

QUALITY PRODUCTS FOR QUALITY WATER



Commercial & Industrial Product Line Catalog



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Section 01. Commercial & Industrial Water Softeners

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'MGT' Series 3/4" – 1½" Water Softeners



Overview

The Marlo 'MGT' water softener system offers the commercial or institutional facility a robust and efficient solution for reducing mineral scale, soap usage, and energy consumption in their plumbing and other water-using equipment.

The corrosion resistant fiberglass reinforced polyethylene tank design and reliable top mounted valve will provide many years of service.

Standard Features

- Corrosion resistant fiberglass tanks
- Piston actuated, multi-port, brass control valves
- Timeclock or meter initiated regeneration cycle
- Brine tank assembly with safety overflow
- Sodium form cation exchange resin
- Hard water bypass during regeneration
- Water hardness testing kit

Materials of Construction

- Control Valve Body: Low lead brass
 - Fleck 1500 - 3/4" Valve-(Timeclock Only)
 - Fleck 2750 - 1" Valve
 - Fleck 2850 - 1-1/2" Valve
- Resin Tanks: Fiberglass reinforced polyethylene - NSF 44 certified
- Internal Distributors: Sch 80 PVC/ABS
- Brine Tank: Corrosion resistant polyethylene
- Meter: Brass or glass filled Noryl

Instrumentation / Controls

- Timeclock - electromechanical control
- Metered - XT and NXT electronic control
 - LED Status lights
 - On board diagnostics and error reporting
 - Flow totalizer

Operating Parameters

- Inlet Pressure: 30-100 psig
- Electrical: 24V circuitry
- 120/24 VAC, 50/60 Hz wall mount transformer
- Temperature: 35-100 °F

Options Available

- Skid mounted, pre-piped, pre-wired systems
- Multi-tank system configurations (twin, triple, quad)
- ASME Pressure vessels
- Signet flow sensors
- Stainless steel meters - 1-1/2"
- Inlet/Outlet pressure gauges and sample valves
- Electromechanical controls and meters
- Larger brine tanks
- Multiple voltage options

'MGT' Series 3/4" – 1½" Water Softeners

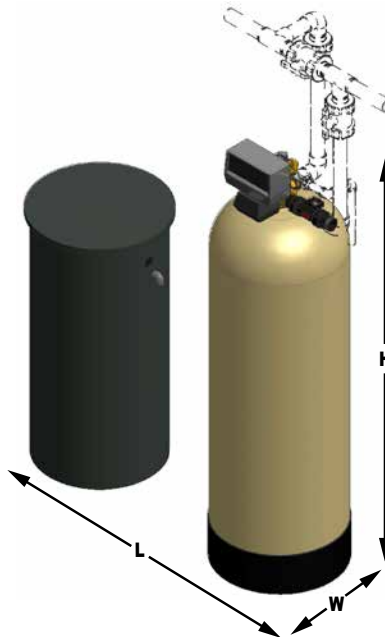
Specifications

CATALOG NUMBER	EXCHANGE CAPACITY (Grains) SALT USAGE (Pounds) ❶		FLOW RATES			PIPE SIZE	RESIN	TANK SIZES		SALT STORAGE	OVERALL DIMENSIONS (INCHES) ❷	SHIPPING WEIGHT (LBS) ❸
			SERVICE		BACK WASH			SOFTENER	BRINE			
	MAX	MIN	CONT. GPM ❹	PEAK GPM ❺		GPM	INCHES			CU. FT.	INCHES	INCHES
	MGT-15-3/4	15,000 7.5	10,000 3	7	10	1.2	3/4	0.5	7x44	18x33	290	31x18x52
MGT-30-3/4	30,000 15	20,000 6	10	14	2	3/4	1	9x48	18x33	290	33x18x56	104
MGT-30-1			14	19		1						
MGT-45-1	45,000 22.5	30,000 9	15	20	3	1	1.5	10x54	18x40	320	34x18x62	144
MGT-45-1-1/2			18	28		1-1/2		13x54				149
MGT-60-1	60,000 30	40,000 12	16	21	3.5	1	2	12x54	18x40	320	36x18x60	178
MGT-60-1-1/2			33	49		1-1/2		13x54				187
MGT-90-1	90,000 45	60,000 18	17	22	5	1	3	14x65	18x40	270	38x18x73	287
MGT-90-1-1/2			31	42		1-1/2						296
MGT-120-1	120,000 60	80,000 24	18	23	6	1	4	16x65	24x40	550	46x24x73	366
MGT-120-1-1/2			34	46		1-1/2						374
MGT-150-1-1/2	150,000 75	100,000 30	37	51	8	1-1/2	5	18x65	24x40	500	48x24x75	463
MGT-210-1-1/2	210,000 105	140,000 42	39	52	12	1-1/2	7	21x62	24x50	600	51x24x75	654
MGT-240-1-1/2	240,000 120	160,000 48	42	55	15	1-1/2	8	24x72	24x50	550	54x24x83	811
MGT-300-1-1/2	300,000 150	200,000 60	41	55	15	1-1/2	10	24x72	24x50	450	54x24x83	927

'MGT' Series Dimensions

NOTE:

Installation piping (shown in broken lines) are provided by others.



Notes

- ❶ Maximum capacity based on 30,000 grains per cubic foot of resin when regenerated with 15 lbs. salt . Minimum capacity based on 20,000 grains per cubic foot of resin when regenerated with 6 lbs. salt.
- ❷ At pressure loss not exceeding 15 psi.
- ❸ At pressure loss not exceeding 25 psi.
- ❹ Dimensions are estimate only. Actual dimensions may vary based on job-site space limits and piping layout. Allow a minimum of 24" above height dimension for resin loading. Use of ASME rated tanks may add up to 12" of tank height.
- ❺ Shipping weights are estimate only. Weights include resin and support gravel, which are added to the tanks after installation.

'MGT' Series 2" and 3" Water Softeners



Twin system shown with skid mount option.

Overview

The Marlo 'MGT' 2" and 3" water softener systems are engineered to handle higher flow rates. Whether its mineral scale in boiler feed or supply water for a car wash, the MGT offers a robust and efficient solution for reducing mineral scale, soap usage, and energy consumption in the plumbing and other water using equipment.

The multiple tank design offers a modular platform with several configuration options that brings a customized water treatment plan that fits most demands. The corrosion resistant fiberglass reinforced polyethylene tank design and reliable top mounted valve will provide many years of service.

Standard Features

- Corrosion resistant fiberglass tanks
- Piston actuated, multiport, brass control valves
- Timeclock or meter initiated regeneration cycle
- Brine tank assembly with safety overflow
- Sodium form cation exchange resin
- Water hardness testing kit

Materials of Construction

- Control Valve Body: Low lead brass
 - Fleck 2900 - 2" Valve
 - Fleck 3900 - 3" Valve
- Resin Tanks: Fiberglass reinforced polyethylene NSF 44 certified
- Internal Distributors: Sch 80 PVC/ABS
- Brine Tank: Corrosion resistant polyethylene
- Meter: Brass or glass filled Noryl

Instrumentation / Controls

- Timeclock - electromechanical control
- Metered - XT, NXT and NXT14 - electronic control
 - LED status lights
 - On board diagnostics and error reporting
 - Flow totalizer

Operating Parameters

- Inlet Pressure: 30-100 psig
- Electrical: 24V circuitry
- 120/24 VAC, 50/60 Hz wall mount transformer
- Temperature: 35-100 °F

Options Available

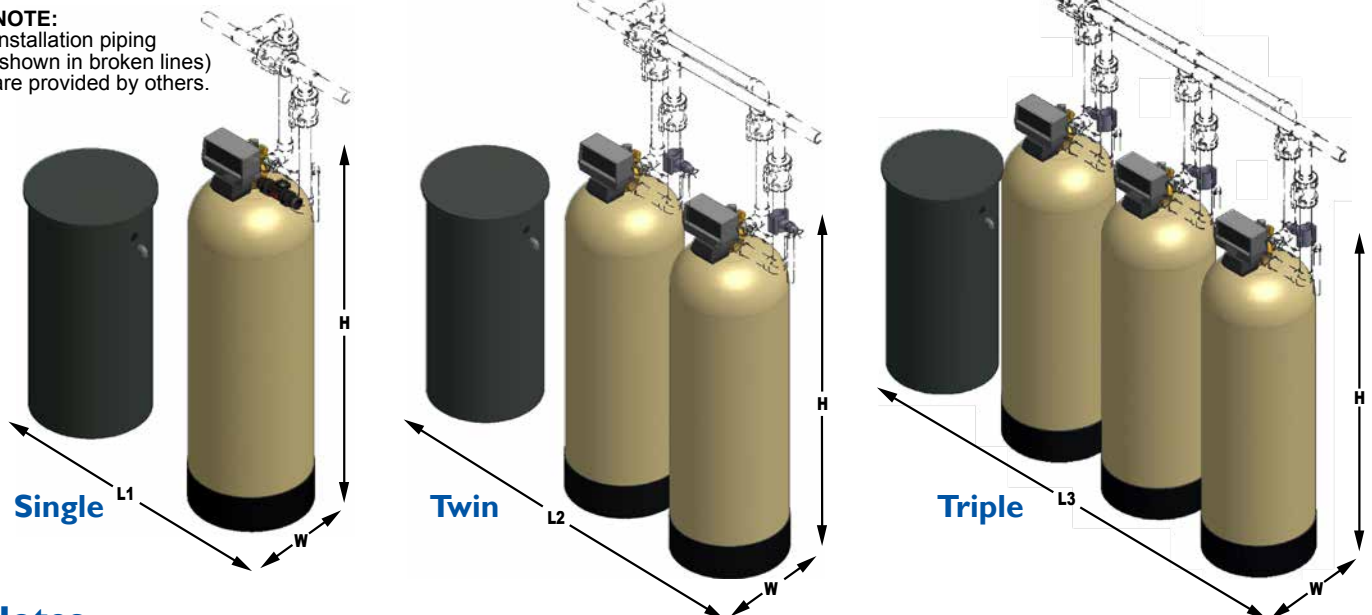
- Skid mounted, pre-piped, pre-wired systems
- NXT System 14 Progressive Parallel Demand configurations (twin, triple, quad)
- ASME Pressure vessels
- Signet flow sensors
- Stainless steel meters - 2" and 3"
- Inlet/Outlet pressure gauges and sample valves
- Electromechanical metered controls
- Larger brine tanks
- Multiple voltage options

'MGT' Series 2" and 3" Water Softeners Specifications

CATALOG NUMBER	EXCHANGE CAPACITY (Grains) SALT USAGE (Pounds) ①		FLOW RATES			PIPE SIZE INCHES	RESIN CU. FT.	TANK SIZES		SALT STORAGE LBS	OVERALL DIMENSIONS (INCHES) ②			SHIPPING WEIGHT (LBS) ③		
			SERVICE		BACK WASH			SOFTENER	BRINE		SINGLE (L1xWxH)	TWIN (L2xWxH)	TRIPLE (L3xWxH)	SINGLE	TWIN	TRIPLE
	MAX.	MIN.	CONT. GPM ④	PEAK GPM ④	GPM		INCHES	INCHES	INCHES							
MGT-60-2	60,000 30	40,000 12	33	49	3.5	2	2	13x54	18x40	320	37x18x67	62x18x67	87x18x67	199	381	571
MGT-90-2	90,000 45	60,000 18	39	54	5	2	3	14x65	18x40	270	38x18x78	64x18x78	90x18x78	319	610	915
MGT-120-2	120,000 60	80,000 24	47	64	6	2	4	16x65	24x40	550	46x24x78	74x24x78	102x24x78	387	746	1,119
MGT-150-2	150,000 75	100,000 30	61	80	8	2	5	18x65	24x40	500	48x24x80	78x24x80	108x24x80	476	923	1,385
MGT-210-2	210,000 105	140,000 42	60	77	12	2	7	21x62	24x50	600	51x24x80	82x24x80	117x24x80	667	1,302	1,952
MGT-240-2	240,000 120	160,000 48	74	97	15	2	8	24x72	24x50	550	54x24x88	90x24x88	126x24x88	824	1,616	2,423
MGT-240-3			120	170		3					54x24x91	90x24x91	126x24x91	888	1,743	2,614
MGT-300-2	300,000 150	200,000 60	68	91	15	2	10	24x72	24x50	450	54x24x88	90x24x88	126x24x88	939	1,847	2,769
MGT-300-3			114	150		3					54x24x91	90x24x91	126x24x91	1,003	1,974	2,960
MGT-450-2	450,000 225	300,000 90	84	105	25	2	15	30x72	30x48	590	66x30x88	108x30x88	150x30x88	1,375	2,689	4,033
MGT-450-3			160	213		3					66x30x91	108x30x91	150x30x91	1,439	2,817	4,226
MGT-600-2	600,000 300	400,000 120	87	110	35	2	20	36x72	39x48	1250	81x39x91	129x39x91	177x39x91	2,033	3,988	5,981
MGT-600-3			185	250		3					81x39x91	129x39x91	177x39x91	2,097	4,116	6,173
MGT-900-3	900,000 450	600,000 180	165	225	35	3	30	42x72	42x60	2,000	90x42x110	144x42x110	198x42x110	3,421	6,731	10,096
MGT-1200-3	1,200,000 600	800,000 240	205	275	55	3	40	48x72	42x60	1,700	96x48x110	156x48x110	216x48x110	4,394	8,678	13,016

'MGT' Series Dimensions

NOTE:
Installation piping
(shown in broken lines)
are provided by others.



Notes

- ① Maximum capacity based on 30,000 grains per cubic foot of resin when regenerated with 15 lbs. salt . Minimum capacity based on 20,000 grains per cubic foot of resin when regenerated with 6 lbs. salt.
- ② At pressure loss not exceeding 15 psi.
- ③ At pressure loss not exceeding 25 psi.
- ④ Dimensions are estimate only. Actual dimensions may vary based on job-site space limits and piping layout. Allow a minimum of 24" above height dimension for resin loading. Use of ASME rated tanks may add up to 12" of tank height.
- ⑤ Shipping weights are estimate only. Weights include resin and support gravel, which are added to the tanks after installation.

'MAT' Series Softener Systems



Overview

The Marlo 'MAT' softener is a meter initiated twin-alternating softener that effectively reduces hardwater scale. This results in lower energy costs and longer equipment life.

The twin alternating design provides a continuous supply of softened water for critical applications, such as boiler feed, with a fully recharged tank always in standby.

Standard Features

- Top-mounted, twin-tank control valve with integral brine injector
- High capacity, sodium form cation resin
- Water meter initiated regeneration
- Inlet/Outlet Sizes - 3/4", 1" or 1-1/2"
- NSF certified corrosion resistant pressure vessels
- Brine tank assembly with salt shelf and safety overflow valve
- Hardness test kit

Materials of Construction

- Control Valve Body:
Glass-filled Noryl - Fleck 9100, (3/4" and 1")
Bronze - Fleck 9500, (1-1/2")
- Meter: Brass or glass filled Noryl
- Resin Tanks: FRP
- Internal Distributor: PVC/ABS
- Brine Tank: Corrosion resistant polyethylene

Instrumentation / Controls

- Fleck SXT digital display electronic timer
- Meter initiated with override option
- Blue backlit LCD display
- Adjustable cycle times
- Service and diagnostic indicators

Operating Parameters

- Flow Range: 2 gpm - 62 gpm
- Inlet Pressure: 30-125 psig
- Temperature: 40-100°F
- Electrical: 120VAC, 1-Ph, 60 Hz

Options Available

- Skid mounted, pre-piped, pre-loaded system
- Electromechanical controller
- XT electronic controller with resettable totalizer
- 220 VAC/50Hz electrical power
- Application specific resin
- Larger brine bank

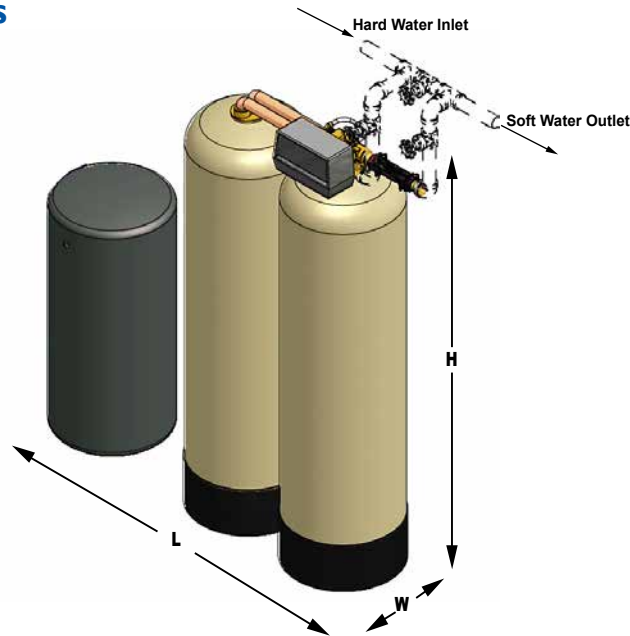
'MAT' Series Softener Systems Specifications

MODEL NUMBER	EXCHANGE CAPACITY (Grains) ^①		FLOW RATES			PIPE SIZE		RESIN PER TANK	TANK SIZES		SALT STORAGE	# OF REGENS PER SALT REFILL	OVERALL DIMENSIONS (INCHES) ^④			APPROX SHIPPING WEIGHT (LBS) ^⑤
			SERVICE		BACK WASH	SERVICE	DRAIN		SOFTENER	BRINE			LENGTH	WIDTH	HEIGHT	SINGLE
	MAX.	MIN.	CONT. GPM ^②	PEAK GPM ^③				GPM			INCHES	INCHES				
MAT 15M-3/4	15,000	10,000	12	16	1.2	3/4	1/2	1/2	7x44	18x33	300	40	38	18	52	130
MAT 22M-3/4	22,000	15,000	13	17	1.6	3/4	1/2	3/4	8x44	18x33	300	27	40	18	52	165
MAT 30M-3/4	30,000	20,000	14	19	2	3/4	1/2	1	9x48	18x33	300	20	40	18	56	200
MAT 45M-3/4	45,000	30,000	13	18	2.4	3/4	1/2	1-1/2	10x54	18x33	375	17	45	18	62	265
MAT 60M-3/4	60,000	40,000	14	19	3.5	3/4	1/2	2	12x52	18x40	320	11	49	18	60	400
MAT 60M-1	60,000	40,000	16	21	3.5	1	1/2	2	12x52	18x40	320	11	49	18	60	400
MAT 60M-1-1/2	60,000	40,000	28	39	3.5	1-1/2	1	2	13x54	18x40	320	11	52	18	62	425
MAT 90M-1	90,000	60,000	17	22	5	1	1/2	3	14x65	18x40	270	6	54	18	73	625
MAT 90M-1-1/2	90,000	60,000	31	42	5	1-1/2	1	3	14x65	18x40	270	6	56	18	75	650
MAT 120M-1	120,000	80,000	18	23	6	1	1/2	4	16x65	24x40	550	9	64	24	73	825
MAT 120M-1-1/2	120,000	80,000	34	46	6	1-1/2	1	4	16x65	24x40	550	9	68	24	75	850
MAT 150M-1-1/2	150,000	100,000	38	50	8	1-1/2	1	5	18x65	24x50	500	7	72	24	75	1,150
MAT 210M-1-1/2	210,000	140,000	39	52	12	1-1/2	1	7	21x62	24x50	580	6	78	24	75	1,375
MAT 240M-1-1/2	240,000	160,000	43	57	15	1-1/2	1	8	24x72	24x50	530	4	84	24	83	1,600
MAT 300M-1-1/2	300,000	200,000	41	55	15	1-1/2	1	10	24x72	24x50	440	3	84	24	83	1,850
MAT 450M-1-1/2	450,000	300,000	45	62	25	1-1/2	1	15	30x72	30x50	640	3	102	30	83	2,725

'MAT' Series Dimensions

NOTE:

Leave a minimum 24 inch clearance above the height of the unit for loading media. Installation piping (shown in broken lines) are provided by others.



Notes

- ① Maximum capacity based on 30,000 grains per cubic foot of resin when regenerated with 15 lbs. salt . Minimum capacity based on 20,000 grains per cubic foot of resin when regenerated with 6 lbs. salt.
- ② At pressure loss not exceeding 15 psi.
- ③ At pressure loss not exceeding 25 psi.
- ④ Dimensions are estimate only.
- ⑤ Shipping weights are estimate only. Weights include resin and support gravel.

'MGTE' Series Water Softeners



Overview

The Marlo 'MGTE' water softener system offers the commercial or institutional facility a robust and efficient solution for reducing mineral scale, soap usage, and energy consumption in their plumbing and other water-using equipment.

The corrosion resistant fiberglass reinforced polyethylene tank design and reliable top mounted valve will provide many years of service.

Standard Features

- Corrosion resistant fiberglass tanks
- Piston actuated, multiport, plastic or brass control valves
- Timeclock or meter initiated regeneration cycle
- Brine tank assembly with safety overflow
- Sodium form cation exchange resin
- Hardwater bypass during regeneration
- Water hardness testing kit

Materials of Construction

- Control Valve Body:
 - 1" & 1-1/4" Noryl Plastic
 - 1-1/2" & 2" Low Lead Brass
- Resin Tanks: Fiberglass reinforced polyethylene - NSF 44 certified
- Internal Distributors: Sch 80 PVC/ABS
- Brine Tank: Corrosion resistant polyethylene
- Meter (optional): Internal or Stainless Steel

Instrumentation / Controls

- Timeclock
- Metered -
 - LCD Display Screen
 - On board diagnostics and error reporting
 - Flow totalizer (with optional meter)

Operating Parameters

- Inlet Pressure: 25-125 psig
- Electrical: 12V circuitry
- 120/12 VAC, 50/60 Hz wall mount transformer
- Temperature: 40-110 °F

Options Available

- Skid mounted, pre-piped, pre-wired systems
- Multi-tank system configurations (twin alternating)
- ASME pressure vessels (18" diameter and larger)
- Bypass valve for use on 1" & 1-1/4" Systems
- Stainless steel meters - 1-1/2", 2"
- Inlet/Outlet pressure gauges and sample valves
- Larger brine tanks
- Multiple voltage options

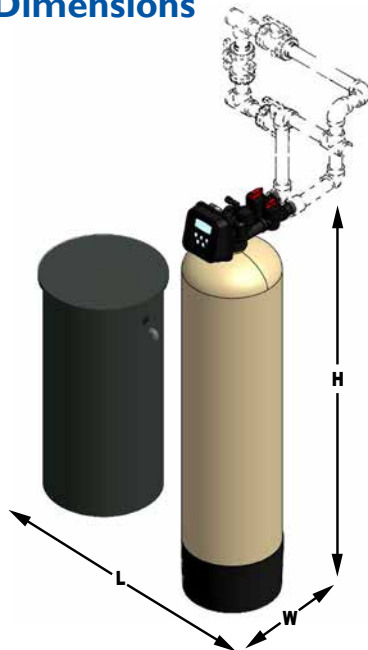
'MGTE' Series Water Softeners

Specifications

MODEL	EXCHANGE CAPACITY (Grains) SALT USAGE (Pounds) ①		FLOW RATES			PIPE SIZE		RESIN	TANK SIZES		SALT STORAGE	OVERALL DIMENSIONS (INCHES) ②	OVERALL DIMENSIONS (INCHES) ③	SHIPPING WEIGHT (LBS) ④	
			SERVICE		BACK WASH GPM	SERVICE	DRAIN		SOFTENER	BRINE				SINGLE (LxWxH)	TWIN (LxWxH)
	MAX	MIN	CONT. GPM ⑤	PEAK GPM ⑥				INCHES			INCHES	CU. FT.	INCHES		
	MGTE-30-1	30,000 15	20,000 6	15	20	2.2	1	3/4	1	9x48	18x33	300	33x18x56	54x18x56	100
MGTE-45-1	45,000 22.5	30,000 9	17	22	2.7	1	3/4	1.5	10x54	18x40	350	34x18x62	56x18x62	140	265
MGTE-45-1-1/4			19	28		1-1/4								145	275
MGTE-60-1	60,000 30	40,000 12	20	25	3.2	1	3/4	2	12x52	18x40	290	36x18x60	60x18x60	175	375
MGTE-60-1-1/4			25	34		1-1/4			36x18x60			60x18x60	180	385	
MGTE-60-1-1/2			33	42		1-1/2			37x18x65			62x18x65	185	395	
MGTE-90-1	90,000 45	60,000 18	21	26	4.2	1	3/4	3	14x65	18x40	290	38x18x73	64x18x73	280	585
MGTE-90-1-1/4			24	33		1-1/4						38x18x73	64x18x73	285	595
MGTE-90-1-1/2			33	44		1-1/2						38x18x76	64x18x76	295	600
MGTE-120-1-1/4	120,000 60	80,000 24	25	34	5.3	1-1/4	3/4	4	16x65	24x41	565	46x24x73	74x24x73	360	710
MGTE-120-1-1/2			36	50		1-1/2						46x24x76	74x24x76	375	740
MGTE-120-2			47	60		2						46x24x76	74x24x76	390	750
MGTE-150-1-1/4	150,000 75	100,000 30	27	35	7.5	1-1/4	3/4	5	18x65	24x50	665	48x24x78	78x24x78	455	910
MGTE-150-1-1/2			40	54		1-1/2						48x24x78	78x24x78	465	920
MGTE-150-2			53	69		2						48x24x78	78x24x78	480	925
MGTE-210-1-1/2	210,000 105	140,000 42	43	58	11	1-1/2	1	7	21x62	24x50	575	51x24x78	84x24x78	655	1320
MGTE-210-2			66	85		2	51x24x78					84x24x78	670	1300	
MGTE-300-1-1/2	300,000 150	200,000 60	45	60	15	1-1/2	1	10	24x72	24x50	430	54x24x86	90x24x86	925	1840
MGTE-300-2			73	94	15	2	1							950	1850
MGTE-450-2	450,000 225	300,000 90	84	109	25	2	1	15	30x72	30x50	740	66x30x85	108x30x85	1370	2690
MGTE-600-2	600,000 300	400,000 120	93	119	30	2	1	20	36x72	39x60	1860	81x39x98	129x39x98	2040	3990

'MGTE' Series Dimensions

NOTE:
Installation piping
(shown in broken lines) are
provided by others.



Notes

- Maximum capacity based on 30,000 grains per cubic foot of resin when regenerated with 15 lbs. salt . Minimum capacity based on 20,000 grains per cubic foot of resin when regenerated with 6 lbs. salt.
- At pressure loss not exceeding 15 psi.
- At pressure loss not exceeding 25 psi.
- Dimensions are estimate only. Actual dimensions may vary based on job-site space limits and piping layout. Allow a minimum of 24" above height dimension for resin loading. Use of ASME rated tanks may add up to 12" of tank height.
- Shipping weights are estimate only. Weights include resin and support gravel, which are added to the tanks after installation.

'MGTC' Series Water Softeners



Twin system shown with skid mount option.

Overview

The Marlo 'MGTC' water softener systems are engineered for higher flow rates and ease of use. The removable operator interface makes it easy to view valve diagnostics and make programming adjustments. The quick-connect valve mount, along with the 2" valve's built in meter, make installation and service quick and easy. The corrosion resistant fiberglass reinforced polyethylene tanks are designed to provide many years of reliable service.

The multiple tank configurations and available options make the MGTC a robust solution for boiler pretreatment, car washes or any application requiring mineral scale reduction.

Standard Features

- Corrosion resistant fiberglass tanks
- Piston actuated, multiport, lead free brass control valves
- Meter initiated regeneration cycle
- Brine tank assembly with safety overflow
- Sodium form cation exchange resin
- Hardwater bypass during regeneration
- Water hardness testing kit

Materials of Construction

- Control Valve Body: Epoxy coated lead free brass
 - Clack WS2H - 2" Valve
 - Clack WS3 - 3" Valve
- Resin Tanks: Fiberglass reinforced polyethylene - NSF 44 certified
- Internal Distributors: Sch 80 PVC/ABS
- Brine Tank: Corrosion resistant polyethylene

Instrumentation & Controls

- Easy access front removable operator interface
- LCD Display Screen
- On board diagnostics and error reporting
- Meter: 2" internal meter or 3" Signet paddle-type
- Flow Totalizer

Operating Parameters

- Inlet Pressure: 20 – 125 psig
- Electrical: 20V Circuitry
- 120/20 VAC, 50/60 Hz wall mount transformer
- Temperature: 40 – 100 °F

Options Available

- Skid mounted, pre-piped, pre-wired systems
- Available Flow Configurations:
 - Single Tank
 - Twin Alternating
 - Multi-tank Progressive
- ASME pressure vessels
- Stainless steel meters
- Inlet/Outlet pressure gauges and sample valves
- Larger brine tanks
- Multiple voltage options
- Side Mount Control Valve

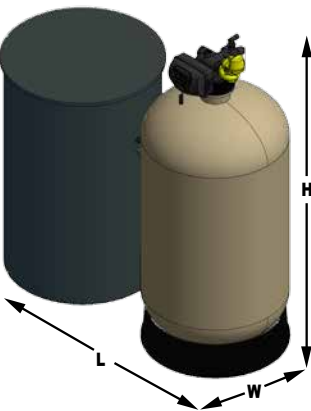
'MGTC' Series Water Softeners

Specifications

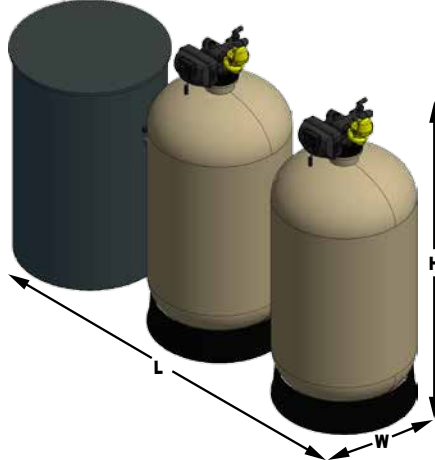
MODEL	EXCHANGE CAPACITY (Grains) SALT USAGE (Pounds) ①		FLOW RATES			PIPE SIZE	RESIN	TANK SIZES		SALT STORAGE	OVERALL DIMENSIONS (INCHES) ④	OVERALL DIMENSIONS (INCHES) ④	OVERALL DIMENSIONS (INCHES) ④	SHIPPING WEIGHT (LBS) ⑤		
			SERVICE		BACK WASH			SOFTENER	BRINE					SINGLE (LxWxH)	TWIN (LxWxH)	TRIPLE (LxWxH)
	CONT. GPM ②	PEAK GPM ③	SERVICE	CU. FT.		INCHES	INCHES			LBS						
	MAX	MIN	GPM	INCHES	INCHES	LBS	SINGLE (LxWxH)	TWIN (LxWxH)	TRIPLE (LxWxH)	SINGLE	TWIN	TRIPLE				
MGTC-150-2	150,000 75	100,000 30	54	70	8	2	5	18x65	24x50	630	48x24x80	78x24x80	108x24x80	493	957	1436
MGTC-210-2	210,000 105	140,000 42	68	88	12	2	7	21x62	24x50	540	51x24x80	84x24x80	117x24x80	684	1336	2003
MGTC-240-2	240,000 120	160,000 48	77	100	15	2	8	24x72	24x50	510	54x24x88	90x24x88	126x24x88	841	1650	2474
MGTC-240-3			111	143	15	3	8	24x72	24x50	510	54x24x89	90x24x89	126x24x89	852	1671	2506
MGTC-300-2	300,000 150	200,000 60	75	97	15	2	10	24x72	24x50	410	54x24x88	90x24x88	126x24x88	956	1881	2820
MGTC-300-3			98	126	15	3	10	24x72	24x50	410	54x24x89	90x24x89	126x24x89	967	1902	2852
MGTC-450-2	450,000 225	300,000 90	88	113	25	2	15	30x72	30x50	640	66x30x87	108x30x87	150x30x87	1392	2723	4084
MGTC-450-3			144	186	25	3	15	30x72	30x50	640	66x30x88	108x30x88	150x30x88	1403	2745	4118
MGTC-600-2	600,000 300	400,000 120	97	126	30	2	20	36x72	39x60	1700	81x39x87	129x39x87	177x39x87	2050	4022	6032
MGTC-600-3			172	222	30	3	20	36x72	39x60	1700	81x39x88	129x39x88	177x39x88	2061	4044	6065
MGTC-900-3	900,000 450	600,000 180	190	244	35	3	30	42x72	42x60	1940	90x42x107	144x42x107	198x42x107	3385	6659	9988
MGTC-1200-3	1,200,000 600	800,000 240	194	251	35	3	40	48x72	42x60	1670	96x48x107	156x48x107	216x48x107	4358	8606	12908

'MGTC' Series Dimensions

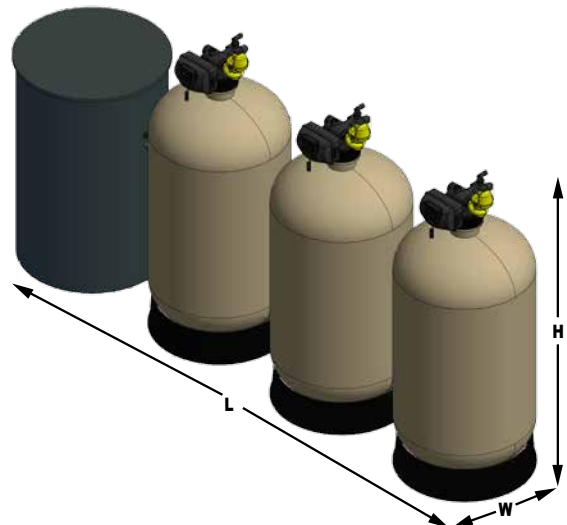
Single



Twin



Triple



Notes

- ① Maximum capacity based on 30,000 grains per cubic foot of resin when regenerated with 15 lbs. salt . Minimum capacity based on 20,000 grains per cubic foot of resin when regenerated with 6 lbs. salt.
- ② At pressure loss not exceeding 15 psi.
- ③ At pressure loss not exceeding 25 psi.
- ④ Dimensions are estimate only. Actual dimensions may vary based on job-site space limits and piping layout. Allow a minimum of 24" above height dimension for resin loading. Use of ASME rated tanks may add up to 12" of tank height.
- ⑤ Shipping weights are estimate only. Weights include resin and support gravel, which are added to the tanks after installation.

'MATC' Series Water Softeners



Overview

The Marlo 'MATC' water softener system is a meter initiated twin-alternating softener that offers the commercial or institutional facility a robust and efficient solution for reducing mineral scale, soap usage, and energy consumption in their plumbing and other water-using equipment.

The twin-alternating design provides a continuous supply of softened water for critical applications, such as boiler feed, with a fully recharged tank always in standby.

Standard Features

- Top mounted, twin tank control valve
- NSF certified corrosion resistant fiberglass tanks
- Piston actuated, multiport, plastic or brass control valves
- Water meter initiated regeneration cycle
- Brine tank assembly with safety overflow
- High capacity sodium form cation exchange resin
- Water hardness testing kit

Materials of Construction

- Control Valve Body:
 - 1" Noryl Plastic
- Resin Tanks: Fiberglass reinforced polyethylene - NSF 44 certified
- Internal Distributors: Sch 80 PVC/ABS
- Brine Tank: Corrosion resistant polyethylene
- Meter: Internal

Instrumentation / Controls

- Metered -
 - LCD Display Screen
 - On board diagnostics and error reporting
 - Flow totalizer

Operating Parameters

- Inlet Pressure: 25-125 psig
- Electrical: 12V circuitry
- 120/12 VAC, 50/60 Hz wall mount transformer
- Temperature: 40-110 °F

Options Available

- Skid mounted, pre-piped, pre-loaded systems
- Bypass valve
- Inlet/Outlet pressure gauges and sample valves
- Larger brine tanks
- Multiple voltage options
- Application specific resin

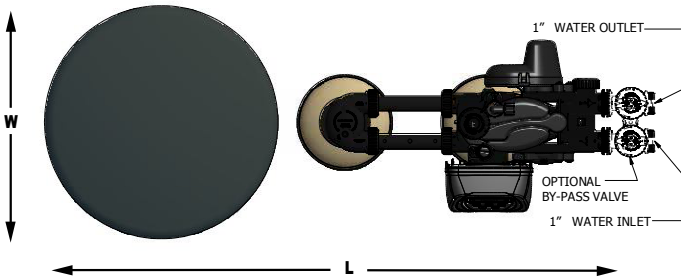
'MATC' Series Water Softeners

Specifications

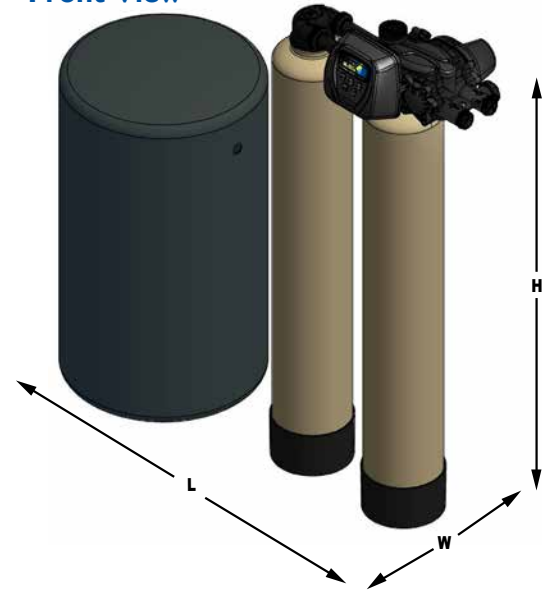
MODEL	EXCHANGE CAPACITY (Grains) SALT USAGE (Pounds) ⑤		FLOW RATES			PIPE SIZE		RESIN	TANK SIZES		SALT STORAGE LBS	OVERALL DIMENSIONS (INCHES) ⑤	SHIPPING WEIGHT (LBS) ⑤
			SERVICE		BACK WASH GPM	SERVICE INCHES	DRAIN INCHES		SOFTENER INCHES	BRINE INCHES			
	MAX	MIN	CONT. GPM ⑤	PEAK GPM ⑤				CU. FT.			TWIN (LxWxH)	TWIN	
	MATC-15M-1	15,000 7.5	10,000 3	13	18	1.3	1	3/4	0.5	7x44	18x33	300	50x18x52
MATC-30M-1	30,000 15	20,000 6	15	20	2.2	1	3/4	1	9x48	18x33	300	51x18x56	200
MATC-45M-1	45,000 22.5	30,000 9	17	22	2.7	1	3/4	1.5	10x54	18x40	320	51x18x62	265
MATC-60M-1	60,000 30	40,000 12	20	25	3.2	1	3/4	2	12x52	18x40	320	54x18x60	400
MATC-90M-1	90,000 45	60,000 18	21	26	4.2	1	3/4	3	14x65	18x40	270	57x18x73	625
MATC-120M-1	120,000 60	80,000 24	23	30	5.3	1	3/4	4	16x65	24x40	550	66x24x73	825

'MATC' Series Dimensions

Top View



Front View



Notes

- ① Maximum capacity based on 30,000 grains per cubic foot of resin when regenerated with 15 lbs. salt . Minimum capacity based on 20,000 grains per cubic foot of resin when regenerated with 6 lbs. salt.
- ② At pressure loss not exceeding 15 psi.
- ③ At pressure loss not exceeding 25 psi.
- ④ Dimensions are estimate only. Actual dimensions may vary based on job-site space limits and piping layout. Allow a minimum of 24" above height dimension for resin loading.
- ⑤ Shipping weights are estimate only. Weights include resin and support gravel, which are added to the tanks after installation.

'MR' Series Water Softener Systems



Overview

The Marlo 'MR' Series water softener system offers the commercial or institutional facility a robust and efficient solution for reducing mineral scale, soap usage, and energy consumption in their plumbing and other water-using equipment.

The standard, all-steel exterior design will be reliable for many years of service. A modular platform allows for single, twin, or triplex tank designs to be easily configured to meet the exact flow requirements matched with the incoming water quality. Numerous custom engineered options are available to meet most specifications.

Standard Features

- Carbon steel resin tanks with epoxy-lined interior
- Water activated diaphragm style control valves
- Volume and/or time initiated regeneration cycle
- Polyethylene brine tank assembly with injector
- Sodium form cation exchange resin
- Inlet/Outlet tank sampling valves
- Water hardness testing kit
- Factory Hydro-tested at 100 psig

Materials of Construction

- Resin Tanks: Carbon steel with Safety Blue exterior paint
- Tank Lining: NSF 61 rated epoxy coating
- Exterior Piping: Galvanized steel pipe & cast iron fittings
- Internal Distributors: Sch 80 PVC/ABS
- Control Valves: Painted cast iron body

Instrumentation / Controls

- Marlo MX-II electronic system controller
- Time or metered control with bypass for single tank
- Alternating or parallel progressive metered control for twin and triplex tank units
- NEMA-4X electrical enclosures
- Signet paddle-type flow sensors
- Inlet/Outlet pressure gauges

Operating Parameters

- Inlet Pressure: 30-100 psig
- Electrical: 120 VAC, 1-Ph, 60Hz
- Temperature: 35-110 °F

Options Available

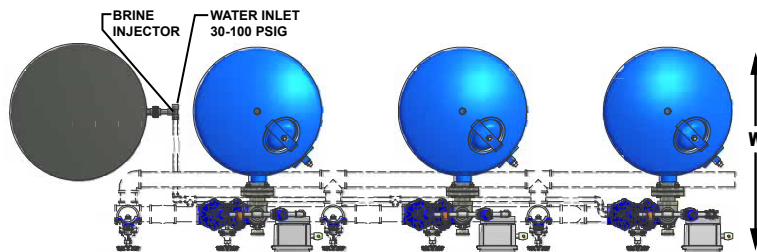
- Skid mounted, pre-piped, pre-wired systems
- ASME code stamped resin tanks
- Allen-Bradley PLC systems
- Alternate water meter types
- Brine pump systems
- PVC or CPVC exterior piping
- Copper or Stainless steel exterior piping
- Stainless steel internal distributor piping
- Butterfly control valves (air operated)
- 'SRS' Salt Recycling Systems
- Online hardness monitor

'MR' Series Water Softener Systems

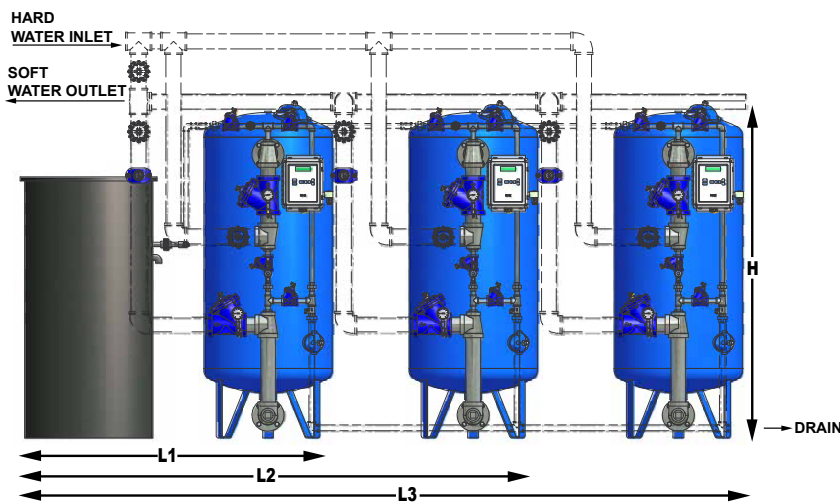
Specifications

CATALOG NUMBER	EXCHANGE CAPACITY (Grains) SALT USAGE (Pounds) ❶		FLOW RATES		PIPE SIZE		RESIN	TANK SIZES		SALT STORAGE	REGENERATION PER SALT REFILL		OVERALL DIMENSIONS (INCHES) ❷			SHIPPING WEIGHT (LBS) ❸			
			SERVICE		BACK WASH	SERVICE		DRAIN	SOFTENER										BRINE
	MAX.	MIN.	CONT. GPM ❹	PEAK GPM ❹			GPM			INCHES	INCHES	CU. FT.	INCHES	INCHES	LBS	MIN.	MAX.	SINGLE (L1x-WxH)	
MR-150-1	150,000	100,000	32	42	10	1	1	5	20 x 54	24 x 50	700	9	23	71x34x70	107x34x70	145x34x70	708	1,345	2,053
MR-150-1-1/2			55	78		1-1/2	1							71x34x70	107x34x70	145x34x70	721	1,369	2,090
MR-150-2			69	97		2	1							71x34x70	107x34x70	145x34x70	754	1,430	2,184
MR-210-1-1/2	210,000	140,000	64	86	15	1-1/2	1	7	24 x 54	24 x 50	600	5	14	73x39x71	113x39x71	157x39x71	919	1,762	2,681
MR-210-2			80	110		2	1							73x38x71	113x38x71	157x38x71	946	1,814	2,760
MR-210-2-1/2			115	160		2-1/2	1							73x41x74	113x41x74	157x41x74	1,000	1,900	2,900
MR-300-1-1/2	300,000	200,000	68	92	20	1-1/2	1	10	30 x 54	24 x 60	600	4	10	76x44x75	121x44x75	175x44x75	1,426	2,732	4,158
MR-300-2			92	125		2	1							76x44x75	121x44x75	175x44x75	1,428	2,738	4,166
MR-300-2-1/2			140	190		2-1/2	1							76x48x79	121x48x79	175x48x79	1,458	2,785	4,243
MR-300-3			165	230		3	1							76x48x79	121x48x79	175x48x79	1,533	2,936	4,469
MR-450-1-1/2	450,000	300,000	63	90	20	1-1/2	1	15	30 x 60	30 x 60	1000	4	11	82x45x79	127x45x79	181x45x79	1,753	3,333	5,086
MR-450-2			82	115		2	1							82x44x79	127x44x79	181x44x79	1,753	3,351	5,104
MR-450-2-1/2			120	170		2-1/2	1							82x48x79	127x48x79	181x48x79	1,776	3,408	5,184
MR-450-3			140	190		3	1							82x48x79	127x48x79	181x48x79	1,826	3,504	5,330
MR-600-2	600,000	400,000	110	125	30	2	1-1/2	20	36 x 60	39 x 60	1900	6	15	94x51x86	148x51x86	208x51x86	2,460	4,722	7,182
MR-600-2-1/2			140	190		2-1/2	1-1/2							94x54x86	148x54x86	208x54x86	2,460	4,781	7,241
MR-600-3			175	250		3	1-1/2							94x54x86	148x54x86	208x54x86	2,533	4,863	7,396
MR-750-2			90	116		2	1-1/2							94x51x98	148x51x98	208x51x98	2,833	5,440	8,273
MR-750-2-1/2	750,000	500,000	140	190	30	2-1/2	1-1/2	25	36 x 72	39 x 60	1700	4	11	94x54x98	148x54x98	208x54x98	2,863	5,470	8,363
MR-750-3			160	230		3	1-1/2							94x54x98	148x54x98	208x54x98	2,970	5,581	8,551
MR-900-2			105	133		2	2							103x58x88	163x58x88	229x58x88	3,340	6,429	9,769
MR-900-2-1/2	900,000	600,000	150	218	45	2-1/2	2	30	42 x 60	42 x 60	1900	4	10	103x60x88	163x60x88	229x60x88	3,378	6,488	9,807
MR-900-3			188	279		3	2							103x60x88	163x60x88	229x60x88	3,416	6,598	10,014
MR-1050-2			95	124		2	2							111x58x103	171x58x103	237x58x103	3,650	7,049	10,699
MR-1050-2-1/2	1,050,000	700,000	145	210	45	2-1/2	2	35	42 x 72	50 x 60	2300	4	10	111x60x103	171x60x103	237x60x103	3,688	7,108	10,737
MR-1050-3			173	259		3	2							111x60x103	171x60x103	237x60x103	3,726	7,218	10,944

'MR' Series - Top View



'MR' Series - Front View



NOTE: Installation piping (shown in broken lines) are provided by others.

Notes

- ❶ Maximum capacity based on 30,000 grains per cubic foot of resin when regenerated with 15 lbs. salt. Minimum capacity based on 20,000 grains per cubic foot of resin when regenerated with 6 lbs. salt.
- ❷ At pressure loss not exceeding 15 psi.
- ❸ At pressure loss not exceeding 25 psi.
- ❹ Dimensions are estimate only. Actual dimensions may vary based on job-site space limits and piping layout. Allow a minimum of 24" above height dimension for resin loading. Use of ASME rated tanks may add up to 12" of tank height.
- ❺ Shipping weights are estimate only. Weights include resin and support gravel, which are added to the tanks after installation.

'MRG' Series Water Softener Systems



Overview

The Marlo 'MRG' Series water softener system offers a corrosion resistant alternative for commercial & industrial applications. Equipped with FRP resin tanks and external control valve manifold, it achieves higher service flow rates than traditional top-mount, multi-port valve configurations. All systems are completely factory skid mounted, pre-piped, pre-wired, and pre-tested for minimal installation time and cost. Standard designs available for twin and triple tank configurations.

Standard Features

- Composite FRP resin tank with tri-pod base
- Aquamatic diaphragm style control valves
- Volume and/or time initiated regeneration cycle
- Polyethylene brine tank assembly
- Air or water actuated control valves
- High capacity, cation exchange resin
- Tank isolation valves & system bypass valve
- Inlet/Outlet tank sampling valves
- Factory Hydro-tested at 100 psig

Materials of Construction

- Resin Tanks: FRP
- Exterior Piping: Sch 80 PVC
- Internal Distributors: Sch 80 PVC / ABS
- Control Valves: Noryl Thermoplastic
- Skid: Painted, Carbon Steel

Instrumentation / Controls

- Marlo MX-III electronic system controller
- Alternating or parallel progressive flow control
- NEMA-4X electrical enclosures
- Signet paddle-type flow sensors
- Inlet/Outlet tank pressure gauges

Operating Parameters

- Inlet Pressure: 30-100 psig
- Electrical: 120VAC, 1-Ph, 60 Hz.
- Temperature: 35-110°F

Options Available

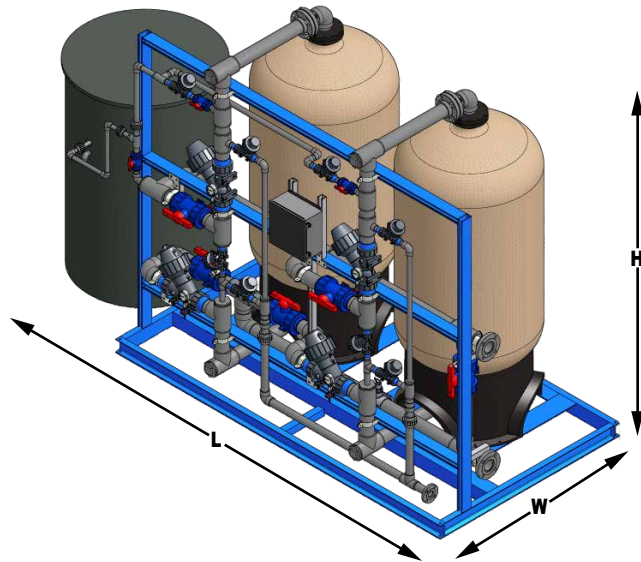
- ASME rated resin tanks
- Allen-Bradley PLC systems
- Bulk Brinemaker Silos
- Brine pump skids
- CPVC exterior piping
- Butterfly control valves (air-operated)
- Alternate ion exchange resins
- Online hardness monitor
- Polyurethane skid painting
- 'SRS' Salt Recycling Systems

'MRG' Series Water Softener Systems

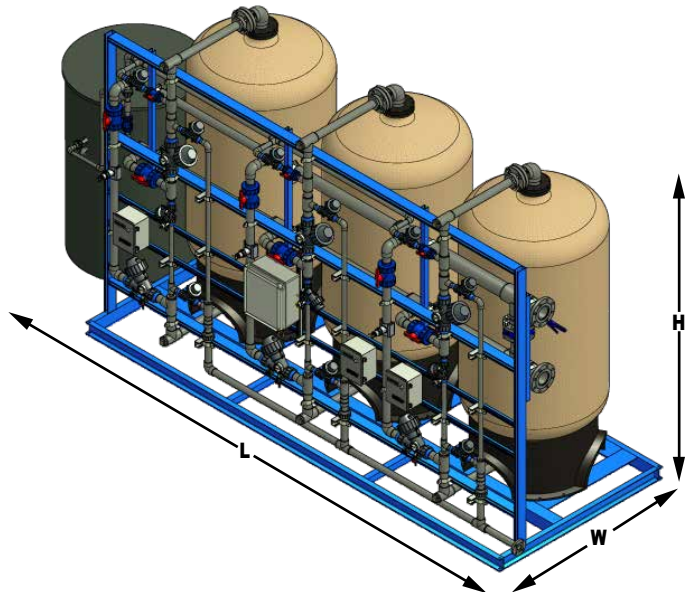
Specifications

MODEL NUMBER	CAPACITY (Grains) SALT DOSAGE (LBS.) ①	FLOW RATES (PER TANK)			PIPE SIZE		RESIN	TANK SIZES		HEADER SIZES ⑤		OVERALL DIMENSIONS (LxWxH, INCHES) ⑥		SHIPPING WEIGHT (LBS.) ⑦	
		SERVICE		BACKWASH	SERVICE	DRAIN		SOFTENER	BRINE ④	TWIN PARALLEL	TRIPLE PARALLEL	TWIN	TRIPLE	TWIN	TRIPLE
	MAX. (per tank)	CONT. GPM ②	PEAK GPM ③	GPM	INCHES	INCHES	CU. FT.	INCHES	INCHES	INCHES	INCHES				
MRG-210-2	210,000 105	80	110	12	2	1	7	21x62	24x50	2.5	3	122x42x98	159x42x98	2,030	2,970
MRG-300-2	300,000 150	82	115	15	2	1	10	24x72	24x60	2.5	3	130x46x101	170x46x101	2,710	3,965
MRG-300-3	300,000 150	140	190		3	1				4	4				
MRG-450-2	450,000 225	92	125	20	2	1	15	30x72	30x60	2.5	3	150x52x106	196x52x106	3,830	5,620
MRG-450-3	450,000 225	165	230		3	1				4	4				
MRG-600-3	600,000 300	175	250	30	3	1-1/2	20	36x72	39x60	4	4	170x58x106	222x58x106	4,950	7,250
MRG-900-3	900,000 450	188	279	45	3	2	30	42x72	42x60	4	4	185x64x108	243x64x108	7,620	11,200
MRG-1200-3	1,200,000 600	215	300	60	3	2	40	48x72	56x62	4	6	211x70x112	274x70x112	9,840	14,500
MRG-1500-3	1,500,000 750	235	325	110	3	3	50	63x86	74x64	4	6	258x85x113	338x85x113	15,250	22,600

'MRG' Series Twin



'MRG' Series Triple



Notes

- ① Salt dosage equal to 15 lbs. per cu. ft. resin for maximum exchange capacity.
- ② At a pressure drop not exceeding 15 psig.
- ③ At a pressure drop not exceeding 25 psig.
- ④ Brine tanks designed for a salt storage of at least 4 regeneration cycles.
- ⑤ Main service headers indicated for parallel flow applications. Headers sizes for twin alternating systems are equal to the tank service pipe size.
- ⑥ Dimensions are estimate only. Actual dimensions may differ dependent on options selected.
- ⑦ Shipping weights are estimate only. Weights include resin and gravel.

'MHC' Series Water Softener Systems



Overview

The Marlo 'MHC' Series water softener system is designed to effectively meet the rigorous demands of institutional and industrial facilities where high flow rates and hardness capacities are required.

The standard, all-steel exterior design will be reliable for many years of service. A modular platform allows for single, twin, or triplex tank designs to be easily configured to meet the exact flow requirements matched with the incoming water quality. Numerous custom engineered options are available to meet most specifications.

Standard Features

- Carbon steel resin tanks with epoxy-lined interior
- Water activated diaphragm style control valves
- Volume and/or time initiated regeneration cycle
- Polyethylene brine tank assembly with injector
- Sodium form cation exchange resin
- Inlet/Outlet tank sampling valves
- Water hardness testing kit
- Factory Hydro-tested at 100 psig

Materials of Construction

- Resin Tanks: Carbon steel with Safety Blue exterior paint
- Tank Lining: NSF 61 rated epoxy coating
- Exterior Piping: Galvanized steel pipe & cast iron fittings
- Internal Distributors: Sch 80 PVC/ABS
- Control Valves: Painted cast iron body

Instrumentation / Controls

- Marlo MX-II electronic system controller
- Time or metered control with bypass for single tank
- Alternating or parallel progressive metered control for twin and triple tank units
- NEMA-4X electrical enclosures
- Signet paddle-type flow sensors
- Inlet/Outlet pressure gauges

Operating Parameters

- Inlet Pressure: 30-100 psig
- Electrical: 120 VAC, 1-Ph, 60Hz
- Temperature: 35-110 °F

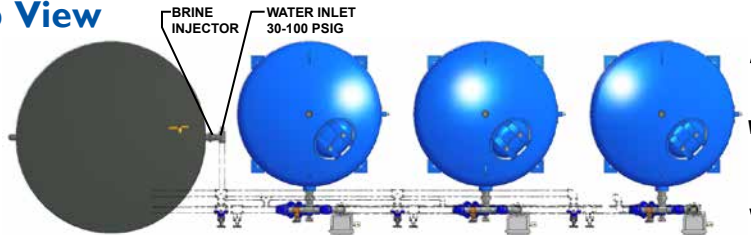
Options Available

- Skid mounted, pre-piped, pre-wired systems
- ASME code stamped resin tanks
- Allen-Bradley PLC systems
- Alternate water meter types
- Brine silo and/or brine pump systems
- PVC or CPVC exterior piping
- Copper or Stainless steel exterior piping
- Stainless steel internal distributor piping
- Seismic zone rated systems
- Butterfly control valves (air operated)
- 'SRS' Salt Recycling Systems
- Online hardness monitor

'MHC' Series Water Softener Systems Specifications

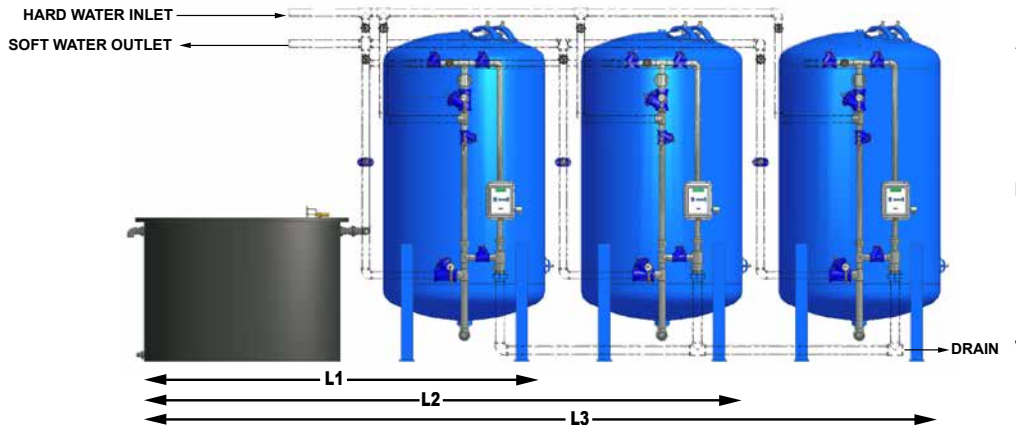
CATALOG NUMBER	EXCHANGE CAPACITY (Grains) SALT USAGE (LBS) ①		FLOW RATES		PIPE SIZE		RESIN	TANK SIZES		SALT STORAGE	REGEN PER SALT REFILL		OVERALL DIMENSIONS (INCHES) ③			SHIPPING WEIGHT (LBS) ⑤						
			SERVICE		BACK WASH	SERVICE		DRAIN	SOFTENER										BRINE			
	CONT. GPM ②	PEAK GPM ③	GPM	INCHES			INCHES			CU. FT.	INCHES	INCHES	LBS	MIN. SALT	MAX. SALT	SINGLE (L1xWxH)	TWIN (L2xWxH)	TRIPLE (L3xWxH)		SINGLE	TWIN	TRIPLE
	MAX. SALT	MIN. SALT																				
MHC-1200-3	1,200,000	800,000	215	300	60	3	2	40	48 x 60	52 x 60	2600	10	4	120x64x98	188x64x98	252x64x98	5,700	10,800	15,900			
MHC-1200-4	600	240	310	410		4	2		48 x 60	52 x 60				2600	10	4	120x68x98	188x68x98	252x68x98	5,730	10,860	16,000
MHC-1500-3	1,500,000	1,000,000	225	308	80	3	2	50	54 x 60	66 x 46	3300	11	4	140x70x100	214x70x100	288x70x100	6,850	13,050	19,100			
MHC-1500-4	750	300	405	600		4	2		54 x 60	66 x 46				3300	11	4	140x74x100	214x74x100	288x74x100	6,880	13,110	19,200
MHC-1950-3	1,950,000	1,300,000	235	325	100	3	2	65	60 x 60	72 x 46	4000	10	4	158x76x102	232x76x102	312x76x102	8,500	16,200	23,950			
MHC-1950-4	975	390	445	650		4	2		60 x 60	72 x 46				4000	10	4	158x80x102	232x80x102	312x80x102	8,550	16,250	24,000
MHC-2400-3	2,400,000 1,200	1,600,000 480	245	340	120	3	3	80	66 x 72	84 x 46	6100	12	5	170x84x114	256x84x114	342x84x114	10,700	20,500	30,300			
MHC-2400-4			480	690		4	3		66 x 72	84 x 46				6100	12	5	170x86x114	256x86x114	342x86x114	10,750	20,600	30,500
MHC-2400-6			650	940		6	3		66 x 72	84 x 46				6100	12	5	170x92x114	256x92x114	342x92x114	10,800	20,700	30,700
MHC-3000-3	3,000,000 1,500	2,000,000 600	255	355	140	3	3	100	72 x 72	82 x 60	7600	12	5	174x88x117	266x88x117	358x88x117	12,300	23,600	34,900			
MHC-3000-4			500	720		4	3		72 x 72	82 x 60				7600	12	5	174x92x117	266x92x117	358x92x117	12,350	23,700	35,100
MHC-3000-6			700	1050		6	3		72 x 72	82 x 60				7600	12	5	174x96x117	266x96x117	358x96x117	12,400	23,800	35,300
MHC-4200-4	4,200,000 2,100	2,800,000 840	540	760	190	4	3	140	84 x 72	90 x 60	8600	10	4	194x104x120	298x104x120	402x104x120	16,100	30,900	45,700			
MHC-4200-6			780	1130		6	3		84 x 72	90 x 60				8600	10	4	194x110x120	298x110x120	402x110x120	16,250	31,200	45,900
MHC-4200-8			1000	1450		8	3		84 x 72	90 x 60				8600	10	4	194x118x120	298x118x120	402x118x120	16,300	31,300	46,150
MHC-5400-4	5,400,000 2,700	3,600,000 1,080	675	820	250	4	4	180	96 x 72	90 x 60	8000	7	3	206x116x123	322x116x123	438x116x123	21,475	41,600	61,650			
MHC-5400-6			880	1250		6	4		96 x 72	90 x 60				8000	7	3	206x122x123	322x122x123	438x122x123	21,600	41,800	61,800
MHC-5400-8			1150	1700		8	4		96 x 72	90 x 60				8000	7	3	206x134x123	322x134x123	438x134x123	21,700	41,950	62,950

'MHC' Series - Top View









NOTE:
Installation piping (shown in broken lines) are provided by others.

'MHC' Series - Front View



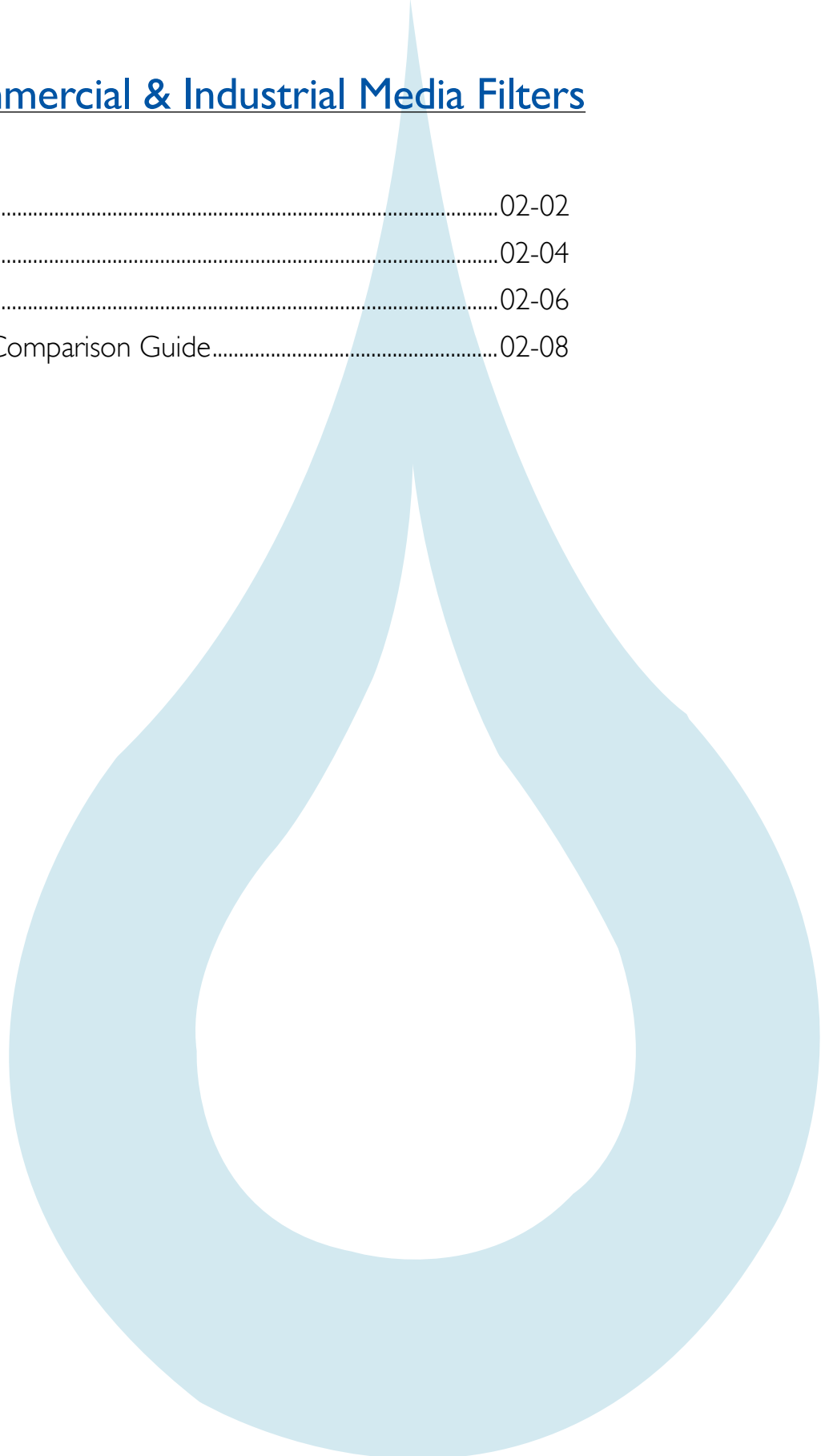
Notes

- ① Maximum capacity based on 30,000 grains per cubic foot of resin when regenerated with 15 lbs. salt . Minimum capacity based on 20,000 grains per cubic foot of resin when regenerated with 6 lbs. salt.
- ② At pressure loss not exceeding 15 psi.
- ③ At pressure loss not exceeding 25 psi.
- ④ Dimensions are estimate only. Actual dimensions may vary based on job-site space limits and piping layout. Allow a minimum of 24" above height dimension for resin loading. Use of ASME rated tanks may add up to 12" of tank height. Consult factory for dimensions on skid mounted systems.
- ⑤ Shipping weights are estimate only. Weights include resin and support gravel, which are added to the tanks after installation.

MODEL	MAT	MGT	MGTE	MRG	MR	MHC
						
Flow Rate (per tank) @ 15 psid	10–45 GPM	7–205 GPM	15–95 GPM	80–235 GPM	50–190 GPM	215–1,150 GPM
Capacity (per tank)	Up to 450,000 Grain	Up to 1,200,000 Grain	Up to 600,000 Grain	Up to 1,500,000 Grain	Up to 1,050,000 Grain	Up to 6,000,000 Grain
Pipe Size	0.75"–1.5"	0.75"–3"	1"–2"	2"–3"	1.5"–3"	3"–8"
Control Valve Type	Fleck Top Mount	Fleck Top Mount	Clack Top Mount	Aquamatic Side Mount Diaphragm	Aquamatic Side Mount Diaphragm	Aquamatic Side Mount Diaphragm
Valve Body Material	Plastic: 0.75"–1" Brass: 1.5"	Brass	Plastic: 1"–1.25" Brass: 1.5"–2"	Plastic	Cast Iron	Cast Iron
Resin Tank Material	Fiberglass	Fiberglass	Fiberglass	Fiberglass	Epoxy Lined Carbon Steel	Epoxy Lined Carbon Steel
Exterior Piping Material	N/A	N/A	N/A	Sch 80 PVC	Galvanized Steel	Galvanized Steel
System Controller Type	Fleck 'SXT'	Fleck 'NXT'	Clack 'MA'	Marlo MX-III	Marlo MX-III	Marlo MX-III
FEATURES / OPTIONS						
Timeclock Initiated Regeneration		•	•	•	•	•
Meter Initiated Regeneration	•	•	•	•	•	•
Single Tank Design		•	•	•	•	•
Duplex Alternating Tank Design	•	•	•	•	•	•
Multi-Tank Parallel Progressive		•		•	•	•
Salt Recovery Option		•		•	•	•
ASME Option: Steel Tank					•	•
ASME Option: FRP Tank (18" Diameter or Higher)	•	•	•	•		
Programmable Logic Controller (PLC) Option				•	•	•
Remote Monitoring to BMS Option				•	•	•
Butterfly Valve Option (Standard for 6" & 8")				•	•	•
Stainless Steel or Copper Piping Option					•	•
Skid Mounted / Pre-Piped Option (Standard for MRG Units)	•	•	•	•	•	•

Section 02. Commercial & Industrial Media Filters

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'MFGE' Series.....	02-04
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Media Filter System Comparison Guide.....	02-08



'MFG' Series Media Filter Systems



Overview

The Marlo 'MFG' Series automatic backwashing media filter system is designed to provide the highest quality in water filtration equipment while covering a wide variety of commercial applications including turbidity reduction, iron removal, and chlorine removal. A broad range of filter media and component options are offered to fit your exact specifications.

'MID' Multi-Media Filters

High efficiency, in-depth filter system using a layered media bed of anthracite, silica sand, and two grades of garnet for excellent filtration down to the order of 5 - 10 micron.

'MZA' Natural Zeolite Filters

An alternative, single media approach to traditional multi-media filters that achieves a finer filtration to 3-5 micron with longer service run times.

'MGA' Iron Removal Filters

Filter system capable of reducing iron, manganese, and hydrogen sulfide using manganese greensand filter media.

'ACA' Carbon Filters

Granular Activated Carbon (GAC) is designed for the reduction of chlorine, taste, odor, and dissolved organic material from municipal and industrial water supplies.

Standard Equipment & Features

- Control Valve:
 - Top Mount, Multi-port Type, Low Lead Brass
 - Fleck 2750 - 1" Valve
 - Fleck 2850 - 1-1/2" Valve
 - Fleck 3150 - 2" Valve
 - Fleck 3900 - 3" Valve
- Resin Tanks: Fiberglass reinforced polyethylene - (FRP) NSF 44 certified
- Internal Distributors: Sch 80 PVC/ABS
- 12-Day Timeclock Initiated Backwash Cycle (Electro-mechanical)
- Automatic Backwash Flow Controller

Operating Parameters

- Inlet Pressure: 30-100 psig
- Electrical: 120VAC, 1-Phase, 60 Hz
- 120/24 VAC, 50/60 Hz wall mount transformer (Digital Control Valves Only)
- Temperature: 35-100 °F

Options Available

- Skid mounted, pre-piped, pre-wired systems
- Multi-tank system configurations (twin, triple, quad)
- Fleck XT/NXT Digital Control Timers
- ASME Stamped Pressure vessels (18" dia. & higher)
- Inlet/Outlet pressure gauges and sample valves
- Differential pressure switch backwash cycle
- Separate Source Backwash Cycle
- Recirculation Pumps (Cooling Towers)
- Backwash Water Supply Pumps
- Alternate filter media (Birm, Filter-AG, Calcite)
- RO Lockout Switch
- Greensand Intermittent Regenerant Tank Systems
- Greensand Continuous Regeneration Systems

'MFG' Series Media Filter Systems Specifications

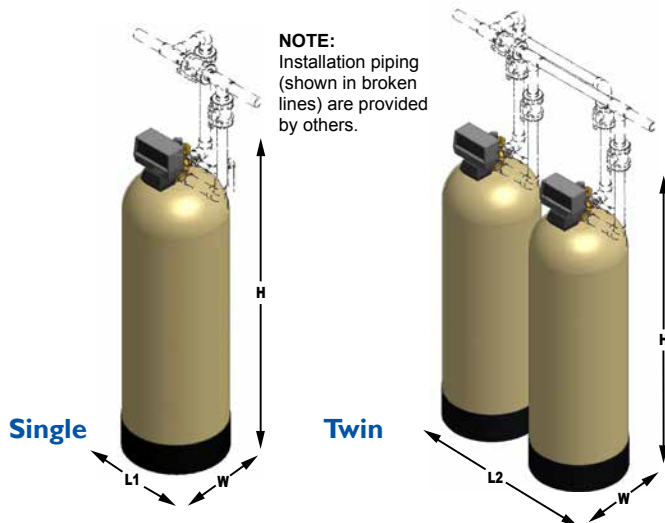
CATALOG NUMBER	FLOW RATES			PIPE SIZE		MEDIA	TANK SIZE	OVERALL DIMENSIONS (INCHES)			SHIP- PING WEIGHT (LBS)
	SERVICE		BACK WASH	SERVICE	DRAIN			SINGLE (L1xWxH)	TWIN (L2xWxH)	SINGLE	
	CONT. GPM ①	PEAK GPM									
			CJ. FT.	INCHES							
MZA-10G-1	5	10	8	1	1	2	10x54	10x10x62	32x10x62	190	
MZA-12G-1	8	16	12	1	1	2	12x52	12x12x60	36x12x60	240	
MZA-14G-1	10	20	15	1	1	3	14x65	14x14x73	40x14x73	315	
MZA-16G-1	14	28	20	1	1	4	16x65	16x16x73	44x16x73	380	
MZA-16G-1-1/2	14	28	20	1-1/2	1	4	16x65	16x16x73	44x16x73	385	
MZA-18G-1	18	28	25	1	1-1/2	5	18x65	18x18x75	48x18x75	465	
MZA-18G-1-1/2	18	36	25	1-1/2	1-1/2	5	18x65	18x18x75	48x18x75	470	
MZA-21G-1-1/2	24	48	35	1-1/2	1-1/2	7	21x62	21x21x75	54x21x75	625	
MZA-24G-1-1/2	31	62	50	1-1/2	2	10	24x72	24x24x83	60x24x83	850	
MZA-24G-2	31	62	50	2	2	10	24x72	24x24x86	60x24x86	870	
MZA-30G-2	49	98	70	2	2	15	30x72	30x30x86	72x30x86	1,295	
MZA-36G-2	70	100	105	2	3	20	36x72	36x36x86	84x36x86	1,980	
MZA-36G-3	70	140	105	3	3	20	36x72	36x36x91	84x36x91	2,060	

CATALOG NUMBER	FLOW RATES			PIPE SIZE		MEDIA	TANK SIZE	OVERALL DIMENSIONS (INCHES)			SHIP- PING WEIGHT (LBS)
	SERVICE		BACK WASH	SERVICE	DRAIN			SINGLE (L1xWxH)	TWIN (L2xWxH)	SINGLE	
	CONT. GPM ①	PEAK GPM									
			CJ. FT.	INCHES							
MID-10G-1	5	10	8	1	1	2	10x54	10x10x62	32x10x62	225	
MID-12G-1	8	16	12	1	1	2	12x52	12x12x60	36x12x60	310	
MID-14G-1	10	20	15	1	1	3	14x65	14x14x73	40x14x73	420	
MID-16G-1	14	28	20	1	1	4	16x65	16x16x73	44x16x73	520	
MID-16G-1-1/2	14	28	20	1-1/2	1	4	16x65	16x16x73	44x16x73	525	
MID-18G-1	18	28	25	1	1-1/2	5	18x65	18x18x75	48x18x75	640	
MID-18G-1-1/2	18	36	25	1-1/2	1-1/2	5	18x65	18x18x75	48x18x75	645	
MID-21G-1-1/2	24	48	35	1-1/2	1-1/2	7	21x62	21x21x75	54x21x75	870	
MID-24G-1-1/2	31	62	50	1-1/2	2	10	24x72	24x24x83	60x24x83	1,200	
MID-24G-2	31	62	50	2	2	10	24x72	24x24x86	60x24x86	1,220	
MID-30G-2	49	98	70	2	2	15	30x72	30x30x86	72x30x86	1,820	
MID-36G-2	70	100	105	2	3	20	36x72	36x36x86	84x36x86	2,680	
MID-36G-3	70	140	105	3	3	20	36x72	36x36x91	84x36x91	2,760	

CATALOG NUMBER	FLOW RATES			PIPE SIZE		MEDIA	TANK SIZE	OVERALL DIMENSIONS (INCHES)			SHIP- PING WEIGHT (LBS)
	SERVICE		BACK WASH	SERVICE	DRAIN			SINGLE (L1xWxH)	TWIN (L2xWxH)	SINGLE	
	CONT. GPM ①	PEAK GPM									
			CJ. FT.	INCHES							
ACA-10G-1	2	4	5	1	3/4	1	10x54	10x10x62	32x10x62	165	
ACA-12G-1	4	8	8	1	1	2	12x52	12x12x60	36x12x60	195	
ACA-14G-1	6	12	10	1	1	3	14x65	14x14x73	40x14x73	250	
ACA-16-1	8	16	15	1	1	4	16x65	16x16x73	44x16x73	305	
ACA-16G-1-1/2	8	16	15	1-1/2	1	4	16x65	16x16x73	44x16x73	310	
ACA-18G-1	10	20	20	1	1	5	18x65	18x18x75	48x18x75	360	
ACA-18G-1-1/2	10	20	20	1-1/2	1	5	18x65	18x18x75	48x18x75	365	
ACA-21G-1-1/2	14	28	25	1-1/2	1-1/2	7	21x62	21x21x75	54x21x75	520	
ACA-24G-1-1/2	20	40	30	1-1/2	1-1/2	10	24x72	24x24x83	60x24x83	715	
ACA-24G-2	20	40	30	2	1-1/2	10	24x72	24x24x86	60x24x86	735	
ACA-30G-2	30	60	50	2	2	15	30x72	30x30x86	72x30x86	1,050	
ACA-36G-2	40	80	70	2	2	20	36x72	36x36x86	84x36x86	1,390	
ACA-36G-3	40	80	70	3	2	20	36x72	36x36x91	84x36x91	1,450	
ACA-42G-2	60	100	100	2	3	30	42x72	42x42x105	96x42x105	1,720	
ACA-42G-3	60	120	100	3	3	30	42x72	42x42x110	96x42x110	1,780	

CATALOG NUMBER	FLOW RATES			PIPE SIZE		MEDIA	TANK SIZE	OVERALL DIMENSIONS (INCHES)			SHIP- PING WEIGHT (LBS)
	SERVICE		BACK WASH	SERVICE	DRAIN			SINGLE (L1xWxH)	TWIN (L2xWxH)	SINGLE	
	CONT. GPM ①	PEAK GPM									
			CJ. FT.	INCHES							
MGA-10G-1	2	4	5	1	3/4	1	10x54	10x10x62	32x10x62	225	
MGA-12G-1	3	6	8	1	1	2	12x52	12x12x60	36x12x60	310	
MGA-14G-1	4	8	10	1	1	3	14x65	14x14x73	40x14x73	420	
MGA-16-1	6	12	15	1	1	4	16x65	16x16x73	44x16x73	520	
MGA-16G-1-1/2	6	12	15	1-1/2	1	4	16x65	16x16x73	44x16x73	525	
MGA-18G-1	7	14	20	1	1	5	18x65	18x18x75	48x18x75	640	
MGA-18G-1-1/2	7	14	20	1-1/2	1	5	18x65	18x18x75	48x18x75	645	
MGA-21G-1-1/2	10	20	25	1-1/2	1-1/2	7	21x62	21x21x75	54x21x75	870	
MGA-24G-1-1/2	13	26	30	1-1/2	1-1/2	10	24x72	24x24x83	60x24x83	1,200	
MGA-24G-2	13	26	30	2	1-1/2	10	24x72	24x24x86	60x24x86	1,220	
MGA-30G-2	20	40	50	2	2	15	30x72	30x30x86	72x30x86	1,820	
MGA-36G-2	30	60	70	2	2	20	36x72	36x36x86	84x36x86	2,680	
MGA-36G-3	30	60	70	3	2	20	36x72	36x36x91	84x36x91	2,760	
MGA-42G-2	40	80	100	2	3	30	42x72	42x42x105	96x42x105	3,520	
MGA-42G-3	40	80	100	3	3	30	42x72	42x42x110	96x42x110	3,580	

'MFG' Series - Dimensions



* Sizing assumes inlet water supply of less than 2 ppm iron with continuous or intermittent regeneration with potassium permanganate (KMnO4).

Notes

- At expected pressure loss not exceeding 5 psig, based on a clean filter bed.
- Dimensions are estimate only. Actual dimensions may vary based on job-site space limits and piping layout. Allow a minimum of 24" above height dimension for media loading. Consult factory for dimensions on skid mounted systems.
- Shipping weights are estimate only. Weights include media and support gravel, which are added to the tanks after installation. Double weight for twin tank systems.

'MFGE' Series Media Filter Systems



Overview

The Marlo 'MFGE' Series automatic backwashing media filter system is designed to provide the highest quality in water filtration equipment while covering a wide variety of commercial applications including turbidity reduction, iron removal, and chlorine removal. A broad range of filter media and component options are offered to fit your exact specifications.

'MZE' Natural Zeolite Filters

An alternative, single media approach to traditional multi-media filters that achieves a finer filtration to 3-5 micron with longer service run times.

'ACE' Carbon Filters

Granular Activated Carbon (GAC) is designed for the reduction of chlorine, taste, odor, and dissolved organic material from municipal and industrial water supplies.

Materials of Construction

- Control Valve Body:
 - 1" Valve & 1-1/4" Valve - Noryl
 - 1-1/2" Valve & 2" Valve - Low Lead Brass
- Resin Tanks: Fiberglass reinforced polyethylene - (FRP) NSF 44 certified
- Internal Distributors: Sch 80 PVC/ABS

Instrumentation & Controls

- Clack Digital Control Timers
- Timeclock Initiated Backwash Cycle
- Automatic Backwash Flow Controller

Operating Parameters

- Inlet Pressure: 25-125 psig
- Electrical: 12V circuitry
- 120/12 VAC, 50/60 Hz wall mount transformer
- Temperature: 40-110 °F

Options Available

- Skid mounted, pre-piped, pre-wired systems
- ASME Stamped Pressure vessels (18" dia. & larger)
- Inlet/Outlet pressure gauges and sample valves
- Differential pressure switch backwash cycle
- Recirculation Pumps (Cooling Towers)
- Backwash Water Supply Pumps
- Alternate filter media (Birm, Filter-AG, Calcite)
- RO Lockout Switch

'MFGE' Series Media Filter Systems Specifications

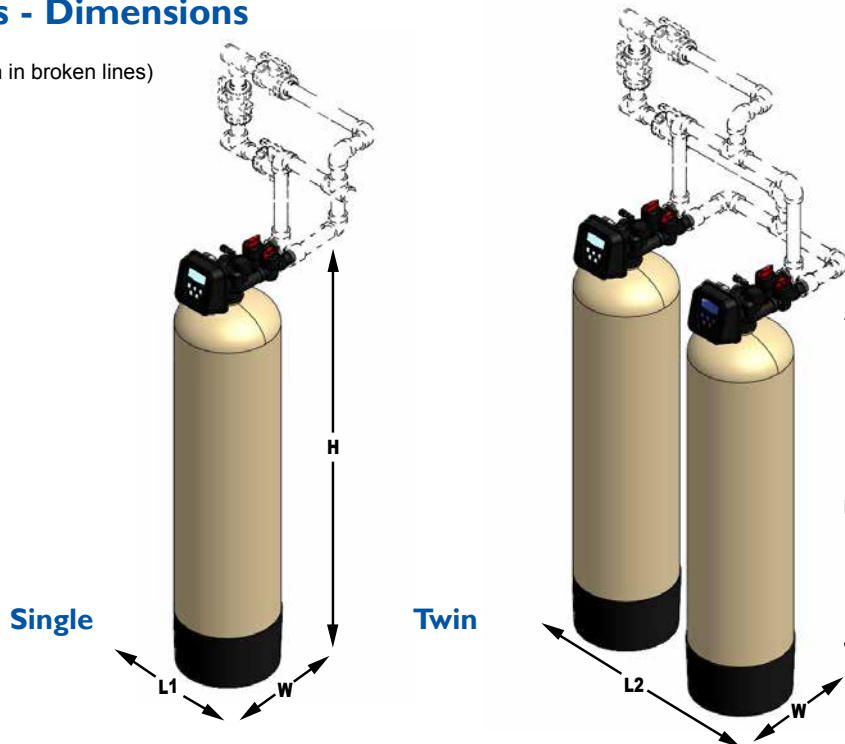
MZE - Natural Zeolite Filter Specifications (Turbidity Reduction)											
CATALOG NUMBER	FLOW RATES		PIPE SIZE			MEDIA	TANK SIZE	OVERALL DIMENSIONS (INCHES) ^②			SHIP- PING WEIGHT (LBS) ^③
	SERVICE		BACK WASH	SERVICE	DRAIN			SINGLE (L1xWxH)	TWIN (L2xWxH)	SINGLE	
	CONT. GPM ^①	PEAK GPM									
MZE-10G-1	5	10	9	1	3/4	1	10x54	10x10x62	32x10x62	105	
MZE-12G-1	8	16	13	1	1	2	12x52	12x12x60	36x12x60	170	
MZE-13G-1-1/2	8	16	15	1-1/2	1	2	13x54	13x13x65	38x13x65	190	
MZE-14G-1	10	20	17	1	1	3	14x65	14x14x73	40x14x73	250	
MZE-14G-1-1/2	10	20	17	1-1/2	1	3	14x65	14x14x73	40x14x73	270	
MZE-16G-1	14	28	20	1	1	4	16x65	16x16x73	44x16x73	330	
MZE-16G-1-1/4	14	28	20	1-1/4	1	4	16x65	16x16x73	44x16x73	330	
MZE-16G-1-1/2	14	28	20	1-1/2	1	4	16x65	16x16x73	44x16x73	350	
MZE-18G-1-1/4	17	34	25	1-1/4	1	5	18x65	18x18x75	48x18x75	410	
MZE-18G-1-1/2	17	34	25	1-1/2	1	5	18x65	18x18x75	48x18x75	375	
MZE-21G-1-1/2	25	50	35	1-1/2	1-1/2	7	21x62	21x21x78	54x21x78	590	
MZE-21G-2	25	50	35	2	1-1/2	7	21x62	21x21x78	54x21x78	595	
MZE-24G-1-1/2	30	60	45	1-1/2	1-1/2	10	24x72	24x24x86	60x24x86	825	
MZE-24G-2	30	60	45	2	1-1/2	10	24x72	24x24x86	60x24x86	830	
MZE-30G-2	50	100	75	2	1-1/2	15	30x72	30x30x85	72x30x85	1,265	

ACE - Activated Carbon Filter Specifications (Dechlorination)											
CATALOG NUMBER	FLOW RATES		PIPE SIZE			MEDIA	TANK SIZE	OVERALL DIMENSIONS (INCHES) ^②			SHIP- PING WEIGHT (LBS) ^③
	SERVICE		BACK WASH	SERVICE	DRAIN			SINGLE (L1xWxH)	TWIN (L2xWxH)	SINGLE	
	CONT. GPM ^①	PEAK GPM									
ACE-10G-1	2	5	5.3	1	3/4	1	10x54	10x10x62	32x10x62	85	
ACE-12G-1	4	8	7.5	1	3/4	2	12x52	12x12x60	36x12x60	125	
ACE-13G-1-1/2	4	8	9	1-1/2	3/4	2	13x54	13x13x65	38x13x65	145	
ACE-14G-1	5	10	10	1	3/4	3	14x65	14x14x73	40x14x73	185	
ACE-14G-1-1/2	5	10	10	1-1/2	3/4	3	14x65	14x14x73	40x14x73	205	
ACE-16G-1	7	14	13	1	1	4	16x65	16x16x73	44x16x73	245	
ACE-16G-1-1/4	7	14	13	1-1/4	1	4	16x65	16x16x73	44x16x73	245	
ACE-16G-1-1/2	7	14	13	1-1/2	1	4	16x65	16x16x73	44x16x73	260	
ACE-18G-1-1/4	9	18	17	1-1/4	1	5	18x65	18x18x75	48x18x75	300	
ACE-18G-1-1/2	9	18	17	1-1/2	1	5	18x65	18x18x75	48x18x75	315	
ACE-21G-1-1/4	12	24	25	1-1/4	1	7	21x62	21x21x78	54x21x78	420	
ACE-21G-1-1/2	12	24	25	1-1/2	1	7	21x62	21x21x78	54x21x78	435	
ACE-21G-2	12	24	25	2	1	7	21x62	21x21x78	54x21x78	440	
ACE-24G-1-1/2	15	30	30	1-1/2	1-1/2	10	24x72	24x24x86	60x24x86	605	
ACE-24G-2	15	30	30	2	1-1/2	10	24x72	24x24x86	60x24x86	610	
ACE-30G-2	24	48	50	2	1-1/2	15	30x72	30x30x85	72x30x85	935	
ACE-36G-2	35	70	70	2	1-1/2	20	36x72	36x36x98	84x36x98	1,265	

'MFGE' Series - Dimensions

NOTE:

Installation piping (shown in broken lines) are provided by others.



Notes

- At expected pressure loss not exceeding 5 psig, based on a clean filter bed
- Dimensions are estimate only. Actual dimensions may vary based on job-site space limits and piping layout. Allow a minimum of 24" above height dimension for media loading. Consult factory for dimensions on skid mounted systems.
- Shipping weights are estimate only. Weights include media and support gravel, which are added to the tanks after installation. Double weight for twin tank systems.

'MFG-SM' Series Water Filter Systems



Overview

The Marlo 'MFG-SM' Series is the corrosion resistant alternative to the 'MFS' Series of media based water filters. These filter systems are equipped with FRP resin tanks and side-mounted Sch 80 PVC exterior piping and valves. All 'MFG-SM' systems are factory skid mounted, pre-piped, pre-wired for ease of installation. Pre-engineered standard designs available for twin and triple tank configurations for the following filtration technologies:

'MZA' Natural Zeolite Filters

An alternative, single media approach to traditional multi-media filters that achieves a finer filtration to 3-5 micron with longer service run times.

'ACA' Carbon Filters

Granular Activated Carbon (GAC) is designed for the reduction of chlorine, taste, odor, and dissolved organic material from municipal and industrial water supplies.

Materials of Construction

- Resin Tanks: Composite FRP with Tri-Pod Base
- Exterior Piping: Sch 80 PVC
- Internal Distributors: Sch 80 PVC / ABS
- Control Valves: Noryl Thermoplastic
- Skid: Painted, Carbon Steel

Standard Equipment / Features

- Marlo MX-III Electronic System Controller
- Motorized Stagers for Automatic Operation
- Timer Initiated Backwash Cycle
- Aquamatic Diaphragm Style Control Valves (Hydraulically Operated)
- NEMA-4X Electrical Enclosures (FRP)
- Inlet/Outlet Tank Pressure Gauges & Sample Valves

Operating Parameters

- Inlet Water Pressure: 30-100 psig
- Electrical: 120VAC, 1-Ph, 60 Hz.
- Temperature: 35-110°F

Options Available

- ASME Rated Media Tanks
- Allen-Bradley PLC/HMI Systems
- Differential Pressure Initiated Backwash Cycle
- Separate Source Backwash Water Supply
- CPVC Exterior Piping
- Butterfly or Ball Control Valves (Air or Electric Operated)
- Multi-Media Layers (Anthracite, Sand, Garnet)
- Greensand Filter Media for Iron Removal
- Catalytic Carbon Media for Chloramine Removal

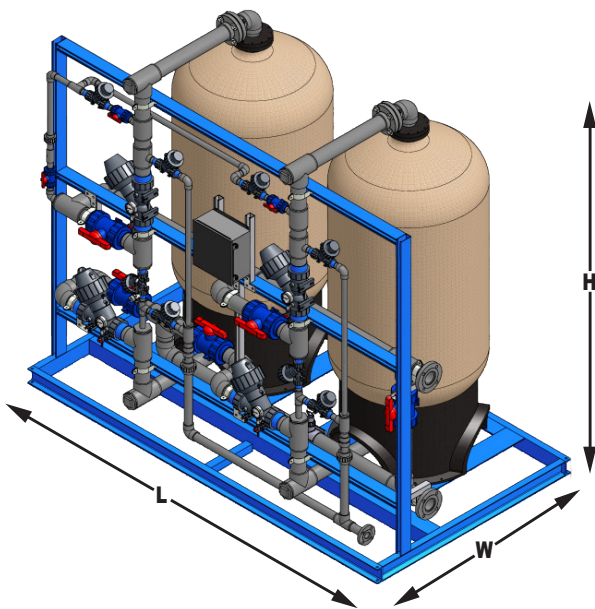
'MFG-SM' Series Specifications Natural Zeolite Filters

MODEL NUMBER	FLOW RATES					FILTER MEDIA	TANK SIZES	PIPE SIZE		SKID HEADER SIZES ^④		OVERALL DIMENSIONS (LxWxH, INCHES) ^⑤		SHIPPING WEIGHT (LBS.) ^⑥	
	SERVICE (PER TANK)		BACKWASH GPM	TOTAL SYSTEM FLOW			DIAMETER x HEIGHT	TANK SERVICE INCHES	DRAIN INCHES	TWIN INCHES	TRIPLE INCHES	TWIN	TRIPLE	TWIN	TRIPLE
	CONT. GPM ^①	PEAK GPM ^③		TWIN GPM	TRIPLE GPM										
MZA-24G-SM	30	45	45	60-90	90-135	10	24x72	2	2	2.5	2.5	100x52x102	150x52x102	2,650	4,000
MZA-30G-SM	50	75	75	100-150	150-225	15	30x72	2	2.5	3	3	104x58x102	154x58x102	3,730	5,510
MZA-36G-SM	70	105	105	140-210	210-315	20	36x72	3	3	4	4	104x64x103	154x64x103	4,790	7,160
MZA-42G-SM	100	145	145	200-290	300-435	30	42x72	3	3	4	6	112x70x110	172x70x110	7,355	10,920
MZA-48G-SM	125	190	190	250-380	375-570	40	48x72	3	4	4	6	118x76x110	176x76x110	9,275	14,100

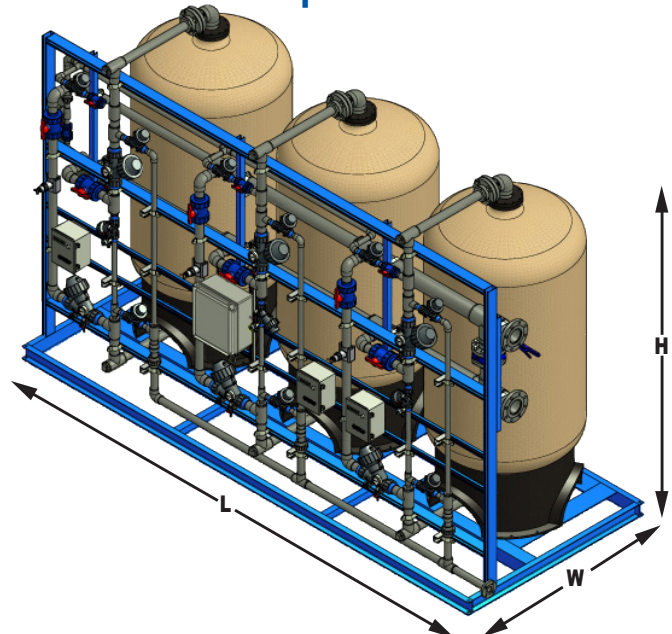
Activated Carbon Filters

MODEL NUMBER	FLOW RATES					FILTER MEDIA	TANK SIZES	PIPE SIZE		SKID HEADER SIZES ^④		OVERALL DIMENSIONS (LxWxH, INCHES) ^⑤		SHIPPING WEIGHT (LBS.) ^⑥	
	SERVICE (PER TANK)		BACKWASH GPM	TOTAL SYSTEM FLOW			DIAMETER x HEIGHT	TANK SERVICE INCHES	DRAIN INCHES	TWIN INCHES	TRIPLE INCHES	TWIN	TRIPLE	TWIN	TRIPLE
	CONT. GPM ^②	PEAK GPM ^③		TWIN GPM	TRIPLE GPM										
ACA-24G-SM	20	30	30	40-60	60-90	10	24x72	2	1.5	2	2.5	100x52x102	150x52x102	2,210	3,340
ACA-30G-SM	30	50	50	60-100	90-150	15	30x72	2	2	2.5	2.5	104x58x102	154x58x102	3,070	4,520
ACA-36G-SM	40	70	70	80-140	120-210	20	36x72	2	2	2.5	3	104x64x103	154x64x103	3,910	5,840
ACA-42G-SM	60	100	100	120-200	180-300	30	42x72	3	2.5	4	4	112x70x110	172x70x110	6,050	8,970
ACA-48G-SM	80	125	125	160-250	240-375	40	48x72	3	3	4	4	118x76x110	176x76x110	7,550	11,490

'MFG-SM' Series Twin



'MFG-SM' Series Triple



Notes

- ① Continuous Service Flow is based on 10 gpm/ft² surface loading for Zeolite Filters. Expected pressure drop less than 5 psig (clean bed).
- ② Continuous Service Flow is based on 2 gpm/ft³ volumetric loading for Carbon Filters. Expected pressure drop less than 5 psig (clean bed).
- ③ Peak Service Flow is recommended for intermittent usage only.
- ④ Main service headers indicated for parallel flow applications. Header sizes may change depending on options selected.
- ⑤ Dimensions are estimate only. Actual dimensions may differ dependent on options selected.
- ⑥ Shipping weights are estimate only. Weights include media and gravel that is shipped separately on pallets.

'MFS' Series Media Filter Systems



Overview

The Marlo 'MFS' Series automatic backwashing media filter system is designed to provide the highest quality in water filtration equipment while covering a wide variety of commercial and industrial applications including turbidity reduction, iron removal, and chlorine removal. A broad range of filter media and component options are offered to fit your exact specifications.

'MID' Multi-Media Filters

High efficiency, in-depth filter system using a layered media bed of anthracite, silica sand, and two grades of garnet for excellent filtration down to the order of 5 - 10 micron.

'MZA' Natural Zeolite Filters

An alternative, single media approach to traditional multi-media filters that achieves a finer filtration to 3-5 micron with longer service run times.

'MGA' Iron Removal Filters

Filter system capable of reducing iron, manganese, and hydrogen sulfide using manganese greensand filter media.

'ACA' Carbon Filters

Granular Activated Carbon (GAC) is designed for the reduction of chlorine, taste, odor, and dissolved organic material from municipal and industrial water supplies.

Materials of Construction

- Media Tanks: Carbon steel with Safety Blue exterior paint
- Tank Lining: NSF 61 rated epoxy coating
- Exterior Piping: Galvanized steel pipe & cast iron fittings
- Internal Distributors: Sch 80 PVC/ABS
- Control Valves: Painted cast iron body

Standard Equipment / Features

- Marlo MX-II electronic system controller
- Timer initiated backwash cycle
- Water activated diaphragm style control valves
- NEMA-4X electrical enclosures (FRP)
- Inlet/Outlet pressure gauges and sampling valves
- Factory Hydro-tested at 100 psig

Operating Parameters

- Inlet Pressure: 30-100 psig
- Electrical: 120 VAC, 1-Ph, 60Hz
- Temperature: 35-110 °F

Options Available

- Skid mounted, pre-piped, pre-wired systems
- Differential pressure switch backwash cycle
- Multiple tank parallel configurations
- ASME code stamped resin tanks
- Allen-Bradley PLC systems
- PVC or CPVC exterior face-piping (PVC standard for filters with 6" service)
- Copper or Stainless steel exterior face-piping
- Stainless steel internal distributor piping
- Seismic zone rated systems
- Butterfly control valves (air operated; standard for filters with 6" service)
- Air-scour backwash system
- Steam / hot water sanitizable carbon filters
- Alternate filter media (Birm, Filter-AG, Calcite)

'MFS' Series Media Filter Systems Specifications

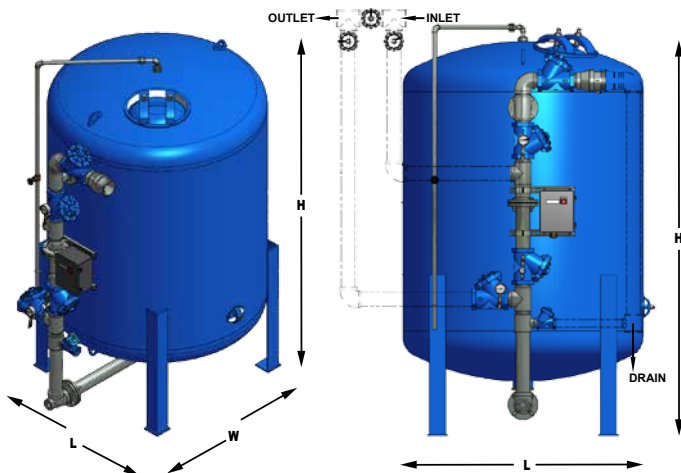
MZA - Natural Zeolite Filter Specifications											
CATALOG NUMBER	FLOW RATES			PIPE SIZE			MEDIA	TANK SIZE	OVERALL DIMENSIONS (INCHES) ②	SHIPPING WEIGHT (LBS) ③	
	SERVICE		BACK WASH	SERVICE	DRAIN	CU. FT.					INCHES
	CONT. GPM ①	PEAK GPM									
MZA-20	20	45	35	1.5	1.5	5	20x54	21x30x72	650		
MZA-24	30	60	45	1.5	2	8	24x54	25x34x73	900		
MZA-30	50	100	75	2	2.5	12	30x54	31x40x76	1,400		
MZA-36	70	140	105	2.5	3	18	36x60	37x48x84	2,100		
MZA-42	100	200	145	2.5	4	24	42x60	43x54x88	2,700		
MZA-48	125	250	190	3	4	32	48x60	49x62x95	4,000		
MZA-54	160	320	240	3	4	40	54x60	55x70x97	4,900		
MZA-60	200	400	300	3	6	50	60x60	61x76x103	6,200		
MZA-66	240	480	360	4	6	60	66x60	67x82x105	8,600		
MZA-72	285	570	425	4	6	70	72x60	73x88x107	11,700		
MZA-84	385	770	580	6	6	95	84x60	85x104x102	15,600		
MZA-96	500	1000	750	6	6	125	96x60	96x122x110	20,100		
MZA-108	640	1280	950	8	8	160	108x60	109x134x112	25,000		
MZA-120	800	1600	1175	8	8	200	120x60	121x146x115	29,500		

MID - Multimedia Filter Specifications											
CATALOG NUMBER	FLOW RATES			PIPE SIZE			MEDIA	TANK SIZE	OVERALL DIMENSIONS (INCHES) ②	SHIPPING WEIGHT (LBS) ③	
	SERVICE		BACK WASH	SERVICE	DRAIN	CU. FT.					INCHES
	CONT. GPM ①	PEAK GPM									
MID-20	20	45	35	1.5	1.5	5	20x54	21x30x72	1,200		
MID-24	30	60	45	1.5	2	8	24x54	25x34x73	1,500		
MID-30	50	100	75	2	2.5	12	30x54	31x40x76	2,200		
MID-36	70	140	105	2.5	3	18	36x60	37x48x84	2,900		
MID-42	100	200	145	2.5	4	24	42x60	43x54x88	3,700		
MID-48	125	250	190	3	4	32	48x60	49x62x95	5,100		
MID-54	160	320	240	3	4	40	54x60	55x70x97	6,300		
MID-60	200	400	300	3	6	50	60x60	61x76x103	8,100		
MID-66	240	480	360	4	6	60	66x60	67x82x105	11,000		
MID-72	285	570	425	4	6	70	72x60	73x88x107	14,300		
MID-84	385	770	580	6	6	95	84x60	85x104x102	19,600		
MID-96	500	1000	750	6	6	125	96x60	96x122x110	25,200		
MID-108	640	1280	950	8	8	160	108x60	109x134x112	31,500		
MID-120	800	1600	1175	8	8	200	120x60	121x146x115	37,500		

ACA - Activated Carbon Filter Specifications											
CATALOG NUMBER	FLOW RATES			PIPE SIZE			MEDIA	TANK SIZE	OVERALL DIMENSIONS (INCHES) ②	SHIPPING WEIGHT (LBS) ③	
	SERVICE		BACK WASH	SERVICE	DRAIN	CU. FT.					INCHES
	CONT. GPM ①	PEAK GPM									
ACA-20	10	20	20	1	1.25	5	20x54	21x30x72	500		
ACA-24	15	30	30	1.5	1.5	8	24x54	25x34x73	700		
ACA-30	25	50	50	1.5	1.5	12	30x54	31x40x76	1,100		
ACA-36	35	70	70	2	2	18	36x60	37x48x84	1,600		
ACA-42	50	100	100	2	2.5	24	42x60	43x54x88	2,100		
ACA-48	65	125	125	3	3	32	48x60	49x62x95	3,100		
ACA-54	80	160	160	3	4	40	54x60	55x70x97	3,900		
ACA-60	100	200	200	3	4	50	60x60	61x76x103	4,900		
ACA-66	120	240	240	3	4	60	66x60	67x82x105	7,000		
ACA-72	140	285	285	3	4	70	72x60	73x88x107	9,900		
ACA-84	195	385	385	4	6	95	84x60	85x104x102	13,300		
ACA-96	250	500	500	6	6	125	96x60	96x122x110	16,900		
ACA-108	320	640	640	6	6	160	108x60	109x134x112	21,000		
ACA-120	400	800	800	6	6	200	120x60	121x146x115	24,500		





MGA - Manganese Greensand Filter Specifications											
CATALOG NUMBER	FLOW RATES			PIPE SIZE			MEDIA	TANK SIZE	OVERALL DIMENSIONS (INCHES) ②	SHIPPING WEIGHT (LBS) ③	
	SERVICE		BACK WASH	SERVICE	DRAIN	CU. FT.					INCHES
	CONT. GPM ①	PEAK GPM									
MGA-20	10	15	20	1	1.25	5	20x54	21x30x72	900		
MGA-24	15	30	30	1.5	1.5	8	24x54	25x34x73	1,300		
MGA-30	20	40	50	1.5	1.5	12	30x54	31x40x76	2,000		
MGA-36	30	60	70	2	2	18	36x60	37x48x84	3,000		
MGA-42	40	80	100	2	2.5	24	42x60	43x54x88	4,000		
MGA-48	50	100	125	3	3	32	48x60	49x62x95	5,600		
MGA-54	65	130	160	3	4	40	54x60	55x70x97	7,000		
MGA-60	80	160	200	3	4	50	60x60	61x76x103	8,800		
MGA-66	95	190	240	3	4	60	66x60	67x82x105	11,500		
MGA-72	115	230	285	3	4	70	72x60	73x88x107	14,000		
MGA-84	150	300	385	4	6	95	84x60	85x104x102	18,300		
MGA-96	200	400	500	6	6	125	96x60	96x122x110	23,500		
MGA-108	250	500	640	6	6	160	108x60	109x134x112	29,300		
MGA-120	315	630	800	6	6	200	120x60	121x146x115	35,000		

'MFS' Series - Dimensions



Notes

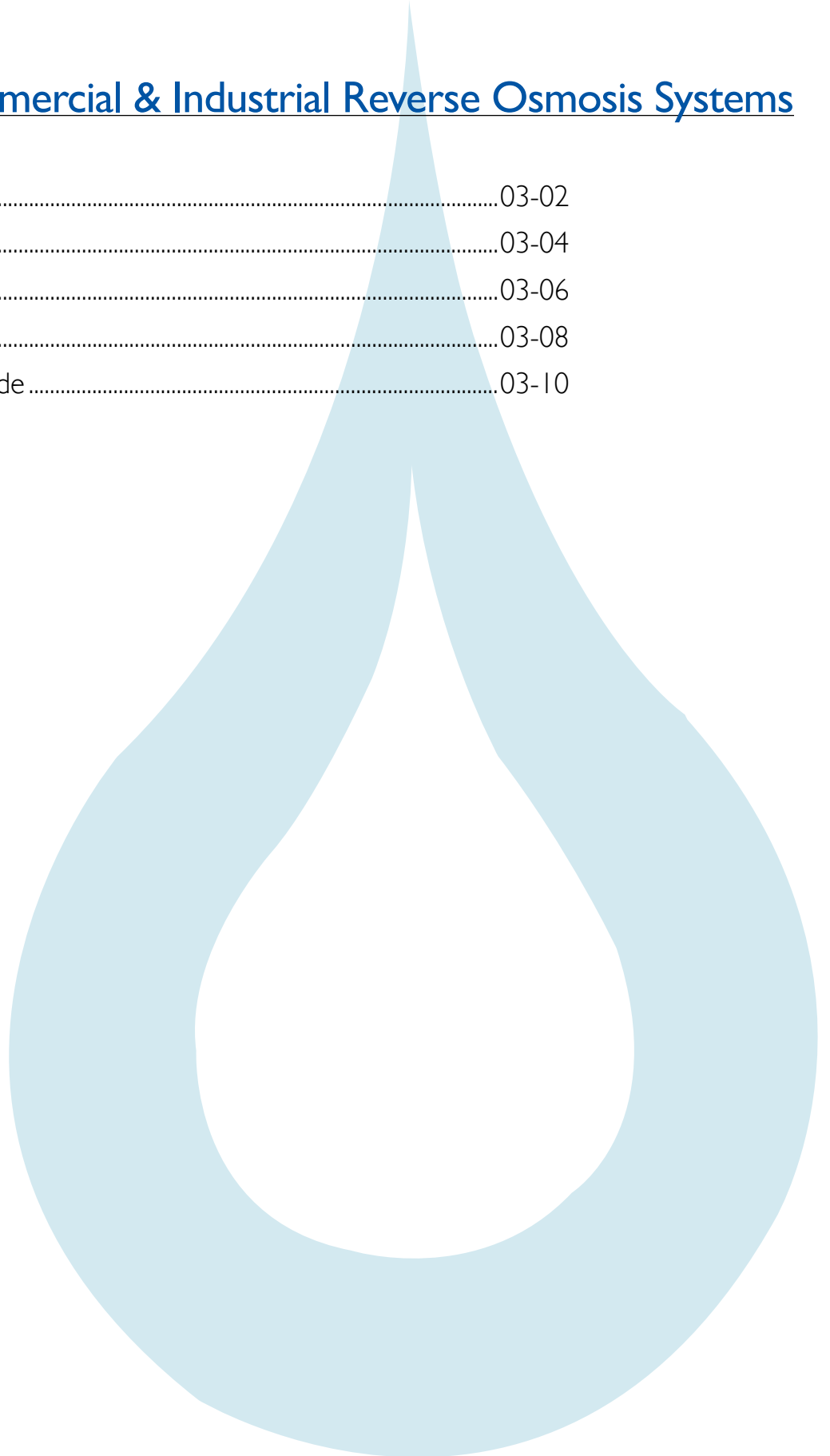
- ① At expected pressure loss not exceeding 5 psig, based on a clean filter bed
- ② Dimensions are estimate only. Actual dimensions may vary based on job-site space limits and piping layout. Allow a minimum of 24" above height dimension for resin loading. Use of ASME rated tanks may add up to 12" of tank height. Consult factory for dimensions on skid mounted systems.
- ③ Shipping weights are estimate only. Weights include resin and support gravel, which are added to the tanks after installation.

MODEL	MFG	MFGE	MFG-SM	MFS
				
Multi-Media Filter Flow (per tank)	5–70 GPM	5–70 GPM	10–125 GPM	15–800 GPM
Activated Carbon Flow per tank)	2–60 GPM	2–40 GPM	10–125 GPM	10–500 GPM
Manganese Greensand Flow (per tank)	2–40 GPM	2–30 GPM	10–100 GPM	10–400 GPM
Media Tank Diameter	10”–42”	10”–36”	18”–63”	20”–120”
Pipe Size	1”–3”	1”–2”	1”–3”	1”–8”
Control Valve Type	Fleck Top Mount	Clack Top Mount	Aquamatic Side Mount Diaphragm	Aquamatic Side Mount Diaphragm
Valve Body Material	Brass	Plastic: 1”–1.25” / Brass: 1.5”–2”	Plastic	Cast Iron
Media Tank Material	Fiberglass (FRP)	Fiberglass (FRP)	Fiberglass (FRP)	Epoxy Lined Carbon Steel
Exterior Piping Material	N/A	N/A	Sch 80 PVC	Galvanized Steel
System Controller Type	Fleck ‘NXT’ or Electromechanical	Clack ‘MA’	Marlo MX-III	Marlo MX-III
FEATURES / OPTIONS				
Timeclock Initiated Backwash	●	●	●	●
Diff. Pressure Initiated Backwash	●	●	●	●
ASME Option: Steel Tank				●
ASME Option: FRP Tank (18” Diameter or Higher)	●	●	●	
Single Tank Design	●	●	●	●
Multi-Tank Parallel Design	●	●	●	●
Separate Source Backwash Option	●	●	●	●
Programmable Logic Controller (PLC) Option			●	●
Remote Monitoring to BMS Option			●	●
Butterfly Valve Option			●	●
Stainless Steel or Copper Piping Option				●
Skid Mounted / Pre-Piped Option (Standard for MFG-SM Units)	●	●	●	●

NOTE: Alternate filter medias are available (Birm, Calcite, etc.). Consult factory.

Section 03. Commercial & Industrial Reverse Osmosis Systems

MRO-2.5	03-02
MRO-4LP	03-04
MRO-4	03-06
MRO-8	03-08
RO Comparison Guide	03-10



'MRO-2.5' Light Commercial Reverse Osmosis Systems



Overview

Marlo's MRO-2.5 light commercial grade reverse osmosis units combine high quality components with an energy-saving design for a reliable and economical supply of high purity water. The following are just a few of the applications that benefit from the use of RO water.

- Boiler feed
- Spot-free rinse
- Icemaking
- Greenhouses
- Research and medical labs
- Process make-up water
- Humidification
- Ion exchange pre-treatment

Operating Parameters

- 500 to 2500 GPD Output Capacity
- Operating Pressure: 125-150 psig
- Maximum Recovery: 50%
- Nominal Salt Rejection: 97-99%
- Operating Temperature: 40-85° F (Design: 77° F)
- Minimum Inlet Pressure: 30 psig
- Electrical Requirement: 120 VAC, 1-phase, 60 Hz.
- Inlet Water Quality: Chlorine-Free/Softened
2,000 ppm TDS Max

Materials of Construction

- Powder-coated steel frame
- Membrane Elements:
Low Energy, Thin-film Composite (TFC)
- Membrane Housings: FRP
- Piping: Sch 80 PVC
- Tubing: Polyethylene

Pump and Motor

- Pump: Rotary Vane, Stainless Steel Construction
- Motor: ODP, 120 VAC, 1-phase, 60 Hz.

Standard Features

- 5-micron sediment pre-filter housing
- Activated carbon block pre-filter housing
- Automatic inlet shut-off valve
- Remote machine on/off capability
- Product water conductivity monitor
- Operating pressure gauges
- Reject and recycle flow control valves
- Permeate, reject, and recycle flow meters
- Low inlet pressure switch
- High outlet pressure switch

Optional Equipment Available

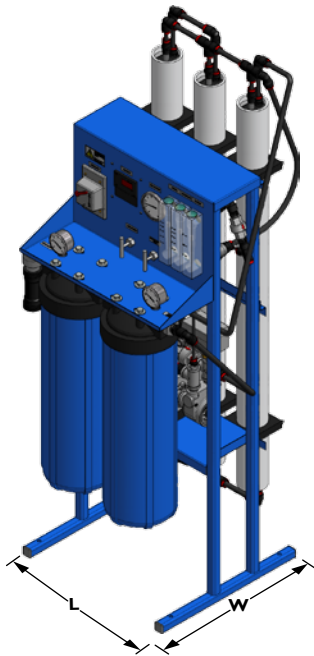
- Pressurized storage vessels
- Atmospheric storage tanks with level control and repressurization pump
- Skid mounted packages with pre/post treatment equipment

'MRO-2.5' Light Commercial Reverse Osmosis Systems

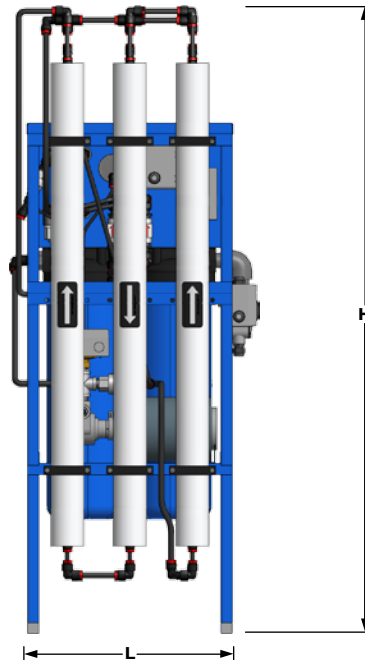
SPECIFICATIONS

MODEL NUMBER	RATE	CAPACITY	ELEMENT QUANTITY & SIZE (INCHES)	RO FEED	RO REJECT	SYSTEM PIPING CONNECTIONS (INCHES)			PUMP HP	APPROX. SHIP WT. (LBS.)	OVERALL DIMENSIONS (LxWxH) (INCHES)
	GPM	GPD		GPM	GPM	INLET FEED	PERMEATE	RO REJECT			
MRO-500	0.35	500	2	0.7	0.35	1" NPT	3/8" Tube	3/8" Tube	1/3	65	22x22x56
			2.5x21								
MRO-1000	0.7	1,000	3	1.4	0.7	1" NPT	3/8" Tube	3/8" Tube	1/2	70	22x22x56
			2.5x21								
MRO-1500	1.04	1,500	2	2.08	1.04	1" NPT	3/8" Tube	3/8" Tube	3/4	105	22x22x56
			2.5x40								
MRO-2500	1.75	2,500	3	3.5	1.75	1" NPT	3/8" Tube	3/8" Tube	3/4	115	22x22x56
			2.5x40								

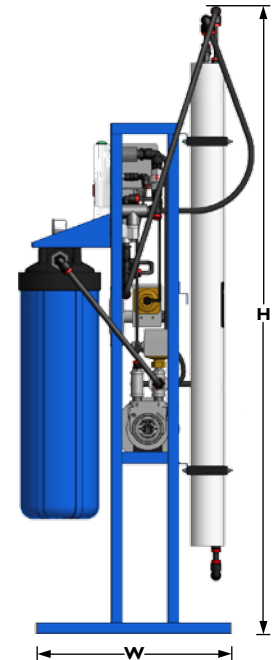
Front View



Rear View



Side View



Notes

1. System capacity rated at 77°F water temperature and less than 2,000 ppm TDS incoming water quality. Capacity will be lowered with colder water and/or higher TDS.
2. Reject flow is constant during machine operation. Installer to confirm proper floor drain capacity.
3. The installation should allow for additional overhead clearance space for membrane removal (21" for the 500 & 1000 GPD models and 40" for the 1500 & 2500 GPD models).
4. Electrical is 120 VAC, 1-ph, 60 Hz from a standard wall plug. Consult factory for other electrical requirements.

'MRO-4-LP' Low Pressure Reverse Osmosis Systems



Overview

Marlo's MRO-4-LP low pressure commercial grade reverse osmosis units combine high quality components with an energy-saving design for a reliable and economical supply of high purity water. The following are just a few of the applications that benefit from the use of RO water.

- Boiler feed
- Spot-free rinse
- Icemaking
- Greenhouses
- Research and medical labs
- Process make-up water
- Humidification
- Ion exchange pre-treatment

Operating Parameters

- Operating Pressure: 125-150 psig
- Nominal Recovery: 65-75%
- Nominal Salt Rejection: 95-99%
- Operating Temperature: 35-85° F
- Design Temperature: 77° F
- Minimum Inlet Pressure: 30 psig
- Inlet Water Quality: Chlorine-Free/Softened
- Electrical Requirements: 220 VAC, 1-phase, 60 Hz.

Materials of Construction

- Frame: Painted carbon steel
- Membrane Elements: Thin-film Composite (TFC)
- Membrane Housings: FRP
- Piping: Sch 80 PVC
- Tubing: Polyethylene

Pump and Motor

- Pump: 304SS Multi-Stage Centrifugal
- Motor: ODP, 220 VAC, 1-phase, 60 Hz.

Standard Features

- 5-micron sediment pre-filter housing
- Automatic inlet shut-off valve
- Solid-state digital controller
- Product water conductivity monitor
- Operating pressure gauges
- Product and concentrate flow meters
- Concentrate and recycle flow control valves
- Low inlet pressure switch with shutdown alarm

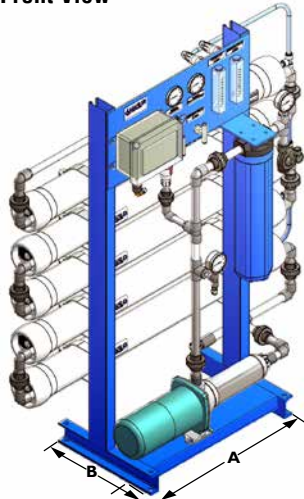
Optional Equipment Available

- Pressurized storage vessels
- Atmospheric storage tanks with level control and repressurization pump
- Water softeners and carbon filter pretreatment
- Skid mounted packages with pre/post treatment equipment

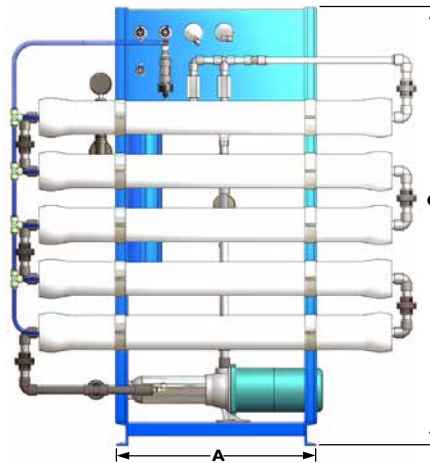
'MRO-4-LP' Low Pressure Reverse Osmosis Systems

SPECIFICATIONS MRO-3600-4-LP THROUGH MRO-9000-4-LP SERIES

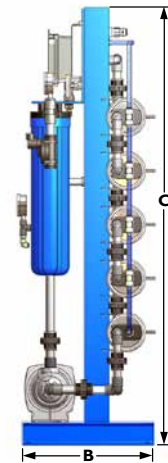
Front View



Rear View



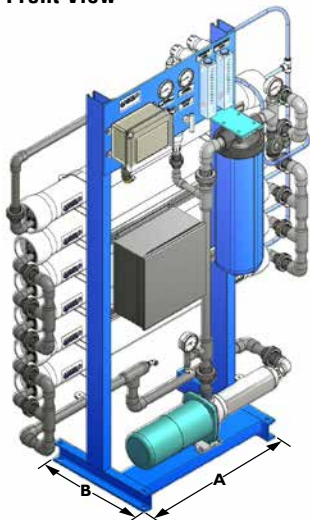
Side View



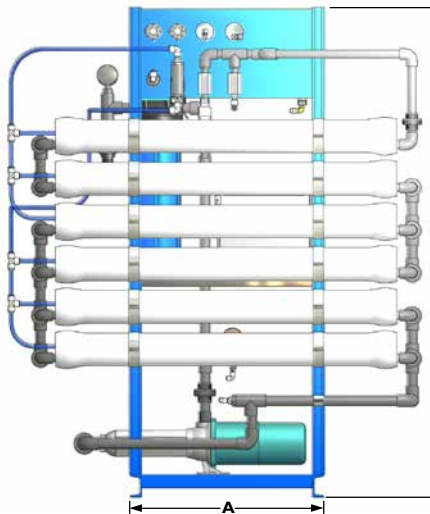
Model No.	Design (gpm)	Capacity (gpd)	Element Quantity	RO Feed (gpm)	RO Reject (gpm)	System Piping Connections			Nominal Operating Pressure	Pump Hp	Approx. Ship Wt.	Approx. Operating Wt.	Dimensions		
						Inlet Feed	Product	Reject					Length A	Width B	Height C
MRO-3600-4-LP	2.5	3,600	2	3.3-3.8	0.8-1.3	3/4" FNPT	1/2" Tube	1/2" Tube	125 psi	1	375 lb.	425 lb.	56"	17"	57"
MRO-5400-4-LP	3.8	5,400	3	5.0-5.8	1.2-2.0	3/4" FNPT	1/2" Tube	1/2" Tube	125 psi	1	425 lb.	475 lb.	56"	17"	57"
MRO-7200-4-LP	5.0	7,200	4	6.7-7.7	1.7-2.7	3/4" FNPT	1/2" Tube	1/2" Tube	125 psi	1	475 lb.	525 lb.	56"	17"	57"
MRO-9000-4-LP	6.3	9,000	5	8.4-9.7	2.1-3.4	3/4" FNPT	1/2" Tube	1/2" Tube	125 psi	1	525 lb.	575 lb.	56"	17"	57"

SPECIFICATIONS MRO-10800-4-LP THROUGH MRO-16200-4-LP SERIES

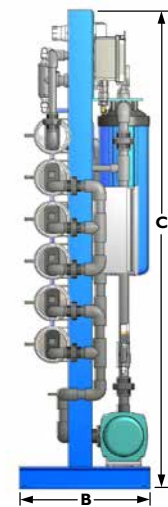
Front View



Rear View



Side View



Model No.	Design (gpm)	Capacity (gpd)	Element Quantity	RO Feed (gpm)	RO Reject (gpm)	System Piping Connections			Nominal Operating Pressure	Pump Hp	Approx. Ship Wt.	Approx. Operating Wt.	Dimensions		
						Inlet Feed	Product	Reject					Length A	Width B	Height C
MRO-10800-4-LP	7.5	10,800	6	10-11.5	2.5-4	1" FNPT	1" FNPT	1" FNPT	125 psi	1.5	575 lb.	650 lb.	56"	18"	66"
MRO-12600-4-LP	8.8	12,600	7	11.7-13.5	2.9-4.7	1" FNPT	1" FNPT	1" FNPT	125 psi	1.5	625 lb.	700 lb.	56"	18"	66"
MRO-14400-4-LP	10.0	14,400	8	13.3-15.4	3.3-5.4	1" FNPT	1" FNPT	1" FNPT	125 psi	1.5	675 lb.	750 lb.	56"	18"	66"
MRO-16200-4-LP	11.3	16,200	9	15-17.4	3.7-6.1	1" FNPT	1" FNPT	1" FNPT	125 psi	1.5	725 lb.	800 lb.	56"	18"	66"

'MRO-4V' & 'MRO-4H' Reverse Osmosis Systems



Overview

The Marlo MRO Series Commercial and Industrial Reverse Osmosis Systems are engineered to economically produce high purity water by removal of dissolved minerals, bacteria, particles, and organic impurities. Each MRO machine is constructed using the highest quality components and materials for reliable operation and exceptional performance. Standard machines in the MRO-4 Series are available with product water capacities from 2.5–20 GPM (3,600–28,800 GPD). Contact Marlo for larger flow requirements with the MRO-8 Series equipment.

Marlo Reverse Osmosis Systems provide exceptional performance in a wide variety of applications, including:

- Boiler feed
- Research and medical labs
- Spot-free rinse
- Process make-up water
- Icemaking
- Humidification
- Greenhouses
- Ion exchange pre-treatment

Operating Parameters

- Operating Pressure: 200-250 psig
- Nominal Recovery: 65–75%
- Nominal Salt Rejection: 98–99%
- Operating Temperature: 45–85° F
- Design Temperature: 50° F
- Minimum Inlet Pressure: 30 psig
- Inlet Water Quality: Chlorine-Free/Softened
- Control Circuit: 120 VAC, 1-phase, 60 Hz.

Materials of Construction

- Skid Frame: Epoxy-coated carbon steel
- Membrane Elements: Thin-film Composite (TFC)
- Membrane Housings: FRP
- Low pressure piping: Sch 80 PVC
- High pressure piping: 304SS

Pump and Motor

- Pump: 304SS vertical multi-stage centrifugal
- Motor: TEFC, 460 VAC, 3-phase, 60 Hz.

Standard Features

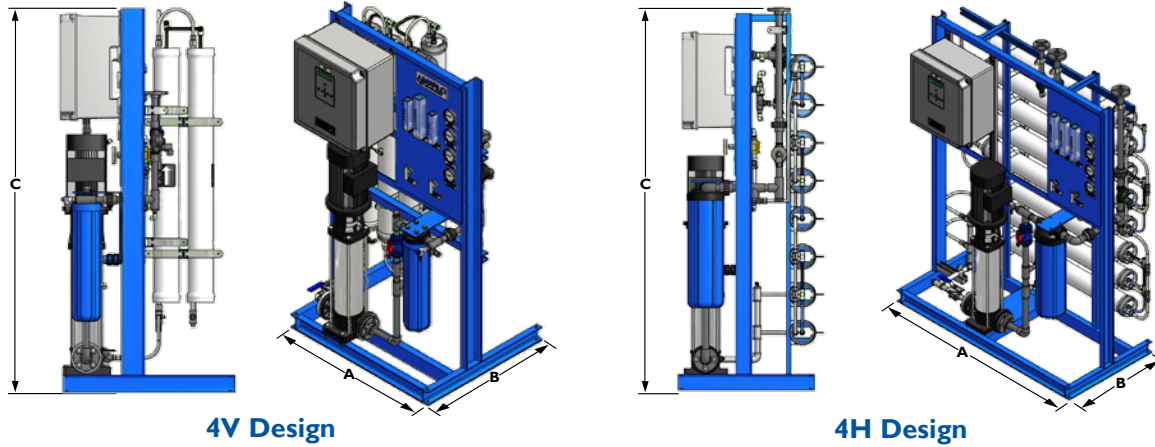
- 4" x 40" High rejection membrane elements
- 5-micron sediment pre-filter housing
- Automatic inlet shut-off valve
- Solid-state digital controller (NEMA-4X)
- Product water conductivity monitor
- Operating pressure gauges
- Product and concentrate flow meters
- Concentrate and recycle flow control valves
- Low inlet pressure switch with shutdown alarm

Optional Equipment Available

- Atmospheric storage tanks with level control and repressurization pump
- Water softeners and carbon filter pretreatment
- Pressurized storage vessels
- Skid mounted packages with pre/post treatment equipment
- Membrane clean-in-place (CIP) systems
- Pretreatment chemical injection systems

'MRO-4V' & 'MRO-4H' Reverse Osmosis Systems

SPECIFICATIONS MRO-3600-4-V THROUGH MRO-16200-4-H SERIES

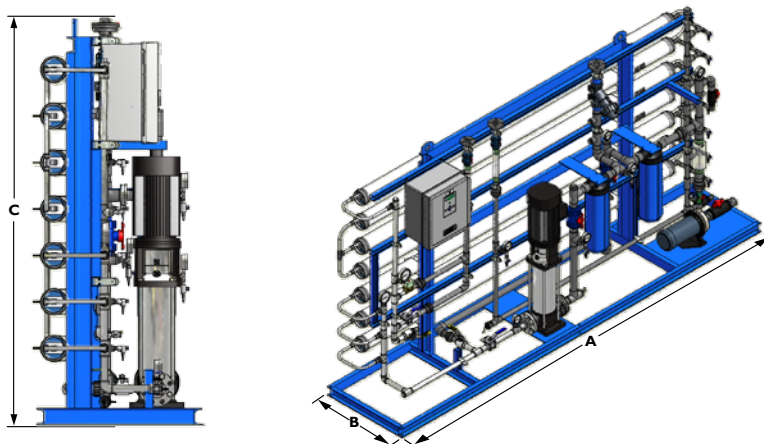


4V Design

4H Design

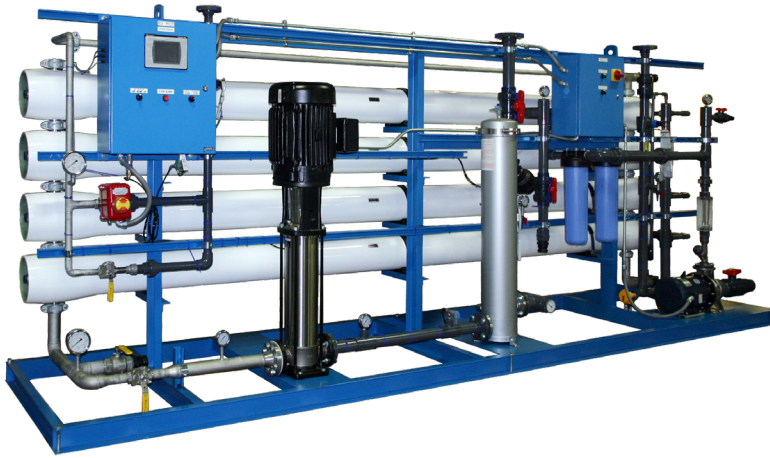
Model No.	Design (gpm)	Capacity (gpd)	Element Quantity	RO Feed (gpm)	RO Reject (gpm)	System Piping Connections			Nominal Operating Pressure	Pump Hp	Approx. Ship Wt.	Dimensions		
						Inlet Feed	Product	Reject				Length A	Width B	Height C
MRO-3600-4V	2.5	3,600	2	3.3-3.8	0.8-1.3	3/4" Flange	1/2" Flange	1/2" Flange	251 psi	3.0	425 lb.	36"	24"	68"
MRO-5400-4V	3.8	5,400	3	5.0-5.8	1.2-2.0	3/4" Flange	1/2" Flange	1/2" Flange	242 psi	3.0	475 lb.	36"	24"	68"
MRO-7200-4V	5.0	7,200	4	6.7-7.7	1.7-2.7	3/4" Flange	3/4" Flange	1/2" Flange	235 psi	5.0	525 lb.	36"	30"	68"
MRO-9000-4V	6.3	9,000	5	8.4-9.7	2.1-3.4	3/4" Flange	3/4" Flange	1/2" Flange	230 psi	5.0	575 lb.	36"	30"	68"
MRO-10800-4H	7.5	10,800	6	10.0-11.5	2.5-4.0	1" Flange	3/4" Flange	1/2" Flange	251 psi	5.0	650 lb.	54"	26"	76"
MRO-12600-4H	8.8	12,600	7	11.7-13.5	2.9-4.7	1" Flange	3/4" Flange	1/2" Flange	242 psi	5.0	700 lb.	54"	26"	76"
MRO-14400-4H	10.0	14,400	8	13.3-15.4	3.3-5.4	1" Flange	3/4" Flange	3/4" Flange	234 psi	5.0	750 lb.	54"	26"	76"
MRO-16200-4H	11.3	16,200	9	15.0-17.4	3.7-6.1	1" Flange	1" Flange	3/4" Flange	234 psi	5.0	800 lb.	54"	26"	76"

SPECIFICATIONS MRO-18K-4H THROUGH MRO-29K-4H SERIES



Model No.	Design (gpm)	Capacity (gpd)	Element Quantity	RO Feed (gpm)	RO Reject (gpm)	System Piping Connections			Nominal Operating Pressure	Pump Hp	Approx. Ship Wt.	Dimensions		
						Inlet Feed	Product	Reject				Length A	Width B	Height C
MRO-18K-4H	12.5	18,000	12	16.7-19.2	4.2-6.7	1 1/4" Flange	1" Flange	3/4" Flange	280 psi	7.5	1050 lb.	144"	30"	76"
MRO-22K-4H	15.0	21,600	15	20.0-23.0	5.0-8.0	1 1/4" Flange	1" Flange	3/4" Flange	270 psi	7.5	1200 lb.	144"	30"	76"
MRO-25K-4H	17.5	25,200	18	23.2-26.8	5.7-9.3	1 1/2" Flange	1 1/4" Flange	3/4" Flange	260 psi	10	1350 lb.	144"	30"	76"
MRO-29K-4H	20.0	28,800	21	26.7-30.8	6.7-10.8	1 1/2" Flange	1 1/4" Flange	1" Flange	245 psi	10	1500 lb.	144"	30"	76"

'MRO-8H' Reverse Osmosis Systems



Overview

The Marlo MRO-8H Series Industrial Reverse Osmosis Systems are engineered to economically produce high purity water by removal of dissolved minerals, bacteria, particles, and organic impurities. Each MRO machine is constructed using the highest quality components and materials for reliable operation and exceptional performance. Our standard machines are available with product water outputs from 25-300 GPM (36,000-432,000 GPD).

Marlo also offers a wide variety of machine options, pre/post treatment equipment, distribution pumps, and integrated controls for a complete water treatment system. Our specialty is skid mounted, pre-piped, and pre-wired equipment allowing for quick installation and start-up time. Other types of membrane technology are also available including two-pass, two-train, cellulose acetate (CA), and nanofiltration (NF) for custom applications. Marlo engineers are ready to work with you to design a system meeting your water treatment requirements.

The following are just a few of the industrial applications that benefit from the use of reverse osmosis water:

- Boiler Feedwater
- Chemical Manufacturing
- Humidification
- Ice-making
- Bottled Water
- Small Municipalities
- Electronics Manufacturing
- Ink / Dye Production
- Food / Beverage Production
- Deionizer Pre-treatment

Operating Parameters

- Operating Pressure: 200-250 psig
- Nominal Recovery: 75-80%
- Nominal Salt Rejection: 98-99%
- Operating Temperature: 45-85° F
- Design Temperature: 50° F
- Minimum Inlet Pressure: 30 psig
- Control Circuit: 120 VAC, 1-phase, 60 Hz.

Materials of Construction

- Skid Frame: Epoxy-coated carbon steel
- Membrane Elements: Thin-film Composite (TFC)
- Membrane Housings: FRP (300 psig rated)
- Low pressure piping: Sch 80 PVC
- High pressure piping: Sch 10 304SS

Pump and Motor

- Pump: 304/316SS vertical multi-stage centrifugal
- Motor: TEFC, 460 VAC, 3-phase, 60 Hz.

Standard Features

- 8" x 40" High rejection membrane elements
- 5-micron sediment pre-filter housing (304SS)
- Allen Bradley MicroLogix 1400 PLC System with PanelView 800-7 operator interface
- Prewired motor starter with fused disconnect switch
- NEMA-4 electrical enclosures
- UL-508A Listed electrical panels
- Product water conductivity transmitters
- Product and reject flow transmitters
- 316SS pressure gauges / Inlet pressure switch

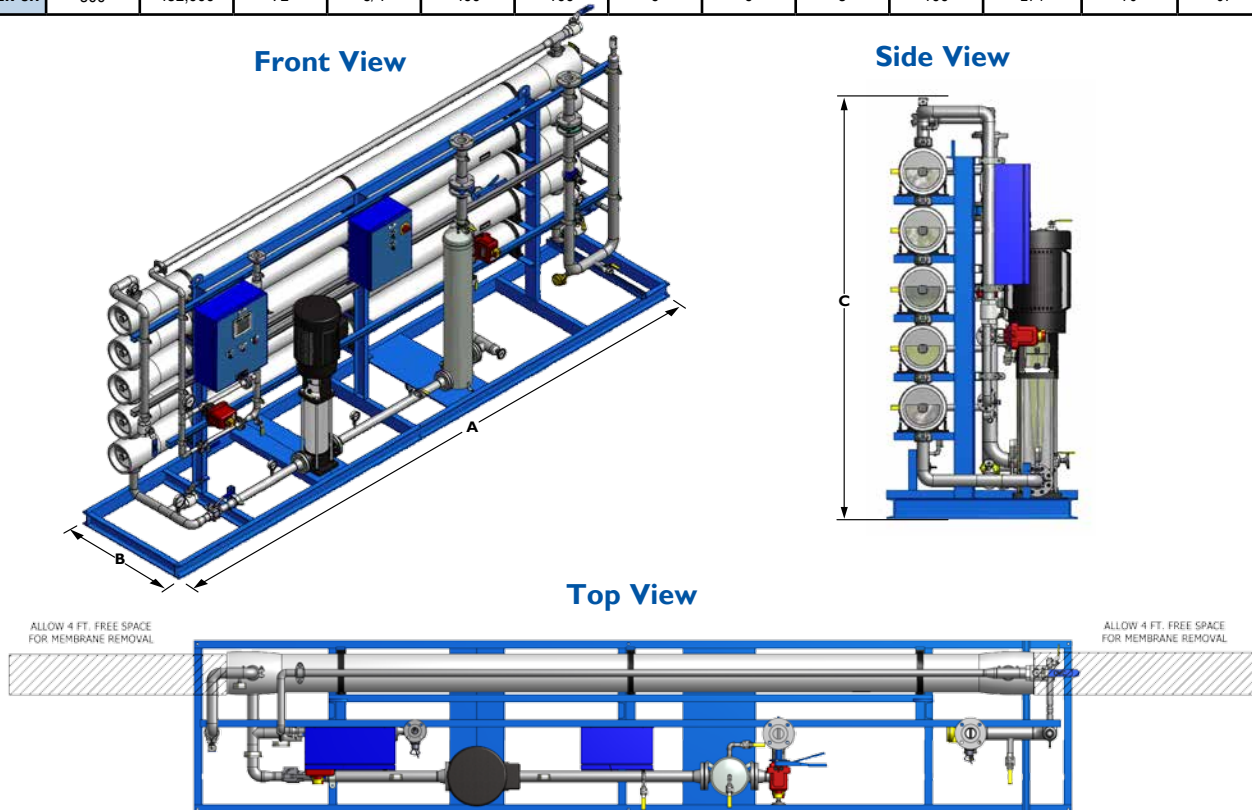
Optional Equipment Available

- Variable Frequency Drives (VFD)
- pH/ORP monitors
- Low energy membrane elements
- All stainless steel piping and/or skid
- Ethernet/Modbus PLC communications
- Atmospheric storage tanks with level control and repressurization pump systems
- Membrane clean-in-place (CIP) systems
- Pretreatment chemical injection systems
- Containerized installations

'MRO-8H' Reverse Osmosis Systems






SPECIFICATIONS

MODEL NUMBER	CAPACITY		ELEMENT QUANTITY	VESSEL STAGING	RO FEED	RO REJECT	SYSTEM PIPING CONNECTIONS (INCHES)			PUMP HP	OVERALL DIMENSIONS (INCHES)			SHIPPING WEIGHT
	GPM	GPD			GPM	GPM	INLET FEED	PERMEATE	RO REJECT		A LENGTH	B WIDTH	C HEIGHT	LBS.
MRO-36K-8H	25	36,000	6	1/1	33	8	1 1/2	1 1/2	1	10	146	40	82	3150
MRO-50K-8H	35	50,400	9	1/1/1	47	12	2	1 1/2	1	15	146	40	82	3550
MRO-72K-8H	50	72,000	12	2/1/1	67	17	2	2	1	20	146	40	82	3800
MRO-94K-8H	65	93,600	16	2/1/1	87	22	2 1/2	2	1 1/2	25	194	46	82	4300
MRO-115K-8H	80	115,000	20	2/2/1	107	27	2 1/2	2 1/2	1 1/2	25	194	46	82	4600
MRO-144K-8H	100	144,000	24	3/2/1	133	32	2 1/2	2 1/2	1 1/2	30	194	46	94	5100
MRO-180K-8H	125	180,000	30	3/2	167	42	3	3	2	40	274	50	86	5700
MRO-216K-8H	150	216,000	36	4/2	187	47	3	3	2	50	274	50	94	6100
MRO-288K-8H	200	288,000	48	5/3	267	67	4	4	2	60	274	70	86	7100
MRO-360K-8H	250	360,000	60	6/4	333	83	6	6	3	75	274	76	86	8000
MRO-432K-8H	300	432,000	72	8/4	400	100	6	6	3	100	274	76	97	10,600



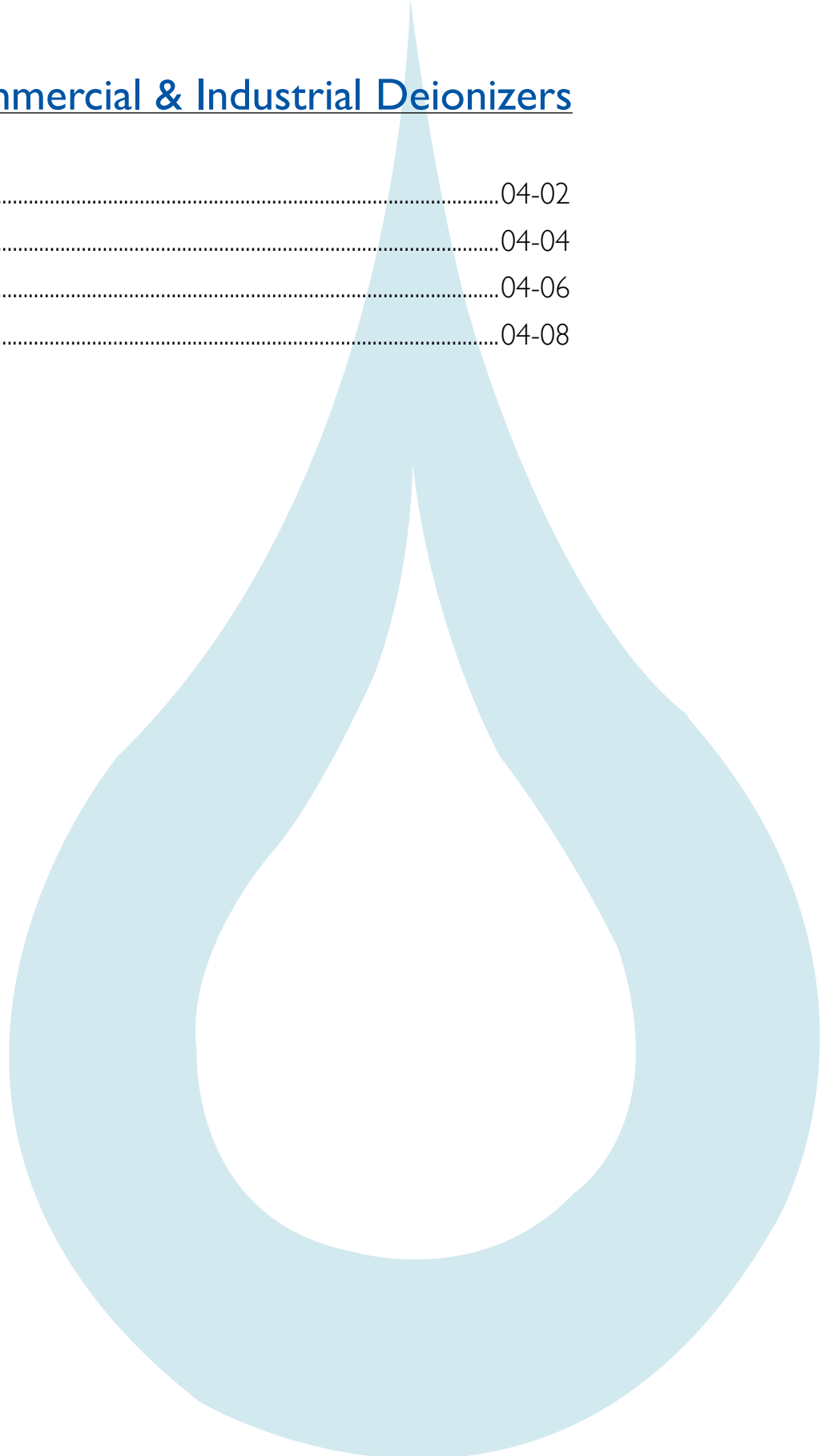
Notes

- 1 Feed flow based on 75% recovery.
- 2 Motor horsepower based on 50°F feedwater and high rejection membranes. Lower horsepower models are available for warmer feedwater and/or higher flow membranes. Consult factory.
- 3 Requires minimum of 48" additional length on each side of the skid for membrane removal.
- 4 Feedwater to RO system must be free of chlorine and pre-conditioned by water softening or polymer injection to prevent membrane scaling.

MODEL	MRO-2.5	MRO-4LP	MRO-4V	MRO-4H	MRO-8H
					
Product Flow Rate	0.35–1.75 GPM	2.5–11 GPM	2.5-6 GPM	7.5–20 GPM	25–400 GPM
System Recovery	50%	65–75%	65–75%	70–75%	75–80%
Membrane Type / Size	Low Energy TFC 2.5" x 21" / 2.5" x 40"	Low Energy TFC 4" x 40"	High Rejection TFC 4" x 40"	High Rejection TFC 4" x 40"	High Rejection TFC 8" x 40"
Pump Electrical	120V, 1-ph, 60Hz	220V, 1-ph, 60Hz	460V, 3-ph, 60Hz	460V, 3-ph, 60Hz	460V, 3-ph, 60Hz
Design Temperature	77°F	77°F	50°F	50°F	50°F
Design Pressure	125–150 psig	125–150 psig	200–250 psig	200–250 psig	200–250 psig
Membrane Housing Material	Fiberglass - FRP	Fiberglass - FRP	Fiberglass - FRP	Fiberglass - FRP	Fiberglass - FRP
Prefilter Housing Material / Type	Polypropylene / 5-micron & Carbon	Polypropylene / 5-micron	Polypropylene / 5-micron	Polypropylene / 5-micron	304SS / 5-micron
System Controller Type	Electromechanical	S-100 Microprocessor	S-150 Microprocessor	S-150 Microprocessor	Micrologix 1200 PLC PanelView C600
FEATURES / OPTIONS					
Product / Reject Flow Meters	•	•	•	•	•
Product Conductivity	•	•	•	•	•
Low Inlet Pressure Switch	•	•	•	•	•
pH Monitor Option				•	•
ORP Monitor Option				•	•
Membrane CIP System Option			•	•	•
Low Product Quality Divert Option				•	•
Low Energy Membrane Option			•	•	•
All Stainless Steel Piping Option				•	•
Stainless Steel Skid Bottom				•	•
Remote Monitoring to BMS					•
Variable Frequency Drives (VFD)				•	•
Two-Pass Design				•	•
Two-Train Design				•	•

Section 04. Commercial & Industrial Deionizers

MSB-F.....	04-02
MSB.....	04-04
MMB.....	04-06
EDI Systems.....	04-08



'MSB-F' Series Deionization Systems



Overview

The Marlo 'MSB-F' Series Automatic Separate-Bed Deionizer (DI) system offers a corrosion resistant alternative for the economical production of high purity water in industrial applications where DI exchange tank service or reverse osmosis (RO) systems are not desired.

Standard designs are available for product flow rates of 5-250 GPM. All systems are completely factory skid mounted, pre-piped, pre-wired, and pre-tested for minimal installation time and cost. Duplex alternating systems are available when continuous DI water demand is required.

Standard Features

- Composite FRP resin tank with tri-pod base
- Aquamatic diaphragm style control valves (air-actuated)
- Volume, time, or conductivity initiated regeneration cycle
- Pre-sized chemical eductors
- High capacity, cation and anion exchange resins
- Tank isolation valves & system bypass valve
- Inlet/outlet tank and dilute chemical sampling valves
- Factory Hydro-Tested at 100 psig

Materials of Construction

- Resin Tanks: FRP
- Exterior Piping: Sch 80 PVC
- Internal Distributors: Sch 80 PVC / ABS
- Control Valves: Noryl Thermoplastic
- Chemical Eductors: PVC
- Skid: Painted, Carbon Steel

Controls / Instrumentation

- Allen-Bradley MicroLogix PLC system
- Allen-Bradley PanelView operator terminal
- NEMA-4X electrical enclosure
- Signet product water flowmeter
- Signet product water conductivity meter
- Visual-type rotameter for chemical dilution water
- Inlet/Outlet tank pressure gauges

Standard Operating Parameters

- Inlet Pressure: 30-100 psig
- Electrical: 120VAC, 1-Ph, 60 Hz.
- Pneumatic: 80-100 psig (Dry, Oil-Free Air)
- Temperature: 35-110°F
- Cation Resin Regenerant: HCL (30%)
- Anion Resin Regenerant: NaOH (50%)

Available Options

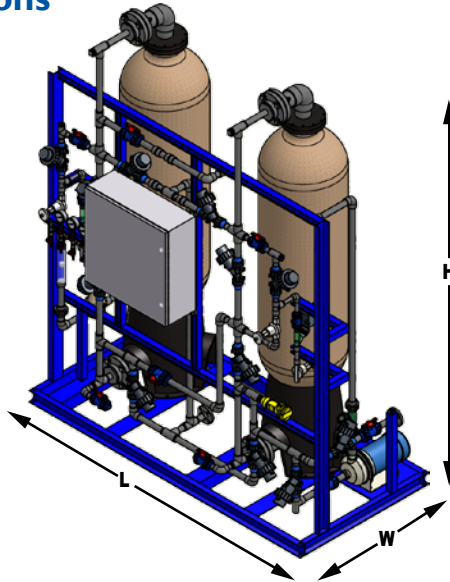
- ASME rated resin tanks
- Duplex alternating systems (2-skids required)
- Recirculation pump systems (for low-flow periods)
- Regenerant chemical tank and pump systems
- Alternate PLC systems
- CPVC exterior piping
- Automatic butterfly or ball control valves
- Alternate ion exchange resins
- Wastewater neutralization systems
- Regeneration with sulfuric acid (H₂SO₄)

'MSB-F' Series Deionization Systems

Specifications

MODEL NUMBER	NOMINAL CAPACITY ①	FLOW RATES		TANK SIZE	RESIN VOLUME CATION CU. FT.	RESIN VOLUME ANION CU. FT.	PIPE SIZE INCHES	WASTE VOLUME GALLONS ④	ACID PER REGENERATION GALLONS ⑤	CAUSTIC PER REGENERATION GALLONS ⑥	OVERALL DIMENSIONS (LxWxH, INCH-ES) ⑦	SHIPPING WEIGHT (LBS.) ⑧	OPERATING WEIGHT (LBS.)
		SERVICE											
		MINIMUM ②	MAXIMUM ③										
MSB-1865 F	85,000	5	20	18x65	4.5	4.5	1	630	12.5	5.5	80x38x96	1,950	3,915
MSB-2162 F	110,000	7	30	21x62	6	6	1	840	16.5	7.5	88x40x98	2,060	4,030
MSB-2472 F	185,000	9	40	24x72	10	10	1.5	1,400	27.5	12.5	94x44x101	2,740	5,340
MSB-3072 F	275,000	14	60	30x72	15	15	1.5	2,100	42	19	108x52x106	3,830	7,560
MSB-3672 F	365,000	20	85	36x72	20	20	2	2,800	55.5	25	120x58x106	4,980	9,630
MSB-4272 F	460,000	28	115	42x72	25	25	2	3,500	69	31.5	132x66x108	7,670	14,950
MSB-4872 F	640,000	37	150	48x72	35	35	3	4,900	97	44	144x72x112	9,890	19,230
MSB-6386 F	920,000	65	250	63x86	50	50	3	7,000	139	63	180x87x113	15,300	29,260

'MSB-F' Series Dimensions



Notes

- ① System nominal capacity is based on a raw water having no more than 15 grain/gallon (approx. 250 ppm) of total dissolved solids (as CaCO₃) and free of color, oil, turbidity, and organic matter. A complete water analysis is required to more accurately predict system capacity and product water quality.
- ② Minimum flow rates are established to prevent flow channeling within the resin bed, which can lead to lower capacity and product water quality.
- ③ At a pressure drop not exceeding 15 psig.
- ④ Wastewater from the regeneration process may require neutralization prior to final discharge. Size drain flows equal to the maximum flow rating.
- ⑤ Acid dosage for the cation resin tank is based on 8 lbs. per cubic foot of 30% hydrochloric acid (HCL). Acid drums or carboys are to be provided by others.
- ⑥ Caustic dosage for the anion tank is based on 8 lbs. per cubic foot of 50% sodium hydroxide (NaOH). Caustic drums or carboys are to be provided by others.
- ⑦ Dimensions are estimate only. Actual dimensions may vary based on job-site space limits, piping layout, and selected options. Dimensions shown are for a single, cation-anion tank skid and do not included space for chemical regenerant containers. Allow a minimum of 24" above the height dimension for resin loading.
- ⑧ Shipping weights are estimate only. Weights include resin and support gravel, which are added to the tanks after installation.

'MSB' Series Deionization Systems



Overview

The Marlo 'MSB' Series Automatic Separate-Bed Deionizer (DI) systems are engineered to economically produce high purity water through the removal of total dissolved solids (TDS). Each MSB system is constructed using robust, industrial-grade components and materials for reliable operation and exceptional performance.

Standard designs are available for product flow rates of 5-600 GPM. All systems are completely factory skid mounted, pre-piped, pre-wired, and pre-tested for minimal installation time and cost. Duplex alternating systems are available when continuous DI water demand is required.

Standard Features

- Carbon steel resin tanks with vinyl ester lined interior
- Aquamatic diaphragm style control valves (up to 3", air-actuated)
- Butterfly style control valves (4"-6", air-actuated)
- Volume, time, or conductivity initiated regeneration cycle
- Pre-sized chemical eductors (acid & caustic containers by others)
- High capacity, cation and anion exchange resins
- Tank isolation valves & system bypass valve
- Inlet/outlet tank and dilute chemical sampling valves
- Factory Hydro-Tested at 100 psig

Materials of Construction

- Resin Tanks: Carbon steel with Safety Blue exterior paint
- Tank Lining: Vinyl ester (applied at 40-50 mils DFT)
- Exterior Piping: Sch 80 PVC
- Internal Distributors: Sch 80 PVC / ABS
- Control Valves: Noryl Thermoplastic
- Chemical Eductors: PVC
- Skid: Painted, Carbon Steel

Controls / Instrumentation

- Allen-Bradley MicroLogix PLC system
- Allen-Bradley PanelView operator terminal
- NEMA-4X electrical enclosure
- Signet product water flowmeter
- Signet product water conductivity meter
- Visual-type rotameter for chemical dilution water
- Inlet/Outlet tank pressure gauges

Operating Parameters

- Inlet Pressure: 30-100 psig
- Electrical: 120VAC, 1-Ph, 60 Hz.
- Pneumatic: 80-100 psig (Dry, Oil-Free Air)
- Water Temperature: 35-100°F
- Cation Resin Regenerant: HCL (30%)
- Anion Resin Regenerant: NaOH (50%)

Available Options

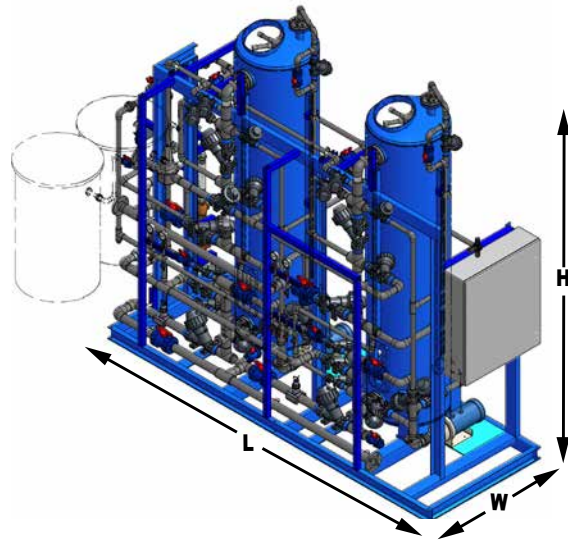
- ASME Code stamped resin tanks
- Duplex alternating systems (2-skids required)
- Recirculation pump systems (for low-flow periods)
- Rubber lined tank interior surfaces
- Regenerant chemical tank and pump systems
- Alternate PLC systems
- CPVC exterior piping
- 304/316 Stainless steel exterior piping
- Stainless steel internal distributor piping
- Automatic butterfly or ball control valves
- Alternate ion exchange resins
- Wastewater neutralization systems
- Regeneration with sulfuric acid (H2SO4)
- Forced-draft decarbonator systems (CO2 removal)

'MSB' Series Deionization Systems Specifications

MODEL NUMBER	CAPACITY (Kilograins) ①	FLOW RATES		TANK SIZE	RESIN VOLUME CATION	RESIN VOLUME ANION	PIPE SIZE	WASTE VOLUME	ACID PER REGENERATION	CAUSTIC PER REGENERATION	OVERALL DIMENSIONS (LxWxH, INCHES) ⑦	SHIPPING WEIGHT (LBS.) ⑧	OPERATING WEIGHT (LBS.)
		SERVICE											
		MINIMUM ②	MAXIMUM ③										
KGR	②	③	INCHES	CU. FT.	CU. FT.	INCHES	GALLONS ④	GALLONS ⑤	GALLONS ⑥				
MSB-2084	140	5	26	20x84	7	8	1	1,046	19.5	10	88x38x106	2,605	3,905
MSB-2484	220	11	37	24x84	11	12	1 1/2	1,597	30.5	15	96x42x108	3,054	4,854
MSB-3084	340	17	60	30x84	17	19	1 1/2	2,482	47	24	108x48x111	4,187	7,087
MSB-3684	500	25	85	36x84	25	27	2	3,579	69.5	34	120x54x114	5,665	8,465
MSB-4284	680	34	115	42x84	34	37	2	4,873	94.5	46.5	132x60x117	7,452	12,852
MSB-4884	860	43	150	48x84	43	48	3	6,274	119	60.5	144x66x122	9,185	16,485
MSB-5484	1100	55	190	54x84	55	60	3	7,924	153	75.5	156x72x125	11,162	20,162
MSB-6084	1320	66	235	60x84	66	72	3	9,574	183	90.5	168x78x128	13,888	25,088
MSB-6684	1640	82	288	66x84	82	90	3	11,854	228	113	186x90x133	17,055	30,555
MSB-7284	1900	95	336	72x84	95	104	4	13,738	264	131	198x96x136	19,163	36,700
MSB-8484	2640	132	456	84x84	132	144	6	18,986	367	181	222x108x142	26,614	49,825
MSB-9684	3440	173	600	96x84	173	190	6	24,962	481	239	246x120x148	36,416	66,750

'MSB' Series Dimensions

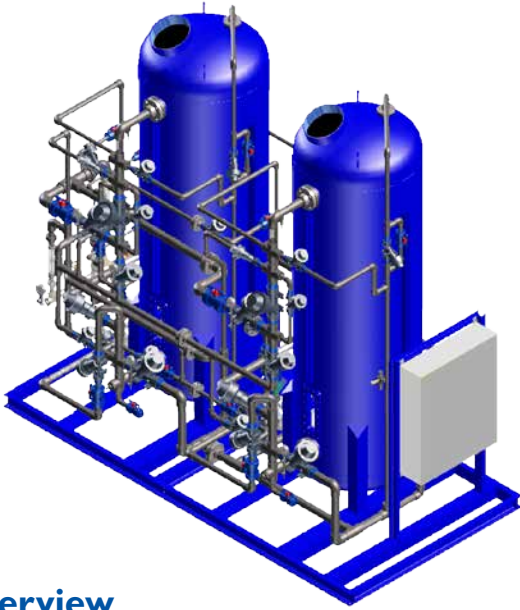
NOTE:
Chemical tanks
(shown in broken lines)
are provided by others.



Notes

- ① System nominal capacity is based on a raw water having no more than 15 grain/gallon (approx. 250 ppm) of total dissolved solids (as CaCO₃) and free of color, oil, turbidity, and organic matter. A complete water analysis is required to more accurately predict system capacity and product water quality.
- ② Minimum flow rates are established to prevent flow channeling within the resin bed, which can lead to lower capacity and product water quality.
- ③ At a pressure drop not exceeding 15 psig.
- ④ Wastewater from the regeneration process may require neutralization prior to final discharge. Size drain flows equal to the maximum flow rating.
- ⑤ Acid dosage for the cation resin tank is based on 8 lbs. per cubic foot of 30% hydrochloric acid (HCL). Acid drums or carboys are to be provided by others.
- ⑥ Caustic dosage for the anion tank is based on 8 lbs. per cubic foot of 50% sodium hydroxide (NaOH). Caustic drums or carboys are to be provided by others.
- ⑦ Dimensions are estimate only. Actual dimensions may vary based on job-site space limits, piping layout, and selected options. Dimensions shown are for a single, cation-anion tank skid and do not included space for chemical regenerant containers. Allow a minimum of 24" above the height dimension for resin loading.
- ⑧ Shipping weights are estimate only. Weights include resin and support gravel, which are added to the tanks after installation.

'MMB' Series Deionization Systems



Overview

The Marlo 'MMB' Series Mixed-Bed Deionizer (MBDI) systems are designed for industrial, ultra-pure water applications where only trace amount of dissolved solids are allowed. The cation and anion exchange processes take place in a single vessel where extremely high water purity is achievable (up to 18.3 Meg-Ohm resistivity). On-site chemical regeneration of the resin also occurs within the vessels after an automatic separation step.

Standard designs are available for product flow rates of 5-350 GPM. All systems are completely factory skid mounted, pre-piped, pre-wired, and pre-tested for minimal installation time and cost. Duplex alternating or lead-lag series systems are available when continuous DI water demand and the highest quality water is required.

Standard Features

- Carbon steel resin tanks with vinyl ester lined interior
- Aquamatic diaphragm style control valves (up to 3", air-actuated)
- Butterfly style control valves (4"-6", air-actuated)
- Volume, time, or conductivity initiated regeneration cycle
- Pre-sized chemical eductors (acid & caustic containers by others)
- High capacity, cation and anion exchange resins
- Tank isolation valves & system bypass valve
- Inlet/outlet tank and dilute chemical sampling valves
- Factory Hydro-Tested at 100 psig

Materials of Construction

- Resin Tanks: Carbon steel with Safety Blue exterior paint
- Tank Lining: Vinyl ester (applied at 40-50 mils DFT)
- Exterior Piping: Sch 80 PVC
- Internal Distributors: Sch 80 PVC / ABS
- Control Valves: Noryl Thermoplastic
- Chemical Eductors: PVC
- Skid: Painted, Carbon Steel

Controls / Instrumentation

- Allen-Bradley MicroLogix PLC system
- Allen-Bradley PanelView operator terminal
- NEMA-4X electrical enclosure
- Signet product water flowmeter
- Signet product water conductivity meter
- Visual-type rotameter for chemical dilution water
- Inlet/Outlet tank pressure gauges

Operating Parameters

- Inlet Pressure: 30-100 psig
- Electrical: 120VAC, 1-Ph, 60 Hz.
- Pneumatic: 80-100 psig (Dry, Oil-Free Air)
- Water Temperature: 35-100°F
- Cation Resin Regenerant: HCL (30%)
- Anion Resin Regenerant: NaOH (50%)

Available Options

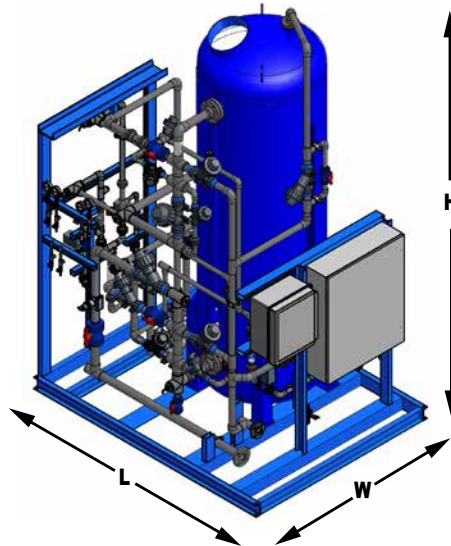
- ASME Code stamped resin tanks
- Duplex alternating systems
- Recirculation pump systems (for low-flow periods)
- Rubber lined tank interior surfaces
- Regenerant chemical tank and pump systems
- Alternate PLC systems
- CPVC exterior piping
- 316 Stainless steel resin tanks & exterior piping
- Stainless steel internal distributor piping
- Automatic butterfly or ball control valves
- Alternate ion exchange resins
- Wastewater neutralization systems
- Regeneration with sulfuric acid (H₂SO₄)
- Forced-draft decarbonator systems (CO₂ removal)

'MMB' Series Deionization Systems

Specifications

MODEL NUMBER	CAPACITY (Kilograins) ①	FLOW RATES		TANK SIZE	RESIN VOLUME CATION	RESIN VOLUME ANION	PIPE SIZE	WASTE VOLUME	ACID PER REGENERATION	CAUSTIC PER REGENERATION	OVERALL DIMENSIONS (LxWxH, INCH-ES) ⑦	SHIPPING WEIGHT (LBS.) ⑧	OPERATING WEIGHT (LBS.)
		SERVICE											
		MINIMUM ②	MAXIMUM ③										
GRAINS	②	③	INCHES	CU. FT.	CU. FT.	INCHES	GALLONS ④	GALLONS ⑤	GALLONS ⑥				
MMB-2096	52,000	5	25	20x96	3	5	1	640	8.5	6.5	55x52x112	1,700	2,800
MMB-2496	78,000	8	40	24x96	4.5	7.5	1½	960	12.5	9.5	59x56x112	2,200	3,500
MMB-3096	124,000	12	60	30x96	7.5	11.5	1½	1,520	20.5	14.5	65x62x123	3,100	5,300
MMB-3696	176,000	18	85	36x96	10	17	2	2,160	28	21.5	71x68x126	3,800	6,400
MMB-4296	240,000	25	115	42x96	14	23	2	2,960	39	29	78x72x129	4,700	7,900
MMB-4896	312,000	32	150	48x96	17	31	3	3,840	47	39	84x78x134	5,600	9,800
MMB-5496	397,000	40	200	54x96	22	39	3	4,880	61	49	90x84x137	6,300	11,200
MMB-6096	494,000	50	250	60x96	27	49	3	6,080	75	62	96x90x140	7,500	13,500
MMB-7296	715,000	70	350	72x96	40	70	4	8,800	110	88	108x102x148	12,500	22,000

Dimensions



Notes

- ① System nominal capacity is based on a raw water having no more than 15 grain/gallon (approx. 250 ppm) of total dissolved solids (as CaCO₃) and free of color, oil, turbidity, and organic matter. A complete water analysis is required to more accurately predict system capacity and product water quality.
- ② Minimum flow rates are established to prevent flow channeling within the resin bed, which can lead to lower capacity and product water quality.
- ③ At a pressure drop not exceeding 15 psig.
- ④ Wastewater from the regeneration process may require neutralization prior to final discharge. Size drain flows equal to the maximum flow rating.
- ⑤ Acid dosage for the cation resin tank is based on 8 lbs. per cubic foot of 30% hydrochloric acid (HCL). Acid drums or carboys are to be provided by others.
- ⑥ Caustic dosage for the anion tank is based on 8 lbs. per cubic foot of 50% sodium hydroxide (NaOH). Caustic drums or carboys are to be provided by others.
- ⑦ Dimensions are estimate only. Actual dimensions may vary based on job-site space limits, piping layout, and selected options. Dimensions shown are for a single, cation-anion tank skid and do not included space for chemical regenerant containers. Allow a minimum of 24" above the height dimension for resin loading.
- ⑧ Shipping weights are estimate only. Weights include resin and support gravel, which are added to the tanks after installation.

Electro-Deionization (EDI) Skids



Overview

The Electro-Deionization process is the latest technology to achieve ultrapure water. EDI uses ion exchange resins in the presence of a DC voltage potential to remove cation and anion contaminants from the feed water supply. Ion selective membranes are then used within the modules to continuously remove these contaminants and carry them out in a small concentrate stream. The voltage applied across the cell allows for the electrochemical “splitting” of water into hydrogen (H+) and hydroxide (OH-) ions within the ion exchange resins resulting in constant regeneration without the addition of chemicals, wastewater neutralization/disposal, and shutdown time. This results in a major advantage over the operation of traditional, regenerable Mixed-Bed Deionization and Service Exchange DI Systems.

The following are just a few of the industrial applications that can benefit from purified water produced by EDI systems:

- Power Generation
- Chemical Manufacturing
- Electronics / Semiconductor
- Industrial Process Water
- Boiler Feed
- Research Lab Facilities

Operating Parameters

- Nominal Recovery: 90–95%
- EDI Water Quality: 15–18 meg-ohm
- Feedwater Requirements: See table on next page
- Operating Temperature: 50–100° F
- Maximum Inlet Pressure: 100 psig
- Minimum Inlet Pressure: 60 psig
- Expected Pressure Drop: 30–40 psig
- Electrical Requirement: 460 VAC, 3-phase, 60 Hz.
120 VAC, 1-phase, 60 Hz.

Materials of Construction

- Skid Frame: Epoxy-coated carbon steel
- EDI Housings: FRP
- System piping: Sch 80 PVC
- EDI cell tubing: Polyethylene

Standard Features

- Allen Bradley MicroLogix Series PLC system
- Allen Bradley PanelView operator terminal
- DC Power supply/rectifier unit
- NEMA-4 electrical enclosures
- Electric-actuated inlet water valve
- Individual EDI cell sampling ports
- Product water resistivity monitor
- Flowmeters for product, reject, and electrolyte streams
- Feedwater pH monitor

Optional Equipment Available

- Product water divert valve
- Alternate PLC systems
- EDI cell clean-in-place (CIP) systems
- CPVC system piping
- Feedwater resistivity monitor
- System pressure transmitters
- Product water pressure relief valve
- Two-pass Reverse Osmosis (RO) pretreatment
- Feed/product water storage tanks
- Feed/product water transfer pump systems

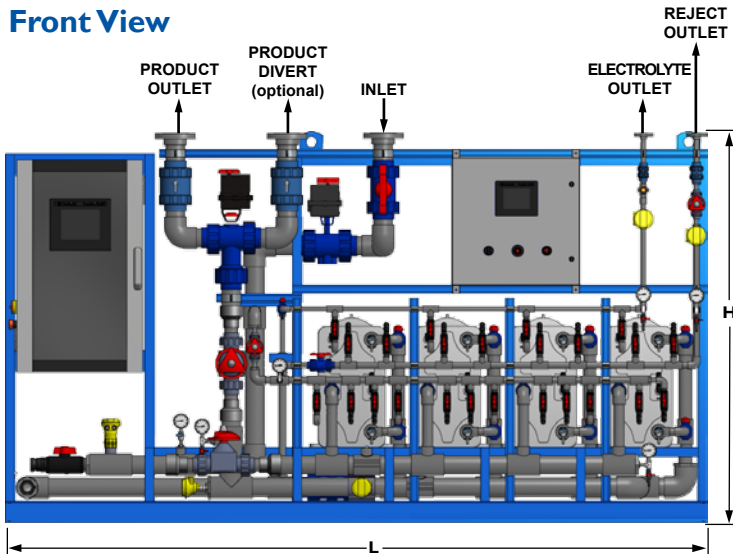
Electro-Deionization (EDI) Skids

SPECIFICATIONS

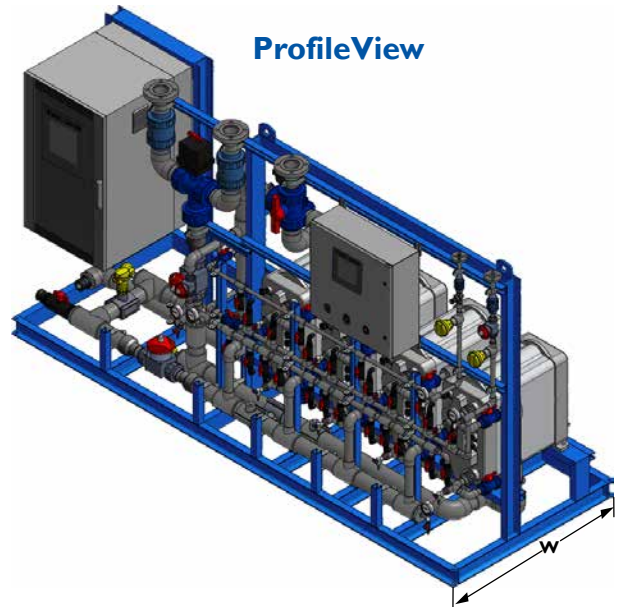
MODEL	MEDI-25	MEDI-50	MEDI-100	MEDI-150	MEDI-200
EDI WATER PRODUCTION RATE (GPM)	25	50	100	150	200
QUANTITY OF EDI CELLS	1	2	4	6	8
MAXIMUM CURRENT LOAD at 350 VDC (AMP)	6	12	24	36	48
INLET FEED WATER RATE (GPM)	28	55	110	166	220
MAXIMUM WATER TO DRAIN (GPM)	3	5	10	16	20
INLET FEED CONNECTION SIZE	2"	2"	3"	3"	4"
PRODUCT CONNECTION SIZE	2"	2"	3"	3"	4"
DRAIN CONNECTION SIZE	3/4"	3/4"	1"	1"	1"
ELECTROLYTE FLUSH CONNECTION	1/2"	1/2"	3/4"	3/4"	3/4"
SYSTEM DIMENSIONS (LxWxH)	92"x48"x73"	100"x48"x73"	133"x48"x73"	133"x48"x84"	133"x48"x84"
SHIPPING WEIGHT (LBS)	2,200	2,500	3,000	3,750	4,400

DIMENSIONS

Front View



Profile View



FEEDWATER REQUIREMENTS

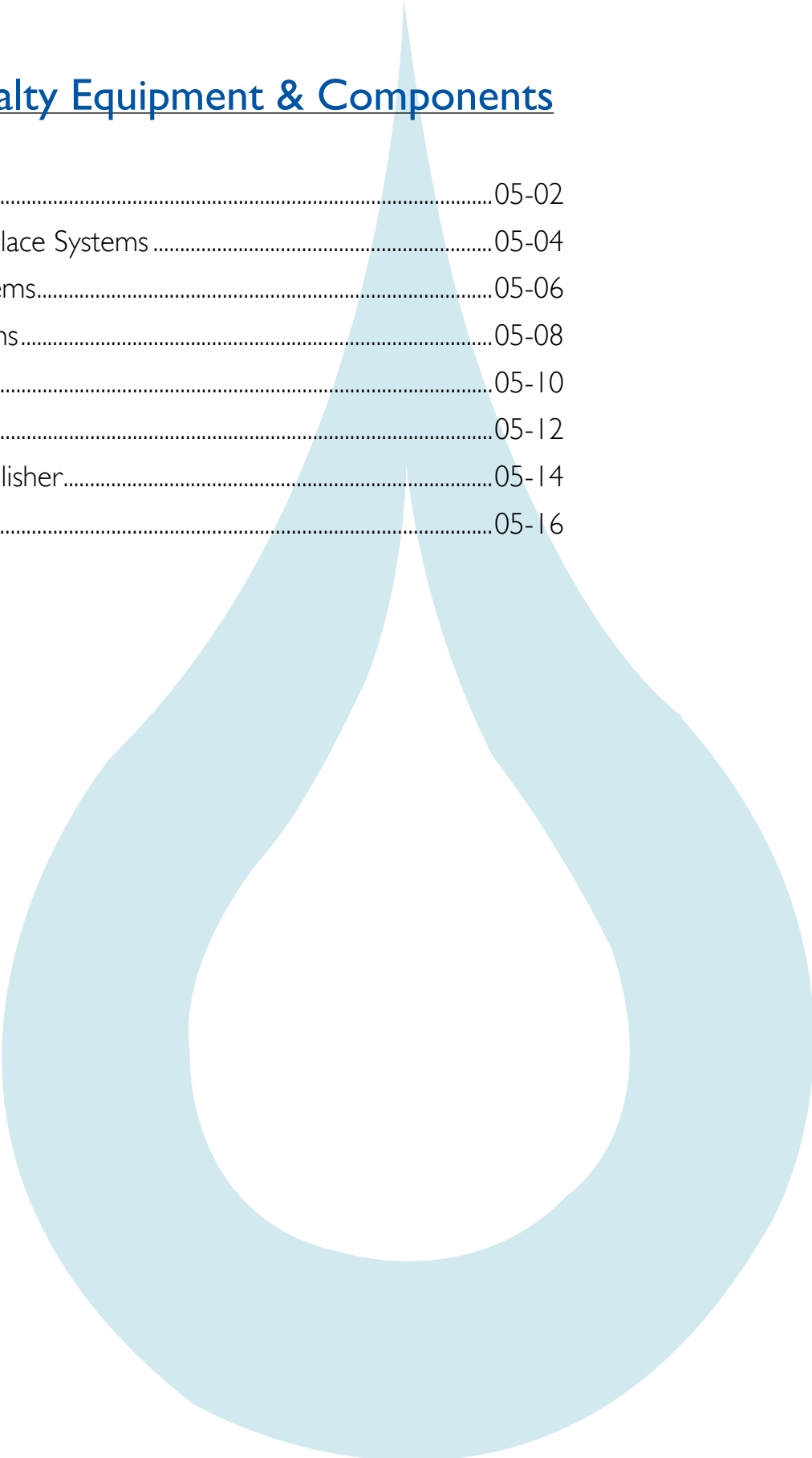
PARAMETERS	REQUIREMENT
FEED CONDUCTIVITY (INCLUDING CO ₂)	< 10 µs/cm
pH	7-10
SILICA (REACTIVE)	< 0.1 ppm
TOTAL HARDNESS AS CaCO ₃	< 0.1 ppm
TOC	< 0.1 ppm
HEAVY METALS (Fe, Mn etc.)	< 0.01 ppm
FREE CHLORINE AS Cl ₂	< 0.05 ppm

Notes

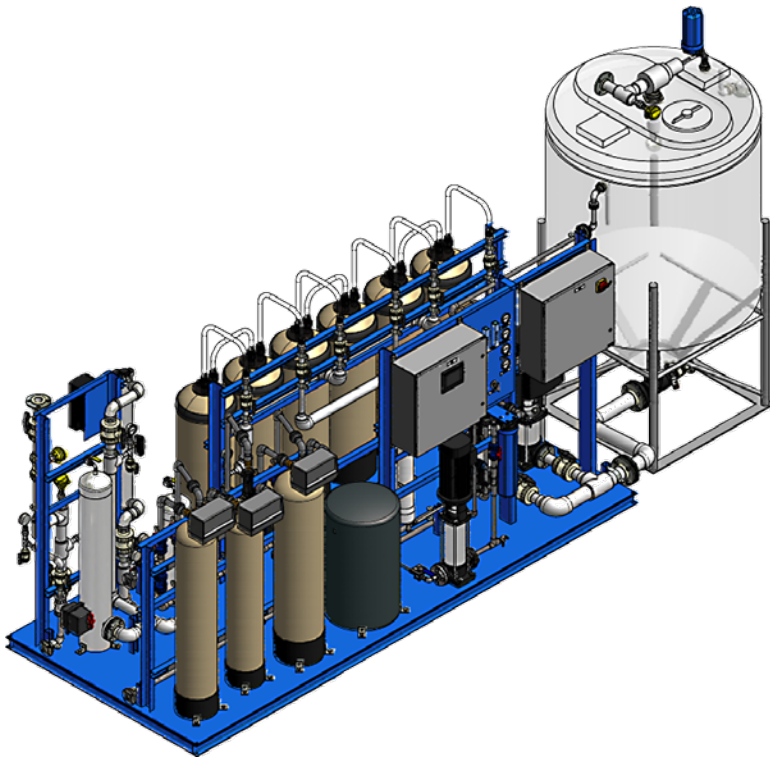
- Standard specifications are based on typical applications and incoming water quality from a Two-Pass Reverse Osmosis (RO) System. Specifications may be altered to meet certain site conditions and changes in incoming and/or product water quality requirements.
- Dimensions and shipping weights are estimated only. Actual dimensions and weights differ dependant upon the final system design and options selected.

Section 05. Specialty Equipment & Components

Lab Water Systems.....	05-02
Membrane Clean-in-Place Systems	05-04
Bulk Brinemaker Systems.....	05-06
Transfer Pump Systems.....	05-08
MATD.....	05-10
MDAS.....	05-12
MCP- Condensate Polisher.....	05-14
MX-III Controller.....	05-16



'LWS' Series High Purity Lab Water Skids



Overview

Marlo's Pre-Engineered Laboratory Water Systems are designed to serve as the centralized, purified water source for a variety of academic, medical, and other research laboratory facilities. Designed to meet or exceed the Type II reagent-grade water platform set forth by CAP/NCCLS and ASTM standards. Standard systems are furnished with all the treatment equipment fully pre-piped, pre-wired, and factory-tested on a common skid package to minimize field installation and start-up costs. The standard system includes the following equipment:

- Pre-Treatment (inlet filter / carbon / softener)
- Reverse Osmosis (RO) machine
- RO water storage tank
- Stainless steel distribution pumps
- DI exchange polishers (portable exchange type)
- Ultraviolet (UV) sterilizer
- Final sub-micron filter (0.2 micron)
- Central control panel with purity monitoring

Operating Parameters

- Operating RO Pressure: 200-250 psig
- Nominal RO Recovery: 50-65%
- Nominal TDS Rejection: 98-99% (RO unit)
- DI Water Quality: 16-18 Mega Ohms
- Operating Temperature: 45-85° F
- Design Temperature: 50° F
- Minimum Inlet Pressure: 50 psig
- Electrical Requirement: 460 VAC, 3-phase, 60 Hz.
120 VAC, 1-phase, 60 Hz.
- DI Loop Outlet Pressure: 75 psig

Materials of Construction

- Skid Frame: Epoxy-coated carbon steel
- Membrane Elements: Thin-film Composite (TFC)
- Membrane Housings: FRP
- Low Pressure Piping: Sch 80 PVC
- High RO pressure piping: 304SS
- RO/DI Water Storage Tank: Polyethylene
- DI Water Loop Piping: Fusion-welded Polypropylene

Pump and Motor

- Pump: 304/316SS vertical multi-stage centrifugal
- Motor: TEFC, 460 VAC, 3-phase, 60 Hz.

Standard Features

- Automatic backwashing carbon filter (timer)
- Twin alternating water softener (metered)
- Single pass Reverse Osmosis unit
- Conical bottom, closed top storage tank
- Storage tank level controller and mounting stand
- Duplex RO/DI distribution pumps (2 x 100%)
- Primary/Polisher mixed bed DI polishers
- UV Sterilizer unit with intensity monitor (254 nm)
- NEMA-4 Electrical enclosures
- Pre-wired motor starters with fused disconnect switch
- DI Water outlet flowmeter
- DI Water outlet resistivity monitor

Optional Equipment Available

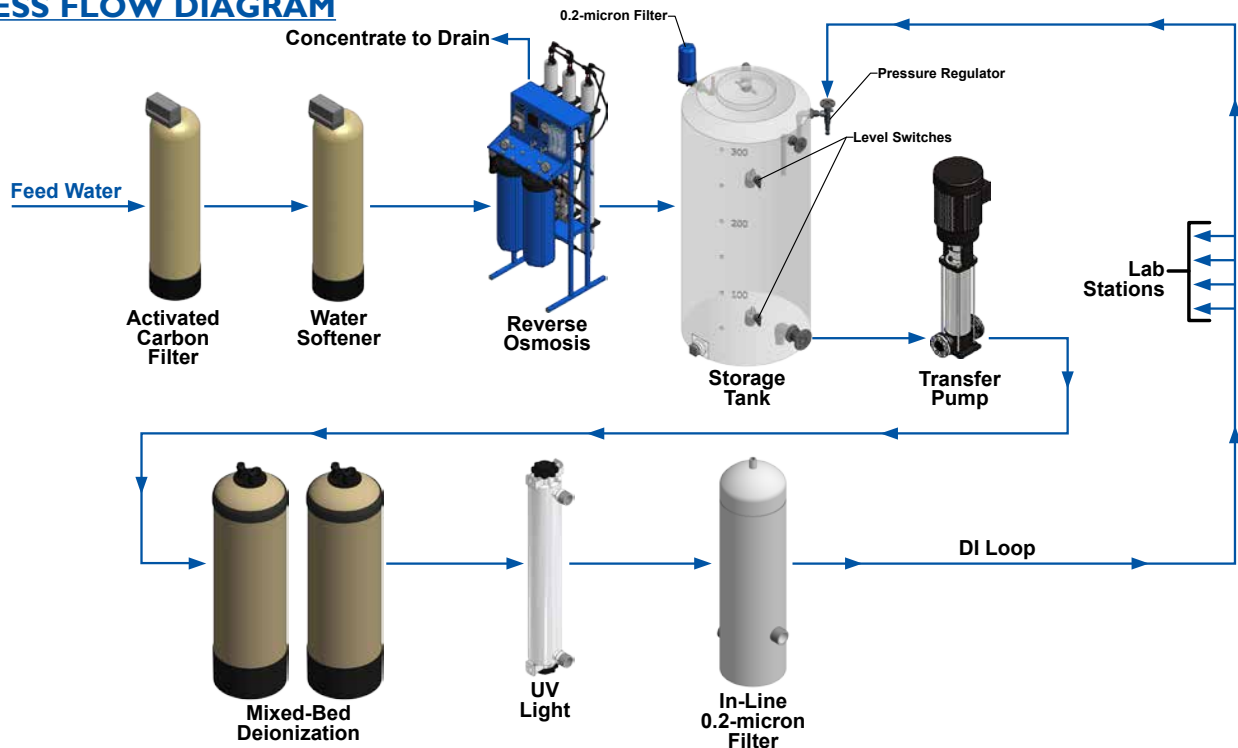
- Programmable Logic Controller (PLC) systems
- Variable Frequency Drives (VFD's)
- Multi-media filter pre-treatment
- Type III Lab Systems

'LWS' Series High Purity Lab Water Skids

SPECIFICATIONS

MODEL	LWS-1500-20	LWS-2500-20	LWS-3600-30	LWS-5400-40	LWS-7200-60
RO WATER GENERATION RATE (GPD)	1,500	2,500	3,600	5,400	7,200
DI WATER LOOP RECIRCULATION RATES (GPM)	20 @ 75 psig	20 @ 75 psig	30 @ 75 psig	40 @ 75 psig	60 @ 75 psig
DI WATER LOOP CONNECTION SIZE	1"	1"	1 1/4"	1 1/2"	2"
STORAGE TANK VOLUME (GAL)	300	500	500	1,000	1,000
DI WATER RECIRCULATION PUMP MOTOR (Hp)	2.0	2.0	3.0	3.0	5.0
DI EXCHANGE TANKS (QTY/SIZE)	Qty (4) 12"x52" / 2.5 ft. ³ ea.	Qty (4) 12"x52" / 2.5 ft. ³ ea.	Qty (4) 14"x47" / 3.5 ft. ³ ea.	Qty (4) 14"x47" / 3.5 ft. ³ ea.	Qty (6) 14"x47" / 3.5 ft. ³ ea.
INLET FEED WATER RATE (GPM)	2.1	3.5	4.25	6.25	7.75
INLET FEED CONNECTION SIZE	1"	1"	1"	1"	1"
MAXIMUM WATER TO DRAIN (GPM)	7	10	12	13	15
DRAIN CONNECTION SIZE	1"	1"	1"	1"	1"
SYSTEM DIMENSIONS (LxWxH)	192"x56"x90"	198"x66"x106"	198"x66"x106"	219"x66"x114"	228"x66"x114"
SHIPPING WEIGHT (LBS)	2,700	2,800	3,000	3,200	3,600

PROCESS FLOW DIAGRAM



Notes

- Standard specifications are based on typical, general lab applications and incoming water quality. Specifications may be altered to meet certain site conditions and changes in water quality.
- Dimensions and shipping weights are estimated only. Actual dimensions and weights differ dependant upon the final system design and options selected.

Membrane Clean-In-Place (CIP) Systems



Overview

Marlo Clean-in-Place (CIP) Systems are engineered for on-site cleaning of Reverse Osmosis (RO) and other membrane based water treatment equipment. Periodic cleaning of the membrane elements will extend the useful life and greatly improve the economics of ownership. Systems are designed to work with all types of membrane cleaning procedures including inorganic mineral scale (low pH), biological/organic fouling (high pH), and sanitization cycles.

Each system includes a cleaning solution tank, transfer pump, and sediment filter to trap debris from re-entering the membranes during recirculation. All steps of the CIP process are to be performed manually by an equipment operator.

The CIP system is available in two (2) types of design configurations:

Integral Mounted

The transfer pump and sediment filter housing are mounted, pre-piped, and pre-wired directly on the RO skid. The cleaning solution tank is free-standing and can be stored when not in use. Includes a set of hoses and quick-connect fittings for the feed and return lines to and from the RO skid.

Skid Mounted

All CIP equipment including the cleaning solution tank are factory mounted, pre-piped, and pre-wired on a dedicated skid assembly. The Skid Mounted configuration is a good choice for installations where multiple RO systems are in place or where a hard piped CIP system is desired. This option can also be modified for portability for easy movement to storage or other locations within the plant.

Operating Parameters

- Operating Pressure: 40-50 psig
- Operating Temperature: 50-110° F
- Pump Motor Power: 460 VAC, 3-Phase, 60 Hz
- Control Circuit: 120 VAC, 1-phase, 60 Hz.

Materials of Construction

- Skid Frame: Epoxy-coated carbon steel
- Solution Tank: Polyethylene
- Feed Pump: 304 Stainless Steel
- Prefilter Housing: Polypropylene or 304SS
- Interconnecting Piping: Sch 80 PVC
- Hardware & Fasteners: Stainless Steel

Standard Features

- Conical-Bottom, Closed Top Cleaning Solution Tank
- Centrifugal Transfer Pump with TEFC Motor
- Sediment Cartridge Filter Housing (5-micron rating)
- Pre-Wired Motor Starter with Fused Disconnect Switch
- NEMA-4 Electrical Enclosures
- Low Tank Level Switch with Automatic Pump Shutdown
- Temperature Indicator
- Flow Indicator
- Pump Discharge Pressure Indicator
- Manual Recirculation Line for Solution Mixing
- Manual Tank Drain Valve
- Flexible Hose Assemblies with Quick-Disconnects (Integral Mount)

Optional Equipment Available

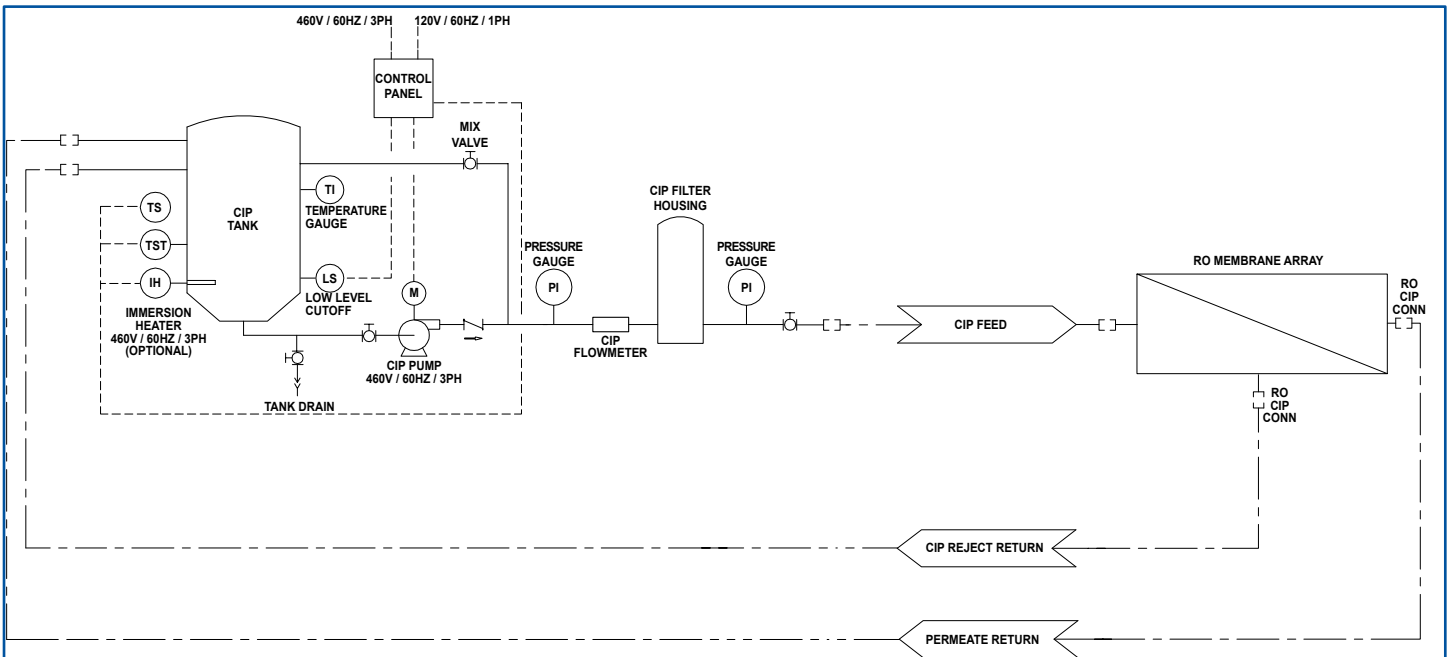
- Variable Frequency Drives (VFD)
- pH Monitor
- Immersion Heater with Adjustable Thermostat (Skid Mount Only)
- UL-508A Rated Electrical Panels
- CPVC Piping
- All Stainless Steel Piping and/or Skid
- Portability for Skid Systems (Hose Kit & Caster Wheels)

Membrane Clean-In-Place (CIP) Systems

SPECIFICATIONS

MODEL	CIP-100	CIP-150	CIP-250	CIP-350	CIP-500	CIP-1000
RO SYSTEM SERVED PRODUCT RANGE (GPM)	10-20	25-35	50-80	100-125	150-200	250-400
MAX CIP INLET FEED FLOW (GPM)	30	45	90	135	200	400
SOLUTION TANK VOLUME (GAL)	100	150	250	350	500	1000
SOLUTION TANK DIMENSIONS (Dia. x Ht.)	24" x 50"	36" x 55"	36" x 79"	42" x 93"	52" x 93"	64" x 113"
PUMP MOTOR (HP)	2.0	3.0	5.0	7.5	10	20
PRE-FILTER HOUSING (MATERIAL / SIZE)	Polypropylene (1) 4.5" x 20"	Polypropylene (2) 4.5" x 20"	Polypropylene (2) 4.5" x 20"	304SS (7) 2.5" x 40"	304SS (12) 2.5" x 40"	304SS (22) 2.5" x 40"
CIP FEED / REJECT RETURN CONNECTION SIZE	1"	1.5"	2"	2"	3"	4"
CIP PERMEATE RETURN CONNECTION SIZE	0.75"	1"	1"	2"	2"	2"
SKID DIMENSIONS (LxWxH)	66" x 30" x 64"	90" x 42" x 66"	90" x 42" x 88"	96" x 46" x 102"	106" x 54" x 102"	150" x 66" x 120"
SHIPPING WEIGHT (LBS)	800	1,100	1,500	1,800	2,000	3,100

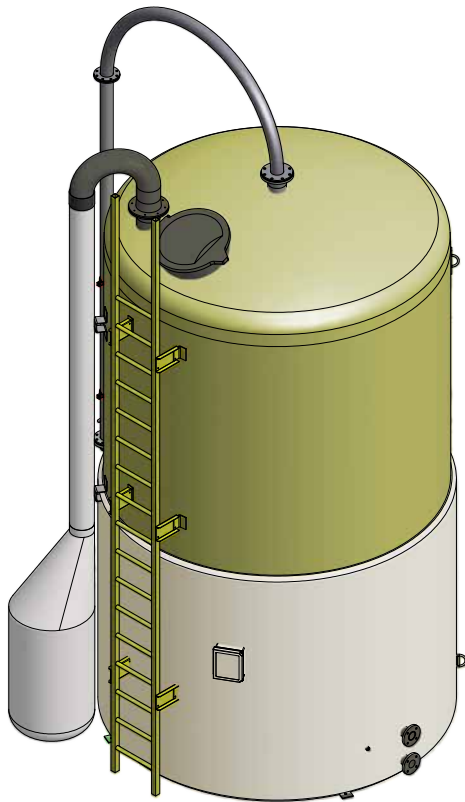
PROCESS FLOW DIAGRAM



Notes

- Dimensions and shipping weights are estimated only. Actual dimensions and weights differ dependant upon the final system design and options selected.
- Standard specifications listed above are based on the skid mounted configuration. The dimensions and weights shown will not apply to the integral mount option.
- The solution tank for the CIP-100 uses a flat-bottomed tank for the skid mounted configuration.
- The solution tanks for all integral mount configurations are flat-bottomed tanks.

'MBM' Series Bulk Brinemaker Silos



Overview

Marlo Bulk Brinemaker Silos are the ideal complement for industrial water softening systems that require a large amount of daily salt consumption for the regeneration process. The corrosion-free design will allow for on-site truckload delivery of sodium chloride salt that is pneumatically conveyed directly into the silo. An automatic liquid level controller will introduce fresh water into the silo to provide for a consistent supply of saturated brine to be subsequently pumped to the water softener system. Numerous sizes and options are available to provide the best fit for your application.

The key advantages for considering a Bulk Brine System are:

- Significant price savings in delivered bulk salt costs vs. bagged salt (40-50% less).
- Reduces the burden on labor force with less handling, monitoring, and injury risk.
- Creates a cleaner area around the water softener with less storage, salt spillage, and packaging waste.

Materials of Construction

- Silo Shell: Fiberglass Reinforced Plastic (FRP)
- Inlet Water Distributor: Sch 80 PVC
- Brine Outlet Distributor: Sch 80 PVC
- Salt Fill Pipe: 304 SS
- Access Ladder: Epoxy Coated Carbon Steel
- Dust Control Filter: Polyester
- Air Vent Pipe: Sch 40 PVC
- Anchor / Lift Lugs: 304 SS

Standard Equipment / Features

- Use for either Granulated or Rock/Solar Salt
- Pneumatic Salt Fill Pipe
- Inlet Water Spray Ring Distributor
- Brine Collection System
- Air Vent Pipe with Dust Control Filter
- Access Ladder Assembly
- Liquid Level Controller
- Automatic Water Refill Valve
- 24" Covered Upper Access Manway
- 24" Covered Lower Cleanout Manway
- Anchor / Lifting Lugs
- Gravel Support Bed

Options / Accessories

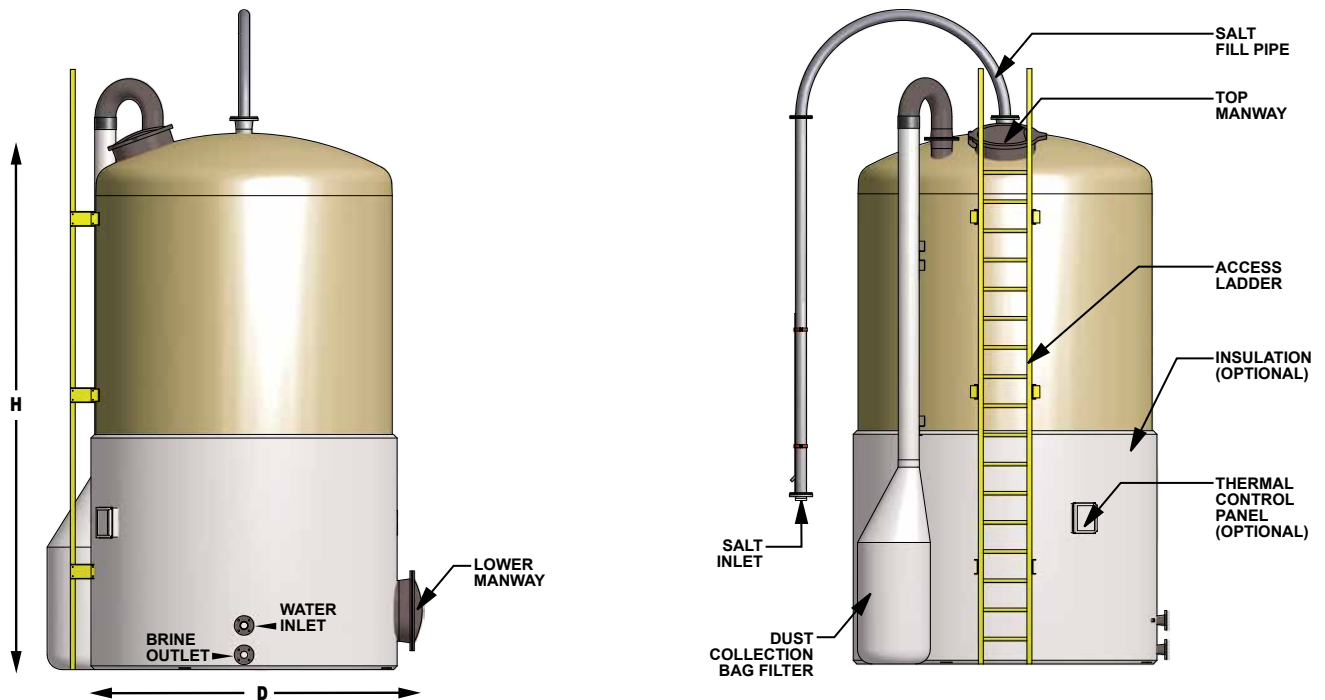
- Freeze Protection System (Insulation & Heat Controls)
- Ladder Safety Cage
- Solid Salt Level Indicator
- FRP Ladder Construction
- Brine Pump & Metering Systems
- Seismic / Wind Load Designs

'MBM' Series Bulk Brinemaker Silos

Specifications

MODEL	MBM-30	MBM-36	MBM-40	MBM-50	MBM-72
TANK DIAMETER (D)	108"	120"	144"	144"	144"
TANK HEIGHT (H) (NOT INCLUDING SALT PIPE)	212"	219"	186"	216"	271"
USABLE DRY SALT STORAGE (TONS)	30	36	40	50	72
EMPTY TANK WEIGHT (LBS.)	2,000	2,400	2,600	3,000	3,800
MAX. GROSS (FILLED) WEIGHT (LBS)	76,000	91,000	106,000	129,000	171,000
INLET/OUTLET CONNECTION SIZE	3" Flange	3" Flange	3" Flange	3" Flange	3" Flange
MAXIMUM BRINE DRAW GRANULATED SALT (GPM)	40	40	50	50	50
MAXIMUM BRINE DRAW ROCK/SOLAR SALT (GPM)	20	20	25	25	25

Dimensions



Notes

- Refer to detailed engineering drawings for more clarity on equipment and connection orientation.
- Tank height shown does not include the salt fill pipe. Additional height will vary. For estimate purposes, figure an additional 72" above the tank height.
- Salt delivery companies may require a minimum size load per order. Typically these are in the 20–25 ton range.
- Concrete support pad to be provided by others. Pad must be designed for a fully loaded tank, soil properties, and freeze/thaw forces.
- Consult factory for more details on support pad construction and silo off-loading and mounting instructions.

'MPS' Series Transfer Pump Skids



Overview

The Marlo 'MPS' Series Transfer Pump Skid is offered to complement our other water treatment equipment to offer you a more integrated system. The standard product platform is designed for general water transfer such as inlet water pressure boosting and RO water transfer from a storage tank.

The skid can be customized to fit other applications including recirculation loops, filter backwash water supply, and liquid brine transfer to water softening systems. A wide variety of equipment options are also available to best suit your project.

All pump skids are furnished completely factory skid mounted, pre-piped, pre-wired, and factory tested for minimal installation time and cost.

Operating Parameters

- 460 VAC, 3-Phase, 60 Hz electrical power (motors)
- 120 VAC, 1-Phase, 60 Hz electrical power (controls)
- 40-50 psig Nominal discharge pressure
- 35-110 0F operating temperature

Materials of Construction

- Pump: 304 stainless steel
- Piping: Sch 80 PVC
- Skid: Epoxy-coated carbon steel

Pump and Motor

- Single-stage, end-suction centrifugal pumps
- TEFC motor, 3450 RPM.

Standard Features

- Duplex pumps for redundancy (2 x 100%)
- Automatic on/off capability
- Pre-wired pump motor starter panel
- Fused power disconnect switch
- NEMA-4 electrical enclosure
- Pump discharge check valves & pressure gauges
- Isolation valves for each pump
- Panel mounted operator lights and switches

Optional Equipment Available

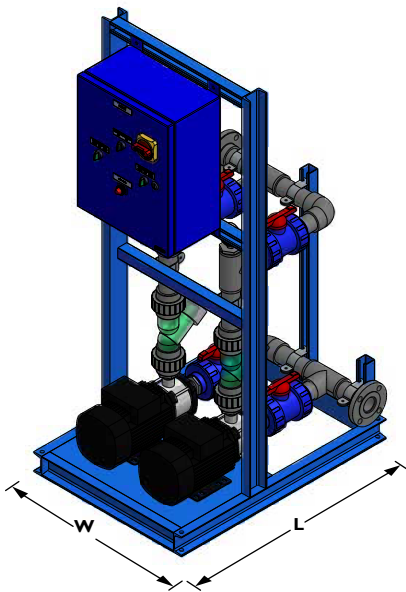
- Variable Frequency Drives (VFD)
- 316 SS and Noryl bodied pumps
- 304/316 Stainless Steel piping
- Automatic Pump Alternator
- Multi-stage pumps for higher discharge pressures
- Pressure and flow transmitters
- UV Sterilizer and post-filter housings
- UL-508A certified panels
- Explosion proof duty pump motors
- Self-priming pump designs

'MPS' Series Transfer Pump Skids

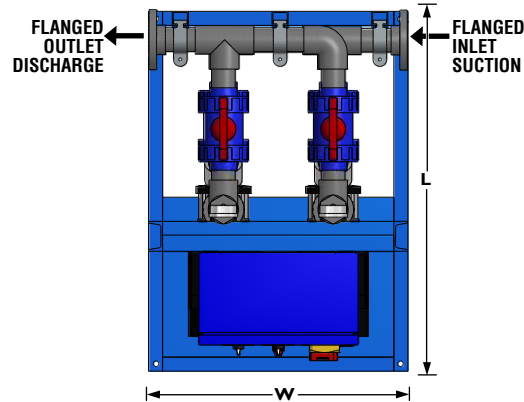
SPECIFICATIONS DUPLEX PUMP SKID

MODEL	FLOW RATE (GPM)	DISCHARGE PRESSURE (psig)	MOTOR (HP)	INLET (INCHES)	OUTLET (INCHES)	DIMENSIONS (LxWxH) (INCHES)	SHIPPING WEIGHT (LBS)
MPS-10	10	40	1	1-1/2	1	32x26x63	490
MPS-20	20	50	1.5	1-1/2	1-1/4	32x26x63	515
MPS-35	35	50	2	2	2	36x26x63	560
MPS-50	50	50	3	3	2	39x28x63	610
MPS-100	100	50	5	4	3	49x34x63	705
MPS-150	150	50	7.5	6	3	56x38x63	1,010
MPS-200	200	50	10	6	4	56x38x63	1,100

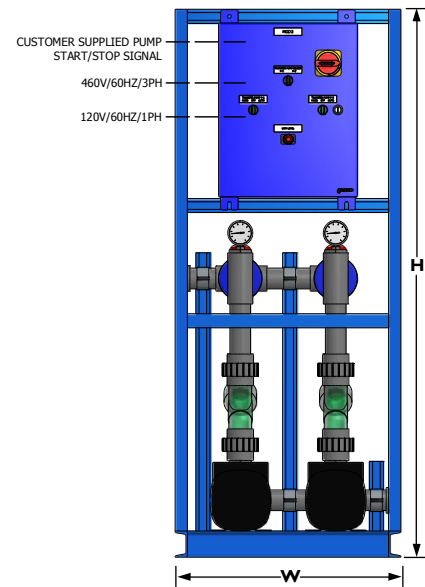
Profile View



Top View



Front View



Notes

1. Flooded suction at the skid inlet connection is required to prevent pump cavitation.
2. The installer is to take the pre-cautions to ensure the system will not be subject to a dead-heading situation (i.e. blocked discharge line) during pump operation.
3. Dimensions and shipping weights are estimate only. Actual dimensions and weights may differ dependent on options selected.
4. Higher flow rate and/or discharge pressures are available. Consult factory.

'MATD' Series Dealkalizer Systems



Overview

The Marlo 'MATD' chloride-cycle dealkalizer system effectively reduces the incoming alkalinity in feed water resulting in lower blowdown rates, lower condensate return corrosion, and a more effective chemical treatment program for your boiler system.

All systems are twin-alternating to provide a continuous supply of dealkalized water. Standard models with treat up to 50-GPM.

Standard Features

- Fiberglass reinforced polyester (FRP) resin tanks
- High capacity, strong-base anion resin in chloride form (Type II)
- Water meter initiated regeneration cycle
- Top-mounted, twin-tank control valve with integral brine injector
- Brine tank assembly with salt shelf and safety overflow valve
- Caustic injection system with metering pump, pump stand, and control panel

Materials of Construction

- Resin Tanks: FRP
- Pump Body: PVC
- Internal Distributor: PVC/ABS
- Brine Tank: Polyethylene
- Pump Stand: Painted carbon steel
- Control Valve Body:
Fleck 9100, Noryl thermoplastic (3/4" and 1")
Fleck 9500, Bronze (1-1/2")

Instrumentation / Controls

- Fleck 'XT' digital display electronic timer
- Resettable water usage totalizer
- Attached turbine-type water meter
- Pulsafeeder Series A+ metering pump
- Pre-wired caustic pump outlet with adjustable relay timer

Operating Parameters

- Feedwater Source: Softened Water (<1 gpg)
- Inlet Pressure: 30-125 psig
- Electrical: 120VAC, 1-Ph, 60 Hz.
- Temperature: 40-100°F

Options Available

- Skid mounted, pre-piped, pre-loaded system
- Alternate ion exchange resins
- Alternate chemical pumps
- 220 VAC/50Hz electrical power

'MATD' Series Dealkalizer Systems

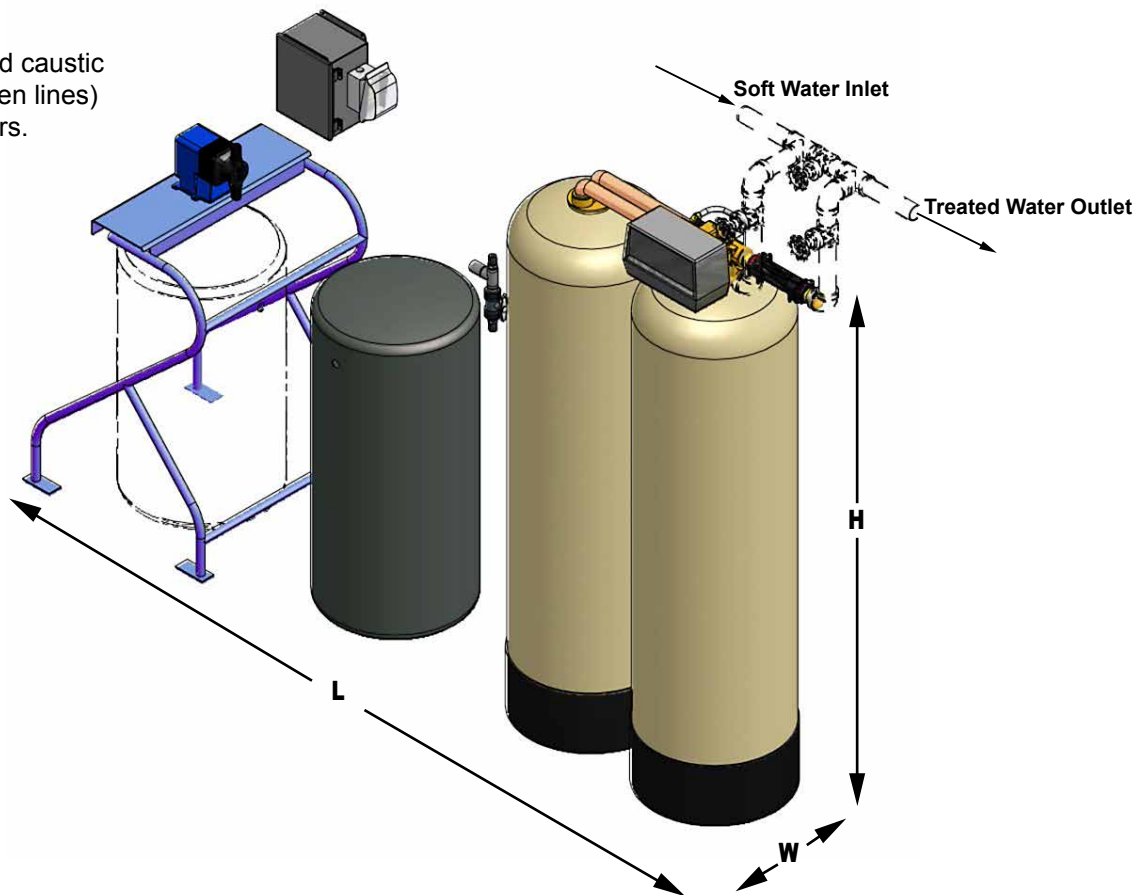
Specifications

MODEL NUMBER	GRAIN CAPACITY ❶	SALT DOSAGE PER REGENERATION	CAUSTIC DOSAGE PER REGENERATION	PIPE & METER SIZE	SERVICE FLOW RATE		BACKWASH FLOW RATE	ANION RESIN PER TANK	TANK SIZES		SALT STORAGE	OVERALL DIMENSIONS (INCHES) ❷			APPROX. SHIPPING WEIGHT	
	GRAINS PER TANK	LBS.	LBS.		GPM				SOFTENER	BRINE		LBS.	LENGTH	WIDTH		HEIGHT
					CONT. ❸	PEAK ❹										
MATD-10-3/4	10,000	5	0.33	3/4	2.5	5	1.1	1	9x48	18x33	300	72	24	56	210	
MATD-20-3/4	20,000	10	0.66	3/4	5	10	2	2	12x52	18x33	300	79	24	60	400	
MATD-30-1	30,000	15	1.00	1	7.5	15	3	3	14x65	18x33	300	84	24	73	625	
MATD-40-1	40,000	20	1.33	1	10	20	3.5	4	16x65	18x40	325	88	24	73	830	
MATD-50-1-1/2	50,000	25	1.65	1.5	12.5	25	5	5	18x65	18x40	325	96	24	75	1150	
MATD-60-1-1/2	60,000	30	2.00	1.5	15	30	6	6	21x62	18x40	325	102	24	72	1270	
MATD-80-1-1/2	80,000	40	2.65	1.5	20	40	8	8	24x72	24x40	550	114	24	82	1640	
MATD-100-1-1/2	100,000	50	3.33	1.5	25	50	12	10	30x72	24x40	550	132	24	82	2230	

Dimensions

NOTE:

Installation piping and caustic drum (shown in broken lines) are provided by others.



Notes

- ❶ Capacity based on 10,000 grains per cubic foot of resin when regenerated with 5 lbs. salt and 0.33 lbs. caustic. Capacity decreases as chloride levels exceed 10% of the total anions.
- ❷ At a pressure loss not exceeding 15-PSI.
- ❸ At a pressure loss not exceeding 25-PSI.
- ❹ Includes space requirements for 50-gallon drum of 50% caustic soda.

'MDAS' Series Dealkalizer Systems



System shown with skid mount and copper piping options.

Overview

The Marlo 'MDAS' Series dealkalizer system offers an efficient alkalinity reduction solution for larger commercial & industrial applications. Dealkalization of boiler feed water reduces system blowdown and helps lower energy and water costs. It also promotes a more effective boiler chemical program and reduces condensate return line corrosion. Pre-engineered designs are available for single and twin tank configurations with numerous custom options available. MDAS systems can also be specially designed for high silica, nitrate, and sulfate removal applications.

Standard Features

- Carbon steel resin tanks with epoxy-lined interior
- Water activated diaphragm style control valves
- Volume and/or time initiated regeneration cycle
- Polyethylene brine tank assembly with injector
- Caustic injection pump with mounting stand
- Chloride form anion exchange resin
- Inlet/Outlet tank sampling valves
- Alkalinity testing kit
- Factory Hydro-tested at 100 psig

Materials of Construction

- Resin Tanks: Carbon steel with Safety Blue exterior paint
- Tank Lining: NSF 61 rated epoxy coating
- Exterior Piping: Galvanized steel pipe & cast iron fittings
- Internal Distributors: Sch 80 PVC/ABS
- Control Valves: Painted cast iron body
- Caustic Pump Wetted End: PVC
- Caustic Pump Stand: Painted carbon steel

Instrumentation / Controls

- Marlo MX-II electronic system controller
- Metered control with bypass for single units
- Alternating metered control for twin units
- NEMA-4X electrical enclosures
- Signet paddle-type flow sensors
- Inlet/Outlet pressure gauges
- Prewired caustic pump panel with adjustable relay timer

Operating Parameters

- Inlet Feedwater: Pre-softened (<1 gpg)
- Inlet Pressure: 30-100 psig
- Electrical: 120 VAC, 1-Ph, 60Hz
- Temperature: 35-110 °F

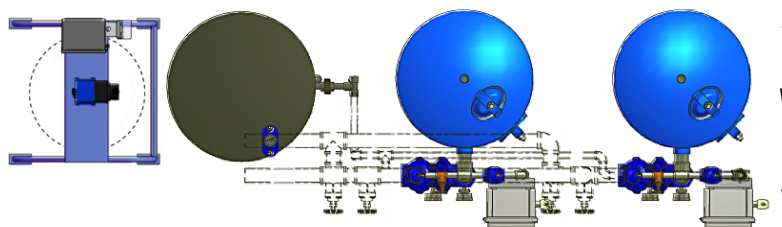
Options Available

- Skid mounted, pre-piped, pre-wired systems
- ASME code stamped resin tanks
- Allen-Bradley PLC systems
- Brine pump systems
- PVC or CPVC exterior piping
- Copper or Stainless steel exterior piping
- Stainless steel internal distributor piping
- Butterfly control valves (air operated)

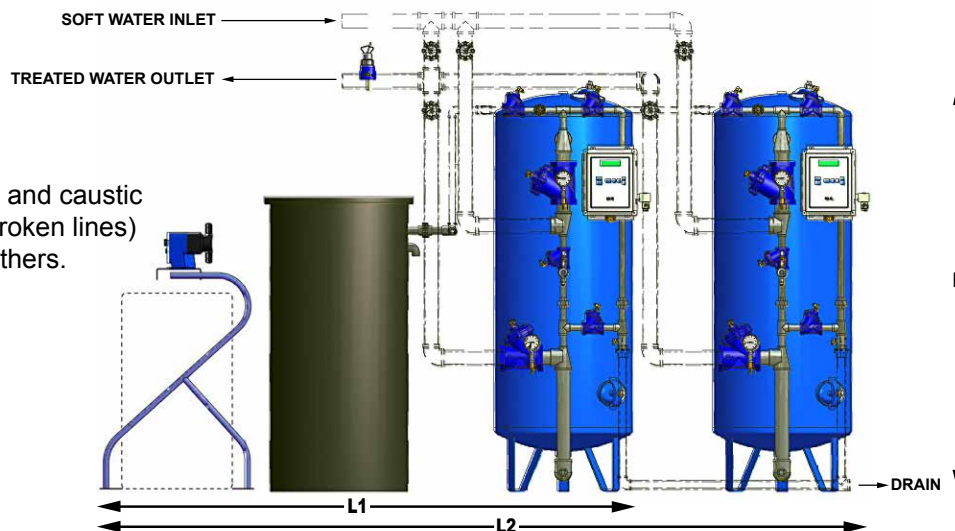
'MDAS' Series Dealkalizer Systems Specifications

MODEL NUMBER	GRAIN CAPACITY ❶	SALT DOSAGE PER REGENERATION	CAUSTIC DOSAGE PER REGENERATION	PIPE SIZE (INCHES)		SERVICE FLOW RATE		BACKWASH FLOW RATE	ANION RESIN PER TANK	TANK SIZES		SALT STORAGE	OVERALL DIMENSIONS (LxWxH, INCHES) ❷		SHIPPING WEIGHT (LBS) ❸	
	GRAINS PER TANK	LBS.	LBS.	SERVICE	DRAIN	CONT.	PEAK			GPM	CU. FT.		SOFTENER	BRINE	LBS.	SINGLE L1
								INCHES	INCHES			INCHES	INCHES	SINGLE		TWIN
MDAS-50-1-1/2	50,000	25	1.65	1-1/2	1	12.5	25	5.5	5	20x54	18x40	325	74x29x68	112x29x68	715	1,325
MDAS-80-1-1/2	80,000	40	2.65	1-1/2	1	20	40	8	8	24x54	24x40	550	84x32x69	126x32x69	970	1,775
MDAS-140-1-1/2	140,000	70	4.60	1-1/2	1	35	70	12	14	30x60	24x50	700	90x36x79	138x38x79	1,625	3,045
MDAS-200-2	200,000	100	6.60	2	1	50	100	18	20	36x60	24x50	700	96x48x84	150x48x84	2,335	4,440
MDAS-250-2	250,000	125	8.25	2	1	65	125	18	25	36x72	24x60	850	96x48x96	150x48x96	2,690	5,075
MDAS-330-2-1/2	330,000	165	10.9	2-1/2	1-1/2	85	165	25	33	42x72	24x60	850	102x55x100	162x55x100	3,360	6,415
MDAS-440-2-1/2	440,000	210	13.85	2-1/2	1-1/2	105	210	30	44	48x72	30x60	1100	114x62x107	182x62x107	5,570	10,470
MDAS-550-3	550,000	275	18.15	3	1-1/2	140	275	40	55	54x72	39x60	1900	129x70x112	203x70x112	6,715	12,560
MDAS-680-3	680,000	340	22.45	3	2	170	340	50	68	60x72	39x60	1900	105x76x118	215x76x118	8,160	15,450
MDAS-830-4	830,000	415	27.40	4	2	210	420	60	83	66x72	50x60	2300	152x86x120	238x86x120	10,230	19,510
MDAS-980-4	980,000	490	32.35	4	2	245	490	70	98	72x72	50x60	2300	158x92x122	250x92x122	11,480	21,870

Top View



Front View



NOTE:

Installation piping and caustic drum (shown in broken lines) are provided by others.

Notes

- ❶ Capacity based on 10,000 grains per cubic foot of resin when regenerated with 5 lbs. salt and 0.33 lbs. caustic. Capacity decreases as chloride levels exceed 10% of the total anions.
- ❷ At pressure loss not exceeding 10 psi.
- ❸ At pressure loss not exceeding 20 psi.
- ❹ Dimensions are estimate only. Actual dimensions may vary based on job-site space limits and piping layout. Allow a minimum of 24" above height dimension for resin loading. Use of ASME rated tanks may add up to 12" of tank height.
- ❺ Shipping weights are estimate only. Weights include resin and support gravel, which are added to the tanks after installation.

'MCP' Series Condensate Polisher Systems



Overview

The Marlo 'MCP' Series condensate polisher system offers a sound solution for removing impurities such as iron, copper, and hardness from returned steam condensate resulting in improved boiler feedwater quality and lower operating costs. Using sodium-cycle, cation exchange resin, they operate similar to water softeners requiring only salt for regeneration material. The system is fully automatic as standard and all valves and controls are completely factory pre-piped, pre-wired, and pre-tested for minimal installation time and cost. Multiple tank systems in alternating or parallel configurations, to achieve higher service flow or continuous supply of treated condensate are also available.

Standard Features

- 304 Stainless steel resin tanks
- Air-Operated butterfly style control valves
- Automatic timer initiated regeneration cycle
- Polyethylene brine tank assembly
- High capacity, High cross-link exchange resin
- Cold water backwash/regeneration supply water
- Automatic raw water bypass valve
- Inlet/Outlet tank sampling valves

Materials of Construction

- Resin Tanks: 304SS
- Exterior Piping: 304SS
- Internal Distributors: 304SS
- Control Valve Body: Cast Iron

Controls / Instrumentation

- Allen-Bradley PLC controller
- Simplex, alternating or parallel flow control
- NEMA-4X electrical enclosure
- Inlet/Outlet tank pressure gauges

Operating Parameters

- Inlet Pressure: 30-100 psig
- Electrical: 120VAC, 1-Ph, 60 Hz.
- Temperature: 100-230°F
- Air Source: 80-100 psig (Dry, oil-free)

Available Options

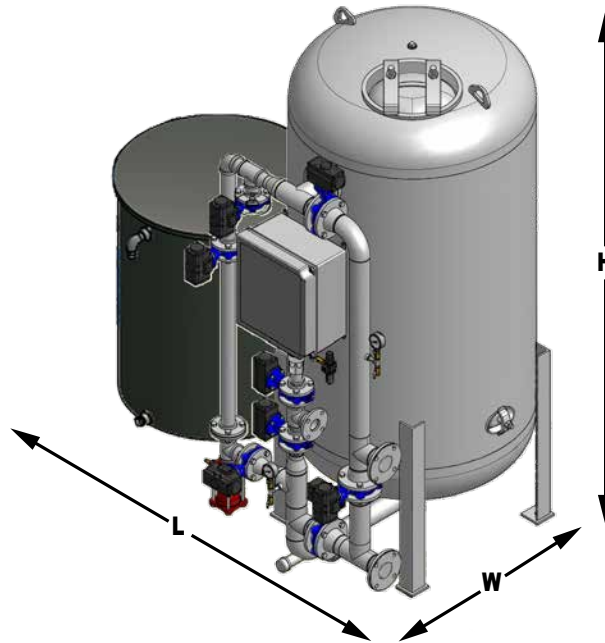
- ASME rated resin tanks
- 316 stainless steel construction
- Sub-surface wash distributor
- Water meter and totalizer
- Differential pressure switch
- Brine pump systems
- Alternate ion exchange resins
- Manually operated design
- Skid mount design for multi-tanks

'MCP' Series Condensate Polisher Systems

Specifications

MODEL NUMBER	CAPACITY (Grains) SALT DOSAGE (LBS.) ❶	FLOW RATES (PER TANK)			PIPE SIZE		RESIN CU. FT.	TANK SIZES		OVERALL DIMENSIONS (LxWxH, INCHES) ❺	SHIPPING WEIGHT (LBS.) ❻
		SERVICE		BACKWASH	SERVICE	DRAIN		SOFTENER	BRINE ❷		
		CONT. GPM ❷	PEAK GPM ❸	GPM	INCHES	INCHES		INCHES	INCHES		
MCP-150-2	150,000 75	45	65	10	2	1	5	20x54	24x50	50x33x72	830
MCP-210-2	210,000 105	60	95	15	2	1	7	24x54	24x50	54x37x74	1,050
MCP-300-2	300,000 150	100	150	20	2	1	10	30x54	24x60	60x45x77	1,570
MCP-600-3	600,000 300	140	210	30	3	1-1/2	20	36x60	39x60	81x53x90	2,790
MCP-900-3	900,000 450	190	285	45	3	1-1/2	30	42x60	42x60	90x60x94	3,860
MCP-1200-3	1,200,000 600	250	375	60	3	2	40	48x60	50x60	120x72x99	6,250
MCP-1500-4	1,500,000 750	315	475	80	4	2	50	54x60	66x46	140x78x101	7,530
MCP-1800-4	1,800,000 900	390	585	100	4	3	60	60x60	72x46	152x84x102	8,380
MCP-2700-6	2,700,000 1,350	565	850	140	6	3	90	72x60	82x60	174x96x107	12,300

Dimensions



Notes

- ❶ Salt dosage equal to 15 lbs. per cu. ft. resin for maximum exchange capacity.
- ❷ At a pressure drop not exceeding 15 psig.
- ❸ At a pressure drop not exceeding 25 psig.
- ❹ Brine tanks designed for a salt storage of at least 4 regeneration cycles.
- ❺ Dimensions are estimate only. Actual dimensions may vary depending on options selected.
- ❻ Shipping weights are estimate only. Weights include resin and gravel.

MX-III Electronic Controller



The MX-III Water Conditioning Controller simplifies installation and maximizes performance for commercial & industrial water softeners, backwashable media filters, and dealkalizer systems. The controller, coupled with a rotary pilot stager, is designed to be used on equipment where external diaphragm valve nests are incorporated.

Numerous system types and customized configurations can be used – all with the same controller making it truly universal. Up to four (4) controllers can be networked together using low-voltage communication cables thereby eliminating the need for an electrician to install. Perfect for both new equipment and retrofit of older equipment in need of an upgraded control system.

Key Features

- Large, 16-character, 2-line backlit LCD display
- UL-508A certified control panel
- NEMA-4X rated fiberglass enclosure
- Large, durable membrane switch keypad
- Integral, pre-wired stager and override solenoid
- Timer or remote signal regeneration initiation
- Timed auxiliary output for brine reclaim or chemical pump operation
- LED light indicates system status or alarm
- English/metric units
- Calendar override regeneration
- Display of time of day, flow rate, batch volume remaining, peak flow, totalizer, valve position, and hours since last regeneration
- Can be used with most third party 'open collector' type water meters

System Configuration

Twenty (20) unique systems are available in the MX-III Controller including:

- Single Tank
- Twin Tank Alternating
- Multi-Tank Parallel (2-4 Tanks)
- Multi-Tank Progressive Flow (2-4 Tanks)
- Multi-Tank Sequential (2-4 Tanks)

Electrical Rating

Available in 120/220 VAC, 50/60 Hz Input, 24 VAC Output

Regeneration Types

- Time Clock Delayed
- Remote Signal Initiation (Meter/DP Switch)
- Meter Immediate Delayed
- Manual Initiation



QUALITY PRODUCTS FOR QUALITY WATER