MARLO INCORPORATED®

MFS Series

INDUSTRIAL PACKAGED WATER FILTERS

Triple System With Skid Mount, Prepipe and Prewire Option and Sch 80 PVC Headers

Quality Products for Quality Water

MARLO INCORPORATED®

MFS Series . . .

MARLO STANDARD TWIN PARALLEL FILTER SYSTEM

Product Overview and Application

Marlo's reputation for designing high quality water filtration equipment covers a wide variety of Commercial and Industrial applications. A broad range of filter media and component options ensure you of the right unit to fit your exact needs. Whether your project requires a filter for turbidity removal, iron removal, or taste and odor control, select a Marlo unit for years of dependable, trouble-free operation.

Turbidity Removal

'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. Multi-Media has the highest service flow rates available in a pressure type filter and suitable for final filtration of most city water and well water supplies. Not recommended for primary filtration of extremely high turbidity applications.

Iron Removal

'MGA' Iron Removal Filters - Filter system capable of reducing iron, manganese, and hydrogen sulfide using manganese greensand filter media. Manganese greensand is formulated from a glauconite coated with varying types of manganese oxides. Soluble iron, manganese, and hydrogen sulfide are then oxidized and precipitated by contact with these oxides. Precipitates are then filtered and removed by the backwash step. Oxidative capacity of the media must be restored through either periodic regeneration with a weak potassium permanganate solution or a continuous chemical feed of potassium permanganate, chlorine, or a combination of both. Requires an inlet pH of 6.8 - 8.0 for effective operation.

Taste and Odor Removal

'ACA' Activated Carbon Filters - Granular Activated Carbon (GAC) is designed for the reduction of tastes, odors, and dissolved organic material from municipal and industrial water supplies. The most common application is the removal of free chlorine from water supplies as pre-treatment to other water treatment systems such as reverse osmosis. Inlet water to activated carbon systems should be relatively free of oil, turbidity, and iron for optimal performance. Numerous types of activated carbon are available for specialty applications including chloramine removal.

. . . Designed For Performance

Standard Features

Tank Construction

All Marlo water filters are fabricated using high quality welded carbon steel pressure vessels designed for 100 psig working pressure and tested at 150 psig. All tank interiors are sand-blasted and lined with cold-set epoxy coating at a 10-12 DFT. All tank exteriors are sand-blasted and sprayed with a corrosion-resistant red oxide primer finish at a 2-3 DFT. An exterior finish paint in “Safety Blue” is available as an option.

Filter vessels are supported by steel strap legs welded to the bottom head. Angle iron legs with support pads are provided on vessels 48” diameter and larger. Vessel access openings include 4” x 6” handhole in both the upper head and lower sideshell for vessels 30” diameter and smaller. Tank diameters 36” - 72” will have a 11” x 15” upper head manhole and tank diameters 78” - 120” will have a 12” x 16” upper head manhole.

Flow Distribution

All Marlo filters are provided with a pre-piped internal distribution system designed for maximum service flow with efficient utilization of the entire media bed and prevention of channeling. All distributors are fabricated of corrosion-free PVC for long, reliable field service. A washed layer of gravel covers the lower distributor for proper media bed support and backwash cycle.

Face-Piping and Automatic Valves

Each filter includes a pre-piped, external valve manifold for automatic operation. For filters 72” and smaller, the manifold is constructed of Sch 40 galvanized steel pipe and Class 150 malleable threaded galvanized steel fittings. Automatic valves are cast-iron bodied, normally open diaphragm type.

For filters 78” diameter and larger, the manifold is constructed of Sch 80 PVC pipe and fittings. Automatic valves are cast-iron bodied butterfly type with double-acting pneumatic actuators. All automatic valve designs offer a slow open/close action with minimal restriction for reduction of “water hammer”.

Automatic Cycle Controller

The standard method of control for filter operation is accomplished through the use of a pilot-stager assembly for automatic valve actuation. It is pre-wired in a NEMA-12 electrical enclosure with an integral timer controller for backwash initiation. A manual override feature allows immediate backwash rather than a predetermined schedule.

Backwash Flow Controller

An automatic backwash flow controller is provided for maintaining the proper backwash flow rate over wide variations in operating pressure. It utilizes a variable orifice concept requiring no field adjustments.

Optional Equipment

Differential Pressure Switch

For automatic initiation of the backwash cycle when the filter bed becomes compacted or plugged with filtered material. This method of backwash initiation ensures maximum efficiency regardless of changing influent conditions.

ASME Code Construction

The media tank is available fabricated in accordance with ASME code, certified, and stamped with standard working pressure rating of 100 psig. Higher pressure ratings are also available.

Sch 80 PVC Valve Manifolds

Exterior filter piping and fittings are supplied with Sch 80 PVC materials in place of standard steel piping for filters 72” diameter and smaller. Cast iron diaphragm valve bodies are replaced with Noryl thermoplastic for filters with service pipe size 3-inch and smaller. Cast iron bodied butterfly valves with double-acting pneumatic actuators are used for filters with service pipe size 4-inch and larger with the PVC option.

Skid Mount Option

Filter tanks are mounted on a welded structural carbon steel skid with pre-piped interconnecting headers and isolation valves for single-point inlet, outlet, and drain field connections. All electrical controls are pre-wired requiring a single field power connection.

- **Separate source backwash valves.**
- **Inlet/outlet pressure gauges and sample valves.**
- **Manual operated backwash cycle.**
- **Chemical injection pre-treatment equipment.**
- **Media regenerant systems for iron filters.**
- **Air-Scour backwash system.**
- **Steam or hot water sanitizable carbon filters.**
- **Custom tank linings and coatings.**
- **304 or 316 stainless steel pressure vessels.**
- **304 or 316 stainless steel external face-piping.**
- **304 or 316 stainless steel internal distributor piping.**
- **Programmable logic controller (PLC) electrical packages.**
- **Specialty applications using Filter-Ag, Birm, and Calcite medias.**

SPECIFICATIONS — MULTI-MEDIA FILTERS

Catalog Number	Service Flow Rate (GPM)				Backwash Flow Rate	Service Pipe Size	Tank Size (Dia. x SS)	Filter Media	Floor Space	Overall Height
	Normal		Peak							
	Flow	Δ P	Flow	Δ P	GPM	Inches	Inches	CU. FT.	Inches	Inches
MID-20	20	4	45	7	35	1.5	20 X 54	5	21 X 30	72
MID-24	30	5	60	9	50	1.5	24 X 54	8	25 X 34	73
MID-30	50	4	100	7	75	2	30 X 54	12	31 X 40	76
MID-36	70	4	140	7	110	2.5	36 X 60	18	37 X 48	84
MID-42	100	5	200	8	145	2.5	42 X 60	24	43 X 54	88
MID-48	125	5	250	9	190	3	48 X 60	32	49 X 62	95
MID-54	160	5	320	10	240	3	54 X 60	40	55 X 70	97
MID-60	200	6	400	12	300	3	60 X 60	50	61 X 76	103
MID-66	240	5	480	8	360	4	66 X 60	60	67 X 86	105
MID-72	285	5	570	9	425	4	72 X 60	70	73 X 92	107
MID-78	330	4	660	10	500	6	78 X 60	85	79 X 104	100
MID-84	385	4	770	10	580	6	84 X 60	95	85 X 110	102
MID-90	440	4	880	10	665	6	90 X 60	110	91 X 116	106
MID-96	500	4	1000	10	750	6	96 X 60	125	97 X 122	110
MID-102	570	4	1140	10	850	6	102 X 60	145	103 X 128	111
MID-108	640	4	1280	10	950	8	108 X 60	160	109 X 136	112
MID-120	800	4	1600	10	1175	8	120 X 60	200	121 X 148	115

SPECIFICATIONS — ACTIVATED CARBON FILTERS

Catalog Number	Service Flow Rate (GPM)				Backwash Flow Rate	Service Pipe Size	Tank Size (Dia. x SS)	Filter Media	Floor Space	Overall Height
	Normal		Peak							
	Flow	Δ P	Flow	Δ P	GPM	Inches	Inches	CU. FT.	Inches	Inches
ACA-20	10	1	20	2	20	1	20 X 54	5	21 X 30	72
ACA-24	15	2	30	3	30	1.25	24 X 54	8	25 X 34	73
ACA-30	25	3	50	4	50	1.5	30 X 54	12	31 X 40	76
ACA-36	35	2	70	4	70	2	36 X 60	18	37 X 48	84
ACA-42	50	3	100	5	100	2	42 X 60	24	43 X 54	88
ACA-48	65	1	125	2	125	3	48 X 60	32	49 X 62	95
ACA-54	80	2	160	3	160	3	54 X 60	40	55 X 70	97
ACA-60	100	2	200	4	200	3	60 X 60	50	61 X 76	103
ACA-66	120	2	240	4	240	3	66 X 60	60	67 X 82	105
ACA-72	140	2	285	4	285	3	72 X 60	70	73 X 88	107
ACA-78	165	3	330	5	330	4	78 X 60	85	79 X 98	100
ACA-84	195	3	385	5	385	4	84 X 60	95	85 X 104	102
ACA-90	220	3	440	5	440	4	90 X 60	110	91 X 110	106
ACA-96	250	2	500	4	500	6	96 X 60	125	96 X 122	110
ACA-102	285	2	570	4	570	6	102 X 60	145	103 X 128	111
ACA-108	320	2	640	4	640	6	108 X 60	160	109 X 134	112
ACA-120	400	2	800	4	800	6	120 X 60	200	121 X 146	115

SPECIFICATIONS — IRON REMOVAL FILTERS

Catalog Number	Service Flow Rate (GPM)				Backwash Flow Rate	Service Pipe Size	Tank Size (Dia. x SS)	Filter Media	Floor Space	Overall Height
	Normal		Peak							
	Flow	Δ P	Flow	Δ P	GPM	Inches	Inches	CU. FT.	Inches	Inches
MGA-20	10	3	15	5	20	1	20 X 54	5	21 X 30	72
MGA-24	15	5	30	7	30	1.25	24 X 54	8	25 X 34	73
MGA-30	20	3	40	6	50	1.5	30 X 54	12	31 X 40	76
MGA-36	30	2	60	4	70	2	36 X 60	18	37 X 48	84
MGA-42	40	5	80	9	100	2	42 X 60	24	43 X 54	88
MGA-48	50	3	100	5	125	3	48 X 60	32	49 X 62	95
MGA-54	65	4	130	6	160	3	54 X 60	40	55 X 70	97
MGA-60	80	4	160	7	200	3	60 X 60	50	61 X 76	103
MGA-66	95	4	190	7	240	3	66 X 60	60	67 X 82	105
MGA-72	115	5	230	9	285	3	72 X 60	70	73 X 88	107
MGA-78	135	4	270	7	330	4	78 X 60	85	79 X 98	100
MGA-84	150	4	300	7	385	4	84 X 60	95	85 X 104	102
MGA-90	175	4	350	7	440	4	90 X 60	110	91 X 110	106
MGA-96	200	3	400	5	500	6	96 X 60	125	96 X 122	110
MGA-102	225	3	450	5	570	6	102 X 60	145	103 X 128	111
MGA-108	250	3	500	5	640	6	108 X 60	160	109 X 134	112
MGA-120	315	3	630	5	800	6	120 X 60	200	121 X 146	115

APPLICATION DATA:

1. Operating Pressure: 30 - 100 psig
2. Operating Temperature: 40 - 110ºF
3. Electrical Requirement: 120VAC, 1-phase, 60 Hz
4. Allow 24" height clearance for media loading
5. ASME constructed tanks add additional height (call factory)
6. Pressure drop (ΔP) ratings are for clean filter beds at 55ºF

QUALITY ASSURANCE

All MARLO units are engineered and thoroughly tested to provide years of trouble-free performance with a minimum of maintenance. All components are inspected, tested and warranted in writing.

MARLO INCORPORATED ®

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