



DIAMOND

Water Conditioning

Pre-engineered Industrial Water Filter Systems



Pictured above is a Model DIF-30-AC twin system with optional skid mounting

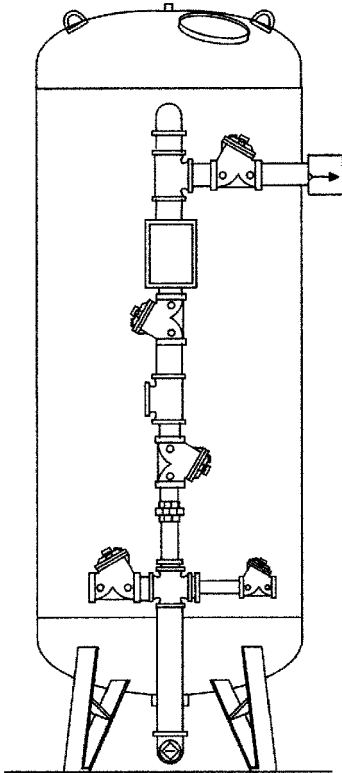
DIF Series

Manufacturers Of Energy - Saving Water Conditioning Equipment
Since 1932



DIAMOND Water Conditioning

Standard Features



Design Criteria- Diamond Water systems are an integrated system design using the most reliable and serviceable components on the market today. All filters are provided with a high quality media that offers the filterability, durability and low pressure drop required by a wide range of operating conditions and applications. The standard PVC lower distributor system provides corrosion resistant, trouble free service, total media bed utilization, even service flow and proper backwashing. A filter gravel support bed covers the lower distributor system to prevent intrusion of media and provide even backwashing.

Media Tanks- Diamond Water pressure vessels are constructed of welded carbon steel with a cold epoxy lining and primed exterior as standard. The vessels are rated for 100 psi working pressure and supported by steel strap legs welded to the bottom head. Vessels 48" and larger are provided with angle iron legs. A 4" x 6" hand hole in both the upper head and lower side shell are provided on 20", 24" and 30" diameter vessels while an 11" x 15" manway in the upper head is provided on 36" and larger diameter vessels.

Controller- Diamond Water standard controllers combine a pilot stager with a time clock, mounted and pre-wired in a NEMA rated enclosure to initiate a backwash or regeneration. Cycle times are programmable to accommodate a wide range of applications. Push button and manual initiation is provided as standard. Pilot staggers are pre-tubed to the diaphragm valves at the factory. A ball valve and y-strainer are standard on the inlet supply to the pilot stager.

Control Valves- Diamond Water systems utilize 'Y' pattern diaphragm valves, arranged in a valve nest, for control of the water flow through the system. The individual valves are operated by a pilot stager in the controller using either hydraulic or pneumatic pressure for a control medium. Valves are constructed of cast iron with rubber, stainless steel and brass internals. A pressure compensating drain line flow control is installed on each system to regulate the backwash flow over a wide range of operating pressures.

Controller Options

Pressure Differential Switch- With this option, a pressure differential switch is used to initiate the backwash cycle of the filter system. When the switch senses a differential between the inlet and outlet pressure of the filter system, a backwash is initiated. The switch is set at a 10 psig differential at the factory, however, it is field adjustable. A single pressure differential switch is typically used on multi-tank filter systems with the units in the system backwashing sequentially. This method of backwash initiation ensures maximum efficiency and service flow of the filter system regardless of changing water conditions.

Seperate Source Backwash- Diamond Water filter systems can be designed to backwash with a clean, separate source of water for applications where the raw, untreated water will not provide the backwash required to properly clean the media bed.

Additional System Options

- A.S.M.E. Code
 - Vessel Linings
 - Paint
 - Custom
 - PVC Piping
 - Mutiple units
 - Turn Key
- Stamped and certified
 - Hot dipped galvanized inside and out, various epoxy linings - Air cured or baked
 - Various enamel and epoxy finish coatings
 - High temperature and pressure applications
 - Utilize Sch. 80 PVC in place of the standard galvanized steel (Add plastic diaphragm valves and a NEMA 4X fiberglass controller enclosure for a non-corrosive control package).
 - Twin and triple systems provide additional service flow and/or continuous filtered water at a lower cost
 - Skid mounting of all units in the system, along with pre-piping and pre-wiring eliminates mistakes, reduces installation cost and time and simplifies start-up.

We Put The Stamp Of Quality On Everything We Do!

Filter Application Guide

AC - Activated Carbon A granular activated carbon providing an excellent filtration medium, having a high density with a balanced pore-structure for more efficient absorption. The advantages of Activated Carbon are a large surface area resulting in high capacity and efficiency; taste, odor and color removal from water with suspended matter present and a high carbon-low ash content. Activated Carbon will impart a "polish" to the filtered water.

Excellent Quality - Can be used for organic removal, low flow provides low pressure drop, maximum quality and useful service life, maximum time between backwashing even with turbid water.

High Quality - Should not be used for organic removal, medium flow provides acceptable pressure drops, good water quality and reasonable service life, reasonable time between backwashing with medium turbid water.

Utility Quality - Not to be used for organic removal - chlorine removal only, high flow provides higher pressure drops, reasonable time between backwashing with low turbidity.

AG - Filter Ag A non-hydrous silicon dioxide media used for turbidity removal. Irregular surface characteristics afford maximum removal of suspended matter throughout the filter bed. The advantages of Filter Ag over more common granular filter media are reduced pressure loss, lightweight requires lower backwash rates and reduced backwash water. Filter Ag typically removes the normal suspended solids, down to the 20-40 micron range.

Excellent Quality - Use on highly turbid water, low flow provides low pressure drops, increased time between backwashing.

High Quality - Use on moderately turbid water, medium service flow provides acceptable pressure drops, reasonable time between backwashing.

Utility Quality - Use on low turbidity water, high flow provides increased pressure drops, minimal time between backwashing, finely divided turbidity must be coagulated before filtration.

AN - Calcite (Acid Neutralizer) A crushed and screened white marble media used to neutralize acidic or low pH water. Acidic waters, on contact with Calcite, slowly dissolve the calcium carbonate media to raise the pH. The sacrificial media will have to be periodically added as it dissolves. Calcite increases hardness and a water softener may have to be added after the neutralizing filter.

Excellent Quality - Low flow maximizes media and water contact time providing best pH elevation, lowest pressure drop, longest time between backwashing even with high turbidity water.

High Quality - Medium flow provides good pH elevation, pressure drop is acceptable, time between backwashing is reasonable with moderately turbid water.

Utility Quality - High flow provides some pH elevation, high pressure drop, time between backwashing is short even with low turbidity water, finely divides turbidity should be coagulated before filtration.

MG - Manganese Greensand Manganese Greensand is formulated from a glauconite greensand, capable of removing iron, manganese and hydrogen sulfide from water through oxidation and filtration. Oxidation can take place on the media with filtration of the precipitate by the media bed. This method requires periodic regeneration of the media with a potassium permanganate solution (KMnO₄). Injection of a high oxidant, such as chlorine before the filter, will precipitate the contaminant while the media bed provides the filtration. This method requires only periodic backwashing of the media. Effective iron, as well as hydrogen sulfide, removal within a pH range of 6.2 - 8.5. No harmful effects from chlorine feed and low attrition loss.

Excellent Quality - Low flow provides effluent iron that is less than the minimum staining level on influent water that is less than 5 ppm, low pressure drop, maximum time between backwashing even on water with high turbidity in addition to the iron.

High Quality - Medium flow provides effluent iron that is near staining level on influent water that is less than 5 ppm, acceptable pressure drop, reasonable time between backwashing on water with moderate turbidity.

Utility Quality - High flow provides high iron leakage, typically followed by a water softener for additional filtration, high pressure drop, reasonable time between backwashing if turbidity is low.

ML - Multi-layer A unique blend of layered and graded gravels used for high flow and high turbidity applications. Design allows for filtration to take place throughout the entire media bed as opposed to standard filters where actual filtration takes place in the top 6-8 inches of the media bed. The various layers of gravel remain separated during backwashing due to the difference in specific gravity and weight of the various gravels. Filtration will range from 10 - 20 micron depending upon service flow. Backwashing should take place when a 10 psi pressure drop is seen between the inlet and outlet pressure.

Excellent Quality - Low flow provides maximum effluent quality and time between backwashing, low pressure drop enables use on high turbidity waters.

High Quality - Medium flow provides good quality water and reasonable pressure drop on water with moderate turbidity.

Utility Quality - High flow provides good quality water when influent water is low in turbidity, high pressure drop reduces time between backwashing. Finely divided turbidity should be coagulated before filtration.

NOTES:

MG - Manganese Greensand Filters

1. When the Hydrogen Sulfide in the influent water exceeds 2 PPM, a chemical feed system is recommended. Injection of a high oxidant should be used such as chlorine or potassium permanganate.
2. A softener is recommended after a Manganese Greensand filter to remove Manganese if Hydrogen Sulfide is also present.
3. The capacity of Manganese Greensand for dissolved iron is 10,000 PPM per cubic foot. If Hydrogen Sulfide is also present, reduce the capacity to 6,000 PPM per cubic foot. This is applicable to "batch" or intermittent regenerated units.
4. Manganese Greensand will provide 30 micron filtration when operated using Excellent Quality service flows. When operated using High or Utility service flows, 40 micron filtration can be expected.
5. Maximum inlet water temperature is 80°F.

AN - Acid Neutralizing Filters

1. Filters using Calcite only work best when the alkalinity is less than 150 PPM. Consult the factory if the influent water alkalinity is higher.
2. Calcite filters will provide 30 micron filtration when operated using Excellent Quality service flows. When operated using High or Utility Quality service flows, 40 micron filtration can be expected.

DIF Series Specifications

Model Number	Service Flow Rate						Backwash Flow Rate (gpm)	Pipe Size (in.)	Tank Size (in.)	Media Quantity (cu. ft.)	Foot Print L X W (in.)	Height (in.)	Shipping Weight (lbs.)
	Excellent		High		Utility								
	Flow	Pd	Flow	Pd	Flow	Pd							
DIF-20-AC	10	1	14	2	18	3	20	1	20x54	5	21x30	72	485
DIF-24-AC	15	2	20	3	30	6	30	1 1/2	24x54	8	25x34	73	650
DIF-30-AC	21	3	30	4	40	7	45	1 1/2	30x54	12	31x40	76	1040
DIF-36-AC	30	2	42	4	60	7	70	2	36x60	18	37x48	89	1605
DIF-42-AC	40	3	60	6	80	9	90	2	42x60	24	43x54	94	2085
DIF-48-AC	50	1	75	2	105	3	115	3	48x60	32	49x62	95	3080
DIF-54-AC	65	2	95	3	130	5	150	3	54x60	40	55x70	97	3835
DIF-60-AC	80	2	120	4	160	7	190	3	60x60	50	61x76	103	4870
DIF-72-AC	115	3	170	7	230	11	270	3	72x60	75	73x88	107	9825
DIF-20-AG	12	1	17	3	24	5	20	1	20x54	5	21x30	72	495
DIF-24-AG	17	3	25	5	32	8	30	1 1/2	24x54	8	25x34	73	670
DIF-30-AG	27	4	38	6	50	9	45	1 1/2	30x54	12	31x40	76	1065
DIF-36-AG	36	3	54	6	72	10	70	2	36x60	18	37x48	89	1695
DIF-42-AG	50	5	73	9	98	14	90	2	42x60	24	43x54	94	2135
DIF-48-AG	64	2	95	3	128	5	115	3	48x60	32	49x62	95	3145
DIF-54-AG	82	2	120	4	160	7	150	3	54x60	40	55x70	97	3885
DIF-60-AG	100	3	150	6	200	9	190	3	60x60	50	61x76	103	4970
DIF-72-AG	142	4	212	10	285	16	270	3	72x60	75	73x88	107	9195
DIF-20-AN	8	1	11	2	14	3	25	1	20x54	5	21x30	72	870
DIF-24-AN	10	1	15	2	20	4	35	1 1/2	24x54	8	25x34	73	1270
DIF-30-AN	16	2	23	4	30	6	60	1 1/2	30x54	12	31x40	76	1965
DIF-36-AN	22	1	34	3	44	5	85	2	36x60	18	37x48	89	2990
DIF-42-AN	30	2	45	4	60	7	115	2	42x60	24	43x54	94	3935
DIF-48-AN	40	1	59	2	77	3	150	3	48x60	32	49x62	95	5555
DIF-54-AN	50	1	74	2	100	4	190	3	54x60	40	55x70	97	6885
DIF-60-AN	60	1	90	3	120	5	230	3	60x60	50	61x76	103	8725
DIF-20-MG	7	3	11	6	15	8	20	1	20x54	5	21x30	72	800
DIF-24-MG	10	5	16	7	22	10	30	1 1/2	24x54	8	25x34	73	1155
DIF-30-MG	15	3	25	6	34	9	45	1 1/2	30x54	12	31x40	76	1795
DIF-36-MG	21	2	35	4	49	6	70	2	36x60	18	37x48	89	2740
DIF-42-MG	29	5	48	9	67	13	90	2	42x60	24	43x54	94	3600
DIF-48-MG	38	3	63	5	88	9	115	3	48x60	32	49x62	95	5095
DIF-54-MG	48	4	80	6	111	9	150	3	54x60	40	55x70	97	6225
DIF-60-MG	59	4	98	7	137	10	190	3	60x60	50	61x76	103	8020
DIF-72-MG	85	5	142	9	198	15	270	3	72x60	75	73x88	107	13875
DIF-20-ML	24	3	35	6	45	10	30	1 1/2	20x54	5	21x30	72	1070
DIF-24-ML	33	5	49	9	63	15	45	1 1/2	24x54	7	25x34	73	1470
DIF-30-ML	50	6	75	13	98	18	75	2	30x54	10	31x40	76	2165
DIF-36-ML	71	5	106	9	141	15	105	2 1/2	36x60	15	37x48	89	2805
DIF-42-ML	97	7	145	12	192	20	150	2 1/2	42x60	21	43x54	94	3650
DIF-48-ML	126	5	189	11	251	17	180	3	48x60	27	49x62	95	5010
DIF-54-ML	159	7	239	14	318	20	240	3	54x60	34	55x70	97	6205
DIF-60-ML	198	10	295	19	393	30	300	3	60x60	43	61x76	103	8005

Service Flow Rate in gallons per minute (GPM)

Pd - Pressure drop in PSIG

System Specifications

The operating pressure range of all Diamond Water systems is 30 to 100 psig and designed for water temperatures from 35° to 120° F. Custom systems are available for higher pressures and temperatures. Standard electrical requirements are 115 volt-60 hertz single phase power. Alternate power requirements are optional. Standard electrical enclosures are NEMA 1 rated. NEMA 4X fiberglass enclosures are optional.

These conditioners will not purify or make your water safe to drink.
Product improvements and design changes subject to change without notice.

WARRANTY: CONSULT FACTORY

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