

FRF FILTERS

STANDARD FEATURES

TASK MASTER III™ - 1½" VALVE – TOP MOUNT

ERCt ELECTRONIC TIMER WITH 99-DAY CYCLE

REMOTE BACKWASH INITIATION IS INCLUDED. (CAN BE USED WITH A DIFFERENTIAL PRESSURE SWITCH OR WITH REMOTE OPERATION SYSTEM.)

POLYGLASS MINERAL TANKS

SINGLE POINT ABS DISTRIBUTOR

110V, 60HZ, 1Ø

AVAILABLE WITH MULTI MEDIA, FILTER SAND, ACTIVATED CARBON, FILTER AG, AND MANGANESE GREEN

OPTIONAL FEATURES

MULTIPLE TANK CONFIGURATIONS

DEMAND INITIATION WITH ERCd AND A FLOW METER

SHUT OFF KIT (SOK) TO PREVENT RAW WATER BYPASS DURING BACKWASH CYCLES

PRESSURE GAUGE AND TEST TAP KIT

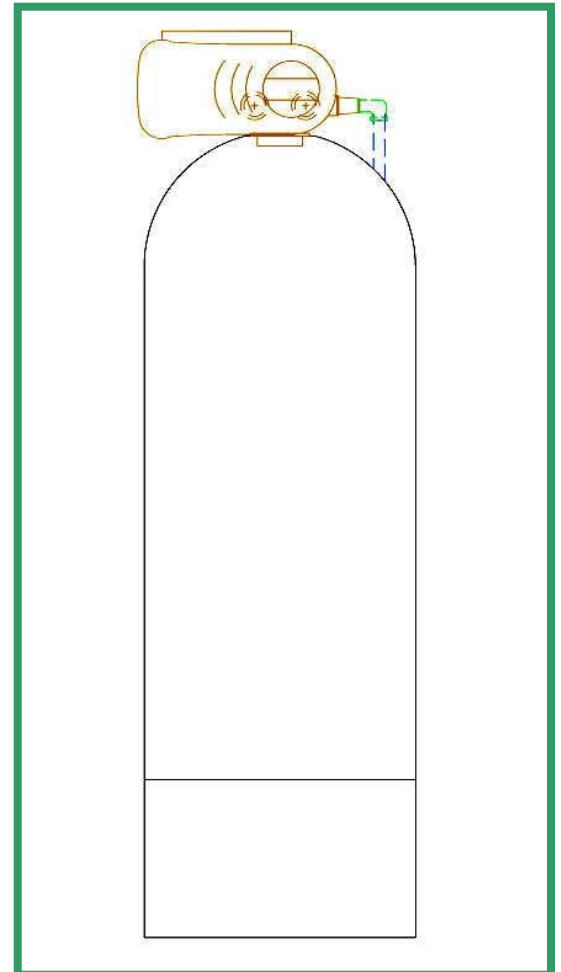
SKID MOUNTING

220V, 50Hz, 1Ø

INTERNATIONAL VALVE CONFIGURATIONS: ENGLISH EUROPEAN, AUSTRALIAN, JAPANESE, AND CHINESE

OPERATING CONDITIONS

25 TO 125 PSI ◆ 120°F



CAT 500.2

FILTER APPLICATION TABLE					
MODEL	FG Tank Size Dia x Ht (inches)	Bed Area (ft ²)	Valve (inches) all top mount	Media (ft ³)	Underbed (lbs)
FRF 50	12 x 54	0.79	TM III 1 ½ SS	1.50	15
FRF 70	13 x 54	0.92	TM III 1 ½ SS	2.00	30
FRF 100	14 x 65	1.07	TM III 1 ½ SS	3.25	40
FRF 120	16 x 65	1.40	TM III 1 ½ SS	4.00	55
FRF 150	21 x 62	2.40	TM III 1 ½ SS	5.00	140
FRF 240	24 x 72	3.14	TM III 1 ½ SS	8.00	200
FRF 300	30 x 72	4.90	TM III 1 ½ SS	10.00	250
FRF 600	36 x 72	7.10	TM III 1 ½ SS	20.00	300

MODEL	Flow rate in gpm at 5 gpm/ft ²	HEAD LOSS IN PSI AT 5 GPM/FT ²				
		Fine Sand	Filter AG	Activated Carbon	Green Sand	Multimedia
FRF 50	3.9	4.0	0.6	0.5	1.0	5
FRF 70	4.6	6.3	0.8	0.7	1.9	7
FRF 100	5.4	6.5	1.0	0.9	2.1	7
FRF 120	7.0	7.3	1.2	1.2	2.4	8
FRF 150	12.1	7.0	2.3	2.3	2.8	9
FRF 240	15.7	8.5	2.7	2.7	3.5	10
FRF 300	24.5	8.1	0.8	0.8	2.4	10
FRF 600	35.4		1.8	1.8		

MODEL	BACKWASH RATE IN GPM				
	Fine Sand	Filter AG	Activated Carbon	Green Sand	Multi Media
FRF 50	8	5	5	8	8
FRF 70	10	8	8	10	15
FRF 100	15	10	10	15	15
FRF 120	15	12	12	15	20
FRF 150	30	20	20	30	35
FRF 240	35	25	25	35	50
FRF 300	60	40	40	60	70
FRF 600		60	60		

MODEL	SHIPPING WEIGHT (LBS)					Installed Dimensions			
	Less Media	Fine Sand	Filter AG	Activated Carbon	Green Sand	Multimedia	Width (in.)	Depth (in.)	Height (in.)
FRF 50		260	145	145	240	295	18	12	59
FRF 70		300	150	155	270	355	18	13	61
FRF 100		405	200	205	360	496	18	14	72
FRF 120		550	250	255	500	570	18	15	72
FRF 150		830	450	460	760	900	22	21	73
FMF 240		1390	790	800	1290	1485	24	24	80
FHF 300		1850	1100	1140	1725	2285	30	30	86
FHF 600			1875	1930			36	36	90

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DELIVERING EXPERIENCE, QUALITY, AND SERVICE SINCE 1934

TASK MASTER III™

1 ½ INCH COMMERCIAL INDUSTRIAL WATER FILTER VALVE
APPLICATION: TOP MOUNTED IN WATER KING FRF SERIES
SIDE MOUNTED IN WATER KING FMF SERIES

- ◆ The Task Master III™ is a **316 Stainless Steel 1½ inch**, five cycle, water softener control valve.
- ◆ There is only one moving part – the piston.
- ◆ The valve body is **316 SS and the piston is stainless steel with EPDM seals and inserts**.
- ◆ The valve has two different tank adaptors allowing top mount on a fiberglass tank or side mount on the face piping on a steel tank.
- ◆ The housing for the brine ejector is cast into the valve body making it an integral part of the valve.
- ◆ The piston is motor driven and is not dependent on water pressure. It shifts smoothly without water hammer. The drive assembly positions the plunger for each of the five cycles.
- ◆ The valve design assures synchronization of the drive assembly with the **electronic timer and optical sensors** making certain the plunger is correctly positioned for each of the five cycles of softening.
- ◆ ERCt 6-day or 7-day electronic timer with ability to independently program each cycle time.
- ◆ ERCd demand regeneration timer with variable reserve.
- ◆ The electrical enclosure carries a NEMA 4 rating.
- ◆ Since brining and process control often must be coordinated with the regeneration cycles of a softener, the valve is designed to provide an on/off signal and dry contacts for external electrical functions.
- ◆ **Temperature rating is 180°F. Operating pressure is 125 psi.**
- ◆ **71gpm backwash rate (at 25 psi head loss)**
- ◆ Certifications: UL, CSA, TÜV and CE. ANSI/NSF 61 (pending)
- ◆ Valve is assembled, tested and all machining and programming is done in Louisiana or other states in the United States. Raw cast metal components, molded plastic and electronic circuit boards for valve are from China. Fiberglass vessels are manufactured in Chardon, Ohio. Filter Media is all from the United States.



FILTER CONTROLS

TIME CLOCK. Most filters are set to backwash daily or every other day with the standard 99–day electronic controllers (ERCt).

DIFFERENTIAL PRESSURE. As a filter run progresses, the filter becomes clogged developing pressure loss across the bed. A differential pressure gauge placed between the filter inlet and outlet measures this head loss. Each filter can be equipped with an ERCt controller with remote backwash initiation by the differential pressure switch. The differential pressure transmitter is not included in the base system. Remote backwash initiation requires only programming changes to the standard systems the ERCt filter controllers.

MULTIPLE FILTERS. Filters operating in parallel all clog simultaneously and thus must be backwashed at the same time or sequentially. Water King often supplies multiple filters with a lead unit having a time clock and the remaining units backwashing in sequence based on remote initiation by the lead unit.

DEMAND INITIATION. Filters can be set up to backwash after a preset volume of filtrate has been produced. This is done with an ERCd filter controller and a flow meter.

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Pressure gauge and test tap kit.

(Optional) A kit containing two liquid filled, stainless steel pressure gauges with 2 ½" Ø face, two brass ball valve sample taps with hose barb connections and associated brass connection fittings shall be provided for mounting in the 1/4" FNPT predrilled and tapped ports in the inlet and outlet of the Task Master III valve.



CAT 500.4

FRF SERIES SPECIFICATION

Mineral Tank. The mineral tank shall be "polyglass" consisting of an inner shell of virgin polyethylene and an external shell of continuous fiberglass roving. Tanks shall be rated at 150 psi operating pressure, 120°F operating temperature with 4"-8 UN threaded top opening.

Mineral Tank (Optional Code Vessels). ASME code stamped fiberglass tanks shall be an available option (not included in standard units) for vessels 18" and larger in diameter. Tank shall be clearly specified as code or non-code with a specified working pressure. Tanks "built to ASME code but not stamped" shall not be acceptable as ASME code.

Internals. The distributor shall be a 2½" Ø single point molded distributor head with 2½" of slotted length and a 1½ inch female socket welded connection. The slots shall be 0.012" - 0.016" wide to retain mineral and the total slot area shall be equal to or larger than the unit pipe size. The distributor pipe shall be 1½" schedule 40 white PVC.

Media. The media shall be as specified elsewhere.

Control Valve Specifications. The main control valve(s) shall be the Task Master III™ with electronic controller to actuate the cycles of backwash, rinse and service. For manganese green sand filters, an additional cycle included to inject potassium permanganate similar to brine injection in a water softener. The control valve(s) shall be Task Master III™ 5-Cycle, multi-port control valve(s) with machined passivated CF8M Type 316 Stainless Steel body, Type 316 Stainless Steel piston assembly, and EPDM (NSF61 and WRAS Approved) inserts and seals with electronic controller and drive motor assembly in a NEMA 4/IP65 Style Enclosure. The valve shall operate with a single motor driven piston positioned by optical sensors. Valve inlet and outlet shall be 1 ½" FNPT. Backwash drain shall be ¾" or 1 ½" depending on flow. For filters the ½" FNPT eductor shall be plugged. For manganese greensand filters, the one piece eductor shall be installed in the valve. The valve shall be equipped with threaded ¼" FNPT ports for the installation of sample taps and pressure gauges. (Taps and gauges are optional.) Unfiltered water by-pass shall be available during all backwash cycles at 70 gpm or at the peak flow rate of the unit, at a pressure drop less than 25 psi, whichever is less. A "no unfiltered water bypass" option is obtained by adding a shut off kit. The valve shall be of a single piston design and shall not use multiple plungers or diaphragm valves. Maximum rated power shall be 125 watts with available current options of 115 VAC, 230 VAC, 100 VAC, 200 VAC, in 50 or 60 Hertz. Ambient operating temperature range shall be 34°F (1°C) to 150°F (65°C). Fluid temperature range shall be 34°F (1°C) to 180°F (82°C). Operating pressure range shall be 20-125 psi (1.38 - 8.6 bar). The valve shall have UL, CSA, TÜV and CE certifications. ANSI/NSF 61 certification is pending.

System Operating Conditions. Maximum temperature shall be 100°F. Maximum Pressure shall be 100 psi. The pressure rating can be increased to 125 psi by specifying 125 psi vessels. The temperature rating can be raised to 180°F by specifying Viton seals for the shut off kits (-V), high temperature epoxy for the vessels, and 10% cross-linked resin.

Other items. A standard soft water soap test kit shall be provided. A complete set of instructions, including installation, loading, start-up, adjustments, servicing, and a parts list shall be provided with the equipment.

Qualifications. A company that has continuously manufactured water softeners for at least twenty (20) years shall construct this equipment.

SHUT OFF KIT (SOK) ON RF 1 ½" SYSTEMS. A "no unfiltered water bypass" option is obtained by adding a shut off kit. For a 1 ½" SOK a single cast iron diaphragm valve with Buna Seats operated by a solenoid shall be installed on the outlet.

FILTRATION CYCLES

- ◆ **SERVICE.** The water flows downward through the media and is clarified. The solids accumulate in the media bed.
- ◆ **BACKWASH.** When the filter begins to clog or when the head loss through the bed increases, flow rates are dramatically reduced and often solids "break through" the filter and water quality deteriorates. To clean the filter bed, the flow is reversed, fluidizing the media bed, and is directed to drain. This is called backwash. The flow required is specific to the media. If too much flow is applied, the bed can be flushed from the tank and if too little flow is applied, the bed will not fluidize properly and will not be cleaned. Improper cleaning leads to mud ball formation and channeling in the filter. The FRF, and FMF and FMF-FG Series use nozzle type backwash rate-of-flow controllers. Backwash is made possible by shifting the Task Master™ III valve so that it allows the water to enter the bottom of the filter tank and flow upward through the media bed, thus backwashing filtered solids to drain.
- ◆ **FILTER TO WASTE.** When a filter is returned to service after backwash, the initial effluent solids concentration from the filter is high. The bed must be repacked and begin to remove some particulates before it can become effective. Thus, the first few gallons of a filter run are usually wasted. This part of the cycle is called filter to waste or rinse.