

# FRF FILTERS – LESS MEDIA

## STANDARD FEATURES

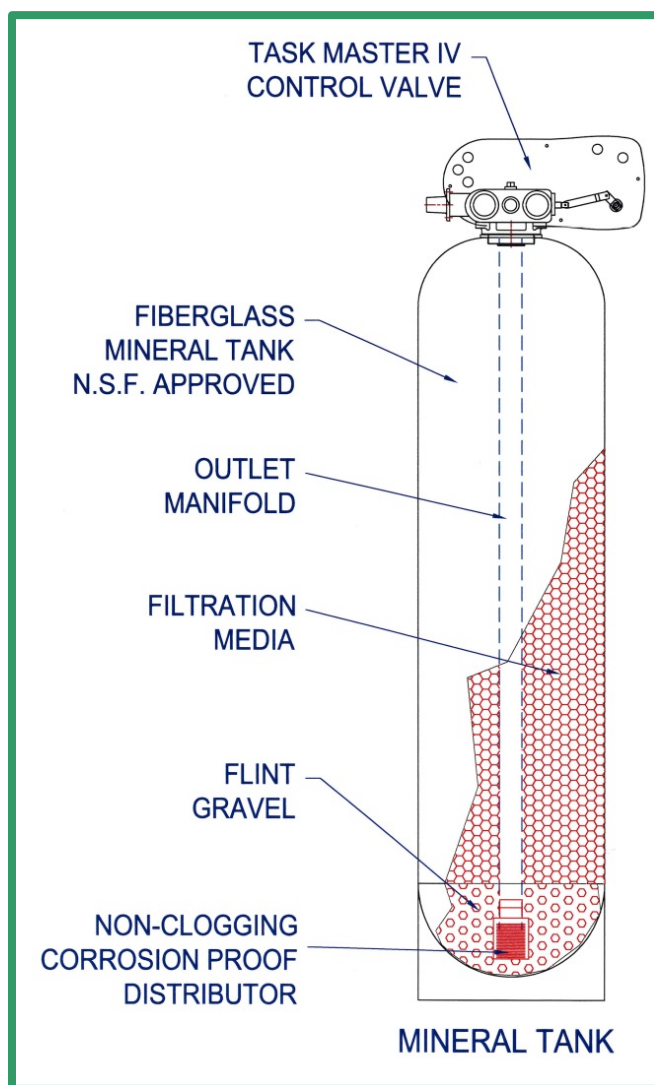
TASK MASTER IV™ - STAINLESS STEEL – TOP MOUNT  
 ERCf ELECTRONIC FILTER CONTROLLER WITH 99-DAY CYCLE  
 TIMER  
 REMOTE BACKWASH INITIATION IS INCLUDED. (CAN BE USED  
 WITH A DIFFERENTIAL PRESSURE SWITCH OR WITH REMOTE  
 OPERATION SYSTEM SUCH AS A PLC.)  
 POLYGLASS MINERAL TANKS  
 SINGLE POINT ABS DISTRIBUTOR  
 110V, 60HZ, 1Ø  
 POSSIBLE MEDIA: ACTIVATED CARBON, MULTI MEDIA, SAND  
 FILTER, NEUTRALIZING MEDIA, OR FILTER AG.

## 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



## FRF Filters - Less Media

Model No.	Part No.
FRF 50	919005
FRF 70	919007
FRF 100	919010
FRF 120	919012
FRF 150	919015
FMF 240	919024
FHF 300	919030
FHF 600	919060

## FRF SERIES SPECIFICATION – LESS MEDIA

**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. For 30” diameter and larger the distributor shall be hub and lateral with a 1½ inch female socket welded connection.

**Media.** The media shall be as specified elsewhere.

**Control Valve Specifications.** The main control valve(s) shall be the Task Master IV with electronic controller to actuate the cycles of backwash, brine, slow rinse, fast rinse, and service for a water softener (or backwash, rinse and service for a filter). The control valve(s) shall be Task Master IV 5-Cycle, multi-port control valve(s) with machined and passivated CF8M Type 316 Stainless Steel body, Type 316 Stainless Steel piston assembly, and EPDM 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 adaptors shall be 1 ½” or 2” FNPT or FBSPT. Backwash drain shall be ¾” or 1 ½” FNPT or FBSPT depending on flow. The brine inlet shall be ½”. The one piece brine 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. Hard water by-pass shall be available during all regeneration cycles at 70 gpm or at the peak flow rate of the unit, at a pressure drop less than 25 psi, whichever is less. No hard water bypass option is obtained by adding a shut off kit to the valve. 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).

**Other items.** 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.



### 720075-4

#### 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 ¼” FNPT predrilled and tapped ports in the inlet and outlet of the Task Master III valve.

### 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.



### FILTER CONTROLS

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

**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.

**Dimensional Chart - FRF Series Filters**

MODEL	VESSEL SIZE (dia x overall height in inches)	SHIPPING WEIGHT (LBS)			INSTALLED DIMENSIONS		
		Activated Carbon	Multimedia	Filter Sand	Width (in.)	Depth (in.)	Height (in.)
FRF 50	12 x 52	145	295	260	18	12	59
FRF 70	13 x 54	155	355	300	18	13	61
FRF 100	14 x 65	205	496	405	18	14	72
FRF 120	16 x 65	255	570	550	18	15	72
FRF 150	21 x 62	460	900	830	22	21	73
FMF 240	24 x 72	800	1485	1390	24	24	80
FHF 300	30 x 72	1140	2285	1850	30	30	86
FHF 600	36 x 72	1930			36	36	90