

# New FH Turbine Series

## Product Bulletin

# 900FH and 1000FH Turbine Series

**Racor introduces the most significant improvements to our Turbine Series FF/WS in the last 30 years!**

Today's electronic controlled engines with high performance, high pressure commonrail (HPCR) fuel systems demand higher performance filtration (see Racor Technical Bulletin #7554).

The redesigned FH Turbine Series provides improved filtration performance, numerous design enhancements and an overall increase in performance efficiency to meet the most stringent requirements of these new high pressure fuel systems.

## I - Improved Filtration

### Aquabloc II™ Filter Cartridges

The replacement filter cartridges were redesigned over two years ago and feature a 'key' on the bottom cap to open the new fuel shut-off valve. This ensures proper valve operation, maximum filtration efficiency and performance with the use of genuine Racor replacement filter cartridges. Improvements to the filter cartridges are as follows:

1. **New Media:** Racor is proud to introduce our new Aquabloc II cellulose media. This media has increased efficiency at separating virtually 100% of water out of fuel while filtering out 25% or more sediment, algae, rust, dust, and other contaminants. Additionally,

primary and secondary filters have improved water emulsion removal efficiency over the previous Aquabloc media.

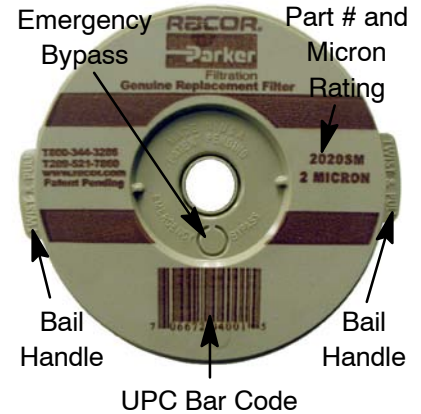
2. **Printed Endcap:** A color coded, permanently printed top endcap will feature information about the cartridge. Red lettering indicates a 30 micron element, blue is 10 micron, and brown is 2 micron.

3. **Improved Bail:** Two opposing handles make the removal of the cartridge easier during servicing.

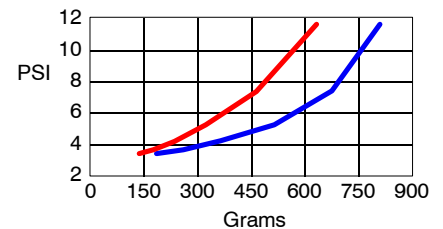
4. **Emergency Bypass Tab:** In an emergency situation when servicing a clogged cartridge is not an option, you can easily puncture the bypass tab for a temporary solution to keep your engine running. Once this feature has been used, service the element as soon as possible to avoid passing harmful contaminants to your engine. Racor recommends that you always keep replacement cartridges available as one tankful of excessively dirty fuel could plug a filter.

5. **UPC Bar Code:** All cartridges are packaged for individual, retail sale and include a UPC bar code.

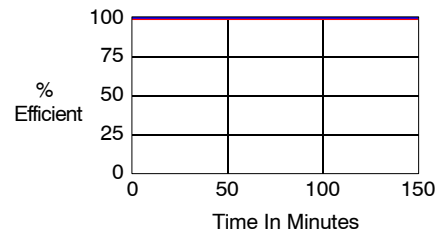
**Top View of 2020 Cartridge Element**



Performance tests on the new 10 micron media have yielded the following improved results (see graphs below). Test data for the *current design* is in red and the test data for the *new design* is in blue.



SAE J905 Contaminant Capacity (Life)  
(using SOFTC-2A)



SAE J1839 Droplet Removal

Bulletin part no. 7566

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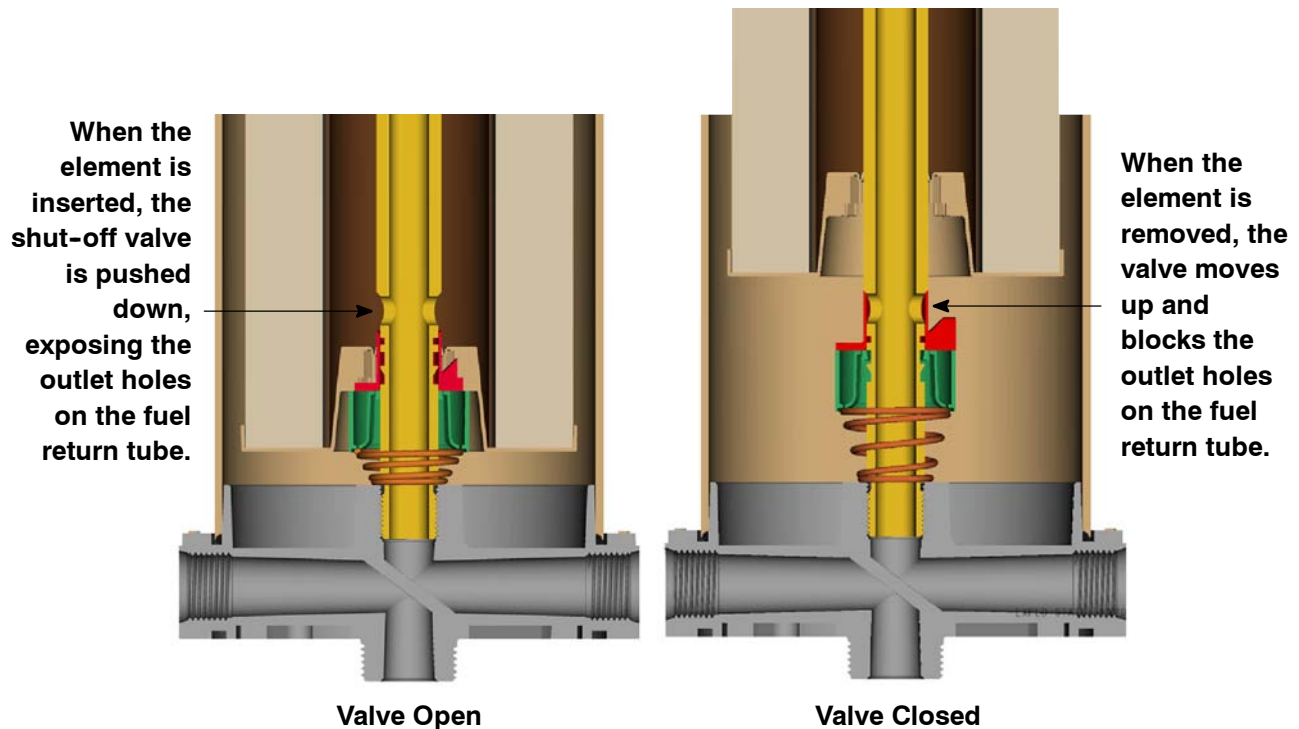


## II - Design Enhancements

### Internal Fuel Shut-off Valve

An advanced, patent pending fuel shut-off valve keeps unfiltered fuel from entering clean-side passages during element removal and provides the customer with a consistent prime and less chance for trapped air to circulate through the fuel system. The valve features a steel spring that pushes up on the element to make servicing more convenient and mess free. The valve is activated by inserting or removing the replacement element. As the element is inserted into the assembly, the valve opens and allows only clean fuel to pass to the engine. If the element is removed, the valve closes and stops all fuel flow out of the assembly (see pictures below).

### Partial Half Section and Cutaway View of the FH Turbine Series



### Redesigned Fuel Return Tube

The redesigned fuel return tube supports the internal fuel shut-off valve and features the outlet hole located at the bottom of the tube (see pictures above).

Note: elements other than genuine Racor cartridges will NOT open the shut-off valve and are not recommended for use with the new FH Turbine Series. This new element design will fit ALL older versions of Racor's famous Turbine Series, however, old element stock (those with full colored end-caps and the single center bail handle) will not fit or open the shut-off valve in the new FH models.

### **New Engineered Polymer Lid**

A new engineered polymer lid will feature a robust, corrosion-proof design that will press the element down to activate the fuel shut-off valve. For marine applications, an aluminum lid is standard and meets UL and marine type-approval requirements.

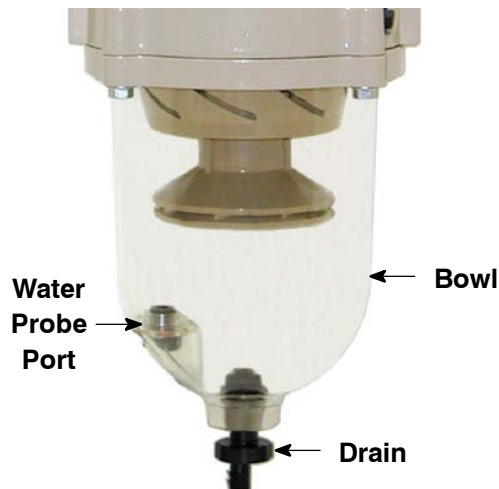
### **Improved T-handle**

The T-handle has been redesigned to enable easier element changeouts. The threaded shaft is now slightly longer than existing T-handles and is completely interchangeable with product already in the field. When an element service is required, remove the T-handle, lid and used element. Install new element and press it down until the bottom engages the internal fuel shut-off valve. Re-install the lid and T-handle and as the T-handle is tightened, the lid will press down on the element until it is in the correct position. Tighten the T-handle hand tight only.



### **Clear, See-thru Bowl**

A completely "see-through" bowl will be introduced on the FH series. Advancements in engineered polymers make way for Racor to offer our premium chemical resistant bowl in place of the current 'amber' tinted bowl. This improvement will enable easier visual distinction of collected water.



### Color Changes

The FH models will showcase a new look. The entire assembly will feature a beige coat with the lid and brackets now appearing in a black finish (see pictures below). The FH models will also be visually identifiable by a new main label in gold and black. This color combination presents a heavy-duty appearance that will blend and compliment the majority of installation applications.



Current 1000FG Unit

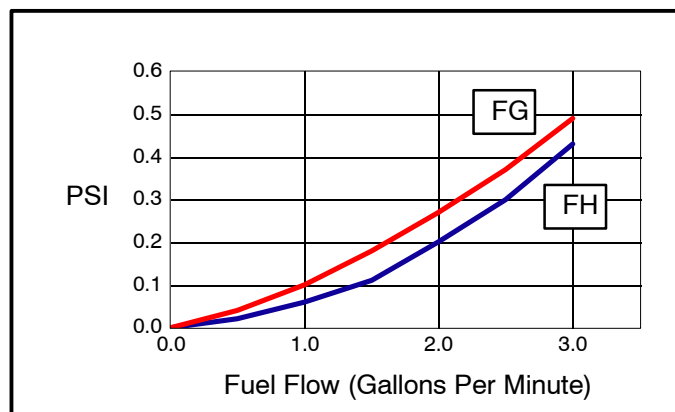


New 1000FH Unit

### III - Performance Efficiency

The modifications mentioned in the bulletin have lowered the overall fuel flow restriction in the FH models by as much as 12%. See graph below.

Test data for the **1000FG** assembly is in **red** and the **1000FH** assembly, in **blue**.



SAE J905 Fuel Flow Restriction (with 10 micron element)

## IV - Available Options

### New Water Probe




Racor has also improved the water sensor design to include a feature that helps prevent false alarms due to water slosh. The RK 30964 water probe must be used with a water detection module and due to the variety of models available, must be ordered separately.



### Water Detection Modules

Racor water detection modules are available in a wide selection for various installation requirements. Under dash, in-dash and remote mount, these solid-state units may be used with any Racor water probe. They are manufactured using the highest quality materials and are all 100% electronically tested.

An electronic detection module analyzes electrical resistance at the water probe and determines if water is present. If so, the detection module operates to indicate water, based on its features listed below. All units reset automatically after water is removed (unless specified). Below are some of our more popular modules, others are available.

Part Number	Description	Voltage	Picture
RK 12870	Under dash mount. Light and audio. Illuminates and sounds when water is detected. Plastic enclosure measures 1.4" square and 1.25" deep. Power draw is 1 milliamp.	12 vdc	
RK 12871	Same as above.	24 vdc	
RK 20725	Under dash mount. Light only. Green 'ON' lamp illuminates with power and red 'DRAIN' lamp illuminates when water is detected. Initial power-up self diagnosis feature and circuit protection included. Plastic enclosure measures 2.75" by 1" by 1.5". Power draw is 10 milliamps.	12 vdc	
RK 20725-24	Same as above.	24 vdc	
RK 20726	In-dash mount. Light and audio. Red 'DRAIN' lamp illuminates continuously and horn sounds momentarily when water is detected. Initial power-up self diagnosis feature and circuit protection included. Plastic 2" gauge. Power draw is 3 milliamps for 12 vdc and 13 milliamps for 24 vdc.	12 or 24 vdc	

### In-filter Fuel Pre-Heater

Racor will provide an optional in-filter, 300 watt, 12 or 24 vdc fuel pre-heater, if desired. The heaters are thermostatically controlled and turn on when the fuel temperature goes below 50°F (10°C) and shut off when the fuel temperature reaches 80°F (27°C). Power draw is 25 amps for 12 vdc and 12.5 amps for 24 vdc. See the 'How to Order' section (below) to include a heater with your filter.

## V - How to Order

The example below illustrates how part numbers are constructed.

<b>90</b>	<b>0FH</b>	<b>P</b>	<b>312</b>	<b>2</b>
Specify a flow rate: '90' for (1.5 GPM) or '100' for (3.0 GPM)	Specify '0FH' for standard ports <sup>1</sup> or '2FH' for M22 ports	Add 'P' for a water probe <sup>2</sup> . (Omit if not desired.)	Add '312' for a (12 vdc) or '324' for a (24 vdc) heater <sup>3</sup> . (Omit if not desired.)	Specify a micron rating: '2', '10', or '30'.
<sup>1</sup> Standard fuel ports are 7/8"-14 UNF (SAE J1926). <sup>2</sup> Must be used with Water Detection Module. <sup>3</sup> 300 watt heater - recommended for use with a Racor relay kit.				

## Specifications

<b>Basic Models</b>	<b>900FH</b>	<b>1000FH</b>
<b>Maximum Flow Rate</b>	90 GPH (341 LPH)	180 GPH (681 LPH)
<b>Port Size</b> Standard (SAE J1926) Optional (SAE J2244)	7/8"-14 UNF M22	7/8"-14 UNF M22
<b>Replacement Elements:</b> 2 micron 10 micron 30 micron	2040SM-OR 2040TM-OR 2040PM-OR	2020SM-OR 2020TM-OR 2020PM-OR
<b>Minimum Service Clearance</b> Above assembly Below assembly	5 in. (127 mm) 2 in. (51 mm)	10 in. (254 mm) 2 in. (51 mm)
<b>Height</b>	17.0 in. (432 mm)	22.0 in. (559 mm)
<b>Depth</b>	6.0 in. (152 mm)	6.0 in. (152 mm)
<b>Width</b>	7.0 in. (178 mm)	7.0 in. (178 mm)
<b>Weight (dry)</b>	6.0 lb (2.7 kg)	10.0 lb (4.5 kg)
<b>Clean Element Pressure Drop</b>	0.30 PSI (2.07 kPa)	0.43 PSI (2.97 kPa)
<b>Maximum Allowable Pressure<sup>1</sup></b>	15 PSI (103 kPa)	15 PSI (103 kPa)
<b>Water In Bowl Capacity</b>	305 ml	305 ml
<b>Available Options:<sup>2</sup></b> Water Sensor Heater	Yes Yes	Yes Yes
<b>Operating Temperature</b>	-40° to +255°F / -40° to +121°C	

## Special Notes

<sup>1</sup> Pressure installations are applicable up to the maximum PSI shown. Vacuum installations are recommended.

<sup>2</sup> Not for use on gasoline applications.