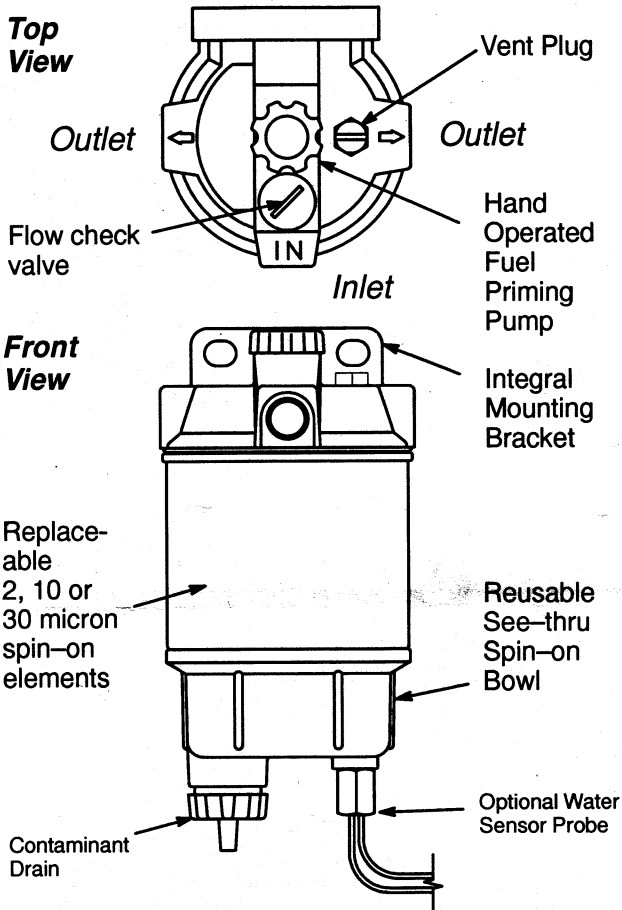


220/225R Spin-on Series Fuel Filter/Water Separators for Diesel Engines

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Racor's 220 / 225R Fuel Filter/Water Separators are specifically designed to handle today's tough diesel filtration problems. These units feature a standard in-head fuel priming pump and are different from one another only in flow capacity and element size.

These units should be used on the suction (vacuum) side of the fuel transfer pump (and are permitted for use up to 7 PSI of head pressure). The die-cast aluminum mounting head features two outlets and one inlet for installation to most fuel systems. The fuel ports are standard SAEJ476 1/4"-18 NPTF (tapered dryseal pipe thread). Call factory for optional port threads. Many varieties of fittings are available from Racor or hardware dealers. (Fittings may not be supplied with this unit).

A vent plug is fitted to easily evacuate trapped air, making fuel priming of the filter an easy, no-mess experience.

Engines will benefit from near 100% water separation and fuel filtration with Racor's proprietary *Aquabloc*[™] water repelling media. The replaceable spin-on filter elements are available in 2, 10 and 30 micron ratings.

The reusable see-through contaminant collection bowl allows the operator to check contamination build-up at a glance. The contaminant drain is opened by rotating the knob counterclockwise (if facing the bowl bottom side).

OPTIONAL FEATURES:

An available option for non-marine applications is a water sensor probe which alerts the operator when it's time to drain the see-through bowl. (The probe must be used with a 12 or 24 vdc powered Water Detection Kit. See *Accessories* for available models). For use with diesel fuel systems, only.

Additionally, a metal bowl is available for severe service, heavy duty or marine applications. This bowl features a 3/8"NPT drain plug which may be replaced by UL LISTED drain valve (refer to parts list).

For marine applications, specify the Model 220RMAM or 225RMAM. These units are UL Marine Listed and USCG Accepted.

PART NUMBER IDENTIFICATION

The example below illustrates how part numbers are constructed.

	225R	M	P	-10
220R = 30 GPH	Metal bowl. (Omit if not desired)	Water Sensor Probe.	Filter Micron Rating: 2 is standard and does not need to be specified if desired.	
225R = 45 GPH	Specify MAM for Marine applications	(Omit if not desired) For see-through bowl only	For 10 or 30 micron filtration, specify: -10 or -30	

SPECIFICATIONS

MODEL		220R	225R
Maximum Flow Rate	GPH	30	45
Replacement Element	LPH	114	170
Fuel Ports (SAEJ476)	NPT	R24 Series 1/4"	R26 Series 1/4"
Clean Pressure Drop*	PSI	0.38	0.61
Height	kPa	2.64	4.21
	in.	8	9.5
Width	mm	203	241
	in.	4	4
Depth	mm	102	102
	in.	4	4
Weight, Dry	mm	102	102
	lbs.	1.8	2
	kgs.	.80	.90
Operating Temp.		- 40° / +255°F / - 40° / +121°C	

* Specifications result from tests conducted at the maximum flow rate.

INSTALLATION INSTRUCTIONS

LOCATION: The Racor 220 / 225 models should be located on the suction (vacuum) side of the fuel transfer pump for optimum water separation efficiency. The unit may be permitted for use up to 7 PSI of head pressure.

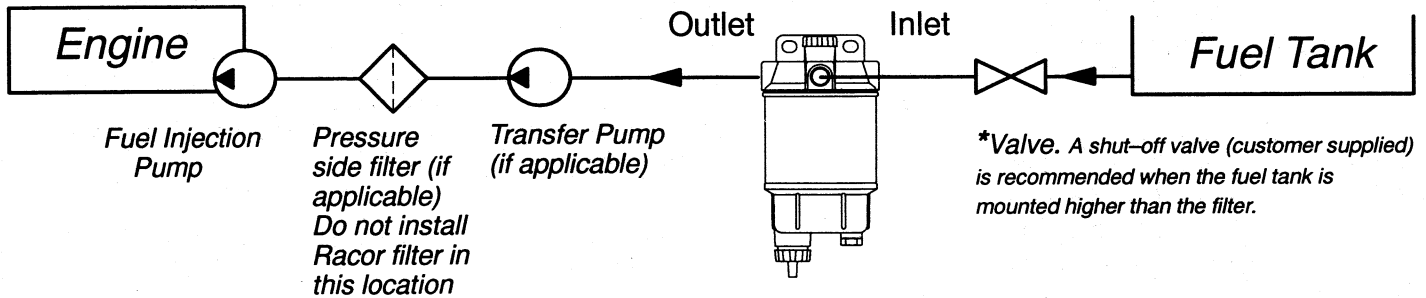
FILTRATION: Primary (30 micron), Secondary (10 micron) or Final (2 micron).

The first filter downstream from the fuel tank to the engine is a primary filter. Typically this filter is rated for 30 microns and catches the largest contaminants (a 10 micron filter may also be used). Between this filter and the engine is a secondary filter (optional) or a final filter (required) and should be rated for 10 or 2 micron, respectively. If using only one filter in the fuel filtration system, a 2 micron filter is recommended for maximum protection.

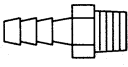
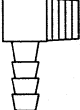
NOTE: Pressure side final filters, if applicable, should be serviced and left in place.

BEFORE INSTALLING THE UNIT:

1. Ensure fuel port fittings are in hand along with fuel line, hardware and all needed tools and materials.
2. Maintain a safe working environment. The engine must be off and obtain good ventilation and lighting. Do not smoke or allow open flames near the installation. Eye protection is recommended and have fluid 'drip' pans and absorbant shop cloths available to anticipate spills.
3. The chosen mounting location should allow adequate room below the unit for servicing requirements (i.e., draining water, replacing elements).
4. Pipe thread sealing paste is recommended on port fitting connections. Do not use pipe tape.



Typical Diesel Suction (vacuum) Side Installation

BRASS 1/4" NPT FITTINGS CHART			
Description	Hose I.D.	Part Number	Qty.
Hose Barb H 	1/4"	RK 30815	2
	3/8"	30926	1
	5/16"	30927	1
Elbow Hose Barb H 	3/8"	30928	1
	5/16"	30929	1

OPERATING INSTRUCTIONS

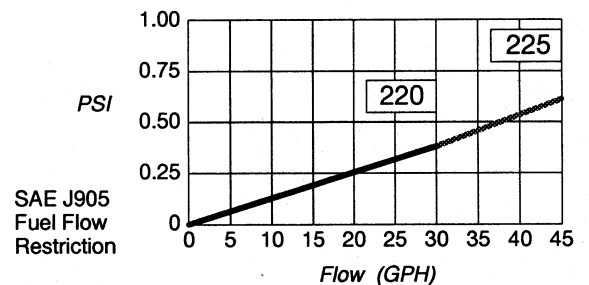
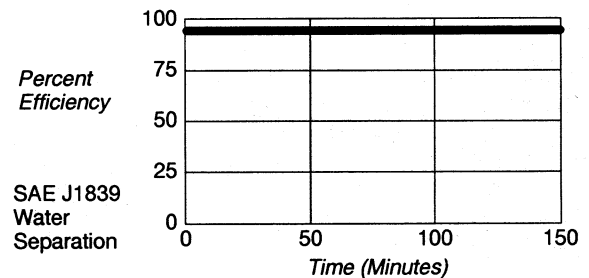
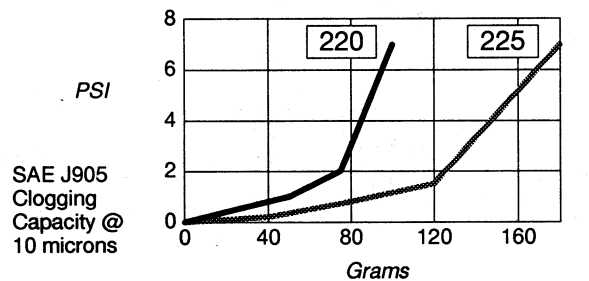
PRIMING. Loosen the vent plug. Operate the primer pump until fuel purges at the vent plug. Close the vent plug, start the engine and check for leaks. Correct as necessary with the engine off.

TROUBLESHOOTING PROCEDURES

A major cause of power loss or hard starting is the result of an air leak. If your unit will not prime or fails to hold prime, first check that the vent plug and drain valve are properly closed and that the element and bowl are snugly tightened.

Check fitting connections and ensure the fuel lines are not pinched or clogged with contaminants. If problems persist and the element is new, call your Racor Distributor or Racor Customer Service for assistance.

PERFORMANCE INFORMATION



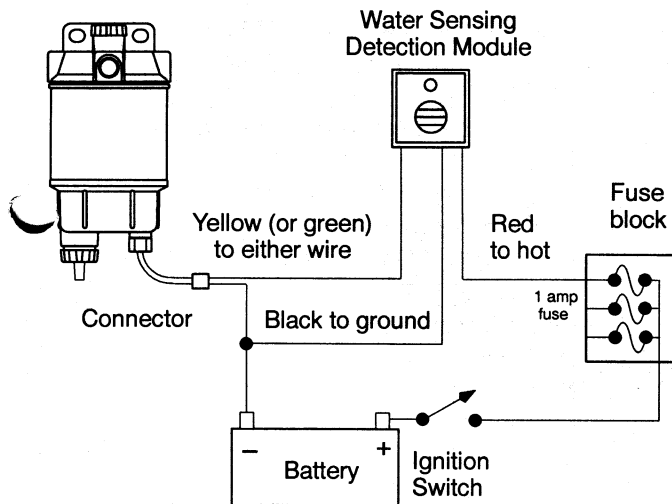
INSTALLING OPTIONAL FEATURES

NOTE: RACOR ELECTRICAL OPTIONS ARE FOR USE WITH NON-MARINE DIESEL FUEL, APPLICATIONS ONLY.

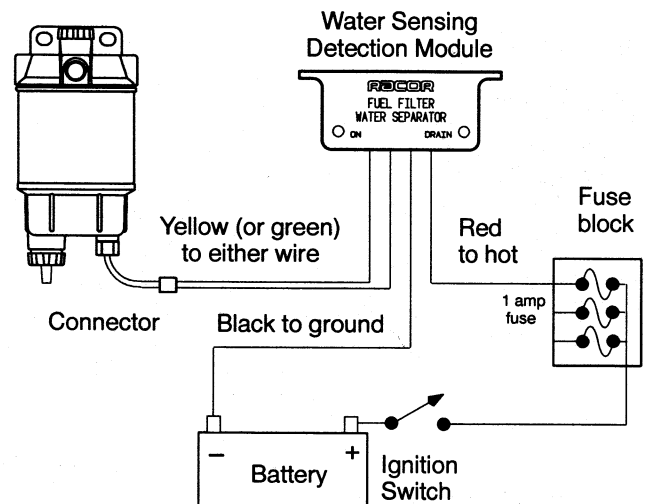
WATER SENSOR.

Racor 220 / 225R Series units can be specified with a water sensor probe when used in conjunction with the see-thru bowl. The probe senses continuity values and **must** be used with a special electronic detection module to function properly. Due to the various models available, the detection modules are sold separately. Installation instructions are supplied with each kit. See *Accessories* for part numbers.

For those units purchased complete with the water sensing package, follow the diagram below to install this feature. (Note: some components shown are customer supplied).



**Diagram for RK12870
or RK12871 underdash type kits**



**Diagram for RK20725 (underdash,
shown) or RK20726 (gauge type) kits**

SERVICE

Frequency of water draining or element replacement is determined by the contamination levels present in diesel fuel.

DRAINING THE COLLECTION BOWL.

Water is heavier than diesel fuel and will settle to the bottom of the bowl and appear different in color. The bowl must be drained before contaminants reach the bottom of the element or when the Water Detector Module (if equipped) indicates it's time to 'drain water'. Inspect or drain the collection bowl of water daily.

1. Open the drain and operate the pump to drain off contaminants. Close the drain.

ELEMENT REPLACEMENT.

Element replacement frequency is determined by the contamination level in diesel fuels. Fuel flow to the engine becomes restricted as the element slowly plugs with contaminants, resulting in noticeable power loss and/or hard starting.

Replace the element every 10,000 miles, every 500 hours of operation, every other oil change, annually or if a power loss is noticed, which ever comes first. If a vacuum gauge has been installed on the outlet side of the filter, change the element between 6 to 10 inches of mercury (restriction). The actual measurement varies in different fuel systems.

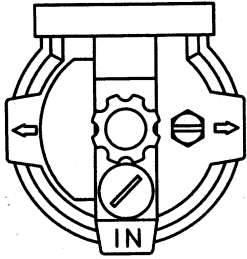
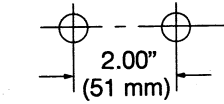
Note: Always carry an extra element as one tankful of excessively contaminated fuel can plug a filter.

1. Drain off some fuel by loosening the vent plug and opening the drain valve.
2. Disconnect the water sensor connector, if equipped.
3. Spin the element and bowl off together. Remove the bowl and clean the O-ring gland.
4. Apply a coating of clean fuel or motor oil to the new O-ring and element seal. Spin the bowl onto the new element and then spin them both onto the filter head snugly by hand only. **DO NOT USE TOOLS TO TIGHTEN!**
5. Connect the water sensor connector, if equipped.
6. With the vent plug still loosened, operate the primer pump until fuel purges at the vent plug. Close the vent plug, start the engine and check for leaks. Correct as necessary with the engine off.

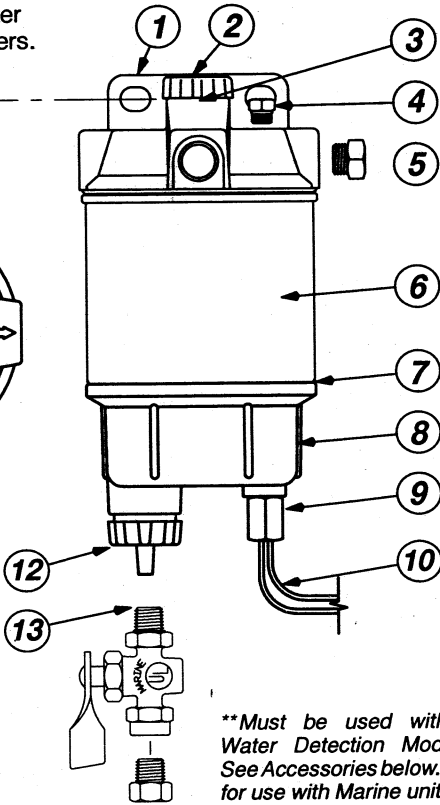
NOTE: The priming pump is intended for priming fuel into the Racor filter only and not the entire fuel system.

REPLACEMENT PARTS LIST

5/16" (8 mm) diameter clearance for fasteners.



Head top view. Fuel ports are 1/4"-18 NPTF (SAEJ476)



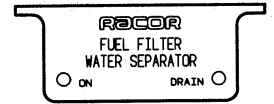
****Must be used with a Water Detection Module. See Accessories below. Not for use with Marine units.**

Item/Part No.	Description	Qty.
1	RK20046 Head, 1/4"-18 NPTF Ports	1
2	RK20025 Primer Pump Assembly	1
3	RK20011 Check Ball and Plastic Cap	1
	RK20742 Metal Check Ball Cap (Marine)	1
4	RK20179 Plastic Vent Plug, 3/8"-16	1
	RK10110 Metal Vent Plug, 3/8"-16 (Marine)	1
5	RK12041 Metal Plug, 1/4"-18 NPTF	1
6	R24S 220R, 2 mic. Replacement Element	1
	R24SUL 220RMAM, 2 mic. Element (Marine)	1
	R24T 220R, 10 mic. Replacement Element	1
	R24P 220R, 30 mic. Replacement Element	1
	R26S 225R, 2 mic. Replacement Element	1
	R26SUL 225RMAM, 2 mic. Element (Marine)	1
	R26T 225R, 10 mic. Replacement Element	1
	R26P 225R, 30 mic. Replacement Element	1
7	RK22244 Bowl O-ring (not shown)	1
8	RK20135 See-thru Bowl Assembly	1
	RK20357 Metal Bowl, 3/8"NPT Drain Plug (Marine)	1
9	RK20022 Metal Plug, 1/2"-20	1
10	RK21069 Water Sensor Probe**	1
12	RK20076 Drain Knob and Seals Kit	1
	01SP-6S Metal Plug, 3/8"NPT (Marine)	1
13	RK19492 Diesel Marine Shut-off Valve (for #RK20357 metal bowls only)	1
	RK20075 Complete Gasket/O-ring Kit	1
	7238 Installation Instruction Sheet	1

ACCESSORIES Accessory kits are for use with diesel fuel only. Order kits from your Racor dealer.

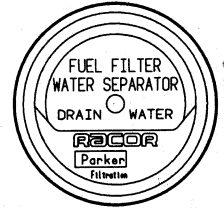
Water Detection Kit # RK20725

This 12 vdc under dash module illuminates an LED when power is on and then when water is detected. The 'DRAIN' LED will remain illuminated until the water is drained below the probe tips. The unit automatically resets. Hardware and instructions included. Wire/terminals are customer supplied. Measures 2 3/4" by 1" by 1 1/2" deep.



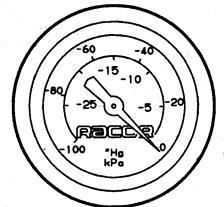
Water Detection Kit # RK20726

This 2" diameter gauge type module is ideal for in-dash applications. The corrosion resistant body is waterproof from the face side and may be used with 12 or 24 vdc electrical systems. The unit illuminates an LED and sounds a momentary buzzer at every 'power-up' and then when water is detected. The unit automatically resets. Hardware and instructions are included however, wire and terminals are customer supplied. Fits standard 2 1/16" diameter panel openings. Measures 2 1/4" (major) diameter by 3 1/8" deep (to end of threaded connector studs).



Gauge-Type Element Restriction Monitor Kit #1606B

This 2" diameter gauge is also ideal for in-dash applications. Fuel flow to the engine becomes restricted as the element slowly plugs with contaminants. The gauge monitors the filter restriction and informs the operator of filter condition anytime the engine is running. Hardware and instructions included however, plated steel 'Tee' and vacuum tubing not supplied. These items may be ordered from your Racor dealer.



WARNING The following statement is required pursuant to Proposition 65 applicable in the State of California: "This product may contain a chemical known to the State of California to cause cancer."
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