500MA/MAM Turbine Series (for marine applications)

Fuel Filter/Water Separator

Instruction Part Number 15335 Rev F

The Racor 500MA Turbine Series fuel filter/water separator protects the precision components of your engine from dirt, rust, algae, asphaltines, varnishes and especially water, which is prevalent in low distillate fuels. Contaminants are removed from fuel using the legendary three stage process described below.

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How It Works

Stage 1 - Separation

Using the fuel flow, the stationary turbine separates large solids and free water through enchanced centrifugal force.

Stage 2 - Coalescing

Smaller water droplets and solids coalesce on the conical baffle and fall to the collection bowl.

Stage 3 - Filtration

Engines will benefit from near 100% water separation and fuel filtration with Racor's proprietary Aquabloc® water repelling media. The replaceable filters are available in 2, 10, and 30 micron ratings.

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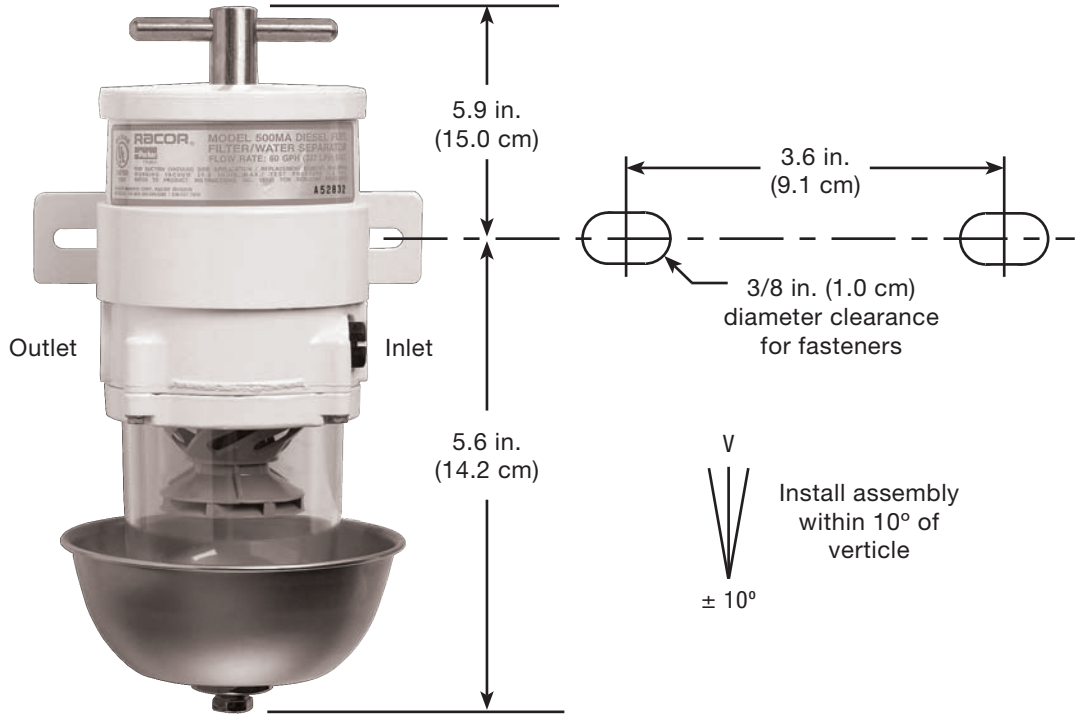
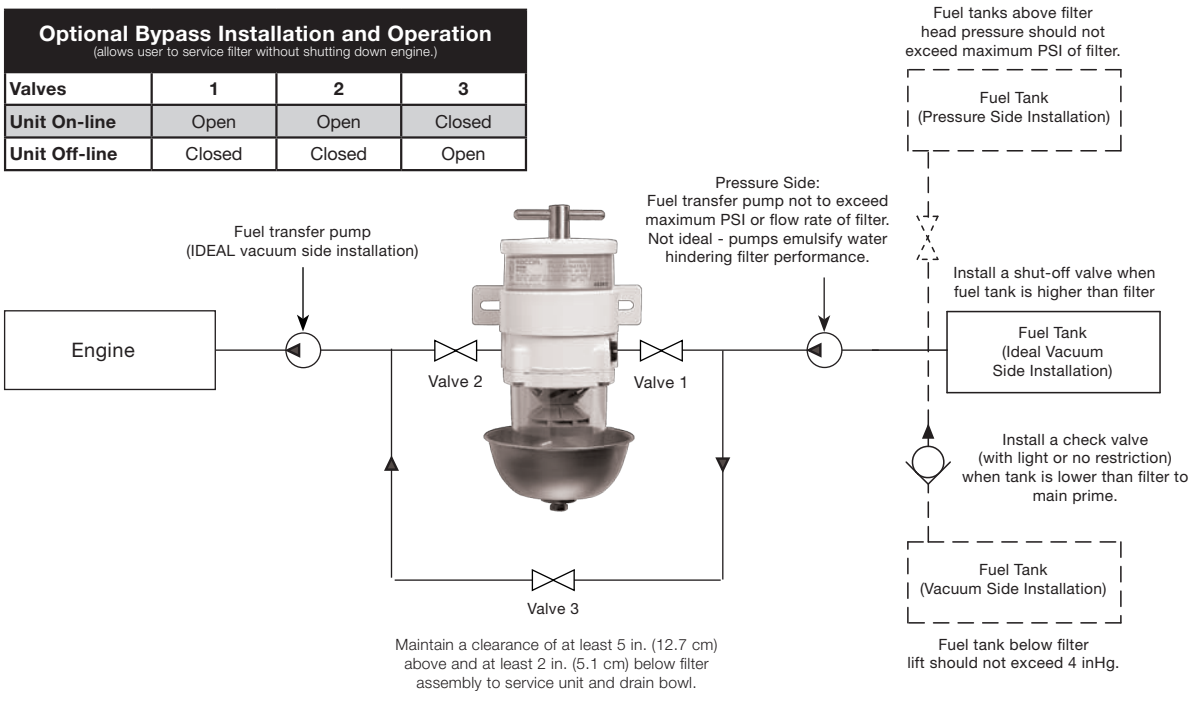
Mounting Instructions (all models)



Installation Diagram

Optional Bypass Installation and Operation
(allows user to service filter without shutting down engine.)

Valves	1	2	3
Unit On-line	Open	Open	Closed
Unit Off-line	Closed	Closed	Open



Installation Guidelines

These *customer supplied* materials should be on hand before beginning installation.

- Shop Towels
- Mounting Hardware
- Inlet/Outlet Fittings
- Fuel Hose
- Clean Diesel Fuel
- Parker Super O-lube or Clean Motor Oil
- Thread Sealant *(no thread tapes)*

Positioning filter assembly:

Filter assembly should be installed on vacuum side of fuel transfer pump for optimum water separating efficiency. *See Installation Diagram.*

Keep fuel line restrictions to a minimum. Locate the 500MA filter assembly between horizontal planes of bottom of fuel tank and inlet of fuel pump, if possible. If 500MA filter assembly is installed in an application where the fuel tank is higher than filter, a shut-off valve must be installed between the tank and 500MA filter assembly INLET. This will be used when servicing the replacement filter.

Before installing filter assembly:

- Obtain good ventilation and lighting.
- Maintain a safe working environment.
- Engine must be off for installation.
- DO NOT smoke or allow open flames near installation.

Installing filter assembly:

Completely remove any vacuum side filters in fuel line between fuel tank and fuel pump. This is where the Racor filter will mount. Leaving these filters in place will add to fuel line restriction. Filter heads cast into engine or that are non-removable or hard piped should be serviced with a new filter and left in place.

Keep fuel flow restriction to a minimum. Always use the maximum size fuel hose possible. Do not make sharp bends with flexible hose as kinks may occur. Avoid use of two 45° elbow fittings where one 90° elbow will work.

When routing hose, avoid surfaces that move, have sharp edges, or get hot (such as exhaust piping).

Priming The Unit

1. Remove T-handle and lid from top of filter assembly.
2. Fill filter assembly with clean fuel.
3. Lubricate lid gasket and T-handle O-ring with clean fuel or motor oil.
4. Replace lid and T-handle, tighten snuggly by hand only – do not use tools.
5. If applicable, refer to equipment operator's manual to complete fuel priming procedure.
6. Start engine, check for fuel system leaks. Correct as necessary with engine off and pressure relieved from filter assembly.

Service

Draining Water:

Frequency of water draining is determined by contamination level of fuel. Inspect or drain collection bowl of water daily or as necessary. Collection bowl must be drained before contaminants reach top of turbine or when Water Detection Module (optional) indicates it's time to drain water.

Vacuum Applications / Installations:

1. Close inlet valve (or valve #1) and open drain on bottom of bowl with a suitable container in place.
2. Close drain after all water and contaminants have been evacuated – DO NOT leave drain open too long as it will eventually completely drain entire filter assembly of water AND fuel.
3. Follow Priming Instructions.

Pressure Applications / Installations:

1. Open drain on bottom of bowl to evacuate water and contaminants with a suitable collection container in place. Head pressure will push any water and contaminants out of drain while keeping filter primed.
2. Close drain after all water and contaminants have been evacuated – DO NOT leave drain open too long as it will eventually completely drain entire filter assembly of water AND fuel, and possibly drain entire tank.

Filter Replacement

Frequency of filter replacement is determined by contamination level of fuel. Replace filter every 10,000 miles (16,000 km), every 500 hours, every other oil change, when vacuum gauge (optional) reads between 7 to 10 inches of mercury (inHg), if power loss is noticed, or annually, whichever comes first.

Note – always carry extra replacement filters as one tankful of excessively dirty fuel can plug a filter.

Use only genuine Racor Aquabloc® replacement filters – *see Replacement Part List*

All Applications:

1. Bypass filter assembly with bypass valves, if applicable.
2. Remove T-handle and lid.
3. Remove filters by holding bail handles and slowly pulling upward with a twisting motion. Dispose properly according to local regulations.
4. Remove and discard old lid gasket and T-handle O-ring and clean seal glands of any dirt or debris. Lubricate new gasket and seal (supplied with new filter) with motor oil or diesel fuel before installation.
5. Refer to Priming Instructions, otherwise, fill unit with clean fuel, replace lid and T-handle and tighten snuggly by hand only – do not use tools.

Note - above ground tanks or transfer pump applications may use head pressure to prime filter assembly.

Troubleshooting Procedures

A major cause of power loss or hard starting is result of an air leak (or clogged filter). If your unit will not prime or fails to hold prime, check that drain, bowl and filter are properly tightened. Next, check all fitting connections and ensure fuel lines are not pinched or clogged with contaminants. If problems persist (and filter is new) call Racor Technical Support for assistance: (800) 344-3286 or (209) 575-7555.

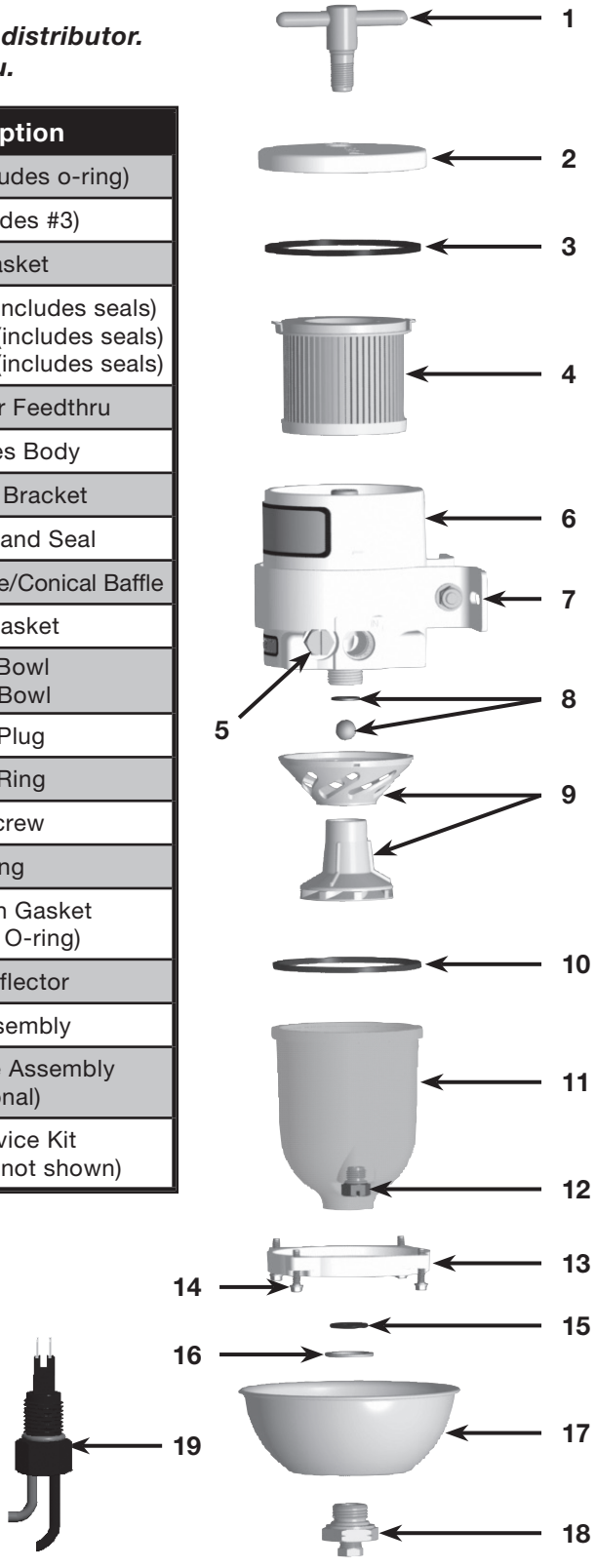
Specifications

	500MA	500MAM
Maximum Flow Rate:	60 GPH (227 LPH)	60 GPH (227 LPH)
Port Size (SAE J1926)	3/4˝-16 UNF	3/4˝-16 UNF
Service Clearance ***Above Assembly*** ***Below Assembly***	 5.0 in. (12.7 cm) 2.0 in. (5.1 cm)	 5.0 in. (12.7 cm) 2.0 in. (5.1 cm)
Replacement Filters ***2 micron*** ***10 micron*** ***30 micron***	 2010SM-OR 2010TM-OR 2010PM-OR	 2010SM-OR 2010TM-OR 2010PM-OR
Water In Bowl Capacity	3.7 oz. (109 ml)	3.7 oz. (109 ml)
Height	11.5 in. (29.2 cm)	11.0 in. (27.9 cm)
Width	5.8 in. (14.7 cm)	5.8 in. (14.7 cm)
Depth	4.8 in. (12.2 cm)	4.8 in. (12.2 cm)
Weight (dry)	4.0 lb (1.8 kg)	5.0 lb (2.2 kg)
Max. Working Pressure	25 PSI (1.7 bar)	25 PSI (1.7 bar)
Clean Pressure Drop	0.25 PSI (1.7 kPa)	0.25 PSI (1.7 kPa)
Water Removal Efficiency	99%	99%
Ambient Temp. Range	-40°F to +250°F (-40°C to +121°C)	
Max. Fuel Temperature	190°F (88°C)	

Part List

Parts/kits listed can be purchased from a Racor distributor. Go to parker.com/racor for a distributor near you.

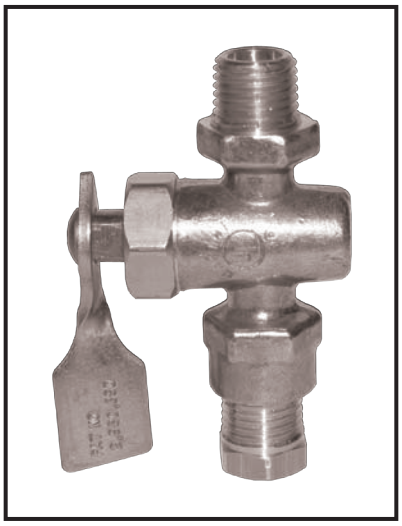
	Part Number	Description
1	***RK 11888***	T-handle (includes o-ring)
2	***RK15078-02***	Lid (includes #3)
3	***15005***	Lid Gasket
4	***2010SM-OR*** ***2010TM-OR*** ***2010PM-OR***	2 Micron Filter (includes seals) 10 Micron Filter (includes seals) 30 Micron Filter (includes seals)
5	***RK 11-1679***	Plug, Heater Feedthru
6	***Not available separately***	500 Series Body
7	***RK 15378-02***	Mounting Bracket
8	***RK 15010B***	Checkball and Seal
9	***RK 15013D***	Turbine Centrifuge/Conical Baffle
10	***15374***	Bowl Gasket
11	***RK 15279-01*** ***RK 15301-02***	Clear Bowl Metal Bowl
12	***RK 20126***	Bowl Plug
13	***RK 15035-01***	Bowl Ring
14	***RK 15081***	Capscrew
15	***RK 11340***	O-ring
16	***RK 11341***	Bowl Drain Gasket (includes O-ring)
17	***RK 15104***	Heat Deflector
18	***RK 11-1910***	Plug Assembly
19	***RK 21069***	Water Probe Assembly (optional)
20	***RK 15211***	Seal Service Kit (all models - not shown)



RK 19492 (UL Listed Shut-off Valve Kit)

The RK 19492 UL Listed Shut-off Valve Kit may be retrofitted to fit most Racor Marine Fuel Filter/Water Separators to simplify draining contaminants from the collection bowl.

- Simple open/close valve for easy contaminant evacuation.
- 1/4″ NPT threads on Valve and Plug.
- Coast Guard accepted in most diesel applications with use of supplied plug.



T-handle Vacuum Gauge

The T-handle vacuum gauge monitors your filters condition. As your filter slowly becomes clogged with contaminates, restriction (resistance to flow) increases. Because of this restriction, more air is mixed with fuel and less fuel is delivered to the engine (fuel de-gassing). This will result in loss of power and eventually stall the engine.

Installing a T-handle vacuum gauge in your fuel system gives you a visual monitor of your filter condition. Excessive resistance on the gauge means it's time to change the filter.

Specifications	RK 11-1969
Application	For 500 Filter Assemblies
Thread Size	1/4″ NPT bottom boss mount
Fitting Thread	9/16″-18 UNF
Dimensions	2.0″ Diameter x 1.1″ Depth
Weight (dry)	0.3 lb (0.1 kg)
Ambient Temperature Range	-40° to +250°F (-40° to +121°C)

Special Notes: For severe vibration applications, mount gauge on a stable, remote location and connect to the source using flexible tubing. After September 1999, Racor converted many liquid-filled gauges to new silicone dampened movement. This new (dry) technology provides a vibration resistant design that never leaks fluid or requires adjustments due to temperature or altitude variations.

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