110A

Fuel Filter/Water Separator

Instruction Part Number 21410 Rev F

Overview:

The 110A fuel filter/water separator may be installed on the vacuum or pressure side (up to 100 PSI) of the fuel system with a maximum flow rate of 15 GPH (57 LPH) for diesel fuel and 35 GPH (132 LPH) for gasoline.

The compact size and four port versatility make the 110A the most popular small fuel filter/water separator on the market today. This filter features 1/4″-18 NPTF (SAE J467) inlet and outlet fuel ports and a unitized mounting bracket. Its two piece, die-cast aluminum construction ensures a long-lasting, durable and extremely effective filter. Servicing is also made easier by the spin-on bowl assembly and simple element changeout procedure.

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Product Features:

- **4 port, die-cast aluminum unitized head**
- **Filters gasoline, diesel, and gasoline/oil blended fuels**
- **Flow rates up to 35 GPH (132 LPH) with gasoline applications**
- **Compact design**
- **Heavy duty construction**
- **Easy to service**

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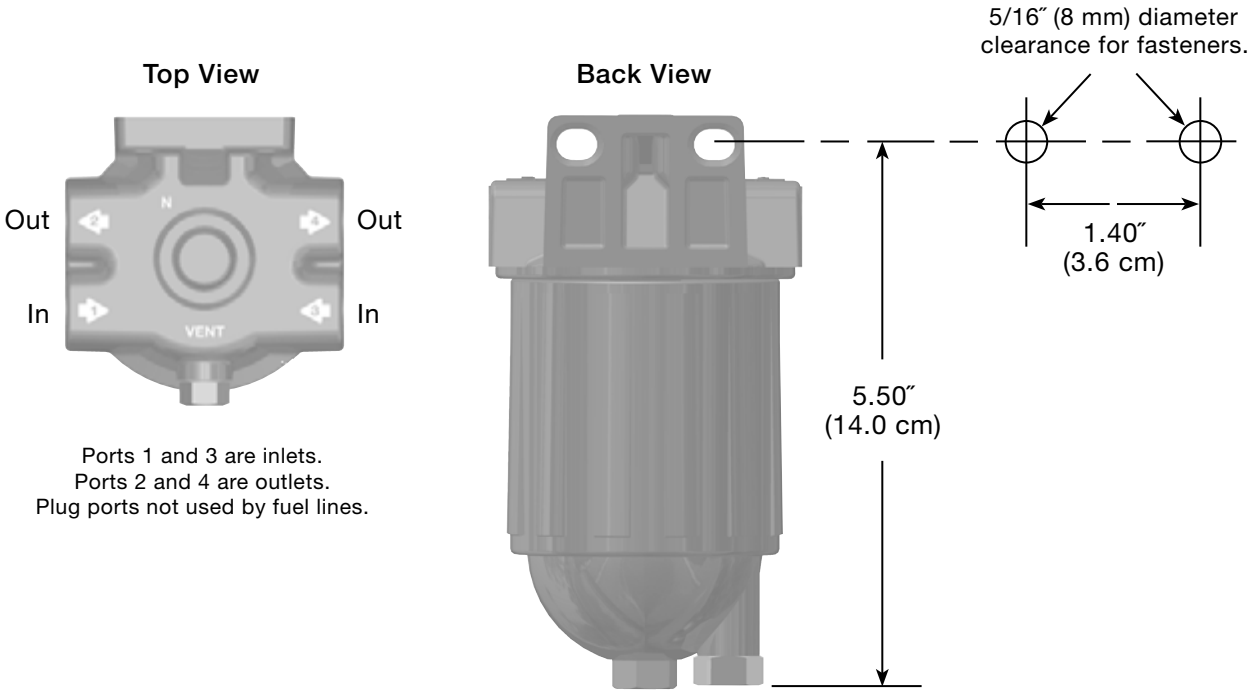
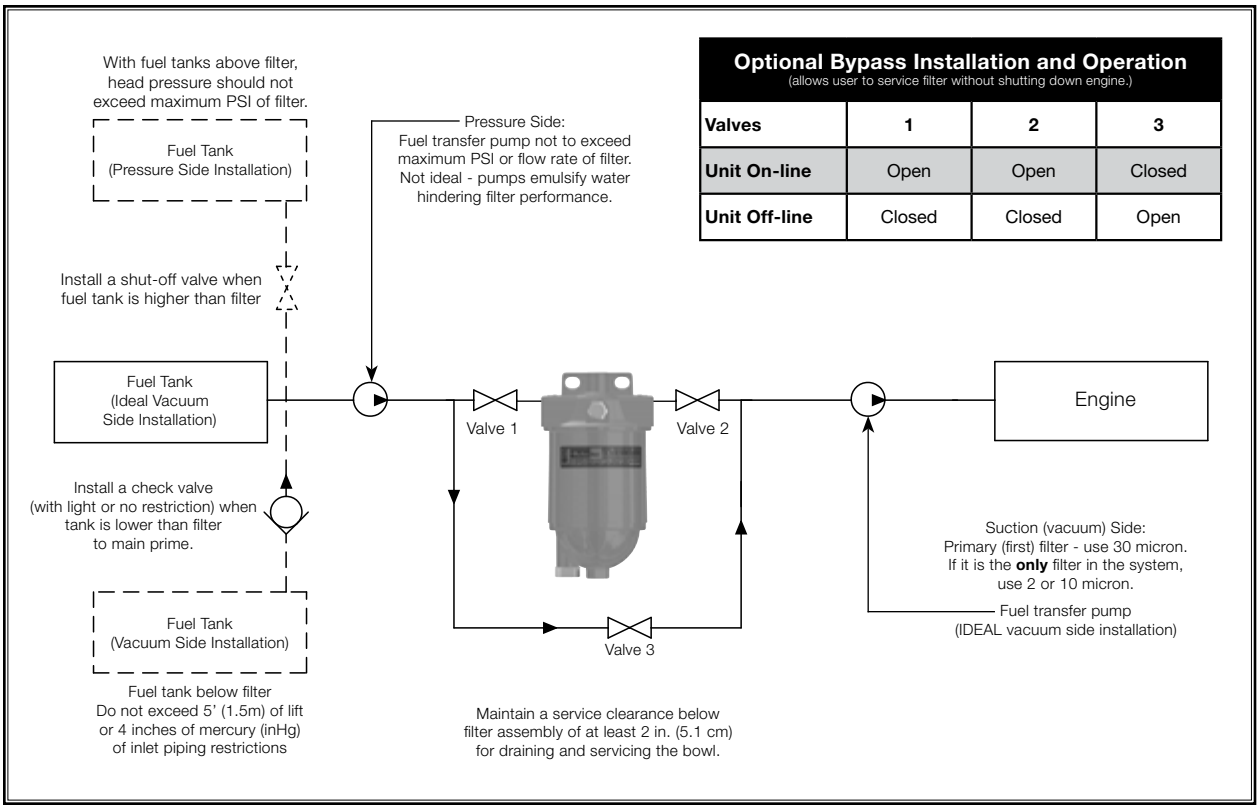
Mounting Instructions



Ports 1 and 3 are inlets.
Ports 2 and 4 are outlets.
Plug ports not used by fuel lines.

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 Instructions

Warning! Do not smoke or allow open flame near installation. Perform installation in a well ventilated area.

Refer to Mounting Instructions and Installation Diagram - install as follows:

1. Make sure engine is off and cool to touch.
2. Apply thread sealant to 1/4″ NPTF fittings - do not use thread tapes as particles may break off and contribute to clogging filter.
3. Thread fittings into appropriate fuel ports and tighten snugly. Plug unused ports with provided port plugs and tighten snugly.
4. Mount filter vertically in a protected area and away from heat sources. Maintain at least 2 inches of clearance below filter for servicing.
5. Attach fuel lines to filter. Avoid tight bends and rubbing areas when routing fuel hose.
6. Spin (counter-clockwise) bowl from mounting head and fill with clean fuel. Spin (clockwise) bowl back onto mounting head and tighten snugly by hand.
7. Start engine and check for leaks. Correct as necessary with engine off.

Filter Replacement

Filter replacement frequency is determined by the contamination level in fuels. Fuel flow to engine becomes restricted as filter gradually plugs with contaminants, resulting in noticeable power loss and/or hard starting. As a guideline, change filter every 500 hours, 10,000 miles, every other oil change, annually, or at first indication of power loss, whichever occurs first. Always carry extra replacement filters as one tankful of excessively dirty fuel can quickly plug a filter.

1. Make sure engine is off and cool to touch.
2. Close all fuel valves, if applicable, to make sure excess fuel does dot spill during servicing.
3. Open vent plug on mounting head.
4. Drain unit of fuel by removing probe port plug or water probe (whichever is installed). Close when done.
5. Spin bowl from mounting head and remove filter. Dispose properly.
6. Lubricate new filter seals with motor oil or clean fuel and install new element.
7. Fill bowl with fuel and spin back onto mounting head. Tighten snugly by hand.
8. Close vent plug. Tighten Snugly. Open all fuel valves, if applicable.
9. Start engine and check for leaks. Correct as necessary with engine off.

Draining the Collection Bowl

Water is heavier than fuel and will settle to bottom of bowl and appear different in color if collected in a clear jar. In marine or high humidity environments, check bowl frequently (daily if a poor fuel source is suspected). The 110A bowl is equipped with a water sensor port that will accept a water probe (sold separately) to alert operator of a high water condition in filter.

Warning! Do NOT use water probe electronics in gasoline applications - an explosion could occur.

1. Make sure engine is off and cool to touch.
2. Open vent plug - it is necessary to remove vent plug completely.
3. Momentarily remove probe port plug or water probe, whichever is installed, and drain water into a suitable container. *Note: If plug or probe is removed too long, the entire filter assembly may drain completely of water and fuel.*
4. Tighten probe port plug or water probe snugly.
5. Follow Priming Instructions on next page.

R11S or R11T Filter

Priming Instructions

1. Make sure engine is off and cool to touch.
2. Spin bowl off of mounting head and fill with clean fuel.
3. Spin bowl back onto mounting head and tighten firmly by hand.
4. Verify all other connections are tight.
5. Start engine and check for leaks, Correct as necessary with engine off.

Troubleshooting

A major cause of power loss or hard starting is a 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

	110A
Maximum Flow Rate	
(with diesel fuel)	15 GPH (57 LPH)
(with gasoline)	35 GPH (132 LPH)
Port Size (SAE J476)	1/4˝-18 NPTF (female)
Replacement Element	
(2 micron)	R11S
(10 micron)	R11T
Minimum Service Clearance	2.0 in. (5.1 cm)
Height	6.0 in. (15.2 cm)
Depth	3.2 in. (8.1 cm)
Width	3.2 in. (8.1 cm)
Weight (dry)	1.3 lb (0.59 kg)
Clean Element Pressure Drop	0.15 PSI (0.01 bar)
Maximum Allowable Pressure [1]	100 PSI (6.9 bar)
Available Options [2]	
Water Sensor	Yes
Heater	No
Water in Bowl Capacity	1.2 oz. (35.5 ml)
Ambient Temperature Range	-40° to +255°F (-40° to +121°C)
Maximum Fuel Temperature	190°F (88°C)

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Special Notes

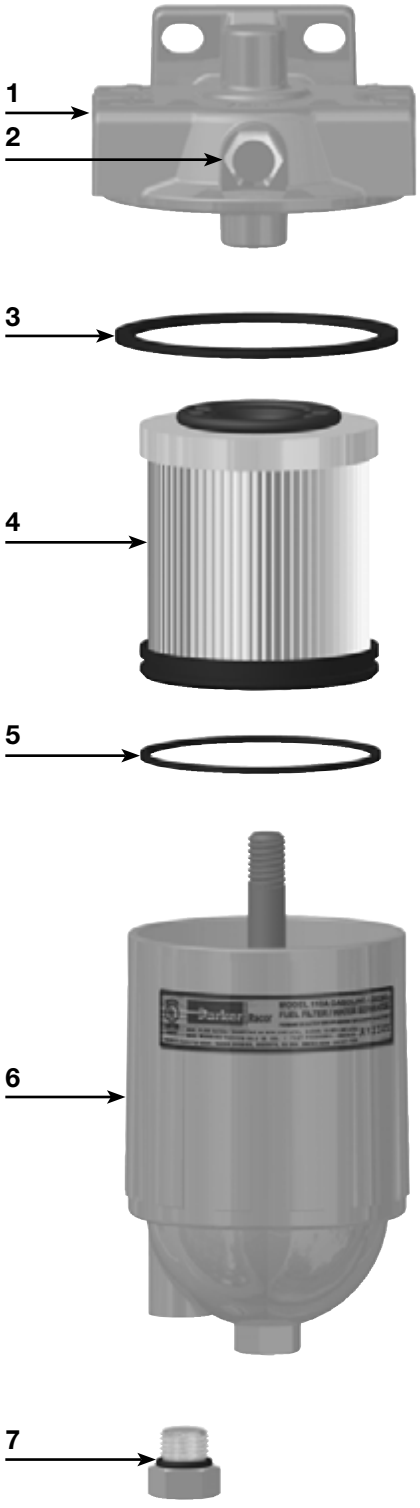
[1] Pressure installations are acceptable up to the maximum PSI shown. Vacuum installations are recommended.

[2] Do not use on gasoline applications.

110A
Replacement Parts

Part No.		Description
1.	**RK 21361**	Mounting Head Kit (1/4″-18 NPTF Ports)
2.	**RK 10110**	Metal Vent Plug Kit (3/8″-24 SAE)
3.	**N/A**	Square Cut Gasket
4.	**R11S**	Replacement Filter (2 Micron) (includes #'s 3 and 5)
	R11T	Replacement Filter (10 Micron) (includes #'s 3 and 5)
5.	**N/A**	O-ring, Bottom End Cap
6.	**RK 21364**	Metal Housing (includes #7)
7.	**RK 20022**	Metal Plug Kit (1/2″-20 SAE)
Additional Parts		
RK 20726 **		Water Detection Module (see accessories)
RK 30817		1/4″-18 Port Plug Kit (2 per kit)
RK 21363		Complete Seal Service Kit

** Not for use with gasoline applications. Water probe must be used with a Racor water detection module.



Accessories

Water Probe Kits

Racor offers a wide selection of water probes, each designed for use with particular models and installation requirements. These probes are available in various configurations to fit every Racor filter/separator. The water probe is only a component in the water detection system and will not work without a Racor electronic detection module (see next page).

RK 30880 has an electronic detection module built-in to its design and has the simplest installation procedure. Wiring instructions are supplied with each water detection module.

Specifications	RK 21069	RK 30964	RK 30880
Threads	1/2″-20 Threads	1/2″-20 Threads	1/2″-20 Threads
Description	One piece design with two wires. Requires a detection module.	Includes detachable 2-wire connector. Requires a detection module.	Includes detachable 3-wire connector, built-in detection electronics and under-dash warning light. Probe sends ground signal to light.
Voltage	12 or 24 vdc	12 or 24 vdc	12 or 24 vdc
Power Draw: ***(12 volt)*** ***(24 volt)***	N/A	N/A	5 Milliamps 10 Milliamps
Maximum Load	N/A	N/A	1 Amp
Weight	0.03 lb (0.01 kg)	0.02 lb (0.01 kg)	0.4 lb (0.18 kg)
Caution: Never wire a water probe directly to voltage or another brand of detection module.			

Hose

Racor fuel hose is fire resistant and meets SAE J1527 Type A class and SAE J1942 standards. This hose delivers test proven performance in a wide operating temperature range, constant working pressure in popular sizes, long-lasting reinforced construction, kink and cut resistance, and compatibility with a variety of standard fittings.

Part Number	Hose ID	Working Pressure	Burst Pressure	Min. Bend Radius
CGH-5	1/4″ (6.3 mm)	500 PSI (3.5 MPa)	2000 PSI (14 MPa)	1″ (25 mm)
CGH-6	5/16″ (8 mm)	500 PSI (3.5 MPa)	2000 PSI (14 MPa)	1 1/4″ (30 mm)
CGH-8	13/32″ (10 mm)	500 PSI (3.5 MPa)	2000 PSI (14 MPa)	1 3/4″ (45 mm)

Note: Additional sizes may be available - contact your Racor distributor.

Additional Features

- High-tensile steel wire braid.
- No-Skive - does not require the removal of outer cover to install.
- USCG-rated for gasoline, diesel, lube oil, and hydraulic systems.
- Working temperature of -4°F to +212°F (-20°C to +100°C).

Water Detection Modules

Racor Water Detection Kits are available for under dash, in-dash, and remote mount installation. These units may be used with any Racor fuel filter/water separator and water probe. An electric detection module analyzes electrical resistance at the water probe and determines if water is present. Units reset automatically after removing water (unless specified). All water detection module kits include an RK 21069 water probe.

Under Dash Modules

Specifications	RK 12870	RK 12871
Voltage	12 vdc	24 vdc
Features	Light and Buzzer	Same as RK12870
Description	Lamp illuminates and buzzer sounds when water is detected. Water must be drained to reset light and stop buzzer.	
Dimensions	1.4″ H x 1.25″ D x 1.4″ W	
Power Draw	1 Milliamp	
Max. Internal Load	30 Milliamps	
Weight	0.2 lb (0.1 kg)	

Note: Additional modules available - contact your Racor distributor.

Part Number
RK 12870 or
RK 12871

In-Dash Modules

Specifications	RK 20726
Voltage	12 or 24 vdc
Features	Light and Buzzer
Description	Red DRAIN lamp illuminates continuously and buzzer sounds momentarily when water is detected. Power-up self diagnosis feature and circuit protection included.
Dimensions*	2.2″ Diameter x 3.2″ Depth
Power Draw: ***(12 volt)*** ***(24 volt)***	 3 Milliamps 13 Milliamps
Max. Internal Load	30 Milliamps
Weight	0.4 lb (0.2 kg)
**** Cut 2.0″ diameter hole to mount gauges in instrument panel.***	

Note: Additional modules available - contact your Racor distributor.

Part Number
RK 20726

Remote Mount Modules

Specifications	RK 14329	RK 14321
Voltage	12 vdc	24 vdc
Features	Sends Hot (+) Signal	Sends Hot (+) Signal
Description	Receives signal from water probe or vacuum switch (not included) then sends a signal to horn or lamp. Must use with relay if power draw is over 1 amp.	Same as RK14329
Dimensions	0.7″ H x 2.5” D x 2.8″ W	1.0″ H x 1.5″ D x 2.0 W
Power Draw:	14 Milliamps	10 Milliamps
Max. Internal Load	30 Milliamps	30 Milliamps
Weight	0.3 lb (0.1 kg)	0.4 lb (0.2 kg)

Note: Additional modules available - contact your Racor distributor.

Part Number
RK 14329

Part Number
RK 14321

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