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 filter changeout procedure.

**Contact Information:**

Parker Hannifin Corporation  
**Racor Division**  
P.O. Box 3208  
3400 Finch Road  
Modesto, CA 95353  
phone 800 344 3286  
209 521 7860  
fax 209 529 3278  
racor@parker.com  
parker.com/racor

**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
Mounting Instructions

Top View

Out
In

Back View

Out
In

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

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

1.40˝ (3.6 cm)

5.50˝ (14.0 cm)

Installation Diagram

With fuel tanks above filter, head pressure should not exceed maximum PSI of filter.

Fuel Tank
(Pressure Side Installation)

Install a shut-off valve when fuel tank is higher than filter.

Fuel Tank
(Ideal Vacuum Side Installation)

Install a check valve (with light or no restriction) when tank is lower than filter to main prime.

Fuel tank below filter
Do not exceed 0’ (1.5m) of lift or 4 inches of mercury (inHg) of inlet piping restrictions

Optional Bypass Installation and Operation

(Allows user to service filter without shutting down engine.)

<table>
<thead>
<tr>
<th>Valves</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unit On-line</td>
<td>Open</td>
<td>Open</td>
<td>Closed</td>
</tr>
<tr>
<td>Unit Off-line</td>
<td>Closed</td>
<td>Closed</td>
<td>Open</td>
</tr>
</tbody>
</table>

Pressure Side:
Fuel transfer pump not to exceed maximum PSI or flow rate of filter. Not ideal - pumps emulsify water hindering filter performance.

Fuel transfer pump
(Ideal vacuum side installation)

Pressure Side:
Primary (first) filter - use 10 micron. If it is the only filter in the system, use 2 micron.

Fuel tank below filter
Do not exceed 0’ (1.5m) of lift or 4 inches of mercury (inHg) of inlet piping restrictions

Maintain a service clearance below filter assembly of at least 2 in. (5.1 cm) for draining and servicing the bowl.

Optional Bypass Installation and Operation

(Allows user to service filter without shutting down engine.)

<table>
<thead>
<tr>
<th>Valves</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unit On-line</td>
<td>Open</td>
<td>Open</td>
<td>Closed</td>
</tr>
<tr>
<td>Unit Off-line</td>
<td>Closed</td>
<td>Closed</td>
<td>Open</td>
</tr>
</tbody>
</table>

Suction (vacuum) Side:
Primary (first) filter - use 10 micron. If it is the only filter in the system, use 2 micron.

Fuel tank below filter
Do not exceed 0’ (1.5m) of lift or 4 inches of mercury (inHg) of inlet piping restrictions

Maintain a service clearance below filter assembly of at least 2 in. (5.1 cm) for draining and servicing the bowl.
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 not 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 filter.
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.

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.

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.
### 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.

### 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.

### Specifications

<table>
<thead>
<tr>
<th>Specification</th>
<th>110A</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Maximum Flow Rate</strong></td>
<td><strong>15 GPH (57 LPH)</strong></td>
</tr>
<tr>
<td>(with diesel fuel)</td>
<td></td>
</tr>
<tr>
<td>(with gasoline)</td>
<td><strong>35 GPH (132 LPH)</strong></td>
</tr>
<tr>
<td><strong>Port Size (SAE J476)</strong></td>
<td>1/4”-18 NPTF (female)</td>
</tr>
<tr>
<td><strong>Replacement Element</strong></td>
<td>R11S</td>
</tr>
<tr>
<td>(2 micron)</td>
<td>R11T</td>
</tr>
<tr>
<td>(10 micron)</td>
<td></td>
</tr>
<tr>
<td><strong>Minimum Service Clearance</strong></td>
<td>2.0 in. (5.1 cm)</td>
</tr>
<tr>
<td><strong>Height</strong></td>
<td>6.0 in. (15.2 cm)</td>
</tr>
<tr>
<td><strong>Depth</strong></td>
<td>3.2 in. (8.1 cm)</td>
</tr>
<tr>
<td><strong>Width</strong></td>
<td>3.2 in. (8.1 cm)</td>
</tr>
<tr>
<td><strong>Weight (dry)</strong></td>
<td>1.3 lb (0.59 kg)</td>
</tr>
<tr>
<td><strong>Clean Element Pressure Drop</strong></td>
<td>0.15 PSI (0.01 bar)</td>
</tr>
<tr>
<td><strong>Maximum Allowable Pressure</strong> *</td>
<td>100 PSI (6.9 bar)</td>
</tr>
<tr>
<td><strong>Available Options</strong></td>
<td></td>
</tr>
<tr>
<td>Water Sensor</td>
<td>Yes</td>
</tr>
<tr>
<td>Heater</td>
<td>No</td>
</tr>
<tr>
<td><strong>Water in Bowl Capacity</strong></td>
<td>1.2 oz. (35.5 ml)</td>
</tr>
<tr>
<td><strong>Ambient Temperature Range</strong></td>
<td>-40° to +255°F (-40° to +121°C)</td>
</tr>
<tr>
<td>(when fuel temp is:)</td>
<td>80° to 190°F (27° to 88°C)</td>
</tr>
</tbody>
</table>

* Pressure installations are acceptable up to the maximum PSI shown. Vacuum installations are recommended.
# 110A Replacement Parts

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. N/A</td>
<td>Mounting Head Kit (1/4˝-18 NPTF Ports)</td>
</tr>
<tr>
<td>2. RK 10110</td>
<td>Metal Vent Plug Kit (3/8˝-24 SAE)</td>
</tr>
<tr>
<td>3. N/A</td>
<td>Square Cut Gasket</td>
</tr>
<tr>
<td>4. R11S</td>
<td>Replacement Filter (2 Micron) (includes #’s 3 and 5)</td>
</tr>
<tr>
<td></td>
<td>Replacement Filter (10 Micron) (includes #’s 3 and 5)</td>
</tr>
<tr>
<td>5. N/A</td>
<td>O-ring, Bottom End Cap</td>
</tr>
<tr>
<td>6. RK 21364</td>
<td>Metal Housing (includes #7)</td>
</tr>
<tr>
<td>7. RK 20022</td>
<td>Metal Plug Kit (1/2˝-20 SAE)</td>
</tr>
</tbody>
</table>

**Additional Parts**
- RK 30817: 1/4˝-18 Port Plug Kit (2 per kit)
- RK 21363: Complete Seal Service Kit

Visit racordealer.com to purchase parts online.
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 30880E has an electronic detection module built-into its design and has the simplest installation procedure. Wiring instructions are supplied with each water detection module.

<table>
<thead>
<tr>
<th>Specifications</th>
<th>RK 21069*</th>
<th>RK 30964*</th>
<th>RK30880E</th>
</tr>
</thead>
<tbody>
<tr>
<td>Threads</td>
<td>1/2˝-20 Threads</td>
<td>1/2˝-20 Threads</td>
<td>1/2˝-20 Threads</td>
</tr>
<tr>
<td>Description</td>
<td>One piece design with two wires. Requires a detection module.</td>
<td>Includes detachable 2-wire connector. Requires a detection module.</td>
<td>Includes detachable 3-wire connector, built-in detection electronics and under-dash warning light. Probe sends ground signal to light.</td>
</tr>
<tr>
<td>Voltage</td>
<td>12 or 24 vdc</td>
<td>12 or 24 vdc</td>
<td>12 or 24 vdc</td>
</tr>
<tr>
<td>Power Draw:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(12 volt)</td>
<td>N/A</td>
<td>N/A</td>
<td>5 Milliamps</td>
</tr>
<tr>
<td>(24 volt)</td>
<td></td>
<td></td>
<td>10 Milliamps</td>
</tr>
<tr>
<td>Maximum Load</td>
<td>N/A</td>
<td>N/A</td>
<td>1 Amp</td>
</tr>
<tr>
<td>Weight</td>
<td>0.03 lb (0.01 kg)</td>
<td>0.02 lb (0.01 kg)</td>
<td>0.4 lb (0.18 kg)</td>
</tr>
</tbody>
</table>

* Water probe must be used with a Racor water detection module.

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

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).

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Hose ID</th>
<th>Working Pressure</th>
<th>Burst Pressure</th>
<th>Min. Bend Radius</th>
</tr>
</thead>
<tbody>
<tr>
<td>CGH-5</td>
<td>1/4˝ (6.3 mm)</td>
<td>500 PSI (3.5 MPa)</td>
<td>2000 PSI (14 MPa)</td>
<td>1˝ (25 mm)</td>
</tr>
<tr>
<td>CGH-6</td>
<td>5/16˝ (8 mm)</td>
<td>500 PSI (3.5 MPa)</td>
<td>2000 PSI (14 MPa)</td>
<td>1 1/4˝ (30 mm)</td>
</tr>
<tr>
<td>CGH-8</td>
<td>3/32˝ (10 mm)</td>
<td>500 PSI (3.5 MPa)</td>
<td>2000 PSI (14 MPa)</td>
<td>1 3/4˝ (45 mm)</td>
</tr>
</tbody>
</table>

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

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

Note: Additional modules available - contact your Racor distributor.

In-Dash Modules

<table>
<thead>
<tr>
<th>Specifications</th>
<th>RK 20726</th>
</tr>
</thead>
<tbody>
<tr>
<td>Voltage</td>
<td>12 or 24 vdc</td>
</tr>
<tr>
<td>Features</td>
<td>Light and Buzzer</td>
</tr>
<tr>
<td>Description</td>
<td>Red DRAIN lamp illuminates continuously and buzzer sounds momentarily when water is detected. Power-up self diagnosis feature and circuit protection included.</td>
</tr>
<tr>
<td>Dimensions</td>
<td>2.2˝ Diameter x 3.2˝ Depth</td>
</tr>
<tr>
<td>Power Draw (12 volt)</td>
<td>3 Milliamps</td>
</tr>
<tr>
<td>Power Draw (24 volt)</td>
<td>13 Milliamps</td>
</tr>
<tr>
<td>Max. Internal Load</td>
<td>30 Milliamps</td>
</tr>
<tr>
<td>Weight</td>
<td>0.4 lb (0.2 kg)</td>
</tr>
</tbody>
</table>

Note: Additional modules available - contact your Racor distributor.

Remote Mount Modules

<table>
<thead>
<tr>
<th>Specifications</th>
<th>RK 14329</th>
<th>RK 14321</th>
</tr>
</thead>
<tbody>
<tr>
<td>Voltage</td>
<td>12 vdc</td>
<td>24 vdc</td>
</tr>
<tr>
<td>Features</td>
<td>Sends Hot (+) Signal</td>
<td>Sends Hot (+) Signal</td>
</tr>
<tr>
<td>Description</td>
<td>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.</td>
<td>Same as RK14329</td>
</tr>
<tr>
<td>Dimensions</td>
<td>0.7˝ H x 2.5˝ D x 2.8˝ W</td>
<td>1.0˝ H x 1.5˝ D x 2.0˝ W</td>
</tr>
<tr>
<td>Power Draw</td>
<td>14 Milliamps</td>
<td>10 Milliamps</td>
</tr>
<tr>
<td>Max. Internal Load</td>
<td>30 Milliamps</td>
<td>30 Milliamps</td>
</tr>
<tr>
<td>Weight</td>
<td>0.3 lb (0.1 kg)</td>
<td>0.4 lb (0.2 kg)</td>
</tr>
</tbody>
</table>

Note: Additional modules available - contact your Racor distributor.
Limited Warranties Statement

All products manufactured or distributed by Racor are subject to the following, and only the following, LIMITED EXPRESS WARRANTIES, and no others: For a period of one (1) year from and after the date of purchase of a new Racor product, Racor warrants and guarantees only to the original purchaser-user that such a product shall be free from defects of materials and workmanship in the manufacturing process. The warranty period for pumps and motors is specifically limited to ninety (90) days from date of purchase. A product claimed to be defective must be returned to the place of purchase. Racor, at its sole option, shall replace the defective product with a comparable new product or repair the defective product. This express warranty shall be inapplicable to any product not properly installed and properly used by the purchaser-user or to any product damaged or impaired by external forces.

Warning

Failure or improper selection or improper use of the products and/or systems described herein or related items can cause death, personal injury and property damage. This document and other information from Parker Hannifin Corporation, its subsidiaries and authorized distributors provide product and/or system options for further investigation by users having technical expertise. It is important that you analyze all aspects of your application and review the information concerning the product or system in the current product catalog. Due to the variety of operating conditions and applications for these products or systems, the user, through its own analysis and testing, is solely responsible for making the final selection of the products and systems and assuring that all performance, safety and warning requirements of the applications are met.

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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 or reproductive toxicity’.