

100 Watt Heater Kits

Installation Instructions

Read all instructions before beginning installation. Improper installation could cause personal injury or property damage.

RK15438-01 or RK15440-01 (12 VDC) and
 RK15438-02 or RK15440-02 (24 VDC)
 For 500FG Turbine Series Fuel Filters



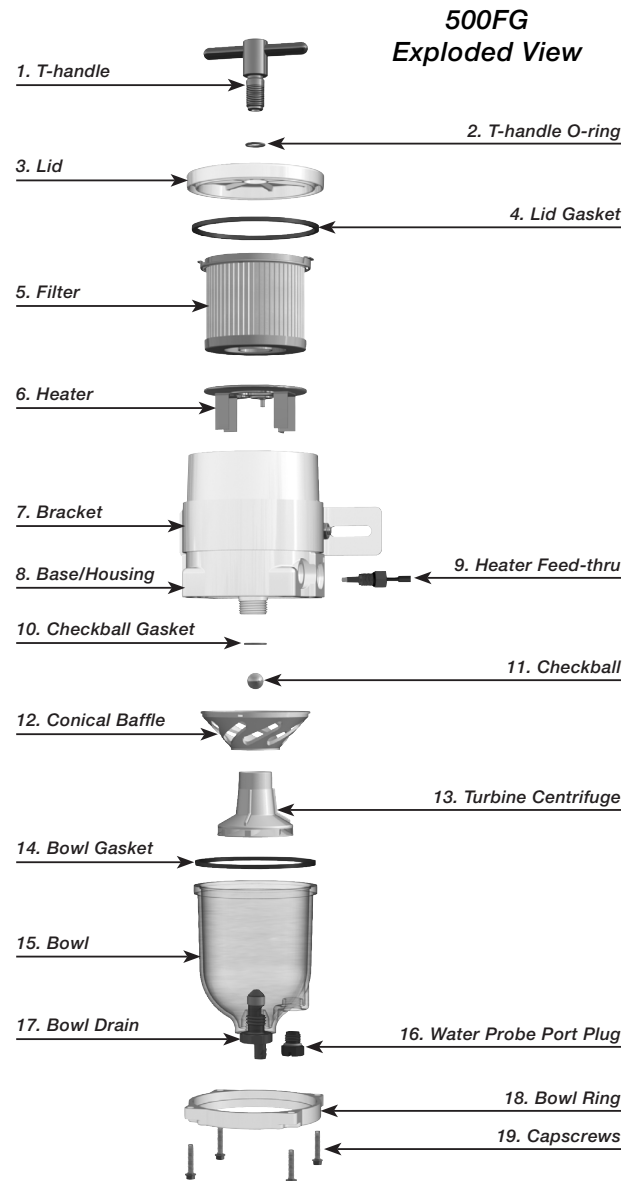
The in-filter heater is a cold weather starting aid with an internal automatic thermostat that turns the heater ON when the fuel temperature drops below 50°F (10°C) and turns OFF when the fuel reaches 80°F (27°C). Heat is supplied in the filter assembly just below the replacement filter for quick, easy starting. The 100 watt heater is operated by turning the ignition switch ON for a minimum of five minutes prior to starting the engine.

Note: Racor electrical options are for use with diesel applications only.

As of August 2013, all 500FG Turbine Series heaters are equipped with a thermal cut-off (TCO) fuse. This is a running change.

Thermal cut-offs provide protection against overheating conditions, which could lead to fuel filter component damage. Additionally, a green heat insulator pad has been secured to the heater disc top surface to provide additional protection and heat transfer to the filter.

Caution! Do not attempt to remove the insulator as it is riveted to the heater disc. Note—some color transfer to the bottom filter cap is normal.



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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'.



Supplies

The following customer supplied items are recommended for best results when installing a heater:

- Heater power demand is 8.3 amps for 12 vdc and 4.2 amps for 24 vdc. Due to power demand, we recommend our relay kit for the safest method of installation. We offer several relay kits available from your Racor distributor.
- Refer to the Heater Relay Kit Selection Guide
- A ON-OFF toggle switch (customer supplied) may be used to control power to heater relay. This allows the operator to cut power to the heater relay during summer use or servicing procedures.
- All wires should be 14 AWG (American Wire Gauge) minimum.
- Threadlocker such as Loctite #242.
- Motor oil, shop towels, clean fuel and torque wrenches.

Installation

This procedure may be done with the unit on the vehicle (if space permits) or on a work bench. When performing procedure on vehicle, remove ground cable from battery as a safety measure before starting.

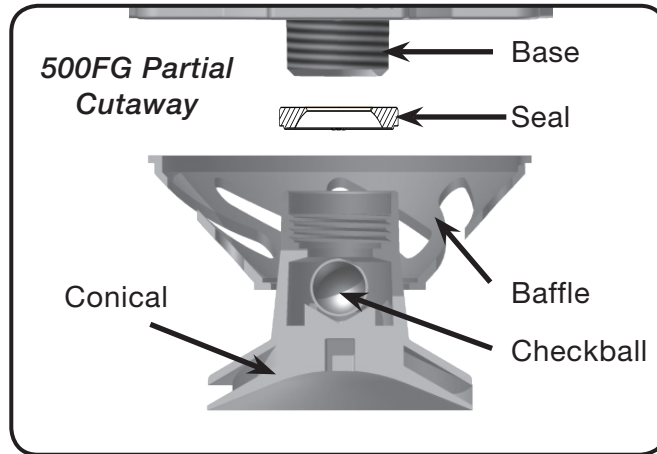
Note: Use a toothpick to remove old gaskets that are stuck in the sealing gland so the surfaces are not scratched. Clean all sealing surfaces with a clean, dry cloth.

Refer to Exploded View on page 4 as you read these instructions and install the heater.

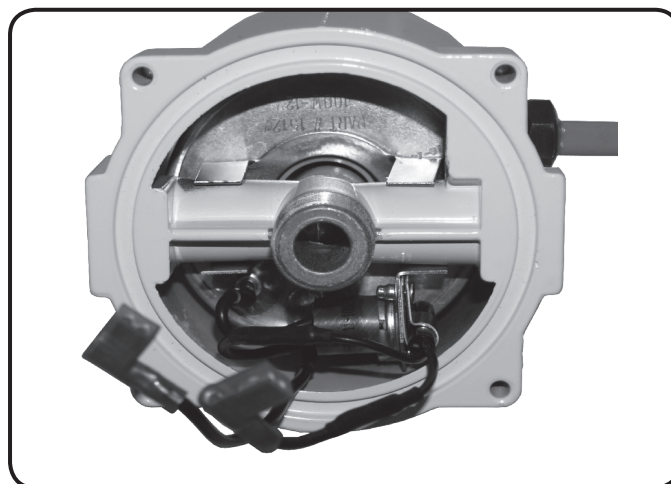
1. Drain all fuel from the Racor by opening drain valve (item# 17).
2. Remove T-handle (item# 1) and lid (item# 3), discarding old T-handle O-ring (item# 2) and lid gasket (item# 4).
3. Remove filter element (item# 5) from base/housing (item# 8).
4. Remove the four (4) bowl ring capscrews (item# 19) and pull the bowl (item# 15) from the base/housing (item# 8). You may need to tap the side of the bowl (item#

15) with a rubber mallet to free it. Remove the rubber bowl gasket (item# 14) and discard. Clean the base (item# 8) gasket gland of any debris with a soft shop cloth.

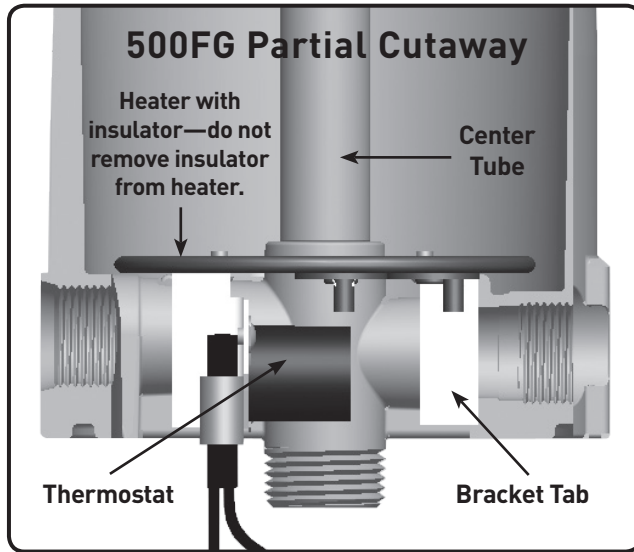
5. Grasp the turbine centrifuge (item# 13) with a gloved hand and unthread it counter-clockwise to remove it. The conical baffle (item# 12) will also come off with the centrifuge. An aluminum checkball (item# 11) should be inside it along with a light red colored checkball seal (item# 10).
6. Notice how the checkball seal (item# 10) is positioned within the base (item# 8)—the radiused side faces toward the checkball—see image below. Install your new check ball seal at this time in the same orientation so it is not forgotten in the re-assembly process. Set these parts to the side, you will use them later.



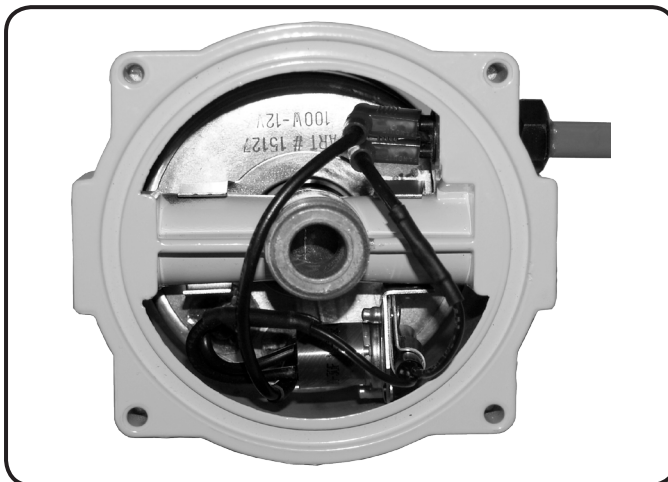
7. Apply a light coating of motor oil on the o-ring of the 2-wire feed-thru (item# 9) and insert connector end thru the base port (next to the fuel inlet port). Tighten the feed-thru housing into the base port. Tighten the 5/8" feed-thru housing hex (specification: 90 inch pounds). The o-ring will seal with just light hand tightening.
8. Carefully lower the heater (item# 6) into the filter housing –thermostat end first - over the center tube and pull the wires **through the correct opening at bottom of base** (item# 8). See image below.



9. Position, then push the heater bracket tabs onto filter base runner as shown in the illustration below.



10. Attach the flag connectors of the heater to the 2-wire feed-thru. The wires are color-coded; however, the heater has no polarity so you can hook either wire to either of the two wires from the feed-thru plug. Use pliers to ensure the connectors seat properly.
11. The wires must be routed smoothly so they go around the distance from the feed-thru to the heater. In the next step, the centrifuge and conical parts will be re-attached to the base. The wires should be clear of the conical (item# 12) and be 'hidden' within the void of the conical. Also, the wires should not be pinched by the installed conical if installed properly.



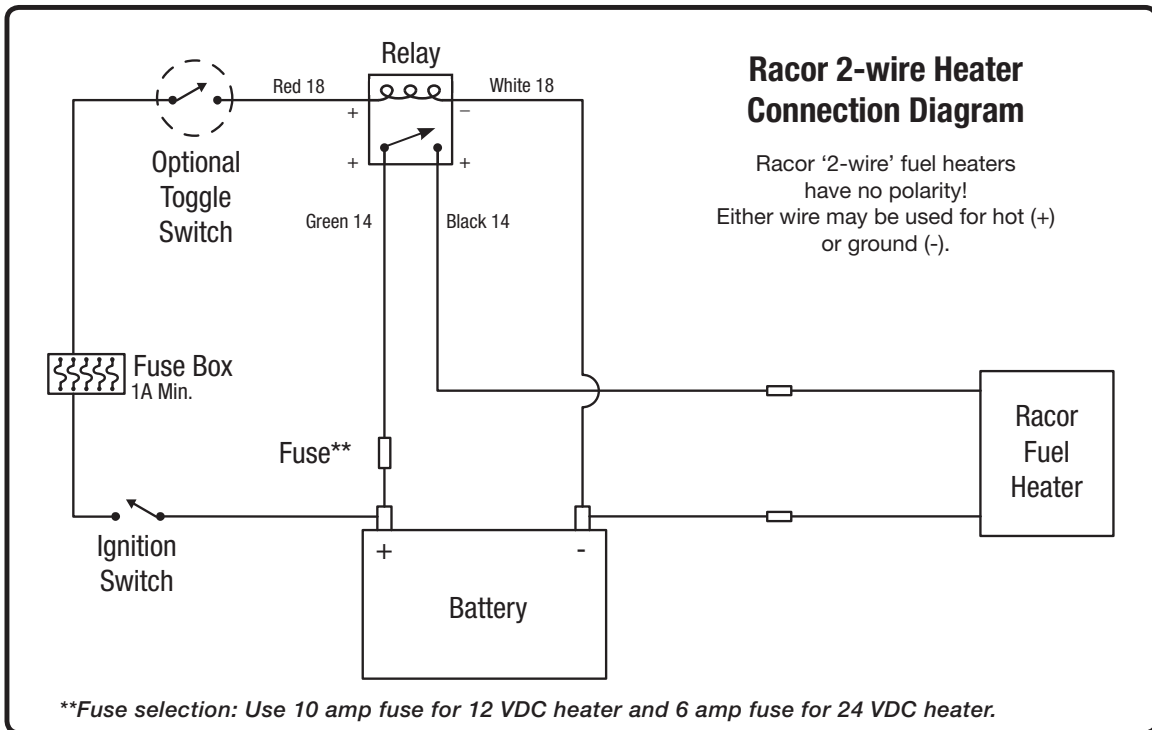
12. Now re-install the turbine centrifuge, checkball, checkball gasket, and conical parts (from step 5) onto the filter base. Start the threading process slowly so you don't cross-thread the centrifuge threads. Once started, hand tighten snugly (specification: 90 inch lbs). Double-check to make sure the heater wires are not protruding or getting pinched by the conical.

13. Apply a generous coating of silicone grease to the new bowl gasket and position it in the base gasket gland. The grease should hold the gasket in position.

Note: If the gasket appears to be a smaller diameter than the base gasket gland, it may be necessary to 'stretch' it by pulling on opposite ends a few times. Do this a little at a time until the gasket lays flat within the gland.

14. Secure the bowl to the base using the bowl ring and four capscrews. Note: Using a shop cloth, clean the capscrew threads of any moisture or debris. Apply a drop or two of threadlocker to threads. Avoid cross-threading the base threads by starting each capscrew one at a time. Start the thread engagement by hand. Do not force the capscrew, it should thread several turns by hand with little resistance. Tighten each capscrew in a 'cross-wise' pattern hand tight (specification: 55-65 in.lbs) Do not over tighten to avoid stripping out the base threads! Ensure the bowl drain is closed.
15. Replace the filter element into the housing and prime the Racor by filling the housing slowly with clean fuel.
16. Apply silicone grease to the new lid gasket (same size as the bowl gasket) and T-handle O-ring. Re-attach the lid and T-handle to the housing and tighten snugly by hand only. Do not use tools for leverage. (specification: 90 in.lbs)
17. Prime the fuel system per manufacturer's instructions, if applicable.
18. Reattach the battery. Start the engine and let it run for a minute. Check the fuel system for leaks. Correct as necessary with the engine off and pressure relieved from the filter assembly.

Schematic - For Light-Duty Power Relay Kits: RK 11861 and RK 11862



HEATER WIRING INSTALLATION

Note—The Racor fuel heater should be powered from an independent wiring circuit. Do not source power from existing circuits which could overload and create a hazard, such as a fire.

1. Never power up the heater if there is no fuel in the Racor filter, **severe damage** may result to the heater and filter assembly.
2. During equipment or vehicle servicing, always ensure power to the Racor heater is turned off. We recommend the installation of a customer-supplied power control switch (see electrical schematic).
3. Check contaminant collection bowl daily for accumulated water.

Water is heavier than diesel fuel and will fall to the bottom of the bowl. Drain water before the level reaches the bottom of the turbine centrifuge. Do not allow water to rise to the level of the heater.

4. Ensure wiring installation diagram is closely followed and the proper safety fuse is used. If a fuse should fail, determine the cause and correct it before installing a new fuse and using the heater again.
5. Exterior wiring connections should be soldered, crimped and sealed for protection against shorting.
6. Route wires in protected locations, away from hot or moving surfaces

and places that could expose them to chemical contact or environmental debris.

7. Inspect all wiring and connections for unsafe conditions annually or every 12,000 miles, whichever occurs first.
8. Study the wiring illustration of your system before starting. Due to the power consumption of the heater (12 vdc = 8.3 amps, 24 vdc = 4.2 amps) an external relay is required. Racor offers relay kits for this application—see below. Racor Relay kits include instructions on how to attach them to the Racor heater.

Racor Heater Relay Kit Information

Heater Kits	Recommended Racor Heater Relay Kit	
	Heater In Use	Use Kit Number
RK15438-01 12 VDC 100 Watts 8.3 Amps	Single (1)	RK 11861
	Dual (2)	RK 11861
RK15438-02 24 VDC 100 Watts 4.2 Amps	Single (1)	RK 11862
	Dual (2)	RK 11862



RK 11861 or RK 11862 Relay Kits

Note—Racor heater relay kits are ordered separately.