

**Rinnai**®

**Rinnai Circ-Logic™ (RCL)  
With GTK15 Kit**

**Rinnai Circ-Logic™ (RCL) offers homeowners enhanced convenience and energy efficiency in homes with hot water recirculation systems with a dedicated return line. The RCL controls the on/off sequence and operational cycles of the recirculation pump through the programming of the tankless water heater's control board. This feature is standard on Rinnai's Ultra and Luxury Series units.**

The RCL has been designed to provide the homeowner with the ability to customize their recirculation systems based on such key variables as home size, length of recirculation loop, piping insulation, and the homeowner's comfort and efficiency preferences.

## Economy Mode

The Economy mode operates as follows:

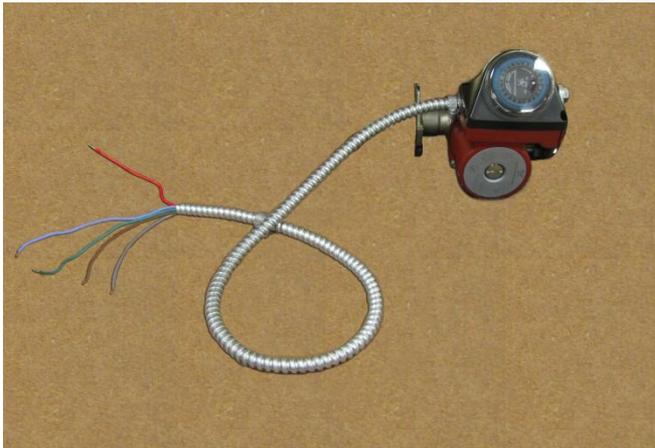
- Less energy consumed due to fewer pump cycles
- Assumes plumbing is insulated (minimal pipe heat loss)
- Pump cycles on every 31 to 79 minutes (see table).

## Comfort Mode

The Comfort mode operates as follows:

- Higher energy consumption due to more pump cycles
- Assumes plumbing is not insulated resulting in higher pipe heat loss
- Pump cycles on every 15 to 39 minutes (see table).

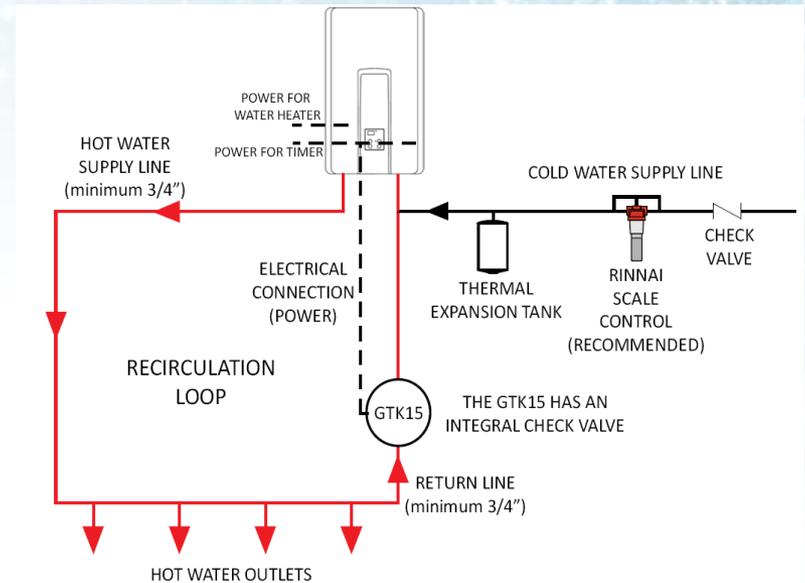
The GTK15 Kit, manufactured by Grundfos, allows the user to enjoy further energy savings through the use of a timer.



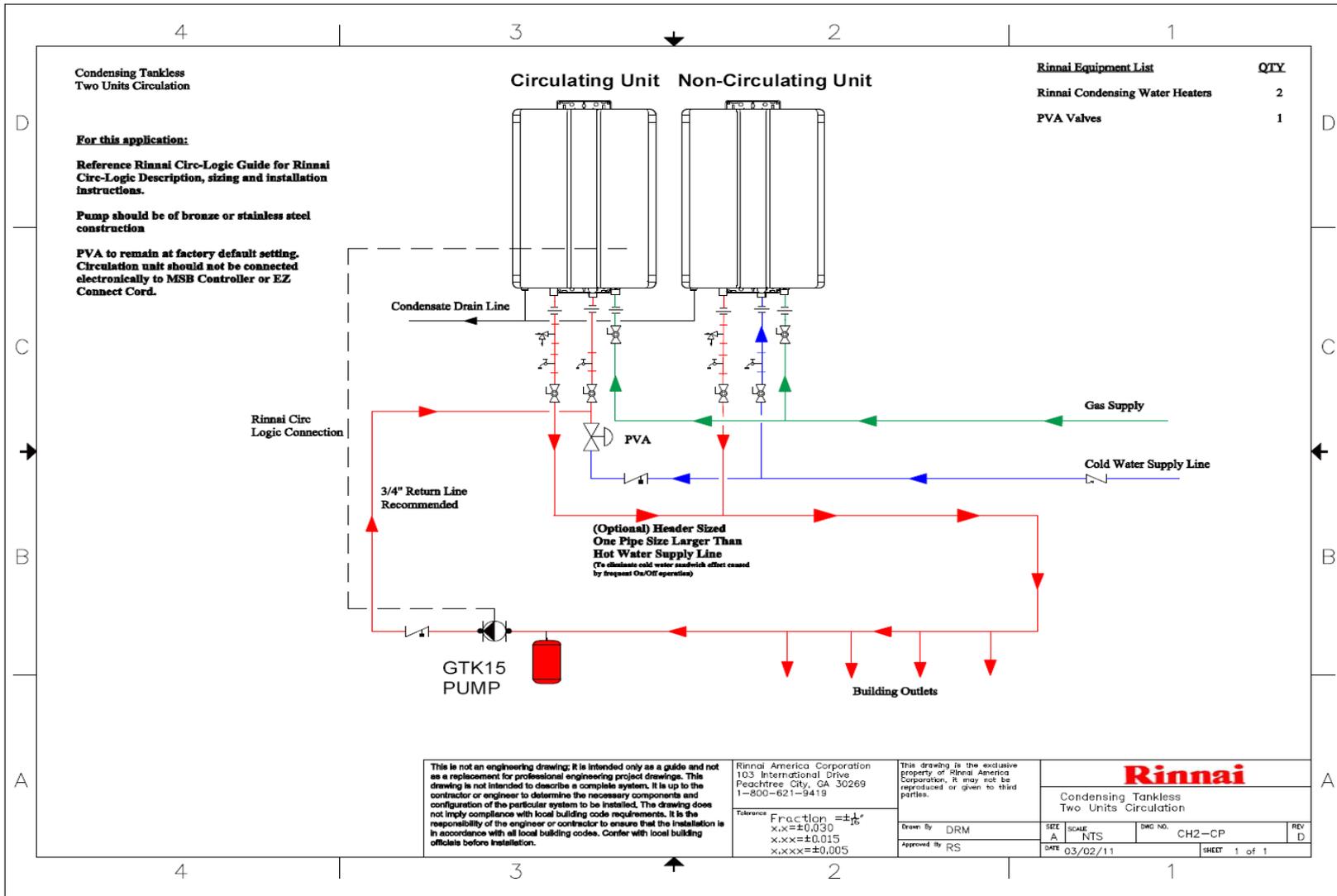
The GTK15 Kit contains the following:

- Grundfos 15-55 pump with timer and internal check valve
- 6' electrical cord
- 6' BX conduit pre-wired to pump
- (5) wire nuts
- Rinnai Circ-Logic™ Manual

Flange connectors and fasteners are to be field supplied.



# Installation with GTK15 Kit



- **Pump must be installed in accordance with Rinnai installation instructions when Circ-Logic™ is used.**
- **The contractor/engineer must determine the necessary components for and configuration of the particular system being installed.**
- **It is the engineer's or contractors responsibility to ensure the installation is in accordance with all local building codes.**
- **The water heater and the plumbing system should be installed in accordance with local codes and with Rinnai installation manual.**

## Installation requirements

1. Thoroughly clean and flush the system prior to pump installation.
2. Do not install the pump at the lowest point of the system where dirt and sediment naturally collect.
3. Install an air vent at the high point(s) of the system to remove accumulated air.
4. Ensure that water does not enter the terminal box during the installation process.
5. Install the pump in the supply line; the suction side of the pump should be flooded with water.
6. DO NOT START THE PUMP UNTIL THE SYSTEM HAS BEEN FILLED AND CHECKED FOR LEAKS OR OTHER POSSIBLE COMPONENT FAILURES.

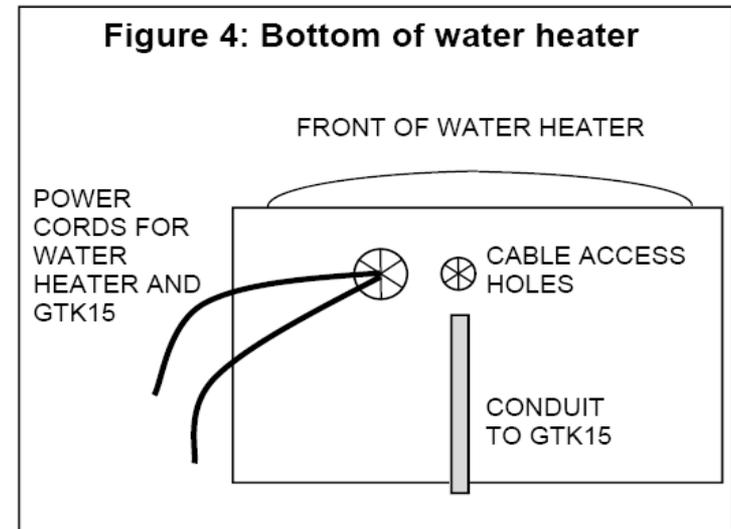
# Installation with GTK15 Kit

1. Turn off the electrical power supply by unplugging the power cord or by turning off the electricity at the circuit breaker.
2. Install the GTK15 pump according to the System Drawings and Pump Installation instructions.
3. Re-route the water heater power cord or wiring from the smaller access hole to the larger access hole as shown in Figure 4: Bottom of Water Heater.
4. Route the line cord (power cord) for the GTK15 through this larger access hole.
5. On VC series models, use a knockout to enlarge the smaller hole to 3/4 inch diameter. On KB series models the hole is already the correct size. Attach the conduit from the GTK15 to the smaller access hole using the connector supplied.

## Pump Sizing

Equivalent Pipe Length [1] using Grundfos GTK15 @ 120° F	Up to 200 ft
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[1] The Equivalent pipe length includes supply piping, return piping, and fittings. The installer/contractor/engineer must calculate the total equivalent pipe length of the piping system.

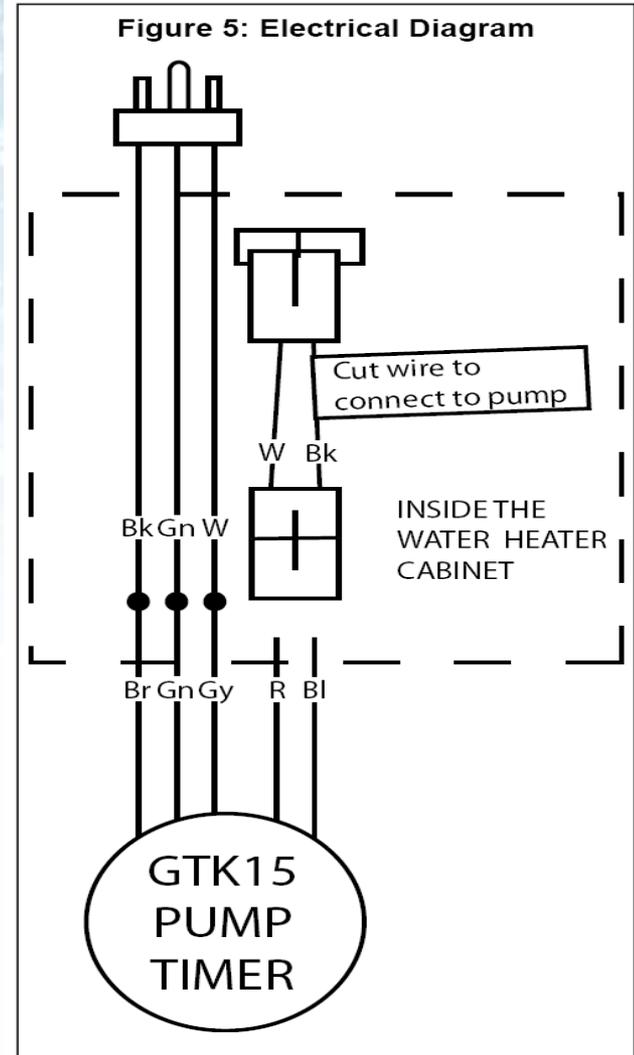


# Installation with GTK15 Kit

- Splice the brown, gray, and green wires from the Grundfos unit to the line cord (black, white, green) according to the wiring table. These splices should be located inside the water heater cabinet. Refer to Figure 5: Electrical Diagram.
- The wire harness for the recirculation pump is bundled with the wire harness from the PC board. The connector has a black and white wire with the label "Cut wire to connect to pump". To connect to the pump, cut the connector and splice the wires according to the wiring table and Figure 5. Follow Electrical Code and pump manufacturers recommendations.

**WARNING:**  
**Risk of electric shock.** The GTK15 Pump has two power sources. Disconnect all supply connections before servicing. One is directly from the electrical outlet for the timer and the other is through the water heater for the pump.

Wiring Table		
Description	GTK15 (Timer)	Supplied Line Cord
+115VAC	Brown (Br)	Black (Bk)
Neutral	Gray (Gy)	White (W)
Ground	Green (Gn)	Green (Gn)
	GTK15 (Pump)	Rinnai Circ-Logic
+115VAC (Circ-Logic)	Red (R)	White (W)
Neutral (Circ-Logic)	Blue (Bl)	Black (Bk)



- Adjust the dip switch by moving the 4th switch in the white set of switches (SW2) to ON.  
For Economy Mode, set the 8th switch in the white set of switches (SW2) to OFF (default).  
For Comfort Mode, set the 8th switch in the white set of switches (SW2) to ON.
- Connect power to the water heater and the GTK15 line cord. Press the Power button on the controller. The pump and water heater will turn on to raise the recirculation loop temperature.

	Settings for SW2 (bank of white switches)	
	Switch 4	Switch 8
Economy Mode	ON	OFF
Comfort Mode	ON	ON

### Timer Technical Application

The timer control is designed to turn the circulator on and off at preset times allowing the user to select operation of the circulator during high use periods of the day.

**Note that the timer will have a higher priority than the Rinnai Circ-Logic™. The pump will only circulate water when both the timer and Circ-Logic™ output is activated.**

Refer to Rinnai Circ-Logic™ Guide for instructions in setting and operating timer controls

# Sequence of Operation



Pump recirculation begins when the water heater is turned on. The Rinnai inlet and outlet thermistors measure the water temperature.

The water heater produces hot water at the temperature setting. If the inlet thermistor detects abnormal temperature then a diagnostic code **51** is generated and the pump will turn off.

When the return water temperature reaches 15°F (8.3°C) below the temperature setting the water heater and pump will turn off.

The cycle will restart at the approximate time interval in the table based on mode of operation and temperature thermistor readings.

Rinnai Temperature Setting °F	Typical Pump ON Intervals* (minutes)	
	Economy Mode	Comfort Mode
140	31	15
135	31	15
130	31	15
125	31	15
120	31	15
115	35	18
110	42	21
108	45	22
106	49	24
104	54	27
102	60	30
100	68	34
98	79	39

**Note: The maximum Rinnai temperature setting while in recirculation mode is 140°F (60°C)**

\* The pump will cycle on at these calculated intervals which are based on the temperature setting, insulation, timer settings and estimated heat loss in the system. The values for your installation may vary.

The table below indicates the beginning serial number for each model that has the Circ-Logic™ feature.

Model	Serial Number	Part Number
RL75i (VC)	Units with an "(A)" on the end of the part number. These will be available in June 2012	REU-VC2528FFUD(A)-US
RL75e (VC)		REU-VC2528WD(A)-US
RL94i (VC)	DB.CA-016788 and higher	REU-VC2837FFUD-US
RL94e (VC)	DC.BA-013335 and higher	REU-VC2837WD-US
RU98i	DB.BA-006175 and higher	REU-KB3237FFUD-US
RU98e	DB.BA-006213 and higher	REU-KB3237WD-US
RU80i	DB.BA-006201 and higher	REU-KB2530FFUD-US
RU80e	DB.BA-006195 and higher	REU-KB2530WD-US

For specific information on warranty with circulation, visit <http://www.rinnai.us/warranty>

When the pump is first started, the shaft may rotate slowly until water has fully penetrated the bearings. If the pump does not run, the shaft can be rotated manually. To accomplish this, switch off the electrical supply, and close the isolation valves on each side of the pump. Remove the large screw in the middle of the nameplate. Insert a small flat blade screwdriver into the end of the shaft, and gently turn until the shaft moves freely (see Figure 8). Replace and tighten the plug. Open the isolation valves and wait 2 to 3 minutes for the system pressure to equalize before starting the pump. (See Figure 8)



**Figure 8**

For technical assistance, please contact Rinnai at 1-866-RINNAI1 (746-6241).

**The End**

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