



USER MANUAL

# Marley Collection Basin Heater Circuit

INTEGRATED OPTION BASIN HEATER CIRCUIT USING INDEECO TEMPERATURE CARD

M98-1483A ISSUED 3/2013

READ AND UNDERSTAND THIS MANUAL PRIOR TO OPERATING OR SERVICING THIS PRODUCT.





# introduction

This manual covers operation and maintenance of an Indeeco heater control circuit for cold water basin heaters. The circuit may be integrated into various control panels along with other circuits, such as a starter panel. This system includes an Indeeco Series 550 circuit board, a dual function sensor for temperature and low water cutout, and contactor.

# operation

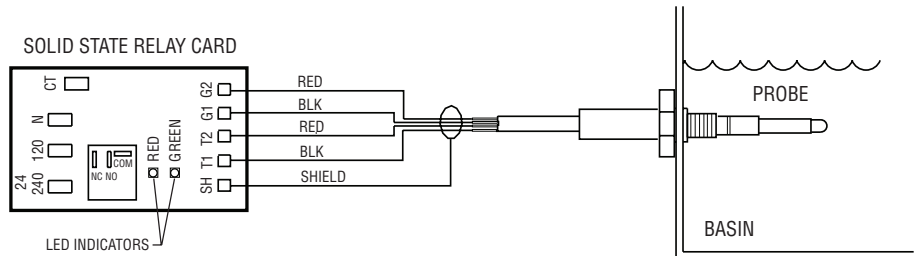
To operate the heater, check the water level and verify the sensor is submerged in water. See **Figure 1**. The system will not energize until both the water level and the temperature conditions are met. The water level must be above the sensor and the temperature must be below the set point. This set point is fixed at 45°F.

Turn power on. If the green LED on the circuit board is on this indicates that the water temperature is below the set point and the heater is ON. If no LEDs are illuminated this indicates that the water temperature is above the set point and the system is operational. If the red LED is illuminated this indicates that the water level is below the probe.

The fan motor starter is interlocked with the heater controls and the fan will not run when the heater is ON. There is no separate switch for the heater control. The heater is operational whenever the control panel disconnect is in the ON position. To service the basin heaters it is necessary to place the disconnect in the OFF position. To disable the operation of the basin heater, remove the basin heater fuses. The circuit board and contactor will remain operational. However, no heating will occur with the heater fuses removed.

**Figure 1**

Red	Green	
OFF	OFF	Ready, No Demand
ON	OFF	Low Water Level
OFF	ON	Heater On



---

## operation

---

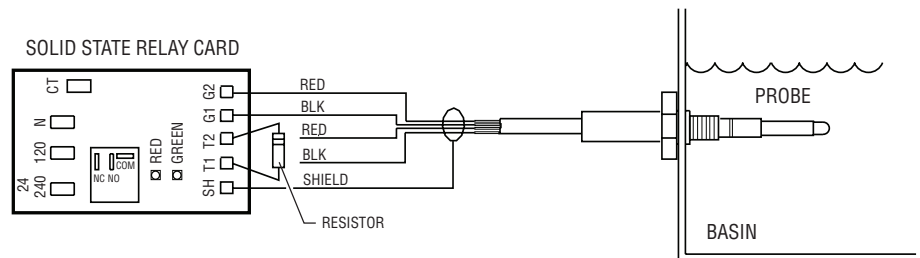
### Testing above Freezing Temperatures

Under normal operating conditions the heaters will be turned on at a water temperature between 40° and 45°F, and turned off when the water temperature exceeds 45°F. For testing the system at temperatures above 45°F use the following method

1. Disconnect power to the control panel using standard lockout procedure.
2. Remove the sensor wires connected to terminals T1 and T2 on the relay circuit board.
3. Connect a 1.5K ohm resistor across T1 and T2 terminals—see **Figure 2**.
4. Close panel door and verify probe is submerged in tower basin water.

---

**Figure 2**



5. With panel door closed turn on power supply to the system. An audible CLICK should be heard as the contactor engages. If this does not happen, refer to the Troubleshooting section of this manual.
6. If the system tests OK turn off power, open panel, and remove the resistor. Replace sensor wires T1 and T2 and close door. Turn power on.

---

## operation

---

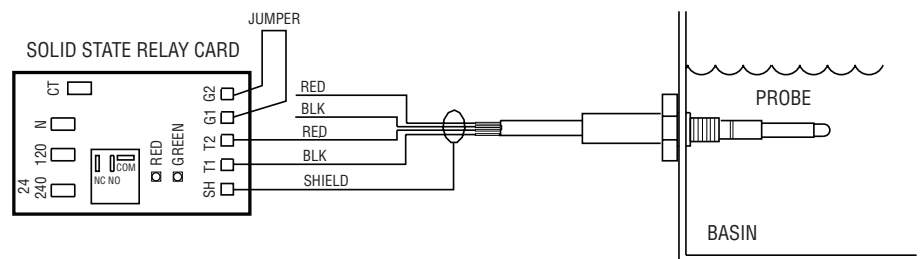
### Deicing

If the sensor becomes encased in solid ice the heaters will not operate. Ice provides inadequate conductivity for the sensor probe to detect operational water level. To operate heaters in this situation and melt the ice follow these procedures.

1. Disconnect power to the control panel using standard lockout procedures.
2. Install a jumper wire between relay terminals G1 and G2—see **Figure 3**.

---

**Figure 3**



3. Close panel door.
4. Energize the system and listen for contactor closing.
5. Operate the system until ice is melted around the sensor probe.
6. After ice is melted, de-energize the system, remove the jumper, check all connections and place the system back in operation.

---

**⚠ Caution**

***Do not leave the heating system unattended during this procedure. There is no low water protection with this jumper in place.***

---

## troubleshooting

If the system fails to operate, check the following:

1. Check water temperature. Systems will turn on between 40° and 45°F and turn off above 45°F.
2. Check water level. Water must completely cover the sensor probe.
3. Make sure sensor is not encased in ice. See Deicing procedure.

---

### ⚠ Caution

***The following checks should be made by a qualified electrician.***

4. Open the panel and check incoming electrical power for proper voltage. Make sure all phases are present. Correct as required.

5. If water level is adequate, temperature is 40°F or lower and power is present, observe the LEDs on the relay circuit board. The red LED indicates low water level—or ice around the probe—and the green LED indicates the heaters are energized.

a. If the red LED is on and the sensor probe is submerged in water—no ice—this indicates the sensor probe is defective. Confirm by disconnecting power and placing a jumper across terminals G1 and G2—see **Figure 3**. Reconnect power. If the red LED is now off and the green LED is on, the system is now operating. Replace sensor probe.

b. If the green LED is on and the heaters are not operating the problem is either the contactor, the relay circuit board or the heater elements. To determine which, observe the panel while power is disconnected and reconnected. If the contactor operates with an audible CLICK and no heat results the heater element is defective. Check voltage at the heater side of the contactor to confirm voltage is present. Check each line with a clamp-on amp meter. If voltage is present and no current is flowing, this indicates the element is defective and must be replaced. As an additional check, disconnect power, remove wires from the contactor and check the element with an ohm meter for measurable resistance.

c. If the green LED is off and the red LED is also off the problem is either the circuit board or the sensor probe. To determine which, disconnect power and remove wires T1 and T2 from the circuit board. Replace with a 1.5K ohm resistor—see **Figure 2**. If the heater now works the sensor probe is defective and must be replaced. If the heater does not work the circuit board is defective.

---

# troubleshooting

- 6. The sensor assembly can be checked for accuracy in the following manner.
  - a. Remove wires T1 and T2 from the circuit board and measure ohm readings across these wires. Measure temperature that the probe is being exposed to. Compare with the following values.

Temp °F	ohms
0	4273
10	3126
20	2312
32	1633
40	1305
45	1138
60	765
75	525
85	412

---

# parts list

---

## Replacement Parts

Control Card .....	C00640D
12'-0" Probe Cord Assembly.....	A81137D

For complete parts and service assistance, contact the Marley sales representative in your area. If you need help locating the office nearest you, please phone 913 664 7400 or check the internet at [spxcooling.com](http://spxcooling.com).



## Marley Collection Basin Heater Circuit

INTEGRATED OPTION BASIN  
HEATER CIRCUIT USING INDECO  
TEMPERATURE CARD

**SPX COOLING TECHNOLOGIES, INC.**

7401 W 129 ST  
OVERLAND PARK, KANSAS USA  
P: 913 664 7400  
F: 913 664 7439  
[spxcooling@spx.com](mailto:spxcooling@spx.com)  
[spxcooling.com](http://spxcooling.com)

In the interest of technological progress, all products are subject to design and/or material change without notice.

ISSUED 3/2013 M98-1483A

COPYRIGHT © 2013 SPX Corporation