

Instructions for Immersion Heater

Models

240V

BIS-60-240-GF, BIS-60-240-FP

BIS-60-240-G, BIS-60-240-P

120V

BIS-15-120-GF

BIS-15-120-G

- General purpose tank or reservoir immersion heating
- Not intended for spa or hot tub use
- Not to be installed outdoors
- Range of operation 60 F to 90 F

- √ Upgraded - Safety lifting handle
- √ Upgraded - High limit protection
- √ Upgraded - Visual Diagnostic System lights "VDS"
- √ Upgraded - Ground Fault "GFCI" safety Cord
- √ Upgraded - Water level safety switch
- √ Proudly designed and assembled in the USA



BIS-60-240-GF Shown

IMPORTANT PRODUCT INFORMATION

CAUTION ATTENTION! Read all instructions and important safety information prior to connecting and operating this heater. Persons not qualified, and/or, that have not read this instruction or that have not been shown how to safely operate should not be allowed to use the heater at any time.

CAUTION WARNING! Removing product labels, disassembling, altering, damaging, bending, submerging the control box or GFCI in water, or operating the heater out of water (dry fire) will void product warranty.

CAUTION Risk of electrical shock. DO NOT operate heater outdoors, allow water to enter the control box, or remove the control box cover. GFCI breaker must be tested before each use. DO NOT use heater if the GFCI does not pass functional test or if the heater appears damaged. Electrical connection must be in accordance to the National Electric Code (NEC).

CAUTION Risk of severe burns. NEVER allow persons to enter the water or touch heater while operating. Contact with the heater during operation or cooling period may cause severe burns to skin. Always use the safety handle to place and remove heater. Heater element must be allowed to cool before removing from water.

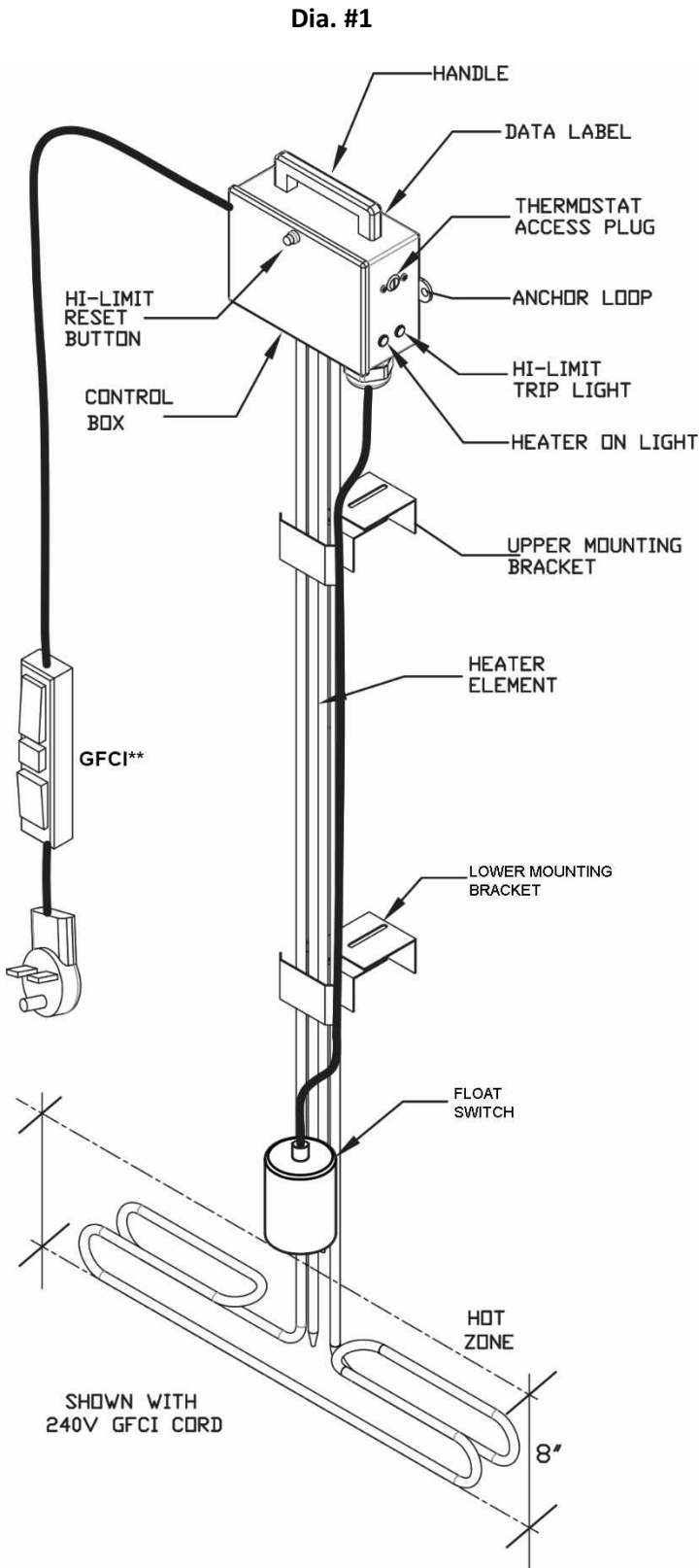
CAUTION Risk of product damage. Product is intended for heating indoor water only, DO NOT use heater to warm chemicals, flammable liquids, objects or materials. DO NOT operate heater dry (out of the water) or submerge the heater control box or GFCI in water. DO NOT store heater laying down or outdoors.

PRE-CHECK LIST

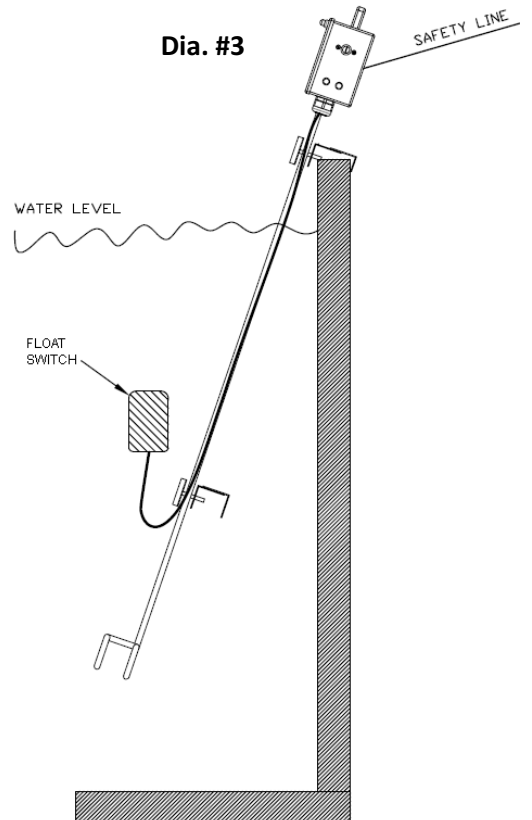
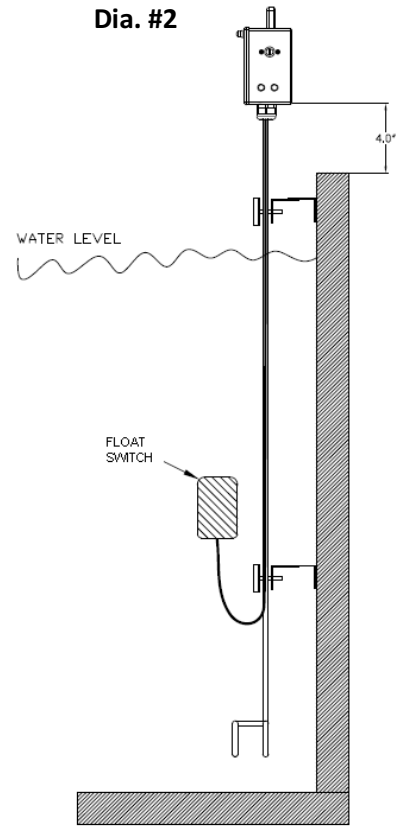
- Inspect for shipping or other damage. DO NOT operate a heater that appears damaged or missing parts
- Read this complete instruction before attempting to use heater
- Record your heater model number using the data label information for future reference
- Copy these instructions and make available to all users of this product

SAVE A COPY OF THESE INSTRUCTIONS

HEATER ITEM DESCRIPTIONS



****FLOAT & GFCI MAY BE OPTIONAL****

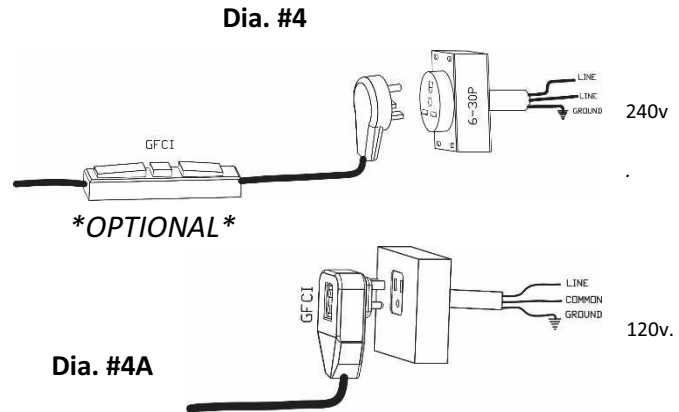


STEPS FOR SUCCESSFUL INSTALLATION

- General purpose tank or reservoir immersion heating
- Not intended for spa or hot tub use
- Not to be installed outdoors
- Range of operation 60 F to 90 F

ELECTRICAL REQUIREMENTS

Model:	BIS-60-240-XX	BIS-15-120-XX
Voltage:	208v.-240v. (1-phase)	110v.-120v.
Supply:	3-wire (no neutral)	3-wire
Plug type:	NEMA 6-30P	NEMA 5-15
Amps:	30A. @ 240v.	15A. @ 120v.



Power supply must have correct wiring size, breaker size and plug receptacle per the National Electric Code (NEC) Follow all NEC specifications and include any State and local code requirements and permits for your area (Ref. Terminology).

Immersion Systems are equipped with a Ground Fault Circuit Interrupter (GFCI) and **do not** require an additional GFCI breaker be connected within the electrical circuit. ****OPTIONAL****

Plug and receptacle connection shown in Dia. #4-4A must be placed as far from the water's edge as possible

MOUNTING BRACKETS

When possible, mount heater using the provided bracket kit. The upper bracket is adjustable for height along the element column (Ref Dia. #2, Pg 1) the Lower bracket holds the Water Level Safety Switch cord in the correct position and should not be moved.

Permanently attach the bracket "base" and use the bolt and wing nut for easy placement and removal of heater from the vessel (Ref Dia #6).

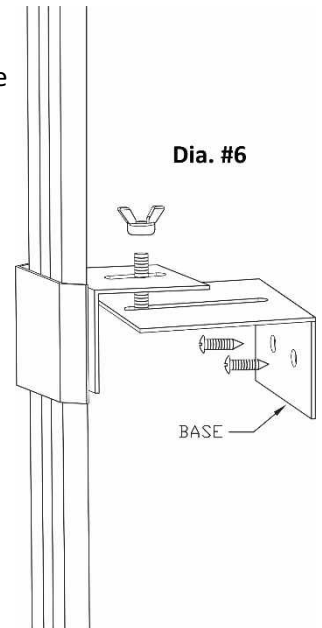
SAFETY LINE OPTION

If the heater is not mounted using the bracket kit, you must attach a cable or string to the molded anchor loop on the control box (Ref. Dia#1 & 3, Pg 1) and secure it to a stationary object to prevent heater from sliding into the water.

Heater is designed for vertical mounting only and should never be operated or stored laying on its side, upside-down or in areas that may have water spray. Heater to be used and stored indoors only.

MOUNTING RESTRICTIONS

Control box must always be 4" above the maximum water level at all times to prevent water intrusion (Ref Dia. #2, Pg 1).



The bottom 8" of the element is the hot zone (Ref Dia.#1) which can exceed 165F causing damage to plastic and vinyl liners. Mount the heater suspended using the bracket kit or make accommodation so the "hot zone" never touches temperature sensitive materials like plastic or vinyl liners that can permanently damage the vessel.

Note the cord mounted GFCI and heater control box are only "water resistant" and do not provide leak proof protection if submerged under water.

OPERATION

 **WARNING! NEVER** plug heater in when the element is out of the water

 **WARNING! DO NOT** allow persons in the baptistry when heater is present

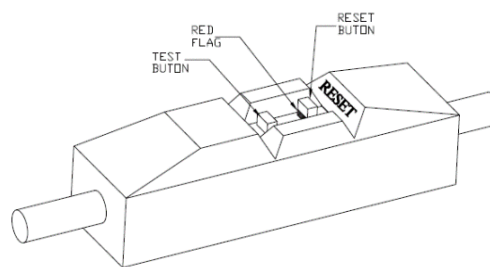
PLACE HEATER IN FILLED VESSEL AND CONNECT TO POWER

Submerge heater in water and secure to the mounting brackets or safety line. Plug heater into power receptacle

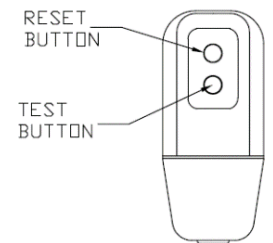
TEST GFCI (Optional feature on BIS-240)

The GFCI must be tested each time the heater is used. After submerging element in water, connect to power and follow test steps using the indicator light/flag as shown in Dia. #7 or #7A (test procedure are also found on the GFCI label)

1. Press the button marked “Reset”
2. Press the button marked “Test” and confirm the red indicator appears
3. Press the “Reset” button again for use



Dia. #7 (240v.)



Dia. #7A (115v.)

 **DO NOT** use the heater if the GFCI test fails

Water Level Safety Switch (Optional)

The Water Level Safety Switch assists with dry fire protection. If the heater was plugged in and the vessel was empty or losing water, this switch will not allow power to the element. The switch will only work properly if the heater is mounted or placed in the upright position (Ref. Dia. 2-3, Pg 1) The lower mounting bracket holds the switch cord at a fixed position for proper operation **Do Not** change lower mounting bracket location or remove cord from bracket (Dia #1, Pg 1)


Heater on light is “ON”

Confirms the heater is operating with power supplied to the element. This light should only be on when the element is submerged in water. This light and heater will go off when the water reaches the set temperature

Estimated heating time

240v. heater is capable of raising 1,000 gallon of water about 30f degrees in 10-12 hours (115v. heater in 35-45 hrs.)

Estimate heating times will vary depending on the supply voltage, start temperature and the vessel’s insulation. To speed the heating process and reduce operating cost, we recommend a floating thermal blanket or other cover. Contact your heater provider or a local pool and spa store for insulating cover ideas

 Heater should never be allowed to operate unattended. Periodic monitoring of water temperature is important as the thermostat should not be relied on for exact temperature settings

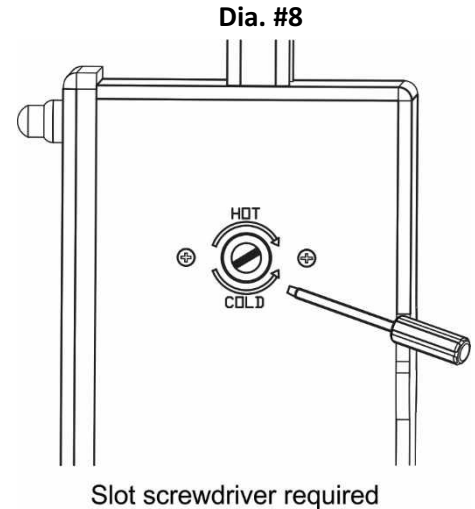
OPERATION

Adjusting the thermostat “set” temperature

Thermostat is preset to 90F (approx.) The heater on light will go off when the thermostat has warmed the water to the “set” temperature. We recommend using a pool thermometer

The set temperature can be changed by removing the access plug with a screwdriver and turning the thermostat set screw clockwise to raise the temperature or counterclockwise to lower the set temperature (Ref. Dia. #8) Replace and tighten the access plug when finished

- Make slight adjustments to the thermostat screw as 1/8 of a turn = approx. 16F.
- Element always heats at the same rate, turning up the thermostat doesn't increase heating speed



Removing heater and cooling off period

Heater must be turned off at the GFCI or main breaker and allowed to cool for 2 minutes prior to removing from water. Unplug cold heater and removed from the vessel area to prevent unauthorized use

TROUBLESHOOTING

Water not hot enough

The thermostat has a max set temp of approx 90°F which is found to be appropriate for baptismal use.

Heater on light is “ON” but water is not warming up

There is an element problem and you must contact your heater provider

Heater on light goes on/off periodically

- a. Water has reached the set temperature and the thermostat turns itself on/off to regulate the set temperature
- b. Water level is too low and Water Level Safety Switch is disconnecting power to prevent a dry fire condition

Heater on light is “OFF” when heater should be operating

- a. Water has already reach the set temperature
- b. Water level is too low and the Water Level Safety Switch is preventing operation
- c. GFCI breaker has tripped and must be reset
- d. Power plug not connected or power supply breaker has tripped off
- e. High Limit tripped light is on (Ref High Limit tripped light is “ON”)

High Limit trip light is “ON”

Indicates the integral High Limit switch has tripped and disconnected power to the element. The High Limit can be reactivated by pushing the “reset” button located at the top-front of the control box after the element has been allowed to cool. (Ref Dia. #1, Pg 1) The following can be reasons the high limit tripped:

- a. Heater laying on its side out of the water while plugged in
- b. Water temperature exceeded 118F.
- c. Faulty high limit switch

TROUBLESHOOTING

GFCI breaker has tripped and will not reset

- a. Inspect electrical plug connection for moisture or corrosion and inspect element for damage.
- b. Water or moisture has entered the Control Box or GFCI (allow 24-48 hours to dry and re-test)
- c. Check for power being supplied to the plug receptacle
- d. Broken internal component (contact your heater supplier)

NOTE: The GFCI is not repairable and labeled “not serviceable” Product warranty is void if the GFCI box has been opened

Water becomes too hot

Reference adjusting the thermostat to a lower temp in the Operation section

MAINTENANCE

- Store heater upright, indoors and in a dry environment using the original shipping carton
- Test GFCI before using heater (Ref. testing GFCI)
- Mineral buildup on element and Safety Switch body can be removed with household vinegars
- Periodically check that cord restraints remain tight
- Confirm the Safety Switch Cord is firmly attached to lower mounting bracket
- Control box and GFCI contain no serviceable parts, **DO NOT OPEN THESE ITEMS**

TERMINOLOGY

What is the NEC?

NEC stands for the National Electrical Code and is the adopted standards set in the United States for the safe installation of electrical wiring and equipment. This code must be followed to insure proper materials are used and safety in the electrical circuit design. Note that some regions have state and local codes that may supersede the NEC standards.

What does a GFCI do?

GFCI stands for Ground Fault Circuit Interrupter, also referred to as a GFI. The GFCI is an electrical breaker designed to instantly detect stray electricity leading to an electrical fault. A GFCI will quickly disconnect power to an appliance providing protection against electrical shock to the user. The device is very sensitive and can even detect moisture vapor between electrical components.

What is a dry fire?

When the heater element is allowed to operate with little or no water for cooling, it's being “dry fired” and can get hot enough to internally break or even split open. The high limit switch is not designed to catch a rapidly heating dry element when out of the water. Heaters determined to have dry fire damage will not be covered by product warranty

What is the element hot zone?

This is an area of the element that becomes the hottest during operation (Ref Dia. #1, Pg 1) the hot zone should not be touched or come in contact with sensitive materials during operation.

What are VDS lights?

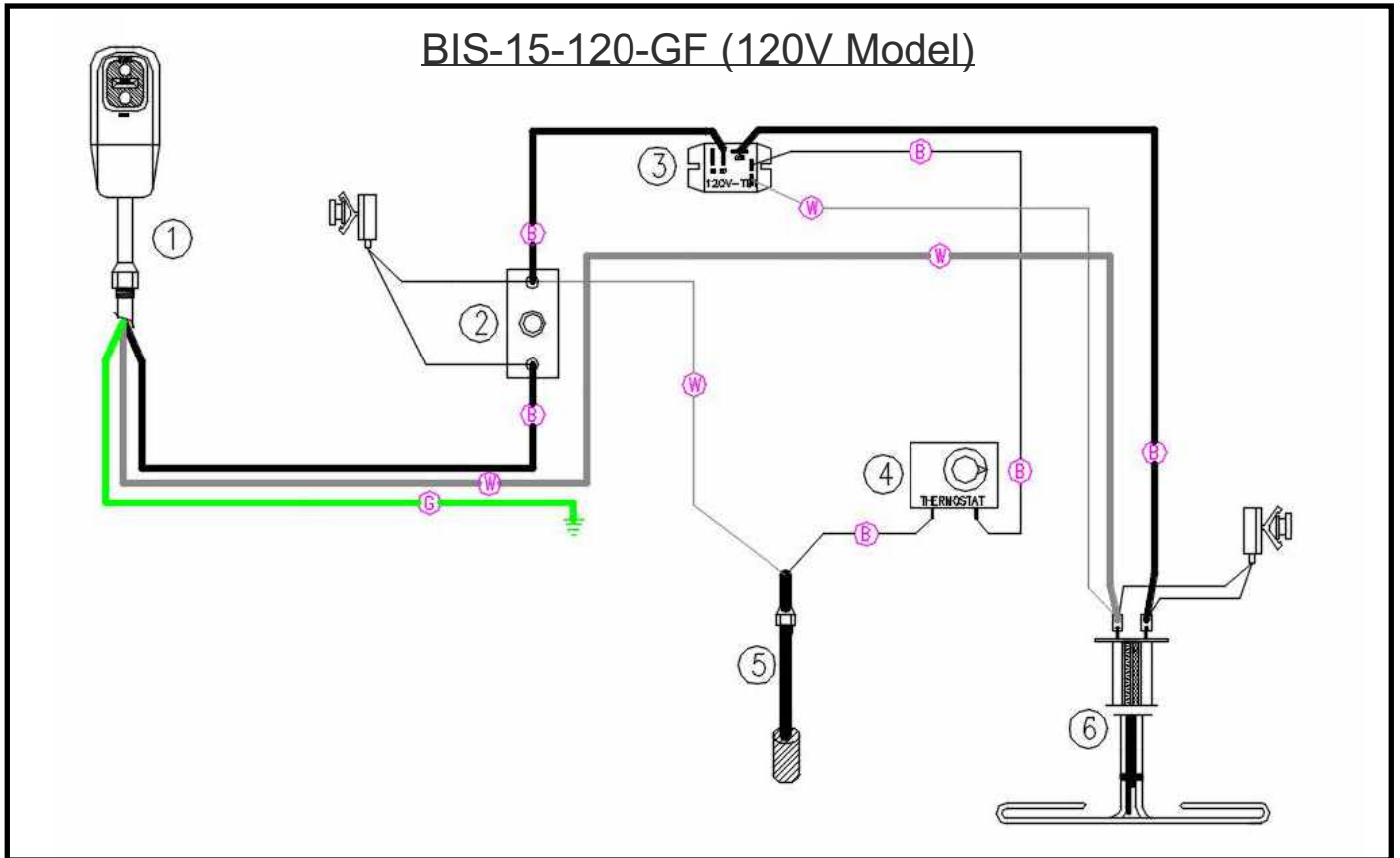
VDS stands for Visual Diagnostic System created by HydroQuip to make troubleshooting fast and easy. The colored lights will confirm heater operation or display trouble without having to access the control box or use a multi-meter.

What does this caution symbol mean?

The caution symbol draws the reader's attention to a subject of personal safety or concern for product damage.

The symbol is placed next to very important information the user must know in advance before operating the heater.

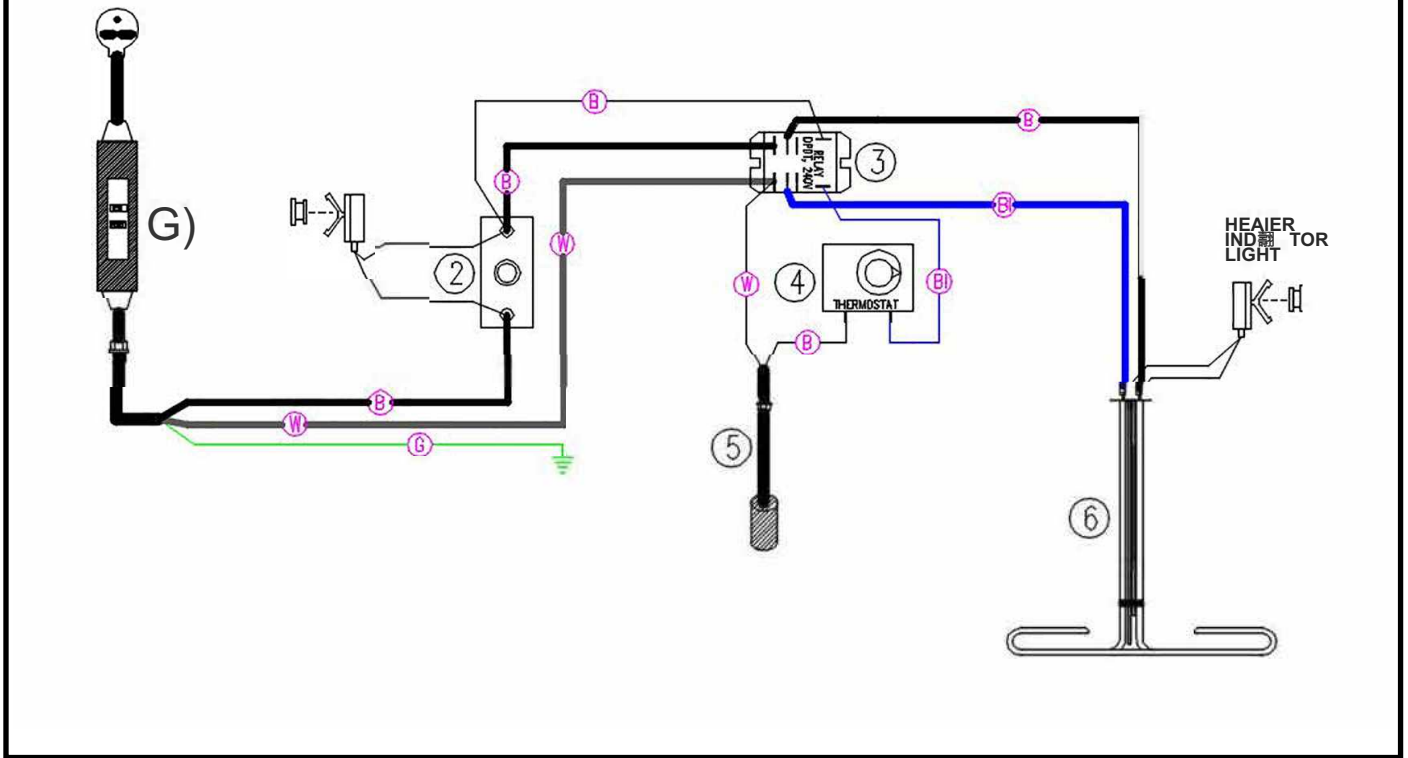
PARTS LIST



Description	Part Number
1. Ground Fault Circuit Interrupter (GFCI)	30-0061C-K
2. High-Limit Switch	34-0012A-K
3. Heater Relay (T91)	35-0002-K
4. Thermostat	34-0030D-K
5. Float Switch	34-0099A-1-K
6. Heater Element	12-0004-K

PARTS LIST

BIS-60-240-GF (240V Model)



Description	Part Number
1. Ground Fault Circuit Interrupter (GFCI)	30-0061C-K
2. High-Limit Switch	34-0012A-K
3. Heater Relay (T92)	35-0037-K
4. Thermostat	34-0030D-K
5. Float Switch	34-0099A-1-K
6. Heater Element	12-0004A-K

WARRANTY GUIDLINES

All warranty claims and product returns must be handled through your heater provider (no exceptions)

Data label contains information important to identification and warranty period. **DO NOT REMOVE PRODUCT LABELS**

Product returns determined to have shipping damaged, alterations, signs of chemical corrosion or dry fire, abused, out of the warranty or with a missing data label will not be considered for warranty.

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