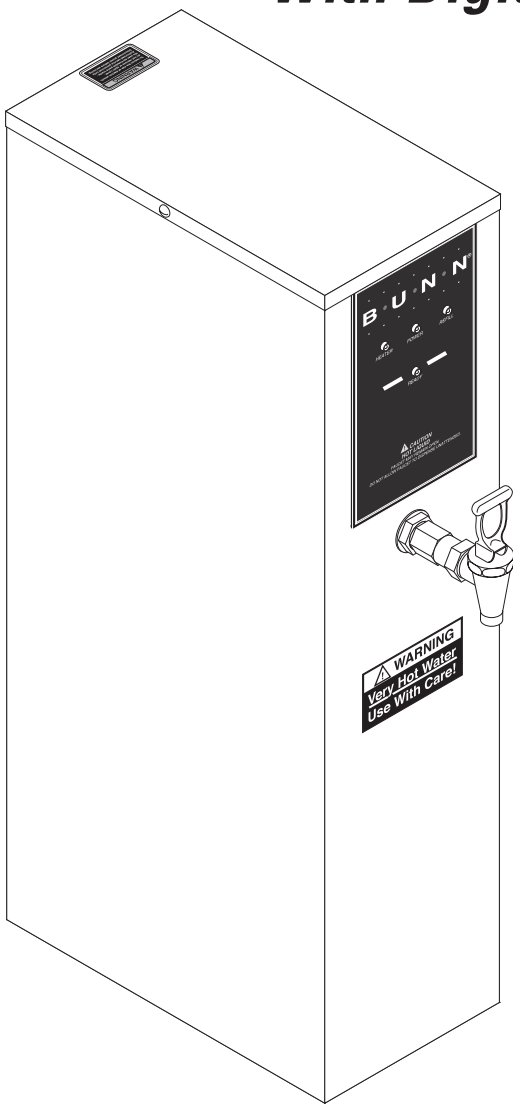
BUNN® H5E, H5X

With Digital Control Board



OPERATING & SERVICE MANUAL

BUNN-O-MATIC CORPORATION

POST OFFICE BOX 3227
SPRINGFIELD, ILLINOIS 62708-3227
PHONE: (217) 529-6601 FAX: (217) 529-6644

To ensure you have the latest revision of the manual or to obtain the illustrated parts catalog, please visit the Bunn-O-Matic website, at www.bunn.com. This is absolutely FREE, and the quickest way to obtain the latest catalog and manual updates. Contact Bunn-O-Matic Corporation at 1-800-286-6070 to obtain a paper copy of the required Illustrated Parts Catalog mailed via U.S. Postal Service.

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BUNN-O-MATIC COMMERCIAL PRODUCT WARRANTY

Bunn-O-Matic Corp. ("BUNN") warrants equipment manufactured by it as follows:

1) All equipment other than as specified below: 2 years parts and 1 year labor.

2) Electronic circuit and/or control boards: parts and labor for 3 years.

3) Compressors on refrigeration equipment: 5 years parts and 1 year labor.

4) Grinding burrs on coffee grinding equipment to grind coffee to meet original factory screen sieve analysis: parts and labor for 3 years or 30,000 pounds of coffee, whichever comes first.

These warranty periods run from the date of installation BUNN warrants that the equipment manufactured by it will be commercially free of defects in material and workmanship existing at the time of manufacture and appearing within the applicable warranty period. This warranty does not apply to any equipment, component or part that was not manufactured by BUNN or that, in BUNN's judgment, has been affected by misuse, neglect, alteration, improper installation or operation, improper maintenance or repair, damage or casualty. This warranty is conditioned on the Buyer 1) giving BUNN prompt notice of any claim to be made under this warranty by telephone at (217) 529-6601 or by writing to Post Office Box 3227, Springfield, Illinois 62708-3227; 2) if requested by BUNN, shipping the defective equipment prepaid to an authorized BUNN service location; and 3) receiving prior authorization from BUNN that the defective equipment is under warranty.

THE FOREGOING WARRANTY IS EXCLUSIVE AND IS IN LIEU OF ANY OTHER WARRANTY, WRITTEN OR ORAL, EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, ANY IMPLIED WARRANTY OF EITHER MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. The agents, dealers or employees of BUNN are not authorized to make modifications to this warranty or to make additional warranties that are binding on BUNN. Accordingly, statements by such individuals, whether oral or written, do not constitute warranties and should not be relied upon.

If BUNN determines in its sole discretion that the equipment does not conform to the warranty, BUNN, at its exclusive option while the equipment is under warranty, shall either 1) provide at no charge replacement parts and/or labor (during the applicable parts and labor warranty periods specified above) to repair the defective components, provided that this repair is done by a BUNN Authorized Service Representative; or 2) shall replace the equipment or refund the purchase price for the equipment.

THE BUYER'S REMEDY AGAINST BUNN FOR THE BREACH OF ANY OBLIGATION ARISING OUT OF THE SALE OF THIS EQUIPMENT, WHETHER DERIVED FROM WARRANTY OR OTHERWISE, SHALL BE LIMITED, AT BUNN'S SOLE OPTION AS SPECIFIED HEREIN, TO REPAIR, REPLACEMENT OR REFUND.

In no event shall BUNN be liable for any other damage or loss, including, but not limited to, lost profits, lost sales, loss of use of equipment, claims of Buyer's customers, cost of capital, cost of down time, cost of substitute equipment, facilities or services, or any other special, incidental or consequential damages.

CONTENTS

INTRODUCTION

This equipment heats and dispenses water on demand for beverages and cooking purposes. It has a panel above the faucet that indicates the status of the dispenser. This equipment is for indoor use, either wall-mounted or on a sturdy counter or shelf.

USER NOTICES

The notices on this dispenser should be kept in good condition. Replace unreadable or damaged labels.

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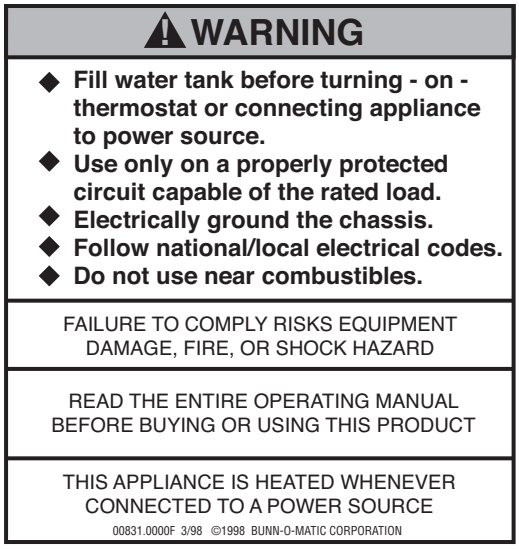

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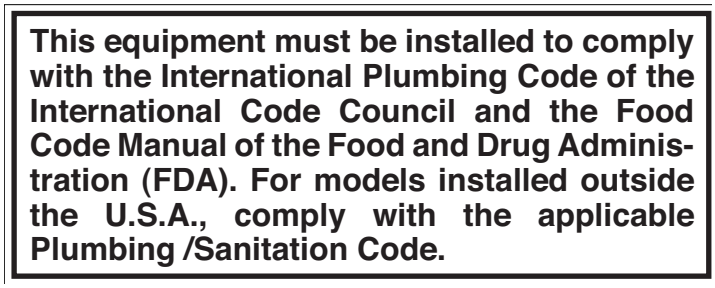

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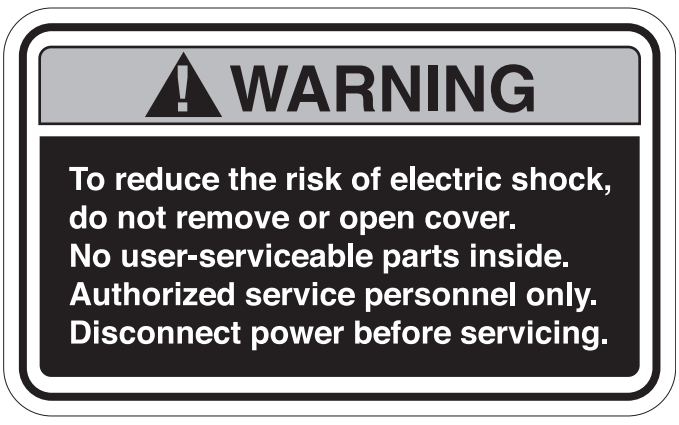

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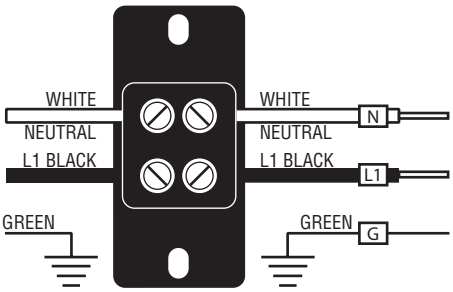
ELECTRICAL REQUIREMENTS

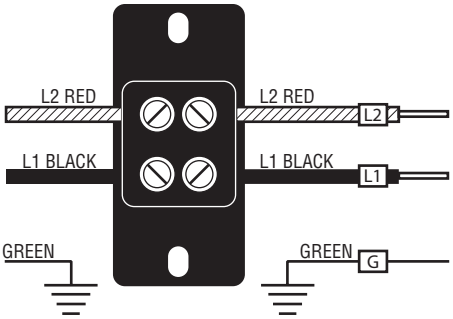
WARNING - The dispenser must be disconnected from the power source until specified in *Initial Set-Up.*

Refer to Data Plate on the Brewer, and local/national electrical codes to determine circuit requirements.



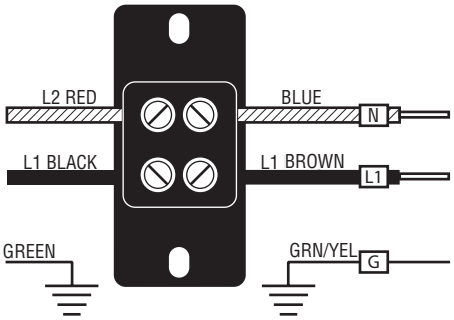
120 volt ac models

Note: This electrical service consists of 2 current carrying conductors (L1 and Neutral) and a separate conductor for earth ground.



208 & 240 volt ac models

Note: This electrical service consists of 2 current carrying conductors (L1 and L2) and a separate conductor for earth ground.



230 volt ac models

Note: This electrical service consists of 2 current carrying conductors (L1 and Neutral) and a separate conductor for earth ground.

Electrical Hook-Up

CAUTION – Improper electrical installation will damage electronic components.

1. An electrician must provide electrical service as specified.
2. Using a voltmeter, check the voltage and color coding of each conductor at the electrical source.
3. Remove the upper and lower rear panels.
4. Install a strain relief and the proper electrical wiring to the terminal block.
5. Connect the dispenser to the power source and verify the voltage at the terminal block before proceeding. Reinstall both rear panels.
6. If plumbing is to be hooked-up later be sure the dispenser is disconnected from the power source. If Plumbing has been hooked-up, the dispenser is ready for *Initial Set-Up*.

CE REQUIREMENTS

- This appliance must be installed in locations where it can be overseen by trained personnel.
- For proper operation, this appliance must be installed where the temperature is between 5°C to 35°C.
- Appliance shall not be tilted more than 10° for safe operation.
- An electrician must provide electrical service as specified in conformance with all local and national codes.
- This appliance must not be cleaned by water jet.
- This appliance is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given instructions concerning use of this appliance by a person responsible for its safety.
- Children should be supervised to ensure they do not play with the appliance.
- If the power cord is ever damaged, it must be replaced by the manufacturer or authorized service personnel with a special cord available from the manufacturer or its authorized service personnel in order to avoid a hazard.

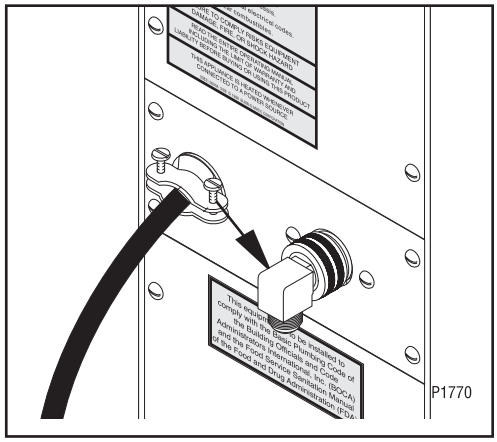
PLUMBING REQUIREMENTS

This dispenser must be connected to a **COLD WATER** system with operating pressure between 20 and 90 psi (138 and 620 kPa)from a ½" or larger supply line. A shut-off valve should be installed in the line before the dispenser. Install a regulator in the line when pressure is greater than 90 psi (620 kPa) to reduce it to 50 psi (345 kPa). The water inlet fitting is ¼" flare.

NOTE - Bunn-O-Matic recommends ¼" tubing for installations of less than 25 feet and ⅜" for more than 25 feet from the ½" water supply line. At least 18 inches of an FDA approved flexible beverage tubing, such as reinforced braided polyethylene or silicone, before the dispenser will facilitate movement to clean the countertop. Bunn-O-Matic does not recommend the use of a saddle valve to install the dispenser. The size and shape of the hole made in the supply line by this type of device may restrict water flow.

This equipment must be installed to comply with the International Plumbing Code of the International Code Council and the Food Code Manual of the Food and Drug Administration (FDA). For models installed outside the U.S.A., you must comply with the applicable Plumbing/Sanitation Code for your area.

Plumbing Hook-Up



1. Flush the water line and securely attach it to the flare fitting on the rear of the dispenser.
2. Turn-on the water supply.

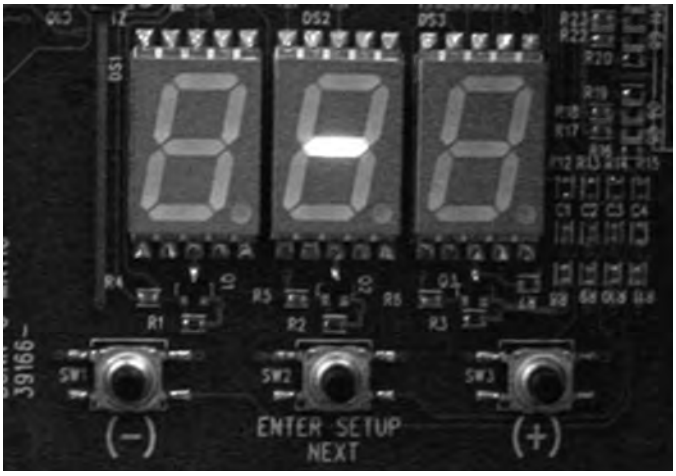
INITIAL SET-UP

CAUTION - The dispenser must be disconnected from the power source throughout the initial set-up, except when specified in the instructions.

1. Connect dispenser to the power source and turn on water supply.
2. Place master ON/OFF switch (if dispenser is equipped with a master switch) in the ON position.
3. Water will automatically flow into the tank to the proper level and shut-off. When filled, the water heater will turn on automatically. This will take approximately 7 minutes.
4. The tank will heat to the (set) temperature.
5. Refer to *Programming* to set the Tank Temperature and the Ready Temperature.

PROGRAMMING

When power is applied to the dispenser, the display located on the bottom of the main circuit board will show the revision level of the software for 5 seconds, and then go to (-). While the tank is filling, the display will read (FIL). When the tank is full the display will return to (-).



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LEFT BUTTON **CENTER BUTTON** **RIGHT BUTTON**

INITIAL PROGRAMMING OF THE CONTROL BOARD

1. Before programming any settings into the Control Board, confirm the correct machine selection is entered.

2. Do this by pressing and holding down on the center button until **U1** appears on the display (approximately 9-10 seconds). Release the center button. Now, press and release the center button until the display reads **U9**. The display will show either **A**, **6.25**, **12.5**, **25.0**, or **H10**.
3. The display should be set to **A**. If it shows anything but **A**, press and release the right button until it shows **A**.
4. Press and release the center button once more. The display will show the Software Version, then (-). You may now proceed with the Level 1 and Level 2 Programming.

LEVEL 1 PROGRAMMING

TANK WATER TEMPERATURE & READY TEMPERATURE SET-UP

1. Press and hold the center button until **P1** appears on the display (approximately 3 seconds) then release button. The tank water temperature set point will appear on the display. Factory default is 200° F for most dispensers, and 90° F for some.
2. Use the (+) button to increase the temperature set point, and the (-) button to decrease the set point.

NOTE: If the unit is a H5X, set the Tank Temperature to 212°F.

3. After the Tank Temperature is entered, press and release the center button once more. The display will read **P2**, then show the ready temperature set point. Factory default is 195° F for most dispensers, and 85° F for some.
4. Press the (+) button to increase the temperature set point, and the (-) button to decrease the set point.
5. To exit Level 1 Program press and release the center button once more. The display will show Software version, then **(-)**.

PROGRAMMING (Continued)

LEVEL 2 PROGRAMMING

FAHRENHEIT OR CENTIGRADE SELECTION, & RESTORING FACTORY DEFAULTS

1. To enter Level 2 Programming, press and hold the center button until **H2** appears on the display (approximately 6 seconds). Release the center button, The display will show either **FAH** (Degrees in Fahrenheit) or **CEn** (Degrees in Centigrade).

2. Press and release the (+) or (-) buttons to alternate between **FAH** and **CEn**.

3. After setting FAH or CEn, to exit Level 2 Programming, press and release the center button twice. Software Version will show on the display, then (-).

RESTORING FACTORY DEFAULTS

1. To restore Factory Defaults (This clears all settings that were previously entered), press and release the center button until **H2** appears on the display (approximately 6 seconds). Release the Center Button, then press and release the Center Button once more. The display will read **H3**, then show **(- - -)**.

2. Press and hold both (+) and (-) buttons to initiate the resetting of the factory default settings. The display **(- - -)** will flash on and off during this time (about 5 to 7 seconds).

3. When the factory default numbers are loaded in, the display will stop flashing, then read **don** (DONE). You can now release the two buttons.

NOTE: If you release the two buttons at any time before the display reads **don**, the Factory Default numbers will not be entered. The old numbers will remain in the memory.

4. To exit Level 2 Programming press and release the center button once more. The display will show the Software Version, then (-).

DRAINING THE DISPENSER

CAUTION - The dispenser must be disconnected from the power source throughout these steps.

1. Disconnect the dispenser from the power source.
2. Shut-off and disconnect the incoming water supply
3. Remove the 4-40 screws at the sides of the top panel.
4. Gently remove one of the grommets from the tank lid.
5. Insert a tube to the bottom of the tank and syphon ALL of the water out.

NOTE - The dispenser must be full using the INITIAL SET-UP steps before reconnecting to the power source.

CLEANING

The use of a damp cloth rinsed in any mild, non-abrasive, liquid detergent is recommended for cleaning all surfaces on Bunn-O-Matic equipment.

WALL MOUNTED INSTALLATION

If the dispenser is wall mounted, the bottom of the dispenser should be at the same height as a counter or table top. Use B.O.M. part #12542.0000 for side mounted Wall Bracket Kit or # 13125.0001 for front mounted Wall Bracket Kit .

SUPPORT FOR LARGE RECEPTACLES

CAUTION: If the dispenser is to be used with larger receptacles such as pitchers or pots, those receptacles must be adequately supported during dispensing of hot water to avoid spillage of very hot water. This support may be provided by a table or counter top, or use B.O.M. part #12599.0000 Shelf Kit.

TROUBLESHOOTING

A troubleshooting guide is provided to suggest probable causes and remedies for the most likely problems encountered. If the problem remains after exhausting the troubleshooting steps, contact the Bunn-O-Matic Technical Service Department.

- Inspection, testing, and repair of electrical equipment should be performed only by qualified service personnel.
- All electronic components have 120 – 240 volt ac and low voltage dc potential on their terminals. Shorting of terminals or the application of external voltages may result in board failure.
- Intermittent operation of electronic circuit boards is unlikely. Board failure will normally be permanent. If an intermittent condition is encountered, the cause will likely be a switch contact or a loose connection at a terminal or crimp.
- Solenoid removal requires interrupting the water supply to the valve. Damage may result if solenoids are energized for more than ten minutes without a supply of water.
- The use of two wrenches is recommended whenever plumbing fittings are tightened or loosened. This will help to avoid twists and kinks in the tubing.
- Make certain that all plumbing connections are sealed and electrical connections tight and isolated.
- This dispenser is heated at all times. Keep away from combustibles.

WARNING

- Exercise extreme caution when servicing electrical equipment.
- Disconnect dispenser from the power source when servicing, except when electrical tests are specified.
- Follow recommended service procedures
- Replace all protective shields or safety notices

FAULT CODES

When a fault occurs (failure to the unit) the **POWER** lamp will flash to identify the problem.

Flashes	Description of Failure
1	Temperature Sensor (short)
2	Temperature Sensor (open)
3	Refill Fault (continuous refill for 15 minutes)
4	Heater Fault (heater relay on for 120 minutes)
5	Boil Thermistor (short) H5X only
6	Boil Thermistor (open) H5X only

Problem	Probable Cause	Remedy
Equipment will not operate.	1. No power or incorrect voltage	(A) Check the terminal block for the correct voltage. It should be: a.) 100 to 120 volts ac across the black and white terminals for 100 to 120 volt models or, b.) 200 to 240 volts ac across the red and black terminals for 200 to 240 volt models or, c.) 230 volts ac across the red and black terminals for 230 volt models. (B) Check circuit breakers or fuses.

TROUBLESHOOTING (cont.)

Problem	Probable Cause	Remedy
Equipment will not operate (cont.)	2. Safety overflow switch	Refer to Service – safety overflow switch for testing procedures. See page 18.
Automatic refill will not operate after drawing hot water.	1. No water	Check plumbing and shut-off valves.
	2. Water strainer/flow control	(A) Direction of flow arrow must be pointing towards dispenser. (B) Remove the strainer/flow control and check for obstructions. Clear or replace.
	3. Safety overflow switch	Refer to Service – safety overflow switch for testing procedures. See page 18.
	4. Liquid level system	Refer to Service – electronic controls for testing procedures. See page 12.
	5. Solenoid valve	Refer to Service – solenoid valve for testing procedures. See page 19.
Water flows into the tank continuously (Dispenser disconnected from power source).	1. Solenoid valve	Refer to Service – solenoid valve for testing procedures. See page 19.
Water flows into the tank continuously (Dispenser connected to power source).	1. Liquid level system	Refer to Service – electronic controls for testing procedures. See page 10.
Water is cold.	1. Safety overflow switch	Refer to Service – safety overflow switch for testing procedures. See page 18.
	2. Limit thermostat	Refer to Service – limit thermostat for testing procedures. See page 17.

CAUTION – Do not eliminate or bypass limit thermostat. Use only B.O.M. replacement part #23717.0003.

	3. Tank heater	Refer to Service – tank heater for testing procedures. See page 20.
	4. Temperature control	Refer to Service – electronic controls for testing procedures. See page 10.

TROUBLESHOOTING (cont.)

Problem	Probable Cause	Remedy
Water boils continuously.	1. Temperature control	Refer to Service – electronic controls for testing procedures. See page 10.
	2. Lime build-up	Inspect the tank assembliy for excess lime deposits. Delime as required.

CAUTION – Tanks and tank components should be delimed reglarly depending on local water conditions. Excessive mineral build-up on stainless steel surfaces can initiate corrosive reactions resulting in serious leaks.

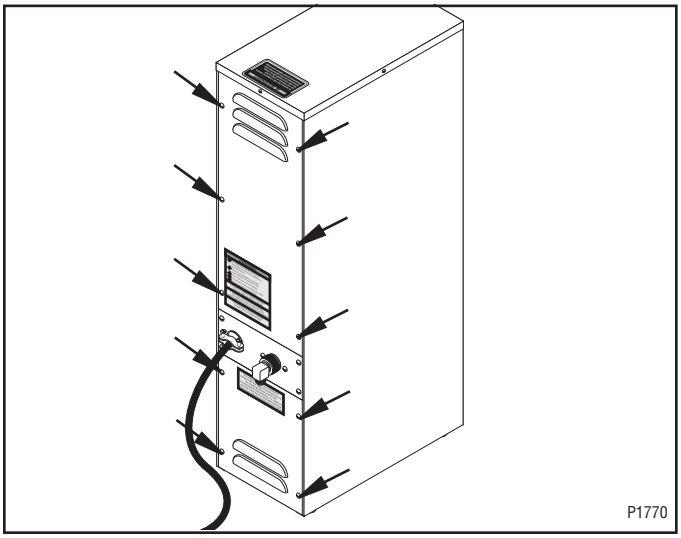
Dispenser is making unusual noises.	1. Plumbing lines	Plumbing lines should not be resting on the counter top.
	3. Water supply	(A) The dispenser must be connected to a cold water line. (B) Water pressure to the dispenser must not be higher than 90 psi (620 kPa). Install a regulator if necessary to lower the working pressure to approximately 50 psi (345 kPa).
Ready indicator will not light.	1. Temperature control	Refer to Service – electronic controls for testing procedures. See page 10.
	2. Ready Indicator LED	Replace the indicator LED.

SERVICE

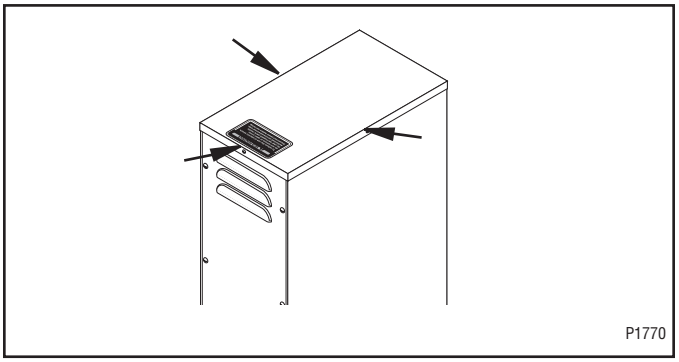
This section provides procedures for testing and replacing various major components used in this dispenser should service become necessary. Refer to Troubleshooting for assistance in determining the cause of any problem.

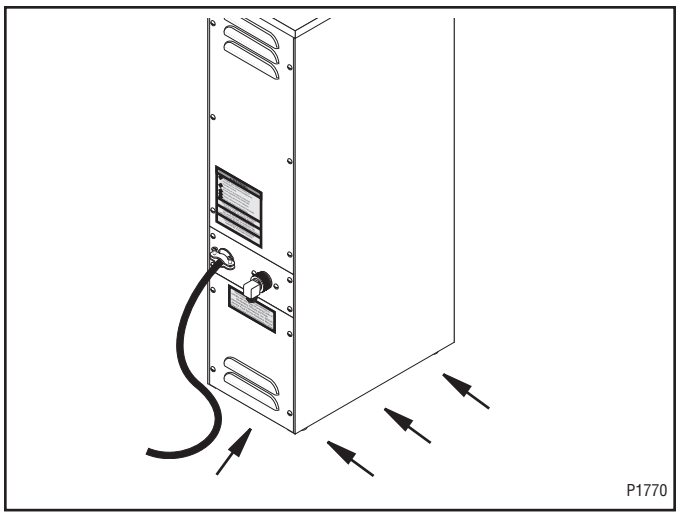
Component Access

WARNING – Disconnect the dispenser from the power source before the removal of any panel or the replacement of any component.



The check valve, electronic control board, safety overflow switch, solenoid valve, overflow tube temperature sensor and terminal block are located at the rear of the dispenser. Access is gained by removing the upper and lower rear panels. The upper is attached with six 8-32 slotted-head screws. The lower is attached with four 8-32 slotted-head screws. The middle panel must not be removed from the dispenser.





The limit thermostat, liquid level probe, tank heater, and temperature sensor are located at the top of the dispenser. Access is gained by removing the top lid, attached with three 4-40 slotted-head screws.

NOTE - Completely drain the tank before tipping the dispenser.

WARNING – Inspection, testing, and repair of electrical equipment should be performed only by qualified service personnel. Disconnect the dispenser from the power source when servicing, except when electrical tests are required and the test procedure specifically states to connect the dispenser to the power source.

Electronic Control Board Troubleshooting:
Check these items first

- Is circuit board popped-out of bracket?
- Is circuit board wet due to misaligned overflow tube?
- Is water in overflow cup activating float switch?
- Is overflow cup not making good contact with tank?
- Is dispenser being operated with panels removed?

SERVICE (cont.)

Electronic Controls

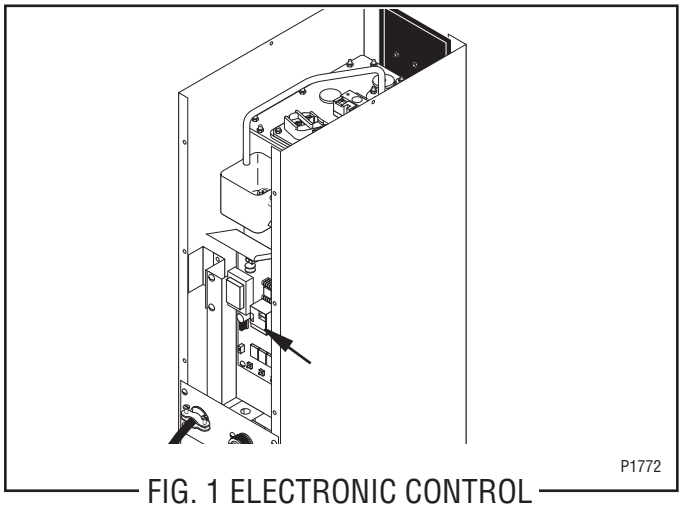


FIG. 1 ELECTRONIC CONTROL

Location:

The electronic control board is located inside the rear of the dispenser. Access will also be needed to the temperature sensor, overflow tube temperature sensor, and liquid level probe located on the tank lid.

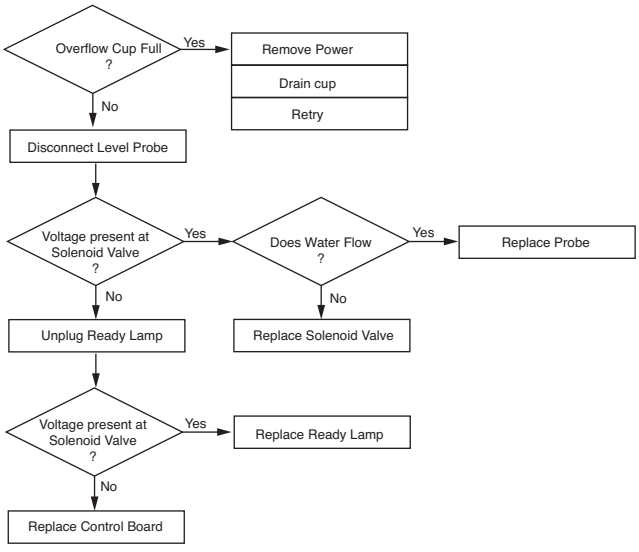
General:

This system controls the liquid level and water temperature of the dispenser. These two functions act independently of each other and should be tested separately.

Liquid Level Control Flow Charts

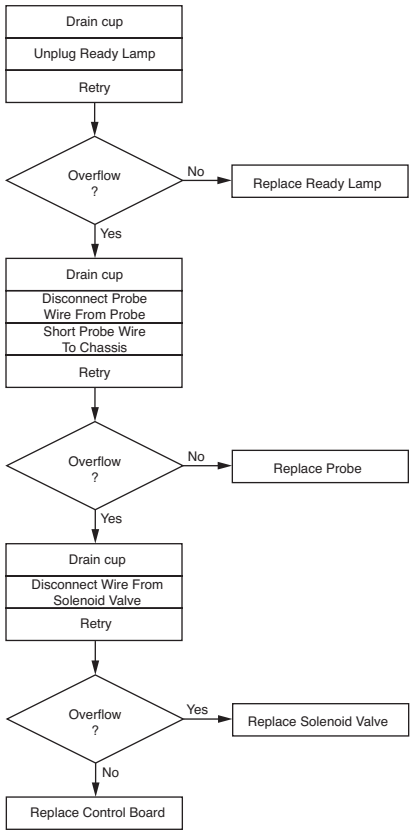
H5E, H5X LIQUID LEVEL CONTROL

PROBLEM: Does Not Refill



H5E, H5X LIQUID LEVEL CONTROL

PROBLEM: Overflows



SERVICE (cont.)

Electronic Controls (cont.)

Liquid Level Control Test Procedure

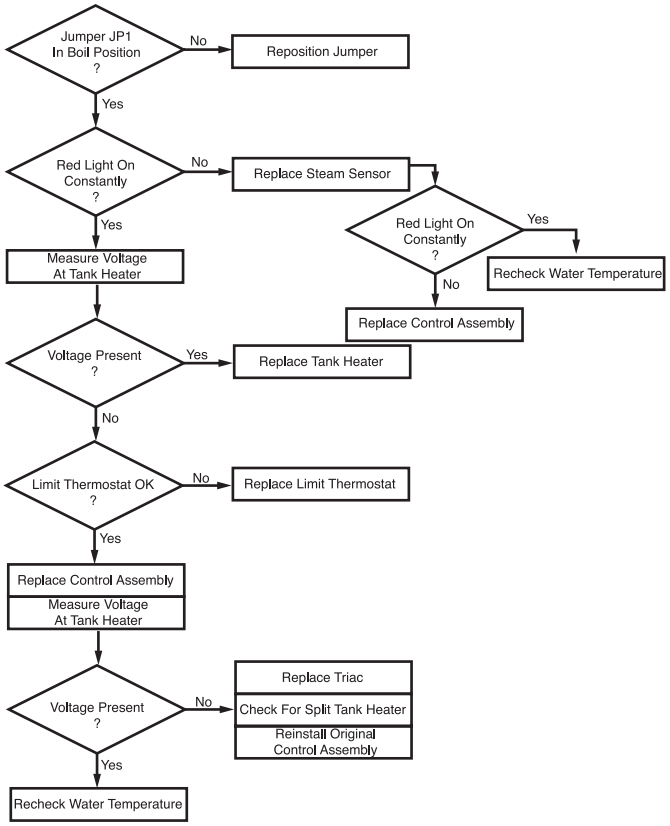
1. Disconnect the dispenser from the power source.
2. Check the voltage across terminals 3 & 4 of the electronic control board with a voltmeter. Connect the dispenser to the power source. The indication must be:
   a.) 100 to 120 volts ac for 100 to 120 volt models
   or
   b.) 200 to 240 volts ac for 200 to 240 volt models
   or
   c.) 230 volts ac for 230 volt models.
3. Disconnect the dispenser from the power source. If voltage was present as described, proceed to #4. If voltage was not present as described, refer to the Wiring Diagrams and check the dispenser wiring harness.
4. Remove the pink wire from terminal 5 of the electronic control assembly.
5. Check the voltage across terminals 1 & 4 of the electronic control board with a voltmeter. Connect the dispenser to the power source. The indication must be:
   a.) 100 to 120 volts ac for 100 to 120 voltmodels
   or
   b.) 200 to 240 volts ac for 200 to 240 volt models
   or
   c.) 230 volts ac for 230 volt models
   after a delay of approximately 5 seconds.
6. Disconnect the dispenser from the power source.

If voltage was present as described, the liquid level control of the system is operating properly, proceed to #7.
If voltage was not present as described, replace the electronic control board and the temperature sensor in the tank lid.

Temperature Control Flow Charts

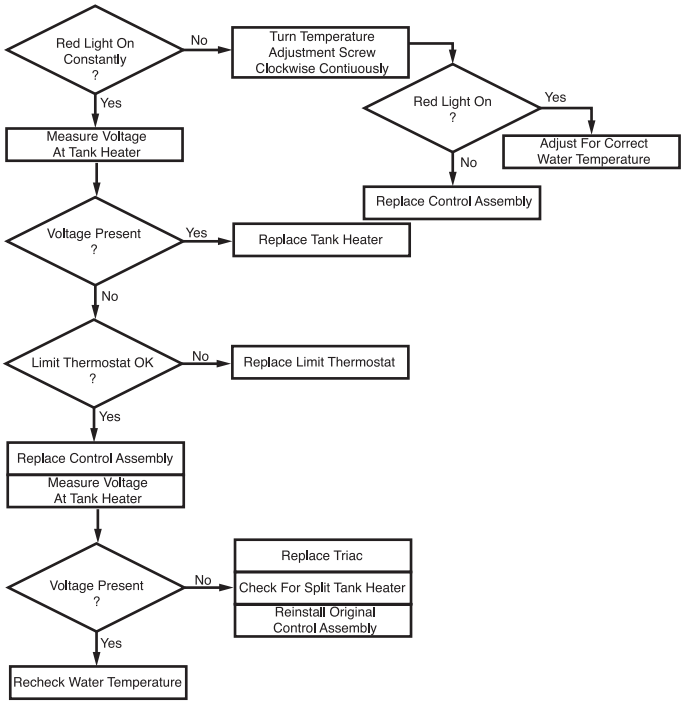
H5X THERMOSTAT

PROBLEM: Water Not Hot Enough



H5E THERMOSTAT

PROBLEM: Water Not Hot Enough



SERVICE (cont.)

Electronic Controls (cont.)

7. Reconnect the pink wire to terminal 5 of the electronic control assembly.
8. Loosen the compression fitting, remove the probe from the tank lid, and inspect it for mineral deposits. Replace it if necessary. Keep the exposed ends of the probe away from any metal surface of the dispenser.
9. Check the voltage across terminals 1 & 4 of the electronic control assembly with a voltmeter. Connect the dispenser to the power source. The indication must be:
   a.) 100 to 120 volts ac for 100 to 120 volt models
   or
   b.) 200 to 240 volts ac for 200 to 240 volt models
   or
   c.) 230 volts ac for 230 volt models after a delay of approximately 5 seconds.
10. Touch the screw head end of the probe to the dispenser housing. The indication must be 0.
11. Move the probe away from the dispenser housing. The indication must again be:
    a.) 100 to 120 volts ac for 100 to 120 volt models
    or
    b.) 200 to 240 volts ac for 200 to 240 volt models
    or
    c.) 230 volts ac for 230 volt models
    after a delay of approximately 5 seconds.
12. Disconnect the dispenser from the power source.

If voltage was present as described, reinstall the probe, the sensing function of the system is operating properly.
If voltage was not present as described, check the pink probe wire and the green ground wire for continuity and/or replace the probe.

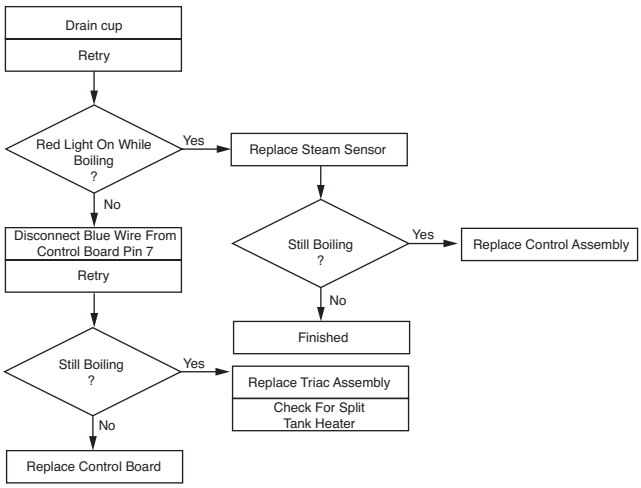
Temperature Control Test Procedure

1. Disconnect the dispenser from the power source.
2. Check the voltage across terminals 3 & 4 of the electronic control circuit board with a voltmeter. Connect the dispenser to the power source.The indication must be:
   a.) 100 to 120 volts ac for 100 to 120 volt models
   or
   b.) 200 to 240 volts ac for 200 to 240 volt models
   or
   c.) 230 volts ac for 230 volt models.
3. Disconnect the dispenser from the power source.
4. Check the voltage across the tank heater terminals with a voltmeter. Connect the dispenser to the power source. The indication must be:
   a.) 100 to 120 volts ac for 100 to 120 volt models
   or
   b.) 200 to 240 volts ac for 200 to 240 volt models
   or
   c.) 230 volts ac for 230 volt models.
5. Disconnect the dispenser from the power source.

Temperature Control Flow Charts (cont.)

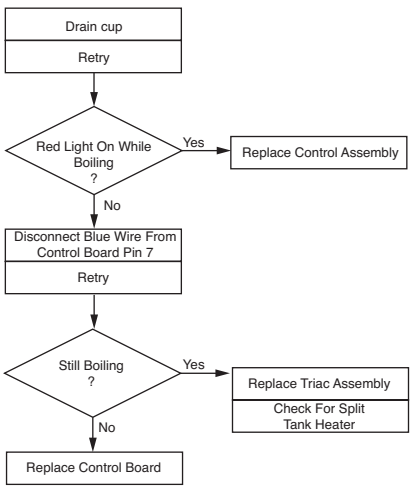
H5X THERMOSTAT

PROBLEM: Boils Excessively - Fills Cup



H5E THERMOSTAT

PROBLEM: Boils



SERVICE (cont.)

Electronic Controls (cont.)

If voltage was present as described, the temperature control of the system is operating properly.
If voltage was not present as described, contact Bunn-O-Matic to order an electronic control board and temperature sensor for evaluation and proceed to #9.

6. Replace the electronic control board.

7. Check the voltage across the tank heater terminals with a voltmeter. Connect the dispenser to the power source. The indication must be:
   a.) 100 to 120 volts ac for 100 to 120 volt models
   or
   b.) 200 to 240 volts ac for 200 to 240 volt models
   or
   c.) 230 volts ac for 230 volt models

8. Disconnect the dispenser from the power source.

If voltage was present as described, the temperature control of the system is operating properly. Return the new electronic control board or temperature sensor to Bunn-O-Matic for credit.

Electronic Controls Removal and Replacement

1. Remove all wires from the electronic control board terminals.
2. Remove the six 6-32 screws holding the electronic control board to the component bracket.
3. Disconnect the temperature sensor, overflow tube temperature sensor, and indicator wires from the electronic control board.
4. Attach the temperature sensor, overflow tube temperature sensor, and indicator wires to the electronic control assembly.
5. Fasten the new electronic control board to its bracket.
6. Refer to Fig 2 when reconnecting the wires.
7. Review the initial set-up procedures on page 6.

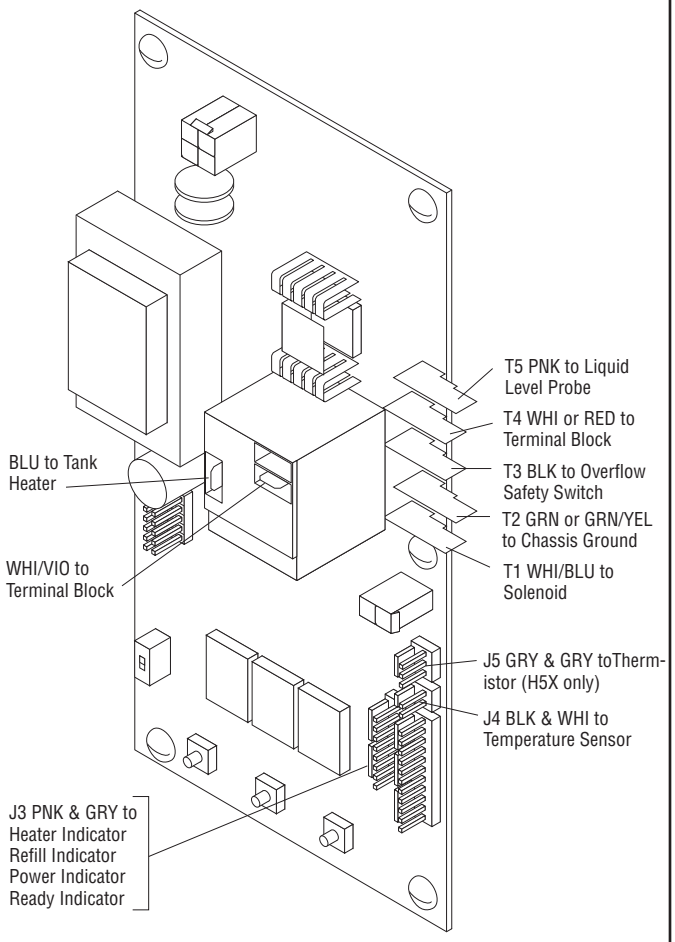


FIG. 2 WIRING CONNECTIONS

Adjustments

The H5X dispenser holds the water temperature at the threshold of boiling. It is not adjustable by the user.

The H5E dispenser is factory calibrated for the temperature specified on the data plate. If adjustment is required, use the following procedure:

1. Fill the dispenser according to the steps in the Initial Set-up.

2. Take the temperature of the stream of water immediately below the faucet as it flows from the dispenser with an accurate thermometer. Do not take the temperature of water collected in a container.

3. If any adjustment is required, refer to *LEVEL 1 PROGRAMMING* in the Programming Section.

Limit Thermostat

Location:

The limit thermostat is located on the tank lid.

To test the limit thermostat, access will also be needed to the terminal block located at the rear of the dispenser.

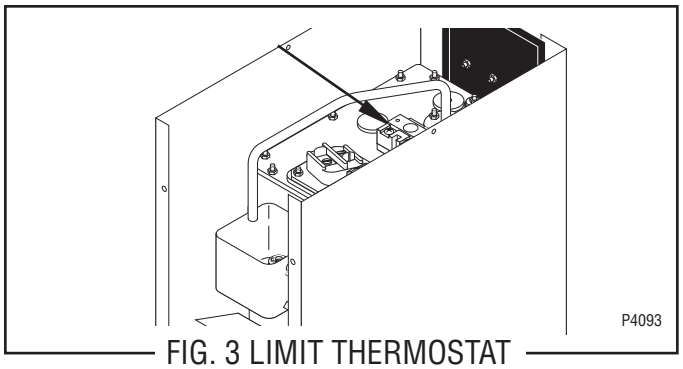


FIG. 3 LIMIT THERMOSTAT

Test Procedure:

1. Disconnect the dispenser from the power source.
2. There are two black wires on the limit thermostat terminals. One comes from the terminal block. The other goes directly to the tank heater terminal. Remove the black wire at the limit thermostat coming from the terminal block.
3. Check the voltage across the black wire removed from the limit thermostat and the white wire or red wire of the terminal block with a voltmeter. Connect the dispenser to the power source. The indication must be:
   a.) 100 to 120 volts ac for 100 to 120 volt models
   or
   b.) 200 to 240 volts ac for 200 to 240 volt models
   or
   c.) 230 volts ac for 230 volt models.
4. Disconnect the dispenser from the power source.

If voltage was present as described, reconnect the black wire and proceed to #5.

If voltage was not present as described, refer to the Wiring Diagrams and check the dispenser wiring harness.

5. Check for continuity across the terminals of the limit thermostat.

If continuity is not present as described, the circuit is broken. Press the reset button of the limit thermostat and recheck for continuity.

If continuity is not present as described, replace the limit thermostat.

Removal and Replacement:

1. Remove both wires from the limit thermostat terminals.
2. Remove the two #10-32 nuts attaching the limit thermostat to the top of the tank.
3. Install the new limit thermostat and secure into place with two #10-32 nuts.
4. Refer to FIG. 4 when reconnecting the wires.

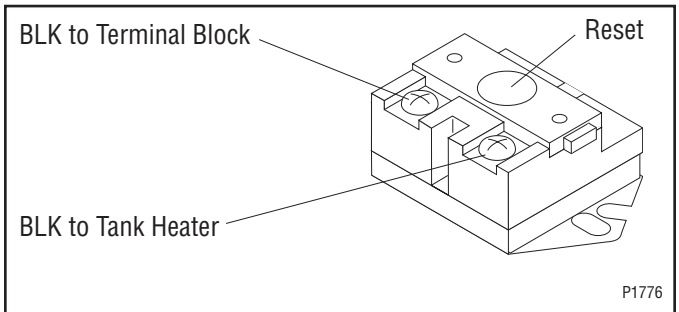


FIG. 4 LIMIT THERMOSTAT WIRING

SERVICE (cont.)

Safety Overflow Switch

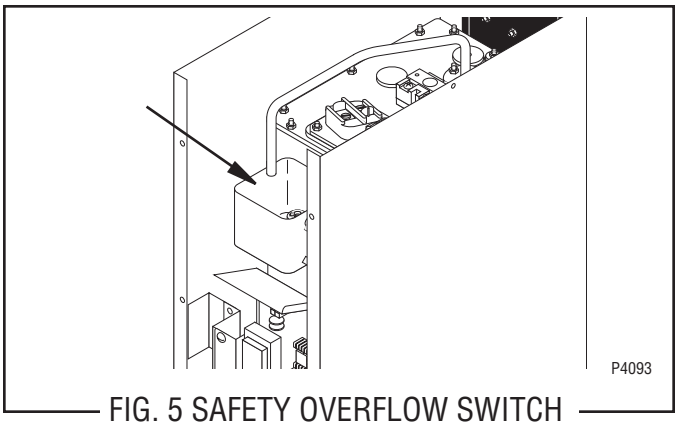


FIG. 5 SAFETY OVERFLOW SWITCH

Location:

The safety overflow switch is located inside the rear of the dispenser inside the copper overflow cup.

For testing or removal of the safety overflow switch, access may also be needed by removing the two screws attaching the electronic control assembly to its mounting bracket.

Test Procedure:

1. Once voltage is verified at the power source, check for continuity across the safety overflow switch red wires only until the plastic float is raised and check that continuity returns when the plastic float is again lowered.

If continuity is present as described, reconnect each of the red wires to the black wires, the safety overflow switch is operating properly.

If continuity is not present as described, replace the safety overflow switch.

Removal and Replacement:

1. Disconnect the black wires from the safety overflow switch.
2. Remove the nut beneath the copper overflow cup.
3. Remove the entire switch assembly from the cup.
4. Place the new switch assembly into the cup, wires first. Make sure that a gasket is in place around the threaded switch stem.

NOTE - The magnets must be at the top of the float and there must be NO stainless steel washers installed for the safety overflow switch to operate properly.

5. Install the nut beneath the copper overflow cup. Be sure not to overtighten.
6. Reconnect the wires, FIG. 6.

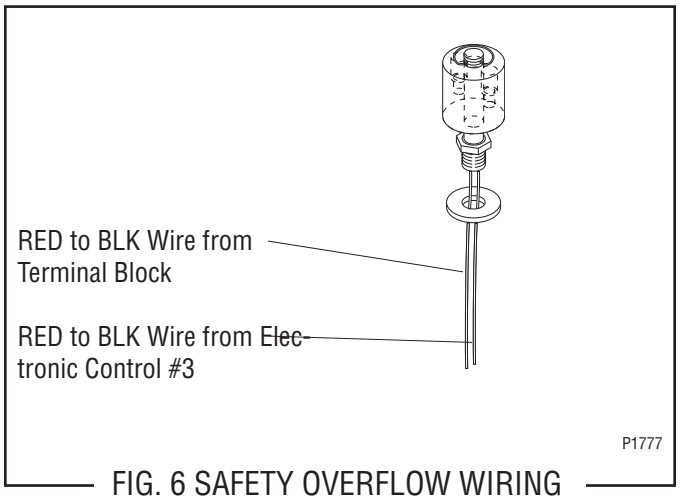


FIG. 6 SAFETY OVERFLOW WIRING

SERVICE (cont.)

Solenoid Valve

Location:

The solenoid valve is located inside the rear of the dispenser on the right side near the bottom.

To test the solenoid valve, access will also be needed to the electronic control board.

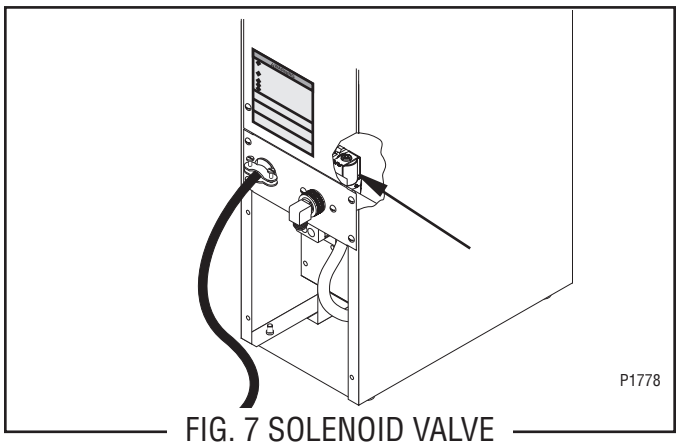


FIG. 7 SOLENOID VALVE

Test Procedure:

1. Disconnect the dispenser from the power source and turn-off the water supply to the dispenser.
2. Remove the pink wire from terminal 5 of the electronic control board.
3. Check the voltage across the solenoid valve coil terminals with a voltmeter. Connect the dispenser to the power source. The indication must be:
   a.) 100 to 120 volts ac for 100 to 120 volt models
   or
   b.) 200 to 240 volts ac for 200 to 240 volt models
   or
   c.) 230 volts ac for 230 volt models
   after a delay of approximately 5 seconds.
4. Disconnect the dispenser from the power source.

If voltage was present as described, proceed to #5.

If voltage was not present as described, refer to the Wiring Diagrams and check the dispenser wiring harness.

5. Remove both wires from the solenoid valve coil terminals.
6. Check for continuity across the solenoid valve coil terminals.

If continuity is present as described, reconnect the wires and proceed to #7.

If continuity is not present as described, replace the solenoid valve coil.

7. Check the solenoid valve for coil action. Connect the dispenser to the power source. Listen carefully in the vicinity of the solenoid valve for a "clicking" sound after approximately 5 seconds, as the coil magnet attracts the plunger.
8. Disconnect the dispenser from the power source.
9. Reconnect the pink wire to terminal 5 of the electronic control board.

If the sound was heard as described and water will not pass through the solenoid valve, there may be a blockage in the water line before or after the solenoid valve or the solenoid valve may require inspection for wear and removal of waterborne particles.

If the sound was not heard as described, replace the solenoid valve.

Removal and Replacement:

1. Remove all wires from the solenoid valve coil.
2. Turn-off the water supply to the dispenser.
3. Disconnect the water line from the solenoid valve.
4. Remove the two 8-32 slotted-head screws holding the solenoid valve and mounting bracket to the back panel.
5. Lift-out the solenoid valve.
6. Securely install the new solenoid valve to the back panel.
7. Securely fasten the water line to the solenoid valve.
8. Reconnect the wires, FIG. 8.

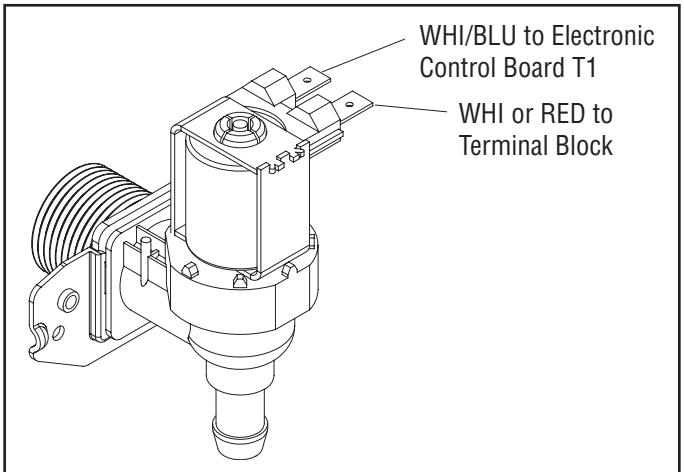


FIG. 8 SOLENOID VALVE WIRING

SERVICE (cont.)

Tank Heater

Location:

The tank heater is located in the tank lid.

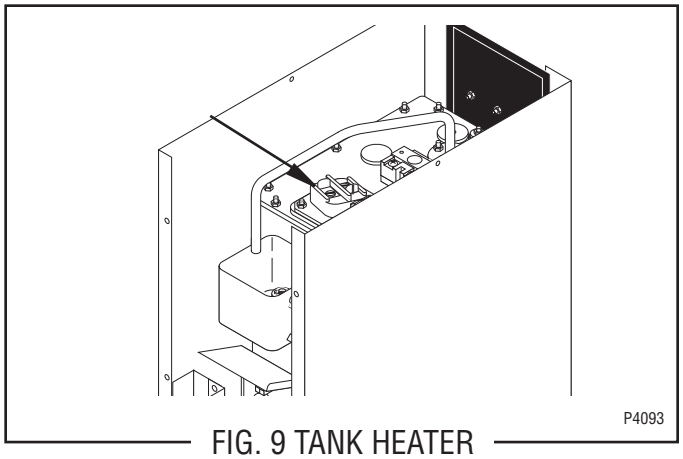


FIG. 9 TANK HEATER

Test Procedure:

1. Disconnect the dispenser from the power source.
2. Check the voltage across the terminals of the tank heater with a voltmeter. Connect the dispenser to the power source. The indication must be:
   a.) 100 to 120 volts ac for 100 to 120 volt models
   or
   b.) 200 to 240 volts ac for 200 to 240 volt models
   or
   c.) 230 volts ac for 230 volt models.
3. Disconnect the dispenser from the power source.

If voltage is present as described, proceed to #4.
If voltage is not present as described, replace the tank heater.

4. Remove the tank heater from the tank lid and inspect it for cracks in the sheath.

If the sheath shows no sign of damage, proceed to #5.
If the sheath is damaged, replace the tank heater.

5. Check for continuity across the tank heater terminals.

If continuity is present as described, reinstall the tank heater. The tank heater is operating properly.
If continuity is not present as described, replace the tank heater.

Removal and Replacement:

1. Remove the wires to the tank heater.
2. Remove the 8-32 nuts from the tank heater flange.
3. Remove the tank heater.
4. Inspect the tank heater gasket and replace if necessary.
5. Securely install the new tank heater. Be certain of a watertight seal.
6. Reconnect the wires, FIG. 10.

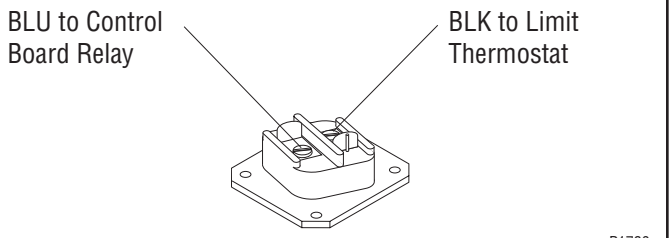
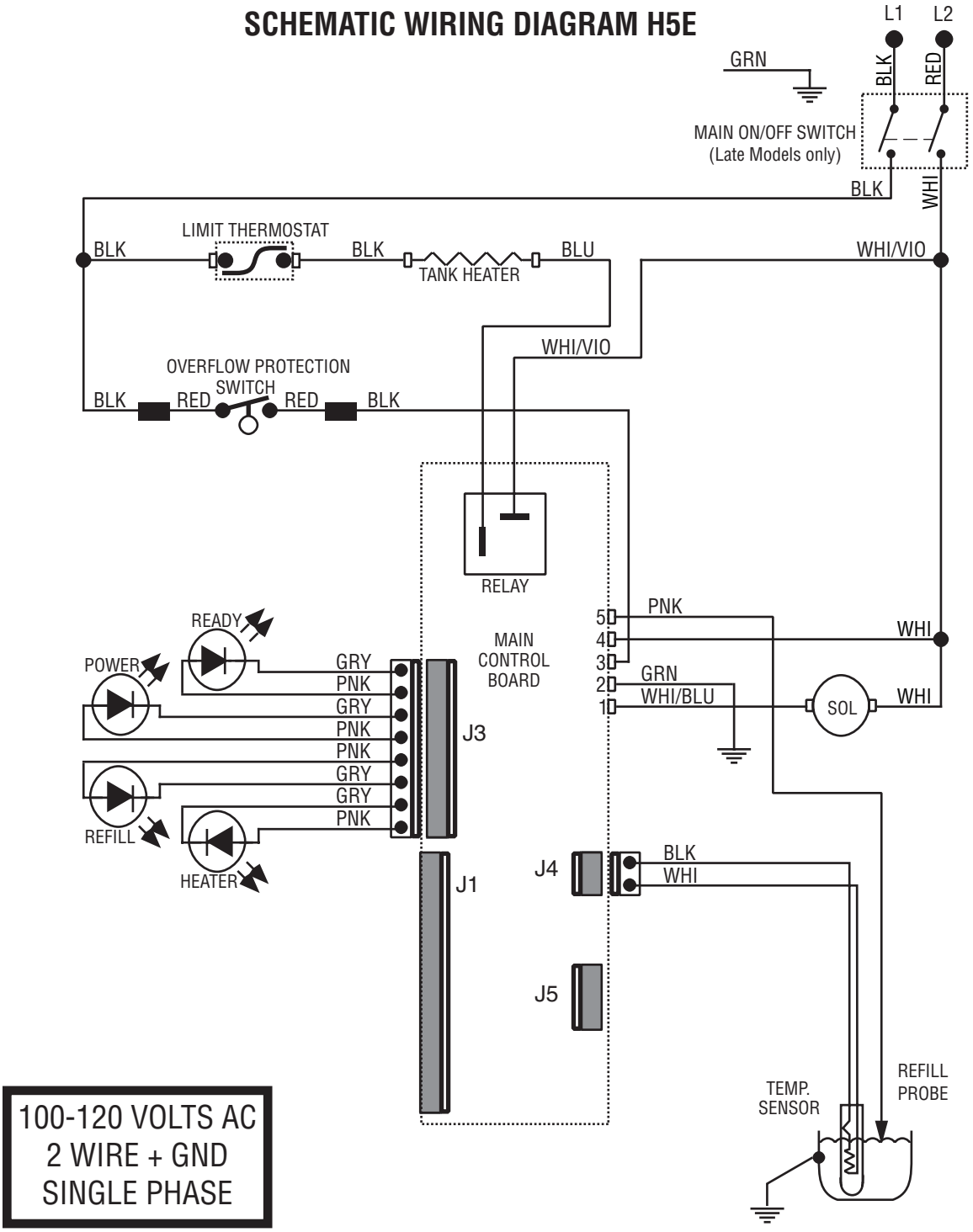
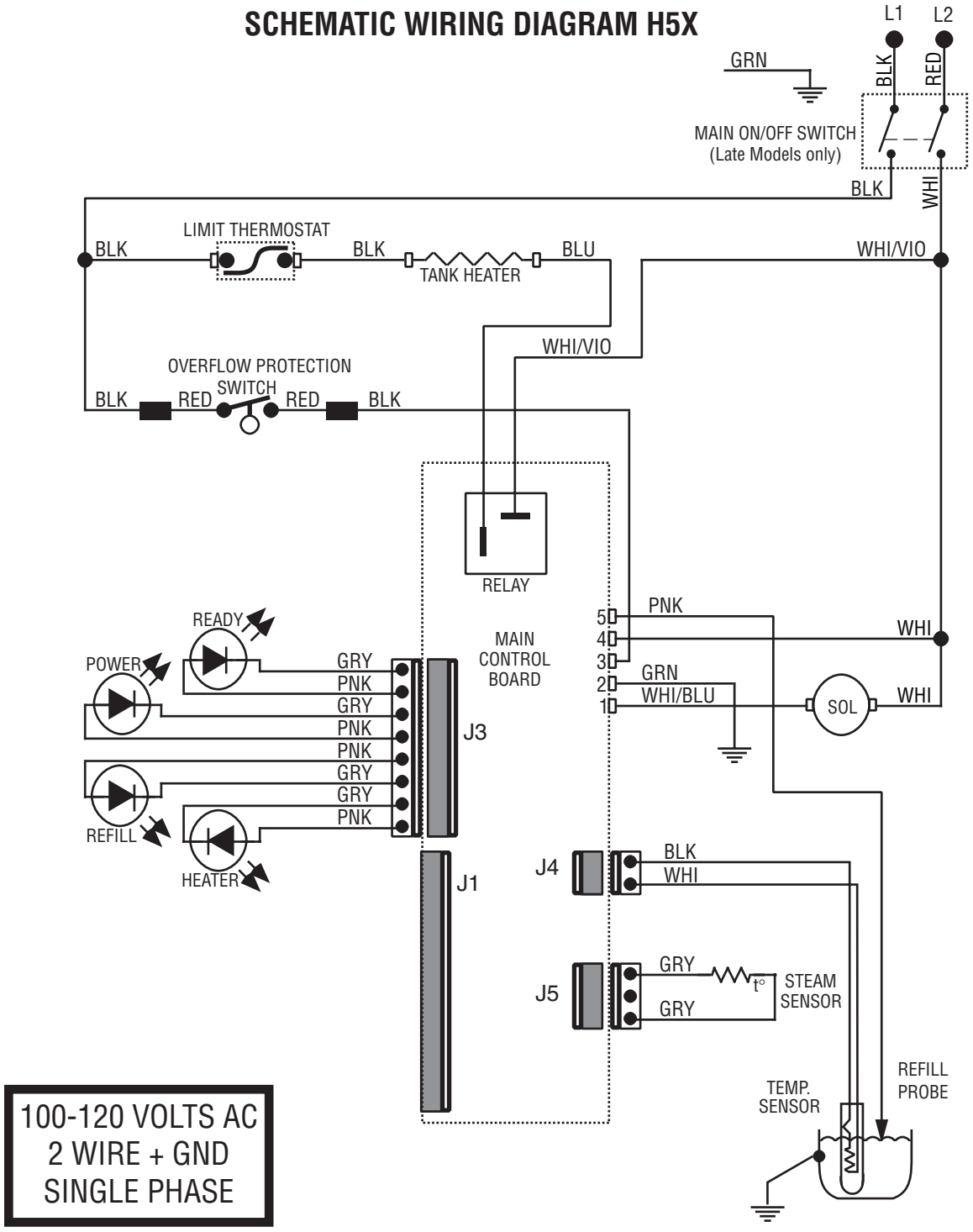


FIG. 10 TANK HEATER WIRING

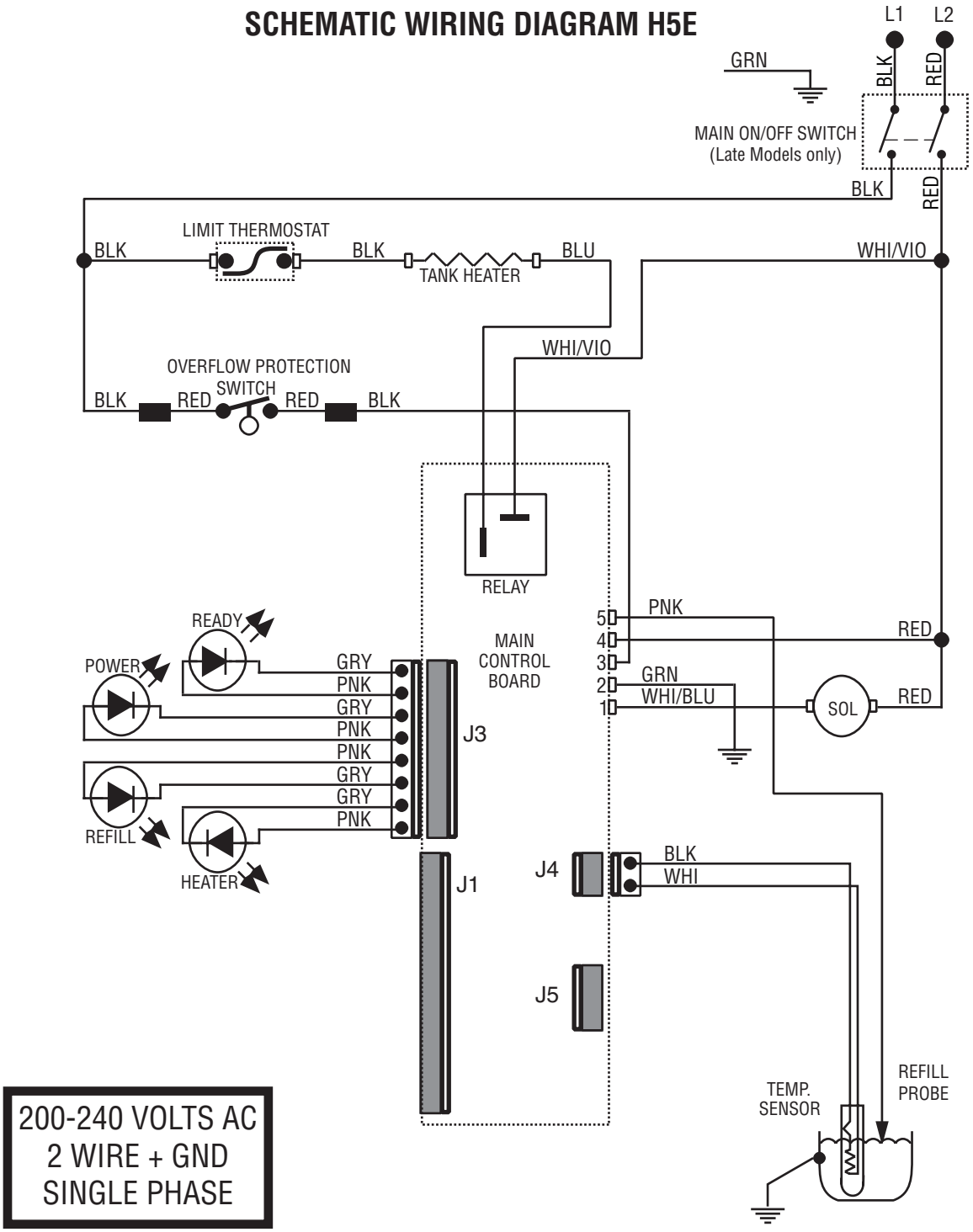
SCHEMATIC WIRING DIAGRAM H5E



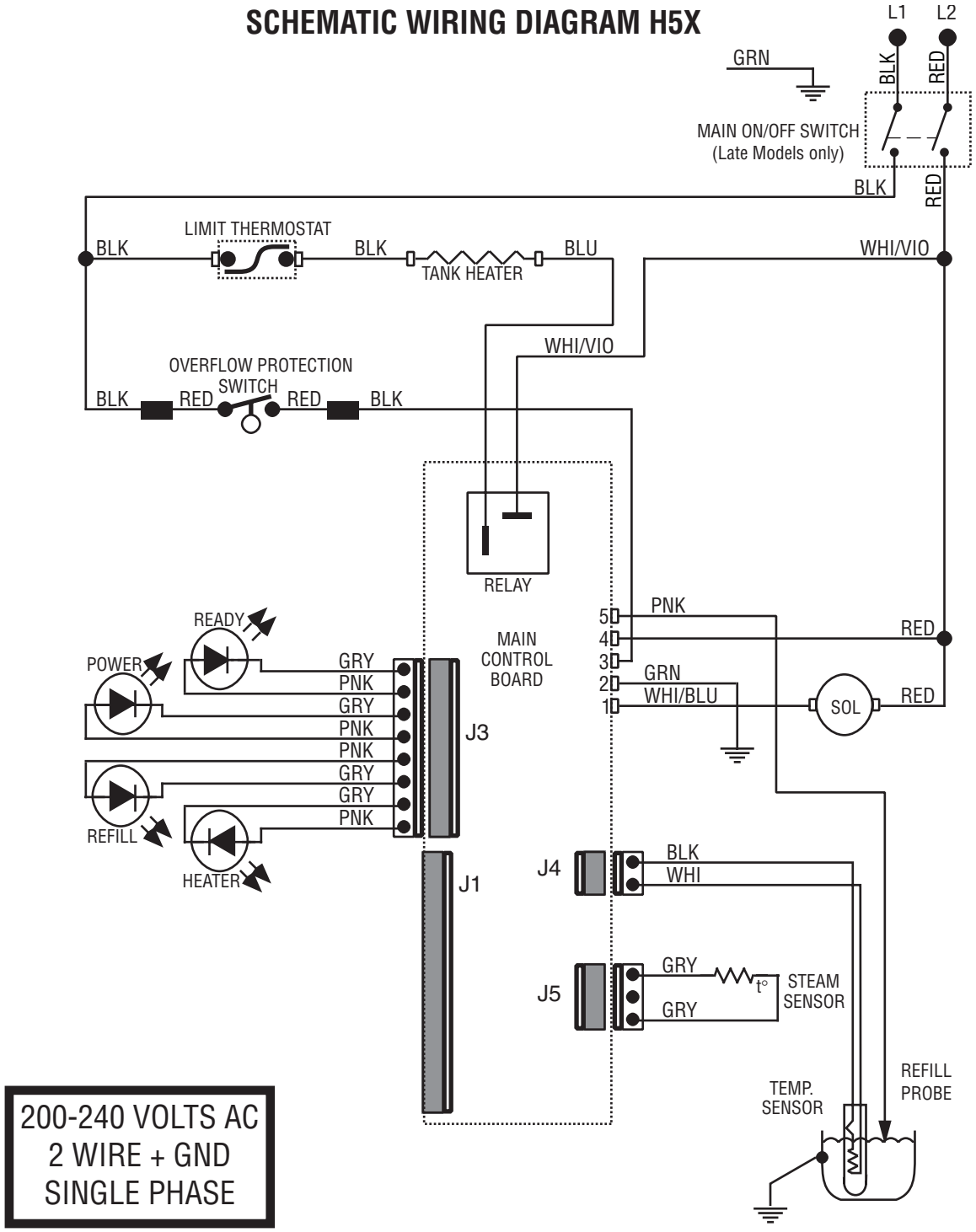
SCHEMATIC WIRING DIAGRAM H5X



SCHEMATIC WIRING DIAGRAM H5E



SCHEMATIC WIRING DIAGRAM H5X



SCHEMATIC WIRING DIAGRAM H5XA, H5EA