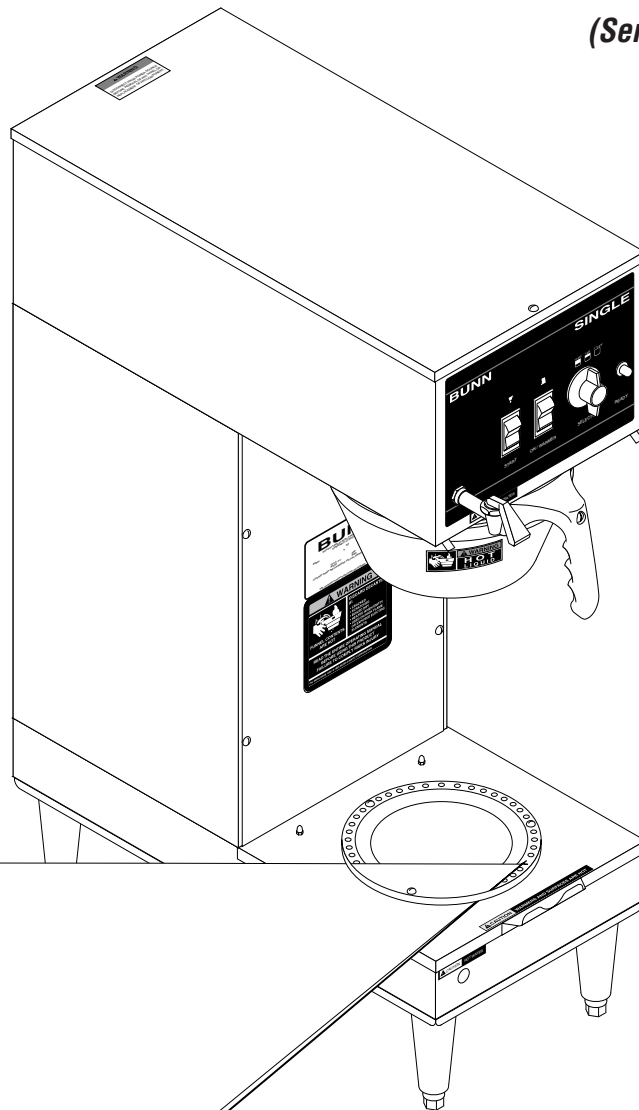


BUNN®

SINGLE™

(Serial # SNG0005000 - Up)



OPERATING & SERVICE MANUAL

BUNN-O-MATIC CORPORATION

POST OFFICE BOX 3227

SPRINGFIELD, ILLINOIS 62708-3227

PHONE: (217) 529-6601 FAX: (217) 529-6644

INTRODUCTION

This equipment will brew a half-gallon, gallon, or gallon and a half batch of coffee into an awaiting server at the push of a button and includes a hot water faucet for allied beverage use. The brewer is specifically designed for use with a BUNN® 1.5GPR server. It is only for indoor use on a sturdy counter or shelf.

WARRANTY

Bunn-O-Matic Corp. ("Bunn") warrants the equipment manufactured by it to be commercially free from defects in material and workmanship existing at the time of manufacture and appearing within one year from the date of installation. In addition:

1.) Bunn warrants electronic circuit and/or control boards to be commercially free from defects in material and workmanship for two years from the date of installation.

2.) Bunn warrants the compressor on refrigeration equipment to be commercially free from defects in material and workmanship for two years from the date of installation.

3.) Bunn warrants that the grinding burrs on coffee grinding equipment will grind coffee to meet original factory screen sieve analysis for three years from date of installation or for 30,000 pounds of coffee, whichever comes first.

This warranty does not apply to any equipment, component or part that was not manufactured by Bunn or that, in Bunn's judgement, has been affected by misuse, neglect, alteration, improper installation or operation, improper maintenance or repair, damage or casualty.

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.

The Buyer shall give 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. If requested by Bunn, the Buyer shall ship the defective equipment prepaid to an authorized Bunn service location. If Bunn determines, in its sole discretion, that the equipment does not conform to the warranty, Bunn shall repair the equipment with no charge for parts during the warranty period and no charge for labor by a Bunn Authorized Service Representative during the warranty period. If Bunn determines that repair is not feasible, Bunn shall, at its sole option, 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, AS SPECIFIED HEREIN, TO REPAIR OR, AT BUNN'S SOLE OPTION, 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.

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 front panel beneath the sprayhead.

Models with electronic control assemblies:

Place the tank heater switch at the top of the control assembly in the “OFF” position.

Models with electro/mechanical thermostats:

Rotate the control thermostat knob fully counterclockwise to the “OFF” position.

4. Feed the cord through the strain relief and connect it to the terminal block.
5. Connect the brewer to the power source and verify the voltage at the terminal block before proceeding. Replace the front panel.
6. If plumbing is to be hooked up later be sure the brewer is disconnected from the power source. If plumbing has been hooked up, the brewer is ready for Initial Set-Up.

PLUMBING REQUIREMENTS

This brewer 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 brewer. Install a regulator in the line when pressure is greater than 90 psi (620 kPa) to reduce it to 50 psi (138 kPa). The water inlet fitting is ¼" flare.

NOTE – Bunn-O-Matic recommends ¼" copper tubing for installations of less than 25 feet and ⅜" for more than 25 feet from the ½" water supply line. A tight coil of copper tubing in the water line will facilitate moving the brewer to clean the counter top. Bunn-O-Matic does not recommend the use of a saddle valve to install the brewer. 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 Basic Plumbing Code of the Building Officials and Code Administrators International, Inc. (BOCA) and the Food Service Sanitation Manual of the Food and Drug Administration (FDA).

PLUMBING HOOK-UP

1. Attach the flare fitting from the short piece of tubing on the strainer/flow control (supplied) to the water inlet fitting on the bottom of the brewer.
2. Flush the water line and securely attach it to the flare fitting on the strainer/flow control.
3. Turn on the water supply.



INITIAL SET-UP

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

NOTE: ECA Models Only - This brewer is equipped with a temperature sensor that indicates when to brew and, when selected, locks out the start of a brew cycle until the water has heated to the optimum brewing temperature.

1. Remove the front panel beneath the sprayhead.

Models with electronic control assemblies:

Place the tank heater switch at the top of the control assembly in the “OFF” position.

Models with electro/mechanical thermostats:

Rotate the control thermostat knob fully counterclockwise to the “OFF” position.

2. Connect the brewer to the power source. Water will begin flowing into the tank.
3. When water stops flowing into the tank, remove the front panel and proceed as directed:

Models with electronic control assemblies:

Place the tank heater switch at the top of the control assembly in the “ON” position and replace the front panel.

Models with electro/mechanical thermostats:

Rotate the control thermostat knob fully clockwise to the “ON” position and replace the front panel.

4. Wait approximately twenty-five minutes on 208V,240V Models or fifty minutes on 120V Models for the water in the tank to heat to the proper temperature.
5. Place an empty server beneath the brew station. Place the Selector switch in the one-gallon position, the On/ OFF switch in the upper position and initiate a brew cycle.
6. Place the On/Off switch in the lower “OFF” position after water has stopped flowing from the funnel, and check the water volume in the server. It should be 128 ounces.
7. (A) If not, adjust the timer as required. Refer to Adjusting Brew Volumes.
(B) If necessary adjust the needle valve to achieve water volume to be bypassed around the coffee filter in the funnel.

NOTE: To increase the water bypass turn the needle valve counterclockwise, to decrease the water bypass turn the needle valve clockwise. An adjustment to the needle valve will require a timer adjustment for volume.

8. Repeat step 7 until the proper water volume is achieved.
9. The brewer is now ready for use in accordance with the coffee brewing instructions.

ADJUSTING BREW VOLUMES

CAUTION - Disconnect the power source from the brewer prior to the removal of any panel for the replacement or adjustment of any component.

NOTE: Prior to setting or modifying batch sizes, check that the brewer is connected to water supply, the tank is properly filled, and a funnel and server are in place.

1. **Modifying batch sizes.** To modify a batch volume, first check that the SET/LOCK switch is in the “SET” position on the circuit board.

To increase a batch size. Press and hold the START or BREW switch until three clicks are heard. Release the switch (Failure to release the switch within two seconds after the third click causes the volume setting to be aborted and previous volume setting will remain in memory) and press it again one or more times. Each time the switch is pressed, two seconds are added to the brew time period. Allow the brew cycle to finish in order to verify that the desired volume has been achieved.

To decrease a batch size. Press and release the START or BREW switch once for every two-second interval to be removed from the total brew time period; then immediately press and hold down the START or BREW switch until three clicks are heard. Release the switch. (Failure to release the switch within two seconds after the third click causes the volume setting to be aborted and previous volume setting will remain in memory). Allow the brew cycle to finish in order to verify that the desired volume has been achieved.

2. **Setting batch sizes.** To set a batch volume, first check that the SET/LOCK switch is in the “SET” position on the circuit board. Press and hold the START or BREW switch until three distinct clicks are heard, and then release the switch. (Failure to release the switch within two seconds after the third click causes the volume setting to be aborted and previous volume setting will remain in memory). View the level of the liquid being dispensed. When the desired level is reached, turn the ON/OFF switch to “OFF” (lower). The brewer remembers this volume and will continue to brew batches of this size until the volume setting procedure is repeated.

NOTE: When brewing coffee, batch volumes will decrease due to absorption by the coffee grounds.

3. **Setting programming disable feature.** If it becomes necessary to prevent anyone from changing brew times once programmed, you can set the SET/LOCK switch to the “LOCK” position. This will prevent any programming to be done until switch is once again placed in the “SET” position.

OPERATING CONTROLS

BREW SELECTOR SWITCH

Placing the switch in the ½ Gal, 1 Gal, or 1½ Gal position selects the amount of coffee to be brewed in subsequent brew cycles. Repositioning this switch after a brew cycle has been initiated does not change the brew batch in progress.

ON/OFF SWITCH

Placing the switch in the unlighted lower position cuts power to the brew station warmer and stops brewing. Stopping a brew cycle after it has been started will not stop the flow of water from the funnel. Placing the switch in the lighted upper position supplies power to the brew station warmer and enables the brew circuit.

START SWITCH

Momentarily pressing and releasing this switch starts a brew cycle when the On/Off switch is in the lighted upper position.

NOTE – The On/Off switch must be in the lighted upper position to initiate and complete a brew cycle.

COFFEE BREWING

1. Select the desired batch size.
2. Insert a BUNN® filter into the funnel.
3. Pour the proper amount of fresh coffee into the filter and level the bed of grounds by gently shaking.
4. Slide the funnel into the funnel rails.
5. Place an empty server under the funnel.
6. Place the On/Off switch in the lighted upper position. Momentarily press and release the start switch.
7. When brewing is completed, simply discard the grounds and filter.

CLEANING

1. 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.
2. Check and clean the sprayhead. The sprayhead holes must always remain open.

NOTE – In hard water areas, this may need to be done daily. It will help prevent liming problems in the brewer and takes less than a minute.

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 avoid twists and kinks in the tubing.
- Make certain that all plumbing connections are sealed and electrical connections tight and isolated.
- This brewer is heated at all times. Keep away from combustibles.

WARNING

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

Problem	Probable Cause	Remedy
Equipment will not operate. Brew cycle will not start.	1. No power or incorrect voltage	(A1) Check the terminal block for 120 volts across the black and white terminals on 120 volt two wire brewers. (A2) Check the terminal block for 120 volts across the red and white terminals and the black and white terminals on 120/208 or 120/240 volt brewers. (A3) Check the terminal block for 200 volts on "B Series" brewers or 240 volts on "A Series" brewers across the red and black terminals. (B) Check circuit breakers or fuses.
Brew cycle will not start.	1. No water 2. Water strainer/flow control (.330 GPM)	Check plumbing and shut-off valves (A) Direction of flow arrow must be pointing towards brewer. (B) Remove the strainer/flow control and check for obstructions. Clear or replace.

TROUBLESHOOTING (cont.)

Problem	Probable Cause	Remedy
Brew cycle will not start (cont.)	3. ON/OFF switch	Refer to <i>Service</i> - ON/OFF switch for testing procedures. See page 31
	4. Start switch	Refer to <i>Service</i> - Start switch for testing procedures. See page 34
	5. Timer	Refer to <i>Service</i> - Timer for testing procedures. See page 36 & 38
	6. Dispense Valve	Refer to <i>Service</i> - Dispense valve for testing procedures. See page 22
	7. Control Assembly (Electronic)	Refer to <i>Service</i> - Electronic controls for testing procedures. See pages 23 thru 27
Automatic refill will not operate	1. No water	Check plumbing and shut-off valves.
	2. Water strainer/flow control (.330 GPM)	(A) Direction of flow arrow must be pointing towards brewer.
		(B) Remove the strainer/flow control and check for obstructions. Clear or replace.
	3. Limit thermostat (Electro/mechanical and Electronic)	Refer to <i>Service</i> - Limit thermostat for testing procedures. See page 30
	4. Overflow protection switch	Refer to <i>Service</i> - Overflow protection switch for testing procedures. See page 32
	5. (A) Level control board & level probe. (Electro/mechanical)	Refer to <i>Service</i> - Level control board for testing procedures. See page 28
(B) Control Assembly (Electronic)		Refer to <i>Service</i> - Electronic controls for testing procedures. See page 23 thru 27
6. Solenoid Valve	Refer to <i>Service</i> - Solenoid valve for testing procedures. See page 33	

TROUBLESHOOTING (cont.)

Problem	Probable Cause	Remedy
Water from tank is not hot (cont.)	5. Triac assembly (Electronic)	Refer to <i>Service</i> - Triac assembly for removal and replacement. See page 27
Server warmer is not hot.	1. ON/OFF switch	Refer to <i>Service</i> - ON/OFF switch for testing procedures. See page 31
	2. Warmer element	Refer to <i>Service</i> - Warmer element for testing procedures. See page 40
Spitting or unusual steaming from sprayhead or airvent.	1. (A) Control thermostat (Electro/mechanical)	Refer to <i>Service</i> - Control thermostat for testing procedures. See page 20
	(B) Control assembly (Electronic)	Refer to <i>Service</i> - Control assembly for testing procedures. See page 23 thru 27
	2. Triac assembly (Electronic)	Refer to <i>Service</i> - Triac assembly for testing procedures. See page 27
Inconsistent beverage level in server.	3. Lime build-up	Inspect the tank assembly for excessive lime deposits. Delime as required.
	CAUTION - Tank and tank components should be delimed regularly depending on local water conditions. Excessive mineral build-up on stainless steel surfaces can initiate corrosive reactions resulting in serious leaks.	
Inconsistent beverage level in server.	1. Strainer/flow control (.330 GPM)	(A) Direction of flow arrow must be pointing towards the brewer. (B) Remove the strainer/flow control and check for obstructions. Clear or replace.
	2. Improper water pressure	Check the operating water pressure to the brewer. It must be between 20 and 90 psi (138 and 620 kPa).

TROUBLESHOOTING (cont.)

Problem	Probable Cause	Remedy
Inconsistent beverage level in server. (cont.)	3. Dispense valve	Refer to <i>Service</i> - Dispense valve for testing procedures. See page 22
Consistently high or low beverage level in server.	1. Timer adjustment	Adjust the timer as required to achieve the recommended volume for each brew cycle.
Dripping from sprayhead.	1. Dispense valve	Refer to <i>Service</i> - Dispense valve for testing procedures. See page 22
Water overflows filter.	1. Bypass valve (Electro/mechanical)	Refer to <i>Adjustments</i> on page 5 step #7. For test procedures see page 15.
	2. Type of paper filters	BUNN® paper filters should be used for proper extraction.
	3. No sprayhead	Check sprayhead
Beverage overflows server.	1. Beverage left in server	The brew cycle should be started only with an empty server under the funnel.
	2. Timer adjustment	Adjust the timer as required to achieve the recommended 192 oz for each 1-1/2 gallon brew cycle. Refer to <i>Service</i> - Timer for testing procedures. See page 36 & 38
	3. Dispense valve	Refer to <i>Service</i> - Dispense valve for testing procedures. See page 22
Weak beverage.	1. Type of paper filters	BUNN® paper filters should be used for proper extraction.
	2. Coffee	A sufficient quantity of fresh drip or regular grind should be used for proper extraction.
	3. Sprayhead	B.O.M. sprayhead #01082.0002 should be used to properly wet the bed of ground coffee in the funnel.

TROUBLESHOOTING (cont.)

Problem	Probable Cause	Remedy
Weak beverage (cont.)	4. Funnel loading	The BUNN® paper filter should be centered in the funnel and the bed of ground coffee leveled by gentle shaking.
	5. Water temperature	Empty the server, remove its cover, and place the server on the warmer. Place empty funnel over the server entrance, with ON/OFF switch in the "ON" position press the start switch and release it. Check the water temperature immediately below the sprayhead with a thermometer. The reading should not be less than 195°F(91°C).
Brewer is making unusual noises.	1. Solenoid (Inlet)	The nut on back of the solenoid must be tight or it will vibrate during operation
	2. Plumbing lines	Plumbing lines should not be resting on the counter top.
	3. Water supply	(A) The brewer must be connected to a cold water line. (B) Water pressure to the brewer 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).
	4. Tank heater	Remove and clean lime off the tank heater.
	5. Contactor	Check for low voltage.

SERVICE

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

WARNING - Inspection, testing, and repair of electrical equipment should be performed only by qualified service personnel. The brewer should be unplugged when servicing, except when electrical tests are required and the test procedure specifically states to plug-in the brewer.

COMPONENT ACCESS

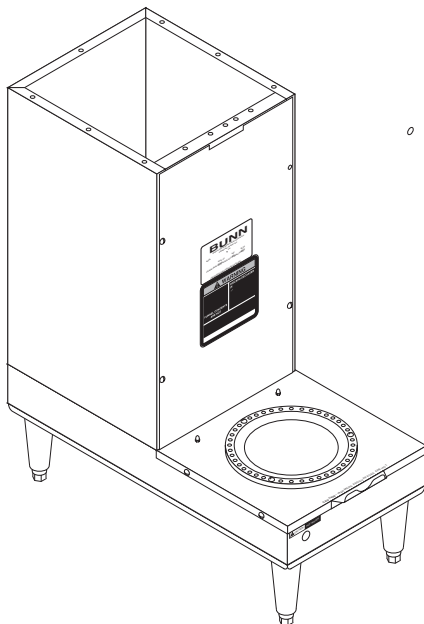
WARNING - Disconnect the brewer from the power source before the removal of any panel or the replacement of any component.

All components are accessible by the removal of the top cover, front inspection panel and warmer base plate.

The top cover is attached with one #4-40 slotted head screw.

The front inspection panel is attached with four #6-32 slotted head screws.

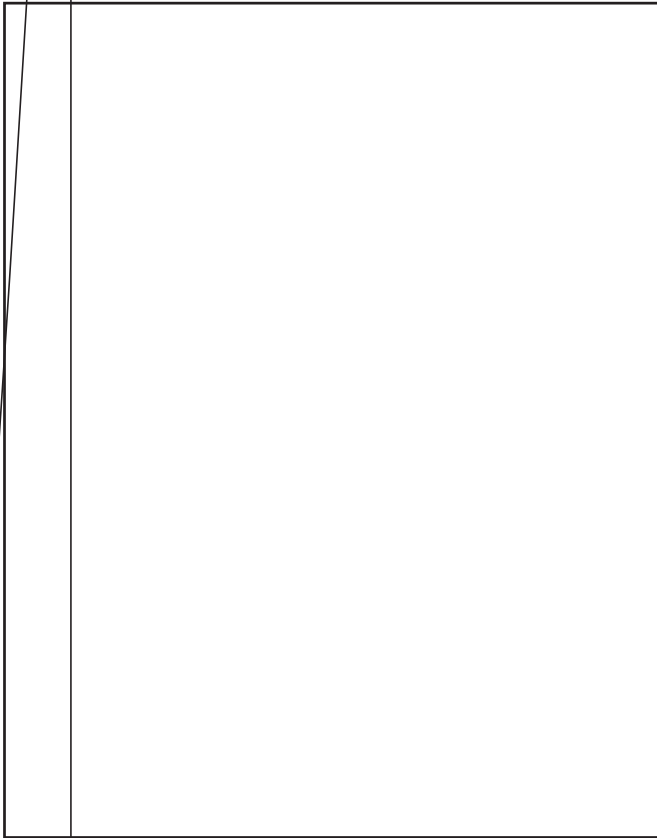
The warmer base is attached with four #6-32 slotted head screws.



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SERVICE (cont.)

BYPASS VALVE



Location:

The bypass valve is located inside the right front of the hood.

Test Procedures:

Disconnect the brewer from the power source and place a server beneath the funnel.

Check the water level in the tank to confirm it is within 1/2" from the top of the tank.

Turn the brewer to the power source.

Listen for the bypass valve to click in the tank.

If the bypass valve does not click in the tank, check the water level in the tank.

If the water level is correct, check the bypass valve for a blockage.

Check the bypass valve for a blockage.

Check the bypass valve for a blockage.

Check the bypass valve for a blockage.

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Check the bypass valve for a blockage.

Check the bypass valve for a blockage.

Check the bypass valve for a blockage.

If the sound described, there may be a blockage in the bypass valve or the water line to the spray wand. Turn the bypass valve and inspect for wear, and check for airborne particles.

If the sound is not heard as described, check the bypass valve for a blockage.

SERVICE (cont.)

BREW SELECTOR SWITCH

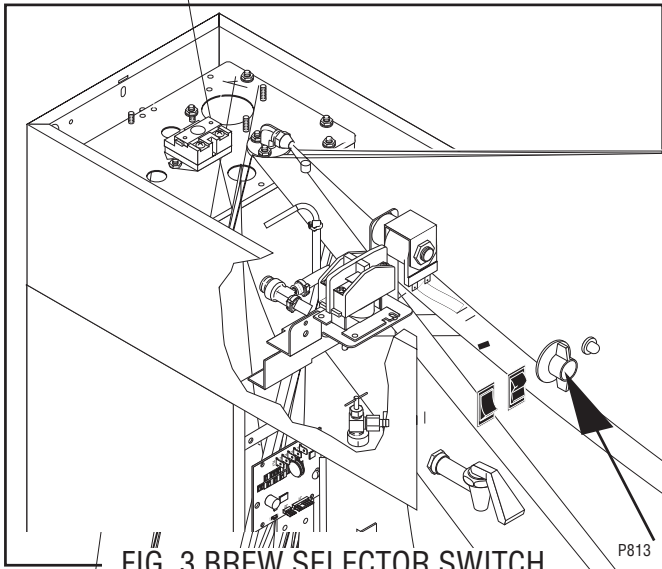


FIG. 3 BREW SELECTOR SWITCH

13. Disconnect the tan wire from the selector switch and tan wire from interface socket.
14. Check for continuity across the tan wires.
15. Reconnect the tan wires.
16. With the selector switch set at 1 and 1-1/2 gallon, disconnect the white/violet from the terminal block.

Location:
The brew selector switch is located on the inside of the hood.

Test Procedure:

1. Disconnect power to the brewer.
2. Set the selector switch to 1 and 1-1/2 gallon.
3. Check for continuity across the tan wires.
4. Reconnect the tan wires.
5. Set the selector switch to 1 and 1-1/2 gallon.
6. Disconnect the white/violet wire from the terminal block.
7. Check for continuity across the tan wires.
8. Reconnect the white/violet wire to the terminal block.
9. Reconnect power to the brewer.

SERVICE (cont.)

BREW SELECTOR SWITCH (cont.)

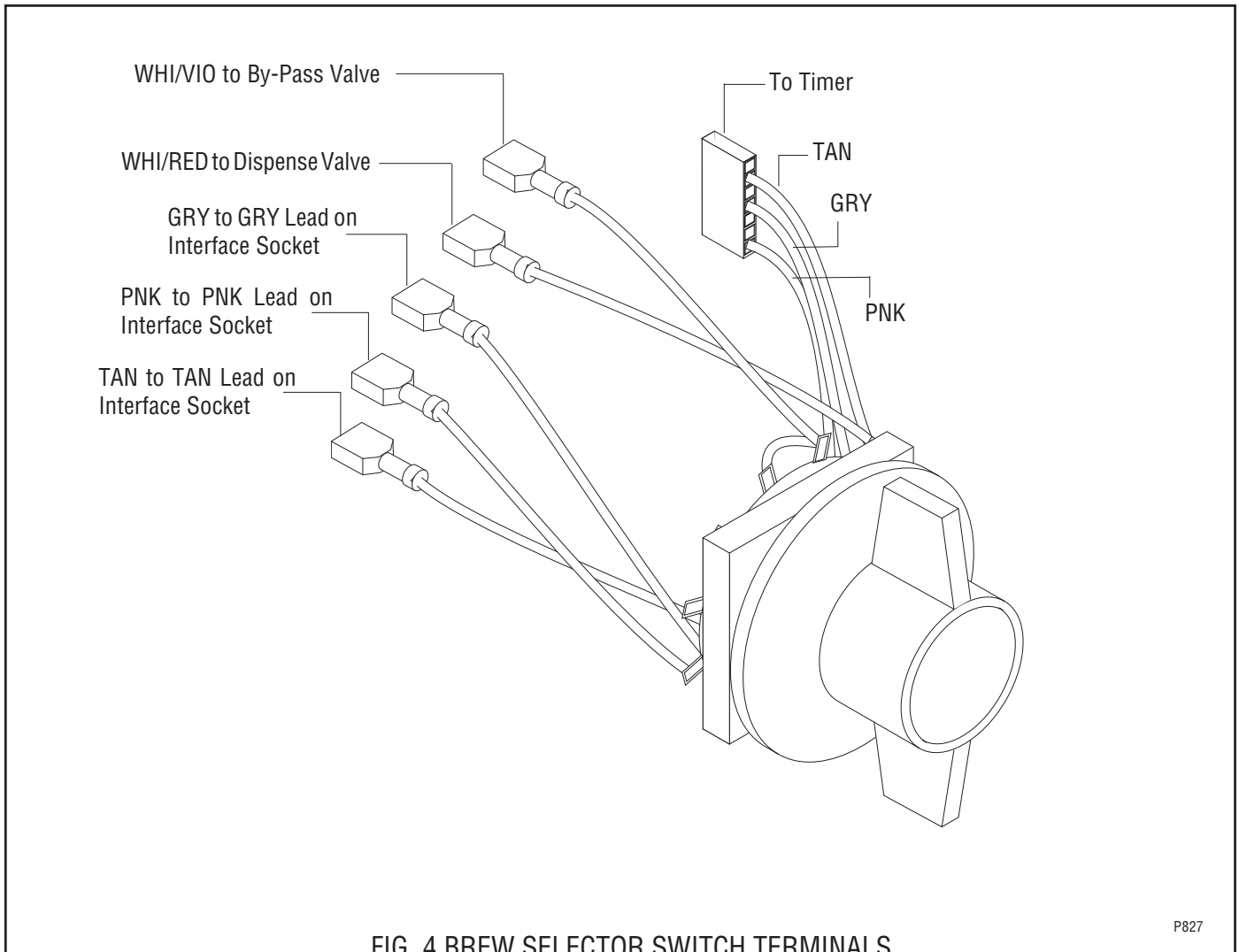


FIG. 4 BREW SELECTOR SWITCH TERMINALS

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SERVICE (cont.)

CONTACTOR ASSEMBLY (W/ MECHANICAL THERMOSTAT ONLY) (cont.)

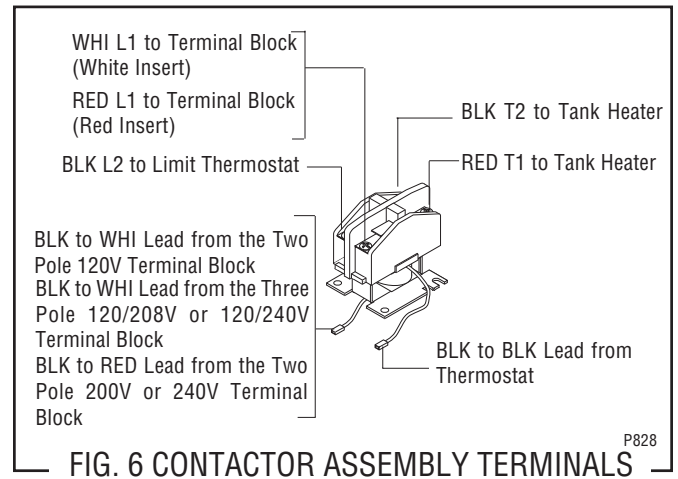
11. Check for continuity across the terminals on the right side of the contactor by manually closing the contacts. Continuity must not be present when the contact is released.

If continuity is present as described, the contactor is operating properly.

If continuity is not present as described, replace the contactor.

Removal and Replacement:

1. Remove all wires from the contactor.
2. Remove the two #10-32 slotted head screw securing contactor to the inside of the hood.
3. Securely install the new contactor inside the hood.
4. Refer to Fig. 6 when reconnecting the wires.





inside the lower
bracket.

power source.
control thermostat.
voltage across the blue
thermostat and the white
wire 120V, 120/208V,
the red insert on two
connect the brewer to
voltage must be:
for 120 volt models, 208
0/208 volt models and
for 120/240 volt models.
for two wire 200 or 240 volt

from the power source.

As described, reconnect the wire

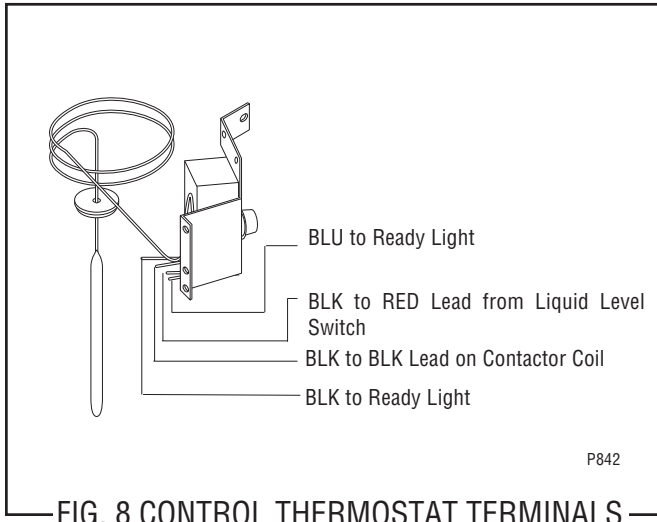
As described, refer to the
manual and check the brewer wiring har-

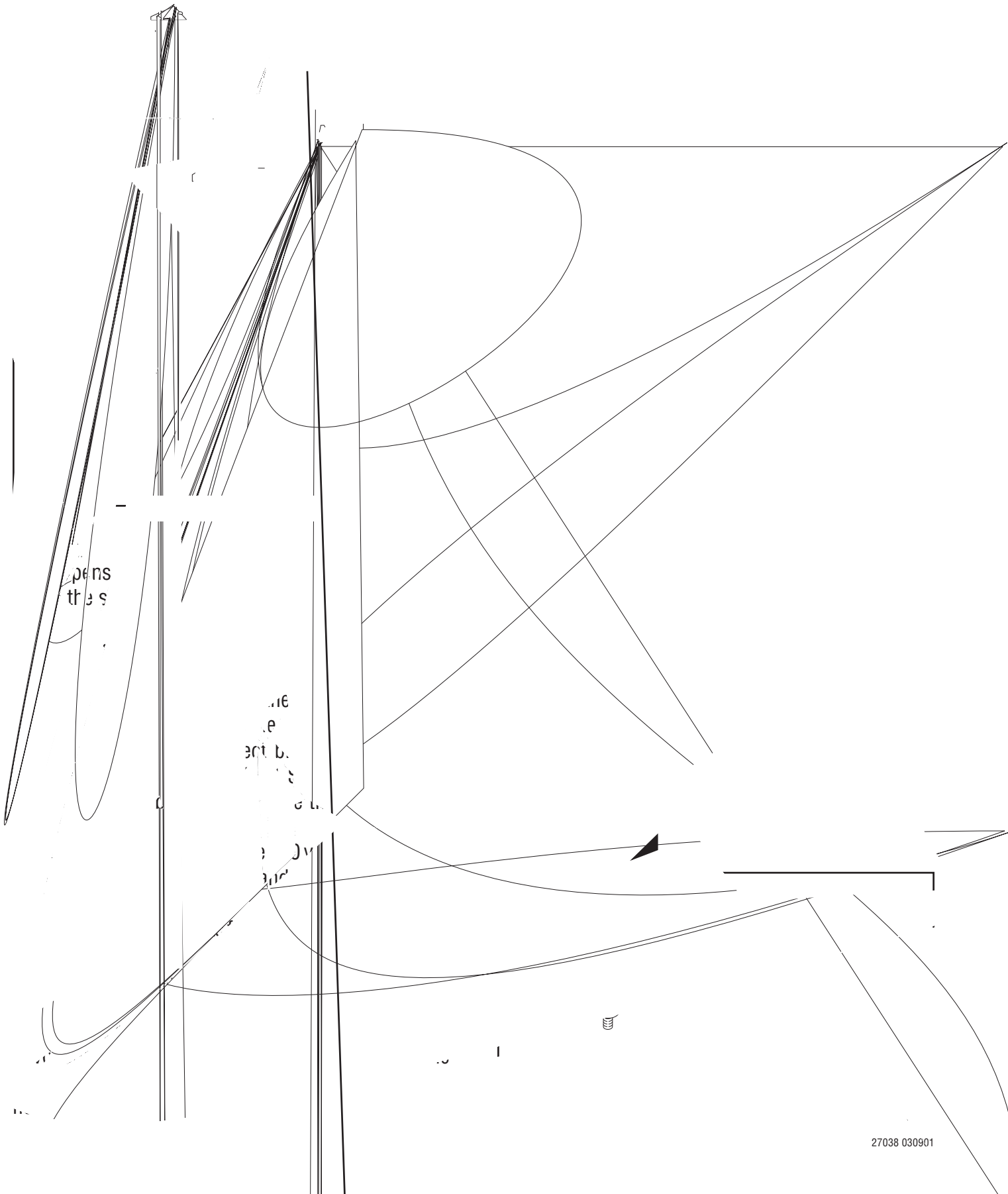
SERVICE (cont.)

CONTROL THERMOSTAT (cont.)

NOTE - The capillary tube must be clear of any electrical termination and not kinked.

7. Using a #8-32 slotted head screw fasten the control thermostat to the component bracket.
8. Refer to Fig. 8 when reconnecting the wires.
9. Adjust the control thermostat as required.





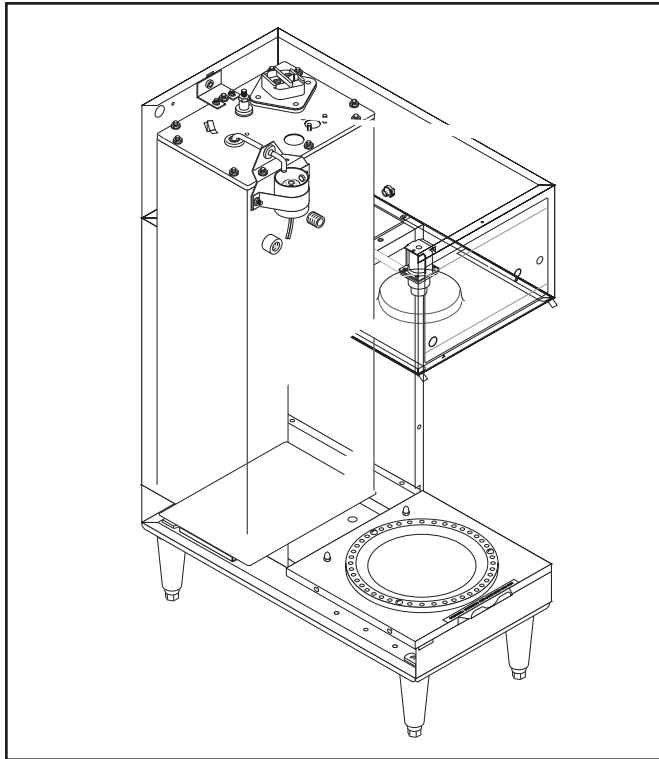
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SERVICE (cont.)

ELECTRONIC CONTROL ASSEMBLY



- | | |
|---------------------------------------|----------------------------|
| 1. Electronic Control | 8. Temperature Sensor |
| 2. Terminal Block | 9. Dispense Valve |
| 3. Timer | 10. Bypass Valve |
| 4. Liquid Level Switch & Overflow Cup | 11. Ready Light |
| 5. Tank Heater | 12. Solenoid Valve |
| 6. Limit Thermostat | 13. LED |
| 7. Liquid Level Probe | 14. Temperature Adjustment |
| | 15. Triac Assy |

Location:

The electronic control assembly (1) is located inside the lower left front on the component bracket of the brewer. Access will also be needed to the temperature sensor (8), liquid level probe (7) located on the tank lid and to the triac assembly (15) located beneath the tank.

General:

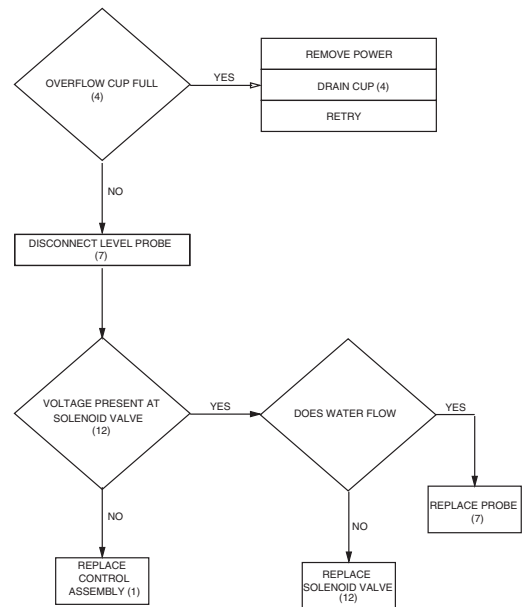
This system controls the liquid level and water temperature of the brewer. These two functions act independently of each other and should be tested separately.

BREW START - LOCK

The water must be heated to the preset temperature indicated by the glowing ready light before a brew cycle can be initiated.

PROBLEM:

ELECTRONIC CONTROL SYSTEM DOES NOT REFILL



Liquid Level Control Test Procedure:

1. Disconnect brewer from the power source.
2. With a voltmeter, check the voltage across terminals 3 & 4 of the electronic control assembly (1). Connect brewer to power source. The indication must be:
 - a.) 120 volts ac for two wire 120 volt models, 208 volts ac for three wire 120/208 volt models and 240 volts ac for three wire 120/240 volt models.
 - b.) 200 to 240 volts ac for two wire 200 or 240 volt models.
3. Disconnect brewer 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 brewer wiring harness.

4. Remove the pink wire from terminal 5 of the electronic control assembly (1).
5. With a voltmeter, check the voltage across terminals 1 & 4 of the electronic control assembly (1). Connect brewer to the power source. The indication must be:

SERVICE (cont.)

ELECTRONIC CONTROL ASSEMBLY (cont.)

- a.) 120 volts ac for two wire 120 volt models, three wire 120/208 volt models and three wire 120/240 volt models after a delay of approximately 1 second.
- b.) 200 to 240 volts ac for two wire 200 or 240 volt models after a delay of approximately 1 second.

6. Disconnect the brewer from the power source.

If voltage was present as described, the liquid level control system is operating properly, proceed to #7. If voltage was not present as described, replace the electronic control assembly (1) and temperature sensor (8) in the tank lid.

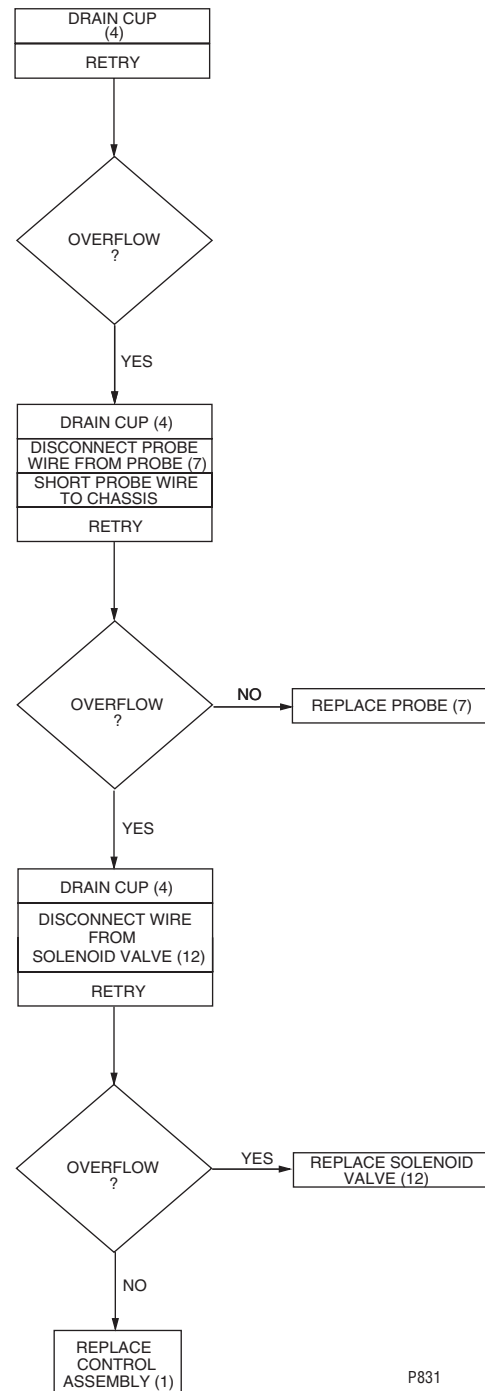
NOTE - Each electronic control assembly is calibrated to a temperature sensor. Both components **MUST** be replaced as a set.

7. Reconnect the pink wire to terminal 5 of the electronic control assembly (1).
8. Remove the liquid level probe (7) 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. With a voltmeter, check the voltage across terminals 1 & 4 of the electronic control assembly (1). Connect the brewer to the power source. The indication must be:
 - a.) 120 volts ac for two wire 120 volt models, three wire 120/208 volt models and three wire 120/240 volt models after a delay of approximately 1 second.
 - b.) 200 to 240 volts ac for two wire 208 or 240 volt models after a delay of approximately 1 second.
10. Touch the screw head end of the probe to the brewer housing. The indication must be 0.
11. Move the probe away from the brewer housing. The indication must again be:
 - a.) 120 volts ac for two wire 120 volt models, three wire 120/208 volt models and three wire 120/240 volt models after a delay of approximately 1 second.
 - b.) 200 to 240 volts ac for two wire 200 or 240 volt models after a delay of approximately 1 second.
12. Disconnect the brewer 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.

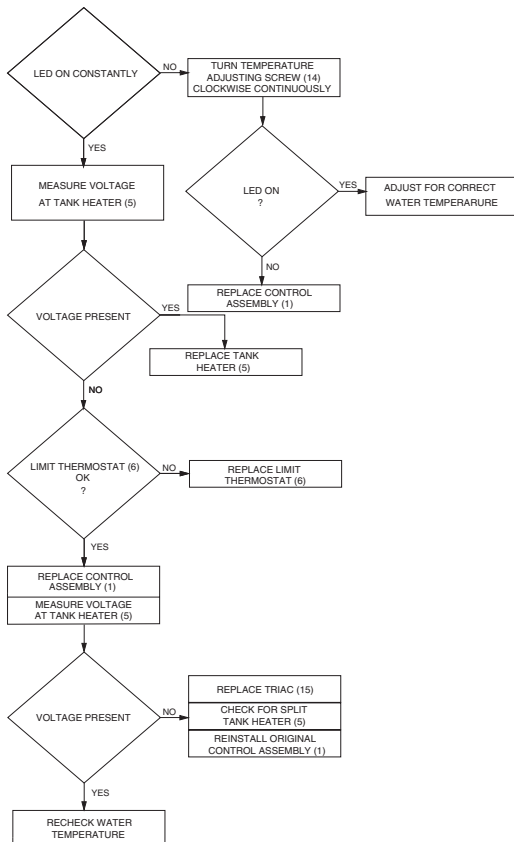
PROBLEM: LIQUID LEVEL CONTROL OVERFLOWS



P831

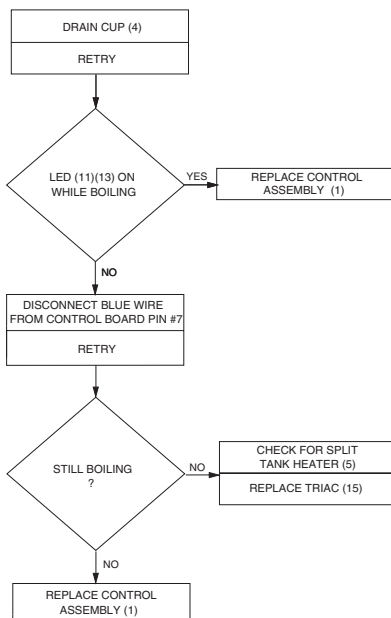
SERVICE (cont.)
ELECTRONIC CONTROLS (cont.)

PROBLEM
WATER NOT HOT ENOUGH



P844

PROBLEM:
WATER BOILS



P845

Temperature Control Test Procedure

1. Disconnect the brewer from the power source.
2. With a voltmeter, check the voltage across terminals 3 & 4 of the electronic control circuit board. Connect the brewer to the power source. The indication must be:
 - a.) 120 volts ac for two wire 120 volt models, 208 volts ac for three wire 120/208 volt models and 240 volts ac for three wire 120/240 volt models.
 - b.) 200 to 240 volts ac for two wire 200 or 240 volt models.
3. Disconnect the brewer 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 brewer wiring harness.

4. Connect the brewer to the power source and place the tank heater switch in the "ON" position.
5. Observe the red LED indicator on the electronic control circuit board (13).
6. Disconnect the brewer from the power source.

If the indicator was on or blinking, the temperature sensor is operating properly, proceed to #7.

If the indicator was off, check the sensor connection on the electronic control circuit board and/or replace the temperature sensor (8) and the electronic control assembly (1).

NOTE - each temperature sensor is calibrated to an electronic control assembly. Both components **MUST** be replaced as a set.

7. With a voltmeter, check the voltage across the tank heater (5) terminals. Connect the brewer to the power source. The indication must be:
 - a.) 120 volts ac for two wire 120 volt models, 208 volts ac for three wire 120/208 volt models and 240 volts ac for three wire 120/240 volt models while the red indicator on the circuit board is on or blinking.
 - b.) 200 to 240 volts ac for two wire 200 or 240 volt models while the red indicator on the circuit board is on or blinking.
8. Disconnect the brewer from the power source.

SERVICE (cont.)

ELECTRONIC CONTROL ASSEMBLY (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 assembly (1), temperature sensor (8), and triac assembly (15) for evaluation and proceed to #9.

9. Replace the electronic control assembly (1) and temperature sensor (8).

NOTE - each electronic control assembly is calibrated to a temperature sensor. Both components **MUST** be replaced as a set.

10. With a voltmeter, check the voltage across the tank heater terminals (5). Connect the brewer to the power source. The indication must be:
 - a.) 120 volts ac for two wire 120 volt models, 208 volts ac for three wire 120/208 volt models and 240 volts ac for three wire 120/240 volt models while the red indicator on the circuit board is on or blinking.
 - b.) 200 to 240 volts ac for two wire 200 or 240 volt models while the red indicator on the circuit board is on or blinking.
11. Disconnect the brewer from the power source.

If voltage was present as described, return the new triac assembly (15) to Bunn-O-Matic for credit. The temperature control of the system is operating properly.

If voltage was not present as described, reinstall your existing electronic control assembly (1) and temperature sensor (8), and proceed to #12.

12. Replace the triac assembly (15).
13. With a voltmeter, check the voltage across the tank heater terminals (5). Connect the brewer to the power source. The indication must be:
 - a.) 120 volts ac for two wire 120 volt models, 208 volts ac for three wire 120/208 volt models and 240 volts ac three wire 120/240 volt models while the red indicator on the circuit board is on or blinking.

- b.) 200 to 240 volts ac for two wire 200 or 240 volt models while the red indicator on the circuit is on or blinking.

14. Disconnect the brewer from the power source.

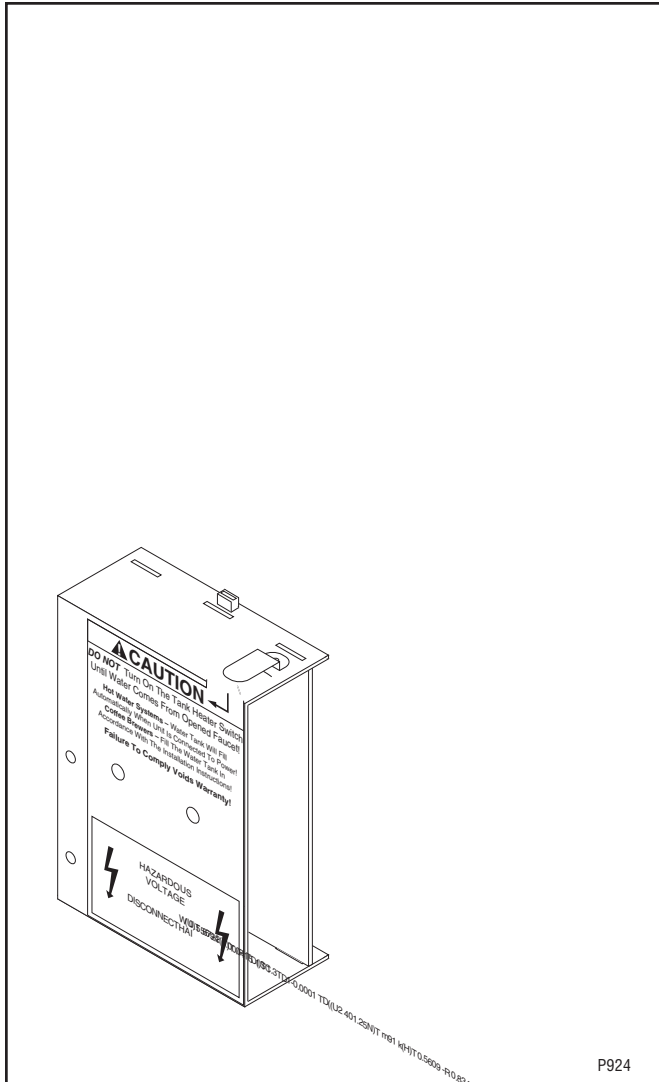
If voltage was present as described, the temperature control of the system is operating properly. Return the new electronic control assembly (1) and temperature sensor (8) to Bunn-O-Matic for credit.

Electronic Controls Removal and Replacement

NOTE - each electronic control assembly is calibrated to a temperature sensor. Both components **MUST** be replaced as a set.

1. Remove all wires from the electronic control assembly terminals.
2. Remove the two 8-32 screws holding the electronic control assembly to the component bracket.
3. Disconnect the temperature sensor and ready indicator wires from the left side of the electronic control assembly board.
4. Remove the temperature sensor from the grommet in the tank lid.
5. Install the new temperature sensor into the grommet on the tank lid. Route the wires to the location of the new electronic control assembly.
6. Attach the temperature sensor and ready indicator wires to the electronic control assembly.
7. Fasten the new electronic control assembly to its bracket.
8. Reconnect the wires.
9. Refer to Fig. 12 when reconnecting the wires.
10. Review the initial set-up procedures and adjust the control as required for the desired temperature.

SERVICE (cont.)
ELECTRONIC CONTROL ASSEMBLY (cont.)

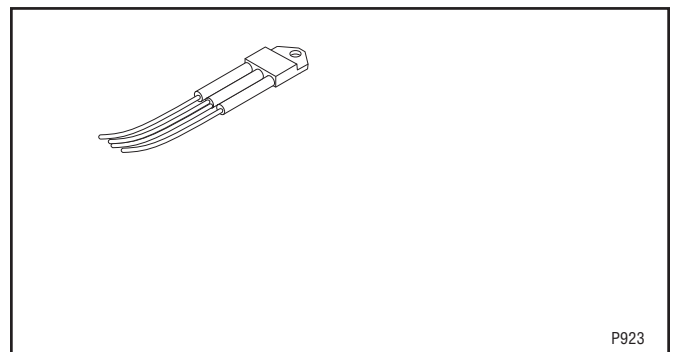


Triac Assembly Removal and Replacement

NOTE - Each triac installation requires the use of an approved silicone heat sink compound. Bunn-O-Matic recommends the use of Dow Corning 340 compound or equivalent. It can be purchased direct from Bunn-O-Matic (part number M2522.1000).

1. Place the tank heater switch on the electronic control assembly in the "OFF" position.
2. Completely drain the tank.
3. Place a styrofoam or wood block between the center of the tank and the rear of the brewer.
4. Disconnect triac wires, white/violet from terminal block, blue from tank heater, blue from electronic control and tan from tank heater switch.
5. Carefully set the brewer on its back.
6. Remove the 2" dia hole plug from the bottom cover.

7. Remove the two #8-32 keps nuts securing tank to tank mounting bracket.
8. Remove the twelve #8-32 slotted head screws securing the bottom cover.
9. Remove the bottom cover with the four feet, the tank mounting brackets, triac/heat sink as an assembly.
10. Remove triac/heat sink from tank mounting bracket and discard.
11. Install new triac/heat sink assembly on tank mounting bracket.
12. Route the wires up around the rear of the brewer.
13. Reinstall the bottom cover, four feet, tank mounting brackets and triac/heat sink to the bottom of the tank using two #8-32 keps nuts.
14. Secure bottom cover to brewer base with twelve #8-32 slotted head screws.
15. Stand the brewer upright.
16. Reconnect the wires of the new triac assembly. Refer to Fig. 13 when reconnecting wires.



SERVICE (cont

LEVEL CONTROL

(Electro/mecha

The level control is mounted in center of the tank lid. The level probe is located at the bottom of the tank lid.

Test Procedure:

1. Disconnect the brewer from the power source.
2. Remove the violet wire from terminal 1 & pink wire from terminal 4 of the circuit board.
3. With a voltmeter, check the voltage across terminals 2 & 3. Connect the brewer to the power source. The indication must be:
 - a.) 120 volts ac for two wire 120/208 volt models.
 - b.) 200 to 240 volts ac for three wire 120/208 volt models.
4. Dis

SERVICE (cont.)

LEVEL CONTROL BOARD AND LEVEL PROBE (Electro/mechanical only)(cont.)

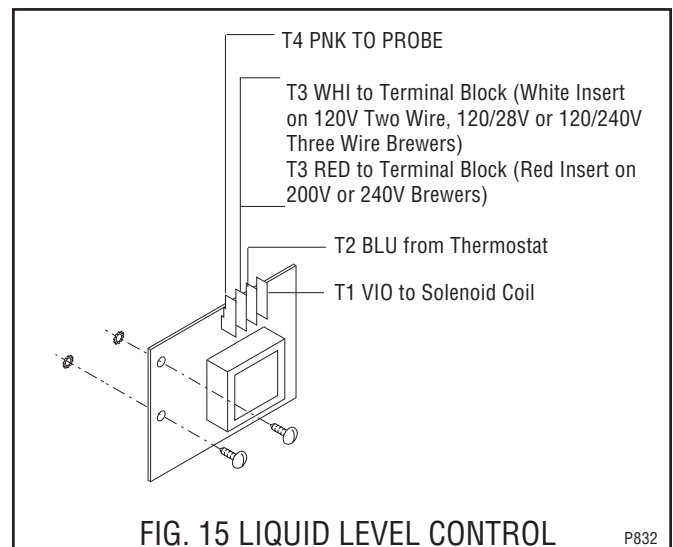
15. Move the probe's flat end to the brewer housing. The indication must be 0.
16. Move the probe's flat end away from the brewer housing. The indication should again be
 - a.) 120 volts ac for two wire 120 volt models, three wire 120/208 volt models and three wire 120/240 volt models.
 - b.) 200 to 240 volts ac for two wire 200 or 240 volt models after a delay of approximately 1 second.
17. Disconnect the brewer from the power source.

If voltage is present as described, reinstall the probe, the level control board and level probe are operating properly.

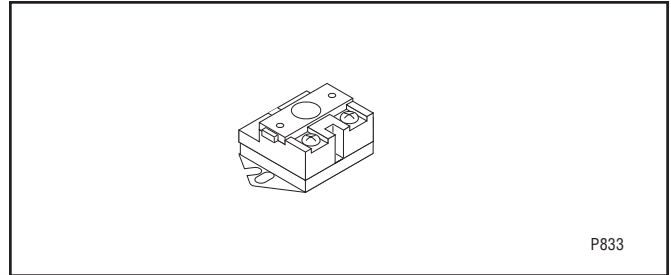
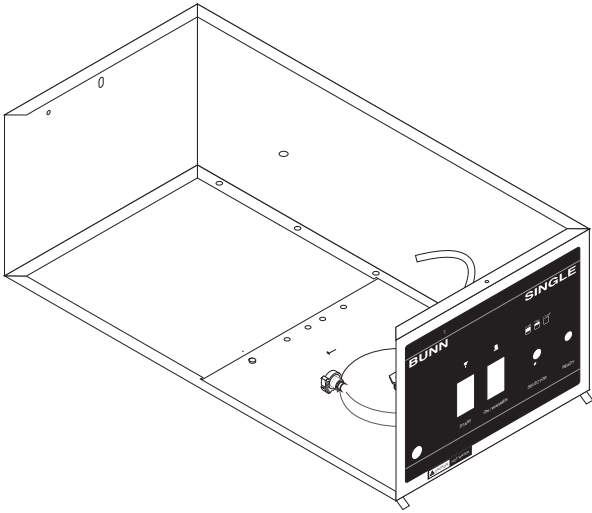
If voltage is not present as described, check the pink probe wire for continuity.

Removal and Replacement:

1. Remove all wires from the level control board.
2. Remove two #8-32 slotted head screws and lockwashers holding level control board to component bracket.
3. Install the new level control board to the component bracket. Make certain that the lockwashers are between the level control board and the component bracket.
4. Refer to Fig. 15 when reconnecting the wires.



SERVICE (cont.)



Location:

The limit thermostat is located inside the hood on the tank lid just to the left of the tank heater.

Test Procedure:

1. Disconnect the brewer from the power supply.
2. Disconnect both black wires from the limit thermostat.
3. With an ohmmeter, check for continuity across the limit thermostat terminals.

If continuity is present as described, reconnect the black wires to the limit thermostat, the limit thermostat is operating properly.

If continuity is not present as described, press the reset button on the limit thermostat and repeat step #3.

After repeating step #3, if no continuity is shown, replace the limit thermostat.

SERVICE (cont.)

ON/OFF SWITCH (Warmer)

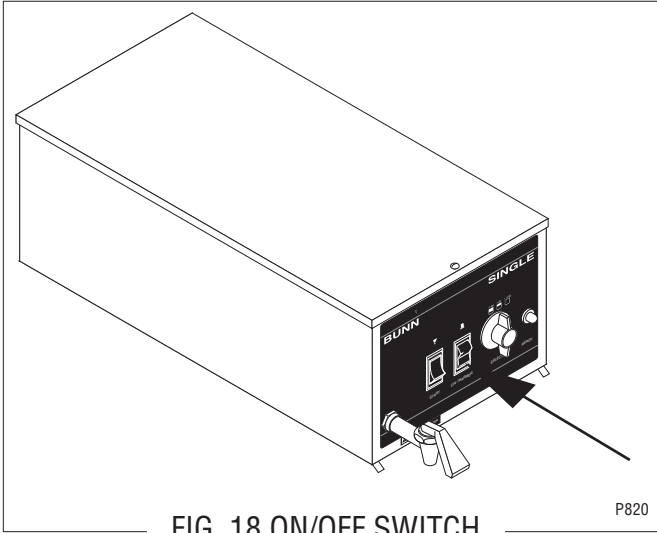


FIG. 18 ON/OFF SWITCH

Location:

The ON/OFF switch is located on the front of the hood in the center to the right of the start switch.

Test Procedure:

1. Disconnect the brewer from the power source.
2. Viewing the switch from the back remove the white wire from the upper right terminal and the black wire from the center terminal.
3. With a voltmeter, check the voltage across the white wire and the black wire. Connect the brewer to the power source. The indication must be:
 - a.) 120 volts ac for two wire 120 volt models, three wire 120/208 volt models and three wire 120/240 volt models.
 - b.) 200 to 240 volts ac for two wire 200 or 240 volt models.
4. Disconnect the brewer from the power source.

If voltage is present as described, reconnect the white wire, and proceed to #5.

If voltage is not present as described, refer to the *Wiring Diagrams* and check the brewer wiring harness.

5. With the black wire removed, remove the white/violet wire on the switch from the lower left terminal.

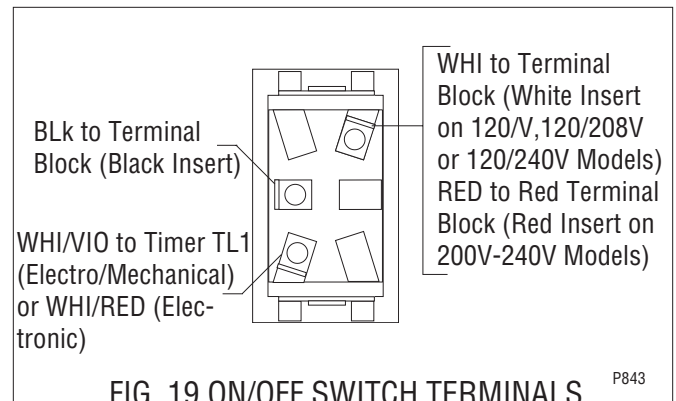
6. Check for continuity across the center and lower left terminal with switch in the "ON" position. Continuity must not be present when switch is in the "OFF" position.

If continuity is present as described, reconnect the black wire to the center terminal and the white/violet wire on the switch to the lower left terminal.

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

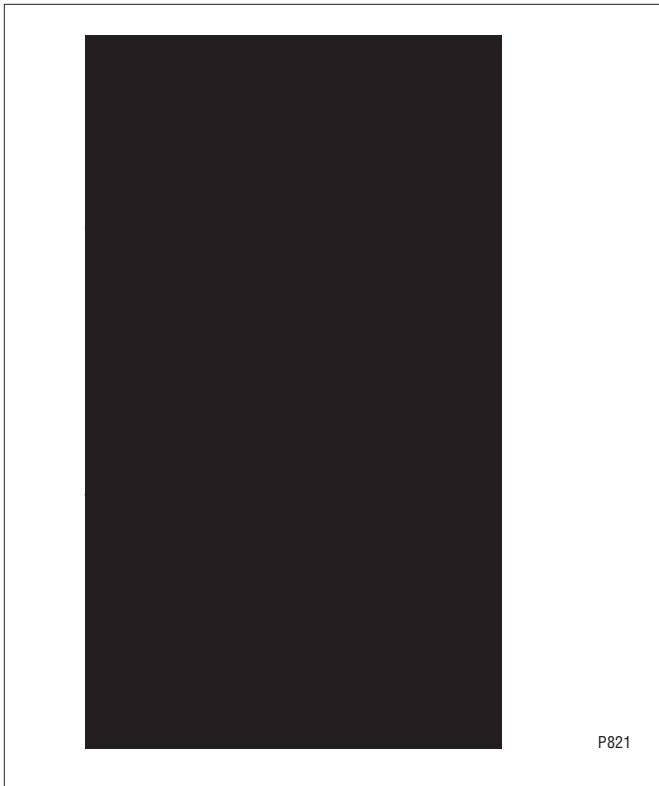
Removal and Installation:

1. Remove the wires from the switch terminals.
2. Compress the clips inside the hood and gently push the switch through the opening.
3. Push the new switch into the opening and spread the clips to hold switch in the hood.
4. Refer to Fig. 19 when reconnecting the wires.



SERVICE (cont.)

OVERFLOW PROTECTION SWITCH



Location:

The overflow protection switch is located inside the hood on the tank inside the copper overflow cup.

To test the overflow protection switch, access will also be needed to the level control board or electronic control assembly and terminal block.

Test Procedure:

1. Disconnect the brewer from the power source.
2. Remove the wire nuts connecting the red wires from the overflow protection switch to the black wire from the terminal block and the blue wire from the thermostat or the violet wire from the electronic control assembly.
3. 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 the red wires to the black wire from the terminal block and the blue wire from the thermostat or violet wire from electronic control assembly.

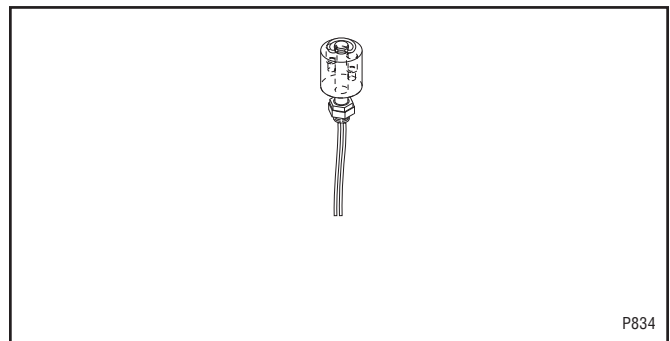
If continuity is not present as described, replace the safety overflow switch.

Removal and Replacement:

1. Disconnect the red leads from the overflow protection switch from the black wire from the terminal block and the blue wire from the thermostat or violet wire from electronic control assembly.
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.

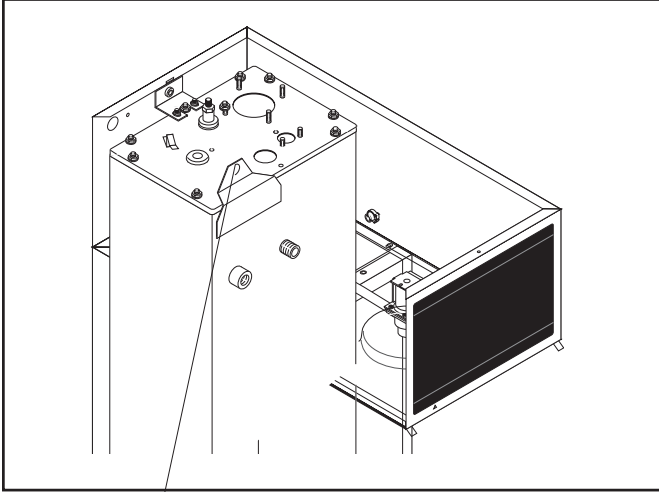
NOTE - The magnets must be at the top of float and there must be NO adjusting washers installed for the overflow protection switch to operate properly.

5. Install the nut beneath the copper overflow cup. Be sure not to overtighten.
6. Refer to Fig. 21 when reconnecting wires.



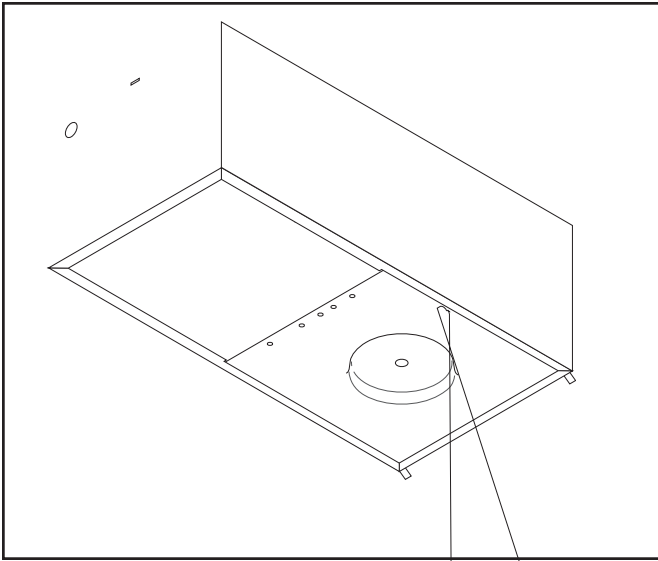
SERVICE (cont.)

SOLENOID VALVE (Inlet)



SERVICE (cont.)

START SWITCH



Location:

The momentary start switch is located in front of hood just to the left of the ON/OFF switch.

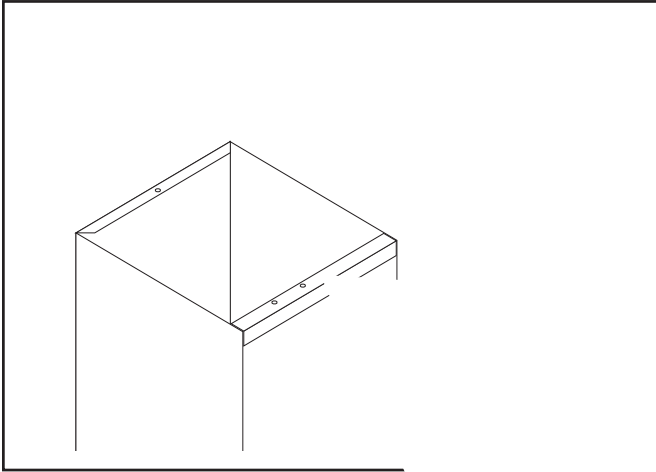
Test Procedure:

1. Disconnect the brewer from the power source and remove the wires from both terminals of the switch.
2. Check for continuity across the two terminals on the switch when it is held in the lower position. Continuity must not be present across these terminals in the upper position.

If continuity is present as described, reconnect the wires, the switch is operating properly.

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

SERVICE (cont.)
TANK HEATER



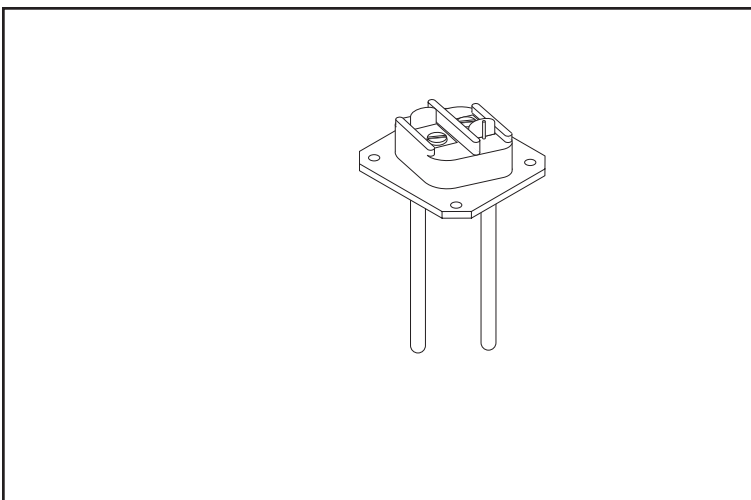
Location:

The tank heater is located inside right rear of the tank lid.

Test Procedure:

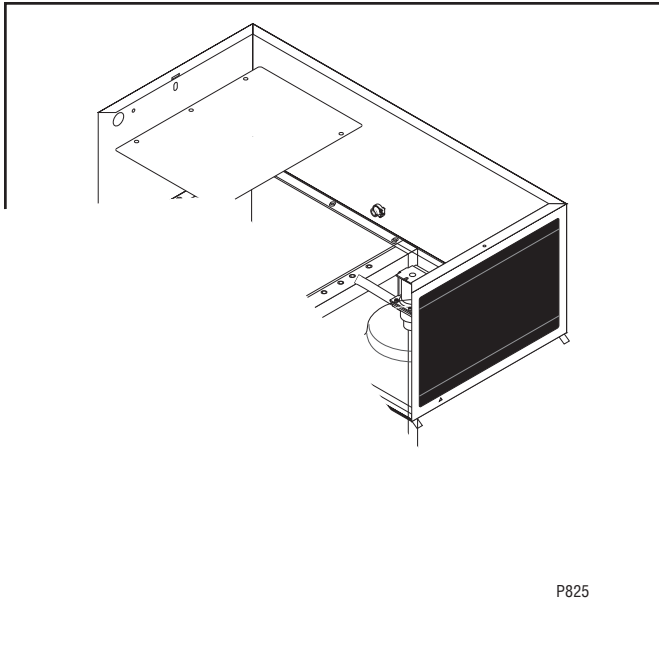
Electro/Mechanical Models.

1. Disconnect the brewer from the power
2. Check the voltage across the black and the
on 120V, 208 or 240V models on the tank
With a voltmeter, and with the control ther
turned to the "ON" position (fully clockwise),
nect the brewer to the power supply and check
voltage across the wires. The indication should be
a.) 120 volts ac for two wire 120 volt models, 20
volts ac for three wire 120/208 volt models and
240 volts ac for three wire 120/240 volt models.
b.) 200 to 240 volts ac for two wire 200 or 240 volt
models.
3. Disconnect the brewer from the power supply.



SERVICE (cont.)

TIMER (First Type)



P825

the

lock must be bypassed. To bypass brew-lock disconnect white/yellow and orange wires from interlock of ECA and connect harness leads together.

5. Check for continuity across the white/orange and white/yellow wires on electro/mechanical brewers or the white/yellow and yellow wires on electronic brewers when the start switch is pressed.

If continuity is present as described, reconnect the wires to terminals TL3, TL4 and TL5 of the timer board and interlock wires if necessary, proceed to #6.

6. With a voltmeter, check the voltage across terminals TL1 and TL4 when the "ON/OFF" switch is in the "ON" position. Connect the brewer to the power source and press the start switch. The indication must be:
 - a.) 120 volts ac for two wire 120 volt models, three wire 120/208 volt models and three wire 120/240 volt models for approximately 1 minute for 1-1/2 gallon batch.
 - b.) 200 to 240 volts ac for two wire 200 or 240 volt models for approximately 1 minute for 1-1/2 gallon batch.
7. Select a 1 gallon batch and repeat #6. The voltage indication should remain for approximately 40 seconds.
 - a.) Select a 1/2 gallon batch and repeat #6. The indication should remain approximately 20 seconds.

Placement:

from the timer.

#6-32 slotted head screws hold dial plate on to the component.

nylon spacers and dial

board as described in following pages.

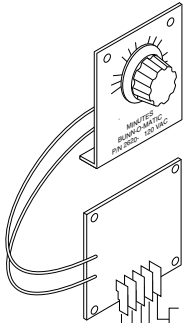
wiring wires.

provided with the of the front

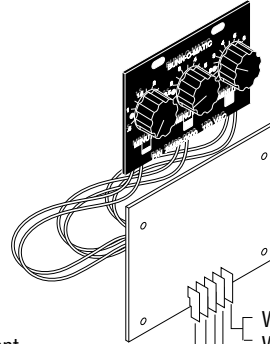
' Timer

SERVICE (cont.)

TIMER (First Type)(cont.)

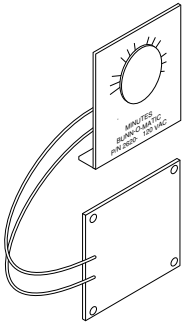


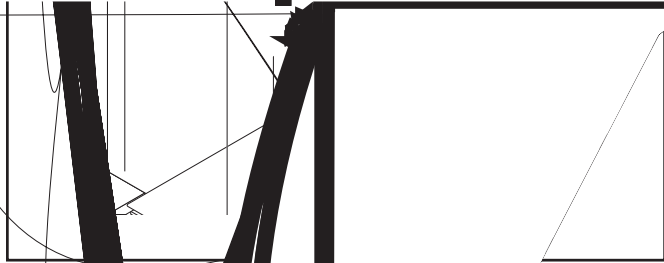
- WHI/VIO TL1 to ON/OFF Switch
- WHI/VIO TL1 to Warmer Element
- WHI TL2 To Terminal Block and Warmer Element (120V Two Pole, 120/208V or 120/240V Three Pole Terminal Block)
- RED TL2 to Terminal Block and Warmer Element (200V or 240V Two Pole Terminal Block)
- WHI/ORA TL3 to Start Switch (Top)
- WHI/GRN TL4 to Dispense Valve (Upper Front)
- WHI/YEL TL5 to Start Switch (Bottom)



- WHI/VIO TL1 to ON/OFF Switch
- WHI/VIO TL1 to Warmer Element
- WHI TL2 To Terminal Block and Warmer Element (120V Two Pole, 120/208V or 120/240V Three Pole Terminal Block)
- RED TL2 to Terminal Block and Warmer Element (200V or 240V Two Pole Terminal Block)
- WHI/ORA TL3 to Start Switch (Top)
- WHI/GRN TL4 to Dispense Valve (Upper Front)
- WHI/YEL TL5 to Start Switch (Bottom)

ELECTRO/MECHANICAL





Location

The timer is located at the front of the brewer in the component bracket.

Test Procedure

NOTE: Do not remove the timer board if it is installed. Pressing the timer board may cause damage to the board.

1. Disconnect the brewer from the power source and remove the front access panel.
2. Remove the two screws that hold the timer board to the mounting bracket.
3. Remove circuit board and separate the wires.
4. With a voltmeter, check the voltage on terminals TL1 and TL2 with the "ON/OFF" switch in the "ON" position. Connect the brewer to the power source. The indication must be:
 - a) 120 volts ac for two wire 120/240 volt models.
 - b) 200 to 240 volts ac for three wire 240/240 volt models.
5. Disconnect the brewer from the power source.

If voltage is present as described, proceed to #6. If voltage is not present as described, refer to the *Wiring Diagrams* and check the brewer wiring harness.

SERVICE (cont.)

TIMERS (Late Models)(cont.)

Timer Setting:

NOTE: Check that the brewer is connected to water supply, the tank is properly filled, and a funnel and server are in place, prior to setting or modifying volumes.

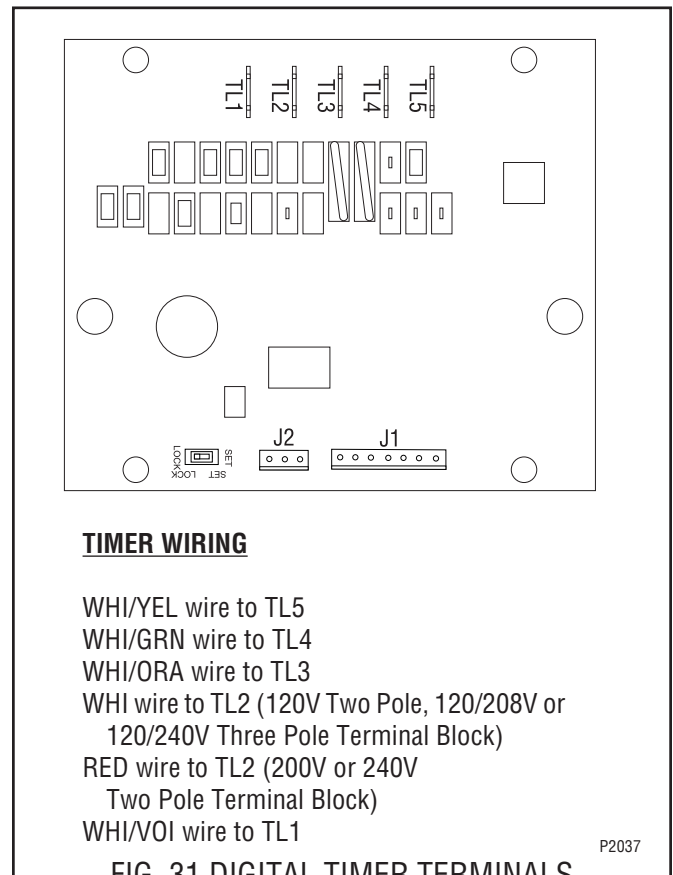
NOTE: All volume settings must be done with the sprayhead installed.

1. **Modifying brew volumes.** To modify a brew volume, first check that the SET/LOCK switch is in the "SET" position on the circuit board.

To increase a brew volume, place the ON/OFF switch in the "ON" position, press and hold the START switch until three clicks are heard. Release the switch (Failure to release the switch within two seconds after the third click causes the volume setting to be aborted and previous volume setting will remain in memory) and press it again one or more times. Each time the switch is pressed, two seconds are added to the brew time period. Allow the brew cycle to finish in order to verify that the desired volume has been achieved.

To decrease a brew volume, place the ON/OFF switch in the "ON" position, press and release the START switch once for every two-second interval to be removed from the total brew time period; then immediately press and hold down the START switch until three clicks are heard. Release the switch. (Failure to release the switch within two seconds after the third click causes the volume setting to be aborted and previous volume setting will remain in memory). Allow the brew cycle to finish in order to verify that the desired volume has been achieved.

2. **Setting brew volumes.** To set a brew volume, first check that the SET/LOCK switch is in the "SET" position on the circuit board. Place the ON/OFF switch in the "ON" position, press and hold the START switch until three distinct clicks are heard and then release the switch. (Failure to release the switch within two seconds after the third click causes the volume setting to be aborted and previous volume setting will remain in memory). View the level of the liquid being dispensed. When the desired level is reached, turn the ON/OFF



TIMER WIRING

WHI/YEL wire to TL5
WHI/GRN wire to TL4
WHI/ORA wire to TL3
WHI wire to TL2 (120V Two Pole, 120/208V or
120/240V Three Pole Terminal Block)
RED wire to TL2 (200V or 240V
Two Pole Terminal Block)
WHI/VOI wire to TL1

FIG. 31 DIGITAL TIMER TERMINALS

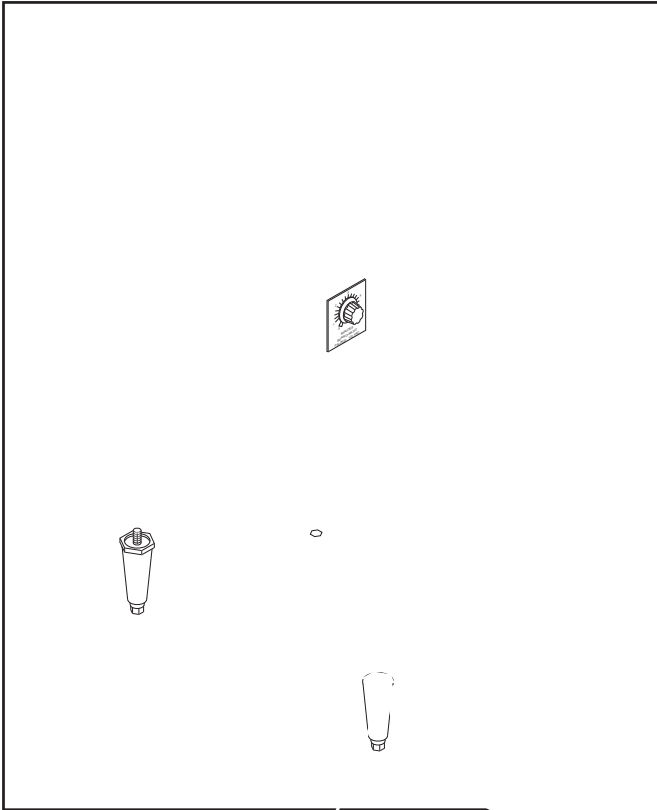
switch to "OFF". **NOTE:** Several ounces of water will continue to syphon from the tank after turning the switch "OFF". The brewer remembers this volume and will continue to brew batches of this size until the volume setting procedure is repeated.

NOTE: When brewing coffee, volumes will decrease due to absorption by the coffee grounds.

3. **Setting programming disable feature.** If it becomes necessary to prevent anyone from changing brew time once programmed, you can set the SET/LOCK switch to the "LOCK" position. This will prevent any further programming.

SERVICE (cont.)

WARMER ELEMENT



Location:

The warmer element is located in the base of the brewer under the warmer plate.

Test Procedures:

1. Disconnect the brewer from the power source.
2. Use the white wire or red wire to the terminal block and the white/violet wire to the warmer element.
3. With a voltmeter, on 120V, 120/208V or 120/240V models, check the voltage across the white wire and the white/violet wire with the "ON/OFF" switch in the "ON" position. With a voltmeter, on 200V or 240V models check the voltage across the red wire and the white/violet wire with the "ON/OFF" switch in the "ON" position. The indication must be:
 - a.) 120 volts ac for two wire 120 volt models, three wire 120/208 volt models and three wire 120/240 volt models.

120 volt

4. Disconnect the power source.

If voltage is not present as described, proceed to #5.

If voltage is not present as described, refer to the *Wiring Diagrams* and check brewer wiring harness.

5. Disconnect wires from the warmer element.
6. Check the continuity across the two terminals on the warmer element.

If continuity is present as described, reconnect the white or red and white/red wires or the white or red and white/violet wires on the warmer element.

If continuity is not present as described, replace the warmer element.

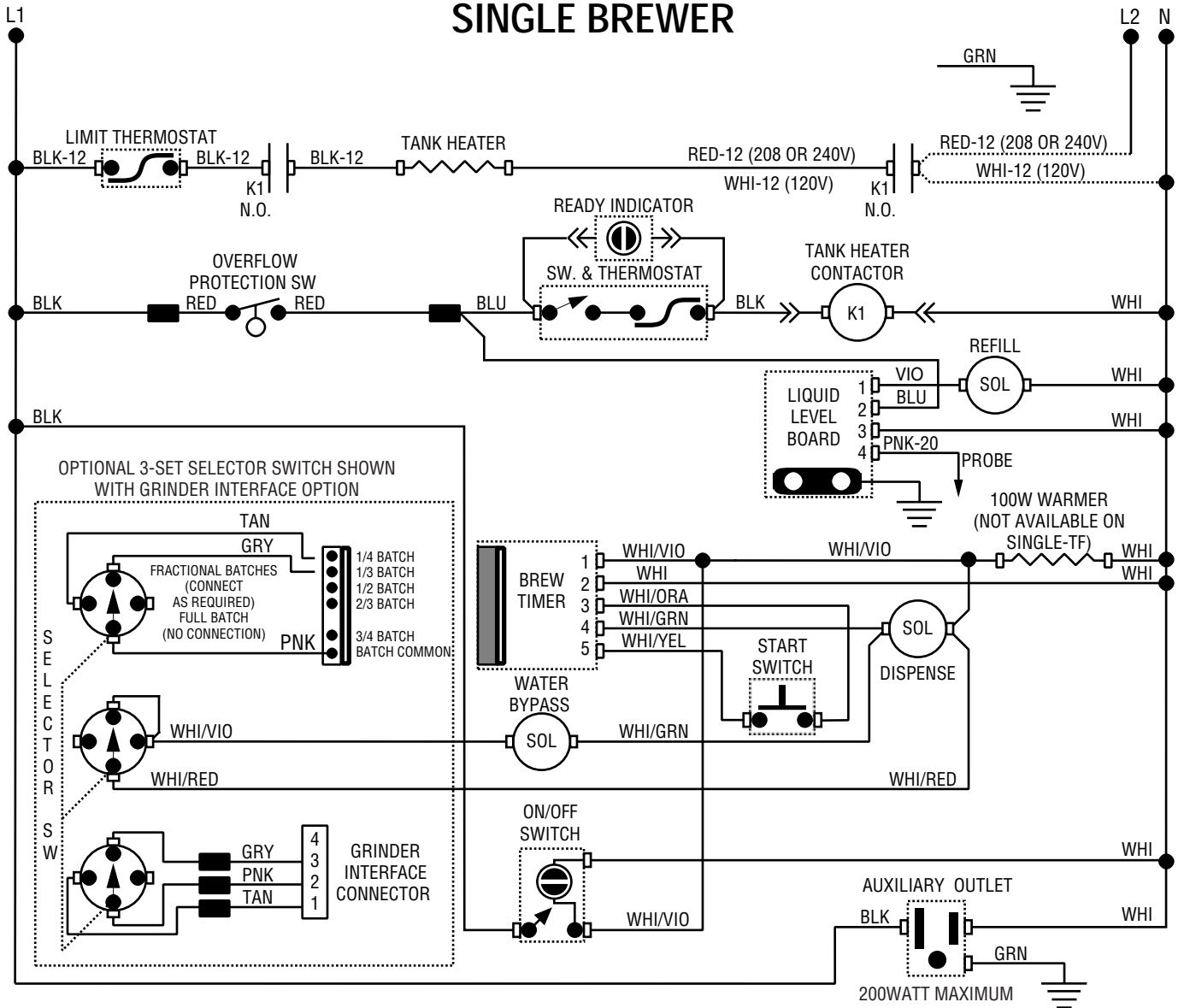
Removal and Replacement:

1. Remove the three #4-40 slotted head screws securing the warmer assembly to the brewer base.
2. Lift the warmer assembly from the brewer base.
3. Disconnect the two wires from the warmer element terminals.
4. Remove the two #8-22 nuts securing the warmer

8. Note.

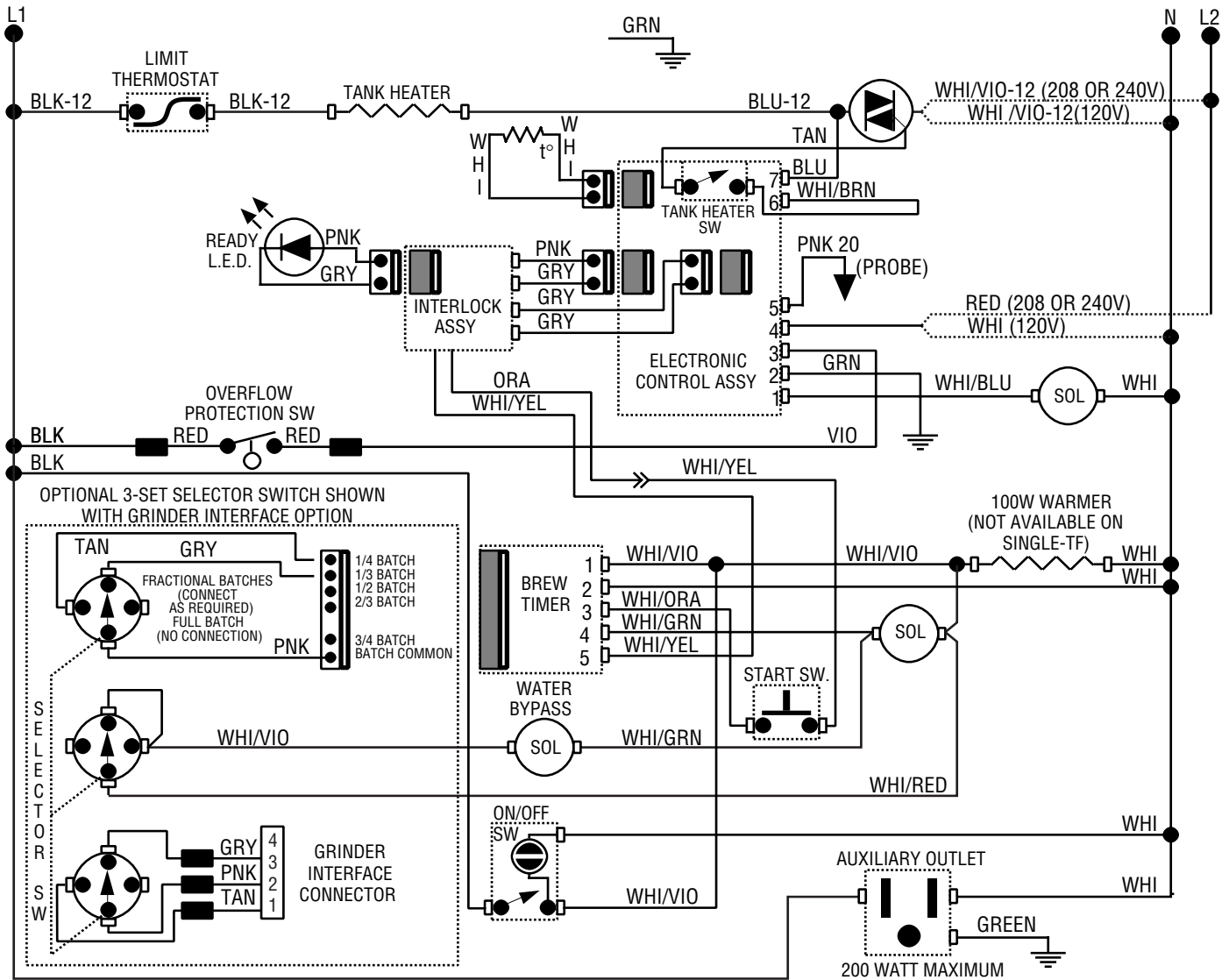


SCHEMATIC WIRING DIAGRAM SINGLE BREWER



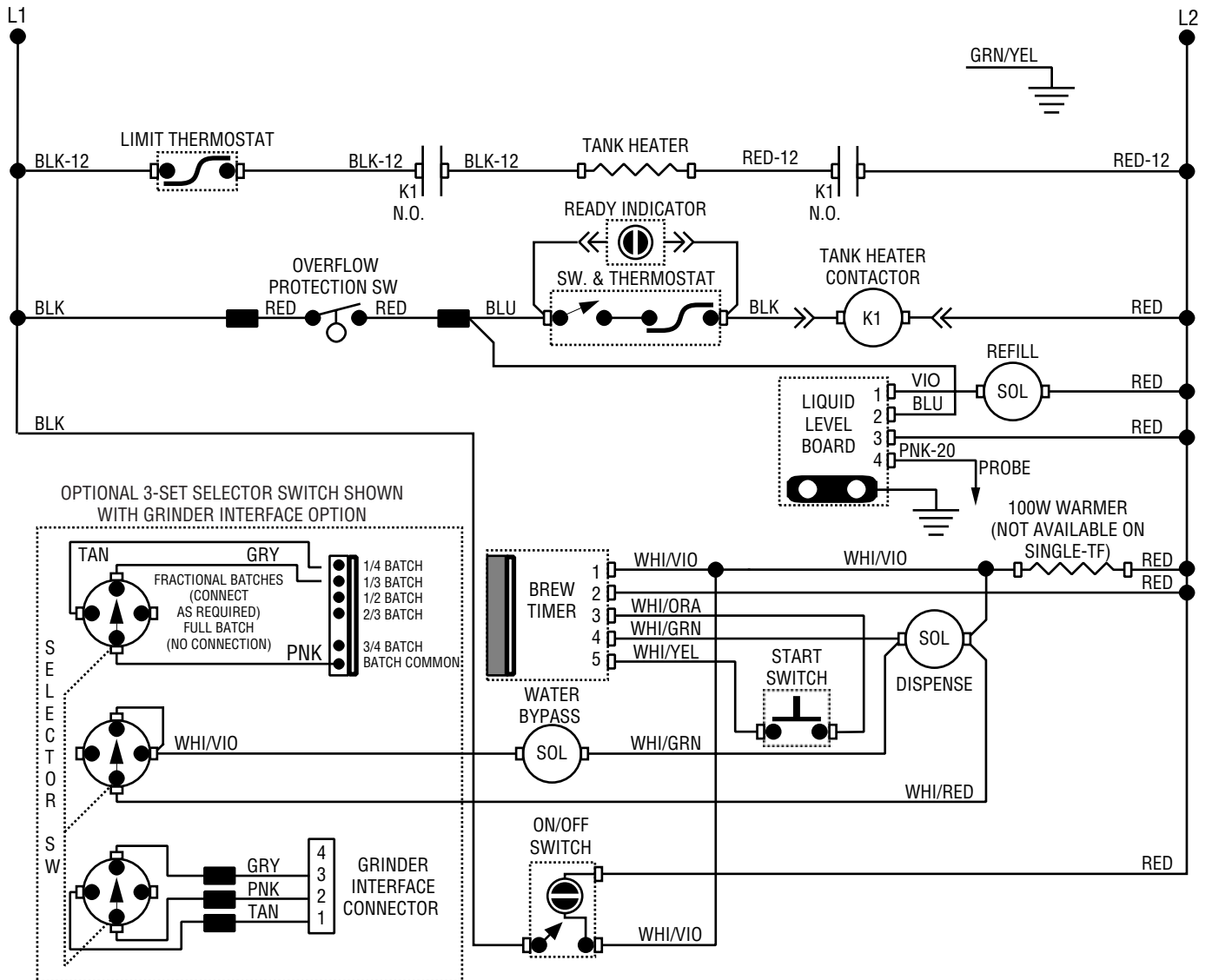
120 VOLTS AC 2 WIRE
120/208 VOLTS AC OR
120/240 VOLTS AC 3 WIRE
SINGLE PHASE

SCHEMATIC WIRING DIAGRAM SINGLE BREWER ECA

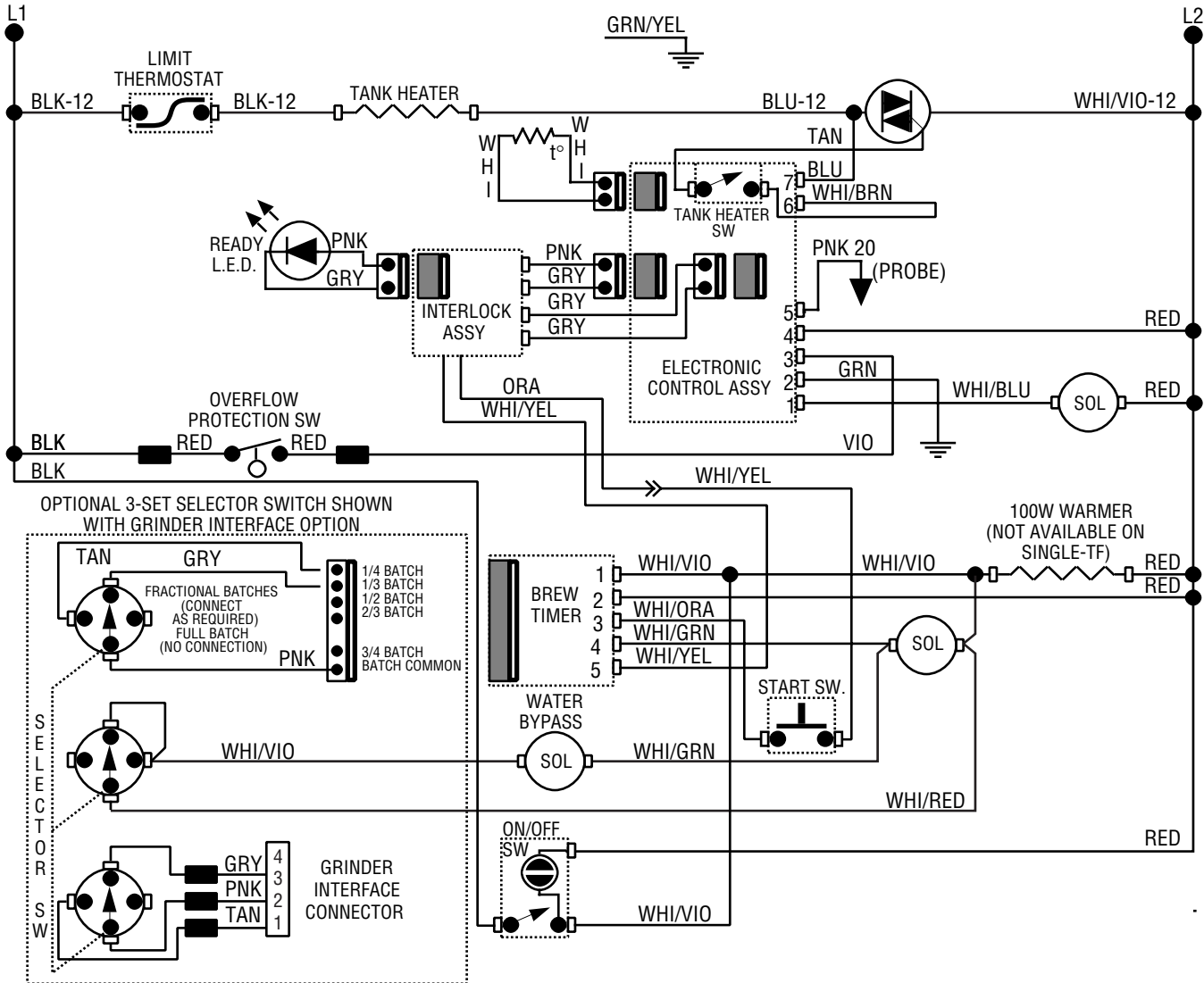


**120 VOLTS AC 2 WIRE
120/208 VOLTS AC OR
120/240 VOLTS AC
3 WIRE**

SCHEMATIC WIRING DIAGRAM SINGLE-A & -B BREWER

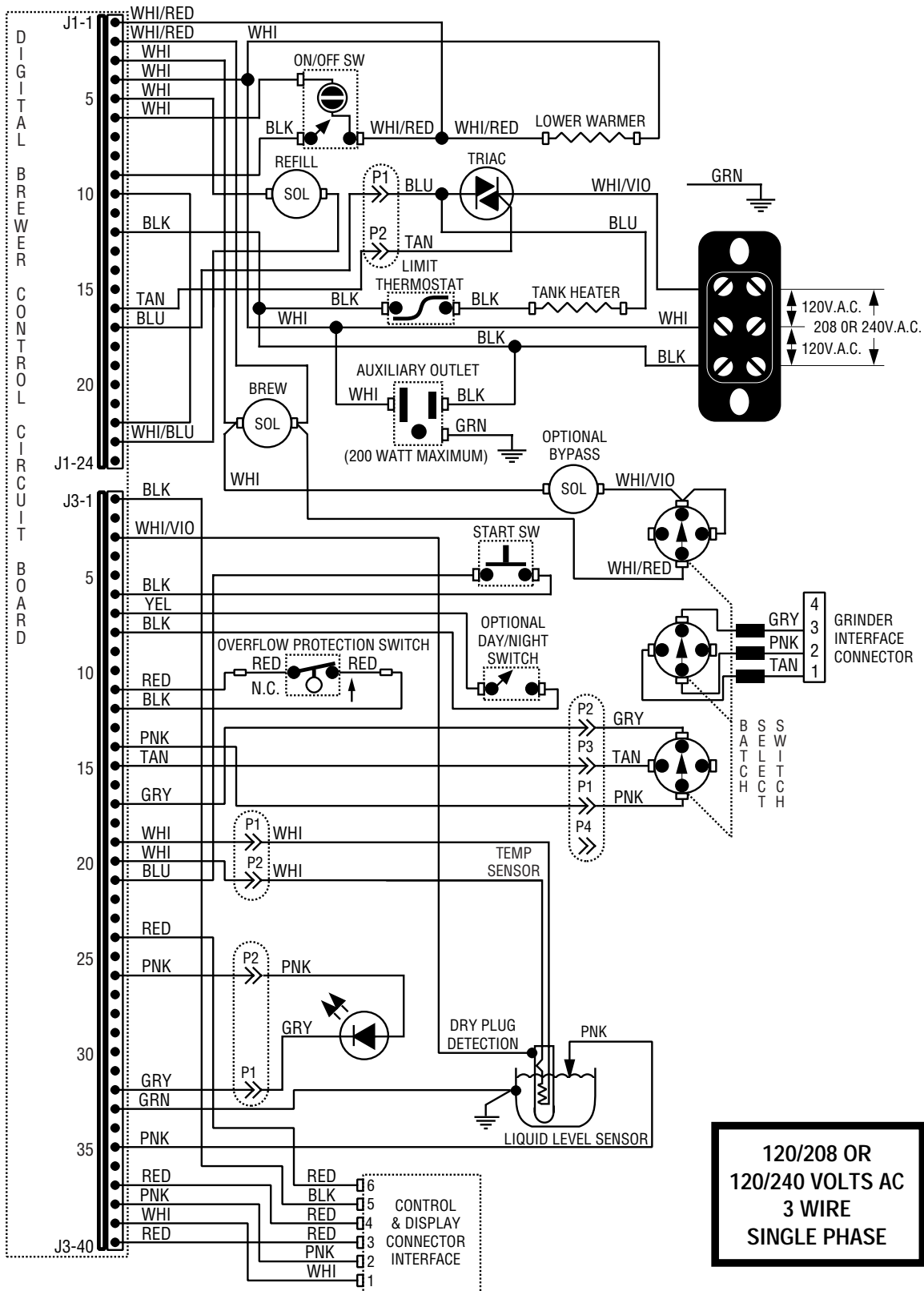


SCHEMATIC WIRING DIAGRAM SINGLE-A & -B BREWER ECA

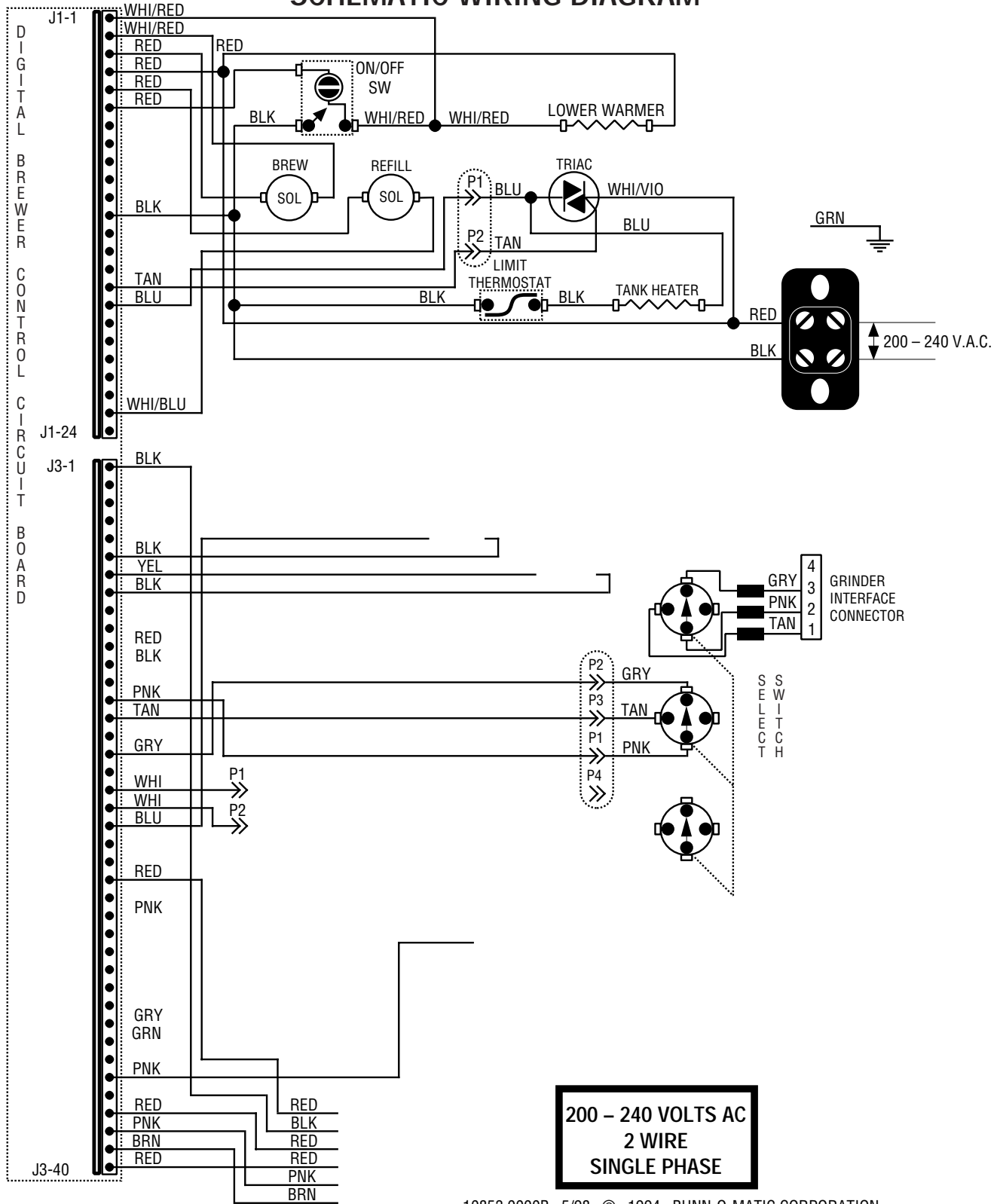


**200 OR 240 VOLTS AC
2 WIRE**

SINGLE BREWER W/DIGITAL BREWER CONTROL SCHEMATIC WIRING DIAGRAM



SINGLE BREWER W/DIGITAL BREWER CONTROL SCHEMATIC WIRING DIAGRAM



200 - 240 VOLTS AC
2 WIRE
SINGLE PHASE

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