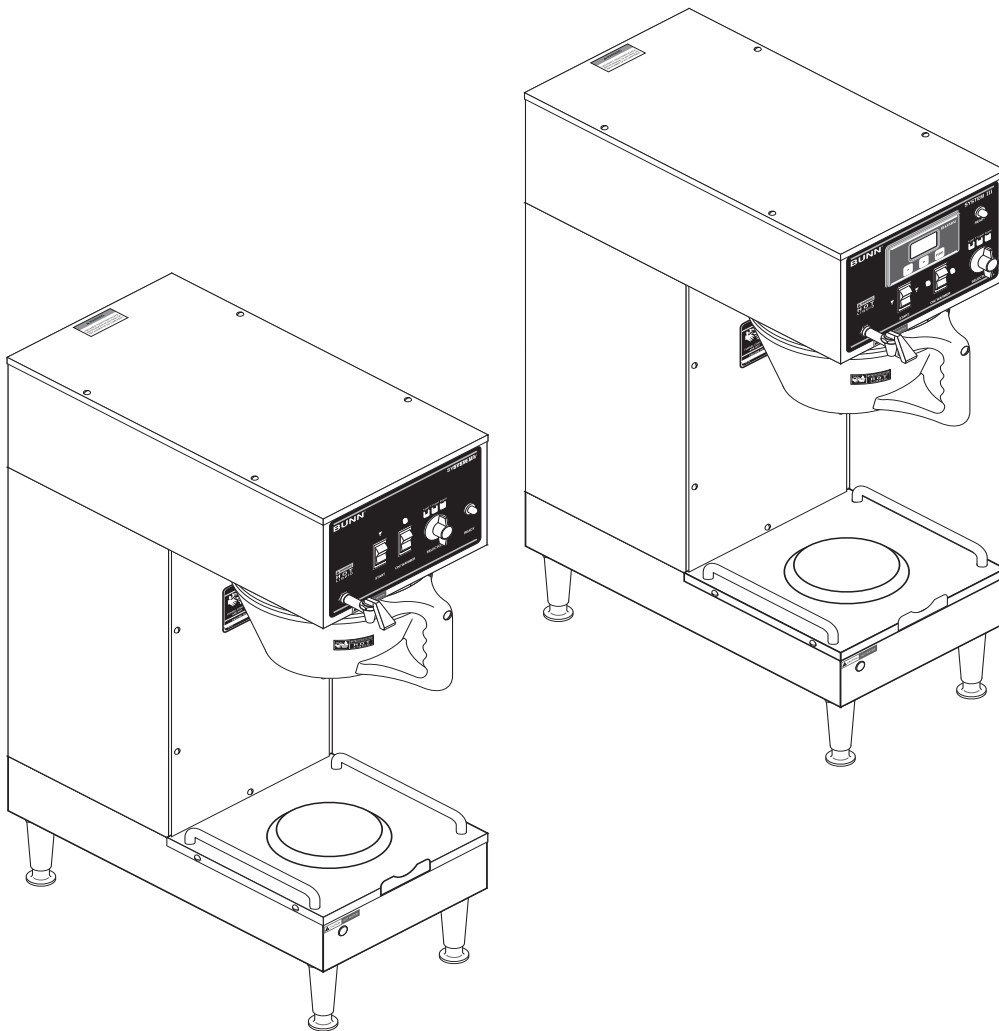


BUNN®

SYSTEM III®



OPERATING & SERVICE MANUAL

BUNN-O-MATIC CORPORATION

POST OFFICE BOX 3227

SPRINGFIELD, ILLINOIS 62708-3227

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

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.

USER NOTICES

Carefully read and follow all notices in this manual and on the equipment. The notices on this brewer should be kept in good condition. Replace any unreadable or damaged labels.

⚠ CAUTION WARMERS AND SURFACES ARE HOT

12364.0000

⚠ WARNING

Disconnect from power source before removal of any panel or replacement of any component!

10044.0000

⚠ WARNING HOT WATER

20201.5600

⚠ WARNING

- ◆ Fill water tank before turning -on thermostat or connecting appliance to power source.
- ◆ Use only on a properly protected circuit capable of the rated load.
- ◆ Electrically ground the chassis.
- ◆ Follow national/local electrical codes.
- ◆ Do not use near combustibles.

FAILURE TO COMPLY RISKS EQUIPMENT DAMAGE, FIRE, OR SHOCK HAZARD

READ THE ENTIRE OPERATING MANUAL BEFORE BUYING OR USING THIS PRODUCT

THIS APPLIANCE IS HEATED WHENEVER CONNECTED TO A POWER SOURCE

00831.0000F 3/98 © 1988 BUNN-O-MATIC CORPORATION

00831.0000

This equipment is to 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).

00656.0000

⚠ WARNING

REMOVE FUNNEL SLOWLY

03408.0000

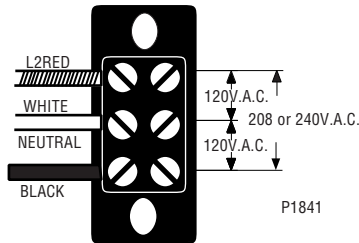
⚠ WARNING

HOT LIQUID

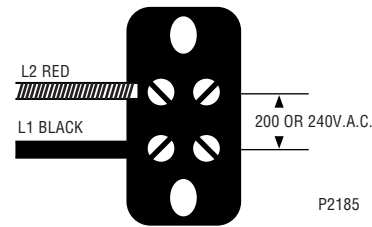
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ELECTRICAL REQUIREMENTS

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



Requires 3-wire, grounded service rated 120/208 volts or 120/240 volts ac, 20 amp, single phase, 60 Hz.



"A" & "B" models require 2-wire, grounded service rated 200 volts ac or 240 volts ac, 20 amp, single phase, 50 Hz.

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 digital brewer control assembly:

Place the tank heater toggle switch at the bottom left 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 (138) and 90 psi (620 kPa) from a 1/2" 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 (345 kPa). The water inlet fitting is 3/8" flare.

NOTE – Bunn-O-Matic recommends 3/8" copper tubing for installations of less than 25 feet and 1/2" for more than 25 feet from the 1/2" water supply line. A tight coil of copper tubing in the water line will facilitate moving the brewer to clean the countertop. 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. Remove the 3/8" flare cap from the bulkhead fitting on the bottom of the brewer.
2. Flush the water line and securely attach it to the bulkhead fitting on the bottom of the brewer.
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.

1. Remove the front panel beneath the sprayhead.

Models with digital brewer control assembly:

Place the tank heater toggle switch at the bottom left 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 digital brewer control assembly:

Place the tank heater toggle switch at the bottom left 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. On 208V or 240V Models, wait approximately twenty-five minutes 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 desired position, the ON/OFF switch in the "ON" (upper) position and initiate a brew cycle. Each volume must be set individually.

6. Place the ON/OFF switch in the "OFF" (lower) position after water has stopped flowing from the funnel, and check the water volume in the server. It should be 128 oz (1 gallon), 192 oz (1-1/2 gallon) or 256 oz (2 gallon).

7. (A) If not, adjust the brew timer as required. See *Adjusting Brew Volumes* for electro/mechanical brewers. See *Service - Digital Brewer Control Board* for DBC Brewers. Allow the water to reheat, start, and measure another brew cycle.

(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 desired 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

electro/mechanical brewers

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. Select the batch volume to be set. (1, 1-1/2, or 2 gallons)

NOTE: Each batch setting must be adjusted separately.

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.

ADJUSTING BREW VOLUMES (cont.)

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 1Gal, 1-1/2Gal or 2Gal 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 (Warmer) 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 complete, simply discard the grounds and filter.

CLEANING

1. The use of a damp cloth rinsed in any mild, nonabrasive, 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. | 1. No power or incorrect voltage | (A1) 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. (A2) 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 (.500 GPM) | Check plumbing and shut-off valves (A) Direction of flow arrow must be pointing towards the right. (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 28 | |
| | 4. Start switch | Refer to <i>Service</i> - Start switch for testing procedures. See page 32 | |
| | 5. Timer | Refer to <i>Service</i> - Timer for testing procedures. See page 34 or 35 | |
| | 6. Dispense Valve | Refer to <i>Service</i> - Dispense valve for testing procedures. See page 21 | |
| | 7. Digital Brewer Control | Refer to <i>Service</i> - Digital brewer controls for testing procedures. See page 22 step 4 | |
| | Automatic refill will not operate | 1. No water | Check plumbing and shut-off valves. |
| | | 2. Water strainer/flow control (.500 GPM) | (A) Direction of flow arrow must be pointing towards the right. (B) Remove the strainer/flow control and check for obstructions. Clear or replace. |
| 3. Limit thermostat (Electro/mechanical and Digital Brewer Control) | | Refer to <i>Service</i> - Limit thermostat for testing procedures. See page 27 | |
| 4. Overflow protection switch | | Refer to <i>Service</i> - Overflow protection switch for testing procedures. See page 29 | |
| 5. (A) Level control board & level probe. (Electro/mechanical) (B) Digital Brewer Control Assembly (DBC) | | Refer to <i>Service</i> - Level control board for testing procedures. See page 25 Refer to <i>Service</i> - Digital brewer control for testing procedures. See page 22 step 2 | |

TROUBLESHOOTING (cont.)

| Problem | Probable Cause | Remedy |
|--|---|--|
| Automatic refill will not operate (cont.) | 6. Solenoid Valve | Refer to <i>Service</i> - Solenoid valve for testing procedures. See page 30 |
| Beverage level will not adjust (Selector switch in any position) | 1. Selector switch | Refer to <i>Service</i> - Selector switch for testing procedures. See page 16 |
| Water flows into tank continuously (ON/OFF Switch "OFF") | 1. (A) Level control board and level probe (Electro/mechanical) | Refer to <i>Service</i> - Level control board for testing procedures. See page 25 |
| | (B) Digital Brewer Control | Refer to <i>Service</i> - Digital brewer control for testing procedures. See page 23 step 10 |
| | 2. Overflow protection switch | Refer to <i>Service</i> - Overflow protection switch for testing procedures. See page 29 |
| | 3. Solenoid valve | Refer to <i>Service</i> - Solenoid valve for testing procedures. See page 30 |
| Water from tank is not hot | 1. Limit thermostat CAUTION - Do not eliminate or bypass limit thermostat. Use only B.O.M. part #23717.0001 | Refer to <i>Service</i> - Limit thermostat for testing procedures. See page 27 |
| | 2. (A) Control Thermostat (Electro/mechanical) | Refer to <i>Service</i> - Control thermostat for testing procedures. See page 20 |
| | (B) Digital Brewer Control | Refer to <i>Service</i> - Digital brewer control for testing procedure. See page 22 step 3 |
| | 3. Contactor (Electro/mechanical) | Refer to <i>Service</i> - Contactor for test procedures. See page 18 |
| | 4. Tank heater | Refer to <i>Service</i> - Tank heater for testing procedures. See page 33 |

TROUBLESHOOTING (cont.)

| Problem | Probable Cause | Remedy |
|---|--|---|
| Water from tank is not hot (cont.) | 5. Triac assembly (DBC) | Refer to <i>Service</i> - Digital brewer control for testing procedures. See page 22 |
| Server warmer is not hot. | 1. ON/OFF switch | Refer to <i>Service</i> - ON/OFF switch for testing procedures. See page 28 |
| | 2. Warmer element | Refer to <i>Service</i> - Warmer element for testing procedures. See page 37 |
| 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) Digital Brewer Control | Refer to <i>Service</i> - Digital brewer control for testing procedures. See page 23 step 10 |
| | 2. Triac assembly (DBC) | Refer to <i>Service</i> - Digital Brew Control for testing procedures. See page 22 |
| | 3. Lime build-up | Inspect the tank assembly for excessive lime deposits. Delime as required. |
| Inconsistent beverage level in server. | 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. | |
| | 1. Strainer/flow control (.500 GPM) | (A) Direction of flow arrow must be pointing towards the brewer. |
| | 2. Improper water pressure | (B) Remove the strainer/flow control and check for obstructions. Clear or replace. Check the operating water pressure to the brewer. It must be between 20 (138) and 90 psi (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 21 |
| Consistently high or low beverage level in server. | 1. (A) Time adjustment (Electro/mechanical) | Refer to <i>Service</i> - Brew Timer for testing and adjustment procedures. See pages 34 or 35 |
| | (B) DBC volume adjustment | Refer to <i>Service</i> - Digital brewer control for testing procedures. See page 23 step 8 |
| Dripping from sprayhead. | 1. Dispense valve | Refer to <i>Service</i> - Dispense valve for testing procedures. See page 21 |
| 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 | Refer to <i>Service</i> - Timer for testing procedures. See page 34 or 35 |
| | 3. Dispense valve | Refer to <i>Service</i> - Dispense valve for testing procedures. See page 21 |
| 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. |

TROUBLESHOOTING (cont.)

| Problem | Probable Cause | Remedy |
|--|---------------------------|---|
| Weak beverage (cont.) | 3. Sprayhead | B.O.M. sprayhead #01082.0002 should be used to properly wet the bed of ground coffee in the funnel. |
| | 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" (upper) 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. | |
| Temperature on the DBC display varies. | 1. Digital brewer control | Refer to <i>Service</i> - Digital brewer control for testing procedures. See page 22 step 6 |

TROUBLESHOOTING (cont.)

| Problem | Probable Cause | Remedy |
|-----------------------|---------------------------|---|
| Cannot access the DBC | 1. Digital brewer control | Refer to <i>Service</i> -Digital brewer control for testing procedures. See page 22 step 7 |
| DBC display is blank | 1. Digital brewer control | Refer to <i>Service</i> - Digital brewer control for testing procedures. See page 23 step 9 |

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 four #6-32 screws.

The front inspection panel is attached with five #6-32 screws.

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

Contents

| | |
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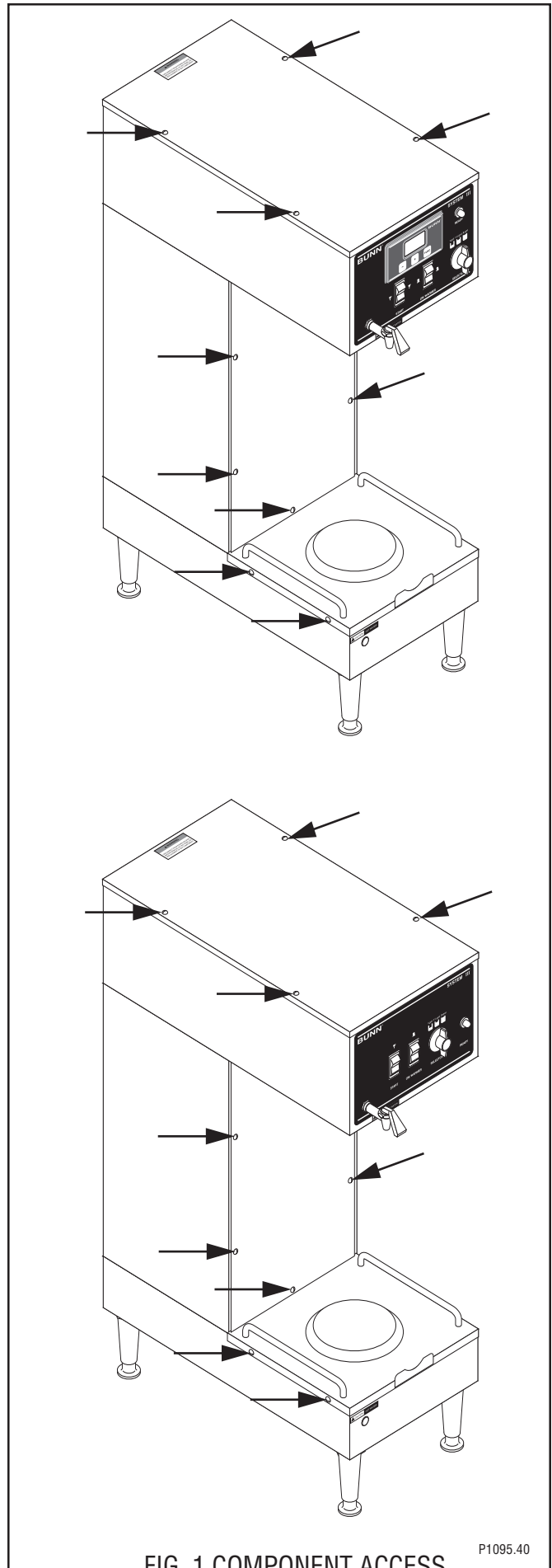


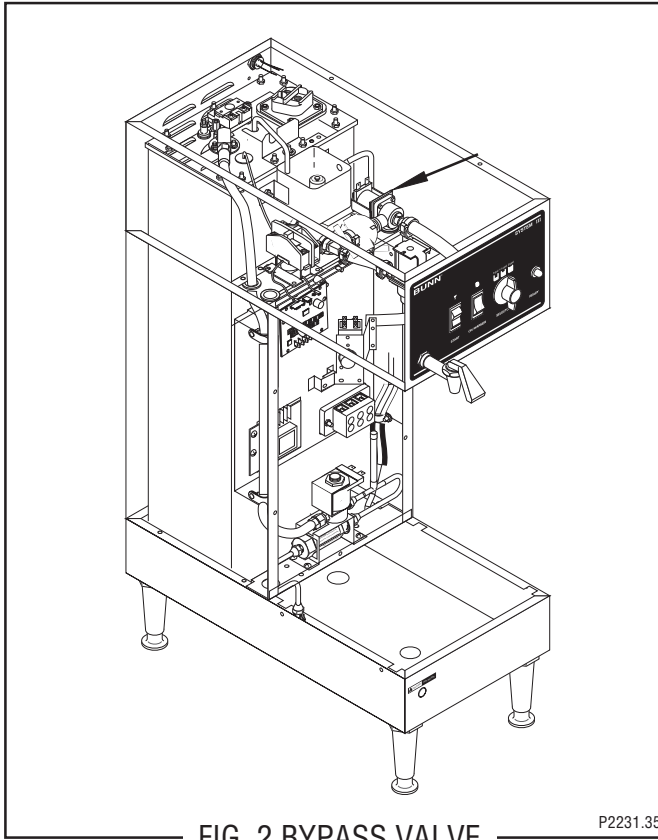
FIG. 1 COMPONENT ACCESS

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SERVICE (cont.)

BYPASS VALVE



Location:

The bypass valve is located inside the hood on the left side just in front of the tank.

Test Procedures:

1. Disconnect the brewer from the power source.
2. With a voltmeter, check the voltage across the white/green wire and the white/violet wire on the bypass valve. Connect the brewer to the power source. With the "ON/OFF (Warmer)" switch in the "ON" (upper) position, and the selector switch in the 1-1/2 or 2 gallon position press the start switch. The indication must be:
 - a.) 120 volts ac for 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.
3. Disconnect the brewer from the power source.

If voltage is present as described, proceed to #4.
If voltage is not present as described refer to the *Wiring Diagrams* and check the brewer wiring harness.

4. Disconnect the white/green wire and white/violet wire. Check for continuity across the bypass valve coil terminals.

If continuity is present as described, reconnect the white/green and white/violet wires to the bypass valve and proceed to #5.

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

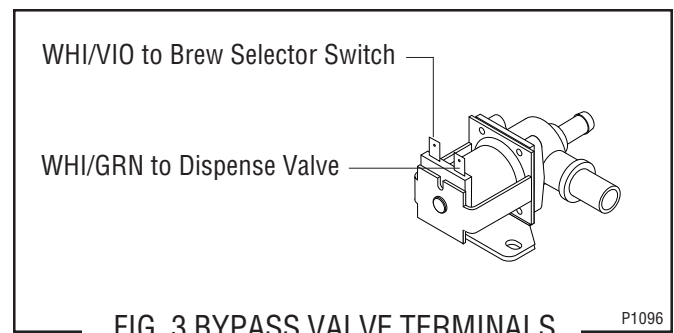
5. Check the bypass valve for coil action. Connect brewer to the power source. With the "ON/OFF (Warmer)" switch in the "ON" (upper) position press the start switch. Listen carefully in the vicinity of the bypass valve for a "clicking" sound as the coil attracts and repels the plunger.

If the sound is heard as described, there may be a blockage in the water line before the bypass valve or the bypass valve may require inspection for wear and removal of waterborne particles.

If the sound is not heard as described, replace the bypass valve.

Removal and Replacement:

1. Remove the wires from the bypass valve.
2. Drain enough water from the tank so bypass valve is above the water line.
3. Remove water lines from valve.
4. Remove two nuts retaining bypass valve inside the hood and remove bypass valve.
5. Install new bypass valve.
6. Reconnect the water tubes and the wires to the bypass valve.
7. Refer to FIG. 3 when reconnecting the wires.



SERVICE (cont.)

BREW SELECTOR SWITCH

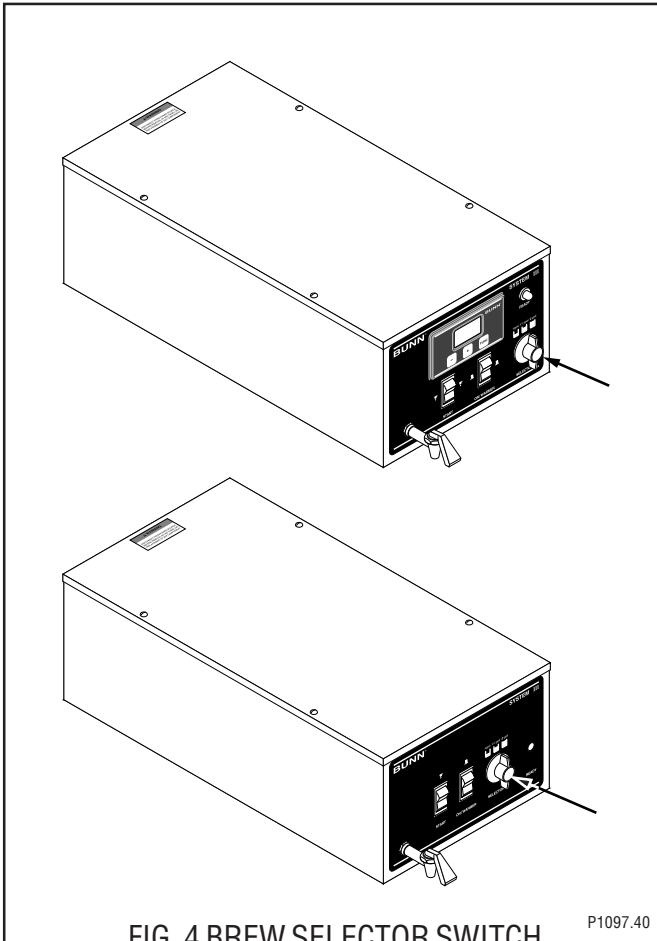


FIG. 4 BREW SELECTOR SWITCH

P1097.40

Location:

The brew selector switch is located in the front of the hood on the lower right side on DBC models and to the right of center on electro/mechanical models.

Test Procedure:

Timer or DBC

1. Disconnect the brewer from the power supply.
2. Separate the connector on the selector switch harness from the brew timer circuit board or DBC connector.
3. Check for continuity across the pink and tan wires on the connector when the switch is in the 1 gallon position. Continuity must not be present in any other position.
4. Check for continuity across the pink wire and the gray wire when the switch is in the 1-1/2 gallon position. Continuity must not be present in any other switch position.

5. Reattach the connector to the brew timer circuit board or DBC connector.

Grinder Interface:

6. Disconnect pink, gray and tan wires on the selector switch from the pink, gray and tan wires on the interface socket.
7. Check for continuity across the pink wire and the tan wire on the selector switch when the switch is in the 1 gallon position. Continuity must not be present in any other position.
8. Check for continuity across the pink wire and gray wire on the selector switch when the switch is in the 1-1/2 gallon position. Continuity must not be present in any other position.
9. Reconnect the pink, gray and tan wires on the selector switch to the pink, gray and tan wires on the interface socket.

Bypass Valve:

10. Disconnect the white/violet wire on the selector switch from the bypass valve coil and disconnect the white/red wire from the dispense valve coil.
11. Check for continuity across the white/violet wire and white/red wire when the selector is in the 1-1/2 gallon and 2 gallon position. Continuity must not be present in any other position.
12. Reconnect the white/violet wire to the bypass valve coil and the white/red wire to the dispense valve coil.

If continuity is as described the switch is operating properly.

If continuity is not present as described replace switch assembly.

Removal and Replacement:

1. Disconnect the connector on the selector switch harness from the brewer timer circuit board.
2. Disconnect wires from the selector switch, interface socket, dispense valve and bypass valve.
3. Loosen the set screw on the switch knob.
4. Remove the 9/16" nut and washer holding the switch to the hood.
5. Remove the switch.
6. Install the new switch. The positioning tab must be in the hole in the hood for proper switch and knob alignment.

SERVICE (cont.)

BREW SELECTOR SWITCH (cont.)

7. Install the knob so that the arrow lines up in the 2 gallon position when the switch is turned to the full right position.
8. Reattach the connector to the brew timer circuit board or DBC
9. Refer to Fig. 5 when reconnecting the wires.

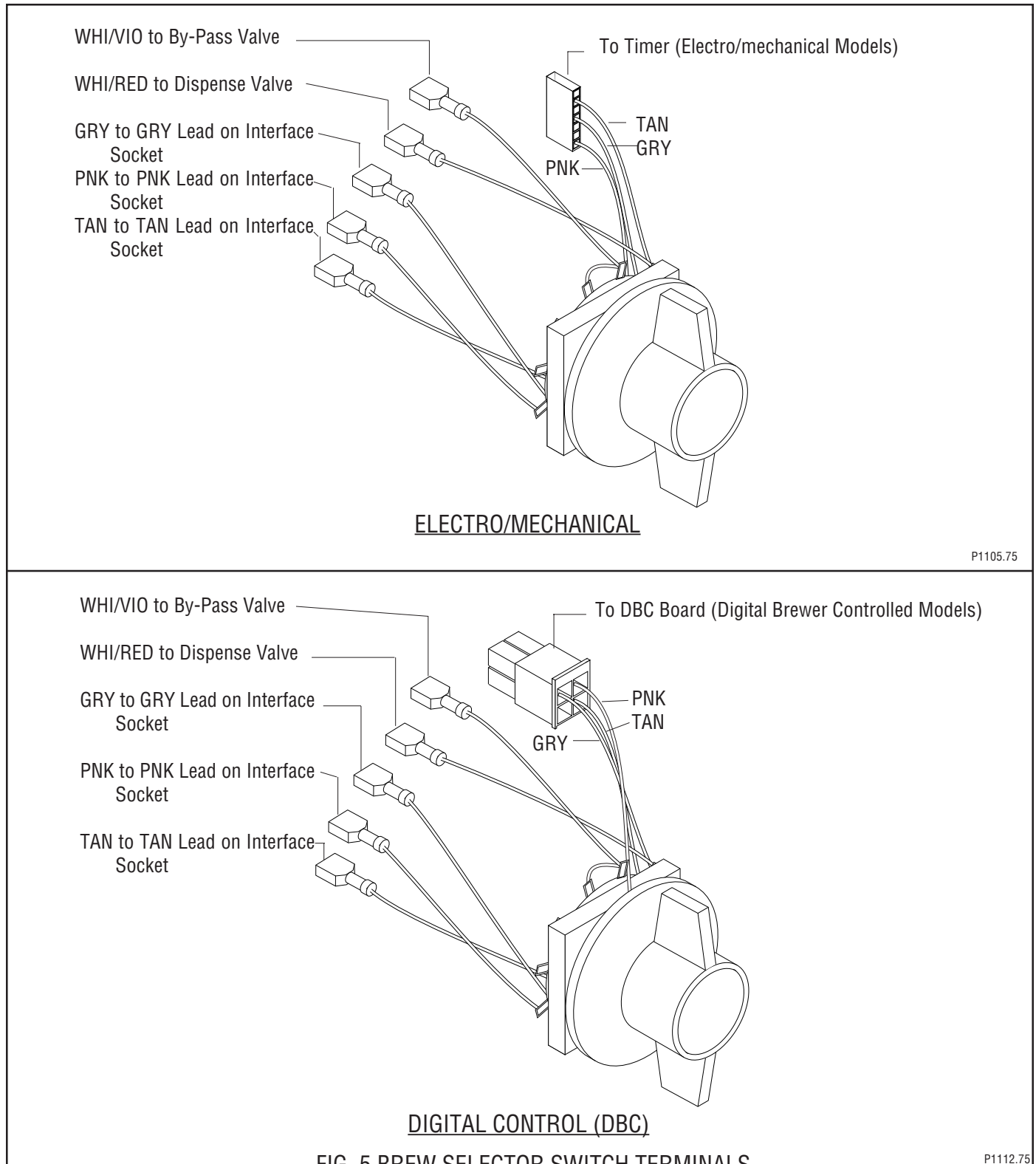
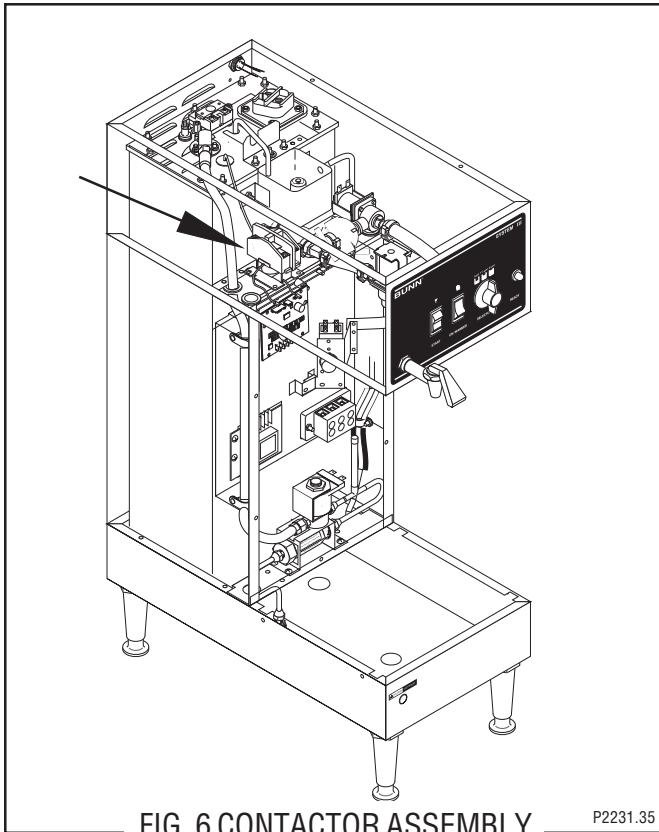


FIG. 5 BREW SELECTOR SWITCH TERMINALS

SERVICE (cont.)

CONTACTOR ASSEMBLY (ELECTRO/MECHANICAL ONLY)



Location:

The contactor assembly is located inside the hood to the right of the overflow cup.

Test Procedures:

Mechanical Thermostat

1. Disconnect the brewer from the power source.
2. Disconnect the white wire or the red wire and the black wire of the contactor coil and disconnect the black wire of the control thermostat from the remaining black wire of the contactor coil.
3. Gently remove the capillary bulb and grommet from the tank.
4. With a voltmeter, check the voltage across the white wire from the terminal block on 120/208, 120/240 volt units or the red wire from 200, 240 volt units and the black wire from the control thermostat when the thermostat is turned clockwise to the "FULL ON" position. Connect the brewer to the power source. The indication must be:
 - a.) 120 volts ac for 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.

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.

6. Check for continuity between the two black wires of the contactor coil.

If continuity is present as described, reconnect one black wire to the white wire or red wire from the terminal block and the other black wire to the black wire from the control thermostat. Reinstall capillary tube into tank to line 7" above the bulb and proceed to #7.

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

7. With a voltmeter, carefully check the voltage across the red and black wires on L1 and L2. The indication must be:
 - a.) 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.

8. Disconnect the brewer from the power source.

If voltage is present as described, proceed to #9.

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

9. Check for continuity across the terminals on the left side of the contactor by manually closing the contacts. Continuity must not be present when the contact is released.
10. 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.

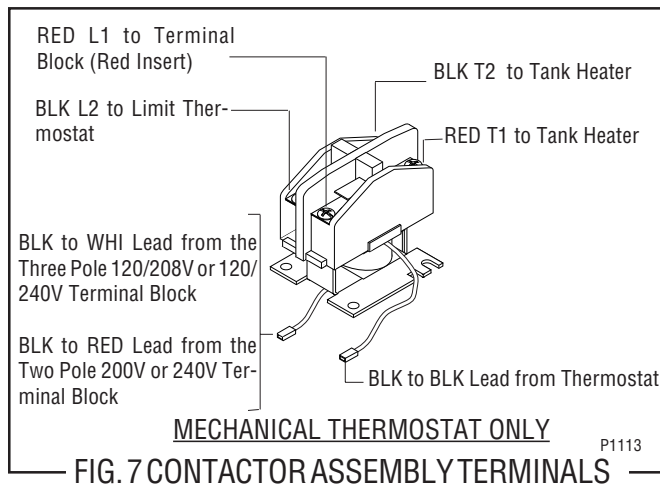
If continuity is not present as described, replace the contactor.

SERVICE (cont.)

CONTACTOR ASSEMBLY (ELECTRO/MECHANICAL ONLY) (cont.)

Removal and Replacement:

1. Remove all wires from the contactor.
2. Remove the two #10-32 screws securing contactor to the inside of the hood.
3. Securely install the new contactor inside the hood.
4. Refer to Fig. 7 when reconnecting the wires.



SERVICE (cont.)

CONTROL THERMOSTAT (ELECTRO/MECHANICAL ONLY)

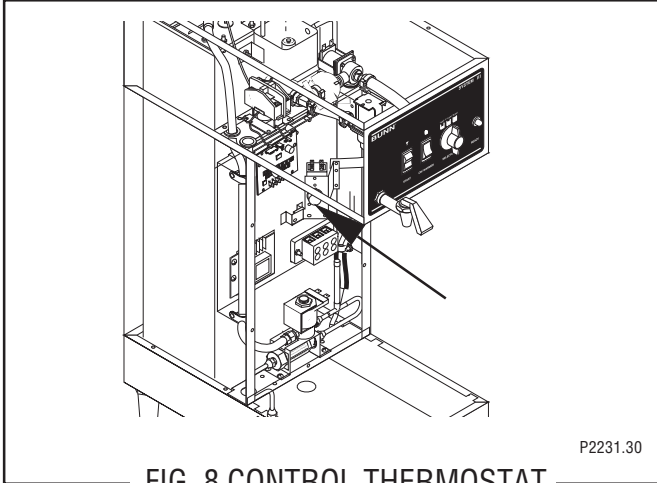


FIG. 8 CONTROL THERMOSTAT

Location:

The control thermostat is located inside the front of the brewer in the center of the component bracket.

Test Procedures:

1. Disconnect the brewer from the power source.
2. With a voltmeter, check the voltage across the blue wires on the control thermostat and the white insert on the three pole 120/208V, 120/240V terminal block or the red insert on two pole 240V terminal block. Connect the brewer to the power source. The indication must be:
 - a.) 120 volts ac for 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.
3. Disconnect the brewer from the power source.

If voltage is present as described, proceed to #4.

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

4. Gently remove the capillary bulb and grommet from the tank.
5. With a voltmeter, check the voltage across the black wires of the control thermostat and the white insert on the three pole 120/208V or 120/240V terminal blocks and the red insert on two pole 200V/240V terminal blocks when the control thermostat is turned "ON" (fully clockwise). Connect the brewer to the power source. The indication must be:
 - a.) 120 volts ac for 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.

Voltage must not be indicated across these terminals when the thermostat is turned "OFF" (fully counterclockwise).

6. Disconnect the brewer from the power source.

If voltage is present as described, reinstall the capillary tube into the tank to the line 7" above the bulb, the control thermostat is operating properly.

If voltage is not present as described, replace the thermostat.

Removal and Replacement:

1. Remove wires from the control thermostat.
2. Remove the thermostat capillary bulb by firmly pulling up on the capillary tube on top of the tank lid. This will disengage the grommet from tank lid.
3. Remove the #8-32 screw holding the control thermostat to the component bracket.
4. Slide the grommet to the line 7" above the bulb on the new capillary tube.
5. Insert the capillary bulb through the hole in the tank lid and press the grommet firmly and evenly so that the groove in the grommet fits into the tank lid.
6. Carefully bend the capillary tube so that the tube and bulb inside the tank are in the vertical position.

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

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

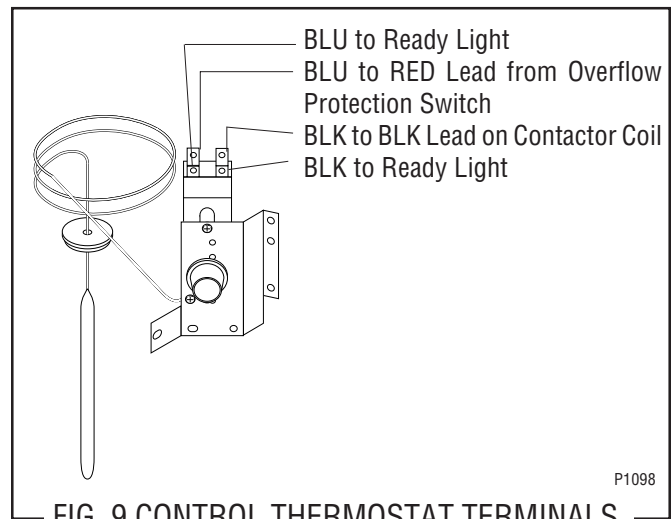


FIG. 9 CONTROL THERMOSTAT TERMINALS

SERVICE (cont.)
DISPENSE VALVE

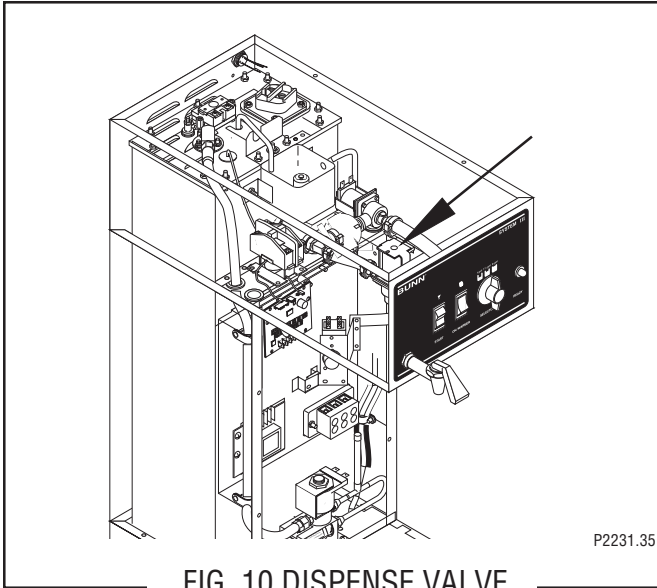


FIG. 10 DISPENSE VALVE

Location:

Dispense valve is located inside the hood directly above the sprayhead.

Test Procedures:

1. Disconnect the brewer from the power source.
2. Disconnect the wires from the dispense valve and check for continuity across the dispense valve coil terminals.

If continuity is present as described, reconnect the wires to the dispense valve and proceed to #3.

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

3. With a voltmeter, check the voltage across dispense valve using the white/violet wire and white/green wire on electro/mechanical models, or white/red wire and white/green wire on DBC models. Connect brewer to the power source. Place the "ON/OFF (Warmer)" switch in the "ON" (upper) position. Press and release the start switch. The indication must be:
 - a.) 120 volts ac for 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 brewer from the power source. If voltage is present as described in step 3, proceed to #5.

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

5. Check the dispense valve for coil action. Connect the brewer to power source. Place the "ON/OFF (Warmer)" switch in the "ON" (upper) position, press and release the start switch. Listen carefully in the vicinity of the dispense valve for a "clicking" sound as the coil magnet attracts and repels the plunger.
6. Disconnect the brewer from the power source.

If the sound is heard as described, there may be a blockage in the dispense valve or the water line to the dispense valve. Remove the dispense valve and inspect for wear, and remove waterborne particles. If the sound is not heard as described, replace the dispense valve.

Removal and Replacement:

1. Disconnect wires from dispense valve.
2. Drain enough water from the tank so the dispense valve is above the water line.
3. Remove water lines and hose barb fitting from dispense valve.
4. Remove dispense valve from the sprayhead panel.
5. Install new dispense valve .
6. Reconnect the water lines, hose barb fitting and the wires to the dispense valve.
7. Refer to Fig. 11 when reconnecting wires.

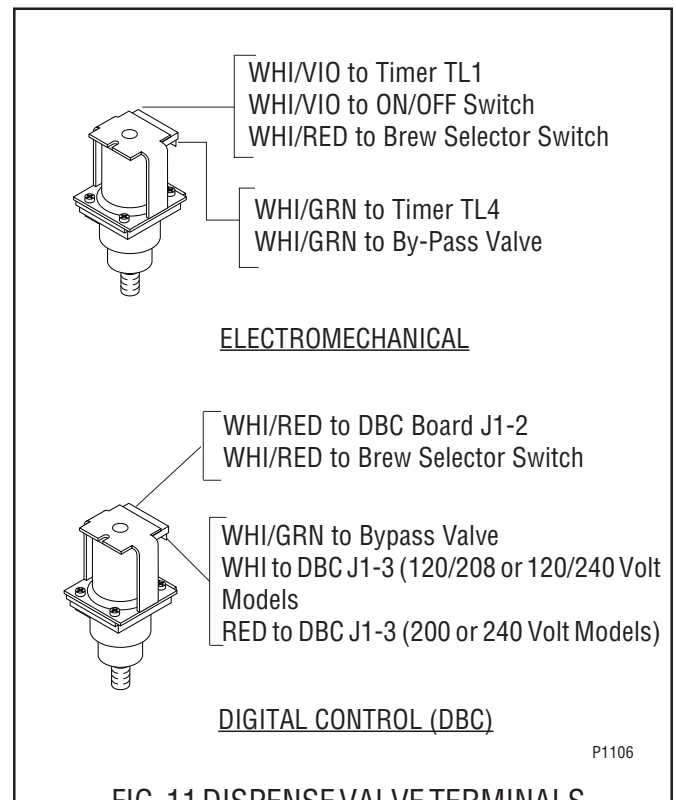


FIG. 11 DISPENSE VALVE TERMINALS

SERVICE (cont.) DIGITAL BREWER CONTROL BOARD AND DISPLAY (DBC)

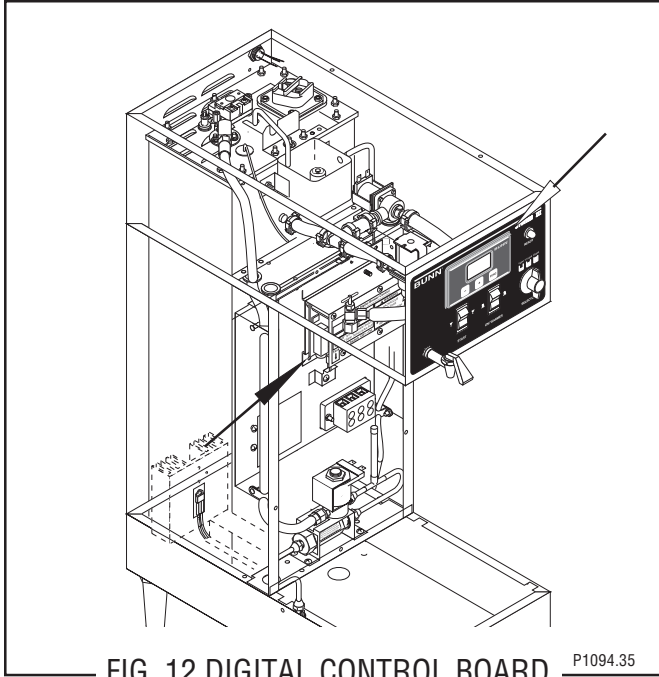


FIG. 12 DIGITAL CONTROL BOARD P1094.35

Location

The digital control board is located inside the upper front of the trunk on the component bracket.

The digital display is located in the upper center of the front of hood.

NOTE: Check the function list (supplied) for FUNCTION, ENTRY AND DESCRIPTION.

1. If display indicates a "FAULT" use the list below to troubleshoot the indicated fault.
FAULT 1 - main brew tank temperature probe is shorted
FAULT 2 - main brew tank temperature probe is open circuit
FAULT 3 - secondary water tank temperature probe is shorted (used only in two-tank system)
FAULT 4 - secondary water tank temperature probe is open circuit (used only in two-tank system)
FAULT 5 - main DBC board is defective
FAULT 6 - water overflow protection switch is open circuit
FAULT 7 - dry plug-in condition (brewer is looking for connection between the water tank and the dry plug-in probe).
2. If the brewer **will not refill** then use the function list and test the refill solenoid and make sure that

the following functions are set properly.

- A) set refill probe delay (larger values add more delay time)
 - B) refill sensing probe ("no" means that there will be no automatic refill)
 - C) refill solenoid separate from brew solenoid (usually on gravity brewers) ("no" means that refill will occur automatically only when not brewing.
 - D) set refill resistance threshold (only necessary to change in pure water areas)(changing the setting to a value higher than 128 means the water will be more likely to create a full condition).
 - E) check wiring to refill solenoid
 - F) replace Digital Brewer Control Board
3. If the brewer **will not heat** then check the following.
 - A) test the main tank heater
 - B) check the main brew tank temperature setting
 - C) check dry plug-in prevention probe setting ("yes" means that there must be a dry plug-in prevention probe)
 - D) limit thermostat on top of the brewer tank
 - E) temporarily substitute a known working heater triac assembly
 - F) replace Digital Brewer Control Board
 4. If the brewer **will not brew** then use the function list and test the brew solenoid and make sure that the following functions are set properly.
 - A) set main brew tank temperature (a setting that is lower than the ready lamp value can prevent brewing)
 - B) set main brew tank - ready lamp off temperature (a setting that is higher than the brew value can prevent brewing)
 - C) select brew lockout ("yes" requires the brewer ready lamp to be "ON" in order to brew)
 - D) replace Digital Brewer Control Board
 5. If the temperature reading on the display is higher than 211°F (99°C), disconnect the two pin connector (blue wire and tan wire) from the heater triac. If the heater remains on, the heater triac is defective and must be replaced.
 - A) B)
 6. If the **temperature on display varies** by more than one degree while the brewer is at idle, select main

SERVICE (cont.)
DIGITAL BREWER CONTROL BOARD AND DISPLAY
(DBC) (cont.)

heater relay or triac. ("0" means the temperature will be allowed to vary by the value in "set relay temperature difference")

7. If you **cannot access the DBC** with the password you have entered, the password has been changed. If you know what the brew settings are you can "reset" the memory back to the way it left the factory, which is "0". This is accomplished by disconnecting the brewer from the power source, pressing the plus (+) and minus (-) buttons simultaneously and holding them in this position then connecting the brewer to the power source. Continue pressing the buttons until the display shows numbers counting upward rapidly. If this does not occur press the plus (+) and minus(-) firmly and repeat the procedure. The brew values can now be set to your desired value.

8. If the **brew volume** does not match the programmed value then use the following list to correct the error.
 - A) The coffee grounds naturally absorb some of the brew water; typically between one and two ounces of water per ounce of coffee (depending on the grind).
 - B) The DBC calculates the amount of time the brew solenoid must stay on to dispense the programmed brew volume. It uses the sprayhead constant to determine the rate of dispense. The sprayhead rate can be measured by capturing the water coming out of the sprayhead for 60 seconds. This value (in gallons per minute) can be entered into memory.
 - C) The last reason can be the brew by-pass. If you are using brew by-pass then the amount that comes out of the by-pass must be subtracted from the total desired volume to get the programmed brew volume.

9. If your DBC **display is blank**, you should check the following.
 - A) Make sure brewer is connected to the power source.
 - B) Make sure connectors that go between the main DBC and the DBC display are plugged into their appropriate locations.
 - C) Restart the DBC program by disconnecting

brewer from the power source, wait 15 seconds and reconnect the brewer to the power source.
D) If these do not remedy the problem, replace Digital Brewer Control Board

10. If **water is running out** from the base of the brewer check the following:
 - A) If the display shows temperature or FAULT 6 , disconnect the brewer from the power source. If water continues to flow out of the base of the brewer there may be an obstruction in the refill solenoid valve. Refer to Refill Solenoid Valve service procedures.
 - B) With the brewer disconnected from the power source, remove panels as necessary, dry inside of brewer as needed, and reinstall panels on brewer.
 - C) Reconnect brewer to the power supply. If water continues to flow out of the base, the Digital Brewer Control Board is defective and must be replaced.

Removal and Replacement:
DBC Control Board

1. Disconnect the brewer from the power source.
2. Disconnect all wires from the control board.
3. Remove the two #8-32 keps nuts securing control board to component bracket inside the trunk.
4. Remove control board and discard,
5. Install new control board on the component bracket using two #8-32 keps nuts.
6. Reconnect the multi-pin plugs to the control board.

DBC Display Assembly:

1. Disconnect the display assembly cord from the display assembly.
2. Remove the two #6-32 locking screws securing the display assembly to the display assembly mounting bracket behind the front of the hood.
3. Remove display assembly from the front of the hood and discard.
4. Install new display assembly on the front of the hood using two #6-32 locking screws to secure it to the display assembly mounting bracket.
5. Reconnect the display assembly cord to the display assembly.

NOTE: If necessary recalibrate the values of the DBC using the FUNCTION LIST (supplied).

SERVICE (cont.)

TRIAC/HEAT SINK ASSEMBLY (DBC ONLY)

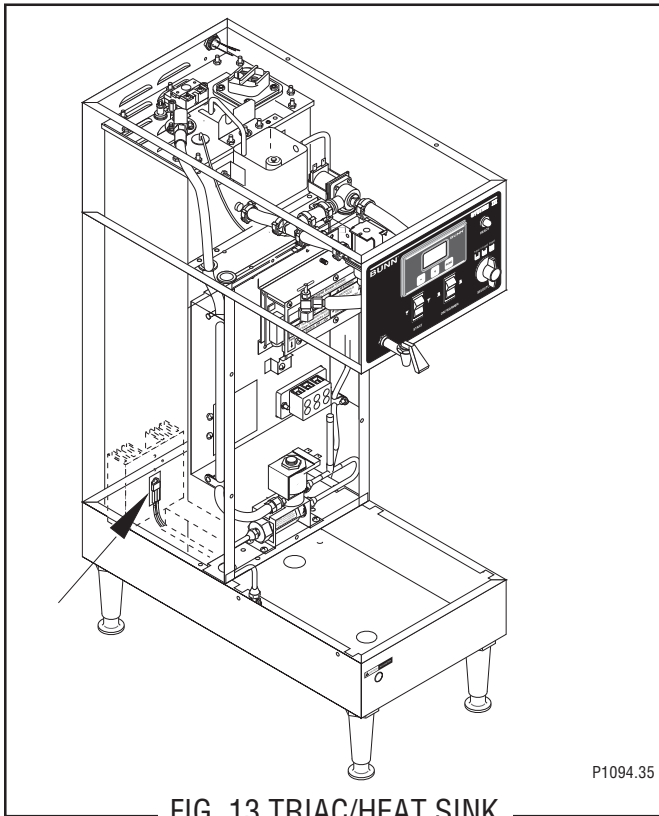
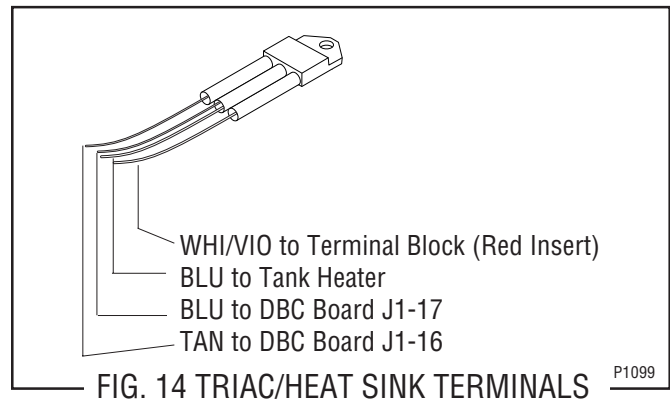


FIG. 13 TRIAC/HEAT SINK

6. Apply heat sink compound and secure new triac assembly on rear of the heat sink with one #6-32 screw.
7. Route the triac wires through the tank support channel.
8. Secure triac/heat sink assembly to the lower rear of the brewer with two #6-32 screws.
9. Reconnect the wires of the new triac assembly. Refer to Fig. 14 when reconnecting wires.



Location

The triac/heat sink is located on the lower rear of the brewer.

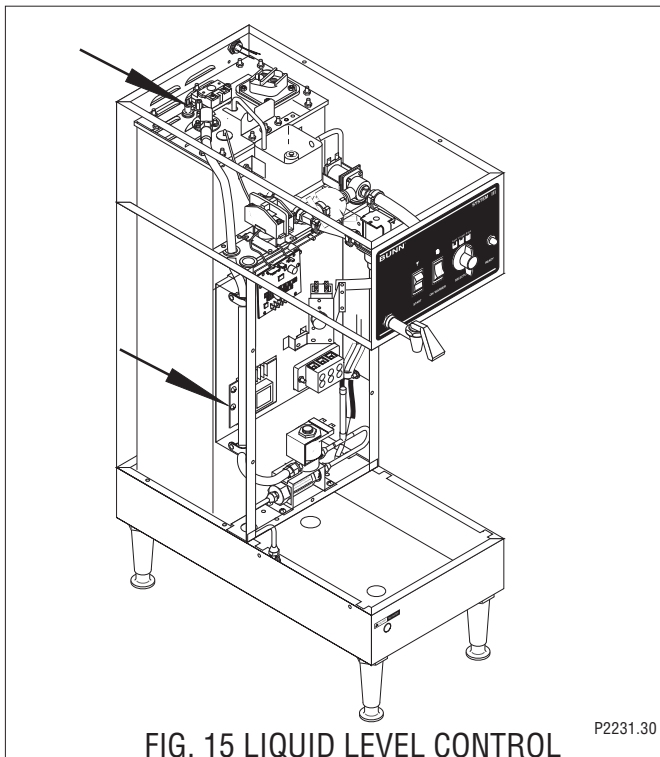
Removal and Replacement

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 DBC board assembly in the "OFF" position.
2. Disconnect triac wires, white/violet from terminal block, blue from tank heater, blue and tan from the DBC board assembly.
3. Remove the two #6-32 screws securing the triac/heat sink assembly to the lower rear of the brewer.
4. Remove heat sink, triac and triac leads as an assembly.
5. Remove the one #6-32 screw securing triac to the heat sink and discard triac with leads.

SERVICE (cont.)

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



Location:

The level control board is located inside the front of the brewer on the lower left side of the component bracket. The level probe is located inside the hood on the left center rear of the tank lid next to the limit thermostat.

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 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, proceed to #5.
If voltage is not present as described, refer to the *Wiring Diagrams* and check the brewer wiring harness.

5. Reconnect the violet wire to terminal 1.

6. Carefully connect a piece of insulated jumper wire to terminal 4. Keep the other end of this wire away from any metal surface of the brewer.
7. With a voltmeter, check the voltage across terminals 1 & 3. Connect the brewer to the power source. The indication must be:
 - a.) 120 volts ac for 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.
8. Touch the free end of jumper wire to the brewer housing. The indication must be 0.
9. Move the jumper wire away from the brewer housing. The indication must again be:
 - a.) 120 volts ac for 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.
10. Disconnect the brewer from the power source and remove the jumper wire from terminal 4.

If voltage is present as described, the level control board is operating properly, proceed to #11.
If voltage is not present as described, replace the level control board.

11. Reconnect the pink wire to terminal 4.
12. Gently pull the probe out of the tank lid and inspect for corrosion. Replace it if necessary.
13. Place the probe so that neither end is in contact with any metal surface of the brewer.
14. With a voltmeter, check the voltage across terminals 1 & 3. Connect the brewer to the power source. The indication must be:
 - a.) 120 volts ac for 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.
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 be:
 - a.) 120 volts ac for three wire 120/208 volt models and three wire 120/240 volt models after a delay of approximately 1 second.

SERVICE (cont.)

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

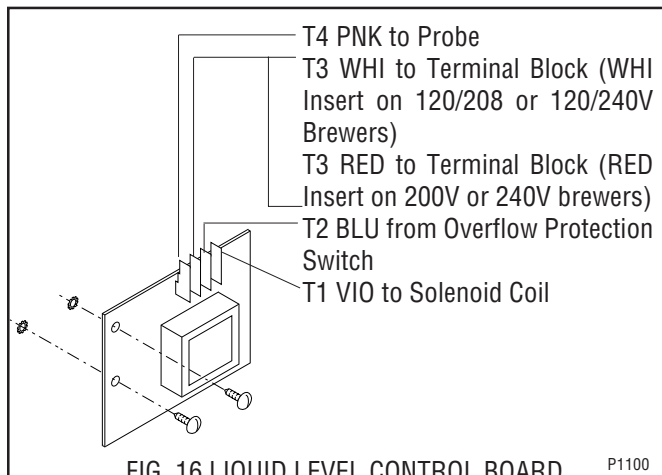
- b.) 200 to 240 volts ac for two wire 200 or 240 volt models after a delay of approximately 1 second.
17. Disconnect the brewer from the power source.

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. If no continuity is present, replace or repair pink wire.

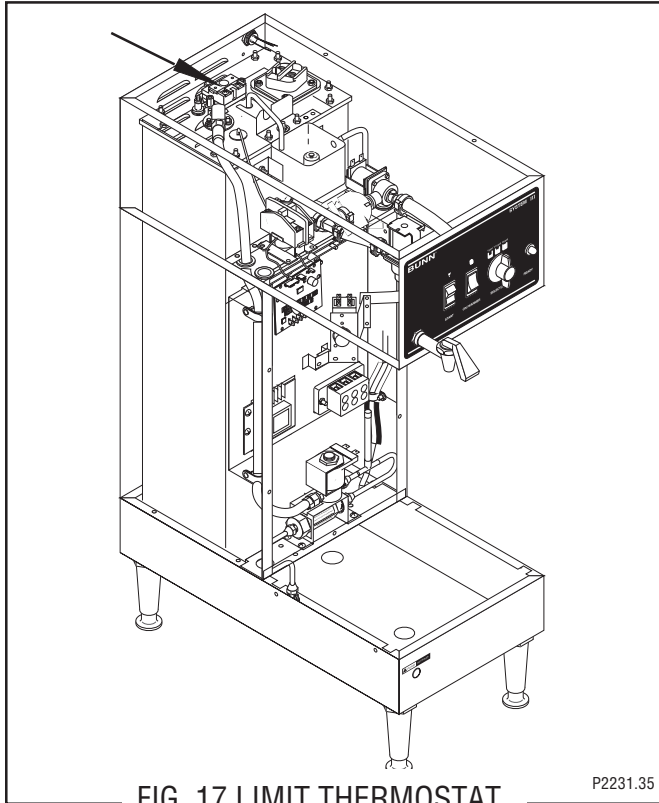
Removal and Replacement:

1. Remove all wires from the level control board.
2. Remove two #8-32 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. 16 when reconnecting the wires.



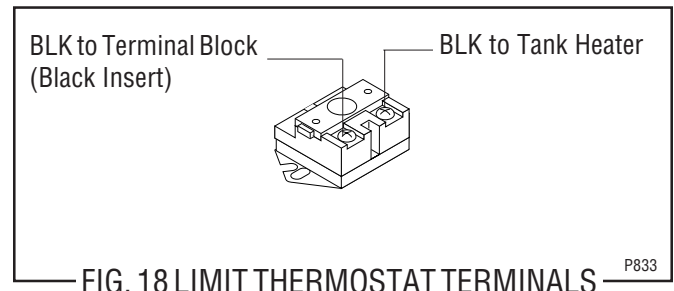
SERVICE (cont.)

LIMIT THERMOSTAT



Removal and Replacement

1. Remove all wires from the limit thermostat terminals.
2. Carefully remove the two #8-32 nuts securing the limit thermostat to tank lid and remove limit thermostat.
3. Carefully secure new limit thermostat to tank lid.
4. Refer to Fig. 18 when reconnecting the wires.



Location:

The limit thermostat is located inside the hood on the tank lid 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 and no continuity is shown, replace the limit thermostat.

SERVICE (cont.)

ON/OFF (Warmer) SWITCH

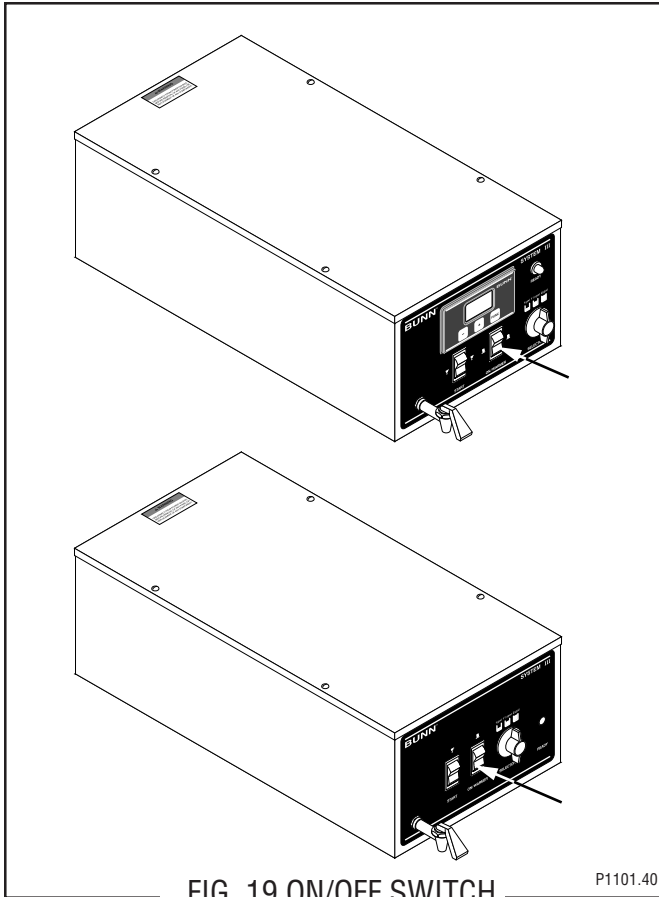


FIG. 19 ON/OFF SWITCH

P1101.40

Location:

The ON/OFF (Warmer) switch is located on the front of the hood 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 red or white wire from the upper right terminal and the black wire from the center terminal.
3. With a voltmeter, check the voltage across the red or white wire and the black wire. Connect the brewer to the power source. The indication must be:
 - a.) 120 volts ac for 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 red or 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 or white/red 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" (upper) position. Continuity must not be present when switch is in the "OFF" (lower) position.

If continuity is present as described, reconnect the black wire to the center terminal and the white/violet wire or white/red 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. 20 when reconnecting the wires.

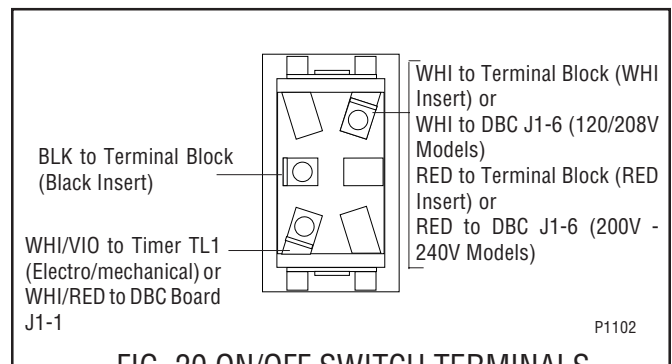


FIG. 20 ON/OFF SWITCH TERMINALS

P1102

SERVICE (cont.)

OVERFLOW PROTECTION SWITCH

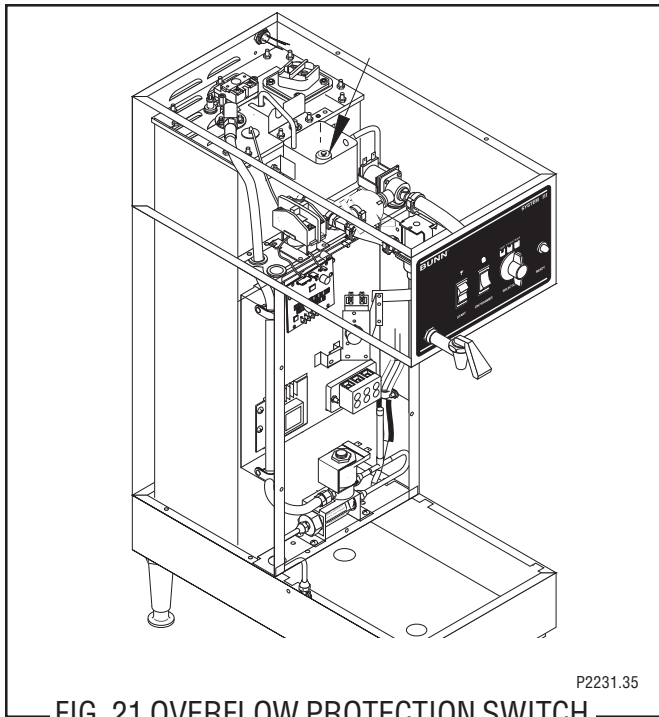


FIG. 21 OVERFLOW PROTECTION SWITCH

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 DBC board assembly and terminal block.

Test Procedure:

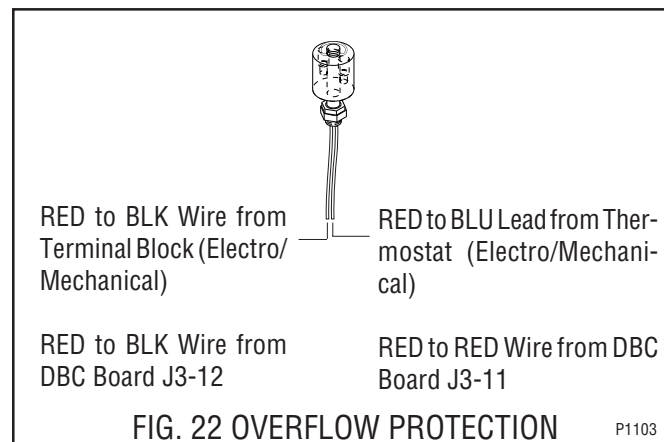
1. Disconnect the brewer from the power source.
2. Remove the wire nuts connecting the red wires from the overflow protection switch to the black wire from the terminal block or DBC board assembly, and blue wire from the thermostat or the red wire from the DBC board assembly.
3. Check for continuity across the overflow protection 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 or DBC Board Assembly, and the blue wire from the thermostat or red wire from DBC board assembly.

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

Removal and Replacement:

1. Disconnect the red leads from the overflow protection switch from the black wire from the terminal block or DBC board assembly and the blue wire from the thermostat or red wire from DBC board 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. 22 when reconnecting wires.



SERVICE (cont.)

SOLENOID VALVE (Refill)

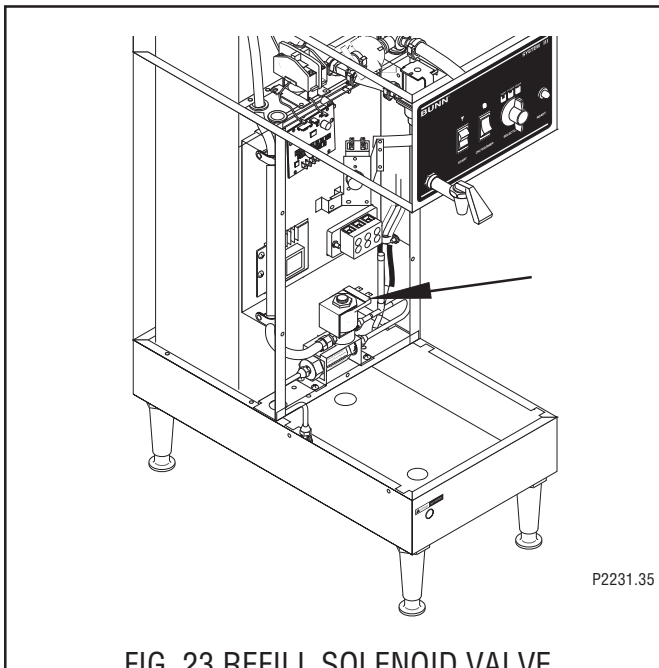


FIG. 23 REFILL SOLENOID VALVE

Location:

The inlet solenoid valve is located inside the trunk on top of the flow control bracket.

Test Procedure:

1. Disconnect the brewer from the power source.
2. Disconnect both wires from the solenoid valve coil terminals and check for continuity across the solenoid valve coil terminals.

If continuity is present as described, reconnect the white and violet wires on the electro/mechanical controlled 120/208 and 120/240 volt brewers, white and white/blue on DBC 120/208 and 120/240 volt brewers, red and violet on electro/mechanical controlled 200 or 240 volt brewers and red and white/blue on DBC 200 or 240 volt brewers.

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

3. With a voltmeter, check the voltage across the solenoid valve terminal wires:
 - a.) White and violet wires on 120/208 and 120/240 volt electro/mechanical controlled models.
 - b.) White and white/blue wires on 120/208 and 120/240 volt DBC models.

c.) Red and violet wires on 200 and 240V volt electro/mechanical controlled models.

d.) Red and white/blue wires on 200 and 240 volt DBC models.

Connect the brewer to the power source. The indication must be:

- a.) 120 volts ac for 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, proceed to #5.

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

5. Check the solenoid valve for coil action. Connect the brewer to the power source and draw water from the faucet. Listen carefully in the vicinity of the solenoid valve for a "clicking" sound after approximately 1 second, as the coil magnet attracts.
6. Disconnect the brewer from the power source.

If the sound is 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 is 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 brewer.
3. Disconnect the water lines to and from the solenoid valve.
4. Disconnect water line from the flow control to the solenoid and remove.
5. Remove the four #8-32 screws securing the flow control bracket to the support bracket and slide bracket and solenoid over flow control.
6. Remove bracket and solenoid as an assembly.
7. Remove the two #10-32 screws and lockwashers securing the solenoid valve to the flow control bracket.
8. Using two #10-32 screws securely install the new solenoid valve to the flow control bracket.

SERVICE (cont.)

SOLENOID VALVE (Refill) (cont.)

9. Slide flow control bracket and solenoid as an assembly over flow control and secure with four #8-32 screws to the support bracket.
10. Securely fasten the water lines to and from the solenoid valve and flow control.
11. Refer to Fig. 24 when reconnecting the wires.

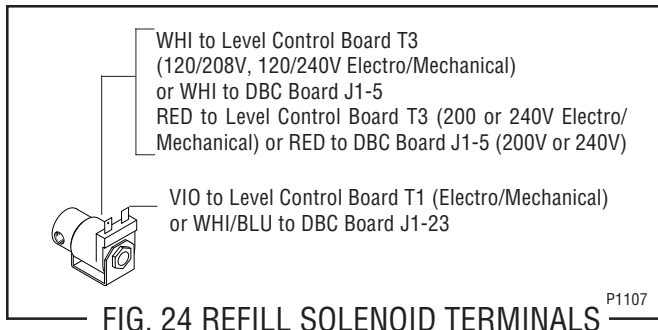
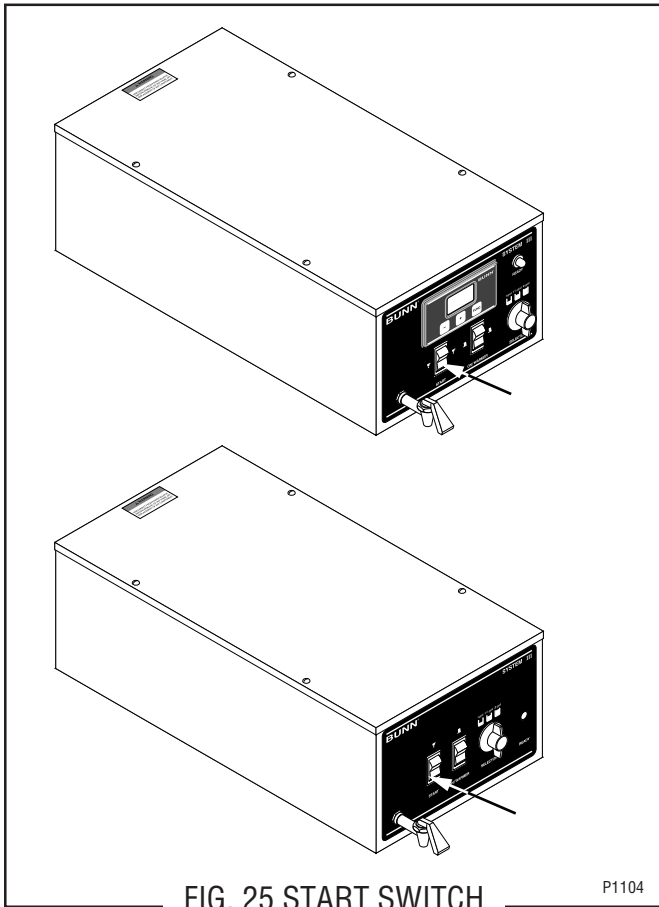


FIG. 24 REFILL SOLENOID TERMINALS

SERVICE (cont.)

START SWITCH



Location:

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

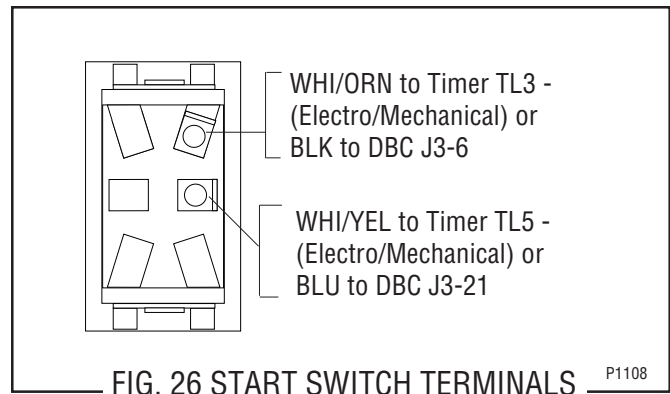
Test Procedure:

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.

Removal and Replacement:

1. Remove all 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 the switch in the hood.
4. Refer to FIG. 26 when reconnecting the wires.



SERVICE (cont.)
TANK HEATER

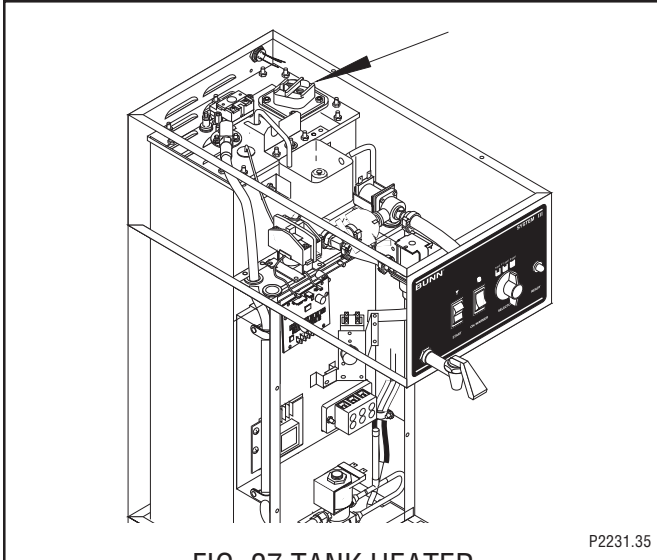


FIG. 27 TANK HEATER

Location:

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

Test Procedure:

Electro/Mechanical Models.

1. Disconnect the brewer from the power supply.
2. With a voltmeter, check the voltage across the black and the red wire on the tank heater. With the control thermostat turned to the "ON" position (fully clockwise), connect the brewer to the power supply and check the voltage across the wires. The indication should be:
 - a.) 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 supply.

If voltage is present as described, proceed to #4.
 If voltage is not present as described, refer to the *Wiring Diagrams* and check the wiring harness.

4. Disconnect wires from the tank heater.
5. Check for continuity across the terminals of the tank heater.

If continuity is present as described, reconnect the wires, the tank heater is operating properly.
 If continuity is not present as described, replace the tank heater.

NOTE - If the tank heater remains unable to heat, remove and inspect the heater for cracks in the sheath.

DBC Models:

1. Disconnect the brewer from the power source.
2. Disconnect wires from heater.
3. Check for continuity across the tank heater terminals.

If continuity is present as described, the tank heater is operating properly.

If continuity is not present as described, replace the tank heater.

NOTE - If the tank heater remains unable to heat, remove and inspect the heater for cracks in the sheath.

Removal and Replacement:

1. Remove wires from tank heater.
2. Remove the four #8-32 nuts securing tank heater to tank lid.
3. Remove tank heater and gasket.
4. Install new tank heater and gasket with four #8-32 nuts on tank lid.
5. Refer to Fig. 28 when reconnecting the wires.

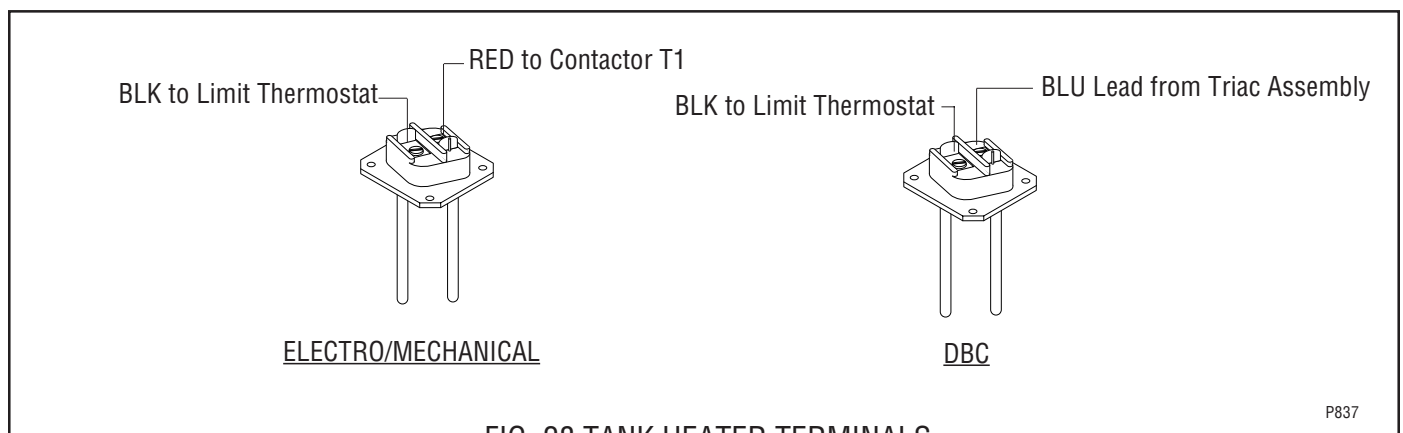


FIG. 28 TANK HEATER TERMINALS

SERVICE (cont.)
TIMER (ELECTRO/MECHANICAL ONLY)(EARLY MODELS)

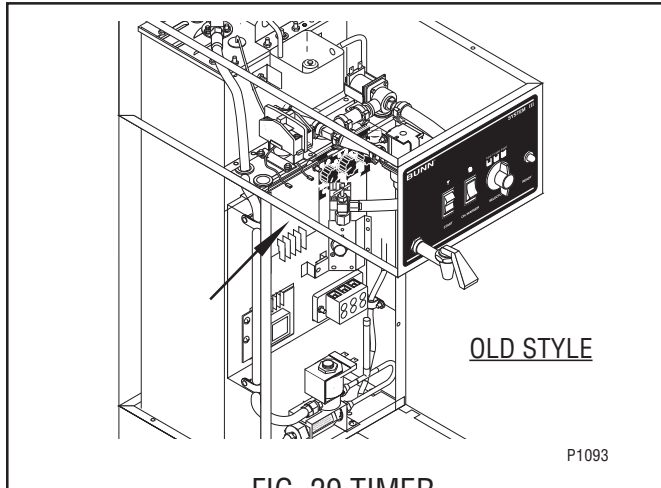


FIG. 29 TIMER

Location:

The timer is located inside the right front of the brewer on the upper part of the component bracket.

Test Procedures:

1. Disconnect the brewer from the power source.
2. Disconnect the wires from the timer terminals TL3, TL4 and TL5 and rotate the dial(s) fully counterclockwise.
3. With a voltmeter, check the voltage across terminals TL1 and TL2 when the "ON/OFF (Warmer)" switch is in the "ON" (upper) position. Connect the brewer to the power source. The indication must be:
 - a.) 120 volts ac for 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, proceed to #5.

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

5. Check for continuity across the white/orange wire and white/yellow wire 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 proceed to #6.

6. With a voltmeter, check the voltage across terminals TL1 and TL4 with a voltmeter when the "ON/OFF (Warmer)" switch is in the "ON" (upper) posi-

tion. Select the 2 gallon batch setting. Connect the brewer to the power source and press the start switch. The indication must be:

- a.) 120 volts ac for three wire 120/208 volt models and three wire 120/240 volt models for approximately 1 minute 20 seconds for 2 gallon batch.
- b.) 200 to 240 volts ac for two wire 200 or 240 volt models for approximately 1 minute 20 seconds for 2 gallon batch.

7. Select a 1-1/2 gallon batch and repeat #6. The voltage indication should remain for approximately 1 minute.

8. Select a 1 gallon batch and repeat #6. The indication should remain approximately 40 seconds.

If voltage is present as described the timer is functioning properly.

If voltage is not present as described, replace the timer and adjust the dial(s) as required.

Removal and Replacement:

1. Remove all wires from the timer.
2. Remove the two #6-32 keps nuts holding circuit board and two #8-32 keps holding dial plate on to the component mounting bracket.
3. Remove circuit board, nylon spacers and dial plate.
4. Install new timer directly to component mounting bracket as described in *Late Model Timer* Section.
5. Refer to Fig. 32 when reconnecting wires.
6. Install the Timer Setting Decal, provided with the replacement timer, on the inside of the front access panel.
7. Adjust the timer as required. Refer to *Late Model Timer* Section on the following pages.

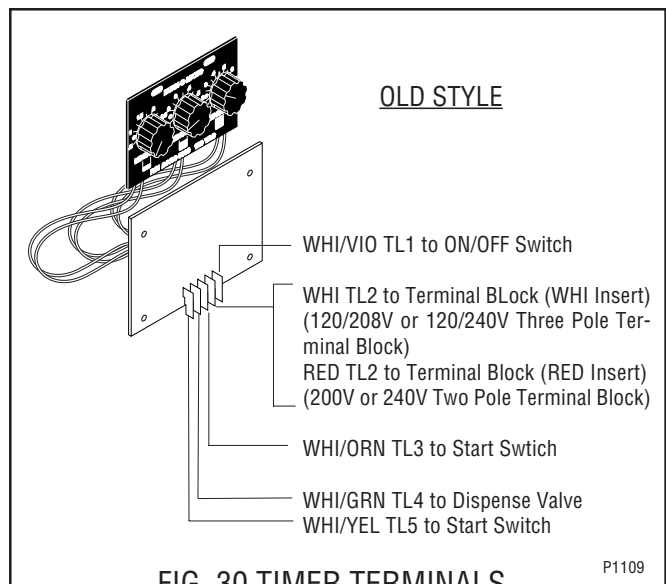


FIG. 30 TIMER TERMINALS

SERVICE (cont.)

DIGITAL TIMER (ELECTRO/MECHANICAL ONLY) (LATE MODELS)

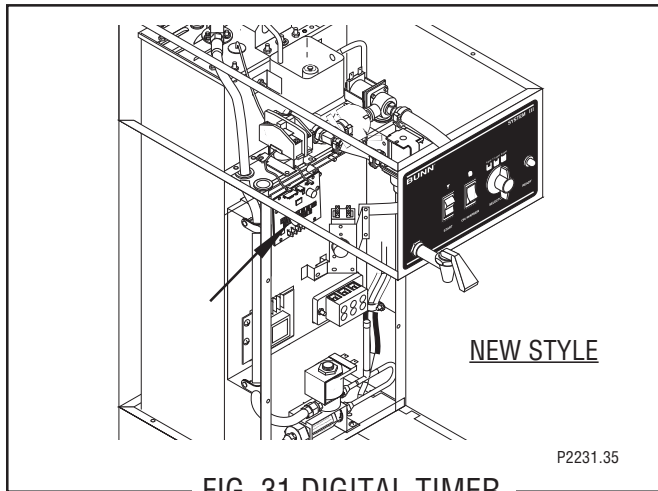


FIG. 31 DIGITAL TIMER

Location:

The timer is located inside the front of the trunk on the top of the component bracket.

Test Procedure.

NOTE: Do not remove or install wires while timer board is installed. Pressure applied to one side may cause damage to the board.

1. Disconnect the brewer from the power source and remove the front access panel.
2. Remove the two #8-32 screws securing circuit board to the mounting bracket.
3. Remove circuit board and spacers (as required).
4. With a voltmeter, check the voltage across terminals TL1 and TL2 when the "ON/OFF" switch is in the "ON" position. Connect the brewer to the power source. The indication must be:
 - a) 120 volts ac for three wire 120/208 or 120/240 volt models.
 - b) 200 to 240 volts ac on two wire 200 or 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.

6. With a voltmeter, check the voltage across termi-

nals TL1 and TL4 when the "ON/OFF" switch is in the "ON" (upper) position. Connect the brewer to the power source. The indication must be 0 volts.

If voltage is as described, proceed to #7.

If voltage is not as described, disconnect the brewer from the power source and replace the timer.

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

If voltage is present as described, the brew timer is operating properly. Reset the timer as required, to obtain the desired brew volume.

If voltage is not present as described, disconnect the brewer from the power source and replace the timer.

Removal and Replacement:

1. Remove the two #8-32 screws securing circuit board to the mounting bracket.
2. Remove circuit board and spacers (as required).
3. Remove all wires from the timer.
4. Attach all wires to the replacement timer board prior to installation to the component mounting bracket. Refer to FIG. 32 when reconnecting the wires.
5. Install new circuit board with spacers (as required) to the component mounting bracket.
6. Adjust the timer as described below.

SERVICE (cont.)

DIGITAL TIMER (ELECTRO/MECHANICAL ONLY) (LATE MODELS)(cont.)

Timer Setting:

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

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

NOTE: The timer must be adjusted for each individual batch setting.

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 and press it again one or more times. (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.) 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 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, volume 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 until switch is once again put into the "SET" position.

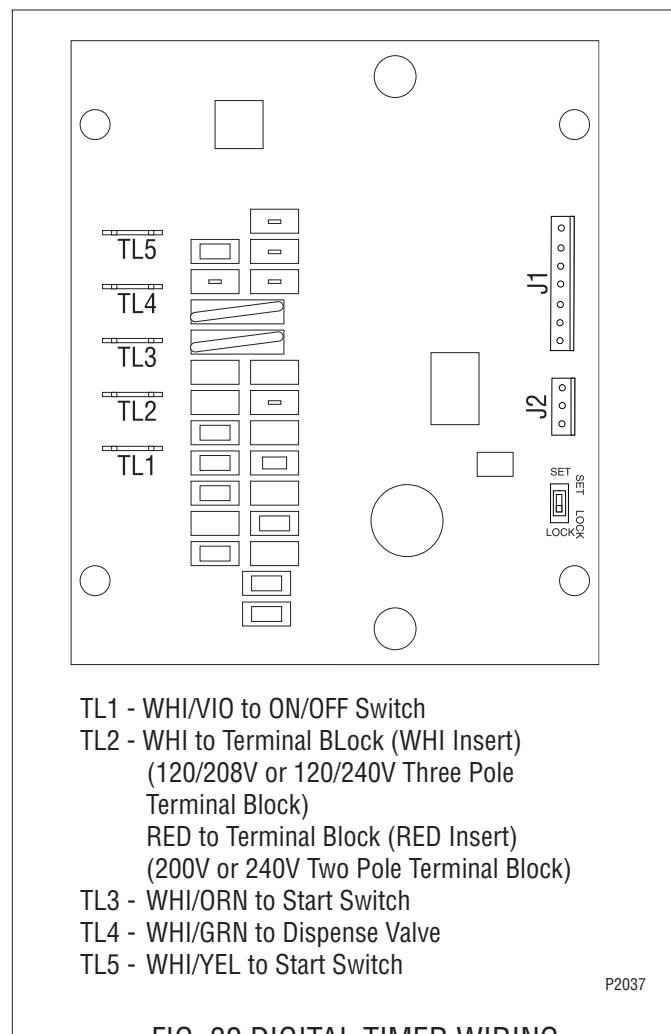
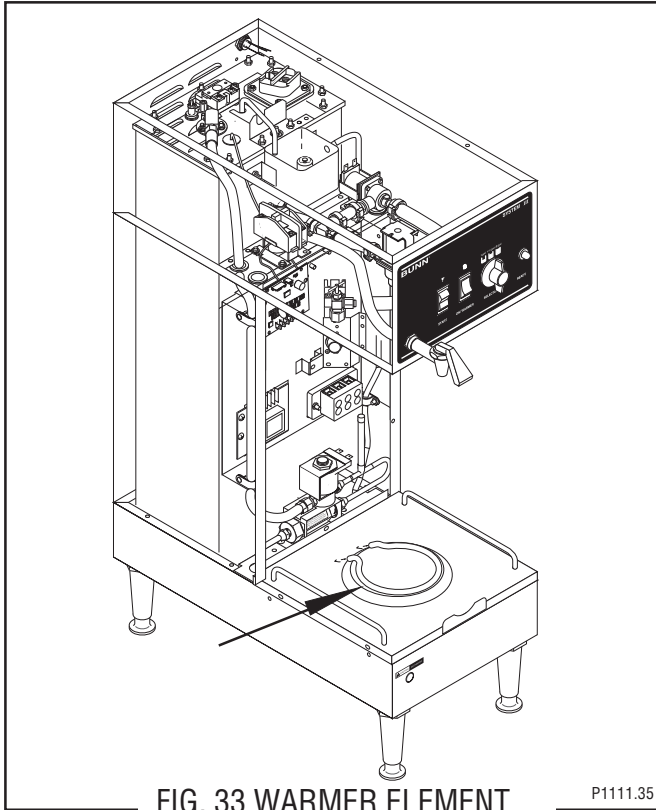


FIG. 32 DIGITAL TIMER WIRING

SERVICE (cont.)

WARMER ELEMENT



Location:

The warmer element is located on the bottom the base (warmer) plate.

Test Procedures:

1. Disconnect the brewer from the power source.
2. On 120/208V or 120/240V models, with a voltmeter, check the voltage across the white wire and the white/violet wire or white/red wire to the element with the "ON/OFF (Warmer)" switch in the "ON" (upper) position. On 200V or 240V models, with a voltmeter, check the voltage across the red wire and the white/violet wire or white/red wire with the "ON/OFF (Warmer)" switch in the "ON" (upper) position. The indication must be:
 - a.) 120 volts ac for 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.
3. Disconnect the brewer from the power source.

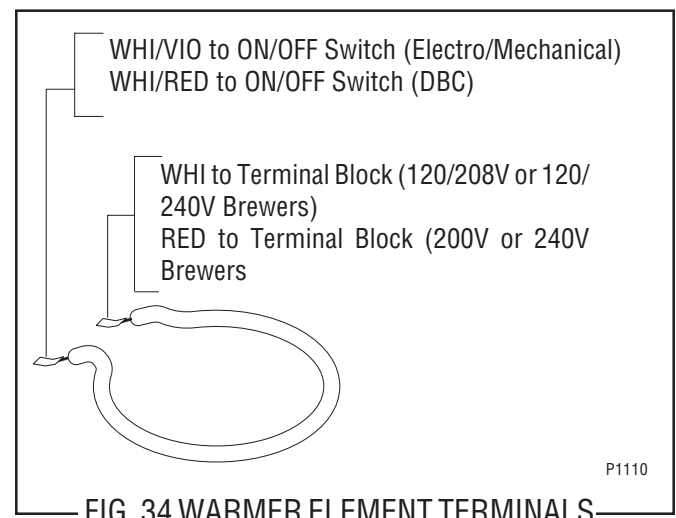
If voltage is present as described, proceed to #4. If voltage is not present as described, refer to the *Wiring Diagrams* and check brewer wiring harness.

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

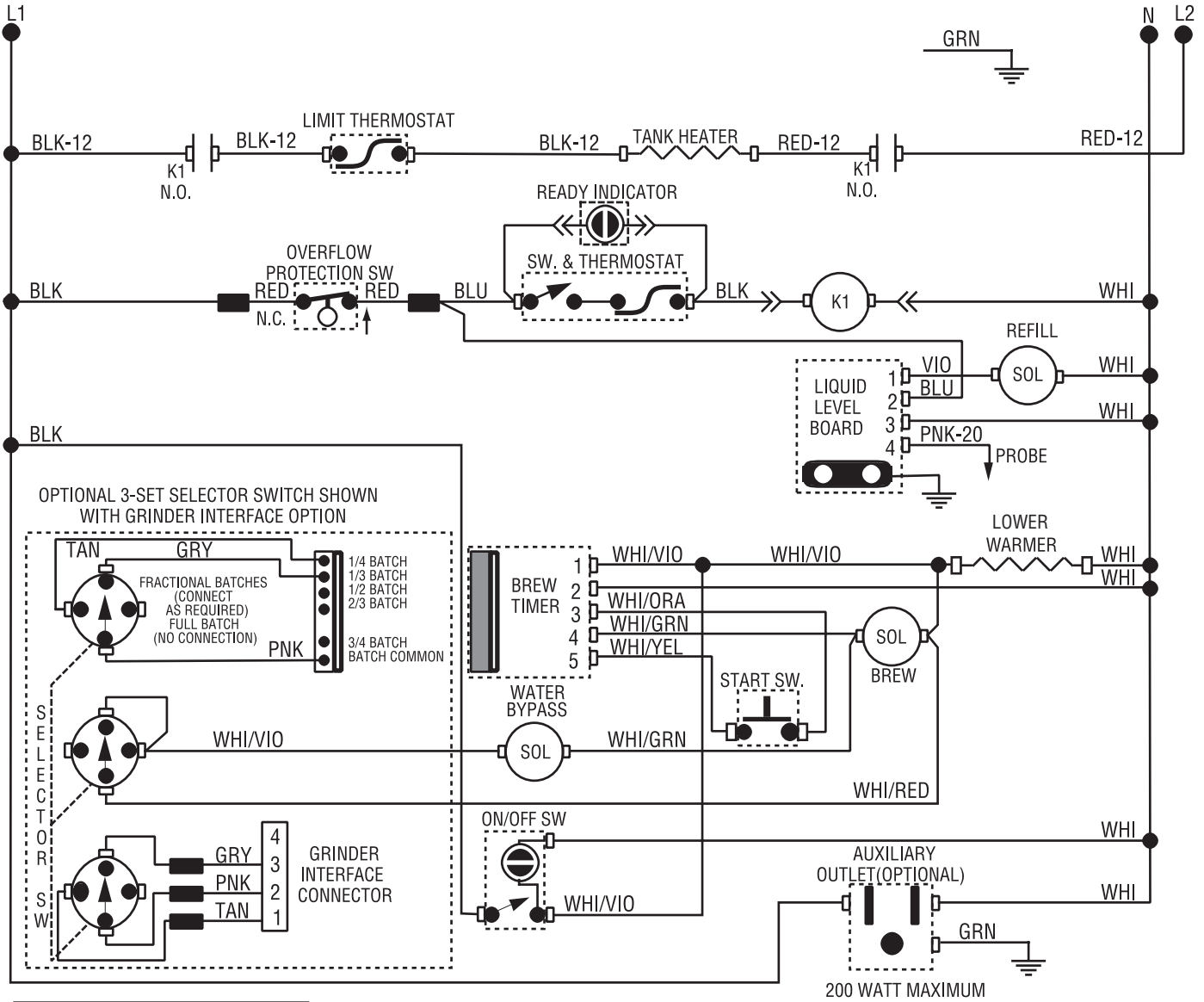
If continuity is present as described, reconnect the white or red wire and white/red wires, or the white or red wire and white/violet wires on the warmer element. If continuity is not present as described, replace the warmer element.

Removal and Replacement:

1. Remove the four #6-32 screws securing the base (warmer) plate to the brewer housing.
2. Turn base plate over and disconnect the two wires from the warmer element.
3. Remove the #8-32 Keps nut, warmer retainer plate and warmer element. Discard warmer element.
4. Place new warmer element on the center bottom of the base plate with the warmer terminals pointing up and to the rear of the base plate.
5. Install warmer retainer plate and warmer element over the stud in bottom of the base plate, secure with #8-32 Keps nut.
6. Reconnect the two wires to warmer element terminals.
7. Turn base plate over and reinstall with four #6-32 screws to the brewer housing.
8. Refer to Fig. 34 when reconnecting wires.

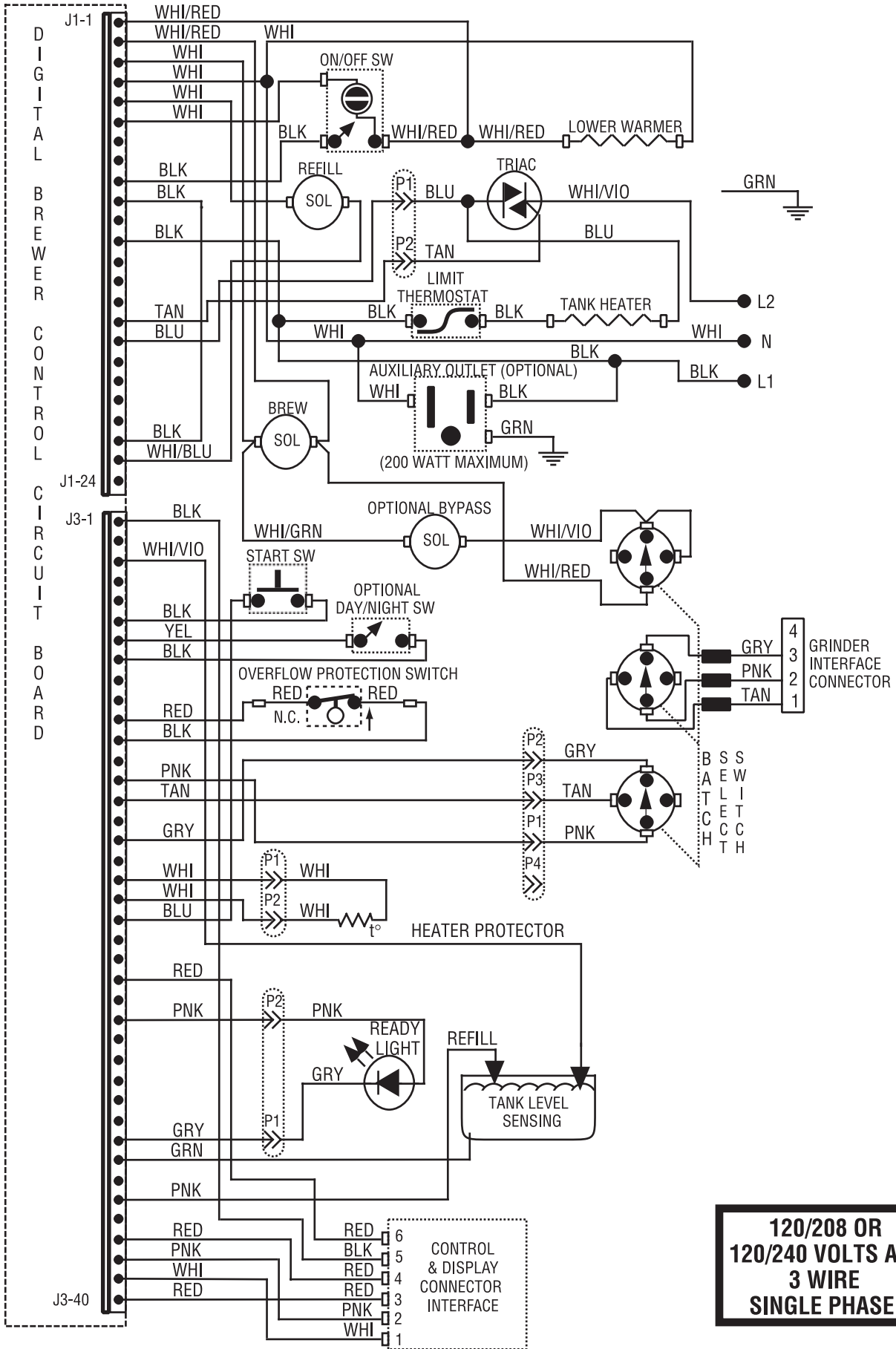


SYSTEM III SCHEMATIC WIRING DIAGRAM



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

SYSTEM III DBC SCHEMATIC WIRING DIAGRAM



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

SYSTEM III SCHEMATIC WIRING DIAGRAM - A & B MODELS

