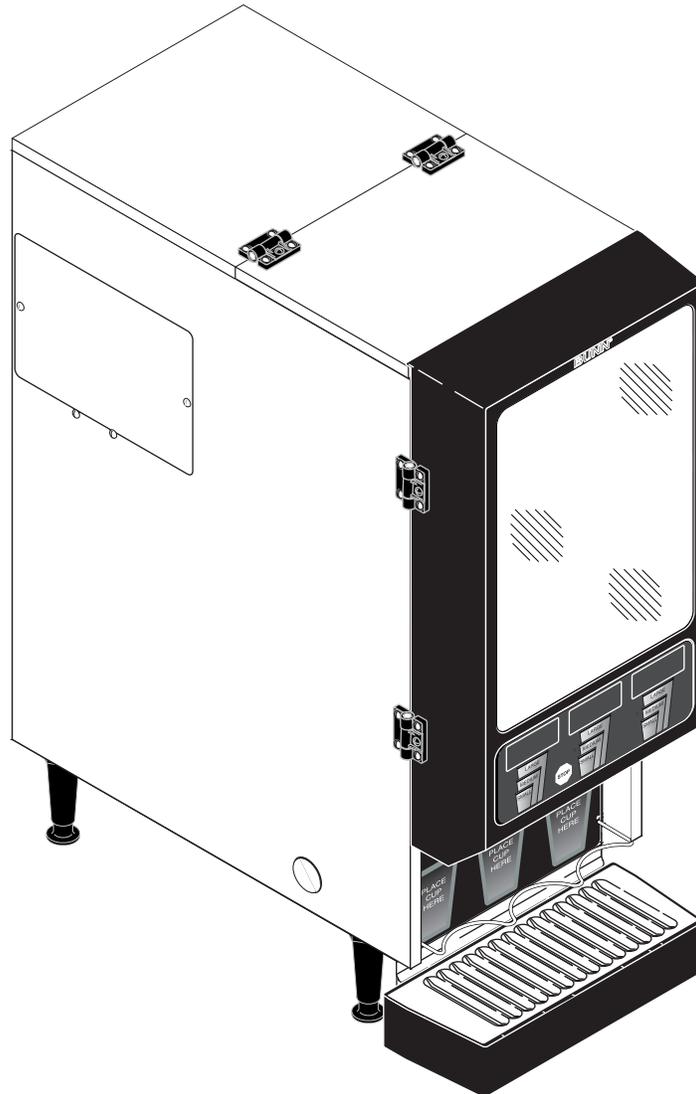


# **BUNN**®

***FMD DBC-3***  
***FMDA DBC-3***

***SN FMD0013000-UP***



## **OPERATING & SERVICE MANUAL**

**BUNN-O-MATIC CORPORATION**

POST OFFICE BOX 3227

SPRINGFIELD, ILLINOIS 62708-3227

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

## **BUNN-O-MATIC COMMERCIAL PRODUCT WARRANTY**

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

- 1) All equipment other than as specified below: 2 years parts and 1 year labor.
- 2) Electronic circuit and/or control boards: parts and labor for 3 years.
- 3) Compressors on refrigeration equipment: 5 years parts and 1 year labor.
- 4) Grinding burrs on coffee grinding equipment to grind coffee to meet original factory screen sieve analysis: parts and labor for 3 years or 30,000 pounds of coffee, whichever comes first.

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

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

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

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

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

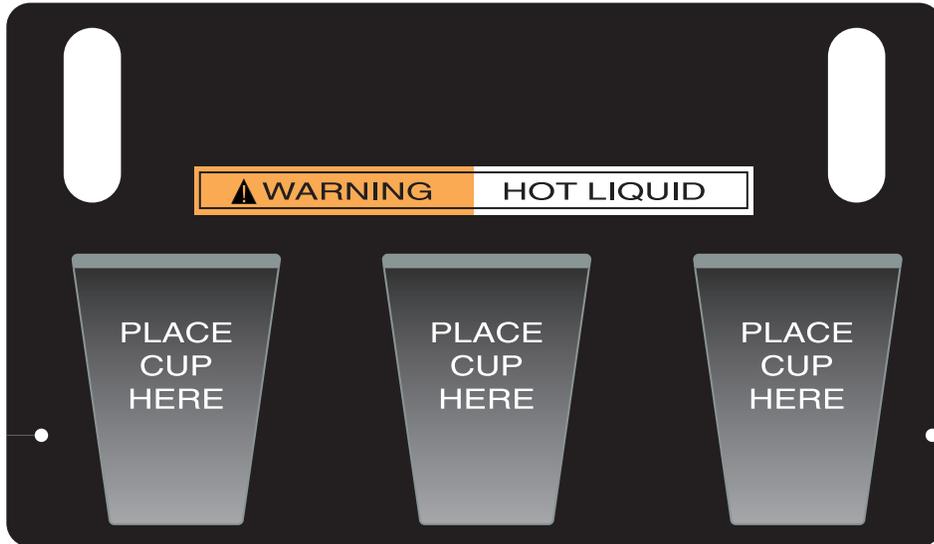
# USER NOTICES (cont.)

<b>⚠ WARNING</b>
<ul style="list-style-type: none"> <li>◆ Fill water tank before turning - on - thermostat or connecting appliance to power source.</li> <li>◆ Use only on a properly protected circuit capable of the rated load.</li> <li>◆ Electrically ground the chassis.</li> <li>◆ Follow national/local electrical codes.</li> <li>◆ Do not use near combustibles.</li> </ul>
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
<small>00831.0000F 3/98 ©1998 BUNN-O-MATIC CORPORATION</small>

00831.0000

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). For models installed outside the U.S.A., comply with the applicable Plumbing /SanitationCode.

00656.0000



29216.0000

<b>CONTROL THERMOSTAT ADJUSTMENT</b>		
<u>200 F</u>	<u>190 F</u>	<u>180 F</u>
APPROXIMATE THERMOSTAT TEMPERATURE SETTINGS		
<small>28368.0001A 8/98 © 1998 BUNN-O-MATIC CORPORATION</small>		

28368.0001

## INITIAL SET-UP

1. Locate the drip tray assembly above the dispenser nested in the packing material.
2. Remove the drip tray and the drip tray cover and set them aside.
3. Remove the water strainer assembly from the drip tray and set it aside.
4. Remove the four legs from the packaging material, apply non-skid pads to the bottom of the legs and securely install the legs in the dispenser base.

## ELECTRICAL REQUIREMENTS

**CAUTION** - The dispenser must be disconnected from the power source until specified in *Electrical Hook-Up*. The 120 volt version of this dispenser has an attached cordset. The mating connector must be a NEMA 5-15R. The 120/208 volt and the 120/240 version of this dispenser has an attached cordset. The mating connector must be a NEMA 14-20R.

The 240 volt version of this dispenser has an attached cordset without plug.

The 230 volt version of this dispenser has an attached cordset without plug.

## 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. Open the front door of the dispenser and place the heater switch in the "OFF" (upper) position.
4. Connect the dispenser to the power source.
5. If plumbing is to be hooked up later be sure the dispenser is disconnected from the power source. If plumbing has been hooked up, the dispenser is ready for *Initial Fill & Heat*.

## PLUMBING REQUIREMENTS

This dispenser must be connected to a **COLD WATER** system with operating pressure between 20 and 90 psi from a  $\frac{1}{2}$ " or larger supply line. A shut-off valve should be installed in the line before the dispenser. Install a regulator in the line when pressure is greater than 90 psi to reduce it to 50 psi. The water inlet fitting is  $\frac{1}{4}$ " flare.

**NOTE** - Bunn-O-Matic recommends  $\frac{1}{4}$ " copper tubing for installations of less than 25 feet and  $\frac{3}{8}$ " for more than 25 feet from the  $\frac{1}{2}$ " water supply line. At least 18 inches of an FDA approved flexible beverage tubing, such as reinforced braided polyethylene or silicone, before the dispenser will facilitate movement to clean the countertop. Bunn-O-Matic does not recommend the use of a saddle valve to install the dispenser. The size and shape of the hole made in the supply line by this type of device may restrict water flow.

**This equipment must be installed to comply with the 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). For models installed outside the U.S.A., you must comply with the applicable Plumbing/Sanitation Code for your area.**

## PLUMBING HOOK-UP

1. Securely attach the short piece of tubing on the water strainer assembly to the inlet fitting on the bottom of the dispenser.
2. Flush the water line and securely attach it to the flare fitting on the water strainer assembly.
3. Turn on the water supply.

## INITIAL FILL & HEAT

**CAUTION** - The dispenser must be disconnected from the power source throughout the initial fill & heat, except when specified in the instructions.

1. Turn on the water supply and connect the dispenser to the power source.
2. Water will automatically flow into the tank to the proper level and then shut-off. This will take less than five minutes.
3. When the tank is full of water, open the front door and place the heater switch in the “ON” (lower) position. A tank full of cold water will take approximately forty minutes for the water to heat on 120 volt versions, and twenty minutes on 120/240, 240 and 230 volt versions.

During this waiting period, complete these dispenser set-up steps:

- a. Place a set of keyholes in the splash panel over the screws beneath the hopper access door and push down gently.
- b. Place the drip tray onto the supports on the splash panel. Hook the tabs on the rear of the drip tray through the holes in the splash panel. Set the drip tray cover in place.
- c. Fill the hopper(s) with the dry product to be dispensed.

## LIQUID LEVEL CONTROL

The system automatically maintains the hot water tank’s level by energizing the refill solenoid when the water level drops below the liquid level probe. If the system has not successfully refilled in 15 minutes, a refill error occurs.

When a refill error occurs, the refill solenoid is de-energized and the 3 position L.E.D.’s will flash sequentially; left...center...right...left...center...right...etc.

Once the cause of the refill error has been investigated (see the troubleshooting guide) and cured, the system can be reset by either disconnecting (for at least 5 seconds) and then reconnecting the power to the machine, or by entering one of the program modes (see Programming Modes.)

## RINSE TIMER

The dispenser is shipped from the factory with the rinse timer disabled. To enable the rinse timer, remove power from the dispenser, remove the lower access panel, and remove the jumper from J4 of the control board. For dispensers with hot water dispense, remove power from the dispenser, remove the lower access panel, and disconnect the green wires coming from J4 of the control board from each other. Replace the lower access panel, and return power to the dispenser.

When enabled, the rinse timer automatically keeps track of the time since the dispenser was last run through a rinse sequence. If the dispenser detects that a rinse sequence has not been run for 8 hours, all three position L.E.D.’s will flash continually. If, after an additional 4 hours (12 hours total), a rinse cycle has still not been run, all three position L.E.D.’s will light continuously, and the hopper drives will be disabled until a rinse sequence has been run.

## RUNNING A RINSE SEQUENCE

1. Place the Rinse/Run switch in the “rinse” position .
2. Sequentially or simultaneously at each of the three positions, press any of the three dispense switches. The dispenser will run for 10 seconds with the hopper(s) disabled.
3. As each position is rinsed, the corresponding L.E.D. will extinguish, indicating that the rinse cycle took place.
4. After all three position L.E.D.’s have extinguished, the rinse timer is reset.
5. Return the Rinse/Run switch to the “run” position.

## DISPENSER USE

1. Simply place a cup on the drip tray beneath the desired dispensing tip.
2. a) Momentarily press the appropriate dispense switch to froth and dispense the beverage. The dispenser will automatically dispense the beverage for the programmed dispense time at the programmed hopper dispense rate. The dispenser is factory preset to produce the approximate dispense sizes as follows:
  - Small (8 seconds): approximately 8 fluid ounces of beverage.
  - Medium (12 seconds): approximately 12 fluid ounces of beverage.
  - Large (16 seconds): approximately 16 fluid ounces of beverage.To stop a timed dispense, press the stop switch or any of the switches on the position that is running.

**Note** - The mixing chamber must drain at the end of each dispense.

The dispense times can be individually programmed by following the procedures described in Programming Modes.

- b) Hot Water - Push and hold the hot water switch until the water reaches the desired level, then release.

## HOPPER DISPENSE RATE OF PRODUCT

The hopper dispense rates are preset at the factory. With 22 tooth gear and auger wire, the preset dispense rate is approximately 3 to 5 grams per second. With 30 tooth gear and auger wire, the preset dispense rate is approximately 5 to 7 grams per second. The hopper dispense rates can be individually programmed to a range of dispense rates from approximately 1.5 to 12 grams per second by following the procedures described in Programming Modes.

## PROGRAMMING MODES

### 1. Enter / Exit:

- a. To enter the program mode, press any two dispense size switches, on the position to be programmed, at the same time. The L.E.D. will flash indicating the program mode.
- b. To exit the program mode, press a switch on any position other than the one being programmed.

**Note:** The stop switch will not cause exit of program mode since it is used for some programming operations.

If in the program mode for more than 25 seconds and no switches have been pressed, the program mode is automatically exited.

### 2. Dispense Run Time:

- a. Enter the program mode on the position you want to program (see step 1.a.)
- b. Place the "Rinse/Run" switch in the "Run" position and press and hold the cup size to be programmed.
- c. When the desired amount is reached, release the switch, the time is recorded in memory.

To set the time to non-timed dispense, just momentarily press the position switch. This actually sets in a very short timed dispense.

- d. Repeat for remaining cup sizes if desired.
- e. Exit the programming mode (see step 1.b.)

### 3. Increasing / Decreasing the Hopper Dispense Rate:

- a. Enter the program mode on the position you want to program (see step 1.a.)
- b. Place the Rinse/Run switch in the "Rinse" position.
- c. Press and hold down on the stop switch and press the small switch to decrease the dispense rate or press the large switch to increase the dispense rate. Each time the button is pressed, the dispense rate will increase/decrease by approximately  $2\frac{1}{2}$  %. Each time the small or large switch is pressed, the L.E.D. on that position will flash on and off to indicate the switch was recognized. When the maximum or minimum level is reached all 3 position L.E.D.'s will flash rapidly.

- d. To return the dispense rate to the factory preset, press and hold down stop switch and press the medium switch. When the medium switch is pressed, the L.E.D. on that position will flash on and off to indicate the switch was recognized.
  - e. Return the Rinse/Run switch to the “Run” position.
  - f. Exit the programming mode (see step 1.b.)
4. Making Common Timed Dispenses: Once a position has been programmed to the proper dispense times, you can make all 3 positions the same, as follows:
    - a. Place the Rinse/Run switch in the “Run” position.
    - b. Enter the program mode on the position you want all others to be like (see step 1.a.)
    - c. Press and hold the Stop switch for 10 seconds.
    - d. After the 10 second period, all 3 position L.E.D.’s will come on solid indicating the task is complete. The program mode is exited when the Stop switch is released.
  5. Running Hopper Throw Test: The hopper throw can be checked by automatically running the hopper motor as follows:
    - a. Remove the steam collector and mixing chamber from under the hopper to be checked.
    - b. Position a small cup under the hopper outlet.
    - c. Enter the program mode on the position you want to check (see step 1.a.)
    - d. Place the Rinse/Run switch in the “Run” position.
    - e. Press and hold the stop switch down and press the small, medium, or large switch. The hopper will run for the programmed timed dispense period at the programmed dispense rate.
    - f. Remove the cup and weigh the dispensed product.
    - g. Exit the programming mode (see step 1.b.)
    - h. Replace the mixing chamber and steam collector.
  6. Making Common Dispense Rates: Once a position has been programmed to the proper hopper dispense rate, you can make all 3 positions approximately the same, as follows:
    - a. Place the Rinse/Run switch in the “Rinse” position.
    - b. Enter the program mode on the position you want all others to be like (see step 1.a.)
    - c. Press and hold the Stop switch for 10 seconds.
    - d. After the 10 second period, all 3 position L.E.D.’s will come on solid indicating the task is complete. The program mode is exited when the Stop switch is released.
    - e. Return the Rinse/Run switch to the “Run” position.
  7. Password: The password is to be used to prevent unauthorized entering of the program modes. The password is preset at the factory to 0 (no password.)
    - a. To enter the password programming, press and hold any two dispense size switches on any one of the positions for 10 seconds. All 3 position L.E.D.’s will begin flashing indicating that the dispenser is ready to accept a new password.
    - b. When the switches are released the 3 L.E.D.’s will stop flashing. At this time press the Stop switch the number of times that is the password (For example: If you press the Stop switch 5 times, you will then have to press the Stop switch 5 times before you will be able to enter the program mode the next time.)
    - c. 5 seconds after the Stop switch is pressed for the last time, the password is recorded in memory. As a verification of the password, when the 5 seconds is up, the 3 L.E.D.’s will flash the password. (For example: If the password is 5, when the exit of the password occurs, the L.E.D. will flash 5 times.)
    - d. Thereafter, the Stop switch needs to be pressed the password number of times before the program mode can be entered.

**NOTE:** After 5 seconds of pressing the Stop switch for the final time, the password counter is reset to 0. So if the password is mis-entered, wait 5 seconds before trying again.

- e. To reset the password to 0 (no password,) enter the old password, then press and hold any two dispense size switches on any one of the positions for 10 seconds. All 3 position L.E.D.'s will begin flashing indicating that the dispenser is ready to accept a new password. Then just wait 5 seconds without pressing the Stop switch.

**NOTE:** There will be no indication when the 5 seconds are up and the password is reset to 0.

## RE-INITIALIZE TO FACTORY DEFAULTS

This resets all dispense time settings and hopper throw rates to the factory defaults, and resets the password to 0 (no password.)

1. Disconnect the dispenser from the power source.
2. Place the Rinse/Run switch in the "Run" position.
3. Press and hold the left small, center small, and the Stop switches at the same time.
4. While holding the switches, connect the dispenser to the power source (this is intended to be difficult.) The switches must be held for about 5 seconds. When the task is completed, the left, center and right L.E.D.'s flash until the switches are released.
5. Wait an additional 10 seconds before operating the dispenser.

## COLD BEVERAGE SET-UP (OPTIONAL)

Cold beverages may be dispensed from the left dispense position. Simply place the HOT/COLD switch near the left whipper chamber in the "COLD" (upper) position.

## CLEANING

Refer to the decal inside the hopper access door for cleaning recommendations and procedures.

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.

## ADJUSTMENTS

The hot or cold beverage solenoids are preset to dispense approximately  $\frac{9}{10}$  ounce per second. This amount can be adjusted:

1. Disconnect the dispenser from the power source.
2. Remove the small left side access panel.
3. Rotate the control at the base of the desired solenoid(s) clockwise to decrease or counterclockwise to increase the amount of water.
4. For cold beverage adjustment remove the 1-1/2" plug on the lower left side of the dispenser and rotate the needle valve clockwise to decrease or counterclockwise to increase the amount of cold water.

## DRAINING THE HOT WATER TANK

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

1. Disconnect the dispenser from the power source.
2. Open front door and place tank heater switch in the "OFF" (upper) position.
3. Shut off and disconnect the incoming water supply.
4. Remove the top panel.
5. Gently remove one of the grommets from the tank lid.
6. Insert a tube to the bottom of the tank and syphon ALL of the water out.

**NOTE** - The dispenser must be refilled using the INITIAL FILL & HEAT steps before reconnecting to the power source.

## 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 volt, 230 volt or 240 volt ac and low voltage dc potential on their terminals. Shorting of terminals or the application of external voltages may result in board failure.
- Intermittent operation of electronic circuit boards is unlikely. Board failure will normally be permanent. If an intermittent condition is encountered, the cause will likely be a switch contact or a loose connection at a terminal or crimp.
- Solenoid removal requires interrupting the water supply to the valve. Damage may result if solenoids are energized for more than ten minutes without a supply of water.
- The use of two wrenches is recommended whenever plumbing fittings are tightened or loosened. This will help to avoid twists and kinks in the tubing.
- Make certain that all plumbing connections are sealed and electrical connections tight and isolated.
- This unit is heated at all times. Keep away from combustibles.

- WARNING** –
- Exercise extreme caution when servicing electrical equipment.
  - Unplug the dispenser when servicing, except when electrical tests are specified.
  - Follow recommended service procedures
  - Replace all protective shields or safety notices

PROBLEM	PROBABLE CAUSE	REMEDY
Product will not dispense	1. No water	Water lines and valves to the dispenser must be open.
	2. No power or incorrect voltage to the dispenser	(A1) Check for 120 volts across the black and white wires on two wire 120 volt dispensers. (A2) Check for 120 volts across the red and white wires and the black and white wires, 208 volts across the red and black wires on three wire 120/208 volt dispensers and 240 volts across the red and black wires on 120/240 volt dispensers. (A3) Check for 240 volts across the white and black wires on two wire 240 volt dispenser. (A4) Check for 230 volts across the white and black wires on two wire 230 volt dispensers.
	3. Digital Touch Control Switch	(B) Check circuit breakers or fuses.  Refer to <i>Service</i> - Digital Touch Control Switch for testing procedure. See page 26

## TROUBLESHOOTING (cont.)

PROBLEM	PROBABLE CAUSE	REMEDY
Product will not dispense (cont.)	4. Dispense Solenoid Valve (Hot or Cold)	Refer to <i>Service</i> - Dispense Solenoid Valve for testing procedures. See page 35 or 36
	5. Solenoid Valve (Inlet)	Refer to <i>Service</i> - Solenoid Valve (Inlet) for testing procedures. See page 38
	6. Control Board	Refer to <i>Service</i> - Control Board and Probe for testing procedures. See page 22
	7. Overflow Protection Switch	Refer to <i>Service</i> - Overflow Protection Switch for testing procedures. See page 33
	8. Auger Drive	Refer to <i>Service</i> - Auger Drive. See page 15
	9. Water Strainer	(A) Direction of flow arrow must be pointing towards dispenser.  (B) Remove the strainer and check for obstructions. Clear or replace.
	10. Lime build-up <b>CAUTION</b> - 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.	Inspect the tank assembly for excessive lime deposits. Delime as required.
	11. Rinse cycle not run for 12 hours.	Refer to <i>Operations</i> - Rinse Timer. See page 5
	12. Transformer	Refer to <i>Service</i> - Transformer for test procedures. See page 41
	Water is not hot	1. Limit Thermostat <b>CAUTION</b> - Do not eliminate or bypass limit thermostat. Use only BOM replacement part #29329.1000

## TROUBLESHOOTING (cont.)

### PROBLEM

Water is not hot (cont.)

### PROBABLE CAUSE

2. Control Thermostat

3. Tank Heater

4. Tank Heater Switch

### REMEDY

Refer to *Service* - Control Thermostat for testing procedures. See page 24

Refer to *Service* - Tank Heater for testing procedures. See page 39

Refer to *Service* - Tank Heater Switch for testing procedures. See page 40

Spitting or excessive steaming

1. Lime build-up

**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.

Inspect tank assembly for excessive lime deposits. Delime as required.

2. Control Thermostat

Refer to *Service* - Control Thermostat for testing procedures. See page 24

Dripping from dispense tip

1. Lime build-up

**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.

Inspect the tank assembly for excessive lime deposits. Delime as required.

2. Dispense Solenoid Valve (Hot or Cold)

Remove the dispense solenoid valve and clear any obstructions. Rebuild or replace the valve if necessary. See page 35 or 36

Water flows into tank continuously

1. Control Board

Refer to *Service* - Control Board and Probe for testing procedures. See page 22

2. Solenoid Valve (Inlet)

Refer to *Service* - Solenoid Valve (Inlet) for testing procedures. See page 38

## TROUBLESHOOTING (cont.)

### PROBLEM

### PROBABLE CAUSE

### REMEDY

Water flows into tank continuously (cont.)

3. Overflow Protection Switch

Refer to *Service* - Overflow Protection Switch for testing procedures. See page 33

Product overflows container

1. Digital Touch Control Switch

Refer to *Service* - Digital Touch Control Switch for testing procedures. See page 26

2. Dispense Solenoid Valve (Hot or Cold)

Remove the solenoid valve and clear any obstructions. Rebuild or replace the valve if necessary. See page 35 or 36

3. Dispense time excessive

Refer to *Dispense Run Time* on page 6

Weak product

1. Water temperature

Place an empty container beneath the dispense tip. Initiate a dispense cycle and check the water temperature immediately below the dispense tip with a thermometer.

(A) Reading for mechanical thermostat models should be 180°F to 200°F (see thermostat temperature settings decal in *USER NOTICES* on page 3.

(B) Reading for electronic thermostat should be 185°F to 190°F.

Adjust the control thermostat to increase or decrease the water temperature. Replace if necessary.

2. Whipper Motor

Refer to *Service* - Whipper Motor for testing procedure. See page 28

3. Frother

Refer to *Service* - Frother Components. See page 28

4. Dispense Solenoid Valve (Hot or Cold)

Refer to *Service* - Dispense Solenoid Valve for test procedures. See page 35 or 36

5. Auger Drive

Refer to *Service* - Auger Drive Components. See page 15

6. Auger Spring

Refer to *Service* - Auger Drive Components. See page 15

## TROUBLESHOOTING (cont.)

### PROBLEM

### PROBABLE CAUSE

### REMEDY

Weak product (cont.)

7. Auger Motor

Refer to *Service* - Auger Drive Components. See page 15

8. Rinse/Run Switch

Refer to *Service* - Rinse/Run Switch for test procedures. See page 34

9. Rinse Timer

Refer to *Operations* - Rinse Timer. See page 5

Dispenser is making unusual noises

1. Plumbing Lines

Plumbing lines should not be resting on the counter top.

2. Water Supply

(A) The dispenser must be connected to a cold water line

(B) Water pressure to the dispenser must not exceed 90 psi. Install a regulator if necessary to lower the working pressure to approximately 50 psi.

3. Tank Heater

Remove and clean lime off the tank heater. See page 39

Excess dust

1. Fan

Refer to *Service* - Fan for testing procedures. See page 28

2. Control Board

Refer to *Service* - Control Board for testing procedures. See page 22

Display not lit

1. Lamp

Refer to *Service* - Lamp, see page 32 for lamp replacement.

2. Lamp Holder

Refer to *Service* - Lamp Holder for testing procedures. See page 31

3. Starter - Lamp

Refer to *Service* - Starter for testing procedures. See page 32

4. Ballast

Refer to *Service* - Ballast for testing procedures. See page 21

## TROUBLESHOOTING (cont.)

<b>PROBLEM</b>	<b>PROBABLE CAUSE</b>	<b>REMEDY</b>
Hot water will not dispense	1. Dispense solenoid valve	Refer to <i>Service</i> - Dispense solenoid valve for testing procedures. See page 37
	2. Digital touch control switch	Refer to <i>Service</i> - Digital touch control switch for testing procedures. See page 26
	3. Auxiliary control board	Refer to <i>Service</i> - Auxiliary control board for testing procedures. See page 19
Ready lamp will not light	1. Tank heater switch	Refer to <i>Service</i> - Tank heater switch for testing procedures. See page 40
	2. Control thermostat	Refer to <i>Service</i> - Control thermostat for testing procedures. See page 24
	3. Digital touch control switch	Refer to <i>Service</i> - Digital touch control switch for testing procedures. See page 26
	4. Auxiliary control board	Refer to <i>Service</i> - Auxiliary control board for testing procedures. See page 19
Ready lamp lights constantly	1. Control thermostat	Refer to <i>Service</i> - Control thermostat for testing procedures. See page 24
	2. Auxiliary control board	Refer to <i>Service</i> - Auxiliary control board for testing procedures. See page 19

## SERVICE

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

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

### COMPONENT ACCESS

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

All components are accessible by opening the door, removal of the door panels, dispenser top covers, hoppers, hopper support plate, splash guard, splash panel w/drip tray, lower front access panel, side and rear access covers.

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## AUGER DRIVE COMPONENTS

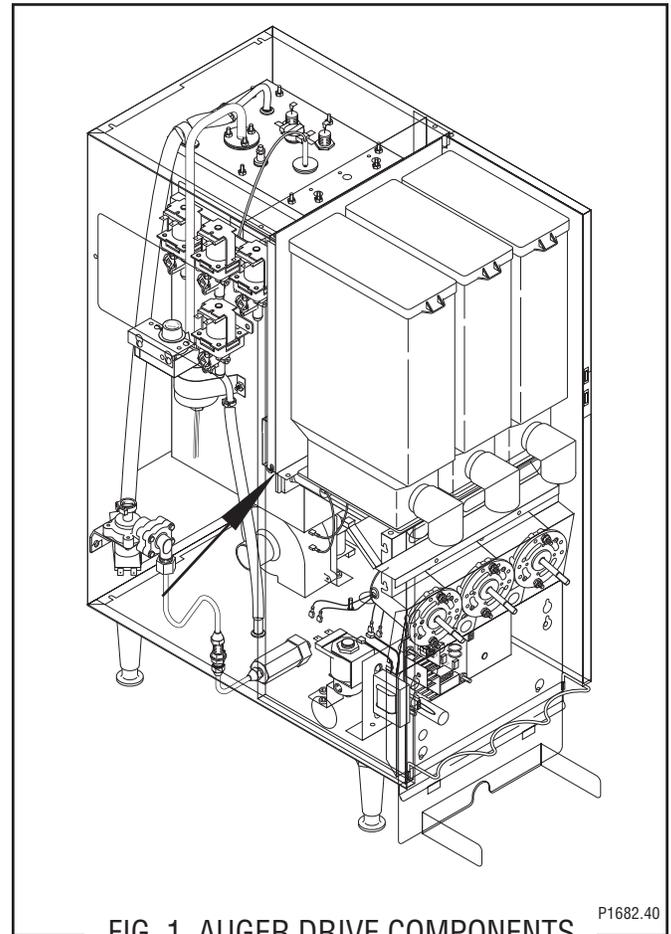


FIG. 1 AUGER DRIVE COMPONENTS

P1682.40

### Location

The auger components are located inside the bottom part of the hopper except for the auger drive bracket, washer and locknut, which are located on the outside bottom rear of the hopper. The auger motors are located on the rear of the auger motor mounting panel. Refer to Fig. 2 for disassembly and assembly.

### Test Procedures - Auger motors

1. Disconnect the dispenser from the power source.
2. Disconnect the wires from the motor to be tested.
3. Check the voltage across the positive (white/blue) wire for the right motor, positive (white/orange) wire for the center motor or the positive (white/red) wire for the left motor and the negative (green) wire with a voltmeter. Connect the dispenser to the power supply. With the rinse/run switch in the run position press the appropriate dispense switch. After a .6 second delay the indication must be 4.0 to 24.5 volts dc.

## SERVICE

### AUGER DRIVE COMPONENTS (CONT.)

4. Disconnect the dispenser from the power supply.

If voltage is present as described and the auger motor does not rotate, replace the auger motor.

If voltage is not present as described, refer to the wiring diagrams and check the dispenser wiring harness.

#### Removal, Cleaning and Replacement

##### Hopper & Auger (Early Models):

1. Open the dispenser door and raise the top front cover.
2. Lift the front edge of hopper assy (20) over the tab on hopper support plate (19) and slide hopper assembly out the front of the dispenser.
3. Remove hopper lid (1) and empty product.
4. Pull off the ejector elbow (13).
5. Remove auger disc assy (2) by pulling agitator support rod (4) towards agitator disc assy and lifting agitator disc assy from hopper (10).
6. Remove auger (12) by pulling it out the front of the hopper (10).
7. Remove auger drive shaft (5) by removing the retaining clip (6) from auger drive shaft.
8. Slide washer (8) and auger drive shaft bracket (7) off of the auger drive shaft (5).
9. Slide auger drive shaft (5) from auger drive shaft bushing (3) and remove from hopper (10).
10. Remove locknut (9) from auger drive shaft bushing (3) and remove auger drive shaft bushing from hopper (10).
11. Wash components in a mild solution of dish detergent using a bristle brush when needed.
12. Rinse and dry each item thoroughly.
13. Check for damaged or broken components, replace any if necessary and reassemble hopper assy.
14. Install hopper assy (20) in the dispenser by sliding hopper assembly in the guides on the hopper locator bracket (21) until the slot in the bottom rear of the hopper seats against the shoulder screw (18) in the hopper support plate.

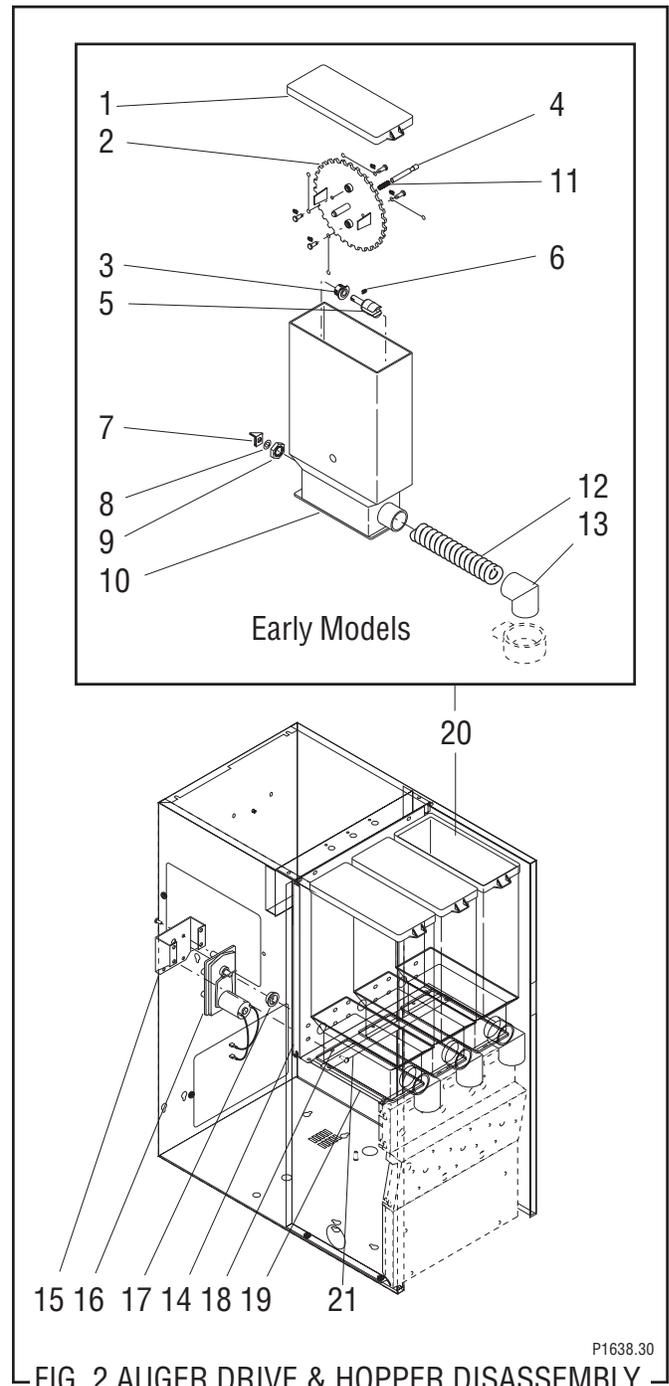


FIG. 2 AUGER DRIVE & HOPPER DISASSEMBLY

- |                              |                                |
|------------------------------|--------------------------------|
| 1. Hopper Lid                | 12. Auger Wire                 |
| 2. Agitator Disc Assy        | 13. Ejector Elbow              |
| 3. Auger Drive Shaft Bushing | 14. Auger Motor Mounting Panel |
| 4. Agitator Support Rod      | 15. Auger Motor Bracket        |
| 5. Auger Drive Shaft         | 16. Auger Motor                |
| 6. Retainer Clip             | 17. Dust Seal                  |
| 7. Auger Drive Bracket       | 18. Shoulder Screw             |
| 8. Washer                    | 19. Hopper Support plate       |
| 9. Locknut                   | 20. Hopper Assy                |
| 10. Hopper                   | 21. Hopper Locator Bracket     |
| 11. Spring                   |                                |

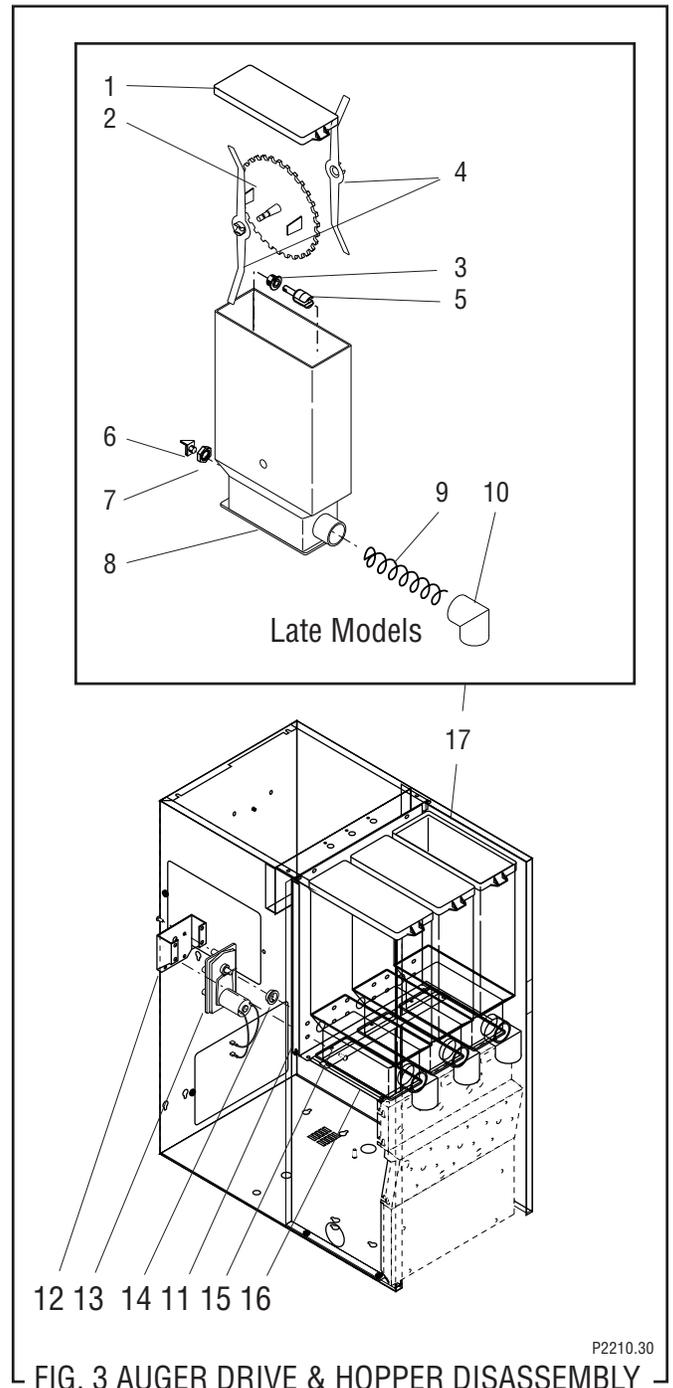
## SERVICE

### AUGER DRIVE COMPONENTS (CONT.)

#### Removal, Cleaning and Replacement:

#### Hopper & Auger (Late Models):

1. Open the dispenser door and raise the top front cover.
2. Lift the front edge of hopper assy (17) over the tab on hopper support plate (16) and slide hopper assembly out the front of the dispenser.
3. Remove hopper lid (1) and empty product.
4. Pull off the ejector elbow (10).
5. Remove agitator disk assy (2) by pushing out on the side of the hopper, rotating the agitator disk assy out of the mounting hubs and lifting the agitator disk assy from the hopper. Remove the mixing blades (4) from the agitator disk by tugging sharply.
6. Remove auger (9) by pulling it out the front of the hopper (8).
7. Remove the auger drive bracket by turning it clockwise while holding the auger drive shaft firmly.
8. Slide auger drive shaft (5) from auger drive shaft bushing (3) and remove from hopper (8).
9. Remove locknut (7) from auger drive shaft bushing (3) and remove auger drive shaft bushing from hopper (8).
10. Wash components in a mild solution of dish detergent using a bristle brush when needed.
11. Rinse and dry each item thoroughly.
12. Check for damaged or broken components, replace any if necessary and reassemble hopper assembly.
13. Install hopper assy (17) in the dispenser by sliding hopper assy in the guides on the hopper support plate (16) until the slot in the bottom rear the hopper seats against the shoulder screw (15) in the hopper support plate.



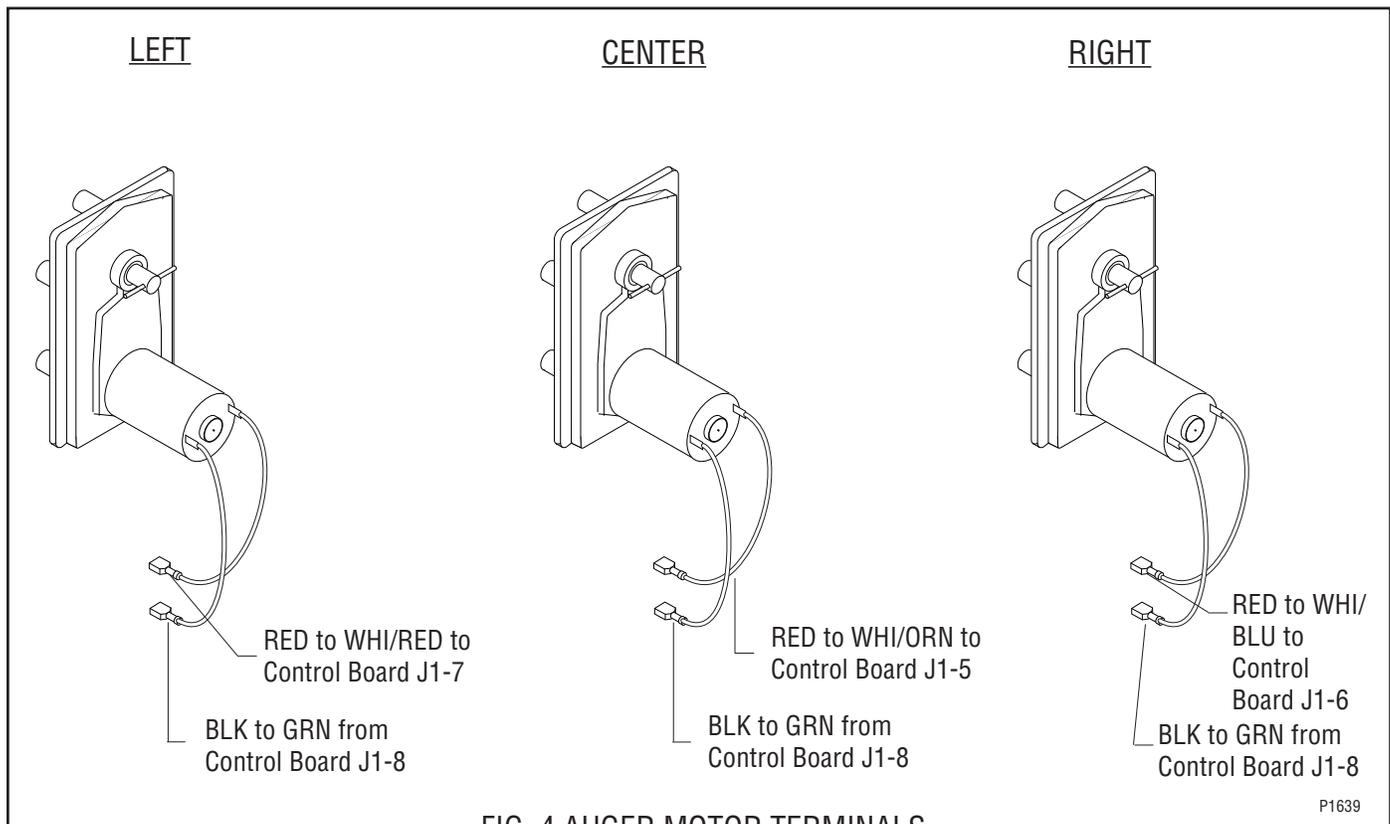
- |                              |                                |
|------------------------------|--------------------------------|
| 1. Hopper Lid                | 9. Auger Wire                  |
| 2. Agitator Disk Assy        | 10. Ejector Elbow              |
| 3. Auger Drive Shaft Bushing | 11. Auger Motor Mounting Panel |
| 4. Mixing Blade              | 12. Auger Motor Bracket        |
| 5. Auger Drive Shaft         | 13. Auger Motor                |
| 6. Auger Drive Bracket       | 14. Dust Seal                  |
| 7. Locknut                   | 15. Shoulder Screw             |
| 8. Hopper                    | 16. Hopper Support plate       |
|                              | 17. Hopper Assembly            |

## SERVICE (cont.)

### AUGER DRIVE COMPONENTS (cont.)

#### Auger Drive Motor (Refer to Figs. 2 & 3)

1. Remove all hopper assemblies (20) and set aside for reassembly.
2. Remove the four #8-32 screws securing the hopper support plate (19), and hopper locator bracket (21) remove plate and bracket and set aside for reassembly.
3. Remove the four #8-32 locking screws, located inside the dispenser housing on the front of the auger motor mounting panel (14), securing auger motor mounting bracket (15) and auger motor (16) to the rear of the auger motor mounting panel (14).
4. Disconnect the wires from the auger motor (16) to be removed.
5. Remove auger motor mounting bracket (15), auger motor (16) and dust seal (17) as an assembly.
6. Remove dust seal (17) from auger motor (16).
7. Remove the four #8-32 screws securing the auger motor to the auger motor mounting bracket.
8. Remove auger motor and discard.
9. Using four #8-32 screws, install new auger motor (16) on mounting bracket (15).
10. Install dust seal (17) on auger motor shaft.
11. Using four #8-32 locking screws install auger motor, dust seal and mounting bracket to the rear of the auger motor mounting panel (14)
12. Reconnect the wires to the terminals on the auger motor.
13. Install hopper support plate (19), hopper locator bracket (21) and all hopper assemblies (20).
14. Refer to Fig. 4 when reconnecting wires.



## SERVICE (cont.)

### AUXILIARY CONTROL BOARD

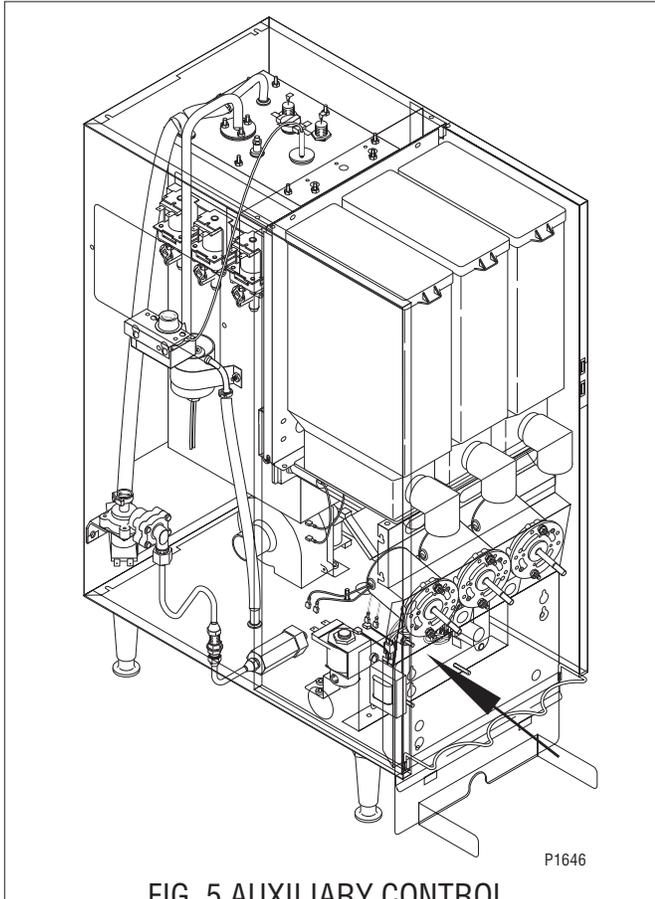


FIG. 5 AUXILIARY CONTROL BOARD

#### Location:

The auxiliary control board is located behind the lower front access cover, mounted on the rear side of the component bracket.

#### Hot Water Dispense

##### Test Procedure:

1. Disconnect the dispenser from the power source.
2. Disconnect the three pin connector from J1 of the auxiliary control board.
3. With a voltmeter, and using the component mounting bracket as a reference (-), check for voltage at pin 1 (red wire) of J1. Connect the dispenser to the power source. The indication must be approximately 37 volts dc.
4. Disconnect the dispenser from the power source.

If voltage is present as described, proceed to step 5. If voltage is not present as described, refer to the wiring diagram and check the dispenser wiring harness.

5. Reconnect the three pin connector of the wiring harness to J1 of the auxiliary control board.
6. Disconnect the six pin connector from J2 of the auxiliary control board.
7. Check the voltage across pins 2 (black wire) and 5 (white wire) of the six pin connector on the wiring harness with a voltmeter. Connect the dispenser to the power source. The indication must be:
  - a) 120 volts ac for two wire 120 volt models
  - b) 120 volts ac for three wire 120/208 or 120/240 volt models
  - c) 240 volts ac for two wire 240 volt models.
  - d) 230 volts ac for two wire 230 volt models.
8. Disconnect the dispenser from the power source.

If voltage is present as described, proceed to step 9. If voltage is not present as described, refer to the wiring diagram and check the dispenser wiring harness.

9. Check the voltage across the terminals of the hot water dispense solenoid with a voltmeter. Connect the dispenser to the power source. Press the hot water dispense switch. The indication must be:
  - a) 120 volts ac for two wire 120 volt models
  - b) 120 volts ac for three wire 120/208 or 120/240 volt models
  - c) 240 volts ac for two wire 240 volt models.
  - d) 230 volts ac for two wire 230 volt models.
10. Disconnect the dispenser from the power source.

If voltage is present as described the hot water dispense circuitry is operating properly. If voltage is not present as described, replace the auxiliary control board.

#### Ready Light Circuit

##### Test Procedure:

1. Disconnect the dispenser from the power source.
2. Disconnect the three pin connector from J1 of the auxiliary control board.
3. With a voltmeter, and using the component mounting bracket as a reference (-), check for voltage at pin 1 (red wire) of J1. Connect the dispenser to the power source. The indication must be approximately 37 volts dc.
4. Disconnect the dispenser from the power source.

If voltage is present as described, proceed to step 5. If voltage is not present as described, refer to the wiring diagram and check the dispenser wiring harness.

## SERVICE (cont.)

### AUXILIARY CONTROL BOARD (cont.)

- On the dispenser whipper panel, ensure that the tank heater switch is in the "ON" (lower) position.
- Disconnect the black wire coming from the control thermostat from the limit thermostat.
- Remove the control thermostat bulb from the tank.
- Remove the six pin connector from J2 of the auxiliary control board.
- With a voltmeter, and using pin 5 as a reference, check for voltage, in turn, at pin 3 and pin 6 of the six pin connector of the wiring harness. Connect the dispenser to the power source. The indication must be :
  - 120 volts ac for two wire 120 volt models
  - 120 volts ac for three wire 120/208 or 120/240 volt models
  - 240 volts ac for two wire 240 volt models.
  - 230 volts ac for two wire 230 volt models.
- Disconnect the dispenser from the power source.

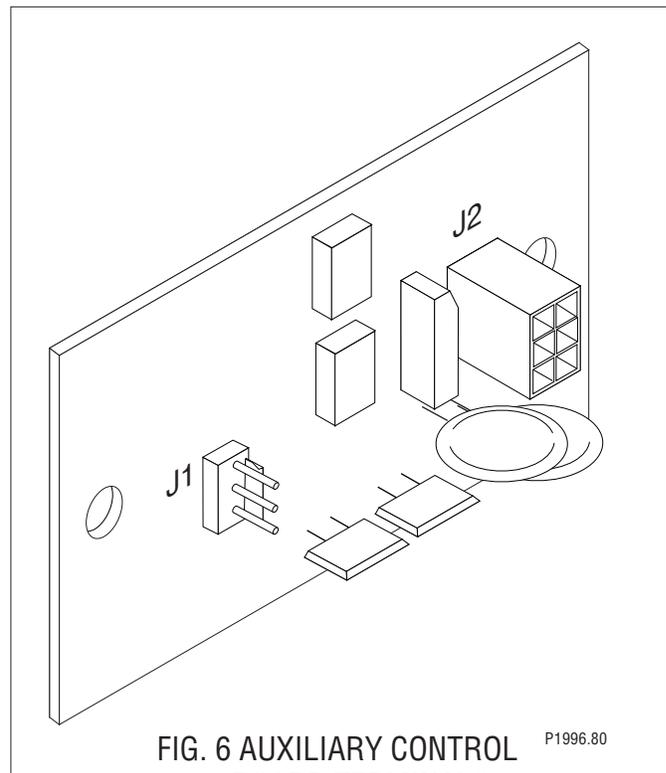
If voltage is present as described, proceed to step 11. If voltage is not present as described, refer to the wiring diagram and check the dispenser wiring harness.

- Reconnect the black wire coming from the control thermostat to the limit thermostat.
- Re-install the control thermostat bulb.
- Noting the starting position of the control thermostat knob, adjust the control thermostat knob counter-clockwise until a click is heard.
- With a voltmeter, check for voltage between pins 3 and 6 of the six pin connector of the wiring harness. Connect the dispenser to the power source. The indication must be:
  - 120 volts ac for two wire 120 volt models
  - 208 volts ac for three wire 120/208 or 240 volts ac for three wire 120/240 volt models
  - 240 volts ac for two wire 240 volt models.
  - 230 volts ac for two wire 230 volt models.
- Disconnect the dispenser from the power source. Return the control thermostat knob to the starting position.

If voltage is present as described, replace the auxiliary control board. If voltage is not present as described, refer to the wiring diagram and check the dispenser wiring harness.

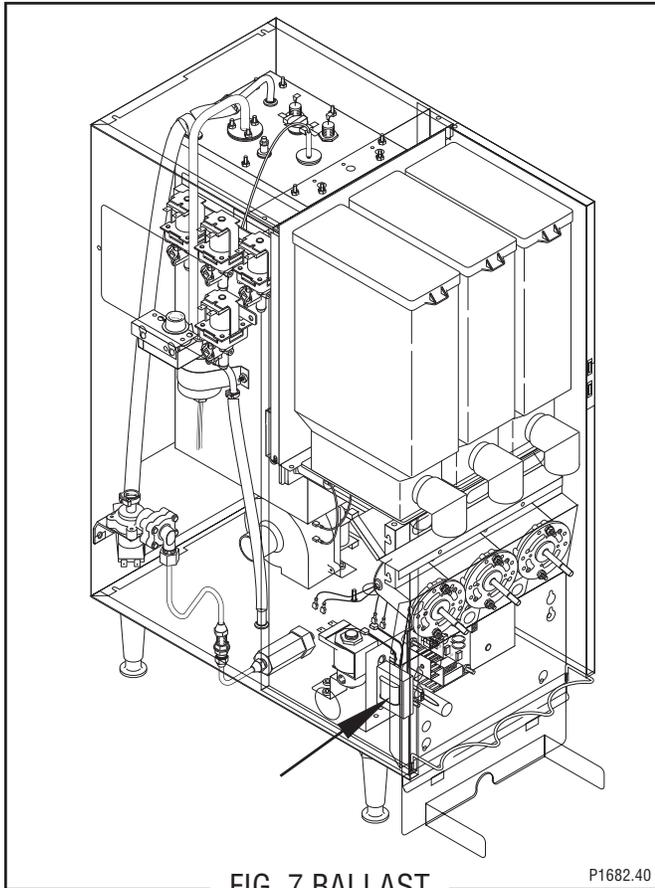
### Removal and Replacement:

- Loosen the two #8-32 screws securing the component mounting bracket to the dispenser housing.
- Slide the component mounting bracket forward until the screw heads align with the large diameters of the keyhole openings.
- Lift the component mounting bracket, and pull it through the lower access panel opening.
- Disconnect the two plugs on the main wiring harness from the connectors on the auxiliary control board.
- Remove the two #6-32 keps nuts securing the auxiliary control board to the component mounting bracket.
- Remove the auxiliary control board.
- Remove the two snap-in stand-offs from the auxiliary control board and install them in the new auxiliary control board. Discard the old auxiliary control board.
- Install the new auxiliary control board using the two #6-32 keps nuts.
- Reconnect the two plugs on the main wiring harness to the connectors on the auxiliary control board.
- Replace the component mounting bracket and tighten the two #8-32 screws.



## SERVICE (cont.)

### BALLAST



#### Location

The front door lamp ballast is located behind the front access panel on the left side of the component bracket.

#### Test Procedure

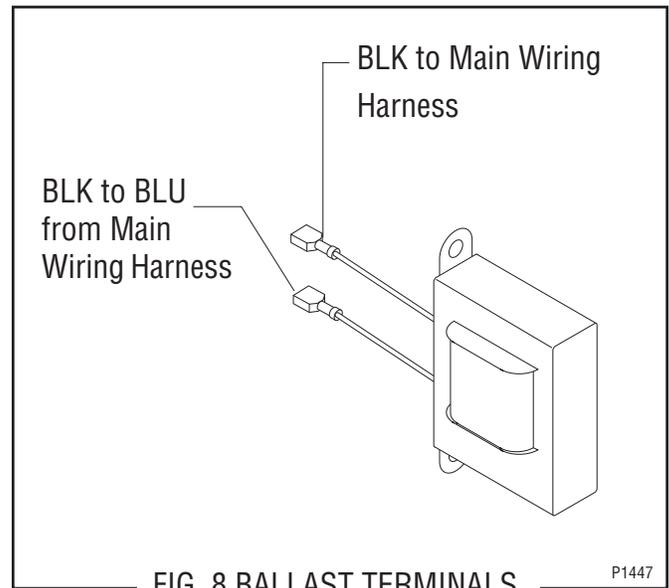
1. Disconnect the dispenser from the power source.
2. Disconnect the two black leads on the ballast from the dispenser main harness.
3. Check for continuity between the two black leads on the ballast.

If continuity is present as described the ballast is operating properly.

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

#### Removal and Replacement

1. Disconnect the wires from the ballast.
2. Remove the two #8-32 screws securing the ballast to the component bracket.
3. Remove and discard ballast.
4. Install new ballast using two #8-32 screws to secure ballast to the component bracket..
5. Refer to Fig. 8 when reconnecting the wires.



## SERVICE (cont.) CONTROL BOARD

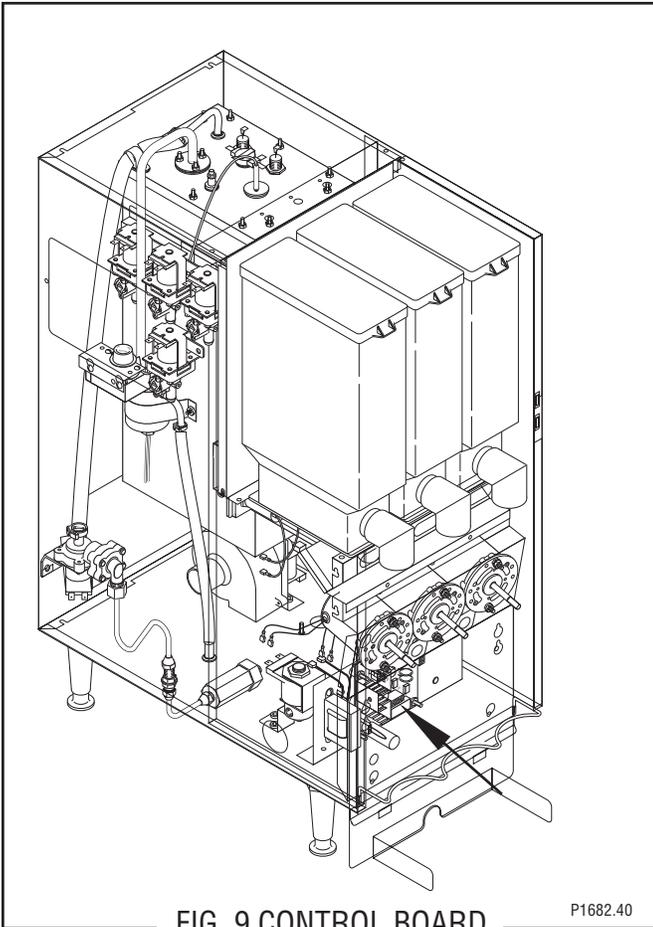


FIG. 9 CONTROL BOARD

### Location:

The Control Board is located behind the lower front access cover mounted on the component bracket.

### Test Procedure:

#### Liquid Level Control Circuitry:

1. Disconnect the dispenser from the power source.
2. Disconnect the eight pin connector from J1 of the control board.
3. With a voltmeter check the voltage across pins 1 & 2 of the eight pin connector on the wiring harness. Connect the dispenser to the power source. The indication must be 24 volts ac.
4. Disconnect the dispenser from the power source.

If voltage is present as described, proceed to step 5. If voltage is not present as described, refer to the wiring diagram and check the dispenser wiring harness.

5. Reconnect the eight pin connector of the wiring harness to J1 of the control board.

6. Disconnect the six pin connector from J2 of the control board.
7. With a voltmeter check the voltage across pins 2 & 4 of the six pin connector on the wiring harness. Connect the dispenser to the power source. The indication must be:
  - a) 120 volts ac for two wire 120 volt models
  - b) 120 volts ac for three wire 120/208 volt models or three wire 120/240 volt models
  - c) 240 volts ac for two wire 240 volt models.
  - d) 230 volts ac for two wire 230 volt models.
8. Disconnect the dispenser from the power source.

If voltage is present as described, proceed to step 9. If voltage is not present as described, refer to the wiring diagram and check the dispenser wiring harness.

9. Reconnect the six pin connector of the wiring harness to J2 of the control board.
10. Disconnect the eight pin connector from J1 of the control board.
11. Carefully connect a piece of insulated jumper wire to pin 3 (third from left on top row) of J1 on the control board. Keep the other end of this wire away from any metal surfaces of the dispenser.
12. With a voltmeter check the voltage across the terminals of the inlet solenoid valve. Connect the dispenser to the power source. After a 10 second delay, the indication must be :
  - a) 120 volts ac for two wire 120 volt models.
  - b) 120 volts ac for three wire 120/208 or 120/240 volt models.
  - c) 240 volts ac for two wire 240 volt models.
  - d) 230 volts ac for two wire 230 volt models.
13. Touch the free end of the jumper wire to the dispenser housing. The indication must be 0.
14. Move the jumper wire away from the housing. After a 5 second delay, the indication must, again, be:
  - a) 120 volts ac for two wire 120 volt models.
  - b) 120 volts ac for three wire 120/208 or 120/240 volt models.
  - c) 240 volts ac for two wire 240 volt models.
  - d) 230 volts ac for two wire 230 volt models.
15. Disconnect the dispenser from the power source and remove the jumper wire.

## **SERVICE (cont.)**

### **CONTROL BOARD (cont.)**

If voltage is present as described, proceed to step 16. If the voltage is not present as described, replace the control circuit board.

16. Reconnect the eight pin connector of the wiring harness to J1 of the control board.
17. Gently pull the liquid level probe out of the tank lid and inspect for corrosion. Replace it if necessary.
18. Place the probe so that neither end is in contact with any metal surface of the dispenser.
19. With a voltmeter check the voltage across the terminals of the inlet solenoid valve. Connect the dispenser to the power source. After a 10 second delay, the indication must be :
  - a) 120 volts ac for two wire 120 volt models.
  - b) 120 volts ac for three wire 120/208 or 120/240 volt models.
  - c) 240 volts ac for two wire 240 volt models.
  - d) 230 volts ac for two wire 230 volt models.
20. Move the probe's flat end to the dispenser housing. The indication must be 0.
21. Move the probe's flat end away from the housing. After a 5 second delay, the indication must, again, be:
  - a) 120 volts ac for two wire 120 volt models.
  - b) 120 volts ac for three wire 120/208 or 120/240 volt models.
  - c) 240 volts ac for two wire 240 volt models.
  - d) 230 volts ac for two wire 230 volt models.
22. Disconnect the dispenser from the power source.

If the voltage is present as described, re-install the probe. The liquid level control circuitry is operating properly.

If the voltage is not present as described, check the pink probe wire and green tank wire for continuity and overflow protection switch (page 33).

#### Hopper Motor Control Circuitry:

1. Disconnect the dispenser from the power source.
2. Disconnect the eight pin connector from J1 of the control board.
3. With the voltmeter check the voltage across pins 1 & 2 of the eight pin connector on the wiring harness. Connect the dispenser to the power source. The indication must be 24 volts ac.
4. Disconnect the dispenser from the power source.

If voltage is present as described, proceed to step 5. If voltage is not present as described, refer to the wiring diagram and check the dispenser wiring harness.

5. Reconnect the eight pin connector of the wiring harness to J1 of the control board.
6. Check that the "Rinse/Run" switch is in the "Run" position.
7. With a voltmeter check the voltage across the red (+) terminal and the black (-) terminal of the auger motor. Connect the dispenser to the power source. Press the appropriate dispense switch. After a delay of about .6 seconds, the indication must be between +4.0 and +24.5 volts dc.

If the voltage is present as described, the hopper motor control circuitry is operating properly.

If the voltage is not present as described, replace the control circuit board.

#### Whipper Motor and Dispense Solenoid Circuitry:

1. Disconnect the dispenser from the power source.
2. Disconnect the eight pin connector from J1 of the control board.
3. With a voltmeter check the voltage across pins 1 & 2 of the eight pin connector on the wiring harness. Connect the dispenser to the power source. The indication must be 24 volts ac.
4. Disconnect the dispenser from the power source.

If voltage is present as described, proceed to step 5. If voltage is not present as described, refer to the wiring diagram and check the dispenser wiring harness.

5. Reconnect the eight pin connector of the wiring harness to J1 of the control board.
6. Check that the RINSE/RUN switch is in the "Rinse" position.
7. Disconnect the six pin connector from J2 of the control board.
8. With a voltmeter check the voltage across pins 2 & 4 of the six pin connector on the wiring harness. Connect the dispenser to the power source. The indication must be:
  - a) 120 volts ac for two wire 120 volt models
  - b) 120 volts ac for three wire 120/208 or 120/240 volt models
  - c) 240 volts ac for two wire 240 volt models.
  - d) 230 volts ac for two wire 230 volt models.

## SERVICE (cont.)

### CONTROL BOARD (cont.)

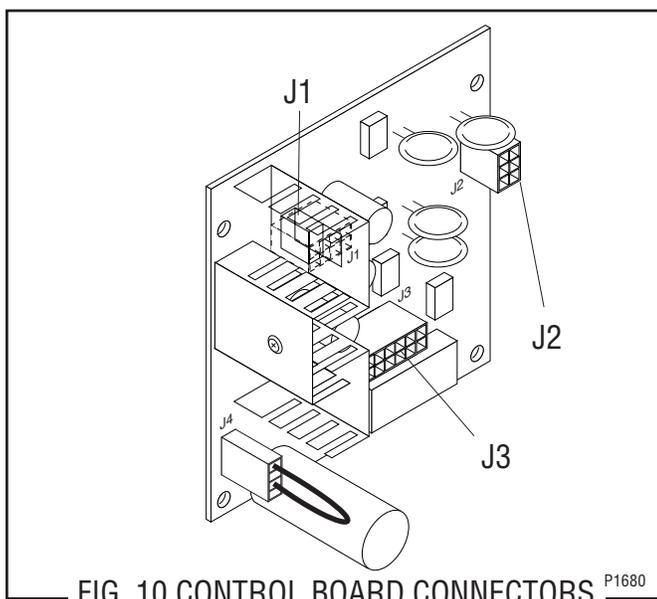
9. Disconnect the dispenser from the power source.
10. With a voltmeter check the voltage across the terminals of the appropriate dispense solenoid. Connect the dispenser to the power source. Press the appropriate dispense switch. The indication must be :
  - a) 120 volts ac for two wire 120 volt models
  - b) 120 volts ac for three wire 120/208 or 120/240 volt models
  - c) 240 volts ac for two wire 240 volt models.
  - d) 230 volts ac for two wire 230 volt models.

If the voltage is present as described, the whipper motor and dispense solenoid control circuitry is operating properly.

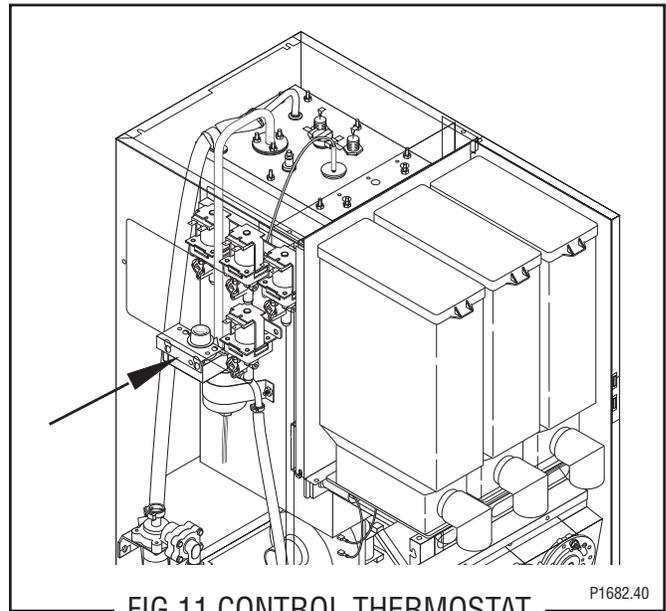
If the voltage is not present as described, replace the control circuit board.

#### Removal and Replacement:

1. Disconnect the three plugs on the main wiring harness from the connectors on the control board.
2. Remove the four #6-32 keps nuts securing the control board to the component bracket.
3. Remove control board and discard.
4. Install new control board on the component bracket using four #6-32 keps nuts.
5. Reconnect the three plugs on the main harness to the connectors on the control board.



### CONTROL THERMOSTAT



#### Location

The control thermostat (mechanical or electronic) is located inside the dispenser on the upper left side of the housing.

#### Test Procedure

##### Mechanical Thermostat

1. Disconnect the dispenser from the power source.
2. Disconnect the black wire of the control thermostat from the black lead from the limit thermostat.
3. Remove bulb from the tank.
4. With a voltmeter check the voltage across black wire on the control thermostat and the white or red wire on the tank heater with the tank heater switch in the "ON" lower position. Connect the dispenser to the power source. The indication must be:
  - a) 120 volts ac for two wire 120 volt models.
  - b) 208 volts ac for three wire 120/208 volt models.
  - c) 240 volts ac for two wire 240 volt models and three wire 120/240 volt models.
  - d) 230 volts ac for two wire 230 volt models.
5. Disconnect the dispenser from the power source.

If voltage is present as described the control thermostat is operating properly. Reinstall bulb into the tank. If voltage is not present as described, replace the thermostat.

## SERVICE (cont.)

### CONTROL THERMOSTAT (cont.)

#### Electronic Thermostat (Optional)

1. Disconnect the dispenser from the power source.
2. Disconnect the black wire of the control thermostat from the black wire from the limit thermostat.
3. Remove temperature probe from the tank.
4. With a voltmeter check the voltage across the black wire from the control thermostat and the white wire on the tank heater with the tank heater switch in "ON" (lower) position. Connect the dispenser to the power source. The indication must be 120 volts ac for two wire 120 volt models.

If voltage is present as described the control thermostat is operating properly. Reinstall temperature probe into the tank.

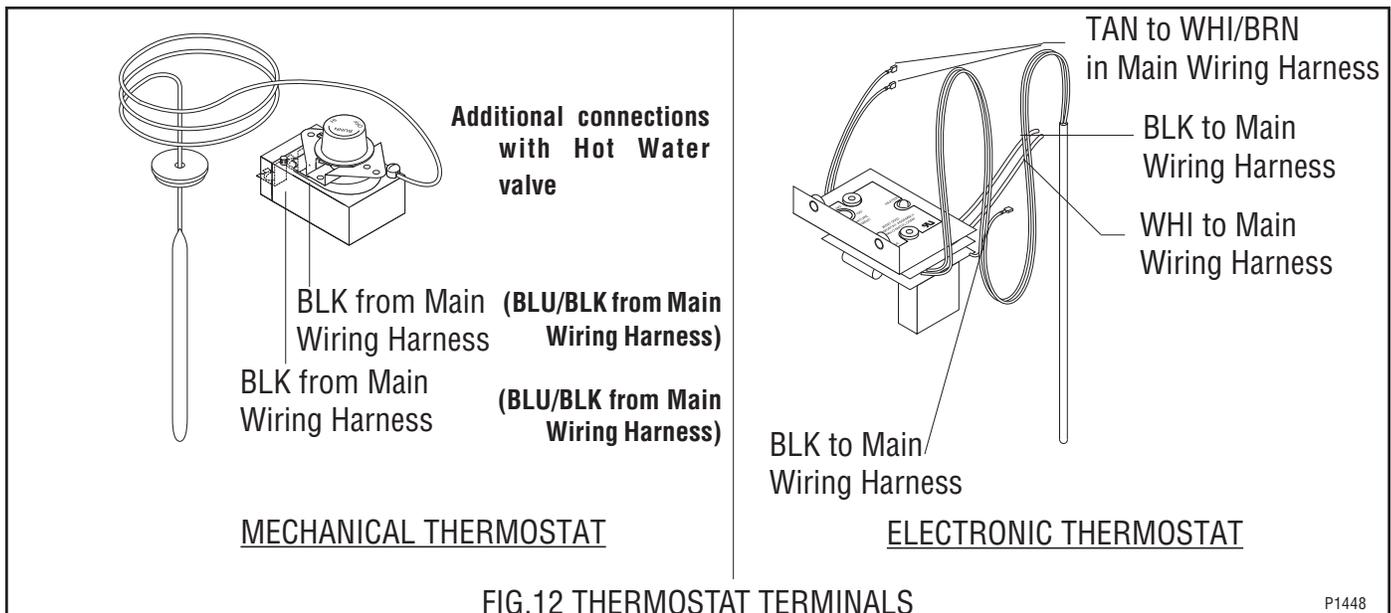
If voltage is not present as described, replace the control thermostat.

#### Removal and Replacement.

1. Disconnect the wires from the thermostat.
2. Remove the thermostat capillary bulb/temperature probe by firmly pulling-up on the capillary/probe grommet at the tank lid.

3. Loosen the two #8-32 screws securing the thermostat bracket to the upper left rear of the dispenser housing.
4. Remove thermostat bracket and thermostat as an assembly.
5. Install the new thermostat and bracket inside the dispenser housing on the upper left rear side and tighten the two #8-32 screws.
- 6A. (Mechanical thermostat only) Slide the grommet to the line 4.5" above the bulb on the new capillary tube.
- 6B. (Electronic thermostat only) Slide the grommet to the bottom of the grounding clip on the wired end of the probe.
7. Insert the capillary bulb/temperature probe 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.
8. Carefully bend the capillary tube so that the tube and bulb inside the tank are in the vertical position and away from any electrical connections (mechanical thermostat only).
9. Refer to Fig. 12 and reconnect the wires.

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



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## SERVICE (cont.)

### DIGITAL TOUCH CONTROL SWITCH

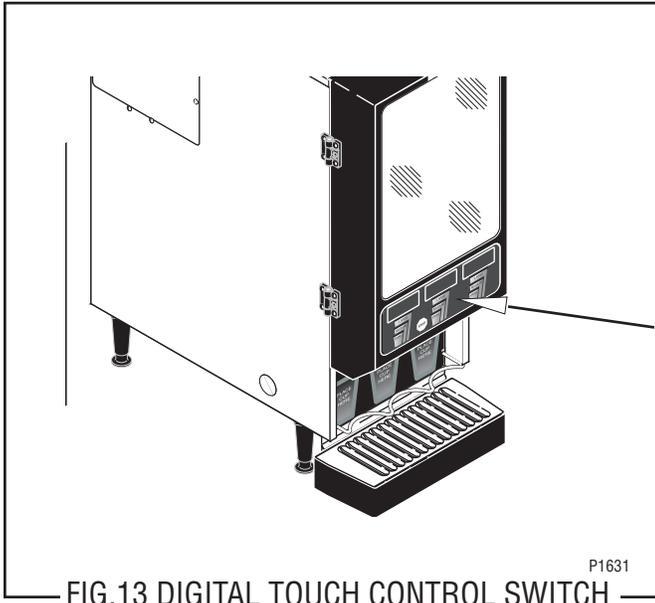


FIG.13 DIGITAL TOUCH CONTROL SWITCH

#### Location:

The digital touch control switch is located on the lower outside of the dispenser door.

#### Test Procedure:

1. Disconnect the dispenser from the power source.
2. Open dispenser door and remove the bottom door cover.
3. Disconnect the wires from the door interconnect wiring harness to the digital touch control switch assembly.
4. With a voltmeter, and using pin 1 (green/black wire) of the multi-pin connector of the door interconnect wiring harness as a reference (-), check for voltage at each of the following pins of the connector: pin 2 (red/white wire), pin 3 (red wire), pin 4 (black wire), pin 5 (white/black wire), pin 6 (orange wire), pin 7 (blue/white wire), and pin 8 (blue/black wire). Connect the dispenser to the power source. The indication must be +5 volts dc. If the dispenser does not have a hot water valve, skip to #6.

5. On dispensers with a hot water valve only, with a voltmeter, and using pin 1 (green/black wire) of the multi-pin connector of the door wiring harness as a reference (-), check for voltage at pin 13 (blue/red wire). Connect the dispenser to the power source. The indication must be approximately 37 volts dc.
6. Disconnect the dispenser from the power source.

If voltage is present as described, proceed to step 6. If voltage is not present as described, refer to the wiring diagram and check the dispenser wiring harness.

7. While pressing the appropriate switch, check for continuity across the following pins of the digital touch control switch assembly's multi-pin connector:

**Note:** Pin 1 of the connector is identified by an arrow embossed on the connector housing.

Left Small : pin 1 to pin 2

Left Medium: pin 2 to pin 3

Left Large: pin 1 to pin 3

Stop: pin 1 to pin 4

Center Small: pin 1 to pin 5

Center Medium: pin 5 to pin 6

Center Large: pin 1 to pin 6

Right Small: pin 1 to pin 7

Right Medium: pin 7 to pin 8

Right Large: pin 1 to pin 8

Hot Water: pin 1 to pin 13

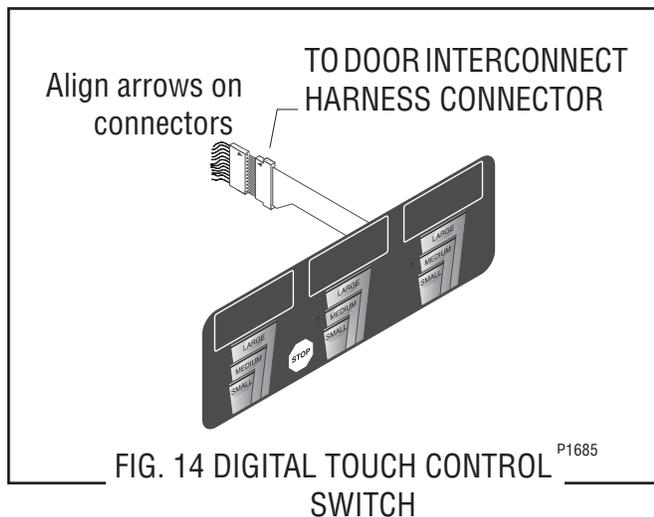
If continuity is present as described, the membrane switch assembly is operating properly. If continuity is not present as described, replace the membrane switch assembly.

## SERVICE (cont.)

### DIGITAL TOUCH CONTROL SWITCH (cont.)

#### Removal and Replacement:

1. Open the dispenser door.
2. Remove the five #6-32 screws securing the bottom door cover and remove cover.
3. Disconnect the wires on the dispense switch to be removed from the door interconnect wiring harness.
4. From inside the door gently push the switch away from the door and discard.
5. Remove the paper from the adhesive backing on the switch and feed the ribbon cable on the back of switch through the slot in the door.
6. Firmly press the new switch into the opening on the door to hold the switch in the door.
7. Reconnect the wires to the dispense switch from door interconnect wiring harness.
8. Reinstall the door bottom cover using five #6-32 screws.
9. Refer to Fig. 14 when reinstalling wires.



## SERVICE (cont.)

### FAN

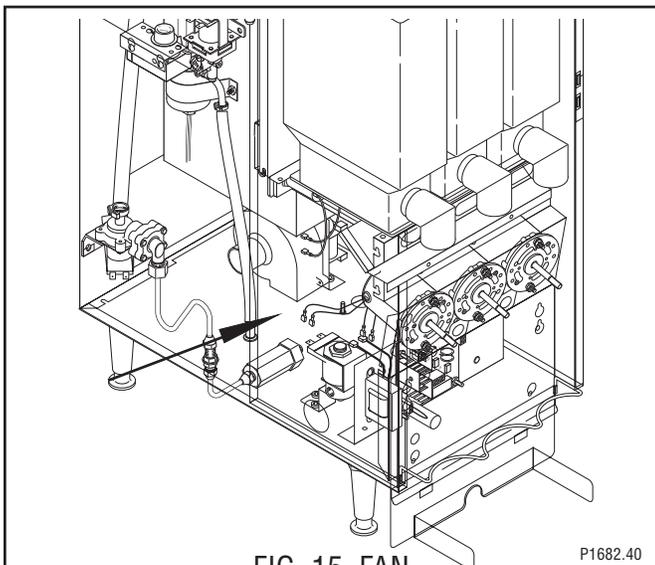


FIG. 15 FAN

#### Location:

The fan is located inside the dispenser housing on the right rear of the dispenser base plate.

#### Test Procedures:

1. Disconnect the dispenser from the power source.
2. Disconnect the black and white wires from the fan terminals.
3. Check the voltage across the black and white wires with a voltmeter. Connect the dispenser to the power source. The indication must be:
  - a) 120 volts ac for two wire 120 volts models.
  - b) 120 volts ac for three wire 120/208 or 120/240 volt models.
  - c) 240 volts ac for two wire 240 volt models.
  - d) 230 volts ac for two wire 230 volt models.

If voltage is present as described, replace the fan.  
If voltage is not present as described, refer to wiring diagram and check the dispenser wiring harness.

#### Removal and Replacement:

1. Disconnect the vacuum hose from the fan.
2. Remove the two #8-32 locking screws securing the fan to the dispenser housing base plate.
3. Disconnect the wires from the fan terminals and discard the fan.
4. Refer to Fig.16 and connect the wires to the new fan.
5. Install new fan through the rear access hole and secure to the dispenser housing base plate using two #8-32 locking screws.
6. Reconnect the vacuum hose to the fan.

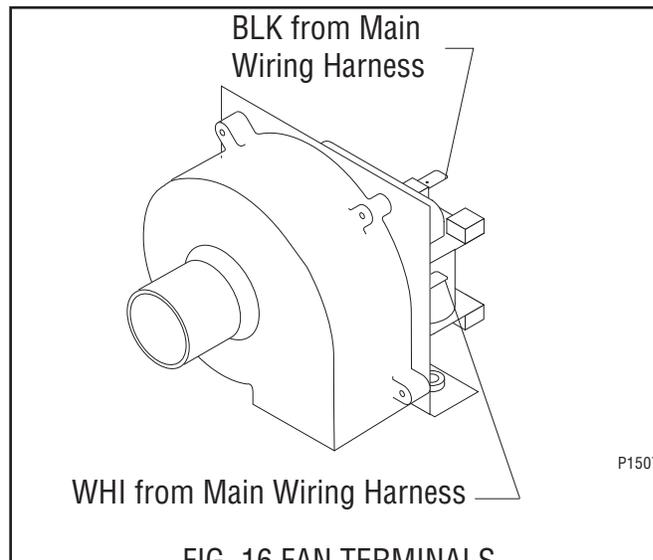


FIG. 16 FAN TERMINALS

### FROTHER AND WHIPPER MOTOR

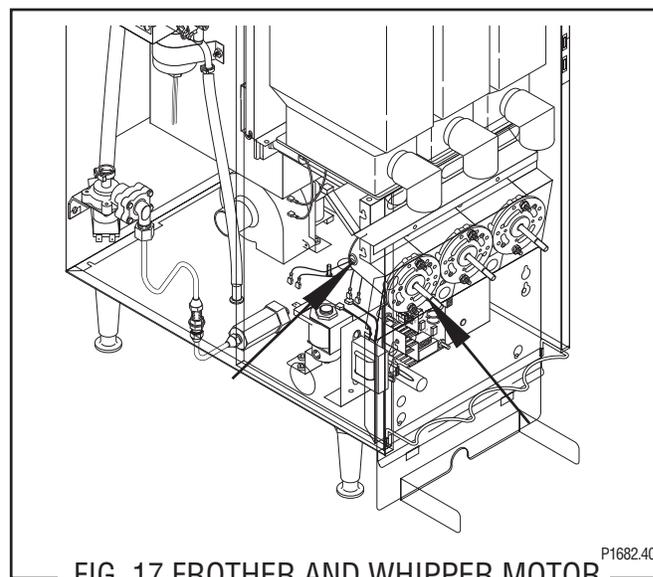


FIG. 17 FROTHER AND WHIPPER MOTOR

#### Location:

The frothers are located behind the dispenser door, mounted on the whipper motor shaft inside the whipper chamber.

The whipper motors are located on the back side of the whipper motor mounting panel.

#### Test Procedure:

1. Check that the "Rinse/Run" switch is in the "Rinse" (upper) position.
2. Disconnect the dispenser from the power source.
3. Disconnect the white/violet and white wires on the right motor, orange and white wires on the center motor or the red and white wires on the left motor from the black leads on the motors.

## SERVICE (cont.)

### FROTHER AND WHIPPER MOTOR (cont.)

- Press and hold the appropriate dispense switch and check the voltage across the disconnected harness wires with a voltmeter. Connect the dispenser to the power source. The reading must be:
  - 120 volts ac for two wire 120 volt models.
  - 120 volts ac for three wire 120/208 or 120/240 volt models.
  - 240 volts ac for two wire 240 volt models.
  - 230 volts ac for two wire 230 volt models.
- Disconnect the dispenser from the power source.

If voltage is present as described, replace the motor. If voltage is not present as described, refer to the wiring diagrams and check the dispenser wiring harness.

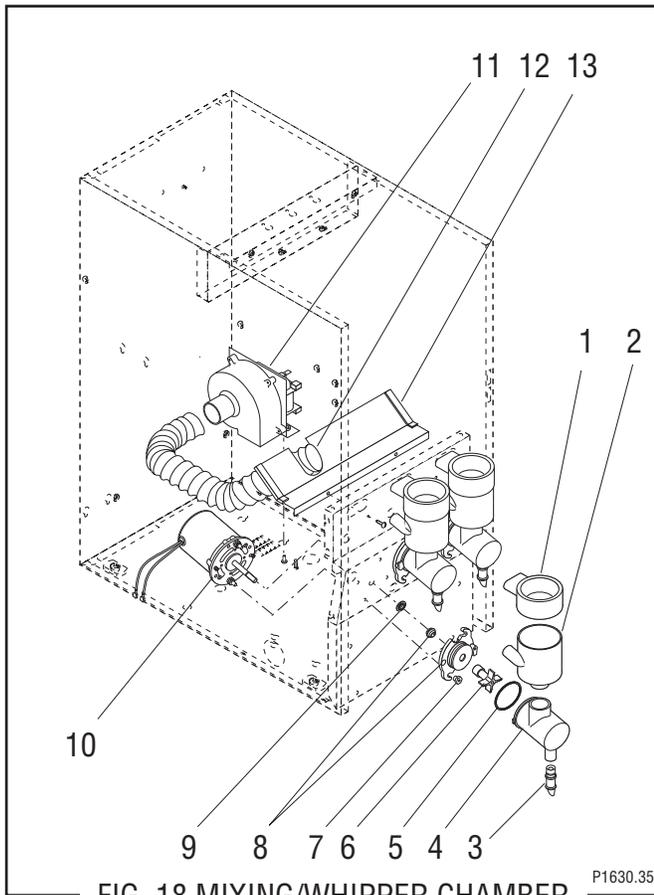


FIG. 18 MIXING/WHIPPER CHAMBER COMPONENTS

P1630.35

- |                    |                      |
|--------------------|----------------------|
| 1. Steam Collector | 8. Receptacle w/Seal |
| 2. Mixing Chamber  | 9. Slinger           |
| 3. Dispense Tip    | 10. Motor Assy.      |
| 4. Whipper Chamber | 11. Fan              |
| 5. O-Ring          | 12. Vacuum Hose      |
| 6. Frother         | 13. Baffle           |
| 7. Nut             |                      |

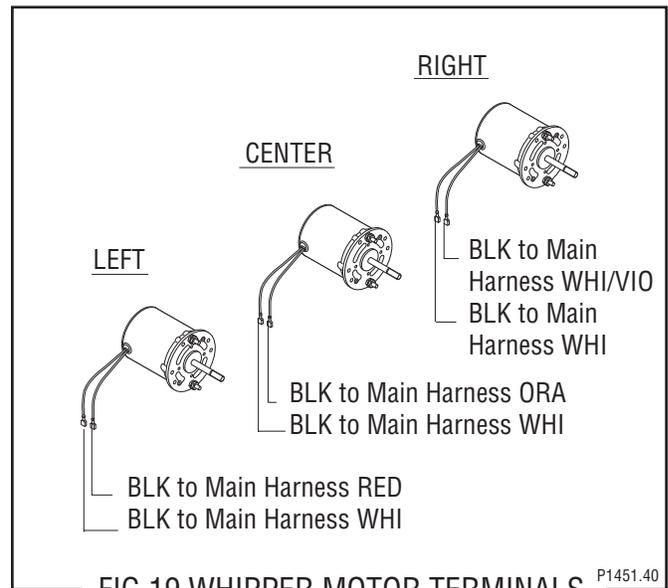
### Removal, Cleaning and Replacement (Refer to Fig. 18):

- Open the dispenser door and raise the top front cover.
- Lift the front edge of the each hopper assembly over the tab on the hopper support panel and slide each hopper assembly out the front of the dispenser. Set aside for reassembly.
- Remove the four #8-32 screws securing the hopper support panel to auger motor mounting panel and the whipper motor mounting panel. Set aside for reassembly.
- Disconnect vacuum hose (12) from fan baffle (13).
- Remove the steam collector (1) by pulling it forward and at the same time twisting it clockwise.
- Pull the mixing chamber (2) out of the whipper chamber (4).
- Remove the two #4-40 x .25" screws securing the fan baffle (13) to the whipper motor mounting panel and remove fan baffle. Set aside for reassembly.
- Remove dispense tip (3) and twist the whipper chamber (4) clockwise and pull it off the whipper chamber receptacle (8).
- Pull the frother (6) off the motor shaft. Notice the flat side on the shaft and the matching flat inside the frother. It is important that these two flats are lined up when reassembling.
- Slip the O-ring (5) off the whipper chamber receptacle (8).
- To remove the receptacle rotate clockwise until the receptacle clears the nuts (7) and slide off of the motor shaft.
- Slide the slinger (9) off of the motor shaft.
- Remove the two nuts (7) securing whipper motor (10) to the front panel.
- Disconnect the black leads on the motor (10) from the main wiring harness.
- Remove motor and discard.
- Install new motor (10) on rear of front panel and secure with two nuts (7) and connect black leads on the motor to the main wiring harness. Refer to Fig. 18 when reconnecting wires
- Slide slinger (9) onto the motor shaft flush against the front panel.
- Wash remaining components in a mild solution of dish detergent using a bristle brush.
- Rinse thoroughly and allow to dry before reinstalling in the dispenser.

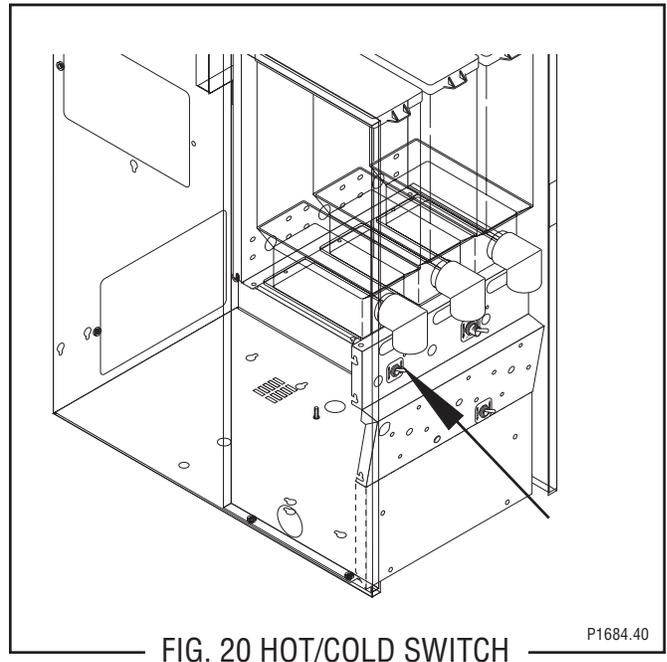
## SERVICE (cont.)

### FROTHER AND WHIPPER MOTOR (cont.)

20. Slide whipper chamber receptacle w/seal (8) and O-ring (5) on to the motor shaft.
21. Rotate the receptacle w/seal (8) counterclockwise until it snaps into place on the motor mounting nuts (7).
22. Push frother (6) onto the motor shaft, making sure the flat in the frother (6) lines up with the flat on the motor shaft.
23. Install whipper chamber (4) on the whipper chamber receptacle (8) by twisting counterclockwise until the tabs on the whipper chamber (4) lock with the tabs on the whipper chamber receptacle (8). Be sure dispense port is pointing down.
24. Install dispense tip (3) into the bottom of the whipper chamber (4).
25. Using two #4-40 screws secure the fan baffle to the whipper motor mounting panel.
26. Install vacuum hose (12) on fan baffle (13).
27. Install hopper support panel and hopper locator bracket using four #8-32 screws.
28. Slip the mixing chamber (2) onto the mixing chamber water inlet tube far enough so the mixing chamber (2) will seat inside the whipper chamber (4).
29. Install the steam collector (1) onto the mixing chamber (2) by pushing down and toward the dispenser while twisting until the flange on the steam collector lines-up with the slot in the front panel.
30. Install hopper assembly in the dispenser by sliding hopper assembly on the hopper support panel until the slot in the bottom rear of the hopper seats against the shoulder screw in the hopper support panel.



### HOT/COLD SWITCH (Optional)



#### Location:

The hot/cold switch is located on the left side of the whipper motor mounting panel.

#### Test Procedure:

1. Disconnect the dispenser from the power source.
2. Disconnect the wires from the switch terminals.
3. With the switch in the "Cold" (upper) position check for continuity between the center terminal and the bottom terminal. With the switch in the "Hot" (lower) position check for continuity between the center terminal and the upper terminal.

## SERVICE (cont.)

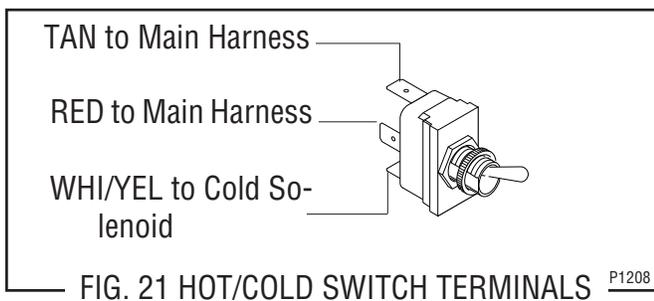
### HOT/COLD SWITCH (Optional) (cont.)

If continuity is present as described, the hot/cold 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. Remove the mounting nut on the front of the whipper motor mounting panel.
3. Remove the hot/cold switch from the rear of the front panel and discard.
4. Reconnect the wires to the terminals on the rear of the new switch.
5. Push new hot/cold switch through the hole on the left side of the whipper motor mounting panel and secure with mounting nut.
6. Refer to Fig. 21 when reconnecting the wires.



## LAMP HOLDER

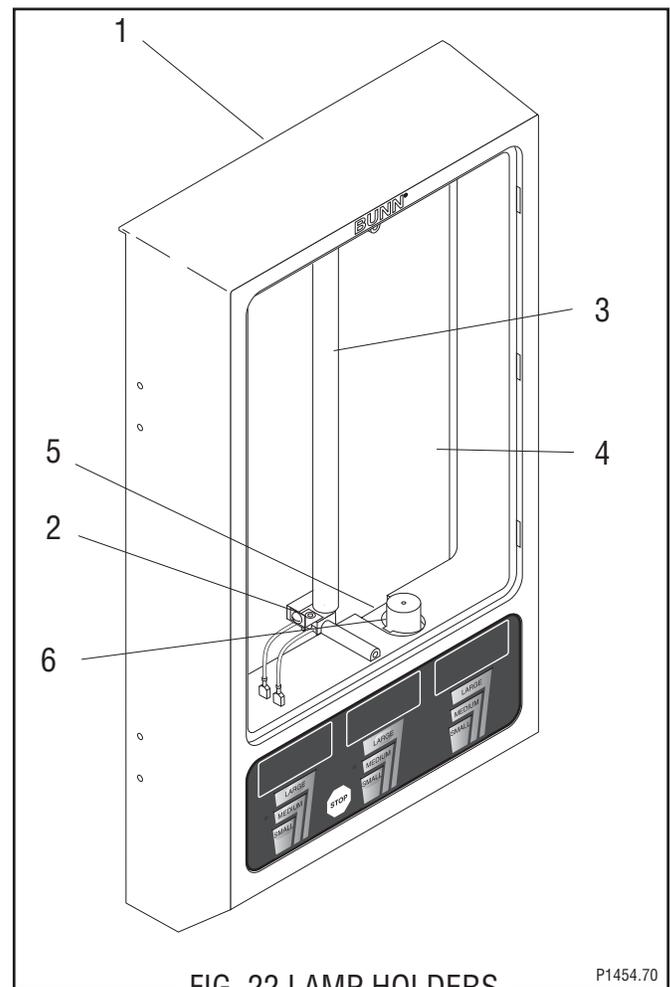


FIG. 22 LAMP HOLDERS

P1454.70

- |                 |                     |
|-----------------|---------------------|
| 1. Door Assy    | 4. Upper Panel      |
| 2. Lamp Holders | 5. Lower Panel      |
| 3. Lamp         | 6. Starter W/Socket |

#### Location:

The lamp holders are located on the front of the upper panel behind the display panel.

#### Test Procedure:

1. Disconnect the dispenser from the power source.
2. Remove upper door panel (4) and disconnect the door wiring harness from the leads on the lamp holders.
3. Remove lamp from lamp holders.
4. Check for continuity on each lead of the lamp holders.

If continuity is present as described, lamp holders are operating properly.

If continuity is not present as described replace the lamp holder.

## SERVICE (cont.)

### LAMP HOLDER

Removal and Replacement: (Refer to Fig. 22)

1. Open dispenser door (1).
2. Remove the five #6-32 screws securing lower door panel (5) to the door (1) and remove cover.
3. Disconnect the door wiring harness from the door interconnect wiring harness.
4. Remove five #6-32 screws securing the upper door panel (4) to the door (1).
5. Remove the upper door cover (4), lamp (3), lamp holders (2) and door wiring harness as an assembly.
6. Disconnect the wires from the lamp holder to be replaced from the door wiring harness.
7. Rotate lamp (3) 90° and remove from lamp holders (2).
8. Remove the #6-32 screw securing the lamp holder (2) to be removed, remove lamp holder (2) and discard.
9. Install new lamp holder (2) and secure with a #6-32 screw.
10. Connect the wires on the new lamp holder to the door wiring harness, black wire to red wire, and white wire to blue wire.
11. Install lamp (3) into lamp holders (2) and turn 90° until the pins snap in place.
12. Install upper door panel (4), lamp (3), lamp holders (2) and door wiring harness as an assembly using five #6-32 screws.
13. Reconnect the plug on the door wiring harness to the connector on the door interconnect wiring harness.
14. Install the door lower panel (5) using five #6-32 screws.

**LAMP REPLACEMENT** (Refer to Fig. 22)

1. Remove the outside window and display graphic.
2. Remove the two #4-40 screws securing the inside window to the door and remove window.
3. Rotate lamp (3) 90° and remove from the lamp holders (2).
4. Insert new lamp (3) into lamp holders (2) and turn 90° until the pins snap in place.
5. Using two #4-40 screws secure the inside window to the door.
6. Install outside window and slide display graphic down between the inside window and the outside window.

### LAMP STARTER and SOCKET

Location:

The lamp starter (6) is located inside the door assy (1) on the top of the door lower panel (5).

Test Procedures:

1. Disconnect the dispenser from the power source.
2. Disconnect the starter leads from the door wiring harness.
3. Remove lamp starter from starter socket.
4. Check for continuity on each lead of the starter socket.

If continuity is present as described the starter socket is operating properly.

If continuity is not present as described replace the starter socket.

6. Remove starter (6) from starter socket.
7. Check for continuity across the pins on the bottom of the starter (6).

If continuity is present as described, replace the starter. If continuity is not present as described, starter is operating properly.

**Note:** If continuity tests are both as described and lamp does not light, replace the starter.

Removal and Replacement (Refer to Fig.22):

1. Open dispenser door assy (1)
2. Remove the five #6-32 screws securing the door lower panel (5) to the door assy (1).
3. Disconnect the leads on the starter socket from the door wiring harness.
4. Remove lower door panel (5) and starter w/socket (6) as assembly.
5. Compress the spring tabs on the socket and remove socket from the door bottom cover (5).
6. Rotate starter 90° and remove from the starter socket.
7. Insert new starter (6) into socket and turn 90° until the pins snap in place.
8. Install new socket by compressing spring tabs on the socket and pushing the socket up through the hole in the lower door panel (5) and releasing spring tabs.
9. Connect the sockets leads to the door wiring harness.
10. Install door lower panel (5) with starter and starter socket on door assy (1) using five #6-32 screws.

## SERVICE (cont.)

### LIMIT THERMOSTAT

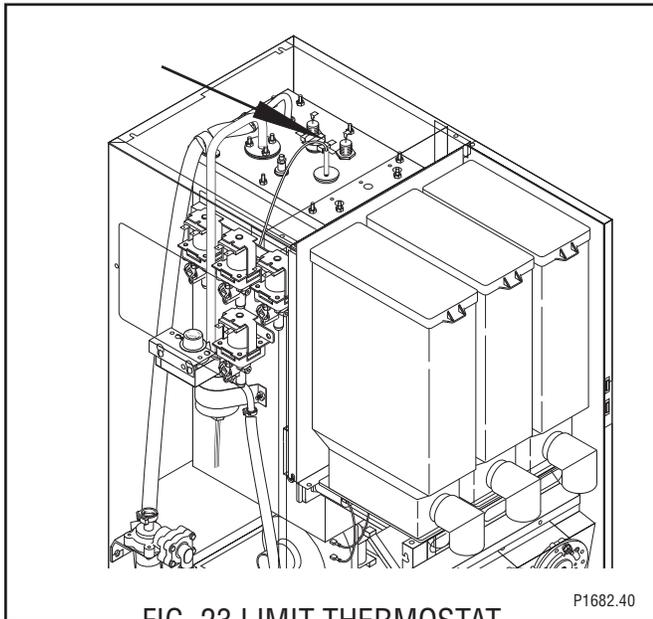


FIG. 23 LIMIT THERMOSTAT

#### Location:

The limit thermostat is located in the center of the tank lid.

#### Test Procedures:

1. Disconnect the dispenser from the power source.
2. Disconnect both black wires from the limit thermostat.
3. Check for continuity across the limit thermostat terminals.

If continuity is present as described, the limit thermostat is operating properly.

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

#### Removal and Replacement:

1. Remove all wires from the limit thermostat terminals.
2. Carefully slide the limit thermostat out from under the retaining clip and remove the limit thermostat.
3. Carefully slide the new limit thermostat into the retaining clip.
4. Refer to Fig. 24 when reconnecting the wires.

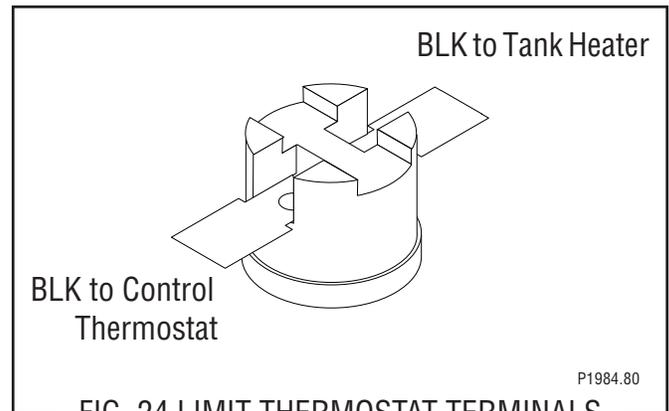


FIG. 24 LIMIT THERMOSTAT TERMINALS

### OVERFLOW PROTECTION SWITCH

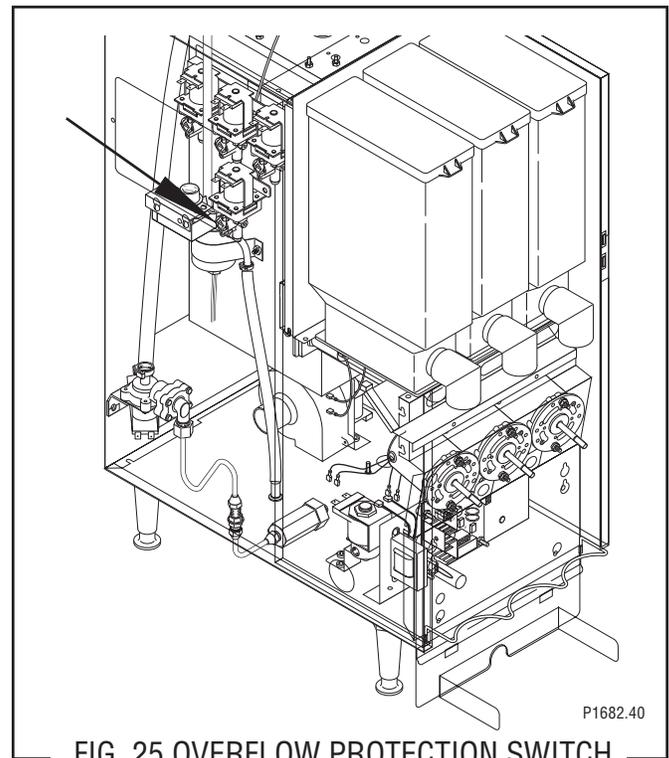


FIG. 25 OVERFLOW PROTECTION SWITCH

#### Location:

The overflow protection switch is located inside the copper overflow cup on the left side of the tank.

#### Test Procedures:

1. Disconnect the dispenser from the power source.
2. Remove the wire nuts connecting the red wires from the overflow protection switch to the violet wire and blue wire from the main harness.
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.

## SERVICE (cont.)

### OVERFLOW PROTECTION SWITCH (cont.)

If continuity is present as described, reconnect the red wires to the black wire and the blue wire from the main harness.

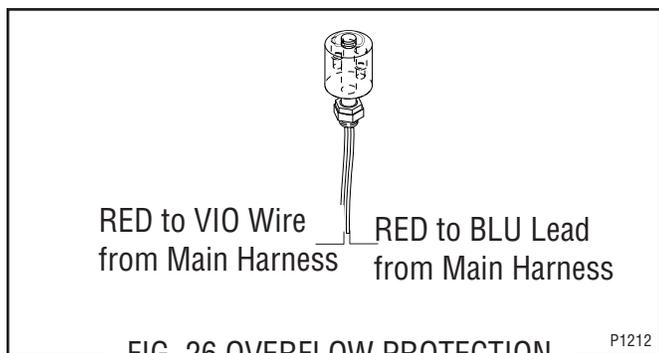
If continuity is not present as described, replace the overflow protection switch.

#### Removal and Replacement:

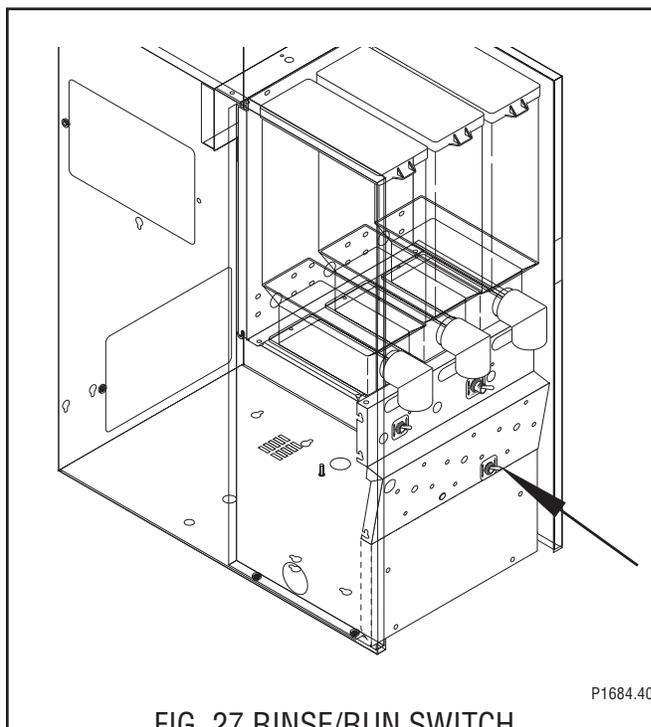
1. Disconnect the red leads from the overflow protection switch from the black wire and the blue wire from the main harness.
2. Remove the nut beneath the copper overflow cup.
3. Remove the entire switch assembly from the cup.
4. Place the new switch assembly into the cup, wires first. Make sure that 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. 26 when reconnecting wires.



## RINSE /RUN SWITCH



#### Location:

The rinse/run switch is located on the lower right side of the whipper motor mounting panel.

#### Test Procedures:

1. Disconnect the dispenser from the power source.
2. Disconnect the blue and green wires from the switch terminals.
3. With the switch in the "RUN" (lower) position check for continuity between the center and the upper terminal. With the switch in the "RINSE" (upper) position no continuity should be present between center and upper terminals.

If continuity is present as described, the "RINSE/RUN" switch is operating properly.

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

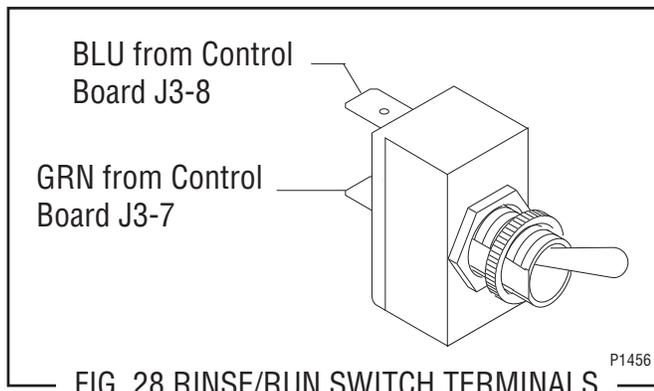
#### Removal and Replacement:

1. Open the dispenser door.
2. Remove the facenut securing the run/rinse switch to the whipper motor mounting panel.
3. Remove switch with wires attached from the back side of the whipper motor mounting panel.
4. Disconnect the wires from the switch and discard the switch.

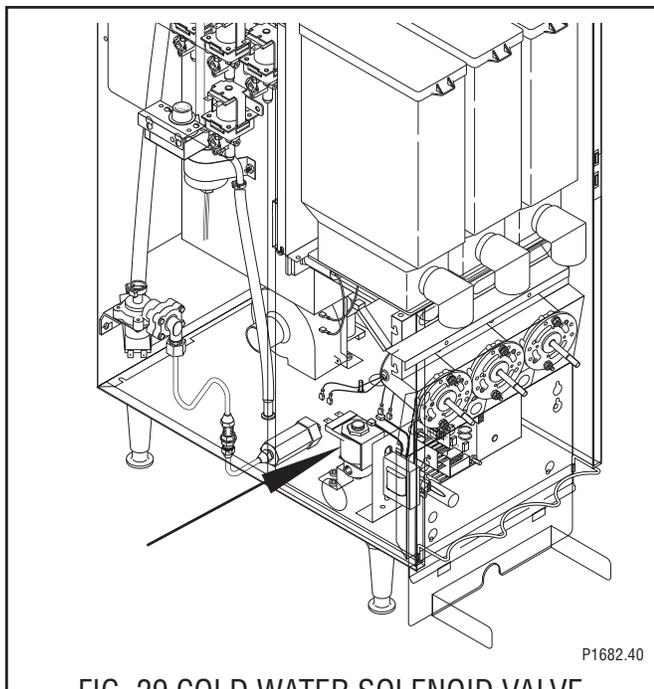
## SERVICE (cont.)

### RINSE /RUN SWITCH (cont.)

5. Refer to Fig. 28 when connecting the wires to the new switch.
6. Install new switch with wires attached through the hole in the whipper motor mounting panel and secure with facenut.



### SOLENOID VALVE (COLD WATER - OPTIONAL)



#### Location:

The cold water solenoid valve is located on the left side of the dispenser base just behind the component bracket.

#### Test Procedures:

1. Disconnect the dispenser from the power source.
2. With the "HOT/COLD" switch in the "COLD" (upper) position press any left dispense switch on front of the door.

3. With a voltmeter check the voltage across the white and white/yellow wires at the solenoid terminals. Connect the dispenser to the power source. The indication must be:
  - a) 120 volts ac for two wire 120 volt models
  - b) 120 volts ac for three wire 120/208 or 120/240 volt models
  - c) 240 volts ac for two wire 240 volt models.
  - d) 230 volts ac for two wire 230 volt models.
4. Disconnect the dispenser from the power source.

If voltage is present as described, proceed to #5  
If voltage is not present as described, refer to wiring diagram and check dispenser wiring harness.

5. Disconnect the white and white/yellow wires from the solenoid.
6. Check for continuity across the solenoid valve coil terminals.

If continuity is present as described, reconnect the white and white/yellow wires to the solenoid.

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

7. Check the solenoid valve for coil action. Connect the dispenser to the power source. With "HOT/COLD" switch in the "COLD" (upper) position press the left dispense switch and listen carefully in the vicinity of the solenoid valve for a "clicking" sound as the coil magnet attracts.
8. Disconnect the dispenser 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 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. Loosen the two screws securing the component bracket to the dispenser base. Lift the component bracket off of the base and move to the right.
2. Remove the white and white/yellow wires from the solenoid valve.
3. Turn off the water supply to the dispenser.

**SERVICE (cont.)**  
**SOLENOID VALVE (COLD WATER - OPTIONAL)**  
**(cont.)**

4. Disconnect the water lines to and from the solenoid valve.
5. Loosen the two #8-32 screws and washers securing the solenoid mounting bracket to the base. Remove solenoid bracket and solenoid valve as an assembly.
6. Remove the two #10-32 screws and lockwashers securing the solenoid valve to the solenoid bracket.
7. Using two #10-32 screws and lockwashers install new solenoid valve on solenoid mounting bracket.
8. Install the solenoid valve and bracket on the dispenser base and tighten the two #8-32 screws.
9. Securely fasten the water lines to and from the solenoid valve.
10. Refer to Fig. 30 when reconnecting the wires.

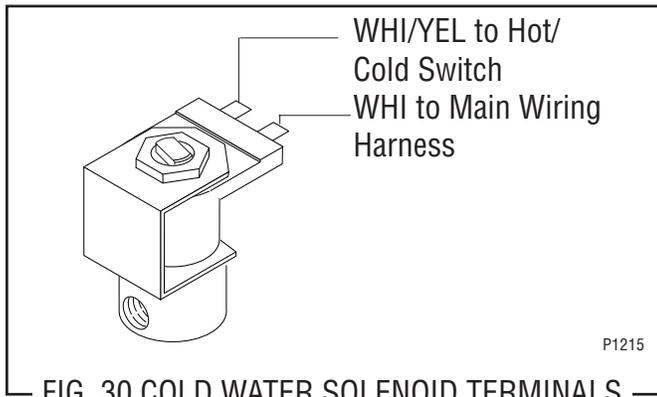


FIG. 30 COLD WATER SOLENOID TERMINALS

**SOLENOID VALVES (DISPENSE)**

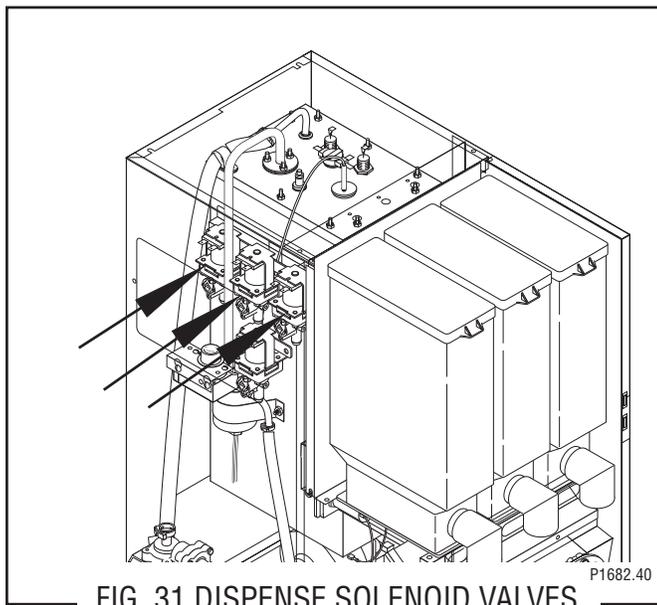


FIG. 31 DISPENSE SOLENOID VALVES

Location:

The dispense solenoids are located on the upper left side of the tank.

Test Procedures:

1. Disconnect the dispenser from the power source.
2. With a voltmeter check the voltage across the white and white/violet, orange or tan wires at the dispense solenoid. Connect the dispenser to the power source. With the "RUN/RINSE" switch in the "RINSE" (upper) position press the appropriate dispense switch on front of the door. The indication must be:
  - a) 120 volts ac for two wire 120 volt models
  - b) 120 volts ac for three wire 120/208 or 120/240 volt models
  - c) 240 volts ac for two wire 240 volt models.
  - d) 230 volts ac for two wire 230 volt models.
3. Disconnect the dispenser from the power source,

If voltage is present as described, proceed to #4  
 If voltage is not present as described, refer to wiring diagram and check dispenser wiring harness.

4. Disconnect the white and white/violet , orange or tan wires from the solenoid valve.
5. Check for continuity across the solenoid valve coil terminals.

If continuity is present as described, reconnect the white and white/violet, orange or tan wires to the solenoid.

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

6. Check the solenoid valve for coil action. Connect the dispenser to the power source. With "RUN/RINSE" switch in the "RINSE" (upper) position press the appropriate dispense switch and listen carefully in the vicinity of the solenoid valve for a "clicking" sound as the coil magnet attracts.
7. Disconnect the dispenser 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 tank water outlet before the solenoid valve or the solenoid valve may require inspection for wear, and removal of waterborne particles.

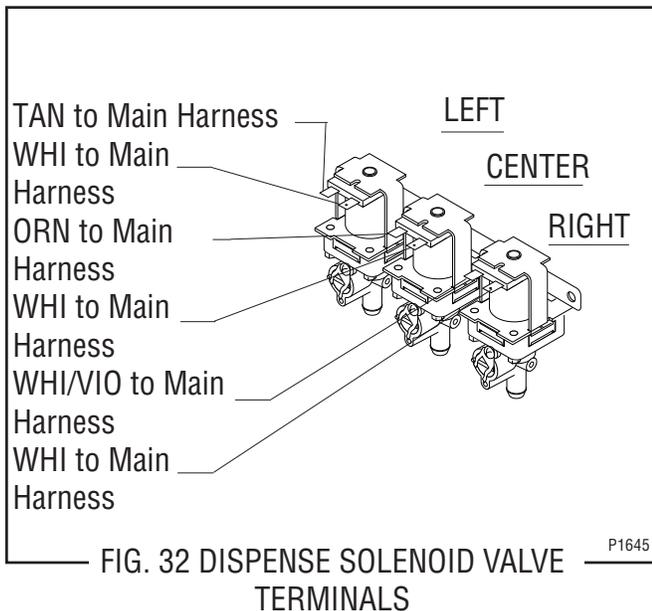
If the sound is not heard as described, replace the solenoid valve.

## SERVICE (cont.)

### SOLENOID VALVES (DISPENSE) (cont.)

#### Removal and Replacement:

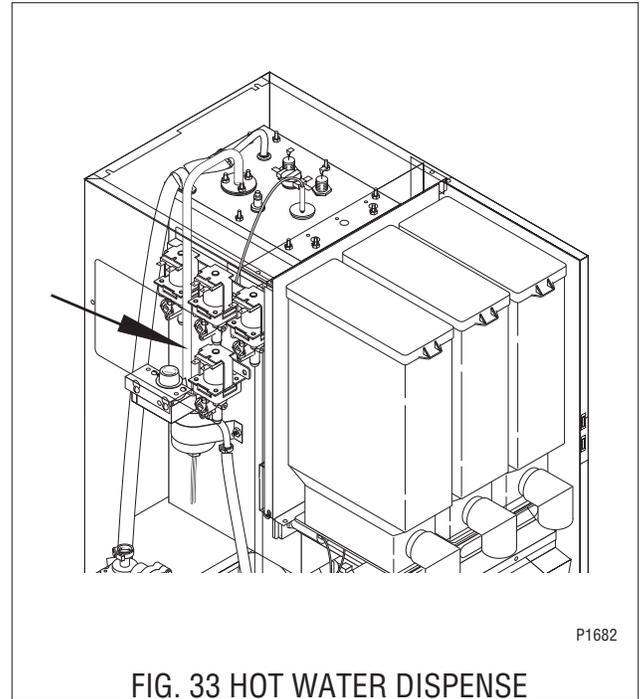
1. Remove the white and white/violet, orange or tan wires from the solenoid valve.
2. Turn off the water supply to the dispenser.
3. Drain enough water from the tank (approximately 1.0 gallon) so the water level is below the dispense valve mounting hole.
4. Disconnect the water line from the solenoid valve.
5. Loosen the #10-32 screw securing the solenoid valve to side of the tank. Twist the solenoid valve clockwise and remove solenoid valve.
6. Using the #10-32 screw install new solenoid valve on side of the tank
7. Push the water line onto the tube on bottom of solenoid valve.
8. Refer to Fig. 32 when reconnecting the wires.



### HOT WATER DISPENSE SOLENOID VALVE (Optional)

#### Location:

The hot water solenoid valve is located on the left side of the tank.



#### Test Procedures:

1. Disconnect the dispenser from the power source.
2. With a voltmeter check the voltage across the white and blue wires at the solenoid valve. Connect the dispenser to the power source. The indication must be:
  - a) 120 volts ac for two wire 120 volt models
  - b) 120 volts for three wire 120/208 or 120/240 volt models
  - c) 240 volts ac for two wire 240 volt models.
  - d) 230 volts ac for two wire 230 volt models.
3. Disconnect the dispenser from the power source.

If voltage is present as described, proceed to #4.  
If voltage is not present as described, refer to the wiring diagram and check dispenser wiring harness.

4. Disconnect the white and blue wires from the solenoid valve.
5. Check for continuity across the solenoid valve coil terminals.

If continuity is present as described, reconnect the white and blue wires to the solenoid.

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

## SERVICE (cont.)

### HOT WATER DISPENSE SOLENOID VALVE (cont.)

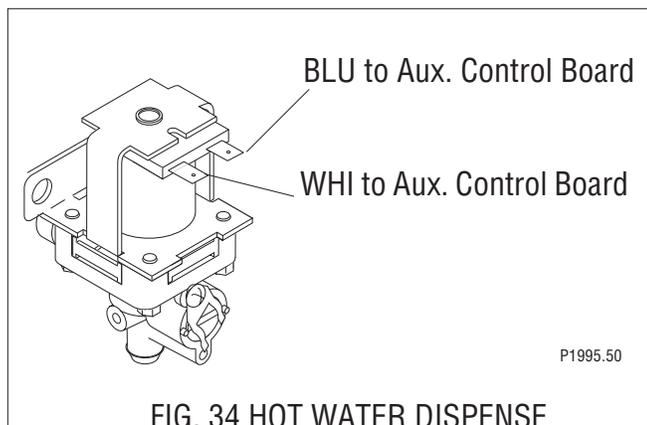
6. Check the solenoid valve for coil action. Connect the dispenser to the power source. Listen carefully in the vicinity of the solenoid valve for a “clicking” sound as the coil magnet attracts.
7. Disconnect the dispenser from the power source.

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 the solenoid valve or the solenoid valve may require inspection for wear, and removal of waterborne particles.

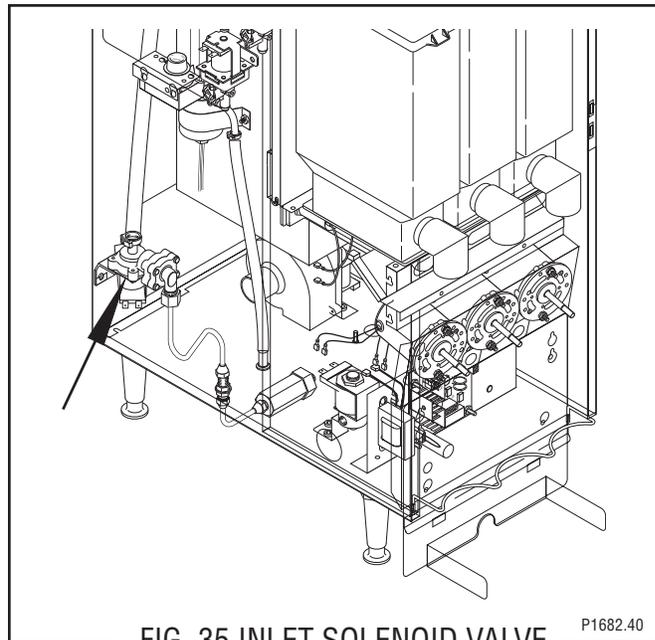
If the sound is not heard as described, replace the solenoid valve.

#### Removal and Replacement:

1. Remove the white and blue wires from the solenoid valve.
2. Turn off the water supply to the dispenser.
3. Drain enough water from the tank (approximately 2.0 gallons) so the water level is below the dispense valve mounting hole.
4. Disconnect the water line from the solenoid valve.
5. Loosen the #10-32 screw securing the solenoid valve to side of the tank. Twist the solenoid valve clockwise and remove solenoid valve.
6. Using the #10-32 screw install new solenoid valve on side of the tank.
7. Push the water line onto the tube on bottom of solenoid valve.
8. Refer to FIG. 34 when reconnecting the wires.



### SOLENOID VALVE (INLET)



#### Location:

The inlet solenoid is located inside on the left rear of the dispenser housing.

#### Test Procedures:

1. Disconnect the dispenser from the power source.
2. With a voltmeter check the voltage across the white and violet wires at the inlet solenoid. Connect the dispenser to the power source. After a delay of 10 seconds, the indication must be:
  - a) 120 volts ac for two wire 120 volt models
  - b) 120 volts ac for three wire 120/208 or 120/240 volt models
  - c) 240 volts ac for two wire 240 volt models.
  - d) 230 volts ac for two wire 230 volt models.
3. Disconnect the dispenser from the power source,

If voltage is present as described, proceed to #4  
If voltage is not present as described, refer to the wiring diagram and check dispenser wiring harness.

4. Disconnect the white and violet wires from the solenoid valve.
5. Check for continuity across the solenoid valve coil terminals.

If continuity is present as described, reconnect the white and violet wires to the solenoid.

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

## SERVICE (cont.)

### SOLENOID VALVE (INLET) (cont.)

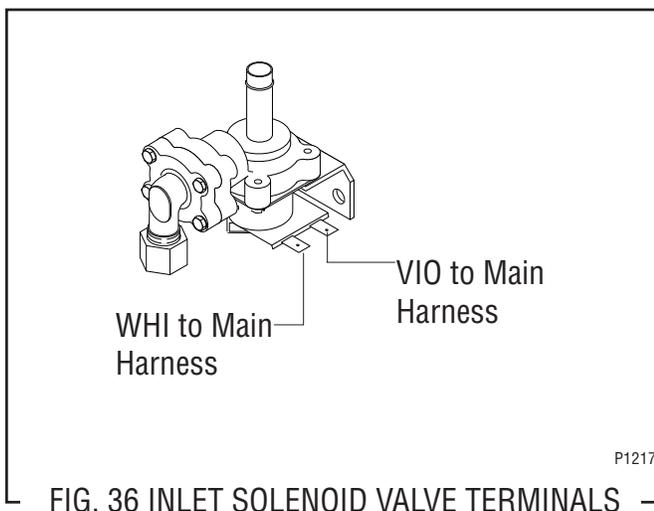
6. Check the solenoid valve for coil action. Connect the dispenser to the power source. Listen carefully in the vicinity of the solenoid valve for a "clicking" sound as the coil magnet attracts.
7. Disconnect the dispenser from the power source.

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 the solenoid valve or, the solenoid valve may require inspection for wear, and removal of waterborne particles.

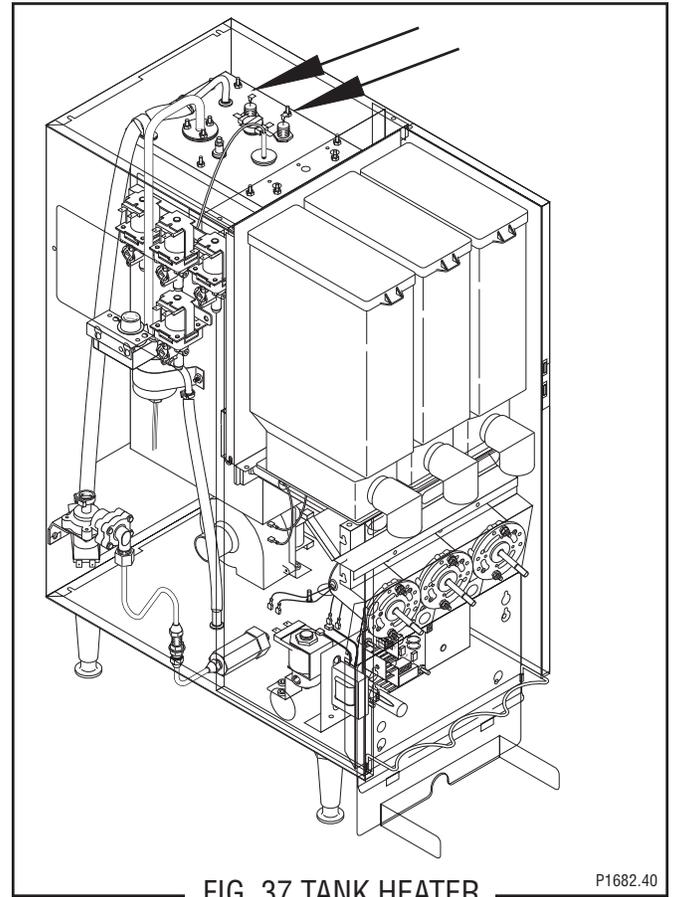
If the sound is not heard as described, replace the solenoid valve.

### Removal and Replacement:

1. Remove the white and violet wires from the solenoid valve.
2. Turn off the water supply to the dispenser.
3. Disconnect the water lines to and from the solenoid valve.
4. Loosen the two #8-32 screws securing the solenoid to the rear dispenser housing. Remove solenoid.
5. Remove the two #8-32 U-Type fasteners from the solenoid bracket.
6. Install the two #8-32 U-Type fasteners and the two #8-32 screws on the new solenoid.
7. Securely fasten the water lines to and from the solenoid valve.
8. Install new solenoid valve on rear of dispenser housing and tighten the two screws.
9. Refer to Fig. 36 when reconnecting the wires.



## TANK HEATER



### Location:

The tank heater is located inside the tank and secured to the tank lid.

### Test Procedure:

1. Disconnect the dispenser from the power source.
2. With a voltmeter check the voltage across the black and white wires 120 volt or 240 volt models or black and red wires for 120/208 volt models or 120/240 volt models. Connect the dispenser to the power source. The indication must be:
  - a) 120 volts ac for two wire 120 volt models;
  - b) 208 volts ac for three wire 120/208 volt models.
  - c) 240 volts ac for three wire 120/240 volt models and two wire 240 volt models.
  - d) 230 volts ac for two wire 230 volt models.
3. Disconnect the dispenser from the power source.

If voltage is present as described, proceed to #4. If voltage is not present as described, refer to the dispenser wiring diagram and check the wiring harness.

4. Disconnect the black wire and the white or red wire from the tank heater terminals.

## SERVICE (cont.)

### TANK HEATER (cont.)

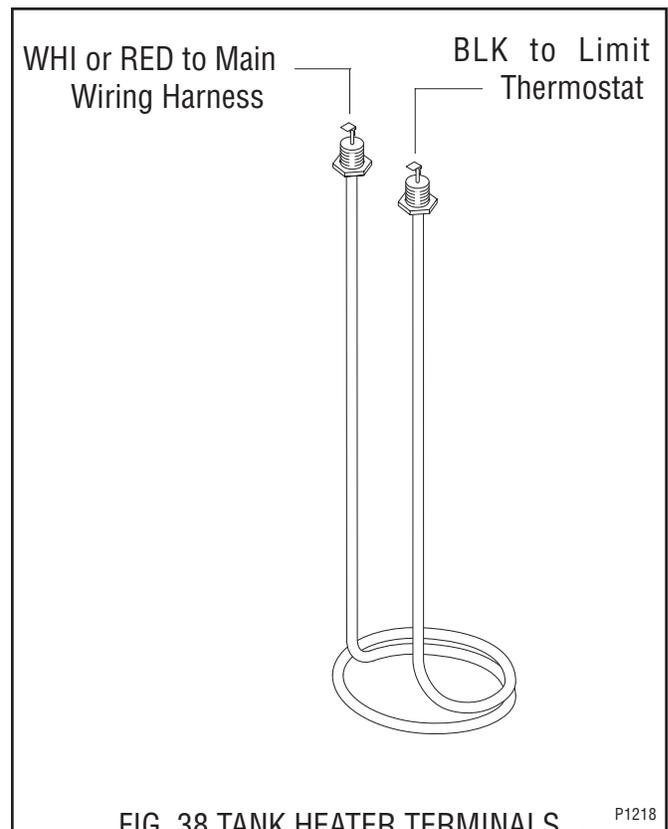
5. Check for continuity across the tank heater terminals.

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.

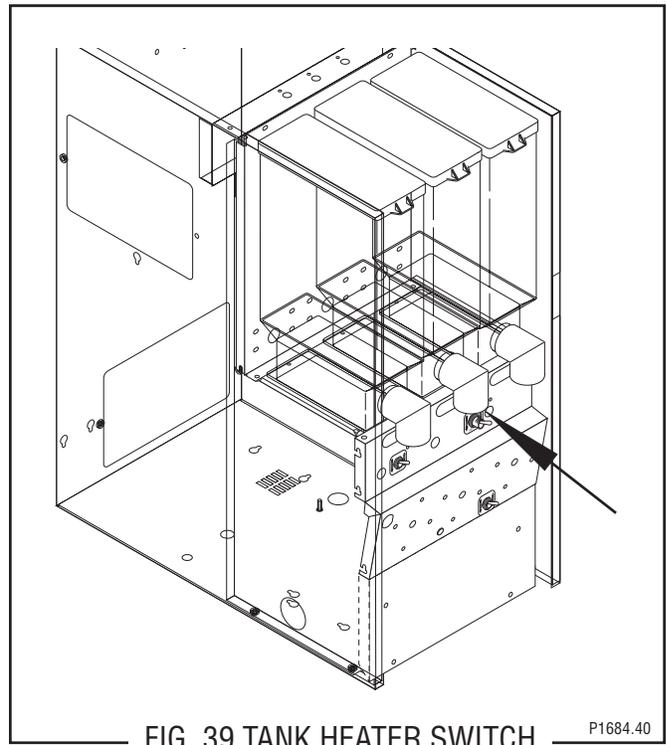
**NOTE** - If the tank heater remains unable to heat, remove and inspect heater for cracks in the sheath.

#### Removal and Replacement:

1. Shut off water supply to the dispenser.
2. Disconnect the water supply tube on the tank lid.
3. Disconnect the black wires on the limit thermostat.
4. Disconnect the black wire and the white or red wire from the tank heater terminals.
5. Disconnect the pink wire from the liquid level probe.
6. Disconnect the green wire from the tank.
7. Remove the thermostat capillary bulb/temperature probe by firmly pulling up on the capillary at the tank lid. This will disengage the grommet from the tank lid.
8. Remove the ten #8-32 nuts securing the tank lid to the tank.
9. Remove tank lid with limit thermostat, liquid level probe and tank heater as an assembly.
10. Remove the two hex nuts securing the tank heater to the tank lid. Remove tank heater with gaskets and discard.
11. Install new tank heater with gaskets on the tank lid and secure with two hex nuts.
12. Install tank lid with limit thermostat, liquid level probe and tank heater on the tank and secure with ten #8-32 hex nuts.
13. Connect water inlet line to the tank lid.
14. Reconnect the black wires to limit thermostat, the pink wire to the liquid level probe and the green wire to the tank. Refer to the limit thermostat and the liquid level board and probe sections in this manual when reconnecting wires.
15. Refer to Fig. 38 when reconnecting the wires to the tank heater.



### TANK HEATER SWITCH



#### Location:

The tank heater switch located is inside the dispenser on the upper right of the whipper motor mounting panel.

## SERVICE (cont.)

### TANK HEATER SWITCH (cont.)

#### Test Procedure:

1. Disconnect the dispenser from the power source.
2. Disconnect the black or white/brown wires from the main harness.
3. With the switch in the "ON" (lower) position check for continuity between the center and the upper terminal. With the switch in the "OFF" (upper) position no continuity should be present between center and upper terminals.

If continuity is present as described, the heater "ON/OFF" switch is operating properly.  
If continuity is not present as described, replace the switch.

#### Removal and Replacement:

1. Refer to the hopper section in this manual and remove the hopper assemblies and the hopper support plate.
2. Remove the switch mounting nut on the front of the front panel.
3. Remove switch with wires attached from the rear of the front panel.
4. Remove the wires from the switch terminals and discard switch.
5. Connect the wires to the new switch, refer to fig. 40.
5. Push new switch through hole in the front panel and secure with face nut.
7. Refer to the hopper section in this manual and install the hopper support plate and the hopper assemblies.

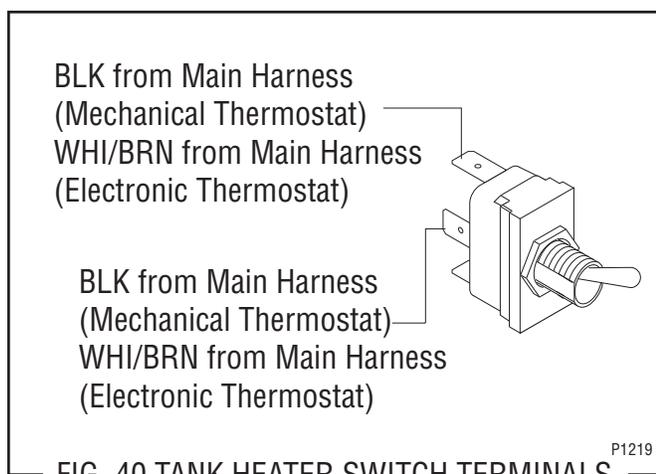


FIG. 40 TANK HEATER SWITCH TERMINALS

## TRANSFORMER

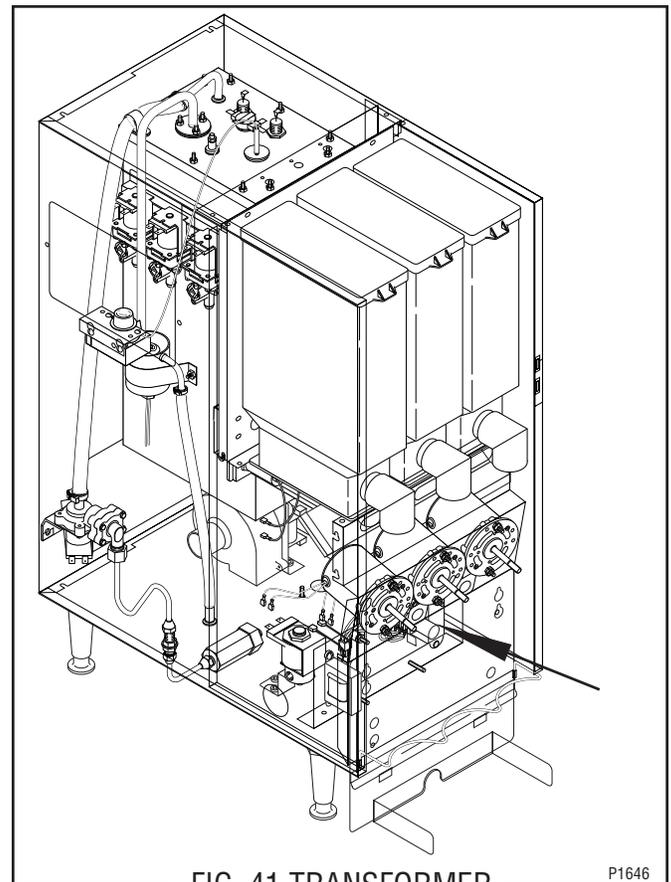


FIG. 41 TRANSFORMER

#### Location:

The transformer is located behind the lower front access cover, mounted on the right rear side of the component bracket.

#### Test Procedure:

1. Disconnect the dispenser from the power source.
2. Disconnect the four pin plug from the main harness from the four pin connector on the transformer.
3. Check the voltage across black wire (pin 1) and the white wire (pin 2) on the plug from the main harness. Connect the dispenser to power source. The indication must be:
  - a) 120 volts ac for two wire 120 volt models.
  - b) 120 volts for three wire 120/208 and 120/240 volt models.
  - c) 240 volts ac for two wire 240 volt models.
  - d) 230 volts ac for two wire 230 volt models.
4. Disconnect the dispenser from the power source.

If voltage is present as described reconnect the plug and the connector and proceed to #5.

If voltage is not present as described, refer to the wiring diagrams and check the main wiring harness.

## SERVICE (cont.)

### TRANSFORMER (cont.)

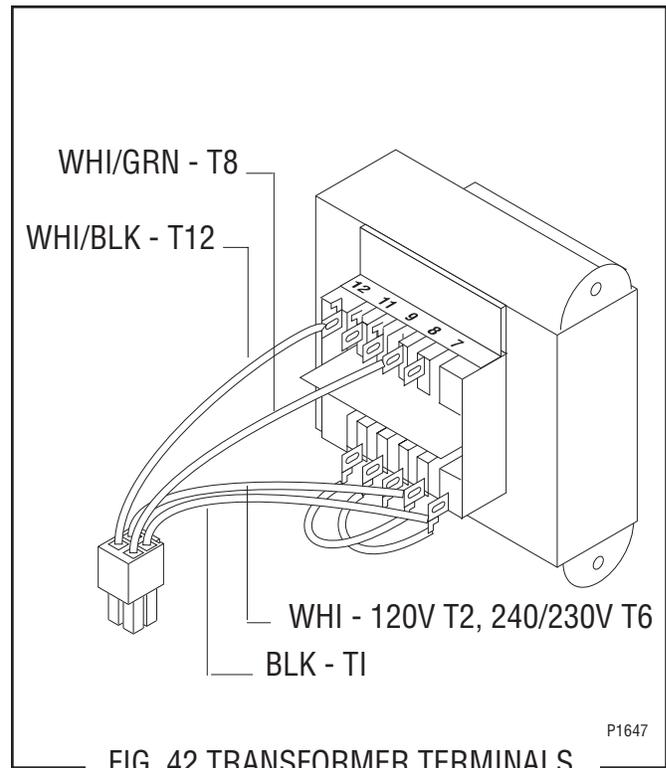
5. Check the voltage between J1-1 and J1-2 on the eight pin connector at the control board. Connect the dispenser to the power source. The indication must be 24 volts ac.

If voltage is present as described the transformer is operating properly.

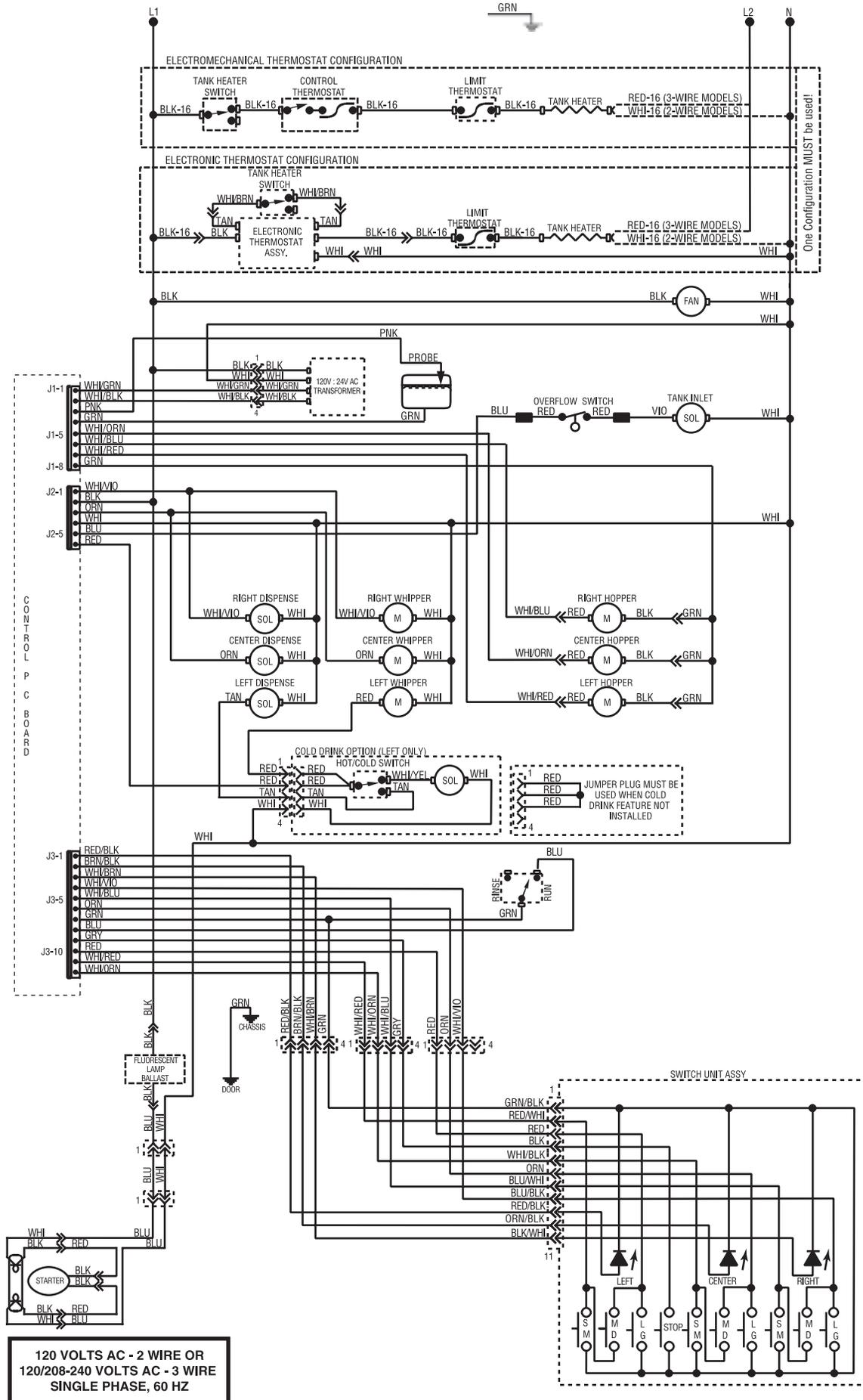
If voltage is not present as described, replace the transformer.

#### Removal and Replacement:

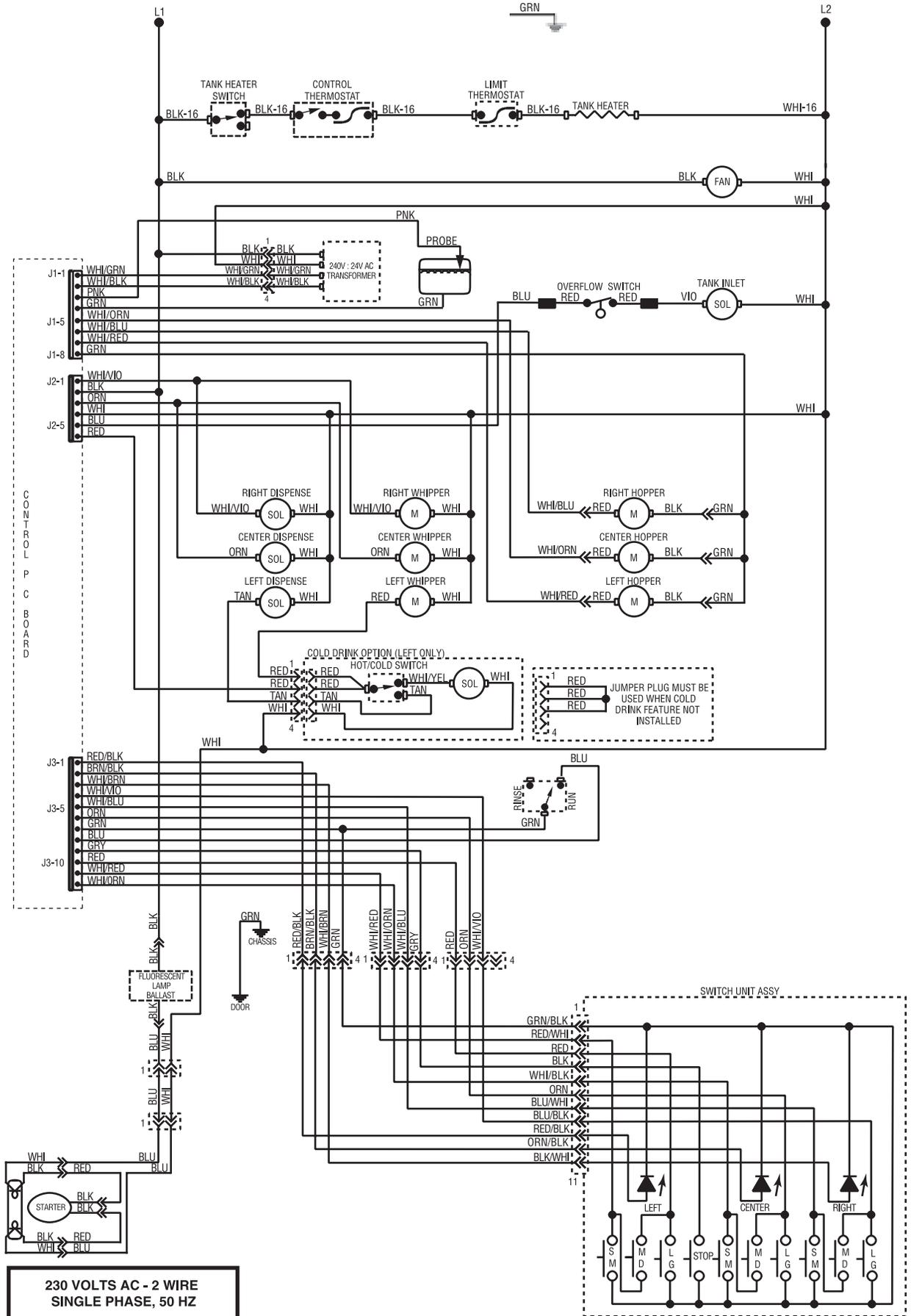
1. Loosen the two #8-32 screws securing the component bracket to the dispenser housing base.
2. Pull component bracket out the front of the dispenser far enough so the transformer connector can be disconnected from the main wiring harness.
3. Disconnect the transformer four pin connector from the four pin plug on the main wiring harness.
4. Remove the two #6-32 keps nuts securing the transformer to the rear of the component bracket.
5. Remove and discard the transformer.
6. Install new transformer on the rear of the component bracket and secure with two #6-32 keps nuts.
7. Connect the four pin connector on the transformer to four pin plug on the main wiring harness.
8. Place the component bracket into position and tighten the two #8-32 screws.



# SCHEMATIC WIRING DIAGRAM FMD DBC-3



# SCHEMATIC WIRING DIAGRAM FMDA DBC-3



**230 VOLTS AC - 2 WIRE  
SINGLE PHASE, 50 HZ**

# SCHEMATIC WIRING DIAGRAM FMD DBC-3 (WITH HOT WATER DISPENSE)

