BUNN®
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nitroN 2®
COLD DRAFT

# SERVICE & REPAIR MANUAL


## BUNN-O-MATIC CORPORATION

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


To ensure you have the latest revision of the Operating Manual, or to view the Illustrated Parts Catalog, Programming Manual, or Service Manual, please visit the Bunn-O-Matic website, at www.bunn.com. This is absolutely FREE, and the quickest way to obtain the latest catalog and manual updates. For Technical Service, contact Bunn-O-Matic Corporation at 1-800-286-6070.

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## BUNN-O-MATIC COMMERCIAL PRODUCT WARRANTY

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

1) Airpots, thermal carafes, decanters, GPR servers, iced tea/coffee dispensers, MCR/MCP/MCA single cup brewers, thermal servers and ThermoFresh® servers (mechanical and digital) 1 year parts and 1 year labor.
2) All other equipment - 2 years parts and 1 year labor plus added warranties as specified below:
a) Electronic circuit and/or control boards - parts and labor for 3 years.
b) Compressors on refrigeration equipment - 5 years parts and 1 year labor.
c) Grinding burrs on coffee grinding equipment to grind coffee to meet original factory screen sieve analysis - parts and labor for 4 years or 40,000 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, non periodic cleaning and descaling, equipment failures related to poor water quality, damage or casualty. In addition, the warranty does not apply to replacement of items subject to normal use including but not limited to user replaceable parts such as seals and gaskets. 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.

# INTRODUCTION

**Safety first!**
To avoid electrical shock, unplug dispenser from power source before servicing inside.

**Basic Maintenance**
In order to maintain proper machine operation, a Preventative Maintenance schedule must be performed on a regular basis.

The following procedures pretain to all versions in the Nitron family of machines unless otherwise noted.

# CONTENTS



# USER NOTICES

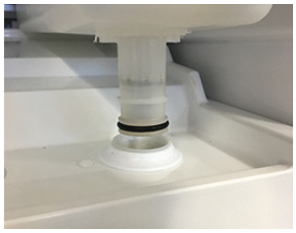
All notices on this equipment are written for your protection. All notices are to be kept in good condition. Replace any unreadable or damaged labels.

# SITE PREPARATION

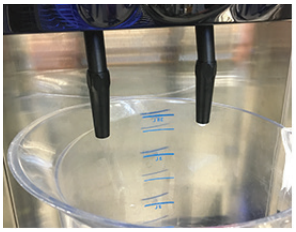
A minimal clearance is required between the dispenser sides and the wall or another appliances.For optimum performance, **do not** allow warm air from surrounding machines blow on the JDF dispenser. Leave some space so the dispenser can be moved for cleaning.

## Recommended Daily Cleaning Instructions

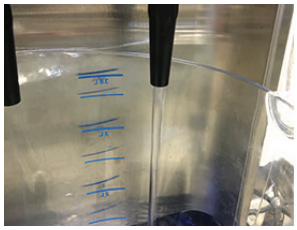
The use of a damp cloth rinsed in any mild, non-abrasive, liquid detergent is recommended for cleaning all surfaces on Bunn-O-Matic equipment. Do **NOT** clean this equipment with a water jet device.



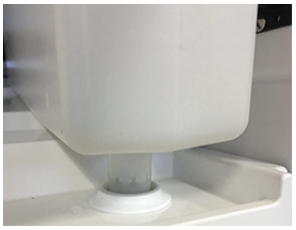
1. Open dispenser door. Lift up on product containers to disconnect them from the machine inlet.



2. Close door, place an empty container under the dispense nozzles.



2. Dispense from each station until clear water flows from the dispense nozzle.



4. Open dispenser door and reconnect all product containers.

5. Remove dispenser nozzles and drip tray. Wash all parts in warm soapy water.

Brush Storage


Lubricant Shelf

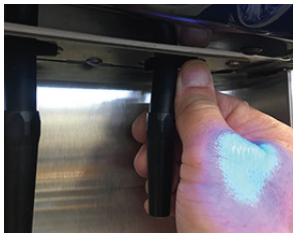
6. Use brush to clean through dispense nozzles.

7. Use brush to clean nitro insert.

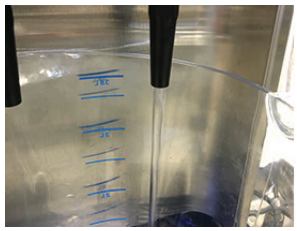
8. Use brush to clean nozzle connection ports on machine. BUNN Part No. 49827.0000.

9. Apply small amount of food grade lubricant to o-ring on nozzles. BUNN Part No. M2550.0001.

10. With a warm soapy cloth, wipe down interior of cabinet and splash panel area behind dispensing nozzles.

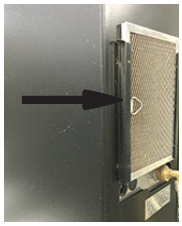


11. Replace drip tray and dispense nozzles. Be sure to install nitro nozzle in left dispense station.

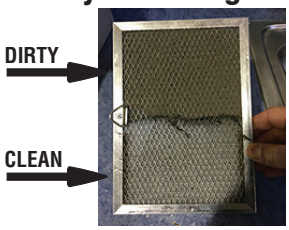


12. Dispense from each station until finished product flows from the dispense nozzles.

## Recommended Weekly Cleaning




13. Remove Air Filter from outside rear panel of dispenser.



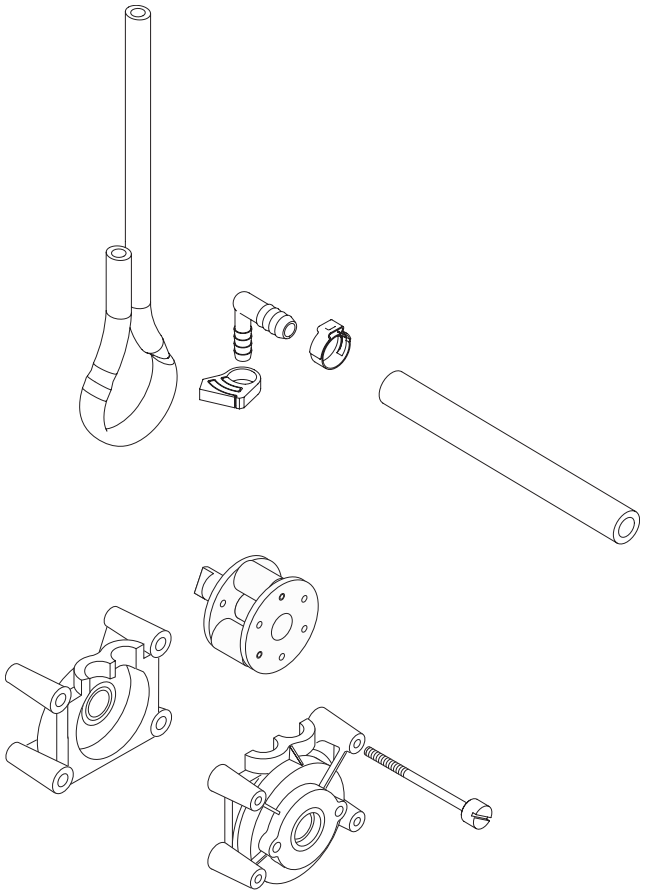

14. Wash Filter using warm soapy water, rinse using water flow from faucet. Shake out excess water then re-install on rear panel of dispenser.

## REQUIRED REGULAR MAINTENANCE:

When performing Daily-Weekly Cleaning procedures, inspect o-rings, seals, and bushings for signs of wear or damage and replace immediately.

Check and/or replace every 6 months or as required:

| | |
|---|---|
| 39690.0000 | Pump Tube Replacement Kit (Includes items indented below) |
| 28755.1011 | Tube, Norprene .25" ID x 17.0" lg |
| 32732.0000 | Clamp .39"/.48" |
| 32656.0000 | Fitting, Elbow .25" Barb x .38" Barb |
| 21275.0003 | Clamp .57"/.70" |
| 34325.0032 | Hose, Flex .38" ID x 5.25" lg |



# TROUBLESHOOTING

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

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

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 |
|---|---|---|
| **Cold Water Circulation**<br>Dispense stations not working.<br>**Note:** Cooling failure or excessive cabinet temperatures for more than 4 hours will result in dispense lockout or no dispense.<br>**Note:** Reset fault/timer by unplugging unit. | 1. Cabinet cooling fan. | Replace fan (24vdc).<br>Note: Fan receives power when the dispenser is powered. |
| | 2. Bath recirculation pump. | A) If not running, check refrigeration switch and wiring for proper continuity.<br><br>B) Check for 120V or 230V AC at pump. Replace pump. |
| | 3. Restricted water flow to cabinet water coil and bath. | Check for kinked hose. |
| Dispense nozzle dripping/won't stop dispensing. | 1. Juice residue causing oring on dispense nozzle to lose vacuum. | A) Remove dispense nozzles and stout insert. Clean nozzles and oring in mild detergent solution.<br><br>B) Use soft bristle brush and mild detergent solution to clean dispense valve area that dispense nozzles are seated. |

**TROUBLESHOOTING (cont.)**

| PROBLEM | PROBABLE CAUSE | REMEDY |
|---|---|---|
| **Refrigeration**<br>Dispense stations not working.<br>**Note:** Cooling failure or excessive bath and cabinet temperatures for more than 4 hours will result in dispense lockout or no dispense. | 1. Compressor ON/OFF switch. | Check for "ON" position or no continuity - replace switch. |
| | 2. Dirty condenser filter or fins. | Clean filter and fins or replace condenser filter. (Filter not supplied on some machines). |
| | 3. Condenser fan not running. | A) Check for 120V or 230V AC. Replace fan motor or check fan blades for obstructions.<br><br>B) Check compressor LED on circuit board. If ON, relay coil should have power (120 or 230 VAC). |
| | 4. Compressor relay not activating. | Check compressor relay coil for 120 or 230vac.<br>NOTE: Always check power with coil attached. If compressor LED is ON and no 120 or 230vac - replace board. If yes, 120 or 230vac - replace relay.<br>Note: Relay contacts are normally open. |
| | 5. Compressor not running. | Check compressor thermal overload (N/C). If open check for dirty condenser filter or adequate ventilation and space around machine. |
| | 6. Compressor running and not cooling. | Check refrigeration system for leaks and proper charge. |
| | 7. Low water bath or bath fill valve failed. | Check Dispense switch is set to ON and sight gauge shows full water bath. If sight gauge is low, press Dispense switch to OFF. Wait a few seconds. Press Dispense switch to ON. Bath will automatically start filling water bath after 30 seconds. |

**TROUBLESHOOTING (cont.)**

| PROBLEM | PROBABLE CAUSE | REMEDY |
|---|---|---|
| **Dispenser Locked Out**<br>Dispense stations not working. | 1. Check Dispense Lockout switch. | (A) Set switch to ON position.<br><br>(B) Check switch and harness for proper continuity. |
| Cooling system failure. | 1. Refrigeration or cold water recirculation system. | Check all previous items that pertain to refrigeration or cold water recirculation |
| Dispense station not working | 1. Dispense Lockout switch set to OFF position. | Place switch in ON position. |
| | 2. Dispense switch failed | Check switch and harness for proper continuity. |
| All stations dispense concentrate only | Main water supply | Check for ON position. |
| | Frozen bath | A) Compressor relay/contacts shorted - replace relay.<br><br>B) Recirculating pump - replace or check for kinked flex line. |
| | Inlet water valve failed | A) Check for 120V or 230V power when dispensing. If yes, replace valve. If no, check harness for proper continuity. Then replace circuit board if needed. |

## TROUBLESHOOTING (Continued)

| PROBLEM | PROBABLE CAUSE | REMEDY |
|---|---|---|
| Dispense station **concentrate only** | Water solenoid | Replace solenoid (24vdc) or check wire connection between water valve and main control board. |
| Dispense station **water only** | Concentrate out | Replace refill concentrate container or BIB |
| | Product pump not pumping | Check for proper counterclockwise rotation of pump rollers. If counterclockwise, replace pump tubing. If clockwise, wire connection to pump is reversed. Switch wires on terminals. |
| | Pump not turning | A) Check speed setting on circuit board and increase speed (turn clockwise)<br><br>B) Check for d.c. power to pump motor. If yes, replace motor assy. If no, check harness for proper continuity. Then replace circuit board if needed. |

**TROUBLESHOOTING (cont.)**

| PROBLEM | PROBABLE CAUSE | REMEDY |
|---|---|---|
| Water leak filling drip tray or around dispense deck area | 1. Initial fill/setup | Some expansion normal. May fill drip tray during initial ice block formation |
| | 2. Dispense deck | Inspect or replace fittings clamps, o-rings, solenoids and quick disconnect fittings.<br>**NOTE:** Dispense deck area slopes to drain tube that leads to the drip tray. |
| | 3. Water pressure greater than 100psi | Install water pressure regulator and reduce to 50 psi. |
| Water leaking beneath machine | 1. Bath tank overflow. | A) Check all internal water connections.<br><br>B) Check internal plumbing connections.<br><br>C) Check bath float switch |
| | 2. Condensation from cabinet cooling coil. | Check for routing of condensation tube to water bath. |

**TROUBLESHOOTING (cont.)**

| PROBLEM | PROBABLE CAUSE | REMEDY |
|---|---|---|
| Unit is not working | 1. Step-down transformer. | Check for 120/24 or 230/24 vac. If no 24vac reading, replace step-down transformer. |
| | 2. Main control board. | If 24 vac present and no LED's lit, replace control board. |
| Difficulty brixing and/or weak beverage | 1. Product viscosity or too cold. | Thorough thaw of product before use (35° - 40°) |
| | 2. Low water pressure. | Maintain 30 psi or higher and a minimum dynamic flow rate of 4.5 fl oz/sec. |
| | 3. High water pressure. | Over 100 psi, install a pressure regulator and set to 50 psi. |
| | 4. Dispense valve adjustment setting. | A) Perform 3 second water dispense test. Factory setting is 133 ml in 3 second dispense.<br><br>B) Adjust water to 133 mL/3 sec.. Once water is set, adjust motor speed to achieve brix degrees. |
| | 5. Brix ratio. | Check for proper brix ratio per product using Ratio method and or refractometer method. |
| Difficulty brixing and/or weak beverage | 1. Pump tubing. | Inspect, clean, or replace tubing and pump rotor/rollers for ease of rotation. |
| | 2. Use of portable water pump. | A) Follow plumbing requirements for pressure and flow rate.<br><br>B) Source another portable pump or water supply that meets requirements. |
| Difficulty brixing bag-in-box | Vacuum leak | Inspect all lines and connections from bag-in-box connector to bottle adapter assembly. |

**TROUBLESHOOTING (cont.)**

| PROBLEM | PROBABLE CAUSE | REMEDY |
|---|---|---|
| Only Water Flowing from Faucet | 1. Bag-in-Box (BIB) or caddy is empty. | 1. Change BIB to full BIB or refill the caddy with more product. |
| | 2. BIB or caddy is not engaged in bottle adapter properly. | 2. Lift BIB or caddy out of adapter and seat it back down properly. Follow step-by-step instructions on priming product through the system. |
| Head on Beverage Thinner than Desired | 1. System is not set to temperature yet (ice bank not fully formed). | 1. Wait until system is fully cooled and ice bank fully formed before setting preferred N2 pressure. Check Compressor switch is set to ON and sight gauge shows full water bath. If water bath sight gauge is low, press Dispense switch to OFF. Wait a few seconds. Press Dispense switch to ON. Bath will automatically start filling water bath after 30 seconds. |
| | 2. a) Tank regulator is below 125 psi (red LED Nitrogen "Out" light is flashing on dispenser door). | 2. a) Adjust tank regulator by turning the T-handle clockwise until needle reaches 125 psi. Dispense a drink to make sure needle stays set at 125 psi. |
| | b) Gas leak on tank regulator. | b) If gas is leaking from tank regulator, replace tank regulator by contacting manufacturer or supplier. |

**TROUBLESHOOTING (cont.)**

| PROBLEM | PROBABLE CAUSE | REMEDY |
|---|---|---|
| Coffee is Weaker than Desired | 1. BIB or caddy is empty. | 1. Change to full BIB or replenish caddy with more product. |
| | 2. Product pump tubing is worn. | 2. Contact authorized service agent or perform product tubing replacement if authorized to do so. |
| | 3. Build-up is occurring in nozzle and system needs cleaning. | 3. Remove nozzles and clean with sanitizing solution to remove build-up. Follow Care and Cleaning instructions and run sanitizing solution through system. |
| | 4. Brix is off target and needs adjustment. | 4. Follow set-up instructions to adjust Brix. |
| Coffee is Stronger than Desired | 1. Water supply is turned off or too low water pressure from source/inlet. | 1. Assure required water connection was made properly and if there's a shut-off valve, make sure shut-off valve is open. Check that water inlet pressure has dynamic operating pressure between 30 to 90 psi. If below 30 psi, install water booster pump for adequate water pressure to supply line of dispenser. |
| | 2. Brix is off target and needs adjustment. | 2. Follow set-up instructions to adjust Brix |

**TROUBLESHOOTING (cont.)**

| PROBLEM | PROBABLE CAUSE | REMEDY |
|---|---|---|
| Nothing Flowing from Nozzles | 1. Dispense switch is OFF. | 1. Turn Dispense switch ON. |
| | 2. Gas, coffee, and water not connected. | 2. Assure all required connections are made according to set-up instructions before operating the system. |
| Product Pouring Too Warm and/or Inside Cabinet Too Warm | 1. System has not reached temperature (ice bank not fully formed). | 1. Wait until system is fully cooled and ice bank fully formed. Check Compressor switch is set to ON and sight gauge shows full water bath. If water bath sight gauge is low, press Dispense switch to OFF. Wait a few seconds. Press Dispense switch to ON. Bath will automatically start filling water bath after 30 seconds. |
| | 2. BIB or caddy is ambient temp and needs to cool down. | 2. Best practice is to use a chilled BIB or caddy for proper nitrogenation. If using ambient concentrates, chill BIB or caddy first prior to using. |
| | 3. Water bath pump not running. | 3. Confirm the compressor/water bath pump switched is turned ON. Confirm the water bath pump and compressor are running. |

**TROUBLESHOOTING (cont.)**

| PROBLEM | PROBABLE CAUSE | REMEDY |
|---|---|---|
| Irregular Flow from Nozzle<br>1. Flow is pulsating/ hammering | 1. The product pump speed is set too high (at max) to dispense a lower ratio product (below 4:1). | 1. Use a more appropriate concentrate (between 4:1 to 11:1) and adjust the product dial to the proper Brix setting. |
| 2. Flow coming out at an angle | 2. The nozzle has accumulated build-up or debris. | 2. Remove nozzles and clean with sanitizing solution to remove build-up. Follow Care and Cleaning instructions and run sanitizing solution through system. |
| 3. Flow rate is slow | 3. a) The nozzle has accumulated build-up or debris<br>b) The water needle valve on right-side of deck may be set too low (only affects Still Dispense station)<br>c) The system needs cleaning | 3. a) Remove nozzles and clean with sanitizing solution to remove build-up. Follow Care and Cleaning instructions and run sanitizing solution through system.<br><br>b) Water flow rate should be factory pre-set to 133 ml (4.5 oz) per 3 second dispense. To verify, switch to Program mode. Place a graduated measuring cylinder under the dispense nozzle, pull and release the tapper handle 3 times. The dispenser will then dispense an amount of water for 3 seconds. If water flow rate is set too low, adjust the water needle valve using a small flathead screwdriver and turning the needle counter-clockwise.<br><br>c) Clean the system by following the Care and Cleaning instructions. |

**TROUBLESHOOTING (cont.)**

| PROBLEM | PROBABLE CAUSE | REMEDY |
|---|---|---|
| Unit Performing Inconsistently (Brix/Nitro fluctuating wildly or outside normal range) | 1. System was installed/set-up incorrectly or has been placed in an environment with unacceptable conditions:<br>a. Incorrect water line size | 1. a) Install a water line that is in accordance with machine specifications. |
| | b. Incorrect gas line size | b) Install a gas line that is in accordance with machine specifications. |
| | c. Fluctuations in water or gas supply pressures | c) Assure the unit is being fed consistent and constant gas and water pressure. |
| | d. Ambient temperature too high or low | d) Place the unit in a location in accordance with machine specifications. |
| | 2. System has internal malfunction and needs service by a technician | 2. Call Customer Support for assistance. |

## 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 disconnected from the power source when servicing, except when electrical tests are required and the test procedure specifically states to connect the dispenser to the power source.

### 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, hopper(s), hopper support plate, splash guard, splash panel w/drip tray, lower front access panel and rear access cover.

Refer to the contents listing for component location.

### INDEX

## SERVICE(CONT.)

## ACCESS PANELS

Location:

Before removing panels, make sure power is OFF to the machine and water is disconnected accept where indicated in testing procedures. Retain all screws and other attaching hardware for re-assembly.

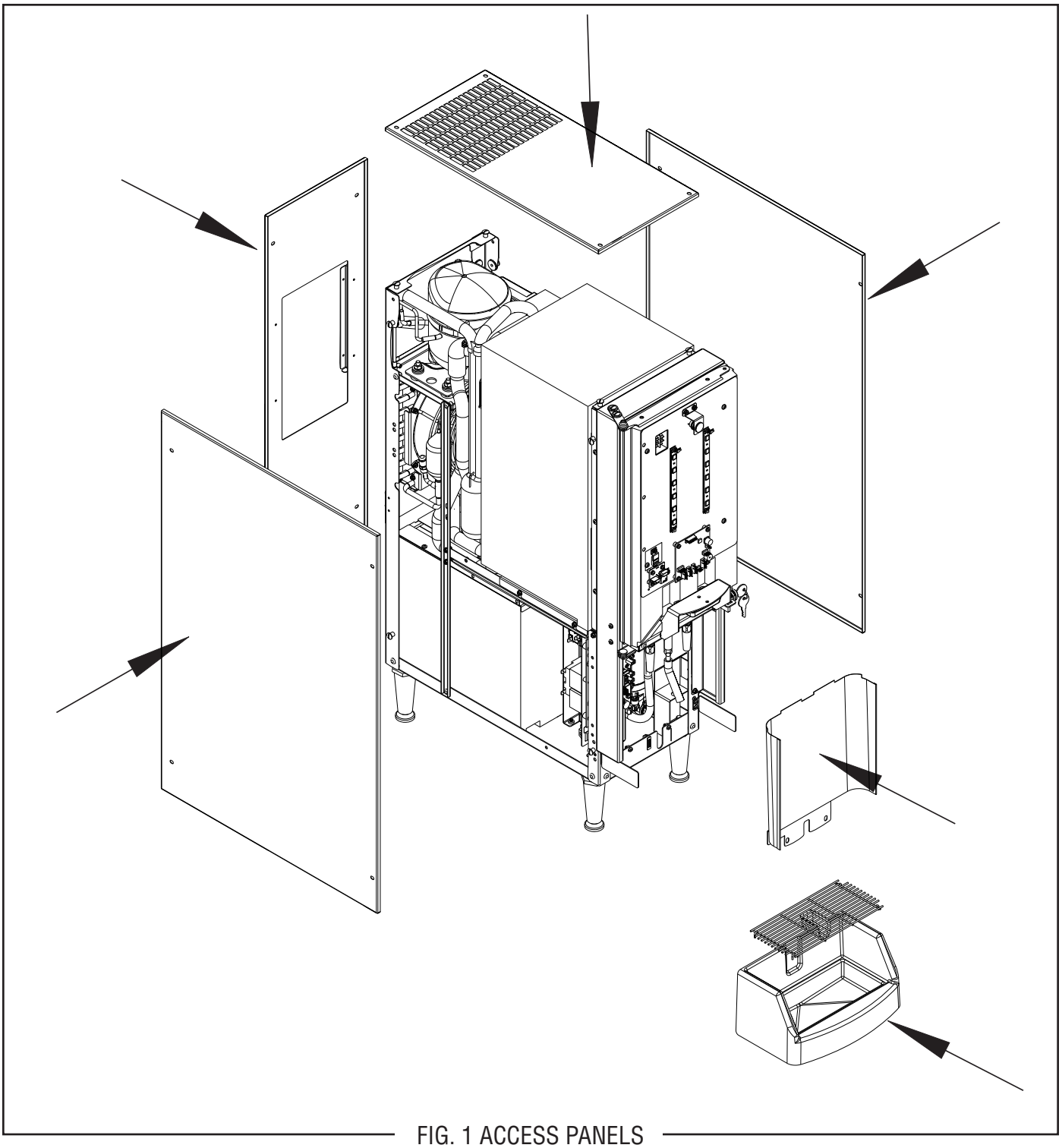


FIG. 1 ACCESS PANELS

## SERVICE(CONT.)

## DISPENSE PLATFORM REMOVAL

1. Remove concentrate dispense tips by turning 1/4 turn to the left, then pull straight down.
2. Lift and remove product shelf to access dispense platform.
3. Remove front thumb screw holding dispense platform.
4. Disconnect 12 pin connector above dispense platform in rear.
5. Disconnect 3/8” water line at quick disconnect.
6. Remove dispense platform by pulling forward.

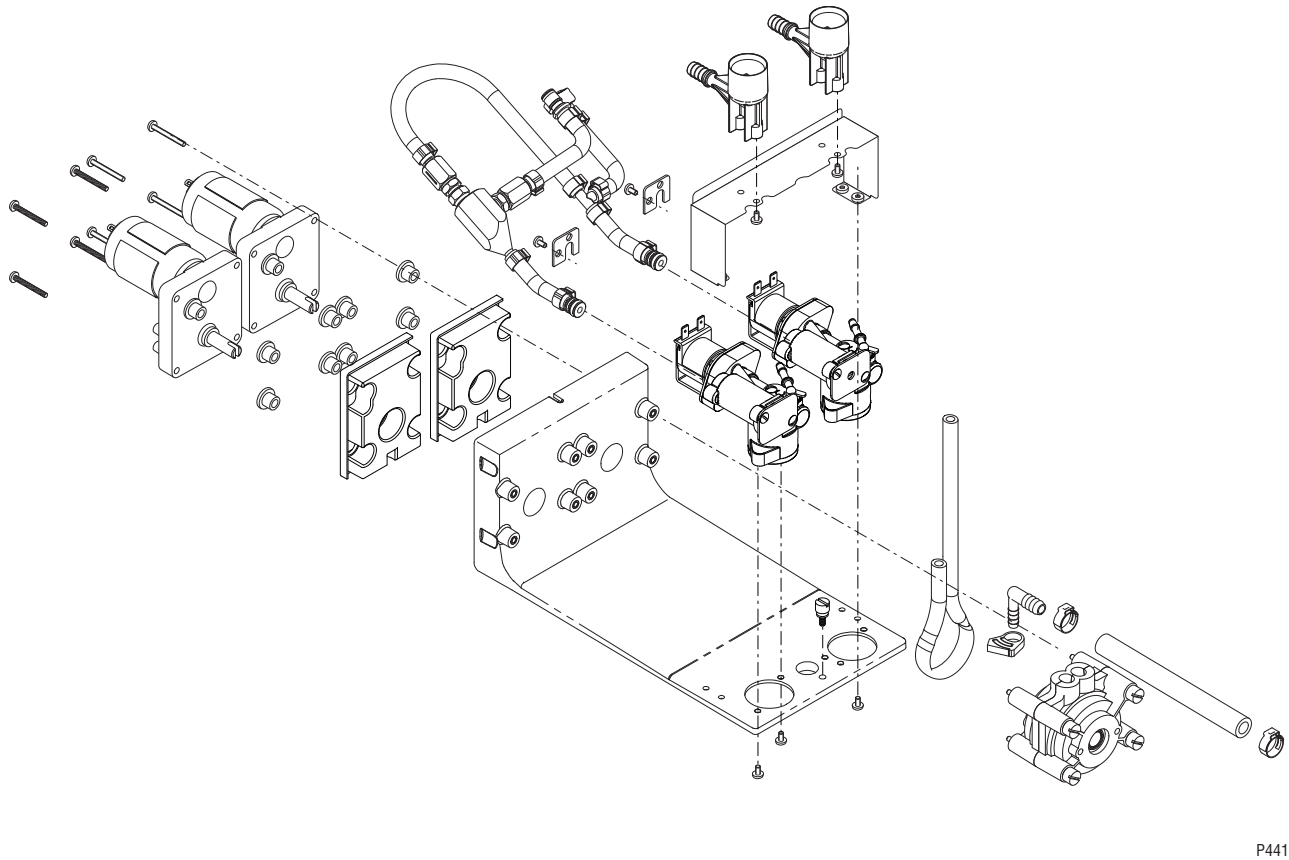



FIG. 2 DISPENSE PLATFORM REMOVAL

## SERVICE (CONT.)

### Cabinet Fan

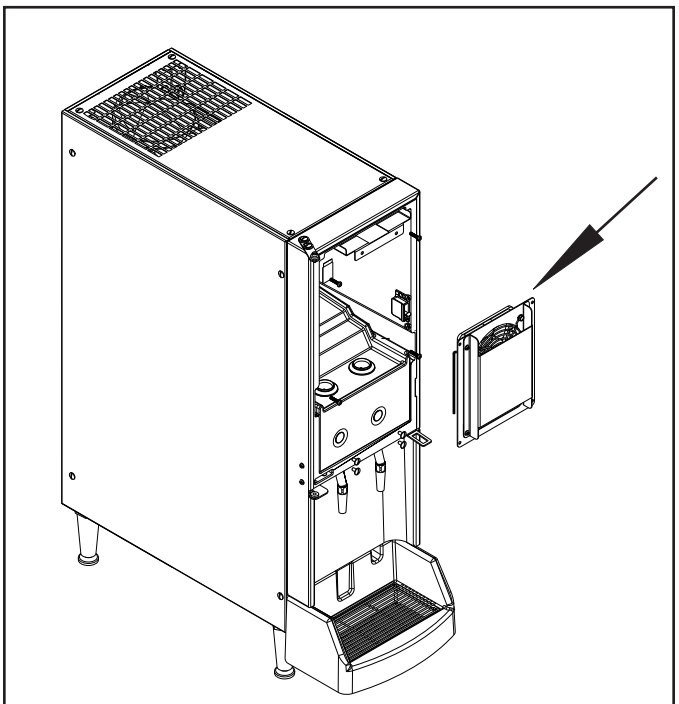


FIG. 3 CABINET FAN

Location:

The cabinet fan is located inside the dispenser cabinet mounted in the center behind the fan guard cover.

Test Procedure:

1. Disconnect the dispenser from the power source.
2. Remove the four screws attaching the fan and cover assembly.
3. Gently pull the cover forward and disconnect the 2-pin connector from the main wiring harness.
4. With a voltmeter, check the voltage across the two wire terminals of the main harness. Connect the dispenser to the power source. The indication must be 24 volts ac.
5. Disconnect the dispenser from the power source.

If voltage is present as described, replace the fan.
If voltage is not present as described, refer to the Wiring Diagrams and check the dispenser wiring harness back to the transformer (See TRANSFORMER).

Removal and Replacement:

1. Disconnect the dispenser from the power source.
2. Remove the four screws attaching the fan and cover assembly.
3. Gently pull the cover forward and disconnect the 2-pin connector from the main wiring harness.
4. Remove the fan from the cover assembly and discard the old fan.
5. Install the new fan to the cover assembly using screws previously removed.
6. Reconnect the fan to the 2-pin connector on the main wiring harness.
7. Install the fan and cover assembly to the cabinet using screws previously removed.
8. Reconnect power to the dispenser.

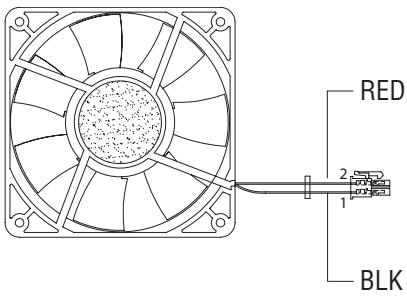



FIG. 4 CABINET FAN TERMINALS

## SERVICE (CONT.)

### Compressor

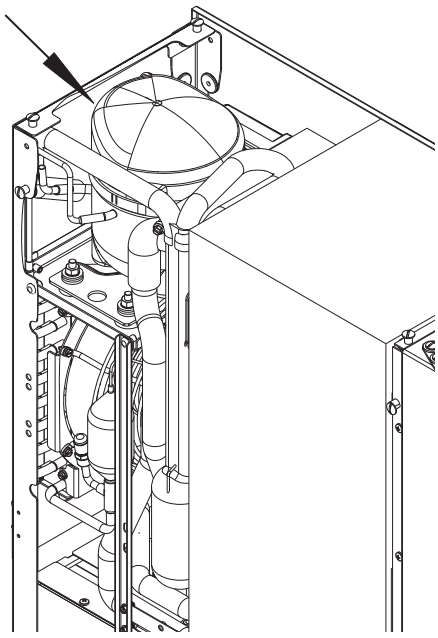



FIG. 5 COMPRESSOR

Location:

The compressor is located at the top of the dispenser frame.

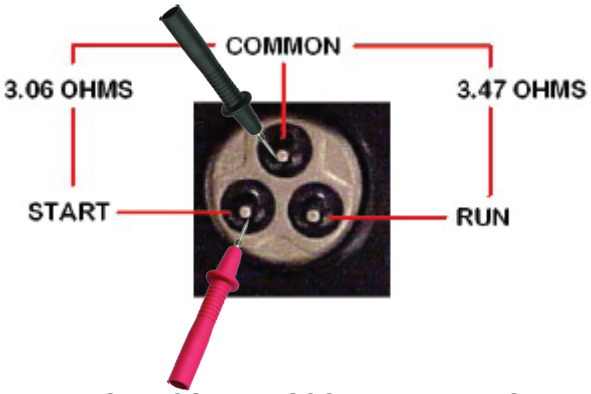



FIG. 6 COMPRESSOR TERMINALS

Test Procedures:

Compressor: Refer to FIG. 6

1. Remove relay and thermal overload protector.
2. Use an Ohm meter, place one lead on the copper tubing and the other on any of the three terminals and set the meter to highest resistance setting.

If you get a resistance reading to ground, replace the compressor.

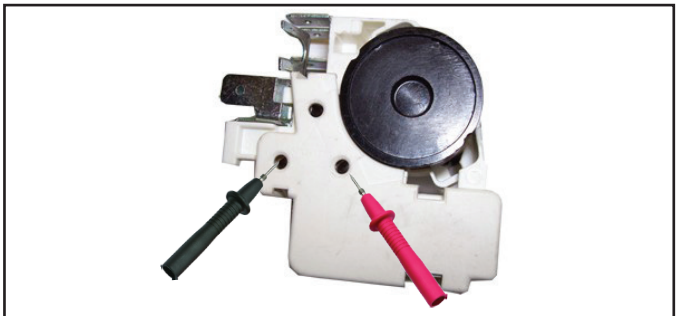


FIG. 7 START RELAY TERMINALS

Compressor Start Relay: Refer to FIG. 7

1. Disconnect the dispenser from the power source.
2. Remove compressor terminal cover (1).
3. Install meter leads as shown and check for low nominal resistance through the PTC relay.

If continuity is not present, replace the PTC relay.

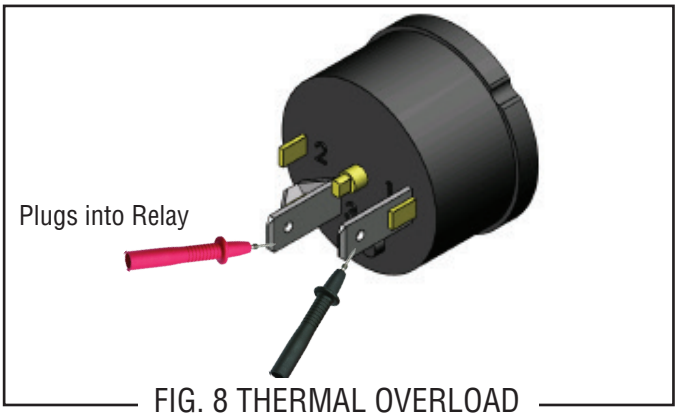



FIG. 8 THERMAL OVERLOAD PROTECTOR TERMINALS

Thermal Overload Protector: Refer to FIG. 8

1. Disconnect the overload from the compressor and at room temperature. Install meter leads across the two spade terminals and check for continuity
2. The eter display should read 0.00 or hear an audible tone.

If continuity is not present at room temperature, replace the overload protector.

## SERVICE (CONT.)

### Compressor (Cont.)

Removal and Replacement:

Compressor Relay: Refer to FIG. 9

1. Remove the terminal cover (1)
2. Disconnect the white wire from the compressor relay.
3. Pull relay (2) off of the compressor pins.
4. Remove overload protector (3) and discard relay.
5. Install the overload protector on to the new relay.
6. Push new relay onto the compressor pins.
7. Refer to Fig. 9 and reconnect the wires.
8. Reinstall terminal cover (1).

Compressor Thermal Overload Protector: Refer to FIG. 9

1. Remove terminal cover (1).
2. Disconnect the BLU/BLK wire of the harness from the thermal overload protector.
3. Remove relay (2).
4. Remove overload protector (3) and discard overload protector.
5. Install new overload protector (3) on to the relay.
6. Install relay (2) on to the compressor.
7. Refer to Fig. 10 and reconnect the thermal overload protector wires.
8. Reinstall terminal cover (1).

Compressor Assy:

**NOTE:** Before removal of any refrigeration component the refrigerant in the system must be reclaimed by a licensed refrigeration repair person.

**NOTE:** When replacing the compressor it is recommended that the **dryer** also be replaced.

1. Disconnect the tubes from the condenser and the accumulator.
2. Disconnect the compressor wiring harness from the dispenser main wiring harness.
3. Remove the four .25-20 keps nuts and washers securing the compressor to the chassis. Set nuts and washers aside for reassembly.
4. From the right side of the dispenser lift the compressor assembly over the four studs in the chassis and remove compressor.

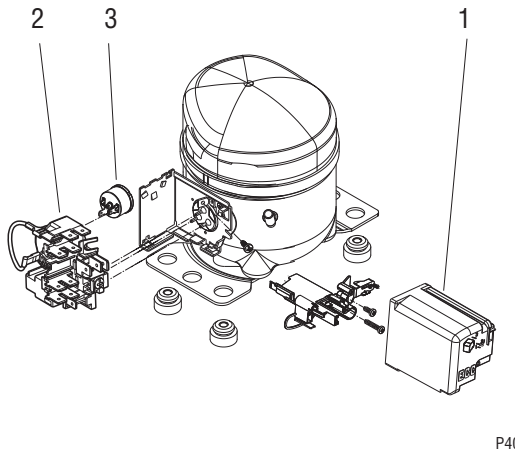



FIG. 9 COMPRESSOR THERMAL OVERLOAD PROTECTOR LOCATION

1. Compressor Terminal Cover
2. Compressor Relay
3. Thermal Overload Protector

5. Install new compressor over the four studs in the dispenser chassis with the fill valve to the left side of the dispenser.
6. Secure compressor to the dispenser chassis using four .25-20 keps nuts and washers.
7. Reconnect tubes from the condenser and the accumulator to the compressor.
8. Evacuate the system.
9. Recharge system with:

9 oz. Type R134A refrigerant.
Design Pressures: High 255 - Low 36 psi

**NOTE:** The charging of the system must be done by a licensed refrigeration repair person.

**NOTE:** Refer to Wiring Diagrams when reconnecting wires to Compressor, Thermal Overload Protector and Start Relay.

## SERVICE (CONT.)

### Compressor Switch

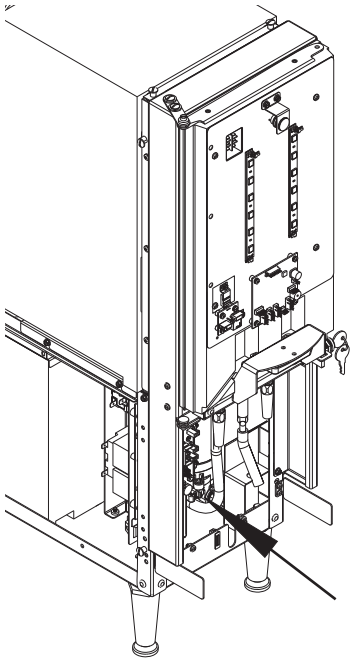



FIG. 10 COMPRESSOR SWITCH

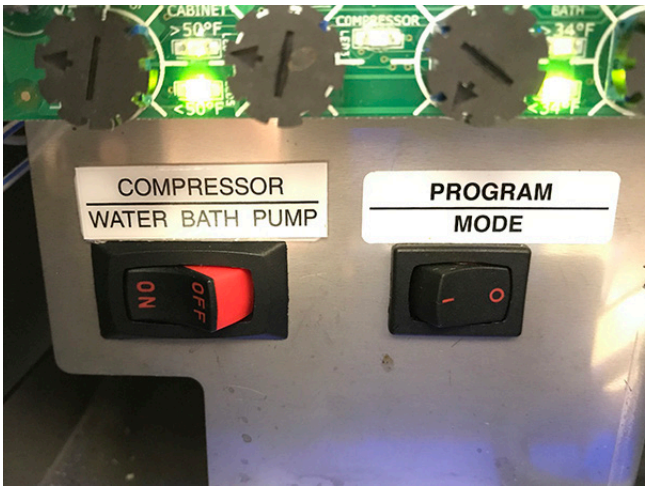
Location:

The switch is located on the front left of the dispenser behind the splash panel.

Test Procedure:

1. Disconnect the dispenser from the power source.
2. Remove the two wires from the switch terminals.
3. Check for continuity across the switch terminals with the switch in the “ON” position. Continuity must not be present when the switch is in the “OFF” position.

If continuity is present as described, reconnect the wires to the switch terminals.
If continuity is not present as described, replace the switch.




Refrigeration Switch

Removal and Replacement:

1. Disconnect the dispenser from the power source.
2. Remove the cover or splash panel to gain access to the switch.
3. Gently disconnect the wiring harness from the switch.
4. Remove the switch from the mounting bracket and discard.
5. Install the new switch into the mounting bracket.
6. Reconnect the wiring harness to the new switch.
7. Install covers or panels previously removed.
8. Reconnect power to the dispenser.

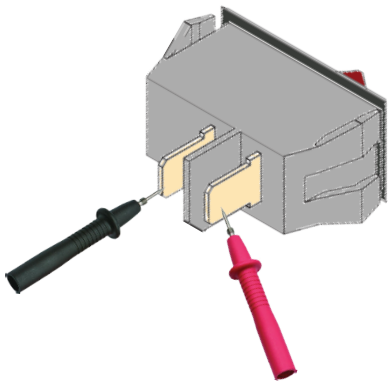



FIG. 11 COMPRESSOR SWITCH TERMINALS

## SERVICE (CONT.)

### Condenser Fan

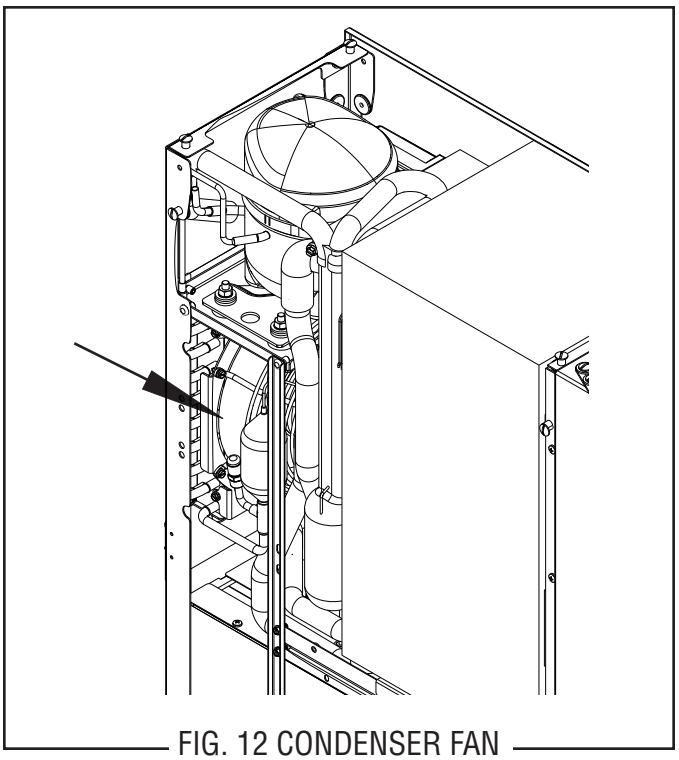


FIG. 12 CONDENSER FAN

Location:

The condenser fan is located inside the main frame below the compressor assembly.

Test Procedure:

1. Disconnect the dispenser from the power source.
2. Disconnect the 2-pin from the fan to the main wiring harness.
3. Check for continuity across the fan terminals.

If continuity is present as described, reconnect the wires to the fan terminals.
If continuity is not present as described, replace the fan.

Removal and Replacement:

1. Disconnect the dispenser from the power source.
2. Remove the four screws attaching the fan and wire guard to the mounting bracket.
3. Disconnect the 2-pin connector from the fan to the main harness.
4. Remove the fan from the wire guard and discard.
5. Install the new fan onto the wire guard..
6. Install fan and wire guard assembly using four screws previously removed.
7. Reconnect the wiring harness to the new fan.
8. Use wire ties where necessary to secure the wiring from any moving parts.
9. Reconnect power to the dispenser.

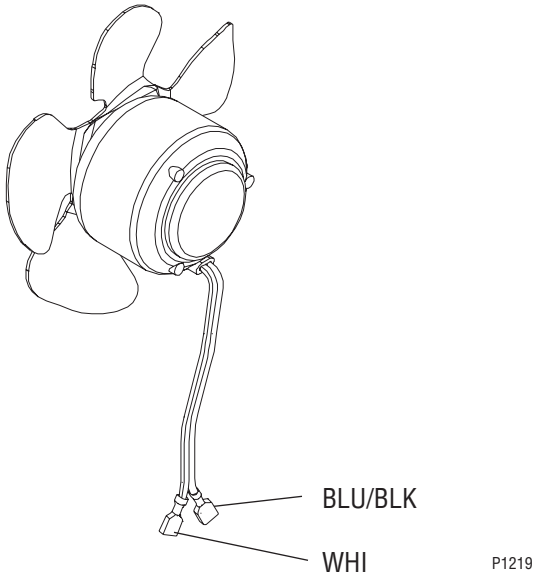



FIG. 13 CONDENSER FAN TERMINALS

## SERVICE (CONT.)

### Control Board, Main

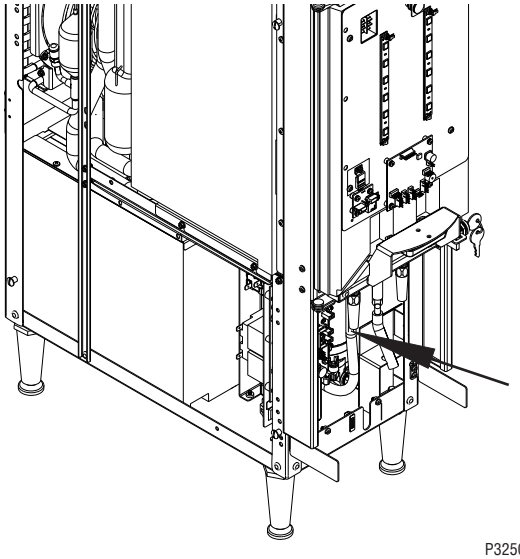



FIG. 14 CONTROL BOARD

Location:

The Main Control Board is located on the electrical component enclosure behind the splash panel.

Test Procedure:

Power Supply Circuitry:

1. Disconnect the dispenser from the power source.
2. With a voltmeter, back probe check the voltage across pins 1 & 3 of the J6 connector on the wiring harness. Connect the dispenser to the power source. The indication must be 24 volts ac.
3. Disconnect the dispenser from the power source.

If voltage is present as described, proceed to step 4. If voltage is not present as described, refer to the Wiring Diagrams and check the dispenser wiring harness back to the transformer (See TRANSFORMER).

4. Disconnect the dispenser from the power source.
5. With a voltmeter, back probe check the voltage across pins 1 & 3 of the J12 connector on the wiring harness. Connect the dispenser to the power source. The indication must be 24 volts ac.
6. Disconnect the dispenser from the power source.

If voltage is not present as described, refer to the Wiring Diagrams and check the dispenser wiring harness back to the transformer (See TRANSFORMER).

Removal and Replacement:

1. Disconnect the dispenser from the power source.
2. Remove the four #6-32 screws securing the control board to the component bracket.
3. Disconnect all the plugs on the main wiring harness from the connectors on the control board.
4. Remove the spacers from the control board and discard.
5. Install the spacers on to the new control board.
6. Reconnect all plugs on the main harness to the connectors on the control board.
7. Install new control board on the component bracket using four #6-32 screws.

NOTE: Verify all ground wires are connected to the grounding stud and secured with nuts.

NOTE: If the main circuit board is being replaced, the technician should also calibrate the water bath thermistor after the new board is installed.

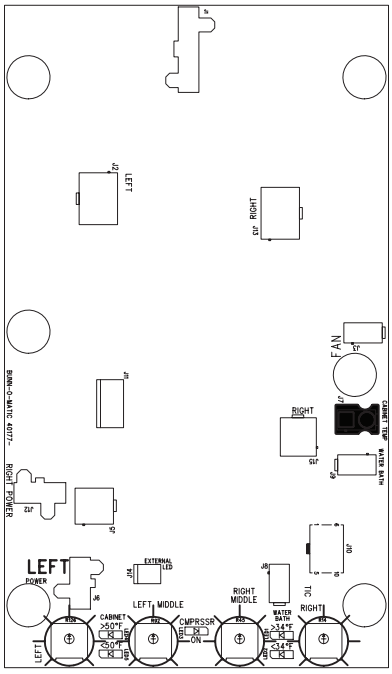



FIG. 15 CONTROL BOARD CONNECTORS

## SERVICE (CONT.)

### Portion Control Board

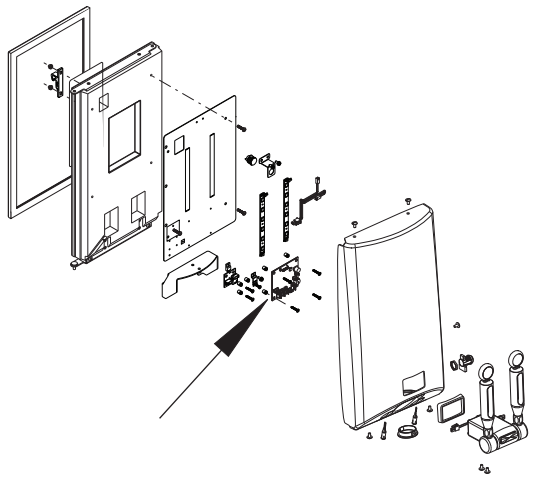


FIG. 16 PORTION CONTROL BOARD

Location:

The Portion Control Board is located inside the door cover mounted on the bracket.

Test Procedure:

1. Disconnect the dispenser from the power source.
2. With a voltmeter, back probe check the voltage across pins 1 & 5 of the J6 connector on the wiring harness. Connect the dispenser to the power source. The indication must be 30 volts dc.
3. Disconnect the dispenser from the power source.

If voltage is present as described, replace the board. If voltage is not present, inspect the door cable and connector for loose connection at the CBA J11 connector.

| | |
|---|---|
| J-1 | Dispense Lockout Switch |
| J-2 | Left and Right Handle Reed Switches |
| J-3 | N/A |
| J-4 | N/A |
| J-5 | N/A |
| J-6 | Door Harness to Main Circuit Board |
| J-7 | N/A |
| J-8 | Blue and Red LED's |
| J-9 | N/A |

Removal and Replacement:

1. Remove the five screws securing the door cover to the door frame.
2. Carefully pull the cover forward and disconnect all switch harnesses from the connectors on the control board.
3. Remove the four #6-20 screws securing the control board to the light panel.
4. Remove the spacers from the control board and discard the old board.
5. Install the spacers on to the new control board.
6. Install new control board on the light panel using four #6-20 screws.
7. Position the door cover to the door frame and reconnect all switch harnesses to the connectors on the control board.
8. Secure the door cover to the frame with the five screws previously removed.

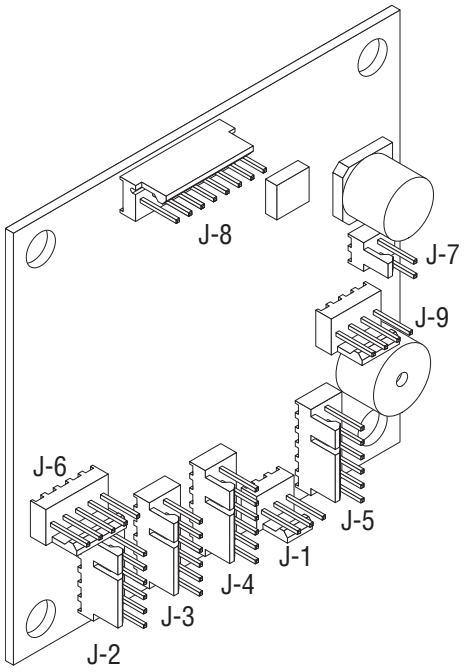



FIG. 17 CONTROL BOARD CONNECTORS

## SERVICE (CONT.)

### Circulation Pump

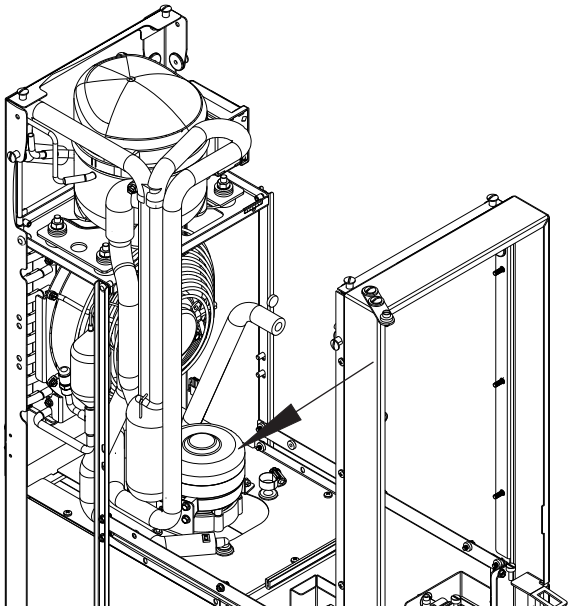


FIG. 18 CIRCULATION PUMP

Location:

The Circulation Pump is located on top of the water bath tank cover.

Test Procedure:

1. Disconnect both spade terminals at the pump.
2. With a voltmeter, place the leads across the harness side that connected to the pump. The voltage reading should be 120V ac continuously when dispenser is powered.
3. Install amp clamp around red/black wire going to the pump. Meter should display around .36 amps.
4. Visually ensure the pump is moving or circulating water.

Removal and Replacement:

1. Remove dispense platform for ease of taking out recirculating pump.
2. Remove left and right side panels.
3. Remove silicone condensation hose out of bath tank along side recirculating pump.
4. Disconnect pump motor and condenser fan wires (1/4" spade terminals).
5. Release recirculating pump holding brackets each side (4 nuts).
6. Lift up on recirculating pump and maneuver out the right side of the machine.

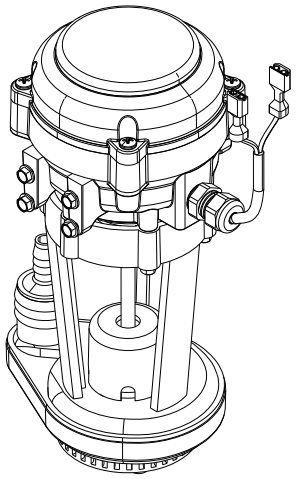



FIG. 19 CIRCULATION PUMP

## SERVICE (CONT.)

### Dispense Switch

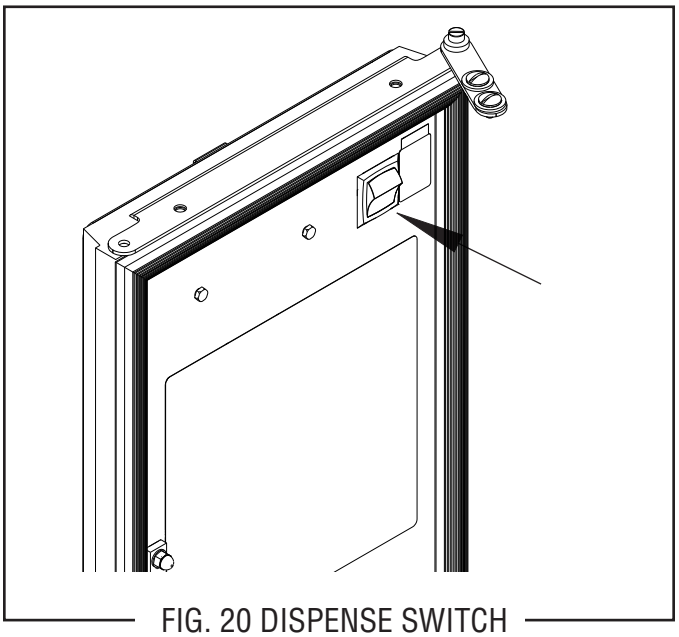


FIG. 20 DISPENSE SWITCH

Location:

The Dispense Switch is located on the rear side of the inner door, upper corner.

Test Procedure:

1. Disconnect the dispenser from the power source.
2. With a voltmeter, back probe check across the two brown wires on the switch.
3. Return power to the dispenser. The meter will display 0.00 for continuity.
4. Disconnect the dispenser from the power source.

If continuity is present as described, proceed to step 5.
If continuity is not present, replace the switch.

5. With an ohmmeter, check for continuity between the terminals shown in Fig. 21.

Continuity must be present when the switch is in the ON position.
If continuity is not present, replace the switch.

Removal and Replacement:

1. Disconnect the dispenser from the power source.
2. Press the locking tabs of the old switch and remove from the mounting bracket.
3. Disconnect the two brown wires and two blue wires from the switch.
4. Connect the two brown wires and two blue wires to the new switch terminals as shown below.
5. Press the new switch into the mounting bracket.
7. Return power to the dispenser.

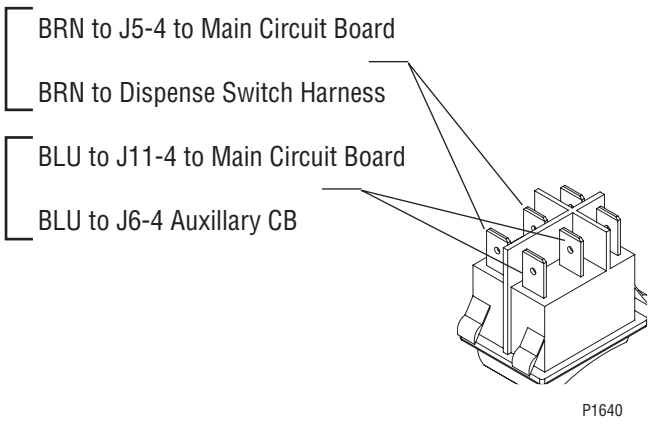



FIG. 21 SWITCH TERMINALS

## SERVICE (CONT.)

### Dispense Pump

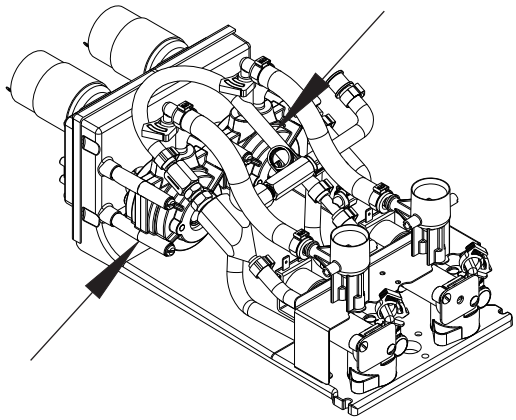


FIG. 22 DISPENSE PUMP

Location:

The Dispense Pumps are located on the platform assembly.

Removal, Inspection, and Replacement:

1. Loosen the four #8-32 x 2.45 screws securing the pump assembly to the platform.
2. Pry the two halves of the pump housing apart to reveal the pump tube and the rotor.
3. Inspect the pump tubing for signs of wear and replace every six months or as needed.
4. Inspect the pump rotor for signs of wear and replace if necessary.
5. Install the new pump tube around the rotor and position into the rear housing with the clamp resting on the top edge.
6. Install the front housing to be flush with the rear housing.
7. Position the pump assembly back on the platform and secure with four #8-32 x 2.45 screws previously removed.
8. Repeat for remaining pump.

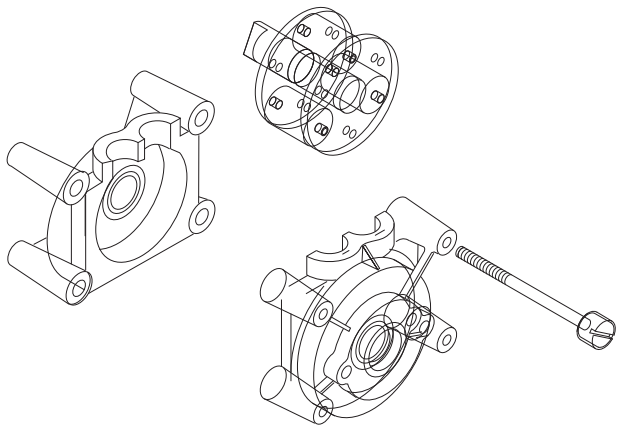


FIG. 23 DISPENSE PUMP COMPONENTS

## SERVICE (CONT.)

### Dispense Motor

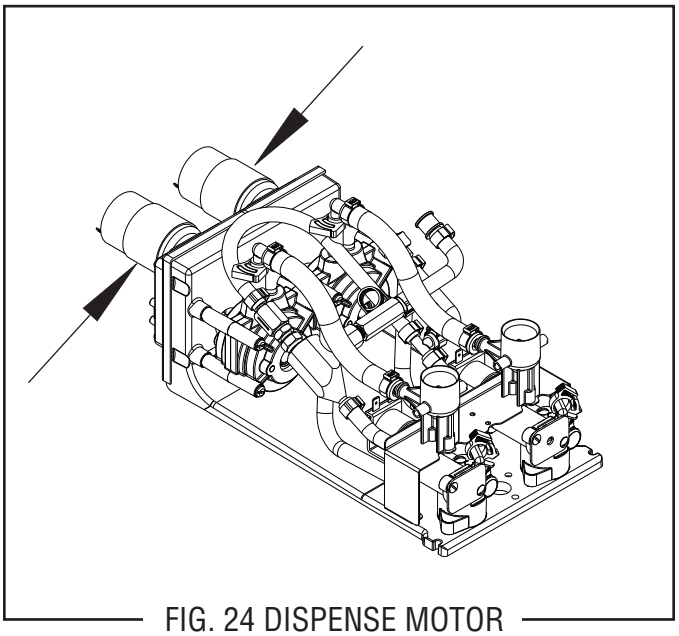


FIG. 24 DISPENSE MOTOR

Location:

The Dispense Motors are located on the rear of the platform assembly.

Test Procedure:

1. Turn main water supply off.
2. Gently move motor spade connectors to expose enough motor terminal for the voltmeter leads to be applied for DC voltage test.
2. With a voltmeter, install the red lead on the lower motor terminal and the black lead on the upper terminal. Pull the coresponding handle. A voltage reading between 9.0 to 25 volts dc should be displayed on the voltmeter. The amount of voltage is dependent upon the dispense station pot dial setting.
3. 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 pull and hold handle assembly with reed switch.

Removal and Replacement:

1. Disconnect the two wires from the dispense motor.
2. Loosen the four #8-32 screws securing the motor to the platform assembly and remove the motor.
3. Inspect the gasket and rubber bushings for signs of wear and replace if necessary.
4. Position the new motor into place with the gasket and bushings onto the platform. Secure with four #8-32 screws previously removed.
5. Reconnect the two wires to the motor as shown in Fig. 25.

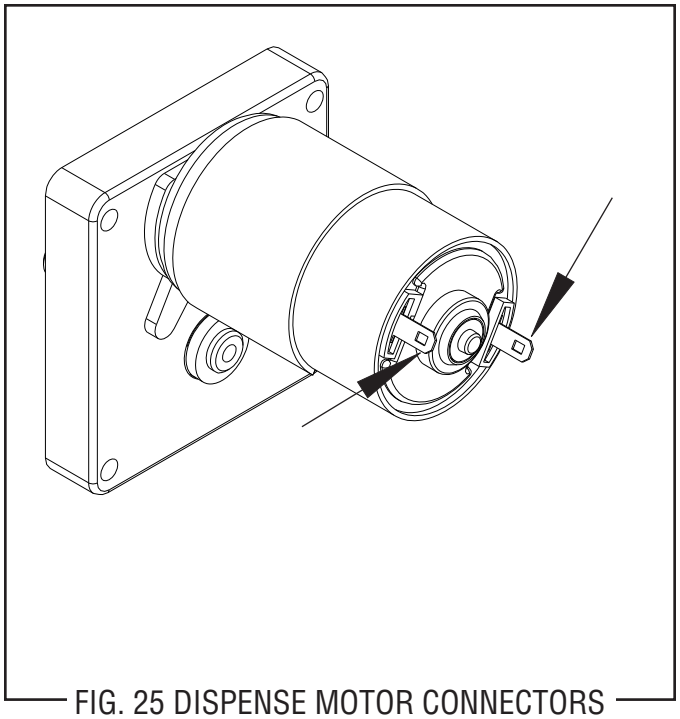


FIG. 25 DISPENSE MOTOR CONNECTORS

## SERVICE (CONT.)

### Dispense Valve

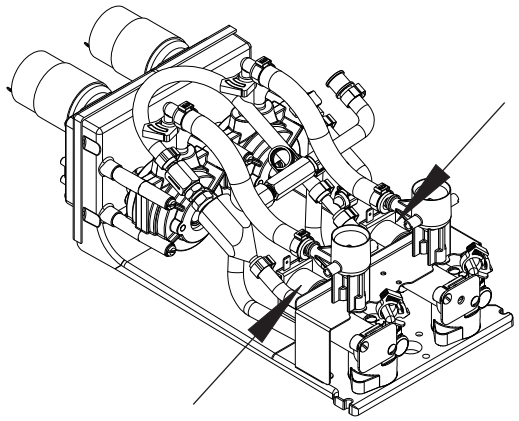


FIG. 26 DISPENSE VALVES

Location:

The Dispense Valves are located at the front of the platform assembly. The associated flow adjustment in the front of the still dispense valve is used to fine tune the water flow to approximately 1.5 ounces per second.

Test Procedure:

1. Disconnect the dispenser from the power source.
2. With a voltmeter, check the voltage across the two wire terminals of the valve solenoid. Connect the dispenser to the power source. The indication must be 24 volts dc.
3. Check coil resistance by disconnecting the wires going to the coil. Place meter leads across coil terminals, the meter display should show approximately 44.3 ohms +/_ 10% at 77°F temperature.

If readings are not as described, replace the valve.

Removal and Replacement:

1. Disconnect the two wires from the dispense valve.
2. Remove the #6-32 screw and plate securing the water manifold tube to the valve.
3. Loosen the two #6-32 screws securing the valve to the platform assembly and remove the valve.
4. Install the new valve onto the platform and secure with two #6-32 screws previously removed.
5. Inspect the o-ring on the manifold tube connector for signs of wear and replace if necessary.
6. Connect the water manifold tube to the valve and secure in place with the plate and #6-32 screw previously removed.
7. Reconnect the two wires to each valve as shown in Fig.s 27 and 28.

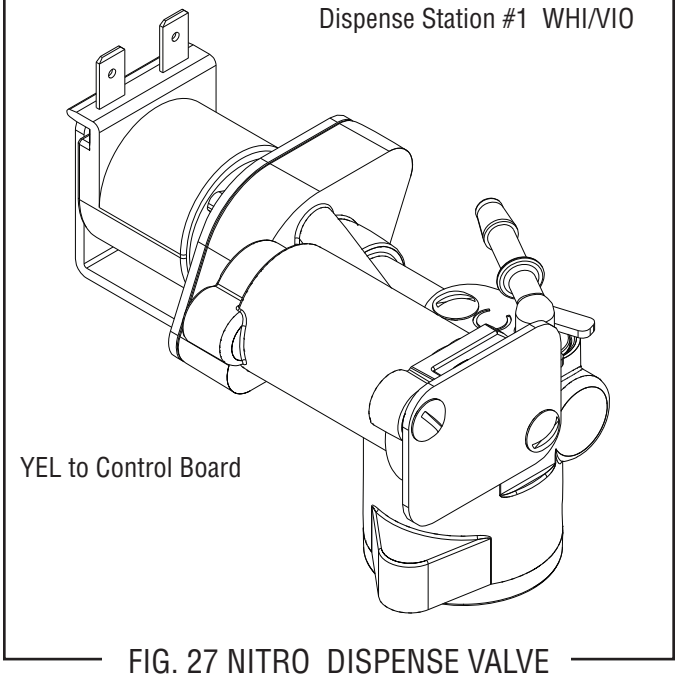



FIG. 27 NITRO DISPENSE VALVE

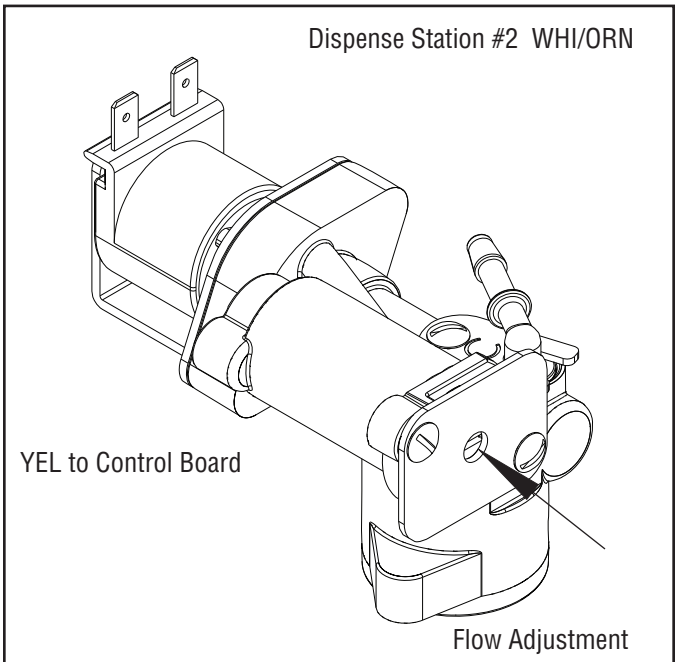



FIG. 28 STILL DISPENSE VALVE

## SERVICE (CONT.)

### Dispense Handles

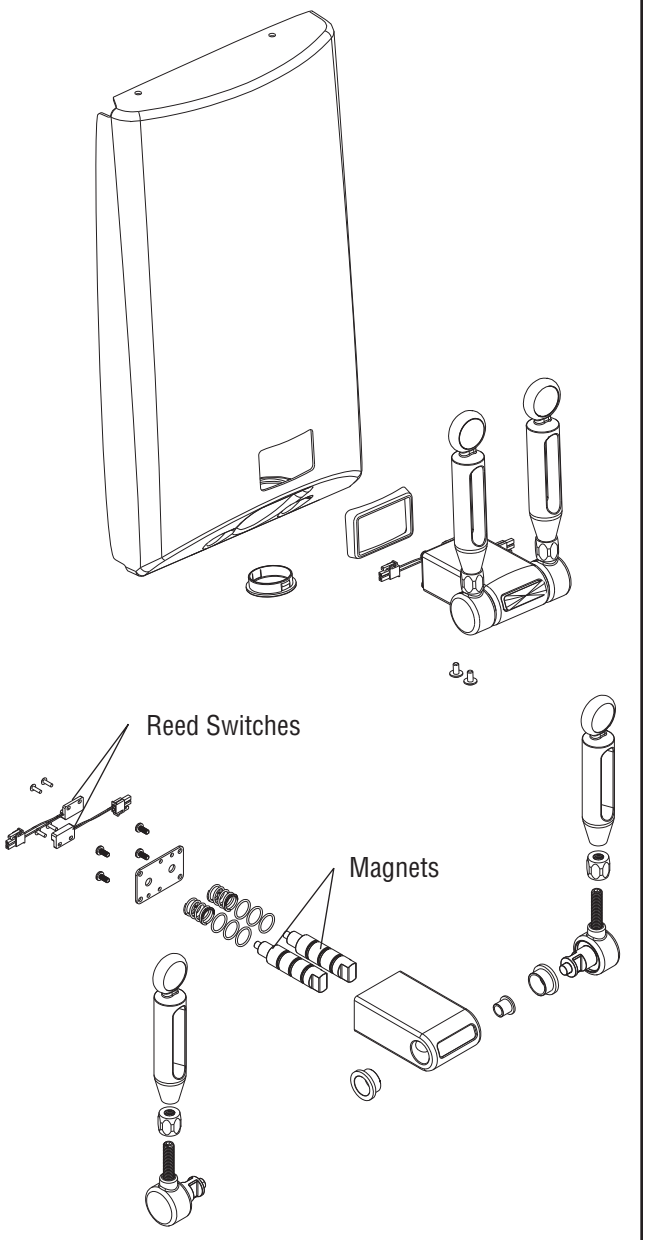



FIG. 29 DISPENSE HANDLES

Location:

The dispense handles are located on the lower outside of the dispenser door.

Test Procedure:

1. Disconnect the dispenser from the power source.
2. Remove the access plug from the bottom of the door and remove the two screws attaching the pull and hold handle assembly to the mounting bracket.
3. Disconnect the switch from the wiring harness and remove the reed switch from the block.
4. Source a magnet to test the switch contacts for closure.
5. With a voltmeter, check across the two terminals for each dispense switch. Place the magnet near the switch surface to close the switch contacts.
6. The meter will show 0.00 for continuity and when the magnet is removed, the switch should return to an open connection.

If continuity is not present with the test magnet, replace the reed switch.
If continuity is continuous without the test magnet, replace the reed switch.
If continuity is present with the test magnet, inspect the pull and hold handle internal parts for mechanical operation and magnet for corrosion.

Removal and Replacement:

1. Disconnect the dispenser from the power source.
2. Remove the access plug from the bottom of the door and remove the two screws attaching the pull and hold handle assembly to the mounting bracket.
3. Disconnect the switches from the wiring harness and remove the pull and hold handle assembly.
4. Carefully slide the new handle assembly through the gasket.
5. Connect the wires for the nitro reed switch to the connector with white and blue wires.
6. Connect the wires for the still reed switch to the connector with white and red wires.
7. Insert the handle assembly into the door opening and secure with two screws previously removed.
8. Re-install the access plug to the bottom of the door.

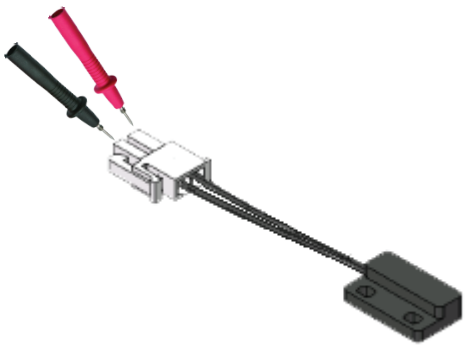


FIG. 30 DISPENSE REED SWITCH

## SERVICE (CONT.)

### LED Lamps

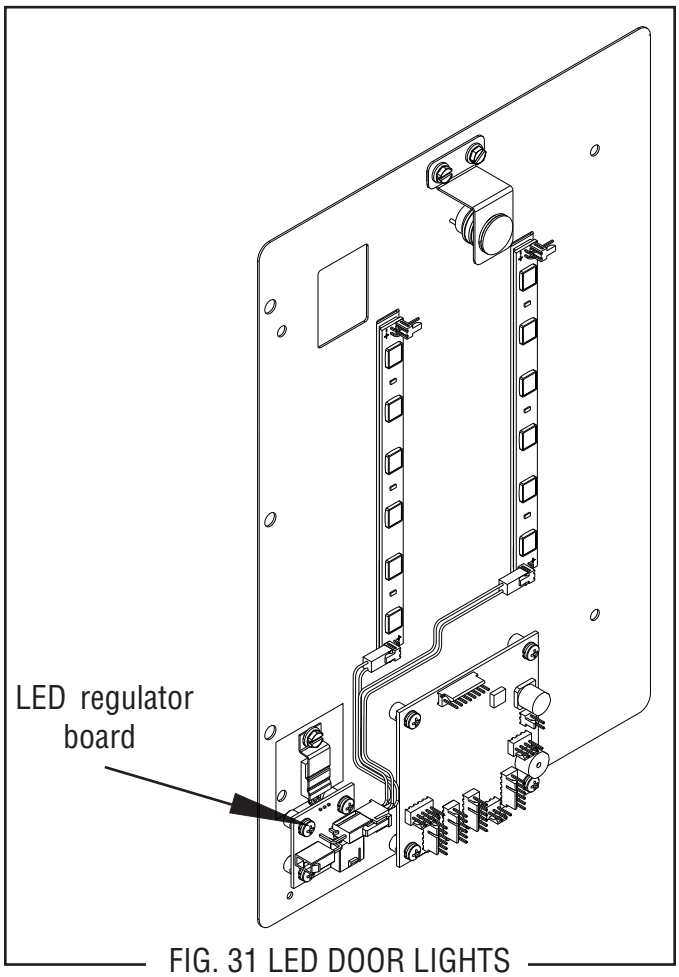



FIG. 31 LED DOOR LIGHTS

Location:

The LED door lights are located inside the dispenser door.

Test Procedures:

No illumination at all: First verify that the dispense lockout switch has not been turned off!

1. Disconnect power from the dispenser.
2. Check the voltage across the black and red leads of J3 at the LED regulator board with a voltmeter. Reconnect power to the dispenser. The indication must be 24 volts dc.
3. Disconnect power from the dispenser.

If voltage is present as described, replace the defective LED regulator board.
If voltage is not present as described, go to step 4.

4. Check for supply voltage (unregulated +30VDC) across brown wire and white wire at J1 of the regulator board. (FIG 32).

If voltge is present as described, replace LED regulator board.
If voltage is not present as described, check the wiring back to the main CBA.

Removal and Replacement:

1. Disconnect power from the dispenser.
2. Remove the five #6-32 screws securing the door cover to the door.
3. Carefully lower the door cover and disconnect the lamp terminals from the LED regulator board.
4. Remove and discard the faulty LED board.
5. Install a new LED regulator board exposing the adhesive backing.
6. Refer to Fig. 32 and reconnect wires to the LED regulator board.
7. Replace the door cover and secure with the five #6-32 screws.
8. Return power to the dispenser.

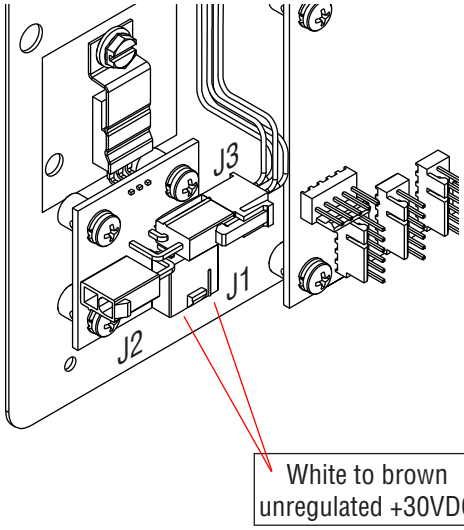



FIG. 32 LED DOOR LIGHT WIRING

## SERVICE (CONT.)

### Indicator LED

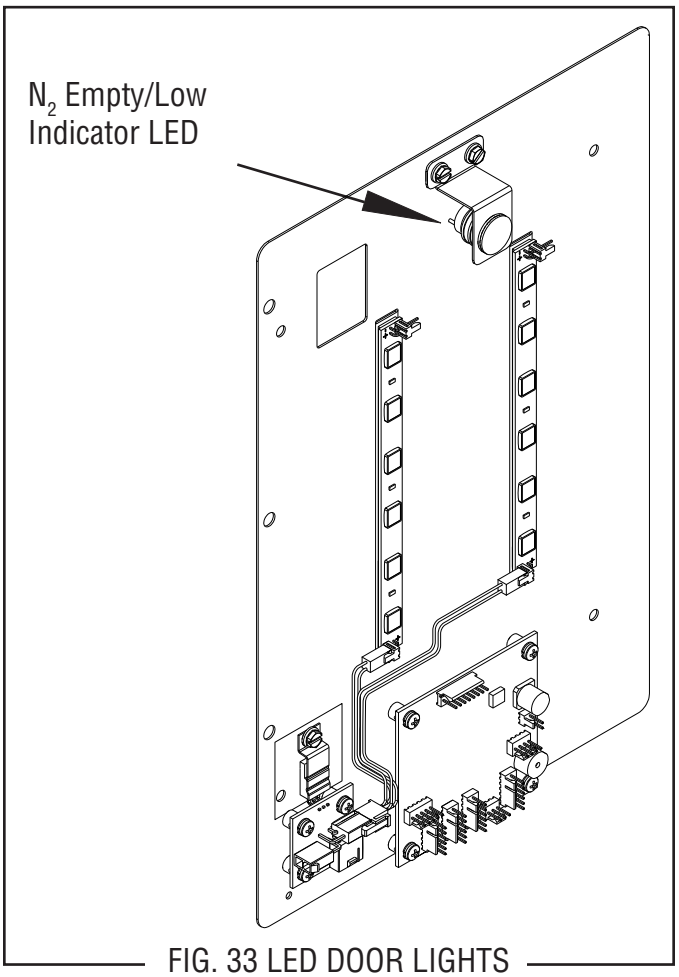



FIG. 33 LED DOOR LIGHTS

Location:

The LED door lights are located inside the dispenser door.

Test Procedures:

Visual.

Ensure N2 cylinder gauge is higher than 100psig.

If No, replace the empty N2 cylinder with a full N2 cylinder.

If Yes, go to pressure switch test procedure

Removal and Replacement:

1. Disconnect power from the dispenser.
2. Remove the five #6-32 screws securing the door cover to the door.
3. Carefully lower the door cover and disconnect the LED lamp terminals connected to the LED harness.
4. Remove and discard the faulty LED lamp.
5. Install a new LED lamp.
6. Reconnect wires to the LED harness.
7. Replace the door cover and secure with the five #6-32 screws.
8. Return power to the dispenser.

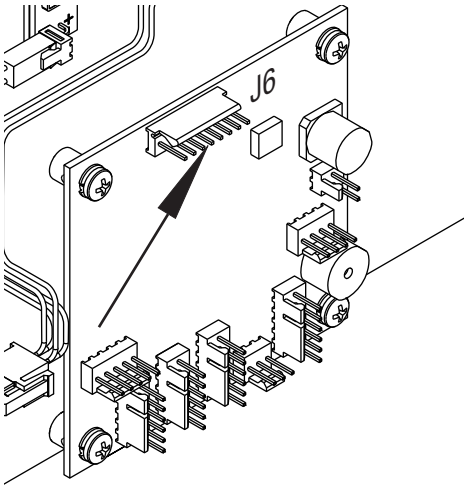



FIG. 34 LED DOOR LIGHT WIRING

## SERVICE (CONT.)

### Compressor Relay

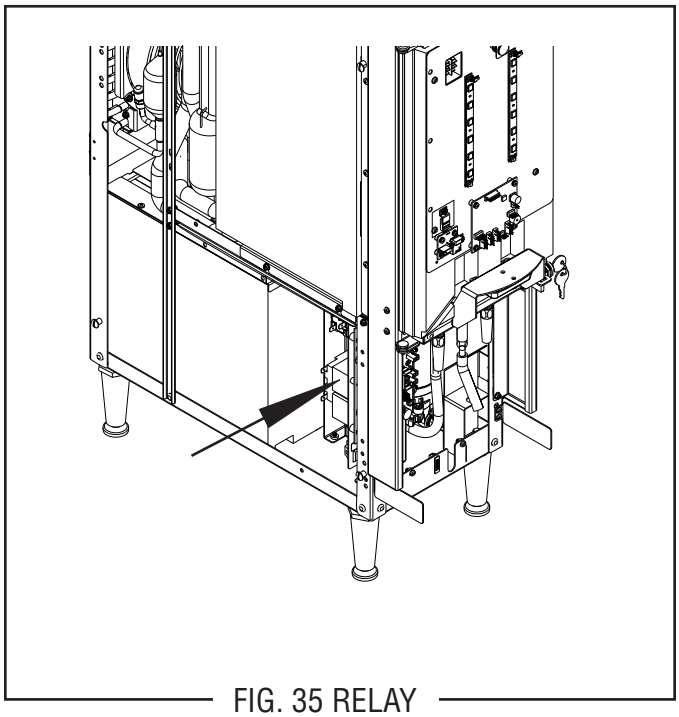


FIG. 35 RELAY

Location:

The relay (or contactor) is located inside the dispenser chassis on the upper outside of the component bracket.

Test Procedures:

1. Disconnect the dispenser from the power source.
2. Disconnect the blue/black wire and the red/black wires from relay terminals.
3. Connect the dispenser to the power source.
4. Turn on power and check for continuity across terminals on relay.

The indication must be no continuity. Energize the relay coil, the relay contacts should close and meter will read 0.00.

NOTE: Relay does have a test button to close contacts momentarily for testing purposes.

If continuity is not as described, replace the relay.

Removal and Replacement:

1. Disconnect the wires from the relay.
2. Remove the two #8-32 locking screws securing the relay and mounting bracket to the chassis. Remove and discard relay.
3. Install the new relay to the mounting bracket and then on the chassis using two #8-32 locking screws.
4. Refer to Fig. 36 to reconnect the wires.

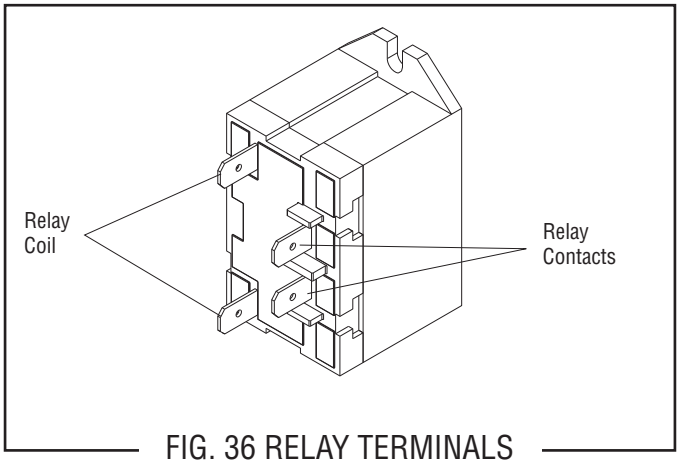



FIG. 36 RELAY TERMINALS

## SERVICE (CONT.)

### Water Pump Relay

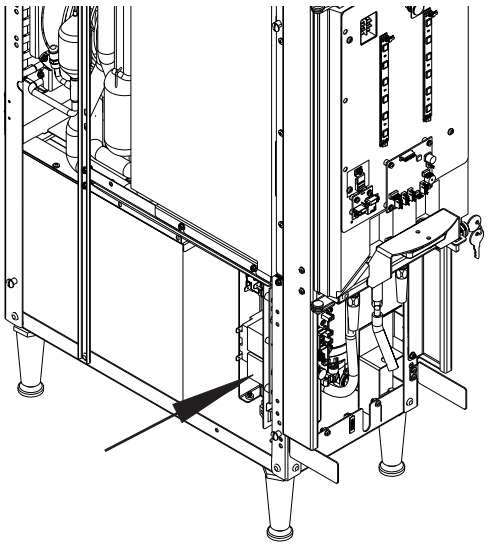


FIG. 37 RELAY

Location:

The relay (or contactor) is located inside the dispenser chassis on the lower outside of the component bracket.

Test Procedures: Continuity or Voltage Check
The coil is supplied with 24VDC from the control board while the relay contact terminal has 120VAC on the black wire.

1. Disconnect the wires going to the coil.
2. Install red meter lead into the solid yellow wire spade terminal (+) and black meter lead into the pink wire spade terminal (-).
3. Pull a handle, the meter display should show a voltage reading 24.0 to 30.0VDC.

The relay contact terminal is a normally open contact and will close upon 24VDC activation of the coil. Ensure wires are attached to coil terminals.

4. Disconnect and isolate the 120 VAC wires on the relay contact terminals.

Check relay contact terminals for continuity when relay coil is activated by the corresponding handle. The meter on the display should show 0.00 or audible tone.
If continuity or voltage is not present as described, replace the relay.

Removal and Replacement:

1. Disconnect the wires from the relay.
2. Remove the two nuts securing the relay to the mounting bracket. Remove and discard relay.
3. Install the new relay to the mounting bracket using two nuts.
4. Refer to Fig. 38 to reconnect the wires.

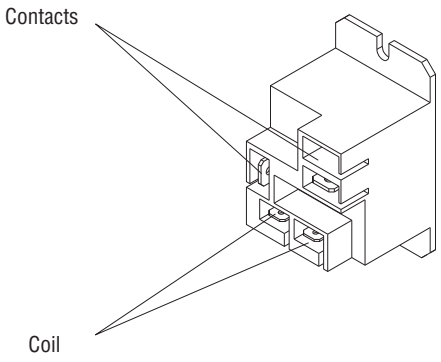



FIG. 38 RELAY TERMINALS

## Program Switch

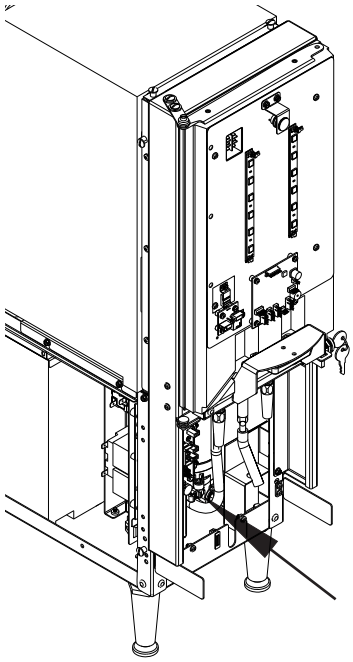



FIG. 39 PROGRAM SWITCH

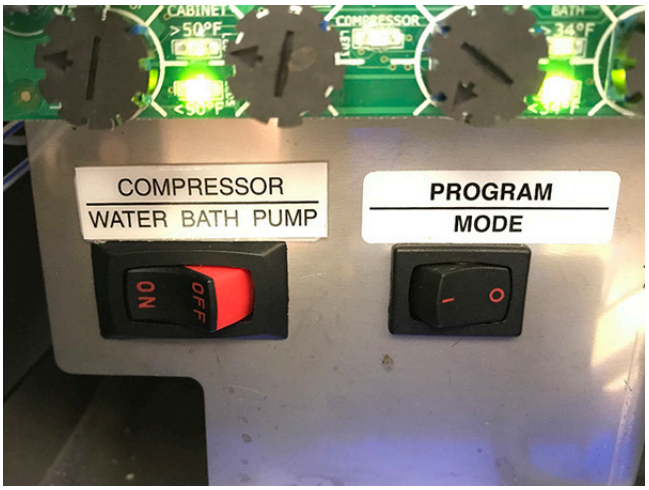
Location:

The switch is located on the front left of the dispenser behind the splash panel.

Test Procedure:

1. Disconnect the dispenser from the power source.
2. Remove the two wires from the switch terminals.
3. Check for continuity across the switch terminals with the switch in the “ON” position. Continuity must not be present when the switch is in the “OFF” position.

If continuity is present as described, reconnect the wires to the switch terminals.
If continuity is not present as described, replace the switch.




Program Switch

Removal and Replacement:

1. Disconnect the dispenser from the power source.
2. Remove the cover or splash panel to gain access to the switch.
3. Gently disconnect the wiring harness from the switch.
4. Remove the switch from the mounting bracket and discard.
5. Install the new switch into the mounting bracket.
6. Reconnect the wiring harness to the new switch.
7. Install covers or panels previously removed.
8. Reconnect power to the dispenser.

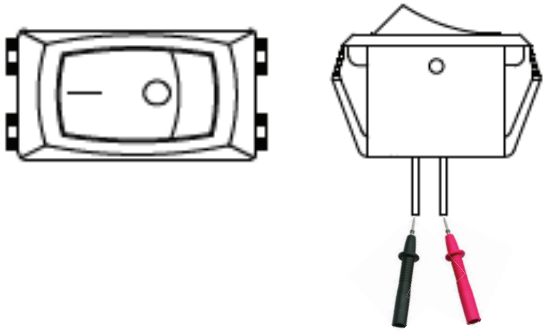


FIG. 40 PROGRAM SWITCH TERMINALS

## SERVICE (CONT.)

### Water Inlet Solenoid

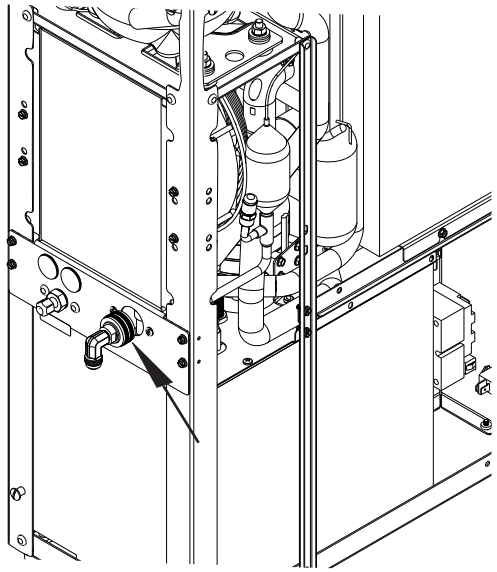


FIG. 41 INLET SOLENOID VALVE

Location:

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

Test Procedures:

1. Disconnect the dispenser from the power source.
2. Disconnect the two wires from the solenoid valve.
3. Check for continuity across the solenoid valve coil terminals.

If continuity is present as described, reconnect the two wires to the solenoid.
If continuity is not present as described, replace the solenoid valve.

4. 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.
5. 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 two 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. Remove the two #8-32 screws securing the solenoid to the dispenser base. Remove solenoid.
5. Install new solenoid valve on the dispenser base and secure with the two #8-32 screws.
6. Securely fasten the water lines to and from the solenoid valve.
7. Refer to Schematic Wiring Diagram when reconnecting the wires.

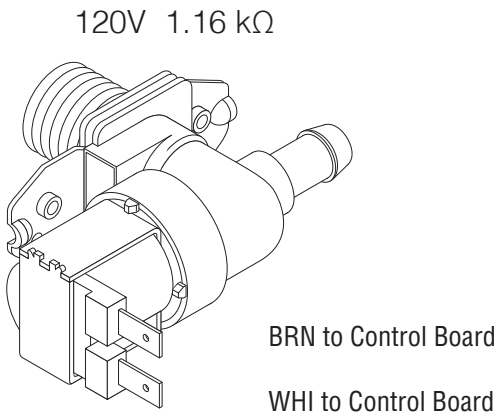



FIG. 42 INLET SOLENOID VALVE TERMINALS

## SERVICE (CONT.)

### Water Tank Solenoid

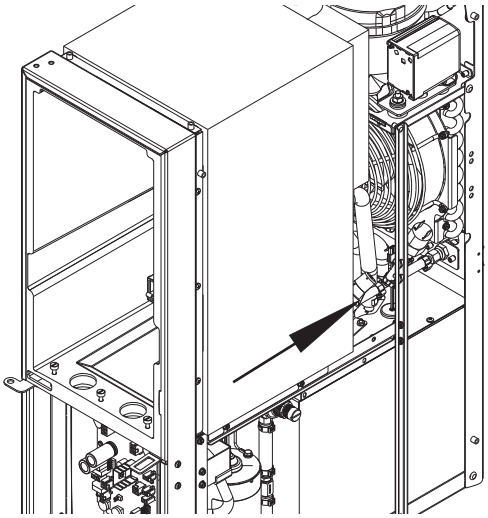


FIG. 43 WATER TANK SOLENOID

Location:

The Water Tank solenoid is located at the inside rear of the chassis frame.

Test Procedures:

1. Disconnect the dispenser from the power source.
2. Disconnect the two wires from the solenoid valve.
3. Check for continuity across the solenoid valve coil terminals.

Coil Resistance should be:

20.8 +/- 1.6 Ohm @ 68° F.
21.2 +/- 1.7 Ohm @ 77° F.

If continuity is present as described, reconnect the two wires to the solenoid.
If continuity is not present as described, replace the solenoid valve.

Removal and Replacement:

1. Disconnect the dispenser from the power source.
2. Turn off the water supply to the dispenser.
3. Remove the two wires from the solenoid valve.
4. Disconnect the water line from the solenoid valve.
5. Remove the #10-32 screws securing the solenoid valve to the chassis frame. Remove solenoid valve.
6. Using the #10-32 screws install new solenoid valve to the chassis frame.
7. Reconnect the water lines to solenoid valve.
8. Refer to schematic wiring diagrams when reconnecting the wires.

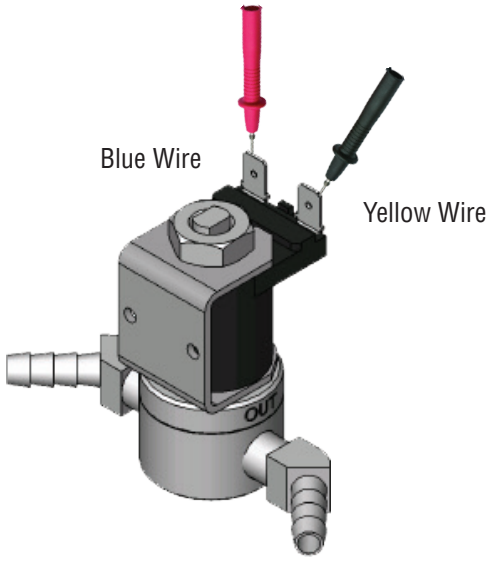



FIG. 44 SOLENOID TERMINALS

## SERVICE (CONT.)

### Water Tank Float Switch

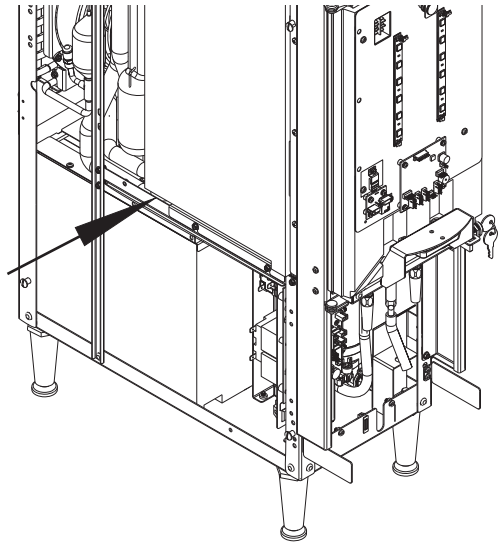


FIG. 45 WATER TANK FLOAT SWITCH

Location:

The Water Tank Float Switch is located in the top of the water tank lid.

Purpose:

The float switch is used to monitor and control water level in the tank. The float in down position has the internal contacts closed, up position opens the internal contacts which stops the water tank fill process when the On/Off dispense switch is in the On position.

Test Procedures:

Float down position: 0.00vdc or continuity across float contacts.

Float up position: 5.0vdc or no continuity across float contacts.

Removal and Replacement:

1. Disconnect the dispenser from the power source.
2. Turn off the water supply to the dispenser.
3. Disconnect the float switch from the main harness.
4. Remove the float switch from the tank lid.
5. Install a new float switch to the tank lid.
6. Reconnect the float switch to the main harness.
7. Reconnect the water lines to solenoid valve.
8. Restore power to the dispenser.

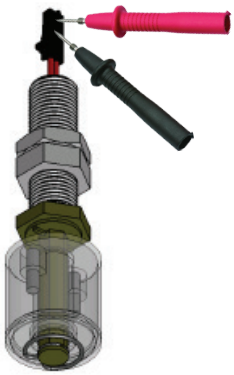


FIG. 46 SWITCH TERMINALS

**Temperature Probe**
**(Also known as Water Bath Thermistor)**

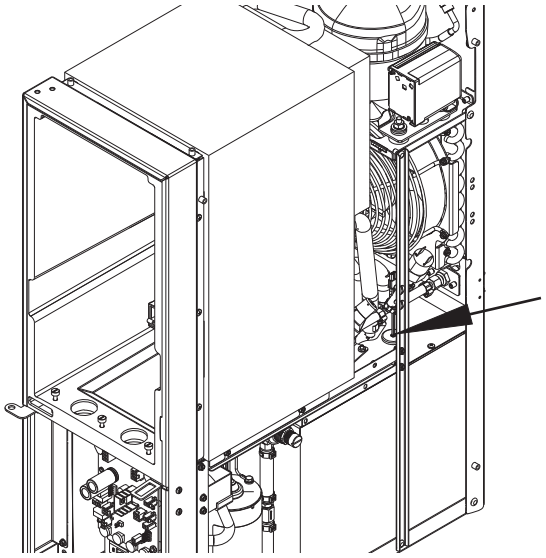


FIG. 47 TEMPERATURE PROBE

Location:

The temperature probe is located on the top of the tank assembly.

Purpose:

A thermistor (NTC) is a type of resistor which resistance is dependent on temperature. The temperature sensor will become cool and embedded in the ice block, the resis-tance will increase to the shut off point of the software param-eter. When the water temperature starts rising in temperature, the thermistor resistance starts decreasing which tells the control board to activate the refrigeration circuit.

Test Procedure:

Disconnect temperature probe from J9 on control board and place the temperature sensor in a cup of ice water for a few minutes before checking the resistance across the two terminals of the temperature probe while in the cup of ice water (32° F). The resistance should be within 31280.00 to 34022.00 Ohms @ 32° F.

If resistance is not to specification, replace the temperature probe.

Removal and Replacement:

1. Disconnect the dispenser from the power source.
2. Remove the top rear cover.
3. Disconnect the two pin connector from the dispenser main wiring harness.
4. Remove the temperature probe by firmly pulling-up on the tube at the tank lid. This will disengage the grommet from the tank lid.
5. Slide a new grommet on to the new temperature probe.
6. Insert the 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.
7. Reconnect the two pin connector to the dispenser main wiring harness.

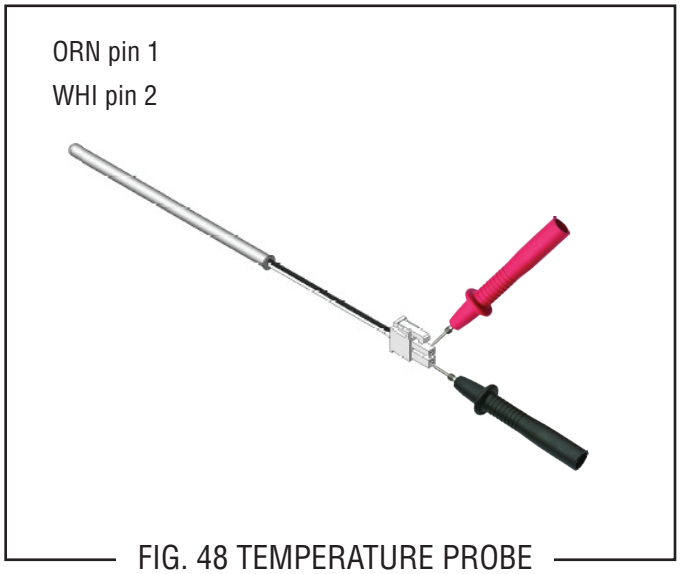



FIG. 48 TEMPERATURE PROBE

| TEMP | RESISTANCE | VOLTAGE |
|---|---|---|
| SHORTED | 0 Ω | 0VDC |
| 32° F<br>0.0° C | 31.2k - 34k Ω | 3.3VDC |
| 77° F<br>25.0° C | 9.8k - 10.2k Ω | 1.5VDC |
| OPEN | INFINITE | 5.0VDC |

**NOTE:** ALL FIGURES LISTED ABOVE ARE APPROXIMATE.

## SERVICE (CONT.)

### Temperature Sensor

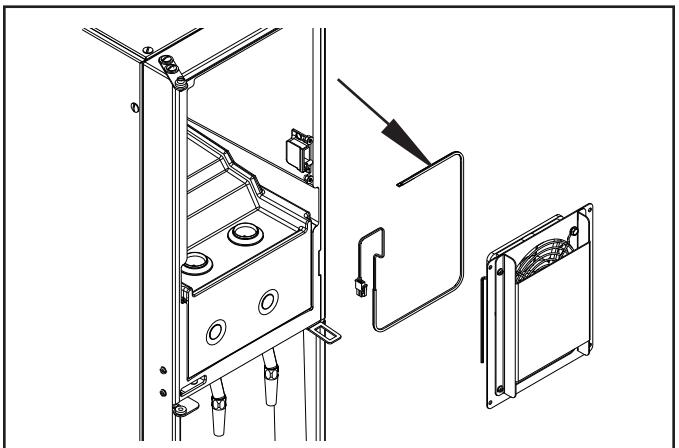


FIG. 49 TEMPERATURE SENSOR

Location:

The Temperature Sensor is located inside the cabinet between the fan and the water coil.

Test Procedures:

1. Remove the left side housing panel.
2. Connect a voltmeter across the two leads of the temperature sensor (leave plug connected);
   The indication must be:
   a) Approx. 1.4 vdc @ 71° F
   b) Approx. 2.6 vdc @ 32° F

If voltage reading is 0v, the Control Board is not supplying the necessary 5v and should be replaced. If the reading stays at 5vdc, replace sensor.

Alternate Test:

2. Disconnect the plug on sensor leads and check resistance as indicated in chart.

If resistance reading is not within the range listed in chart, replace sensor.

Removal and Replacement:

1. Remove the left side housing panel.
2. Disconnect the plug on the temperature sensor leads from the connector on the dispenser main harness.
3. Open the cabinet door and remove the product containers.
4. Remove the cabinet fan and fan guard assembly.
5. Clip off the connector and pull the temperature sensor from the top left rear of the cabinet and discard.
6. Push new temperature sensor wires into the grommet at the top left rear of the cabinet and secure to sensor mounting clip.
7. Refer to Fig. 50 and connect the wires to the new plug.
8. Connect the sensor plug to the connector from the main harness.
9. Reinstall the cabinet fan and guard assembly.
10. Reinstall the left side housing panel.

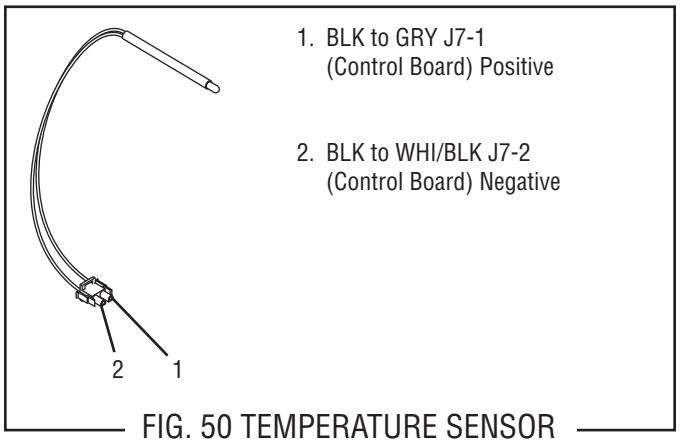



FIG. 50 TEMPERATURE SENSOR

| TEMP | RESISTANCE | VOLTAGE |
|---|---|---|
| SHORTED | 0 Ω | 0VDC |
| 32° F<br>0° C | 5532k Ω<br>5758k Ω | 2.5VDC |
| 77° F<br>25.0° C | 2k Ω | 3.3VDC |
| OPEN | INFINITE | 5.0VDC |

**NOTE:** ALL FIGURES LISTED ABOVE ARE APPROXIMATE.

## Transformer

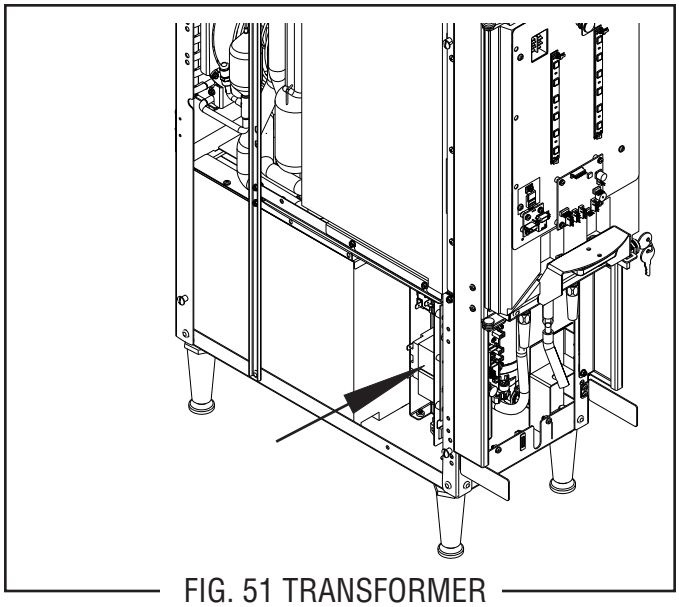


FIG. 51 TRANSFORMER

Location:

The transformer is located on the electrical component mounting bracket on the lower front of the dispenser behind the splash panel.

Test Procedure:

1. Disconnect the dispenser from the power source.
2. Check the voltage across black wire and the white wire from the main harness. Connect the dispenser to power source. The indication must be 120 volts ac.
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 the *Wiring Diagrams* and check the main wiring harness.

5. Check the voltage between J6-1 and J6-3 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 can be disconnected from the main wiring harness.
3 Remove the two #6-32 keps nuts securing the transformer to the component bracket.
5. Remove and discard the transformer.
6. Install new transformer on the component bracket and secure with two #6-32 keps nuts.
7. Refer to Fig. 52 and connect the transformer to the main wiring harness.
8. Place the component bracket into position and tighten the two #8-32 screws.

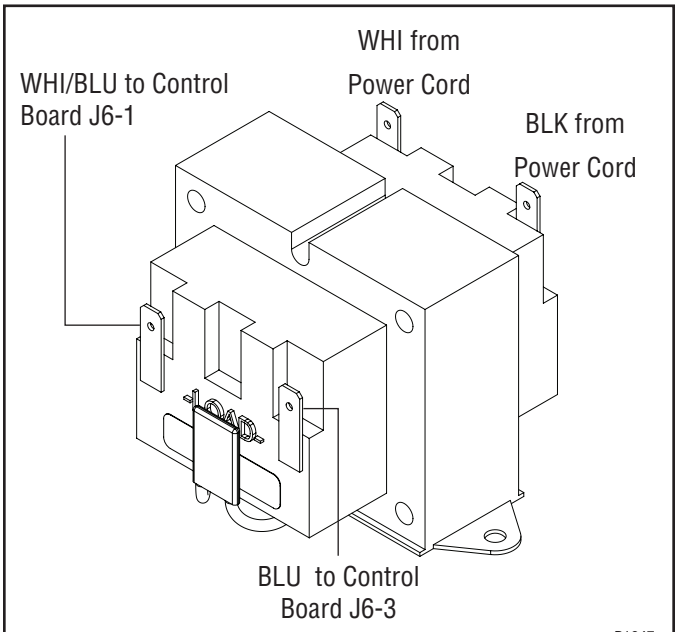



FIG. 52 TRANSFORMER TERMINALS

## Dispense Water Booster Pump

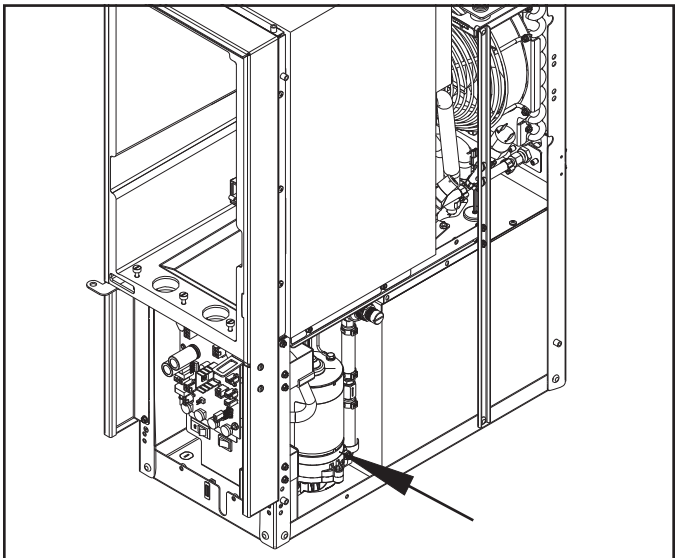


FIG. 53 WATER BOOSTER PUMP

Location:

The Temperature Sensor is located inside the cabinet between the fan and the water coil.

Test Procedures:

Install red meter lead into terminal 1 and black meter lead into terminal 2 of the harness pump connector. Pull a handle to activate the dispense pump. The reading on the meter display should indicate 120.0VAC reading.

No voltage - first, check pump fuse for continuity before going to the corresponding dispense pump relay.
Yes voltage - replace booster water pump.

Removal and Replacement:

1. Disconnect dispenser from the power source.
2. Shut off nitrogen gas at supply tank.
3. Remove the right side housing panel.
4. Disconnect the plug on the booster pump leads from the connector on the dispenser main harness.
5. Disconnect the nitrogen lines from the booster pump.
6. Remove the four nuts securing the pump to the mounting bracket and discard the pump.
7. Install the new booster pump to the mounting bracket and secure with new hardware supplied with the replacement booster pump.
8. Reconnect the nitrogen lines to the booster pump.
9. Connect the pump harness plug to the connector on the main harness.
10. Reinstall the right side housing panel.
11. Turn on nitrogen supply to the dispenser.

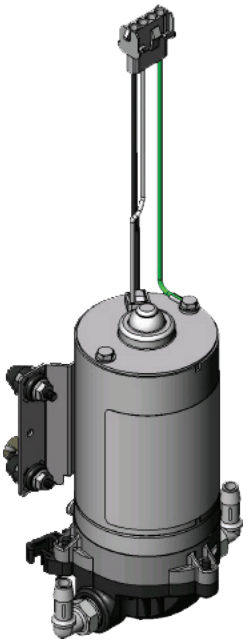


FIG. 54 WATER BOOSTER PUMP

## Water Pressure Regulator

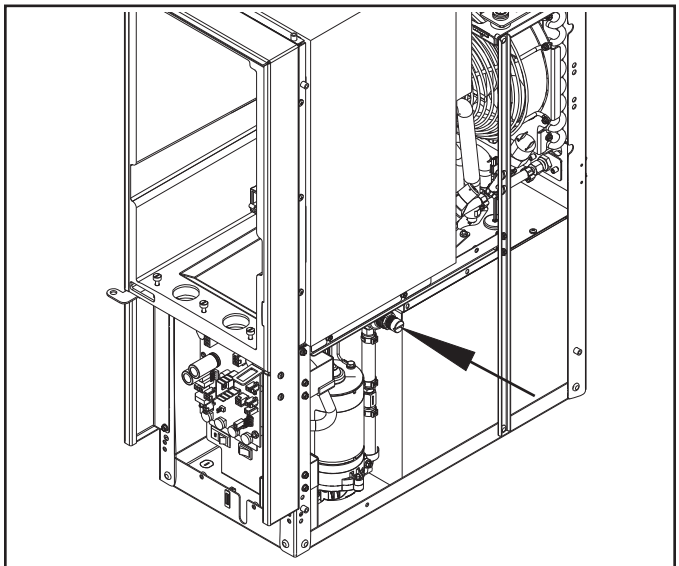


FIG. 55 WATER PRESSURE REGULATOR

Location:

The Water Pressure Regulator is located inside the cabinet on the front right side of the water bath tank.

Test Procedures:

Remove pressure regulator from dispenser. Attach a water line to the incoming side and a test pressure gauge assembly on the outlet side. Place water outlet into an empty bucket and turn on water supply. Unlock the adjustment knob and rotate knob while watching the pressure gauge for increase or decrease in water pressure. If the water pressure or water flow doesn't change, replace the regulator.

Removal and Replacement:

1. Disconnect dispenser from the power source.
2. Shut off water supply to the dispenser.
3. Remove the right side housing panel.
4. Disconnect the water lines to and from the regulator.
6. Install the new regulator and attach water lines previously removed.
7. Reconnect the water supply to the dispenser.
8. Check for leaks and correct if necessary.
9. Reinstall the right side housing panel.
10. Connect power to the dispenser.

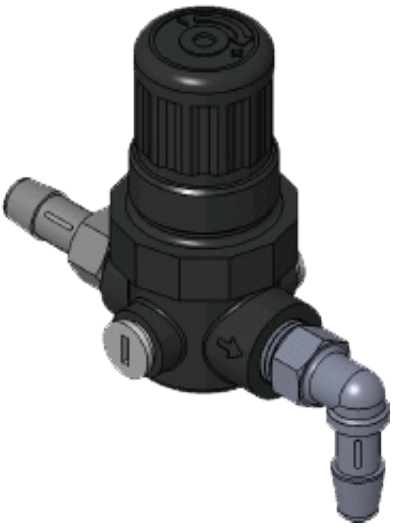


FIG. 56 WATER PRESSURE REGULATOR

## SERVICE (CONT.)

### Nitrogenator Assembly

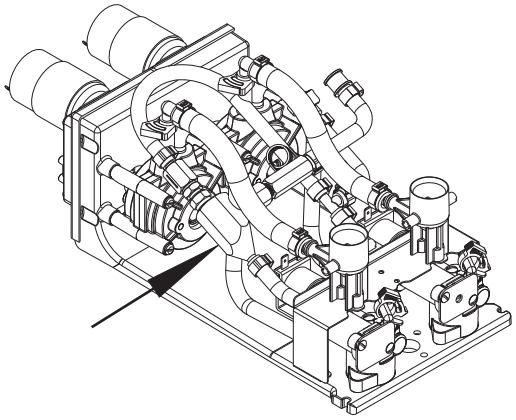


FIG. 57 NITROGENATOR ASSEMBLY

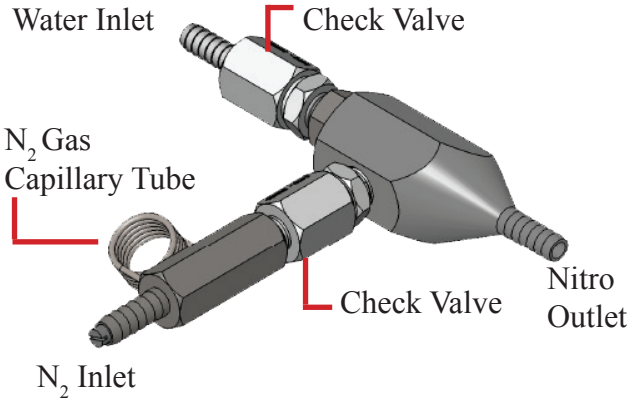



FIG. 58 NITROGENATOR ASSEMBLY

Location:

The Nitrogenator is located inside the cabinet on the platform assembly. The check valves are components of the Nitrogenator assembly

Test Procedures:

If you experience weak or erratic water delivery out the Nitro dispense nozzle or there is no cascading of the Nitro Coffee beverage, check valves may be obstructed.

Remove and clear check valves.

Remove check valve and check with external air or water source by installing valve in reverse flow. A good valve should not allow air or water to flow in reverse direction.

Removal and Replacement:

1. Disconnect dispenser from the power source.
2. Shut off water supply to the dispenser.
3. Shut off nitrogen supply to the dispenser.
4. Remove the right side housing panel.
5. Disconnect the water lines and nitrogen supply to the Nitrogenator assembly.
6. Disassemble the nitrogenator to test check valves.
7. Install the new nitrogenator and attach water line and nitrogen line previously removed.
7. Reconnect the water supply to the dispenser.
8. Reconnect nitrogen supply to the dispenser.
8. Check for leaks and correct if necessary.
9. Reinstall the right side housing panel.
10. Connect power to the dispenser.

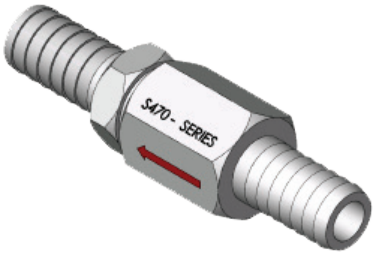



FIG. 59 CHECK VALVE ASSEMBLY

## Pressure Switch

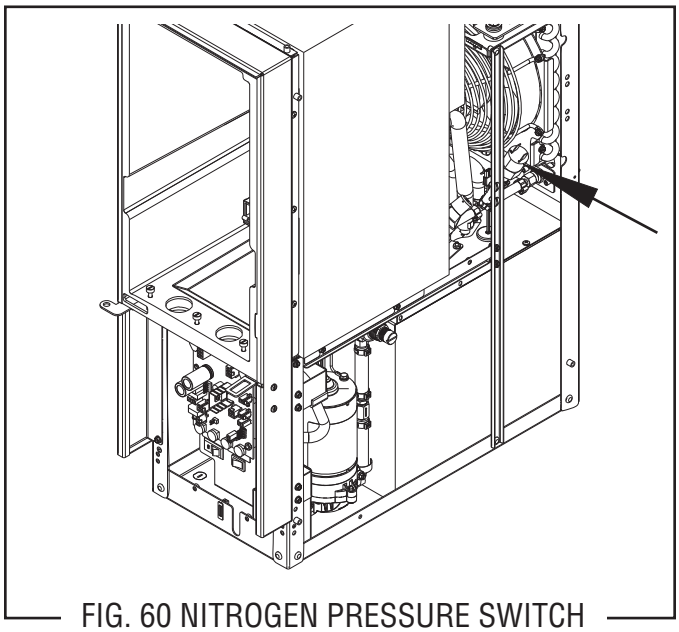


FIG. 60 NITROGEN PRESSURE SWITCH

Location:

The Nitrogenator is located inside the cabinet on the platform assembly. The check valves are components of the Nitrogenator assembly

Test Procedures:

Check for continuity across terminals when no N2 gas pressure is applied.

No continuity - replace pressure switch.

Removal and Replacement:

1. Disconnect dispenser from the power source.
2. Shut off nitrogen supply to the dispenser.
3. Remove the right side housing panel.
4. Disconnect the pressure switch from the Nitrogen line.
5. Install the new pressure switch to the nitrogen line.
6. Reconnect nitrogen supply to the dispenser.
7. Reinstall the right side housing panel.
8. Connect power to the dispenser.

FIG. 61 NITROGEN PRESSURE SWITCH

## Nitrogen Regulator

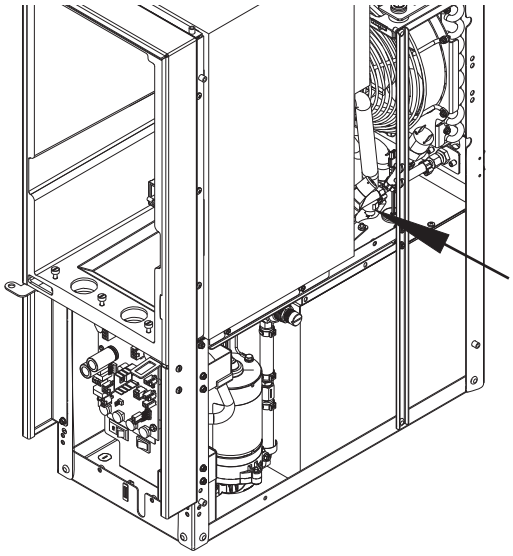


FIG. 62 NITROGEN REGULATOR

Location:

The Nitrogenator is located inside the cabinet on the platform assembly. The check valves are components of the Nitrogenator assembly

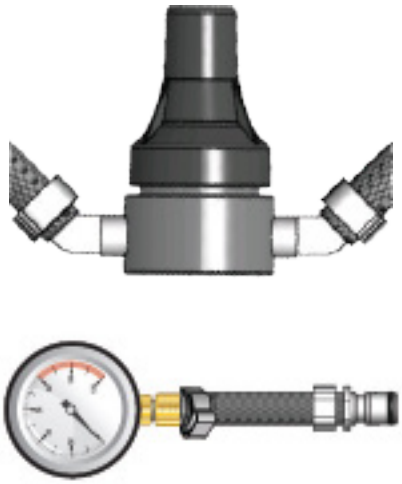
Test Procedures:

Note: Create a nitrogen test gauge that can connect to a female quick disconnect fitting. See Fig 63.

Check N2 supply tank is adequately full before performing test. Turn off N2 supply and relieve pressure by pulling on the corresponding handle to open the dispense valve. Disconnect the gas infusion manifold at the quick disconnect fitting. Connect the test gauge and turn N2 supply back on. The pressure reading should be at 90psig.

Removal and Replacement:

1. Disconnect dispenser from the power source.
2. Shut off water supply to the dispenser.
3. Shut off nitrogen supply to the dispenser.
4. Remove the right side housing panel.
5. Disconnect the water lines and nitrogen supply to the Nitrogenator assembly.
6. Disassemble the nitrogenator to test check valves.
7. Install the new nitrogenator and attach water line and nitrogen line previously removed.
7. Reconnect the water supply to the dispenser.
8. Reconnect nitrogen supply to the dispenser.
8. Check for leaks and correct if necessary.
9. Reinstall the right side housing panel.
10. Connect power to the dispenser.



Nitrogen Test Gauge

FIG. 63 NITROGEN REGULATOR

## Nitro Stout Insert

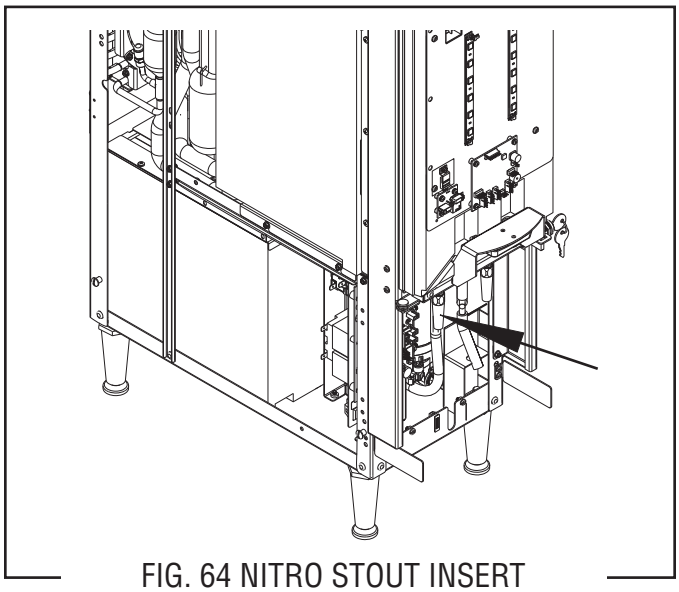


FIG. 64 NITRO STOUT INSERT

Location:

The Nitrogenator is located inside the cabinet on the platform assembly. The check valves are components of the Nitrogenator assembly

Test Procedures:

Inspect & Clean

Remove Nitro nozzle from the dispense station. Locate the insert inside the nozzle and gently remove insert. Inspect the inner diameter of all five holes for product residue. Clean and clear the residue from the holes. Ensure all holes appear the same diameter size before installing insert back into a clean Nitro nozzle.

Removal and Replacement:

1. Remove the nitro dispense nozzle.
2. Remove the nitro stout insert from the dispense nozzle.
3. Check for obstructions and clean if necessary.
4. Reinstall the nitro stout insert into the dispense nozzle.
5. Reinstall the nitro dispense nozzle.

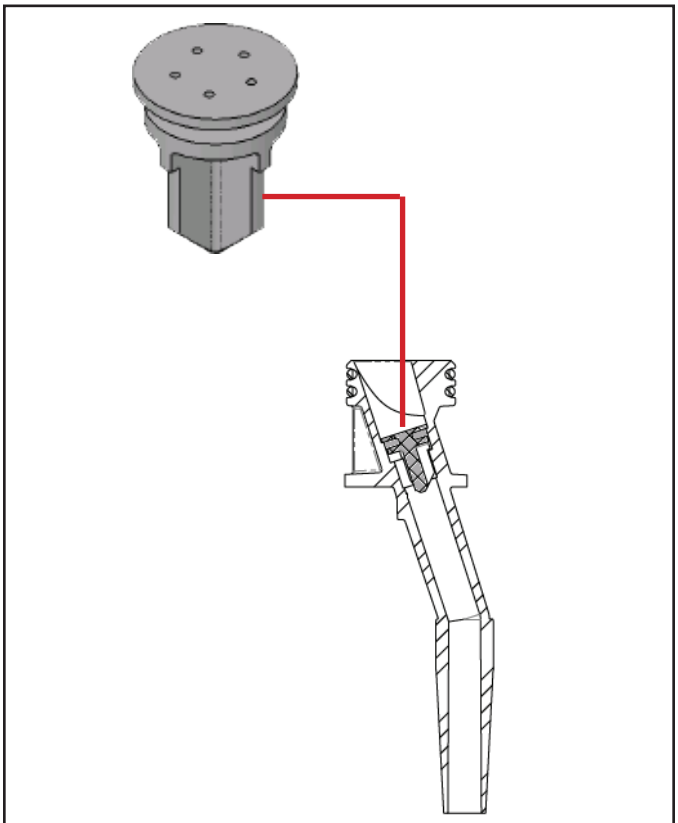
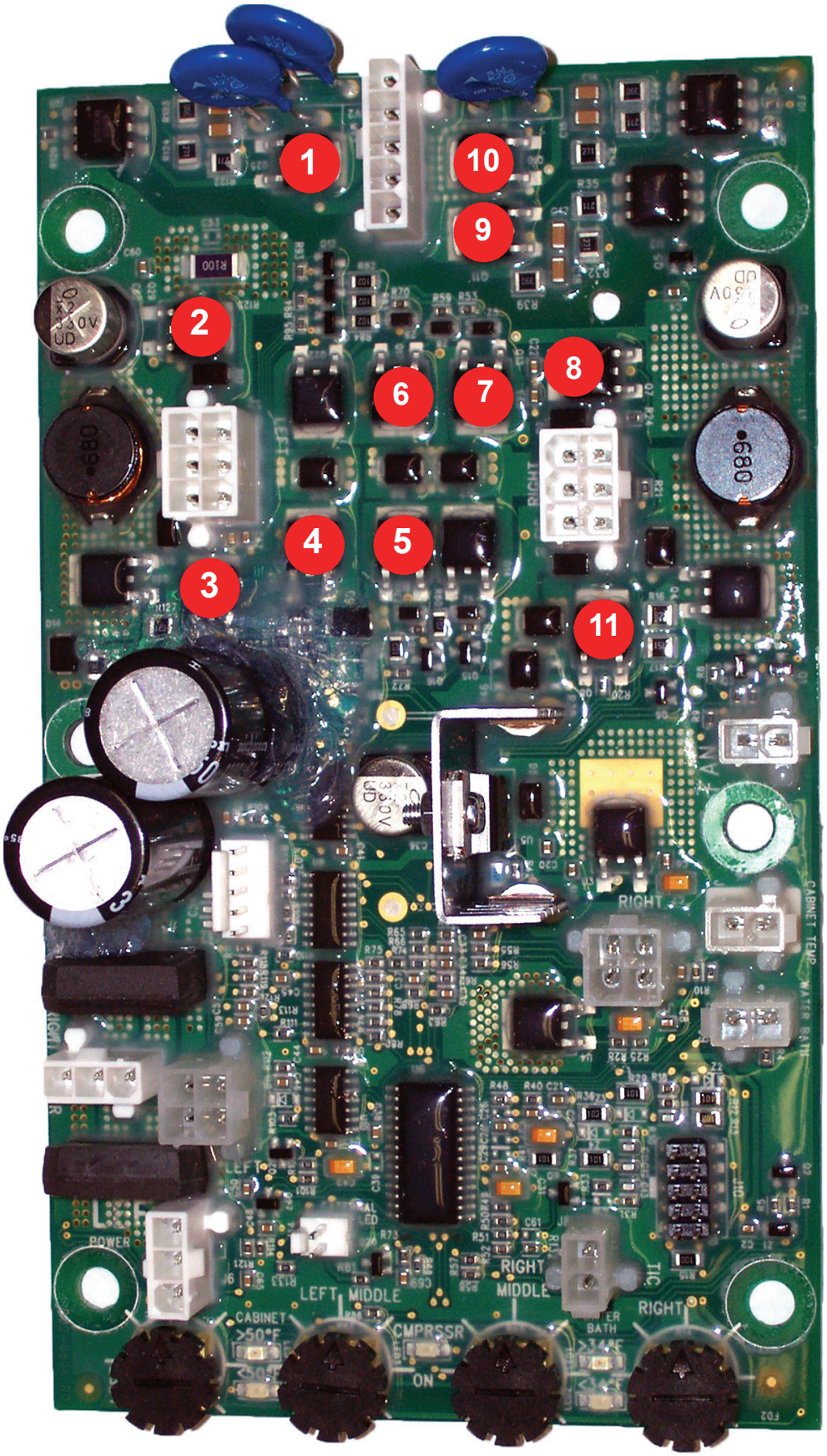


FIG. 65 NITRO STOUT INSERT

# Triac Map

1. Compressor Relay Q25
2. Not Used
3. Not Used
4. Not Used
5. Not Used
6. Not Used
7. Not Used
8. Not Used
9. Not Used Q11
10. Inlet Water Valve Q10
11. Not Used



# SCHEMATIC WIRING DIAGRAM