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# QUEST JUICE

2 and 4 Flavor

## Training Manual



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# Quest Juice Training Manual

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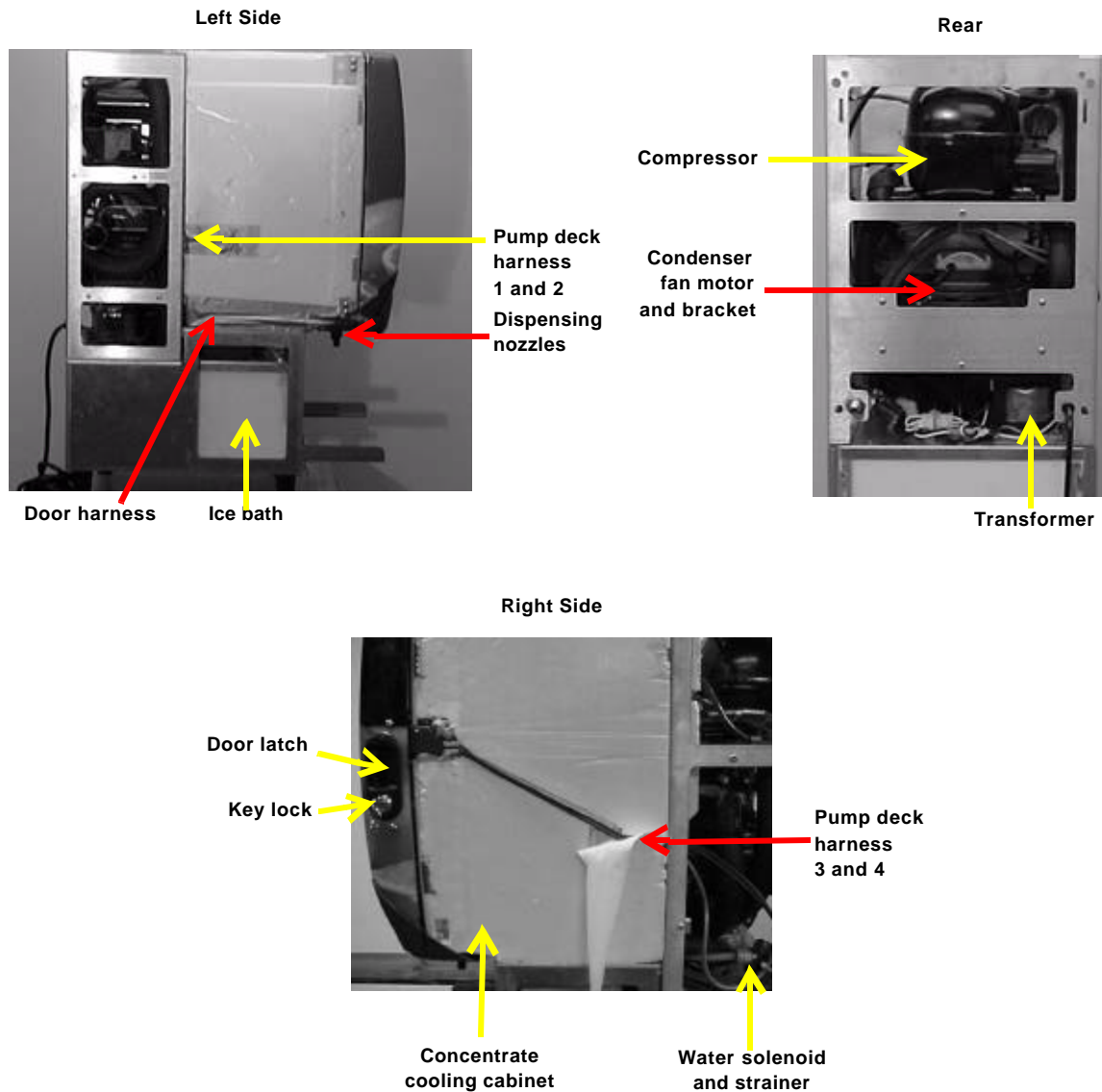
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# OVERVIEW

## PRODUCT DESCRIPTION



The Quest Juice Dispenser uses an ice/water bath system to cool both the potable water supply and the concentrate cabinet.

To achieve cooling capabilities we use an agitator/recirculating pump and motor. This cools the stainless steel water coils and circulates the cold water through a heat exchanger to cool the cabinet. This gives us colder drinks for longer periods of time and eliminates the need to have to defrost the cooling cabinet.

A lighted merchandiser is standard.



## DIMENSIONS & CAPACITIES

### Quest

Dispense Rate .....	1.0 – 2.2 oz./sec.
Electrical rating .....	115 VAC, 60 Hz, 15 amp dedicated circuit
.....	220 VAC, 50Hz
Dimensions .....	29.3" H, 24.3" D
Condenser clearance.....	4" back, 12" top
Water Connection.....	3/8" SAE male flare
Water Pressure.....	80 psi max. static, 20 psi min. dynamic
For best results it should be regulated to 45 to 50 psi	

### Quest, Two Flavor

Dimensions .....	10.4" W
Operating weight.....	120 lbs.

### Quest, Four Flavor

Dimensions .....	15" W
Operating weight.....	160 lbs.

### IPD Times

Quest 4 .....	4.5 hours +
Quest 2 .....	3 hours

### Ice Bath Capacity

Quest 4 .....	3.6 gallons; 15-16 lbs of ice IPD
Quest 2 .....	1.8 gallons; 8-9 lbs of ice IPD

# SYSTEM DETAILS

## WATER

### Water Quality

Water quality has an affect on juice dispensing systems.

- odor
- taste
- clarity/foaming

Water filtration is recommended to assure the best beverage taste.

### Water Flow

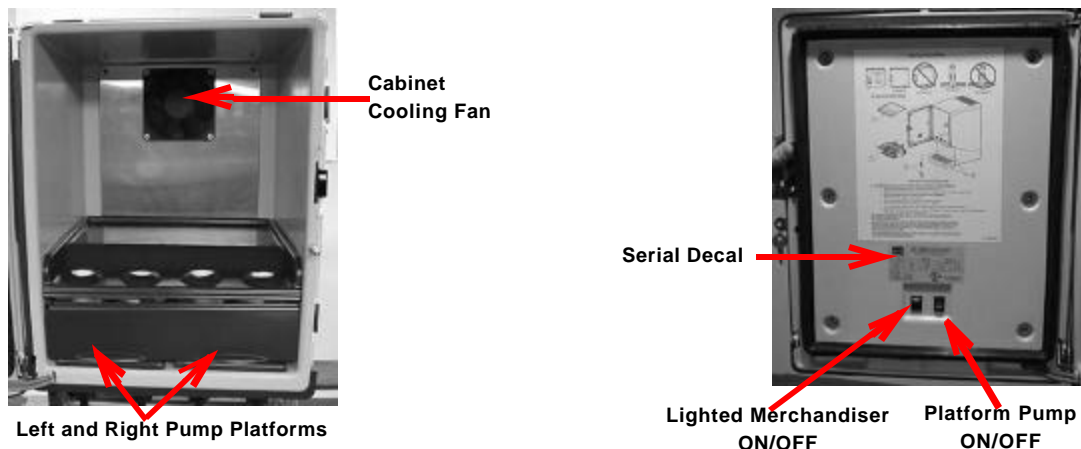
Inlet water pressure should be regulated to 45 to 50 psi max. (3.1 bar) to prevent damage to pump tubing. Minimum flowing pressure must be 20psi.

### Flow Rates

Adequate water flow is necessary and must be at least 3.0 ounces per second (89ml) at the inlet to the unit.

## CONCENTRATE

- Concentrate should be stored frozen and put into a cooler 72 hours before use. Rapid cooling, such as in a sink of hot water, adversely affects flavor and leads to service calls.
- Proper loading of concentrate is important. Improper loading is a major source of service calls.



- Concentrates vary in viscosity and mixing valves must be adjusted accordingly.
- When changing concentrate, be sure to check the concentrate container O-ring for damage. It should be clean and wet with concentrate or a food grade lubricant.
- Shake or stir pulp based concentrates.
- When changing flavors, be sure to flush the system and reset the pump.
- Nozzles should be cleaned daily. Remove the nozzles and wash in warm soap solution. Rinse with clean water, lubricate the O-ring, and replace nozzle.
- Flushing daily and sanitizing weekly is recommended.

## SETTING THE BRIX

- A refractometer must be used to measure the post-mix brix.
- Ratio adjustment can be set with a concentrate separator and ratio cup, see Brixing Procedure.
- Ratios are sometimes set by taste but this is not recommended.

# INTRODUCTION

## PREVIEW QUESTIONS

Check your current knowledge by taking a few minutes to answer the following questions:

1. The ice bank control is adjustable?  True  False
2. The transformer does NOT control the cooling system?  True  False
3. Condenser airflow passes over the compressor first?  True  False
4. "Ratio" refers to the amount of water required to dilute one part of concentrate?  
 True  False
5. O-rings may be installed dry (lubrication is not recommended)?  
 True  False

## KEY THINGS TO KNOW / DO

- Work Safely! Always unplug/disconnect the power to the dispenser before servicing, and get help lifting the unit if it must be removed from the counter.
- Make certain that the water line has adequate pressure at all times!
- Learn to use a good quality volt-ohm meter. Proper electrical trouble shooting is impossible without it!
- 40-50 PSI dynamic water pressure measured at the dispenser inlet with 3.0 ounces a second. Water pressure must not exceed 80 lbs static with a minimum flowing pressure of 30 PSI.
- Never leave the Dispense/Flush lever in the Flush position, it can cause the pump tubing to burst.



# INSTALLATION

## COUNTER LOCATION

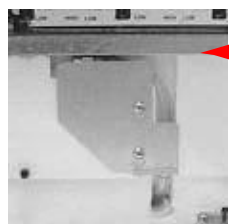
The minimum airflow clearance is: 4" (10.16 cm) in back and 12" (30.48 cm) on top and open to the front.

**IMPORTANT:** Condenser air is drawn in from the bottom of the rear panel and discharged out the top of the rear panel. Failure to maintain clearance space will reduce capacity of the unit and cause premature compressor failure.

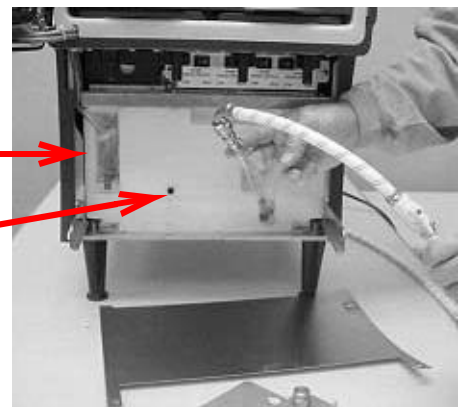
## FILLING THE ICE BATH

The fill tube is located behind the splash panel. Use the water supply line to fill the ice bath before connecting it to the unit.

Remove the 3/8" cap from the fill tube/sight glass to begin filling the ice bath. Replace the cap when finished filling the ice bath. Lock it in place with its holder.



Full Water Level



Cabinet drain outlet  
Water bath overflow

**IMPORTANT:** Fill the water bath slowly until it runs out the overflow. Failure to do so can cause back pressure and improper water level. ALWAYS FILL WITH THE UNIT UNPLUGGED.

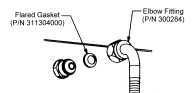
Replace the cap TIGHTLY when finished filling the water bath. Lock it in place with its holder.

## CONNECTING WATER SUPPLY

The QST series Juice Dispenser is designed to dispense juice at a high flow rate. It is very important that the incoming water line be dedicated for use by the dispenser only and does not have other machines connected which could cause a water surge, (i.e., a dishwasher, coffee maker, etc.).

**IMPORTANT:** The water supply should be consistent with proper water quality standards (neutral pH of 7.0 to 8.0), and should not be connected to a water softener. It is the installers responsibility to ensure that all water connections to the dispenser are sized, installed, and maintained according to Federal, State, and Local Laws.

Secure the 3/8" (0.95 cm) swivel nut on the flexible supply tubing to the water inlet located at the rear of the dispenser. Make sure that the flared gasket is used (tubing and flared gasket are included with the installation kit).



**IMPORTANT:** When securing flare nut, use a backup wrench on the male side of the inlet fitting (unit side) to prevent twisting of the copper tube inside the unit and/or possible damage to the water strainer/solenoid. A water shut off outside the unit is recommended.

## PRIMING/FLUSHING WATER SYSTEM

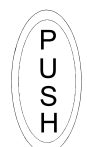
To properly prime the unit with water and remove air pockets in the system, open the cabinet door and make sure that all the valve levers are in the "Dispense" position.

Close the door and press the dispense button for a few seconds. Repeat until a steady flow of water is observed flowing from all dispense valves.

**NOTE:** Water splashing may occur during this purge cycle.



Dispense/ Flush Lever



## CONCENTRATE HANDLING & LOADING

It is recommended that the concentrate be thawed in a refrigerated 35°F-40°F (1.6°C-4.4°C) compartment for a minimum of 48 hours prior to loading into the Quest Juice Dispenser.

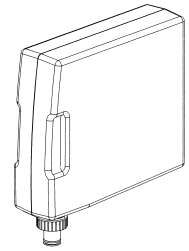


**WARNING: Concentrate must be completely thawed and within the temperature range of 35°F-40°F (1.6°C-4.4°C) prior to loading. Failing to supply concentrate inside the recommended temperature range, especially below 35°F (1.6°C), will cause an out of brix drink (refer to the Brixing Procedure section for details).**

### LOADING CONCENTRATE

The Quest Juice Dispenser is designed to use either disposable juice concentrate containers or the optional Cornelius generic refillable container sold separately.

1. Thoroughly shake thawed concentrate prior to use.
2. Place concentrate containers on the dispensing platform shelf inside the refrigerated cabinet.
3. Engage the concentrate container by pressing it downward into the bottle adapter opening on the dispensing platform.



**NOTE: Be sure to lubricate the o-ring seal on the container nozzle. This will ensure a good seal and allow the pumps to draw concentrated from the containers more easily. Failure to create a good seal at this connection may result in weak drinks and/or seepage of concentrate.**

4. Prime each pump by closing the cabinet door and press each dispense button until concentrate flows from the dispense nozzles.

### CHANGING CONCENTRATE CONTAINERS:

1. Open the cabinet door and move the valve handle from “Dispense” to “Flush”
2. Close the door. Depress and hold the dispense button until clear water flows from the dispense nozzle.
3. **Open the cabinet door and return the handle to “Dispense”.**
4. Depress and hold the dispense button for 1-2 seconds. This will relieve water pressure from the concentrate pump system.
5. Load concentrate container (see *Loading Concentrate*).

## BRIXING PROCEDURE

**NOTE:** If concentrate is not properly thawed, it will adversely affect the amount of concentrate dispensed. Thawed product should be between 35°F/1.6°C to 40°F/4.4°C.

**NOTE:** You can not dispense drinks with the door open.

### SUPPLIES

- 1-Small 12 oz. cup (354.8 ml)
- 1-Large 21 oz. cup (621.1 ml)
- 1-Straw
- Paper Towel
- 1-Thermometer
- 1-Refractometer
- Concentrate Separator (720601323)



You will also need a flat blade screwdriver to turn a screw if brix adjustments are required.

**NOTE:** The refractometer shown above, P/N 511004000, is available through your local Cornelius Distributor.

### CHECKING/ADJUSTING THE BRIX SETTING

The following instructions are for use with a refractometer.

1. Dispense approximately 8 oz. (236 ml) of drink and discard. Now draw a second 8 oz. drink.
2. **Check drink temperature with a reliable thermometer (target is 35-45°F, or 1.6-7.2°C). Discard this drink after checking temperature.**

**NOTE:** If drink temperature is not within the target range, refer to the basic troubleshooting section. When setting up the unit with warm concentrate and hot water (90°F) it will take longer to get the 35-45°F finished drink.

3. Dispense a 12 oz (354.8 ml) drink sample into a clean, dry cup. Thoroughly stir the sample using a straw. (Adjustments should be made in 1/8 to 1/4 turn increments).
4. Using a straw, transfer a small sample of finished drink to the refractometer lens (refer to operating instructions supplied with your refractometer). Check the brix reading against the brix chart below.

**NOTE:** The following brix chart is generic and intended for reference use only. Contact your frozen concentrate supplier for specific brix readings.

Brix Reference Chart		
Flavor	Ratio	Brix
Orange Juice	4+1	11.8
Grapefruit Juice	5+1	10.6
Cranberry Cocktail	4+1	13.5
Apple Juice	5+1	12.0
Grape	5+1	13.0
Lemonade	5+1	10.5
Tropical Punch	5+1	11.8
Sweetened Iced Tea	7+1	6.0
Pineapple Juice	4+1	12.8
Prune Juice	2+1	16.0

### Pump Speed Switch

The pump speed switch has two settings, low and high. For most dispensing situations high speed will be the preferred speed. Most concentrates use this setting. Low speed is only used when the water pressure is at the low end of the range (25 PSI or less) and the concentrate is a very thin viscosity such as apple or cranberry. Low speed cuts the output voltage to **18VDC**.

**Using a water booster system to increase the flowing pressure to the recommended pressure is a better solution.**



- To change the brix setting, simply readjust the water flow rate. Located on each of the valve assemblies inside the refrigerated compartment are the adjusting screws for the water flow rate (one per valve).

If the brix reading is too high or low, rotate the appropriate water flow control according to the diagram below. Repeat steps 1-5 until the brix setting is achieved.



**Lowers Brix by increasing water**



**Raises Brix by reducing water**

**IMPORTANT:** When making changes to the water flow control, do not rotate more than 1/4 turn per adjustment. Additionally, prior to taking your next brix reading, “tap” the corresponding dispense button several times prior to drawing a sample. This will clear remnant drink from the dispense nozzle AND help move the flow control to its new setting.

## PROGRAMMING THE PORTION CONTROL

If your dispenser has optional portion controls, they have been pre-programmed from the factory to pour 7, 12, and 16 ounce drinks. The “extra large” (pitcher icon) size has also been pre-programmed to pour 16 ounces. To change the pour sizes, please follow the instructions below:

- Simultaneously, press and hold “small” and “extra large” push button switches on the Portion Control Module until the “Refill” light starts blinking. Release the switches. The blinking Refill light indicates the programming mode is active.
- Place the cup under the dispense nozzle and push the selected size button (small, medium, large, or extra large). Hold the button in until the cup fills to the desired portion, then release the button. Repeat the above procedure for the remaining sizes.
- After programming all the drink sizes, press and release the “cancel/pour” switch to return the Portion Control to the operational mode. The blinking REFILL light will go out.
- If at a future date it is decided to change the portion size of the drinks, the individual sizes can be adjusted by the above procedure. It is not necessary to reprogram every size. Additionally the portion control has full memory retention in case of a power failure.



### Cancel/Pour Button



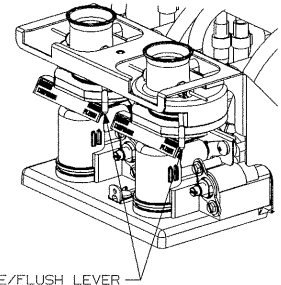
To pour a drink without using a pre-programmed portion control size, simply push and hold the Cancel/Pour button. Release when the glass is full.

# PLANNED MAINTENANCE SCHEDULE

## DAILY

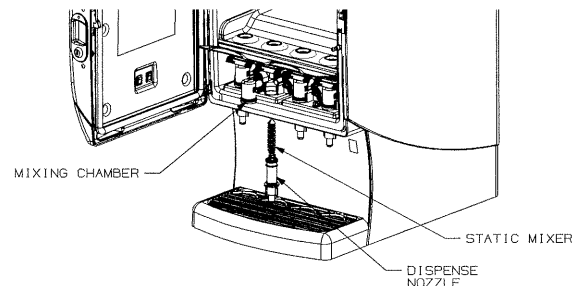
### Flush System:

1. Move Dispense/Flush levers located on the platform assembly in the refrigerated cabinet to the "Flush" position. Place an empty cup on the drip tray below each dispense nozzle.
2. Close the door and depress each dispense button for 2-3 seconds or until clear water flows from each dispense nozzle.
3. Return the Dispense/Flush levers to the "Dispense" position.
4. Press each dispense button for 1-2 seconds to release the water pressure present in the concentrate pump system.



### Clean Splash Zones & Dispense Nozzles:

1. On a daily basis, clean the external cabinet and splash areas using a clean damp cloth. Remove and wash the cup rest and drip tray using a mild dish soap.
2. Remove the dispense nozzles and static mixers by rotating each 90° and pulling down. Remove the mixing chambers by pulling straight forward. Wash using a mild dish soap.



**IMPORTANT: DO NOT wash nozzles, static mixers, or mixing chambers in a dish washer. This will distort the plastic and damage the o-rings. Additionally, do not soak them in sanitizing solution longer than 2 minutes.**

## WEEKLY

Check concentrate to water brix ratio (refer to the Brixing Procedure in this manual).

### Sanitize the Juice Dispenser:

#### Step 1 - Rinse With Hot Water

1. Prepare two 2 oz. packets of Stera-Sheen Green Label sanitizing solution (or similar brand) by dissolving each packet in 1 gallon (3.8L) of potable water to insure 200 ppm of available chlorine.

**IMPORTANT: Use potable water at 80°F-100°F (26.7°C-37.8°C). Water above this range will break-down the chlorine count and minimize sanitation.**

2. Remove the juice concentrate containers and place them in separate refrigerated compartment.
3. "Flush" the system by following the instructions in the Daily Section.
4. Fill a clean empty concentrate container with one quart of extremely hot tap water, approximately 140°F (60°C) and place into unit. Dispense all of the hot water into a large container. Repeat for the remaining dispense valves.
5. Remove the mixing chambers, nozzles, and static mixers. Rinse in hot water to remove excess pulp and concentrate.
6. Place the mixing chambers, nozzles, and static mixers in a separate container of sanitizing solution and agitate vigorously. Allow the parts to soak for two minutes. Rinse thoroughly with fresh tap water.
7. Reinstall the static mixer, nozzles, and mixing chambers.

### Step 2 - Sanitize Pump System

1. Fill a clean concentrate container with 2 quarts (1.9L) of fresh sanitizing solution.
2. Place handles in the "dispense" position and close the door.
3. Press and hold the dispense button for 90 seconds then stop. Allow sanitizing solution to remain in the lines for 5 minutes.
4. After 5 minutes, dispense the remaining sanitizing solution.

### Step 3 - Prepare Dispenser for Use

1. Replace sanitizing solution container with a concentrate container and close the door.
2. Press and hold the dispense button until juice appears from the nozzle. Next dispense and discard at least two 8 oz. (236.6ML) cups of juice in order to prime the system and prepare it for operation.

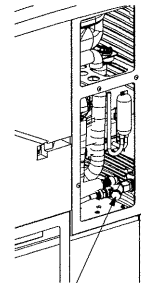
## SEMI-ANNUAL



**CAUTION:** The following procedures require removal of the dispenser side panel(s). Disconnect the power cord from the receptacle prior to proceeding.

### Clean Water Inlet Strainer:

1. Remove the right side panel from the dispenser.
2. Turn off the water supply to the dispenser.
3. Remove the access port from the "Y" shaped water inlet solenoid located on the right side of the dispenser.
4. Clean and reinstall the stainless steel water strainer.



WATER STRAINER ACCESS  
(RIGHT SIDE OF DISPENSER)

### Clean Chassis Interior:

1. Clean the condenser cooling fins.
2. Clean the air inlet grilles located on the rear and top panels of the dispenser.
3. Clean the interior base.
4. Wipe the fan blade clean.
5. Reinstall the right side panel, turn on the water supply, and plug the dispenser into the power receptacle.

### Check and Top-Off Water Ice Bath:

1. Remove the drip tray and lower splash panel.
2. If the Ice bath level is below the "Full" indicator, top it off with water. Refer to the Filling the Ice Bath procedure in the Installation section of this manual.

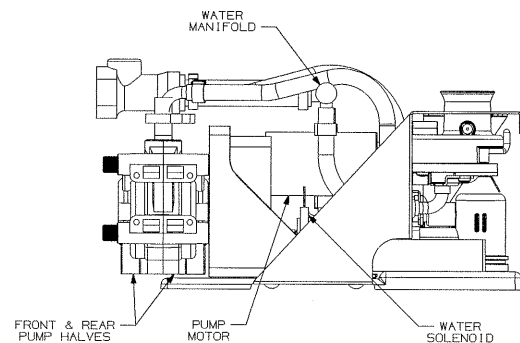
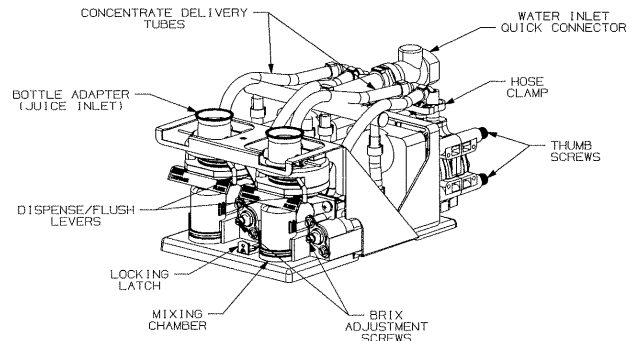
## ANNUALLY

### Replace Pump Tubing:

A replacement pump tubing kit, part#45098, is available. The kit consists of one pre-cut length of pump tubing, two white plastic hose clamps, and instructions.

### Removing Pump Platform(s):

1. Remove the concentrate containers from the dispenser and place them in a refrigerator.
2. Remove the cabinet shelf that the concentrate containers sit on.
3. Flush the system prior to removing the pump platform (refer to the Daily section located at the beginning of the Planned Maintenance Schedule). Remove the dispense nozzles and static mixers.
4. Unplug the water line quick disconnect by pressing the gray button (see Fig. 1&2).
5. Slide the locking latch forward. Lift the platform slightly and pull forward to gain access to the electrical connector (see Fig.1).
6. Unplug the electrical connector by squeezing the locking tabs on either side and pulling out the connector. Lift and remove the pump platform (see Fig.1).



### Replacing Pump Tubing:

1. Remove pump platform (refer to the Removing Pump Platform(s) procedure located earlier in this section).
2. Remove the two white plastic hose clamps from the pump tube connections (see Fig. 1&2). Remove the concentrate delivery tubes from the hose ends.
3. Loosen and remove the four screws from the pump body (see fig 3).
4. Remove the rear pump body half **only** to reveal the pump tube and rollers.
5. Remove the old pump tube from the pump body. If the roller assembly comes out with the tubing, place it back into the pump housing being sure to align the roller assembly shaft keyway to the motor shaft so that the two interlock.
6. Firmly press the new hose into the pump body around the roller assembly, being sure to keep the protruding ends even with each other.
7. Once the tubing is in place, hold the tubing with one hand, capture the lower part of the tubing with the outer housing, then proceed to capture the shaft of the roller assembly and push the rear pump housing into place. Make sure to capture the tubing within the body and not pinch it between the halves. Do not use any tool other than your finger tips to manipulate the tubing into the housing or you may damage the tube.

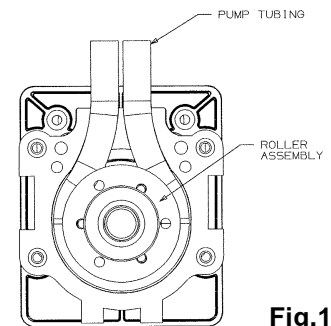


Fig.1

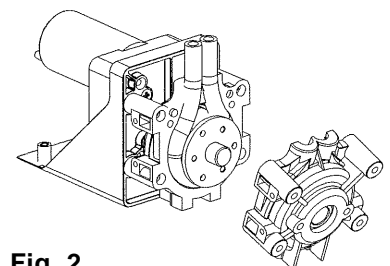
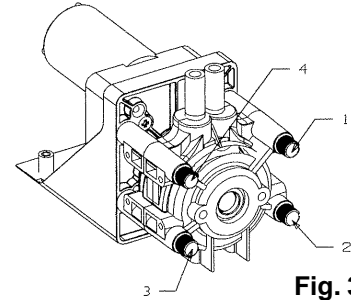


Fig. 2

8. While holding the pump halves together with your hand, reinsert the four screws and tighten using a crisscross pattern as shown. The screws should be tightened about 1/4 turn beyond snug.
9. Insert the two concentrate delivery tubes into the pump tubing ends and secure them using the new hose clamps supplied in the kit. Be sure to use pliers to squeeze and tighten the hose clamps.

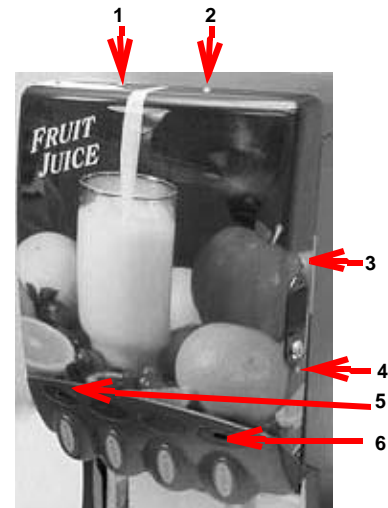
**Fig. 3**



## MECHANICAL SECTION

### REMOVAL OF MERCHANDISER

1. Remove (6) screws from the top, the front, and the side of the door (as shown).

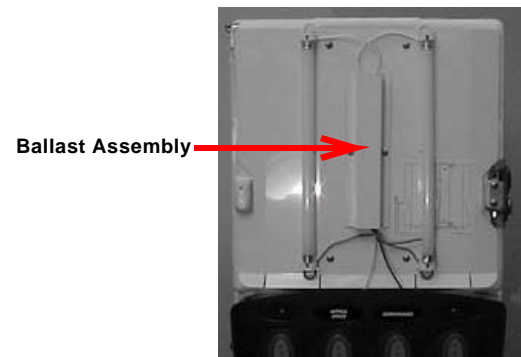


**NOTE:** You now have access to the ballast and light panel.

**NOTE:** Remember the door switch is used to reset the refill light.

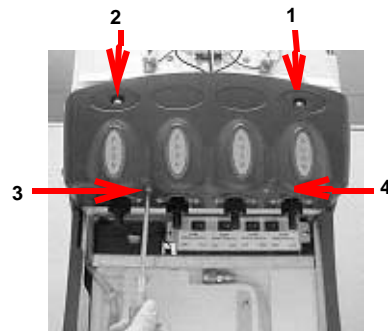
**NOTE:** The pumps can not be operated with the door in the open position.

**NOTE:** Trying to bypass the door switch during the Brixing/Ratio procedure will result in longer pull down times and improper settings.

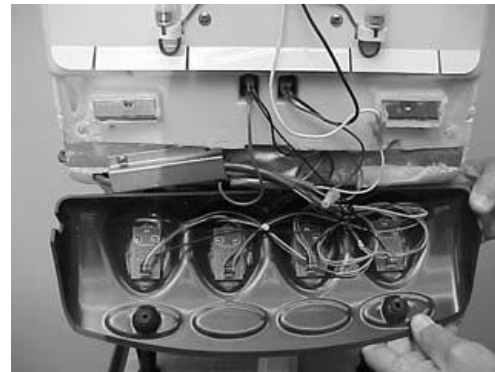


## REMOVAL OF THE SWITCH PANEL

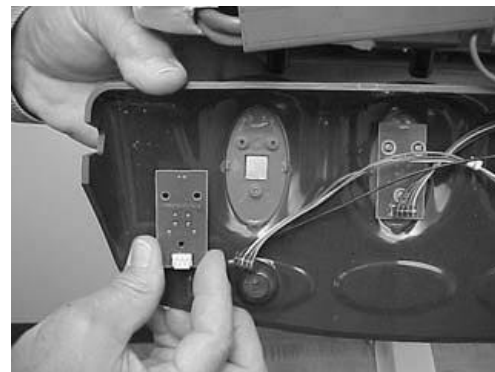
1. Remove (2) screws from behind the right and left flavor tabs and the (2) screws from the front underside of the switch panel assembly.



**NOTE: The switch harness is marked 1-4 and the connectors are indexed.**



2. Remove (3) screws to replace a dispensing switch, if necessary.



**NOTE: If a change of dispensing venue is required (push to portion) Cornelius makes available a complete lower door assembly to expedite this change.**



## REMOVAL OF THE PUMP PLATFORMS

1. Remove the cabinet shelf by lifting it up and pulling it forward.



2. Pull the front flap out and up.



3. Remove the dispensing nozzles by turning them 1/4 turn clockwise and pulling down.



4. Pull the locking latch forward and lift the platform up and pull it forward slightly.



5. Press the release button on the water connector to release the platform.



6. Disconnect the platform electrical connector by squeezing the release tabs on either side of the connector and pulling straight back. The platform can now be removed from the cabinet.



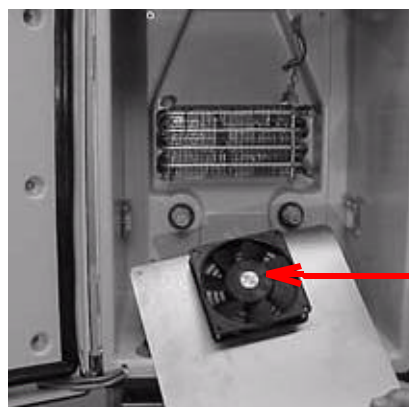
## REMOVAL OF THE COOLING FAN

1. Remove (4) screws from the cabinet rear panel.
2. Turn the panel so the fan is facing you. To do this you will have to pull the wire leads gently through the back of the cabinet.
3. Disconnect the wire leads and remove the ground wire (as shown).



4. Remove (4) screws from the fan mounting bracket.

**NOTE:** When installing a new fan always make sure the label is facing the front of the cabinet.



Fan Label



When reinstalling the panel it will be necessary to pull back through the wire lead connected to the fan.



## REMOVAL OF PANELS

1. Loosen the 2 screws from the top panel.



2. Open the front door.
3. Lift the rear of the top panel and slide forward and remove.



4. Slide the drip tray forward and remove.
5. Remove the 2 screws on the front panel and remove the front panel.



6. Slide the panel up and pull out to remove. On the 2 flavor unit it will be necessary to remove 2 screws from the back panel.



7. Remove the side panels.

- A. Right Panel: The 2 screws and switch backing plate must be removed before the right panel can be removed.
- B. Left Panel: The door must be open while removing the left panel.

Once the screws are removed, pull the panel clear off the frame and tip forward. Slide panel forward and up until it clears the mounting tab (insert). Move the panel down and back. Once it is clear of the door the panel will release.



## REMOVAL OF ELECTRICAL BOX

1. Remove the nozzles.
2. Remove the screw on the right side of the electrical box.



3. Pull the electrical box forward and straight out.



## REMOVAL OF THE VRB BOARDS

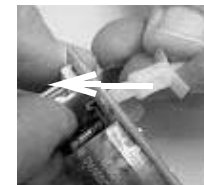
1. Remove the cover.



2. Remove the connectors.
3. Loosen and remove the nut and insulation.
4. Turn the box over and locate the standoffs on the VRB board to be removed. Gently squeeze with a needle nose pliers. This will release the standoff and allow it to be pushed back through the hole in the bracket.



5. The VRB board can now be removed from the electrical box itself.
6. The standoffs (4) can be removed by gently squeezing the tip with needle nose pliers and at the same time pushing through the board.



**NOTE: The nut and insulation must be assembled as illustrated. Failure to assemble and tighten correctly can result in component overheating causing the concentrate pump not to run.**



Lock washer  
Washer  
Insulator pad  
Insulator washer



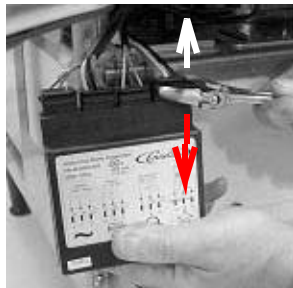
## REMOVAL OF THE ICE BANK CONTROL

1. Slide the ice control toward the center of the deck to release and lift up while gently pulling forward. The box will come forward only as far as the cables will allow.

**NOTE:**The electrical box and nozzles must be removed to remove the ice bank control.



2. The connectors are very tight. To successfully remove use a crescent wrench to grip the outside of the connector rocking gently up and down while pulling up to release. The best way to work from right to left.



## REMOVAL OF NOZZLE GUIDE GASKET

1. The nozzle guide gaskets can be removed for cleaning or replacement by pulling them up and over the nozzle guides.

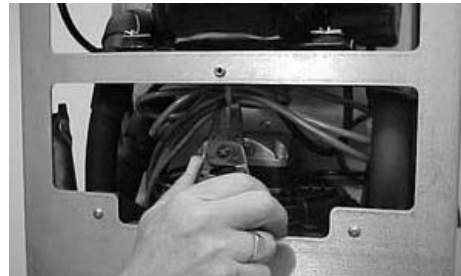


## REMOVAL OF THE COOLING CABINET

1. Remove (4) 7/16" nuts from the under side of the cabinet frame. Current productions uses (2) nuts only.



2. Cut the wire tie from the wire bundle in the rear of the unit, just above the condenser.



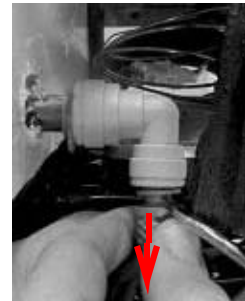
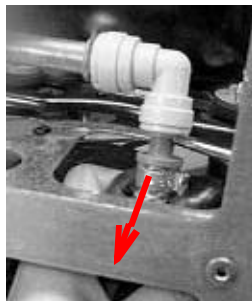
3. Disconnect the cooling cabinet wire harness.



4. Remove the insulation from around the inlet and outlet fittings of the heat exchange. Remove the locking clips from the inlet and outlet fittings.



5. Insert the screwdriver blade against the locking ring and pull down on the hose.

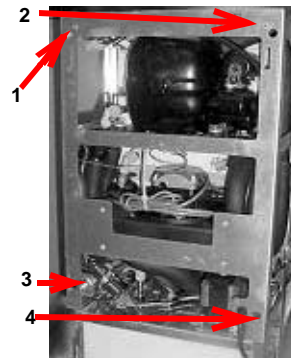


6. Remove the inlet water line from the cabinet manifold.



7. Remove (4) screws that secure the cooling to the frame.

**NOTE: For best results use a screw driver that has at least an 8" blade.**



8. After you lift the cabinet off the frame you can service the agitator motor.

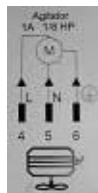


## REMOVAL OF THE AGITATOR MOTOR

1. Remove the thumbscrew located at the rear of the motor before removing the agitator motor.



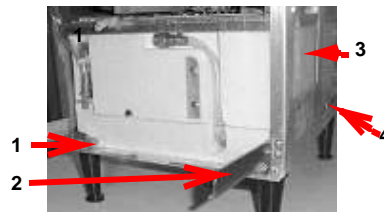
2. Lift the motor out of the ice bath. Disconnect the wire lead from the ice bank control.



Note: You will have to feed the water tubes through the refrigeration frame to completely remove.

## REMOVAL OF THE REFRIGERATION CHASSIS

1. With the cabinet removed, remove (2) screws from the lower front and (2) screws from the lower rear of the water bath housing.



2. Unsnap the wire harnesses (red and white) connectors from the bracket mounted to the water bath cover.



3. Disconnect the following connectors and leads:
- Remove the top ground wire from the post.
  - Red/White - from transformer #1
  - Blue - from transformer #2
  - Lead from inlet solenoid #3.



Ground Wire/Post



Red/White

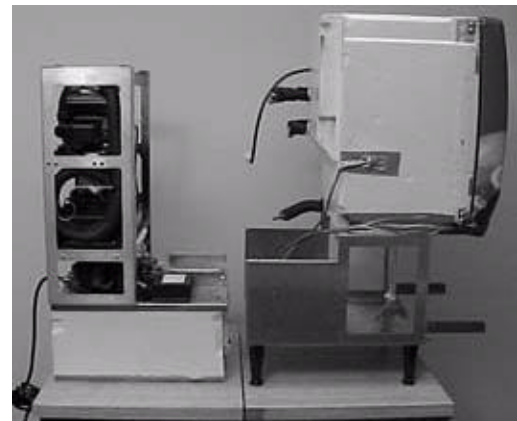


Blue

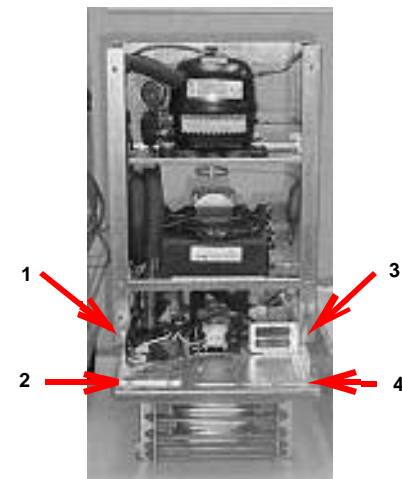


Lead

4. Slide the refrigeration chassis out from the frame.

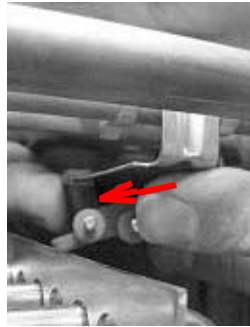


5. Remove (4) screws from the base of the refrigeration chassis and lift off of the water bath.



## REMOVAL OF THE ICE CONTROL PROBE

1. Carefully turn the chassis over to gain access to the probe assembly.  
Cut the wire tie holding the probe assembly only. Push up and slide the probe assembly off the bracket. **DO NOT REMOVE THE BRACKET.**



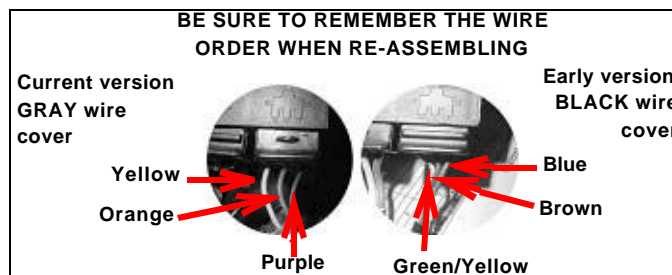
2. The connector must be disassembled to pass the wire leads through the water bath cover.



3. Carefully remove the grommet from the water bath cover.



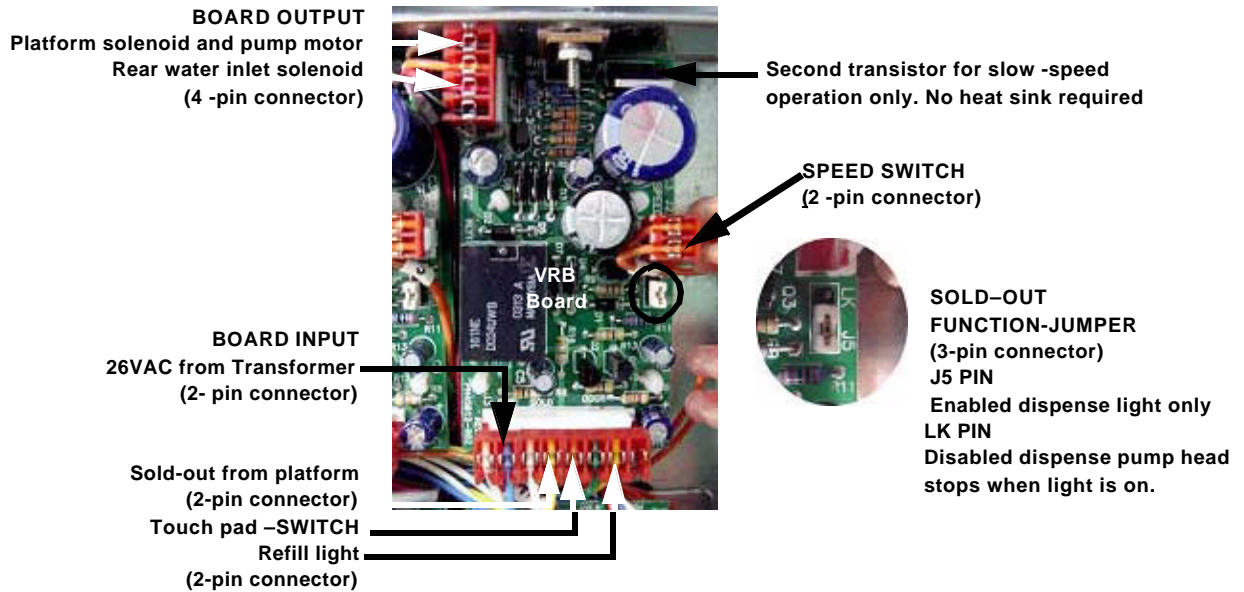
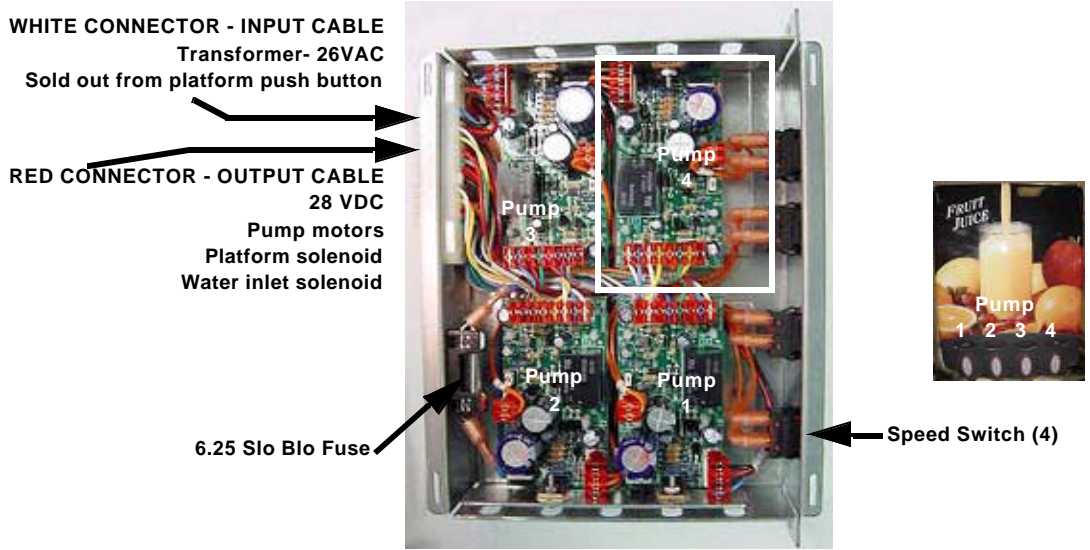
4. With the wire loose, pass the connectors first through the grommet and the water bath cover itself.



# MAJOR COMPONENT REVIEW

## ELECTRICAL BOX

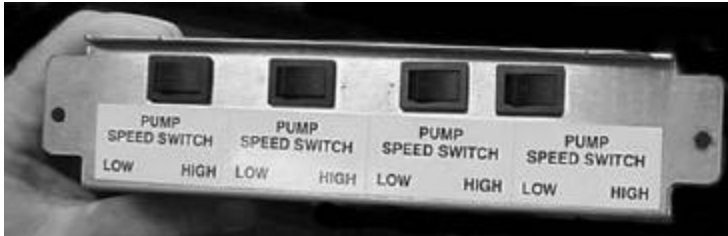
The electrical box houses the Voltage Regulator Boards (VRB) that is used to convert AC voltage from the transformer to DC voltage that powers the pumping system. It also incorporates the sold out logic. Each flavor has its own VRB.



## PUMP SPEED SWITCH

The pump speed switch has two settings, low and high. For most dispensing situations high speed will be the preferred speed. Most concentrates use this setting. Low speed is only used when the water pressure is at the low end of the range (25 PSI or less) and the concentrate is a very thin viscosity such as apple or cranberry. Low speed cuts the output voltage to **18VDC**.

**Using a water booster system to increase the flowing pressure to the recommended pressure is a better solution.**



## ICE BANK CONTROL

The ice bank control is the only device used to control the refrigeration system for both the cabinet and the water chiller.

### Operational Overview

There is no adjustment of any kind to this control. The control will not activate without having sufficient water in the water bath tank.

(See chapter on installation -water bath filling)

THERE IS A 3 -MINUTE DELAY BUILT INTO EACH CONTROL AS A SAFETY PRECAUTION.

The default mode is an open circuit. Any break in the continuity i.e. broken wire, and the system reads it as a no water condition.

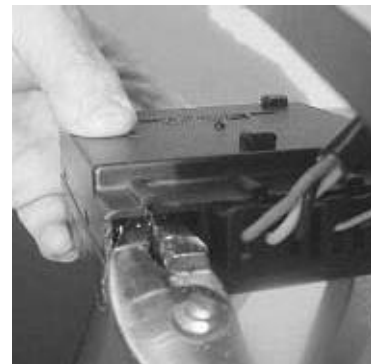
Control is powered by line voltage. All connectors are label and keyed for proper installation.

### Validating Operation

With box detached from the unit, remove the ice bank probe connector by gently rocking the wrench up and down to loosen and pull off to remove.

As the probe is very low voltage, insert a standard set of pliers into the connector gripping the middle terminal and allowing the Pliers' jaws to come in contact with the outside 2. Wait the 3 minutes and the compressor and condenser fan should cycle on. Run for 1 minute and remove the pliers.

The compressor will shutdown in 45-60 seconds. If it does not then a sticking relay is a possibility and the control should be replaced.





## TRANSFORMER

This is a dual stage transformer with 2 outputs. The purpose of the transformer is to step the line voltage to 26 VAC primary to the electrical box and the VRB and 24 VAC secondary is to light the merchandiser.

Current production transformers are equipped with a thermal overload protection device that will cut out when high temperature or high amperage is detected. THE OVERLOAD RESETS AUTOMATICALLY

Primary wires are Blue  
Secondary are Red



## WATER INLET SOLENOID

The water inlet solenoid is connected to the incoming water line and is only activated when the dispense button is pressed. The water inlet solenoid prevents backflow and is equipped with a strainer screen that needs to be removed and cleaned once a year.

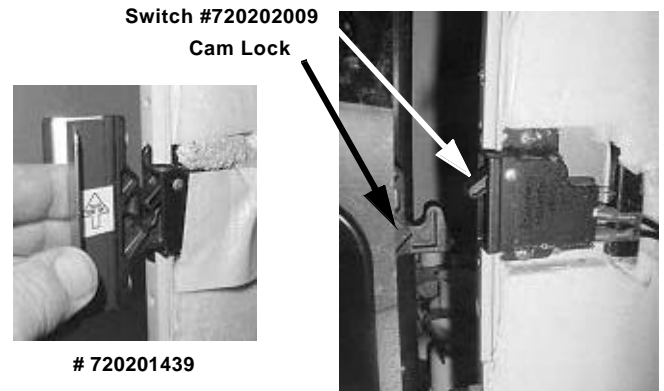
**NOTE: THE INLET SOLENOID COIL IS ACTIVATED FROM THE VRB BOARD USING THE 28VDC OUTPUT AN AC COIL WILL NOT WORK IN THIS APPLICATION.**



## DOOR SWITCH - 72 B SERIAL NUMBER

The door switch on the 72B serial number units is a combination of a door latch and switch. The primary function of the door switch is to interrupt the 26 VAC coming into the VRB board when refilling the concentrate. By cutting this voltage the refill lights are reset automatically.

**NOTE: WHEN THE DOOR IS OPEN THE DISPENSE CIRCUIT IS INOPERABLE DO NOT ATTEMPT TO DEFEAT THIS WITH ANYTHING. BUT THE CAM-LOCK FOUND ON THE DOOR. A SPECIAL TOOL IS AVAILABLE FOR THIS PURPOSE.**



## DOOR SWITCH - 72 E SERIAL NUMBER

On or before April 1, 2004 the door switch configuration will be changed to separate the reset switch from the catch. The serial number for this will have a prefix of 72 D for Quest 4 flavor and 72C for Quest 2 flavor.

Kit #720911146 is available to convert field units to this configuration. The sold-out feature however will be inoperable with the use of this kit.



New Door Latch Configuration

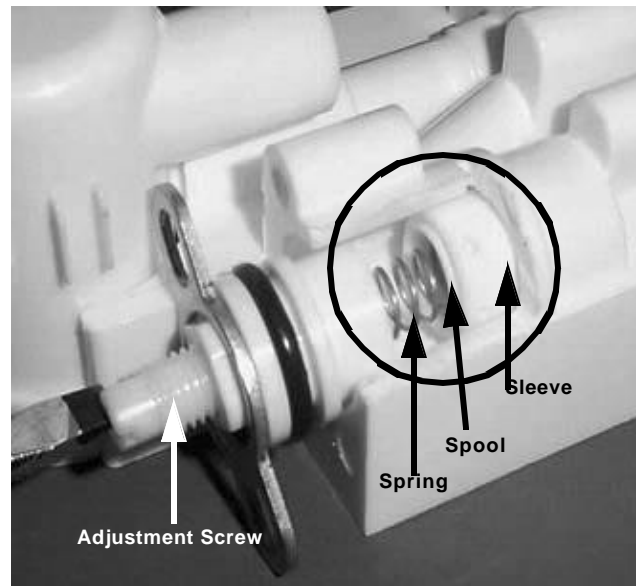
## PLATFORM COMPONENTS



### Water Valve/Flow Control

The flow control is a ceramic spool and sleeve. It must move freely to regulate the water flow and maintain brix.

Be sure the o-ring is in place and sealing properly.



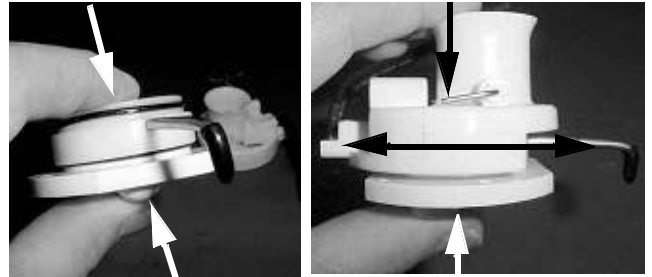
### Bottle Adaptor - O-rings

When doing any assembly work on the bottle adaptor be sure to use a small amount of lubricant on each o ring. This should be a food approved non petroleum based grease.

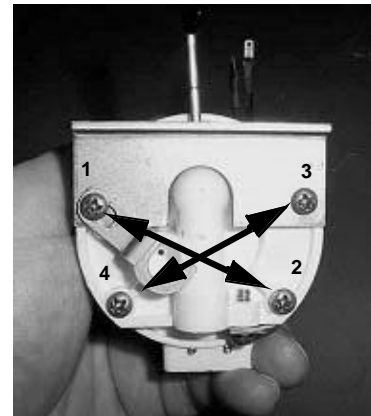


**Tip:**

When re-assembling the large o-ring may be pinched if not installed properly. Place the slide valve into the bottom of the adaptor keeping straight across. Press evenly to seat the o-ring. It is not advisable to rotate the valve back and forth in and attempt to seat the o-ring. Do the same when installing the top.



When securing the screws do it in the X pattern tightening the opposites across from each other. Be sure they are fully tighten to prevent leaking.

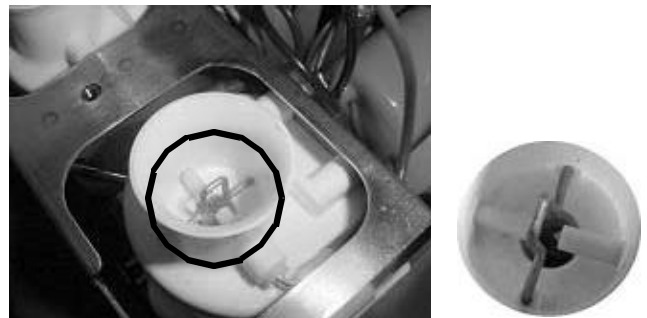


**Bottle Adaptor - Sold Out Sensors**

The sold-out sensors are located in the bottle adaptor neck.

The do not get cleaned during normal flushing procedures. They are cleaned only during sanitizing.

Be sure there is no build up of pulp or concentrate on the pins themselves. The results will be an erratic operation of the refill lights.



Sold Out Contacts

**Bottle Adaptor - Tray Grommets**

When installing the grommets be sure that each one is sealed below the lead in taper on the top of the bottle adaptor.

TIP: Press the entire tray down evenly to seat Run finger around the edge to seal.



## Bottle Adaptor - Flush Mode

THE FLUSH MODE IS FOR FLUSHING THE PUMP SYSTEM OF CONCENTRATE ONLY.

**Dispensing water in the flush mode over long periods can cause the pump tubing to split at the inlet of the pump.**



## Static Mixers

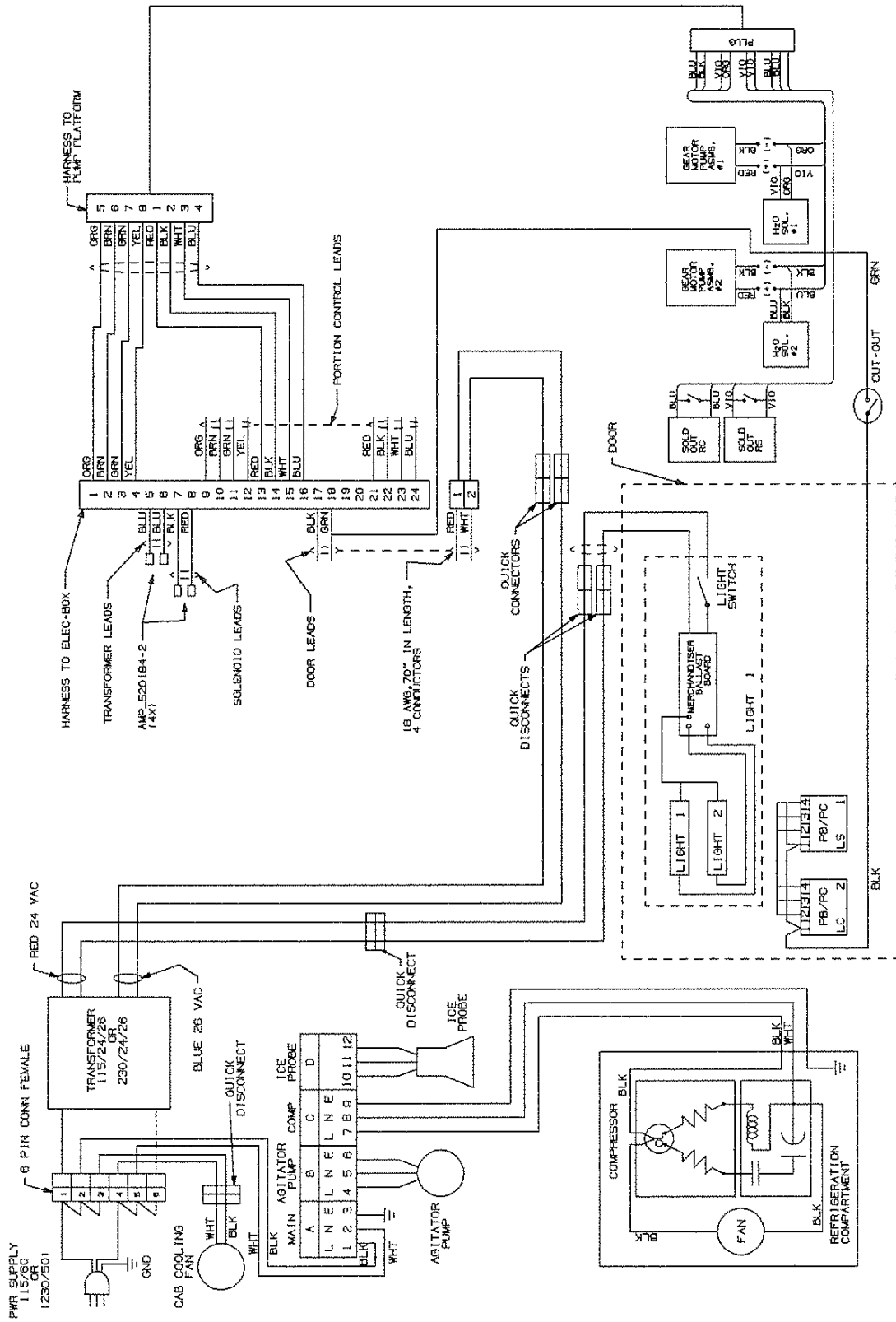
The Quest dispenser has static mixer option.

The DN MIXER (part number 720703202) is used for high viscosity concentrates. It helps promote proper mixing. The cone top mixer is the standard. Both are interchangeable with each other.

All feet must be attached for proper operation. If all or any are missing the mixer should be replaced.







## TROUBLESHOOTING GUIDE

The following pages contain troubleshooting information intended to aid an experienced service person in diagnosing operational problems that may occur. For further assistance, contact the IMI Cornelius Technical Services department at 1-888-248-5568 (630-539-6850 outside the United States) between the hours of 7:30A.M. and 5:00P.M. Central Standard Time. You must have the model and serial number (Located on the right side of the dispenser) prior to calling.

PROBLEM	PROBABLE CAUSE	REMEDY
Totally Inoperative	<ul style="list-style-type: none"> <li>No power to dispenser due to tripped circuit breaker</li> </ul>	<ul style="list-style-type: none"> <li>Reset circuit breaker. Confirm that breaker is correct size and no other equipment is operating on the same circuit. Also confirm that supply voltage is +/- 10% of nameplate specifications.</li> </ul>
	<ul style="list-style-type: none"> <li>Loose or broken power supply connection inside dispenser.</li> </ul>	<ul style="list-style-type: none"> <li>Repair connection.</li> </ul>
No cooling	<ul style="list-style-type: none"> <li>Line voltage is not within +/- 10% of nameplate specifications causing compressor overload to trip</li> </ul>	<ul style="list-style-type: none"> <li>Contact an electrician</li> </ul>
	<ul style="list-style-type: none"> <li>No water in water ice bath or water level extremely low exposing the ice bank sensing probe</li> </ul>	<ul style="list-style-type: none"> <li>Fill ice bath to proper water level</li> </ul>
	<ul style="list-style-type: none"> <li>Defective Ice Bank Control or sensing probe</li> </ul>	<ul style="list-style-type: none"> <li>Replace</li> </ul>
	<ul style="list-style-type: none"> <li>Cabinet fan is inoperative resulting in warm concentrate (water continues to cool)</li> </ul>	<ul style="list-style-type: none"> <li>Replace</li> </ul>
	<ul style="list-style-type: none"> <li>Compressor short cycles on overload</li> </ul>	<ul style="list-style-type: none"> <li>Excessively high discharge pressure due to restricted condenser or inoperative condenser fan motor</li> </ul>
	<ul style="list-style-type: none"> <li>Compressor starts but hums and trips overload</li> </ul>	<ul style="list-style-type: none"> <li>Seized or shorted compressor, replace</li> </ul>
	<ul style="list-style-type: none"> <li>Defective compressor overload or start capacitor</li> </ul>	<ul style="list-style-type: none"> <li>Test and replace</li> </ul>
	<ul style="list-style-type: none"> <li>Compressor starts but does not switch off of start winding</li> </ul>	<ul style="list-style-type: none"> <li>Relay or compressor is defective. Test and replace faulty item</li> </ul>
	<ul style="list-style-type: none"> <li>Refrigerant leak</li> </ul>	<ul style="list-style-type: none"> <li>Repair leak, evacuate and recharge system</li> </ul>
No water dispensed, concentrate only	<ul style="list-style-type: none"> <li>No water to dispenser</li> </ul>	<ul style="list-style-type: none"> <li>Restore Water</li> </ul>
	<ul style="list-style-type: none"> <li>Water supply line inside refrigerated cabinet disconnected from pump platform</li> </ul>	<ul style="list-style-type: none"> <li>Reconnect</li> </ul>
	<ul style="list-style-type: none"> <li>Water solenoid located on pump platform clogged or defective</li> </ul>	<ul style="list-style-type: none"> <li>Disassemble and clean solenoid. Replace if necessary.</li> </ul>
	<ul style="list-style-type: none"> <li>Main water solenoid/strainer located at the rear of dispenser is clogged, binding or defective</li> </ul>	<ul style="list-style-type: none"> <li>Remove and clean strainer. Confirm 28VDC is present at solenoid during dispense. Confirm solenoid coil is not open. Disassemble and clean solenoid.</li> </ul>
	<ul style="list-style-type: none"> <li>Water supply pressure is greater than 80 psi (5.5 bar) forcing the brix flow control closed</li> </ul>	<ul style="list-style-type: none"> <li>Add external regulator and lower pressure to 50 psi (3.5 bar)</li> </ul>



PROBLEM	PROBABLE CAUSE	REMEDY
	<ul style="list-style-type: none"> <li>Freeze-up of water coil in ice bath</li> </ul>	<ul style="list-style-type: none"> <li>Unplug dispenser and allow 2-4 hours to thaw. Check operation of agitator motor and ice bank control.</li> </ul>
	<ul style="list-style-type: none"> <li></li> </ul>	<ul style="list-style-type: none"> <li>Refrigeration system may be low on charge resulting in a deformed ice bank and freeze-up of the water coil in the ice bath.</li> </ul>
<p>No water and no concentrate, refrigeration is working</p>	<ul style="list-style-type: none"> <li>Black service switch located on the rear of the cabinet door in OFF position</li> </ul>	<ul style="list-style-type: none"> <li>Turn on switch</li> </ul>
	<ul style="list-style-type: none"> <li>White door switch open</li> </ul>	<ul style="list-style-type: none"> <li>Door switch must be closed in order to dispense. Check switch operation and replace if necessary.</li> </ul>
	<ul style="list-style-type: none"> <li>6.25 amp fuse inside front electrical box blown</li> </ul>	<ul style="list-style-type: none"> <li>Replace with 6.25, 250VAC slow blow fuse and test</li> </ul>
	<ul style="list-style-type: none"> <li>No output from Transformer</li> </ul>	<ul style="list-style-type: none"> <li>Confirm transformer output by of 26VAC +/- 2. Replace transformer if necessary.</li> </ul>
	<ul style="list-style-type: none"> <li>Defective voltage regulator board (VRB) located inside front electrical box</li> </ul>	<ul style="list-style-type: none"> <li>Measure across the VDC output of the board. There should be 28VDC present when the dispense button is pressed. Replaced VRB if necessary.</li> </ul>
	<ul style="list-style-type: none"> <li>Defective dispense push button or portion control board</li> </ul>	<ul style="list-style-type: none"> <li>Test and replace if necessary</li> </ul>
<p>No concentrate dispensed, water only</p>	<ul style="list-style-type: none"> <li>Concentrate container not fully engaged into receptacle on pump platform</li> </ul>	<ul style="list-style-type: none"> <li>Refer to Concentrate Loading section of this manual</li> </ul>
	<ul style="list-style-type: none"> <li>Dispense/Flush lever in FLUSH position</li> </ul>	<ul style="list-style-type: none"> <li>Move lever to DISPENSE position</li> </ul>
	<ul style="list-style-type: none"> <li>Concentrate too cold, not properly thawed</li> </ul>	<ul style="list-style-type: none"> <li>Concentrate should be 35-40°F (1.7-4.5°C) prior to loading</li> </ul>
	<ul style="list-style-type: none"> <li>Defective pump motor</li> </ul>	<ul style="list-style-type: none"> <li>Replace pump motor</li> </ul>
<p>Warm Drink</p>	<ul style="list-style-type: none"> <li>Ambient air around dispenser is too warm</li> </ul>	<ul style="list-style-type: none"> <li>Relocate dispenser</li> </ul>
	<ul style="list-style-type: none"> <li>Excessive demand on dispenser</li> </ul>	<ul style="list-style-type: none"> <li>Add water pre-cooler or second dispenser</li> </ul>
	<ul style="list-style-type: none"> <li>Dirty condenser coil</li> </ul>	<ul style="list-style-type: none"> <li>Clean condenser coil</li> </ul>
	<ul style="list-style-type: none"> <li>Inoperative condenser fan</li> </ul>	<ul style="list-style-type: none"> <li>Replace condenser fan motor</li> </ul>
	<ul style="list-style-type: none"> <li>Defective Ice Bank Control</li> </ul>	<ul style="list-style-type: none"> <li>Test and replace if necessary</li> </ul>
	<ul style="list-style-type: none"> <li>Loss of refrigerant charge due to leak in system</li> </ul>	<ul style="list-style-type: none"> <li>Repair leak and recharge system</li> </ul>
<p>Water continuously drips from nozzle when in OFF mode</p>	<ul style="list-style-type: none"> <li>Main water solenoid at base of unit or water solenoid on pump platform not shutting off tightly</li> </ul>	<ul style="list-style-type: none"> <li>Clean solenoid(s), replace parts as necessary (refer to the Planned Maintenance Section)</li> </ul>
<p>Concentrate warm, water cold</p>	<ul style="list-style-type: none"> <li>Cabinet fan inoperable</li> </ul>	<ul style="list-style-type: none"> <li>Check/replace fan</li> </ul>
	<ul style="list-style-type: none"> <li>Agitator motor/pump inoperable or restricted</li> </ul>	<ul style="list-style-type: none"> <li>Check/replace agitator motor</li> </ul>
	<ul style="list-style-type: none"> <li>Loss of refrigerant charge due to leak in system</li> </ul>	<ul style="list-style-type: none"> <li>Repair leak and recharge system</li> </ul>



PROBLEM	PROBABLE CAUSE	REMEDY
Brix Problem	<ul style="list-style-type: none"> <li>Water supply pressure too low, less than 20 psi (1.4 bar) flowing water pressure fluctuates sharply</li> </ul>	<ul style="list-style-type: none"> <li>Correct water supply problem to ensure a constant 50 psi (3.5 bar) flowing to the dispenser</li> </ul>
	<ul style="list-style-type: none"> <li>Water flow control binding or spring is defective</li> </ul>	<ul style="list-style-type: none"> <li>Clean and/or replace parts as necessary</li> </ul>
	<ul style="list-style-type: none"> <li>Improperly thawed concentrate. Brix changes as the concentrate temperature changes (concentrate becomes thinner as temperature rises)</li> </ul>	<ul style="list-style-type: none"> <li>Concentrate should be 35-40°F (1.7-4.5°C) prior to loading</li> </ul>
Pump Inoperative	<ul style="list-style-type: none"> <li>Pump motor defective</li> </ul>	<ul style="list-style-type: none"> <li>28VDC should be present at pump motor during dispense. If voltage is present and motor does not start, replace pump motor</li> </ul>
	<ul style="list-style-type: none"> <li>No power to transformer or no 28VAC output from transformer</li> </ul>	<ul style="list-style-type: none"> <li>Confirm transformer has line voltage present on primary side. If no 28VAC output from the secondary replace transformer</li> </ul>
	<ul style="list-style-type: none"> <li>Defective voltage regulator board (VRB) located inside front electrical box</li> </ul>	<ul style="list-style-type: none"> <li>Confirm board produces 28VDC present when the dispense button is pressed (refer to the Electrical Box Wiring Diagram for VDC output location). Replace VRB if necessary</li> </ul>
	<ul style="list-style-type: none"> <li>Defective dispense control board (Push button or portion control)</li> </ul>	<ul style="list-style-type: none"> <li>Test and replace if necessary</li> </ul>
Machine continues to dispense after dispense button is released or dispenses without operator input	<ul style="list-style-type: none"> <li>Push button or portion control pad stuck in on position</li> </ul>	<ul style="list-style-type: none"> <li>Disconnect the wire harness from the rear of the portion control and close the door. If unit does not dispense on its own the dispense control board is bad (stuck on)</li> </ul>
	<ul style="list-style-type: none"> <li>Relay on voltage regulator board (VRB) stuck on.</li> </ul>	<ul style="list-style-type: none"> <li>Disconnect the 4-wire harness from the lower right corner of the VRB. If the unit continues to dispense on its own the VRB is defective (relay stuck on)</li> </ul>



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