Quest Equipment Training

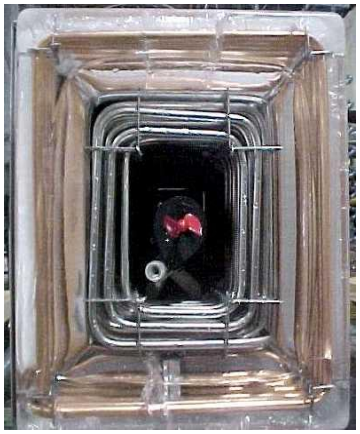
Oct 18, 2018

Outline

- Theory of Operation
- General Info
- Daily Cleaning
- Weekly Cleaning
- Semi-Annual PM
- Annual PM
- Additional Info

Theory of Operation

Theory of operation/System overview:
Refrigeration



Refrigeration is a water bath/ ice bank system. (16 Lbs 4 Flavor/8 lbs for the 2 Flavor)

The system is controlled by a solid state Ice bank control. Dispensed water is 38 F.

Draw capacity is 3-12 oz drinks a minute continuous. at or below 40 F with 75 F incoming water and a 40 F degree concentrate.

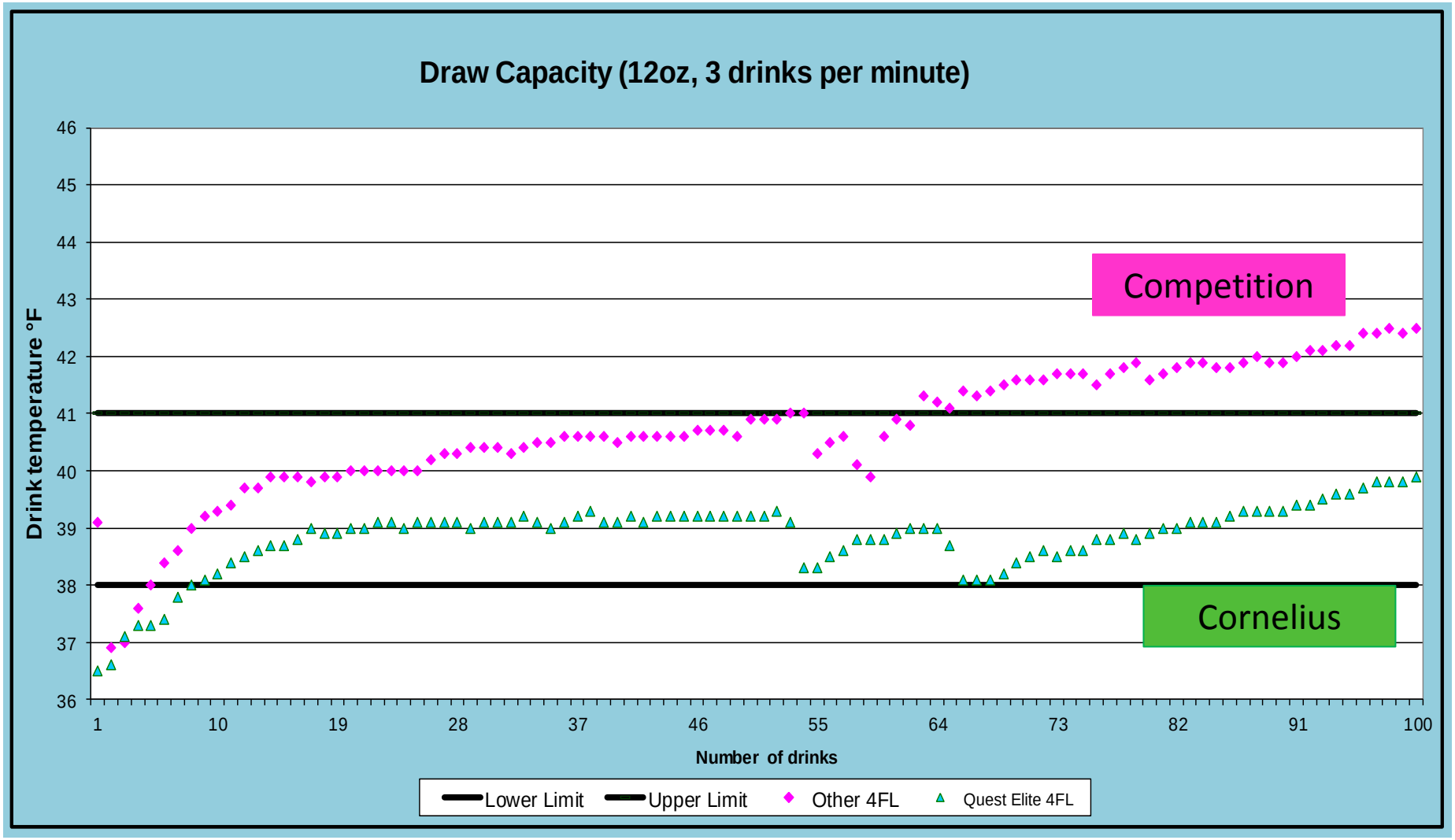
Cabinet is cooled by circulating the cold water from the bath into a cabinet heat exchanger and circulating the cold air with an internal cabinet fan.

Cabinet temperature is consistent ~38 degrees F.

There are no temperature adjustments on either the water or cabinet.

Refrigeration System Performance

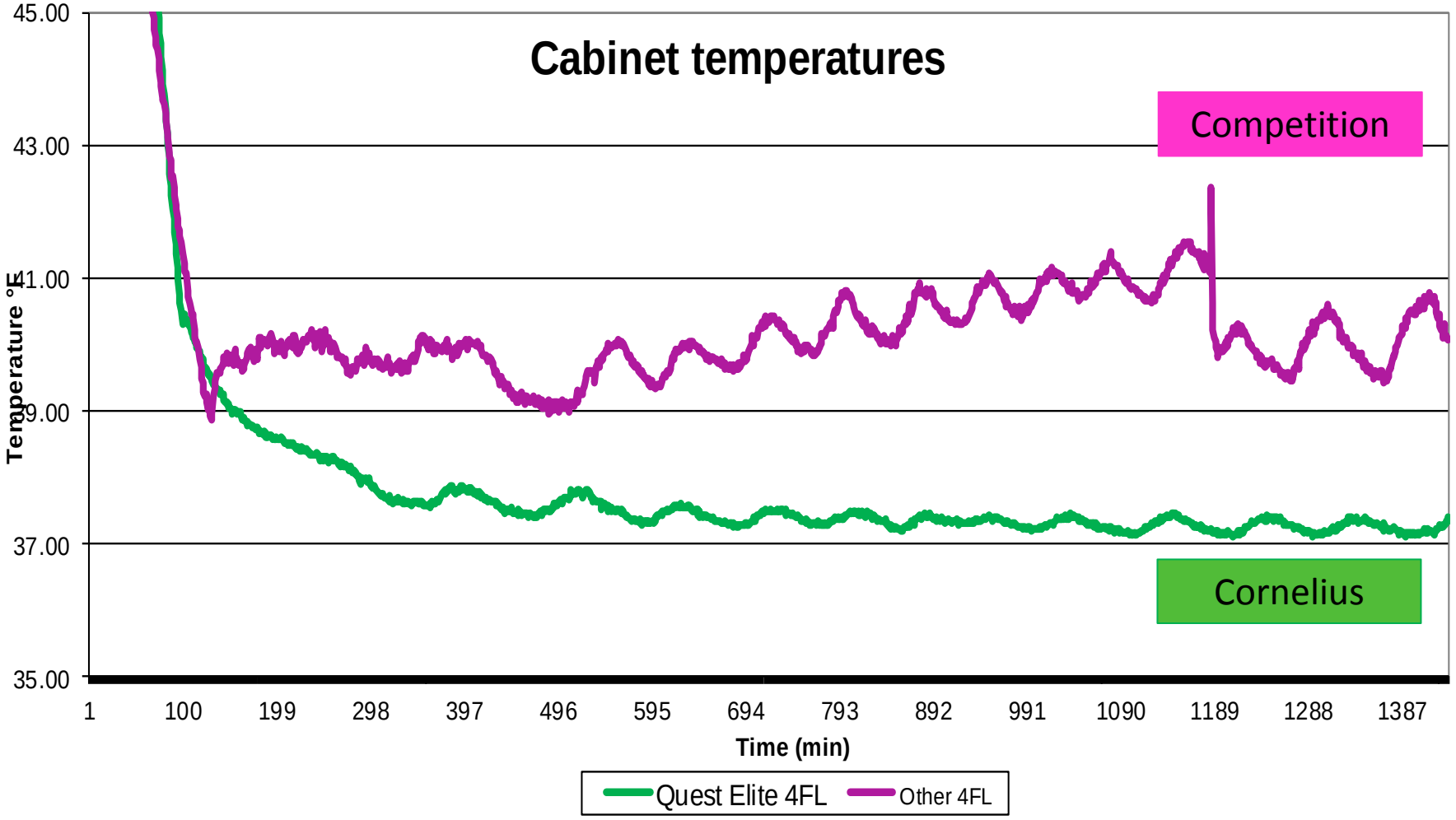
Compared to the Competition



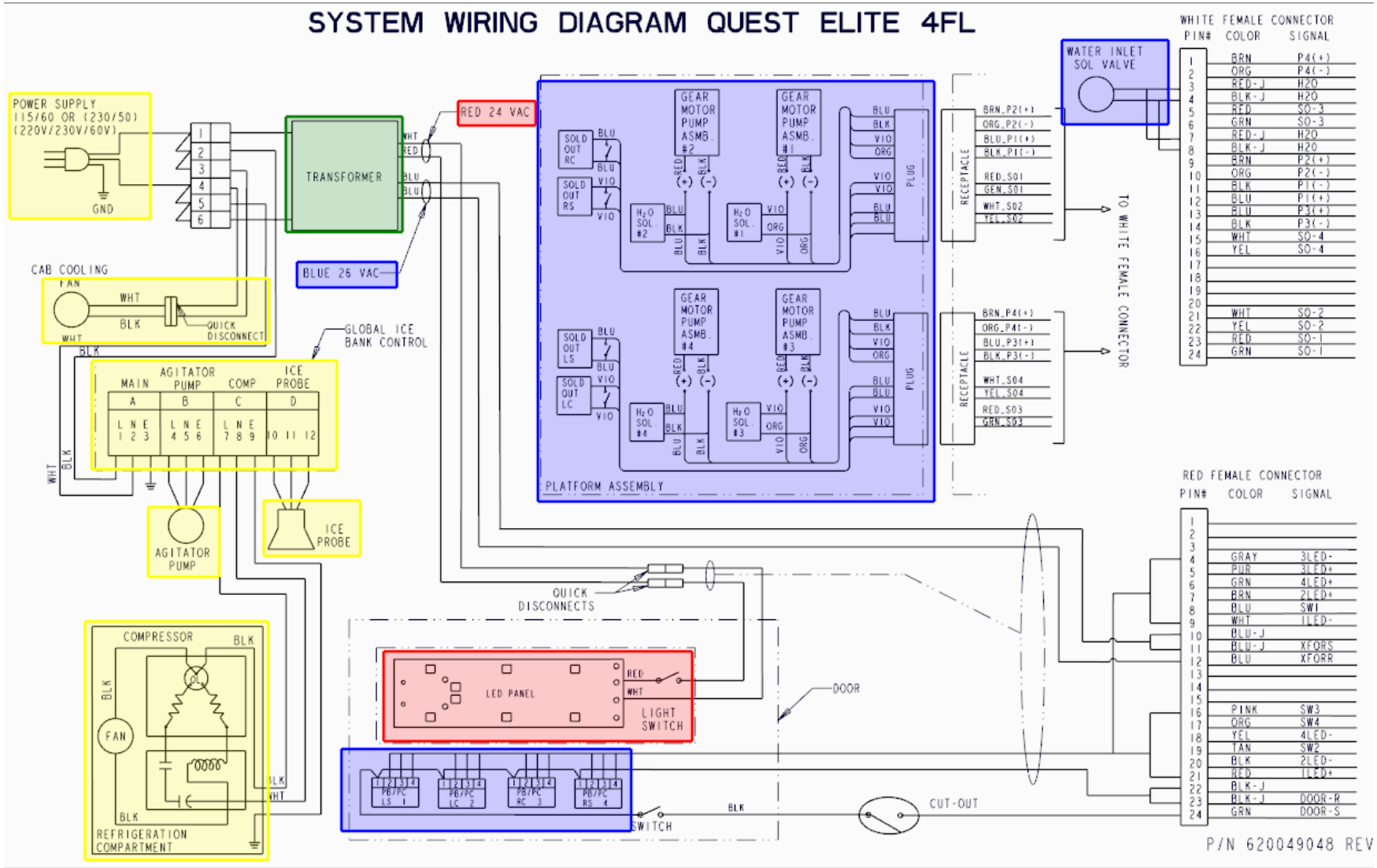
Refrigeration System Performance

Compared to the Competition

- High efficient Cabinet design keeps product colder, extending shelf life and maintaining product safety

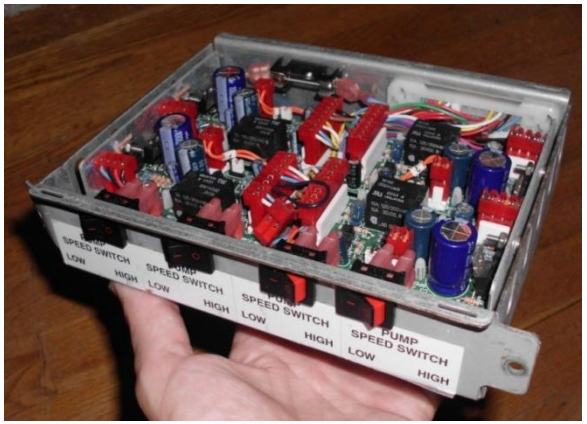


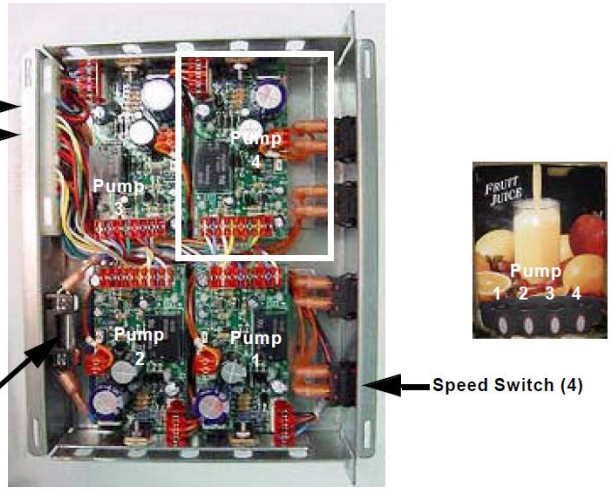
Wiring Diagram



Theory of operation/System overview:

Dispensing Electronics



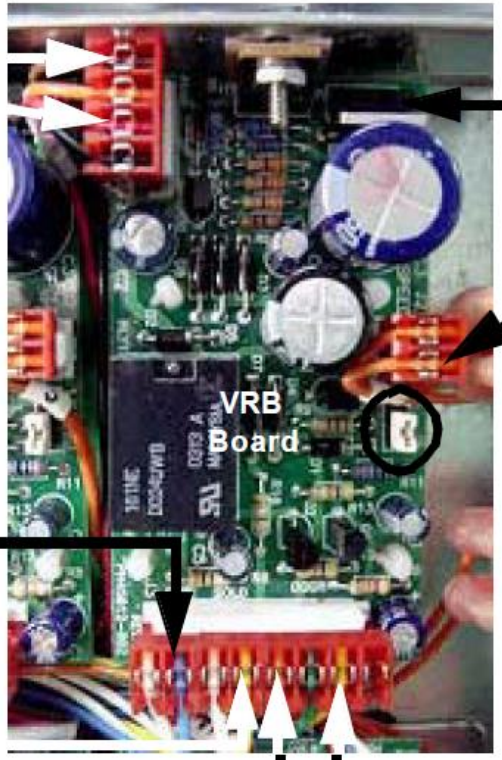


The VRB (Voltage Regulator Board) does the actual conversion from AC current to DC current. There is one board for each pump head and is accessed thru the “plug and play” electrical box for easy an quick servicing. It also contains the logic for the sold-out system.

28 VDC (primary)operates following:

- Pump motor (High Speed)
  - Voltage is farther reduced for Low Speed **18VDC**
- Solenoid on platform
- Water in solenoid at water connection

Theory of operation/System overview:
Dispensing Electronics



BOARD OUTPUT
Platform solenoid and pump motor
Rear water inlet solenoid
(4 -pin connector)

Second transistor for slow -speed operation only. No heat sink required

SPEED SWITCH
(2 -pin connector)

BOARD INPUT
26VAC from Transformer
(2- pin connector)

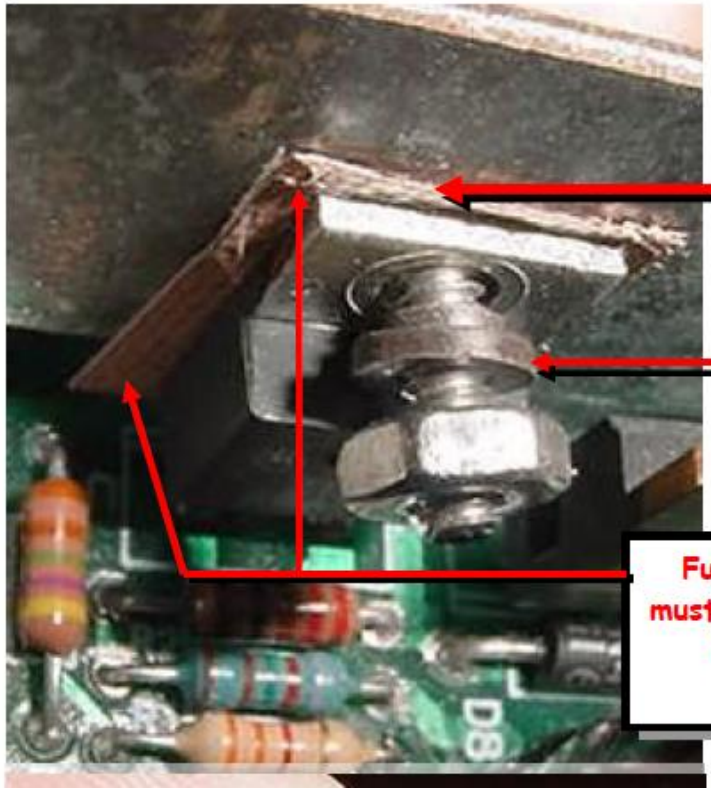
Sold-out from platform
(2-pin connector)

Touch pad –SWITCH

Refill light
(2-pin connector)

SOLD–OUT FUNCTION-JUMPER
(3-pin connector)
J5 PIN
Enabled dispense light only
LK PIN
Disabled dispense pump head stops when light is on.

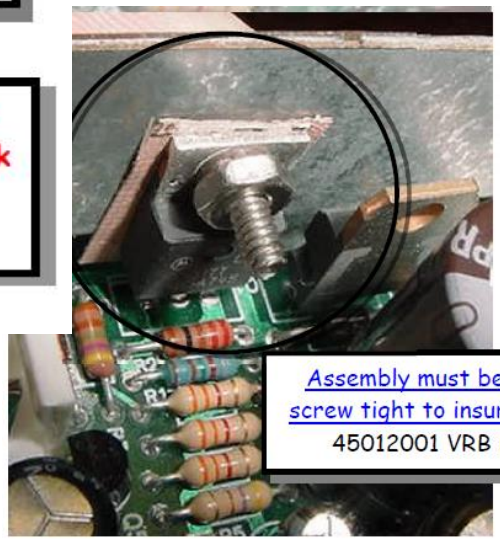
Important VRB Mounting Info



Insulating Pad must be square with chip not making any direct contact with the bracket

Insulating Washer in correctly

Full contact with bracket must be made front and back for proper heat sink operation.



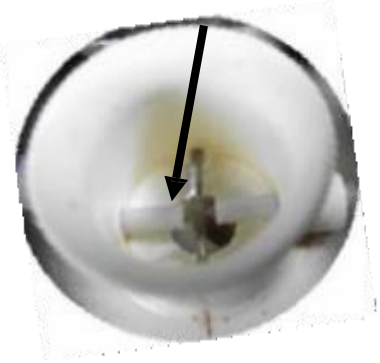
Assembly must be complete and the screw tight to insure proper operation.
45012001 VRB Board Assembly

Quest Elite Sold-out Operations Guide

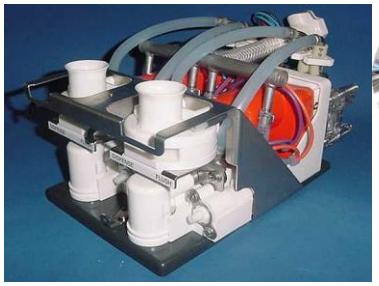
The sold out system on the Quest Elite is closed loop circuit,. With the concentrate covering the pins, the circuit closes thus extinguishing the refill light. Once the concentrate container is emptied the pins are exposed opening the circuit illuminating the refill indicator.

It is extremely important that these pins stay cleaned and free of any accumulated concentrate to maintain good conductivity.
The flush feature on the platform DOES NOT clean this area. It must be done manually.

Some concentrates do not have sufficient conductivity to allow the circuit to close thus the refill light stays on even with a full concentrate container . This is particularly true of some of the non citrus juices such as cranberry. Because this system is a closed loop pulling the sold-out connector off the corresponding board WILL NOT solve the problem.

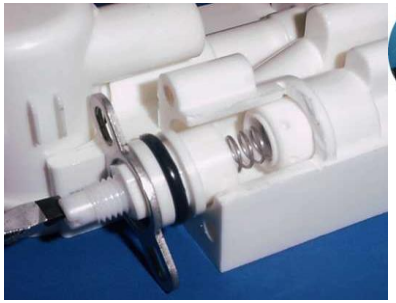


Theory of operation/System overview:
Pump Platform




The platform is the same on both the 2 flavor and 4 flavor units. It can be easily removed for cleaning and servicing. A quick connector is included so the water source can remain on when removing the platform.


The concentrate is delivered using a motor driven peristaltic pump.




Water is delivered and calibrated thru a spool and sleeve flow control which monitors and maintain the correct ratio or with juice correct “Brix”.

Troubleshooting Guide

Symptom	Probable Cause	Remedy
Unit totally inoperative	A. No power to dispenser due to tripped circuit breaker.	A. Reset circuit breaker. Confirm that breaker is correct size & no other equipment is operating on the same circuit. Also confirm that supply voltage is +/-10% of nameplate specification.
	B. Loose or broken power supply connection inside dispenser.	B. Repair connection.
No Cooling	A. Line voltage not within nameplate specification causing compressor overload to trip.	A. Contact an electrician.
	B. No water in water ice bath or water level extremely low, exposing ice bank sensing probe.	B. Fill ice bath to proper water level.
	C. Defective Ice Bank Control or sensing probe.	C. Replace.
	D. Cabinet fan inoperative resulting in warm concentrate (water continues to cool).	D. Replace.
	E. Compressor short cycles on overload.	E. Excessively high discharge pressure due to restricted condenser or inoperative condenser fan motor.
	F. Compressor starts but hums & trips overload.	F. Seized or shorted compressor, replace.
	G. Defective compressor overload or start capacitor.	G. Test & replace.
	H. Compressor starts but does not switch off of start winding.	H. Relay or compressor is defective. Test & replace faulty item.
	I. Refrigerant leak.	I. Repair leak, evacuate & recharge system.

Troubleshooting Guide

Symptom	Probable Cause	Remedy
No water dispensed, concentrate only	A. No water in dispenser.	A. Restore water.
	B. Water supply line inside refrigerated cabinet disconnected from pump platform.	B. Reconnect
	C. Water solenoid located on pump platform clogged or defective.	C. Disassemble & clean solenoid. Replace if necessary.
	D. Main water solenoid/strainer located at the rear of dispenser is clogged, binding or defective.	D. Remove & clean strainer. Confirm 24VDC is present at solenoid during dispense. Confirm solenoid coil is not open. Disassemble & clean solenoid.
	E. Water supply pressure is greater than 80 psi (5.5 bar) forcing BRIX flow control closed.	E. Add external regulator & lower pressure to 50 psi (3.5 bar).
	F. Freeze-up of water coil in ice bath.	F. Unplug dispenser & allow 2-4 hrs. to thaw. Check operation of agitator motor & ice bank control. Refrigeration system may be low on charge resulting in a deformed ice bank & freeze-up of water coil in ice bath.
No water & no concentrate, refrigeration is working.	A. Black service switch located on the rear of the cabinet door in OFF position.	A. Turn on switch.
	B. White door switch open	B. Door switch must be closed in order to dispense. Check switch operation & replace if necessary.
	C. 6.25 amp fuse inside front electrical box blown.	C. Replace with 6.25, 250VAC slow blow fuse & test.
	D. No output from transformer.	D. Confirm transformer output of 24VAC +/-2. Replace transformer if necessary.
	E. Defective voltage regulator board (VRB) located inside front electrical box.	E. Measure across the VDC output of the board. There should be 28VDC present when the dispense button is pressed. Replace VRB if necessary.
	F. Defective dispense push button or portion control board.	F. Test & replace if necessary.
No concentrate dispensed, water only.	A. Concentrate container not fully engaged into receptacle on pump platform.	A. Refer to Concentrate Loading section of this manual.
	B. Dispense/Flush lever in FLUSH position	B. Move lever to DISPENSE position
	C. Concentrate too cold, not properly thawed.	C. Concentrate should be 35 to 40°F (1.7 to 4.5°C) prior to loading.
	D. Defective pump motor.	D. Replace pump motor.

Troubleshooting Guide

Symptom	Probable Cause	Remedy
Warm drinks	A. Ambient air around dispenser is too warm.	A. Relocate dispenser.
	B. Excessive demand on dispenser.	B. Add water pre-cooler or second dispenser
	C. Dirty condenser coil.	C. Clean condenser coil.
	D. Inoperative condenser fan.	D. Replace condenser fan motor.
	E. Defective Ice Bank Control.	E. Test & replace if necessary.
	F. Loss of refrigerant charge due to leak in system.	F. Repair leak and recharge system.
Water continuously drips from nozzle in OFF mode.	A. Main water solenoid at base of unit or water solenoid on pump platform not shutting off completely.	A. Clean solenoid(s), replace parts as necessary (refer to Planned Maintenance section).
Concentrate warm, water cold.	A. Cabinet fan inoperable.	A. Check/replace fan.
	B. Agitator motor/pump inoperable or restricted.	B. Check/replace agitator motor.
	C. Loss of refrigerant charge due to leak in system.	C. Repair leak & recharge system.
BRIX problem	A. Water supply pressure too low, less than 20 psi (1.4 bar) flowing water pressure.	A. Correct water supply problem to ensure a constant 50 psi (3.5 bar) flowing to dispenser.
	B. Water flow control binding or spring is defective.	B. Clean and/or replace parts as necessary.
	C. Improperly thawed concentrate. BRIX changes as concentrate temperature changes (concentrate becomes thinner as temperature rises)	C. Concentrate should be 35 to 40°F (1.7 to 4.5°C) prior to loading.
Pump inoperative	A. Pump motor defective.	A. 28VDC should be present at pump motor during dispense. If voltage is present & motor does not start, replace motor.
	B. No power to transformer or no 24VAC output from transformer.	B. Confirm transformer has line voltage present on primary side. If no 24VAC output from secondary, replace transformer.
	C. Defective voltage regulator board (VRB) located inside front electrical box.	C. Confirm board produces 28VDC present when dispense button is pressed (refer to Electrical Box Wiring Diagram for VDC output location). Replace VRB if necessary.
	D. Defective dispense control board (Push button or portion control).	D. Test & replace if necessary.
Machine continues to dispense after dispense button is released or dispenses without operator input.	A. Push button or portion control pad stuck in ON position.	A. Disconnect wire harness from rear of portion control and close the door. If unit does not dispense on its own, dispense control board is bad (stuck on).
	B. Relay on voltage regulator board (VRB) stuck on.	B. Disconnect 4-wire harness from lower right corner of VRB. If unit continues to dispense on its own VRB is defective (relay stuck on).

General Info

Installation Requirements

Water Connection:

- 40-50 PSI Dynamic water pressure i. e. flowing pressure measured at dispenser inlet with a 3.0 ounces (88.7 ml) per second water flow.
- 30 PSI Dynamic is minimum /80 PSI Dynamic is Maximum

Clearance Recommendations:

- 12 " on top and 4 " required in the back for proper air flow.

Operating Weights:

- 4 flavor with ice -185 LBS
- 2 flavor with ice -136 LBS

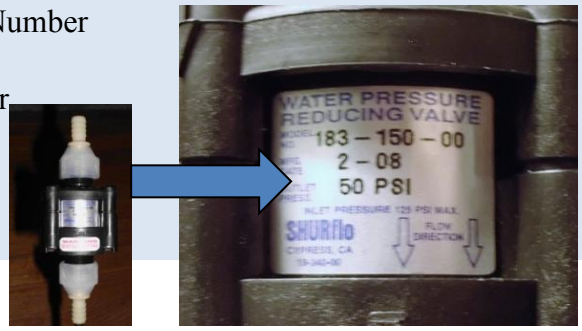
Pull Down & Ice Bath Size:

- 4 flavor: 4.5 Hours; 3.6 gallons; 15-16 lbs
- 2 flavor: 3 Hours; 1.8 gallons; 8-9 lbs

Electrical

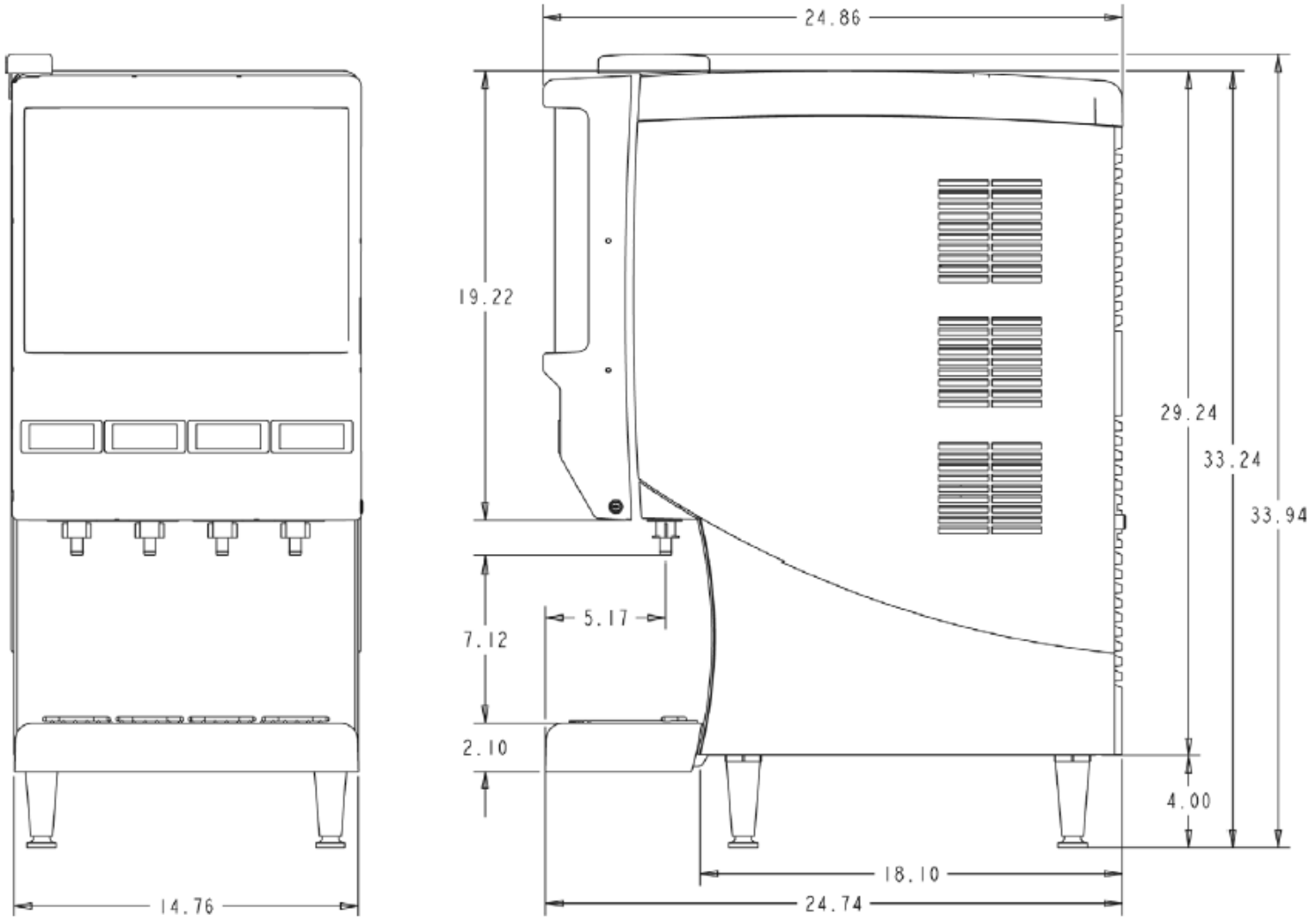
- Dedicated line 15 AMP capability

Reg Wtr 50 Psi Shurflo - 18305906
Manufacturer
Shurflo
OEM Part Number
18305906
Part Number
1001711



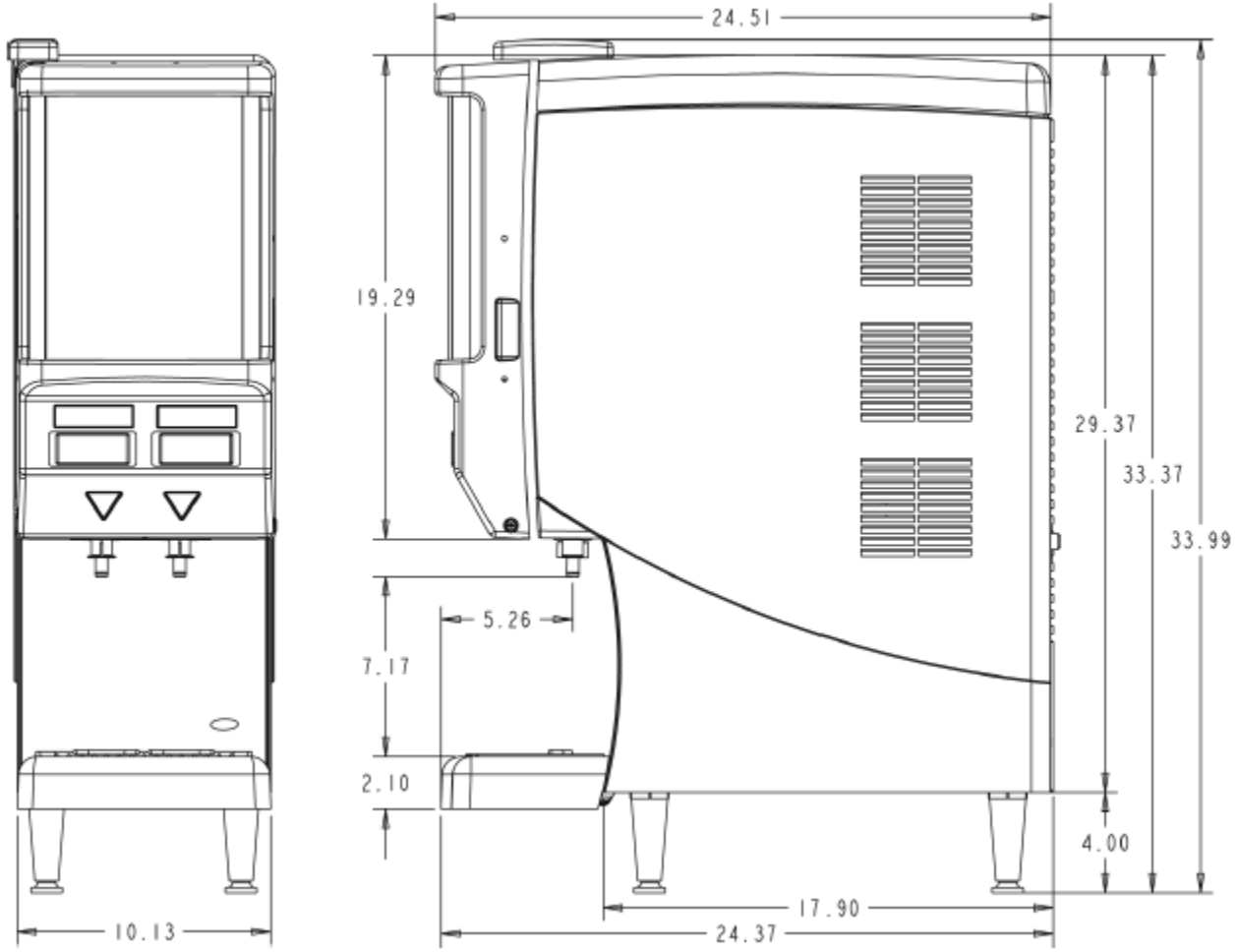
General Information

Quest 4F Dimensions



General Information

Quest 2F Dimensions

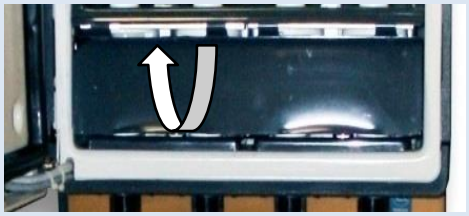


Daily Cleaning

Daily Cleaning

Flush

- Open cabinet door and lift platform access panel
- Slide lever to “Flush” position for all the valves
- Close cabinet door and run until only water is dispensed. Repeat it for all the other valves
- Switch all dispense valves back to “Dispense” mode



Remove & Wash

- Rotate nozzle ¼ turn to unlock
- Pull down to remove
- Wash using mild dish soap

Reinstall

- Insert static mixer inside the nozzle
- Push the nozzle up until it stops and rotate it ¼ turn to lock.
- Give it a slight pull to be sure it is secured
- The nozzle is locked when the wings are parallel to the front panel.

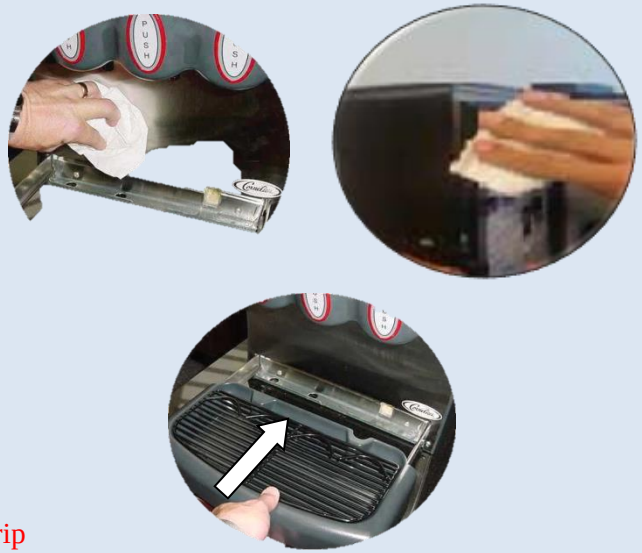
IMPORTANT: Do not wash the nozzles and mixers or any plastic parts in a dishwasher. Dishwashing can distort and discolor these plastic parts and can cause damage to the nozzle o-ring. Only use warm water and a mild detergent.

Daily Cleaning

Continue…

Splash Areas and Drip Tray

- Using a wet rug, wipe around the outside of the cabinet and splash panel
- Open the cabinet door and, using the same rug, wipe around the door gasket. Close door when complete.
- Remove and clean the drip tray and cup rest using mild dish soap



IMPORTANT: Condensation that forms in the cabinet drains into the drip tray. Leaving the tray off or not having it pushed completely back in place will cause the cabinet drain tube to misalign .This results in water dripping on to the counter from under the front left side of the dispenser .

Weekly Cleaning

Weekly Cleaning

Sanitize Solution

Prepare two 2 oz. (59 ml) packets of Stera-Sheen Green Label sanitizing solution (or similar brand) by dissolving each packet in 1 gallon (3.8L) of potable water to ensure 200 ppm of available chlorine

IMPORTANT: Only use Potable water at 80F-100F temperature. Water above this range will breakdown the chlorine solution and minimize sanitation.

Hot Water Flush

- Remove juice concentrate containers and place them in separate refrigerated compartment
- Fill a clean empty concentrate container with one quart of extremely hot tap water, approximately 140°F (60°C)
- Place the container into the unit
- Dispense all of the hot water into a large container
- Repeat for all the remaining dispense valves

Weekly Cleaning

Continue…

Sanitize Mixing Components

- Remove the mixing chambers, nozzles, and static mixers
- Rinse them in hot water to remove excess pulp and concentrate
- Place the mixing chambers, nozzles, and static mixers in a separate container of sanitizing solution previously prepared and agitate vigorously
- Allow the parts to soak for two minutes
- Rinse static mixer, nozzles and mixing chambers thoroughly with fresh tap water
- Reinstall the static mixer, nozzles and mixing chambers

IMPORTANT: Do not leave the nozzles or mixers in the sanitizing solution for longer than 5 minutes. Prolonged exposure will cause damage to the plastic.

Sanitize Pump System

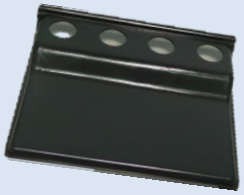
- Fill a clean concentrate container with 2 quarts (1.9L) of fresh sanitizing solution (previously prepared)
- Pump levers must be on “Dispense” mode
- Press the “Pitcher” button and manually stop it after 90 sec.
- Allow sanitizing solution to remain in the lines for 5 minutes
- After 5 minutes, dispense the remaining sanitizing solution in the container
- Repeat for all valves

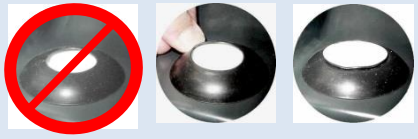
Weekly Cleaning

Continue…

Internal Spills

- If concentrate there's spills inside the dispenser, remove shelf
- Clean shelf and cabinet as needed.
- Reinstall inside tray
- Grommets must sit under the neck of the adaptor as shown





Prepare Dispenser for Use

- Replace sanitizing solution container with a concentrate container and close the cabinet door
- Press the medium drink button. You need to dispense at least 8 oz. Manually stop or restart as need
- Repeat for all valves

Semi-Annual PM

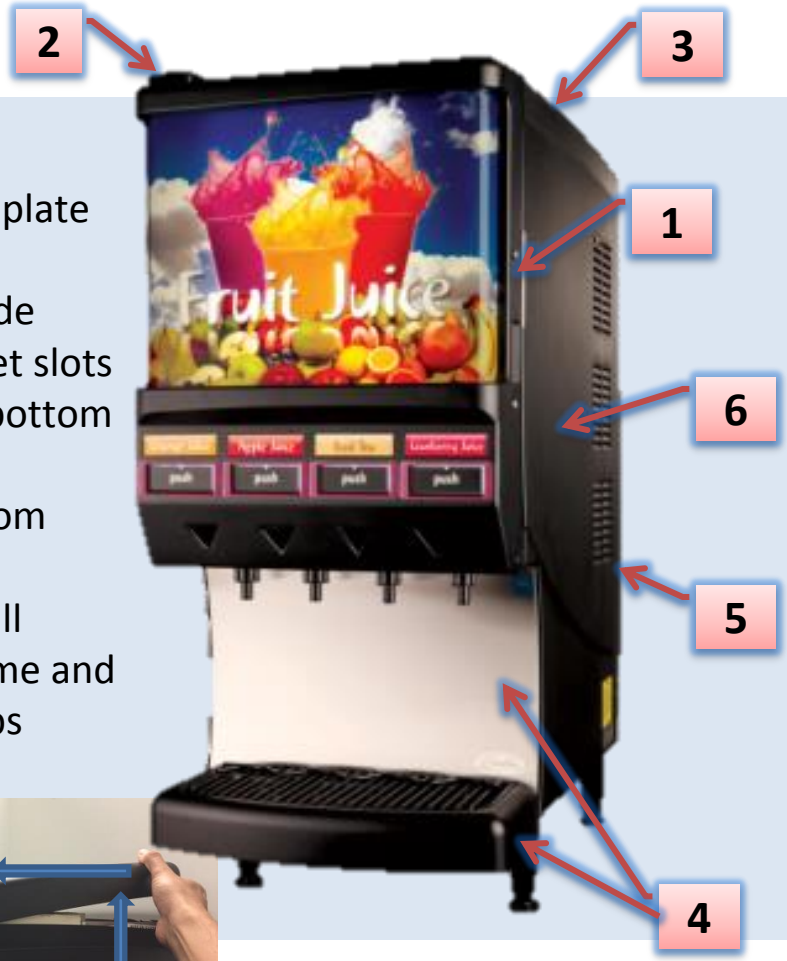
Semi-Annual PM

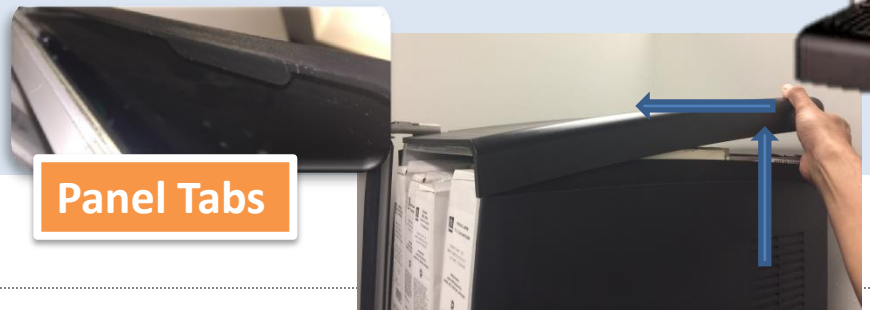
CAUTION: The following procedures require removal of the dispenser side panel(s). Disconnect the power cord from the receptacle prior to proceeding

Remove Panels

The following sequence must be follow

1. **Strike Plate**: Open door and remove screws to detach plate
2. **Top Cover**: Remove screws to release cover
3. **Top Panel:** Remove back screws. Lift from back and slide forward to disengage front two panel tabs from cabinet slots
4. **Splash Panel & Drip Tray:** Remove drip tray. Remove bottom splash panel screws and slide down to release.
5. **Back Panel:** Slide straight up to release panel hooks from frame
6. **Left & Right Panels:** Remove screws from the back. Pull panel away from the unit only enough to clear the frame and push forward in order to disengage the front panel tabs

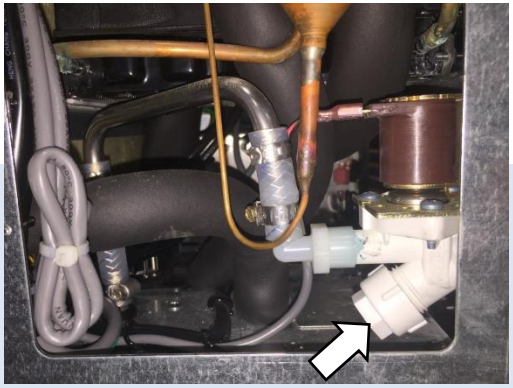




Semi-Annual PM

Continue…

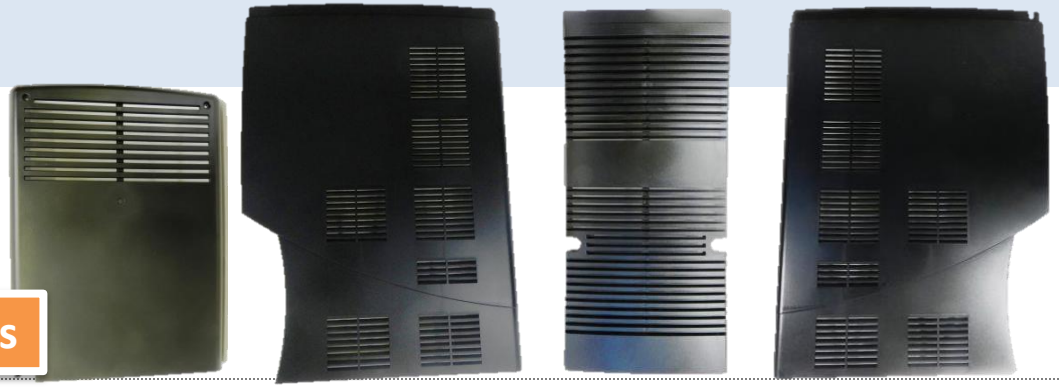
Water Strainer



- Turn off the water supply to the dispenser
- Remove cap from the “Y” shaped water inlet solenoid located on the right side of the dispenser
- Clean and reinstall the stainless steel water strainer
- Turn on water supply and check for leaks

Chassis Cleaning

- Clean the condenser cooling fins
- Wipe the fan blades clean
- Clean the panel air inlet grilles on all the panels

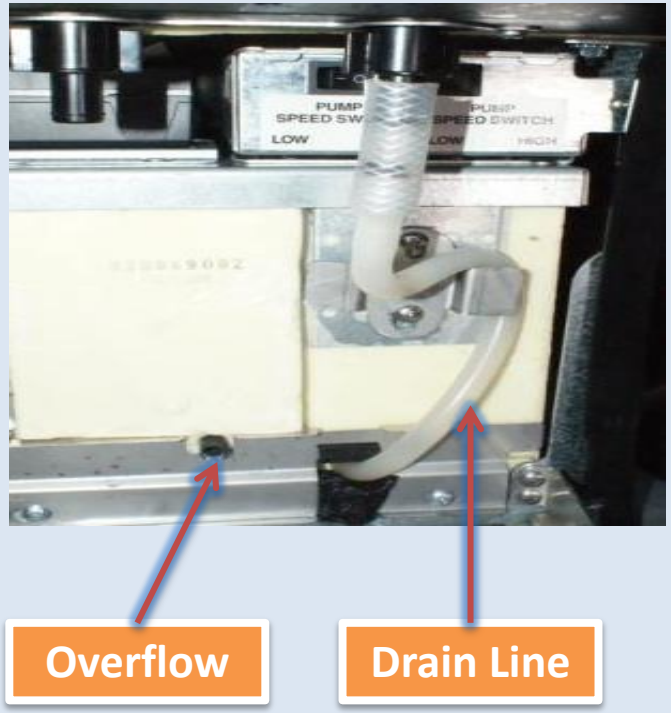


Semi-Annual PM

Continue…

Refill Water Ice Bath

- Replace all panels except for the Splash Panel and Drip Tray. Follow backward sequence from the Panel Removal Section
- Reconnect unit to power outlet
- Perform the weekly cleaning procedure, but **DONOT** perform the last step of **"Prep Dispenser for Use".** Concentrate bottles **should not** be installed
- Release drain line located on the front of the unit rom the left side of the holding bracket
- Remove red plug and insert drain tube to the right nozzle as shown
- Temporary place the drip tray on the unit. This will serve the catch the excess water from this process
- Press the pitcher button
- Stop dispensing once water starts coming out of the over flow port
- If the refill process need to continue, switch to the next valve and continue cycling until refill is complete
- Place red plug on the drain line and re route it thru the holding bracket
- Replace Splash panel and drip tray
- Complete the last step form the weekly cleaning



Semi-Annual PM

Continue…

Check Brix

- Measure brix for each of valve. Refer to the concentrate brix setting from the brand owner
- Perform brix process if required

Brix Process

- Dispense 12 oz drink into clean dry cup
- Thoroughly stir the drink
- Measure the drink temperature. If temperature it above this 45 F, discard and repeat
- Take a small sample from the middle of the cup
- Measure brix and adjust as needed (+ or -)
  - Clockwise adjustment turns screw in and increases water flow (Brix ↓)
  - Turning the screw counter clockwise decreases water flow (Brix ↑)
- Repeat until desired brix is achieved

Typical Brix Measurement Tools

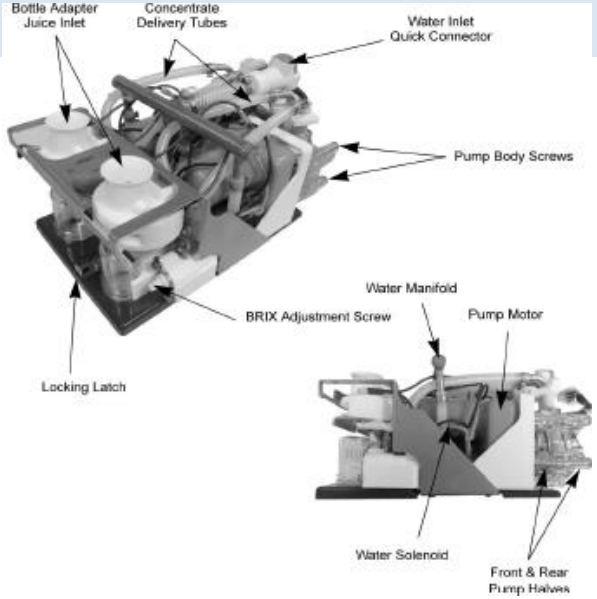

Fruit Juice
Orange Juice
Apple Juice
Iced Tea
Cranberry Juice
push
push
push
push
Fruit Juice
Orange Juice
Apple Juice
push
push

Annual PM

Annual PM

Remove Pump Deck

- Remove the concentrate containers from the dispenser and place them in a refrigerator
- Remove the cabinet shelf on which the concentrate containers are installed
- Flush the system prior to removing the pump platform (refer to the Daily Section)
- Remove the dispense nozzles and static mixers.
- Unplug the water line quick disconnect by pressing the gray button
- Slide the locking latch forward. Lift the platform slightly and pull forward to gain access to the electrical connector
- Unplug the electrical connector by squeezing the locking tabs on either side and pulling out the connector. Lift and remove the pump platform

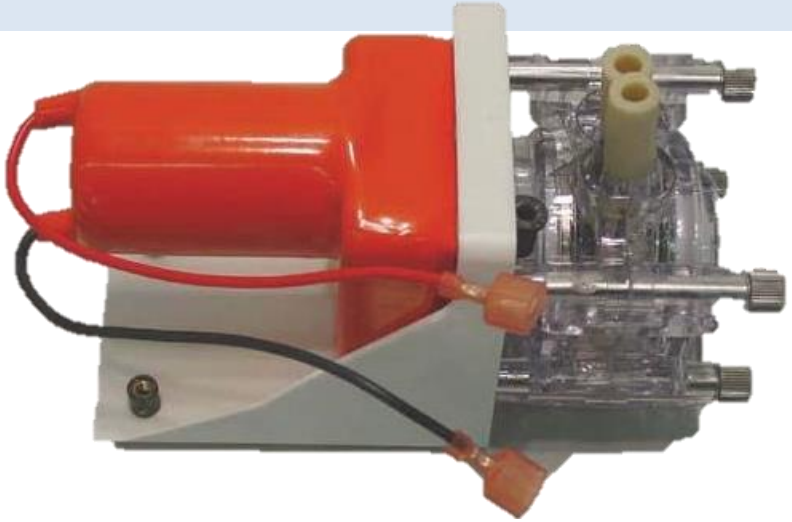


Annual PM

Continue…

Replace Tubing

- Remove the two white plastic hose clamps from the pump tube connections and remove the concentrate delivery tubes from the hose ends
- Loosen and remove the four screws from the pump body
- Remove ONLY the rear pump body half to reveal the pump tubing and rollers
- Remove the old pump tubing from the pump body. If the roller assembly comes out with the tubing, place it back into the pump housing. Make sure to align the roller assembly shaft keyway to the motor shaft so that the two interlock
- Firmly press the new tubing into the pump body around the roller assembly, making sure to keep the protruding ends even with each other



Annual PM

Continue…

Replace Tubing Cont.

- 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, manually manipulate the tubing into the housing or you may damage the tubing
- While holding the pump halves together with your hand, re-insert the four thumb screws and tighten using a criss-cross pattern as shown. The thumb screws should be tightened about 1/4 turn beyond snug
- 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

Annual PM

Continue…

Cabinet Cleaning

- Remove natural rubber nozzle bushing gasket and inspect it and silicone RTV. If cracked, clean off RTV and re-apply using kit P/N 729011013 per instructions provided with kit
- Re-apply nozzle bushing gasket so that the edges lie flat on the floor of the cabinet
- Clean cabinet floor and walls of any spilled juice and let dry. Use a mild soap/detergent and plain water.
- Re-install the pump platform in the reverse order given above.

Additional Info

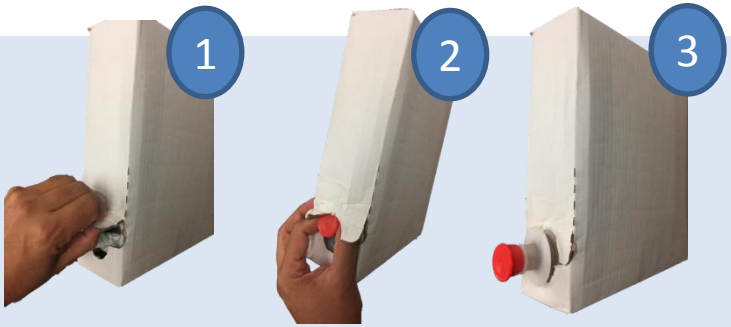
Additional Information

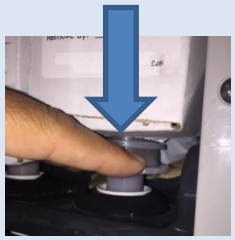
Your Cornelius dispenser is equipped with a **sold-out** indicator. You'll know it's time to replace an empty container when a red REFILL light comes on.

Replace Concentrate

Instructions apply to both Plastic Bottle and BiB product packaging unless otherwise specified

- Remove and discard empty container
- Make sure new product is completely thawed
- Shake well before proceeding
- **BIB ONLY:** Open BiB to retract bag fitment and secure it to the box as shown
- Remove cap and place new product inside dispenser
- Press down on fitment to make sure it's properly seated in the adapter
- **BOTTLE ONLY:** Peel off label from bottle pin hole
- Push all BiBs against back wall to prevent interferences with the door when closing
- Check to make sure all package fitments are seated properly
- Close cabinet and check around door gasket for proper seal





Additional Information

Program Portion Control

- To set the key pad to “Program” mode. Press the small and large buttons at the same time
- Release once the refill light starts blinking. Key pad is now in “Program” mode
- Program the “cup sizes” by pressing and holding the “cup size” button until the desired level is achieved. The software will continue to add to the “cup size” as long as you are in this mode. You can top up the cup with repeated small increments until the desired level is achieved even if you switch back and forth between “cup sizes”. All the cup sizes can be programmed at the same time
- To get out of the “Program” mode and return to “Run” mode press the stop button once. The refill-light will go out if there is concentrate in the unit or stay on otherwise

“Program” Mode
[**press and hold**]

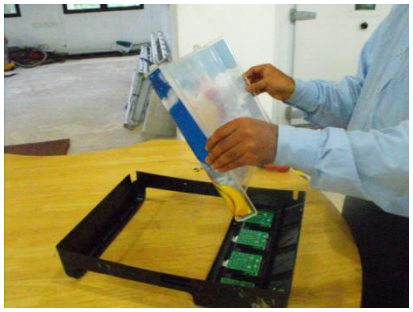
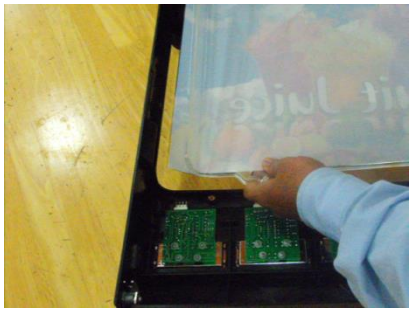
“Run” Mode
[**press once**]

Additional Information

Graphic Installation

- Remove front merchandiser
- Remove front lens
- Center graphic in front of the lens
- Install lens with graphic facing the outside
- Reinstall merchandiser



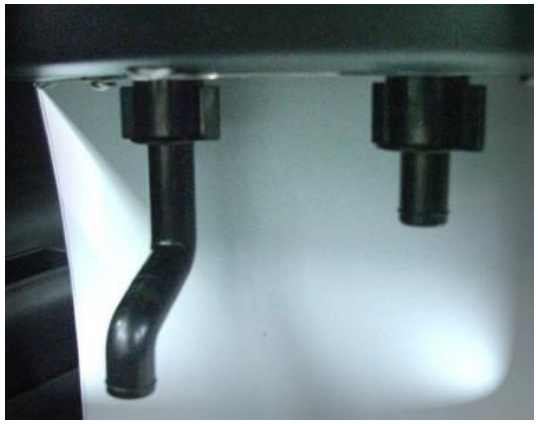



Features/Accessories

- An extended front panel kit is available to accommodate taller glasses or pitchers.

  4 flavor #729011003 2 flavor #729011004
- The longer nozzle option helps give better nozzle visibility when using smaller cups/glasses.
- Condensate Management Kit Fits all 4 flavors

  4 flavor #629096996 2 flavor N/A



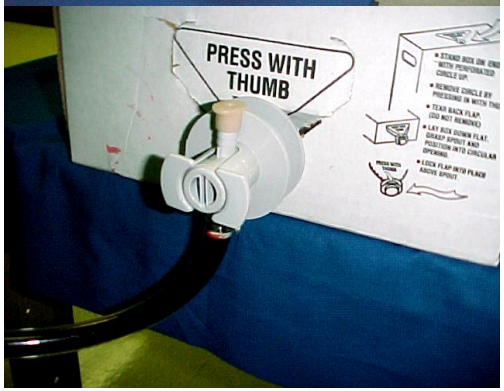
Quick Load Tube (QLT)

- 4-6 liter pouch capacity
- No venting required
- Stainless Steel re-usable cassette
- **ONLY** available in 2 Flavor

Value Proposition

-Sanitation and Hygiene optimization
-Packaging cost efficiencies
-Unique disposable package- no tube maintenance
-No tube flush or sanitation required
-Closest taste profile to NFC [frozen concentrate]

Traditional BiB Packaging



- 3 gallon and 5 gallon sizes
- Traditional QCD connectors to interface

Value Proposition

-Low product cost of entry

-Utilize existing packaging options