INSTALLATION & SERVICE MANUAL

QUANTUM SERIES

IMI CORNELIUS INC.
www.cornelius.com

Cornelius®
FOODSERVICE GROUP

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UNIT SPECIFICATIONS

Clearance Recommended: 12” (30.48 cm) on top and 4” (10.16 cm) required in back for air circulation if sides are blocked off. If sides are open only 2” (5.08) are required in back. Space between bottom of unit and counter cannot be obstructed in foot print area.

Electrical Connection: 6ft. long (1.83m) power cord with 3-prong plug attached to dispenser. Export models have line cord less plug.

Power Supply: 15 amps at 120 volts or 10 amps at 220 volts.

Water Connection: 3/8” (0.95 cm) SAE male flare fitting on dispenser.

Water Supply Requirements: 80 psi (5.5 bar) maximum static pressure. 20 psi (1.4 bar) minimum dynamic pressure; i.e., flowing pressure measured at dispenser water inlet with 3.0 ounces (88.7ml) per second water flow.

PREINSTALLATION

RECEIVING

Each unit is completely tested and inspected before shipment. At time of shipment, the carrier accepts the unit and any claim for damage must be made with the carrier.

Upon receiving from the carrier, please, inspect the carton for visible damage. If damage exists, have the carrier make a note on the bill of lading and file a claim with the carrier.

UNPACKING

- Remove staples securing carton to pallet.
- Lift carton up and off of unit.
- Remove top insert and shipping bag.
- Open the upper cabinet door and remove installation kit.
- Remove bolts securing unit to pallet.
- Lift unit off of pallet.
- Open the package, take legs and secure them to the bottom of the unit.

NOTE: Do not lay the unit on sides or on the back.

- Tilt the unit only when securing legs.
- If the unit is to be transported from the place where it was unpacked, do not remove the unit from the pallet. Transport it on the pallet to the installation site.

COUNTER LOCATION

- Select location in well ventilated area, close to grounded electrical outlet. If possible do not place the unit close to hot and/or steaming machines.

INSTALLATION SPECIFICATIONS

WATER SUPPLY

The Quantum Juice Dispensing machine is designed to dispense juice at a high flow rate. It is very important that the incoming water line is dedicated for the unit, or at least does not have other machines connected which could cause a water surge; i.e., a dishwashing machine.

> **NOTE: For increased cooling capacity the unit should be connected to a remote recirculating cooling unit. If the location is equipped with a dedicated beverage water supply system the juice dispenser should be connected to it.**
>
> **NOTE: The water supply should be consistent with proper water quality standard (neutral ph of 7.0 to 8.0), and should not be connected to a water softener. The water cooling coil is Copper, and may be affected by poor water conditions (i.e. severe corrosion and pitting).**

Water connections shall be sized, installed, and maintained according to Federal, State, and Local Laws.

ELECTRICAL

A minimum of 15 amps electrical service is needed for 120V power supply or 10 amps for 220V supply.

SPACE

The minimum clearance is: 4" (10.16cm) in back and 12" (30.48cm) on top and open to the front if sides are blocked off. If the sides are open then only 2" (5.08cm) is required in the back. Space between the bottom of the unit and the counter cannot be obstructed.

> **NOTE: Condenser air is drawn from the bottom and discharged out the back. Failure to maintain clearance space will reduce capacity of the unit and cause premature compressor failure.**

CONNECTING WATER SUPPLY

1. Secure 3/8" (0.95cm) flexible hose to the unit water inlet. Make sure that the seal washer is used (hose and seal washer are included with the installation kit).
2. When securing flare nut use backup wrench on male side of the 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.

FILLING UNIT WITH WATER

To properly prime the unit with water, without air pockets in the system, push the dispensing switches simultaneously for a few seconds each. Repeat above until a steady flow of water is observed.

> **NOTE: Water splashing may occur during the purge cycle.**

FLUSHING AND SANITIZING ON START UP

Follow standard sanitizing and flushing procedure.

PROGRAMMING PORTION CONTROL (OPTIONAL)

The portion control supplied with your orange juice dispenser has been programmed to pour 7, 12, and 16 ounce drinks. The “XL” size has also been programmed to pour 16 ounces. Should pour size adjustments be required, please follow the instructions below:

1. Simultaneously, press and hold “S” (small) and “XL” (extra large) push button switches on the Portion Control Module until the led “REFILL” light in the corner of the module starts blinking. Release the switches. The blinking led indicates the programming mode is active.

2. Place the cup under the white mixing valve 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.

3. After programming all the drink sizes, press and release the “cancel/pour” switch to return the Portion Control to the operational mode. The blinking led 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.

   The portion control has a full memory retention in case of a power failure.

CANCEL/POUR BUTTON

- Push and release the cancel/pour button to stop the valve from dispensing.
- Push and hold for a continuous pour.

CONCENTRATE LOADING AND BRIXING

PLACING CONCENTRATE PRODUCTS ON DISPENSING PLATFORM

To engage the concentrate container, place it in the desired position and press down into bottle adapter opening on dispensing platform tray (inside the cabinet).

> **NOTE: Make sure o-ring seal on the container adapter is lubricated; otherwise, you may experience difficulties with container replacement.**
>
> **NOTE: Concentrate in the containers must be completely thawed and be within the temperature range of 35°F - 40°F (1.6°C - 4.4°C). Failing to supply concentrate inside the recommended temperature range, especially below 35°F (1.6°C), will cause an out of brix drink.**

It is recommended the concentrate be thawed in a refrigerated (**35°F - 40°F) (1.6°C - 4.4°C)** compartment for 36 to 48 hours before use.

It is recommended that the thawed concentrate be thoroughly shaken before use.

CHANGING CONCENTRATE FLAVOR

1. Perform flush cycle
2. Move valve handle to “Dispense” position
3. Replace concentrate container

PUMP PRIMING

1. Follow instructions in paragraph “Placing Concentrate Products on the Dispensing Platform”
2. Close the door (or unit will not activate)
3. Depress the push button until concentrate appears at the dispensing nozzle.

BRIX SETTING

1. Make two (2) full clockwise turns of the corresponding brix knob from the “all the way out” position (factory set). These two turns will bring you within one turn of proper brix setting. (Refer to brix table located on the inside of the refrigerated compartment door).
2. Dispense 1/2 cup of juice and discard.
3. Dispense 1/2 cup of juice and use refractometer to check brix level.
4. Clockwise rotation of the knob decreases brix level for example from 13% to 11.5%. Counterclockwise will increase brix level for example from 11.5% to 13%.

If a brix problem is experienced, refer to troubleshooting guide.

CLEANING AND SANITIZING PROCEDURES

DAILY: SYSTEM FLUSH PROCEDURE

1. A 1 quart (0.95 liters) (32 fluid oz. minimum) empty container is needed. Place the empty container on the drip tray grill under the nozzle of the dispensing station to be flushed.
2. Open the cabinet door.
3. Choose the valve handle that corresponds with dispensing station to be flushed.
4. Move chosen handle from “dispense” position to the “flush” position.
5. Close the door.
6. Depress and hold push button corresponding with dispensing station to be flushed, until clear water is dispensed from the nozzle.
7. Move the handle to the “dispense” position.
8. Depress the push button for approximately 0.5 sec. and release. This will release water pressure from the pump system.

   It is recommended to use one or more quarts of water to flush a single dispensing station.

DAILY: PART WASHING

1. Remove and wash dispensing nozzle, static mixer, splash plate, drip pan, bracket, and grille in a mild detergent solution. Rinse thoroughly.

WEEKLY: SANITIZING PROCEDURE

1. Remove juice concentrate container from unit and place in separate refrigerated compartment.
2. Perform flush procedure.
3. Fill a clean empty concentrate container with one quart of extremely hot tap water, approximately 140°F (60°C) and place into unit. Run the hot water completely through unit into a large container. When complete remove concentrate container.
4. Remove nozzles and static mixers from unit and rinse under hot tap water to remove excess pulp.
5. Place nozzles and static mixers in separate container with 1 quart (0.95 liter) of sanitizing solution and agitate vigorously, using brush (P/N 07932) to remove any excess pulp or concentrate (allow to soak for 2 minutes).
6. Clean bottle adaptor’s inlet area along with dispensing platform tray with brush and sanitizing solution to remove concentrate and pulp.
7. Clean valve mixing chambers with brush and sanitizing solution. (This is the cavity from which the nozzle is removed).
8. Replace nozzles and static mixers into proper location.

9. Fill a clean empty concentrate container with 2 quarts (1.9 liters) of sanitizing solution, place on dispensing platform, and insert bottle fitting into bottle adapter.

   NOTE: Do not reuse the same sanitizing solution used to clean nozzles, static mixers, etc.

10. Place handle in dispense position and close door.

11. Run dispensing station for 90 seconds then stop; allow sanitizing solution to remain in lines for 5 minutes.

12. Dispense remaining sanitizing solution (approximately 90 seconds).

13. Replace sanitizing solution container with a concentrate container, and close door.

14. Depress and hold push buttons until juice appears at outlet of dispensing nozzle.

15. Dispense and discard two 8 oz. cups (236.6 ML) of juice.

    NOTE: Wipe internal and external surfaces of cabinet with a clean damp cloth.

WEEKLY: CHECK BRIX SETTING

Tools: Hydrometer or Refractometer

1. Dispense required ounces of juice per brix testing device instructions.

2. Test concentrate to water ratio of dispensed juice per brix testing device instructions.

3. Clockwise rotation of knob decreases brix level (i.e. from 13% to 11.5%). Counterclockwise rotation of knob increases brix level (i.e. from 11.5% to 13%).

   NOTE: If brix problem persists, refer to trouble shooting guide.

SEMI-ANNUAL: GENERAL CLEANING

1. Remove access port of Y-shaped water solenoid located on water inlet in lower cabinet, clean stainless steel strainer and reinstall.

2. Clean condenser fins.

3. Clean air inlet grille located in base of unit.

4. Clean lower cabinet interior.

5. Wipe fan blade clean.

YEARLY: REPLACE PUMP TUBING

Removal of Platform (see figure 1):

1. Remove concentrate container from the dispenser and place in a refrigerator.

2. Remove the product shelf.

3. Depress the button on the water line quick disconnect and lift the water line away from the platform.

4. Unplug the platform electrical connector at the inside rear of the cabinet.

5. Release the catch at the front of the platform by pulling the tab towards yourself with on finger.

6. Remove the nozzle and static mixers.

7. Carefully lift and pull the platform from the dispenser and place it in a clean and well lit area for service.

Replacement of Pump Hose (see figure 2):

1. Remove platform as described above in removal of platform instructions.

2. Remove the two white plastic hose clamps from the pump tube connections. Remove the two stainless steel concentrate delivery tubes from the hose ends.

3. Loosen and remove the four thumb screws from the pump body.

4. Remove the rear half (only) of the pump body to reveal the hose and rollers.

5. Remove the old hose from the pump body. If the rollers come out with the hose, place in back into the housing being sure to align the roller assembly shaft keyway to the motor shaft key so that the two interlock (see figure 3 for step by step pictorial instructions).

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. Once the hose is in place, replace the outer half of the pump body. Hold the tubing in place inside pump housing 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 housing straight onto the pump/motor portion of the assembly. Make sure to capture the hose within the body and not pinch it between the halves. Do not use any tool other than your finger tips to manipulate the hose into the housing or damage to the hose will result.

7. While holding the pump halves together by hand, reinsert the four thumb screws and tighten them in a criss-cross pattern until the two halves are pressed together.

8. Insert the two stainless tubes into the hose ends and fasten them with new clamps using pliers to tighten the clamps.

Replace platform in unit, reinstall nozzles and static mixers, connect water, install product shelf and concentrate, and reconnect power to unit.

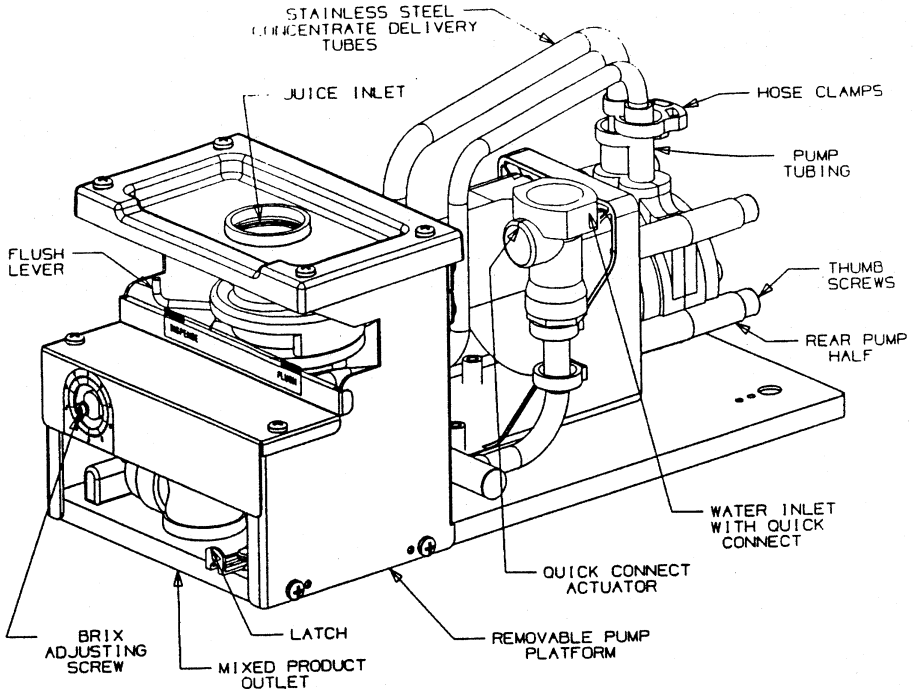
STAINLESS STEEL CONCENTRATE DELIVERY TUBES
JUICE INLET
HOSE CLAMPS
PUMP TUBING
FLUSH LEVER
THUMB SCREWS
REAR PUMP HALF
WATER INLET WITH QUICK CONNECT
QUICK CONNECT ACTUATOR
BRIX ADJUSTING SCREW
LATCH
MIXED PRODUCT OUTLET
REMOVABLE PUMP PLATFORM

FIG. 1

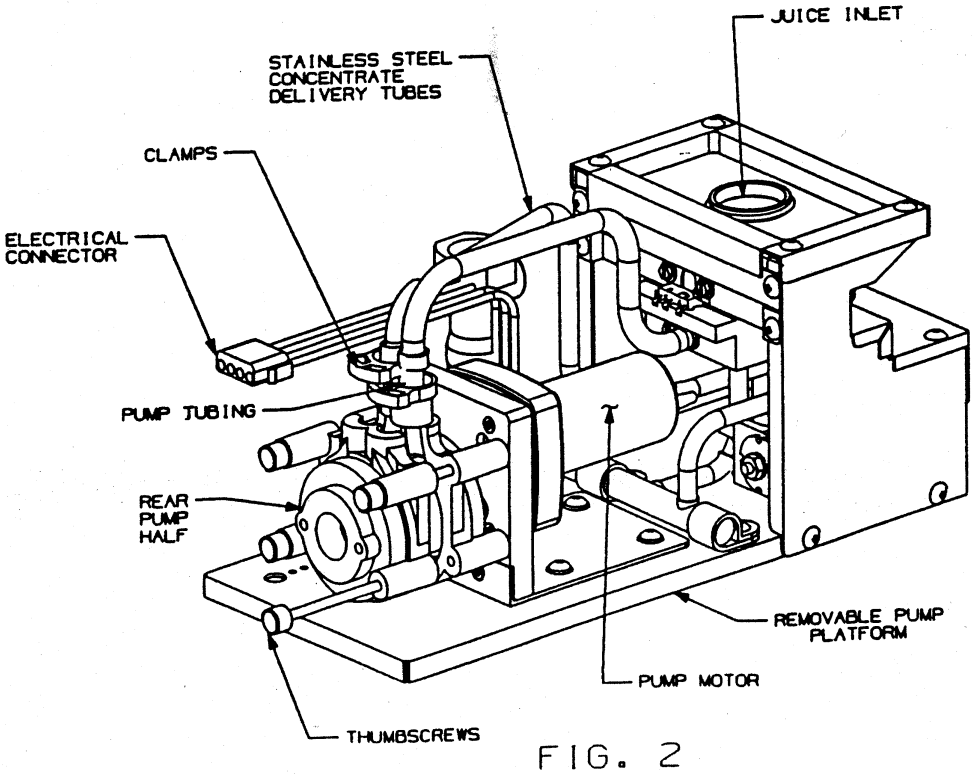
JUICE INLET
STAINLESS STEEL CONCENTRATE DELIVERY TUBES
CLAMPS
ELECTRICAL CONNECTOR
PUMP TUBING
REAR PUMP HALF
REMOVABLE PUMP PLATFORM
PUMP MOTOR
THUMBSCREWS

FIG. 2

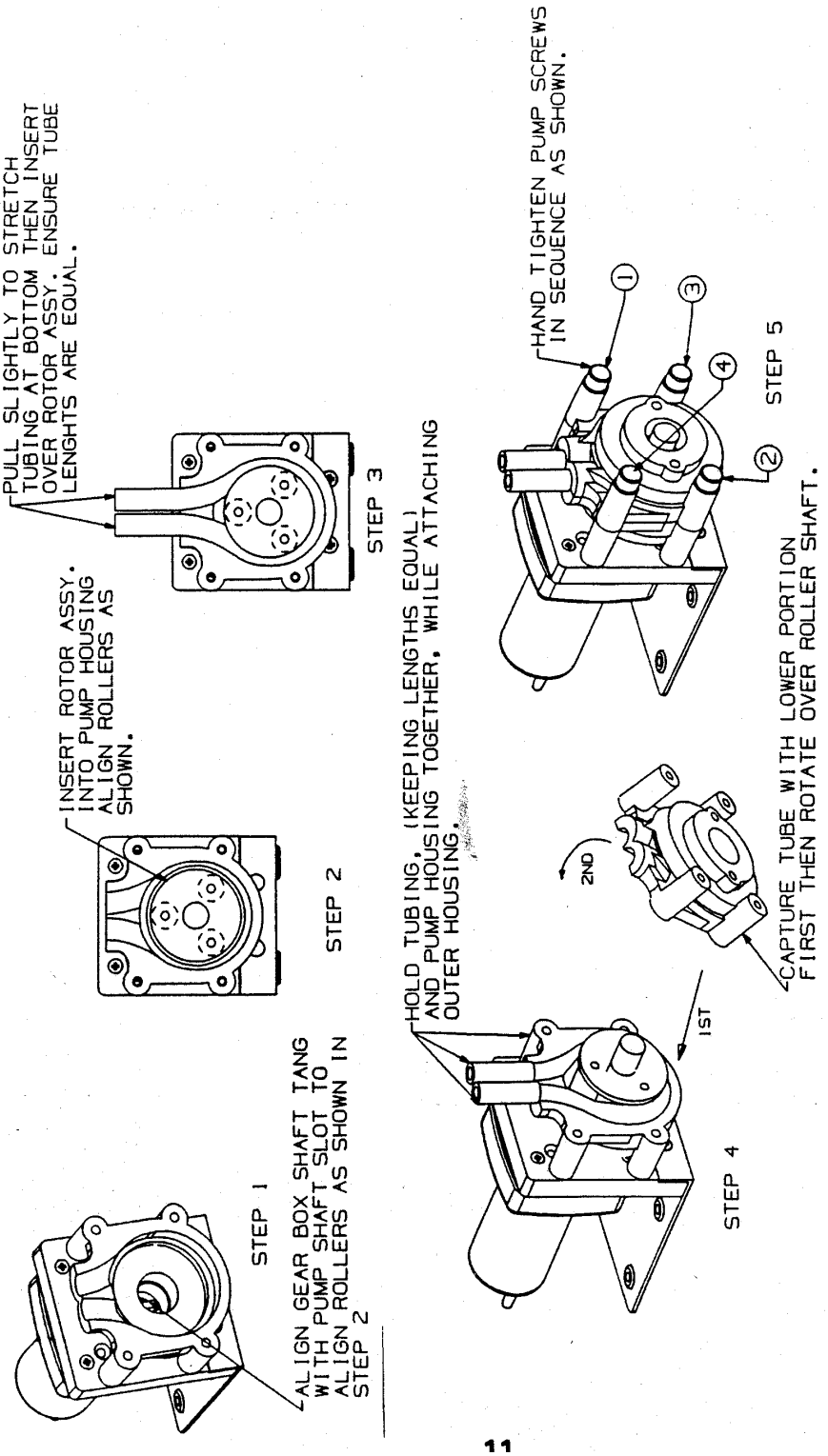
STEP 1
ALIGN GEAR BOX SHAFT TANG WITH PUMP SHAFT SLOT TO ALIGN ROLLERS AS SHOWN IN STEP 2
STEP 2
INSERT ROTOR ASSY. INTO PUMP HOUSING ALIGN ROLLERS AS SHOWN.
STEP 3
PULL SLIGHTLY TO STRETCH TUBING AT BOTTOM THEN INSERT OVER ROTOR ASSY. ENSURE TUBE LENGHTS ARE EQUAL.
STEP 4
HOLD TUBING, (KEEPING LENGTHS EQUAL) AND PUMP HOUSING TOGETHER, WHILE ATTACHING OUTER HOUSING.
1ST
2ND
CAPTURE TUBE WITH LOWER PORTION FIRST THEN ROTATE OVER ROLLER SHAFT.
STEP 5
HAND TIGHTEN PUMP SCREWS IN SEQUENCE AS SHOWN.
1
2
3
4

FIG. 3

TROUBLE-SHOOTING GUIDE

The following pages contain trouble-shooting charts designed to aid an experienced serviceman in diagnosing any operating problems that may be experienced. In order to gain maximum benefit from the charts, please note:

1. Start at the beginning of the chart and supply the appropriate answer to each question.
2. Do not skip any section, unless instructed to do so. You may miss the solution to your problem.
3. Evaluate the possible problem causes in the sequence in which they are presented. In general, they began with the most likely and/or easiest to check, and proceed to the less likely and/or more complicated.
4. If, after checking all indicated causes, the problem is not resolved, it is recommended that you try a second time. Evaluate symptoms carefully and modify your answers as necessary.
5. If you are unable to resolve a problem after several attempts, contact customer service department at (1-800-238-3600) for assistance.

PROBLEM	PROBABLE CAUSE	REMEDY
Totally Inoperative	No power to dispenser due to tripped circuit breaker.	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.
	Loose or broken power supply connection inside dispenser.	Repair connection
No cooling	Line voltage is not within ±10% of nameplate specifications causing compressor overload to trip	Contact an electrician
	Both thermostats in OFF position	Turn ON thermostats and recalibrate the temperatures to 34°F -40°F (1.1°C –4.5°C).
	Defective compressor overload or start capacitor	Replace

No cooling (con't)	Defective start relay located on upper rear shelf inside dispenser	There should be line voltage on the black wire of the relay when there is line voltage present on the orange OR yellow wire. Replace relay if it fails this test.
	Compressor starts but hums and trips overload	Seized or shorted compressor, replace.
	Compressor starts but does not switch off of start winding	Relay or compressor is defective. Test and replace faulty item.
	Compressor short cycles on overload	Excessively high discharge pressure due to restricted condenser or inoperative condenser fan motor
	Refrigerant leak	Repair leak. Evacuate and recharge system.
No water dispensed, concentrate only.	No water to dispenser	Restore water
	Water supply line inside refrigerated cabinet disconnected from pump platform	Reconnect
	Water solenoid located on pump platform clogged or defective	Disassemble and clean solenoid. Replace if necessary.
	Main water solenoid/ strainer located at base of dispenser is clogged, binding or defective	Remove and clean strainer. Confirm 28VDC is present at solenoid during dispense. Confirm solenoid coil is not open. Disassemble and clean solenoid.
	Water supply pressure is greater than 80 psi (5.5 bar)	Add external regulator and lower pressure to 50 psi (3.5 bar)

No water dispensed, concentrate only (con't).	Freeze-up of water coil or concentrate chamber	Unplug dispenser and allow 2-4 hours to thaw. Water or concentrate thermostat set too low, recalibrate to 34^{o}F -40 ^{o}F (1.1 ^{o}C - 4.5 ^{o}C). Defective water or concentrate thermostat, replace. Refrigerant solenoid stuck open or not closing fully. Evacuate system, replace solenoid valve and recharge
No water and no concentrate, refrigeration is working	Service switch located under drip tray in OFF position	Turn on switch
	Door switch open	Door switch must be closed in order to operate pump. Check switch operation and replace if necessary
No water and no concentrate, refrigeration is working	6.25 amp Fuse inside front electrical box blown	Replace with 6.25 amp, 250VAC slow blow fuse and test
	No output from Transformer located on rear upper shelf	Confirm transformer output by measuring for 26VAC at fuse. Replace transformer if necessary
	Defective voltage regulator board (VRB) located inside front electrical box	Measure across the blue and black wire located in the upper left corner of the board. There should be 28VDC present when the dispense button is pressed. Replace VRB if necessary
	Defective portion control board	Disconnect wire harness from rear of portion control, close door switch and short the orange and black wires together on the harness. If unit dispenses portion control board is defective. If it does not dispense the voltage regulator board is defective.

No concentrate dispensed, water only	Dispense tube not fully engaged into receptacle on concentrate pouch	Refer to *Concentrate Loading* section of this manual
	Dispense tube disconnected from mixing chamber	Refer to *Concentrate Loading* section of this manual
	Slide block on pump in open position	Close and lock the slide block. Refer to *Concentrate Loading* section of this manual
	Switch on pump platform in FLUSH position	Move switch to RUN position
	Concentrate too cold, not properly thawed	Concentrate should be 34^{o}F -40 ^{o}F (1.1 ^{o}C –4.5 ^{o}C) prior to loading
	Defective pump motor	Replace pump motor
Excessive remnant left in empty concentrate pouch	Concentrate pouch improperly thawed	Concentrate should be 34^{o}F -40 ^{o}F (1.1 ^{o}C –4.5 ^{o}C) prior to loading
	Concentrate pouch and/or dispense tube improperly installed	Refer to *Concentrate Loading* section of this manual
Concentrate refill light comes on prematurely	Concentrate pouch improperly thawed	Concentrate should be 34^{o}F -40 ^{o}F (1.1 ^{o}C –4.5 ^{o}C) prior to loading.
	Concentrate pouch and/or dispense tube improperly installed	Refer to concentrate loading section of this manual
	Loose wiring	Check wiring connections between the pump motor and the VRB board
	Bad VRB board	Replace VRB board
	Bad pump motor	Replace pump motor
Concentrate refill light does not come on at all	Pump improperly locked or pump is open	Close and lock Pump
	Run/flush switch is in the FLUSH position	Move switch to the RUN position

Concentrate refill light does not come on at all (con't)	Improperly loaded tube	Refer to concentrate loading section of this manual
	Bad VRB board	Replace VRB board
	Bad portion control	Replace portion control
Warm Drink	Incoming water supply too warm	Optimum performance is achieved when the dispenser utilizes water from a pre-cooler
	Ambient air too warm	Relocate dispenser
	Excessive demand on dispenser	Add water pre-cooler or second dispenser
	Dirty condenser coil	Clean condenser coil
	Inoperative condenser fan	Replace condenser fan motor
	Defective water thermostat	Replace thermostat
	Loss of refrigerant charge due to leak in system	Repair leak and recharge system
Water continuously drips from nozzle when in OFF mode	Main water solenoid at base of unit or water solenoid on pump platform not shutting off tightly	Clean solenoid(s), replace parts as necessary
No Flush Cycle	Run/Flush switch on pump platform in Run mode	Move switch to Flush position
	Defective Run/Flush switch on pump platform (concentrate continues to dispense while in Flush mode)	Replace Run/Flush switch
Concentrate warm, water cold	Concentrate thermostat is turned off or not calibrated properly	Calibrate to be 34°F -40 °F (1.1 °C –4.5 °C)
	Concentrate thermostat defective (stuck open)	Replace thermostat and calibrate to 34°F -40 °F (1.1°C –4.5 °C)
	Defective start relay located on upper rear shelf inside dispenser	There should be line voltage on the black wire of the relay when there is line voltage present on the orange OR yellow wire. Replace relay if it fails this test.

Concentrate warm, water cold (con't)	Loss of refrigerant charge due to leak in system	Repair leak and recharge system
Brix Problem	Water supply pressure too low, less than 20 psi (1.4 bar) flowing or water pressure fluctuates sharply	Correct water supply problem to ensure a constant 40 psi (3 bar) flowing to the dispenser
	Water flow control binding or spring is defective	Clean and/or replace parts as necessary
	Improperly thawed concentrate. Brix changes as the concentrate temperature changes (concentrate becomes thinner as temperature rises)	Concentrate should 34 ^{o}F -40 ^{o}F (1.1 ^{o}C –4.5 ^{o}C) prior to loading
	Check that the rollers on the pump are spinning freely with no tube in place	If they are sticky or locked up see platform removal and cleaning procedure.
Pump Inoperative	Pump motor defective	28VDC should be present at pump motor during dispense. If voltage is present and motor does not start, replace pump motor
	No power to transformer or no 28VAC output from transformer	Confirm transformer has line voltage present on primary side. If no 28VAC output from the secondary replace transformer
	Defective voltage regulator board (VRB) located inside front electrical box	Measure across the blue and black wire located in the upper left corner of the board. There should be 28VDC present when the dispense button is pressed. Replace VRB if necessary
	Defective portion control board	Disconnect wire harness from rear of portion control, close door switch and short the orange and black wires together on the harness. If unit dispenses portion control board is defective. If it does not dispense the voltage regulator board is defective.

Machine continues to dispense after dispense button is released or dispenses without operator input	Portion control pad stuck in on position	Disconnect the wire harness from the rear of the portion control and close the door. If unit does not dispense on its own the portion control is bad (stuck on)
	Relay on voltage regulator board (VRB) stuck on.	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)
Sold Out light illuminates when concentrate no longer passes through the pump.	The concentrate is improperly thawed. The temperature is not maintained between 34×F - 40×F(1.1-4.5×C)	Assure proper thawing procedures have been followed per the Minute Maid company instructions. Check that McDonald's walk-in cooler temperature is on the proper set point. Check the dispenser cabinet temperature is at 34×F - 40×F(1.1-4.5×C).
	High Brix readings result in a poor, pulsating/splashing dispense, erratic pump amp draw, and consequently erratic sold-out indications.	Check drink brix in procedure described on equipment P.M. card using the hydrometer provided. Check the drink flow rate under normal operating conditions. The dispenser should pour a drink at a flow rate of approximately 1.5 oz. Per second or greater. If the flow rate is less, a check described in the Sold Out section should be completed.

Sold Out light illuminates when concentrate no longer passes through the pump.(con't)	Improper loading procedures will usually result in low brix conditions and thus erratic sold out indications.	Check that the pouch of juice is properly loaded in the pouch holder. Tube fitting should be located at the bottom of the pouch holder and the tube should be approximately centered in the bottom portion of the opening of the holder. Check that the tube is correctly loaded in the pump and the pump is fully locked (top and bottom slide pins should be fully engaged into the pump body).
	Tube has been stretched through pump when it was loaded. Pouch may not be seated correctly.	Adjust pouch. If pouch is loaded correctly there should be ample tube to reach the mixing chambers without stretching the tube.
	Check that the rollers on the pump are spinning freely with no tube in place.	If the rollers are sticky or locked up see the platform removal and cleaning procedure.
Sold Out light fails to reset itself after door is opened and closed (Sold Out light stays illuminated)	Check the operation of the reset switch located at the bottom left hand side of the door.	Adjust Switch.

IMI Cornelius Inc.
One Cornelius Place
Anoka, MN 55303-1592
U.S.A.

Total Systems Commitment