IMPULSE

Post-Mix Beverage Dispenser

Installation & Operation Manual

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The products, technical information, and instructions contained in this manual are subject to change without notice. These instructions are not intended to cover all details or variations of the equipment, nor to provide for every possible contingency in the installation, operation or maintenance of this equipment. This manual assumes that the person(s) working on the equipment have been trained and are skilled in working with electrical, plumbing, pneumatic, and mechanical equipment. It is assumed that appropriate safety precautions are taken and that all local safety and construction requirements are being met, in addition to the information contained in this manual.

This Product is warranted only as provided in Cornelius' Commercial Warrant applicable to this Product and is subject to all of the restrictions and limitations contained in the Commercial Warranty.

Cornelius will not be responsible for any repair, replacement or other service required by or loss or damage resulting from any of the following occurrences, including but not limited to, (1) other than normal and proper use and normal service conditions with respect to the Product, (2) improper voltage, (3) inadequate wiring, (4) abuse, (5) accident, (6) alteration, (7) misuse, (8) neglect, (9) unauthorized repair or the failure to utilize suitably qualified and trained persons to perform service and/or repair of the Product, (10) improper cleaning, (11) failure to follow installation, operating, cleaning or maintenance instructions, (12) use of "non-authorized" parts (i.e., parts that are not 100% compatible with the Product) which use voids the entire warranty, (13) Product parts in contact with water or the product dispensed which are adversely impacted by changes in liquid scale or chemical composition.

Contact Information:

To inquire about current revisions of this and other documentation or for assistance with any Cornelius product contact:

www.cornelius-usa.com

800-238-3600

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This document contains the original instructions for the unit described.

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Printed in U.S.A.

TABLE OF CONTENTS

SAFETY

RECOGNIZE SAFETY ALERTS

This is the safety alert symbol. When you see it in this manual or on the machine be alert to the potential of personal injury,

AUTHORIZED SERVICE PERSONNEL

CAUTION — Only trained and certified electrical, plumbing and refrigeration technicians should service this unit. ALL WIRING AND PLUMBING MUST CONFORM TO NATIONAL AND LOCAL CODES.

CO_2 (CARBON DIOXIDE) WARNING

WARNING — CO_2 Displaces Oxygen. Strict Attention **must** be observed in the prevention of CO_2 gas leaks in the entire CO_2 and soft drink system. If a CO_2 gas leak is suspected, particularly in a small area, **immediately** ventilate the contaminated area before attempting to repair the leak. Personnel exposed to high concentration of CO_2 gas will experience tremors which are followed rapidly by loss of consciousness and death.

SYSTEM DIMENSIONS

	Impulse 1 Unit
Height	27 inches
Width	16 inches
Depth	26 7/8 inches
Shipping Weight (approx.)	120 pounds

INSTALLATION

CAUTION — Only trained and certified electrical, plumbing and refrigeration technicians should service this unit. ALL WIRING AND PLUMBING MUST CONFORM TO NATIONAL AND LOCAL CODES.

NOTE: Water pipe connections and fixtures directly connected to the potable water supply must be sized, installed, and maintained in accordance with NSF Standard 18, as well as Federal, State, and Local codes.

NOTE: It is the installer's responsibility to ensure that the water supply is equipped with protection against backflow. This protection can be an air gap as defined by ANSI/ASME A112.1.2-1979, or by an approved vacuum breaker or other approved method.

INSTALLATION REQUIREMENTS

Requirements Summary

Weight:.	front or rear counter must be level and able to support 400 lbs.
Environment: . .	indoor installation only
Temperature: . .	40 to 110° F ambient temperature
Clearance:	18-inches above 6-inches on sides and rear
CO_2:.	75 psi (5.25 bar) at unit with internal carbonator
Syrup:	60 psi
Water:	50 psi maximum
Electrical:	see nameplate on unit for electrical requirements

Electrical Requirements

Before connecting electrical power to the unit refer to nameplate to verify power requirements.

DANGER — To avoid possible serious injury or death the ELCB (earth leakage circuit breaker) must be installed in electrical circuit of all 50 Hz units.

WARNING — To avoid possible electrical shock the unit must be electrically grounded using the green grounding screw provided inside the electrical contractor box.

Publication Number: 859000101INS

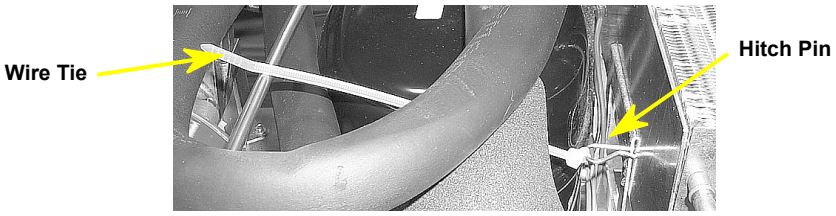
CAUTION — The wiring must be properly grounded and connected through a 10-amp disconnect switch (slow–blow fuse or equivalent HVAC/R circuit breaker). ALL WIRING MUST CONFORM TO NATIONAL AND LOCAL CODES. MAKE SURE UNIT IS PROPERLY GROUNDED.

INSTALLATION PROCEDURE

Counter-top Installation.

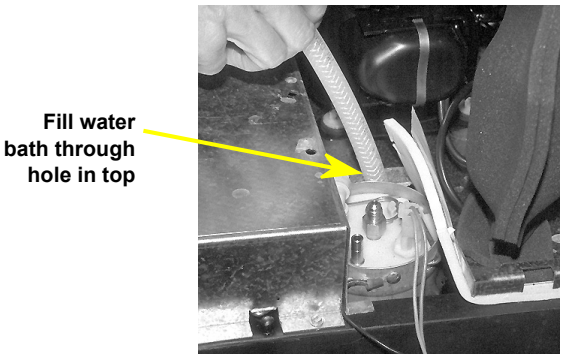
NOTE: Optional 4-inch legs (p/n 3184) will elevate the unit 4 inches above the counter (order 4 legs).

1. Place the unit on a level counter capable of supporting at least 400 pounds.
2. Remove drip tray and front access panel.
3. Turn power switch off then remove screw located next to the power switch and the screw at top of front panel. Next, remove front panel, disconnect wires to valve key lock switch, and peal back magnetic decals from the top. Lift off top center section.
4. Pull water, syrup, and CO_2 lines through counter or wall. To comply with NSF International requirements the unit must be sealed to the counter top and all access holes in the unit base must be sealed, or the unit can be installed using the optional 4-inch legs (P/N 3184). Caulk/seal the unit to the counter using Dow Corning RTV 731 or equivalent approved sealant.
5. Pull plastic “wire tie” to remove hitch pin from condenser fan motor assembly (this pin is only needed during shipping).



6. Fill the water bath with clean water around the carbonator tank or bend back the insulation on the non-carbonated unit until it comes out the

overflow tube. Make sure the overflow tube is not blocked or plugged. Use low-mineral tap water, not distilled or deionized water.



NOTE: Water bath must be filled with water before the unit will run.

GLOBAL ICE BANK CONTROL (GIBO) THEORY OF OPERATION

Once electrical power is supplied to the Unit, the agitator motor will start. There will be a three-minute time delay before the refrigeration compressor and the condenser fan motor will start. This three-minute time delay will take place each time electrical power to the Unit is interrupted.

The Unit will continue to operate until ice covers all three stainless-steel pins on the ice bank control probe. The ice bank control module senses this by measuring the difference in electrical resistance between the water and the ice. When the ice on the evaporator coil becomes thick enough, it covers the three stainless-steel pins on the ice bank control probe. The control module senses there is enough ice and turns the refrigeration compressor and the condenser fan motor off.

The Unit remains turned off until the ice bank control three stainless-steel pins are free of ice. Once this happens, the ice bank control module starts the refrigeration compressor and the condenser fan motor.

7. Make sure that the electrical power circuit breaker is switched off or the fuse removed.

   NOTE: Before connecting electrical power to the unit, refer to nameplate to verify the power requirements.

   A. Remove the following:

– front merchandiser by removing two screws on the top and lifting up
– key switch wires
– hood by removing two screws on the top and lifting up and forward.

   B. Remove second valve from the left to facilitate routing of the new cord.

   C. First route the new cord up behind the valve panel and through the cutout in the pump deck. Use the already attached wire tie/fastener on the deck to secure the cord.

   D. Connect cord to the receptacle on the refrigeration deck.

Publication Number: 859000101INS

E. Turn the circuit breaker on and then the units power switch. Check to see that the agitator motor has started. After about three minutes the compressor should start. If the agitator or compressor do not start call Technical Services.

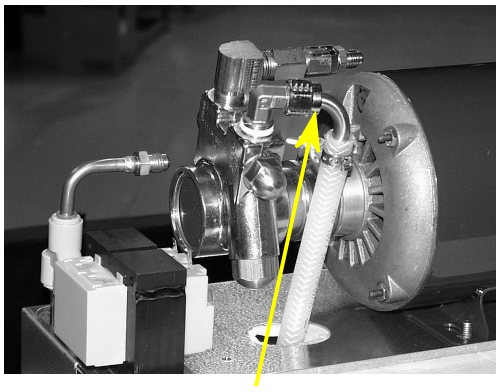
Connect Syrup, Water, and Carbonated Water Lines

1. Route syrup and plain water lines from the back side of the unit and under the unit to the front. Connect them to the appropriate inlet connections.

NOTE: If water supply pressure to the unit is less than 40 psi, a water pressure booster is required. If water supply pressure to the unit is more than 50 psi, a water pressure regulator must be installed in the supply line.

NOTE: A water shutoff valve and water filter in the water supply line are recommended.

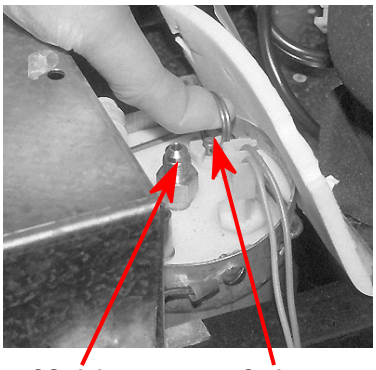
2. If a remote carbonator is used, make the connection behind the splash panel to a marked 3/8 water tube.
   If the unit has a built-in carbonator, connect the water line to pump.
3. Connect optional drip tray drain hose (if used). Be sure the knockout in the drip pan has been removed if drain hose is used.



Water line connected to pump

4. If remote carbonator is used, be sure it is on. Bleed each valve into a bucket until carbonated water comes out.
5. If the unit has a built-in carbonator, connect the CO_2 lines. Be sure the water and CO_2 are on. CO_2 should be set to 75 psig (5.25 bar) maximum. **Higher CO_2 pressure will result in LOWER carbonation**.

   Bleed the air out of the carbonator by pulling up on the metal ring on the bleed valve. Bleed each valve into a bucket until water comes out for 2-3 seconds.



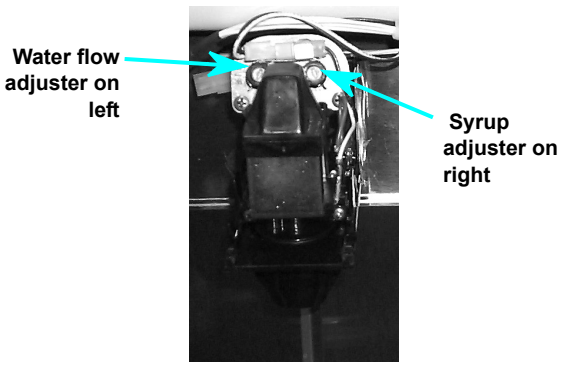
CO_2 inlet (hold with wrench) **Carbonator bleed valve**

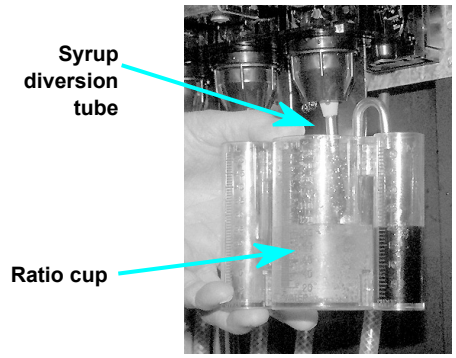
NOTE: The CO_2 inlet fitting is sealed inside the carbonator with an O-ring. This fitting rotates freely and must be held by a second wrench while securing the CO_2 inlet line.

6. Be sure that all syrup sources are connected and on. Bleed each valve into a bucket until syrup comes out.
7. Reinstall drip tray and position water bath overflow hose in drip tray indent.
8. Check the system for gas leaks by pressurizing the system and then turning off the cylinder valve. Wait a couple of minutes and check the cylinder gauge to see if the pressure has dropped.
9. Check the system for water and syrup leaks.

Adjust Water-To-Syrup Ratio

1. Remove valve front cover and install syrup diversion assembly in place of nozzle.





2. Adjust carbonated water flow to the desired rate (such as 2.50 oz./sec.).

   Turn the adjuster 1/4 of a turn at a time and recheck the flow.

   To increase flow turn clockwise.
3. Adjust the syrup-to-water ratio of each valve using the syrup adjuster on the left side of each valve. Hold cup under valve and dispense beverage for a specific time (such as 4 seconds).

Adjusting Flow Rates

Flow rates of the water and syrup are adjusted based on the desired ratio. For example: if the desired ratio is 5:1, then the flow rate of the water is 5 times that of the syrup.

Publication Number: 859000101INS

If the desired finished drink flow rate is 3.0 ounces per second, then the water flow rate is 2.5 oz./sec. and the syrup flow rate is 0.5 oz./sec. (The water at 2.5 oz./sec. is five times the 0.5 oz./sec. syrup flow rate.)

Flow Rates oz./sec. Based on 5:1 Ratio		
Finished Drink oz./sec.	Water oz./sec.	Syrup oz./sec.
1.5	1.25	.25
2.0	1.67	.33
2.5	2.08	.42
3.0	2.5	.50
3.5	2.92	.58
4.0	3.33	.67
4.5	3.75	.75

OPERATIONS

OPERATIONS

Starting And Stopping The Unit

1. Push power ON/OFF switch to ON to power on the unit.
2. Insert key into key lock and turn to the ON to activate valves.

Dispensing Product

To dispense beverage press a cup or glass against the lever or push the button on the valve cover.

Replenishing Syrup Supply

Tank System:

1. Remove the empty syrup tank by disconnecting the syrup tube first, then the CO_2 tube.
2. Rinse the disconnects in warm water to remove any syrup residue.
3. Move a full tank into position and connect the CO_2 tube first, then the syrup tube.

Bag-In-Box System:

1. Disconnect the syrup tube from the empty bag-in-box and remove the empty box.
2. Rinse the disconnects in warm water to remove any syrup residue.
3. Install a full bag-in-box and connect the syrup tube.

Publication Number: 859000101INS

ADJUSTMENTS

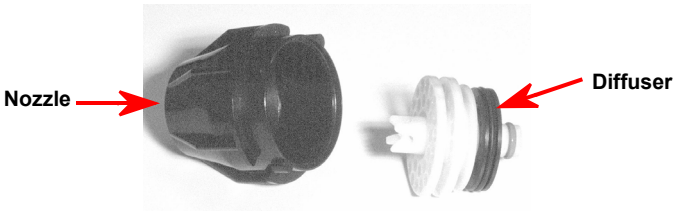
Water-to-Syrup Ratio Adjustment

The ratio adjustment should only be done by a qualified service person.

CLEANING & CHECKS

Daily Cleaning

1. Remove nozzle assembly and rinse with warm (not hot) water. If possible, soak nozzle assembly over night in carbonated water then rinse with warm water.



2. Wash external surfaces with mild soap solution, rinse with clean water, and wipe dry. Remove the drip tray, wash with mild soap solution, rinse and dry.

NOTE: Do not use abrasive or harsh cleaners on the unit.

Daily Checks

1. Check CO_2 supply.
2. Check syrup supply.

Sanitizing Syrup Systems

The syrup systems should be sanitized at least every 120-days and before or after storage. Use a non-scented liquid household bleach containing a 5.25% sodium hypochlorite concentration per the following procedure:

Sanitizing Syrup Tank Systems

1. Disconnect Syrup

- Remove quick disconnects from syrup tanks and rinse disconnects in potable water.

CAUTION — To avoid possible personal injury or property damage, DO NOT remove the syrup tank cover until CO_2 pressure has been released from the tank.

2. Wash System

- Using a clean empty syrup tank, prepare a washing solution by mixing
  1/2 oz. liquid dishwashing detergent per gallon of 70° – 100° F potable water. Shake tank to mix.
- Connect tank containing the solution to one of the syrup circuits and pressurize to 60 – 80 psi.
- Place waste container under dispensing valve. Dispense for one minute to purge all syrup from the circuit.
- Repeat this process for each syrup circuit.

3. Flush System

- Connect a tank containing clean potable water to syrup circuit and pressurize to 60 – 80 psi.
- Place waste container under dispensing valve. Dispense from the valve for one minute to flush the circuit.
- Repeat this process for each syrup circuit.

4. Sanitize System

- Using a clean empty syrup tank, prepare a sanitizing solution by mixing
  1/2 oz. non-scented liquid household bleach per gallon of 70° – 100° F potable water. Shake tank to mix.
- NOTE: Use bleach with a 5.25% sodium hypochlorite solution. The flushing solution must not exceed 200 PPM chlorine.
- Connect the tank containing the solution to syrup circuit and pressurize to 60 – 80 psi.
- Place waste container under dispensing valve. Dispense from the valve for one minute to purge the circuit.
- Repeat this process for each syrup circuit.
- Allow the sanitizing solution to remain in circuits for at least 10 minutes but no more than 15 minutes.

CAUTION — Flush the system thoroughly — residual sanitizing solution left in the system could create a health hazard.

5. Flush System

- Connect a tank containing clean potable water to the syrup circuit and pressurize to 60 – 80 psi.

- Place waste container under dispensing valve. Dispense from the valve for one minute to flush the circuit.
- Repeat this process for each syrup circuit.

Sanitizing Bag-In-Box Syrup System

To sanitize a bag-in-box system follow the same procedure as the tank system described above, with following exceptions:

- Use a clean container (like a 5 gallon plastic bucket) to mix solutions and hold flushing water.
- Cut bag valves cut from empty BIB containers. Clean them and connect them to the ends of the syrup lines.
- Place syrup lines with bag valves into the container of solution.

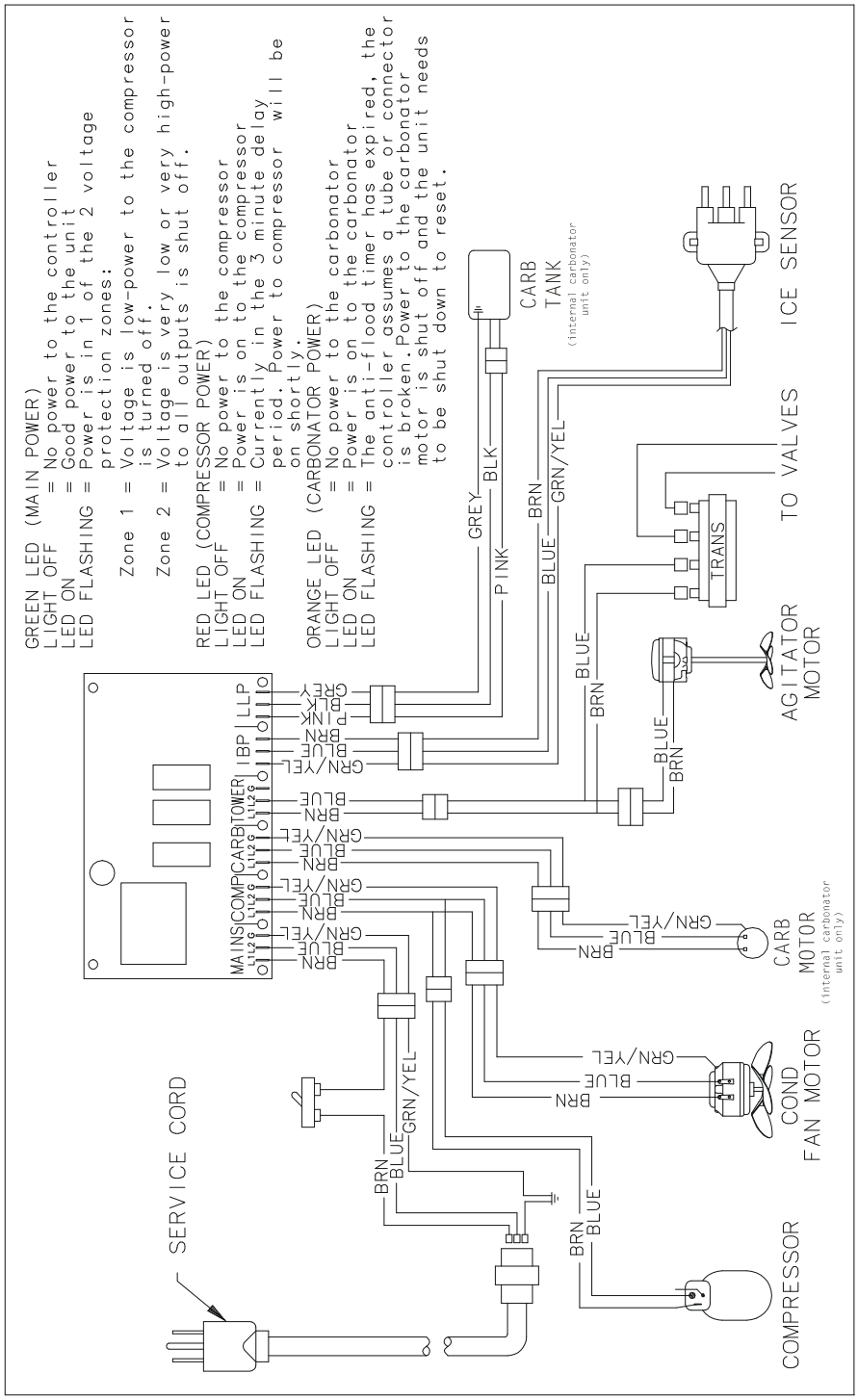
Double Liquid Check Valve Inspection & Cleaning

CAUTION — The carbonator double-liquid check valve must be inspected after any disruptions to the water supply system (plumbing work, earth quakes, etc.) It should also be inspected at least once a year under normal conditions. If particles lodge in the check valve CO_2 gas could back flow into the water system and create a health hazard.

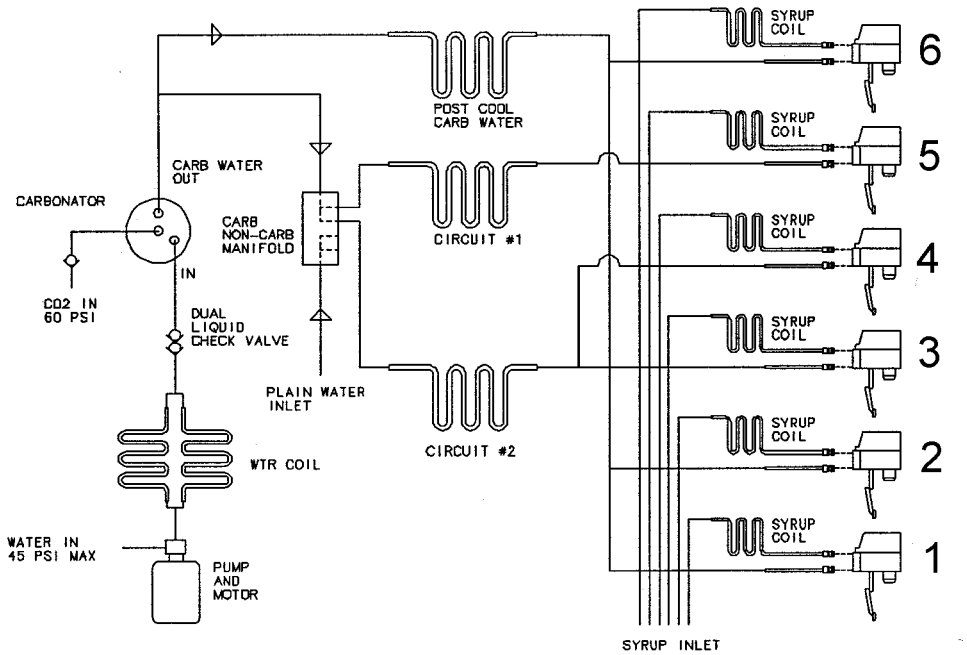
1. Disconnect electrical power to the unit.
2. Shut off CO_2, syrup, and water supplies to the unit.
3. Disconnect the water line from the double check valve then remove the check valve.
4. Disassemble the check valve. Clean and inspect each part, especially the check the ball for damage. Replace damaged or suspicious parts.
5. Always install a new seat (p/n 31-2418-000).
6. Reassemble and install the check valves.
7. Turn on the CO_2, syrup, and water supplies, and reconnect the electrical power.

REFERENCE MATERIAL

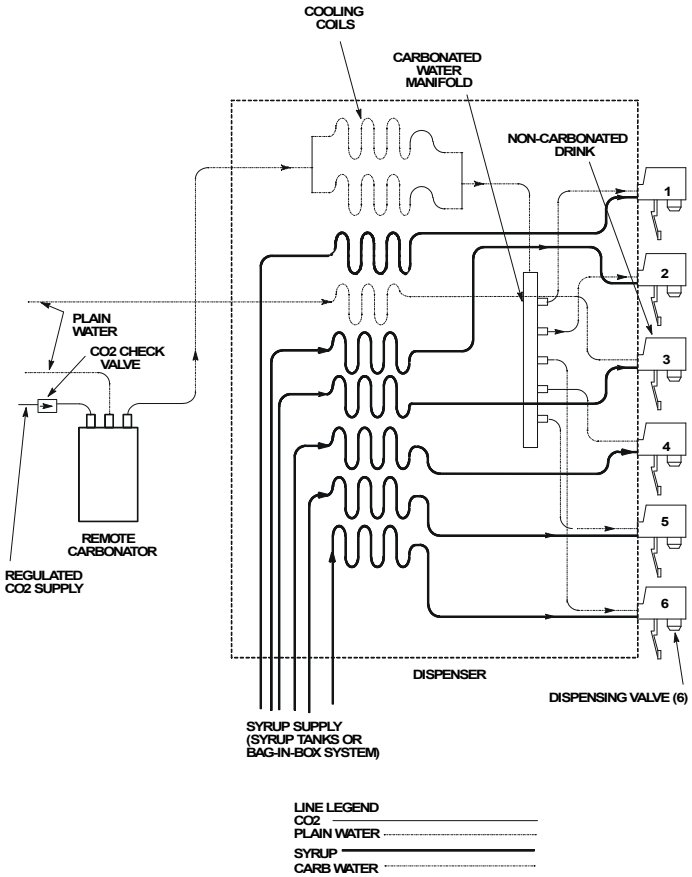
WIRING DIAGRAM



PLUMBING DIAGRAMS



Internal Carbonator



External Carbonator

Publication Number:

Total Systems Commitment

Cornelius Inc.
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