CERAMIC POST-MIX TOWER

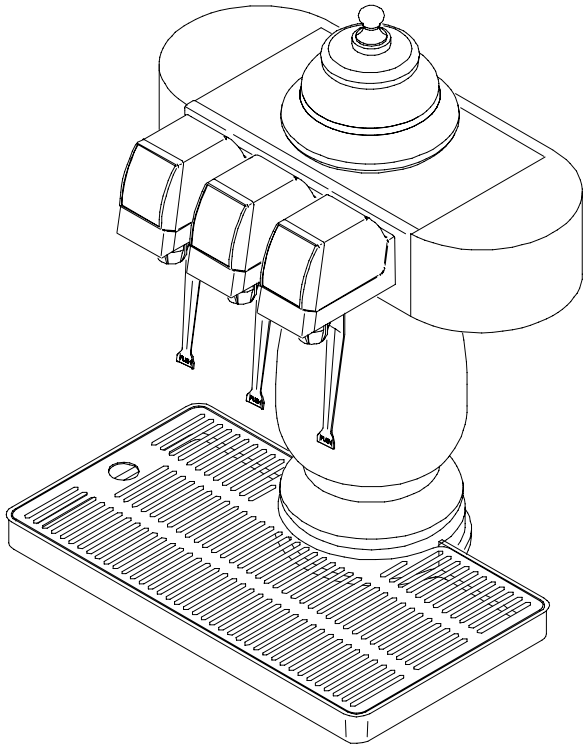
Installation/Owner's Manual

IMPORTANT:

TO THE INSTALLER.

It is the responsibility of the Installer to ensure that the water supply to the dispensing equipment is provided with protection against backflow by an air gap as defined in ANSI/ASME A112. 1.2-1979; or an approved vacuum breaker or other such method as proved effective by test.

Water pipe connections and fixtures directly connected to a potable water supply shall be sized, installed, and maintained according to Federal, State, and Local laws.



Part No. 569000286INS
Revision Date: May 13, 2014
Revision : B

THIS DOCUMENT CONTAINS IMPORTANT INFORMATION
This Manual must be read and understood before installing or operating this equipment

PRINTED IN U.S.A

TABLE OF CONTENTS

TABLE OF CONTENTS (cont'd)

LIST OF FIGURES

TABLE OF CONTENTS (cont'd)

Page

LIST OF FIGURES CONT'D)

LIST OF TABLES

SAFETY INFORMATION

Recognize Safety Information

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

Follow recommended precautions and safe operating practices.

Understand Signal Words

A signal word - ***DANGER, WARNING,*** *OR* ***CAUTION*** is used with the safety-alert symbol. ***DANGER*** identifies the most serious hazards.

Safety signs with signal word ***DANGER*** or ***WARNING*** are typically near specific hazards.

General precautions are listed on ***CAUTION*** safety signs. ***CAUTION*** also calls attention to safety messages in this manual.

Follow Safety Instructions

Carefully read all safety messages in this manual and on your machine safety signs. Keep safety signs in good condition. Replace missing or damaged safety signs. Learn how to operate the machine and how to use the controls properly. Do not let anyone operate the machine without instructions. Keep your machine in proper working condition. Unauthorized modifications to the machine may impair function and/or safety and affect the machine life.

CO_2 (Carbon Dioxide) Warning

CO_2 Displaces Oxygen. Strict Attention *must* be observed in the prevention of CO_2 (carbon dioxide) 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 suffocation.

Shipping, Storing, Or Relocating Unit

CAUTION: Before shipping, storing, or relocating this Unit, the syrup systems must be sanitized and all sanitizing solution *must* be purged from the syrup systems. All water *must* also be purged from the plain and carbonated water systems. A freezing ambient temperature will cause residual water remaining inside the Unit to freeze resulting in damage to internal components of the Unit.

GENERAL INFORMATION

IMPORTANT: *To the user of this manual* – This manual is a guide for installing, operating, and maintaining this equipment. Refer to the Table of Contents for page location for detailed information pertaining to questions that arise during installation, operation, service, or maintenance of this equipment.

GENERAL DESCRIPTION

This section gives the Unit description, theory of operation, and design data for the Ceramic Post-Mix Tower (hereafter referred to as a Unit).

This Unit must be installed and serviced by a qualified Service Person. This Unit contains no User serviceable parts.

UNIT DESCRIPTION

The Unit is compact and may be island-mounted or installed on a front or rear counter. The Unit may be connected to dispense a liquid-base concentrate combined with water to create a finished drink (see Figure 2) or the Unit may be connected into a system (see Figure 3) to dispense carbonated drinks.

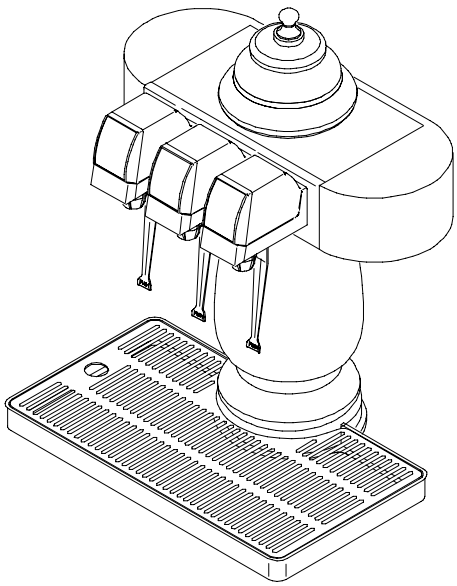


FIGURE 1. CERAMIC POST-MIX TOWER

Table 1. Design Data	
Unit Part Number	See Unit Nameplate
Overall Dimensions (approximate): With Cup Rest & Drip Tray	
Height	23 inches
Width	16 inches
Depth	13 inches
Weights (approximate):	
Shipping	25 pounds
Tower (uncartoned)	17 pounds
Dispensing Rate (approx.)	1–1/2 ounces/sec
Ambient Operating Temperature	40°F to 100°F
Operating Pressures:	
Water Inlet Supply Line	40 to 125 psig
Electrical:	
Electric Dispensing Valves Transformer (if applicable)	115/24 VAC, 60Hz

THEORY OF OPERATION

BAG-IN-BOX CONCENTRATE SYSTEM

(see Figure 2)

Note: The gas-operated concentrate pump in the system, which provides concentrate to the dispensing valve, may be driven by carbon dioxide (CO_2) gas, nitrogen gas, compressed air, or an electrically operated pump may be used in place of the gas-operated pump.

The concentrate is stored in a collapsible bag within a sturdy box which is called a bag–in–box. When the dispensing valve is opened, a pump operated by gas pressure delivers concentrate from the bag-in-box to the dispensing valve. At the same time, plain water also enters the dispensing valve. Concentrate and plain water meet simultaneously at the dispensing valve resulting in a finished drink being dispensed. Dispensing continues from the dispensing valve as long as the valve is is activated.

CARBONATED DRINK SYSTEM

(see Figure 3)

A CO_2 cylinder delivers carbon dioxide (CO_2) gas through adjustable CO_2 regulators to the applicable syrup tanks or bag-in-box syrup pumps and also to a remote carbonator. Plain water enters the remote carbonator carbonated water tank and is carbonated by regulated CO_2 gas pressure also entering the tank. When dispensing valve is opened, CO_2 gas pressure exerted upon the syrup tank or on the bag-in-box system syrup pump, pushes syrup through the Cooling Unit syrup cooling coil, and on to the dispensing valve.

Carbonated water is propelled by CO_2 gas pressure which pushes carbonated water from the carbonated water tank, through the Cooling Unit cooling coils, and on to the dispensing valve. Syrup and carbonated water meet simultaneously at the dispensing valve resulting in a carbonated drink being dispensed.

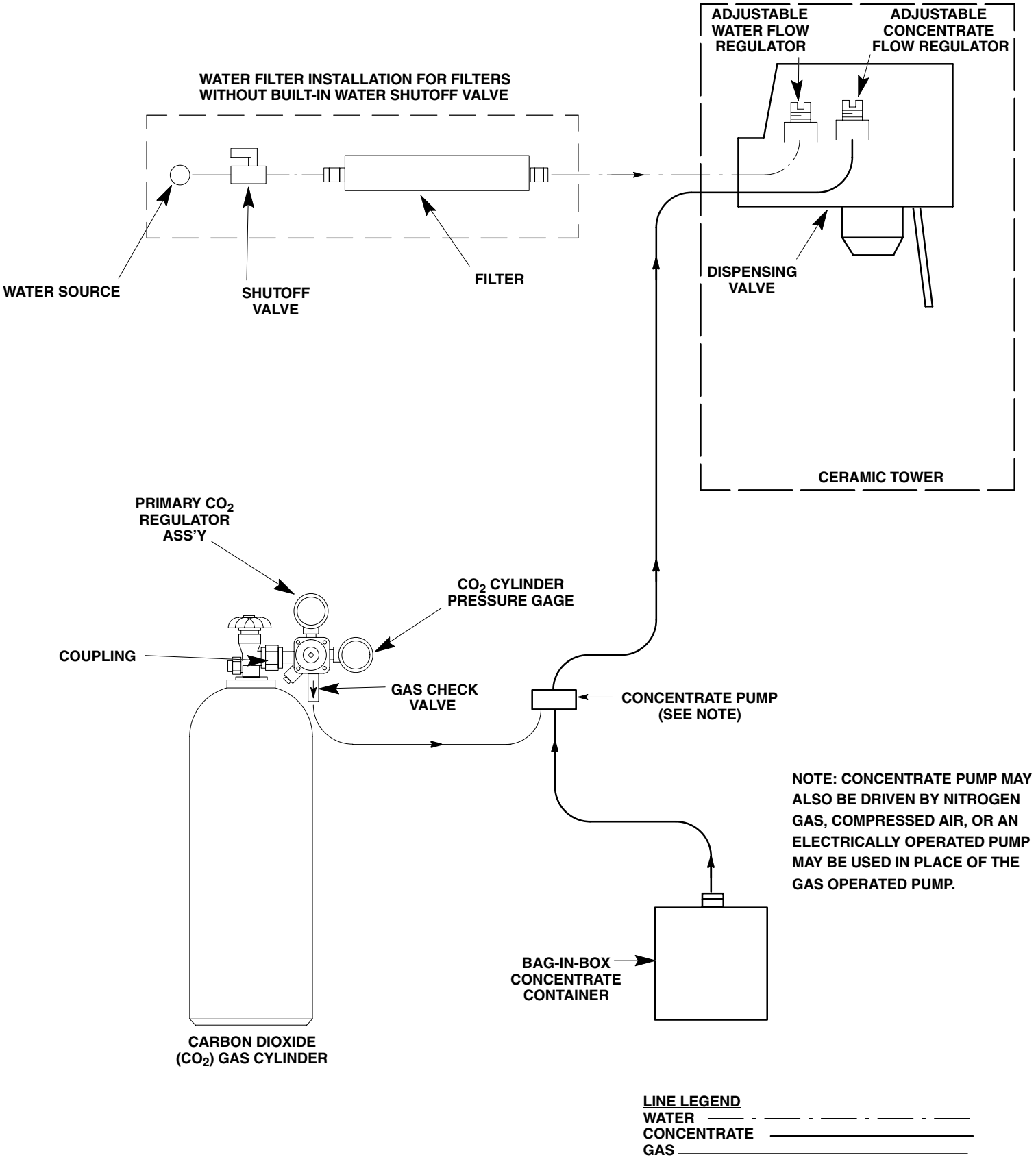


FIGURE 2. FLOW DIAGRAM (BAG-IN-BOX CONCENTRATE SYSTEM)

LINE LEGEND

CO_2

PLAIN WATER

CARB WATER

SYRUP

NOTE: CONCENTRATE PUMP MAY ALSO BE DRIVEN BY NITROGEN GAS, COMPRESSED AIR, OR AN ELECTRICALLY OPERATED PUMP MAY BE USED IN PLACE OF THE GAS OPERATED PUMP.

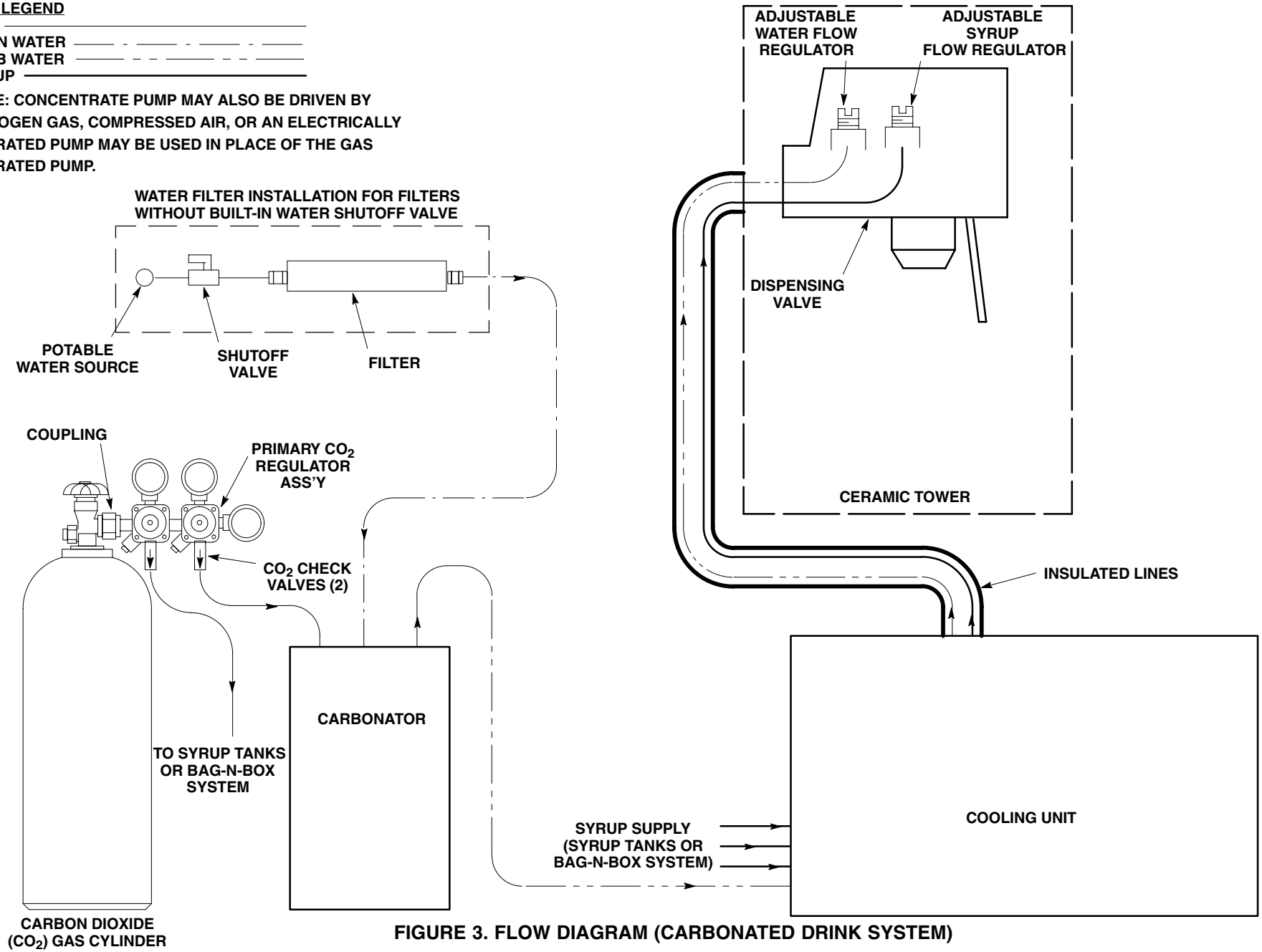


FIGURE 3. FLOW DIAGRAM (CARBONATED DRINK SYSTEM)

INSTALLATION

This section covers unpacking and inspection, selecting location, installing the Unit, preparing the Unit for operation, and Unit operation.

UNPACKING AND INSPECTION

NOTE: The Unit was thoroughly inspected before leaving the factory and the carrier has accepted and signed for it. Any damage or irregularities should be noted at the time of delivery (or not later than 15 days from date of delivery) and immediately reported to the delivering carrier. Request a written inspec-tion report from Claims Inspector to substantiate any necessary claim. File claim with the delivering carrier, *not* with Cornelius Inc.

1. After the Unit has been unpacked, remove shipping tape and other packing material.
2. Unpack LOOSE-SHIPPED PARTS. Make sure all items are present and in good condition.

Table 2. Loose-Shipped Parts

Item No.	Part No.	Name	Qty.
1	Part No. (NA)	Threaded Plastic Adapter, 8–1/2 inches Long	1
2	Part No. (NA)	Plastic Nut (For Above Threaded Plastic Adapter)	1
3	560005050	Drip Tray Ass'y W/Drain Fitting (if applicable)	1
4	630001233	Transformer, 115/24 VAC, 60 Hz (provided with UF–1 electric dispensing valves equipped Units)	1

IDENTIFICATION OF LOOSE-SHIPPED PARTS

1. THREADED PLASTIC ADAPTER (item 1) AND PLASTIC NUT (item 2), are used to secure the Unit to the countertop.
2. DRIP TRAY ASS'Y (item 3), if applicable, must be installed after the Ceramic Tower has been installed on the countertop.
3. TRANSFORMER (item 4) is loose-shipped with Unit equipped with UF–1 electric dispensing valves and is to be installed underneath the countertop close to the Unit.

INSTALLATION

INSTALLING UNIT (CERAMIC TOWER) ON COUNTERTOP

(see Figure 4)

1. Remove (cut) CERAMIC TOWER MOUNTING TEMPLATE page from back of the manual.
2. Position the drip tray (if applicable) in desired location on the countertop where the Ceramic Tower will be installed.
3. Place MOUNTING TEMPLATE underneath the drip tray as indicated on the template.
4. While holding the drip tray and the mounting template firmly in position on the countertop, mark location of the 3–inch hole to be cut in the countertop.
5. Remove drip tray and mounting template from the countertop.

6. Cut 3–inch hole in the countertop as indicated on the template.

7. Very carefully lay the Unit on it's side close to where it will be mounted on the countertop.

8. Route the Unit potable water, concentrate or syrup inlet lines, and dispensing valves power cord (if applicable) down through PLASTIC ADAPTER (item 1), then down through 3–inch hole in the countertop.

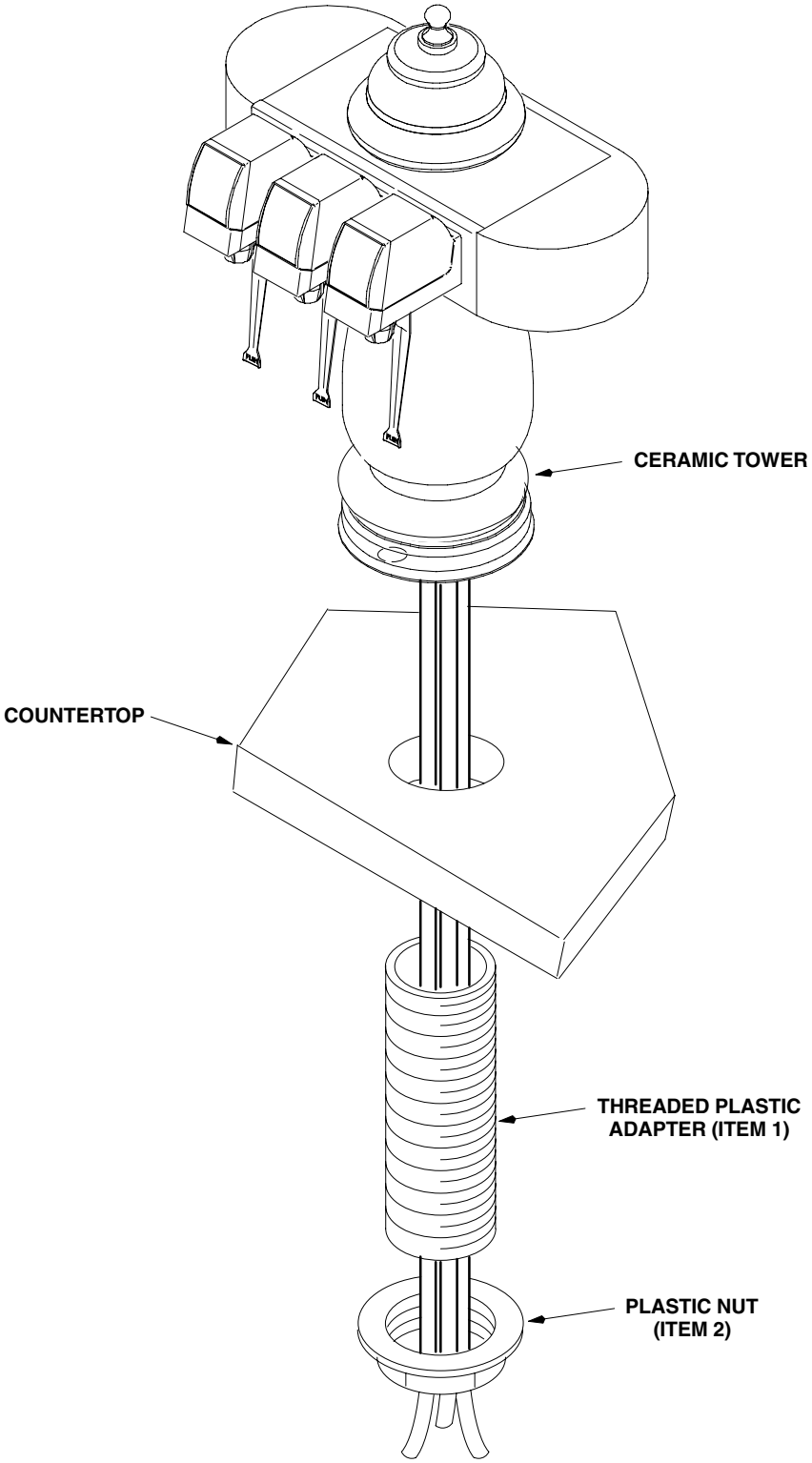


FIGURE 4. CERAMIC TOWER INSTALLATION

9. Screw PLASTIC MALE ADAPTER (item 1) into female adapter inside base of the Ceramic Tower Assembly.

NOTE: To comply with NSF International (NSF) requirements within the United States, the Unit base *must* be sealed to the countertop and all access holes to the Unit base *must* be completely sealed with a silastic sealant such as Dow Corning RTV 731 or equivalent. Proceed as follows to seal the Unit base to the countertop.

10. Liberally apply silastic sealant such as Dow Corning RTV 731 or equivalent on the Unit base bottom edges.

NOTE: Do not move Unit after positioning on the countertop or seal from Tower base to countertop will be broken.

11. Very carefully pick up the Unit and lower it into position on the countertop. Secure Unit to the countertop with PLASTIC NUT (item 2) as shown in Figure 4.

12. Apply additional sealant around bottom of the Unit base. The seal must have a minimum radius of 1/2-inch to prevent crevices and to ensure a complete seal.

13. If applicable, install Drip Tray Assembly as instructed in manual provided with the drip tray assembly.

14. If applicable, mount TRANSFORMER (item 4) on underside of the countertop close to the Unit.

15. If applicable, plug Unit dispensing valves power cord connector into mating connector on the transformer output power cord.

BAG-IN-BOX CONCENTRATE SYSTEM

(see Figure 2)

Connecting Potable (City Water) Water Source Lines to Ceramic Tower.

IMPORTANT: TO THE INSTALLER. It is the responsibility of the Installer to ensure that the water supply to the dispensing equipment is provided with protection against backflow by an air gap as defined in ANSI/ASME A112. 1.2-1979; or an approved vacuum breaker or other such method as proved effective by test.

Water pipe connections and fixtures directly connected to a potable water supply shall be sized, installed, and maintained according to Federal, State, and Local laws.

Route potable (city water) source line up to the Ceramic Tower and connect to the Tower plain water inlet lines.

Connecting Concentrate Source Lines to Ceramic Tower.

(see Figure 2)

NOTE: The Ceramic Tower concentrate inlet lines are labeled to identify the dispensing valves they serve. For example, the line labeled "1" must be connected to the concentrate source line that provides concentrate to be dispensed from the No. 1 dispensing valve (No. 1 dispensing valve is the valve on the right side when facing front of the Unit).

1. Route labeled concentrate source lines from the concentrate bag-in-Box system location up to the Ceramic Tower.

2. Connect labeled concentrate source lines to matching labeled Ceramic Tower concentrate inlet lines.

CARBONATED DRINK SYSTEM

(see Figure 3)

IMPORTANT: The carbonated water and syrup lines connected between the Cooling Unit and the Ceramic Tower *must* be insulated to keep the carbonated water and syrup cool and also to help prevent sweating of the carbonated water and syrup lines.

Connecting Potable (City Water) Water Source Lines to The Carbonator.

IMPORTANT: TO THE INSTALLER. It is the responsibility of the Installer to ensure that the water supply to the dispensing equipment is provided with protection against backflow by an air gap as defined in ANSI/ASME A112. 1.2-1979; or an approved vacuum breaker or other such method as proved effective by test.

Water pipe connections and fixtures directly connected to a potable water supply shall be sized, installed, and maintained according to Federal, State, and Local laws.

1. Route potable (city water) source line to the Carbionator, then connect water line to the Carbonator.
2. Connect carbonated water line between the Carbonator and the Cooling Unit carbonated water inlet.
3. Connect carbonated water line between the Cooling Unit carbonated water outlet and the Ceramic Tower carbonated water inlet lines.

Connecting Syrup Source Lines to the Carbonated Drink System.

NOTE: The Ceramic Tower syrup inlet lines are labeled to identify the dispensing valves they serve. For example, the line labeled "1" must be connected to the syrup source line that provides syrup to be dispensed from the No. 1 dispensing valve (No. 1 dispensing valve is the valve on the right side when facing front of the Ceramic Tower).

1. Connect syrup source lines from applicable syrup tanks or bag-in-box system to the Cooling Unit syrup inlet lines.
2. Connect syrup lines from Cooling Unit syrup outlets to the Ceramic Tower syrup inlet lines. ***Make sure*** **the carbonated water and syrup lines connected between the Cooling Unit and the Ceramic Tower are well insulated.**

PREPARATION FOR OPERATION

WARNING: CO_2 displaces oxygen. Strict attention *must* be observed in the prevention of CO_2 (carbon dioxide) 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 suffocation.

CAUTION: Before opening CO_2 cylinder shutoff valve, turn secondary CO_2 regulators adjusting screws to the left (counterclockwise) until all tension is relieved from adjusting screws springs.

BAG-IN-BOX CONCENTRATE SYSTEM

(see Figure 2)

1. Open (counterclockwise) the CO_2 cylinder shutoff valve slightly to allow the lines to slowly fill with gas, then open the valve fully to back-seat the valve. (back-seating the valve prevents leakage around the valve shaft). Check for CO_2 leaks.
2. Adjust primary CO_2 regulator for Bag-in-Box system concentrate pumps (see Figure 2) to 70-psi. *Do not exceed maximum CO_2 pressure specified on the concentrate pumps.*
3. If applicable, plug Ceramic Tower power cord into electrical outlet.
4. Sanitize all concentrate systems as instructed in SERVICE AND MAINTENANCE section of this manual.
5. Open plain water inlet supply line shutoff valve. Check for water leaks and repair if evident.
6. Dispense from dispensing valves to purge all air from the water system and until water is dispensed.
7. Adjust dispensing valves for water flow rate as instructed in SERVICE AND MAINTENANCE section of this manual.
8. Connect full bag-in-boxes of concentrate into the concentrate systems.
9. Adjust dispensing valves for Water-to-Concentrate "Ratio" of dispensed drinks as instructed in SERVICE AND MAINTENANCE section of this manual.
10. Check entire water and concentrate systems for leaks and repair if evident.

CARBONATED DRINK SYSTEM

(see Figure 3)

1. Open (counterclockwise) the CO_2 cylinder shutoff valve slightly to allow the lines to slowly fill with gas, then open the valve fully to back-seat the valve. (back-seating the valve prevents leakage around the valve shaft). Check for CO_2 leaks.
2. **Adjusting Carbonator CO_2 Regulator.**

   Refer to manual provided with the carbonator and adjust Carbonator CO_2 operating pressure as instructed.

   Adjusting Syrup supply Bag-In-Box or Syrup Tanks Primary CO_2 Regulator.

   Bag-In-Box Primary CO_2 Regulator–Adjust primary CO_2 regulator for Bag-in-Box system syrup pumps to 70-psi. *Do not exceed maximum CO_2 pressure specified on the concentrate pumps.*

   Sugar Syrup Tanks Primary CO_2 Regulator–Adjust primary CO_2 regulator for sugar syrup tanks to a minimum of 45-psi.

   Low-Calorie (Diet) Syrup Tanks Primary CO_2 Regulator–Adjust low-calorie (diet) syrup tank CO_2 regulator to 10-psi for syrup lines up to 30-feet in length. Syrup lines longer than 30-feet in length may require a slightly higher setting of 12-psi maximum. Excessive CO_2 pressure may cause low-calorie syrup carbonation resulting in foam.
3. Refer to manual provided with the Cooling Unit to prepare the Cooling Unit for operation, then connect electrical power to the Cooling Unit.
4. If applicable, plug Ceramic Tower power cord into electrical outlet.
5. Sanitize all syrup systems as instructed in SERVICE AND MAINTENANCE section of this manual.
6. Open the Carbonator plain water inlet supply line shutoff valve, then plug Carbonator power cord into electrical outlet. Check for water leaks and repair if evident.

7. Open dispensing valves and dispense until all air is purged from the carbonated water system and until carbonated water is dispensed.

8. Connect applicable full syrup tanks or bag-in-boxes full of syrup into the syrup systems.

9. Dispense from all dispensing valves to purge all air from the syrup systems and until only syrup is dispensed.

10. Check entire system for syrup and water leaks and repair if evident.

11. Adjust all dispensing valves for Water-To-syrup “Ratio” of dispensed drinks.

12. If applicable, adjust portion-control dispensing valves for portion sizes of drinks dispensed as instructed in SERVICE AND MAINTENANCE section of this manual.

OPERATORS INSTRUCTIONS

This section describes the Unit's operating control, daily pre-operation checks, and maintenance procedures to be performed by the operator.

DISPENSING VALVES

Cup Actuated Dispensing Valve–Operate the cup actuated valve by pressing a cup or glass against the valve lever until the cup or glass if full, then release the lever.

Self-Serve Dispensing Valve–Operate the Self-Serv Dispensing Valve by pressing and holding the "PUSH" switch until cup or glass is full, then release the switch.

Portion-Control Dispensing Valve–The Portion-Control Dispensing Valve will dispense different size drinks by pressing the desired switch. The valve also has a manual dispense function. The Portion-Control Dispensing Valve can be programmed to dispense different drink sizes.

DAILY PRE-OPERATION CHECK

1. Check primary CO_2 regulator assembly 1800-psi gage and if gage indicator is in shaded ("change CO_2 cylinder") portion of the dial, CO_2 cylinder is almost empty and must be changed as instructed in SERVICE AND MAINTENANCE section of this manual.
2. Make sure there is sufficient amount of applicable concentrate or syrup in all of the bag-in-boxes or syrup tanks. If not, replenish concentrate or syrup supply as instructed in SERVICE AND MAINTENANCE section of this manual..
3. Make sure drip tray and cup rest are clean and cup rest is properly installed in the drip tray.

ADJUSTMENTS

ADJUSTING CO_2 REGULATORS

The CO_2 regulators should be checked periodically for proper pressure settings and be adjusted if necessary. Refer to SERVICE AND MAINTENANCE section in this manual for adjustment instructions.

ADJUSTING DISPENSING VALVE WATER FLOW RATE

The water flow rate of the dispensing valves may be adjusted. Refer to SERVICE AND MAINTENANCE section in this manual for adjustment instructions.

ADJUSTING APPLICABLE WATER-TO-CONCENTRATE OR SYRUP "RATIO" OF DISPENSED DRINK

The applicable Water-to-Concentrate or Syrup "Ratio" (Brix) of the dispensed product should be checked periodically and adjusted if necessary. Refer to SERVICE AND MAINTENANCE section in this manual for adjustment instructions.

REPLENISHING CO_2 SUPPLY

WARNING: CO_2 displaces oxygen. Strict attention *must* be observed in the prevention of CO_2 (carbon dioxide) 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 suffocation.

The CO_2 supply should be checked daily and replenished if necessary. Refer to SERVICE AND MAINTENANCE section in this manual for replenishing procedure.

REPLENISHING APPLICABLE CONCENTRATE OR SYRUP SUPPLY

The applicable concentrate or syrup supply should be checked daily and replenished if necessary. Refer to SERVICE AND MAINTENANCE section in this manual for replenishing instructions.

CLEANING AND SANITIZING

DAILY CLEANING OF UNIT

The daily cleaning procedure for the Unit should be performed at the end of the daily operation. Refer to SERVICE AND MAINTENANCE section in this manual for daily cleaning procedure.

SANITIZING APPLICABLE CONCENTRATE OR SYRUP SYSTEMS

The applicable concentrate or syrup systems should be sanitized as instructed every 90-days. Refer to SERVICE AND MAINTENANCE section in this manual for sanitizing instructions.

CARBONATOR (IF APPLICABLE) MAINTENANCE

Refer to manual provided with the Carbonator for maintenance procedures.

COOLING UNIT (IF APPLICABLE) MAINTENANCE

Refer to manual provided with the Cooling Unit for maintenance procedures.

CLEANING CO_2 GAS VALVES

(see Figure 2 or 3)

The CO_2 gas valves must be inspected and serviced as instructed at least once a year under normal conditions and after any CO_2 system servicing or disruption. Servicing of the CO_2 gas valves should be performed by a qualified Service Person. Refer to SERVICE AND MAINTENANCE section of this manual for inspection and servicing procedures.

SERVICE AND MAINTENANCE

This section describes service and maintenance procedures to be performed on the Ceramic Post-mix Tower.

IMPORTANT: Only qualified personnel should service the Ceramic Post-Mix Tower.

ADJUSTMENTS

ADJUSTING CO_2 REGULATORS

Bag-In-Box Concentrate System.

(see Figure 2)

Adjust primary CO_2 regulator for the Bag-In-Box system concentrate pumps to 70-psi. *Do not exceed maximum CO_2 pressure specified on the concentrate pumps.*

Carbonated Drink System.

(see Figure 3)

Adjusting Carbonator CO_2 Regulator–Refer to manual provided with the Carbonator and adjust Carbonator CO_2 pressure as instructed.

Adjusting Bag-In-Box Primary CO_2 regulator–Adjust primary CO_2 regulator for the Bag-In-Box system syrup pumps to 70-psi. *Do not exceed maximum CO_2 pressure specified on the concentrate pumps.*

Adjusting Sugar Syrup Tanks Primary CO_2 Regulator–Adjust primary CO_2 regulator for sugar syrup tanks to a minimum of 45-psi.

Adjusting Low-Calorie (Diet) Syrup Tanks Primary CO_2 Regulator–Adjust low-calorie (diet) syrup tank CO_2 regulator to10-psi for syrup lines up to 30-feet in length. Syrup lines longer than 30-feet in length may require a slightly higher setting of 12-psi maximum. Excessive CO_2 pressure may cause low-calorie syrup carbonation resulting in foam.

ADJUSTING DISPENSING VALVE WATER FLOW RATE

(see Figure 5)

1. Remove cover from the dispensing valve by lifting the front cover up 1/4-inch and pulling forward.

2. Install syrup diversion tube assembly on the dispensing valve by pushing rubber end of the syrup diversion tube onto the syrup outlet of the inner nozzle.

3. Measure the water flow rate by dispensing water into a graduated cup for a set period of time.

NOTE: Adjusting screw stops are built into the valve to prevent leakage when the screws are adjusted too far clockwise. Stop adjusting clockwise when turning resistance increases. Turn the screw counterclockwise 1-1/2 turns after the stops are contacted.

4. Turn the water flow regulator adjusting screw to the left (counterclockwise) to decrease the water flow rate or turn the adjusting screw to the right (clockwise) to increase the water flow rate, then recheck the flow rate. Adjustments should be no more than 1/4-turn at a time.

5. Remove syrup diversion tube from the dispensing valve, then install cover on the dispensing valve.

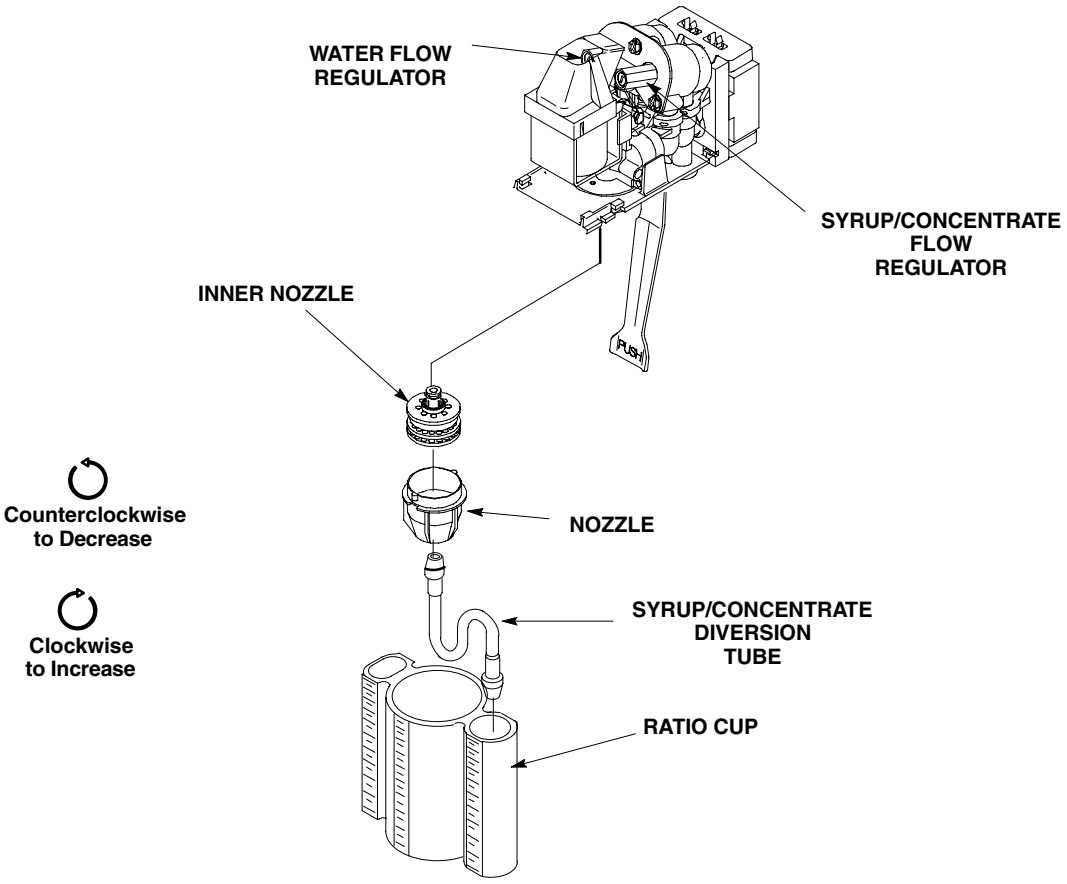


FIGURE 5. DISPENSING VALVE

ADJUSTING WATER-TO-SYRUP/CONCENTRATE "RATIO" (BRIX) OF DISPENSED PRODUCT

NOTE: Make sure the dispensing valve water flow rate is as desired before adjusting the valve for Water-To-Syrup/Concentrate "Ratio" (Brix) of the dispensed product.

Adjust the Water-To-Syrup/Concentrate "Ratio" (Brix) of the dispensed product using Ratio Cup (P/N 311100000) and Syrup Diversion Tube Assembly (P/N 319540000) as follows:

1. Remove cover from the dispensing valve by lifting the front cover up 1/4-inch and pulling forward.
2. Install syrup/concentrate diversion tube assembly on the dispensing valve by pushing rubber end of the syrup/concentrate diversion tube onto the syrup/concentrate outlet of the inner nozzle.

NOTE: Refer to syrup/concentrate manufacturer's recommendations on the syrup/concentrate package for the Water-To-Syrup/Concentrate "Ratio" (Brix) of the dispensed product.

3. Dispense enough to fill the syrup/concentrate diversion tube with syrup/concentrate.
4. Hold large chamber of the ratio cup under the dispensing valve nozzle. Place free end of the syrup/concentrate diversion tube into the syrup/concentrate chamber marked for the proper ratio. Dispense approximately 6-ounces of water into the ratio cup. Water and syrup/concentrate levels should be even in the cup.

NOTE: Adjusting screw stops are built into the valve to prevent leakage when the screws are adjusted too far clockwise. Stop adjusting clockwise when turning resistance increases. Turn the screw counterclockwise 1-1/2 turns after the stops are contacted.

5. **Adjusting Syrup/Concentrate Flow Regulator**–If syrup/concentrate levels are uneven in the ratio cup, adjust by turning the dispensing valve syrup/concentrate flow regulator adjusting screw labeled **"SYRUP"** as follows:

   A. For less syrup/concentrate, turn the adjusting screw counterclockwise no more than 1/4-turn at a time.

   B. For more syrup/concentrate, turn the adjusting screw clockwise no more than 1/4-turn at a time.

6. Repeat Water-To-Syrup/Concentrate "Ratio" (Brix) test and adjust syrup/concentrate flow regulator as many times as necessary until proper ratio of dispensed product is dispensed.

7. Remove syrup/concentrate diversion tube assembly from the dispensing valve.

8. Install dispensing valve cover.

ADJUSTING (IF APPLICABLE) DISPENSING VALVE PORTION CONTROL

Accessing Programming Mode.

(see Figure 6)

1. Press and hold hidden switch for 3-seconds without interruption. When you have entered into the program mode, the "PGM" LED will be illuminated. While in the programming cycle for any dispensing size, the "PGM" LED will flash.

NOTE: On the Portion Control Module, the "PGM/OUT" displays are not visible unless they are illuminated. This is similar to the dashboard warning lights on automobiles. They are shown here to identify their location.

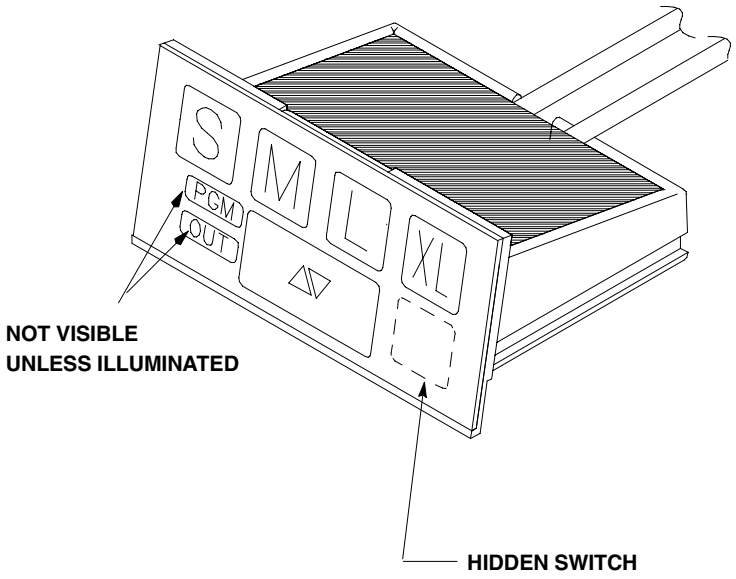


FIGURE 6. ACCESSING PORTION CONTROL PROGRAMMING MODE

Program Mode Steps

(see Figure 7)

1. Place appropriate size cup or glass (with the desired amount of ice) under dispensing valve nozzle.

2. Press and hold the desired portion switch until the liquid/foam level reaches the desired cup level.

NOTE: While in the programming mode, the "PGM" LED will be illuminated. While pressing a portion switch, the "PGM" LED will flash.

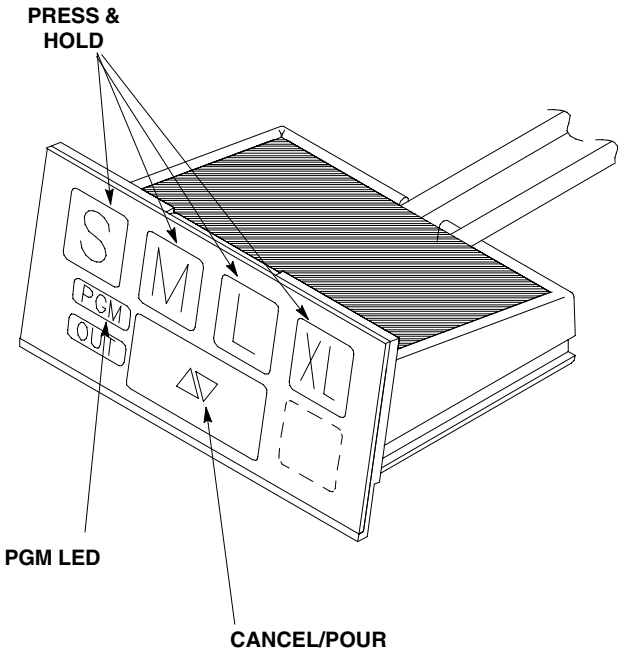


FIGURE 7. PROGRAMMING MODE

3. Release the switch storing the pour time value in memory. The “PGM” LED will stop flashing and return to steady illumination.
4. Programming steps for this drink size are now complete. Repeat steps 1 through 3 for each drink size to be programmed.

NOTE: Any drink size may be programmed as many times as desired before exiting the program mode. It is not necessary to adjust all cup or glass sizes in the program mode.

Exiting Programming Mode.

(see Figure 8)

1. Press and hold the hidden switch for 3-seconds. When you have exited the program mode, the timer values stored in the temporary memory will be written to permanent storage and the “PGM” LED will go “OFF”.

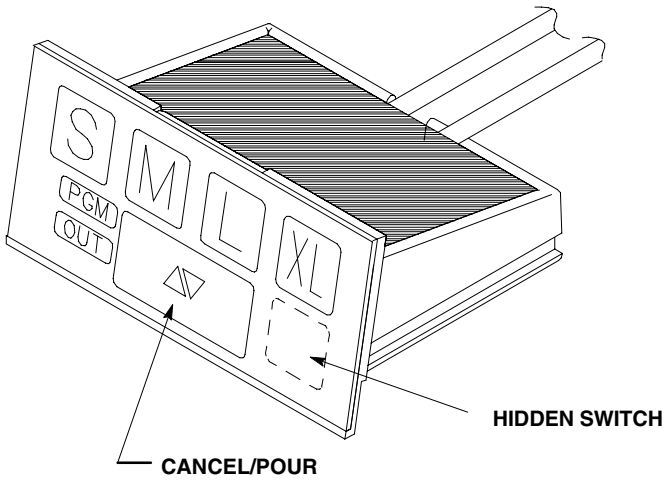


FIGURE 8. EXITING PROGRAM MODE

Restoring Factory Settings.

(see Figure 8)

1. To restore the factory setting while in the program mode, press and hold the CANCEL/POUR switch. Then, at the same time, press the desired dispensing size switch. The factory programmed setting is now restored.
2. Repeat for each drink size to be restored to the factory programmed setting.

CLEANING AND SANITIZING

DAILY CLEANING OF UNIT

1. Remove cup rest from the drip tray.
2. Wash drip tray in place on the Unit, then rinse drip tray with hot water allowing water to drain out through the drain hose.
3. Wash cup rest, then rinse the cup rest with clean water. Install cup rest in the drip tray.
4. Clean all external surfaces of the Unit with a sponge. Rinse out the sponge with clean water, then wring excess water out of the sponge and wipe off all external surfaces on the Unit. Wipe Unit dry with a clean soft cloth. DO NOT USE ABRASIVE CLEANERS.
5. Remove nozzle and syrup diffusers from the dispensing valves. Place nozzles and syrup diffusers in sanitizing solution.
6. Wash the nozzles and syrup diffusers in sanitizing solution, then rinse them with potable water.
7. Re-install nozzles and syrup diffusers back on the dispensing valves.

SANITIZING POST-MIX SYRUP SYSTEMS

IMPORTANT: Only qualified Service Personnel should perform sanitizing procedure on the post-mix syrup systems.

The post-mix syrup systems should be sanitized every 90-days using a non-scented household liquid bleach containing a 5.25 % sodium hypochlorite concentration. Proceed as follows to sanitize the post-mix syrup systems.

1. Disconnect syrup supplies from syrup systems.
2. Rinse quick disconnects (syrup tanks systems) or bag-in-box connectors (syrup bag-in-box systems) in warm potable water.

STEP 1. WASH SYRUP SYSTEMS

3. Using a clean syrup tank (syrup tank system) or a five-gallon container (bag-in-box system), prepare a full tank or container of liquid dishwasher detergent by using 70° F (21° C) to 100° F (38° C) potable water and 0.5 oz. (15 ml) of liquid dishwasher detergent to one gallon of potable water. Stir detergent solution to thoroughly mix the solution.
4. Syrup Tank Systems.

   A. Observe and note CO_2 pressure setting on the syrup tanks CO_2 regulator, then re-adjust CO_2 regulator to 60 to 80-psi. Pressurize syrup tank containing detergent solution to 60 to 80-psi.

   B. Connect detergent solution tank, pressurized at 60 to 80-psi, into one of the syrup systems.

Bag-in Box Syrup Systems.

C. Install bag valves, cut from empty bag-in-box syrup containers, on ends of syrup containers syrup outlet tubes connectors.

D. Place all syrup outlet tubes, with bag valves on their ends, in container containing detergent solution.

5. Flush the syrup system and dispensing valve as follows:

   A. Place waste container under applicable dispensing valve.

   B. Activate the dispensing valve for one minute to purge all syrup and flush out the syrup system.

   C. Continue to activate the dispensing valve in cycles ("ON" for 15-seconds, "OFF", then "ON" for 15-seconds). Repeat "ON" and "OFF" cycles for 15-cycles.

6. Connect detergent solution to the remaining syrup systems and flush syrup out of the syrup systems as instructed in step 5 preceding.

7. Remove detergent solution source from the syrup system.

STEP 2. FLUSH SYRUP SYSTEMS

8. Syrup Tank Systems.

   Connect syrup tank containing potable water, pressurized at 60 to 80-psi, into one of the syrup systems.

   Bag-in-Box Syrup System.

   Fill five-gallon container with potable water, then place all bag-in-box syrup containers syrup outlet tubes in container containing potable water.

9. Flush detergent solution out of the syrup system and dispensing valve as follows:

   A. Place waste container under applicable dispensing valve.

   B. Activate the dispensing valve for one minute to purge all detergent solution and flush out the syrup system.

   C. Continue to activate the dispensing valve in cycles ("ON" for 15-seconds, "OFF", then "ON" for 15-seconds). Repeat "ON" and "OFF" cycles for 15-cycles.

10. Connect potable water source to the remaining syrup systems and flush detergent solution out of the syrup systems as instructed in step 9 preceding.

11. Remove potable water source from the syrup system.

STEP 3. SANITIZE SYRUP SYSTEMS

12. Using a clean syrup tank (syrup tanks system) or a five-gallon container (bag-in-box system), prepare sanitizing solution using 70° F (21° C) to100° F (38° C) potable water and 0.5 oz. (15 ml) of non-scented household liquid bleach that contains a 5.25 % sodium hypochlorite concentration to one gallon of potable water. This mixture *must not* exceed 200 PPM of chlorine. Stir sanitizing solution to thoroughly mix.

13. Syrup Tank Systems.

    Connect sanitizing solution tank, pressurized at 60 to 80-psi, into one of the syrup systems.

    Bag-in-Box Syrup System.

    Place all bag-in-box syrup containers syrup outlet tubes in container containing sanitizing solution.

14. Sanitize the syrup system and dispensing valve as follows:

    A. Place waste container under applicable dispensing valve.

B. Activate the dispensing valve for one minute to purge all water from and install sanitizing solution in the syrup system and dispensing valve.

C. Continue to activate the dispensing valve in cycles (“ON” for 15-seconds, “OFF”, then “ON” for 15-seconds). Repeat “ON” and “OFF” cycles for 15-cycles.

15. Repeat steps13 and 14 to flush water out of and install sanitizing solution in the remaining syrup systems and dispensing valves.

16. Remove sanitizing solution source from the syrup system.

17. Allow sanitizing solution to remain in the syrup systems for not less than 10 or no more than 15-minutes (max.) contact time.

STEP 4. WATER FLUSH SYRUP SYSTEMS

WARNING: Flush sanitizing solution from the syrup systems as instructed. Residual sanitizing solution left in the syrup systems could create a health hazard.

18. Fill syrup tank (syrup tank system) or a five-gallon container (bag-in-box system) with potable water.

19. Syrup Tank Systems.

Connect syrup tank containing potable water, pressurized at 60 to 80-psi, into one of the syrup systems.

Bag-in-Box Syrup System.

Place all bag-in-box syrup containers syrup outlet tubes in container containing potable water.

20. Flush sanitizing solution from the syrup system and the dispensing valve as follows:

A. Place waste container under applicable dispensing valve.

B. Activate the dispensing valve for one minute to purge all sanitizing solution out of the syrup system and the dispensing valve.

C. Continue to activate the dispensing valve in cycles (“ON” for 15-seconds, “OFF”, then “ON” for 15-seconds). Repeat “ON” and “OFF” cycles for 15-cycles.

21. Repeat steps 19 and 20 preceding to purge sanitizing solution out of the remaining syrup systems and dispensing valves.

22. Remove potable water source from the syrup system.

STEP 5. PURGE WATER OUT OF SYRUP SYSTEMS (RESTORE OPERATION)

23. Syrup Tank Systems.

A. Noting syrup tanks CO_2 regulator pressure setting observed in step 4 preceding, readjust CO_2 regulator to the observed pressure setting,

B. Connect tanks containing syrup into syrup systems.

Bag-in-Box Syrup System.

C. Remove all bag valves from bag-in-box syrup containers outlet tubes connectors.

D. Connect bag-in-box syrup containers into the syrup systems.

24. Place waste container under dispensing valves. Dispense from all dispensing valves to permit syrup to purge all potable water from the syrup systems and the dispensing valves. Continue to dispense from the dispensing valves until only syrup is dispensed from the syrup systems and valves.

WARNING: To avoid possible personal injury or property damage, do not attempt to remove the syrup tank cover until CO_2 pressure has been released from the tank.

25. Dispose of waste sanitizing solution in a sanitary sewer, not in a storm drain, then thoroughly rinse the inside and the outside of the container that was used for sanitizing solution to remove all sanitizing solution residue.

REPLENISHING CO_2 SUPPLY

WARNING: CO_2 displaces oxygen. Strict attention *must* be observed in the prevention of CO_2 (carbon dioxide) 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 suffocation.

NOTE: When indicator on the CO_2 cylinder primary CO_2 regulator assembly 1800-psi gage is in the shaded ("change CO_2 cylinder") portion of the dial, the CO_2 cylinder is almost empty and should be changed.

1. Fully close (clockwise) the CO_2 cylinder main shutoff valve.
2. Slowly loosen primary the CO_2 regulator assembly coupling nut allowing CO_2 pressure to escape, then remove the regulator assembly from the empty CO_2 cylinder.
3. Unfasten safety chain and remove the empty CO_2 cylinder.

WARNING: To avoid personal injury and/or property damage, always secure the CO_2 cylinder in an upright position with a safety chain to prevent it from falling over. Should the valve become accidentally damaged or broken off, the CO_2 cylinder can cause serious personal injury.

4. Position full CO_2 cylinder in an upright position and secure with a safety chain.
5. Make sure a gasket is in place inside the primary CO_2 regulator coupling nut, then install regulator on the CO_2 cylinder.
6. Open (counterclockwise) the CO_2 cylinder main shutoff valve slightly to allow the lines to slowly fill with gas, then open the valve fully to back-seat the valve. (Back-seating the valve prevents leakage around the valve shaft).
7. Check all CO_2 connections for leaks. Tighten any loose connections and repair any leaks.

REPLENISHING SYRUP/CONCENTRATE SUPPLY

NOTE: The following instructions are applicable only when replenishing with same flavor syrup or concentrate. Refer to SYRUP OR CONCENTRATE FLAVOR CHANGE when changing syrup or concentrate flavor.

SYRUP TANK SYSTEM

1. Disconnect empty syrup tank from the syrup system.
2. Check syrup tank quick disconnects for sticky or restricted operation. Wash disconnects in warm water.
3. Connect full tank of syrup into the syrup system.

BAG-IN-BOX SYSTEM

1. Disconnect empty bag-in-box container from the syrup or concentrate system.

2. Check bag-in-box connector for sticky or restricted operation. Wash bag-in-box connector in warm water.
3. Connect full bag-in-box container into the syrup or concentrate system.

SYRUP OR CONCENTRATE FLAVOR CHANGE

1. Perform sanitizing procedure (as instructed in this section of the manual) on the syrup or concentrate system syrup or concentrate flavor change will be made on.
2. Connect a new flavor syrup or concentrate into the syrup or concentrate system.

CARBONATOR (IF APPLICABLE) MAINTENANCE

Refer to manual provided with the Carbonator for maintenance procedures.

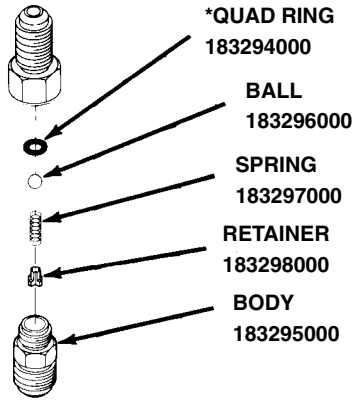
COOLING UNIT (IF APPLICABLE) MAINTENANCE

Refer to manual provided with the Cooling Unit for maintenance procedures.

CLEANING CO_2 GAS VALVES

(see applicable Figure 2 or 3 and 9)

The CO_2 regulator CO_2 gas check valves *must* be inspected and serviced at least once a year under normal conditions and after any servicing or disruption of the CO2 system. *ALWAYS REPLACE THE BALL SEAT (QUAD RING SEAL) EACH TIME THE GAS VALVES ARE SERVICED.*



***Quad ring seal *must* be replaced each time check valve is serviced.**

FIGURE 9. CO_2 GAS CHECK VALVE ASSEMBLY

THIS PAGE LEFT BLANK INTENTIONALLY

TROUBLESHOOTING

IMPORTANT: Only qualified Personnel should service internal components or electrical wiring.

CAUTION: If repairs are to be made to CO_2, concentrate, or plain water systems, close CO_2 cylinder shutoff valve, disconnect concentrate bag-in-box container, shutt off plain water, and bleed systems pressures by operating the dispensing valves.

BAG-IN-BOX CONCENTRATE SYSTEM

Trouble	Probable Cause	Remedy
WATER-TO-CONCENTRATE "RATIO" OF DISPENSED PRODUCT TOO LOW OR TOO HIGH	A. Dispensing valve concentrate flow regulator not properly adjusted.	A. Adjust Water-To-Concentrate "Ratio"
ADJUSTMENT OF DISPENSING VALVE CONCENTRATE FLOW REGULATOR DOES NOT INCREASE WATER-TO-CONCENTRATE "RATIO"	A. CO_2 gas pressure to concentrate pump insufficient to operate pump.	A. Adjust primary CO_2 regulator or check CO2 supply and replenish as instructed.
	B. No concentrate supply.	B. Replenish concentrate supply as instructed.
	C. Quick disconnect not secure on bag-in-box container.	C. Secure quick disconnect on bag-in-box container.
	D. Kink in concentrate line.	D. Remove kink from concentrate line.
	E. Dispensing valve concentrate flow regulator, concentrate container quick disconnect, or concentrate line restricted.	E. Sanitize concentrate systems as instructed.
	F. Improper Baume of concentrate.	F. Replace concentrate supply.
	G. Dirty or inoperative piston or spring in dispensing valve concentrate flow regulator.	G. Call a qualified Service Person.
ADJUSTMENT OF DISPENSING VALVE CONCENTRATE FLOW REGULATOR DOES NOT DECREASE TO DESIRED WATER-TO-CONCENTRATE "RATIO"	A. Dirty or inoperative piston or spring in dispensing valve concentrate flow regulator.	A. Call a qualified Service Person.

Trouble	Probable Cause	Remedy
ONLY WATER DISPENSED	A. Connections not secure on bag-in-box container.	A. Secure connections on bag-in-box container.
	B. Out of concentrate.	B. Replenish concentrate supply as instructed.
	C. Concentrate pump primary CO_2 gas regulator not properly adjusted.	C. Adjust primary CO_2 gas regulator as instructed.
	D. Inoperable dispensing valve.	D. Call a qualified Service Person.
	E. Dispensing valve concentrate flow regulator not properly adjusted.	E. Adjust Water-To-Concentrate “Ratio” of dispensed product as instructed.
	F. No CO_2 gas supply.	F. Replenish CO_2 gas supply as instructed.
	G. Dispensing valve concentrate flow regulator, bag-in-box quick disconnect, or concentrate lines restricted.	G. Sanitize concentrate system as instructed.
	H. Inoperable concentrate pump.	H. Replace concentrate pump (call a qualified Service Person).
ONLY CONCENTRATE DISPENSED	A. Plain water source line shutoff valve closed.	A. Open plain water source line shutoff valve.
	B. Water filter clogged.	B. Replace water filter cartridge.
NO CONCENTRATE OR WATER DISPENSED	A. Inoperable dispensing valve.	A. Repair dispensing valve (call a qualified Service Person).

TROUBLESHOOTING

IMPORTANT: Only qualified Personnel should service internal components or electrical wiring.

WARNING: If repairs are to be made to the product system, remove quick disconnects from the applicable product tank, then relieve system pressure before proceeding. If repairs are to be made to the CO_2 system, stop dispensing, shut off the CO_2 supply, then relieve the system pressure before proceeding. If repairs are to be made to the refrigeration system, make sure electrical power is disconnected from the Unit.

CARBONATED DRINK SYSTEM

Trouble	Probable Cause	Remedy
WATER-TO-SYRUP "RATIO" TOO LOW OR TOO HIGH	A. Dispensing valve syrup flow control not properly adjusted.	A. Adjust Water-To-Syrup "Ratio" as instructed.
	B. **Syrup Tanks System.** CO_2 gas pressure to syrup tanks insufficient to push syrup out of tanks.	B. Adjust syrup tanks CO_2 regulator as instructed.
	Bag-In-Box System. CO_2 gas pressure to syrup pumps insufficient to operate pumps.	Adjust syrup pumps CO_2 gas regulator as instructed.
ADJUSTMENT OF DISPENSING VALVE SYRUP FLOW CONTROL DOES NOT INCREASE TO DESIRED WATER-TO-SYRUP "RATIO"	A. No syrup supply.	A. Replenish syrup supply as instructed.
	B. **Syrup Tanks System.** Syrup Tanks CO_2 regulator out of adjustment.	B. Adjust syrup tanks CO_2 regulator as instructed.
	Bag-In-Box System. Syrup pumps CO_2 regulator out of adjustment.	Adjust syrup pumps CO_2 regulator as instructed.
	C. Dispensing valve syrup flow control or syrup line restricted.	C. Sanitize syrup system as instructed.
	D. Improper Baume of syrup.	D. Replace syrup supply.
	E. Inoperative dispensing valve syrup flow control.	E. Repair dispensing valve syrup flow control.
	F. Tapered washer inside tube swivel nut connection distorted from being overtightened restricting syrup flow.	F. Replace tapered gasket. Make sure it seals properly.

Trouble	Probable Cause	Remedy
ADJUSTMENT OF DISPENSING VALVE SYRUP FLOW CONTROL DOES NOT DECREASE TO DESIRED WATER-TO-SYRUP “RATIO”	A. Dirty or inoperative dispensing valve syrup flow regulator.	A. Disassemble and clean dispensing valve dyrup flow control.
DISPENSED PRODUCT CARBONATION TOO LOW	A. Carbonator CO_2 regulator out of adjustment for existing water conditions or temperature.	A. Adjust carbonator CO_2 regulator as instructed.
	B. Air in carbonator tank.	B. Vent air out of carbonator tank through relief valve. Open dispensing valve to make carbonator pump cycle on.
	C. Water, oil, or dirt in CO_2 supply.	C. Remove contaminated CO_2. Clean CO2 system (lines, regulator, etc.) using a mild detergent. Install a clean CO_2 supply.
DISPENSED PRODUCT COMES OUT OF DISPENSING VALVE CLEAR BUT FOAMS IN CUP OR GLASS	A. Oil film or soap scum in cups or glasses.	A. Use clean cups or glasses.
	B. Ice used for finished drink is sub-cooled.	B. Do not use ice directly from freezer. Allow ice to become “wet” before using. (Refer to following **NOTE**).
	NOTE: Crushed ice also causes dispensing problems. When dispensed drink hits sharp edges of ice, carbonation is released from drink.	
DISPENSED PRODUCT PRODUCES FOAM AS IT LEAVES DISPENSING VALVE	A. Recovery rate of refrigeration Unit exceeded, ice bank depleted.	A. Allow ice bank to recover.
	NOTE: The drop-in refrigeration assembly condenser coil must be cleaned every 30-days. Excessive accumulation of dust, lint, and grease on the coil will restrict cooling air flow through the coil and cause refrigeration system to overheat.	
	B. Carbonator CO_2 regulator pressure adjusted too high for existing water conditions or temperature.	B. Reduce CO_2 regulator pressure settings.
	C. Condenser coil plugged.	C. Clean condenser coil as instructed.
	D. Dispensing valve restricted or dirty.	D. Sanitize syrup system as instructed.

Trouble	Probable Cause	Remedy
DISPENSED PRODUCT PRODUCES FOAM AS IT LEAVES DISPENSING VALVE (CONT'D)	E. Tapered gasket inside carbonated water line swivel nut connector distorted.	E. Replace tapered gasket. Make sure it is properly seated.
	F. Dirty water supply.	F. Check water filter. Replace cartridge (see **NOTE**).
	NOTE: If water supply is dirty, be sure to flush lines and carbonator completely. It may be necessary to remove lines to the carbonator tank, invert tank, and flush tank and all inlet lines to remove foreign particles or dirt.	
NO PRODUCT DISPENSED	A. Dispensing valves keyed lock-out switch in "OFF" position.	A. Place keyed lock-out switch in "ON" position.
	B. No electrical power to Unit.	B. Plug in Unit power cord or check for blown power fuse or tripped circuir breaker.
	C. Disconnected dispensing valves power cord.	C. Connect dispensing valves power cord.
	D. Disconnected or broken wiring to dispensing valve.	D. Connect or replace wiring.
	E. Inoperative transformer or valve solenoids.	E. Replace inoperative part.
ONLY CARBONATED WATER DISPENSED	A. Out of syrup.	A. Replenish syrup supply.
	B. Inoperable dispensing valve.	B. Repair dispensing valve.
	C. Dispensing valve syrup flow control not properly adjusted.	C. Adjust dispensing valve syrup flow control (Water-To-Syrup "Ratio") as instructed.
	D. Dispensing valve syrup flow control or syrup lines restricted.	D. Sanitize syrup system as instructed.
ONLY SYRUP DISPENSED	A. Water inlet supply line shutoff valve closed.	A. Open water inlet supply line shutoff valve.
	B. Carbonator power cord unplugged from electrical outlet.	B. Plug carbonator power cord into electrical outlet.
	C. Carbonator CO_2 regulator not properly adjusted.	C. Adjust CO_2 regulator as instructed.

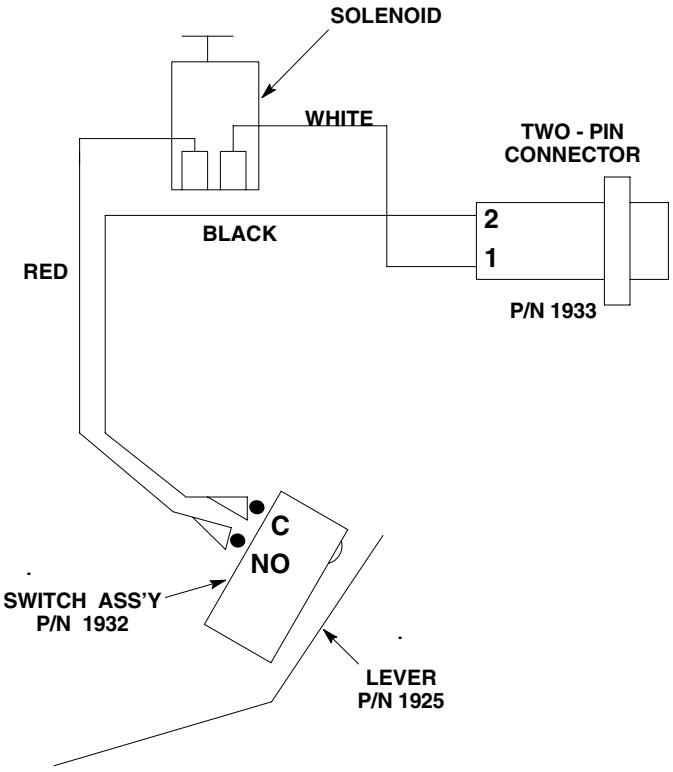


FIGURE 10. WIRING DIAGRAM (UF–1 DISPENSING VALVE)

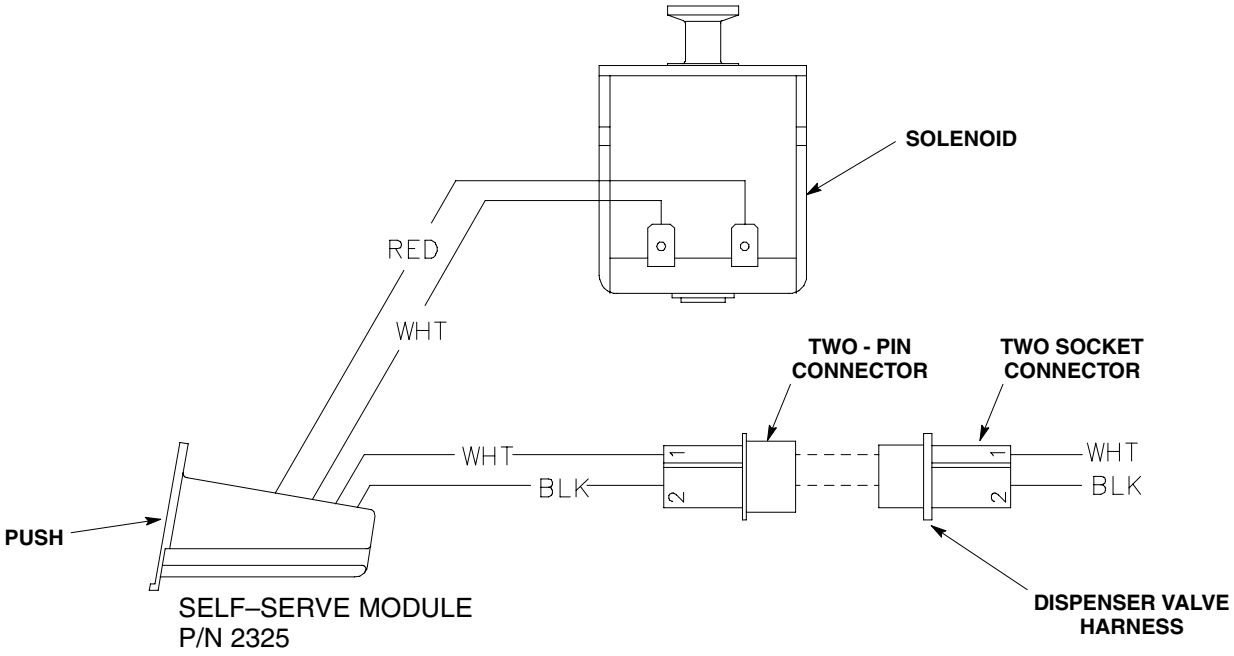


FIGURE 11. WIRING DIAGRAM (UF–1 SELF–SERVE DISPENSING VALVE)

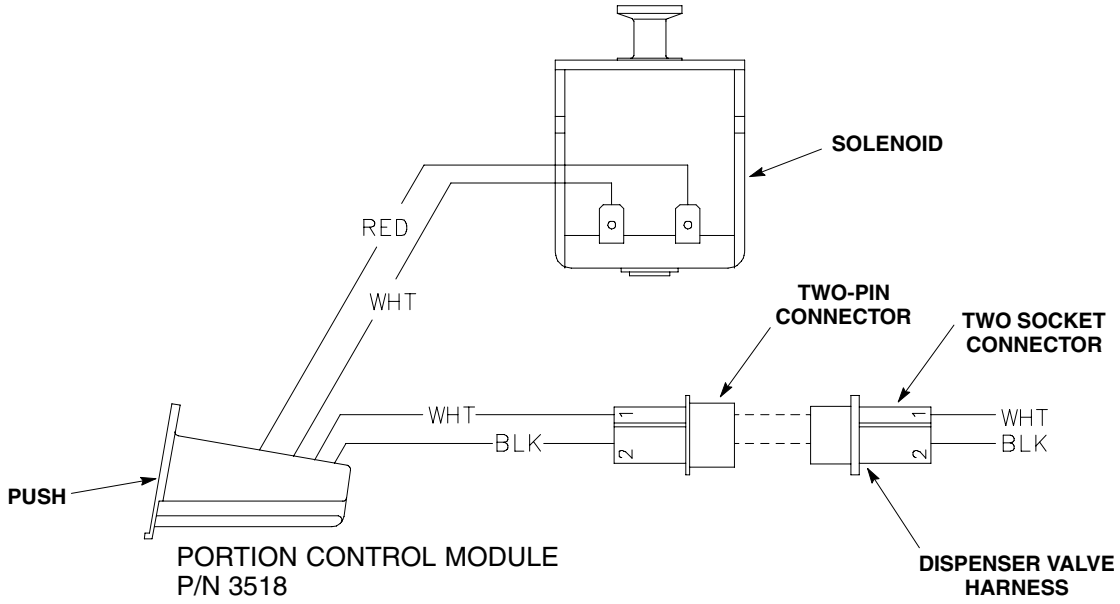


FIGURE 12. WIRING DIAGRAM (UF–1 DISPENSING VALVE WITH PORTION CONTROL)

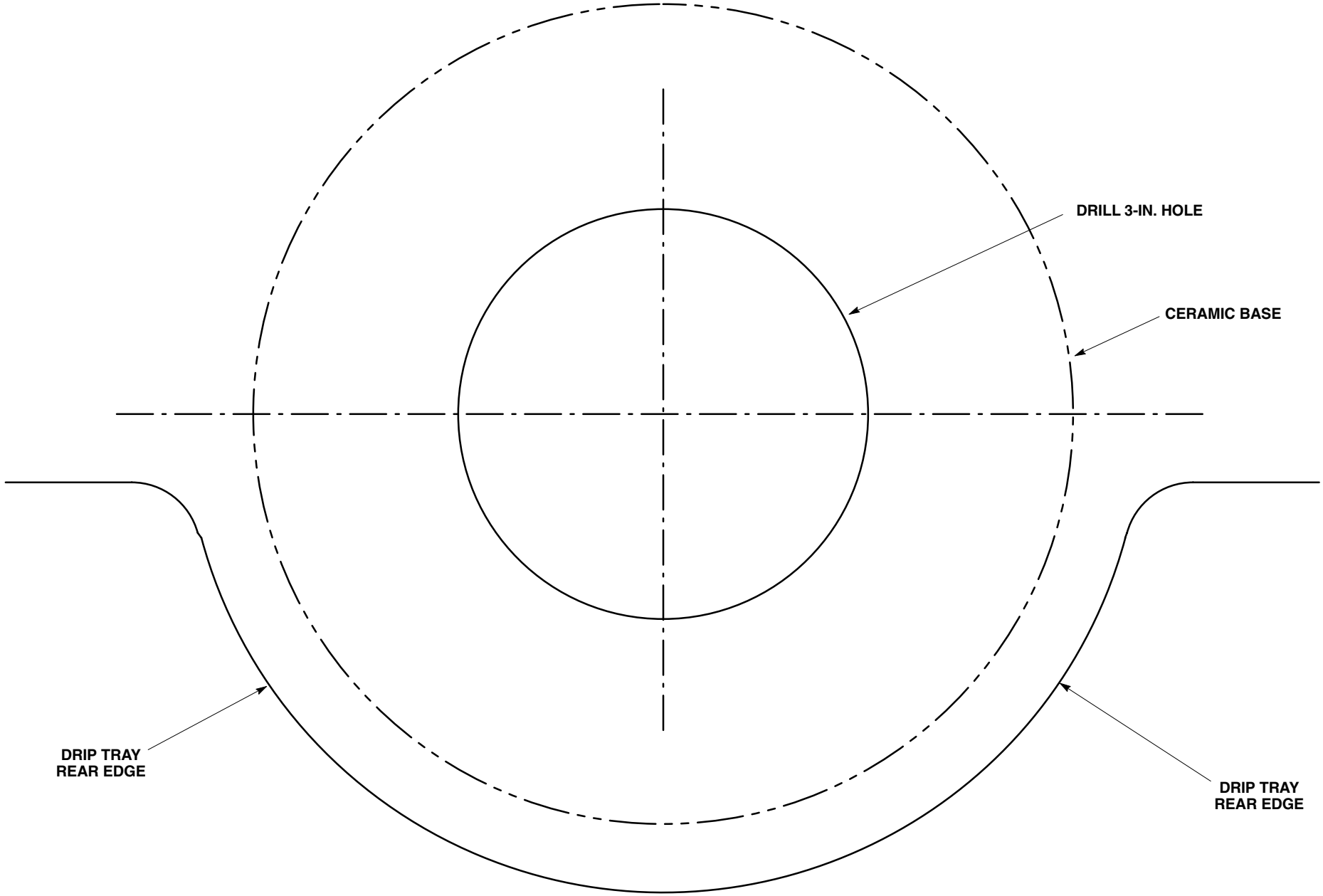


FIGURE 13. CERAMIC TEA TOWER MOUNTING TEMPLATE

CORNELIUS INC.

www.cornelius.com