



**VANGUARD 245**  
**POST-MIX BEVERAGE DISPENSER**  
**SERVICE MANUAL**  
**(Mc DONALD'S APPLICATIONS)**



**IMI CORNELIUS ( TIANJIN ) CO., LTD**

## **CONTACT INFORMATION**

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. Appropriate safety precautions should be followed and all local safety and construction requirements should be met.

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## **NOTE**

# SAFETY

## SAFETY INSTRUCTIONS

### Read And Follow All Safety Instructions

Read and follow all safety instructions in this manual and on the machine (decals, labels, and laminated cards).

Read and understand all applicable OSHA (Occupation Safety and Health Administration) safety regulations before operating the machine.

#### 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, or damage to machine.

### Different Types Of Alerts

There are three types of safety alerts:



**DANGER** — Indicates an immediate hazardous situation which if not avoided WILL result in serious injury, death, or equipment damage.



**WARNING** — Indicates a potentially hazardous situation which, if not avoided, COULD result in serious injury, death, or equipment damage.



**CAUTION** — Indicates a potentially hazardous situation which, if not avoided, MAY result in minor or moderate injury or equipment damage.

### SAFETY TIPS

- Carefully read all safety messages in this manual and safety signs on the machine.
- Keep safety signs in good condition and 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 proper training.
- Keep your machine in proper working condition and do not allow unauthorized modifications to the machine.

## 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.

## ( CARBON DIOXIDE ) WARNING



**WARNING** -- CO<sub>2</sub> Displaces Oxygen. Strict Attention **must** be observed in the prevention of CO<sub>2</sub> gas leaks in the entire CO<sub>2</sub> and soft drink system. If a CO<sub>2</sub> 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<sub>2</sub> gas will experience tremors which are followed rapidly by loss of consciousness and death.



**CAUTION** — PRECAUTIONS TO BE TAKEN IN STORAGE: Store and use with adequate ventilation. Firmly secure cylinders upright to keep from falling or being knocked over. Screw valve protection cap firmly in place by hand. Store only where temperature will not exceed 52° C (125° F). Store full and empty cylinders separately. Use a first-in, first-out inventory system to prevent storing full cylinders for long periods.



**CAUTION** — PRECAUTIONS TO BE TAKEN IN HANDLING: Protect cylinders from damage. Use a suitable hand truck to move cylinders; do not drag, roll, slide, or drop cylinders. Never attempt to lift a cylinder by its cap; the cap is intended solely to protect the valve. Never insert an object (e.g. wrench, screwdriver, pry bar) into cap openings; doing so may damage the valve and cause a leak. Use an adjustable strap wrench to remove over-tight or rusted caps. Open valve slowly. If valve is hard to open, discontinue use and contact your supplier. Never apply flame or localized heat directly to any part of the cylinder. High temperatures may damage the cylinder and could cause the pressure relief device to fail prematurely and venting the cylinder contents. Never strike an arc on a compressed gas cylinder or make a cylinder part of an electrical circuit. For additional information on storage and handling, refer to Compressed Gas Association (CGA) pamphlet P-1, "Safe Handling of Compressed Gases in Containers," available from the CGA.

## SHIPPING AND STORAGE



**CAUTION** — Before shipping, storing, or relocating the unit, 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 environment will cause residual sanitizing solution or water remaining inside the unit to freeze resulting in damage to the internal components.

## EQUIPMENT HANDLING



**CAUTION** — This equipment is NOT suitable for installation in an area where a water jet could be used and **MUST NOT** be cleaned by water jet.



**CAUTION** — This equipment is top heavy and unstable when empty and **MUST NOT** be operated unless the unit is in place and the water bath is filled.

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## **NOTE**

## GENERAL INFORMATION

### GENERAL DESCRIPTION

This manual is a guide for installing, operating, and maintaining this equipment. This section gives the Unit Description, Theory of Operation, and Design Date for Vanguard 245 Post-Mix Beverage Over Counter Dispenser. This Unit must be installed and serviced by a qualified Service Person. This Unit Contains no User serviceable parts.

### WARRANTY REFERENCE INFORMATION

Warranty Registration Date (to be filled out by customer)
Unit Part Number
Serial Number
Install Date
Local Authorized Serviced Center

### UNIT DESCRIPTION

The Vanguard 245 over-the-counter, post-mix, beverage dispenser is compact and may be installed on a counter top as a self-service Unit or the Units are equipped with drop-in type refrigeration assemblies that are easily removed for service and maintenance. Adjustable water flow regulators and syrup flow regulators, located on the dispensing valves, are easily accessible to control the water flow rate of the dispensing valves and Water-to Syrup "Ratio" of the dispensed product.

The only requirements for operation are installation of the Unit on a counter top, installation of LOOSE-SHIPED PARTS, filling water tank with water, connection to a remote carbonator (Unit requiring connection to a remote carbonator), connections to plain water and syrup supplies, adjustment of CO<sub>2</sub> regulators, plugging unit power cord into an electrical outlet, and adjusting the dispensing valves water and syrup flow regulators for proper water flow rate and Water-to-Syrup "Ratio" of the dispensed product.

Available is an optional Straw Holder (P/N 560000440) that provides a place to store drink straws and a Cup Lid Holder (P/N 560000439) that provides a place to store a supply of cup lids. A Plain Water Cooling Coil (P/N 560000477) is available that may be installed in the Unit that provides pre-cooled plain water that may be connected to a remote Orange Juice Dispenser.

The units are available in two sizes. both sizes can be ordered with or without built-in carbonator.

- Medium — six valve
- Large — eight valve



VANGUARD 245 DISPENSER (EIGHT-FLAVOR UNIT SHOWN)

The Vanguard 245 over the counter, post-mix, beverage dispenser offers the following features:

- Six or eight valves
- Built-in carbonator (optional)
- Removable refrigeration deck
- Removable drip tray
- Removable cladding

## SPECIFICATIONS

### DESIGN DATE

	Unit Requiring Connection To Remote Carbonator	Unit With Built-In Carbonator
Valve	6 or 8 valves	6 or 8 valves
Valve Positions Convertible To Water*	All	No. 3 & No. 4 (6 Valves) No. 4, No. 7 & No. 8 (8 Valves)
Nominal Ice Bank Weight	27 kg (50 pounds)	27 kg (50 pounds)
Water Bath Capacity (no ice bank)	80 L (21.25 gal.)	78 L (20.5 gal.)
Overall Height	788 mm (31 in)	788 mm (31 in)
Overall Width	622 mm (24-1/2 in)	622 mm (24-1/2 in)
Overall Depth	746 mm (29-3/8 in)	746 mm (29-3/8 in)
Counter Weight (empty water bath)	87.7 kg (193 lbs.)	97.8 kg (215 lbs.)
Shipping Weight	109 kg (240 pounds)	116 kg (255 pounds)
Counter Weight (filled water bath)	97.7 kg (215 pounds.)	104.6 kg (230 pounds)
* valves numbered right to left facing the front of the dispenser		

### PART NUMBER

#### Unit requiring connection to Remote carbonator

six-flavor unit (115 VAC, 60 Hz)	417306660XX
eight-flavor unit (115VAC, 60Hz)	417308660XX
six-flavor unit (208-230 VAC, 60 Hz)	477306660XX
eight-flavor unit (208-230 VAC, 60 Hz)	477308660XX
six-flavor unit (230 VAC, 50 Hz)	497306660XX
eight-flavor unit (230 VAC, 50 Hz)	497308660XX

#### Unit with built-in carbonator

six-flavor unit (230 VAC, 50 Hz)	497316660XX
eight-flavor unit (230 VAC, 50 Hz)	497318660XX

### CAPABILITY

Dispensing rate : 12 OZ. drinks 4 / min. or fewer 1000

\* NOTE: Number of drinks dispensed 4° C ( 40° F ) or below @ 24 ° C ( 75° F ) syrup and water inlet temperature and 24° C ( 75° F ) ambient.

## MISCELLANEOUS INFORMATION

Refrigerant.....	404A
Compressor HP.....	3/4 H.P
Standard Valve.....	FFV, LVV
Cup Clearance.....	300 mm (11-3/4 inches) 197 mm (7-3/4 inches) optional
Agency Listing.....	CE, ETL, UL
Electronic Controls.....	Electronic ice bank and liquid level control

## THEORY OF OPERATION

### UNIT REQUIRING CONNECTION TO REMOTE CARBONATOR

**NOTE: The unit is factory set to dispense non-carbonated water and carbonated water as per customer's requirement. It is available to convert carbonated waters to non-carbonated water valve(s). Non-carbonated water dispensing valve(s) may be converted to also dispense carbonated drink(s).**

A CO<sub>2</sub> cylinder delivers carbon dioxide (CO<sub>2</sub>) gas through adjustable CO<sub>2</sub> regulators to the applicable syrup tanks or bag-in-box syrup pumps and also the remote carbonator. Plain water enters the remote carbonator water tank and is carbonated by CO<sub>2</sub> gas pressure also entering the water tank. When dispensing valve is opened, CO<sub>2</sub> gas pressure exerted upon the applicable syrup tank contents or bag-in-box syrup pump pushes syrup from the syrup supply, through the Unit cooling coils, and on to the dispensing valve.

Carbonated water is pushed from the remote carbonator by CO<sub>2</sub> gas head pressure and is pushed through the Unit cooling coils to the dispensing valve. Syrup and carbonated water meet simultaneously at the dispensing valve resulting in a carbonated drink being dispensed. Still (non-carbonated) drink is dispensed in the same manner as the carbonated drink except plain water is substituted for carbonated water.

## UNIT WITH INTEGRAL CARBONATOR

**NOTE: The unit is factory set to dispense non-carbonated water and carbonated water as per customer's requirement. It is available to dispense at most 2 non-carbonated waters ( 6 Flavours ) or 3 non-carbonated waters ( 8 Flavors ) with carbonated water dispensing from the remaining valve(s). Non-carbonated water dispensing valve(s) may be converted to also dispense carbonated drink(s).**

A CO<sub>2</sub> cylinder delivers carbon dioxide (CO<sub>2</sub>) gas through adjustable CO<sub>2</sub> regulators to the applicable syrup tanks or bag-in-box syrup pumps and also the integral (built-in) carbonator. Plain water enters the integral carbonator carbonated water tank and is carbonated by CO<sub>2</sub> gas pressure also entering the water tank. When dispensing valve is opened, CO<sub>2</sub> gas pressure exerted upon the applicable syrup tank contents or bag-in-box syrup pump pushes syrup from the syrup supply, through the Unit syrup cooling coil, and on to the dispensing valve.

Carbonated water is pushed from the integral carbonator carbonated water tank by CO<sub>2</sub> gas head pressure and is pushed through the carbonated water manifold to the dispensing valve. Syrup and carbonated water meet simultaneously at the dispensing valve resulting in a carbonated drink being dispensed.

Still (non-carbonated) drink is dispensed in the same manner as the carbonated drink except plain water is substituted for carbonated water.

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## **NOTE**

## 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.

## DELIVERY INSPECTION AND UNPACKING

### INSPECTION

Upon delivery inspect the unit for damage or irregularities and immediately report problems to the delivering carrier and file a claim with that carrier.

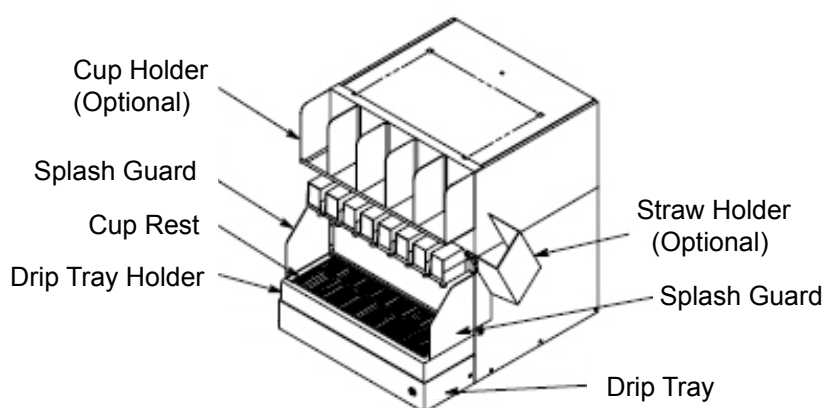
### UNPACKING

- \* Remove shipping tape and other packing material.
- \* Remove four shipping nuts that secure the drop-in refrigeration assembly in the lower cabinet.
- \* Unpack the loose parts and make sure all items are present and in good condition.

Item No.	Part No.	Loose Part No.	Quantity
1	560000428 560000429	Cup Rest	1
2	4772	Drip Tray	1
3	4778M	Drip Tray Holder Bracket	2
4	4123	Rear Access Cover	1
5	317784000	Screw, Thread Cutting	6
6	113500000	Drip Tray Drain Hose	1
7	140135000	Clamp, Drip Tray Drain Hose	1
8	560000417	Drip Tray Holder	2
9	188072000	Screw	6
10	569000203D	Service Manual	1
11	560000426	Splash Guard (Left Side)	1
12	560000427	Splash Guard (Right Side)	1
13	as request	Valve Stickers	1 set
14	569000440	Straw Holder (optional)	1
15	560000291	Air Filter (optional)	1
16	560000439	Cup Lid Holder (optional)	1

## IDENTIFICATION OF LOOSE-SHIPED PARTS

1. Drip tray holder brackets to be installed on the unit and secured with screws, then drip tray holder to be installed on the drip tray holder brackets and secured with screws. Drip tray is to be installed in the drip tray holder, then the cup rest is to be installed in the drip tray.
2. Rear access cover is used to cover the rear access hole on back of the unit and secured with screws, thread cutting if drip tray and water tank drain hoses, water tank overflow hose, and the syrup and water source inlet lines to be connected to the unit will not be routed through the access hole.
3. Splash guards are to be installed on the Unit and secured with front access panel retaining screws.
4. Drip tray drain hose is to be connected to the drip tray and secured with Clamp, drip tray drain hose.
5. Cup lid holder (optional) to be installed on the unit as shown.
6. Straw holder (optional) to be installed on the unit as shown.



### LOOSE PART INSTALLATION

## SELECTING LOCATION



**DANGER:** To avoid possible fatal electrical shock or serious injury to the operator, it is required that a GFI (ground fault circuit interrupt) be installed in the electrical circuit for the domestic Units. It is required that an ELCB (earth leakage circuit breaker) be installed in the electrical circuit for the export Units.

This Unit may be installed on a countertop as a self-serve Unit or the Unit may be installed in a drive-through or a center-island installation. Locate the Unit so the following requirements are satisfied.

1. Near a properly grounded electrical outlet with proper electrical requirements. The electrical circuit should be fused at 20-amps (slow blow type fuse) or circuit must be connected through an equivalent HACR circuit breaker. The electrical outlet must be accessible for ease of connecting and disconnecting the Unit power cord. No other electrical appliance should be connected to this circuit. ALL ELECTRICAL WIRING MUST CONFORM TO NATIONAL AND LOCAL ELECTRICAL CODES.



CAUTION: Do not place or store anything on top of the Unit.

2. Clearance above top of the Unit must be open to the ceiling. A minimum clearance of 305 mm (12 inches) must be maintained on the back side of the Unit and a minimum of 150 mm (6 inches) clearance to the nearest obstruction must be maintained on both sides of the Unit. These clearances must be provided to allow for proper air flow through the Unit to cool the refrigeration system. The Unit must be located close to a permanent drain to route and connect the Unit drip tray drain hose.

## INSTALLATION



**CAUTION:** This Unit is intended for indoor installation only. Do not install this Unit in an outdoor environment which would expose it to the outside elements.

### PLACING UNIT IN OPERATING POSITION

The water tank drain hose, drip tray drain hose, and the water tank overflow hose may either be routed out through access hole on back of the Unit or they may be routed down through hole cut in the countertop under front of the Unit. The carbonated water (Unit with integral carbonator), plain water, and the syrup source inlet lines that are to be connected to the Unit may either be routed in through the back access hole or they may be routed up through hole cut in the countertop under front of the Unit. Proceed to applicable installation instructions.

1. Remove Unit front access panel by removing four screws securing the panel, then remove the panel.
2. Install the drip tray holder brackets on front of the Unit and secure with screws installed in the brackets.
3. Install the drip tray holder on the drip tray brackets. Secure drip tray holder to the drip tray holder brackets with two screws.
4. Place the Unit in operating position on the countertop.
5. Out Unit base back access hole - Route water tank drain hose, drip tray drain hose , and water tank overflow hose out Unit base back access hole. The carbonated water, plain water, and the syrup inlet lines that are to be connected to the Unit will be routed through the back access hole up to the front of the Unit for connection to the stainless-steel inlet tubes.
6. Through hole cut in the countertop, cut hole in countertop as indicated, then place Unit in position on the countertop. Cutting hole in the countertop allows routing the drip tray drain hose, water tank drain hose, and the water tank overflow hose down through the hole and syrup and water source inlet lines up through the hole to the stainless-steel inlet tubes on front of the Unit.

Route water tank drain hose, drip tray drain hose and the water tank overflow hose down through hole in the countertop. Install rear access cover over Unit back access hole.

## **CONNECTING DRIP TRAY DRAIN HOSE TO A PERMANENT DRAIN**

**NOTE: Connection of drip tray drain hose to a permanent drain is recommended. Drip tray drain hose routed to a waste container is not recommended due to sanitation and cleaning problems.**

**The drip tray drain hose must be attached to the drain to allow a 76cm (3-inch) air gap between the drain and the end of the hose. All connections must comply with local plumbing codes and health codes.**

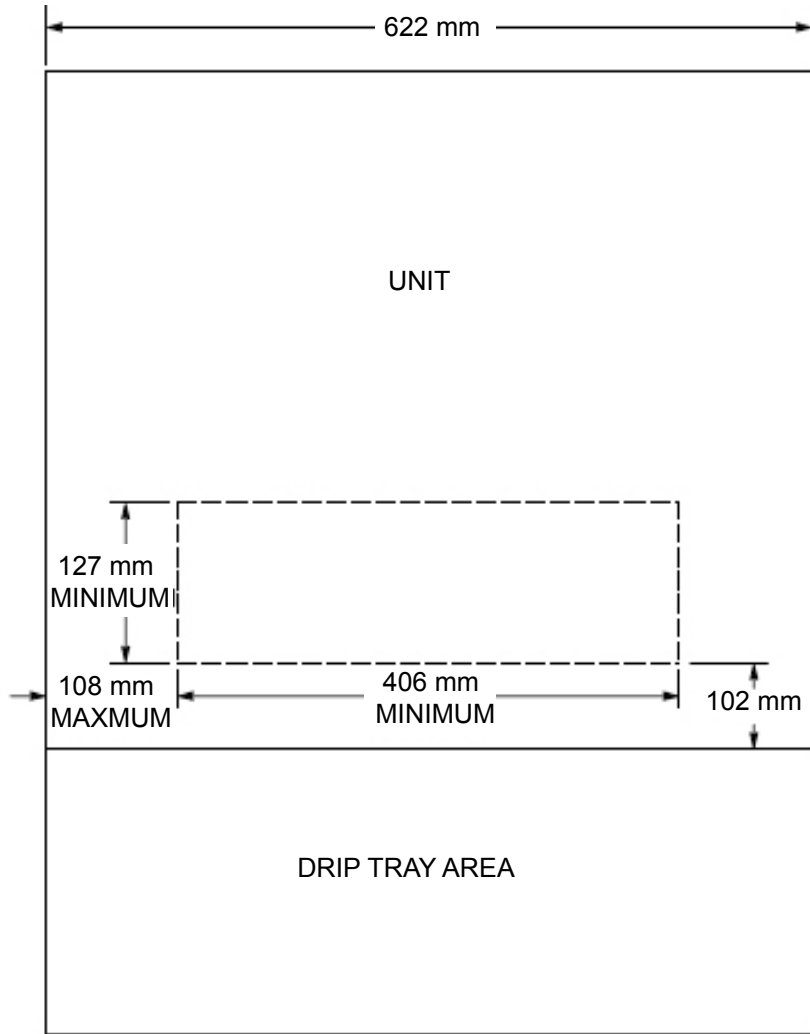
1. Connect drip tray hose to nipple on the drip tray. Secure connection with clamp.
2. Route lower end of drip tray drain hose to and attach to the drain allowing a 76cm (3-inch) air gap between the drain and end of the drain hose.

## **CONNECTING SYRUP SOURCE LINES TO THE UNIT**

**NOTE: The Unit barbed stainless-steel syrup inlet tubes located on the front of the Unit are labeled to identify the dispensing valves they serve. For example, the barbed syrup inlet stainless-steel tube labeled “1” provides syrup to be dispensed from the No. 1 dispensing valve.**

Proceed as follows to connect syrup source lines to the Unit.

1. Route the syrup source lines (numbered for identification) from the syrup source location up to the Unit barbed stainless-steel syrup inlet tubes on front of the Unit.
2. Connect the numbered syrup source lines to the corresponding labeled Unit barbed stainless-steel syrup inlet tubes.



**VANGUARD 245 COUNTER CUTOUT**

## **CONNECTING CARBONATED WATER SOURCE (UNIT REQUIRING CONNECTION TO REMOTE CARBONATOR)**

Proceed as follows to connect carbonated water source line to Unit requiring connection to a remote carbonator.

1. Route carbonated water source line from the remote carbonator up to the Unit .
2. Connect the carbonated water source line to the labeled barbed stainless-steel carbonated water inlet tubes on front of the Unit.

## **CONNECTING PLAIN WATER SOURCE LINE TO UNIT**

**NOTE:** IMI Cornelius Inc; recommends that a water shutoff valve and a water filter be installed in the plain water source to be connected to the Unit. The plain water source water pressure must not be less than 35-psi or more than 45-psi. If water pressure exceeds 45-psi, a water pressure regulator must be used to regulate the water pressure.

The plain water source to the equipment shall be installed with adequate back flow protection to comply with applicable Federal, State, and local codes.

**NOTE:** No.1 dispensing valve is the valve on the left side facing front side of the unit.

## **UNIT REQUIRING CONNECTION TO REMOTE CARBONATOR**

Proceed as follows to connect plain water source line to No. 3 (six-flavor Unit) or No. 4 (eight-flavor Unit) dispensing valve on Unit requiring connection to a remote carbonator.

1. Route plain water source line from plain water source up to the Unit.
2. Connect plain water source line to barbed stainless-steel plain water inlet tube labeled "WTR 3" (six-flavor Unit) or "WTR 4" (eight-flavor Unit) on front of the Unit.

## **UNIT WITH INTEGRAL (BUILT-IN) CARBONATOR**

Proceed as follows to connect plain water source line to Unit with an integral (built-in) carbonator.

1. Route plain water source line from plain water source up to the Unit.
2. Connect plain water source line to barbed stainless-steel plain water inlet tubes for No. 3 and 4 (six-flavor Unit) dispensing valves or No. 4 ,7 and 8 (eight-flavor Unit) dispensing valves.

## CONNECTING PLAIN WATER SOURCE LINE TO DESIRED DISPENSING VALVES

1. Route plain water source line from plain water source up to the Unit.
2. Connect the plain water source line to the desired labeled stainless-steel water inlet tube(s) on front of the Unit.

## CONNECTING CO<sub>2</sub> SOURCE LINE (UNIT WITH INTEGRAL CARBONATOR)

Proceed as follows to connect CO<sub>2</sub> source line to Unit with integral (built-in) carbonator.

1. Route CO<sub>2</sub> source line, connected to an adjustable CO<sub>2</sub> regulator, up to the Unit.
2. Connect CO<sub>2</sub> source line to CO<sub>2</sub> check valve on end of the Unit CO<sub>2</sub> inlet tube labeled "CO<sub>2</sub>".

## SEALING UNIT BASE TO COUNTERTOP

**NOTE: An alternate arrangement to avoid sealing the Unit to the countertop as described below, would be to install the optional Leg Kit to raise the Dispenser up off the countertop.**

To comply with NSF International (NSF) requirements within the United States, the Unit base must be sealed to the countertop and all access holes in the Unit base must be sealed with permagum or an equivalent sealant material. Proceed as follows to seal the Unit base to the countertop.

1. Tilt the Unit up to expose the bottom of it's base.
2. Liberally apply silastic sealant (such as Dow Corning RTV 731 or equivalent) on Unit base bottom edges.

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

3. Lower the Unit into operating position on the countertop to complete seal from the Unit base to the countertop.
4. Apply additional sealant around bottom of the Unit base. The seal must have a minimum radius of 1/2-inch (12.7 MM) to prevent crevices and to ensure a complete seal.
5. Seal all access holes to the Unit base with permagum or an equivalent sealant material.

## CO<sub>2</sub> REGULATORS ADJUSTMENTS



WARNING: CO<sub>2</sub> displaces oxygen. Strict attention must be observed in the prevention of CO<sub>2</sub> (carbon dioxide) gas leaks in the entire CO<sub>2</sub> and soft drink system. If a CO<sub>2</sub> 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<sub>2</sub> gas will experience tremors which are followed rapidly by loss of consciousness and suffocation.

### ADJUSTING CARBONATOR CO<sub>2</sub> REGULATOR

#### *UNIT REQUIRING CONNECTION TO A REMOTE CARBONATOR*

Adjust CO<sub>2</sub> regulator (regulator controls carbonator CO<sub>2</sub> pressure) as instructed in manual provided with the remote carbonator.

#### *UNIT WITH INTEGRAL (BUILT-IN) CARBONATOR*

Adjust CO<sub>2</sub> regulator (regulator controls Unit built-in carbonator CO<sub>2</sub> pressure) to a nominal 80-psi. CO<sub>2</sub> inlet pressure to the carbonator must not exceed 125-psi.

### ADJUSTING SYRUP SUPPLIES CO<sub>2</sub> REGULATOR

#### *SUGAR SYRUP SUPPLIES SECONDARY CO<sub>2</sub> REGULATOR*

Adjust syrup tanks CO<sub>2</sub> regulator to a minimum of 45-psi.

#### *LOW-CALORIE (DIET) SYRUP TANK SECONDARY CO<sub>2</sub> REGULATOR*

Adjust low-calorie (diet) syrup tank secondary CO<sub>2</sub> 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<sub>2</sub> pressure may cause low-calorie syrup carbonation resulting in foam.

#### *SYRUP PUMPS (BAG-IN-BOX SYSTEM) CO<sub>2</sub> OR COMPRESSED AIR REGULATOR*

Adjust the syrup pumps CO<sub>2</sub> regulator or compressed air regulator to 70-psi. **DO NOT EXCEED MAXIMUM PRESSURE SPECIFIED ON THE SYRUP PUMPS.**

## FILL WATER TANK AND START THE REFRIGERATION SYSTEM

1. Make sure plug in end of the water tank drain hose is secure.

**NOTE: Use a low-mineral-content water where a local water problem exists.**

2. Remove plug from drop-in refrigeration assembly platform water fill hole. Fill the water tank with clean water until water flows out of the water tank overflow hose. USE A LOW-MINERAL-CONTENT WATER WHERE A LOCAL WATER PROBLEM EXISTS.
3. Install plug in the water fill hole.
4. Unit with integral (built-in) carbonator—Activate plain water and CO<sub>2</sub> supplies to the Unit. Make sure CO<sub>2</sub> inlet pressure to the carbonator is adjusted to a nominal 80-psi. CO<sub>2</sub> inlet pressure to the carbonator must not exceed 125-psi.



**WARNING:** The Unit must be electrically grounded to avoid possible fatal electrical shock or serious injury to the operator. The power cord is equipped with a three-prong plug. If a three-hole (grounded) electrical outlet is not available, use an approved method to ground the Unit.

5. Place dispensing valves keyed lock-out switch on side of the Unit in the “OFF” position.
6. 60 Hz Units.  
Make sure Unit power switch (if applicable) is in “ON” position.
7. Plug the Unit power cord into an electrical outlet with the proper electrical requirements. The compressor, condenser fan motor, and agitator motor will start and begin forming an ice bank. When full ice bank has been formed, the compressor and condenser fan motor will stop but the agitator motor will continue to operate circulating ice water bath in the water tank.
8. Unit With Integral Carbonator—Place carbonator motor power switch in “ON” position. The Unit integral carbonator water pump motor will start and begin filling the carbonated water tank when the Unit is put into operation. The carbonator water pump motor will stop after the water tank has been filled with carbonated water.

**IMPORTANT: Circulating air, required to cool the refrigeration assembly condenser coil, is drawn in through grille on back of the hood and is exhausted out through grille on top of the hood. For proper cooling of the condenser coil, the hood back grille must be positioned over the condenser coil on back side of the Unit.**

9. Install hood on the Unit and secure with SCREW.

## PREPARATION FOR OPERATION

### INSTALLING FRONT ACCESS PANEL, SPLASH GUARDS, DRIP TRAY, AND CUP REST

1. Place front access panel in position on the Unit.
2. Place right-side splash guard in position on the Unit . Secure splash guard and front access panel to the Unit with two screws that were removed when removing the front access panel. LEAVE SCREWS LOOSE FOR THE TIME BEING.
3. Place left-side splash guard in position on the Unit . Secure splash guard and front access panel to the Unit with other two screws that were removed when removing the front access panel. LEAVE SCREWS LOOSE FOR THE TIME BEING.

4. Install drip tray in drip tray holder as follows:.

**IMPORTANT:** Before installing Dispenser front access panel, make sure the two-wire electrical wiring harness with spade clip terminals on it's end (intended for connection to the push-button plain water dispense switch on the drip tray support) is hanging down out bottom of the Dispenser. This wiring harness must be connected to the plain water dispense switch before installing the drip tray in the drip tray support.

5. Hold drip tray up in position above the drip tray holder.
6. Connect drip tray drain hose to the drip tray and secure with drain hose clamp.
7. Place the drip tray so that the two splash guard steps rest on the drip tray edge, then tip back of the drip tray down and place it's back edge up under bottom of the loosely installed front access panel.
8. When the drip tray is in this position, work the front corners of the drip tray down until the drip tray sits in it's proper position on the the drip tray holder.
9. Tighten all four screws securing the front access panel.
10. Using a silastic sealant (such as Dow Corning RTV 731 or equivalent), seal cracks on outsides of the splash guards where they enter the drip tray holder.
11. Using a silastic sealant (such as Dow Corning RTV 731 or equivalent), Seal cracks on insides of the splash guards where the drip tray and the splash guards surfaces meet. Also seal front edge of the drip tray where it sets on the drip tray holder.

NOTE: Connection of drip tray drain hose to a permanent drain is recommended. Drip tray drain hose routed to a waste container is not recommended due to sanitation and cleaning problems.

The drip tray drain hose must be attached to the drain to allow a 3-inch air gap between the drain and the end of the hose. All connections must comply with local plumbing codes and health codes.

12. Preferably, route the lower end of the drip tray drain hose and connect it to a permanent drain.
13. Place cup rest in the drip tray.

### **INSTALLING OPTIONAL CUP LID HOLDER**

The optional cup lid holder is to be hung on front of the Unit hood as follows:

1. Hold cup lid holder up in position on front of the Unit hood.
2. Pull bottom of the cup lid holder out slightly from the hood and at the same time, insert two pegs on top of the cup lid holder into slots in the plastic grille on top of the hood.
3. Lower bottom of the cup lid holder and allow it to rest on the hood. The cup lid holder is now in place on the Unit.

### **INSTALLING OPTIONAL STRAW HOLDER**

The optional straw holder is to be installed on the Unit as follows:

1. Loosen two screws securing right side of the front access panel to the Unit.
2. Pull the front access panel out from the Unit just far enough to allow inserting the slotted portion of the straw holder in between the front access panel and the Unit. The straw holder must be positioned on the Unit as shown.
3. After properly positioning the straw holder on the Unit, tighten the two screws securing the front access panel which secures the straw holder to the Unit.

## OPERATOR'S INSTRUCTIONS



**WARNING:** Disconnect electrical power to the Unit to prevent personal injury before attempting any internal maintenance. Only qualified personnel should service the internal components or electrical wiring.



**CAUTION:** Do not place or store anything on top of unit.

### OPERATING CONTROLS

#### DISPENSING VALVE OPERATION

##### PUSH BUTTON DISPENSING VALVE

The push button on front of the dispensing valve need only to be pressed and held until the cup or glass is full of product, then release the button.

##### Dispensing Valve With Dispense Lever.

The dispensing valve lever, located below the dispensing valve, need only to be pressed with a cup or glass to dispense product.

##### Portion Control Dispensing Valve.

- A. Place desired amount of ice in appropriate cup or glass.
- B. Hold cup or glass under dispensing valve nozzle.
- C. Press appropriate "S" (Small), "M" (Medium), "L" (Large), or "XL" (Extra Large) dispense switch to dispense product into cup or glass.

**NOTE:** Dispensing of a portion control drink may be stopped by pressing the "CANCEL/POUR" switch. Drinks may be manually dispensed (non-portion control) by pressing and holding the "CANCEL/POUR" switch.

##### UNIT POWER SWITCH (50 Hz UNITS EXCLUDED)

The Unit power switch, must be in "ON" position before the Unit will operate.

## **DISPENSING VALVES KEYED LOCK-OUT SWITCH**

The dispensing valves keyed lock-out switch, located on side of the Unit (see applicable Figure 7 or 8), must be in the “ON” (vertical) position to operate the electric dispensing valves. The keyed lock-out switch in the “OFF” (horizontal) position turns off electrical power to the dispensing valves only but the refrigeration system will continue to operate.

## **DAILY PRE-OPERATION CHECK**

1. The CO<sub>2</sub> supply should be checked daily to make sure there is an adequate supply of CO<sub>2</sub>. If necessary, replenish the CO<sub>2</sub> supply.
2. Make sure there is sufficient syrup supply. If necessary, replenish the syrup supply.
3. Make sure the drip tray is clean and clean cup rest is in place in the drip tray.

## **UNIT OPERATION**

1. Make sure the Unit power switch (if applicable) is in the “ON” position.
2. Make sure the dispensing valves keyed lock-out switch, located on side of the Unit, is in the “ON” (vertical) position.
3. Hold cup or glass under the dispensing valve nozzle, then activate the valve to dispense product.

## **CLEANING AND SANITIZING**

### **DAILY CLEANING OF UNIT**

Daily cleaning procedure for the Unit should be performed at the end of daily operation as instructed in SERVICE AND MAINTENANCE section of this manual.

### **SANITIZING SYRUP SYSTEMS**

The syrup systems should be sanitized every 90-days following Sanitizer Manufacturer’s recommendations as instructed in SERVICE AND MAINTENANCE section of this manual. The sanitizing procedures should be performed by a qualified Service Person.

## CHECKING DROP-IN REFRIGERATION ASSEMBLY CONDENSER COIL FOR RESTRICTIONS



**CAUTION:** Circulating air, required to cool the refrigeration assembly condenser coil, is drawn in through grille on back of the hood and is exhausted out through grille on top of the hood. Restricting air in or out of the Unit will decrease the refrigeration system cooling efficiency. Failure to clean, and allowing the condenser coil to become clogged, will cause the refrigeration system to overheat which will eventually result in refrigeration compressor failure and will automatically void the factory warranty.

For proper cooling of the condenser coil, the hood back grille must be positioned over the condenser coil on back side of the unit.

Area on top and back side of the hood must be kept free of obstructions at all times. Make sure nothing is stored on top of the hood. The Condenser coil must be cleaned every 30-days as instructed in SERVICE AND MAINTENANCE section of this manual to maintain proper cooling of the condenser coil. The condenser coil cleaning procedure should be performed by a qualified Service Person.

## CHECKING ICE WATER BATH

A “gurgle” heard from the Unit indicates the water level in the water tank is low and more water should be added for maximum product cooling. Water should be added to the water tank as instructed in SERVICE AND MAINTENANCE section. This procedure should be performed by a qualified Service Person.

## CARBONATOR WATER PUMP YEARLY MAINTENANCE OR AFTER WATER SYSTEM DISRUPTIONS

### UNIT REQUIRING CONNECTION TO REMOTE CARBONATOR

The remote carbonator water pump water inlet strainer screen and the liquid double check valve must be inspected and cleaned by a qualified Service Person at least once a year under normal circumstances and after any water system disruption (plumbing work, earthquake, etc.). Refer to manual provided with the carbonator for the liquid double check valve inspection and cleaning procedure.

## **UNIT WITH INTEGRAL (BUILT-IN) CARBONATOR**

The water pump water strainer screen and the liquid double check valve must be inspected and cleaned as instructed at least once a year under normal circumstances and after any water system disruption (plumbing work, earthquake, etc.). Refer to SERVICE AND MAINTENANCE section of this manual for inspecting and cleaning procedure.

## **CLEANING CO<sub>2</sub> GAS CHECK VALVES**

The CO<sub>2</sub> gas check valves must be inspected and serviced as instructed at least once a year under normal conditions and after any CO<sub>2</sub> system servicing or disruption. Servicing of the CO<sub>2</sub> gas check valves should be performed by qualified Service Personnel. Refer to SERVICE AND MAINTENANCE section of this manual for CO<sub>2</sub> gas check valve inspecting and servicing procedure.

## SERVICE

**IMPORTANT:** Only qualified personnel should service the internal components or electrical wiring.



**WARNING:** Disconnect electrical power from the Unit to prevent personal injury before attempting any internal maintenance. Only qualified personnel should service the internal components or electrical wiring.

## PREPARING UNIT FOR SHIPPING OR RELOCATING



**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 environment will cause residual water in the Unit to freeze resulting in damage to internal components.

## HOOD AND FRONT ACCESS PANEL REMOVAL

### HOOD REMOVAL



**CAUTION:** Do not place or store anything on top of the Unit.

Remove screw securing the hood, then lift the hood straight up off the Unit to remove.

**IMPORTANT:** Circulating air, required to cool the refrigeration assembly condenser coil, is drawn in through grille on back of the hood and is exhausted out through grille on top of the hood. For proper cooling of the condenser coil, the hood back grille must be positioned over the condenser coil on back side of the Unit.

### FRONT ACCESS PANEL REMOVAL

1. Remove four screws securing the left and right-side splash guards and the front access panel to the Unit, then remove splash guards and access panel. Re-install the left and right-side splash guards and the front access panel by reversing the removal procedures.

## PERIODIC INSPECTION

1. Clean the drop-in refrigeration assembly condenser coil every 30-day as instructed in this manual section. Cleaning the condenser coil should be performed by a qualified Service Person. DO NOT place objects on top of or on back side of the Unit hood. Restricting circulating air in and out of the Unit hood will cause the refrigeration system to overheat.
2. Check the dispensing valves for dripping that indicates leakage and repair as necessary.

## ADJUSTMENTS

### CO<sub>2</sub> REGULATORS ADJUSTMENTS



WARNING: CO<sub>2</sub> displaces oxygen. Strict attention must be observed in the prevention of CO<sub>2</sub> (carbon dioxide) gas leaks in the entire CO<sub>2</sub> and soft drink system. If a CO<sub>2</sub> 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<sub>2</sub> gas will experience tremors which are followed rapidly by loss of consciousness and suffocation.

### ADJUSTING CARBONATOR CO<sub>2</sub> REGULATOR

#### Unit Requiring Connection To A Remote Carbonator

Adjust CO<sub>2</sub> regulator (regulator controls carbonator CO<sub>2</sub> pressure) as instructed in manual provided with the remote carbonator.

#### Unit With Integral (Built-in) Carbonator

Adjust CO<sub>2</sub> regulator (regulator controls Unit built-in carbonator CO<sub>2</sub> pressure) to a nominal 80-psi. CO<sub>2</sub> inlet pressure to the carbonator must not exceed 125-psi.

### ADJUSTING SYRUP SUPPLIES CO<sub>2</sub> REGULATOR

#### Sugar Syrup Tanks Seconary Co<sub>2</sub> Regulator

Adjust syrup tanks CO<sub>2</sub> regulator to a minimum of 45-psi.

### **Low-calorie (Diet) Syrup Tank Secondary CO<sub>2</sub> Regulator**

Adjust low-calorie (diet) syrup tank secondary CO<sub>2</sub> 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<sub>2</sub> pressure may cause low-calorie syrup carbonation resulting in foam.

### **Syrup Pumps (Bag-in-box System)**

Adjust the syrup pumps CO<sub>2</sub> regulator to 70-psi. **DO NOT EXCEED MAXIMUM CO<sub>2</sub> PRESSURE SPECIFIED ON THE SYRUP PUMPS.**

## **ADJUSTING DISPENSING VALVES FOR WATER FLOW RATE**

### **Dole Dispensing Valve**

The dispensing valves adjustable water flow regulators are factory adjusted and should require no further adjustment. If readjustment should become necessary, proceed as follows:

1. Disconnect syrup supply from the dispensing valve the water flow rate check will be performed on.
2. Remove front cover from the dispensing valve by pulling out on the bottom of the cover.
3. Remove top cover from the dispensing valve by loosening screw on front of the valve, then remove the cover.
4. Turn syrup shutoff valve (right-side shutoff valve) to the "CLOSED" (extreme COUNTERCLOCKWISE) position.

NOTE: Do not confuse syrup and water shutoff valves with dispensing valve flow control adjusting screws.

NOTE: The dispensing valve water shutoff valve must be in the fully "OPEN" position.

5. Position volume cup under the dispensing valve nozzle.

6. Dispense from the regular dispensing valve for four-seconds or press “CANCEL/POUR” switch (portion control dispensing valve) and hold for four-seconds.

NOTE: 10-fluid ounces (296 ml) of water should have been dispensed into the volume cup for sugar-based drinks and 7.6-fluid ounces (225-ml) for sugar-free based drinks.

7. If the water volume is correct, proceed with step 8. If the water flow rate is not correct, proceed with step 9.
8. Turn dispensing valve water flow control adjusting screw to the right (CLOCKWISE) to increase water flow rate or to the left (“COUNTERCLOCKWISE”) to decrease the water flow rate.

NOTE: One (1) turn of the water flow control adjusting screw will change the water flow rate approximately 2-fluid ounces (59-ml) per 4-second draw.

9. Repeat steps 2 through 7 for each dispensing valve until all valves are checked and/or calibrated (as required). The water flow rate check is complete.
10. Turn syrup shutoff valve (right-side shutoff valve) to the “OPEN” (extreme CLOCKWISE) position.
11. Install top cover on the dispensing valve and secure with screw.
12. Install front cover on the dispensing valve.
13. Re-connect syrup supply to the dispensing valve

#### CC-1 Dispensing Valve

1. Disconnect syrup supply from the dispensing valve the water flow rate check will be performed on.
2. Remove applicable dispensing valve portion control cover by sliding the cover up and off the top cover.
3. Remove dispensing valve top cover by loosening screw securing the cover, then lift cover up and off the valve.
4. Position volume cup under the dispensing valve nozzle.
5. Press “CANCEL/POUR” switch and hold for four-seconds.

NOTE: 10-fluid ounces (296 ml) of water should have been dispensed into the volume cup for sugar-based drinks and 7.6-fluid ounces (225-ml) for sugar-free based drinks.

6. If the water volume is correct, proceed with step 10. If the water flow rate is not correct, proceed with step 7.
7. Remove plastic cover from the water flow regulator labeled “WATER”.

8. Turn the dispensing valve water flow control adjusting screw **CLOCKWISE** to increase or **COUNTERCLOCKWISE** to decrease the water flow rate.

NOTE: One (1) turn of the water flow control adjusting screw will change the water flow rate approximately 2-fl. ounces (59-ml) per 4-second draw.

9. Install plastic cover on the dispensing valve water flow control.
10. Install dispensing valve top cover and secure with screw.
11. Install dispensing valve portion control cover by sliding the portion control cover down into place on the top cover.
12. Re-connect syrup supply to the dispensing valve.

## CHECKING WATER VOLUME (PORTION-CONTROL DISPENSING VALVES)

### Dole Dispensing Valve

1. Remove front cover from the dispensing valve by pulling out on the bottom of the cover.
2. Remove top cover from the dispensing valve by loosening screw on front of the valve, then remove the cover.
3. Turn syrup shutoff valve (right-side shutoff valve) to the "CLOSED" (extreme **COUNTERCLOCKWISE**) position.

NOTE: The dispensing valve water shutoff valve must be in the fully "OPEN" position. The shutoff valves are not to be used for calibrating. They are to be used for shutting off the syrup and/or water supply.

4. At the same time, press and hold the "S" (small) and the "XL" (extra large) dispense switches on the dispensing valve front cover until the LED indicator light on the cover starts blinking.

A blinking LED indicates the portion control "set mode" has been activated.

5. Place volume cup under the dispensing valve nozzle.
6. Press dispense switch labeled "S" (small) and dispense until water volume noted in the following CHART (for sugar-base or sugar-free diet drink) is dispensed, then release the switch.

DISPENSE SWITCH	CUP SIZE	WATER ONLY LEVEL 4.75:1(SUGAR-BASE SYSRUP DRINK)	WATER ONLY LEVEL 5.25:1(SUGAR-FREE SYRUP DRINK)
"S" (SMALL)	12-fl oz.(355 ml)	6.96-fl oz.(206 ml)	7.07-fl oz.(209 ml)
"M" (MEDIUM)	16-fl oz.(472 ml)	9.60-fl oz.(284 ml)	9.76-fl oz.(289 ml)
"L"(LARGE)	21-fl oz.(621 ml)	13.79-fl oz.(408 ml)	14.02-fl oz.(414 ml)
"XL" (EXTRA LARGE)	32-fl oz.(944 ml)	20.42-fl oz.(604 ml)	20.73-fl oz.(614 ml)

7. Repeat steps 5 and 6, with exception of using the “M” (medium), “L” (large), or “XL” (extra large) dispensing switches, to adjust the remaining water volumes noted in CHART.
8. After completion of checking and adjusting all dispensed water volumes, press and release the “CANCEL/POUR” switch to cancel the portion control “set mode” and return to the portion control mode.
9. Turn the syrup shutoff valve (right-side shutoff valve) to the fully open position.
10. Install dispensing valve top cover and secure with screw.
11. Install dispensing valve front cover.
12. Repeat steps 1 through 11 to adjust the other dispensing valves dispensed water volumes.

#### CC-1 Dispensing Valve

1. Disconnect syrup supply from the dispensing valve the water volume check check will be performed on.
2. At the same time, press and hold the “S” (small) and “XL” (extra-large) dispense switches on the dispensing valve front cover until the LED indicator light on the cover starts blinking. The blinking LED indicates the portion control “set mode” has been activated.
3. Place volume cup under the dispensing valve nozzle.
4. Press dispense switch labeled “S” (small) and dispense until water volume noted in CHART (for sugar-base or sugar-free diet drink) is dispensed, then release the dispense switch.
5. Repeat steps 3 and 4 preceding, with exception of using the “M” (medium), “L” (large), or “XL” (extra large) dispense switches, to adjust the remaining water volumes noted in CHART.
6. After completion of checking and adjusting all dispensed water volumes, press and release the “CANCEL/ POUR” switch to cancel the portion control “set mode” and return to the portion control mode.
7. Re-connect syrup supply to the dispensing valve.

### CHECKING DISPENSING VALVES SYRUP CALIBRATION (BRX)



**CAUTION:** To prevent any water or syrup leaks at the valves, be sure that all valve latches are secure.

NOTE: If water flow or water volume are to be checked, check syrup calibration last.

### Dole Dispensing Valve

1. Make sure all of the CO<sub>2</sub> regulators (carbonator, sugar syrup, and low-calorie (diet) are properly adjusted as instructed.
2. Remove front cover from the dispensing valve by pulling out on the bottom of the cover.
3. Remove nozzle from the dispensing valve by turning the nozzle and pulling down.
4. Place the syrup/water separator on the dispensing valve by pushing up and turning the separator to tighten.
5. Dispense from the regular dispensing valve or press “CANCEL/POUR” switch (portion control dispensing valve) as shown momentarily to fill the separator with syrup.
6. Place brix cup under the syrup/water separator, the large section of the cup under the large round body of the separator and the small section of the cup under the extended arm, which is the syrup tube.
7. Dispense from the regular dispensing valve or press “CANCEL/POUR” switch (portion control dispensing valve) and fill the brix cup to approximately 3/4 of the cup capacity.

NOTE: For non U.S.A. locations, check local specifications for dispensed product water to syrup ratio specifications. The following are dispensed product water-to-syrup ratio specifications for U.S.A. locations.

Sugar syrup dispensed drinks	4.75 parts water to 1 part syrup
Diet (sugar-free) dispensed drinks	5.25 parts water to 1 part syrup

8. If the ratios are correct, proceed to step 10. If the ratios are not correct, proceed to step 9.
9. Turn dispensing valve syrup flow control labeled “S4” (right-side control) adjusting screw to the left (counterclockwise) for more syrup or to the right (clockwise) for less syrup.
10. Remove the syrup/water separator by turning the separator and pulling down.
11. Re-install the nozzle by pushing up and turning the nozzle until it is locked.
12. Repeat steps 6 through 11 preceding until the water-to-syrup ratios are correct on all of the dispensing valves. Syrup calibration is complete.
13. Install dispensing valve front cover.

## CC-1 Dispensing Valve

1. Remove dispensing valve portion control cover by sliding the cover up and off the top cover.
2. Remove dispensing valve top cover by loosening screw securing the cover, then lift cover up and off the valve.
3. Remove nozzle from the dispensing valve by turning and pulling down on the nozzle.
4. Remove syrup diffuser from the dispensing valve by pulling the diffuser down and out of the valve.
5. Place the syrup/water separator on the dispensing valve by pushing up and turning the separator to tighten.
6. Press the portion control cover "CANCEL/POUR" switch momentarily to fill the syrup/water separator with syrup.
7. Place the brix cup under the syrup/water separator— large section of the cup under the large round body of the separator and the small section of the cup under the small tube, which is the syrup tube.
8. Press dispensing valve cover "CANCEL/POUR" switch and fill the brix cup to approximately 3/4-cup capacity, then release the switch.

NOTE: For non U.S.A. locations, check local specifications for dispensed product water to syrup ratio specifications. The following are dispensed product water-to-syrup ratio specifications for U.S.A. locations.

Sugar syrup dispensed drinks	4.75 parts water to 1 part syrup
Diet (sugar-free) dispensed drinks	5.25 parts water to 1 part syrup

9. If the syrup calibrations (brix) ratios are correct, proceed to step 12. If the ratios are not correct, proceed to step 10.
10. Turn the dispensing valve syrup flow control labeled "SYRUP" (right-side control) adjusting screw to the left (counterclockwise) for less syrup or to the right (clockwise) for more syrup.
11. Re-check the dispensing valve syrup calibration and adjust the syrup flow control until the desired water-to-syrup ratio is achieved.
12. Remove the syrup/water separator from the dispensing valve by turning and pulling down on the separator.
13. Re-install the syrup diffuser and nozzle on the dispensing valve.
14. Install the dispensing valve top cover and secure with screw.
15. Install portion control cover on the top cover by sliding the portion control cover down into place on the top cover.

## PORTION CONTROL ADJUSTMENT (DOLE AND CC-1 DISPENSING VALVES)

NOTE: In case of electrical power failure, dispensing valves portion controls have full memory function.

1. At the same time, press and hold the “S” (small) and the “XL” (extra large) dispense switches on the dispensing valve front cover until the LED indicator light on the cover starts blinking.

A blinking LED indicates the portion control “set mode” has been activated.

2. Fill a 12-fl. ounce (355 ml) cup with desired amount of ice, then place cup under the dispensing valve nozzle.

3. Press and hold dispense switch labeled “S” (small) on dispensing valve cover until cup is filled to the desired level, then release the switch.

4. Repeat steps 2 and 3, with exception of using the “M” (medium), “L” (large), or “XL” (extra-large) dispense switches to adjust sizes of the dispensed drinks.

5. Repeat steps 1 through 4 preceding to adjust remaining dispensing valves portion controls for sizes of drinks dispensed.

Any one of the dispensing valves dispensed portion sizes may be re-programmed by at the same time, pressing and holding the “S” (small) and the “XL” (extra-large) dispense switches (activate “set mode”), re-program drink size, then press the “CANCEL/POUR” switch to return to the portion control operation.

Dispensing of a portion control drink may be stopped by pressing the “CANCEL/POUR” switch. Drinks may be manually dispensed (non-portion control) by pressing the “CANCEL/POUR” switch.

## 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.

### WASH 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.
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<sub>2</sub> pressure setting on the syrup tanks CO<sub>2</sub> regulator, then re-adjust CO<sub>2</sub> 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.**

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

#### **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.

### **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) to 100° 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 steps 13 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.

## 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.

## PURGE WATER OUT OF SYRUP SYSTEMS (RESTORE OPERATION)

23. **Syrup Tank Systems**
  - A. Noting syrup tanks CO<sub>2</sub> regulator pressure setting observed in step 4 preceding, readjust CO<sub>2</sub> 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<sub>2</sub> 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.

## **CLEANING DROP-IN REFRIGERATION ASSEMBLY CONDENSER COIL**



**CAUTION:** The refrigeration assembly condenser coil must be cleaned every 30-days. Excessive accumulation of dust, lint, and grease on the condenser coil will restrict air flow through the coil and cause the refrigeration system to overheat. Operating the refrigeration system in an overheated condition will eventually lead to compressor failure and will automatically void the factory warranty. Clean the condenser coil and air filter as follows:

1. Disconnect electrical power from the Unit.
2. Remove screw securing the hood, then lift the hood straight up to remove from the Unit.
3. Vacuum or use a soft brush to clean the condenser coil. If available, use low-pressure compressed air.
4. Clean dust and dirt from around top of the drop-in refrigeration assembly.
5. Install hood on the Unit and secure with screw.
6. Connect electrical power to the Unit.

## **CHECKING ICE WATER BATH**

A “gurgle” heard from the Unit indicates water level in the water tank is low and more water should be added for maximum cooling. Before adding more water, check the ice water bath for cleanliness and check the water tank coils for excessive mineral deposit build-up.

1. Disconnect electrical power from the Unit.
2. Remove screw securing the hood, then lift the hood straight up to remove from the Unit.
3. Remove plug from the drop-in refrigeration assembly platform water fill hole.
4. Using a flashlight, inspect the ice water bath and ice bank for cleanliness. The ice water bath should be clear and the ice bank should be free of foreign particles.
5. If cleaning of the water tank is necessary, refer to CLEANING WATER TANK in this section.
6. Fill the water tank with clean water until water runs out of the water tank overflow hose. USE LOW-MINERAL-CONTENT WATER WHERE A LOCAL WATER PROBLEM EXISTS.
7. Install plug in the drop-in refrigeration assembly platform water fill hole.
8. Install Unit hood and secure with screw.
9. Connect electrical power to the Unit.

## **CLEANING WATER TANK**

1. Disconnect electrical power from the Unit.
2. Remove screw securing the hood, then lift the hood straight up to remove from the Unit.
3. Unplug the drop-in refrigeration assembly and electric dispensing valve power cords.
4. **Unit with integral (built-in) carbonator.**
  - A. Shut off CO<sub>2</sub> and plain water supplies to the Unit.
  - B. Disconnect carbonated water tank ground wire (green with yellow stripe) connector, protruding up B. Disconnect carbonated water tank ground wire (green with yellow stripe) connector, protruding up through hole in drop-in refrigeration assembly deck, from mating ground wire connector on top of the refrigeration assembly deck.
  - C. Disconnect two-conductor wiring harness connector from electrical terminals on top of the carbonated water tank.
  - D. Pull up on the carbonated water tank relief valve ring protruding up through hole in the drop-in refrigeration deck (see Figure 8) to bleed off all pressure from the water tank.
  - E. Disconnect plain water inlet and outlet lines from the carbonator water pump.
5. Extend the water tank drain hose to a waste container or floor drain. Remove plug from end of the drain hose and allow the water tank to drain.

6. Allow the ice bank to melt. Hot water may be used to speed melting.
7. Very carefully, lift the drop-in refrigeration assembly up and out of the Unit.



**CAUTION:** Never use an ice pick or other instrument to remove ice from the drop-in refrigeration assembly evaporator coils. Such practice can result in a punctured refrigeration circuit.

8. Use a fiber brush and carefully clean mineral deposit build-up from the agitator motor shaft and the ice bank sensing bulb.
9. Wash inside of the water tank and the drop-in refrigeration assembly evaporator coils, then rinse with clean water.
10. Install plug in end of the water tank drain hose.
11. Unit with integral (built-in) carbonator.

**IMPORTANT:** For proper alignment when lowering drop-in refrigeration assembly into the Unit lower housing, steel tube welded on top of the carbonated water tank must align with alignment funnel fastened into top of the refrigeration assembly deck. The carbonated water tank ground wire (green with yellow stripe) must also be routed up through hole in the refrigeration assembly deck and be connected to mating ground wire connector on top of the refrigeration assembly deck. *Failure to connect the carbonated water tank ground wire will cause erratic operation of the carbonator water pump motor.*

- A. Referring to previous IMPORTANT note, very carefully, lower drop-in refrigeration assembly down into the Unit lower housing. Make sure carbonated water tank ground wire connector is routed up through hole in the refrigeration assembly deck.
  - B. Connect carbonated water tank ground wire connector to mating ground wire connector on top of the refrigeration assembly deck.
  - C. Connect two-conductor wiring harness connector to electrical terminals on top of the carbonated water tank.
  - D. Connect plain water inlet and outlet lines to the carbonator water pump.
  - E. Restore CO<sub>2</sub> and plain water supplies to the Unit.
12. Remove plug from the drop-in refrigeration assembly platform water fill hole.
  13. Fill the water tank with clean water until water runs out of the water tank overflow hose. USE LOW-MINERAL-CONTENT WATER WHERE A LOCAL WATER PROBLEM EXISTS.

14. Install plug in the drop-in refrigeration assembly platform water fill hole.
15. Plug drop-in refrigeration assembly and electric dispensing valve power cords into their mating connectors.
16. Install Unit hood and secure with screw.
17. Connect electrical power to the Unit.

## **CARBONATOR WATER PUMP YEARLY MAINTENANCE OR AFTER WATER SYSTEM DISRUPTIONS**



**WARNING:** The carbonator water pump water inlet strainer screen and the double liquid check valve must be inspected and cleaned at least once a year under normal circumstances, and after any disruptions (plumbing work, earthquake, etc.) to the water supply system that might cause turbulent (erratic) flow of water through the system. A carbonated water pump with no screen or a defective screen in the strainer would allow foreign particles to foul the double liquid check valve. CO<sub>2</sub> gas could then back flow into the water system and create a health hazard in the water system.

### **UNIT REQUIRING CONNECTION TO REMOTE CARBONATOR**

The remote carbonator water pump water inlet strainer screen and the double liquid check valve must be inspected and cleaned at least once a year under normal circumstances and after any water system disruption (plumbing work, earthquake, etc.). Refer to manual provided with the remote carbonator for servicing procedure.

### **UNIT WITH INTEGRAL (BUILT-IN) CARBONATOR**

The carbonator water pump water inlet strainer screen and double liquid check valve must be inspected and cleaned at least once a year under normal circumstances and after any water system disruption (plumbing work, earthquake, etc.). This service procedure must be performed by a qualified Service Person.

### **SERVICING WATER PUMP WATER INLET STRAINER SCREEN**

1. Disconnect electrical power from the Unit.
2. Shut off CO<sub>2</sub> and plain water supplies to the Unit.
3. Remove screw securing the hood, then lift hood up and off the Unit.

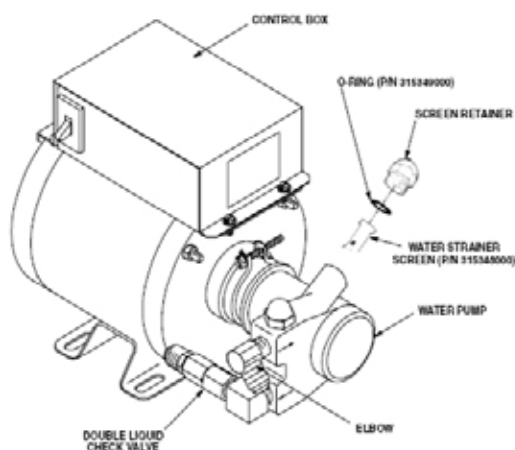
4. Pull up on the carbonated water tank relief valve ring protruding up through the drop-in refrigeration deck to bleed off all CO<sub>2</sub> pressure from the water tank.
5. Loosen screen retainer, then pull screen retainer and strainer screen from the water pump.
6. Pull screen from screen retainer. Clean any sediment from the screen retainer and the water pump screen.
7. Inspect screen for holes, restrictions, corrosion, and other damage. Discard damaged screen.
8. Check O-Ring on the screen retainer. Replace worn or damaged O-Ring.

**NOTE: A screen should always be used, otherwise particles could foul the double liquid check valve.**

9. Install screen in screen retainer, then screw retainer into the water pump and tighten securely.
10. Proceed to Servicing Double Liquid Check Valve and service the double liquid check valve as instructed.

## SERVICING DOUBLE LIQUID CHECK VALVE

1. Service water inlet strainer screen as instructed in previous paragraph before servicing the double liquid check valve.
2. Disconnect plain water outlet line from double liquid check valve outlet, then remove double liquid check valve from the water pump outlet port.
3. Disassemble each check valve as shown in Figure CHECK VALVE ASSEMBLY.
4. Wipe each part with clean lint-free cloth. Inspect each part, especially the ball for burrs, nicks, corrosion, deterioration, and other damage. Discard ball seat and any damaged or suspicious parts and replace with new parts during reassembly.



WATER STRAINER SCREEN AND DOUBLE LIQUID CHECK VALVE

## **CONVERTING STILL (NON-CARBONATED) DRINK DISPENSING VALVE TO DISPENSE A CARBONATED DRINK**

### **UNITS REQUIRING CONNECTION TO REMOTE CARBONATOR**

Non-Carbonated Drink Dispensing Valve(s) can be converted into Carbonated Drink Dispensing Valve(s) by connecting a carbonated water rather than a plain line to the unit plain water line connected to dispensing valve(s).

### **UNIT WITH INTEGRAL (BUILT-IN) CARBONATOR**

Non-Carbonated Drink Dispensing Valve(s) can be converted into Carbonated Drink Dispensing Valve(s) by connecting a carbonated water rather than a plain line to the unit plain water line connected to either No. 3 and No. 4 dispensing valve(s) (six-flavor unit) or the No. 4, No. 7 and No. 8 dispensing valve(s) (eight-flavor unit).

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## **NOTE**

## TROUBLE SHOOTING

**IMPORTANT** -- Only a service person should service internal components or electrical wiring.

**IMPORTANT** -- If repairs are to be made to one of the syrup circuits, disconnect applicable syrup tank and bleed pressure from the system before proceeding.

**IMPORTANT** -- If repairs will be made to the CO<sub>2</sub> or carbonated water systems, disconnect electrical power to the carbonator, shut off CO<sub>2</sub> and water supplies, then bleed systems before proceeding.



**WARNING** — To avoid personal injury disconnect electrical power to the unit before attempting any electrical repairs or working on the internal parts of the unit.

<b>TROUBLESHOOTING UNIT</b>		
<b>Trouble</b>	<b>Probable Cause</b>	<b>Remedy</b>
Adjustment of dispensing valve syrup flow regulator does not increase to desired water-to syrup ratio.	<ol style="list-style-type: none"> <li>1. No syrup supply.</li> <li>2. Syrup supply container not securely connected into system.</li> <li>3. Tanks System-Syrup tanks secondary CO<sub>2</sub> regulator out of adjustment.  Bag-in-Box System-Primary CO<sub>2</sub> regulator out of adjustment.</li> <li>4. Inoperative dispensing valve syrup flow control.</li> <li>5. Tapered washer inside tube swivel nut connection distorted from being over tightened restricting syrup flow.</li> </ol>	<ol style="list-style-type: none"> <li>1. Replenish syrup supply.</li> <li>2. Securely connect syrup supply container into syrup system.</li> <li>3. Adjust syrup tanks secondary CO<sub>2</sub> regulator as instructed.  Adjust primary CO<sub>2</sub> regulator as instructed.</li> <li>4. Repair dispensing valve syrup flow control.</li> <li>5. Replace tapered gasket. Make sure it seats properly.</li> </ol>

<b>TROUBLESHOOTING UNIT</b>		
<b>Trouble</b>	<b>Probable Cause</b>	<b>Remedy</b>
Only syrup dispensed.	<p>1. <i>Remote Carbonator Unit</i> Plain water inlet supply line shutoff valve closed.</p> <p>Carbonator not operating.</p> <p>2. <i>Integral (built-in) Carbonator Unit</i> Unit plain water inlet supply line shut off valve closed.</p> <p>Carbonator CO<sub>2</sub> regulator not properly adjusted.</p> <p>Inoperative carbonator liquid level control module or water tank liquid level probe.</p> <p>Inoperative water pump or water pump motor.</p>	<p>1. Open plain water inlet supply line shutoff valve.</p> <p>Refer to manual provided with carbonator.</p> <p>2. Open plain water inlet supply line shutoff valve.</p> <p>Adjust carbonator CO<sub>2</sub> regulator as instructed.</p> <p>Replace inoperative component.</p> <p>Replace inoperative pump or motor.</p>
Water-to-syrup "Ratio" too low or too high.	<p>1. Dispensing valve syrup flow regulator not properly adjusted.</p> <p>2. <i>Syrup Tanks System</i> CO<sub>2</sub> gas pressure to syrup tanks insufficient to push syrup out of tank.</p> <p><i>Bag-In-Box System</i> CO<sub>2</sub> gas pressure to syrup pumps insufficient to operate pumps.</p>	<p>1. Adjust Water-to-Syrup "Ratio" as instructed.</p> <p>2. Adjust CO<sub>2</sub> regulator for syrup tanks as instructed.</p> <p>Adjust syrup pumps CO<sub>2</sub> regulator as instructed.</p>

<b>TROUBLESHOOTING UNIT</b>		
<b>Trouble</b>	<b>Probable Cause</b>	<b>Remedy</b>
Adjustment of dispensing valve syrup flow regulator does not decrease to desired water-to-syrup ratio.	1. Dirty or inoperative dispensing valve syrup flow control.	1. Disassemble and clean dispensing valve syrup flow control.
Dispensed product carbonation too low.	1. Primary CO <sub>2</sub> regulator out of adjustment for existing water conditions or temperature.  2. Air in carbonator water tank.  3. Water, oil, or dirt, in CO <sub>2</sub> supply.  4. CO <sub>2</sub> supply depleted.	1. Adjust primary CO <sub>2</sub> regulator. As instructed.  2. Vent air out of carbonator water tank through relief valve.  3. Remove contaminated CO <sub>2</sub> . Clean CO <sub>2</sub> system (lines, regulator, etc.) using a mild detergent. Install a clean CO <sub>2</sub> supply.  4. Replenish CO <sub>2</sub> supply.
Dispensed product comes out of dispensing valve clear but foams in cup or glass.	1. Oil film or soap scum in cups or glasses. 2. Ice used for finished drink is sub-cooled.	1. Use clean cups or glasses. 2. Do not use ice directly from freezer. Allow ice to become "wet" before using. (refer to following NOTE).
<p><b>NOTE:</b> Crushed ice also causes dispensing problems. When finished drink hits sharp edges of ice, carbonation is released from dispensed drink.</p>		

<b>TROUBLESHOOTING UNIT</b>		
<b>Trouble</b>	<b>Probable Cause</b>	<b>Remedy</b>
<p>Dispensed product produces foam as it leaves dispensing valve.</p>	<ol style="list-style-type: none"> <li>1. Recovery rate of refrigeration of system exceeded, ice bank depleted.</li> <li>2. Primary CO<sub>2</sub> regulator pressure too high for existing water conditions or temperature.</li> <li>3. Tanks System-Syrup over-carbonated with CO<sub>2</sub> as indicated by bubbles in inlet syrup lines leading to unit.</li> <li>4. Dispensing valve restricted or dirty.</li> <li>5. Tapered gasket inside carbonated water line swivel nut connector distorted restricting carbonated water flow.</li> <li>6. Dirty water supply.</li> <li>7. Finished drink above 4.4° C (40° F).</li> </ol>	<ol style="list-style-type: none"> <li>1. Allow ice bank to recover.</li> <li>2. Reduce primary CO<sub>2</sub> regulator pressure settings.</li> <li>3. Remove syrup tanks quick disconnects. Relieve tank CO<sub>2</sub> pressure as many times as necessary to remove over-carbonation.</li> <li>4. Sanitize syrup system as instructed in Service and Maintenance Manual.</li> <li>5. Replace tapered gasket. Make sure it is properly seated.</li> <li>6. Check water filter. Replace cartridge.</li> <li>7. Check refrigeration system.</li> </ol>

<b>TROUBLESHOOTING UNIT</b>		
<b>Trouble</b>	<b>Probable Cause</b>	<b>Remedy</b>
No product dispensed.	<ol style="list-style-type: none"> <li>1. Dispensing valves keyed lock-out switch in "OFF" position.</li> <li>2. No electrical power to dispenser.</li> <li>3. Disconnected dispensing valves power cord.</li> <li>4. Disconnected or broken wiring to dispensing valve.</li> <li>5. Inoperative transformer or dispensing valve solenoids.</li> </ol>	<ol style="list-style-type: none"> <li>1. Place keyed lock-out switch in "ON" position.</li> <li>2. Plug in dispenser power cord or check for blown power fuse or tripped circuit breaker.</li> <li>3. Connect dispensing valves power cord.</li> <li>4. Connect or replace wiring.</li> <li>5. Replace inoperative part.</li> </ol>
Dispensed product carbonation too low.	<ol style="list-style-type: none"> <li>1. Primary CO<sub>2</sub> regulator out of adjustment for existing water conditions or temperature.</li> <li>2. Air in carbonated water tank.</li> <li>3. water, oil or dirt in CO<sub>2</sub> supply.</li> </ol>	<ol style="list-style-type: none"> <li>1. Adjust primary CO<sub>2</sub> regulator as instructed.</li> <li>2. Vent air from carbonated water tank by dispensing from No. 1 dispensing valve to make carbonator water pump motor cycle on.</li> <li>3. Have service person remove contaminated CO<sub>2</sub> supply, then clean CO<sub>2</sub> system (lines, regulator, etc.) using a mild detergent. install a clean CO<sub>2</sub> supply.</li> </ol>

<b>TROUBLESHOOTING CARBONATOR</b>		
<b>Trouble</b>	<b>Probable Cause</b>	<b>Remedy</b>
Only carbonated water dispensed.	<ol style="list-style-type: none"> <li>1. Syrup supply container not securely connected into syrup system.</li> <li>2. No syrup supply.</li> <li>3. Bag-in-Box System – Inoperable syrup pump. Tanks System –Syrup tanks CO<sub>2</sub> regulator not properly adjusted.</li> <li>4. Inoperable dispensing valve.</li> <li>5. Dispensing valve syrup flow control not properly adjusted.</li> </ol>	<ol style="list-style-type: none"> <li>1. Securely connect syrup supply container into syrup system.</li> <li>2. Replenish syrup supply.</li> <li>3. Replace inoperable syrup pump. Adjust syrup tanks CO<sub>2</sub> regulator as instructed.</li> <li>4. Repair dispensing valve.</li> <li>5. Adjust dispensing valve syrup flow control (Water-to-Syrup ratio) as instructed.</li> </ol>
Carbonator pump not operating	<ol style="list-style-type: none"> <li>1. 3 minutes run limit exceeded.</li> <li>2. Water supply to carbonator disrupted.</li> <li>3. Carbonated water tank water level probe electrical wiring disconnected.</li> <li>4. Inoperative carbonated water tank water level probe.</li> <li>5. Inoperative carbonator pump or motor.</li> <li>6. Inoperative control board.</li> </ol>	<ol style="list-style-type: none"> <li>1. Turn power OFF for 15 second.</li> <li>2. Correct water supply problem.</li> <li>3. Connect electrical wiring to water level probe (see note).</li> <li>4. Replace probe (see note).</li> <li>5. Replace pump or motor.</li> <li>6. Replace control board.</li> </ol>

<b>TROUBLESHOOTING REFRIGERATION SYSTEM</b>		
<b>Trouble</b>	<b>Probable Cause</b>	<b>Remedy</b>
Refrigeration compressor does not operate.	<ol style="list-style-type: none"> <li>1. Ice bank sufficient.</li> <li>2. No water in water tank.</li> <li>3. Control board power switch on top of unit in "OFF" position.</li> <li>4. Unit power cord unplugged, or drop-in refrigeration assembly power cord unplugged.</li> <li>5. Ice sensor electrically disconnected.</li> <li>6. No power source (blown fuse or tripped circuit breaker).</li> <li>7. Low/high voltage.</li> <li>8. Loose, disconnected, or broken wiring .</li> <li>9. Overload protector cut out; overheated compressor. Condenser fan motor not operating as required.</li> <li>10. Inoperative overload protector or start relay.</li> <li>11. Inoperative ice bank probe.</li> <li>12. Inoperative control</li> </ol>	<ol style="list-style-type: none"> <li>1. No refrigeration called for.</li> <li>2. Fill water tank with water as instructed.</li> <li>3. Place control board power switch in "ON" position (will be a built-in 3-minute time delay before refrigeration compressor starts).</li> <li>4. Plug in power cord.</li> <li>5. Electrically connect or replace inoperable sensor.</li> <li>6. Replace fuse or reset circuit breaker. ( Note: Fuse or circuit breaker are not part of unit).</li> <li>7. Voltage must be 103 volts (115VAC Unit) or 208 Volts (220 VAC Unit).</li> <li>8. Tighten connections or replace broken wiring.</li> <li>9. Compressor will cool enough to restart, Do not overdraw cooling capacity of unit. Refer to "Condenser Fan Motor Not Operating " in this section.</li> <li>10. Replace inoperative part.</li> <li>11. Replace ice bank probe.</li> <li>12. Replace control board.</li> </ol>

<b>TROUBLESHOOTING REFRIGERATION SYSTEM</b>		
<b>Trouble</b>	<b>Probable Cause</b>	<b>Remedy</b>
Compressor will not stop after sufficient ice bank is produced.	<ol style="list-style-type: none"> <li>1. Ice bank probe location incorrect.</li> <li>2. Ice temperature sensor inoperative.</li> <li>3. Control board inoperative.</li> </ol>	<ol style="list-style-type: none"> <li>1. Place probe in proper location.</li> <li>2. Replace ice temperature sensor.</li> <li>3. Place power switch in ON position.</li> </ol>
Compressor operates continuously but does not form sufficient ice bank.	<ol style="list-style-type: none"> <li>1. Cooling capacity is exceeded by overdrawing.</li> <li>2. Unit located in excessively hot area or air circulation through condenser coil is restricted.</li> </ol>	<ol style="list-style-type: none"> <li>1. Reduce amount of drinks drawn per given time.</li> <li>2. Relocate unit or check and if necessary, clean condenser coil as instructed.</li> </ol>
Agitator motor not operating	<ol style="list-style-type: none"> <li>1. No power source (blown fuse or tripped circuit breaker).</li> <li>2. Agitator motor propeller obstructed.</li> <li>3. Low Voltage.</li> <li>4. Loose, disconnected, or broken wiring.</li> <li>5. Inoperative agitator motor.</li> </ol>	<ol style="list-style-type: none"> <li>1. Replace fuse or reset circuit breaker.  (NOTE: Fuse or circuit breaker are not part of unit).</li> <li>2. Remove obstruction.</li> <li>3. Voltage must be 103 VAC (115 volt unit ) or 203 VAC (230 VAC unit) at compressor terminals when compressor is trying to start.</li> <li>4. Tighten connections or replace broken wiring.</li> <li>5. Replace agitator motor.</li> </ol>

## COMPONENT SERVICE

The following are procedures for replacing the major components of the Vanguard.

### CARBONATOR PUMP REPLACEMENT

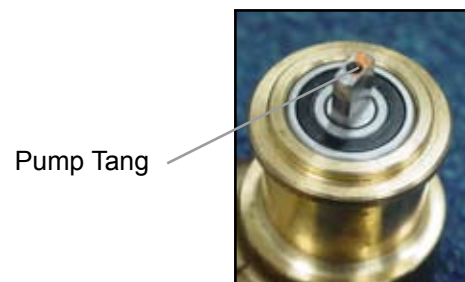
1. Shut off water and CO<sub>2</sub> at their sources.
2. Remove the hood by removing screws on the top and lifting up.
3. Depressurize carbonator by dispensing drinks from any valve.
4. Disconnect power to the unit.
5. Disconnect water in and out lines.

6. Loosen the V - band clamp and remove pump.



7. Install new pump by reversing this procedure.

**NOTE** -- Be sure there is anti-seize compound on the pump



## PUMP MOTOR REPLACEMENT

1. Shut off water and CO<sub>2</sub> at their sources.
2. Remove the hood by removing screws on the top and lifting up.
3. Depressurize carbonator by dispensing drinks from any valve.
4. Disconnect power to the unit.
5. Disconnect water in and out lines.
6. Unplug motor harness.
7. Remove control box.
8. Loosen the V - band clamp and remove pump.

Pump V - Band



9. Remove nuts from bolts and remove the motor.

Mounting Bolts



10. Install new motor by reversing this procedure.

**NOTE** -- Be sure there is anti-seize compound on the pump drive tang.

Pump Tang



## AGITATOR MOTOR REPLACEMENT

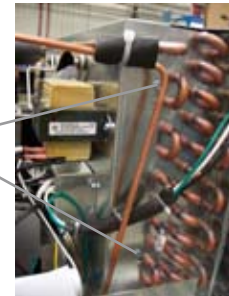
1. Disconnect power to the unit.
2. Shut off water and CO<sub>2</sub> at their sources.
3. Remove the hood by removing screws on the top and lifting up.

4. Remove carbonator cover by removing mounting bolts and lifting up.



Mounting Bolts

5. Remove mounting screws of condenser kit and lift up slightly.



Mounting  
Screws

6. Remove motor by reassembling mounting screws.



Mounting  
Screws

7. Install new motor by reversing this procedure.

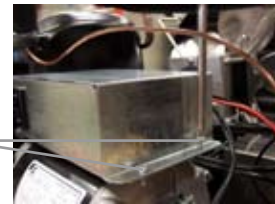
## CONTROLLER BOARD REPLACEMENT

1. Shut off water and CO<sub>2</sub> at their sources.
2. Remove the hood by removing screws on the top and lifting up.

3. Remove controller cover by following,

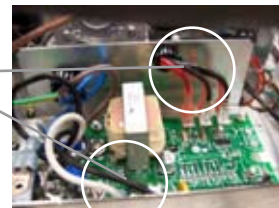
- remove mounting screw
- lift up slightly and push back controller cover

Mounting  
Screws



4. Unplug all connectors.

Connectors



5. Remove mounting screws.

Mounting  
Screws



6. Install new controller board by reversing this procedure.

## CONDENSER FAN MOTOR REPLACEMENT

1. Shut off water and CO<sub>2</sub> at their sources.
2. Remove the hood by removing screws on the top and lifting up.

3. Disconnect power to the unit.

4. Remove cover by removing two mounting screws.

Mounting screws of cover



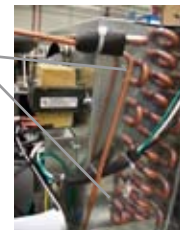
5. Unplug harness.

Harness



6. Lift up condenser assembly cover by loose four mounting screws.

Mounting screws of condenser assembly



7. Remove four mounting screws of motor bracket.

Mounting screws of motor bracket



8. remove fan motor by disassembling three motor mounting screws.

Mounting screws of motor



9. Install new fan motor by reversing this procedure.



## ILLUSTRATED PARTS LIST

### VANGUARD 245 POST-MIX DISPENSER REMOTE

Item No.	Part No.	Names
1	560002628	Tank Assy.
2	4083	Harn Wire (Not Shown)
3	71827615	Swich KeyLock
4	560000477	Coil, Plain Water
5	4924	Panel Val 6-Flaver
	4228	Panel Val 8-Flaver
6	4123	Cover Access Back
7	140135000	Clamp Hose, Tank Drain
8	113500000	Hose, Tank Drain
9	4173	Insulation Tank
10	560001878	Coil Wtr No.2 6-Flaver
	560001881	Coil Wtr No.2 and 3 8-flavor
11	560001874	Coil Wtr No.3 6-Flavor
	560001876	Coil Wtr No.4 8-Flavor
12	560001886	Retainer Coil
13	560001882	Coil Wtr No.4 and 5 6-Flavor or No. 5 and 6 8-Flavor
14	4763	Retainer Coil Front
15	560001875	Coil Wtr No.6 6-Flavor
	560001877	Coil Wtr No.7 and 8 8-Flavor
16	560000862	Coil Syr Assy RH
17	560001880	Coil Wtr No.1
18	188072000	Screw SM 10 TRPH 16
19	319944000	Hose Clamp
20		Hood Assy.
21	150447000	Washer, Drain Fitting

Item No.	Part No.	Names
22		Chassis Rfg 120V 60HZ Chassis Rfg 240V 60HZ Chassis Rfg 230V 50HZ
23	317015000	O-Ring.239 I.D.
24		Dispensing Valve Assy.
25	318308000	Screw
26	560000419	Panel, Access
27	560000428	Cup Rest (8-Flavor)
	560000429	Cup Rest (6-Flavor)
28	77150200	Fitg Drain 1/2-20
29	77150300	Fitg Drain L 1/2-Barb
30	4772	Drip Tray
31	4778	Brkt Mtg Drip Tray
32	140135000	Clamp, Drip Tray Drain Hose
33	113500000	Hose, Drip Tray Drain
34	331309000	Screw
35	188072000	Screw
36	200498003	Hex Nut
37	186207000	Washer
38	320240000	Screw
39	317784000	Screw
40	560000417	Wrap, Drip Tray
41	560000426	Splash Guard, Left-Hand
	560000427	Splash Guard, Right-Hand
42	300479000	Button Plug
43	560000439	Holder, Cup Lid(Optional)
44	560000440	Holder, Straw(Optional)

# ILLUSTRATED PARTS LIST

## VANGUARD 245 POST-MIX DISPENSER (COLD CARBONATED)

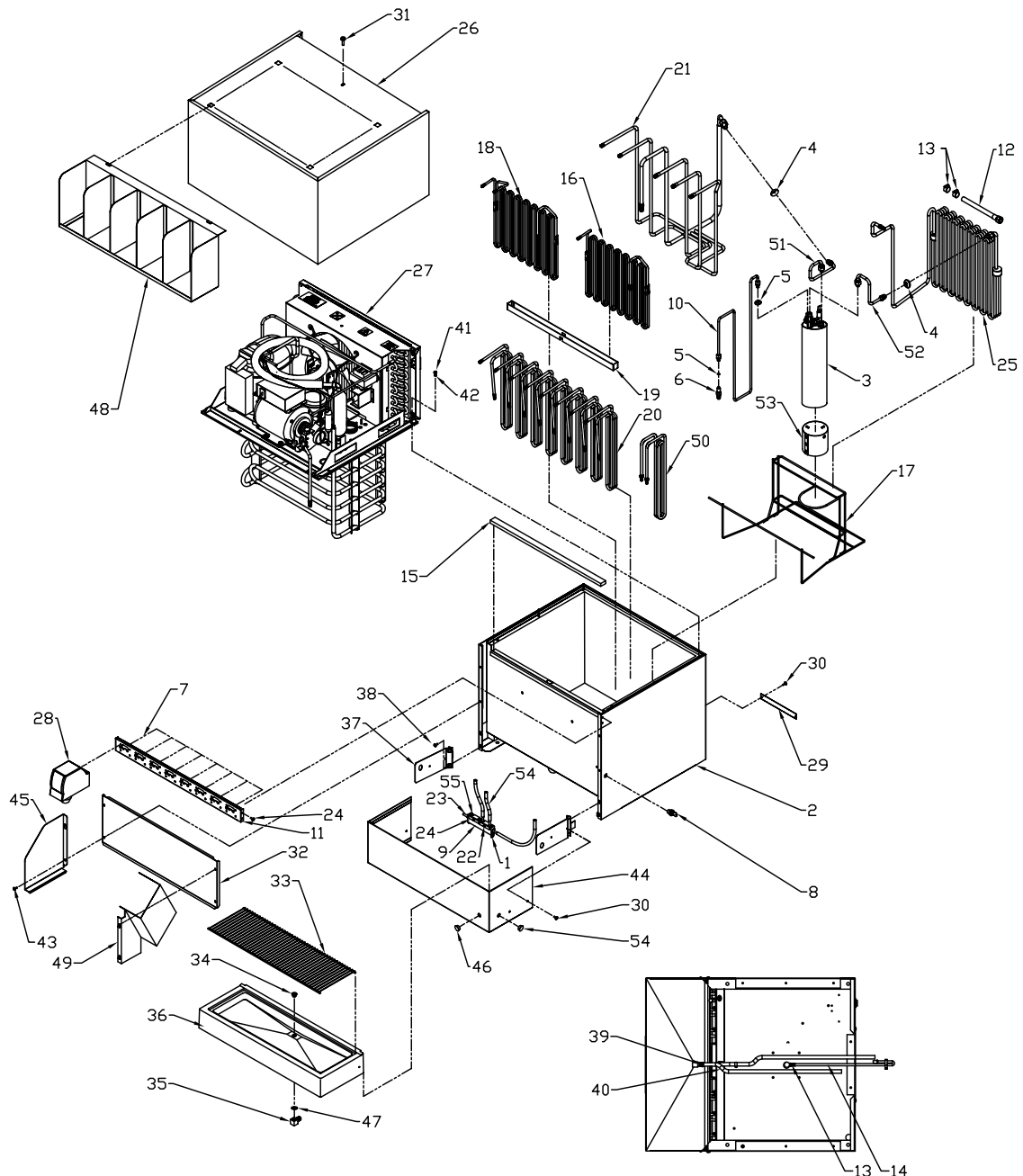


FIGURE 2. VANGUARD 245 POST-MIX DISPENSER (COLD CARB) ASSEMBLY

## ILLUSTRATED PARTS LIST

### VANGUARD 245 POST-MIX DISPENSER (COLD CARBONATED)

Item No.	Part No.	Names	Item No.	Part No.	Names
1	40407	Retainer S Prod Line	27	560003654 560003655	Chassis Rfg 230V 60HZ Chassis Rfg 220V 50HZ
2	560002628	Tank Base	28		Dispensing Valve Assy.
3	560007415C	Tank Carb Assy.	29	4123	Cover Access Back
	71860230	Valve Pres Relief	30	317784000	Screw
	710660001	Probe Assy. Insrt Mold	31	320240000	Screw
4	311304000	Gasket Male Flare	32	560000419	Panel Access
5	178025100	Gasket 1/4 Male Flare	33	560000428	Cup Rest 8 Flavor
6	183310000	Valve Chk Blkhd		560000429	Cup Rest 6 Flavor
7	4083	Harn Wire	34	77150200	Fitg. Drain
8	71827615	Switch Keylock	35	77150300	Fitg. Drain Elbow
9	560006956	Manifold Block	36	4772	Drip Tray
10	620717788	Tube Inlet CO2	37	4778	Brkt. Mtg. Drip Tray
11	4924	Panel Val 6-Flavor	38	331309000	Screw
	4228	Panel Val 8-Flavor	39	140135000	Clamp Hose
12	560001487	Tube Conn.375 I.D.	40	113500000	Drain Tube, Trip Tray
13	140135000	Clamp Hose	41	200498003	Nut Hex No. 8-32
14	113500000	Drain Tube, Tank	42	186207000	Washer Ft. 219 I.D.
15	4173	Insulation Tank	43	188072000	Screw
16	560001874	Coil Wtr No.3 6-Flavor	44	560000417	Wrap, Drip Tray
	560001876	Coil Wtr No.4 8-flavor	45	560000426	Splash Guard, Left-Hand
17	560002983	Retainer Coil		560000427	Splash Guard, Right-Hand
18	560001426	Coil Wtr No.4 6-Flavor	46	300479000	Button Plug
	560000753	Coil Wtr No.5 8-flavor	47	150447000	Washer, Drain Fitting
19	4763	Retainer Coil Front	48	560000439	Holder, Cup Lid (Optional)
20	560000862	Coil Syr Assy. RH	49	560000440	Holder, Straw (Optional)
21	560001393	Manifold Wtr 6-Flavor	50	560000477	Coil, Plain Water
	560001342	Manifold Wtr 8-Flavor	51	890222401	Tube Soda
22	398023208	Screw	52	620717789	P-Tube Water
23	560006959	Fitg.-Val Dole 3/8 Barb STGT.	53	620050381	P-Support Carb. Tank
24	560006957	Retainer Prod Line	54	174292000	Tube FlexCor.
25	560000874	Coil, Water, Pre-Chill	55	77050200	Plug
26	560001329	Hood Assy.			

# ILLUSTRATED PARTS LIST

## VANGUARD 245 POST-MIX DISPENSER REMOTE

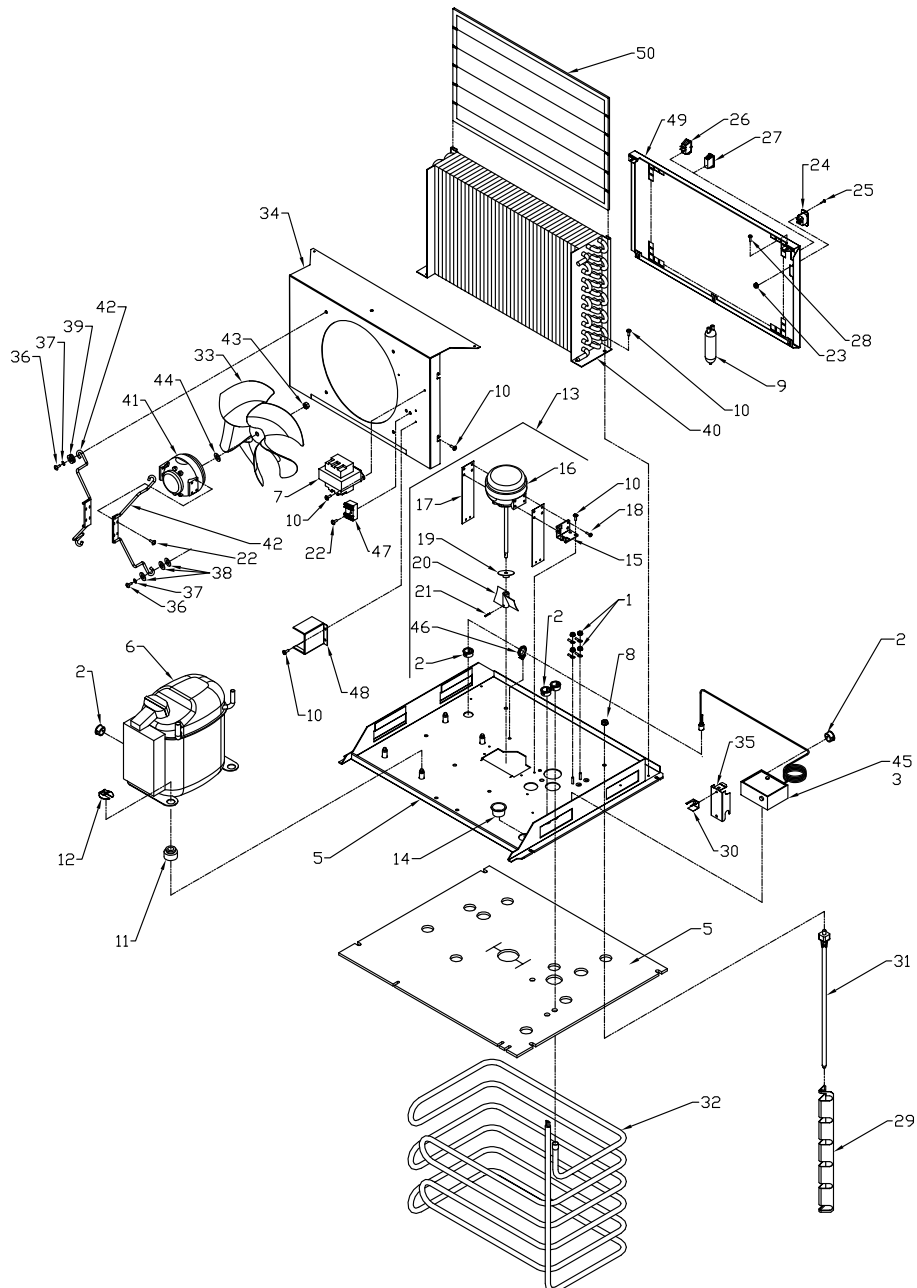


FIGURE 3. VANGUARD 245 REFRIGERATION (REMOTE) ASSEMBLY

## ILLUSTRATED PARTS LIST

### VANGUARD 245 POST-MIX DISPENSER REMOTE

Item No.	Part No.	Names	Item No.	Part No.	Names
1	200498003	Nut Hex No. 8-32	23	5119	Hex Nut
2	320389000	Bushing Snap	24	560001415	Receptacle
3	4680	Screw MA 8-32 PAPH 6	25	310780000	Screw MA 4-40 PAPH 20
4	560001722	Platform Rfg.	26	309645000	Swt Rocker (120V 60HZ)
5	560000755	Insulation Platform	27	560001396	Switch, Cutout
6	4182	Kit Comp. 3/4 H.P. 120V 60HZ	28	186770000	Screw MA 10-24 RDPH 20
	4408	Kit Comp. 3/4 H.P. 230V 60HZ	29	560003858	Spacer Evap.
	4407	Kit Comp. 3/4 H.P. 230V 50HZ	30	560001537	Holder C-Bulb
7	449999999	Transformer 120V 60HZ-24V	31	319347016	Rod Support Evap.
	449999996	Transformer 240V 60HZ-24V	32	4786	Evap. Coil
	560002114	Transformer 230V 50HZ-24V	33	3113	Fan 5-Bid
8	186146000	Nut Hex 5/16-18	34	560002108	Shroud Condenser
9	2602	Dryer	35	560003071	Bracket, Ice Bank Control
10	319941000	Screw TR 8-32 HXWS 12	36	186770000	Machine Screw
11	189723000	Grommet Comp.	37	120227000	Washer LK.194 I.D.
12	187888000	Clip Comp. Mtg.	38	320539000	Washer Ft. 191 I.D.
13		Motor Assy.Sgit. 120V 60HZ	39	321484000	Grommet
		Motor Assy.Sgit. 240V 60HZ	40	560000292	Condenser Coil
		Motor Assy.Sgit. 230V 50/60HZ	41	4197	Motor Fan 35W 120V 60HZ
14	316727000	Cap Plg.		560000123	Motor Fan 35W 240V 60HZ
15	4932	Brkt. Mtr. Agit.		560000170	Motor Fan 23W 230V 50HZ
16	111778000	Motor Agit. 25W 120V 60HZ	42	2944	Brkt. Motor Fan
	308912000	Motor Agit. 25W 240V 60HZ	43	189429000	Nut Hex 1/4-20
	318168002	Motor Agit. 18W 230V 50/60HZ	44	187394000	Cushion Fan Mount
17	319856000	Plate Heat Transer	45	4187	Control Ice Bank
18	186154000	Screw SE 8-36 PAPH 12	46	2757	Retainer
19	186599000	Slinger Water	47	309898000	Block Term
20	3600	Blade Agit 2-Bld	48	560001720	Cover Terminal Block
21	186610000	Pin Sprg.	49	560002107	Panel Back
22	186154000	Screw SE 8-36 PAPH 12	50	560000291	Air Filter (Optional)

# ILLUSTRATED PARTS LIST

## VANGUARD 245 POST-MIX DISPENSER (COLD CARBONATED)

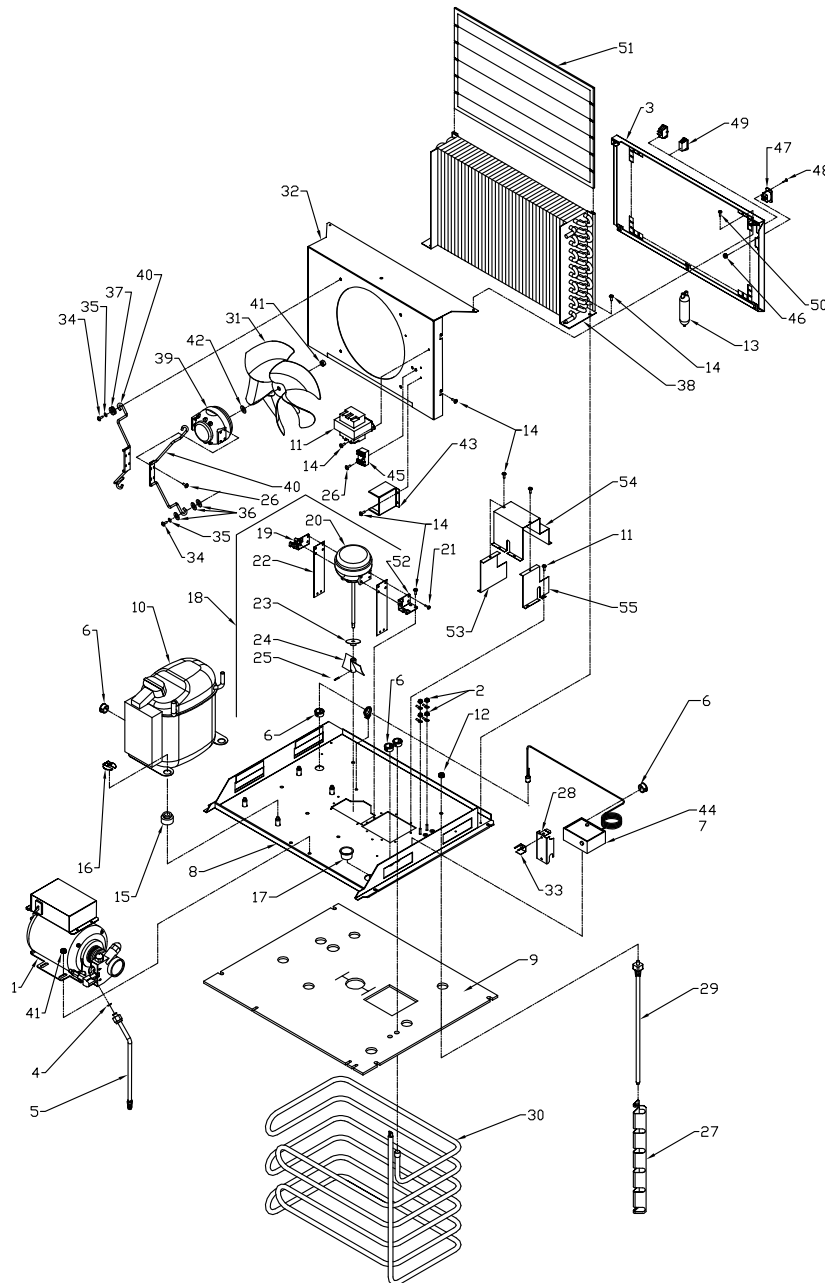


FIGURE 4. VANGUARD 245 REFRIGERATION (COLD CARB) ASSEMBLY

## ILLUSTRATED PARTS LIST

### VANGUARD 245 POST-MIX DISPENSER (COLD CARBONATED)

Item No.	Part No.	Names	Item No.	Part No.	Names
1		Pump and Mot. Assy. 230 V 50HZ	26	186154000	Screw SE 8-36 PAPH 12
2	200498003	Nut Hex No. 8-32	27	560003858	Spacer Evap.
3	560002107	Panel Back Chassis	28	560003071	Holder Ice Bank Probe
4	311304000	Gasket 3/8 Male Flare	29	319347016	Rod Support Evap.
5	560000754	Tube Inlet Pump	30	4786	Evap. Coil
6	320389000	Bushing Snap	31	3113	Fan 5-Bid
7	4680	Screw MA 8-32 PAPH 6	32	560002108	Shroud Condenser
8	890221201	Platform Rfg.	33	560001537	Holder C-Bulb
9	620711936	Insulation Platform	34	186770000	Screw MA 10-24 RKPH 20
10	4182	Kit Comp. 3/4 H.P. 120V 60HZ Kit	35	120227000	Washer LK.194 I.D.
	4408	Comp. 3/4 H.P. 240V 60HZ	36	320539000	Washer Ft. 191 I.D.
	4407	Kit Comp. 3/4 H.P. 230V 50HZ	37	321484000	Grommet
11	449999999	Transformer 120V 60HZ-24V	38	560000292	Condenser Coil
	449999996	Transformer 240V 60HZ-24V	39	560000123	Motor Fan 35W 240V 60HZ
	560002114	Transformer 230V 50HZ-24V		560000170	Motor Fan 23W 230V 50HZ
12	186146000	Nut Hex 5-16-18	40	2944	Brkt. Motor Fan
13	2602	Dryer	41	189429000	Nut Hex 1/4-20
14	319941000	Screw TR 8-32 HXWS 12	42	187394000	Cushion Fan Mount
15	189723000	Grommet Cop	43	560001720	Cover Terminal Block
16	187888000	Clip Comp. MTg.	44	4187	Control Ice Bank
17	316727000	Cap Plug	45	309898000	Block Term
18		Motor Assy.Sgit. 120V 60HZ	46	5119	Nut Hex NO.4-40
		Motor Assy.Sgit. 240V 60HZ	47	560001415	Receptacle
		Motor Assy.Sgit. 230V 50/60HZ	48	310780000	Screw MA 4-40 PAPH 20
19	4932	Brkt. Motor Agitator	49	560001396	Plug Swt. (220/230V 50/60HZ)
20	111778000	Motor Agit. 25W 120V 60HZ	50	188117000	Screw SM 8-TRPH 12
	308912000	Motor Agit. 25W 240V 60HZ	51	560000291	Fitter Air Cond. Alum. Mesh
	318168002	Motor Agit. 18W 230V 50/60HZ	52	620052092	P-Brkt. Agitator Motor
21	186154000	Screw SE 8-36 PAPH 12	53	890221101	Cover Platform Left
22	319856000	Plate Heat Transfer	54	890221102	Cover Platform Middle
23	186599000	Slinger Water	55	890221103	Cover Platform Right
24	3600	Blade Agit.			
25	186610000	Pin Sprg			

# ILLUSTRATED PARTS LIST

## VANGUARD 245 POST-MIX DISPENSER (COLD CARBONATED)

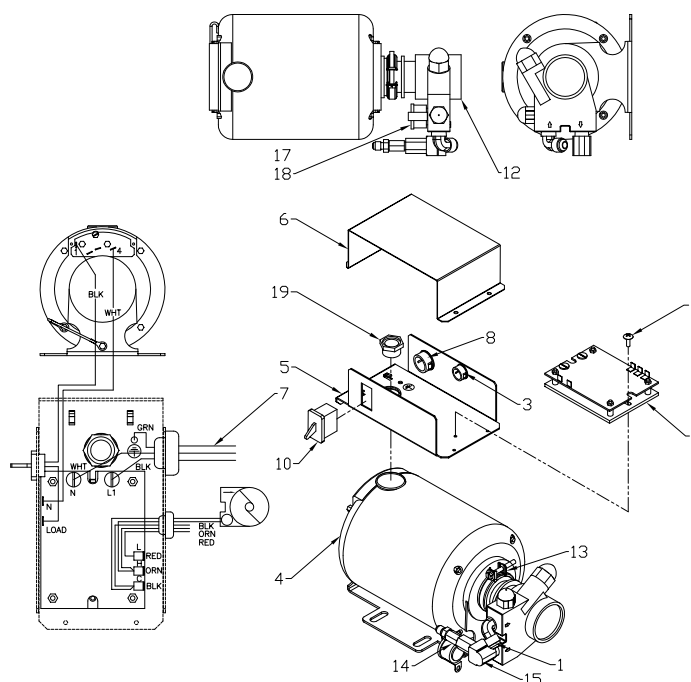


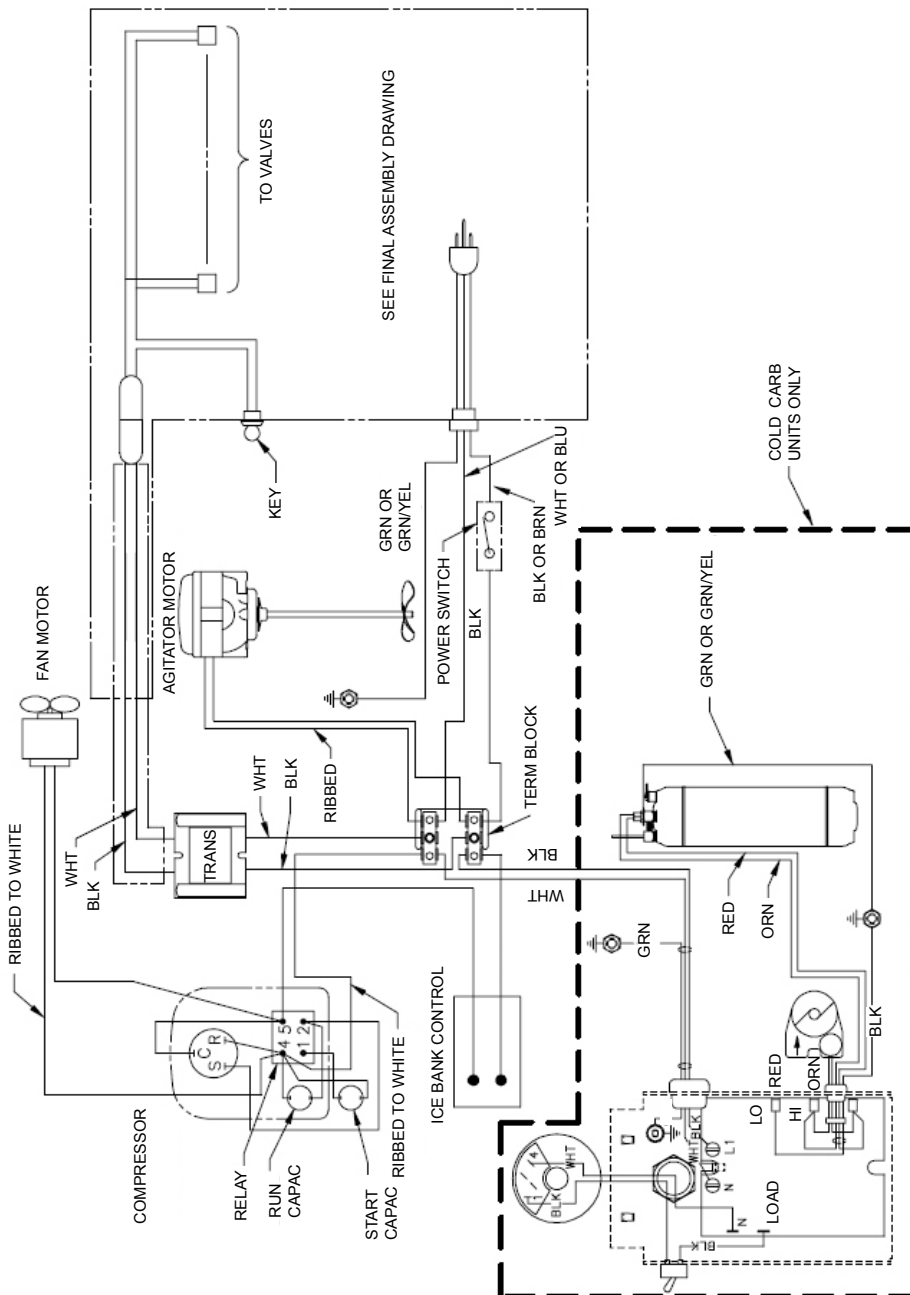
FIGURE 5. PUMP AND MOTOR (COLD CARB) ASSEMBLY

Item No.	Part No.	Names
		Pump and Motor 230V 60HZ Pump and Motor 230V 50HZ
1	361003200	Fitg. L 3/8-MPT By 5/8-18
2	197359000	Control Liquid Level
3	395098000	Strain Relief
4	320626000	Motor Pump 1/4H.P. 240V 50/60HZ
	199020000	Motor Pump 1/4H.P. 230V 50HZ
5	560000863	Box Control
6	4967	Cover Elec. Box
7	560001630	Cord Jump
8	319453000	Strain Relief
9	319941000	Screw TR 8-32 HXWS 12

Item No.	Part No.	Names
10	313438000	Switch Toggle
11	3175	Harn Wire Carb. (Not Shown)
12	312996000	Pump Water
13	187483000	Clamp Pump and Motor
14	2991	Valve Chk. Dual
15	1151	Fitg. L 3/8-NPT
16	200498003	Nut Hex No. 8-32 (Not Shown)
17	317989555	Clip Thermo. Thermostat Control
18	318039000	Thermostat Control
19	168049000	Fitg. Chase Conduit

# REFERENCE MATERIAL

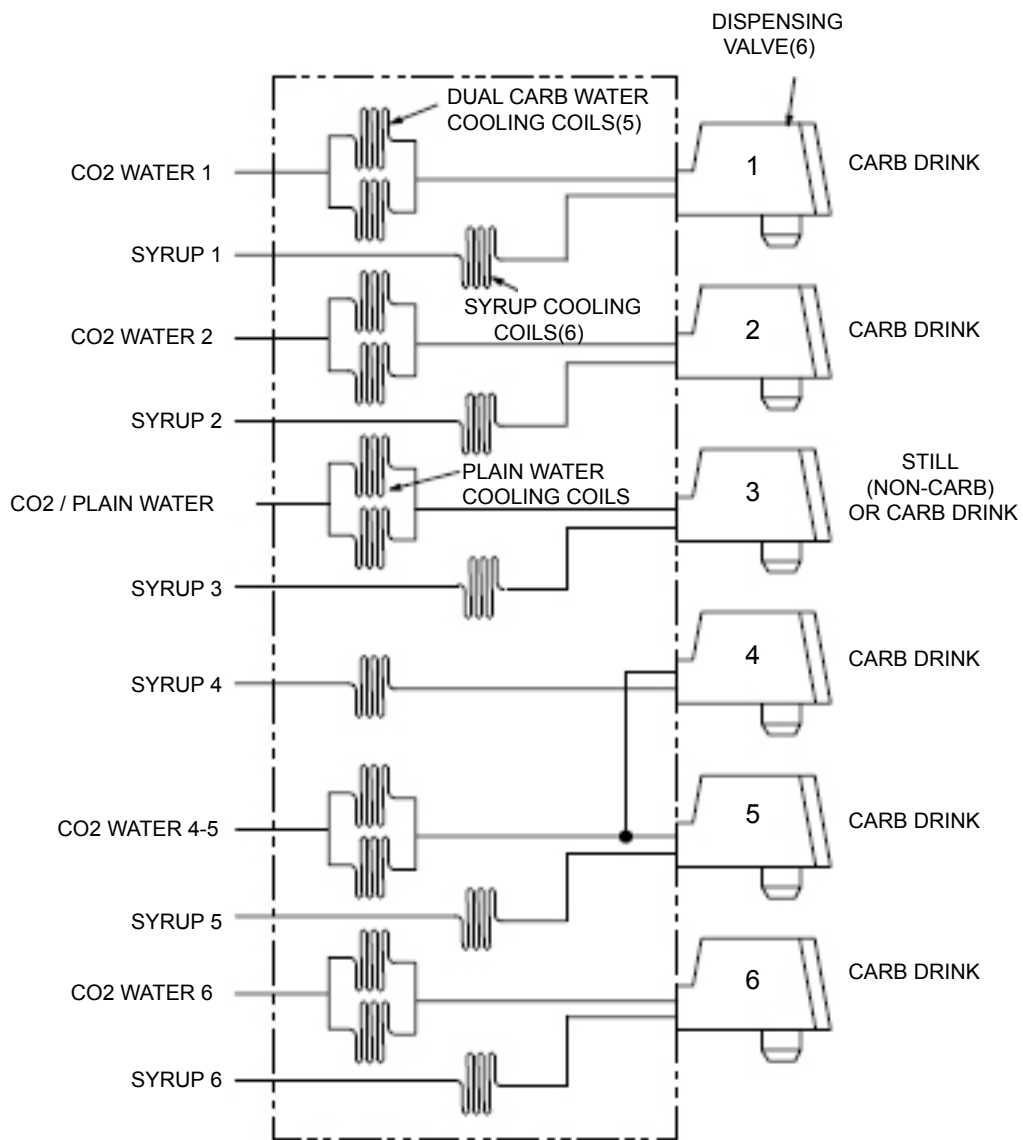
## WIRING DIAGRAM



# REFERENCE MATERIAL

## FLOW DIAGRAM

### Six-Flavor Unit Requiring Remote Carbonator

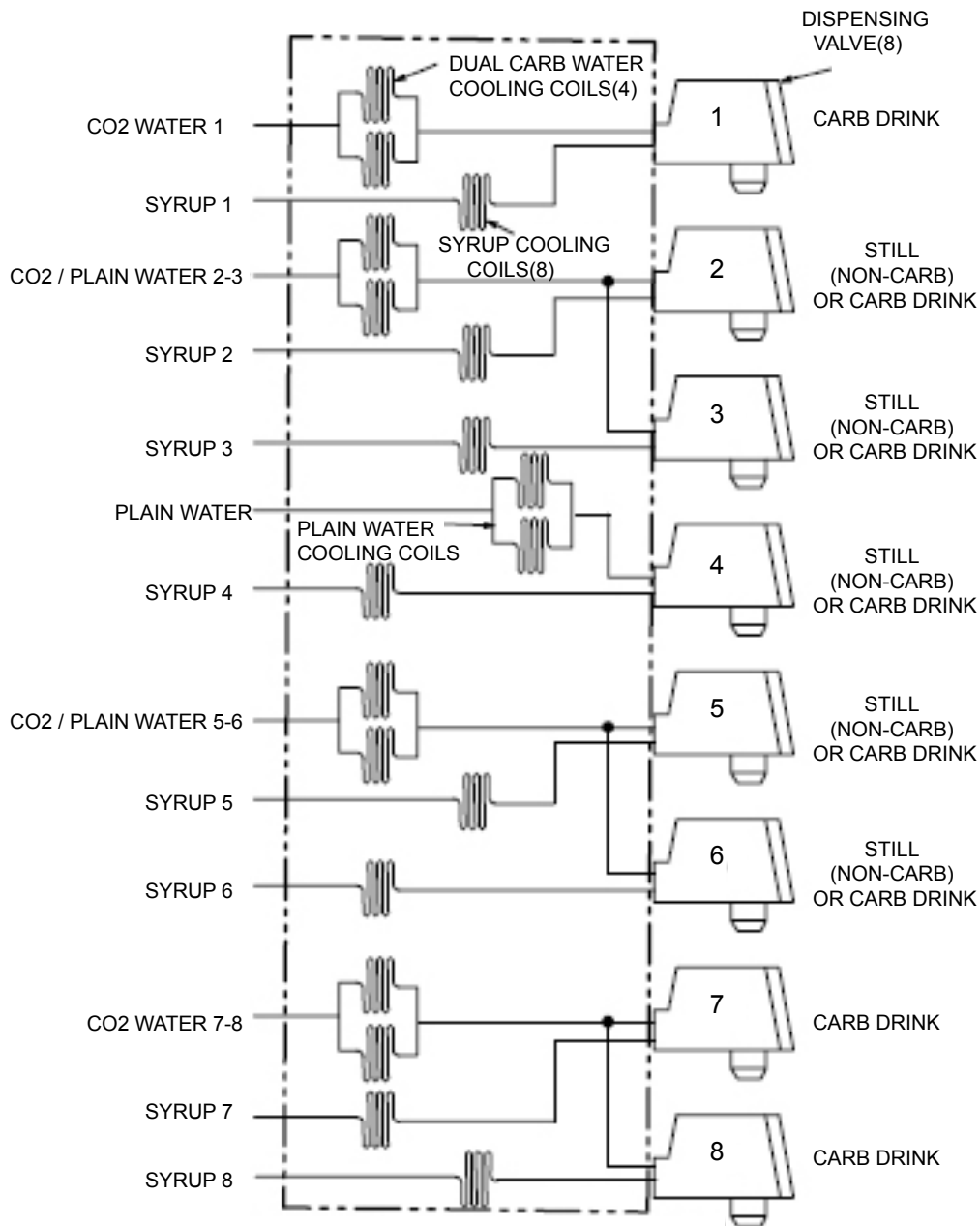


**NOTE:** The indicated CARB DRINK dispensing valves may be made to dispense still (non-carb) drinks by connecting plain water instead of carbonated water to the valves water inlet lines.

# REFERENCE MATERIAL

## FLOW DIAGRAM

### Eight-Flavor Unit Requiring Remote Carbonator

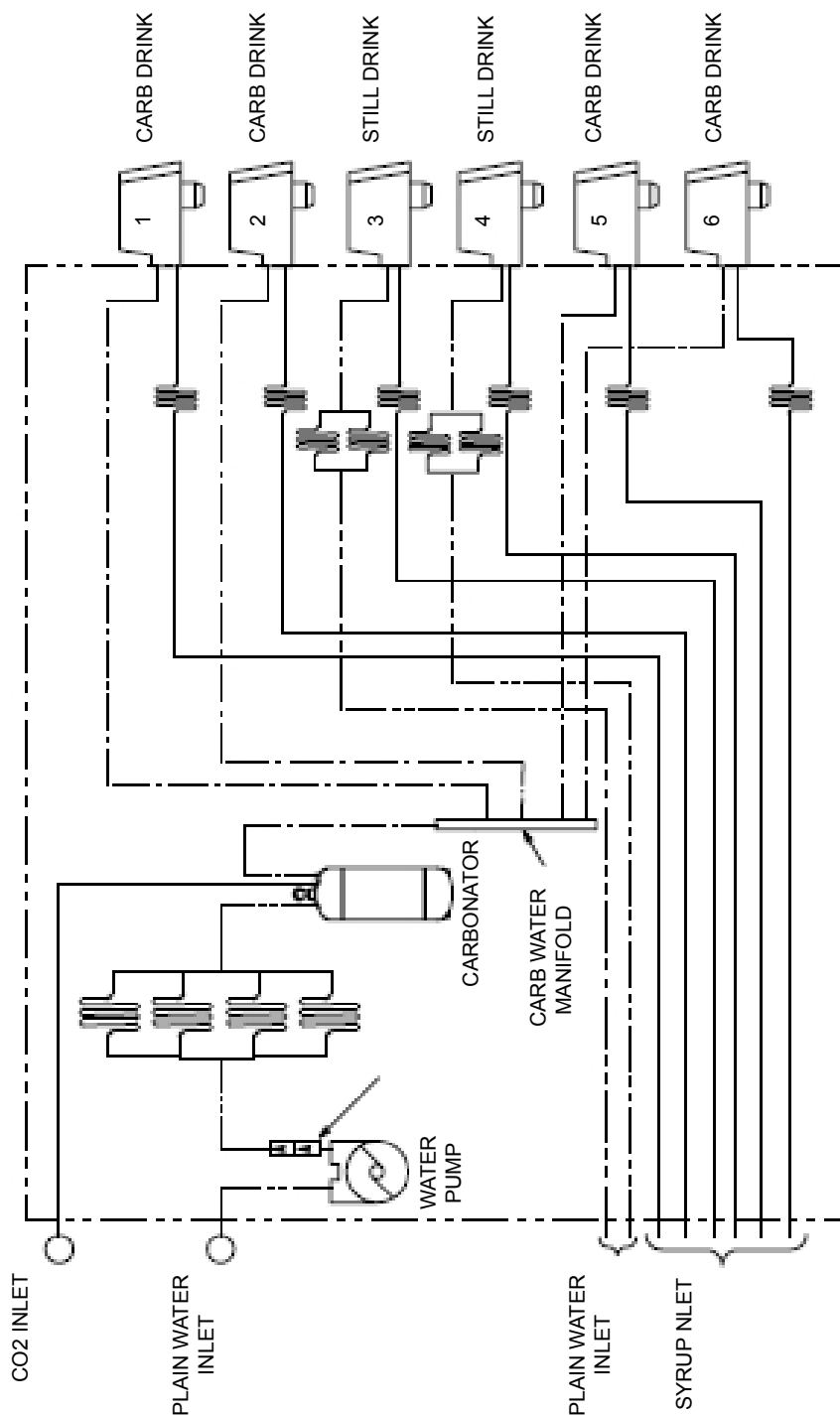


**NOTE:** The indicated CARB DRINK dispensing valves may be made to dispense still (non-carb) drinks by connecting plain water instead of carbonated water to the valves water inlet lines.

# REFERENCE MATERIAL

## FLOW DIAGRAM

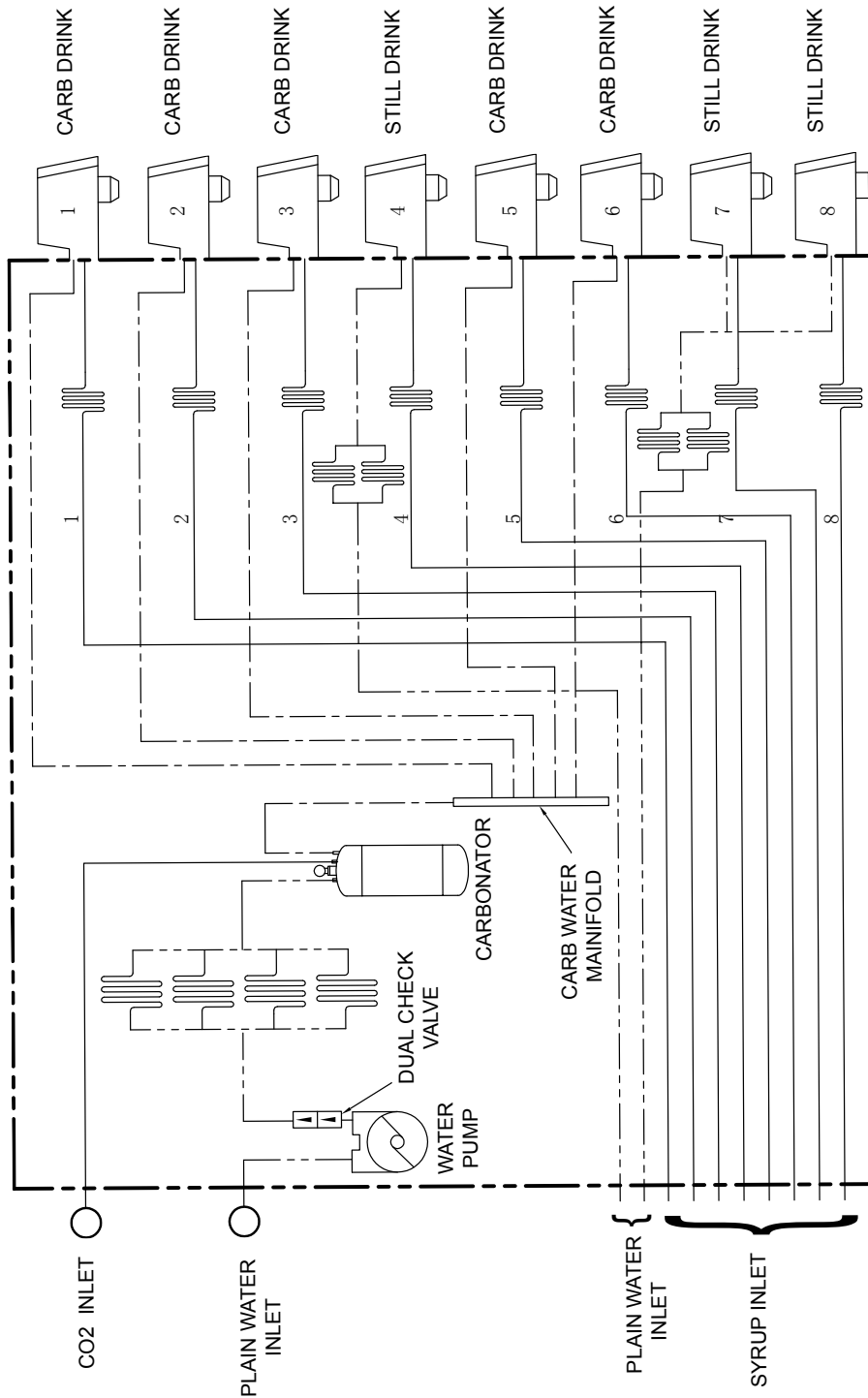
### Six-Flavor Unit with Integral Carbonator



# REFERENCE MATERIAL

## FLOW DIAGRAM

### Eight-Flavor Unit with Integral Carbonator



Release Date: July 2006

Publication Number: 569000203E

Visit the IMI Cornelius Web Site at [www.cornelius-asia.com](http://www.cornelius-asia.com) for all your Literature needs.

This manual is apply for equipment series no. from 89E0630VDXXX.



**IMI CORNELIUS ( TIANJIN ) CO., LTD.**