

# LANCER®

## Delta-600 R-290

Counter Electric Dispenser



## Operation Manual

Lancer Corporation  
6655 Lancer Blvd.  
San Antonio, Texas 78219  
800-729-1500



Tech Support/Warranty: 800-729-1550  
email: [custserv@lancercorp.com](mailto:custserv@lancercorp.com)  
web: [lancercorp.com](http://lancercorp.com)  
Lancer PN: 28-1002/01-01  
Revision: 01-1 - February 2019

"Lancer" is the registered trademark of Lancer © 2019 by Lancer, all rights reserved.

# TABLE OF CONTENTS

## ABOUT THIS MANUAL

This booklet is an integral and essential part of the product. Please carefully read the guidelines and warnings contained herein as they are intended to provide the user with essential information for the continued safe use and maintenance of the product. In addition, it provides **GUIDANCE ONLY** to the user on the correct services and site location of the unit.

***The installation and relocation, if necessary, of this product must be carried out by qualified personnel with up-to-date safety and hygiene knowledge and practical experience, in accordance with current regulations.***

<b>IMPORTANT SAFETY INSTRUCTIONS</b> .....	<b>3</b>
Refrigerant Warning.....	3
Intended Use Warning.....	3
CO <sub>2</sub> Warning.....	3
Electrical Warning.....	3
Water Notice.....	3
<b>PRE-INSTALLATION</b> .....	<b>4-5</b>
Specifications & Features.....	4
General System Overview.....	5
Pre-Installation Checklist.....	5
<b>INSTALLATION</b> .....	<b>6-11</b>
Unpacking the Dispenser.....	6
Selecting/Preparing the Counter Location.....	6
Dispenser Installation.....	7-8
Installing CO <sub>2</sub> Supply.....	9
Dispenser Setup.....	10
Adjust Water Flow Rate & Syrup/Water Ratio.....	10-11
Volumetric Valve Adjustment.....	11

## BEFORE GETTING STARTED

Each unit is tested under operating conditions and is thoroughly inspected before shipment. At the time of shipment, the carrier accepts responsibility for the unit. Upon receiving the unit, carefully inspect the carton for visible damage. If damage exists, have the carrier note the damage on the freight bill and file a claim with carrier. Responsibility for damage to the dispenser lies with the carrier.

<b>CLEANING AND SANITIZING</b> .....	<b>12-13</b>
General Information.....	12
Cleaning and Sanitizing Solutions.....	12
Scheduled Maintenance and Cleaning.....	12-13
Cleaning and Sanitizing Nozzles.....	13
Cleaning and Sanitizing Syrup Lines - BIB.....	13
<b>TROUBLESHOOTING</b> .....	<b>14-16</b>
<b>THE ELECTRONIC ICE BANK CONTROL</b> .....	<b>17</b>
Checking the Normal PCB Operation.....	17
<b>ILLUSTRATIONS AND PART LISTINGS</b> .....	<b>18-24</b>
Main Unit Assembly.....	18
Refrigeration Deck Assembly - R290.....	19
Carbonator, Water/Syrup Line Assembly.....	20
Carbonator Deck/Pump Bracket Assembly.....	21
Control Housing Assembly.....	22
Wiring Diagram.....	23
Plumbing Diagram.....	24

# SAFETY NOTICES

## READ ALL SAFETY INSTRUCTIONS BEFORE USING THIS UNIT.

This manual contains important safety information and all applicable safety precautions must be observed. To reduce the risk of fire, electric shock, damage to the equipment or personal injury when using this unit all instructions/warnings on the product being used must be followed:

### **⚠ WARNING**

Warning; flammable material. Taking care to avoid causing a fire by igniting flammable material.

### **⚠ WARNING**

Text following the Warning signal indicates a hazardous situation, which if not avoided, will result in death or serious injury. Be sure to read all Warning statements before proceeding with the installation.

### **⚠ CAUTION**

Text following the Caution signal indicates a hazardous situation, which if not avoided, could result in death or serious injury. Be sure to read the Caution statements before proceeding with the installation

### **⚠ ATTENTION**

Text following the Attention signal addresses a situation that if not followed could potentially damage the equipment. Be sure to read the Attention statements before proceeding

### **NOTE**

Text following the Note signal provides you with information that may help you more effectively perform the installation procedures within this manual. Disregarding information will not cause damage or injury, however it may limit the performance of the dispenser.

# IMPORTANT SAFETY INSTRUCTIONS

## Refrigerant Warning

- This system uses a flammable refrigerant under pressure. Do not tamper with it. Contact qualified service personal before disposal.
- In order to minimize the risk of possible ignition due to incorrect parts or improper service, only factory authorized personnel should perform service on the appliance and its component parts
- Do not store explosive substances such as aerosol cans with a flammable propellant in this appliance.
- Replace component parts with like components. Only use genuine Lancer parts or parts certified by Lancer.
- Do not damage the refrigerant circuit.

## Intended Use

- The dispenser is for indoor use only
- This appliance is intended to be used in commercial applications such as restaurants or similar.
- This appliance should not be used by children or infirm persons without supervision.
- This appliance is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety.
- This appliance is not a toy and children should be advised not to play with the appliance. This appliance can be used by children aged from 8 years and above and persons with reduced physical, sensory or mental capabilities or lack of experience and knowledge if they have been given supervision or instruction concerning use of the appliance in a safe way and understand the hazards involved.
- Cleaning and user maintenance shall not be performed by children without supervision.
- The min/max ambient operating temperature for the dispenser is 65°F to 105°F (18°C to 40°C). Do not operate unit below minimum ambient operation conditions.
- Should freezing occur, cease operation of the unit and contact authorized service technician.
- The maximum tilt for safe operation is 5°. This appliance must be installed and serviced by a professional.

## Carbon Dioxide (CO<sub>2</sub>)

- **WARNING:** Carbon Dioxide (CO<sub>2</sub>) is a colorless, noncombustible gas with a light pungent odor. High percentages of CO<sub>2</sub> may displace oxygen in the blood.
- **WARNING:** Prolonged exposure to CO<sub>2</sub> can be harmful. Personnel exposed to high concentrations of CO<sub>2</sub> gas will experience tremors which are followed by a loss of consciousness and suffocation.
- **WARNING:** If a CO<sub>2</sub> gas leak is suspected, immediately ventilate the contaminated area before attempting to repair the leak.
- **WARNING:** 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.

## Electrical Warning

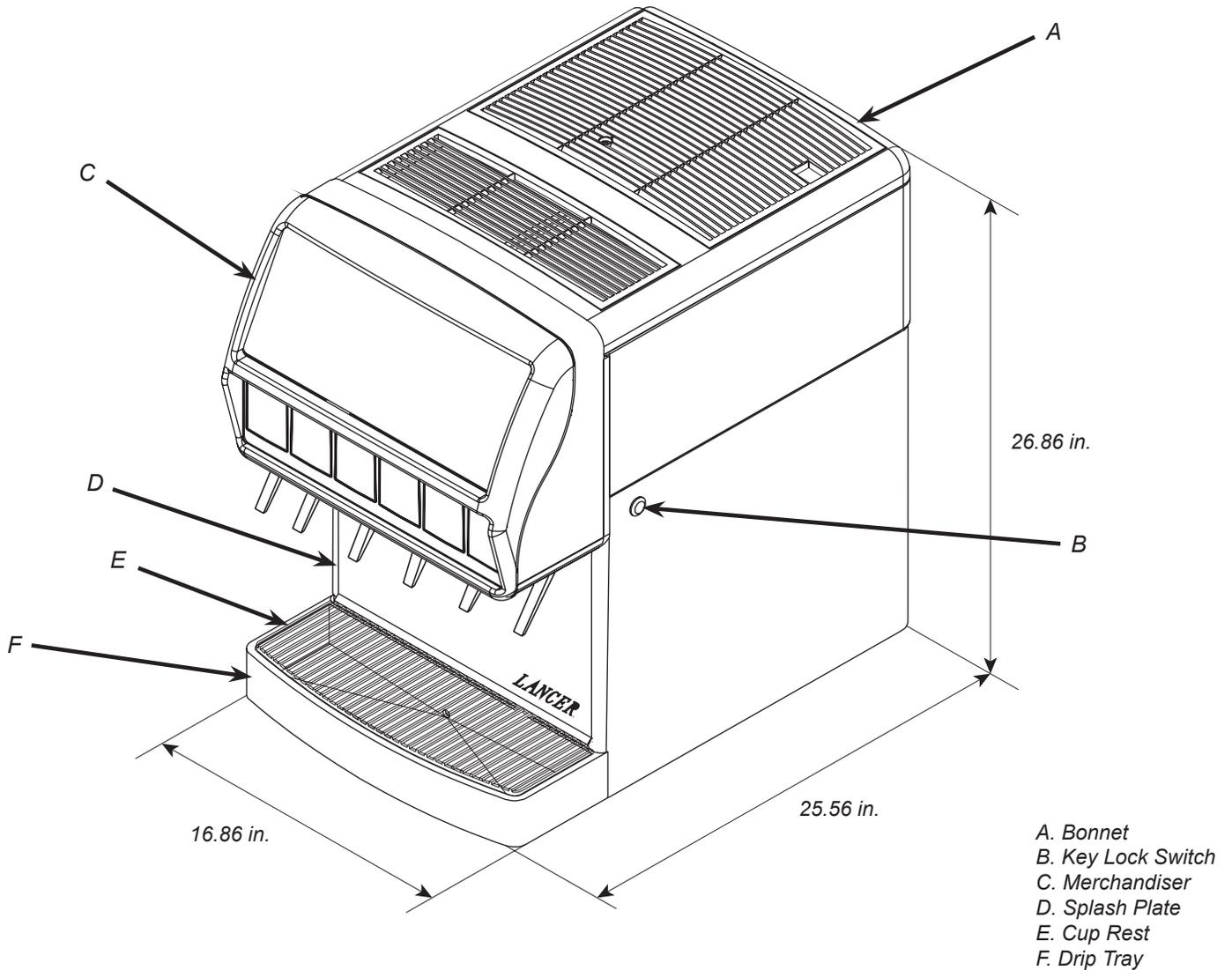
- Follow all local electrical codes when making connections.
- Check the dispenser name plate label, located behind the splash plate for the correct electrical requirements of unit. **DO NOT** plug into a wall electrical outlet unless the current shown on the serial number plate agrees with local current available.
- Each dispenser must have a dedicated electrical circuit.
- **DO NOT** use extension cords with this unit.
- **DO NOT** 'gang' together with other electrical devices on the same outlet.
- **DO NOT** locate multiple portable socket-outlets or portable power supplies at the rear of the appliance.
- **WARNING:** Always disconnect electrical power to the unit to prevent personal injury before attempting any internal maintenance.
- The re-settable breaker switch should not be used as a substitute for unplugging the dispenser from the power source to service the unit.
- Only qualified personnel should service internal components of electrical control housing.
- **WARNING:** Make sure that all water lines are tight and units are dry before making any electrical connections
- If this dispenser is installed in an area that is susceptible to more than 10% variation of the nominal line voltage, consider installing a surge protector or similar protection device.

## Water Notice

- Provide an adequate, potable water supply. Water pipe connections and fixtures directly connected to a potable water supply must be sized, installed, and maintained according to federal, state, and local codes.
- The water supply line must be at least a 3/8 inches (9.525 mm) pipe with a minimum of 25 psi (0.172 MPa) line pressure. Water pressure below 25 psi (0.172 MPa) will require the use of a water booster, (82-3401 or MC-163172). For proper carbonation water pressure exceeding 65 psi (0.448 MPa) must be reduced by way of a water regulator (18-0253/02).
- Use a filter in the water line to avoid equipment damage and beverage off-taste. Check the water filter periodically, as required by local conditions.
- **CAUTION:** The water supply must be protected by means of an air gap, a backflow prevention device (located upstream of the CO<sub>2</sub> injection system) or another approved method to comply with NSF standards. A leaking inlet water check valve will allow carbonated water to flow back through the pump when it is shut off and contaminate the water supply.
- **CAUTION:** Ensure the backflow prevention device complies with ASSE and local standards. It is the responsibility of the installer to ensure compliance.

# PRE-INSTALLATION

## Specifications & Features



### DIMENSIONS

Width: 16.86 inches (429 mm)  
Depth: 25.56 inches (649 mm)  
Height: 26.86 inches (657 mm)

### WEIGHT

Shipping: 160 lbs (72.5 kg)  
Empty: 146 lbs (66.2 kg)  
Operating: 237 lbs (107.5 kg)  
Ice Bath: 22 - 24 lbs (10.0 - 10.9 kg)

### ELECTRICAL

115 VAC, 60 Hz, 8 Amps  
220-240 VAC, 50 / 60 Hz, 4 Amps

### PLAIN WATER SUPPLY

Min Inlet Pressure: 25 psi (0.172 MPa)  
Max Static Pressure: 65 psi (0.448 MPa)

### CARBON DIOXIDE (CO<sub>2</sub>) SUPPLY

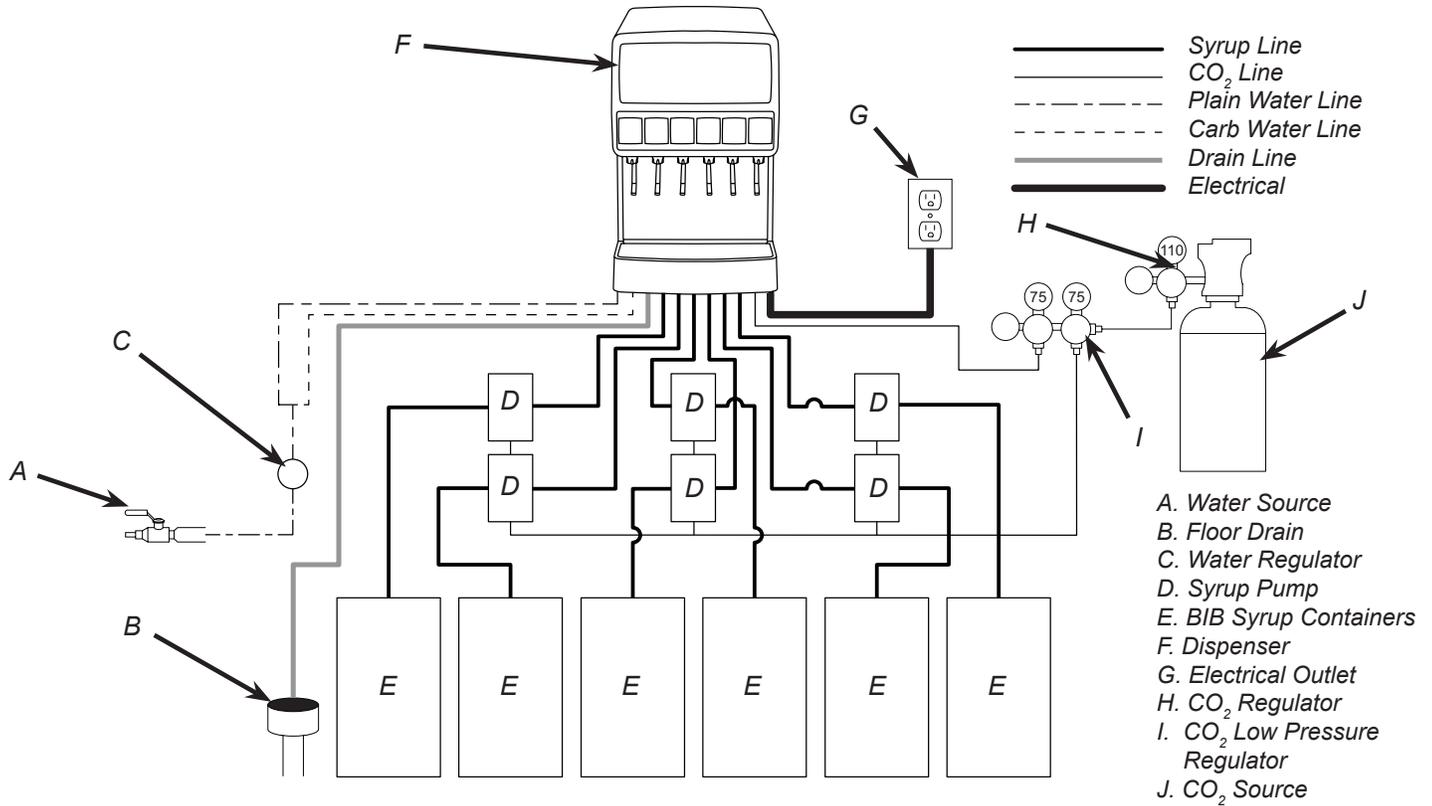
Min Pressure: 70 psi (0.483 MPa)  
Max Pressure: 80 psi (0.552 MPa)

### FITTINGS AT UNIT

Water for Carb Inlet: 3/8 inch barb  
Brand Syrup Inlets: 1/4 inch barb  
Carb CO<sub>2</sub> Inlet: 3/8 inch barb

This unit emits a sound pressure level below 70 dB  
Max Altitude: 16,400 ft (5,000 m)

# General System Overview - Remote Syrup Pumps



## Pre-Installation Checklist

### TOOLS REQUIRED:

- Oetiker Pliers
- Tubing Cutters
- Wrench
- Slotted Screwdriver
- Phillips Screwdriver
- Drill

### BIB SYSTEM:

- BIB Rack
- BIB Syrup Boxes
- BIB Regulator Set
- BIB Connectors

### POST MIX ACCESSORIES:

- CO<sub>2</sub> Regulator
- CO<sub>2</sub> Supply
- Chain for CO<sub>2</sub> Tank
- Beverage Dispenser
- Beverage Tubing
- Oetiker Clamp Fittings
- Water Booster (Lancer PN: 82-3401 or MC-163172)
- Water Regulator (supplied with unit)

### CONSIDER THE FOLLOWING BEFORE INSTALLATION:

- Location of Water Supply Lines
- Location of Drain
- Location of Electrical Outlet
- Location of Heating and Air Conditioning Ducts
- Do you have enough space to install the dispenser?
- Does the counter height meet ADA requirements?
- Is counter-top level?
- Can the counter-top support the weight of the dispenser? (Include the weight of an ice machine plus weight of ice, if necessary)
- Is dispenser located away from direct sunlight or overhead lighting?

# INSTALLATION

## Read This Manual

This manual was developed by Lancer Corporation as a reference guide for the owner/operator and installer of this dispenser. Please read this manual before installation and operation of this dispenser. Please see pages 14 - 16 for troubleshooting or service assistance. If the service cannot be corrected please call your Service Agent or Lancer Customer Service. Always have your model and serial number available when you call.

## Unpacking the Dispenser

1. Cut package banding straps and remove.
2. Open the box and remove the parts tray.
3. Close the lid, then remove using the handle cutouts.
4. Remove accessory kit and loose parts.

### NOTE

**Inspect unit for concealed damage. If evident, notify delivering carrier and file a claim against the same.**

### ⚠ WARNING

**Never energize the machine if there is any trace of damage. Contact Lancer Customer Service for assistance.**

5. Remove plywood shipping base from unit by moving unit so that one side is off the counter top or table allowing access to screws on the bottom of the plywood shipping base.

### NOTE

**If unit is to be transported, it is advisable to leave the unit secured to the plywood shipping base.**

6. If leg kit has been provided, assemble legs by tilting unit.

### ⚠ ATTENTION

**DO NOT LAY UNIT ON ITS SIDE OR BACK**

## Selecting/Preparing a Counter Location

### NOTE

**The dispenser should only be installed in a location where it can be overseen by trained personnel**

1. Select a location that is in close proximity to a properly grounded electrical outlet, within five (5) feet (1.5 m) of a drain, and a water supply that meets the requirements shown in the Specifications section found on page 4.

### ⚠ WARNING

**When positioning the appliance, ensure the supply cord is not trapped or damaged.**

2. Select a location for the syrup pumps, CO<sub>2</sub> tank, syrup containers, and water filter (recommended). Please see General System Overview on page 5 for reference.
3. Condenser air is drawn in from the front and side vents located on the bonnet and discharged out the rear of the bonnet. A minimum of eight (8) inches (203 mm) of clearance must be maintained over the top of the unit and a minimum of four (4) inches (101.6 mm) clearance behind the unit to provide for proper air flow and circulation.

### ⚠ WARNING

**Keep ventilation openings, in the appliance enclosure or in the built-in structure clear of obstruction. Failure to maintain specified clearance will cause the compressor to overheat and will result in compressor failure.**

4. Cut the necessary holes in counter for mounting in the designated dispenser location.

### Leveling the Dispenser

**In order to facilitate proper dispenser drainage, ensure that the dispenser is level, front to back and side to side. Place a level on the top of the rear edge of the dispenser. The bubble must settle between the level lines. Repeat this procedure for the remaining three sides. Level unit if necessary. For optimum performance place the unit at a 0° tilt. The maximum tilt is 5°.**

# Dispenser Installation

## NOTE

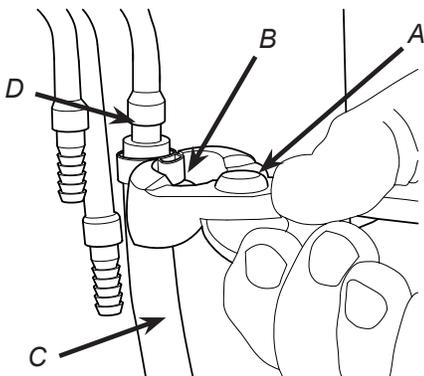
The installation, and relocation if necessary, must be carried out by qualified personnel with up-to-date knowledge and practical experience, in accordance with current regulations.

1. The dispenser is designed to be installed either permanently to counter or placed on a counter using the legs (included in the Lancer kit, PN 82-1704).

## NOTE

NSF listed units must be sealed to the counter or use legs provided.

2. When the dispenser is to be permanently bolted to the counter top, the dispenser base must be sealed to the counter top with a bead of clear silicone caulk or sealant which provides a smooth and easily cleanable bond to the counter.
3. Once the dispenser is installed to the counter or placed on the counter using legs provided, remove the cup rest, splash plate, and valve shroud.
4. Connect drain tube to the drain fitting located on the bottom of the drip tray and secure drain tube with clamp.
5. Route the drain line to designated floor drain.
6. Remove the bonnet screw from the top of the unit and lift the bonnet to remove from the dispenser.
7. Route appropriate tubing from the syrup pump location to the syrup inlets located behind the splash plate. Connect tubing to inlets using the oetiker pliers and fittings. Repeat for all syrup connections.



A. Oetiker Pliers  
B. Fitting  
C. Tubing  
D. Syrup/Water/CO<sub>2</sub> Inlet

8. Route appropriate tubing from the water source to the carbonator pump inlet at the unit, and connect tubing to water source.

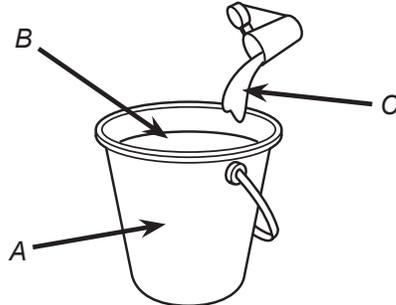
## ⚠ CRITICAL - to maximize performance

Carefully read this before filling the water bath tank. In order to optimize the maximum performance of the dispenser, the following MUST be adhered to:

9. Insert water line into a large bucket, and fill with approx. 5.4 gallons (20.4 L) of distilled water.
10. Add 1/8 oz (4 g) of baking soda to distilled water and stir.

## ⚠ ATTENTION

For proper function of the electronic ice bank control the total dissolved solids (TDS) measurements should be 300-500 ppm.



A. Bucket  
B. Distilled Water (approx. 5.4 gal)  
C. Baking Soda (approx. 1/8 oz)

11. Using a conductivity meter, measure the electric conductivity of the distilled water mixture.

## ⚠ ATTENTION

The E.C. measurement of the distilled water mixture must be between 100 and 300 uS/cm. Below 100 uS/cm, the compressor will not work properly and above 300 uS/cm could cause the lines to freeze.

12. Remove yellow cap from the water bath fill hole and insert and insert a funnel into the fill hole.
13. Carefully pour the distilled water mixture into the water bath tank until water flows out of the overflow tube at the front of the unit. Then replace yellow cap (Repeat steps 7-8 if needed)

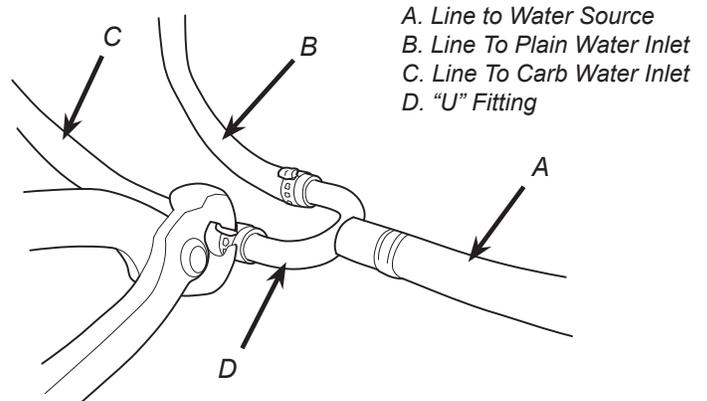
## ⚠ ATTENTION

The water bath compartment must be filled with water before plugging in the unit, otherwise the compressor deck and condenser fan may not operate properly. DO NOT use RO or purified water.

## NOTE

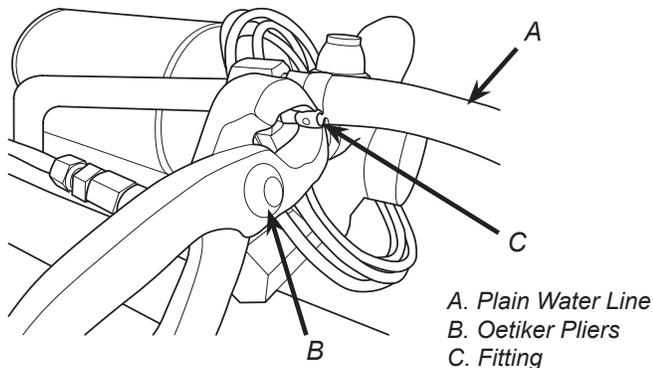
Make sure the top of overflow tube is not covered so that the water from the water bath tank cannot escape.

14. Using tubing cutters, cut water supply line and install "U" fitting, (PN 01-2128/01).

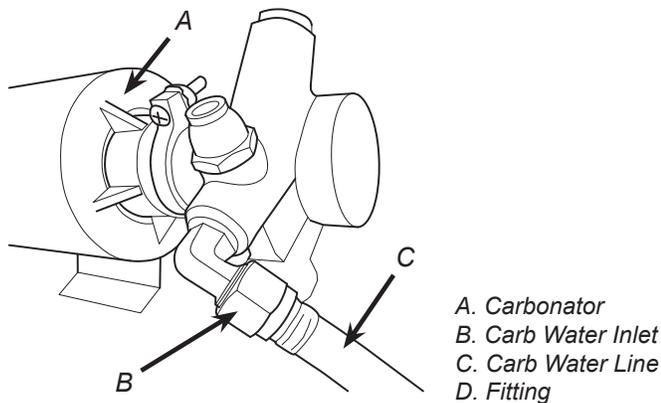


A. Line to Water Source  
B. Line To Plain Water Inlet  
C. Line To Carb Water Inlet  
D. "U" Fitting

15. Route appropriate tubing from the plain water inlet, located at the front of the unit, to one side of the “U” fitting at water supply and connect tubing to inlet.



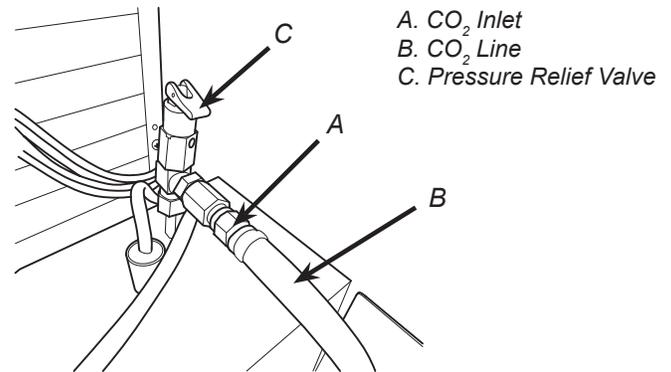
16. Route appropriate tubing from the carbonator pump inlet and the “U” fitting at water supply then connect tubing to inlet using flare seal washer (PN 05-0017). Use a back-up wrench to prevent damage to carbonator pump.



#### NOTE

If the water source is above 65 psi (0.448 MPa), cut tubing assembly and install Water Regulator Kit (PN 18-0253/02, sold separately) as shown in kit instruction sheet. Once installed, use a test gauge assembly (PN 22-0138, sold separately), to set regulator at a maximum of 65 psi (0.448 MPa).

17. Route appropriate tubing from the syrup pump/syrup supply location to the CO<sub>2</sub> inlet and connect tubing to CO<sub>2</sub> inlet.



18. Feed all tubing, power cord, and drain line through the counter top cutout.  
19. Connect tubing routed from carbonated water inlet and plain water inlet to the “U” fitting at the water supply.  
20. Turn on water supply and check for leaks.  
21. Plug in the unit to a grounded electrical outlet then turn the power switch, at the top of the unit, to begin building an ice bank.

#### ⚠ WARNING

Never energize the machine if there is any trace of damage. Contact Lancer Customer Service for assistance.

#### ⚠ WARNING

The dispenser must be properly electrically grounded to avoid serious injury or fatal electrical shock. The power cord has a three-prong grounded plug. If a three-hole grounded electrical outlet is not available, use an approved method to ground the unit. Follow all local electrical codes when making connections. Each dispenser must have a separate electrical circuit. Do not use extension cords. Do not connect multiple electrical devices on the same outlet.

#### ⚠ WARNING

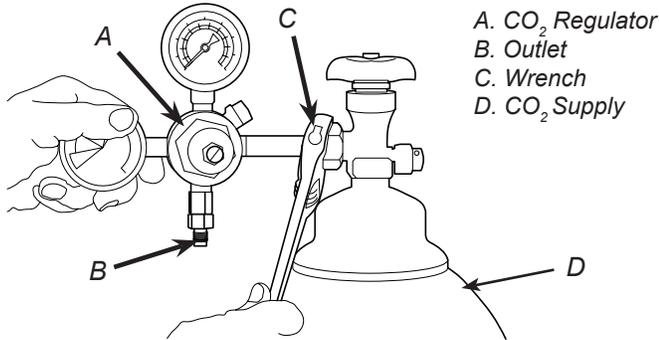
Do not use mechanical devices or other means to accelerate the defrosting process, other than those recommended by the manufacturer.

# Installing CO<sub>2</sub> Supply

1. Connect high pressure CO<sub>2</sub> regulator assembly to CO<sub>2</sub> cylinder or bulk system.

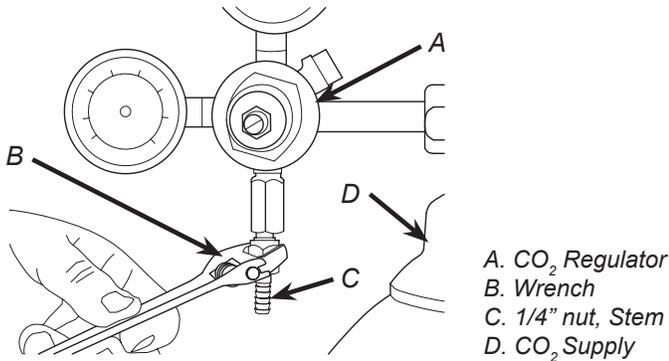
**⚠ ATTENTION**

Before installing regulator, assure that a seal (washer or o-ring) is present in regulator attachment nut.



- Thread regulator nut on to tank, then tighten nut with wrench

2. Connect a 1/4" nut, stem and seal to CO<sub>2</sub> regulator outlet.



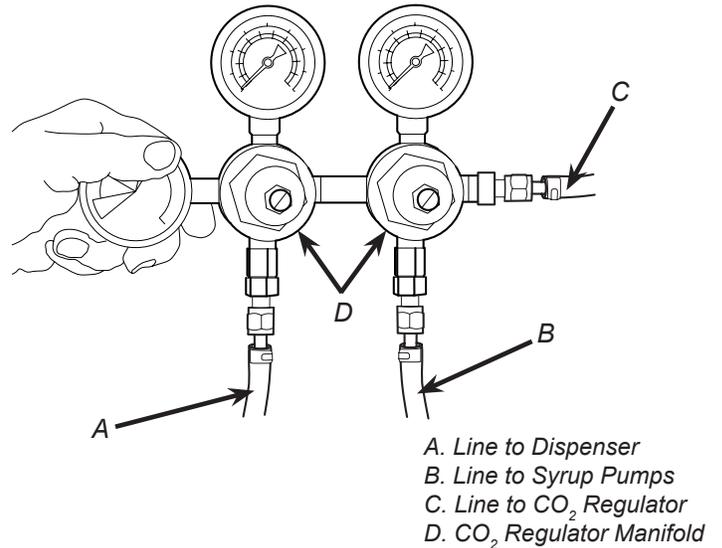
3. Route appropriate tubing from the low pressure CO<sub>2</sub> regulator manifold location to the 1/4" nut, stem on the high pressure CO<sub>2</sub> regulator attached to source and connect tubing.

**⚠ ATTENTION**

A dedicated CO<sub>2</sub> regulator is required to supply the CO<sub>2</sub> inlet at the unit as well as to all remote syrup pumps.

4. Connect tubing routed from the CO<sub>2</sub> inlet at the unit to one of the low pressure CO<sub>2</sub> regulator manifold outlets.

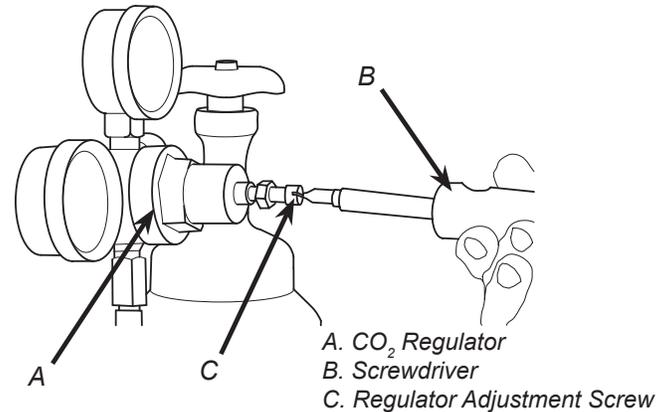
5. Connect tubing routed from the syrup pump location to the second outlet of the low pressure CO<sub>2</sub> regulator manifold.



6. Using a wrench, loosen lock nut on the regulator adjustment screw of the high pressure CO<sub>2</sub> regulator connected to the source, then using a screwdriver back out lock nut screw all the way.

**⚠ WARNING**

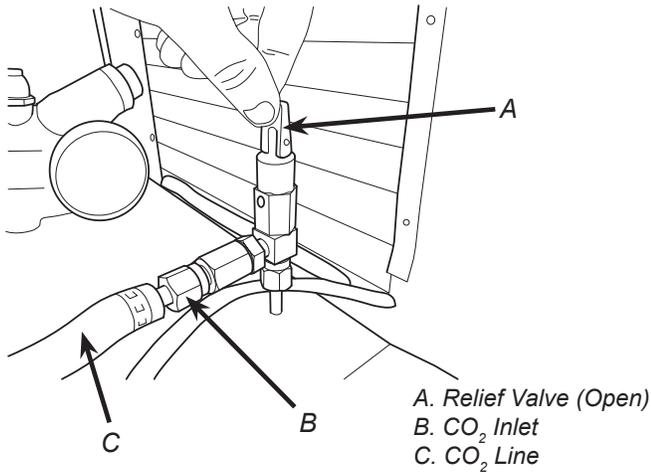
DO NOT TURN ON CO<sub>2</sub> SUPPLY AT THIS TIME



7. Repeat Step 6 for both low pressure CO<sub>2</sub> regulators on the regulator manifold routed to the unit and the syrup pumps.

# Dispenser Setup

1. Purge water to fill carbonator tank by opening carbonator relief valve. Close relief valve once water comes out.

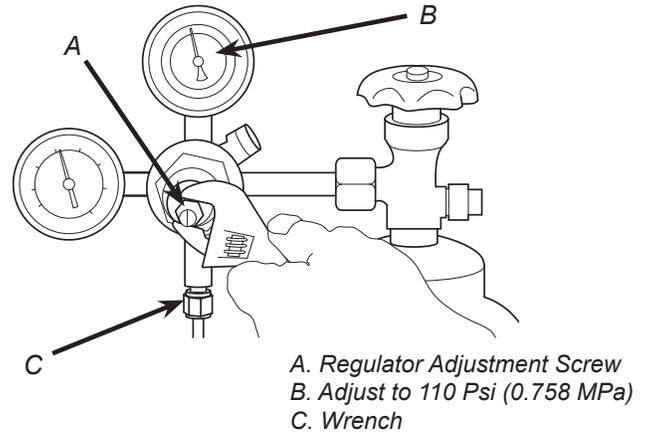


2. Activate each valve until a steady flow of water is achieved.
3. Turn power off.
4. Unplug the Pump Motor Connector from the control box. Use the wiring diagram either on the unit control box or in the back of this manual for reference.

**⚠ ATTENTION**

Failure to disconnect the motor power supply will damage the carbonator motor, the pump and void the warranty

5. Turn on CO<sub>2</sub> at the source then, using a screwdriver, adjust the high pressure regulator at the source to 110 Psi (0.758 MPa) then tighten locknut with wrench.



6. Adjust both of the low pressure regulators on the regulator manifold to 75 Psi (0.517 MPa) then tighten locknut with wrench.
7. Activate each valve until gas-out is achieved.
8. Plug the Pump Motor Connector back into the control box.

**NOTE**

Pump Motor will run for a few seconds to fill carb tank

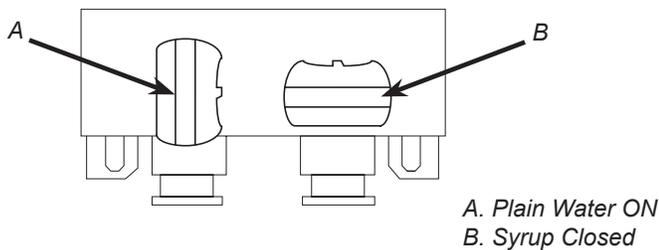
9. Turn power on.
10. Activate each valve until a steady flow of carbonated water is achieved.

# Adjust Water Flow Rate & Syrup/Water Ratio - LEV

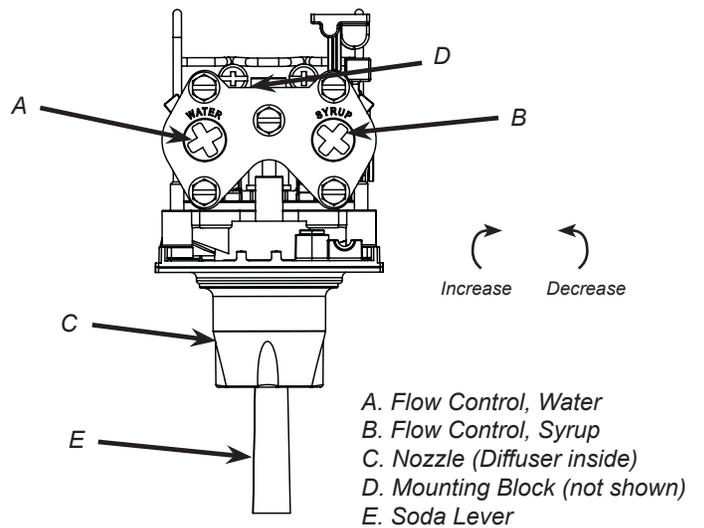
**NOTE**

Do not set flow rates or dispense from the unit until after a complete ice bank is established.

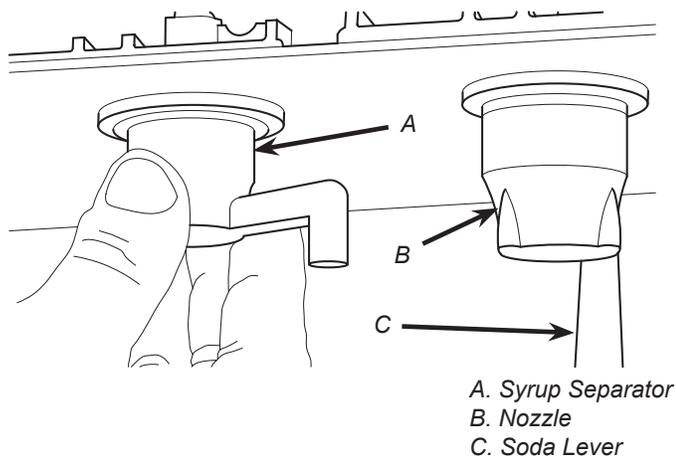
1. Close syrup shut-off at mounting block for first valve.



2. Using a Lancer brix cup verify water flow rate (5 oz. in 4 sec.). Use a screwdriver to adjust if needed.

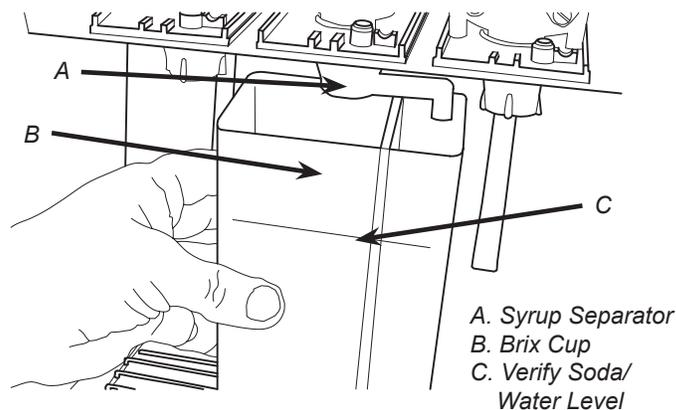


- Remove nozzle by twisting counter clockwise and pulling down, then remove diffuser by pulling down.
- Install Lancer (yellow) syrup separator (PN 54-0031) in place of nozzle.



- Re-open syrup shut-off at mounting block.

- Activate valve to purge syrup until steady flow is achieved.
- Using a Lancer brix cup, activate the valve and capture a sample. Verify that the syrup level is even with the water level. Use a screwdriver to adjust if needed.
- Repeat process for each valve.



- Re-install the merchandiser, splash plate, cup rest, and drip tray then reattach bonnet using the top bonnet screw.

## Volumetric Valve Adjustment

- Remove the ID panel from the front of the first valve.
- Insert the programmer's 10-pin connector into the ID panel plug located on the front of the circuit board.
- When properly connected, the programmer will run a self diagnostic test. The display will show all "8's" with the decimal points lighted. After about three (3) seconds, the display indicates the setting of the dip switches.

### NOTE

**If the programmer does not run its diagnostic test properly, disconnect it and try plugging it in again. If the programmer still fails, replace the programmer**

- After the programmer is connected, Press the "Read Mem" button.
- Press the "Ratio +" or the "Ratio -" key until the desired ratio is displayed.
- Verify the drink type by pressing "Carb Toggle" to select "C" for carbonated or "n" for non-carbonated.
- Press the "Enter" button to program the valve with the setting on the display.
- Verify Ratio by pressing "Read Mem".
- Disconnect the programmer and repeat steps 4-9 for each valve.



- Handheld Programmer  
Volumetric Valve

# CLEANING AND SANITIZING

## General Information

- Lancer equipment (new or reconditioned) is shipped from the factory cleaned and sanitized in accordance with NSF guidelines. The operator of the equipment must provide continuous maintenance as required by this manual and/or state and local health department guidelines to ensure proper operation and sanitation requirements are maintained.

### NOTE

The cleaning procedures provided herein pertain to the Lancer equipment identified by this manual. If other equipment is being cleaned, follow the guidelines established by the manufacturer for that equipment.

- Cleaning should be accomplished only by trained personnel. Sanitary gloves are to be used during cleaning operations. Applicable safety precautions must be observed. Instruction warnings on the product being used must be followed.

### ⚠ ATTENTION

- Use sanitary gloves when cleaning the unit and observe all applicable safety precautions.
- DO NOT** use a water jet to clean or sanitize the unit.
- DO NOT** disconnect water lines when cleaning and sanitizing syrup lines, to avoid contamination.
- DO NOT** use strong bleaches or detergents; These can discolor and corrode various materials.
- DO NOT** use metal scrapers, sharp objects, steel wool, scouring pads, abrasives, or solvents on the dispenser.
- DO NOT** use hot water above 140° F (60° C). This can damage the dispenser.
- DO NOT** spill sanitizing solution on any circuit boards. Insure all sanitizing solution is removed from the system.

## Cleaning and Sanitizing Solutions

### Cleaning Solution

Mix a mild, non-abrasive detergent (e.g. Sodium Laureth Sulfate, dish soap) with clean, potable water at a temperature of 90°F to 110°F (32°C to 43°C). The mixture ratio is one ounce of cleaner to two gallons of water. Prepare a minimum of five gallons of cleaning solution. Do not use abrasive cleaners or solvents because they can cause permanent damage to the unit. Ensure rinsing is thorough, using clean, potable water at a temperature of 90°F to 110°F. Extended lengths of product lines may require additional cleaning solution.

### Sanitizing Solution

Prepare the sanitizing solution in accordance with the manufacturer's written recommendations and safety guidelines. The type and concentration of sanitizing agent recommended in the instructions by the manufacturer shall comply with 40 CFR §180.940. The solution must provide 100 parts per million (PPM) chlorine (e.g. Sodium Hypochlorite or bleach) and a minimum of five gallons of sanitizing solution should be prepared.

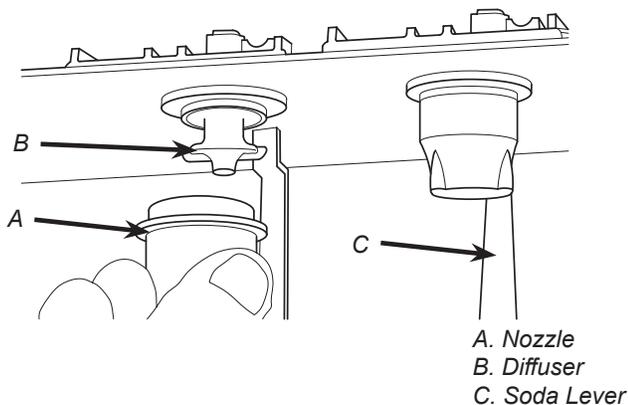
## Scheduled Maintenance & Cleaning

<b>As Needed</b>	<ul style="list-style-type: none"> <li>Keep exterior surfaces of dispenser (include drip tray and cup rest) clean using a clean, damp cloth.</li> </ul>
<b>Daily</b>	<ul style="list-style-type: none"> <li>Remove each nozzle and diffuser and rinse well in warm water. <b>DO NOT</b> use soap or detergent. This will cause foaming and off taste in finished product.</li> <li>Remove cup rest and wash in warm soapy water.</li> <li>Pour warm soapy water into the drip tray and wipe with a clean cloth.</li> <li>With a clean cloth and warm water, wipe off all of the unit's exterior surfaces. <b>DO NOT USE ABRASIVE SOAPS OR STRONG DETERGENTS.</b></li> <li>Replace the cup rest, diffusers, and valve nozzles.</li> </ul>
<b>Weekly</b>	<ul style="list-style-type: none"> <li>Taste each product for off tastes.</li> <li>Remove the unit's bonnet and check the level of water in the water bath. Replenish as required and replace bonnet.</li> </ul>

<b>Monthly</b>	<ul style="list-style-type: none"> <li>• Unplug the dispenser from the power source.</li> <li>• Remove the bonnet and clean the dirt from the gas cooler using a soft brush.</li> <li>• Replace the bonnet and plug in the unit.</li> </ul>
<b>Every Six Months</b>	<ul style="list-style-type: none"> <li>• Clean and sanitize the unit using the appropriate procedures outlined in the Cleaning and Sanitizing section of this manual.</li> </ul>
<b>Yearly</b>	<ul style="list-style-type: none"> <li>• Clean water bath interior, including evaporator coils and refrigeration components.</li> <li>• Clean the entire exterior of the unit.</li> </ul>

## Cleaning and Sanitizing Nozzles

1. Disconnect power, so as to not activate valve while cleaning.
2. Remove nozzle by twisting counter clockwise and pulling down.



3. Remove diffuser by pulling down.
4. Rinse nozzle and diffuser with warm water.
5. Wash nozzle and diffuser with cleaning solution then immerse in sanitizing solution and let sit for fifteen (15) minutes.
6. Set nozzle and diffuser aside and let air dry. **DO NOT** rinse with water after sanitizing.
7. Reconnect diffuser and nozzle.
8. Connect power.
9. Taste the drink to verify that there is no off-taste. If off-taste is found, flush syrup system again.

### ⚠ CAUTION

Following sanitization, rinse with end-use product until there is no aftertaste. Do not use a fresh water rinse. This is a NSF requirement. Residual sanitizing solution left in the system creates a health hazard.

## Cleaning and Sanitizing Syrup Lines - BIB

1. Disconnect syrup lines from BIB's
2. Place syrup lines, with BIB connectors, in a bucket of warm water.
3. Activate each valve to fill the lines with warm water and flush out syrup remaining in the lines.
4. Prepare Cleaning Solution described above.
5. Place syrup lines, with BIB connectors, into cleaning solution.
6. Activate each valve until lines are filled with cleaning solution then let stand for ten (10) minutes.
7. Flush out cleaning solution from the syrup lines using clean, warm water.
8. Prepare Sanitizing Solution described above.
9. Place syrup lines into sanitizing solution and activate each valve to fill lines with sanitizer. Let sit for ten (10) minutes.
10. Reconnect syrup lines to BIB's and draw drinks to flush solution from the dispenser.
11. Taste the drink to verify that there is no off-taste. If off-taste is found, flush syrup system again.

### ⚠ CAUTION

Following sanitization, rinse with end-use product until there is no aftertaste. Do not use a fresh water rinse. This is a NSF requirement. Residual sanitizing solution left in the system creates a health hazard.

# TROUBLESHOOTING

## Dispenser Troubleshooting

TROUBLE	CAUSE	REMEDY
Water leakage around nozzle.	<ol style="list-style-type: none"> <li>O-ring not properly installed above diffuser</li> <li>O-ring is damaged or missing.</li> </ol>	<ol style="list-style-type: none"> <li>Install or replace o-ring correctly.</li> <li>Replace o-ring.</li> </ol>
Leakage between upper and lower bodies.	<ol style="list-style-type: none"> <li>Gap between upper and lower valve bodies.</li> <li>Worn or damaged paddle arm assemblies.</li> <li>Cracked valve bodies</li> </ol>	<ol style="list-style-type: none"> <li>Tighten all six (6) retaining screws.</li> <li>Replace paddle arm assemblies.</li> <li>Replace Valve Body.</li> </ol>
Miscellaneous leakage.	<ol style="list-style-type: none"> <li>Gap between parts.</li> <li>Damaged or improperly installed o-rings.</li> </ol>	<ol style="list-style-type: none"> <li>Tighten appropriate retaining screws</li> <li>Replace or adjust appropriate o-rings</li> </ol>
Insufficient water flow.	<ol style="list-style-type: none"> <li>Insufficient incoming supply water pressure.</li> <li>Shutoff on mounting block not fully open.</li> <li>Foreign debris in water flow control.</li> <li>Foreign debris in water pump strainer</li> </ol>	<ol style="list-style-type: none"> <li>Verify incoming supply water pressure is a minimum of 25 Psi (0.172 MPa).</li> <li>Open shutoff fully.</li> <li>Remove water flow control from upper body and clean out any foreign material to ensure smooth free spool movement.</li> <li>Remove water pump strainer and clean.</li> </ol>
Insufficient syrup flow.	<ol style="list-style-type: none"> <li>Insufficient CO<sub>2</sub> pressure to BIB pumps.</li> <li>Out of CO<sub>2</sub>.</li> <li>Shutoff on mounting block not fully open.</li> <li>Foreign debris in syrup flow control.</li> <li>Bad syrup pump.</li> </ol>	<ol style="list-style-type: none"> <li>Adjust CO<sub>2</sub> pressure to 80 Psi (0.550 MPa) [minimum 70 Psi (0.480 MPa)] for BIB pumps.</li> <li>Replace CO<sub>2</sub> tank/refill.</li> <li>Open shutoff fully.</li> <li>Remove syrup flow control form upper body and clean out any foreign material to ensure smooth free spool movement.</li> <li>Replace BIB pump.</li> </ol>
Erratic ratio.	<ol style="list-style-type: none"> <li>Incoming water and/or syrup supply not at minimum flowing pressure.</li> <li>Foreign debris in water and/or syrup flow controls.</li> </ol>	<ol style="list-style-type: none"> <li>Check pressure and adjust</li> <li>Remove flow controls from upper body and clean out any foreign material to ensure smooth free spool movement.</li> </ol>
No product dispensed	<ol style="list-style-type: none"> <li>Water and syrup shutoffs on mounting block not fully open.</li> <li>The key switch on an electric valve is in the OFF position.</li> <li>Cup lever arm or ID panel actuator on electric valve is not actuating the switch.</li> <li>Electric current not reaching valve.</li> <li>Improper or inadequate water or syrup supply.</li> <li>Transformer Failure</li> <li>Bad valve solenoid(s)</li> </ol>	<ol style="list-style-type: none"> <li>Open shutoff fully.</li> <li>Turn key switch to ON position.</li> <li>Repair</li> <li>Check electric current supplied to valve. If current is adequate, check solenoid coil and switch, and replace if necessary.</li> <li>Remove valve from mounting block and open shutoffs slightly and check water and syrup flow. If no flow, check dispenser for freeze-up or other problems</li> <li>Reset transformer circuit breaker. If breaker trips again check for pinched wire harness at back-blocks</li> <li>Replace Solenoid(s)</li> </ol>

TROUBLE	CAUSE	REMEDY
Water only dispensed; no syrup; or syrup only dispensed, no water	<ol style="list-style-type: none"> <li>1. Water or syrup shutoff on mounting block not fully open.</li> <li>2. Improper or inadequate water or syrup flow.</li> <li>3. BIB supply too far from dispenser.</li> <li>4. CO<sub>2</sub> pressure too low.</li> <li>5. Stalled or inoperative BIB pump</li> <li>6. Kinked line.</li> </ol>	<ol style="list-style-type: none"> <li>1. Open shutoff fully.</li> <li>2. Remove valve from mounting block, open shutoffs slightly and check water and syrup flow. If no flow, check dispenser for freeze-up or other problems. Ensure BIB connection is engaged.</li> <li>3. Check that BIB supply is within six (6) feet of the dispenser.</li> <li>4. Check the CO<sub>2</sub> pressure to the pump manifold to ensure it is between 70 and 80 Psi (0.483 and 0.552 MPa).</li> <li>5. Check CO<sub>2</sub> pressure and/or replace pump.</li> <li>6. Remove kink or replace line.</li> </ol>
Valve will not shut off.	<ol style="list-style-type: none"> <li>1. Cup lever may be sticking or binding.</li> <li>2. Switch not actuating freely.</li> <li>3. Solenoid armature not returning to bottom position.</li> </ol>	<ol style="list-style-type: none"> <li>1. Correct or replace lever.</li> <li>2. Check switch for free actuation.</li> <li>3. Replace defective armature or spring.</li> </ol>
Excessive foaming.	<ol style="list-style-type: none"> <li>1. Incoming water or syrup temperature too high.</li> <li>2. CO<sub>2</sub> pressure too high.</li> <li>3. Water flow rate too high.</li> <li>4. Nozzle and diffuser not installed.</li> <li>5. Nozzle and diffuser not clean.</li> <li>6. Air in BIB lines.</li> <li>7. Poor quality ice.</li> <li>8. High beverage temperature.</li> </ol>	<ol style="list-style-type: none"> <li>1. Correct prior to dispenser. Consider larger dispenser or pre-cooler.</li> <li>2. Adjust CO<sub>2</sub> pressure downward, but not less than 70 Psi.</li> <li>3. Re-adjust and reset ratio. Refer to "Adjust Water Flow Rate &amp; Syrup/Water Ratio" Section.</li> <li>4. Remove and reinstall properly.</li> <li>5. Remove and clean.</li> <li>6. Bleed air from BIB lines.</li> <li>7. Check quality of ice used in drink.</li> <li>8. Check refrigeration system.</li> </ol>
Water continually overflows from water bath into drip tray.	<ol style="list-style-type: none"> <li>1. Loose water connection(s).</li> <li>2. Flare seal washer leaks.</li> <li>3. Faulty water coil.</li> </ol>	<ol style="list-style-type: none"> <li>1. Tighten water connections.</li> <li>2. Replace flare seal washer.</li> <li>3. Replace water coil.</li> </ol>
Warm drinks.	<ol style="list-style-type: none"> <li>1. Dispenser was recently installed.</li> <li>2. Restricted airflow.</li> <li>3. Dispenser connected to hot water supply.</li> <li>4. Condenser fan motor not working.</li> <li>5. Dirty condenser, air vents clogged.</li> <li>6. Dispenser capacity exceeded.</li> </ol>	<ol style="list-style-type: none"> <li>1. It may take up to 5 hours, after install, to reach the desired temperature.</li> <li>2. Check clearances around sides, top, and inlet of unit. Remove objects blocking airflow through grill.</li> <li>3. Switch to cold water supply.</li> <li>4. Replace condenser fan motor.</li> <li>5. Clean condenser and air vents of any blockage.</li> <li>6. Add pre-cooler or replace with larger dispenser.</li> </ol>

## Post-Mix Troubleshooting

TROUBLE	CAUSE	REMEDY
BIB pump does not operate when dispensing valve opened.	<ol style="list-style-type: none"> <li>1. Out of CO<sub>2</sub>, CO<sub>2</sub> not turned on, or low CO<sub>2</sub> pressure.</li> <li>2. Out of syrup.</li> <li>3. BIB connector not tight.</li> <li>4. Kinks in syrup or gas lines.</li> <li>5. Bad BIB Pumps.</li> </ol>	<ol style="list-style-type: none"> <li>1. Replace CO<sub>2</sub> supply, turn on CO<sub>2</sub> supply, or adjust CO<sub>2</sub> pressure to 70-80 Psi (0.483-0.552 MPa)</li> <li>2. Replace syrup supply.</li> <li>3. Fasten connector tightly.</li> <li>4. Straighten or replace lines.</li> <li>5. Replace BIB pump.</li> </ol>
BIB pump operated, but no flow.	<ol style="list-style-type: none"> <li>1. Leak in syrup inlet or outlet line.</li> <li>2. Defective BIB pump check valve.</li> </ol>	<ol style="list-style-type: none"> <li>1. Replace line.</li> <li>2. Replace BIB pump</li> </ol>
BIB pump continues to operate when bag is empty.	<ol style="list-style-type: none"> <li>1. Leak in suction line.</li> <li>2. Leaking o-ring on pump inlet fitting.</li> </ol>	<ol style="list-style-type: none"> <li>1. Replace line.</li> <li>2. Replace o-ring.</li> </ol>
BIB pump fails to restart after bag replacement.	<ol style="list-style-type: none"> <li>1. BIB connector not on tight.</li> <li>2. BIB connector is stopped up.</li> <li>3. Kinks in syrup line</li> <li>4. Bad BIB Pumps.</li> </ol>	<ol style="list-style-type: none"> <li>1. Tighten BIB connector.</li> <li>2. Clean out or replace BIB connector.</li> <li>3. Straighten or replace line.</li> <li>4. Replace BIB pump.</li> </ol>
BIB pump fails to restart when dispensing valve is closed.	<ol style="list-style-type: none"> <li>1. Leak in discharge line or fittings.</li> <li>2. Empty BIB.</li> <li>3. Air leak on inlet line or bag connector.</li> </ol>	<ol style="list-style-type: none"> <li>1. Repair or replace discharge</li> <li>2. Replace BIB.</li> <li>3. Repair or replace.</li> </ol>
Low or no carbonation.	<ol style="list-style-type: none"> <li>1. Low or no CO<sub>2</sub>.</li> <li>2. Excessive water pressure.</li> <li>3. Worn or defective carbonator pump.</li> <li>4. PCB malfunctioning.</li> </ol>	<ol style="list-style-type: none"> <li>1. Check CO<sub>2</sub> supply. Adjust CO<sub>2</sub> pressure to 70 Psi (0.483 MPa).</li> <li>2. Water regulator should be set at 50 Psi (0.345 MPa)</li> <li>3. Replace carbonator pump.</li> <li>4. See page 19.</li> </ol>

## Dispenser Disposal



To prevent possible harm to the environment from improper disposal, recycle the unit by locating an authorized recycler or contact the retailer where the product was purchased. Comply with local regulations regarding disposal of the refrigerant and insulation.

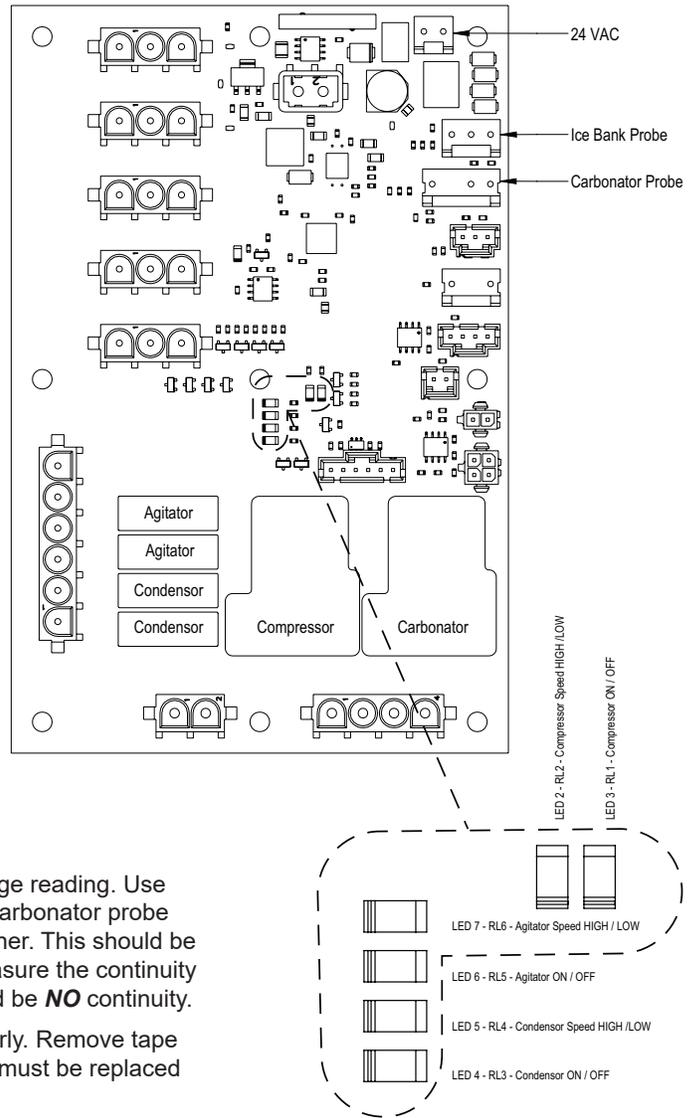
# THE ELECTRONIC ICE BANK CONTROL (EIBC)

## Checking the Normal PCB Operation

### ⚠ WARNING

Terminal block has ac line voltage and, when servicing the unit, should be covered with tape. Tape should cover bare electrical connections to prevent electrical shock.

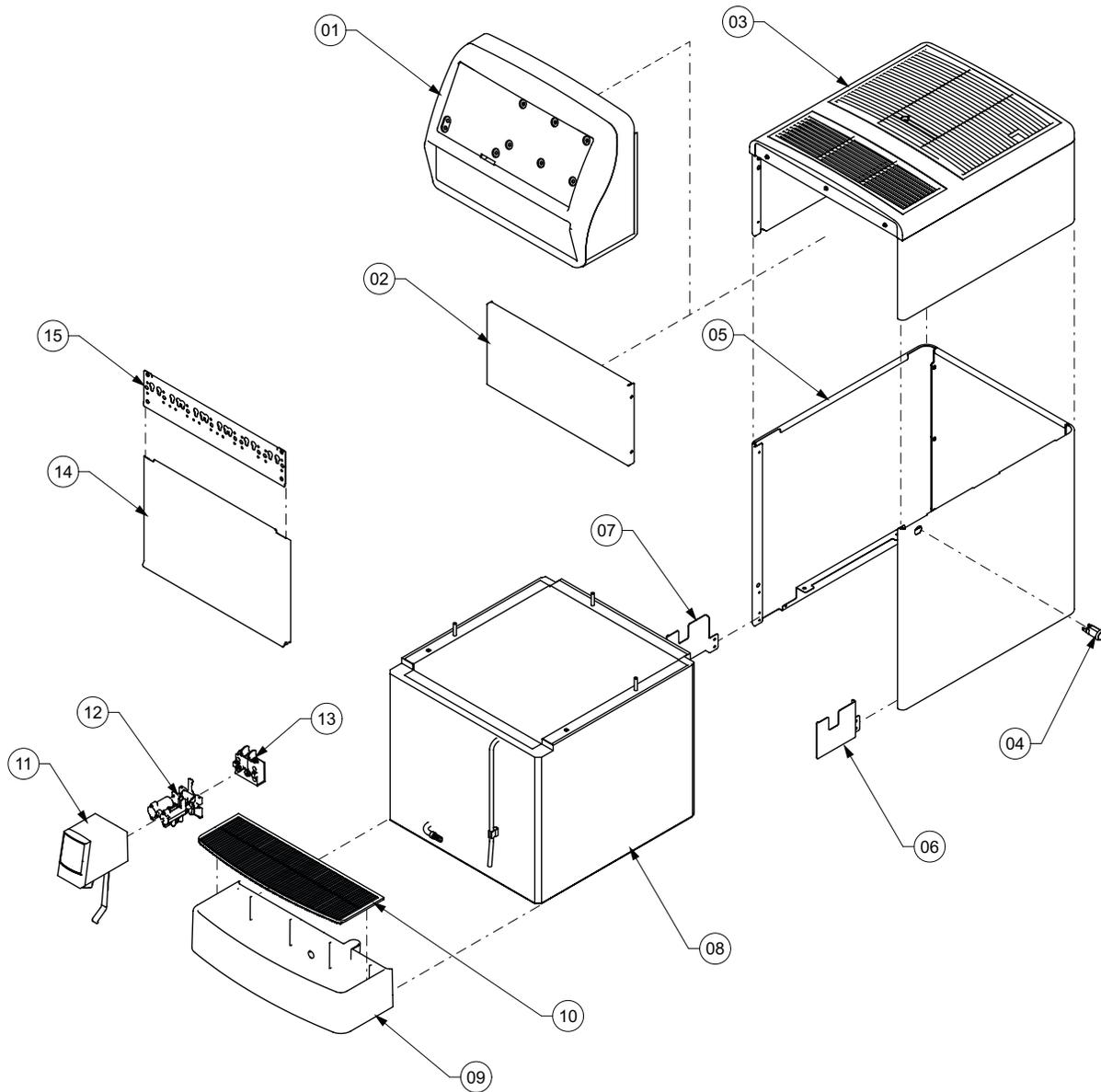
1. Turn power OFF or insure that power has been disconnected from dispenser
2. Disconnect leads from the terminal block that connect to the PCB, noting their specific location for re-connection.
3. Disconnect both the Ice Bank probe (J6) and the Carbonator probe (J3) (if equipped) connections from board.
4. Use a short copper wire, paper clip, or other means to short the Ice Bank probe terminals (J6) on the PCB by touching all three (3) pins together.
5. Set multimeter to AC Voltage.
6. Reconnect power or turn dispenser ON. A green LED will be blinking every second upon startup.
7. Observe time and check voltage of the PCB connections:
  - Terminal 1 and 2 on header J21 (Carbonator): During the first 2.5 to 3.5 minutes there should be a line voltage reading. After 2.5 to 3.5 minutes, there should be NO voltage reading.
  - Terminal 1 and 2 on header J18 (Compressor): During first 4 to 6 minutes, there should be NO voltage reading. After 4 to 6 minutes, there should be a line voltage reading.
  - You should be able to hear a “click” sound of the relay closing when the time delay ends.
8. Turn electrical power OFF for 15 seconds and then back ON again to reset Carbonator timer. Again, measure the voltage of the PCB connections
  - Terminal 1 and 2 on header J21: There should be a line voltage reading. Use a short copper wire, paper clip, or other means to short the Carbonator probe terminals (J3) on the PCB by touching all three (3) pins together. This should be done before the 2.5 to 3.5 minute time limit has elapsed. Measure the continuity again between Terminal 1 and 2 on header J21. There should be **NO** continuity.
9. If all the above work as noted, then the board is functioning properly. Remove tape and reconnect board. If any non-conformities are found, the PCB must be replaced (PN 64-5132).



LED DETAIL  
SCALE 4 : 1

# ILLUSTRATIONS AND PART LISTINGS

## Main Unit Assembly

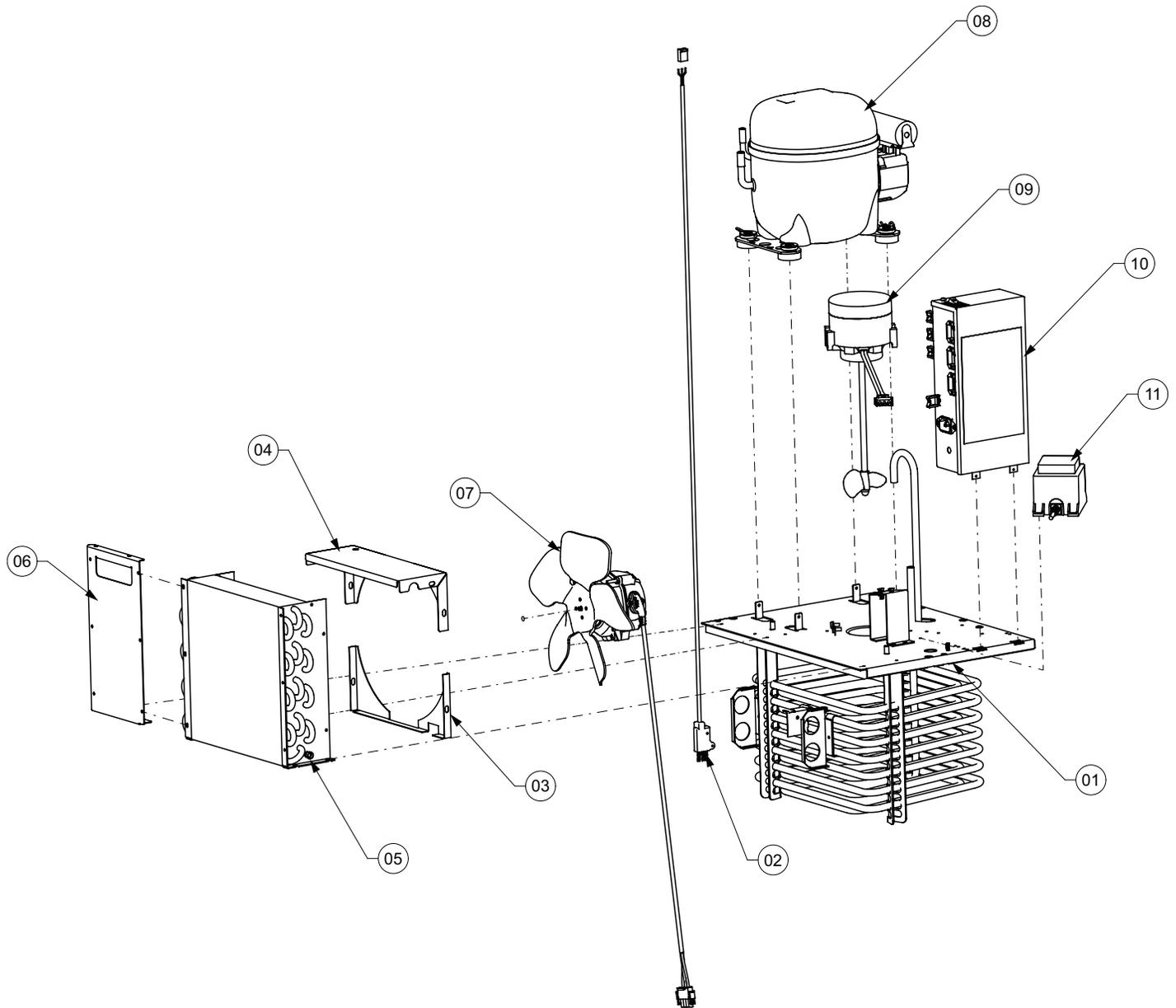


<b>Item</b>	<b>Part No.</b>	<b>Description</b>
01	54-0292	Merchandiser Assembly
02	30-7619	Bonnet Face
03	23-1255	Bonnet Assembly
04	12-0097	Key-switch Assembly
05*	51-6711	Wrapper Assembly
06*	30-13199	Drip Tray Bracket, Right
07*	30-13200	Drip Tray Bracket, Left
08	42-0215	Foam Tank Assembly
09*	05-3711	Drip Tray
10	05-1585	Cup Rest
11	19-0359	LEV, Self-Service Lever
12	05-1110	Upper Body, GMV
13	82-0274	Back-block
14	30-0319	Splash Plate
15	30-9276	Faucet Plate

### NOTE

\* - Designates parts that are specific to Delta-600 units.

# Refrigeration Deck Assembly - R290

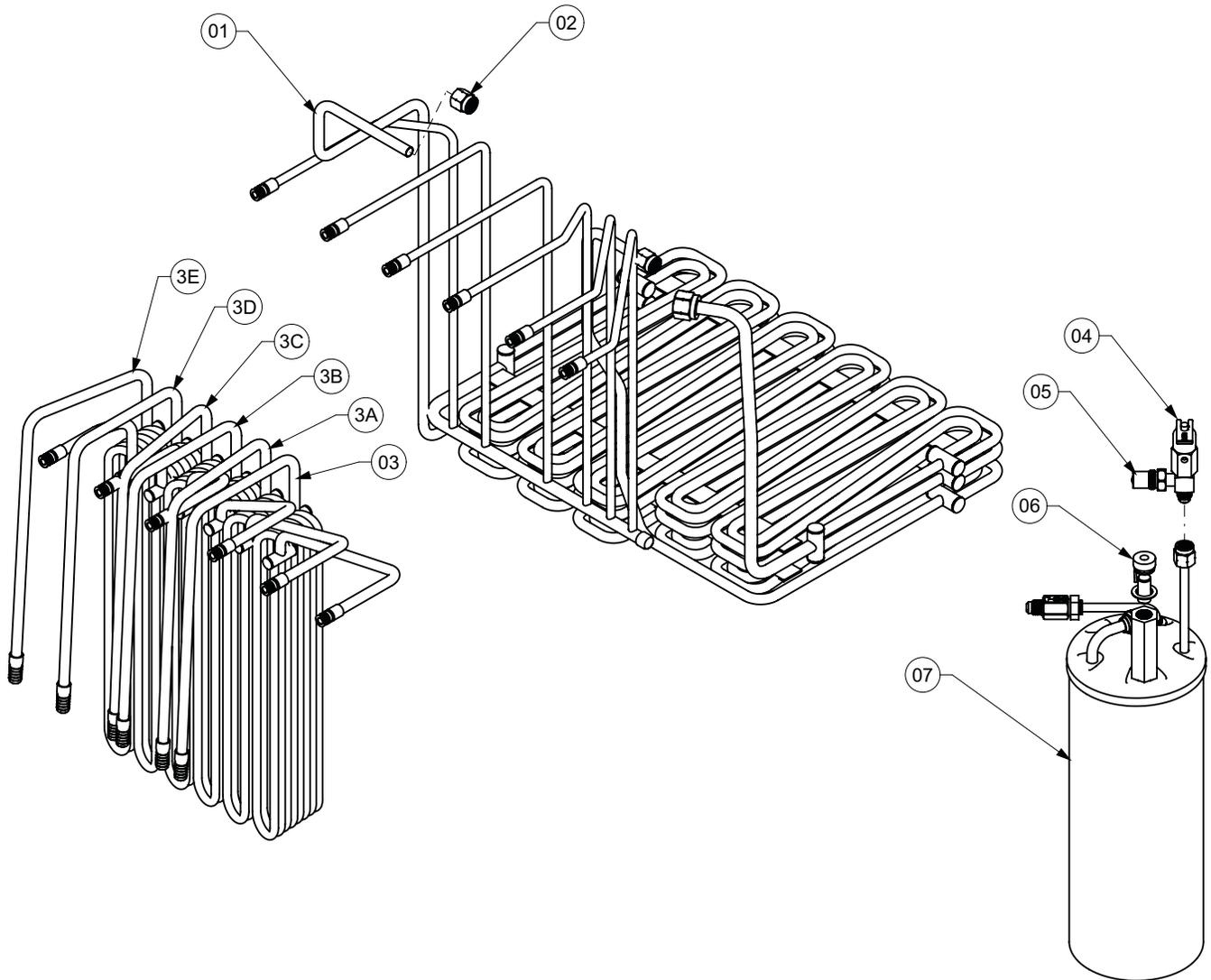


<u>Item</u>	<u>Part No.</u>	<u>Description</u>			
01*	82-5211	Refrigeration Deck Assy (115H)	08*	83-0082	Compressor Assembly (115V)
-*	82-5227	Refrigeration Deck Assy (230V)	-*	83-0083	Compressor Assembly (230V)
02	52-1773	EIBC Probe Assembly	09*	82-5215	Agitator Assembly (115V)
03	30-5866	Fan Shroud Bottom	-*	82-5216	Agitator Assembly (230V)
04	30-5865	Fan Shroud Top	10*	52-4001	Control Housing Assy (115V)
05	23-0985	Condenser	-*	52-3895	Control Housing Assy (230V)
06	30-5867	Air Shield	11*	25-0119	Transformer (115V)
07*	52-3880	Fan Motor Assy (110V - 240V)	-*	25-0120	Transformer (230V)

## NOTE

\* - Designates parts that are specific to Delta-600 units.

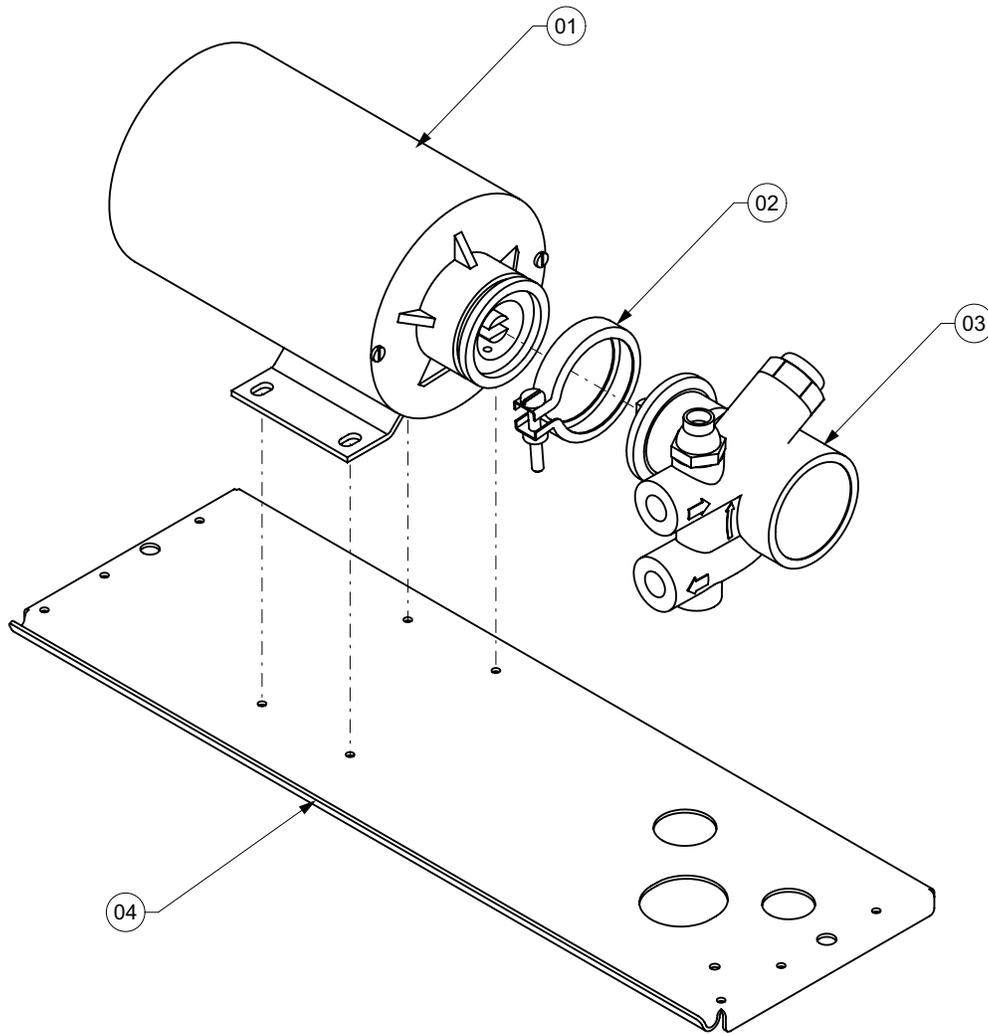
# Carbonated, Water/Syrup Line Assemblies



<u>Item</u>	<u>Part No.</u>	<u>Description</u>			
01	23-1514	Water/Soda Cage Assembly	3E	48-0478	Tubing Assembly, Syrup #6/5/4, 6/5/4V
02	01-0252	Connector	04	54-0066	Relief Valve Assembly
03	48-0473	Tubing Assembly, Syrup #1	05	17-0469	Check Valve Assembly
3A	48-0474	Tubing Assembly, Syrup #2, 6V	06	52-0909	Carbonator Probe
3B	48-0475	Tubing Assembly, Syrup #3	07	82-2676	Carb Tank Assembly (115V)
3C	48-0476	Tubing Assembly, Syrup #4	-	82-2678	Carb Tank Assembly (230V)
3D	48-0477	Tubing Assembly, Syrup #5/4/3, 6/5/4V			

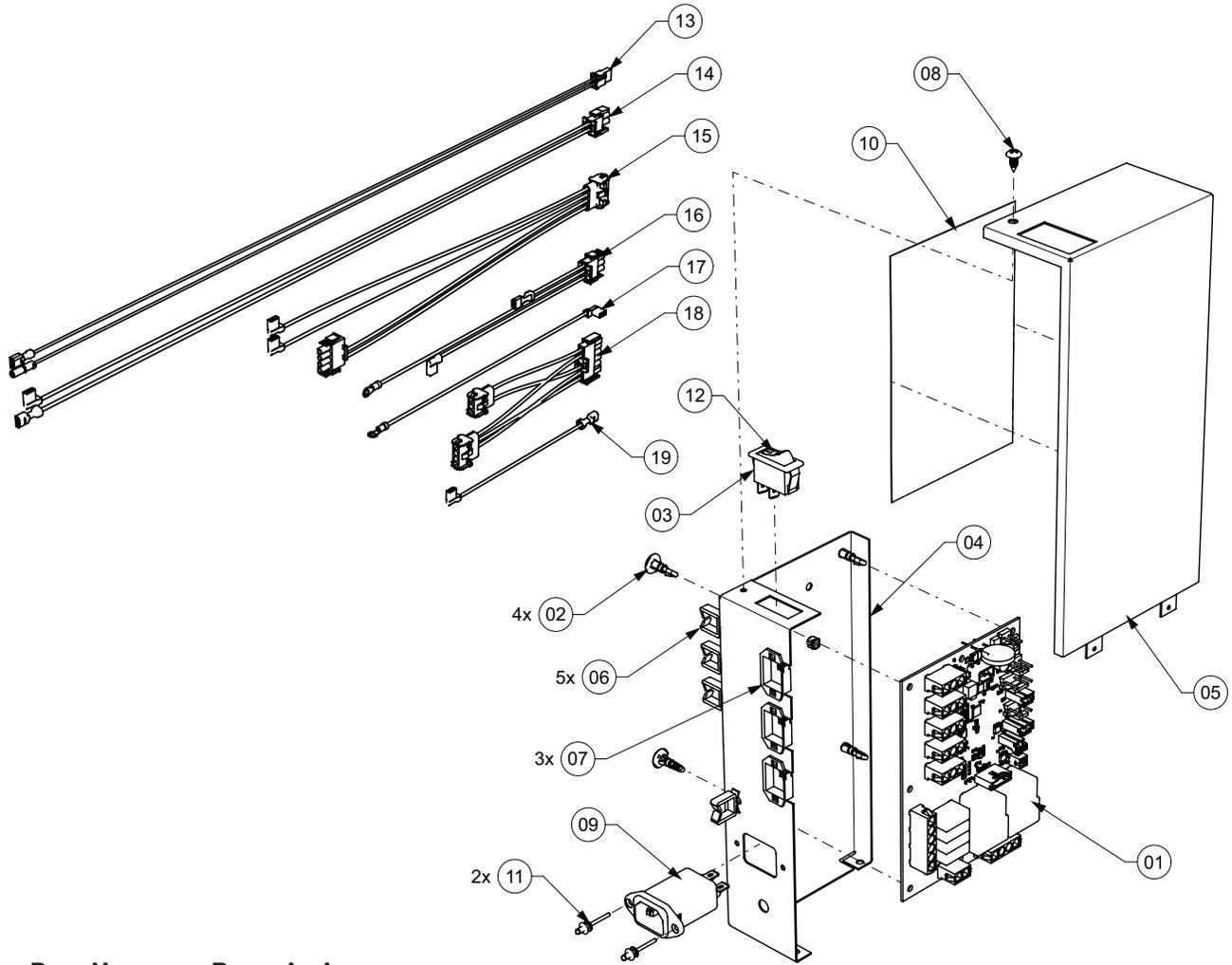
## Carbonator Deck/Pump Bracket Assemblies

---



<b><u>Item</u></b>	<b><u>Part No.</u></b>	<b><u>Description</u></b>
01	91-0063	Carbonator Motor (115V)
-	91-0065	Carbonator Motor (230V)
02	07-0017	Clamp with Screw
03	86-0084	Carb Pump
04	30-6800	Deck Plate

# Control Housing Assembly



Item	Part No.	Description	Qty	Part No.	Description
01*	64-5132/02	PCB Assy, R290, Refr., Control	10*	06-3584	Wire Diagram Label, 115/60 HZ, 230/50 HZ, 220/60 Hz, Delta 06, R290
02*	05-1678	Standoff, PCB, Rev Locking			
03*	12-0660	Rocker Switch, Sealed, 250 VAC, 16A	11	04-0072	Rivet, 0.125 Dia X 0.312, SS
04*	30-13161	Control Box Base Housing, R290	12*	06-4011	ON/OFF Label, R290 Electrical Box Power
05*	30-5108	Control Housing Cover with Kill-switch	13	52-3937	Harness, 24V to Key-switch/Valve
06*	13-0209	Wire Saddle, ROHS, with Arrowhead	14*	52-3917	Harness, Compressor to PCB
07*	13-0208	Wire Saddle, Edge, with Hinge Top	15*	52-3915	Harness, Capacitor to Bulkhead, PCB & Carbonator
08*	04-0504	Screw, 8-18 x 0.375, PHD, w/o Washer, PH, AB, SH	16*	52-3914	Harness, Switch to Connector on PCB, Neutral
09*	12-0653	Filter, Line, IEC, 250V, 50/60, 6A, Panel MNT	17*	52-3936	Lead, IEC to Chasis Ground
			18*	52-3916	Harness, Agitator & Condenser Fan to PCB
			19*	52-3913	Harness, Inlet to Switch, Hot

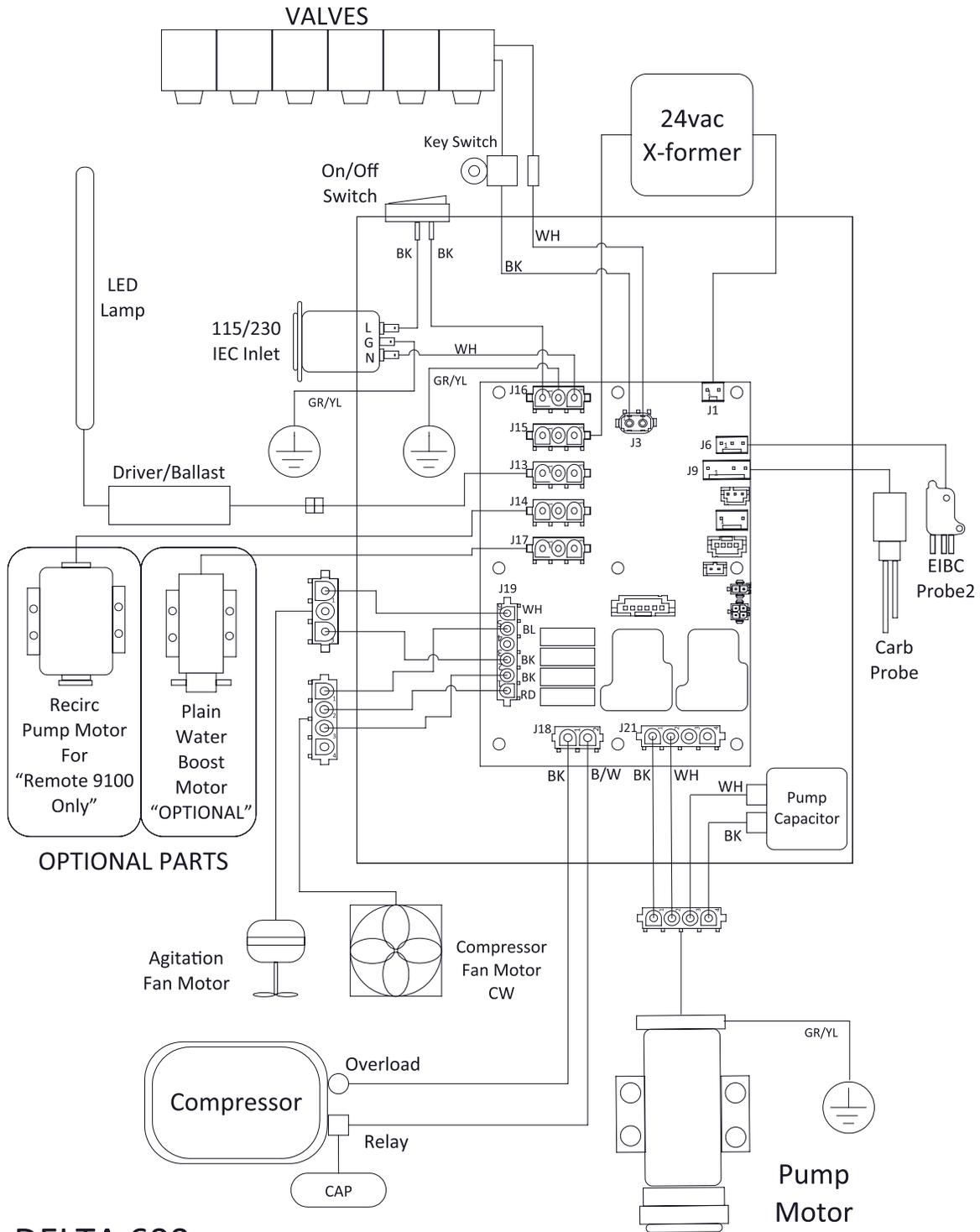
## NOTE

\* - Designates parts that are specific to Delta-600 units.

# Wiring Diagram

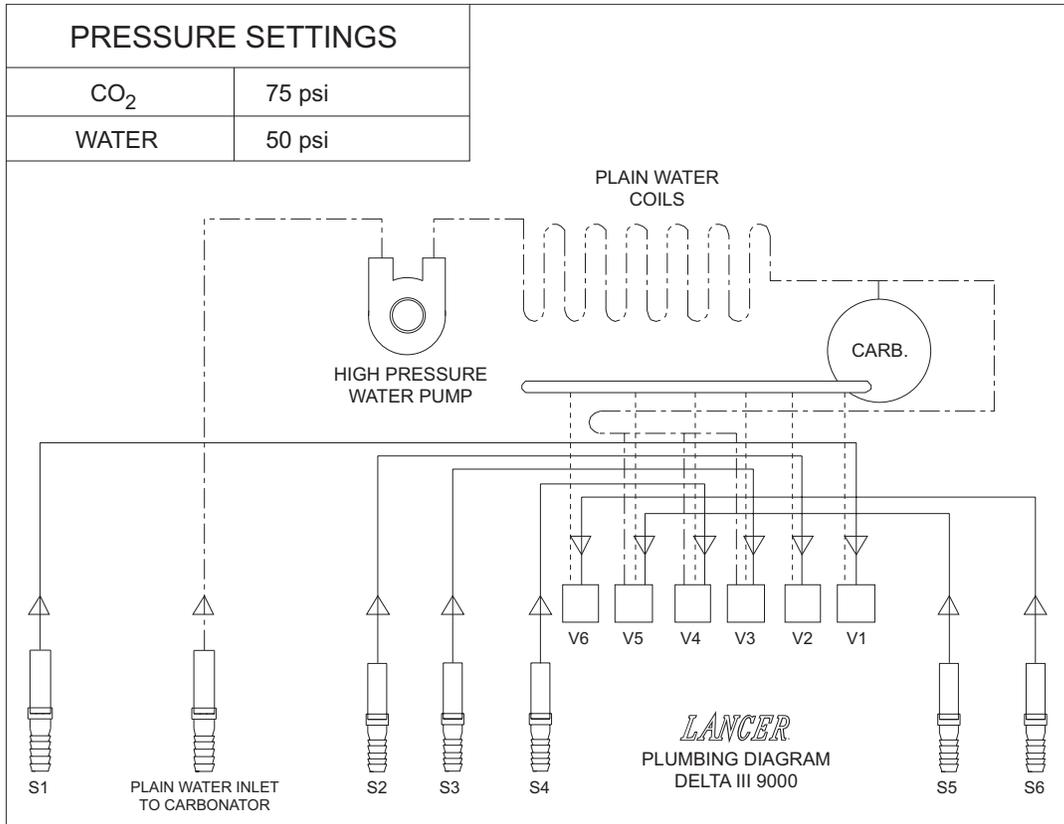
## IMPORTANT

1. WHEN STARTING UNIT OR IF CURRENT IS INTERRUPTED THERE IS A 5 MINUTE DELAY BEFORE THE COMPRESSOR/FAN STARTS.
2. THERE IS A 3 MINUTE PROTECTION TIMER ON THE CARBONATOR LEVEL SENSOR. IF THE MOTOR HAS TIMED OUT, CHECK WATER SUPPLY AND RESET BY MOMENTARILY DISCONNECTING POWER.



DELTA 600

# Plumbing Diagram



# LANCER®

Lancer Corp.  
800-729-1500  
Technical Support/Warranty: 800-729-1550  
custserv@lancercorp.com  
lancercorp.com