



# TITAN HC

## POST-MIX BEVERAGE DISPENSER

### Installation, Operation & Service Manual



Publication Number: 620067354

Revision Date: May 28, 2019

Revision: A

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This document contains the original instructions for the unit described.

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# SAFETY INSTRUCTIONS

## READ AND FOLLOW ALL SAFETY INSTRUCTIONS

### Safety Overview

- Read and follow **ALL SAFETY INSTRUCTIONS** in this manual and any warning/caution labels on the unit (decals, labels or laminated cards).
- Read and understand ALL applicable OSHA (Occupational Safety and Health Administration) safety regulations before operating this unit.
- Must wear required PPE'S when the technicians start to service or maintain the equipment.

### Recognition

<b>Recognize Safety Alerts</b>

<b><i>This is the safety alert symbol. When you see it in this manual or on the unit, be alert to the potential of personal injury or damage to the unit.</i></b>

## DIFFERENT TYPES OF 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 and follow all safety messages in this manual and safety signs on the unit.
- Keep safety signs in good condition and replace missing or damaged items.
- Learn how to operate the unit and how to use the controls properly.
- 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. Children shall not play with the appliance. Cleaning and user maintenance shall not be made by children without supervision.
- Keep your unit in proper working condition and do not allow unauthorized modifications to the unit.
- Any modifications to be done by Factory Authorized Service personnel only.
- Any part replacement in the system shall be conducted with like components.

## QUALIFIED SERVICE PERSONNEL

### WARNING:

Only factory authorized service personnel shall service the equipment. **ALL WIRING AND PLUMBING MUST CONFORM TO NATIONAL AND LOCAL CODES. FAILURE TO COMPLY COULD RESULT IN SERIOUS INJURY, DEATH OR EQUIPMENT DAMAGE.**

**NOTE: System contains flammable refrigerant. do not tamper with the system. it must be serviced by factory authorized service personnel only. Any Parts replacement shall be conducted with like components.**

## SAFETY PRECAUTIONS

This unit has been specifically designed to provide protection against personal injury. To ensure continued protection observe the following:

### WARNING:

Disconnect power to the unit before servicing following all lock out/tag out procedures established by the user. Verify all of the power is off to the unit before any work is performed.

**Failure to disconnect the power could result in serious injury, death or equipment damage.**

### CAUTION:

Always be sure to keep area around the unit clean and free of clutter. Failure to keep this area clean may result in injury or equipment damage.

## SHIPPING AND STORAGE

### CAUTION:



**Unit contains flammable refrigerant. care to be taken while handling, moving and use of the unit to avoid either damaging the refrigerant tubing or increasing the risk of a leak.**

### CAUTION:

Before shipping, storing, or relocating the unit, the unit must be sanitized and all sanitizing solution must be drained from the system. A freezing ambient environment will cause residual sanitizing solution or water remaining inside the unit to freeze resulting in damage to internal components.

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

### DANGER:

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 concentrations of CO<sub>2</sub> gas experience tremors which are followed rapidly by loss of consciousness and **DEATH**.

## POWER CORD

If the power cord is damaged, it must be replaced by a special cord available from the manufacturer or its service agent. Detachable cord sets should meet the below requirements:

- Cord type should be H05VV-F or stronger, with earthing conductor;
- Cord section should be minimum nominal cross-sectional area of 1.0mm<sup>2</sup>;
- Plug should also be earthing type and obtain approval with above cord.

## SOUND LEVEL

The A-weighted sound pressure level has been determined to be below 70dBA.

## UNIT LOCATION

This unit is not designed for use in outdoor locations.

 **CAUTION:**

Appliance is not suitable for installation in an area where a water jet could be used.

 **CAUTION:**

The appliance must be placed in a horizontal position.

# GENERAL INSTRUCTIONS

## GENERAL DESCRIPTION

This manual is a guide for installing, operating, and maintaining this equipment. This section gives the Unit Description, Theory of Operation, and 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 service center	

## UNIT DESCRIPTION

The Titan HC over the counter, post-mix, beverage dispenser is compact, lightweight, and can be ordered with or without a built-in carbonator. Syrup pump kits are available for the units.

## TITAN - 6 VALVES

Titan HC units may be island mounted or installed on a front or rear counter. The 1/3+ H.P. refrigeration deck is easily removed for service and maintenance. Adjustable water flow regulators and syrup flow regulators, located on dispensing valves, are easily accessible.

The Titan HC over the counter, post-mix, beverage dispenser offers the following features:

- Key-lock switch
- Circuit Breaker
- Lighted merchandiser
- Built-in carbonator
- Syrup pump kit (optional)
- Removable refrigeration deck (s)
- Removable drip tray



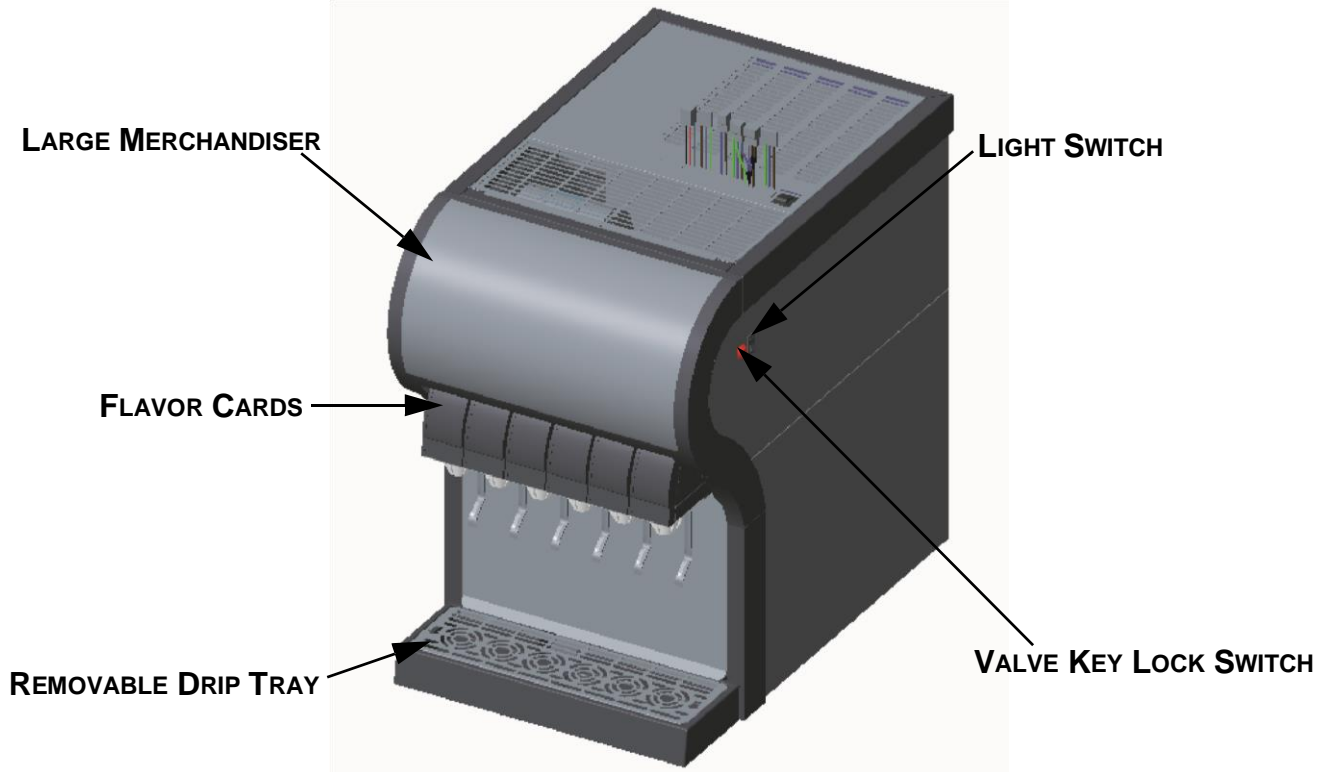


Figure 1.

## UNIT SPECIFICATION

The Titan HC is an over counter Ice bank system beverage dispenser. It contains six valves for drink dispense. Valve number 3,4 and 5 from right to left can be converted from carbonated drink to non-carbonated drink dispense.

Table 1.

Height	28.9 inches	730 mm
Width	18.62 inches	473 mm
Depth	28.8 inches	731.5 mm
Shipping weight (approx)	210 lbs	95 Kg
Water Bath Size	13 gal (US)	48 L
Ice Bank Weight	26.4 lbs	12 Kg

## PART NUMBERS

60 Hz Model, 220 VAC See name plate

## CAPACITY

### Assuming:

- 3 oz./sec. (85g / sec.) dispensing rate
- 105° F (40° C) ambient temperature
- Two 12-oz. (340g) drinks per minute
- Drink temperature  $\leq 40^{\circ}\text{F}$  (4.4°C) for CSD

### Draw Capacity:

- 50 cups at 12OZ/cup per minute at 105°F (40°C) ambient
- 126 cups at 12OZ/cup per minute at 90°F (32.2°C) ambient

## MISCELLANEOUS INFORMATION

Refrigerant.....R290

Compressor HP.....1/3+

Design Valve Flow Rate.....85 g/sec (128 max) (3.0 oz./sec <4.0 max>)

Standard Valve.....SFV, LEV 3.0, LVV

Cup Clearance.....250 mm (9.8 inches)

Safety Approvals..... INMETRO, CB

Sanitary Approvals.....ETL Sanitation (NSF 18)

Electronic Controls.....Electronic ice bank and liquid level control

## ACCESSORIES

Legs (optional), order 4 ea. — P/No 70970

## THEORY OF OPERATION

**NOTE: The unit is factory set to dispense carbonated water as per customer's requirement. It is available to dispense at most 3 non-carbonated waters 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 activated, 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.

# INSTALLATION

## ⚠ CAUTION:

Only factory authorized service personnel should service this unit. Any part replacement shall be conducted with like components.

## ⚠ CAUTION:

This appliance is for indoor use only. The appliance is only to be installed in locations where its use and maintenance is restricted to trained personnel.

**ALL WIRING AND PLUMBING MUST CONFORM TO NATIONAL AND LOCAL CODES.**

## ⚠ WARNING:

It is the responsibility of the installer to ensure that the water supply to the dispensing equipment is provided with protection back flow by an air gap as defined in ANSI A 112.1.2-1979; or an approved vacuum breaker or other such method as proved effective by test and must comply with all federal, state and local codes.

**Failure to comply could result in serious injury, death or damage to the equipment.**

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

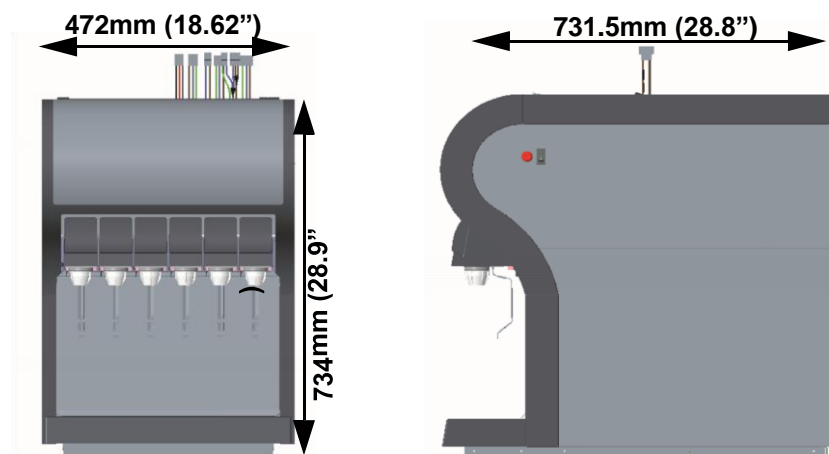
## DELIVERY INSPECTION AND UNPACKING

Each unit is completely tested thoroughly and inspected before shipment. Upon receiving the units from shipment carrier, carefully inspect the unit for visible indication of damage. If any damages exist, file a claim with the shipment carrier.

**Table 2.**

Accessories	Part No.	Quantity
Cup rest	890531197	1
Power cord	890214305	1
Drain Hose	50119	1
Clamps	70339	2
Decals	Varies with dispenser	1 Set
Manual	620067354	1

## DIMENSIONS



**Figure 2.**

## INSTALLATION REQUIREMENTS

Weight	Front or rear counter must be level and able to support 300 lbs.
Environment	Indoor installation only
Temperature	39 to 110° F ambient temperature
Clearance	18-inches on Top, 6- inches all sides
CO <sub>2</sub>	75 psig (5.25 bar) at unit with internal carbonator for ambient carb version
Syrup	60 psig
Water	20~65 psig(1.4~4.5bar)
Electrical	See nameplate on unit for electrical requirements

## ELECTRICAL REQUIREMENTS



### WARNING:

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



### WARNING:

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



### CAUTION:

The wiring must be properly grounded.

**ALL WIRING MUST CONFORM TO NATIONAL AND LOCAL CODES. MAKE SURE UNIT IS PROPERLY GROUNDED.**

## ENVIRONMENT REQUIREMENTS

Ambient (room) temperature **MUST NOT EXCEED 110° F (43° C)** temperatures in excess of 110° F (43° C) will void the factory warranty and may eventually result in refrigerations system failure.



### CAUTION:

To avoid overheating & damaging to the unit, and voiding the warranty, there must be at least 6 - inch (0.15 m) of clearance on all sides and 18 - inch (0.45 m) on the top of the unit.



### CAUTION:

This unit is designed for indoor installation only (In non harsh environments).



### CAUTION:

If the unit is exposed to freezing temperature, water in the unit will freeze and may damage the unit.



### CAUTION:

Avoid spillage into the top vents.

## INSTALLATION PROCEDURE

### Counter-top Installation

**NOTE:** Optional 4-inch legs (P/N 70970) will elevate the unit 4 inches above the counter (order 4 legs). If the unit is installed without legs, the gaps must be sealed with RTV.



**WARNING:**

The unit is heavy and extreme care should be taken when moving or lifting the unit. Do not attempt to lift the unit manually.



**CAUTION:**

Unit contains flammable refrigerant. Care to be taken while handling, moving and use of the unit to avoid either damaging the refrigerant tubing or increasing the risk of a leak.

**Failure to comply could result in serious injury, death or damage to the equipment.**

1. Place the unit on a level counter capable of supporting at least 400 pounds (180 kg).
2. Remove drip tray and front access panel. (push up and pull out the splash panel).



**Figure 3.**



**Figure 4.**

3. Do not insert the power cord plug before installation. Remove front merchandiser, disconnect wires to valve key lock switch, and light switch.

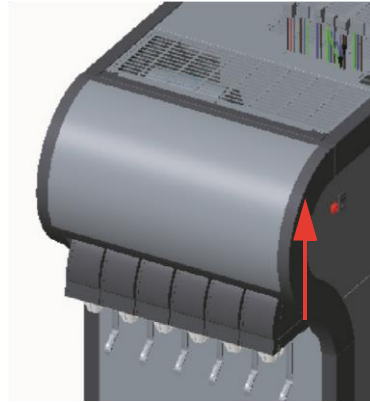
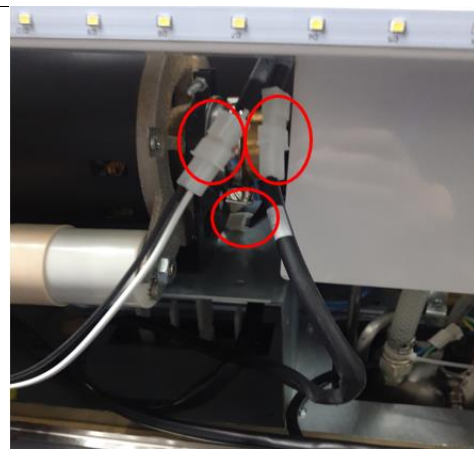


Figure 5.



Disconnect the Light power, Valve power inlet and valve harness housing

Figure 6.

4. Pull water, syrup, and CO2 lines through counter or wall. To comply with NSF International requirements the unit must be sealed to the counter top and all access holes in the unit base must be sealed, or the unit can be installed using the optional 4-inch legs (P/N 70970). Caulk/seal the unit to the counter using Dow Corning RTV 731 or equivalent approved sealant.



**CAUTION:**

**Make sure that the power to the unit is disconnected (unplugged) before removing the covers.**

5. Fill the water bath with clean water around the carbonator tank or bend back the insulation on the non-carbonated unit until it comes out the overflow tube. Make sure the overflow tube is not blocked or plugged. Use low-mineral tap water, not distilled or deionized water.

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



**Figure 7.**



**Figure 8.**

6. Re-install the red cap screws on the panel
7. Connect the light valve harness and install the merchandiser.

## GLOBAL ICE BANK CONTROL (GIBO) THEORY OF OPERATION

Once electrical power is supplied to the Unit, the agitator motor will start. There will be a three-minute time delay before the refrigeration compressor and the condenser fan motor will start. This three-minute time delay will take place each time electrical power to the Unit is interrupted. The Unit will continue to operate until ice covers all three stainless-steel pins on the ice bank control probe. The ice bank control module senses this by measuring the difference in electrical resistance between the water and the ice. When the ice on the evaporator coil becomes thick enough, it covers the three stainless-steel pins on the ice bank control probe. The control module senses there is enough ice and turns the refrigeration compressor and the condenser fan motor off. The Unit remains turned off until the ice bank control three stainless-steel pins are free of ice. Once this happens, the ice bank control module starts the refrigeration compressor and the condenser fan motor.

## Connect Syrup, Water and Carbonated Lines

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

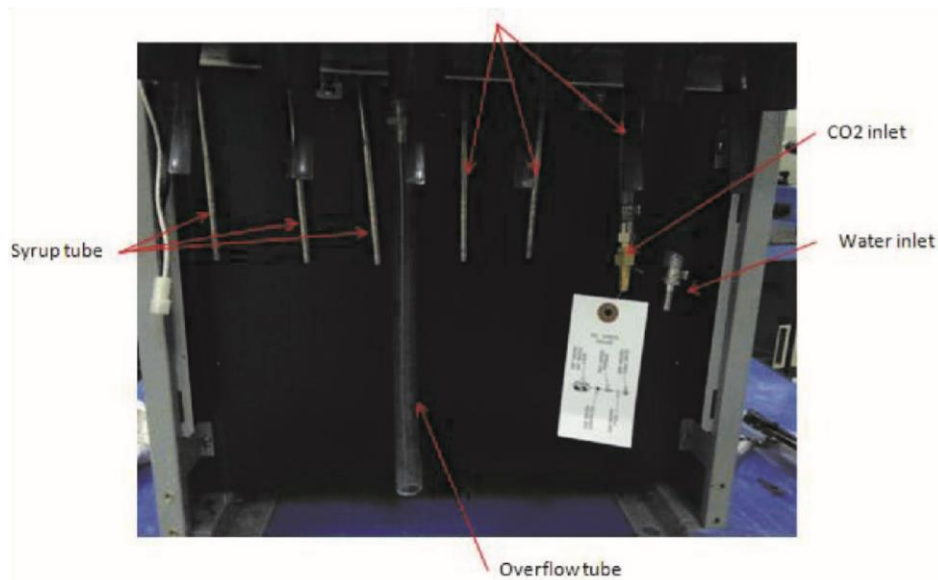


Figure 9.

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

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

**NOTE: If water supply pressure to the unit is less than 20 psi, a water pressure booster is required. If water supply pressure to the unit is more than 65 psi, a water pressure regulator must be installed in the supply line.**

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

**NOTE: Connect the CO<sub>2</sub> lines. Be sure the water and CO<sub>2</sub> are on. CO<sub>2</sub> should be set to 75 psig (5.25 bar) maximum. Higher CO<sub>2</sub> pressure will result in lower carbonation.**

2. Connect optional drip tray drain hose (if used). Be sure remove the black cap if the drain hose is used.
3. Connect the CO<sub>2</sub> lines. Be sure the water and CO<sub>2</sub> are on. CO<sub>2</sub> should be set at 75 psi (5.25 bar) maximum. Higher CO<sub>2</sub> pressure will result in LOWER carbonation. CO<sub>2</sub> Inlet Carbonator.
4. Bleed the air out of the carbonator (hold with wrench) Bleed Valve by pulling up on the metal ring on the bleed valve. Bleed each valve into a bucket until water comes out for 2-3 seconds.

**NOTE: The CO<sub>2</sub> inlet fitting is sealed inside the carbonator with an O-ring. This fitting rotates freely and must be held by a second wrench while securing the CO<sub>2</sub> inlet line.**

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

### Primary and Secondary CO<sub>2</sub> Regulator Settings

1. Open CO<sub>2</sub> cylinder valve slightly to allow lines to slowly fill with gas. When lines are fully pressurized open the valve all the way until it back-seats itself (this prevents leaks from the valve).



2. Adjust the cylinder CO<sub>2</sub> regulator to 5.2 bar (75 psi) for bag-in-box applications, 2.8 bar (40 psi) for sugar base tank applications and 0.69 bar (10 psi) for diet base tank applications.
3. The Titan HC dispenser with integral cold carbonator requires CO<sub>2</sub> supply pressures of 5.2 bar (75 psi).
4. Bleed air from the lines with the carbonator tank relief valve.
5. Check the system for gas leaks.

## Check for Leaks

1. Bleed air from the lines by activating dispensing valves.
2. Remove air from carbonator (if dispenser has built-in carbonator) by opening carbonator relief valve until water escapes.
3. Check the system for CO<sub>2</sub> leaks by pressurizing and then turning off the cylinder valve. Wait at least two minutes and check the cylinder pressure gauge (1800 psi gauge) to see if the pressure has dropped.
4. Check the system for water and syrup leaks.

## Reinstall Panels

1. Re-install top panel, close front merchandiser panel, and front splash panel.

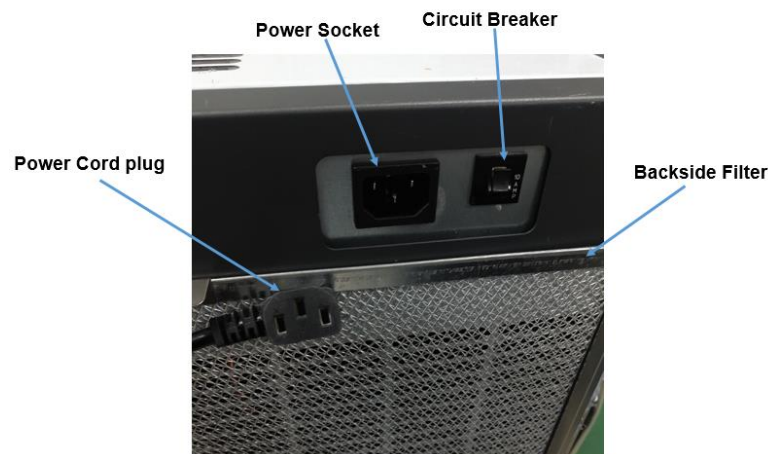
### CAUTION:

Make sure that the power is disconnected from the unit.

## Connect Electrical Power

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

1. Make sure that the electrical power circuit is switched off.
2. Plug the dispenser into the power receptacle.



**Figure 10.**

3. Turn electrical power ON.
4. Check to see that the refrigeration system started after the built-in 3 minute delay.
5. Allow dispenser to form an ice bank before dispensing beverages. This will take 3 - 8 hours depending on the ambient conditions.

## ADJUST WATER-TO-SYRUP RATIO

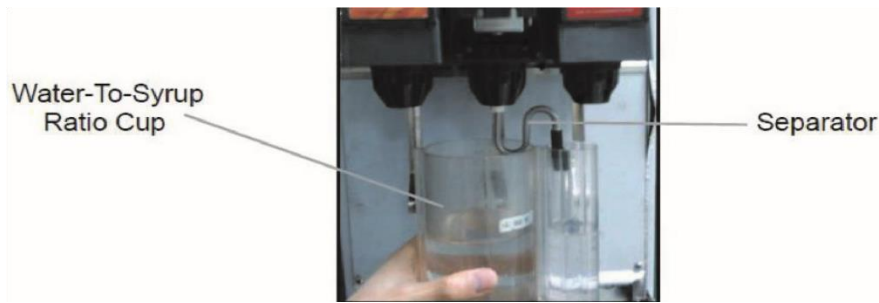


Figure 11.

1. Remove valve cover and install syrup separator in place of nozzle.
2. Hold cup under valve and dispense beverage for a specific time (such as 4 seconds).

**NOTE: Water and syrup must be cold before checking ratios.**

3. Adjust carbonated water flow to the desired rate (such as 74 ml (2.5 oz) per second).
4. Turn the flow adjuster 1/4 of a turn at a time and recheck the flow. To increase reading turn clockwise.
5. Next set syrup flow adjuster to get the desired ratio.
6. Test the valve and adjust until a consistent ratio is delivered three consecutive times.
7. Repeat procedure for other valves.



Figure 12.

## ADJUSTING FLOW RATES

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

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

**Table 3. Flow Rates Oz./sec. Based on 5:1 Ratio**

Finished Drink Oz./Sec.	Water Oz./Sec.	Syrup Oz./Sec.
1.5	1.25	0.25
2.0	1.67	0.33
2.5	2.08	0.42
3.0	2.5	0.50

## ELECTRONIC CONTROL BOARD FUNCTION

An integrated circuit board and microprocessor are used to control the electrical functions of the Olympus™ beverage dispenser. Functional features of the control board include:

- Ice bank control with compressor start-up protection
- Carbonator control with continuous run protection
- LED diagnostics

Input to the control board include line power, the ice bank position sensor, and carbonator water level sensor. Switched outputs from the circuit board include the compressor, agitator motor, condenser fan motor, and carbonator pump (refer to electrical diagram in reference section).

## ICE BANK CONTROL

The ice bank control operates the compressor and condenser fan motor to control the size of the ice bank. The control board will not restart the compressor until after the compressor has been off for at least 3 minutes to allow the refrigeration system pressures to equalize.

## CARBONATOR CONTROL

The carbonator control operates the integral carbonator pump to maintain the water level in the carbonator tank within pre-established limits. A programmed timer shuts down the carbonator pump motor if it operates continuously for more than 3 minutes. This prevents the carbonator from running continuously if there is a water leak or loss of water supply.

## VOLTAGE CUTOUT PROTECTION

The control board monitors the input line for high and low voltage conditions. If the voltage is outside of the acceptable range, the control will not allow certain operations (to protect motors from damage).

## LED DIAGNOSTICS

LED diagnostic lights are mounted on the control board to assist in trouble shooting. There is one green LED and two red LED's.

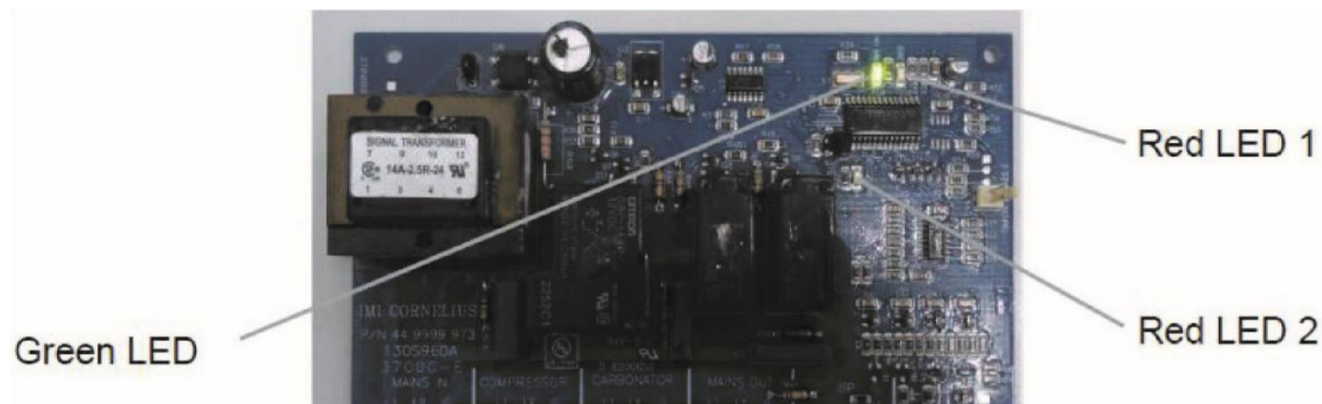


Figure 13.

## Functions of the LEDs are:

- **Red** and **Green** OFF = no power to the dispenser
- **Green** ON = line voltage is within acceptable range
- **Red** LED 1 ON = The pump is working ,when the led flash means that working time more than 3min.
- **Red** LED 2 ON = The compressor is working after 3min startup delay period.

**NOTE: The LED has been flashed in delay period.**

**NOTE: The control board must be reset if the carbonator pump does not run because the 3minute continuous run period has been exceeded (**red** LED 1 Flash). To reset the control board toggle the main power switch OFF, wait 15 seconds, then toggle to ON.**

# OPERATION

## INSTRUCTIONS

Push power ON/OFF switch to ON to power on the unit.



Figure 14.

## Dispensing Product

To dispense beverage press drink container against the lever or push the button on the valve cover.

## Replenishing Syrup Supply

### Tank System

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

### Bag-In-Box System

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

## ADJUSTMENTS

### Water-to-Syrup Ratio Adjustment

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

## CLEANING AND CHECKS

### Daily Cleaning

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



Figure 15.

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

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

## Daily Checks

1. Check CO<sub>2</sub> supply.
2. Check syrup supply.

## Sanitizing Syrup Systems

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

### Sanitizer Solution

Using a clean empty syrup tank, mix a non-scented liquid household bleach containing a 5.25% sodium hypo chlorite concentration in one gallon of 70°F - 100°F (20°C - 38°C) potable water.

### Detergent Solution

Using a clean empty syrup tank, mix 1/2 oz. (14 g) liquid dish washing detergent per gallon of 70°F - 100°F (20°C - 38°C) potable water. Shake tank to mix.

## Sanitizing Syrup Tank Systems

1. **Disconnect Syrup:** Remove quick disconnects from syrup tanks and rinse disconnects in potable water.

### CAUTION:

To avoid possible personal injury or property damage, DO NOT remove the syrup tank cover until CO<sub>2</sub> pressure has been released from the tank.

2. Wash System
  - A. Using a clean empty syrup tank, prepare a washing solution by mixing 1/2 oz. (14 g) liquid dish washing detergent per gallon of 70°F – 100°F (20°C - 38°C) potable water. Shake tank to mix B.  
Connect tank containing the solution to one of the syrup circuits.
  - C. Place the waste water container under dispensing valve. Dispense for one minute to purge all syrup from the circuit.
  - D. Repeat this process for each syrup circuit.
3. Flush System
  - A. Connect a tank containing clean potable water to syrup circuit and pressurize to 60-80 psi. (4-5.5 bar).
  - B. Place the waste container under dispensing valve. Dispense from the valve for one minute to flush the circuit.
  - C. Repeat this process for each syrup circuit.
4. Sanitize System
  - A. Connect the tank containing the sanitizer solution to syrup circuit and pressurize to 60-80 psi. (4-5.5 bar).

- B. Place the waste container under dispensing valve. Dispense from the valve for till the sanitizing solution is dispensed for 30 seconds.
- C. Allow the sanitizing solution to remain in circuits for at least 10 minutes but no more than 15 minutes.
- D. Dispense from the valve until the whole sanitization solution is used up.
- E. Repeat this process for each syrup circuit.

#### 5. Flush System

#### **IMPORTANT:**

The flushing solution must not exceed 200PPM chlorine.

- A. Connect a tank containing clean potable water to the syrup circuit and pressurize to 60 - 80 psi. (4 - 5.5 bar).
- B. Place waste container under dispensing valve. Dispense from the valve for one minute to flush the circuit.
- C. Repeat this process for each syrup circuit.

#### **CAUTION:**

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

#### **Sanitizing Bag-In-Box Syrup System**

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

1. Use a clean container [like a 5 gallon (20 l) plastic bucket] to mix solutions and hold flushing water.
2. Cut bag valves from empty BIB containers. Clean them and connect them to the ends of the syrup lines.
3. Place syrup lines with bag valves into the container of solution.

#### **Double Liquid Check Valve Inspection & Cleaning**

#### **CAUTION:**

The carbonator double-liquid check valve must be inspected after any disruptions to the water supply system (plumbing work, earth quakes, etc.). It should also be inspected at least once a year under normal conditions. If particles lodge in the check valve CO2 gas could back flow into the water system and create a health hazard.

1. Shut off CO2, syrup, and water supplies to the unit.
2. Disconnect the water line from the double check valve then remove the check valve.
3. Disassemble the check valve. Clean and inspect each part, especially check the ball for damage. Replace damaged or worn out parts.
4. Always install a new seat (P/N 315-250-12).
5. Re-assemble and install the check valves.
6. Turn on the CO2, syrup, and water supplies, and reconnect the electrical power.

## Sanitizing by Diversol CX

### **⚠ CAUTION:**

Melt the Ice bank on the evaporator and Discharge the water in the water bath before starting the following sanitation solution.

1. Mix Diversol CX with 40~50°C water (150g/10L) to make sanitation solution.
2. Sanitizing syrup and water system by below steps:

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- A. Use water to clean the system continuously by 10 minutes.
  - B. Sanitizing by sanitation solution, and keep the solution in all position of system for 60 minutes.
  - C. Use sanitation solution to clean the system continuously by 10 minutes.
  - D. Sanitizing by sanitation solution, and keep the solution in all position of system for 60 minutes.
3. Use water to clean syrup and water system continuously by below steps:
    - A. Step 1. Clean continuous by 3 minutes and pause for 5 minutes.
    - B. Step 2. Repeat the first step 10 times.
  4. Drop first 3 cups of drinking.

## CSD/NCB Conversion (Optional Configuration)

The Titan unit has 2 kinds of configuration:

1. All CSD version.
2. Flexible version (The default setting is all CSD).

Face to the merchandiser , The valve 1,2 and valve 6 is fixed CSD, the Valve 3,4,5 are NCB/CSD conversion valve (and the valve4,5 are in the same water circuit).

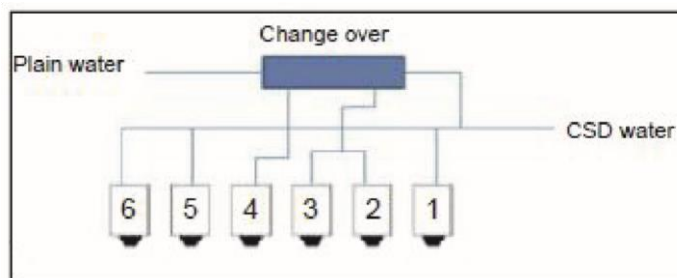
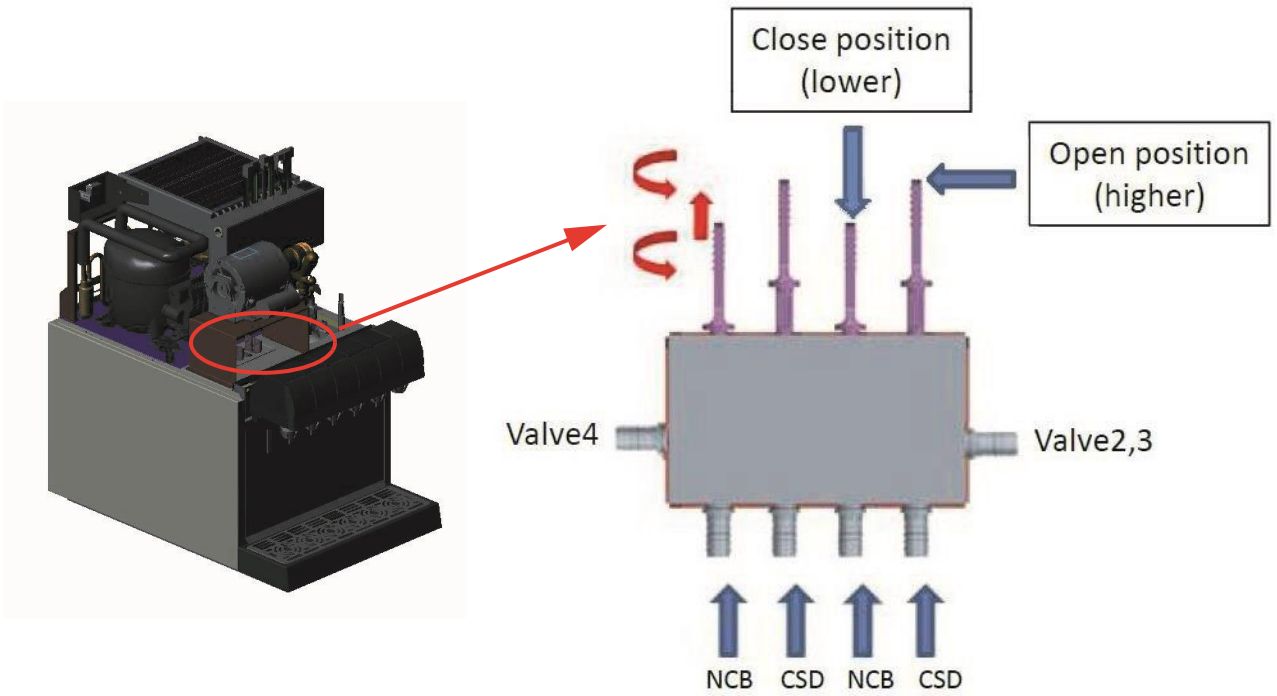


Figure 16.



**Change Over Introduction:**



**Figure 17.**

### How to convert CSD / NCB (Example: Valve 3 CSD convert to NCB)



**WARNING:**

The conversion operation must be done by qualified technician.

The delivery system pressure must be relieved before starting the operation.

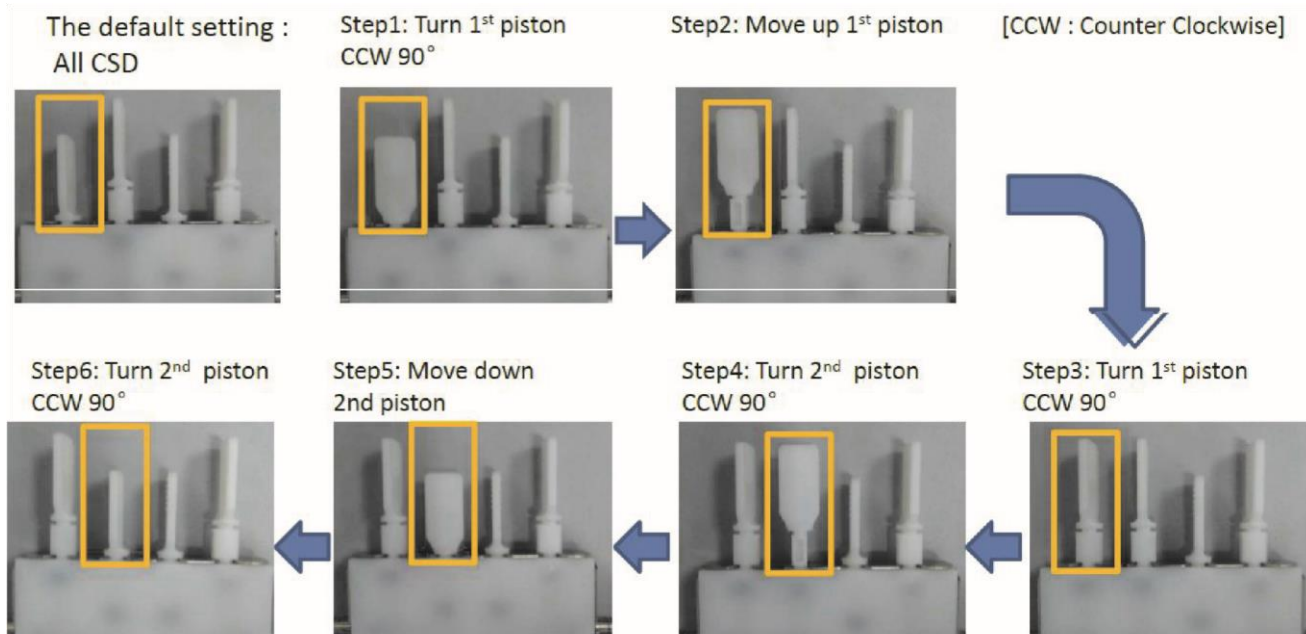
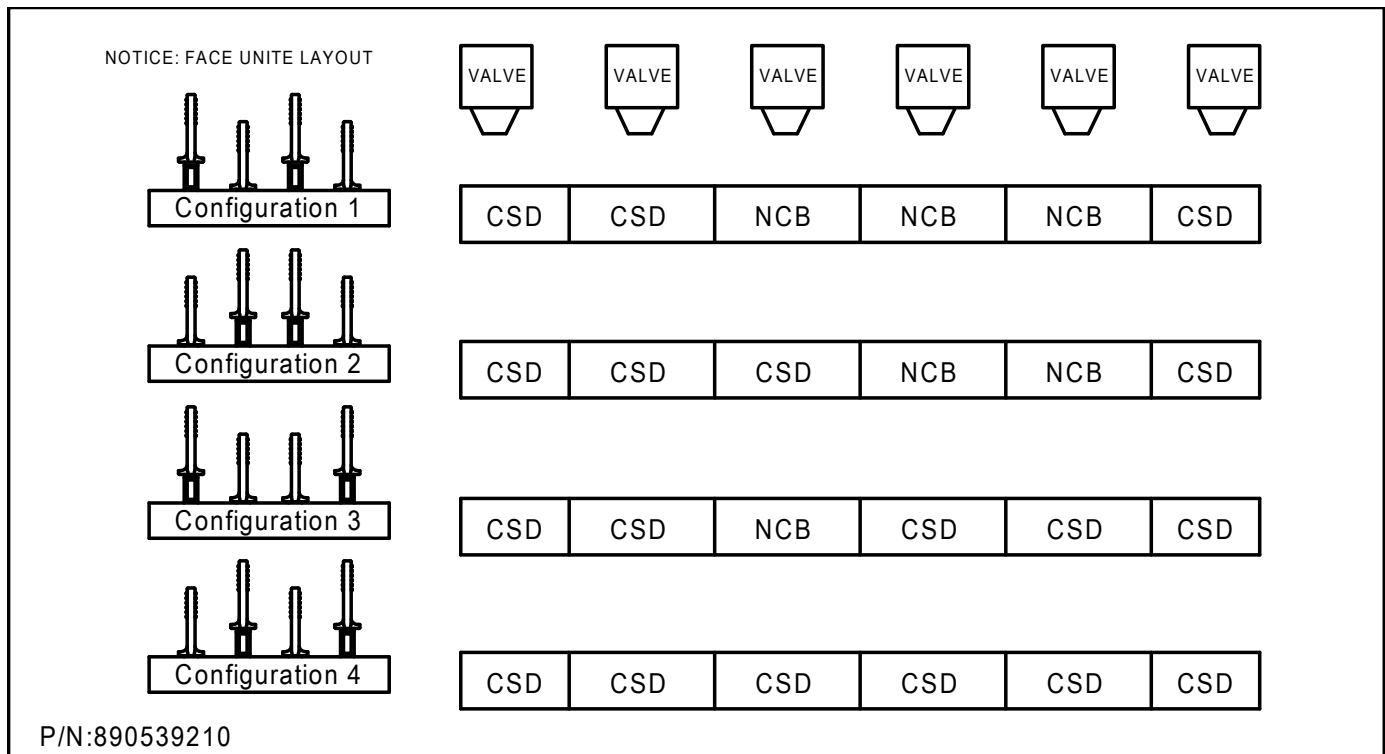


Figure 18



# SERVICE

**CAUTION:**

Flammable refrigerant used, do not service refrigeration system at field.

**CAUTION:**

Only factory authorized personnel should service this unit. Any part replacement shall be conducted with like components.

**ALL WIRING AND PLUMBING MUST CONFORM TO NATIONAL AND LOCAL CODES.**

## PREVENTATIVE MAINTENANCE

Table 4.

Preventative Maintenance Summary	
Procedure	Frequency
Sanitize Unit	3 months
Check Ratio	6 months
Clean Condenser	6 months and as needed
Carbonator Double Liquid Check Valve	Annually
Check for Leaks	Annually
Clean BIB Connectors	Annually
Clean air Filter	As needed

### Sanitizing

Dissolve 1 packet [1oz. (29.6 ml)] of Stera Sheen Green Label (or KAY - 5 Sanitizer/Cleaner) into 2.5 gallons (9.46 L) of warm [80 - 100°F (26.7 - 37.8°C)] potable water to ensure 100 ppm of chlorine.

### Double Liquid Check Valve Inspection & Cleaning

The carbonator double-liquid check valve must be inspected after any disruptions to the water supply system (plumbing work, earth quakes, etc.) It should also be inspected at least once a year under normal conditions. If particles lodge in the check valve CO<sub>2</sub> gas could back flow into the water system and create a health hazard.

1. Disconnect electrical power to the dispenser.
2. Shut off CO<sub>2</sub>, syrup, and water supplies to the dispenser.
3. Check seat and O-rings. Replace if necessary.

### Check for Leaks

Periodically check syrup, water, CO<sub>2</sub>, and drain for leaks.

### Check Ratio

Should be done whenever flavors are changed or any service is performed.

## Clean Condenser

Accumulation of dust and grease on the refrigeration condenser can cause overheating of compressor. The condenser should be cleaned as often as necessary to avoid overheating using the following procedure.

1. Disconnect electrical power to the dispenser. Refer Figure 21
2. Remove the condenser filter from top accessible slot.
3. Remove the merchandiser.
4. Remove top hood. Refer Figure 22
5. Vacuum or use a soft brush to clean condenser coil. If available, use low pressure compressed air.
6. Clean around top of refrigeration assembly.
7. Reinstall hood and put back the merchandiser.

## Clean BIB Connectors

See the Operation section of this manual.

## Clean Air Filter

Accumulation of dust and grease on the air filter can cause compressor overheating. The filter should be cleaned as often as necessary to avoid overheating using the following procedure.

1. Disconnect electrical power to the dispenser.
2. Remove the condenser filter from top & back from accessible slot.
3. Take out the filter and clean it with water.

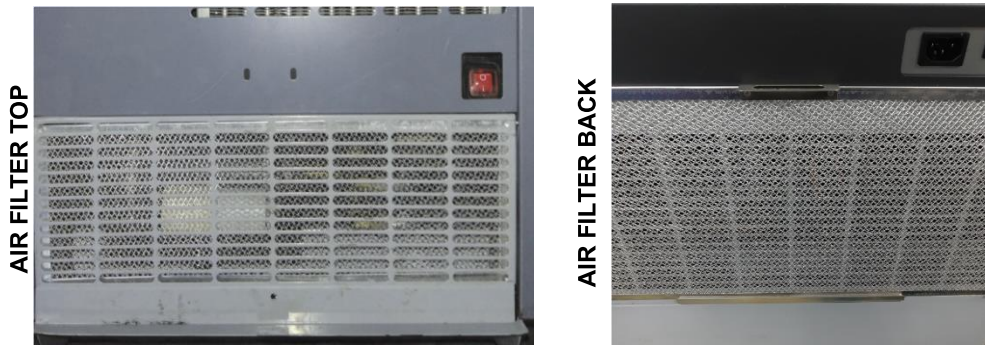


Figure 19.

## ADJUSTMENTS

### CO<sub>2</sub> Connection

1. Unscrew protector cap (with chain attached) from CO<sub>2</sub> cylinder valve. Open CO<sub>2</sub> cylinder valve slightly counter clockwise to blow any dirt or dust from outlet fitting before installing primary CO<sub>2</sub> regulator, then close valve.
2. Remove shipping plug from primary CO<sub>2</sub> regulator assembly coupling nut and make sure gasket is in place inside nut. Install regulator assembly on CO<sub>2</sub> cylinder so gages can be easily read, then tighten coupling.
3. Connect soft drink tanks CO<sub>2</sub> lines to primary CO<sub>2</sub> regulator manifold assembly.

4. Install gas quick disconnects on ends of soft drink tank CO<sub>2</sub> lines.

**▲ CAUTION:**

To avoid personal injury and property damage. Always secure CO<sub>2</sub> cylinder in upright position with a safety chain to prevent it from falling over.

**▲ WARNING:**

CO<sub>2</sub> displaces oxygen. Persons exposed to high concentrations of CO<sub>2</sub> will experience tremors, followed by loss of consciousness and death. It is very important to prevent CO<sub>2</sub> leaks, especially in small unventilated areas. If a CO<sub>2</sub> leak occurs ventilate the area before fixing the leak.

## Primary and Secondary CO<sub>2</sub> Regulator Settings

1. Open CO<sub>2</sub> cylinder valve slightly to allow lines to slowly fill with gas. When lines are fully pressurized open the valve all the way until it back-seats itself (this prevents leaks from the valve).
2. Adjust the cylinder CO<sub>2</sub> regulator to 70 psi (4.8 bar) for bag-in-box applications. 40 psi (2.8 bar) for sugar base tank applications and 10 psi (0.7 bar) for diet base tank applications.
3. The Titan HC dispenser with integral cold carbonator requires CO<sub>2</sub> supply pressure of 75 psi (5.2 bar).
4. Bleed air from the lines with the relief valves.
5. Check the system for gas leaks.

## LIFTING THE REFRIGERATION DECK

Handles are provided at the either sides of the refrigeration deck to aid in safe lifting and handling of the deck during service. To access these handles remove the side panels.

**▲ CAUTION:**

Ensure that only these handles are used to lift the deck. Do not hold to any other components or structures.



**Failure to comply could result in serious injury, death or damage equipment.**

to the

Figure 20

# COMPONENT SERVICE

**▲ CAUTION:**

Any part replacement shall be conducted with like components. Use only Cornelius approved product.

**▲ CAUTION:**

Only factory authorized personnel should service this unit.

The following are procedures for replacing the major components of the Titan HC dispenser.

## CARBONATOR PUMP REPLACEMENT

1. Disconnect power to the unit.



Figure 21.

2. Shut off water and CO<sub>2</sub> at their sources

3. Remove merchandiser assembly.

4. Remove top panel and side cladding.



Figure 22.

5.

De-pressurize carbonator by removing the solenoid dust cover from any dispensing valve and press valve lever to release the pressure.



Figure 23.

6. Disconnect water in and out lines.

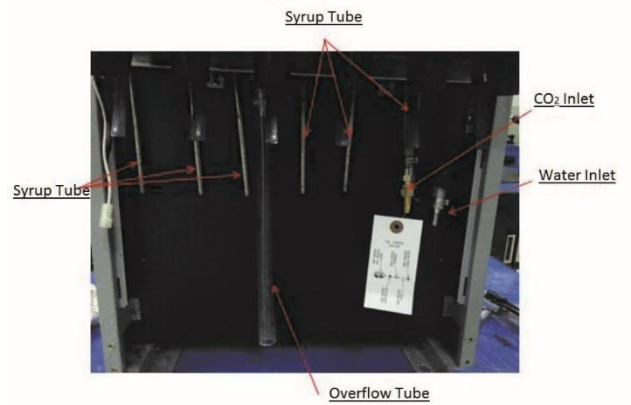


Figure 24.



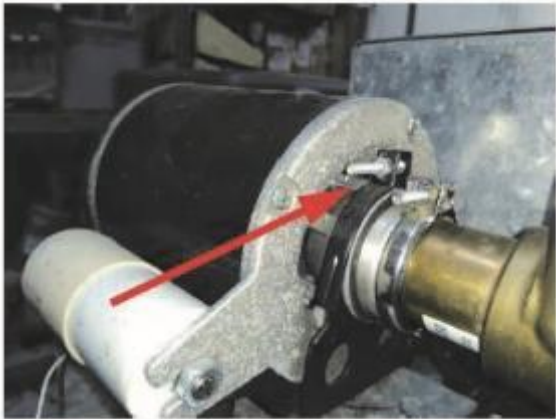
<p>7. Loosen the V-band clamp and remove pump</p>	
<p>8. Install new pump.</p>	

Figure 25.

### PUMP MOTOR REPLACEMENT


<p>1. Disconnect power to the unit. Refer Figure 21.</p>	
<p>2. Remove top panel and side cladding. Refer Figure 22.</p>	
<p>3. Unplug motor harness.</p>	
<p>4. Loosen the V - band clamp and remove pump. Refer Figure 25.</p>	

Figure 26.



5. Remove bolts and remove the motor.

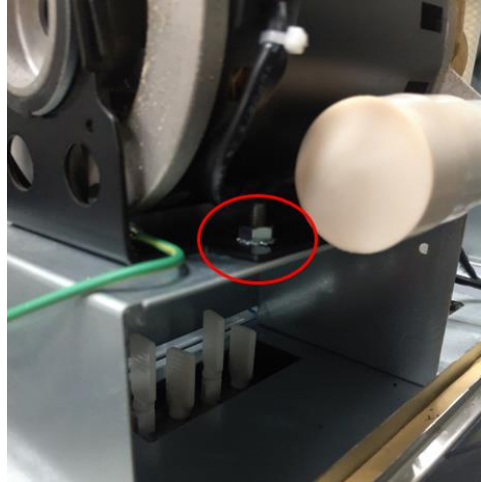


Figure 27.

6. Install new motor by reversing this procedure.

### CONDENSER FAN MOTOR REPLACEMENT

1. Disconnect power to the unit. Refer Figure 21.

2. Remove top hood. Refer Figure 22.

3.  
  
Unplug agitator and fan motor harness.  
Remove 4 screws and fan motor.

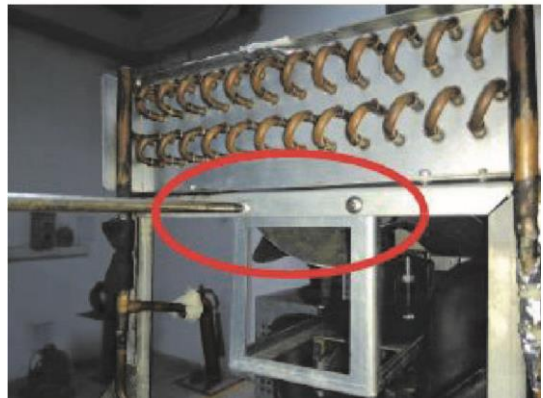

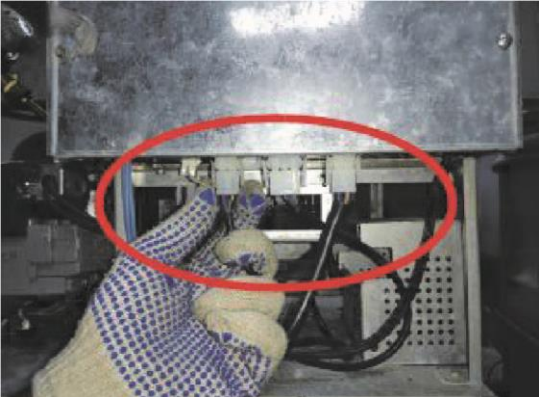


Figure 28.

4. Remove fan motor from rear part of the unit.	
5. Install new motor by reversing this procedure.	<b>Figure 29.</b>

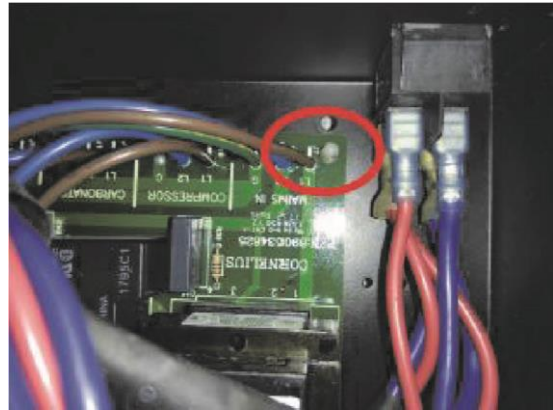
## CONTROLLER BOARD REPLACEMENT

1. Disconnect power to the unit. Refer Figure 21.	
2. Remove top panel and side cladding. Refer Figure 22. <ul style="list-style-type: none"><li>• Lift up controller cover.</li><li>• Remove mounting screw.</li><li>• Push back controller cover.</li></ul>	
3. Unplug all connectors.	

**Figure 30.**

4.

Squeeze all four standoffs and remove the board.

**Figure 31.**

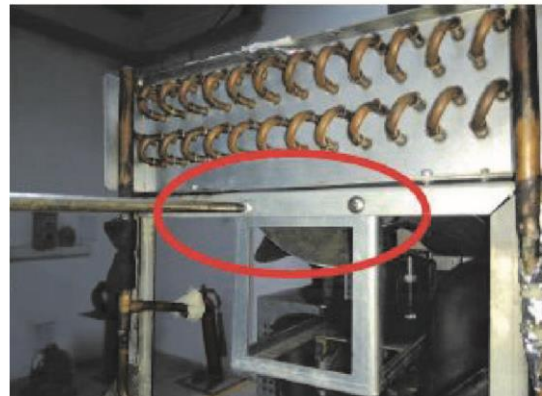
5. Install new controller board by reversing this procedure.

## AGITATOR MOTOR REPLACEMENT

1. Disconnect power to the unit. Refer Figure 21.

2. Remove top hood. Refer Figure 22.

3. Unplug agitator and fan motor harness. Remove 4 screws and fan motor.

**Figure 32.**

4. Remove fan motor from rear part of the unit.



Figure 33.

5. Remove the connections.

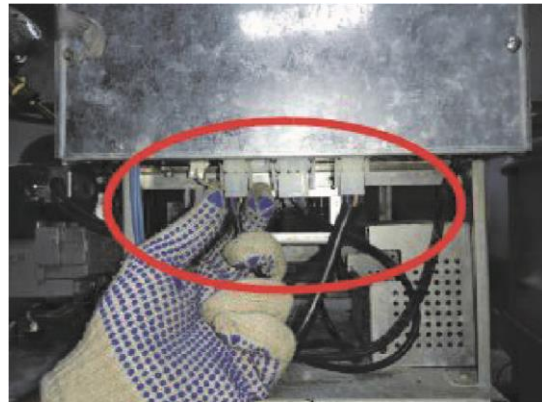


Figure 34.

6. Use screw driver to remove 4 screws to remove the agitator motor.

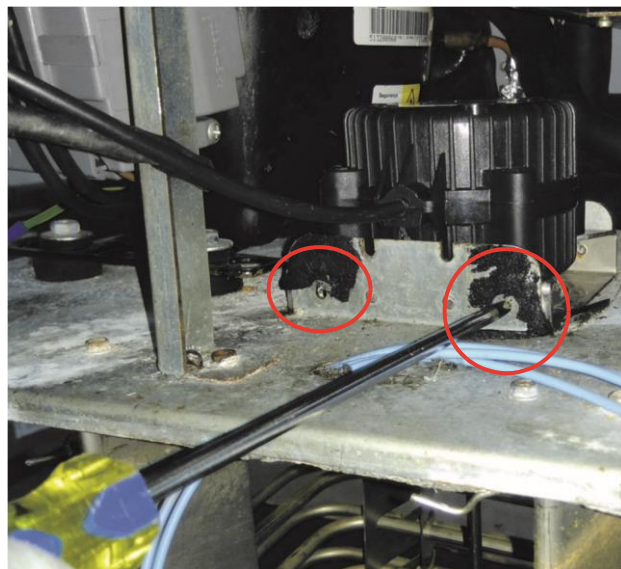


Figure 35.

# TROUBLE SHOOTING

**▲ WARNING:**

Only factory authorized service person should service internal components or electrical components. Any part replacement shall be conducted with like components.

**▲ WARNING:**

No person allowed to work on refrigerant & refrigeration components.

**▲ CAUTION:**

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

**▲ WARNING:**

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.

**Table 5. Troubleshooting Post-mix System**

Trouble	Probable Cause	Remedy
Adjustment of dispensing valve syrup flow regulator does not increase to desired water-to syrup ratio.	1. No syrup supply. 2. Syrup supply container not securely connected into system. 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. 4. Inoperative dispensing valve syrup flow control. 5. Tapered washer inside tube swivel nut connection distorted from being over tightened restricting syrup flow. 6. Pressure to BIB/Syrup tank is too low.	1. Replenish syrup supply. 2. Securely connect syrup supply container into syrup system. 3. Adjust syrup tanks secondary CO <sub>2</sub> regulator as instructed. Adjust primary CO <sub>2</sub> regulator as instructed. 4. Repair dispensing valve syrup flow control. 5. Replace tapered gasket. Make sure it seats properly. 6. Adjust the pressure as per the specifications.
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. Use clean cups or glasses. 2. Do not use ice directly from freezer. Allow ice to become "wet" before using. (refer to following NOTE).



**NOTE: Crushed ice also causes dispensing problems. When finished drink hits sharp edges of ice, carbonation is released from dispensed drink.**

<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 overcarbonation.</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>
<p>No product dispensed.</p>	<ol style="list-style-type: none"> <li>1. No electrical power to dispenser.</li> <li>2. Disconnected dispensing valves power cord.</li> <li>3. Disconnected or broken wiring to dispensing valve.</li> <li>4. Inoperative transformer or dispensing valve solenoids.</li> </ol>	<ol style="list-style-type: none"> <li>1. Plug in dispenser power cord or check for blown power fuse or tripped circuit breaker.</li> <li>2. Connect dispensing valves power cord.</li> <li>3. Connect or replace wiring.</li> <li>4. Replace inoperative part.</li> </ol>
<p>Only carbonated water dispensed.</p>	<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 – Inoperative syrup pump.</li> <li>Tanks System – Syrup tanks CO<sub>2</sub> regulator not properly adjusted.</li> <li>4. Inoperative 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 inoperative syrup pump.</li> <li>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>
<p>Compressor not stopping even after sufficient Ice formation</p>	<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>
<p>Compressor operates continuously but does not form sufficient ice bank.</p>	<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>



<p>Carbonator pump not operating</p>	<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>
<p>Agitator motor not operating.</p>	<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 90- 135VAC (110/120 volt unit) or 180-260(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>
<p>Refrigeration compressor does not operate.</p>	<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 un- plugged, 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 board.</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 207-253 Volts.</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>

# REFERENCE MATERIAL

## WIRING DIAGRAM

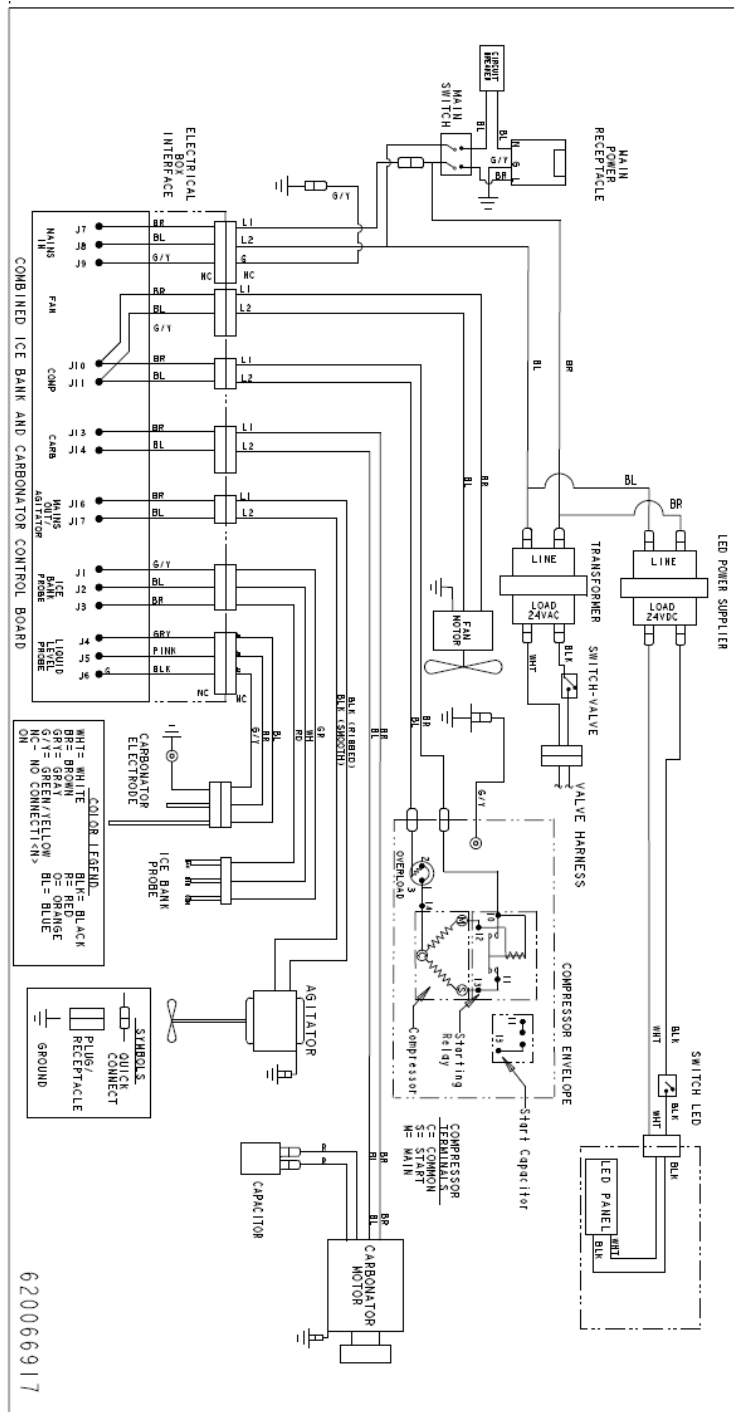
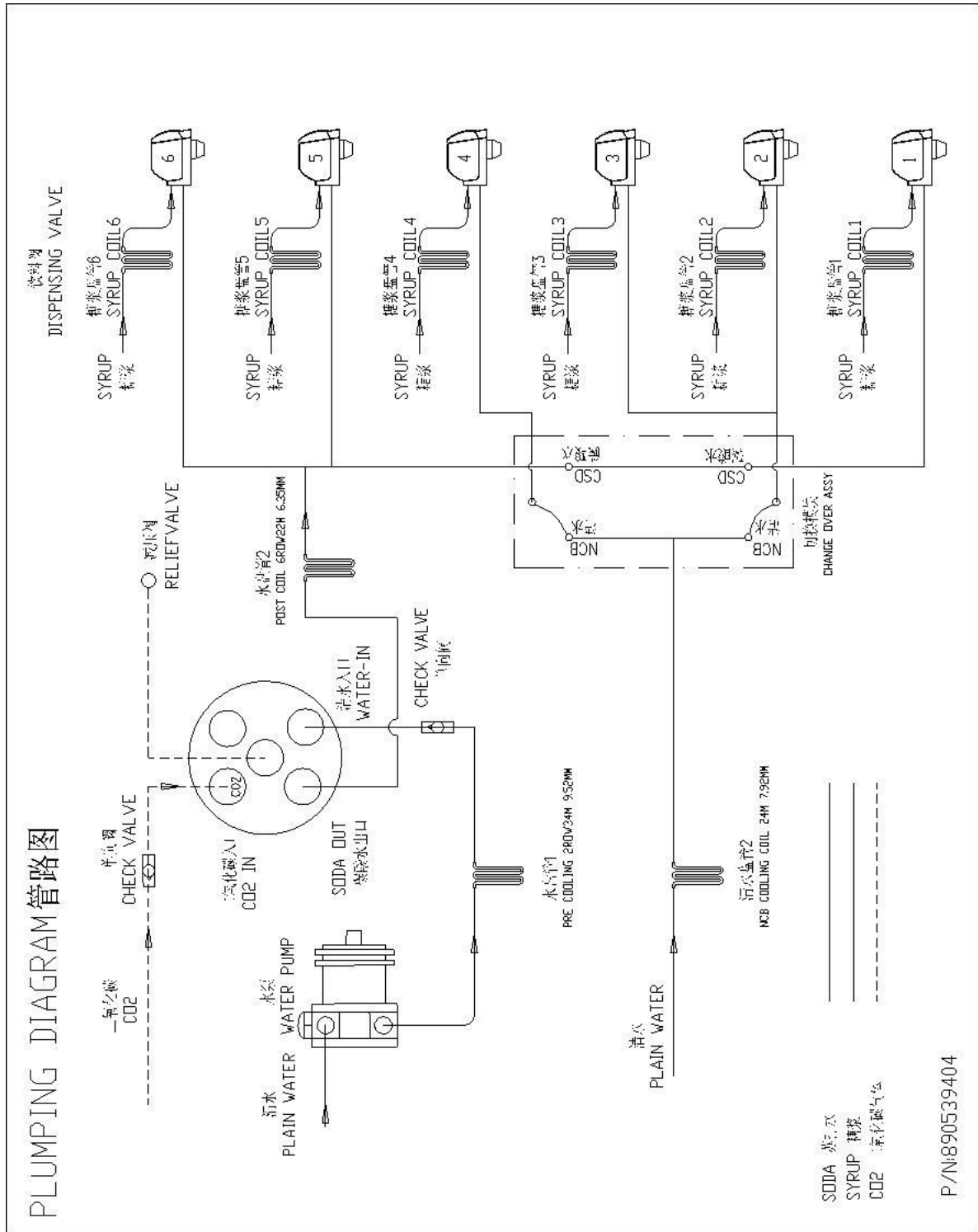


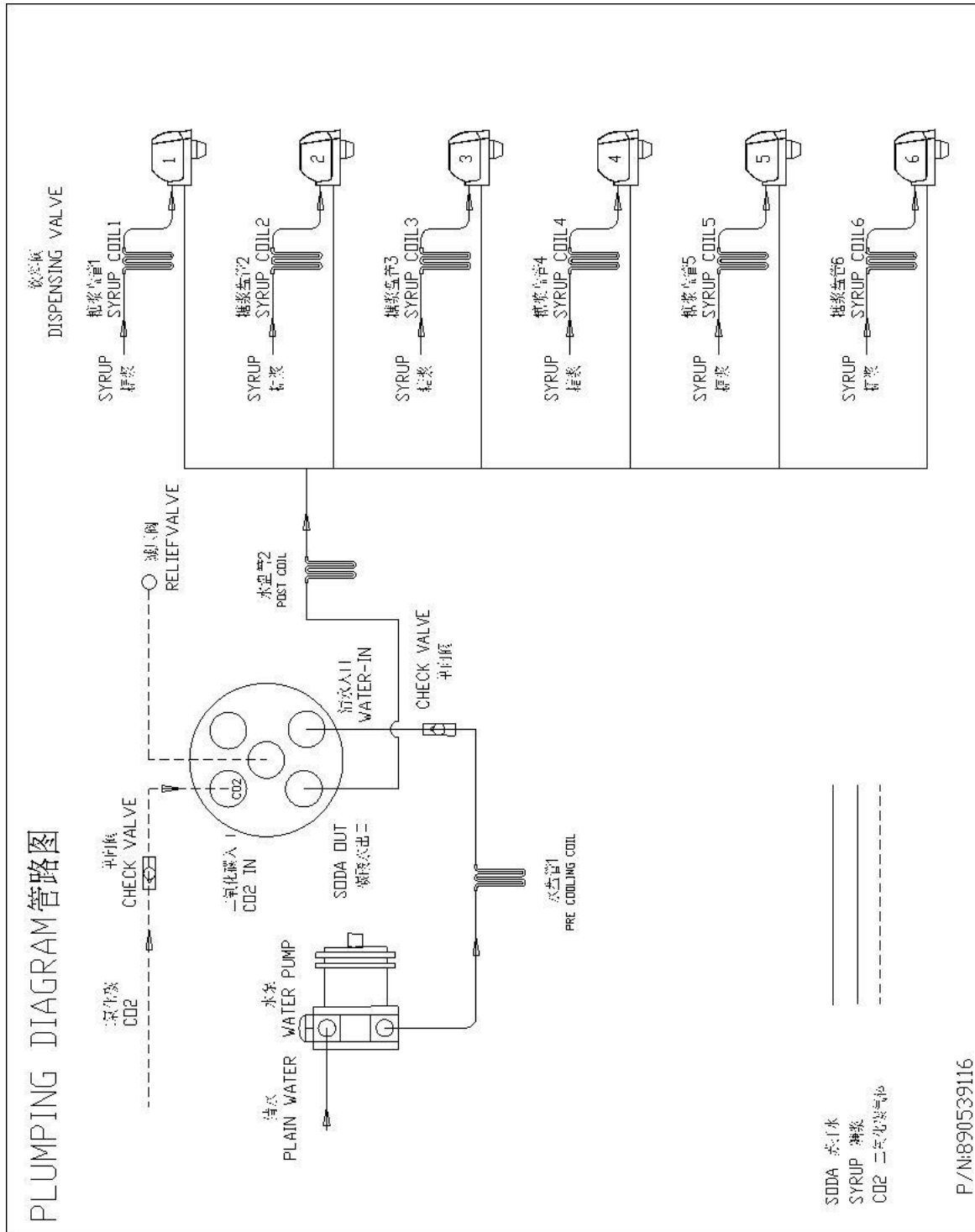
Figure 36



# PLUMBING DIAGRAM



# PLUMBING DIAGRAM





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# Notes





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