



IDC 2XX WITH COLD CARBONATION

Service Manual



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

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

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Contact Information:

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

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This document contains the original instructions for the unit described.

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SAFETY INSTRUCTION

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.

Recognition

Recognize Safety Alerts



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.

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.
- **Do not** let anyone operate the unit without proper training. This appliance is **not** intended for use by very young children or infirm persons without supervision. Young children should be supervised to ensure that they do not play with the appliance.
- Keep your unit in proper working condition and do not allow unauthorized modifications to the unit.

QUALIFIED SERVICE PERSONNEL

WARNING:

Only trained and certified electrical, plumbing and refrigeration technicians should service this unit. **ALL WIRING AND PLUMBING MUST CONFORM TO NATIONAL AND LOCAL CODES. FAILURE TO COMPLY COULD RESULT IN SERIOUS INJURY, DEATH OR EQUIPMENT DAMAGE.**

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:

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.

CO₂ (CARBON DIOXIDE) WARNING

DANGER:

CO₂ displaces oxygen. Strict attention **MUST** be observed in the prevention of CO₂ gas leaks in the entire CO₂ and soft drink system. If a CO₂ 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 CO₂ gas experience tremors which are followed rapidly by loss of consciousness and **DEATH**.

MOUNTING IN OR ON A COUNTER

WARNING:

When installing the unit in or on a counter top, the counter must be able to support a weight in excess of 600 lbs. to insure adequate support for the unit. **FAILURE TO COMPLY COULD RESULT IN SERIOUS INJURY, DEATH OR EQUIPMENT DAMAGE.**

NOTE: Many units incorporate the use of additional equipment such as ice makers. When any addition equipment is used you must check with the equipment manufacturer to determine the additional weight the counter will need to support to ensure a safe installation.



INTRODUCTION

DESCRIPTION

The IDC series of ice dispensers solves your ice and beverage service needs in a sanitary, space saving, economical way. Designed to be automatically filled with ice from a top mounted ice machine or manually filled with ice from any remote ice-making source, these dispensers will dispense cubes (up to 1-1/4 inch in size), cubelets, and compressed or extruded style ice. In addition, the units include beverage faucets, a cold plate, an internal carbonator tank and an external pump for the carbonator, and are designed to be supplied direct from syrup tanks with no additional cooling required.

THEORY OF OPERATION

The rate of CO₂ solubility increases with cold water. IDC System provides pre-chilled cold water from the cold plate and mix with CO₂ in the carbonator tank. The water is introduced into the tank with a high volume 125gph Procon pump and high torque motor.

The amount of carbonated water reserve is controlled by a probe mounted in the tank. The probe is called a “liquid level probe”. The liquid level probe senses the water level in the tank. Probe controls the pump “ON” and “OFF” cycle through the “liquid level board” located on the main control board.

NOTE: The probe works on a 5 mVDC current that continually reverses direction to prevent probe corrosion.

SPECIFICATION

Model Descriptions:	IDC 215 B=Beverage C=Coldplate H=Internal Carb Z=No Drip Tray	IDC 255 B=Beverage C=Coldplate H=Internal Carb Z=No Drip Tray
Ice Storage:	215 Pounds	255 Pounds
Maximum Number of Faucets Available:	10	10
Built-in Cold Plate:	Yes	Yes
Electrical:	120/1/60, 9.3 Amps of Total Unit Draw 220/1/50, 4.7 Amps of Total Unit Draw	
Dimensions:	Width 30 inch Depth 30-11/16 inch Height 36 inch (to top of bin) 36-3/4 inch (to top of lid)	30 inch 30-11/16 inch 39 inch (to top of bin) 39-3/4 inch (to top of lid)
CO ₂ Operating Pressure	75-psig (max)	75-psig (max)

FLOW DIAGRAM - EIGHT VALVE UNIT WITH EIGHT LINE COLD PLATE

THIS EQUIPMENT MUST BE INSTALLED WITH ADEQUATE BACKFLOW PROTECTION TO COMPLY WITH APPLICABLE FEDERAL, STATE AND LOCAL CODES.

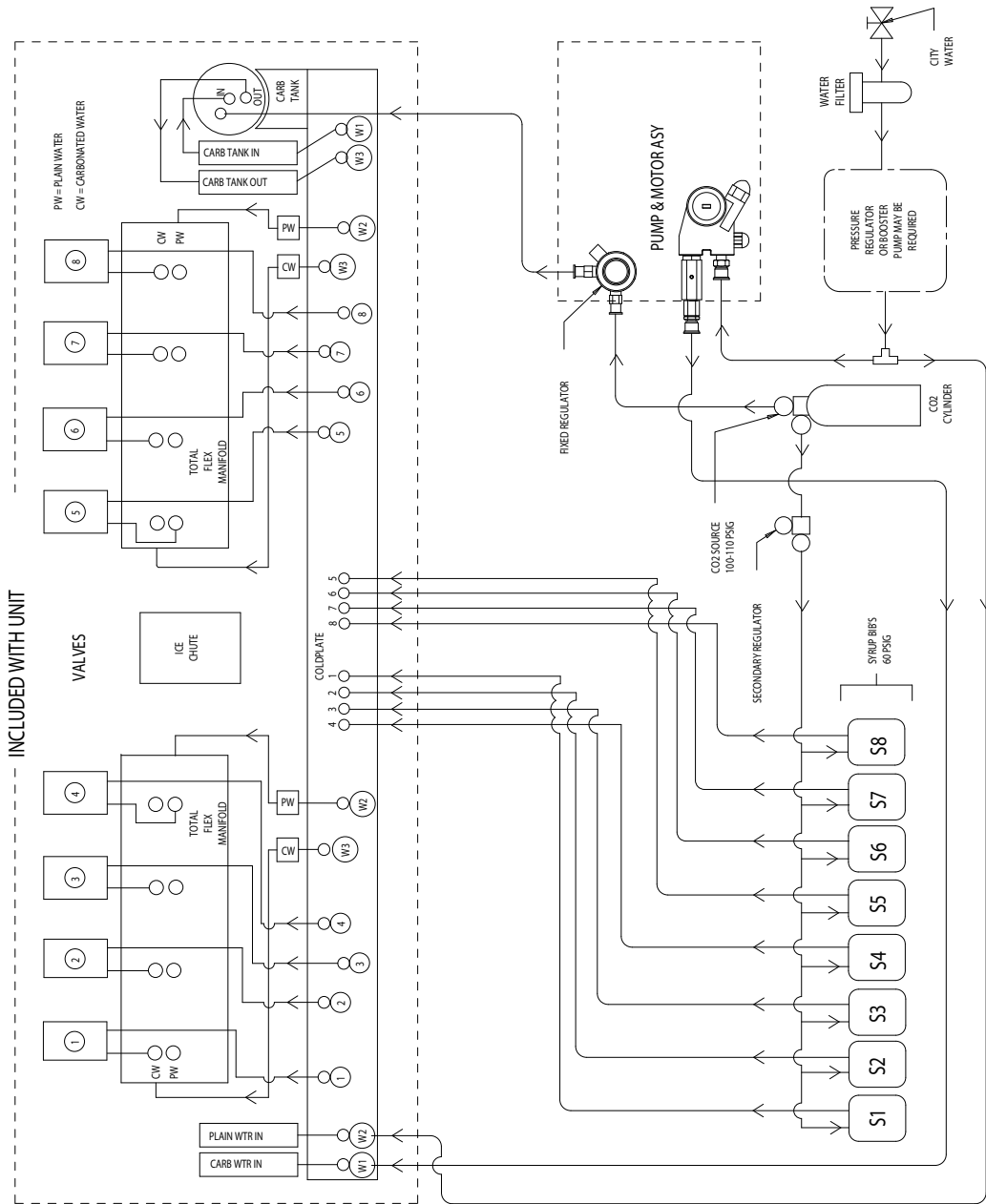


figure 1.

FLOW DIAGRAM - EIGHT VALVE UNIT WITH TWELVE LINE COLD PLATE

THIS EQUIPMENT MUST BE INSTALLED WITH ADEQUATE BACKFLOW PROTECTION TO COMPLY WITH APPLICABLE FEDERAL, STATE AND LOCAL CODES.

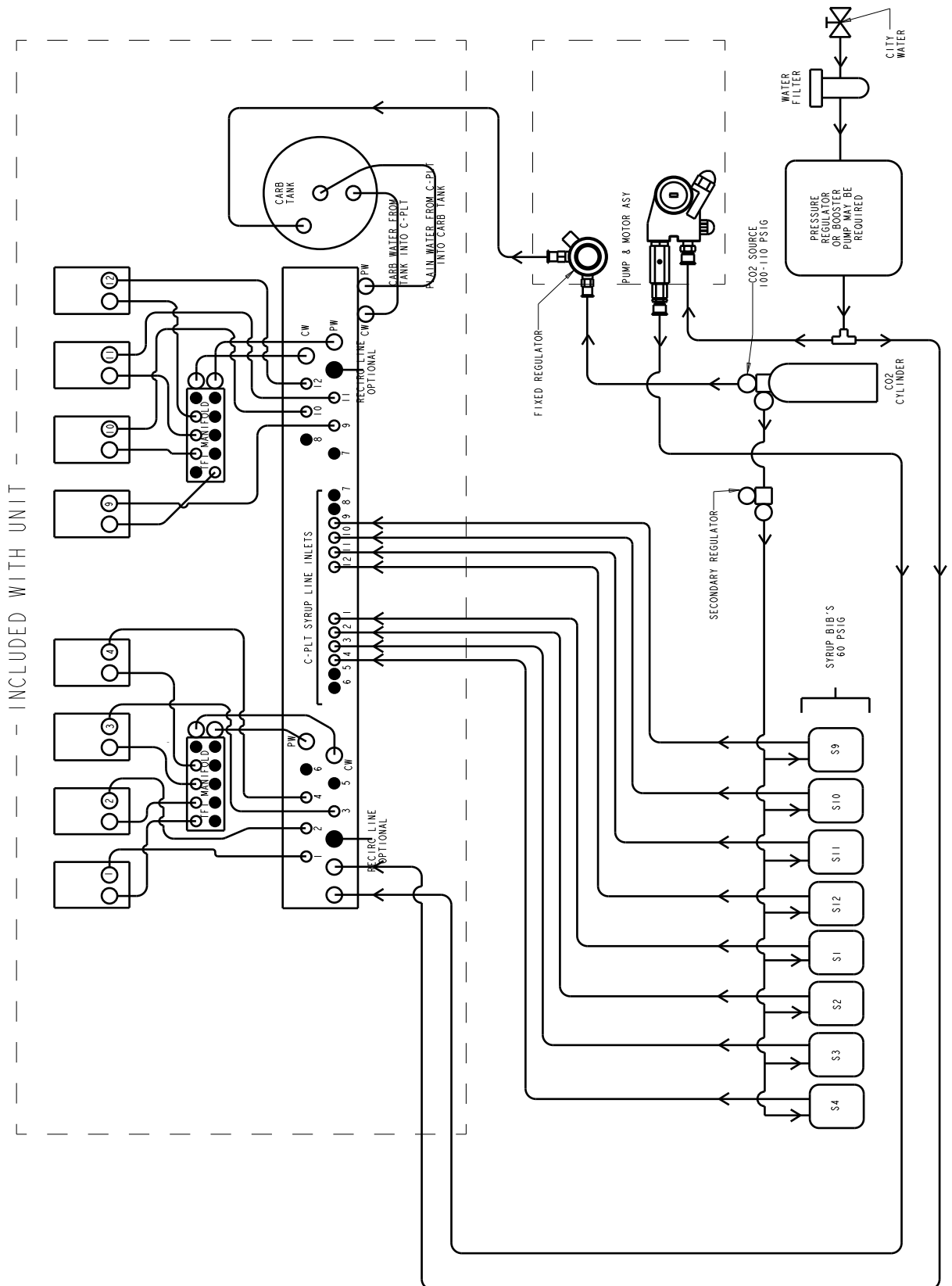
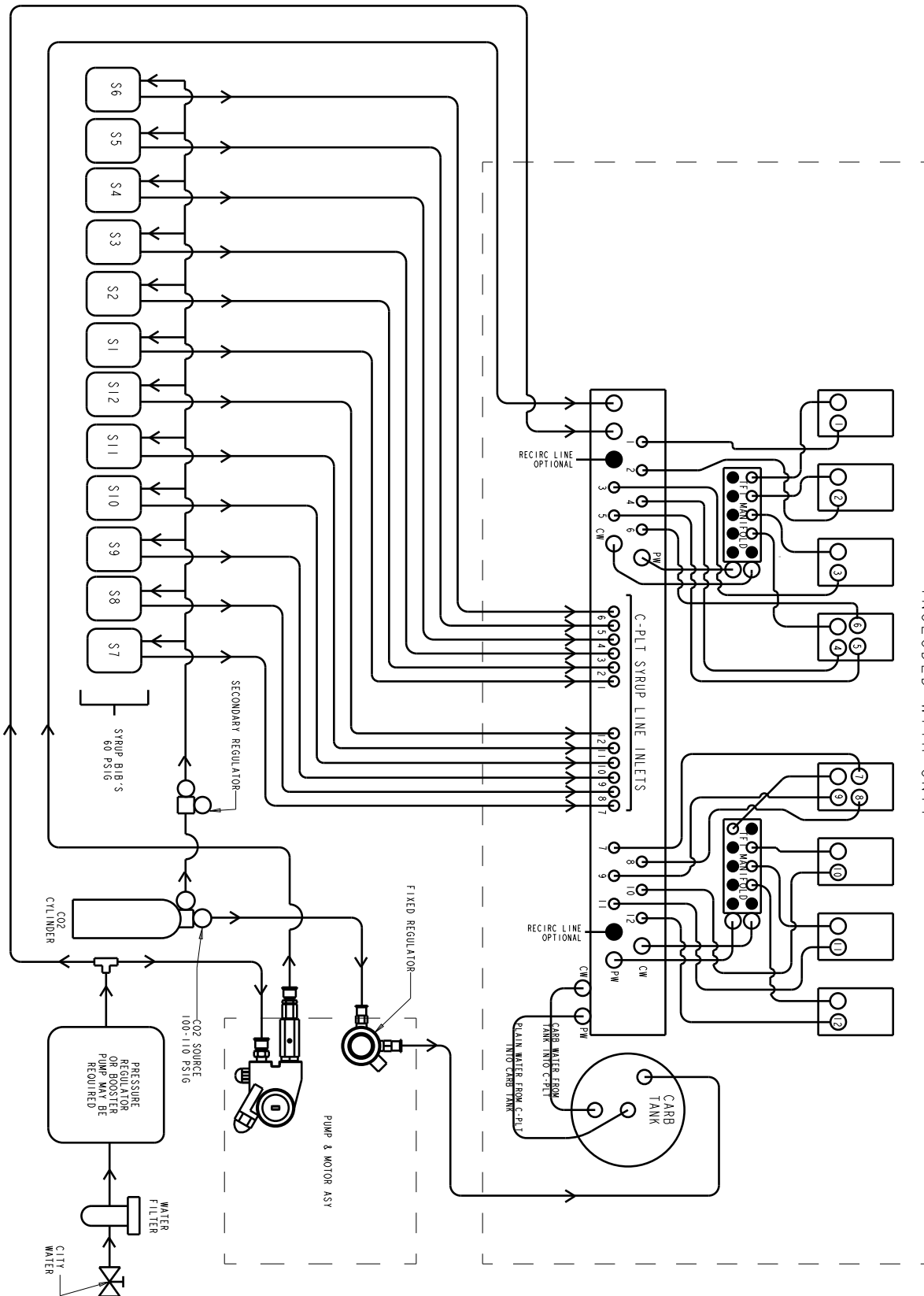


figure 2

FLOW DIAGRAM - EIGHT VALVE UNIT WITH TWO PRISM VALVES



THIS EQUIPMENT MUST BE INSTALLED WITH ADEQUATE BACKFLOW PROTECTION TO COMPLY WITH APPLICABLE FEDERAL, STATE AND LOCAL CODES.

figure 3

FLOW DIAGRAM - TEN VALVE UNIT WITH TEN LINE COLD PLATE

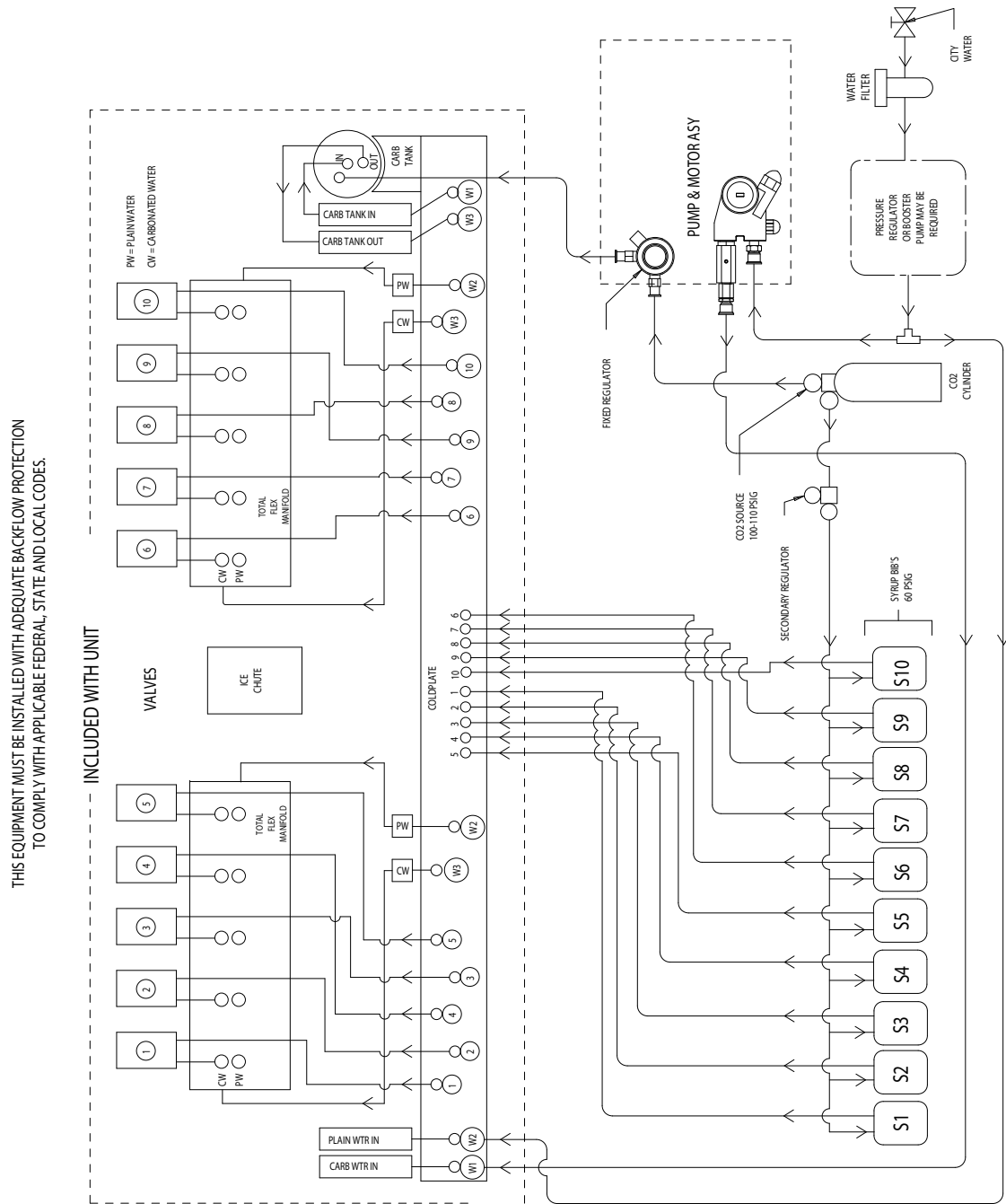


figure 4.

FLOW DIAGRAM - TEN VALVE UNIT WITH TWELVE LINE COLD PLATE

THIS EQUIPMENT MUST BE INSTALLED WITH ADEQUATE BACKFLOW PROTECTION TO COMPLY WITH APPLICABLE FEDERAL, STATE AND LOCAL CODES.

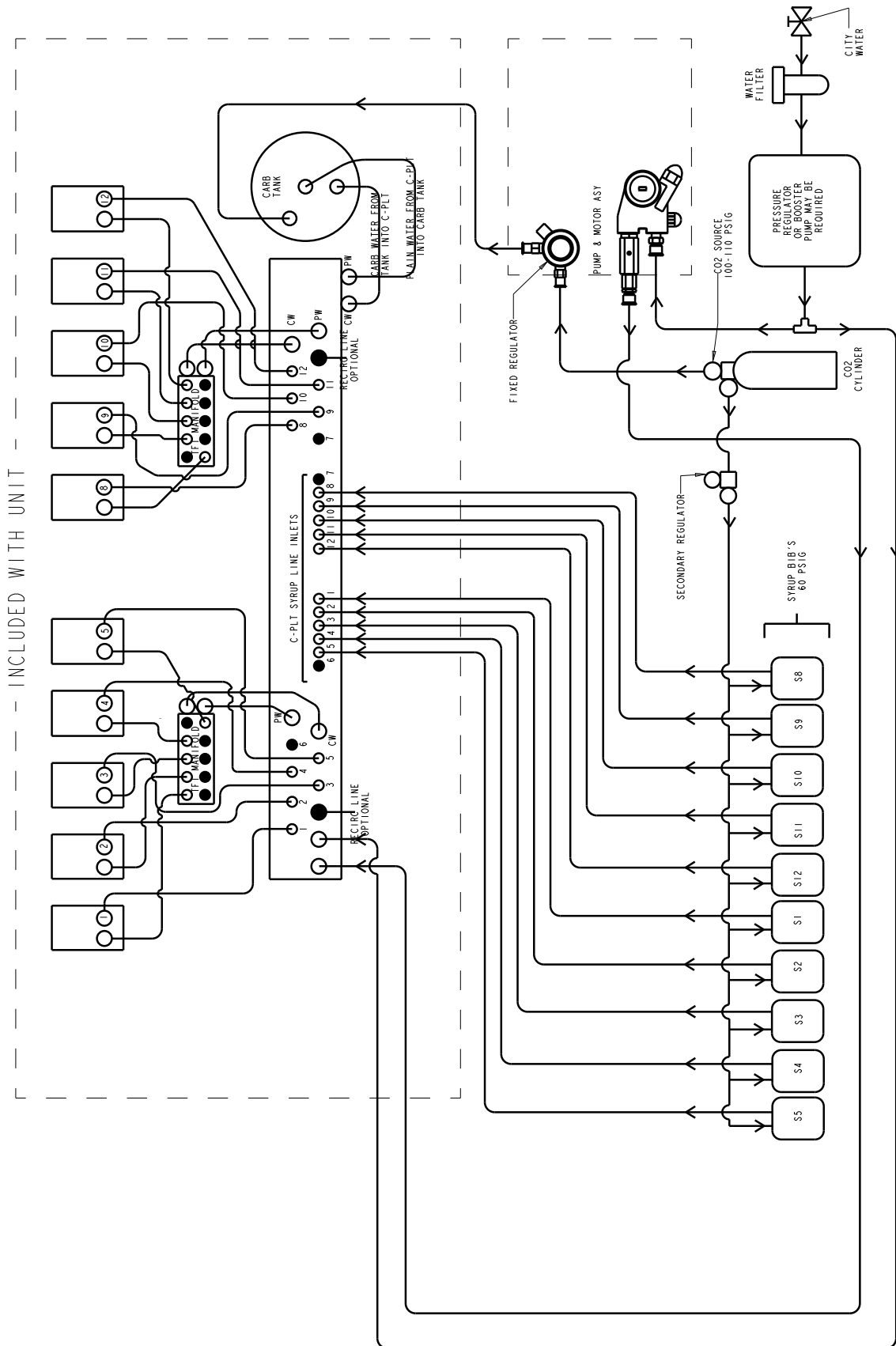
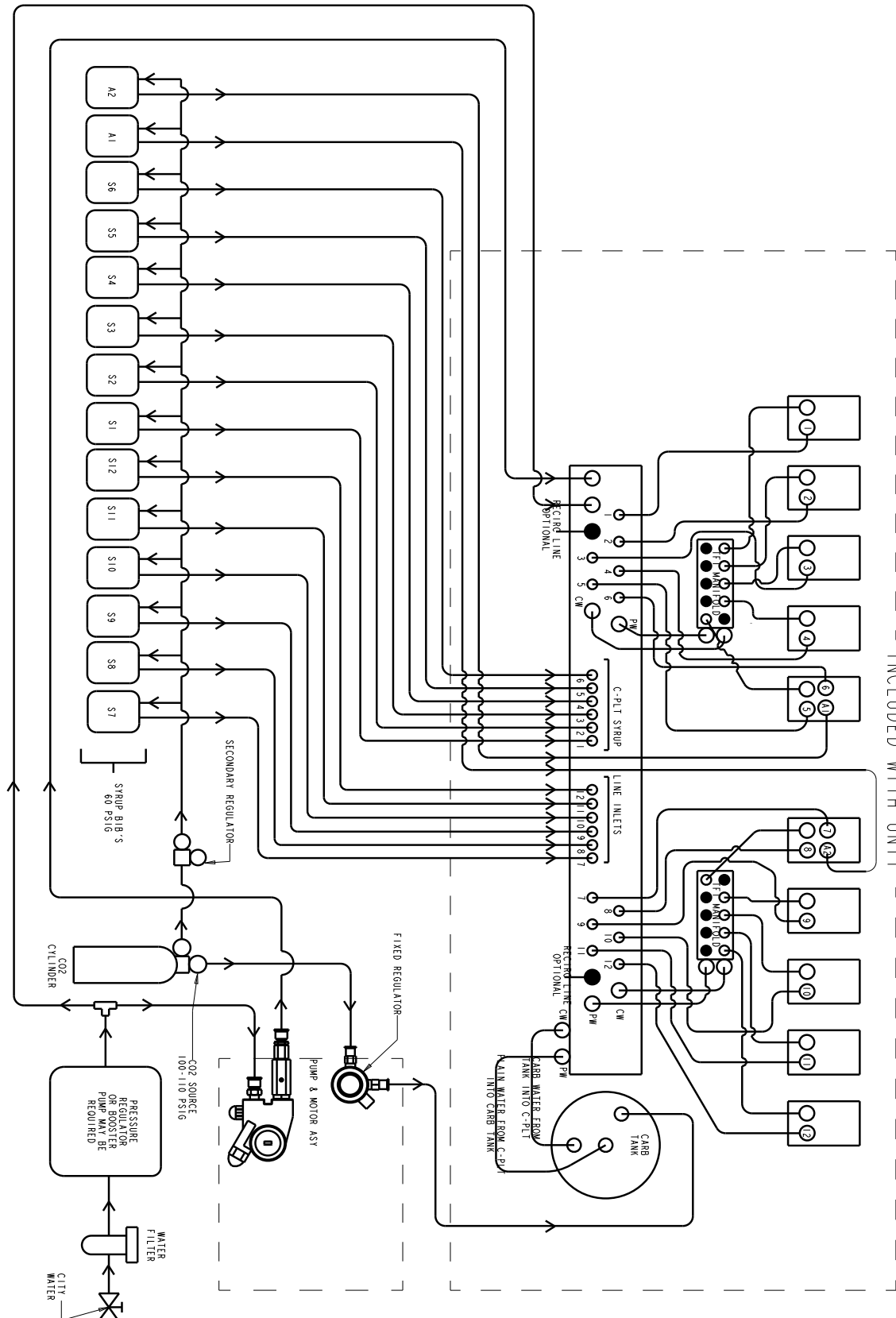


figure 5

FLOW DIAGRAM - TEN VALVE UNIT WITH TWELVE LINE COLD PLATE



THIS EQUIPMENT MUST BE INSTALLED WITH ADEQUATE BACKFLOW PROTECTION TO COMPLY WITH APPLICABLE FEDERAL, STATE AND LOCAL CODES.

figure 6

E – BOARD OFF CYCLE AGITATION ADJUSTMENTS

When Ice is not being dispensed from the machine such as during off hours it is essential to move or agitate the ice to keep it from clumping and to replenish the ice in the cold plate. The amount of time the agitator runs and the time between the agitation cycles can be adjusted depending on ice type or application. The settings for this function are located on the E-Board found in the E-BOX. Using a screwdriver follow the diagram below and set the agitator for the desired settings.

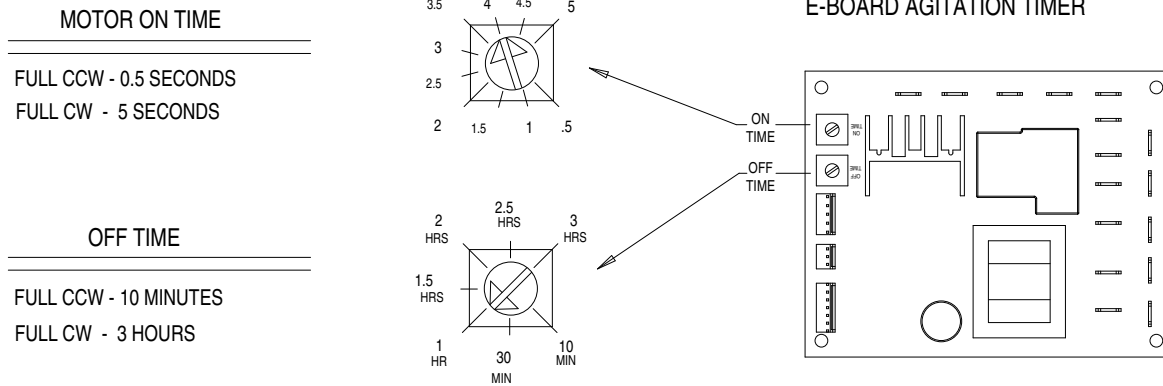


figure 7

Manufacturer Recommended Agitation Settings			
Model	Ice Fill/Ice Type	Motor ON Time	Motor OFF time
175, 215, &255, 300, B, BC	Manual/Hard Ice (Cube)	4 Seconds	1 Hour
	Automatic (Top-Mount Ice Maker/Hard Ice (Cube)	0.5 Seconds	20 Minutes
	Manual & Automatic/ Cornelius Chunklet, Scotsman & Hoshizaki Compressed Ice	0.5 Seconds	3 Hours
B - Beverage C-Coldplate		*NO FLAKED ICE*	

WIRING DIAGRAM

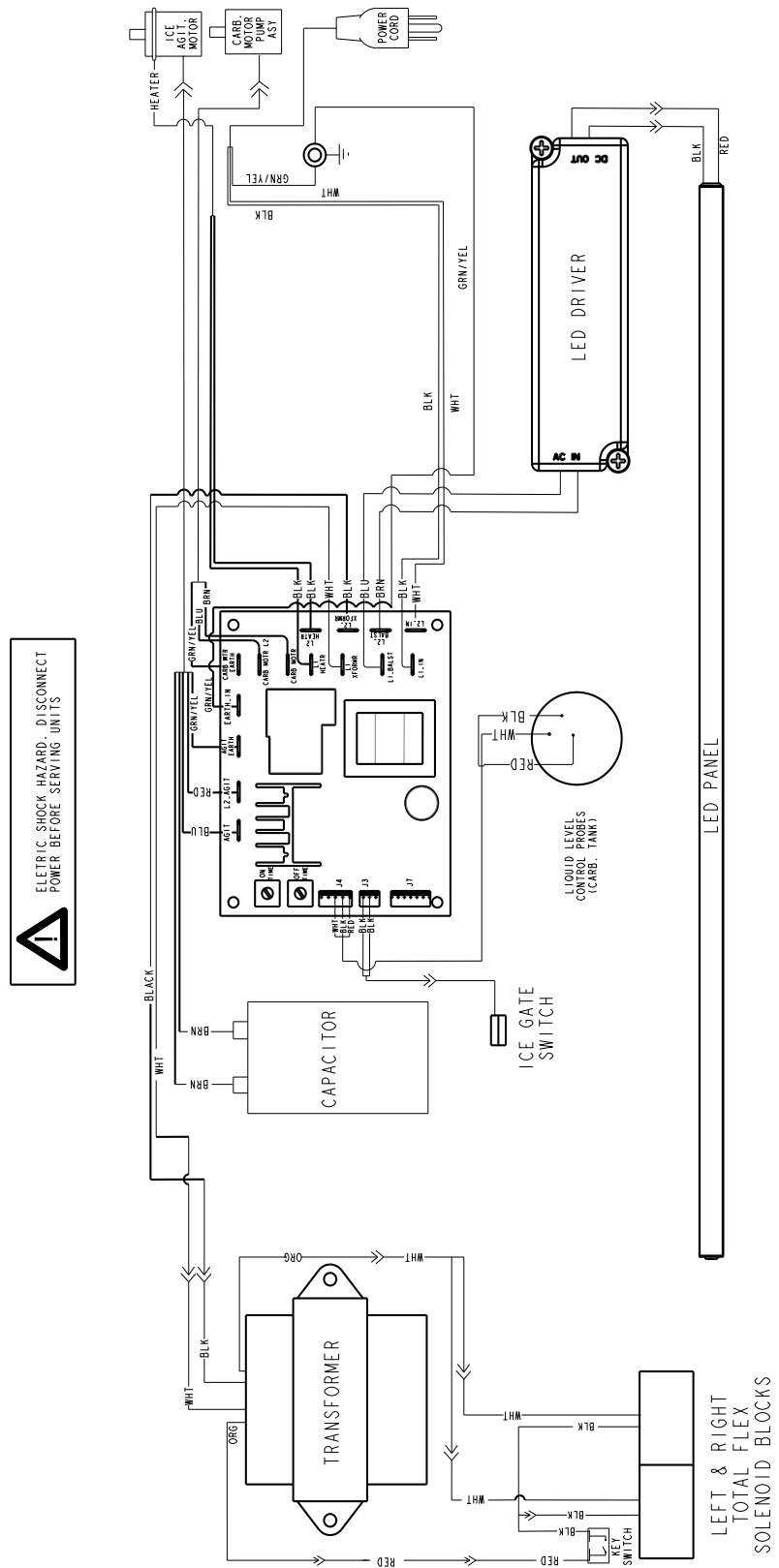


figure 8.

WIRING SCHEMATIC

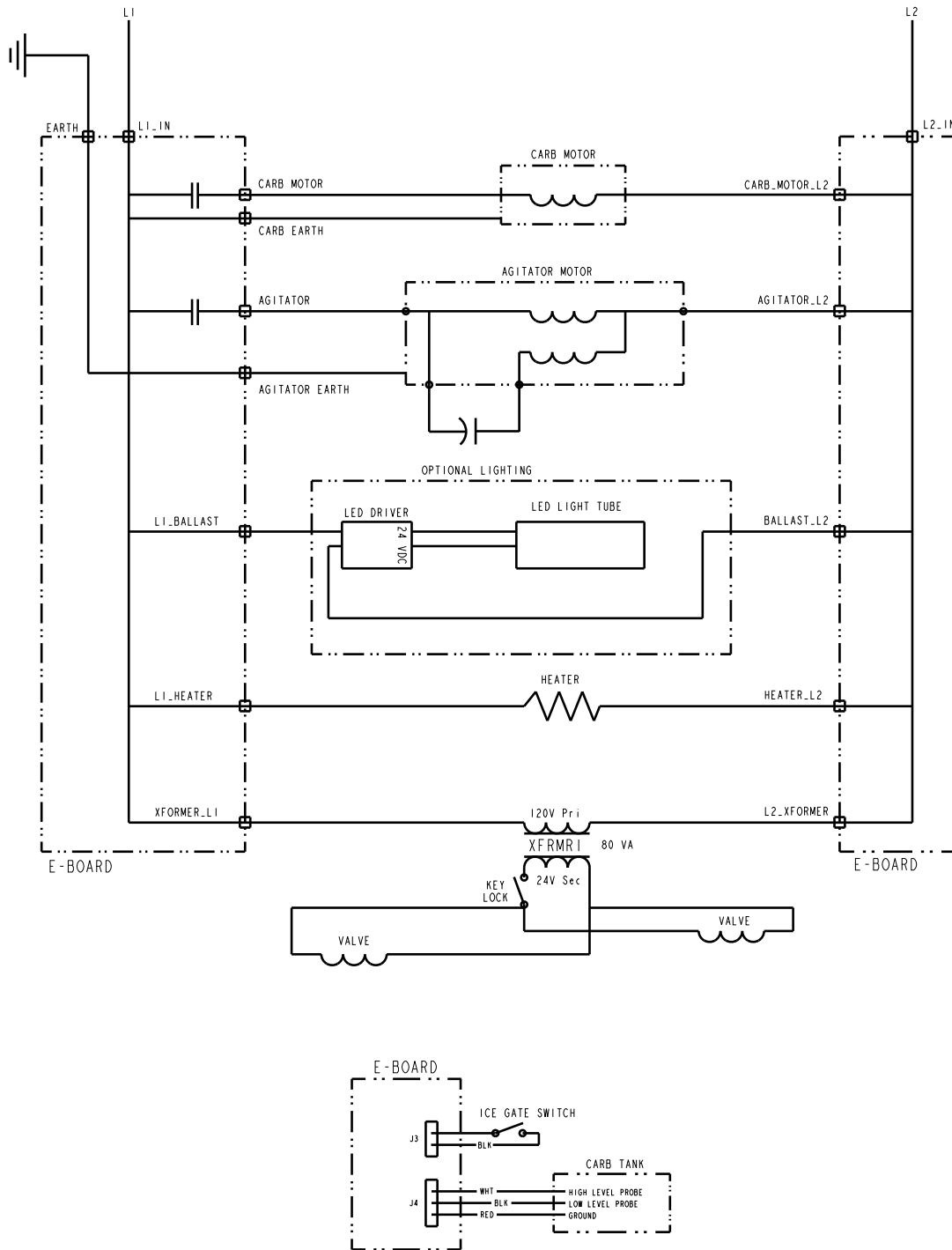


figure 9

MAINTENANCE

The following dispenser maintenance should be performed at the intervals indicated:

DAILY (OR AS REQUIRED)

Remove foreign material from vending area drip tray to prevent drain blockage.

Clean vending area. Check for proper water drainage from the vending area drip tray.

Checking CO₂ Supply

Make sure CO₂ cylinder regulator assembly 1800-psi gage indicator is not in shaded (“change CO₂ cylinder”) portion of the dial. If so, the CO₂ cylinder is almost empty and must be replaced.

Replenishing CO₂ Supply

NOTE: When indicator on the 1800-psi gage is in the shaded (“change CO₂ cylinder”) portion of the dial, CO₂ cylinder is almost empty and should be changed.

1. Fully close (clockwise) the CO₂ cylinder valve.
2. Slowly loosen the CO₂ regulator assembly coupling nut allowing CO₂ pressure to escape, then remove the regulator assembly from the empty CO₂ cylinder.
3. Unfasten safety chain and remove the empty CO₂ cylinder.



WARNING: To avoid personnel injury and/or property damage, always secure the CO₂ cylinder with a safety chain to prevent it from falling over. Should the valve become accidentally damaged or broken off, a CO₂ regulator can cause serious personnel injury.

4. Position the full CO₂ cylinder and secure with a safety chain.
5. Make sure gasket is in place inside the CO₂ regulator assembly coupling nut, then install the regulator assembly on the CO₂ cylinder.
6. Open (counterclockwise) the CO₂ cylinder valve slightly to allow the lines to slowly fill with gas, then open the valve fully to back-seat the valve (back-seating the valve prevents gas leakage around the valve shaft).
7. Check CO₂ connections for leaks. Tighten any loose connections.

Checking for CO₂ and water leak

Check the Unit for CO₂ and water leaks and if found, call a qualified Service Person to repair as necessary.

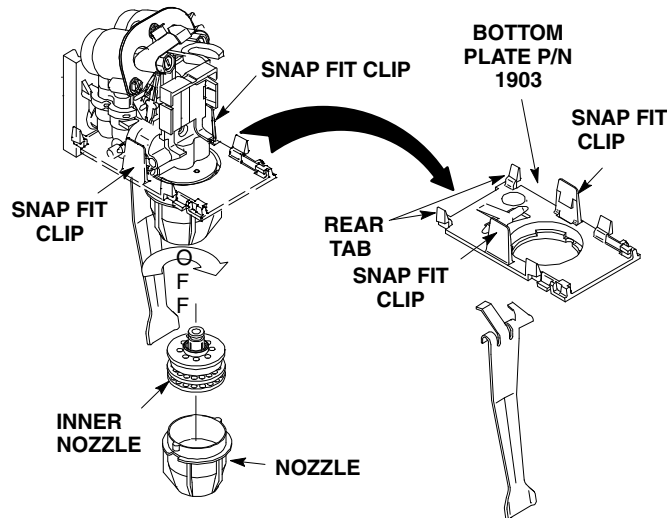
Dispensing Valves

Refer to addendum supplied with the unit that is applicable to the manufacturer of the valves installed on the unit.

Cleaning Dispensing Valve

1. Remove nozzle assembly (contains Inner Nozzle) from dispensing valve. Separate the inner nozzle from the nozzle and wash the two parts in warm water.
2. Remove the bottom plate by releasing the two snap-fit clips. Remove the lever from the bottom plate and wash the bottom plate and the lever in warm water.
3. Reassemble the lever into the bottom plate and return the bottom plate to the valve. Be sure the rear tabs are properly secured.

- Return the inner nozzle to the nozzle and replace the assembly to the valve.



MONTHLY

Clean and sanitize the hopper interior and beverage system, if applicable (see CLEANING INSTRUCTIONS).

BEVERAGE SYSTEM (IF APPLICABLE)



WARNING: Disconnect Power Before Cleaning! Do not use metal scrapers, sharp objects, or abrasives on the ice storage hopper, top cover and the agitator disk, as damage may result. Do not use solvents or other cleaning agents, as they may attack the plastic material.

- Soap solution – Use a mixture of mild detergent and warm (100°F) potable water.
- Sanitizing solution – Dissolve 2 packets (4 oz.) Stera Sheen Green Label into 2 gallons of warm (80-100°F) water to ensure 200 ppm of available chlorine.
- Cleaning tank – Fill clean, empty tank with a mixture of mild detergent and five (5) gallons of warm potable water (120°F).



CAUTION: When pouring liquid into the hopper, do not exceed the rate of 1/2 gallon per minute.

Cold Plate

1. Remove splash panel.
2. Remove or move the plastic cold plate cover to expose the cold plate.
3. Locate and remove any debris from the drain trough. Check that the drain holes are not clogged.
4. Pour small amount of soap solution through cold plate openings in hopper.
5. Using a cloth, wash down the surfaces of the cold plate and plastic cover with soap solution.
6. Install and properly position the access covers on the cold plate.
7. Install the splash panel in the reverse order it was removed.
8. Rinse cold plate surface by pouring potable water through hopper openings.

Sanitize syrup lines, B-I-B Systems

1. Remove all the quick disconnects from all the B-I-B containers.
2. Fill a suitable pail or bucket with soap solution.
3. Submerge all disconnects (gas and liquid) in the soap solution and then clean them using a nylon bristle brush. (**Do not use a wire brush**). Rinse with clean water.
4. Using a plastic pail, prepare approximately five (5) gallons of sanitizing solution.

5. Rinse the B-I-B disconnects in the sanitizing solution.
6. Sanitizing fittings must be attached to each B-I-B disconnect. If these fittings are not available, the fittings from empty B-I-B bags can be cut from the bags and used. These fittings open the disconnect so the sanitizing solution can be drawn through the disconnect.
7. Place all the B-I-B disconnects into the pail of sanitizing solution. Operate all the valves until the sanitizing solution is flowing from the valve. Allow sanitizer to remain in lines for fifteen (15) minutes.
8. Remove the nozzle and syrup diffuser from each valve and clean them in a soap solution. Rinse with clean water and reassemble the nozzle and syrup diffuser to the valve.
9. Remove the sanitizing fittings from the B-I-B disconnects and connect the disconnects to the appropriate B-I-B container. Operate the valves until all sanitizer has been flushed from the system and syrup is flowing freely.

YEARLY

Water Pump Maintenance (or after water system disruption)

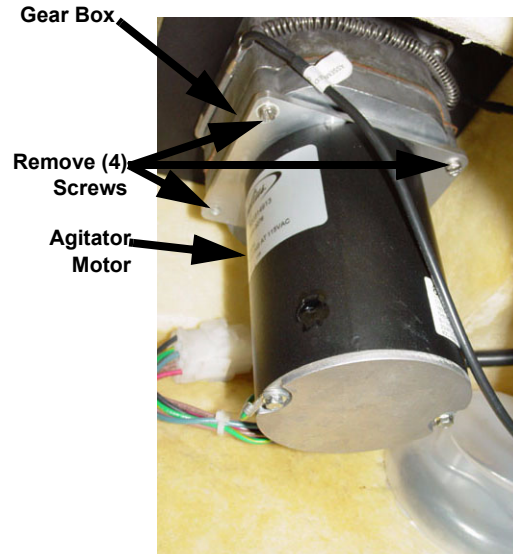
The water pump water strainer screen and the liquid dual check valve must be inspected and cleaned at least once a year under normal circumstances and after any water system disruption (plumbing work, earthquake, etc.). Call a qualified Service Person to inspect and clean the strainer screen and the liquid dual check valve.

Cleaning CO₂ Gas Check Valve

The CO₂ gas check valve, located on the carbonated water tank, must be inspected and serviced at least once a year under normal conditions and after any CO₂ system servicing disruption. Call a qualified Service Person to inspect and clean the CO₂ gas check valve.

MOTOR REPLACEMENT

1. Remove the 4 screws with a 1/4" socket to separate the agitator motor from the gear box.

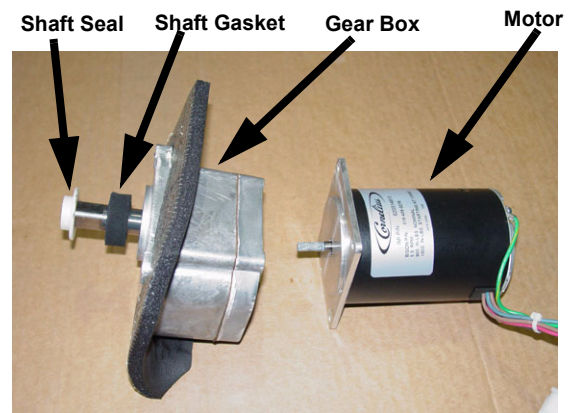
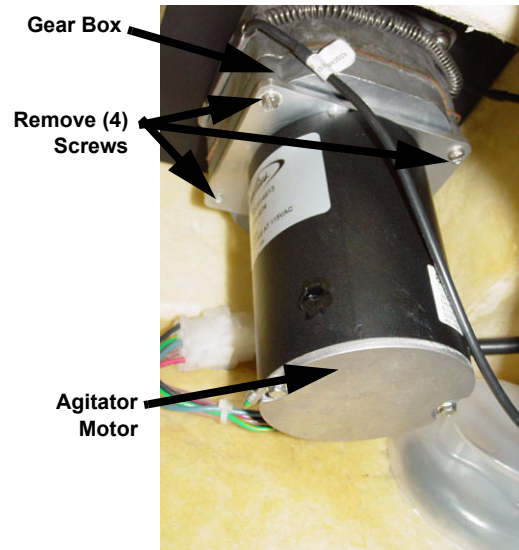


2. Remove the agitator motor.
3. Install the new agitator motor and replace the screws removed in step 1 with a 1/4" socket.



GEARBOX REPLACEMENT

1. Remove the 4 screws with a 1/4" socket to separate the agitator motor from the gear box.
2. Remove the 4 screws holding the gear box in place with a 3/16 hex wrench.
3. Pull the gear box, seal, and gasket off the machine.
4. Install the new gear box, seal, and gasket. Screw it in place with the 4 screws removed in step 4 using a 3/16 hex wrench.
5. Replace the motor with the 2 screws removed in step 1 using a 1/4" socket.



TROUBLESHOOTING

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



WARNING: If repairs are to be made to a product system, remove quick disconnects from the applicable product tank, then relieve the system pressure before proceeding. If repairs are to be made to the CO₂ system, stop dispensing, shut off the CO₂ supply, then relieve the system pressure before proceeding. If repairs are to be made to the refrigeration system, make sure electrical power is disconnected from the unit.

Should your unit fail to operate properly, check that there is power to the unit and that the hopper contains ice. If the unit does not dispense, check the following chart under the appropriate symptoms to aid in locating the defect.

Dispenser Troubleshooting		
Symptom	Cause	Remedy
Blown fuse or circuit breaker	Short circuit in electrical wiring	Repair Wiring
	Inoperable agitator motor (shorted motor)	Replace gear motor
Agitator does not turn	No power	Restore power or plug in unit
	Improperly installed upper ice chute assembly (Reed switch is not being activated)	Check the upper ice chute assembly for proper assembly and operation
	Inoperable reed switch	Replace reed switch
	Electrical board driver circuit is defective	Replace main control board
	Gear motor has open circuit	Replace gear motor
	Reed switch is not activated Improper assembly of upper ice chute to lower chute.	Check to make sure tongue of upper chute engages into the back of the lower chute, ensure upper chute engages outside the lower chute, and snap front of chute into place.
	Broken wire in the 2-wire harness leading to the reed switch	Repair or replace 2-wire harness
	Bad connection at main control board, J3, pins 2 & 3	Repair connection or replace 2-wire harness
Ice dispenses continuously	Ice gate mechanism is stuck in open position	Inspect gasket for proper position. Examine gate plate to see if it slides freely behind the lower ice chute.
	Stuck or bent ice lever (does not allow gate to close and open reed switch)	Examine ice dispense lever to see if it is bent.

Slushy ice or water in hopper	Blocked drains in cold plate	Remove access covers in cold plate cover & inspect/clean drains
	Poor ice quality due to water quality or ice maker problems	Correct water quality or repair ice maker
Beverage does not dispense	No 24VAC to valves	Restore 24 VAC to valves
	No CO ₂ pressure	Restore CO ₂ pressure
Beverage is too sweet	Valve brix requires adjustment	Adjust valve brix
	Carbonator is not operating	Repair carbonator
	No CO ₂ in carbonator	Restore CO ₂ pressure in carbonator
	City water pressure supply low or inconsistent	Booster pump must be used if dynamic water pressure drops below 40 psig.
Unit will not dispense carbonated drinks. Dispenses syrup only.	CO ₂ pressure in carbonator tank is too high.	Check CO ₂ pressure regulator setting. 75 psig recommended. Relieve pressure from carbonator tank.
	Water valve will not open	Check electrical connection to water valve. Check resistance of coil (should be 9 ohms). Check for voltage at coil when brand button is depressed.
Unit will not dispense carbonated drinks. Spurts CO ₂ and syrup only.	Carbonator tank is empty, because tank was emptied while power was applied to unit. 5 minute time-out of carbonator pump/motor occurred, and carbonator pump is locked off.	Unplug the unit and reconnect the unit. Main control board will reset, ice agitation will occur, and carbonator tank will refill to normal level.
	Note that this can occur while the water filter system is serviced or water supply is shutoff. If drinks are drawn from the dispenser while water pressure is shutoff, the carbonator pump starts and runs continuously, then shuts off on the 5 minute timeout.	1) low water pressure switch deactivates carbonator pump, 2) after 5 minutes reset and retry carbonator pump. If water supply is restored, the 5 minute timeout will not occur. Repeat reset a second time, but on a third time, then lockout carbonator pump, which will generate a service call.
Carbonated drinks are flat (low on carbonation)	CO ₂ is out	Replace CO ₂
	Carbonator tank is 100% filled because the city water pressure exceeds the carbonator tank CO ₂ pressure regulator setting.	CO ₂ setting for the carbonator tank is 75 psig, max water pressure is 60 psig. If necessary, install a water pressure regulating valve.

Low water pressure	Could be caused by excessively long runs (over 40 ft.) of 3/8" water supply line.	Increase line size to 1/2"
	Low water pressure	Add water pressure booster pump
	Plugged water filter.	Change water filter
	Water booster bladder has burst	Replace water booster tank/bladder
No Syrup or Watered down drink dispensed	Syrup supply is empty	Replace BIB
	BIB pump not working	Replace BIB pump
	No CO ₂ or compressed air supply to BIB pump, or not enough pressure	Check CO ₂ pressure regulator setting. 65 psig recommended. Replace CO ₂ tank or fix compressor.

Carbonator Troubleshooting

Symptom	Cause	Remedy
Carbonator pump does not start to fill tank	Power cord for the carbonator pump motor is not connected.	Carbonator pump is powered off the main control board inside the electrical box of the unit. Check that the umbilical cord is connected from the unit to the pump motor terminal box.
Power cord is connected but carbonator pump does not run.	Carbonator pump motor is disabled.	Check the enable/disable switch on the carbonator pump terminal box and enable it, if necessary.
	Probes were dry, unit was powered up, water was not turned on, and carbonator did not fill.	This results in a 5 minute timeout. Unplugging the unit and plugging it in will reset the unit and start the carbonator pump.
	Water service was interrupted for more than 5 minutes.	Unplugging the unit and plugging it in will reset the unit and start the carbonator pump.
Carbonator pump is short cycling with every drink drawn	Lower liquid level probe reads "dry" while upper probe reads "wet"	Check color of leads going to probes. Black should go to bottom probe and white to top probe. Reverse if incorrect.
Carbonator tank overfills, overflows through relief valve, and pump shuts off after 5 minutes.	A. Poor electrical connections between carbonator tank and main control board	A. Check connections at carbonator tank and at connector J4 on the main control board.
	B. Broken wires between carbonator tank and main control board	B. Replace wire harness
	C. Defective liquid level probes	C. Replace both liquid level probes

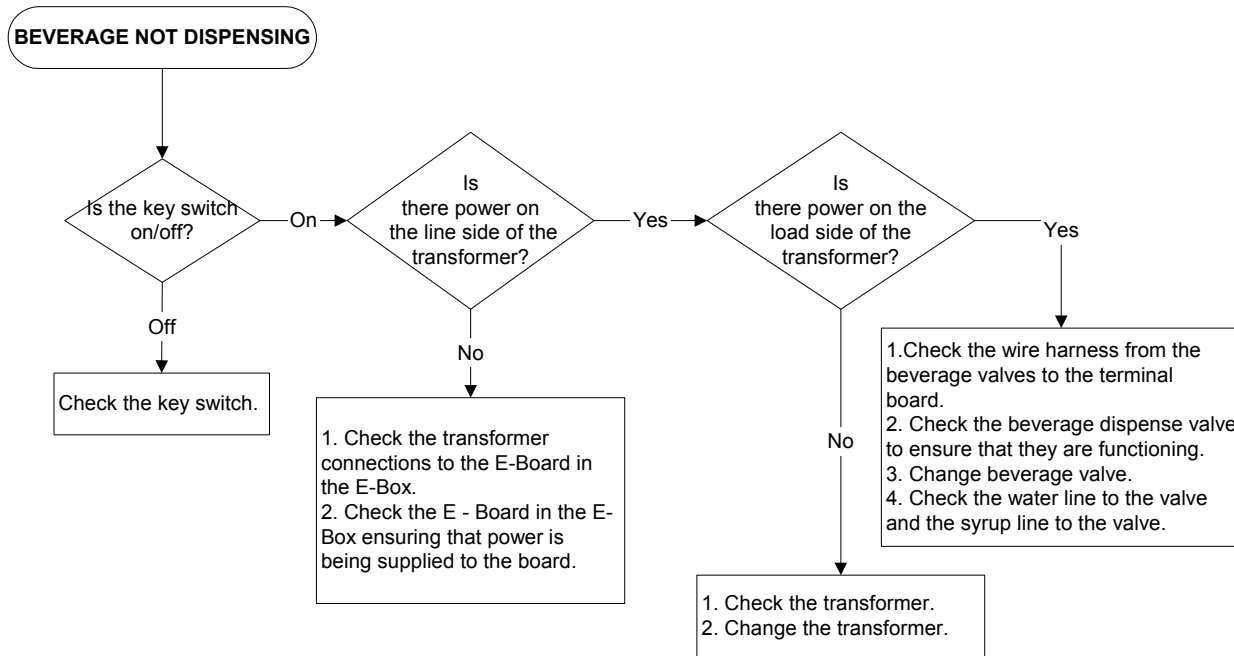
Contact your local syrup or beverage equipment distributor for additional information and troubleshooting of beverage system.

DIAGNOSTICS GUIDE FOR THE MAIN CONTROL BOARD

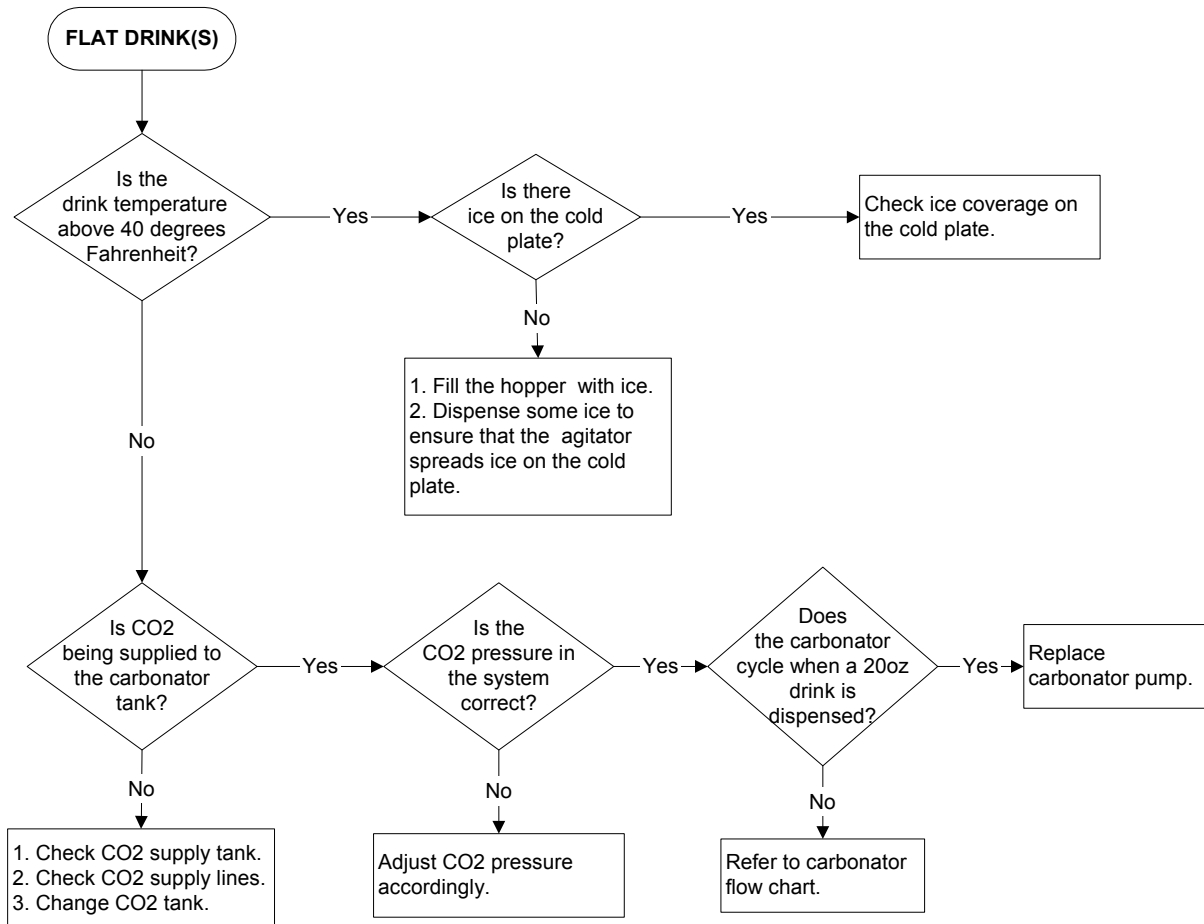
State	Observed State of Red LED	Sensor Input	Control Response	Service Remedy
0	Flash rate 3 seconds	Both probes read "wet"	Standby mode. Pump = OFF	No service required
1	Flash rate 1/2 second	Pump is OFF and HIGH probe reads "dry" and LOW probe reads "wet"	Waiting for level to drop below LOW probe. Pump = OFF	No service required
2	Flash rate 1/2 second	Both HIGH and LOW probes read "dry"	Normal mode. Pump = ON	No service required
3	Flash rate 1/2 second	Entered when HIGH probe does not detect liquid, and LOW probe does detect liquid, and pump is ON	Normal mode. Pump = ON	No service required
4	Flash rate 1 second	Entered when HIGH probe reads "wet" and LOW probe reads "dry"	THIS IS AN ERROR CONDITION.	<ul style="list-style-type: none"> - Check electrical connections at the carbonator tank, and at connector J4 on the main control board - Black wire should be connected to the LOW probe and also to Pin 4 of Connector J4 - Reverse the connections if incorrect - Replace harness if necessary
5	ON continuously, but "flickers" every 3 seconds	Poor signal connection to the carbonator tank. May result in short cycling of the carbonator pump.	<p>Able to continue to function but carbonator pump short-cycles. Pump will come on each time a drink is drawn.</p> <p>THIS SITUATION SHOULD BE CORRECTED.</p>	<p>Check the harness connections of the red signal wire at both ends:</p> <ol style="list-style-type: none"> 1) at the carbonator ring terminal and 2) at Pin 5 of the J4 connector at the main control board
6	ON continuously	Entered when pump has run continuously for 5 minutes	THIS IS AN ERROR CONDITION.	Unplug the unit and plug it back in. This will reset the unit's main control board and restart the carbonator pump.

TROUBLESHOOTING

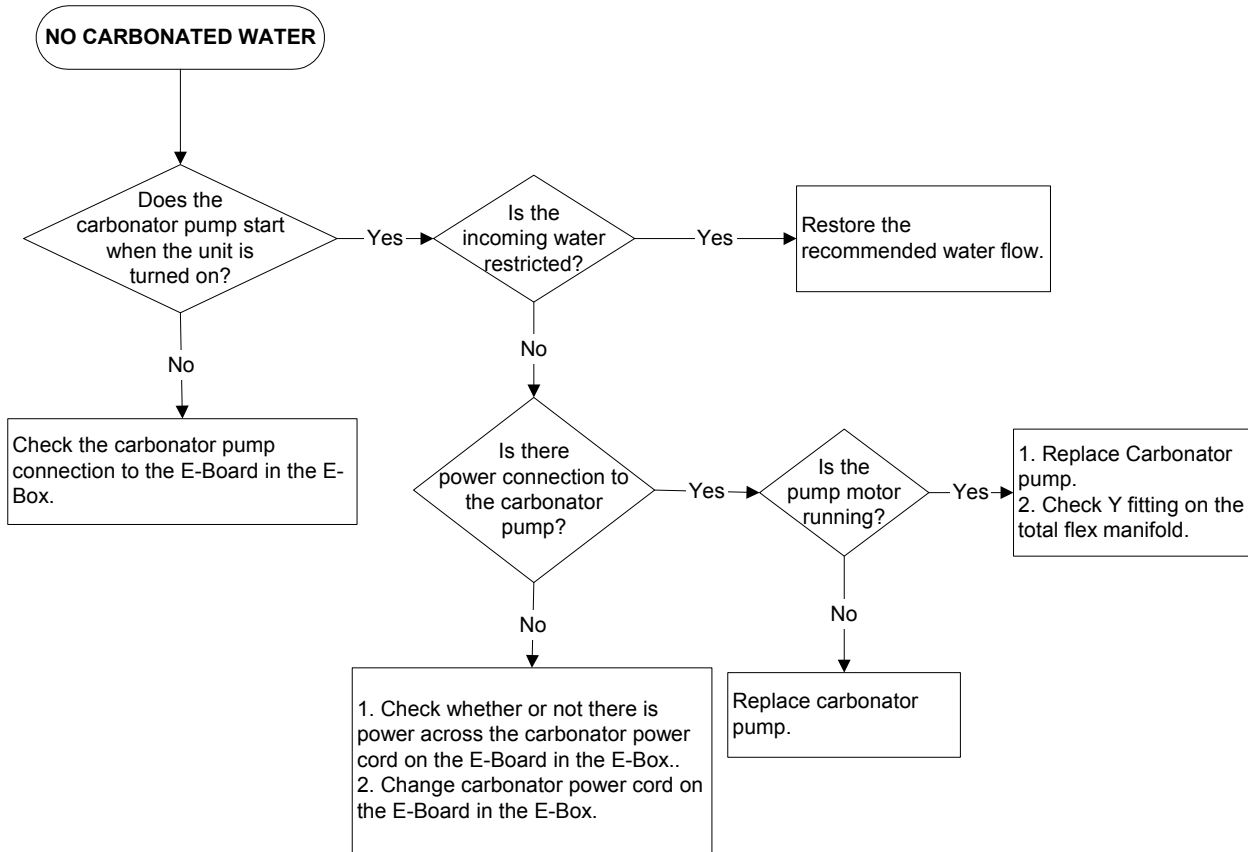
Beverage Not Dispensing



Flat Drinks



No Carbonated Water



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