BATCH CARBONATOR BC-1

Installation Manual

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Revision: D

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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.

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Contact Information:

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Correct Disposal of this Product

RECYCLE

This marking indicates that this product should not be disposed with other household wastes throughout the EU. To prevent possible harm to the environment or human health from uncontrolled waste disposal, recycle it responsibly to promote the sustainable reuse of material resources. To return your used device, please use the return and collection systems or contact the retailer where the product was purchased. They can take this product for environmental safe recycling.

TABLE OF CONTENTS

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 and/or national and local codes 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

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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.

CO_2 (Carbon Dioxide) Warning

DANGER:
CO_2 displaces oxygen. Strict attention **MUST** be observed in the prevention of CO_2 gas leaks in the entire CO_2 and soft drink system. If a CO_2 gas leak is suspected, particularly in a small area, **IMMEDIATELY** ventilate the contaminated area before attempting to repair the leak. Personnel exposed to high concentrations of CO_2 gas experience tremors which are followed rapidly by loss of consciousness and **DEATH**.

Unit Location

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.

CAUTION:
This unit is not designed for use in outdoor locations.

Power Cord

CAUTION:
If the power cord is damaged, it must be replaced by a special cord available from the manufacturer or its service agent.

Sound Levels

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

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MACHINE USAGE

CAUTION:
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.

CAUTION:
Children should be supervised to ensure that they do not play with the appliance.

CAUTION:
This appliance is intended to be used in commercial applications.

UNIT CLEANING

CAUTION:
This unit must not be cleaned by using a water jet.

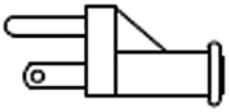
GROUNDING INSTRUCTIONS

CAUTION:
This appliance must be grounded. In the event of malfunction or breakdown, grounding provides a path of least resistance for electric current to reduce the risk of electric shock. This appliance Is equipped with a cord having an equipment-grounding conductor and a groundling plug. The plug must be plugged into an appropriate outlet that is properly Installed and grounded in accordance with all local codes and ordinances.

DANGER:
Improper connection of the equipment-grounding conductor can result In a risk of electric shock. The conductor with green insulation with or without yellow stripes Is the equipment grounding conductor. If repair or replacement of the cord or plug Is necessary, do not connect the equipment grounding conductor to a live terminal. If in doubt whether the appliance is properly grounded, check with a qualified electrician or serviceman. Do not modify the plug provided with the appliance - if it will not fit the outlet, have a proper outlet installed by a qualified electrician.

CAUTION:
This appliance Is for use on electrical circuits, as shown in Table 1, and has a grounding plug that looks like the plug illustrated in Figure 1.

A qualified electrician should be consulted if there is any doubt about the outlet box being properly grounded.



3-Prong Plug *

* Example of grounded North American plug.

Figure 1.

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INTRODUCTION

SYSTEM OVERVIEW

The Batch Carbonation Unit is a state-of-the-art beverage carbonating machine. It provides on-demand carbonation for a wide range of products in a reliable and compact design.

The unit provides the highest quality drink appearance and consistency, while keeping operation and maintenance simple and straightforward. It is designed to sit on a table or countertop and does not require any mounting to the table.

The unit consists of a sealed vessel that is pressurized with CO_2, coupled through a self-lubricating set of bearings and driven by a dc electric motor. Intelligent controls allow the user to set multiple carbonation levels.

SPECIFICATIONS

Table 1.

Capacity	17.75 fl. oz. (0.52 liters)
CO2 Input Connection	1/4 in. quick connect
CO2 Vent Connection	1/4 in. quick connect
CO2 Pressure at unit	Max: 100 psi (0.69 MPa)
Operational Voltage	100 V, 115 V, 220-240 V 50/60 Hz
Height	19.1 in. (485 mm)
Depth	14.1 in. (358 mm)
Width	11.5 in. (292 mm)
Weight (unit)	39 lbs. (17.7 kg)
Ambient Operating Temperature	40° F to 100° F (4.4° C to 37.8° C)

INSTALLATION

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.

DELIVERY INSPECTION AND UNPACKING

NOTE: Cornelius is not responsible for damaged freight. If damage is found, you must save all packaging material and contact the freight carrier. Failure to contact the carrier within 48 hours of receipt may void your claim.

1. Inspect the carton and note any damage, even if it appears minor. If the carton is damaged, note on the consignee copy of the freight invoice “exterior carton damage-concealed damage possible” and contact the freight company immediately.
2. Remove the strapping from the box, remove the tape and lift the carton off the pallet.
3. Remove the internal fillers and plastic bag around the unit. Carefully inspect the unit for damage.
4. Inspect the device to make sure it has no scratches, dents or any other cosmetic defects.
5. Open the packages of loose parts and inspect all of the parts for damage or missing parts. Check the parts against the packing list to ensure receipt of all parts.

COUNTER LOCATION

CAUTION:
Countertop material and thickness can vary between stores (stainless steel, molded resin, etc), and the underside of the countertop may be open or part of an enclosed cabinet.

Select a location in a well-ventilated area, close to a grounded electrical outlet. The counter or table must be able to support a weight of at least 55 pounds. The minimum clearance is: 3 in. (7.62 cm) in the back of the unit. Side clearance for the unit is zero on the right and 1 in. (2.54 cm) on the left.

This unit comes with self-leveling feet. In order to insure proper unit functionality, the counter should be level to within 5 degrees.

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SUPPLY CONNECTIONS

WARNING:
Only trained and certified electrical, plumbing and refrigeration technicians should service this unit.

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All of the electrical and supply connections to the unit are located on the back of the unit, as shown in Figure 2. The unit is filled manually from the front. Make sure there is enough clearance to allow proper filling of the unit.

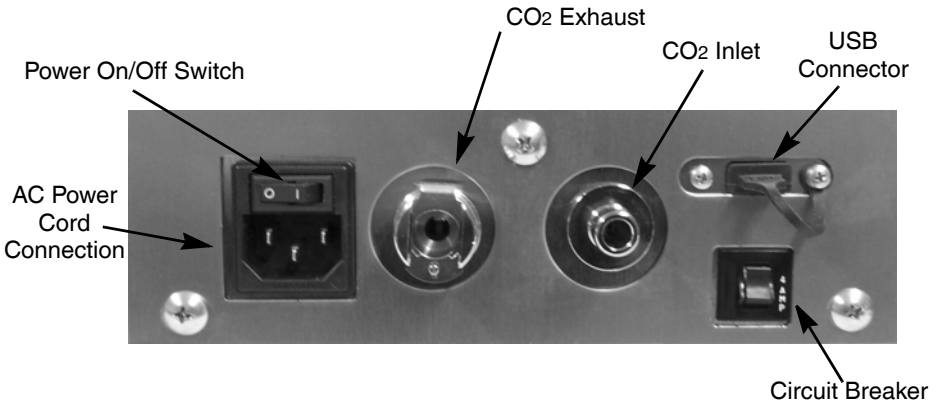

Figure 2.

Electrical Requirements

Refer to the nameplate to determine the power requirements before connecting electrical power to the unit. All of the power cords should comply with safety requirements outlined in the EC Standards (EN 60335--1 1 Clause 24.1) in countries where CE compliance is required. All cords must be HD 21 or HD 22.

Line Voltage

The intended line voltage ranges for the Batch Carbonation unit are 100, 115, 220-240 VAC + 10%/-10%. Measure the voltage at the wall outlet to verify proper wiring of the outlet before plugging the Batch Carbonation unit in.

Power

The power cord must have overload protection such as a circuit breaker or fuse that meets local and national electrical codes. Table 2 shows the minimum power requirements for the unit with various nominal power supplies.

Table 2.

100 VAC, 50/60 HZ	115 VAC, 60 HZ	220-240 VAC, 50/60 HZ
0.6 A	0.5 A	0.35/0.25 A

Electrical Connections

All units are shipped with a power cord terminated with the proper AC plug for the application. Plug the power cord into the rear of the unit.

All units are connected to AC power by plugging the electrical plug into the proper wall outlet. Verify the proper operating voltage before plugging in the unit.

CO_2 Requirements

WARNING:
Failure to install the wall bracket may result in a tipping hazard.

FAILURE TO COMPLY COULD RESULT IN SERIOUS INJURY, DEATH OR EQUIPMENT DAMAGE.

NOTE: CO_2 connections require 1/4" I.D. tubing. All hoses must reach the back of the unit including an adequate amount of extra tubing to allow the unit to be pulled out for servicing

NOTE: Use a dedicated secondary regulator adjusted to 100±1 PSIG (0.69 MPa) to supply the unit.

CO_2 Connections

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.

Use the primary regulator supplied in the installation kit, which includes a 160 PSIG maximum secondary regulator, fittings and clamps to connect the CO_2 line to the unit. Set the secondary regulator for 100±1 psig (0.69 MPa) at the unit. Run the tubing for the CO_2 from the secondary regulator to the unit and make all appropriate connections. Do not turn on the CO_2 supply to the unit.

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Initial CO_2 Pressure Setup

Once the CO_2 cylinder is properly connected to the unit, perform the procedure in Table 3 to set the regulator to the proper pressure for proper operation.

NOTE: The pressure gauge on the CO_2 cylinder is not always accurate. The unit should be setup using the pressure gauge in the unit.

Table 3.

Step	Action
1	Turn the unit on.
2	Press and hold the Selector Knob for 5 seconds.The screen shown in Figure 3 is displayed.
3	Rotate the Selector Knob and the screen shown in Figure 4 will be displayed. The word “GO” starts flashing.
4	Press the Selector Knob momentarily. The screen shown in Figure 5 is displayed with the CO_2 pressure currently present at the unit.
5	If the pressure is less than 95 psig (0.66 MPa) or more than 100 psig (0.69 MPa), exit the menu by pressing the Selector Knob again.
6	Go to the secondary regulator on the CO_2 cylinder and adjust the regulator.
7	Repeat Steps 2 through 4 until 95-100 psig (0.66-0.69 MPa) is measured on the unit menu.

Figure 3.

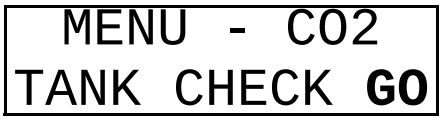

Figure 4.

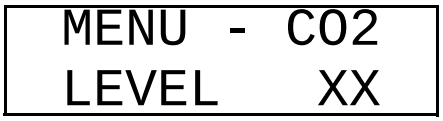

Figure 5.

COMMISSIONING THE UNIT

INITIAL STARTUP

Connecting Power

Plug in the power cord to the appropriate outlet and turn on the power switch at the rear of the unit, shown in Figure 6. Verify that the wall outlet is a grounded receptacle and that it is properly grounded. Refer to the section on Power on page 8 for electrical requirements.

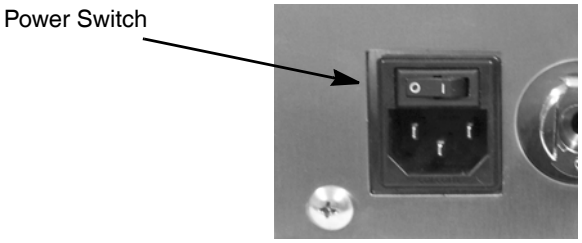

Figure 6.

Pre-Cleaning and Sanitation

Before using the unit for drink preparation, the mixing vessel and anti-foaming gasket must be washed and sanitized. The vessel and gasket are dishwasher safe. If hand washing, use a dish washing detergent and thoroughly wash the vessel inside and out, along with the gasket. Rinse and dry the vessel and gasket.

The vessel and gasket must be sanitized. Mix a solution of approved chlorine sanitizer (Kay-5 sanitizer or equivalent) according to manufacturers instructions. Sanitize the mixing vessel and gasket thoroughly (inside and out) and let them air dry before use.

⚠ CAUTION:
DO NOT spray the unit.

Regional Setting

The system menu must be configured for the region where the unit is being installed. This is accomplished by following the procedure in the Service menu shown in 01 Region Select on page 19. The default setting is North America.

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CONTROL PANEL OVERVIEW

The following section describes the components on the control panel and their functions.

The Batch Carbonation Unit user interface is a very simple design. It consists of a 2 x 16 character LCD display, an analog CO_2 pressure gauge and the Stop/Start Selector Knob. This interface allows the operator to control and program the unit. Troubleshooting information for the unit is available on the LCD display. The knob gives a clear, visual color indication of unit status.

The Selector Knob is located on the top-right side of the unit as shown in Figure 7.

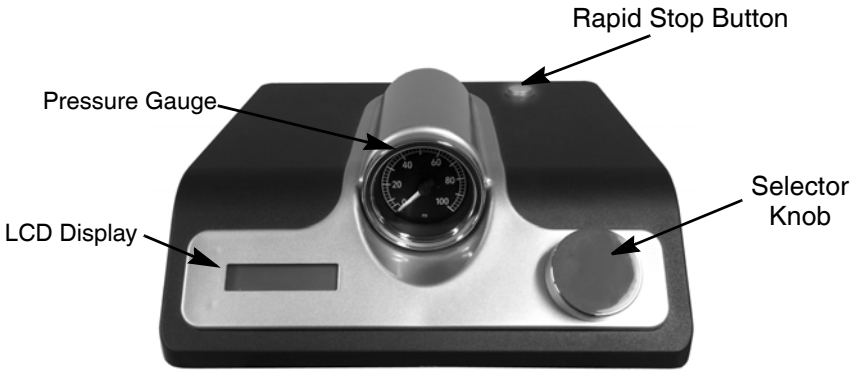

Figure 7.

Selector Knob

The Selector Knob operates either on a push or a release depending on the state of the machine. In most cases it acts on a release action, but if the system is running (i.e. shaking a drink) it reacts to a push to stop the machine as quickly as possible.

The rotary knob located around the Stop/Start push button is turned to select different menu options and is momentarily depressed to make user selections. The knob has a halo that displays different colors, depending on the status of the unit.

Power On/Off Switch

This switch is located on the back of the unit and turns power off to the entire unit. See Figure 2 for the location of the switch.

Rapid Stop Button

This button is located on the top right of the unit (see Figure 7). It immediately breaks the line voltage between the power entry module and the power supply. All

unit activity stops and the system returns to its normal state. This includes venting the internal pressure in the vessel and unit.

When the button is in the up position, this is the closed switch position and power is sent to the rest of the unit. When the button is pushed down it is flush with the switch bezel. This is the open switch position and power is broken at the switch. The switch latches in the down position, press the button again to return it to the up position and restore power to the unit.

NORMAL OPERATION

When the unit is powered up, the user interface display shows “STARBUCKS” on the first line and “CARBONATION” on the second line. After two seconds, line one reads “READY” and line two reads “GRANDE”.

Grande is the default drink setting for the unit when it is powered up. Rotate the Selector Knob to the desired setting. The “halo” around the Selector Knob is white when the unit is in the ready and drink complete states. Refer to Table 4 for the detailed procedure for making a drink.

When the cycle starts, the Selector Knob halo turns green and remains green until the cycle is complete. The asterisks on the second line of the display count down the remaining cycle time. The shake time of the unit varies by setting, followed by a vent cycle of 10 to 14 seconds.

When the pressure in the vessel drops below 6 PSI (0.041 MPa), line one of the display reads “DRINK COMPLETE”.

If there are no selection knob actions (press or rotate) for one hour, the unit goes into standby mode. The display and the selection knob halo both shut off to conserve energy. Pressing the selection knob or rotating it wakes up the unit.

Warning, Error or Alarm

If there is a warning, error or alarm, the Selector Knob halo turns red and the issue code is displayed on the second line of the display. Refer to the Warnings, Errors and Alarms on page 15 for information.

Stopping the Cycle

Pressing the Selector Knob during a drink cycle ends the cycle immediately. Line one displays “PLEASE WAIT” while the unit vents the CO_2 pressure. The second line displays the countdown asterisks. The unit returns to ready mode and the door unlocks after the system pressure falls below 6 PSI (0.041 MPa). Press the Selector Knob again to restart the cycle.

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Preparing a Drink

To prepare a drink, perform the procedure in Table 4.

Table 4.

Step	Action
1	Pour 17.75 fl. oz. of desired drink into the mixing vessel and place the anti-foaming gasket over the vessel. Make sure the seal flange is down over the vessel.
2	Open the door and unlock the clamp latch. (See Figure 8.)
3	Open the clamp, slide the mixing vessel under the lid and push it toward the unit. (See Figure 8)
4	Close the clamp and latch it fully.
5	Close the door.
6	Rotating the Selector Knob, choose the setting for the drink being carbonated. Verify the selection by observing the LCD display. (See Figure 7 on page 12)
7	Press the Selector Knob to start the cycle. This changes the color of the knob from white to green and the door locks. The LCD display shows the status of the drink preparation, as shown in Figure 9.
8	The cycle is complete after the mixing vessel is depressurized The LED changes color from green to white and the door unlocks. The LCD display shows the drink complete, as shown in Figure 10. **NOTE: The door remains locked if the pressure transducer reads 6 PSI (0.041 MPa) or more.**
9	Remove the mixing vessel by opening the clamp handle and opening the clamp.
10	Wipe down the bottom of the pressure lid after removing the mixing vessel.
11	Pour the finished drink into a clear cup for inspection.
12	If there are bubbles showing on the sides of the cup, the unit is working properly.
13	Clean the mixing vessel and anti-foaming gasket before reuse.

NOTE: To stop the unit during the carbonation cycle, press the Selector Knob. This stops the unit and vents the mixing vessel. The door remains locked if the pressure transducer reads 6 PSI (0.041 MPa) or more.

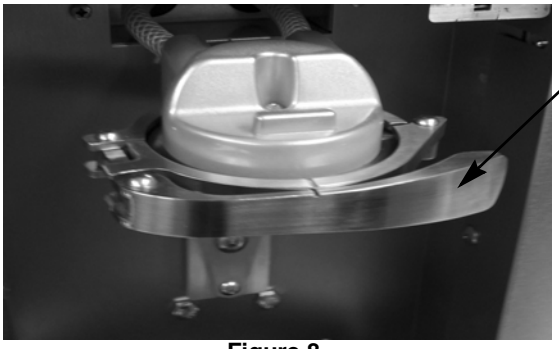

Figure 8.

Figure 9.

Figure 10.

WARNINGS, ERRORS AND ALARMS

CPU Error

This error occurs when the microprocessor fails its self test. The LCD display shows “01: CPU ERROR”.

Stuck Key Error

This error occurs if the Selector Knob is pressed continuously for more than 10 seconds. The LCD display shows “02: STUCK KEY”.

Pressure Sensor Error

This error occurs when the PCBA is not receiving a signal back from the pressure sensor. If the pressure sensor has failed or is unplugged, this error is generated. The LCD display shows: “03: PRESS SENSOR”.

24 VDC Low Error

This error occurs when the power supply voltage drops below 18 V for more than 5 seconds. The LCD display shows: “04: 24 VDC LOW”.

Vent Error

This error occurs if the system pressure reads more than 6 PSI (0.041 MPa) for more than 30 seconds after a venting cycle should have been completed. The LCD display shows “05: VENT ERROR”.

Motor Error

This error occurs if the PCBA is receiving a signal from the motor that it is running when the unit is in a state where the motor should not be running. The LCD Display shows “06: MOTOR ERROR”.

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CO_2 Sold Out Warning

If CO_2 pressure is 5 PSI (0.038 MPa) below the lowest program pressure, this error is generated. This error will stop normal operation. The LCD display shows: “07: CO2 OUT”.

CO_2 Low Warning

If the CO_2 pressure is 2 PSI (0.014 MPa) or more below the program pressure for the selected level of carbonation, an alarm is generated for that setting. System continues to operate normally. The LCD display shows: “08: CO2 LOW”.

Motor Stall Alarm

This alarm occurs if the motor draws excessive current for more than 5 seconds. The LCD display shows “09: MOTOR STALL”.

No Motor Alarm

This alarm indicates that no motor current is sensed by the system when the motor is turned on. The LCD display shows “10: NO MOTOR”.

Pressure Leak Alarm

This alarm is generated if internal CO_2 pressure is not increasing at the expected rate when the inlet solenoid valve is open. The system will stop operation. The unit will reset and re-attempt pressurization once operation resumes. The LCD display shows: “11: PRESS LEAK”.

Door Open Error

This alarm occurs if the door is open and the start button is pressed. If the unit is opened while running, or if the door unexpectedly opens, the unit stops immediately and the system vents pressure. A properly working door lock solenoid prevents either of these occurrences. The LCD display shows: “12: DOOR OPEN”.

PROGRAM SETTINGS

The Batch Carbonation Unit may be placed in the Menu Selection Mode using the interface on the front panel of the unit.

The menu selection mode is used to access data on the unit, program CO_2 levels, provide service tests and retrieve cycle counts.

If the Start/Stop switch is not pressed or rotated for 30 seconds, the unit returns to operating mode and any changes made will not be saved. On menu selection mode exit, any changes made and not saved by the operator are discarded.

Using the User Interface

Press and hold the Selector Knob for 5 seconds. This places the unit into the menu selection mode. When the screen shown in Figure 11 is displayed, release the selection knob. Menu selection mode allows the operator to select from a list of menus. The list is shown in Table 5.

Rotating the Selector Knob clockwise cycles through the list from top to bottom, while rotating it counterclockwise cycles through the list from bottom to top.

Figure 11.

Table 5.

Menu Screen Selections
01 TANK LEVEL
02 VERSION
03 DRINK COUNTS
04 ERROR LOG
05 SERVICE MODE
06 EXIT

LINE PRESSURE TESTING

01 Tank Level

Pressing the Selector Knob while "01 TANK CHECK" is displayed enters the tank level check. The top line of the LCD displays "MENU-CO2" and the second line displays either "TANK CHECK GO" or "TANK CHECK EXIT?". The "GO" is flashing. Pushing the button again causes the line pressure to display on the second line of the display. Rotating the knob cycles between "TANK CHECK GO" and "TANK CHECK EXIT?". Pressing the Selector Knob while "TANK CHECK EXIT?" is displayed returns to the Menu Mode Screen.

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02 Version

Pressing the Selector Knob while "02 VERSION" is displayed enters the software revision check. The first line of the LCD displays “FW VERSION” and the second line displays the software revision. Pressing the Selector Knob again returns to the Menu Mode Screen.

03 Drink Counts

Pressing the Selector Knob while "03 DRINK COUNTS" is displayed enters the drink counts check. The top line of the LCD displays "MENU-DRINK CNTS". The second line displays number of drinks run by level setting and total drink counts. Turning the knob cycles through the different level settings, total drinks and exit. Pressing the Selector Knob while "DRINK COUNTS EXIT" is displayed returns to the Menu Mode Screen.

04 Error Log

Pressing the push button while "04 ERROR LOG" is displayed enters the error log. The top line of the LCD displays "ERROR LOG". The second line displays a number 1 and an error/alarm/warning code. Rotate the Selector Knob to cycle through the 5 most recent error/alarm/warning codes and exit. One is the most recent and five is the oldest error. Stop on an error code and the second line flashes between the error/alarm/warning code and the drink count at the time the error occurred. If an error/alarm/warning occurs multiple times in a row it is only recorded in the log once.

05 Service Mode

Pressing the Selector Knob while "05 SERVICE MODE" is displayed enters the service mode menu. The top line of the LCD displays "MENU-SERVICE" and the second line displays "PASSWORD: 0***". Rotate the knob to cycle through the numbers 0-9 and press the Selector Knob to enter a number. An incorrect password returns the unit to the 05 SERVICE MODE screen. The password is 7289 (SBUX on a phone keypad). A correct password and the second line displays "01 PROGRAM LEVEL".

06 Exit

Pressing the Selector Knob while "06 EXIT" is displayed returns the unit to the service mode menu.

Service Mode Submenu

The service mode provides the submenu screen selections, shown in Table 6.

Table 6.

Service Mode Submenu Screen Selections
01 REGION SELECT
02 PROGRAM LEVEL
03 RESET DEFAULT
04 INPUT CHECK
05 OUTPUT CHECK
06 UPGRADE FW
07 EXIT

01 Region Select

Pressing the Selector Knob while “01 REGION SELECT” is displayed enters the region select programming mode. The top line of the LCD displays “MENU-REGION SELECT” and the second line displays the available regions. Rotating the knob cycles between the available region settings, “SAVE AND EXIT” and “EXIT”. The factory default setting is “NORTH AMERICA”. When displayed on the second line “NORTH AMERICA” flashs to indicate it is the region that is currently selected. To choose a different region, rotate the knob until the desired region is displayed on the screen and press the Selector Knob. The desired region now flashs to indicate it has been selected. To save the change, rotate the knob to “SAVE AND EXIT” and press the knob. To exit the region select programming mode without saving the changes, rotate the knob to “EXIT” and press the knob. Resetting factory defaults does not change the region selected.

02 Program Level

Pressing the Selector Knob while "02 PROGRAM LEVEL" is displayed enters the program level setting. The top line of the LCD displays "MENU-SET LEVELS" and the second line displays the level setting and the pressure level. The pressure level flashes. Pressing the Selector Knob stops the pressure from flashing and turning the knob changes the pressure level in increments of 1 PSI (0.007 MPa), with a minimum of 50 and a maximum of 90. To shake a drink without CO_2 pressure, choose “OFF”

Pressing the Selector Knob sets the new pressure level. The display flashes to indicate the new level. Rotating the knob cycles through the different level settings, "SAVE AND EXIT", and "EXIT". To save the change, rotate the knob to “SAVE AND EXIT” and press the knob. To exit the region select programming mode without saving the changes, rotate the knob to “EXIT” and press the knob.

03 Reset Default

Pressing the Selector Knob while "03 RESET DEFAULT" is displayed enters the factory default reset mode. The top LCD displays "MENU-RESET FAC." and the second line displays "RESET DEFAULT? N". Rotating the knob cycles between N and

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Y. Pushing the Selector Knob while "RESET DEFAULTS? N" is displayed returns to the service mode submenu screen. Pressing the Selector Knob while "RESET DEFAULT? Y" is displayed changes the level settings and pressure levels back to the factory defaults.

04 Input Check

Pressing the Selector Knob while "04 INPUT CHECK" is displayed enters the input test mode. This allows the technician to diagnose components that send signals to the PCBA. The top LCD displays "MENU-INPUT TEST" and the second line displays "01 DOOR: OPEN".

Menu Input Test Screen Selections

Entering the Input Test Screen Selection mode provides the input submenu screen selections, shown in Table 7.

Table 7.

Menu Input Test Screen Selections
01 DOOR
02 SENSOR
03 VOLTS
04 EXIT

01 Door

Tests the state of the door microswitch. The LCD displays either "01 DOOR: OPEN" or "01 DOOR: CLOSED" depending on the state of the microswitch. Open or close the door to change the display.

02 Sensor

Tests the functionality of the pressure transducer. Pressing the Selector Knob pressurizes the system in short pulses and then depressurizes it in short pulses. LCD displays "02 SENSOR XX p" constantly updating the pressure reading.

03 Volts

Tests the output voltage of the power supply (24VDC). When this selection is chosen, the LCD displays "VOLTS: XX.X DC".

04 Exit

Pressing the Selector Knob returns to the service mode submenu.

05 Output Check

Pressing the knob while "05 OUTPUT CHECK" is displayed enters the output test mode. This allows the technician to diagnose components that receive signals from the PCBA. The top LCD displays "MENU-OUTPUT TEST" and the second line displays "01 INLET: OFF".

This mode allows the technician to diagnose components which receive signals.

Menu Output Test Screen Selections

Entering the output Test Screen Selection mode provides the output submenu screen selections, shown in Table 7.

Table 8.

Menu Input Test Screen Selections
01 INLET
02 OUTLET
03 JAR IN
04 MOTOR
05 DISPLAY
06 LOCK
07 GAUGE
08 EXIT

01 Inlet

When entering this function, the display shows “01 INLET: OFF”. The function tests the operation of the normally closed solenoid valve. Pressing the Selector Knob opens the normally closed valve on the inlet side and the LCD displays "01 INLET: ON". After 2 seconds the valve closes and the LCD display reads "01 INLET: OFF". If CO_2 supply pressure is plumbed to the unit, during this test CO_2 vents into the unit if no vessel is installed or out of the exhaust port on the back of the unit if it is.

02 Outlet

When entering this function, the display shows “02 OUTLET: OFF”. The function tests the operation of the normally open exhaust solenoid valve. Pressing the Selector Knob opens the normally open valve on the exhaust side and the LCD displays "02 OUTLET: ON". After 10 seconds the valve closes and the LCD display reads "02 OUTLET: OFF". During this test, the unit should not vent CO_2 if it is plumbed to the unit.

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03 Jar In

When entering this function, the display shows “03 JAR IN: OFF”. The function tests the operation of the normally open inlet solenoid valve. Pressing the Selector Knob opens the normally open valve on the inlet side and the LCD displays "03 JAR IN: ON". After 10 seconds the valve closes and the LCD display reads "03 JAR IN: OFF". During this test, the unit should not vent CO_2 if it is plumbed to the unit.

04 Motor

When entering this function, the display shows “04 MOTOR: OFF”. The function tests the operation of the shaker motor. Pressing the Selector Knob turns on the motor and the LCD displays "04 MOTOR: ON". After 5 seconds, the motor stops and the LCD display reads "04 MOTOR: OFF".

05 Display

In this mode, the functionality of the LCD display is tested. Press the Selector Knob and the LCD displays "123456789ABCDEF" on both lines. After 5 seconds the LCD back light blinks off and on and then reads "05 DISPLAY".

06 Door Lock

When entering this function, the display shows “06 LOCK: UNLOCKED”. The function tests the operation of the door lock solenoid. Pressing the Selector Knob moves the bi-latching solenoid plunger to the door locked position and the LCD displays "06 LOCK: LOCKED". After 5 seconds, the bi-latching solenoid plunger moves to the door open position and the LCD display reads "06 LOCK: UNLOCKED".

07 Gauge

When entering this function, the display shows "07 GAUGE: ON". The function tests the backlight of the pressure gauge. Pressing the Selector Knob turns off the back-light of the pressure gauge and the LCD display reads "07 Gauge: OFF".

08 Exit

Pressing the Selector Knob returns to the service mode menu.

06 Upgrade FW

WARNING:
Ensure that you have a USB 2.0 Flash Drive with the most current firmware prior to entering the Upgrade FW mode.

Pressing the button while "06 UPGRADE FW" is displayed causes the unit to go into the firmware upgrade mode. The first line of the display shows “MENU-UPGRADE FW”. The second line of the display shows “ARE YOU SURE? N”. To upgrade the firmware, rotate the Selector Knob. The “N” at the end of the second line of the display changes to Y. If you want to upgrade the firmware, press the Selector Knob. If you do not want to upgrade the firmware, rotate the Selector Knob again until “N” appears at the end of the second line of the display, then press the knob.

If the upgrade option is chosen, a version of firmware must be installed. The screen and knob halo turn off. A USB 2.0 flash drive loaded with a software revision can then be inserted into the USB connector on the rear of the unit. After recognizing the flash drive, the LCD displays "SELECT FILE" on line 1 and shows the program file name on line 2. Rotating the knob cycles through the file names. Pressing the Selector Knob uploads the code revision selected. In approximately 2 seconds there will be a click. The LCD displays "STARBUCKS" on line 1 and "CARBONATION" on line 2 and the Selector Knob halo turns white. After two more seconds, the LCD displays "READY” on line 1 and "Grande" on line 2.

07 Exit

Pressing the Selector Knob while “07: EXIT” is displayed exits the service mode.

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TROUBLESHOOTING

TROUBLESHOOTING

⚠ 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.

Table 9 describes some of the possible symptoms and solutions for troubleshooting the unit.

Table 9.

Symptom	Probable Cause	Solution
No activity at all	A. Rapid Stop button off position.	A. Press Rapid Stop button.
	B. Power switch in off position.	B. Turn power switch to On position.
	C. Power cord not plugged into unit.	C. Plug into unit.
	D. Power cord not plugged into outlet.	D. Plug into outlet.
	E. Unit circuit breaker tripped.	E. If white paint is exposed push button back in to reset circuit breaker.
	F. GFI outlet tripped.	F. Check for voltage at outlet. If none then hit reset on outlet.
	G. Circuit breaker	G. Check fuse is good and breaker is in on position.
	H. Failed power cord.	H. Check for line voltage at IEC connector on power cord. Replace power cord if there is no voltage.
	I. Loose harness connections.	I. Check for loose or unconnected harness terminals at power entry module, power supply and unit PCBA.
	J. Failed power entry module.	J. Check for line voltage at power entry module rear terminals. Replace power entry module if there is no voltage.
	K. Failed control board.	K. Replace board.
	L. Failed power supply.	L. Replace power supply.
	M. Failed harnesses	M. Replace harnesses.
	N. Failed Rapid Stop button.	N. Replace Rapid Stop switch.
	O. Failed unit circuit breaker	O. Replace unit circuit breaker
Carbonation level too low	A. Vessel filled above capacity.	A. Fill vessel below maximum capacity, 17.75 fl. oz.
	B. Beverage ingredient temperature too high.	B. Refrigerate ingredients.

Table 9.

Symptom	Probable Cause	Solution
Shaker mechanism won't run	A. Loose harness connections.	A. Check for loose or unconnected motor harness connector at unit PCBA and reconnect.
	B. Loss of 24V supply.	B. Check secondary output voltage on power supply.
	C. Failed unit PCBA.	C. Replace PCBA.
	D. Failed motor.	D. Replace motor.
	E. Failed push-button.	E. Replace bezel assembly.
Nothing displayed on LCD	A. Unit in standby mode.	A. Rotate dial to wake unit up.
	B. Loose harness connections.	B. Check for loose or unconnected harness connectors at LCD and unit PCBA and reconnect.
	C. Failed unit PCBA.	C. Replace unit PCBA.
	D. Failed LCD display.	D. Replace bezel assembly.
Dial not changing settings on LCD display	A. Loose harness connections.	A. Check for loose or unconnected harness connectors at rotary encoder and unit PCBAs and reconnect.
	B. Failed rotary encoder PCB.	B. Replace bezel assembly.
Drink cycle not completed	A. Exhaust line blocked.	A. Remove left hand side panel and pull the key ring on the pressure relief valve in order to vent internal pressure.
	B. Loose harness connections.	B. Check for loose or unconnected harness terminals at the pressure transducer and unit PCBA.
	C. Failed pressure transducer harness.	C. Check conductivity of harness. Replace if there is no conductivity.
	D. Failed pressure transducer.	D. Replace pressure transducer.
Can't open door	A. Carbonation cycle is running.	A. Normal operation, wait for cycle to complete.
	B. Door latch in locked position.	B. Cycle power via power switch.
	C. Vessel pressure is greater than 6 PSI (0.041 MPa). Exhaust line blocked.	C. Remove left hand side panel and pull the key ring on the pressure relief valve in order to vent internal pressure.

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ALARM/WARNINGS/ERROR CODES

Table 10 describes the various error codes and their probable cause.

Table 10.

LCD Displays	Condition Description	Cause
"01: CPU ERROR"	Self check error occurs when microprocessor fails its self check.	A. Communication error B. PCBA failed
"02: STUCK KEY"	Stuck Selector Knob error occurs when the Selector Knob senses being pressed continuously for more than 10 seconds.	A. Communication error B. Harness not connected C. Rotary encoder board failed
"03: PRESS SENSOR"	Pressure sensor failure error occurs when PCBA is not receiving a signal back from the pressure sensor.	A. Harness not connected B. Pressure sensor harness failed C. Pressure sensor failed D. PCBA failed
"04: 24VDC LOW"	Low voltage warning occurs when the power supply voltage is less than 18V for more than 5 seconds.	A. Insufficient supply line voltage. If supply line voltage is outside of 85-265V, wait for supply line voltage to return to normal. If within 85-265V continue to B. B. Harness connection loose C. 24V supply harness failed D. Power supply failed E. PCBA failed
"05: VENT ERROR"	Pressure venting error occurs if the pressure transducer reads 6 PSI (0.041 MPa) or more 30 seconds after a venting cycle should have been completed.	A. Communication error If analog pressure gage reads less than 6 PSI (0.041 MPa) see B. If analog pressure gage reads more than 6 PSI (0.041 MPa) see D. B. Transducer error C. PCBA failed D. Vent line jammed
“06: MOTOR ERROR”	Motor error occurs when the PCB receives a signal that the motor is running when the unit is in a state where the motor shows that it is not running.	A. PCBA failed. B. Motor harness failed.
"07: CO2 OUT"	CO_2 sold out warning occurs when CO_2 line pressure not high enough to make the lowest programmed carbonation level.	A. CO_2 supply tank pressure is too low. B. CO_2 tank regulator set incorrectly C. Inlet solenoid valve harness(es) disconnected from PCB. D. Normally closed inlet solenoid valve won't open. E. Normally open inlet solenoid valve stuck open.

Table 10.

LCD Displays	Condition Description	Cause
"08: CO2 LOW"	CO2 low alarm occurs when CO2 supply line pressure was not high enough to make selected carbonation level.	A. CO2 supply tank is getting low. B. CO2 tank regulator set incorrectly C. Inlet solenoid valve harness(es) disconnected from PCB. D. Normally open inlet solenoid valve close completely.
"09: MOTOR STALL"	Motor stall error occurs if the motor draws an over-current for more than 5 seconds.	A. Communication error B. Carriage assembly jammed. If it is re-run cycle to see if error re-occurs. If it isn't see next. If the carriage assembly isn't free see C, if it is see D. C. Carriage jammed D. Gearmotor failed
"10: NO MOTOR"	No motor error occurs when no motor current is sensed when the motor is turned on.	A. Communication error B. Harness not connected C. PCBA failed D. Gearmotor failed
"11: PRESS LEAK"	Pressure leak alarm occurs when internal pressure doesn't increase at the expected rate when the inlet valve is open.	A. Vessel/Seal not installed properly B. Cut/Tear in seal C. Dent or scratch in vessel flange
"12: DOOR OPEN"	Door open error occurs when door microswitch does not sense door is closed.	A. Door is open. B. Door microswitch harness is unplugged C. Door microswitch has failed D. PCBA failed

SYSTEM DIAGRAMS

ELECTRICAL DIAGRAM

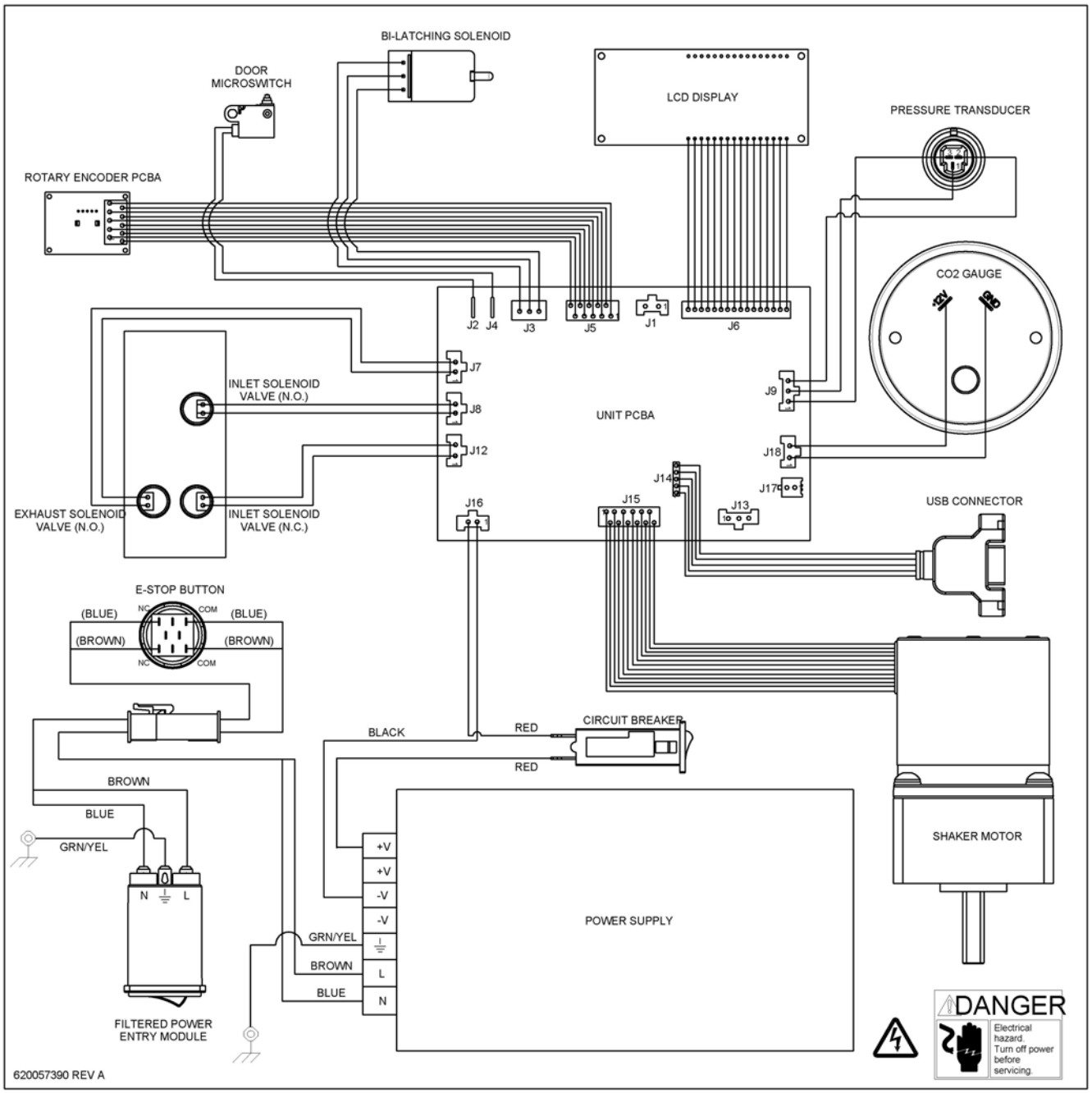

Figure 12.

CO_2 Flow Diagram

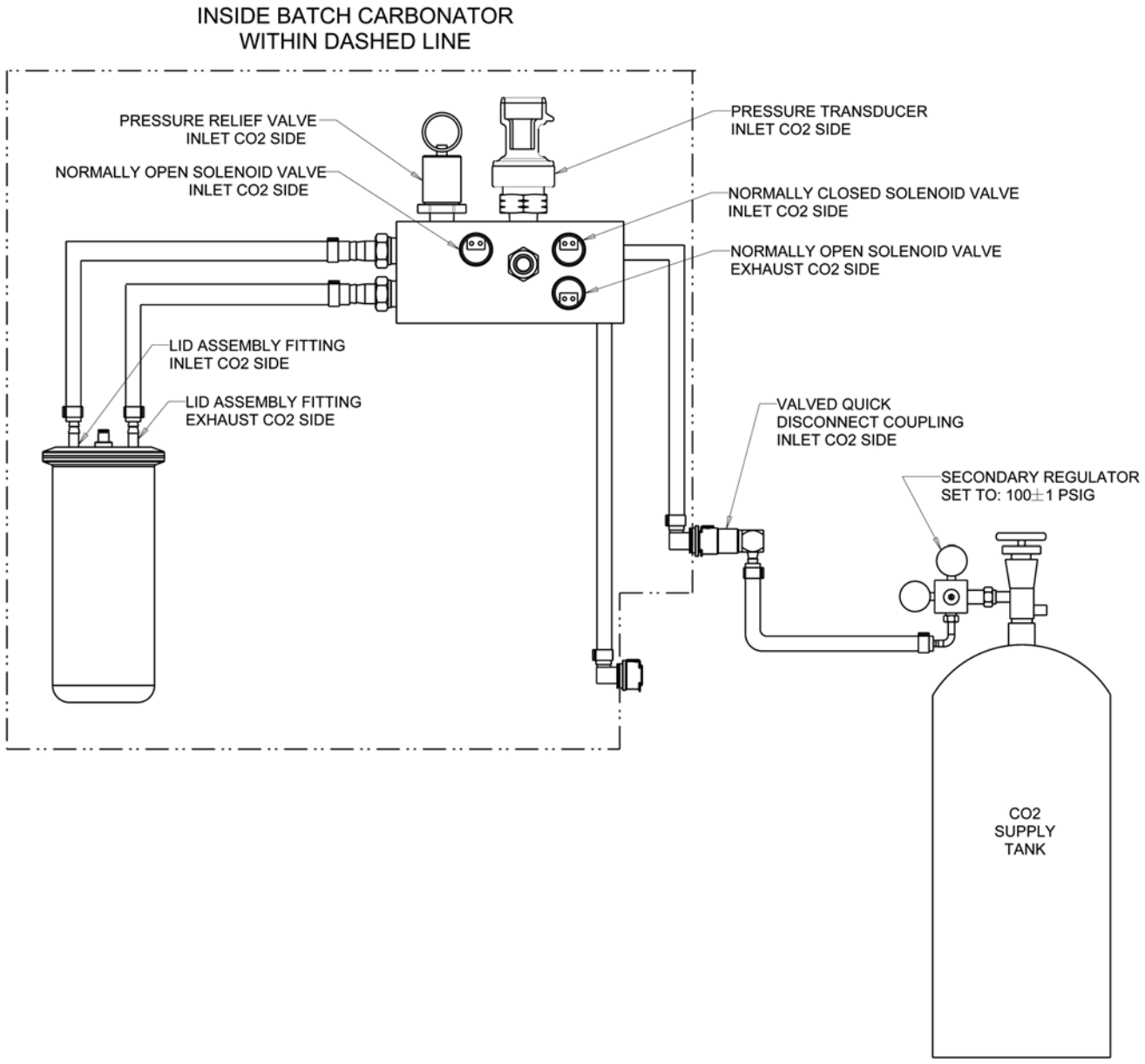

Figure 13.

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