



ACSD SERVICE MANUAL



Release Date: Oct 6, 2025
Publication Number: 621058815SER
Revision Date: Oct 6, 2025
Revision: 1

 **Marmon Foodservice
Technologies**
A Berkshire Hathaway Company

Visit the Cornelius web site at www.cornelius.com for all your Literature needs.



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 Warranty applicable to this Product and is subject to all of the restrictions and limitations contained in the Commercial Warranty.

Cornelius will not be responsible for any repair, replacement or other service required by or loss or damage resulting from any of the following occurrences, including but not limited to, (1) other than normal and proper use and normal service conditions with respect to the Product, (2) improper voltage, (3) inadequate wiring, (4) abuse, (5) accident, (6) alteration, (7) misuse, (8) neglect, (9) unauthorized repair or the failure to utilize suitably qualified and trained persons to perform service and/or repair of the Product, (10) improper cleaning, (11) failure to follow installation, operating, cleaning or maintenance instructions, (12) use of "non-authorized" parts (i.e., parts that are not 100% compatible with the Product) which use voids the entire warranty, (13) Product parts in contact with water or the product dispensed which are adversely impacted by changes in liquid scale or chemical composition.

Contact Information:

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

www.marmonfoodservice.com

www.cornelius.com

800-238-3600

Trademarks and Copyrights:

This document contains proprietary information, and it may not be reproduced in any way without permission from Marmon Foodservice Technologies.

This document contains the original instructions for the unit described.

MARMON FOODSERVICE TECHNOLOGIES INC

355 Kehoe Blvd

Carol Stream, IL

Tel: + 1 800-238-3600



TABLE OF CONTENTS

SAFETY INSTRUCTIONS	4
SYSTEM OVERVIEW	6
SPECIFICATIONS	6
FEATURES	7
UNIT FOOTPRINT DRAWING	8
SUBSYSTEM OVERVIEWS	9
SERVICE ACCESS	13
OPENING UI DISPLAY/DOOR	13
POWER SWITCH & E-BOX ACCESS	13
RIGHT SPLASH PANEL REMOVAL	14
LEFT SPLASH PANELS REMOVAL	15
DRIP-TRAY REMOVAL	16
CUP DISPENSER ACCESS	17
DIAGNOSTICS TOOLS	18
DIAGNOSTIC - HARDWARE	18
DIAGNOSTICS - LOGS	18
DIAGNOSTICS – POS	19
UI ERROR CODE REFERENCE CHART	20
DIAGNOSTICS	23
POWER DIAGNOSTICS	24
UI DISPLAY DIAGNOSTICS	28
INTERLOCKS DIAGNOSTICS	29
CONTROLS DIAGNOSTICS (MCB & MFV BOARD)	32
CUP DISPENSER DIAGNOSTICS	35
CAROUSEL DIAGNOSTICS	39
PROGATE ICE CHUTE DIAGNOSTICS	46
HOPPER & ICE AGITATION DIAGNOSTICS	47
MFV DIAGNOSTICS	48
CARBONATION DIAGNOSTICS	52
SCHEMATICS & DIAGRAMS	55
SCHEMATIC WIRING DIAGRAM 115V	55
SCHEMATIC WIRING DIAGRAM 230V	56
PLUMBING DIAGRAM	57

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.

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 people without supervision. Young children should be supervised to ensure that they do not play with the appliance.

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.



CAUTION:

Always be sure to keep the 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 solutions must be drained from the system. A freezing ambient environment will cause residual sanitizing solutions 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**.

SHOCK HAZARD



CAUTION:

The diagnostics and repair explained in this manual assume the technician has been trained to handle electrical hazards and understand how to use a multi-meter. When this symbol is present in a section be aware that high voltage is present and proper methods and handling are essential to eliminate electric shock! Always be cautious and aware when working around high voltage!



SYSTEM OVERVIEW

The ACSD is designed for drive-through area installation or locations accessible only by employees. When a beverage is ordered from the Point of Sale (POS) register, the ACSD automatically drops a cup, fills it with ice and dispenses the correct amount and type of syrup-based beverage. The finished drink is then moved by the carousel to the pickup location, and the drink description is displayed on the User Interface Screen.

Operation of the ACSD is restricted to employees and service personnel that have been trained and certified in proper operation, service and maintenance of equipment.

SPECIFICATIONS

Unit Dimensions	Refer to Page 8 – Unit Footprint Drawing	
Unit Weight	Dry Weight	480 lb. (218 kg)
	Operational Weight (with ice, water, etc.)	800 lb. (363 kg)
Cooling Method	Cold Plate	Ice
Ice Storage	Hopper Ice Capacity	200 lb. (91 kg)
Electrical	Line Voltage & Current	115 VAC, 60 HZ, 1 PH, 3 A 220-240 VAC, 50/60 HZ, 1 PH, 3 A
	Connection Method	IEC-NEMA C13
Supply Pressure	Water*	90 ±15 psi (0.55 ±0.10 MPa)
	Syrup	70 ±5 psi (0.48 ±0.03 MPa)
	CO ₂ /Air	90 ±10 psi (.55 ±0.07 MPa)
Temperature	Water & Syrup	Max 35°F (1.7°C) Water Max 38°F (3.3°C) Syrup
	Operating Ambient	65°F (18°C) to 95°F (35°C)
Clearance Requirements	Top	Refer to Page 8 – Unit Footprint Drawing
	Sides	Zero Clearance

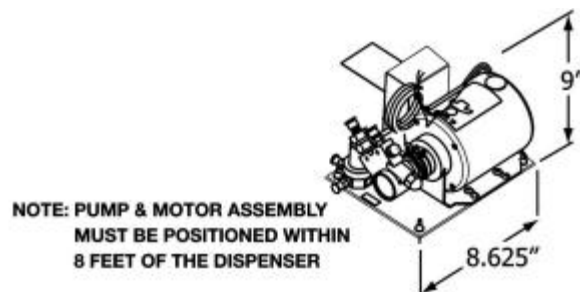
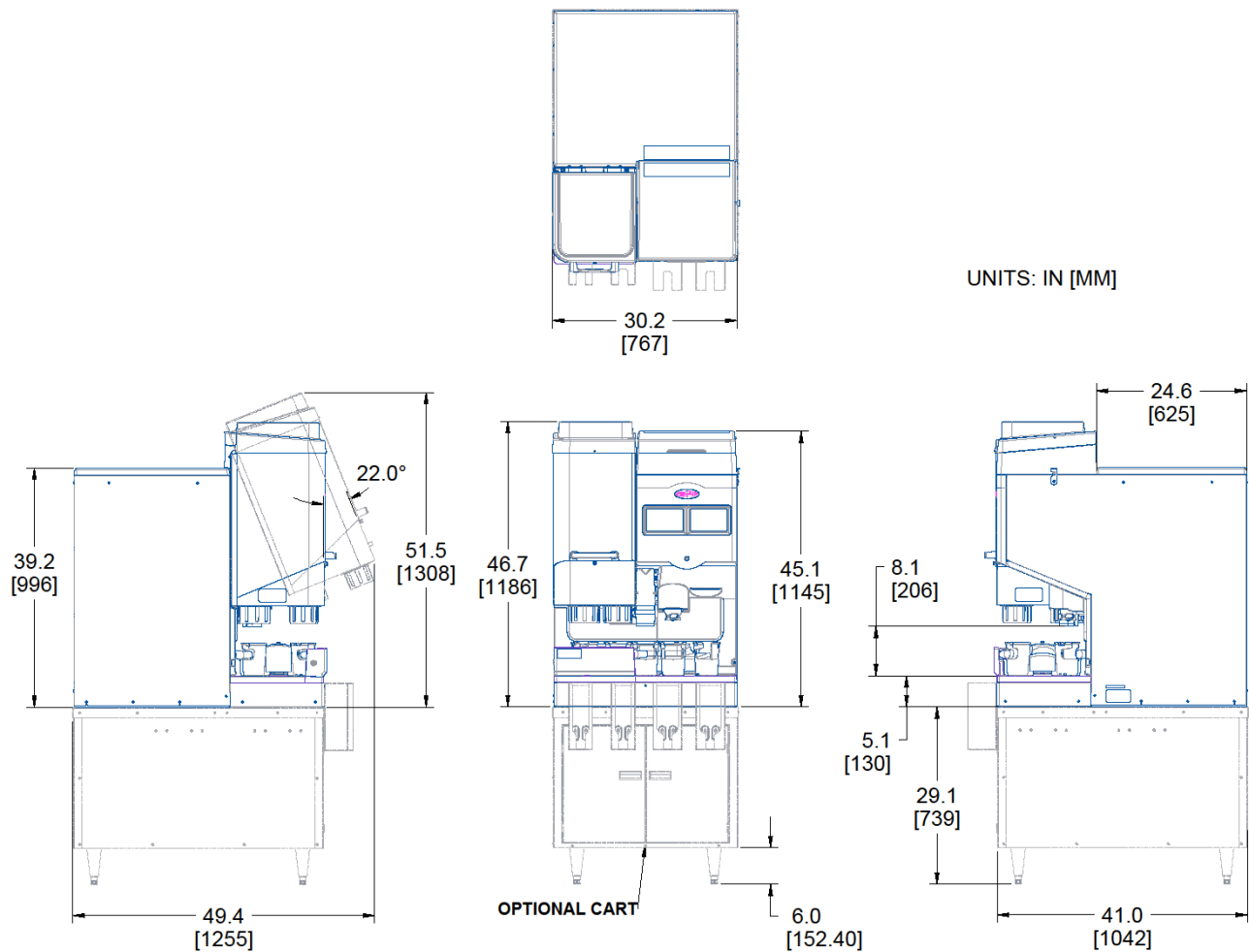
**For Denmark, Sweden, Norway and Finland only: Maximum inlet water pressure is 1Mpa.*



FEATURES

Mounting Type	4 legs, direct to counter, or optional cart with casters/legs
UI Type and Size	2X 7 in (177.8 mm) touch screen displays
Number of Brands	12
Number of Flavors	4 (optional ambient)
Cup Storage	4 cup dispensers
Lid Storage	4 lid compartments on optional cart
Ice Dispensing	1 portion-controlled ice dispenser
Product Dispensing	Cornelius Multi-Flavor Valve (MFV)
No. of Staged Drinks	4

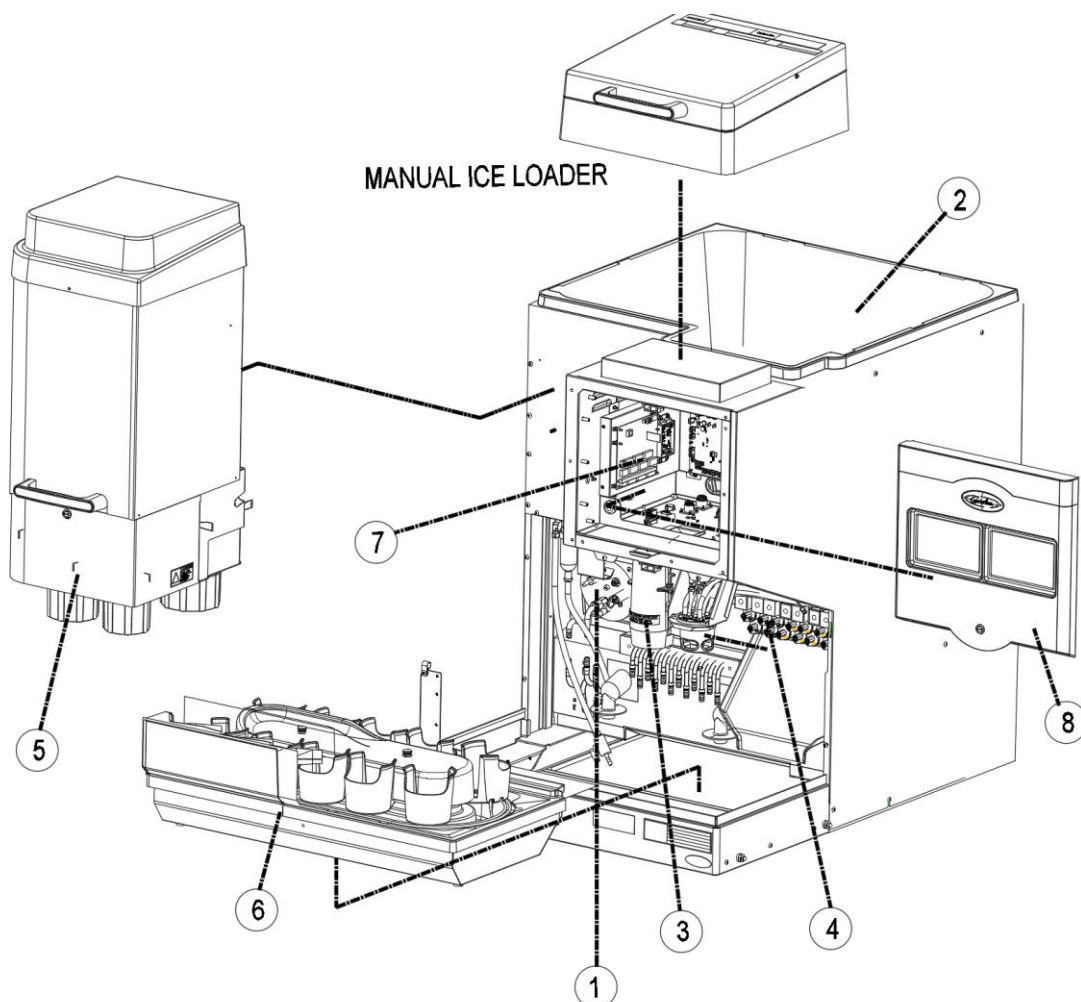
UNIT FOOTPRINT DRAWING



SUBSYSTEM OVERVIEWS

The ACSD can be broken down into 8 subsystems. These subsystems will be referenced throughout the service manual:

1. Carbonator
2. Ice Hopper, Agitation, & Ice Loader
3. ProGate Ice Dispense
4. Beverage Dispense Valves & Nozzle
5. Cup Dispenser
6. Drip Tray & Carousel
7. Electrical Box (E-box) – Controls and Power
8. User Interface (UI) Display/Door



System Location Overview

CARBONATOR

The carbonator tank is on-board the ACSD unit, in contact with the cold plate and the ice that chills the cold plate. Level sensing probes in the carbonator tank connect via a harness to the off-board carbonator pump. The carbonator pump deck is separate from the ACSD unit, but ships standard within the packaging of the unit. When the carbonator pump receives a low signal from the level probes, the carbonator pump runs to pressurize the carb tank and allows the CO₂ to saturate the water, creating carbonated water. This system contains the following serviceable components (see the *Illustrated Parts List Manual* for more details):

- Carbonator tank
- Carbonator pump
- Level probes
- CO₂ input and check valve
- Water input and check valve (from cold plate)

ICE HOPPER, AGITATION, & ICE LOADER

The hopper stores ice used to cool the cold plate and to dispense into beverages. The hopper contains an agitator and motor to move the ice within the hopper, to distribute it to the cold plate, and to fill ice in the ProGate ice chute. The agitator is controlled by the Motion Control Board (MCB) and can be programmed via settings in the UI to allow more or less agitation in the hopper. Factory defaults are available for soft and hard ice for best performance and should only be adjusted if bridging, due to poor ice quality, is experienced. The hopper can be replenished with ice via a top-mounted ice maker and/or manually refilled with the manual ice loader. The manual ice loader consists of a plastic ramp structure mounted above the e-box with a hinged lid that gives the crew easy access to load ice from the front of the unit. This system contains the following components (see the *Illustrated Parts List Manual* for more details):

- Hopper (not serviceable)
- Agitator (2-piece construction)
- 120VAC (or 230VAC) agitator motor and gear box
- Heater to control condensation on gear box

PROGATE ICE DISPENSE

The ProGate system holds ice in the ice chute, using a pneumatic cylinder to open and close a gate at the exit of the chute to dispense ice. The volume of ice dispensed is controlled by length of time the gate remains open. The pneumatic cylinder pressure is controlled by a regulator and activated by a pneumatic valve. The Motion Control Board (MCB) activates the valve, and the amount of ice can be adjusted (via length of time) in the user interface (UI). The ice chute assembly contains a magnetic interlock, preventing the ACSD from operating if the cover is not installed and prompting a message on the UI. This system contains the following serviceable components (see the *Illustrated Parts List Manual* for more details):

- ProGate ice chute & cover
- Pneumatic cylinder
- Pneumatic valve
- Regulator and filter
- Interlock switch

BEVERAGE DISPENSE VALVES & NOZZLE

The ACSD uses Multi-Flavor Valve (MFV) technology to dispense beverages. The valves are supplied carbonated water, still water, and syrup from the cold plate or ambient lines. The cold plate has integral mounting points for the valve back blocks. The back blocks act as emergency shut offs and mounting points for the valves. The valves are electronically controlled by the MFV board to open and close the individual liquid circuits. The valves also control the flow rates of the liquids, which can be mechanically adjusted to achieve the appropriate ratios of syrup to water. The nozzle contains multiple dispense ports that are connected to the valves by tubing.

CUP DISPENSER

The cup dispenser stores and dispenses cups into the carousel cup holders. The dispenser contains up to 4 individual cup dispense modules. While the dispense modules are customized for different cup sizes, the operation and systems are the same for each. Each module has its own motor which drives a set of cams via a gear tooth belt. The rotating cams force a wedge between the lips of the cups to separate a single cup from the stack and dispense it. The dispensers are controlled by the Quad Motor Board (QMB).

The frame that houses the cup dispense modules pivots forward using gas spring assist and allows cups to be loaded from the bottom of the holder. Flexible flaps attached to each cam give way to allow bottom loading of cups. The flaps then support the stack after loading and work with the cams to separate and dispense cups.

Two types of sensors are used on each cup dispense module. The low cup sensor detects when there are no more dispensable cups left in the stack, and the user will be prompted to reload via the UI. The cam home sensor triggers a full rotation of the cam belt drive system and ensures the cams/flaps realign after dispensing to enable smooth cup reloading.

A switch mounted to the main body of the unit, behind the dispenser frame, locks out the system and triggers a message on the UI when the cup dispenser is open for loading.

The cup dispenser system contains the following serviceable components (see the *Illustrated Parts List Manual* for more details):

- Frame and cladding
- Quad Motor Board (QMB)
- Gas struts
- Cup dispenser modules
- Gear motor
- Low cup sensor
- Cam home sensor
- Tilt switch
- Exit chimneys

DRIP TRAY & CAROUSEL

The drip tray collects ice melted from the cold plate, spilled beverages, and stray ice from the ProGate ice dispense. A wire form grate sits on the drip tray to support the cup carousel. The carousel moves the cup holders through the various positions: from the 4 cup dispense positions, to ice dispense, to beverage dispense, and then to the 4 staging positions. The drip tray also houses the carousel motor, carousel index sensor, and 5 cup presence sensors.

The index sensor is inductive and detects the metal bracket on the back of every cup holder, to allow the system to track the position of the carousel. The index sensor position can also be adjusted to set alignment between the carousel and the cup dispenser to ensure proper cup dispense.

The cup presence sensors use ultrasonic technology to detect if a cup is in the cup holder. One of the five cup presence sensors (referred to as the last cup sensor) detects cups in the last staging position, preventing a finished beverage from re-entering the cup dispense locations. **NOTE:** If a cup is present in this location, a message should appear on the UI. The system will not resume operation until the cup is removed.

The other four cup presence sensors are used to detect that a cup was successfully dispensed into the matching holder. If the cup is not detected after the first attempt, the cup dispenser will attempt a second dispense. If a cup is still not detected after the second attempt, a UI action message will prompt to clear the cup dispenser.



ELECTRICAL BOX (E-BOX) – CONTROLS & POWER

The electrical box is accessible behind the UI display. It houses the majority of the control boards (with the exception of the Quad Motor Board in the cup dispenser and the single board computer in the UI display). It also houses the power supplies and harnesses delivering power and communications.

Input Power: 60Hz / 120VAC or 50/60Hz / 220-240VAC

Power Supplies:

- 30VDC - Supplies power to the MFV valves through the MFV board.
- 24VDC - Supplies power to MCB, cup dispense motors, sensors, and ProGate pneumatic valve.
- 12VDC - Supplies power to user interface (UI) display through the MFV board.

Control Boards:

- Motion Control Board (MCB)
- Multi-Flavor Valve (MFV) board
- Conveyor Sensor Interface Board

Capacitors:

- Agitator motor capacitor
- Conveyor motor capacitor

Ethernet: Local network communication to the POS system

USER INTERFACE (UI) DISPLAY/DOOR

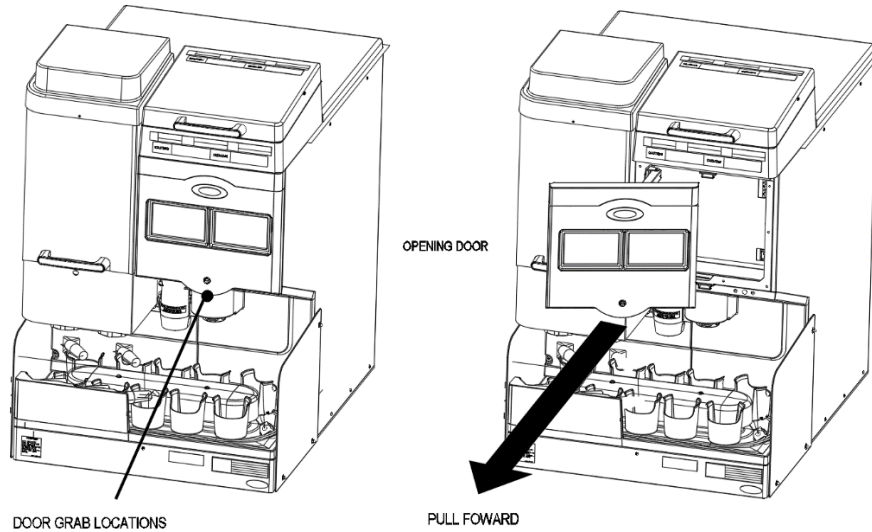
The display/door assembly consists of two LCD touch panels, plastic cladding, a metal mounting panel, door seal gasket, closure latches, and a single board computer (SBC) with a variety of input and output (I/O) ports. The display assembly is mounted to a hinge on the frame of the unit, acting as a door to allow access to the e-box and I/O ports on the side of the UI display. The software UI is the main interface for information and status of the ACSD used by restaurant crew and technicians for service. The UI is used by the crew for facilitating beverage order processing and displaying action or warning messages (see *Operator's Manual*). The UI is used by technicians to set up the unit during installation (see *Installation Manual*). The UI also contains tools to operate individual systems and monitor status to assist during diagnostics, explained further in the Diagnostics sections of this manual.

SERVICE ACCESS

When diagnosing issues with the ACSD, refer to these steps to access the various subsystems and remove the panels that cover them.

OPENING UI DISPLAY/DOOR

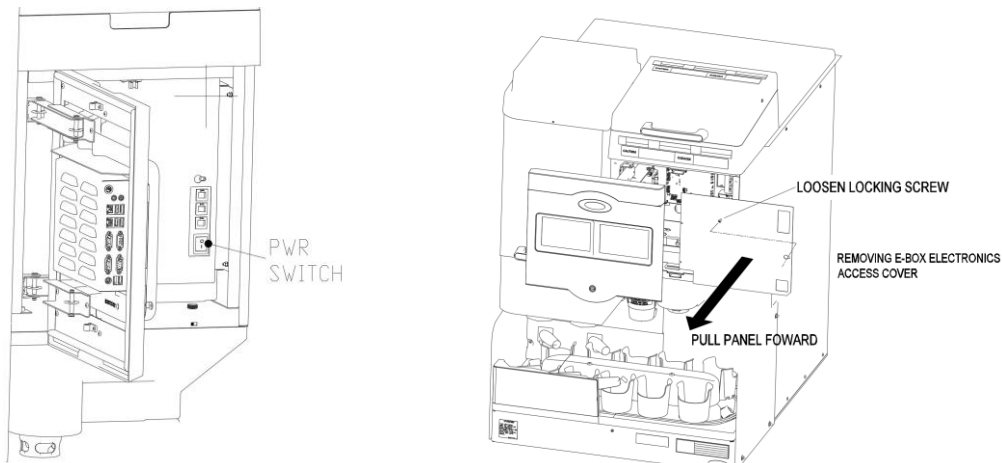
1. If UI display/door is locked, unlock the quarter-turn door latch with a coin or a flat head screwdriver.
2. Position hand at the bottom of UI display/door and pull forward to unlatch.



POWER SWITCH & E-BOX ACCESS

NOTE: If turning off power, first properly shut down the UI display and operating system by accessing the Service Menu through the UI and choosing the Shut Down option from the menu.

1. Open the UI display/door to access the power switch and e-box cover panel.
2. Toggle power switch to O for OFF, or I for ON.
3. Loosen screw (does not need to be fully removed) on right side of e-box cover panel.
4. Slide e-box cover to the right to free from retaining posts and keyhole slot, then pull forward to remove.

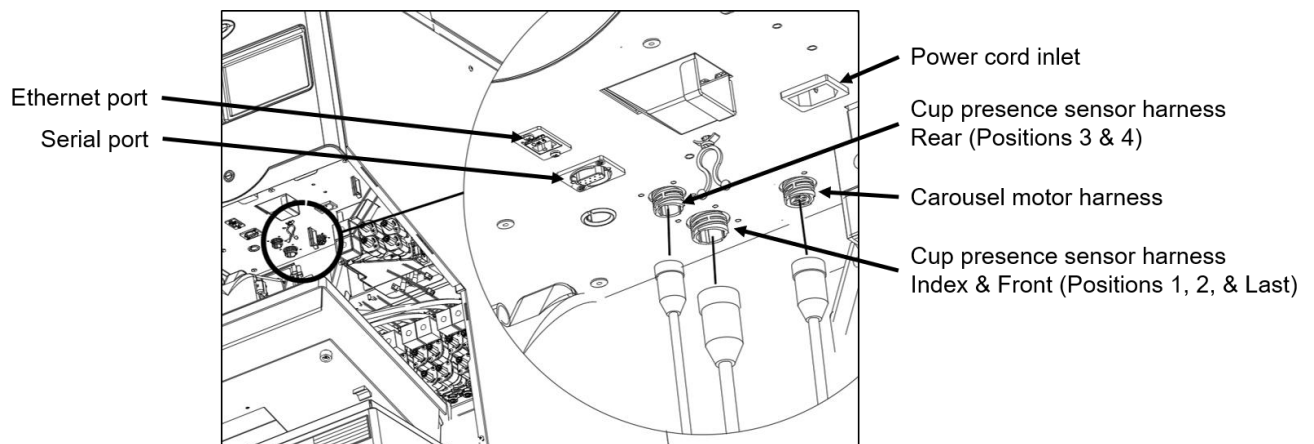
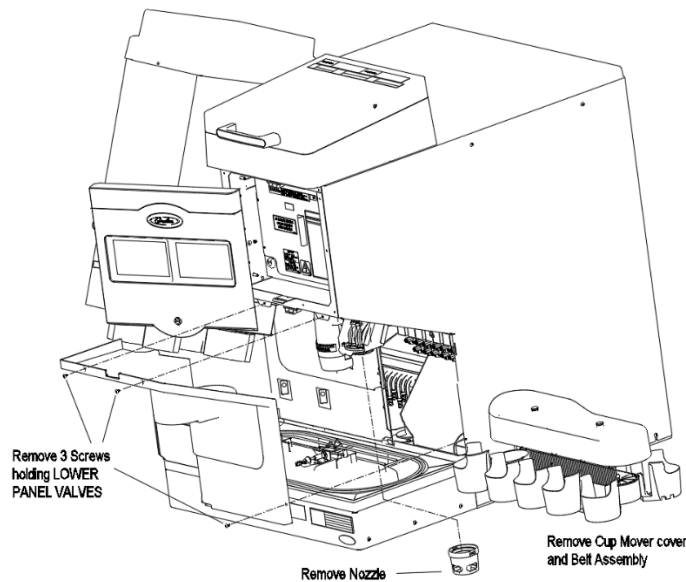


RIGHT SPLASH PANEL REMOVAL

1. Remove the nozzle housing with a quarter turn twist and pull off the nozzle diffuser.
2. Remove the carousel cover by loosening thumb screws.
3. Remove the carousel assembly by pulling it off of the conveyor drive tang and mounting posts.
4. Remove the 3 screws fastening the right splash panel – 2 behind the UI display/door, 1 on the lower right side of the panel.

Right splash panel provides access to:

- Multi-Flavor Valves
- Nozzle tubing
- Power cord connection to e-box
- Ethernet & serial cable connections to e-box
- Front and rear cup presence harness connections to e-box
- Carousel motor harness connection to e-box
- Right cold plate drain boot



LEFT SPLASH PANELS REMOVAL

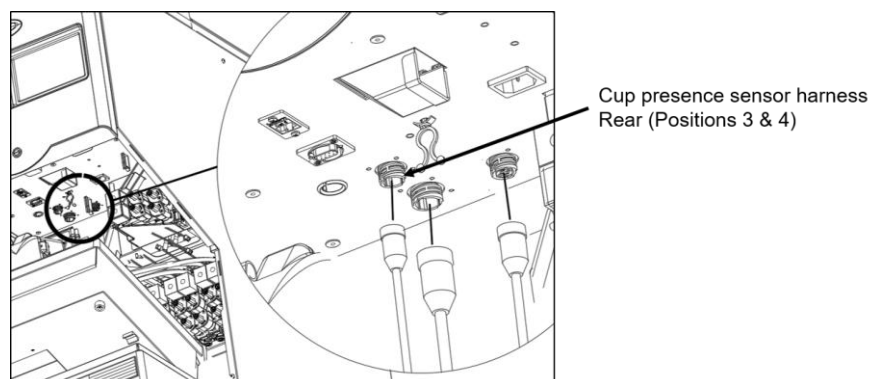
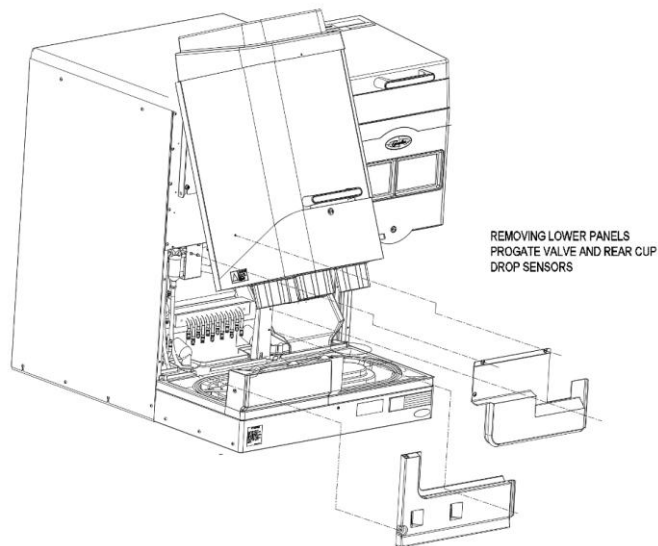
1. Remove the right splash panel to access the screws securing the left panels to the center post.
2. Tilt open the cup dispenser assembly.
3. Upper left panel: Remove the 4 screws fastening the panel and slide up to remove from lower panel.
4. Lower left panel: Remove the 2 screws fastening the panel. If panel needs to be completely removed from the machine, disconnect the cup presence sensor harness connection from the bottom of the e-box.

Upper left splash panel provides access to:

- ProGate ice chute components
- Carb tank pressure relief valve
- Carb tank level probes
- Cold plate cleaning access cover

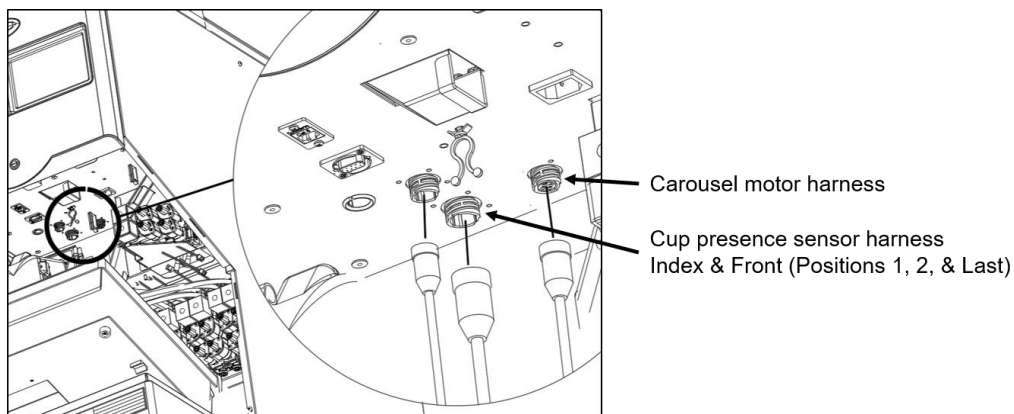
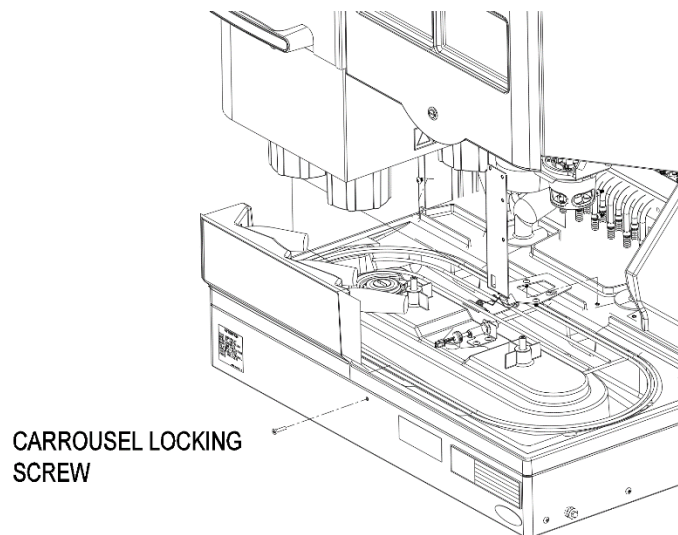
Lower left splash panel provides access to:

- Cup presence sensors for Positions 3 & 4 and associated harness
- Syrup inlets
- Water inlet
- CO₂ inlet
- Left cold plate drain boot
- Carb tank for full service



DRIP-TRAY REMOVAL

1. Remove the right and left splash panels.
2. Remove the screw from the front of the unit that secures the drip-tray assembly.
3. Disconnect the carousel motor harness and cup presence sensor harness connections from the bottom of the e-box.
4. If ice is on the cold plate during service, rotate the cold plate drain boots upside down to capture the ice melt-off. The boots can be fully removed if servicing without ice on the cold plate.
5. Tilt the drip-tray assembly up and pull out of the metal support wrap enough to access the drain line at the back right of the drip-tray.
6. If removing the drip-tray completely, loosen the hose clamp and pull the drain line off the drip-tray drain fitting.



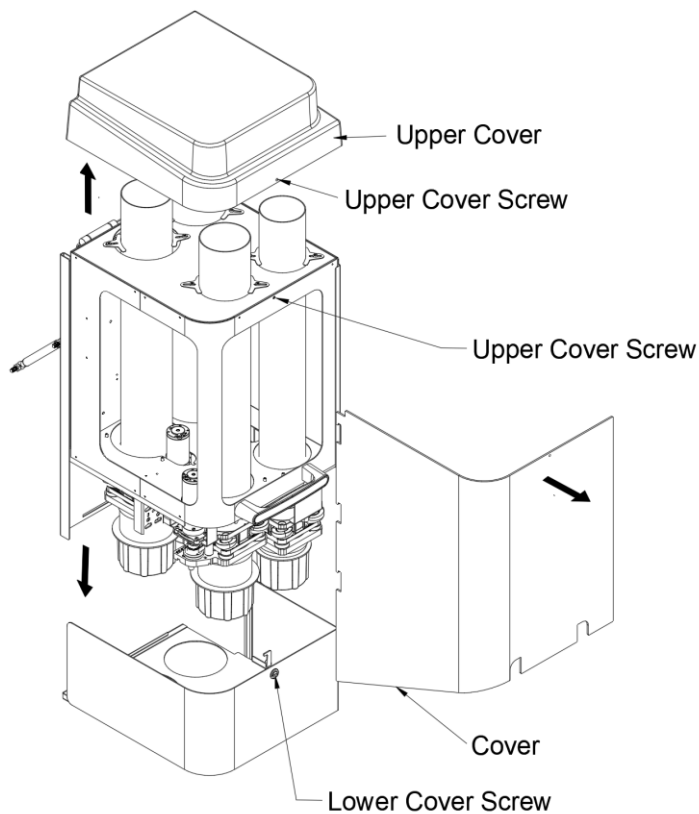
CUP DISPENSER ACCESS

To gain access to the cup dispense modules and the Quad Motor Board (QMB):

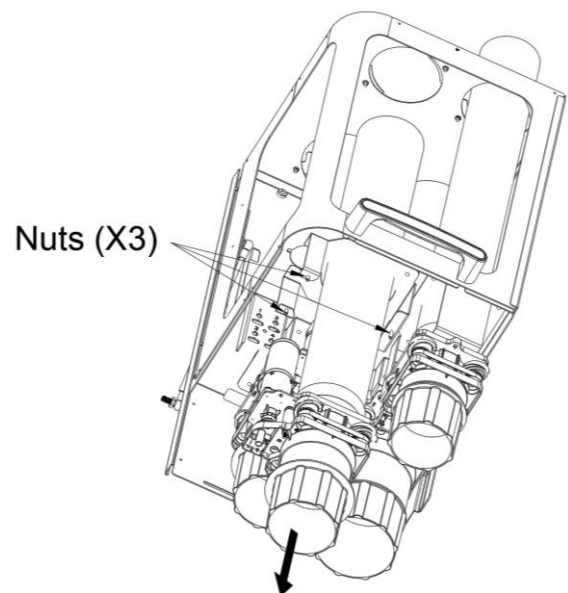
1. Remove the screw holding the upper cover.
2. Remove the tinted wrap by sliding it up and pulling it forward.
3. Remove the exit chimneys with quarter turn clockwise twists.
4. Remove the lower cover by loosening the captive screw on the front, tilt the cover down, and lift off from the rear attachment slot.

To remove a cup dispenser module:

1. Disconnect the motor power harness and both sensor harness connectors.
2. Loosen the tube alignment clips at the top of the tower.
3. Remove the 3 nuts securing the module to the mounting bracket.
4. Pull the module down to free from the mounting studs.



Cup Dispenser Cladding Removal



Cup Dispenser Module Removal

DIAGNOSTICS TOOLS

These are a few tools that can help to diagnose issues with the ACSD.

DIAGNOSTIC - HARDWARE

This UI feature enables technicians to see the status of the sensors on the ACSD and activate different subsystems to support diagnosing issues. This screen can be accessed through the Navigation menu in the Service UI.

NOTE: Processing POS orders will automatically stop when in the Service UI. If troubleshooting is required while orders are being processed, press the *Resume Order Processing* button in the *Mode* section of this screen.

DIAGNOSTICS - LOGS

This UI feature enables technicians to export a log file which contains the history of actions and current system settings on the ACSD. These unit logs are constantly captured in the background and will remain stored on the unit, rotating out older data to preserve storage as required. This log file can be sent to the Marmon Foodservice technical team for analysis if root cause cannot be determined in the field.

DIAGNOSTICS – POS

Log to File

This UI feature enables technicians to export a log file which contains the history of data the ACSD received from the POS system. This information is not logged by default because of its size to prevent overloading the system memory. If there is a discrepancy between what orders the ACSD is processing versus what's sent via the POS system, the *Log to file* option can be toggled on for a time to capture information about both. The subsequent logs exported via *Diagnostics – Logs* will then contain the POS data logs in addition to the typical ACSD logs.

NOTE: After downloading the needed log files, uncheck the *Log to file* option to avoid overloading the system memory with unnecessary data which could cause unit operation issues. This feature will also automatically toggle back off when the unit is rebooted.

Enable Data Feed

To view the incoming POS data live on the screen, the *Enable data feed* option can also be toggled on. This feature is also disabled by default and will reset upon reboot.



UI ERROR CODE REFERENCE CHART

The ACSD will display alerts and notifications on the UI. The table below captures all of these error codes, the associated on-screen messages, the system logic that drives them, and additional potential root causes if following the on-screen prompt doesn't resolve them.

Code	UI Summary	UI Description	Logic Reasons	Additional Root Causes
9010	Remove Last Cup	Please remove last drink from the carousel.	(Typical user notification.) Last cup sensor detected an object when the carousel was commanded to move.	Intermittent connection or faulty cup presence sensor (last cup staging position)
9011	Ice Chute Cover Fault	Please verify correct installation of the ice chute cover to continue.	A move command was sent to the carousel, but the ice chute cover sensor indicates it's open.	- Intermittent connection or faulty ice chute cover interlock sensor - Ice chute cover missing magnet
9012	Cup Dispenser Tower Open	Please gently push cup tower back to vertical orientation to continue.	State machine detected the cup tower is tilted when it needs to move.	Intermittent connection or faulty cup dispenser interlock switch
9013	Carousel Misaligned	Please verify the carousel is in place and free of blockages. If any beverages are out of order, discard them, and the unit will re-dispense. Press Retry to realign and re-dispense.	- Conveyor just stopped moving but index sensor is not reading a cup holder position. - Or conveyor was not moving and sensor was reading a cup holder position, then not.	- Cup holder partially dislodged from belt dovetail - Missing metal bracket on back of cup holder - Incorrect depth setting on index sensor - Intermittent connection or faulty index sensor
9020	Ice Chute Cover Fault	Please verify correct installation of the ice chute cover to continue.	Ice chute cover sensor indicates it's open (while system is not attempting to move).	- Intermittent connection or faulty ice chute cover interlock sensor - Ice chute cover missing magnet
9021	Ice Chute Cover Fault	Please verify correct installation of the ice chute cover to continue.	An ice dispense command was sent, but: - The ice chute cover sensor indicates it's open. - Or the ice chute refill timeout hasn't expired yet.	- Intermittent connection or faulty ice chute cover interlock sensor - Ice chute cover missing magnet
9311	Carousel Timeout	Please verify the carousel is in place and free of blockages. If any beverages are out of order, discard them, and the unit will re-dispense. Press Retry to realign and re-dispense.	There is no cup in the last staging position, and the MCB times out in either one of two ways: - Running timeout: The index sensor is not detected when expected at the end of a move request: 2.5 seconds after move starts (~1.5 cup positions) - Startup timeout: The move command was sent to MCB and it did not start moving within 5 seconds.	- MCB has firmware older than v2.22 with longer timeout (over 5s) - False positive flicker of last cup sensor blocks conveyor movement, leading to timeout



Code	UI Summary	UI Description	Logic Reasons	Additional Root Causes
9312	Carousel Move Error	Please verify the carousel is in place and free of blockages. If any beverages are out of order, discard them, and the unit will re-dispense. Press Retry to realign and re-dispense.	Software was unable to send a move command when requested due to software timing issue.	
9320	Action Failed To Execute	Please retry action. Call approved service provider if failure persists.	Software was unable to send an ice command when requested due to software timing issue.	
10005	Remove Cup From Position #	Please open the cup dispenser tower and remove the cup from position #. Then gently close the cup dispenser tower to continue.	Object detected in dropper location when drop command was requested, but before it was sent. (A drop command will only be sent if no cup was detected.)	- Slow cup drop event and the user initiates a retry just as the cup drops into place - False positive flicker or user interruption of cup presence sensor just before drop request - Intermittent connection or faulty cup presence sensor - Cup holder partially dislodged from belt, blocking cup presence sensor
10006	Conveyor In Motion During Cup Dispense	Please manually input <i>#Order ID# #Drink ID#</i> (failed dispense) when the conveyor stops.	Cup drop was attempted while the conveyor is moving or it started moving before the cup drop was finished.	
10007	Cup Dispenser # In Motion	Please wait for cup dispenser # to stop moving. Then retry action.	Cup drop was attempted before the previous drop was completed.	
10008	Cup Dispenser # Low On #Size#	Please open the cup dispenser tower and reload cup dispenser # with <i>#Size#</i> cups. Then gently close the cup dispenser tower to continue	(Typical user notification.) Cup dropper became empty when drop command was requested, but before it was sent. (A drop command will only be sent if dropper is not empty.)	Intermittent connection or faulty low cup sensor
10009	Cup Dispenser Tower Open	Please gently push cup tower back to vertical orientation to continue.	Cup tower interlock switch triggered just as cup drop was attempted.	Intermittent connection or faulty cup dispenser interlock switch
10010	Carousel Misaligned	Please verify the carousel is in place and free of blockages. If any beverages are out of order, discard them, and the unit will re-dispense. Press Retry to realign and re-dispense.	Conveyor became unaligned just as a cup drop was attempted.	- Cup holder partially dislodged from belt dovetail - Missing metal bracket on back of cup holder - Incorrect depth setting on index sensor - Intermittent connection or faulty index sensor



Code	UI Summary	UI Description	Logic Reasons	Additional Root Causes
10011	Ice Chute Open	Please retry action. Call approved service provider if failure persists.	A drop command was sent, but the ice chute sensor indicates chute cover is open.	- Intermittent connection or faulty ice chute cover interlock sensor - Ice chute cover missing magnet
10310	Cup Expected In Position #	Please clean sensor at position # if there is a cup present. If there is no cup present, please verify cup dispenser # is free of jammed cups or blockage, then retry action to continue.	Two cup drop attempts failed. No cup dropped within 2 seconds of the initial attempt.	- Cup-to-cup static in low humidity conditions - Damaged cups - Belt slip leading to cam misalignment - Intermittent connection or faulty cam home sensor leading to cam misalignment - Intermittent connection or faulty cup presence sensor
10311	Cup Dispenser # Not Responding	Please check for jammed cups or adjust the cups in cup dispenser #. If failure persists call approved service.	Software was unable to send a drop command when requested due to software timing issue.	
12001	POS Issue	Please check network and POS setup.	Captures various terminal POS errors that will prevent the POS handler from working. Most likely to be generated by network issues, but could also be software issues.	Intermittent or disconnected Ethernet cable



DIAGNOSTICS

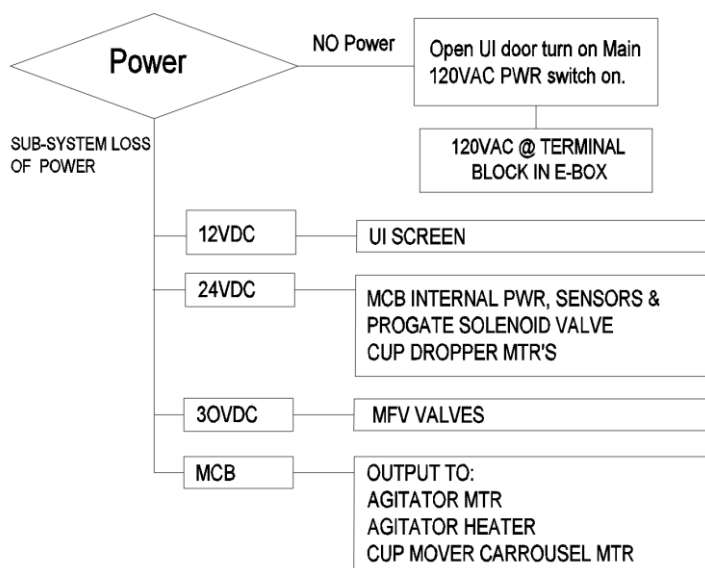
Understanding how the ACSD subsystems are interrelated is essential to diagnosing issues. When a problem is reported, the first step is to identify the system that might contain the issue. The next sections of this manual will lay out steps for diagnosing and how to service components related to each of these subsystems.

1. Power
2. UI Display
3. Interlocks
4. Controls (MCB & MFV Board)
5. Cup Dispenser
6. Carousel
7. ProGate
8. Hopper & Ice Agitation
9. MFV
10. Carbonation

POWER DIAGNOSTICS

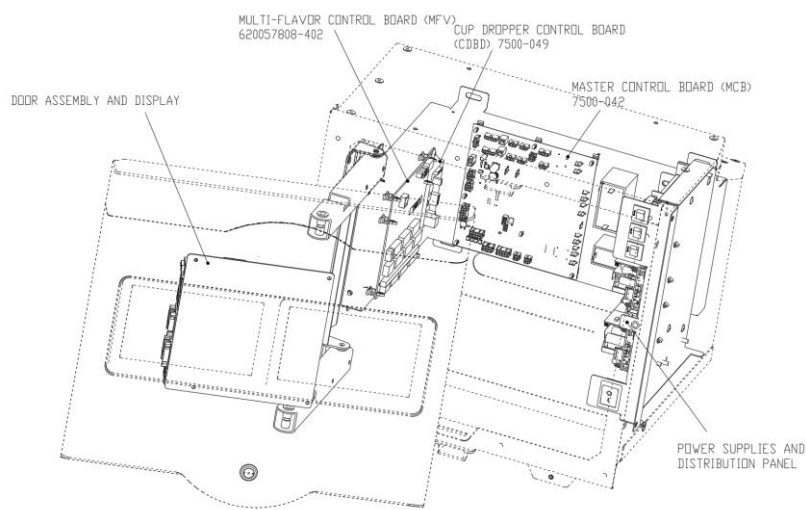
Power Input and Power Supplies

If any of the power supplies or boards distributing power fail, the system that it powers will not function. Before replacing motors, sensors, or valves, check to make sure power is present from the power supplies and at the device. Below is a chart to identify where power comes from to operate the particular components.



Diagnostics Power

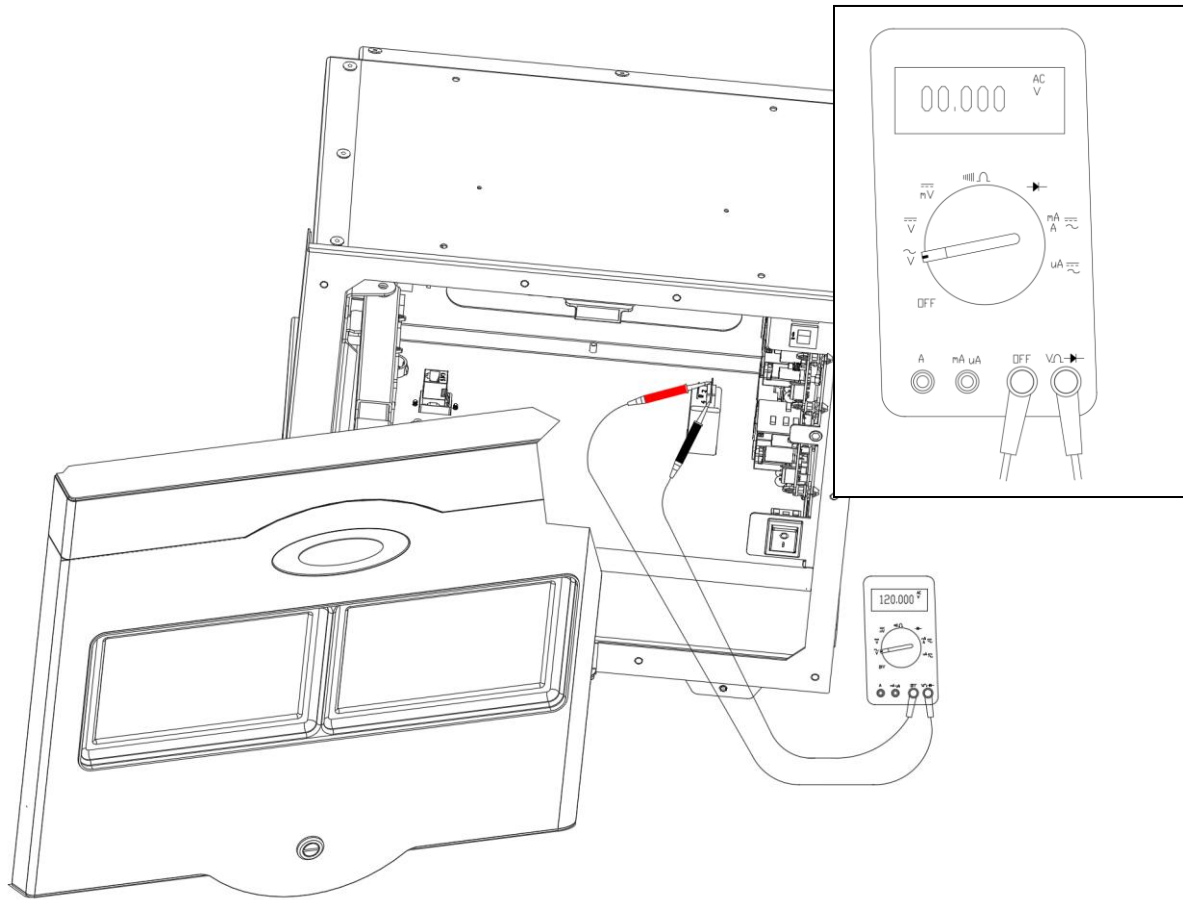
Power originates in the E-BOX cabinet. The power supplies are separated from the control boards to reduce noise. **Fig 7** shows the location of control boards and power supplies.



E-Box Control Board and PWR supply locations

Verifying AC Power Input

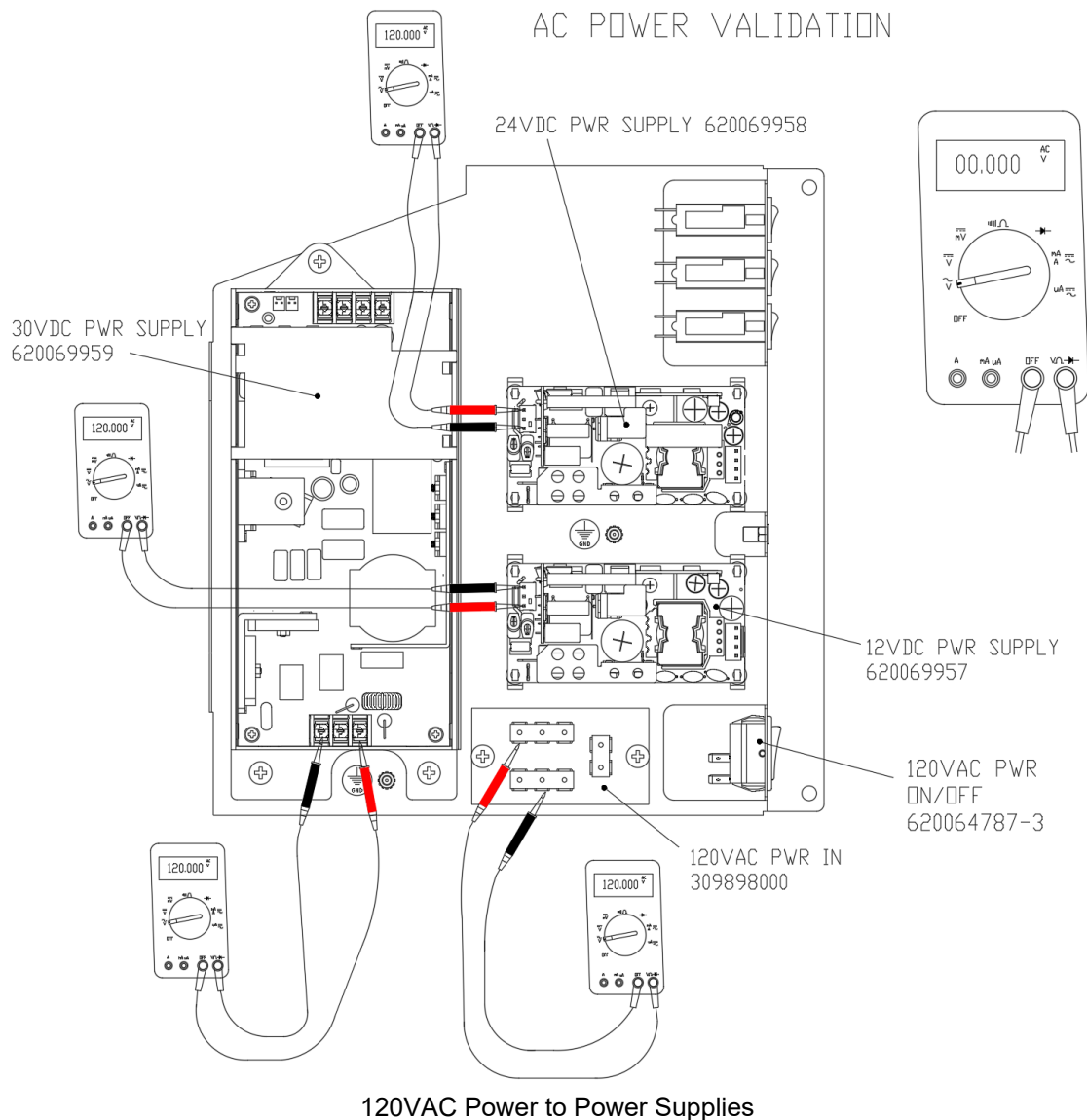
Set meter to measure AC voltage. The location shown is the PWR plug input.



VAC Input PWR

If **AC POWER** is not present at the **AC INPUT**, validate the input power cord is plugged in the unit and connected to the wall. Also make sure no breakers have been tripped at the wall outlet. If so, reset or have the store manager call an electrician.

Verifying AC Power to Components

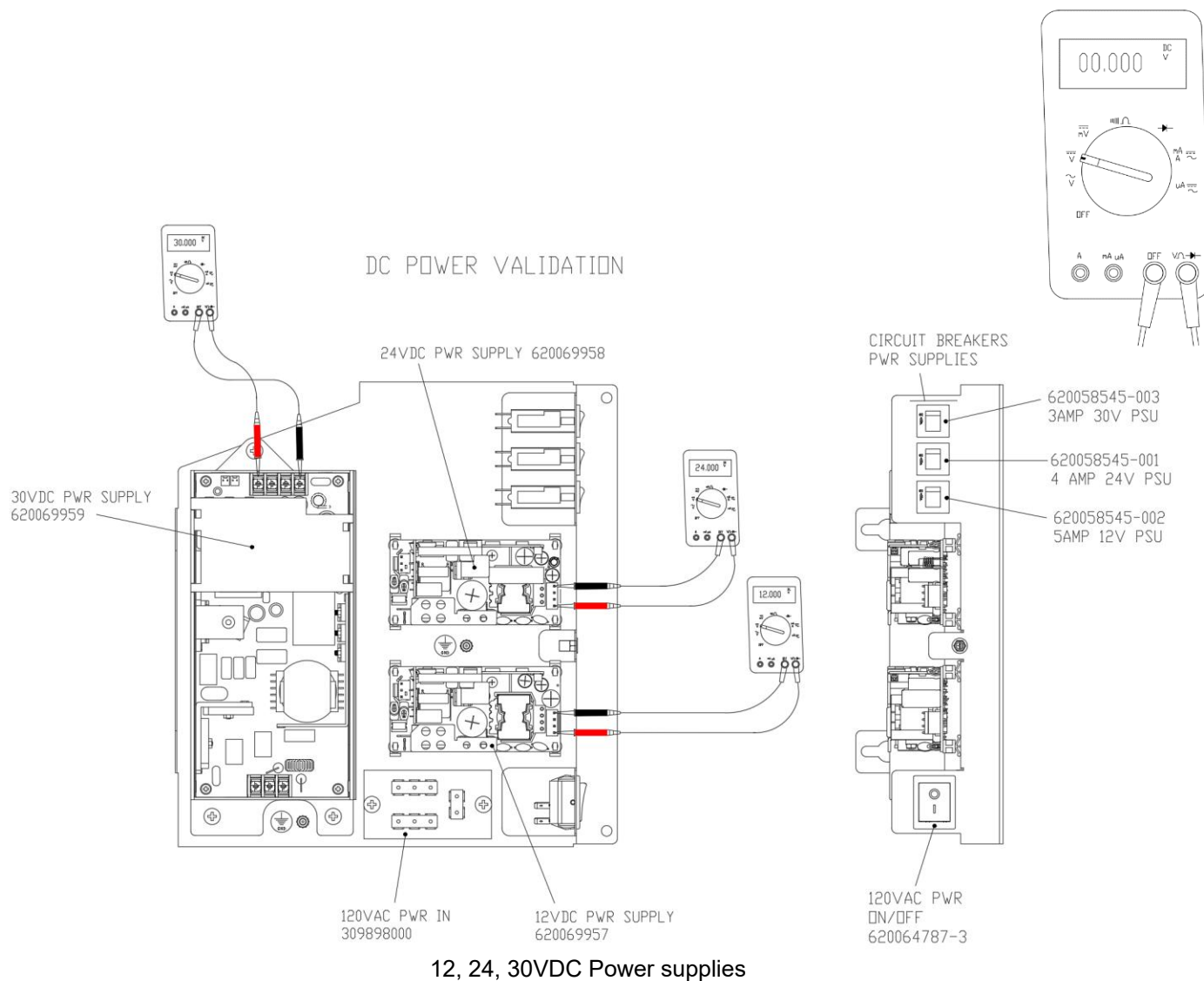


If **AC POWER** is not present at any of the locations shown above, **disconnect the power** from the machine and use the wiring diagram to check the connections between the points.

Verifying Circuit Breakers

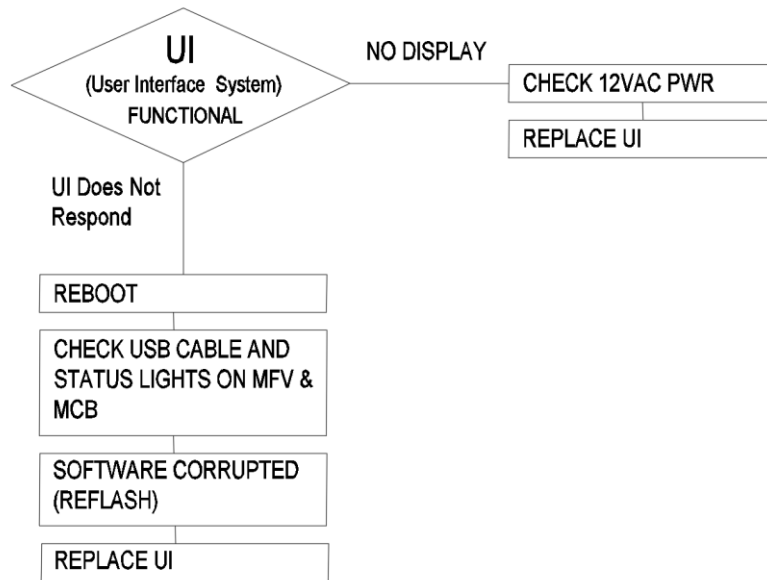
Before moving on to check for DC power, check that the 3 circuit breakers have not tripped. If a breaker is tripped, reset. If the breaker trips during use, this is an indication of a shorted component or board to ground. Identify which breaker is tripped and unplug one output at a time to isolate the faulty component.

Verifying DC Power



If **DC POWER** is not present at any of the locations shown above, **disconnect the power** and replace the faulty power supply. Reconnect power when completed and check if power is present.

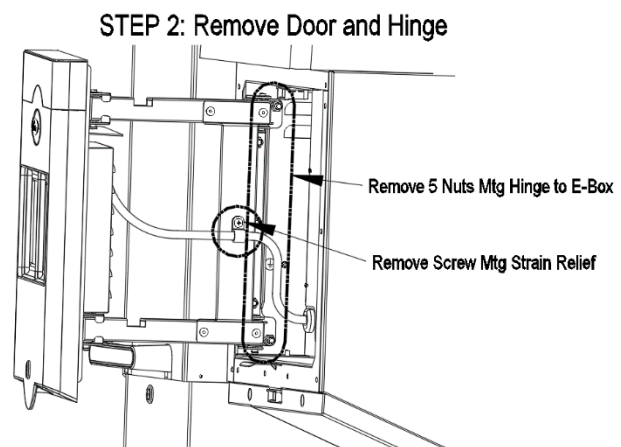
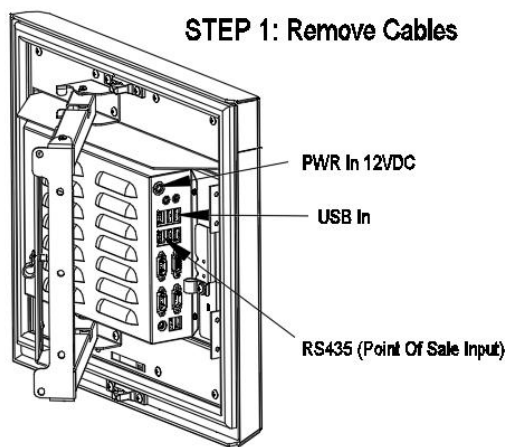
UI DISPLAY DIAGNOSTICS



Diagnostics UI

Replacing UI Display/Door

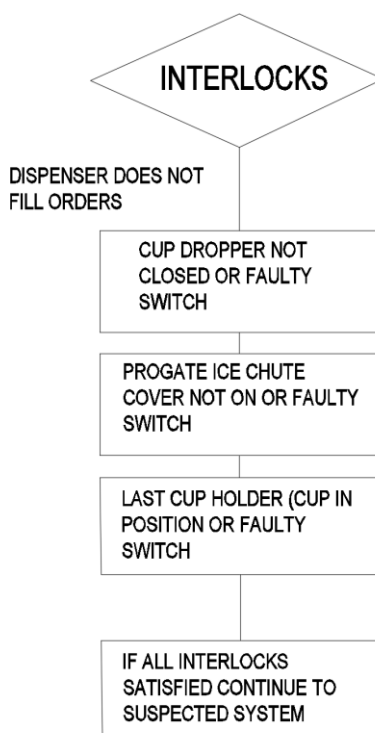
1. Disconnect PWR, USB, Ethernet, and ground cables.
2. Remove the strain relief holder and 5 nuts holding door hinge to E-Box frame.



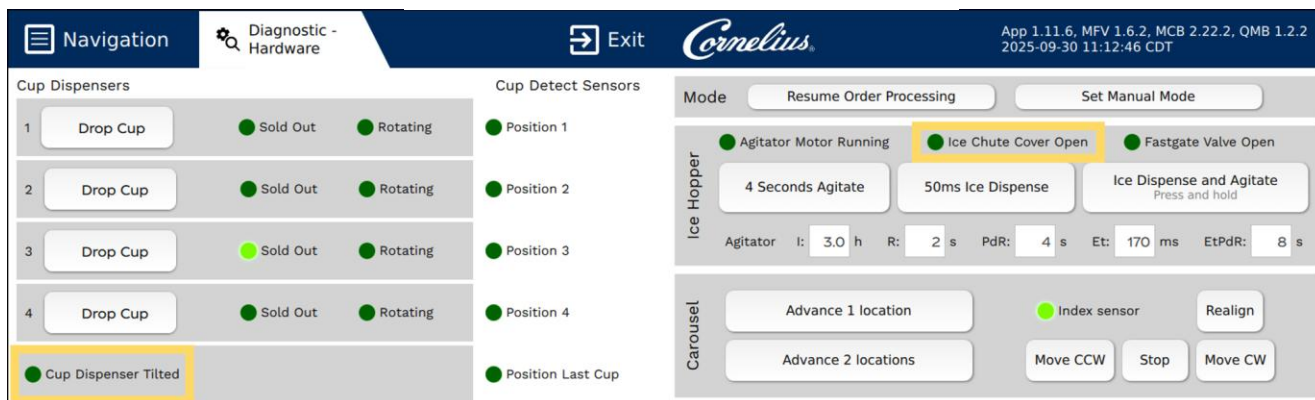
INTERLOCKS DIAGNOSTICS

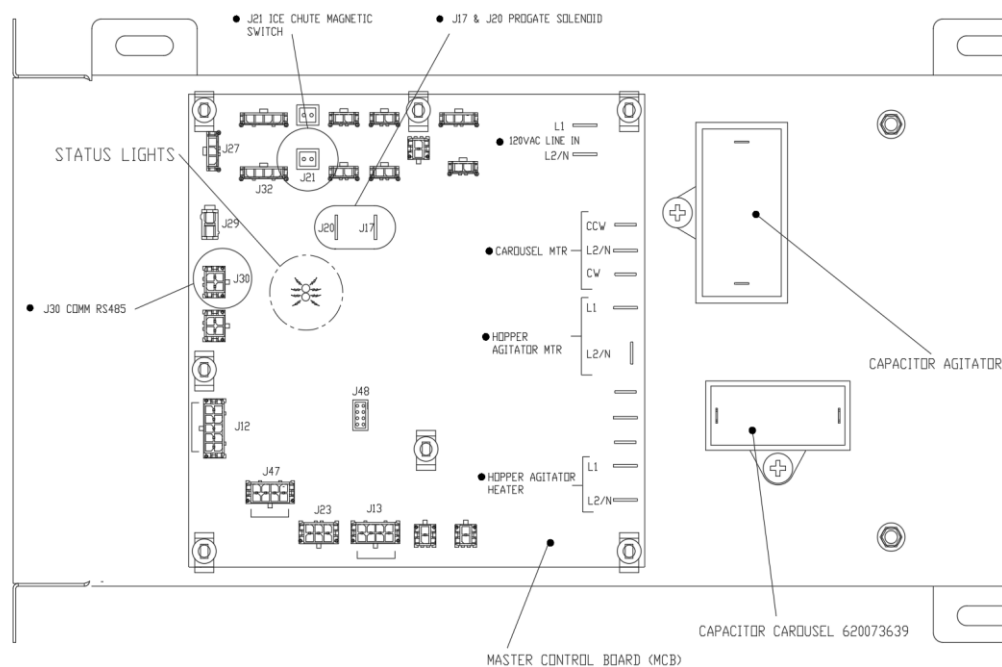
Interlock Connectors on MCB

There are 2 main interlocks for the cup dispense tower and the ice chute cover, which if not closed or installed correctly, will not allow the machine to operate. When the cup dispenser tower is tilted open to load cups, a message appears on the UI letting the operator know that the dispenser is in load mode. The ice chute will also place a message on the UI if not reinstalled properly after cleaning. The status of these interlocks can also be found in the *Diagnostic – Hardware* UI screen. If the interfaces appear properly connected but the machine does not function, it is important to validate the interconnect switches are functional.

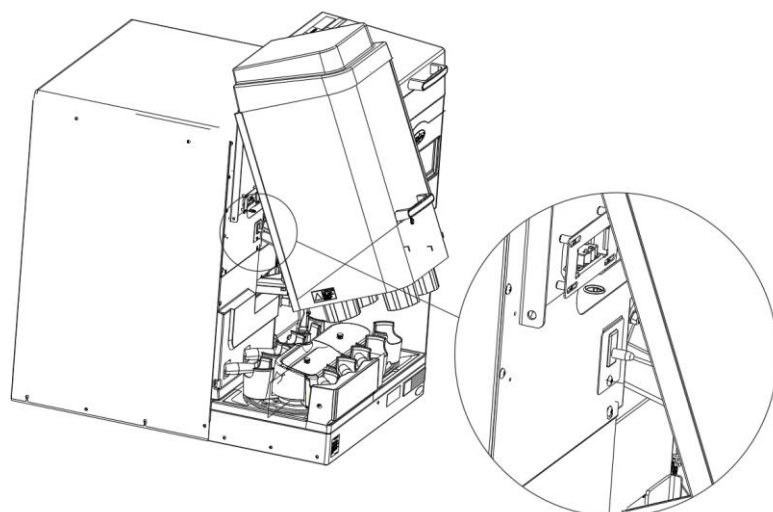


Diagnostics Interlocks

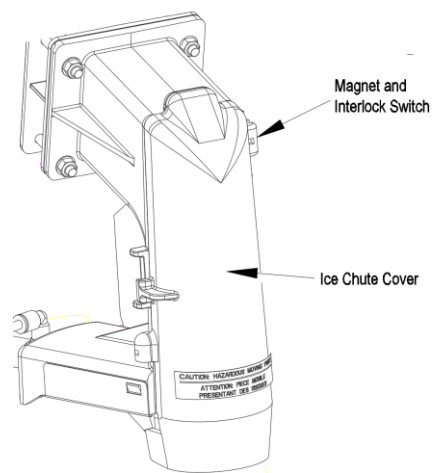

Interlocks Status in *Diagnostic – Hardware* UI Screen



MCB Interlock Connections



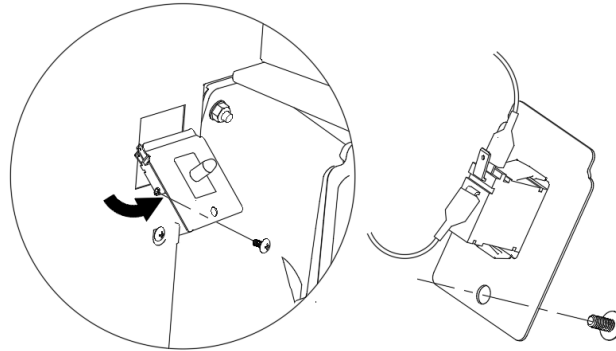
Cup Dispenser Interlock Switch Location



Ice Chute Interlock

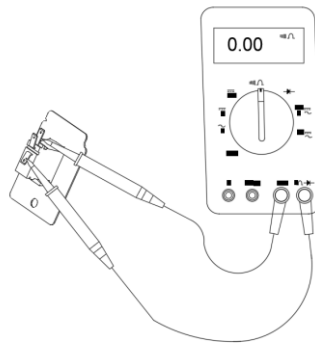
Cup Dispenser Tilt Switch

To replace or get access to the switch leads, remove the screw holding the switch bracket to the unit. Press the tabs at the top and bottom of the switch to pull out of the metal bracket.



Cup Dispenser Interlock Switch Removal

To validate if the switch is functional set your multimeter to OHMS with sound and place the probes as shown. Push the plunger in and out. The meter should beep and then turn off as the switch contacts are closed. If the meter does not beep or stays on, replace the switch.



Checking Switch

Ice Chute Cover Interlock

The ice chute cover contains a magnetic switch which activates the interlock switch mounted to the body of the ice chute to assure the agitator will not move when the cover is removed. If the cover is off, the unit will also **not operate** until properly installed. Always check that the magnet is in the Ice Chute Cover. If it is missing, replace the cover.

Check the Interlock switch connector on the MCB to make sure it is plugged in.

If all of the above are satisfied or been checked, replace the magnetic switch attached to the housing by screws.

CONTROLS DIAGNOSTICS (MCB & MFV BOARD)

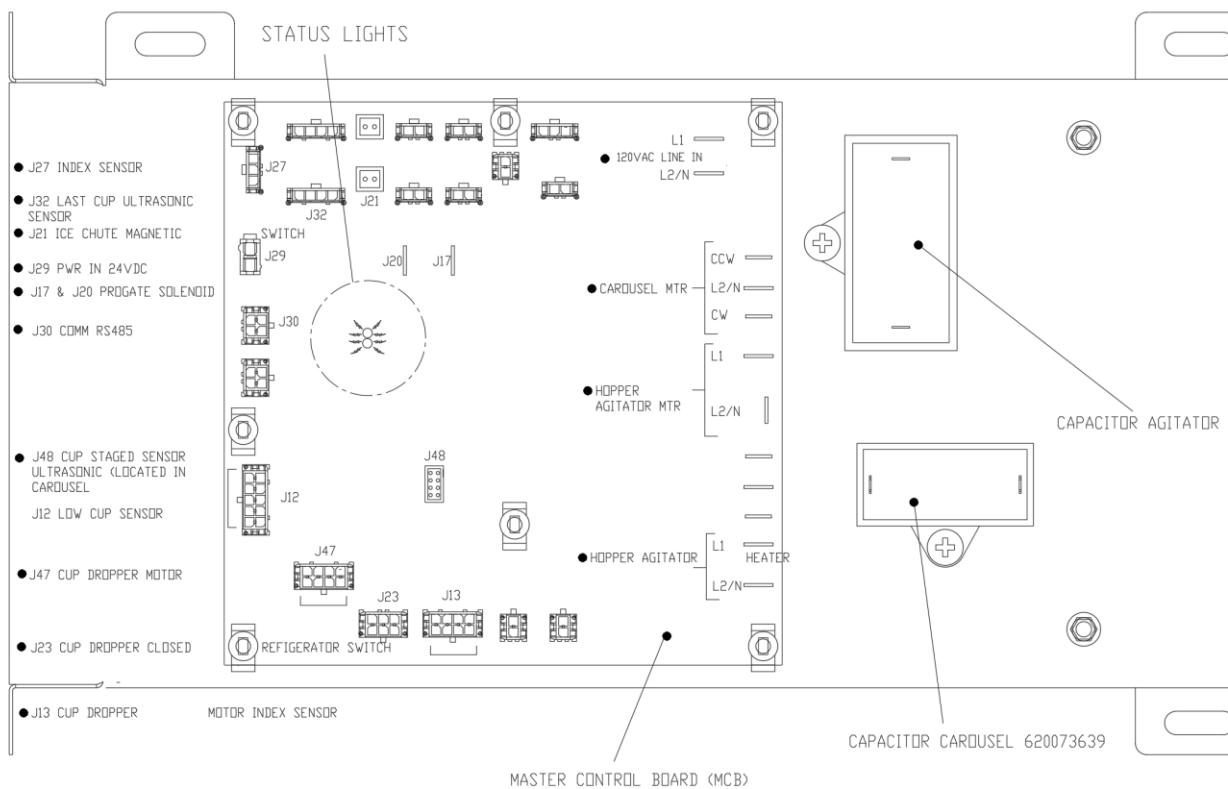
MCB Status Lights

The status lights on the MCB should flash when operating properly. This signifies that the MCB has 24VDC power and that the MCB and MFV USB are communicating with each other.

MCB System Outputs

Checking that all connections are installed properly is a good first step.

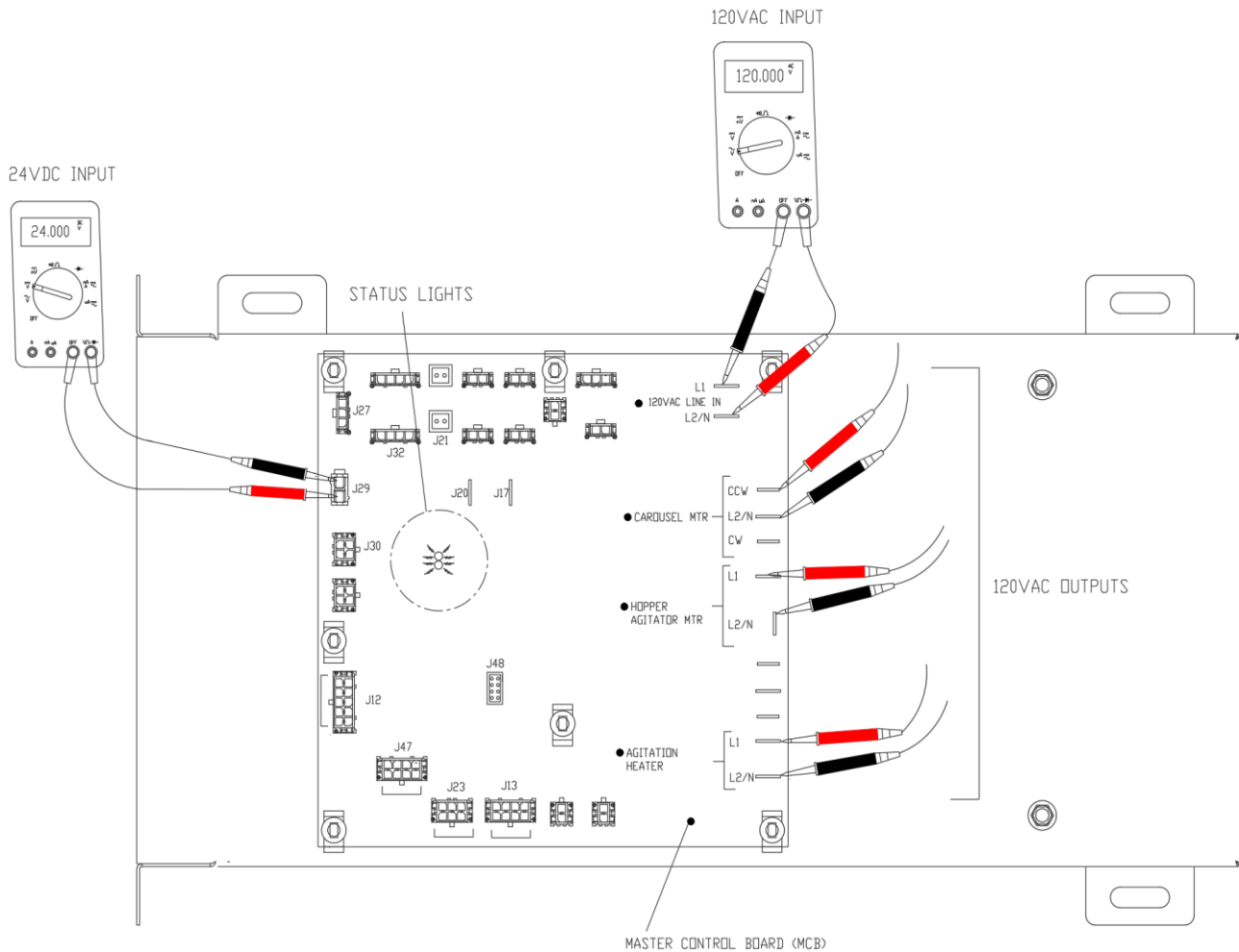
CAUTION: It is always a good practice to turn off power before disconnecting connectors to prevent damage to the circuit board. If you suspect a system that may be intermittent or not functioning, use this figure to identify the output and remove and reconnect associated connector.



MCB Board Inputs and Outputs

MCB 120VAC and 24VDC Inputs and Outputs

The locations shown are to measure the 120VAC power that is output from the MCB. Power would need to be **ON** and only trained technicians should perform this.



MCB Outputs 120VAC & 24VDC

MFV Board Status Lights

The status lights on the MFV board should flash when operating properly. This signifies that the MFV board has 24VDC power and that the MFV board and MCB USB are communicating with each other. If they are not flashing, validate the connections, then replace board if not resolved.

Valve Outputs

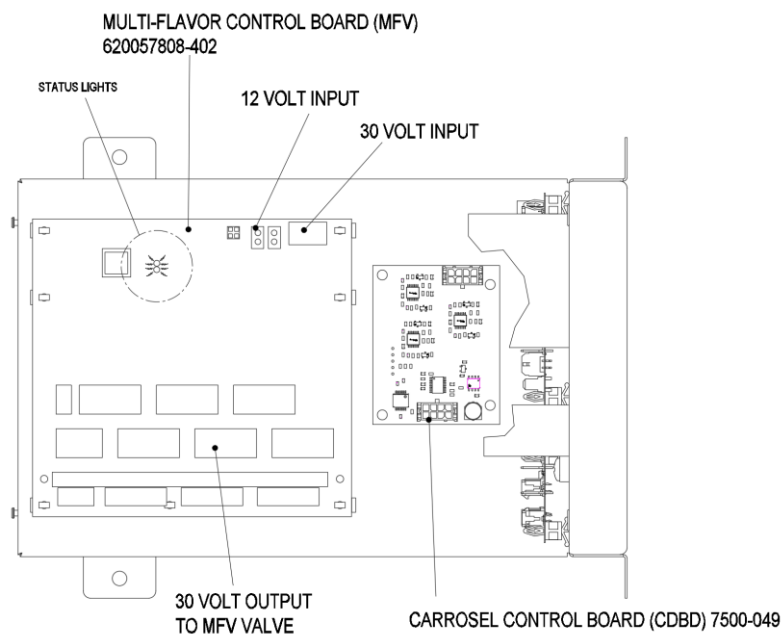
The outputs from the MFV are 30VDC PWM outputs.

No Valves Work

1. Validate communications lights are flashing – if so, go to next step. If not, replace board.
2. Validate valves are properly mapped in UI. If all are mapped, go to the next step.
3. Validate 30VDC PWR to Board. If 12 and 30VDC power is present at the input connector, go to the next step.
4. Validate there are no shorted valves. This can be done by unplugging banks of connectors starting with water on the left. If unplugging valve banks does not change anything, **REPLACE BOARD**.

Some Valves Work

1. Validate Valves are properly mapped in UI. If all are mapped go to the next step.
2. Validate there are no shorted valves. This can be done by unplugging banks of connectors starting with water on the left. If unplugging valve banks does not change anything, **REPLACE BOARD**.



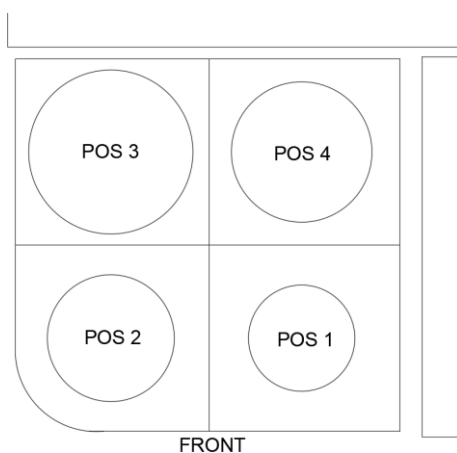
MFV Board Electrical Connections

CUP DISPENSER DIAGNOSTICS

Occasional double cup dispenses and bad cup landings can occur with the ACSD. If double drop occurrences exceed 5% of daily dispenses and/or bad landings exceed 1% of daily dispenses, it may be a sign of dispenser and/or cup issues. Follow these steps to verify function of the cup dispense modules and the carousel. If no issues are found on the ACSD, follow the steps to review the cups.

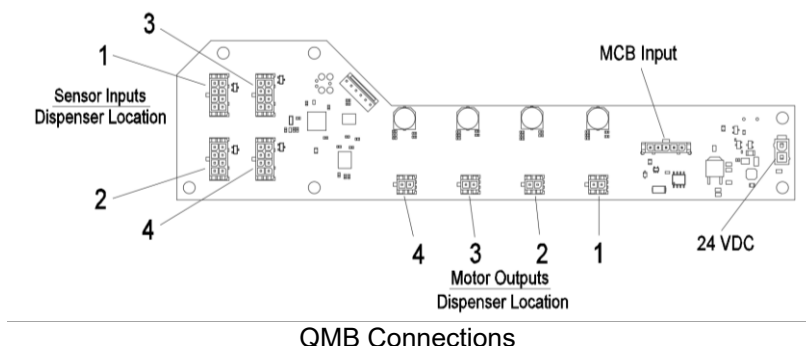
Verify Cup Dispense Modules

1. **Check functionality of each module independently.** Each cup dispense position aligns with a position in the carousel, referred to as Positions 1-4 (see diagram below). Access the *Diagnostic – Hardware* screen and press the *Drop Cup* button for a given position to confirm the correct module runs and the associated sensors activate.

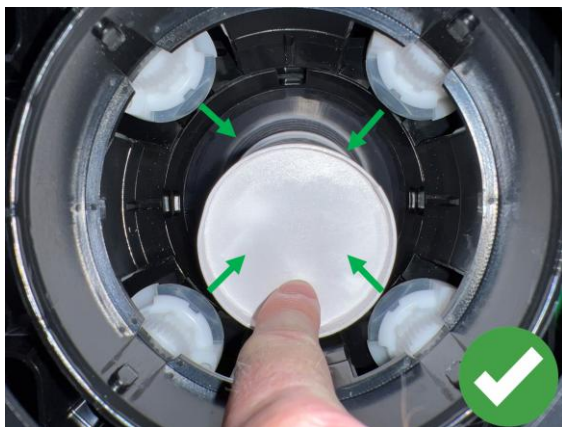


Cup Dispense Positions

2. **Confirm the harness connections are secure and correct.** Review the harness connections at the modules as well as at the Quad Motor Board (QMB) for (1) motor power (2) low cup sensors and (3) cam home sensors. Refer to the image below (the board is also labeled) to trace the connections to the matching cup dispense position number. If no indicator lights are active on the QMB, verify MCB Input and 24VDC connections and refer to *Power, Interlocks, and Controls Diagnostics* sections of this manual. If some sensors and motors function, but not others, jump to the *Cup Dispenser Subcomponent Service* section of this manual.



3. **Visually confirm that the cams are aligned.** Tilt open the cup dispense tower, look up through the middle of the module and confirm the rectangular notches on all four cams are oriented to the centerline of the tube. The cup stack may need to be pushed up or evacuated to easily see this. If the cams have become misaligned, replace the full module assembly. Cam adjustment is not recommended for field service because precision fixtures are required to set alignment and belt tension.



Proper Cam Alignment



Cams Misaligned

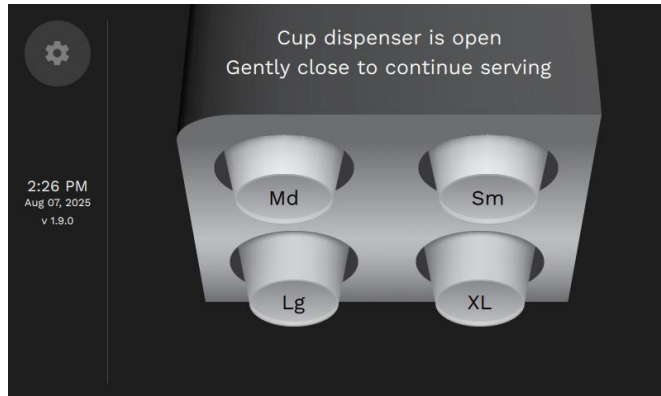
Verify Carousel

1. **Check alignment of the carousel cup holders to the cup dispense positions.** Carousel misalignment can lead to crooked cup landings.
2. **Confirm that the landing zone for the dispenser module in question is not obstructed.** The cup presence sensors in the drip-tray / carousel sub-system confirm when a cup has landed and will prevent cup dispense if a cup or other blockage is present. Verify the carousel cover is correctly fastened, the sensors are clean, and that the cup holders are fully seated on the carousel belt dovetail.

See *Carousel Diagnostics* section of this manual for further details.

Review Cups

1. **Confirm the correct size cups are placed in the designated dispense positions** (layout will be specific to a given restaurant chain). Verify against the exit chimney labels and the UI screen. If the cup is in the incorrect position, use the *Cup Purge* feature in the Service UI or remove the cup dispenser tower top cover and push the cups up through the top of the assembly.



2. **Check cups for damage or moisture.** The cups on each end of a sleeve are the most likely to be impacted by shipping damage. Ensure the cups loaded are loaded top side up.
3. **Verify that no more than 100 cups (2 sleeves) are loaded into a single size dispense module.** Cups that nest more tightly together will have a higher total stack weight, which can lead to dispense issues.
4. **Cup dispense test:**
 - a. Load at least 15 new cups to be dispensed. If there is no room for 15 new cups, use the *Cup Purge* feature in the UI to remove existing cups until there is enough space.
 - b. Dispense the 15 cups loaded. Of the last 10 dispenses, was the original issue persistent? If so, the cups being used could be defective. Possible causes of defective cups include:
 - Cups stored in the incorrect orientation (check the box, but the prescribed orientation is typically vertical)
 - Cups damaged during shipment
 - Cups damaged or soiled during storage
 - Manufacturer defected cups

Cup Dispenser Subcomponent Service

While a full cup dispenser module can be replaced, some sub-components of the module are available for service if cam re-alignment and belt re-alignment are not required.

Motor

If the motor is receiving signal and power, but is non-functional, the motor may require replacement. Follow these steps to replace. NOTE: The motor and mounting plate come together as a kit for backward compatibility with multiple approved motor manufacturers.

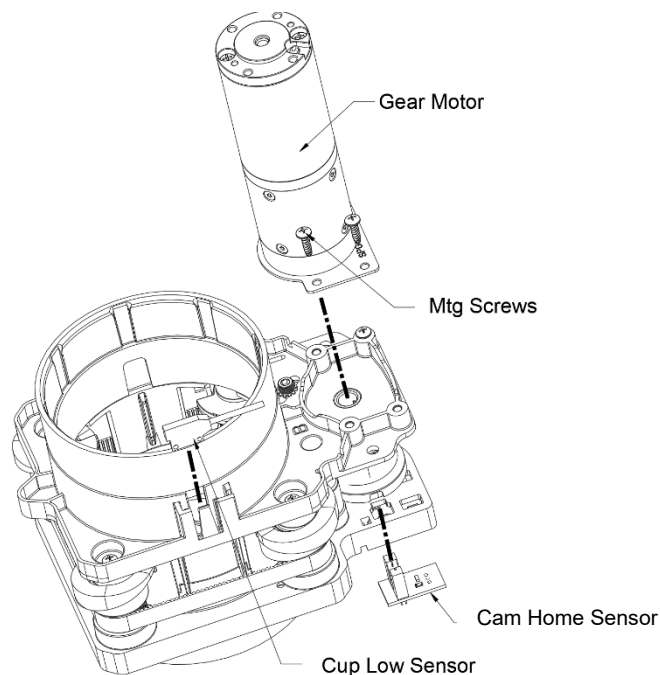
1. Remove the (4) screws securing the motor plate to the plastic cup dispenser module frame.
2. Pull the plate and motor assembly out of the drive pulley to remove.
3. Upon replacement, be aware of the flat in the output shaft of the motor, making sure it aligns with the D-slot on the drive pulley before pressing in.

Cam Home Sensor

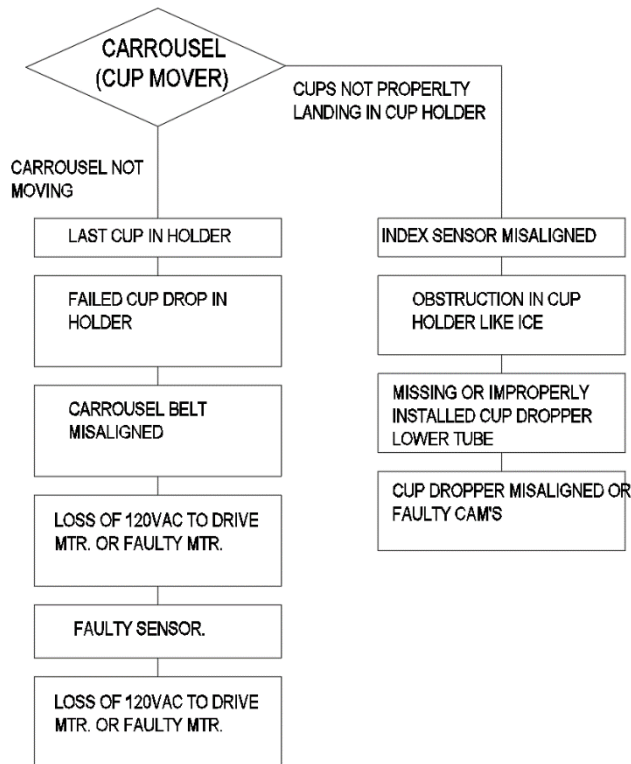
If the cams rotate when commanded, but do not stop at the home position with all cams aligned to the middle, the cam home sensor may require replacement. This will look different from cam misalignment (due to belt skipping), where one cam will typically be out of phase from the three others. If the cam home sensor fails, all four cams will still be in sync, but equally misaligned from home when rotation stops. The cam sensor is secured in place with a plastic snap feature integrated in the cup dispenser module frame.

Low Cup Sensor

The sensor points to the inside of the module to detect if the cup stack is too low to dispense. In addition to the sensor status displayed in the *Diagnostic – Hardware* UI screen, the face of the sensor also has an indicator light. If the indicator light does not react when covering and uncovering the sensor face, and all other troubleshooting steps have been followed, the low cup sensor may require replacement. The low cup sensor is secured in place with a plastic snap feature integrated in the cup dispenser module frame.



CARROUSEL DIAGNOSTICS



Index Sensor Function

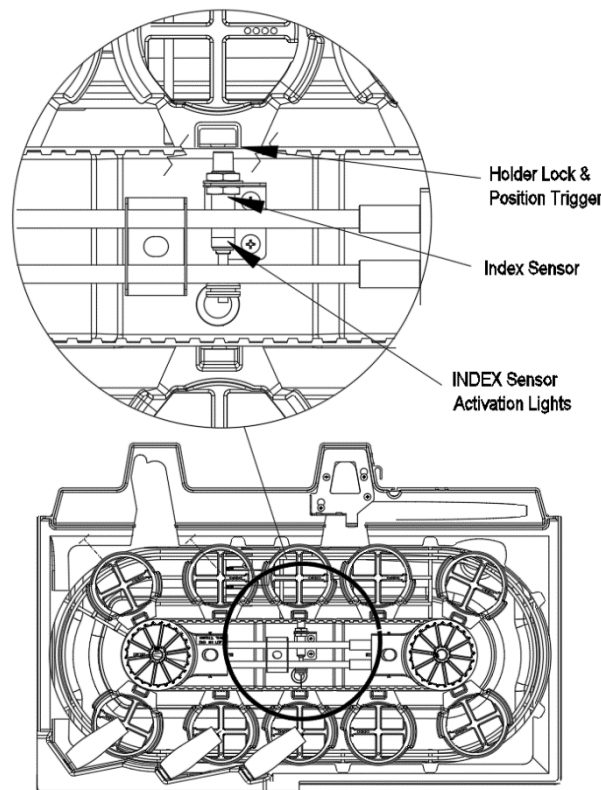
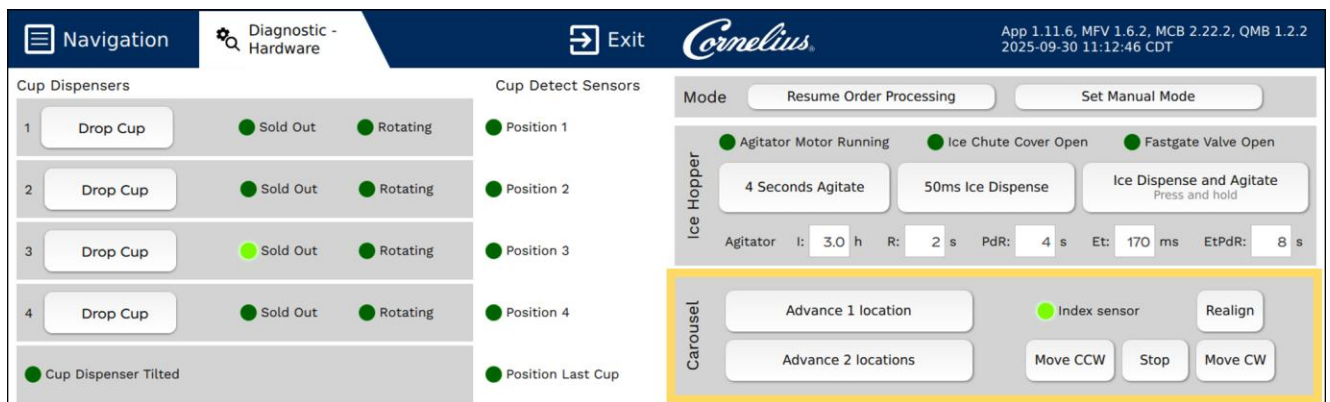
The index sensor is an inductive proximity switch (sensing ferrous metals) and is triggered by a metal bracket screwed to the back of each cup holder. This detection of the cup holders, regardless of if a cup is in the holder, allows the system to track positioning of the carousel as beverage orders are processed. The index sensor also effectively sets the home position for the carousel, primarily aligning it with the four cup dispense positions, and secondarily with the ice and beverage dispense positions.

For the index sensor to consistently and accurately trigger, the face of it must be within 8mm of the metal cup holder brackets. If triggering is inconsistent, issues could occur such as *Carousel Misalignment* errors (codes 9013 and 10010) and skipped positions, leading to pours into open carousel positions or pours into the wrong cup.

Index Sensor Verification

Check for proper function of the index sensor by following these steps:

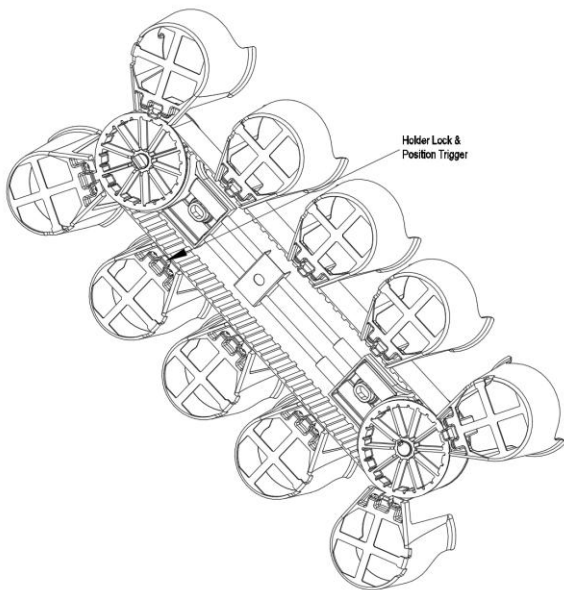
1. Go into the *Diagnostic – Hardware* UI screen to advance the carousel.
2. With the carousel, running check the *Index sensor* indicator on the screen illuminates as each cup holder passes and stays on when a cup holder stops in front of it.
3. If the on-screen indicator doesn't behave as expected, confirm the LED status light on the index sensor.
 - a. Remove the carousel cover and find the index sensor located in the center of the drip tray.
 - b. Find the LED on the wire end of the sensor.
 - c. Run the carousel, and verify the LED illuminates as each cup holder passes and stays on when a cup holder stops in front of it



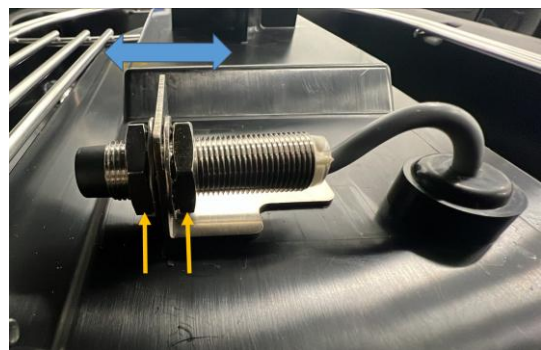
Index Sensor Intermittent Function

If the index sensor detection is intermittent during normal operation, but the sensor itself and controls hardware have been verified as fully functional, these are the common items to check (ordered from least invasive to most):

1. Ensure drip-tray wire grate is seated properly. If not, it can push the cup holders out of position.
2. Ensure cup holder brackets are in place and secure on the back of every cup holder. To inspect:
 - a. Remove carousel cover.
 - b. Remove carousel.
 - c. Flip upside down
 - d. Review for loose screws and/or damaged cup holders
3. Ensure all cup holders are fully engaged with the drive belt dovetails. If not, the cup holder will sit crooked and could be out of range of the index sensor. To repair:
 - a. Remove the cup holder bracket by removing the two screws.
 - b. Vertically slide the cup holder off the drive belt
 - c. Inspect the cup holder for cracks and damage (replace with new if damaged)
 - d. Slide the cup holder back onto the dovetail and push to fully seat.
 - e. Re-attach the bracket with the two screws (matching the orientation of the other brackets)
4. The index sensor depth is set with a fixture on the production line but can be adjusted in the field if issues continue to occur. To adjust:
 - a. Loosen (by a few threads) the two nuts holding the index sensor to the drip-tray mounting bracket.
 - b. Push the sensor towards the belt, the face of the bracket must be within 8mm of the metal cup holder brackets but with clearance from it.
 - c. Retighten the nuts to secure the index sensor.



Cup Holder Brackets for Index Sensing

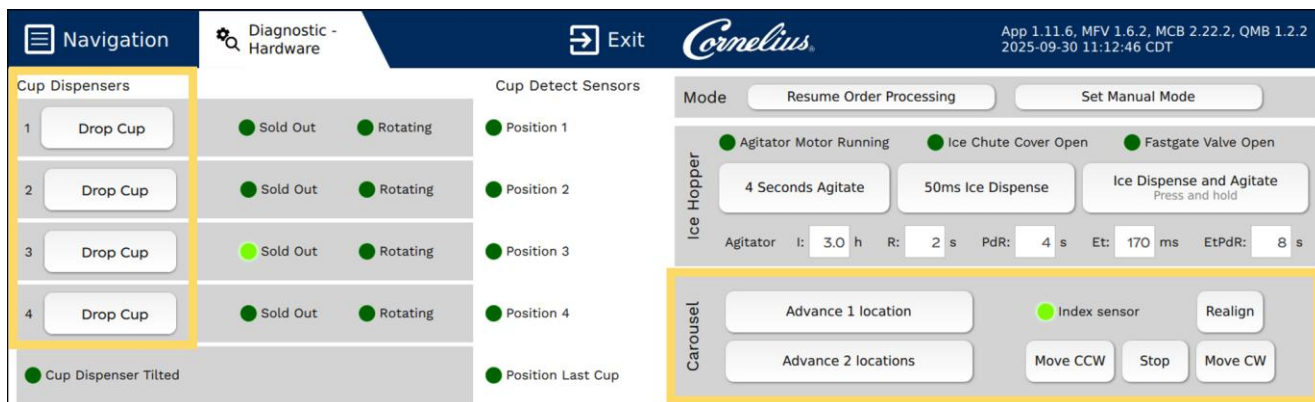
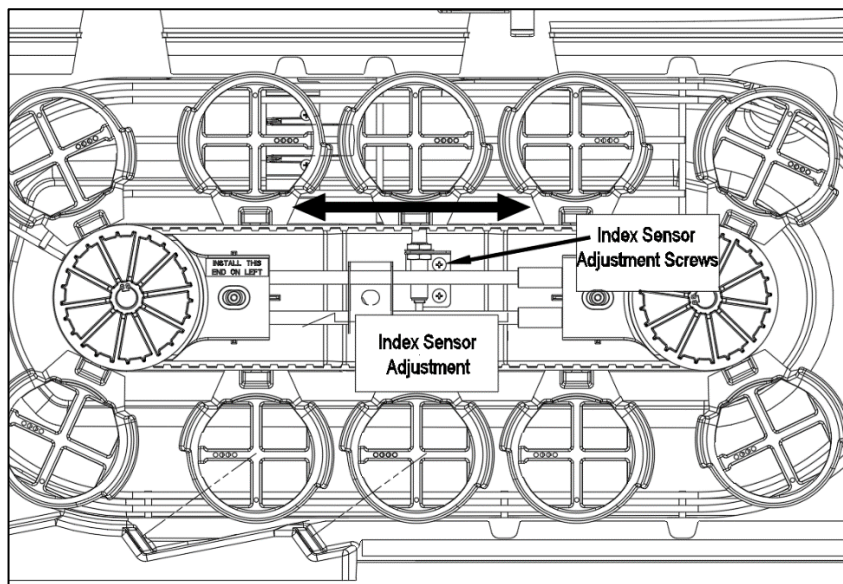


Index Sensor Depth Adjustment

Aligning Carousel to Cup Dispenser

If bad cup landings are a recurring issue, the carousel may not be properly aligned to the cup dispense positions. Moving the index sensor left or right will shift the home position of the carousel to realign. The bracket mounting the index sensor is slotted to accommodate any adjustments required. When adjusting, it's important to keep the index sensor face parallel to the cup holder brackets, sliding the bracket on both slots together and not allowing it to become crooked.

1. From the *Diagnostic – Hardware* UI screen, press *Advance 1 location* to rehome the carousel.
2. Dispense the problem cup size with the *Drop Cup* button and note how it aligns with the cup holder. Does it hit one side of the cup holder instead of landing in the middle?
3. Remove the carousel cover.
4. Loosen the two screws holding the index sensor mounting bracket.
5. Slide the index sensor and mounting bracket assembly in the direction required to realign with the problem cup dispense position.
6. Retighten the mounting screws, ensuring the bracket is not crooked.
7. Press *Advance 1 location* to home the carousel in its newly aligned position.
8. Confirm alignment to the cup dispense position with the *Drop Cup* button.
9. If further adjustments are required, repeat Steps 4-8 as needed.



Index Sensor Replacement

The index sensor is serviceable and can be replaced if it's found to be non-functional and the rest of the controls system has been verified. Index sensor will come pre-assembled to the mounting bracket, with the correct depth position pre-set. Before replacing the index sensor, mark the left-right location of the current assembly on the drip tray using a piece of tape or paint marker to reduce realignment time. Remove the 2 screws holding the index sensor to the drip tray. Remove the drip tray assembly, turn upside down, and unplug the sensor connector from the harness. Pull the index sensor harness and grommet through from the top of the drip tray assembly. When installing the new index sensor assembly, ensure the grommet is fully seated in the drip-tray to prevent liquid ingress. Follow the steps in *Aligning Carousel to Cup Dispenser* to verify alignment and adjust as-needed.

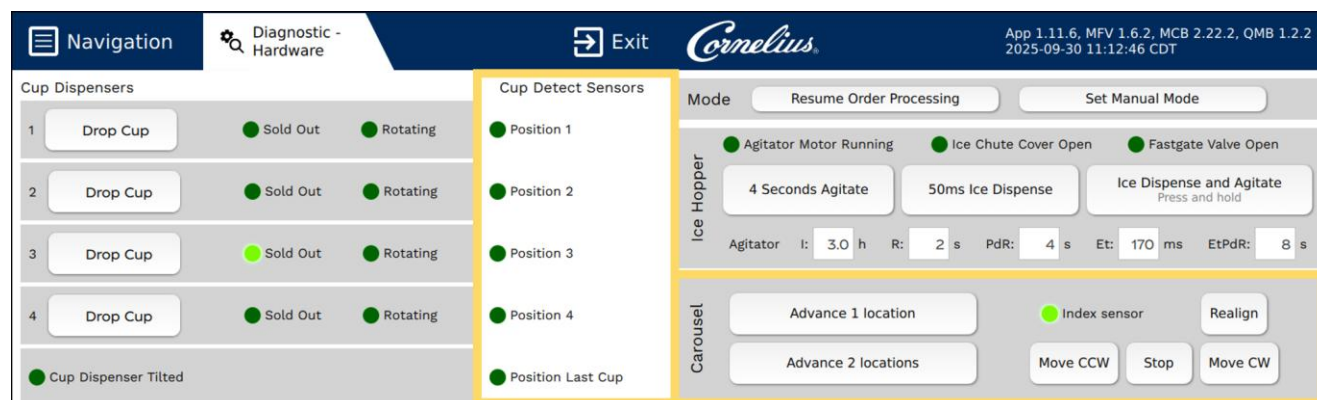
Cup Presence Sensor Function

While the index sensor verifies the carousel position, regardless of if cups are present, the 5 cup presence sensors surrounding the carousel use ultrasonic technology to detect if a cups are in present in each of their respective positions. One of the five cup presence sensors, referred to as the last cup sensor, detects cups in the last staging position, preventing a finished beverage from re-entering the cup dispense locations. The other 4 cup presence sensors are used to detect that a cup was successfully dispensed into the matching carousel cup holder. If the cup is not detected after the first dispense attempt, the cup dispenser will attempt a second dispense. If a cup is still not detected after the second attempt, a UI action message will prompt to clear the cup dispenser of any blockages.

Cup Presence Sensor Verification

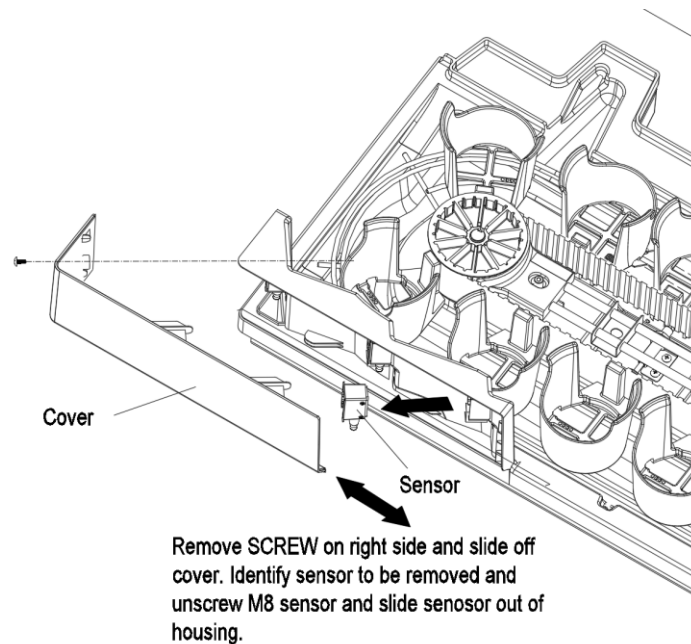
Check for proper function of any of the cup presence sensors by following these steps:

1. Go into the *Diagnostic – Hardware* UI screen and ensure the carousel is in its home position.
2. Verify the on-screen indicators for the cup presence sensors turn on and stay on when a cup is placed in front of them, and turn off when a cup is removed. NOTE: These sensors will ignore objects too close in range, so touching the face of the sensor to cover it will not effectively confirm function.
3. Verify the face of the sensors is clean. They can be wiped down with warm water or mild cleaner and a cloth rag.
4. If the on-screen indicators still don't behave as expected, confirm the LED status lights located on the actual cup presence sensor in question. An LED on the top of each sensor indicates power, and another LED will toggle on in the presence of cups:
 - To access the front 3 cup presence sensors, remove the screw and the access cover from the front of the drip-tray.
 - To access the rear 2 cup presence sensors, remove the splash panels and remove the sheet metal mounting bracket from the sensor for visibility to the LED.
5. If a sensor is not functional or intermittent, verify that the threaded M8 harness connector is fully secured to the sensor. NOTE: The metal mounting bracket may need to be removed from the rear sensors to fully gain access to the connector for tightening.



Cup Presence Sensor Replacement

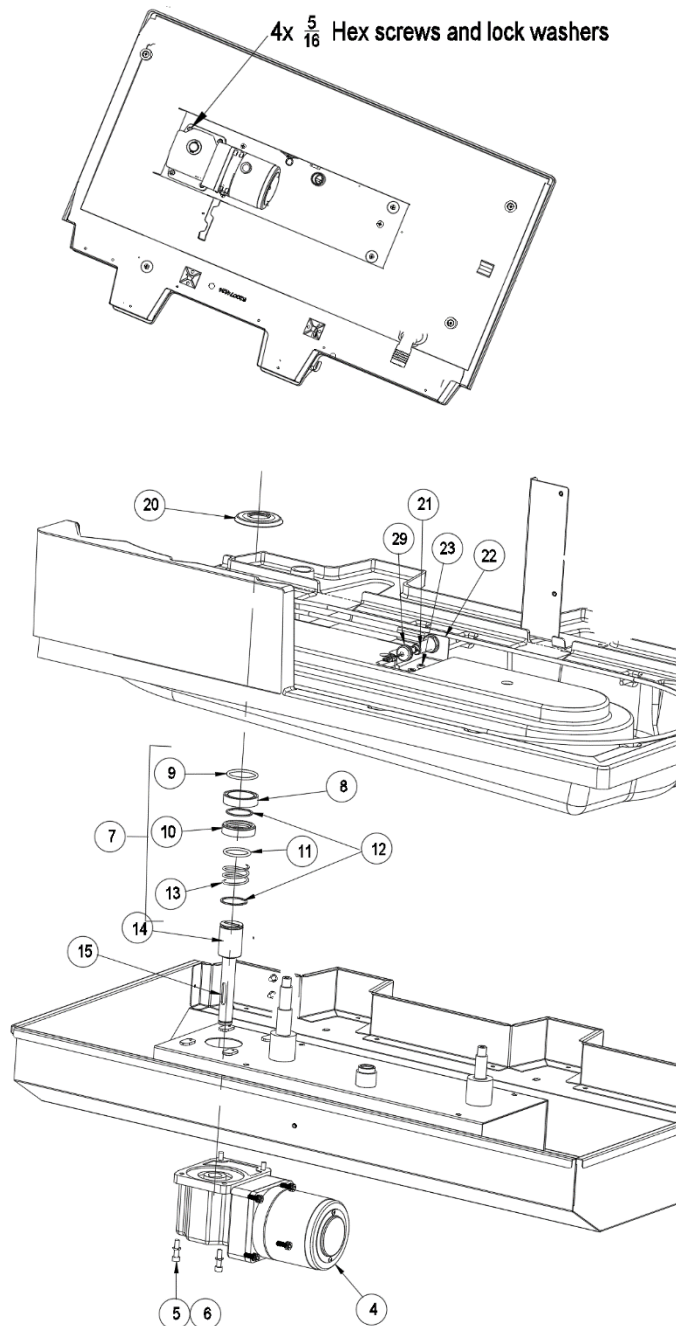
The cup presence sensors are serviceable and can be replaced if any of them are found to be non-functional and the rest of the controls system has been verified. To replace any of the 3 front sensors, remove the single screw holding the sensor cover and slide to the left. To replace any of the rear sensors, remove the splash panels and access the lower left splash panel. Each sensor is assembled in a plastic housing with two roll pins. These do not need to be separated for replacement. The sensor and housing come together pre-assembled as a kit for backward compatibility with multiple approved sensor manufacturers.



Cover and ultrasonic sensor removal

Replacing Gear Motor and Shaft Seal

The gear motor and shaft that drive the carousel are serviceable and can be replaced if there is an issue that can't be resolved by verifying the sensors or the controls system. With the carousel assembly disconnected from the unit, remove the drip-tray assembly and turn upside down to expose the gear motor. Remove the (4) 5/16" hex bolts and lock washers mounting it to the frame. Pull assembly out and validate seals are not left behind. Once removed, inspect the shaft seals for damage. The seals should only be replaced if leaking or physical damage is observed.



PROGATE ICE CHUTE DIAGNOSTICS

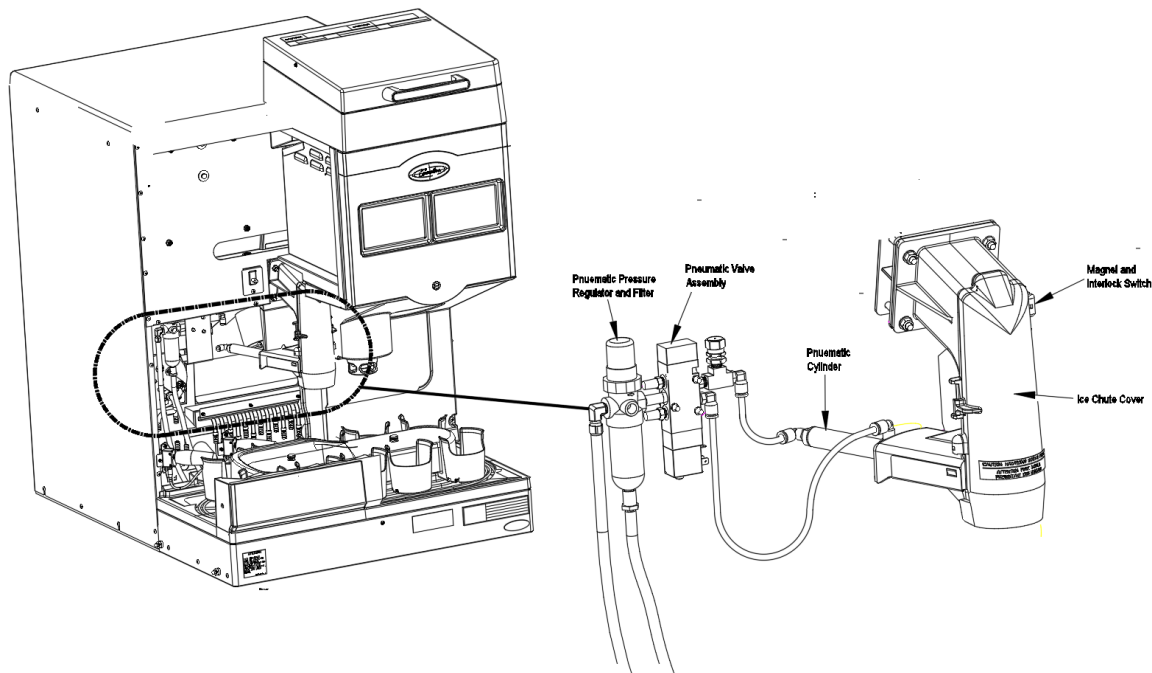
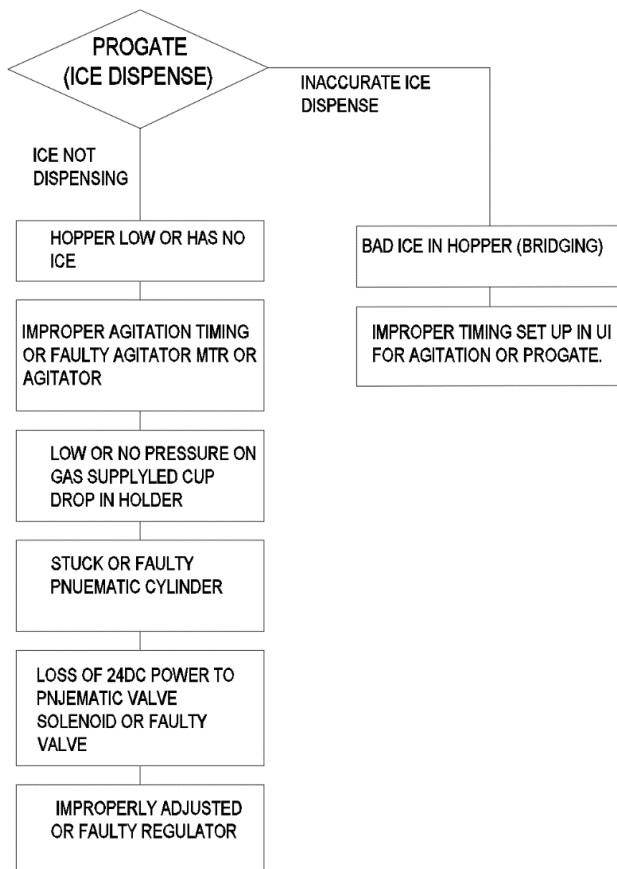


Figure 38: ProGate Ice Chute Pneumatic Detail

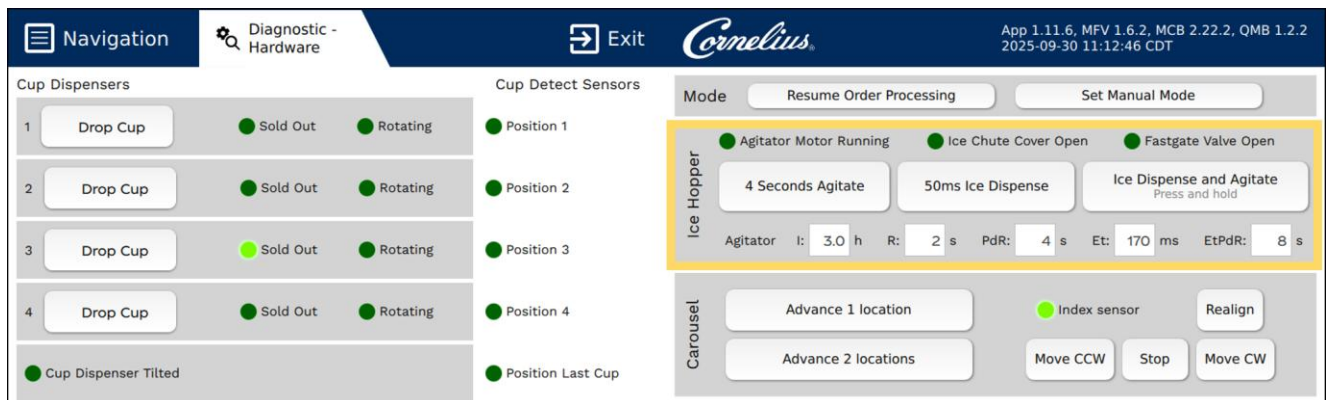


HOPPER & ICE AGITATION DIAGNOSTICS

There are 3 main failures that can cause loss of agitation:

1. MCB power/communication
2. Damaged agitator
3. Damaged motor

If the agitator motor does not turn on, check the output from the MCB to the agitator motor. Using the *Diagnostic – Hardware* UI screen and multimeter probes on output of the MCB, validate the board has sent 115 VAC. If power is going into the MCB, but is not present on the output, replace MCB.

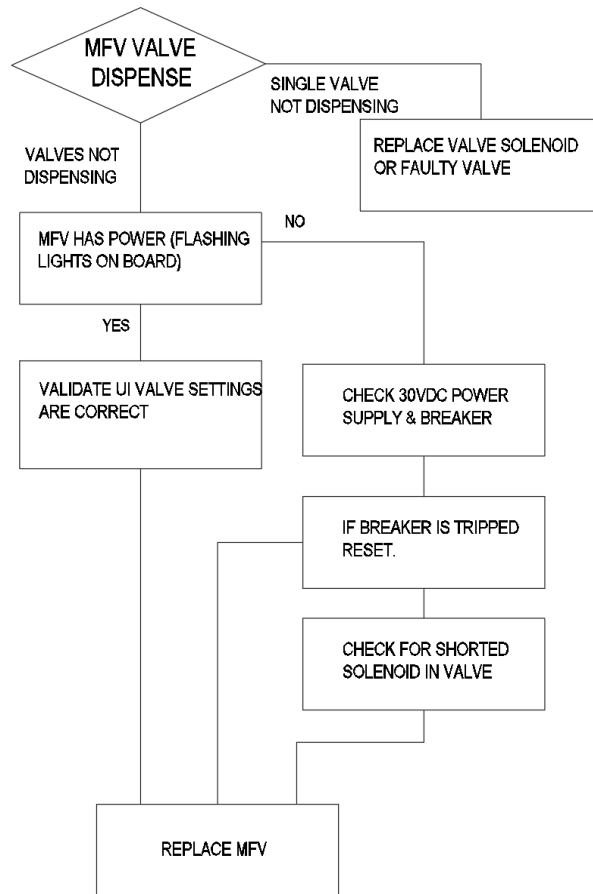


If the agitation does not turn on and power is present in step above, replace the agitator motor assembly.

If the motor moves, hums, or spins and no ice is pushed into the ice chute or cold plate, check for a damaged agitator.

To replace the motor and or agitator, it will be necessary to remove the hopper lid and ice maker if used. Remove any ice in the hopper and replace the 2-piece agitator or motor.

MFV DIAGNOSTICS



Diagnostics MFV Valves


WARNING:

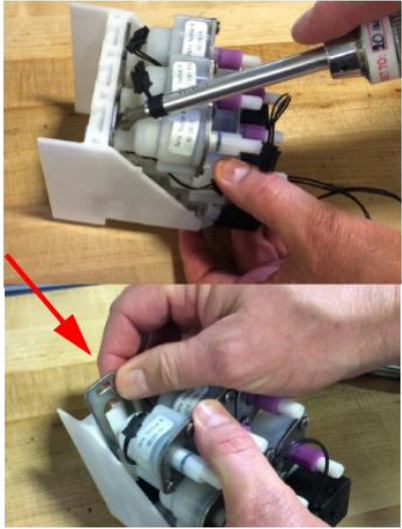
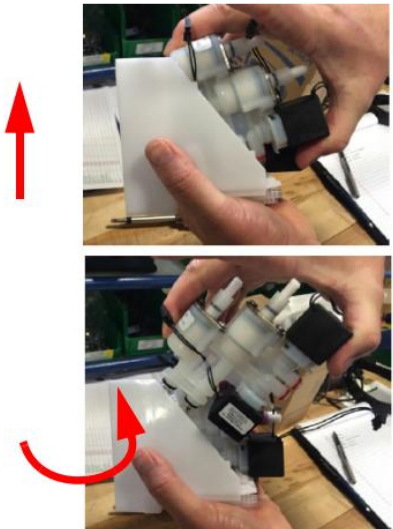
Disconnect power to the unit before accessing the Multi-Flavor Valve (MFV).

Table 10.

Step	Action	Figure
1.	Each round shutoff Spindle must be pressed downward as shown to allow fluid to flow past the back-block and into the valves.	 Figure 31
2.	Press the bottom snap (Dovetail) of the back-block downward as indicated.	 Figure 32.
3.	MFV Module placed on the back-block.	 Figure 33.
4.	Back-block layout behind each valve bank.	 Figure 34.

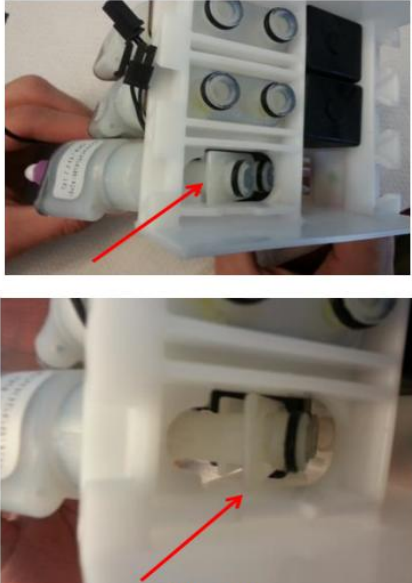
DISASSEMBLY OF AN MFV VALVE MODULE

Table 11.

Step	Action	Figure
1	After the valve module is removed, pull the locking clip upwards and remove.	 Figure 35.
2	Pull upward and rotate valve upward from bracket to remove the valve from the module. NOTE: Check for all O-rings on bottom of valves.	 Figure 36.
3	Rotate the solenoid assembly counterclockwise and remove pull outward to service the solenoid and plunger. NOTE: Solenoid resistance should read 9.1 ohms. NOTE: Solenoid wiring at top left position.	 Figure 37.

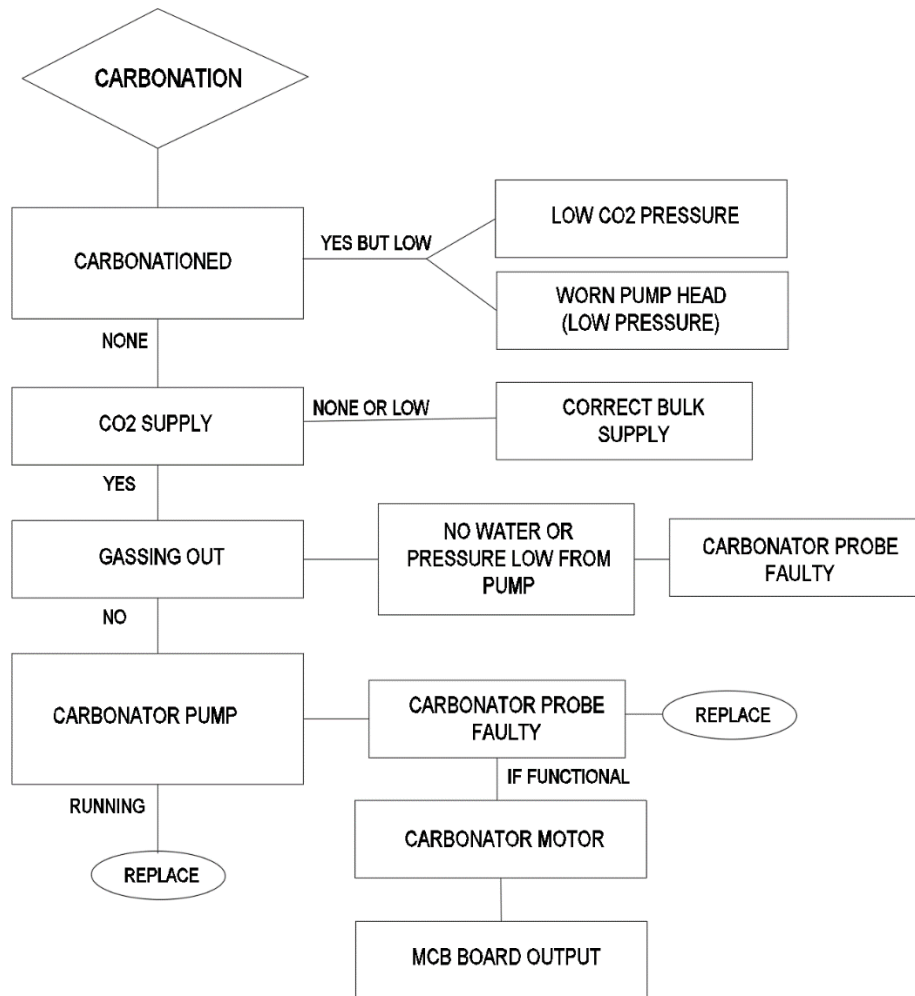
REASSEMBLY OF MFV VALVE

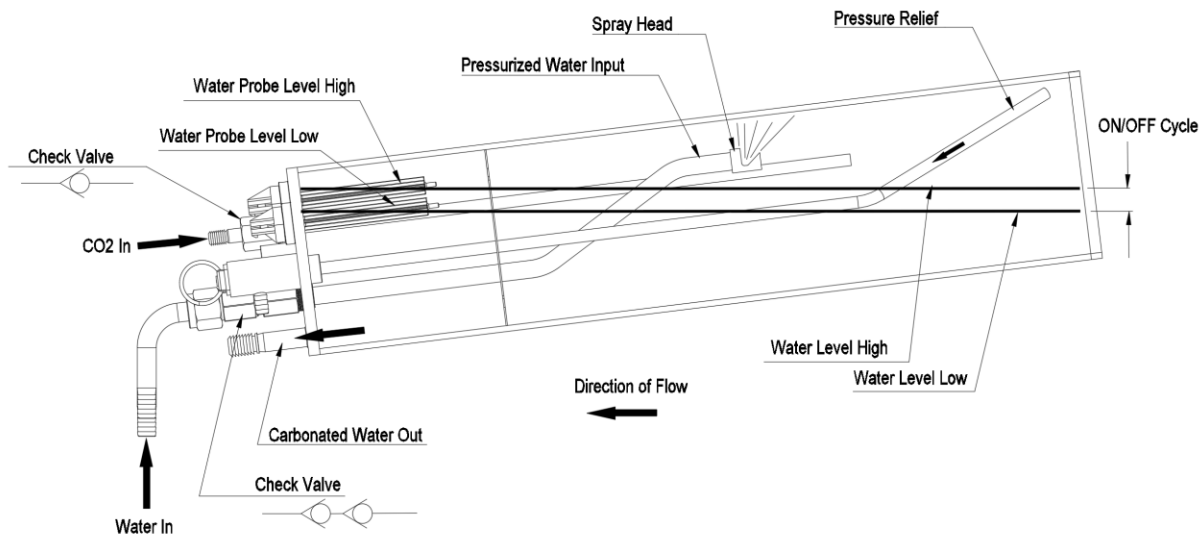
Table 12.

Step	Action	Figure
1	Place valve into the valve carrier. NOTE: Use only Dow III or equivalent on all O-rings	 Figure 38.
2	Start the solenoid at a 45 deg. angle and ensure that rear flange of the valve fits behind the wall of the carrier bracket.	 Figure 39.
3	• Ensure that bottom o-rings seat and are not pinched in the outlet barbs. • Replacement of o-rings (black) and lubrication with Dow 111 or equivalent is recommended. • Black quad rings shown on previous slide.	 Figure 40

CARBONATION DIAGNOSTICS

CAUTION: Before servicing and or removing any fittings or components from carbonator, make sure to shut off gas and water to system. Use the pressure relief valve to remove all pressure from the system.





Carbonation Tank Cross Section

Gassing Out

If the carb water valve is actuated and only gas comes out, this could be one of several issues:

1. **No City Water.** Check to make sure there is at least 45 psi water to the pump and that no valves or restrictions exist in front of the pump.
2. **Carb pump time out.** The pump has a safety timeout if the water source is shut off. After the water source has been returned, power cycle the pump to reset the error and restore function.
3. **Carb Pump not turning.** When the system is gassing out, the probes and MCB should be sending 120 VAC to the pump. Check 120 VAC power to pump at MCB output and from harness that plugs into pump. If power is present, replace the pump. If no power is present then the probes or MCB might be faulty.
4. **Probes or MCB board not functioning.** The probes require a good ground on the carb tank to function. Check the ground connection to make sure it is connected or no corrosion or loose nuts. Next remove and replace level probes. If system still does not function check connection to MCB before replacing.
5. **Improper gas pressure (Too High).** If the incoming CO₂ is too high it will prevent the water from entering the tank. While this should be regulated at the source it is important to validate this system is functioning properly.

Low or No Carbonation

If the carb water valve is actuated and there's no carbonation or low carbonation, but not gassing out, it can be several issues:

1. Improper CO₂ pressure or no supply gas (too low).
2. Malfunctioning CO₂ and or water check valves.
3. Probes or MCB board not functioning.
4. Bad ground on carb tank not turning on pump.
5. Faulty pump on carbonation deck.

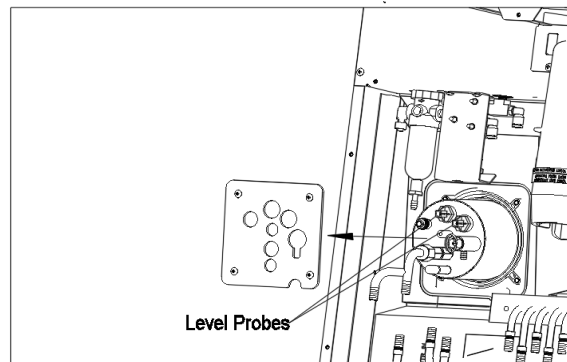
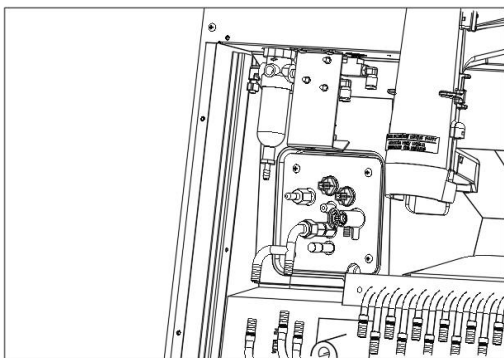
Carbonation Pump Not Cycling

1. Carb pump failure or no power from MCB.
2. Probes or MCB board not functioning.
3. Bad ground on carb tank.

Carbonation Tank Service

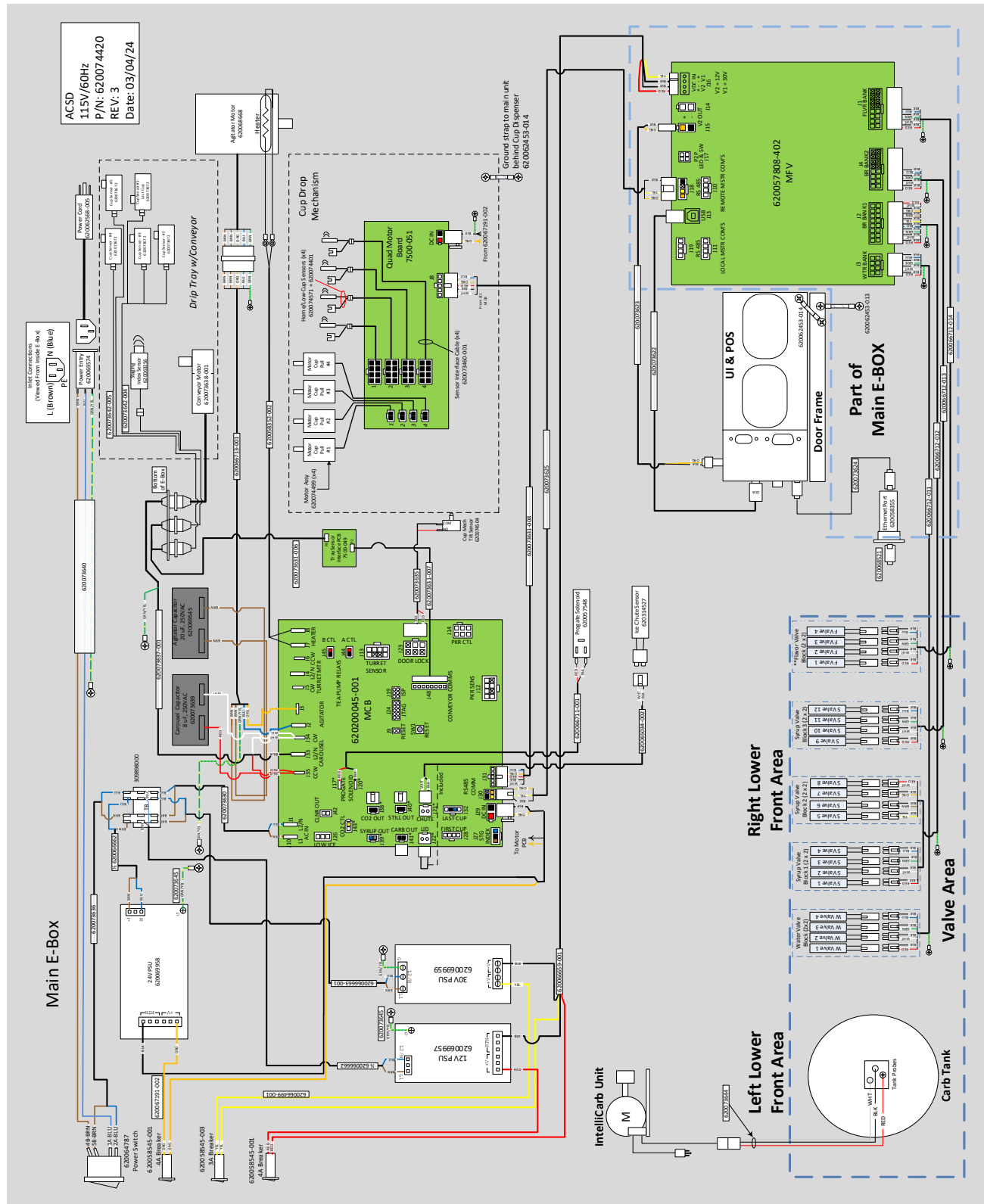
The ACSD design allows removal of the carbonation tank if required. Before considering this procedure, make sure ice is removed from the cold plate around the carb tank, or after removal, the ice will need to be cleared from the location it occupies.

1. Disconnect CO₂ gas and water from the dispenser and depressurize using the pressure relief on the carb tank.
2. Remove water and CO₂ lines to the carbonation tank.
3. Disconnect the carb probe harness and ground cable.
4. Peel back the insulation to expose the four mounting screws at the corners of the mounting plate.
5. Remove the four mounting screws.
6. Pull to slide the tank out of the cold plate assembly.



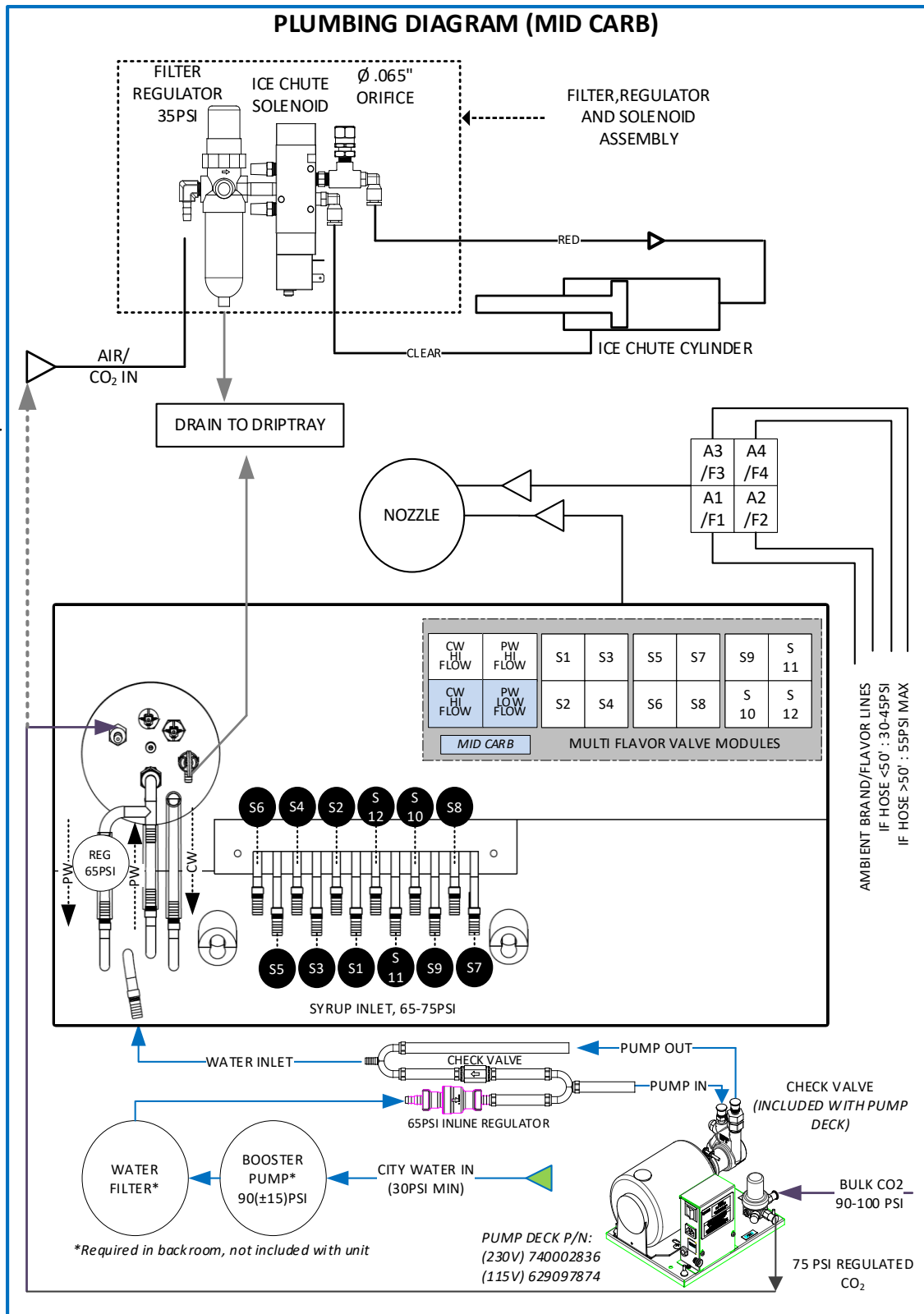
SCHEMATICS & DIAGRAMS

SCHEMATIC WIRING DIAGRAM 115V



[illegible]

PLUMBING DIAGRAM



620074689 REV 3



Marmon Foodservice Technologies Inc.

www.marmonfoodservice.com

www.cornelius-usa.com