ABS 2.0

Service Manual

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

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Contact Information:

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

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CORNELIUS INC
101 Regency Drive
Glendale Heights, IL
Tel: + 1 800-238-3600

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RECYCLE

Correct Disposal of this Product

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 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.
- Unit must be located in an area with nearest access to floor drain port, preferably under the foot print of unit.
- **DO NOT** Let anyone operate the unit without proper training. This appliance is not intended for use by children. Children should be supervised to ensure that they do not play with the appliance.
- The appliance is not to be used 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.
- Keep your unit in proper working condition and do not allow unauthorized modifications to the unit.
- This unit must be installed and used as per the requirement in the specification section of this manual.
- If freezing occurs, move the unit to a location maintained at ambient called in specification section of this manual.

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NOTE: The dispenser is not designed for a wash-down environment and MUST NOT be placed in an area where a water jet could be used.

QUALIFIED SERVICE PERSONNEL

⚠ WARNING:

Only trained and certified electrical, plumbing and refrigeration technicians are to 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:
- Access to the service area is restricted to persons having knowledge and practical experience of the appliance, in particular as far as safety and hygiene are concerned.

⚠ 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.

⚠ WARNING:

It is the responsibility of the installer to ensure that the water supply to the dispensing equipment is provided with protection back flow by an air gap as defined in ANSI A 112.1.2-1979; or an approved vacuum breaker or other such method as proved effective by test and must comply with IEC 61770 and all federal, state and local codes.

GENERAL INFORMATION

SYSTEM OVERVIEW

The Automated Beverage System ABS 2.0 is an upgraded version of ABS. The ABS 2.0 is designed for drive-through area installation or other restricted area that is accessible to authorized personnel only. When a beverage is ordered from the P.O.S. register, the ABS 2.0 automatically drops a cup, fills it with ice and dispenses the correct amount and type of any syrup-based beverage. The finished drink is then moved by the carousel to the pick-up station and the drink description is displayed on the touchscreen.

Operation of the ABS 2.0 is restricted to employees and service personnel that have been trained and certified in the proper operation, service and maintenance of the equipment.

SPECIFICATION

Table 1.Product Specification

Unit Dimensions	**Length**	**911.86 mm [35.9 inch]**
	Width	**901.70 mm [35.5 inch]**
	Height	**1905 mm [75.0 inch]**
Unit weight	**Dry weight**	**267.62 kg [590 lbs] (Dry)**
	Operational weight (With ice, water, etc.)	**362.87 kg [800 lbs]**
Cooling method	**Method of product cooling**	**Cold plate & on board chiller for condition "C"**
Ice storage capacity	**W/o bin extender**	**61.24 kg [135 lbs]**
Electrical	**Line voltage**	**621058590: 115 ± 10% VAC, 60 Hz, 1 Phase 621058773: 220-240 VAC, 50-60 Hz, 1 Phase**
	Current	**3A**
	Connection method	**115V/60Hz (North America): IEC-NEMA 5-15P 220-240V, 50-60Hz (Rest of World)**
Water	**Supply pressure**	**0.55 ±0.10 MPa [90 ±15 psi] static**
	Supply method	**12.7 mm [1/2 inch] ID tube (Python)**
Syrup	**Supply pressure**	**0.44 ±0.14 MPa [65 ±20 psi] Optimal**
	Supply method	**9.52 mm [3/8 inch] ID tube (Python)**
Temperature	**Water & Syrup**	**Max 1.7°C (35°F) Water & 3.3°C (38°F) Syrup**
	Ambient Operating Temperature	**18°C (65°F) to 35°C (95°F)**
Air and CO_2	**Supply pressure**	**CO_2/Compressed Air: 0.55 ±0.07 MPa [90 ± 10 psi]**
	Supply method	**9.52 mm [3/8 inch] ID tube**
Clearance Requirement	**Top**	**No ice Maker:1905mm [75 inch] + 304.8 mm [12 inch] refill area = 2209.8 mm [87 inch] With ice Maker: 2501.9 mm [98.5 inch]**
	Back	**25.4 mm [1 inch] clearance to wall (min)**

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FEATURES

Table 2. Product features

Mounting type (leg/caster)	**4 legs mounted**
UI interface type and size	**Two 177.8 mm [7 inch] touch screen display**
Number of Brands	**8**
Cup storage	**6 cup dispenser**
Lid Storage	**8 lid compartment**
Ice dispensing	**1 portion controlled ice dispenser**
Product dispensing	**Cornelius Multi Flavor Valve**
Automatic cleaning	**Wand type cleaning nozzle Kit.**
No of stage drinks	**6**

ACCESSORIES

Table 3.Accessories compatible with ABS 2.0

SL NO.	Accessories	Part No:
1.	ICEMAKER ADAPTER KIT ABS 2.0 MANITOWOC/SCOTSMAN	629097799
	ICEMAKER ADAPTER ABS 2.0 HOSHIZAKI	629097800
2.	PRE - CHILLER 120V /60Hz	560000270
	PRE - CHILLER 230V /50Hz	560002730

SUPPORTED ICE-MAKER

Table 4. List of ice maker compatible with ABS 2.0

SL NO.	BRAND	MODEL
1	MANITOWOC	IB0620C-161
2	MANITOWOC	IB0820C-161
3	MANITOWOC	IB1020C-161
4	MANITOWOC	1B0694YC-161
5	MANITOWOC	IB0894YC-161
6	MANITOWOC	IB1094YC-161
7	SCOTSMAN	EH222
8	SCOTSMAN	ECC1410
9	HOSHIZAKI	KMS-1122MLH
10	HOSHIZAKI	KMS-1122MLJ

UNIT DRAWING

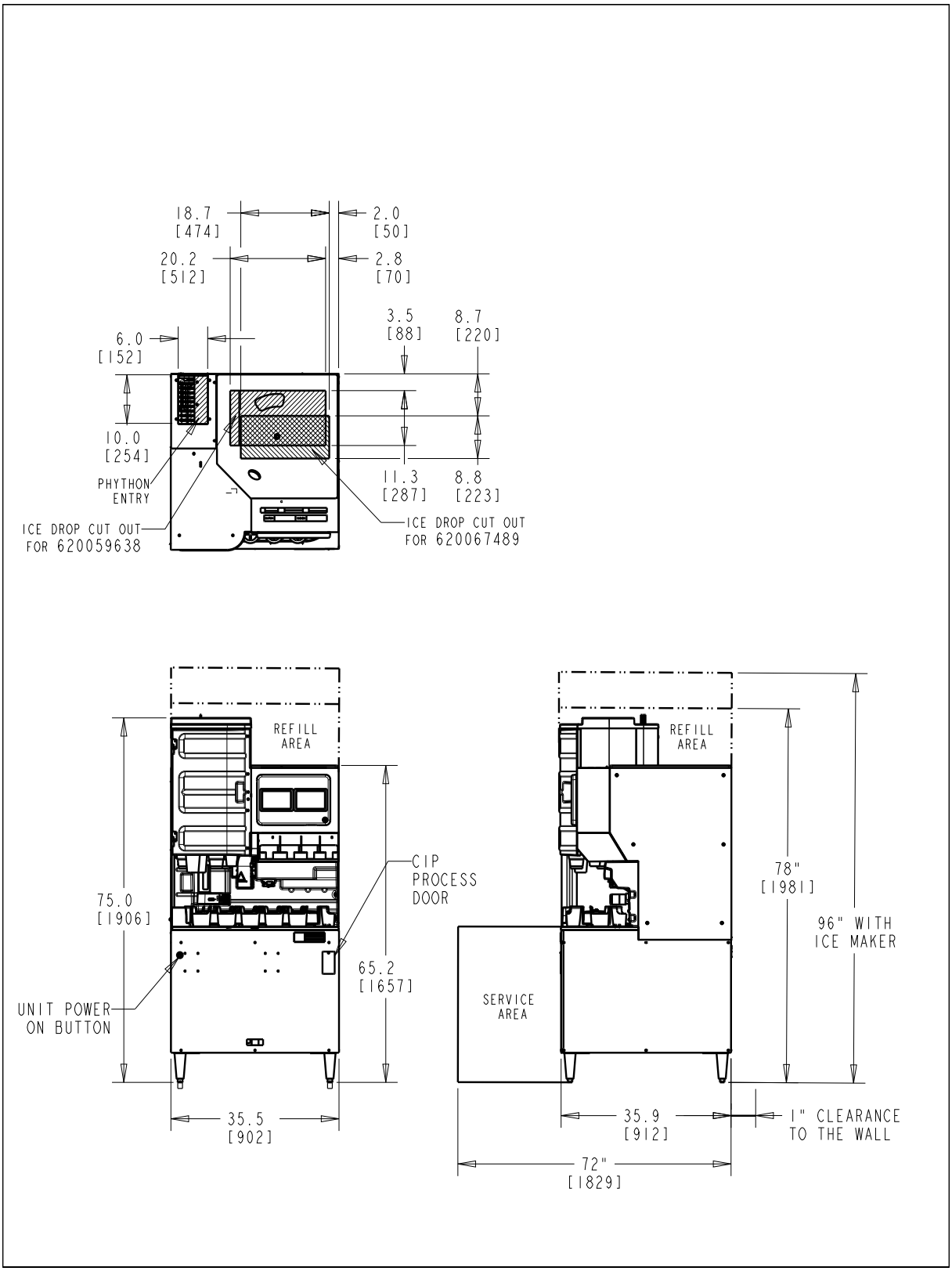


Figure 1.

Dimension Unit **in [mm].**

E-BOX CONFIGURATION

⚠ WARNING:
Disconnect power to the unit before accessing the E-box.

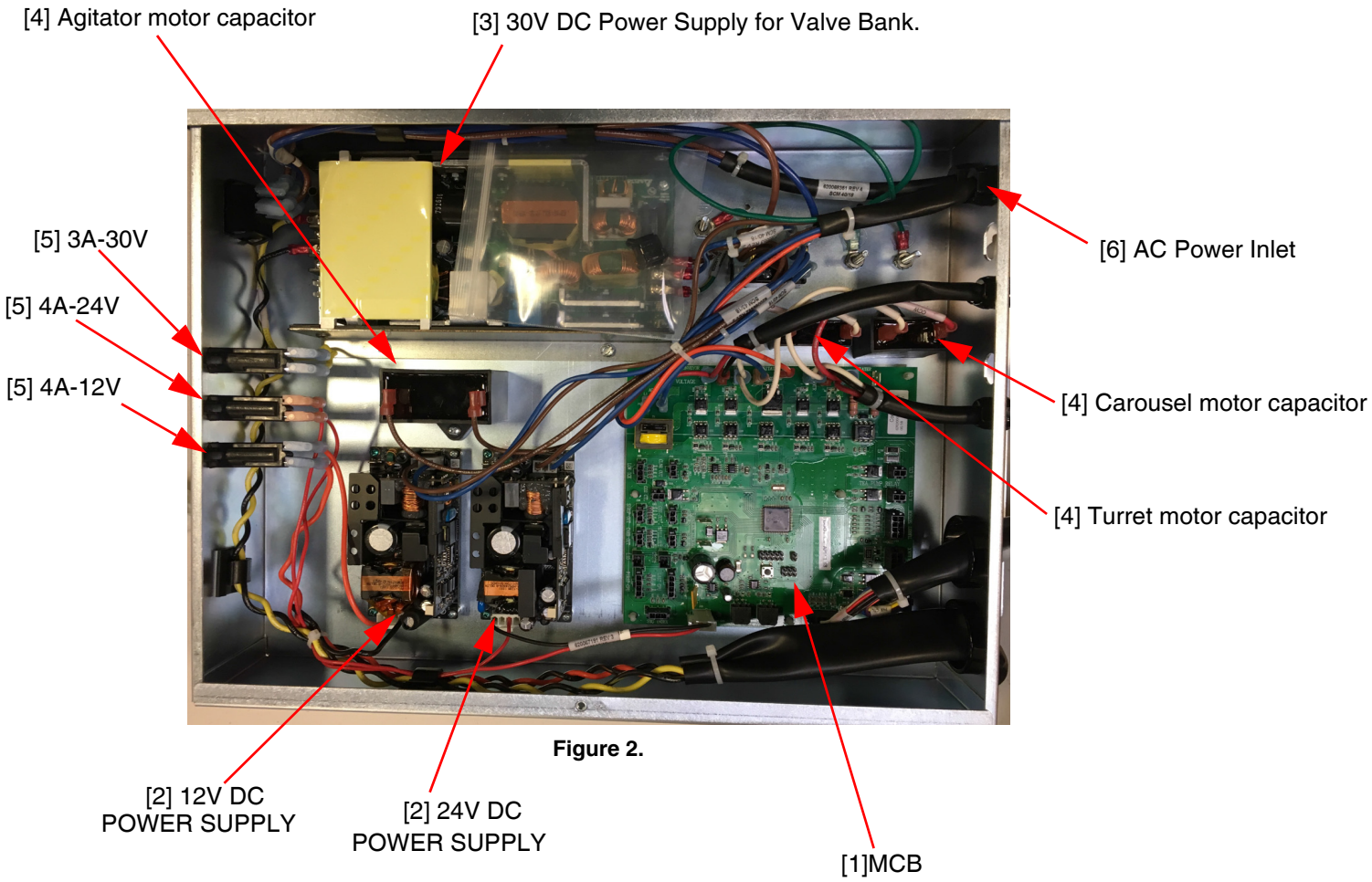


Figure 2.

[1] MCB.

[2] 12V DC/ 24V DC power supply.

A. 12V DC - for screen.

B. 24V DC - Power for all sensor.

[3] 30V DC Power supply for Valve bank.

[4] A. Turret motor capacitor.

B. Agitator motor capacitor.

C. Carousel motor capacitor.

[5] Circuit breakers as follows.

C. 4A - 12V DC.

D. 4A - 24V DC.

E. 3A - 30V DC.

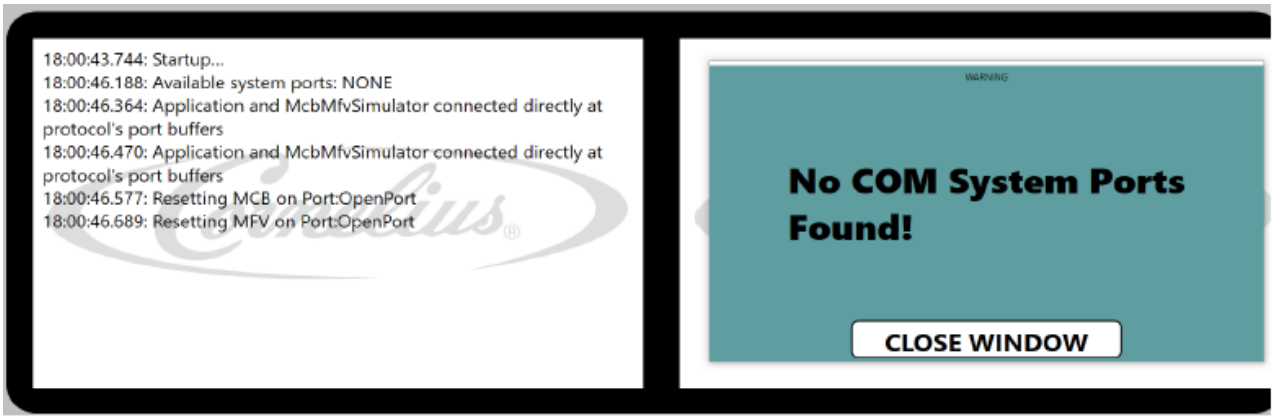
[6] AC Power Inlet.

INITIALIZING and SELF TEST

Turn ON the ABS 2.0 unit at the ABS 2.0 ON/OFF switch located on the left top corner of the stand. During the power-up sequence the **Self Test** and **Initializing** messages will be displayed as each test is being made. When the tests are complete the final message will be displayed.

Figure 3.

If the Initialing process ends with a "**No COM System Ports Found**" see message, it means that the communication cable between the POS system and ABS system is not connected. If it is not convenient to connect the cable at this time but you wish to proceed with the Set Up, Choose **CLOSE WINDOW** from screen to bypass the Failed message.



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MANUAL MODE OPERATION

In the MANUAL mode, POS data is updated and ALARM messages are displayed. In MANUAL mode the highlight flashes to alert operator that the ABS 2.0 unit is in the MANUAL mode. While in the MANUAL mode, POS drink orders continue to be received and placed in the order buffer.

Figure 4.

In the manual mode select the **Brand** then Press and hold button to dispense Beverage as required. as same as Press **ICE** button to dispense ice. There is no need of cup selection in manual mode.

NOTE: When Manual mode please remove the carousel for dispense drinks, See Carousel Assembly Removal on page 14.

AUTOMATIC MODE OPERATION

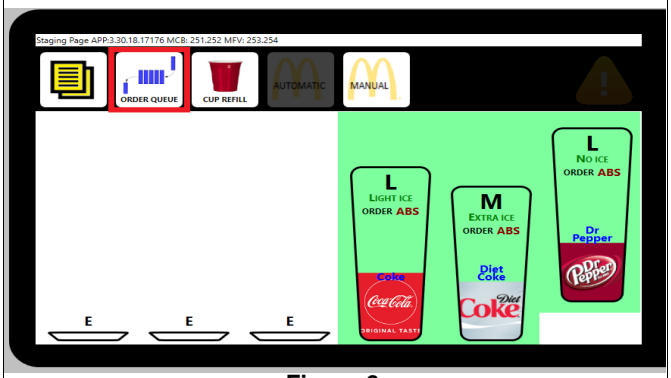
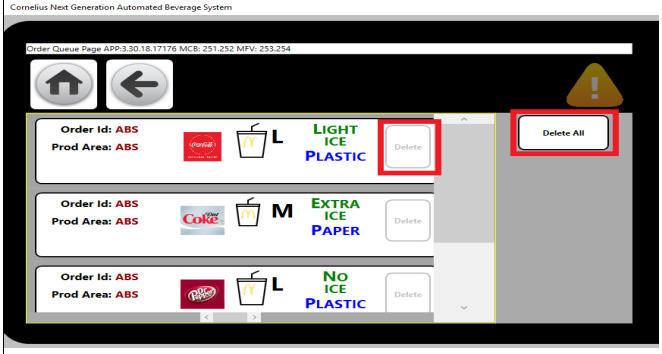
In automatic mode the beverage dispense automatically from the input of POS system. By default ABS 2.0 System is setup to Automatic operation mode.

If alarm conditions are present (but previously acknowledged) the ABS 2.0 status will indicate **Warning.** While the Warning status is present. the word **AUTOMATIC** will flash.

Figure 5.

CLEAR THE POS ORDER BUFFER

Table 5.

Step	Action	Figure
1	Select **Order Queue** as shown Figure 6.	
		Figure 6.
2	A. Delete Undesired Orders or **Delete All** B. If several orders stack up and are no longer needed, it may be easier to delete all and manually enter in what is missing	
		Figure 7.

Semi-Automatic Drink Order Entry

Manual order entry can be made without entering the drink at the POS. This is normally done to correct an error in entry, to pour a replacement drink or to accommodate a customer special request.

NOTE: Steps 1, 2, 3, 4 below can be made in any order. If any selection in any step is incorrect it may be reentered. "Order Entry" will be displayed on the second line of the display.

NOTE: Pressing the Clear button at any time will cancel the operation.

While in the **Automatic** mode:

1. Press a **Cup** button to select the size of drink desired. The display will indicate the selection made.
2. Press a **BRAND** button to select the brand desired. The display will indicate the selection made.
3. Press the **No Ice** or **Extra Ice,** or **FLOAT** button if either ice feature is desired, or a float drink is requested. Not pressing these buttons will cause the normal ice portion to dispense. The display will indicate the selection made. The **No Ice, Extra Ice** and **light Ice** buttons are toggle buttons, so, if an error is made simply press the button again to cancel.

4. After the proper selections are made, press the **Enter** button to dispense the drink.

Once entered, the ABS system will determine how many drinks are ahead in the POS queue before the Semi--Automatic drink order will be started.

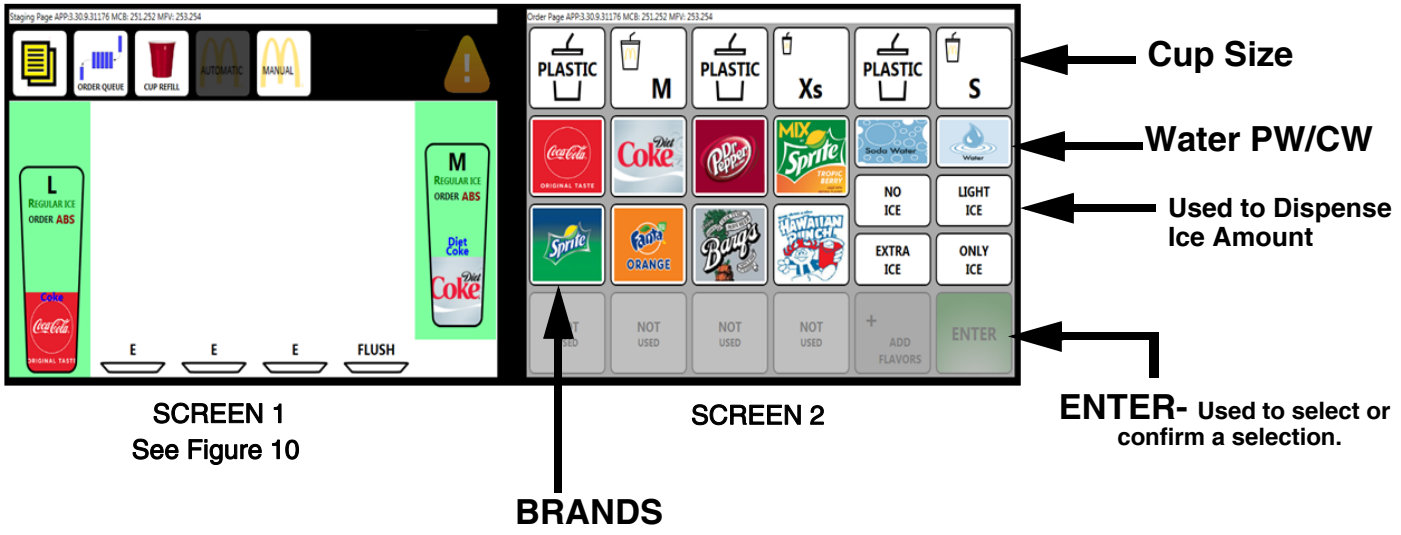
Figure 8.

To Service

Introduction to ABS 2.0 Programming

Default Settings/Restoring Settings

The ABS 2.0 system is factory set to satisfy the majority of all installations. Do not make any adjustments until you are sure the factory settings will not satisfy the store requirements. Touch Panel Layout & Explanation



Menu

Automatic Mode

Manual mode

Order Queue

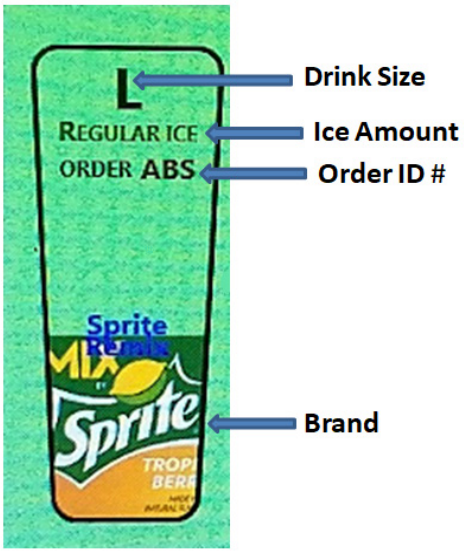


Figure 9.

DISPLAY EXPLANATION

The screen displays represented in the following illustrations are samples of the screen data.

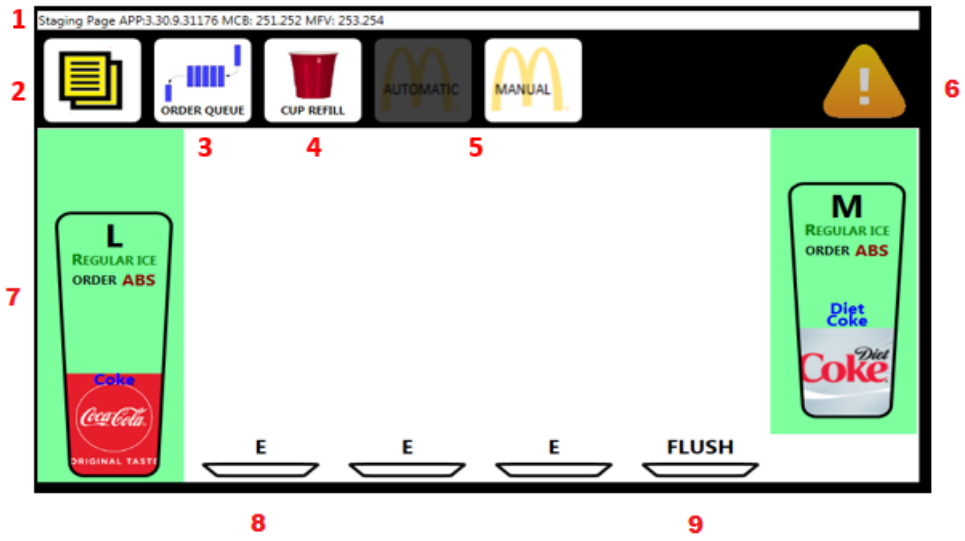
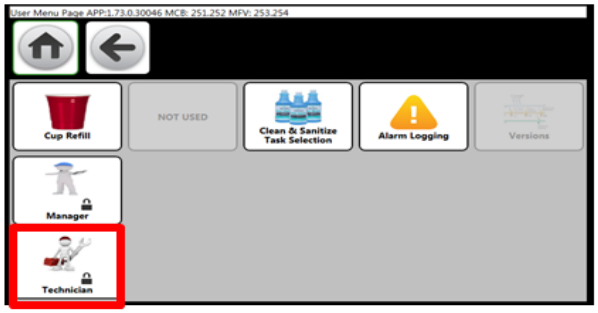
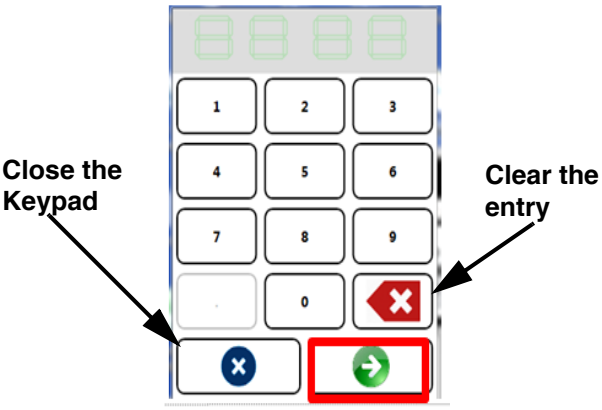


Figure 10.

1. Software Version.
2. Page/Menu.
3. Order Queue.
4. Cup Refill.
5. Automatic/ Manual (Dark is Selected).
   -Currently in Automatic Mode
6. Alarm, cleaning due or past due.
7. Order - Current example.
   -L (Large), Regular (Ice type)
   -Order (ABS 2.0 = Semi Auto or Order Number)
8. Finished Drinks 1-6, left to right, Coke is Position one.
9. Flush - CW has flushed the Nozzle.

ENTERING the TECHNICIAN SCREEN

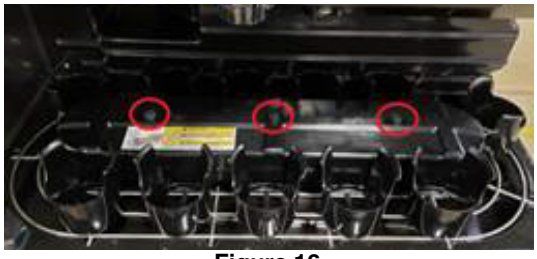
Table 6.

Step	Action	Figure
1.	1. Select the Menu as shown in Figure 11.	 Figure 11.
2.	3. Select the Technician Icon as shown Figure 12.	 Figure 12.
4.	5. Enter 9876, then green arrow as shown Figure 13.	 Figure 13.
6.	7. See the Technician Screen as shown Figure 14.	 Figure 14.

CAROUSEL ASSEMBLY / SPLASH PANEL REMOVAL

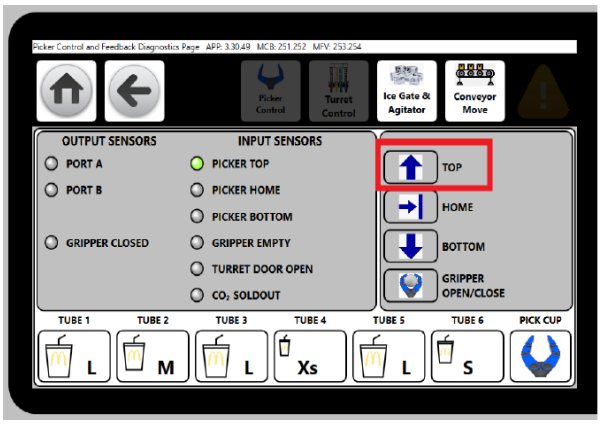
CAROUSEL ASSEMBLY REMOVAL

Table 7.

Step	Action	Figure
1	Select manual button from start screen as shown Figure 15.	 **Figure 15.**
2	Remove cover by loosening the 3 thumb screws and lifting it upwards.	 **Figure 16.**
3	Remove the carousel by lifting it upwards. **NOTE:Avoid carrying carousel by cup holder.**	 **Figure 17.**
4	Remove the grille by lifting it upwards. **NOTE:Note cup locater spring position.**	 **Figure 18.**

SPLASH PANEL REMOVAL

Table 8.

Step	Action	Figure
1	Open turret door (optional remove turret assembly) and remove the five screws holding the splash panel, as shown in Figure 19 and pull the panel forward and down to remove it. **NOTE: 5th screw is behind Cup lifter / grabber**	 **Figure 19.**
2	A. From the Technician Screen select Diagnostics menu, In this menu select picker control and feedback button, in this screen select the Top button to move picker to up. This is to allow access to the screw behind the Lifter/Grabber assembly. B. If no power/air in the unit, directly up/down the Picker by hand.	 **Figure 20.**
3	Remove outer nozzle and diffuser before taking off panel.	
4	Gently pull the splash panel forward from the bottom and move the lifter/grabber up to fully remove.	
5	Replace the splash panels onto the unit.	

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NOZZLE DIFFUSER REMOVAL

NOTE:Diffuser cleaning or sanitizing is recommended twice weekly.

Table 9.

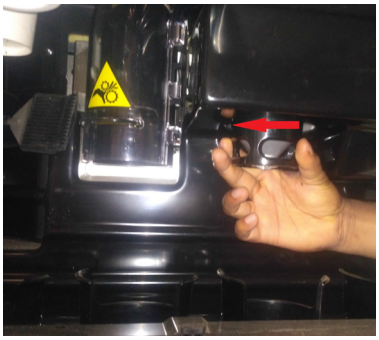
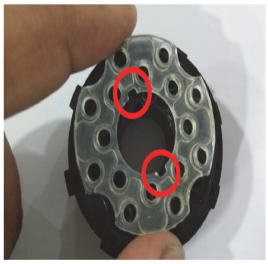
Step	Action	Figure
1	Turn nozzle clockwise (left), Than pull down, the diffuser will stay in position (it is keyed only, fits one way).	 **Figure 21.**
2	Pull diffuser down. Clean with warm soapy water then sanitize and reinstall. **NOTE:Do not soak for more than 2 minute. Seal may warp**	 **Figure 22.**
3	Remove Seal from Diffuser by inserting thumb into center and pulling against the 2 surfaces to pull the seal away from the diffuser.	 **Figure 23.**
4	Line up the locating notches on inner 10circle of both the Seal and Diffuser. Push the Silicone Seal into the Diffuser until it sits flat.	 **Figure 24.**

Table 9. (Continued)

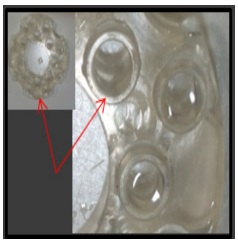
Step	Action	Figure
5	This side up – you should be able to feel the raised edges of the seal holes when you re-insert into nozzle.	 **Figure 25.**
6	With the Seal side up, align the notches in the Diffuser with the ribs on Nozzle Base. Push the Diffuser up into Nozzle Base.	 **Figure 26.**
7	The Diffuser will stay in place if correctly installed.	 **Figure 27.**
8	While pushing upwards, rotate the Nozzle towards the back of the unit.(CCW).	 **Figure 28.**
9	The Nozzle should **NOT** sit on an angle. It should sit even with the unit	 **Figure 29.**

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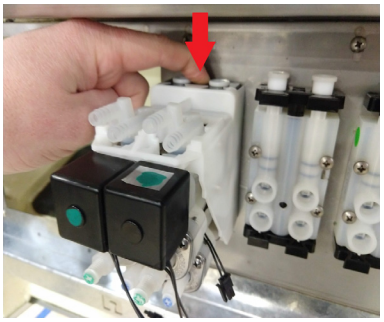
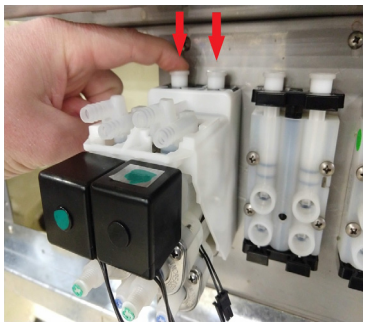
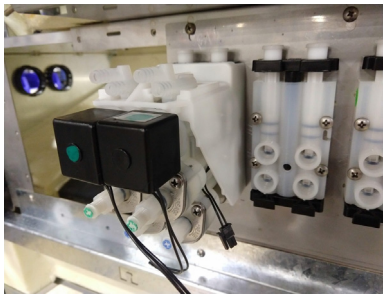
Table 9. (Continued)

Step	Action	Figure
10	If the Nozzle is installed on an angle, it is Incorrectly installed. An incorrectly installed nozzle will have decreased performance (dripping, excess carryover, etc).	 Figure 30.

MULTI-FLAVOR VALVE CONFIGURATION

WARNING:
Disconnect power to the unit before accessing the MFV valve.

Table 10.

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

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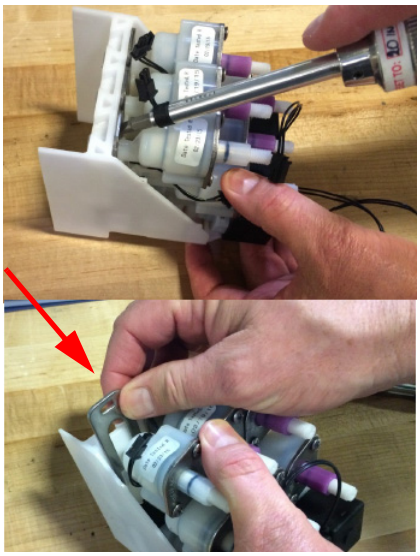
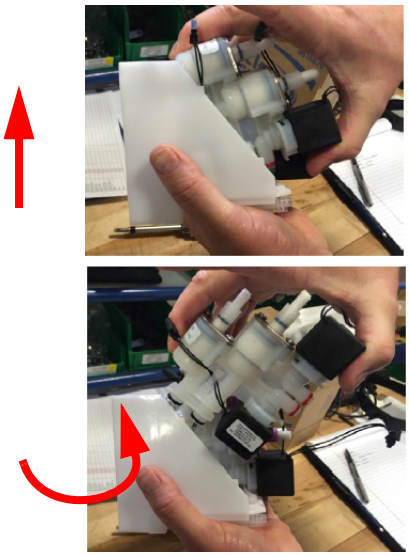
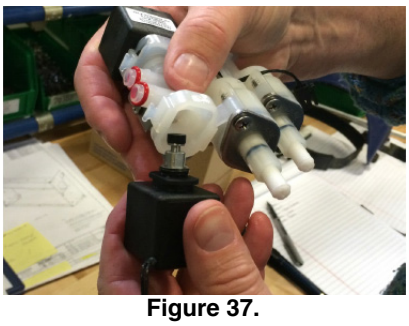
Disassembly Of An MFV Valve Module

Table 11.

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

REASSEMBLY OF MFV VALVE

Table 12.

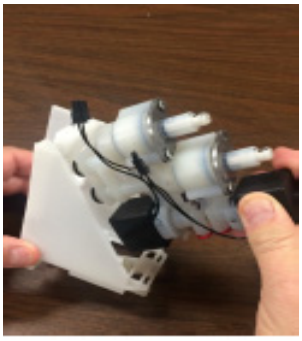
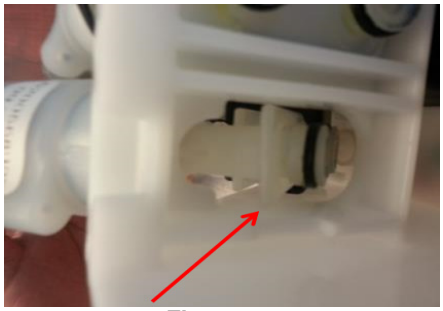
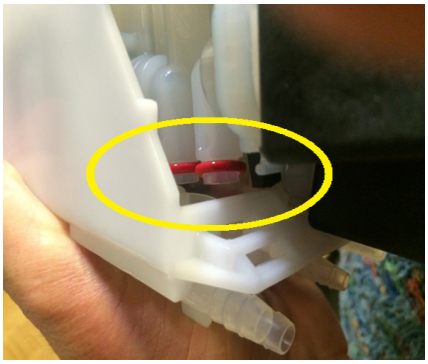
Step	Action	Figure
1	Place valve into the valve carrier. **NOTE: Use only Dow III or equivalent on all O-rings**	 **Figure 38.**
2	Start the solenoid at a 45 deg. angle and ensure that rear flange of the valve fits behind the wall of the carrier bracket	  **Figure 39.**
3	• Ensure that bottom o-rings 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**

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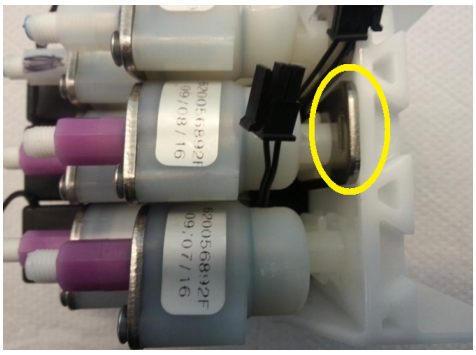
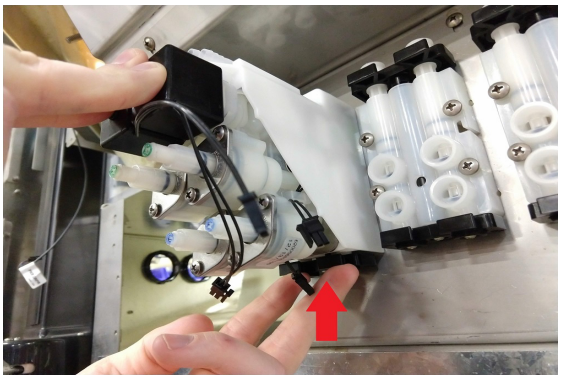
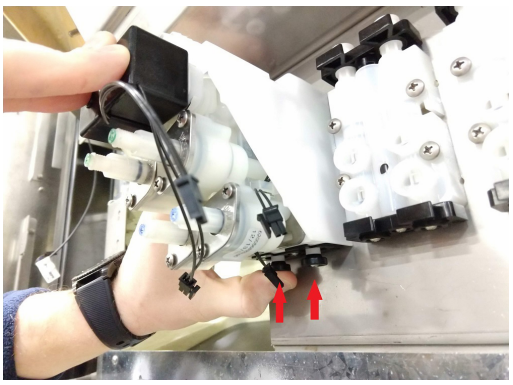
Table 12.

Step	Action	Figure
4	The valve is back in position and ready to insert stainless steel locking clip.	 **Figure 41.**
5	• Place valve on the backblock. (make sure wires are not pinched) • Push up on dovetail to lock valve.	 **Figure 42.**
6	• Push spindles up to open shut offs. • Re-connect wire harnesses. • Test for leaks and function.	 **Figure 43.**

ICE CHUTE COVER REMOVAL / REPLACE

Table 13.

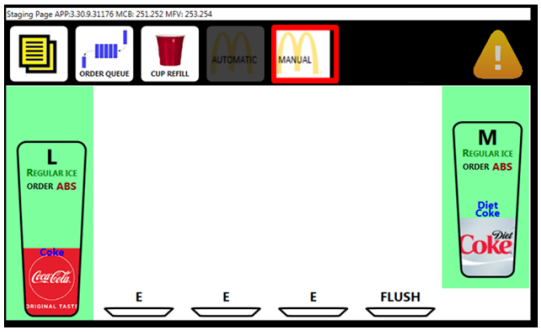
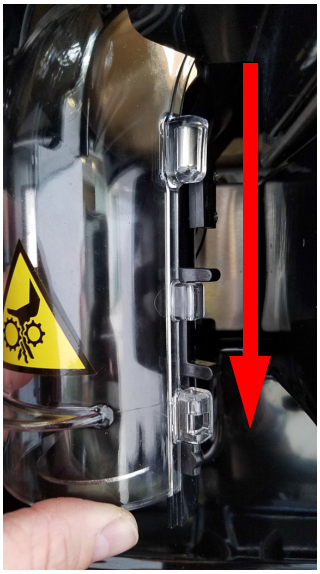
Step	Action	Figure
1	Select manual button from start screen as shown in Figure 44.	 **Figure 44.**
2	Lift chute upward to release the locking tabs as shown in Figure 45.	 **Figure 45.**
3	Then lift chute upwards to remove as shown in Figure 46.	 **Figure 46.**

Table 13.

Step	Action	Figure
4	Press downward to replace the Ice chute cover. and ensure the sensor working fine.	 **Figure 47.**

Water & Syrup Line Connections

The standard unit supports the following:

- 2-water lines from carbonator/chiller/ Recirculation system.
- 1-water line for non-carbonated drinks.
- 8-Syrup lines.

Connecting Product to the Unit

The unit must have a product supply connected to each in let on the cold-plate. Refer to the cold-plate diagram below Figure 48.

NOTE:All inlet connections are clearly marked with a label adjacent to the inlet connections. Always check for leaks on all connections.

Product Line Connections

To connect the syrup and water from the back-room package to the unit,

NOTE:If lines are to be cut, mark the line numbers above the cut with a marker. If syrup lines are mixed up they can be mapped later in the control. Make sure that syrup lines and brand lines are NOT mixed.

Figure 48.

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Set Flow Rate and Valve Ratio

NOTE: Cold plate should have ice on it and should be cold.

Remove the carousel assembly to allow easy access to the area under the valve for the ratio cup. Refer Table 8. for accessing the MFV valves in the unit.

Table 14.

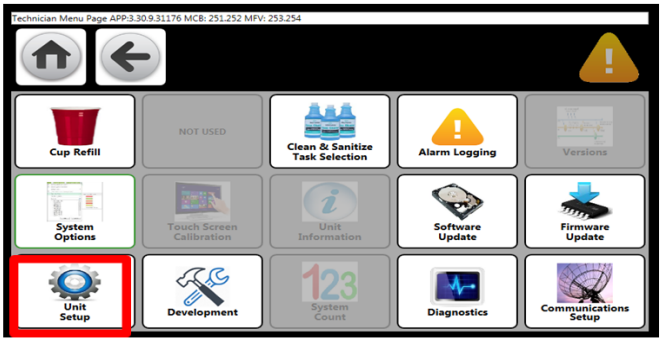
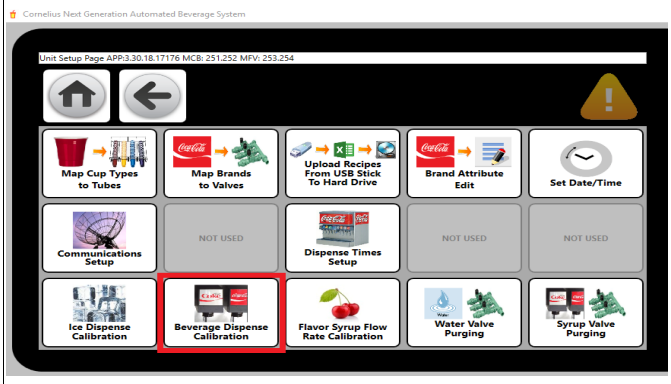
Step	Action	Figure
1	Select the Unit setup Menu from technician screen as shown Figure 49.	 **Figure 49.**
2	Select the Beverage Dispense Calibration	 **Figure 50.**

Figure 51. Front View, Valve

ADJUSTING WATER FLOW RATE

Overview: The ABS 2.0 uses 2 MFV water valves for both carbonated water (CW1 & CW2) and plain water (PW1 & PW2). Each valve module has a high-flow orifice and a low-flow orifice. The high-flow orifice provides approximately 75% and the low-flow orifice provides approximately 25% of the total flow rate. During a beverage dispense, both valves are activated and together provide the total water flow rate required.

NOTE: The default water volume shown on the Beverage Dispense Calibration screen is 12.00. This is the target volume after calibration which equates to a water flow rate of 3.0 oz/sec.(88.7ml/sec) If the final water flow rate is different than 3.0 oz/sec(88.7ml/sec), this procedure will update the default value.

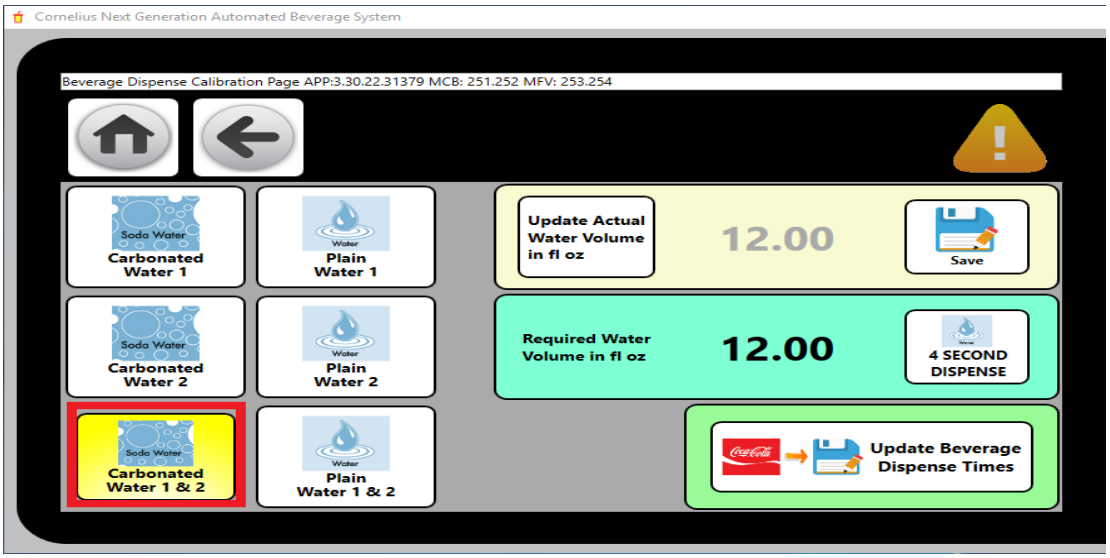


Figure 52.

1. From the Beverage Dispense Calibration screen, select the button for **Carbonated Water 1**. Hold the water compartment of the ratio cup under the nozzle and press the **4 SECOND DISPENSE** button. Target volume for CW1 is approximately 9 ounces(226.16 ml). Turn the **CW1** adjustment screw on the MFV valve clockwise to increase the flowrate or counter-clockwise to decrease the flow rate until the target volume is reached.
2. Next, select the button for **Carbonated Water 1 & 2**. Hold the water compartment of the ratio cup under the nozzle and press the **4 SECOND DISPENSE** button. Target volume for CW1 & CW2 is 12 ounces (354.9 ml). Turn the **CW2** adjustment screw on the MFV valve clockwise to increase the flow rate or counter-clockwise to decrease the flowrate until the target volume is reached.
3. Repeat steps 1 & 2 for the plain water valves PW1 & PW2. The total target volume for plain water is 12 ounces.

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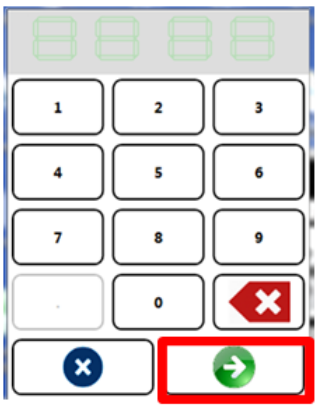
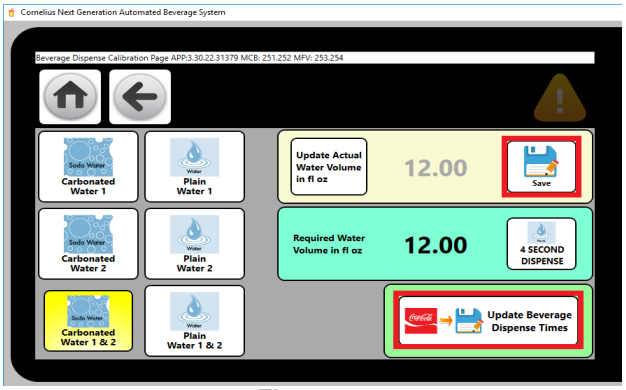
SET OVERALL WATER VALVE

NOTE: This is the step that adjusts the pour times of all beverages dispensed from the ABS 2.0. If this step is not completed, then drinks will either over- or under-pour depending on the flow rate adjustment of the valves.

Table 15.

Step	Action	Figure
1	After both CW valves are adjusted, do another 4 second dispense and measure the volume dispensed in the ratio cup. Select **Update Actual Water Volume in oz** and using the key-pad enter the volume measured in the ratio cup and press the **green arrow**.	 **Figure 53.**  **Figure 54.**
2	Press **Save** and then press **Update Beverage Dispense Times**. The dispense times for all drink sizes and types are now updated based on the set flow rate.	 **Figure 55.**
3	Repeat steps 1 & 2 for the plain water valves PW1 & PW2.	

TROUBLESHOOTING FOR WATER VALVE:

- If drinks **overfill**, this means the dispense times are too high for the flow rate that the valves have been adjusted to. Repeat the above steps and **increase** volume entered. This will shorten the dispense time prevent overfilling.
- If drinks **underfill**, this means the dispense times are too low for the flow rate that the valves have been adjusted to. Repeat the above steps and **decrease** volume entered. This will lengthen the dispense time prevent underfilling

ADJUST THE SYRUP RATIO (BRAND)

After the water flow rates are set, the syrup ratio must be adjusted. The water flow rates were set to a target flow rate of 3.0 oz/sec(88.72 ml/sec) and now the syrup flow rates must set to achieve the correct ratio required for each brand. To check the ratio required, select the brand on the right screen and set the valve according to the ratio displayed.

NOTE: Always adjust the ratio for the syrup with the highest viscosity first. Some syrups may be too viscous and you might be unable to achieve the desired ratio. In these cases, the PW or CW flow rate will have to be lowered to permit setting the proper ratio.

NOTE: Once the PW and CW flow rates are set they should not be changed. Any change to the PW or CW will require that all syrup to water ratios be readjusted.

NOTE: Be sure to use the correct ratio cup for the ratio being adjusted.

Figure 56.

U.S.A. Follow The Procedure Below:

1. Hold the ratio cup water compartment below the valve and select the Plain Water button if adjusting a non-carbonated drink or the carbonated water button if adjusting a carbonated water drink.
2. Hold the appropriate ratio cup syrup compartment below the valve.Select the syrup brand and press the **"4 SECOND DISPENSE"**.
3. Acceptable ratio is shown in the illustration below as the Correct Reading within the same bandwidth.

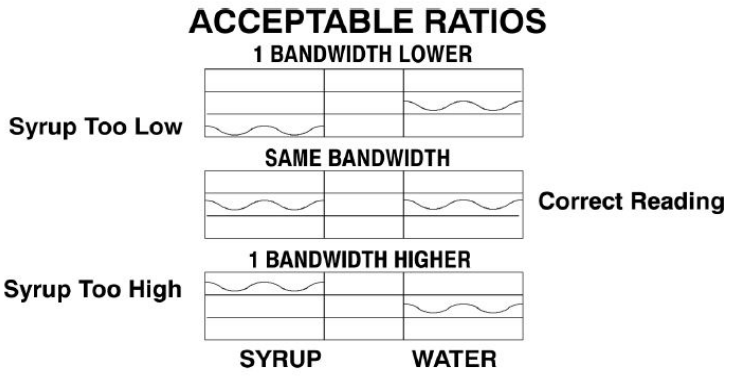


Figure 57. Ratio Cup, Acceptable Ratio

Australia Follow The Procedure Below:

1. Using the table below, determine the volume of syrup that should dispense in the 4 second pour.

Example: The ratio for the brand is 5.25, and it is a carbonated (CW) drink, the unit should dispense 75.7 ml of syrup in the 4 second dispense. If the ratio for the brand is 5.25, and it is plain water (PW) drink, the unit should dispense 66.3 ml of syrup in the 4 second dispense.

Table 16.

Ratio	CW/PW	ml Syrup
5.25/1	CW	75.700
5.25/1	PW	66.300
4.75/1	CW	82.300
4.75/1	PW	72.000
4.25/1	CW	90.100
4.25/1	PW	78.900
9.5/1	PW	39.500

2. Hold the volume measuring device below the valve, Select the syrup brand and press the **"4 SECOND DISPENSE"**.
3. Adjust the flow regulator as required.

See Figure 51 for location of the adjustment screws on the valve.

At the end of this adjustment press the **HOME** button twice to return to the main menu.

SYRUP MAPPING (BRAND)

Syrup Map

The table below, shows all the brand names that are resident in the ABS 2.0 system. The listed brands are the default brands position in units.

Table 17.

DEFAULT SETTINGS		POS PROGRAMMING DATA	
VALVE	**DISPLAY ID**	**POS ID**	**ACTUAL brand**
1	COCA COLA	1	
2	DIET COKE	2	
3	Dr. PEPPER	3	
4	SPRITE REMIX	4	
5	SPRITE	5	
6	FANTA ORANGE	6	
7	BARQ'S ROOT BEER	7	
8	HAWAIIAN PUNCH	8	

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BRAND MAPPING EXPLANATION

The Store POS system will be programmed with each drink flavor. The Brand Map makes the POS system agree with the flavor information in the ABS 2.0 system.

Mapping – First Step

NOTE:The illustration (Figure 58.) does not represent an actual situation. It is for Explanation only.

In this illustration, Diet Coke has been installed at valve #2. We must now tell the ABS 2.0 system that Diet Coke is installed on valve #2. The **SYRUP MAP: EDIT** must be set at **2** Then the **LABEL** must be set to display **DIET COKE** (Figure 58.). When this has been done, the ABS 2.0 system will then display Diet Coke as the flavor dispensed on valve #2.

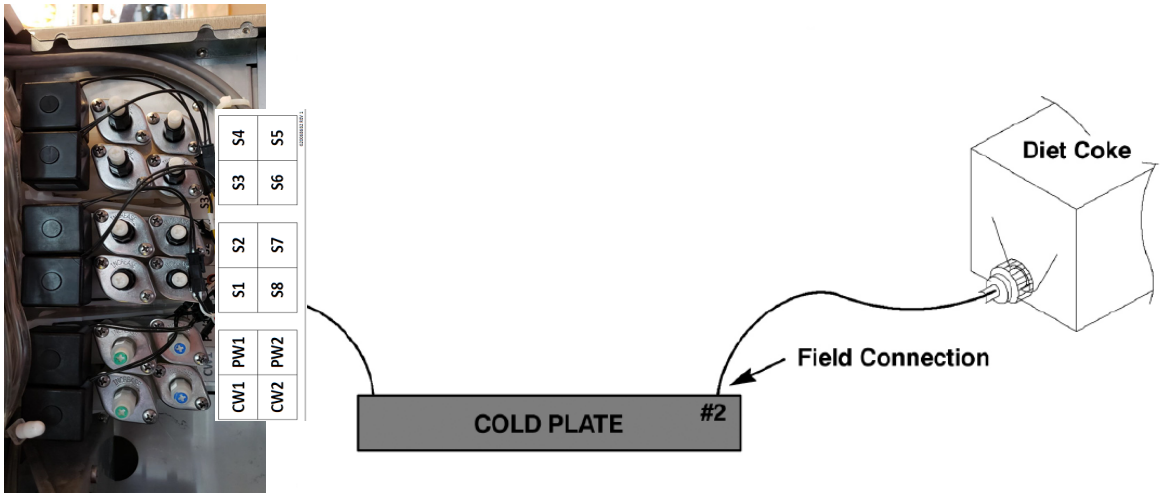


Figure 58.Syrup Map Explanation 1

Drink List

Create a drink list showing the exact position of each drink in the ABS 2.0 system give to GM or keep at the unit (Behind screen)

Table 18.

POS ID	Brand / Aust. Version
1	COCA COLA
2	DIET COKE
3	Dr. PEPPER
4	SPRITE REMIX
5	SPRITE
6	FANTA ORANGE
7	BARQ'S ROOT BEER
8	HAWAIIAN PUNCH

Mapping – Second Step

Table 19.

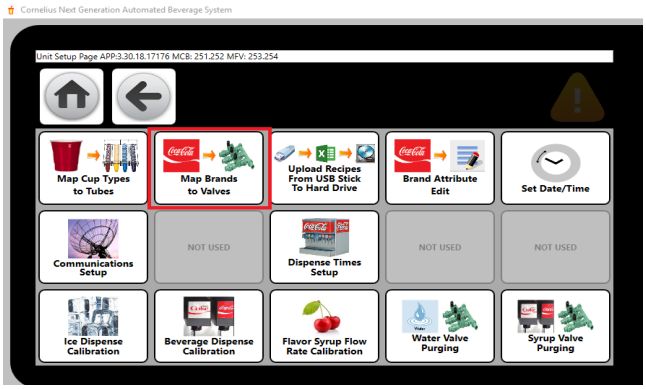
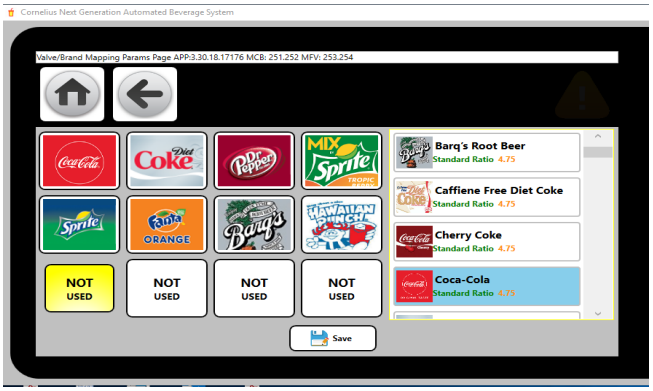
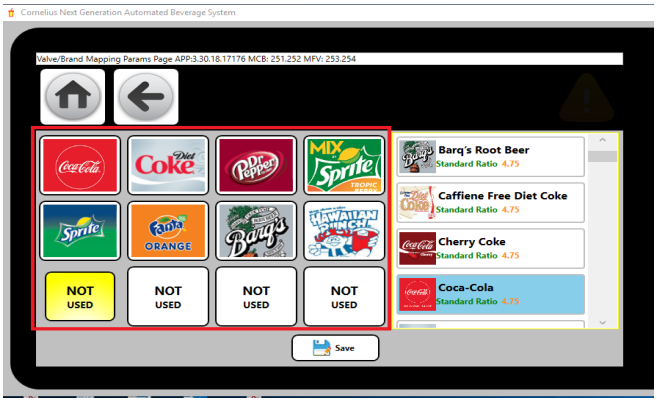
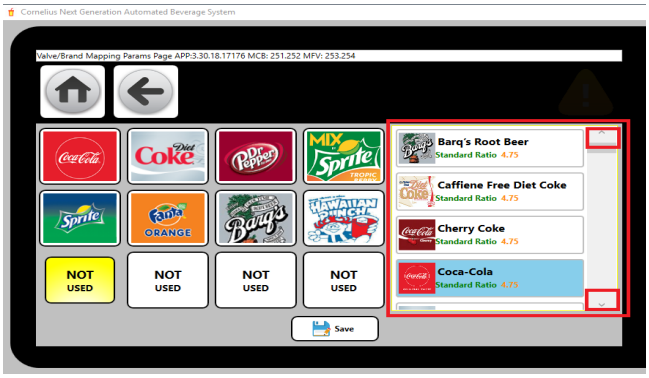
Step	Action	Figure
1.	From unit setup Menu select the Map Brands to Valves as shown in Figure 59.	 **Figure 59.**
2.	Brand mapping menu as shown in Figure 60.	 **Figure 60.**
3.	Select the Valve's as shown in Figure 61. Order 1-4, 5-8 Left to right.	 **Figure 61.**

Table 19. (Continued)

4.	Select the brand to assign the valve by scroll the brand's using of up/down arrow as shown in Figure 62.	 **Figure 62.**
5.	Save the Mapping and back to home or previous menu	 **Figure 63.**

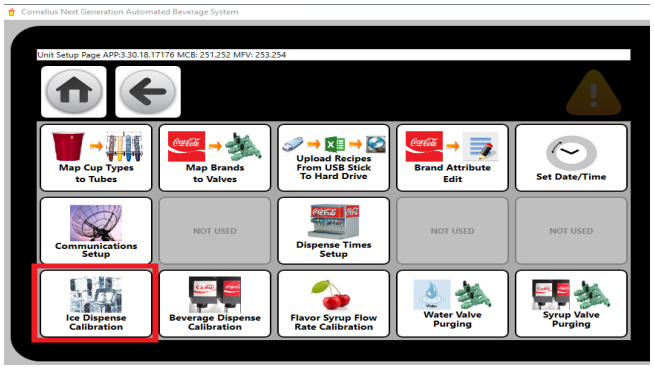
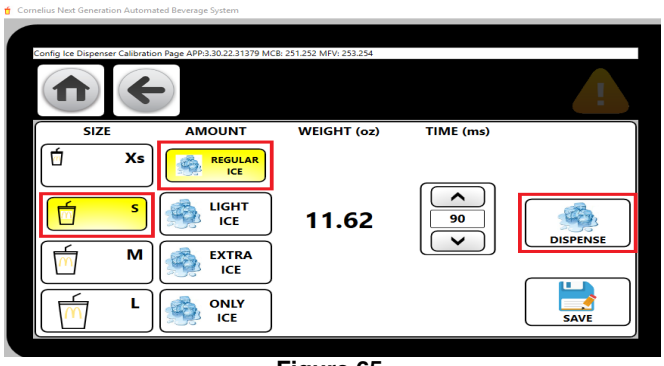
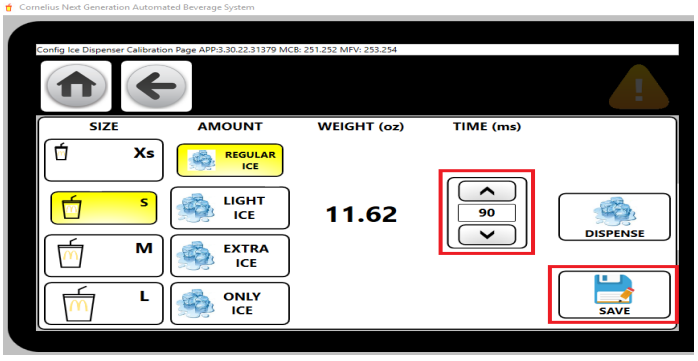
Drink List

Create a drink list showing the exact position of each drink in the ABS system and present this to the POS programmer. The chart at the back of the installation manual can be used for this purpose. Refer Table 17.

ADJUSTMENT ICE

The carousel assembly must be installed before beginning this procedure.

Table 20.

Step	Action	Figure
1.	Place the measuring cup under the ice dispenser.Select the **"Ice Dispense Calibration"** Icon from the Unit setup menu as shown in Figure 64.	 **Figure 64.**
2.	From the Ice Dispense Calibration Menu Select the Cup Size, Amount of Ice and Press **"DISPENSE"** button as shown in Figure 65. and measure the weight of the Ice.	 **Figure 65.**
3.	If weight is not correct adjust the Ice dispense time by pressing the up/down arrow as shown in Figure 66. if correct weight is obtained. Save the setting by pressing the save button.	 **Figure 66.**
4.	Repeat the process for all remaining cup sizes with different amount of Ice and save the setting.	

SAVING THE SET-UP

Select preferences in respective set up and press **"SAVE"** icon shown in Figure 67. to save the setting of the menu

Figure 67.

ALARM and WARNING MESSAGES

Follow the steps to alarm logging

Table 21.

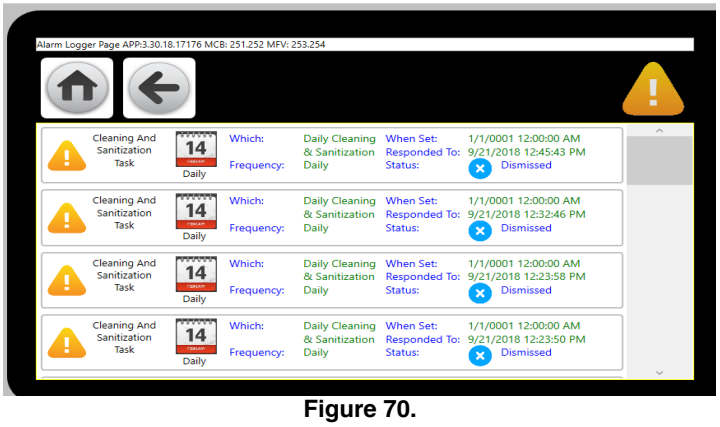
Step	Action	Figure
1.	From the staring page select the Menu page Icon as shown in Figure 68.	 **Figure 68.**
2.	From the menu page select "Alarm Logging" button to entering the menu as shown in Figure 69.	 **Figure 69.**
3.	In the alarm logging menu all alarms and cleanings messages are listed. Use scroll button to view all the messages.	 **Figure 70.**

Table 21.

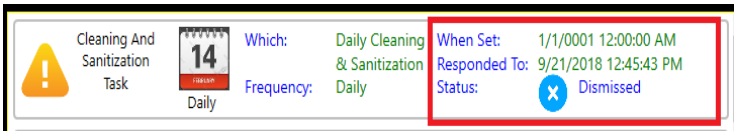
Step	Action	Figure
4.	current status of the messages show at right side as shown in Figure 71.	

Figure 71.

CUP CAROUSEL

DESCRIPTION OF OPERATION

The carousel is controlled by the Motion Control Board. When a drink order is placed at the POS the correct cup is pulled and placed into the carousel. The carousel is then rotated clockwise by the gear motor to move the cup to the ice drop position based on the following information:

- If a cup is in Cup Serve Point “A” the carousel will not operate until that cup is removed.
- If No Ice was part of the drink order the cup will not be filled with ice.

NOTE: The carousel will not operate if there is a cup or any other obstruction in the cup holder at Cup Serve Point

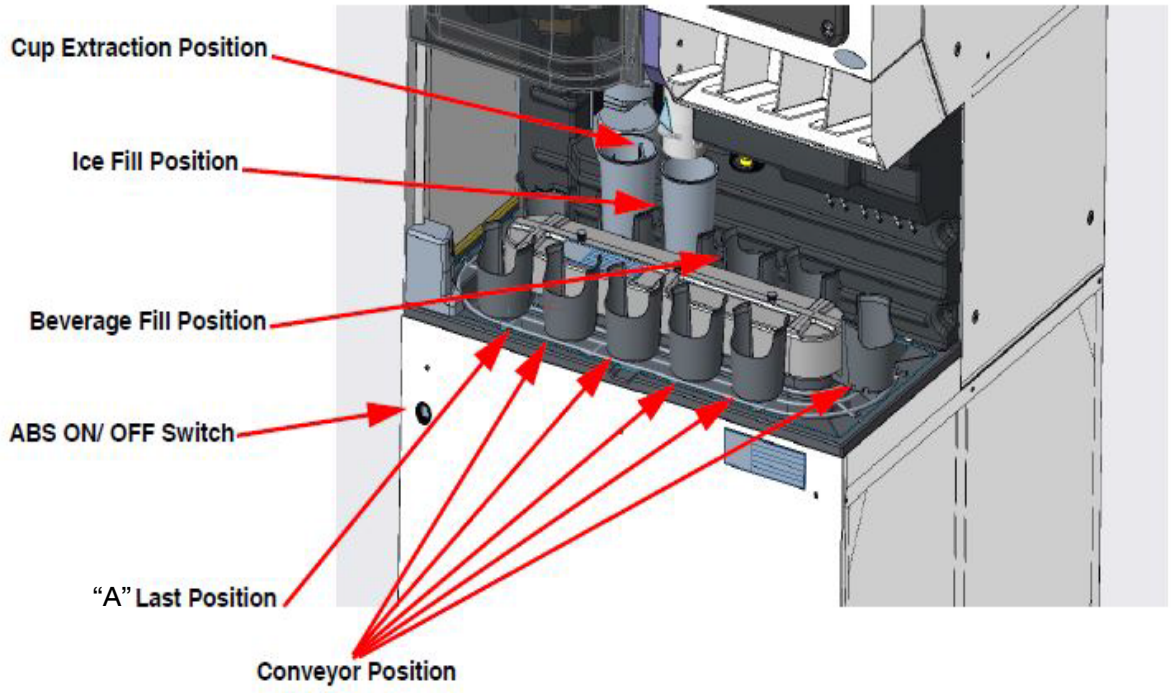


Figure 72. Carousel Reference Location

INDEX SENSOR.

A sensor is located near edge of the sink (drip tray) near the cup drop area (see Figure 72.). This sensor detects metal bracket in each cup holder on the carousel belt and is thus responsible for aligning the cup holder in the proper position. When the sensor detects the metal in the cup holder, the carousel gear motor is stopped and then reversed for a fraction of a second to provide a braking action.

Last Cup Sensor

A sensor is located near edge of the sink, in the serving area. This sensor ultrasonic through the cop holder in Cup Serve Point “A” position (see Figure 73.). When a cup or anything else is present in that holder that blocks the ultrasonic wave, the carousel is halted until it is removed.

When a cup reaches the Cup Serve Point “A” it cannot be allowed to rotate any farther since the next position is the extract position. Therefore, once a cup reaches Cup Serve Point “A”, the ABS will stop operating until that cup is removed. If, for example, there were cups at Cup Serve Positions; “A” and “B”, and the cup at Point “A” was removed the carousel would rotate one space until the cup that was at Point “B” moves to Point “A”, then the ABS 2.0 would be stopped again.

The carousel mechanization assembly consists of: a drive motor, gear box, drive sprocket, idler sprocket, carousel belt with cup holders attached, and drive belt cover with 3 thumb screw fasteners.

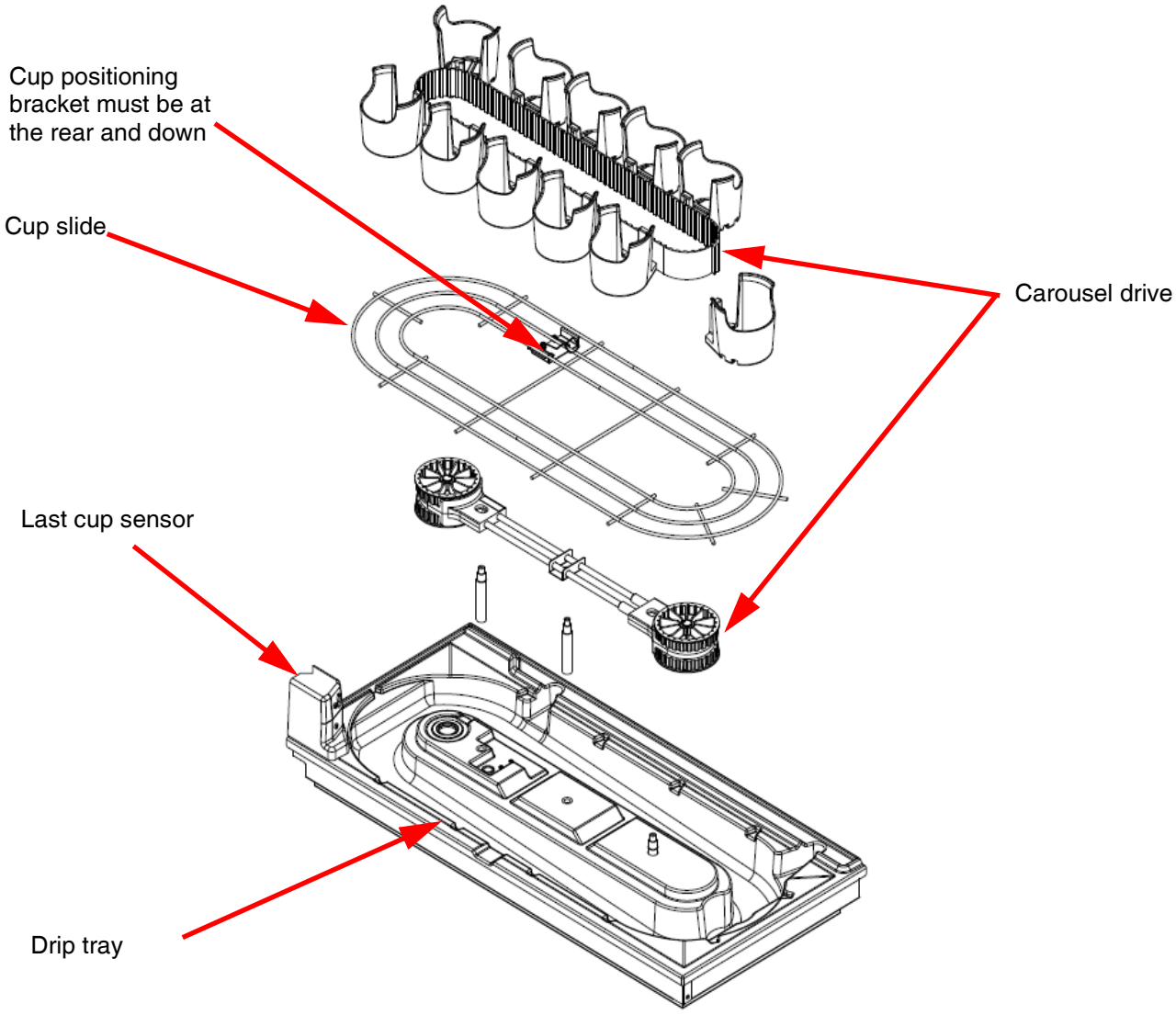


Figure 73. Carousel Assembly

Carousel Drive Alignment

When installing the carousel the carousel belt may be rotated to align the Drive Pin and the Drive Socket. The Drive Pin on the carousel must engage the Drive Socket on the gear motor or the carousel is not properly installed and will not operate.

Carousel Belt Assembly

The carousel belt and cup holder assembly must be installed only one way – the cups must face up and the drive pin to the left. The only replacement part is the cup holder.

Carousel Motor

The carousel is powered by a electric motor and gear box. The motor and gear box are secured to the drip tray with four screws. The screws are accessible from inside the ABS lower cabinet. The motor is electrically connected to the Motion Control Board.

Cup Slide

The cup slide must be installed with the oval rails up and with the “Cup Positioning Bracket” must be at the rear of the drip tray.

Cup Positioning Bracket

The cup positioning bracket, located on the cup slide, contains a spring that is positioned so it touches the cup in the cup holder as the cup moves past the spring. This moves the cup to the rear (based on the direction of movement) of the cup holder. This ensures that all cups will be in the same position regardless of it’s size.

CUP PICKER

DESCRIPTION of OPERATION

The Cup Puller is activated by a command from the POS to the ABS 2.0. When a drink order is placed at the POS, the correct cup is pulled and placed into the carousel.

The cup puller consists of, two cup grabber arms actuated by a pneumatic cylinder, an elevating mechanism operated by a pneumatic cylinder, and two guide rods.

SEQUENCE of EVENTS

The sequence of events that occur when a cup is to be pulled and placed in the carousel are as follows:

- The cup turret rotates to place the correct cup at the extract position.
- The cup lifter is raised up to the cup.
- The cup grabber arms close onto the cup (If the grabber arms do not encounter a cup and close completely a sensor will send an “Empty Cup Tube” message.)
- The cup grabber is lowered by the pneumatic cylinder (lift), pulling the cup from the cup tube (If the grabber arms slip off the cup and close completely, an “Empty Cup Tube” message will be sent.).
- The grabber arms are opened dropping the cup into the carousel.

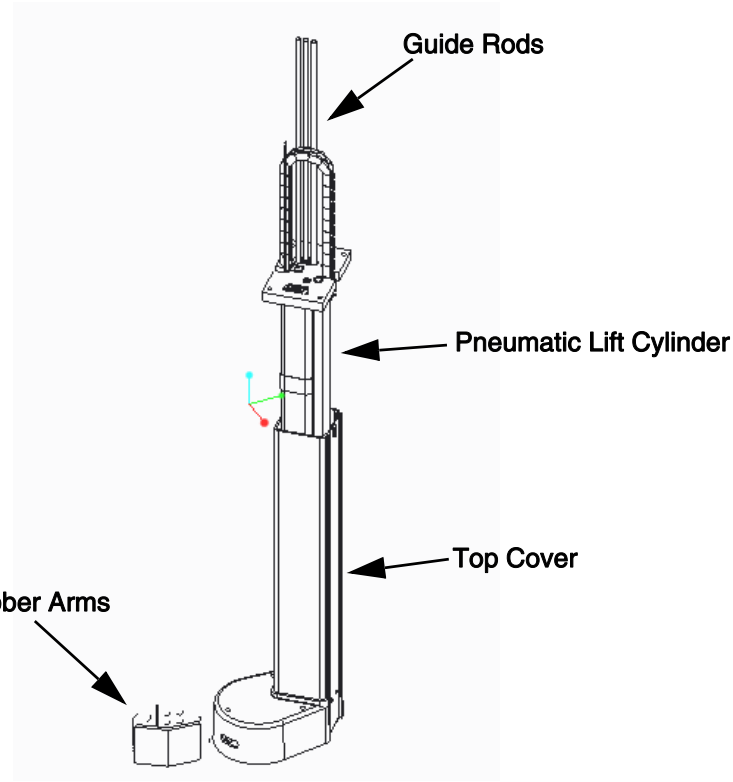


Figure 74.

EMPTY CUP TUBE SENSOR

If the cup grabber arms close completely and do not encounter a cup, a sensor will detect that no cup was gripped by the grabber arms. This will cause a “Empty Cup Tube” message to be sent. See the sequence of events above for a full description of this sensor.

⚠ CAUTION:

Do Not attempt any repair until the ABS 2.0 unit has been shut down and the air/CO_2 has been shut OFF. Serious injury could occur if the cup grabber activates during repair.

REPLACEMENT of CUP GRABBER PADS

Remove the rubber pads from the picker arms by first cutting the edge of RTV at the base of the pads and then pulling the pads off the picker arms. Install new pads by sliding them on to the picker arms making sure to align and seat the circular protrusions inside the pads to the circular cutouts on the arms. Apply a line of RTV to the back edge of the pads to prevent liquid ingress.

REPLACEMENT of CUP PICKER

CUP TURRET SYSTEM

DESCRIPTION of OPERATION

The cup turret mechanism consists of a column (six sided bracket), that will hold six cup holder assembles. An electric motor and gear box, a 24” drive shaft, shrouded with a protective sleeve.

The cup turret is activated by a command from the POS to the ABS 2.0. The cup turret rotates so that the correct cup size is at the cup drop position. The cup is then pulled and placed into the carousel.

When the cup turret rotates to a selected cup size, it will rotate in either direction (clockwise or counterclockwise), whichever distance is closest to the extract position.

CUP HOLDER DEFAULT POSITIONS

The cup turret Holder default positions are setup in the ABS 2.0 using Nos. 1 to 6. The default positions are shown.

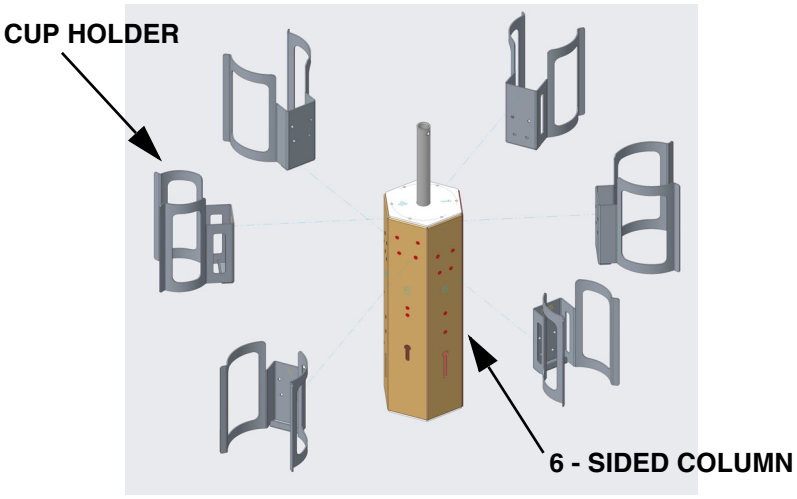


Figure 75.

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CUP HOLDERS INSTALLATION

Table 22.

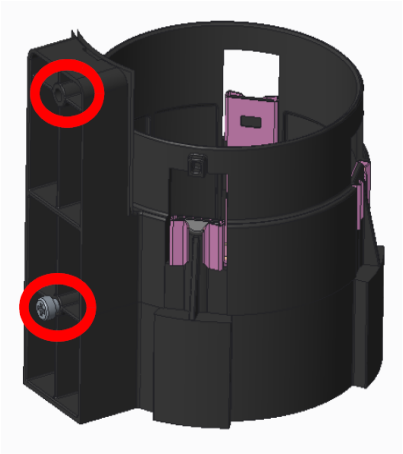
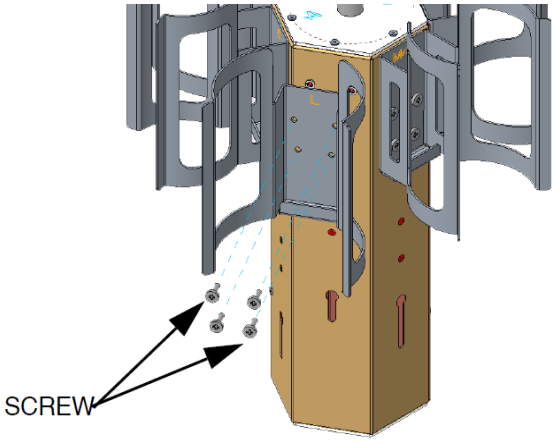
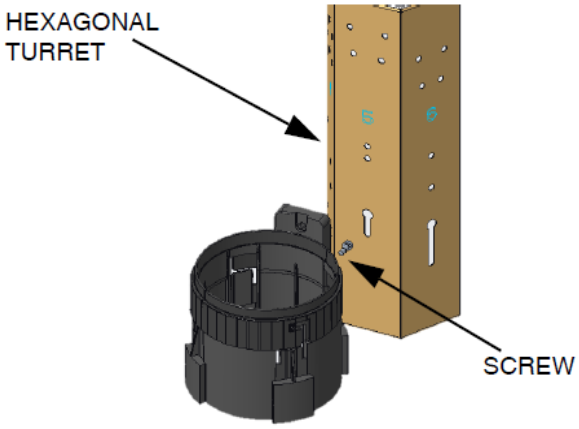
Step	Action	Figure
1	Each cup dispenser has two mounting holes as shown in Figure 76.	 **Figure 76.**
2	Attach the cup tube clip to the turret by fastening four screws as shown Figure 77.	 **Figure 77.**
3	Assemble the base of the cup dispenser by hooking the key hole slot on hexagonal turret as shown in Figure 78. **NOTE: Assure proper mounting location.**	 **Figure 78.**

Table 22. (Continued)

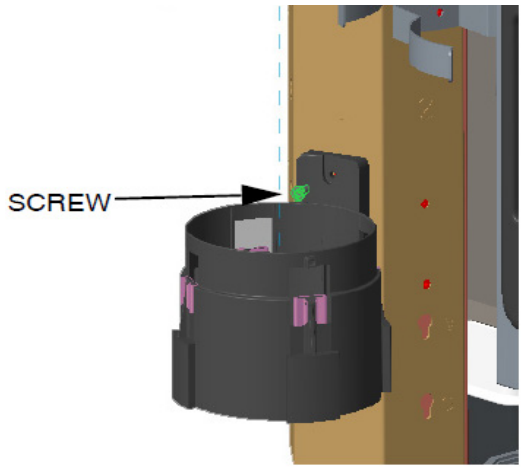
4	Pivot the base to align the second mounting hole on cup holder with the top hole and fix in place with a screw as shown in Figure 79.	 **Figure 79.**
5	Load one complete sleeve by pushing through bottom opening and gradually lower the hand until the cups are supported.	 **Figure 80.**
6	Repeat the procedure for rest of the cup dispensers	

Table 23.

CUP SIZE MATRIX		
Position	Upper	Lower
1.	30oz [0.887 litre] Large - Plastic	21oz [0.621 litre] Medium - Paper
2.	21oz [0.621 litre] Medium - Paper	16oz [0.473 litre] Small - Paper
3.	30oz [0.887 litre] Large - Plastic	21oz [0.621 litre] Medium - Paper
4.	12oz [0.355 litre] Child - Paper	Unused
5.	30oz [0.887 litre] Large - Plastic	21oz [0.621 litre] Medium - Paper
6.	21oz [0.621 litre] Medium - Paper	16oz [0.473 litre] Small - Paper

The mounting hole placement pattern determines which cup holder mounts on which side of the column.

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Turret Drive Assembly

The entire turret assembly is attached to the motor coupler shaft by a pin/clip The 6-sided column at the top of the turret shaft must align with the coupler shaft holes.

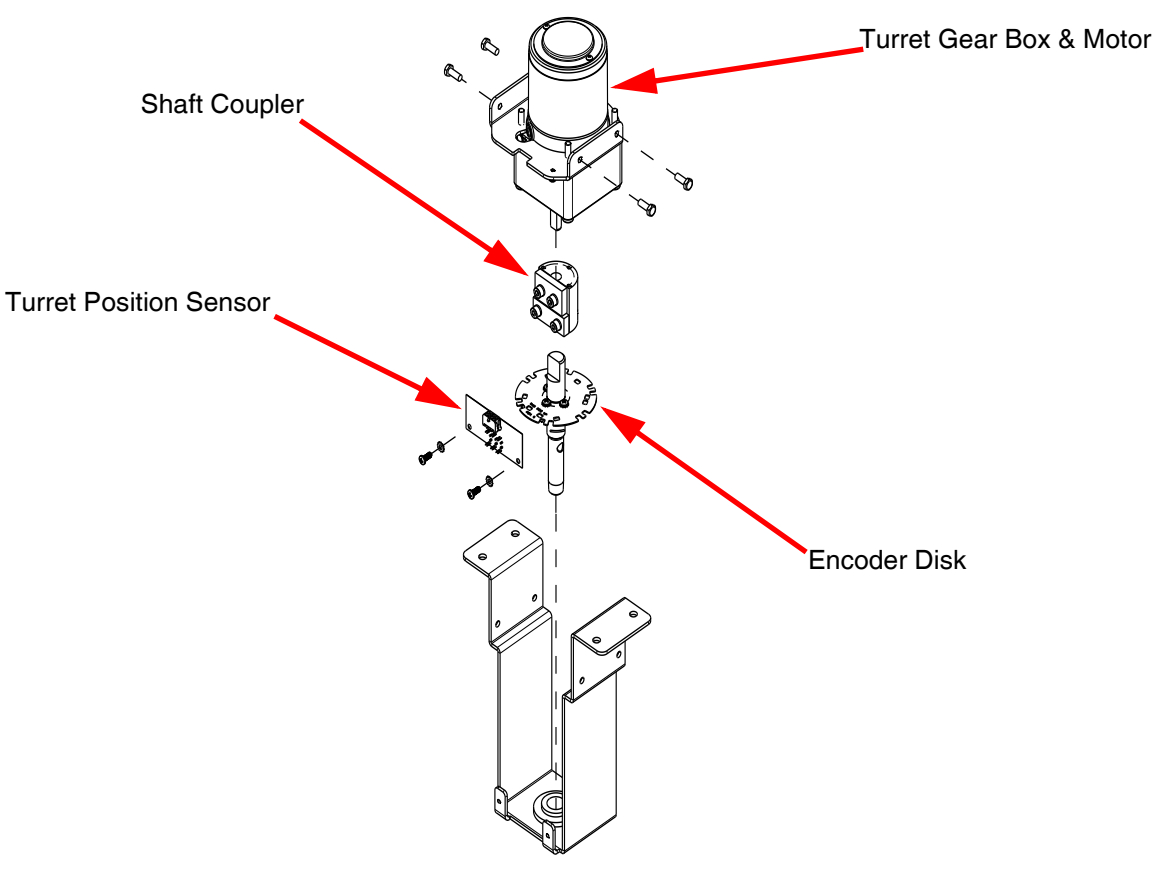

Figure 81.

Turret Gear Box & Motor

The gear box and motor are replaceable and are accessible from top side under the black cover of the ABS 2.0. Four bolts attach them to the Gear/Motor bracket.

Encoder Disk

The alignment disk, attached with three screws to the shaft coupler, interfaces with the turret position sensor and notifies the Motion Control Board of which cup tube is at the extract position. The disk can only attach in one position.

Turret Position Sensor

The turret position sensor is attached to the correct reads the holes in the disk sending position signals to the Motion Control Board. The sensor can be replaced by removing the two screws that attach it to the bracket. The sensor is electrically connected to the Motion Control Board.

Shaft Coupler

The shaft coupler not only joins the shaft to the gear box but it ensures alignment of the flats on the shafts necessary for proper alignment communications to the Motion Control Board.

ICE CHUTE ASSEMBLY

ICE GATE DESCRIPTION

The ice gate is a pneumatically operated “gate” that is controlled by the Beverage Interface Board. The time the gate is open is very precise and determines the portion of ice dispensed. The gate opens and closes under pneumatic pressure[35psi(.24Mpa)]. The gas is controlled by solenoids.

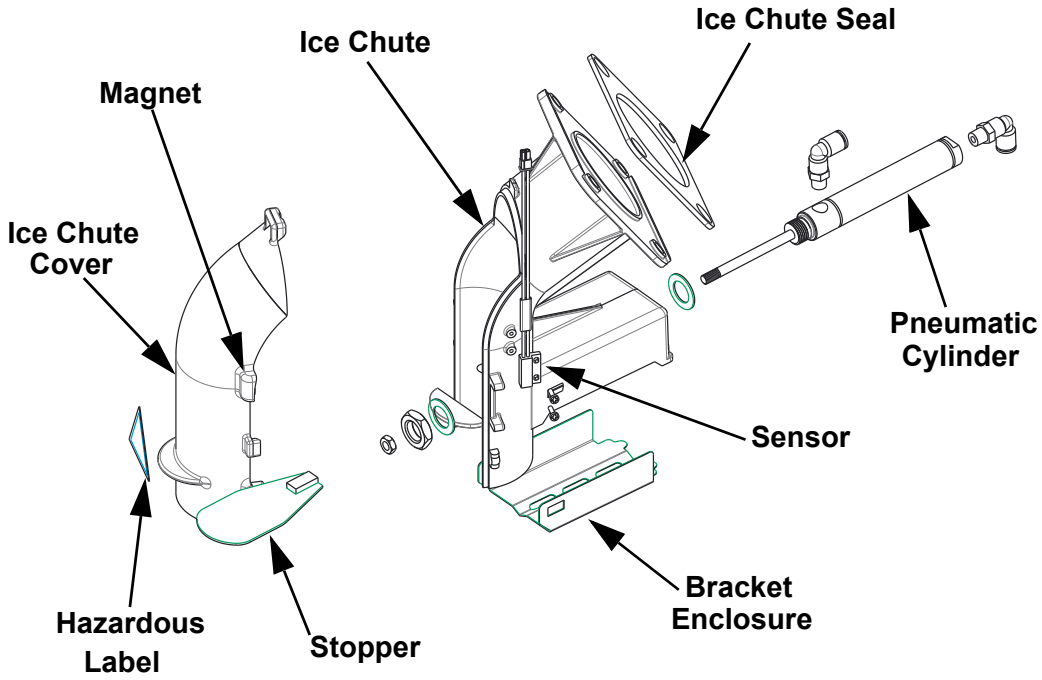

Figure 82.

ICE CHUTE COVER

The ice chute directs the ice into the cup. It can be removed for cleaning or replacement.

ICE CHUTE SENSOR

There is a sensor that detects when the ice chute cover is on/off. The unit will not operate when off or installed incorrectly.

CYLINDER REPLACEMENT

The cylinder can be replaced by manually shutting off the air/CO_2 supply, (Back of the unit) disconnecting the tubing and removing the cylinder from the ice bin and ice chute assembly by removing the mounting nut.

ICE GATE SOLENOID REPLACEMENT

The solenoid for the ice gate is located in the pneumatic compartment can be accessed by removing the access cover and splash panel.

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DISPENSING VALVE

VALVE DESCRIPTION

The dispensing valve is located behind the splash panel and is made up of 3 blocks of 4 valves/solenoids. The blocks are mounted to the outlet of the cold-plate. The outlets of the valves are plumbed to the nozzle. The front view is shown below.

Figure 83.

SHUT-OFF CONTROLS

The shut-offs are used mainly for service to shut-off a brand (Syrup) in the case of a leaky solenoid, etc.

Refer to the valve back block and removed section.

FLOW CONTROLS

The flow controls are used to set the flow rates for the CW, PW and all the syrups.

The flow rate is increased by turning the adjusting screw clockwise and decreased by turning it counterclockwise.

The flow controls are removable by removing the two retaining screws on each side of the control. After shuttling of flow and de-pressurizing.

SOLENOID VALVES

The solenoid valves are 30V DC electrically operated valves and are controlled by the MFV. The valve can be taken apart for cleaning or component replacement. A good valve read 9.1 ohms

DIAGNOSTICS

The Diagnostics menu is used to pre-test and adjust the function of ABS 2.0 unit for Sensor input and output or Automate moving assembly. It's run while servicing the assembly.It is also ensure the Unit function working properly.

PICKER CONTROL AND FEEDBACK

Table 24.

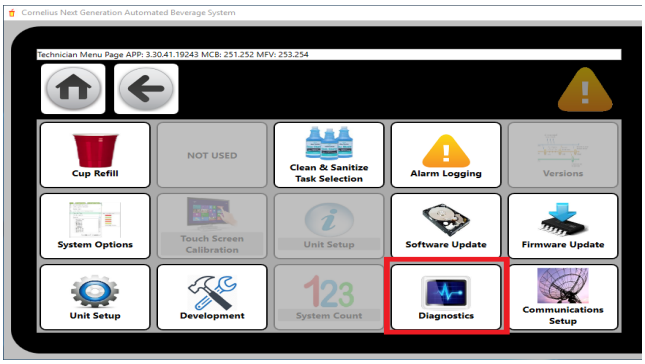
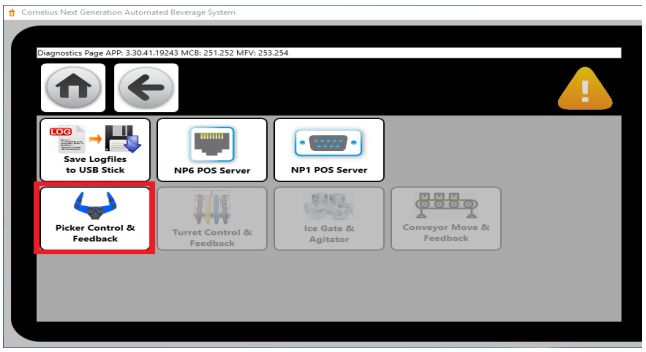
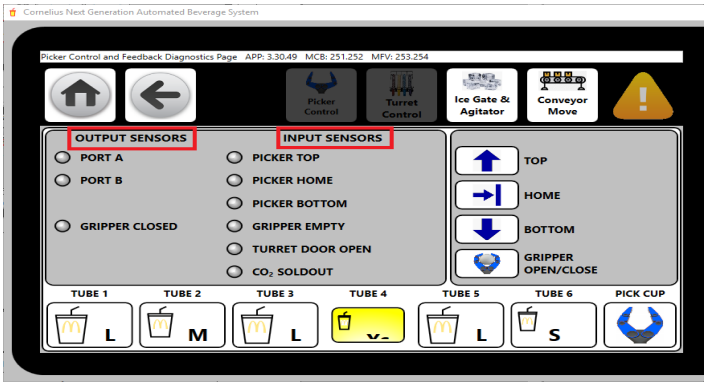
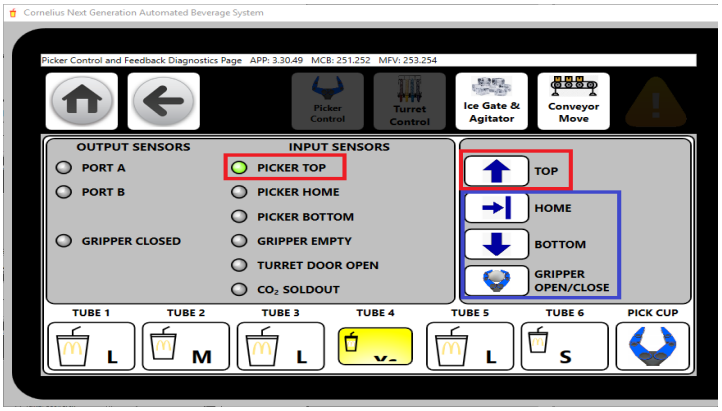
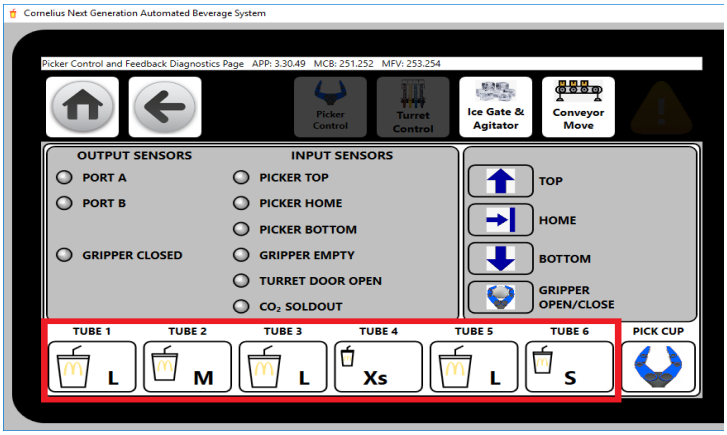
Step	Action	Figure
1.	From the Technician Menu page select the Diagnostics Icon as shown in Figure 84.	 **Figure 84.**
2.	From the Diagnostics menu page select "Picker Control & Feed Back" button to entering the menu as shown in Figure 85.	 **Figure 85.**
3.	In the menu it is have the input and output sensor as shown Figure 86.	 **Figure 86.**

Table 24. (Continued)

Step	Action	Figure
4.	A. If select the top button on the menu the Gripper arm move to the position and the sensor highlight in green as shown in Figure 87. If the position is not correct the sensor will Highlight in red.(the sensor input data is missing). B. Same as check the other position of sensor.	 **Figure 87.**
5.	Same way the cup are select and pick by using the Gripper at different cup size at different position.	 **Figure 88.**

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.

⚠ WARNING:

If repairs are to be made to a product system, remove quick disconnects from the applicable product tank, then relieve the system pressure before proceeding. If repairs are to be made to the CO_2 system, stop dispensing, shut off the CO_2 supply, then relieve the system pressure before proceeding. If repairs are to be made to the refrigeration system, make sure electrical power is disconnected from the unit.

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

Table 25.

Message	Explanation	Correction
Blown fuse or circuit breaker	A. Short circuit in electrical wiring. B. Inoperable agitator motor (shorted motor).	A. Repair wiring. B. Replace gear motor.
Agitator does not turn	A. No power. B. Improperly installed ice chute assembly (Reed switch is not being activated). C. Inoperable reed switch. D. Electrical board driver circuit is defective. E. Gear motor has open circuit. F. Reed switch is not activated, improper assembly of upper ice chute to lower chute. G. Broken wire in the 2-wire harness leading to the reed switch. H. Bad connection at main control board. I. Door not closed or not making switch connections to lid.	A. Restore power or plug in unit. B. Check the upper ice chute assembly for proper assembly and operation. C. Replace reed switch. D. Replace main control board. E. Replace gear motor. F. Check to make sure tongue of upper chute engages into the back of the lower chute, ensure upper chute engages outside the lower chute, and snap front of chute into place. G. Repair of replace 2-wire harness. H. Repair connection or replace 2-wire harness. I. Check distance from screen to lid.
Ice dispenses continuously	A. Ice gate mechanism is stuck in open position B. Stuck or bent ice lever (does not allow gate to close and open reed switch).	A. Inspect gasket for proper position. Examine gate plate to see if it slides freely behind the lower ice chute. B. Examine ice dispense lever to see if it is bent.
Slushy ice or water in hopper	A. Blocked drains in cold plate B. Poor ice quality due to water quality or ice maker problems	A. Remove access covers in cold plate cover & inspect/clean drains. B. Correct water quality or repair ice maker.
Beverage does not dispense	A. No 30 VDC to valves. B. No touch response.	A. Restore 30 VDC to valves. B. Re-start the unit.
Beverage is too sweet	A. Valve BRIX requires adjustment.	A. Adjust valve BRIX.

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Table 25. (Continued)

Message	Explanation	Correction
Low water pressure	A. Could be caused by excessively long runs (over 40 ft.) of 3/8" (9.525 mm) water supply line. B. Low water pressure. C. Plugged water filter. D. Water booster bladder has burst.	A. Increase line size to 1/2". B. Add water pressure booster pump. C. Change water filter. D. Replace water booster tank/bladder.

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

MECHANICAL ISSUES

Table 26.

Message	Explanation	Correction
CLEAR CUP JAM	Cup(s) is jammed in the carousel at the cup extraction position and the carousel and turret are unable to operate.	Remove all cups from the carousel cup holders at the Extract Position before pressing the ENTER button. Another cup will be extracted and dispensing will continue.
	Cup Tubes.	Over stacking of cups in cup tubes. DO not fill above the top of the cup tube.
		Cup tube fingers are damaged (bent), replace all four fingers.
		Cup tubes not properly mounted. Remove and remount cup tubes.
	Loose or missing Hardware.	Check each cup tube to insure all hardware is present on the cup tube. Replace any missing hardware.
	Cups.	Cups are packed together and will not separate.
NO CUP EXTRACTED	The gripper did not or could not extract a cup from the cup tube.	Check cup supply at the extract station and make sure the cups are not stuck. Make sure the gripper pads are not damaged
	No cup present	Refill the cup holders.
	Grabber Pads.	Wet, dry off if damaged, replace.
	CO_2	Check bulk CO_2 tank, if empty go to back up CO_2 and turn on.
	Cup Tubes.	Cup tube fingers are damaged (bent), replace all four fingers.
	Cups	Cups are packed together and will not separate.
TURRET STALLED	Turret unable to rotate clockwise of counter-clockwise.	Clear obstruction (cup holder, cup tube or cup). Press ENTER
CAROUSEL STALLED	Carousel Dirty	clean the Carousel.
	Cup(s) is jammed in the carousel at the cup extraction position and the carousel and turret are unable to operate.Does the carousel rotate?	Remove all cups from the carousel cup holders at the EXTRACT POSITION before pressing the ENTER button. Another cup will be extracted and dispensing will continue.Make sure carousel is installed correctly. Repair or Replace.

Table 26.

Message	Explanation	Correction
AIR OR CO_2 LOW OR OUT	CO_2 supply is low or empty or Air compressor not operating	Change CO_2 cylinder or have bulk tank refilled. Check cause not operating and repair.

BEVERAGE / ICE RELATED ISSUES:

Table 27.

Message	Explanation	Correction
NO ICE DISPENSE	A. Ice Chute not installed correctly. B. Bad solenoid valve. C. Plugged orifice. D. No / Low CO_2 . E. No ice in the hopper	Reinstall Ice Chute. Call for service. Call for service. Call for service. Refill the ice or switch on the ice maker
BEVERAGES TOO SWEET	A. Carbonator not working. B. No CO_2 pressure in carbonator. C. Valve ratio requires adjusting. D. Plugged filter.	Call for service. Call for service. Call for service. Replace.
BEVERAGES NOT SWEET ENOUGH	A. Empty B.I.B container. B. Valve ratio requires adjusting.	Replace. Call for service.
BEVERAGE NOT COLD	A. No ice in hopper. B. Drains plugged and water standing on cold plate. C. Master Cooling system not cooling.	Fill ice bin. Clean ice bin and flush drain with warm water. Call for service.
DRINKS FOAMY	A. Nozzle & Syrup diffuser not clean. B. Bulk coke tank needs to be sanitize. C. Lower or out of CO_2. D. No jumper transfer hose used on bulk tank	A. Clean and Sanitize. B. Clean and Sanitize. C. Replace or Switch to Back Up. D. Make sure jumper hose on bulk tank is connected when changing bulk tanks

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POS Related Issues

Table 28.

Message	Explanation
ABS SYSTEM NOT COMMUNICATING	• Verify that the ABS 2.0 unit is enabled in the POS Drink. Dispenser setup. • Verify that POS cable is connected to Ethernet jack on the display unit. • Verify that the POS cable is connected to the ABS 2.0 unit. • Verify all programming is correct. • Verify the IP-Address set up. • Verify that no error messages are displayed on the ABS 2.0 unit. • Reboot power to the Display unit. • Reboot power to the ABS 2.0 unit.
ABS UNIT WILL NOT DISPENSE A DRINK WITHOUT ICE OR WITH EXTRA ICE	• For no ice you must have to check ice chute sensor or pneumatic. • For extra ice, you must have the modify ice dispense time.
ABS UNIT IS DISPENSING THE WRONG SIZE OR BRANDS	• Make sure that the order in which the brands and size are the same in brand Setup and size Setup in the Drink dispenser as it is on the ABS 2.0 System. Coca-Cola will provide the brand Position Guide for POS programming. • Call your POS vendor for service.
ABS IS NOT DISPENSING ONE OR MORE OF A SIZE OR BRANDS	• Verify the brand and Size spelling is the same in both the brand and Size setup as it is in the Menu item Setup. • Call your POS vendor for service.

SCHEMATICS

WIRING DIAGRAM

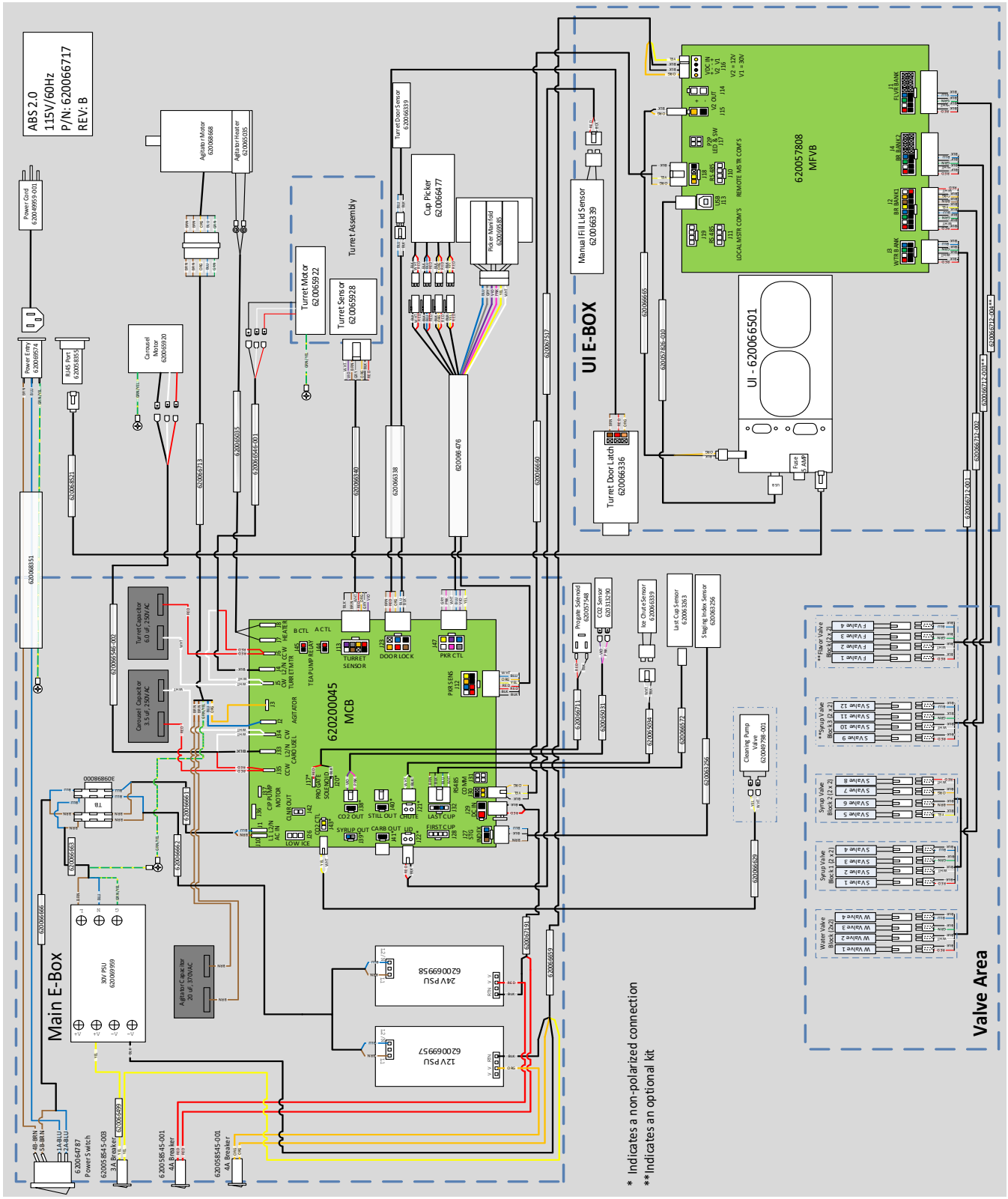

Figure 89.

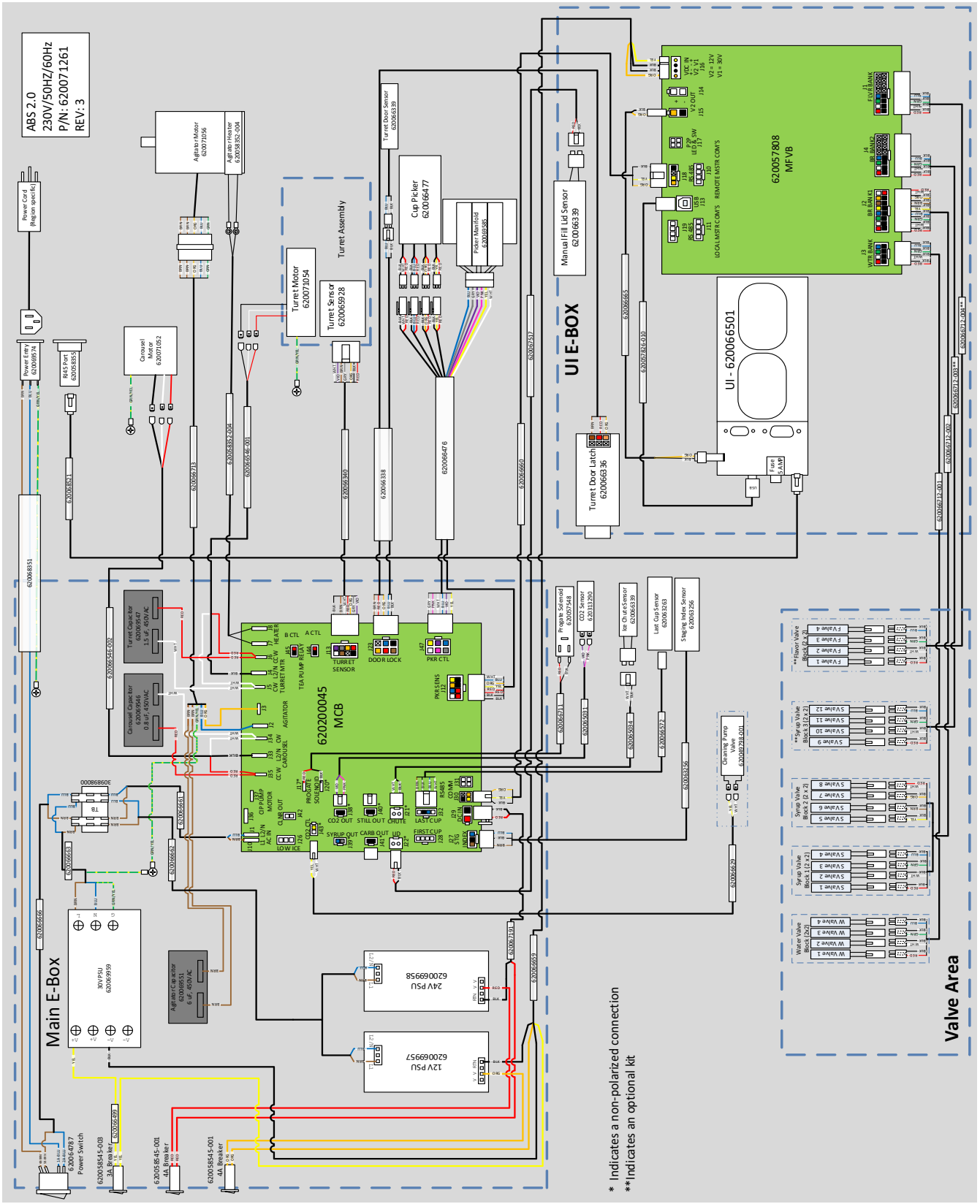

Figure 90.

PLUMBING DIAGRAM (AIR/CO_2)

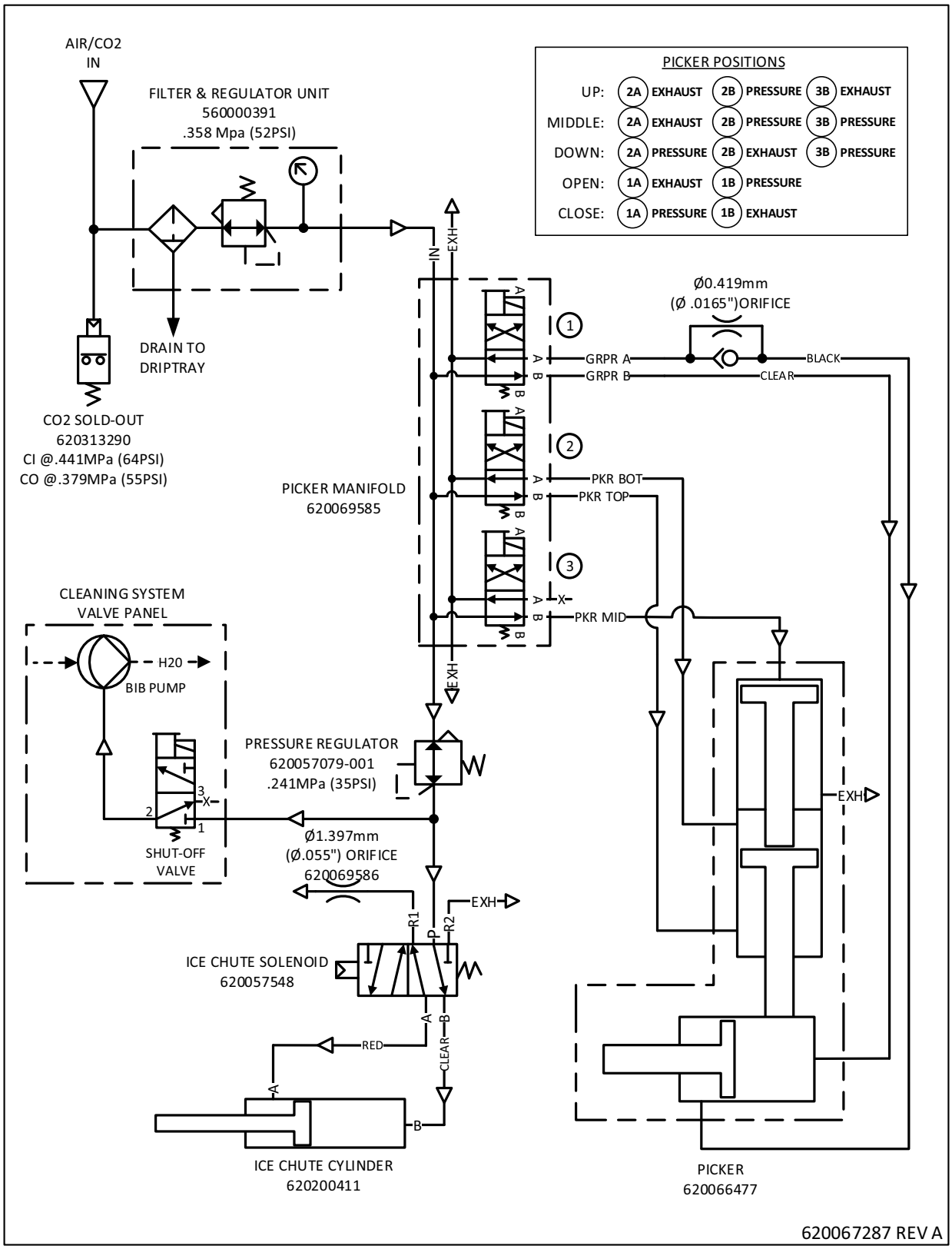

Figure 91.

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