



Frozen Beverage Dispensers

EVERYONE LOVES FROZEN™

152 INSTALLATION AND OPERATION MANUAL





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1. SAFETY

1.1 Electrical

This dispenser must be properly electrically grounded to avoid possible fatal electrical shock or serious injury to the operator. The power cord is provided with a three-prong grounded plug. If a three-hole grounded electrical outlet is not available, use an approved method to ground the dispenser. Only qualified electricians should perform this task and the work performed should meet all applicable codes.

Always disconnect electrical power to the dispenser to prevent personal injury before attempting any internal maintenance. Only qualified personnel should service internal components or electrical wiring.

1.2 Carbon Dioxide (CO₂)



⚠ DANGER
ASPHYXIATION HAZARD

Strict attention must be observed in the prevention of CO₂ gas leaks in the entire CO₂ and frozen drink system. If a CO₂ gas leak is suspected, immediately ventilate the contaminated area before attempting to repair the leak. Personnel exposed to high concentrations of CO₂ gas will experience tremors which are followed rapidly by loss of consciousness and suffocation.

To avoid personal injury and/or property damage, always secure CO₂ cylinders in an upright position with a safety chain. A CO₂ cylinder with a damaged or detached valve can cause serious personal injury.

1.3 General Precautions

This equipment, depending on the model, weighs up to 194 pounds (88 kilograms) and is top-heavy. To avoid personal injury or equipment damage, do not attempt to lift the dispenser without help. The use of a mechanical lift is highly recommended. When lifting and positioning the dispenser, it should always stay in a vertical upright position.

Children should be supervised to ensure they do not play with the dispenser.

Prior to use, persons (including children) with reduced physical, sensory or mental capabilities or lack of experience and knowledge should be supervised or instructed about the use of the dispenser by a person responsible for their safety.

When the dispenser is mounted onto a base cart, it must be secured to the cart with bolts. Use caution when moving the cart. Avoid surfaces that are not level and smooth under the width of the casters to prevent tipping.



2. Unit in Storage

If a unit is going to be placed in storage for an extended period (more than 90 days), it is recommended that all rubber components be replaced (o-rings, rear seal, expansion tank, etc.). Failure to replace rubber components could cause leaks which may damage components.



3. SPECIFICATIONS

3.1 General Requirements

Requirement	
Syrup Supply Pressure	70 - 72 psig* (483 – 496 kPag)
Water Supply Pressure	30 psig (207 kPag) Minimum Flowing Pressure 70 psig (483 kPag) Max Static Pressure
CO ₂ Supply Pressure	70 - 72 psig (483 – 496 kPag)
Clearance	2" (51 mm) Sides and Back, 12" (305 mm) Top
Refrigerant	R404A

3.2 Electrical Requirements

Requirement	
Frequency	50 Hz
Voltage	Single Phase, 230 VAC
Operational Voltage	208-248 VAC (when compressor is on)
Input Power	1780 W
Minimum Power Breaker	4600 W / 20 AMP

3.3 Dimension and Weight Specifications

Specification	
Width	14.4" (366 mm)
Depth	26.2" (665 mm)
Height	31.5" (800 mm)
Weight–Empty	166 lbs (75 kg)
Weight–Operational	184 lbs (84 kg)
Weight–Shipping	194 lbs (88 kg)

* All pressure values are listed in the manual in psig (kPag). However, the pressure readouts will be shown as "PSI" on the dispenser display .



4. RECEIVING AND UNPACKING DISPENSER

4.1 Receiving

Each dispenser is tested and thoroughly inspected before shipment. At the time of shipment, the carrier accepts the dispenser and any claim for damages must be made with the carrier. Upon receiving the dispenser from the delivering carrier, carefully inspect carton for visible indication of damage. If damage is present, have carrier note same on bill of lading and file a claim with the carrier.

4.2 Unpacking

- A. Cut banding from shipping carton and remove carton by lifting up. Remove protective side panels and four corner protectors.
- B. Remove drip tray assembly, accessory kit, and manual from top packaging. Contact the dealer if any parts are missing or damaged.
- C. Remove side panels from dispenser.
- D. Inspect dispenser for concealed damage. If evident, immediately notify delivering carrier and file a claim against same.
- E. Lift dispenser up by the frame cross bracing and remove lower portion of carton.
- F. If dispenser is received with a shipping board attached to the bottom, remove shipping board from bottom of dispenser by accessing and removing the bolts located on the under side of the shipping board.

5. INSTALLATION

5.1 General Location Requirements

Dispenser is intended for indoor use only and should not be installed in areas where a waterjet can be used. A flat, level location is required for proper installation. When using a counter, ensure it will support the weight of the dispenser plus the weight of any equipment placed near it. See the specifications section for equipment weights.

Note: Maximum installation angle for surface placement should not exceed 8° for proper operation of dispenser.

Adequate space above and behind the dispenser is required to allow:

1. Removal of side panels, if service is necessary.
2. Air circulation around vents on sides, back, and top of dispenser.

A well-ventilated room is required with a temperature of 50°F to 90°F (10°C to 32°C). The environment, however, should be stable and not subject to abrupt changes in temperature. The dispenser should not be exposed to direct sunlight or chemicals.

5.2 Self-Contained Refrigeration Models

Adequate clearance around the dispenser is required for proper air flow. Failure to provide proper clearance will reduce capacity and can eventually damage the refrigeration system. See the specifications page for clearance requirements. Be careful of enclosed installations that can recirculate hot discharge air. Such installations require supplemental ventilation to remove the hot discharge air. A fan with a thermal switch is a good option.

Although the dispenser can operate in temperatures up to 104°F (40°C), an ambient temperature of 75°F (24°C) provides the optimal capacity. As the ambient temperature increases, the dispenser capacity decreases. A self-contained, air-cooled dispenser can release a large amount of heat into the environment; therefore, it is essential that the HVAC system be able to handle this heat load.



5.3 Dispenser Mounting

Countertop - Flush Mounting: One method of installation is to set the dispenser directly on a countertop. If permanently mounting to the countertop, use the mounting information located in the “Diagrams and Schematics” section of this manual to drill holes in the countertop. Once installed, with side panels removed, seal the dispenser to the countertop using a bead of clear silicone caulk around the base of the frame.

Countertop - Leg Mounting: Another countertop option is to use support legs that raise the dispenser four inches off the countertop (purchased separately). The legs mount to the same frame locations as the countertop mounting bolts. This allows easy cleaning under the dispenser and meets most local health department codes.

Base Cart: A roll-around base cart (purchased separately) can be used when a suitable countertop location is not available or it is desired that the BIBs and syrup pumps be located with the dispenser. If a base cart is used, the dispenser must be secured to the cart using 3/8”-16 UNC or M8 bolts. Add nuts to fasten bolts. Failure to do so can result in serious injury should the dispenser fall off the cart. Once installed, seal the dispenser to the cart using a bead of clear silicone caulk around the base of the frame.

5.4 Connecting to Electrical Power

The dispenser is shipped with a 10 A plug. The mating wall receptacle must match the amperage rating of the dispenser. If the plug on the dispenser is replaced with an alternate, it must have the same amperage rating and provide a grounding prong. The dispenser must be connected to a dedicated circuit with the proper amperage fuse rating.

The dispenser requires single phase 230 VAC. If the line voltage is below 208 VAC or above 248 VAC, a 10% buck and boost transformer must be used. Operation below 208 VAC or above 248 VAC may damage the dispenser and cause inconsistent performance. Operation outside the recommended voltage range also voids all warranties.

Remove the plug from the power cord and feed the cord through the strain relief located at the back of the dispenser. Tighten the strain relief securely. Reinstall the plug on the power cord and check for continuity on the plug across both "hot legs" and no continuity between each "hot leg" and ground.

Note: The voltage drop on the LCD between idle and run modes must not exceed 10 volts between the power source and the machine. If it is greater than 10 volts then the power supply is inadequate and needs to be addressed by a certified electrician.



Risk of Electric Shock: If the cord or plug becomes damaged, replace only with a cord and plug of the same type provided by the manufacturer or service agency in order to avoid potential hazard.

CAUTION

Do not connect the dispenser to power at this time.



5.5 Connecting to Water Supply

Water pipe connections and fixtures directly connected to a potable water supply shall be sized, installed, and maintained in accordance with local codes.

Connect water line adapter to the bulkhead fitting labeled “WATER” on the back of the dispenser (**Figure 5.1**). The water supply line should be 3/8” ID minimum or whichever size local codes require. Before installing, flush several gallons of water through a newly fabricated line to remove any debris. Installing a shutoff valve near the connection will be helpful when removing the dispenser.

Do not turn on the water supply at this time.



Figure 5.1 Bulkhead Fittings

Note: If local codes require the installation of a backflow prevention device to be installed on the water supply line before connecting to the dispenser, one can be purchased from FBD under part number 12-2272-0001. The backflow device must have a line connected to the vent that diverts any flow to a drain. Failure to divert flow can result in water overflow.

5.6 Connecting to CO₂ Supply

The CO₂ supply may come from either an independent tank with a primary/secondary regulator or a bulk tank that supplies other equipment. If the supply is from a bulk tank, supply pressure must not exceed 120 psig (827 kPag). Tee off the main line and install a wall-mounted secondary regulator set to 70 psig (483 kPag). Fabricate a 3/8” ID line from the secondary regulator (independent tank or wall mount) to the rear of the dispenser and connect to the bulkhead fitting labeled “CO₂” using a 1/4” flare fitting. This regulator should only supply CO₂ to the frozen beverage dispenser. Installing a shutoff valve near the connection will be helpful when removing the dispenser.

If the dispenser is on a base cart with the BIBs and syrup pumps inside then install a tee in the supply CO₂ line to feed the syrup pumps.

Do not turn on the CO₂ supply at this time.



5.7 Connecting to Syrup Supply

For installations requiring syrup lines less than 50 ft (15 m) in length, use tubing with a minimum ID of 3/8". Run the syrup lines from the pumps to the rear of the dispenser and connect to the proper syrup fitting (**Figure 5.1**).

For installations requiring syrup lines over 50 ft (15 m) in length, use tubing with a minimum ID of 1/2". Using tubing of any smaller diameter will lead to pressure fluctuations and false sold-out errors. Furthermore, consider installing booster pumps on the supply lines. Increasing the regulated CO₂ pressure on the syrup pumps can also help maintain proper supply pressure at the dispenser; however, be sure not to exceed the pressure rating of the syrup pumps.

In all situations, it is recommended to install a shutoff valve near the connection to the back of the dispenser to assist with servicing or removing the dispenser.

Do not turn on the CO₂ supply for the syrup pumps at this time.

5.8 Long Tubing Runs

Long runs of supply tubing can cause problems if the pressure drop (between the CO₂ tank or syrup source and the dispenser) is too much. Runs longer than 25 feet (7.62 m) will require special attention. The machine's sensors may indicate that the machine is out of syrup, water, or CO₂. Consider the following solutions:

1. Increase the tubing size from 3/8 inch diameter to 1/2 inch diameter.
2. Install booster pumps in the supply lines. Use a vacuum regulating valve with syrup booster pumps.
3. Increase primary CO₂ regulator pressure from bulk or tank CO₂ to 105 to 120 psig (724 to 827 kPag). An additional regulator may be necessary for pumps (syrup or water) to avoid exceeding manufacturer's recommended operating pressures.



6. STARTING UP THE DISPENSER

6.1 Leak Check

1	Remove the drip tray below the dispenser and remove the front metal panel covered with the drip tray. The two solution modules inside the dispenser should be visible once metal panel is removed.
2	Connect the BIB connectors to the syrup BIB's.
3	Open the water supply shutoff valve (Section 5.5). On one of the solution modules, close the CO ₂ shutoff valve (Figure 6.1). Open the sample valve until water flows out of the sample port, then close the sample valve.
4	Open the CO ₂ , water, and syrup shutoff valves. Note: The pump and syrup pump will operate automatically and feed the dispenser until the internal pressure is balanced. This feed is normal and does not last long.
5	Check all connections thoroughly for leaks.
6	Open the sample valve (Figure 6.1) and collect the water/syrup being dispensed into a cup. Continue to prime until syrup flow has been established and all air has been removed from the lines. Discard the samples.
7	Repeat for the other module.

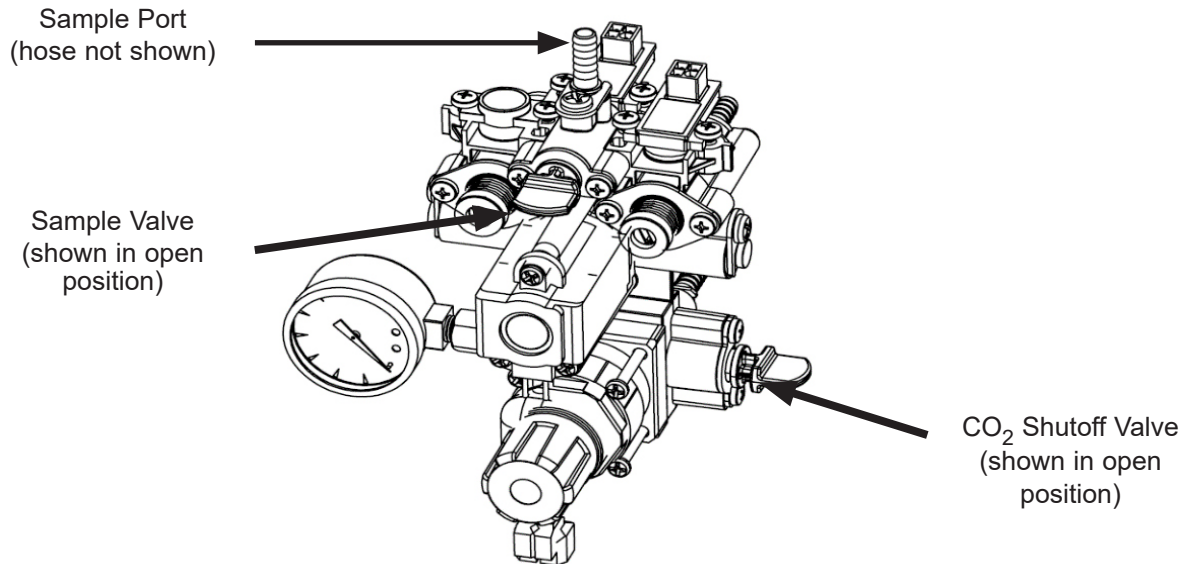


Figure 6.1 Solution Module and Sample Valve Discharge

6.2 Initial Power Up

Plug the dispenser into the power supply and verify the dispenser turns on by looking at the display behind the merchandiser (see **Section 5.4**). The LCD display should illuminate and should read "COPYRIGHT 94-2019 FBD" on the bottom line. See Section 10 for additional information on keypad buttons and how to navigate through menus.

Note: If the screen does not power on, please power off the dispenser immediately and contact the dealer.



6.3 CO₂ Purge

Follow these steps to purge air from the barrels:

1.	Turn off the water and syrup supply shutoff valves to the dispenser (Section 5.5).
2.	Open the CO ₂ supply device and adjust the regulator on one of the solution modules to 60 psig (414 kPag).
Note: This regulator is a non-venting regulator. It will be easier to adjust by increasing pressure. If the regulator setting is reduced to lower pressure, the pressure must be vented by opening the solution module solenoid manually using the Filling Sol 1 or 2 function in the Manual ON/OFF menu and pressing SELECT before the set pressure is displayed on the pressure gauge. If the pressure reading does not reduce it will be necessary to pull open the relief valve on the faceplate (Figure 6.3) to vent the pressure in the barrel.	
3.	Open the solution module solenoid manually using the Filling Sol 1 or 2 function in the Manual ON/OFF menu and pressing SELECT to fill the barrel with CO ₂ .
4.	After about five (5) seconds, pull the pressure relief valve on the faceplate until no more gas is heard escaping.
5.	Repeat previous step two more times.
6.	Close the solution module solenoid manually using the Filling Sol 1 or 2 function in the Manual ON/OFF menu by pressing SELECT again.

Repeat process for other barrel.

6.4 Brixing

To ensure the dispenser produces a quality beverage and continues to operate properly, it is important to check and adjust the brix of the beverage before use. All dispensers have been set correctly before leaving the factory, but the differences in syrup require the user to check or adjust brix settings. Use the following procedure to set the brix for each barrel:

1.	Press the STOP ALL button on the display to ensure the dispenser is in the OFF state. Note: Check all supply lines to ensure that they are connected to the correct fittings (Section 5). If lines are not connected properly, components will be damaged.
2.	Open the water supply valve and check all water line connections for leaks.
3.	Check all syrup supply connections at the rear of the machine for leaks.
4.	Open the CO ₂ tank valve and adjust the primary tank regulator to 70 to 72 psig (483 to 496 kPag). Check all CO ₂ line connections for leaks.
5.	Adjust the CO ₂ solution module regulators (located inside the machine) to read 58 to 62 psig (400 to 427 kPag) as described in Section 6.3 .
6.	Close syrup flow controls by backing the right adjustment screw on the solution module all the way out turning it counterclockwise (see Figure 6.2).
7.	Turn off the CO ₂ shutoff valve (see Figure 6.2).
8.	Adjust the water flow control two and one quarter (2 1/4) turns clockwise from the full counterclockwise stop.



9.	Open the sample valve. Adjust the water flow rate to 1.5 oz/sec (44.4 ml/sec) by dispensing water from the solution module through the sample port for 10 seconds into a measuring cup. The amount measured should be 15 oz (444 ml). Turn the flow control clockwise to increase the flow and counterclockwise to reduce the flow.
10.	Open the syrup supply valve and check syrup line connections for leaks. Preset syrup flow by turning flow controls two and one fourth (2 1/4) turns clockwise on solution module.
11.	Place a container under the sample port (see Figure 6.2) and open the sample valve until a good water and syrup mixture is obtained. This sample should be discarded.
12.	Dispense a 9-12 oz sample and measure the brix with a refractometer. Be sure to thoroughly mix the sample first by pouring back and fourth in two cups.
13.	Turn the syrup flow control counterclockwise to decrease the brix. Turn the syrup flow control clockwise to increase the brix.
14.	Dispense and discard several samples after adjusting the brix. Note: Do not adjust the brix with the water flow control setting unless you are unable to obtain the desired brix with adjustments to the syrup flow control. The brix reading is affected by temperature; samples taken from the barrel should be at the same temperature as from the sample valve.
15.	Repeat steps 8 through 14 for other barrel.

The target brix for most sugar flavors is between 13.5 and 15. The target brix for most "light" flavors will be lower, usually between 9 and 10. Check the specifications for the flavors if unsure of the target brix.

Note: Light or diet products have a low brix and can cause problems with the dispenser if not properly set up. Although these products have ingredients to replace the antifreezing properties of sugar, they can still create excessive ice if not carefully brixed according to their specifications. Low brix issues will be associated with events such as audible ice scraping during freeze and low beater problems.

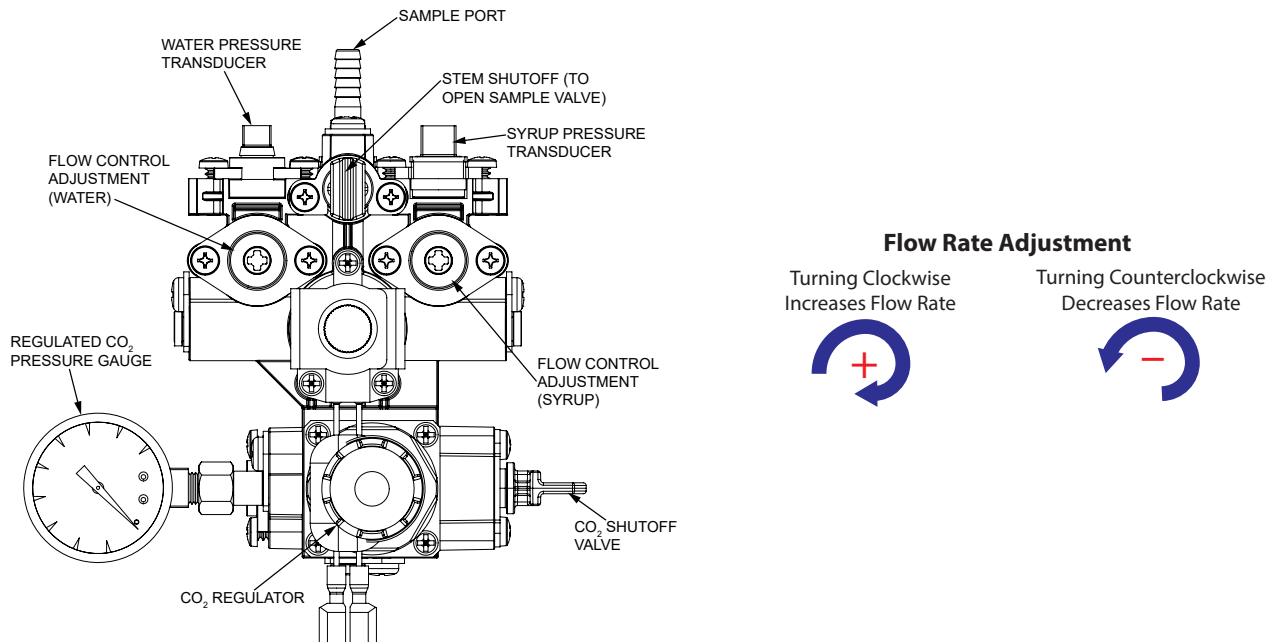


Figure 6.2 Solution Module



6.5 Filling Barrel

The barrel, or freeze chamber, must be purged of air before filling with product. Failure to displace the air with CO₂ will result in poor drink quality.

1.	Open the CO ₂ shutoff valve on the solution module for barrel 1.
2.	Select BARREL 1 on the keypad, then the FILL button to begin filling the barrel with product. If the barrel does not fill, gently pull the relief valve ring (see Figure 6.3) until filling begins and then release. As the barrel fills, the pressure in the barrel will increase until it rises above the psig fill point (set by dispenser software). At this point, the barrel will stop filling and the LCD will read "Fill Hold". It will then be necessary to pull the relief valve to relieve the pressure and allow filling to continue. Slowly pull the relief valve until the pumps activate, then release. Repeat the venting process until the barrel is 90% full (level with relief valve), then press FILL button to turn OFF.
3.	Repeat step 2 for BARREL 2.
4.	Select BARREL 1, then press FILL, press the DEFROST and then the RUN buttons to begin the freezing process. Select BARREL 2 and repeat the process. The dispenser will complete a minimum forty-five (45) second defrost cycle on each barrel and then begin the freeze process.
5.	After an initial freeze down, the product will be frozen and ready to dispense. NOTE: On an initial freeze down, products must be given adequate time to absorb CO ₂ . Until CO ₂ is properly and adequately absorbed, drinks could be too "wet" or too "heavy". If adjustments are necessary, refer to Section 7.
6.	Check CO ₂ , water, and syrup lines again for leaks.

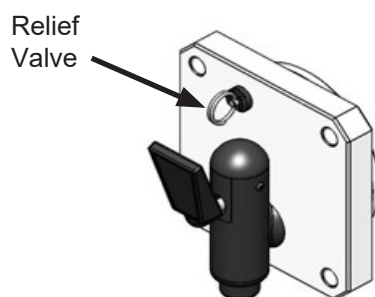


Figure 6.3 DDV Faceplate



7. DISPENSER OPERATION

There are a few critical settings that affect drink quality. These settings are preset when you receive the dispenser from the factory. However, due to variations that occur (e.g., in operating environments, syrups, dispenser differences, etc.), it may be necessary to make minor adjustments to these critical settings. Adjustments are easily made using the keypad located behind the merchandiser door at the front of the machine*, or by adjusting the CO₂ regulator located behind the access panel behind the drip tray.

There are several settings that control product quality:

- A. Brix (syrup content of beverage)
- B. Expansion
- C. Regulated CO₂ injection pressure
- D. Freeze and thaw settings

If the drink quality is not as desired, even after the stabilization period, check the critical settings (listed above) and make the necessary adjustments. The sections that follow provide additional information on these and other settings.

Note: On an initial freeze down, products must be given adequate time to stabilize. Adjustments made too quickly may negatively affect drink quality.

7.1 Brix

To ensure the dispenser produces a quality drink, the syrup content of the drink or brix level must be maintained between 13.5 and 15. A brix level lower than 13.5 may cause operational problems, produce a weak tasting drink, and tends to freeze product around the beater shaft. A high brix level (higher than 15.0) causes freeze down times to be longer and produces a more liquid drink. Water flow rate must be set to provide a flow of 15 ounces in 10 seconds (444ml/10 seconds) prior to adjusting brix (see **Section 6.4**).

7.2 Expansion

The dispenser utilizes a patented liquid level control system to hold a constant liquid level. A constant liquid level assures a quality frozen product. If a “wetter” product is desired, the numerical setting (0-6) should be increased. If a “drier” and colder product is desired, the numerical setting should be decreased. The default setting is 3 and should produce a quality drink.

Note: Before changing the Expansion settings, check the regulated CO₂ pressures for the dispenser to make sure they are adjusted properly before adjusting expansion controls.

1.	In the Settings menu, use the UP and DOWN keys to scroll to the Expansion.
2.	Use the SELECT key to make the number blink.
3.	Use the arrow key to change to the desired Expansion.
4.	Use the SELECT key to set the value.

A drink with not enough CO₂ will be heavy and may look dark in the barrel. A drink with too much CO₂ will be very light and may even collapse in the cup.

* See Section 10 for additional information on keypad buttons and how to navigate through menus.



7.3 Regulated CO₂ Injection Pressure

The CO₂ injection pressure is set by adjusting the CO₂ regulators on the solution module, located behind the access panel below the keypad in the front of the machine. The CO₂ regulators should be set at 58 to 62 psig (400 to 427 kPag). The dispenser then automatically sets the barrel pressure between 25 and 30 psig (172 and 207 kPag).

7.4 Thaw and Freeze Settings

The thaw and freeze settings signal the refrigeration system when to start and stop freezing. The liquid in the barrel freezes until it reaches the desired frozen consistency; then, the refrigeration system shuts off and the barrel begins to thaw. The liquid continues to thaw until it reaches a consistency specified by the thaw value. The thaw value is the point at which the refrigeration system turns back on and refreezes the product. This assures the product is maintained in a good, acceptable, frozen drink range.

Prior to changing any thaw or freeze settings, make sure the brix and water flow rate are correct and the liquid level control settings are properly set. Also assure the barrels stay filled to the proper levels with the proper amount of CO₂. The optimum frozen drink temperature is 24°F to 28°F (-4.4°C to -2.2°C) and should be checked prior to making any adjustments.

The thaw and freeze settings may be raised or lowered to change the temperature of the product. A default setting of 10 is set at the factory. To decrease the temperature, decrease the numerical setting; to increase the temperature, increase the numerical setting.

To change the Thaw/Freeze setting:

1.	In the Settings menu, use the UP and DOWN keys to scroll to the THAW/FREEZE menu.
2.	Press SELECT key to make the THAW/FREEZE value flash.
3.	Use the UP and DOWN keys to adjust the THAW/FREEZE value to the desired value.
4.	Press the SELECT key to save the value.

7.5 No Defrost Time Block

The dispenser has "no defrost" time settings that will prevent it from defrosting during a specified three (3) hour time block. These settings will affect both barrels and can be programmed under either of the barrel menus. The "No Def Start 1" and "No Def Start 2" represent the start time setting for each "no defrost" time block.

To program the "no defrost" time block:

1.	Scroll down until the desired "no defrost" time menu is displayed and press the SELECT button.
2.	Press the UP or DOWN buttons until the desired start time is shown (this is in 24 hour time format). Example: 1 No Def Start 1 = 3 No defrost from 3 to 6 AM 2 No Def Start 1 = 13 No defrost from 1 to 4 PM
3.	Press the SELECT button to save the setting.



7.6 Setting Wake/Sleep Times

To program Wake/Sleep times use the following steps:

1.	In the Settings menu, use the UP and DOWN arrows to scroll to WAKE TIME.
2.	Press the SELECT key and hour numbers will flash.
3.	Use the UP and DOWN keys to change the hour.
4.	Press the SELECT key again to make the minutes flash. Use the UP and DOWN keys to adjust the minutes.
5.	Press the SELECT key again when done.
6.	Use the UP and DOWN keys to scroll to SLEEP TIME.
7.	Press the SELECT key again and repeat steps 3 through 5 (above) for the SLEEP times. Note: The dispenser will defrost before going to sleep and when it wakes up.

7.7 Drink Quality

Many factors can affect the quality of a frozen beverage such as time since last defrost, brand and/or type of syrup used, and the local water quality. Drink quality settings are designed to be adjustable to compensate for natural differences in drinks and can be adjusted to drink quality of personal preference.

Please note that a barrel that has been idle for hours, such as overnight, will produce a wetter heavier drink. It is best to dispense a drink or two to recondition the barrel. This fact should be considered before making a judgment on the drink quality.

7.8 Drink Too "Firm" or Cold

A drink that is over-frozen will tend to be very cold, below 22°F (-5.5°C), and can be considered hard and difficult to suck through a straw. It can also be lighter in weight than a properly frozen drink and tends to collapse in the cup after being dispensed. To correct this, adjust the Expansion to a higher level setting. See **Section 7.2** to properly adjust the Expansion settings.

It will be necessary to dispense several drinks to allow the barrel to fill and recondition. After dispensing several drinks, defrost the barrel and refreeze. It will take several compressor cycles before the product in the barrel has reconditioned to the new setting. If the drink is still too firm, repeat the process taking the Expansion setting to the next higher value.

Note: Before changing the Expansion settings, check the regulated CO₂ pressures for the dispenser to make sure they are adjusted properly before adjusting expansion controls.

7.9 Drink Too Liquid

If the drink is cold, but is still a liquid, adjust the Expansion to a lower level setting. See **Section 7.2** to properly adjust the Expansion settings.

It will be necessary to dispense several drinks to allow the barrel to fill and recondition. After dispensing several drinks, defrost the barrel and refreeze. It will take several compressor cycles before the product in the barrel has reconditioned to the new setting. If the drink is still too liquid, repeat the process taking the Expansion to the next lower setting. Drink temperature should be between 24°F and 28°F (-4.4°C to -2.2°C). If the temperature is outside this range then check or adjust the Thaw and Freeze settings (see **Section 7.4**).

Note: Before changing the Expansion settings, check the regulated CO₂ pressures for the dispenser to make sure they are adjusted properly before adjusting expansion controls.



7.10 Defrosting

To maintain optimal product quality a frozen drink must be periodically defrosted because ice crystals grow in size over time and degraded the consistency and texture of the drink. The best drink quality is always right after defrost and refreeze. Naturally, it is ideal for the dispenser to be ready to serve drinks at all times so a balance between defrost and up time must be maintained. During times of high volume dispensing, a barrel can go longer without defrosting while low volume periods should defrost every three to four hours. This machine provides automatic defrosting every three hours if no drinks are dispensed. Dispensing drinks increases the time between defrost cycles. If additional defrosting is desired, it can be done manually (see **Section 10.6**). No defrost time blocks can also be set (see **Section 7.5**).

7.11 Barrels 90% Full on Initial Set-Up

Before beginning a RUN-FREEZE cycle, the barrels should be filled approximately 90% full (up to relief valve level). If the barrels are above the 90% level, with Fill Off, open the dispensing valve and allow a small amount of liquid to drain out. If the barrels are not 90% full, press OFF, then FILL, and then slowly pull the relief valve on the faceplate to vent gas and allow barrel to fill (the screen will display "Filling"). While venting, DO NOT let the pressure drop more than three to four (3-4) psig.

7.12 Freeze

To freeze the product down, select the barrel by pressing BARREL 1 or BARREL 2 and then press the RUN button. If the product is liquid, it will take 13 to 15 minutes per barrel (depending on temperature of product) to complete the initial freeze cycle. Dispense two drinks to condition the barrel.

7.13 Off

There are two options for turning off the dispenser. The first is to turn off one barrel at a time. To turn off, select the barrel by pressing BARREL 1 or BARREL 2 and then press the OFF button. The second option is to turn off both barrels at the same time. To do this, press the red STOP ALL button.



8. CLEANING AND SANITIZING THE UNIT

8.1 General Information

The dispensers are shipped from the factory cleaned and sanitized. After installation of the dispenser, the operator must provide continuous maintenance as described in this manual and/or local codes to ensure proper operation and sanitation requirements are met.

Cleaning and sanitizing should be carried out only by trained personnel. Sanitary gloves are to be used during cleaning and sanitizing operations. Applicable safety precautions must be observed. Instruction warnings on the product being used must be followed.

A few precautions while cleaning:

- Water lines are NOT to be disconnected during the cleaning and sanitizing process. This is to avoid contamination.
- DO NOT use strong bleaches or detergents when cleaning the exterior of the equipment. They will discolor and possibly corrode various materials.
- DO NOT use metal scrapers, sharp objects, steel wool, scouring pads, abrasives, solvents, etc., on the dispenser as they can damage the finish on various materials.
- DO NOT use waterjet to clean dispenser.

8.2 Daily Cleaning

A mild soap solution such as hand dishwashing detergent diluted with water at 90°F to 100°F (32°C to 38°C) should be used to clean the exterior of the equipment. Remove all product residues from the surfaces of the dispenser. Rinse thoroughly using clean water also at 90°F to 100°F (32°C to 38°C) to remove the remaining soap. Remove the drip tray (if not connected to drain plumbing) and cup rest and clean in a sink using a mild soap solution.

8.3 Sanitizing

The dispenser should be sanitized yearly. Prepare a chlorine solution containing 100 PPM of available chlorine with clean water at 90°F to 100°F (32°C to 38°C). Commercial beverage equipment sanitizing and cleaning solutions such as Kay-5 or Stera Sheen are preferred because they also contain surfactants to assist in cleaning. If using a commercial sanitizer/cleaner such as this, then prepare according to their directions.

The following procedure must be followed for sanitizing the dispenser.

1	Press the STOP ALL button, followed by the DEFROST button, for both barrels.
2	Turn off water and syrup at the inlet of the dispenser or at the source.
3	After defrost is complete, activate the solution solenoids on each barrel.
4	Place a container under the dispensing valve and empty the barrels. Activate the beaters to facilitate removal of product.
5	Turn off the solution solenoids and beaters after the barrels are empty.
6	Prepare five (5) gallons of sanitizing solution following manufacturer's directions. The water temperature should be 110°F to 115°F (44°C to 46°C). Stir the solution until sanitizing agent has completely dissolved.



7	Take an empty BIB and cut off the connector. Attach the BIB connector to the connector on the syrup line to serve as a BIB adapter. This will open up the syrup line connector and allow for cleaning solution to be pumped into the dispenser.
8	Open the sample valve until water is purged from the system.
9	Place a container under the sample port and open the sample valve to purge syrup and water from lines. When the tubing is clear of syrup, lower sanitizing BIB adapters into sanitizing solution. Continue purging lines until any syrup in the line clears.
10	Activate the solution solenoids for each barrel using the SELECT key.
11	Fill each barrel approximately 2/3 full with sanitizing solution/water mixture then deactivate the syrup solenoids.
12	Remove the BIB connectors from the cleaning solution.
13	Activate the solution solenoids to evacuate the solution from the barrels. Once the barrels are evacuated, deactivate the solution solenoids and purge pressure from cylinders by pulling faceplate relief valve.
14	Place the BIB connectors in the cleaning solution and activate the solution solenoid and allow the barrels to fill 1/2 full of sanitizing solution. Deactivate the solution solenoids and turn on beaters. Let solution agitate for three (3) minutes.
15	Remove the BIB connectors from the cleaning solution.
16	Activate the solution solenoids and evacuate the sanitizing solution from the barrels. Turn off beaters, deactivate the solution solenoids and purge pressure from barrels.
17	Remove sanitizing adapters from the BIB lines and reconnect the lines to the syrup supplies.
18	Turn on water at source.
19	Partially refill the barrels (1/3 full) with syrup and water by activating the solution solenoids. Turn off the solenoids. Run the beaters for a few seconds.
20	Drain the product by opening the dispense valve.
21	Partially refill the barrels again and test the product for off-taste. Repeat the drain/fill process until no off-taste exists.
22	When there is no more off-taste, fill the dispenser following the procedure outlined in Sections 6.3 through 6.5.



9. ROUTINE MAINTENANCE

9.1 Air Filter Cleaning

The air filter must be cleaned monthly to ensure proper operation of the dispenser. A dirty air filter will reduce the refrigeration capacity and can potentially damage the compressor. To remove the filter, start by removing the left and right side panels. The filter will be located under the condenser on the back top section of the dispenser (see **Figure 9.1**). Remove the filter by bending the corners in and pulling the filter down and then out through one of the sides of the dispenser. Clean the filter with a mild dishwashing soap and water solution and dry thoroughly before reinstalling. Make sure to not use water that is too hot or it may damage the filter. A degreaser may be required if the filter is greasy. To install the filter, slide into filter location through one of the sides of the dispenser being careful not to pull on any of the harnesses. Once filter has been placed over back top section of the dispenser, push the filter up so that it sits on the frame edges.

NOTE: If the dispenser is located in a particularly dusty area or with airborne grease such as the cooking area of a fast food restaurant, then the filter should be cleaned every two weeks.

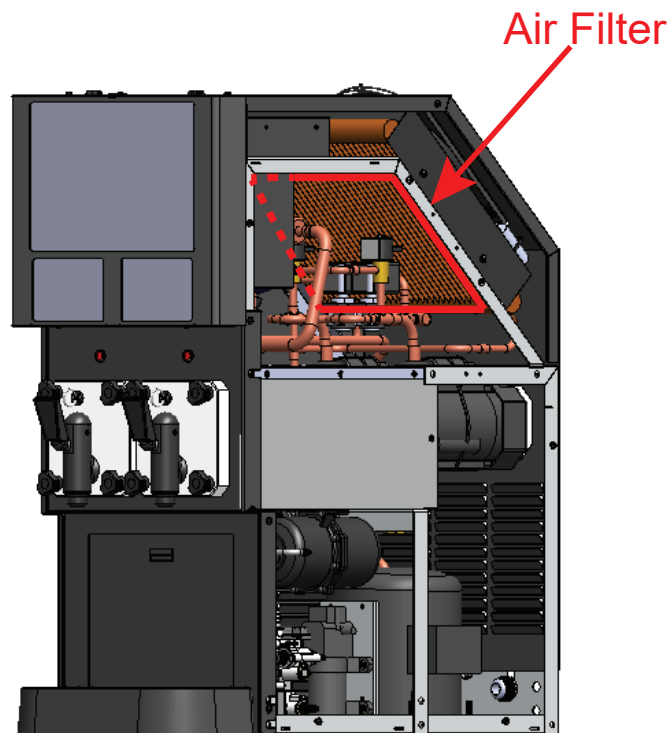


Figure 9.1 Air Filter Location



9.2 Rear Seal Replacement

The motor rear seals must be replaced annually. Failure to do so can result in rear seal leaks and potential motor failures. If the dispenser has been in storage for longer than 90 days, FBD recommends that the rear seals be replaced. The rear seal can be replaced from the front of the dispenser. The barrel must be drained and the faceplate removed to access the seal. The following process describes the procedure for one barrel. Repeat for second barrel.

1	Turn off the water and syrup supply shutoff valves to the dispenser.
2	Select the barrel by pressing BARREL 1 on the keypad, then the DEFROST button.
3	After the defrost cycle is complete, place a container under the dispensing valve and empty the barrel by discarding product through the dispenser valve. Note: CO ₂ solenoids can be manually actuated from Manual ON/OFF menu to aid in emptying product from barrel.
4	Vent the barrel of all pressure.
5	Remove the faceplate and beater bar. Be sure to catch the remaining liquid from the barrel when removing the faceplate.
6	With a small pick or corkscrew type seal puller, reach into the back of the barrel and remove the rear seal (Figure 9.2). Discard the used seal.
7	Lubricate the inner diameter on the new seal with Dow Corning 111 lubricant or any other lubricant approved for food contact. <ul style="list-style-type: none"> DO NOT lubricate the outer diameter of the seal. DO NOT use a hydrocarbon based lubricant as swelling and premature seal failure will occur.
8	Reinstall the seal with the "V" groove facing the product chamber. Ensure the rear seal is firmly seated by checking to make sure it is flushed with the back of the barrel.
9	Reinstall the beater bar and faceplate.
10	Turn on the water and syrup supply shutoff valves to the dispenser. Complete gas purge, brining, and fill barrel processes as outlined in Sections 6.3 through 6.5 .

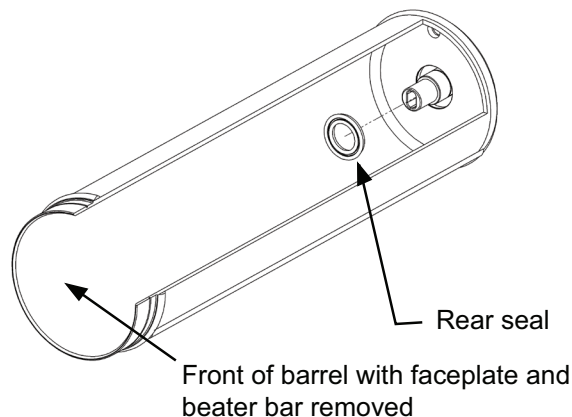


Figure 9.2 Rear Seal Placement



10. MENUS AND NAVIGATION

10.1 Keypad and Buttons

The keypad is the user interface point and allows for control of the dispenser and navigation of the menus. Please review the keypad layout (**Figure 10.1**) to familiarize yourself with the interface.

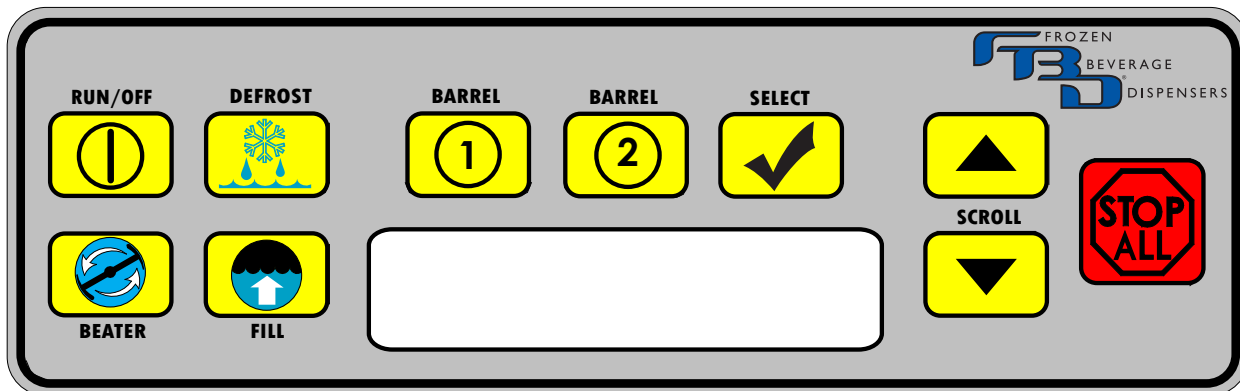
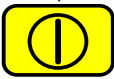





Figure 10.1 Keypad

10.2 Process Buttons



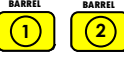

The first 4 buttons on the left of the keypad (**Figure 10.1**) are process buttons and are double-acting switches. Pressing the button once activates the process; pressing the button a second time deactivates the process. Take care not to double press the buttons when first activating a process. The buttons all operate the selected barrel which is selected by pressing the BARREL 1 or BARREL 2 buttons.

<p>RUN/OFF</p> 	<p>The RUN/OFF button initiates the freeze process and can wake the dispenser if it is in sleep mode. After pressing this button, the beater motors will run for five seconds before the compressor starts. RUN also maintains the flow of product into the barrels when needed. Always press the DEFROST button first to baseline the dispenser.</p> <p>OFF turns off all the machine's refrigeration and chamber refill systems. All of the electronic controls are still active.</p>
<p>BEATER</p> 	<p>The BEATER button activates the beaters inside the barrels. The beaters can be activated to mix the slurry.</p> <p>Note: The beaters start automatically when the RUN or DEFROST buttons are pressed.</p>
<p>DEFROST</p> 	<p>The DEFROST button allows the user to manually defrost the barrel. Because the dispenser automatically defrosts during the day, it is not necessary to defrost manually. However, this button provides the option to do so if desired.</p>
<p>FILL</p> 	<p>The FILL button activates the solenoid valves that allow product to flow into the barrels (providing the pressure in the barrel is low enough to allow a fill). Each barrel should be filled to 90% of capacity (level with the pressure relief valve) prior to start-up.</p>



10.3 Navigation/Selection Buttons

The remaining buttons on the keypad (**Figure 10.1**) are used to navigate through the menus or to select options and functions.

	<p>The SELECT button allows the operator to enter changes in the dispenser programming and it allows the operator to move into different levels in the menu.</p>
	<p>The SCROLL buttons are used to navigate through the menus.</p>
	<p>Selects the barrel for which to make changes, activate functions, or view settings.</p>
	<p>Stops all functions for all barrels.</p>

10.4 LCD Display

The barrel status is displayed in the upper half of the LCD (see **Figure 10.2**). The left side shows barrel 1 status and the right side shows barrel 2 status. The current mode or option is displayed in the lower half of the LCD.



Figure 10.2 Keypad Display



10.5 Accessing and Changing Values

The same procedure for changing values applies to all levels of the control panel. Parameters of the control system can be monitored or changed as follows.

The UP and DOWN scroll buttons can be used to move to the next mode or option on the menu. Continue pressing the UP or DOWN button until the desired option is displayed. Then press SELECT button to enter that mode/option.

When accessing an option for which the value can be changed, once the option is shown on the display, press the SELECT button. The value for that option will then begin to flash. This indicates the value can now be changed. Use the UP or DOWN buttons to increase or lower the value. Once new value is selected, press SELECT button to save the new value. This will stop the value from flashing and save the change. Values that can be adjusted can be found on the Top Menu (Date & Time) and on the Settings Menu and Manual ON/OFF Menu (see **Figure 10.3**).

Since there is no "back" or "return" button, at the end of each of the Level 2 and Level 3 menus (see **Section 10.6**) there is a "<SELECT> to Exit" option that allows you to go back a level. Pressing the SELECT button from this option will move you back to the previous menu option (one level back).

10.6 Menu Structure

Access to the control panel is separated into different levels (see **Figure 10.3**).

Level 1

Level 1 or the Top Menu as shown in **Figure 10.3** provides access to change date and time settings, provides software version, and also provides access to various other menus.

Top Level Options	
SOFTWARE NUMBER	Displays the software number and revision.
DATE	Displays current date.
TIME	Used to set the time and day. The machine uses a 24 hour format (military time) clock. The clock has a battery backup which maintains correct time even if not connected to electrical power.
ALTERNATE LANGUAGE	Used to set display menu language. Option to choose between Chinese and English.



Level 2

Level 2 provides access to the values and settings for each of the following menus: Settings Menu, Readouts Menu, and Manual ON/OFF Menu. It also gives access to the values for Machine Totals (shown under Level 3 menu).

Settings Menu: Used to make adjustments to machine settings.

THAW/FREEZE	Changes the temperature of the drink.
EXPANSION	Adjusts the expansion in the drink.
WAKE/SLEEP	Wake sets the time at which the dispenser will automatically turn on. Sleep sets the time at which the dispenser will automatically turn off.
NO DEF START 1 NO DEF START 2	Sets the start times for a three (3) hour window with NO DEFROST. The settings affect the entire dispenser and will not defrost either barrel during this NO DEFROST time block. The settings can be changed from either barrel menu.

Readouts Menu: Displays information for troubleshooting and cannot be adjusted.

BEATER %	Represents the Thaw/Frozen status of each barrel (the load on the motor).
BASELINE	Represents the beater % value of each barrel with liquid product.
LINE VOLTAGE	Current voltage from wall outlet.
TANK PRESSURE	Displays current pressure in each barrel.
SYRUP PRESSURE	Displays syrup pressure at the header.
RETURN TEMP	Represents the current temperature of the return refrigerant line to the compressor.
INLET TEMP	Represents the current temperature of the inlet refrigerant line to the compressor.
DELTA T	Return temperature minus inlet temperature.
DUTY CYCLE	Displays barrel 1/barrel 2 current duty cycle.
NEXT DEF	Next Defrost, displays the number of minutes before next defrost for each barrel.
H2O PRESSURE	Displays water pressure at the header.

Manual ON/OFF Menu: Allows user to turn various items or functions on or off.

FILLING SOL	Activates/deactivates the solenoid that fills the barrel.
DEFROST SOL	Activates/deactivates the defrost solenoid.
REFRIG SOL	Activates/deactivates the refrigeration solenoid.
COMPRESSOR	Turns the compressor on and off.
FAN MOTOR	Turns the fan motor on and off.
PRODUCT OUT	Turns the sold-out light on and off.



Level 3

Level 3 provides access to the machine values or usage information of the dispenser during operation for barrel 1 (Side 1 Totals), barrel 2 (Side 2 Totals), common dispenser values (Common Totals), and access to reset any of these values.

Note: Common settings or readouts are values or readings that affect or are common to both barrels. The values can be viewed or changed through either of the barrel menus.



Level 1

Level 2

Level 3

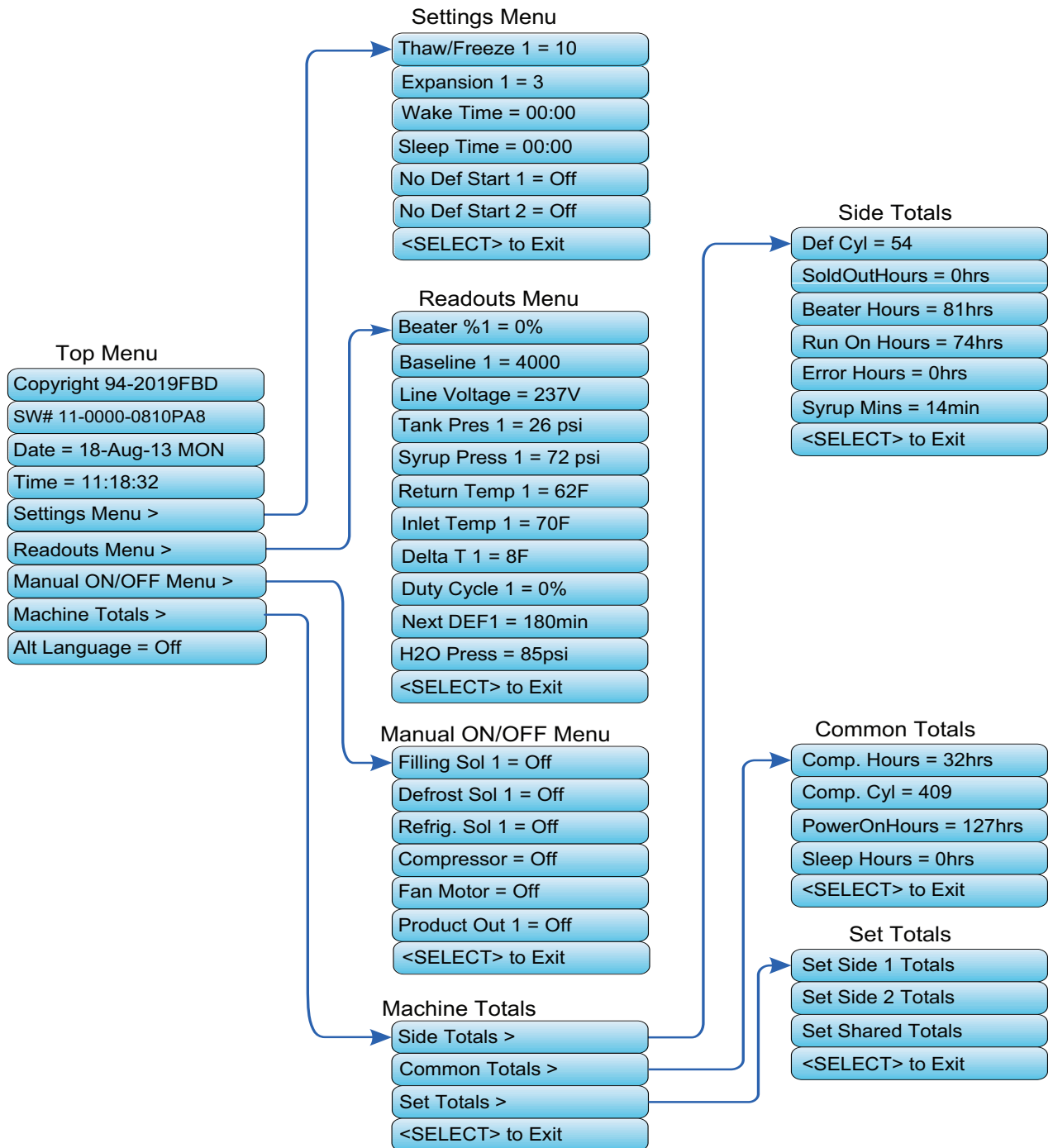


Figure 10.3 Menu Structure



11. TROUBLESHOOTING GUIDE

The following information is a listing of the most common problems that could keep the dispenser from operating properly. Contact the factory for details, when necessary.

11.1 Mechanical

TROUBLE	CAUSE	REMEDY
Barrel will not fill. NOTE: H ₂ O readout should be 15 psig (103 kPag) higher on the readouts. Keep incoming regulated CO ₂ at 70-72 psig (483-496 kPag).	"Fill" off.	Press FILL button. "Filling" or "Fill Hold" will appear on LCD display.
	Pressure in barrel above "RFILL" (refill) pressure point.	Gently pull faceplate relief valve to relieve pressure in barrel.
	"Defrosting" or "Sleeping".	Press DEFROST, then RUN. Wait for dispenser to freeze and red light to go out.
	Out of CO ₂ , syrup or water.	Check LCD messages.
	Tank pressure readout not moving between 18 and 40 psig (124 to 276 kPag) or doesn't lower when barrel pressure is reduced.	Observe "Tank Pressure" reading. Check transducer and replace if necessary.
	Transformer problem.	Check the transformer input and output. Refer to Section 12.3 for electrical wiring schematic. The output should be 22.4-25.6V. Replace transformer if necessary.
Barrel fills even when turned off.	Solution solenoid plunger sticking.	Energize solution solenoid and check for 24VAC at coil. Clean or replace solenoid if necessary.
	Solution solenoid let "ON".	Turn solenoid off.
Out of product displayed (Out of Water, Syrup or CO ₂).	Dispenser receiving no water, syrup and/or CO ₂ .	Assure water is on and CO ₂ supply is not empty or turned off. Also check to see that syrup container is not empty and is connected.
	Restriction in lines.	Assure all lines are free of crimps or restrictions.
	Regulator pressures (dispenser and syrup pumps) too low.	Check pressure readouts (H ₂ O and syrups) for proper settings. Adjust regulators if necessary.
	Syrup or water pump failure.	Check all pumps and replace if necessary.
	CO ₂ or water can't keep up with dispenser demand.	Reroute water or CO ₂ lines to maximize supply pressure. Install water booster if necessary.

(continued on next page)



TROUBLE	CAUSE	REMEDY
Out of product displayed (Out of Water, Syrup or CO ₂). (continued from previous page)	Excessive pressure drops in syrup lines.	Observe "Syrup Press" readouts as barrel fills to verify. Increase line diameter or relocate syrup source closer to unit. Syrup pressures may only be raised (by increasing pump CO ₂ pressure) if separate regulators are installed for dispenser and syrup pumps. Never exceed pump manufacturer's recommended maximum CO ₂ inlet pressure.
	Transducer problem (H ₂ O or syrup).	Check pressure readouts (H ₂ O and syrup) for proper settings. If CO ₂ is not within 70-72 psig (483-496 kPag), adjust regulator and/or check transducer. H ₂ O will be about 15 psig (103 kPag) higher. Replace transducer if necessary.
Product does not flow freely or does not flow at all from dispensing valve.	Faulty CO ₂ check valve.	Check tank pressure. If low, inspect CO ₂ check valve. Clean or replace if necessary.
	Solution solenoid valve won't open.	Energize solution solenoid and check for 24VAC at coil (see Section 10.6). Clean or replace solenoid if necessary.
	Ice particles in dispensing valve.	Run defrost cycle. If necessary, open and close dispensing valve several times or run warm water over valve.
	Product in cylinder is frozen too hard or solid.	1. Check water/syrup flow rates and brix. Adjust if necessary (see Section 6.4). 2. Defrost barrel. Assure barrel is filled to 90% of capacity, then press RUN.
	CO ₂ shutoff is closed.	Open CO ₂ shutoff and adjust secondary CO ₂ regulators inside of dispenser to to 60 psig (414 kPag).
Product leaking from rear of cold pack.	Rear seal worn or damaged.	Replace with new seal.
	Seal is not positioned correctly.	From inside barrel reseal seal and make sure it is flush with back of barrel.
	Beater drive coupling is worn.	Replace coupling.



TROUBLE	CAUSE	REMEDY
Leaking brix sample valve.	Damaged or failed seal or O-ring on valve.	Turn off CO ₂ water and disconnect syrup. Depressurize by opening the sample valve. Remove clamp from sample valve. Remove sample valve, change O-ring and washer and reinstall.
	Inside of solution module is scratched or damaged.	Replace solution module.
Low or no water pressure.	Water not turned on or line restricted.	Turn on water. Check for line restrictions.
	CO ₂ not turned on or too low.	Assure CO ₂ is turned on and verify pressure is at 70-72 psig (483-496 kPag).
	Water pressure transducer.	Verify "H2O Pressure" readout is correct. Check transducer and replace if necessary.
	Water pump failure.	Check water pump and replace if necessary.
Noisy condenser fan.	Fan contacting condenser, fan blade guard, or other part.	Remove fan guard and adjust fan up or down as required. Remove obstruction as necessary. Reinstall fan guard.
	Loose fan bracket fasteners.	Tighten loose fasteners.

11.2 Electrical

TROUBLE	CAUSE	REMEDY
Solenoids not activating.	Solenoid plunger not lifting.	Energize solenoid on and off checking for plunger movement and 24VAC at coil. Clean or replace solenoid if necessary.
	Connectors not plugged in at board or solenoid.	Assure connections are clean and secure at solenoid coils.
Solenoids continuously activated.	Solenoid plunger not dropping.	Energize solenoid on and off checking for plunger movement and 24VAC at coil. Clean or replace solenoid if necessary.
	Transducer failure.	Observe "Tank Pressure" readouts and check corresponding transducer. Replace transducer if necessary.
Excessively slow or low beater counts.	Product is frozen too hard.	Verify correct brix settings. Defrost barrel, refill to 90% of capacity and refreeze.

(continued on next page)



TROUBLE	CAUSE	REMEDY
Excessively slow or low beater counts. (continued from previous page)	Beater motor capacitor.	Check motor capacitor and replace if necessary.
	Beater motor problem.	Replace beater motor.
Excessively rapid or high beater counts.	Low brix.	Defrost barrel and check brix. Adjust if necessary.
	Insufficient defrost.	Defrost barrel and check return temperature at the end of defrost.
Ammonia smell in electrical box.	Start capacitor has failed.	Verify blown capacitor. Replace start capacitor and check start relay. Replace relay if necessary.
Fan motor not running.	Dispenser in "Defrost" cycle.	Check fan after completion of defrost cycle.
	Board failure.	Replace board.
	Contact not engaging.	Check 24VAC at coil and 115VAC at contactor T1 and T2 (refer to electrical diagram, Section 12.3 , for contactor terminal locations). For 230VAC dispensers, the voltage between T1 and T2 should be 230VAC. Replace contactor if necessary.
	Bad fan motor.	Replace fan.
LCD readout garbled or blank.	Board problem.	Replace board.
One or more keypad buttons will not function.	Cable connecting main control (upper) board to keypad not connected properly.	Check for loose or incorrect connections.
	Faulty control cable.	Replace keypad.
Clock shows incorrect time/date.	Initial setting incorrect.	Change clock settings (see Sections 10.5 and 10.6).
	Clock battery failure.	Replace clock battery on upper board.
Faulty tank pressure reading on LCD.	Pressure transducer failure.	Check transducer and replace if necessary.
	Possible short in wiring from transducer to PC board.	Clean and dry both ends of cable and check for loose connections.
	Poor contact within connector.	Reposition or replace transducer.



11.3 Refrigeration

TROUBLE	CAUSE	REMEDY
Compressor won't start.	Incorrect start procedure.	Press DEFROST then RUN to start.
	Out of CO ₂ , syrup, or water.	Check pressure readouts to be between 70-72 psig (483-496 kPag), adjust regulators if necessary.
	Run capacitor problem.	Test run capacitor. Replace if necessary.
	Contactors failure.	<ol style="list-style-type: none"> 1. In Manual ON/OFF, activate "Compressor." Do not run compressor for more than 10 seconds. If contactor energizes, quickly check voltage across contactor T1 and T2 for 115V. If no voltage reading, replace contactor. 2. In Manual ON/OFF, activate "Compressor." Do not run compressor for more than 10 seconds. If contactor does not energize quickly, check voltage across coil terminals for 24VAC. If voltage is present, replace contactor.
	Board not sending power to contactor coil.	Test harness for 24VAC output. Replace harness if necessary.
	Board problem.	Replace board if necessary.
	Transformer problem.	Test transformer for 230VAC input. Also check for 24VAC output. Replace transformer if necessary.
	Compressor failure or overheated.	Wait for compressor to cool. Check amperage draw on compressor. Check compressor wiring and terminals. Replace compressor if necessary. Check that defrost and refrigeration solenoids are ON when defrosting.



TROUBLE	CAUSE	REMEDY
<p>Compressor runs for a long time but the barrels won't freeze down.</p> <p>Caution: Contact FBD Warranty Dept. before tapping system if dispenser is under warranty.</p>	Return temperature not dropping.	Verify that return temperature drops below 25°F (-3.9°C). Return temperature should drop down to 20°F to 25°F (-6.7°C to -3.9°C) within 7 to 25 minutes of startup (no drinks dispensed).
	Hot gas valve is activated in Manual ON/OFF.	Turn off defrost solenoid.
	Refrigeration solenoid not activating.	Check if solenoid is ON by navigating through the menu. Replace board if the solenoid does not come ON during "freeze."
	Hot gas valve is stuck open, or debris is preventing valve from closing.	Recover refrigerant and remove blockage, or replace valve if necessary. Recharge system with R404-A (use the specifications label on the back of the dispenser for charge amount).
	Refrigeration valve not opening.	<ol style="list-style-type: none"> 1. Test refrigeration valve coil to ensure it is receiving 24VAC. Replace refrigeration valve if plunger inside doesn't move. Recover refrigerant and replace valve. Recharge system with R404-A (use the specifications label on the back of the dispenser for charge amount). 2. Test for 24VAC output at the harness. Replace if necessary.
	Expansion valve restriction.	Recover refrigerant and remove blockage, or replace valve if necessary. Recharge system with R404-A refrigerant (use the specifications label on the back of the dispenser for charge amount).
	Refrigeration leak or low refrigerant charge.	Put gages on system and check pressures. Single side suction should be between 40-45 psig (276-310 kPag), dual side between 45-50 psig (310-345 kPag). Single and dual side discharge should be 230-255 psig (1,586-1,758 kPag). Check for and repair leaks then recharge system with R404-A refrigerant (use the specifications label on the back of the dispenser for charge amount).



TROUBLE	CAUSE	REMEDY
High head/suction pressure.	Condenser air flow restricted.	Check for air flow restriction, clean condenser and air filter.
	Compressor damage.	Check amp draw on compressor.
	High ambient temperature.	Temperature surrounding unit should be less than 90°F (32°C).
Low head/suction pressure.	Low refrigerant level.	See solution for "Compressor runs for a long time."

Caution: Do not pressurize low side (evaporator and compressor suction) above 150 psig (1,034 kPag) for any reason. Components will fail and warranties will be void.

11.4 Drink Quality

TROUBLE	CAUSE	REMEDY
Drink to "wet" or "liquid."	Barrel not filled properly.	Defrost, then ensure barrel is filled to 90% capacity.
	CO ₂ check valve clogged.	Clean or replace check valve.
	CO ₂ level in drink too low.	1. To affect ALL barrels, raise "primary CO ₂ " within 70-72 psig (483-496 kPag) range. 2. To affect ONE barrel, adjust secondary CO ₂ regulator for that barrel inside of the dispenser to 58-62 psig (400-427 kPag).
	CO ₂ shutoff valve is off.	Open valve and refill barrel.
	Secondary CO ₂ regulator inside of dispenser malfunctioning.	Check secondary regulator. Repair or replace if necessary.
	Incorrect brix or water/syrup flow rates.	Check water and syrup flows and adjust if necessary. Then check brix (see Section 6.4).
	"Tank Pressure" readout not moving between 18 and 40 psig (124 to 276 kPag) or doesn't lower when barrel pressure is reduced.	Observe tank transducer, check and replace if necessary.
	CO ₂ orifice is blocked.	Remove blockage.
Drink quality is too light.	Barrel not filled properly.	Defrost and assure barrel is filled to 90% of capacity.
	Incorrect brix or water/syrup flow rates.	Check water and syrup flows and adjust if necessary. Then check brix (see Section 6.4).

(continued on next page)



TROUBLE	CAUSE	REMEDY
Drink quality is too light. (continued from previous page)	CO ₂ level in drink is too high.	Lower "Reg CO2" within 58-62 psig (400-427 kPag) range.
	Secondary regulator pressure rise.	Pressure rising out of 58-62 psig (400-427 kPag) range. Repair or replace the secondary regulator if necessary.
	Solution solenoid malfunctioning and not allowing the barrel to fill.	Activate "Filling." Check for 24VAC at coil. Clean solenoid or replace if necessary.
	Board not sending power to solution solenoid.	Test harness for 24VAC output. Replace board if necessary.
Drinks "collapse" or "fall" (CO ₂ is escaping from the drink).	Barrel not filled properly.	Defrost and assure barrel is filled to 90% capacity. Then press RUN.
	CO ₂ level in drink too high.	Lower "Reg CO2" within 58-62 psig (400-427 kPag) range.
	Air not cleared from barrel prior to filling barrel.	Follow "Filling Barrel" instructions in Section 6.5 .
	Contaminated syrup supply.	Syrup being used is more than three months old, or is not an FCB syrup. Replace with new syrup.
	Contaminants in product from excessive lubrication of valve or seal.	Flush barrel and remove excessive lubrication contaminants.
	Contaminated CO ₂ or water supply.	Contact CO ₂ supplier or plumber.
Drink tends to "grow" or continue to expand in volume after drawing into cup.	Incorrect brix or water/syrup flow rates.	Check water and syrup flows and adjust if necessary. Then check brix (see Section 6.4).



12. DIAGRAMS AND SCHEMATICS

12.1 Mounting Template

To permanently secure the dispenser to a countertop, use the provided mounting diagram (**Figure 12.1**) to drill 7/16" or 11 mm clearance holes in the countertop. Next, place the dispenser in position and install 3/8" - 16 UNC or M8 bolts from the underside of the countertop into the threaded bosses in the frame. Add nuts to fasten bolts. Seal the dispenser to the countertop with a bead of clear silicone caulk around the base of the frame to prevent spills from collecting under the dispenser.

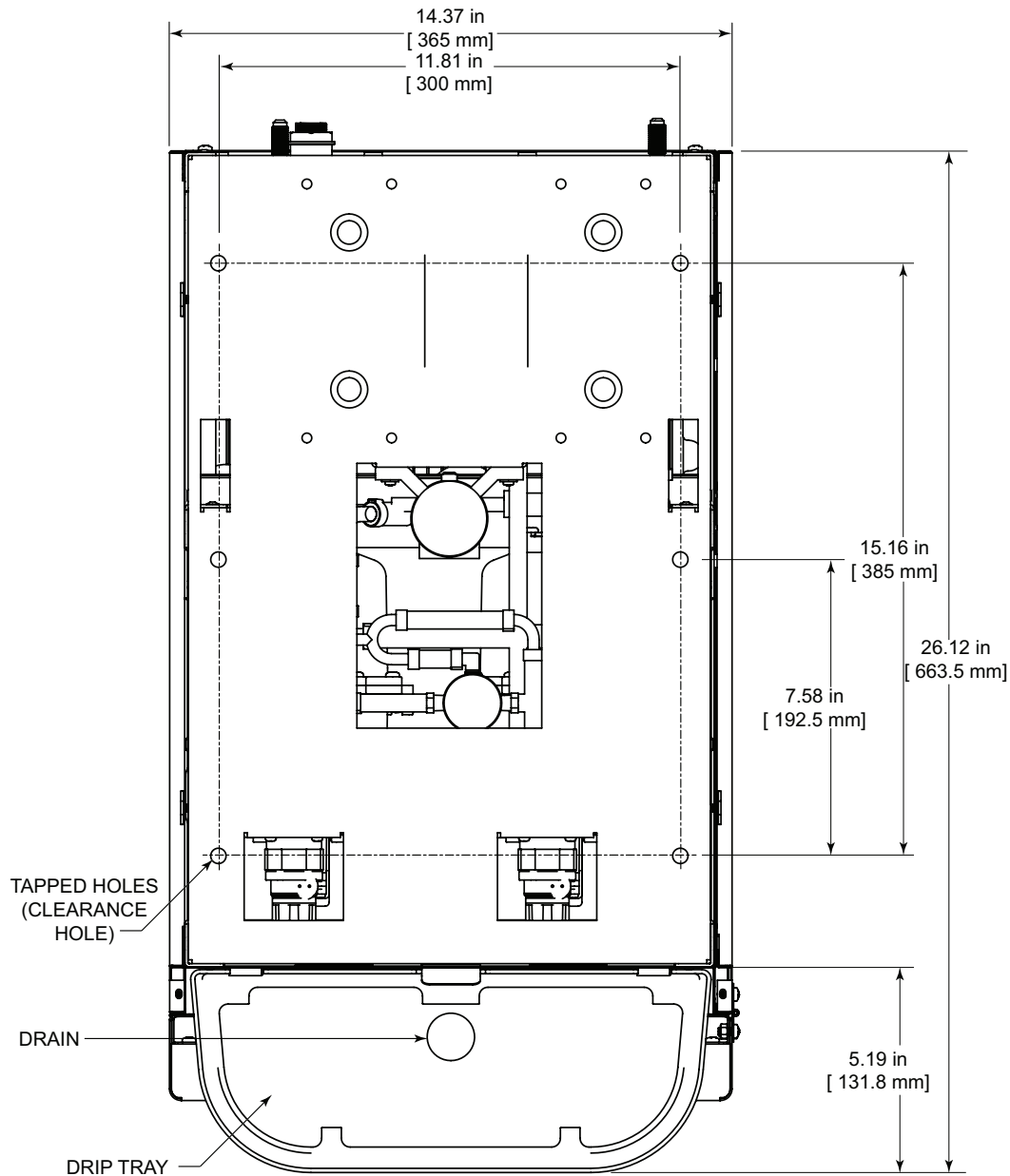
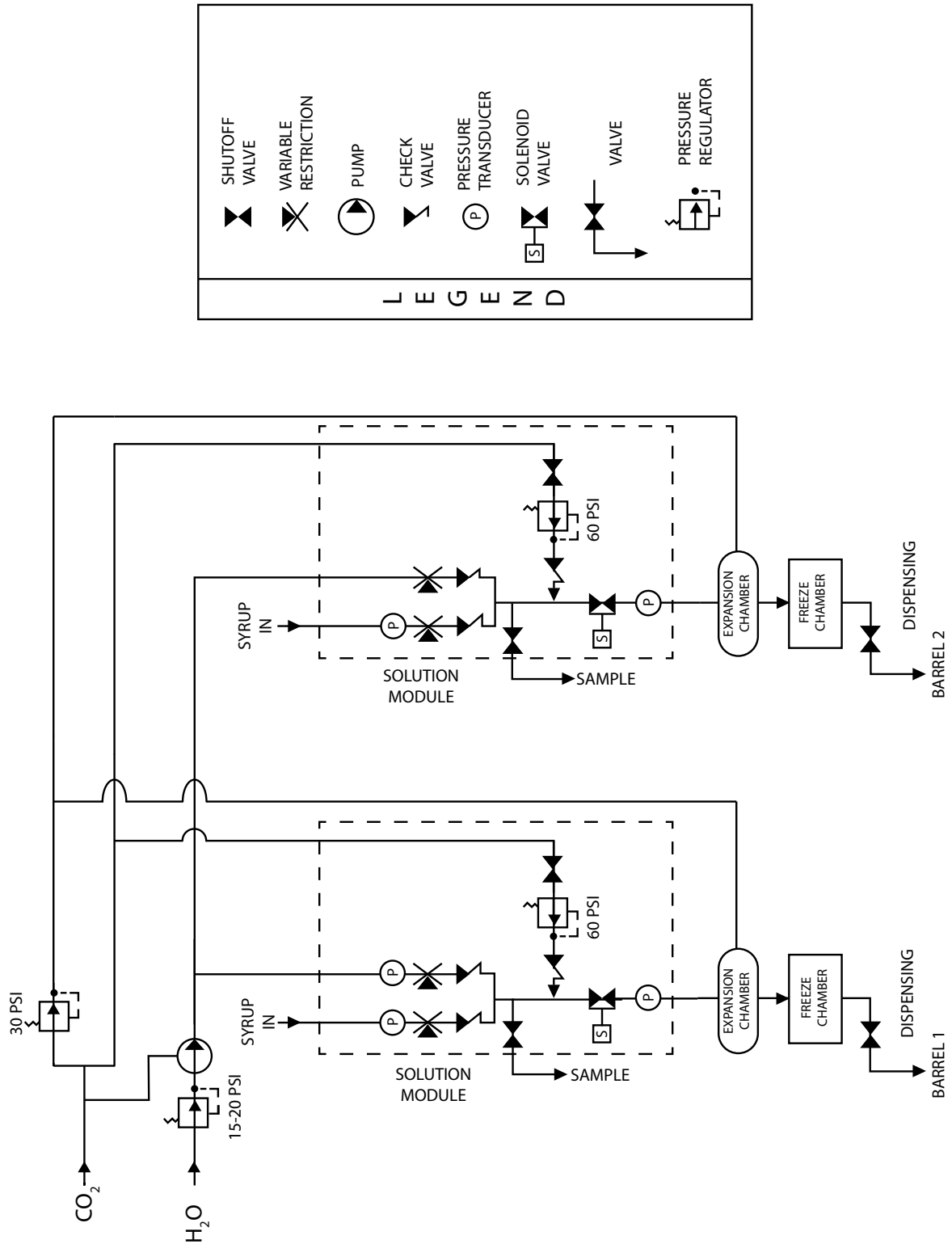


Figure 12.1 152 Mounting Diagram



12.2 Flow Diagram



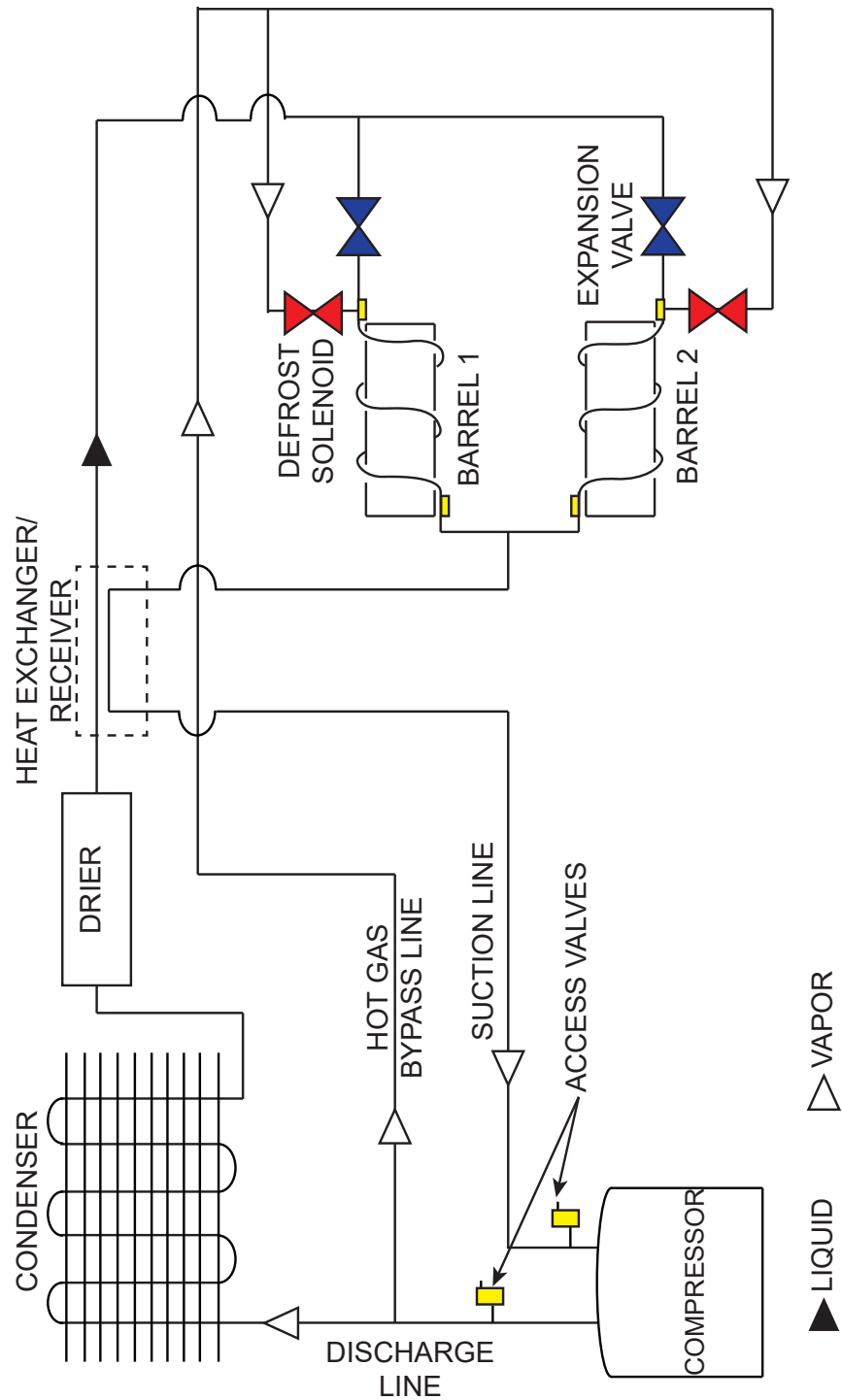
! WARNING

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**14-0391-0002 CONTACTOR,
2 POLE 30 AMP**



12.4 Refrigeration Schematic Diagram



NOTES

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