



Frozen Beverage Dispensers
EVERYONE LOVES FROZEN™

37X SERIES

INSTALLATION & OPERATION MANUAL



372/373 MODEL

24-37XM-0001_01



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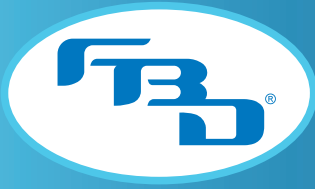


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* While Sections 1-12 contain information specific to the common configuration of the 37X dispenser, the Appendices detail information for various unique configurations. If you are the owner of a unique configuration please refer to the Appendix that coincides with your dispenser. An annotation symbol will be added to each section where additional information is being provided on the Appendices for that specific dispenser configuration. The dispenser type, appendix, and annotation symbol are listed below.

Dispenser	Appendix	Annotation Symbol
372 Nitrofub	A	NF



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)^{NF*}

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 may 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

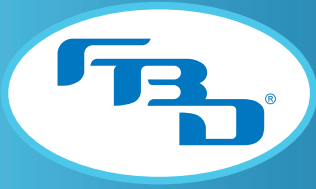
This equipment, depending on the model, weighs up to 304 pounds (138 kilograms) and is top-heavy. To avoid personal injury or equipment damage, do not attempt to lift the dispenser without help. The use of a mechanical lift is highly recommended. When lifting and positioning the dispenser, it should always stay in a vertical upright position.

2. LEGAL

This manual is for general informational purposes only and is not intended to cover every potential installation or operational possibility. The parts and equipment addressed herein are warranted only to the extent covered by FBD's Parts and Equipment Warranty. FBD makes no express warranties as to any matter whatsoever and hereby disclaims all implied warranties including, without limitation, the implied warranties of merchantability and fitness for any particular purpose. In no event shall FBD be liable or obligated to any customer or to any third party for incidental, consequential, or special damages, regardless of the theory of liability, arising out of, or in any manner related to FBD parts, equipment or any delay with respect to its delivery.

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*Refer to Appendices for additional information on NitroFub configuration.



3. SPECIFICATIONS

3.1 General Requirements ^{NF*}

Requirement	
Syrup Supply Pressure	70 - 72 PSIG** (483 - 496 kPag)
Water Supply Pressure	30 PSIG (207 kPag) Minimum Flowing Pressure 70 PSIG (483 kPag) Maximum Static Pressure
CO ₂ Supply Pressure	70 - 72 PSIG (483 - 496 kPag)
Clearance	3" (76 mm) Sides and Back, 12" (305 mm) Top
Refrigerant	R404A

3.2 Electrical Requirements

Requirement	
Frequency	60 Hz
Operational Voltage	230 VAC ± 10%
Current	20 A

3.3 Dimension and Weight Specifications

Specifications	372	373
Width	15.8" (400 mm)	20.1" (511 mm)
Depth	25.2" (640 mm)	25.2" (640 mm)
Height - Short Door	31.5" (800 mm)	31.5" (800 mm)
Height - Tall Door	37.7" (958 mm)	N/A
Weight - Empty	199 lb (90 kg)	215 lb (98 kg)
Weight - Operational	217 lb (98 kg)	239 lb (108 kg)
Weight - Shipping	233 lb (106 kg)	304 lb (138 kg)

*Refer to Appendices for additional information on NitroFub configuration.

** All pressure values are listed in the manual in PSIG (kPag). However, the pressure readouts will be shown as "PSI" or "kPa" on the dispenser display depending on the setting selected for "DISPLAY UNITS" (see Section 10.10).



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 and accessory kit 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. 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 for the dispenser. 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.

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 state and 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 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 three-prong, 20 A, locking-type plug. The mating wall receptacle must be a NEMA L6-20R to 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 a single phase 230 VAC \pm 10%. If the line voltage is above or below the required, a buck-boost transformer must be used. Operation above or below the required voltage 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.

Do not connect the dispenser to power at this time.

5.5 Connecting to Water Supply ^{NF*}

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

Connect water line adapter to the bulkhead fitting labeled “WATER” or “H₂O” on the back of the dispenser (Figures 5.1 and 5.2). 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.

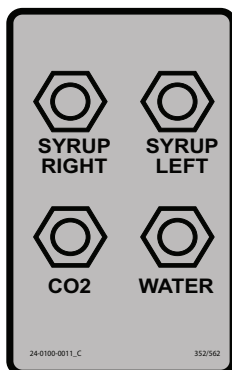


Figure 5.1 372 Bulkhead Fitting

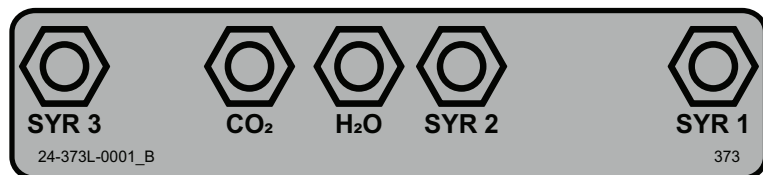


Figure 5.2 373 Bulkhead Fitting

Note: According to the National Sanitation Foundation (NSF), an ASSE 1022 approved backflow prevention device must be installed on the water supply line before connecting to the dispenser. If needed, 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.

*Refer to Appendices for additional information on NitroFub configuration.



5.6 Connecting to CO₂ Supply ^{NF*}

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" (**Figures 5.1 and 5.2**) 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 (**Figures 5.1 and 5.2**).

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.

*Refer to Appendices for additional information on NitroFub configuration.



6. STARTING UP THE DISPENSER

6.1 Leak Check and Prime ^{NF*}

1	Remove the side panels by loosening the two screws located at the bottom of the panel and then lifting off the frame.
2	Remove the drip tray by lifting up and pulling away and then remove access panel to expose the solution modules.
3	Connect the BIB connectors to the syrup BIBs.
4	Turn on the water and the CO ₂ supplies. Ensure both are flowing to the dispenser. Note: The water and syrup pumps will activate loudly until the lines are pressurized.
5	Thoroughly check for leaks at all connections.
6	Install a 1/4" I.D. tube on the sample port shown in Figure 6.1 . Open the sample valve and collect the water/syrup in a cup. Continue to prime until syrup flow has been established and all air has been removed from the lines. Discard the samples. Repeat for all barrels.

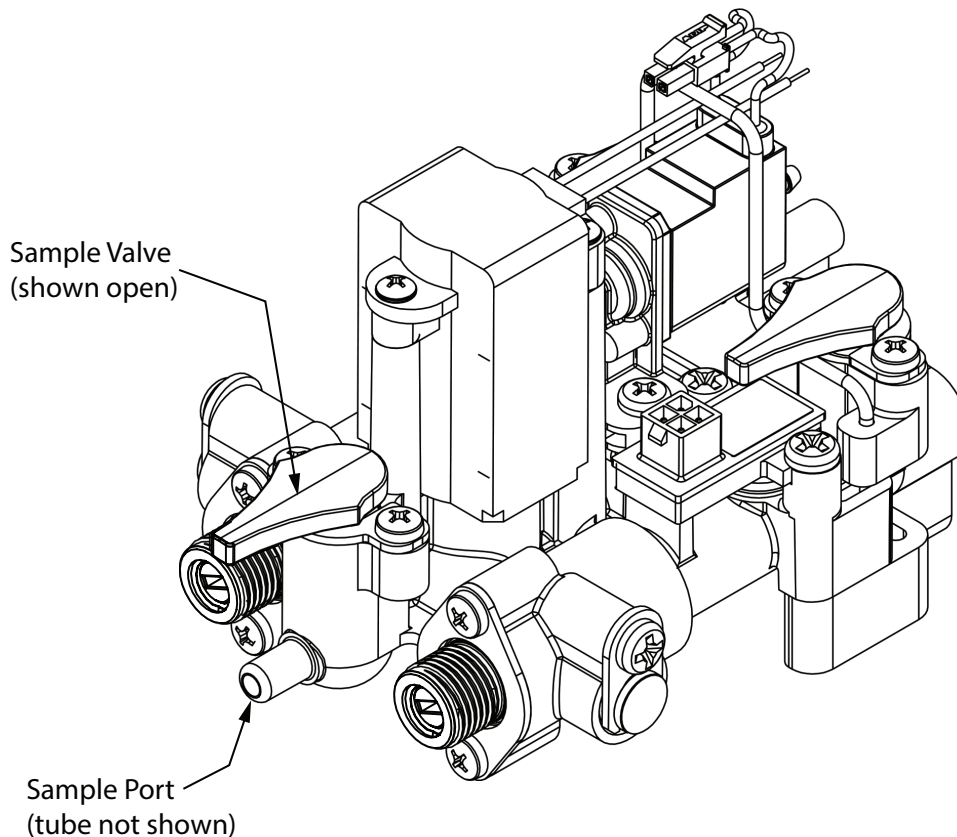


Figure 6.1 Sample Valve on Solution Module

*Refer to Appendices for additional information on Nitrofab configuration.



6.2 Initial Power Up ^{NF*}

Plug the dispenser into the power supply and verify the dispenser turns on by looking at the LCD located behind the merchandiser. The display should be on the home screen showing the status of the barrels (see **Section 10** for additional information on keypad buttons and how to navigate through menus). If the firmware has just been updated, then the dispenser will prompt the operator to answer the following questions:

1. Desired language.
2. Dispenser serial number.

After responding to the prompted questions, the home screen will be displayed.

Next, a few verifications will need to be made:

1	Press the green check button and then select the MENU option. Next, select the READOUTS option.
2	Press the COMMON button.
3	Verify the line voltage is at 230V \pm 10%.
4	Verify the unregulated CO ₂ pressure is between 70 to 72 PSIG (483 to 496 kPag) [†] and adjust the regulator if needed.
5	Verify the water pressure is between 85 to 92 PSIG (586 to 634 kPag) [†] . This is not adjustable. [‡]
6	Verify the regulated CO ₂ pressure is approximately 60 PSIG (414 kPag) and adjust the regulator if needed. [§]
7	Press the BARREL button.
8	Verify the syrup pressures are between 70 to 72 PSIG (483 and 496 kPag) and adjust the back room regulator if needed.

Dispense product from the sample valve after adjusting any pressures. This will restabilize to the new pressure.

[†] Use the display pressure readouts when adjusting the settings.

[‡] The water pump output pressure should be 15 to 20 PSIG (103 to 138 kPag) above the unregulated CO₂ pressure. See the troubleshooting section if the pressures are not correct.

[§] The dispenser will tolerate fluctuations in regulated CO₂ from 50 to 70 PSIG (345 to 483 kPag) because it will automatically compensate. It is best to ensure during setup that the regulated CO₂ is as close to 60 PSIG (414 kPag) as possible.

* Refer to Appendices for additional information on NitroFub configuration.



6.3 Brixing

The brix for each barrel must be verified and adjusted for optimal performance. Use the following procedure to set the brix for each barrel:

1	Turn the syrup shutoff valve to the off position (Figure 6.2).
2	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.
3	Turn the syrup shutoff valve to the on position and dispense a cup of fluid from the sample port to establish a stable flow.
4	Once a good water and syrup mixture is obtained, dispense a 16 oz sample and measure the sample brix with a refractometer. Be sure to thoroughly mix the sample first by pouring back and fourth between two cups.
5	Turn the syrup flow control counterclockwise to decrease the brix. Turn the syrup flow control clockwise to increase the brix.
6	Dispense and discard several samples after adjusting the brix.

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 error problems.

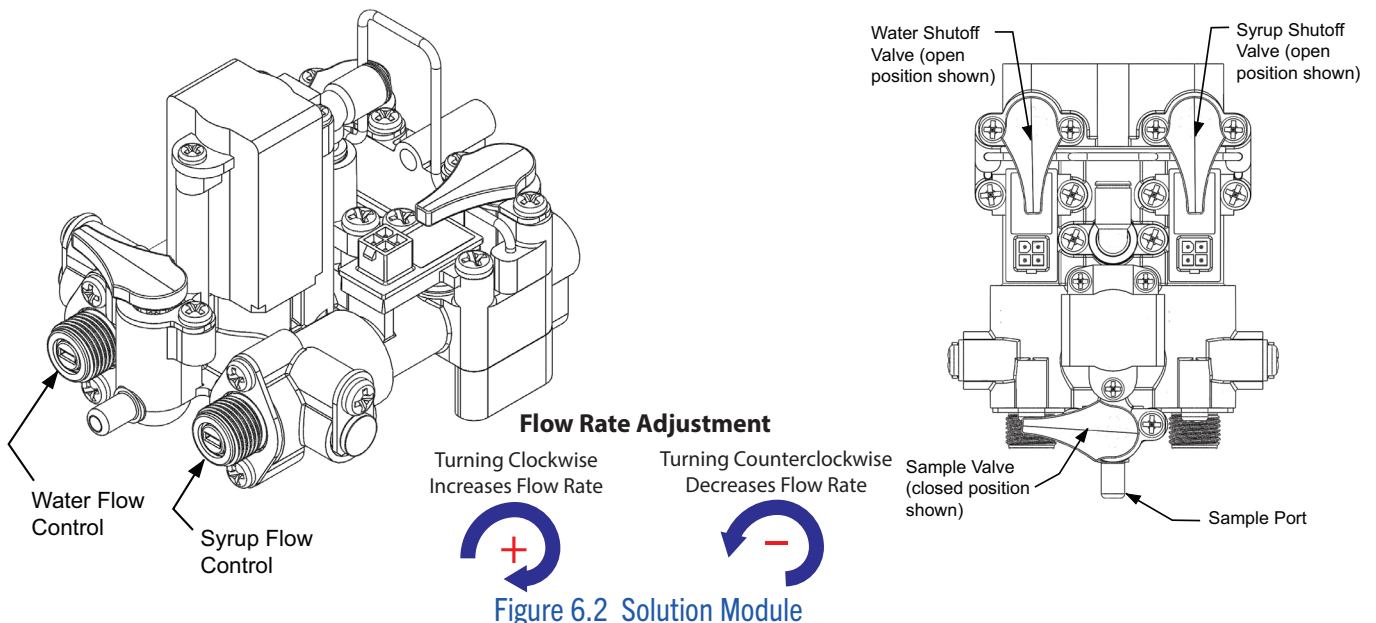


Figure 6.2 Solution Module



6.4 Filling Barrel and Starting ^{NF*}

The barrel, or freeze chamber, must be purged of air before filling with product. Purge the air by activating the CO₂ solenoid and then using the relief valve (**Figure 6.3**) on the faceplate to relieve air until all air has been displaced by CO₂.[‡] Failure to displace the air with CO₂ will result in poor drink quality.

1	Navigate to the SERVICE MENU and then select the MAINTENANCE MENU. Go to the PURGE/FILL/DRAIN BARREL menu.
2	Highlight the desired barrel and then press the GAS PURGE button. Follow the prompts until the process has completed.
3	Press the FILL BARREL button to begin filling the product. Follow the prompts until the barrel is full and then press the END button. Use the relief valve to relieve pressure in the barrel (Figure 6.3).
4	Once all barrels have been filled, return to the home menu.
5	Defrost the barrel(s) by pressing the green check mark button then selecting DEFROST. This will defrost the highlighted barrel.
6	If you want to proceed to a freeze cycle right after the defrost cycle then press the green check mark button again and select ON.
7	When the LCD display shows ready then the barrel is ready to be conditioned. Dispense several drinks until lighter color product begins forming in the faceplate.

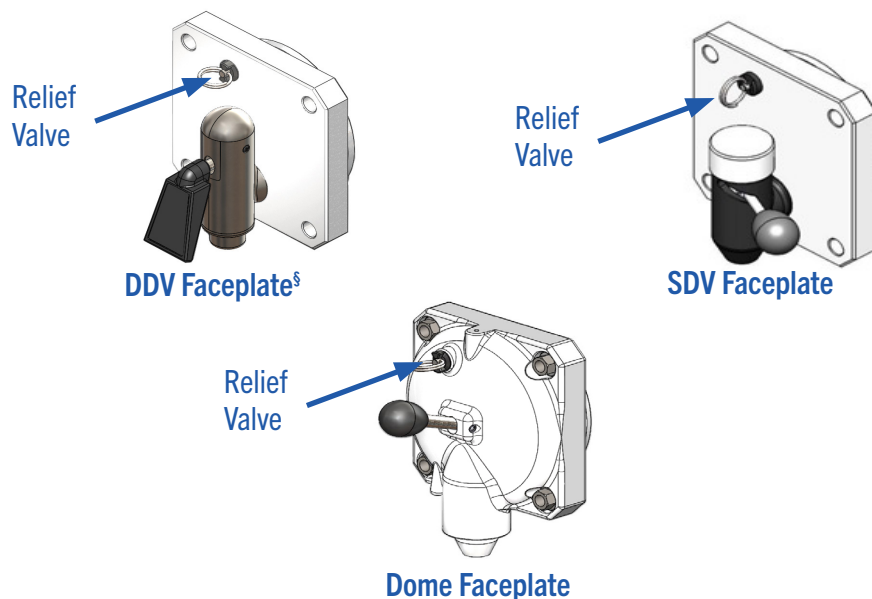
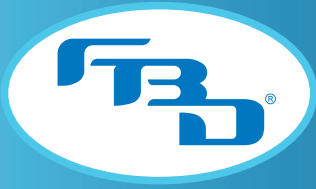


Figure 6.3 Relief Valve Location on Various Faceplate Types

* Refer to Appendices for additional information on NitroFub configuration.

‡ Remember to deactivate CO₂ solenoid upon completion.

§ Faceplate available as standard or ADA version (ADA version shown).



7. DISPENSER OPERATION

Operation of the dispenser is simple because many of the operations/functions are automated.

7.1 Freeze

To freeze the product down, press the up or down arrows on the keypad until the desired barrel is highlighted and then press the RUN button. If the product is liquid, it will take 5 to 9 minutes per barrel (depending on temperature of product) to complete the initial freeze cycle. Dispense two drinks to condition the barrel.

7.2 Off

There are two options for turning off the dispenser. The first is to turn off one barrel at a time. To turn off, press the up or down arrows on the keypad until the desired barrel is highlighted and then press the OFF button.

The second option is to turn off all barrels at the same time. To do this, press the red octagon button (with picture of a hand) and then press the green check button to confirm.

7.3 Defrost

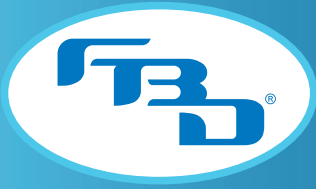
Sometimes a barrel needs to be defrosted for service or because the product quality is poor. In order for the barrel to turn off after the defrost cycle, it must be turned off before the cycle starts; otherwise, it will return to the run mode after defrosting. To start the defrost cycle, press the up or down arrows on the keypad until the desired barrel is highlighted and then press the DEFROST button. It will take about eight to twelve minutes to defrost (depending on the activity of the other barrel).

7.4 Drink Quality ^{NF*}

Many factors can affect the quality of a frozen beverage such as time since last defrost, brand of syrup used, and the local water quality. There can even be drink quality differences between the various flavors within a given brand. Because of these factors, the dispenser drink quality settings are designed to be easily adjusted to compensate for these natural differences or even to adjust the drink quality for personal preferences.

There are two settings that can be adjusted for each barrel to change drink quality: the FREEZE ADJUSTMENT, which controls how frozen the drink is, and the EXPANSION ADJUSTMENT, which controls how much CO₂ is injected into the product. Both of these adjustments are electronic settings; therefore, no tools are required to make an adjustment. The type of adjustment to make will actually be made based on the drink characteristic that needs to be changed. 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 before judging drink quality. Consider the condition of the product in the barrel before making a judgement on the drink quality.

* Refer to Appendices for additional information on NitroFub configuration.



7.5 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 raise the temperature of the drink, increase the setting found in the FREEZE ADJUSTMENT menu. It will take several compressor cycles before the product in the barrel has reconditioned to the new setting.

7.6 Drink Too “Sloppy” or Warm

A drink that is not frozen enough will tend to be above 27°F (-2.8°C) and will be considered “wet” or “loose” and may not stand up in the cup. It can also be heavier in weight than a properly frozen drink. To freeze the drink harder, lower the setting in the FREEZE ADJUSTMENT menu. It will take several compressor cycles before the product in the barrel has reconditioned to the new setting.

7.7 Drink Too Heavy ^{NF*}

A drink with not enough CO₂ will be heavy and may look dark in the barrel. To increase the CO₂ content in the drink, increase the setting in the EXPANSION ADJUSTMENT menu. Approximately ten 16 oz drinks will need to be dispensed before the product in the barrel has reconditioned to the new setting.

7.8 Drink Too Light ^{NF*}

A drink with too much CO₂ will be very light and may even collapse in the cup. To reduce the amount of CO₂ in the drink, lower the setting in the EXPANSION ADJUSTMENT menu. Approximately ten 16 oz drinks will need to be dispensed before the product in the barrel has reconditioned to the new setting.

7.9 Defrosting

To maintain optimal product quality a frozen drink must be periodically defrosted because ice crystals grow in size over time and degrade 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. Please refer to the “Defrost Schedule Menu” and “Auto Defrost Menu” sections of this manual for directions on setting up defrost times.

* Refer to Appendices for additional information on NitroFub configuration.



8. CLEANING AND SANITIZING

8.1 General Information

The dispensers are shipped from the factory cleaned and sanitized in accordance with NSF guidelines. After installation of the dispenser, the operator must provide continuous maintenance as described in this manual and always adhere to state and local codes to ensure proper operational and sanitization requirements are met. Failure to properly clean and sanitize the dispenser can negatively affect components, drink quality, and dispenser operation. FBD recommends that the dispenser be sanitized annually or when the dispenser has been non-operational for an extended period of time.

A few precautions when 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.

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

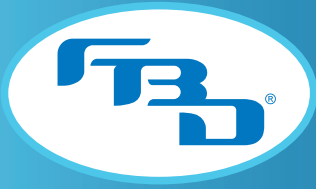
The dispenser should be sanitized yearly. Prepare a chlorine solution containing 100 PPM of available chlorine with clean water at 90°F to 100°F (32°C to 38°C). Commercial beverage equipment sanitizing and cleaning solutions such as Kay-5 or Stera Sheen are preferred because they also contain surfactants 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 in accordance with NSF guidelines. The process describes the procedure for one barrel. Repeat for all barrels.

1	On the home screen press the up or down arrow until the barrel to be sanitized is highlighted. Press the green button and then select OFF. Press the green button again and select DEFROST.
2	While the barrel is defrosting remove the drip tray (if not connected to drain plumbing), splash plate and the cover located behind the splash plate.
3	Take an empty BIB and cut off the connector. Attach the BIB connector to the connector on the syrup line - this will open up the syrup line connector and allow for cleaning solution to be pumped into the dispenser.



4	Once the barrel has defrosted, navigate to the MANUAL ON/OFF menu located under the SERVICE MENU section and activate both the CO ₂ and solution solenoids for the barrel to be sanitized.
5	Place a large container under the dispensing valve and drain the barrel. Activating the beater motor will facilitate draining the barrel when near empty. Deactivate the solution solenoid when the syrup lines have been purged. Continue purging the barrel and then deactivate the CO ₂ solenoid when the barrel has been emptied.
6	Turn off the water supply at the solution module using the shutoff valve.
7	Place the syrup BIB connector with adapter in the sanitizing solution.
8	Activate the solution solenoid and begin filling the barrel with sanitizing solution. Pull the relief valve as necessary to vent the pressure allowing the fill process to continue. Deactivate the solution solenoid when the barrel is 3/4 full.
9	Activate the beater motor and agitate for three minutes.
10	While the beater motor is agitating, dispense some sanitizing solution from both the relief valve and the sample valve to ensure they are both sanitized as well.
11	Remove the BIB connector from the sanitizing solution and reconnect to the syrup supply.
12	Activate the solution solenoid.
13	Place a large container under the dispensing valve and drain the barrel. Activating the beater motor will facilitate draining the barrel. Deactivate the solution solenoid when the syrup lines have been primed with syrup. Continue purging the barrel and then deactivate the CO ₂ solenoid when the barrel has been emptied.
14	Restore the water supply.
15	Activate the solution solenoid and beater motor again. When the barrel is 1/2 full, deactivate the solution solenoid to stop the fill process.
16	Activate the CO ₂ solenoid and drain the barrel. This step removes the remaining sanitizing solution left in the barrel. Deactivate the CO ₂ solenoid and beater motor when the barrel is empty.
17	Navigate to the MAINTENANCE MENU and start the FILL BARREL process. Follow the prompts until the barrel is full.
18	If any sanitizer off-taste remains then drain the barrel again and refill.



9. PREVENTIVE MAINTENANCE

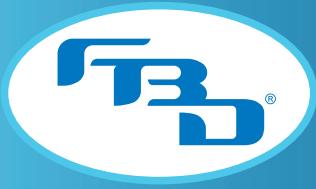
An annual preventive maintenance schedule is recommended by FBD and should include the following steps:

A.	Clean air filter (Section 9.1).
B.	Check brix (Section 6.3).
C.	Replace the motor rear seals (Section 9.2)
D.	Check the Fault Code History in the menu (Section 10.7). If there are repeated beater low errors, inspect blades for damage (chips, cracks, warping, excessive wear) and dullness. The blade edge should be sharp and smooth. If damage or dullness is found, replace blades using an FBD blade/spring kit (purchased separately).
E.	Sanitize according to manufacturer's recommended procedure (Section 8.3).
F.	Check all fittings and components for leaks. Repair if necessary.
G.	Verify Time, Date, Sleep, and Defrost settings (Section 10.11). Adjust as necessary.
H.	Check O-ring seals in dispenser valves for leakage and wear. Replace as necessary. For dispensers using the stainless-steel DDV, the roll pin needs to be changed during the annual preventive maintenance. The SS DDV Minor Repair Kit (P/N 12-1140-0001) contains the roll pin and O-rings that are recommended to be replaced. If the internal metal components show signs of wear, the SS DDV Major Repair Kit (P/N 12-2307-0001) can be used to replace needed components. If the roll pin does not fit tightly with the handle lever, replace the handle (P/N 12-2864-0002).

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, open the front merchandiser and locate the filter above the LCD display. Pull the air filter straight out to remove. Clean it with a mild dishwashing soap and water solution and dry thoroughly before reinstalling. A degreaser may be required if the filter is greasy.

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.



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 all barrels.

1	On the home screen press the up or down arrow until the barrel to be sanitized is highlighted. Press the green button and then select OFF. Press the green button again and select DEFROST.
2	After the defrost cycle is complete, navigate to the MAINTENANCE MENU and start the DRAIN BARREL process. Follow the prompts until the barrel is empty and then end the process.
3	Vent the barrel of all pressure.
4	Remove the faceplate and beater bar. Be sure to catch the remaining liquid from the barrel when removing the faceplate.
5	With a small pick or corkscrew type seal puller, reach into the back of the barrel and remove the rear seal (Figure 9.1). Discard the used seal.
6	Lubricate the inner diameter on the new seal with Dow Corning 111 lubricant or any other NSF approved lubricant. <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.
7	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.
8	Reinstall the beater bar and faceplate.
9	Return to the MAINTENANCE MENU and start the GAS PURGE process followed by the FILL BARREL process.

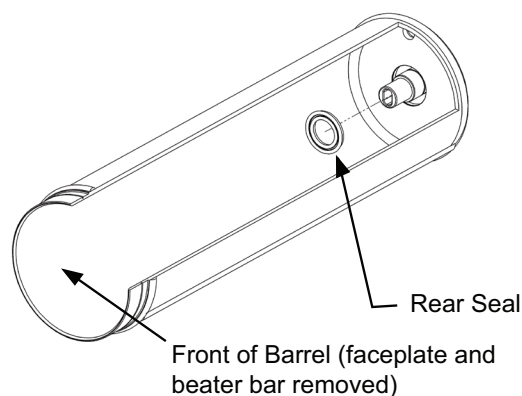
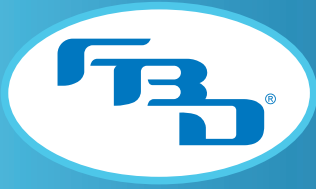


Figure 9.1 Rear Seal Placement



9.3 Backflow Preventer Maintenance

The strainer portion of the backflow preventer must be removed and cleaned on an annual basis. To clean the device, turn off the water supply and unscrew the filter housing (**Figure 9.2**). Clean any debris and replace the strainer. Turn the water supply back on when finished.

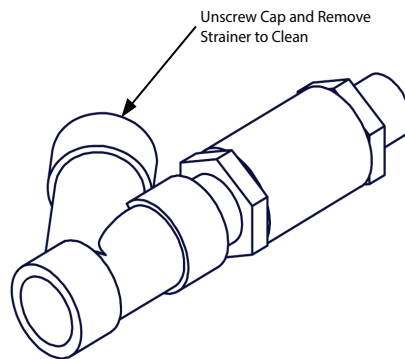


Figure 9.2 Backflow Preventer



10. MENUS AND NAVIGATION

10.1 Keypad

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.

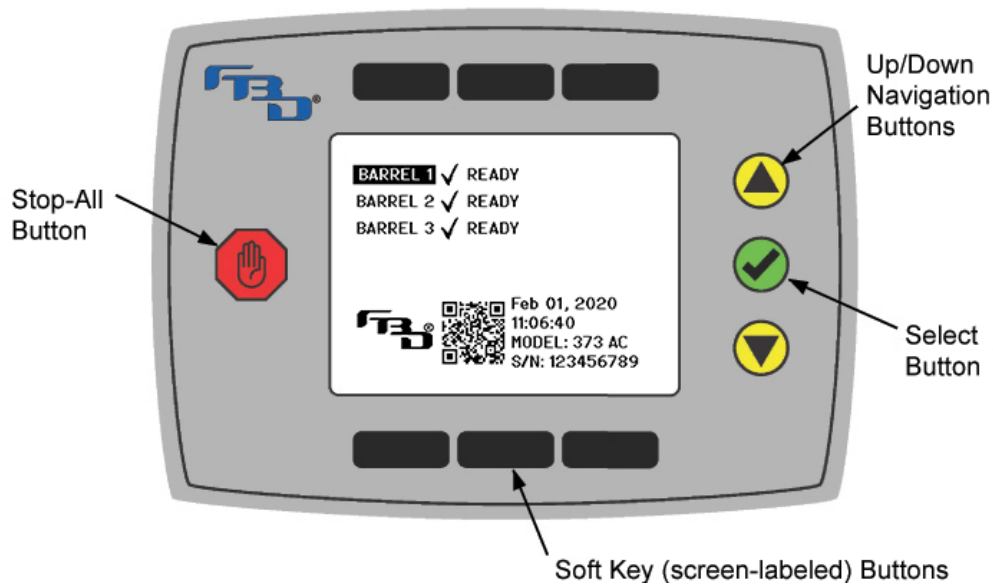


Figure 10.1 Keypad

- Select Button (green): This button confirms the current selection or action.
- Stop All Button (red): This button will turn off all barrels. A confirmation by the green select button is required.
- Up/Down Arrow Buttons (yellow): These buttons move the highlighted selection up and down. Press the select button to confirm the selection.
- Soft Key (screen-labeled) Buttons (black): These buttons change function depending on the menu currently being displayed. The function will be displayed below the top buttons and above the lower buttons.

Screen Icon Legend

ICON	ACTION
	Returns the display to the home menu.
	Returns the display to the previous menu.
	Moves the highlighted selection to the column on the right.
	Moves the highlighted selection to the column on the left.



10.2 Home Menu

The home menu (**Figure 10.1**) shows the status of all barrels, allows control of all barrels and is the launching point to the submenus. Press the green button while a barrel is highlighted to perform actions to that barrel such as defrost or turn on/off. Pressing the green arrow will also allow access to the submenus. Messages may appear on the home screen from time to time depending on the current activity or error. For a complete listing of these messages, please see the “Home Menu Messages” section of this manual.

10.3 Pop-Up Menu

The pop-up menu (**Figures 10.2 and 10.3**) allows the user to do the following:

- Start or stop the highlighted barrel.
- Defrost the highlighted barrel.
- Refill the highlighted barrel (use only when partially empty). Do not use this option to fill empty barrels, use the MAINTENANCE MENU instead.
- Perform a flavor change on the highlighted barrel.
- Proceed to the submenus.

The pop-up menu is accessed by pressing the green button when the home screen is displayed.

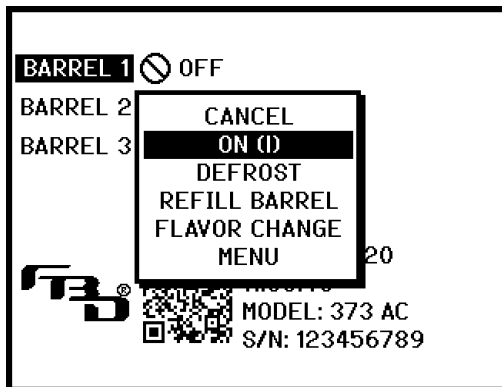


Figure 10.2

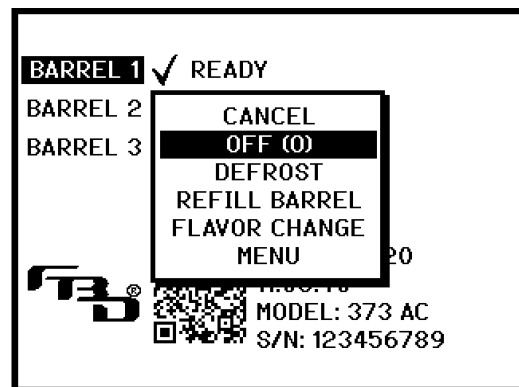


Figure 10.3



10.5 Main Menu

The main menu (Figure 10.4) allows the user to:

- View the readouts (pressures, temperatures, etc).
- Access the fault code history.
- Access the SERVICE MENU.
- Set a language.

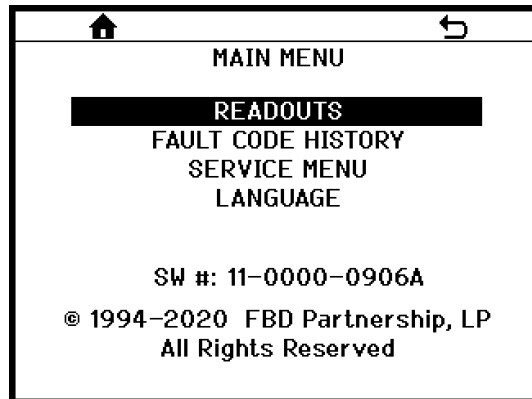


Figure 10.4

10.6 Readouts Menu ^{NF*}

The READOUTS menu shows the current status of all temperature and pressure sensor readings, line voltage and other pertinent information about the operation of the dispenser. Some readouts are common to the dispenser and others are side or barrel specific. Press the BARREL or COMMON soft key button to switch between the two readouts (Figures 10.5 and 10.6).

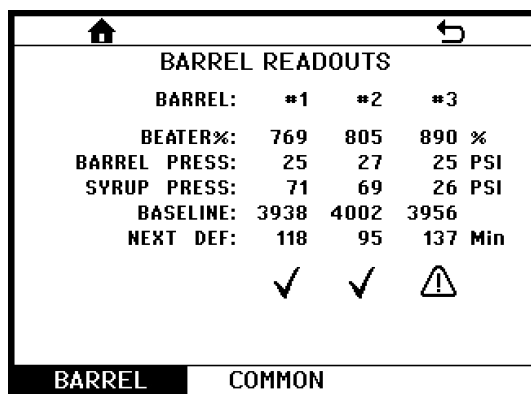


Figure 10.5

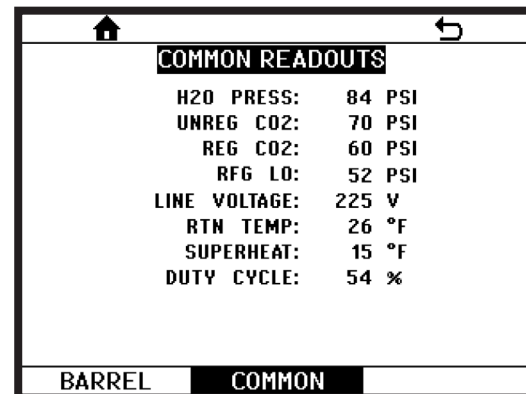


Figure 10.6

* Refer to Appendices for additional information on NitroFub configuration.



10.7 Fault Code History Menu

The FAULT CODE HISTORY menu provides a list of the last twenty fault codes with the date and time of occurrence and resolution (Figure 10.7). When the green button is pressed, additional details about the highlighted error are shown, including a QR code (Figure 10.8). Scan the QR code with a smart phone to see detailed troubleshooting steps. For a complete listing of fault codes that can be displayed please see the “Fault Codes” section (Section 11.2) of this manual.

Error Code	Date	Time	Status
Error: 000 Water Out	01/01	07:00	Active
Error: 001 Syrup Out B3	01/10	08:59	09:32
Error: 003 CO2 Out	02/25	15:32	15:55
Error: 004 Power Restored	03/05	12:01	12:01

Figure 10.7

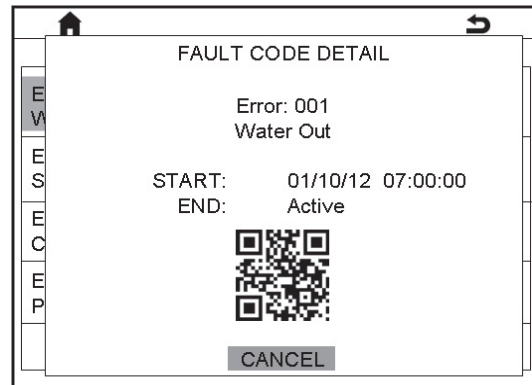


Figure 10.8

10.8 Service Menu

The SERVICE MENU (Figure 10.9) is intended for use by a trained service technician only. To access its submenus, select SERVICE MENU while in the MAIN MENU and then press the green check button and the bottom center soft key button (blank) simultaneously.

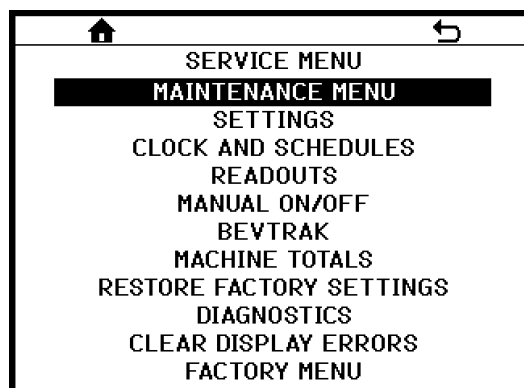


Figure 10.9



10.9 Maintenance Menu ^{NF*}

The MAINTENANCE MENU has two sections to choose from (Figure 10.10):

- PURGE/FILL/DRAIN BARREL
- WATER AND BRUX CALIBRATION

PURGE/FILL/DRAIN BARREL (Figure 10.11) – Provides three semi-automatic routines that eliminate the need to manually turn solenoids on and off. Follow the on-screen prompts to complete each process. All processes may be terminated at any time by pressing the END button.

- **GAS PURGE:** This procedure must be used after the faceplate has been removed and there is air in the barrel. It will purge the air from the barrel and replace with CO₂. Use this process before filling the barrel. If the air is not replaced with CO₂ in the barrel, then the drink quality of the first few drinks from the barrel will be negatively affected. The process will fill the barrel with CO₂ three times before automatically ending.
- **DRAIN BARREL:** This process will assist in draining a liquid barrel (defrost first if needed). The user must terminate this process by pressing the END button once the barrel is empty.
- **FILL BARREL:** This process fills the barrel with product. The user must terminate this process by pressing the END button once the barrel is full.

WATER AND BRUX CALIBRATION (Figure 10.12) – Provides a step-by-step process for calibrating the flow controls for the solution modules. Images and instructions are provided in each step.

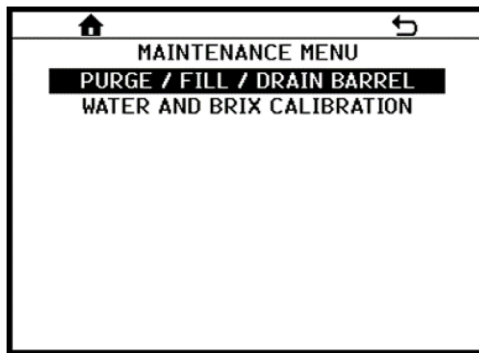


Figure 10.10

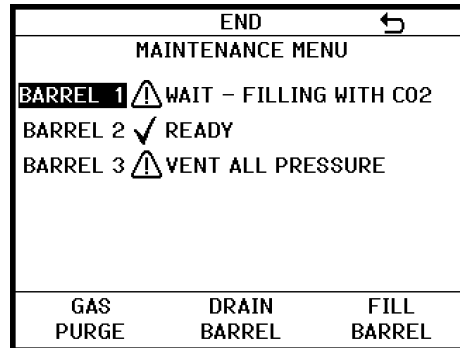


Figure 10.11

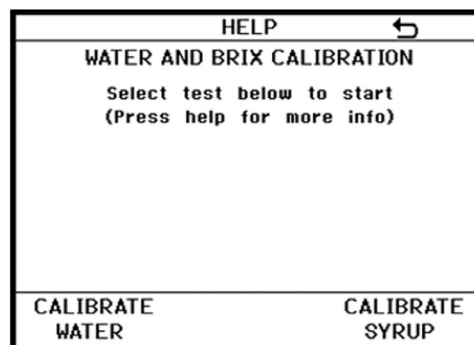


Figure 10.12

* Refer to Appendices for additional information on NitroFub configuration.



10.10 Settings Menu ^{NF*}

The SETTINGS menu (Figure 10.13) provides dispenser information and access to some settings that are adjustable:

SERIAL#: Provides the serial number of the dispenser. This is used for BevTrak™ reporting.

BARRELS: Provides the number of barrels for the dispenser.

DISPLAY UNITS: Set the units of measurement to English or SI.

ALARM: Indicates whether the dispenser is set up with an audible alarm when out of product.

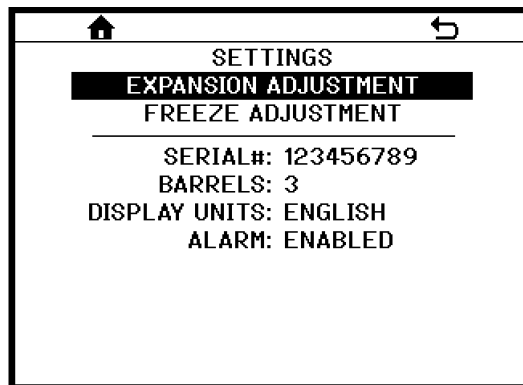


Figure 10.13

There are also two sub-menus that affect the quality of the drink (Figures 10.14 and 10.15):

EXPANSION ADJUSTMENT: The amount of carbonation in the drink can be adjusted in this menu (Figure 10.13). The adjustment ranges from “MAX CO2” (high levels of carbonation) to an uncarbonated drink. Select the barrel number and adjust the bar graph up or down.

Note: Approximately ten 16 oz drinks will need to be dispensed before the product in the barrel has reconditioned to the new settings.

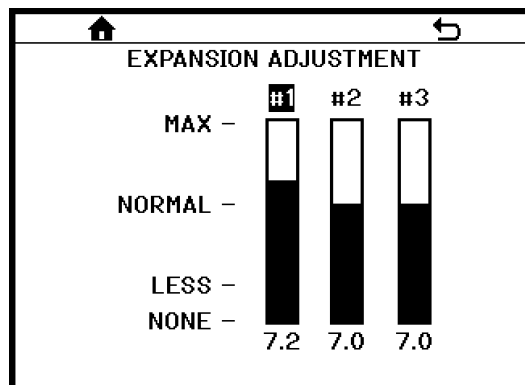


Figure 10.14

* Refer to Appendices for additional information on NitroFub configuration.



FREEZE ADJUSTMENT: The viscosity of the drink can be adjusted by highlighting and selecting the appropriate barrel. The adjustment allows the service agent to make the drink more liquid or more frozen.

Note: It will take several compressor cycles before the product in the barrel has reconditioned to the new settings.

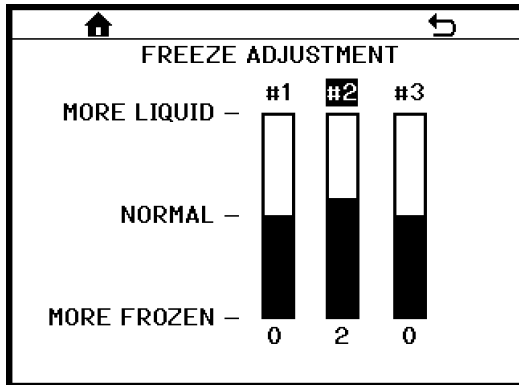


Figure 10.15

10.11 Clock and Schedule Menu

The CLOCK AND SCHEDULE menu contains various submenus shown in Figure 10.16.

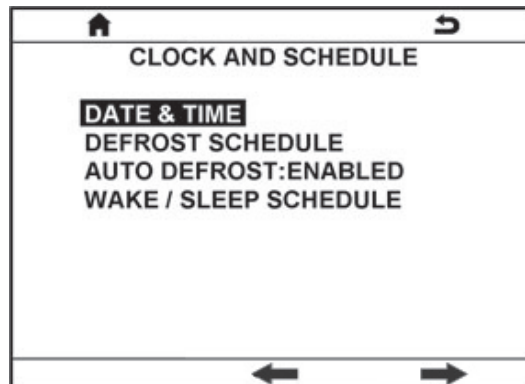


Figure 10.16



10.12 Date and Time Menu

The dispenser date and time is set in this menu. The time is in 24 hour format. The Daylight Saving (DST) feature can also be activated and the start and end dates are adjustable. Refer to your country's specific DST schedule to set the start and end dates.

For example: In the USA, DST begins the second Sunday in March and ends on the first Sunday in November. The example shown in **Figure 10.17** has been set according to this schedule.

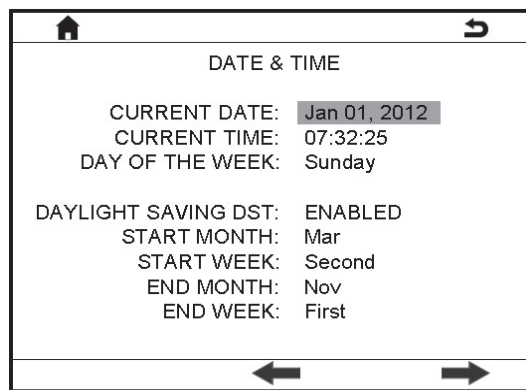


Figure 10.17

10.13 Defrost Schedule Menu

The DEFROST SCHEDULE menu (**Figure 10.18**) allows for easy adjustment of the defrost times for barrel #1 and then the delay time between barrels. For example, assume the delay time is set to 60 minutes on a 3-barrel dispenser and the first defrost is at 03:00. Barrel #1 will defrost at 03:00, barrel #2 will defrost at 04:00 and barrel #3 will defrost at 05:00. There can be up to eight defrosts per barrel per day. A time of 00:00 means no defrost is scheduled.

Each defrost time also has a day of the week setting. If the day of the week is capitalized then the dispenser will defrost at that time on that day. If the day of the week is in lowercase then the dispenser will skip that defrost time on that day.

There are also predefined defrost schedules available. Contact FBD for details on the various schedules.

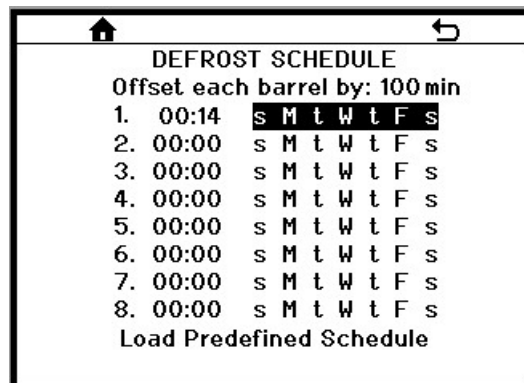


Figure 10.18



10.14 Auto Defrost Menu

In addition to a preset defrost schedule, the dispenser has an automatic defrost feature (Figure 10.19). This allows the dispenser to dynamically adjust the time between defrost cycles based on customer activity.

When the auto defrost feature is enabled there are also “black out windows” that can be programmed. These windows prevent any defrost cycles from occurring during that period. Up to three windows can be specified and the start and end times for each window must be designated.

Note: A defrost schedule and auto defrost can be used simultaneously.

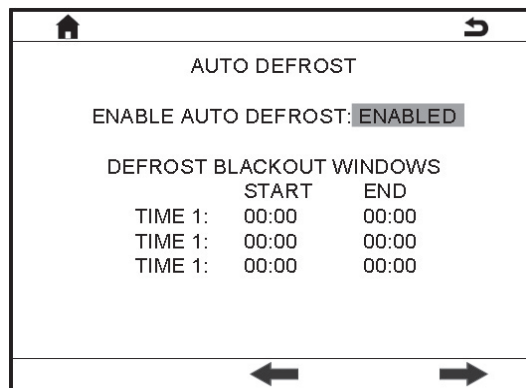


Figure 10.19

10.15 Wake/Sleep Schedule Menu

The wake/sleep feature (Figure 10.20) makes the dispenser wake up and go to sleep automatically. This feature is useful for locations that are closed overnight. The wake and sleep times can be different for each day of the week or common for all days.

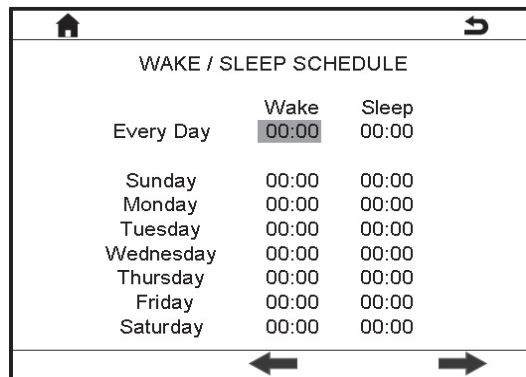


Figure 10.20



10.16 Manual On/Off Menu

The MANUAL ON/OFF menu (Figure 10.21) allows the service technician to turn on and off any solenoid, motor or status light in the dispenser. This is useful when purging the barrels or troubleshooting the dispenser.

Note: For protection, all solenoids will automatically turn off after 6 minutes.

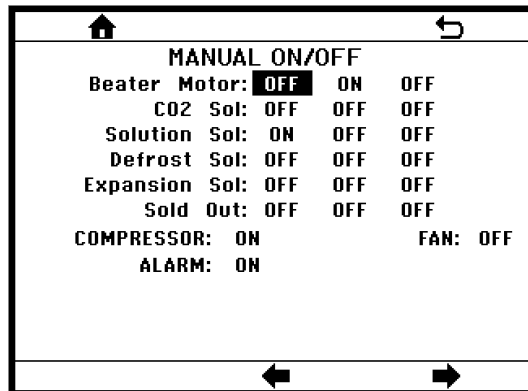


Figure 10.21

10.17 BevTrak™ Menu

BevTrak™ is a reporting system for FBD beverage equipment. It allows the equipment owner to monitor the status and sales performance of their dispenser via an internet browser. BevTrak™ connects to the internet through Wi-Fi connections. If your dispenser comes with BevTrak™ capability the BEVTRAK™ menu (Figure 10.22) will show “Yes” for Enabled. If the serial number is not already entered in this menu, then it will need to be entered here to utilize this service. Also a Wi-Fi modem will need to be set up as shown in Section 10.18 of this manual and a customer login portal will need to be created on the BevTrak™ website (www.bevtrak.com). Contact FBD sales for assistance in setting up an account.

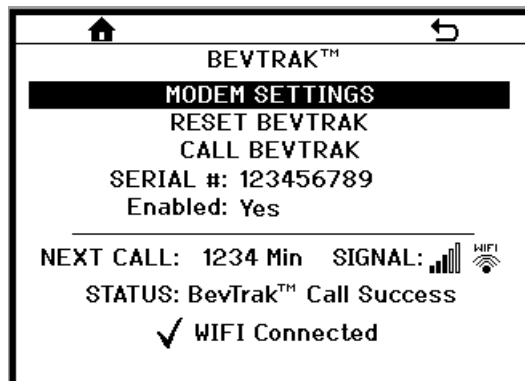


Figure 10.22



10.18 Modem Settings Menu

In order to use BevTrak™, the modem needs to be configured. To configure the modem, from the MODEM SETTINGS menu (Figure 10.23), select CONFIGURE WIFI. This will open a WIFI SETUP MENU (Figure 10.24) that will allow you to select from existing networks in the area or allow you to manually enter the needed network. Once the network is selected, a second WIFI SETUP MENU window will open (Figure 10.25) that will allow you to enter the password to the selected network. To finalize setup, select PRESS TO COMPLETE SETUP.

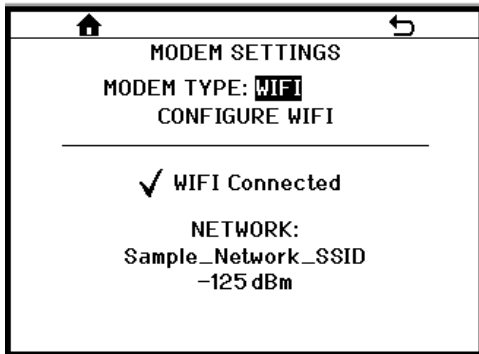


Figure 10.23

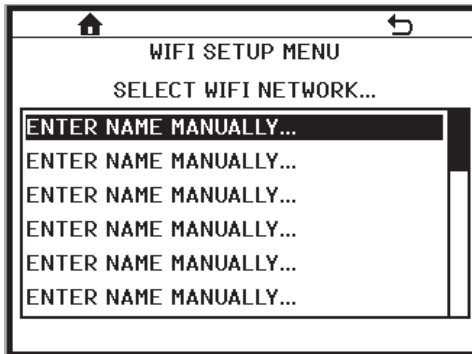


Figure 10.24

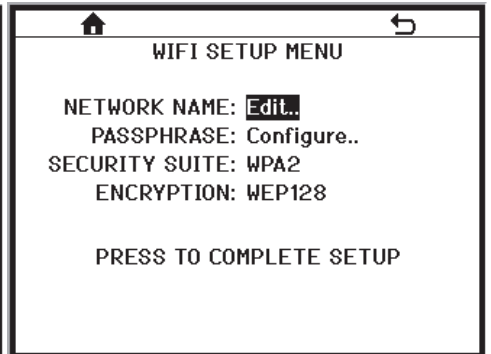


Figure 10.25

10.19 Machine Totals Menu

The MACHINE TOTALS menu (Figure 10.26) provides various totals that the dispenser records such as the number of compressor cycles or operating time for various components. This information can be useful when evaluating the throughput or diagnosing problems with the dispenser.

	#1	#2	#3
BARREL:	#1	#2	#3
DEFROST:	2,365	2,355	2,061 Cyc
SOLDOUT:	435	435	285 Hrs
BEATER:	72	72	68 Hrs
RUN-ON:	69	69	66 Hrs
ERROR:	4	4	2 Hrs
SYRUP:	122	122	97 Min
COMPRESSOR HOURS:			18 Hrs
COMPRESSOR CYCLES:			472 Cyc.
POWER ON HOURS:			109 Hrs
SLEEP HOURS:			0 Hrs
RESET TOTALS			

Figure 10.26



10.20 Restore Factory Settings Menu

The RESTORE FACTORY SETTINGS menu (Figure 10.27) allows a service technician to restore the dispenser settings to factory default. This can be useful when too many settings have been changed and the dispenser is not operating at optimal conditions. When restoring factory settings, certain settings can be retained such as the defrost schedule, auto defrost blackout times, language and units (English or SI). Select which settings are to be retained before restoring the factory settings.

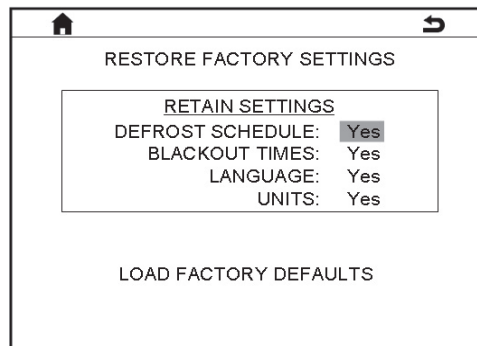


Figure 10.27

10.21 Diagnostics Menu

The DIAGNOSTICS MENU (Figure 10.28) is a powerful feature of the 37x dispensers. Any time a malfunction is suspected, the best option for the service technician is to first run the diagnostic sequence for the system involved. This can eliminate hours of guesswork and parts swapping.

There are two diagnostic sequences:

1. Beater Circuit: This sequence will help identify any component failure in the beater circuit system such as the beater motor and capacitors.
2. Fill Circuit: This sequence will help identify any component failure in the fill circuit system such as solution or CO₂ solenoids or any leaks in the product delivery system.

To begin, determine what the possible issue with the dispenser may be. Select the appropriate diagnostic sequence. Initiate the sequence and let it perform its checks. You may be asked to perform some manual operations or answer questions to proceed with the process. If any errors are found, the display will note the error and provide an error code. Refer to the “Diagnostic Fault Codes” section (Section 11.3) of this manual to diagnose the cause of the error.

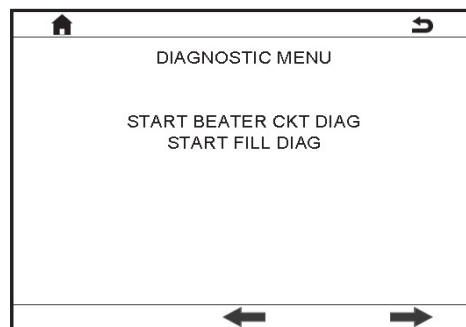


Figure 10.28



11. TROUBLESHOOTING

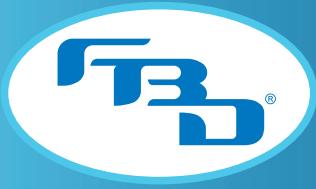
11.1 Home Menu Messages ^{NF*}

The dispenser will always display a message on the home screen with the status of the dispenser. These may be normal operation messages, out of product messages or error messages.

Message	Meaning	Action
BOARD FAILURE	Internal communications on board not functioning.	Replace control board.
CO2 OUT	CO2 supply depleted.	Restore CO2 supply. Dispenser will automatically restart.
COMPRESSOR RAN TOO LONG	The compressor ran continuously for 90 minutes.	Verify air filter is clean and that return temperature drops below 25°F (-3.9°C).
DEFROST PAUSED	Defrost cycle was paused because another barrel required freezing.	No action required.
DEFROST REQUIRED	Motor baseline value is at factory default. Only occurs on new software installation.	Run defrost cycle.
DEFROSTING	Barrel is defrosting.	Wait for defrost cycle to complete.
FILL ERROR	A barrel is not filling with product correctly.	Run fill circuit diagnostic sequence.
FREEZING	Dispenser is in READY mode and product is being frozen.	No action required.
HIGH BARREL PRESSURE	The barrel pressure exceeds 55 PSIG (379 kPag).	Dispense a drink to reduce barrel pressure.
HIGH REGULATED CO2 PRESSURE	Regulated CO2 above 70 PSIG (483 kPag).	Adjust regulator to 60 PSIG (414 kPag).
HOT PRODUCT DETECTED	Refrigeration return temperature above 110°F (43.3°C) for 50 seconds.	Check temperature sensor.
LOW REGULATED CO2 PRESSURE	Regulated CO2 below 50 PSIG (345 kPag).	Adjust regulator to 60 PSIG (414 kPag). Read the pressure on the LCD screen.
MOTOR FAILURE	A beater motor is stalled.	Run the beater circuit diagnostic sequence.

Table continued on next page.

* Refer to Appendices for additional information on NitroFub configuration.



Message	Meaning	Action
OFF	Barrel is turned off.	Select the ON option in the pop-up menu.
READY	Barrel is ready for serving.	Enjoy a frozen beverage.
REFRIGERATION SENSOR FAILURE	Low side pressure transducer reading out of range.	Verify harness is plugged into transducer. Replace transducer if necessary.
SLEEPING	Dispenser is in sleep mode.	Wait until the normal wake time or restart each barrel by turning ON.
SYRUP OUT	The syrup pressure is below the syrup out threshold.	Check syrup BIB or pump. Replace BIB, if needed (barrel will restart automatically).
TEMPERATURE SENSOR FAILURE	Temperature sensor reading out of range.	Check sensor and replace if necessary.
WAITING TO DEFROST	Barrel is waiting to begin the defrost cycle and must wait until one of other barrels freezes or completes a defrost.	No action required.
WAITING TO FREEZE	Barrel is ready to freeze but is waiting on one of the other barrels to complete defrost.	Wait until barrel defrosting has completed the defrost cycle.
WATER OUT	Water supply turned off.	Restore water supply. Dispenser will automatically restart.



11.2 Fault Codes ^{NF*}

The dispenser records all errors, or faults, that occur. A history of these faults can be found in the **FAULT CODE HISTORY** menu located in the **SERVICE MENU**. Each error has a three digit number associated with it. The first two digits are the error number and the third digit is the barrel number with the error. If the third digit is a 0 (zero) then the error is a common error to all barrels or it's a dispenser error.

Error #011, 012, 013: Syrup Out

The syrup pressure is less than 45 PSIG (310 kPag).

1	Replace the empty BIB.
2	Ensure the CO ₂ line is connected to the BIB pump.
3	Ensure the BIB pump is operating correctly.
4	Ensure the CO ₂ tank is not empty.
5	Ensure the syrup shutoff valve at the solution module is turned on.
6	Ensure any syrup shutoff valves at the back of the dispenser are not turned off.
7	Ensure the syrup supply pressure at the dispenser is reading 70 PSIG (483 kPag). Adjust the regulator if needed.
8	Ensure the syrup pressure transducer is connected and working properly.

Error #020: CO₂ Out

The CO₂ pressure is less than 45 PSIG (310 kPag).

1	Replace or refill the CO ₂ tank.
2	Ensure CO ₂ shutoff valve at the back of the dispenser is not turned off.
3	Ensure the CO ₂ pressure transducer is connected and working properly.
4	Ensure the CO ₂ supply pressure at the dispenser is reading 70 PSIG (483 kPag). Adjust the regulator if needed.

Error #030: Water Out

The water pressure is less than 45 PSIG (310 kPag).

1	Ensure the water line to the dispenser is on and that the water shutoff at the solution module is turned on.
2	Ensure the CO ₂ supply line is connected to the water pump and that the pump is not stalled.
3	Ensure the CO ₂ supply pressure at the dispenser is reading 70 PSIG (483 kPag). Adjust the regulator if needed.
4	Ensure the water pressure transducer is connected and working properly.

* Refer to Appendices for additional information on NitroFub configuration.



Error #041, 042, 043: Tank PSIG = 0

The tank pressure did not rise from 0 PSIG (0 kPag) when filling.

1	Run the fill diagnostic sequence to determine the reason for the failure.
---	---

Error #051, 052, 053: Safety Fill Error

A barrel filled continuously for more than two minutes.

1	Run the fill diagnostic sequence to determine the reason for the failure.
---	---

Error #061, 062, 063: Beater Low Error

A beater motor stalled during operation.

1	Check the brix in the barrel. If low, check the brix at the sample valve and adjust if needed. Drain and refill the barrel.
2	Check the fault code history for multiple sold-out errors within a short period. This can mean that the BIB connector or syrup pump has a suction leak. Fix if necessary.
3	Run the beater circuit diagnostic if a component failure is suspected.

Error #070: Compressor Ran Too Long

The compressor ran continuously for more than 90 minutes.

1	Is the location an extreme volume venue such as a festival? If so, contact FBD service for instructions on adjusting the timer.
---	---

Error #081, 082, 083: High Barrel Pressure

The pressure on a barrel exceeded 55 PSIG (379 kPag).

1	Dispense a drink to reduce the barrel pressure. The dispenser will refreeze if set to the ON mode.
2	Run the fill diagnostic if a failed component is suspected.
3	Check the "Active Charge" regulator located on the product header to ensure it is set at 30 PSIG (207 kPag). All barrels should be fully depressurized before checking the active charge.

Error #090: Hot Product Detected

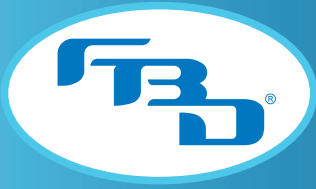
The system shut down because product in a barrel exceeds 110°F (43.3°C) for 50 seconds.

1	Check the return temperature sensor for proper operation.
2	If hot product was detected, call FBD for technical assistance.

Error #111, 112, 113: Motor Failure

The beater motor is not operating.

1	Run a beater circuit diagnostic to determine the problem or refer to error #58X in this manual.
2	Check to make sure the beater motor is plugged in.



Error #121, 122, 123: Beater High Error

The control board is not reading the proper value from the beater motor.

1	Run a defrost cycle to reset the motor baseline value.
2	Run a beater circuit diagnostic to determine the problem or refer to error #58X in this manual.

Error #130: Board Failure

The control board is not functioning properly.

1	Cycle the power to the dispenser to see if it will clear the error.
2	Replace the control board.

Error #140: Low Regulated CO₂ PSI

The regulated CO₂ pressure dropped below 50 PSIG (345 kPag).

1	Ensure the CO ₂ supply is not low.
2	Check the “carbonation” regulator on the header tray and ensure it is set to 60 PSIG (414 kPag).

Error #150: High Regulated CO₂ PSI

The regulated CO₂ pressure is above 70 PSIG (483 kPag).

1	Check the “carbonation” regulator on the header tray and ensure it is set to 60 PSIG (414 kPag).
---	--

Error #180: LPSI Transducer

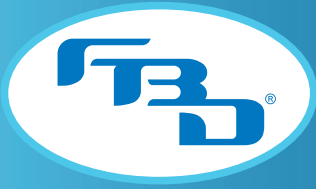
The low side refrigeration pressure is not reading correctly.

1	Ensure the pressure transducer is plugged in.
2	Replace the transducer if faulty.

Error #200: Return Temperature Sensor

The refrigeration return (suction) temperature sensor is not reading correctly.

1	Ensure the temperature sensor is plugged in.
2	Replace the sensor if faulty.



11.3 Diagnostic Fault Codes

The following codes are faults that can be displayed after running a diagnostic sequence.

Error #581, 582, 583: Beater Motor Not Turning On

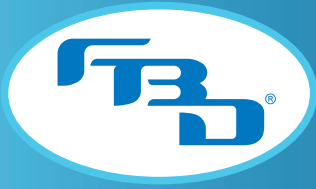
1	Remove the control board and check for blown motor fuses (Motor 1: F3 & F4, Motor 2: F5 & F6, Motor 3: F7 & F8). A motor or capacitor malfunction may be caused by a blown fuse.
2	If fuses are OK, reinstall control board.
3	Disconnect wiring harness from suspect beater motor.
4	Manually turn on beater motor using the SERVICE MENU and ensure there is line voltage on pins 1 & 3 of supply harness (outside pins).
5	If correct voltage is present then substitute a "known to be good" capacitor and try to operate motor again. If no voltage is present (when activated through the menu), then replace the beater motor power harness.
6	If motor fails to start with working capacitor then replace both motor and capacitor.

Error #591, 592, 593: CO₂ Solenoid Not Opening

1	Disconnect the electrical harness from the CO ₂ solenoid for the barrel in question
2	Manually activate the solenoid and check to make sure there is 12 VDC at the connection (the voltage will read ~2 VDC when not powered). If no voltage then replace the control board.
3	If correct voltage is present then replace the solenoid. Be sure to turn off CO ₂ supply before disconnecting the CO ₂ line from the solenoid.
4	If solenoid is functioning properly then a leak may be present in the product delivery system. Check the relief valve, dispensing valve, rear seal and tubing in the product tray for leaks.
5	If no leaks are found then the tank pressure transducer may be defective.

Error #601, 602, 603: Solution Solenoid Not Opening

1	Disconnect the electrical harness from the suspect solution solenoid.
2	Manually activate the solenoid and check for 24 VAC at the connection (the voltage will read ~19 VAC when not powered). If no voltage then replace the control board.
3	If correct voltage is present then remove the solution module and then replace the solenoid.



Error #611, 612, 613: CO₂ or Solution Leak

The barrel pressure is rising during a fill circuit diagnostic test.

1	Determine if the barrel is filling with CO ₂ or liquid. If the barrel liquid level is low enough use a flashlight to look at the back of the barrel and see if liquid is entering the barrel. Replace a leaking solenoid.
2	Ensure the solenoids are not manually turned on by going to the MANUAL ON/OFF menu. Check to see if either solenoid is receiving power by removing the leads and testing with a voltmeter. If 12 VDC is measured on the CO ₂ solenoid or 24 VAC is measured on the solution solenoid then replace the control board.

Error #621, 622, 623: Barrel Leak

The barrel pressure is dropping during a fill circuit diagnostic test.

1	Look for any obvious leaks by searching for liquid along the product line from the solution module to the back of the barrel.
2	Inspect the rear seal to determine if the leak is originating from it.
3	Inspect the relief valve in the faceplate to determine if the leak is originating from it. Press and turn the relief valve to firmly seat.
4	Inspect the dispensing nozzle to determine if the leak is originating from it.



12. DIAGRAMS AND SCHEMATICS

12.1 Mounting Templates

To permanently secure the dispenser to a countertop, use the provided mounting diagrams (Figures 12.1 and 12.2) to drill 7/16" clearance holes into the countertop. Next, place the dispenser in position and install 3/8"-16 UNC bolts from the underside of the countertop into the threaded bosses in the frame. 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.

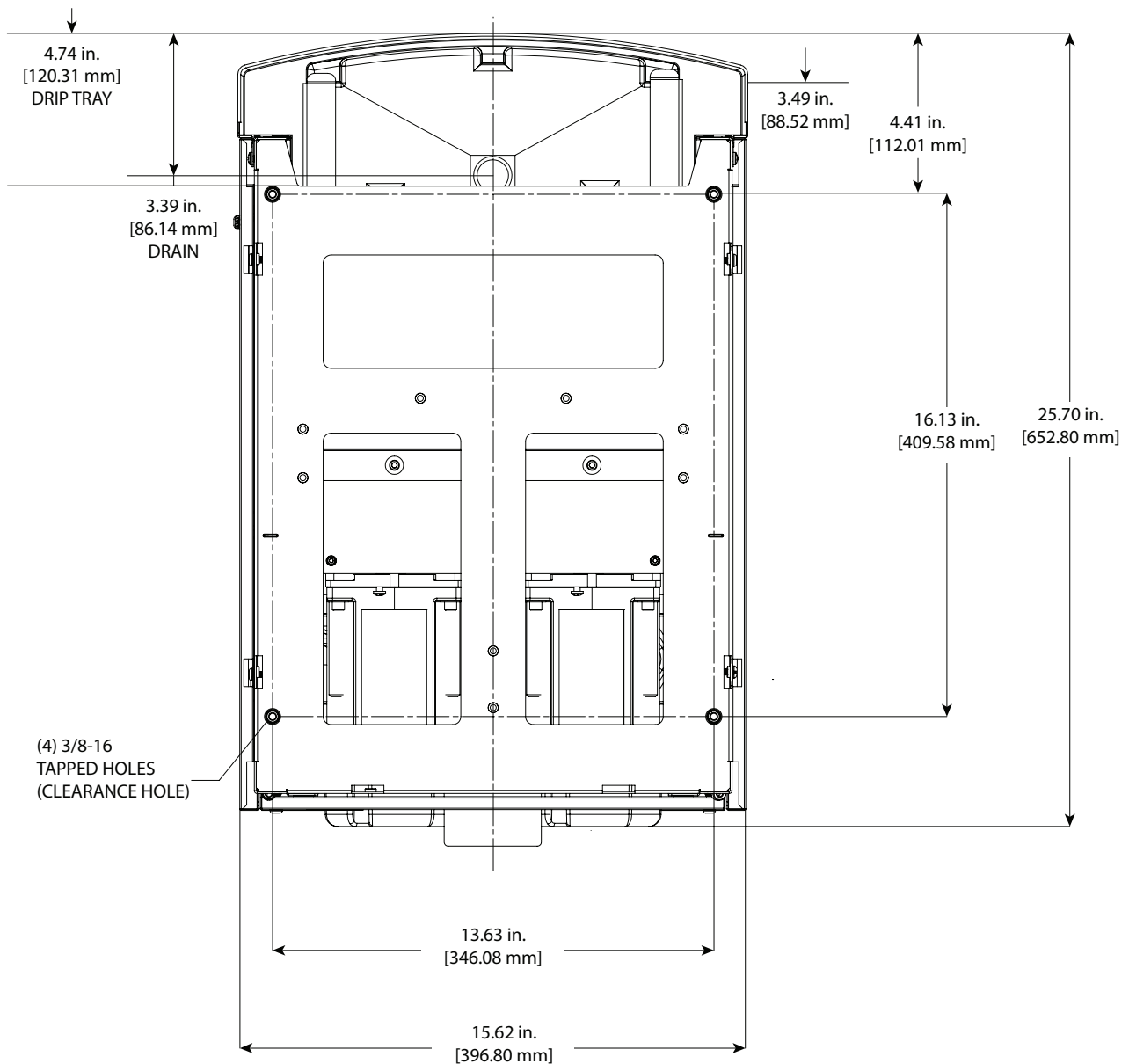
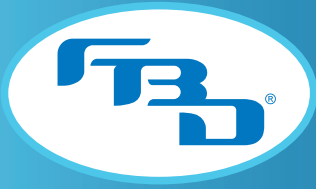


Figure 12.1 372 Mounting Diagram



12.1 Mounting Templates

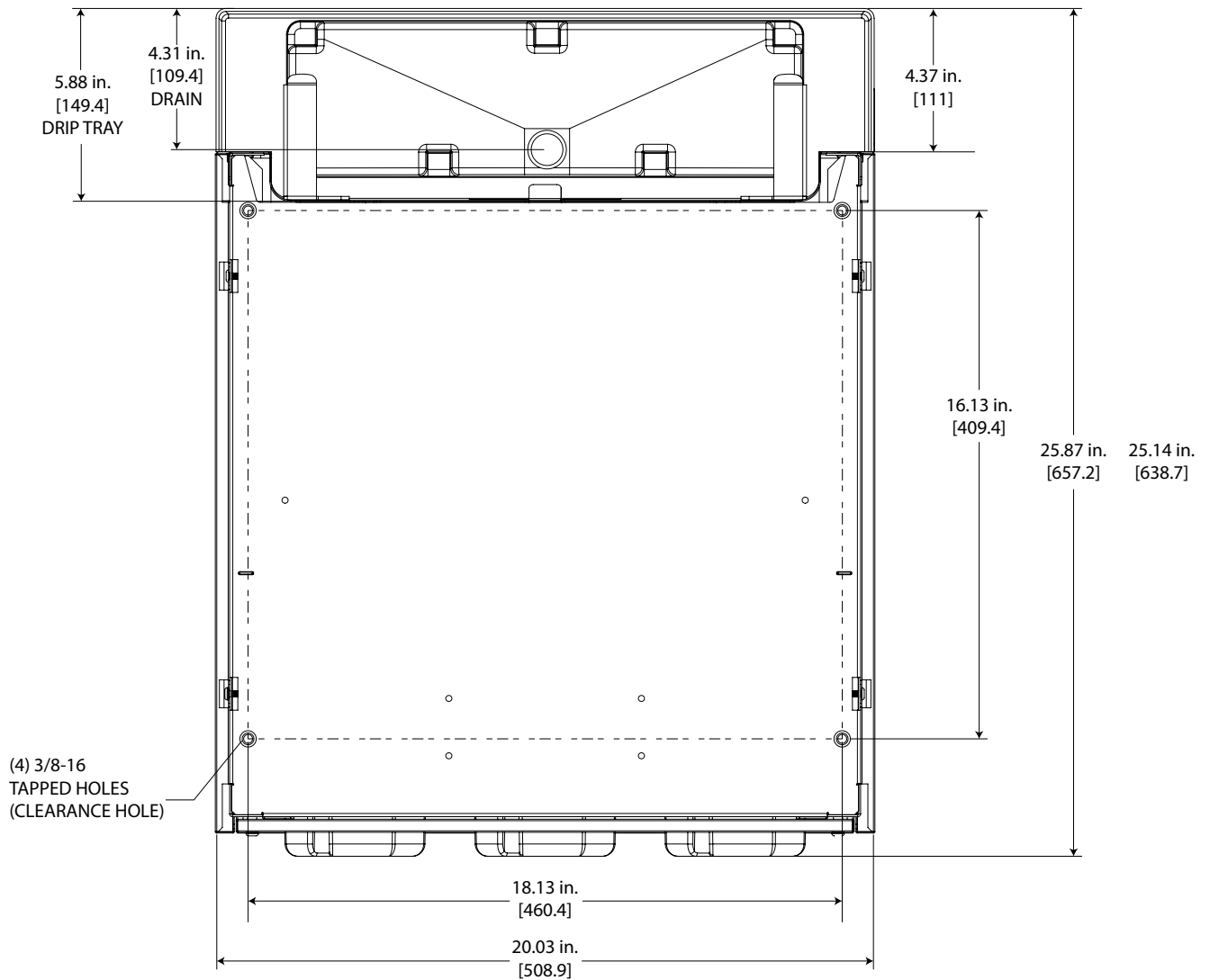
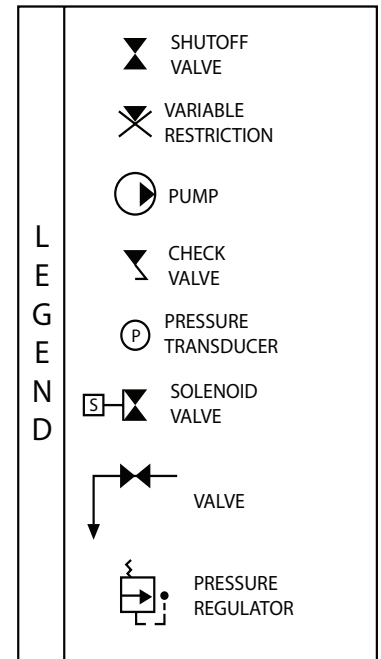
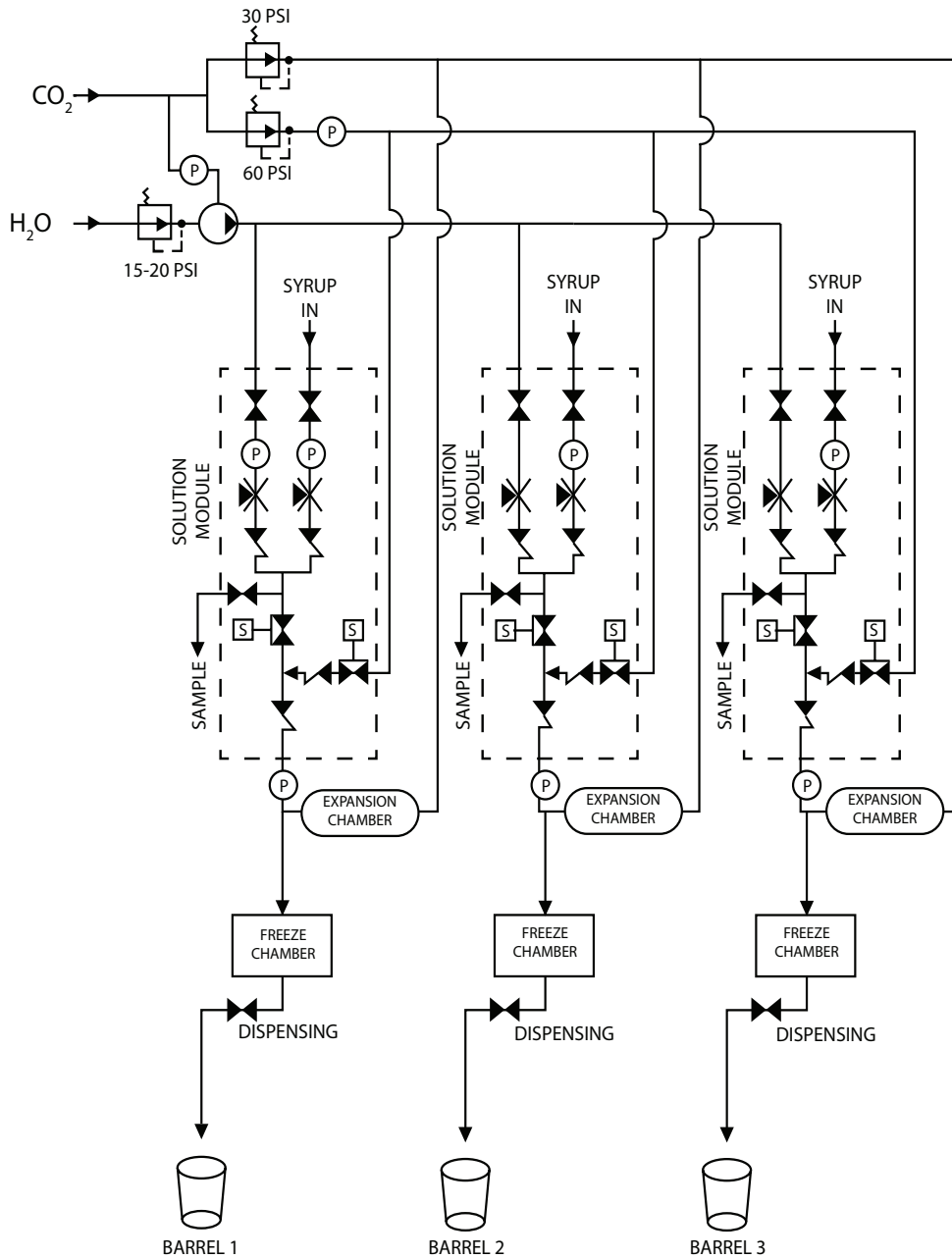


Figure 12.2 373 Mounting Diagram



12.2 Flow Diagram ^{NF*}

Three-barrel configuration shown.

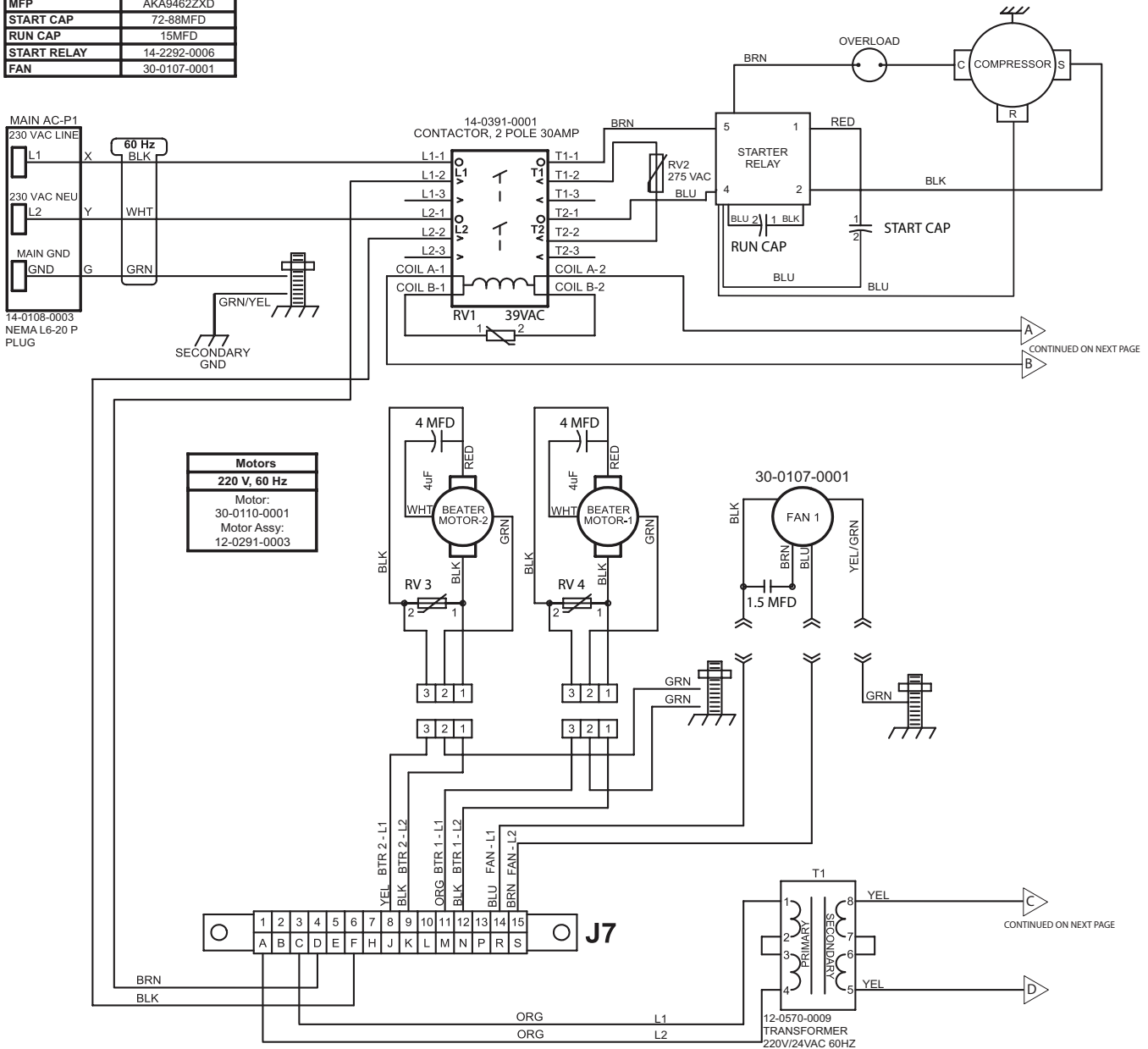


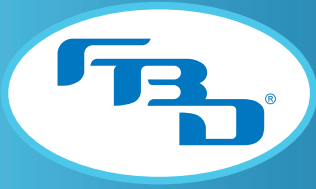
* Refer to Appendices for additional information on NitroFub configuration.



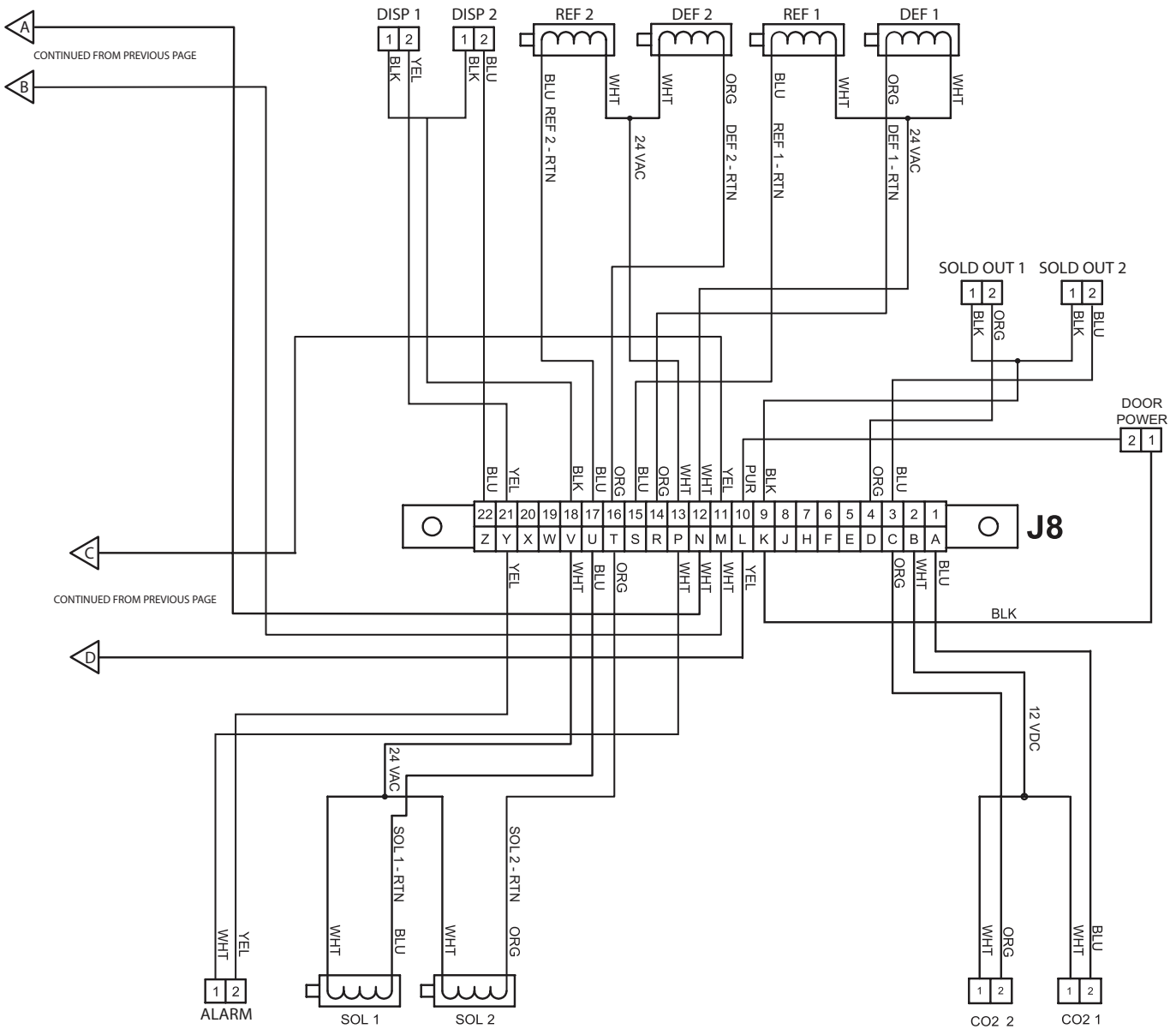
12.3 372 Electrical Wiring Diagram

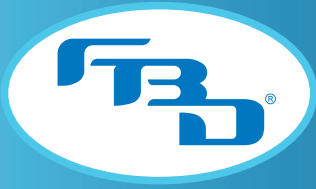
PART	50/60 HZ
COMPRESSOR	36-2026-0001
MFP	AKA9462ZXD
START CAP	72-88MFD
RUN CAP	15MFD
START RELAY	14-2292-0006
FAN	30-0107-0001



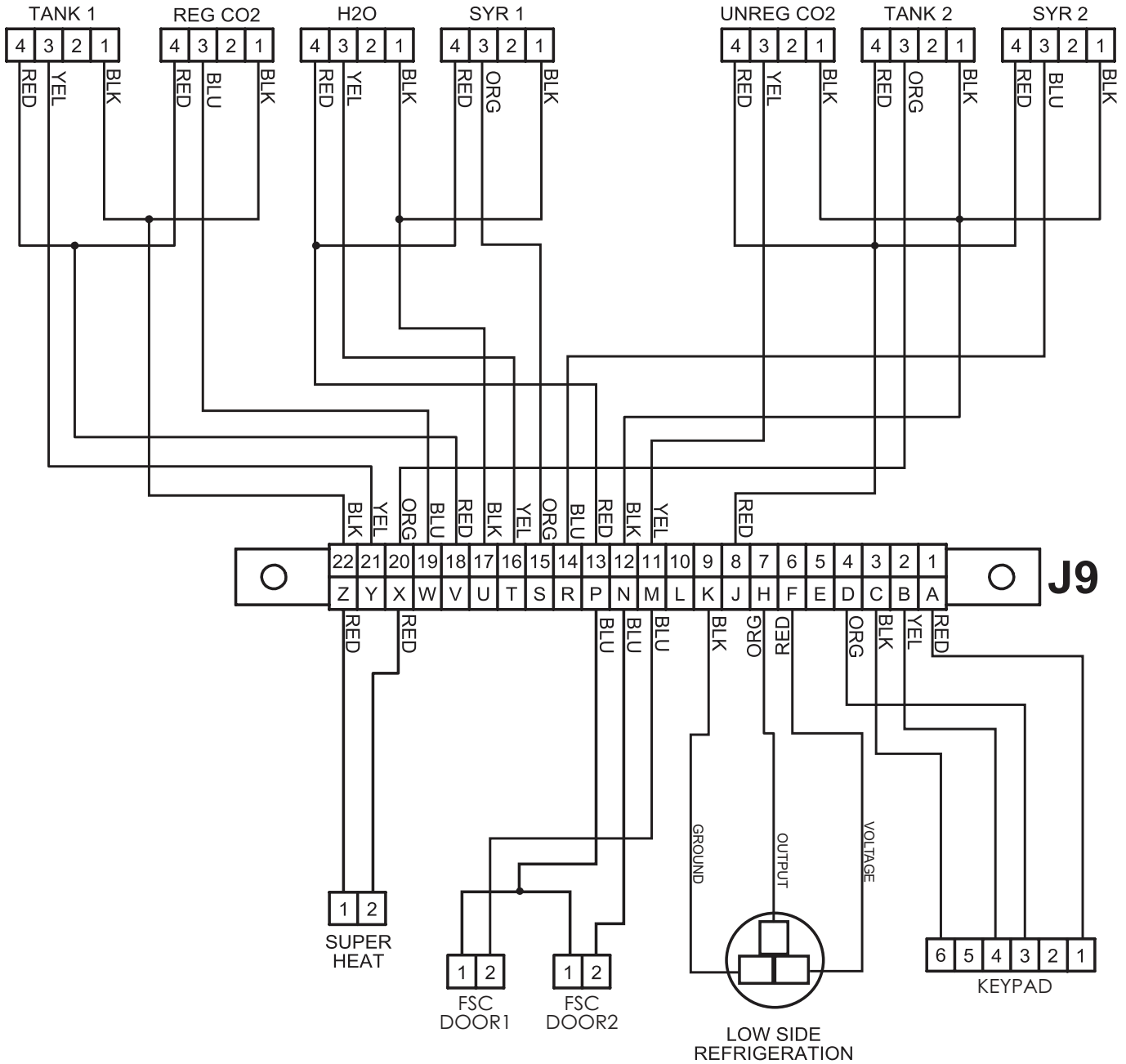


12.3 372 Electrical Wiring Diagram





12.3 372 Electrical Wiring Diagram

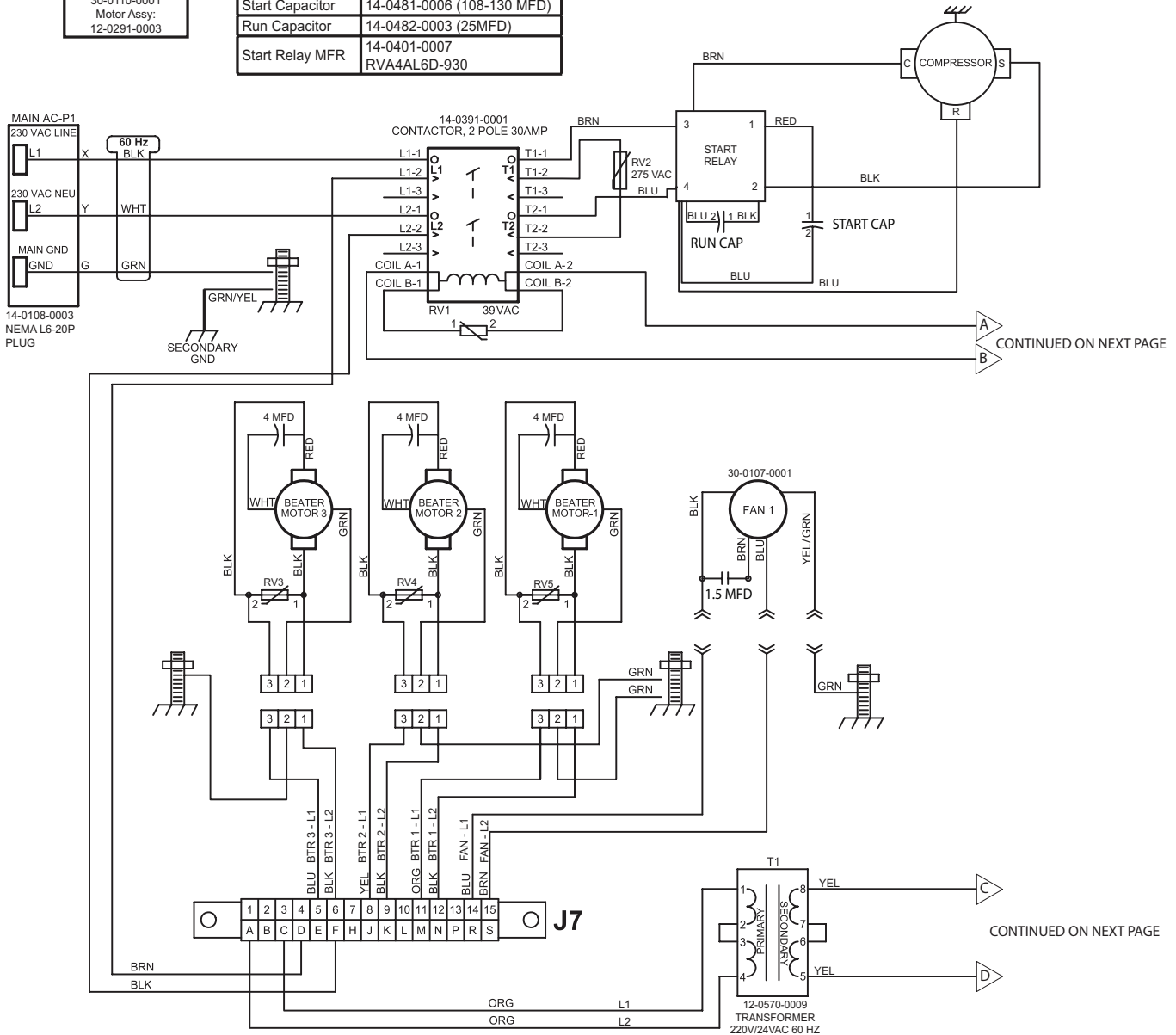




12.4 373 Electrical Wiring Diagram

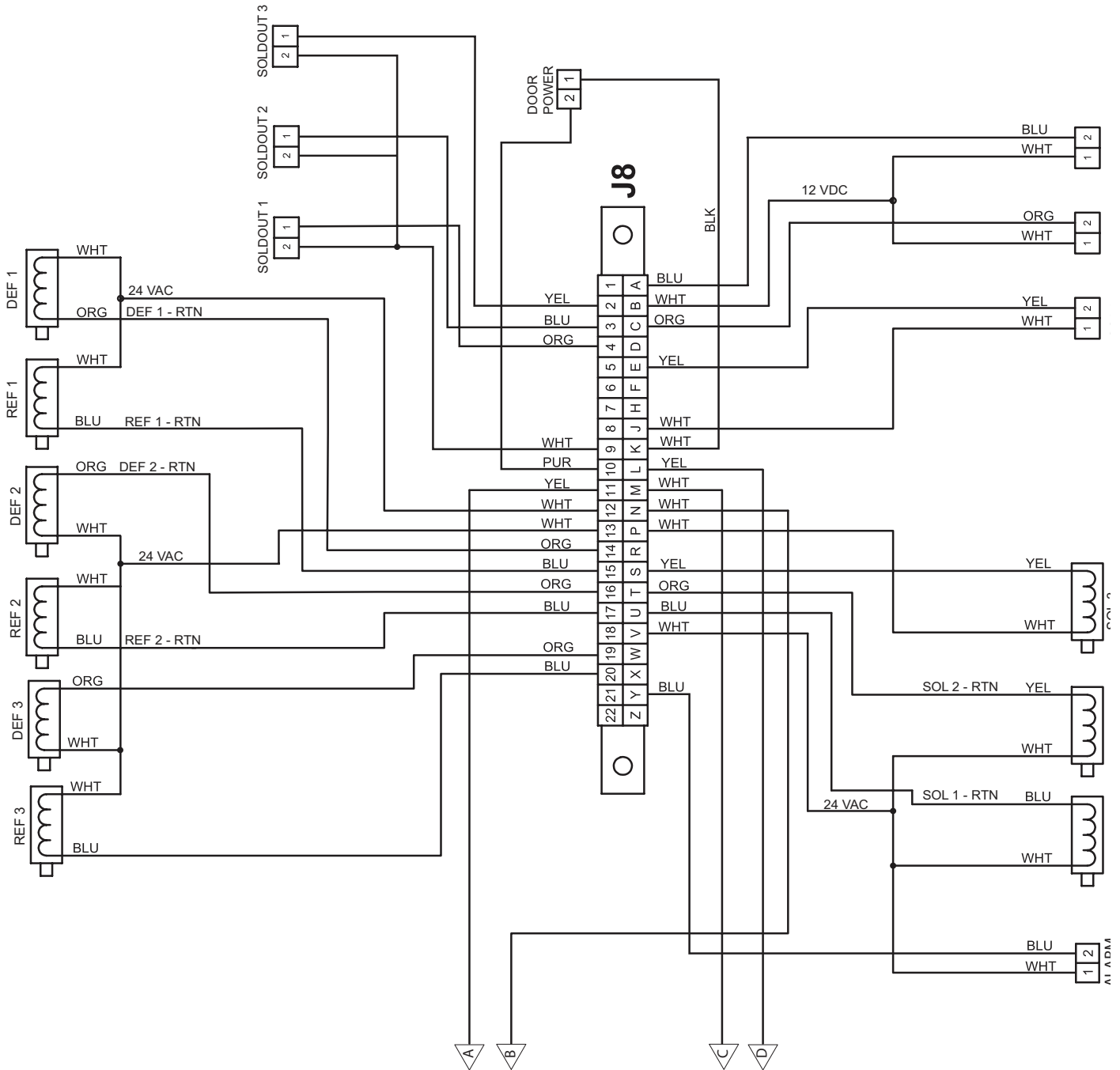
Motors
220 V, 60 Hz
Motor: 30-0110-0001 Motor Assy: 12-0291-0003

PART	60 HZ
Compressor MFR	36-0106-0003 RST70C1E-PFV
Start Capacitor	14-0481-0006 (108-130 MFD)
Run Capacitor	14-0482-0003 (25MFD)
Start Relay MFR	14-0401-0007 RVA4AL6D-930



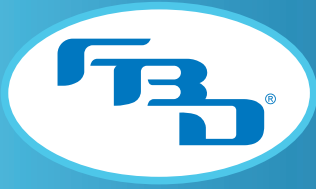


12.4 373 Electrical Wiring Diagram

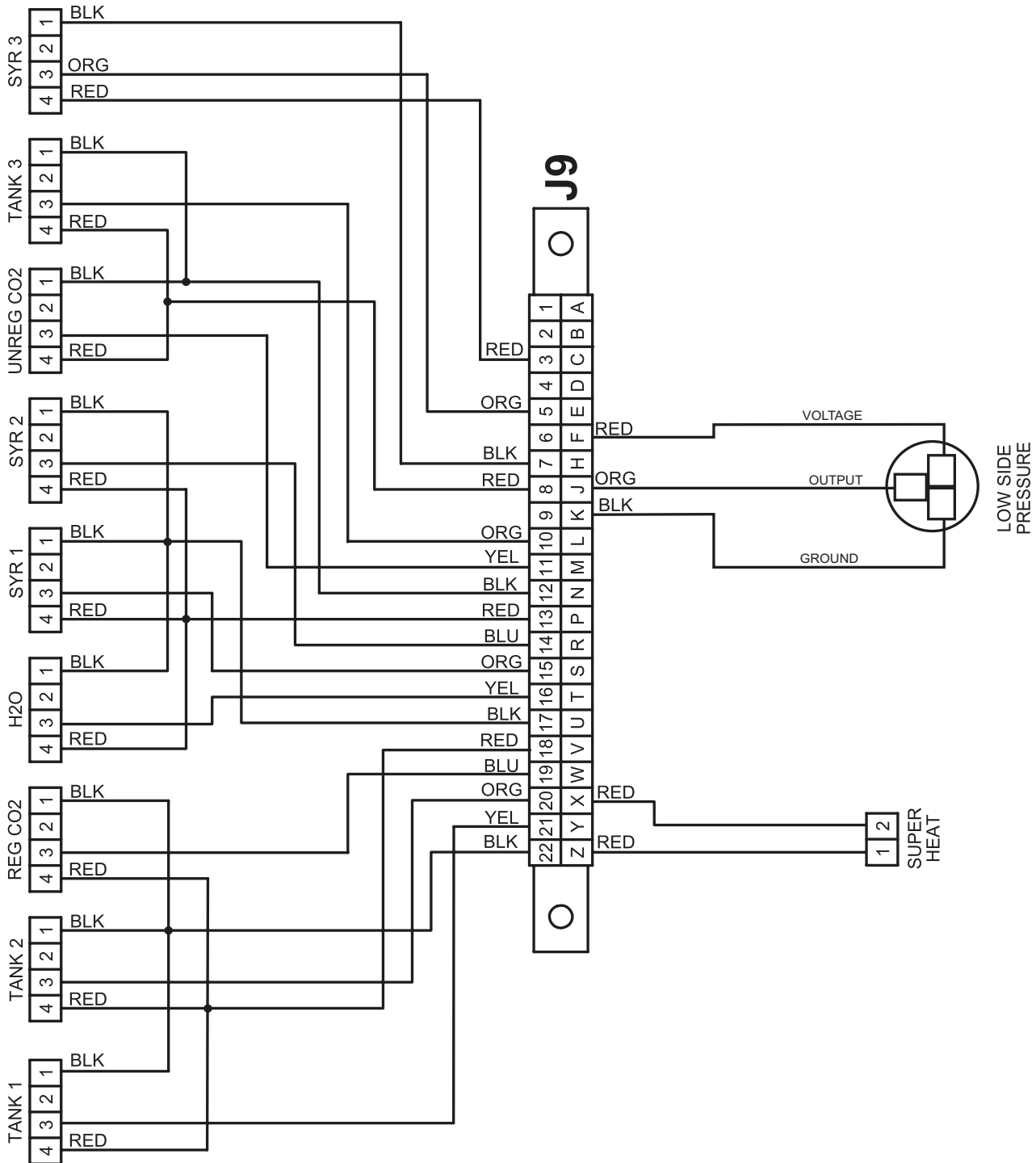


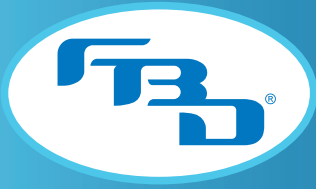
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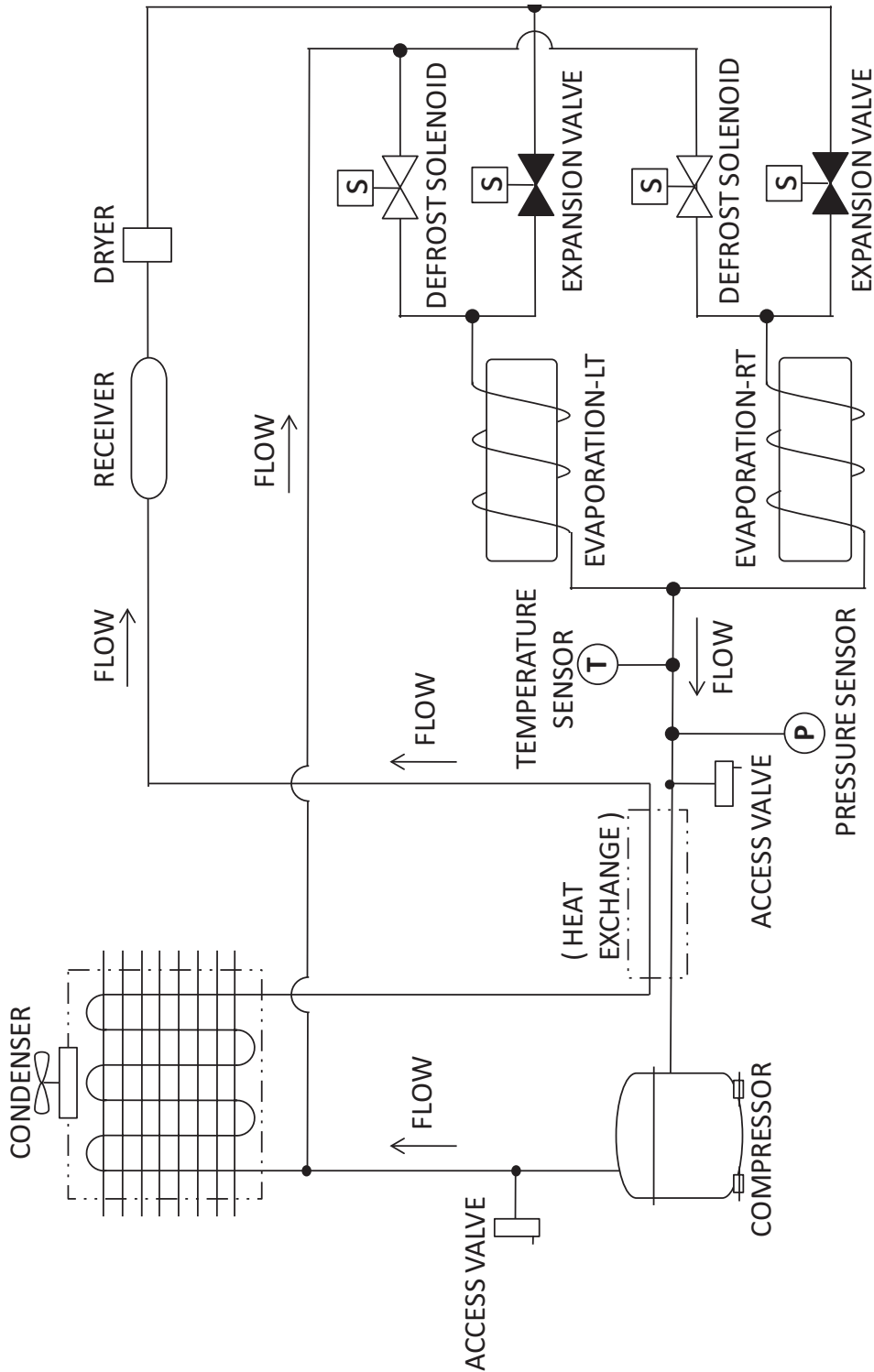


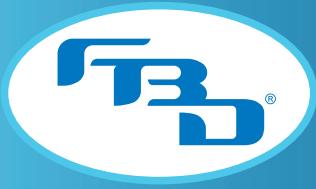
12.4 373 Electrical Wiring Diagram



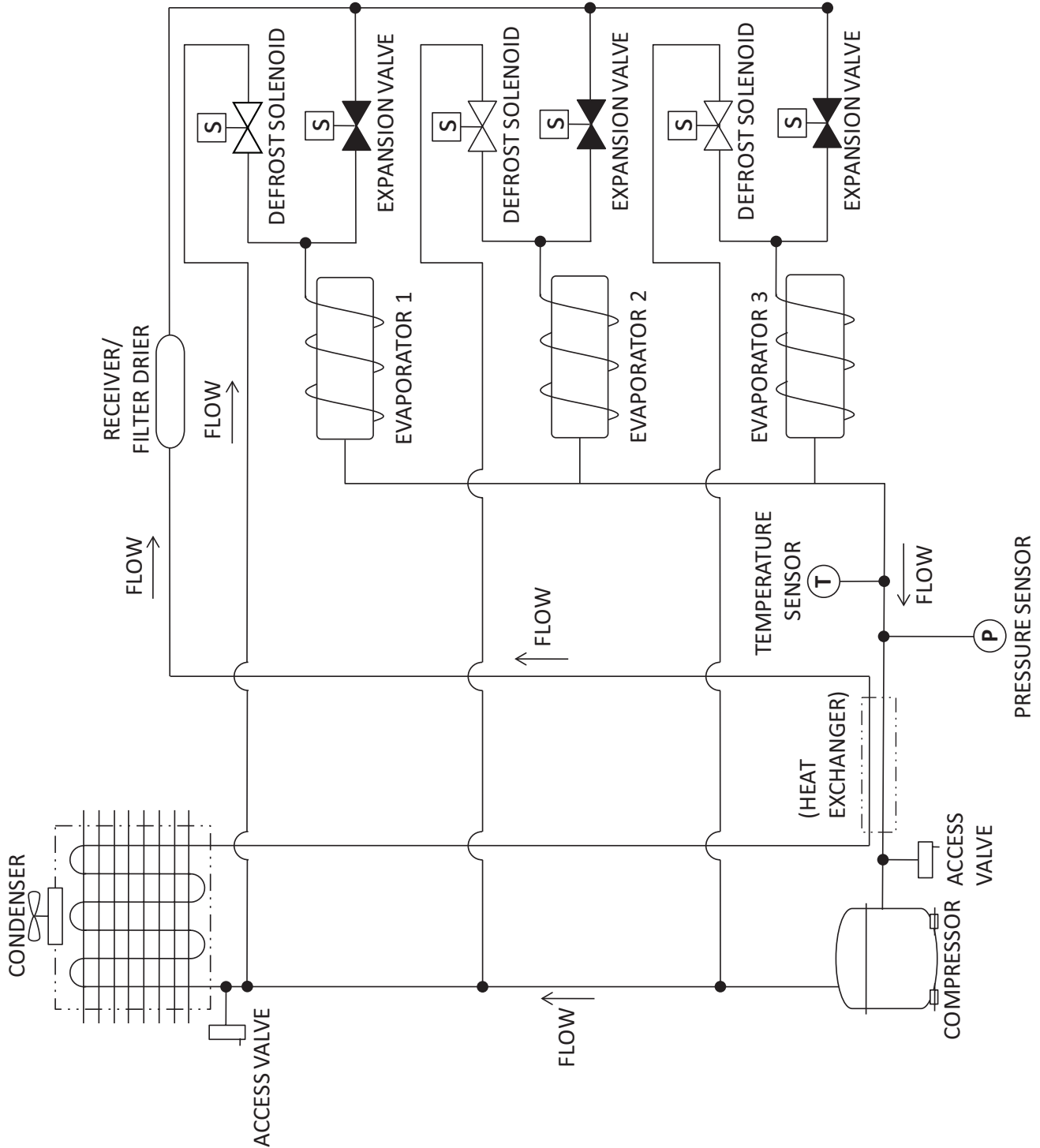


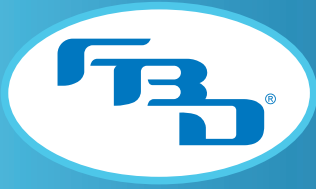
12.5 372 Refrigeration Schematic Diagram





12.6 373 Refrigeration Schematic Diagram





APPENDICES



APPENDIX A: 372 “NITROFUB”

The 372 “Nitrofub” dispenser, is a unique dispenser with barrel one configured for Nitro-FCB (expanded drink) and barrel two configured for FUB (drink with no expansion). The second biggest difference from a standard 372 is the Nitrofub dispenser’s usage of Nitrogen (N₂). The following information supplements the information available in this manual to detail specific requirements and features of the dispenser.

A1. SAFETY

A1.2 Nitrogen (N₂)

In addition to making sure to follow proper safety protocols for CO₂ as stated in Section 1.2, strict attention must also be observed in the prevention of N₂ gas leaks in the frozen drink system. If an N₂ gas leak is suspected, immediately ventilate the contaminated area before attending to repair the leak. Inhalation of excessive amounts of N₂ can cause dizziness, nausea, vomiting, loss of consciousness, and death.

To avoid personal injury and/or property damage, always secure N₂ cylinders in an upright position with a safety chain. An N₂ cylinder with a damaged or detached valve can cause serious personal injury.

A3. SPECIFICATIONS

A3.1 General Requirements

Requirement	
N ₂ Supply Pressure	70 - 72 PSIG (483 - 496 kPag)

A5. INSTALLATION

A5.5 Connecting to Water Supply

Connection to a potable water supply should be carried out in the same manner as specified in Section 5.5; however, the bulkhead fitting diagram used for Nitrofub configurations is shown in Figure A5.1. Please use this diagram as a reference for water, syrup, CO₂ and N₂ connections.

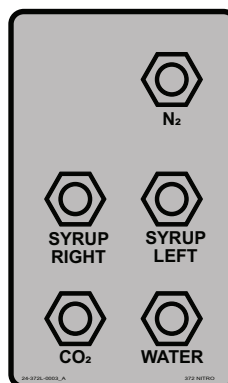


Figure A5.1 372 Nitrofub Bulkhead Diagram



A5.6 Connecting to N₂ Supply

The NitroFub dispenser will require a connection to CO₂ as stated in Section 5.6; however, that CO₂ supply will only be used for operating the pumps. The NitroFub dispenser will also need to be connected to an N₂ supply to be used for the Nitro-FCB barrel. That 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 "N₂" (Figure A5.1) using a 1/4" flare fitting. This regulator should only support N₂ to the frozen beverage dispenser. Installing a shutoff valve near the connection will be helpful when removing the dispenser.

A6. STARTING UP THE DISPENSER

A6.1 Leak Check and Prime

Follow the same procedure listed in Section 6.1 with the change on the step below.

4	Turn on the water, CO ₂ , and N ₂ supplies. Ensure both are flowing to the dispenser. Note: The water and syrup pumps will activate loudly until the lines are pressurized.
---	---

A6.2 Initial Power Up

Follow the same procedure listed in Section 6.2 with the change on the step below.

6	Verify the regulated N ₂ pressure is approximately 60 PSIG (414 kPag) and adjust the regulator if needed. ^Δ
---	---

^ΔThe dispenser will tolerate fluctuations in regulated N₂ from 50 to 70 PSIG (345 to 483 kPag) because it will automatically compensate. It is best to ensure during setup that it is as close to 60 PSIG (414 kPag) as possible.

A6.4 Filling Barrel and Starting

Follow the same procedure listed in Section 6.4. The NitroFub dispenser will purge the barrel with N₂ instead of CO₂.

A7. DISPENSER OPERATION

A7.4 Drink Quality

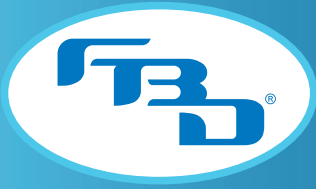
The drink quality factors are the same as listed in Section 7.4; however, for the NitroFub dispenser, the EXPANSION ADJUSTMENT controls how much N₂ is injected into the product instead of CO₂.

A7.7 Drink Too Heavy

A drink from the NitroFub dispenser with not enough N₂ will behave in the same manner as one with CO₂, and its N₂ content can be increased in the same manner as explained in Section 7.7.

A7.8 Drink Too Light

A drink from the NitroFub dispenser with too much N₂ will behave in the same manner as one with CO₂, and its N₂ content can be reduced in the same manner as explained in Section 7.8.



A10. MENUS AND NAVIGATION

A10.6 Readouts Menu

The COMMON READOUTS will show Nitrogen (N₂) readouts instead of CO₂.

COMMON READOUTS	
H2O PRESS:	84 PSI
UNREG N2:	70 PSI
REG N2:	60 PSI
RFG LD:	52 PSI
LINE VOLTAGE:	225 V
RTN TEMP:	26 °F
SUPERHEAT:	15 °F
DUTY CYCLE:	54 %

At the bottom of the screen, there are two tabs: 'BARREL' and 'COMMON'. The 'COMMON' tab is currently selected and highlighted.

Figure A10.1

A10.9 Maintenance Menu

On NitroFub dispensers, the GAS PURGE procedure uses Nitrogen (N₂) to purge air from the barrel instead of CO₂.

A10.10 Settings Menu

On NitroFub dispensers, the EXPANSION ADJUSTMENT is used to adjust the amount of Nitrogen (N₂) in the drink instead of CO₂.

A11. TROUBLESHOOTING

A11.1 Home Menu Messages

Message	Meaning	Action
N2	N2 supply depleted.	Restore N2 supply. Dispenser will automatically restart.

A11.2 Fault Codes

Error #280: N₂ Out

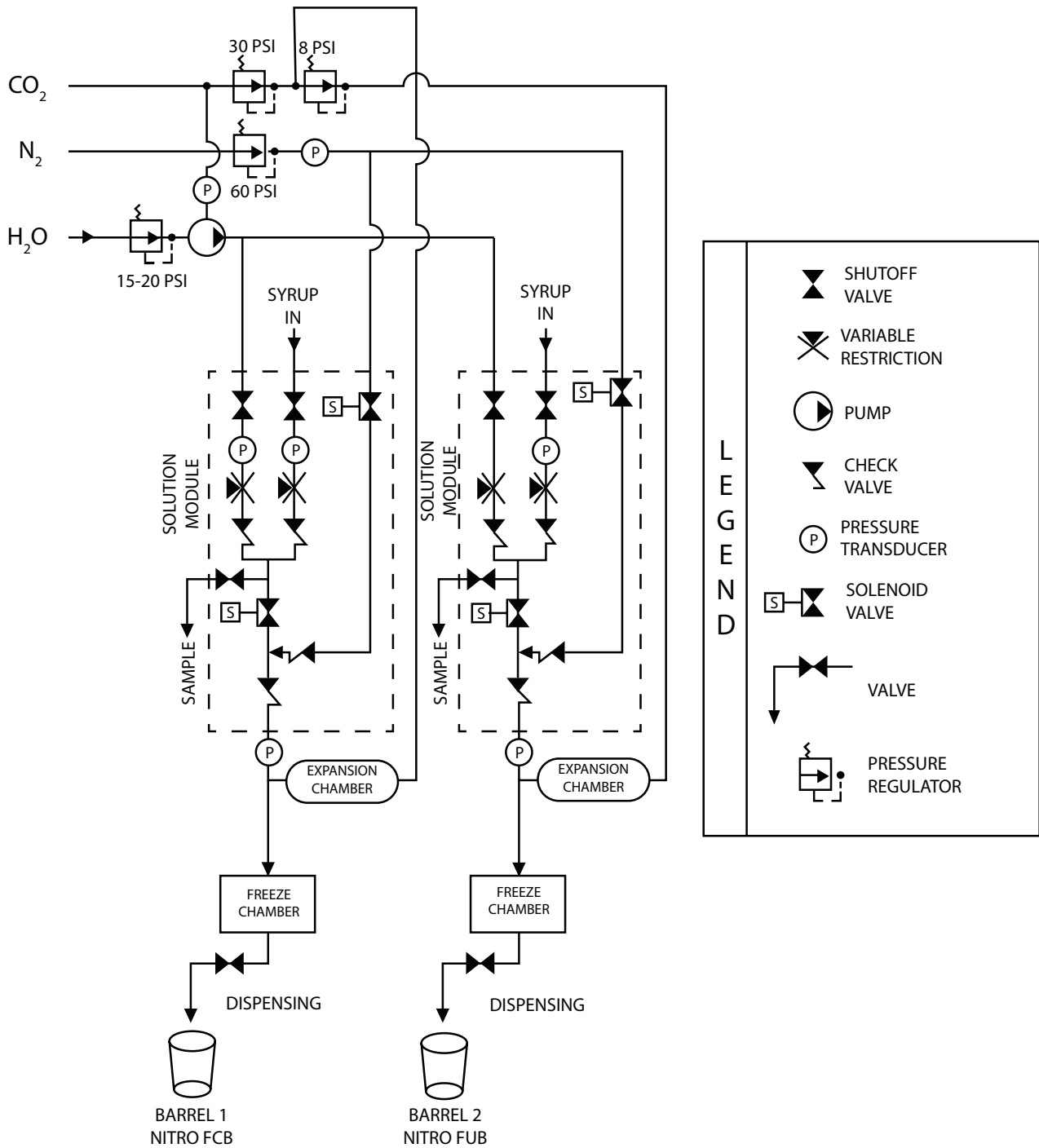
The N₂ pressure is less than 45 PSIG (310 kPag).

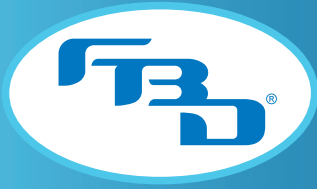
1	Replace or refill the N ₂ tank.
2	Ensure N ₂ shutoff valve at the back of the dispenser is not turned off.
3	Ensure the N ₂ pressure transducer is connected and working properly.
4	Ensure the N ₂ supply pressure at the dispenser is reading 70 PSIG (483 kPag). Adjust the regulator if needed.



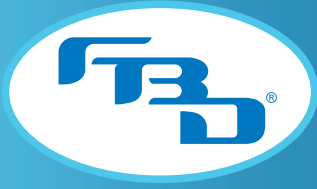
A12. DIAGRAMS AND SCHEMATICS

A12.2 Flow Diagram





NOTES



37X INSTALLATION & OPERATION MANUAL
372/373 MODEL

