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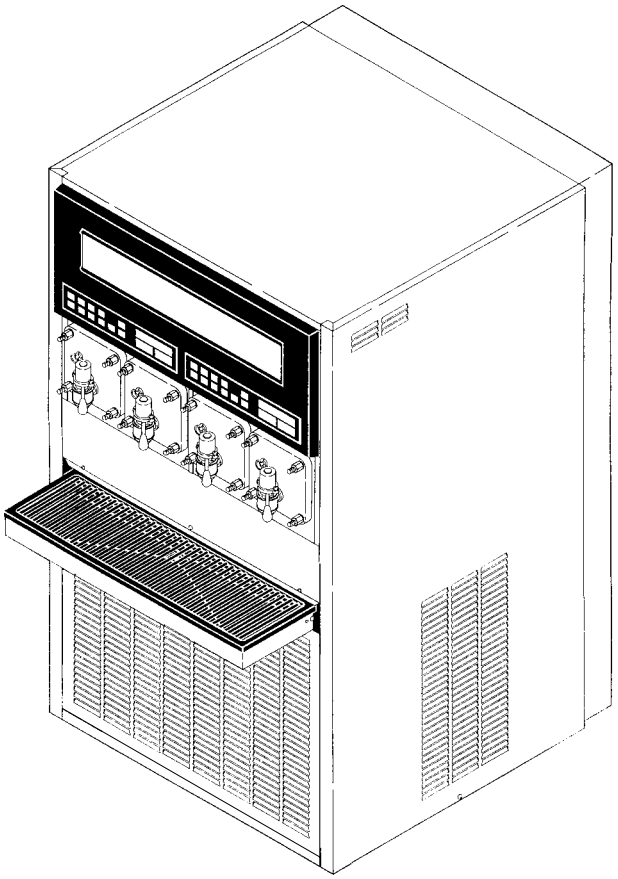
Service Manual
FCB (SOLID-STATE) POST-MIX DISPENSER
Four-Flavor/Hot-gas Defrost
With V3 Electronics

IMPORTANT:

TO THE INSTALLER.

It is the responsibility of the Installer to ensure that the water supply to the dispensing equipment is provided with protection against backflow by an air gap as defined in ANSI/ASME A112.1.2-1979; or an approved vacuum breaker or other such method as proved effective by test.

Water pipe connections and fixtures directly connected to a potable water supply shall be sized, installed, and maintained according to Federal, State, and Local Codes.



Part No. 326093000
August 11, 1988
Revised: February 4, 1992

THIS DOCUMENT CONTAINS IMPORTANT INFORMATION

This Manual must be read and understood before installing or operating this equipment

PRINTED IN U.S.A

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SAFETY INFORMATION

Recognize Safety Information

This is the safety-alert symbol. When you see this symbol on our machine or in this manual, be alert to the potentially of personal injury.

Follow recommended precautions and safe operating practices.

Understand Signal Words

A signal word - ***DANGER, WARNING,*** *OR* ***CAUTION*** is used with the safety-alert symbol. ***DANGER*** identifies the most serious hazards.

Safety signs with signal word ***DANGER*** or ***WARNING*** are typically near specific hazards.

General precautions are listed on ***CAUTION*** safety signs. ***CAUTION*** also calls attention to safety messages in this manual.

Follow Safety Instructions

Carefully read all safety messages in this manual and on your machine safety signs. Keep safety signs in good condition. Replace missing or damaged safety signs. Learn how to operate the machine and how to use the controls properly. Do not let anyone operate the machine without instructions. Keep your machine in proper working condition. Unauthorized modifications to the machine may impair function and/or safety and affect the machine life.

CO_2 (Carbon Dioxide) Warning

CO_2 Displaces Oxygen. Strict Attention *must* be observed in the prevention of CO_2 (carbon dioxide) gas leaks in the entire CO_2 and soft drink system. If a CO_2 gas leak is suspected, particularly in a small area, *immediately* ventilate the contaminated area before attempting to repair the leak. Personnel exposed to high concentration of CO_2 gas will experience tremors which are followed rapidly by loss of consciousness and suffocation.

Shipping, Storing, Or Relocating Unit

CAUTION: Before shipping, storing, or relocating this Unit, the syrup systems must be sanitized and all sanitizing solution *must* be purged from the syrup systems. All water *must* also be purged from the plain and carbonated water systems. A freezing ambient temperature will cause residual water remaining inside the Unit to freeze resulting in damage to internal components of the Unit.

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GENERAL DESCRIPTION

This section gives the Unit description, theory of operation, and design data for FCB (Solid State) Post-Mix Dispenser.

IMPORTANT: *To the user of this manual* – This manual is a guide for installing, operating, and maintaining this equipment. Refer to the Table of Contents for page location for detailed information pertaining to questions that arise during installation, operation, service, or maintenance of this equipment.

GENERAL DESCRIPTION

This section gives the description, theory of operation, and design data for the FCB (Solid–State) Post–Mix Four–Flavor Dispenser with Hot–Gas Defrost (hereafter referred to as a Unit.

UNIT DESCRIPTION

The Unit (see Figure 1) consists basically of four freeze cylinders each containing an internal beater driven by an electric motor, two refrigeration systems (one for each two freeze cylinders), two carbonators (one carbonator feeding two carbonator–blender tanks), a timer–controlled automatic hot–gas defrost system to defrost the freeze cylinders, and interconnecting tubing, components, and fittings necessary to regulate, transfer, and dispense product. The components are attached to a steel frame and are enclosed in a steel cabinet. The cabinet panels are easily removed to facilitate installation and service and maintenance. A transparent faceplate, with an integral relief valve and a removable self–closing dispensing valve, is mounted on front of each freeze cylinder. A removable drip tray, with cup rest, is located directly below the dispensing valves.

CAUTION: Before shipping, storing, or relocating this Unit, the syrup systems *must* be sanitized and all sanitizing solution *must* be purged from the syrup systems. All water *must* also be purged from the plain and carbonated water systems. A freezing ambient environment will cause residual water in the Unit to freeze resulting in damage to internal components.

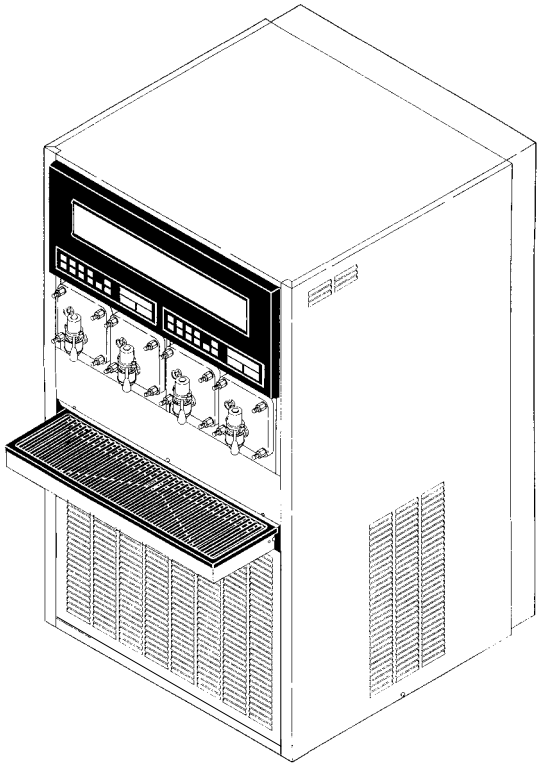


FIGURE 1. FCB (SOLID STATE) POST-MIX FOUR-FLAVOR DISPENSER

Table 1. Design Data	
Model Numbers:	
Domestic Unit	416100–XXX 416100–XXX
Export Unit	496100–XXX
Overall Dimensions:	
Height	60–1/2 inches
Width	32–1/2 inches
Depth Without Drip Tray	37–1/4 inches
Depth With Drip Tray	45–1/4 inches
Shipping Weight (approx.)	800 pounds
Compressor Horsepower (each compressor)	2 H.P.
Refrigeration System:	
Refrigerant Type	R–502
Refrigerant Charge	See Nameplate
Ambient Operating Temperature	40F to 100F
Electrical Requirements:	
Domestic Unit:	
Operating Voltage	219/242VAC 60Hz, Single Phase
Current Draw	40 Amps
Export Unit:	
Operating Voltage	219/242VAC 50Hz, Single Phase
Current Draw	40 Amps

THEORY OF OPERATION

IMPORTANT: Before connecting electrical power, refer to Unit nameplate and note if Unit is to be operated with 50 or 60 Hz power source and also note beaters drive motors manufacturer's name. No. 6, No. 7 and No. 8 switches on DIP switch assemblies on master circuit boards must be set according to motors manufacturer and for 50 or 60 Hz operation.

A CO_2 cylinder delivers carbon dioxide (CO_2) gas to an adjustable primary CO_2 regulator assembly attached to the cylinder. Primary CO_2 regulator assembly in turn delivers CO_2 gas to adjustable secondary CO_2 regulators inside the Unit and also to the four soft drink tanks. CO_2 gas is delivered from adjustable secondary CO_2 regulators to two carbonators and also four product–blender tanks inside the Unit. CO_2 gas pressure pushes syrup out of soft drink tanks, through syrup sold–out switches, through electrically operated syrup solenoid valves, through adjustable syrup flow regulators, and on to product–blender tanks. At the same time, plain water passes through water pressure regulators and is pumped into carbonators tanks by water pumps and is carbonated by CO_2 gas pressure also entering the tanks. Carbonated water is pushed by CO_2 gas pressure from carbonators tanks, through electrically operated carbonated water solenoid valves, through adjustable carbonated water flow regulators, and on to product–blender tanks. Carbonated water and syrup enter tanks properly proportioned (blended) for desired BRIX of dispensed product by adjustment of syrup flow regulators. From product–blender tanks, product is pushed by CO_2 gas into the freeze cylinders. The beater in each freeze cylinder is driven by an electric motor. Scraper blades, attached to beaters, scrapes product from cylinders walls as product enters freeze cylinders and is frozen. Transparent faceplate, attached to front of each freeze cylinder, includes a self-closing dispensing valve and a spring–loaded relief valve that protects freeze cylinder from accidental over–pressure. The relief valve is also used to bleed CO_2 gas pressure from freeze cylinder to atmosphere when filling cylinder with product. Electronic sensing on each freeze cylinder beater motor provides a means of adjusting viscosity (product consistency) of dispensed product to suit customer preference.

DEFROST SYSTEMS

The Unit is equipped with both manual and automatic hot–gas defrost systems. The automatic defrost system may be programmed into Unit to occur up to nine different times a day with a minimum of two hours between defrost time sittings or system may be completely turned off.

MANUAL DEFROST SYSTEMS

The Manual hot gas defrost system may be activated at any time by pressing ‘‘DEFROST’’ switch on front of Unit. Refrigeration compressor will operate for a short time, then both No. 1 and No. 11 or No. 2 and No. 22 (depending upon which ‘‘DEFROST’’ switch was pressed) freeze cylinder only will go into defrost and defrost for one minute. At the end of manual defrost cycle, Unit will return to normal operation. Manual defrost may be cancelled at any time by pressing ‘‘CANCEL DEFROST’’ switch.

AUTOMATIC DEFROST SYSTEMS

NOTE: The following describes Automatic Hot–gas Defrost system operation for No. 1 and No. 2 freeze cylinders. Automatic defrost system operation for the No. 11 and No. 22 freeze cylinders is identical to the No. 1 and No. 2 freeze cylinders.

The Automatic hot gas defrost system may be programmed into Unit to occur up to nine different times a day with a minimum of two hours between defrost settings. At start of each automatic defrost cycle, refrigeration compressor will operate for 30–seconds to pump Freon out of freeze cylinders evaporator coils. After Freon has been pumped out of freeze cylinders evaporator coils, No. 1 freeze cylinders only will go into defrost cycle and defrost for approximately 7–minutes, then will return to normal operation. This ends automatic defrost cycle of No. 1 freeze cylinder. No. 2 freeze cylinder will defrost 30–minutes after the start of No. 1 freeze cylinder. The next automatic defrost cycle will occur according to time programmed into the Unit. Automatic defrost may be cancelled at any time by pressing ‘‘CANCEL DEFROST’’ switch.

‘‘SLEEP’’ (SLEEP TIME)

NOTE: The following describes ‘‘Sleep Time’’ operation for half of the Unit (No. 1 and No. 2 freeze cylinders). ‘‘Sleep Time’’ operation for No. 11 and No. 22 freeze cylinders is identical to the No. 1 and No. 2 freeze cylinders.

‘‘Sleep time’’ may be programmed into Unit to allow Unit to go into ‘‘sleep time’’ (Unit shut down, freeze cylinders beaters and refrigeration systems not operating). At the start of sleep time, refrigeration compressor will operate for 30–seconds to pump Freon out of freeze cylinders evaporator coils, then, No. 1 freeze cylinder will defrost for one minute, then No. 2 freeze cylinder will defrost for one minute. After freeze cylinders have been defrosted, Unit will go into ‘‘sleep time’’.

‘‘WAKE UP’’ (WAKE UP TIME)

‘‘Wake up’’ (wake up time) may be programmed into the unit to allow unit to resume normal operation at a desired time. When programmed wake up time is reached, an alarm will sound for a short duration, then unit will resume normal operation.

NOTE: Automatic defrost, sleep time, and wake up time may be used in any combination together or separately.

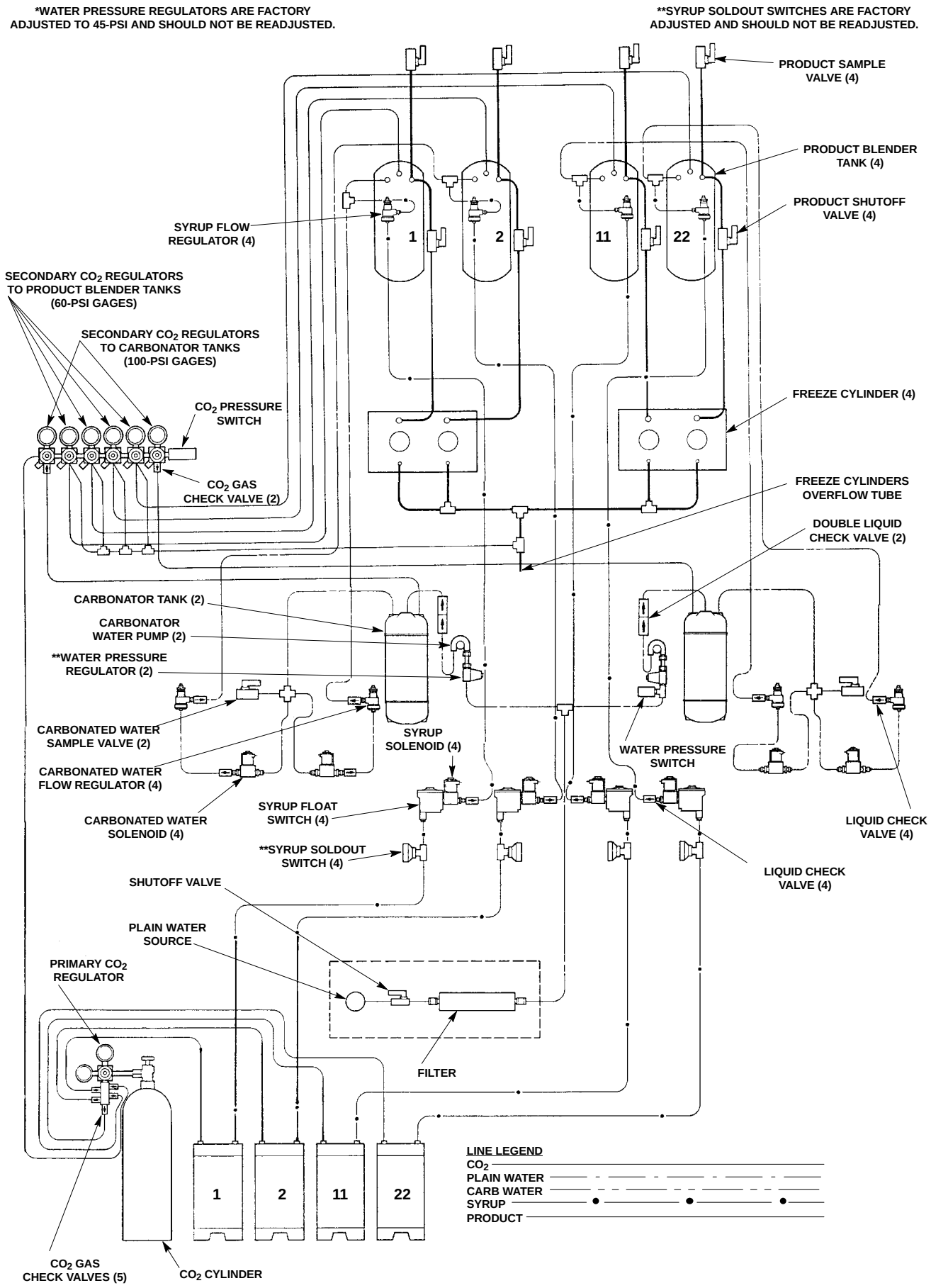


FIGURE 2. FLOW DIAGRAM

INSTALLATION

This section covers unpacking and inspection, installing loose shipped parts, selecting location, installing Unit, preparing for operation, and operation.

UNPACKING AND INSPECTION

NOTE: The Unit was thoroughly inspected before leaving the factory and the carrier has accepted and signed for it. Any damage or irregularities should be noted at the time of delivery (or not later than 15 days from date of delivery) and immediately reported to the delivering carrier. Request a written inspection report from Claims Inspector to substantiate any necessary claim. File claim with the delivering carrier, *not* with IMI Cornelius Inc.

1. After Unit has been unpacked, remove shipping tape and other packing material.
2. Remove Unit sides, top, and back panels as instructed.
3. Remove shipping bolts that secure Unit to skid, then remove skid.
4. Unpack LOOSE–SHIPPED PARTS. Make sure all items are present and in good condition.

Table 2. Loose-Shipped Parts

Item No.	Part No.	Name	Qty.
1	178025–100	Tapered Gasket, White	5
2	311304	Tapered Gasket, Black	1
3	151689	Spanner Wrench, Flow Regulators	1
4	322859	Spanner Wrench, Dispensing Valve	1
5	325216	Cleaning Brush	1
6	325666	Instructions, Scraper Blades	1
7	325458	Beater (item 13)	4
8	325457	Scraper Blade (item 2)	8
9	319941	Thread Cutting Screw Hex HD, No. 8–32 by 3/8 in. Long	4
10	325986	Drip Tray Support	2
11	325991	Frame, Drip Tray	1
12	325992	Cup Rest	1
13	325990039	Drip Tray	
14	326002	Kit, Drip Tray Drain Hose (includes items 15–19)	1
15	170413	Drain Fitting	1
16	151281	Lockwasher, Internal Tooth	1
17	170423	Hex Nut, 5/8–32	1
18	140133	Drain Hose Clamp	1
19	113500039	Drain Hose, 1/2–in. I.D. by 60–in. long	1

***Numbers in parentheses are in reference to items in Figure 2–1.**

IDENTIFICATION OF LOOSE–SHIPPED PARTS

1. TAPERED GASKETS, WHITE (item 1) used to seal connections when connecting Unit product inlet lines to product tanks and connecting Unit CO_2 inlet to CO_2 source.

2. TAPERED GASKETS, BLACK (item 2) used to seal connection when connecting Unit plain water inlet line to water source line.

3. SPANNER WRENCH, FLOW REGULATORS (item 3) is used to adjust flow regulators inside Unit.

4. SPANNER WRENCH, DISPENSING VALVE (item 4) is used to remove shank nuts securing dispensing valves to faceplates.

5. CLEANING BRUSH (item 5) is used to clean faceplates relief valves passages.

6. INSTRUCTIONS, SCRAPER BLADES (item 6) pictorially shows how to install BEATERS (item 7) and SCRAPER BLADES (item 8) in freeze cylinders.

7. DRIP TRAY SUPPORTS (item 10) to be installed on front of unit and secured with THREAD CUTTING SCREWS (item 9)

8. CUP REST (item 12) to be installed in DRIP TRAY (item 13), then drip tray to be installed in FRAME, DRIP TRAY (item 11). Assembled drip tray then to be installed on drip tray supports on front of Unit.

9. DRIP TRAY KIT (item 14) to be installed on drip tray as instructed.

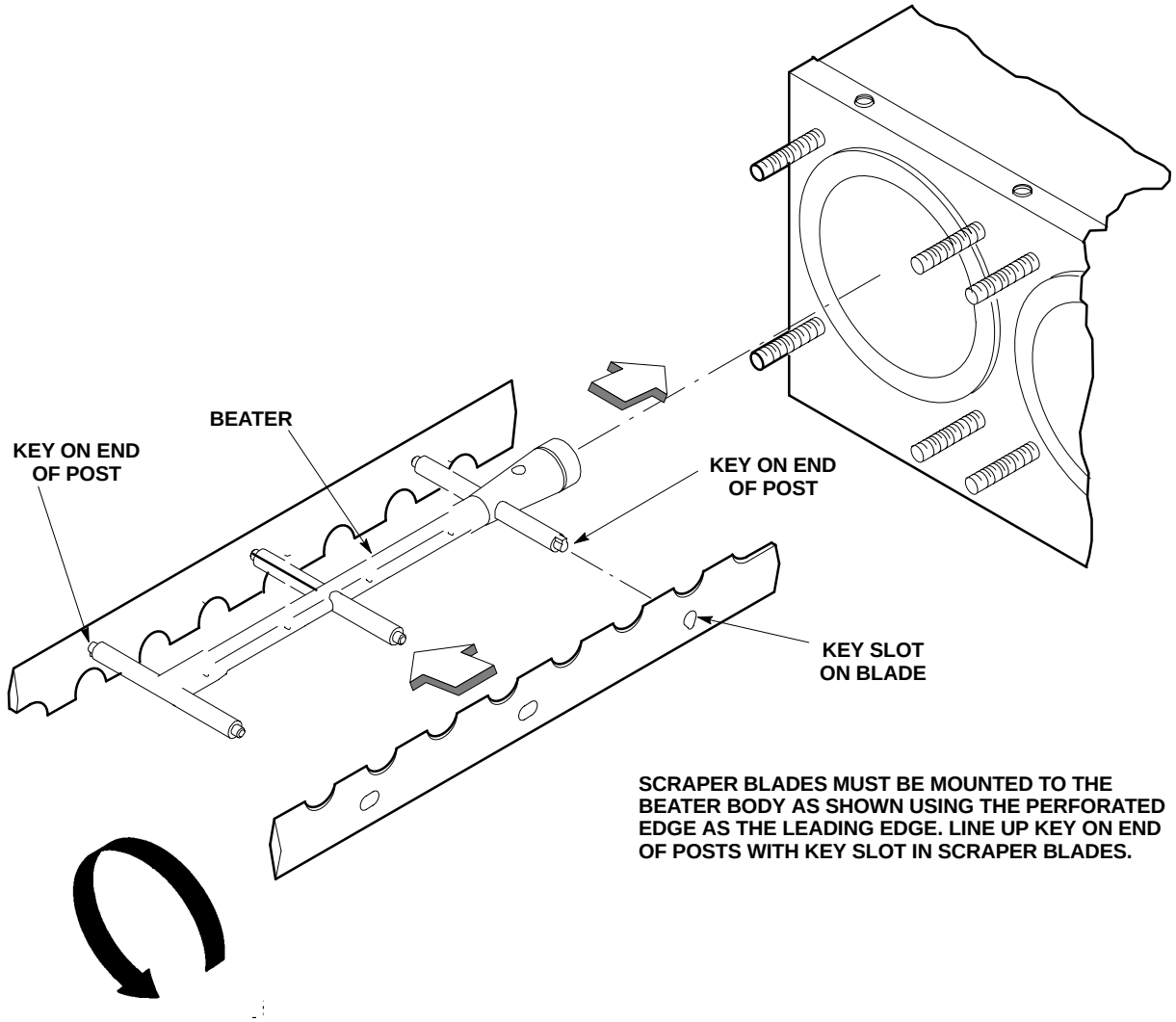
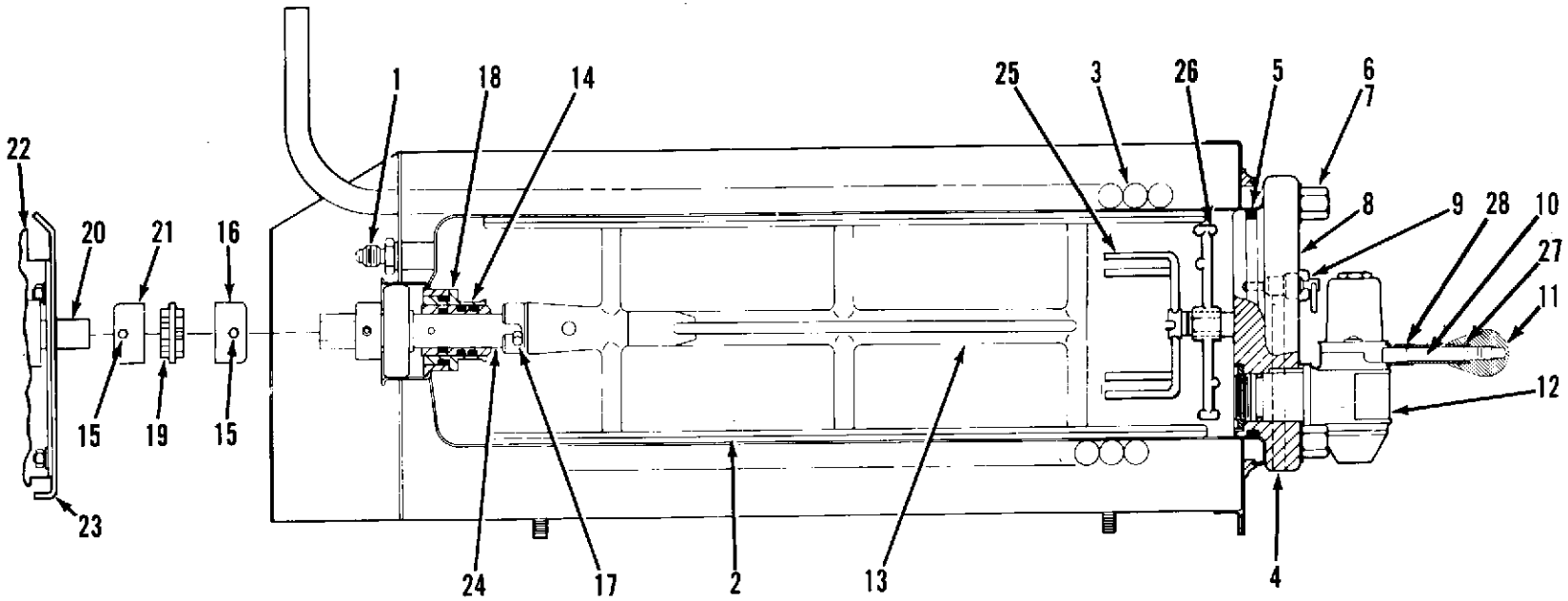


FIGURE 3. BEATERS AND SCRAPER BLADES INSTALLATION



1. Product Inlet Fitting
2. Scraper Blade (2)
3. Evaporator Coil
4. Relief Valve Port
5. O–Ring
6. Flatwasher (4)
7. Hex Nut (4)
8. Faceplate
9. Relief Valve
10. Valve Lever.
11. Knob
12. Dispensing Valve
13. Beater
14. Drive Shaft Seal Assembly
15. Allen Head Setscrew
16. Beater Shaft Coupling
17. Drive Pin
18. Bearing Guide Pin (4)
19. Power Coupler (plastic)
20. Beater Motor Drive Shaft
21. Beater Drive Motor Shaft Coupling
22. Beater Drive Motor
23. Unit Frame
24. Drive Shaft Assembly
25. Viscosity Sensor
26. Spinner
27. Spring
28. Shaft Release

FIGURE 4. FREEZE CYLINDER CUTAWAY VIEW

INSTALLING BEATERS (ITEM 13) AND SCRAPER BLADES (ITEM 2) See Figures 3 and 4

1. Remove four HEX NUTS and FLATWASHERS (see Figure 4) that secure each faceplate to freeze cylinders. Pull faceplates off freeze cylinders.

2. Position two SCRAPER BLADES (item 2) on BEATER (item 13) as shown in Figure 3.

3. Slide beater assembly into one of the freeze cylinders so beater slotted hooks engage DRIVE PIN on DRIVE SHAFT as shown in Figure 4.

4. Repeat procedure outlined in step 3 preceding to assemble and install beater assemblies in remaining freeze cylinders.

5. Lubricate each faceplate O–RING (see Figure 4) with Dow–Corning (DC 111) light grade silicone to facilitate installing faceplates on freeze cylinders. Position each FACEPLATE on freeze cylinders so dispensing valves faucets face down. Secure each faceplate to freeze cylinder with four HEX NUTS and FLAT WASHERS removed in step 1) preceding. Tighten HEX NUTS until faceplates touch all the way around on freeze cylinder flanges. CAUTION –DO NOT OVERTIGHTEN HEX NUTS.

ELECTRICAL POWER REQUIREMENTS

IMPORTANT: Refer to Unit nameplate to determine if Unit is to be operated with 50HZ or 60 HZ power source. Also note beaters motors manufacturer. No. 6, No. 7 and No. 8 switches on DIP switch assembly on master circuit board must be set according to motors manufacturers and for 50HZ or 60HZ operation.

DOMESTIC UNIT

IMPORTANT: Power circuit voltage across L_1 and L_2 terminals on contactor inside lower electrical control box, with refrigeration compressor operating, must be in operating range of between 219 and 242 VAC, 60Hz single–phase range for proper operation. If voltage is below or above this range, a 1.5 KVA Step Up/Step Down Transformer (P/N 325674000) is available to correct below or above voltage condition.

A properly grounded 219 to 242 VAC, 60Hz single phase electrical circuit with a 50–amp minimum–rated disconnect switch (not provided) fused at 50–amps (“slow–blow”) or a circuit connected through a equivalent HACR circuit board, must be available to the Unit. ALL WIRING MUST CONFORM TO NATIONAL AND LOCAL CODES. MAKE SURE UNIT IS PROPERLY GROUNDED.

EXPORT UNIT

IMPORTANT: Power circuit voltage across L_1 and L_2 terminals on contactor inside lower electrical control box, with refrigeration compressor operating, must be in operating range of between 219 and 242 VAC, 50Hz single phase range for proper operation. If voltage is below or above this range. A means to provide voltage within operating range must be provided.

A properly grounded 219 to 242 VAC, 50Hz single phase electrical circuit with a 50–amp minimum–rated disconnect switch (not provided) fused at 50–amps (“slow–blow”) must be available to the Unit.

SELECTING LOCATION

IMPORTANT: Unit operating ambient temperature MUST NOT EXCEED 100° F. Operating ambient in excess of 100° F will automatically void factory warranty and will eventually result in Unit failure. Several means are available to achieve proper ambient temperature and air circulation around the Unit which are wall air intake grilles and ceiling exhaust fans, air conditioning, etc. Consult local codes.

Locate Unit so the following requirements are satisfied:

1. Close to a plain water inlet supply line with a minimum pressure of 12–psig.

NOTE: Circulating air, required to cool the refrigeration system's condenser coils, is drawn in through louvers on front and exhausted out through louvers on sides and back of Unit. Restricting air circulation through the Unit will decrease its cooling efficiency.

2. When installing Unit do not allow obstructions to block louvers on front which will block off air intake to inside of Unit. If installation dictates only one side or back being unobstructed allow 18 inches clearance between Unit and obstruction. If both sides or one side and back are unobstructed, allow 12 inches clearance. If both sides and back are unobstructed allow 6 inches of clearance.

INSTALLING UNIT

PLACING UNIT IN OPERATING LOCATION

1. Place Unit in location meeting requirements of SELECTING LOCATION.
2. After Unit has been installed in operating position, make sure front (dispensing valve side) is approximately 1/4–inch to 3/8–inch higher than the rear to eliminate gas pockets being trapped inside freeze cylinders.
3. To comply with NSF International (NSF) requirements, Unit installed with base contacting floor must have base sealed to floor with Dow Corning RTV 731 or equivalent.

INSTALLING DRIP TRAY SUPPORTS, DRIP TRAY, AND CUP REST

1. Install DRIP TRAY SUPPORTS item 10 on panel above lower front access panel on front of Unit. Secure supports to panel with THREAD CUTTING SCREWS item 9.
2. Place DRIP TRAY item 13 in FRAME, DRIP TRAY item 11, then slide frame up on drip tray supports on front of Unit.

INSTALLING DRIP TRAY DRAIN KIT (ITEM 14) see Figure 5

1. Drill 5/8–inch diameter hole in lowest point (center) in bottom of drip tray.
2. Install DRAIN FITTING item 15 in drip tray and secure with LOCKWASHER, INTERNAL TOOTH item 16 and HEX NUT, 5/8–32 item 17.
3. Push DRAIN HOSE item 19 over drip tray fitting and secure with DRAIN HOSE CLAMP item 18.

NOTE: Drip tray drain hose may be routed to a waste container, but is not recommended due to sanitation and cleaning problems. Connection of drain hose to a permanent drain is most highly recommended.

4. Route drip tray drain hose to and connect to permanent drain.
5. Place CUP REST item 12 in drip tray.

INSTALLING PRIMARY CO_2 REGULATOR ASSEMBLY ON CO_2 CYLINDER (see Figure 2)

WARNING: To avoid personal injury and/or property damage, always secure CO_2 cylinder in an upright position with safety chain to prevent it from falling over. Should the shutoff valve become accidentally broken off, CO_2 cylinder can cause serious personal injury.

WARNING: CO_2 displaces oxygen. Strict attention *must* be observed in the prevention of CO_2 (carbon dioxide) gas leaks in the entire CO_2 and soft drink system. If a CO_2 gas leak is suspected, particularly in a small area, *immediately* ventilate the contaminated area before attempting to repair the leak. Personnel exposed to high concentration of CO_2 gas will experience tremors which are followed rapidly by loss of consciousness and suffocation.

1. Unscrew protector cap (with chain attached) from CO_2 cylinder valve. Open CO_2 cylinders valve slightly counterclockwise to blow any dirt or dust from outlet fitting before installing primary CO_2 regulator, then close the valve.
2. Remove shipping plug from primary CO_2 regulator coupling nut and make sure gasket is in place inside nut. Install regulator assembly on CO_2 cylinder so gages can be easily read, then tighten coupling nut. DO NOT OPEN CO_2 CYLINDER VALVE AT THIS TIME.

CONNECTING SOFT DRINK TANKS CO_2 LINES TO PRIMARY CO_2 REGULATOR ASSEMBLY (see Figure 2)

NOTE: A syrup bag–n–box system may be connected to Unit in place of soft drink tanks shown in Figure 2.

1. Connect soft drink tanks CO_2 lines to primary CO_2 regulator manifold assembly as shown in Figure 2.
2. Install gas quick disconnects on ends of soft drink tanks CO_2 lines. DO NOT CONNECT CO_2 LINES TO TANKS AT THIS TIME.

PREPARING UNIT SYRUP INLET LINES FOR CONNECTION TO SOFT DRINK TANKS (see Figure 2)

NOTE: The four Unit syrup inlet lines are labeled 1, 2, 11, and 22. Lines labeled 1 and 2 provide syrup to No. 1 and No. 2 (left–side cylinders facing front of unit) freeze cylinders. Lines labeled 11 and 22 provide syrup to two right–side freeze cylinders.

1. Route Unit syrup inlet lines labeled 1, 2, 11, and 22 out through hole provided in Unit base to soft drink tanks location.
2. Install liquid disconnects on ends of Unit syrup inlet lines. DO NOT CONNECT SYRUP LINES TO TANKS AT THIS TIME.

CONNECTING PLAIN WATER INLET SUPPLY LINE TO UNIT (see Figure 2)

NOTE: IMI Cornelius Inc. recommends that a water shutoff valve and water filter be installed in plain water inlet supply line (see Figure 2). A Cornelius Water Filter (P/N 313860000) and Quick Disconnect Set (P/N 313867000) are recommended.

1. If fitting connector is not available, tap into plain water supply line with a 3/8–flare Saddle Valve (P/N 315664000) or equivalent.
2. Before connecting plain water inlet supply line to Unit, open shutoff valve in water supply line for a period of time to flush out any metal shavings resulting from installing fitting or saddle valve.
3. Route water inlet line out through hole in bottom of Unit base.

NOTE: Carbonators plain water inlets adjustable water pressure regulators (see Figure 10) are factory adjusted to 45–psi and should not be readjusted.

4. Connect Unit water inlet line to plain water inlet supply line (12–psi minimum pressure). Seal connection with TAPERED GASKET, BLACK item 2. DO NOT OPEN WATER INLET SUPPLY LINE SHUTOFF VALVE AT THIS TIME.

CONNECTING ELECTRICAL POWER CIRCUIT TO UNIT (see Figure 17)

WARNING: Make sure unit 50–amp minimum–rated disconnect switch (not provided) or equivalent HACR circuit breaker is in OFF position.

Domestic Unit.

IMPORTANT: Power circuit voltage across L_1 and L_2 terminals on contactor inside lower electrical control box, with refrigeration compressor operating, *must* be in operating range of between 219 and 242 VAC, 60Hz single phase range for proper operation. If voltage is below or above this range, a 1.5 KVA Step Up/Step Down Transformer (P/N 325674000) is available to correct below or above voltage condition. Use No. 10 AWG copper wire, or larger, depending upon line length, in suitable conduit or BX sheath. POWER CIRCUIT TO UNIT MUST BE MADE UP OF COPPER CONDUCTORS AND ALL WIRING MUST CONFORM TO NATIONAL AND LOCAL CODES.

Export Unit.

IMPORTANT: Power circuit voltage across L_1 and L_2 terminals on contactor inside lower electrical control box, with refrigeration compressor operating, must be in operating range of between 219 and 242 VAC, 50Hz single phase range for proper operation. If voltage is below or above this range. A means to provide voltage within operating range must be provided.

1. Remove lower electrical control box (located on lower–right side facing front of Unit) cover for access to contactor L_1 and L_2 terminals.

WARNING: This Unit must be electrically grounded to avoid possible fatal electrical shock or serious injury to the operator. A green screw, with lock washer, is provided inside electrical control box to connect power circuit ground wire electrically grounding the Unit.

2. Connect electrical power from 50–amp minimum rated disconnect switch (not provided) fused at 50–amps (“slow–blow”) or through an equivalent HACR circuit breaker to L_1 and L_2 terminals on contactor inside control box. MAKE SURE GROUND WIRE IS CONNECTED TO GREEN GROUND SCREW INSIDE CONTROL BOX.

3. Install lower control box cover and secure with screws.

PREPARATION FOR OPERATION

The Unit is equipped with two control panels with associated message displays (see Figure 5). The left side control panel (facing front of Unit) controls the two left–side freeze cylinders and right–side control panel controls the two right–side freeze cylinders.

50 OR 60HZ OPERATION AND BEATER MOTOR SELECT

IMPORTANT: Before connecting electrical power, refer to Unit nameplate and note if Unit is to be operated with 50 or 60 Hz power and also note beaters drive motors manufacturer’s name. Set No. 6, No. 7 and No. 8 switches on DIP switch assemblies on master circuit boards according to motor manufacturer and for 50 or 60 Hz operation.

1. Remove four screws securing unit upper control box cover, then remove cover for access to the master circuit board (see Figure 10).

2. After noting if unit is to be operated with 50 or 60HZ electrical power and beater motors manufacturer’s name, refer to Figure 10 and Table 5 to place dip switch assembly No. 6, No. 7, and No. 8 switches in appropriate positions.

TURNING ON ELECTRICAL POWER TO UNIT

Turn on electrical power to Unit. Operational status of Unit is now being displayed as fault messages on both control panels message displays. The following fault messages on message displays will be continuously displayed at 2–second intervals until necessary operation requirements are satisfied.

“OFF 1” (Beater Motor No. 1 not operating)
“OFF 2” (Beater Motor No. 2 not operating)
“H_2O OUT” (No water supply to Unit)
“CO_2 OUT” (No CO_2 gas supply to Unit)
“SYRUP 1” (No syrup supply to Unit No. 1 syrup system)
“SYRUP 2” (No syrup supply to Unit No. 2 syrup system)

TURNING ON CO_2 SUPPLY TO UNIT

1. Open CO_2 cylinder valve slightly to allow lines to slowly fill with gas, then open valve fully to back seat valve. Back–seating valve prevents leakage around valve shaft.

IMPORTANT: If bag–n–box syrup supply system will be connected to Unit instead of soft drink tanks, primary CO_2 regulator (see Figure 2) must be adjusted no higher than 80–psi maximum.

2. Adjust primary CO_2 regulator (see Figure 2) by turning regulator adjusting screw to the right (clockwise) until regulator pressure reads 80 to 100–psig. OUT OF CO_2 warning lights on both control panel message displays should have gone out.

3. Pull up on product blender tanks relief valves to purge air from tanks.

4. Remove Unit front lower access panel as instructed for access to carbonator secondary CO_2 regulators (see Figure 2 and 6).

5. Check product blender tanks secondary CO_2 regulators with 60–psi gages for pressure settings which should be set at 30–psi for best textured product. If further adjustments are necessary, adjust as instructed.

IMPORTANT: Carbonators secondary CO_2 regulators must be adjusted 25–psi higher or more above product blender tanks secondary CO_2 regulators pressure settings. Carbonated water and syrup pressures must be able to overcome and vent product blender tanks head pressures while tanks are filling with carbonated water and syrup. Carbonators tanks secondary CO_2 regulators not adjusted high enough will cause decreased flow of carbonated water into blender tanks which will increase brix of dispensed product.

6. Adjust carbonators secondary CO_2 regulators, with 100–psi gages, by turning regulators adjusting screws to the right (clockwise) until gages reads 60–psi.

7. Pull up on carbonators tanks relief valves plastic covers to purge air from tanks.

TURNING ON PLAIN WATER SUPPLY TO UNIT

1. Open plain water inlet supply line shutoff valve. Check for water leaks and tighten or repair if evident. “H_2O OUT” fault messages on both message displays should have gone out but “OFF 1”, “OFF 2”, “SYRUP 1”, and “SYRUP 2” fault messages on both displays will continue to be displayed.

CONNECTING SOFT DRINK TANKS TO UNIT SYRUP SYSTEM

IMPORTANT: Product shutoff valves, located in lines leading from product blender tanks to freeze cylinders (see Figure 2 and 6), must be closed at this time. Closing valves prevents product from filling freeze cylinders while checking BRIX of product in product blender tanks.

1. Close product shutoff valves, located in lines leading from product blender tanks to freeze cylinders, to prevent product from entering cylinders.

IMPORTANT: The following CO_2 and liquid disconnects disconnecting and connecting procedure for soft drink tank replacement or filling soft drink tank in place must be performed in order as follows:

To disconnect soft drink tank from Unit syrup system.

a. Disconnect liquid disconnect from soft drink tank. NOTE – Disconnecting liquid quick disconnect from soft drink tank first prevents syrup from backflowing through Unit syrup flow regulator which may alter regulator adjustment.

b. Second, disconnect CO_2 quick disconnect from soft drink tank.

To connect soft drink tank into Unit syrup system.

a. First, connect CO_2 quick disconnect to soft drink tank to pressurize tank.

b. Second, connect liquid quick disconnect to soft drink tank.

NOTE: Unit control panels are equipped with hidden "SECURITY SWITCHES" located between "FILL 1" and "ERROR RESET" control switches (see Figure 5). Pressing in and holding "SECURITY SWITCHES" for 3–seconds deactivates control switches on both control panels preventing tampering with Unit normal operation. To reactivate control switches, press in and hold "SECURITY SWITCHES" for 3–seconds.

2. Pressurize soft drink tanks containing syrup, then connect tanks to Unit syrup systems. "OFF 1", "OFF 2", "SYRUP 1", and "SYRUP 2" fault messages on both message displays will continue to be displayed.

ADJUSTING BRIX (WATER–TO–SYRUP) RATIO OF DISPENSED PRODUCT

The following steps are instructions for adjusting Brix (Water–to–Syrup) "Ratio" (mixture) of dispensed product on one of the four system.

NOTE: The adjustable carbonated water flow regulators (see Figures 2 and 6), located in their respective systems, control carbonated water flow rate to the product blender tanks. The water flow regulators are factory adjusted at 1.5 ~~±0.05~~ oz/sec and should not normally require adjustment. If adjustment is necessary, adjust as instructed.

1. Press "FILL 1" switch to fill No. 1 system float switch. "SYRUP 1" fault message will go out and "FILL 1" fault message will come on. "OFF 1", "OFF 2", and "SYRUP 2" fault messages will continue to be displayed.

2. Press "AUTO BLEND 1" switch to fill No. 1 system product blender tank 1/4–full of product. "FILL 1" fault message will go out when "AUTO BLEND 1" switch is pressed. When product blender tank is 1/4–full, press "FILL 1" switch to prevent more product from entering tank. "OFF 1", "OFF 2", and "SYRUP 2" fault messages will continue to be displayed.

3. Open No. 1 product blender tank product sample valve (see Figures 2 and 6) and take sample (approximately 6–ounces) of product in cup.

NOTE: Temperature compensated hand–type refractometers (P/N 511004–000) are available from IMI Cornelius Inc.

4. Check product BRIX with a temperature compensated hand–type refractometer. BRIX should read 13.5 ~~±0.5~~. If BRIX is not within tolerance, adjust white syrup flow regulator for No. 1 syrup system as follows:

   A. Loosen jamb nut on syrup flow regulator.

   B. Turn regulator adjusting screw to the left (counterclockwise) no more than 1/8–turn at a time to reduce syrup flow rate or turn screw to the right (clockwise) no more than 1/8–turn to increase flow rate.

   C. Tighten jamb nut on syrup flow regulator, then lightly tap regulator to register adjustment.

5. Place container under No. 1 product sample valve. Open valve to purge product out of product blender tank, line, and valve, then close valve. “OFF 1”, “OFF 2”, and “SYRUP 2” will continue to be displayed.
6. Press “AUTO BLEND 1” switch to run new batch of product into product blender tank, then press “FILL 1” switch to prevent more product from entering blender tank. “OFF 1”, “OFF 2”, and “SYRUP 2” fault messages will continue to be displayed.
7. Repeat steps 3 and 4 preceding to check product sample for BRIX.
8. Repeat steps 5 through 7 preceding until proper BRIX adjustment is achieved.
9. Repeat steps 1 through 8 preceding to adjust BRIX of dispensed product on No. 2 system. After completing BRIX on No. 2 system, only “OFF 1” and “OFF 2” fault messages should continue to be displayed.
10. Repeat steps 1 through 9 preceding to adjust Brix (Water–to–Syrup) Ratio (mixture) of dispensed product on remaining systems.

NOTE: Syrup systems may be sanitized at this time as instructed.

FILLING FREEZE CYLINDERS WITH PRODUCT

1. Open product shutoff valves, located in lines leading from product blender tanks to freeze cylinders.
2. On both control panels, press “AUTO BLEND 1” and “AUTO BLEND 2” switches to begin filling freeze cylinders. Open freeze cylinders faceplates relief valves to bleed air from cylinders while filling with product, then close valves. Do not relieve freeze cylinder pressure too fast or product will foam excessively in cylinder and lose carbonation.

ADJUSTING BEATER MOTOR CURRENT (EITHER SIDE)

1. Remove four screws securing upper control box cover, then remove cover for access to master circuit board inside control box.
2. Adjust beaters motors currents as instructed in SERVICE AND MAINTENANCE.

PROGRAMMING MAIN MENU SELECTIONS ONTO MESSAGE DISPLAY

The MAIN MENU SELECTIONS (see Table 2) may be brought up on message display as instructed in SERVICE AND MAINTENANCE.

SETTING “CLOCK” (TIME OF DAY)

NOTE: “CLOCK” (TIME OF DAY) must be programmed into Unit before “DEFROST” (AUTOMATIC), “SLEEP” (SLEEP TIME), and “WAKE UP” (WAKE UP TIME) can be programmed into the Unit.

Program “CLOCK” (TIME OF DAY) into Unit as instructed in SERVICE AND MAINTENANCE.

PROGRAMMING “DEFROST” (AUTOMATIC) SETTINGS INTO UNIT

The automatic defrost system may be programmed into the Unit to occur up to nine different times during a day with a minimum of two hours between defrost time settings. Program automatic defrost time settings into the Unit as instructed in SERVICE AND MAINTENANCE.

PROGRAMMING “SLEEP” (SLEEP TIME) INTO UNIT

“SLEEP” (SLEEP TIME) may be programmed into Unit to occur any time of the day after the Unit automatic defrost cycle has occurred. Unit will shut down (go into sleep time) and will not wake up (return to normal operation) until programmed “WAKE UP” (WAKE UP TIME) has occurred. Program “SLEEP” (SLEEP TIME) into Unit as instructed in SERVICE AND MAINTENANCE.

PROGRAMMING “WAKE UP” (WAKE UP) TIME INTO UNIT

“WAKE UP’’ (WAKE UP TIME) May be programmed into Unit to occur any time of the day to wake Unit up (return to normal operation) after‘‘sleep time’’ has occured. Program ‘‘WAKE UP’’ into Unit as instructed in SERVICE AND MAINTENANCE.

PROGRAMMING POINT OF SALE MESSAGE DISPLAY

Three point of sale display messages are available to choose from and may be programmed into Unit by placing No. 1, No. 2, and No. 3 switches on DIP SWITCH assembly on master circuit board in appropriate positions. Program point of sale display messages into Unit as instructed in SERVICE AND MAINTENANCE.

ADJUSTING “VIS SET” (PRODUCT VISCOSITY) OF DISPENSED PRODUCT

Adjust “VIS SET’’ (PRODUCT VISCOSITY) determines what product consistency of the dispensed product will be present in each freeze cylinder. Adjust “VIS SET’’ (PRODUCT VISCOSITY) of the dispensed product as instructed in SERVICE AND MAINTENANCE.

DISPLAYED EVAPORATOR REFRIGERATION COILS INLETS AND COMMON OUTLET SENSORS TEMPERATURES

Evaporator refrigeration coils inlet and common outlet temperature readings in degrees Fahrenheit may be displayed on message display as instructed in SERVICE AND MAINTENANCE

“VOLTAGE’’ (DISPLAYED VOLTAGE READOUT)

Displayed voltage readout may be displayed on message display as instructed in SERVICE AND MAINTENANCE

PROGRAMMING COMPONENTS “DIAGNOSE” (DIAGNOSTIC MODE) INTO UNIT

“DIAGNOSE’’ (DIAGNOSTIC MODE) may be programmed into the Unit to check certain components for operation. Program ‘‘DIAGNOSE’’ into Unit and check components for proper operation as instructed in SERVICE AND MAINTENANCE.

DISPLAYING “TOTALS” (DISPLAYED CYCLES AND HOURS TOTALS) ONTO MESSAGE DISPLAY

“TOTALS’’ (DISPLAYED CYCLES AND HOURS TOTALS) may be displayed on message display as instructed in SERVICE AND MAINTENANCE

DISPLAYED ERROR CONDITIONS

Displayed error conditions, associated errors, and items affected by the errors are found in Table 8. DISPLAYED ERROR CONDITIONS.

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OPERATORS INSTRUCTIONS

This section describes operating controls and indicators, dispensed product conditions, operating characteristics, Unit operation, replenishing syrup supply, product flavor change, checking CO_2 supply, operators daily cleaning of Unit, and sanitizing requirements.

WARNING: Disconnect electrical power to Unit to prevent personal injury before attempting any internal maintenance. Only qualified personnel should service internal components or electrical wiring.

CONTROL PANEL SWITCHES AND DISPLAYED MESSAGES

NOTE: The Unit is equipped with two control panels each having its own message displays (see Figure 6). The left–side control panel (facing front of Unit) controls the two left–side freeze cylinders and right side control panel controls the two right–side freeze cylinders.

CONTROL PANEL SWITCHES

"FILL 1" and "FILL 2" Control Switches.

"FILL 1" and "FILL 2" control switches, located on control panel (see Figure 5), are touch–type switches and require only pressing to activate. "FILL 1" and "FILL 2" control switches are used when filling syrup systems syrup float switches during syrup replenishing, syrup flavor changeover, or sanitizing syrup systems. After syrup systems syrup float switches have been filled, "FILL 1" and "FILL 2" switches may be used to prevent more product entering product blender tanks during BRIX test.

"AUTO BLEND 1" and "AUTO BLEND 2" Control Switches.

"AUTO BLEND 1' and "AUTO BLEND 2" control switches, located on control panel (see Figure 5), are touch–type switches and require only pressing to activate. These switches are used to fill product blender tanks after syrup float switches have been filled using "FILL 1" and "FILL 2" switches. "AUTO BLEND 1" and "AUTO BLEND 2" and "AUTO 1" and "AUTO 2" switches must be pressed to operate freeze cylinders beaters and refrigeration system during normal operation.

"WASH 1" and "WASH 2" Control Switches.

"WASH 1" and "WASH 2" control switches, located on control panel (see Figure 5), are touch–type switches and require only pressing to activate. These switches are used to operate freeze cylinders beaters with no refrigeration during sanitizing.

"AUTO 1" and "AUTO 2" Control Switches.

"AUTO 1" and "AUTO 2" control switches, located on control panel (see Figure 5), are touch–type switches and require only pressing to activate. These switches are used to operate freeze cylinders beaters and refrigeration system after cylinders have been filled with product. Freeze cylinders beaters and refrigeration systems may be stopped by pressing "OFF 1" or "OFF 2" switches.

"OFF 1" and "OFF 2" Control Switches.

"OFF 1" and "OFF 2" control switches, located on control panel (see Figure 5), are touch–type switches and require only pressing to activate. These switches are used to stop freeze cylinders beaters and refrigeration systems.

“ERROR RESET” Control Switch.

“ERROR RESET” control switch, located on control panel (see Figure 5), is a touch–type switch and requires only pressing to activate. “ERROR RESET” switch is used to restore normal operation after error within Unit (indicated by “ERROR 1” or “ERROR 2” on message display) has been corrected.

“SECURITY SWITCH”

The Unit is equipped with a hidden “SECURITY SWITCH” located between “FILL 1” switch and “ERROR RESET” switch on control panel (see Figure 5). Pressing in and holding “SECURITY SWITCH” for 3–seconds deactivates control switches preventing tampering with Unit normal operation. To reactivate control switches, press in and hold “SECURITY SWITCH” for 3–seconds.

CONTROL PANEL DISPLAY MESSAGES (see Figure 5)

“FILL 1” and “FILL 2” Fault Messages.

“FILL 1” and “FILL 2” fault messages will appear on message display only when “FILL 1” and “FILL 2” control switches have been pressed and syrup systems syrup float switches have been filled with product. “FILL 1” and “FILL 2” fault messages will continue to be displayed until “AUTO BLEND 1” or “AUTO BLEND 2” control switches have been pressed to fill product blender tanks with product.

“ERROR 1” and “ERROR 2” Fault Messages.

“ERROR 1” and “ERROR 2” fault messages will appear on message display only if error within Unit has developed interrupting normal operation. Error will have to be located and corrected, then press “ERROR RESET” to restore normal operation. “ERROR 1” or “ERROR 2” fault message will disappear from display.

“OFF 1” and “OFF 2” Fault Messages.

“OFF 1” and “OFF 2” fault messages will appear on message display when either freeze cylinder beater is not in operation.

“H_2O OUT” Fault Message.

The Unit plain water inlet system contains a water pressure switch. Should the plain water source to the Unit be disrupted or a water pressure drop occur, will cause “H_2O OUT“ fault message to appear on message display. Unit will continue to operate for 1–1/2 minutes after “H_2O OUT fault message has appeared and if water pressure has not been restored or water pressure improved after 1–1/2 minutes, Unit operation will shut down. After plain water source has been restored or water pressure has improved, Unit will resume operation and “H_2O OUT” fault message will disappear from message display.

“CO_2 OUT” Fault Message.

“CO_2 OUT” fault message will appear on message display when CO_2 supply to Unit has been turned off or if CO_2 pressure drops below 50–psi. A minimum CO_2 pressure of 75–psi must be available to Unit to extinguish “CO_2 OUT” fault message.

“SYRUP 1” or “SYRUP 2” Fault Messages.

“SYRUP 1” or “SYRUP 2” fault messages will appear on message display if product tanks are not connected to Unit or product tanks are empty. Syrup systems syrup float switches must be filled with syrup to extinguish “SYRUP 1” or “SYRUP 2” fault messages.

“DEFROST 1” or “DEFROST 2” Display Messages.

“DEFROST 1” or “DEFROST 2” display messages will appear on message display if either freeze cylinder is in defrost mode. “DEFROST 1” or “DEFROST 2” messages will remain on during defrost cycle and will disappear when cycle has ended.

“POINT OF SALE” Display Message.

Four “POINT OF SALE” display messages are available to choose from and may be programmed into Unit as instructed to appear on message display.

Common Outlet Temperatures.

Evaporator refrigeration coils inlet 1 and inlet 2 and common outlet temperatures may be displayed on control panel message display as instructed.

FREEZE CYLINDERS MANUAL OR AUTOMATIC DEFROST SYSTEMS

NOTE: The Unit is equipped with both manual and automatic hot–gas defrost systems. The automatic defrost system may be programmed into Unit to occur up to nine different times a day with a minimum of two hours between defrost time sittings or system may be completely turned off.

MANUAL DEFROST SYSTEM

The Manual hot gas defrost system may be activated at any time by pressing “DEFROST” switch on front of Unit. Refrigeration compressor will operate for a short time, then both No. 1 and No. 11 or No. 2 and No. 22 (depending upon which “DEFROST” switch was pressed) freeze cylinder only will go into defrost for one minute. At end of manual defrost cycle, Unit will return to normal operation. Manual defrost may be cancelled at any time by pressing “CANCEL DEFROST” switch.

AUTOMATIC DEFROST SYSTEM

NOTE: The following describes Automatic defrost system operation for No. 1 and No. 2 freeze cylinders. Automatic defrost system operation for the No. 11 and No. 22 freeze cylinders is identical to the No. 1 and No. 2 freeze cylinders.

The automatic hot gas defrost system may be programmed into Unit to occur up to nine different times a day with a minimum of two hours between defrost time settings. At start of each automatic defrost cycle, refrigeration compressor will operate for 30–seconds to pump Freon out of freeze cylinders evaporator coils. After Freon has been pumped out of freeze cylinders evaporator coils, No. 1 freeze cylinders only will go into defrost cycle and defrost for approximately 7–minutes, then will return to normal operation. This ends automatic defrost cycle of No. 1 freeze cylinder. No. 2 freeze cylinder will defrost 30 minutes after the start of No. 1 freeze cylinder. The next automatic defrost cycle will occur according to time programmed into the Unit. Automatic defrost may be cancelled at any time by pressing “CANCEL DEFROST” switch.

“SLEEP” (SLEEP TIME)

NOTE: The following describes “Sleep Time” operation for half of the Unit (No. 1 and No. 2 freeze cylinders). “Sleep Time” operation for No. 11 and No. 22 freeze cylinders is identical to the No. 1 and No. 2 freeze cylinders.

“Sleep time” may be programmed into Unit to allow Unit to go into sleep time (Unit shut down, freeze cylinders beaters and refrigeration systems not operating). At the start of sleep time, refrigeration compressor will operate for 30–seconds to pump Freon out of freeze cylinders evaporator coils, then No. 1 freeze cylinder will defrost for one minute. After No. 1 freeze cylinder has defrosted No. 2 freeze cylinder will go into defrost, and defrost for one minute. At end of No. 2 freeze cylinder defrost unit will shut down and go into sleep time.

“WAKE UP” (WAKE UP TIME)

“WAKE UP’’ (WAKE UP TIME) may be programmed into the Unit to allow Unit to resume normal operation at a desired time. When programmed wake up time is reached, an alarm will sound for a short duration, then Unit will resume normal operation.

NOTE: Automatic defrost, sleep time, and wake up time may be used in any combination together or separately.

FACEPLATE RELIEF VALVES

The faceplate relief valves (see Figure 5), located in each faceplate, are spring–loaded valves that protect freeze cylinders from accidental over–pressure. The relief valve is also used to manually bleed CO_2 gas from freeze cylinder to atmosphere during filling with product and if gas pockets form in cylinder during operation.

PRODUCT SAMPLE VALVES

The two product sample valves (see Figures 2 and 6), located behind front lower access panel, are manually operated lever–type ball valves used to check product BRIX. Turn valve lever to line up with attached line to open valve and at 90° angle with line to close valve.

PRODUCT SHUTOFF VALVES

The four product shutoff valves, located in lines leading from product blender tanks to freeze cylinders (see Figures 2 and 6), are manually operated lever–type ball valves and are used to prevent product from entering and filling freeze cylinders while adjusting BRIX of dispensed product. Shutoff valve may also be used to shut off product to individual freeze cylinder for service and maintenance without disrupting operation of other freeze cylinders.

PRIMARY CO_2 REGULATOR

The primary CO_2 regulator (see Figure 2) controls CO_2 pressure to soft drink tanks (also to bag–n–box syrup system if used) and Unit secondary CO_2 regulators located behind lower front access panel. If necessary to adjust primary CO_2 regulator, adjust as instructed.

SECONDARY CO_2 REGULATORS

The secondary CO_2 regulators, located behind lower front access panel (see Figures 2 and 6), control CO_2 pressure to carbonators and product blender tanks. If necessary to adjust secondary CO_2 regulators, adjust as instructed.

CARBONATED WATER FLOW REGULATORS

The adjustable carbonated water flow regulators (see Figures 2 and 6), located in their respective systems, control carbonated water flow rate to the product blender tanks. The water flow regulators are factory adjusted at 1.5 ~~± 0.05~~ oz/sec and should not normally require adjustment. If adjustment is necessary, adjust as instructed.

SYRUP FLOW REGULATORS

The syrup flow regulators (see Figures 2 and 6), located in their respective systems, are adjustable regulators that control syrup flow rate to the product blender tanks for desired BRIX of dispensed product. Adjust syrup flow regulators for desired BRIX as instructed.

DISPENSING VALVES

Self–closing dispensing valves (see Figure 5 and 7), located on faceplates on front of Unit, are operated one at a time or all at once to deliver product to the customer.

DISPENSED PRODUCT CONDITIONS

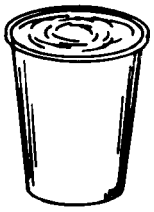
"OVERRUN", AS APPLIED TO FROZEN CARBONATED BEVERAGES

Overrun Defined.

Overrun is product expansion that takes place in the frozen carbonated drink. It is caused primarily by CO_2 gas breakout and secondary by freezing.

Overrun is a Variable.

The percentage or degree of overrun depends on a number of factors. The specific syrup, BRIX, low dispensing volume, carbonation level in liquid product, and freezing, all affect overrun. After these factors have been considered, desired viscosity (product consistency) adjustment may be made on the Unit. The viscosity adjustment adjusts product texture from very wet to light.



DRAWING 1

DRAWING 2

DRAWING 3

Specific Product Ingredients Affect Overrun.

Each syrup has its own specific formulation or makeup. Baume, an important ingredient factor, may fall within an extremely wide range. Fruit flavors contain citric acids that colas do not. Colas also differ in ingredients from one brand to another. Each product formulation has its own peculiarities regarding the way the product will absorb carbonation and the way it will release carbonation.

BRIX Affects Overrun.

Sugar in carbonated drinks is like anti–freeze in water. The higher the BRIX in a product, the greater resistance the product has to freezing. Conversely, in products with lower BRIX, freezing takes place at higher temperatures than for high–BRIX products. Thus, BRIX affects overrun because the amount of sugar in a drink has a direct bearing on the product's freezing characteristics.

Low Dispensing Volume Affects Overrun.

When Unit sits idle for a period of time and no drinks are dispensed, CO_2 gas in the system takes a "set". When first few drinks are drawn off after an idle period, CO_2 gas has less tendency to break out as drink is dispensed. The result is these casual drinks have less overrun than drinks dispensed during peak–use periods.

Carbonation Level in Liquid Product Affects Overrun.

The higher the specific carbonation level in a given product, the greater the potential for carbonation breakout in frozen carbonated form of that drink. For example, drinks with *3.0 volume of carbonation will have more gas breakout in frozen carbonated form, and more overrun, then will drinks that contain 2.0 volumes of CO_2 gas.*

Freezing Affects Overrun.

Freezing causes approximately 10 percent expansion in dispensed frozen carbonated drink. The degree of freezing is limited because finished drink is intended to be sipped through a straw. This is not possible if product is too "solid".

OPERATING CHARACTERISTICS

The product viscosity (product consistency) can be varied by adjustment and secondary CO_2 regulator setting from a high overrun light drink to a wet heavy drink. The length of freezing cycle and amount of CO_2 present in product combine to create drink dispensed. The dispensed product will have a normal variance due to the following conditions:

1. If some time has elapsed since last drink was drawn from particular freeze cylinder and compressor has not cycled on, the drink dispensed will have a tendency to be wetter, have slightly less overrun than normal for the setting, and will not mound up as high. See Drawing 1.

NOTE: A cylinder freeze–up may be expected under casual draw conditions if an attempt is made to eliminate drink described above by adjusting viscosity.

2. If product is drawn from freeze cylinder quite regularly, its viscosity (product consistency) will be maintained at whatever viscosity adjustment was made within the normal variance of the compressor off and on cycle. See Drawing 2.
3. If product is drawn continuously from freeze cylinder and rate is approaching capacity of the dispensing Unit, overrun of drink will increase just prior to point capacity is exceeded, and drink dispensed will turn slightly wetter.

OPERATING UNIT

NOTE: No. 1 freeze cylinder is cylinder on left–hand side facing front of Unit.

1. Make sure ‘‘H_2O OUT’’ fault message is not displayed on message display. This indicates no water supply to Unit.
2. Make sure ‘‘CO_2 OUT’’ fault message is not displayed on message display. This indicates no CO_2 gas supply to Unit.
3. Make sure ‘‘SYRUP 1’’ or ‘‘SYRUP 2’’ fault messages are not displayed on message display. This indicates no syrup supply to Unit.
4. Makes sure ‘‘AUTO BLEND 1’’, ‘‘AUTO BLEND 2’’, ‘‘AUTO 1’’, and ‘‘AUTO 2’’ control switches are pressed for normal operation.
5. Place cup under dispensing valve, then dispense until cup is full of product.
6. Make sure viscosity (product consistency) is as desired. If not, adjust as instructed.

REPLENISHING SYRUP SUPPLY

IMPORTANT: The following CO_2 and liquid disconnects disconnecting and connecting procedure for soft drink tank replacement or filling soft drink tank in place must be performed in order as follows:

<u>To disconnect soft drink tank from Unit syrup system.</u>

a. **Disconnect liquid disconnect from soft drink tank. NOTE – Disconnecting liquid quick disconnect from soft drink tank first prevents syrup from backflowing through Unit syrup flow regulator which may alter regulator adjustment.**
b. **Second, disconnect CO_2 quick disconnect from soft drink tank.**

<u>To connect soft drink tank into Unit syrup system.</u>

a. **First, connect CO_2 quick disconnect to soft drink tank to pressurize tank.**
b. **Second, connect liquid quick disconnect to soft drink tank.**

Syrup supply should be checked daily and if necessary, replenished as instructed.

PRODUCT FLAVOR CHANGE

Perform syrup flavor change as instructed.

CHECKING CO_2 SUPPLY

WARNING: CO_2 displaces oxygen. Strict attention *must* be observed in the prevention of CO_2 (carbon dioxide) gas leaks in the entire CO_2 and soft drink system. If a CO_2 gas leak is suspected, particularly in a small area, *immediately* ventilate the contaminated area before attempting to repair the leak. Personnel exposed to high concentration of CO_2 gas will experience tremors which are followed rapidly by loss of consciousness and suffocation.

Make sure CO_2 cylinder shutoff valve is fully opened and regulator assembly 1800–psi gage indicator is not shaded (“change CO_2 cylinder”) portion of dial. If so, CO_2 cylinder is almost empty and must be replaced as instructed.

CLEANING AND SANITIZING

DAILY CLEANING

Daily; or more often if necessary, wash all external surfaces of Unit, rinse with clean water, then wipe dry with clean soft cloth. DO NOT USE ABRASIVE–TYPE CLEANERS. Remove and wash drip tray and cup rest with warm water and mild detergent, rinse with clean water, then install them on Unit.

SANITIZING

The Unit should be sanitized as instructed every 90 days and before and after storage periods following parent company requirements and sanitizer manufacturers recommendations.

CLEANING CONDENSER COIL

NOTE: Circulating air, required to cool the refrigeration systems condenser coils (see Figure 5), is drawn in through louvers on front and exhausted out through louvers on sides and back of Unit. Restricting air circulation through the Unit will decrease its cooling efficiency.

Condenser coils must be cleaned periodically as instructed.

LUBRICATION

Carbonators water pump motors must be lubricated as instructed on motors.

ADJUSTMENTS

CARBONATED WATER FLOW RATE

The adjustable carbonated water flow regulators (see Figures 2 and 6), located in their respective systems, control carbonated water flow rate to the product blender tanks. The water flow regulators are factory adjusted at 1.5 ~~± 0.05~~ oz/sec and should not normally require adjustment. If adjustment is necessary, adjust as instructed.

CO REGULATORS

Primary CO_2 Regulator.

The primary CO_2 regulator (see Figure 2) controls CO_2 pressure to soft drink tanks (also to bag–n–box syrup system if used) and secondary CO_2 regulators located behind Unit lower front access panel. If necessary to adjust primary CO_2 regulator, adjust as instructed.

Secondary CO_2 Regulators.

The secondary CO_2 regulators (see Figures 2 and 6) regulate CO_2 pressure to carbonators and product blender tanks. If necessary to adjust secondary CO_2 regulators, adjust as instructed.

BRIX (WATER–TO–SYRUP) ‘‘RATIO’’ OF DISPENSED PRODUCT

BRIX is Water–to–Syrup ‘‘Ratio’’ (mixture) of dispensed product. If necessary to adjust BRIX, adjust as instructed.

ADJUSTING BEATERS MOTORS CURRENTS

Beater motors currents must be adjusted as instructed in SERVICE AND MAINTENANCE.

ADJUSTING CARBONATOR TANK LIQUID LEVEL

The carbonator tank liquid level (pump cut–in and cut-out) was adjusted at the factory and should require no further adjustment. However, if incorrect setting is suspected, check and adjust as instructed.

PROGRAMMING MAIN MENU SELECTIONS ONTO MESSAGE DISPLAY

The MAIN MENU SELECTIONS (see Table 5) may be brought up on message display as instructed in SERVICE AND MAINTENANCE.

SETTING ‘‘CLOCK’’ (TIME OF DAY)

NOTE: ‘‘CLOCK’’ (TIME OF DAY) must be programmed into Unit before ‘‘DEFROST’’ (AUTOMATIC), ‘‘SLEEP’’ (SLEEP TIME), and ‘‘WAKE UP’’ (WAKE UP TIME) can be programmed into the Unit.

Program ‘‘CLOCK’’ (TIME OF DAY) into Unit as instructed in SERVICE AND MAINTENANCE.

PROGRAMMING ‘‘DEFROST’’ (AUTOMATIC) SETTINGS INTO UNIT

The automatic defrost system may be programmed into the Unit to occur up to nine different times during a day with a minimum of two hours between defrost time settings. Program automatic defrost time settings into the Unit as instructed in SERVICE AND MAINTENANCE.

PROGRAMMING ‘‘SLEEP’’ (SLEEP TIME) INTO UNIT

‘‘SLEEP’’ (SLEEP TIME) may be programmed into Unit to occur any time of the day after the Unit automatic defrost cycle has occurred. Unit will shut down (go into sleep time) and will not wake up (return to normal operation) until programmed ‘‘WAKE UP’’ (WAKE UP TIME) has occurred. Program ‘‘SLEEP’’ (SLEEP TIME) into Unit as instructed in SERVICE AND MAINTENANCE.

PROGRAMMING “WAKE UP” (WAKE UP) TIME INTO UNIT

“WAKE UP’’ (WAKE UP TIME) May be programmed into Unit to occur any time of the day to wake Unit up (return to normal operation) after“sleep time’’ has occured. Program ‘‘WAKE UP’’ into Unit as instructed in SERVICE AND MAINTENANCE.

PROGRAMMING POINT OF SALE MESSAGE DISPLAY

Three point of sale display messages are available to choose from and may be programmed into Unit by placing No. 1, No. 2, and No. 3 switches on DIP SWITCH assembly on master circuit board in appropriate positions. Program point of sale display messages into Unit as instructed in SERVICE AND MAINTENANCE.

ADJUSTING “VIS SET” (PRODUCT VISCOSITY) OF DISPENSED PRODUCT

Adjusting ‘‘VIS SET’’ (PRODUCT VISCOSITY) determines what product consistency of the dispensed product will be present in each freeze cylinder. Adjust ‘‘VIS SET’’ (PRODUCT VISCOSITY) of the dispensed product as instructed in SERVICE AND MAINTENANCE.

DISPLAYED EVAPORATOR REFRIGERATION COILS INLETS AND COMMON OUTLET SENSORS TEMPERATURES

Evaporator refrigeration coils inlet and common outlet temperature readings in degrees Fahrenheit may be displayed on message display as instructed in SERVICE AND MAINTENANCE

“VOLTAGE” (DISPLAYED VOLTAGE READOUT)

Displayed voltage readout may be displayed on message display as instructed in SERVICE AND MAINTENANCE

PROGRAMMING COMPONENTS “DIAGNOSE” (DIAGNOSTIC MODE) INTO UNIT

“DIAGNOSE” (DIAGNOSTIC MODE) may be programmed into the Unit to check certain components for operation. Program ‘‘DIAGNOSE’’ into Unit and check components for proper operation as instructed in SERVICE AND MAINTENANCE.

DISPLAYING “TOTALS” (DISPLAYED CYCLES AND HOURS TOTALS) ONTO MESSAGE DISPLAY

“TOTALS’’ (DISPLAYED CYCLES AND HOURS TOTALS) may be displayed on message display as instructed in SERVICE AND MAINTENANCE

DISPLAYED ERROR CONDITIONS

Displayed error conditions, associated errors, and items affected by the errors are found in Table 8. DISPLAYED ERROR CONDITIONS.

WATER STRAINER SCREEN AND DOUBLE LIQUID CHECK VALVE MAINTENANCE (see Figures 2 and 12)

WARNING: The carbonator water pump water strainer screen and double liquid check valve must be inspected and serviced after any disruptions (plumbing work, earthquake, etc.) to the water supply system, and at least once a year under normal circumstances. Water pump with no screen or defective screen in strainer would allow foreign particles to foul the double liquid check valve. CO gas could then back flow into water system and create health hazard in system.

Service water strainer screen and double liquid check valve as instructed.

CLEANING CO_2 GAS CHECK VALVES (see Figures 2 and 13)

The CO_2 gas check valves must be inspected and serviced at least once a year under normal conditions, and after any servicing or disruption of the CO_2 system as instructed.

SERVICE AND MAINTENANCE

This section describes service and maintenance to be performed on the Unit.

WARNING: Disconnect electrical power from the Unit to prevent personnel injury before attemping any internal maintenance. Only qualified personnel should service the internal components or electrical wiring.

PREPARING UNIT FOR SHIPPING, STORING, OR RELOCATING

CAUTION: Before shipping, storing, or relocating this Unit, the syrup systems *must* be sanitized and all sanitizing solution *must* be purged from the syrup systems. All water *must* also be purged from the plain and carbonated water systems. A freezing ambient environment will cause residual water in the Unit to freeze resulting in damage to internal components.

PERIODIC INSPECTION

1. Make sure CO_2 cylinder valve is fully opened and primary CO_2 cylinder regulator assembly 1800–psi gage indicator is not in shaded (“change CO_2 cylinder”) portion of dial. If so, CO_2 cylinder is almost empty and must be replaced.
2. Make sure soft drink tanks contain sufficient amount of syrup for Unit operation.
3. Circulating air, required to cool the refrigeration systems condenser coils, is drawn in through louvers on front and exhausted out through louvers on sides and back of Unit. Make sure louvers are not obstructed and refer to CLEANING CONDENSER COILS in this section.

REMOVAL OF DRIP TRAY, BACK PANEL, SIDE PANELS, TOP PANEL, LOWER FRONT ACCESS PANEL, AND CONDENSER COILS ACCESS PANEL (see Figure 3)

DRIP TRAY

Pull drip tray forward to disengage from drip tray supports.

BACK PANEL

Remove one screws securing bottom of back panel, then lift panel straight up to remove.

SIDE PANELS

Remove screw securing bottom of side panel, then lift panel straight up to remove.

TOP PANEL

Remove two screws securing top panel, then lift panel up off Unit.

LOWER FRONT ACCESS PANEL

Remove two screws securing lower front panel, then pull panel down to remove from Unit.

CONDENSER COILS ACCESS PANEL

Pull out on top of condenser coils access panel, then lift panel up and out to remove.

LUBRICATION

CARBONATORS WATER PUMP MOTORS (see Figure 12)

Carbonators water pumps motor bearings must be lubricated periodically. Refer to oiling instructions on motor. DO NOT OVER OIL.

DISPENSING VALVES CAGED O–RINGS AND BEATERS DRIVE SHAFTS SEALS ASSEMBLIES

NOTE: Defrost freeze cylinders, shut Unit down, close product shutoff valves in lines leading from product blender tanks to freeze cylinders, then drain product from freeze cylinders.

Lubricate dispensing valves caged o–rings (see Figure 7) and beaters drive shafts seals assemblies (see Figure 8) each time Unit is sanitized as follows:

NOTE: Item numbers in reference to Figure 4.

1. Remove HEX NUTS (item 7) and FLATWASHERS (item 6) securing FACEPLATE (item 8) to freeze cylinder, then remove faceplate from cylinder.
2. Carefully remove large O–RING (item 5) from FACEPLATE (item 8).
3. Unscrew RELIEF VALVE (item 9) from FACEPLATE (item 8).
4. Disassemble dispensing valve (see Figure 7) as follows:
   A. Remove two screws and hold–down plates securing spring housing to dispensing valve body, then remove housing.
   B. Remove torsion spring from dispensing valve.
   C. Remove knob, spring, sleeve and lever assembly from dispensing valve.
   D. Remove spring fitting from dispensing valve.
   E. Press valve, with caged O–ring, down and out of dispensing valve body.
   F. Carefully remove caged O–ring from valve.

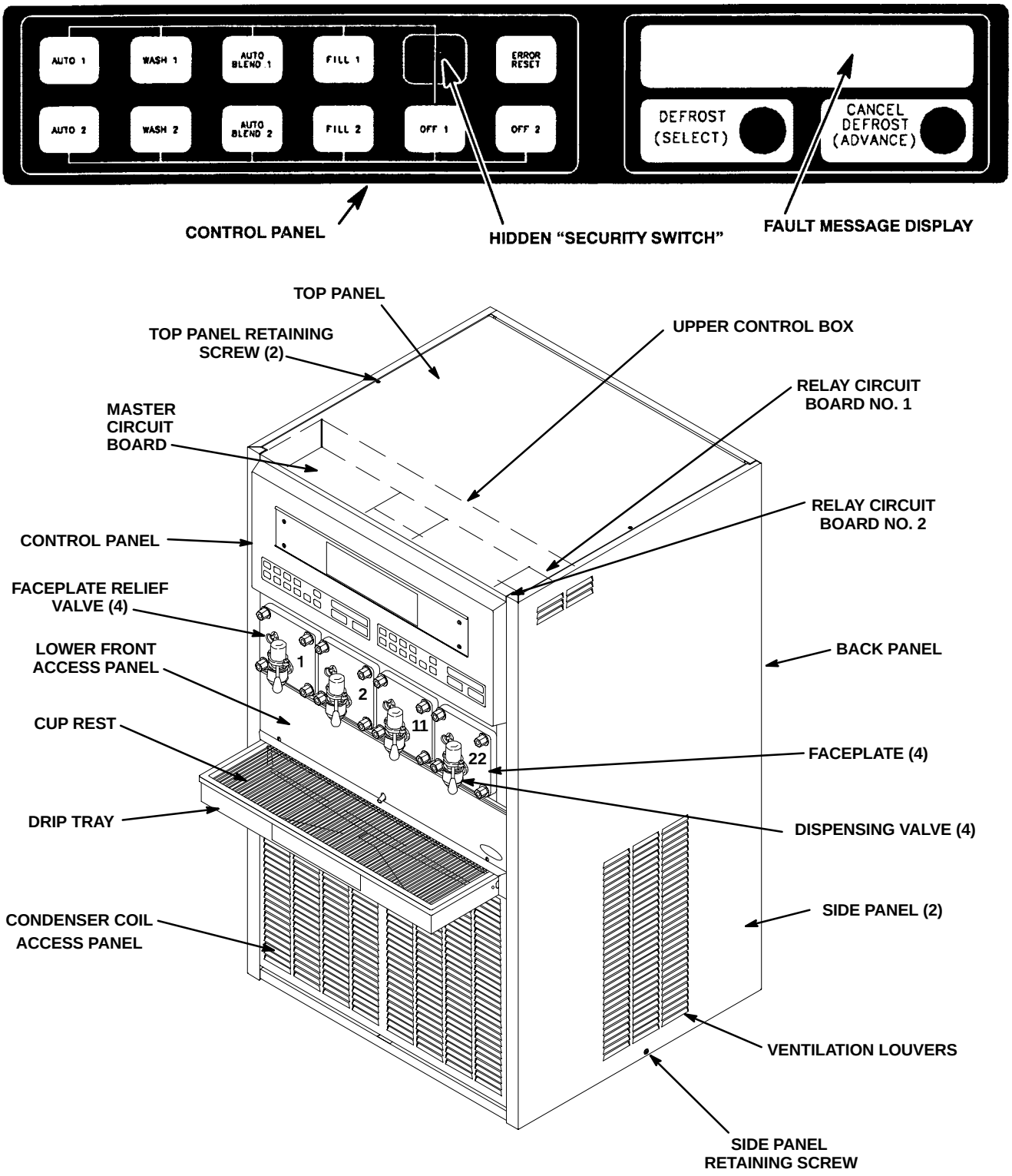


FIGURE 5. OPERATING CONTROLS

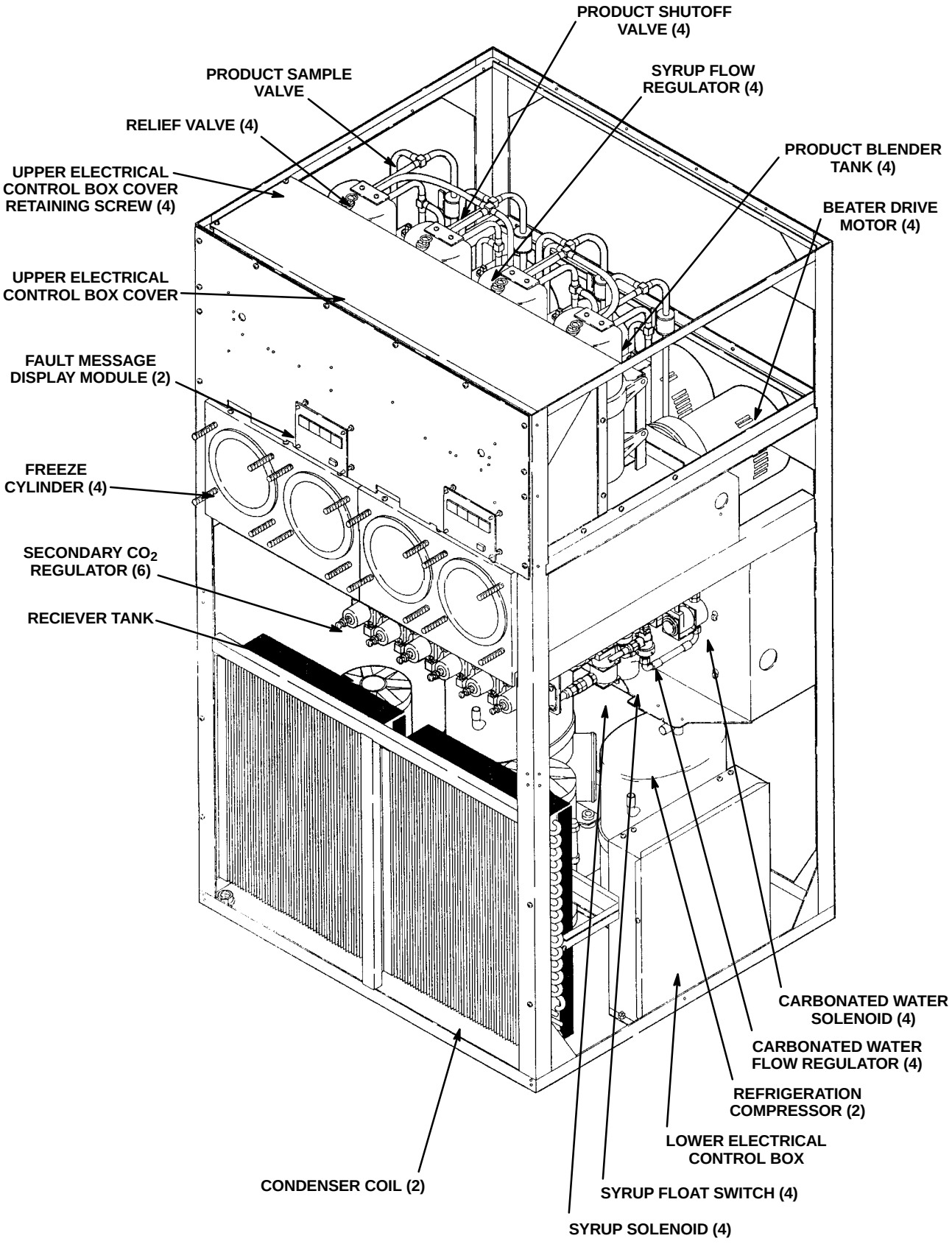


FIGURE 6. UNIT INTERNAL COMPONENTS

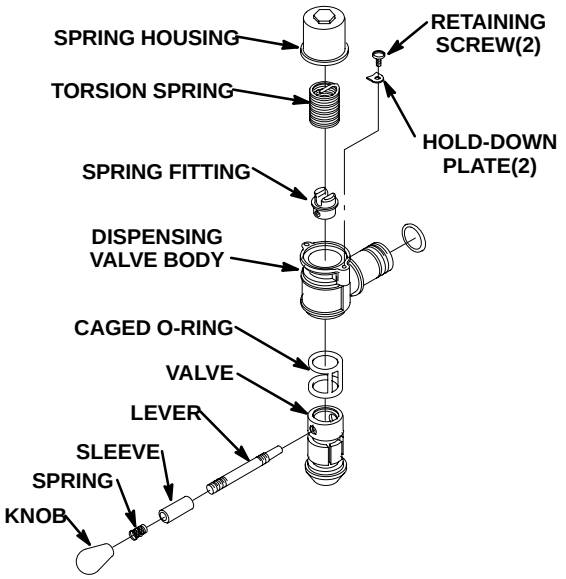


FIGURE 7. SELF–CLOSING DISPENSING VALVE

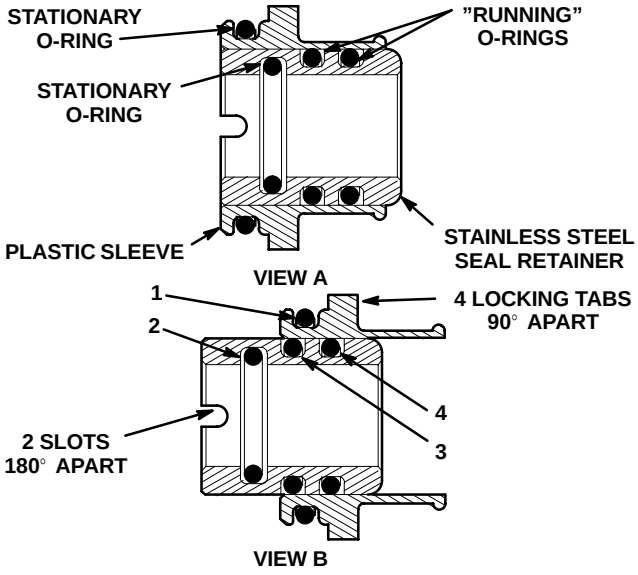


FIGURE 8. SERVICING BEATER DRIVE SHAFT SEAL ASSEMBLY

5. Wash all parts in warm water. Remove all traces of syrup and lubricant, especially from faceplate, O–rings, and dispensing valve. If parts are excessively coated, wipe clean with paper towel to remove syrup and lubricant, especially from caged O–ring and dispensing valve. Use CLEANING BRUSH (item 5, Table 3) to clean faceplates relief valve passages.

6. Submerge all parts in four percent solution of approved sanitizing agent for time recommended by sanitizer manufacturer.

7. Remove parts from sanitizing solution and place on clean paper towels.

NOTE: Use Dow–Corning DC–111 (P/N 321471000) light grade silicone lubricant.

8. Assemble dispensing valve as follows:

   A. Lubricate caged O–ring. Carefully install caged O–ring on valve from straight end (opposite tapered end). Lubricate grooves in which O–ring rides to fill in all void areas around O–ring.

   B. Carefully install valve with caged O–ring in dispensing valve body.

   C. Install spring fitting, knob and lever parts, torsion, spring, and spring housing assembly by reversing removal procedure. Do not tighten down hold–down plates securing spring housing at this time.

   D. Turn spring housing to the left (counterclockwise) to put tension on torsion spring, then tighten hold–down plates to secure spring housing.

   E. Test dispensing valve to make sure it closes by itself when lever is released. If not, readjust torsion spring tension.

9. Thoroughly clean RELIEF VALVE (item 9), then screw relief valve into FACEPLATE (item 8).

10. Service beater drive shaft seal assembly as follows:

NOTE: Use Dow–Corning DC–111 (P/N 321471000) light grade silicone lubricant.

   A. Pull BEATER (item 13) and SCRAPER BLADES (item 2) from freeze cylinder.

   B. Pull beater drive shaft seal assembly from freeze cylinder socket using seal puller, Cornelius (P/N 322063–000) from front side. Disassemble shaft seal assembly and discard O–rings.

NOTE: If old lubricant cannot be removed from plastic sleeve by washing, use nylon "pot and pan" scrubber (3M Company "Scotchbrite'', or equivalent) to remove residue. Do not scrape sleeve. Replace any sleeve that has rough edges in O–ring sealing areas.

C. Remove old lubricant from plastic sleeve and stainless steel seal retainer (see Figure 8) with paper towels. Do not scrape the sleeve. Wash sleeve, retainer, and socket and back of freeze cylinder in warm water.

D. Install No. 1 stationary O–ring in groove of plastic sleeve and No. 2 stationary O–ring in inner groove of stainless steel seal retainer. Lubricate both O–rings.

E. Install new “running” O–rings No. 3 and No. 4 in outer grooves of stainless steel seal retainer, then lubricate O–rings with generous amount of special light grade silicone grease.

F. Slide stainless steel seal retainer in plastic sleeve until “running” O–ring No. 3 is just covered by plastic sleeve, as shown in View B of Figure 8.

G. Carefully place shaft seal assembly over beater drive shaft and locate slots of seal retainer on drive shaft pin. Then, carefully and simultaneously, push and turn plastic sleeve to locate locking tabs on sleeve in notches of freeze cylinder retainer. When tabs are seated in notches, press assembly firmly in place.

H. Position SCRAPER BLADES (item 2) on BEATER (item) as shown in Figure 4. Slide beater into freeze cylinder so slotted hooks engage DRIVE PIN (item 17) on DRIVE SHAFT (item 24). Turn beater to the right (clockwise) to lock in place.

I. Lubricate O–RING (item 5) with water to facilitate faceplate installation. Position O–RING (item 5) on FACEPLATE (item 8). Install faceplate on Unit so dispensing valve spout faces down. Tighten hex nuts until faceplate touches freeze cylinder all around flange. CAUTION – DO NOT OVERTIGHTEN HEX NUTS.

11. Open product shutoff valves leading from product blender tanks to freeze cylinders, fill freeze cylinders with product, then restore Unit to operation.

CLEANING CONDENSER COILS (see Figure 6)

NOTE: Circulating air, required to cool the refrigeration systems condenser coils, is drawn in through louvers on front and exhausted out through louvers on sides and back of Unit. Restricting air circulation through Unit will decrease its cooling efficiency.

Periodically clean condenser coils as follows:

1. Press ‘‘OFF 1’’ and ‘‘OFF 2’’ switches on Unit control panels to stop refrigeration systems and beater motors.
2. Remove condenser coils access panel as instructed.
3. Clean condenser coils with vacuum cleaner, low-pressure compressed air, or a soft brush.
4. Install condenser coils access panel by reversing removal procedure.
5. Press ‘‘AUTO 1’’ and ‘‘AUTO 2’’ switches on Unit control panels to start refrigeration systems and beater motors.

ADJUSTMENTS

ADJUSTING PLAIN WATER PRESSURE REGULATORS (see Figure 2)

Carbonators plain water inlet adjustable water pressure regulators are factory adjusted to 45–psi and should not

be readjusted.

ADJUSTING CARBONATED WATER FLOW RATE

The black carbonated water flow regulators (see Figures 2 and 6), which control carbonated water flow rate into product blender tanks, are factory adjusted for flow rate of 1.5 ~~0.05~~ ounces per second and normally do not require adjustment. However, if adjustment is necessary, proceed as follows:

1. Press applicable “OFF 1” or “OFF 2” switch to prevent more product from entering applicable product blender tank.
2. Disconnect Unit syrup inlet line from applicable soft drink tank.
3. Remove applicable side panel from Unit as instructed for access to applicable carbonated water flow regulator, product shutoff valve, and product sample valve.
4. Close product shutoff valve to prevent more product from entering freeze cylinder.
5. Place container under applicable product sample valve. Open valve and allow all product to be purged from product blender tank, then close valve.
6. Remove lower front access panel as instructed for access to secondary CO_2 regulators.
7. Note pressure setting on secondary CO_2 regulator with 60–psi gage for applicable product blender tank. Turn regulator adjusting screw to the left (counterclockwise) until regulator gage reads 0–psi. Pull up on product blender bank relief valve to release CO_2 pressure from tank, then release valve.
8. Disconnect carbonated water line from outlet side of applicable carbonated water flow regulator.
9. Connect line, long enough to reach to outside of Unit, to water flow regulator outlet, then route line to outside of Unit.
10. Place end of carbonated water line, routed to outside of Unit, in container.
11. Press applicable “AUTO BLEND 1” or “AUTO BLEND 2” switch to activate electrically operated carbonated water solenoid.
12. When steady stream of water is flowing from added length of line, catch carbonated water in container graduated in ounces for exactly 10–seconds. Press applicable “FILL 1” or “FILL 2” switch to deactivate carbonated water solenoid. In 10–seconds, 14 to 16–ounces of water should have been dispensed.
13. If adjustment is necessary, loosen jam nut on carbonated water flow regulator. Turn regulator adjusting screw to the left (counterclockwise) to reduce carbonated water flow rate or turn screw to the right (clockwise) to increase flow rate. Tighten jam nut and tap on regulator to register adjustment.
14. Repeat steps 11 through 13 until desired carbonated water flow rate is achieved.
15. Remove added length of line from outlet side of carbonated water flow regulator. Connect carbonated water line, disconnected from carbonated water flow regulator in step 8 preceding, to regulator outlet.
16. Turn product blender tanks CO_2 regulator, with 60–psi gage, adjusting screw in (clockwise) until gage registers pressure noted in step 7 preceding.
17. Pull relief valve on applicable product blender tank to purge air from tank, then close valve.
18. Connect Unit syrup inlet line to soft drink tank.
19. Press applicable “AUTO BLEND 1” or “AUTO BLEND 2” switch to fill product blender tank with product.
20. Open product shutoff valve that was closed in step 4 preceding.
21. Install side panel and lower front access panel by reversing removal procedure.

ADJUSTING CO_2 REGULATORS

NOTE: To readjust CO_2 regulator to a lower setting, loosen adjusting screw lock nut, then turn screw to the left (counterclockwise) until pressure gage reads 5–psi lower than new setting will be. Turn adjusting screw to the right (clockwise) until gage registers new setting, then tighten lock nut.

Primary CO_2 Regulator. (see Figure 2)

The primary CO_2 regulator controls CO_2 pressure to soft drink tanks (also to bag–n–box syrup system if used) and secondary CO_2 regulators located behind Unit lower front access panel. Adjust primary CO_2 regulator by turning regulator adjusting screw to the right (clockwise) until regulator pressure reads 80 to 100–psi, if regulator is providing CO_2 pressure to soft drink tanks. If regulator is controlling CO_2 pressure to bag–n–box syrup system, adjust regulator to 80–psi maximum.

Product Blender Tanks Secondary CO_2 Regulators. (see Figures 2 and 6)

1. Remove Unit lower front access panel as instructed for access to product blender tanks secondary CO_2 regulators with 60–psi gages.
2. Adjust product blender tank secondary CO_2 regulators by turning regulator adjusting screws to the right (clockwise) until gages reads 30–psi.
3. Install lower front access panel by reversing removal procedure.

Carbonators Secondary CO_2 Regulators. (see Figures 2 and 6)

1. Remove Unit lower front access panel as instructed for access to carbonators secondary CO_2 regulators.

IMPORTANT: Carbonators tanks secondary CO_2 regulators must be adjusted 25–psi higher or more above product blender tanks secondary CO_2 regulators pressure settings. Carbonated water and syrup pressures must be able to overcome and vent product blender tanks head pressures while tanks are filling with carbonated water and syrup. Carbonators tanks secondary CO_2 regulators not adjusted high enough will cause decreased flow of carbonated water into blender tanks which will increase brix of dispensed product.

2. Adjust carbonators secondary CO_2 regulators, with 100–psi gages, by turning regulators adjusting screws to the right (clockwise) until gages read 60–psi.
3. Install lower front access panel by reversing removal procedure.

ADJUSTING BRIX (WATER–TO–SYRUP) ‘‘RATIO’’ OF DISPENSED PRODUCT (see Figures 2 and 6)

1. Remove Unit front lower access panel as instructed for access to product blender tanks secondary CO_2 regulators and product sample valves.
2. Check product blender tanks secondary CO_2 regulators, with 60–psi gages, for proper pressure settings which are set at 30–psi for best textured dispensed product. If adjustment is necessary, adjust as instructed.
3. Remove both Unit side panels as instructed for access to product shutoff valves located close to product blender tanks.
4. Close product shutoff valve in line between applicable product blender tank and associated freeze cylinder BRIX adjustment will be performed on.
5. Press applicable ‘‘FILL 1’’ or ‘‘FILL 2’’ switch to prevent more product from filling product blender tank.
6. Open applicable product blender tank product sample valve and take sample (approximately 6–ounces) of product in cup.

NOTE: Temperature compensated hand–type refractometers (P/N 511004000) are available from the Cornelius Company.

7. Check product BRIX with a temperature compensated hand–type refractometer. BRIX should read 13 1. If BRIX is not within tolerance, adjust applicable white syrup flow regulator as follows:
   A. Loosen jamb nut on applicable syrup flow regulator.
   B. Turn syrup flow regulator adjusting screw to the left (counterclockwise) no more than 1/8–turn at a time to reduce syrup flow rate or turn screw to the right (clockwise) no more than 1/8–turn to increase flow rate.
   C. Tighten jamb nut on syrup flow regulator, then lightly tap regulator to register adjustment.

8. Place container under applicable product sample valve. Open valve to purge product out of product blender tank, line, and valve, then close valve.

9. Press applicable ‘‘AUTO BLEND 1‘‘ or ‘‘AUTO BLEND 2’’ switch to fill product blender tank 1/4–full of new batch of product. When product blender tank is 1/4–full of product, press applicable ‘‘FILL 1’’ or ‘‘FILL 2’’ switch to prevent more product from entering product blender tank.

10. Repeat steps 6 and 7 preceding to check product sample for BRIX.

11. Repeat steps 7 through 10 preceding until proper BRIX adjustment is achieved.

12. Open product shutoff valve in line between product blender tank and freeze cylinder.

13. Press applicable ‘‘AUTO BLEND 1’’ or ‘‘AUTO BLEND 2’’ switch.

14. Install Unit side panels and front lower access panel by reversing removal procedures.

PRODUCT CARBONATION ADJUSTMENT (see Figures 2 and 6)

Carbonation of dispensed product can also be varied to suit consumer preference by adjusting Unit carbonator secondary CO_2 regulator as follows:

IMPORTANT: Carbonator tank secondary CO_2 regulator must be adjusted 25–psi higher or more above product blender tanks secondary CO_2 regulators pressure settings. Carbonated water and syrup pressures must be able to overcome and vent product blender tanks head pressures while tanks are filling with carbonated water and syrup. Carbonator tank secondary CO_2 regulator not adjusted high enough will cause decreased flow of carbonated water into blender tanks which will increase BRIX of dispensed product.

1. Remove Unit front lower access panel as instructed for access to carbonator secondary CO_2 regulator with 100–psi gage.

2. Observe pressure setting on carbonator secondary CO_2 regulator gage.

3. To lower CO_2 pressure, loosen regulator adjusting screw lock nut. Turn adjusting screw to the left (counterclockwise) until pressure gage reads 15–psi below desired reading, then turn screw to the right (clockwise) until gage reads desired pressure. DO NOT SET CO_2 REGULATOR PRESSURE BELOW 25–PSI HIGHER THAN PRODUCT BLENDER TANKS CO_2 REGULATORS ARE ADJUSTED TO (SEE PRECEDING IMPORTANT NOTE). Tighten adjusting screw lock nut after each adjustment.

4. To raise CO_2 pressure, turn regulator adjusting screw to the right (clockwise) until gage reads desired pressure. DO NOT SET PRESSURE HIGHER THAN 60–PSI. Make sure primary CO_2 regulator on CO_2 cylinder is set at 80 to 100–psi. Tighten adjusting screw lock nut after each adjustment.

5. Install Unit front lower access panel by reversing removal procedure.

ADJUSTING BEATER MOTOR CURRENT (EITHER SIDE)

Adjusting beater motor current (either side) procedure is very important and must be performed as instructed. Be sure you fully understand the instructions before performing the current adjustments or doing any preventative maintenance current readings check.

Any current adjustments or preventative maintenance current readings check on the beater motor current (either side) must be performed with both freeze cylinders fully defrosted. A partially defrosted freeze cylinder will cause false correct readings to be displayed on the message display. Adjust beater motor current (either side) as
follows:

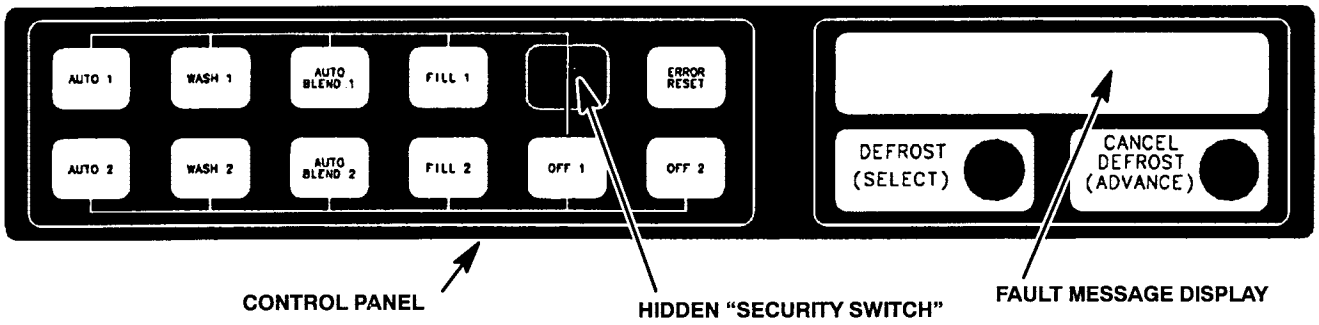


FIGURE 9. CONTROL PANEL

1. Place No. 4 ‘‘BEATER MOTOR CURRENT READOUT’’ switch on DIP SWITCH assembly on master circuit board (see Figure 10) in ‘‘ON’’ position. Both freeze cylinders beater motors will start and operate and beaters motors current ratings will be displayed on message display.
2. Display should be adjusted to read A150 B150 2 by adjusting MOTOR CURRENT ADJUSTMENTS located on No. 1 and No. 2 relay circuit boards (see Figure 10). These figures will fluctuate slightly with variations in line voltage and motor loads.
3. After completion of adjusting beater motor currents to A150B150 2, make sure No. 5 ‘‘MOTOR CURRENT SELF–CALIBRATION’’ switch on DIP SWITCH assembly on motor circuit board (see Figure 10) is in ‘‘OFF’’ position. No. 5 switch in ‘‘OFF’’ position allows the ‘‘MOTOR CURRENT SELF–CALIBRATION’’ electronics to automatically self calibrate the beaters motors currents at completion of each defrost cycle.

CAUTION: If NO. 4 “BEATER MOTOR CURRENT READOUT’’ SWITCH ON DIP SWITCH assembly is place in ‘‘ON’’ position and beater motor current readings were A155B145 and switch was then placed back in ‘‘OFF’’ position without readjusting to A150B150 2, beater motor current has just been reset at A155B145. Operating the FCB Dispenser at these current readings may have serious effects on its operation.

ANY TIME THE NO. 4 ‘‘BEATER MOTOR CURRENT READOUT’’ SWITCH ON DIP SWITCH ASSEMBLY IS PLACED IN ‘‘ON’’ POSITION, THE BEATER MOTOR CURRENT READINGS MUST BE READJUSTED TO A150B150 2 AS INSTRUCTED, THEN SWITCH MUST BE PLACED BACK IN ‘‘OFF’’ POSITION.

ADJUSTMENTS, AND PROGRAMMING MAIN MENU SELECTIONS, COMPONENTS “DIAGNOSE” (DIAGNOSTIC MODE), AND “TOTALS” (DISPLAYED CYCLES AND HOURS) INTO UNIT

NOTE: The Unit control panel switches are as shown in Figure 9.

The following instructions outline adjustments and programming main menu selections, components ‘‘DIAGNOSE’’ (DIAGNOSTIC MODE), and ‘‘TOTALS’’ (DISPLAYED CYCLES AND HOURS TOTALS) into Unit.

NOTE: Plain water, CO_2 and syrup supplies to Unit must be satisfied to turn off “H_2O OUT”, “CO_2 OUT”, “SYRUP 1”, and “SYRUP 2” fault messages on message display before adjustments and programming procedures can be performed on the Unit.

PROGRAMMING MAIN MENU SELECTION ONTO MESSAGE DISPLAY

The MAIN MENU SELECTIONS (see Table 3) may be brought up on the message display as follows:

1. Press ‘‘AUTO 1’’, ‘‘WASH 1’’, and ‘‘BLEND 1’’ control switches (see Figure 9) at the same time and hold them pressed for a minimum of 1/2 second to bring up MAIN MENU SELECTIONS on message display. The word ‘‘CLOCK’’ will appear on display. You are now in the MAIN MENU SELECTIONS as shown in Table 3. To advance through the MENU SELECTIONS, repeatedly press the ‘‘CANCEL DEFROST’’ (ADVANCE) switch. Once you reach the desired selection, press the ‘‘DEFROST’’ (SELECT) switch to lock in on the selection.

NOTE: to exit MENU SELECTION and go back to MAIN MENU SELECTIONS, press “ERROR RESET” (RESET) switch. Press ‘‘ERROR RESET (RESET) switch again to exit from MAIN MENU SELECTIONS.

SETTING CLOCK (TIME OF DAY)

NOTE: The CLOCK (TIME OF DAY) must be programmed into Unit before ‘‘DEFROST’’ (AUTOMATIC), ‘‘SLEEP’’ (SLEEP TIME), and ‘‘WAKE UP’’ (WAKE UP TIME) can be programmed into the Unit.

Program ‘‘CLOCK’’ (TIME OF DAY) into Unit as follows:

1. Refer to PROGRAMMING MAIN MENU SELECTIONS ONTO MESSAGE DISPLAY and bring up ‘‘CLOCK’’ on display. Press ‘‘DEFROST’’ (SELECT) switch to lock in on selection.
2. Press ‘‘CANCEL DEFROST’’ (ADVANCE) switch to bring up flashing hour number on display.
3. Press ‘‘CANCEL DEFROST’’ (ADVANCE) switch to advance hours on display to desired hour. Press ‘‘DEFROST’’ (SELECT) switch to lock in hour on display.
4. After hour (time of day) has been locked in on message display, minute numbers will be flashing on display. Press ‘‘CANCEL DEFROST’’ (ADVANCE) switch to advance minute numbers to desired minutes (time of day). Press ‘‘DEFROST’’ (SELECT) switch to lock in minute (time of day) on display.
5. Press ‘‘ERROR RESET’’ switch two times to exit from MENU SELECTION.

PROGRAMMING ‘‘DEFROST’’ (AUTOMATIC) SETTINGS INTO UNIT

The automatic defrost system may be programmed into the Unit to occur up to nine different times during a day with a minimum of two hours between defrost time settings. Program automatic defrost time settings into the Unit as follows:

1. Refer to PROGRAMMING MAIN MENU SELECTIONS ON TO MESSAGE DISPLAY and bring up ‘‘DEFROST’’ on message display. Press ‘‘DEFROST’’ (SELECT) switch to lock in on selection.
2. Press ‘‘CANCEL DEFROST’’(ADVANCE) switch to bring up flashing hour number on display.
3. Press ‘‘CANCEL DEFROST’’(ADVANCE) switch to advance hours on display to desired hour. Press ‘‘DEFROST’’(SELECT) switch to lock in hour on display.
4. After hour (time of day) has been locked in on message display, minute numbers will be flashing on display. Press ‘‘CANCEL DEFROST’’ (ADVANCE) switch to advance minute numbers to desired minutes (time of day). Press ‘‘DEFROST’’ (SELECT) switch to lock in minute (time of day) on display.
5. Press ‘‘DEFROST’’ (SELECT) switch, then repeat steps 2, 3, and 4 to program in next defrost time setting. MAKE SURE A MINIMUM OF TWO HOURS IS MAINTAINED BETWEEN DEFROST TIME SETTINGS. IF A TIME SETTING OF LESS THAN TWO HOURS IS PROGRAMMED INTO THE UNIT, A MOMENTARY ‘‘ERROR’’ MESSAGE WILL APPEAR ON THE MESSAGE DISPLAY WHEN OPERATOR TRIES TO EXIT ‘‘DEFROST’’. THE PROGRAM WILL NOT ALLOW THE OPERATOR TO EXIT THE DEFROST SETTING UNTIL THE LESS THEN TWO HOUR DEFROST TIME IS CORRECTED. THE OPERATOR MUST PRESS ‘‘CANCEL DEFROST’’ (ADVANCE) SWITCH, THEN REPEAT STEPS 2, 3, and 4 TO PROGRAM CORRECTED DEFROST TIME INTO UNIT.

Table 3. Main Menu Selections								
Menu Commands	**Message Display** (Example Readouts)							
"CLOCK" (TIME OF DAY) see note below	C	_	1	2	–	0	0	A
"DEFROST" (AUTOMATIC)	3	D	1	0	–	0	0	A
"SLEEP" (SLEEP TIME)	S	1	2	–	3	0	A	_
"WAKE UP" (WAKE UP TIME)	W	_	0	7	–	1	5	A
"VIS SET" (PRODUCT VISCOSITY SETTING	1	2	_	_	_	_	1	0
"VIS READ" (ACTUAL VISCOSITY READOUT)	1	6	_	_	_	_	1	1
"SENSORS" (TEMPERATURES READOUT)	7	5	*	7	5	*	7	5
"VOLTAGE" (DISPLAYED VOLTAGE READOUT)	V	R	M	S	*	2	3	0
"DIAGNOSE" (DIAGNOSTIC MODE)	See Programming Components Diagnose into Unit.							
"TOTALS"	**See Table 4-5 and Programming "Totals" (DISPLAYED CYCLES AND HOURS TOTAL) into Unit.**							
NOTE: The "CLOCK" (TIME OF DAY) must be programmed into the Unit before "DEFROST" (AUTOMATIC) "SLEEP" (SLEEP TIME), and "WAKE UP" (WAKE UP TIME) will function.								

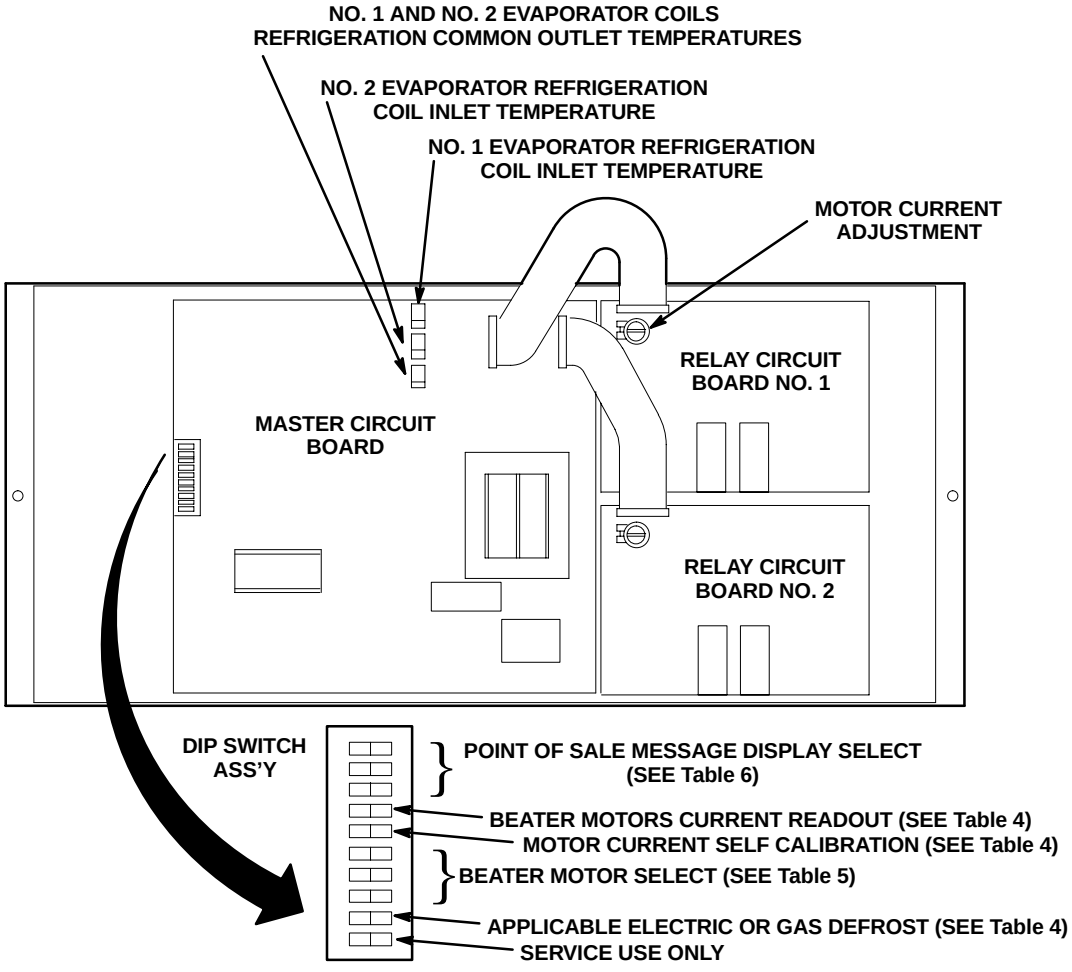


FIGURE 10. MASTER AND RELAY CIRCUIT BOARDS

Table 4. DIP SWITCH FUNCTIONS		
SWITCH NO.	**FUNCTIONS**	
1	POINT OF SALE MESSAGE SELECT	(SEE TABLE 6)
2	POINT OF SALE MESSAGE SELECT	
3	POINT OF SALE MESSAGE SELECT	
4	BEATER MOTOR CURRENT READOUT	ON – DISPLAY CURRENT READOUT OFF – NO DISPLAYED CURRENT READOUT
5	MOTOR CURRENT SELF CALIBRATION	ON – DISABLED OFF – OPERATING
6	BEATER MOTOR SELECT	(SEE TABLE 5)
7	BEATER MOTOR SELECT	
8	BEATER MOTOR SELECT	
9	DEFROST	ON – HOT GAS OFF – ELECTRIC
10	SERVICE USE	

Table 5. BEATER MOTOR SELECT			
DIP SWITCH NO. 6	**DIP SWITCH NO. 7**	**DIP SWITCH NO. 8**	**MOTOR SELECTED**
OFF	OFF	OFF	60HZ KLAUBER
OFF	ON	OFF	NOT USED
ON	OFF	OFF	NOT USED
ON	ON	OFF	NOT USED
ON	ON	ON	NOT USED
ON	OFF	ON	50HZ VON WEISE
OFF	ON	ON	60HZ BODINE
OFF	OFF	ON	60HZ VON WEISE

6. Repeat step 5 as many times as necessary to program desired number of defrost time settings into the Unit.

7. Press ‘‘ERROR RESET’’ switch two times to exit from MENU SELECTIONS.

PROGRAMMING ‘‘SLEEP’’ (SLEEP TIME) INTO UNIT

‘‘SLEEP’’ (SLEEP TIME) may be programmed into Unit to occur any time of the day after Unit automatic defrost cycle has occurred. Unit will shut down (go into sleep time) and will not wake up (return to normal operation) until programmed ‘‘WAKE UP’’ (WAKE UP TIME) has occurred. Program ‘‘SLEEP’’ (SLEEP TIME) into Unit as follows:

1. Refer to PROGRAMMING MENU SELECTIONS ONTO MESSAGE DISPLAY and bring up ‘‘SLEEP’’ on message display. Press ‘‘DEFROST’’ (SELECT) switch to lock in on selection.

2. Press ‘‘CANCEL DEFROST’’ (ADVANCE) switch to bring up flashing hour number on display.

3. Press ‘‘CANCEL DEFROST’’ (ADVANCE) switch to advance hours on display to desired hour. Press ‘‘DEFROST’’ (SELECT) switch to lock in hour on display.

4. After hour (time of day) has been locked in on message display, minute numbers will be flashing on display. Press ‘‘CANCEL DEFROST’’ (ADVANCE) switch to advance minute numbers to desired minutes (time of day). Press ‘‘DEFROST’’ (SELECT) switch to lock in minutes (time of day) on display.

5. Press ‘‘ERROR RESET’’ switch two times to exit from MENU SELECTIONS.

PROGRAMMING ‘‘WAKE UP’’ (WAKE UP TIME) INTO UNIT

‘‘WAKE UP’’ (WAKE UP TIME) may be programmed into Unit to occur any time of the day to wake Unit up (return to normal operation) after ‘‘sleep time’’ has occured. Program ‘‘WAKE UP’’ into Unit as follows:

1. Refer to PROGRAMMING MAIN MENU SELECTIONS ONTO MESSAGE DISPLAY and bring up ‘‘WAKE UP’’ on message display. Press ‘‘DEFROST’’ (SELECT) switch to lock in on selection.

2. Press ‘‘CANCEL DEFROST’’ (ADVANCE) switch to bring up flashing hour number on display.

3. Press ‘‘CANCEL DEFROST’’ (ADVANCE) switch to advance hours on display to desired hour. Press ‘‘DEFROST’’ (SELECT) switch to lock in hour on display.

4. After hour (time of day) has been locked in on message display, minute numbers will be flashing on display. Press ‘‘CANCEL DEFROST’’ (ADVANCE) switch to advance minute numbers to desired minutes (time of day). Press ‘‘DEFROST’’ (SELECT) switch to lock in minutes (time of day) on display.

5. Press ‘‘ERROR RESET’’ switch two times to exit from MENU SELECTIONS.

Table 6. POINT OF SALES DISPLAY MESSAGES

DIP SWITCH NO. 1	DIP SWITCH NO. 2	DIP SWITCH NO. 3	MESSAGE
OFF	OFF	OFF	“ENJOY A FROZEN BEVERAGE”
OFF	ON	OFF	NOT USED–BLANK
ON	OFF	OFF	“HAVE A NICE DAY”
ON	ON	OFF	“DISFRUTE UNA BEBIDA CONGELADA CARBONATADA”
ON	ON	ON	NOT USED – BLANK
ON	OFF	ON	NOT USED – BLANK
OFF	ON	ON	NOT USED – BLANK
OFF	OFF	ON	DISABLES POINT OF SALE – BLANK

NOTE: For special messages, contact your local sales representative

PROGRAMMING POINT OF SALE MESSAGE DISPLAY (see Figure 10 and Table 6)

NOTE: Point of sale display messages may be turned off by placing No. 1, No. 2, and No. 3 switches on master circuit board (see Figure 10 and Tables 4 and 6) assembly in appropriate positions.

Three point of sale display messages are available to choose from and may be programmed by placing switch No. 1, No. 2, and No. 3 on DIP SWITCH assembly on master circuit board in appropriate positions. See Figure 10 and Tables 4 and 6 and program desired point of sale display message which will be displayed on message display.

ADJUSTING “VIS SET” (PRODUCT VISCOSITY) OF DISPENSED PRODUCT

Adjusting “VIS SET” (PRODUCT VISCOSITY) determines what product consistency of the dispensed product will be present in each freeze cylinder. Adjust “VIS SET”(PRODUCT VISCOSITY) of the dispensed product as follows:

1. Refer to PROGRAMMING MAIN MENU SELECTIONS ONTO MESSAGE DISPLAY and bring up “VIS SET” on message display.
2. Press “DEFROST” (SELECT) switch to bring up numbers on message display.

NOTE: The direction of arrows () on message display indicates which set of numbers belongs to which freeze cylinder. A No. 4 setting indicates the thinnest product consistency of dispensed product and a No. 12 setting indicates the thickest consistency of product dispensed.

3. Press “CANCEL DEFROST” (ADVANCE) switch. The left–side freeze cylinder viscosity number will be flashing on message display.
4. Press “CANCEL DEFROST” (ADVANCE) switch to advance viscosity number to desired setting. Press “DEFROST” (SELECT) switch to lock in viscosity setting. The right–side freeze cylinder viscosity number will now be flashing.
5. Press “CANCEL DEFROST” (ADVANCE) switch to advance viscosity number to desired setting. Press “DEFROST” (SELECT) switch to lock in viscosity setting.
6. Press “ERROR RESET” switch two times to exit from MENU SELECTIONS.

“VIS READ” (ACTUAL VISCOSITY READOUT) OF PRODUCT IN FREEZE CYLINDERS

“VIS READ” (ACTUAL VISCOSITY READOUT) may be brought up on message display to actually read the viscosity (product consistency) of the product in the freeze cylinders while the Unit is in operation. Bring “VIS READ” up on message display as follows:

1. Refer to PROGRAMMING MENU SELECTIONS ON MESSAGE DISPLAY and bring up “VIS READ” of product in freeze cylinders.
2. Press “DEFROST” (SELECT) switch to bring up actual viscosity readout of product in each freeze cylinder.
3. Press “ERROR RESET” switch two times to exit from MENU SELECTIONS.

DISPLAYED EVAPORATOR REFRIGERATION COILS INLETS AND COMMON OUTLET SENSORS TEMPERATURES.

Evaporator refrigeration coils inlet and common outlet temperature readings in degrees Fahrenheit may be displayed on message displays as follows:

1. Refer to PROGRAMMING MENU SELECTIONS ON MESSAGE DISPLAY and bring up “SENSORS” (TEMPERATURES READOUT)on message display.
2. Press “DEFROST” (SELECT) switch to bring up evaporator refrigeration coils inlet and common outlet temperature readings in degrees Fahrenheit.
3. Press ‘ERROR RESET” switch two times to exit from MENU SELECTIONS.

“VOLTAGE” (DISPLAYED VOLTAGE READOUT)

Displayed voltage readout may be displayed on message display as follows:

1. Refer to PROGRAMMING MENU SELECTIONS ON MESSAGE DISPLAY and bring up ‘‘VOLTAGE’’ (DISPLAYED VOLTAGE READOUT) on message display.
2. Press ‘‘DEFROST’’ (SELECT) switch to bring up voltage readout on message display.
3. Press ‘‘ERROR RESET’’ switch two times to exit from MENU SELECTIONS.

PROGRAMMING COMPONENTS ‘‘DIAGNOSE’’ (DIAGNOSTIC MODE) INTO UNIT

‘‘DIAGNOSE’’ (DIAGNOSTIC MODE) may be programmed into the Unit to check certain components for operation. Program ‘‘DIAGNOSE’’ into Unit and check components for proper operation as follows:

1. Refer to PROGRAMMING MAIN MENU SELECTIONS ONTO MESSAGE DISPLAY and bring up the word ‘‘CLOCK’’ on display.
2. Press ‘‘CANCEL DEFROST’’ (ADVANCE) switch to bring up ‘‘DIAGNOSE’’ menu on message display. Press ‘‘DEFROST’’ (SELECT) switch to lock in place. The word ‘‘MOTOR 1’’ will appear on message display.
3. Press ‘‘DEFROST’’ (SELECT) switch. No. 1 beater motor will start and operate while switch is pressed.
4. Press ‘‘CANCEL DEFROST’’ (ADVANCE) switch to advance and bring up the word ‘‘MOTOR 2’’ on message display.
5. Press ‘‘DEFROST’’ (SELECT) switch. No. 2 beater motor will start and operate while switch is pressed.
6. Press ‘‘CANCEL DEFROST’’ (ADVANCE) switch to advance and bring up ‘‘DEFROST 1’’ on message display.
7. Press ‘‘DEFROST’’ (SELECT) switch. No. 1 defrost relay will click when switch is pressed.
8. Press ‘‘CANCEL DEFROST’’ (ADVANCE) switch to advance and bring up ‘‘DEFROST 2’’ on message display.
9. Press ‘‘DEFROST’’ (SELECT) switch. No. 2 defrost relay will click when switch is pressed.
10. Press ‘‘CANCEL DEFROST’’ (ADVANCE) switch to advance and bring up ‘‘SYRUP 1’’ on message display.
11. Press ‘‘DEFROST’’ (SELECT) switch. No. 1 syrup solenoid relay will click when switch is pressed.
12. Press ‘‘CANCEL DEFROST’’ (ADVANCE) switch to advance and bring up ‘‘SYRUP 2’’ on message display.
13. Press ‘‘DEFROST’’ (SELECT) switch. No.2 syrup solenoid relay will click when switch is pressed.
14. Press ‘‘CANCEL DEFROST’’ (ADVANCE) switch to advance and bring up ‘‘WATER 1’’ on message display.
15. Press ‘‘DEFROST’’ (SELECT) switch. No. 1 carbonated water solenoid relay will click when switch is pressed.
16. Press ‘‘CANCEL DEFROST’’ (ADVANCE) switch to advance and bring up ‘‘WATER 2’’ on message display.
17. Press ‘’DEFROST’’ (SELECT) switch. No. 2 carbonated water solenoid relay will click when switch is pressed.
18. Press ‘‘CANCEL DEFROST’’ (ADVANCE) switch to advance and bring up ‘‘RF SOL 1’’ on message display.
19. Press ‘‘DEFROST’’ (SELECT) switch. Refrigeration relay clicks when switch is pressed.
20. Press ‘‘CANCEL DEFROST’’ (ADVANCE) switch to advance and bring up ‘‘RF SOL 2’’ on message display.
21. Press ‘‘DEFROST’’ (SELECT) switch. No. 2 refrigeration solenoid clicks when switch is pressed.

22. Press ‘‘CANCEL DEFROST’’ (ADVANCE) switch to advance and bring up ‘‘COMPRESS’’ on Message display.

23. Press ‘‘DEFROST’’ (SELECT) switch. Compressor and condenser fan motor will start and operate while switch is pressed.

24. Press ‘‘CANCEL DEFROST’’ (ADVANCE) switch to advance and bring up ‘‘H_2O PUMP’’ on message display.

25. Press ‘‘DEFROST’’ (SELECT) switch. Carbonator water pump relay on master circuit board clicks when switch is pressed.

26. ‘‘ERROR RESET’’ switch two times to exit from MENU SELECTIONS.

Table 7. “TOTALS” (DISPLAYED CYCLES AND HOURS TOTALS) MENU	
TOTALS MENU COMMANDS	DESCRIPTION
COMP HRS	COMPRESSOR RUN HOURS
COMP CYC	COMPRESSOR CYCLES X 100
DFSTYC1	DEFROST SIDE 1 CYCLES
DFSTYC2	DEFROST SIDE 2 CYCLES
BLDRCYC1	BLENDER SIDE 1 CYCLES X 100
BLDRCYC2	BLENDER SIDE 2 CYCLES X 100
SOLDOUT 1	SOLDOUT SYRUP SIDE 1
SOLDOUT 2	SOLDOUT SYRUP SIDE 2
BMTRHRS1	BEATER MOTOR 1 HOURS
BMTRHRS2	BEATER MOTOR 2 HOURS
PWR ON	POWER ON HOURS
AUTO ON 1	AUTO SIDE 1 HOURS
AUTO ON 2	AUTO SIDE 2 HOURS
ERR HRS 1	ERROR SIDE 1 HOURS
ERR HRS 2	ERROR SIDE 2 HOURS
SLEEP HRS	SLEEP MODE HOURS
SYR MIN 1 (see note)	SYRUP MINUTE (SIDE 1)
SYR MIN 2 (see note)	SYRUP MINUTE (SIDE 2)
NOTE: Displaying “SYR MIN 1” or “SYR MIN 2” on message display will indicate time in minutes syrup actually has been dispensed. refer to table and formula below to calculate how much syrup has be dispensed.	

BRIX	“A”
11.0	0.1358
11.5	0.1420
12.0	0.1481
12.5	0.1543
13.0	0.1605
13.5	0.1337
14.0	0.1728
14.5	0.1790
15.0	0.1852
15.5	0.1914
16.0	0.1975

GALLONS = “A” x SYRUP MINUTES

Using the above table, choose the “A” number that corresponds to your BRIX setting. Multiply the “A” number by the syrup minutes reading to obtain the amount (gallons) of syrup used.

Table 8.DISPLAYED ERROR CONDITIONS					
		Items Affected By Error			
Message Displayed	**Error**	**Beater Motor 1**	**Beater Motor 2**	**Refrig 1**	**Refrig 2**
Motor 1	Low current, < 109, Sensed on motor one	OFF		OFF	
Motor 2	Low current, < 109, Sensed on motor two		OFF		OFF
Motor 1	High current, > 255, Sensed on motor one	OFF		OFF	
Motor 2	High current, > 255, Sensed on motor one		OFF		OFF
Refrig	Maximum Run Time on Compressor	OFF	OFF	OFF	OFF
Syrup 1	Syrup Out Side One			OFF	
Syrup 2	Syrup Out Side Two				OFF
CO_2 OUT	CO_2 Out			OFF	OFF
H_2O OUT	H_2O Out			*OFF	*OFF
SENSOR 1	Temp. Sensor Inlet One	OFF	OFF	OFF	OFF
SENSOR 2	Temp. Sensor Inlet Two	OFF	OFF	OFF	OFF
SENSOR 3	Temp. Sensor Outlet	OFF	OFF	OFF	OFF
* The refrigeration system and carbonator shall continue to operate for 1/5 minutes after a water pressure Loss has been detected. If water pressure loss continues beyond 1.5 minutes, the refrigeration system and carbonator will stop.					

DISPLAYING “TOTALS” (DISPLAYED CYCLES AND HOURS TOTALS) ONTO MESSAGE DISPLAY (see Tables 3 and 7).

“TOTALS” (DISPLAYED CYCLES AND HOURS TOTALS) may be displayed on message display as follows:

1. Refer to PROGRAMMING MAIN MENU SELECTION ONTO MESSAGE DISPLAY and bring up the word “CLOCK” on message display.
2. Repeatedly press and release “CANCEL DEFROST” (ADVANCE) switch to advance through main menu until “TOTALS” menu appears on message display. Press “DEFROST” (SELECT) switch to lock “TOTALS” menu in place. The word “COMP HRS” will appear on message display.
3. Press and hold “DEFROST” (SELECT) switch. Compressor run hours will appear on message display.
4. Press “CANCEL DEFROST” (ADVANCE) switch to advance and bring up “COMP CYC” on message display.
5. Press and hold “DEFROST” (SELECT) switch. Compressor cycles x 100 will appear on message display.
6. Use CANCEL DEFROST (ADVANCE) switch to advance through remaining “TOTALS” (DISPLAYED CYCLES AND HOURS TOTAL MENU) see Table 7. Press “DEFROST” (SELECT) switch to obtain message display readings of the individual menu selections.
7. Press “ERROR RESET” switch two times to exit from MENU SELECTIONS.

DISPLAYED ERROR CONDITIONS

Displayed error conditions, associated errors, and items affected by the errors are found in TABLE 8.

CLEANING AND SANITIZING

DAILY CLEANING OF UNIT

Daily, or more often if necessary, wash all external surfaces of Unit with a mild soap solution. Rinse with clean water, then wipe dry with a clean soft cloth. DO NOT USE ABRASIVE–TYPE CLEANERS. Remove and wash drip tray in mild soap solution, rinse with clean water, then install drip tray on Unit.

NOTE: The Unit should be sanitized every 90–days following Sanitizer Manufacturer's recommendation. Use Chlor–Tergent (Oakite Products, Inc.) or equivalent sanitizer.

The Unit should be sanitized every 90–days and before and after storage periods following parent company requirements and sanitizer manufacturer's recommendations. One or all syrup systems may be sanitized at one time for routine 90–days sanitizing requirements. The following sanitizing instructions use No. 1 syrup system as an example. Other syrup systems sanitizing instructions are identical to No. 1 syrup system with exception of using applicable system switches. Proceed as follows:

1. Press ''OFF 2'' switch to stop beater motor and refrigeration in No. 2 freeze cylinder which is not to be defrosted. ''OFF 2'' fault message will appear on message display.
2. Press ''DEFROST'' switch to start defrost cycle on No. 1 freeze cylinder. ''DEFROST 1'' message will ppear on message display as long as defrost cycle is in progress.
3. Immediately press ''AUTO 2'' control switch to restart beater in No. 2 freeze cylinder. Refrigeration in No. 2 cylinder will not be operating.
4. Remove right–hand side panel as instructed for access to No. 2 product blender tank product shutoff valve.
5. Close No. 2 product blender tank product shutoff valve to prevent product bleeding back into No. 1 product blender tank during sanitizing procedure.

IMPORTANT: The following CO_2 and liquid disconnects disconnecting and connecting procedure for soft drink tank replacement or filling soft drink tank in place must be performed in order as follows:

To disconnect soft drink tank from Unit syrup system

c. Disconnect liquid disconnect from soft drink tank. NOTE – Disconnecting liquid quick disconnect from soft drink tank first prevents syrup from backflowing through Unit syrup flow regulator which may alter regulator adjustment.

d. Second, disconnect CO_2 quick disconnect from soft drink tank.

To connect soft drink tank into Unit syrup system

a. First, connect CO_2 quick disconnect to soft drink tank to pressurize tank.

b. Second, connect liquid quick disconnect to soft drink tank.

6. Disconnect soft drink tank containing syrup from No. 1 syrup system.
7. Connect clean empty soft drink tank into No. 1 syrup system.
8. Place waste container under No. 1 cylinder dispensing valve nozzle. Open dispensing valve and dispense all product from cylinder. As product level lowers in cylinder, partially close valve to avoid spurting.
9. Remove Unit front lower access panel as instructed for access to No. 1 product blender tank product sample valve.
10. Place waste container under No. 1 product blender tank product sample valve. Slowly open valve and purge remaining product out of tank, then close valve.
11. Disconnect empty soft drink tank from No. 1 syrup system.
12. Refer to DISPENSING VALVES CAGED O–RINGS AND DRIVE SHAFTS SEALS ASSEMBLIES under LUBRICATION and perform procedure to lubricate dispensing valve caged O–ring and drive shaft seal assembly.

WARNING: To avoid possible personal injury or property damage, do not attempt to remove soft drink tank cover until CO_2 pressure has been released from tank.

13. Pull up on empty soft drink tank cover relief valve to release CO_2 pressure from tank.

WARNING: If powder type sanitizer is used, it must be thoroughly dissolved with water prior to adding to soft drink tank.

NOTE: Sanitizing solution is used in a more concentrated form because it will be diluted approximately four–to–one in product blender tank.

14. Using clean empty soft drink tank, prepare full tank of sanitizing solution using Chlor–Tergent (Oakite Products, Inc.) or equivalent sanitizer. Mix sanitizing solution by using 70° F to 100° F (max) plain water and 2.65 oz/gallon sanitizer. This mixture will provide 800–ppm of chlorine. Sanitizing solution will be diluted to approximately 200–ppm inside product blender tank after carbonated water has been mixed with sanitizing solution.

15. Shake sanitizing solution tank to thoroughly mix solution, then connect tank into No. 1 syrup system.

16. Press ‘‘FILL 1’’ switch to fill No. 1 syrup system syrup float switch with sanitizing solution. ‘‘SYRUP 1’’ fault message on message display will go out indicating syrup float switch has been filled with sanitizing solution.

17. Press ‘‘AUTO BLEND 1’’ switch to fill No. 1 product blender tank with sanitizing solution. Carbonator water pump will start and begin pumping carbonated water into product blender tank which will dilute sanitizing solution also entering tank.

18. After carbonator water pump cycles off, completely fill No. 1 freeze cylinder with sanitizing solution by repeatedly pulling and releasing relief valve knob on freeze cylinder faceplate and until sanitizing solution comes out of relief valve port. Open dispensing valve until sanitizing solution flows from valve, then close valve. Open product blender tank sample valve until sanitizing solution flows from valve, then close valve.

19. Press ‘‘WASH 1’’ switch to start No. 1 freeze cylinder beater. Allow sanitizing solution to remain in freeze cylinder for no less than ten or no more than 15–minutes (max) contact time.

20. When sanitizing solution contact time has elapsed, press ‘‘OFF 1’’ switch to stop No. 1 freeze cylinder beater.

21. Hold appropriate container under dispensing valve and dispense until soft drink tank containing sanitizing solution is empty and all sanitizing solution has been dispensed from freeze cylinder. As sanitizing solution level lowers in freeze cylinder, partially close valve to avoid spurting. Dispose of sanitizing solution in a safe way.

22. Place waste container under No. 1 system product sample valve. Slowly open valve and purge remaining sanitizing solution out of product blender tank, then close valve.

23. Disconnect empty sanitizing solution tank from No. 1 syrup system.

24. Connect soft drink tank containing syrup into No. 1 syrup system.

WARNING: Flush residual sanitizing solution from syrup system as instructed. Residual solution left in system could create a health hazard.

25. Press ‘‘FILL 1’’ switch to fill No. 1 syrup system syrup float switch with syrup. ‘‘SYRUP 1’’ fault message on message display will go out indicating syrup float switch has been filled with syrup.

26. Press ‘‘AUTO BLEND 1’’ switch to fill No. 1 product blender tank with product. Carbonator water pump will start and begin pumping carbonated water into product blender tank along with syrup to make product.

27. After carbonator water pump cycles off, completely fill No. 1 freeze cylinder with product by repeatedly pulling and releasing faceplate relief valve and until product comes out of relief valve port. Open dispensing valve until product flows from valve, then close valve. Open No. 1 system product sample valve until product flows from valve, then close valve.

28. Press ‘‘WASH 1’’ switch to start No. 1 freeze cylinder beater. Allow beater to operate for approximately five minutes, then press ‘‘OFF 1’’ switch to stop beater.

29. Disconnect soft drink tank containing syrup from No. 1 syrup system.

30. Connect clean empty soft drink tank into No. 1 syrup system.

31. Hold appropriate container under dispensing valve and dispense until all product has been dispensed from freeze cylinder. As product level lowers in freeze cylinder, partially close valve to avoid spurting.

32. Place waste container under No. 1 system product sample valve. Slowly open valve and purge remaining product out of product blender tank, then close valve.

33. Disconnect empty soft drink tank from No. 1 syrup system and install tank containing syrup.

34. Press ‘‘FILL 1’’ switch to fill No. 1 syrup system syrup float switch with syrup. ‘‘SYRUP 1’’ fault message on message display will go out indicating syrup float switch has been filled with syrup.

35. Press ‘‘AUTO BLEND 1’’ switch to fill No. 1 product blender tank with product. Carbonator water pump will start and begin pumping carbonated water into product blender tank along with syrup to make product.

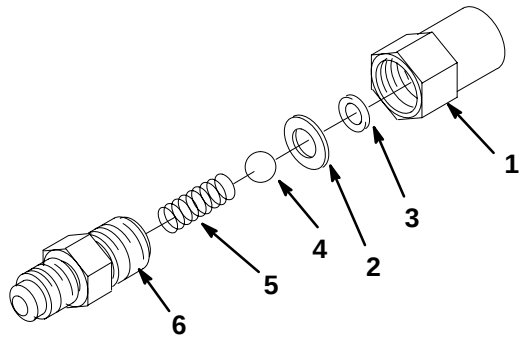
CAUTION: Do not relieve freeze cylinder pressure too fast or product will foam excessively in cylinder and lose carbonation.

36. After carbonator water pump cycles off, intermittently pull and release No. 1 freeze cylinder faceplate relief valve. This bleeds CO_2 from freeze cylinder and allows product to enter and fill cylinder.

37. Open No. 2 product blender tank product shutoff valve.

38. Press both ‘‘AUTO 1’’ and ‘‘AUTO 2’’ switches to start both freeze cylinders beaters and refrigeration system. Product will be ready for dispensing in approximately 10–minutes.

39. Install right–hand side panel and front lower access panel by reversing removal procedure.



Index No	Part No	Name
1	317963	Housing
2	312415	Flat Washer, Stainless Steel
3	312418	Ball Seat (quad ring)
4	312419	Ball
5	312196	Spring
6	317965	Retainer

FIGURE 11. LIQUID CHECK VALVE ASSEMBLY

YEARLY (OR AFTER WATER SYSTEM DISRUPTION)

WARNING: The carbonators water pumps water strainer screens and double liquid check valves must be inspected and serviced after any disruptions (plumbing work, earthquake, etc.) to the water supply system, and at least once a year under normal circumstances. Water pumps with no strainer screens or defective screens would allow foreign particles to foul the double liquid check valves. CO_2 gas could then back flow into water system and create health hazard in water system.

SERVICING CARBONATORS WATER PUMPS WATER STRAINER SCREENS

(see Figure 12)

1. Press ‘‘OFF 1’’ and ‘‘OFF 2’’ switches to stop freeze cylinders beaters and refrigeration systems.
2. Disconnect electrical power from Unit.
3. Close CO_2 cylinder and water inlet supply line shutoff valve.
4. Remove Lower front access panel and left–side panel as instructed for access to the water pump water strainer screen.
5. Pull up on each carbonator tank relief valve plastic cover to release CO_2 pressure from tanks.
6. Loosen screen retainer in water pump port, then remove screen retainer and strainer screen from port.
7. Pull strainer screen from screen retainer. Clean any sediment from screen retainer and water pump port.
8. Inspect strainer screen for holes, restrictions, corrosion, and other damage. Discard damaged strainer screen.
9. Check O–ring on screen retainer. Replace worn or damaged O–ring (P/N 315349000).

NOTE: Strainer screen should always be used otherwise particles could foul double liquid check valve.

10. Install good or new strainer screen (P/N 315348–000) in screen retainer, then screw retainer into water pump port and tighten securely.
11. Service other carbonator water pump water strainer screen by repeating steps 6 through 10 preceding.
12. Proceed to SERVICING CARBONATORS WATER PUMPS DOUBLE LIQUID CHECK VALVES.

SERVICING CARBONATORS WATER PUMPS DOUBLE LIQUID CHECK VALVES (see Figures 2 and 12)

1. Service water pump water strainer screen before servicing water pump double liquid check valve.
2. Disconnect carbonator tank water line from double liquid check valve assembly outlet.
3. Remove double liquid check valve assembly from elbow in water pump outlet port. Retain white tapered gasket inside inlet (female) end of double liquid check valve.
4. Disassemble each check valve as shown in Figure 11.
5. Wipe each part with clean lint–free cloth. Inspect each part, especially ball for burrs, nicks, corrosion, deterioration, and other damage. Discard ball seat and any damaged or suspicious parts and replace with new parts during reassemble.
6. Reassemble liquid check valves as shown in Figure 11. ALWAYS INSTALL NEW BALL SEAT (QUAD RING) P/N 312418–000.

NOTE: Make sure when assembling check valves together, check valve female end with white tapered gasket inside is on inlet side of double liquid check valve assembly.

7. Assemble check valves together. DO NOT OVERTIGHTEN.
8. Make sure white tapered gasket is in place inside female end of double liquid check valve assembly, then install check valve assembly on elbow in water pump outlet port.
9. Connect carbonator tank water line to double liquid check valve assembly outlet. DO NOT OVERTIGHTEN.
10. Service other carbonator water pump double liquid check valve by repeating steps 2 through 9 preceding.

11. Open CO_2 cylinder and water inlet supply lines shutoff valves. Check for water leaks and tighten any loose connections.

12. Install Unit back panel by reversing removal procedure.

13. Connect electrical power to Unit.

14. Press both ‘‘AUTO BLEND 1’’ and ‘‘AUTO BLEND 2’’ switches.

15. Press both ‘‘AUTO 1’ ’and ‘‘AUTO’’ switches to start freeze cylinders beaters and refrigeration system.

REPLENISHING SYRUP SUPPLY

NOTE: Sugar free diet syrups cannot by used with this Unit.

Although syrup replenishing can be done anytime, syrup supply must be replenished when either ‘‘SYRUP 1’’ or ‘‘SYRUP 2’’ fault messages are displayed on message display indicating either No. 1 or No. 2 syrup system soft drink tank is empty.

NOTE: The following instructions are applicable only when replenishing syrup supply. Refer to SYRUP FLAVOR CHANGE when changing syrup flavors.

1. Press applicable ‘‘OFF 1’’ or ‘‘OFF 2’’ switch to stop applicable freeze cylinder beater and refrigeration system.

IMPORTANT: The following CO_2 and liquid disconnect disconnecting and connecting procedure for soft drink tank replacement or filling soft drink tank in place must be performed in order as follows:

<u>To disconnect soft drink tank from Unit syrup system.</u>

a. Disconnect liquid disconnect from soft drink tank. NOTE – Disconnecting liquid quick disconnect from soft drink tank first prevents syrup from backflowing through Unit syrup flow regulator which may alter regulator adjustment.

b. Second, disconnect CO_2 quick disconnect from soft drink tank.

<u>To connect soft drink tank into Unit syrup system.</u>

a. First, connect CO_2 quick disconnect to soft drink tank to pressurize tank.

b. Second, connect liquid quick disconnect to soft drink tank.

2. Disconnect inlet (CO_2) and outlet (syrup) lines from empty soft drink tank.

3. Check soft drink tank quick disconnects for sticky or restricted operation. Rinse disconnects in warm water.

4. First, pressurize full soft drink tank by connecting CO_2 line to tank, then connect Unit syrup inlet line to tank.

5. Press applicable ‘‘FILL 1’’ or ‘‘FILL 2’’ switch to fill applicable No. 1 or No. 2 syrup system syrup float switch with syrup.

6. Press applicable ‘‘AUTO BLEND 1’’ or ‘‘AUTO BLEND 2’’ switch to fill applicable No. 1 or No. 2 system product blender tank with product.

7. Press applicable ‘‘AUTO 1’’ or ‘‘AUTO 2’’ switch to start refrigeration system and beater in applicable No. 1 or No. 2 freeze cylinder.

8. If freeze cylinder is not full of product, repeatedly pull and release faceplate relief valve to slowly bleed CO_2 from freeze cylinder and allow product to fill cylinder. Do not relieve freeze cylinder pressure too fast or product will foam excessively in cylinder and lose carbonation.

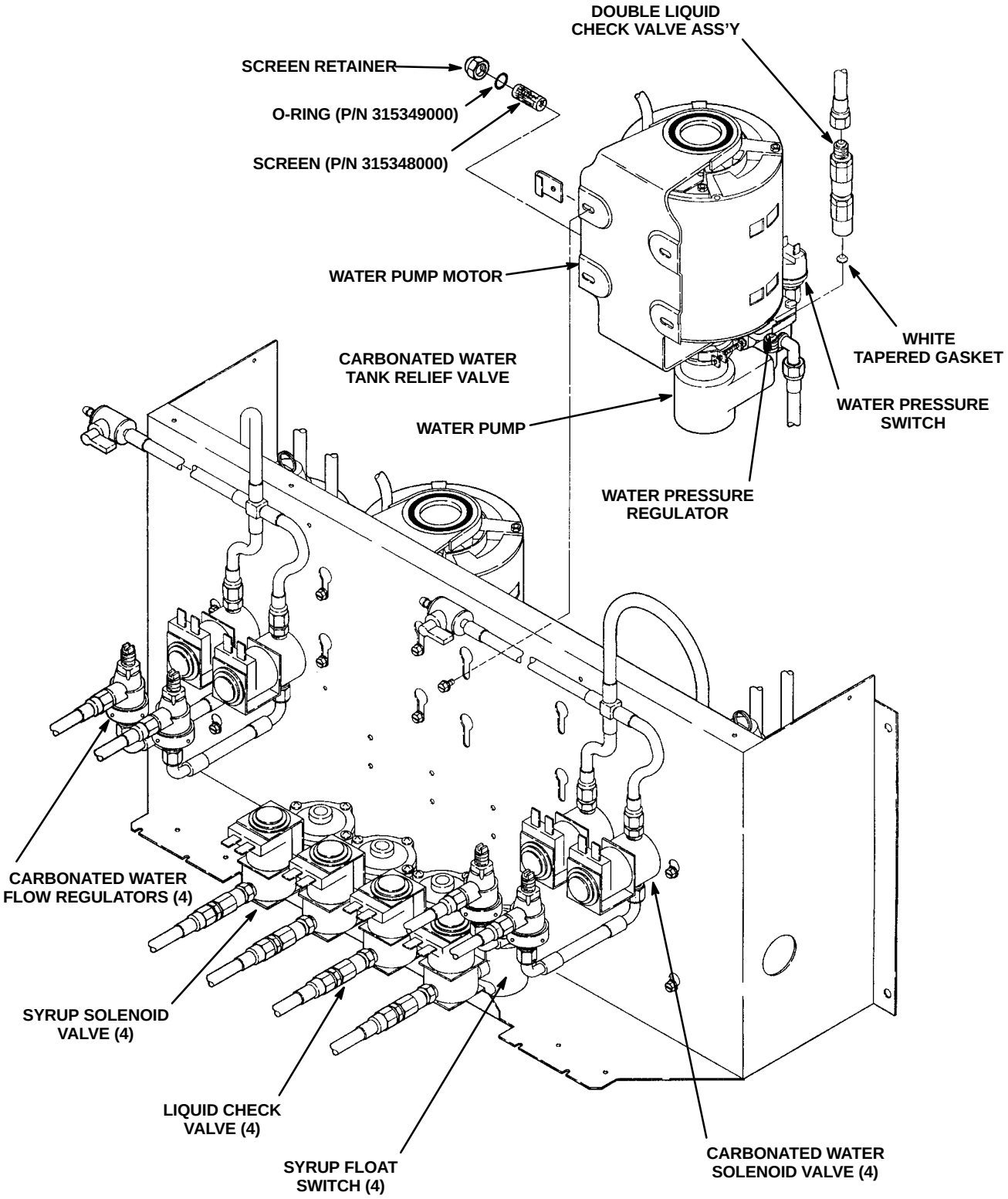


FIGURE 12. WATER STRAINER SCREEN AND DOUBLE LIQUID CHECK VALVE

REPLENISHING CO_2 SUPPLY

WARNING: CO_2 displaces oxygen. Strict attention *must* be observed in the prevention of CO_2 (carbon dioxide) gas leaks in the entire CO_2 and soft drink system. If a CO_2 gas leak is suspected, particularly in a small area, *immediately* ventilate the contaminated area before attempting to repair the leak. Personnel exposed to high concentration of CO_2 gas will experience tremors which are followed rapidly by loss of consciousness and suffocation.

NOTE: When indicator on primary CO_2 cylinder regulator assembly 1800–psi gage is in shaded ("change CO_2 cylinder") portion of the dial, CO_2 cylinder is almost empty and should be changed.

1. Fully close (clockwise) CO_2 cylinder valve.
2. Slowly loosen CO_2 regulator assembly coupling nut allowing CO_2 pressure to escape, then remove regulator assembly from empty CO_2 cylinder.
3. Unfasten safety chain and remove empty CO_2 cylinder.

WARNING: To avoid personal injury and/or property damage, always secure CO_2 cylinder in an upright position with safety chain to prevent it from falling over. Should the shutoff valve become accidentally broken off, CO_2 cylinder can cause serious personal injury.

4. Position CO_2 cylinder and secure with safety chain.
5. Make sure gasket is in place inside CO_2 regulator coupling nut, then install regulator on CO_2 cylinder.
6. Open (counterclockwise) CO_2 cylinder valve slightly to allow lines to slowly fill with gas, then open valve fully to back–seat valve. (Back–seating valve prevents leakage around valve shaft.)
7. Check CO_2 connections for leaks. Tighten loose connections.

SYRUP FLAVOR CHANGE

One or all syrup flavors can be changed at the same time. Perform flavor change on one system as follows:

1. Perform sanitizing procedure on syrup system syrup flavor change will be made as instructed in Service and Maintenance Section.

IMPORTANT: The following CO_2 and liquid disconnects disconnecting and connecting procedure for soft drink tank replacement or filling soft drink tank in place must be performed in order as follows:

<u>To disconnect soft drink tank from Unit syrup system.</u>

a. Disconnect liquid disconnect from soft drink tank. NOTE – Disconnecting liquid quick disconnect from soft drink tank first prevents syrup from backflowing through Unit syrup flow regulator which may alter regulator adjustment.

b. Second, disconnect CO_2 quick disconnect from soft drink tank.

<u>To connect soft drink tank into Unit syrup system.</u>

a. First, connect CO_2 quick disconnect to soft drink tank to pressurize tank.

b. Second, connect liquid quick disconnect to soft drink tank.

2. First, pressurize soft drink tank containing new flavor syrup by connecting CO_2 line to tank, then connect Unit syrup inlet line to tank.
3. Press applicable "FILL 1" or "FILL 2" switch to fill applicable No. 1 or No. 2 syrup system syrup float switch with syrup.

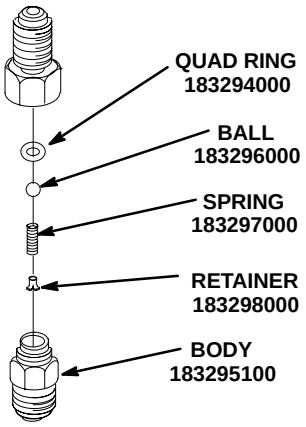
4. Press applicable ‘‘AUTO BLEND 1’’ or ‘‘AUTO BLEND 2’’ switch to fill applicable No. 1 or No. 2 system product blender tank with product.

5. Press applicable ‘‘AUTO 1’’ or ‘‘AUTO 2’’ switch to start refrigeration system and beater in applicable No. 1 or No. 2 freeze cylinder.

CAUTION: Do not relieve freeze cylinder pressure too fast or product will foam excessively in freeze cylinder and lose carbonation.

6. After carbonator water pump cycles off, intermittently pull and release applicable No. 1 or No. 2 freeze cylinder faceplate relief valve. This bleeds CO_2 from freeze cylinder and allows product to enter and fill cylinder.

7. If necessary, adjust BRIX, product viscosity (product consistency), and product carbonation of dispensed product as instructed.



QUAD RING SEAL *MUST* BE REPLACED EACH TIME CHECK VALVE IS SERVICED.

FIGURE 13. CO_2 GAS CHECK VALVE

CLEANING CO_2 GAS CHECK VALVES (see Figures 2 and 13)

The CO_2 gas check valves must be inspected and serviced at least once a year under normal conditions and after any servicing or disruption of the CO_2 system. ALWAYS REPLACE QUAD RING SEAL EACH TIME GAS CHECK VALVES ARE SERVICED.

REPLACING FREEZE CYLINDER BEATER DRIVE SHAFT BEARING

(see Figures 4, 8 and 14)

SHUTTING UNIT DOWN

1. Press ‘‘DEFROST’’ switch to defrost product in freeze cylinders.

2. After defrost cycle is completed, press ‘‘OFF 1’’ and ‘‘OFF 2’’ control switches to stop refrigeration system and beaters motors.

3. Disconnect electrical power to Unit.

4. Remove back and applicable side panels as instructed.

5. Close product shutoff valve leading from product blender tank to freeze cylinder beater drive shaft.

6. Drain product from freeze cylinder.

REMOVING BEATER DRIVE MOTOR AND BEATER DRIVE SHAFT ASS'Y FROM UNIT

1. Remove access cover plate from back of beater drive motor for access to motor electrical terminals.

2. Tag motor electrical wiring for identification, then disconnect wiring from motor terminals.

3. Remove bolts and lockwashers securing beater motor to Unit frame.

4. While supporting back of motor, remove U–bolt hanger and its two spacers from around motor.

5. Very carefully, pull beater drive motor out of Unit. BE CAREFUL NOT TO LOSE PLASTIC COUPLER LOCATED BETWEEN BEATER DRIVE MOTOR SHAFT COUPLING AND BEATER DRIVE SHAFT ASSEMBLY COUPLING.

NOTE: Items in parentheses are in reference to Figure 4.

6. Remove HEX NUTS (item 7) and FLATWASHERS (item 6) securing FACEPLATE (item 8) to freeze cylinder, then remove faceplate.

7. Remove beater shaft and scraper blades from inside freeze cylinder.

8. Pull beater drive shaft seal assembly from socket in back of freeze cylinder using Cornelius Puller (P/N 322063–000).

9. Pull beater drive shaft assembly out back of freeze cylinder.

INSTALLING BEATER DRIVE SHAFT BEARING ASS'Y (see Figure 14)

IMPORTANT: Bearing retaining collar has a special cam action that locks it up tightly against bearing inner race when properly installed. Cam–action type bearing retaining collar prevents bearing inner race from turning on beater drive shaft and prevents drive shaft from working in and out of freeze cylinder causing a knock when in operation.

1. Loosen allen–type setscrew securing bearing retaining collar on beater drive shaft. Rotate collar slightly to the left (counterclockwise) to unlock cam action from bearing inner race, then remove collar and bearing from shaft.

2. Remove boot from old and install on new bearing.

3. Install new bearing, with boot in place, on beater drive shaft.

4. Install bearing retaining collar as follows:

   A. a. Slide bearing retaining collar up on beater drive shaft to bearing inner race.

   B. Rotate bearing retaining collar to the right (clockwise) so its cam action locks it securely against bearing inner race. When in locked position, its allen–type setscrew must align with flat on beater drive shaft.

   C. Tighten allen–type setscrew to secure bearing retaining collar on beater drive shaft.

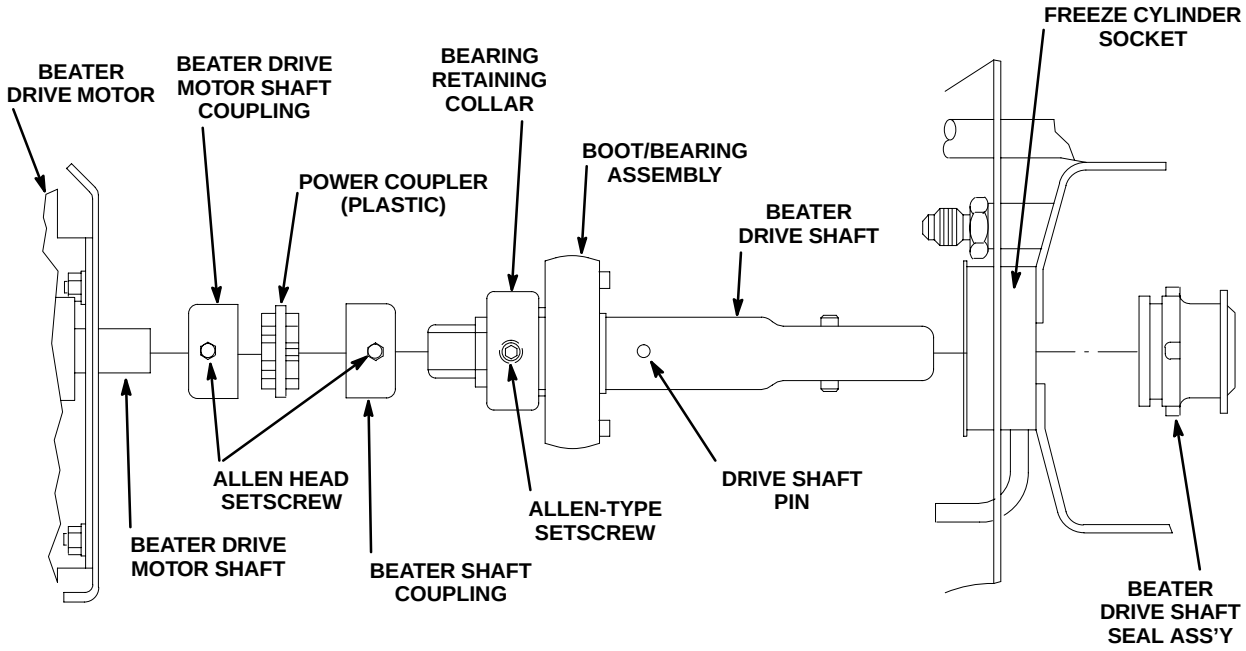


FIGURE 14. BEATER DRIVE MOTOR AND SHAFT SEAL ASS'Y REPLACEMENT

INSTALLING BEATER DRIVE SHAFT ASS'Y AND BEATER DRIVE MOTOR IN UNIT

NOTE: Use Beater Drive Shaft Assembly Alignment Tool Kit (P/N 0726) when installing beater drive shaft assembly.

1. Lubricate beater drive shaft bearing boot with DOW–CORNING DC–111 (P/N 321471–000) light grade silicone lubricant.
2. Install beater drive shaft assembly in freeze cylinder.
3. Place plastic power coupler in beater drive motor shaft coupling. TAPE POWER COUPLER TO MOTOR SHAFT COUPLING TO PREVENT COUPLER FROM FALLING OUT DURING INSTALLATION OF MOTOR IN UNIT.
4. Very carefully, slide beater drive motor shaft through hole in Unit frame up to coupling on end of beater drive shaft assembly.
5. Engage plastic coupler, on end of beater drive motor shaft, in coupling on end of beater drive shaft assembly.
6. Suspend motor in position with U–bolt and its spacers. DO NOT TIGHTEN U–BOLT NUTS AT THIS TIME.
7. Secure beater drive motor to Unit frame with bolts and lockwashers.
8. Tighten U–bolt nuts securely. DO NOT OVER– TIGHTEN NUTS.
9. Connect electrical wiring to beater drive motor terminals, then install access cover plate on motor.
10. Refer to DISPENSING VALVES CAGED O–RINGS AND BEATERS DRIVE SHAFTS SEALS ASSEMBLIES under LUBRICATION and perform procedure to lubricate beater drive shaft seal assembly.
11. Carefully place shaft seal assembly over beater drive shaft and locate slots of seal retainer on drive shaft pin. Then, carefully and simultaneously push and turn plastic sleeve in notches of freeze cylinder retainer. When tabs are seated in notches, press assembly firmly in place.

12. Install beater shaft and scraper blades in freeze cylinder (see Figure 3).

13. Lubricate faceplate O–ring with water to facilitate installation, then install faceplate on Unit. Secure faceplate with hex nuts and lockwashers. DO NOT OVERTIGHTEN HEX NUTS.

RESTORING UNIT OPERATION

1. Open product shutoff valve leading from product blender tank to freeze cylinder.

2. Connect electrical power to Unit.

3. Sanitize syrup system as instructed in CLEANING AND SANITIZING.

4. Press ‘‘AUTO BLEND 1’’ and ‘‘AUTO BLEND 2’’ to begin filling freeze cylinder. Open freeze cylinder faceplate relief valve to bleed air from cylinder while filling with product, then close valve. Do not relieve freeze cylinder pressure too fast or product will foam excessively in cylinder and lose carbonation.

5. Press ‘‘AUTO 1’’ and ‘‘AUTO 2’’ switches to start freeze cylinders beaters and refrigeration system.

6. Check for leaks and repair if evident.

7. Install back and side panels by reversing removal procedure.

REPLACING BEATER DRIVE SHAFT SEAL ASS’Y (see Figures 4 and 14)

1. Refer to DISPENSING VALVES CAGED O–RINGS AND BEATER DRIVE SHAFTS SEALS ASSEMBLIES under LUBRICATION for instructions to replace beater drive shaft seal assembly.

2. Sanitize syrup system as instructed in CLEANING AND SANITIZING.

REPLACING FREEZE CYLINDER BEATER DRIVE MOTOR

(see Figure 6 and 14)

NOTE: Use Beater Drive Shaft Assembly Alignment Tool Kit (P/N 0726) when installing beater drive shaft assembly.

1. Press ‘‘OFF 1’’ and ‘‘OFF 2’’ control switches to stop refrigeration system and beaters motors.

2. Disconnect electrical power from Unit (at disconnect switch).

3. Remove back and applicable side panels as instructed.

4. Remove access cover plate from back of beater drive motor for access to electrical terminals.

5. Tag motor electrical wiring for identification, then disconnect wiring from motor terminals.

6. Remove bolts and lockwashers securing beater motor to Unit frame.

7. While supporting back of motor, remove U–bolt hanger and its two spacers from around motor.

8. Very carefully, pull old beater drive motor out of Unit. BE CAREFUL NOT TO LOSE PLASTIC COUPLER LOCATED BETWEEN BEATER DRIVE MOTOR SHAFT COUPLING AND BEATER DRIVE SHAFT ASSEMBLY COUPLING.

9. Note how far beater drive motor shaft protrudes inside coupling. Using allen wrench, loosen allen head setscrew in coupling, then remove coupling from motor shaft.

10. Install coupling on new beater drive motor shaft, then tighten allen head setscrew securely. MAKE SURE COUPLING IS INSTALLED ON MOTOR SHAFT SAME DISTANCE AS NOTED IN STEP 8) preceding.

CAUTION: New beater drive motor is provided with two gear box vent holes that are plugged with hex–socket plugs to prevent oil from leaking out of gear box. It must be determined which vent hole will be in “up’’ position when motor is in installed position. Remove “up’’ position hex–socket plug and install loose–shipped vent plug.

11. Determine which beater drive motor gear box vent hole will be in “up” position when motor is in installed position.

12. Remove hex–socket plug from vent hole and install loose–shipped vent plug. DO NOT LAY MOTOR IN POSITION THAT WILL ALLOW OIL TO LEAK OUT OF GEAR BOX THROUGH VENT PLUG.

13. Place plastic power coupler in beater drive motor shaft coupling. TAPE POWER COUPLER TO MOTOR SHAFT COUPLING TO PREVENT COUPLER FROM FALLING OUT DURING INSTALLATION OF MOTOR IN UNIT.

14. Very carefully, slide beater drive motor shaft through hole in Unit frame up to coupling on end of beater drive shaft assembly.

15. Engage plastic coupler, on end of beater drive motor shaft, in coupling on end of beater drive shaft assembly.

16. Suspend motor in position with U–bolt and its spacers. DO NOT TIGHTEN U–BOLT NUTS AT THIS TIME.

17. Secure beater drive motor to Unit frame with bolts and lockwashers.

18. Tighten U–bolt nuts securely. DO NOT OVER–TIGHTEN NUTS.

19. Connect electrical wiring to beater drive motor terminals, then install access cover plate on motor.

20. Install back and side panels.

21. Connect electrical power to Unit at disconnect switch.

22. Press “AUTO BLEND 1” and “AUTO BLEND 2” control switches, then press “AUTO 1” and “AUTO 2” switches to start freeze cylinders beaters and refrigeration system.

ADJUSTING CARBONATOR TANK LIQUID LEVEL

1. The carbonator tank liquid level (pump cut–in and cut–out) was adjusted at the factory and should require no further adjustment. However, if incorrect setting is suspected, check and make necessary adjustments as follows:

2. Remove Unit back and right–side panels as instructed for access to carbonator and carbonated water volume sample valve (see Figures 2 and 6).

3. To check carbonator tank total fill; allow carbonator water pump motor to operate and fill tank with carbonated water. After pump cycles off, disconnect Unit electrical power at disconnect switch.

4. Using container graduated in ounces, open carbonator carbonated water sample valve and completely drain carbonator tank into container. Total carbonated water volume dispensed should be 40 to 58–ounces maximum.

5. If total carbonated water dispensed is below 40–ounces, loosen screw securing level control switches actuator bracket (see Figure 15) and move actuator bracket up slightly. If more than 58–ounces, maximum of carbonated water was dispensed, move actuator bracket down, then tighten screw. MAKE ADJUSTMENTS IN SMALL INCREMENTS.

6. Connect electrical power to Unit and allow carbonator tank to fill with water and until water pump cycles off.

7. Repeat steps 2 through 5 preceding as many times as necessary until correct carbonated water volume adjustment is achieved.

8. To check differential; using container graduated in ounces, open carbonated water volume sample valve and dispense into container until carbonator water pump cycles on, then immediately close sample valve. Total volume dispensed (differential) should be 7 to 20–ounces.

9. Install back and right–side panels by reversing removal procedure.

10. Press “AUTO 1” and “AUTO 2” switches to resume normal operation.

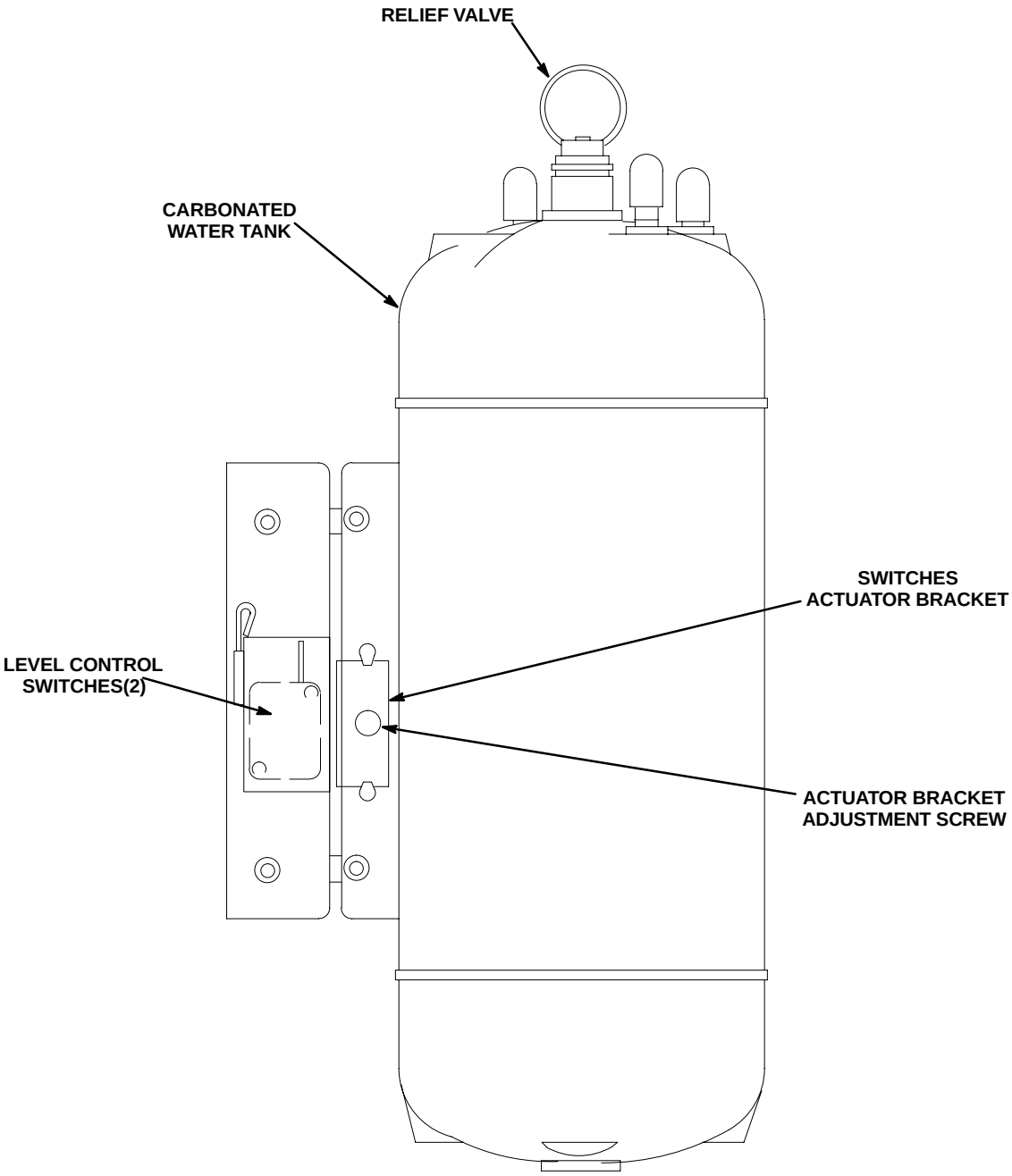


FIGURE 15. CARBONATOR LIQUID LEVEL CONTROL SWITCH ADJUSTMENT

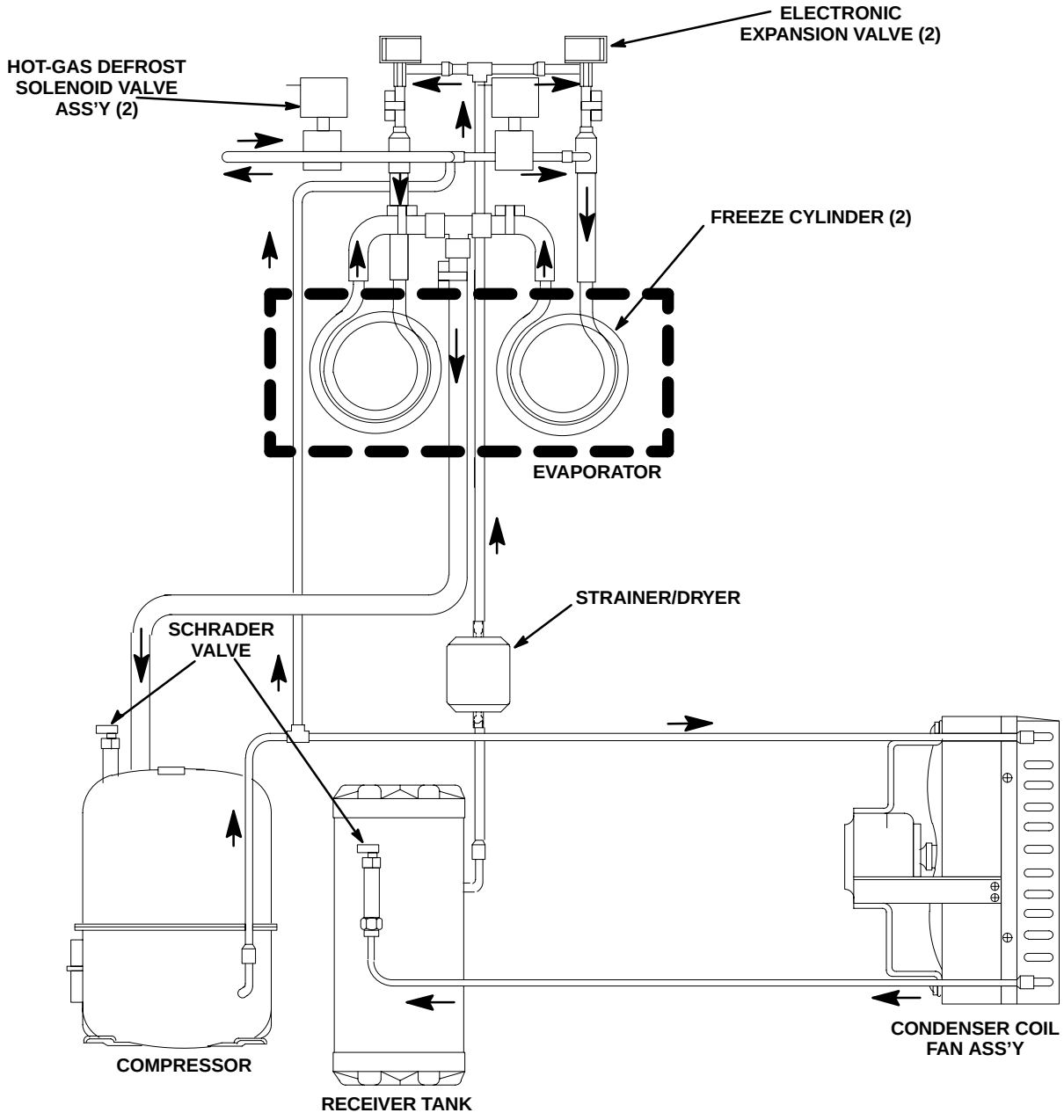


FIGURE 16. REFRIGERATION FLOW DIAGRAM (ONE OF TWO REFRIGERATION SYSTEMS SHOWN)

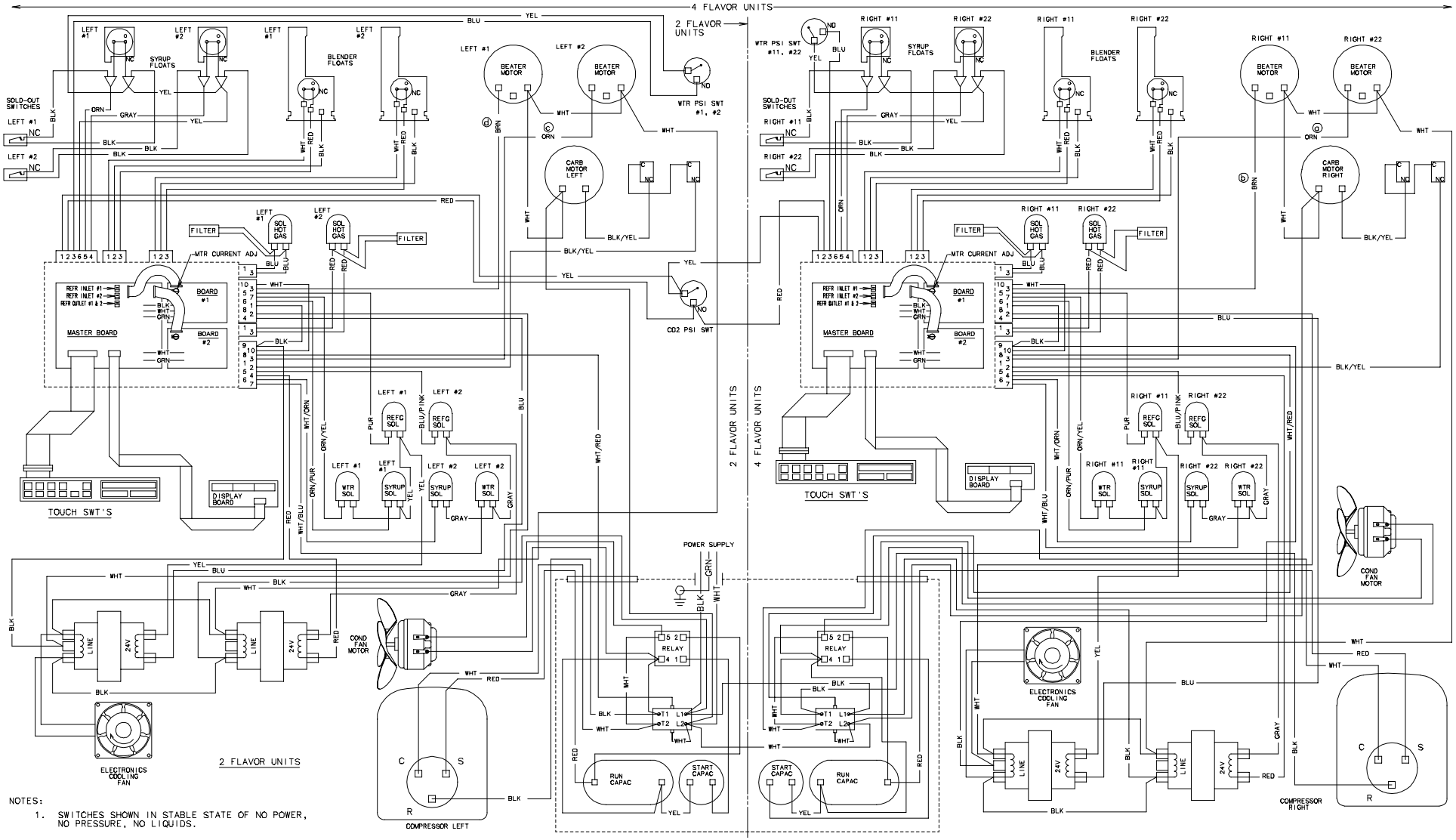


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FIGURE 17. WIRING DIAGRAM

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TROUBLESHOOTING

IMPORTANT: Only qualified personnel should service internal components or electrical wiring.

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

IMPORTANT: The following CO_2 and liquid disconnects disconnecting and connecting procedure for soft drink tank replacement or filling soft drink tank in place must be performed in order as follows:

To disconnect soft drink tank from Unit syrup system.

a.. Disconnect liquid disconnect from soft drink tank. NOTE – Disconnecting liquid quick disconnect from soft drink tank first prevents syrup from backflowing through Unit syrup flow regulator which may alter regulator adjustment.

b.. Second, disconnect CO_2 quick disconnect from soft drink tank.

To connect soft drink tank into Unit syrup system.

a.. First, connect CO_2 quick disconnect to soft drink tank to pressurize tank.

b.. Second, connect liquid quick disconnect to soft drink tank.

Trouble	Probable Cause	Remedy
TROUBLESHOOTING CONTROL PANEL SWITCHES AND FAULT MESSAGES		
ONE OR MORE CONTROL PANEL SWITCHES NOT OPERATING.	A. Flat cable not properly connected to control switch module or master circuit board.	A. Properly connect flat cable to control switch module or master circuit board.
	B. Flat cable connected between control switch module and master circuit board pinched and shorted out or broken wire in cable.	B. Check cable for pinched or broken wire condition and repair or replace as necessary.
	C. Inoperable switch(s) on control panel switch module.	C. Replace control panel switch module.
	D. Master circuit board not operating properly.	D. Replace master circuit board.
ALL CONTROL PANEL SWITCHES NOT OPERATING.	A. Electric power disconnected from Unit.	A. Restore electric power to Unit.
	B. ‘‘SECURITY SWITCH’’ has not been pressed to activate control panel for switches.	B. Press and hold ‘‘SECURITY SWITCH’’ 3–seconds to restore control panel switches to operation.
ALL CONTROL PANEL SWITCHES NOT OPERATING.	C. ‘‘SECURITY SWITCH’’ inoperable (control switches deactivated).	C. Replace control panel switch module.
	D. Flat cable not properly connected to control switch module or master circuit board.	D. Properly connect flat cable to control switch module or master circuit board.

Trouble	Probable Cause	Remedy
	E. Flat cable connected between control switch module and master circuit board pinched and shorted out or broken wire in cable.	E. Check cable for pinched or broken wire condition and repair or replace as necessary.
	F. Master circuit board not operating properly.	F. Replace master circuit board.
CONTROL PANEL SWITCHES CANNOT BE DEACTIVATED.	A. Not pressing and holding ‘‘SECURITY SWITCH’’ for 3–seconds to deactivate control switches.	A. Press and hold ‘‘SECURITY SWITCH” for 3–seconds to deactivate control switches.
	B. ‘‘SECURITY SWITCH’’ inoperable.	B. Replace control panel switch module.
PARTIAL MESSAGE OR DULL (POORLY ILLUMINATED) DISPLAY.	A. Extremely low voltage.	A. Upgrade voltage.
ONE OR MORE FAULT MESSAGES NOT OPERATING.	A. Flat cable not properly connected to fault message module or master circuit board.	A. Properly connect flat cable to fault message module or master circuit board.
	B. Flat cable connected between fault message module and master circuit board pinched and shorted out or broken wire in cable.	B. Check cable for pinched or broken wire condition and repair or replace as necessary.
	C. External sensing device failing to signal master circuit board which in turn signals fault message display.	C. Replace or repair external sensing device.
	D. External sensing devices cable connectors not securely connected to master circuit board connectors.	D. Make sure external sensing devices cable connectors are securely connected to master circuit board connectors.
	E. Disconnected or broken wire between master circuit board connector and external sensing device.	E. Connect or repair wire between master circuit board connector and external sensing device.
	F. Master circuit board not operating properly.	F. Replace master circuit board.
	G. Fault message display module not operating properly.	G. Replace fault message display module.
ALL FAULT MESSAGES NOT OPERATING.	A. No electrical power to Unit.	A. Connect electrical power to Unit.
	B. Flat cable not properly connected to fault message display module or master circuit board.	B. Properly connect flat cable to fault message display module or master circuit board.

Trouble		Probable Cause		Remedy
ALL FAULT MESSAGES NOT OPERATING. CONT'D	C.	Flat cable connected between fault message display module and master circuit board pinched and shorted out or broken wire in cable.	C.	Check cable for pinched or broken wire condition and repair or replace as necessary.
	D.	Master circuit board not operating.	D.	Replace master circuit board.
	E.	Fault message display module not operating properly.	E.	Replace fault message display module.
''CO_2 OUT'' FAULT1. MESSAGE GOES ON DURING OPERATION.	A.	CO_2 supply turned off or exhausted.	A.	Open CO_2 cylinder shutoff valve or replenish CO_2 supply as instructed.
	B.	Primary CO_2 regulator adjusted too low.	B.	Adjust primary CO_2 regulator as instructed.
	C.	Inoperable CO_2 pressure switch.	C.	Replace CO_2 pressure switch.
''H_2O OUT'' FAULT MESSAGE GOES ON DURING OPERATION.	A.	Water supply turned off or water pressure inadequate.	A.	Turn on water supply or check water supply line pressure.
	B.	Plugged water filter or water pump strainer screen.	B.	Change water filter or clean water pump strainer screen as instructed.
	C.	Inoperative water pressure switch.	C.	Replace water pressure switch.
''SYRUP 1'' OR ''SYRUP 2'' FAULT MESSAGE GOES ON DURING OPERATION.	A.	Soft drink tank empty.	A.	Replenish syrup supply as instructed.
''ERROR 1'' OR ''ERROR 2'' FAULT MESSAGE GOES ON DURING OPERATION.	A.	Error within Unit has developed interrupting normal operation.	A.	Locate and correct error, then press ''ERROR RESET'' switch to restore normal operation.
FREEZE CYLINDERS AUTOMATIC DEFROST SYSTEM DOES NOT OPERATE.	A.	Automatic defrost system not programmed into Unit.	A.	Program automatic defrost system into Unit as instructed.
	B.	Loose or broken electrical wires.	B.	Repair electrical wires.
	C.	Inoperable automatic defrost timer.	C.	Replace master circuit board.

Trouble		Probable Cause		Remedy
UNIT DOES NOT GO OFF AUTOMATIC DEFROST CYCLE.	A.	Automatic defrost timer stuck in automatic defrost cycle.	A.	Replace master circuit board.
MANUAL DEFROST CYCLE DOES NOT OPERATE WHEN ‘‘DEFROST‘‘ SWITCH IS PRESSED.	A.	Flat cable not properly connected to control panel switch module or master circuit board	A.	Properly connect flat cable to control panel switch module or master circuit board.
	B.	Flat cable connected between control panel switch module and master circuit board pinched and shorted out or broken wire in cable.	B.	Check cable for pinched or broken wire condition and repair or replace as necessary.
	C.	Inoperable ‘‘DEFROST’’ switch on control panel switch module.	C.	Replace control panel switch module.
	D.	Loose or broken wire.	D.	Repair wire.
	E.	Master circuit board not operating properly.	E.	Replace master circuit board.
DEFROST CYCLE DOES NOT CANCEL AFTER PRESSING ‘‘CANCEL DEFROST’’ SWITCH.	A.	Flat cable not properly connected to control panel switch module or master circuit board.	A.	Properly connect flat cable to control panel switch module or master circuit board.
	B.	Flat cable connected between control panel switch module and master circuit board pinched and shorted out or broken wire in cable.	B.	Check cable for pinched or broken wire condition and repair or replace as necessary.
	C.	Inoperable ‘‘CANCEL DEFROST’’ switch on control panel switch module.	C.	Replace control panel switch module.
	D.	Master circuit board not operating properly.	D.	Replace master circuit board.

Trouble	Probable Cause	Remedy
TROUBLESHOOTING PRODUCT BLENDER TANKS AND CARBONATORS		
CARBONATOR WATER PUMP MOTOR WILL NOT OPERATE.	A. No electrical power to Unit.	A. Connect electrical power to Unit. Check power source.
	B. ‘‘AUTO BLEND 1’’ or ‘‘AUTO BLEND 2’’ switch has not been pressed.	B. Press ‘‘AUTO BLEND 1’’ or ‘‘AUTO BLEND 2’’ switch.
	C. ‘‘H_2O OUT’’ fault message is on.	C. Restore water supply to Unit.
	D. ‘‘CO_2 OUT’’ fault message is on.	D. Replenish CO_2 supply as instructed.
	E. Loose or broken electrical wires.	E. Tighten connections or replace wires.
	F. Overheated water pump motor cut off by overload protector.	F. Check for proper line voltage. Check restricted pump discharge.
	G. Binding water pump (new or replacement pump only).	G. Remove water pump from motor. Rotate pump coupling shaft 180 degrees, then reinstall pump.
	H. Inoperative water pump and/or motor.	H. Replace pump and/or motor.
	I. Inoperative carbonated water tank level control switches.	I. Replace level control switches.
	J. Binding, damaged, or dirty carbonated water tank balance mechanism.	J. Clean, repair, or replace balance mechanism.
	K. Inoperative water pump and/or motor.	K. Replace water pump and/or motor.
CARBONATOR WATER PUMP WILL NOT SHUT OFF.	A. Binding, damaged, or dirty carbonated water tank balance mechanism.	A. Clean, repair, or replace balance mechanism.
ERRATIC CARBONATOR WATER PUMP CYCLING.	A. Insufficient water supply pressure. ‘‘H_2O OUT’’ fault message goes on and off intermittently and water pump cycles on and off during carbonator tank fill cycle.	A. Increase water inlet supply line pressure. Water inlet supply line must have large enough diameter.
	B. Water filter restricted.	B. Replace water filter.
TROUBLESHOOTING DISPENSED PRODUCT		
BRIX (WATER–TO–SYRUP) ‘‘RATIO’’ TOO LOW.	A. Quick disconnect not secure on soft drink tank.	A. Secure tank quick disconnect.
	B. Syrup flow regulator set too low.	B. Adjust BRIX of dispensed product as instructed.
	C. Carbonated water flow regulator adjusted too high.	C. Carbonated water flow regulator must be adjusted for a flow rate of 1.5 ±0.05 oz/sec as instructed.
	D. Syrup flow regulators stuck.	D. Clean syrup flow regulators.
	E. Restriction in syrup line.	E. Sanitize Unit as instructed.
	F. Syrup Baume not in proper range.	F. Change syrup supply as instructed.

Trouble	Probable Cause	Remedy
BRIX (WATER–TO–SYRUP) ‘‘RATIO’’ TOO HIGH.	A. Syrup flow regulators set too high.	A. Adjust BRIX OF dispensed product as instructed.
	B. Syrup Baume not in proper range.	B. Change syrup supply as instructed.
	C. Carbonated water flow regulator adjusted too low.	C. Carbonated water flow regulator must be adjusted for a flow rate of 1.5 ~~± 0.05~~ oz/sec as instructed.
	D. Restricted water filter.	D. Replace water filter.
IMPROPER PRODUCT DISPENSED.	A. Secondary CO_2 regulators not properly adjusted.	A. Adjust secondary CO_2 regulators as instructed.
	B. Dirty CO_2 supply. CO_2 must be clean and free of water, oil, and dirt. Water will not absorb dirty CO_2 gas in same way as clean gas. This can also cause off–taste problems.	B. Replace CO_2 supply as instructed.
PRODUCT WILL NOT DISPENSE OUT OF DISPENSING VALVE, IN ONLY SMALL AMOUNTS, OR ONLY LIQUID.	A. Dispensing valve has ice particles in it.	A. Open and close dispensing valve repeatedly. Defrost freeze cylinder as instructed. If necessary, check and adjust BRIX as instructed. Adjust viscosity of dispensed product as instructed.
	B. Cylinder freeze–up.	B. Refer to CYLINDER FREEZE–UP.
FREEZE CYLINDER DOES NOT REFILL AT ALL TIMES WHEN DISPENSING	A. ‘‘AUTO BLEND 1’’ or ‘‘AUTO BLEND 2’’ switch not pressed.	A. Press ‘‘AUTO BLEND 1’’ or ‘‘AUTO BLEND 2’’ switch.
	B. Carbonator water pump not operating.	B. Check carbonator and restore to operation.
	C. Lines restricted.	C. Sanitize Unit as instructed.
FROZEN PRODUCT CONSISTENCY VARIES EXCESSIVELY.	A. Dispensed product BRIX varying because: 1. Syrup flow regulator sticking. 2. Primary CO_2 regulator pressure insufficient.	A. 1. a. Clean regulator. 2. Primary CO_2 regulator must be adjusted as instructed.
	B. Cylinder freeze–up causing ice formation in center of cylinder and liquid product channels around ice formation.	B. Refer to CYLINDER FREEZE–UP.
	NOTE: Defrost freeze cylinder as instructed.	
CYLINDER FREEZE–UP.	A. Dispensed product BRIX too low.	A. Refer to BRIX (Water–to–Syrup) ‘‘Ratio’’ too low.
	B. Viscosity of dispensed product not properly adjusted.	B. Adjust dispensed product viscosity as instructed.

ACCESSORIES AND TOOLS

ACCESSORIES

1155	Installation Kit
511005–000	Cup Holder
511006–000	Cup Holder
511035–000	CO Changeover Kit
1040	Seal Kit, Rear O–Ring Housing and O–Rings

GENERIC FLAVOR TABS

1085	Cola
1086	Cherry
1087	Orange
1088	Grape
1089	Lemon–Lime
1090	Strawberry
1091	Banana

SERVICE TOOLS

151689000	Spanner Wrench, Flow Regulator
281884000	3gallon Sanitizing Tank
322859000	Spanner Wrench, Dispensing Valve
511004000	Refractometer, 030 Scale
322063000	Shaft Seal Assembly Puller
0726	Alignment Tool Kit, Beater Drive Shaft Ass’y

WARRANTY

IMI Cornelius Inc. warrants that all equipment and parts are free from defects in material and workmanship under normal use and service. For a copy of the warranty applicable to your Cornelius, Remcor or Wilshire product, in your country, please write, fax or telephone the IMI Cornelius office nearest you. Please provide the equipment model number, serial number and the date of purchase.

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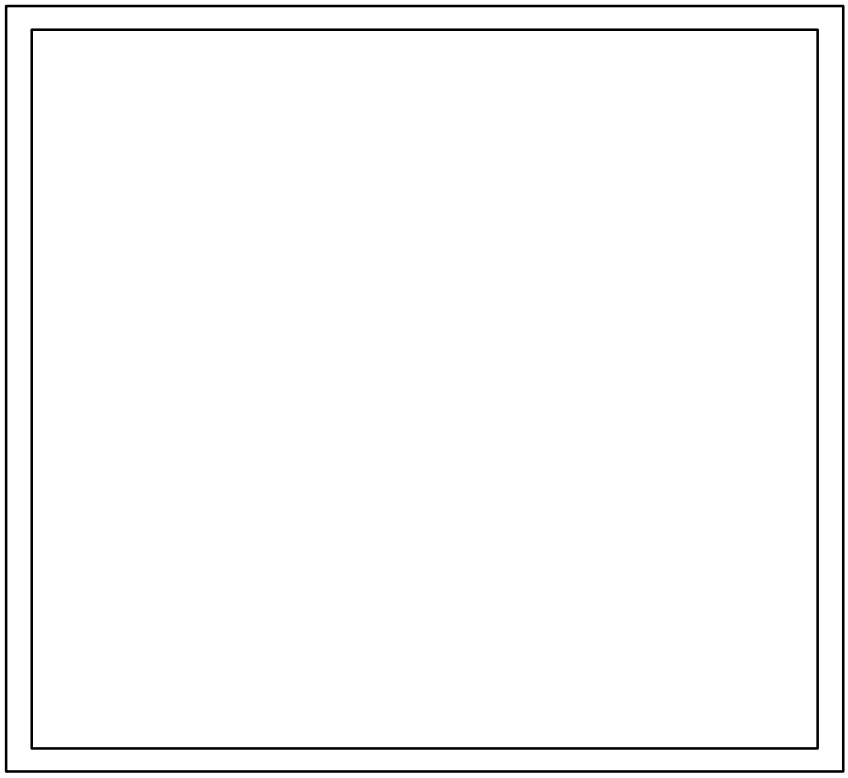

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