SIGNATURE

Operator's Manual

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

This Product is warranted only as provided in Cornelius' Commercial Warrant applicable to this Product and is subject to all of the restrictions and limitations contained in the Commercial Warranty.

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SAFETY INSTRUCTIONS

READ AND FOLLOW ALL SAFETY INSTRUCTIONS

Safety Overview

- Read and follow **ALL SAFETY INSTRUCTIONS** in this manual and any warning/ caution labels on the unit (decals, labels or laminated cards).
- Read and understand ALL applicable OSHA (Occupational Safety and Health Administration) safety regulations before operating this unit.

Recognition

Recognize Safety Alerts

This is the safety alert symbol. When you see it in this manual or on the unit, be alert to the potential of personal injury or damage to the unit.

Different Types of Alerts

DANGER:
Indicates an immediate hazardous situation which if not avoided **WILL** result in serious injury, death or equipment damage.

WARNING:
Indicates a potentially hazardous situation which, if not avoided, **COULD** result in serious injury, death, or equipment damage.

CAUTION:
Indicates a potentially hazardous situation which, if not avoided, **MAY** result in minor or moderate injury or equipment damage.

SAFETY TIPS

- Carefully read and follow all safety messages in this manual and safety signs on the unit.
- Keep safety signs in good condition and replace missing or damaged items.
- Learn how to operate the unit and how to use the controls properly.
- **Do not** let anyone operate the unit without proper training. This appliance is **not** intended for use by very young children or infirm persons without supervision. Young children should be supervised to ensure that they do not play with the appliance.

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- Keep your unit in proper working condition and do not allow unauthorized modifications to the unit.

QUALIFIED SERVICE PERSONNEL

WARNING:
Only trained and certified electrical, plumbing and refrigeration technicians should service this unit. **ALL WIRING AND PLUMBING MUST CONFORM TO NATIONAL AND LOCAL CODES. FAILURE TO COMPLY COULD RESULT IN SERIOUS INJURY, DEATH OR EQUIPMENT DAMAGE.**

SAFETY PRECAUTIONS

This unit has been specifically designed to provide protection against personal injury. To ensure continued protection observe the following:

WARNING:
Disconnect power to the unit before servicing following all lock out/tag out procedures established by the user. Verify all of the power is off to the unit before any work is performed.

Failure to disconnect the power could result in serious injury, death or equipment damage.

CAUTION:
Always be sure to keep area around the unit clean and free of clutter. Failure to keep this area clean may result in injury or equipment damage.

SHIPPING AND STORAGE

CAUTION:
Before shipping, storing, or relocating the unit, the unit must be sanitized and all sanitizing solution must be drained from the system. A freezing ambient environment will cause residual sanitizing solution or water remaining inside the unit to freeze resulting in damage to internal components.

MOUNTING ON A COUNTER

WARNING:
When installing the unit in or on a counter top, the counter must be able to support a weight in excess of 300 lbs. to insure adequate support for the unit.

FAILURE TO COMPLY COULD RESULT IN SERIOUS INJURY, DEATH OR EQUIPMENT DAMAGE.

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INTRODUCTION

SYSTEM OVERVIEW

The Signature is a state-of-the-art Frozen Un-carbonated Beverage (FUB) unit. It provides improved drink availability, reliability and reduced complexity in a compact, reduced footprint unit.

The Signature unit also provides the highest quality drink appearance and consistency while keeping operation and maintenance simple and straightforward.

The Signature unit is simple in design and has built-in features and diagnostic controls to help the service technician quickly and accurately maintain and service the unit.

The unit consists of a freeze barrel that contains an internal auger driven by a magnetically coupled electric motor, a refrigeration system, a temperature controlled, intelligent control system and interconnecting tubing and controls required to dispense the product.

CONTROL PANEL OVERVIEW

The following section describes the information displayed on each control panel menu and the interactions and settings that are controlled by that menu.

The Signature control panel is a very simple design. It allows the operator to control the unit with the push of a button. Troubleshooting information on the unit is available from the three LEDs on the right side of the control panel.

The control panel is located on the upper portion of the front panel, above the dispensing valve. See Figure 1.

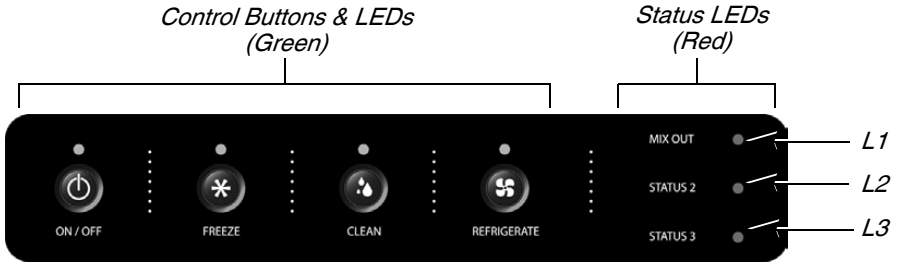

Figure 1.

Controls and Indicators

ON/OFF Button

The ON/OFF Button toggles access between the Operational modes and the Programming/Service modes. When the ON/OFF Button is pressed; the LED above the ON/OFF Button turns on, and the unit can then be placed into any of the three Operational modes (Freeze, Clean, or Refrigerate). When the ON/OFF Button is pressed while the On/Off LED is on; the LED above the ON/OFF Button turns off and the unit can then be placed into either the Programming or Service Mode.

This button does not turn off power to the unit.

FREEZE Button

During normal operation, the FREEZE Button controls the refrigeration system of the unit. When the FREEZE Button is On, the unit freezes the product barrel to the programmed viscosity setting and maintains the hopper at less than or equal to 41° F (5° C).

The FREEZE Button is also used in conjunction with the REFRIGERATE Button to place the unit into Programming Mode.

In the Programming Mode, repeatedly pressing the FREEZE Button steps through the coarse viscosity level settings for the product. (See Service Manual P/N 621058426SER for more details)

CLEAN Button

The CLEAN Button operates the Auger in the freeze barrel and the mixing Paddles in the Product Bowl on top of the unit. The auger and paddles are used to agitate the cleaning solution. Refrigeration is off in the Clean Mode.

The CLEAN Button and the REFRIGREATE Button are used together to place the unit into the Factory Mode. The system defaults to the Motor Type Mode when the unit is placed in the Factory Mode. The Motor Calibration Mode and the

In the Programming Mode, repeatedly pressing the CLEAN Button steps through the possible fine viscosity level settings for the product.

REFRIGERATE Button

The REFRIGERATE Button operates the unit in a temperature controlled mode. It keeps the Product Bowl and the Barrel at a chilled temperature, but the Barrel is in a liquid state, not frozen.

The REFRIGERATE Button is used in conjunction with the FREEZE Button to place the unit into the Programming Mode.

BASIC OPERATION

To operate the unit, follow the procedure described in Table 1 and the control panel photo shown in Figure 1.

Table 1.

Step	Action
1.	Remove the **Bowl Cover Lid** and fill the **Product Bowl** on top of the unit with product.
2.	Allow the barrel to fill with product and insert the **air/mix tube** into the bowl (if dairy product is being used).
3.	Press the **ON/OFF** ⏻ Button on the control panel to activate the control panel.

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Table 1.

Step	Action
4.	Press the **FREEZE** ⊛ Button to start chilling the product in the unit. The unit automatically starts to chill down the product in the barrel and the mixing blades in the **Product Bowl** on top of the unit start to spin.
5.	Wait 10 to 15 minutes or until the **Freeze** LED stops flashing before dispensing the product.
6.	Product is ready to serve from the barrel, however, the unit continues to run until the temperature of the **Product Bowl** is satisfied.

SYSTEM STATUS LEDS

There is a group of three red LEDs located on the right side of the control panel. These LEDs indicate the status of the unit and the product. Refer to Table 2 for indicator light status information. Table 2 also describes unit troubleshooting information.

Table 2.

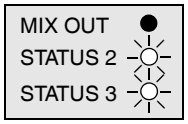
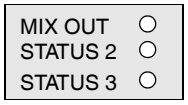
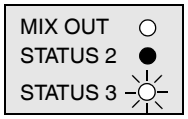
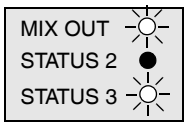
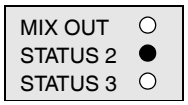
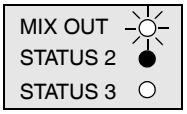
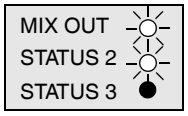
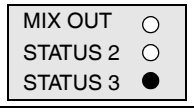
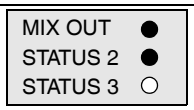
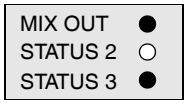
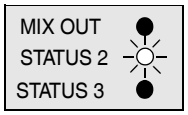
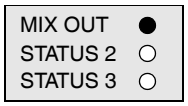
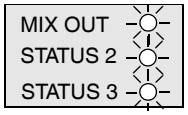
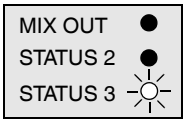
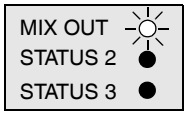
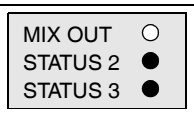
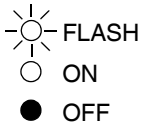
Indicator Light	Status	Condition
	Status 2 & Status 3 Flashing	Corrupted Data, call Service.
	All Three LEDs Illuminated	Stuck Keypad, Power cycle the unit (unplug from wall and plug back in). If error doesn't clear, call Service.
	Mix Out On & Status 3 Flashing	Motor Calibration, call Service.
	Mix Out & Status 3 Flashing	Barrel TCO. Flush unit with cold water. Power cycle unit (unplug from wall and plug back in). If error doesn't clear, call Service.
	Mix Out & Status 3 Illuminated	Machine Disable. Install faceplate if it is not installed. Power cycle the unit (unplug from wall and plug back in). If error doesn't clear, call Service.
	Mix Out Flashing & Status 3 Illuminated	AC Relay, Power cycle the unit (unplug from wall and plug back in). If error doesn't clear, call Service.
	Mix Out & Status 2 Flashing	Hopper Refrigeration Error. Add a minimum of 1 gal. (4 liters) of product. Power cycle unit (unplug from wall outlet and plug back in). If error reoccurs, call Service
	Mix Out & Status 2 Illuminated	Barrel Refrigeration Error, call Service

Table 2.

Indicator Light	Status	Condition
	Status 3 Illuminated	Motor Control Error, call Service
	Status 2 Illuminated	Thermistor Error, call Service.
	Status 2 Flashing	No Handle. Close handle, if error doesn't clear, call Service.
	Status 2 & Status 3 Illuminated	Communication Error, call Service
	Mix Out, Status 2 & Status 3 Flashing	Voltage Error. Call Electrician or Maintenance.
	Status 3 Flashing	Motor Stall, try resetting by depressing and holding ON/OFF button for 3 seconds. If error does not clear, call Service.
	Mix Out Flashing	No Product. Add product until error is cleared. Refrigeration system does not work until product is added.
	Mix Out Illuminated	Low Product. Add product until error is cleared



Refer to the Service Manual (P/N 621058426SER) for troubleshooting information and other controller functions and features.

Program Settings

The Program mode (accessed by pressing the FREEZE and REFRIGERATE Buttons simultaneously) allows the operator to adjust the coarse and fine viscosity adjustments to change product quality for a variety of products. The unit defaults into the coarse viscosity indication when placed in Programming Mode.

These settings apply to product consistency in normal operation (Freeze Mode).

The consistency can be adjusted from watery to stiff, depending on the customer preference. The higher the number (1-3), the thicker the viscosity of the product.

In addition to the coarse settings adjusted through the FREEZE Button, there is a finer adjustment setting available by using the CLEAN Button. This has seven levels (1-7). The higher the number, the thicker the viscosity of the product.

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Programming Mode

The control panel may also be used to program the unit for various products and levels of viscosity. Table 3 describes the procedure for entering and leaving programming mode and the steps necessary to make the adjustments allowed.

Table 3.

Step	Procedure
1	The unit must be Off to enter the Programming Mode.
2	Press and hold the **FREEZE** and **REFRIGERATE** Buttons simultaneously. Hold for 3 seconds or until the **FREEZE** LED starts flashing.
3	The **FREEZE** LED continues to flash indicating Programming Mode.
4	The coarse viscosity level of the product is indicated by the Status LEDs on the right side of the control panel. Refer to Figure 7 for LED display values. Repeatedly pressing the **FREEZE** Button steps through the viscosity settings (1-3).
5	Press the **CLEAN** Button, while the **CLEAN** LED is flashing. The fine viscosity level is now indicated by the Status LEDs at the right side of the control panel. Refer to Figure 7 for LED display values. Repeatedly pressing the **CLEAN** Button steps through the viscosity settings (1-7).
6	When selections are complete, press the **ON/OFF** Button. The four green LEDs should illuminate, indicating that the unit is no longer in the Programming Mode.
7	Press the **ON/OFF** Button once more to set the new viscosity settings into memory.
8	If these steps are not followed, or if there is no keypad activity for 2 minutes, values changed are not saved.
9	This completes the product viscosity setup procedure.

Status LEDs (function in programming mode)

The Status LEDs are located on the right side of the Control Panel, as shown in Figure 6. These LEDs are used to indicate various error conditions for the unit and the viscosity setting for the product in the unit.

When the unit is first placed into Freeze mode, the Status LEDs show the viscosity settings (coarse for 1 second, then fine for 1 second). These codes indicate the viscosity of the product. (i.e., if the setting of the unit is level 1, 2 then the 1st LED flashes for 1 sec. and then the 2nd LED flashes for 1 sec.)

They are also used to program the unit for the viscosity desired. There are twenty one levels of viscosity (3 coarse settings and 7 fine settings) available for the Signature unit. Figure 2 shows how the three coarse and seven fine levels are displayed.

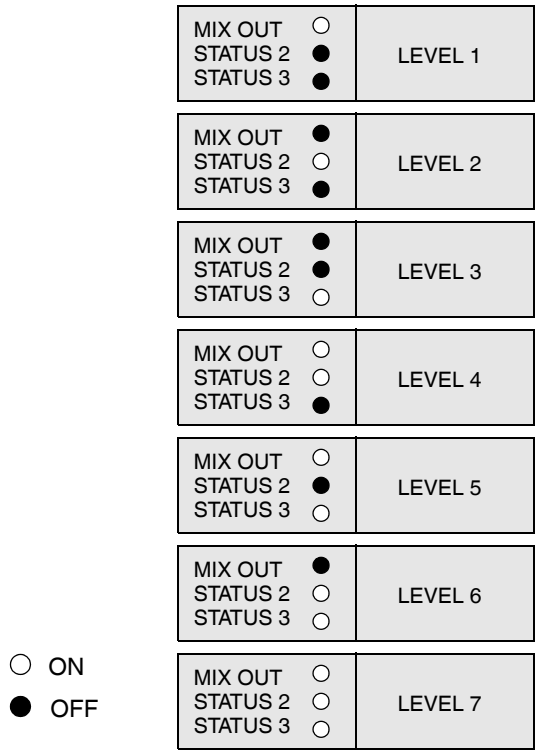
MIX OUT ○
STATUS 2 ●
STATUS 3 ●
LEVEL 1
MIX OUT ●
STATUS 2 ○
STATUS 3 ●
LEVEL 2
MIX OUT ●
STATUS 2 ●
STATUS 3 ○
LEVEL 3
MIX OUT ○
STATUS 2 ○
STATUS 3 ●
LEVEL 4
MIX OUT ○
STATUS 2 ●
STATUS 3 ○
LEVEL 5
MIX OUT ●
STATUS 2 ○
STATUS 3 ○
LEVEL 6
MIX OUT ○
STATUS 2 ○
STATUS 3 ○
LEVEL 7
○ ON
● OFF

Figure 2.

PREVENTATIVE MAINTENANCE

Maintenance is important to the unit performance and quality of the product being served. The following sections outline the minimum requirements for periodic maintenance of the unit and the surrounding service area.

NOTE: Do not use abrasive cleaners on the unit.

IMPORTANT: Only trained and qualified persons should perform these maintenance procedures.

Normal equipment maintenance procedures and intervals are listed in Table 4. It is recommended that a preventative maintenance procedure be performed every six (6) months. This procedure should include all of the maintenance items described in Table 4 and the following sections.

Table 4.

Preventative Maintenance Summary	
Maintenance Procedure	**Frequency of Maintenance**
Sanitize Unit	Daily (especially w/dairy products)
Clean Air Filter	Monthly or more often, as necessary (See Table 13)
Seal Change	Every six months
Clean Condenser Coil	Every six months or as necessary
Change or Rotate Scraper Blades	Every six months
Check for Leaks	Every six months

CAUTION:
Only trained and certified electrical, plumbing and refrigeration technicians should service this unit. ALL WIRING AND PLUMBING MUST CONFORM TO NATIONAL AND LOCAL CODES.

DAILY MAINTENANCE

On a daily basis, clean all external surfaces with a stainless steel cleaner or a mild detergent solution and rinse with potable water. Dry all external surfaces with a clean soft cloth.

CAUTION:
Avoid the use of abrasive cleaners and chlorine based solutions, which can damage the finish. If desired, small parts may be cleaned in a mechanical dishwasher.

Cleaning and Sanitizing Procedure

Under normal operating conditions, the unit must be sanitized on a daily basis, especially if dairy products are being used in the unit.

Supplies

Warm water, house hold dish washing detergent [3.0 oz in 3.0 gallons of warm water solution at 90-100^{o} F (32-38^{o} C)] or KAY-5 sanitizer (100ppm).

Tools

Draining bucket, brushes, magnet removal tool, spray bottle for sanitizer and a food grade lubricant.

Draining the Unit

Table 5.

Step	Procedure
1	Press **ON/OFF** Button to turn off the unit. **NOTE: It is recommended that you shut the unit off as far ahead of cleaning as possible to allow the product in the barrel to thaw for easier removal.**
2	**NOTE: Air tube and blade sweepers are only used for dairy products.** Remove the **Bowl Lid Cover** and **Air Tube**. Place the **Air Tube** in a parts bin to be cleaned later. Replace the **Bowl Lid Cover.** See Figure 3.
3	Press the **ON/OFF** Button to turn the unit ON and push the **CLEAN** Button.
4	Place an empty bucket under the **Product Dispense Valve** and move dispense handle to the right (open position, shown in Figure 4) and drain as much liquid as possible. Allow the last of the product to drain, then close the dispenser valve by turning the dispense handle all the way to the left. Press **ON/OFF** Button to turn OFF the unit.
5	**NOTE: Skip this step if the unit does not have the 2 for 1 feature.** Place the bucket under the **2 for 1 Dispense Nozzle,** pull the handle and allow the product to drain until the line is empty, see Figure 5.

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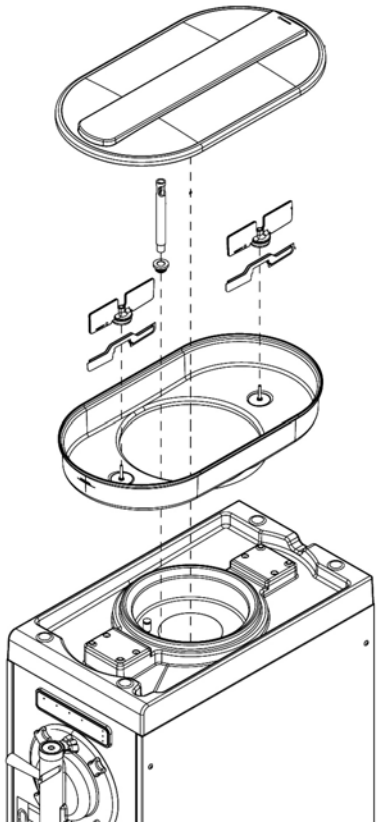

Figure 3.

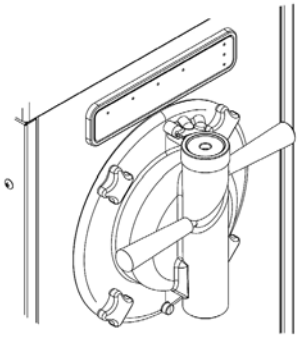

Figure 4.

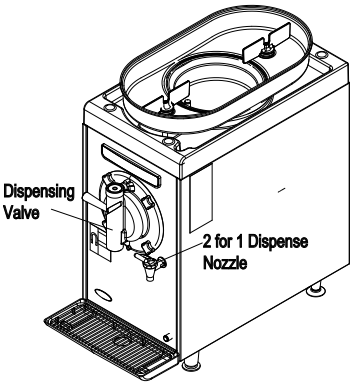

Figure 5.

Rinsing the Unit

Table 6.

Step	Procedure
1	Remove **Bowl Lid Cover** and fill the **Product Bowl** with 3.0 gallons or (11.4 liters) of warm [(90-100^{o} F) (32-38^{o} C)] potable water and replace the **Bowel Lid Cover.**
2	Press the **ON/OFF** ⏻ Button to turn the unit ON and **then press the Clean** 💧 Button. Allow to run for 30 seconds.
3	Place an empty bucket beneath the product **Dispensing Valve** and move the handle to the right (open position) and drain all the rinse water from the barrel and bowl. Close the **Dispensing Valve** by turning the handle all the way to the left.
4	**NOTE: Skip this step if the unit does not have the 2 for 1 feature.** Place the bucket beneath the **2 for 1 Dispense Nozzle** and pull up the handle to the open position. Drain liquid until water stops flowing in the 2 for 1 line.
5	Press **ON/OFF** ⏻ Button to turn Off the unit.
6	Repeat step 1-5 again or until water running through **Dispense Valve** is clear.

Detergent Wash and Clean the Unit

Table 7.

Step	Procedure
1	Remove **Bowl Lid Cover**.
2	Prepare detergent water by mixing 3.0 oz. (89 ml) of a dish washing detergent in 3.0 gallons (11.4 liters) of 90 to 100° F (32 to 38° C) warm water.
3	Pour the detergent solution into the **Product Bowl**.
4	Use supplied brush to gently scrub inner surface of the barrel fill tube and inside of **Product Bowl Evaporator,** as shown in Figure 6.
5	**NOTE: Skip this step if the unit does not have the 2 for 1 feature.** Place bucket under **2 for 1 Dispense Nozzle**, pull handle and allow the product to drain until detergent solution exits the nozzle.
6	Replace the **Bowl Lid Cover** then press the **ON/OFF** Button to turn the unit ON and then push the **Clean** Button. Allow to agitate for 10 minutes. (Note: Until automatically exits the Clean Mode after 10 minutes.)
7	Place an empty bucket under the dispenser and drain as much liquid as possible. Press the **ON/OFF** Button to turn OFF the unit.
8	**NOTE: Skip this step if the unit does not have the 2 for 1 feature.** Place the bucket beneath the **2 for 1 Dispense Nozzle** and pull up handle to open position. Drain liquid until detergent stops flowing in the 2 for 1 line.
9	Pour small amount of detergent into the drip tray to flush and clean the drain tube, shown in Figure 7.

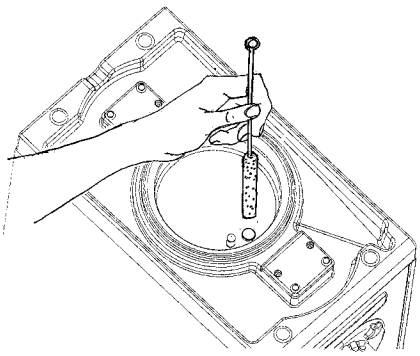

Figure 6.

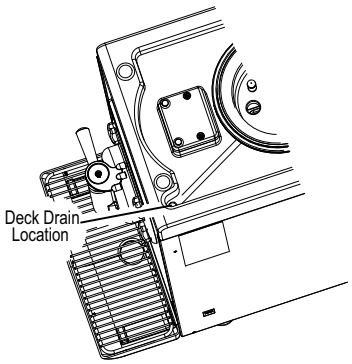

Figure 7.

System Disassembly

CAUTION:
Make sure the unit is Off before disassembly.

Place all disassembled components in a parts bin to be cleaned later in the sink or in a dishwasher.

Table 8.

Step	Procedure
1	Remove the **Bowl Lid Cover** the **Mixing Blades** and **Blade Sweepers** from the **Product Bowl**, as shown in Figure 8. (Also remove the air tube and blade sweepers, if using dairy products.)
2	Remove the **Product Bowl** from the unit.
3	Turn the **Product Bowl** upside down and remove the **Bowl Gasket,** as shown in Figure 9.
4	Remove the **Dispense Handle** from the **Plunger**, by pulling it straight out of the **Plunger**. Figure 11.
5	Remove the **Faceplate** from the front panel by unscrewing the four (4) **Thumb Knobs.** See Figure 11.
6	Remove the **Plunger** from the **Faceplate** by pulling it out the top of the **Faceplate**. See Figure 11.
7	Carefully remove the two (2) **O-Rings** from their grooves and slide them to the narrow area of the **Plunger**. See Figure 10. **TIP:** Use a paper towel to squeeze the O-Ring on opposite sides. This makes it easier for you to grab the O-Ring.
8	Remove the **Faceplate Gasket** from the rear of the **Faceplate**, as shown in Figure 12.
9	Remove the **Auger** assembly while holding the **Scraper Blades** in place, as shown in Figure 14.
10	Use the **Magnet Removal Tool** to remove the **Auger Drive Magnet.** Place the bar handle against the lip of the barrel and hook the wire form into the hole in the magnet coupling. Pull the end of the magnet removal tool handle towards you until the magnet is disconnected. See Figure 13. ⚠ **CAUTION:** **Be extremely careful when handling the magnet set. Do not place the magnet near small metal objects.**
11	To remove **Drive Magnet Coupling** and **Bearing** press the magnet, coupling side down on a table or other hard surface. The bearing and coupling will slide out. See Figure 15.
12	Remove the **Drip Tray** and **Cup Rest** from the unit, as shown in Figure 16.

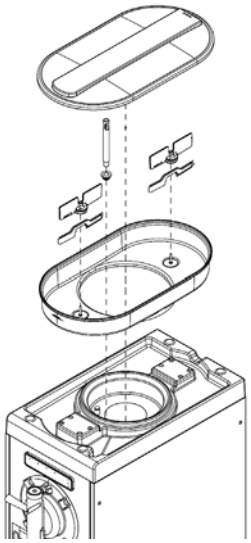

Figure 8.

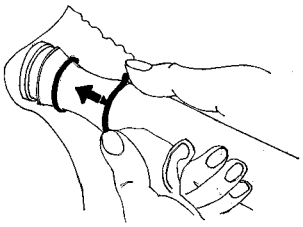

Figure 10.

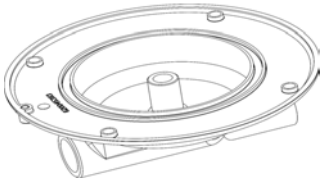

Figure 12

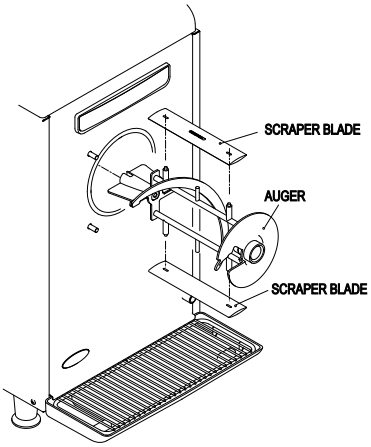

Figure 14.

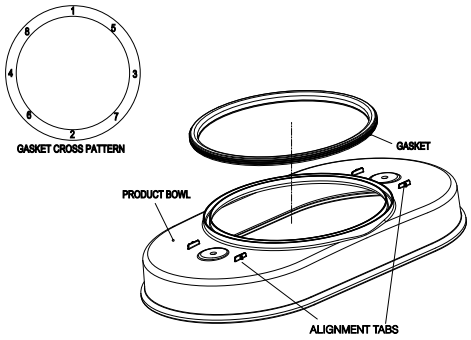

Figure 9.

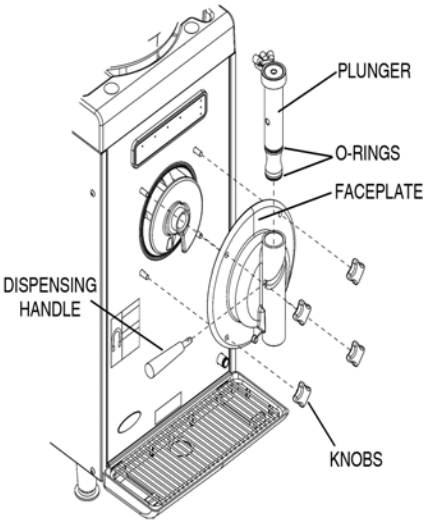

Figure 11.

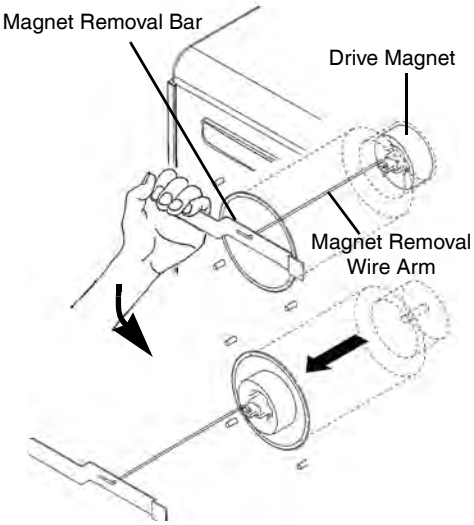

Figure 13.

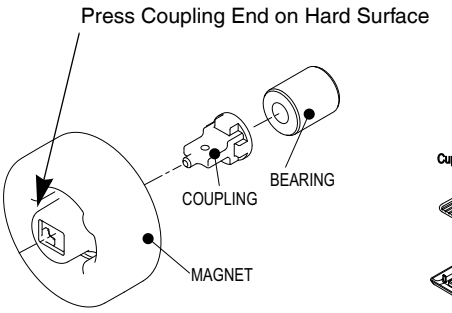

Figure 15.

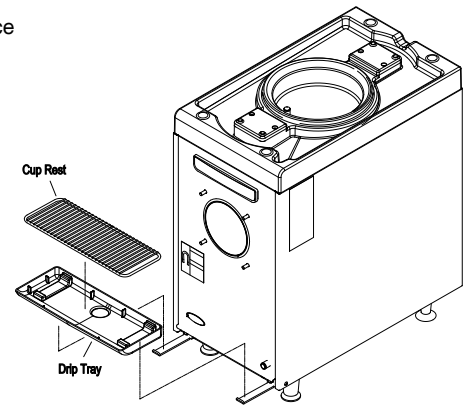

Figure 16.

System Cleaning

Make sure all removable parts that make contact with the food product are removed from the unit and that all brushes provided with the unit are available for cleaning.

CAUTION:
Avoid the use of abrasive cleaners, which can damage the finish. If desired, these pieces may be cleaned in a dishwasher.

Table 9.

Step	Procedure
1	Prepare detergent solution by mixing 3.0 oz. (89 ml) of dish washing detergent in 3.0 gallons (11.4 liters) of 90 to 100^{o} F (32 to 38^{o} C) warm water.
2	Place all parts in detergent solution and thoroughly wash each part that has been removed in System Disassembly on page 13 and the **Air Tube** . Thoroughly brush clean all disassembled parts in the detergent solution. Make sure ALL lubrication and product film is removed from all parts. If parts are excessively coated, wipe clean with a paper towel to remove excess product and/or lubricant. See Figure 17.
3	Rinse all parts thoroughly with clean warm [90-100^{o} F (32-38^{o} C)] water.
4	Using a clean brush with the same dish washing soap solution, wipe out all surfaces of the barrel interior and the front surface of the unit, as well as the top surface of the unit under the **Product Bowl.** See Figure 17 and Figure 18.
5	Thoroughly rinse these surfaces with a clean cloth and clean warm [90-100^{o} F (32-38^{o} C)] water.
6	Allow all the parts and the unit to dry.

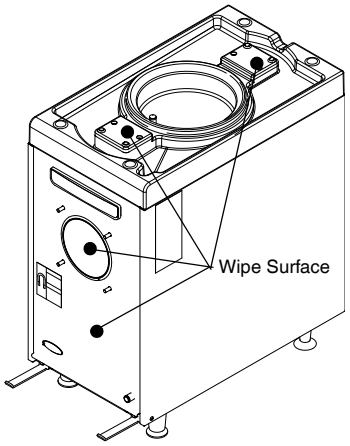

Figure 17.

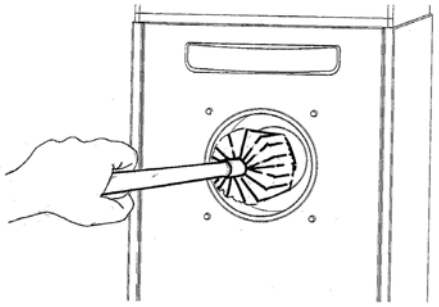

Figure 18.

System Assembly

Once the unit and all components have been cleaned and dried, reassemble the unit by performing the procedure in Table 10.

CAUTION:
Make sure unit is OFF before assembly.

IMPORTANT: It is very critical to assemble the unit with clean, sanitized hands or wearing a new pair of rubber gloves.

CAUTION:
Carefully lubricate o-rings with a small amount of Dow Corning 111 Valve Lubricant and Sealant. Be careful not to tear or cut the O-rings. This might cause the product to leak from the faceplate of dispenser.

Table 10.

Step	Procedure
1	Place the **O-Rings** back into their grooves on the **Plunger**. Lightly lubricate the exposed surfaces. See Figure 19.
2	Reinstall the **Faceplate Gasket** into the groove on the back of the **Faceplate**. Make sure the gasket is flat and not twisted. See Figure 20.
3	Replace the **Plunger** assembly into the **Faceplate** and align it so the **Handle** can be inserted into the **Plunger** through the **Faceplate**, as shown in Figure 21. Push in and rotate the **Handle** until it snaps into place.
4	Reassemble the **Auger Drive Magnet** by pressing the **Coupling** and **Bearing** into the rear of the magnet. When properly assembled the bearing is flush with the back of the magnet. See Figure 22. **CAUTION:** Do not use the magnet removal tool to install the magnet manually.
5	Carefully replace the **Auger Drive Magnet** into the barrel. When the magnet approaches the rear of the barrel, the magnetic force pulls it to the center at the rear end of the barrel. Release it from your fingers. See Figure 23.
6	Assemble the **Scraper Blades** on the **Auger** and insert it into the barrel while holding the **Scraper Blades** in place. Push gently and spin the **Auger** until it engages the magnet. The **Scraper Blades** are 1/8" inside the barrel when coupled correctly. See Figure 24.

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Table 10.

Step	Procedure
7	Center the **Faceplate** with the **Auger Bearing** and push it into position on the four mounting studs, as shown in Figure 25 and replace the four (4) faceplate **Hand Nuts**. Make sure they are tightened in a cross pattern (upper left, lower right, upper right then lower left.).
8	Turn the **Product Bowl** upside down and replace the **Bowl Gasket** using a cross pattern (as shown in Figure 26) to make sure that the gasket does not leak.
9	Replace the **Product Bowl** on the unit. Gently slide the bowl over the evaporator, as shown in Figure 27. Make sure the alignment tabs on the bottom of the Product Bowl are aligned with the motor covers on top of the unit.
10	Replace the **Mixing Blades** and **Blade Sweepers** (for dairy products) into the **Product Bowl** and place the **Bowl Lid Cover** onto the **Product Bowl**.
11	Replace the **Drip Tray** and **Cup Rest,** as shown in Figure 28.
12	Turn the **Dispense Handle** to the left to close the valve.
13	The unit is now ready to be sanitized.

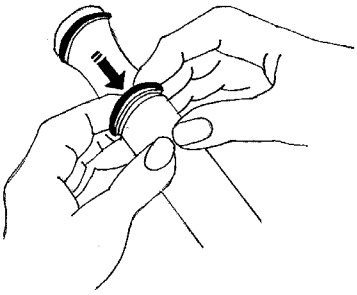
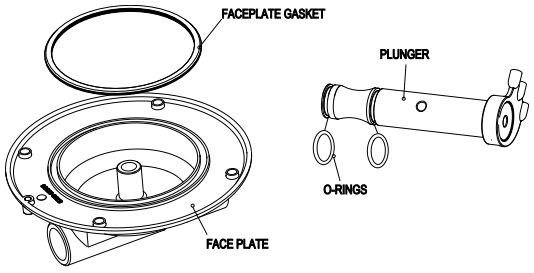


Figure 19.



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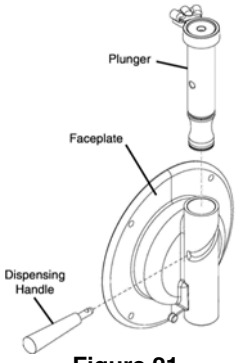

Figure 21.

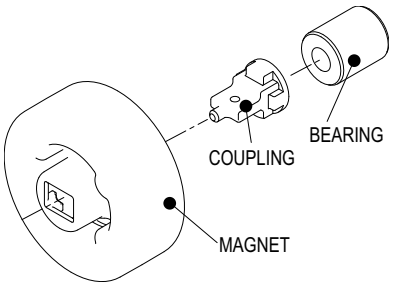

Figure 22.

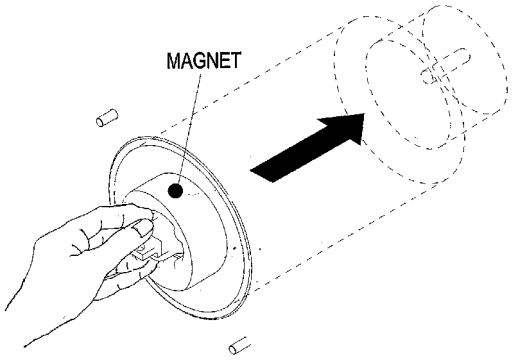

Figure 23.

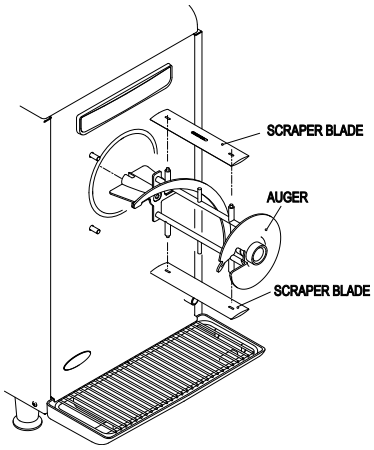

Figure 24.

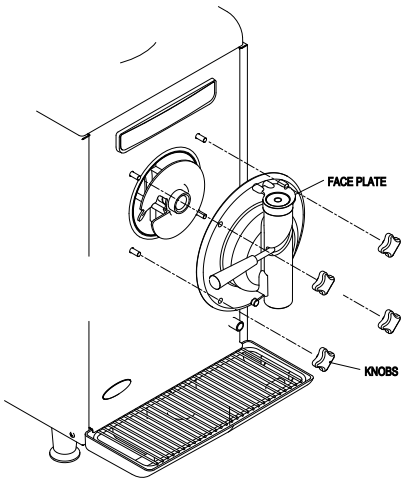

Figure 25.

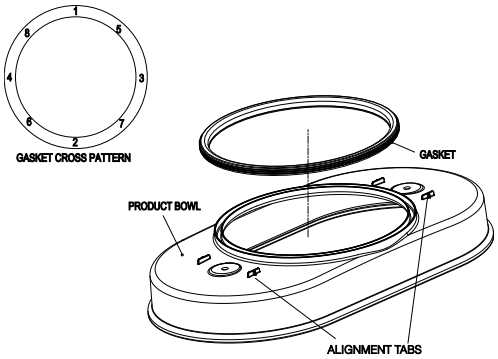

Figure 26.

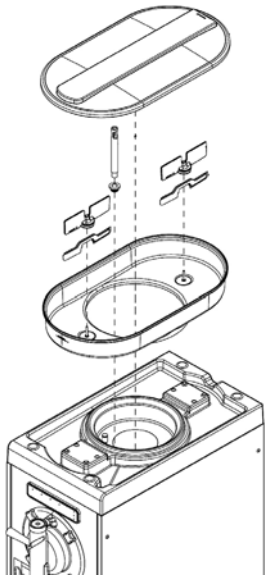

Figure 27.

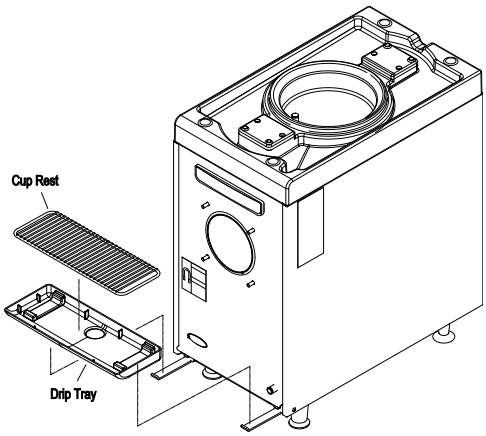

Figure 28.

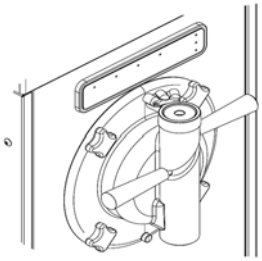

Figure 29.

System Sanitation

Kay-5 Sanitizing Solution. Dissolve one packet of Kay-5 Sanitizer/Cleaner into 2-1/2 gallons of warm water to insure 100ppm of available chlorine. Always use freshly prepared chlorine solution. Use sanitation chemicals only in accordance to manufacturer's instructions. To sanitize the unit, perform the procedure in Table 11.

IMPORTANT: Follow label directions on cleaning solution.

Table 11.

Step	Procedure
1	Remove the **Bowl Lid Cover.**
2	Fill a spray bottle with prepared sanitizer.
3	Turn **Bowl Lid Cover** upside down and spray sanitizer over entire surface of **Bowl Lid Cover** enough to coat the entire cover.

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Table 11.

Step	Procedure
4	Submerge **Air Tube** (Only used for dairy product) into sanitizer bucket for 2 minutes. Remove and set aside until final rinse is complete.
5	Pour remaining prepared sanitizer in **Product Bowl** of unit.
6	**NOTE: Skip this step if the unit does not have the 2 for 1 feature.** Place a bucket under **2 for 1 Dispense Nozzle** and allow product to drain until sanitizer solution exits valve.
7	Spray the lip and the top half of the **Product Bowl** with sanitizer. Replace the **Bowl Lid Cover** on the **Product Bowl**, then press the **ON/OFF** Button to turn the unit ON and push the **CLEAN** Button. The unit automatically exits Clean Mode in 10 minutes.
8	Place an empty bucket under the Dispensing Valve and drain as much of the sanitizer as possible while Auger is on. Press the **ON/OFF** Button to turn OFF the unit.
9	**NOTE: Skip this step if the unit does not have the 2 for 1 feature.** Place a bucket under **2 for 1 Dispense Nozzle**, pull handle and allow product to drain until sanitizer solution exits the valve.
10	Remove the **Bowl Lid Cover**.
11	Using a clean bucket, pour 3.0 gallons (11.4 liters) of potable water into the **Product Bowl**.
12	Replace the Bowl Lid Cover then press the **ON/OFF** Button to turn the unit ON and push the **CLEAN** Button. Allow to agitate for 2 minutes.
13	Place an empty bucket under the **Dispensing Valve** and drain all of the water while **Auger** is on. Press the **ON/OFF** Button to turn OFF the unit.
14	**NOTE: Skip this step if the unit does not have the 2 for 1 feature.** Place bucket under **2 for 1 Dispense Nozzle**, pull handle and allow the product to drain until the unit is empty.
15	Turn **Dispense Handle** to the left to (Closed position, see Figure 29).
16	Remove the **Bowl Lid Cover** and load product.
17	If running dairy product, replace the **Air Tube**.
18	Replace the **Bowl Lid Cover** and draw an 8 oz. drink and dispose of it before serving product.

Cleaning Parts Inventory List

The following table contains a list of parts that need to be cleaned so that the unit is sanitized completely.

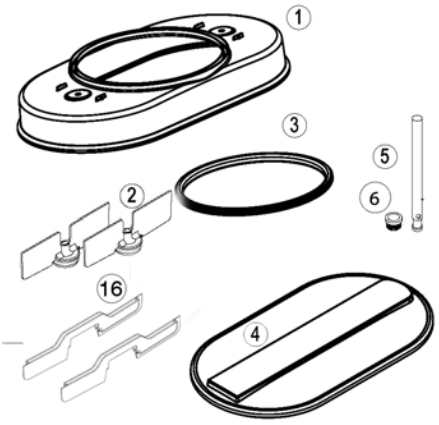
Table 12.

Item	Part Number	Description	Qty.
1	620049756	Product Bowl	1
2	620043194	Mixing Blade	2
3.	620049757	Gasket, Evaporator	1
4	620049940	Cover	1
5	620049969	Air Tube	1
6	620047121	Air Tube Seal	1

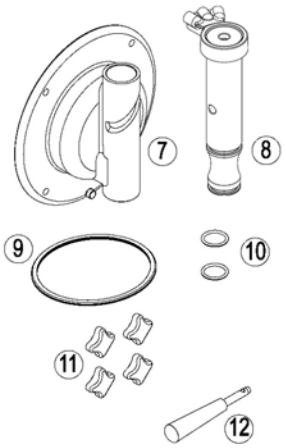
Table 12.

Item	Part Number	Description	Qty.
7	620045393	Face Plate	1
8	620045394	Plunger	1
9	620047115	Faceplate Gasket	1
10	620054997	O-Ring	2
11	620042994	Knob	4
12	620043383	Handle Dispensing	1
13	620047944	Auger	1
14	620049764	Drive Magnet Assembly	1
14A	620046135	Coupling	1
14B	560004289	Bearing	1
15	620043012	Scraper Blade	2
16	620050276	Blade Sweeper	2
17	620048449	Drip Tray	1
18	620716516	Cup Rest	1

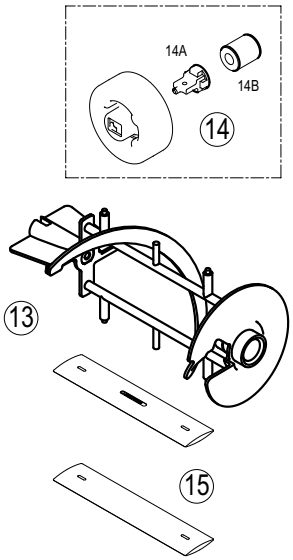
Product Bowl Assembly



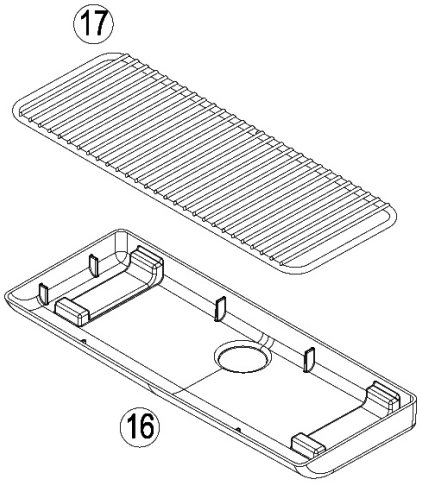
Face Plate Assembly



Auger Assembly



Drip Tray Assembly



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Drip Tray Installation and Removal

Slide the drip tray into the two brackets protruding from the bottom of the unit until the tray contacts the two detents in the brackets. See Figure 30 and Figure 31.

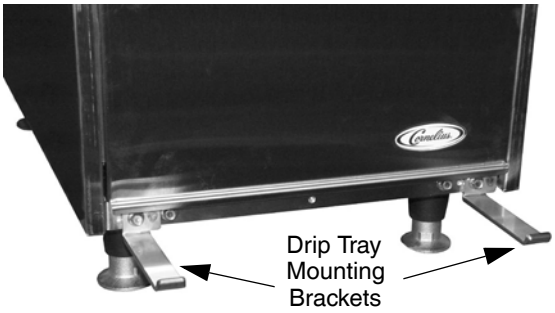

Figure 30.

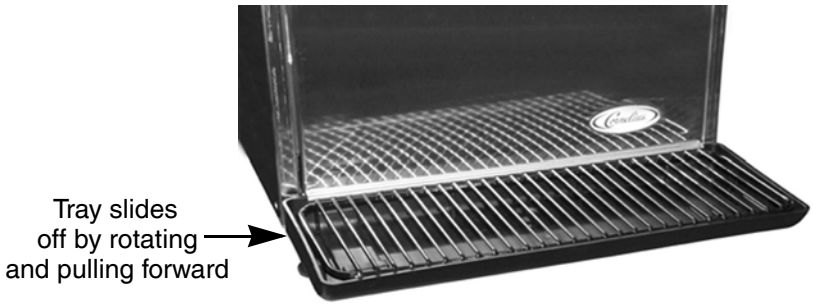

Figure 31.

MONTHLY MAINTENANCE

Perform a general inspection of the unit for leaks and cleanliness on a weekly basis. Any abnormal conditions should be reported and corrected when noticed.

Refer to Table 4 and the following procedures for a listing of the monthly maintenance items. These procedures help to insure proper operation of the unit on a long term basis.

Cleaning Air Filter

The air filter should be cleaned at least once a month (more often in harsh environments). Perform the procedure in Table 13 to clean the air cleaner.

Table 13.

Step	Action
1.	Turn off the unit.
2.	Reach under the unit and flip up the **filter retaining bar**, shown in Figure 32.

Table 13.

Step	Action
3.	Remove the **filter** by grasping it and sliding it toward the front of the unit.
4.	Carefully wash the **filter** with clean water. Shake out the excess water and towel dry the filter.
5.	Set the **filter** into the **filter holding bracket** toward the rear of the unit and flip the **filter retaining bar** down to hold the air filter in place, as shown in Figure 33.
6.	Turn on the unit.

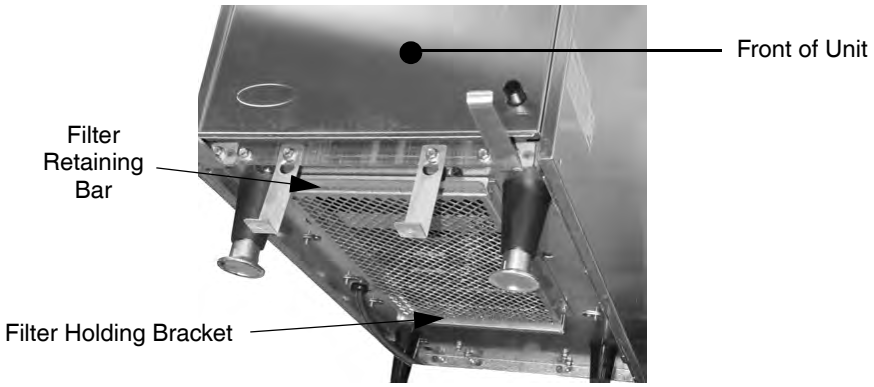

Figure 32. Air Filter Location

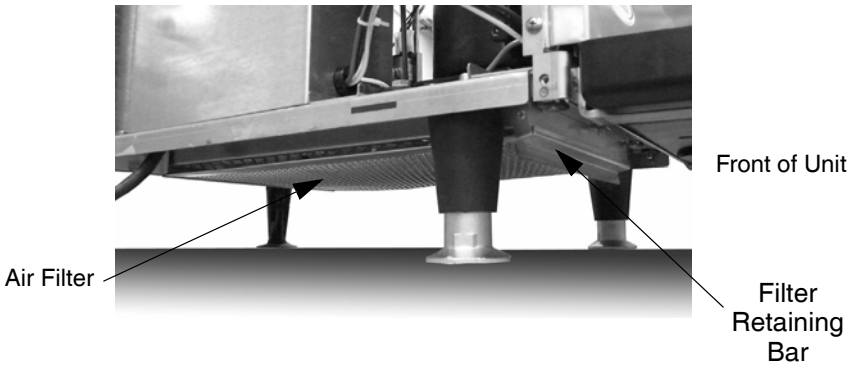

Figure 33. Air Filter Installation

TROUBLESHOOTING

TROUBLESHOOTING - CONTROLS

Problem	Probable Cause	Remedy
No activity at all	A. Unit unplugged / cable disconnected	A. Make sure unit is plugged in & cord is connected in E-box
	B. No power to branch circuit.	B. Make sure fuse is good/installed or breaker is switched to "ON".
	C. Keypad bad or disconnected.	C. Check for proper connection/replace keypad
	D. Control Board bad.	D. Replace Control Board
Front panel LEDs indicate unit on but no motor activity/will not respond	A. Software detected error condition	A. See error table document
	B. 24VAC missing	B. Check that faceplate is in proper mounted position and adjust as needed Check for excessive refrigeration pressure & correct Check connections & transformer in E-box and correct
	C. Bad or missing cable connection	C. Connect or replace cable.
	D. Control Board bad	D. Replace Control Board
No condenser fan or compressor	A. Software detected error condition	A. See error table document
	B. Bad contactor or connections	B. Check connections, contactor & transformer in E-box and correct
No condenser fan but compressor runs	A. Bad connections	A. Check connections at contactor and fan & correct
	B. Bad condenser fan	B. Replace
	C. Bad contactor	C. Replace
No compressor but condenser fan runs	A. Bad connections	A. Check connections at contactor, capacitors, start relay & compressor and correct
	B. Bad start relay	B. Replace
	C. Bad capacitor(s)	C. Replace
	D. Bad compressor	D. Replace
	E. Bad contactor	E. Replace
Product Bowl blades do not turn	A. Blades uncoupled from drive	A. Check that hopper product viscosity is within limits & correct as necessary
	B. Bad/missing connections to hopper motor	B. Check connections & correct as necessary
	C. Control Board bad	C. Replace Control Board
	D. Bad Product Bowl motor	D. Replace motor
Product does not dispense	A. Motor does not turn	A. See next section
	B. Dispense valve clogged.	B. Check valve and clean if necessary
	C. Bad connections to dispense switch	C. Check connections/correct as needed
	D. Dispense switch bad or mis-located	D. Adjust/replace as needed
	E. Control Board bad	E. Replace board
Motor does not turn at all	A. Face plate not in proper position or missing	A. Verify face plate is secure & in proper position for unit operation
	B. Product frozen solid	B. Clean out barrel & check that viscosity settings are correct for current product
	C. Software detected error condition	C. See error table document
	D. Bad connections.	D. Check connections between E-Box, control board & correct as needed.
	E. Faceplate switch bad or mis-located	E. Adjust or replace faceplate switch
	F. Control Board bad	F. Replace

TROUBLESHOOTING PRODUCT NOT COLD

Problem	Probable Cause	Remedy
Compressor not Running	A. Barrel not in Freeze or Refrigerate mode. B. No voltage to compressor. C. Bad start components. D. Compressor's thermal overload protector "open". E. Open or shorted compressor windings. F. Bad Control Board.	A. Select Freeze or Refrigerate. B. Check power at contactor L2 - L3, T2 - T3. C. Check components and wiring. D. Check resistance of compressor windings & check incoming line voltage. E. Check resistance of compressor windings. F. Troubleshoot, replace if necessary.
Compressor Running but not Cooling	A. Low refrigerant. B. Restricted condenser/filter. C. Condenser fan motor/blade defective. D. Liquid Line valves not operating. E. Defective compressor.	A. Repair leak & weigh in new charge. B. Clean or repair. C. Repair or replace. D. Check cables and connections to control board & repair or replace. E. Repair or replace.
Restricted Air Flow	A. Dirty filter. B. Dirty condenser. C. Damaged fins. D. Not enough "clearance" around unit.	A. Clean filter. B. Clean condenser. C. Repair/replace if necessary. D. Ensure proper spacing around unit.
Fan Motor not operating properly	A. Bad connection B. Bad motor C. Cracked or bent fan blade	A. Check/connect B. Replace motor C. Replace fan blade
Liquid Line Valves not operating	A. Miswired. B. Defective coil. C. Valve mechanically bad. D. Defective control board or transformer.	A. Correct wiring. B. Replace coil. C. Replace valve. D. Check and replace.
No/Low Refrigerant	A. Leak.	A. Repair and weigh in new charge.
Thermistors/Reed Switches	A. Bad connection. B. Bad sensor. C. Sensor out of position. D. Defective control board.	A. Correct wiring. B. Replace sensor. C. Reposition sensor and clip. D. Replace.

Error Conditions

Table 14 shows the possible system errors and a description of these errors. Figure 34 shows the locations of the LED designations on the control panel.

Figure 34.

NOTE: FL and a number indicates that the LED is flashing, L and a number indicates that the LED is continuously on.

Table 14.

Display Priority	Display Output	Error	Description
1	FL2 & FL3	Corrupted Data	Occurs when the system reads the user settings from EEPROM and it has become corrupted. The unit shuts down and the EEPROM must be reprogrammed.
2	L1, L2 & L3	Stuck Keypad	Occurs when any one of the keypad buttons is not functional anymore. This error can be detected at start-up or if a continuous key press is detected for more than 1 minute during any run mode.
3	L1 & FL3	Motor Calibration	Occurs only in the Service Mode when calibration value is outside the +/-10% window from the factory reference value. Once started, the calibration process requires 10 min. to complete. Any interruptions prevent the unit from performing a motor calibration. The user can reset the error from the front panel. (Press and Hold ON/OFF Button for 3 seconds).
4	FL1 & FL3	Barrel TCO	Occurs when any of the thermistors measure more than 120°F for 10 seconds and the unit is in either the REFRIGERATE or FREEZE Mode. It can only be reset by power cycling the unit.
5	L1 & L3	Machine Disable	This error occurs when the faceplate switch is deactivated. Motor power is not available (also see next error). The unit is disabled until the faceplate is properly installed.
6	FL1 & L3	AC Relay Open	This error occurs when the motor controller does not detect voltage available for the motors but the faceplate is in place (can be refrigeration pressure switch or related circuit element). It can only be reset by power cycling the unit.
7	FL1 & FL2	Hopper Refrigeration Error	This error is triggered when hopper temperature does not pull down in a specified time when in FREEZE or REFRIGERATE Mode. (Cut-in Temp + 13° F within 3 hrs.); it is assumed that the hopper evaporator is malfunctioning. (This error timer is not interrupted when the barrel takes refrigeration priority). The error timer is cleared when the hopper goes into IDLE state. The error itself can only be cleared by power cycling the unit.
8	L1 & L2	Barrel Refrigeration Error	This error is triggered when the barrel has been in FREEZE or REFRIGERATE Mode (viscosity not reached) for more than 40 min. Every handle activation (product dispense) resets the 40 minute timer. This error can only be cleared by power cycling the unit.
9	L3	Motor Drive	This error has two implications: it can occur when the barrel motor command is on, but no motor current is detected, such as if the motor is disconnected. This case can be reset from the front panel, which should be tried first (Press and hold OFF for 3 sec., then ON). However, it also occurs if the barrel motor is turned off but motor current is still detected; in this case, the error display will reset via the front panel, but reoccurs IMMEDIATELY. Unit must be power cycled to clear it.
10	L2	Thermistor Error	This error is triggered when any of the 3 thermistors are detected open for more than 30 seconds. The error timer resets when all the thermistors read "normal". This error can only be reset by power cycling the unit.

Table 14.

Display Priority	Display Output	Error	Description
11	FL2	No Handle	Occurs when the handle is open for a period of 1 minute while the system is in Freeze or Refrigerate Mode. The error auto resets if the handle is detected again.
12	L2 & L3	Communication Error	This error occurs when no communication packets are detected for a period of 10 seconds. This error resets when communication is reestablished.
13	FL1, FL2 & FL3	Voltage Error	This error occurs when line voltage is above or below normal functional limits for more than 30 sec. (It can also be triggered when the wrong motor type is selected in Service mode.) Limits are determined based on nominal (115V /230V) line voltage +10% up and -15% down. Error can auto reset if voltage is reestablished within normal limits for at least 30 sec. User can reset the error from the front panel. by pressing and holding the ON/OFF Button for 3 seconds.
14	FL3	Motor Stall	This error occurs when the control board reports a stall condition on the motor. The error is detected when the unit is in any run mode. The error can be reset from the front panel by pressing and holding the ON/OFF Button for 3 seconds.
15	FL1	No Product	No product is an error that can be detected only in mix out condition. Error is triggered if the dispense lever has been activated for a cumulative time of 2 min. This error prevents the user from accessing FREEZE or REFRIGERATE Mode because it is assumed that there is no more product in the barrel to be served. However, the user can access CLEAN Mode. The error automatically resets if the unit is in ON Mode and the hopper is refilled with product. This restores access to all unit modes.
16	L1	Low Product	This error occurs when low product level is detected in the hopper; the system goes into MIXOUT Mode. The error automatically resets if more product is added to the hopper.

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SPECIFICATIONS

Line Voltage: . . . . . 115VAC +10%, -15% (60 Hz.)
. . . . . 230VAC +10%, -15% (50 Hz.)

Max. Current Draw (FLA): . . . . . .16 A., 2549 W. (115V)
. . . . . .8 A., 2549 W. (230V)

Ventilation Clearance . . . . . 3 in. (8 cm) on back
. . . . . Open to ceiling
. . . . . .0 in. (0 cm) on sides of unit

Equipment Weight (empty): . . . . . .225 lbs. (102 kg)

Approx. Product Weight: . . . . . 36.48 lbs. (16.56kg)

Product Bowl Capacity: . . . . . .3 Gal. (11.4 liters)

Chamber Capacity: . . . . . .1 Gal. (3.8 liters)

Height (to the top of the Bowl Cover) (including 4 in. legs): . . . . . 35 in. (89 cm)

Clearance required for product fill: (Open to ceiling) . . . additional 12 in. (30 cm)

Width: . . . . . 15-1/2 in. (39 cm)

Depth (including drip tray): . . . . . 34 in. (86 cm)

Operating Temperature: . . . . . 55 to 105° F (13 to 40.5° C)

Refrigeration Type: 404A

Compressor Type: . . . . . ¾ hp reciprocating

Refrigerant Charge: . . . . . 20 oz. (567 g)

System Pressures: . . . . . .Barrel ~250 PSIG (17.6 kg/cm^2) High side
. . . . . and ~45 PSIG (3.2 kg/cm^2)Low side
. . . . . Bowl ~200 PSIG (14.0 kg/cm^2)High side
. . . . . and ~33 PSIG (2.3 kg/cm^2)Low side
. . . . . System pressures are measured at 75° F. (24° C) ambient

Bowl Temperatures: . . . . . .Maintains <41° F (5° C)

Barrel Freeze Time. . . . . .
. . . approx. 10 min. @ 75° F (24° C) ambient w/65° F (18° C) product from bowl

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