



OPERATOR'S MANUAL
with Illustrated Parts List

GENESIS SERIES

Soft Serve Freezer

Model GEN-5400

184297— 6/17

**Operator's Manual
for
Electro Freeze
Soft Serve Freezer
Model GEN-5400**

SAFETY FIRST!

Follow these four steps to safety


1. Recognize Safety Information Look for this safety alert symbol throughout this manual.



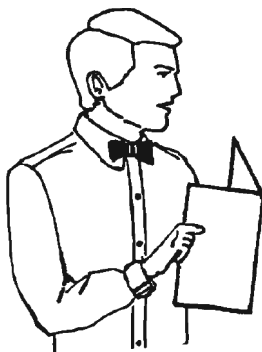
When you see this symbol on your freezer or in this manual, be alert to the potential for personal injury. Follow recommended precautions and safe operating practices.

2. Understand Signal Words



The signal words — **DANGER**, **WARNING** and **CAUTION** — are used with the safety alert symbol (DANGER decals on the freezer may or may not have the safety alert symbol, but the message is the same). Decals with the words DANGER, WARNING or CAUTION appear on the freezer. DANGER identifies the most serious hazard. Decals with the words DANGER or WARNING are typically near specific hazards on the freezer. General precautions are listed on CAUTION safety decals. In this manual, CAUTION messages with the safety alert symbol  call attention to safety messages.

3. Follow Safety Instructions



Read and understand all safety messages in this manual. Read and understand the decal safety messages on your freezer. Take notice of the location of all decals on the freezer and keep the safety decals in good condition. Check them periodically and replace missing, damaged or illegible safety decals. The safety decals must remain in place and legible for the life of the freezer. If you need new decals, use the information and illustrations on pages v and vi of this manual to identify the decal and call or write to H.C. Duke & Son, LLC. or local Electro Freeze distributor.

DO NOT attempt to operate the soft serve freezer until you read and understand all safety messages and the operating instructions in this manual.

SAFETY FIRST!

4. Definitions

Trained person (or Operator): A person who has been trained in the basic operation of the freezer. This person is knowledgeable in the operation of machine startup, stopping, filling, and basic cleaning, disassembly, washing, and sanitation of the freezer.

Freezer Technician: A person who has been trained by a factory representative, or an experienced and qualified service person, to perform more complicated operations such as freezer installation, maintenance repairs, component replacement, is aware of hazards associated with electricity, moving parts, and takes necessary steps to protect against injury to themselves and other people.

5. Operate Safely

IMPORTANT: Store Managers, owners, and supervisors must be aware of staff capabilities and that they do not perform freezer operations outside their level of knowledge or responsibility.



DO NOT allow untrained personnel to maintain or service this freezer. Failure to follow this instruction may result in severe personal injury. **DO NOT** operate the freezer until all service and access covers are secured with screws. **DO NOT** attempt to repair the freezer until the main power supply has been disconnected. Some freezers have more than one disconnect switch. Contact your authorized service representative for original equipment parts.

6. Caution



- This Freezer is to be operated by trained persons. The Dispense feature, if used by public in self-serve applications, shall be monitored by trained persons able to assist people with physical, sensory or mental impaired capabilities.

- Children should not be allowed to play around this equipment.
- Do not store explosive substances such as aerosol cans with a flammable propellant in freezer.
- This appliance is not designed for outdoor weather conditions and shall not be exposed to rain.
- Do not wash machine with power sprayer. Do not install machine next to a power sprayer where splash of freezer can occur.
- Machine is designed for use in areas of normal atmosphere. It is not to be used in areas subject to explosion-proof standards.

Safety Decal Locations

Do not attempt to operate the freezer until all safety precautions and operating instructions in this manual are read and understood.

Take notice of all warning, caution, instruction and information decals (or labels) on the freezer as shown in the figure to the right. The labels have been put there to help maintain a safe working environment.

The labels have been designed to withstand washing and cleaning. All labels must remain legible for the life of the freezer. Check labels periodically to be sure they can be recognized as warning labels.

If it is necessary to replace *any* label, please contact your local authorized Electro Freeze Distributor or H. C. Duke & Son, LLC. When ready to order, you will need to determine the (1) part number, (2) type of label, (3) location of label, and (4) quantity required, and include a return shipping address.

You may contact your local authorized Electro Freeze Distributor, as follows:

Name: _____

Address: _____

Phone: _____

or—for factory service assistance—
contact H. C. Duke & Son, LLC. Electro
Freeze Service Department by phone or
FAX:



Phone: (309) 755-4553
(800) 755-4545

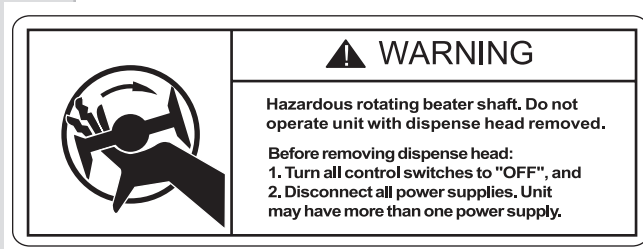
FAX: (309) 755-9858

E-mail: service@hcduke.com

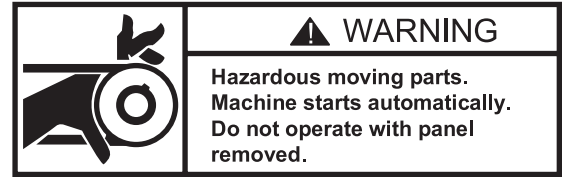
(The decals on the next page are numbered 1, 2, and 3. Those numbers correspond to the numbers in the table below. The table provides the part number, description, and quantity for each decal.)

No.	Part No.	Description (Qty)
1	HC165025	Decal — Beater Warning (1)
2	HC165126	Decal — Panel Removal (3)
3	HC165048	Decal — Rotating Parts (1)
4	HC165246	Decal — Pressurized System (1)

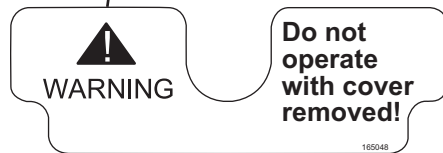
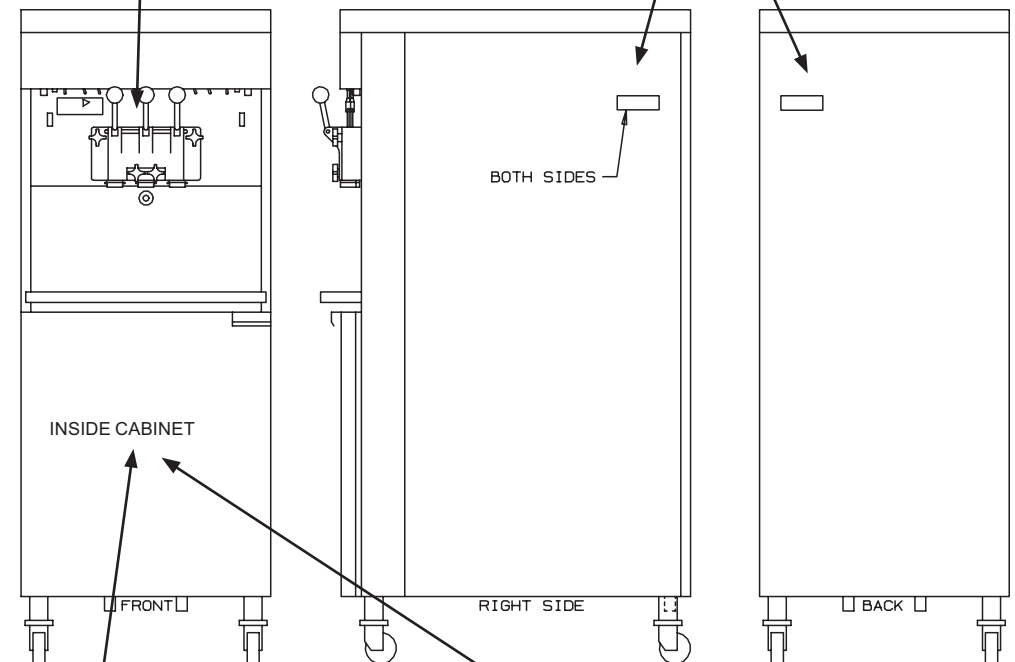
Safety Decal Locations



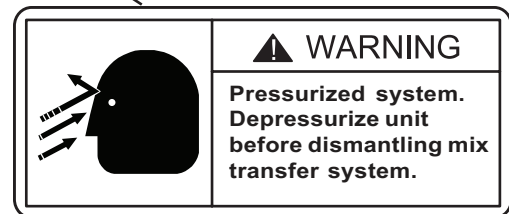
1 HC165025



2 HC165126



3 HC165048



4 HC165246

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*Refer to Part II Table of Contents for help with locating part numbers and illustrations.

1 Introduction

The GEN-5400 Freezer is designed to produce soft serve ice cream, ice milk, yogurt, and similar frozen dairy products, with a product serving temperature range of 15 to 25°F (-9° to -4°C). If such products are prepared from powdered concentrate, they should be precooled to 40°F (4°C) prior to introduction to the freezer. Use of other products in this machine is considered misuse (see Warranty).

This manual has been prepared to assist you in the proper operation and general maintenance of the Electro Freeze Soft Serve Model GEN-5400.

Your freezer will not compensate for or correct any assembly or priming errors made during the initial start-up. Therefore, it is important to follow the assembly and priming procedures detailed in this manual.

Make sure all personnel responsible for equipment operation completely read and understand this manual before operating the freezer. When properly operated and maintained, the freezer will produce a consistent quality product.

If you require technical assistance, please contact your local authorized Electro Freeze Distributor as follows:

Name _____

Address: _____

Phone: _____

For factory service assistance — contact H. C. Duke & Son, LLC., *Electro Freeze* Service Department as follows:

Phone: (309) 755-4553
(800) 755-4545



FAX: (309) 755-9858

E-mail: service@hcduke.com

2 Note to Installer

This freezer must be installed and serviced by an *Electro Freeze* Distributor or authorized service technician in accordance with the installation instructions.

After installation the warranty registration card must be completed and returned to validate the warranty.

2.1 Uncrating and Inspection

CAUTION

Be sure to properly support the machine when removing bolts and installing legs or casters.

When the unit is received and while the carrier is still present, inspect the shipping carton for any damage that may have occurred in transit. If the SHOCKWATCH® label indicates red and/or the carton is broken, torn, or punctured,

note the damage on the carrier's freight bill and notify the carrier's local agent immediately.

1. Remove the carton from the pallet, and move the machine as close as possible to the permanent location.

2. Remove the shipping bolts on the bottom of the freezer (figure 2-1) and install either the legs or casters (figure 2-2).

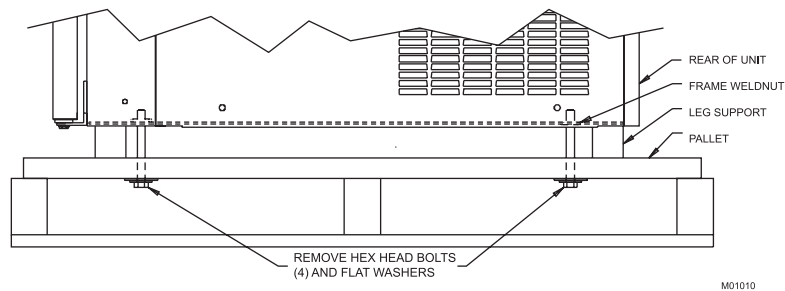
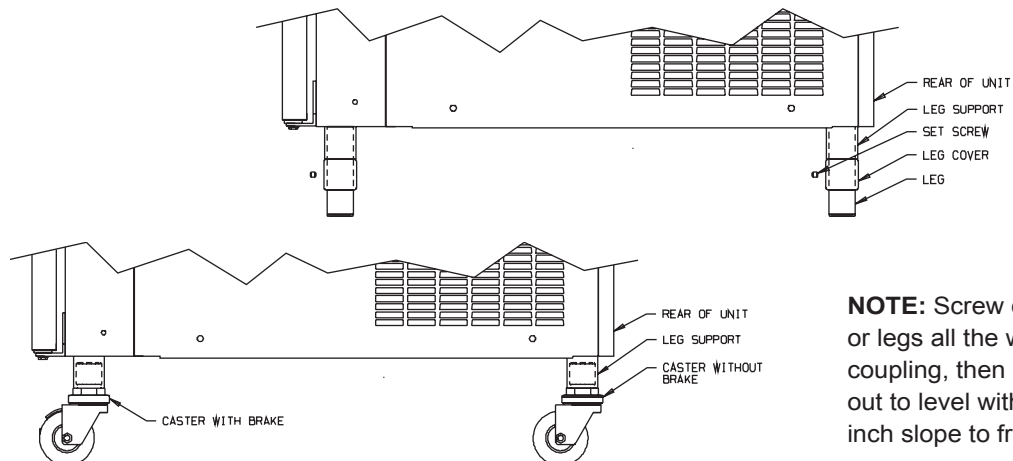


Figure 2-1 Machine Bolted to Shipping Base



NOTE: Screw casters or legs all the way in coupling, then adjust out to level with 1/4 inch slope to front.

Figure 2-2 Installing Mounting Legs or Casters

2.2 Installation



CAUTION
All materials and connections must conform to local requirements and be in compliance with the National Electrical Code.

1. This freezer is designed for indoor use and must be protected from outdoor weather conditions.

2. Where codes permit, Electro Freeze recommends that the freezer be installed on casters and have flexible water and electrical connections for easier service and cleaning.

3. **All models** require a minimum 6 inch (15 cm) clearance on either the side panels or the rear panel for adequate ventilation. Freezers designed with top air discharge require at least 18 inches (45 cm) above the top panel be free of obstructions. Anything blocking ventilation of the freezer (including cone dispensers) will reduce the efficiency of the freezer.

4. **Water cooled** double models will require a 1/2 inch MPT water inlet and water waste connection. Both water condensers are tied together so that one water inlet and one water waste is all that is required. The connections are found on the bottom under the compressor mounting area and are clearly tagged "Water Inlet" and "Water Waste." A manual shut-off valve should be installed in the water inlet line at the time of installation. The water pressure must be between 35-140 psig (241-965 kPa) for proper operation.

5. Place the freezer in the final location and level by adjusting the legs or casters so that it is level side-to-side and the front is approximately 1/4 inch (6 mm) lower than the rear to allow proper drainage of the freezing cylinder.

2.3 Electrical Requirements



CAUTION
To prevent accidental electrical shock, a positive earth ground is required.

1. Always verify electrical specifications on the data plate of each freezer. Data plate specifications will always supersede the information in this manual.

2. Supply voltage must be within $\pm 10\%$ of voltage indicated on the nameplate.

Important:

On 1ph freezers, the voltage must be within +10% and -5

Also, on three-phase systems, voltage between phases must be balanced within 2%. (More than a 6 volt difference between any two voltage measurements at 208-230 volts indicates a possible imbalance.) Request your local power company to correct any voltage problem.

3. An easily accessible main power disconnect must be provided for all poles of the wiring to the freezer.

2.4 Electrical Connections



CAUTION
To prevent accidental electrical shock, a positive earth ground is required.

1. Double freezers with two compressors require one power supply for each side of the freezer. Each side of the freezer operates independently.
2. Check the data plate for fuse size, wire ampacity and electrical specifications.
3. Refer to the wiring diagram provided for proper power connections.
4. Electrical connections are made in the junction box located mid-level behind the left side panel.
5. Use a flexible connection when permissible. All materials and connections must conform to local codes and the National Electrical Code.
6. For 3 phase freezers, beater shaft rotation must be clockwise as viewed from the front of the freezer.

3 Specifications

3.1 Particulars

Always check and verify voltage and amperage on the data plate located on the back panel of each freezer.

GEN-5400

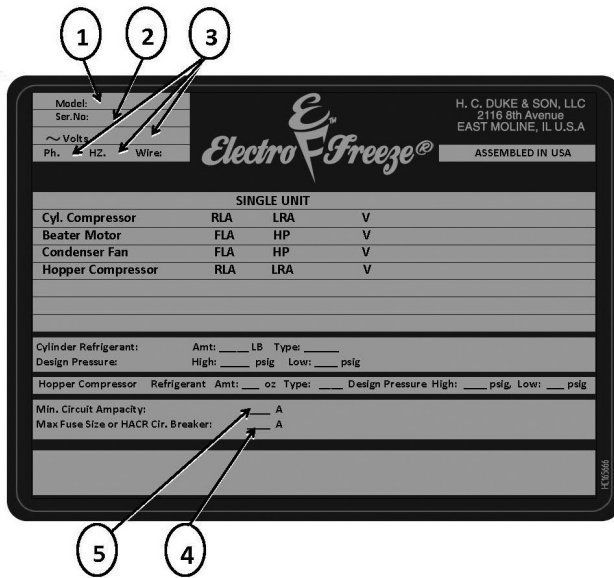
Width (in/cm).....	26/66
Height (in/cm) (Water cooled).....	67.5/171
Height (in/cm)(Air cooled).....	68/173
Depth (in/cm)	36.5/93
Weight (lbs/kg).....	847/385
Compressor Cylinder (2)*	2 HP/19000 BTUH 2.2 kw (Motor) 3.2 kw (Cooling)
Compressor Cabinet (1)*	1/6 HP/650 BTUH 125w (Motor) 190kw (Cooling)
Beater Motor	2 HP/1.5 kw
Refrigerant	404a
Charge**	3.75 lb/1.7 kg
Mix Container (2)	24 Qts/22.7 Liters
Cylinder (2)	4 Qts/3.8 Liters

*Contact factory for other voltages.

**for each side

ELECTRO FREEZE Soft Serve Model GEN-5400

3.2 Data Plate



The data plate provides important information that the operator should record and have available for parts ordering, warranty and service requests.

3.3 Reference Information

Write in Reference Information HERE!

Fill in this information as soon as you receive the Electro Freeze GEN-5400 Soft Serve Freezer. The item numbers, encircled, correspond with the callout numbers in figure 3-1.

- ① Model Number: _____
- ② Serial Number: _____
- ③ Electrical Spec: Voltage _____
Phase _____ Hertz _____
- ④ Maximum Fuse Size: _____
- ⑤ Minimum Circuit Ampacity: _____

3.4 Installation Date

Fill in the date of installation, and the name, address, and phone number of the installer in the space provided below. This information will be needed when ordering parts or service for the GEN-5400 freezer.

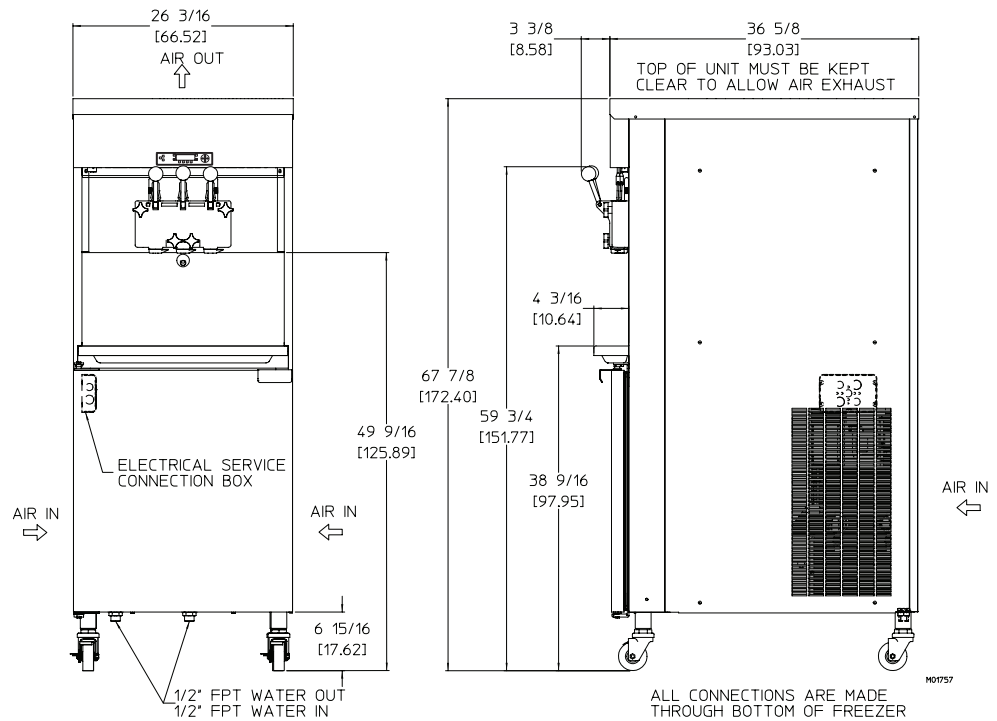
Date of installation: _____

Installed by: _____

Address: _____

Phone: _____

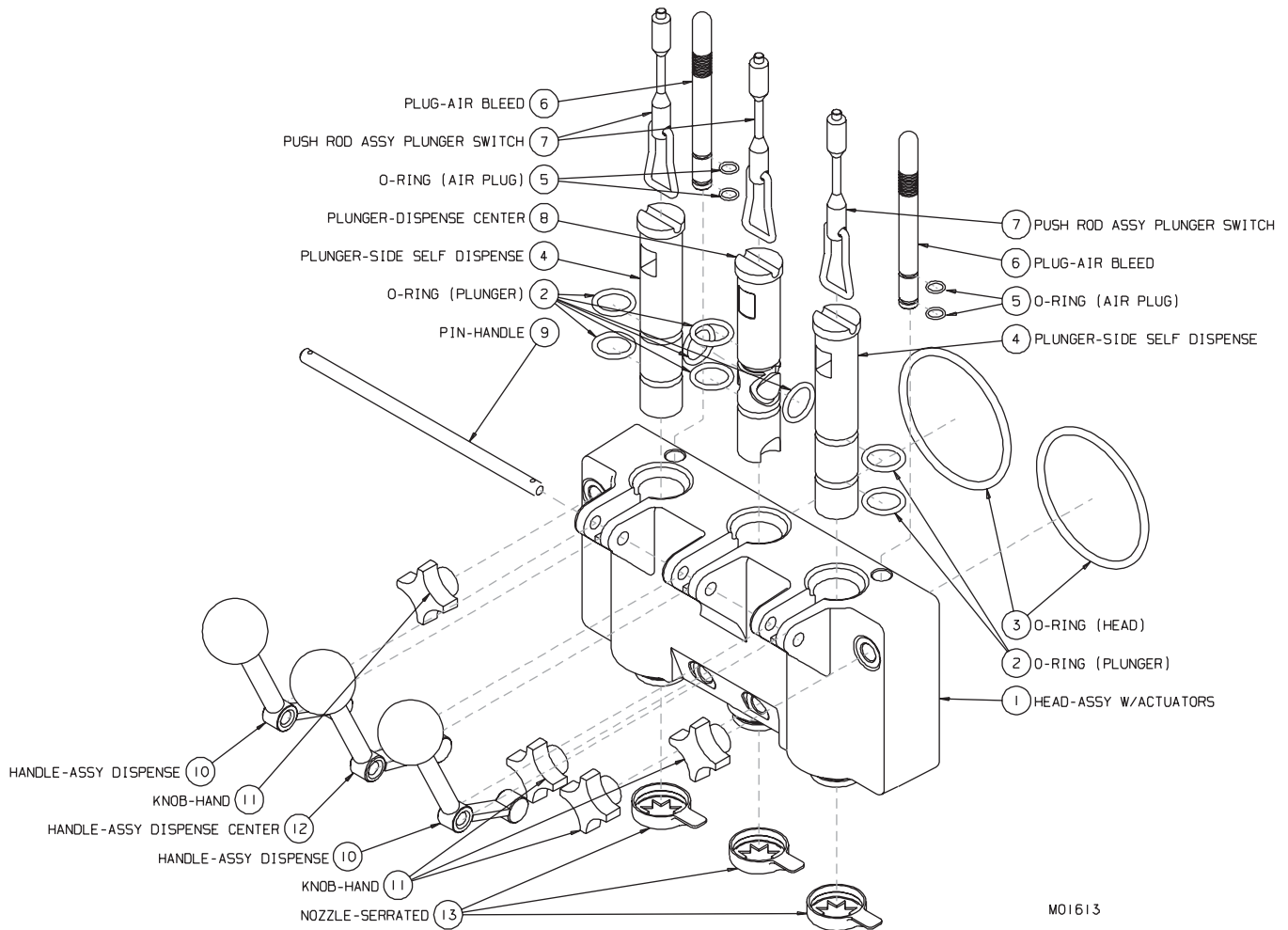
3.5 Dimensions



* NOTE: Electrical service box is located behind left side panel.

Figure 3-2 Dimensions

4 Part Names and Functions



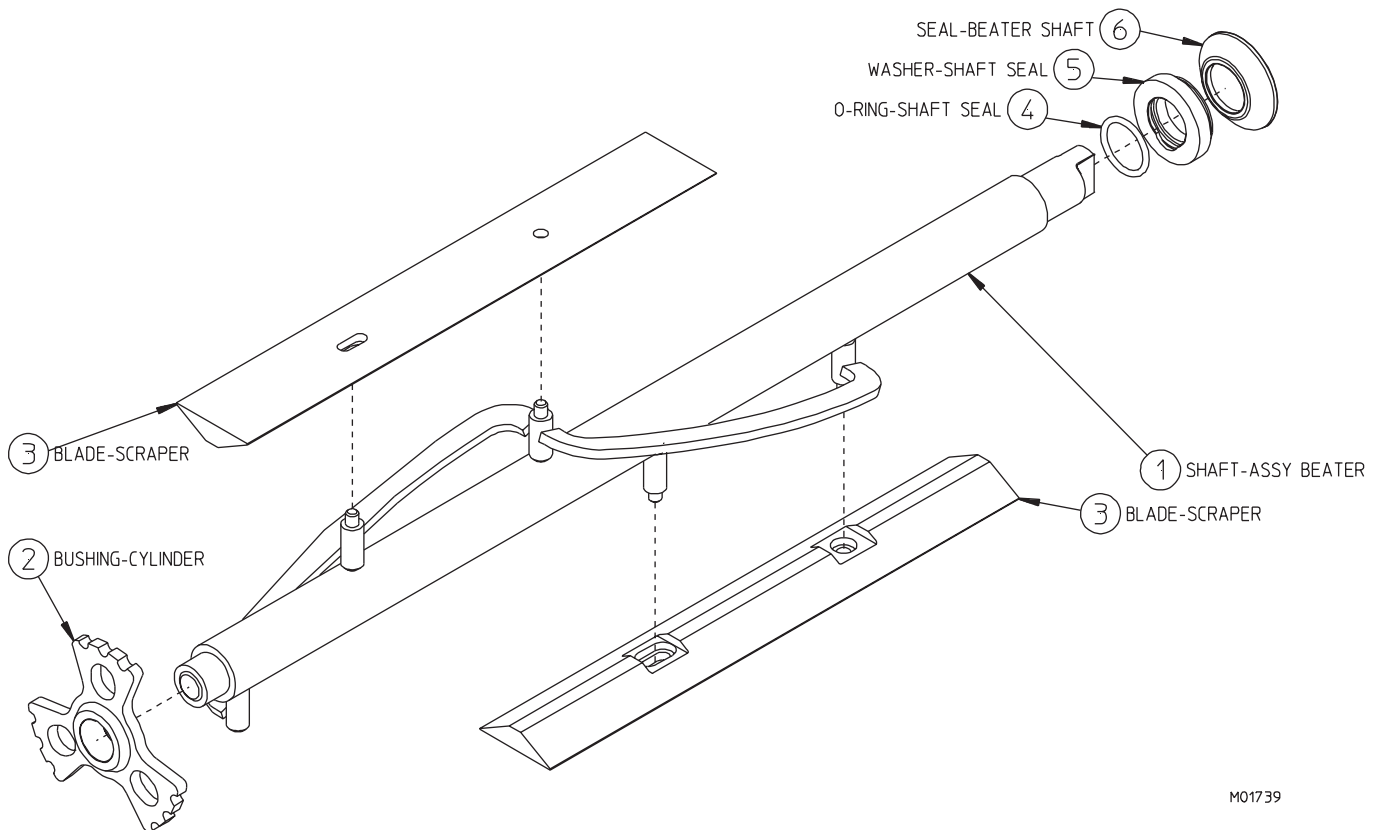
M01613

4 Part Names and Functions (continued)

The following descriptions apply to figure 4-1. The number preceding the part name corresponds to the number in the figure.

- 1.) **HEAD - DISPENSE:** Encloses the freezing cylinder and provides an opening for product to be dispensed.
- 2.) **O-RING - PLUNGER:** Seals the plunger in the dispense head. Must be lubricated to seal and slide properly.
- 3.) **O-RING - HEAD:** Seals the dispense head to the freezing cylinder. Must be lubricated.
- 4.) **PLUNGER - SIDE** Seals the product opening in the dispense head when closed. Allows product to flow when open.
- 5.) **O-RING - PLUG:** Seals the air bleed plug in the dispense head.
- 6.) **PLUG - AIR BLEED:** Seals the air bleed opening in the dispense head when closed. Allows excess air to be removed from the cylinder during the filling process.
- 7.) **ROD - PLUNGER:** Starts the freezer when dispensing. Must be in place before freezer will operate.
- 8.) **PLUNGER - CENTER:** Seals the product opening in the dispense head when closed. Allows product to flow when open.
- 9.) **PIN - HANDLE:** Secures the handle to the dispense head.
- 10.) **HANDLE - DISPENSE SIDE:** Opens and closes the plunger to start and stop the flow of product from the freezer.
- 11.) **KNOB - HAND:** Secures the dispense head to the freezing cylinder.
- 12.) **HANDLE - DISPENSE CENTER:** Opens and closes the plunger to start and stop the flow of product from the freezer.

4 Part Names and Functions (continued)



M01739

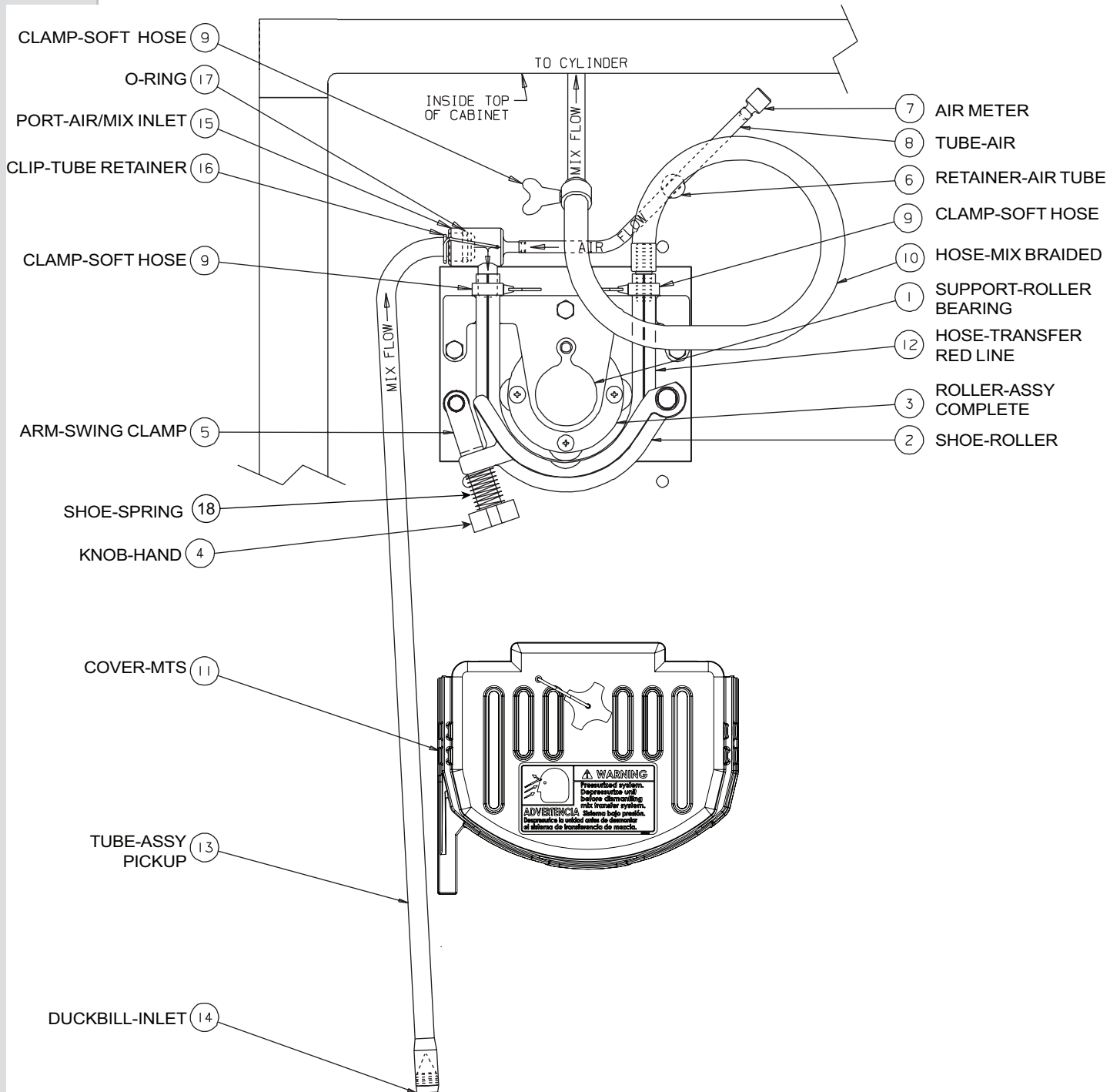
Figure 4-2 Beater Shaft Assembly

4 Part Names and Functions (continued)

The following descriptions apply to figure 4-2. The number preceding the part name corresponds to the number in the figure.

- 1.) **SHAFT - BEATER:** Rotates in the freezing cylinder, blending air and mix as it ejects product.
- 2.) **BUSHING - CYLINDER:** Holds the beater in place at the front of the cylinder. Must be lubricated.
- 3.) **BLADE - SCRAPER:** Scrapes the frozen product from the freezing cylinder wall.
- 4.) **O-RING - SHAFT SEAL:** Seals the beater shaft to the shaft seal. Is inserted into the seal washer. Must be lubricated.
- 5.) **WASHER - SHAFT SEAL:** Holds the shaft seal o-ring. Lightly lubricate the side opposite the beater shaft seal.
- 6.) **SEAL(CUP) - BEATER SHAFT:** Seals the opening between the freezing cylinder and the beater shaft. Do not lubricate rubber cup portion.

4 Part Names and Functions (continued)



M00833

Figure 4-3 Mix Transfer System (MTS)

4 Part Names and Functions (continued)

The following descriptions apply to figure 4-3. The number preceding the part name corresponds to the number in the figure.

- 1.) **SUPPORT - ROLLER BEARING:** Holds roller assembly in place.
- 2.) **SHOE - ROLLER:** Provides an opening to insert the mix transfer hose. Squeezes transfer hose against rollers.
- 3.) **ROLLER ASSEMBLY COMPLETE:** Squeezes mix/air through tubing to freezing cylinder.
- 4.) **KNOB - HAND:** Locks roller shoe in position.
- 5.) **ARM - SWING CLAMP:** Swings hand knob into position over roller shoe.
- 6.) **RETAINER - AIR TUBE:** Holds air meter tube in the "up" position.
- 7.) **AIR METER:** Regulates the amount of air being drawn into the system.
- 8.) **TUBE - AIR:** Provides connection for the air meter.
- 9.) **CLAMP - ASSY. SOFT HOSE 5/8":** Prevents mating parts from leaking.
- 10.) **HOSE - ASSY. MIX BRAIDED:** Connecting tube between the Mix Transfer System and the cylinder inlet.
- 11.) **COVER - MTS:** Protection against moving parts. Cover must be in place for the MTS to operate.
- 12.) **HOSE - TRANSFER RED:** Special "red-lined" hose that is squeezed by rollers to transfer mix to freezer.
- 13.) **TUBE - ASSEMBLY MIX INLET:** Carries mix from mix container to MTS.
- 14.) **DUCKBILL:** A rubber check valve that prevents mix from falling back into the mix container.
- 15.) **PORT - AIR/MIX:** Blends air and mix as it flows into the transfer hose.
- 16.) **CLIP - TUBE RETAINER:** Locks mix pickup tube into air/mix port.
- 17.) **O-RING - MIX TUBE:** Seals the mix tube in the air/mix port.
- 18.) **SHOE - SPRING:** Holds clamp in place.

5 Operator Controls

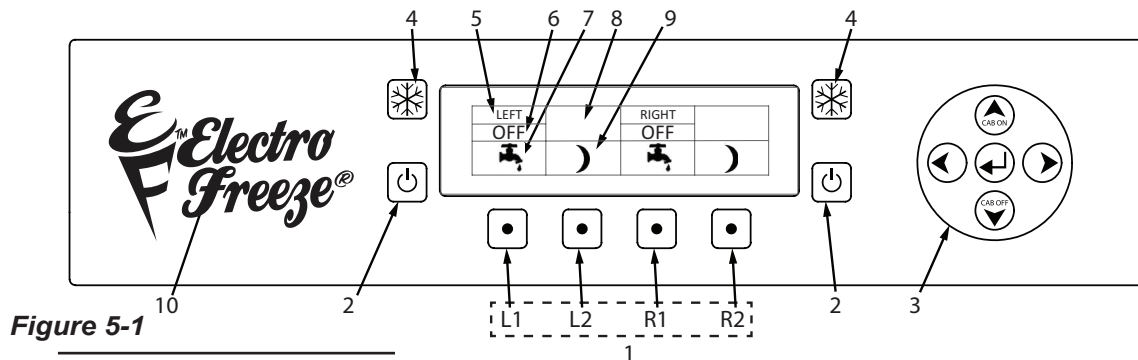


Figure 5-1

The following paragraphs describe the operator controls. Refer to Fig. 5-1 for numbered items in description. Note the left side controls operates the left side cylinder. Operation for right side controls is the same. The display window has three levels of display: Operators Menu, Technician Menu. The last menu is restricted and reserved for use by qualified personnel.

CAUTION

Test operation of the head switch prior to placing the freezer in service. See Section 11, Routine Maintenance, Monthly.

NOTE: The dispense head must be in place before the freezer will operate.

1. Function Buttons (Four)

Pressing any of these buttons will activate the icon directly above in the display screen. Left side (L1 & L2), Right Side (R1 & R2).

2. OFF Key

When this symbol is pressed, the left side of unit will shut off. The beater motor and compressor will not operate.

3. Navigation Pad (Up/Down = Cabinet ON/OFF)

Used to navigate the menu structure. Up/Down arrows are used to turn the cabinet on/off when both cylinders are off. Used by technicians for programming and setting changes. See Troubleshooting section for Operator accessible controls.

4. Freeze Symbol

When this symbol is pressed, the unit will enter the automatic freeze mode. Both the hopper and cylinder compressors will energize to refrigerate product to settings in program. Use this button for DAY mode operation to maintain product in “ready to serve” state.

5 Operator Controls (continued)

5. Left or Right side Control Indicator

Left indicates controls for left side cylinder and hopper. "Right" Indicates controls for right side of freezer cylinder and hopper.

6. Mode of Operation Indicator

There are three primary modes of operation:

a. **OFF** – This is the indicator when power is applied to freezer and when (OFF) button is pressed. In this mode, the refrigeration and beater motor will not operate.

b. **FRZ** – This is the indicator when Freeze button is pressed. In this mode, the freezer is in automatic freeze mode and both the beater motor and refrigeration will activate as needed. Use this position for dispensing product from freezer. Cabinet will also be refrigerated as needed to maintain product below 41°F.

Important: Do not use the  freeze position with water or sanitizer in the cylinder or hopper. The freezer will be damaged.

c. **Standby** – This is the indication when the Night button is pressed. In this mode, an energy-saving feature will activate and reduce product refrigeration. The freezer will automatically cycle to maintain temperatures in the cylinder and cabinet below 41°F and keep product from deteriorating. Use this position when the freezer will not be in use for periods of more than one hour.

7. Wash or Clean Mode

Press the function button directly below icon to activate clean mode. Also allows individual activation of the mix pump & beater.

8. Information Window

This window is normally blank when unit is functioning properly. This window will give you indication when mix in hopper is low and other error messages. Refer to Troubleshooting Section of manual for details on error messages.

9. Standby Indicator

This is the indication when the Night button is pressed. In this mode, an energy-saving feature will activate and reduce product refrigeration. The freezer will automatically cycle to maintain temperatures in the cylinder and cabinet below 41°F and keep product from deteriorating. Use this position when the freezer will not be in use for periods of more than one hour.

11. Hidden Operator Menu Key

Press this key to enter the operator menu to adjust the freezers settings.

5 Operator Controls (continued)

12 Power Switch See Figure 5-3

In the "ON" position, power is supplied to the beater motors. Use this position to operate the freezer. Select the "OFF" position for disassembly and cleaning. See Operators Display Menu for use of this switch in recording cleaning cycles.

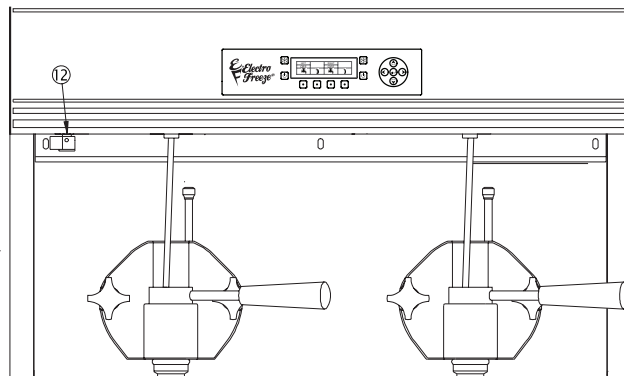


Figure 5-3

6 Operator Display Menus

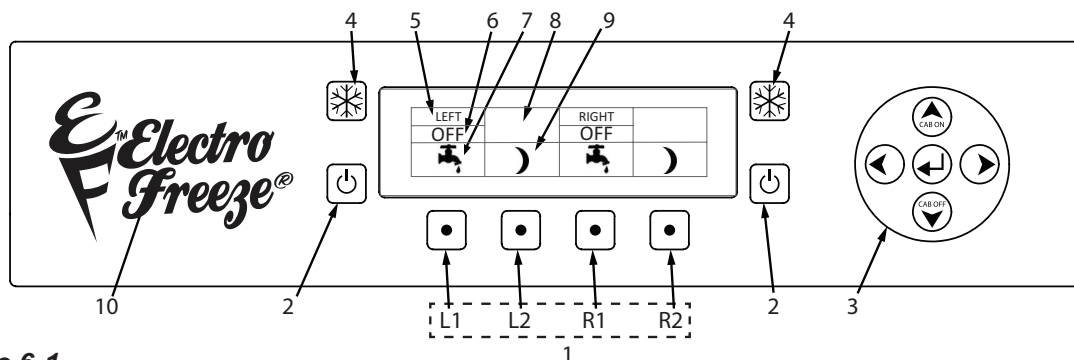


Figure 6-1

To Enter the Operator Menu, push and hold the hidden key (11) under the F for 3 seconds (figure 6-1).

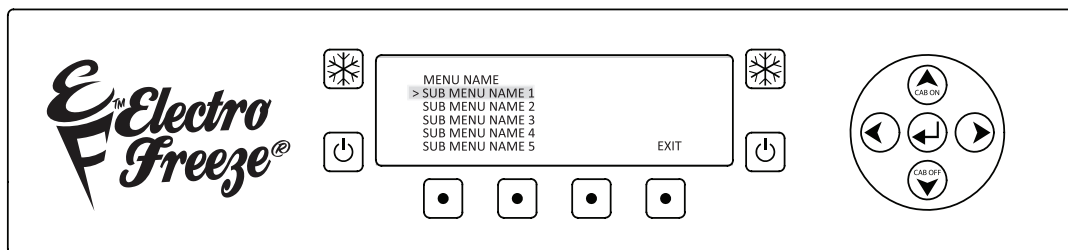


Figure 6-2

The operator menu will show up on the screen (figure 6-2). The cursor will highlight the selected sub-menu (i.e. Basic Setting, Actual Temps, etc.), use the Arrow Buttons to move the cursor up or down to the desired sub-menu. Once the desired menu is highlighted, in this example we will use Basic Settings, press the select (⏏) button to enter the sub-menu. Product Type and Temperature Offset will be shown for left and right barrel. Use the Arrow Buttons to move the cursor to highlight the value to be changed, once highlighted press the select button and the cursor will now be blinking. While the cursor is blinking the value may now be changed using the left or right Arrow Buttons, once you have reached the desired setting press select (⏏) one more time, the cursor will now stop blinking, this indicates that the value change has been stored. Follow these steps to change any other desired settings, once complete you may use the far right Function button to exit the operator menu or just wait and the menu will time out and return to the Home screen.

6 Operator Display Menus

Below is a list of the menu categories that are displayed upon entering the Operator's menu.

Operator's Menu Options

- Basic Settings
- Actual Temps
- Event Log
- Error Log
- Lockouts
- Screen Settings
- Date/Time
- Last Clean
- Software Version

The following information explains more about each of the menu options.

Basic Settings: Information Shown

Product Type

Left Barrel: nonfact, lowfat, highfat, or yogurt

Right Barrel: nonfact, lowfat, highfat, or yogurt

Temperature Offset 1-9, 5 is neutral

Actual Temps: Information Shown

Cabinet Temperature

Cylinder Temperature: Left or Right Cylinder

Event Log: Allows the operator to look at logged events i.e. power switch cycle, low mix, etc. The log will display the last 50 events with the newest event at the top.

Error Log: Allows the operator to look at logged errors i.e. Barrel refrigeration timeout, low/high refrigeration pressure, etc. The log will display the last 50 events with the newest event at the top.

Statistics: Shows the number of starts that the compressor/compressors, switches and beater motors have seen. Also displays the cumulative run time in hours for compressors and beater motors.

Information Shown

On Time Left & Right Barrel

Freeze Mode Left & Right Barrel

Standby Mode Left & Right Barrel

Off Left & Right Barrel

Last PWR Fail

All PWR Fail Time

All PWR Fails

Spigot Left & Right Barrel

6 Operator Display Menus (continued)

Statistics Cont.

Center Spigot	
Spigot Hours	Left & Right Barrel
C Spigot Hours	
Comp. Starts	Left & Right Barrel
Comp. Hours	Left & Right Barrel
Beater Starts	Left & Right Barrel
Beater Hours	Left & Right Barrel
Cab Comp. Starts	
Cab Comp. Hours	
Pump Starts	Left & Right Barrel
Pump Hours	Left & Right Barrel

Lockouts: Allows the operator to lock out the clean, freeze, and night function so that on the home screen when the button is pressed the unit will not react.

Information Shown

Freeze Mode	Y or N
Clean Mode	Y or N
Standby Mode	Y or N
Cab Only Mode	Y or N
Cones Left	5

Screen Settings: Operator can turn on or off the following functions:

Display Cabinet Temperature	Y or N
(Will or will not display Cabinet temp. on home screen)	
Alternate Moon	Y or N
Beep Function	Y or N
(unit will or will not beep when a button is pressed)	
Hide Clock Error	Y or N

Date/Time: Allows user to set the Real Time Clock and current date in the unit.

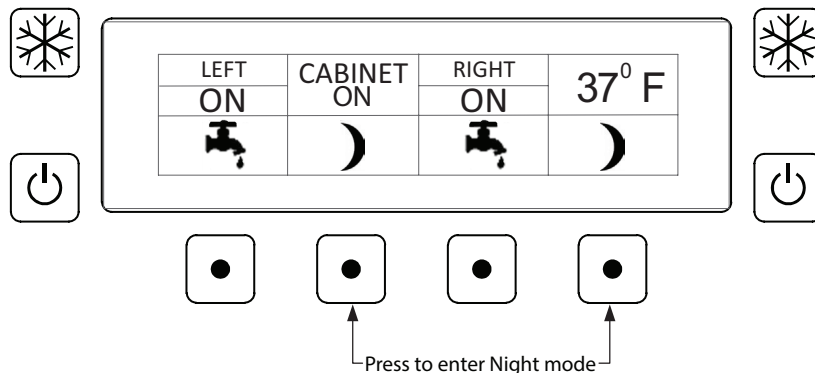
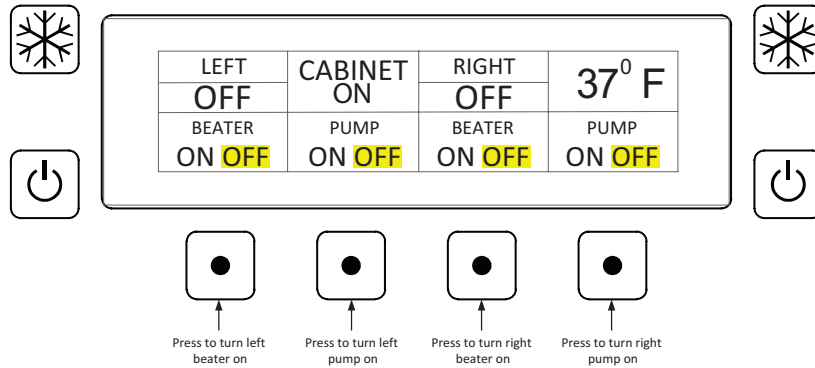
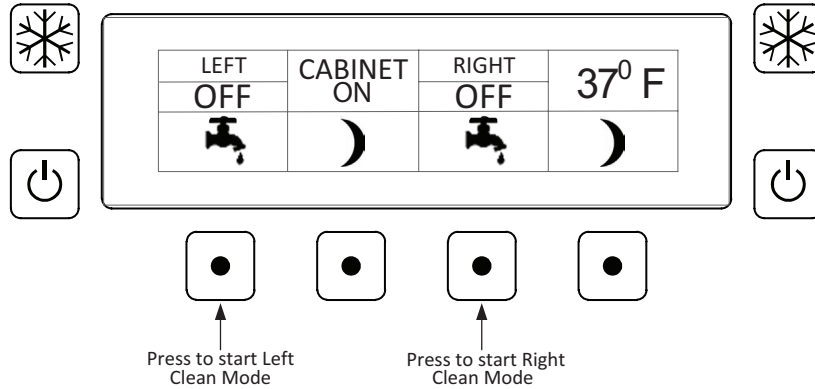
Last Clean: Displays the Last time the unit has been cleaned

Software Versions: Has current software version numbers for both the U.I. and Main board

Main	_____
U.I.	_____
Model	GEN
Cyl Count	2
Compressors	2
Hopper	Y or N
Cabinet	Y or N
Product Table	GEN or SLX

6 Operator Display Menus (continued)

Cabinet Temperature Map for user adjustment. User will only see 1 through 9 but the table below shows the differences with each number change. **6 is default setting**



7 Disassembly and Cleaning

Safety Information

This freezer uses pressure to assure consistent product quality. It is important for your safety that the freezer is depressurized slowly and completely whenever the freezer is to be drained, disassembled, cleaned, or serviced. The safety instructions in this manual will remind you when to check to make sure the freezer is depressurized. When you



CAUTION
Make sure freezer is depressurized before proceeding.

see this CAUTION statement the following steps should be taken:

1. Using the buttons L2 & R2 on the control panel be sure both MTS pumps are in the "OFF" position.



CAUTION
To avoid electrical shock or contact with moving parts, make sure the control pad is "OFF" and that the main power switch is "OFF".

2. Turn the control pad "OFF" and then turn "OFF" the main power switch.
3. Place a clean bucket under the dispense head.
4. **Slowly** open the spigots, allowing any pressurized cleaning solution or air to escape. If there is product in the freezer refer to Section 9, Closing Procedures, 9.1 Draining Product.
5. Remove the spigot switch rods and open the spigots completely.
6. Inside the refrigerated cabinet, remove the MTS cover, loosen the shoe clamp hand knob, swing back the shoe clamp and swing open the roller shoe on both mix transfer systems.

Following these steps will assure that the system is depressurized.

It is important that the freezer be disassembled, washed, lubricated and sanitized before operation.

The cleaning and sanitizing instructions explained in this manual are required to maintain a clean, sanitary freezer. The freezer should be disassembled, cleaned, reassembled, lubricated and sanitized daily to ensure the best possible product quality and freezer operation.

Persons assembling, cleaning or sanitizing the freezer must first wash and sanitize hands and forearms with an approved sanitizer.

7.1 Cleaning Accessories

The following accessories shipped with the freezer are necessary for cleaning, sanitizing, and disassembly/assembly:

- 1.) **HC158004 BRUSH:** 4 inch diameter with 36 inch handle used to clean the shake cylinder.
- 2.) **HC158019 BRUSH:** 9/16 inch diameter 30 inches long used to clean drain tube, the mix feed tube in the ceiling of the cabinet and the pickup tube.
- 3.) **HC158018 BRUSH:** 7/16 inch diameter 12 inches long used to clean transfer hose, braided hose, and the air relief opening in the dispense head.
- 4.) **HC158026 BRUSH:** 1 inch diameter 12 inches long used to clean the disassembled shaft seal and bushing.
- 5.) **HC158037 BRUSH:** 1/4 inch diameter 18-1/2 inches overall length used to clean the air meter hose, the small hole in the back of the dispense head and small parts.
- 6.) **HC169374 TOOL - O-RING REMOVAL:** Aids in removing O-rings from plunger, head, air relief plug, and spindle.
- 7.) **HC158054A LUBRICANT - LUBRI-FILM PLUS:** Approved lubricant for moving parts and O-rings.
- 8.) **HC196103 BOTTLE, WASH:** Used to flush the hose cavity, roller assembly and plunger.

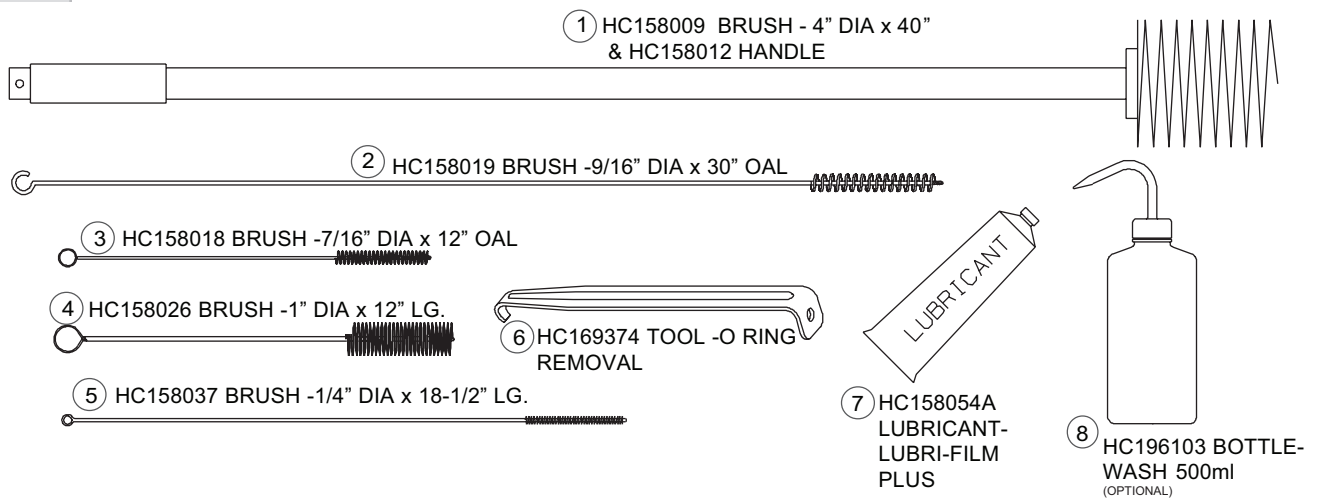


Figure 7-1 Cleaning Accessories

7.2 Disassembly Instructions

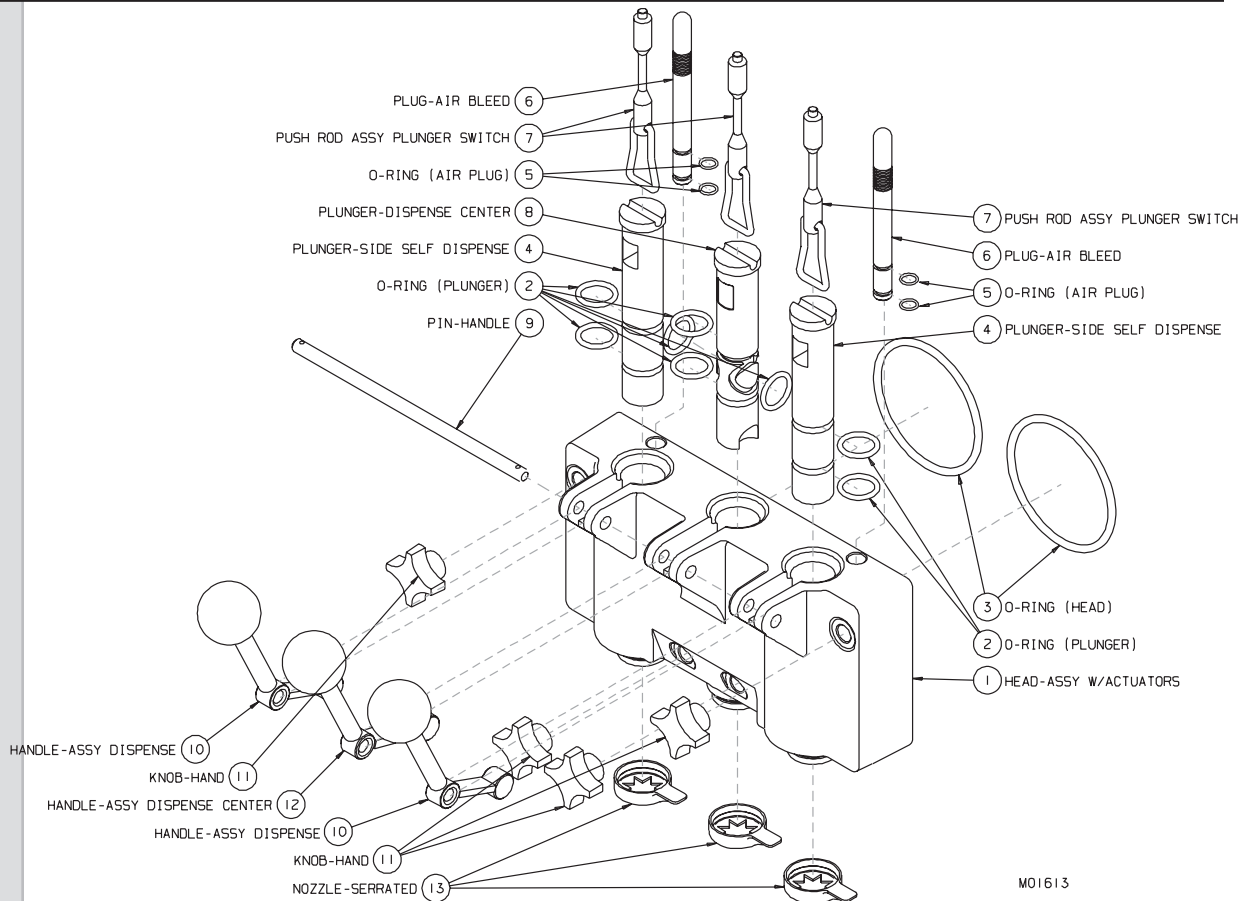


Figure 7-2 Head Assembly



CAUTION

To avoid electrical shock or contact with moving parts, make sure all switches are in the "OFF" position and that the main power supply is disconnected. Some freezers have more than one disconnect switch.



CAUTION

Make sure freezer is depressurized before proceeding.



CAUTION

To prevent bacteria growth, remove ALL O-rings when disassembling for cleaning. Failure to do so could create a health hazard.

Follow these directions for each cylinder:

1. If there is product in the freezer, refer to Section 10, Closing Procedures, 10.2 Draining Product.
2. Remove the plunger rods (7, figure 7-2) by lifting up and swinging the bottom out and down. Remove hand knobs (11) and pull the dispensing head (1) straight out.
3. Remove the bushings and beater shafts from the cylinders.
4. Remove scraper blades and shaft seal from the beater shaft.
5. Remove the drip tray (see Replacement Parts Manual, Panel Assembly) and drip tray insert from the front of the freezer.
6. Remove the air bleed plug (6) and remove the two O-rings (5).

– continued

7.2 Disassembly Instructions (continued)

7. Remove the handle pin (9), handle (10&12), plunger (4&8) and nozzle (13) from the dispense head.

8. Remove O-rings (3) from the dispense head and O-rings (2) from the plungers (4&8).

9. Remove the cup seal (figure 7-3) and O-ring from the plastic washer on the shaft seal assembly.

10. Remove mix containers, covers, and low mix probes

11. Remove the MTS cover.

12. Remove MTS hose assemblies from the Mix Transfer Systems as follows (figure 6-4):

- a. loosen the hand knob,
- b. swing back the shoe clamp,
- c. swing open the roller shoe,
- d. loosen the clamp on braided hose,
- e. pull tube off cylinder inlet and slide hose assembly out of roller support housing.

12. Disassemble the MTS hose assemblies as shown in figure 7-5.

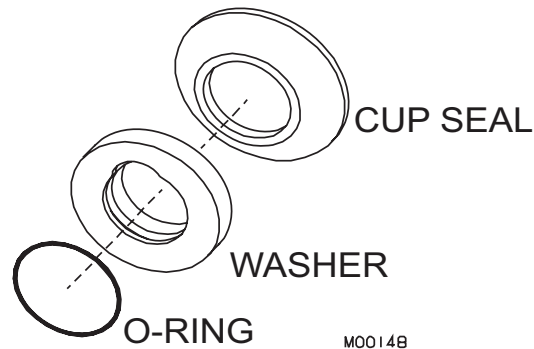


Figure 7-3 Shaft Seal

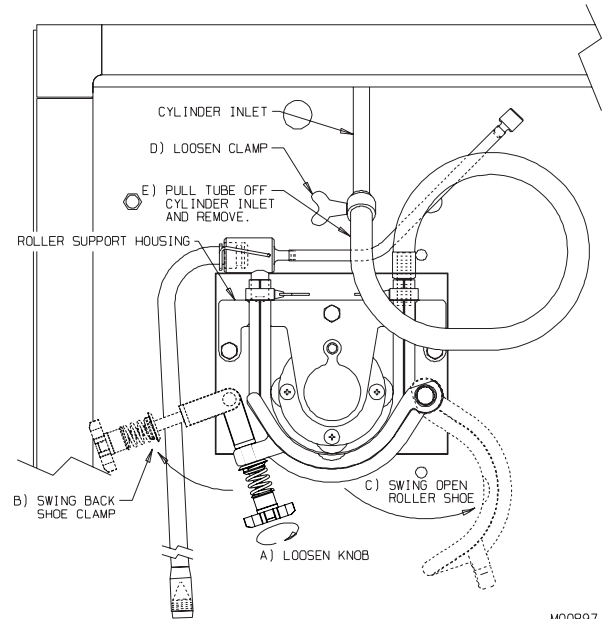


Figure 7-4 MTS

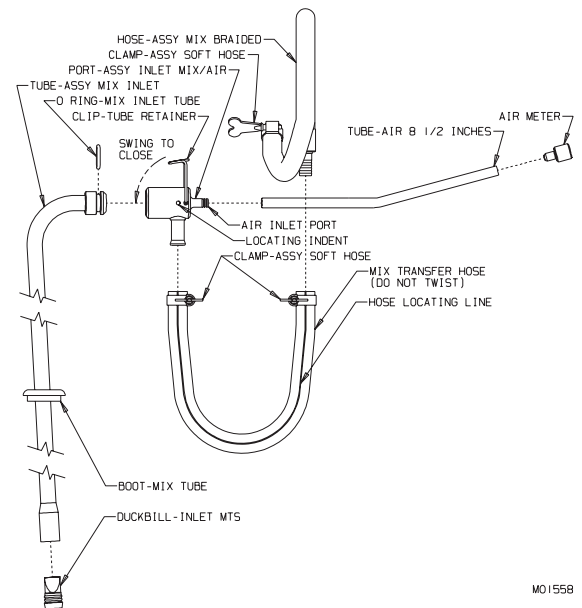



Figure 7-5 MTS Hose Assembly

7.3 Cleaning Instructions

CAUTION

To prevent bacteria growth, remove all O-rings when cleaning. Failure to do so could create a health hazard.



NOTE: It is your responsibility to be aware of, and conform to, the requirements for meeting federal, state and local laws concerning the frequency of cleaning and sanitizing the freezer.

1. Prepare a three-compartment sink for washing, rinsing, and sanitizing parts removed from the freezer, per applicable local health codes. Also prepare a clean surface to air-dry all parts.

⇒ **Important:**

Do not use unapproved sanitizer or laundry bleach. These materials may contain high concentrations of chlorine and will chemically attack freezer components.

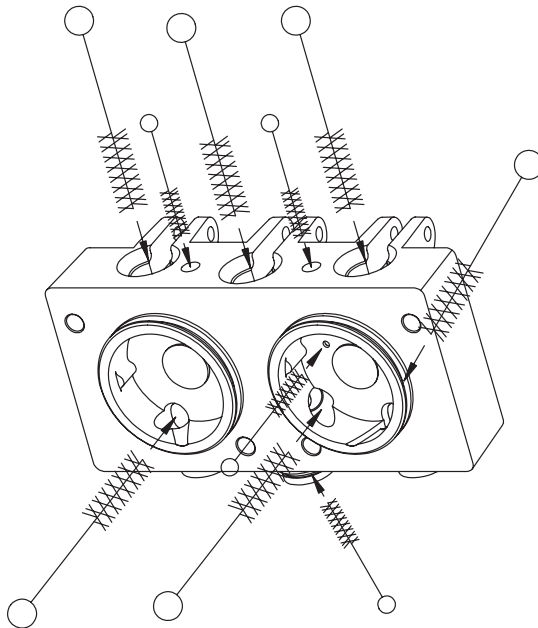



Figure 7-6 Clean head ports and openings with brush.

CAUTION

Electrical shock hazard. Do not splash water on switches or allow water to flow onto electrical components inside the machine.



NOTE: The sanitizer should be mixed according to the manufacturer's instructions to yield 100PPM available chlorine solution (example: Stera-Sheen Green Label.) Use warm water (100° to 110°F or 38° to 43°C) to wash, rinse, and sanitize.

2. Wash all parts removed from the freezer thoroughly with dish detergent. Clean the following parts with the appropriate supplied brush:

- a. The mix tankss, pickup tube assemblies, hoses, and probes.
- b. The head plunger openings, plunger ports, O-ring grooves, dispense nozzle mounting rings, and mix ports, as shown in figure 7-6.
- c. The beater shaft cup seals, plastic washers, and O-rings. The plunger O-ring grooves and nozzles, as shown in figure 7-7.
- d. The air bleed plug O-ring grooves.

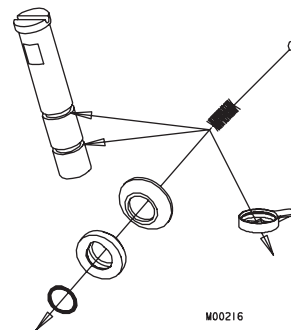


Figure 7-7 Clean O-ring grooves, seal and nozzle with brush.

– continued

7.3 Cleaning Instructions (continued)

e. The beater shafts and the scraper blade pin holes as shown in figure 7-8.

⇒ **Important:**

Do not leave parts in sanitizer for more than 15 minutes.

3. After all parts are washed, rinse and then place them in the sanitizing solution. Brush the inside of all mix transfer hoses with sanitizer. For proper sanitizing, the parts must remain fully immersed in the sanitizer for 5 minutes. Allow parts to air-dry after sanitizing.

4. Using a warm dish detergent solution thoroughly brush; the mix feed tubes from the refrigerated cabinet to the cylinders as shown in figure 6-9, the inside of the cylinders including the back wall, and the inside of the drain tube, as shown in figure 7-10.

5. Remove the drip tray and insert. Wash in a warm dish detergent solution and rinse with clear water.

6. Wash the outside of the freezer and inside of the cabinet with a warm dish detergent solution. Rinse with clear water.

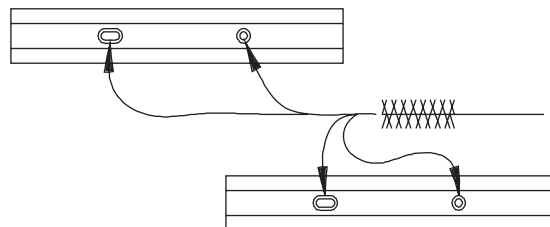


Figure 7-8 Clean beater shaft pin holes.

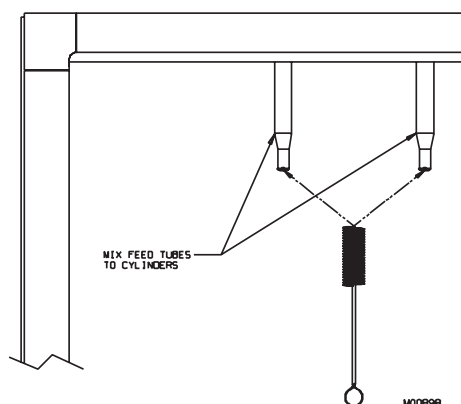


Figure 7-9 Brush inside of cylinder mix feed tubes.

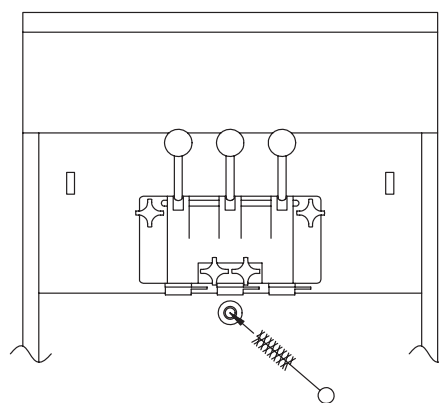


Figure 7-10 Brush inside of drain tube.

Replace worn brushes.

Use only Electro Freeze original or authorized replacement parts.

See Accessories parts list in Part II of this Manual to order new brushes.

7.3.1 Cleaning and Lubricating - MTS Assembly

NOTE: Clean the shoe weekly or when necessary. **Do not interchange the shoe with any other MTS shoes.**

Follow these directions for each MTS shoe:

1. Remove the O-rings and slide the shoe off of the pivot arm and the swing clamp off of the clamp arm. See figure 6-11.
2. Carry to the sink, wash in mild detergent with the brush provided and dry thoroughly.
3. Brush in between rollers. Flush clean with water bottle.

⇒ **Important:**

Do not let shoe sit in sanitizing solution or water. Corrosion will occur in bore.

4. Lubricate the shoe pivot arm and the swing clamp arm with food grade lubricant such as Petrol-Gel.
5. Reassemble the shoe and O-ring on pivot arm.
6. Reassemble the shoe swing clamp and O-ring on the swing clamp arm.

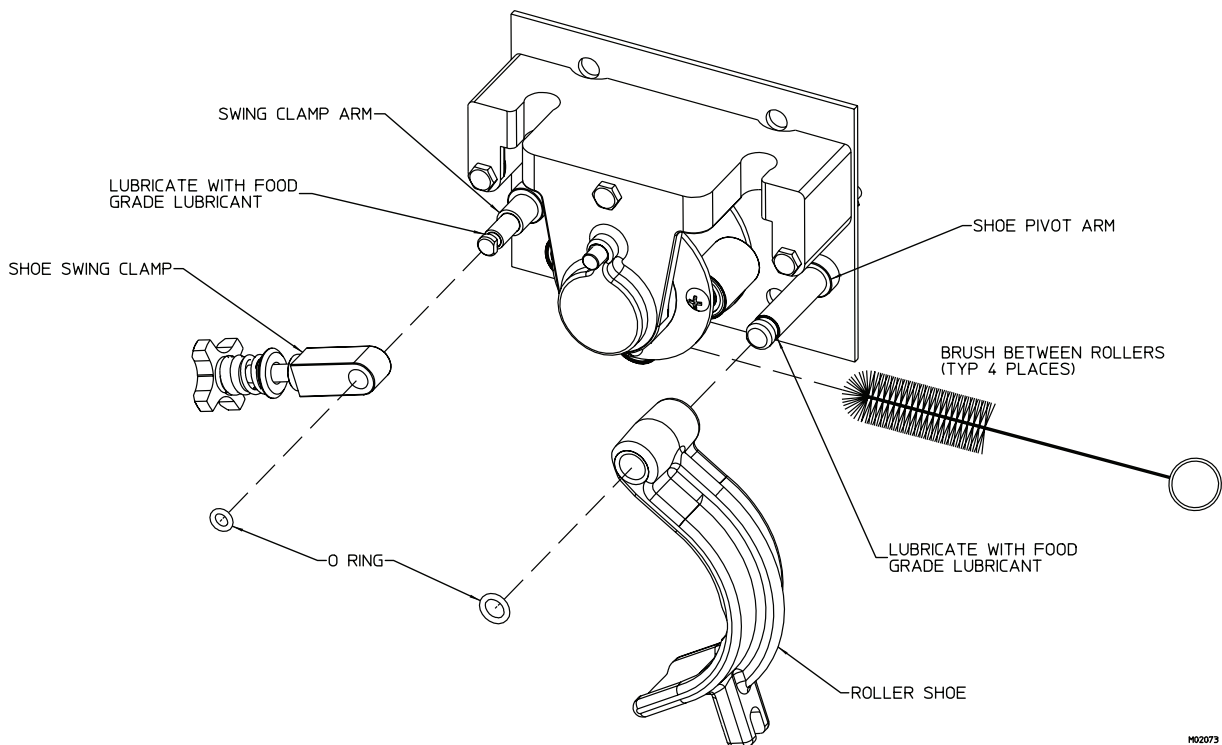


Figure 7-11

8 Assembly

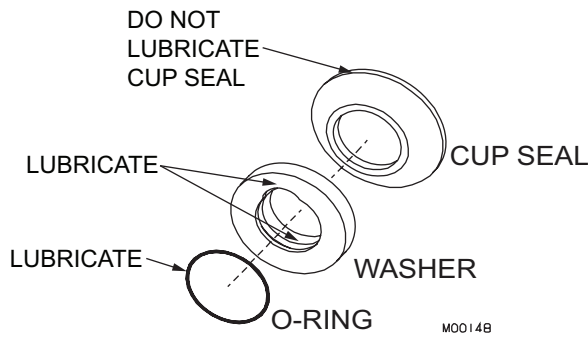


Figure 8-1 Shaft Seal Assembly

Correct assembly of the freezer is essential to prevent leakage of the product and damage to the freezer. To assemble the freezer you will need an approved lubricant (such as Petrol-Gel). Make sure all parts of the assemblies have been washed and sanitized before assembling. Persons assembling the freezer must first wash and sanitize their hands and forearms with an approved sanitizer.

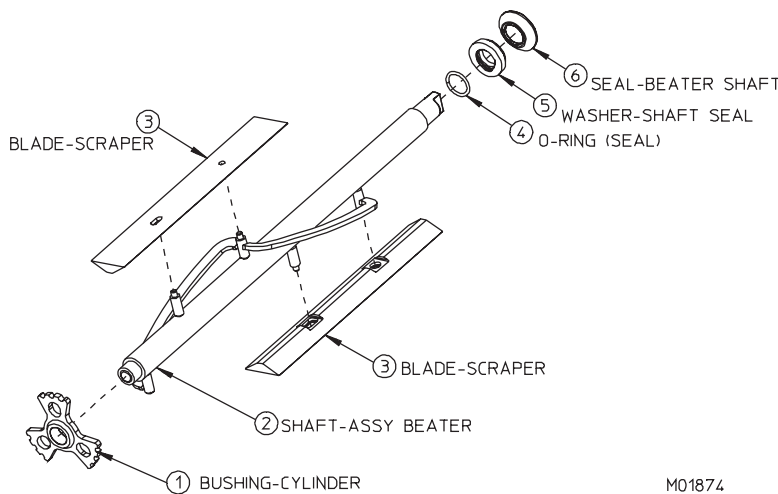


Figure 8-2 Beater Shaft Assembly

CAUTION

To avoid electrical shock or contact with moving parts, make sure all switches are in the "OFF" position and that the main power supply is disconnected. Some freezers have more than one disconnect switch.

1. To assemble the shaft seal, install the cup seal and O-ring on the plastic washer (see figure 8-1). Apply a light amount of approved sanitary lubricant (such as Petrol-Gel) to the O-ring and the face of the plastic washer opposite the bell portion of the seal. Do not allow any lubricant to come into contact with the bell-shaped rubber portion of the seals.

2. Install the shaft seal over the rear of the beater shaft, with the bell-shaped portion facing the rear as shown in figure 8-2.

3. Place the scraper blades on the beater shaft, making sure the blades are installed properly (see figure 8-3).

4. Insert the assembled beater shaft into the cylinder by placing the rear blade on the bottom of the cylinder. This will center the beater and allow alignment with the drive coupling. Rotate the beater assembly while pushing, until the shank has engaged the coupling. Repeat for second cylinder assembly.

PROPER BLADE INSTALLATION IS WITH FLAT SIDE AGAINST CYLINDER WALL.

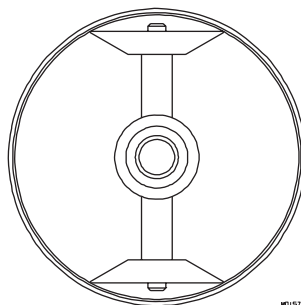


Figure 8-3 Scraper Blade Installation

– continued

8 Assembly (continued)

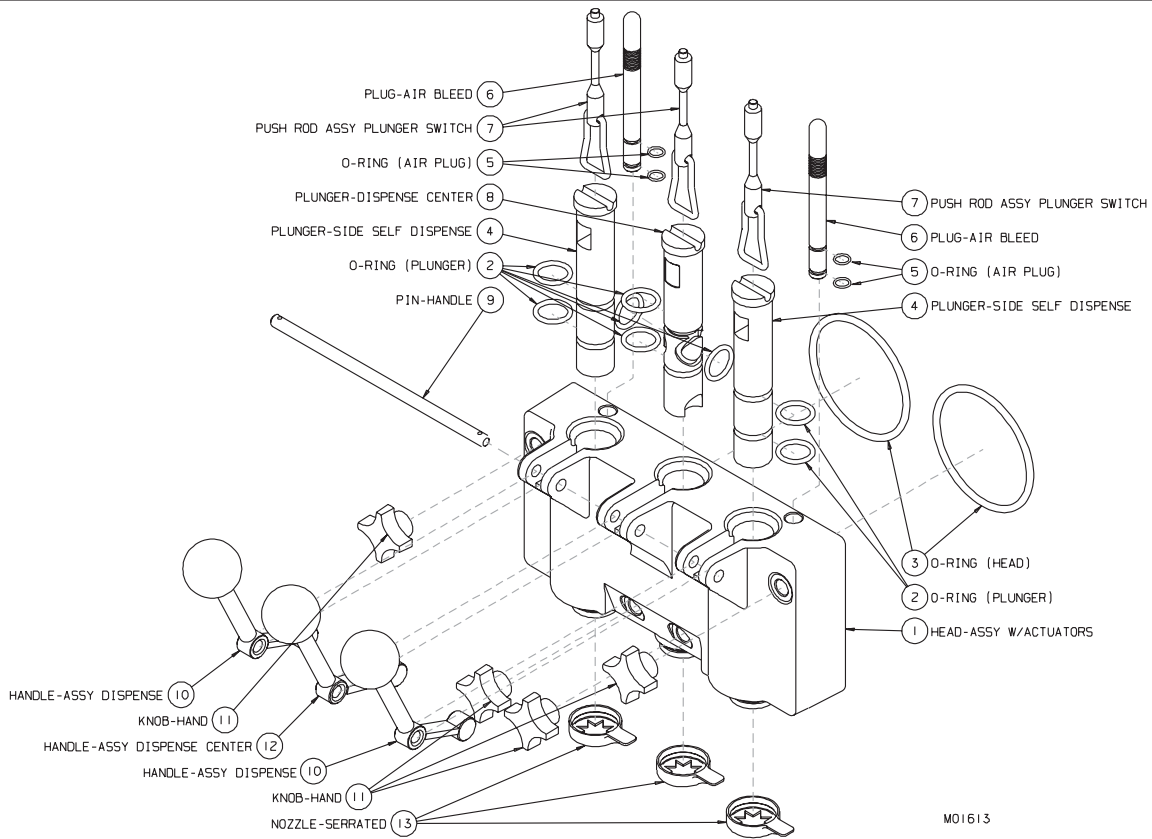


Figure 8-4 Head Assembly

5. (Refer to figure 8-4.) Install and then lubricate the O-rings (2) on the plungers (4&8) and insert plunger halfway into dispensing head (1).

6. Install and then lubricate the 4-inch head O-rings (3).

7. Position the handle (10&12) in the plungers (4&8) and dispensing head (1). Lock in place with the handle pin (9).

8. Install and lubricate O-rings (5) on the air bleed plug (6). Insert plug in the dispensing head (1) assembly.

9. Lubricate the inside bearing surface of the cylinder bushing and place on the end of the beater shaft.

⇒ **Important:**
ALWAYS make sure the cylinder bushing is positioned on the beater shaft properly. Operating the freezer with a missing or badly worn bushing will damage the beater and cylinder.

⇒ **Important:**
Excessive force will damage the head. Do not use tools to tighten.

10. Install the dispensing head onto the freezer by aligning the studs with the holes in the head and sliding toward the freezer. Evenly tighten the hand knobs, finger tight only. Repeat for second head assembly.

11. Install the plunger rods (7). The nozzle (13) will be installed on the mix outlet at the bottom of the head after sanitizing.

– continued

8 Assembly (continued)

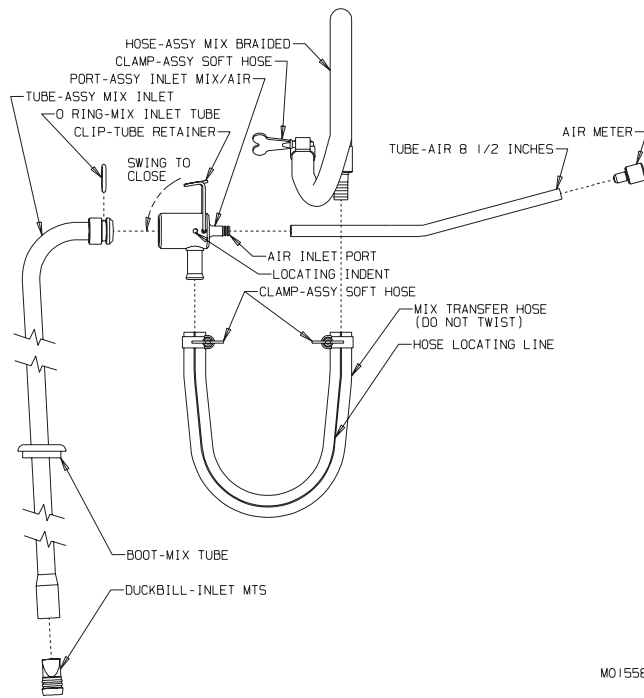


Figure 8-5 MTS Hose Assembly

⇒ **Important:**

Always inspect the transfer hose during assembly for wear. Do not use tools or sharp objects to remove hose.

⇒ **Important:**

Use original Electro Freeze transfer hose only. Your freezer will not operate properly with any other type of hose. Never twist the transfer hose when assembling or installing.

⇒ **Important:**

Replace transfer hose at least every 30 days or as needed sooner.

12. Assemble the MTS hose assembly as shown in figures 8-5 and 7-6. The transfer hose has a red locating line. Hold the mix/air inlet port with the transfer hose mix port on your right and the barbed air port facing away from you. With the locating line up, slide the mix transfer hose onto the port. Then slide a clamp over the hose to secure it to the port. Finger tighten only! The thumbscrew must lie parallel to the mix/air inlet port.

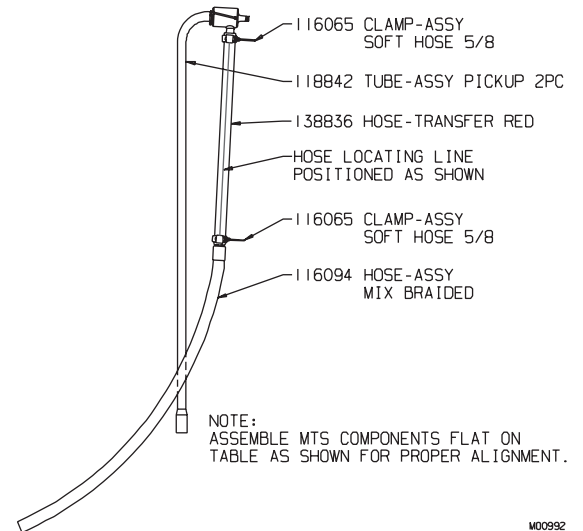


Figure 8-6 Attaching Braided Hose

13. Slide another clamp over the mix transfer hose and connect to the barbed end of the braided hose. Tighten the clamp. Finger tighten only! The thumb screw must lay horizontal as shown in figure 8-6.

14. Slide the air tube over the air inlet port and insert air meter in the opposite end of the air tube.

15. Install o-ring on mix inlet tube assembly and lubricate. Place the tube assembly end into the port assembly and swing retainer clip over to lock tube assembly in place.

16. Install mix tube boot with flat side first, over the tube assembly.

17. Insert the duckbill valve into the bottom of the pickup tube. Push until the two ribs are completely inserted.

– continued

8 Assembly (continued)

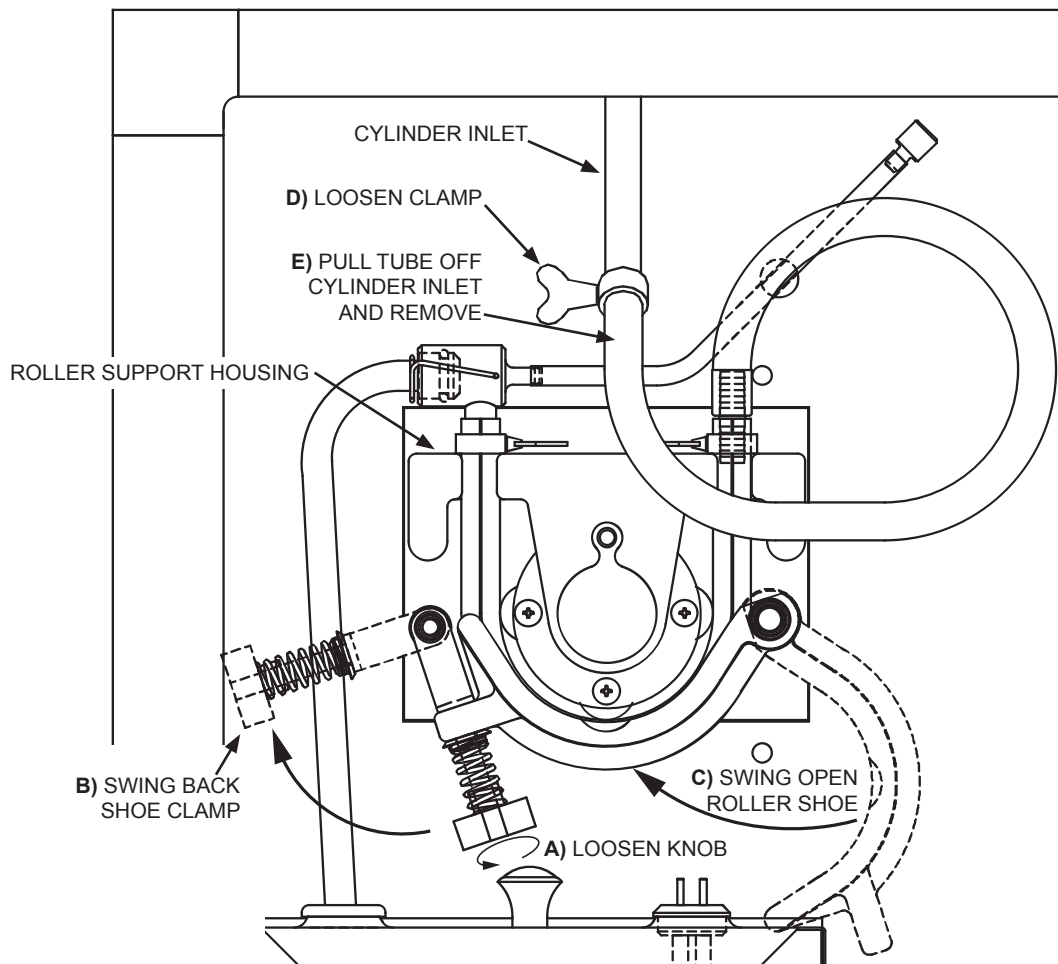


Figure 8-7 MTS

18. Refer to figure 8-7. Install the MTS hose assembly by first placing the clamp next to the braided hose, above the roller bearing support on the right side and push hose into slot. Place the transfer hose under the rollers. While holding the pickup tube stretch the hose so the left hand clamp is above the roller bearing support and push the hose into the slot.

⇒ **Important:**

Do not twist the hose assembly while installing.

19. Check to ensure the transfer hose is straight and centered on the roller assembly making sure the locating line is facing out. The line should be in the same position at the inlet and outlet guides of the roller bearing support, as shown in figure 8-7.

20. Swing the shoe over hose and

tighten the swing clamp hand knob in place until it bottoms out and will not turn any further.

21. Insert the air tube into the retainer in the back of the cabinet.

22. Insert the MTS cover over stud see figure 8-8. Hose clamps should be exposed. Tighten cover knob. Hand tighten only.

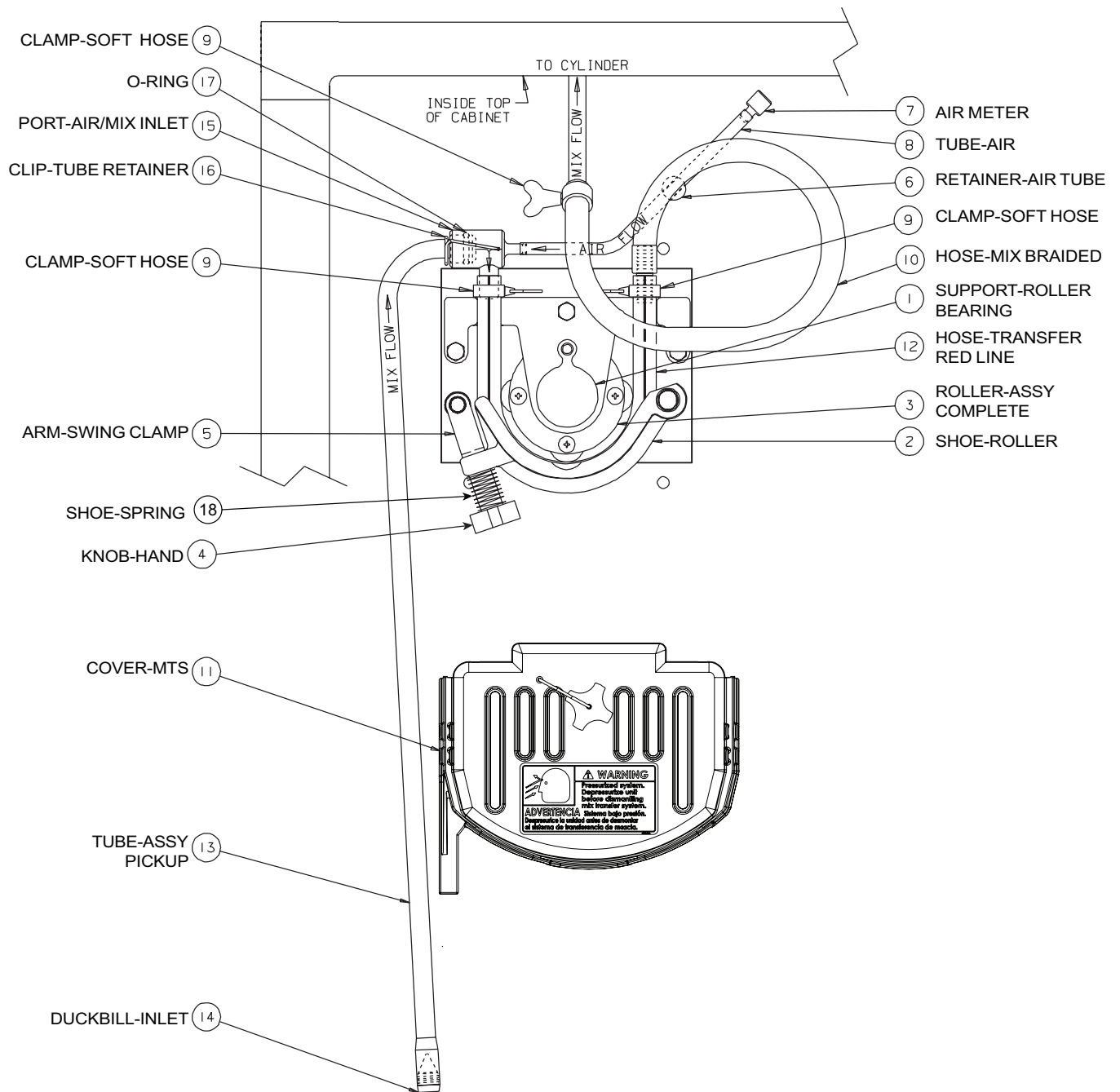
⇒ **Important:**

The MTS will not operate unless the cover is installed and secured by the hand knob.

23. Loop the braided hose towards you and slide the hose over the cylinder inlet tube. Tighten the clamp. Make sure the braided hose is not twisting transfer hose.

—continued

8 Assembly (continued)



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Figure 8-8 MTS

9 Start-up Instructions

9.1 Sanitizing



CAUTION
Mix Transfer System will be pressurized during operation. Make sure all components and fasteners are secure before start-up.

The washing and sanitizing instructions explained in this manual are important procedures to remove bacteria and maintain a clean, sanitary freezer. Always sanitize prior to assembling to ensure the best possible cleanliness.



CAUTION
To prevent bacteria growth, use only approved sanitizers to sanitize the machine. Sanitizing must be done just prior to starting the machine. Failure to do so could create a health hazard.

IMPORTANT:
Do not use unapproved sanitizers or laundry bleach. These materials may contain high concentrations of chlorine and will chemically attack freezer components.

NOTE: It is your responsibility to be aware of and conform to the requirements for meeting federal, state, and local laws concerning the frequency of cleaning and sanitizing the freezer.

1. Prepare 2 gallons (7.5 liters) of sanitizing solution for each cylinder. Sanitizing solution must be mixed according to manufacturer's instructions to yield 100 PPM strength chlorine solution (example: Stera-Sheen Green Label). Use warm water (100° to 110°F or 37° to 43°C) to wash, rinse, and sanitize.
2. Wash and sanitize your hands and forearms.
3. Clean the interior mix tank walls, the underside of the tank covers and low

mix probes with sanitizer liquid and the appropriate brush provided.

4. Place the mix tank in the refrigerated cabinet. Fill with sanitizing solution.

Important:
Never let the sanitizer remain in the freezer for more than 15 minutes.

5. Immerse the pickup tubes into the sanitizer solution and sanitize the outside portion. If plastic mix bag systems are used, be sure all adapters and items that will come in contact with mix are sanitized.
6. Place an empty container under the dispensing head.
7. Open the air bleed plugs by pulling up until the plugs touch the bottom of the switch box.
8. Turn on the main power switch to the freezer. The spigots must be closed. Using the control panel press the L2 & R2 keys to turn the MTS pumps "ON". This will push the sanitizer up into the cylinders.
9. When sanitizer flows out the bottom of the head, close the air bleed plugs.

Important:
DO NOT use the "FREEZE" setting with sanitizer in the cylinder. The freezer will be damaged.
10. Using the control pad press the L1 & R1 keys to turn the beaters "ON" and allow the beaters to run for 5 minutes. At this time check for leaks around the head, drain tube, clamps, and MTS.
11. Drain the solution from the cylinders by slowly turning the spigot handles open.
12. Leaving the spigots open, press L1 & R1 keys to turn the beaters "OFF" and let the MTS force all possible sanitizer out of the freezing cylinders.

—continued

9.1 Sanitizing (continued)

- NOTE:** Some sanitizer will remain in hoses and cylinder.
13. Press L2 & R2 keys to turn the MTS pumps "OFF".
 14. Remove the pickup tubes, holding the top 6" portion only.
 15. Remove the mix tanks and empty any remaining sanitizer.

9.2 Priming

Priming the freezer removes all excess air and sanitizer from the freezing cylinder and sets the proper overrun for the first cylinder of product.

1. Wash and sanitize your hands and forearms.
2. Holding the top 6-inch (15cm) portion only, insert each pickup tubes into the sanitized mix tank through the small hole in the rear cover and set tanks in the cabinet.
3. Slide each boot seal down on the mix tank cover.
4. Fill the mix tanks with mix and install the front covers.
5. Insert each sanitized mix probes through the large hole in the rear cover, and connect the probe cords to the probes and to the back of the cabinet.
6. Close the cabinet door.
7. Place an empty container under the dispense head on the drip tray.
8. Pull up the air bleed plugs
9. Open the side spigots.
10. Press L2 & R2 keys to turn the MTS pumps "ON" allowing the mix to push the remaining sanitizer from the freezer.
11. Close the spigots one at a time when pure mix is coming out.

Important:

Failure to completely remove sanitizer or water from the freezing cylinder before placing in "FREEZE" will cause the scraper blades to break and damage the freezer.

12. Allow the MTS to fill the cylinder until mix flows from the bottom of the air bleed plug openings in the bottom of the dispense head, close the air bleed plugs. Wait for the MTS to fill the cylinders and shut off.

13. After the cylinders are pressurized and the MTS has cycled off (approximately 30 seconds) Press the left and right "Freeze" keys.

14. Allow the freezer to cycle for 15 minutes. The product is now ready to serve.

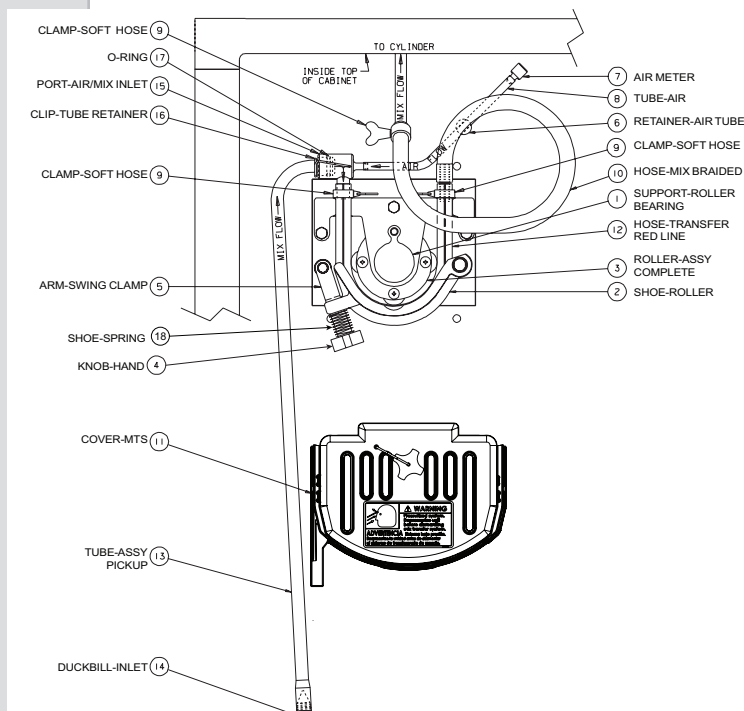


Figure 9-1

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10 Closing Procedures

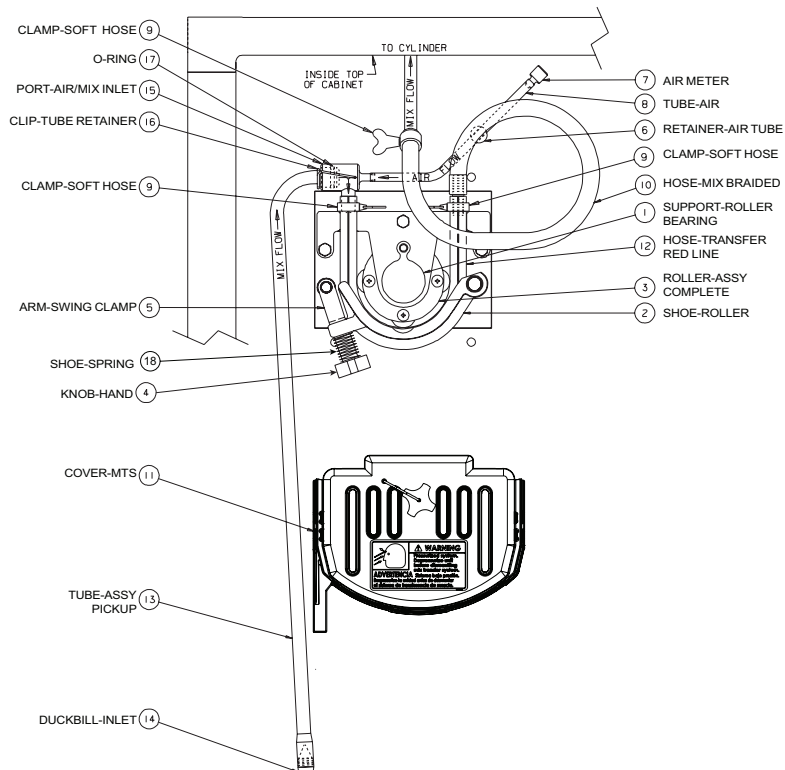
10.1 Draining Product

At the end of each day of operation, the freezer must be rinsed, sanitized, and disassembled. The parts also must be washed, rinsed, sanitized, and prepared for reassembly.

To remove frozen product from the cylinders:

1. Press the L1 & R1 keys to enter "CLEAN" mode.
2. In "CLEAN" mode press L1 & R1 to turn the beaters on and let the beaters run for 5 minutes. This will allow the product in the cylinders to soften.
3. In the cabinet below (see figure 9-1). Disconnect the mix probe cords from the back of the cabinet.
4. Remove each mix tanks while pulling the stainless steel pickup tube from the mix tank. Place the pickup tubes in a clean sanitized container.
5. Mix must be handled according to local health codes.
6. Place a clean sanitized container under the dispensing head.
7. Very slowly open the side spigots and dispense the semi-frozen product until it quits dispensing. To eliminate waste, dispense as much as possible for use in pints, quarts, and/or novelties.
8. Close spigots. Press L2 & R2 to turn the MTS pumps "OFF".
9. Place the mix pickup tubes into a container and fill with cold water. Turn the MTS pumps "ON" and allow the MTS to fill and pressurize the cylinders.
10. Very slowly open the spigots and

— continued



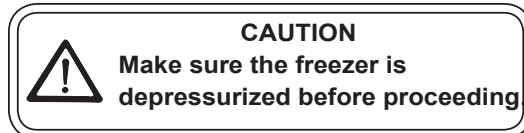
M00833

Figure 10-1

10.1 Draining Product (continued)

dispense the cold water. Follow with a container of warm water and repeat until the dispensed water is clear. Drain remaining water from the cylinders.

11. Turn the beaters and MTS pumps "OFF". Close the spigots
12. Prepare 2 gallons (7.5 liters) of



sanitizing solution for each cylinder. Sanitizing solution must be mixed according to manufacturer's instructions to yield 100PPM available chlorine solution (example: Stera-Sheen Green Label). Use warm water (100° to 110°F or 37° to 43°C).

13. Insert the mix pickup tubes into the sanitizing solution.
14. Place an empty container under the dispense heads.
15. Pull the air bleed plugs up until they touch the bottom of the switch box. Open the spigots.
16. Turn the MTS pumps "ON". When sanitizer flows out the bottom of the head, close the air bleed plugs and allow the MTS to pressurize the cylinders.
17. Press L1 & R1 to turn the beaters "ON" and allow them to agitate for 5 minutes.

IMPORTANT:

Do NOT use the "FREEZE" position with sanitizer or water in the cylinder. The freezer will be damaged.

18. Slowly open the spigots and allow the MTS to push the sanitizer out of the cylinders. Leaving the spigots open, turn the beaters "OFF". Leave

the MTS pumps "ON" and allow the pumps to force all remaining sanitizer from the cylinders. When sanitizer quits flowing, place the MTS pump switches to "OFF"

19. Remove the pickup tubes from the sanitizing solution.
21. Refer to Disassembly and Cleaning Instructions.

11 Soft Serve Information

11.1 Overrun

As mix is frozen in the freezing cylinder, air is incorporated into the mix to increase its volume, as well as enhance the taste and texture of the finished product. The increase in volume is called *overrun*. Fifty percent overrun means a volume increase of 50% — 10 gallons of liquid mix has become 15 gallons of finished product.

Controlled overrun is important to maintain consistency in product quality. Too much overrun (air) results in a light, fluffy product lacking the cold, refreshing appeal of a quality product. Too little overrun results in a wet, heavy product.

To correctly measure the overrun, perform the following steps:

- a. Place an empty pint container on the scale* and adjust your scale to zero.
- b. Remove container from scale and fill with liquid product to the top. Weigh container and record.
- c. Replace liquid product with frozen

product, being sure to leave no voids or air spaces in the container.

d. Strike off the excess product so it is even with the top of the container and measure the weight.

e. Use the following formula to figure overrun percentage:

“Weight of liquid mix minus weight of frozen product/divided by the frozen weight.”

Example:

Weight of one pint of liquid mix = 18 oz.

Weight of one pint frozen product = 12 oz.

Difference = 6 oz.

6.0 oz. divided by 12 oz. = .5

.5 x 100 = 50% overrun

* Your Electro Freeze Distributor can provide a scale and container (P/N HC158049) that is graduated in overrun percentage.

11.2 Overrun Adjustment

NOTE: Each person who operates the freezer should know what overrun is and how to calculate it.

Overrun is regulated by the air meter. You were supplied with three air meters, each having a different size orifice. The smaller the hole and number, the lower the overrun. The larger the hole and number, the higher the overrun. Each half size change of the air meter number will result in a 3-5% increase in overrun. Each full size change will change the overrun 8-10%.

The orifice or hole in this air meter must be open at all times. It is the only source of air into the freezing cylinder. Check this daily!

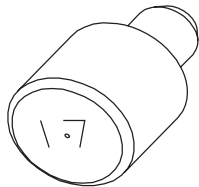


Figure 11-1 Air Meter

The mix will be a factor in determining the amount of overrun you will be able to achieve. Some mixes will accept more air than others, thus affecting the size of air meter you can use. Test to see which air meter will give you the best overrun and the best product. Run each air meter for a few hours until you decide.

You may have a slightly higher overrun when you first start up the machine. After the machine has run long enough to dispense at least one full cylinder of product you will have the overrun that the machine will hold the remainder of the day. Contact your mix supplier for the recommended amount of overrun for each product used.

11.3 Rerun

Rerun is product that has been drawn through the freezer into a container and has melted down to be re-processed. If local health codes permit the use of rerun make sure to follow these procedures:

1. Store rerun mix in a clean, sanitized container with a lid.
2. Store in a cooler with a temperature below 40°F (4.4°C).
3. DO NOT prime the machine with rerun. Always skim off with a sanitized spatula and discard foam. Then combine the rerun with fresh mix in a ratio of 50/50 and add to the mix container during operation.

4. Once a week run the mix as low as possible and discard after closing. This will break the rerun cycle and reduce the possibility of high bacteria and coliform counts.

NOTE: Rerun product is unable to accept the same amount of air as fresh product. As a result, the quality will be affected and product may appear grainy and icy.

For further information contact your local Electro Freeze distributor or the Service Department of H. C. Duke & Son, LLC., phone (309) 755-4553, (800) 755-4545 or e-mail service@hcduke.com.

12 Routine Maintenance

Electro Freeze recommends the following schedule to help maintain your soft serve freezer in like-new operating condition. Take the time to learn and perform these routine procedures and receive in return many years of valuable service from your freezer. Protect your investment!

DAILY

1. Disassemble, wash, rinse, sanitize, air-dry, reassemble and sanitize all parts that come into contact with the mix or product.



CAUTION
To prevent bacteria growth, remove all O-rings when cleaning. Failure to do so could create a health hazard.

2. Clean the cylinders, cylinder inlet tubes and drain tubes with the appropriate brushes.
3. When cleaning, inspect all seals, O-rings and hoses. Replace any seal, O-ring and hose that is worn, torn, or loose fitting.
4. Wipe all exterior surfaces of the freezer to remove any splattered mix.
5. Check overrun and temperature of the product.

AS NEEDED



CAUTION
To avoid electrical shock or contact with moving parts, make sure all switches are in the "OFF" position and that the main power supply is disconnected. Some freezers have more than one disconnect switch.

1. Clean the mix transfer systems:

Important:

If the transfer hose is assembled improperly or replacement has been neglected, it may be necessary to clean mix from the MTS due to hose failure.

If this happens frequently the MTS should be removed for complete cleaning.



CAUTION
Make sure the freezer is depressurized before proceeding.



CAUTION
To avoid electrical shock or contact with moving parts, make sure all switches are in the "OFF" position and that the main power supply is disconnected. Some freezers have more than one disconnect switch.

— continued

12 Routine Maintenance (continued)

AS NEEDED (continued)



CAUTION
 Make sure the freezer
 is depressurized before
 proceeding.

- a. Remove cover, loosen swing clamp and open shoe to gain access to the hose cavity.
- b. Remove mix transfer hose assembly.
- c. Lay a towel on the cabinet base below the MTS.
- d. Using the spray bottle supplied, flush the hose cavity and roller assembly.
- e. Use a brush (supplied) to clean in between rollers. Flush with sanitizer.
- f. Wipe all surfaces with a clean dry cloth.
- g. Remove and clean shoe. See figure 11-1.

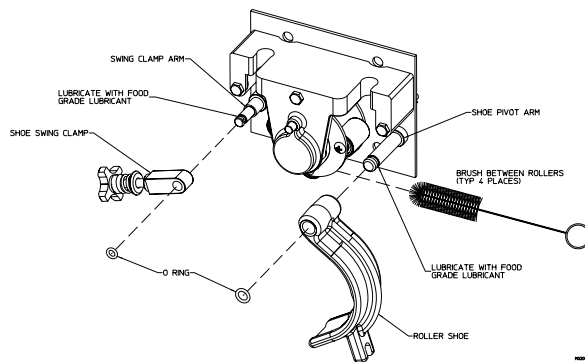
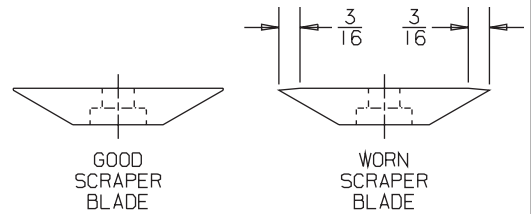


Figure 11-1

WEEKLY

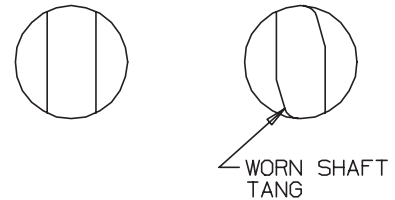
1. Carefully inspect all parts for wear, including seals, O-rings, mix transfer tubes, and blades.

2. Replace as required.



Replace blades if worn 3/16" or more.

3. Check the shaft tang and drive coupling for wear.



A worn coupling will have a nonparallel shape on the drive opening.

12 Routine Maintenance (continued)

MONTHLY

A. Testing the Head Switch

The head switch feature is designed to prevent the beater shaft from being accidentally activated. The beater motors should not operate with the head assembly removed. It is essential that the proper operation of this switch be verified routinely. Use the following instructions to test for proper operation:



CAUTION

To avoid electrical shock or contact with moving parts, make sure the control pad is "OFF" and that the power switch is "OFF".

1. Remove the dispense head and beater shaft assemblies.
2. Place the power switch "ON".





CAUTION


Moving parts. Do not place hands in the freezing cylinder. Severe personal injury could result.

NOTE:


Do this test for each freezing cylinder.

3. Press the  and "BEATER ON". Look inside the cylinder at the rear drive coupling for rotation. Press the  freeze button and look inside the cylinder at the rear drive coupling for rotation. Turn the "BEATER OFF".

Proper Operation

When "BEATER ON" is activated or the  freeze button is pushed, the display should read "HEAD SWITCH" and not allow coupling/beater shaft rotation. The head switch is operating properly. When the head is replaced the system should reset and allow beater rotation. Make sure the control pad is "OFF" and that the power switch is "OFF". The freezer is ready to be assembled and put in service.

Mechanical Hazard

When "BEATER ON" is activated or the  freeze button is pushed and the rear drive coupling is rotating and the display does not read "HEAD SWITCH". Freezer has a head switch or software problem. Turn the power switch "OFF". **DO NOT** place the freezer in service until the problem has been corrected.

B. Water Condenser

Check the outlet water temperature of water-cooled condensers at the floor drain. Ideal water temperatures should be about 95°F (35°C) with a 70°F (21.1°C) water inlet temperature.

— continued

12 Routine Maintenance (continued)

MONTHLY (continued)

C. MTS Cover Switch

The MTS cover switch feature is designed to prevent the MTS gear motor from being accidentally activated. It is essential that the proper operation of this switch be verified on a routine basis. Use the following instructions to test for proper operation:

NOTE: Freezer should be cleaned and



CAUTION
Make sure system is depressurized before proceeding.

disassembled for this test.

1. Be sure all switches are in the "OFF" position.
2. Remove the MTS cover to expose the roller assembly.
3. Turn MTS switch to "ON".



CAUTION
DO NOT place hands near the MTS rollers. Severe personal injury could result.

4. Look at the MTS rollers; they should NOT be rotating. If they are rotating, turn

"OFF" mix switch and discontinue use until repairs can be made.

5. If there is no movement, slowly install cover and listen for the gear motor to turn on. The cover should be almost completely closed when the gear motor turns on. **DO NOT** insert fingers or objects into roller cavity during this test. If the MTS does not operate as described here, or you are unable to determine if the MTS is operating properly, turn the switches to the "OFF" position, disconnect the main power supply and contact your service technician or the factory. **DO NOT** place the freezer in service until the problem has been corrected.

D. Replace the Mix Transfer Hose



CAUTION
Make sure the freezer is depressurized before proceeding.



CAUTION
To avoid electrical shock or contact with moving parts, make sure all switches are in the "OFF" position and that the main power supply is disconnected. Some freezers have more than one disconnect switch.

QUARTERLY

A. Air Condenser.

Important:

Never use a screwdriver or sharp object to clean between fins.

Both air and water cooled freezers have an air condenser. The condenser fins need to be cleaned by your Electro

Freeze Distributor to remove dirt, lint and dust.

B. Refrigeration System

Have your Electro Freeze Distributor check the refrigeration system and make any necessary adjustments.

WARNING!

Failure to properly maintain/clean your air condenser can cause premature compressor failure. Compressor failure due to improper condenser care will void the compressor warranty.

12 Routine Maintenance (continued)

1500 HOURS OF OPERATION OR 6 MONTHS

1. Contact your Electro Freeze distributor for the initial oil change of the gear reducer.

NOTE: Under normal conditions the INITIAL oil changed should be after 1500 hours of operation or every year, whichever occurs first.

SEMI-ANNUALLY

1. Have the condenser fan motor checked by your Electro Freeze Distributor. Add oil as needed.

5000 HOURS OF OPERATION OR 1 YEAR

1. Contact your Electro Freeze distributor to have the oil in the gear reducer changed.

NOTE: Under normal conditions the oil should be changed after 5000 hours of operation or every year, whichever occurs first.

ANNUALLY

CAUTION



To avoid electrical shock or contact with moving parts, make sure all switches are in the "OFF" position and that the main power source is disconnected. Some freezers have more than one disconnect switch.

1. Call your Electro Freeze Distributor for service to replace drive belts and lubricate fan motor as needed.
2. Call your Electro Freeze Distributor to clean the inside of the freezer including base, side panels, condenser, etc.
3. Call your Electro Freeze Distributor to check water-cooled condensers and flush clean to remove scale and deposits if necessary.

12 Routine Maintenance (continued)

Winter Storage

To protect the unit during seasonal shutdown, it is important to store the soft serve freezer properly. Please use the following procedures:

1. Disconnect all power to the freezer.
2. Disassemble and wash all parts that come into contact with the mix with a warm, mild detergent solution. Rinse in clear water and air dry all parts thoroughly.
3. Store the loose parts, such as the head assembly, beater assembly and MTS parts in a safe, dry place.
4. Do not lay heavy objects on the plastic or rubber parts.
5. Cover the freezer and all loose parts to protect them from dust or other elements that could contaminate them while in storage. Place the freezer in a dry location.
6. On air-cooled freezers, have condenser fins cleaned by an authorized service technician.
7. On water-cooled freezers, disconnect the water supply. Use compressed air to blow out all remaining water in the condenser.

⇒ **Important**

The water valve must be opened in order to blow out the condenser. Failure to purge the freezer of water can result in severe damage to the cooling system. Call your Electro Freeze Distributor for service.

8. When freezer is restarted after seasonal shutdown, remember to replace all o-rings and seals with new parts. Rubber parts can lose their elasticity and ability to seal when stored.

USE ONLY ORIGINAL OR AUTHORIZED REPLACEMENT PARTS WITH THIS FREEZER.

(See your Illustrated Replacement Parts Manual)

Should you have any questions on items that are not included in this maintenance schedule, or problems where service assistance is needed, please contact your local *Electro Freeze* Distributor or H. C. Duke & Son, LLC., *Electro Freeze* Service Department for factory service at **(309) 755-4553 , (800) 755-4545 , FAX (309) 755-9858, E-mail - service@electrofreeze.com.**

13 Troubleshooting Tables

SAFETY



THIS SAFETY ALERT SYMBOL IDENTIFIES IMPORTANT PERSONAL SAFETY MESSAGES IN THIS MANUAL. WHEN YOU SEE THIS SYMBOL, BE ALERT TO THE POSSIBILITY OF PERSONAL INJURY. DO NOT ATTEMPT TO CONTINUE UNTIL THE SAFETY PRECAUTIONS ARE THOROUGHLY UNDERSTOOD.

CAUTION



All maintenance adjustments must be done by an Electro Freeze Distributor or authorized service technician.

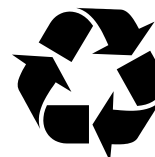
CAUTION






To avoid electrical shock or contact with moving parts, make sure all switches are in the "OFF" position and that the main power supply is disconnected. Some freezers have more than one disconnect switch.

Important:


Some refrigerants are hazardous to the earth's atmosphere. To protect our environment, use a refrigerant recovery/recycling unit when removing refrigerant from the system.




13 Troubleshooting Tables (continued)

PROBLEM	PROBABLE CAUSE	REMEDY
Unit does not operate. 	1. Freezer unplugged.	1. Plug in freezer.
	2. Fuse or breaker blown at main disconnect.	Make sure your freezer is connected to a separate circuit independent from any other electrical equipment. Have technician check fuse or breaker size and check for low voltage; if not within 10% of nameplate rating call power company.
	3. Beater motor out on overload.	Press overload reset button. Check product temperature. (Note: cabinet will continue to cool.)
	4. Control circuit overload open.	Press overload reset button. If freezer still does not operate contact your Electro Freeze Distributor for service.
	5. Off on high pressure cut-out or low pressure cut-out control.	5. Contact your Electro Freeze Distributor for service.
	6. Component failure.	6. Contact your Electro Freeze Distributor for service.
	7. Faulty selector switch.	7. Contact your Electro Freeze Distributor for service.
	8. Disconnected or broken wire in electrical circuit.	8. Contact your Electro Freeze Distributor for service.
Mix or water leaking from drain tube to drip tray. 	1. Damaged beater shaft seal or installed improperly.	1. Replace cup seal or o-ring inside bushing. Install properly.
	2. Beater shaft pitted or damaged where o-ring rides.	2. Replace beater shaft.
	3. Beater shaft end play not set properly.	3. Contact your Electro Freeze Distributor for service.
Mix leaking at dispensing head. 	1. Faulty head o-ring.	1. Replace o-ring.
	2. Head not properly installed.	2. Install head properly. Replace o-ring if pinched.
Dispensed product too soft. (Product temperature above 19°F)	1. Dirty or blocked condenser, restricted air flow.	1. Unblock condenser or have cleaned by your Electro Freeze Distributor.
	2. Component failure.	2. Contact your Electro Freeze Distributor for service.
	3. Leak in refrigeration system resulting in little or no refrigeration.	3. Contact your Electro Freeze Distributor for service.

13 Troubleshooting Tables (continued)

PROBLEM	PROBABLE CAUSE	REMEDY
Product dispenses slowly out of dispensing head. 	1. MTS pressure too low.	1. See MTS Troubleshooting Charts.
	2. Product too cold.	2. Check product temperature. Should be 18°F (-7.8°C). See Dispensed Product Too Hard.
	3. Low overrun.	3. Check air meter. If plugged, clean. See No Air (Overrun).
	4. Wrong rotation on beater.	4. Have an electrician correct rotation to clockwise as viewed from the front of the freezer.
Dispensed product too hard.	1. Low overrun.	1. Check overrun, if low see MTS Troubleshooting Chart.
	2. Cylinder thermostat erratic or set too cold.	2. Contact your Electro Freeze Distributor for service.
	3. Spigot switch electrically or mechanically stuck closed. (Unit runs all the time.)	3. Contact your Electro Freeze Distributor for service.
	4. Component failure.	4. Contact your Electro Freeze Distributor for service.
	5. Low suction pressure, refrigeration system.	5. Contact your Electro Freeze Distributor for service.
Freezer runs continually and product continues to get colder.	1. Spigot switch rod engaged.	1. Close spigot completely.
	2. Spigot not seated in head.	2. Push spigot down.
	3. Spigot switch out of adjustment or defective.	3. Contact your Electro Freeze Distributor for service.
	4. Faulty thermostat or bulb not deep enough in well.	4. Contact your Electro Freeze Distributor for service.
	5. Starter or relay contact points stuck.	5. Contact your Electro Freeze Distributor for service.
	6. Faulty time delay.	6. Contact your Electro Freeze Distributor for service.
	7. Suction pressure too low.	7. Contact your Electro Freeze Distributor for service.







13 Troubleshooting Tables (continued)

PROBLEM	PROBABLE CAUSE	REMEDY
Poor or slow product recovery.	1. Dirty or blocked condenser, restricted air flow – high ambient temperature.	Have condenser cleaned by your local service company; lower ambient temperature.
	2. Thermostat cut-in point out of adjustment or malfunctioning.	2. Contact your Electro Freeze Distributor for service.
	3. Defective condenser fan motor (air cooled)	3. Contact your Electro Freeze Distributor for service.
	4. Component or compressor failure.	4. Contact your Electro Freeze Distributor for service.
Compressor does not operate or operates improperly.	1. Trouble in compressor condensing circuit	1. Contact your Electro Freeze Distributor for service.
	2. Faulty start capacitor, run capacitor or relay. (Single phase only)	2. Contact your Electro Freeze Distributor for service.
	3. Faulty contactor	3. Contact your Electro Freeze Distributor for service.
	4. Disconnected or broken wire in switch or capacitor relay box.	4. Contact your Electro Freeze Distributor for service.
Beater motor does not operate. 	1. Head assembly is not installed.	1. Install head assembly.
	2. Magnetic head switch defective.	2. Contact your Electro Freeze Distributor for service.
	3. Component failure.	3. Contact your Electro Freeze Distributor for service.
Compressor and beater motor operates only when dispensing.	1. Cylinder thermostat setting too warm or thermostat defective.	1. Contact your Electro Freeze Distributor for service.




13 Troubleshooting Tables (continued)

PROBLEM	PROBABLE CAUSE	REMEDY
Compressor and beater motor do not operate when dispensing.	1. Spigot switch(es) defective or out of adjustment.	1. Contact your Electro Freeze Distributor for service.
	2. Component failure.	2. Contact your Electro Freeze Distributor for service.
Cabinet too cold. (below 35°F [1.7°C])	1. Cabinet setting too low.	1. Contact your Electro Freeze Distributor for service.
	2. Defective thermostat.	2. Contact your Electro Freeze Distributor for service.
	3. Cabinet solenoid stuck open	3. Contact your Electro Freeze Distributor for service.
	4. Cabinet expansion valve set too low.	4. Contact your Electro Freeze Distributor for service.
Mix sours in cabinet.	1. Cabinet thermostat defective, set too warm or tuned off.	1. Contact your Electro Freeze Distributor for service.
	2. Cabinet solenoid defective (does not open).	2. Contact your Electro Freeze Distributor for service.
	3. Cabinet switch defective.	3. Contact your Electro Freeze Distributor for service.
	4. Door switch defective.	4. Contact your Electro Freeze Distributor for service.
	5. Cabinet compressor contactor coil open (mix sours in night mode only.	5. Contact your Electro Freeze Distributor for service.
	6. Faulty time delay.	6. Contact your Electro Freeze Distributor for service.
	7. Suction pressure too low.	7. Contact your Electro Freeze Distributor for service.

13.1 MTS Troubleshooting Tables

PROBLEM	PROBABLE CAUSE	REMEDY
Mix leaks out of MTS. 	1. Transfer hose worn or split.	1. Remove cover, clean inside MTS around rollers with spray bottle provided. Install new hose. Do not twist hose.
Mix transfer system (MTS) will not operate. 	1. Pump cover not installed.	1. Install cover.
	2. Hose not installed properly.	2. Check position – reinstall.
	3. Slide switch defective.	3. Contact your Electro Freeze Distributor for service.
	4. MTS relay defective.	4. Contact your Electro Freeze Distributor for service.
	5. Start capacitor defective or motor start switch defective.	5. Contact your Electro Freeze Distributor for service.
	6. Pressure switch defective.	6. Contact your Electro Freeze Distributor for service.
	7. Motor defective or internal overload tripped.	7. Contact your Electro Freeze Distributor for service.
MTS will not shut off. 	1. Hose broken.	1. Replace hose.
	2. Pressure switch stuck in closed position.	2. Contact your Electro Freeze Distributor for service.
MTS cycles on and off without dispensing. 	1. Worn transfer hose.	1. Replace hose.
	2. Leak on pressure side of system.	2. Contact your Electro Freeze Distributor for service.
MTS will not prime. 	1. Insufficient supply of mix.	1. Replenish mix supply.
	2. Swing clamp knob loose.	2. Tighten knob.
	3. Air hose or air meter not installed.	3. Install air hose/air meter.
	4. Hose not installed.	4. Install hose.
Mix pickup tube loses prime. 	1. Defective or missing duckbill valve.	1. Replace duckbill valve.
	2. Inlet clamp not tight.	2. Tighten clamp.
	3. Worn transfer hose.	3. Replace transfer hose.

13.1 MTS Troubleshooting Tables

PROBLEM	PROBABLE CAUSE	REMEDY
No air (overrun). 	1. Air meter plugged.	1. Clean or replace air meter.
	2. Air tube pinched.	2. Replace tube.
Too much air, overrun too high – popping problems. 	1. Air meter too large.	1. Install smaller air meter.
	2. Air leak between pickup tube and hose.	2. Replace as needed.
	3. Air line hose cracked – sucking air.	3. Replace air line hose.
	4. Defective or missing duckbill valve.	4. Replace valve.
Mix shoots out air meter. 	1. Swing Clamp knob loose.	1. Tighten.
	2. Transfer hose worn.	2. Replace hose.
	3. MTS pressure too high.	3. Contact your Electro Freeze Distributor for service.

Keep your freezer in excellent condition — always contact your Electro Freeze Distributor for replacement parts and maintenance scheduling.

**QUALITY PARTS
PROTECT
YOUR
INVESTMENT**

NOTE: Contact your authorized Electro Freeze Distributor for instructions prior to warranty compressor replacement.

14 VQM Error Codes

Error Code	Description/Action	Probable Cause	Remedy
Main Comm	<p>The Main P.C. Board has stopped receiving messages from the User Interface</p> <p>Action: System shut down completely.</p>	<p>1. Faulty Wire Connection</p> <p>2. Programming Issue</p> <p>3. Defective Board</p>	<p>1. Check Communication cable between Main P.C. board and U.I. board. (Contact Electro Freeze Factory Tech Support)</p> <p>2. Ensure U.I. Program version and Main P.C. Program Version are compatible. (Contact Electro Freeze Factory Tech Support Software version compatibility)</p> <p>3. If the program versions are compatible, and using the test cable does not resolve the issue then the main control board is not functioning properly and needs to be replaced. (Contact Electro Freeze Factory Tech Support)</p>
NO Comm.	<p>The U.I. Board is not receiving messages from the main board</p> <p>Action: System shut down completely.</p>	<p>1. Faulty Wire Connection</p> <p>2. Programming Issue</p> <p>3. Defective Board</p>	<p>1. Check Communication cable between Main P.C. board and U.I. board. (Contact Electro Freeze Factory Tech Support)</p> <p>2. Ensure U.I. Program version and Main P.C. Program Version are compatible. (Contact Electro Freeze Factory Tech Support)</p> <p>3. If the program versions are compatible, and using the test cable does not resolve the issue then the U.I. board is not functioning properly and needs to be replaced. (Contact Electro Freeze Factory Tech Support)</p>

14 VQM Error Codes (continued)

Error Code	Description/Action	Probable Cause	Remedy
<p>CYL Rfg.</p>	<p>This error occurs when barrel system run time exceeds 90 minutes. Barrel switches to night mode and locks out.</p> <p>Action: Barrel Refrigeration off, hopper refrigeration continues to operate.</p>	<ol style="list-style-type: none"> 1. Dirty Condenser 2. Shortage of Refrigerant 3. Faulty wire connection 4. Solenoid valve not activating 5. Compressor starting components failure (1 Phase Only) 6. Compressor Contactor Failure 7. Compressor Contactor Control Relay not activating 8. System lacks efficiency 9. Faulty Thermistor 	<ol style="list-style-type: none"> 1. Clean Condenser 2. Locate Source of refrigerant leak and repair. 3. Locate faulty connection (Wire rubbed through, cut) and repair as needed. 4. Determine if Solenoid coil is receiving proper voltage (208/230 Volts), If coil is receiving voltage, ohm out coil windings. If coil is not receiving voltage, check relay responsible for activating coil and repair as needed. If this condition exists a LOW PSI error code may also trip. 5. Check Compressor Starting components and replace as needed. 6. Check contactor coil for proper resistance, check for voltage drop across contact points. Replace as needed 7. Check to see if Relay is receiving power from Main P.C. board (12VDC), Ohm relay control coil for proper resistance. Replace relay as needed. If no 12VDC is detected Contact Electro Freeze Factory Tech Support. 8. Check for worn blades, AXV pressure settings, Check water regulating valve setting (Water Cooled), check refrigerant level, compressor efficiency. 9. Remove thermistor, check in ice water and compare to thermistor curve chart. If faulty replace, if thermistor tests o.k. check wire harness connections. If all connections are sound possibility of control board issue. (Contact Electro Freeze for proper compressor oil charge)

14 VQM Error Codes (continued)

Error Code	Description/Action	Probable Cause	Remedy
CYL Rfg.	<p>This error occurs when barrel system run time exceeds 90 minutes. Barrel switches to night mode and locks out.</p> <p>Action: Barrel Refrigeration off, hopper refrigeration continues to operate.</p>	<p>10. Condenser Fan Motor Failure (Air Cooled Only)</p> <p>11. Water Flow Restriction (Water Cooled Only)</p> <p>12. AXV not set properly/not responding</p> <p>13. Compressor Failure/ Reduced Capacity</p> <p>14. Moisture in system</p>	<p>10. Replace Condenser fan motor</p> <p>11. Locate and remove restriction, re-start system to check for further issues</p> <p>12. Check System refrigerant level, attempt to re-set AXV valve pressure. If valve is not responsive, it may need to be replaced</p> <p>13. Check Voltage to the unit to ensure it is within specification, Check wire connections to the unit and compressor, Check compressor contactor for loose wire connections and proper operation, and possible voltage drop, ohm compressor windings to check for a short and proper winding resistance, check compressor starting components for failure, allow compressor protector to reset and check for proper amp draw.</p> <p>14. Recover refrigerant, change filter drier, change compressor oil (Contact Electro Freeze for proper compressor oil charge), Evacuate system to a minimum of 200 microns or less. Repeat if necessary</p>
Cabinet Rfg	<p>Occurs when cabinet system run time exceeds 90 minutes</p> <p>Action: Barrel refrigeration switches to night mode, cabinet refrigeration is turned off.</p>	<p>1. Dirty Condenser</p> <p>2. Shortage of Refrigerant.</p> <p>3. Evaporator coil Froze up</p> <p>4. Faulty wire connection</p> <p>5. Restriction in System i.e. Capillary tube, Filter Drier</p>	<p>1. Clean Condenser</p> <p>2. Locate Source of refrigerant leak and repair.</p> <p>3. Check door gasket for wear, check evaporator fan motor for proper operation, check spring loaded door closer for proper operation.</p> <p>4. Locate faulty connection (Wire rubbed through, cut) and repair as needed.</p> <p>5. Locate restriction and repair as needed.</p>

14 VQM Error Codes (continued)

Error Code	Description/Action	Probable Cause	Remedy
<p>Cabinet Rfg (cont.)</p>	<p>Occurs when cabinet system run time exceeds 90 minutes</p> <p>Action: Barrel refrigeration switches to night mode, cabinet refrigeration is turned off.</p>	<p>6. Faulty Thermistor</p> <p>7. Compressor Control Relay not activating</p> <p>8. Compressor starting components failure</p> <p>9. Compressor failure/ reduced capacity</p> <p>10. Moisture in System</p>	<p>6. Remove thermistor, check in ice water and compare to thermistor curve chart. If faulty replace, if thermistor tests o.k. check wire harness connections. If all connections are sound possibility of control board issue. (Contact Electro Freeze Factory Tech Support)</p> <p>7. Check to see if Relay is receiving power from Main P.C. board (12VDC), Ohm relay control coil for proper resistance. Replace relay as needed. If no 12VDC is detected Contact Electro Freeze Factory Tech Support.</p> <p>8. Check Compressor Starting components and replace as needed.</p> <p>9. Check Voltage to the unit to ensure it is within specification, Check wire connections to the unit and compressor, Check compressor contactor for proper operation, and possible voltage drop, ohm compressor windings to check for a short and proper winding resistance, check compressor starting components for failure, allow compressor protector to reset and check for proper amp draw.</p> <p>10. Recover refrigerant, change filter drier, change compressor oil (Contact Electro Freeze for proper compressor oil charge), Evacuate system to a minimum of 200 microns or less. Repeat if necessary</p>
<p>Bulb Temp.</p>	<p>Occurs when barrel thermistor is above or below temp. limit for 1 minute without change</p> <p>Action: Affected barrel is in night time cycle mode (1min on and 40 min. off), Cabinet refrigeration remains on</p>	<p>1. Faulty wire connection</p> <p>2. Faulty Thermistor</p> <p>3. Program Issue</p>	<p>1. Locate faulty connection (Wire rubbed through, cut) and repair as needed.</p> <p>2. Remove thermistor, check in ice water and compare to thermistor curve chart. If thermistor does not ohm correctly, replace thermistor.</p> <p>3. Ensure U.I. Program version and Main P.C. Program Version are compatible. (Contact Electro Freeze Factory Tech Support)</p>

14 VQM Error Codes (continued)

Error Code	Description/Action	Probable Cause	Remedy
Cabinet Temp.	<p>Occurs when cabinet thermistor is above or below temp. limit for 1 minute without change</p> <p>Action: Cabinet is in time cycle mode (5 min. on and 30 min. off) both cylinders are in standby mode.</p> <p>If unit is in cabinet only mode: Cabinet is in time cycle mode and both cylinders remain off</p>	<ol style="list-style-type: none"> 1. Faulty wire connection 2. Faulty Thermistor 3. Program Issue 	<ol style="list-style-type: none"> 1. Locate faulty connection (Wire rubbed through, cut) and repair as needed. 2. Remove thermistor, check in ice water and compare to thermistor curve chart. If thermistor does not ohm correctly, replace thermistor. 3. Ensure U.I. Program version and Main P.C. Program Version are compatible. (Contact Electro Freeze Factory Tech Support)
Head Switch	<p>Occurs when head switch is open with power applied to unit</p> <p>Action: Affected head is turned off.</p>	<ol style="list-style-type: none"> 1. Head Assembly Not installed 2. Faulty Head switch (1 per cylinder) 3. Faulty wire connection 4. Program Issue 	<ol style="list-style-type: none"> 1. Install Head assembly 2. Test head switch to see if circuit remains open with magnet in place, remove and replace head switch as needed 3. Locate Faulty wire connection and repair as needed 4. Ensure U.I. Program version and Main P.C. Program Version are compatible. (Contact Electro Freeze Factory Tech Support)
Motor OVLD	<p>Occurs when motor current is 0, and motor is given an on signal</p> <p>Action: Affected barrel is off, hopper refrigeration continues to operate.</p>	<ol style="list-style-type: none"> 1. Motor internal overload open 2. Faulty wire connection 3. Motor Contactor Failure 4. Motor control relay not activating 	<ol style="list-style-type: none"> 1. Allow motor to cool and overload to reset, Check motor start components, product temperature (Too cold, low overrun), and gear reducer operation. 2. Locate Faulty wire connection and repair as needed 3. Check contactor coil for proper resistance, check for voltage drop across contact points. Replace as needed 4. Check to see if Relay is receiving power from Main P.C. board (12VDC), Ohm relay control coil for proper resistance. Replace relay as needed. If 12 VDC is not detected Contact Electro Freeze Factory Tech Support

14 VQM Error Codes (continued)

Error Code	Description/Action	Probable Cause	Remedy
Motor OVLD (cont.)	<p>Occurs when motor current is 0, and motor is given an on signal</p> <p>Action: Affected barrel is off, hopper refrigeration continues to operate.</p>	<p>5. Motor Failure</p> <p>6. Current Sense board/function failure</p> <p>7. One line of power loss</p> <p>8. Program Issue</p>	<p>5. Check motor starting components, check motor for shorts to ground, check for proper winding resistance. Replace Motor as needed</p> <p>6. Check current sense board wire connections, check max current setting in control system. (Contact Electro Freeze Factory Tech Support)</p> <p>7. Check main power supply, and main wire connections and correct as needed</p> <p>8. Ensure U.I. Program version and Main P.C. Program Version are compatible. (Contact Electro Freeze Factory Tech Support)</p>
Comp. Low PSI	<p>Occurs when low pressure control is activated.</p> <p>Action: Cylinder refrigeration is off, Cabinet refrigeration Continues to operate.</p>	<p>1. System is Short on refrigerant</p> <p>2. Solenoid valve not activating</p> <p>3. Low pressure control is Faulty.</p> <p>4. Restriction is refrigeration system.</p> <p>5. Faulty wire connection.</p> <p>6. System component failure</p>	<p>1. Locate refrigerant leak and repair as needed. Ensure refrigeration system is evacuated to at least 200 microns.</p> <p>2. Determine if Solenoid coil is receiving proper voltage (208/230 Volts), If coil is receiving voltage, ohm out coil windings. If coil is not receiving voltage, check relay responsible for activating coil and repair as needed.</p> <p>3. Confirm Low pressure control is faulty by installing manifold gauges to confirm suction pressure is above cut-in set point of control. Replace control as needed</p> <p>4. Locate and remove restriction i.e. restricted drier, AXV closed down, Solenoid valve not opening etc.</p> <p>5. Repair connection as needed i.e. faulty connection on LPCO, etc.</p> <p>6. Locate failed component (Diagnostics Mode in Technician Menu will aid in locating) i.e. solenoid coil, AXV valve not opening, control relay, Compressor contactor staying energized causing unit to pump down, etc. and repair as needed.</p>

14 VQM Error Codes (continued)

Error Code	Description/Action	Probable Cause	Remedy
Comp. High PSI	Occurs when the High pressure control is activated. Action: Cylinder refrigeration is off, Cabinet refrigeration Continues to operate	1. Dirty Condenser Air Cooled	1. Blow out and clean Air cooled condenser re-start system and check unit operation.
		2. Bad Condenser Fan Motor (A/C Only)	2. Replace Condenser motor as needed. Check system operation
		3. Dirty Condenser (Water Cooled)	3. Check inlet and outlet water temperature on condenser, it should be at least 20°F difference from inlet to outlet. If there is no temperature change, condenser is fouled out and will need to be cleaned, or changed. If this condition is present, contact the Electro Freeze Technical Support Line.
		4. High Pressure control is Faulty.	4. Confirm High pressure control is faulty by installing manifold gauges to confirm high side pressure is below cut-out set point of control. Replace control as needed.
		5. Faulty Wire Connection	5. Repair connection as needed i.e. faulty connection on HPCO, etc.
		6. Non-Condensables in refrigeration system.	6. Fully recover refrigerant from system, change the refrigerant filter/drier, evacuate system to at least 200 microns and weigh in Factory refrigerant charge (Contact Electro Freeze in charge amount is not stated on machine data Plate). Ensure while evacuating system a manual activation magnet is placed on each solenoid to ensure they are open for a full system evacuation. Start system and check operation
		7. Refrigeration System over charged.	7. Fully recover refrigerant from system, change the refrigerant filter/drier, evacuate system to at least 200 microns and weigh in Factory refrigerant charge (Contact Electro Freeze if charge amount is not stated on machine data Plate). Start system and check operation

14 VQM Error Codes (continued)

Error Code	Description/Action	Probable Cause	Remedy
Clock Error	<p>CLOCK ERROR</p> <p>Action: All timer functions use default data/time</p>	Contact Electro Freeze Technical Support Line if this Problem exists	Contact Electro Freeze Technical Support Line if this Problem exists
Power Fail	<p>Displays Power Fail if main power to system has failed</p> <p>Action: if unit is in Freeze or Night mode, unit will restore in Night Mode. If unit is in Clean or Off Mode, unit will restore in Off Mode.</p>	1. Main Incoming power to unit was disrupted	1. Check all main power connections, Transformer switch to 208 Volt for 220Volt and below and 230 Volt for 220 Volt and above.
Spigot	<p>Displays Spigot if the Left or Right Side Spigot switch is engaged for more than 5 minutes.</p> <p>Action: Affected side compressor and beater motor are off, until condition is reset</p>	<p>1. Spigot Push rod not installed</p> <p>2. Spigot switch has failed in the closed position</p> <p>3. Spigot Switch is out of adjustment</p> <p>4. Plunger is sticking open</p>	<p>1. Install Spigot Push Rod and start system to see if error is eliminated.</p> <p>2. Replace defective spigot switch and ensure new switch is adjusted properly.</p> <p>3. Re-adjust Spigot switch to operate properly with Push Rod.</p> <p>4. Check for proper lubrication, o-ring wear, switch tower spring worn causing plunger to not close, etc.</p>
C Spigot	<p>Displays C Spigot if the Center spigot switch is engaged for more than 5 minutes</p> <p>Action: Affected side compressor and beater motor are off, until condition is reset</p>	<p>1. Spigot Push rod not installed</p> <p>2. Spigot switch has failed in the closed position</p> <p>3. Spigot Switch is out of adjustment</p> <p>4. Plunger is sticking open</p>	<p>1. Install Spigot Push Rod and start system to see if error is eliminated.</p> <p>2. Replace defective spigot switch and ensure new switch is adjusted properly.</p> <p>3. Re-adjust Spigot switch to operate properly with Push Rod.</p> <p>4. Check for proper lubrication, o-ring wear, switch tower spring worn causing plunger to not close, etc.</p>

14 VQM Error Codes (continued)

Error Code	Description/Action	Probable Cause	Remedy
Low Left Side (This error only applies to Dual Power supply units)	Displays Low Left Side if the Power good relay is not energized, for the side opposite the controller. Action: Left side of unit is off, and the right side is operational	1. Main power to left side is off 2. Power good relay has failed 3. Faulty wire connection to power good relay. 4. Control board issue.	1. Check to see if main circuit breaker is tripped or unit's main power cord is not installed properly. 2. Check coil on power good relay with ohm meter. If open electrically replace relay. 3. Check high voltage wire connections to power good relay. Check low voltage connections going from relay to main control board. Check continuity through relay contacts to ensure proper operation. Repair any connections as needed. 4. Contact Electro Freeze Technical Support
Pump HI PSI	Displays Pump Hi PSI if the pump pressure is greater than 40 PSI for 10 seconds while pump is on. Action: Affected pump is turned off Note: If unit trips this error and Pressure relief has not opened, check to ensure relief is functioning properly.	1. Pump control relay is stuck closed causing pump motor to stay energized. 2. Faulty Pressure transducer/out of calibration. 3. Faulty Control Board	1. Test to see if coil voltage is present at pump control relay, If it is not and pump is still running, the control relay is stuck and needs to be replaced. If coil voltage is present then control board or Transducer may be malfunctioning. 2. Attempt to calibrate the Transducer to 0 psi and re-test unit. If unit continues to malfunction contact Electro Freeze Technical Support. 3. Contact Electro Freeze Technical Support.
Pump Low PSI	Displays Pump Low psi if the pump pressure is lower than 20 PSI while in freeze mode. Action: Affected pump is turned off	1. Pump transfer hose is worn out. 2. Leaking Pressure Relief Valve 3. Hose Shoe is not tight enough causing pressure to relieve back through transfer hose.	1. Replace pump transfer hose (Should be replaced minimally every 30 days) 2. Ensure o-ring is installed properly on relief piston, and nothing is restricting the o-ring from seating on relief body. Check relief spring for proper tension and replace as necessary. 3. Ensure Hose shoe is tightened down as per the operators manual instructions.

14 VQM Error Codes (continued)

Error Code	Description/Action	Probable Cause	Remedy
Pump Low PSI (cont.)	<p>Displays Pump Low psi if the pump pressure is lower than 20 PSI while in freeze mode.</p> <p>Action: Affected pump is turned off</p>	<p>4. Pump control relay not closing preventing pump motor from running</p> <p>5. Pump motor Starting components Faulty</p> <p>6. Faulty wire connection</p> <p>7. Pressure Transducer is Faulty</p> <p>8. Faulty Control Board</p>	<p>4. Test to see if coil voltage is present at pump control relay, If it is present but the pump will not start, check to see if the relay contacts are closing. If so move on to troubleshooting the pump motor. If not replace the relay and check operation.</p> <p>5. Remove and test pump Start capacitor and starting relay, Replace faulty parts as needed. Check motor windings to ensure no electrical shorts are present. Start unit and check operation.</p> <p>6. Locate and repair faulty wire connections as needed.</p> <p>7. Attempt to calibrate the Transducer to 0 psi and re-test unit. If unit continues to malfunction contact Electro Freeze Technical Support.</p> <p>8. Contact Electro Freeze Technical Support</p>
Pump Cover	<p>Occurs if the RMT pump cover is removed or the cover switch is open.</p> <p>Action: If unit is in Freeze, the affected side will be turned to standby and the affected pump will be turned off. If unit is in clean or Standby mode the affected pump will be turned off and unit will not be allowed to be put into freeze, and will remain in standby or off.</p>	<p>1. Pump cover is not installed</p> <p>2. Pump cover magnet has been removed or fallen out</p> <p>3. Pump Cover safety switch is Faulty</p> <p>4. Faulty Wire Connection</p> <p>5. Program issue</p>	<p>1. Install Pump Cover</p> <p>2. Replace pump cover</p> <p>3. Test switch to confirm and replace as needed.</p> <p>4. Locate and repair faulty wire connections as needed.</p> <p>5. Contact Electro Freeze Technical Support</p>

14 VQM Error Codes (continued)

Error Code	Description/Action	Probable Cause	Remedy
Main P.C. Board Heartbeat L.E.D not blinking/ U.I. Not Energizing	Occurs if there is a power loss to the Main P.C. Board or a possible U.I. Issue	1. Power Loss to Main P.C. Board	1. Check control transformer for main 24 VAC power supply to main P.C. Board.
		2. Main P.C. Board Fuse blown	2. Remove fuse and ohm to check for continuity, if none replace fuse. If once fuse is replaced and power is restored, the Main P.C. Board L.E.D. starts blinking however the U.I. Board does not energize then continue with this troubleshooting chart
		3. Power Not being supplied to U.I. Board from main P.C. Board	3. Remove communication wire from U.I. Board, This cable connects the U.I. Board to Main P.C. Board. Using a meter set to DC voltage and power to the Main P.C. Board on, test voltage across both Black wires. If voltage reads about 5.96 VDC then Main P.C. Board and the communication cable are working properly and the problem lies with the U.I. Board
		4. Faulty wire connection	4. If 5.96 VDC is read on the black wires but the U.I. Board does not light up, the issue might lie with the communication cable, and that it is not making a good connection with the U.I. Board. Check the connector on the U.I. Board for damaged pins; also check the communication cable for loose wires in the cable connector (Contact Electro Freeze Factory Tech Support).

If tested to ground relay coil will read 12 VDC to ground and then zero VDC when activated, if tested across relay coil then it will read 0 VDC if sitting idle, and 12 VDC when activated.

If a Power Failure Occurs unit will log the change of state i.e. switching to night mode on re-start, when the unit is powered back up. The Power Failure error will be displayed on the screen until the SELECT button is pressed acknowledging the Failure. Once the SELECT button is pressed error will reset.

The Head Switch, Spigot Switch, Center Spigot Switch, Mix Low, and Mix Out Errors will all Auto Reset after the problem has been rectified.

Keep your freezer in excellent condition — always contact your Electro Freeze Distributor for replacement parts and maintenance scheduling.

QUALITY PARTS
PROTECT
YOUR
INVESTMENT

NOTE: Contact your authorized Electro Freeze Distributor for instructions prior to warranty compressor replacement.



REPLACEMENT PARTS MANUAL
with Illustrations

SOFT SERVE FREEZER
Model GEN-5400

P/N 185297-01 6/17

Replacement Parts Orders

You must have the serial number of your freezer when ordering parts — parts may differ with a particular serial number of the same model.

Parts are listed using terminology that best fits the function of the part. The illustrations in this section will help you to find the correct part number and description.

Place your parts order through your local authorized Electro Freeze Distributor.

Name: _____

Address: _____

Phone: _____

If you require further assistance, contact H.C. Duke & Son, Inc., Electro Freeze, as follows:



Phone: (309) 755-4553

(309) 755-4545

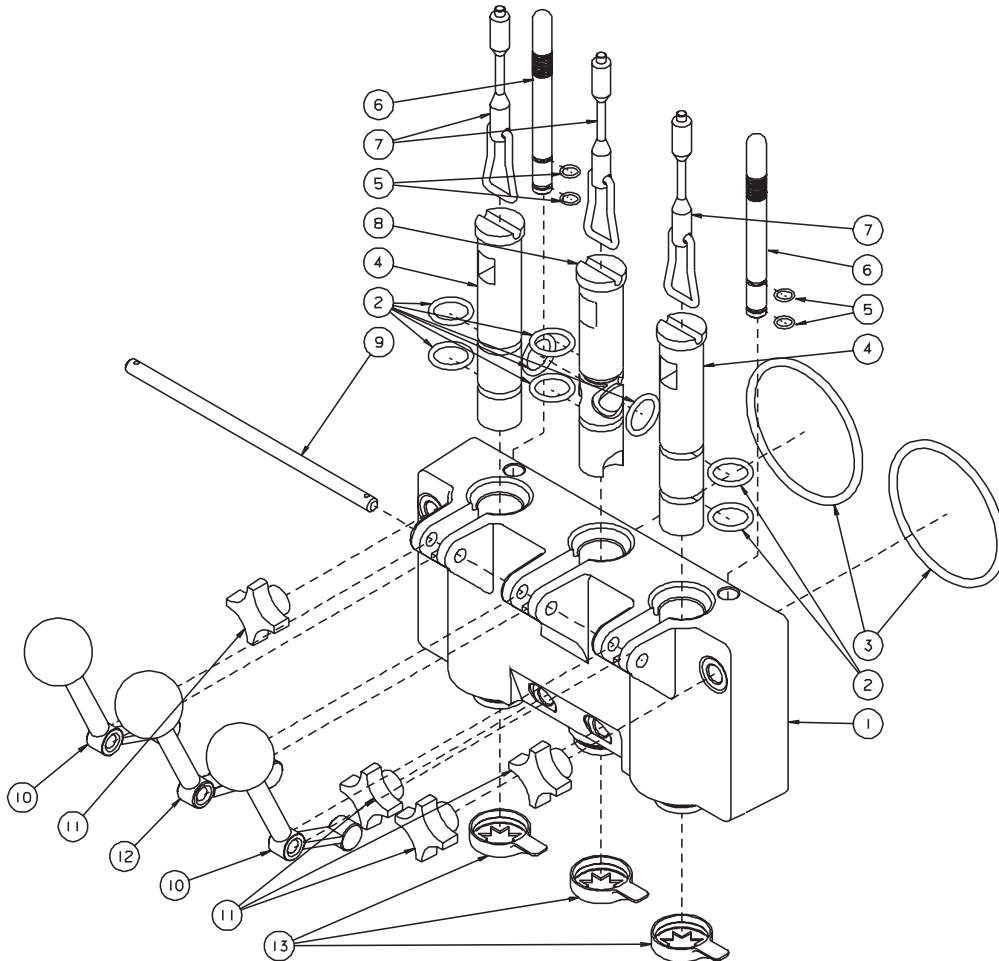
Fax: (309) 755-9858

E-mail: service@hcduke.com

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Figure 1 Head Assembly



M01612

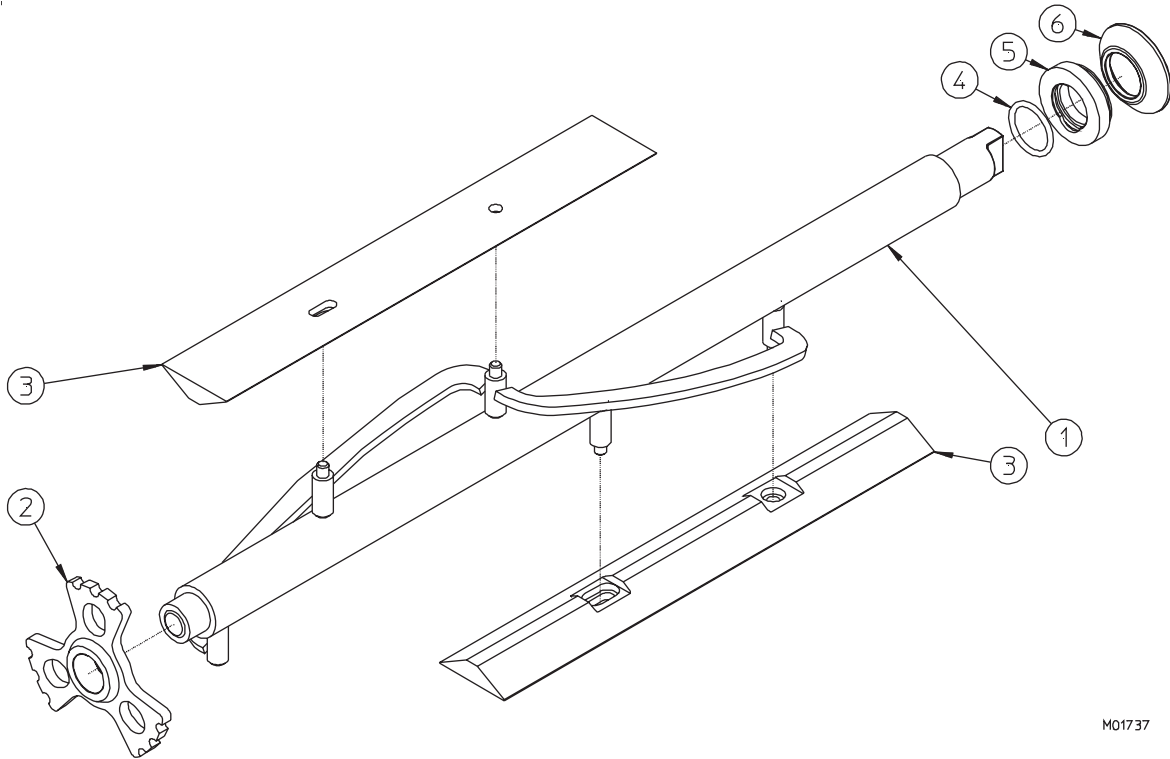
Item	Part No.	Description
*	HC120013	Head - Assy. Dispense
1	HC120012	Head - Assy. w/actuators
2	HC160501	O-Ring (Plunger)
3	HC160583	O-Ring (Head)
4	HC137174	Plunger - Side Self Dispense
5	HC160610	O-Ring (Air Plug)
6	HC138149	Plug - Air Bleed
7	HC116089	Push Rod - Assy. Plunger Switch
8	HC138009	Plunger - Dispense Center
9	HC160269	Pin - Handle
10	HC110007	Handle - Assy. Dispense (Side) includes HC162629 Knob - Ball 3/8-16 THD Black
11	HC162625	Knob - Hand
12	HC114808	Handle - Assy. Dispense Center includes HC162629 Knob - Ball 3/8-16 THD Black
13	HC196185	Nozzle-Serrated

* Includes all items above except 7 and 11.

HC114341-05 Stud - Assy. Cylinder 3-15/16 (not shown)

HC116410 Kit - Dispense Head Switch (not shown)

Figure 2 Beater Shaft Assembly

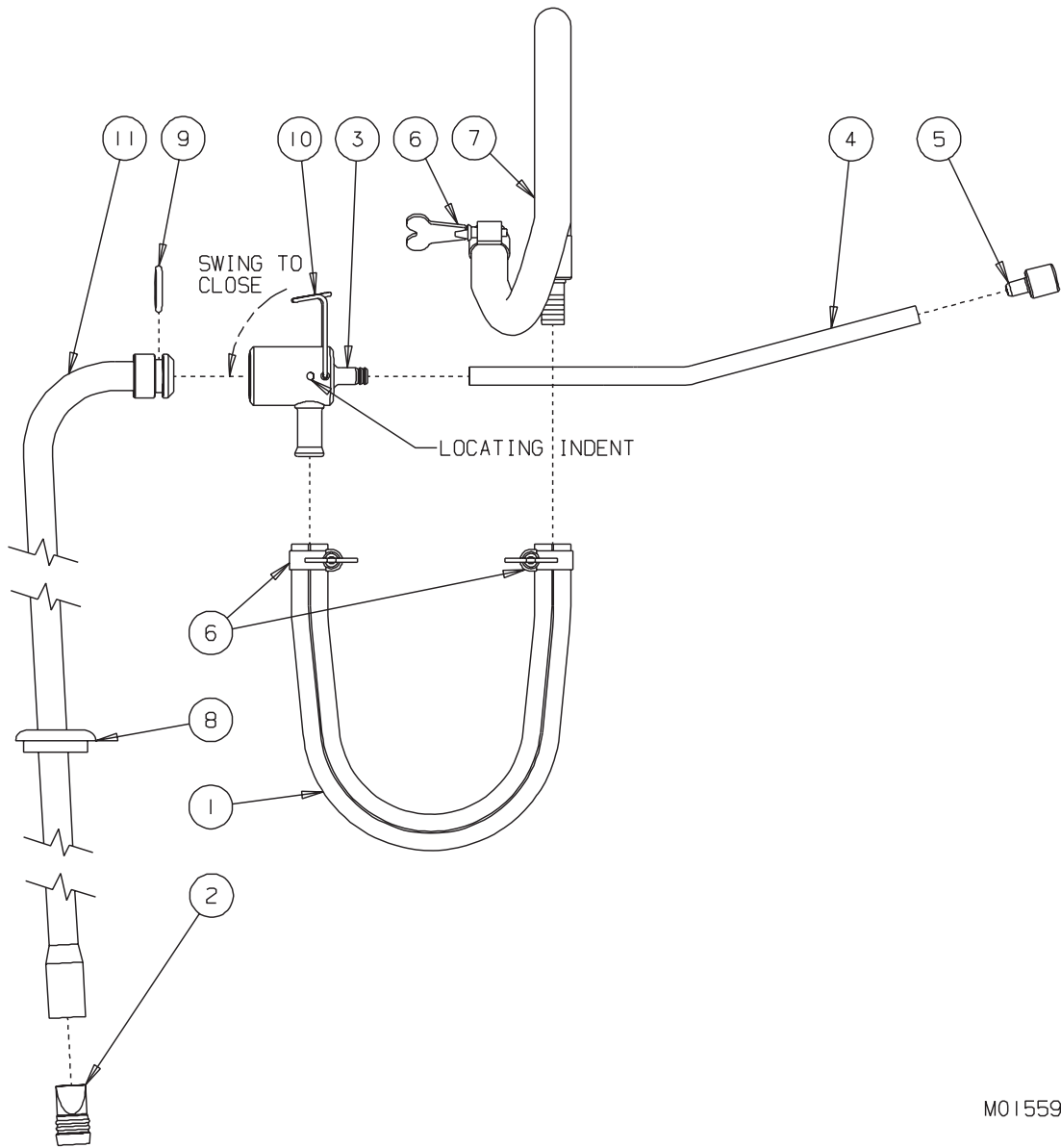


M01737

Item	Part No.	Description
1.....	HC113438	Shaft - Assy. Beater
2.....	HC196085	Bushing - Cylinder
3.....	HC137334	Blade - Scraper Long Soft Serve (Non-reversible)
4*.....	HC160500	O-ring (Seal)
5*.....	HC133098	Washer - Shaft Seal
6*.....	HC160557	Seal - Beater Shaft

* Items 4,5,6 can be ordered together as:
 HC111875 Seal - Assy. Shaft

Figure 3 MTS—RMT Hose Assembly



M01559

Item	Part No.	Description
1	HC138836	Hose - Transfer Red Line
2	HC199032-01	Duckbill - Inlet (Valve)
3	HC118765*	Port - Assy. Inlet Mix/Air
4	HC138170-02	Tube - Air 7½ in. (Hose)
5		Meter - Air (Order by meter number)
6	HC116065	Clamp - Assy. Soft Hose 5/8
7	HC116094	Hose - Assy. Mix Braided
8	HC199033	Boot - Mix Tube (Seal)
9	HC160502*	O-ring
10	HC162324*	Clip - Tube Retainer
11	HC118836*	Tube - Assy. Mix Inlet

Can be ordered as an assembly:

* HC118842 Tube - Assy. Pickup

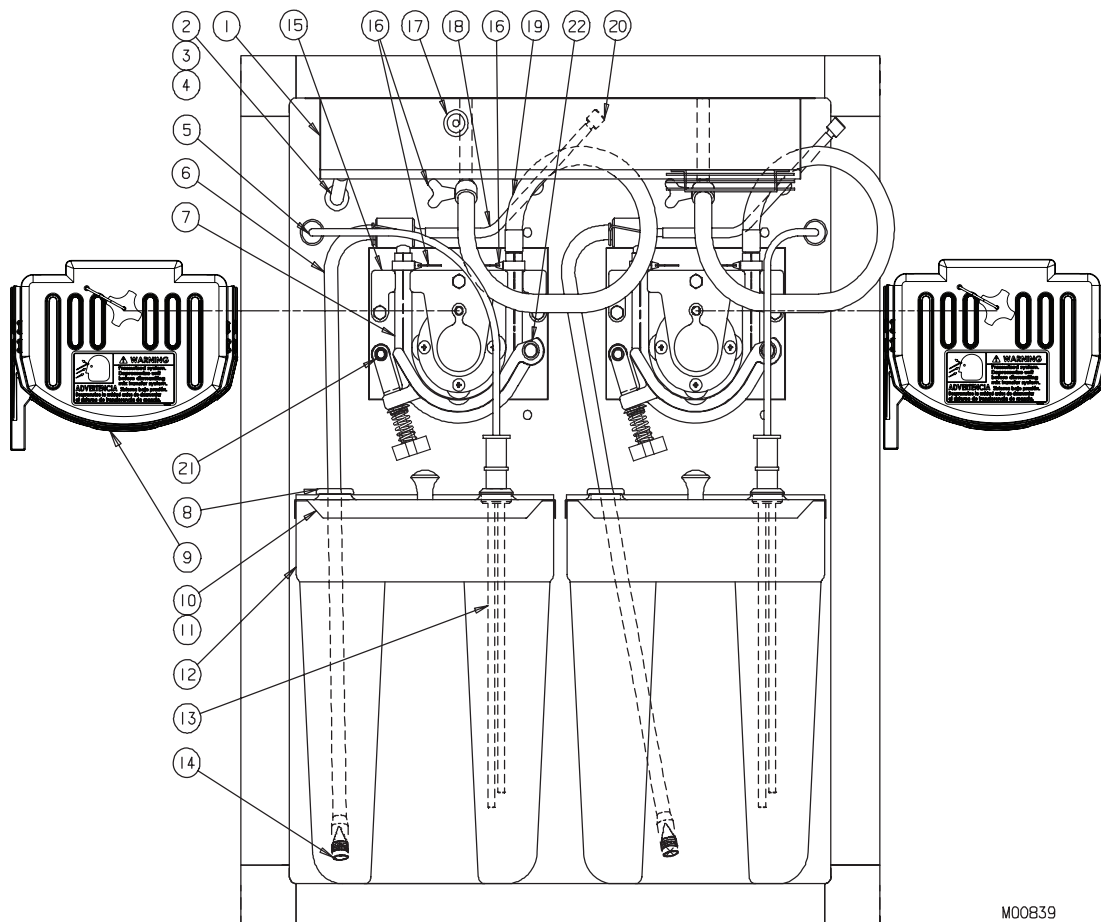
**HC121386..... Valve - Assy In Line Press. Relief (Includes 13-17, 20,21)

Figure 4 Mix Transfer System RMT (Sheet 2 of 2)

Item	Part No.	Description
*	HC118751-03	MT - ASSY CAB RED LINE/RELIEF BISN
1	HC138890	Lanyard - Wire
2	HC160508	Sleeve - Cable Stop 3/64
3	HC160464	Screw - HXHC 1/4-20X2 1/2 SST
4	HC160386	Stud - 5/16-18 X 3/4 SST
5	HC160465	Screw - HXHC 1/4-20X3 1/2 SST
6	HC160338	Pin - Dowel 1/4 Dia X 3/4 SST
7	HC139751	Shoe - Roller
8	HC160628	O Ring
9	HC138799	Arm - Swing Clamp
10	HC120504	Clamp - Assy Swing 1/4-20
11	HC116009	Roller - Assy Complete
12	HC138800	Spacer - Swing Arm
13	HC160093	Screw - TRPS 1/4-28X2-1/4 SST
14	HC161302	Switch - Slide/Cover
14A	HC160357	Screw - RDHM #4-40X1/4 Stl
14B	HC160393	Washer - Flat #6 Brass
15	HC159939	Screw - HXSf 1/4-20X11/16 SST
16	HC118763	Bracket - Assy Switch Mntg
17	HC160170	Washer - Lock 3/8 SST
18	HC160169	Washer - Flat 3/8 SST
19	HC159933	Nut - HXSf 1/4-20 SST
20	HC159927	Nut - Hex 3/8-16 SST
21	HC138793	Spacer - Motor
22	HC165524	Block - Insulation RMT
23	HC121027	Kit - Gearmotor 1/6Hp Replacement Model RMT Includes: HC139046-01....Gauge - Shaft Alignment RMT HC139839.....Strap - Mt Motor Rear HC160173.....Washer - Spring Wave SST
24	HC141607	Cover - RMT Pump Motor
25	HC160137	Washer - Flat #10 X 3/4 ZN
26	HC160420	Screw - HXWF #8-32 X 3/8 ZN
27	HC150706	Connector - 3/8 Straight
28	HC118833	Cord - Assy Motor
29	HC160173	Washer - Spring Wave SST
30	HC139756	Shield - Drip
31	HC118764	Faceplate - Assy MTS
32	HC191527	Blank - Backup MTS
33	HC140711	Washer - Spring End
34	HC162327	Spring - Compression
35	HC140706	Knob - Fluted 1/4-20 Custom
36	HC138797	Arm - Shoe Pivot
37	HC160612	O Ring
38	HC138783-01	Support - Roller Bearing
39	HC118767	Cover - Assy RMT HC165246.....Decal - Warning Pressurized HC138889.....Knob - Cover RMT HC138890.....Lanyard - Wire HC160508.....Sleeve - Cable Stop 3/64
40	HC138889	Knob - Cover RMT
41	HC165246	Decal - Warning Pressurized

* Includes all items above.

Figure 5 Cabinet Parts



AIR METERS	
Meter No.	Part No.
9	HC163423
10	HC163424
11	HC163425
12	HC163426
13	HC163421
13.5	HC163421-05
14	HC163427
14.5	HC163427-05
15	HC163428
15.5	HC163428-05
16	HC163429
16.5	HC163429-05
17	HC163430
17.5	HC163430-05
18	HC163431
18.5	HC163431-05
19	HC163432
19.5	HC163432-05
20	HC163433
20.5	HC163433-05
21	HC163434
21.5	HC163434-05
22	HC163435
22.5	HC163435-05
23	HC163436
24	HC163437
25	HC163438
26	HC163439
28	HC163440
30	HC163441
31	HC163442

M00839

Item	Part No.	Description
1	HC117129-03	Shroud - Assy. Evaporator includes HC150821 ... Disconnect - Female HC151105 ... Fan - Intake (Cabinet) HC151076 ... Guard - Fan Open HC150612 ... Switch - Door Push Button HC161004 ... Thermometer - Barrel
1A	HC155111	Coil - Evaporator
1B	HC150533	Cord - Assy. Female Plug
2	HC160738	Clamp - Hose 1/2 ID Delrin (Drain)
3	HC196068	Tubing -.375 ID x .500 OD PVC
4	HC138919	Tube - Drain Support
5	HC150537	Cordset - Mix Level Probe
5A	HC150536	Receptacle - Molded Level Sensor
6	HC118842	Tube - Assy. Pickup includes HC118765 ... Port - Assy. Inlet Mix/Air HC118836 ... Tube - Assy. Mix Inlet HC162324 ... Clip - Tube Retainer HC160502 ... O-ring
7	HC138836	Hose - Transfer Red Line
8	HC199033	Boot - Mix Tube

Item	Part No.	Description
9	HC121798	Cover - Assy Mix Pump Molded
10	HC113997	Cover - Assy. Mix Tank Front
11	HC38165-01	Cover - Rear Mix
12	HC196222	Tank - Mix 7 Gallon
13	HC115397	Probe - Assy. Mix Level 10-3/4"
14	HC199032-01	Duckbill - Inlet RM MTS
15	HC118751-03	MT - Assy CAB Redline (See Explode View-Fig. 5)
16	HC116065	Clamp - Assy. Soft Hose 5/8
17	HC150612	Switch - Door Push Button
17A	HC118597	Actuator - Assy. Door Switch
18	HC138170-02	Tube - Air 7-1/2 in.
19	HC116094	Hose - Assy. Mix Braided
20		Meter - Air (Order by meter number)
21	HC160628	O-ring (Swing Clamp)
22	HC160612	O-ring (Roller Shoe)

Figure 6 Switch Assembly

Item	Part No.	Description
*	HC114176-01	Switch - Assy. Self Closing Plunger (Sides)
1	HC114174	Guide - Assy. Push Rod
2	HC150477	Switch - Roller Actuator SPDT
3	HC160104	Nut - HEX 1/4-20 ZN
4	HC159965	Screw - HXHM 1/4-20 x 2-1/2" ZN
5	HC162323	Spring - Compression MWZN

*Includes all items above.

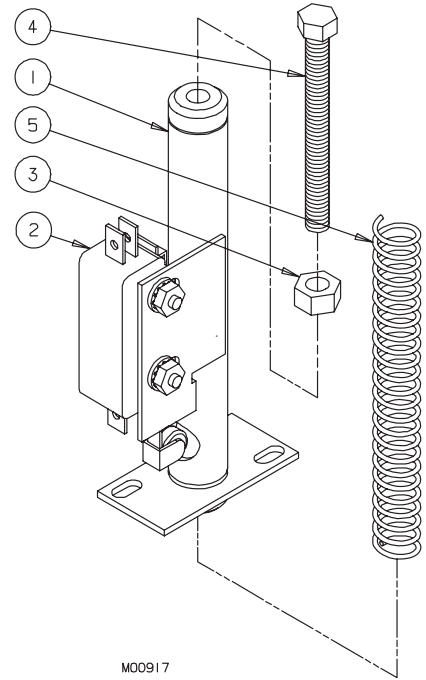
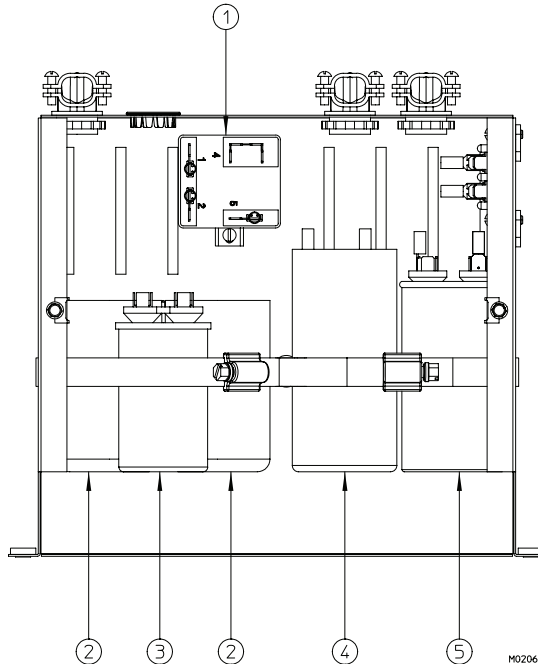
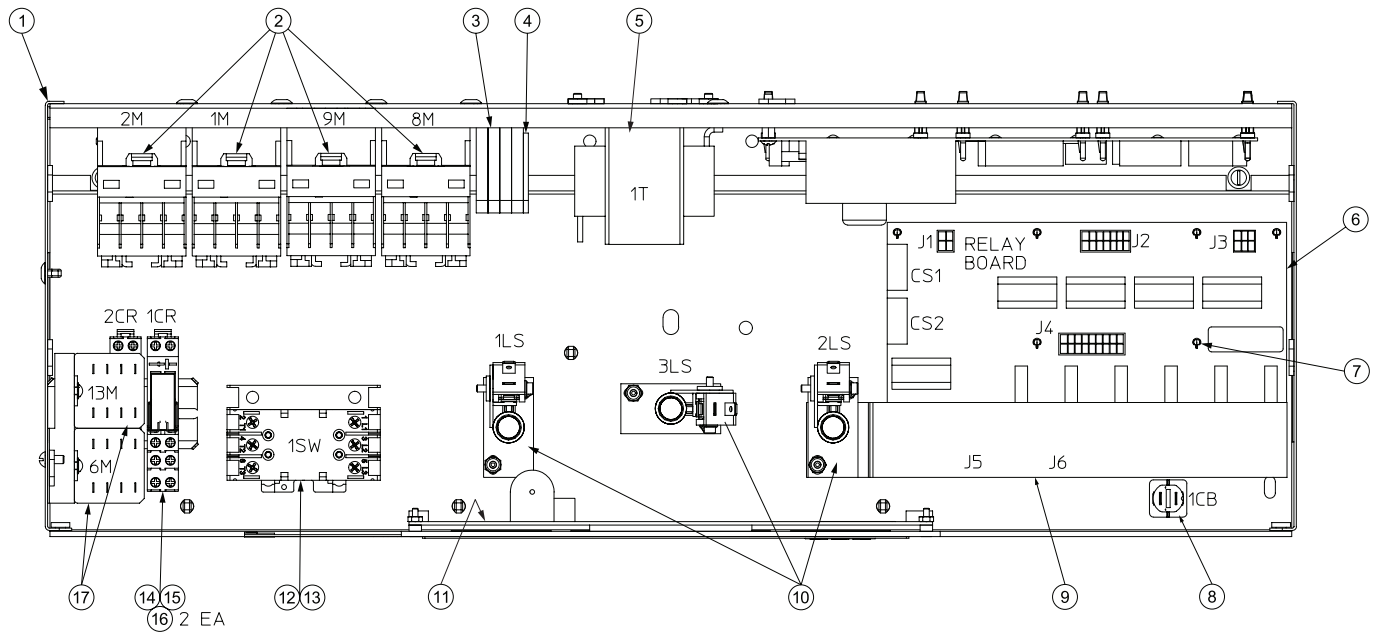


Figure 7 Capacitor & Relay Box

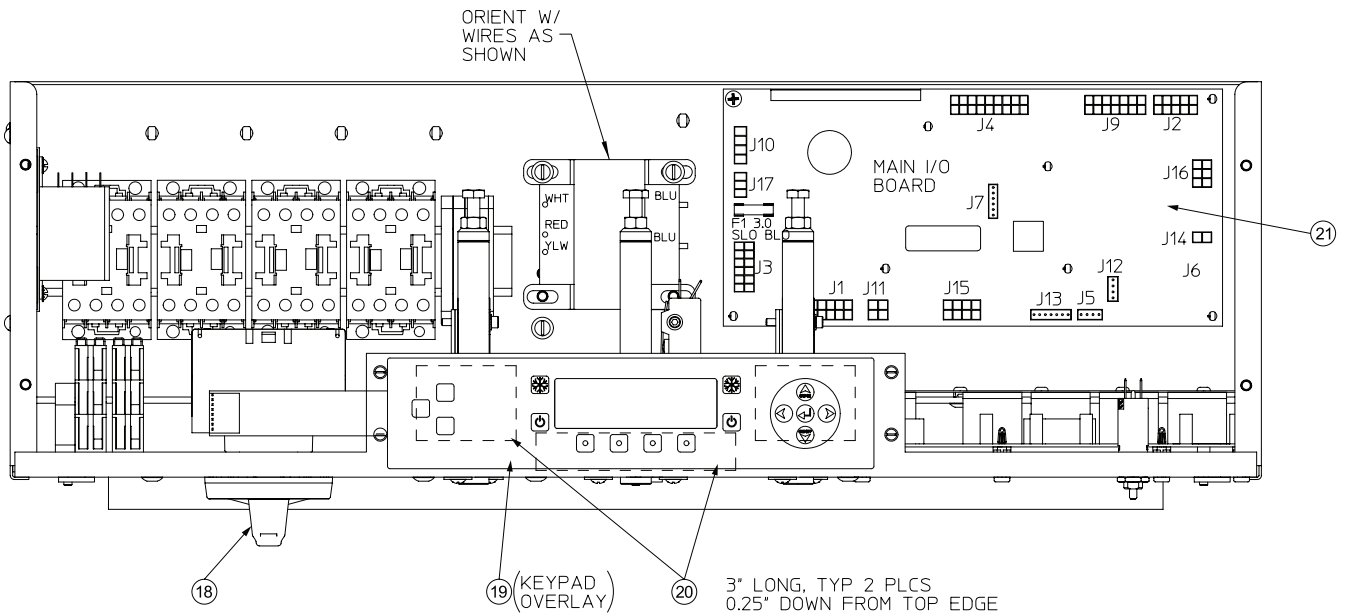


Item	Part No.	Description
1	HC151483	Relay - Compressor
2	HC160739	Clamp - Hose 3-9/16 -4-1/2 Screw
3	HC150294	Capacitor - Start (Bluffton Motor)
4	HC150244	Capacitor - Run (Bluffton Motor)
5	HC151485	Capacitor - Run (Copeland Compressor)
6	HC151484	Capacitor - Start (Copeland Compressor)

Figure 8 Switch Box (sheet 1 of 2)



TOP VIEW



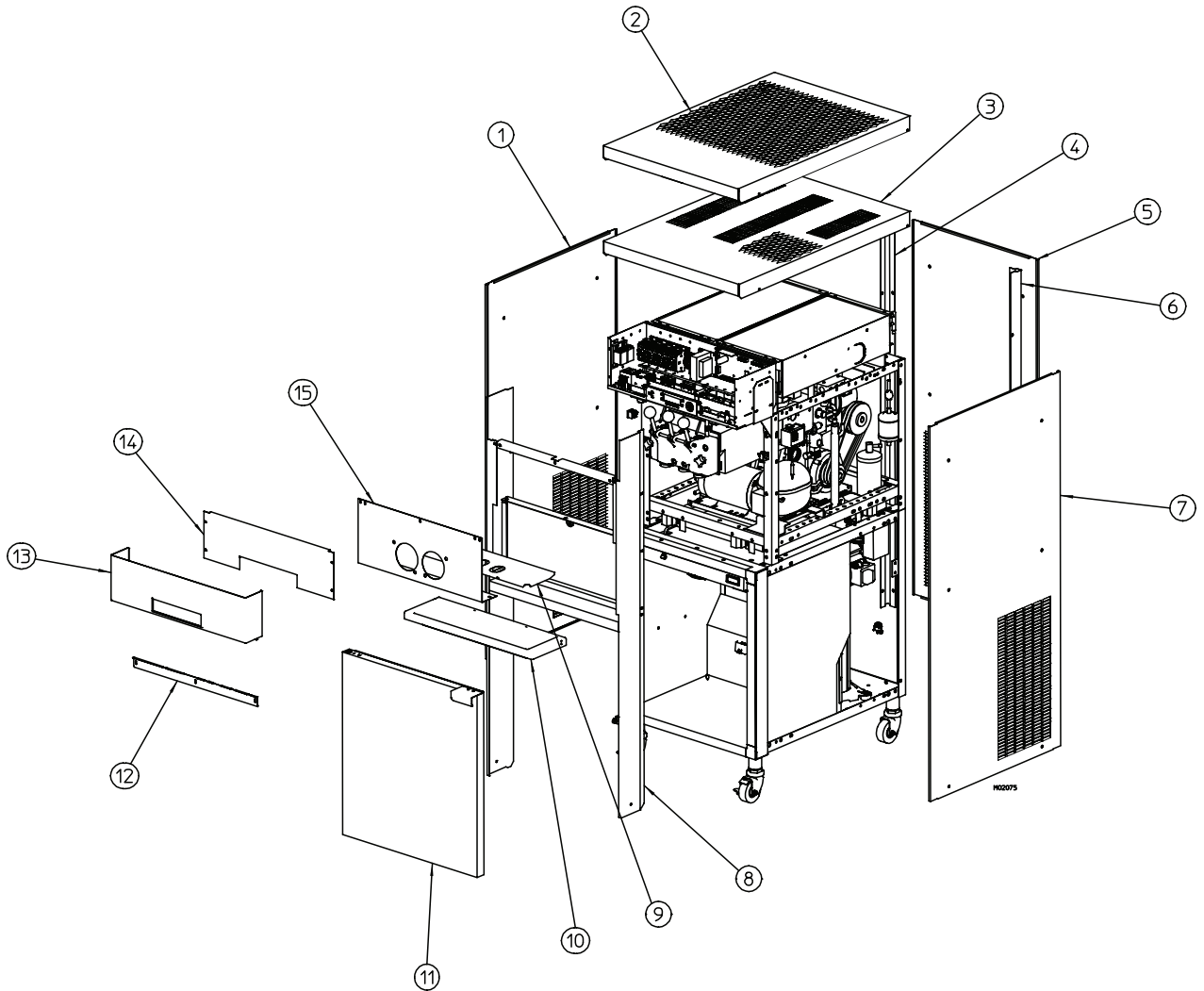
FRONT VIEW

3" LONG, TYP 2 PLCS
0.25" DOWN FROM TOP EDGE
4" LONG, COVER FACE JUST
UNDER DISPLAY WINDOW

Figure 8 Switch Box (sheet 2 of 2)

Item	Part No.	Description
1	HC121406	Box - Assy Electric 208-230/3/60 (Includes 2-21)
2	HC150076	Contactora - 3P 25A 24V Coil BF25
3	HC150591-01	Block - Terminal
4	HC150591-02	Stop - Terminal Block End
5	HC150181-01	Transformer - C12 208/230PRI/24SEC 100VA
6	HC151702	Board - PC Relay
7	HC150038	Support - 1/2 Circuit Board
8	HC150182-01	Breaker - Circuit 4A Threaded
9	HC141350	Insulator - Relay Board
10	HC114176-01	Switch - Assy Spigot
11	HC150994-(*)	Board - PCB UI (Check build version before ordering)
12	HC151708	Switch - Disconnect
13	HC151708-01	Switch - Disconnect 4Th Pole Add On
14	HC150098	Socket - Miniature Relay DPDT
15	HC150166	Clip - Miniature Relay Retaining
16	HC150044	Relay - Miniature DPDT 230V AU Contact
17	HC150343-01	Relay - Control Flange DPDT 12VDC
18	HC151709	Knob - Rotary Disconnect
19	HC150033	Membrane - Cab
20	HC162527	Tape - Cambric 1 1/2
21	HC151701-(*)	Board - PC Main (Check build version before ordering)

Figure 9 Panel Breakdown (Breakdown)



Hardware for Panels				
Panel	Screw	Nut-Speed	Spacer	Nut-Speed on Frame
Channel-Rear	HC160048	HC160117	n/a	n/a
Dispense	HC160076	HC159132	HC138456	n/a
Front	HC160076	HC159132	n/a	HC159067
Rear	HC160048	HC160114	HC138456	n/a
Side	HC159219	HC160114	HC138456	n/a
Top	HC160305	n/a	n/a	n/a
Trimstrip	HC160076	n/a	n/a	n/a
n/a – Not Applicable				

Figure 9 Panel Breakdown (Parts)

Item	Part No.	Description
1	HC136289	Panel - Side LH
2	HC121303	Panel - Assy Top (Air Cooled)
3	HC121140	Panel - Assy Top (Water Cooled)
4	HC135254	Channel - Rear LH
5	HC136313	Panel - Rear
6	HC130021	Channel - Rear RH
7	HC136216	Panel Side RH
8	HC113985	Panel Assy - Front
9	HC115132	Insert - Drip Tray
10	HC196108	Tray - Drip 26 Inch Black
11	HC114262	Shell - Assy Door 26 In
12	HC141353	Trimstrip - Lower 26In
13	HC121388	Trimstrip - Assy W/EF Decal
14	HC141323	Cover - Electric Box
15	HC137297-01	Panel - Dispense

AC = Air Cooled
 WC = Water Cooled
 ACR = Air Cooled Remote
 LH = Left hand side of freezer when facing front.
 RH = Right hand side of freezer when facing front.

LH or RH — Left or right hand is determined as you face the front of freezer.

AC = Air cooled
 WC = Water Cooled
 ACR = Air Cooled Remote

Panel Decals & Labels	
Part No.	Description
HC165119	6" Air Flow
HC165025-03	Beater Warning Twist
HC164452	Cleaning Instructions
HC165093	Clear Overlay
HC165013	CMT Patent
HC164447	Nameplate SN
HC164239	MTS Connect Red Line
HC165124	Top Air Discharge
HC165126	Panel Removal
HC165124	Top Air Discharge
HC164081	Trimstrip
HC164081	Electro Freeze Label
HC165246	Warning - Pressurized

Figure 10 Air Cooled Side/Back View (Breakdown)

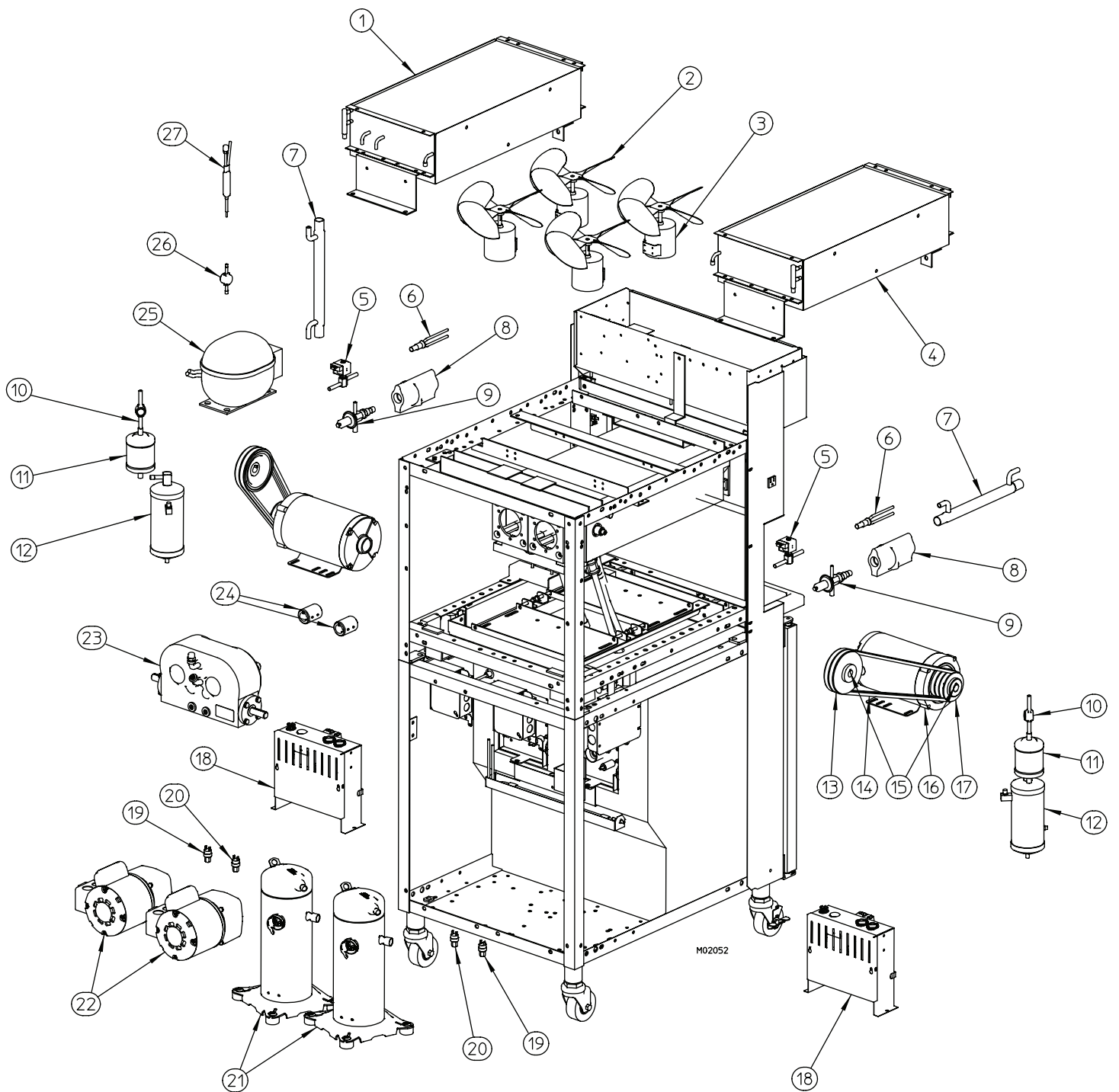


Figure 10 Air Cooled Side/Back View (Parts)

Item	Part No.	Description
1	HC155102	Condenser - Air Rifled
2	HC159023	Blade - Fan 11 In 36 Deg
3	HC151077-02	Motor - Fan 50W 230V 50/60Hz W/Plug
4	HC155101	Condenser - Air Rifled
5	HC155395	Valve - Solenoid Body 3/8 Odm
5A	HC151477	Coil - Solenoid 208-240V MKC-1TS
6	HC155494	Distributor - Refrigerant
7	HC155495	Heat Exchanger
8	HC165531	Insulator - Expansion Valve
9	HC155493	Valve - Automatic Expansion
10	HC155059	Glass - Sight
11	HC155054	Drier - Filter 16 Cu In
12	HC155071	Receiver - 3Lb 3/8 Id Sweat W/O Valve
13	HC153625	Sheave - 3/4 Bore 4.75 Od 4.50Pd
14	HC153161	Belt-V RH
14A	HC153171	Belt-V LH
15	HC153322	Key - Drive 3/16 Sq X 1 1/2
16	HC151052-01	MOTOR - 2HP 208/230/460-3-60
	or	
	HC121424	Kit - Motor - 2HP 208/230-1-60
		Includes: HC151062-02... Motor - 2HP 208/230-1-60
		HC150244 Capacitor - Run
		HC150294 Capacitor - Start
17	HC153626	Sheave - 7/8 Bore 3.25 Od 3.00Pd
18	HC120810-04	Box - Assy Caps 2Hp Bf/2Hp Copzs
19	HC155405	Cut Out - High Pressure
20	HC155701	Cut Out - Low Pressure
21	HC121507	Kit - Compressor - Scroll ZS19KAE-PFV
		Includes: HC154947-01... Comp - ZS19KAE-PFV-818
		HC150403 Capacitor - Run
		HC151445 Capacitor - Start
		HC150029 Relay - Comp COPZS
		HC155054 Drier - Filter 16cu. in.
22	HC151147	Gearmotor - 1/6 Hp 115/208-230/1/60 270Rpm
23	HC153341	Reducer - Gear 4Cb Wintwin
24	HC111964	Coupling - Assy 1 In Drive
24A	HC153323	Key - Drive 1/4 Sq X 1 1/2
25	HC120299	Kit - Cabinet Compressor W/Relay & Cap
26	HC155459	Glass - Sight
27	HC155498	Drier - Filter W/Access

Not Shown:

- HC116410 Kit - Dispense Head Switch
- HC161216 Sensor - 10K Thermistor
- HC155399 Valve - Thermostatic Expansion (134a)
- HC120482-01 Switch - Assy Voltage Setting

LH = Left hand side of freezer when facing front.
 RH = Right hand side of freezer when facing front.

Figure 11 Water Cooled Side/Back View (Breakdown)

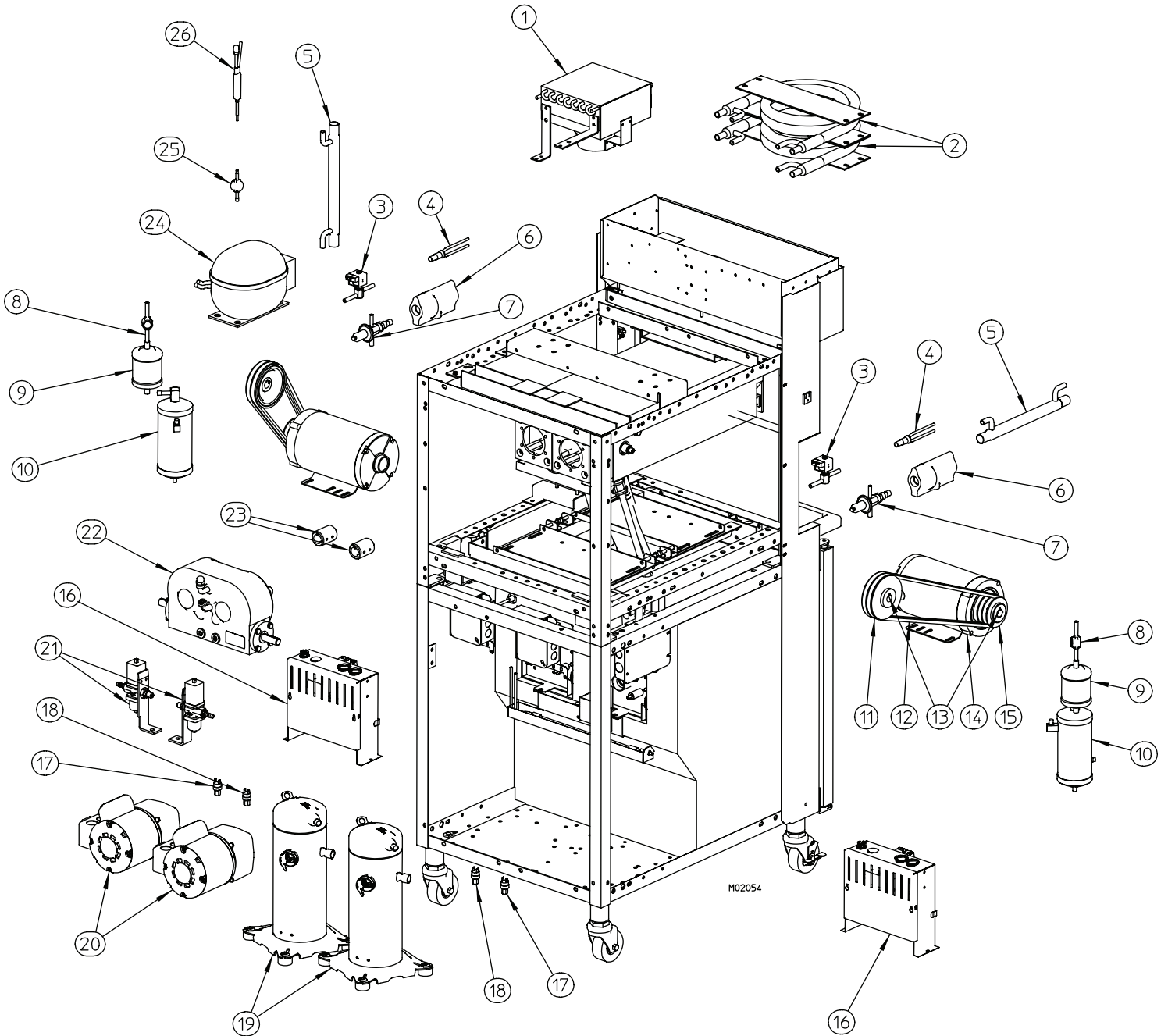


Figure 11 Water Cooled Side/Back View (Parts)

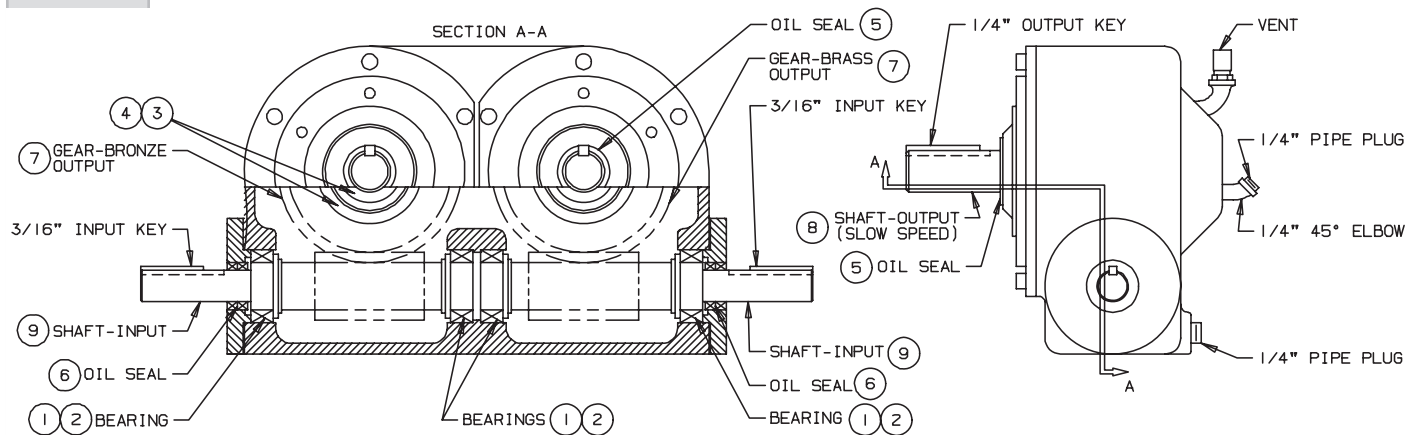
Item	Part No.	Description
1.....	HC120189-01	Condenser - Assy Cab Comp
2.....	HC155029.....	Condenser - Water
3.....	HC155395.....	Valve - Solenoid Body 3/8 ODM
3A.....	HC151477	Coil - Solenoid 208-240V MKC-1TS
4.....	HC155494.....	Distributor - Refrigerant
5.....	HC155495.....	Heat Exchanger
6.....	HC165531.....	Insulator - Expansion Valve
7.....	HC155493.....	Valve - Automatic Expansion
8.....	HC155059.....	Glass - Sight
9.....	HC155054.....	Drier - Filter 16 Cu In
10.....	HC155071.....	Receiver - 3LB 3/8 ID Sweat W/O Valve
11.....	HC153625.....	Sheave - 3/4 Bore 4.75 OD 4.50PD
12.....	HC153161.....	Belt-V RH
12A.....	HC153171.....	Belt-V LH
13.....	HC153322.....	Key - Drive 3/16 Sq X 1 1/2
14.....	HC151052-01	Motor - 2HP 208/230/460-3-60
	or	
	HC121424.....	Kit - Motor - 2HP 208/230-1-60
		Includes: HC151062-02... Motor - 2HP 208/230-1-60
		HC150244..... Capacitor - Run
		HC150294..... Capacitor - Start
15.....	HC153626.....	Sheave - 7/8 Bore 3.25 OD 3.00PD
16.....	HC120810-04	Box - Assy Caps 2Hp BF/2Hp COPZS
17.....	HC155702.....	Cut Out - High Pressure
18.....	HC155701.....	Cut Out - Low Pressure
19.....	HC121507	Kit - Compressor - Scroll ZS19KAE-PFV
		Includes: HC154947-01... Comp - ZS19KAE-PFV-818
		HC150403..... Capacitor - Run
		HC151445..... Capacitor - Start
		HC150029..... Relay - Comp COPZS
		HC155054..... Drier - Filter 16cu. in.
20.....	HC151147	Gearmotor - 1/6 Hp 115/208-230/1/60 270Rpm
21.....	HC112080	Valve - Assy Water
22.....	HC153341	Reducer - Gear 4CB Wintwin
23.....	HC111964	Coupling - Assy 1 In Drive
23A.....	HC153323.....	Key - Drive 1/4 Sq X 1 1/2
24.....	HC120299.....	Kit - Cabinet Compressor W/Relay & Cap
25.....	HC155459.....	Glass - Sight
26.....	HC155498.....	Drier - Filter W/Access

Not Shown:

- HC116410..... Kit - Dispense Head Switch
- HC161216..... Sensor - 10K Thermistor
- HC155399..... Valve - Thermostatic Expansion (134a)
- HC120482-01

LH = Left hand side of freezer when facing front.
 RH = Right hand side of freezer when facing front.

Figure 12 Gear Reducers



M00057

(Order by freezer serial number)
Model - Wintwin

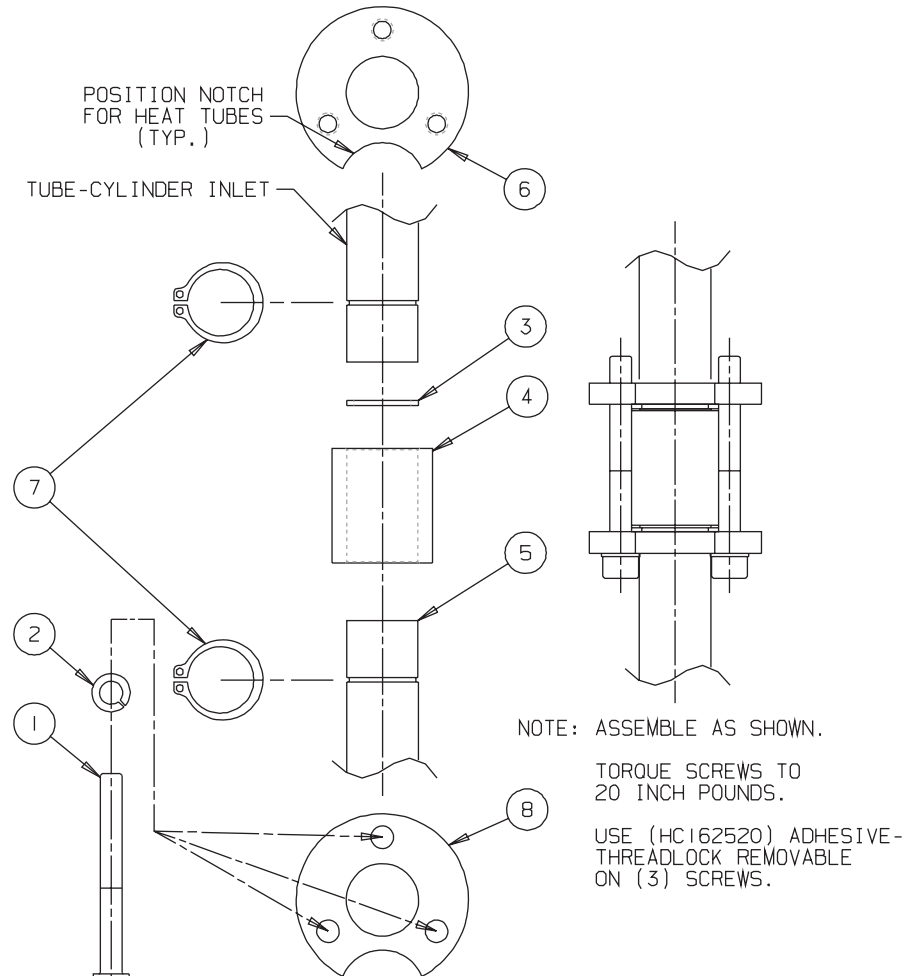
153341 Wintwin 10:1 Ratio A and B Side

Item	Part No.	Description	Quantity Required
1	HC153014	Bearing - High Speed Cup 3/4"	2 ea. req. per side
2	HC153015	Bearing - High Speed Cone 3/4" ..	2 ea. req. per side
3	HC153011	Bearing - Slow Speed Cup 1"	2 ea. req. per side
4	HC153012	Bearing - Slow Speed Cone 1"	2 ea. req. per side
5	HC153051	Seal - Oil 63 x 291 (Slow Speed) .	2 ea. req. per side
6	HC153053	Seal - Oil 63 x 141 (High Speed)..	2 ea. req. per side
7	HC153349	Gear - Bronze	1 ea. req. per side
8	HC153350	Shaft - Slow Speed	1 ea. req. per side
	HC153000	Gear - Assy. Output (Slow Speed)	
9	HC153348	Shaft - Input (High Speed)	1 ea. req. per side
10	HC114874	Kit - Reducer Gasket	1 ea. req. per side
11	HC111964	Coupling - Assy. 1 inch Drive	
	HC158055	Oil - Special Gear Lube (Per Quart)	
	HC153322	Key - 3/16" x 1-1/2" High (in)	
	HC153323	Key - 1/4" x 1-1/2" Slow (out)	

**Oil-Gear Reducer (per quart)

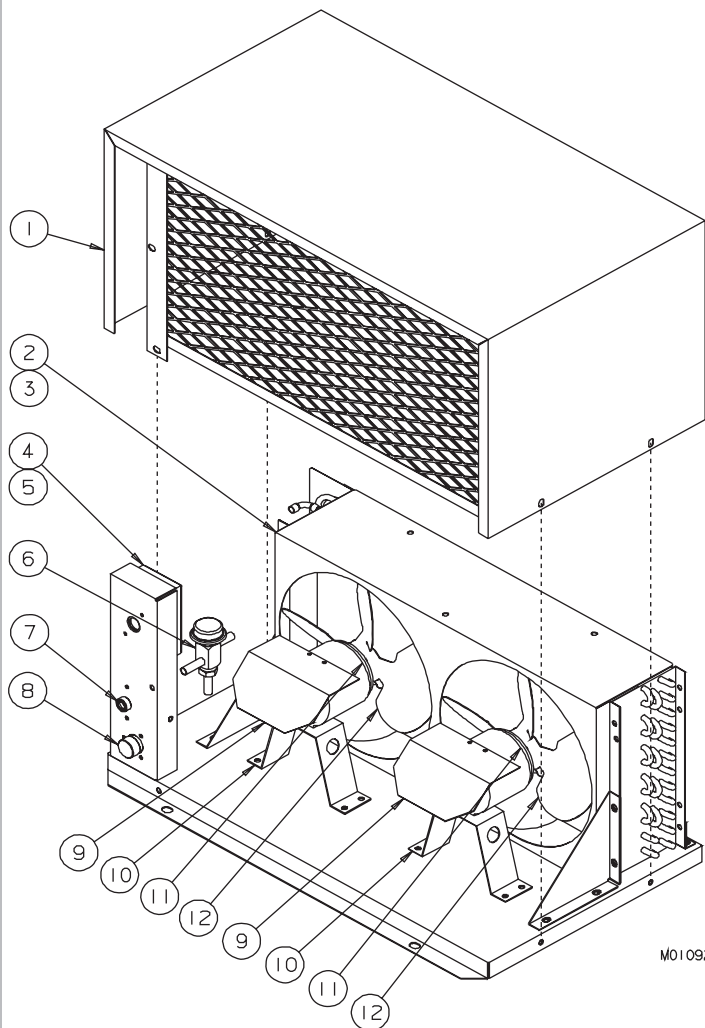
**Note: To order oil always verify type of oil from the tag located on the gear reducer. Improper oil usage will cause the gear reducer to fail.

Figure 13 Mix Feed Seal Assembly



Item	Part No.	Description
1	HC160320	Screw - SKHC #10-24 x 1-3/4 SST
2	HC160166	Washer - Lock #10 SST
3	HC160556	Gasket - Mix Joint
4	HC139351	Collar - Alignment
5	HC141757	Tube-Mix Feed Clamp LT
	HC141758	Tube-Mix Feed Clamp RT
6	HC139352	Clamp - Ring Threaded
7	HC160312	Ring - Retaining 5/8 Ext. SST
8	HC139353	Clamp - Ring

Figure 14 Air Cooled Remote Condenser



Not Shown:

- HC155058 Receiver - 12 lb. Horizontal Mount
- HC155425 Cut Out - High Pressure
- HC155465 Cut Out - Low Pressure
- HC155466 Control - Pressure Fan
- HC155487 Valve - Check 5/8 ODF Sweat
- HC119124 Kit - 25 Foot Line Sets 404a
- HC119125 Kit - 50 Foot Line Sets 404a

M01092

Item	Part No.	Description
*	HC116781-02	Condenser - Assy. 2 Hp Remote (Complete)
1	HC117207	Cover - Assy. Condenser
2	HC155101	Condenser - Air Rifled
3	HC138465	Shroud - Fan
4	HC150732	Box - Electric 2-3/4 x 4-1/2 x 2
5	HC150737	Cover - Electric Box 2-3/4 x 4-1/2
6	HC155454	Valve - Head Pressure Control
7	HC153420	Coupling - Refr. 3/8 MQC 3/8 SW
8	HC153418	Coupling - Refr. 1/2MQC 1/2 SW
8A	HC153502	Flange - Refr. Coupling Mount
8B	HC153503	Cap - Dust Refr. Coupling
9	HC139017	Shield - Motor Rain
10	HC137632	Bracket - Fan Condenser
11	HC151072	Motor - Fan 50W 230V 60Hz
12	HC159029	Blade - Fan 11" Dia 36°

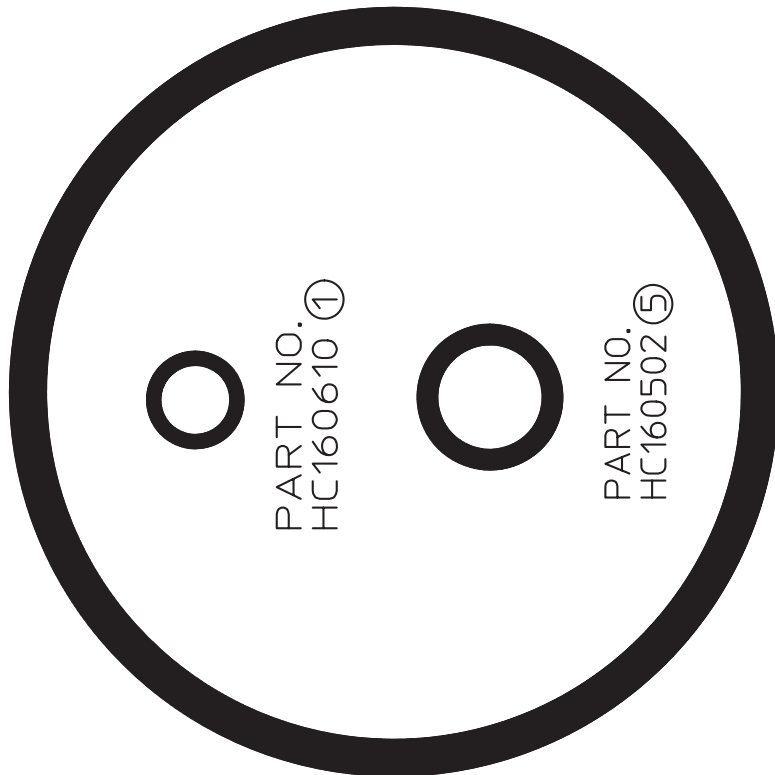
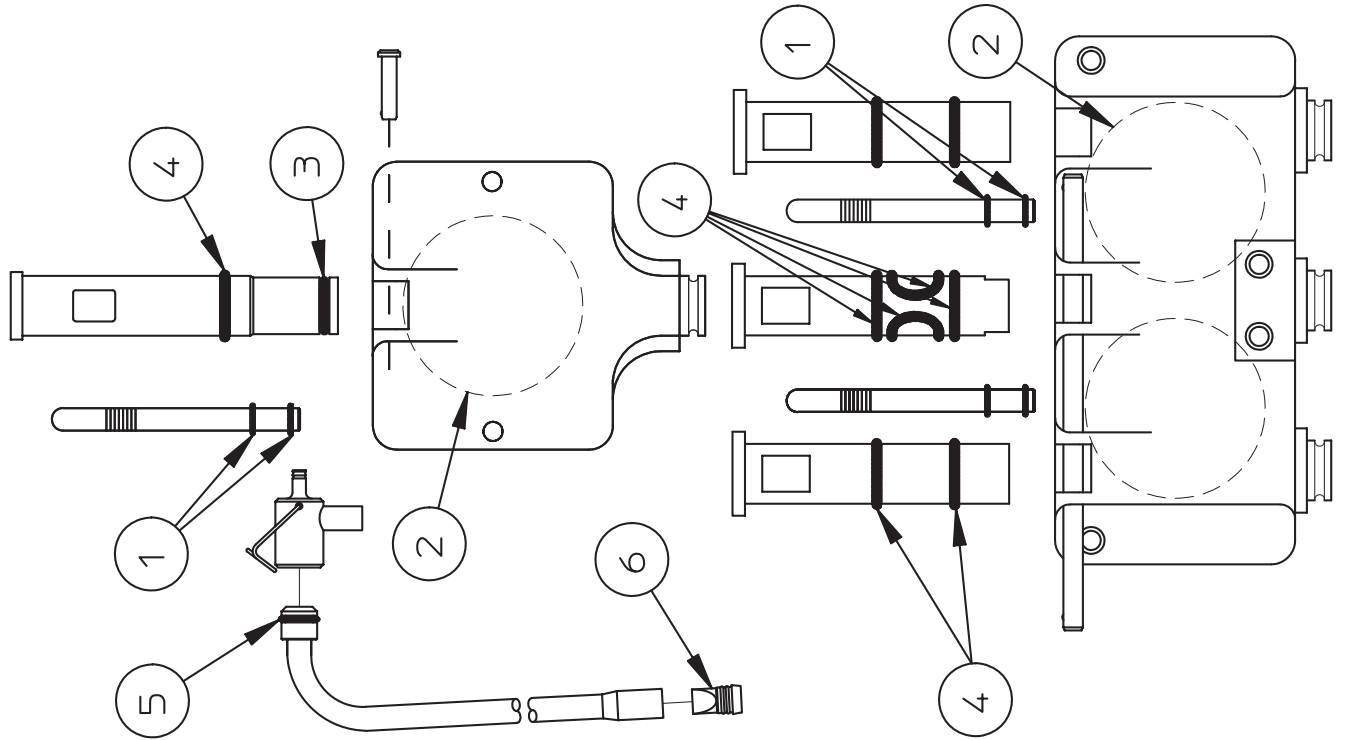
* Includes all items above.

Accessories

Part No.	Description
HC196103	Bottle - Wash 500 ml
HC158004	Brush - 4" w/36" handle
HC158009	Brush - 4" dia w/o handle
HC158018	Brush - 7/16" Dia x 12" Overall Length
HC158019	Brush - 9/16" Dia x 30" Overall Length
HC158026	Brush - 1" Dia 12" Long
HC162105	Caster - 1-1/4" ST w/Brake
HC162106	Caster - 1-1/4" ST w/o Brake
HC119851.....	Kit - O-ring (need 2)
HC158054A.....	Lubricant - Lubri-Film Plus 4 oz. Tube
HC150736	Nut - Lock Conduit 1-1/4" (Casters)
HC158013	Sanitizer - Stera Sheen (sample)
HC158014	Sanitizer - Stera Sheen (case/4 jars)
HC158014A.....	Sanitizer - Stera Sheen (4 lb. jar)
HC158049	Scale - Overrun
HC169374	Tool - O-ring Removal
HC184881-01	DVD - Training RMT SS EF
HC184244	Chart - O-ring (Laminated)

O-Ring Chart

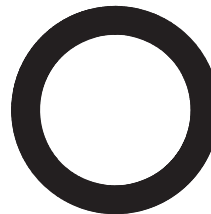
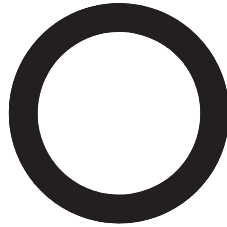
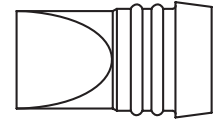
HC184244 SOFT SERVE DISPENSING HEADS REV 02



PART NO.
HC160610 ①

PART NO.
HC160502 ⑤

PART NO.
HC160583 ②



PART NO.
HC160582 ③

PART NO.
HC160501 ④

PART NO.
HC199032-01 ⑥

O-RING CHART

PH.NO. 309-755-4553

H.C.DUKE & SON, INC.