



OPERATOR'S MANUAL

with Illustrated Parts List

GENESIS SERIES

Soft Serve Freezer

Model GES-5099

185265— 2/19

**Operator's Manual
for
Electro Freeze
Soft Serve Freezer
Model GES-5099**

SAFETY FIRST!

Follow these four steps to safety

1. Recognize Safety InformationLook for this safety alert symbol throughout this manual.



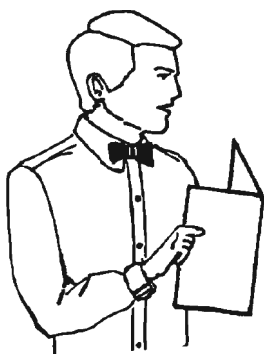
When you see this symbol on your freezer or in this manual, be alert to the potential for personal injury. Follow recommended precautions and safe operating practices.

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 IDQ authorized service representative or H.C. Duke & Son, LLC Service Department 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

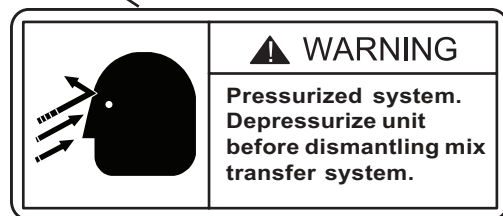
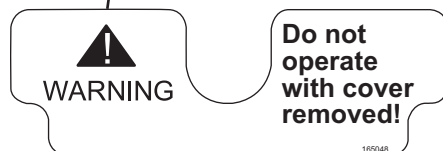
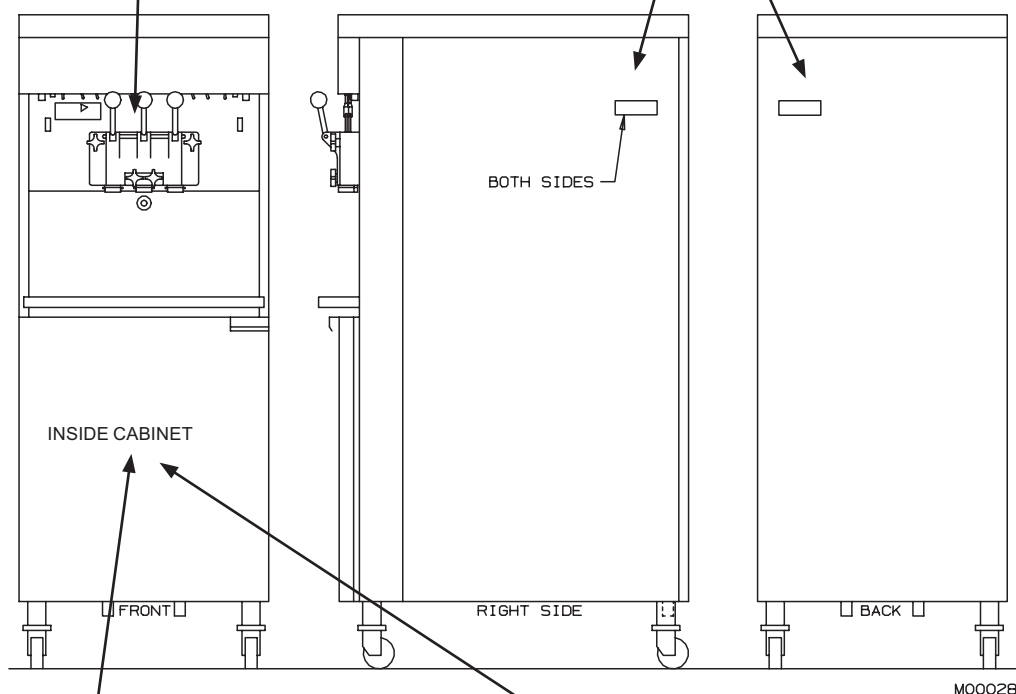
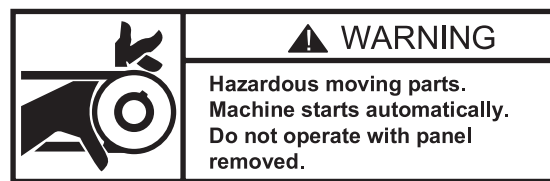
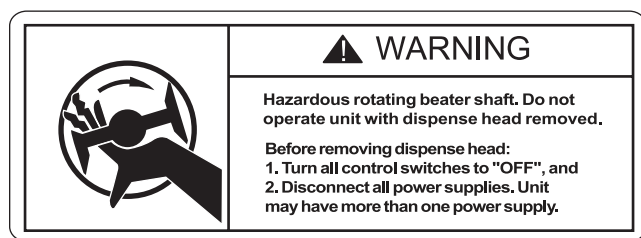


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1 Introduction

The GES-5099 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 GES-5099.

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

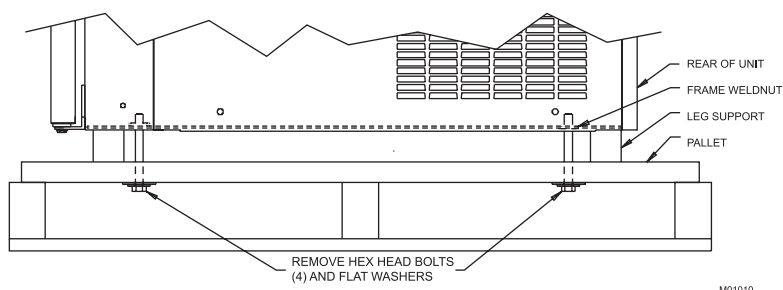


CAUTION
Be sure to properly support the machine when removing bolts and installing legs or casters.

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,

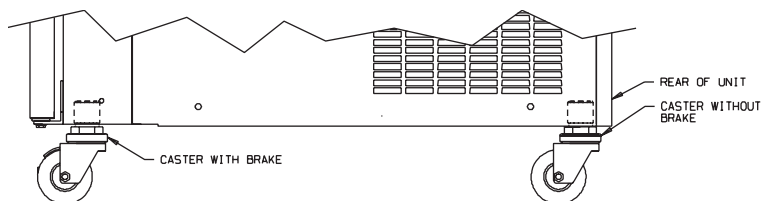
note the damage on the carrier's freight bill and notify the carrier's local agent immediately.

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).



M01010

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" 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 (241-965kPa) for proper operation.
5. **Water cooled and air cooled remote** freezers require at least 12 inches (30 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.
6. Place the freezer in the final location and level the machine by adjusting the legs or casters so that the unit is level side-to-side, and the front is approximately 1/4" lower than the rear, to allow proper drainage of the freezing cylinder.
7. **Water Cooled** Do not allow freezer to be in ambient where air temperature goes below 0°C (32°F), the freezing temperature of water.
8. **Water consumption** increases if temperature of entering water is above 20°C (65°F)

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. 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.



WARNING

Warning: When installing the machine, insert an all pole disconnect, adequately sized according to freezer nameplate marking with electrical contact spacing of 3mm minimum. This should be within sight 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.

GES-5099

Width (in/cm).....	24/60.96
Height (in/cm) (Water cooled).....	68/172.72
Height (in/cm)(Air cooled).....	68/172.72
Depth (in/cm)	30.5/77.54
Weight (lbs/kg).....	653/296
Compressor Cylinder (2)*	12000 BTUH 2.2 kw (Motor) 3.2 kw (Cooling)
Compressor Cabinet (1)*	1000 BTUH 125w (Motor) 190kw (Cooling)
Beater Motor	2 HP/1.5 kw
Refrigerant	404a
Charge**	3.75 lb/1.7 kg
Mix Container*** (2)	20 Qts/18.93 Liters
Cylinder (2)	3.7 Qts/3.5 Liters

Noise: The Steady acoustic pressure level, for both air cooled and water cooled freezers, is less than 70dB(A).

Water Cooled units: Water consumption increases if temperature of entering water is above 20°C (65°F)

*Contact factory for other voltages.

**for each side

*** Do not add mix above line marked on side of mix tank wall.

3.2 Data Plate

The diagram shows a data plate for the Electro Freeze GES-5099. Call-out numbers 1 through 5 point to the following fields:

- 1: Model: _____
- 2: Ser. No.: _____
- 3: ~ Volts _____ Hz _____ Wire _____
- 4: Min. Circuit Ampacity: _____ A
- 5: Max Fuse Size or HACR Cir. Breaker: _____ A

The data plate itself contains the following information:

H. C. DUKE & SON, LLC
2116 8th Avenue
EAST MOLINE, IL U.S.A.
ASSEMBLED IN USA

SINGLE UNIT			
Cyl. Compressor	RLA	LRA	V
Beater Motor	FLA	HP	V
Condenser Fan	FLA	HP	V
Hopper Compressor	RLA	LRA	V

Cylinder Refrigerant: Amt: _____ LB Type: _____
Design Pressure: High: _____ psig Low: _____ psig
Hopper Compressor Refrigerant Amt: _____ oz Type: _____ Design Pressure High: _____ psig Low: _____ psig

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 GES-5099 Soft Serve Freezer. The item numbers, encircled, correspond with the call-out numbers in figure 3-1.

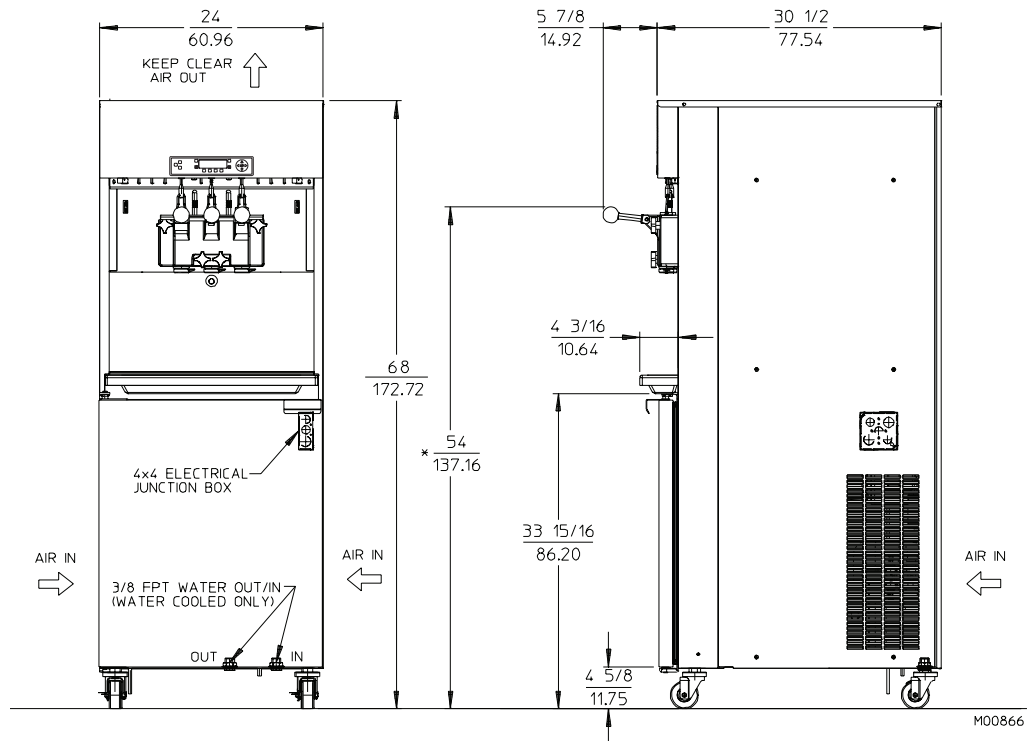
1. Model Number: _____
2. Serial Number: _____
3. Electrical Spec: Voltage _____
Phase _____ Hertz _____
4. Maximum Fuse Size: _____
5. Minimum Circuit Ampacity: _____

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 GES-5099 freezer.

Date of installation: _____
Installed by: _____
Address: _____
Phone: _____

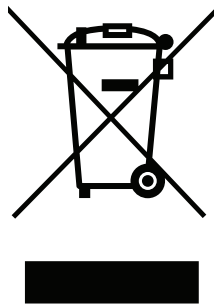
3.5 Dimensions



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

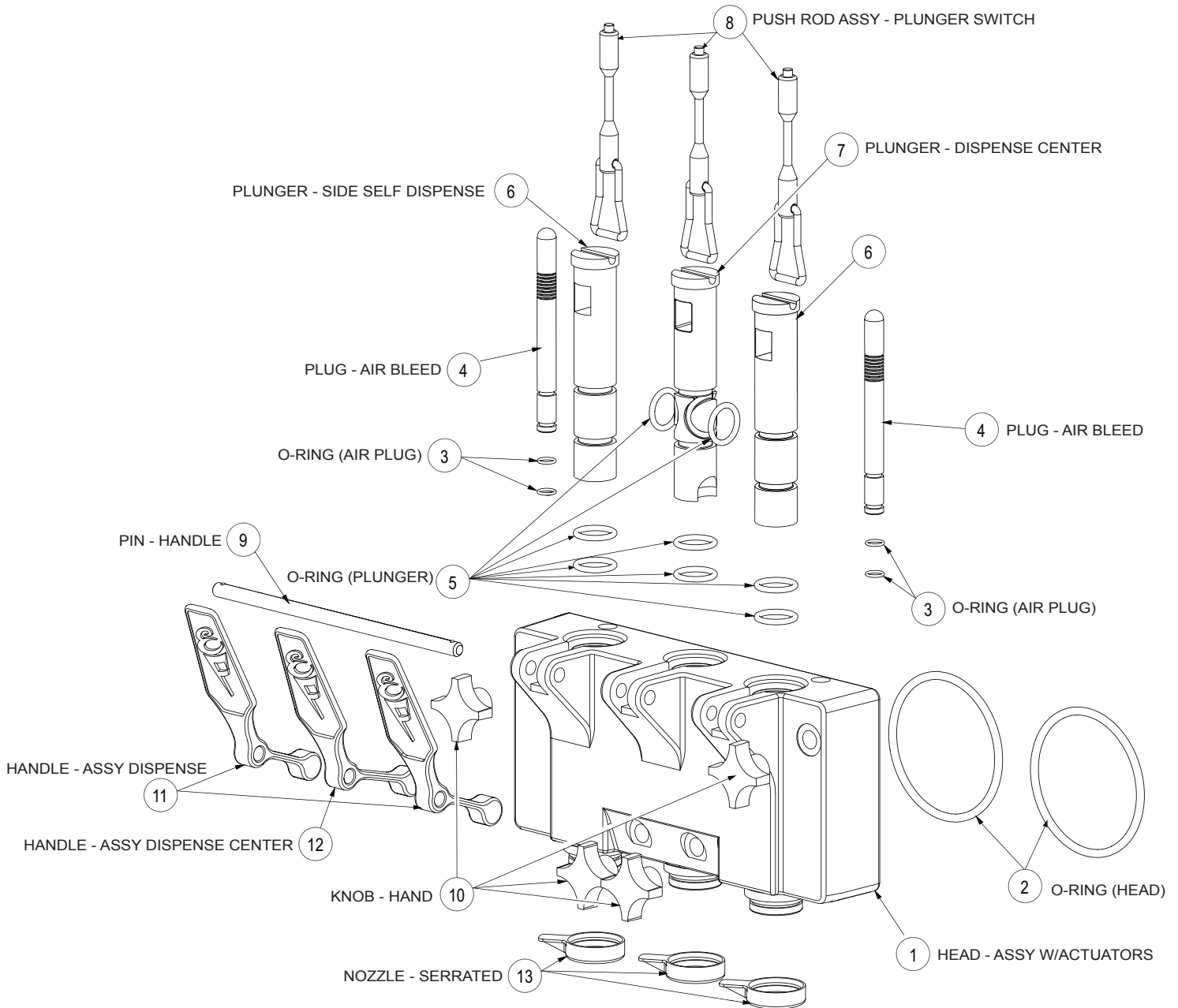
Figure 3-2 Dimensions

3.6 WEEE (Waste Electrical and Electronic Equipment)



In conformity with EU 2002/96/EC, this freezer, at the end of life cycle, is not to be discarded with normal urban waste. Instead, it is the user's responsibility to dispose of this product by returning it to a collection point designated for the recycling of electrical, electronic components and separation of reclaimable, recyclable materials. Contact your local distributor or authority for correct disposal.

4 Part Names and Functions

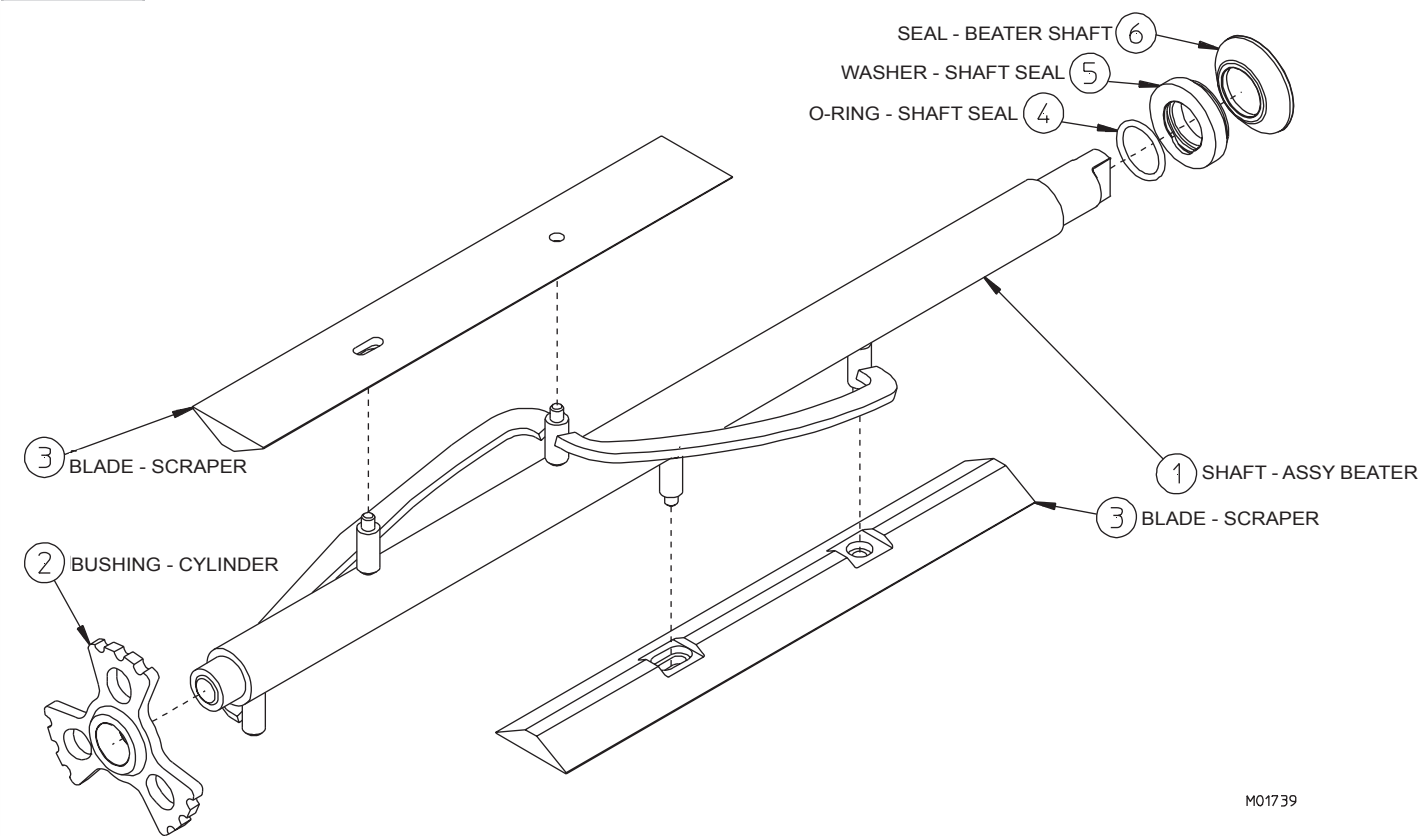


4 Part Names and Functions (continued)

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

- | | |
|--|---|
| <p>1.) HEAD - DISPENSE:
Encloses the freezing cylinder and provides an opening for product to be dispensed.</p> <p>2.) O-RING - HEAD:
Seals the dispense head to the freezing cylinder. Must be lubricated.</p> <p>3.) O-RING - PLUG:
Seals the air bleed plug in the dispense head.</p> <p>4.) 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.</p> <p>5.) O-RING - PLUNGER:
Seals the plunger in the dispense head. Must be lubricated to seal and slide properly.</p> <p>6.) PLUNGER - SIDE:
Seals the product opening in the dispense head when closed. Allows product to flow when open.</p> <p>7.) PLUNGER - CENTER:
Seals the product opening in the dispense head when closed. Allows product to flow when open.</p> <p>8.) ROD - PLUNGER:
Starts the freezer when dispensing. Must be in place before freezer will operate.</p> <p>9.) PIN - HANDLE:
Secures the handle to the dispense head.</p> <p>10.) KNOB - HAND:
Secures the dispense head to the freezing cylinder.</p> | <p>11.) HANDLE - DISPENSE SIDE:
Opens and closes the plunger to start and stop the flow of product from the freezer.</p> <p>12.) HANDLE - DISPENSE CENTER:
Opens and closes the plunger to start and stop the flow of product from the freezer.</p> <p>13.) NOZZLE - SERRATED:
Shapes the frozen product as it is dispensed.</p> |
|--|---|

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.

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

4 Part Names and Functions (continued)

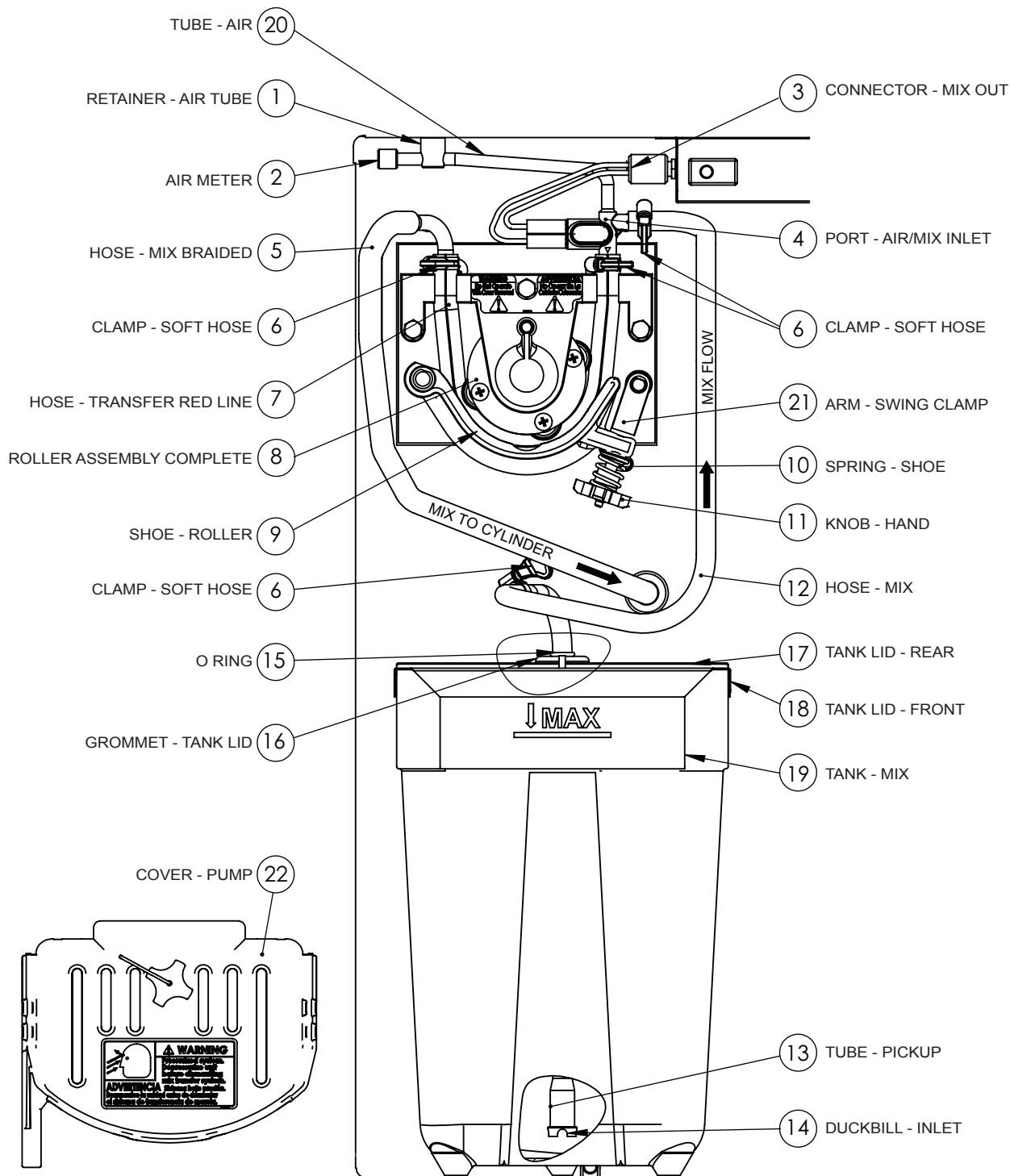


Figure 4-3 Mix Transfer System (MTS) LEFT SIDE*

*Right side mix pump is setup opposite.

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.

- | | |
|--|---|
| <p>1.) RETAINER - AIR TUBE:
Holds air meter tube in the “up” position.</p> <p>2.) AIR METER:
Regulates the amount of air being drawn into the system.</p> <p>3.) MIX OUT CONNECTOR
Connects the mix port to the</p> <p>4.) PORT - AIR/MIX:
Blends air and mix as it flows into the transfer hose.</p> <p>5.) HOSE - ASSY. MIX BRAIDED:
Connecting tube between the Mix Transfer System and the cylinder inlet.</p> <p>6.) CLAMP - ASSY. SOFT HOSE 5/8”:
Prevents mating parts from leaking.</p> <p>7.) HOSE - TRANSFER RED:
Special “red-lined” hose that is squeezed by rollers to transfer mix to freezer.</p> <p>8.) ROLLER ASSEMBLY COMPLETE:
Squeezes mix/air through tubing to freezing cylinder.</p> <p>9.) SHOE - ROLLER:
Provides an opening to insert the mix transfer hose. Squeezes transfer hose against rollers.</p> <p>10.) SPRING - SHOE:
Holds clamp in place.</p> <p>11.) KNOB - HAND:
Locks roller shoe in position.</p> <p>12.) HOSE - MIX
Connects the mix pickup tube to the mix port.</p> | <p>13.) TUBE - PICKUP:
Carries mix from mix container to MTS.</p> <p>14.) DUCKBILL - INLET:
A rubber check valve that prevents mix from falling back into the mix container.</p> <p>15.) O-RING - MIX TUBE:
Seals the mix tube in the air/mix port.</p> <p>16.) GROMMET - TANK LID
Holds the pickup tube in the tank lid.</p> <p>17.) TANK LID - REAR
Covers the rear of the mix tank and holds the mix pickup tube.</p> <p>18.) TANK LID - FRONT
Covers the front of the mix tank.</p> <p>19.) TANK - MIX
Holds product mix.</p> <p>20.) TUBE - AIR:
Provides connection for the air meter.</p> <p>21.) ARM - SWING CLAMP:
Swings hand knob into position over roller shoe.</p> <p>22.) COVER - MTS:
Protection against moving parts. Cover must be in place for the MTS to operate.</p> |
|--|---|

5 Operator Controls

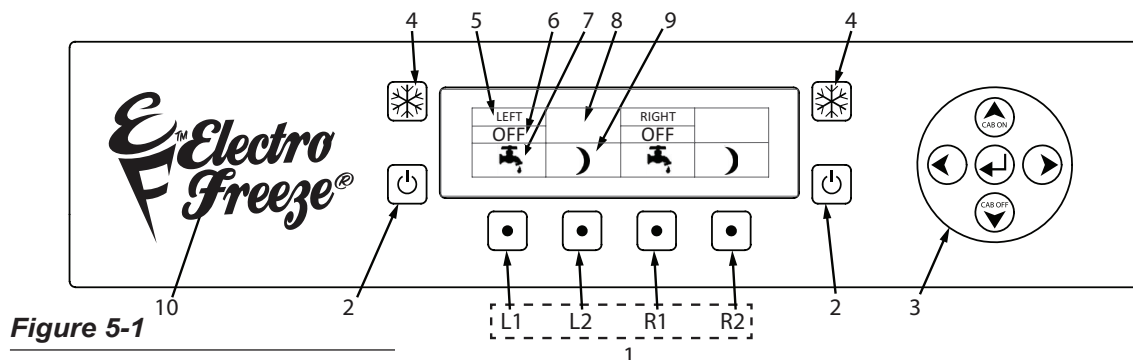


Figure 5-1

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.

10. 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.

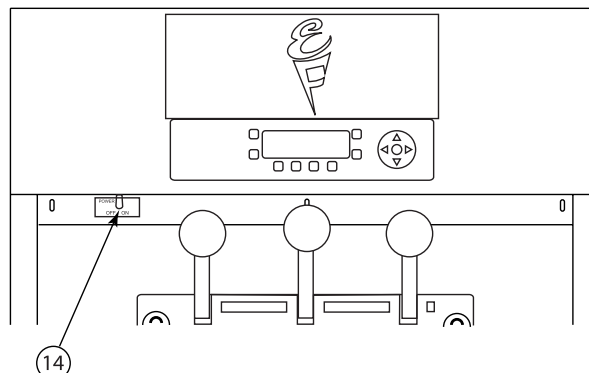


Figure 5-3

6 Operator Display Menus

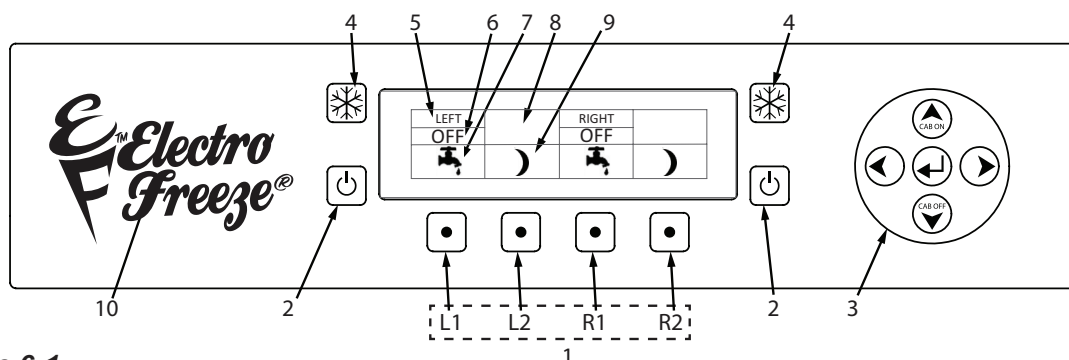


Figure 6-1

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

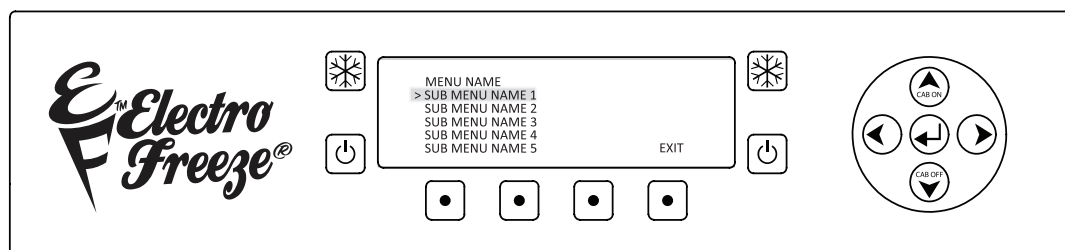


Figure 6-2

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: nonfat, lowfat, highfat, or yogurt

Right Barrel: nonfat, 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

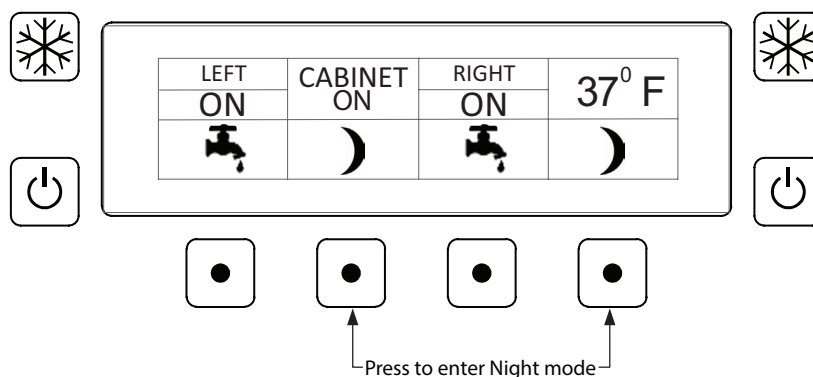
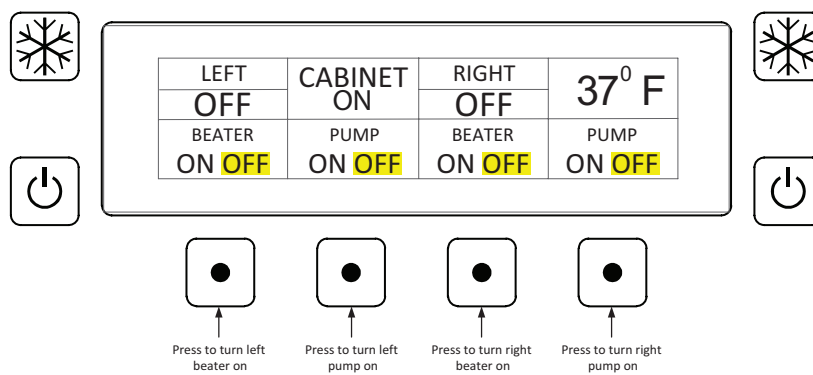
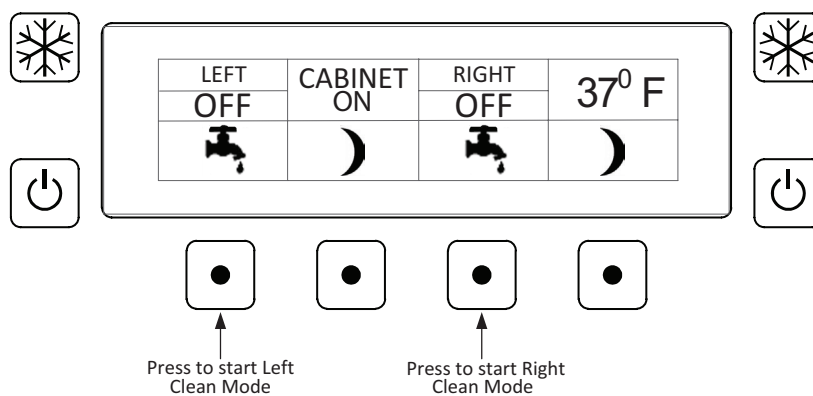
Main _____

U.I. _____

Model	GES
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.) **HANDLE - BRUSH FIBERGLASS**
Used to clean out the freezer cylinders.
- 2.) **HC158009 BRUSH HEAD:**
4 inch diameter without handle used to clean the shake cylinder.
- 3.) **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.
- 4.) **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.
- 5.) **HC158026 BRUSH:**
1 inch diameter 12 inches long used to clean the disassembled shaft seal and bushing.
- 6.) **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.
- 7.) **HC169374 TOOL - O-RING REMOVAL:**
Aids in removing O-rings from plunger, head, air relief plug, and spindle.
- 8.) **HC158054A LUBRICANT - LUBRI-FILM PLUS:**
Approved lubricant for moving parts and O-rings.
- 9.) **HC196103 BOTTLE, WASH:**
Used to flush the hose cavity, roller assembly and plunger.
- 10.) **HC184299 KIT - O-RING:**
Contains all O-rings and seals needing replacement on a regular basis. (not shown)

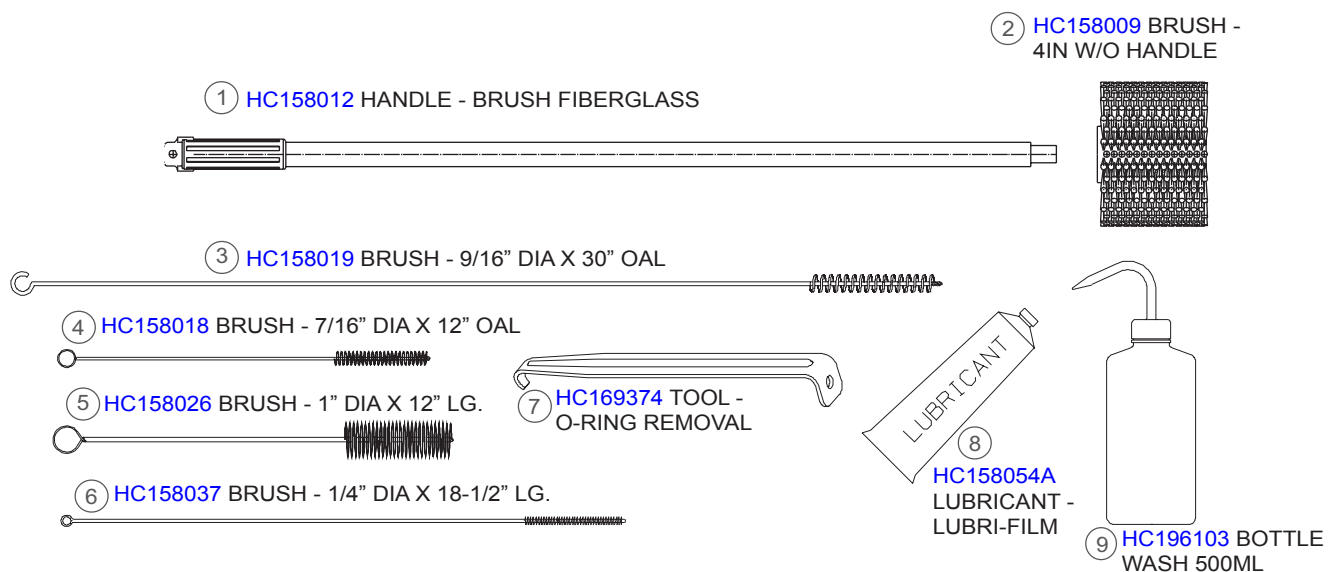


Figure 7-1 Cleaning Accessories

7.2 Disassembly Instructions

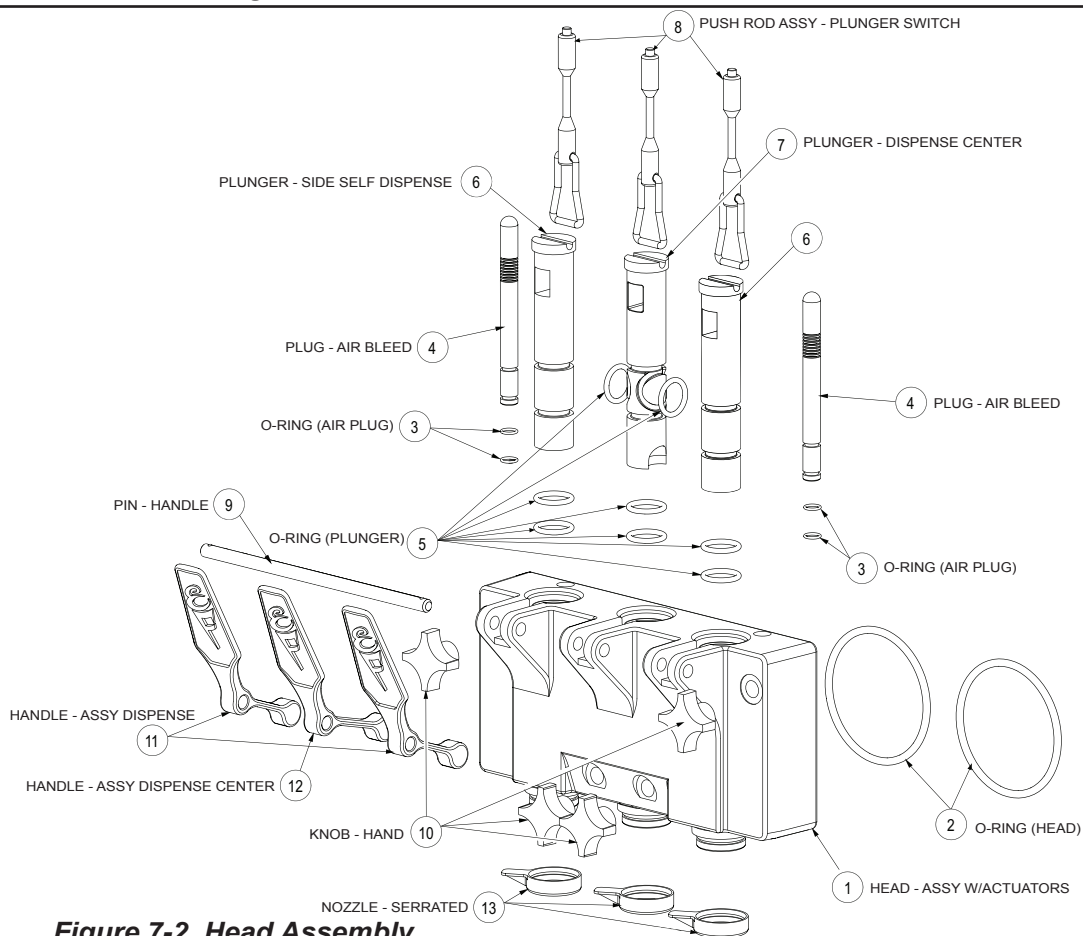


Figure 7-2 Head Assembly



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 (8, figure 7-2) by lifting up and swinging the bottom out and down. Remove hand knobs (10) 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 plugs (4) and remove the two O-rings (3).

– continued

7.2 Disassembly Instructions (continued)

7. Remove the handle pin (9), handle (11&12), plunger (6&7) and nozzle (13) from the dispense head.
8. Remove O-rings (2) from the dispense head and O-rings (5) from the plungers (6&7).
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 7-4):
 - 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.

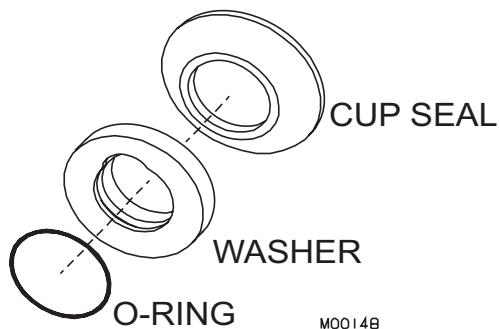


Figure 7-3 Shaft Seal

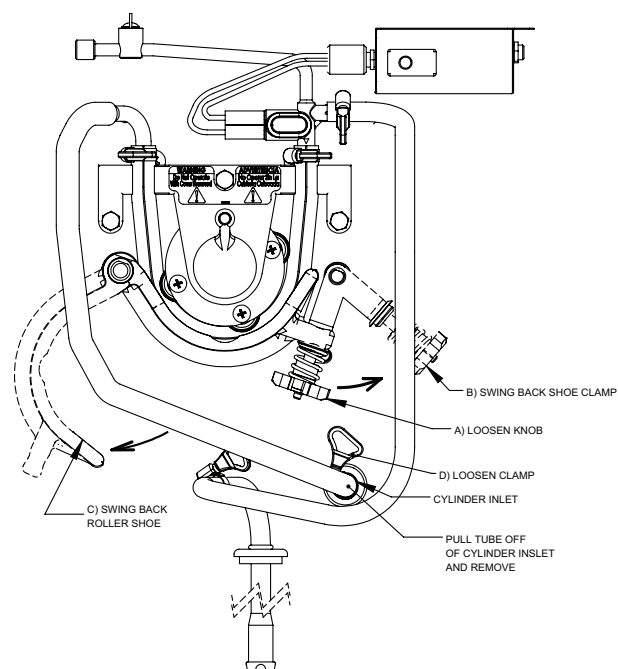


Figure 7-4 MTS (LEFT SIDE*)

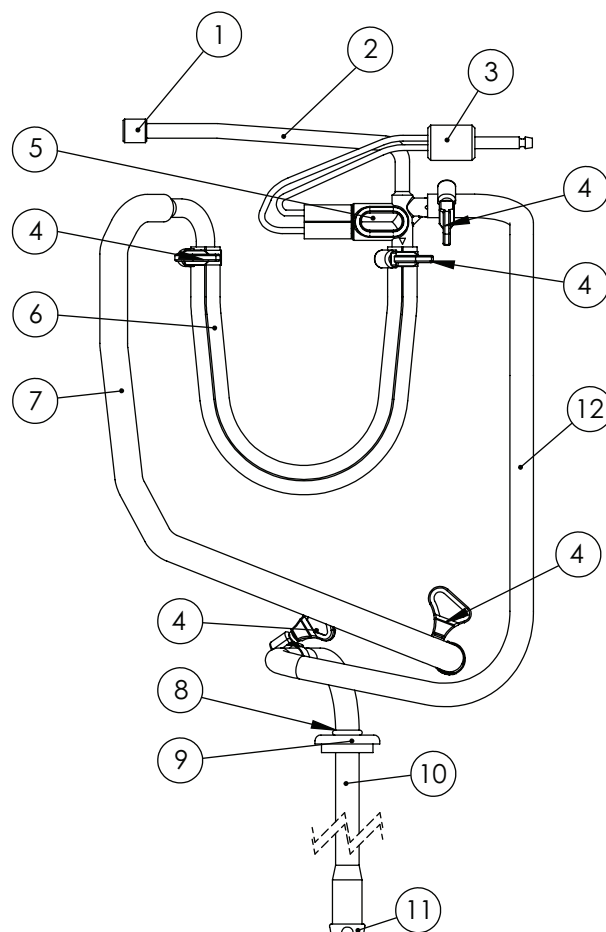


Figure 7-5 MTS Hose Assembly (LEFT SIDE*)

*Right side mix pump is setup opposite.

7.3 Cleaning Instructions



CAUTION

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



CAUTION

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

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.

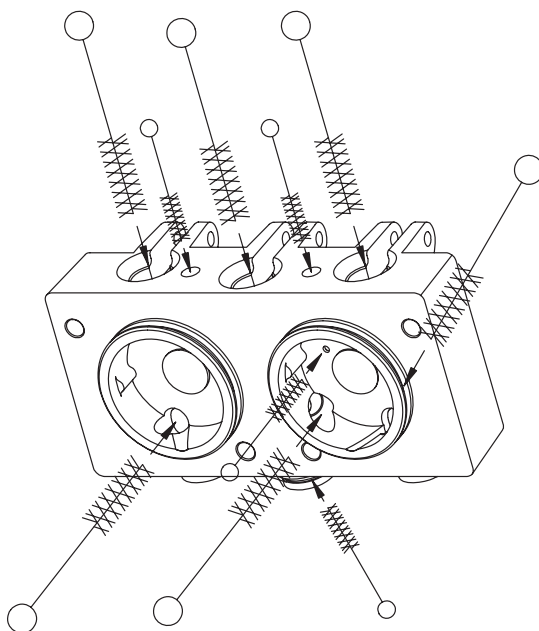


Figure 7-6 Clean head ports and openings with brush.

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 tanks, 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.

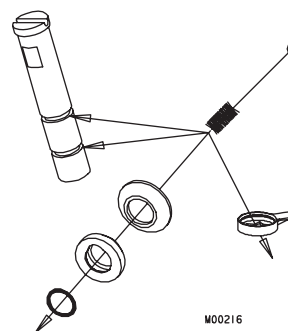


Figure 7-7 Clean O-ring grooves, seal and nozzle with brush.

— 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.

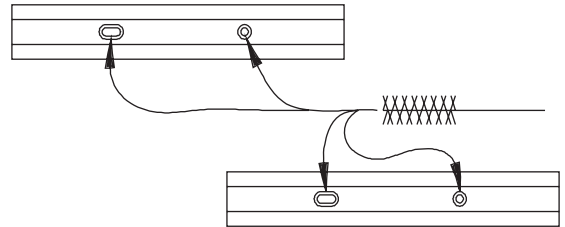


Figure 7-8 Clean beater shaft pin holes.

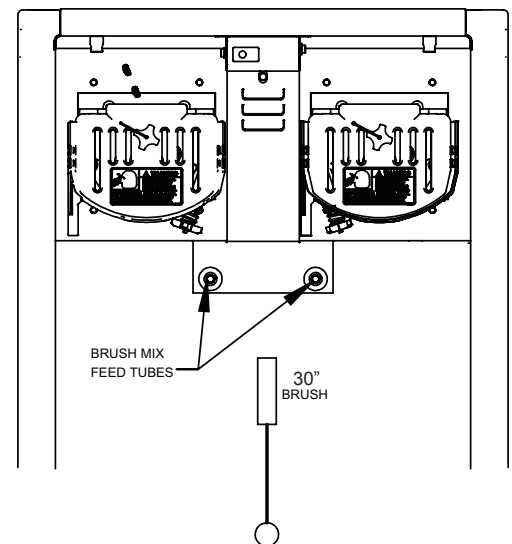


Figure 7-9 Brush inside of cylinder mix feed tubes.

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.

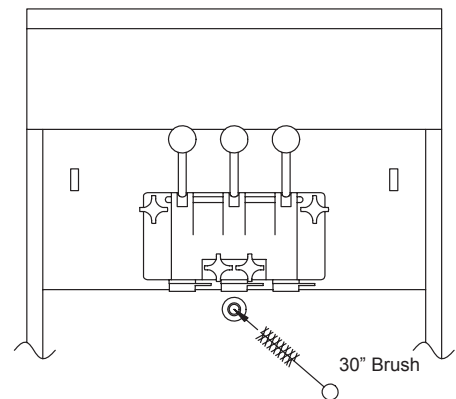


Figure 7-10 Brush inside of drain tube.

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.
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.

Important:

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

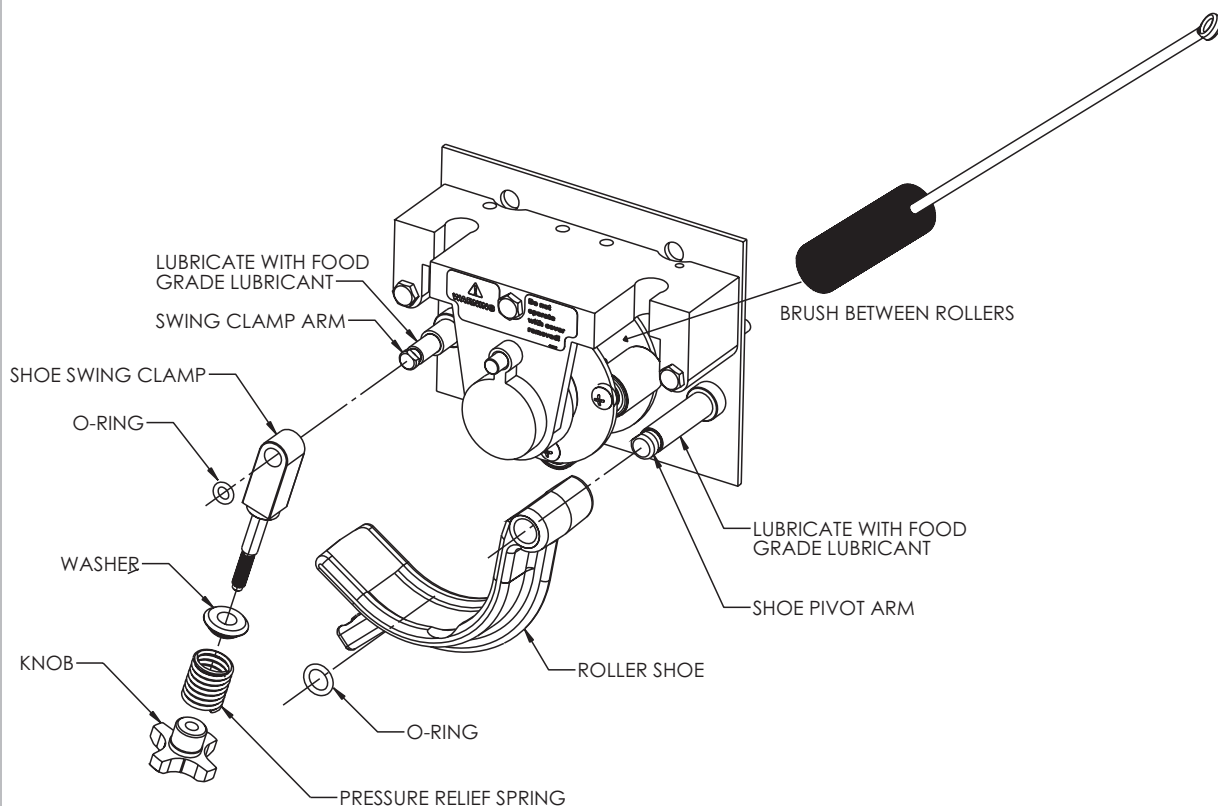


Figure 7-11

M02082

8 Assembly

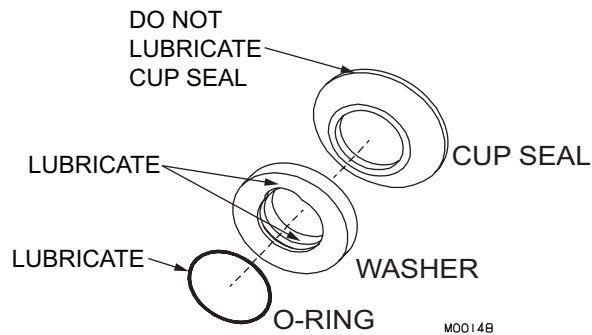


Figure 8-1 Shaft Seal Assembly

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.

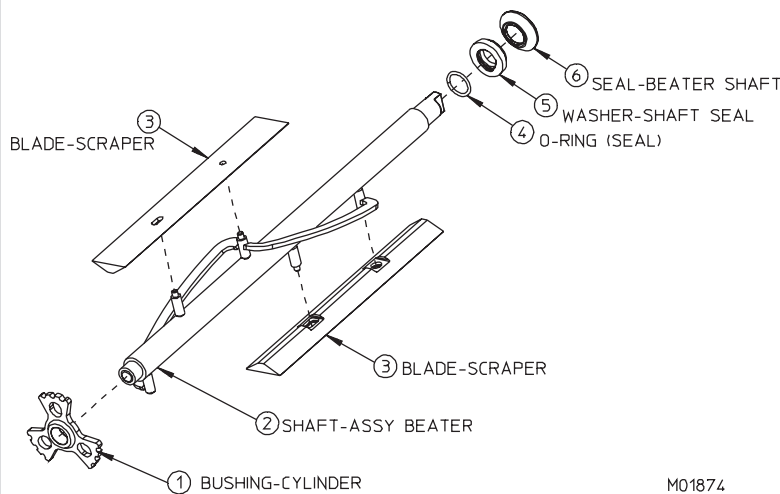


Figure 8-2 Beater Shaft Assembly

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.

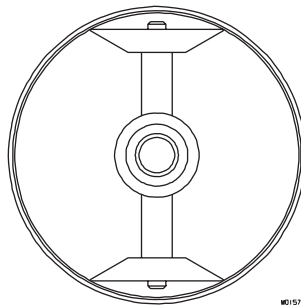


Figure 8-3 Scraper Blade Installation

– continued

8 Assembly (continued)

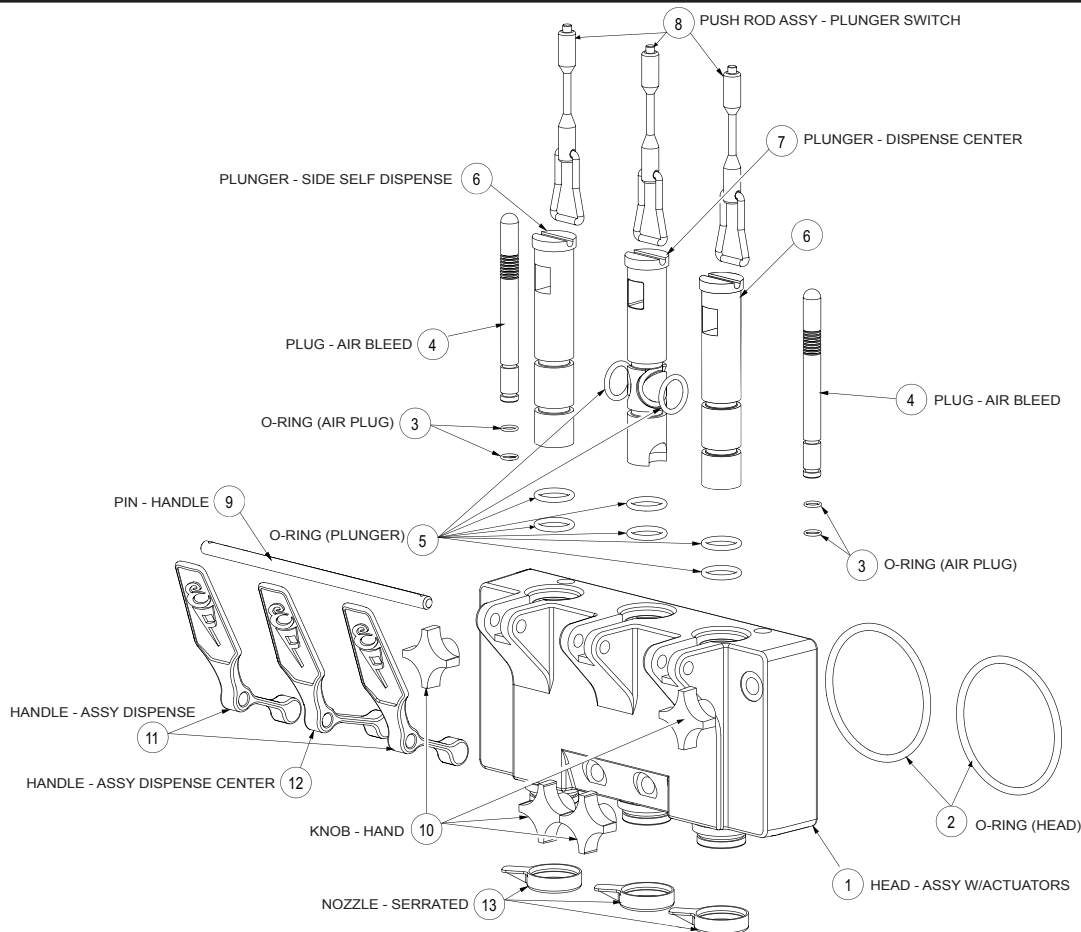


Figure 8-4 Head Assembly

5. (Refer to figure 8-4.) Install and then lubricate the O-rings (5) 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 (6&7) and dispensing head (1). Lock in place with the handle pin (9).
8. Install and lubricate O-rings (3) on the air bleed plug (4). 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 (6&7). The nozzle (13) will be installed on the mix outlet at the bottom of the head after sanitizing.

– continued

8 Assembly (continued)

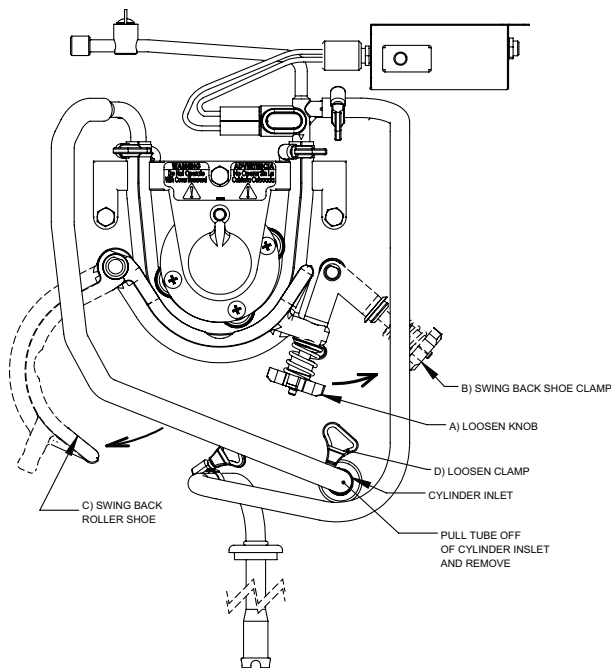


Figure 8-5 MTS Hose Assembly (LEFT SIDE*)

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 8-6. The transfer hose has a red locating line and the mix/inlet port has a molded locating arrow. 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.

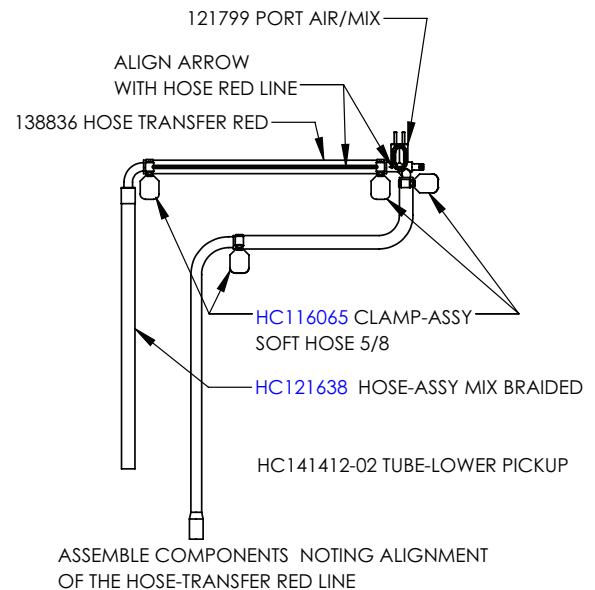


Figure 8-6 Attaching Braided Hose

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.
15. Slide the air tube over the air inlet port and insert air meter in the opposite end of the air tube.
16. Slide the clear mix pickup tubing over the barbed end opposite the mix sensor posts. Then slide a clamp over the hose to secure it to the port. Finger tighten only!
17. Install mix tube boot with flat side first, over the metal pickup tube assembly followed by the o-ring.
18. Insert the narrow end of the pickup tube into the clear pickup hose. Then slide a clamp over the hose to secure it to the pickup tube. Finger tighten only!
19. Insert the duckbill valve into the bottom of the pickup tube. Push until the two ribs are completely inserted.

– continued

***Right side mix pump is setup opposite.**

8 Assembly (continued)

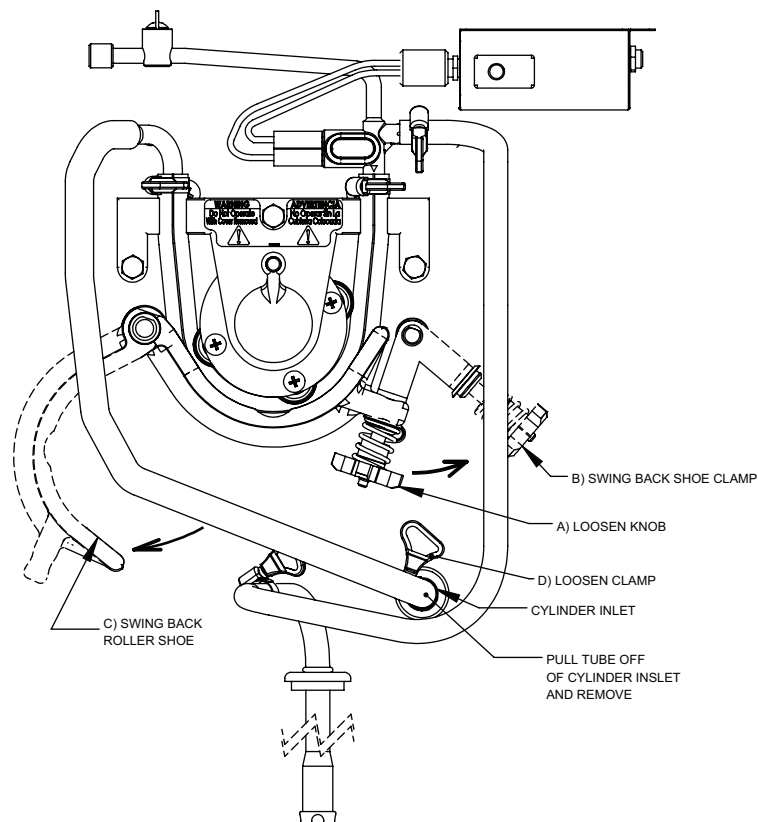


Figure 8-7 MTS (LEFT SIDE*)

20. Attache the mix sensor plug onto the air/inlet port by pressing the two wire connectors firmly onto the metal posts of the air/inlet port
21. 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.
22. 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.
23. Swing the shoe over hose and tighten the swing clamp hand knob in place until it bottoms out and will not turn any further.
24. Insert the air tube into the retainer in the back of the cabinet.
25. Plug the mix sensor plug into the port in the top center of the cabinet figure 8-7.
26. Insert the MTS cover over stud see figure 8-8. Hose clamps should be exposed. Tighten cover knob. Hand tighten only.

Important:

Do not twist the hose assembly while installing.

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

***Right side mix pump is setup opposite.**

8 Assembly (continued)

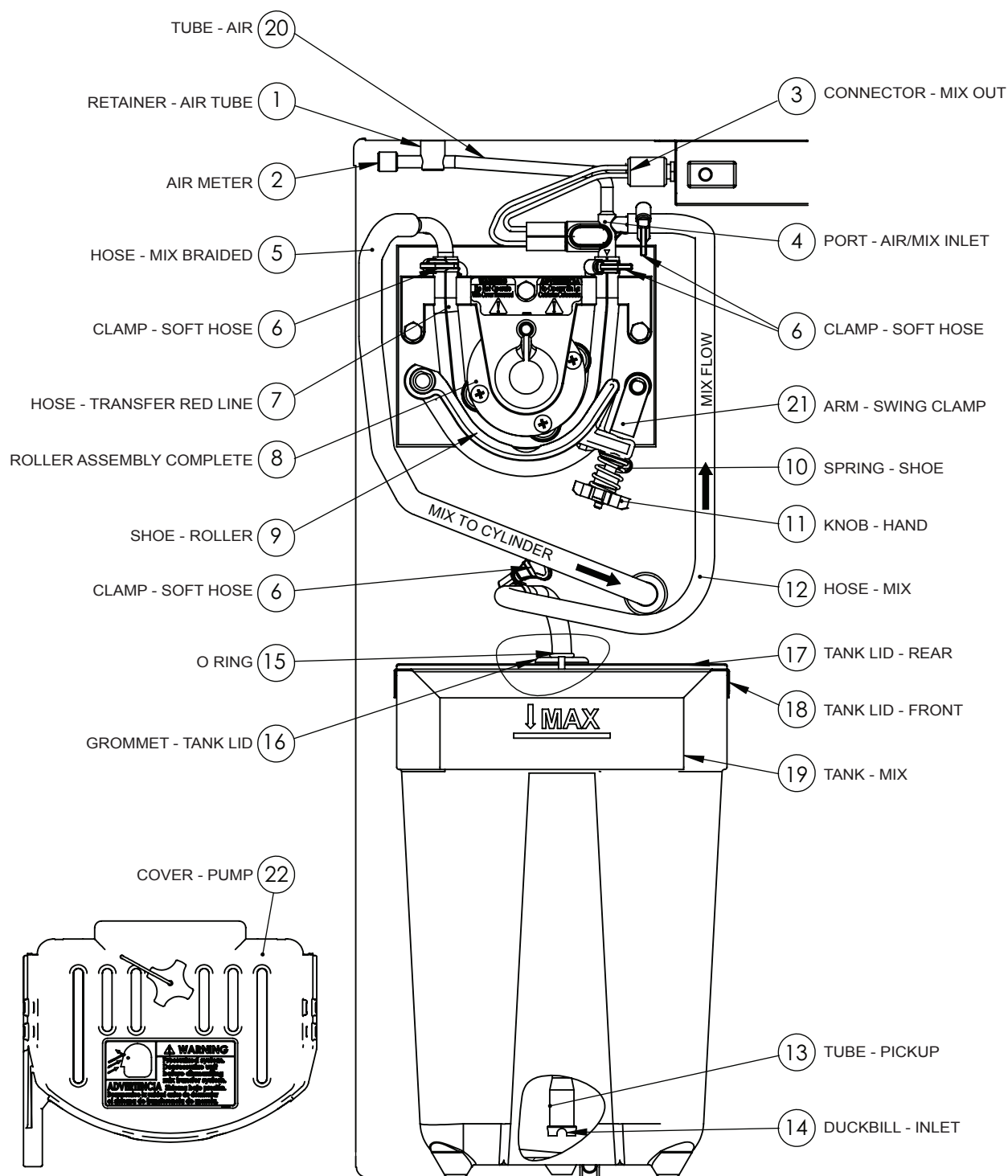


Figure 8-8 MTS (LEFT SIDE*)

*Right side mix pump is setup opposite.

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.

IMPORTANT:

This machine is not intended to process mixes containing abrasive materials. Solid particles that do not dissolve in water may cause premature wear on components and void the manufacturer's warranty.

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.

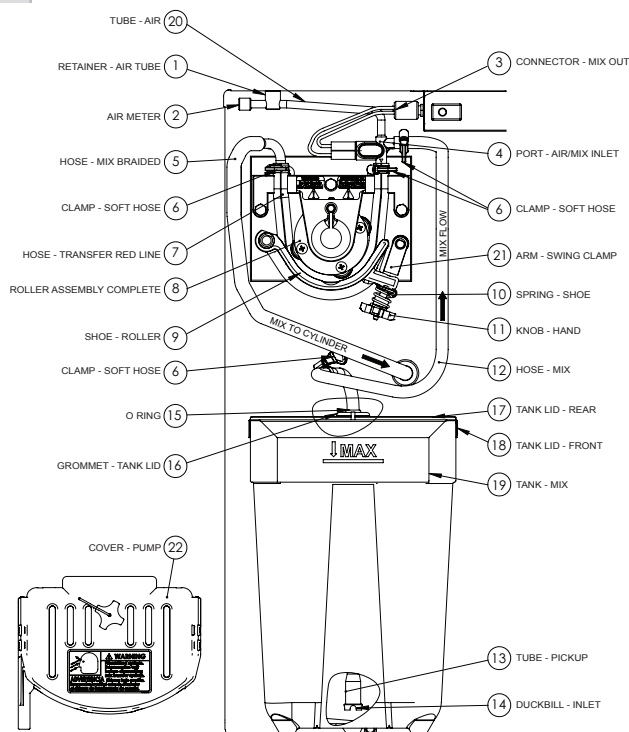


Figure 9-1 (LEFT SIDE*)

***Right side mix pump is setup opposite.**

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 10-1). 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.

— continued

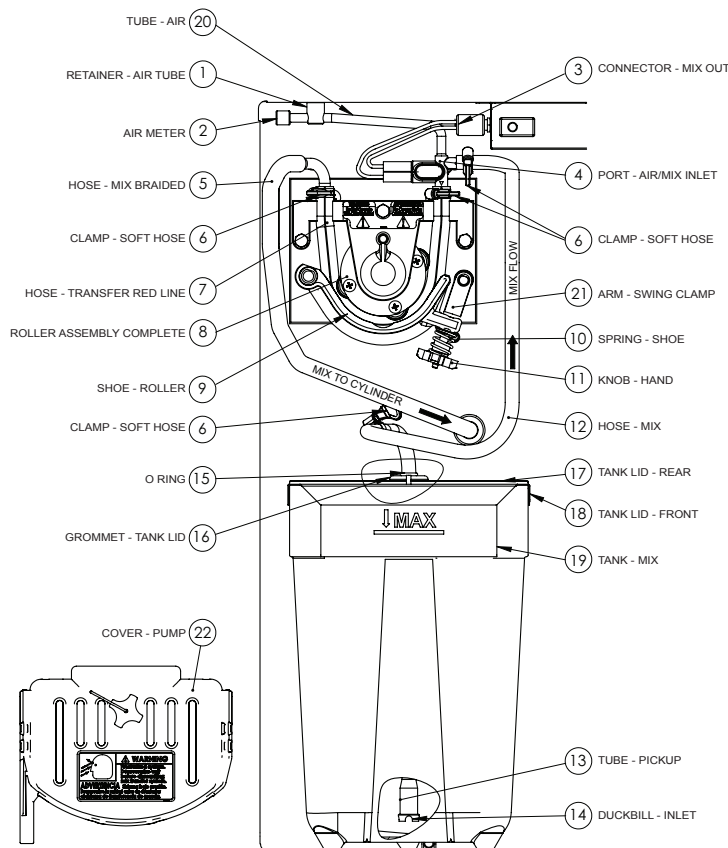


Figure 10-1 (LEFT SIDE*)

*Right side mix pump is setup opposite.

10.1 Draining Product (continued)

10. Very slowly open the spigots and 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



CAUTION
Make sure the freezer
is depressurized before
proceeding.

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!

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.

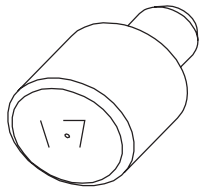


Figure 11-1 Air Meter

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.

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

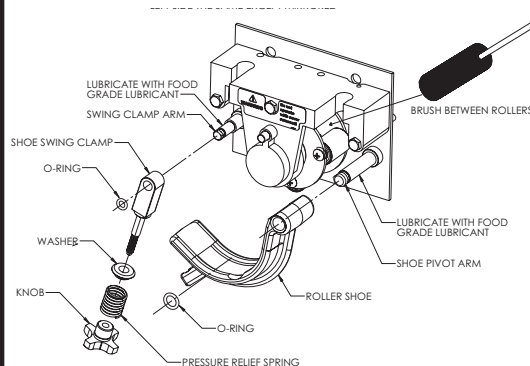
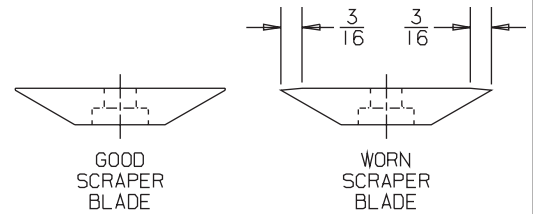


Figure 11-1

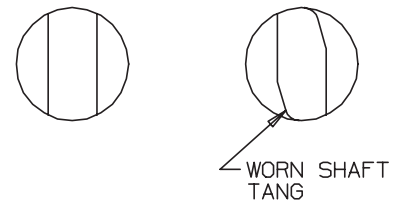
WEEKLY

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



Replace blades if worn 3/16" or more.

- 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.

dust.

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

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.	2. 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.	3. Press overload reset button. Check product temperature. (Note: cabinet will continue to cool.)
	4. Control circuit overload open.	4. 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.

13 Troubleshooting Tables (continued)

PROBLEM	PROBABLE CAUSE	REMEDY
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.
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 temperature 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.

13 Troubleshooting Tables (continued)

PROBLEM	PROBABLE CAUSE	REMEDY
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.
Poor or slow product recovery.	1. Dirty or blocked condenser, restricted air flow – high ambient temperature.	1. 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.

13 Troubleshooting Tables (continued)

PROBLEM	PROBABLE CAUSE	REMEDY
Compressor and beater motor operates only when dispensing.	1. Cylinder temperature setting too warm or thermistor defective.	1. Contact your Electro Freeze Distributor for service.
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 thermistor.	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 thermistor defective, set too warm or tuned off.	1. Contact your Electro Freeze Distributor for service.
	2. Cabinet switch defective.	2. Contact your Electro Freeze Distributor for service.
	3. Door switch defective.	3. Contact your Electro Freeze Distributor for service.
	4. Cabinet compressor (mix sours in night mode only).	4. Contact your Electro Freeze Distributor for service.
	5. Suction pressure too low.	5. 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. 2. Hose not installed properly. 3. Slide switch defective. 4. MTS relay defective. 5. Start capacitor defective or motor start switch defective. 6. Pressure switch defective. 7. Motor defective or internal overload tripped.	1. Install cover. 2. Check position – reinstall. 3. Contact your Electro Freeze Distributor for service. 4. Contact your Electro Freeze Distributor for service. 5. Contact your Electro Freeze Distributor for service. 6. Contact your Electro Freeze Distributor for service. 7. Contact your Electro Freeze Distributor for service.
MTS will not shut off. 	1. Hose broken. 2. Pressure switch stuck in closed position.	1. Replace hose. 2. Contact your Electro Freeze Distributor for service.
MTS cycles on and off without dispensing. 	1. Worn transfer hose. 2. Leak on pressure side of system.	1. Replace hose. 2. Contact your Electro Freeze Distributor for service.
MTS will not prime. 	1. Insufficient supply of mix. 2. Swing clamp knob loose. 3. Air hose or air meter not installed. 4. Hose not installed.	1. Replenish mix supply. 2. Tighten knob. 3. Install air hose/air meter. 4. Install hose.
Mix pickup tube loses prime. 	1. Defective or missing duckbill valve. 2. Inlet clamp not tight. 3. Worn transfer hose.	1. Replace duckbill valve. 2. Tighten clamp. 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	The Main P.C. Board has stopped receiving messages from the User Interface Action: System shut down completely.	1. Faulty Wire Connection 2. Programming Issue 3. Defective Board	1. Check Communication cable between Main P.C. board and U.I. board. (Contact Electro Freeze Factory Tech Support) 2. Ensure U.I. Program version and Main P.C. Program Version are compatible. (Contact Electro Freeze Factory Tech Support Software version compatibility) 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)
NO Comm.	The U.I. Board is not receiving messages from the main board Action: System shut down completely.	1. Faulty Wire Connection 2. Programming Issue 3. Defective Board	1. Check Communication cable between Main P.C. board and U.I. board. (Contact Electro Freeze Factory Tech Support) 2. Ensure U.I. Program version and Main P.C. Program Version are compatible. (Contact Electro Freeze Factory Tech Support) 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)

14 VQM Error Codes (continued)

Error Code	Description/Action	Probable Cause	Remedy
CYL Rfg.	This error occurs when barrel system run time exceeds 90 minutes. Barrel switches to night mode and locks out. Action: Barrel Refrigeration off, hopper refrigeration continues to operate.	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	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.	This error occurs when barrel system run time exceeds 90 minutes. Barrel switches to night mode and locks out. Action: Barrel Refrigeration off, hopper refrigeration continues to operate.	10. Condenser Fan Motor Failure (Air Cooled Only) 11. Water Flow Restriction (Water Cooled Only) 12. AXV not set properly/not responding 13. Compressor Failure/ Reduced Capacity 14. Moisture in system	10. Replace Condenser fan motor 11. Locate and remove restriction, re-start system to check for further issues 12. Check System refrigerant level, attempt to re-set AXV valve pressure. If valve is not responsive, it may need to be replaced 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. 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
Cabinet Rfg	Occurs when cabinet system run time exceeds 90 minutes Action: Barrel refrigeration switches to night mode, cabinet refrigeration is turned off.	1. Dirty Condenser 2. Shortage of Refrigerant. 3. Evaporator coil Froze up 4. Faulty wire connection 5. Restriction in System i.e. Capillary tube, Filter Drier	1. Clean Condenser 2. Locate Source of refrigerant leak and repair. 3. Check door gasket for wear, check evaporator fan motor for proper operation, check spring loaded door closer for proper operation. 4. Locate faulty connection (Wire rubbed through, cut) and repair as needed. 5. Locate restriction and repair as needed.

14 VQM Error Codes (continued)

Error Code	Description/Action	Probable Cause	Remedy
Cabinet Rfg (cont.)	Occurs when cabinet system run time exceeds 90 minutes Action: Barrel refrigeration switches to night mode, cabinet refrigeration is turned off.	6. Faulty Thermistor	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)
		7. Compressor Control Relay not activating	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. Compressor starting components failure	8. Check Compressor Starting components and replace as needed.
		9. Compressor failure/ reduced capacity	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.
		10. Moisture in System	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
Bulb Temp.	Occurs when barrel thermistor is above or below temp. limit for 1 minute without change Action: Affected barrel is in night time cycle mode (1min on and 40 min. off), Cabinet refrigeration remains on	1. Faulty wire connection	1. Locate faulty connection (Wire rubbed through, cut) and repair as needed.
		2. Faulty Thermistor	2. Remove thermistor, check in ice water and compare to thermistor curve chart. If thermistor does not ohm correctly, replace thermistor.
		3. Program Issue	3. Ensure U.I. Program version and Main P.C. Program Version are compatible. (Contact Electro Freeze Factory Tech Support)

14 VQM Error Codes (continued)

Error Code	Description/Action	Probable Cause	Remedy
Cabinet Temp.	Occurs when cabinet thermistor is above or below temp. limit for 1 minute without change Action: Cabinet is in time cycle mode (5 min. on and 30 min. off) both cylinders are in standby mode. If unit is in cabinet only mode: Cabinet is in time cycle mode and both cylinders remain off	1. Faulty wire connection 2. Faulty Thermistor 3. Program Issue	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	Occurs when head switch is open with power applied to unit Action: Affected head is turned off.	1. Head Assembly Not installed 2. Faulty Head switch (1 per cylinder) 3. Faulty wire connection 4. Program Issue	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	Occurs when motor current is 0, and motor is given an on signal Action: Affected barrel is off, hopper refrigeration continues to operate.	1. Motor internal overload open 2. Faulty wire connection 3. Motor Contactor Failure 4. Motor control relay not activating	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.)	Occurs when motor current is 0, and motor is given an on signal Action: Affected barrel is off, hopper refrigeration continues to operate.	5. Motor Failure	5. Check motor starting components, check motor for shorts to ground, check for proper winding resistance. Replace Motor as needed
		6. Current Sense board/ function failure	6. Check current sense board wire connections, check max current setting in control system. (Contact Electro Freeze Factory Tech Support)
		7. One line of power loss	7. Check main power supply, and main wire connections and correct as needed
		8. Program Issue	8. Ensure U.I. Program version and Main P.C. Program Version are compatible. (Contact Electro Freeze Factory Tech Support)
Comp. Low PSI	Occurs when low pressure control is activated. Action: Cylinder refrigeration is off, Cabinet refrigeration Continues to operate.	1. System is Short on refrigerant	1. Locate refrigerant leak and repair as needed. Ensure refrigeration system is evacuated to at least 200 microns.
		2. Solenoid valve not activating	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.
		3. Low pressure control is Faulty.	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
		4. Restriction is refrigeration system.	4. Locate and remove restriction i.e. restricted drier, AXV closed down, Solenoid valve not opening etc.
		5. Faulty wire connection.	5. Repair connection as needed i.e. faulty connection on LPCO, etc.
		6. System component failure	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.

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	CLOCK ERROR Action: All timer functions use default data/time	Contact Electro Freeze Technical Support Line if this Problem exists	Contact Electro Freeze Technical Support Line if this Problem exists
Power Fail	Displays Power Fail if main power to system has failed 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.	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	Displays Spigot if the Left or Right Side Spigot switch is engaged for more than 5 minutes. Action: Affected side compressor and beater motor are off, until condition is reset	1. Spigot Push rod not installed 2. Spigot switch has failed in the closed position 3. Spigot Switch is out of adjustment 4. Plunger is sticking open	1. Install Spigot Push Rod and start system to see if error is eliminated. 2. Replace defective spigot switch and ensure new switch is adjusted properly. 3. Re-adjust Spigot switch to operate properly with Push Rod. 4. Check for proper lubrication, o-ring wear, switch tower spring worn causing plunger to not close, etc.
C Spigot	Displays C Spigot if the Center spigot switch is engaged for more than 5 minutes Action: Affected side compressor and beater motor are off, until condition is reset	1. Spigot Push rod not installed 2. Spigot switch has failed in the closed position 3. Spigot Switch is out of adjustment 4. Plunger is sticking open	1. Install Spigot Push Rod and start system to see if error is eliminated. 2. Replace defective spigot switch and ensure new switch is adjusted properly. 3. Re-adjust Spigot switch to operate properly with Push Rod. 4. Check for proper lubrication, o-ring wear, switch tower spring worn causing plunger to not close, etc.

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.)	Displays Pump Low psi if the pump pressure is lower than 20 PSI while in freeze mode. Action: Affected pump is turned off	4. Pump control relay not closing preventing pump motor from running 5. Pump motor Starting components Faulty 6. Faulty wire connection 7. Pressure Transducer is Faulty 8. Faulty Control Board	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. 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. 6. Locate and repair faulty wire connections as needed. 7. Attempt to calibrate the Transducer to 0 psi and re-test unit. If unit continues to malfunction contact Electro Freeze Technical Support. 8. Contact Electro Freeze Technical Support
Pump Cover	Occurs if the RMT pump cover is removed or the cover switch is open. 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.	1. Pump cover is not installed 2. Pump cover magnet has been removed or fallen out 3. Pump Cover safety switch is Faulty 4. Faulty Wire Connection 5. Program issue	1. Install Pump Cover 2. Replace pump cover 3. Test switch to confirm and replace as needed. 4. Locate and repair faulty wire connections as needed. 5. Contact Electro Freeze Technical Support

14 VQM Error Codes (continued)

Error Code	Description/Action	Probable Cause	Remedy
Main P.C. Board Heart-beat 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 2. Main P.C. Board Fuse blown 3. Power Not being supplied to U.I. Board from main P.C. Board 4. Faulty wire connection	1. Check control transformer for main 24 VAC power supply to main P.C. Board. 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. 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. 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 GES-5099

P/N 185265-01 2/19

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

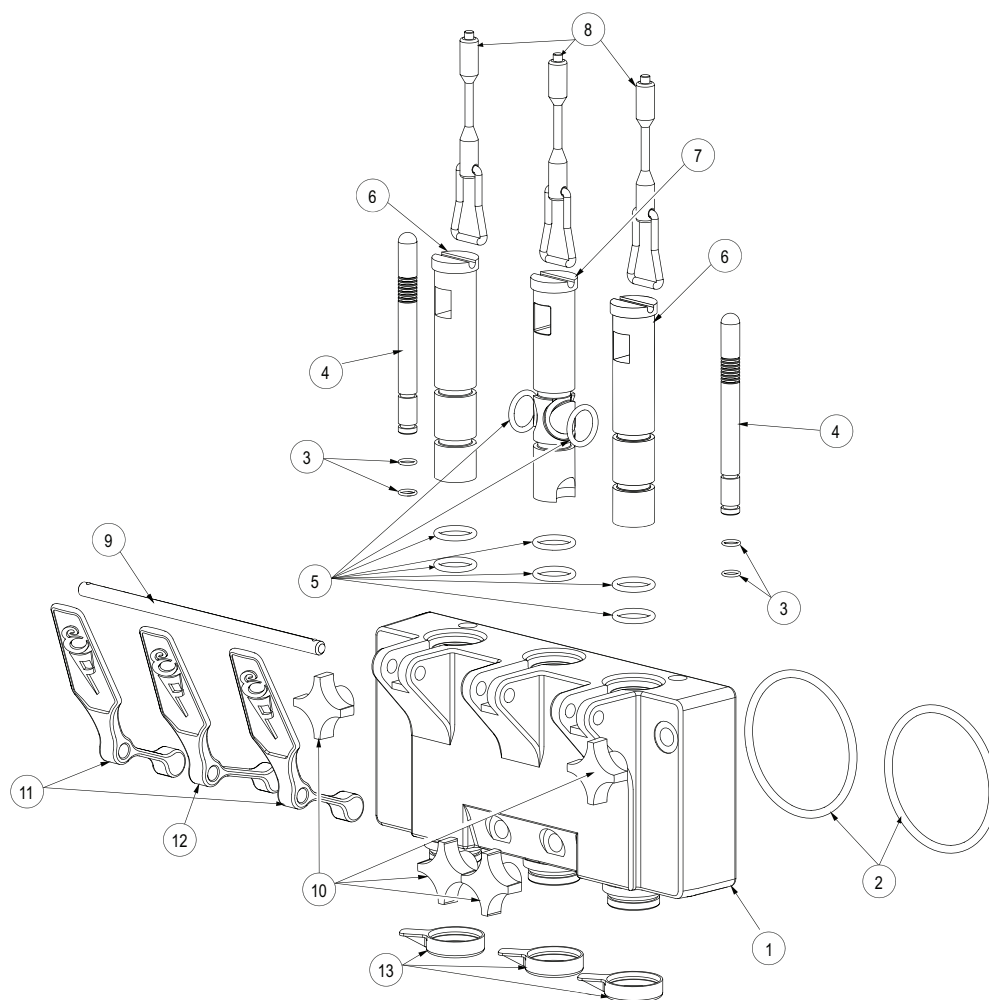
(309) 755-4545

Fax: (309) 755-9858

E-mail: service@hcduke.com

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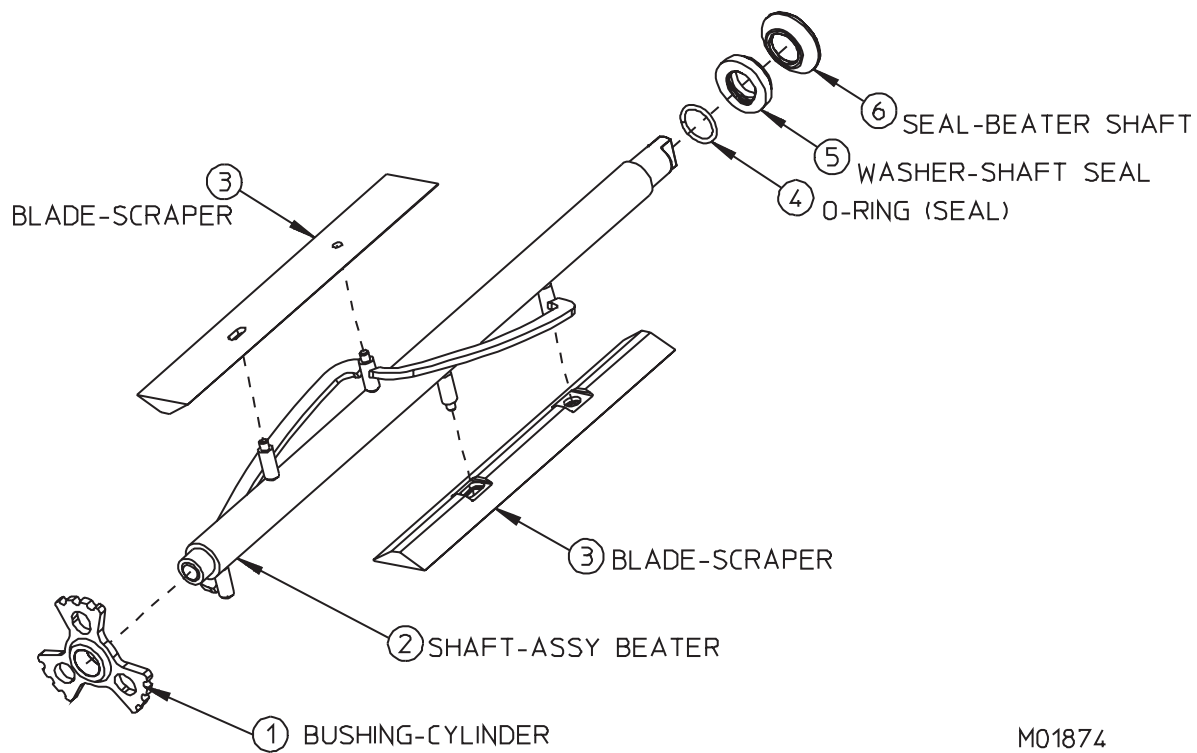
Figure 1 Head Assembly

Item	Part No.	Description
*	HC120811	Head - Assy. Dispense
1	HC120012	Head - Assy. w/actuators
2	HC160583	O-Ring (Head)
3	HC160610	O-Ring (Air Plug)
4	HC138149	Plug - Air Bleed
5	HC160501	O-Ring (Plunger)
6	HC137174	Plunger - Side Self Dispense
7	HC138009	Plunger - Dispense Center
8	HC116089	Push Rod - Assy. Plunger Switch
9	HC160269	Pin - Handle
10	HC162625	Knob - Hand
11	HC162625	Handle - Assy. Dispense Side
12	HC191020	Handle - Assy. Dispense Center
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)

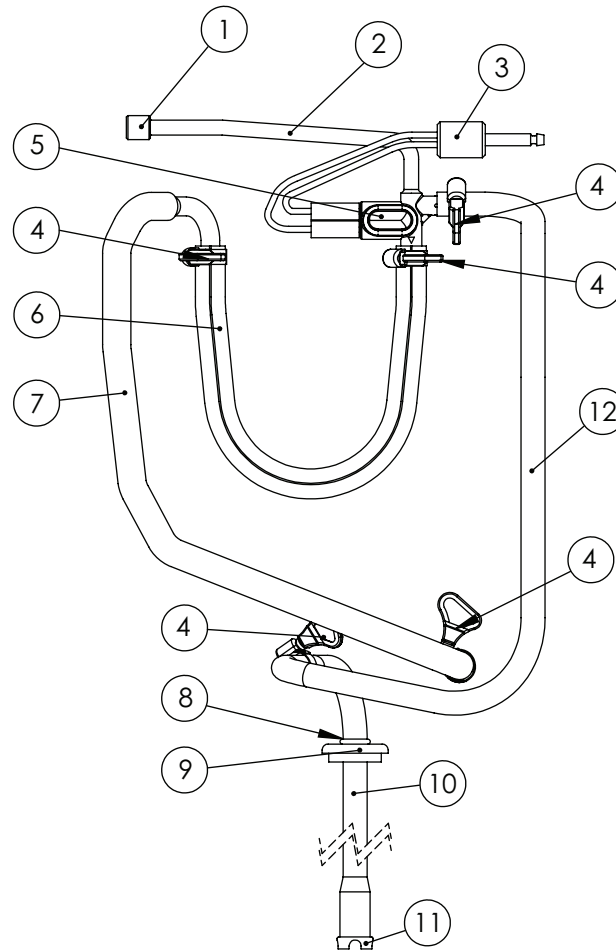
Figure 2 Beater Shaft Assembly

M01874

Item	Part No.	Description
1	HC196085	Bushing - Cylinder
2	HC113467	Shaft - Assy. Beater
3	HC134966	Blade - Scraper
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

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

Item	Part No.	Description
1		Meter - Air (Order by meter number)
2	HC138170-02	Tube - Air 7½ in. (Hose)
3	HC150016	Cordset - Mix Level
4	HC116065	Clamp - Assy. Soft Hose 5/8
5	HC121799	Port - Assembly Mix Level Molded
6	HC138836	Hose - Transfer Red Line
7	HC121638	Hose - Assy Mix Braided
8	HC160612	O-Ring
9	HC199033	Boot - Mix Tube
10	HC141412-02	Tube - Lower Pickup
11	HC199032-01	Duckbill - Inlet (Valve)
12	HC196326	Tubing - 3/8" ID X 5/8" OD (Per Foot)

Figure 4 Mix Transfer System RMT 1Ph. (Sheet 1 of 2)

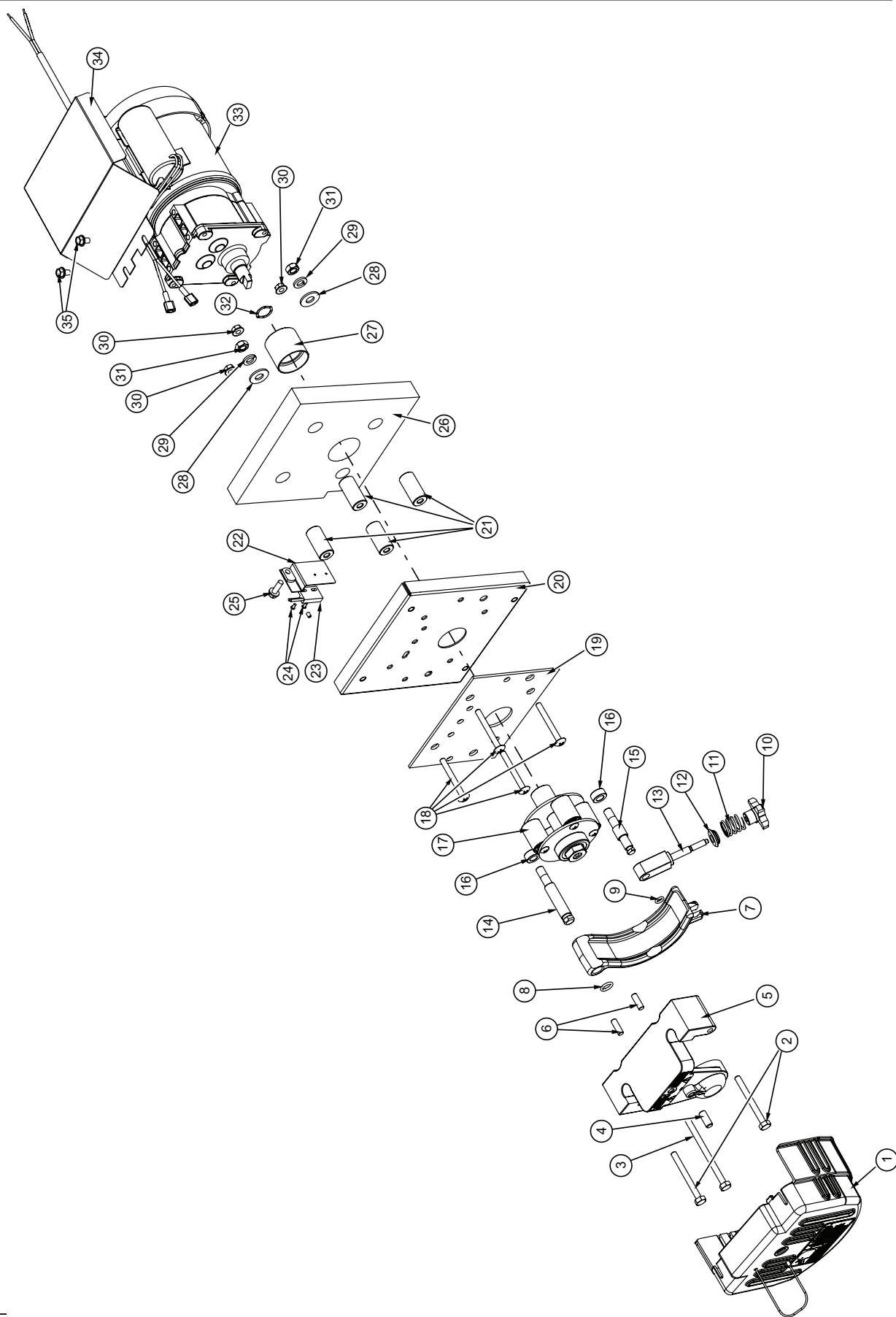


Figure 4 Mix Transfer System RMT 1Ph. (Sheet 2 of 2)

Item	Part No.	Description
*	HC121634	Mt - Assy Cab Red Line/Relief Bsn (LEFT)
	HC121634-01	Mt - Assy Cab Red Line/Relief Bsn (RIGHT)
1	HC121798	Cover - Assy Mix Pump Molded
2	HC160464	Screw - HXHC 1/4-20X2 1/2 SST
3	HC160465	Screw - HXHC 1/4-20X3 1/2 SST
4	HC160386	Stud - 5/16-18 X 3/4 SST
5	HC138783-01	Support - Roller Bearing
6	HC160338	Pin - Dowel 1/4 Dia X 3/4 Sst
7	HC139751	Shoe - Roller
8	HC160612	O Ring
9	HC160628	O Ring
10	HC140706	Knob - Fluted 1/4-20 Custom
11	HC162330	Spring - Compression (SS Side)
	HC162327	Spring - Compression (SH Side)
12	HC140711	Washer - Spring End
13	HC140709	Stud - Threaded Spacer 1/4-20
14	HC138797	Arm - Shoe Pivot
15	HC138799	Arm - Swing Clamp
16	HC138800	Spacer - Swing Arm
17	HC138122	Shaft - Roller
18	HC160093	Screw - TRPS 1/4-28X2-1/4 SST
19	HC191527	Blank - Backup MTS
20	HC121633	Faceplate - Assy MTS Liner Left
21	HC138793	Spacer - Motor
22	HC139747	Bracket - Switch Mounting
23	HC161302	Switch - Slide/Cover
24	HC160357	Screw - RDHM #4-40X1/4 STL
25	HC159939	Screw - HXSF 1/4-20X11/16 SST
26	HC165524-01	Block - Insulation GES
27	HC139756	Shield - DRIP
28	HC160169	Washer - FLAT 3/8 SST
29	HC160170	Washer - LOCK 3/8 SST
30	HC159933	Nut - HXSF 1/4-20 SST
31	HC159927	Nut - HEX 3/8-16 SST
32	HC160173	Washer - Spring Wave SST
33	HC151147-01	Gearmotor - 1/6 HP 115/208-230/1/60 270R
34	HC141607-01	Cover - RMT Pump Motor
35	HC159919	Screw - HXSF 1/4-20 X 3/8 ZN

Figure 4 Mix Transfer System RMT 3Ph. (Sheet 1 of 2)

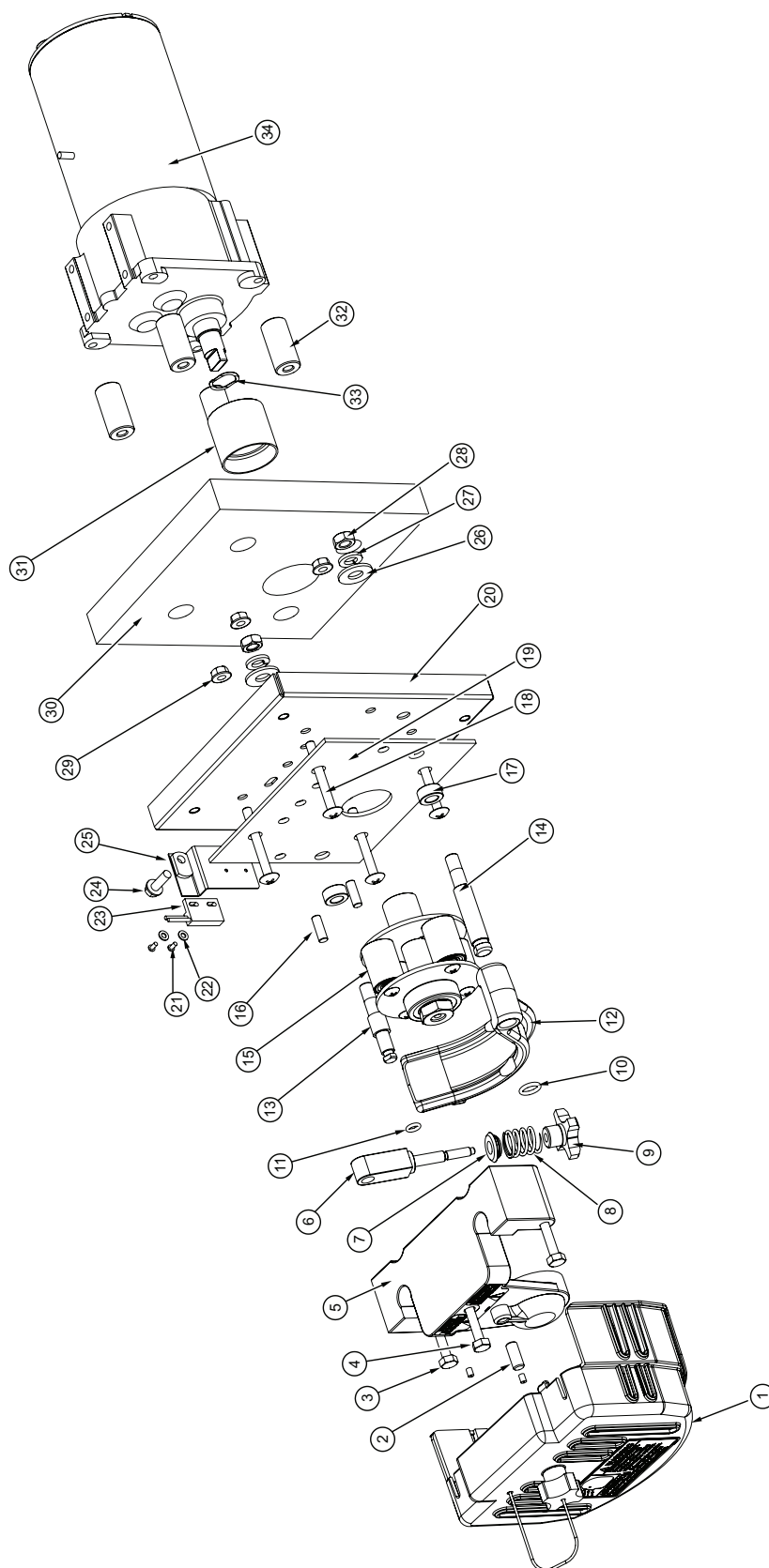
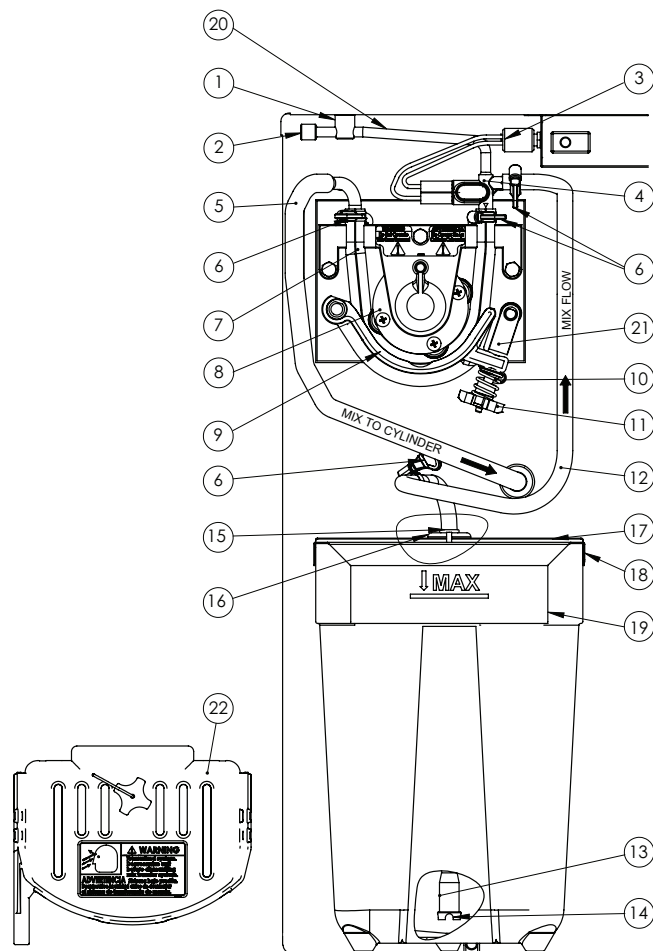


Figure 4 Mix Transfer System RMT 3Ph. (Sheet 2 of 2)

Item	Part No.	Description
*	HC121634-02	MTS - Assy Cab Red Line/Relief Bism (3 Ph) LH
*	HC121634-03	MTS - Assy Cab Red Line/Relief Bism (3 Ph) RH
1	HC121798	Cover - Assy RMT
	HC165246	Decal - Warning Pressurized
	HC138889	Knob - Cover RMT
	HC138890	Lanyard - Wire
	HC160508	Sleeve - Cable Stop 3/64
2	HC160386	Stud - 5/16 - 18 X 3/4 SST
3	HC160464	Screw - HXHC 1/4 - 20X2 1/2 SST
4	HC160465	Screw - HXHC 1/4 - 20X3 1/2 SST
5	HC120633	Support - Assy
6	HC120504	Clamp - Assy Swing 1/4 - 20
7	HC140711	Washer - Spring End
8	HC162330	Spring - Compression (SS Side)
	HC162327	Spring - Compression (SH Side)
9	HC140706	Knob - Fluted 1/4 - 20 Custom
10	HC160612	O Ring
11	HC160628	O-Ring
12	HC139751	Shoe - Roller
13	HC138799	Arm - Swing Clamp
14	HC138797	Arm - Shoe Pivot
15	HC116009	Roller - Assy Bearing
16	HC160338	Pin - Dowel 1/4 Dia X 3/4 SST
17	HC138800	Spacer - Swing Arm
18	HC160093	Screw - Trps 1/4 - 28X2 - 1/4 SST
19	HC191527	Blank - Backup MTS
20	HC121633	Faceplate - Assy MTS Liner LH
or	HC121633-01	Faceplate - Assy MTS Liner RH
21	HC160357	Screw - Rdhm #4 - 40X1/4 STL
22	HC160393	Washer - Flat #6 Brass
23	HC161302	Switch - Slide/Cover
24	HC159939	Screw - Hxsf 1/4 - 20X11/16 SST
25	HC118763	Bracket - Assy Switch Mntg
26	HC160169	Washer - Flat 3/8 SST
27	HC160170	Washer - Lock 3/8 SST
28	HC159927	Nut - Hex 3/8 - 16 SST
29	HC159933	Nut - Hxsf 1/4 - 20 SST
30	HC165524-01	Block - Insulation GES
31	HC139756	Shield - Drip
32	HC138793	Spacer - Motor
33	HC160173	Washer - Spring Wave SST
34	HC151161	Gearmotor - 1/8 Hp 208 - 230/3/60 270 RPM

* Includes all items above.

Figure 5 Cabinet Parts



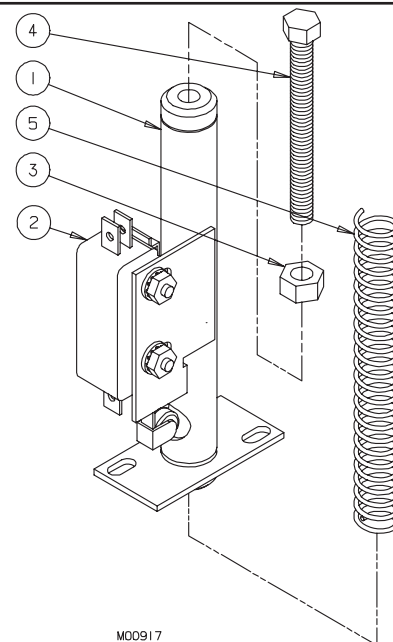
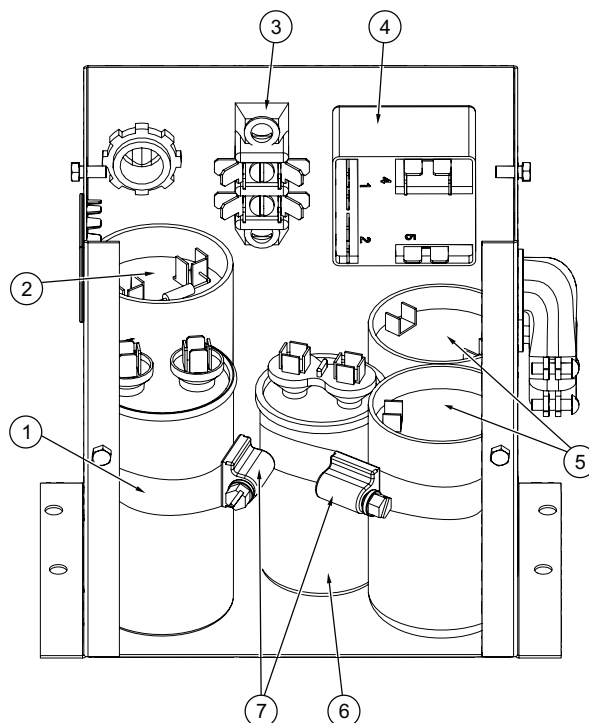
AIR METERS	
Meter No.	Part No.
9	HC163423
10	HC163424
11	HC163425
12	HC163426
13	HC163421
13.5	HC163421-05
14	HC163427
14.5	HC163427-05
15	HC163428
15.5	HC163428-05
16	HC163429
16.5	HC163429-05
17	HC163430
17.5	HC163430-05
18	HC163431
18.5	HC163431-05
19	HC163432
19.5	HC163432-05
20	HC163433
20.5	HC163433-05
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

Item	Part No.	Description
1	HC117092	Retainer - Assy Air Line
2		Air Meter (See Chart)
3	HC150016	Cordset - Mix Level
4	HC121799	Port - Assembly Mix Level Molded
5	HC121638	Hose - Assy Mix Braided
6	HC116065	Clamp - Assy. Soft Hose 5/8
7	HC138836	Hose - Transfer Red Line
8	HC116009	Roller - Assy Complete
9	HC139751	Shoe - Roller
	HC160612	O Ring
10	HC162330	Spring - Compression (SS Side)
	HC162327	Spring - Compression (SH Side)
11	HC140706	Knob - Fluted 1/4-20 Custom
12	HC196326	Tubing - 3/8" ID X 5/8" OD
13	HC141412-02	Tube - Lower Pickup
14	HC199032-01	Duckbill - Inlet (Valve)
15	HC160612	O-Ring
16	HC199033	Boot - Mix Tube
17	HC141413-02	Rear - Tank Lid
18	HC119995	Front Tank Lid
19	HC196255	Mix Tank
20	HC138170-02	Tube - Air 7½ in. (Hose)
21	HC120504	Clamp - Assy Swing 1/4-20
22	HC121672	Cover - Assy Pump Motor

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 (1 Ph. Only)**

Item	Part No.	Description
1	HC150403	Capacitor - Run
2	HC151445	Capacitor - Start W/Bleed
3	HC150798	Strip - Terminal
4	HC150029	Relay - Compressor COPZS
5	HC150294	Capacitor - Start
6	HC150244	Capacitor - Run
7	HC160739	Clamp - Hose 3 9/16-4 1/2, Screw

Figure 8 Switch Box (sheet 1 of 2)

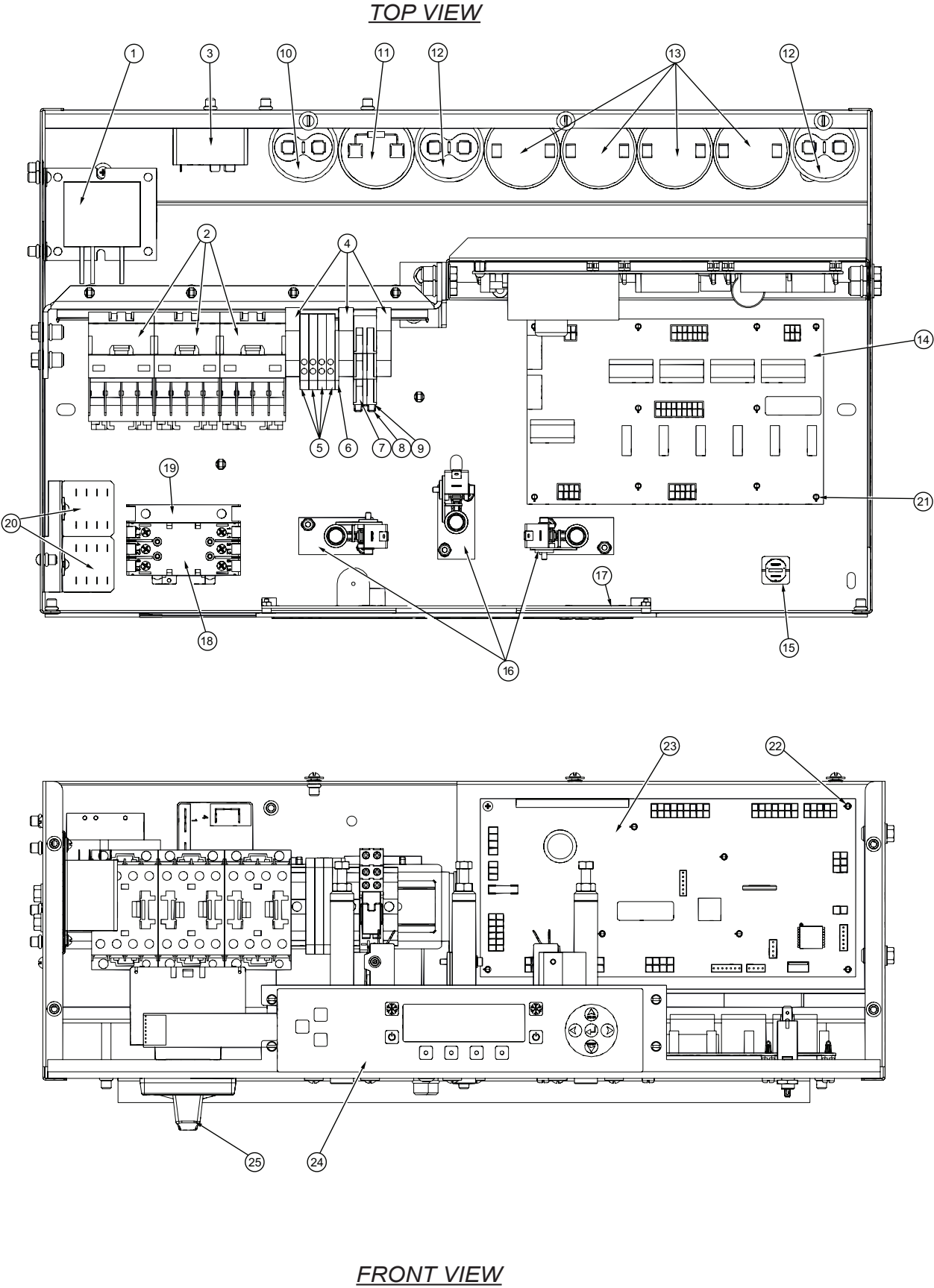
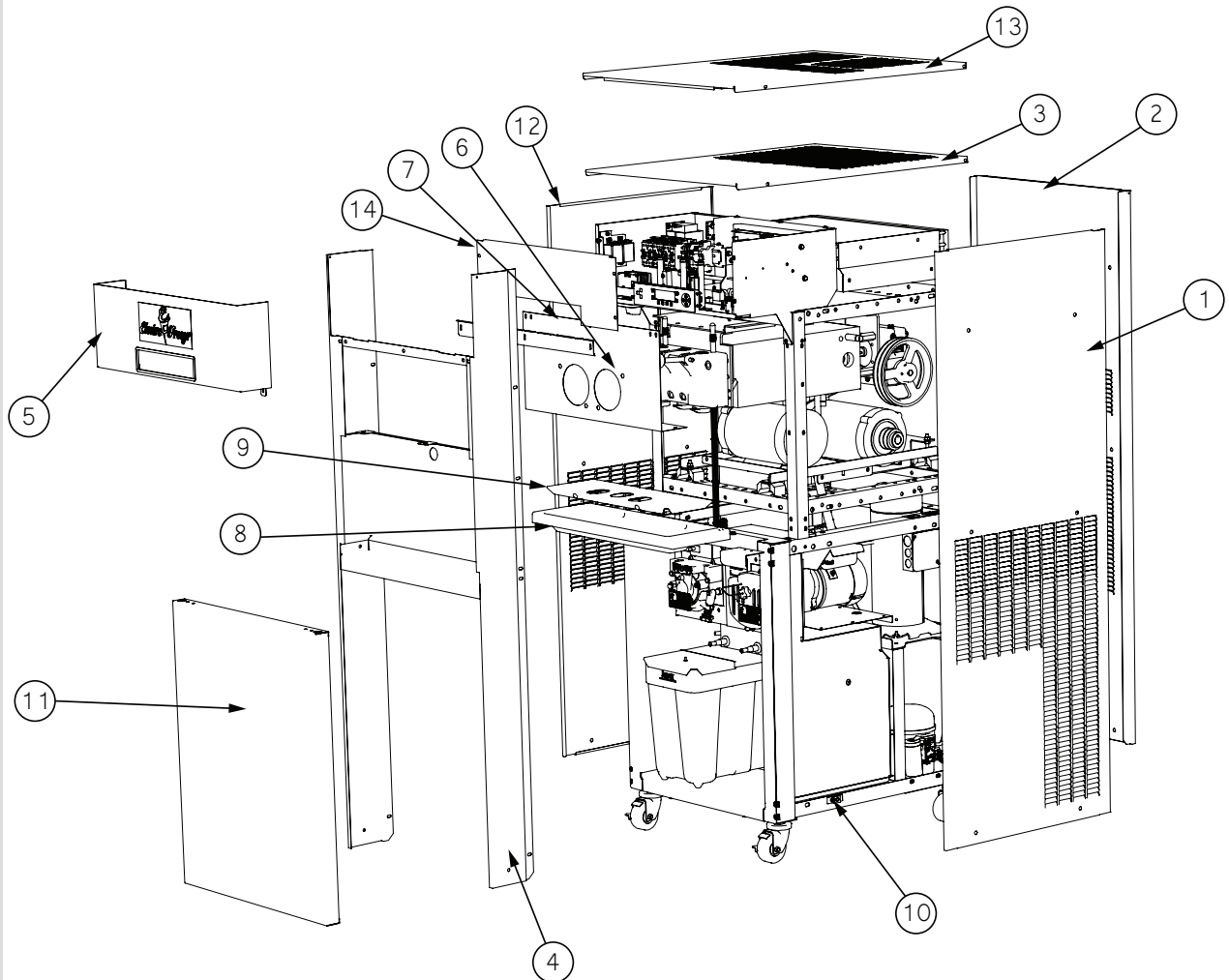


Figure 8 Switch Box (sheet 2 of 2)

Item	Part No.	Description
1	HC150181-02....	Transformer - CL2 208/240PRI/24SEC
2	HC150076	Contactor - 3P 25A 24V Coil BF25
3	HC150029.....	Relay - Compressor COPZS
4	HC150999.....	Anchor - Din Rail
5	HC150591-01....	Block - Terminal Screw
6	HC150591-02....	Stop - Terminal Block End Screw
7	HC150098	Socket - Miniature Relay DPDT
8	HC150166	Clip - Miniature Relay Retaining
9	HC150044	Relay - Miniature DPDT 230V Au Contact
10	HC151491.....	Capacitor - Run (1ph. Only)
11.....	HC151445	Capacitor - Start (1ph. Only)
12	HC150244	Capacitor - Run (1ph. Only)
13	HC150294	Capacitor - Start (1ph. Only)
14	HC151702	Board - PC Relay
15	HC150182-01	Breaker - Circuit 4A Threaded
16	HC114176-01	Switch - Assy Self Closing Plngr
17	HC150994	Board - PCB UI
18	HC151708	Switch - Disconnect
19	HC151708-01	Switch - Disconnect 4Th Pole Add On
20	HC150343-01	Relay - Control Flange DPDT 12VDC
21	HC150038.....	Support-1/2 Circuit Board
22	HC150038-01....	Support-1/4 Circuit Board
23	HC151698	Board - Pc Main WIFI
24	HC150033	Membrane - Cab
25	HC151709	Knob - Rotary Disconnect

Not Shown:

[HC150000-02](#).... Harness - Wire UI

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	HC142246	Panel - Side RH
2	HC142244	Panel - Rear
3	HC141646	Panel - Assy Top (Air Cooled)
4	HC117441	Panel Assy - Front
5	HC121518	Trimstrip - Assy Upper
6	HC141642	Panel - Dispense
7	HC141644	Trimstrip - Lower
8	HC196107	Tray - Drip 24 Inch Black
9	HC117447	Insert - Drip Tray
10	HC138456	Spacer - Panel
11	HC114262-01	Shell - Assy Door 24 In
12	HC142245	Panel Side LH
13	HC121519	Panel - Assy Top (Water Cooled)
14	HC141649	Cover - Electric Box

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
HC165025-04	Decal-Beater Warning Pwr Sw Bk
HC165025-03	Decal-Beater Warning Twist Pwr Sw
HC164452	Decal-Cleaning Instructions Ss
HC165093	Decal-Clear Overlay
HC165013	Decal-Cmt Patent
HC167029	Decal-Ges Mix Connect
HC165685	Decal-Important Air Vent
HC164447-01	Decal-Nameplate Standard
HC164446-01	Decal-Nameplate UI And Nsf
HC165126	Decal-Panel Removal
HC164236	Decal-Power Sw.
HC165040	Decal-Pulley Removal
HC165124	Decal-Top Air Discharge
HC164225-07	Decal-Trimstrip Ef Logo
HC164225-10	Decal-Trimstrip Ef Logo
HC165246	Decal-Warning Pressurized
HC165048	Decal-Warning Rotating Parts
HC142082	Decal-Wiring Diagram 3Ph

Figure 11 Side/Back View (Breakdown)

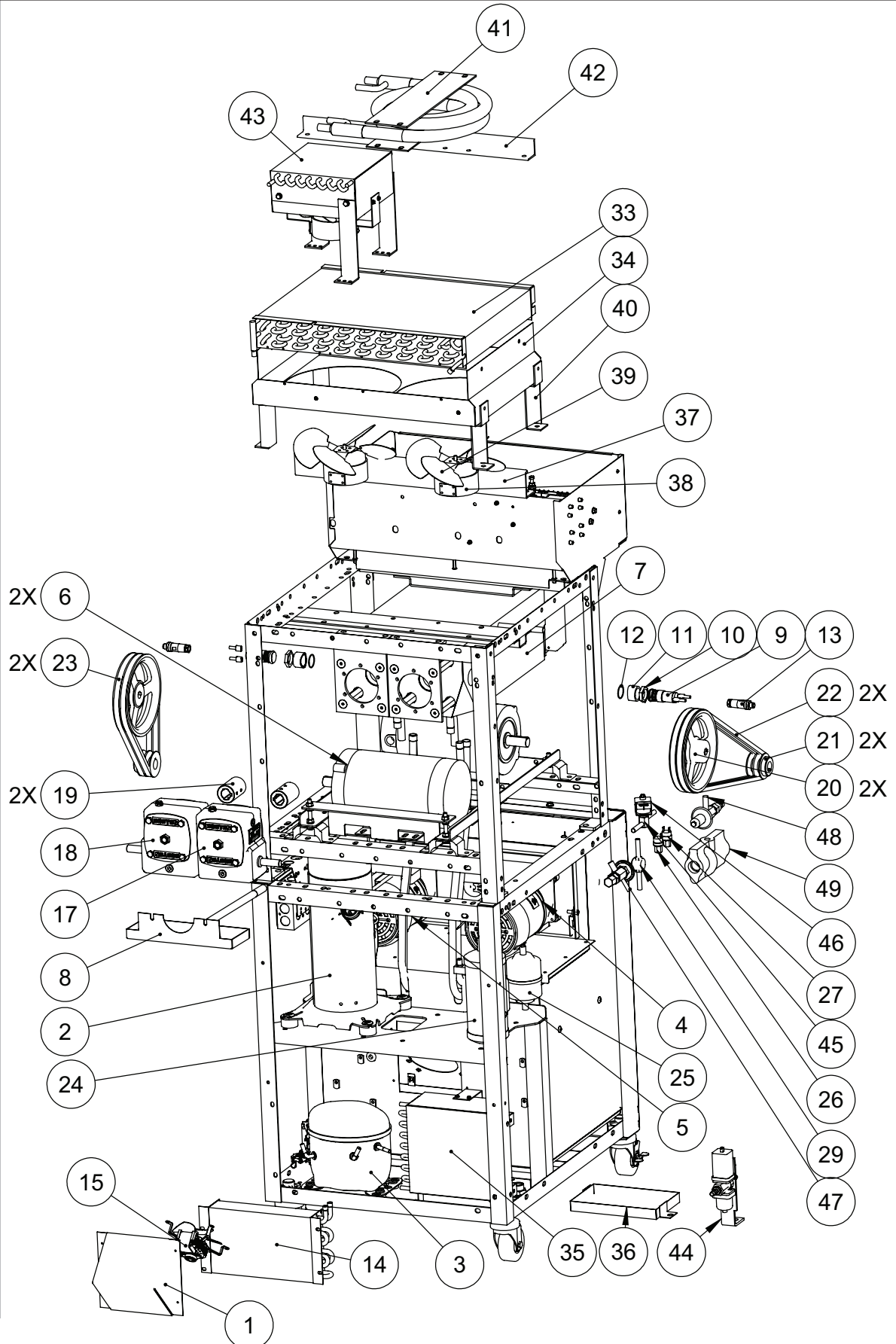


Figure 11 Water Cooled Side/Back View (Parts)

Item	Part No.	Description
1	HC141679	Cover - Evaporator Fan
2	HC154935	Compressor - Scroll #ZS15KAE-TF5
3	HC154936	Compressor - GL60TG
4	HC121634	MT - Assy W/Relief Left
5	HC121634-01	MT - Assy W/Relief Right
6	HC151062-02	Motor - 2hp 208-230-1-60 Fe
7	HC121523	Cylinder - Assy Complete
8	HC115004	Tube - Assy Drain 14-1/4"
9	HC150502	Switch - Pressure 30psi
10	HC116105	Nut - Assy Pressure Switch
11	HC138827-01	Spacer - Curved Press Sw
12	HC160555	O Ring
13	HC121432	Connector - Assy Pressure Switch
14	HC155111	Coil - Evaporator
15	HC121656	Cover - Assy Evaporator
15	HC121945	Bracket - Assy Evaporator Fan
17	HC153366	Reducer - Gear LH 5/1
18	HC153367	Reducer - Gear RH 5/1
19	HC111780	Coupling - Assy 7/8 Drive
20	HC153602	Sheave - 5/8 Bore 7.25 OD 7.00PD
21	HC153611	Sheave - 7/8 Bore 2.25 OD 2.00PD
22	HC153167	Belt - V
23	HC153161	Belt - V
24	HC155071	Receiver - 3lb 3/8 ID Sweat W/O Valve
25	HC155054	Drier - Filter 16 Cu In
26	HC155405	Cut Out - High Pressure
27	HC155701	Cut Out - Low Pressure
28	HC155498	Drier - Filter
29	HC155059	Glass - Sight
30	HC136199	Pull - Door
31	HC142245	Panel - Side LH
32	HC141646	Panel - Top A/C
33	HC155145	Condenser - Air 14 X 20
34	HC116566	Shroud - Assy Condenser
35	HC121619	Condenser - Assy Cab Comp
36	HC121630	Pan - Assy Condensate Drain
37	HC139131	Bracket - Fan Motor
38	HC151017-01	Motor - Fan 5 Watt 230v
39	HC159017	Blade - Fan 10 In 36 Deg
40	HC139123	Bracket - Condenser Mounting
41	HC155029	Condenser - Water
42	HC140672	Bracket - Condenser Mtg
43	HC120446-01	Condenser - Assy Cab Comp
44	HC113769	Valve - Assy Water
45	HC155395	Valve - Solenoid Body 3/8 ODM
46	HC151477	Coil - Solenoid 208-240v MKC-1TS
47	HC155399	Valve - Thermostatic Expansion
48	HC155490	Valve - Automatic Expansion
49	HC165531	Insulator - Expansion Valve

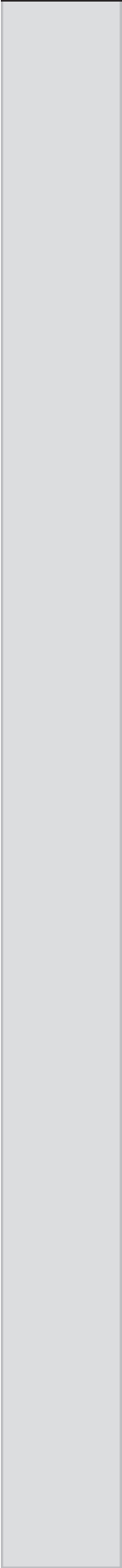
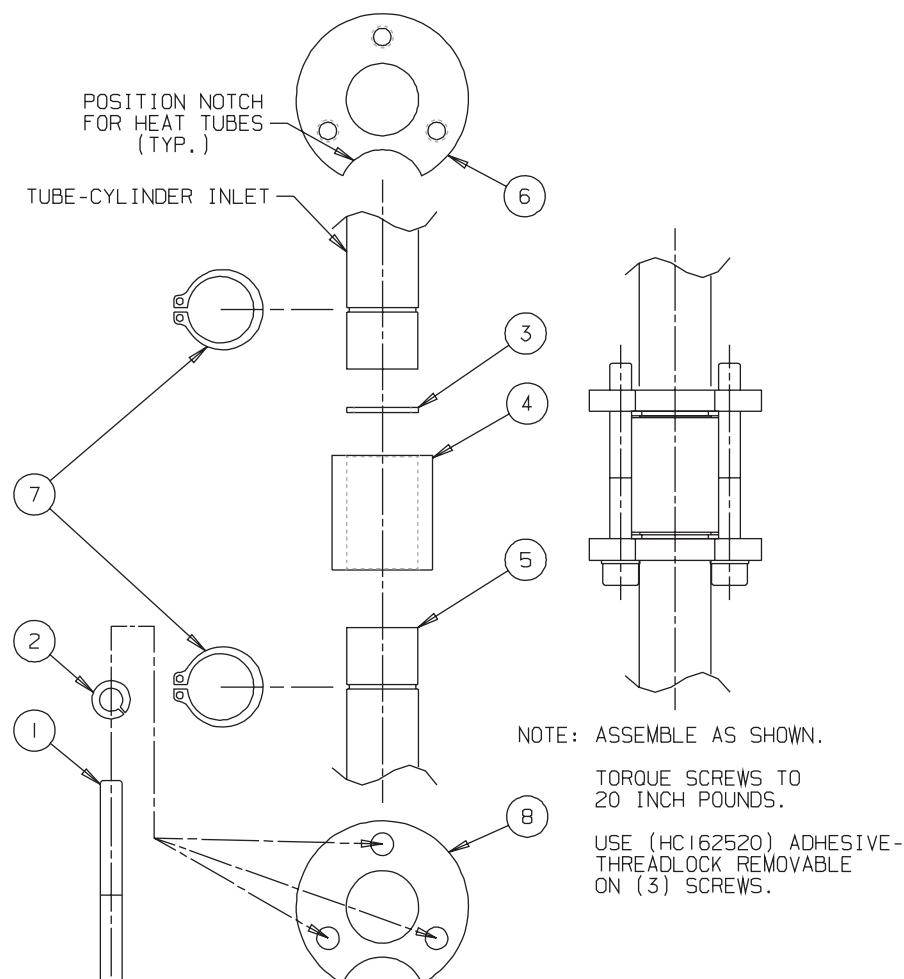
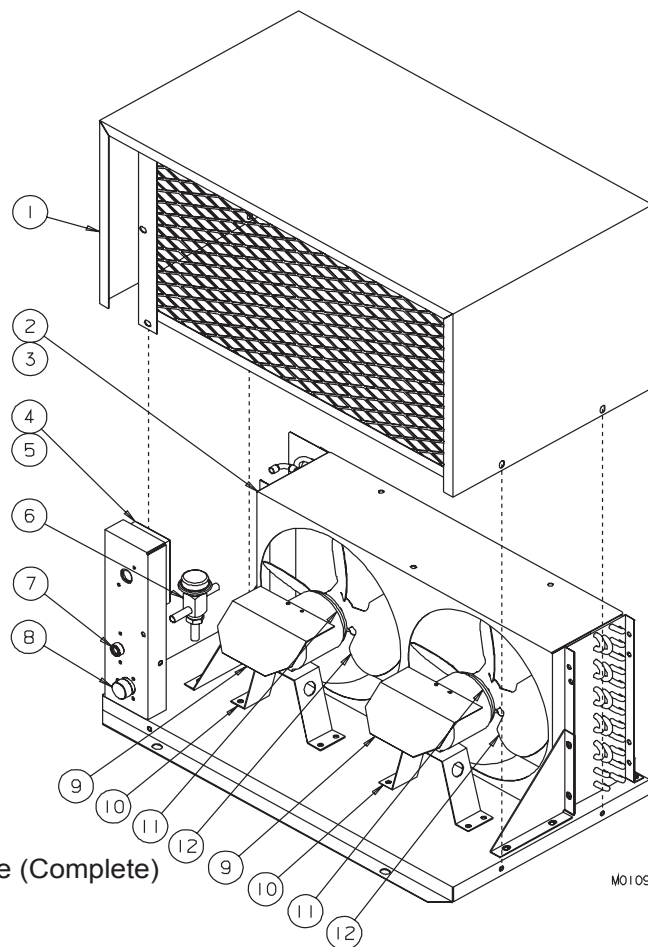


Figure 12 Mix Feed Seal Assembly



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 13 Air Cooled Remote Condenser



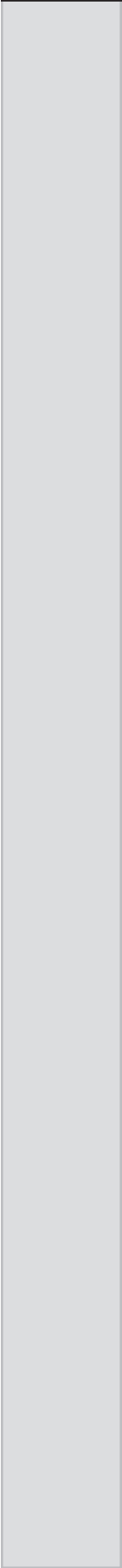
Item	Part No.	Description
*	HC116781-03	Condenser - Assy. 2 Hp Remote (Complete)
1	HC117207	Cover - Assy. Condenser
2	HC155101	Condenser - Air Rifled
3	HC138465	Shroud - Fan
4	HC150732	Box - Electric 2-3/4 x 4-1/2 x 2
5	HC150737	Cover - Electric Box 2-3/4 x 4-1/2
6	HC155454-01	Valve - Head Pressure Control 210 PSIG
7	HC153420	Coupling - Refr. 3/8 MQC 3/8 SW
7A	HC191538	Plate - Coupling Mtg.
8	HC153418	Coupling - Refr. 1/2 MQC 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 items 2-12 above		

Not Shown:

HC155058	Receiver - 12 lb. Horizontal Mount
HC155450	Cut Out - High Pressure 450 PSI
HC155705	Cut Out - Low Pressure 2IN HG
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

Accessories

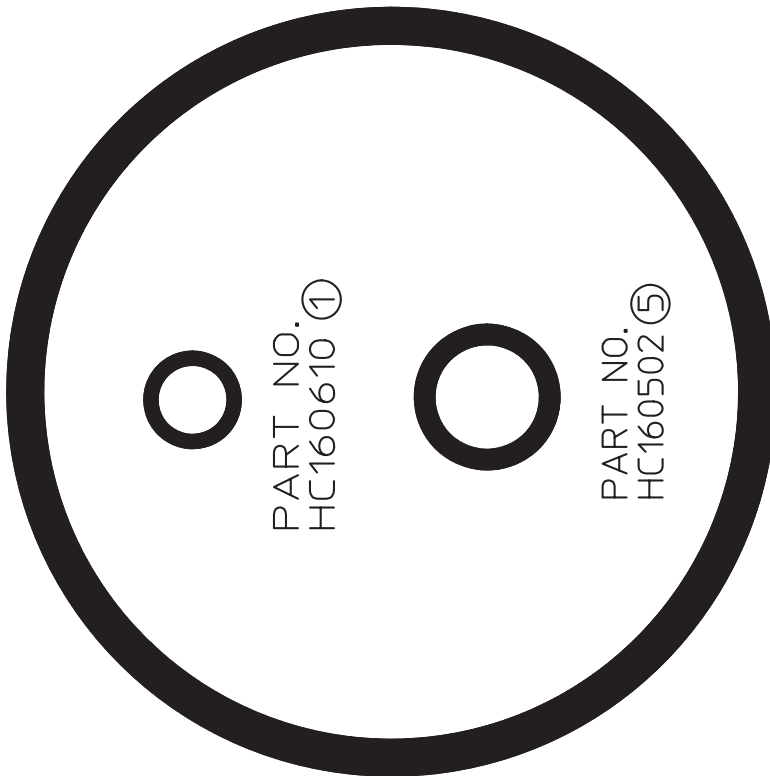
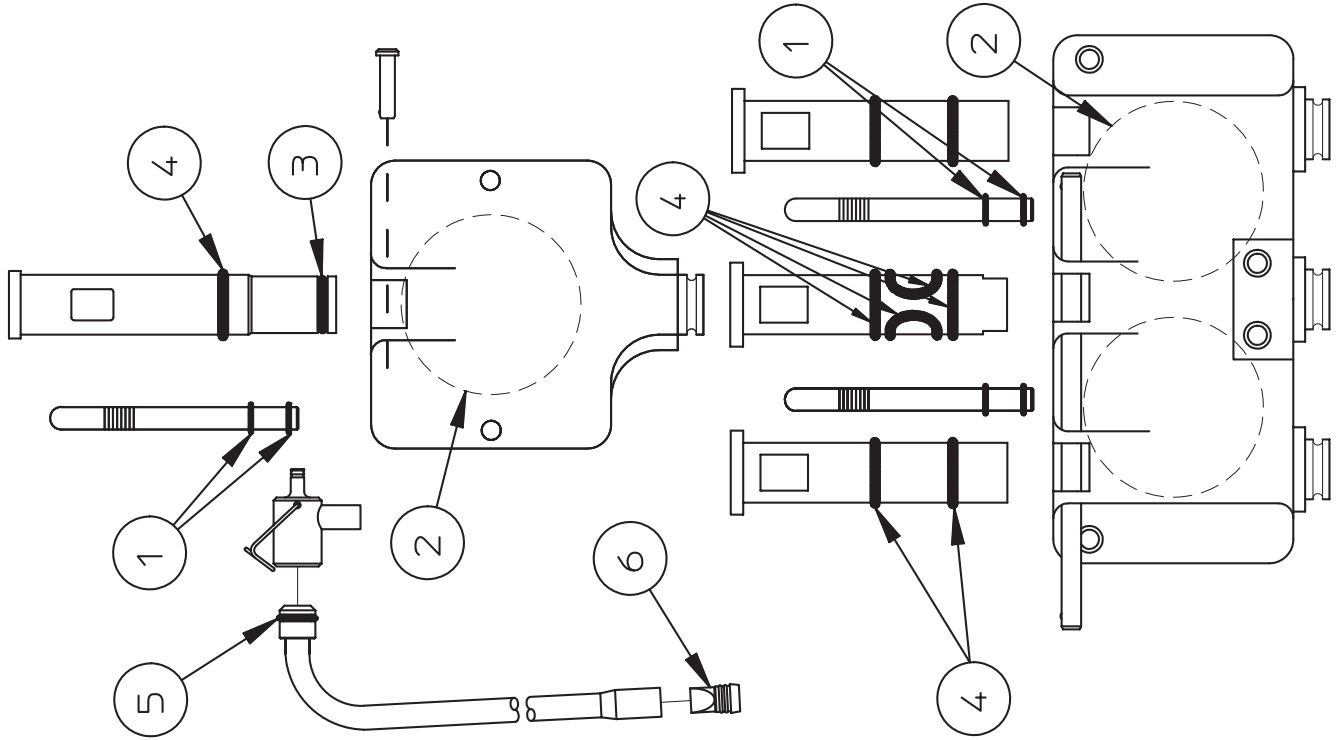
Part No.	Description
HC196103	Bottle-Wash 500 ml
HC158004	Brush-4" w/36" handle
HC158009	Brush-4" dia w/o handle
HC158018	Brush-7/16" Dia x 12" Overall Length
HC158019	Brush-9/16" Dia x 30" Overall Length
HC158026	Brush-1" Dia 12" Long
HC158037	Brush-1/4" Dia x 18-1/2" Overall Length
HC162105	Caster-1-1/4" ST w/Brake
HC162106	Caster-1-1/4" ST w/o Brake
HC119851.....	Kit-O-ring (need 2)
HC112978.....	Leg-Assy. Six Inch
HC158000A.....	Lubricant-Petrol Gel 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)



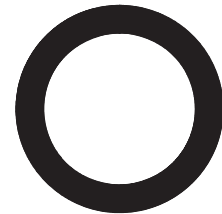
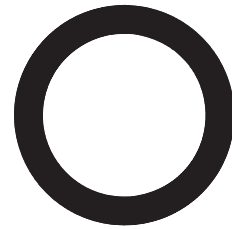
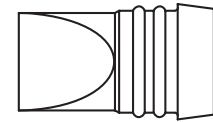
O-Ring Chart

REV 02

SOFT SERVE DISPENSING HEADS



PART NO.
HC160583 ②



PART NO. HC160582 ③
PART NO. HC160501 ④
PART NO. HC199032-01 ⑥

PH.NO. 309-755-4553

O-RING CHART

H.C.DUKE & SON, INC.