



H. C. DUKE & SON, LLC.
2116-8th Avenue • East Moline, Illinois 61244

OPERATOR'S MANUAL

with Illustrated Parts List



**SOFT SERVE
TWIST FREEZER**

**Model
GES-103**

184560 — 1/18

**Operator's Manual
for the
Soft Serve Twist Freezer
Model GES-103**

SAFETY FIRST!

Follow these four steps to safety

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



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

2. Understand Signal Words



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

In this manual, CAUTION messages with the safety alert symbol  call attention to safety messages.

3. Follow Safety Instructions



Read and understand all safety messages in this manual and 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 be legible for the life of the freezer. If you need new decals, use the information and illustrations on pages iv and v of this manual to identify the decal and call or write to H.C. Duke & Son, LLC.

DO NOT attempt to operate the GES-103 Twin Twist 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 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 on the next page. 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 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.

For factory service assistance, contact H. C. Duke & Son, LLC, 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, 3, and 4. 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
-----	----------	-------------


1	HC165025	Decal-Beater Warning (1)
2	HC165246	Decal-Pressurized System (3)
3	HC165126	Decal-Panel Removal Warning (1)
4	HC165048	Decal-Warning Rotating Parts (2)

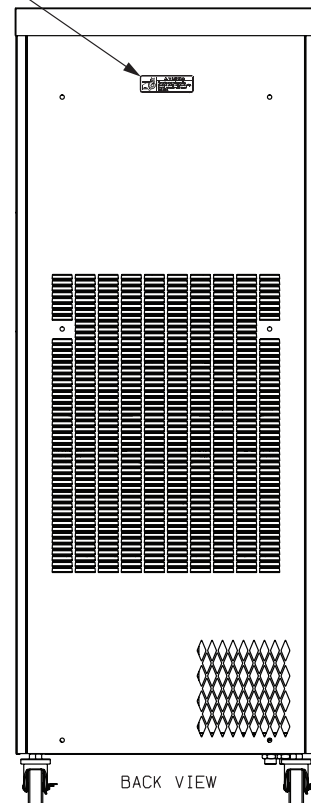
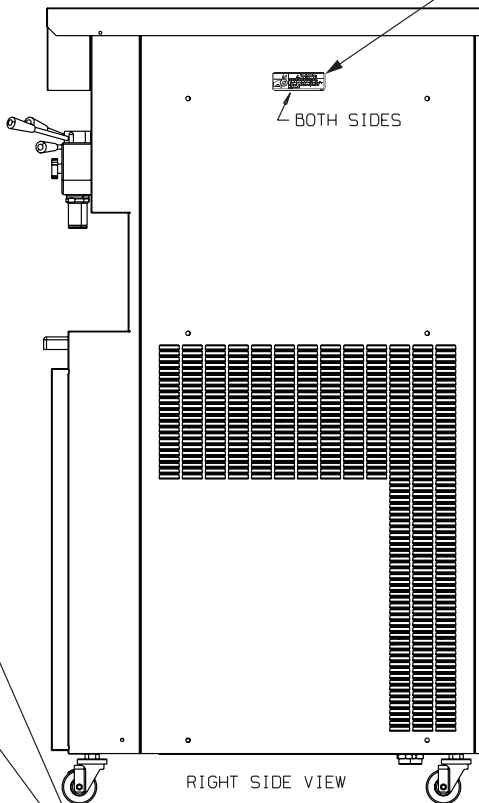
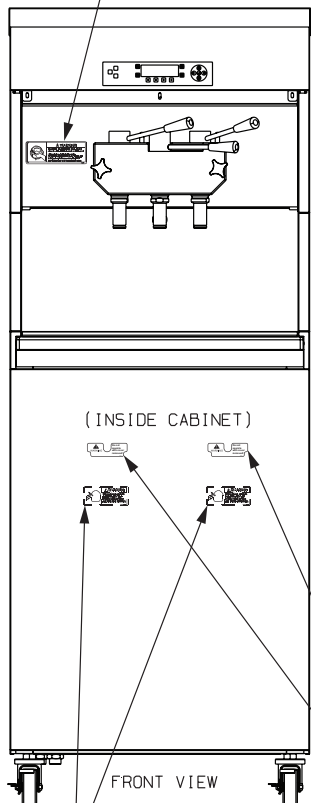
Safety Decal Locations


1 P/N HC165025

	⚠ WARNING
	<p>Hazardous rotating beater shaft. Do not operate unit with dispense head removed.</p> <p>Before removing dispense head:</p> <ol style="list-style-type: none"> 1. Turn all control switches to "OFF", and 2. Disconnect all power supplies. Unit may have more than one power supply.

3 P/N HC165126

	⚠ WARNING
	<p>Hazardous moving parts. Machine starts automatically. Do not operate with panel removed.</p>



	⚠ WARNING
	<p>Pressurized system. Depressurize unit before dismantling mix transfer system.</p>

⚠ WARNING	Do not operate with cover removed!
------------------	---

4 P/N HC165048

2 P/N HC165246

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1 Introduction

The GES-103 Freezer is designed to produce DQ frozen soft serve ice cream or DQ yogurt, with a product serving temperature of 18 to 19°F (-8 to -7°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 in the training of personnel on the proper operation and general maintenance of your Duke freezer.

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

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

If you require technical assistance, please contact your local authorized H.C. Duke & Son, LLC service company:

Name _____

Address _____

Phone _____

or H.C. Duke & Son, LLC Service Dept.
for factory service assistance.

Phone: (309) 755-4553

(800) 755-4545

Fax number: (309) 755-9858

E-mail: service@hcduke.com



2 Note to Installer

This freezer must be installed and serviced by a service technician in accordance with the installation instructions.

After installation the warranty registration card must be completed and returned to validate 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. Also note on the freight bill

1. Remove the carton from the pallet, and move the machine as close as possible to the permanent location.
2. Remove the shipping bolts on the bottom of the freezer (figure 2-1) and install either the legs or casters (figure 2-2).

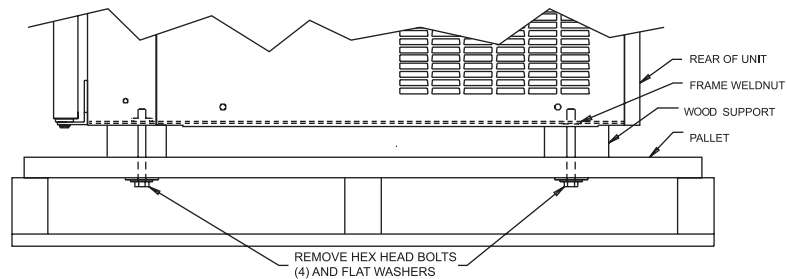


Figure 2-1 Machine bolted to Shipping Base

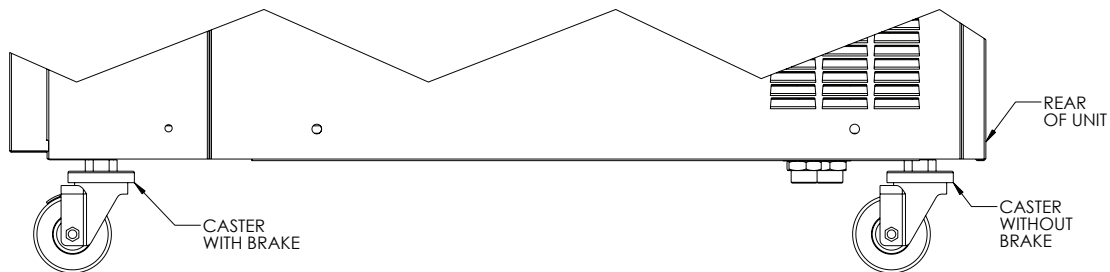


Figure 2-2 Installing Mounting Legs or Casters

NOTE: Screw casters or legs all the way in coupling, then adjust out to level side to side with 1/4 inc (6mm) slope to the front.

— continued

2.2 Installation



CAUTION

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

1. This freezer is designed for indoor use and must be protected from outdoor weather conditions.
2. Where codes permit, we recommend that the freezer be installed on casters and have flexible water and electrical connections for service and cleaning ability.

IMPORTANT:

Unit requires air ventilation. The minimum air space at the sides must be 6 inches (15.2cm) and 1 in.(2.5cm) in the rear or 6 inches in the rear and 1 inch on the sides. Top must have 29 inches clearance. Failure to follow minimum air clearances will void warranty.

3. **All models** require 6 inches (15.3 cm) minimum air space at rear, 1in(2.54 cm) on sides or 6 inch (15.3 cm) on each side and 1inch (2.54cm) at rear. Space above freezer is to be 29 inch (79.7 cm) and is to be provided with an 6 in (15.3 cm) air deflector at rear if boxed on 3 sides. Insure freezer is

not subjected to hot exhaust air from other equipment. Anything blocking ventilation, (e.g. cone dispenser), 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. 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.
6. **Water Cooled** Do not allow freezer to be in ambient where air temperature goes below 0°C (32°F), the freezing temperature of water.
7. **Water consumption** increases if temperature of entering water is above 20°C (65°F)

2.3 Electrical Requirements

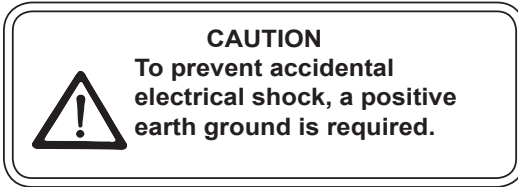


CAUTION

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

1. Always verify electrical specifications on the data plate of each individual freezer. Data plate specifications will always supersede the information in this manual. (See Figure 3-2)
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.

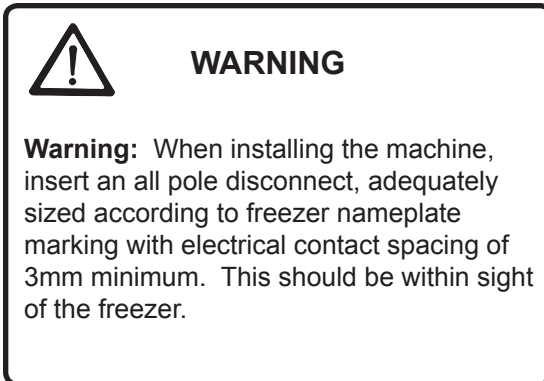
2.4 Electrical Connections



Important!

A positive earth ground is required for electronic VQM system to operate correctly.

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. (See Figure 3-2)
3. Refer to the wiring diagram provided for proper power connections.



4. Electrical connections are made in the junction boxes located mid-level behind the right side panel.

Important

Set switch next to the connection box "UP" for 220-230v or "DOWN" for 208-219V. Failure to set switch to proper voltage will cause damage to the electrical components and will void all warranties.

5. Use a flexible connection when permissible.
6. Beater Shaft Rotation Freezers are designed for clockwise rotation when viewed from front of freezer. 1ph machines are prewired for proper rotation. On 3 phase machines, phase wires to freezer should be connected to produce proper beater rotation. This is to be done by a freezer technician.

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-103

Width-in./cm	26.125/66.36
Height-in./cm	69.875/177.48
Depth-in./cm	38.25/97.16
Weight-lbs./kg	850/386
Compressor (2)	2.5 H.P. /19000 BTUH 2.2 kw (Motor) 3.2 kw (Cooling)
Compressor Cabinet (1)	1/6HP/1000BTUH 125w (Motor) 190w (Cooling)
Beater Motor (2)	2 H.P./1.5 kw
Refrigerant	404a
Charge*	3.75 lb/1.7 kg
Mix Capacity	6 - 5gal. Bags
Cylinder (2)	5 Qts./4.7 Liters
ACR	

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)

*Approximate for each side. See nameplate for actual charge.

3.2 Dimensions

The dimensions of the GES-103 are provided in Figure 3-1, below.

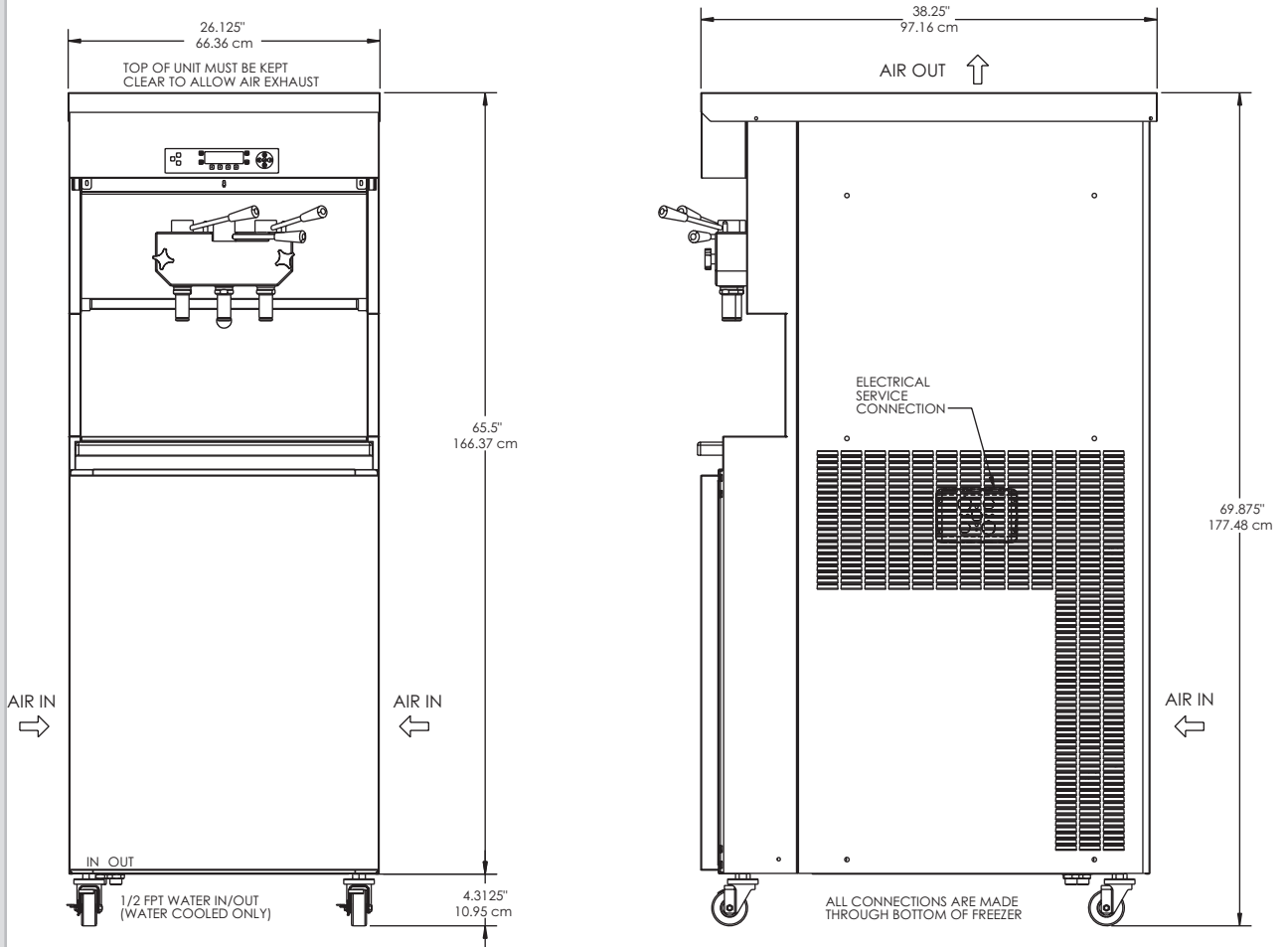


Figure 3-1

3.3 Data Plate

Model: _____
 S/N: _____
 Ph _____ Hz _____ Wire _____ VAC

H.C. DUKE & SON LLC
 2116 8th Avenue
 EAST MOLINE, IL USA
 Assembled in USA

	Left Side			Right Side		
Cyl. Compressor:	RLA	LRA	V	RLA	LRA	V
Beater Motor:	FLA	HP	V	FLA	HP	V
Pump Motor:	FLA	HP	V	FLA	HP	V
Condenser Fan:	FLA	HP	V	FLA	HP	V
Cabinet Fan:				FLA	HP	V
Cabinet Compressor:				RLA	Ph	V

Cylinder Refrigerant: Amt: lb Type: Amt: lb Type:
 Design Pressure PSIG: High: Low: High: Low:

Cabinet Compressor: Refrigerant Amt: oz Type: Design Pressure PSIG High: Low:

Min. Circuit Ampacity: A A ← 5
 Max. Fuse/HACR Cir. Breaker: A A ← 4

UL LISTED NSF
 Ice Cream Maker 186P

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

Figure 3-2 Data Plate

3.4 Reference Information

**Write in
Reference
Information HERE!**



Fill in the following information below as soon as you receive the GES-103. (The item numbers—encircled, below—correspond with the callout numbers above.)

IMPORTANT: Complete for reference:

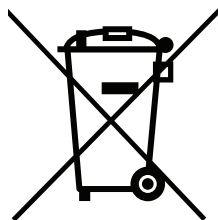
- 1.) Model Number: _____
- 2.) Serial Number: _____
- 3.) Electrical Spec: Voltage _____
Phase _____ Hertz _____
- 4.) Maximum Fuse Size: _____
- 5.) Minimum Circuit Ampacity: _____

3.5 Installation Date

Installation Date _____
 Installed by _____
 Address _____

 Phone _____

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.

3.7 Equipment Videos

To view videos on setting up and priming the GES freezer visit:

http://www.electrofreeze.com/GES_Videos.aspx

4 Virtual Quality Management System (VQM) Terminology

- Beater Run: This D.O.B. timer used to delay the beater motor after the refrigeration shuts down. Beater Run Range: 0 to 10 seconds
- Demand Run Comp:..... The D.O.B. timer used to delay the compressor when product is being drawn. Demand Run Comp. Range: 0 to 12 seconds
- Differential/ Hyst: Symbolizes the differential setting. Differential range: 7 to 20°F i.e. if your cut in is at 18°F and your Differential is at 10°F your unit will cut out at 8°F
- Dual Diff:..... The differential used when product is being drawn out of the center spigot. Dual Differential range: 7 to 20°F
- Idle:..... When the unit is cycling on temperature and no product is being dispensed
- Idle Run Comp:..... Delay on break (D.O.B.) timer used for the compressor when the unit is in idle mode/no product being drawn. Idle Run Comp. Range: 0 to 20 seconds
- Lock outs: Allows the function of a specific feature/button to be temporarily disabled to deter un-necessary usage of that feature.
- Main P.C. Board:..... Main Control board for the unit, housed behind the trim strip panel. This board has many connectors on it and is responsible for the main operations of the unit.
- Membrane Switch:..... The black Electro Freeze decal visible on the front of the unit, which houses the hidden operator, technician, soft, and hard keys used to navigate the menus
- Relay Board..... A control board located in the main electrical control box. This Board contains no software, only solid state control relays to operate system components.
- Single Diff: The differential used when product is being drawn out of one barrel. Single Hysteresis range: 7 to 20°F

4 Virtual Quality Management System (VQM) Terminology (continued)

Slope/Demand Slope: Utilizes a function within the system to watch the temperature change as the unit freezes a barrel. If utilizing the slope feature and the unit sees a lack of temperature change during freeze down, the unit will cycle off. This will prevent a freeze up condition due to a long run time. Demand Slope range: 0 to -0.2

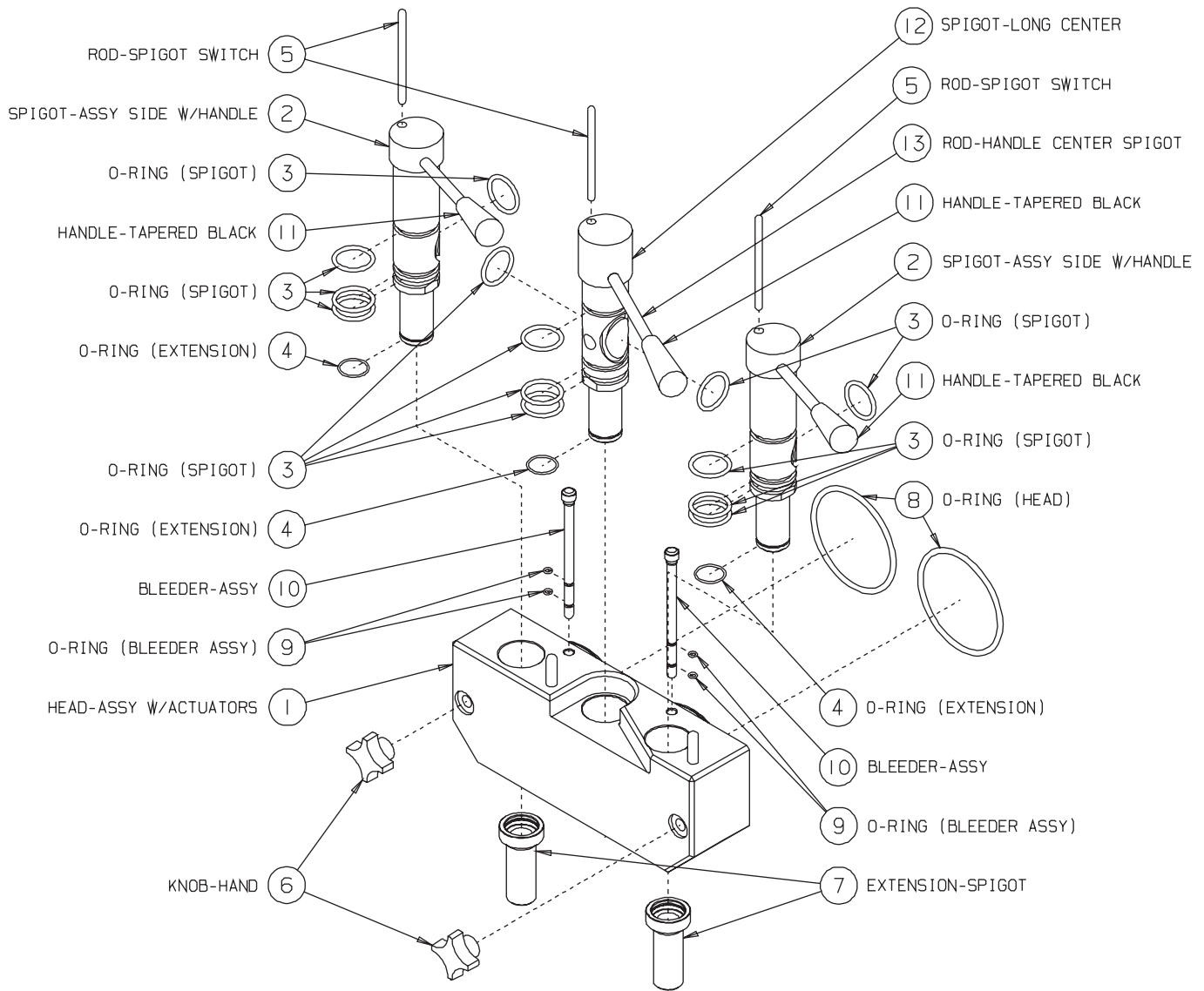
Temp. Comp.: Temperature compensation, utilized when the slope feature is turned on. It prevents the system from seeing the slope temperature curve until a determined temperature is reached. Once that temperature has been reached then the system will examine the curve and shut down if necessary. Temp. Comp. Range: -10 to 22°F

Temperature Offset: A function that allows temperature adjustment to the operator. Adjustable from 1-9 and 5 being neutral/no change, Lower than 5= colder and greater than 5=warmer

Transducer: An electronic control used to measure the cylinder pressure for mix pump operation.

U.I./ User Interface: The board that lies directly behind the membrane switch on the front panel. This board houses the LED screen that displays the menus and operations. The membrane switch is connected to this board via a ribbon cable. This board also has its own software.

5 Part Names and Functions



M01586

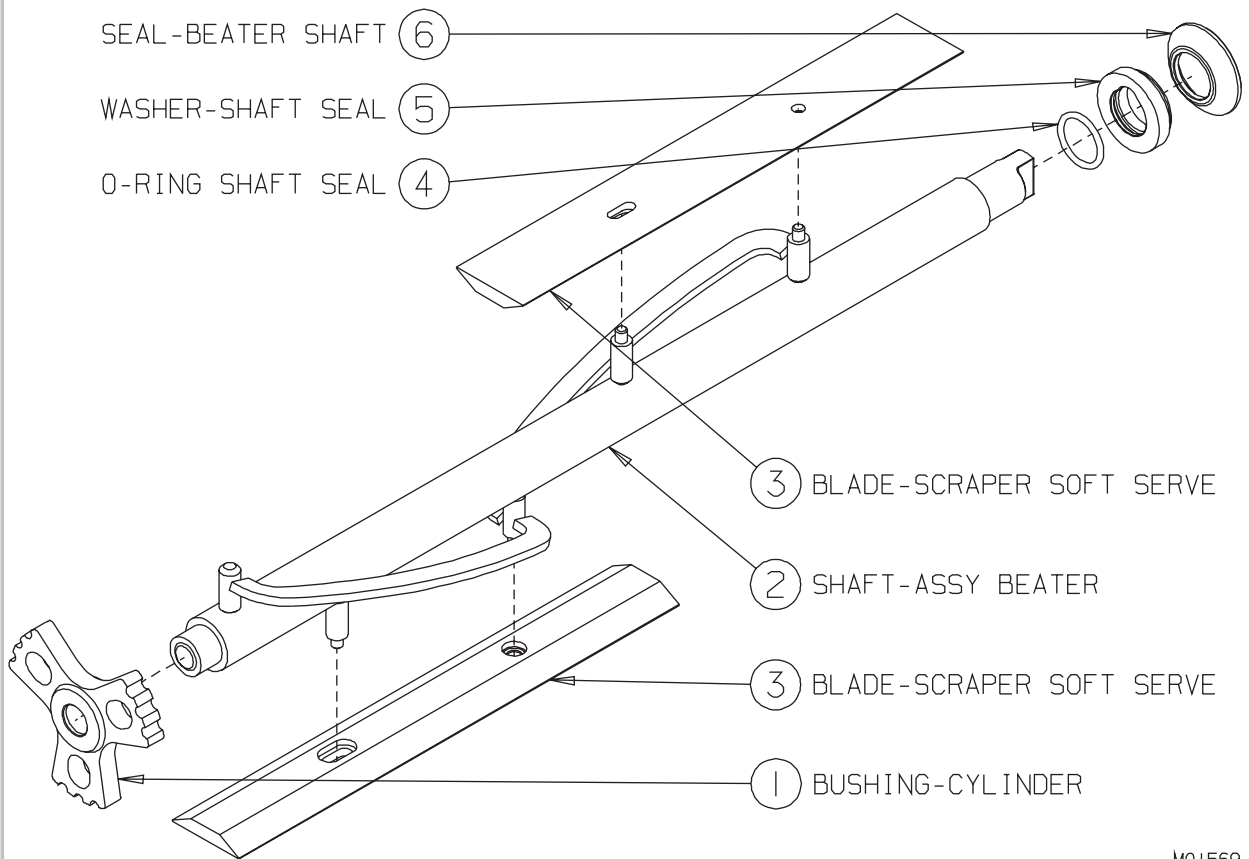
Figure 5-1 Head Assembly

5 Part Names and Functions (continued)

The following descriptions apply to figure 5-1. The number preceding the part name corresponds to the number in the figure.

- | | |
|--|---|
| <p>1.) HEAD:
Encloses the freezing cylinder and provides an opening for product to be dispensed. NOTE: Beater motors will not operate with the head removed from the freezer.</p> | <p>10.) PLUG-AIR BLEED (BLEEDER ASSY.):
Seals the air bleed opening in the head when closed. Allows excess air to be removed from the cylinder when priming.</p> |
| <p>2.) SPIGOT - ASSEMBLY SIDE WITH HANDLE (STAINLESS STEEL):
Seals the product opening in the head when closed. Allows product to flow when open.</p> | <p>11.) HANDLE-TAPERED BLACK (PLASTIC):
Black plastic handle that fits onto the stainless steel handle.</p> |
| <p>3.) O-RING - SPIGOT:
Seals the spigot in the head. Must be lubricated to seal and slide properly.</p> | <p>12.) SPIGOT-LONG CENTER WITHOUT HANDLE (STAINLESS STEEL):
Seals the product opening in the dispense head when closed. Allows product to flow when open.</p> |
| <p>4.) O-RING - SPIGOT EXTENSION:
Holds the extension on to the spigot.</p> | <p>13.) ROD-HANDLE CENTER SPIGOT (STAINLESS STEEL):
Opens and closes the spigot to start and stop the flow of product from the freezer.</p> |
| <p>5.) ROD - SPIGOT:
Starts the freezer when dispensing. Must be in place before freezer will operate.</p> | |
| <p>6.) KNOB-HAND:
Secures the head to the freezing cylinder.</p> | |
| <p>7.) EXTENSION - SPIGOT: (ACCESSORY)
Extends the product opening down to shape the product as it is dispensed.</p> | |
| <p>8.) O-RING - HEAD:
Seals the head to the freezing cylinder. Must be lubricated.</p> | |
| <p>9.) O-RING-AIR BLEED PLUG:
Seals the air bleed plug in the head.</p> | |

5 Part Names and Functions (continued)



M01569

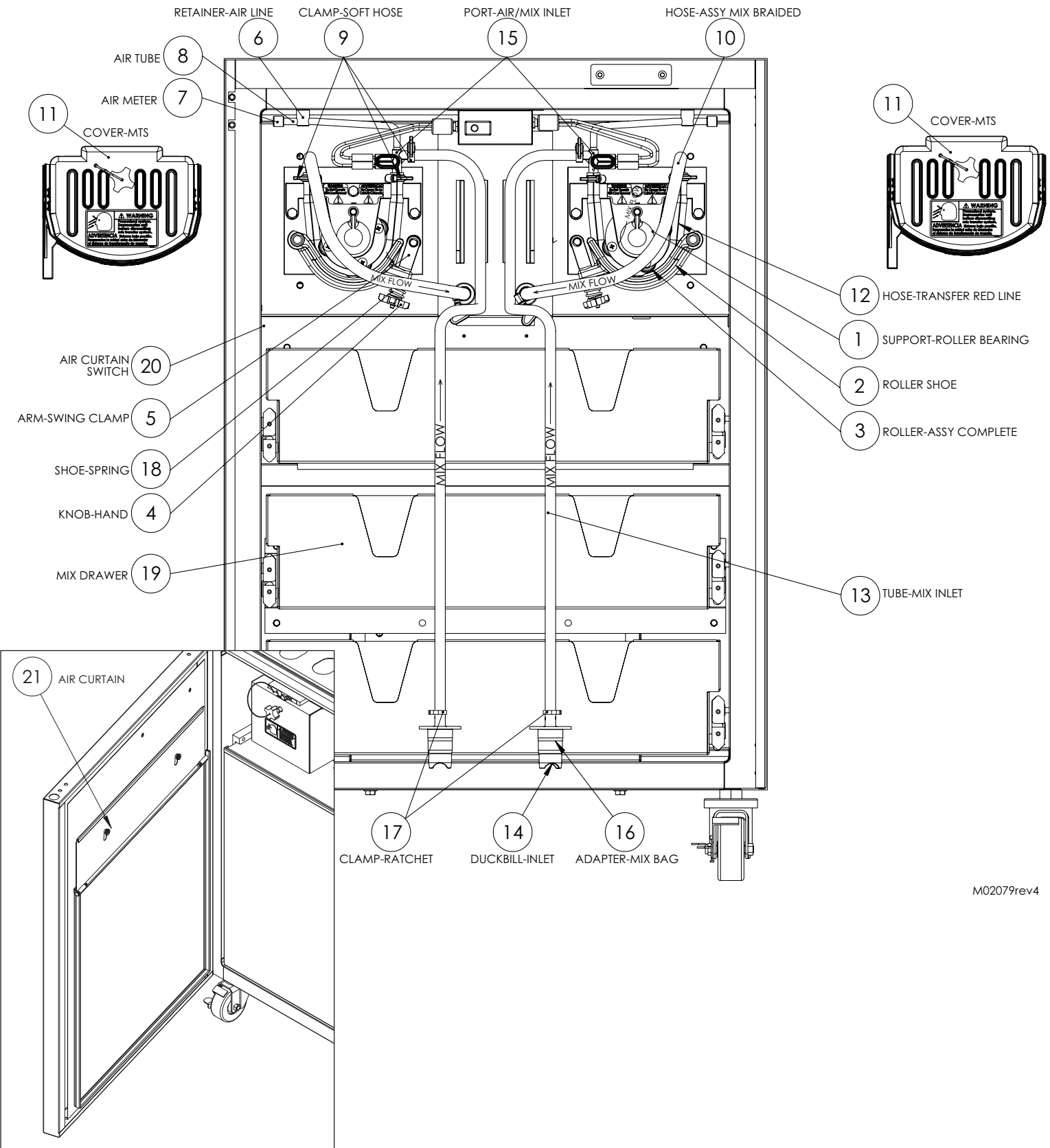
Figure 5-2 Beater Shaft Assembly

5 Part Names and Functions (continued)

The following descriptions apply to figure 5-2. The number preceding the part name corresponds to the number in the figure.

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

5 Part Names and Functions (continued)



M02079rev4

Figure 5-3 Mix Transfer System (MTS)

5 Part Names and Functions (continued)

The following descriptions apply to figure 5-3. The number preceding the part name corresponds to the number in the figure.

- | | |
|--|--|
| <p>1.) SUPPORT - ROLLER BEARING:
Holds roller assembly in place.</p> <p>2.) SHOE - ROLLER:
Provides an opening to insert the mix transfer hose. Squeezes transfer hose against rollers.</p> <p>3.) ROLLER ASSEMBLY COMPLETE:
Squeezes mix/air through tubing to freezing cylinder.</p> <p>4.) KNOB - HAND:
Locks roller shoe in position.</p> <p>5.) ARM - SWING CLAMP:
Swings hand knob into position over roller shoe.</p> <p>6.) RETAINER - AIR TUBE:
Holds air meter tube in the "up" position.</p> <p>7.) AIR METER:
Regulates the amount of air being drawn into the system.</p> <p>8.) TUBE - AIR:
Provides connection for the air meter.</p> <p>9.) CLAMP - ASSY. SOFT HOSE 5/8":
Prevents mating parts from leaking.</p> <p>10.) HOSE - ASSY. MIX BRAIDED:
Connecting tube between the Mix Transfer System and the cylinder inlet.</p> <p>11.) COVER - MTS:
Protection against moving parts. Cover must be in place for the MTS to operate.</p> <p>12.) HOSE - TRANSFER RED:
Special "red-lined" hose that is squeezed by rollers to transfer mix to freezer.</p> | <p>13.) TUBE - ASSEMBLY MIX INLET:
Carries mix from mix container to MTS.</p> <p>14.) DUCKBILL:
A rubber check valve that prevents mix from falling back into the mix container.</p> <p>15.) PORT - AIR/MIX:
Blends air and mix as it flows into the transfer hose.</p> <p>16.) ADAPTER - MIX BAG:
Connects the mix inlet tube to the mix bag.</p> <p>17.) CLAMP-HOSE RATCHET:
Plastic clamp for connecting bag adapters to hose.</p> <p>18.) SHOE - SPRING:
Holds clamp in place.</p> <p>19.) MIX DRAWER:
Storage area for mix bags.</p> <p>20.) AIR CURTAIN SWITCH:
Detects if air curtain is in position for cleaning.</p> <p>21.) AIR CURTAIN:
Located inside cabinet door. Used when cleaning MTS pumps with mix in shelves. Automatically refrigerates cabinet when positioned in front of shelves.</p> |
|--|--|

6 Operator Controls

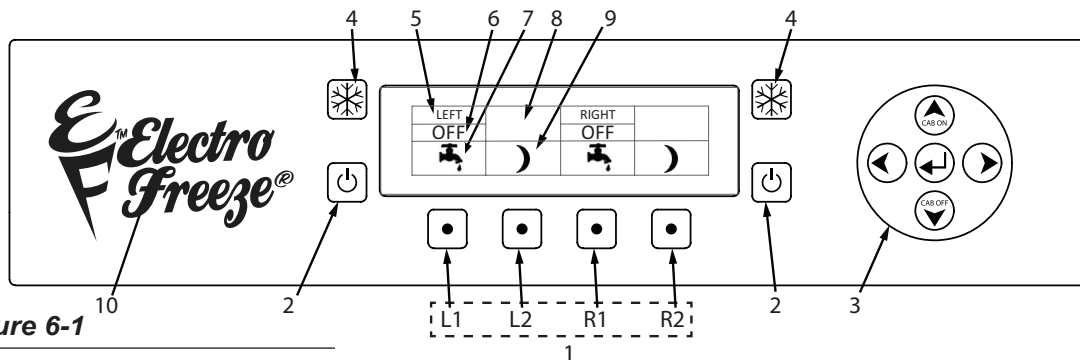


Figure 6-1

The following paragraphs describe the operator controls. Refer to Fig. 6-1 for numbered items in description. Note the left side controls operates the left side cylinder and hopper. Operation for right side controls is the same. The display window has three levels of display: Operators Menu, Technician Menu, and Factory Menu. The last two menus are 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.

To view videos on the GES freezer visit:
http://www.electrofreeze.com/GES_Videos.aspx

IMPORTANT

DISPENSING HEAD MUST BE INSTALLED FOR BEATER MOTOR(S) TO OPERATE. DO NOT INTERCHANGE HEADS FROM OTHER FREEZERS.

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 as well as turning the cabinet on/off.
 UP Arrow - Energizes Cabinet refrigeration only when freezer is in OFF position.
 DWN Arrow - De-energizes Cabinet refrigeration only when CAB Refrig is ON.
 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.

6 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. Hopper 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. **Night** – This is the indicator when 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 hopper 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.

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. Night Mode Operation

As pictured, the Soft Key located below the image of the Moon will allow the machine to be switched into NIGHT refrigeration mode. This feature is used at the closing of the day’s business to hold the product at safe storage temperatures but not in a frozen state.

10. Hidden Operator Menu Key

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

6 Operator Controls (continued)

12 Power Switch See Figure 6-3

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.

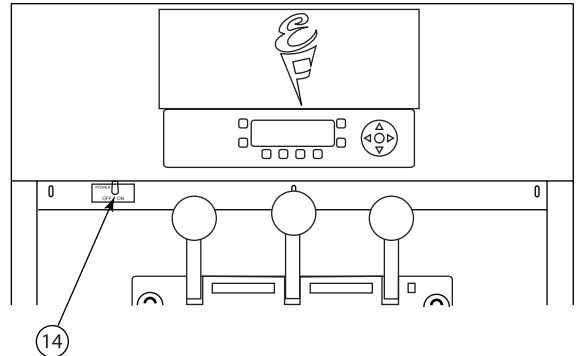


Figure 6-3

7 Operator Display Menus

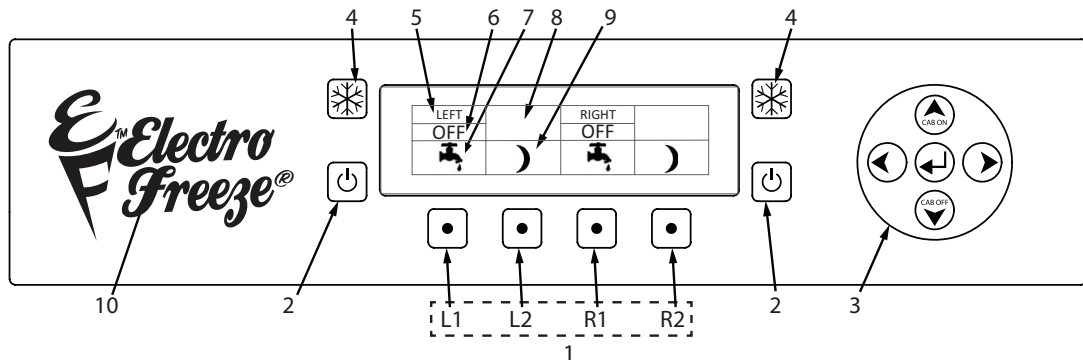


Figure 7-1

To Enter the Operator Menu, push and hold the hidden key (11) under the F for 3 seconds (figure 7-1).

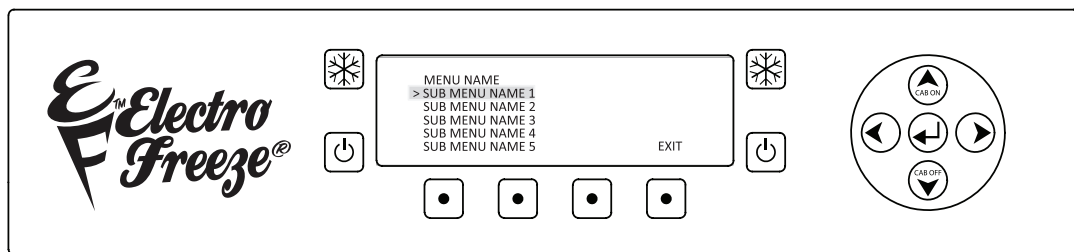


Figure 7-2

The operator menu will show up on the screen (figure 7-2). 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.

7 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.

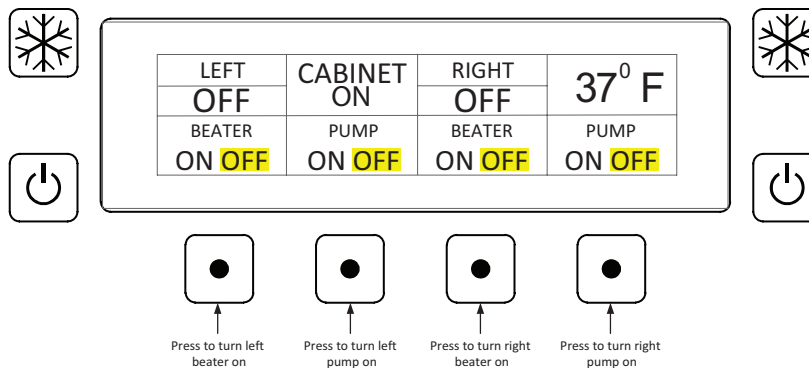
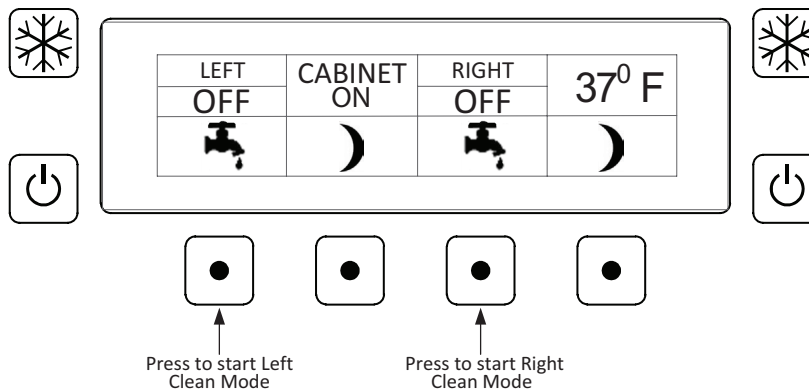
Last Clean: Displays the Last time the unit has been cleaned

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	GES or SLX

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 Operator Display Menus (continued)

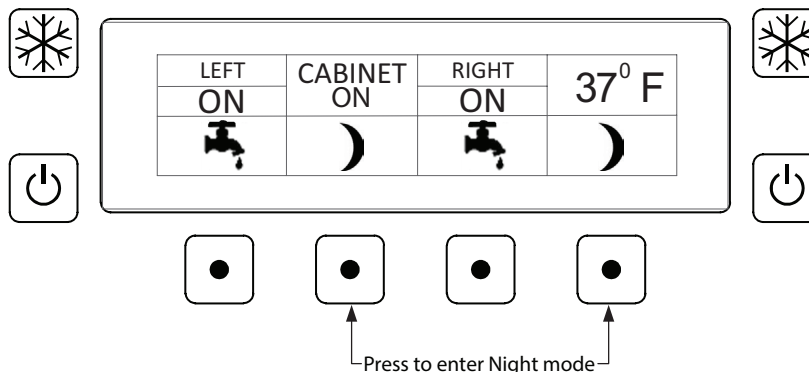


Night Mode Operation

As pictured below, the Soft Key located below the image of the Moon will allow the machine to be switched into NIGHT refrigeration mode. This feature is used at the closing of the day's business to hold the product at safe storage temperatures but not in a frozen state.

PLEASE NOTE: Dairy Queen allows the Night mode to be used for 72 Hours before the machine MUST be disassembled and cleaned per instructions in this manual.

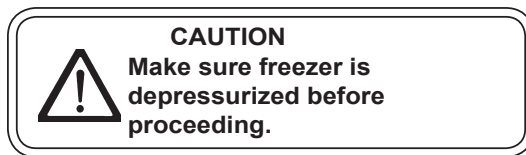
During the use of the NIGHT mode, the computer will monitor the system and maintain a mix holding temperature of 36°F (2.2°C) or below. The beater will cycle throughout this mode to maintain product circulation through the dispensing head.



8 Disassembly and Cleaning

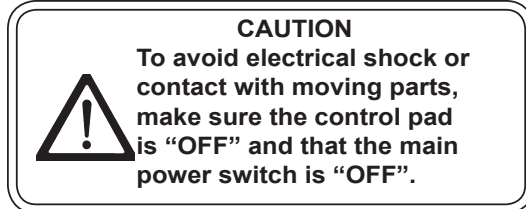
Safety Information

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 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.
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 11, Closing Procedures, 11-1 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.

8.1 Cleaning Accessories

The following accessories are necessary for cleaning, sanitizing, and disassembly/assembly (Figure 8-1):

1. **HC158009 Brush & HC158012 HANDLE:** 4 inch diameter and 27 inch handle used to clean the shake cylinder.
2. **HC158019 Brush:** 9/16 inch diameter 40 inch overall length used to clean drain tube, the mix feed tube in the ceiling of the cabinet and the pickup tube.
3. **HC158018 Brush:** 7/16 inch diameter 12 inch overall length used to clean transfer hose, braided hose, and the air relief opening in the dispense head.
4. **HC158026 Brush:** 1 inch diameter 12 inches long used to clean the disassembled shaft seal and bushing.
5. **HC158037 BRUSH:** 1/4 inch diameter 18-1/2 inches overall length used to clean the air meter hose, the small hole in the back of the dispense head and small parts.
6. **HC169374 Tool - O-ring Removal:** Aids in removing o-rings from plunger, head, air relief plug, and spindle.
7. **HC158054A Lubricant - LUBRI-FILM PLUS:** Approved lubricant for moving parts and o-rings.
8. **HC196103 Bottle, Wash:** Used to flush the hose cavity, roller assembly and plunger.
9. **HC115538 Kit - O-ring:** Contains all o-rings and seals needing replacement on a regular basis. (not shown)

To view videos on the GES freezer visit:

http://www.electrofreeze.com/GES_Videos.aspx

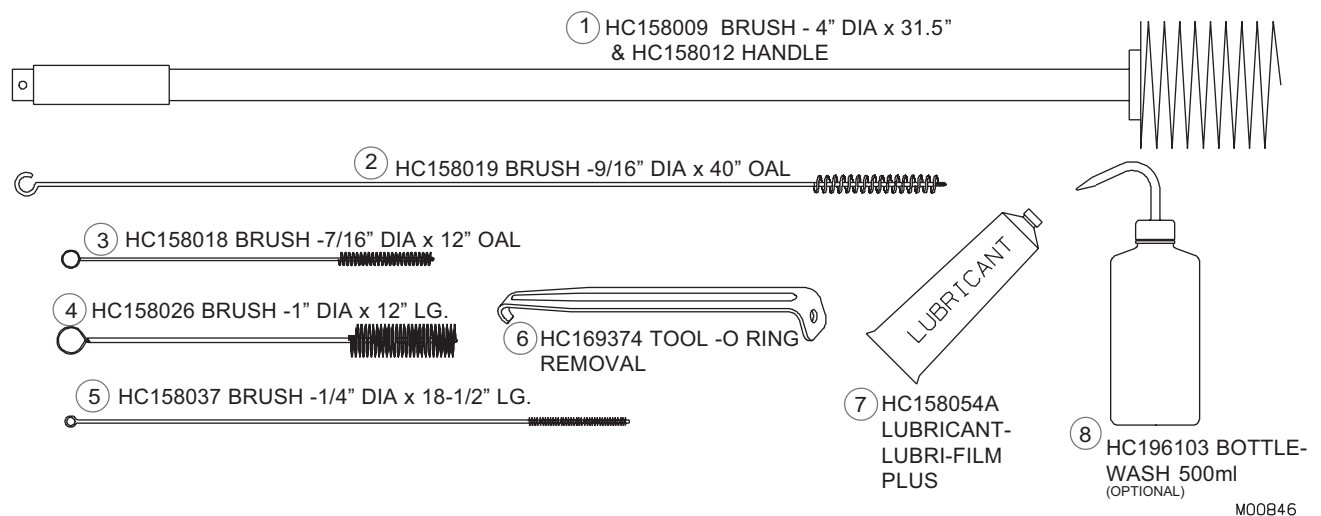


Figure 8-1 Cleaning Accessories

8.2 Disassembly Instructions

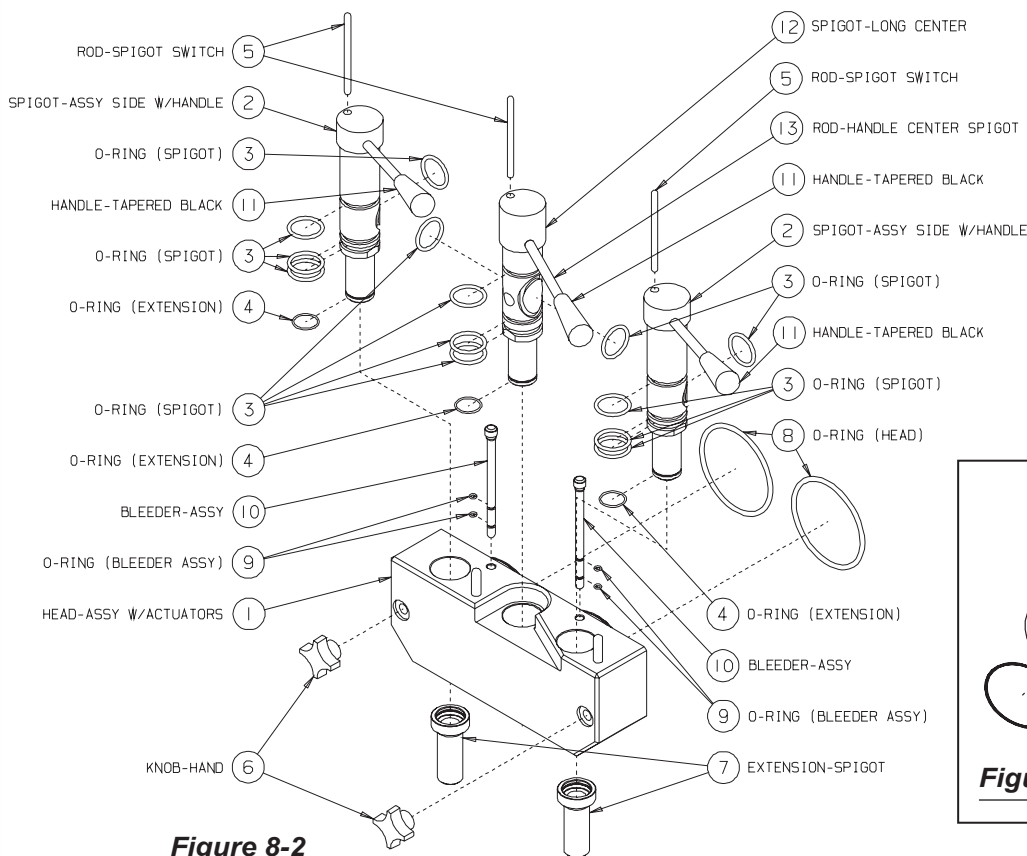


Figure 8-2

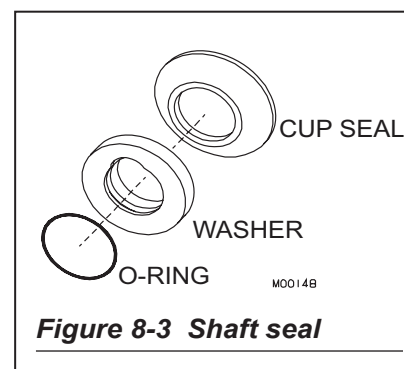


Figure 8-3 Shaft seal

Your freezer is designed for cleaning MTS pumps with or without Cabinet refrigeration. Use the Cabinet refrigeration if the mix bags will not be removed from shelves during cleaning. These instructions will provide steps and notations for:

Cleaning with Mix Stored in drawers - If cabinet is clean and has no mix spills, perform these functions

Cleaning with Mix Stored in remote Cooler - If mix has been splashed/spilled on shelf and on Cabinet walls, perform these functions.

CAUTION

To avoid electrical shock or contact with moving parts, make sure all controls are in the "OFF" position and that the main power switch is turned "OFF". 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.

1. If there is product in the freezer, refer to Sec. 9 Closing Procedures, 9.1 Draining Product. Take the following items to the cleaning sink
2. (See figure 8-2.) Remove the spigot rods (5) by lifting up out. Remove the hand knobs (6) and pull the dispensing head (1) straight out.
3. Remove the cylinder bushings and beater shafts from the cylinders.
4. Remove the scraper blades and shaft seals from the beater shafts. Remove

—continued

To view videos on the GES freezer visit: http://www.electrofreeze.com/GES_Videos.aspx

8.2 Disassembly Instructions (continued)

the drip tray and drip tray insert.

5. (See figure 8-3.) Remove the cup seals and o-rings from the plastic washers on the shaft seal assemblies.
6. Remove the spigot assemblies, air bleed plugs, and o-rings from the head and spigot assemblies.
7. Cleaning with Mix Stored on Shelf Insure air curtain is installed for Cabinet Refrigeration (figure 8-6).

Cleaning with mix stored in remote cooler - Move mix to cooler, remove shelves and move them to cleaning sink.

8. Remove the MTS hose assemblies form the Mix Transfer Systems as follows (figure 8-4):

- a. remove cover,
- b. loosen the hand knob,
- c. swing back the shoe clamp,
- d. swing open the roller shoe,
- e. loosen the clamp on braided hose,
- f. remove duckbill in mix adapter, keep adapter in bucket.
- g. Slide hose assembly out of roller support housing, this will allow water in tube to drain into bucket.

pull tube off cylinder inlet and slide hose assembly out of roller support housing.

9. Disassembly MTS hose assemblies as shown in figure 8-5, and take to cleaning sink.

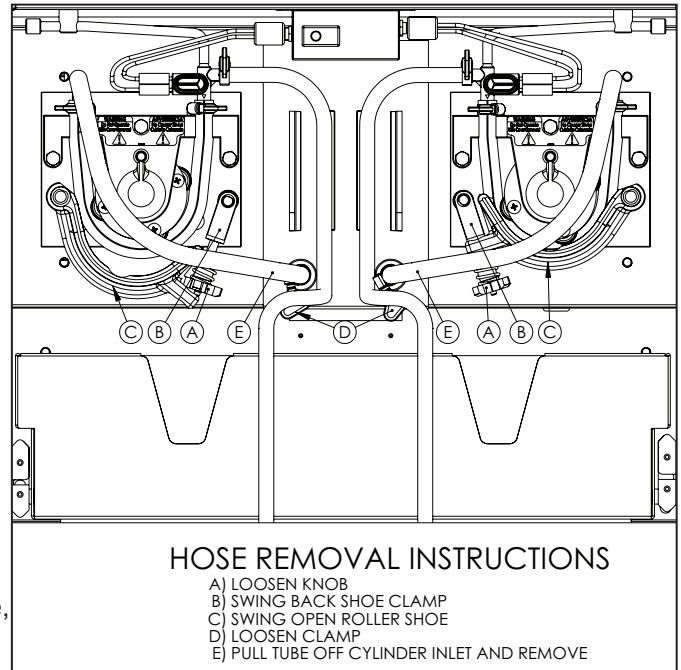


Figure 8-4 MTS

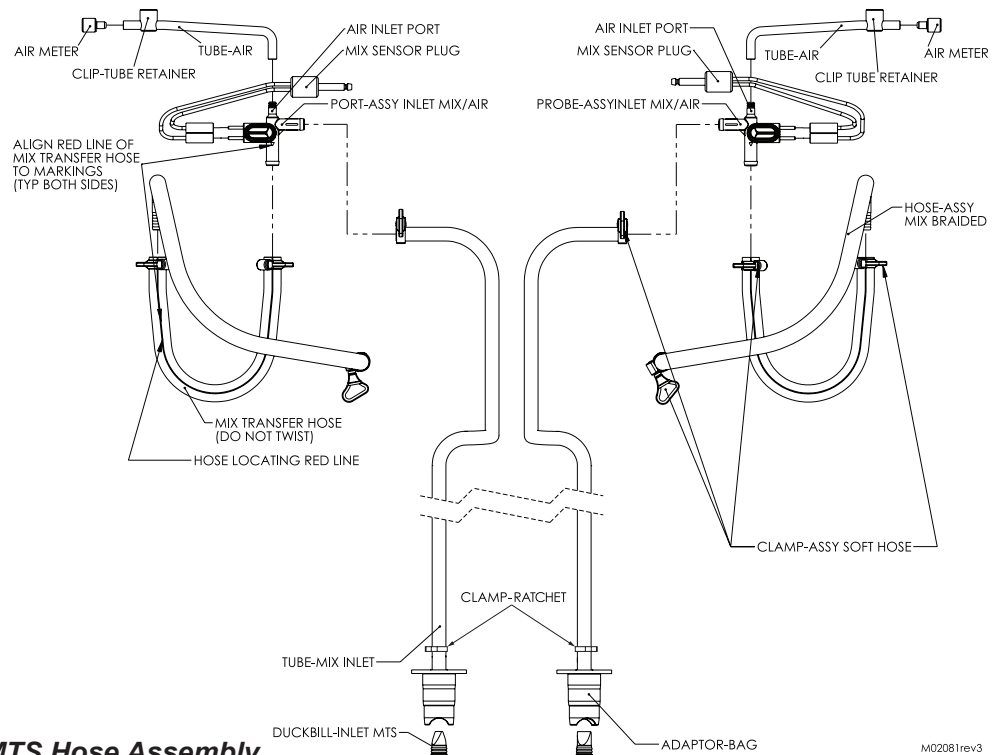



Figure 8-5 MTS Hose Assembly

M02081rev3

8.3 Cleaning Instructions


CAUTION

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



CAUTION

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



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

1. Prepare a three compartment sink for washing, rinsing, and sanitizing parts removed from the freezer, per applicable 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.

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

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

- a. the MTS connector, bag adapter and hoses
- b. the head spigot openings, center spigot ports, o-ring grooves, dispense nozzle mounting rings, and mix ports, as shown in figure 8-7.

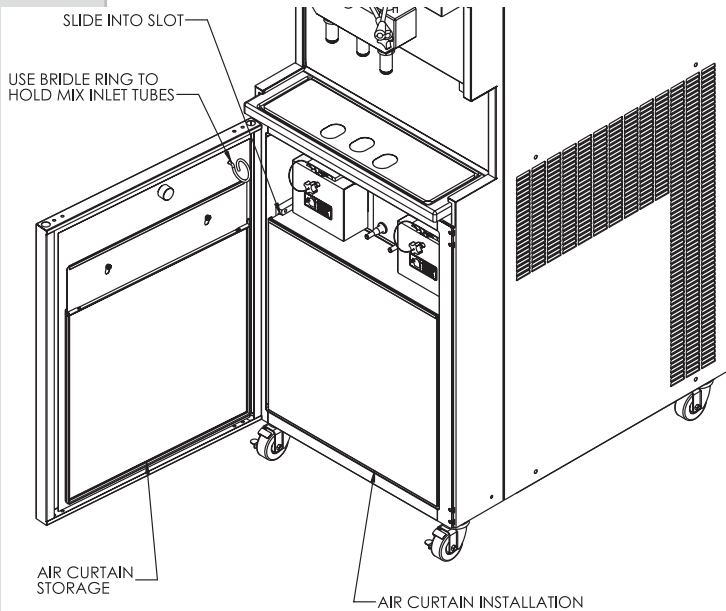


Figure 8-6

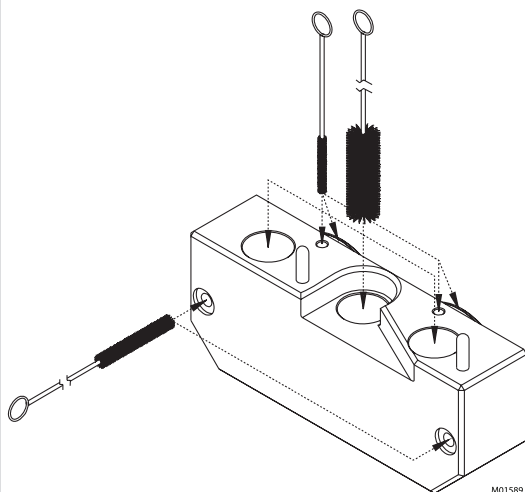


Figure 8-7

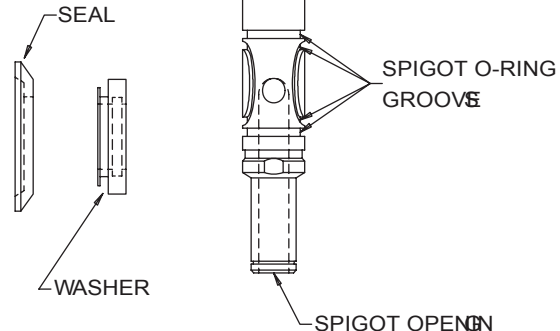


Figure 8-8

—continued

8.3 Cleaning Instructions (continued)

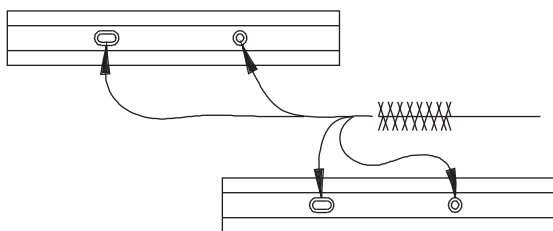


Figure 8-9 Scraper Blade pin holes

- c. the spigot o-ring grooves, nozzles, the shaft cup seals, plastic washers and o-rings as shown in figure 8-8.
- d. the air bleed plug o-ring grooves
- e. the beater shaft and the scraper blade pin holes, as shown in figure 8-9.

Important:

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

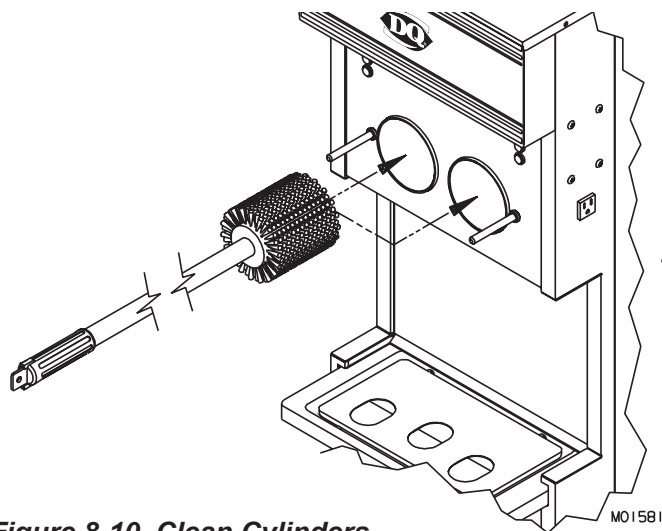


Figure 8-10 Clean Cylinders

3. After all parts are washed and, rinsed, place them in the sanitizing solution. For proper sanitizing, the parts must remain fully immersed in the sanitizer for 5 minutes. Allow the parts to air-dry after sanitizing.
4. The following must be thoroughly brushed first with a warm dish detergent solution, then rinsed with clear water followed by the sanitizing solution.

- a. mix feed tubes from the refrigerated cabinet to the cylinders as shown in figure 8-11
- b. the inside of the cylinders including the back wall as shown in figure 8-10.
- c. the inside of the drain tube as shown in figure 8-11.

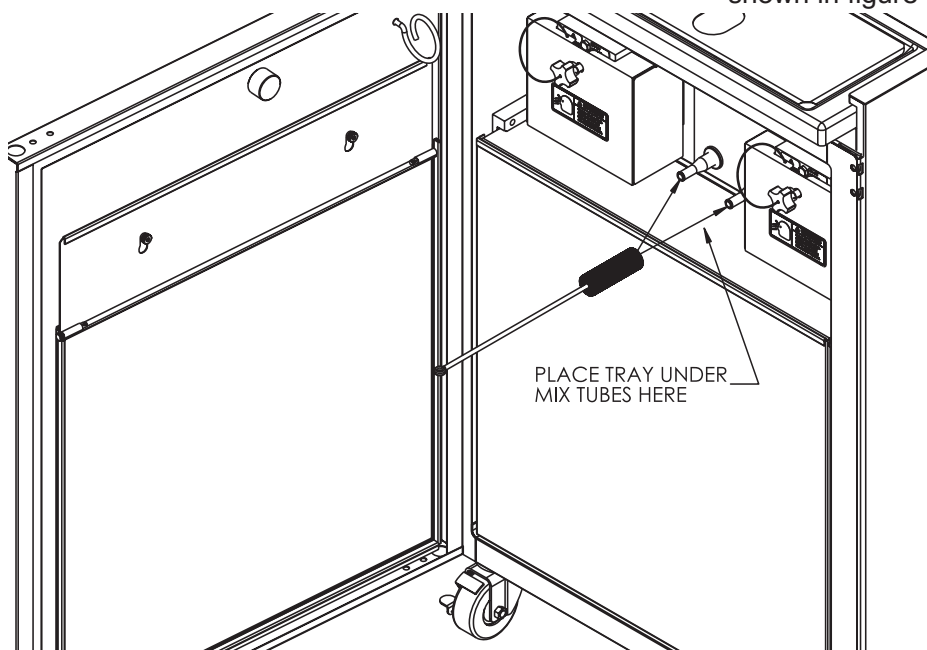


Figure 8-11 Brush inside of cylinder mix feed tubes

8.3 Cleaning Instructions (continued)

5. Remove the drip tray and insert. Wash in a warm dish detergent solution rinse with clear water and place in sanitizing solution for 5 minutes.
6. Cleaning with Mix Stored in remote Cooler - Wash the inside of cabinet walls with a warm dish detergent solution. Rinse with clear water. The slides can be removed for cleaning by tilting the bottom out and lifting straight up (figure 8-13) . Do this with the slide in retracted position (not extended). Bearing mounted on wall should just be wiped down.

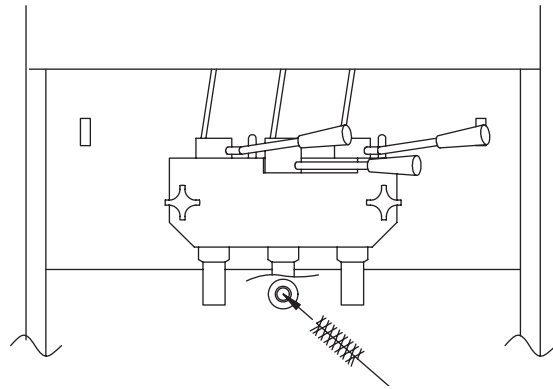


Figure 8-12 Clean Drain Tube

IMPORTANT: Clean drawers with warm dish detergent and rinse with clear water. DO NOT immerse drawers in water or put in dishwasher, drawers should be wiped down as needed with sanitizing solution.

Replace worn brushes.

Use only original or authorized replacement parts.

See Accessories Parts List in Part II of this manual to order new brushes.

NOTE: Slide rails are LT/RT side position sensitive. Look for marking to identify slide when part is reassembled.

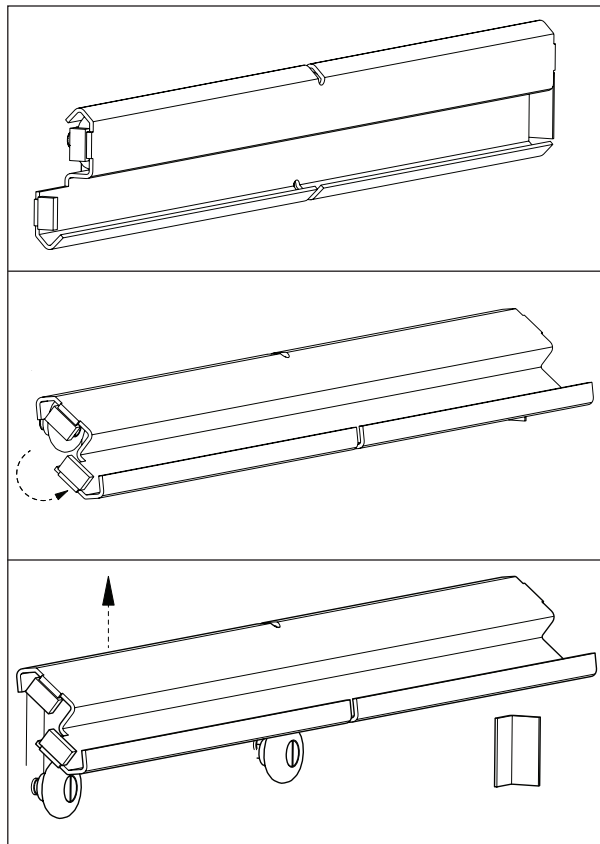


Figure 8-13 Slide Removal

8.3.1 Cleaning and Lubricating - MTS Assembly

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

NOTE: It is recommended this procedure is done when the cabinet is empty of mix.

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 8-11.
2. Carry to the sink, wash in mild detergent with the brush provided and dry thoroughly.
3. Brush in between rollers. Flush clean with water bottle.

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

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

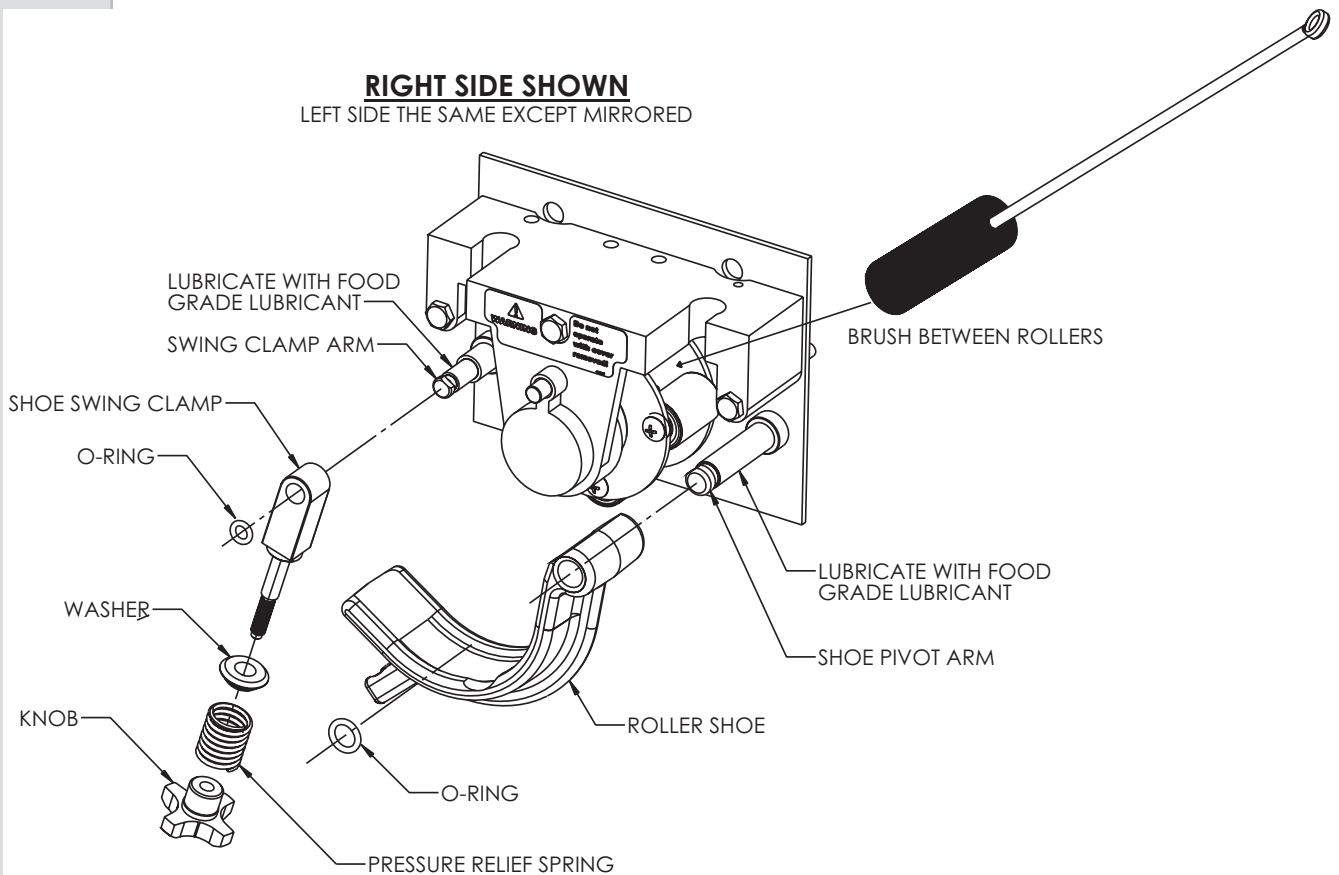



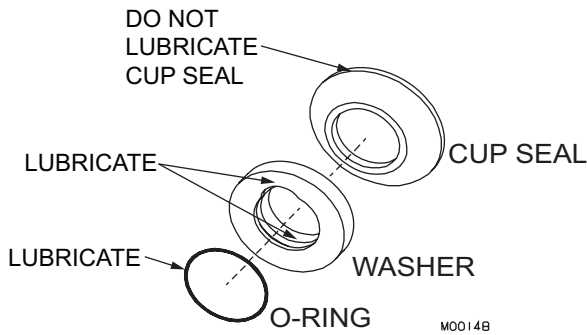
Figure 8-14

M02082

9 Assembly

CAUTION

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

Three Piece Shaft Seal

Figure 9-1 Shaft Seals

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

1. Install the cup seal and o-ring on the washer (see figure 9-1). Apply a light amount of approved sanitary lubricant (such as Lubri-Film Plus) 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 seal.
2. Install the shaft seals over the rear of the beater shafts. If using the three piece shaft seal the bell-shaped portion will be facing the rear of the freezer (see figure 9-2). Remove excess lubricant from the drive end of the beater shaft.
3. Place the scraper blades on the beater shafts, making sure the blades are installed properly. Proper blade installation is with flat side against cylinder wall. (See figure 9-3.)

—continued

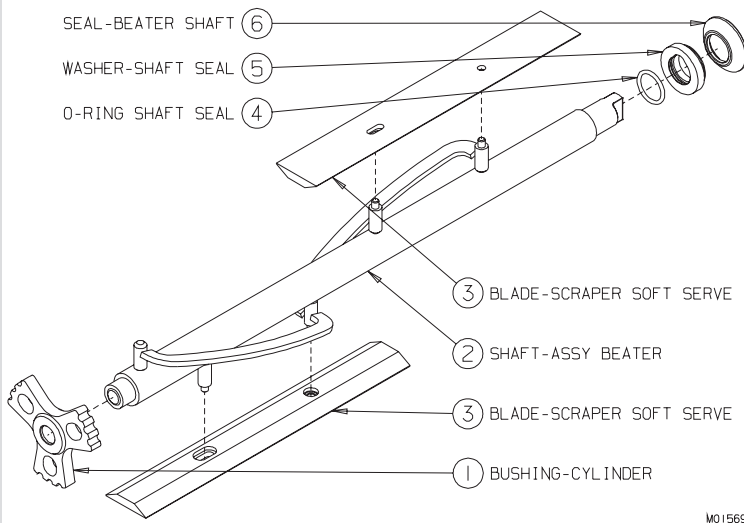
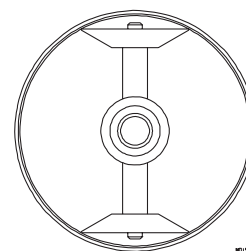


Figure 9-2 Beater Shaft Assemblies



PROPER BLADE INSTALLATION IS WITH FLAT SIDE AGAINST CYLINDER WALL.

Figure 9-3

9 Assembly (continued)

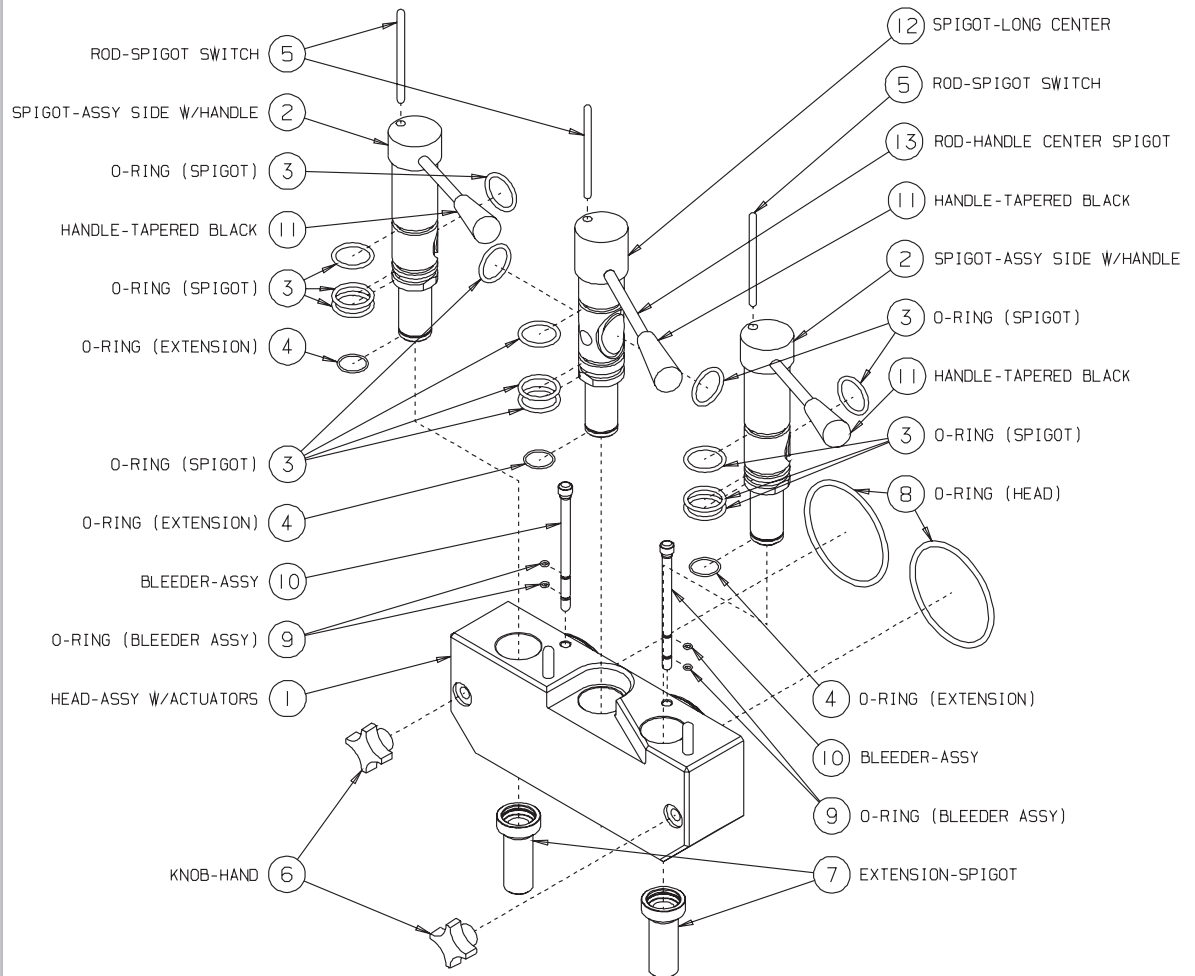


Figure 9-4 Head Assembly

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. Slide beater shaft into cylinder until shaft engages drive coupling. Repeat for second cylinder assembly.
5. Lubricate the inside surface of the cylinder bushings and place on the end of the beater shaft assemblies. The bushings will slide on only one way.
6. See figure 9-4. Install and lubricate the o-rings (3) (see o-ring chart, last page) on the dispensing spigots (2,12) and insert the spigots into the head (1). Check by turning the spigots side to side, making sure they move freely.
7. Place the extension or holding o-ring (4) onto the spigots. Do not lubricate this o-ring.
8. Install and lubricate the 4" head o-rings(8).
9. Install and lubricate the o-rings (9) on the air bleed plugs (10). Insert the plugs in the head assemblies (1).
10. Install the dispensing head onto the freezer by aligning the studs with the holes in the head and sliding toward the freezer. Finger-tighten the hand knobs evenly.

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

—continued

9 Assembly (continued)

Important:

Always make sure the head bushing is positioned on the beater shaft properly. Operating the freezer with a missing or badly worn bushing will damage the beater and cylinder.

11. Install the spigot rods (5). For yogurt mixes, install the nozzles on the mix outlet at the bottom of the spigots before sanitizing.

Important:

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

Important:

Use original H. C. Duke 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 every 30 days.

12. Assemble the MTS hose assembly as shown in figures 9-5. The transfer hose has a red locating line. With the red locating line up, slide the mix transfer hose onto the port and align red line to arrow on connector. Then slide a clamp over the hose to secure it to the port. Insert 90° elbow into transfer hose and align so elbow is 45° up from work surface, slide clamp in position. Finger tighten only! The thumbscrew must lie parallel to the mix/air inlet port.

14. Insert the duckbill valve into the bottom of the bag adapter. Push until the two ribs are completely inserted.

15. Refer to figure 9-6. 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 bag adapter stretch the hose around the roller bearing support and push the hose into the slot.

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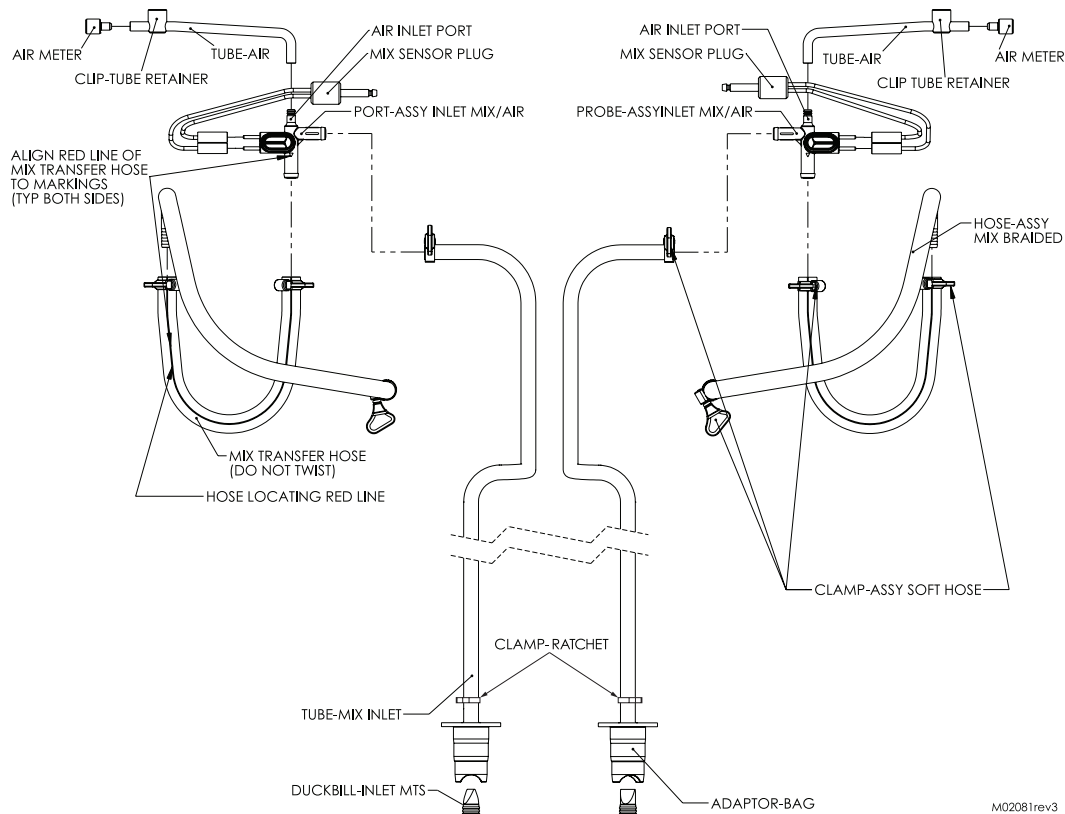


Figure 9-5 MTS Hose Assembly

9 Assembly (continued)

Important:
Do not twist the hose assembly while installing.

16. Check to ensure the transfer hose is straight and centered on the roller assembly by observing the locating line. The line should be in the same position at the inlet and outlet guides of the roller bearing support, as shown in figure 9-6.

17. Swing the shoe over hose and tighten the swing clamp hand knob in place.

18. Insert the air tube into the retainer in the top of the cabinet.

19. Insert sensor probe in to top cab wall and mix inlet housing.

20. Insert the MTS cover over stud. Hose clamps should be exposed. Tighten cover knob. Hand tighten only.

21. 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.

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

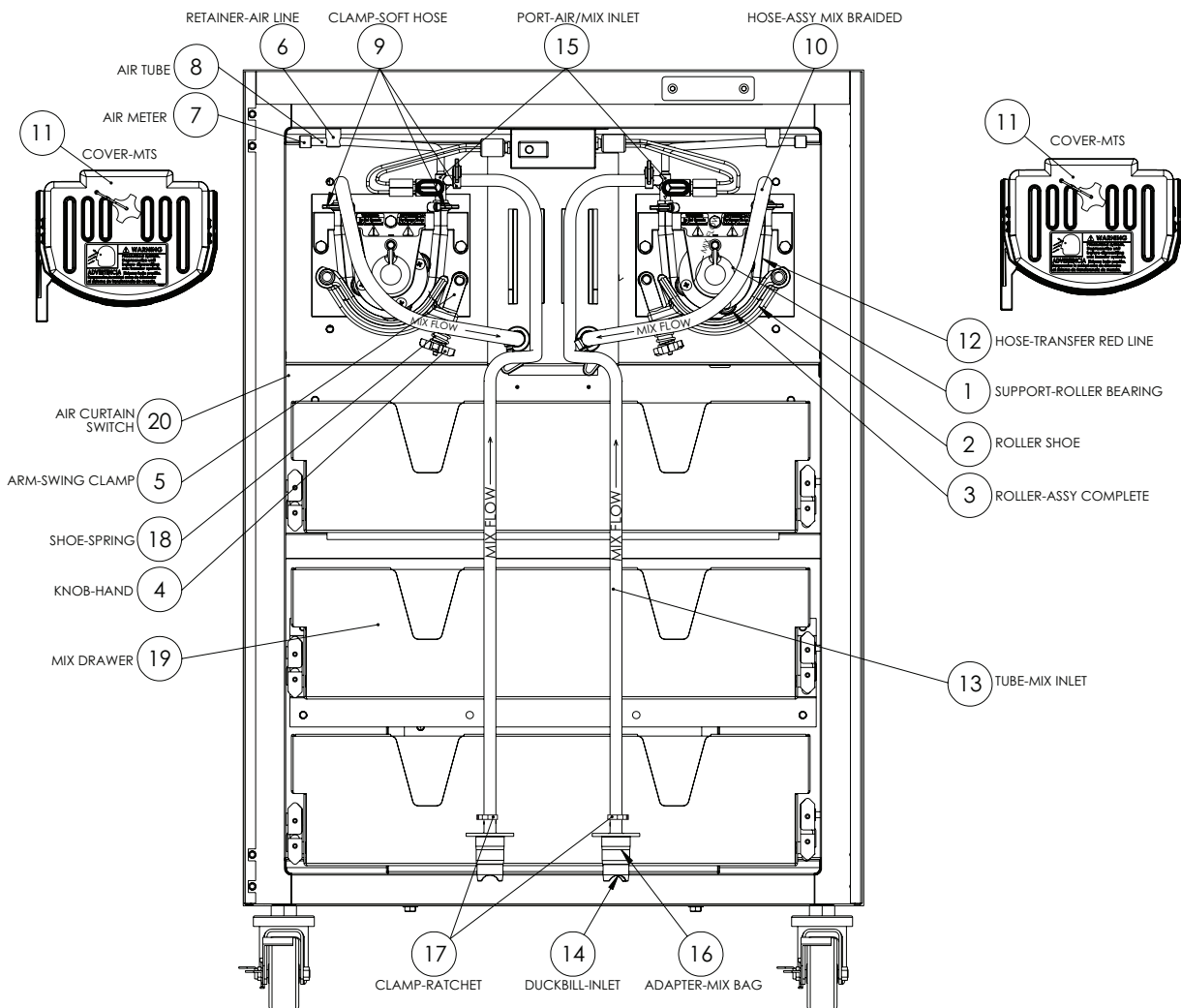



Figure 9-6 MTS

10 Start-up Instructions

10.1 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. IDQ requires the soft serve freezer to be disassembled, washed, and sanitized daily according to the instructions in the manual. 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. **Sanitizing with mix stored in drawers.** Insure stainless air curtain is installed in front of bag storage area to keep it cooling (figure 10-1).

Important:

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

4. Fill a bucket with sanitizer solution and immerse the pickup tubes into the sanitizer solution and sanitize the outside portion. Be sure all adapters and items that will come in contact with mix are sanitized.
5. Place an empty container under the dispensing head.
6. Open the air bleed plugs by pulling up until the plugs touch the bottom of the switch box.
7. 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. —continued

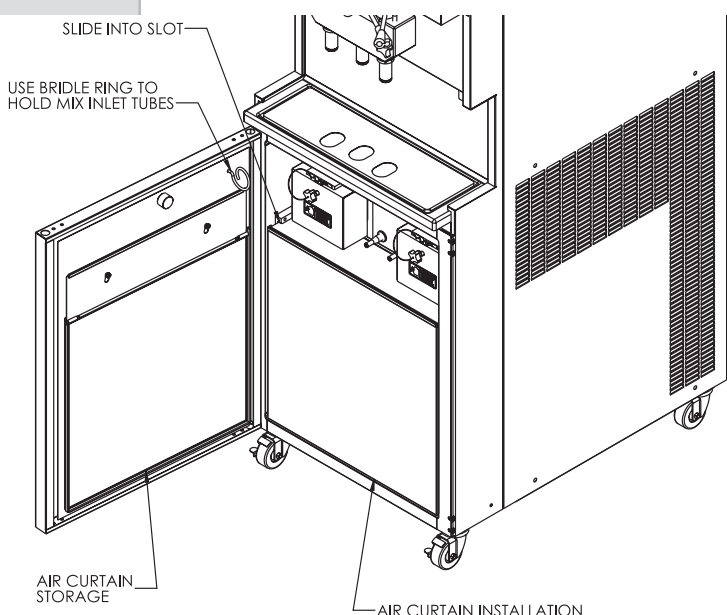


Figure 10-1

To view videos on the GES freezer visit: http://www.electrofreeze.com/GES_Videos.aspx

10.1 Sanitizing (continued)

- 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.

- 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.
- Drain the solution from the cylinders by slowly turning the spigot handles open. Allow MTS to pump all sanitizer from bucket.

- 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.

NOTE: Some sanitizer will remain in hoses and cylinder.

- Press L2 & R2 keys to turn the MTS pumps "OFF".
- Without touching the bag adapters end, place mix pickup tube in bridal ring on CAB door.

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.

10.2 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.

- Wash and sanitize your hands and forearms.
- 2a. Cleaning with Mix Stored in drawers.**

Store the air curtain on studs inside of the CAB door.

- 2b. Cleaning with Mix Stored in remote Cooler**

Install shelves and bags of mix in cabinet.

- Connect the bag adapters of the mix pickups tube to the mix bags.
- Tuck excess inlet hose in shelf of mix being used.
- Close the cabinet door.
- Place an empty container under the dispense head on the drip tray.

- Pull up the air bleed plugs
- Open the side spigots.

—continued

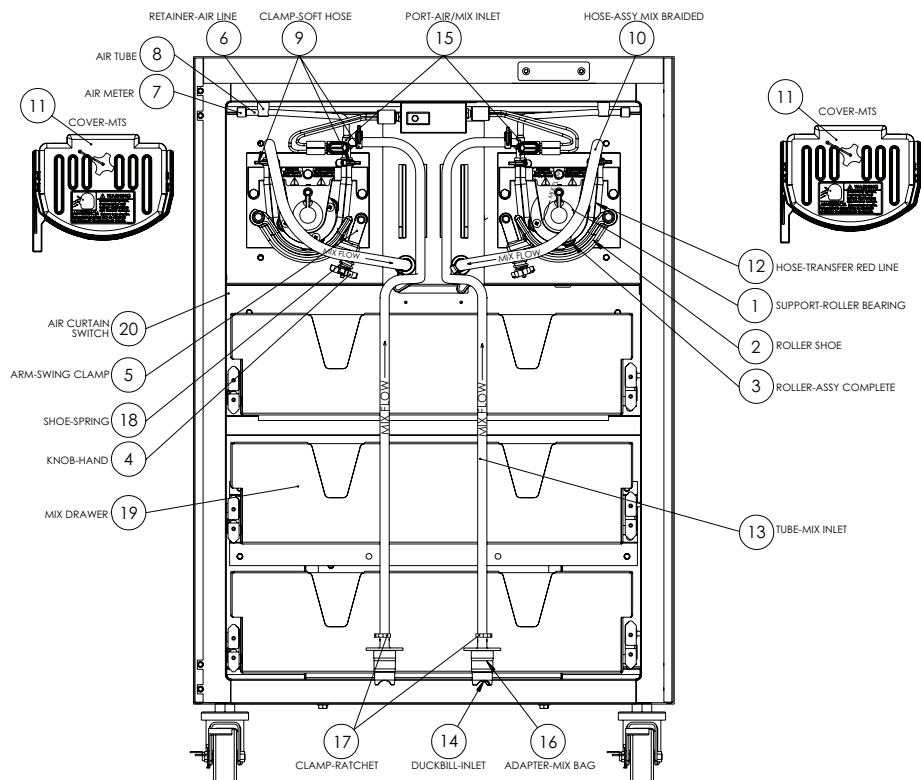


Figure 10-1

10.2 Priming (continued)

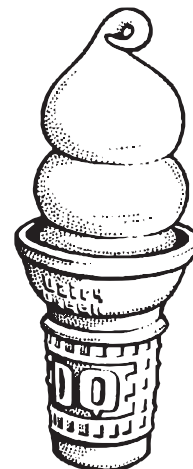
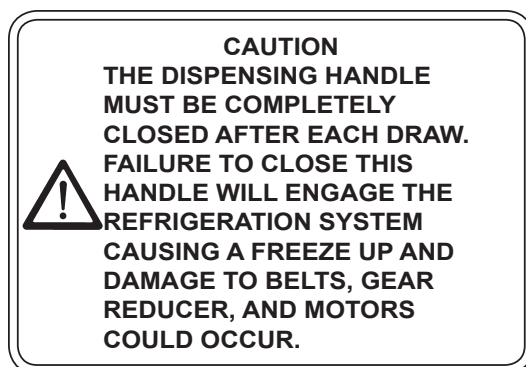
9. Press L2 & R2 keys to turn the MTS pumps "ON" allowing the mix to push the remaining sanitizer from the freezer.
10. Close the spigots one at a time when pure mix is coming out.

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.
11. 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.
12. After the cylinders are pressurized and the MTS has cycled off (approximately 30 seconds) Press the left and right "Freeze" keys.
13. Allow the freezer to cycle for 15-20 minutes. The product is now ready to serve.

10.3 Dispensing Product

1. To dispense product, grasp the spigot handle, hold the container which is to be filled with product below the spigot, and slowly open the spigot until product is dispensed at a comfortable rate.
 2. When the proper portion has been dispensed, close the spigot.
 3. The freezer will continue to run a short time (approximately 12 seconds) following the dispensing of the product. If a large portion has just been dispensed, a longer period of time may be required for the freezer to shut off.
 4. If the freezer has not been used for more than two and a half minutes, and the product requires a firm base, then dispense a small amount of mix in the spigot into a separate container.
- NOTE:** For shakes, large sundaes, floats and other similar products, this practice of drawing off a small amount into a separate container is not necessary and should be discouraged.
5. Observe the level of mix throughout the day to avoid running out of product in the mix containers or bags.
 6. Periodically check the temperature and overrun of product and make sure it is within the specified limits.

IMPORTANT:
If proper mix level is not maintained, a freeze-up may occur and cause damage to the freezer.



11 Closing Procedures

11.1 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.

Your freezer is designed for cleaning MTS pumps with or without Cabinet refrigeration. Use the Cabinet refrigeration if the mix bags will not be removed from shelves during cleaning. These instructions will provide steps and notations for:

Cleaning with Mix Stored in drawers - If cabinet is clean and has no mix spills, perform these functions

Cleaning with Mix Stored in remote Cooler - If mix has been splashed/spilled on shelf and on Cabinet walls, perform these functions.

To remove frozen product from the cylinder

1. Press the L1 & R1 keys to enter "CLEAN" mode.

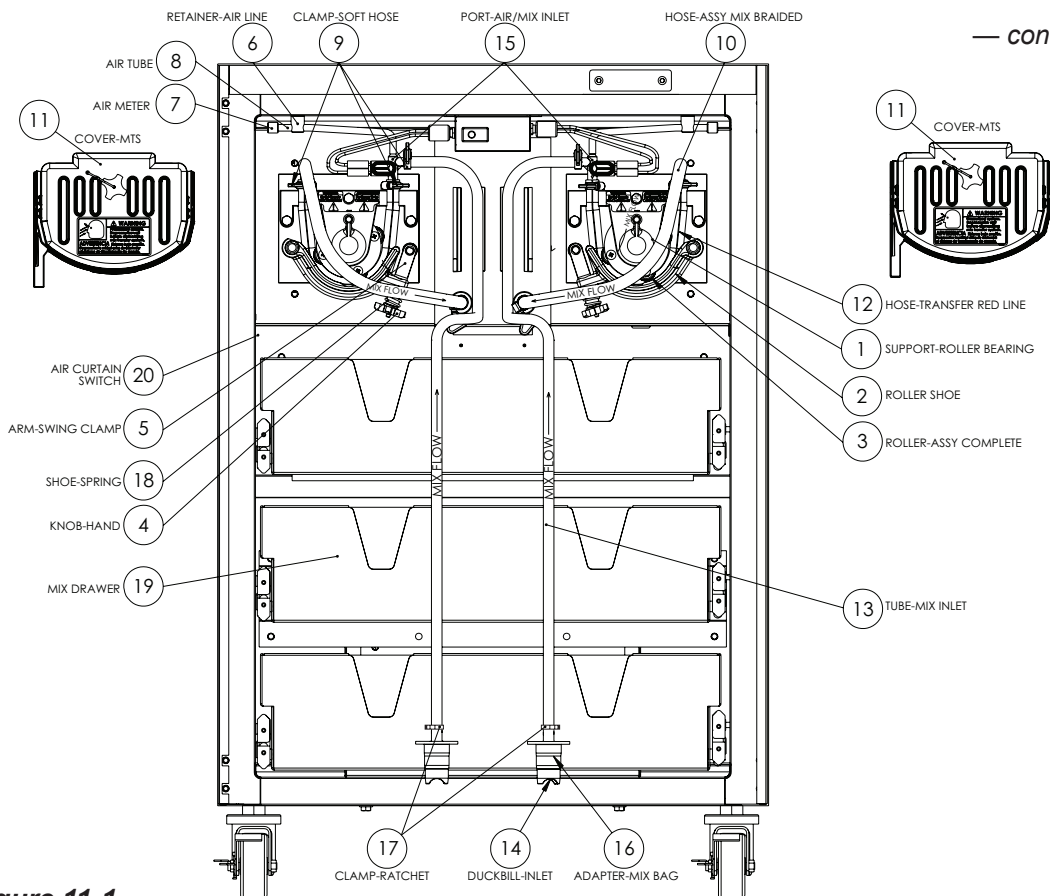
2. Cleaning with Mix Stored in drawers

Press UP Arrow to engage Cabinet Refrigeration

3. In "CLEAN" mode, press L1 & R1 to turn the beaters ON. Disconnect the mix sensor leads from top of Cabinet
4. Let the beaters run for 5 minutes. This will allow the product in the cylinders to soften.

4a. Cleaning with Mix Stored in drawers

Install stainless air curtain, stored on CAB door, in front of shelves in slots provided. This will maintain refrigerated air to mix while main CAB door is open. See Figure 11-2 for installed view.



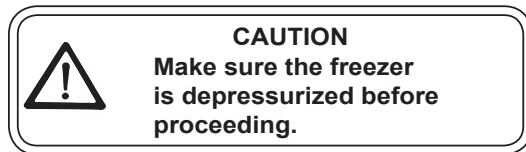
— continued

Figure 11-1

M02079rev4

11.1 Draining Product (continued)

- 4b) Cleaning with Mix Stored in remote Cooler** Pull out shelf, transfer all bags to remote cooler for storage. Mix must be handled according to local health codes.
- In the cabinet, disconnect bag adapter from bag and place in clean rinse bucket. With a clean bag cap, cap unused mix in bag.
 - Place a clean sanitized container under the dispensing head.
 - 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.



- Close spigots. Press L2 & R2 to turn the MTS pumps "OFF".
 - Fill rinse container with mix pickup tubes with cold water. Press L2 & R2 and turn the MTS pumps "ON" and allow the MTS to fill and pressurize the cylinders.
- Note:** If beater motors run more than 5 min, they will automatically turn off to prevent excessive wear. Press L1 & R1 to turn beater on for cleaning.
- Very slowly open the spigots and dispense the cold water. Open air bleed while refilling/ Follow with a container of warm water and repeat until the dispensed water is clear. Drain remaining water from the cylinders.
 - Press L2 & R2 to turn the beaters and MTS pumps "OFF". Close the spigots
 - 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).

- Insert the bag adapters into the sanitizing solution.
- Place an empty container under the dispense heads.
- Pull the air bleed plugs up until they touch the bottom of the switch box. Open the spigots.
- Press L2 & R2 to 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.
- 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.

- Slowly open the spigots and allow the MTS to pump all of the sanitizer out of the bucket. Leaving the spigots open press L1 & R1 to 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 to "OFF" position.
- Refer to Disassembly and Cleaning Instructions.

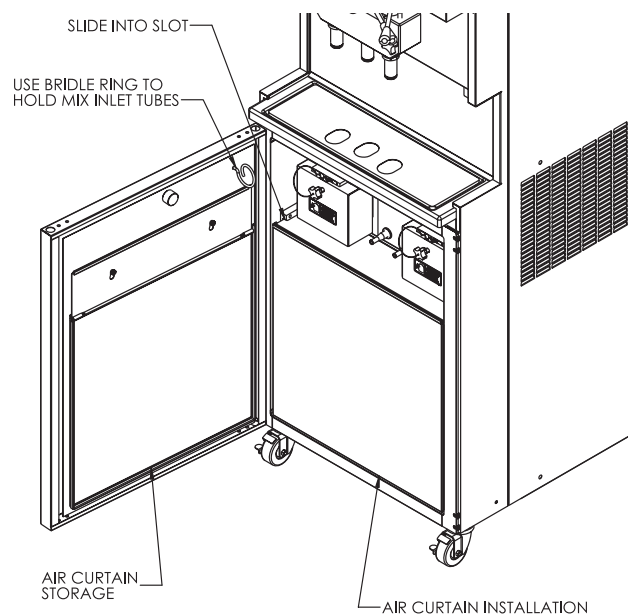


Figure 11-2

11.2 Night Switch Operation

1. In areas where health codes will allow, the freezer may be switched to night mode operation. This will allow the freezer to cycle all night and maintain approximately 36°F (2.2°C) product in the cylinders and cabinet.
2. To switch the freezer to Night mode, press the Soft key located below the image of the Moon on the display. (Pictured Below)
3. Remove any spigot extensions and spigot extension o-rings that might be installed, remove the drip tray assembly and clean all soiled surfaces with soap and water. Fill the wash bottle (HC196103) with approved sanitizing solution, using the wash bottle and a brush clean the spigots and openings.
4. Repeat step 3 prior to putting the machine back into day mode for the days use.

NOTICE

The “night” mode operation is not to be used in lieu of proper cleaning and sanitization procedures at the frequencies required by the federal, state, or local regulatory agency.

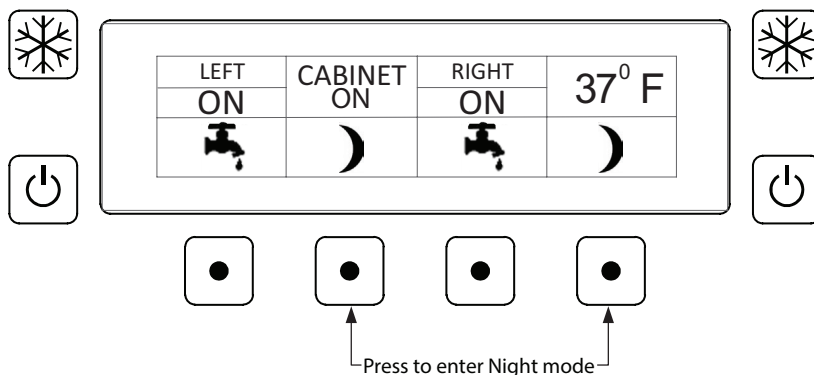


Figure 11-3

12 General Information

12.1 Dairy Queen® Mix

1. Standard approved Dairy Queen® mix weight is approximately 9.25 lbs. per gallon (1.1 kilograms per liter).
2. The mix, when delivered, should be:
 - a. at a temperature of no more than 40°F (4°C).
 - b. displaying no separation such as clear or semi-clear liquid layer on top.
 - c. nearly free of foam in a freshly opened container.
3. Mix should be used within seven days from the date of delivery and should not be over seven days old when delivered.
4. Store mix at a temperature of 35° to 38°F (2° to 3°C).
5. Check both the taste and smell of the mix, and thoroughly stir or agitate the mix prior to use. Be sure any stirring device is properly sanitized before coming in contact with the mix.
6. The mix container must be identified by a tag or label which states that it is Dairy Queen® mix and a code identifying its age.
7. The mix used to produce Dairy Queen® product must be furnished by an approved mix supplier.

Report any mix problems to the mix supplier. If the problem persists, contact IDQ Food Products Department.

12.2 Checking the Frozen DQ® Product

Two measurements of product consistency are **temperature** and **overrun**. Several observations can be made by looking at and tasting the product, but actual measurement of temperature and overrun provides precise information concerning the condition of the product being served and the operation of the freezer and the mix transfer system.

Standard Dairy Queen® product should be between 17° and 19°F (-8° and -7°C). It should have an overrun of 40 to 45%. Its appearance should be “dry” and appear

much like silk. If the product appears “wet” or “slick” then it is usually an indication that the temperature is too high. If the product appears pockmarked and soft, it may be an indication of too much overrun. If the product appears grainy and hard, it is an indication of either too low overrun or too low temperature. In any of the above cases, always measure temperature and overrun to see if they fall into normal operating ranges.

12.3 Product Temperature

The product temperature should be measured by a calibrated thermometer. If you suspect that the thermometer is out of calibration, test it by filling a cup with ice and water and inserting the thermometer into it. After a few minutes, the thermometer should read exactly 32°F (0°C). The freezer should maintain a product temperature variation of only 1½°F (1°C) on a product temperature

of 18°F (-8°C). The control panel dial thermometer should read 5° to 15°F (-15° to -9°C) when product is being dispensed at 18°F (-8°C). Although this dial thermometer is not accurate for measuring product temperature, it is wise to accustom the operators to observe the dial thermometer for its normal operating reading.

12.4 Overrun

As mix is being frozen in the freezing cylinder, air is incorporated into the mix to increase its volume as well as the taste and appeal of the finished product. The increase in volume is called **overrun**. Forty five percent overrun means a volume increase of 45%—10 gallons of liquid mix has become 14.5 gallons of finished product.

Controlled overrun is important in maintaining 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 grainy, heavy product.

To correctly measure the overrun, take a pint container and adjust your scale to zero with the container on the scale. Fill the container with liquid product even with the top of the container and record the weight. Then fill the container with frozen product, leaving no voids or air spaces in the container. Strike off the excess product so it is even with the top of the

container and weigh it. Use the following formula to figure overrun percentage:

Weight of liquid mix minus weight of frozen product. Divide the difference by the frozen weight.

Example:

Weight of one pint of mix	= 18 oz.
Weight of one pint frozen product	= <u>12 oz.</u>
Difference	6 oz.
6.0 oz. divided by 12 oz.	= .5
.5 x 100	= 50% overrun

H. C. Duke and Son, LLC can provide a scale (part #HC158049) that is graduated in overrun percentage.

Section 12.7 is an overrun chart which shows the net weight of one measure pint of frozen Dairy Queen® product in grams, ounces, and their corresponding percentage of overrun.

12.5 Overrun Adjustment

The overrun is regulated by the air meter. You were supplied with six air meters, each containing 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-step change of the air meter number will result in a 3-5% change in overrun. Each full-step change will result in a 8-10% change in overrun.

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 determining factor as to 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 make the determination. (You may have a slightly higher overrun when you first start up the freezer.) After the freezer has run long enough to dispense at least one full cylinder of product, you will have the overrun that the freezer will hold the remainder of the day.

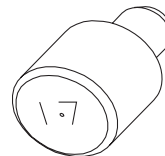


Figure 10-1 Air Meter

12.6 Rerun

Rerun is product that has been drawn through the freezer into a container and has melted down to be reprocessed.

1. International Dairy Queen® does not permit the use of rerun.
2. Rerun product is unable to accept the same amount of air as fresh product; therefore, you cannot produce a quality product with rerun mix. Product may appear grainy and icy, and operational problems may result from the use of rerun.

For further information contact the Service Department of H. C. Duke & Son, LLC by phone at (309) 755-4553 or (800) 755-4545.

12.7 Overrun Chart

Net. Wt. 1 Pint of Frozen Dairy Queen In Ounces	Net. Wt. 1 Pint of Frozen Dairy Queen In Grams	Percentage of Overrun
13.7	388.4	35
13.6	385.5	36
13.5	382.7	37
13.4	379.9	38
13.3	377	39
13.2	374.2	40
13.1	371.4	41
13.0	368.5	42
12.9	365.7	43
12.8	362.9	44
12.7	360	45
12.6	357.2	46
12.5	354.3	47
12.4	351.5	48
12.3	348.6	49
12.2	354.8	50
12.1	342.9	51
12	340.1	52
11.9	337.2	53
11.8	334.4	54
11.7	331.5	55

**Acceptable
Range
for
Overrun**

13 Routine Maintenance

H.C. Duke and Son, Inc. recommends the following schedule to help maintain your Model GES-103 Twin Twist 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, and air-dry 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 cylinder, cylinder inlet tubes and drain tube with the appropriate brushes.
3. When cleaning, inspect all o-rings, seals and hoses. Replace any o-ring, seal or 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 System:

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.

— continued

13 Routine Maintenance (continued)

AS NEEDED (continued)



CAUTION
 Make sure the freezer is depressurized before proceeding.

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

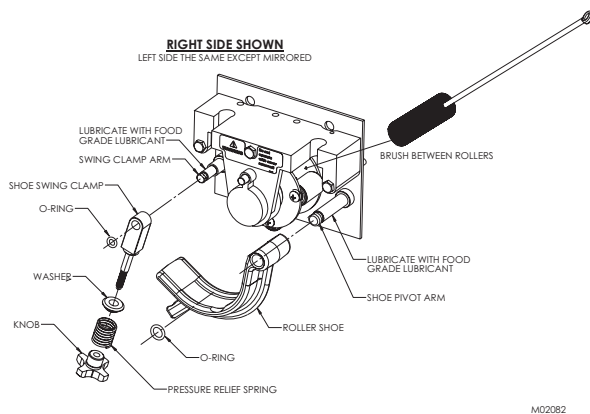
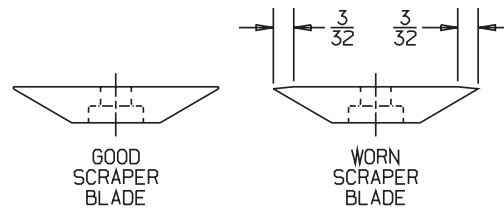


Figure 13-1

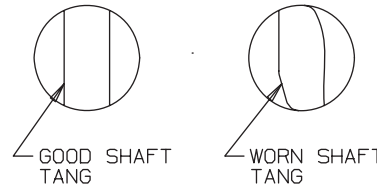
WEEKLY

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

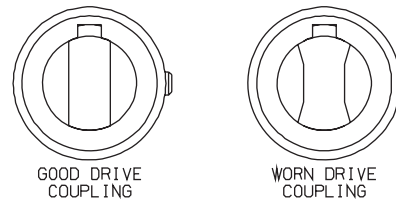


Replace blades if worn 3/16" or more.

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



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



13 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

13 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 disassembled for this test.



CAUTION
Make sure system is depressurized before proceeding.

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



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

4. Look at the MTS rollers; they should **NOT** be rotating. If they are rotating, turn "OFF" mix switch and discontinue use until repairs can be made.

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

D. Replace the Mix Transfer Hose



CAUTION
Make sure the freezer is depressurized before proceeding.



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

QUARTERLY

A. Air Condenser.

Important:

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

Both air and water cooled freezers have an air condenser. The condenser fins need to be cleaned by your H.C. Duke & Son, LLC. Distributor to remove dirt, lint

and dust.

B. Refrigeration System

Have your H.C. Duke & Son, LLC. 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.

13 Routine Maintenance (continued)

1500 HOURS OF OPERATION OR 6 MONTHS

1. Contact your service technician for the initial oil change of the gear reducer.

SEMI-ANNUALLY

1. Have the condenser fan motor checked by your service technician. Add oil as needed.

5000 HOURS OF OPERATION OR 1 YEAR

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

13 Routine Maintenance (continued)

Winter Storage

To protect the unit during seasonal shutdown, it is important to store the GES-103 Twin Twist 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 dry all parts thoroughly.
3. Store the loose parts, such as the head assembly, beater assembly, and pump 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 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 local service technician for service or the H. C. Duke & Son, LLC Service Department.

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 call your local authorized service company or H. C. Duke & Son, LLC Service Department, for factory service at **(800) 755-4545 or (309) 755-4553.**

14 Troubleshooting

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 and adjustments must be done by a qualified 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.




Note: For Water-cooled freezers connected to glycol cooling systems, freezers must be switched to city water prior to trouble-shooting freezers.

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.




14 Troubleshooting Tables

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 Your local service company.
	5. Off on high pressure cut-out or low pressure cut-out control.	5. Contact your Your local service company.
	6. Component failure.	6. Contact your Your local service company.
	7. Faulty selector switch.	7. Contact your Your local service company.
	8. Disconnected or broken wire in electrical circuit.	8. Contact your Your local service company.
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 Your local service company.
Mix leaking at dispensing head. 	1. Faulty head o-ring.	1. Replace o-ring.
	2. Head not properly installed.	2. Install head properly. Replace o-ring if pinched.
Dispensed product too soft. (Product temperature above 19°F)	1. Dirty or blocked condenser, restricted air flow.	1. Unblock condenser or have cleaned by your H.C. Duke & Son, LLC. Distributor.
	2. Component failure.	2. Contact your Your local service company.
	3. Leak in refrigeration system resulting in little or no refrigeration.	3. Contact your Your local service company.

14 Troubleshooting Tables (continued)

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







14 Troubleshooting Tables (continued)

PROBLEM	PROBABLE CAUSE	REMEDY
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 Your local service company.
	3. Defective condenser fan motor (air cooled)	3. Contact your Your local service company.
	4. Component or compressor failure.	4. Contact your Your local service company.
Compressor does not operate or operates improperly.	1. Trouble in compressor condensing circuit	1. Contact your Your local service company.
	2. Faulty start capacitor, run capacitor or relay. (Single phase only)	2. Contact your Your local service company.
	3. Faulty contactor	3. Contact your Your local service company.
	4. Disconnected or broken wire in switch or capacitor relay box.	4. Contact your Your local service company.
Beater motor does not operate. 	1. Head assembly is not installed.	1. Install head assembly.
	2. Magnetic head switch defective.	2. Contact your Your local service company.
	3. Component failure.	3. Contact your Your local service company.
Compressor and beater motor operates only when dispensing.	1. Cylinder thermostat setting too warm or thermostat defective.	1. Contact your Your local service company.




14 Troubleshooting Tables (continued)

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

14.1 MTS Troubleshooting Tables

PROBLEM	PROBABLE CAUSE	REMEDY
Mix leaks out of MTS. 	<ol style="list-style-type: none"> 1. Transfer hose worn or split. 	<ol style="list-style-type: none"> 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. 	<ol style="list-style-type: none"> 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. 	<ol style="list-style-type: none"> 1. Install cover. 2. Check position – reinstall. 3. Contact your Your local service company. 4. Contact your Your local service company. 5. Contact your Your local service company. 6. Contact your Your local service company. 7. Contact your Your local service company.
MTS will not shut off. 	<ol style="list-style-type: none"> 1. Hose broken. 2. Pressure switch stuck in closed position. 	<ol style="list-style-type: none"> 1. Replace hose. 2. Contact your Your local service company.
MTS cycles on and off without dispensing. 	<ol style="list-style-type: none"> 1. Worn transfer hose. 2. Leak on pressure side of system. 	<ol style="list-style-type: none"> 1. Replace hose. 2. Contact your Your local service company.
MTS will not prime. 	<ol style="list-style-type: none"> 1. Insufficient supply of mix. 2. Swing clamp knob loose. 3. Air hose or air meter not installed. 4. Hose not installed. 	<ol style="list-style-type: none"> 1. Replenish mix supply. 2. Tighten knob. 3. Install air hose/air meter. 4. Install hose.
Mix pickup tube loses prime. 	<ol style="list-style-type: none"> 1. Defective or missing duckbill valve. 2. Inlet clamp not tight. 3. Worn transfer hose. 	<ol style="list-style-type: none"> 1. Replace duckbill valve. 2. Tighten clamp. 3. Replace transfer hose.

14.1 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 Your local service company.

Keep your freezer in excellent condition — always contact your H.C. Duke & Son, LLC. Distributor for replacement parts and maintenance scheduling.

**QUALITY PARTS
PROTECT
YOUR
INVESTMENT**

NOTE: Contact your authorized H.C. Duke & Son, LLC. Distributor for instructions prior to warranty compressor replacement.

15 VQM Error Codes

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

15 VQM Error Codes (continued)

Error Code	Description/Action	Probable Cause	Remedy
CYL RFG.	<p>This error occurs when cylinder system run time exceeds 90 minutes. Cylinder switches to STBY mode and locks out.</p> <p>Action: Cylinder Refrigeration off, cabinet refrigeration continues to operate.</p> <p>Reset Method: Main Power Switch, once the condition has been rectified.</p>	<ol style="list-style-type: none"> 1. Dirty Condenser 2. Shortage of Refrigerant 3. Faulty wire connection 4. Compressor starting components failure (1 Phase Only) 5. Compressor Contactor Failure 6. Compressor Contactor Control Relay not activating 7. System lacks efficiency 8. Faulty Thermistor 9. Condenser Fan Motor Failure (Air Cooled Only) 	<ol style="list-style-type: none"> 1. Clean Condenser 2. Locate Source of refrigerant leak and repair. 3. Locate faulty connection (Wire rubbed through, cut) and repair as needed. 4. Check Compressor Starting components and replace as needed. 5. Check contactor coil for proper resistance, check for voltage drop across contact points. Replace as needed 6. 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 H.C. Duke & Son Factory Tech Support. 7. Check for worn blades, AXV pressure settings, Check water regulating valve setting (Water Cooled), check refrigerant level, compressor efficiency. 8. 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 H.C. Duke & Son for proper compressor oil charge) 9. Replace Condenser fan motor

15 VQM Error Codes (continued)

Error Code	Description/Action	Probable Cause	Remedy
CYL RFG.	<p>This error occurs when cylinder system run time exceeds 90 minutes. Cylinder switches to STBY mode and locks out.</p> <p>Action: Cylinder Refrigeration off, cabinet refrigeration continues to operate.</p> <p>Reset Method: Main Power Switch, once the condition has been rectified.</p>	<p>10. Water Flow Restriction (Water Cooled Only)</p> <p>11. AXV not set properly/not responding</p> <p>12. Compressor Failure/ Reduced Capacity</p> <p>13. Moisture in system</p> <p>14. Compressor Control Relay not activating</p>	<p>10. Locate and remove restriction, re-start system to check for further issues</p> <p>11. Check System refrigerant level, attempt to re-set AXV valve pressure. If valve is not responsive, it may need to be replaced</p> <p>12. Check Voltage to the unit to ensure it is within specification, Check wire connections to the unit and compressor, Check compressor contactor for loose wire connections and proper operation, and possible voltage drop, ohm compressor windings to check for a short and proper winding resistance, check compressor starting components for failure, allow compressor protector to reset and check for proper amp draw.</p> <p>13. Recover refrigerant, change filter drier, change compressor oil (Contact H.C. Duke & Son for proper compressor oil charge), Evacuate system to a minimum of 200 microns or less. Repeat if necessary</p> <p>14. 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 H.C. Duke & Son Factory Tech Support.</p>
CABINET RFG	<p>Occurs when cabinet refrigeration system run time exceeds 90 minutes</p> <p>Action: Cylinder refrigeration switches to standby mode, cabinet refrigeration is turned off.</p> <p>Reset Method: Main Power Switch, once the condition has been rectified.</p>	<p>1. Dirty Condenser</p> <p>2. Shortage of Refrigerant.</p> <p>3. Evaporator coil Froze up</p> <p>4. Cabinet TXV superheat not set properly</p>	<p>1. Clean Condenser</p> <p>2. Locate Source of refrigerant leak and repair.</p> <p>3. Check door gasket for wear, check evaporator fan motor for proper operation, check spring loaded door closer for proper operation.</p> <p>4. Ensure the Cabinet TXV Superheat is at 10 to 12 degrees once the system is close to set point. Adjust if necessary</p>

15 VQM Error Codes (continued)

Error Code	Description/Action	Probable Cause	Remedy
CABINET RFG (cont.)	<p>Occurs when cabinet refrigeration system run time exceeds 90 minutes</p> <p>Action: Cylinder refrigeration switches to standby mode, cabinet refrigeration is turned off.</p> <p>Reset Method: Main Power Switch, once the condition has been rectified.</p>	<p>5. Faulty wire connection</p> <p>6. Restriction in System i.e. Capillary tube, Filter Drier</p> <p>7. Faulty Thermistor</p> <p>8. Compressor Control Relay not activating</p> <p>9. Compressor starting components failure</p> <p>10. Compressor failure/reduced capacity</p> <p>11. Moisture in System</p>	<p>5. Locate faulty connection (Wire rubbed through, cut) and repair as needed.</p> <p>6. Locate restriction and repair as needed.</p> <p>7. 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 H.C. Duke & Son Factory Tech Support)</p> <p>8. 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 H.C. Duke & Son Factory Tech Support.</p> <p>9. Check Compressor Starting components and replace as needed.</p> <p>10. Check Voltage to the unit to ensure it is within specification, Check wire connections to the unit and compressor, Check compressor contactor for proper operation, and possible voltage drop, ohm compressor windings to check for a short and proper winding resistance, check compressor starting components for failure, allow compressor protector to reset and check for proper amp draw.</p> <p>11. Recover refrigerant, change filter drier, change compressor oil (Contact H.C. Duke & Son for proper compressor oil charge), Evacuate system to a minimum of 200 microns or less. Repeat if necessary</p>

15 VQM Error Codes (continued)

Error Code	Description/Action	Probable Cause	Remedy
CYL. TEMP	<p>Occurs when barrel thermistor is above or below temp. limit for 1 minute without change</p> <p>Action: Affected barrel is in STBY time cycle mode (1min on and 40 min. off), Cabinet refrigeration remains on</p>	<ol style="list-style-type: none"> 1. Faulty wire connection 2. Faulty Thermistor 	<ol style="list-style-type: none"> 1. Locate faulty connection (Wire rubbed through, cut) and repair as needed. 2. Remove thermistor, check in ice water and compare to thermistor curve chart. If thermistor does not ohm correctly, replace thermistor.
CABINET TEMP.	<p>Occurs when cabinet thermistor is above or below temp. limit for 1 minute without change</p> <p>Action: Cabinet is in time cycle mode (5 min. on and 30 min. off) both cylinders are in standby mode.</p> <p>If unit is in cabinet only mode: Cabinet is in time cycle mode and both cylinders remain off</p>	<ol style="list-style-type: none"> 1. Faulty wire connection 2. Faulty Thermistor 3. Program Issue 	<ol style="list-style-type: none"> 1. Locate faulty connection (Wire rubbed through, cut) and repair as needed. 2. Remove thermistor, check in ice water and compare to thermistor curve chart. If thermistor does not ohm correctly, replace thermistor. 3. Ensure U.I. Program version and Main P.C. Program Version are compatible. (Contact H.C. Duke & Son Factory Tech Support)
HEAD SW (Head Switch)	<p>Occurs when head switch is open with power applied to unit</p> <p>Action: Affected cylinder is turned off.</p> <p>Reset Method: Auto, once condition has been rectified</p>	<ol style="list-style-type: none"> 1. Head Assembly Not installed 2. Faulty Head switch (1 per cylinder) 3. Faulty wire connection 4. Magnet removed from Head assy. 	<ol style="list-style-type: none"> 1. Install Head assembly 2. Test head switch to see if circuit remains open with magnet in place, remove and replace head switch as needed 3. Locate Faulty wire connection and repair as needed 4. Replace the head assy.

15 VQM Error Codes (continued)

Error Code	Description/Action	Probable Cause	Remedy
MOTOR OVLD	<p>Occurs when motor current is 0, and the computer is calling for the motor to operate.</p> <p>Action: Affected barrel is off, hopper refrigeration continues to operate.</p> <p>Reset Method: Main Power Switch, once the condition has been rectified.</p>	<ol style="list-style-type: none"> 1. Motor internal overload open 2. Faulty wire connection 3. Motor Contactor Failure 4. Motor control relay not activating 5. Motor Failure 6. Current Sense board/function failure 7. One line of power loss 8. Program Issue 	<ol style="list-style-type: none"> 1. Allow motor to cool and overload to reset, Check motor start components, product temperature (Too cold, low overrun), and gear reducer operation. 2. Locate Faulty wire connection and repair as needed 3. Check contactor coil for proper resistance, check for voltage drop across contact points. Replace as needed 4. Check to see if Relay is receiving power from Main P.C. board (12VDC), Ohm relay control coil for proper resistance. Replace relay as needed. If 12 VDC is not detected Contact H.C. Duke & Son Factory Tech Support 5. Check motor starting components, check motor for shorts to ground, check for proper winding resistance. Replace Motor as needed 6. Check current sense board wire connections, check max current setting in control system. (Contact H.C. Duke & Son Factory Tech Support) 7. Check main power supply, and main wire connections and correct as needed 8. Ensure U.I. Program version and Main P.C. Program Version are compatible. (Contact H.C. Duke & Son Factory Tech Support)

15 VQM Error Codes (continued)

<p>COMP. LO PSI</p>	<p>Occurs when low pressure control is activated.</p> <p>Action: Cylinder refrigeration is off, Cabinet refrigeration Continues to operate.</p> <p>Reset Method: Main Power Switch, once the condition has been rectified.</p>	<ol style="list-style-type: none"> 1. System is Short on refrigerant 2. Solenoid valve not activating 3. Low pressure control is Faulty. 4. Restriction is refrigeration system. 5. Faulty wire connection. 6. System component failure 	<ol style="list-style-type: none"> 1. Locate refrigerant leak and repair as needed. Ensure refrigeration system is evacuated to at least 200 microns. 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. 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. Locate and remove restriction i.e. restricted drier, AXV closed down, Solenoid valve not opening etc. 5. Repair connection as needed i.e. faulty connection on LPCO, etc. 6. Locate failed component (Diagnostics Mode in Technician Menu will aid in locating) i.e. solenoid coil, AXV valve not opening, control relay, Compressor contactor staying energized causing unit to pump down, etc. and repair as needed.
<p>COMP. HIGH PSI</p>	<p>Occurs when the High pressure control is activated.</p> <p>Action: Cylinder refrigeration is off, Cabinet refrigeration Continues to operate</p> <p>Reset Method: Main Power Switch, once the condition has been rectified.</p>	<ol style="list-style-type: none"> 1. Dirty Condenser Air Cooled 2. Bad Condenser Fan Motor (A/C Only) 3. Dirty Condenser (Water Cooled) 	<ol style="list-style-type: none"> 1. Blow out and clean Air cooled condenser re-start system and check unit operation. 2. Replace Condenser motor as needed. Check system operation 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 H.C. Duke & Son Technical Support Line.

15 VQM Error Codes (continued)

Error Code	Description/Action	Probable Cause	Remedy
COMP. HIGH PSI (cont.)	<p>Occurs when the High pressure control is activated.</p> <p>Action: Cylinder refrigeration is off, Cabinet refrigeration Continues to operate</p> <p>Reset Method: Main Power Switch, once the condition has been rectified.</p>	<p>4. High Pressure control is Faulty.</p> <p>5. Faulty Wire Connection</p> <p>6. Non-Condensables in refrigeration system.</p> <p>7. Refrigeration System over charged.</p>	<p>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.</p> <p>5. Repair connection as needed i.e. faulty connection on HPCO, etc.</p> <p>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 H.C. Duke & Son 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</p> <p>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 H.C. Duke & Son if charge amount is not stated on machine data Plate). Start system and check operation</p>
CLOCK ERROR	<p>CLOCK ERROR</p> <p>Action: All timer functions use default data/time</p>	<p>Contact H.C. Duke & Son Technical Support Line if this Problem exists</p>	<p>Contact H.C. Duke & Son Technical Support Line if this Problem exists.</p>

15 VQM Error Codes (continued)

Error Code	Description/Action	Probable Cause	Remedy
POWER FAIL	<p>Displays Power Fail if main power to system has failed</p> <p>Action: If unit is in Freeze or STBY mode, unit will restore in STBY Mode. If unit is in Clean or Off Mode, unit will restore in Off Mode.</p> <p>Reset Method: Auto, once the condition has been rectified. Power Fail will be displayed on screen until user presses enter button to acknowledge loss of main power.</p>	<p>1. Main Incoming power to unit was disrupted</p>	<p>1. Check all main power connections, Transformer switch to 208 Volt for 220Volt and below and 230 Volt for 220 Volt and above.</p> <p>2. Check 24VAC connections to control board, ensure all 24VAC connections are secure.</p>
SPIGOT	<p>Displays Spigot if the Left or Right Side Spigot switch is engaged for more than 5 minutes.</p> <p>Action: Affected side compressor and beater motor are off.</p> <p>Reset Method: Auto, once the condition has been rectified.</p>	<p>1. Spigot Push rod not installed</p> <p>2. Spigot switch has failed in the closed position</p> <p>3. Spigot Switch is out of adjustment</p> <p>4. Plunger is sticking open</p>	<p>1. Install Spigot Push Rod and start system to see if error is eliminated.</p> <p>2. Replace defective spigot switch and ensure new switch is adjusted properly.</p> <p>3. Re-adjust Spigot switch to operate properly with Push Rod.</p> <p>4. Check for proper lubrication, o-ring wear, switch tower spring worn causing plunger to not close, etc.</p>
C SPIGOT	<p>Displays C Spigot if the Center spigot switch is engaged for more than 5 minutes</p> <p>Action: Affected side compressor and beater motor are off.</p> <p>Reset Method: Auto, once the condition has been rectified.</p>	<p>1. Spigot Push rod not installed</p> <p>2. Spigot switch has failed in the closed position</p> <p>3. Spigot Switch is out of adjustment</p> <p>4. Plunger is sticking open</p>	<p>1. Install Spigot Push Rod and start system to see if error is eliminated.</p> <p>2. Replace defective spigot switch and ensure new switch is adjusted properly.</p> <p>3. Re-adjust Spigot switch to operate properly with Push Rod.</p> <p>4. Check for proper lubrication, o-ring wear, switch tower spring worn causing plunger to not close, etc.</p>

15 VQM Error Codes (continued)

Error Code	Description/Action	Probable Cause	Remedy
L PWR OFF (This error only applies to Dual Power supply units)	Displays L POWER OFF if the Power good relay is not energized, for the A/Left side of dual power supply machines. Action: Left side of unit is off, and the right side is operational Reset Method: Auto, once the condition has been rectified.	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 H.C. Duke & Son 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 Reset Method: Main Power Switch, once the condition has been rectified. 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 H.C. Duke & Son Technical Support. 3. Contact H.C. Duke & Son Technical Support.

15 VQM Error Codes (continued)

Error Code	Description/Action	Probable Cause	Remedy
PUMP ERROR (Formerly PUMP LO PSI)	<p>Displays Pump Error if the pump has ran for 2 minutes continually while in freeze mode.</p> <p>Action: Affected pump is turned off, along with the affected cylinder being turned to standby</p> <p>Reset Method: Main Power Switch, once the condition has been rectified.</p>	<p>1. Pump transfer hose is worn out.</p> <p>2. Leaking Pressure Relief System</p> <p>4. Pump control relay not closing preventing pump motor from running</p> <p>5. Pump motor Starting components Faulty</p> <p>6. Faulty wire connection</p> <p>7. Pressure Transducer is Faulty</p> <p>8. Faulty Control Board</p>	<p>1. Replace pump transfer hose (Should be replaced minimally every 30 days)</p> <p>2. Check to ensure swing arm is tightened properly. Also check to ensure spring has not become compressed.</p> <p>4. Test to see if coil voltage is present at pump control relay, If it is present but the pump will not start, check to see if the relay contacts are closing. If so move on to troubleshooting the pump motor. If not replace the relay and check operation.</p> <p>5. Remove and test pump Start capacitor and starting relay, Replace faulty parts as needed. Check motor windings to ensure no electrical shorts are present. Start unit and check operation.</p> <p>6. Locate and repair faulty wire connections as needed.</p> <p>7. Attempt to calibrate the Transducer to 0 psi and re-test unit. If unit continues to malfunction contact H.C. Duke & Son Technical Support.</p> <p>8. Contact H.C. Duke & Son Technical Support</p>
SHORT	<p>Displays SHORT when a thermistor has failed in a shorted state.</p> <p>Action: Affected System is cycled off.</p> <p>Reset Method: Auto once issue is corrected.</p>	<p>1. Faulty wire connection</p> <p>2. Faulty Thermistor</p>	<p>1. Check to ensure wires have not rubbed through and shorted out together or the wire harness is not resting in water.</p> <p>2. Change thermistor</p>

15 VQM Error Codes (continued)

Error Code	Description/Action	Probable Cause	Remedy
OPEN	<p>Displays OPEN when a thermistor has failed in an open state.</p> <p>Action: Affected system is cycled off</p> <p>Reset method: Auto once issue is corrected</p>	<p>1. Faulty wire connection</p> <p>2. Faulty Thermistor</p>	<p>1. Check to ensure Molex connectors are connected fully and that no wiring from the control board to the sensor has been severed.</p> <p>2. Change Thermistor</p>
CYL. T ALARM	<p>Displays CYL T ALARM when the cylinder temperature has reached 36 degrees for over 2 minutes.</p> <p>Action: Alarm is displayed only and will not change the state of the machine.</p> <p>Reset Method: The main power switch must be cycled to reset error.</p>	<p>Please refer to the error CYL RFG for troubleshooting.</p>	<p>Please refer to the error CYL RFG for troubleshooting.</p>
CAB T ALARM	<p>Displays CAB T ALARM when the cabinet temperature has exceeded 41 degrees for 15 minutes.</p> <p>Action: Alarm is displayed only and will not change the state of the machine.</p> <p>Reset Method: The main power switch must be cycled to reset error.</p>	<p>Please refer to the error CAB RFG for troubleshooting.</p>	<p>Please refer to the error CAB RFG for troubleshooting</p>

15 VQM Error Codes (continued)

Error Code	Description/Action	Probable Cause	Remedy
CLEAN FINISHED	<p>Displayed when the 4 parameters have been met for the machine to log a Last clean.</p> <p>Action: Displayed on the screen once the head is re-installed.</p> <p>Reset Method: Pressing the ENTER button will clear the display.</p>		<p>The 4 parameters to display Clean Finished are as follows:</p> <ol style="list-style-type: none"> 1. Head assy. removed for 10 minutes. 2. Main Power switch needs to be turned off 3. Cylinder temperature have to rise above 55 degrees. 4. Both Mix transfer system pump covers need to be removed. If unit is a Gravity machine then the computer has to see a mix out condition.
PUMP COVER	<p>Occurs if the RMT pump cover is removed or the cover switch is open.</p> <p>Action: If unit is in Freeze, the affected side will be turned to standby and the affected pump will be turned off. If unit is in clean or Standby mode the affected pump will be turned off and unit will not be allowed to be put into freeze, and will remain in standby or off.</p> <p>Reset Method: Auto, once the condition has been rectified.</p>	<ol style="list-style-type: none"> 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 	<ol style="list-style-type: none"> 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 H.C. Duke & Son Technical Support

15 VQM Error Codes (continued)

Error Code	Description/Action	Probable Cause	Remedy
Main P.C. Board Heartbeat L.E.D not blinking/ U.I. Not Energizing	Occurs if there is a power loss to the Main P.C. Board or a possible U.I. Issue	<ol style="list-style-type: none"> 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 	<ol style="list-style-type: none"> 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 H.C. Duke & Son Factory Tech Support).

If tested to the control board ground (Large aluminum plate on upper left side of Main Board) 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 H.C. Duke & Son, LLC. Distributor for replacement parts and maintenance scheduling.



NOTE: Contact your authorized H.C. Duke & Son, LLC. Distributor for instructions prior to warranty compressor replacement.



H. C. DUKE & SON, LLC.
2116-8th Avenue • East Moline, Illinois 61244

REPLACEMENT PARTS MANUAL

with Illustrations



**SOFT SERVE
TWIST FREEZER**

**Model
GES-103**

184560-01 — 11/18

ILLUSTRATIONS

Parts are listed on each page using terminology that best fits the function of the part. It is very important to know the serial number of the machine when ordering parts because many parts are not interchangeable from one serial number to another of the same model. The illustrations in this manual can be used as a reference for obtaining the correct part description and part number.

All parts listed in the manual should be ordered through:

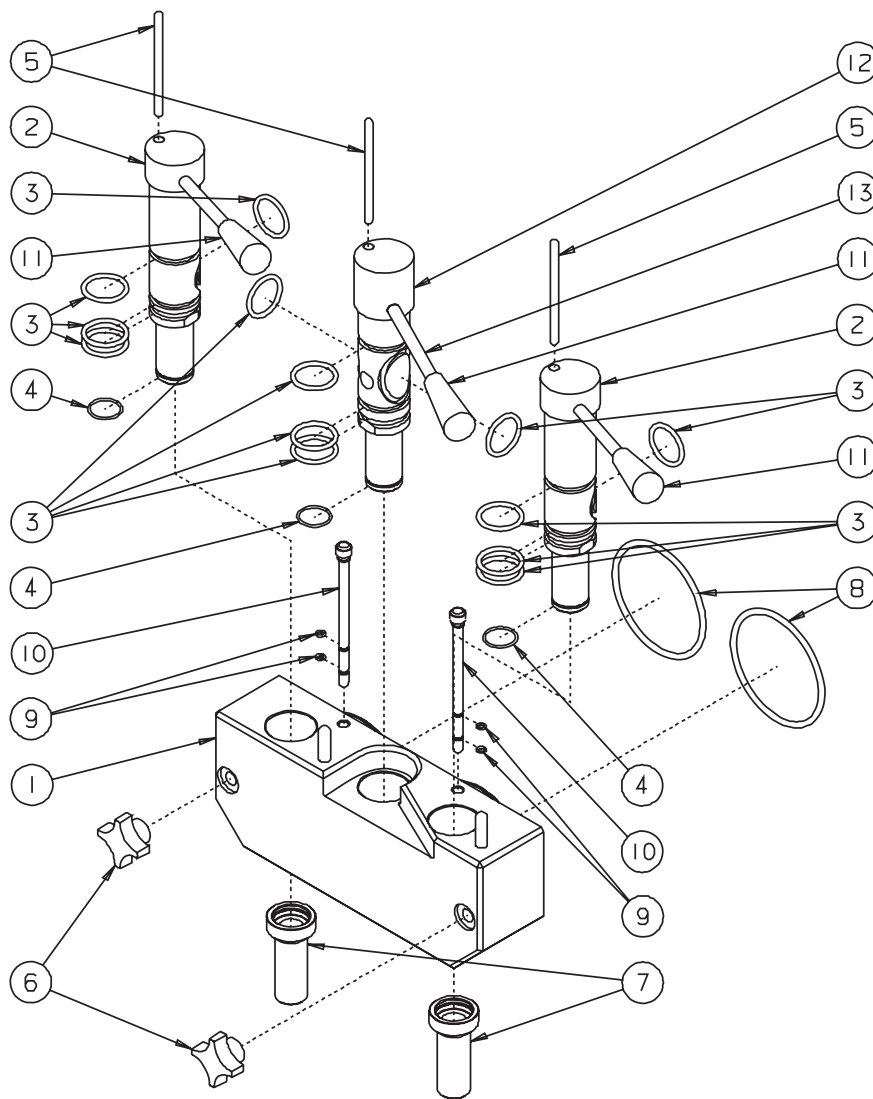


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Part II Replacement Parts

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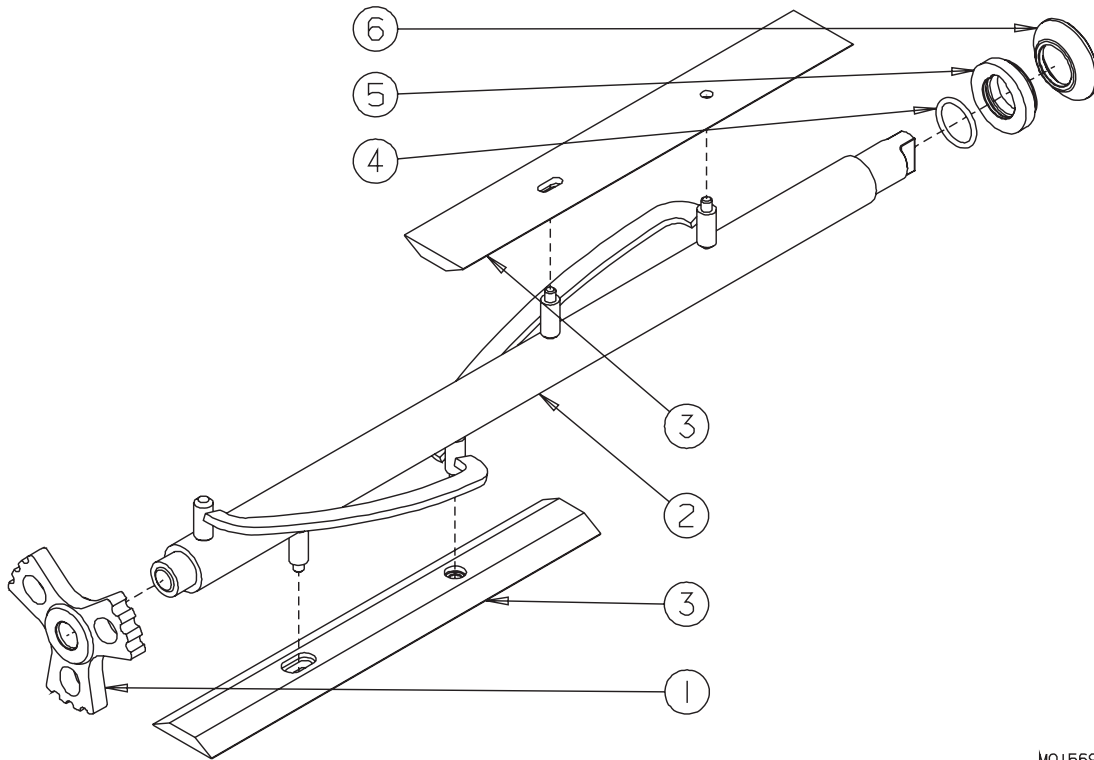
Figure 1 Head Assembly



Item	Part No.	Description
*	HC119915-01	Head - Assy. Dispense (Complete)
1	HC119913-01	Head - Assy. w/Actuator (Less Parts)
2	HC118641	Spigot - Assy. Side w/Handle
3	HC159295	O-Ring (Spigot)
4	HC160584	O-Ring (Extension)
5	HC136794	Rod - Spigot Switch
6	HC162625	Knob - Hand
6A	HC114341-01	Stud - Assy. Cylinder 3-13/16"(not shown)
7	HC136713	Extension - Spigot
8	HC160583	O-Ring (4" Head)
9	HC160562	O-Ring (Air Bleed Plug)
10	HC115129	Bleeder - Assy.(Air Relief Plug)
11	HC162626	Handle - Tapered Black
12	HC137018	Spigot - Long Center (w/o handle)
13	HC136618	Rod - Handle, Center Spigot (Stainless Steel Extension only)
* Includes items 1-4 and 8-13.		

**Use only original or authorized replacement parts with this freezer.
Use of unapproved parts will void warranty.**

Figure 2 Beater Shaft Assembly

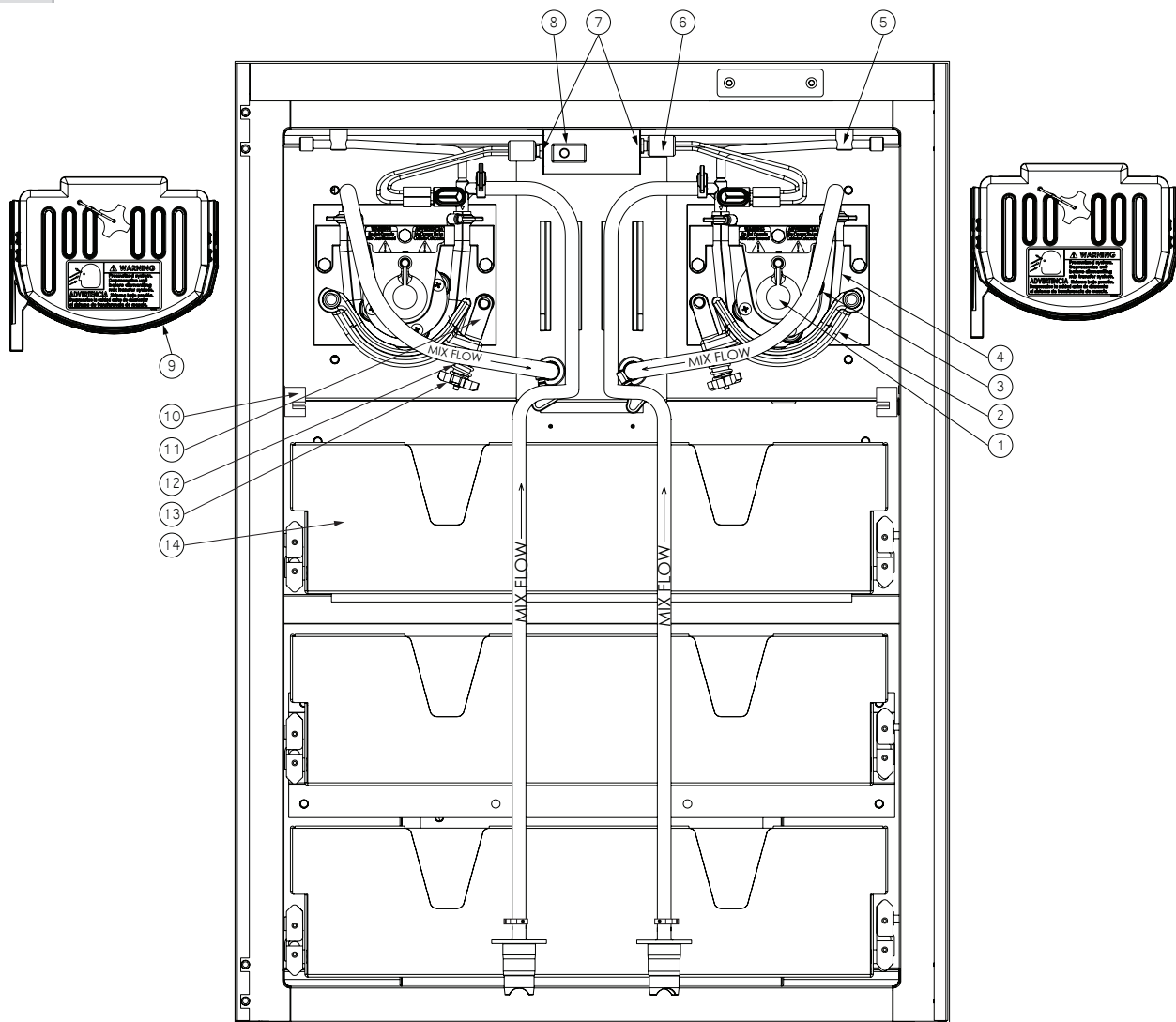


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Item	Part No.	Description
1	HC196079	Bushing - Cylinder
2	HC113438	Shaft - Assy. Beater
3	HC137334	Blade - Scraper Soft Serve
4*	HC160500	O-Ring (Shaft Seal)
5*	HC133098	Washer - Shaft Seal
6*	HC160557	Seal - Beater Shaft
*Items 4-6		HC111875 Seal - Assy Shaft (Complete-3 piece shaft seal)

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Figure 3 Cabinet Parts

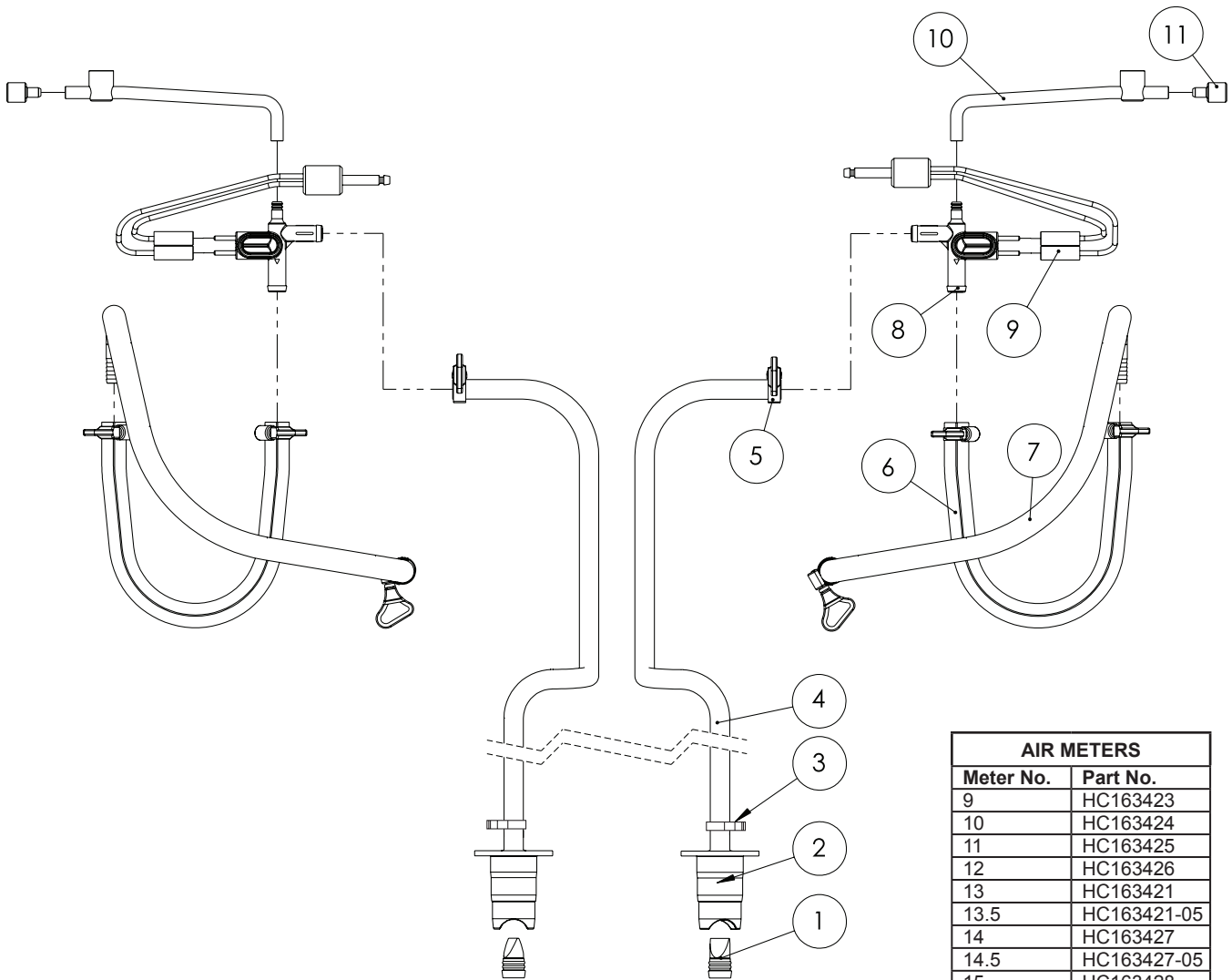


Item	Part No.	Description
1	HC138783-01	Support - Roller Bearing
2	HC139751	Shoe - Roller
3	HC116009-01	Roller - Assy Complete
4	HC138836	Hose - Transfer Red
5	HC117092	Retainer - Air Line
6	HC150016	Mix Cord
7	HC150536	Receptacle
8	HC150612	Switch
9	HC121798	Cover - Assy Mix Pump Molded
10	HC161313	Switch - Proximity Reed NC
11	HC138799	Arm - Swing Clamp
12	HC162330	Spring-Compression
12A	HC140711	Washer - Spring End
13	HC140706	Knob - Fluted 1/4-20 Custom
14	HC141759	Drawer - Mix 10 Gal

*See Figure 4 for MTS Hose assembly.

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Figure 4 MTS—RMT Hose Assembly

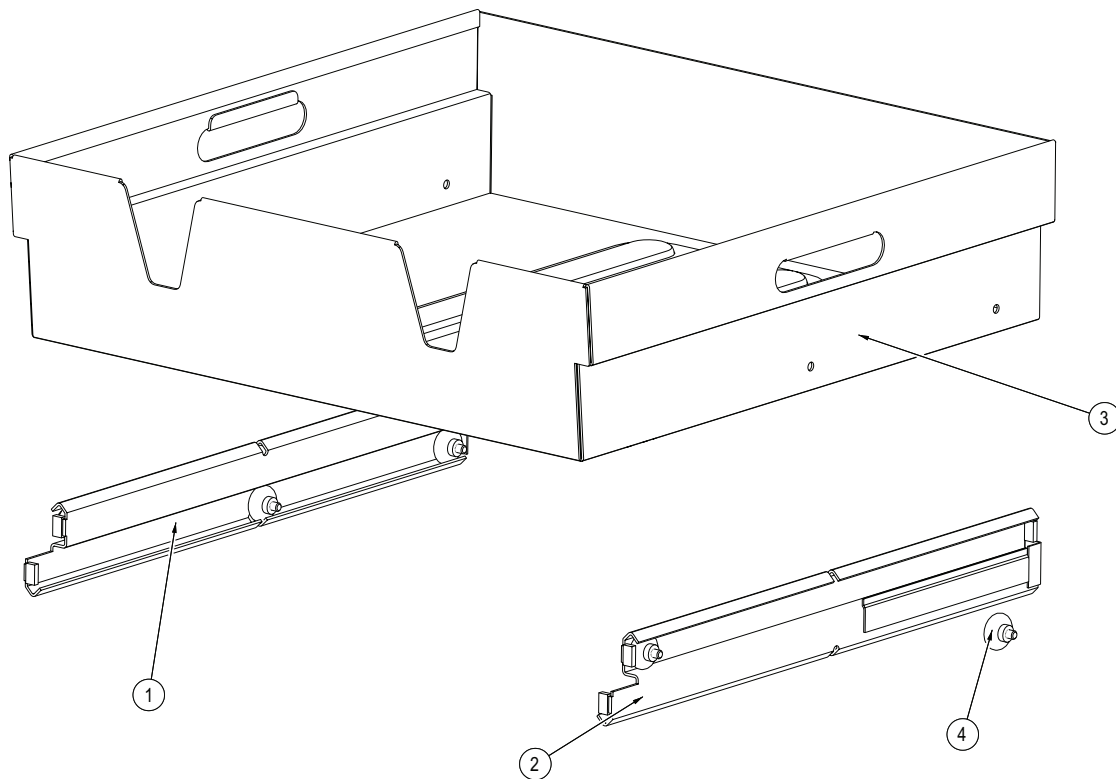


Item	Part No.	Description
1	HC199032	Duckbill - Inlet
2	HC138705-02	Connector - Bag In Box
3	HC160727	Clamp - Plastic Ratchet
4	HC196326	Tubing - Clear (Cut to Length)
5	HC116065	Clamp - Assy Soft Hose 5/8"
6	HC138836	Hose - Transfer Red
7	HC121638	Hose - Assy Mix Braided
8	HC121799	Port - Assy Inlet Mix Level Molded
9	HC150016	Mix Cord
10	HC138170-02	Tube - Air
11	Meter-Air	(Order by meter number)

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

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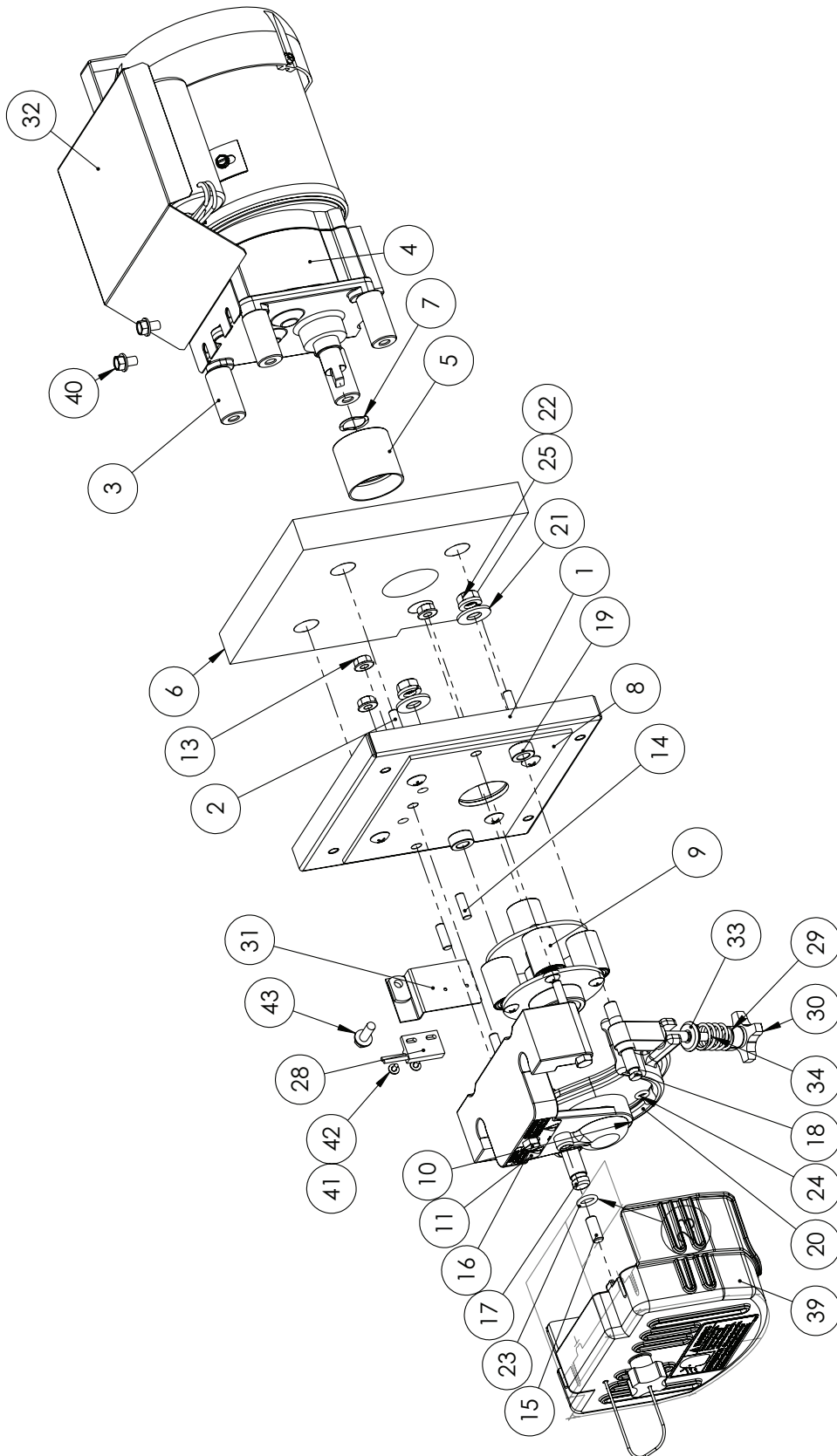
Figure 5 Mix Drawer



Item	Part No.	Description
1		Slide Assembly - Drawer Left
2		Slide - Drawer Right
3	HC141759	Drawer - Mix 10 Gal
4	HC162137	Roller - Drawer
4a	HC159403	Screw - Roller (NOT SHOWN)
4b	HC159402	Nut - Roller (NOT SHOWN)
4c	HC160190	Washer - Roller Spacer (NOT SHOWN)

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Figure 6 Mix Transfer System — RMT (Breakdown)



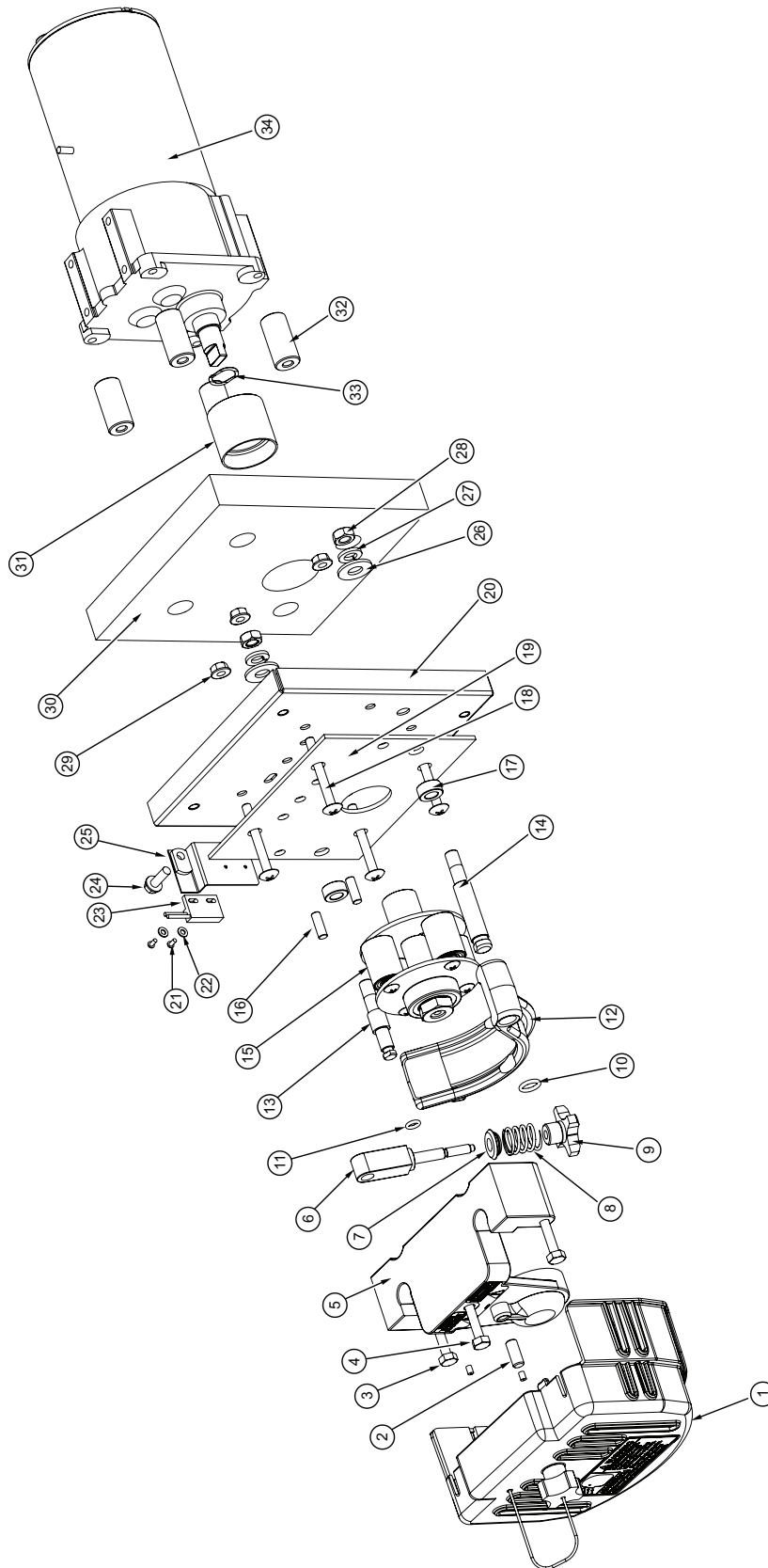
**Use only original or authorized replacement parts with this freezer.
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Figure 6 Mix Transfer System — RMT (Parts)

Item	Part No.	Description
1	HC121633	Faceplate - Assy MTS Liner Left
2	HC160093	Screw - TRPS 1/4 - 28X2 - 1/4 SST
3	HC138793	Spacer - Motor
4	HC121767	Kit - GES Pump Motor 1/6 HP 115/208 - 230/1/60 Includes: HC139046-01 Gauge - Shaft Alignment RMT HC160173 Washer - Spring Wave
or	HC151161	Gearmotor - 1/8 HP 208-230/3/60
5	HC139756	Shield - Drip
6	HC165524-01	Block - Insulation GES
7	HC160173	Washer - Spring Wave SST
8	HC191527	Blank - Backup MTS
9	HC116009	Roller - Assy Complete
10	HC138783-01	Support - Roller Bearing
11	HC165048	Decal - Warning Rotating Parts
12	HC160464	Nut - Hex 3/8 - 16 SST
13	HC159933	Nut - HXSf 1/4 - 20 SST
14	HC160338	Pin - Dowel 1/4 Dia X 3/4 SST
15	HC160386	Stud - 5/16 - 18 X 3/4 SST
16	HC160465	Screw - HXHC 1/4 - 20X3 1/2 SST
17	HC138797	Arm - Shoe Pivot
18	HC138799	Arm - Swing Clamp
19	HC138800	Spacer - Swing Arm
20	HC139751	Shoe - Roller
21	HC160169	Washer - Flat 3/8 SST
22	HC160170	Washer - Lock 3/8 SST
23	HC160612	O Ring (ARP - 111 .438 Id X .625 Od X .094)
24	HC160628	O - Ring
25	HC159927	Nut - Hex 3/8 - 16 SST
26	HC160140	Washer - Lock #10 ZN
27	HC160075	Screw - RDHM #10 - 24X3/8 ZN
28	HC161302	Switch - Slide/Cover
29	HC162330	Spring - Compression .79Diax1.51x.088SST
30	HC140706	Knob - Fluted 1/4 - 20 Custom
31	HC118763	Bracket - Assy Switch Mtg
32	HC121672	Cover - Assy Pump Motor (1ph only)
33	HC140711	Washer - Spring End
34	HC120504	Clamp - Assy Swing 1/4 - 20
35	HC121654	Cover - Assy Mix Pump
36	HC138890	Lanyard - Wire
37	HC138889	Knob - Cover RMT
38	HC165246	Decal - Warning Pressurized
39	HC121798	Cover - Assy Mix Pump Molded
40	HC159919	Screw - HXSf 1/4 - 20 X 3/8 ZN (1ph only)
41	HC160357	Screw - RDHM #4 - 40X1/4 STL
42	HC160393	Washer - Flat #6 Brass
43	HC159939	Screw - HXSf 1/4 - 20X11/16 SST

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Figure 5 3PH Mix Transfer System - RMT (Breakdown)



**Use only original or authorized replacement parts with this freezer.
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Figure 5 3PH Mix Transfer System - RMT (Parts)

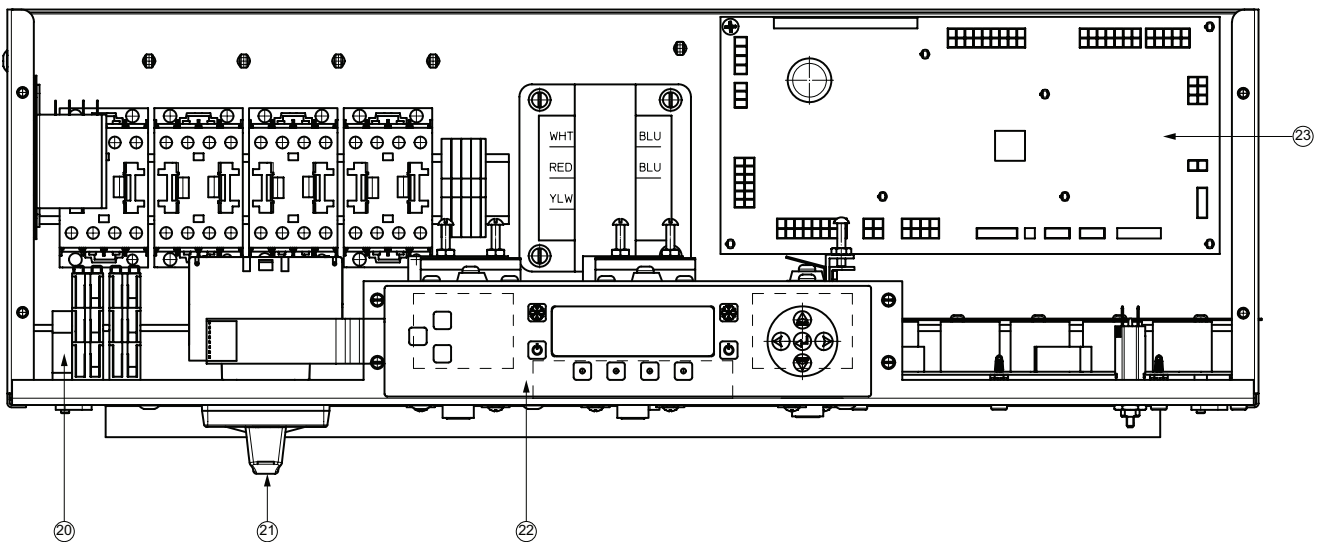
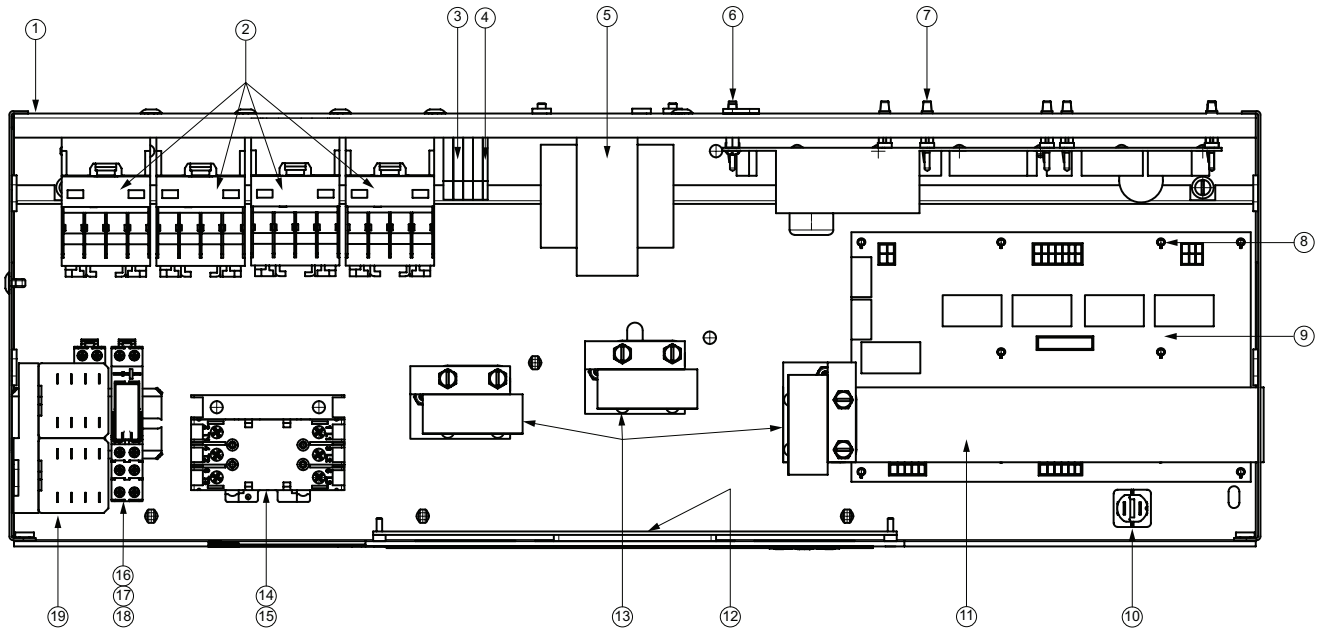
Item	Part No.	Description
*	HC121634-02	MTS - Assy Cab Red Line/Relief Bism (3 Ph) LH
*	HC121634-03	MTS - Assy Cab Red Line/Relief Bism (3 Ph) RH
1	HC121798	Cover - Assy RMT
	HC165246	Decal - Warning Pressurized
	HC138889	Knob - Cover RMT
	HC138890	Lanyard - Wire
	HC160508	Sleeve - Cable Stop 3/64
2	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 .79Diax1.51x.088SST
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.

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Figure 7 Switch Box (Breakdown)

TOP VIEW



FRONT VIEW

Use only original or authorized replacement parts with this freezer.
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Figure 7 Switch Box (Parts)

Item	Part No.	Description
1	HC121272	Box - Assy Electrical Weldment
2	HC150076	Contactors - 3P 25A 24V Coil BF25
3	HC150591	Block - Terminal
4	HC150594	Stop - Terminal Block End
5	HC150181	Transformer - CI2 208/240PRI/24SEC
6	HC160237	Standoff - Hex Male/Female #6-32 5/8
7	HC150927	Support - 5/8 Circuit Board
8	HC150038	Support - 1/2 Circuit Board
9	HC151702	Board - PC Relay
10	HC150182-01	Breaker - Circuit 4A Threaded
11	HC141350	Insulator - Relay Board
12	HC150994-05	Board - PCB UI B.5090
13	HC113903	Switch - Assy Spigot
14	HC151708	Switch - Disconnect
15	HC151708-01	Switch - Disconnect 4th Pole Add On
16	HC150098	Socket - Miniature Relay DPDT
17	HC150166	Clip - Miniature Relay Retaining
18	HC150044	Relay - Miniature DPDT 230V Au Contact
19	HC150343-01	Relay - Control Flange DPDT 12VDC
20	HC150999	Anchor - Din Rail
21	HC151709	Knob - Rotary Disconnect
22	HC150033	Membrane - Cab
23	HC151698	Board - PC Main B.4865

Not Shown:

HC150018.....Fuse - 5 X 20mm 3A Slow Blow

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Figure 8 Spigot Switch Assemblies

Item	Part No.	Description
*	HC113903	Switch - Assy. Spigot (Side)
1	HC150456	Switch - Snap Button
2	HC160393	Washer - Flat #6
3	HC160392	Washer - Ext. Tooth #6 ZN
4	HC160296	Screw - RDHM #6-32 x 1-1/4 SST
5	HC162321	Spring - Spigot Switch
6	HC136124	Button - Spigot Switch
7	HC160303	Ring - Retaining 1/2 External
8	HC113902	Bracket - Assy. Spigot Switch Mtg.
9	HC113901	Bracket - Assy. Adjusting
10	HC160267	Screw - RDHM #8-32 x 7/8 Brass
11	HC160102	Nut - HEX #8-32 ZN
12	HC135744	Insulator - Switch

* Includes items 1-12.

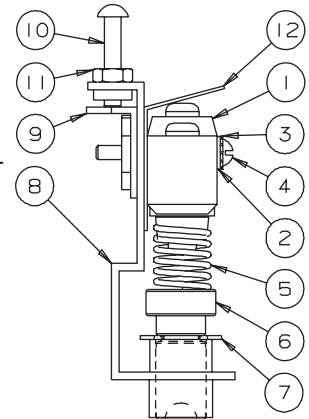
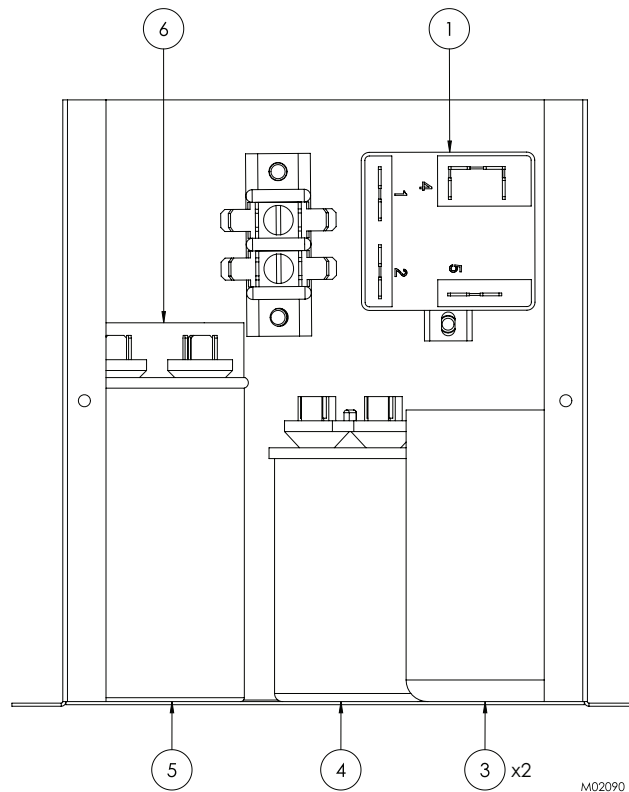


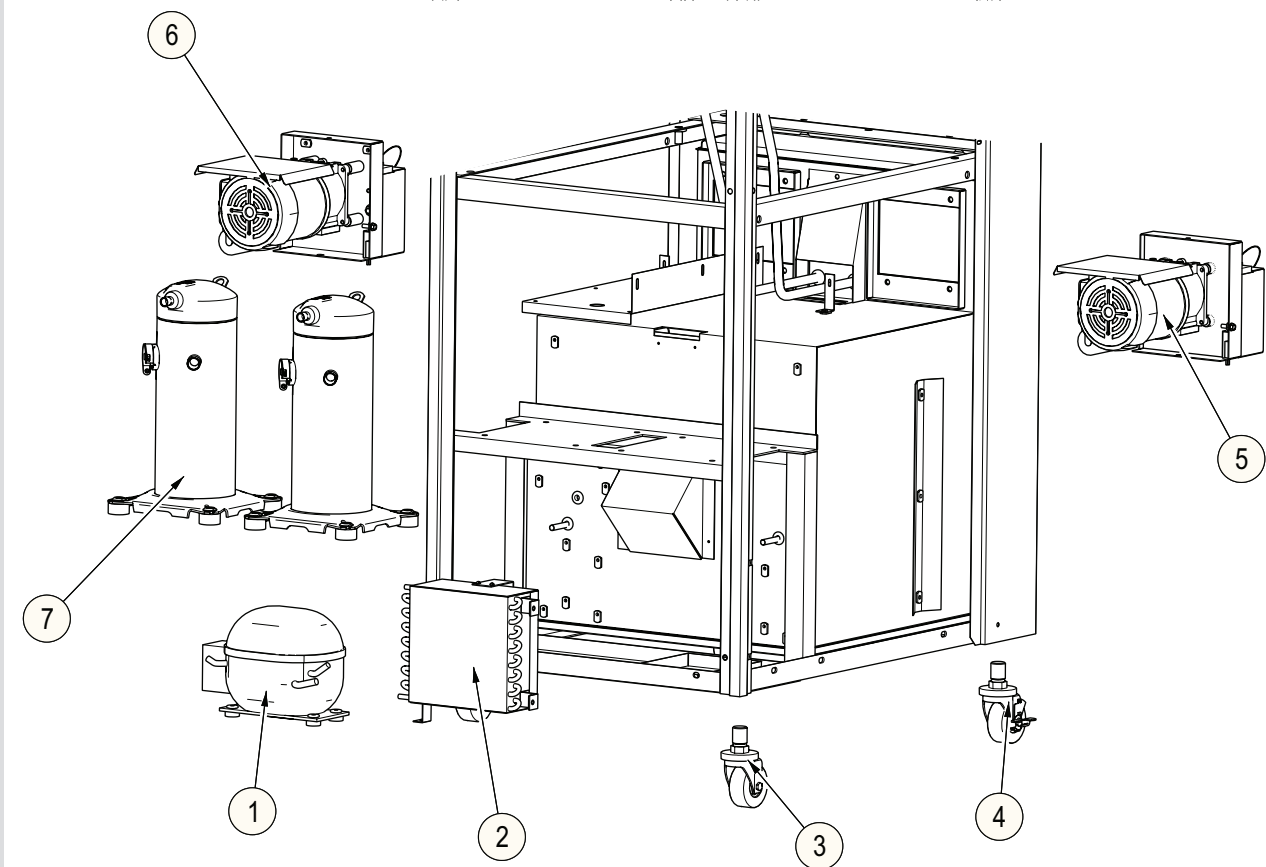
Figure 9 Capacitor & Relay Box (1 phase)



Item	Part No.	Description
1	HC150029	Relay - Compressor
2	HC160739	Clamp - Hose 3-9/16 - 4-1/2 Screw
3	HC150294	Capacitor - Start (Bluffton Motor)
4	HC150244	Capacitor - Run (Bluffton Motor)
5	HC150403	Capacitor - Run (Copeland Compressor)
6	HC151445	Capacitor - Start (Copeland Compressor)

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Figure 10 AC Side/Back View (Lower Cab)



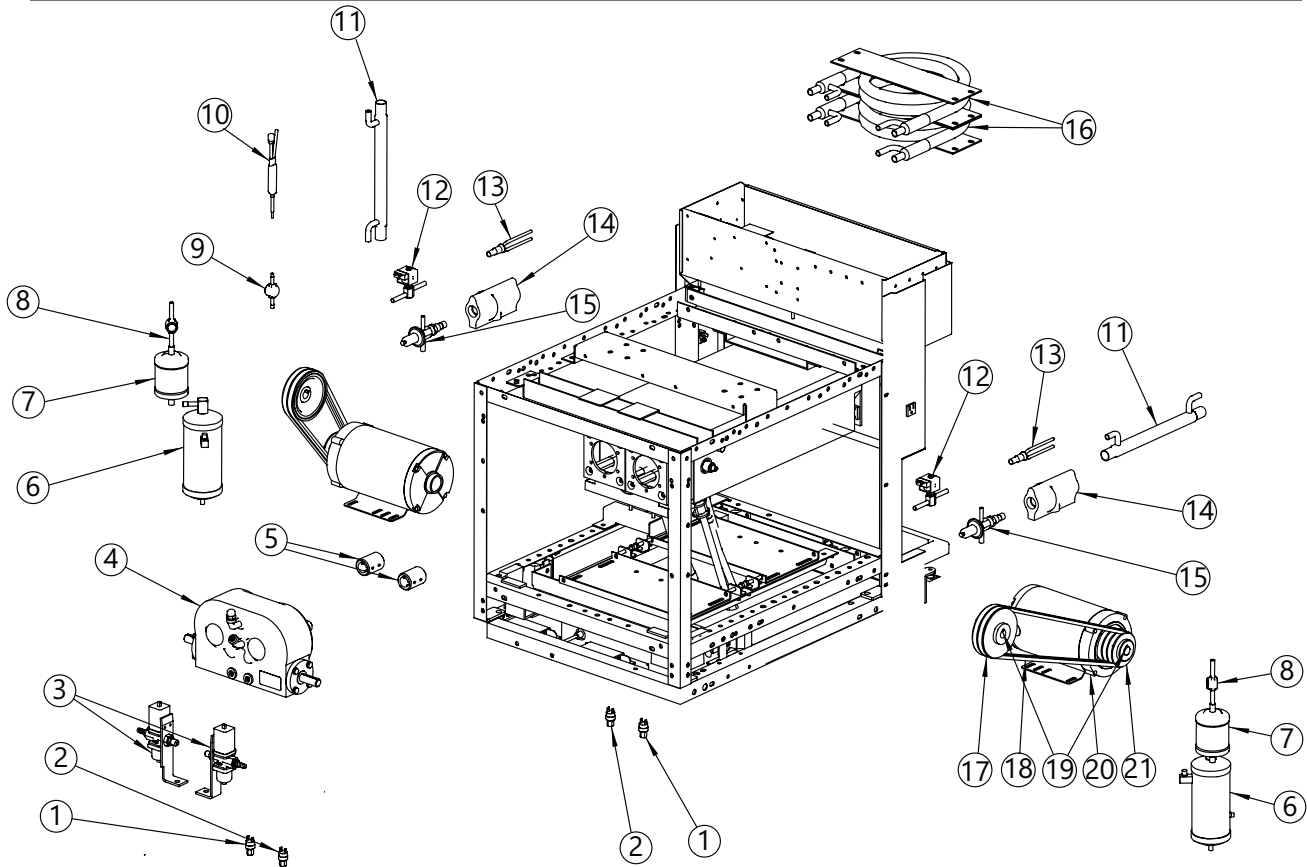
Item	Part No.	Description
1	HC121872	Kit - Cabinet Compressor w/Relay & Cap
2	HC121619	Condenser - Assy GES High Cap Includes: HC120151 Shroud Condenser HC155139 Condenser 8X8
3	HC162132-01	Caster - 1-14 Stem W/O Brake
4	HC162131-01	Caster - 1-14 Stem W/Brake
5	HC121634-01	MT - Assy. W/Relief CCW (A Side)
6	HC121634	MT - Assy. W/Relief CW (B Side)
7	HC154948	Compressor - Scroll ZS19KAE-TF5

Not Shown:

- HC161216.....Sensor - 10K Thermistor (Mix Feed Tube)
- HC161222.....Sensor - Temp 10K NTC W/Molex & Jacket (Cabinet)
- HC161212-01.....Sensor - NTC Temperature 10K W/Molex (Cylinder)
- HC121441Transducer (to pressure switch) Replacement Kit

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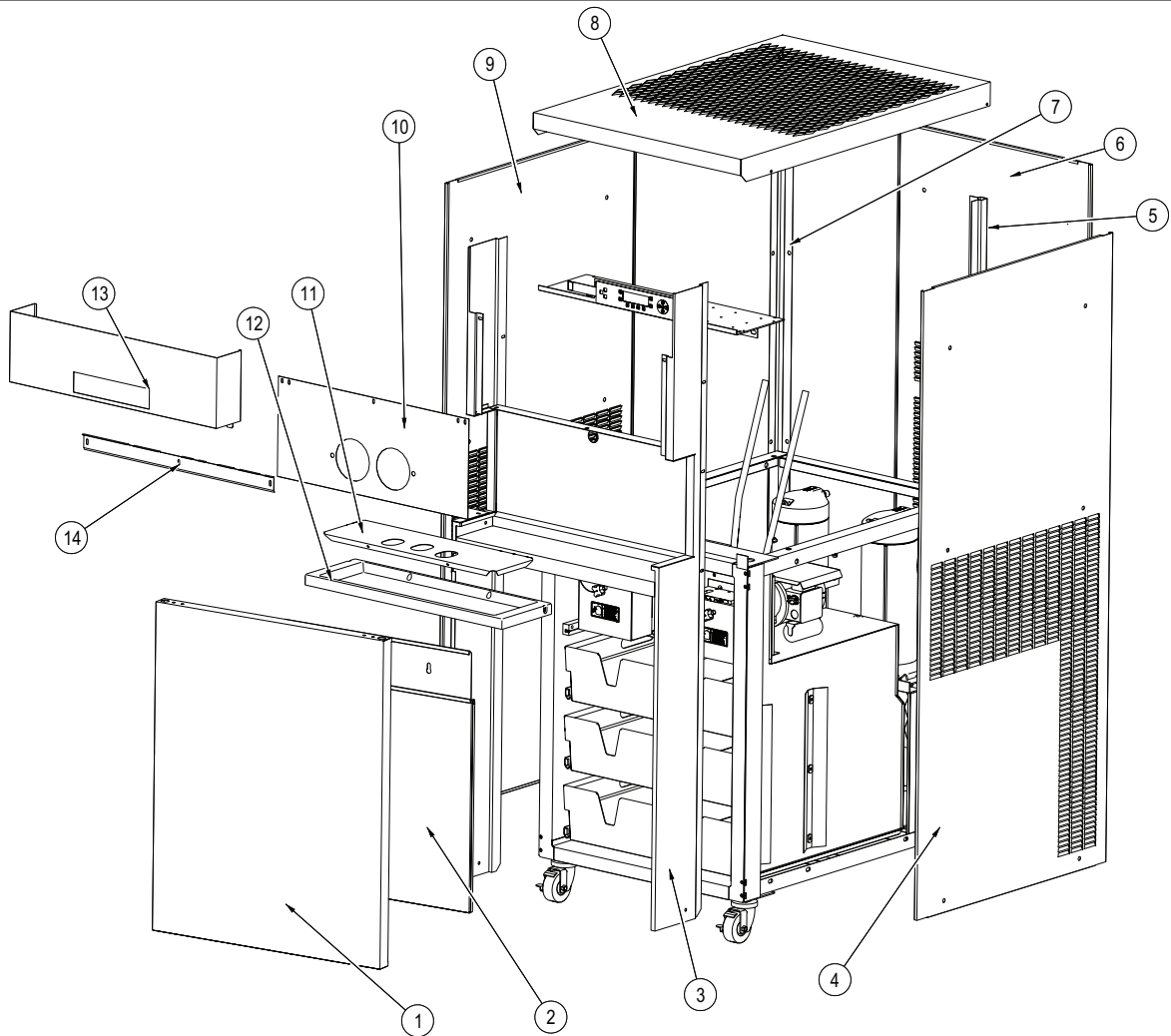
Figure 11 WC Side/Back View (Upper Section)



Item	Part No.	Description
1	HC155405	Cut Out - High Pressure
2	HC155701	Cut Out - Low Pressure
3	HC112080	Valve - Assy Water
4	HC153341	Reducer - Gear 4CB Wintwin
5	HC111964	Coupling - Assy 1 In Drive
6	HC155071	Receiver - 3Lb 3/8 ID Sweat W/O Valve
7	HC155054	Drier - Filter 16 Cu In
8	HC155059	Glass-Sight
9	HC155459	Glass - Sight
10	HC155498	Drier - Filter W/Access
10A	HC155399	TXV Valve (Not Shown)
11	HC155495	Heat Exchanger
12	HC155395	Valve - Solenoid Body 3/8 ODM
12A	HC151477	Coil - Solenoid 208-240V MKC-1TS
13	HC155494	Distributor - Refrigerant
14	HC165531	Insulator - Expansion Valve
15	HC155493	Valve - Automatic Expansion
16	HC155029	Condenser - Water
17	HC153625	Sheave - 3/4 Bore 4.75 OD 4.50PD
18	HC153171	Belt - V (LH - A Side)
18A	HC153161	Belt - V (RH - B Side)
19	HC153322	Key - Drive 3/16 Sq X 1 1/2
20	HC151052-01	MOTOR - 2HP 208/230/460-3-60
21	HC153626	Sheave - 7/8 Bore 3.25 Od 3.00PD

**Use only original or authorized replacement parts with this freezer.
Use of unapproved parts will void warranty.**

Figure 12 Panel Breakdown

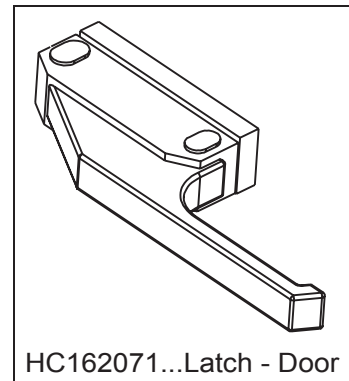


Item	Part No.	Description
1	HC121649	Panel - Door 26 In
2	HC121613	Air Curtain
3	HC121609	Panel - Assy Front
4	HC141726	Panel - Side RH
5	HC141729	Channel - Rear RH
6	HC141728	Panel - Rear
7	HC141730	Channel - Rear LH
8	HC141355	Panel - Top
9	HC141727	Panel - Side LH
10	HC140128-01	Panel - Dispense
11	HC115132	Insert - Assy. Drip Tray
12	HC196336	Tray - Drip 26" White Molded
13	HC141352	Trimstrip - Upper 26In
14	HC141353	Trimstrip - Lower 26In

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

Not Shown:

- HC160574Gasket - Door Magnetic
- HC118597Actuator - Assy Door Switch



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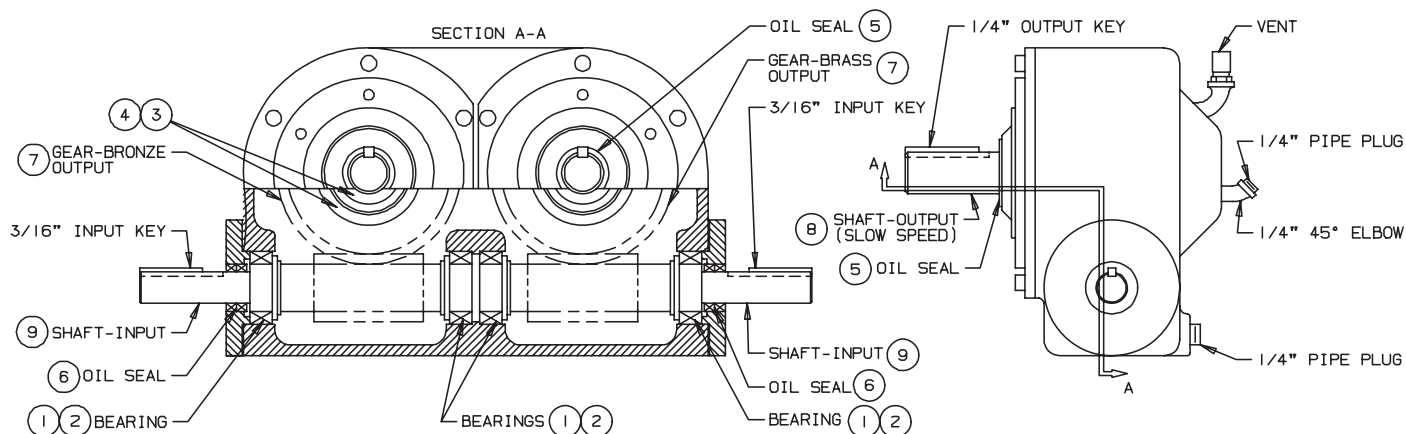
Figure 13 Panel Hardware & Decals

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				

Panel Decals & Labels	
Part No.	Description
HC165119	6" Air Flow
HC165025	Beater Warning
HC164031	Blade Installation
HC164452	Cleaning Instructions
HC165093	Clear Overlay
HC165013	CMT Patent
HC165002	General Purpose Receipt
HC164127	Operating Instructions
HC165126	Panel Removal
HC165124	Top Air Discharge
HC165440-02	Trimstrip IDQ 26"
HC164477-01	Trimstrip LH
HC164021-01	Trimstrip RH
HC165246	Warning - Pressurized
HC164444	MTS Connect
HC167022	Fitting Alignment CW
HC167022-01	Fitting Alignment CCW

**Use only original or authorized replacement parts with this freezer.
Use of unapproved parts will void warranty.**

Figure 14 Gear Reducer



M00057

(Order by freezer serial number)

Model — Wintwin

HC153341 Wintwin 10 - 1 Ratio A and B Side

Item	Part No.	Description	Required Per Side
1	HC153014	Bearing - High Speed Cup	2 ea.
2	HC153015	Bearing - High Speed Cone	2 ea.
3	HC153011	Bearing - Slow Speed Cup	2 ea.
4	HC153012	Bearing - Slow Speed Cone	2 ea.
5	HC153051	Seal - Oil (Slow Speed)	2 ea.
6	HC153053	Seal - Oil (High Speed)	2 ea.
7	HC153349	Gear - Bronze	1 ea.
8	HC153350	Shaft - Slow Speed	1 ea.
	HC153000	Gear - Assy. Output (Slow Speed)	
9	HC153348	Shaft - Input (High Speed)	1 ea.

Not Shown:

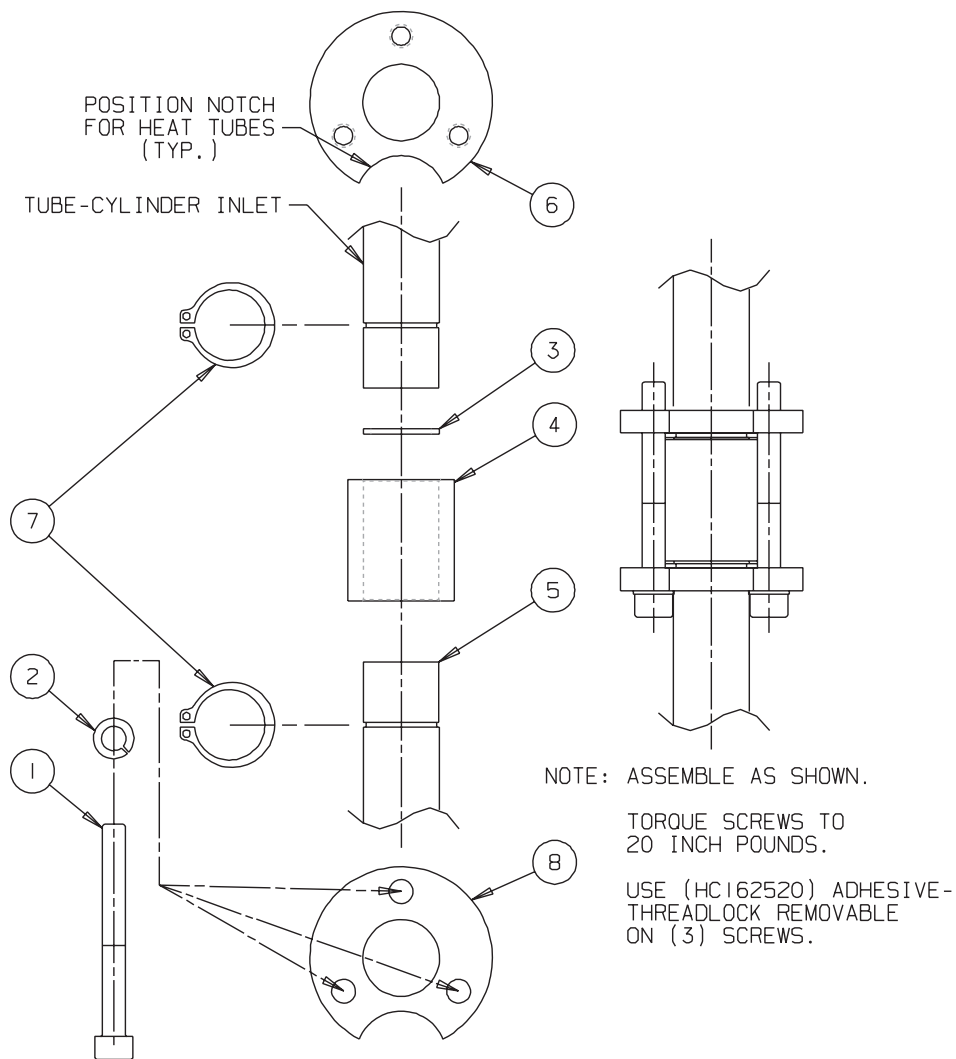
- HC114874Kit - Reducer Gasket 4CB 1 ea.
- HC111964Coupling - Assy. 1 inch Drive
- HC153322.....Key - Drive 3/16" High (in)
- HC153323.....Key - Drive 1/4" Slow (out)

****Oil-Gear Reducer (per quart)**

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

**Use only original or authorized replacement parts with this freezer.
Use of unapproved parts will void warranty.**

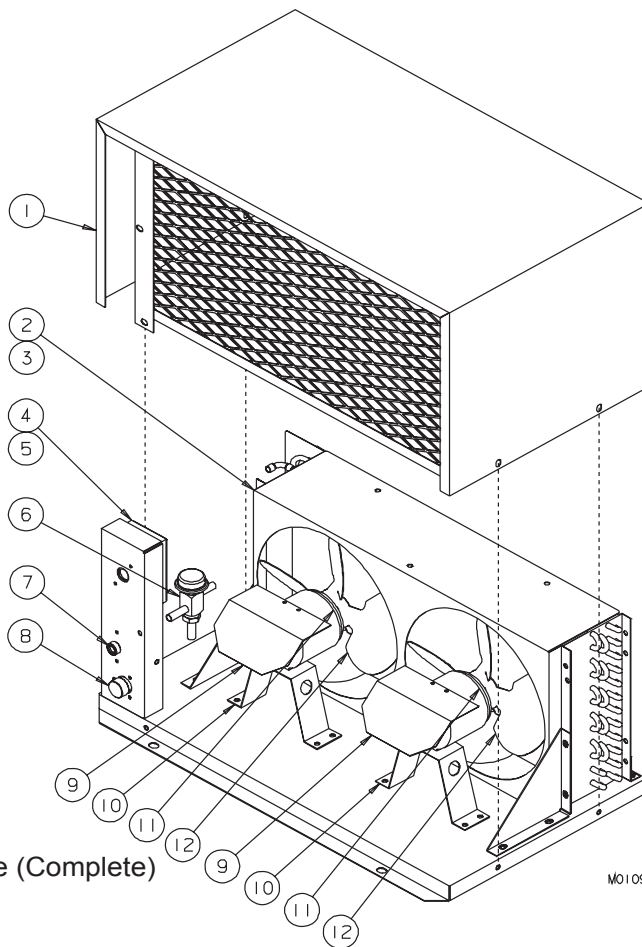
Figure 15 Evaporator Mix Tube Assembly



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

**Use only original or authorized replacement parts with this freezer.
Use of unapproved parts will void warranty.**

Figure 16 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

**Use only original or authorized replacement parts with this freezer.
Use of unapproved parts will void warranty.**

Accessories

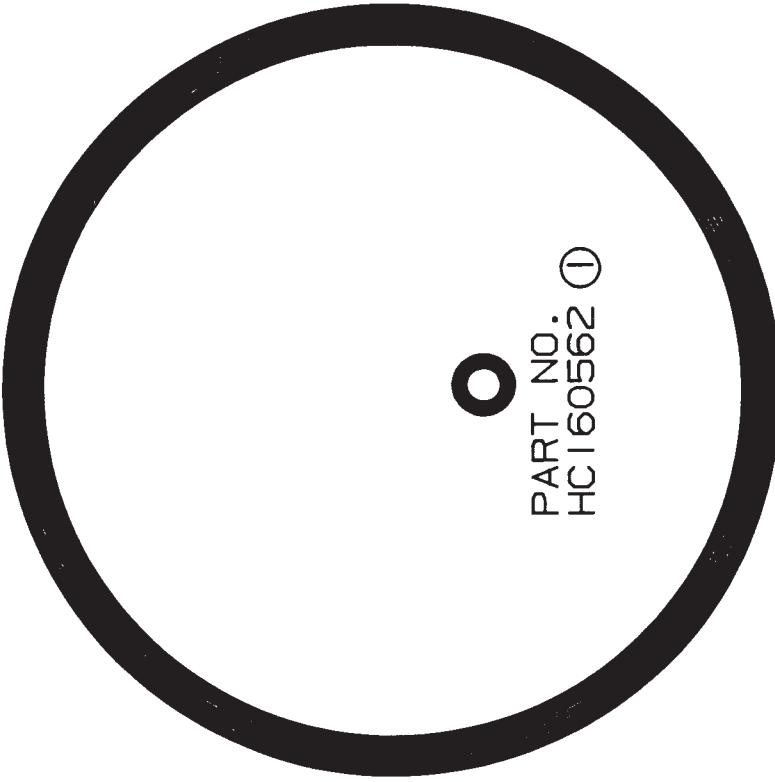
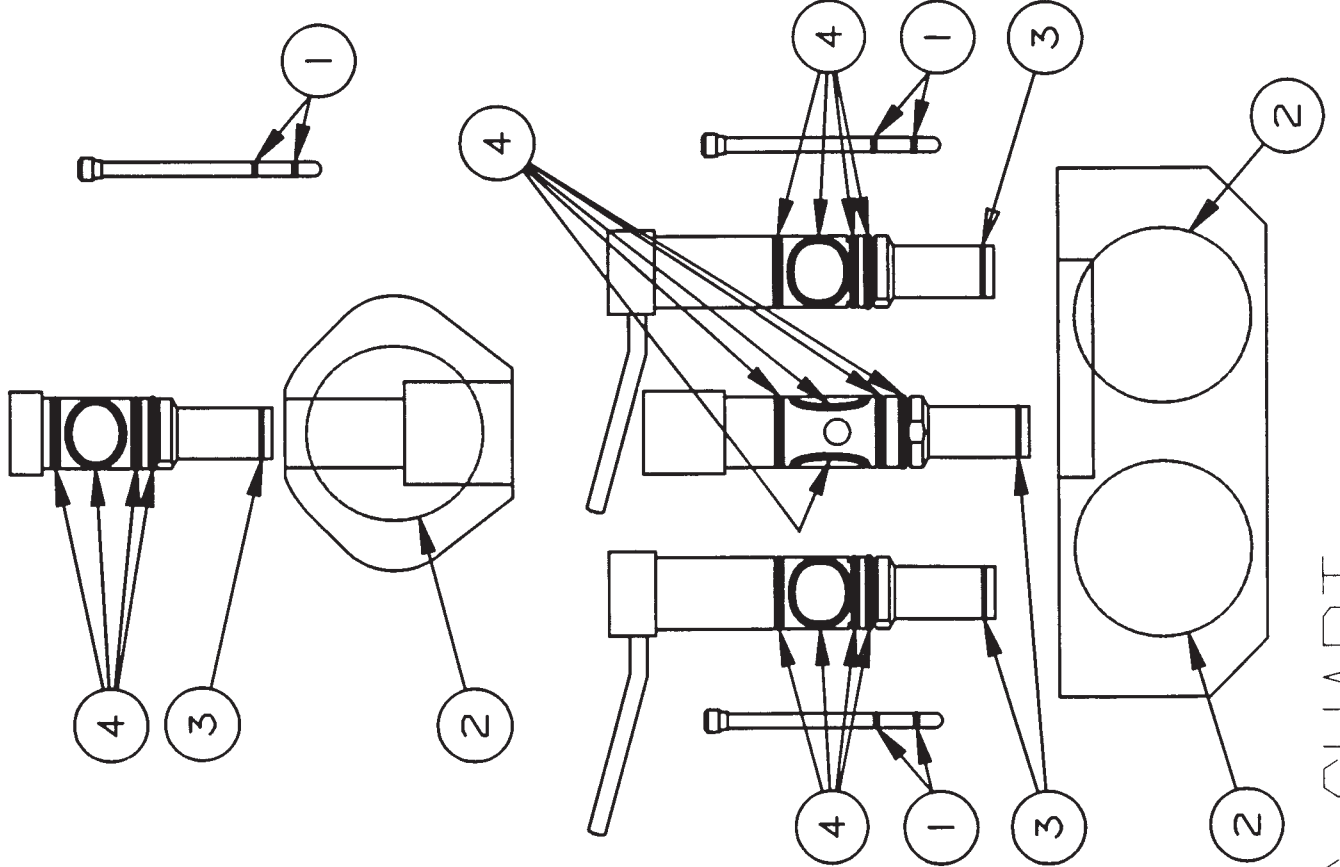
Part No.	Description
HC137870	Adapter - Star/Spigot
HC196103	Bottle - Wash
HC158009	Brush - 4" Cylinder w/o Handle
HC158018	Brush - 7/16" Dia 12" Overall Length
HC158019	Brush - 9/16" Dia 30" Overall Length
HC158026	Brush - 1" Dia. 12" Long
HC158037	Brush - 1/4" Dia. x 18-1/2" Overall Length
HC162105	Caster - 1-1/4" ST PT With Brake
HC162106	Caster - 1-1/4" ST PT Without Brake
HC184238	Chart - O-Ring Laminated
HC158051	Cup - Overrun-One Pint
HC184644	DVD - Training 919RMT, 929RMT, 959RMT
HC158012	Handle - Brush Fiberglass
HC136567	Hose - Spigot Drain
HC112978.....	Leg - Assy. 6"
HC158054A....	Lubricant - Lubri Film Plus 4 oz. tube
HC158066	Lubricant - Compound Seven 4 oz. tube
HC196192	Nozzle - Serrated Six Point (Star)
HC158014	Sanitizer - Stera Sheen Case 4-4lb.jars
HC158014A....	Sanitizer - Stera Sheen 4 lb. jar
HC158049	Scale - Overrun
HC158043	Rod - Stir
HC169374	Tool - O-Ring Removal
HC196006	Tee - Plastic Hose Connection
HC196061	Tubing - .600ID x .850OD PVC (Mix Line-Std.)
HC196062	Tubing - .600ID x .975OD PVC (Mix Line-Hd.)

O-Ring Chart

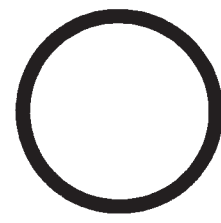
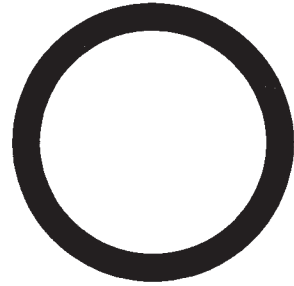
REV. B

SOFT SERVE DISPENSING HEADS

HC184238



PART NO. HC160583 ②



O-RING CHART

PH. NO. 309-755-4553

H.C. DUKE & SON, INC.