



OPERATOR'S MANUAL

with Illustrated Parts List

**COMPACT SERIES
SOFT SERVE FREEZER
Model CS600**

184596 - 7/13

**Operator's Manual
for the
Electro Freeze Model CS600
Compact Series
Soft Serve Freezer**

SAFETY FIRST!

Follow these four steps to safety

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




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

2. Understand Signal Words

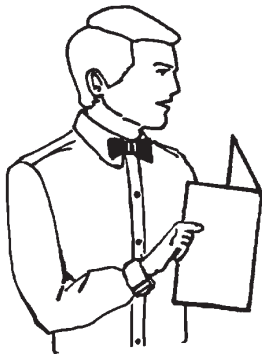


The signal words — DANGER, WARNING and CAUTION — are used with the safety alert symbol (DANGER decals on the freezer may or may not have the safety alert symbol, but the message is the same). Decals with the words DANGER, WARNING or CAUTION appear on the freezer. DANGER identifies the most serious hazard.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

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

SAFETY FIRST!

3. Follow Safety Instructions



Read and understand all safety messages in this manual. Read and understand the decal safety messages on your freezer. Take notice of the location of all decals on the freezer and keep the safety decals in good condition. Check them periodically and replace missing, damaged or illegible safety decals. The safety decals must remain in place and legible for the life of the freezer. If you need new decals, use the information and illustrations on pages iv and v of this manual to identify the decal and order replacement parts.

DO NOT attempt to operate the CS600 freezer until you read and understand all safety messages and the operating instructions in this manual.

4. Operate Safely



DO NOT allow untrained personnel to maintain or service this machine. Failure to follow this instruction may result in severe personal injury. ***DO NOT*** operate the freezer unless all service panels and access doors are secured with screws. ***DO NOT*** attempt to maintain or repair the freezer until the main power supply has been disconnected. Contact your local Electro Freeze Distributor for authorized service.

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 following 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 your local authorized Electro Freeze Distributor or H. C. Duke & Son. When ready to order you will need to determine the (1) part number, (2) type of label, (3) location of label, and (4) quantity required, and include a return shipping address.

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

Name: _____

Address: _____

Phone: _____

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



Phone: 309-755-4553

800-755-4545

FAX: 309-755-9858


E-mail: service@hcduke.com

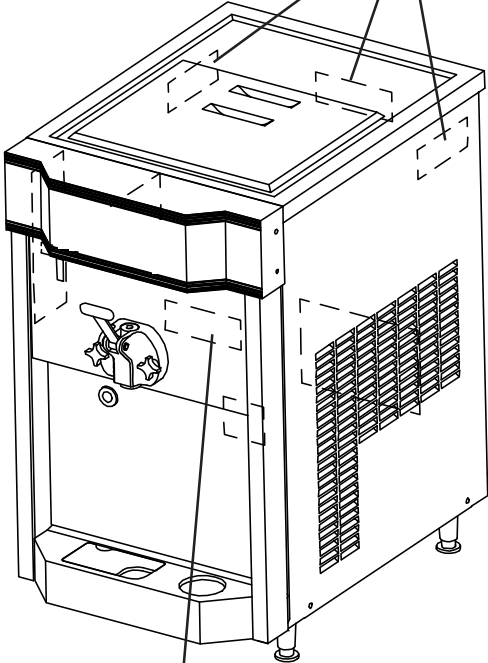
(The decals on the next page are numbered 1 and 2. Those numbers correspond to the numbers in the table below. The table provides the part number, description, and quantity for each decal.)

No.	Part No.	Description (Qty)
1	HC165126	Decal — Panel Removal Warning (3)
2	HC165025	Decal — Beater Warning (1)

Safety Decal Locations

1 P/N [HC165126](#)

	<p>▲ WARNING</p> <p>Hazardous moving parts. Machine starts automatically. Do not operate with panel removed.</p>
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2 P/N [HC165025](#)


	<p>▲ WARNING</p> <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", and2. Disconnect all power supplies. Unit may have more than one power supply.
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Table of Contents

SECTION	DESCRIPTION	PAGE
	SAFETY	ii
PART I		
1.	INTRODUCTION	1
2.	NOTE TO INSTALLER	1
3.	ELECTRICAL REQUIREMENTS	2
4.	SPECIFICATIONS	2
	4.1 Particulars.	2
	4.2 Data Plate	3
	4.3 Reference Information	3
	4.4 Installation Date	3
	4.5 Dimensions.	4
5.	PART NAMES AND FUNCTIONS	5
6.	OPERATOR CONTROLS & INDICATORS	7
	6.1 Selector Switch	7
	6.2 Day-Night Switch	7
	6.3 "ADD MIX" Indicator Light	7
	6.4 Mix Float	8
	6.5 Mix Feed Tube & Insert	8
7.	DISASSEMBLY AND CLEANING	9
	7.1 Accessories	9
	7.2 Disassembly Instructions	10
	7.3 Cleaning Instructions	11
8.	ASSEMBLY	13
9.	START-UP INSTRUCTIONS	15
	9.1 Sanitizing	15
	9.2 Priming	16

Table of Contents - continued

SECTION	DESCRIPTION	PAGE
10.	CLOSING PROCEDURES	17
	10.1 Night Switch Operation	17
	10.2 Draining Product From Freezer	18
11.	SOFT SERVE INFORMATION	19
	11.1 Overrun	19
	11.2 Rerun	19
12.	ROUTINE MAINTENANCE	20
13.	TROUBLESHOOTING TABLE	23



PART II

MODEL CS600 REPLACEMENT PARTS WITH ILLUSTRATIONS*

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



1 Introduction

The CS600 freezer is designed to produce soft serve ice cream, ice milk, yogurt, and similar frozen dairy products, with a product serving temperature range of 15° to 25°F (-9° to -4° C). If such products are prepared from powdered concentrate, they should be precooled to 40°F (4° C) prior to introduction to the freezer. Use of other products in this machine is considered misuse (see Warranty).

This manual has been prepared to assist you in the proper operation and general maintenance of the *Electro Freeze* Model CS600 freezer.

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

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

Name: _____

Address: _____

Phone: _____

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



Phone: 309-755-4553

800-755-4545

FAX: 309-755-9858

E-mail: service@hcduke.com

2 Note to Installer

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

Verify the weight of the freezer. Ensure a counter or table of sufficient strength is used to hold this weight and prevent excessive vibration.

All models require a minimum of 3-inches (7.6 cm) air space on both sides and back of the freezer for adequate ventilation.


If this freezer is to be used in a self-service application, it is recommended that the machine be fitted with a self-service kit. Contact your *Electro Freeze* Distributor or H. C. Duke & Son, LLC. for this kit.

Test the operation of the head safety switch prior to placing the freezer in service. See Section 12, Routine Maintenance, Monthly.


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

3 Electrical Requirements

CAUTION


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

CAUTION


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

1. Always verify electrical specifications on the data plate (figure 4-1) of each individual freezer. Data plate specifications will always supersede the information in this manual.

2. This freezer requires a protected 20 amp 208/230 volt circuit. Connect the freezer to a circuit separate from any other electrical equipment. The power cord on this freezer connects to a NEMA 5-20R receptacle. See Figure 3-1.

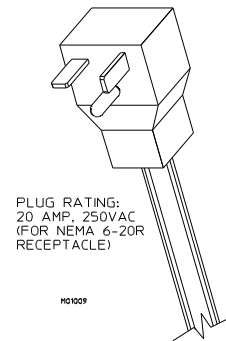


Figure 3-1

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

4 Specifications

4.1 Particulars

Width (in/cm)	18-3/8 / 46.7
Height (in/cm)	35-13/64 / 89.4
Depth (in/cm)	28-3/32 / 71.4
Weight (lbs/kg)	240/109
Voltage*	208-230/60/1
Min.Circuit Ampacity	20.0
Compressor	1-1/2 HP/6500(BTUH)
	1.1kw (Motor)
	1.9 kw (Cooling)
Beater Motor	1-1/2 HP / 1.1kw
Refrigerant	R-404a
Charge	20-34 oz/.57-.96kg
Cooling	Water / Air
Hopper	22 qts/21.2 liters
Cylinder	3.7 qts/3.5 liters

*Contact factory for other voltages.

4.2 Data Plate

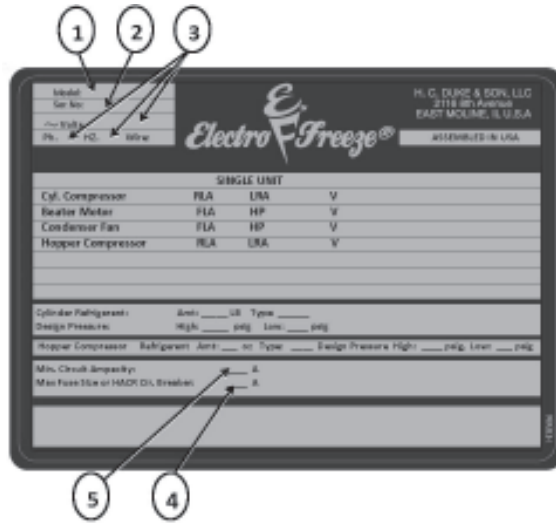


Figure 4-1

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

4.3 Reference Information

Write in Reference Information HERE!



Fill in the following information as soon as you receive the *Electro Freeze* CS600. (The item numbers — encircled, below — correspond with the callout numbers in figure 4-1.)

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

4.4 Installation Date

Fill in the date of installation, and the name, address, and phone number of the installer in the space provided below. This information will be needed when ordering parts or service for the CS600 Freezer.

Date of installation: _____

Installed by: _____

Address: _____

Phone: _____

ELECTRO FREEZE Model CS600

4.5 Dimensions

The dimensions of the CS600 freezer are provided in figure 4-2, below.

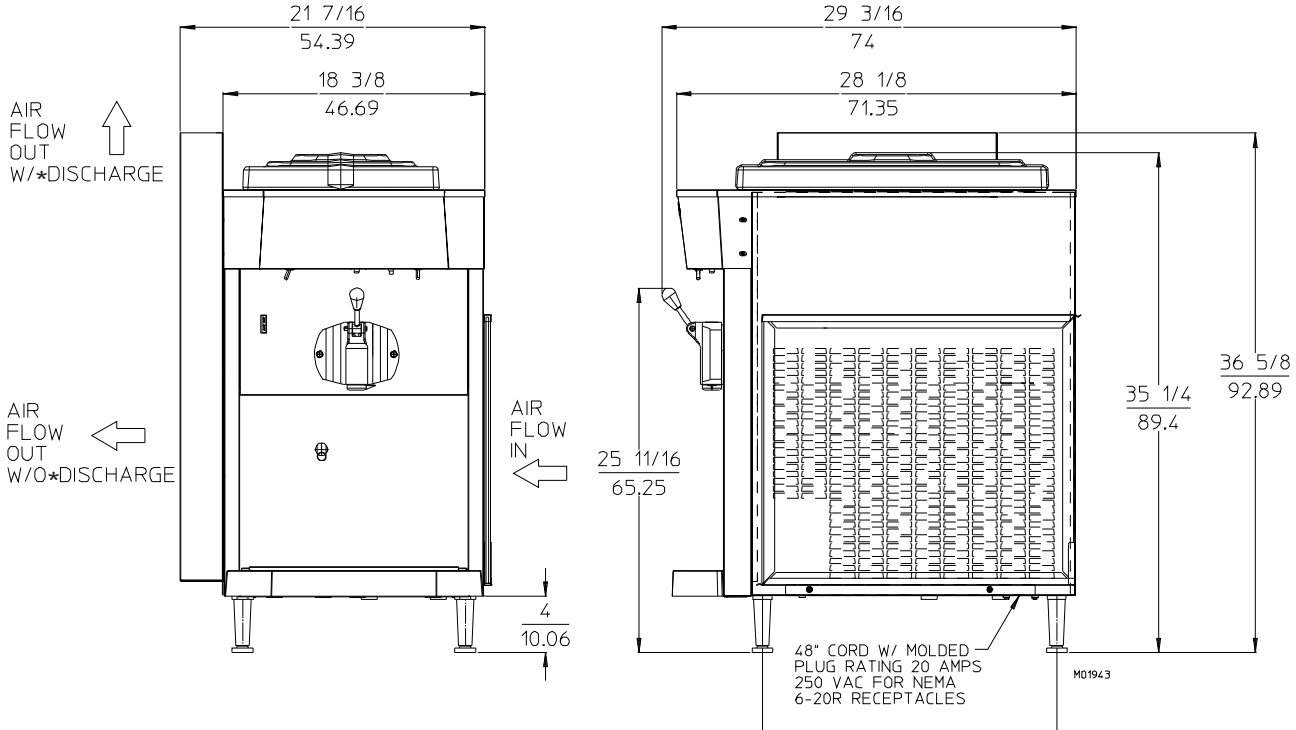


Figure 4-2 Electro Freeze Model CS600 Dimensions

*Optional Top Air Discharge Chute, p/n [HC120991](#)

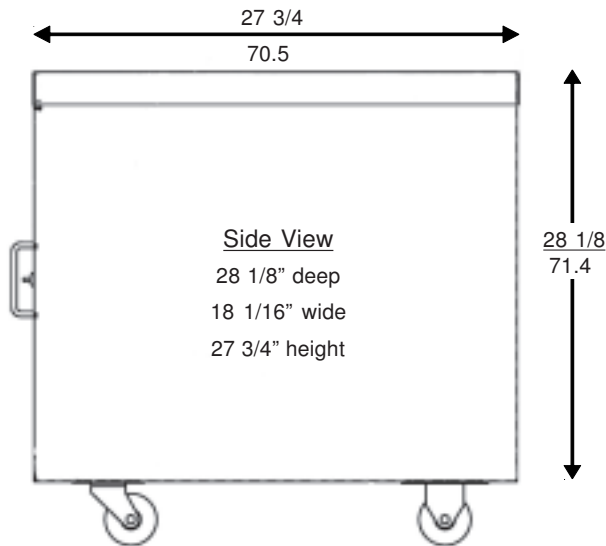


Figure 4-3 Optional Stainless Steel Cart, p/n [HC162200](#) is available

5 Part Names and Functions

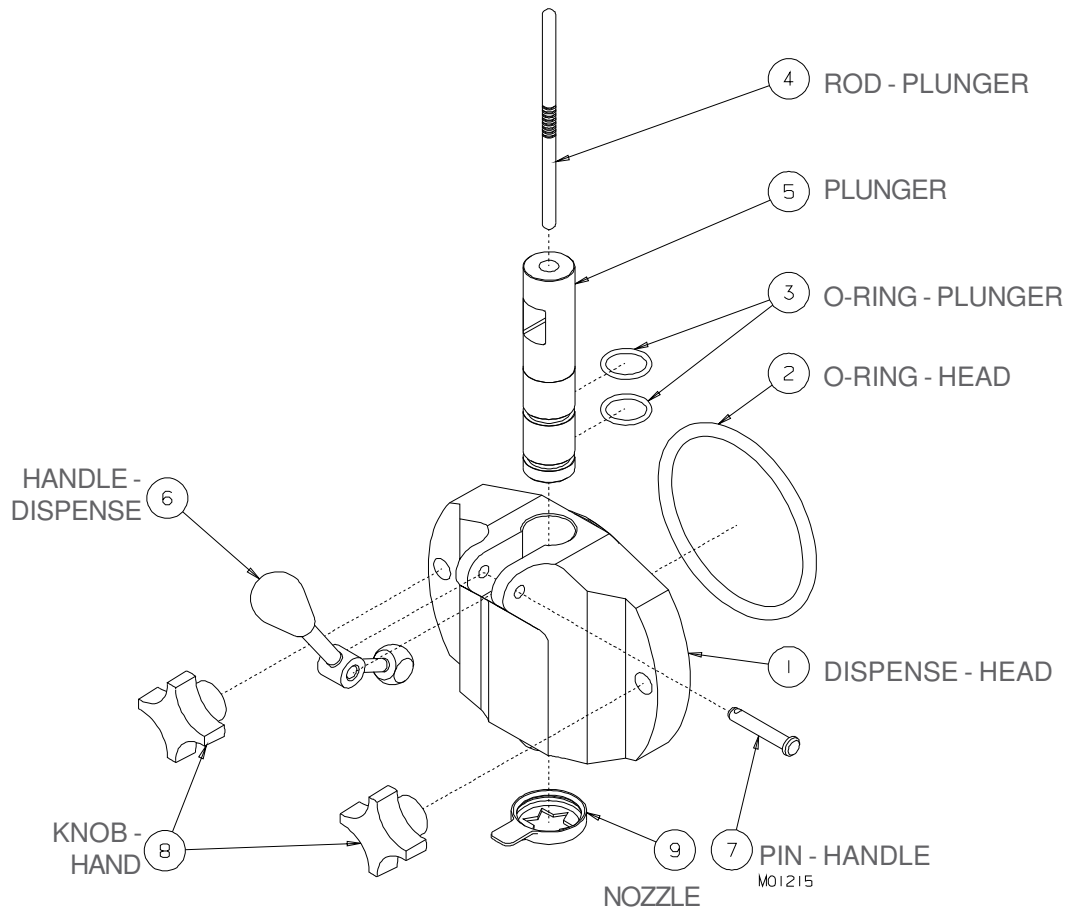


Figure 5-1 Head Assembly

① HEAD. Encloses the freezing cylinder and provides an opening for product to be dispensed.

② O-RING - HEAD. Seals the head to the freezing cylinder. Must be lubricated.

③ O-RING - PLUNGER. Seals the plunger in the head. Must be lubricated to seal and slide freely.

④ ROD - PLUNGER. Starts the freezer when dispensing. Must be in place before freezer will operate.

⑤ PLUNGER. Seals the product opening in the head when closed. Allows product to flow when open.

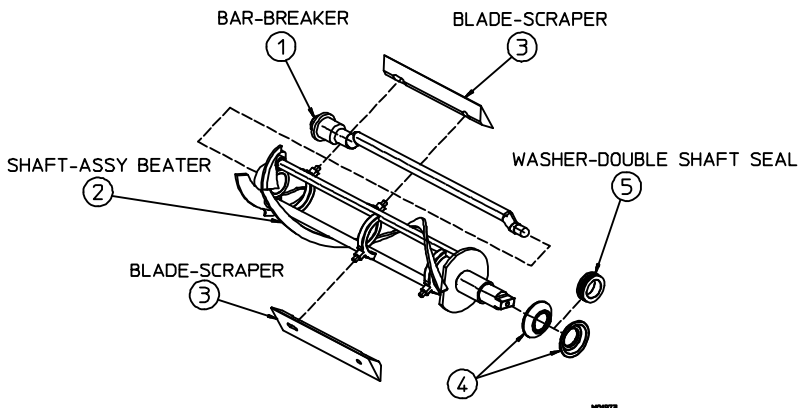
⑥ HANDLE - DISPENSE. Opens and closes the plunger to start and stop the flow of product from the freezer.

⑦ PIN - HANDLE. Secures handle to the head.

⑧ KNOB - HAND. Secures the head to the freezing cylinder.

⑨ NOZZLE. Shapes the frozen product as it is dispensed.

5 Part Names and Functions



① **BAR-BREAKER.** Keeps product blended in the center of the beater shaft.

② **SHAFT-BEATER.** Rotates in the freezing cylinder blending air and mix. Ejects product when dispensing plunger is opened.

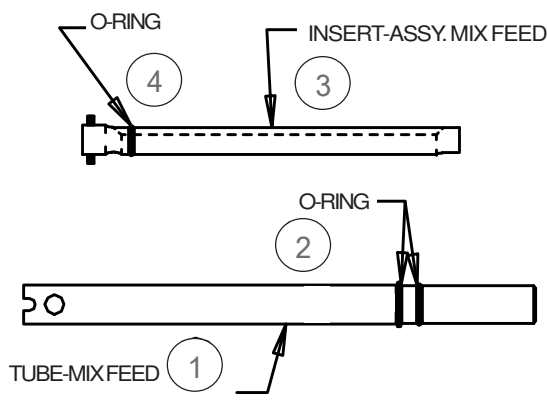
③ **BLADE-SCRAPER** Scrapes frozen product from cylinder walls.

SEAL-SHAFT. Seals the opening between the freezing cylinder and the beater shaft. consists of:

④ **SEAL-BEATERSHAFT**

⑤ **WASHER-DOUBLESHAFT SEAL**

Figure 5-2 Beater Shaft Assembly



① **TUBE - MIX FEED .188.** Meters the correct amount of mix and air into the freezing cylinder from the hopper.

② **O-RING-TUBE.** Seals the opening between the hopper and mix feed tube. (O-rings do not need lubrication.)

③ **INSERT-ASSYMIXFEED.** Provides a positive shut off of mix flow to the freezing cylinder.

④ **O-RING-INSERT.** Holds the insert tube in place in the mix tube. Must be lubricated.

Figure 5-3 Mix Feed Tube Assembly

6 Operator Controls

The following paragraphs describe the operator controls and indicators. Refer to figure 6-1 for location of these controls and indicators on the Model CS600 freezer.

NOTE: The plunger rod must be in place before the freezer will operate in “DAY”, “NIGHT”, or “CLEAN” position.



CAUTION
Test operation of the head switch prior to placing the freezer in service. See Section 12, Routine Maintenance, Monthly.

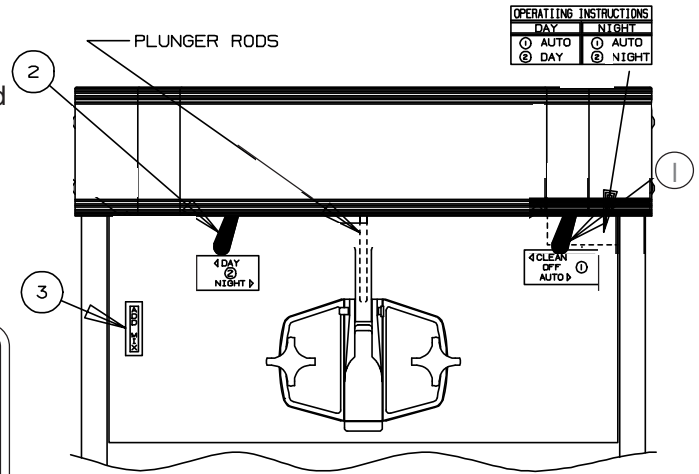


Figure 6-1

6.1 Selector Switch ①

This three-position switch selects the mode of operation of the freezer.

a. “**CLEAN**” (left) — This position operates the beater only (no refrigeration). Always use this mode when performing cleaning and sanitizing operations.

b. “**OFF**” (center) — In this position the beater motor and refrigeration system will not operate.

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

c. “**AUTO**” (right) — This position activates both the beater motor and refrigeration unit. This is the normal operating position.

6.2 Day– Night Switch ②

a. “**DAY**” (left) — The low temperature thermostat controls the system refrigeration to maintain the product serving temperature between 18°–21°F (-8 to -6°C). This is the normal operating position.

b. “**NIGHT**” (right) — This energy saving mode will reduce product agitation. The freezer will automatically cycle to maintain temperatures below 41°F (5° C). Use this position when the freezer will not be in use for periods of more than an hour.

6.3 “ADD MIX” Indicator Light ③

When lit, this light indicates the mix in the hopper is at a low level and should be refilled as soon as possible. Always maintain *at least* 2 inches (5 cm) of mix in the hopper. For best operating results keep hopper full.

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

6 Operator Controls – continued

6.4 Mix Float (not shown)

When this float is mounted on the float stem inside the hopper it automatically senses the mix level. It activates the “Add Mix” light

6.5 Mix Feed Tube & Insert

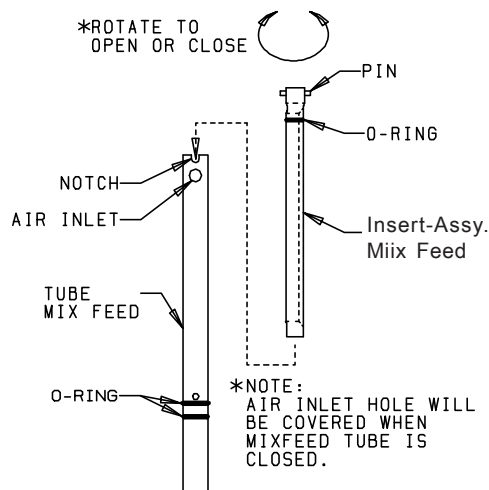


Figure 6-3

This two-position regulating device (figure 6-3) meters the correct amount of mix and air into the freezing cylinder.

a. “OPEN” - Always use this position when dispensing product. (See figure 6-4. When OPEN you can see clear through the hole in the top of mix feed tube.)

Important:

If product is dispensed when the regulator is in the “CLOSED” position, a freeze-up will occur and may damage the freezer.

b. “CLOSED” - Use this position when the freezer is in the “NIGHT” mode, and when product will not be dispensed for a long period of time. (See figure 6-4. When CLOSED you cannot see through the hole in the top of the mix feed tube — the white plastic insert tube inside will block the hole.)

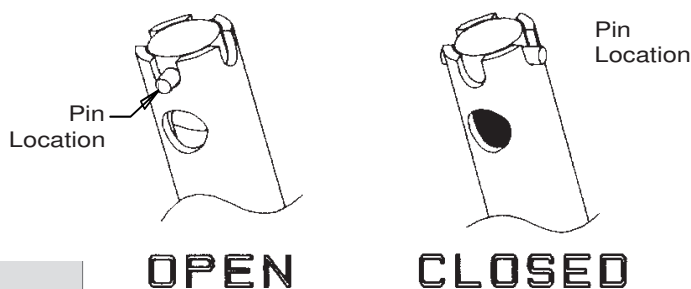



Figure 6-4

7 Disassembly and Cleaning

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.



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 to ensure the best possible product quality and freezer operation.

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

7.1 Cleaning Accessories

The following are accessories necessary for cleaning, sanitizing and disassembly/assembly.

1. BRUSH - HC158009. 4-inch diameter used to clean the cylinder.

2. HANDLE - HC158012. 36-inch handle used with brush p/n HC15010.

3. BRUSH - HC158077. 9/16-inch in

5. TOOL - O-RING REMOVAL. HC169374. Aids in removing O-rings from plunger, head, air relief plug, and spindle.

6. LUBRICANT - LUBRI-FILM PLUS HC158054A. Approved lubricant for moving parts and O-rings.

SH - HC158026. 1-inch in inches long used to clean the

H BOTTLE - HC196103. used plunger and hopper walls.

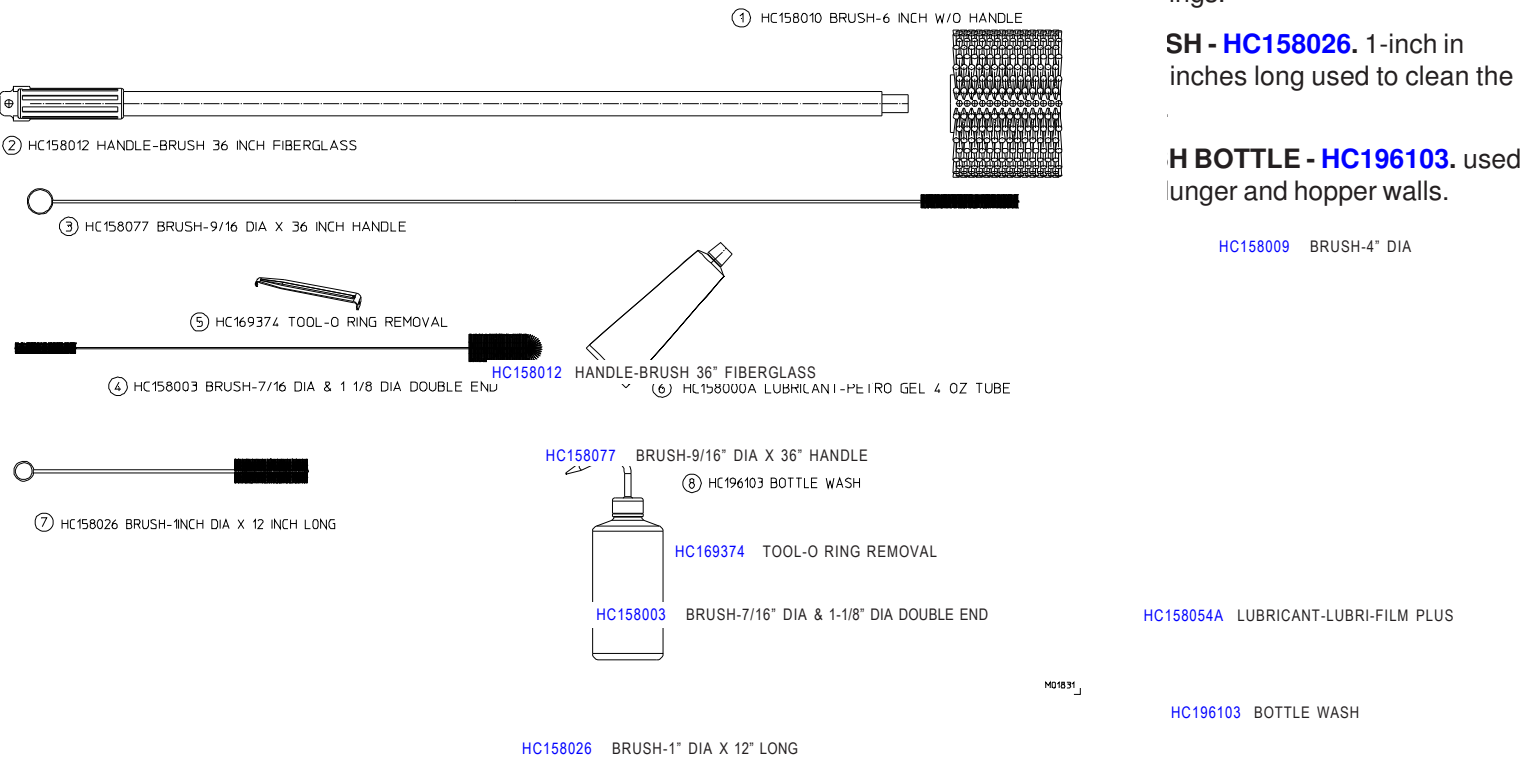


Figure 7-1 Accessories

7.2 Disassembly Instructions

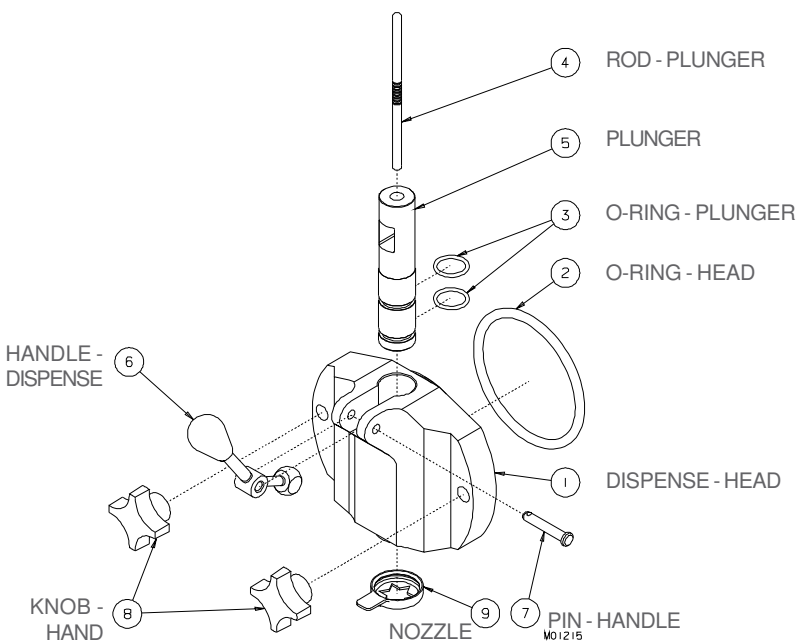


Figure 7-2

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.

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

NOTE: If there is product in the freezer, refer to Section 10, Closing Procedures, 10.1 Draining Product.

1. Remove plunger rod (4, figure 7-2), hand knobs (8) and pull dispensing head (1) straight out.

2. Remove the handle pin (7), plunger (5) and nozzle (9) from head (1).

3. Remove O-ring (figure 7-2, 2) from head (1). Remove O-rings (3) from plunger (5).

4. Remove the beater shaft assembly (2, figure 7-3) from the cylinder. Then remove breaker bar (1), scraper blades (3) and shaft seal (4,5) from the beater shafts. Remove the cup seals (4) from the washer (5) on the shaft seal assembly.

5. Remove hopper cover, drip tray and insert.

6. Remove the mix feed tube (figure 7-4) and mix float from the hopper. Remove insert (2) from mix feed tube.

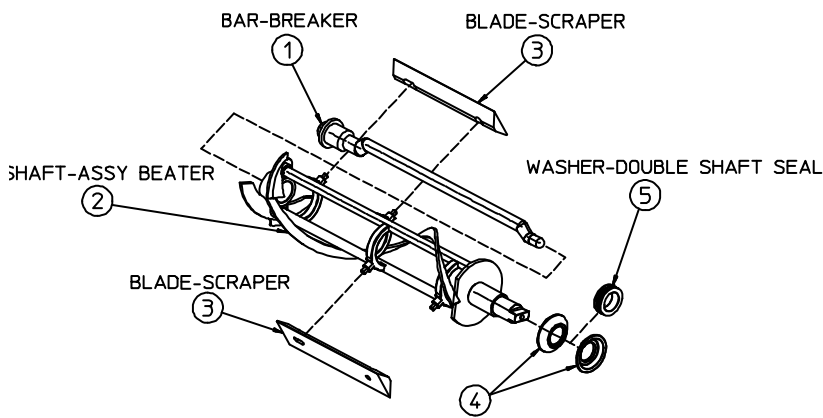


Figure 7-3

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

7. Remove O-rings (3) from mix feed tube (4). Remove O-ring (7) from insert (2).

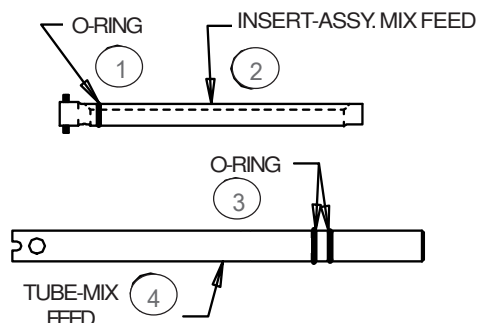


Figure 7-4

7.3 Cleaning Instructions

The cleaning instructions explained in this section are procedures to remove bacteria and maintain a clean sanitary freezer. The soft serve freezer must be disassembled, washed and sanitized according to the instructions in this manual before start-up to ensure the best possible cleanliness.



CAUTION

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



CAUTION

To prevent bacteria growth, use only approved sanitizer to sanitize the machine. Failure to do so could create a health hazard.

Important:

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

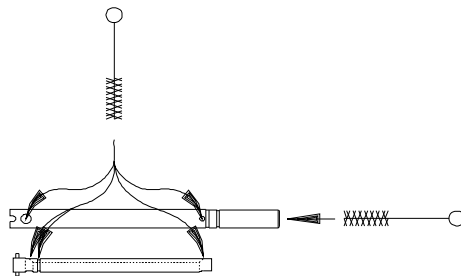


Figure 7-5 Clean the mix feed tube

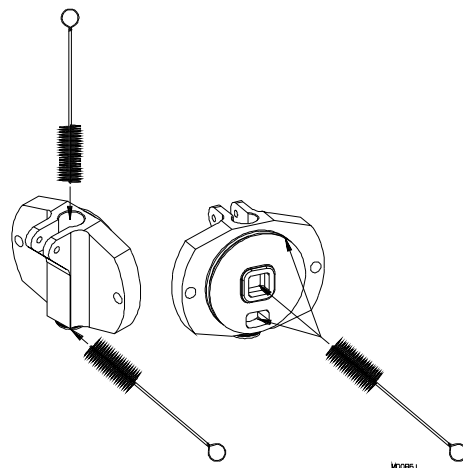


Figure 7-6 Clean the head ports

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

1. Prepare a three-compartment sink in accordance with local health regulations. The sink will be used to wash, rinse, and sanitize the freezer components which will be removed later. Also, prepare a clean surface to air-dry all parts.

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

Important:

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

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

- a. the mix feed tube and regulator main bore and cross holes (figure 7-5)

— continued

7.3 Cleaning Instructions - continued

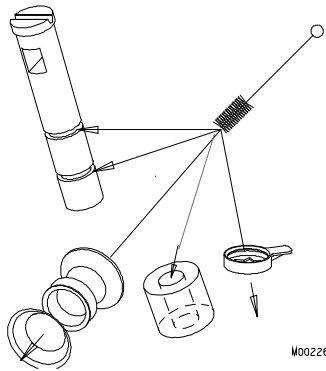


Figure 7-7 Clean shaft seal, bushing, plunger, nozzle and float

b. the head plunger openings, center plunger ports, breaker bar cavities, O-ring grooves, dispense nozzle mounting rings and mix ports (figure 7-6).

c. the shaft seals, washer, plunger O-ring grooves, nozzle and float (figure 7-7)

d. the scraper blade mounting holes and the beater shaft inside the front collar and the hole on the rear flange (figure 7-8)

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

4. Use the dish detergent solution to brush the inside of hopper, around the mix level sensor tube and the mix feed port to the cylinder (figure 7-9). Rinse and brush with sanitizing solution.

5. Brush the inside of the drain tube and cylinder, with dish detergent solution making certain to clean back wall of cylinder. (figure 7-10). Rinse and brush with sanitizing solution.

6. Thoroughly brush the inside of the hopper cover with dish detergent solution. Rinse and brush with sanitizing solution.

7. Use the dish detergent solution to wipe down all exterior surfaces of the freezer. Rinse and brush with sanitizing solution.

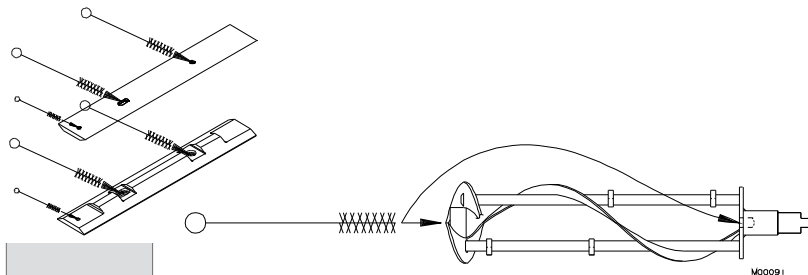


Figure 7-8 Clean beater shaft and blades

Figure 7-9 Clean hopper and mix feed port

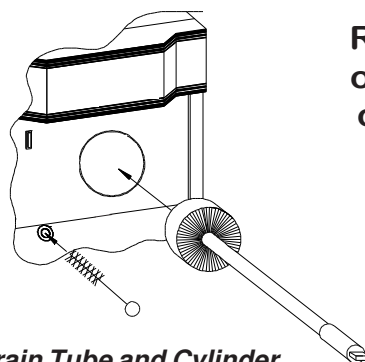


Figure 7-10 Clean Drain Tube and Cylinder

Replace worn brushes. Use only Electro Freeze original or authorized replacement parts. See Alphabetized Parts List in Part II of this Manual to order new brushes.

8 Assembly

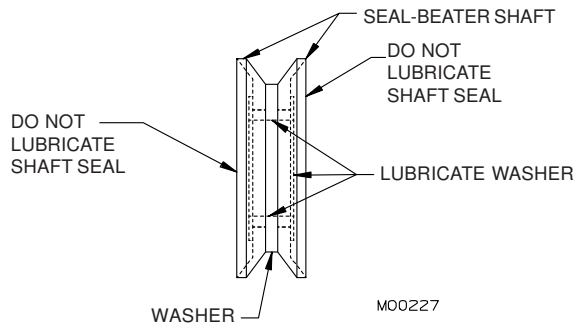


Figure 8-1 Lubricate shaft seal

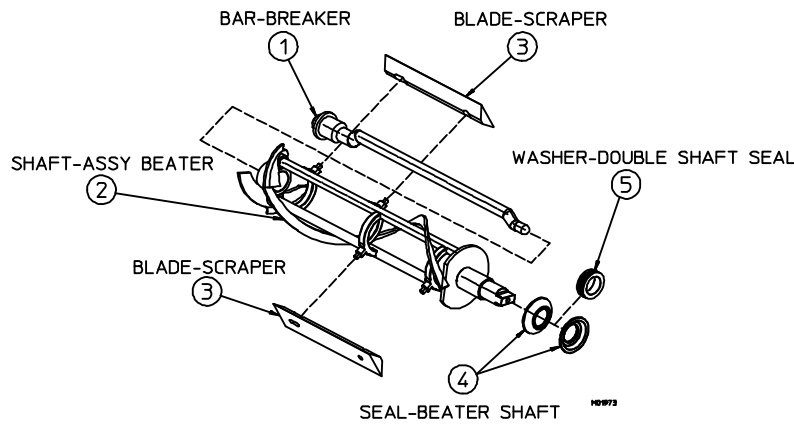


Figure 8-2 Assemble beater shaft assembly

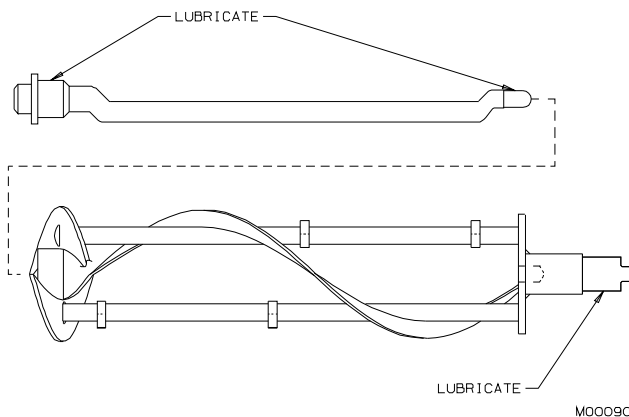


Figure 8-3 Lubricate bearing areas of breaker bar

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

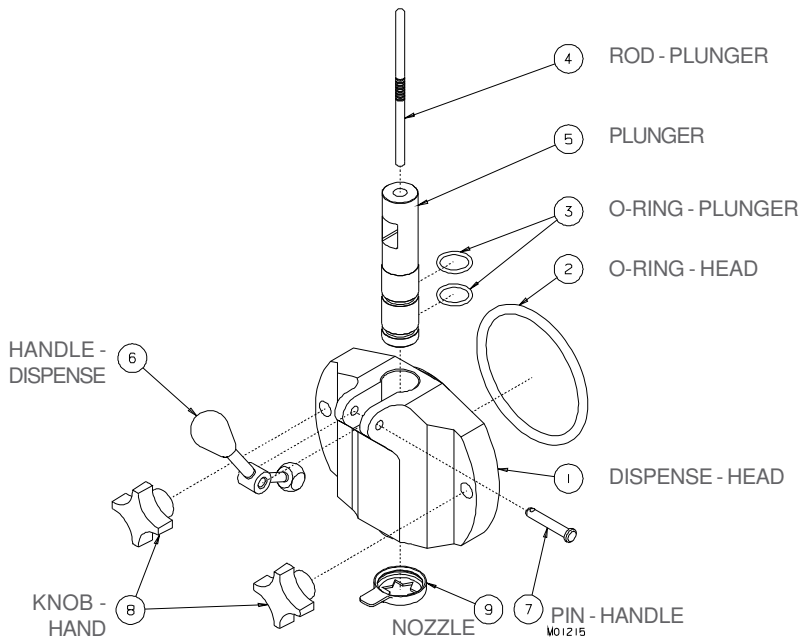


CAUTION
To avoid electrical shock or contact with moving parts, make sure all switches are in the "OFF" position and that the main power supply is disconnected.

1. To assemble the shaft seal, install the cup seals on the plastic washer. Apply a moderate amount of approved sanitary lubricant (such as Lubri-Film Plus) to the washer. Do not allow any lubricant to come in contact with the bell-shaped rubber portions of the seal (figure 8-2). Wipe any excess lubricant from the beater shaft.
2. Install the shaft seal over the rear of the beater shaft
3. Apply lubricant to the bearing areas of the breaker bar and bushing. (See figure 8-3)
4. Slide the breaker bar into the center of the beater shaft so the bar fits into the hole in the rear beater shaft disc. Place the scraper blades on the beater shaft, as shown in figure 8-2,
5. Insert the assembled beater into the cylinder by sliding the rear blade along the bottom of the cylinder. This will center the beater shaft and allow alignment with the drive shaft. Rotate and push the beater assembly until the shank has engaged the drive shaft.

—continued

8 Assembly - continued



6. Install and lubricate the O-rings (see O-ring chart) on the dispensing plunger and insert into the head (figure 8-3).

7. Install and lubricate the 4-inch head O-ring.

8. Position the handle in the head assembly and lock in place with the handle pin.

9. Snap the nozzle on the mix outlet at the bottom of the head.

Important:
Do not overtighten the hand knobs. Excessive force will damage the head. Tighten the hand knobs finger-tight only.

10. Install the dispensing head onto the freezer by sliding the head over the threaded studs and aligning the square end of the breaker bar with the square in the dispensing head. Slide the head into the cylinder and install the hand knobs, being careful to tighten evenly and finger tight only.

NOTE: The plunger rod must be in place for the freezer to operate in the "CLEAN" or "AUTO" Mode.

11. Install the plunger rod.

12. Install the O-rings on the mix feed tube and insert as shown in figure 8-4.

13. Lubricate the O-ring on the insert and install into the mix feed tube. (No lubrication is required on the mix feed tube O-rings.)

Figure 8-3 Assemble the head assembly

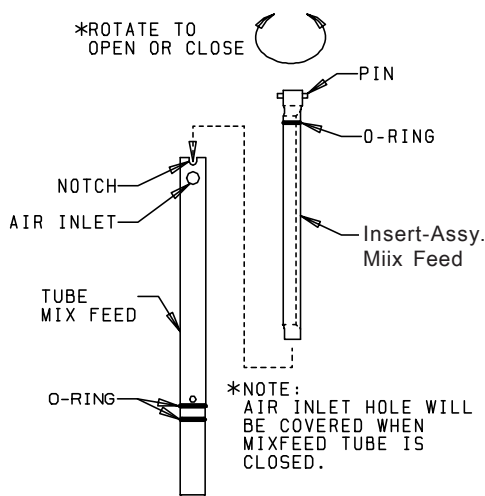


Figure 8-4 Assemble the mix feed tube

9 Start-up Instructions

9.1 Sanitizing

The sanitizing instructions explained in this manual are important procedures to remove bacteria and maintain a clean, sanitary freezer. The soft serve freezer *must* be disassembled, washed and sanitized according to the instructions in this manual to ensure the best possible cleanliness. Always sanitize just before start-up.

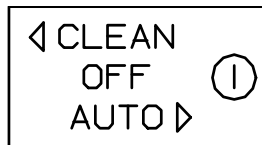
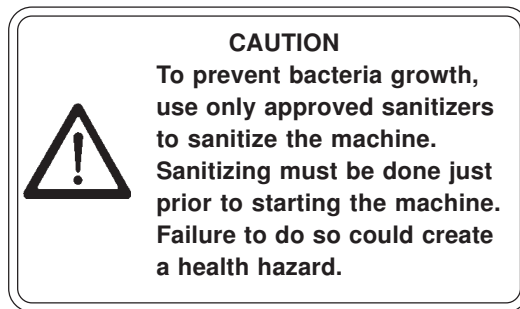


Figure 9-1 Selector (Toggle) Switch Positions

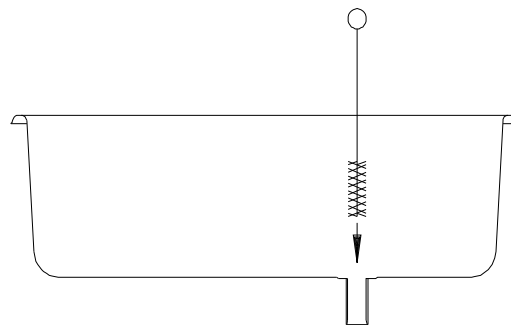


Figure 9-2 Sanitize hopper and its components

Important:

Do not use unapproved sanitizer 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 local, state, and federal laws concerning the frequency of cleaning and sanitizing the freezer.

1. Wash and sanitize your hands and forearms.
2. Prepare 2 gallons (7,6 liters) of sanitizing solution in a container. The sanitizing solution must be mixed according to manufacturer's instructions to yield 100 PPM (parts per million) available chlorine solution (example: Stera-Sheen Green Label). Use warm water (100°-110°F or 37-43°C to wash, rinse, and sanitize.

Important:

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

Important:

Do not insert any tools or objects into the mix feed port or head dispensing hole while the freezer is running.

3. Place the mix feed tube and mix float in the bottom of the hopper pan.
4. Pour sanitizing solution into the hopper and allow cylinder to fill. Using a clean brush scrub all sides of the mix hopper, mix level sensor, mix float, the mix feed tube, and the mix feed port from the hopper to the cylinder. See figure 9-2.
5. Install the mix float on the mix level sensor. With the sanitizing solution brush the inside of the hopper cover.

– continued

9.1 Sanitizing - continued

6. When the cylinder has filled with sanitizing solution, reconnect the main power supply to the freezer. Place the selector switch to the "CLEAN" position (figure 9-1). Allow the beater to run for 5 minutes. During this time period also check for leaks around the head, plunger and drain tube.

Important:

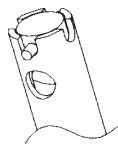
Do not use the "AUTO" position with sanitizer in the cylinder. The freezer will be damaged.

7. Place an empty container under the dispensing head and drain the solution by opening the plunger to allow the cylinder and hopper to empty. Open and close the plunger at least 10 times during draining to sanitize the port area of the dispense head.

8. When the sanitizing solution has drained from the freezer, turn the selector switch to the "OFF" position.

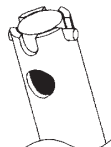
9.2 Priming

Pin is in line with hole. *Pin is not in line with hole.*



OPEN

Look through top hole in tube — you should see clear through.



CLOSED

Look through top hole in tube — you should see the inner white plastic insert tube blocking the opening.

Figure 8-2 Mix Feed Tube Positions

Priming the freezer removes all excess air and sanitizer from the freezing cylinder and sets the proper overrun for the first cylinder of product. Always have clean, sanitized hands when handling mix feed assemblies. Handle only the top 1" (2,5cm).

1. Wash and sanitize your hands and forearms.

2. Place an empty container under the dispense head. Install the mix feed tube assembly in the "closed" position into the mix feed drain in the hopper. Pour a minimum of 2-1/2 gallons (9,5 liters) of mix into the hopper. Hold plunger open and remove mix feed tube and allow mix to push out the

sanitizer. When pure mix flows from the dispense head close the plunger. Install the mix feed tube into the mix feed hopper drain in the "open" position as shown in figure 8-2 and place the selector switch to the "Auto" position.

Important:

Failure to completely remove sanitizer or water from the freezing cylinder before placing in "AUTO" will damage the freezer.

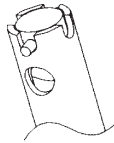
3. Install the hopper cover.

4. During long idle periods, the white plastic insert tube should be closed — **but remember — when dispensing product, ensure that the mix feed insert is OPEN at all times.** If not open, the flow of mix will be restricted. If lubricant blocks the inlet hole in the tube it would also restrict the flow of mix.

10 Closing Procedures

10.1 Night or Idle Operation

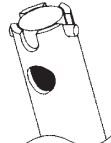
Pin is in line with hole.



OPEN

Look through top hole in tube — you should see clear through.

Pin is not in line with hole.



CLOSED

Look through top hole in tube — you should see the inner white plastic insert tube blocking the opening.

Figure 9-1 *Mix Feed Tube Positions*

1. In areas where state and local health codes allow, product may remain in the freezer overnight, leave the Selector Switch in the “AUTO” position.

2. The plunger rod must be in place for the unit to operate.

3. Clean all soiled surfaces with a warm dish detergent solution.

4. Using the small brush supplied in the spare parts kit, brush the bottom of the plunger with a warm dish detergent solution, then brush with sanitizing solution.

5. Turn the mix feed insert to the “CLOSED” position as shown in figure 9-1.

6. Check mix level in hopper to ensure that there is enough mix to keep the indicator light off, add mix if necessary. **Do not dispense product when the mix feed insert is in the “CLOSED” position.**

7. Before serving from the machine brush the plunger opening with sanitizing solution and “OPEN” the mix feed insert and fill the hopper with mix (figure 9-1).

10.2 Draining Product from Freezer

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

To remove frozen product from the cylinders, perform the following steps:

1. Remove the mix feed tube from the hopper. (See figure 9-3).
2. Place the selector switch in the "CLEAN" position. Let the beater run for 5 minutes. This will allow the product in the cylinder to soften.
3. Place a clean, sanitized container under the dispensing nozzle.
4. Dispense the product until the mix hopper is empty. Place the selector switch in the "OFF" position and continue dispensing product until it quits flowing and close the plunger. If local health codes permit, cover the rerun product container and place it in the cooler. (See Section 11, SOFT SERVE INFORMATION)
5. Pour two gallons (7,6 liters) of cold water into the hopper. Place the selector switch to the "CLEAN" position and dispense the cold water. Brush residue from hopper walls.

Important:
Do not use hot water. Damage to the freezer could occur.

6. Follow with 2 gallons (7,6 liters) of warm water and repeat until the freezer dispenses clear water. With most of the water dispensed, place selector switch in the "OFF" position and drain off remaining water.

7. Prepare 2 gallons (7,6 liters) of sanitizing solution. Sanitizing solution must be mixed according to manufacturer's instructions to yield 100 PPM available chlorine solution (example: Stera-Sheen Green Label). Use warm water (100-110°F or 37-43°C) to wash, rinse, and sanitize.

8. Pour sanitizing solution into the hopper pan. Using a clean brush, scrub the hopper walls, mix level sensor and the mix feed port from the hopper to the cylinder,.

Important:
Do not use the "AUTO" position with sanitizer in the cylinder. The freezer will be damaged.

9. When the cylinder has filled with sanitizing solution, place the selector switch in the "CLEAN" position and allow the beater to run for 5 minutes. During this time period, check for leaks around the head, plunger and drain tube.

10. Place an empty container under the dispensing head. Drain the sanitizing solution from the cylinder by slowly pulling down on the dispense handle. Open and close the handle several times while draining.

11. With most of the sanitizing solution drained, place the selector switch in the "OFF" position and drain remaining solution from the freezer and close the plunger.

12. Proceed to disassembly, cleaning and sanitizing instructions.

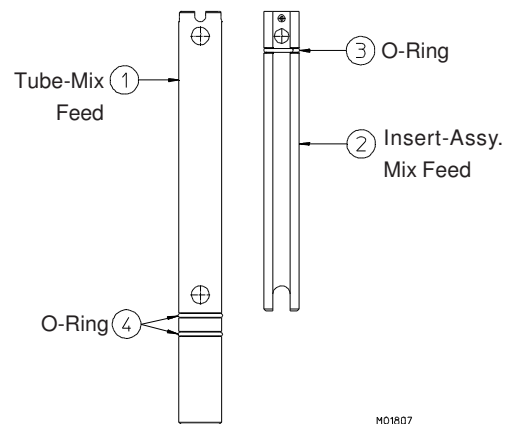


Figure 10-3

11 Soft Serve Information

11.1 Overrun

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

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

To correctly measure the overrun perform the following steps:

1. Place an empty pint container on the scale* and adjust your scale to zero.
2. Remove container from scale and fill the container with liquid product to the top. Weigh container and record.

3. Replace liquid product with frozen product, being sure to leave no voids or air spaces in the container.

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

5. Use the following formula to figure overrun percentage:

“Weight of liquid mix minus weight of frozen product/divided by the frozen weight. Multiply by 100.” See example.

Example:

Weight of 1 pint of mix = 18 oz.

Weight of 1 pint frozen product = 12 oz.

Difference = 6 oz.

6 oz. divided by 12 oz. = .5

.5 x 100 = 50% overrun

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

10.2 Rerun

If local health codes permit the use of rerun make sure to follow these procedures:

1. Store rerun mix in a clean, sanitized container.
2. Store in a cooler with a temperature below 40°F (4.4°C).
3. DO NOT prime the machine with rerun. Always skim off and discard foam. Then combine the rerun with fresh mix in a ratio of 50/50 and add to the hopper during operation.
4. Once a week run the mix as low as possible and discard after closing. This will break the rerun cycle and reduce the possibility of high bacteria and coliform counts.

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

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



12 Routine Maintenance

Electro Freeze recommends the following schedule to help maintain your Model CS600 freezer in like-new operating condition. Take the time to learn and perform these routine procedures and receive in return many years of valuable service from your freezer. Protect your investment!

DAILY

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



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.

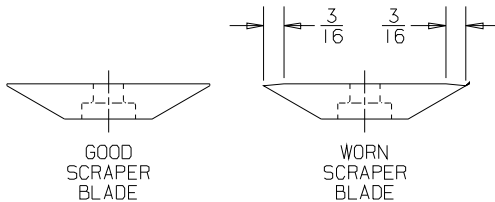
3. When cleaning, inspect all seals and O-rings. Replace any O-ring or seal that is worn, torn, or loose-fitting.

4. Wipe all exterior surfaces of the freezer to remove any splattered mix.

5. Check overrun and temperature of the product.

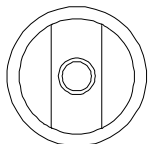
WEEKLY

1. Carefully inspect all parts for wear, including scraper blades and beater shaft. Replace as required.

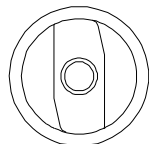


GOOD SCRAPER BLADE

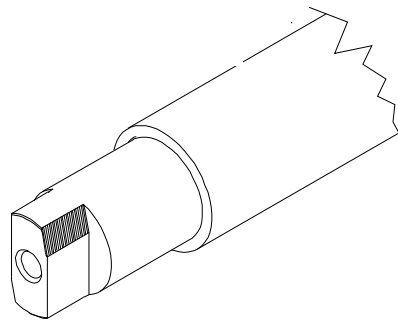
WORN SCRAPER BLADE



GOOD BEATER SHAFT TANG



WORN BEATER SHAFT TANG



12 Routine Maintenance - continued

MONTHLY

Test Head Switch

The head switch feature is designed to prevent the beater shaft 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:

1. Be sure all switches are in the "OFF" position.
2. Disconnect the main power supply.
3. Remove the dispense head and beater shaft assembly.
4. Connect the main power supply.
5. Turn the selector switch to the "CLEAN" position.



CAUTION
Moving parts. **DO NOT** place hands in the freezing cylinder. Severe personal injury could result.

6. Look inside the freezing cylinder toward the rear; the drive shaft coupling should **NOT** be turning. Turn the switch off and disconnect the main power supply.
7. If the drive shaft coupling is turning, or you are unable to determine whether or not the shaft is turning, turn the switch to the "OFF" position, disconnect the main power supply and contact your Electro Freeze distributor for service. **DO NOT** place the freezer in service until the problem has been fixed.

QUARTERLY

1. Have air condenser fins cleaned by an authorized service technician.

Important:

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

2. Have a refrigeration technician check the refrigeration system and make the necessary adjustments.

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 supply is disconnected.

1. Have drive belts replaced by qualified service technician.
2. Have the inside of the freezer cleaned, including base, side panels, condenser, etc.
3. Have the drive shaft and bearing assemblies inspected by a service technician.

12 Routine Maintenance - continued

WINTER STORAGE

To protect the unit during seasonal shutdown, it is important to store the freezer properly. Use the following procedures:

1. Disconnect all power to the freezer.
2. Disassemble and wash all parts that come into contact with the mix using a warm, mild detergent solution. Rinse in clear water and dry all parts thoroughly. Clean drain tube and all exterior panels.
3. Store the loose parts, such as the head assembly and beater assembly, 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. Have condenser fins cleaned by a qualified service technician.

USE ONLY ORIGINAL OR AUTHORIZED REPLACEMENT PARTS WITH THIS FREEZER.

If you have any questions on items that are not included in this schedule or problems that require service assistance, please call your local distributor or H.C. Duke & Son, LLC, *Electro Freeze* Service Department for factory service assistance.

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

FAX: (309) 755-9858

13 Troubleshooting Tables - continued

PROBLEM	PROBABLE CAUSE	REMEDY
Unit does not operate.	1. Freezer unplugged.	1. Plug in freezer.
	2. Fuse blown or breaker tripped 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. Actuator rod not installed	3. Install actuator rod.
	4. Off on high pressure cut-out control.	4. Water turned off or defective water regulating valve. Check water supply.
	5. Circuit breaker tripped.	5. Contact your Electro Freeze distributor for service.
	6. Faulty selector switch	6. Contact your Electro Freeze distributor for service.
	7. Disconnected or broken wire in electrical circuit.	7. Contact your Electro Freeze distributor for service.
Mix leaking at dispensing head.	1. Faulty o-ring.	1. Replace o-ring.
	2. Head not properly installed.	2. Install head properly. Replace o-ring if pinched.
Leakage of mix or water from drain tube to drip tray.	1. Damaged beater shaft seal or installed improperly.	1. Replace cup seals on washer. Install properly.
	2. Beater shaft pitted or damaged where o-ring rides.	2. Replace beater shaft.
	3. Beater shaft end play not set properly.	3. Contact your Electro Freeze distributor for service.
Product dispenses slowly out of dispensing head.	1. Product too cold.	1. See Dispensed Product Too Hard.

13 Troubleshooting Tables - continued

PROBLEM	PROBABLE CAUSE	REMEDY
Dispensed product too soft. (Product temperature above 19°F [-7°C])	1. Dirty air filter.	1. Clean air filter
	2. Dirty or blocked condenser, restricted air flow.	2. Unblock condenser or have cleaned by your Electro Freeze distributor.
	3. Torque control not set firm enough.	3. Contact your Electro Freeze distributor for service.
	4. Component failure.	4. Contact your Electro Freeze distributor for service.
	5. Leak in refrigeration system resulting in little or no refrigeration.	5. Contact your Electro Freeze distributor for service.
Freezer runs continually and product gets too cold.	1. Plunger not fully closed.	1. Close plunger completely.
	2. Torque control not set properly or faulty.	2. Contact your Electro Freeze distributor for service.
	3. Starter or relay control points stuck.	3. Contact your Electro Freeze distributor for service.
	6. Suction pressure too low.	6. Contact your Electro Freeze distributor for service.
Compressor and beater motor operates only when dispensing.	1. Cylinder thermostat setting too warm or thermostat defective.	1. Contact your Electro Freeze distributor for service.
Compressor and beater motor do not operate when dispensing.	1. Plunger switch(es) defective or out of adjustment.	1. Contact your Electro Freeze distributor for service.
	2. Time delay defective.	2. Contact your Electro Freeze distributor for service.
	3. Defective torque control.	3. Contact your Electro Freeze distributor for service.

13 Troubleshooting Tables

SAFETY



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



CAUTION

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

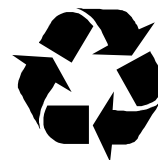


CAUTION

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

Important:

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



13 Troubleshooting Charts — continued

PROBLEM	PROBABLE CAUSE	REMEDY
Compressor will not start – hums intermittently (cycling on overload)	1. Improperly wired.	1. Contact your Electro Freeze Distributor for service.
	2. Low line voltage.	2. Ask power company to increase voltage to not less than 10% below dataplate rating or have transformer installed. Have wire checked for inadequate wire size.
	3. Open start capacitor. (Single phase only)	3. Contact your Electro Freeze Distributor for service.
	4. Defective compressor	4. Contact your Electro Freeze Distributor for service.

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



**QUALITY PARTS
PROTECT
YOUR
EQUIPMENT**

Keep your freezer in excellent condition. Always contact your Electro Freeze distributor for replacement parts and maintenance scheduling.



REPLACEMENT PARTS MANUAL

with ILLUSTRATIONS

<p>QUALITY PARTS PROTECT YOUR EQUIPMENT</p>	<p>COMPACT SERIES SOFT SERVE FREEZER Model CS600</p> <p>184596-01 7/13</p>
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**KEEP YOUR FREEZER IN EXCELLENT CONDITION. ALWAYS CONTACT
YOUR ELECTRO FREEZE DISTRIBUTOR FOR REPLACEMENT PARTS.**

Replacement Parts Orders

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

Name: _____

Address: _____

Phone: _____

Parts are listed using terminology that best fits the function of the part. The illustrations in this section will help you to find the correct part number and description. The alphabetized parts list can be used to verify part numbers pertaining to the serial number of your unit.

If you require any further assistance, contact H. C. Duke & Son, LLC, *Electro Freezes* as follows:

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



Phone: (309) 755-4553

(800) 755-4545

FAX: (309) 755-9858

E-mail: service@electrofreeze.com

PART II

Table of Contents

ILLUSTRATIONS

Figure 1	Head Assembly	1
Figure 2	Beater Shaft Assembly	2
Figure 3	Mix Feed Tube Assembly	3
Figure 4	Plunger/Switch Box	4
Figure 5	Electric Box	5
Figure 6	Back/Side View	6
Figure 7	Panel View	8

OTHER LISTS and INFORMATION

Accessories	9
O-Ring Chart	10
Sheet-Clean & Sanitize	11
Alphabetized Parts List	13

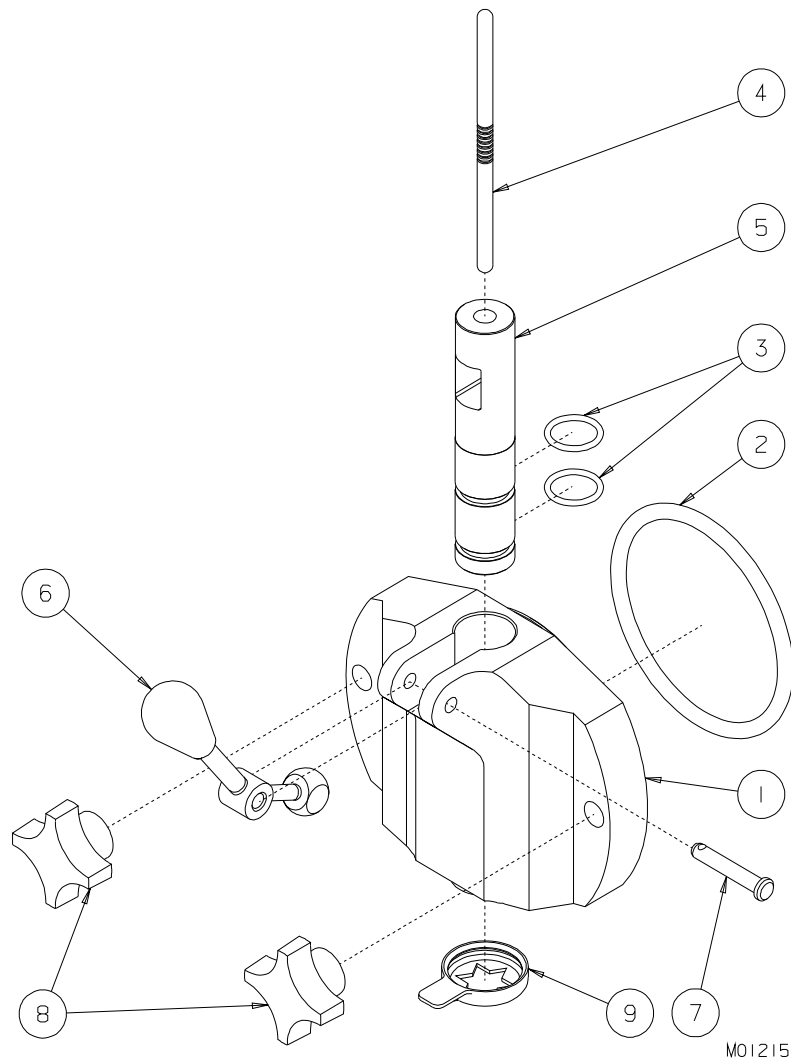


Figure 1 Head Assembly

Item	Part No.	Description
*	HC119199	Head Assy. Dispense Complete Stainless Steel Handle
1	HC119162	Head-Assy. Dispense
2	HC160623	O-Ring (Head)
3	HC160624	O-Ring (Plunger)
4	HC138611	Rod-Actuator
5	HC137807	Plunger-Dispense
6	HC116323	Handle-Assy. Dispense Complete includes HC162627 .. Knob-Oval Taper
7	HC160265	Pin-Handle
8	HC162625	Knob-Hand
8A	HC114341-06	Stud-Assy. Cylinder 2-1/16" (not shown)
9	HC196167	Nozzle-Dispense

* Includes all items except #4, 8 and 8A.

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

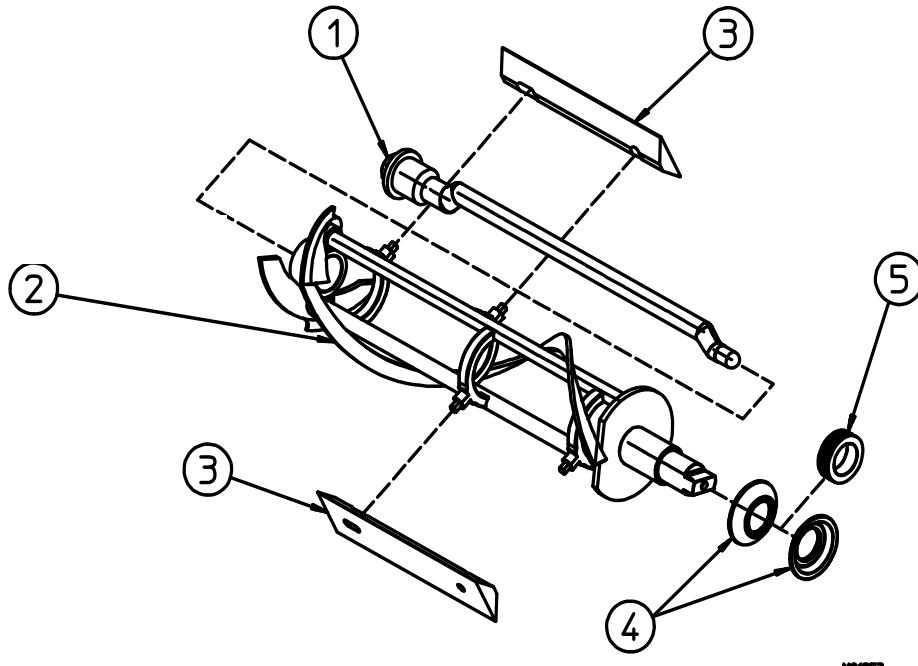


Figure 2 Beater Shaft Assembly

Item	Part No.	Description
1	HC138203	Bar-Breaker 15.35 in.
2	HC120935	Shaft- Assy. Beater
3	HC141009	Blade-Scraper
4*	HC160557	Seal-Beater Shaft
5*	HC137593	Washer-Double Shaft Seal

* Can be ordered together
[HC115525](#) Seal-Assy. Shaft Double

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

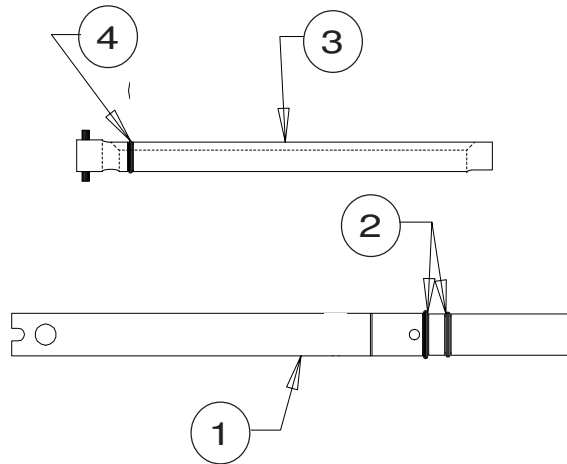


Figure 3 Mix Feed Tube Assembly

Item	Part No.	Description
*	HC120947 Tube-Assy. Mix Feed .188 (Complete)
1	HC141092 Tube-Mix Feed .188 Orifice
2	HC160621 O-ring (Mix Feed Tube)
3	HC120664 Insert-Assy. Mix Feed
4	HC160611 O-ring (Regulator)

* Includes all items above.

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

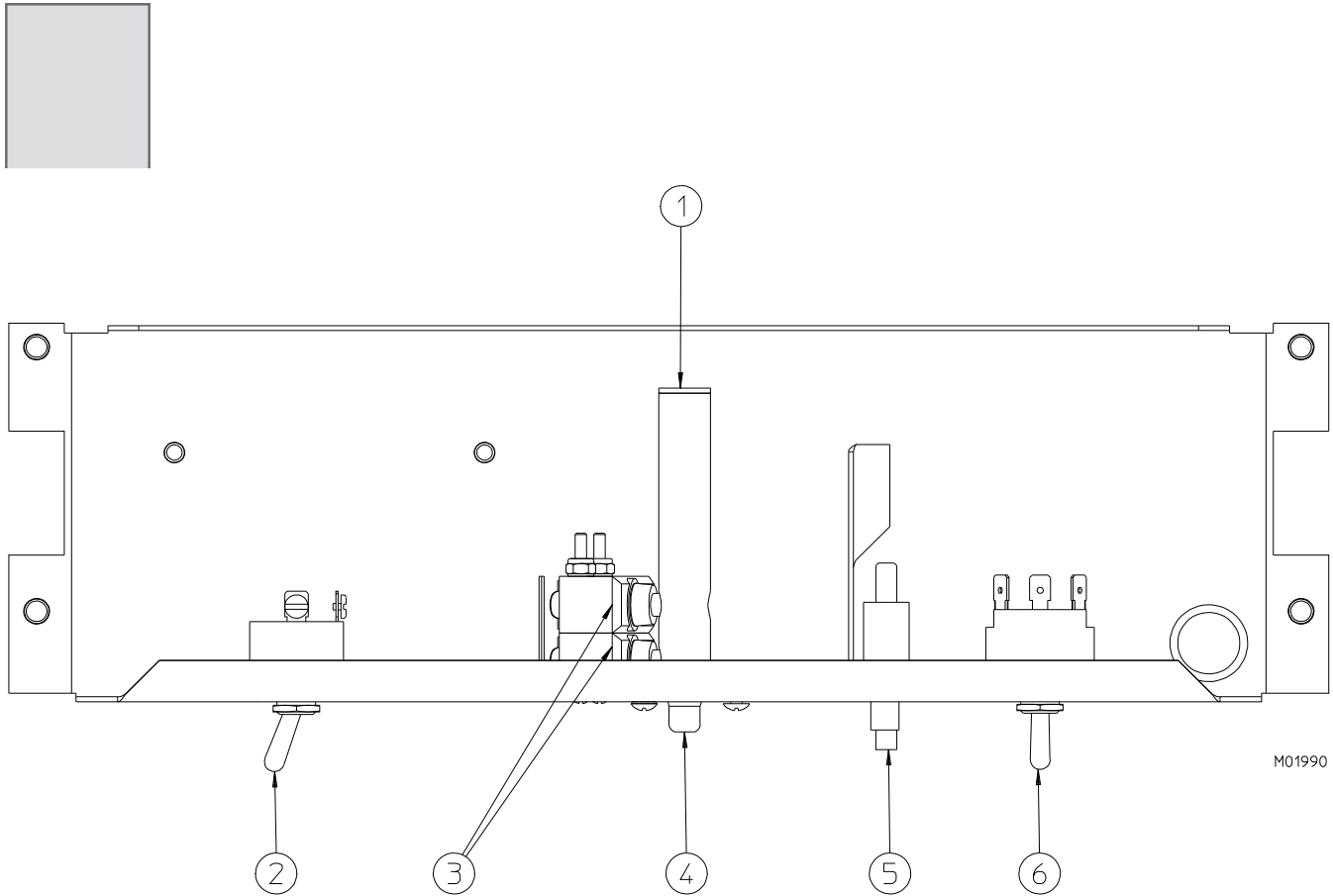


Figure 4 Plunger/Switch Box

Item	Part No.	Description
1	HC116613	Switch-Assy Plunger HC115684 Guide-Assy. Push Rod HC162303 Spring-Plunger Rod HC150456 Switch-Snap Button
2	HC159235	Switch-Toggle SPST (DAY/NIGHT)
3	HC150456	Switch-Snap Button
4	HC137760	Rod-Plunger Switch-(Actuator Button)
5	HC150958	Circuit Breaker 10.0A
6	HC150465	Switch-Toggle 3PDT CTR OFF (AUTO/OFF/CLEAN)

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

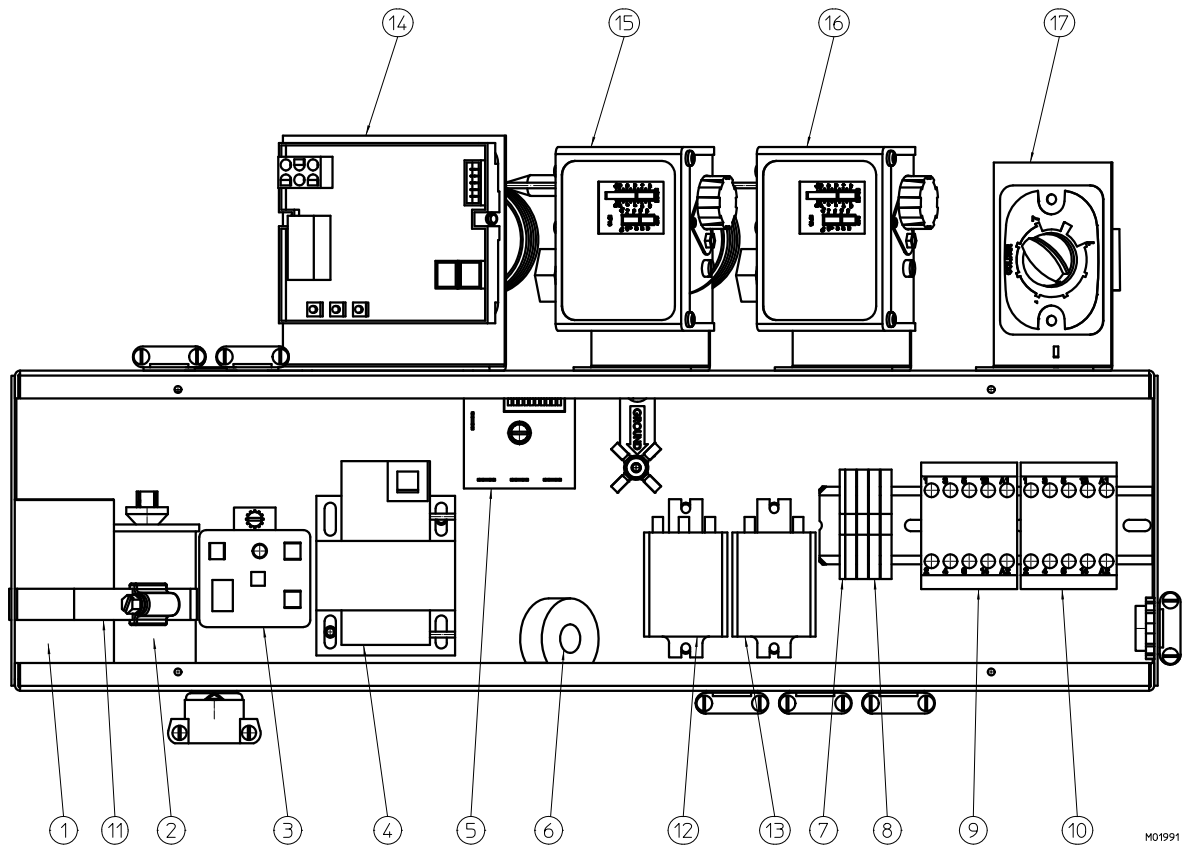
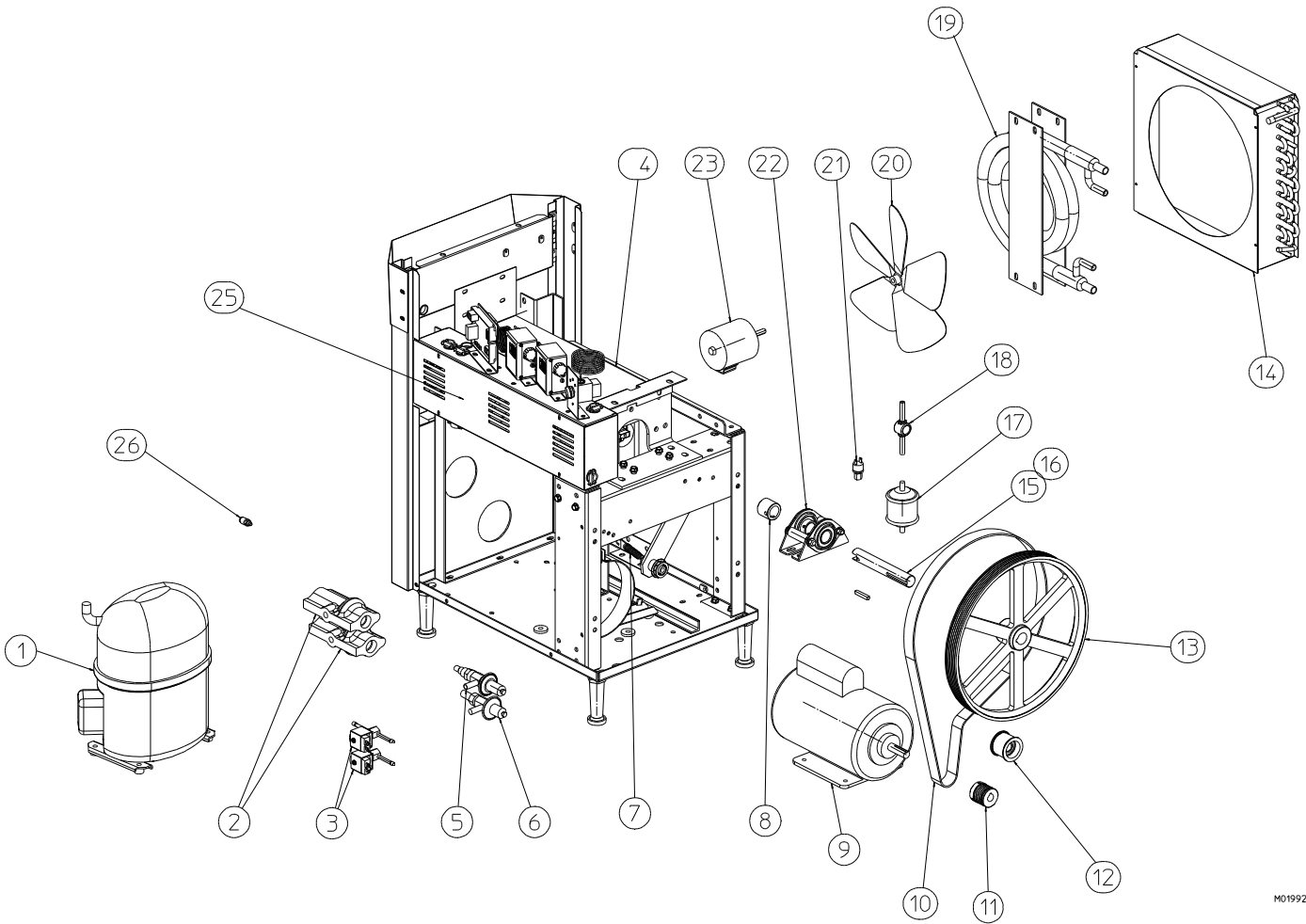


Figure 5 Electrical Box

Item	Part No.	Description
1	HC151414	Capacitor-Start
2	HC150244	Capacitor-Run
3	HC151474	Relay-Compressor Start
4	IC574100325	Transformer-75VA / 24VAC / MURD
5	HC120095	Kit-Recyle Timer Wiring Instructions
6	IC574100349	Transformer-Current
6A	HC150724	Tie-Cable Wrap
7	HC150594	Stop-Terminal Block End (Cover)
8	HC150591	Block-Terminal
9	HC150095	Contactora-Mini 3P, 1 AUX, 24V (Compressor)
10	HC150095	Contactora-Mini 3P, 1 AUX, 24V (Beater Motor)
11	HC160743	Clamp-Hose 3-1/6 to 4
12	HC150341	Relay-Control Flange 3PDT 24V
13	HC150343	Relay-Control Flange DPDT 24VAC
14	HC120969	Board-Assy. Torque Monitor Shake/SS
15	HC119989	Kit-Thermostat & Retainer (Low Temp. Safety)
16	HC119989	Kit-Thermostat & Retainer (Night)
17	HC161202	Thermostat-5° Fixed Differential (Hopper)

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

Figure 6 Side/Back View (Sheet 1 of 2)



M01992

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

Figure 6 Side/Back View (Sheet 1 of 2)

Item	Part No.	Description
1	HC120982	Compressor-Assy. includes compressor and: HC150244 Capacitor-Run HC151414 Capacitor-Start HC155063 Drier-Filter 3 cu. in. Sweat HC151478 Grommet-Comp.Mtg. HC151474 Relay-Compressor Start HC151479 Sleeve-Comp.Mtg.
2	HC165531	Insulator-Expansion Valve
3	HC155395	Valve-Solenoid Body 3/8 ODM (Body Only)
3A	HC151477	Coil-Solenoid 208-240V MKC-1TS
4	HC120639	Cylinder-Assy. Complete
5	HC155449	Valve-Automatic Expansion (Hopper)
6	HC155490	Valve-Automatic Expansion (Cylinder)
7	HC162331	Spring-Extension
8	HC140823	Cap-Coupling
9	HC151148	Motor-1-1/2 HP 115/208-230-1-60 (Beater Motor)
10	HC153190	Belt-Poly V 1397 J12 -Groove
11	HC141073	Sheave-Drive 5/8 Bore .625 OD
12	HC153662	Pulley-Idler Tensioner
13	HC153653	Sheave-1 Bore 14.00 OD
14	HC155145	Condenser-Air 14 x 20 (Air Cooled)
15	HC141072	Shaft-Driven
16	HC153323	Key-Drive 1/4 SQ x 1-1/2
17	HC155063	Drier-Filter 3 cu in Sweat
18	HC155059	Glass-Sight
19	HC155029	Water-Condenser (Water Cooled)
20	HC159033	Blade-Fan 12 in. 24° (Air Cooled)
21	HC155450	Cut Out-High Pressure 450 PSI (Air Cooled)
or	HC155702	Cut Out-High Pressure 375 PSI (Water Cooled)
22	HC120946	Bearing-Assy Rear HC153024 .. Ball-1.00 ID x 2.0472 OD
23	HC151077-01	Motor-Fan 50W 230V 50/60 HZ (Air Cooled)

Not Shown:

HC120606 Tube-Assy. Drain

Not Shown Water Cooled Model:

[HC113769](#) Valve-Assy Water

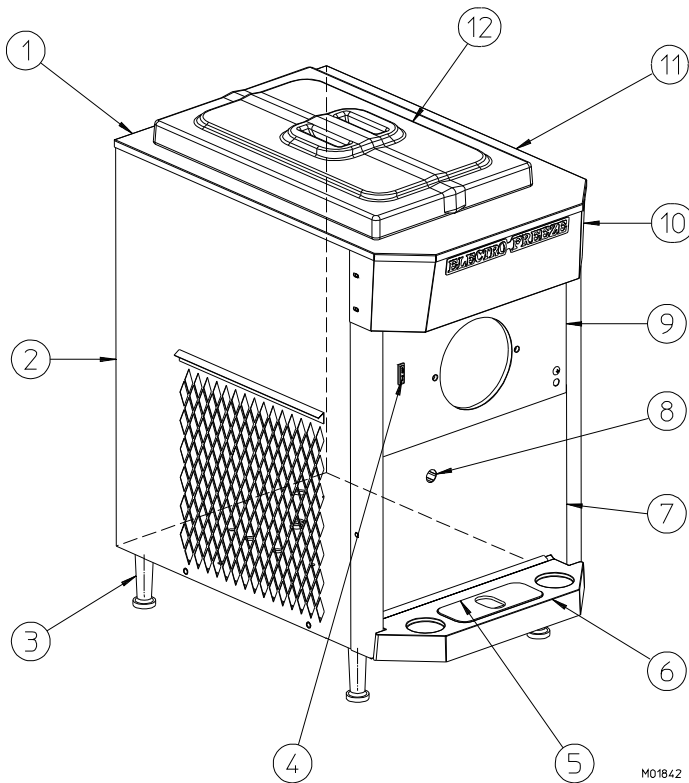
[HC155410](#) .. Valve-Water 3/8

Not Shown Air Cooled Model:

[HC151000](#) Fan-Axial 230V 212CFM 35W 50/60 (Qty 2)

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

ELECTRO FREEZE Model CS600



M01842

Figure 7 Panel View

CS600 Panel Decals & Labels	
Part No.	Description
HC165025	Beater Warning
HC165234	Cleaning Instructions
HC165084	Clear Overlay
HC165126	Panel Removal
HC164081	Label-Trimstrip
HC165151	Label-Trimstrip (Day/Night)
HC169052	Ventilation 3 in.

Item	Part No.	Description
1	HC141080	Panel-Rear
1A	HC141186-01	Bracket-Utility SS
2	HC141147	Panel-Side LH (Air Cooled)
or	HC141099	Panel-Side LH (Water Cooled)
3	HC118616	Kit - 4in Adj. Leg w/Antislip Pad
	HC162114	.. Leg-Four Inch Adj.
	HC162130	.. Pad-Foot Anti Slip
4	HC150541	Light-Indicator 28v ADD MIX
5	HC196261	Cover-Drip Tray
6	HC196260	Tray-Drip
6A	HC140738	Retainer-Drip Tray (Not Shown)
7	HC120932	Panel-Assy. Front
7A	HC159064	Grommet-1.1 OD 7/8 GD x 5/8 ID (Drain Tube)(Not Shown)
8	HC141180	Panel-Side RH
9	HC141067	Panel-Dispense
10	HC120929	Trimstrip-Assy.
10A	HC165414	Nameplate-Large Electro Freeze
11	HC120641	Panel-Assy. Hopper & Top
12	HC118691	Cover-Assy. Hopper Insulate

Not Shown:

- HC161300 Switch-Level Float Sensor
- HC161301 Float-Level Sensor

Part No.	Description
Not Shown Air Cooled Models	
HC155143	Filter-22 x 19 x 3/8
HC140749	Deflector-Air (Left side bottom)
HC139230	Deflector-Panel (Left side top)
Not Shown Water Cooled Models	
HC151094	Fan-Axial 19W
HC151095	Guard-Finger

Hardware for Panels		
Panel	Screw	Nut-Speed
Dispense-Top	HC160025	n/a
Dispense-Bottom	HC160076	n/a
Front	HC160048	n/a
Rear	HC160048	n/a
Side	HC159219	n/a
Trimstrip	HC160076	n/a
*N/A - Not Applicable		

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

Accessories

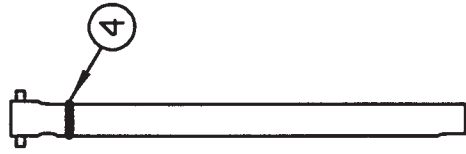
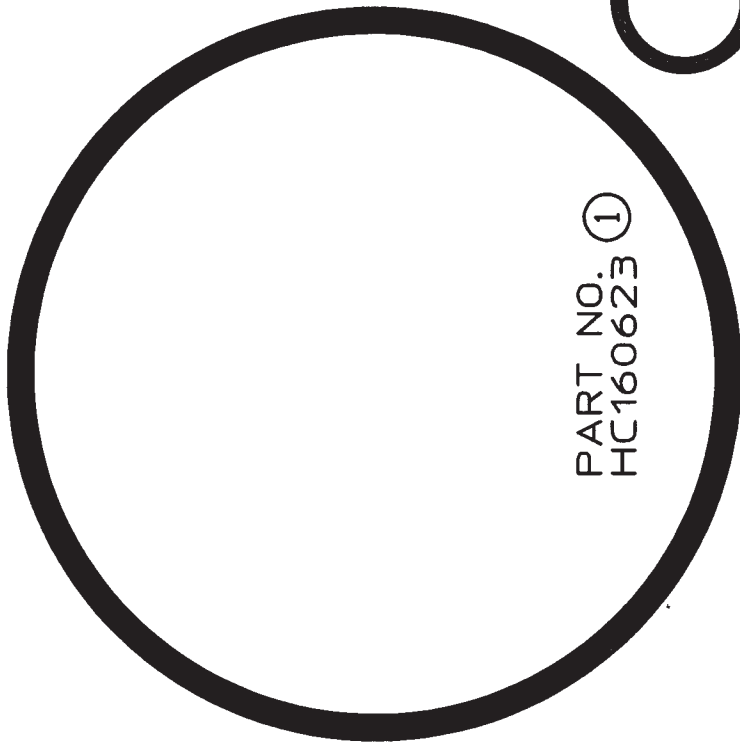
Part No.	Description
HC158003	Brush-7/16 x 1-1/8 Double End
HC158009	Brush-4 inch w/o Handle (Handle HC158012)
HC158026	Brush-1 inch Dia. 12 in. Long
HC158077	Brush-3/16 inch with 36 inch Handle
HC162200	Cart-CS Stainless
HC184289	Chart-O-ring (Laminated)
HC158051	Cup-Overrun Measuring 1 Pint (use with P/N HC158049 Scale)
HC120991	Diverter-Assy Air (Top Air Discharge Chute)
HC158012	Handle-Brush Fiberglass (for Brush HC158009)
HC158054A	Lubricant-Lubri-Film Plus 4 oz. Tube (per Tube)
HC158014	Sanitizer-Stera-Sheen Case/4 Jars
HC158014A	Sanitizer-Stera-Sheen 4 lb. Jar
HC158049	Scale-Overrun
HC184591	Sheet-Clean & Sanitize CS600
HC169374	Tool-O-Ring Removal

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

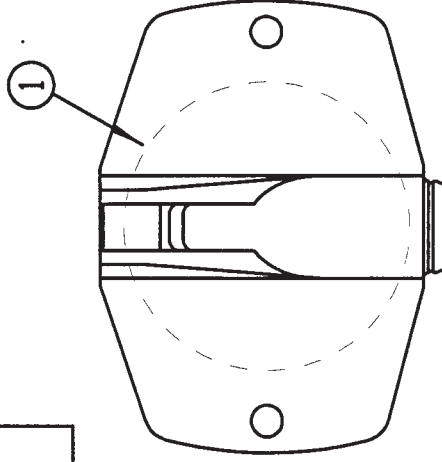
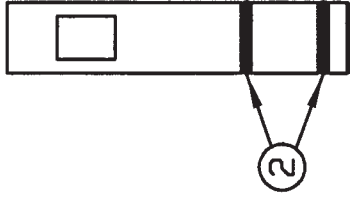
HC184289

MODEL CS600

REV 02



DO NOT LUBRICATE #3



O-RING CHART

PH.NO. 309-755-4553

H.C. DUKE & SON LLC

Alphabetized Parts List for Model CS600

IMPORTANT:

All parts shown are for standard models designed for 208-230v/60Hz/1phase.

PART DESCRIPTION	PART NUMBER	QTY	SERIAL NUMBER (FROM – TO)
Ball-1.00 ID x 2.0472 OD	HC153024	1	D2Q-1577 -
Bar-Breaker 15.35	HC138203	1	D2Q-1577 -
Bearing-Assy Rear	HC120946	1	D2Q-1577 -
Bearing-Ball 1.00 ID X 2.0472 OD	HC153024	2	D2Q-1577 -
Bolt-Carriage 5/16-18X3 ZN	HC160415	2	D2Q-1577 -
Nut-HEX 5/16-18 ZN	HC160105	2	D2Q-1577 -
Spacer-Rear Bearing	HC130189	2	D2Q-1577 -
Stamping-Main	HC153026	2	D2Q-1577 -
Stamping-Retainer Plate	HC153025	2	D2Q-1577 -
Washer-Lock 5/16 ZN	HC160142	2	D2Q-1577 -
Belt-Poly V 1397 J12 -Groove	HC153190	1	D2Q-1577 -
Blade-Fan 12" 24° (Air Cooled)	HC159033	1	D2Q-1577 -
Blade-Scraper	HC141009	2	D2Q-1577 -
Block-Terminal	HC150591	2	D2Q-1577 -
Board-Assy. Torque Monitor Shake/SS	HC120969	1	D2Q-1577 -
Bracket-Utility	HC141186-01	1	D2Q-1577 -
Brush-9/16" Dia. x 36" Handle (Mix Feed Assy.)	HC158077	1	D2Q-1577 -
Brush-4" w/o handle (Cylinder) (use w/ HC158012) ..	HC158009	1	D2Q-1577 -
Brush-7/16" & 1-1/8" Double End	HC158003	1	D2Q-1577 -
Brush-1" dia. 12" long (Drain Tube)	HC158026	1	D2Q-1577 -
Cart-CS Stainless (Optional)	HC162200	1	D2Q-1577 -
Cap-Coupling	HC140823	1	D2Q-1577 -
Capacitor-Run (Beater Motor)	HC150244	1	D2Q-1577 -
Capacitor-Start (Beater Motor)	HC151414	1	D2Q-1577 -
Chart-O Ring (Laminated)	HC184289	*	D2Q-1577 -
Chute-Discharge Top Air (Diverter-Assy Air)(Optional)	HC120991	1	D2Q-1577 -
Circuit Breaker 10.0A	HC150958	1	D2Q-1577 -
Clamp-Hose (Capacitor Box)	HC160743	1	D2Q-1577 -
Coil-Solenoid 208-240V MKC 1TS	HC151477	2	D2Q-1577 -

* As Required

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

NLA No Longer Available

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

Alphabetized Parts List for Model CS600

IMPORTANT:

All parts shown are for standard models designed for 208-230v60Hz/1phase.

PART DESCRIPTION	PART NUMBER	QTY	SERIAL NUMBER (FROM – TO)
Compressor Assy.			
w/Start Components	HC120982	1	D2Q-1577 -
Capacitor-Run	HC150244	1	D2Q-1577 -
Capacitor-Start	HC151414	1	D2Q-1577 -
Drier-Filter 3 cu. in. Sweat	HC155063	1	D2Q-1577 -
Grommet-Compressor Mounting	HC151478	4	D2Q-1577 -
Relay-Compressor Start	HC151474	1	D2Q-1577 -
Sleeve-Compressor Mounting	HC151479	4	D2Q-1577 -
Condenser-14 x 14 (Air Cooled)	HC155140	1	D2Q-1577 - E2Q
Condenser-14 x 20 (Air Cooled)	HC155145	1	E2Q -
Condenser-Water (Water Cooled)	HC155029	1	D2Q-1577 -
Contacto-Mini 3P, 1 AUX,24 V(Compressor/Beater)	HC150095	2	D2Q-1577 -
Cord-Molded Plug 20A, 250V	HC150605	1	D2Q-1577 -
Cover-Assy. Hopper Insulate (Black)	HC118691	1	D2Q-1577 -
Cover-Drip Tray	HC196261	1	D2Q-1577 -
Cup-Overrun Measuring 1 Pint (use with P/N HC158049 scale)	HC158051	*	D2Q-1577 -
Cut Out-High Pressure 375 PSI (WaterCooled)	HC155702	1	D2Q-1577 -
Cut Out-High Pressure 450 PSI (Air Cooled)	HC155450	1	D2Q-1577 -
Cylinder-Assy. Complete	HC120639	1	D2Q-1577 -
Decal-Beater Warning	HC165025	1	D2Q-1577 -
Decal-Blade Installation	HC164031	1	D2Q-1577 -
Decal-Cleaning Instructions	HC165234	1	D2Q-1577 -
Decal-Clear Overlay 2" x 3-1/4"	HC165084	1	D2Q-1577 -
Decal-Panel Removal	HC165126	3	D2Q-1577 -
Decal-Trimstrip	HC165151	1	D2Q-1577 -
Decal-Ventilation 3 inch	HC169052	1	D2Q-1577 -
Deflector-Air (Left side bottom)	HC140749	1	D2Q-1577 -
Deflector-Panel (Left side top)	HC139230	1	D2Q-1577 -
Diverter-Assy Air(Top Air Discharge Chute)(Optional)	HC120991	1	D2Q-1577 -
<p>* As Required ** LH or RH — Left or right hand is determined as you face the front of the freezer. NLA No Longer Available</p>			

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

Alphabetized Parts List for Model CS600

IMPORTANT:

All parts shown are for standard models designed for 208-230v/60Hz/1phase.

PART DESCRIPTION	PART NUMBER	QTY	SERIAL NUMBER (FROM – TO)
Drier-Filter 3 cu in Sweat	HC155063	1	D2Q-1577 -
Fan-Axial 19W (Water Cooled)	HC151094	1	D2Q-1577 -
Fan-Axial 230V 212CFM 35W 50/60 (Air Cooled) ..	HC151000	2	E2Q -
Filter-22 x 19 x 3/8 (Air Cooled)	HC155143	1	D2Q-1577 -
Float-Level Sensor	HC161301	1	D2Q-1577 -
Glass-Sight	HC155059	1	D2Q-1577 -
Grommet-1.1 OD 7/8 GD x 5/8 ID (Drain Tube)	HC159064	1	D2Q-1577 -
Grommet-Compressor Mounting	HC151478	4	D2Q-1577 -
Guard-Finger (Water Cooled)	HC151095	1	D2Q-1577 -
Guide-Assy. Push Rod (Plunger Rod)	HC115684	1	D2Q-1577 -
Handle-Assy. Dispense Complete	HC116323	1	D2Q-1577 -
Handle-Brush Fiberglass 36" (for Brush HC158009)	HC158012	1	D2Q-1577 -
Head-Dispense Assy.	HC119199	1	D2Q-1577 -
Handle-Assy. Dispense (Stainless Steel)	HC116323	1	D2Q-1577 -
Head-Dispense	HC119162	1	D2Q-1577 -
Nozzle-Dispense	HC196167	1	D2Q-1577 -
O-Ring (Head)	HC160623	1	D2Q-1577 -
O-Ring (Plunger)	HC160624	2	D2Q-1577 -
Pin-Handle	HC160265	1	D2Q-1577 -
Plunger-Dispense	HC137807	1	D2Q-1577 -
Insert-Assy. Mix Feed	HC120664	1	D2Q-1577 -
Insulator-Expansion Valve	HC165531	2	D2Q-1577 -
Key-Drive 1/4" sq x 1-1/2" (Drive Shaft)	HC153323	1	D2Q-1577 -
Kit 4 in. Adj. Leg w/ Antislip Pad.	HC118616	4	D2Q-1577 -
Leg-Four Inch Adj.	HC162114	4	D2Q-1577 -
Pad-Foot Anti Slip	HC162130	4	D2Q-1577 -
Knob-Hand (Head)	HC162625	2	D2Q-1577 -
* As Required			
** LH or RH — Left or right hand is determined as you face the front of the freezer.			
NLA No Longer Available			

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

Alphabetized Parts List for Model CS600

IMPORTANT:

All parts shown are for standard models designed for 208-230v60Hz/1phase.

PART DESCRIPTION	PART NUMBER	QTY	SERIAL NUMBER (FROM – TO)
Knob-Oval Tapered (Stainless Steel Handle)	HC162627	1	D2Q-1577 -
Label-Trimstrip (Day/Night Switch)	HC165151	1	D2Q-1577 -
Label-Trimstrip (Switches)	HC164081	1	D2Q-1577 -
Light-Indicator 28v "Add Mix"	HC150541	1	D2Q-1577 -
Lubricant-Lubri-Film Plus 4 oz. Tube	HC158054A	*	D2Q-1577 -
Manual-Operators CS600 (Instruction)	HC184596	1	D2Q-1577 -
Motor-Beater 1-1/2 HP 115/208-340-2-60	HC151148	1	D2Q-1577 -
Motor-Fan 50w 230V 50/60 HZ (Air Cooled)	HC151077-01	1	D2Q-1577 -
Nameplate-Electro Freeze Large	HC165414	1	D2Q-1577 -
Nozzle-Dispense	HC196167	1	D2Q-1577 -
O-Ring (Head)	HC160623	1	D2Q-1577 -
O-Ring (Plunger)	HC160624	2	D2Q-1577 -
O-Ring (Regulator Mix Feed)	HC160611	1	D2Q-1577 -
O-Ring (Mix Feed Tube)	HC160621	2	D2Q-1577 -
Pad-Foot Anti Slip (Leg Assembly)	HC162130	4	D2Q-1577 -
Panel-Assy. Front	HC120932	1	D2Q-1577 -
Panel-Dispense	HC141067	1	D2Q-1577 -
Panel-Assy. Hopper and Top	HC120641	1	D2Q-1577 -
Panel-Rear	HC141080	1	D2Q-1577 -
Panel-Side LH** (Air Cooled) (used with 14x14 Condenser)	HC140659	1	D2Q-1577 - E2Q
Panel-Side LH** (Air Cooled)	HC141147	1	E2Q -
Panel-Side LH** (Water Cooled)	HC141099	1	D2Q-1577 -
Panel-Side RH**	HC140658	1	D2Q-1577 - E2Q
Panel-Side RH**	HC141180	1	E2Q -

* As Required

** LH or RH — Left or right hand is determined as you face the front of the freezer.
NLA No Longer Available

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

Alphabetized Parts List for Model CS600

IMPORTANT:

All parts shown are for standard models designed for 208-230v/60Hz/1phase.

PART DESCRIPTION	PART NUMBER	QTY	SERIAL NUMBER (FROM – TO)
Pin-Handle	HC160265	1	D2Q-1577 -
Plunger-Dispense	HC137807	1	D2Q-1577 -
Pulley-Assy. Idler Tensioner	HC120588	1	D2Q-1577 -
Pulley-Idler Tensioner	HC153662	1	D2Q-1577 -
Pulley	See "Sheave"		
Regulator (Insert)-Mix Feed Tube	HC120664	1	D2Q-1577 -
Relay-Compressor Start	HC151474	1	D2Q-1577 -
Relay-Control Flange 3PDT 24V	HC150341	1	D2Q-1577 -
Relay-Control Flange DPDT 24VAC	HC150343	1	D2Q-1577 -
Rod-Plunger Switch (Actuator Button)	HC137760	1	D2Q-1577 -
Rod-Actuator (Head Assembly)	HC138611	1	D2Q-1577 -
Sanitizer-Stera Sheen Sample	HC158013	*	D2Q-1577 -
Sanitizer-Stera Sheen 4 lb. Jar	HC158014A	*	D2Q-1577 -
Sanitizer-Stera Sheen Case/4 Jars	HC158014	*	D2Q-1577 -
Scale-Overrun	HC158049		
Screw-SK Set 1/4-20 x 1/4 ZN (Drive Shaft)	HC160056	2	D2Q-1577 -
Screw-TRPM #8-32 x 3/8 SST (Top Dispense Panel)	HC160025	2	D2Q-1577 -
Screw-TRPM #10-24 x 1/2 SST (Bottom Dispense Panel & Trimstrip)	HC160076	6	D2Q-1577 -
Screw-TRPM 1/4-20 x 1/2 SST (Front & Rear Panels)	HC160048	8	D2Q-1577 -
Screw-TRPM 1/4-20 x 1 SST (Side Panels)	HC159219	8	D2Q-1577 -
Seal-Assy. Shaft Double (Beater Shaft)	HC115525	1	D2Q-1577 -
Seal-Beater Shaft	HC160557	2	D2Q-1577 -
Washer-Shaft Seal	HC137593	1	D2Q-1577 -
Shaft-Assy. Beater	HC120935	1	D2Q-1577 -
Shaft-Driven	HC141072	1	D2Q-1577 -
* As Required			
** LH or RH — Left or right hand is determined as you face the front of the freezer.			
NLA No Longer Available			

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

Alphabetized Parts List for Model CS600

IMPORTANT:

All parts shown are for standard models designed for 208-230v60Hz/1phase.

PART DESCRIPTION	PART NUMBER	QTY	SERIAL NUMBER (FROM – TO)
Sheave-1" Bore 14.00" OD (Driven Pulley)	HC153653	1	D2Q-1577 -
Sheave-5/8" Bore 6.25" OD (Drive Pulley)	HC141073	1	D2Q-1577 -
Sheet-Clean & Sanitize CS600	HC184951	1	D2Q-1577 -
Sight-Glass	HC155059	1	D2Q-1577 -
Sleeve-Compressor Mounting	HC151479	4	D2Q-1577 -
Spring-Extension	HC162331	1	D2Q-1577 -
Spring-Plunger Rod	HC162303	1	D2Q-1577 -
Stop-Terminal Block End (Cover) (Electric Box)	HC150594	2	D2Q-1577 -
Stud-Assy. Cylinder 2-1/16"	HC114341-06	2	D2Q-1577 -
Switch-Assy. Plunger	HC116613	1	D2Q-1577 -
Switch-Level Float Sensor	HC161300	1	D2Q-1577 -
Switch-Snap Button (Head & Plunger)	HC150456	2	D2Q-1577 -
Switch-Toggle DPDT "AUTO-OFF-CLEAN"	HC150465	1	D2Q-1577 -
Switch-Toggle SPST "DAY-NIGHT"	HC159235	1	D2Q-1577 -
Thermostat & Retainer Kit (Day/Night)	HC119989	2	D2Q-1577 -
Thermostat-5° Fixed Differential (Hopper)	HC161202	1	D2Q-1577 -
Tool-O-Ring Removal	HC169374	*	D2Q-1577 -
Transformer 75VA / 24VAC / MURD	IC574100325	1	D2Q-1577 -
Transformer-Current	IC574100349	1	D2Q-1577 -
Tray-Drip	HC196260	1	D2Q-1577 -
Trimstrip-Assy	HC120929	1	D2Q-1577 -
Tube-Assembly Mix Feed .188 with Regulator	HC120947	1	D2Q-1577 -
Insert-Assy. Mix Feed .188 Orifice	HC116005	1	D2Q-1577 -
Tube-Mix Feed	HC141092	1	D2Q-1577 -
O-Ring	HC160611	1	D2Q-1577 -
O-Ring	HC160621	2	D2Q-1577 -
Tube-Assy. Drain	HC120606	1	D2Q-1577 -
Valve-Access	HC155419	1	D2Q-1577 -
Valve-Core (Access)	HC155649	1	D2Q-1577 -
* As Required			
** LH or RH — Left or right hand is determined as you face the front of the freezer.			
NLA No Longer Available			

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

Alphabetized Parts List for Model CS600

IMPORTANT:

All parts shown are for standard models designed for 208-230v/60Hz/1phase.

PART DESCRIPTION	PART NUMBER	QTY	SERIAL NUMBER (FROM – TO)
Valve-Auto Expansion (Cylinder)	HC155490	1	D2Q-1577 -
Valve-Auto Expansion (Hopper)	HC155449	1	D2Q-1577 -
Valve-Solenoid Body 3/8 ODM (Body Only)	HC155395	2	D2Q-1577 -
Valve-Solenoid Coil Only 208-240V MKC 1TS	HC151477	2	D2Q-1577 -
Valve-Assy. Water	HC113769	1	D2Q-1577 -
Valve-Water 3/8	HC155410	1	D2Q-1577 -
Washer-Shaft Seal	HC137593	1	D2Q-1577 -
<p>* As Required ** LH or RH — Left or right hand is determined as you face the front of the freezer. NLA No Longer Available</p>			

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

Cleaning & Sanitizing Electro Freeze® CS600

This instruction sheet is not intended to be used in place of the Operator's Manual. Use the following information to assist you only after you have read, understood, and are accomplished in the procedures for cleaning and sanitizing detailed in the Electro Freeze Freezer Operator's Manual.

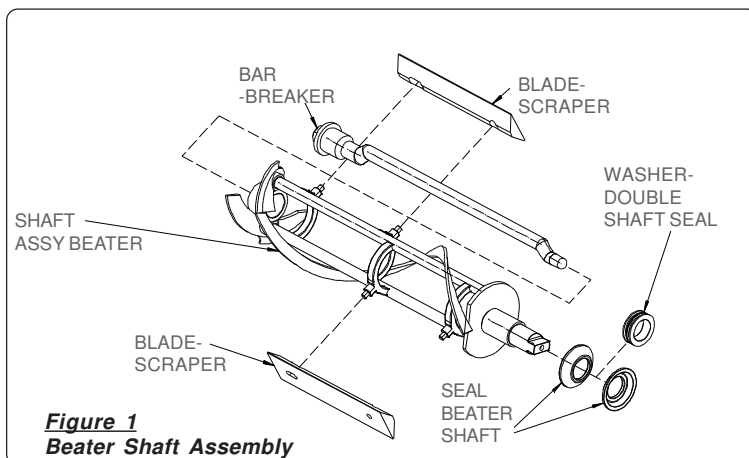
DRAINING PRODUCT

1. Remove the mix feed tube from the hopper.
2. Place the selector switch to the "CLEAN" position. Allow beater to run for 5 minutes to soften product.
3. Dispense the product into a clean sanitized container until the mix hopper is nearly empty.
4. Place the selector switch to "OFF" position and drain remaining product. Close the plunger.
5. Pour 2 gallons (7.6 liters) of cold water into the hopper. Place the selector switch to "CLEAN" and dispense the cold water.
Important: DO NOT use hot water. Damage to the freezer could occur.
6. Follow with 2 gallons (7.6 liters) of warm water and repeat until the freezer dispenses clear water. Place the selector switch in the "OFF" position and drain remaining water.
7. Prepare 2 gallons (7.6 liters) of sanitizing solution in a container. Sanitizing solution must be mixed according to manufacturer's instructions to yield 100 ppm available chlorine solution (example: Stera-Sheen Green Label).
8. Pour the sanitizing solution into the hopper pan. Using a clean brush scrub the hopper walls, sensor and port.
9. When cylinder is filled, place the selector switch to "CLEAN" and allow the beaters to run for 5 minutes. Check for leaks.
Important: Do not use the "AUTO" position with sanitizer in the cylinder. The freezer will be damaged.
10. Place an empty container under the dispensing head. Slowly open the plunger to drain the sanitizer. Open and close handle, place selector switch "OFF" and drain remaining sanitizer.

DISASSEMBLY

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.

Disassemble the freezer components in accordance with the Operator's Manual instructions.

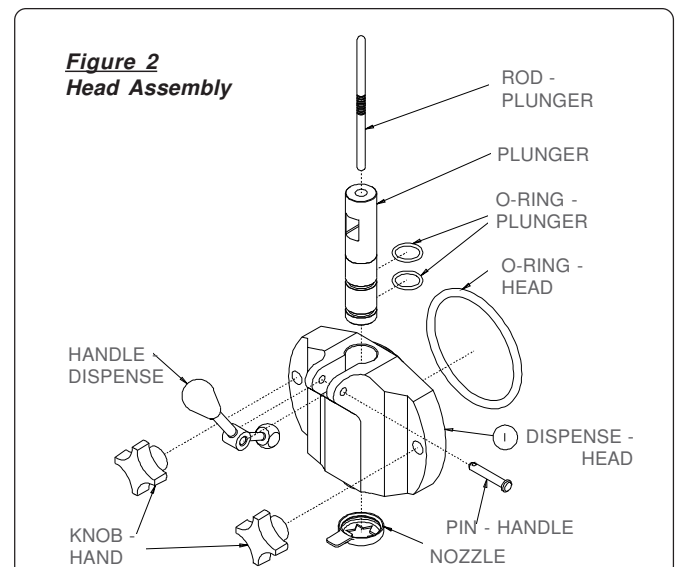


CLEANING

1. Prepare a three-compartment sink for cleaning, rinsing, and sanitizing parts removed from the freezer per applicable health codes. The sanitizer should be mixed according to the manufacturer's instructions to yield 100 parts per million (PPM) available chlorine solution. (example: Stera-Sheen Green Label).
2. Disassemble all parts and remove all o-rings. Clean each part with the appropriate brush supplied with freezer.
3. Wash, rinse, and sanitize all parts removed from the freezer. For proper sanitizing, the parts must remain in the sanitizer for 5 minutes.
4. Place all parts on a clean dry surface to air dry.
5. Go to the freezer and use a dish detergent solution to thoroughly brush the inside of the hopper, the mix feed port to the cylinder and the drain tube. Also brush the inside of the cylinders with the appropriate brush supplied with the freezer, making certain to clean the back walls of the cylinders. Then rinse and brush with sanitizing solution.

ASSEMBLY

1. Assemble and lubricate freezer components in accordance with the Operator's Manual instructions. See figures 1 and 2.



SANITIZING

1. Wash and sanitize your hands and forearms.
2. Prepare 2 gallons (7.6 liters) of sanitizing solution in a container. The sanitizing solution must be mixed according to manufacturer's instructions to yield 100 PPM (parts per million) available chlorine solution (i.e., Stera-Sheen or equivalent).
3. Place the mix feed tube assembly and mix float in the bottom of the hopper pan.
4. Pour sanitizing solution into the hopper and allow cylinder to fill. Using a clean brush scrub all sides of the mix hopper, mix level sensor, mix float, the mix feed tube, and the mix feed port from the hopper to the cylinder.
5. Install mix float on mix level sensor. Brush the inside of the hopper cover with sanitizing solution.
6. When the cylinder has filled with sanitizing solution, reconnect power, place the selector switch in the "CLEAN" position and allow the beater to run for 5 minutes. During this time period, check for leaks around the head, plunger, and drain tube.

Important:

Do not use the "AUTO" position with sanitizer in the cylinder. The freezer will be damaged.

7. Place an empty container under the dispensing head. Place the selector switch "OFF" and drain the solution by opening the plunger to allow the cylinder and hopper to empty. Open and close the plunger at least 10 times while draining to sanitize the port area of the dispense head.
8. Sanitizer can be used to sanitize product preparation container.

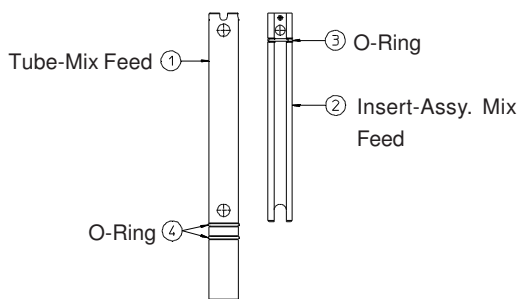


Figure 3
Mix Feed Tube Assembly

PRIMING

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

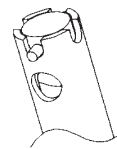
1. Wash and sanitize your hands and forearms. Note: Always have clean, sanitized hands when handling mix feed assemblies. Handle only the top 1" (2.5cm) of mix feed.
2. Place an empty container under the dispense head. Install the mix feed tube assembly (see figure 3) in the "closed" position into the mix feed drain in the hopper (see figure 4). Pour a minimum of 2-1/2 gallons (9.5 liters) of mix into the hopper. Hold plunger open and remove mix feed tube and allow mix to push out the sanitizer. When pure mix flows from the dispense head close the plunger. Install the mix feed tube into the mix feed hopper drain in the "open" position as shown in figure 4 and place the selector switch to the "Auto" position.

Important:

Failure to completely remove sanitizer or water from the freezing cylinder before placing in "AUTO" will damage the freezer.

3. Install the hopper cover.
4. During long idle periods, the white insert tube should be closed — **but remember — when dispensing product, ensure that the mix feed insert is OPEN at all times.** If not open, the flow of mix will be restricted. If lubricant blocks the inlet hole in the tube it would also restrict the flow of mix.

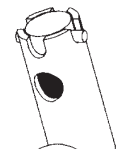
Pin is in line with hole.



OPEN

Look through top hole in tube — you should see clear through.

Pin is not in line with hole.



CLOSED

Look through top hole in tube — you should see the inner white plastic insert tube blocking the opening.

Figure 4
Mix Feed Tube

Problem? Contact your local authorized distributor or the freezer manufacturer, Electro Freeze Service Department, 2116 Eighth Avenue, East Moline, IL 61244, (309) 755-4553 or FAX (309) 755-9858.

ELECTRO FREEZE

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