1 Introduction

The 30CMT 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 40ºF (4°C) prior to introduction to the freezer. Use of other products in this machine is considered misuse (see Warranty).

This manual has been prepared to assist you in the proper operation and general maintenance of the Electro Freeze Soft Serve Model 30CMT.

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

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

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

Name _____

Address: _____

_____

Phone: _____

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

Phone: (309) 755-4553

FAX: (309) 755-9858

2 Note to Installer

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

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

2.1 Uncrating and Inspection

CAUTION

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

When the unit is received and while the carrier is still present, inspect the shipping carton for any damage that may have occurred in transit. If the carton is broken, torn or punctured, note the damage on the carrier's freight bill and notify the carrier's local agent immediately.

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

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

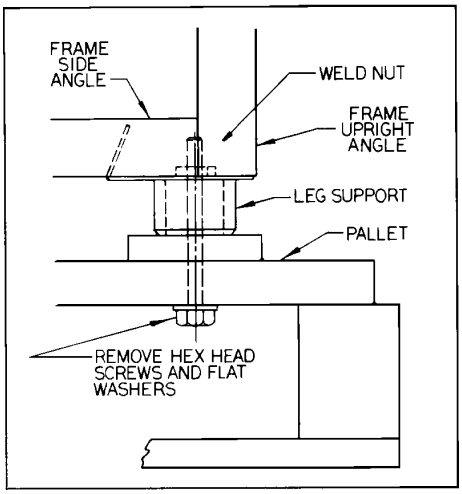


Figure 2-1 Bolted to pallet

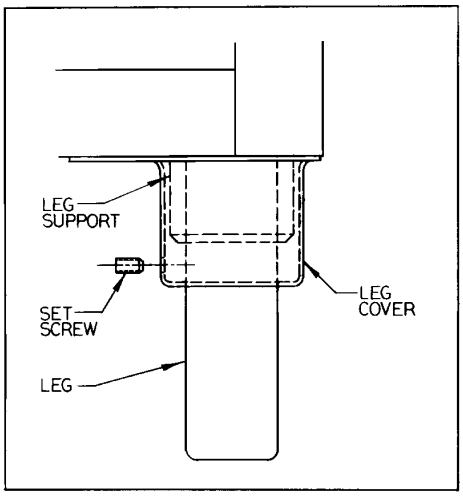


Figure 2-2 Install mounting legs

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 easier service and cleaning.

2.2 Installation (continued)

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

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

5. Place the freezer in the final location and level by adjusting the legs or casters so that it is level side-to-side and the front is approximately ¼ inch lower than the rear (to allow proper drainage of the freezing cylinder).

2.3 Electrical Requirements

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

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

2. Supply voltage must be within ± 10% of voltage indicated on the nameplate. Also, on three-phase systems, voltage between phases must be balanced within 2%. (More than a 6 volt difference between any two voltage measurements at 208-230 volts indicates a possible imbalance.) Request your local power company to correct any voltage problem.

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

2.4 Electrical Connections

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

1. Double freezers with two compressors require one power supply for each side of the freezer. Each side of the freezer operates independently.

2. Check the data plate for fuse size, wire ampacity and electrical specifications.

3. Refer to the wiring diagram provided for proper power connections.

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

5. Use dual element fuses, rated at 25% over the full load amperage (FLA) rating of the freezer. Refer to the data plate on the rear panel. As mentioned before, all double head machines should be wired and fused as individual units. Use a flexible connection when permissible.

3 Specifications

3.1 Particulars

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

30CMT

Width (in/cm)	26/66
Height (in/cm)	67.5/171
Depth (in/cm)	36.5/93
Weight (lbs/kg)	847/385
Compressor (2)*	2 HP/9500 BTUH 1.5 kw (Motor) 2.8 kw (Cooling)
Beater Motor	2 HP/1.5 kw
Refrigerant	404a
Charge**	3.75 lb/1.7 kg
Mix Container (2)	30 Qts/28.4 Liters
Cylinder (2)	4 Qts/3.8 Liters

*Contact factory for other voltages.
**for each side

3.2 Data Plate

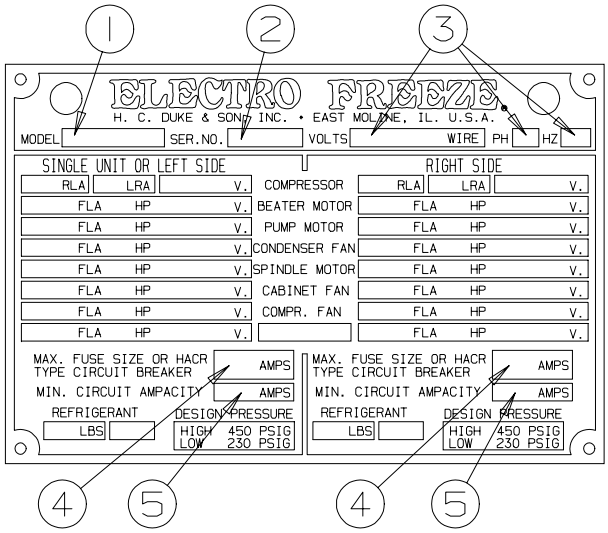


Figure 3-1

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

3.3 Reference Information

Write in Reference Information HERE!

Fill in this information as soon as you receive the Electro Freeze 30CMT Soft Serve Freezer. The item numbers, encircled, correspond with the callout numbers in figure 3-1.

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

3.4 Installation Date

Fill in the date of installation, and the name, address, and phone number of the installer in the space provided below. This information will be needed when ordering parts or service for the 30CMT Freezer.

Date of installation: _____

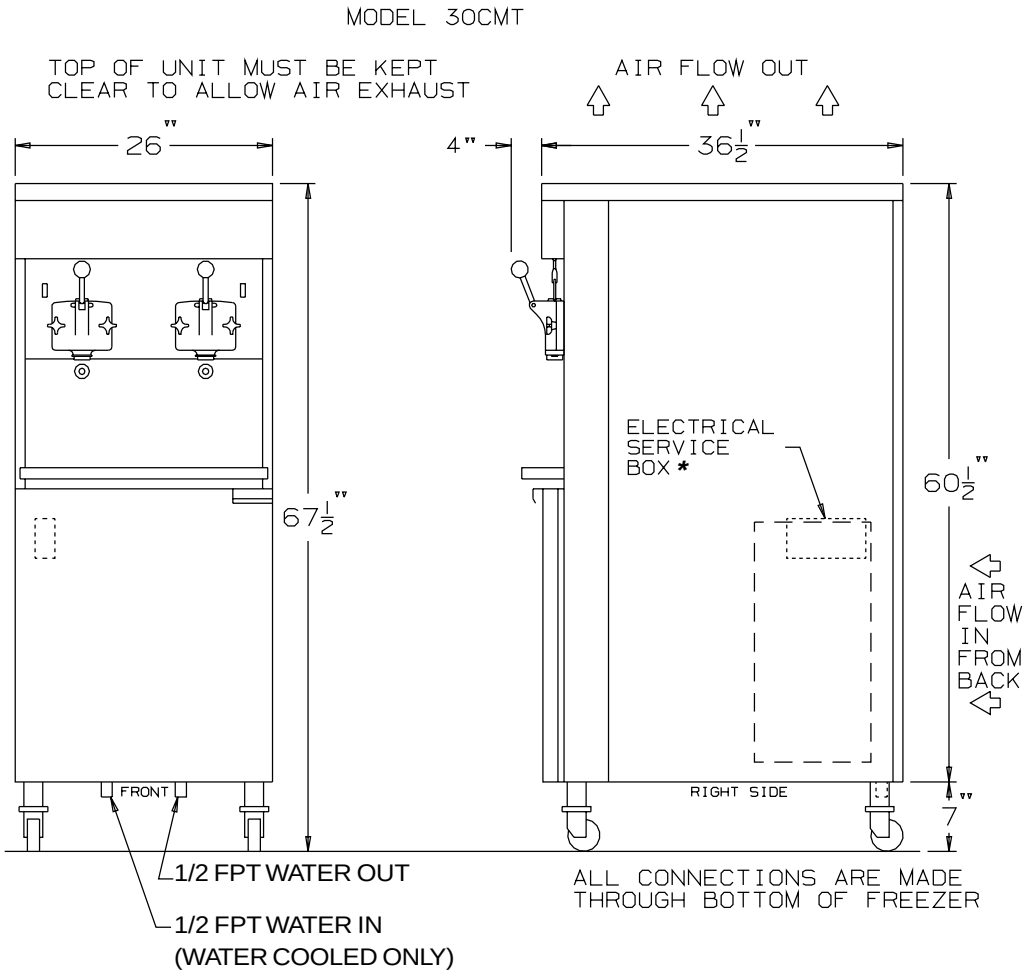
Installed by: _____

Address: _____

_____

Phone: _____

3.5 Dimensions



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

Figure 3-2 Dimensions

4 Part Names and Functions

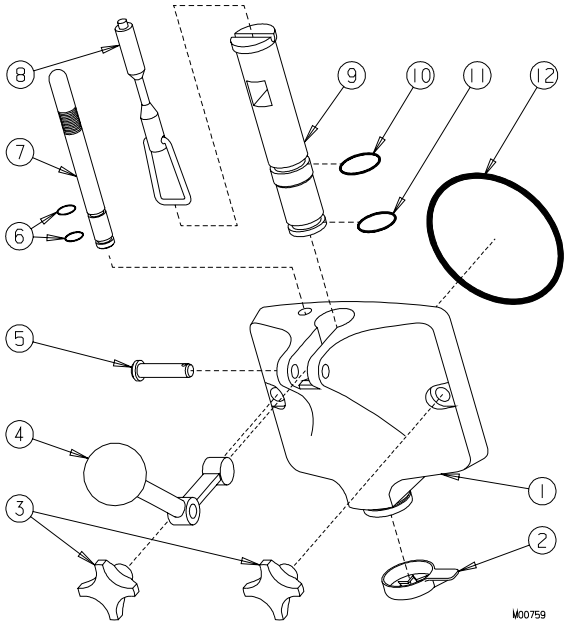


Figure 4-1 Head Assembly

1 HEAD - DISPENSE

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

2 NOZZLE

Forms the frozen product as it is dispensed.

3 KNOB - HAND

Secures the dispense head to the freezing cylinder.

4 HANDLE - DISPENSE

Opens and closes the plunger to start and stop the flow of product from the freezer.

5 PIN - HANDLE

Secures the handle to the dispense head.

6 O-RING - PLUG

Seals the air relief plug in the dispense head.

7 PLUG - AIR RELIEF

Seals the air relief opening in the dispense head when closed. Allows excess air to be removed from the cylinder during the filling process.

8 ROD - PLUNGER

Starts the freezer when dispensing. Must be in place before freezer will operate.

9 PLUNGER

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

10 O-RING - PLUNGER

Seals the plunger in the dispense head. Must be lubricated to seal and slide properly.

11 O-RING - PLUNGER

Seals the plunger in the dispense head. Must be lubricated to seal and slide properly.

12 O-RING - HEAD

Seals the dispense head to the freezing cylinder. Must be lubricated.

4 Part Names and Functions

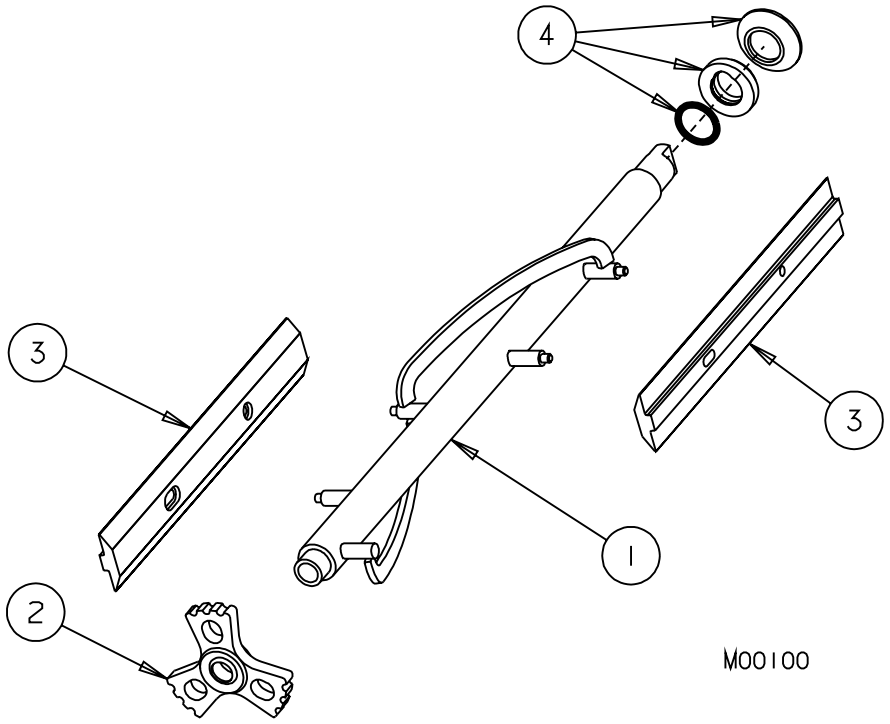


Figure 4-3 30CMT Beater Shaft Assembly

1 SHAFT - BEATER
Rotates in the freezing cylinder, blending air and ejecting product.

2 BUSHING
Centers the beater shaft in the freezing cylinder.

3 BLADE - SCRAPER
Scrapes the frozen product from the freezing cylinder wall.

4 SEAL - SHAFT
Seals the opening between the freezing cylinder and the beater shaft.

4 Part Names and Functions

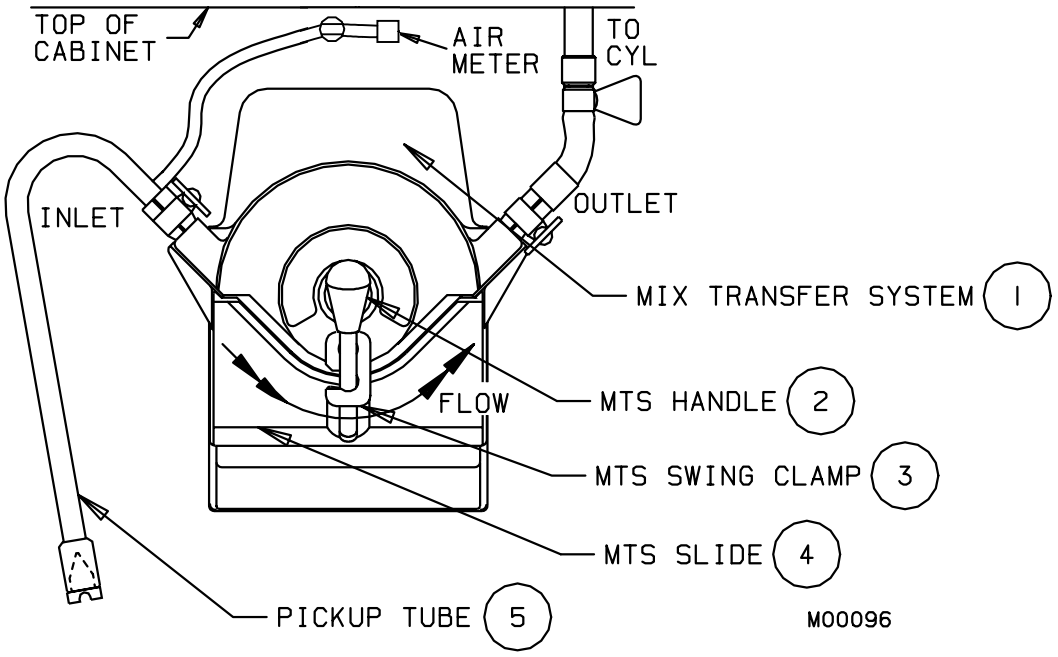


Figure 4-4 Mix Transfer System (MTS)

1 MIX TRANSFER SYSTEM (MTS)

Transfers mix and air from the storage cabinet to the freezing cylinder.

2 MTS HANDLE

Moves the MTS slide up and down to engage the transfer hose with MTS rollers. Allows access to transfer hose.

3 MTS SWING CLAMP

Secures the MTS slide in position, ensuring contact with rollers. MTS will operate only when swing clamp is secured.

4 MTS SLIDE

Sets the transfer hose in proper position under rollers.

5 PICKUP TUBE

Carries mix from mix container to MTS. Duckbill check valve prevents mix from returning to mix container.

5 Operator Controls and Indicators

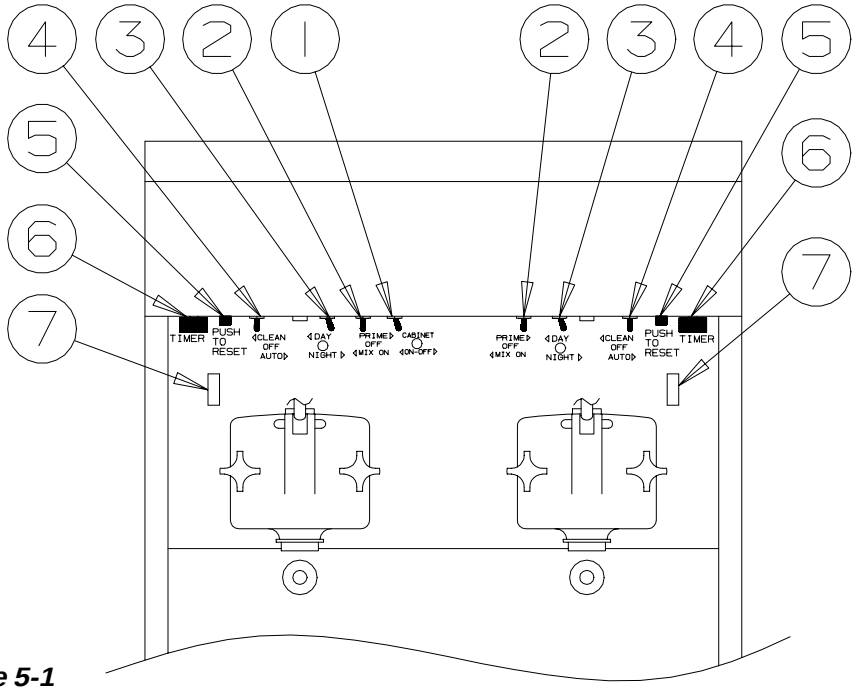


Figure 5-1

M00129

The following paragraphs describe the operator controls and indicators. Refer to figure 5-1 for location of these controls and indicators on the freezer.

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

CAUTION

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

5.1 Cabinet Switch (1)

This two-position switch controls the cabinet refrigeration.

NOTE: Cabinet door must be closed for cabinet refrigeration to operate.

a. **"ON"** (left) — The cabinet thermostat controls the system refrigeration to maintain a temperature of 36 to 40°F (2 to 4°C) in the storage cabinet. Always use this position when mix is in the storage cabinet but not in the cylinder.

b. **"OFF"** (right) — The cabinet will not be refrigerated if the SELECTOR switch is also in the "OFF" position.

NOTE: The cabinet is automatically "ON" when either SELECTOR switch is in the "AUTO" position.

5.2 Mix Transfer System (MTS) Switch ②

This three-position switch controls the operation of the MTS located in the refrigerated mix storage cabinet.

a. **"MIX ON"** (left) — Use this position when the freezer is in the normal operating mode and/or when product is being removed from the cylinder.

b. **"OFF"** (center) — In this position the MTS will not operate.

c. **"PRIME"** (right) — This position is used to fill the cylinder with mix or sanitizer.

5.3 DAY-NIGHT Switch ③

This two-position switch controls the day and night refrigeration modes.

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

b. **"NIGHT"** (right) — The medium temperature thermostat controls the system refrigeration to maintain a mix holding temperature of 40°F (4ºC) or below.

5.4 Selector Switch ④

This three-position switch controls the operating mode of your 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 "AUTO" position with water or sanitizer in the cylinder — the freezer will be damaged.

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

5.5 Reset — Overload ⑤

⇨ ***Important:***
If the overload trips frequently, your freezer should be checked for proper product temperature, overrun and voltage. Contact your Electro Freeze Distributor.

This control protects the beater motor against failure from an overload condition by automatically shutting down the freezer. To restart properly, turn the SELECTOR switch to "OFF", wait 2-3 minutes. Then depress the red reset button and turn the SELECTOR switch back to the "AUTO" or "CLEAN" position.

5.6 Timer ⑥

⇨ ***Important:***
Excessive use of the timer causes freeze-up and damage to the freezer.

This control will bypass the thermostat forcing the compressor and beater motor to run up to 3 minutes. The timer can be used for quick start-ups or fast recovery when large portions are dispensed.

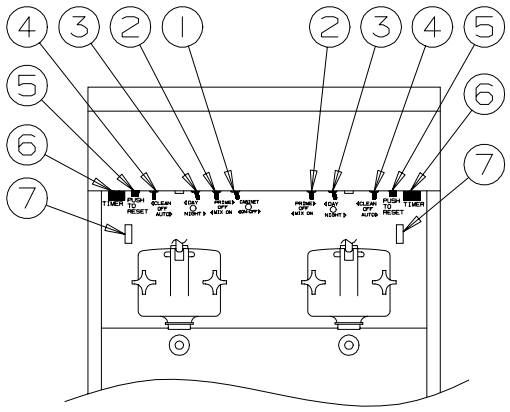
5.7 Indicator Light — "ADD MIX" ⑦

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

When flashing, this light indicates the mix in the mix container 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 container. For best operating results keep container full.

5.8 Probe — "ADD MIX" ⑧ (not shown)

For the "ADD MIX" indicator lights to work, the probes must be installed in the mix containers, with cords attached and plugged into the receptacles located in the back of the cabinet.



This diagram shows the correct positions of the switches for DAY/ NIGHT and filling operations.

To turn the entire machine off, switches numbered 1, 2, and 4 must be in the "OFF" position.

FILL	DAY	NIGHT
1 OFF	1 ON	1 ON
2 PRIME	2 ON	2 OFF
3 DAY	3 DAY	3 NIGHT
4 OFF	4 AUTO	4 AUTO

6 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

CAUTION
Make sure freezer is depressurized before proceeding.

the following steps should be taken for the appropriate side of the freezer:

1. Make sure the MTS switch and the selector switch are in the “OFF” position.

2. Place a clean bucket under the dispense head.

3. ***Slowly*** open the plunger by pulling down on the dispense handle, allowing any pressurized product, cleaning solution, or air to escape.

4. Remove the plunger rod and open the plunger completely.

5. Open the swing clamp on the mix transfer system and pull the MTS handle down.

Following these steps will assure that the system is depressurized.

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.

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. Follow the instructions for each side of the freezer.

6.1 Cleaning Accessories

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

a. Bottle, Wash: used to flush the hose cavity, roller assembly and plunger.

b. Brush, Cylinder: used to clean the cylinder.

c. Brush, 7/16-inch in diameter with 12-inch handle: used to clean transfer hose, braided hose, pickup tube, and mix tube in ceiling of cabinet.

d. Brush, 9/16-inch in diameter with 30-inch handle: used to clean drain tube.

e. Brush, 1/4-inch diameter with 6-1/2 inch handle: used to clean air meter hose.

f. Kit, O-ring: contains all O-rings and seals needing replacement on a regular basis.

g. Lubricant, Petrol Gel: approved lubricant for moving parts and O-rings.

h. Sanitizer, Sample: approved sanitizer, Stera-Sheen, also available in 4 lb. jar.

6.2 Disassembly Instructions

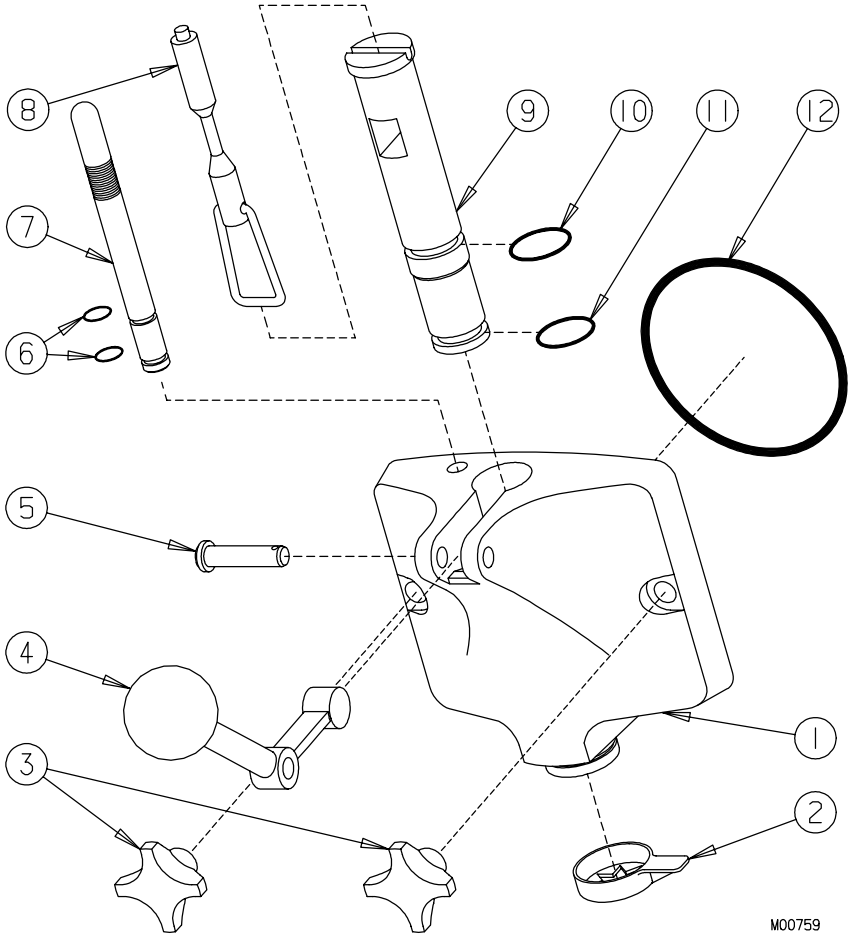


Figure 6-1 Head Assembly

6.2 Disassembly Instructions - continued

CAUTION

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

CAUTION

Make sure freezer is depressurized before proceeding.

CAUTION

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

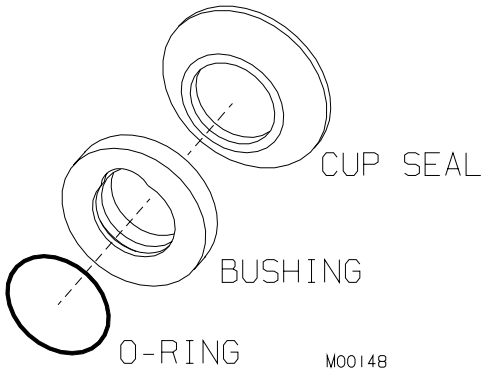


Figure 6-2 Shaft Seal

Follow these directions for each cylinder:

1. If there is product in the freezer, refer to Section 9, Closing Procedures, 9.2 Draining Product.

2. Remove the plunger rod (8, figure 6-1) by lifting up and swinging the bottom out and down. Remove hand knobs (3) and pull the dispensing head (1) straight out.

3. Remove the cylinder bushing and beater shaft from the cylinder.

4. Remove scraper blades and shaft seal from the beater shaft.

5. Remove the drip tray (see Replacement Parts Manual, figure 7 - Panel Assembly) and drip tray insert from the front of the freezer.

6. Remove the air relief plug (7) and remove the two O-rings (6).

7. Remove the handle pin (5), handle (4), plunger (9) and nozzle (2) from the dispense head.

8. Remove O-ring (12) from the dispense head and O-rings (10, 11) from the plunger (9).

9. Remove the cup seal (figure 6-2) and O-ring from the bushing on the shaft seal assembly.

10. Remove mix container, cover and low mix probe.

11. Remove MTS hose assembly from the Mix Transfer System by unlocking the swing clamp and pulling the MTS handle down (figure 6-3). Loosen the three clamps and separate the parts as shown in figure 7-5.

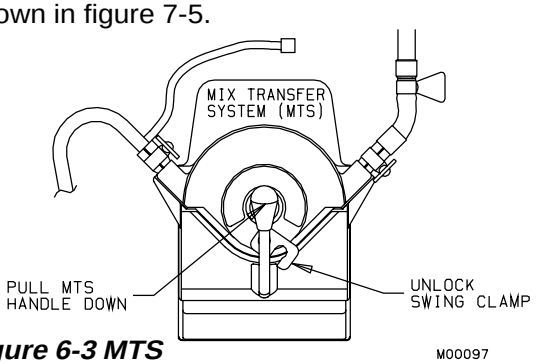


Figure 6-3 MTS

6.3 Cleaning Instructions

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

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

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

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

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

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

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

a. The mix container, pickup tube assemblies, hoses, and probe.

b. The head plunger opening, O-ring grooves, dispense nozzle mounting rings, and mix port, as shown in figure 6-4.

— continued

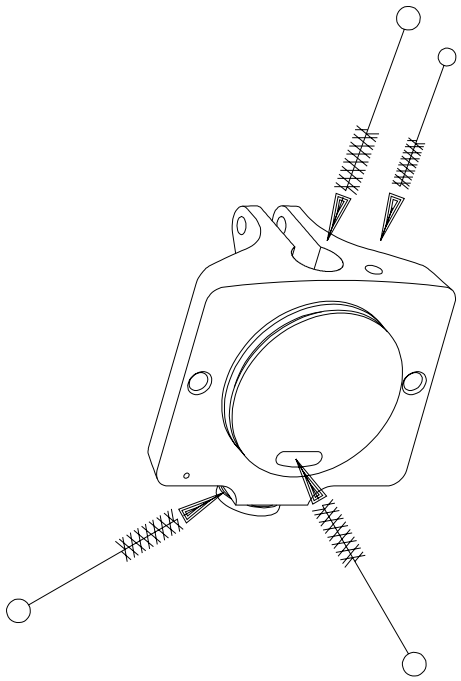


Figure 6-4 Clean head ports and openings with brush.

6.3 Cleaning Instructions — continued

c. The shaft cup seal, bushing, and O-rings, plunger O-ring grooves and nozzle, as shown in figure 6-5.

d. The air relief plug O-ring grooves.

e. The beater shaft and the scraper blade pin holes as shown in figure 6-6.

⇨ ***Important:***
Do not leave parts in sanitizer for more than 15 minutes.

3. After all parts are washed, rinse and then place them in the 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 sanitizing solution to thoroughly brush the mix feed tubes from the refrigerated cabinet to the cylinders.

5. Brush the inside of the cylinders with sanitizer and brush, making certain to clean back wall.

6. Brush the inside of the drain tube, as shown in figure 6-7.

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

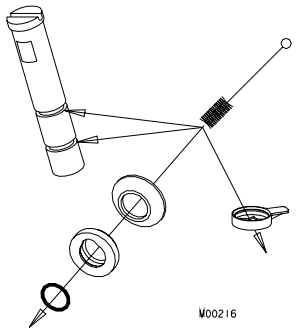


Figure 6-5 Clean O-ring grooves, seal and nozzle with brush.

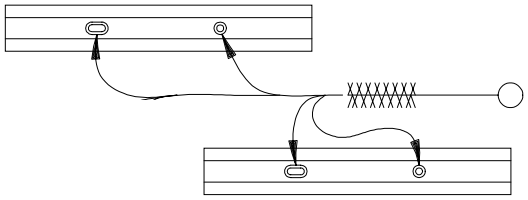


Figure 6-6 Clean beater shaft pin holes.

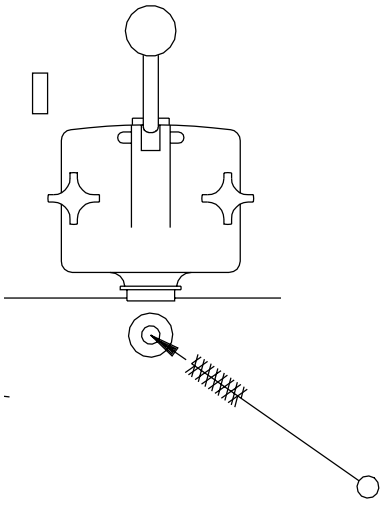


Figure 6-7 Brush inside of drain tubes

7 Assembly

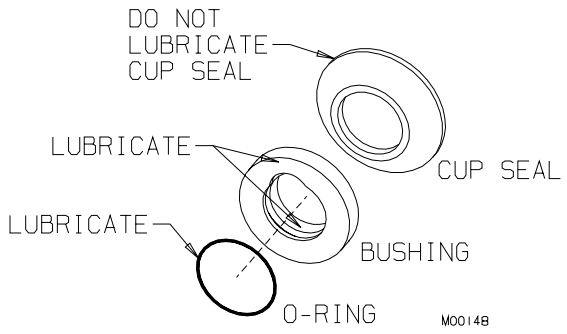


Figure 7-1

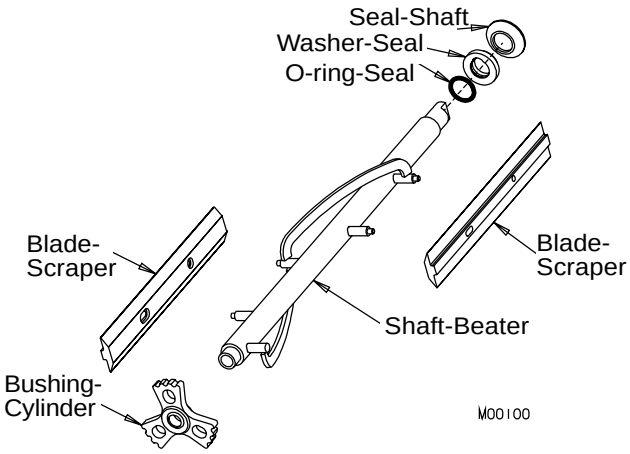


Figure 7-2

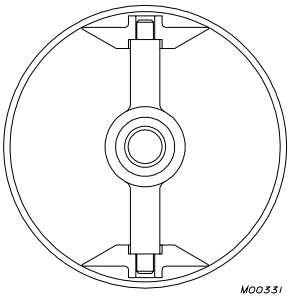


Figure 7-3

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

CAUTION

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

1. To assemble the shaft seal, install the cup seal and O-ring on the bushing (see figure 7-1). Apply approved sanitary lubricant (such as Petrol-Gel) to the O-ring and the face of the plastic bushing 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 seal over the rear of the beater shaft, with the bell-shaped portion facing the rear as shown in figure 7-2.

3. Place the scraper blades on the beater shaft, making sure the blades are installed properly (see figure 7-3).

4. Insert the assembled beater shaft into the cylinder by placing the rear blade on the bottom of the cylinder. This will center the beater and allow alignment with the drive coupling. Rotate the beater assembly while pushing, until the shank has engaged the coupling. Install both beater shafts as instructed above.

—continued

7 Assembly — continued

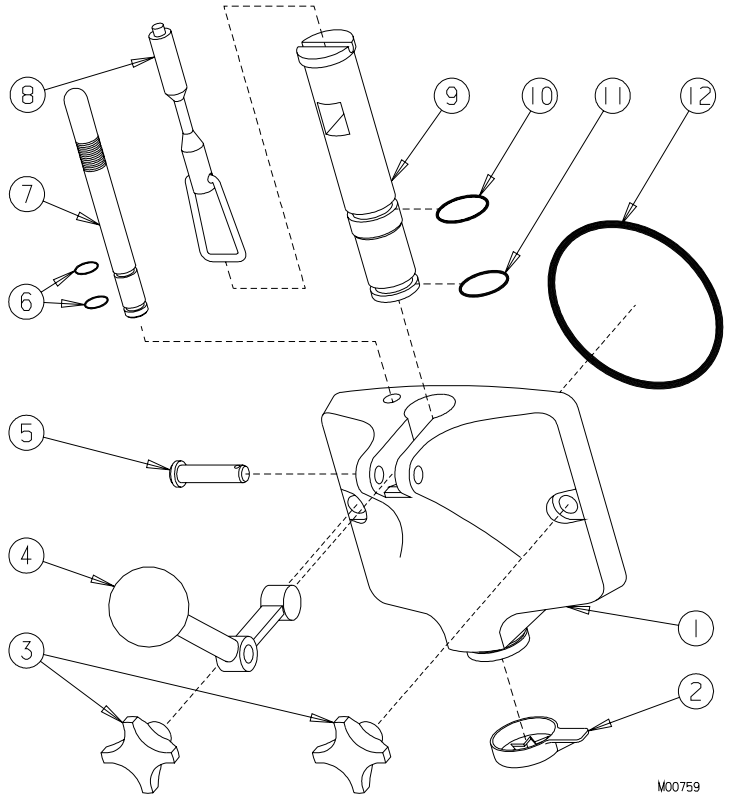


Figure 7-4 Head Assembly

5. (Refer to figure 7-4.) Install and then lubricate the O-rings (10-11) on the plunger (9) and insert plunger halfway into the dispensing head (1).

6. Install and then lubricate the 4-inch head O-ring (12).

7. Position the handle (4) in the plunger (9) and dispensing head (1). Lock in place with the handle pin (5).

8. Install and lubricate O-rings (6) on the air relief plug (7). Insert plug in the dispensing head (1) assembly.

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

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

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

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

11. Install the plunger rod (8). The nozzle (2) will be installed on the mix outlet at the bottom of the head after sanitizing.

— continued

7 Assembly — continued

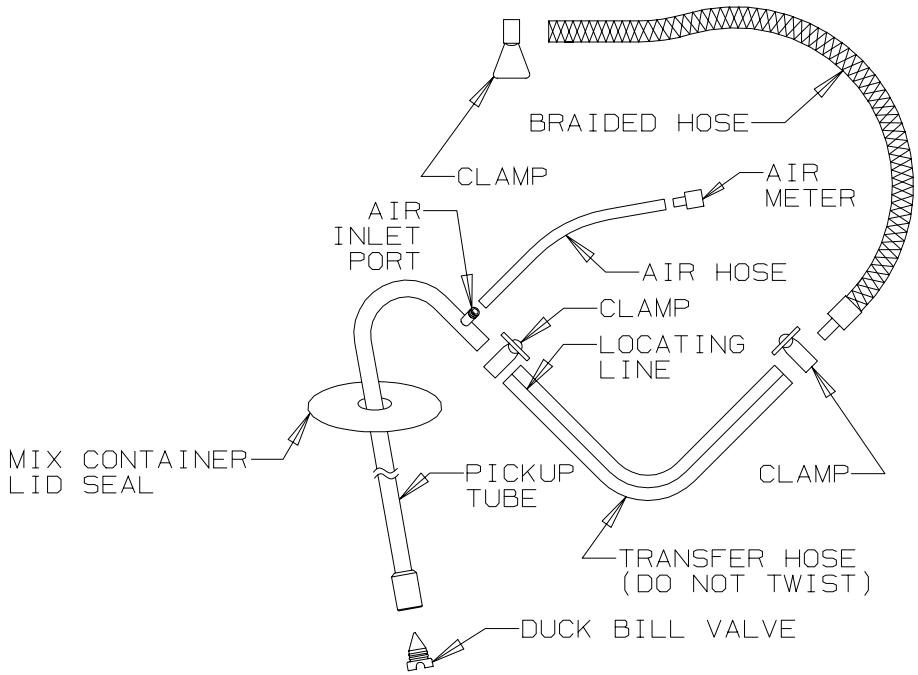


Figure 7-5 MTS Hose Assembly

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

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

⇨ ***Important:***
Replace transfer hose every 30 days.

12. Assemble the MTS hose assembly by sliding the clamp on the transfer hose. Then slide the transfer hose over the pickup tube until it meets the air inlet port. The transfer hose has a locating line. Rotate the hose so that the locating line is to the left of the air inlet port as shown in figure 7-5. Secure the hose with the clamp.

13. Slide a hose clamp over the other end of the transfer hose and connect to braided hose assembly at the barbed fitting and clamp with the thumb screw end towards you (facing straight out).

14. Slide the air hose over the air inlet port and insert air meter.

15. Install mix container lid seal, flat side first, over the mix pickup tube.

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

17. Refer to figure 7-6. Install the MTS hose assembly by laying the transfer hose in the hose/roller cavity. Always install the left hose assembly first.

18. Place the pickup tube end in the inlet hose guide.

19. Pull the braided hose end of the transfer hose through the outlet hose guide.

-continued

7 Assembly — continued

⇨ ***Important:***
Do not twist the hose assembly while installing.

20. Make sure the pickup tube and clamps are completely outside of the inlet hose guide.

21. 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, as shown in figure 7-6.

⇨ ***Important:***
The MTS will not operate unless the handle is in the closed and locked position.

22. Push handle upward and lock in place with the swing lock.

23. Slide a clamp over the braided hose and slide hose over the mix inlet tube and tighten the clamp. Make sure hose is not twisted.

24. Insert the air hose into the support in the back of the cabinet.

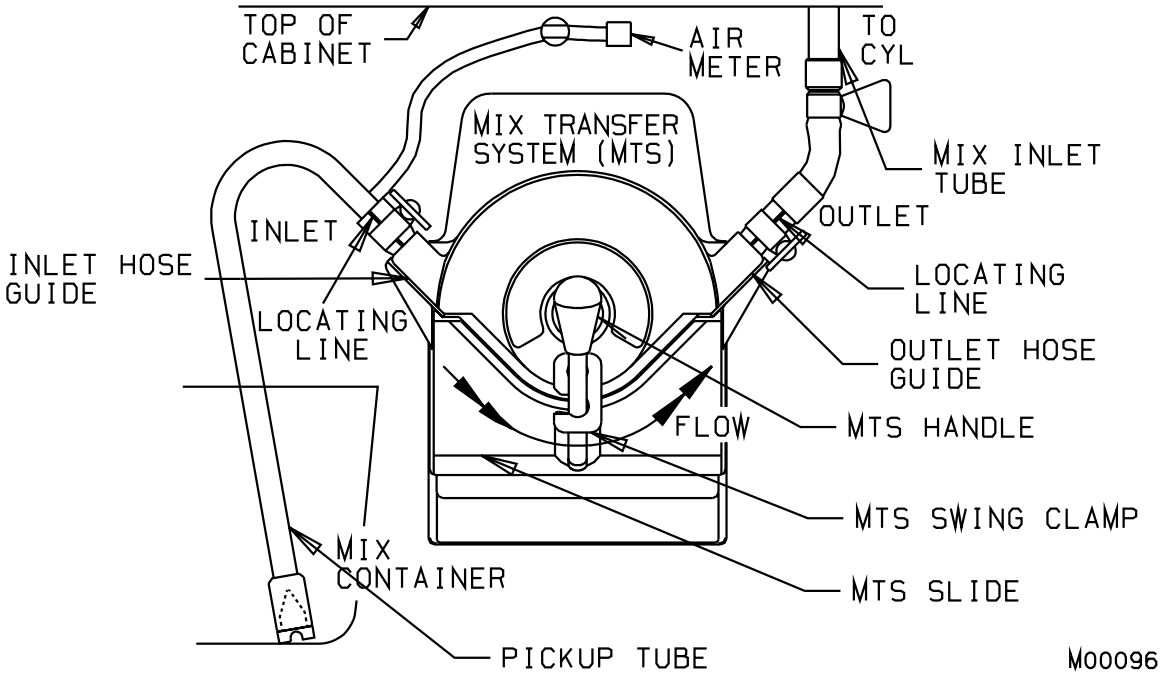


Figure 7-6 MTS Assembly

8 Start-up Instructions

CAUTION

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

8.1 Sanitizing Instructions

The washing and 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 and washed according to the instructions in the manual before sanitizing 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. Always mix fresh sanitizer.

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

1. Prepare 2 gallons (7.6 liters) of sanitizing solution for each cylinder. 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.

2. Clean the interior mix container walls, the underside of the container covers, and low mix probes with sanitizer solution and the appropriate brush provided.

3. Place the mix container with sanitizer in the refrigerated cabinet.

⇨ ***Important:***
Never let the sanitizer remain in the freezer for extended periods.

4. Immerse the pickup tube in the sanitizer solution and sanitize the outside portion. If plastic mix bag systems are used, be sure all adaptors and items that will come into contact with mix are sanitized.

5. Place an empty container under the dispensing head.

6. Open the air relief plug by pulling up until the plug touches the bottom of the switch box.

7. Reconnect the main power supply to the freezer. Turn the MTS switch to "PRIME." This will push the sanitizer up into the cylinder.

8. When sanitizer flows out the bottom of the head, close the air relief plug.

— continued

8.1 Sanitizing Instructions (continued)

⇨ ***Important:***
DO NOT use the "AUTO" position with sanitizer in the cylinder. The freezer will be damaged.

9. Turn the SELECTOR switch to "CLEAN" and allow the beater to run for 10 minutes. Check for leaks around the head, drain tube, clamps and MTS.

10. Drain the solution from the cylinder by slowly pulling down on the dispense handles.

NOTE: Some sanitizer will remain in hoses and cylinder.

11. Leave the handle down, turn the SELECTOR Switches to "OFF", and let the MTS force all possible sanitizer out of the freezing cylinder.

12. Turn the MTS switch to "OFF".

13. Remove the pickup tube, holding the top 6-inch portion only.

14. Remove the mix container and empty any remaining sanitizer.

8.2 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. Follow these directions for each cylinder:

1. Holding the top 6-inch portion only, insert the pickup tube into the sanitized mix container through the small hole in the rear cover and set container in the cabinet.

2. Fill the mix container with mix and install the front cover.

3. Insert the mix probe through the large hole in the rear cover, and connect the probe cord to the probe and to the back of the cabinet.

4. Turn the cabinet switch to "ON" and close the cabinet door.

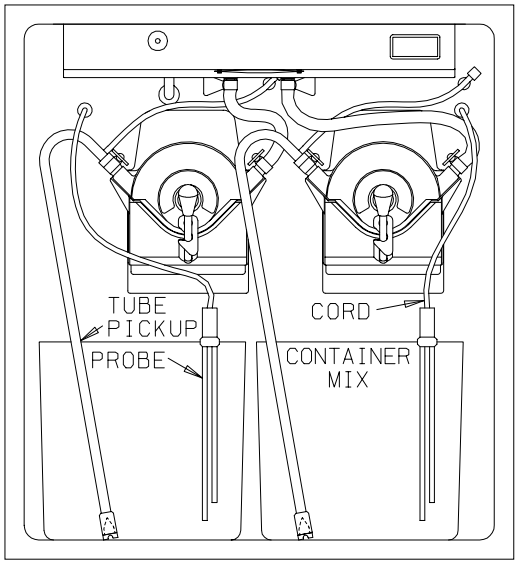


Figure 8-1

5. Place an empty container under the dispensing head on the drip tray.

6. Open the plunger and air relief plug.

7. Turn the MTS switch to "PRIME" and allow the mix to push the remaining sanitizer from the freezer.

8. Close the plunger when pure mix is being expelled.

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

9. After **50–55** seconds, close the air relief plug and wait for the MTS to fill the cylinder and shut off.

10. After the cylinders are pressurized and the MTS has cycled off (approximately 30 seconds) turn the DAY/NIGHT switch to "DAY" and the SELECTOR switch to "AUTO." Turn the MTS switch to "ON".

11. Allow the freezer to cycle for 15 minutes. Sanitize the nozzle and install on the dispensing head. The product is now ready to serve.

9 Closing Procedures

9.1 Night Switch Operation

1. In areas where state and local health codes will allow, the freezer may be switched to night operation that will allow the freezer to cycle all night and maintain approximately 38°F (3°C) or lower product in the cylinder and cabinet.

2. To switch the freezer to the night mode, leave the SELECTOR switches on “AUTO” and the cabinet switch “ON”.

3. Turn the MTS switches to the “OFF” position.

4. Turn the DAY/NIGHT switches to “NIGHT” and let the machine cycle.

5. Remove serrated nozzles and clean the drip tray assembly and all soiled surfaces with soap and water.

6. To start the machine after using the NIGHT mode, turn the DAY/NIGHT switches to “DAY” and the MTS switches to “ON.” Before replacing sanitized nozzles use a small brush and sanitizer to clean the bottom of the plunger openings.

9.2 Draining Product

To remove frozen product from the cylinders follow these directions for each cylinder.

1. Place the SELECTOR switch in the “CLEAN” position and the MTS switch in the “PRIME” position.

2. 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. In the cabinet below, remove the stainless steel pickup tube from the mix. Remove the mix containes and disconnect the low mix cord.

5. *Very slowly* dispense the semi-frozen product until it quits.

6. Close the plunger and turn the cabinet and MTS switches to “OFF”. Place the pick up tube into a container of cold water, turn the MTS switch to “ON” and allow the MTS to fill and pressurize the cylinder with water.

7. *Very slowly* dispense the cold water. Follow with a container of warm water and repeat until the dispensed water is clear. Turn all switches to “OFF” and drain all water from the cylinders.

8. Prepare 2 gallons (7.5 liters) of sanitizing solution for each cylinder. Always mix fresh sanitizer. Sanitizing solution must be mixed according to manufacturer’s instructions to yield 100ppm available chlorine solution (example: Stera-Sheen Green Label).

9. Place the pickup tube into the sanitizer solution.

10. Open the air relief plug by pulling up until the plug touches the bottom of the switch box. Place the MTS switch to the “PRIME” position. When sanitizer solution flows out the bottom of the head, close the plugs and allow the cylinders to pressurize.

11. Place the selector switch in the “CLEAN” position and allow the beater to run for 10 minutes.

12. Slowly open the plunger and allow the MTS to push the sanitizer out of the cylinder. Leaving the plungers open, turn the selector switch to “OFF”. Leave the MTS switch on “PRIME” and allow the MTS to push all remaining sanitizer out of the cylinder. When the sanitizer quits flowing, turn the MTS switch to “OFF”.

13. Remove pickup tube from sanitizing solution.

CAUTION
Make sure the freezer is depressurized before proceeding.

14. Refer to Section 6, Disassembly and Cleaning.

10 Soft Serve Information

10.1 Overrun

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

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

To correctly measure the overrun, perform the following steps:

a. Place an empty pint container on the scale* and adjust your scale to zero.

b. Remove container from scale and fill with liquid product to the top. Weigh container and record.

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

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

e. Use the following formula to figure overrun percentage:

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

Example:

Weight of one pint of liquid mix = 18 oz.

Weight of one pint frozen product = 12 oz.

Difference = 6 oz.

6.0 oz. divided by 12 oz. = .5

.5 x 100 = 50% overrun

* Your Electro Freeze Distributor can provide a scale and container (P/N 158049) that is graduated in overrun percentage.

10.2 Overrun Adjustment

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

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

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

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

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

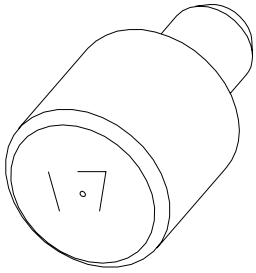


Figure 10-1 Air Meter

10.3 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 with a lid.

2. Store in a cooler with a temperature below 40˚F (4.4˚C).

3. DO NOT prime the machine with rerun. Always skim off with a sanitized spatula and discard foam. Then combine the rerun with fresh mix in a ratio of 50/50 and add to the mix container during operation.

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

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

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

11 Routine Maintenance

Electro Freeze recommends the following schedule to help maintain your Model 30CMT Soft Serve Freezer in like-new operating condition. Take the time to learn and perform these routine procedures and receive in return many years of valuable service from your freezer. Protect your investment!

DAILY

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

CAUTION

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

2. Clean the cylinder and drain tube with the appropriate brushes.

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

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

5. Check overrun and temperature of the product.

AS NEEDED

CAUTION

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

1. Clean the mix transfer 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.

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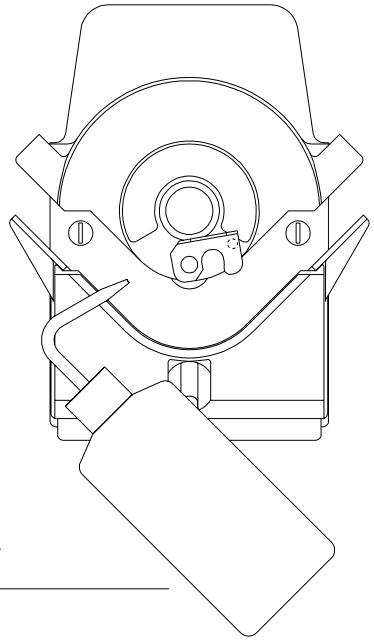


Figure 11-1

11 Routine Maintenance - continued

AS NEEDED - CONTINUED

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.

a. Unlock the MTS handle and pull down to open housing and gain access to 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. Wipe all surfaces with a clean dry cloth.

2. To disassemble and clean the mix transfer system:

CAUTION
Make sure freezer is depressurized before proceeding.

a. Unlock the MTS handle and pull down to open housing and gain access to the hose cavity.

b. Remove mix transfer hose assembly.

c. Remove the two mounting screws located inside the hose cavity (see figure 11-2).

d. Remove MTS from the cabinet wall by pulling straight out.

Important:
Make sure wavy washer stays on the motor shaft in the cabinet wall.

e. Clean the MTS under warm running water with the brush provided.

Important:
Do not submerge MTS in water or put it in dishwasher.

3. To reassemble and sanitize the mix transfer system:

a. Install the MTS on the cabinet wall by aligning the coupling and the motor shaft

b. Turn the roller assembly while pushing MTS back until completely engaged.

c. Install two mounting screws.

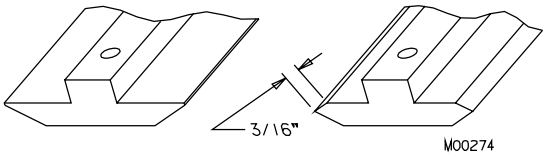
d. Proceed to Assembly, Start-up and Sanitizing Instructions.

11 Routine Maintenance - continued

WEEKLY

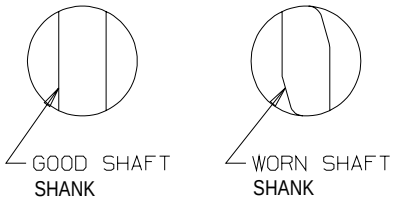
1. Carefully inspect all parts for wear, including seals, O-rings, mix transfer tubes, and blades.

2. Replace as required.



Replace blades if worn 3/16" or more.

3. Check the beater shanks and drive coupling for wear.



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

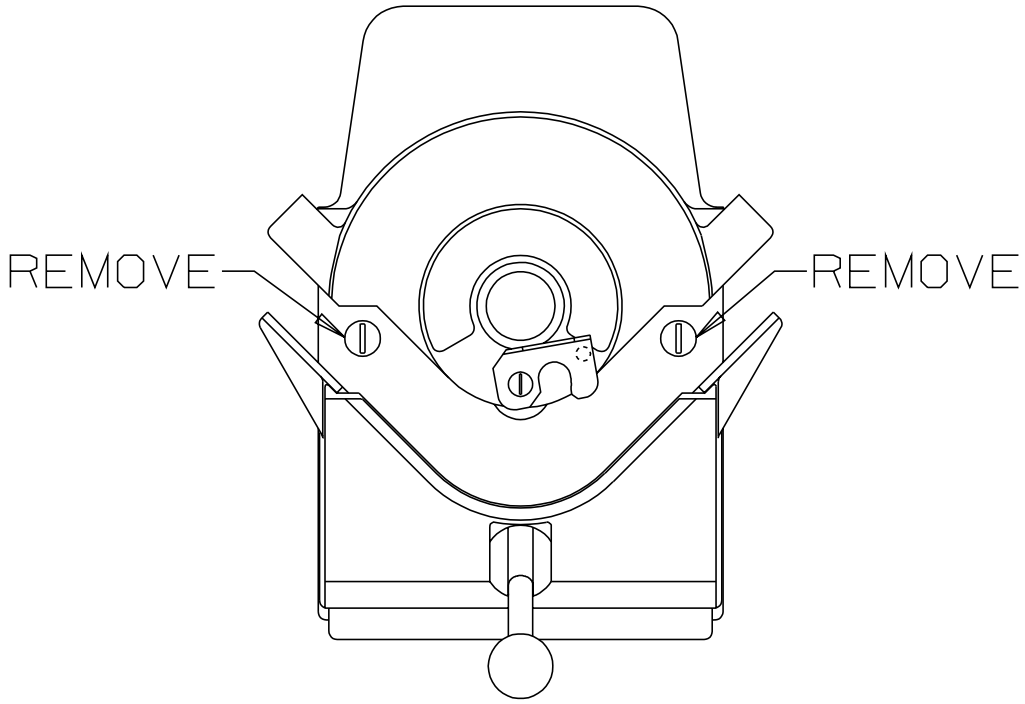


Figure 11-2 MTS Removal

11 Routine Maintenance - continued

MONTHLY

A. 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.

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

5. Turn the selector switch to the "CLEAN" position.

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.

B. Air Condenser.

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

Have air-cooled condenser fins cleaned by authorized service technician.

C. 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°C) water inlet temperature.

D. Test MTS Slide Switch.

The MTS slide 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:

CAUTION
Make sure system is depressurized before proceeding.

— continued

11 Routine Maintenance - continued

MONTHLY– continued

D. MTS Slide Switch - continued

1. Be sure all switches are in the “OFF” position.

2. Pull down MTS handle to open the housing.

3. Remove Mix Transfer Hose.

4. Turn MTS switch to “PRIME.”

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

5. Look up inside the hose cavity from below. The MTS rollers should **NOT** be rotating. If they are rotating, discontinue use until repairs can be made.

6. If there is no movement, slowly raise handle and listen for the gear motor to turn on. The slide should be almost completely closed when 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 Electro Freeze Distributor for service. DO NOT place the freezer in service until the problem has been corrected.

E. 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.

11 Routine Maintenance - continued

QUARTERLY

Have refrigeration technician check the refrigeration system and make any necessary adjustments.

SEMIANNUALLY

1. Have the oil in the gear reducer changed by your Electro Freeze Distributor..

NOTE: Under normal conditions after the initial change, the oil should be changed after 2500 hours of operation or every six months, whichever occurs first.

ANNUALLY

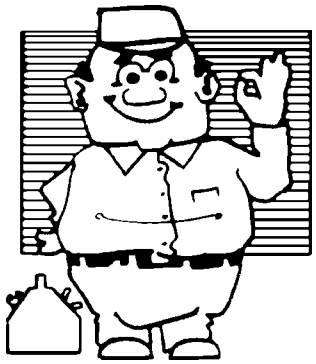
CAUTION

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

1. Call your Electro Freeze Distributor for service to replace drive belts.

2. Call your Electro Freeze Distributor to clean the inside of the freezer including base, side panels, condenser, etc.

3. Call your Electro Freeze Distributor to check water-cooled condenser and flush clean to remove scale and deposits if necessary.



11 Routine Maintenance - continued

Winter Storage

To protect the unit during seasonal shutdown, it is important to store the 30CMT 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 MTS parts in a safe, dry place.

4. Do not lay heavy objects on the plastic or rubber parts.

5. Cover the freezer and all loose parts to protect them from dust or other elements that could contaminate them while in storage. Place the freezer in a dry location.

6. On air-cooled freezers, have condenser fins cleaned by an authorized service technician.

Important

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

7. On water-cooled freezers, disconnect the water supply. Use compressed air to blow out all remaining water in the condenser.

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 *Electro Freeze* Distributor or H. C. Duke & Son, Inc., *Electro Freeze* Service Department for factory service at ***(309) 755-4553 or FAX (309) 755-9858.***