ELECTRO FREEZE®

OPERATOR'S MANUAL

with Illustrated Parts List

FREEDOM 360º Series

Model 78RMT
Shake Freezer

184956 — 7/11

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Operator's Manual
for the
Electro Freeze Shake Freezer
Model 78RMT

SAFETY FIRST!

Follow these four steps to safety ....

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

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

2. Understand Signal Words ....

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

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

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 contact your local distributor — or H.C. Duke & Son, LLC.

DO NOT attempt to operate the Model 78RMT 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 to the right. The labels have been put there to help maintain a safe working environment.

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

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

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

Name: _____

Address: _____

_____

Phone: _____

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

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

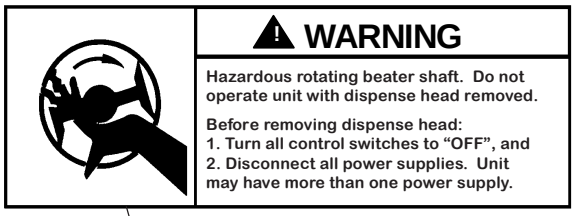
FAX: (309) 755-9858

E-mail: service@electrofreeze.com

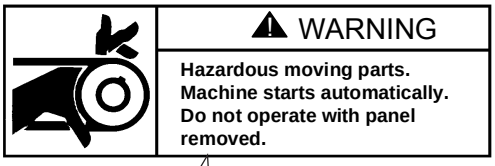
(The decals on the next page are numbered 1, 2, 3, and 4. Those numbers correspond to the numbers in the table below. The table provides the part number, description, and quantity for each decal.)

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

Safety Decal Locations



1 HC165025



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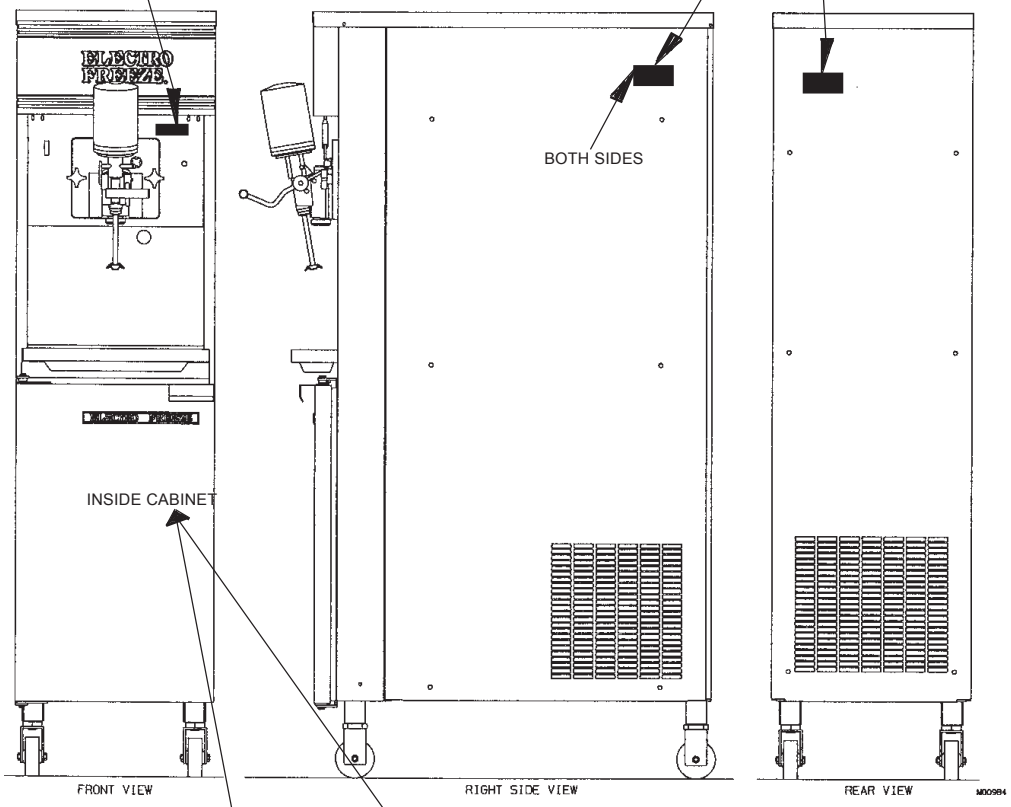
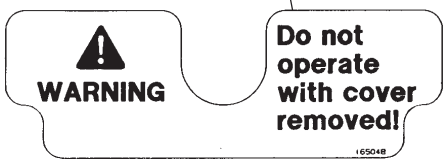


3 HC165048



4 HC165246

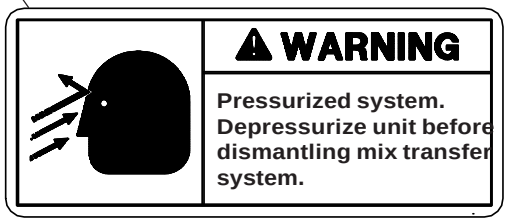


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Table of Contents (continued)

PART II

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

1 Introduction

This freezer is designed to produce shakes with a product serving temperature of 27° to 30°F (-3 to-1°C).

This manual has been prepared to assist you in the proper operation and general maintenance of the *Electro Freeze* Model 78RMT.

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

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@electrofreeze.com

2 Note to Installer

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

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

2.1 Uncrating and Inspection

CAUTION

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

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

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

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

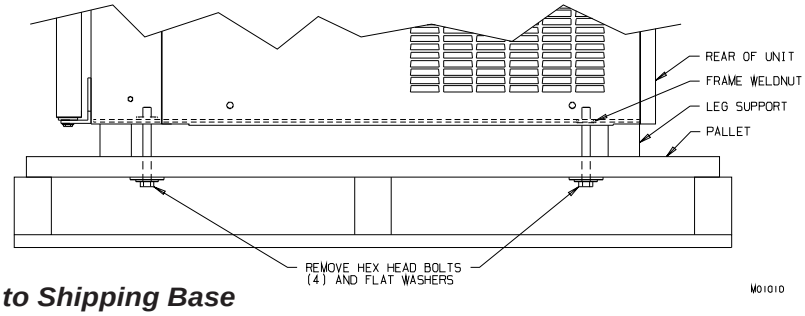
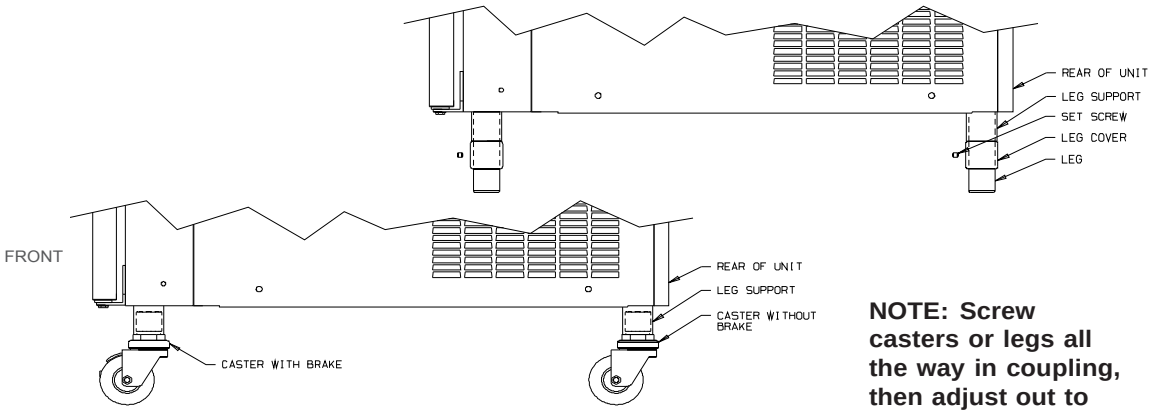


Figure 2-1 Freezer Bolted to Shipping Base



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

Figure 2-2 Installing Mounting Legs or Casters

2.2 Installation

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

1. 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. **ALL** models require a minimum 6-inch (15cm) clearance on either the side panels or the rear panel for adequate ventilation. Freezers designed with top air discharge require that the top panel be free of obstructions. Anything blocking ventilation of the freezer (including cone dispensers) will reduce the efficiency of the freezer.

3. **Water cooled,** models require a 3/8-inch MPT water inlet and water waste connection. The connections are found on the bottom, under the compressor mounting area. They are 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 above 35 psig (241 kPa) and below 140 psig (965 kPa) for proper operation.

4. Place the freezer in its final location and adjust the legs or casters so that it is level side-to-side and the front is approximately 1/4-inch lower than the rear to allow proper drainage of the freezing cylinder. To insure proper stability, do not mount cup dispensing racks or unapproved accessories on the freezer.

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. See Figure 3-1.

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

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

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

4. Use a flexible connection when permissible. All materials and connections must conform to local codes and/or the National Electrical Code (NEC).

5. For 3 phase freezers, beater shaft rotation must be clockwise as viewed from the front of the freezer.

3 Specifications

3.1 Particulars

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

78RMT

Width (in/cm)	18/46	**Beater Motor**	1.5 HP / 1.1 kw
Height (in/cm	68/178	**Refrigerant**	404a
Depth (in/cm)	36/91.4	**Charge**	3.75 lb. / 1.70 kg
Weight (lbs/kg)	530/236	**Mix Container**	28 Qts / 26.5 Liters
Compressor	1.5 HP/10,000 Btuh 1.5 kw (Motor) 2.8 kw (Cooling)	**Cylinder**	9 Qts / 8.51 Liters

*Contact factory for other voltages.

3.2 Data Plate

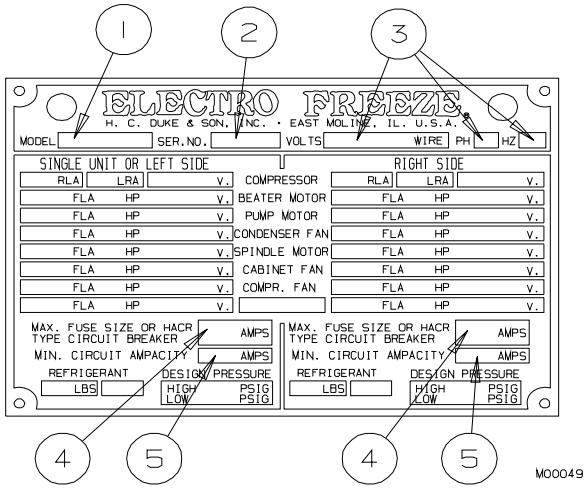


Figure 3-1

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 the following information as soon as you receive the *Electro Freeze* 78RMT Shake Freezer. (The item numbers — encircled, below — correspond with the callout numbers in figure 3-1.)

(1) Model Number: 78RMT_____
(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 78RMT Freezer.

Date of installation: _____

Installed by: _____

Address: _____

_____

Phone: _____

3.5 Dimensions

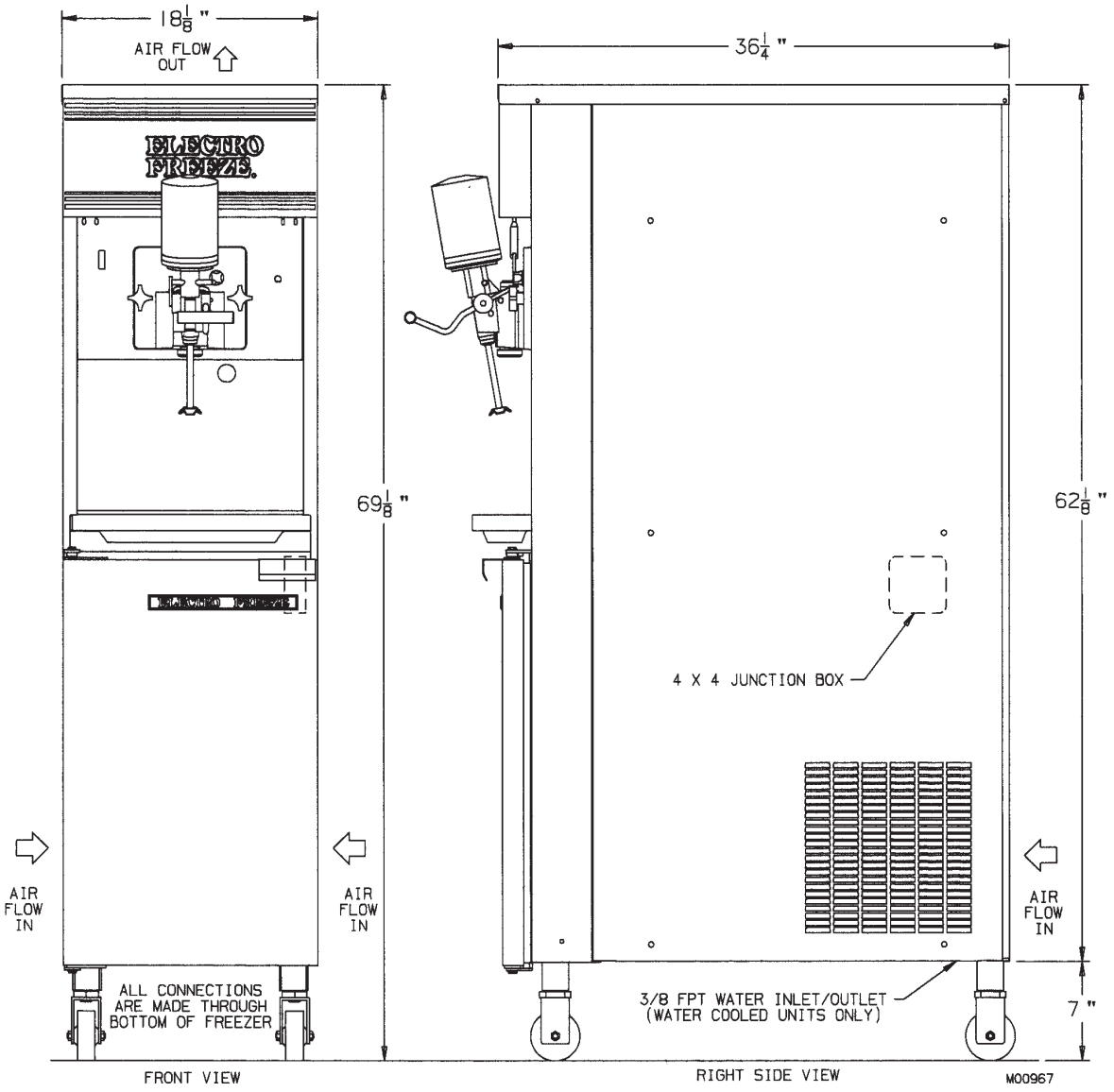


Figure 3-2

4 Part Names and Functions

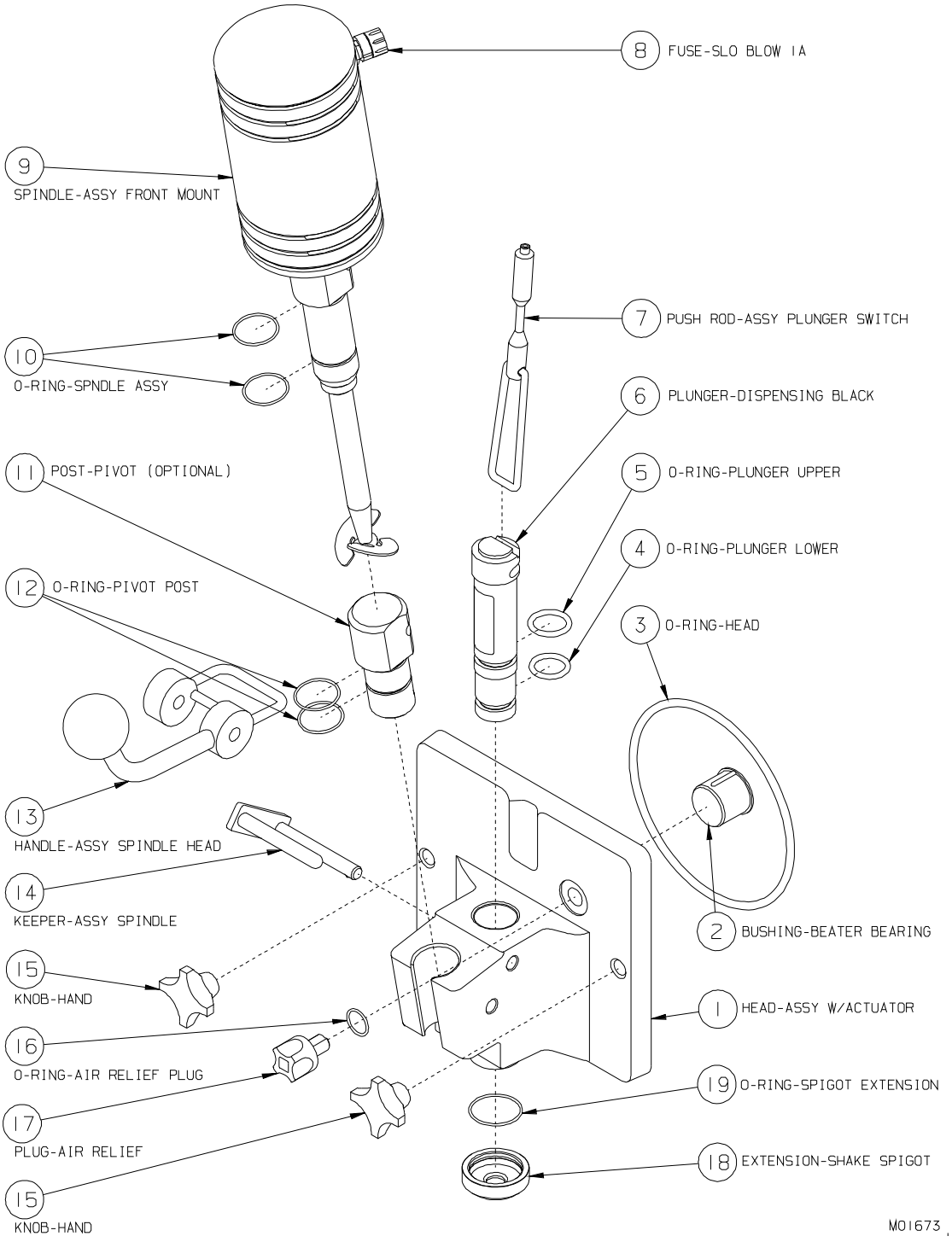


Figure 4-1 Head Assembly

4 Part Names and Functions (continued)

The following part names and descriptions refer to figure 4-1 - Head Assembly.

1. **HEAD - ASSY. W/ACTUATOR**
   Encloses the freezing cylinder and provides an opening for product to be dispensed.

2. **BUSHING - BEATER BEARING**
   Holds the beater in place at the front of the cylinder. Must be inserted into the head and lubricated before assembly.

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

4 and 5. **O-RINGS - PLUNGER (UPPER & LOWER)**
   Seals the plunger in the head. Must be lubricated to seal and slide properly.

6. **PLUNGER - DISPENSING BLACK**
   Seals the product opening in the head when closed. Allows product to flow when open.

7. **PUSH ROD - ASSY. PLUNGER SWITCH**
   Starts the freezer when dispensing. Must be in place before freezer will operate.

8. **FUSE - SLO BLOW 1A**
   Prevents the spindle motor from overload.

9. **SPINDLE - ASSY. FRONT MOUNT**
   Mixes the shake as it is dispensed.

10. **O-RING - SPINDLE ASSY.**
    Holds the spindle in place.

11. **POST - PIVOT (Optional)**
    Holds the handle in place when the spindle is not used.

12. **O-RING - PIVOT POST**
    Holds the pivot post in place.

13. **HANDLE - ASSY. SPINDLE HEAD**
    Opens and closes the plunger to start and stop the flow of product from the freezer.

14. **KEEPER - ASSY. SPINDLE**
    Secures the handle to the head.

15. **KNOB - HAND**
    Secures the head to the freezing cylinder.

16. **O-RING - AIR RELIEF PLUG**
    Seals the air relief screw in the head.

17. **PLUG - AIR RELIEF**
    Seals the air relief opening in the head when closed. Allows excess air to be removed from the cylinder when filling.

18. **EXTENSION-SHAKE SPIGOT**
    Product flows from the head through the extension.

19. **O-RING-SPIGOT EXTENSION**
    Seals the extension to the head.

4 Part Names and Functions (continued)

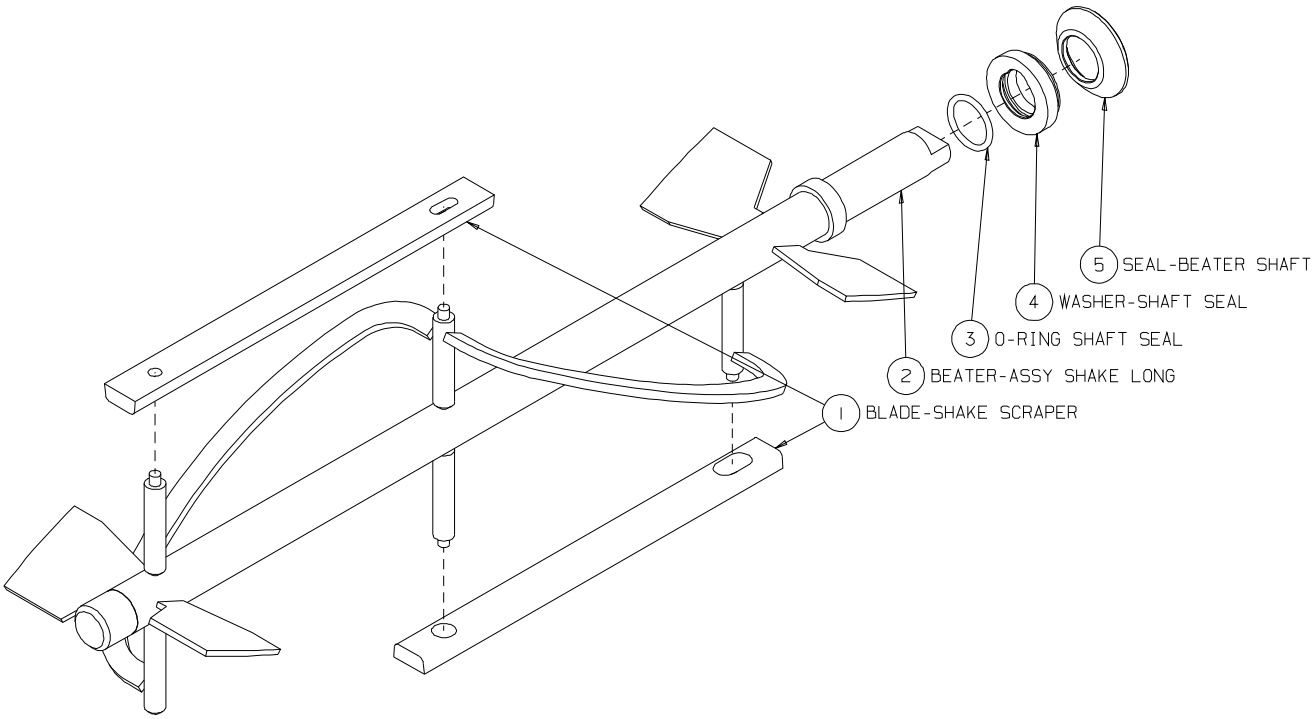


Figure 4-2 Beater Shaft Assembly

4 Part Names and Functions (continued)

The following part names and descriptions refer to figure 4-2 - Beater Shaft Assembly.

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

2 **SHAFT - BEATER**
Rotates in the freezing cylinder, blending air and mix and ejecting product.

3 **O-RING-SHAFT SEAL***
Seals the beater shaft to the shaft seal. Is inserted into the shaft seal washer. **Must be lubricated.**

4 **WASHER-SHAFT SEAL***
Holds the shaft seal o-ring. **Lightly lubricate the side opposite the cup seal.**

5 **SEAL(CUP)-BEATER SHAFT***
Seals the opening between the freezing cylinder and the beater shaft. **Do not lubricate rubber cup portion**.

*** SEAL - ASSY. SHAFT**
Seals the opening between the freezing cylinder and the beater shaft. Consists of items 3, 4, and 5 above.

4 Part Names and Functions (continued)

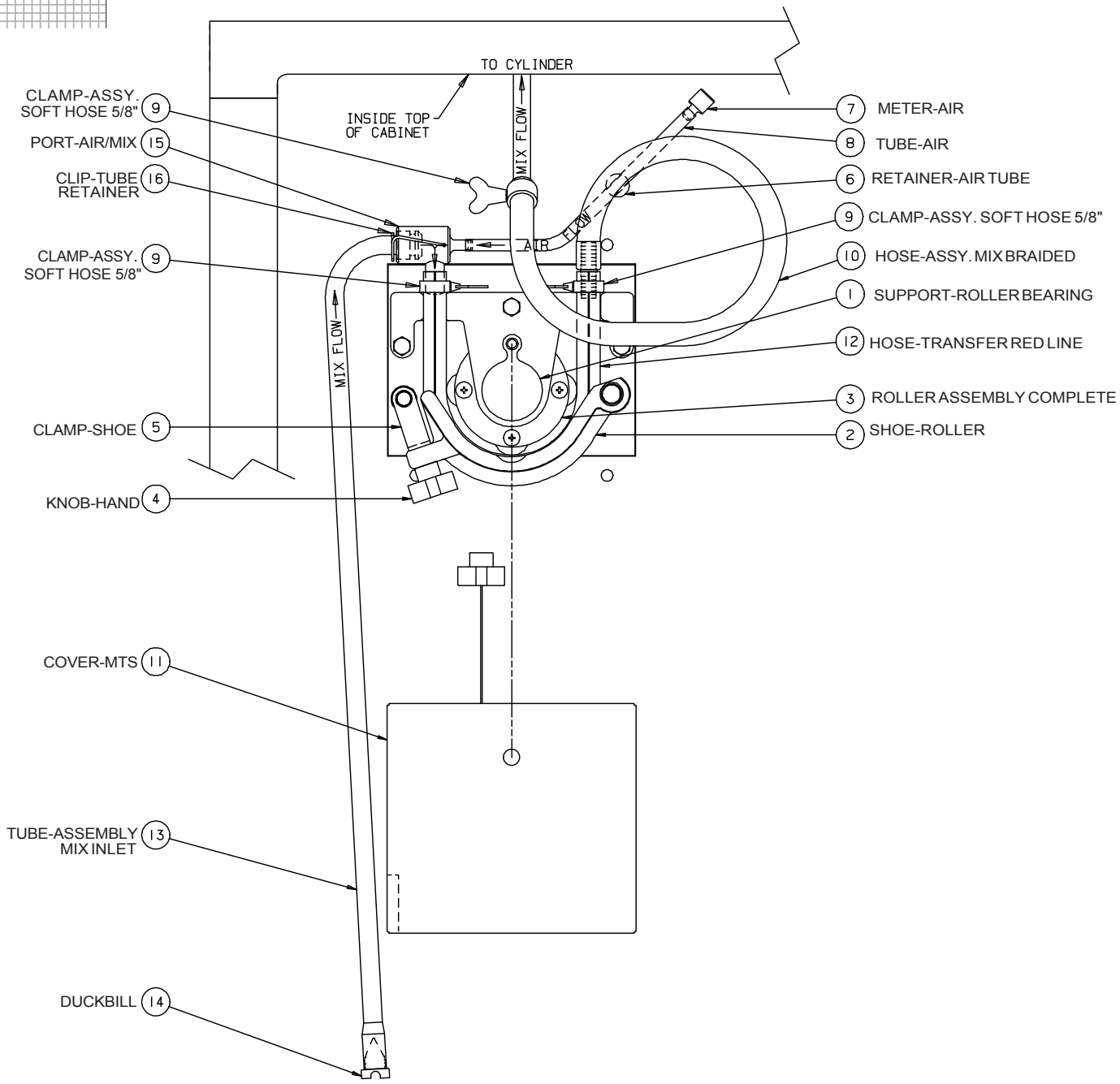


Figure 4-3 Mix Transfer System (MTS)

4 Part Names and Functions (continued)

The following part names and descriptions refer to figure 4-3 - Mix Transfer System.

1. **SUPPORT-ROLLER BEARING**
   Holds roller assembly in place.
2. **SHOE-ROLLER**
   Provides an opening to insert the mix transer hose. Squeezes transfer hose against rollers.
3. **ROLLER ASSEMBLY COMPLETE**
   Squeezes mix/air through tubing to freezing cylinder.
4. **KNOB-HAND**
   Locks roller shoe in positon.
5. **CLAMP-SHOE**
   Swings hand knob into position over roller shoe.
6. **RETAINER-AIR TUBE**
   Holds air meter tube in the “up” position.
7. **METER-AIR**
   Regulates the amount of air being drawn into the system.
8. **TUBE-AIR**
   Provides connection for the air meter.
9. **CLAMP-ASSY. SOFT HOSE 5/8"**
   Prevents mating parts from leaking.
10. **HOSE-ASSY. MIX BRAIDED**
    Connecting tube between the Mix Transfer System and the cylinder inlet.
11. **COVER-MTS**
    Protection against moving parts. Cover must be in place for the MTS to operate.
12. **HOSE-TRANSFER RED LINE**

    Special “red-lined” hose that is squeezed by rollers to transfer mix to freezer.
13. **TUBE-ASSEMBLY MIX INLET**
    Carries mix from mix container to MTS.
14. **DUCKBILL**
    A rubber check valve that prevents mix from falling back into the mix container.
15. **PORT-AIR/MIX**
    Blends air and mix as it flows into the transfer hose.
16. **CLIP-TUBE RETAINER**
    Locks mix pickup tube into air/mix port.

5 Operator Controls and Indicators

The following paragraphs describe the operator controls and indicators. Refer to figure 5-1 for locations of these controls and indicators on the Shake Freezer Model 78RMT.

CAUTION

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

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

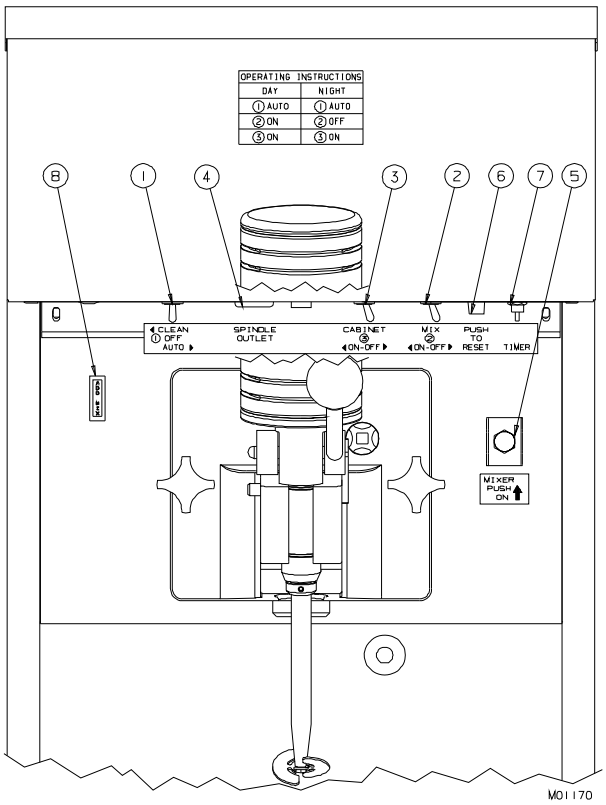


Figure 5-1

5.1 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 "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 which will maintain a cylinder temperature of 26° to 28°F (-3° to -2°C).

5 Operator Controls and Indicators (continued)

5.2 Mix Transfer Systems (MTS) Switch (2)

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

a. **"ON"** (left) — This position is in the normal operating model. Use this position for priming the cylinder, cleaning and day mode operation.

b. **"OFF"** (right) — In this position the MTS will not operate. Use this position for night mode operation.

5.3 Cabinet Switch (3)

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 35° 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 the selector switch is in the "AUTO" position.

5.4 Spindle Outlet (4)

This 115V receptacle provided in the electrical box accepts the spindle cord.

5.5 Spindle Switch (5)

This push-button, when depressed, will activate the spindle motor.

5 Operator Controls and Indicators (continued)

5.6 Reset — Overload (6)

⇨ ***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.

5.7 Timer (7)

⇨ ***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 for approximately 3 minutes. Use the timer for quick start-ups or fast recovery when dispensing large portions.

5.8 Indicator Light — "ADD MIX" (8)

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

⇨ ***Important:***
For "Bag-in-Box" mix systems, add mix <u>immediately</u> when the light comes on.

When blinking, 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* (5.1 cm) of mix in the container. For best operating results keep the container full.

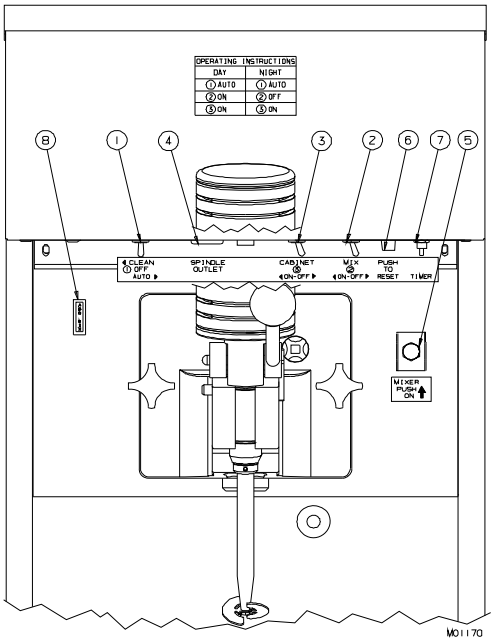


Figure 5-1

5 Operator Controls and Indicators (continued)

5.9 Probe — "ADD MIX" (See Figure 5-2)

For the "ADD MIX" light to work, the probe must be installed in the mix container, with cords attached and plugged into the receptacles located in the back of the cabinet.

If you are using mix in a bag-in-box a spilt cord will be needed. One cord goes to the metal bag adapter and the other cord goes to the pin on the elbow.

5.10 Thermometer - Cabinet (See Figure 5-2)

This thermometer is used to monitor the temperature in the mix cabinet. When the cabinet switch is in the "ON" position, the thermometer should be green which indicates the temperature is between 35º to 41ºF (2º to 5ºC). If the thermometer is indicating red or blue and the cabinet switch is "ON" contact your authorized service company for service.

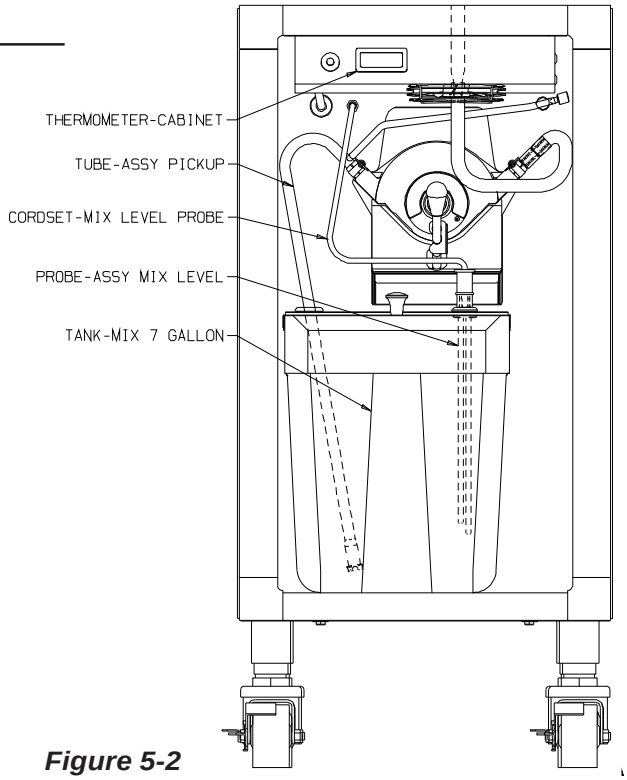


Figure 5-2

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:

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.

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.

5. Inside the refrigerated cabinet, remove the MTS cover, loosen the shoe clamp hand knob, swing back the shoe clamp and swing open the roller shoe on the mix transfer system.

Following these steps will assure that the system is depressurized.

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

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

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

6.1 Cleaning Accessories

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

1. **HC158005 BRUSH.**
   6 inch diameter with
   HC158012 HANDLE.
   36 inches used to clean the shake cylinder.

2. **HC158019 BRUSH.**
   9/16 inch diameter 30 inches long used to clean drain tube, the mix feed tube in the ceiling of the cabinet and the pickup tube.

3. **HC158037 BRUSH.**
   1/4 inch diameter 18-1/2 inches overall length used to clean the air meter hose, the small hole in the back of the dispense head and small parts.

4. **HC158018 BRUSH.**
   7/16 inch diameter 12 inches long used to clean transfer hose, braided hose, and the air relief opening in the dispense head.

5. **HC158026 BRUSH.**
   1 inch diameter 12 inches long used to clean the disassembled shaft seal and bushing.

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

7. **HC158000A**
   LUBRICANT - LUBRI-FILM PLUS.
   Approved lubricant for moving parts and O-rings.

8. **HC116588 KIT - O-RING.**
   Contains all O-rings and seals needing replacement on a regular basis. (not shown)

M01768

6.2 Disassembly Instructions

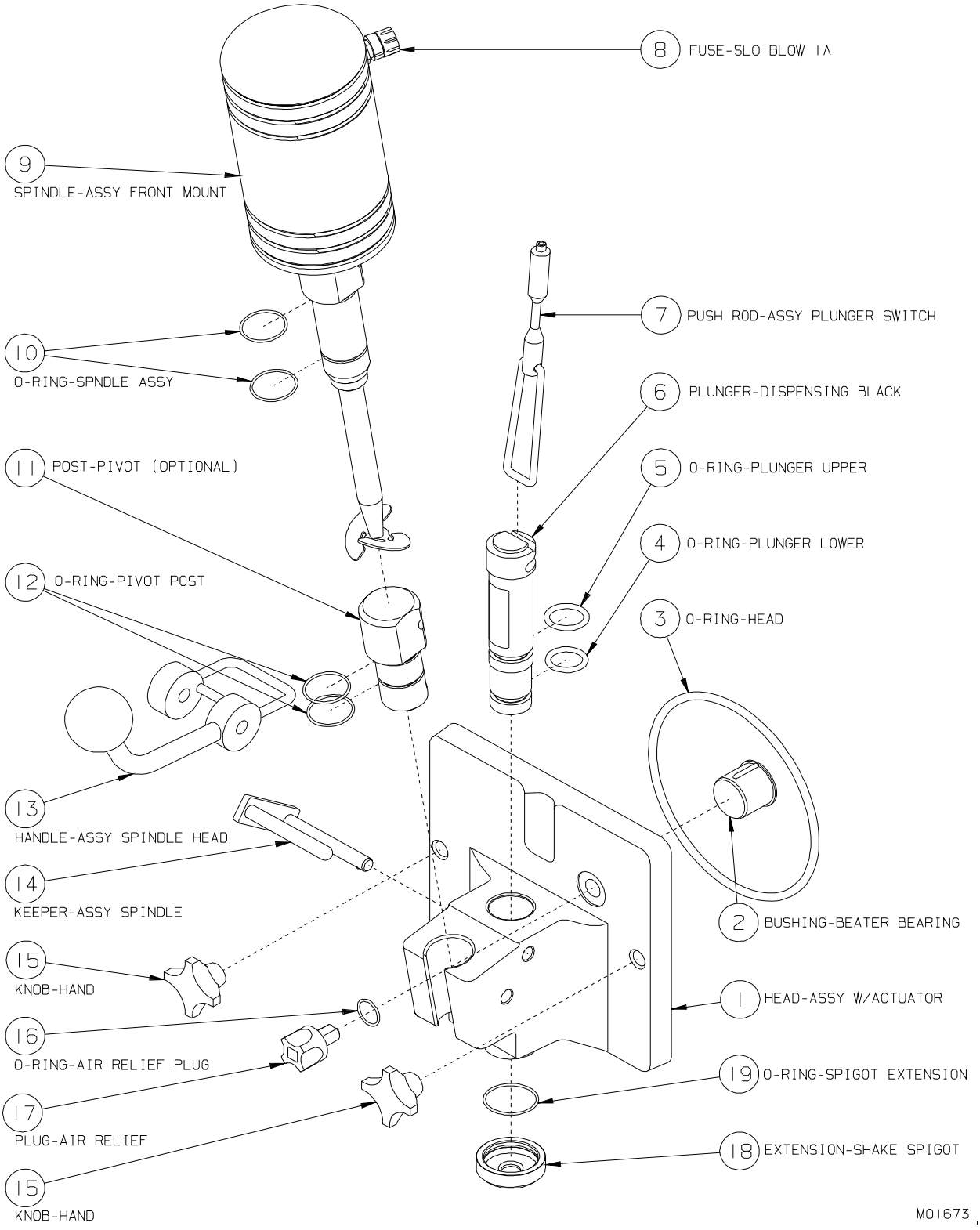


Figure 6-2 Head Assembly

6.2 Disassembly Instruction (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.

CAUTION
Make sure freezer is depressurized before proceeding.

1. If there is product in the freezer, refer to Section 9.1 CLOSING PROCEDURES, DRAINING PRODUCT.

2. Refer to figure 6-2. Remove the plunger rod (7) by lifting up and swinging the bottom out and down.

3. Slide the keeper (14) out of the head (1).

4. Unplug the spindle motor (9) and lift it upward, removing it from the head. If the optional pivot post is used, remove the pivot post by lifting up on pivot post.

5. Remove the handle (13) and hand knobs (15) and then pull the head (1) straight out by gently rocking the head from the studs.

6. Remove the beater bushing (2) and beater shaft, figure 6-3 from the cylinder.

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

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

8. Remove the drip tray (see Replacement Parts Manual, figure 9 - Panels) and drip tray insert from the front of the freezer.

9. Remove the plunger (6) and all O-rings from the head.

10. Unscrew the air relief plug (17, figure 6-2) and remove the o-ring.

11. See Figure -4. Remove the O-ring and cup seal from the plastic washer on the shaft seal assembly.

12. Remove the mix tanks, covers, and low mix probe from inside the cabinet.

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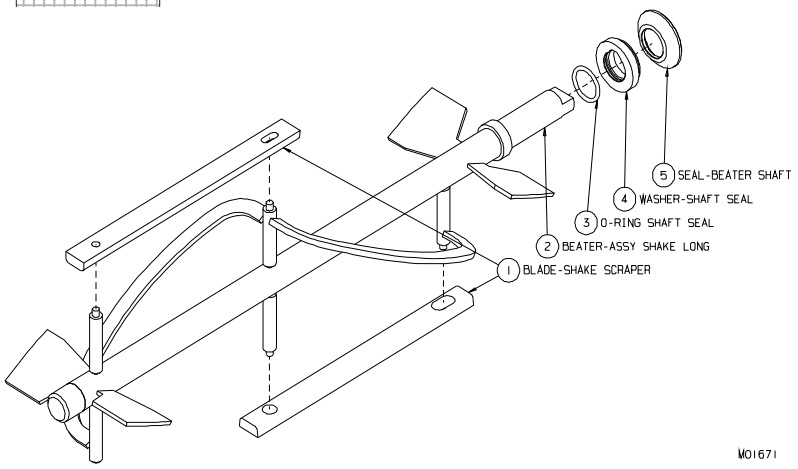

Figure 6-3 Beater Shaft Assembly

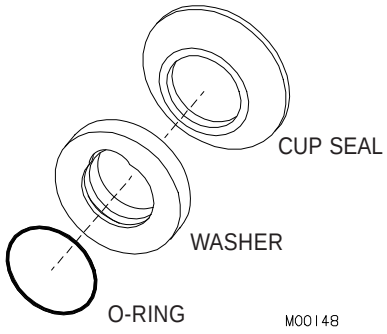

Figure 6-4 Shaft Seal Assembly

6.2 Disassembly Instruction (continued)

13. Remove MTS hose assembly from the Mix Transfer System as follows (figure 6-5):

a. remove cover,

b. loosen the hand knob,

c. swing back the shoe clamp,

d. swing open the roller shoe,

e. loosen the clamp on braided hose,

f. pull the braided hose off the cylinder inlet and slide the mix transfer hose assembly out of the roller support housing.

14. Disassemble the MTS hose assembly as shown in figure 8-6.

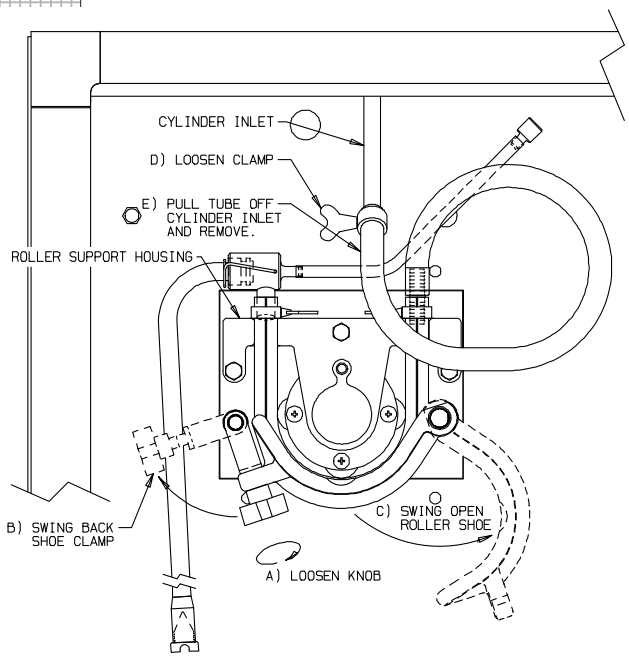

Figure 6-5 MTS

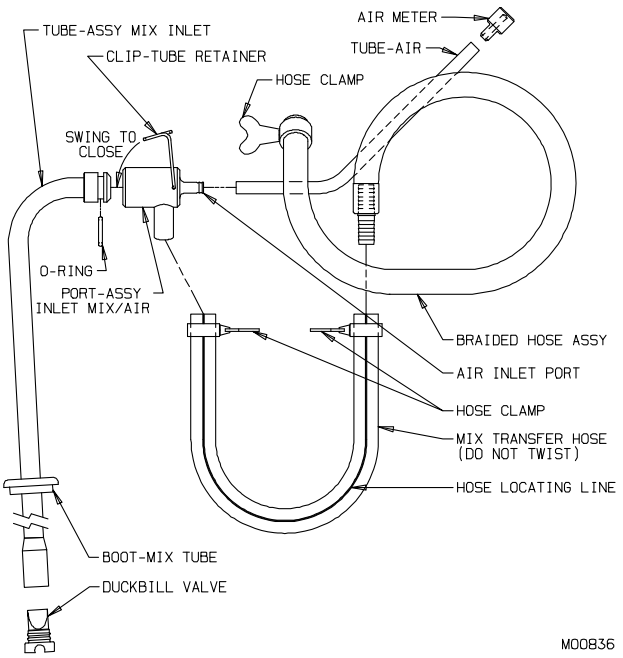

Figure 6-6 MTS Hose Assembly

6.3 Cleaning Instructions

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, Remove all O-rings when cleaning. Failure to do so could create a health hazard.

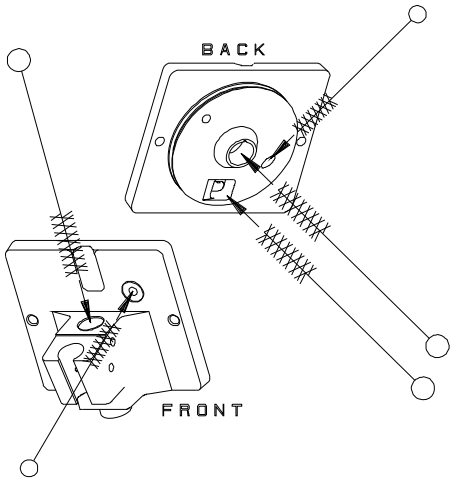

Figure 6-6 Clean head ports and openings

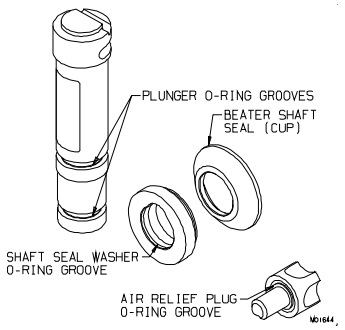

Figure 6-7 Clean shaft seal and plunger o-ring grooves

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

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

NOTE: It is your responsibility to be aware of, and conform to, the requirements for meeting Federal, State, and Local Laws concerning the frequency of cleaning and sanitizing the freezer.

1. Prepare a three-compartment sink for cleaning, rinsing, and sanitizing parts removed from the freezer, per applicable health codes. 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 ppm 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.

⇨ ***Important:***
Do not submerge the spindle motor in water. This will damage the motor.

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

a. The mix tank, pickup tube assemblies, hoses, and probes.

b. (See figure 6-6.) The head plunger, spindle and air relief plug openings, and all O-ring grooves.

c. (See figure 6-7.) The shaft cup seal, plastic washer, plunger O-ring grooves, and air relief plug grooves.

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6.3 Cleaning Instructions (continued)

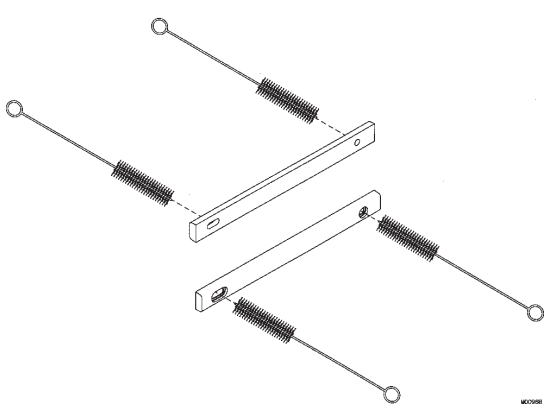

Figure 6-8 Clean beater shaft pin holes

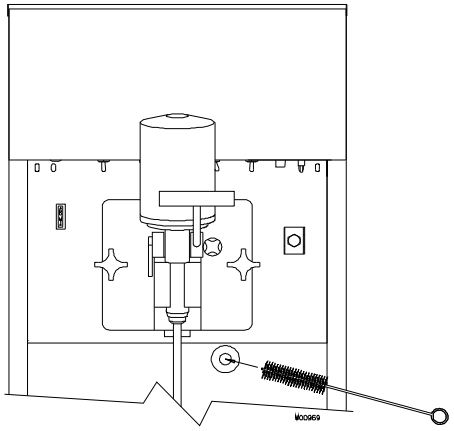

Figure 6-9 Clean inside of drain tube

d. (See figure 6-8.) The beater shaft and the scraper blade pin holes.

e. The spindle agitator shaft and spindle disc.

⇨ ***Important:***
Do not leave parts in sanitizer for extended periods of time.

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

4. Using a warm mild dish detergent solution thoroughly brush, then rinse with clear water and brush with sanitizer.

a. the mix feed tubes from the cabinet to the cylinders.

b. the inside of the cylinders making certain to clean the back walls, and the inside of the drain tubes, see figure 6-9. Dip the brush in the dishwashing solution and force into the drain tube until it stops - repeat until clean.

5. Wash the drip tray and insert in the warm dish detergent solution, rinse with clear water and then sanitizing solution.

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

Replace worn brushes. Use only Electro Freeze original or authorized replacement parts. See Section 6.1 Cleaning Accessories or the Accessories Parts List in Part II of this manual to order new brushes.

6.3.1 Cleaning and Lubricating MTS Shoe

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

1. Remove the O-rings and slide the shoe off of the pivot arm and the swing clamp off of the clamp arm. See figure 6-10.

2. Carry to the sink, wash in mild detergent with the brush provided and dry thoroughly.

3. Brush in between rollers. Flush clean with water bottle.

⇨ ***Important:***

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

4. Lubricate the shoe pivot arm and the swing clamp arm with food grade lubricant such as Lubri-Film Plus.

5. Reassemble the shoe and O-ring on pivot arm.

6. Reassemble the shoe swing clamp and O-ring on the swing clamp arm.

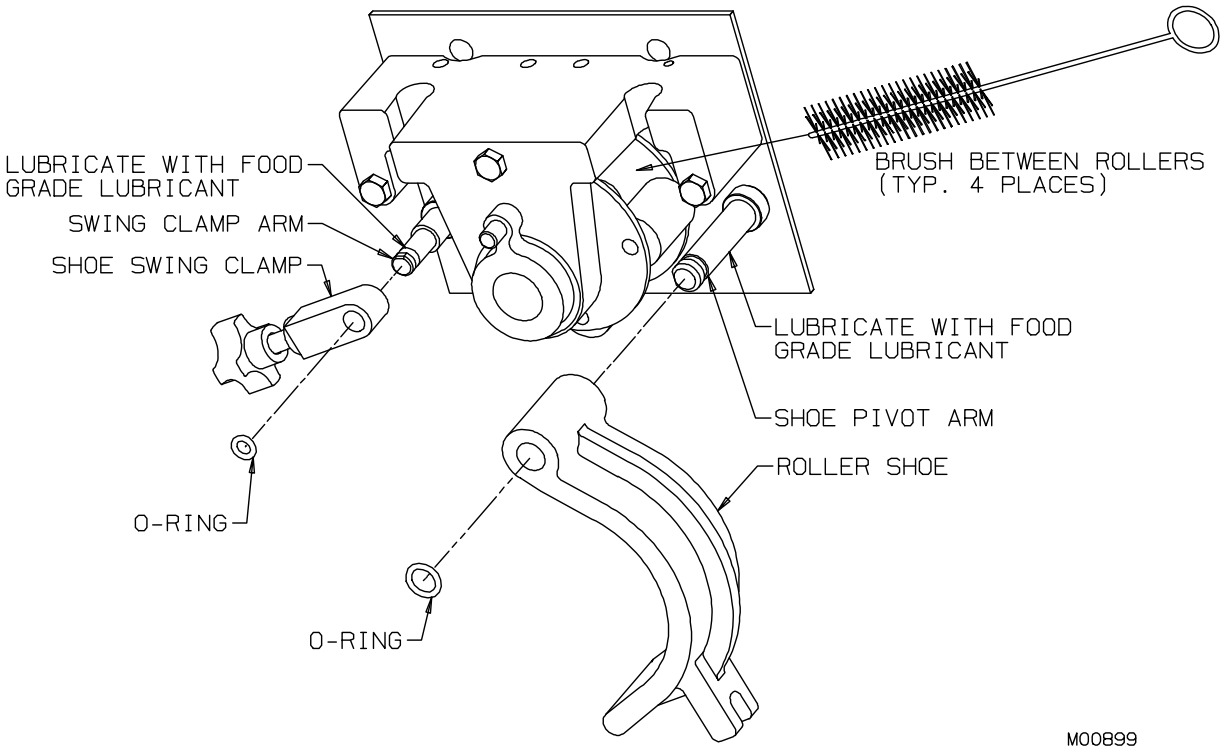

Figure 6-10

7 Assembly

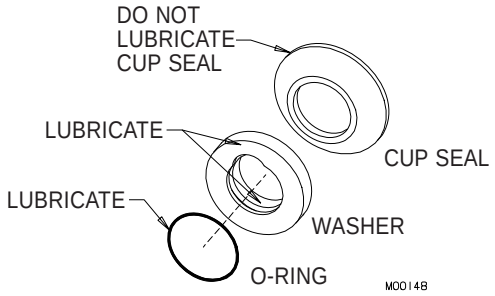

Figure 7-1

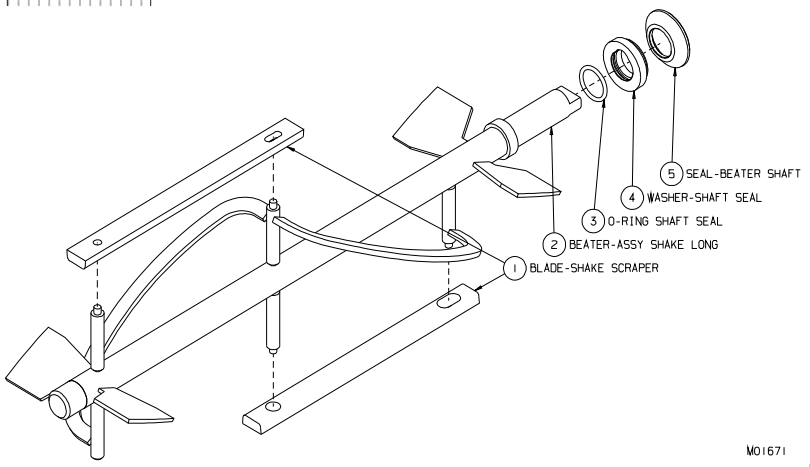

Figure 7-2

PROPER BLADE INSTALLATION IS WITH FLAT SIDE AGAINST CYLINDER WALL.

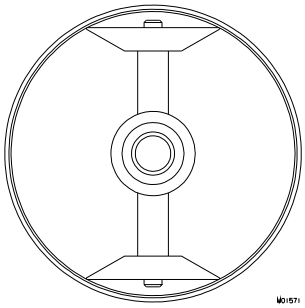

Figure 10-3 Proper blade installation

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 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. See figure 7-1. To assemble the shaft seal, install the cup seal and O-ring on the plastic washer. Apply a moderate amount of approved sanitary lubricant (such as Lubri-Film Plus) 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. Wipe off any excess lubricant from the beater shaft.

2. See figure 7-2. Install the shaft seal over the rear of the beater shaft with the bell-shaped portion facing the rear.

3. Place the scraper blades on the beater shaft, making sure the blades are installed properly.

4. Install 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.

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7 Assembly (continued)

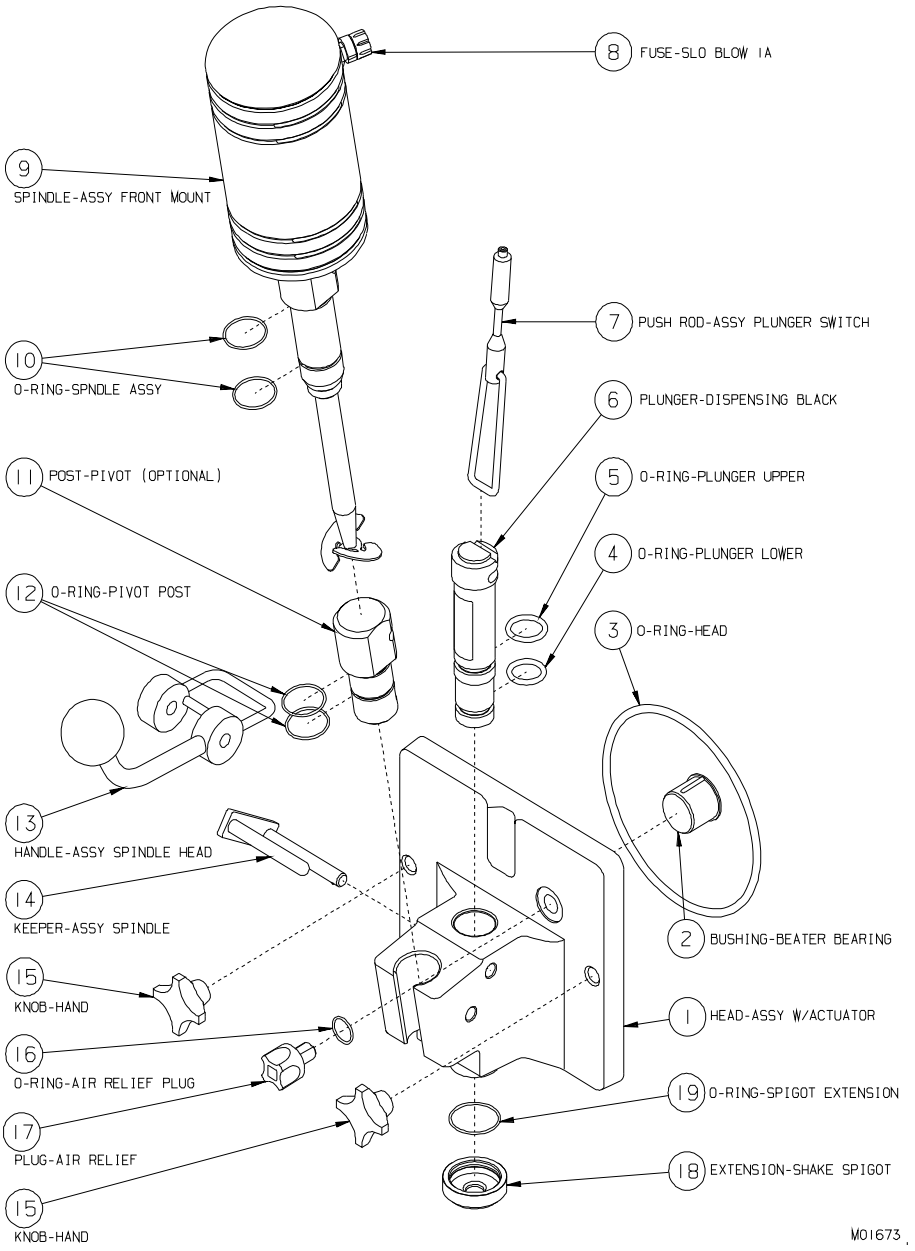

Figure 7-3

5. See figure 7-3 and O-ring chart in the Replacement Parts Section of this manual. Install and lubricate the O-rings (4,5) on the plunger (6) and insert into the head (1), with the slot facing the rear of the head.

6. Install and lubricate the 6-inch O-ring (3) on the head (1).

7. Install and lubricate the O-ring (16) on the air relief plug(17). Then, thread the plug into the head assembly.

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7 Assembly (continued)

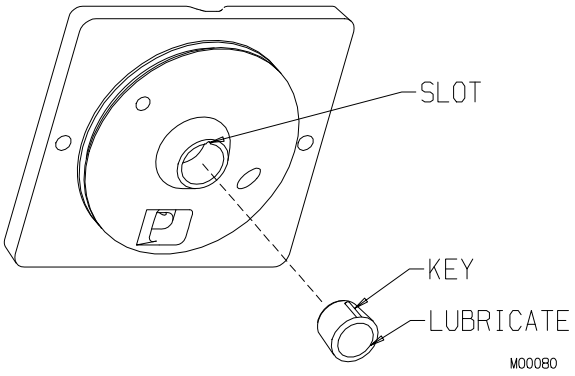

Figure 7-4 Beater Bushing

8. Lubricate the inside surface of the beater bushing (2) and place in the head, making sure to line up the bushing key into the head slot, as shown in figure 7-4.

Important:
ALWAYS make sure the head bushing is positioned in the head properly (see Figure 7-4). The head is slotted to match the key on the bushing. Make sure the key aligns with the slot. Failure to install the bushing properly in the dispensing head will damage the head.

9. Install the dispensing head onto the freezer by tilting the top of the head towards you, aligning the studs with the holes in the head, and sliding toward the freezer. As you push the head towards the freezer, carefully rock it into place, and align the shaft with the bushing in the head.

10. Tighten the hand knobs (15) simultaneously, finger-tight only.

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

11. Hook the handle (13) into the slot on the plunger, then insert the spindle motor (9) onto the head.

12. Insert the keeper (14) through the holes in the handle (13), spindle (9) and head (1).

13. Plug the spindle motor cord into the outlet provided in the bottom of the electrical box and install the plunger rod (7). If the optional pivot post is used lock in place with the keeper (17).

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7 Assembly (continued)

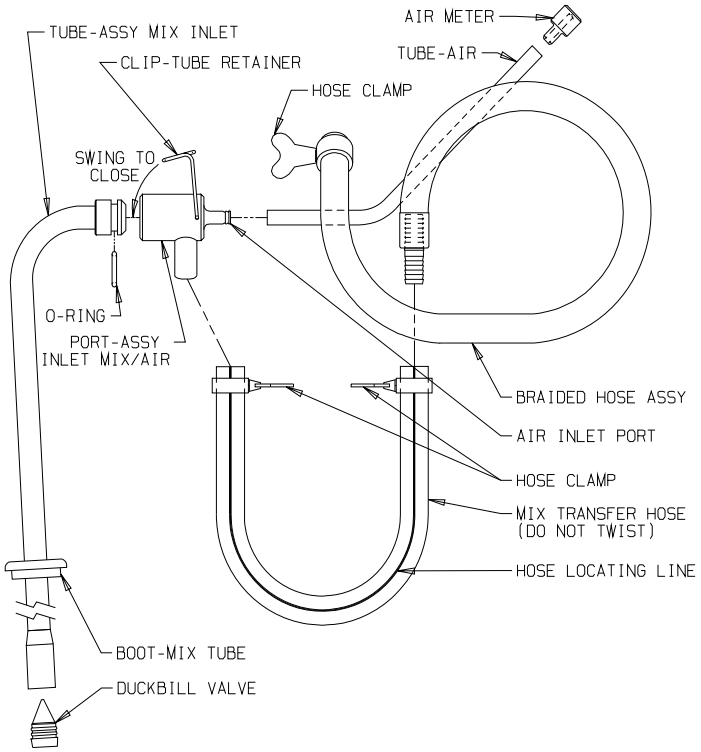

Figure 7-5 MTS Hose Assembly

⇨ ***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.

14. Assemble the MTS hose assembly as shown in figure 7-5. The transfer hose has a red locating line. Install the hose on the port assembly so the locating line is facing out. Secure the hose with the clamp. Finger tighten only! The thumbscrew must lay parallel to the mix/air inlet port.

15. Connect the transfer hose to the braided hose assembly at the barbed fitting as shown in Fig. 7-6 and secure the hose with the clamp. Finger tighten only. The thumb screw must lay horizontal.

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

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

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

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

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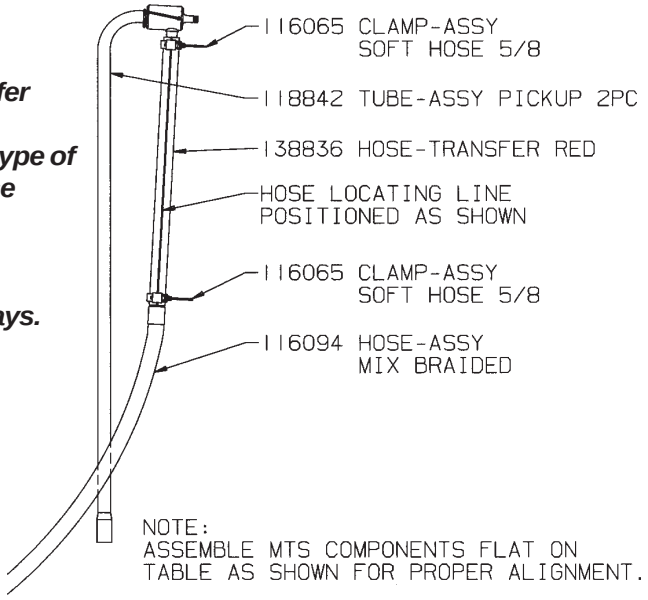

Figure 7-6 Attaching Braided Hose

7 Assembly (continued)

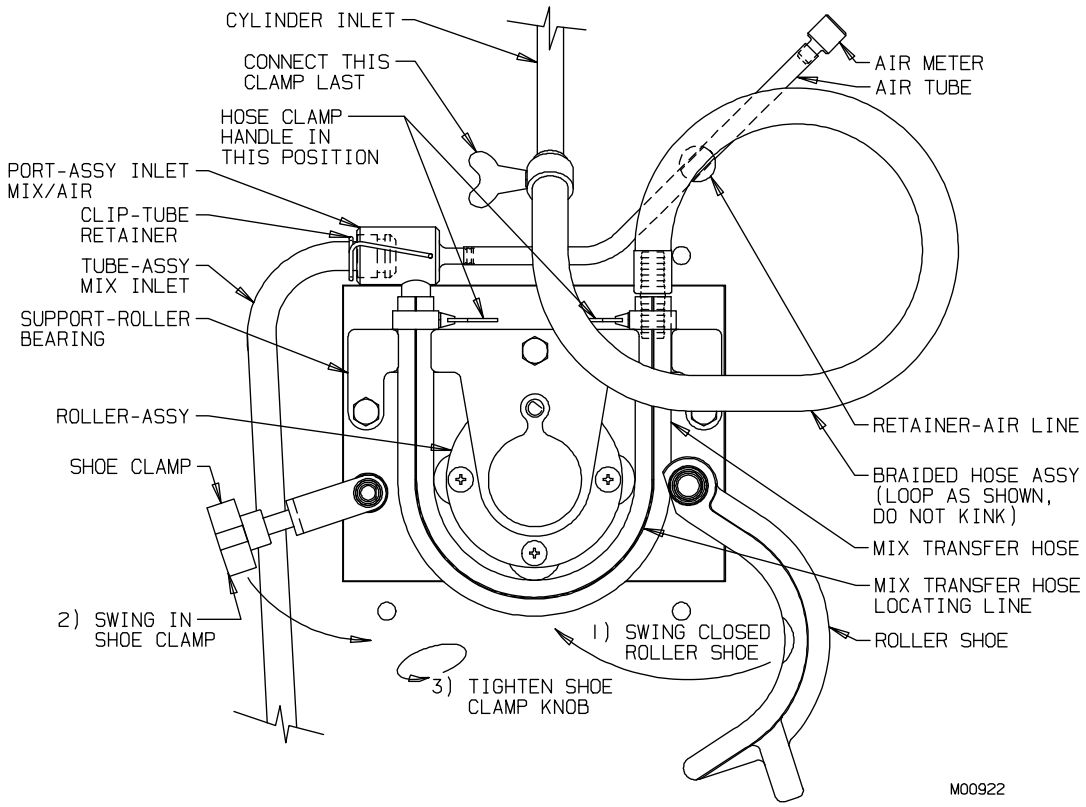

Figure 7-7 MTS

20. Refer to figure 7-7. Install the MTS hose assembly by placing the transfer hose under the rollers stretching the hose until the clamp on the right side is above the roller bearing support and push hose into the slot. Then stretch the hose so the left hand clamp is above the roller bearing support and push hose into the slot.

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

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 of the roller bearing support, as shown in figure 7-7.

22. Swing the shoe over hose and tighten the swing clamp hand knob in place until it bottoms out and will not turn any further.

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

24. Insert the MTS cover over stud, as shown in figure 7-8. Hose clamps should be exposed. Tighten cover knob. Hand tighten only.

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

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

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7 Assembly (continued)

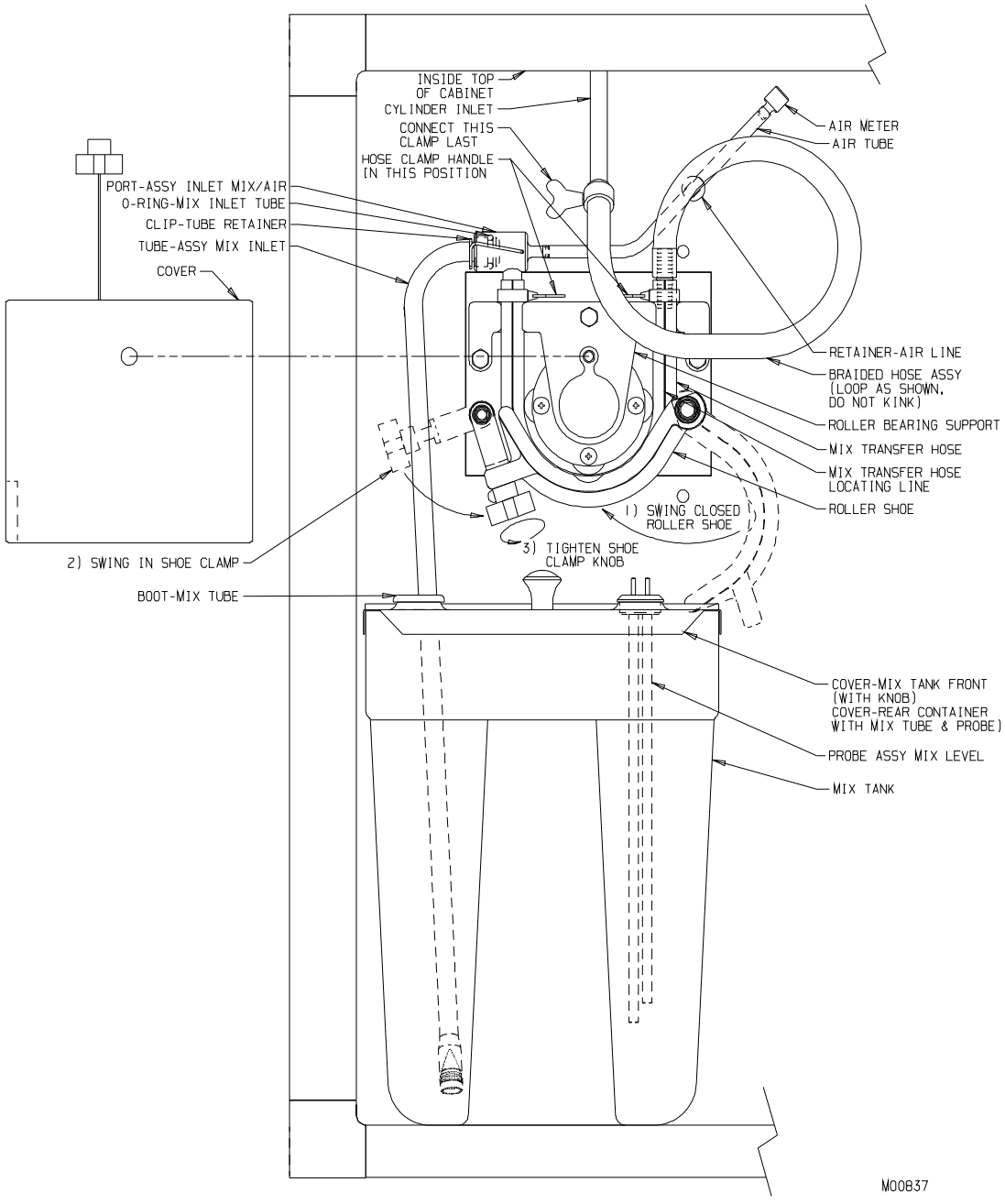


Figure 7-8 MTS

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 shake 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.

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. Wash and sanitize your hands and forearms.

2. Prepare 2 gallons (7.6 liters) of sanitizing solution. Sanitizing solution must be mixed according to manufacturer's instructions to yield 100 PPM strength chlorine solution (example: Stera-Sheen Green Label). Use warm water (100° to 110°F or 38° to 43°C) to wash, rinse, and sanitize.

3. Clean the spindle shaft and disc, interior mix container walls, the underside of the container covers, and low mix probe with sanitizer solution and the appropriate brush provided.

4. Place the mix container with sanitizing solution in the refrigerated cabinet.

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

5. Insert the pickup tube into the sanitizing solution and clean 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.

6. Place an empty container under the dispensing head.

7. Open the air relief plug by unscrewing 1½ turns.

8. Reconnect the main power supply. Turn the MTS switch to "ON". This will push the sanitizer up into the cylinder.

9. When sanitizer flows out of the air relief hole, close the air relief plug.

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

— continued

8.1 Sanitizing Instructions (continued)

10. Turn the selector switch to "CLEAN" and allow the beater to run for 5 minutes. At that time check for leaks around the head, drain tube, clamps, and MTS.

11. Drain the solution from the cylinder by slowly pulling down on the dispense handle.

NOTE: Some sanitizer will remain in hoses and cylinder.

12. Leaving the handle down, turn the selector switch to "OFF" and let the MTS force all possible sanitizer out of the freezer.

13. Turn the MTS switch to "OFF".

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

15. Remove the mix tank and empty any remaining sanitizer.

8.2 Priming

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

1. Holding the top 6-inch portion only, insert the pick up tube into the sanitized mix tank through the left side hole in the rear cover and set tank in the cabinet.

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

3. Holding the top 6-inch portion only, insert the sanitized mix probe through the right side hole in the rear cover, and connect probe cord to the probe and to the receptacle in the back of the cabinet.

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

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

6. Open the air relief plug by unscrewing 1½ turns, then open the plunger.

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

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

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

9. When pure mix is coming out of the air relief plug opening, close the air relief plug. Wait for the MTS to fill the cylinder and shut off.

10. After the cylinder is pressurized and the MTS has cycled off (approximately 30-50 seconds) turn the selector switch to "AUTO".

11. Install sanizited spigot o-ring and extension on the head. Allow the freezer to cycle for 15 minutes. The product is now ready to serve.

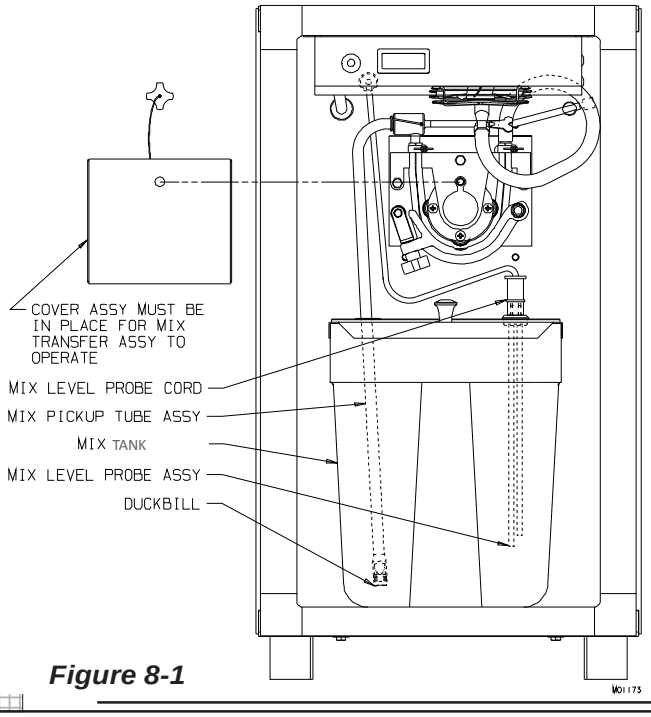


Figure 8-1

8.3 Dispensing Shakes

Make sure each person dispensing shakes reads the following instructions before attempting to use the freezer. Following these instructions will produce a well blended, old-fashioned style shake.

CAUTION
Rotating metal shaft. To avoid injury, use only paper or plastic mixing containers. Contact between shaft and metal containers or malt collars can cause shaft to wear and break.

1. Pour the required amount of flavoring in the bottom of the cup.

2. Firmly holding the cup, place the mixer spinner inside the cup all the way to the bottom. Pull the handle down towards you as far as possible.

⇨ ***Important:***
DO NOT open and close the handle while filling the cup.

CAUTION
To avoid injury, never place a towel or any other material on the rotating shaft to clean it.

3. Slowly lower the cup as it fills with product. Always keep the spinner blade about one inch in the product. When the cup is full, close the handle while lowering the cup and removing the spinner blade from the product, allowing the product to spin off on the top inside of the cup.

4. If additional mixing is required use the manual push button. Your shake is now ready to serve!

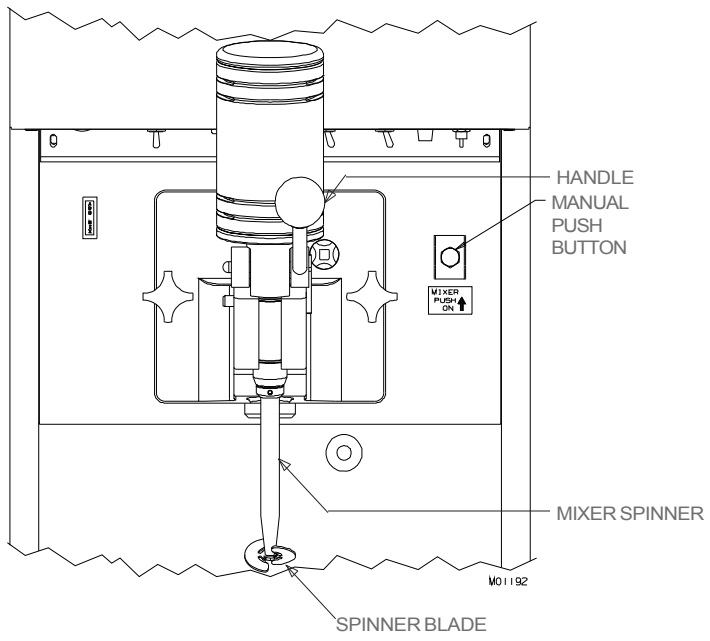


Figure 8-2

9 Closing Procedures

9.1 Draining Product From Freezer

To remove frozen product from the cylinder:

1. Place a clean, sanitized container under the dispensing nozzle.

3. Place the selector switch in the "CLEAN" position and the MTS switch in the "ON" position.

4. See figure 9-1. Disconnect and remove low mix probe. Remove the stainless steel pickup tube from the mix tank in the cabinet. Remove mix tank from the cabinet.

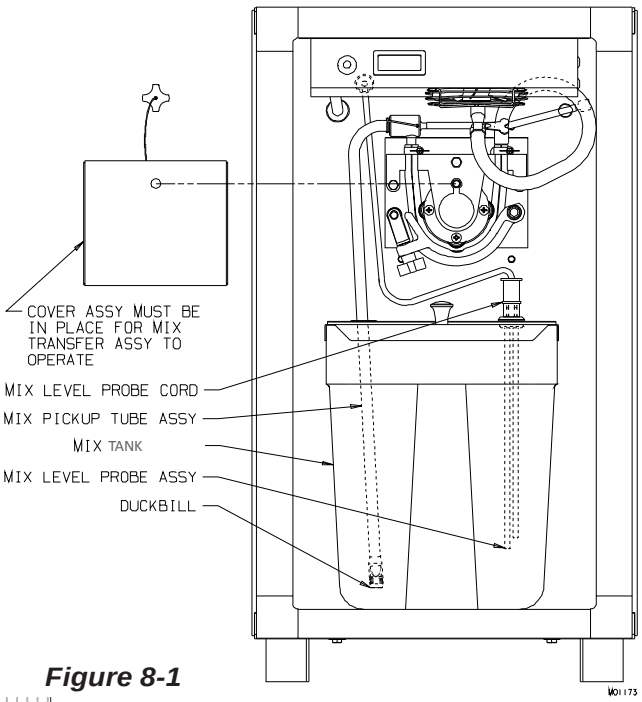


Figure 8-1

5. *Very slowly* dispense the semi-frozen product until no more product comes out.

6. Close plunger. Turn the cabinet and MTS switches to the "OFF" position. Place the pickup tube assembly into a container of cold water, turn the MTS switch to "ON" and allow the MTS to fill and pressurize the cylinder.

7. Very slowly open plunger to dispense the cold water. Follow with a container of warm water (100 to 110°F or 37 to 43°C) and repeat until the dispensed water is clear. Turn all switches to "OFF" and drain all water from cylinder. Close the plunger.

8. 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° to 110°F or 38° to 43°C).

9. Insert the pickup tube into the sanitizing solution.

10. Open the air relief plug on the head by unscrewing 1½ turns. Place the MTS switch in the "ON" position. When the sanitizing solution appears at the air relief, close the plug and allow the cylinder to pressurize.

11. Place the selector switch in the "CLEAN" position and allow the beater to run for 5 minutes.

12. Slowly open the plunger and allow the MTS to push the sanitizer out of the cylinder. Leaving the plunger open, turn the selector switch to the "OFF" position. Leave the MTS switch in the "ON" position and allow the MTS to push all remaining sanitizer out of the cylinder. When the sanitizer quits flowing, turn the MTS switch to the "OFF" position.

CAUTION
Be sure the freezer is depressurized before proceeding.

13. Refer to Disassembly and Closing Instructions.

10 Product 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 maintaining consistency in product quality. Too much overrun (air) results in a light, fluffy product lacking the cold, refreshing appeal of a quality product. Too little overrun results in a soggy, 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 with liquid mix to the top. Measure and record the weight of the container.

3. Replace liquid mix 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." See example.

Example:

Weight of one pint of 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 (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 one containing a different size orifice. The smaller the hole and number, the lower the overrun. The larger the hole and number, the higher the overrun. Each half-size change of the air meter number will change the overrun 3-5%. Each full-size change will change the overrun 5-10%.

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.

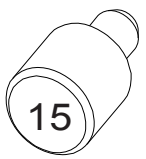


Figure 10-1 Air Meter

11 Routine Maintenance

Electro Freeze recommends the following schedule to help maintain your Model 78RMT Shake 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, drain tube, and mix tube from the cabinet to the cylinder with the appropriate brushes.

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

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

5. Check overrun and temperature of the product.

AS NEEDED

CAUTION

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

1. Clean the mix transfer system:

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

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

— continued

11 Routine Maintenance (continued)

AS NEEDED (continued)

CAUTION
Make sure the freezer is depressurized before proceeding.

a. Remove cover, loosen swing clamp and open shoe to gain access to the hose cavity.

b. Remove mix transfer hose assembly.

c. Lay a towel on the cabinet base below the MTS.

d. Using the spray bottle supplied, flush the hose cavity and roller assembly.

e. Use a brush (supplied) to clean in between rollers. Flush with sanitizer.

f. Wipe all surfaces with a clean dry cloth.

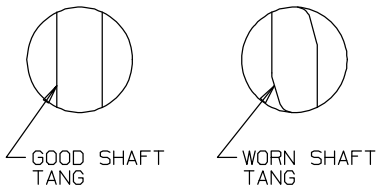
g. Remove and clean shoe. See figure 11-1.

WEEKLY

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

2. Replace as required.

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



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

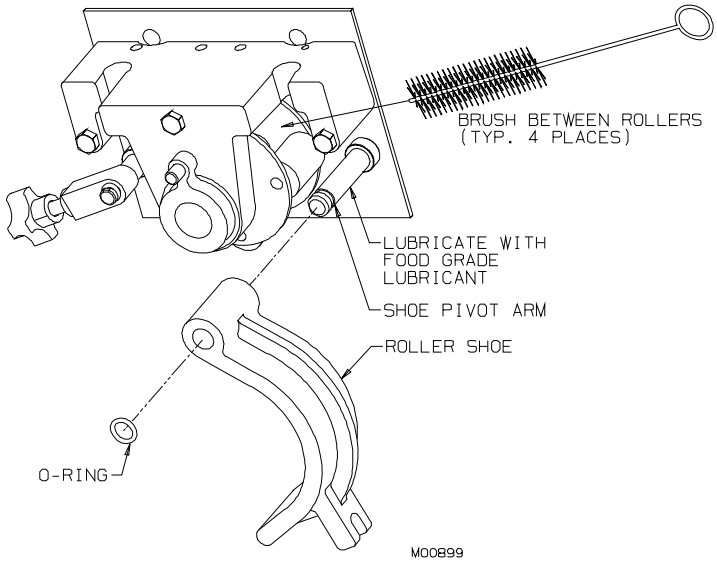


Figure 11-1

11 Routine Maintenance (continued)

MONTHLY

1. 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:

a. Be sure all switches are in the "OFF" position.

b. Disconnect the main power supply.

c. Remove the dispense head and beater shaft assembly.

d. Connect the main power supply.

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

CAUTION

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

f. Look inside the freezing cylinder toward the rear, the drive shaft and coupling should **NOT** be turning. Turn the switch off and disconnect the main power supply.

g. If the drive shaft and coupling are 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.

2. Water Condenser.

Check the outlet water temperature of water-cooled condensers at the floor drain. Water temperatures should be about 95°F with a 70°F water inlet temperature.

3. Test MTS Cover Switch.

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

CAUTION

Make sure system is depressurized before proceeding.

NOTE: Freezer should be cleaned and disassembled for this test.

a. Be sure all switches are in the "OFF" position.

b. Remove the MTS cover to expose the roller assembly.

c. Turn MTS switch to "ON."

CAUTION

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

— continued

11 Routine Maintenance (continued)

MONTHLY (continued)

3. MTS Cover Switch (continued)

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

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

4. 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.

11 Routine Maintenance (continued)

1500 HOURS OF OPERATION OR 6 MONTHS

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

SEMI-ANNUALLY

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

5000 HOURS OF OPERATION OR 1 YEAR

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

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

ANNUALLY

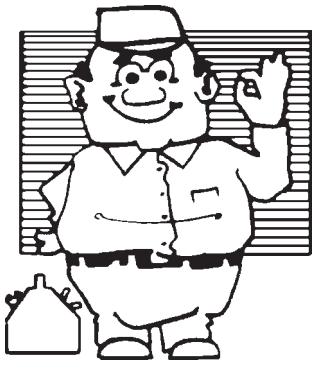
CAUTION

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

1. Call your Electro Freeze Distributor for service to replace drive belts and lubricate fan motor as needed.

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

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



11 Routine Maintenance (continued)

Winter Storage

To protect the unit during seasonal shutdown, it is important to store the 78RMT Shake Freezer properly. Please use the following procedures:

1. Disconnect all power to the freezer.

2. Disassemble and wash all parts that come into contact with the mix with a warm, mild detergent solution. Rinse in clear water and dry all parts thoroughly.

3. Store the loose parts, such as the head assembly, beater assembly, and pump parts in a safe, dry place.

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

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

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

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

⇨ ***Important***

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

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, LLC, *Electro Freeze* Service Department, for factory service at ***(309) 755-4553 or (800) 755-4545.***

12 Troubleshooting Tables

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.

SAFETY

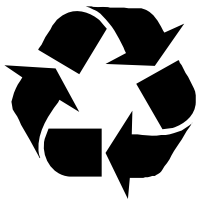
CAUTION

All maintenance and 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.

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



12 Troubleshooting Tables (continued)

PROBLEM	PROBABLE CAUSE	REMEDY
Unit does not operate.	1. Freezer unplugged.	1. Plug in freezer.
	2. Fuse or breaker blown at main disconnect.	2. Make sure your freezer is connected to a separate circuit independent from any other electrical equipment. Check fuse or breaker size. Contact your Electro Freeze Distributor to check for low voltage.
	3. Beater motor out on overolad.	3. Press overload reset button. Contact your Electro Freeze Distributor to check for low voltage. Check product temperature and overrun. (Note: cabinet will cool)
	4. Off on high pressure cut out control.	4. Refer to Troubleshooting Table - Compressor/Condensing Circuit - Discharge Pressure Too High.
	5. Off on low pressure cut out control.	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.
Leakage of mix or water from drain tube to drip tray.	1. Damaged beater shaft seal or installed improperly.	1. Replace cup seal or o-ring inside bushing. Install properly.
	2. Beater shaft pitted or damaged where o-ring rides.	2. Replace beater shaft.
	3. Beater shaft end play not set properly.	3. Contact your Electro Freeze Distributor for service.
Mix leaking at dispensing head.	1. Faulty head o-ring.	1. Replace o-ring.
	2. Head not properly installed.	2. Install head properly. Replace o-ring if pinched.
Dispensed product too soft (Product temperature above 28°F [-2°C])	1. Dirty or blocked condenser, restricted air flow.	1. Unblock condenser or have it cleaned by your Electro Freeze Distributor.
	2. Thermostat set too high or faulty.	2. Contact your Electro Freeze Distributor for service.
	3. Component failure.	3. Contact your Electro Freeze Distributor for service.
	4. Leak in refrigeration system resulting in little or no refrigeration.	4. Contact your Electro Freeze Distributor for service.

12 Troubleshooting Tables (continued)

PROBLEM	PROBABLE CAUSE	REMEDY
Product dispenses slowly out of dispensing head.	1. MTS pressure too low.	1. Contact your Electro Freeze Distributor for service.
	2. Product too cold.	2. Check product temperature; should be about 25° to 27°F (-3.9° to -2.8°C). See Dispensed Product Too Hard.
	3. Low overrun.	3. Check air meter. If plugged, clean. See No Air (Overrun).
	4. MTS problem.	4. See MTS Troubleshooting Charts.
	5. Reverse rotation on beater.	5. Have an electrician correct rotation to clockwise as viewed from the front of freezer.
	6. Dispense speed set too slow.	6. Contact your Electro Freeze Distributor for service.
Dispensed product too hard.	1. Cylinder thermostat erratic or set too cold.	1. Contact your Electro Freeze Distributor for service.
	2. Low overrun.	2. Check overrun, if low see M.T.S. Troubleshooting Table. No air.
	3. Plunger switch electrically or mechanically stuck closed. (Unit runs all the time.)	3. Remove plunger rod. If the freezer shuts off, contact your Electro Freeze Distributor.
	4. Component failure.	4. Contact your Electro Freeze Distributor for service.
	5. Low suction pressure, refrigeration system.	5. Contact your Electro Freeze Distributor for service.
	6. Dispense speed set too slow.	6. Contact your Electro Freeze Distributor for service.
Machine runs continuously and product gets too cold.	1. Plunger switch rod engaged.	1. Close plunger completely.
	2. Plunger switch out of adjustment or defective.	2. Contact your Electro Freeze Distributor for service.
	3. Faulty thermostat or bulb not deep enough in well.	3. Contact your Electro Freeze Distributor for service.
	4. Starter or relay contact points stuck.	4. Contact your Electro Freeze Distributor for service.
	5. Faulty time delay.	5. Contact your Electro Freeze Distributor for service.
	6. Suction pressure too low.	6. Contact your Electro Freeze Distributor for service.
	7. Faulty control relay	7. Contact your Electro Freeze Distributor for service.

12 Troubleshooting Tables (continued)

PROBLEM	PROBABLE CAUSE	REMEDY
Poor or slow product recovery.	1. Dirty or blocked condenser, restricted air flow - high ambient temerature.	1. Have condenser cleaned by your Electro Freeze Distributor; lower ambient temperature.
	2. Thermostat cut in point out of adjustment or malfunctioning.	2. Contact your Electro Freeze Distributor for service.
	3. Defective condenser fan motor.	3. Contact your Electro Freeze Distributor for service.
	4. Component or compressor failure.	4. Contact your Electro Freeze Distributor for service.
Beater motor does not operate. 	1. Head assembly is not installed.	1. Install head assembly.
	2. Magnetic head switch defective.	2. Contact your Electro Freeze Distributor for service.
	3. Loose connection in control circuit.	3. Contact your Electro Freeze Distributor for service.
	4. Open starter coil.	4. Contact your Electro Freeze Distributor for service.
	5. Worn out relay contacts.	5. Contact your Electro Freeze Distributor for service.
	6. Faulty capacitor assembly. (Single phase only).	6. Contact your Electro Freeze Distributor for service.
	7. Faulty beater motor.	7. Contact your Electro Freeze Distributor for service.
Cabinet too cold (below 35°F [1.7°C])	1. Cabinet setting too low.	1. Contact your Electro Freeze Distributor for service.
	2. Defective thermostat.	2. Contact your Electro Freeze Distributor for service.
	3. Cabinet solenoid stuck open.	3. Contact your Electro Freeze Distributor for service.
	4. Cabinet expansion valve set too low.	4. Contact your Electro Freeze Distributor for service.

12 Troubleshooting Tables (continued)

PROBLEM	PROBABLE CAUSE	REMEDY
Mix sours in cabinet.	1. Cabinet thermostat defective, set too warm or turned off.	1. Contact your Electro Freeze Distributor for service.
	2. Cabinet solenoid defective (does not open).	2. Contact your Electro Freeze Distributor for service.
	3. Cabinet switch defective.	3. Contact your Electro Freeze Distributor for service.
	4. Door switch defective.	4. Contact your Electro Freeze Distributor for service.

12.1 Troubleshooting Tables Compressor/Condensing Circuit

Compressor and beater motor operate 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 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. Control relay defective.	3. Contact your Electro Freeze Distributor for service.
Compressor does not operate or operates improperly.	1. Trouble in compressor condensing circuit.	1. Contact your Electro Freeze Distributor for service.
	2. Faulty start capacitor, run capacitor or relay. (single phase only)	2. Contact your Electro Freeze Distributor for service.
	3. Faulty contactor.	3 Contact your Electro Freeze Distributor for service.
	4. Disconnected or broken wire in switch or capacitor relay box.	4. Contact your Electro Freeze Distributor for service.

12.1 Troubleshooting Tables Compressor/Condensing Circuit (continued)

PROBLEM	PROBABLE CAUSE	REMEDY
Capacitor failures. (single phase only)	1. Low line voltage.	1. Ask power company to increase voltage to not less than 10% below dataplate rating or install transformer.
	2. Improper capacitor.	2. Contact your Electro Freeze Distributor for service.
Unit operates long or continuously.	1. Dirty condenser.	1. Have condenser cleaned by your Electro Freeze Distributor.
	2. Shortage of refrigerant.	2. Contact your Electro Freeze Distributor for service.
	3. Moisture in system.	3. Contact your Electro Freeze Distributor for service.
	4. Compressor failing.	4. Contact your Electro Freeze Distributor for service.
Discharge pressure too high.	1. Water turned off or defective water regulating valve.	1. Contact your Electro Freeze Distributor for service.
	2. Restricted water cooled condenser.	2. Contact your Electro Freeze Distributor for service.
	3. Dirty condenser.	3. Have condenser cleaned by your Electro Freeze Distributor.
	4. Unit location too warm (air cooled).	4. Relocate unit away from restriction. Place nothing against the back, sides, or on the top of the unit.
	5. Refrigerant overcharge.	5. Contact your Electro Freeze Distributor for service.
	6. Air in system.	6. Contact your Electro Freeze Distributor for service.

12.1 Troubleshooting Tables
Compressor/Condensing Circuit (continued)

PROBLEM	PROBABLE CAUSE	REMEDY
Discharge pressure too low.	1. Water regulating valve open too wide.	1. Contact your Electro Freeze Distributor for service.
	2. Shortage of refrigerant.	2. Contact your Electro Freeze Distributor for service.
Noisy Compressor	1. Tubing rattle.	1. Contact your Electro Freeze Distributor for service.
	2. Spring broken internally.	2. Contact your Electro Freeze Distributor for service.
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 install transformer. Check for inadequate wire size.
	3. Open start capacitor. (single phase only)	3. Contact your Electro Freeze Distributor for service.
	4. High discharge pressure.	4. See "Discharge Pressure Too High" this section.
	5. Defective compressor.	5. Contact your Electro Freeze Distributor for service.
Compressor starts, but remains in start windings.	1. Low line voltage.	1. Ask power company to increase voltage to not less than 10% below nameplate rating or install transformer.
	2. Improperly wired.	2. Contact your Electro Freeze Distributor for service.
	3. Running capacitor shorted. (single phase only)	3. Contact your Electro Freeze Distributor for service.
	4. Starting capacitor weak. (single phase only)	4. Contact your Electro Freeze Distributor for service.

12.2 Troubleshooting Tables Mix Transfer System (MTS)

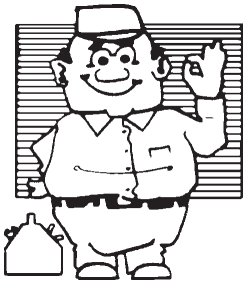
PROBLEM	PROBABLE CAUSE	REMEDY
Mix leaks out of MTS.	1. Transfer hose worn and split.	1. Remove, clean inside MTS around rollers with spray bottle provided, install new hose.
Mix transfer system (MTS) will not operate.	1. MTS cover not properly installed.	1. Install cover under hose clamps.
	2. Hose not installed properly.	2. Check position-reinstall.
	3 Cover switch defective.	3. Contact your Electro Freeze Distributor for service.
	4. MTS relay defective.	4. Contact your Electro Freeze Distributor for service.
	5. Start capacitor defective or motor start-relay defective.	5. Contact your Electro Freeze Distributor for service.
	6. Pressure switch defective.	6. Contact your Electro Freeze Distributor for service.
	7. Motor burned out or tripped overload.	7. Contact your Electro Freeze Distributor for service.
MTS will not shut off.	1. MTS hose worn out.	1. Replace hose.
	2. Mix relay defective.	2. Contact your Electro Freeze Distributor for service.
	3. Pressure switch stuck in closed position.	3. Contact your Electro Freeze Distributor for service.
MTS will not prime.	1. Insufficient supply of mix.	1. Replenish mix supply.
	2. Air hose or air meter not installed.	2. Install air hose/air meter.
	3. Hose not installed.	3. Install hose.
Mix pick up tube losses prime.	1. Transfer hose worn.	1. Replace transfer hose.
	2. Defective duckbill check valve.	2. Replace check valve.
No Air (Overrun).	1. Air meter plugged.	1. Clean or replace air meter.
	2. Air tube pinched.	2. Replace tube.

12.2 Troubleshooting Tables
Mix Transfer System (MTS) (continued)

PROBLEM	PROBABLE CAUSE	REMEDY
Too much air, overrun too high-popping problems.	1. Air meter too large.	1. Install smaller air meter.
	2. Air leak between mix inlet tube and hose.	2. Replace as needed.
	3. Air line hose cracked-sucking air.	3. Replace air line hose.
	4. Defective duckbill valve or duckbill fell out.	4. Replace valve.
	5. O-ring on mix inlet tube worn or cut	5. Replace o-ring.
MTS cycles on and off with out dispensing.	1. Leak on pressure side of system.	1. Find leak and correct, check head, drain tube and all hoses.
	2. Worn transfer hose.	2. Replace hose.
Mix shoots out air meter.	1. Transfer hose worn.	1. Replace hose.
	2. MTS shoe clamp knob not tight.	2. Tighten knob.
	3. MTS pressure too high.	3. Contact your Electro Freeze Distributor for service.

12.3 Troubleshooting Tables Spindle Shaft

PROBLEM	PROBABLE CAUSE	REMEDY
Product climbing up shaft of spindle motor.	1. Handle being held down to finish mixing product and flavor.	1. See Section 8.3 - Dispensing Shakes. View video for proper dispensing procedures.
	2. Plunger switch rod engaged.	2. Close dispenser completely.
	3. Cylinder set too erratic or cold.	3. Contact your Electro Freeze Distributor for service.
	4. Low suction pressure.	4. Contact your Electro Freeze Distributor for service.
	5. Plunger switch adjustment bolt too far down.	5. Contact your Electro Freeze Distributor for service.
	6. Plunger switch out of adjustment or defective.	6. Contact your Electro Freeze Distributor for service.
	7. Mechanical timer knob caught or bad.	7. Contact your Electro Freeze Distributor for service.
	8. Faulty time delay. (Unit runs all the time.)	8. Contact your Electro Freeze Distributor for service.
	9. MTS pressure too low.	7. Contact your Electro Freeze Distributor for service..
	10. Reverse rotation on beater.	10. Contact your Electro Freeze Distributor for service.
Spindle motor does not work or works erratically.	1. Fuse blown (Spindle will not turn).	1. Contact your Electro Freeze Distributor for service.
	2. Brushes worn.	2. Contact your Electro Freeze Distributor for service.
	3. Motor bad.	3. Contact your Electro Freeze Distributor for service.
	4. Bearings binding up on shaft.	4. Contact your Electro Freeze Distributor for service.
Spinner going through the bottom of the cup.	1. Cup being pushed up too hard.	1. Rest spinner on the bottom of cup and pull down on cup while dispensing.
Spinner cutting side of cup.	1. Spinner edges sharp from using metal malt collars or metal malt cups.	1. Contact your Electro Freeze Distributor for service.



QUALITY PARTS
PROTECT
YOUR
EQUIPMENT

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

ELECTRO FREEZE®

Replacement Parts Manual with Illustrations

FREEDOM 360º Series

Shake Freezer
Model 78RMT

184956-01 7/11

H.C. Duke & Son, LLC P/N 184956-01 July 2011 Printed in U.S.A.

Replacement Parts Orders

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

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

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

Name: _____

Address: _____

_____

_____

Phone: _____

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

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

Fax: (309) 755-9858

E-mail: service@electrofreeze.com

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ILLUSTRATIONS

OTHER LISTS AND INFORMATION

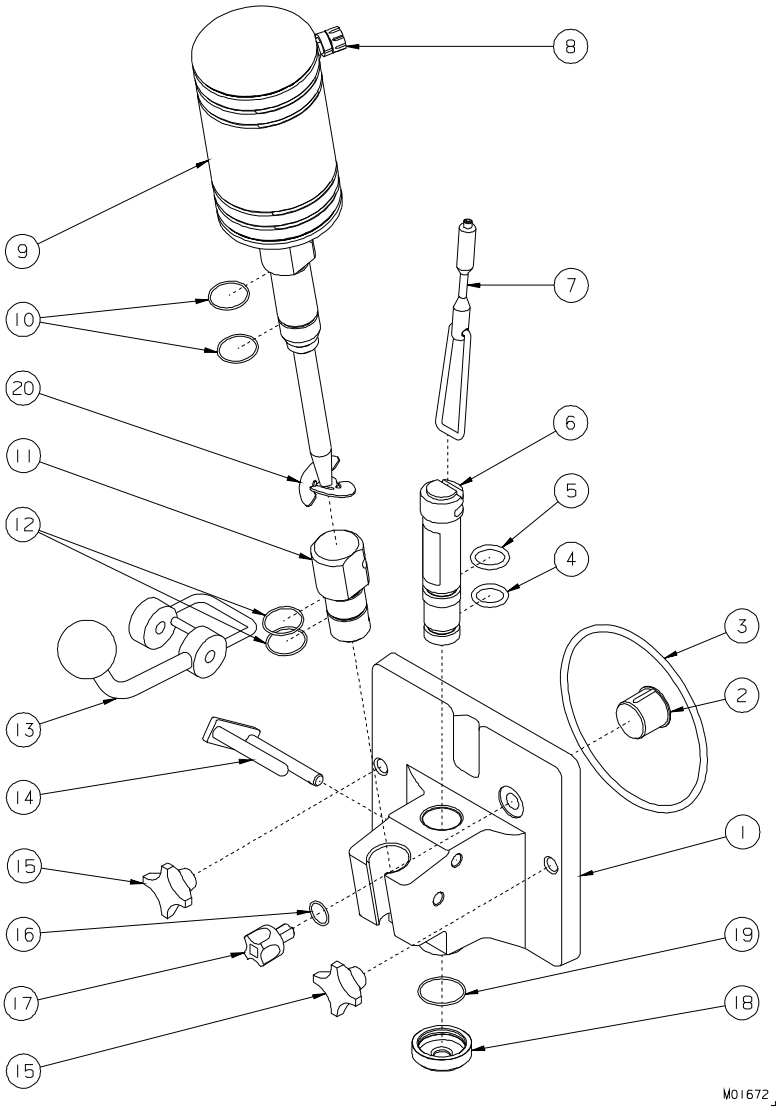


Figure 1 Head Assembly

Item	Part No.	Description
*	HC118909	Head-Assy. Dispense Complete
1	HC118908	Head-Assy. w/Actuator (Head Only)
2	HC196072	Bushing-Beater Bearing
3	HC160622	O-Ring (Head)
4	HC160582	O-Ring (Plunger-Lower)
5	HC160501	O-Ring (Plunger-Upper)
6	HC136922	Plunger-Dispensing BK
7	HC114340	Push Rod - Assy. Plunger Switch
8	HC150889	Fuse-Slo Blo 1.0A
9	HC119168	Spindle-Assy. Front Mount includes HC150889 ... Fuse-Slo Blo 1.0A HC151140 .... Motor-Spindle HC150891 ... Set-Motor Brush (2)
10	HC160555	O-Ring (Spindle)
11	HC135182	Post-Pivot (Optional)
12	HC160555	O-Ring (Pivot Post)
13	HC113123	Handle-Assy. Spindle Head
14	HC113435	Keeper-Assy. Spindle
15	HC162641	Knob-Hand Aluminum
16	HC160621	O-Ring (Plug)
17	HC196066	Plug-Air Relief (Bleed)
18	HC139860-01	Extension-Shake Spigot 1/2 Dia
19	HC160620	O-Ring (Shake Spigot)
20	HC119114	Kit-Spinner Replacement

Not Shown:

HC116410 ..... Kit-Dispense Head Switch
HC114341 ..... Stud-Assy. Cylinder 1-15/16

* Includes Items 1-6, 11, 13, 14, 16-19.

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

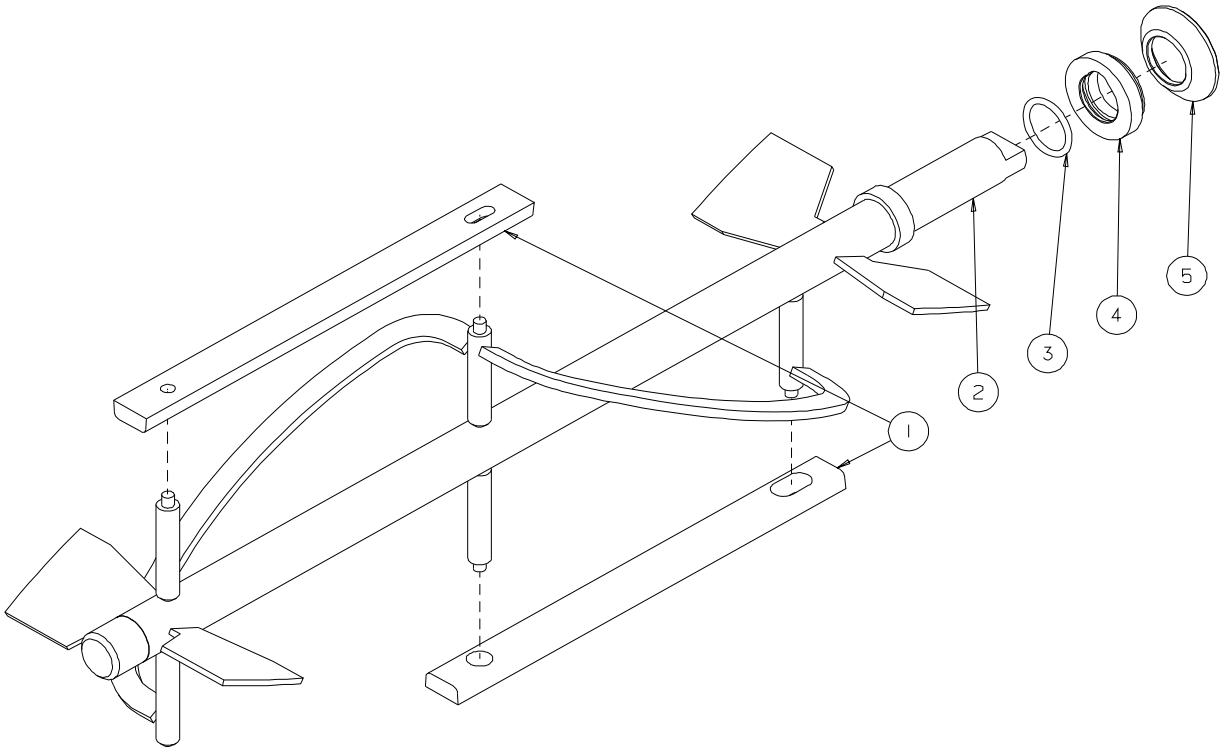


Figure 2 Beater Shaft Assembly

Item	Part No.	Description
1	HC139840	Blade-Shake Scraper
2	HC118892	Beater-Assy. Shake Long
3*	HC160500	O-ring (Seal)
4*	HC133098	Washer-Shaft Seal (Bushing)
5*	HC160557	Seal-Beater Shaft (Cup)

*Items 3,4,5 can be ordered together as Seal Shaft-Complete Part No. HC111875

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

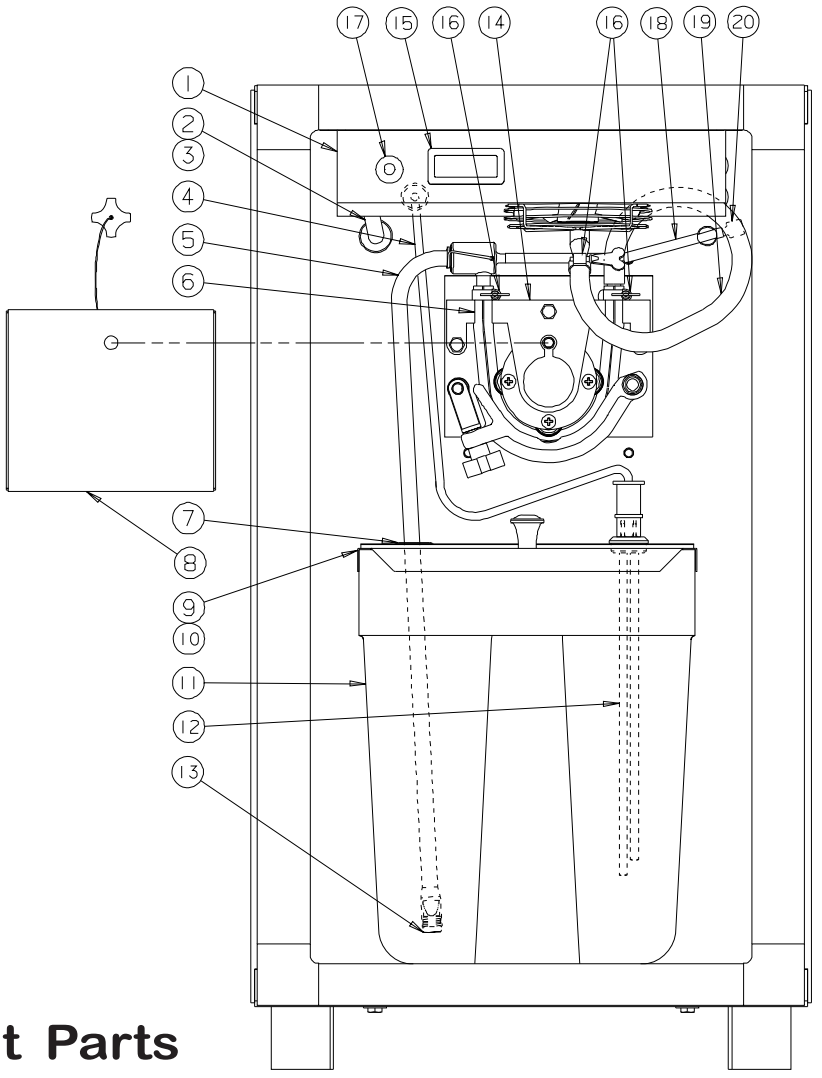
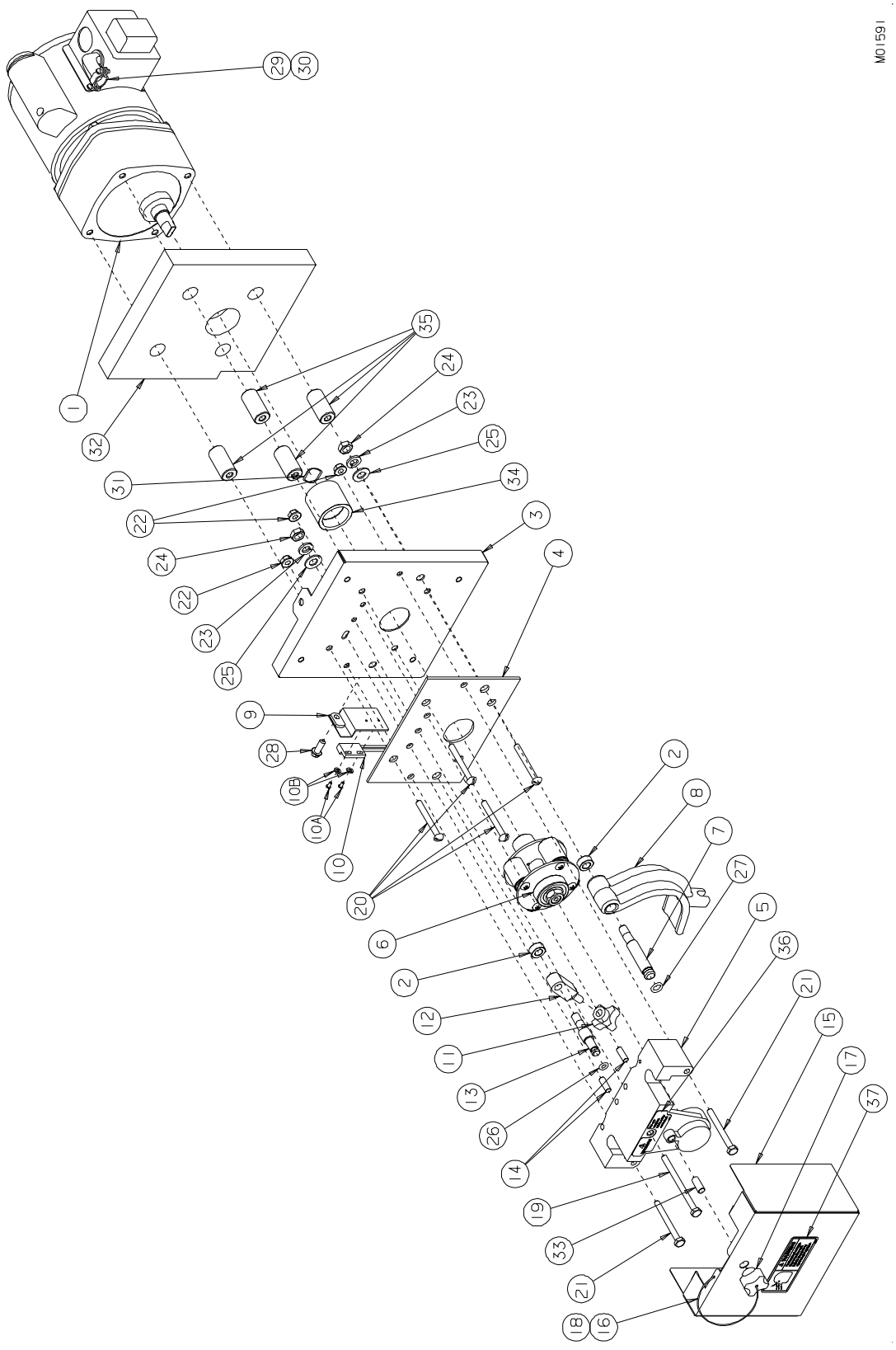


Figure 3 Cabinet Parts

Item	Part No.	Description
1	HC116516-01	Shroud-Assy. Evaporator
	HC150532	Cord-Assy. Male Plug
	HC151105	Fan-Intake (Cabinet)
	HC151076	Guard-Fan Open
	HC150509	Switch-Door Push Button
	HC161004	Thermometer-Barrel
1A	HC155111	Coil-Evaporator
1B	HC150533	Cord-Assy. Female Plug
2	HC160738	Clamp-Hose 1/2 ID Delrin (Drain)
3	HC196068	Tubing-.375 ID x .500 OD PVC
4	HC150537	Cordset-Mix Level Probe
4A	HC150536	Receptacle-Molded Level Sensor
5	HC118842	Tube-Assy. Pickup
	HC118765	Port-Assy. Inlet Mix/Air
	HC118836	Tube-Assy. Mix Inlet
	HC162324	Clip-Tube Retainer
	HC160502	O-ring
6	HC138836	Hose-Transfer Red Line
7	HC199033	Boot-Mix Tube
8	HC119023	Cover-Assy. RMT CAB (See Figure 4)
9	HC113997	Cover-Assy. Mix Tank Front
10	HC138165-01	Cover-Rear Mix RMT
11	HC196222	Tank-Mix 7 Gallon 13-1/4" High
12	HC115397	Probe-Assy. Mix Level 10-3/4"
13	HC199032-01	Duckbill-Inlet RM MTS
14		MT-Assy. CAB Red Line (See Figure 4)
15	HC161004	Thermometer-Barrel
16	HC116065	Clamp-Assy. Soft Hose 5/8
17	HC150509	Switch-Door Push Button
18	HC138170-03	Tube-Air 8-1/2"
19	HC116094	Hose-Assy. Mix Braided
20		Meter-Air (Order by meter number and designate black or white)

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

Figure 4 Mix Transfer System — RMT (sheet 1 of 2)



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

Figure 4 Mix Transfer System — RMT (sheet 2 of 2)

Item	Part No.	Description
*	HC118751	MT-Assy. CAB Red Line (with Leeson gearmotor)
or	HC118751-02	MT-Assy CAB Red Line (with Bison gearmotor)
1	HC119918	Kit-Gearmotor (Leeson) Replacement Model RMT includes motor and
	HC139046-01	Gauge Shaft Alignment RMT
	HC 162513	Sealant-Alum Silastic (3 oz)
	HC150893	Switch-Start Solid State (Relay)
	HC160173	Washer-Spring Wave SST
1A	HC150893	Switch-Start Solid State (Relay)
1B	HC150512	Capacitor-Start w/Bleed
1C	HC151408	Protector-Auto Reset Motor
or	HC121027	Kit-Gearmotor (Bison) 1/6HP Replacement Model RMT includes motor and
	HC139046-01	Gauge Shaft Alignment RMT
	HC 162513	Sealant-Alum Silastic (3 oz)
	HC139839	Strap-MT Motor Rear
	HC160173	Washer-Spring Wave SST
2	HC138800	Spacer-Swing Arm
3	HC118764	Faceplate-Assy. MTS
4	HC139746	Plate-Backup MTS
5	HC120633	Support-Assy. include support and HC160338 Pine-Dowell 1/4 dia x 3/4 SST HC160386 Stud-5/1-18 x 3/4 SST
6	HC116009-01	Kit-Roller (Complete)
7	HC138797	Arm-Shoe Pivot
8	HC139751	Shoe-Roller
9	HC118763	Bracket-Assy. Switch Mtg.
10	HC119023	Kit-Cover Switch RMT Freezer includes switch and HC160357 Screw-RDHM #4-40 x 1/4 STL HC160393 Washer-Flat #6 Brass
11	HC162622	Knob-Hand
12	HC138798	Clamp-Shoe Swing
13	HC138799	Arm-Swing Clamp
14	HC160338	Pin-Dowel 1/4 DIA x 3/4 SST
15	HC119023	Cover-Assy. RMT CAB includes HC165246 Decal-Warning Pressurized HC138889 Knob-Cover RMT HC138890 Lanyard-Wire HC160508 Sleeve-Cable Stop 3/64
16	HC138890	Lanyard-Wire
17	HC138889	Knob-Cover RMT
18	HC160508	Sleeve-Cable Stop 3/64
19	HC160465	Screw-HXHC 1/4-20 x 3-1/2 SST
20	HC160093	Screw-TRPS 1/4-28 x 2-1/4 SST
21	HC160464	Screw-HXHC 1/4-20 x 2-1/2 SST
22	HC159933	Nut-HXSF 1/4-20 SST
23	HC160169	Washer-Flat 3/8 SST
24	HC159927	Nut-HEX 3/8-16 SST
25	HC160170	Washer-Lock 3/8 SST
26	HC160628	O-ring (Swing Clamp)
27	HC160612	O-ring (Roller Shoe)
28	HC159939	Screw-HXSF 1/4-20 x 11/16 SST
29	HC150705	Connector-3/8 x 90°
30	HC118833	Cord-Assy. Motor
31	HC160173	Washer-Spring Wave SST
32	HC165524	Block-Insulation RMT
33	HC160386	Stud-5/16-18 x 3/4 SST
34	HC139756	Shield-Drip
35	HC138793	Spacer-Motor

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

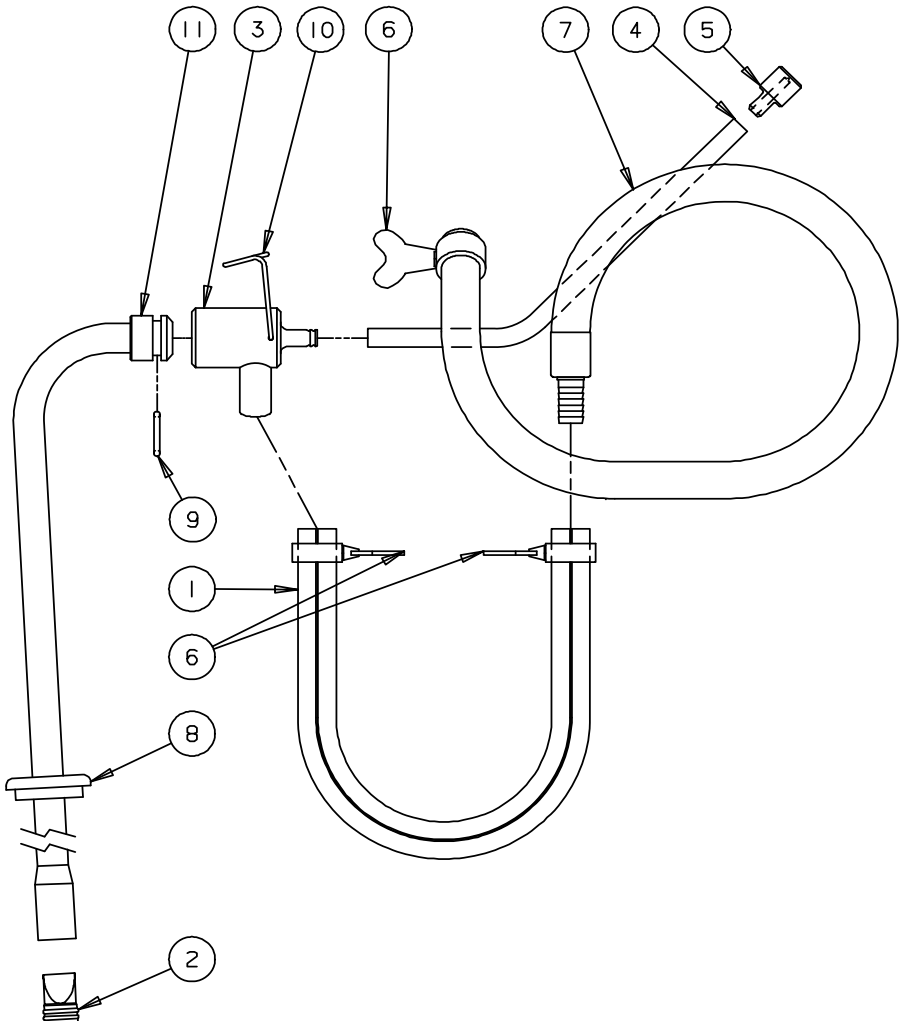


Figure 5 MTS — RMT Hose Assembly

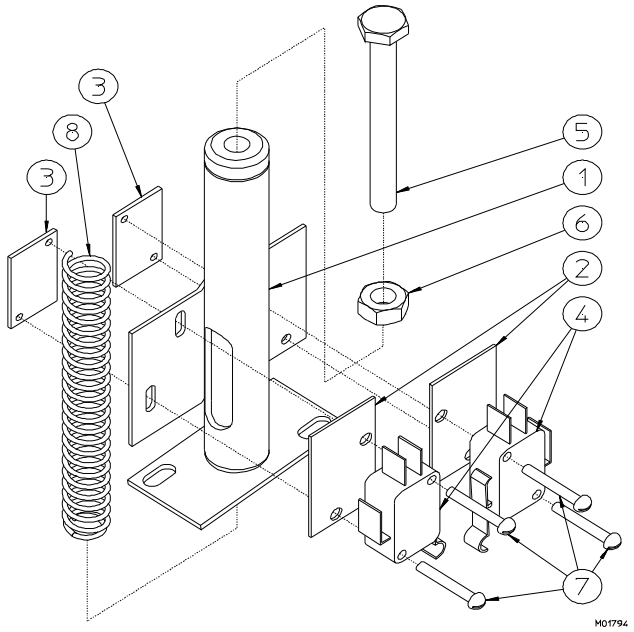
Item	Part No.	Description
1	HC138836	Hose-Transfer Red Line
2	HC199032-01	Duckbill-Inlet RM MTS (Valve)
3	HC118765*	Port-Assy. Inlet Mix/Air
4	HC138170-03	Tube-Air 8-1/2" (Hose)
5		Meter-Air (Order by meter number)
6	HC116065	Clamp-Assy. Soft Hose 5/8
7	HC116094	Hose-Assy. Mix Braided
8	HC199033	Boot-Mix Tube (Seal)
9	HC160502*	O-ring
10	HC162324*	Clip-Tube Retainer
11	HC118836*	Tube-Assy. Mix Inlet

* Can be ordered as an assembly:

HC118842	Tube-Assy. Pickup

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

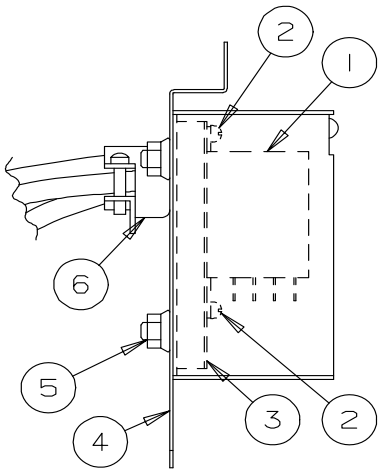
Figure 6 Switch Assembly



Item	Part No.	Description
*	HC120305	Switch-Assy. Plunger Shake Pres.
1	HC120304	Guide-Assy Push Rod
2	HC137671	Insulator-Switch
3	HC137735	Bracket-Safety Switch Mounting
4	HC150476	Switch-SPDT Simul Roller
5	HC159993	Screw-HXHM 1/4-20x2-3/4 ZN
6	HC160104	Nut-Hex 1/4x20 ZN (Adjusting Bolt)
7	HC160433	Screw-RDHM #4-40 x 3/4 ZN
8	HC162323	Spring-Compression MW ZN

* Includes all items above.

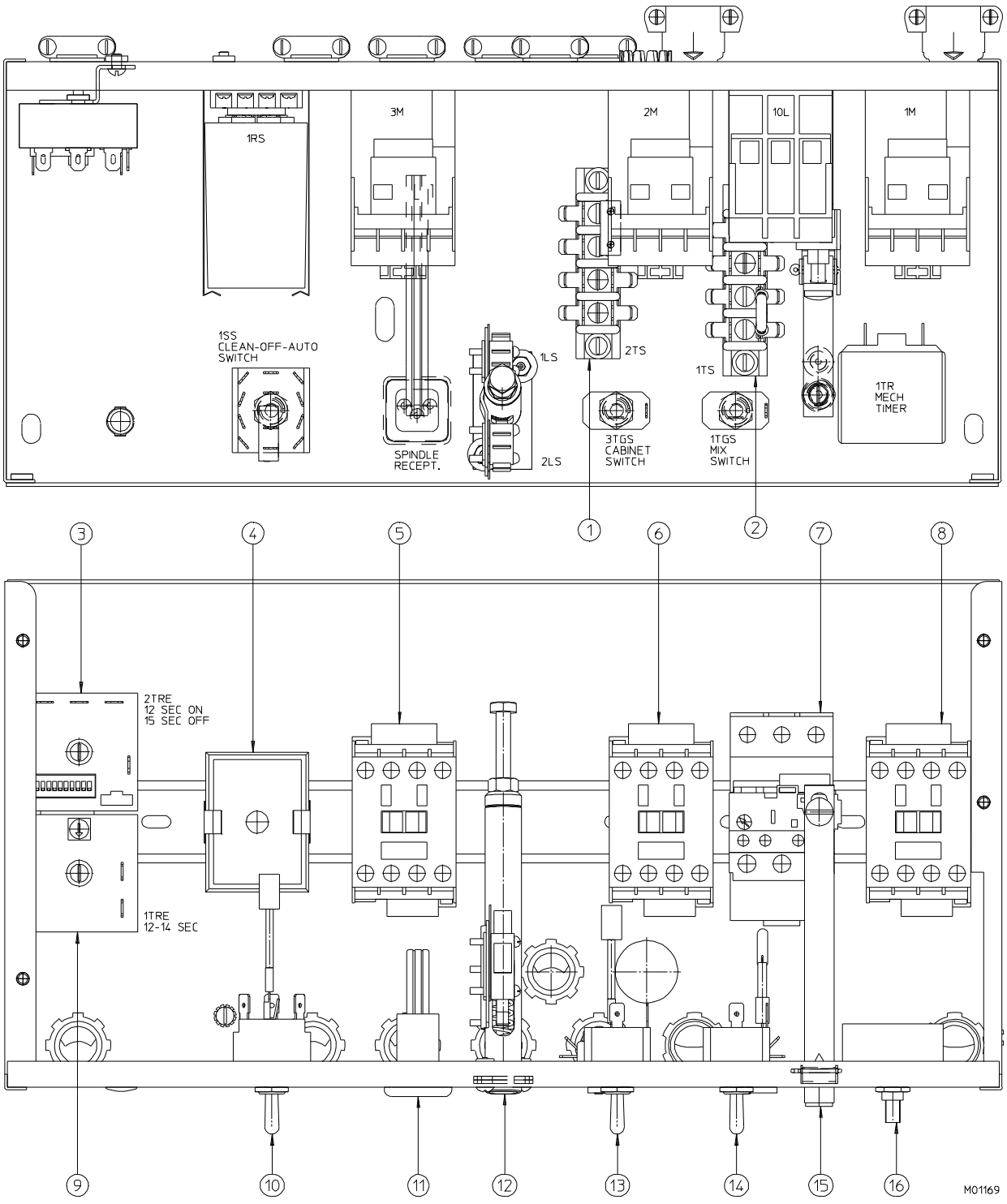
Figure 7 Relay Box — MTS - 3 Phase



Item	Part No.	Description
1	HC150381	Relay-Flange Base w/Cover
2	HC160308	Screw-RDHM #6-32 x 5/16 ZN
2A	HC160116	Nut-Speed #6-32 BKOX
3	HC138159	Bracket-Flange Relay Mtg.
4	HC138248	Support-MTS
5	HC159950	Screw-HXSF 1/4-20x1/2 ZN
5A	HC159951	Nut-HXSF 1/4-20 ZN
6	HC150828	Connector-1/2

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

Figure 8 Switch Box (sheet 1 of 2)



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

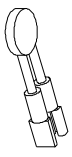
Figure 8 Switch Box (sheet 2 of 2)

Item	Part No.	Description
1	HC150795	Strip-Terminal
1A	HC116125	Filter-Assy. (See Detailed Drawing)
2	HC150795	Strip-Terminal
2A	HC116188	Mov-Assy. (See Detailed Drawing)
3	HC120095	Kit-Recycle Timer Wiring Instructions
4	HC150202	Indicator-Mix Level
4A	HC150540	Light-Indicator
4B	HC150119	Socket-Octal
4C	HC150120	Clip-Retainer
5	HC150155	Contactor-IEC 23A 208-230V C (Cabinet)
5A	HC150156	Coil-AB 208-230V
6	HC150155	Contactor-IEC 23A 208-230V C (Compressor)
6A	HC150156	Coil-AB 208-230V
7	HC120359	Relay-Assy. Overload T1 4.5-6.3A
		HC150063 .... Adaptor-OL Din Rail T1
		HC150064 .... Adaptor-Reset Threaded T1
		HC150059 .... Relay-Overload T1 4.5-6.3A
8	HC150155	Contactor-IEC 23A 208-230V C (Beater Motor)
8A	HC150156	Coil-AB 208-230V
9	HC150252-01	Timer-.5-60 Delay on Break
10	HC150436	Switch-Toggle 4 PDT Center OFF (Selector)
10A	HC116125	Filter-Assy. (See Detailed Drawing)
11	HC150501	Harness-Receptacle-Wiring (Spindle Motor)
12	HC120305	Switch-Assy.Plunger Shake Press. (See Figure 6)
		HC150476 .... Switch-SPDT Simul Roller (not shown)
13	HC159235	Switch-Toggle SPST (Cabinet)
14	HC159235	Switch-Toggle SPST (MTS)
15	HC120363	Lever-Assy. Reset T1 Long
		HC159036 .... Button-Reset
16	HC150218	Timer-Five Minute Mech.
16A	HC162604	Knob-Timer

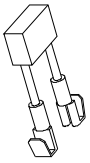
Not Shown:

HC150438	Switch-Momentary Push SPST
HC160512	Seal-Swtich Boot
HC137896	Shield-Switch

Detailed Drawings of Filter and MOV Assemblies



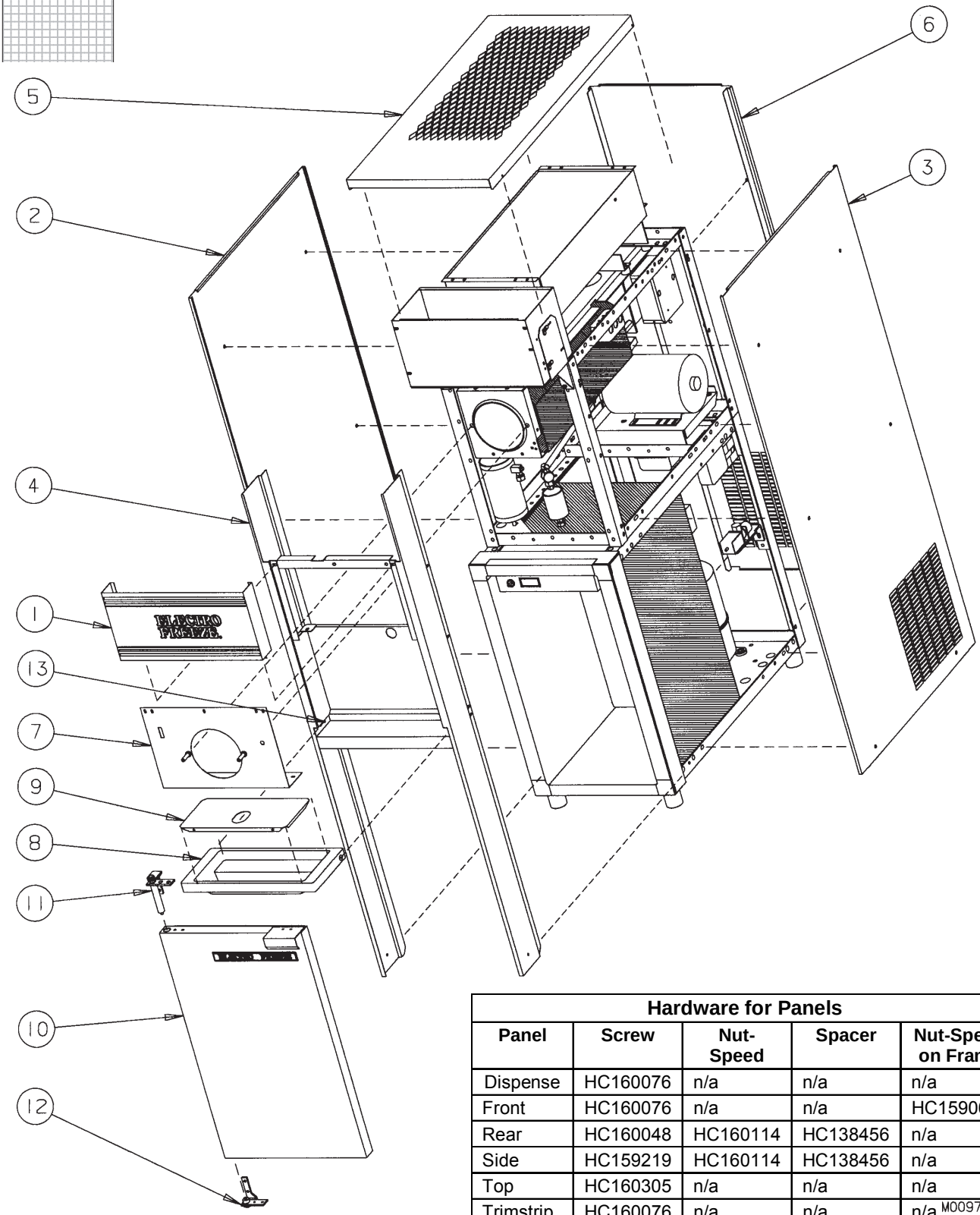
Item #2A
MOV-Assy.
HC116188



Item #1A & 10A
Filter-Assy.
HC116125

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

Figure 9 Panels (sheet 1 of 2)



Hardware for Panels				
Panel	**Screw**	**Nut-Speed**	**Spacer**	**Nut-Speed on Frame**
Dispense	HC160076	n/a	n/a	n/a
Front	HC160076	n/a	n/a	HC159067
Rear	HC160048	HC160114	HC138456	n/a
Side	HC159219	HC160114	HC138456	n/a
Top	HC160305	n/a	n/a	n/a
Trimstrip	HC160076	n/a	n/a	n/a M00971
n/a – Not Applicable				

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

Figure 9 Panels (sheet 2 of 2)

Item	Part No.	Description
1	HC118891-01	Trimstrip-Assy. Electro Freeze 18"
or	HC118891-02	Trimstrip-Assy. SST 18" (no decals)
or	HC118991	Trimstrip-Assy. Sonic Shake
2	HC139834-C	Panel-Side LH
or	HC120074-C	Panel-Side LH (for use with optional air filters)
3	HC139835-C	Panel-Side RH
or	HC120075-C	Panel-Side RH (for use with optional air filters)
4	HC118885-C	Panel-Assy.Front includes panel with:
	HC159175	Catch-Bullet (Button for Drip Tray)
	HC160289	Nut-Push Round .265
5	HC118886-C	Panel-Assy. Top (Air Cooled)
or	HC118911-C	Panel-Assy. Top (Water Cooled)
6	HC139837-C	Panel-Rear
or	HC120080-C	Panel-Rear (for use with optional air filters)
7	HC139836-C	Panel-Dispense
8	HC196107-02	Tray-Drip 18 in. Black
9	HC118893	Insert-Assy. Drip Tray
	HC199030	Bumper-Rubber
10	HC114260-06	Door-Assy. Complete 18 in. EF
	HC160563-02	Gasket-Magnetic
	HC136199	Pull-Door (Handle)
	HC165414	Nameplate-Electro Freeze Large
10A	HC118597	Actuator-Assy. Door Switch
11	HC162045	Hinge-Pivot 1-3/8 Top LH
	HC162052	Spring-LH
12	HC162046	Hinge-Pivot 1-3/8 Botton LH
13	HC159175	Catch-Bullet (Button for Drip Tray)
13A	HC160289	Nut-Push Round

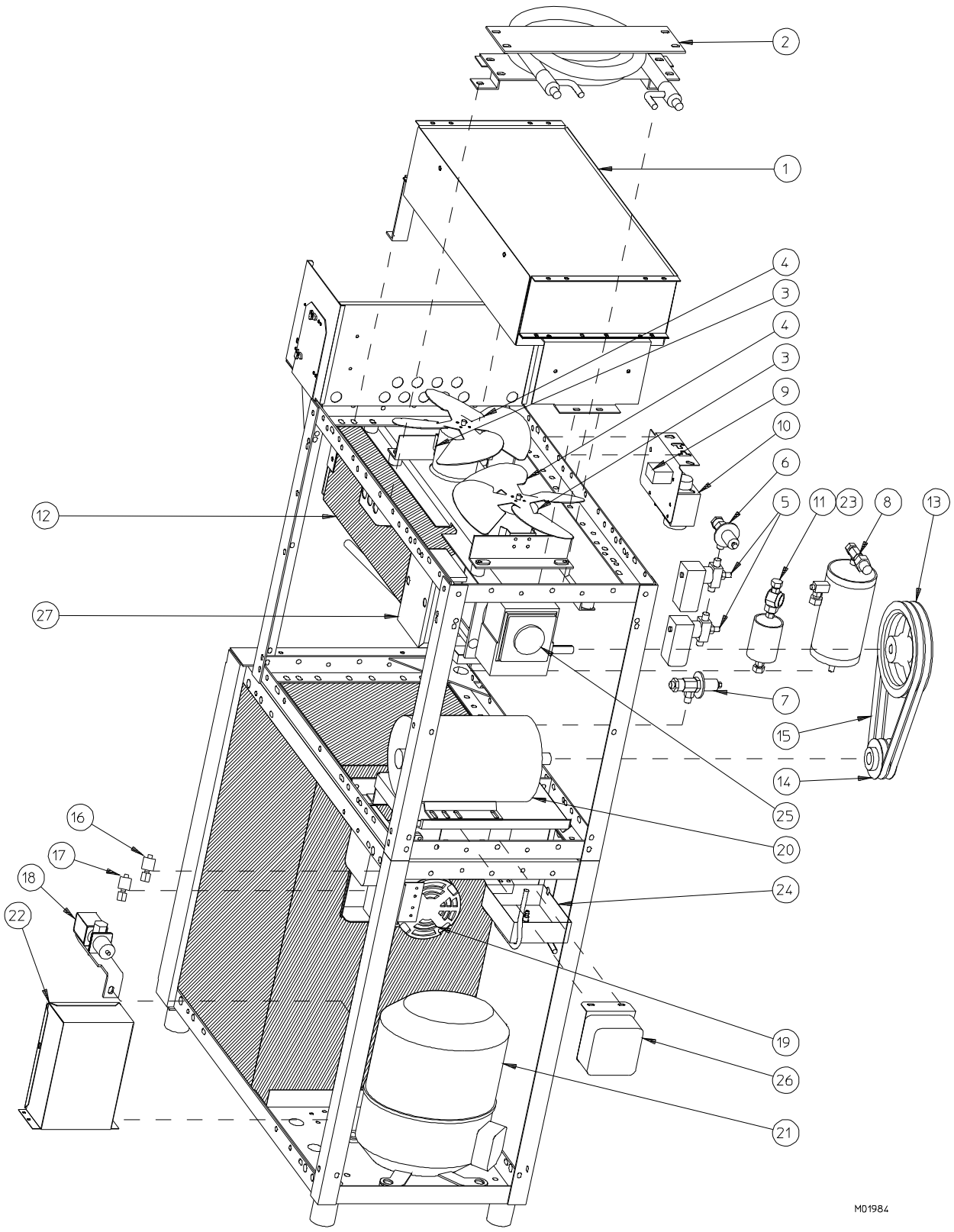
Not Shown Optional:

HC155137	Filter-Air Cleanable (requires different side and rear panels see above)
HC140995	Shield-Splash
HC191130	Bar-Splash Shield

Panel Decals & Labels	
Part No.	**Description**
HC165119	6" Air Flow
HC165025	Beater Warning
HC164119	Cleaning Instructions
HC165093	Clear Overlay
HC165013	CMT Patent
HC165191	Freedom
HC164110	MTS Connect Red Line
HC164121	Operating Instructions
HC165126	Panel Removal
HC164135	Shake Push Button
HC165124	Top Air Discharge
HC164118	Trimstrip
HC165147-01	Trimstrip EF Logo 18"
HC165175	Trimstrip Sonic 16”
HC165246	Warning - Pressurized

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

Figure 10 Side/Back View (sheet 1 of 2)



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

Figure 10 Side/Back View (sheet 2 of 2)

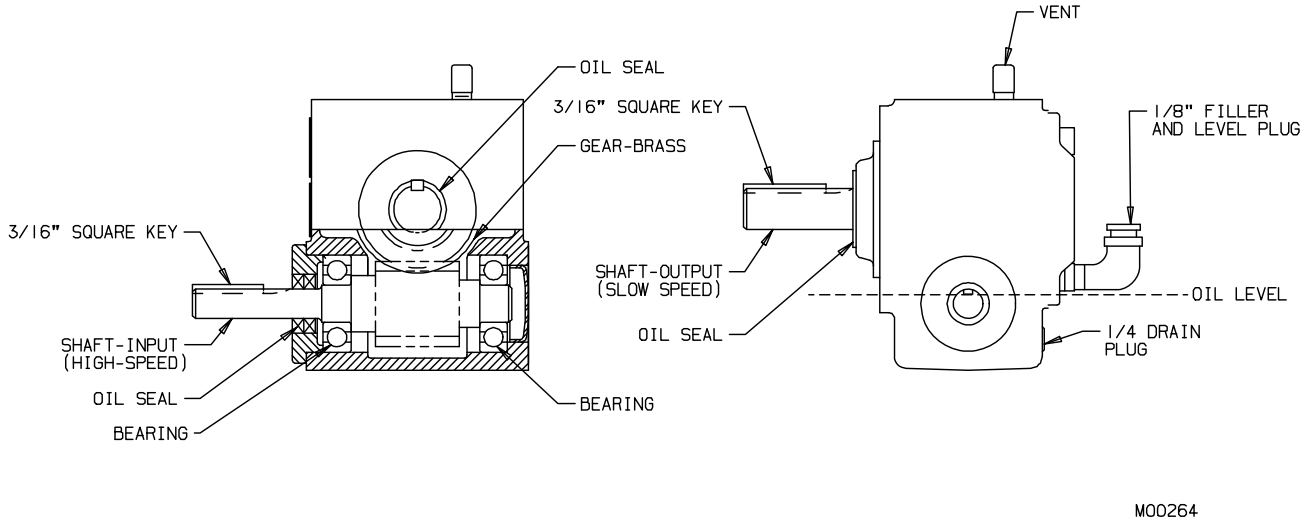
Item	Part No.	Description
1	HC155120-C	Condenser-Air
1A	HC118880	Bracket-Assy. Rear Air Condenser
1B	HC118881	Bracket-Assy. Front Air Condenser
1C	HC138465	Shroud-Fan
2	HC155029	Condenser-Water
2A	HC139939	Bracket-Condenser Mtg.
3	HC151077-01	Motor-Fan 50w (Air Cooled)
3A	HC118884	Bracket-Assy. Fan Motor (Air Cooled)
4	HC159023	Blade-Fan 11 in. 36° (Air Cooled)
5	HC155395	Valve-Solenoid Body 3/8 ODM
5A	HC151477	Coil-Solenoid 208-240v MKC-1TS
6	HC155449	Valve-Automatic Expansion (Cabinet)
6A	HC165531	Insulator-Expansion Valve
7	HC155479	Valve-Automatic Expansion (Cylinder)
6A	HC165531	Insulator-Expansion Valve
8	HC155071	Receiver-3 lb. 3/8 ID Sweat w/o Valve
9	HC118813	Kit-CAB Thermostat (Cabinet)
10	HC119989	Kit-Thermostat & Retainer (Cylinder)
11	HC155054	Drier-Filter
12	HC118876	Cylinder-Assy. Complete
12A	HC114341	Stud-Assy. Cylinder 1-15/16"
13	HC153602	Sheave-5/8 Bore 7.25 OD 7.00 PD (Driven Pulley)
13A	HC160033	Screw-Sk Set 5/16-18 x 3/8 BKOX
13B	HC153322	Key-Drive 3/16 Sq. x 1-1/2
14	HC153620	Sheave-7/8 Bore 3.05 OD 2.80 PD (Driver Pulley)
14A	HC160033	Screw-Sk Set 5/16-18 x 3/8 BKOX
14B	HC153322	Key-Drive 3/16 Sq. x 1-1/2
15	HC153181	Belt-V
16	HC155702	Cut Out-High Pressure 375PSI (Water Cooled)
or	HC155450	Cut Out-High Pressure 450PSI (Air Cooled)
17	HC155701	Cut Out-Low Pressure
18	HC113769	Valve-Assy. Water includes:
	HC155410	Valve-Water 3/8
18A	HC155444	Kit-Water Valve Repair
19	---	Gearmotor-1/8 Hp CSIR (MTS) (See Figure 4)
20	HC151088	Motor-1-1/2 Hp (3 Phase only) (Drive)
or	HC118142	Kit-Motor & Capacitor 1-1/2 Hp (1 Phase only)(Drive) includes:
	HC150236	Capacitor-Run
	HC150235	Capacitor-Start
21	HC118237	Compressor-Assy. 3 Phase includes:
	HC155054	Drier-Filter
	HC155419	Valve-Access
	HC155649	Valve-Core
or	HC118236	Compressor-Assy. 1 Phase includes:
	HC151363	Box-Capacitor & Relay (See item #22)
	HC155054	Drier-Filter
	HC155419	Valve-Access
	HC155649	Valve-Core
21A	HC151433	Grommet-Compressor Mtg.
21B	HC151434	Sleeve-Compressor Mtg.
22	HC151363	Box-Assy. Capacitor & Relay (1 Phase only) (Compressor) includes:
	HC150398	Capacitor-Start
	HC150403	Capacitor-Run
	HC150406	Relay-Start/ Run
23	HC155059	Glass-Sight
24	HC116560	Pan-Assy. Condensate
25	HC153360	Reducer-Gear LH 5/1 HCD (See Figure 11)
26	---	Box-Assy. MTS Relay (3 Phase only) (See Figure 7)
27	---	Box-Capacitor (1 Phase only) (Beater Motor)
	HC150236	Capacitor-Run
	HC150235	Capacitor-Start

Not Shown:

HC118883	Tube-Assy. Drain
HC161216	Sensor-10K Thermistor
HC117159	Kit-Shake Pressure Switch
HC116105	Nut-Assy. Pressure Switch

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

Figure 11 Gear Reducer



Model — HCD920

HC153360 5 - 1 Ratio

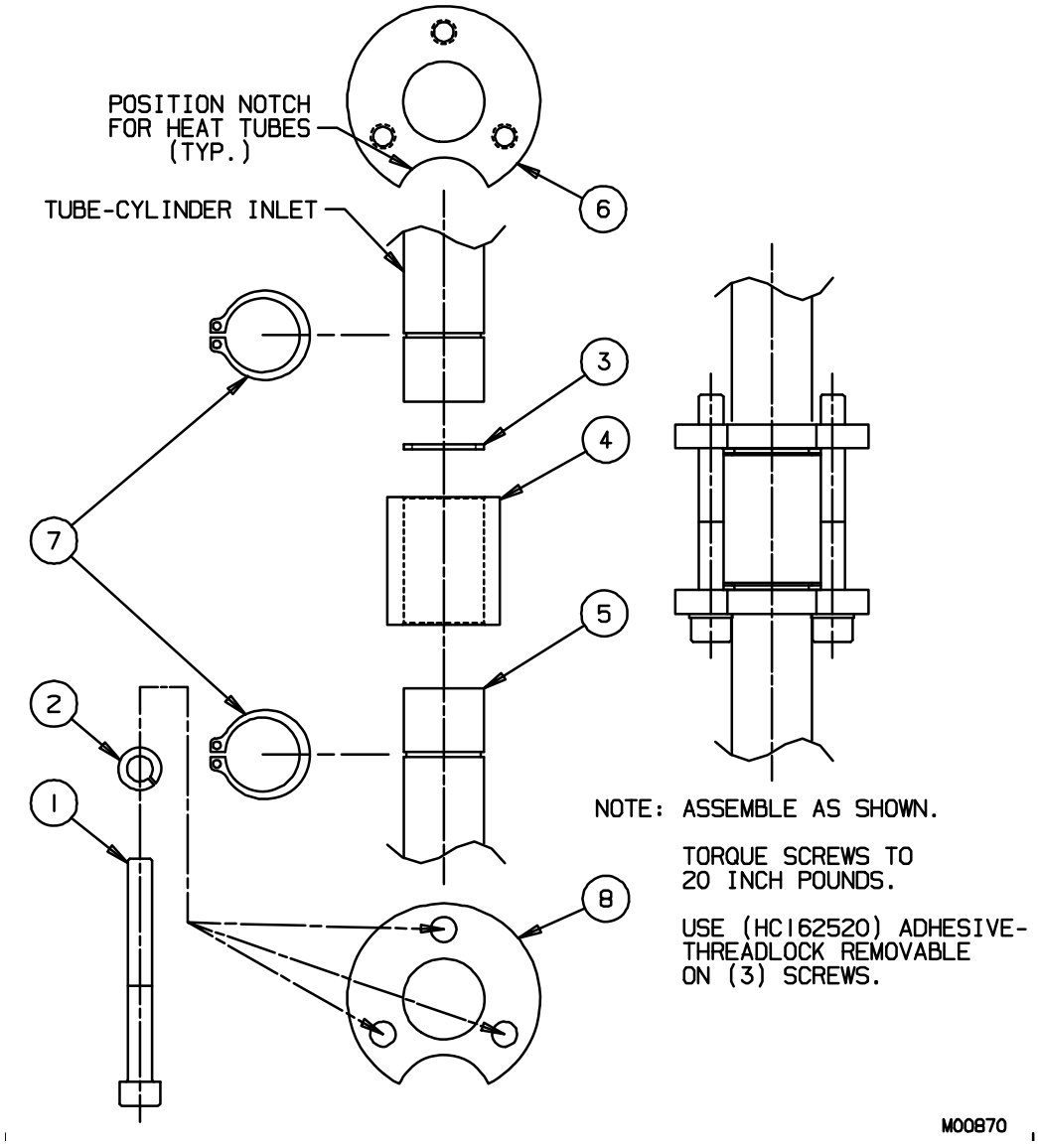
HC116537 ..... Kit-Reducer Shaft Seal HCD920 ..... 1 ea. req.
HC153072 ..... Kit-Gasket Gear Reducer 5/1 ..... 1 ea. req.
HC111780 ..... Coupling-Assy. 7/8" Drive ..... 1 ea. req.
HC158063** ..... Oil-Special Gear Lube 460 (PAG) (per quart)

****Note: To order oil always verify type of oil from the tag located on the gear reducer. Improper oil usuage will cause failure and void of warranty.**

NOTE: Model HCD920 is not a rebuildable gear reducer.

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

Figure 12 Mix Feed Seal Assembly



Item	Part No.	Description
1	HC160320	Screw-SKHC #10-24 x 1-3/4 SST
2	HC160166	Washer-Lock #10 ST
3	HC160556	Gasket-Mix Joint
4	HC139351	Collar-Alignment
5	HC139823	Tube-Mix Feed Clamp
6	HC139352	Clamp-Ring Threaded
7	HC160312	Ring-Retaining 5/8 Ext. SST
8	HC139353	Clamp-Ring

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

Accessories

Part No.	Description
HC191130	Bar-Splash Shield (w/HC140995 Shield)
HC196103	Bottle-Wash (Plunger)
HC158010	Brush-6" dia.w/o Handle
HC158018	Brush-7/16" dia. 12" Overall Length
HC158019	Brush-9/16" dia. 30" Overall Length
HC158026	Brush-1" dia. 12" Long
HC158037	Brush-1/4" Dia x 18-1/2 OAL
HC162133	Caster-Low Profile w/Brake
HC162134	Caster-Low Profile w/o Brake
HC184257	Chart-O-Ring (Laminated)
HC184880	DVD-Training 78RMT (Operator)
HC158012	Handle-Brush Fiberglass
HC119106	Kit-O Ring 78RMT
HC112978	Leg-Assy. 6"
HC158054A	Lubricant-Lubri-Film Plus 4 oz. Tube
HC158014	Sanitizer-Stera Sheen Case/4
HC158014A	Sanitizer-Stera Sheen 4 lb. jar
HC158049	Scale-Overrun
HC140995	Shield-Splash (w/HC191130 Bar)
HC169374	Tool-O-Ring Removal
HC118996	Tube-Assy. Mix Inlet (Bag-in-Box Adapter)

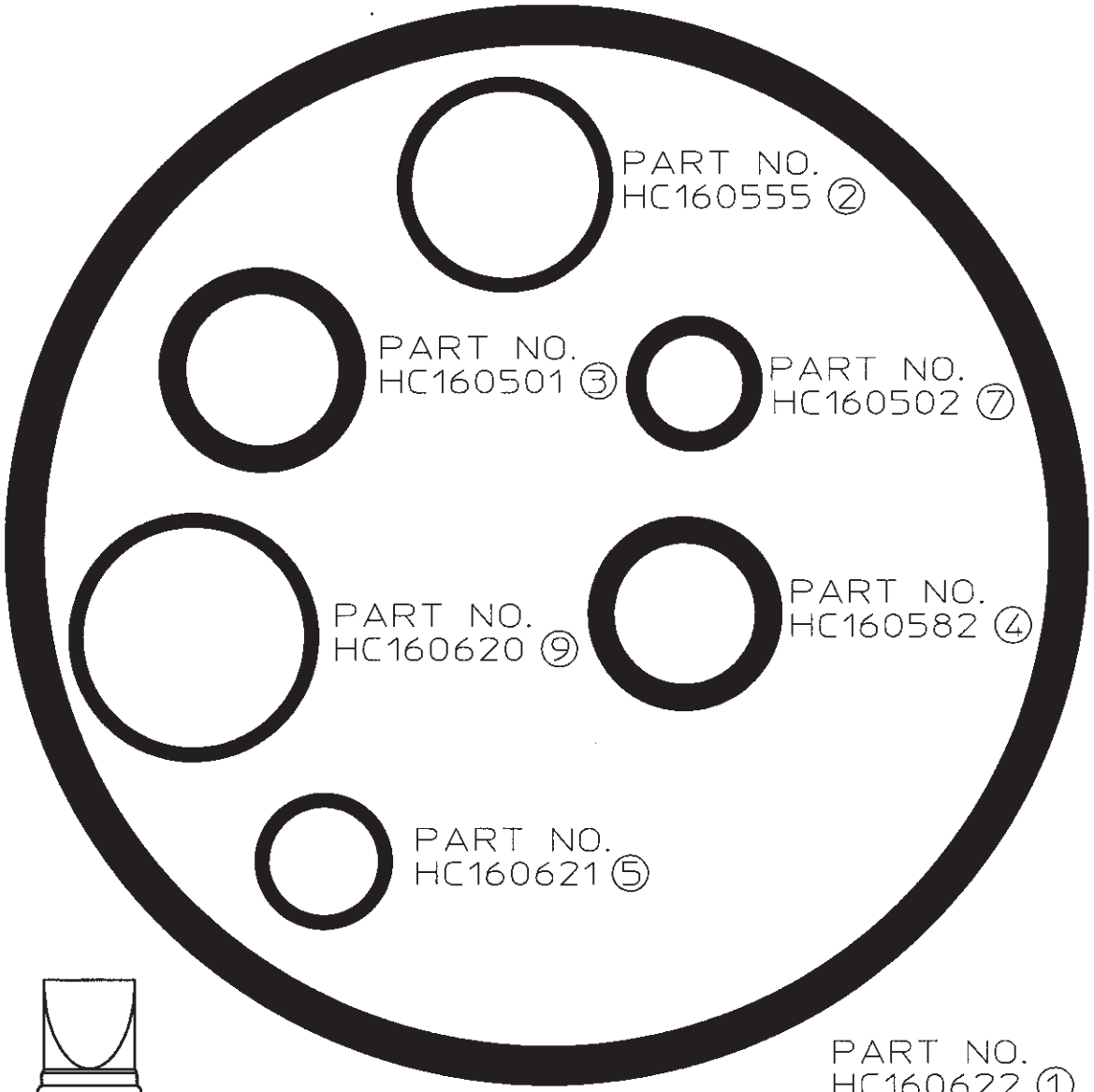
Use only original or authorized replacement parts with this freezer.
Use of unapproved parts will void warranty.

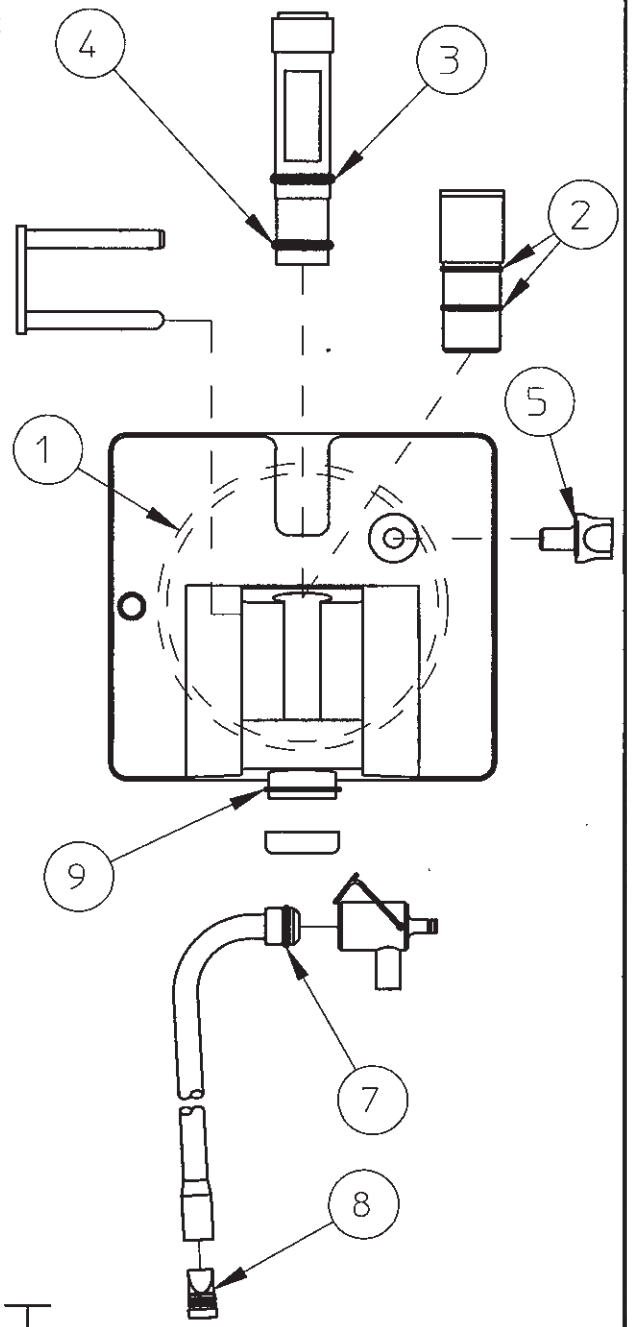
HC184257

SHAKE DISPENSING HEAD

REV. 01

ELECTRO FREEZE Shake Model 78RMT





O-RING CHART

PH. NO. 309-755-4553

H.C.DUKE & SON, INC.

Notes:

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

Cleaning & Sanitizing Electro Freeze® 78RMT Freezers

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

Follow Closing Procedures in Operator's Manual to remove frozen product from the freezer.

1. Turn **selector** switch to **"CLEAN"** and **MTS** switch to **"ON"**.
2. Empty the remaining mix out from the mix tank in the cabinet.
3. Dispense as much frozen product as possible into a clean sanitized container. Close the plunger and turn **MTS** and **cabinet** switch to **"OFF"**.
4. Place the mix tube assembly into a container of cold water, turn the **MTS** switch to **"ON"** and allow the cylinder to fill with water.
5. Very slowly open the plunger to dispense the cold water.
6. Repeat with warm water (100° to 110°F or 38° to 43°C) until dispensed water is clear.
7. Place **all switches** in the **"OFF"** position and close the plunger.
8. Prepare 3 gallons (11 liters) of sanitizing solution, mixed according to manufacturer's instructions to yield 100 ppm available chlorine solution. Use warm water (100° to 110°F or 38° to 43°C).
9. Insert mix tube into the sanitizing solution.
10. Open the air relief plug by unscrewing 1-1/2 turns. Place the **MTS** switch in the **"ON"** position. When the sanitizing solution appears at the air relief plug, close the plug and allow cylinder to pressurize.
11. Place the **selector** switch in the **"CLEAN"** position and allow the beater to run for 5 minutes.
12. Slowly open the plunger and allow the MTS to push the sanitizing solution out of the cylinder. Leaving the plunger open, turn the **selector** switch to **"OFF"**. When the sanitizing solution quits flowing turn the **MTS** switch **"OFF"**.

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.

⚠ CAUTION: PRESSURIZED SYSTEM. Plungers must be open before disassembly.

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

1. Remove spindle motor from the dispense head. Remove dispensing head and beater shaft from freezer. Remove MTS assembly and mix tank then take all parts to the cleaning area.

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).

CLEANING (continued)

2. Disassemble all parts and remove o-rings. Clean each part with a warm dishwashing detergent solution using the appropriate brush supplied with freezer.
3. Rinse, sanitize, and air dry all parts removed from the freezer. For proper sanitizing, the parts must remain in the sanitizer for 5 minutes.
4. Go to freezer and use the sanitizing solution to thoroughly brush the mix feed tube from the refrigerated cabinet to the cylinder.
5. Brush the inside of the cylinder with sanitizing solution, making certain to clean the back wall.
6. Brush the inside of the drain tube.
7. Wash all soiled surfaces on the freezer.

ASSEMBLY

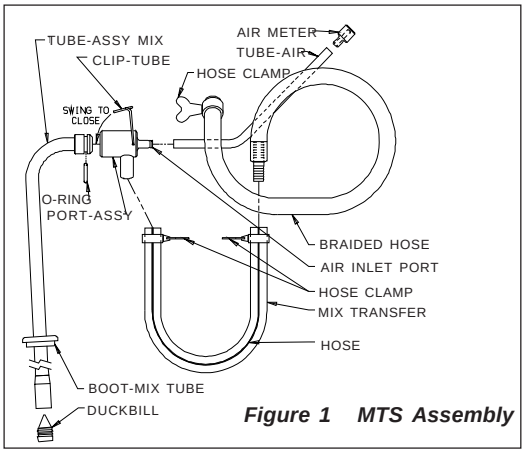


Figure 1 MTS Assembly

Assemble and lubricate freezer components in accordance with the Operator's Manual instructions.

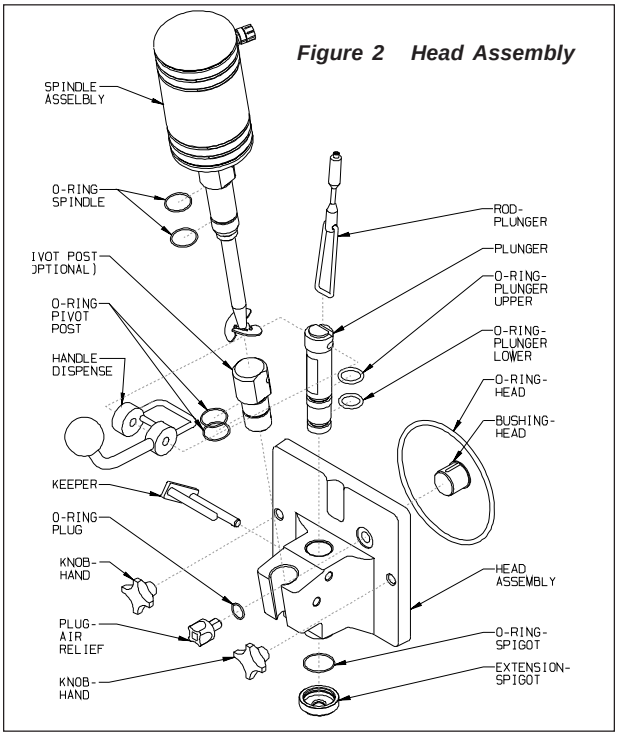


Figure 2 Head Assembly

Priming The Freezer

SANITIZING

1. Wash and sanitize your hands and forearms.
2. Prepare 3 gallons (11 liters) of sanitizing solution in the mix tank. Sanitizing solution must be mixed according to manufacturer's instructions to yield 100 PPM (parts per million) available chlorine solution.
3. Brush the interior mix tank walls, the underside of the tank covers, low mix probe, spindle shaft and disc with sanitizing solution.
4. Place the mix tank with sanitizer in the refrigerated cabinet, insert mix tube and sanitize exterior of the tubes.
5. Place an empty container under the dispensing head.
6. Open the air relief plug by unscrewing 1½ turns.
7. Reconnect the main power supply to the freezer. Turn the **MTS** switch to **"ON"** . This will push the sanitizer into the cylinder.
8. When sanitizer appears at the air relief plug, close the plug.
9. Turn the **selector** switch to **"CLEAN"** and allow the beater to run for 5 minutes. Check for leaks around the head, drain tube, clamps and MTS assembly.
10. Drain the solution from the cylinder by slowly pulling down on the dispense handle. **NOTE: Some sanitizer will remain in hoses and cylinder.**
11. Holding the handle down, turn the **selector** switch to **"OFF"** and let the MTS force all possible sanitizer out of the freezing cylinder.

Important:

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

12. Turn the **MTS** switch to **"OFF"**.
13. Remove the mix tube, holding the top 6-inch portion only.
14. Remove the mix tank and empty any remaining sanitizer.

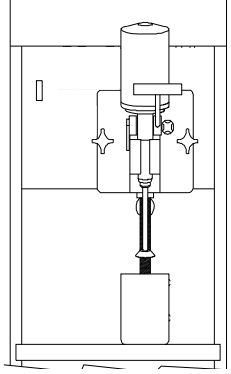
PRIMING THE FREEZER

1. Make sure that your hands, forearms, and all freezer assemblies are sanitized.
2. 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.
3. Fill the mix container with mix and install the front cover.
4. Holding the top portion only, insert the sanitized low 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.
5. Turn the **cabinet** switch to **"ON"** and close the cabinet door.

PRIMING THE FREEZER (continued)

6. Place an empty container under the dispensing head on the drip tray.
   See Figure 3.
7. Open the air relief plug by unscrewing 1½ turns. Open the plunger by pulling down on the dispensing handle.
8. Turn the **MTS** switch to **"ON"** and allow the mix to push the remaining sanitizer from the cylinder through the plunger opening.
9. Close the plunger when pure mix is dispensed.

Figure 3



Important:

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

10. After 2½ minutes close the air relief plug and wait for the MTS to fill the cylinder and shut off.
11. After the MTS has cycled off (approximately 2 minutes) turn the **selector** switch to **"AUTO"**.
12. Allow the freezer to cycle for 15 minutes. Sanitize the nozzles and install on the head. The product is now ready to serve.

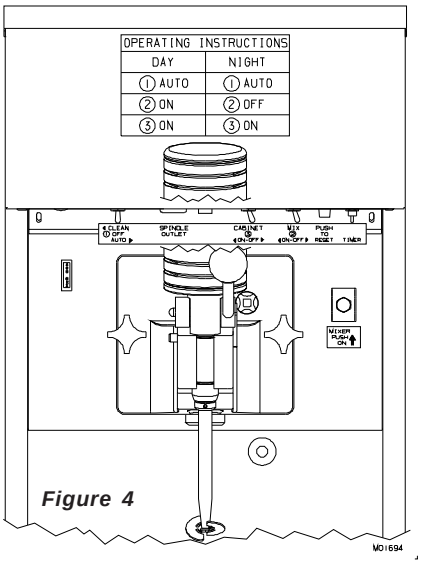


Figure 4

Problem? *Contact your local authorized distributor or the freezer manufacturer, Electro Freeze Service Department, 2116 Eighth Avenue, East Moline, IL 61244, (309) 755-4553 (800) 755-4545 or FAX (309) 755-9858*

ELECTRO FREEZE

Part No. HC184757

Alphabetized Parts List

IMPORTANT: All parts shown are for standard models designed for 230V/1PH/60Hz or 208-230V/3PH/60Hz.

PART DESCRIPTION	PART NUMBER	QTY	SERIAL NUMBER (FROM – TO)	
Actuator-Assy. Door Switch	HC118597	1	C2H-605	—
Adaptor-OL Din Rail (Overload Relay Assy.)	HC150145	1	C2H-605	—
Arm-Shoe Pivot	HC138797	1	C2H-605	—
Arm-Swing Clamp (RMT Housing)	HC138799	1	C2H-605	—
Bar-Splash Shield (Optional w/HC140995)	HC191130	1	C2H-605	—
Beater-Assy. Shake Long	HC118892	1	C2H-605	—
Belt-V	HC153181	2	C2H-605	—
Blade-Fan 11" 36° (Air Cooled)	HC159023	2	C2H-605	—
Blade-Shake Scraper	HC139840	2	C2H-605	—
Block-Insulation RMT	HC165524	1	C2H-605	—
Boot-Mix Tube	HC199033	1	C2H-605	—
Bottle-Wash	HC196103	1	C2H-605	—
Box-Assy. Capacitor & Relay (1 phase)	HC118647	1	C2H-605	—
Capacitor-Run	HC151447	1	C2H-605	—
Kit-Comp. Start Cap. & Relay	HC151448	1	C2H-605	—
Bracket-Assy. Fan Motor	HC118884	2	C2H-605	—
Bracket-Assy. Front Air Condenser	HC118881	2	C2H-605	—
Bracket-Assy. Rear Air Condenser	HC118880	1	C2H-605	—
Bracket-Assy. Switch Mtg.	HC118763	1	C2H-605	—
Bracket-Condenser Mtg.(Water Cooled)	HC139939	1	C2H-605	—
Bracket-Flange Relay Mtg. (MTS Relay Box)	HC138159	1	C2H-605	—
Brush-1/4" Dia x 18-1/2 Overall Length	HC158037	1	C2H-605	—
Brush-1" Dia. x 12" Long	HC158026	1	C2H-605	—
Brush-7/16" Dia. x 12" Overall Length	HC158018	1	C2H-605	—
Brush-9/16" Dia. x 30" Overall Length	HC158019	1	C2H-605	—

* As Required
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Alphabetized Parts List

IMPORTANT: All parts shown are for standard models designed for 230V/1PH/60Hz or 208-230V/3PH/60Hz.

PART DESCRIPTION	PART NUMBER	QTY	SERIAL NUMBER (FROM – TO)		
Brush-6" w/36" Handle (NLA use HC158010 & HC158012)	HC158005	1	C2H-605	—	A2N
Brush-6" w/o 36" Handle	HC158010	1	C2H-605	—	
Brush-Set Spindle Motor (p/n 151140)(set of 2)	HC150891	1	D2H-932	—	
Bumper-Rubber (Drip Tray)	HC199030	4	C2H-605	—	
Bushing-Beater Bearing	HC196072	1	C2H-605	—	
Bushing-Beater Shaft (Washer-Shaft Seal)	HC133098	1	C2H-605	—	
Button-Overload Reset (Overload Relay Assy.)	HC150150	1	C2H-605	—	
Button-Reset (Lever-Assy. Reset)	HC159036	1	C2H-605	—	
Capacitor-Run (Compressor-1 phase)	HC151447	1	C2H-605	—	
Capacitor-Run (Beater Motor-1 phase)	HC150236	1	C2H-605	—	
Capacitor-Start & Relay Kit (Compressor-1 phase)	HC151448	1	C2H-605	—	
Capacitor-Start (Beater Motor-1 phase)	HC150235	1	C2H-605	—	
Capacitor-Start w/Bleed (Leeson MTS-Motor)	HC150512	1	C2H-605	—	H2Q
Caster-1-1/4" NPS Non-Swivel	HC162129	2	C2H-605	—	K2H
Caster-1-1/4" ST PT w/Brake	HC162105	2	C2H-605	—	K2H
Casters-Low Profile w/Brake	HC162133	2	K2H	—	
Casters-Low Profile w/o Brake	HC162134	2	K2H	—	
Catch-Bullet (Button for Drip Tray)	HC159175	2	C2H-605	—	
Chart-O-ring (Laminated)	HC184255	1	C2H-605	—	L2H-3030
Chart-O-ring (Laminated)	HC184257	1	L2H-3031	—	
Clamp-Assy. Soft Hose 5/8	HC116065	3	C2H-605	—	
Clamp-Hose Drain (Cabinet)	HC160738	1	C2H-605	—	
Clamp-Ring (Mix Feed Seal Assy.)	HC139353	1	C2H-605	—	
Clamp-Ring Threaded (Mix Feed Seal Assy.)	HC139352	1	C2H-605	—	

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Alphabetized Parts List

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PART DESCRIPTION	PART NUMBER	QTY	SERIAL NUMBER (FROM – TO)		
Clamp-Shoe Swing (RMT Housing)	HC138798	1	C2H-605	—	
Clip-Retainer (Switch Box)	HC150120	1	C2H-605	—	
Clip-Tube Retainer (Pickup Tube)	HC162324	1	C2H-605	—	
Coil-Cabinet Evaporator	HC155111	1	C2H-605	—	
Coil-Replacement (Contactors)	*See Contactor*				
Coil-Solenoid 208-240v MKC-1TS	HC151477	2			
Collar-Alignment (Mix Feed Seal Assy.)	HC139351	1	C2H-605	—	
Compressor-Assy. 1 Ph. 208/230/1/60	HC118236	1	C2H-605	—	
Box-Assy. Capacitor & Relay	HC151363	1	C2H-605	—	
Capacitor-Start	HC150398	1	C2H-605	—	
Capacitor-Run	HC150403	1	C2H-605	—	
Relay-start/Run	HC150406	1	C2H-605	—	
Drier-Filter	HC155054	1	C2H-605	—	
Valve-Access	HC155419	1	C2H-605	—	
Valve-Core	HC155649	1	C2H-605	—	
Compressor-3 Ph. 208/230/3/60	HC118237	1	C2H-605	—	
Drier-Filter	HC155054	1	C2H-605	—	
Valve-Access	HC155419	1	C2H-605	—	
Valve-Core	HC155649	1	C2H-605	—	
Condenser-Air (Air Cooled)	HC155120-C	1	C2H-605	—	
Condenser-Water (Water Cooled)	HC155029	1	C2H-605	—	
Condenser-Water CU-NI Heavy Duty (optional)	HC155038-01	1	C2H-605	—	
Connector-1/2 (MTS Relay Box)	HC150828	1	C2H-605	—	
Connector-3/8 x 90° (RMT Housing)	HC150705	3	C2H-605	—	
Contactor (Beater Motor,Cabinet & Compressor)	HC150135	3	C2H-605	—	C2J-672
Coil (only)-Replacement	HC150134	3	C2H-605	—	C2J-672
Contactor-IEC (Beater Motor,Cabinet & Compressor)	HC150135	3	C2J-673	—	
Coil (only)-AB Replacement	HC150134	3	C2J-673	—	
Container	*See "Tank"*				

* As Required
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PART DESCRIPTION	PART NUMBER	QTY	SERIAL NUMBER (FROM – TO)		
Cord-Assy. Female Plug	HC150533	1	C2H-605	—	
Cord-Assy. Male Plug	HC150532	1	C2H-605	—	
Cord-Assy. Motor (RMT Housing)	HC118833	1	C2H-605	—	
Cordset-Mix Level Probe	HC150537	1	C2H-605	—	
Coupling-Assy. 7/8" Drive	HC111780	1	C2H-605	—	
Cover-Assy. RMTCAB (RMT Housing)	HC119023	1	C2H-605	—	
Cover-Assy. Tank Front	HC113997	1	C2H-605	—	
Cover-Rear Mix	HC138165	1	C2H-605	—	F2H
Cover-Rear Mix RMT	HC138165-01	1	F2H	—	
Cover-RMT Switch Kit	HC118894	1	C2H-605	—	
Cut Out-High Pressure	HC155425	1	C2H-605	—	D2N-1454
Cut Out-High Pressure 375PSI (WC)	HC155702	1	D2N-1455	—	
Cut Out-High Pressure 450PSI (AC)	HC155450	1	D2N-1455	—	
Cut Out-Low Pressure	HC155403	1	C2H-605	—	D2N-1454
Cut Out-Low Pressure	HC155701	1	D2N-1455	—	
Cylinder-Assy. Complete	HC118876	1	C2H-605	—	
Decal-6 inch Air Flow	HC165119	1	C2H-605	—	
Decal-Beater Warning	HC165025	1	C2H-605	—	
Decal-Cleaning Instructions	HC164119	1	C2I-698	—	
Decal-Cleaning Instructions	HC165252	1	C2H-605	—	C2I-697
Decal-Clear Overlay	HC165093	1	C2H-605	—	
Decal-CMT Patent	HC165013	1	C2H-605	—	
Decal-Freedom	HC165191	1	C2H-605	—	
Decal-MTS Connect Redline	HC164110	1	C2H-605	—	
Decal-MTS Trimstrip	HC165152	1	C2H-605	—	C2I-697
Decal-Operating	HC164121	1	C2I-698	—	

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PART DESCRIPTION	PART NUMBER	QTY	SERIAL NUMBER (FROM – TO)		
Decal-Panel Removal	HC165126	3	C2H-605	—	
Decal-Warning Rotating Parts	HC165048	1	C2H-605	—	
Decal-Top Air Discharge	HC165124	1	C2H-605	—	
Decal-Trimstrip	HC164118+	1	C2I-698	—	
Decal-Trimstrip Electro Freeze Logo 18"	HC165147-01	1	C2H-605	—	
Decal-Warning Rotating Parts	HC165048	2	C2H-605	—	
Decal-Warning Pressurized	HC165246	1	C2H-605	—	
Door Assy. Complete 18" w/Hinges	HC114260-06-C	1	C2H-605	—	
Gasket-Door	HC160563-02	1	C2H-605	—	
Nameplate-Electro Freeze Large	HC165181	1	C2H-605	—	
Pull-Door (Handle)	HC136199	1	C2H-605	—	
Drier-Filter	HC155054	1	C2H-605	—	
Duckbill-Inlet (Valve)	HC199032	1	C2H-605	—	L2H-3030
Duckbill-Inlet RM MTS (Valve)	HC199032-01	**	L2H-3031	—	
DVD-Training 78RMT (Operator)	HC184880-01	*	C2H-605	—	
Extension-Shake Spigot	HC139860	1	C2H-605	—	
Faceplate-Assy. MTS	HC118764	1	C2H-605	—	
Fan-Intake (Cabinet) (Shroud Assy.)	HC151105	1	C2H-605	—	
Filter-Air Cleanable (Optional w/spec Panels)	HC155137	3	C2H-605	—	
Filter-Assy. (Electrical Box)	HC116125	2	C2H-605	—	
Fuse-Slo Blow 1.0A (Spindle Motor)	HC150889	1	D2H-933	—	
Gasket-Magnetic (Door)	HC160563-02	1	C2H-605	—	
Gasket-Mix Joint (Mix Feed Seal Assy.)	HC160556	1	C2H-605	—	
Gauge-Assy. Pressure Test	HC116312	1	C2H-605	—	
Gearmotor-1/8 HP (RMT Pump)	HC151132	1	C2H-605	—	

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PART DESCRIPTION	PART NUMBER	QTY	SERIAL NUMBER (FROM – TO)		
Glass-Sight	HC155059	1	C2H-605	—	
Guard-Fan (Cabinet Evaporator)	HC151076	1	C2H-605	—	
Guide-Assy. Push Rod	HC114270	1	C2H-605	—	J2N-3796
Guide-Assy. Push Rod	HC137735	1	J2N-3797	—	
Handle-Assy. Spindle Head (Dispense)	HC113123	1	C2H-605	—	
Handle-Cabinet Door (Pull-Door)	HC136199	1	C2H-605	—	
Hanger-Drain Tube	HC136843	1	C2H-605	—	
Harness-Receptacle Wiring (Switch Box)	HC150501	1	C2H-605	—	
Head-Assy. Dispense Complete	HC118909	1	C2H-605	—	
Bushing-Beater Bearing	HC196072	1	C2H-605	—	
Extension-Shake Spigot	HC139860	1	C2H-605	—	
Handle-Assy. Spindle Head	HC113123	1	C2H-605	—	
Head-Assy. Dispense w/Actuator	HC118908	1	C2H-605	—	
Keeper-Assy. Spindle	HC113435	1	C2H-605	—	
O-ring (Head)	HC160622	1	C2H-605	—	
O-ring (Keeper & Pin Guide)	HC160554	1	C2H-605	—	
O-ring (Plunger-Lower)	HC160582	1	C2H-605	—	
O-ring (Plunger-Upper)	HC160501	1	C2H-605	—	
O-ring (Shake Spigot Extension)	HC160620	1	C2H-605	—	
Head-Assy. Dispense Complete (continued)	HC118909				
O-ring (Plug)	HC160621	1	C2H-605	—	
Pin-Guide (Optional)	HC135070	1	C2H-605	—	
Plug-Air Bleed (Relief)	HC196066	1	C2H-605	—	
Plunger-Dispensing Bk	HC136922	1	C2H-605	—	
Head-Dispense Switch Kit	HC116410	1	C2H-605	—	
Hinge-Pivot 1-3/8" Bottom	HC162046	1	C2H-605	—	
Hinge-Pivot 1-3/8" Top	HC162045	1	C2H-605	—	
Hose-Air Meter (Tube-Air)	HC138836	1	C2H-605	—	
Hose-Assy. Mix Braided	HC116094	1	C2H-605	—	
Hose-Transfer MTS Redline	HC138184	1	C2H-605	—	

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PART DESCRIPTION	PART NUMBER	QTY	SERIAL NUMBER (FROM – TO)		
Indicator-Mix Level	HC150202	1	C2H-605	—	
Insert-Assy. Drip Tray	HC118893	1	C2H-605	—	
Insulator-Expansion Valve	HC165531	2	C2H-605	—	
Insulator-Switch	HC137671	2	J2N-3797	—	
Keeper-Assy. Spindle (Dispense Handle)	HC113435	1	C2H-605	—	
Key-Drive 3/16 "x 1-1/2" (Drive Sheave)	HC153322	*	C2H-605	—	
Kit-Assy. Pressure Gauge	HC116312	*	C2H-605	—	
Kit-Compressor Start Cap. & Relay	HC151448	1	C2H-605	—	
Kit-Cover Switch RMT Freezer	HC119023	1	C2H-605	—	
Kit-Dispense Head Switch	HC116410	1	C2H-605	—	
Kit-Motor & Capacitor 1-1/2 Hp (1 Phase)	HC118142	1	C2H-605	—	
Capacitor-Run	HC150236	1	C2H-605	—	
Capacitor-Start	HC150235	1	C2H-605	—	
Kit-O Ring 78RMT	HC119106	1	C2H-605	—	
Kit-Roller (Complete)	HC116009-01	1	C2H-605	—	
Kit-Shaft Seals (Gear Reducer)	HC116537	*	C2H-605	—	
Kit-Shake Pressure Switch O-ring	HC117159	1	C2H-605	—	
Kit-Solenoid Valve	HC155434	1	C2H-605	—	
Kit-Water Valve Repair	HC155444	1	C2H-605	—	
Knob-Cover RMT	HC138889	1	C2H-605	—	
Knob-Hand (Dispense Head)	HC162625	2	C2H-605	—	I2P
Knob-Hand Aluminum (Dispense Head)	HC162641	2	A2I-605	—	
Knob-Hand (RMT Housing Cover)	HC162622	1	C2H-605	—	
Knob-Timer (Switch Box)	HC162604	1	C2H-605	—	
Knob-Oval Taper (Handle-MTS)	HC162627	1	C2H-605	—	

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Alphabetized Parts List

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PART DESCRIPTION	PART NUMBER	QTY	SERIAL NUMBER (FROM – TO)		
Label-MTS Trimstrip	HC164067	1	C2H-605	—	C2I-697
Label-Trimstrip	HC164118	1	C2I-698	—	
Lanyard-Wire (w/o Sleeve)	HC138890	1	C2H-605	—	
Leg-Assy. 6"	HC112978	4	C2H-605	—	
Lever Assy.-Reset	HC118550	1	C2H-605	—	G2N-2884
Button-Reset	HC159036	1	C2H-605	—	
Lever Assy.-Reset T1 Long	HC120363	1	G2N-2885	—	
Button-Reset	HC159036	1	C2H-605	—	
Light-Indicator	HC150540	1	C2H-605	—	
Lubricant-Lubri-film 4 oz. tube	HC158054A	*	C2H-605	—	
Lubricant-Petrol-Gel 4 oz. tube	HC158000A	*	C2H-605	—	
Meter- Air	*Order by Meter No. and Designate Black or White*				
Module -Plug on Vari Time	HC150253	1	C2H-605	—	K2L
Module-Varitime 1M 1-100M	HC150275	1	C2H-605	—	G2L
Module-Varitime 1M 1-100S	HC150274	1	C2H-605	—	G2L
Motor Brush-Set (Spindle Motor 151140)	HC150891	1	D2H-933	—	
Motor-Kit Drive-1 Phase	HC151063	1	C2H-605	—	
Capacitor- Start	HC150239	1	C2H-605	—	
Motor-1-1/2 HP (3 Phase - Drive)	HC151088	1	C2H-605	—	
Motor & Capacitor- Kit 1-1/2 Hp (1 Phase)(Drive)	HC118142	1	C2H-605	—	
Capacitor-Run	HC150236	1	C2H-605	—	
Capacitor-Start	HC150235	1	C2H-605	—	
Motor-Fan 50W (Air Cooled)	HC151077-01	2	C2H-605	—	

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PART DESCRIPTION	PART NUMBER	QTY	SERIAL NUMBER (FROM – TO)		
Motor-MTS Pump Kit (Gearmotor-Lesson 1 HP)	HC119918	1	C2H-605	—	H2Q
Capacitor-Start w/ Bleed	HC150512	1	C2H-605	—	H2Q
Gauge Shaft Alignment RMT	HC139046-01	1	C2H-605	—	H2Q
Protector-Auto Reset Motor	HC151408	1	C2H-605	—	H2Q
Sealant-Alum Silastic (3 oz)	HC 162513	1	C2H-605	—	H2Q
Switch-Start Solid State (Relay)	HC150893	1	C2H-605	—	H2Q
Washer-Spring Wave SST	HC160173	1	C2H-605	—	H2Q
Motor MTS Pump Kit (Gearmotor -Bison 1/6HP)	HC121027	1	H2Q	—	
Gauge Shaft Alignment RMT	HC139046-01	1	H2Q	—	
Sealant-Alum Silastic (3 oz)	HC 162513	1	H2Q	—	
Strap-MT Motor Rear	HC139839	1	H2Q	—	
Washer-Spring Wave SST	HC160173	1	H2Q	—	
Motor-Spindle 51W 115V FWR	HC151140	1	D2H-933	—	
Motor-Spindle 53W 115VDC	HC151139	1	C2H-605	—	D2H-932
Mov.-Assy.	HC116188	1	C2H-605	—	
MTS-Assy. CAB Redline	HC118751	1	C2H-605	—	
Nameplate-Electro Freeze Large (Door)	HC165181	1	C2H-605	—	
Nut-Assy. Pressure Switch	HC116105	*	C2H-605	—	
Nut-HEX #6-32ZN (Switch Assy)	HC160309	1	C2H-605	—	J2N-3796
Nut-HEX 1/4-20 ZN (Adjusting Bolt)	HC160104	1	C2H-605	—	
Nut-HEX 3/8-16 SST (RMT Housing)	HC159927	2	C2H-605	—	
Nut-HXSF 1/4-20 SST (MTS Relay Box)	HC159951	2	C2H-605	—	
Nut-HXSF 1/4-20 SST (RMT Housing)	HC159933	2	C2H-605	—	
Nut-Lock Conduit (Caster)	HC150736	4	C2H-605	—	
Nut-Push Round (On Button on Drip Tray)	HC160289	2	C2H-605	—	
Nut-Speed #6-32 (MTS Relay Box)	HC160116	2	C2H-605	—	
Nut-Speed #10-24 .025-.064 SST (Dispense & Front Panels)	HC159132	2	C2H-605	—	

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PART DESCRIPTION	PART NUMBER	QTY	SERIAL NUMBER (FROM – TO)	
Nut-Speed #10-24 .100-.125 (Front Panel on Frame)	HC159067	2	C2H-605	—
Nut-Speed 1/4-20 BP&O (Rear & Side Panels)	HC160114	2	C2H-605	—
O-ring (Air Relief Plug)	HC160621	**	C2H-605	—
O-ring (Head)	HC160622	**	C2H-605	—
O-ring (Keeper/Guide Pin)	HC160554	3	C2H-605	—
O-ring (Pickup Tube)	HC160502	**	C2H-605	—
O-ring (Plunger-Lower)	HC160582	**	C2H-605	—
O-ring (Plunger-Upper)	HC160501	**	C2H-605	—
O-ring (Roller Shoe)	HC160612	1	C2H-605	—
O-ring (Seal Beater Shaft)	HC160500	**	C2H-605	—
O-ring (Shake Spigot Extension)	HC160620	**	C2H-605	—
O-ring (Spindle/Pivot Post)	HC160555	**	C2H-605	—
O-ring (Swing Clamp)	HC160628	1	C2H-605	—
O-ring Chart	HC184257	1	C2H-605	—
Overload Block	*See "Relay-Overload"*			
Pan-Assy. Condensate	HC116560	1	C2H-605	—
Panel-Assy. Front	HC118885-C	1	C2H-605	—
Panel-Assy. Top A/C	HC118886-C	1	C2H-605	—
Panel-Assy. Top W/C	HC118911-C	1	C2H-605	—
Panel-Dispense	HC139836-C	1	C2H-605	—
Panel-Rear	HC139837-C	1	C2H-605	—
Panel-Rear (for use w/option air filters)	HC120080-C	1	C2H-605	—
Panel-Side LH**	HC139834-C	1	C2H-605	—
Panel-Side LH** (for use w/option air filters)	HC120074-C	1	C2H-605	—

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PART DESCRIPTION	PART NUMBER	QTY	SERIAL NUMBER (FROM – TO)		
Panel-Side RH**	HC139835-C	1	C2H-605	—	
Panel-Side RH** (for use w/option air filters)	HC120075-C	1	C2H-605	—	
Pin-Dowel 1/4 DIA x 3/4 SST (RMT Housing)	HC160338	2	C2H-605	—	
Pin-Guide (Optional)	HC135070	1	C2H-605	—	
Plate-Backup MTS	HC139746	1	C2H-605	—	
Plug-Air Relief (Bleed)	HC196066	1	C2H-605	—	
Plunger-Dispensing	HC136922	1	C2H-605	—	
Port-Assy. Inlet Mix/Air (Pickup Tube)	HC118765	1	C2H-605	—	
Post-Pivot (Optional)	HC135182	1	C2H-605	—	
Probe-Assy. Mix Level 8" (6 Gallon)	HC116439	1	C2H-605	—	
Probe-Assy. Mix Level 10-3/4" (7 Gallon)	HC115397	1	C2H-605	—	
Protector-Auto Reset Motor (Leeson MTS-Motor)	HC151408	1	C2H-605	—	H2Q
Pull-Door (Cabinet Door)	HC136199	1	C2H-605	—	
Pulley - See "Sheave"					
Push Rod- Assy. Plunger Switch	HC114340	1	C2H-605	—	
Receiver-3 lb. 3/8 ID Sweat (NLA use HC155071)	HC155057	1	C2H-605	—	G2M
Receiver-3 lb. 3/8 ID Sweat w/o Valve	HC155071	1	G2M	—	
Receptacle-Molded Level Sensor	HC150536	1	C2H-605	—	
Reducer-Gear LH 5/1	HC153353	1	C2H-605	—	H2N-3129
Reducer-Gear LH 5/1 HCD	HC153360	1	H2N-3130	—	
Relay-Assy. Overload 5-15A(1Ph. Switch Box)	HC118359	1	C2H-605	—	G2N-2884
Adapter-OL Din Rail	HC150145	1	C2H-605	—	G2N-2884
Button-OL Reset	HC150150	1	C2H-605	—	G2N-2884
Relay-Overload 5-15A	HC150140	1	C2H-605	—	G2N-2884
Relay-Assy. Overload 3.7-12A (3Ph.Switch Box)	HC118361	1	C2H-605	—	G2N-2884
Adapter-OL Din Rail	HC150145	1	C2H-605	—	G2N-2884
Button-OL Reset	HC150150	1	C2H-605	—	G2N-2884

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Relay-Overload 3.7-12A	HC150142	1	C2H-605	—	G2N-2884
Relay-Assy. Overload T1 4.5-6.3A(Switch Box)	HC120359	1	G2N-2885	—	
Adapter-OL Din Rail T1	HC150063	1	G2N-2885	—	
Adapter-Reset Threaded T1	HC150064	1	G2N-2885	—	
Relay-Overload T1 4.5-6.3A	HC150059	1	G2N-2885	—	
Relay-Flange Base w/Cover (Electric Box)	HC150381	1	C2H-605	—	C2I-697
Relay-Flange Base w/Cover (MTS Relay Box)	HC150381	1	C2H-605	—	
Resistor-Assy. (Electric Box)	HC116154	1	C2H-605	—	C2I-697
Relay-Overload 5-15A (Overload Relay Assy.)	HC150140	1	C2H-605	—	
Relay-Overload 3.7-12A (Overload RelayAssy.)	HC150142	1	C2H-605	—	
Ring-Retaining 5/8 Ext. SST (Mix Feed Seal Assy.)	HC160312	2	C2H-605	—	
Rod-Assy. Plunger Switch (Push-Rod)	HC114340	1	C2H-605	—	
Roller-Assy. Complete Kit	HC116009-01	1	C2H-605	—	
Sanitizer-4 lbs. Jar	HC158014A	*	C2H-605	—	
Sanitizer-Case of 4	HC158014	*	C2H-605	—	
Scale-Overrun	HC158049	*	C2H-605	—	
Screw-HXHC 1/4-20 x 2-1/2 SST (RMT Housing)	HC160464	2	C2H-605	—	
Screw-HXHC 1/4-20 x 3-1/2 SST (RMT Housing)	HC160465	1	C2H-605	—	
Screw-HXHM 1/4-20x2-3/4" ZN (Switch Assy.)	HC159993	1	C2H-605	—	
Screw-HXHM 1/4 - 20 x 2-3/4" (Bolt-Adjusting - Switch Assy.)	HC159993	1	C2H-605	—	
Screw-HXSF 1/4-20x1/2 ZN (MTS Relay Box)	HC159950	2	C2H-605	—	

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PART DESCRIPTION	PART NUMBER	QTY	SERIAL NUMBER (FROM – TO)		
Screw-HXSF 1/4-20x11/16 SST (MTS Relay Box & RMT Housing)	HC159939	2	C2H-605	—	
Screw-RDHM #4-40 x 1/4 STL (RMT Housing Cover)	HC160357	2	C2H-605	—	
Screw-RDHM #4-40 x 3/4 ZN (Swtich Assy.)	HC160433	2	J2N-3797	—	
Screw-RDHM #6-32 x 5/16 ZN (MTS Relay Box)	HC160308	2	C2H-605	—	
Screw-Sk Set 5/16-18 x 3/8 BKOX	HC160033	4	C2H-605	—	
Screw-SKHC #10-24 x 1-3/4 SST (Mix Feed Seal Assy.)	HC160320	3	C2H-605	—	
Screw-SKHC #6-32 x 1 BKOX (Switch Assy.)	HC160381	2	C2H-605	—	J2N-3796
Screw-SK Set 5/16 x 18 x 3/8 BKOX (Driven Sheave)	HC160033	1	C2H-605	—	
Screw-SK Set 1/4 x 20 x 1/4 BKOX (Drive Sheave)	HC160495	1	C2H-605	—	
Screw-Spindle Motor Spinner	HC132616	1	C2H-605	—	
Screw-TRPM #10-24 x 1/2 SST (Trimstrip, Dispense & Front Panels)	HC160076	*	C2H-605	—	
Screw-TRPM #10-24 x 3/8 SST (Top Panel)	HC160305	*	C2H-605	—	
Screw-TRPM 1/4-20 x 1/2 SST (Rear Panel)	HC160048	*	C2H-605	—	
Screw-TRPM 1/4 -20 x 1 SST (Side Panels)	HC159219	*	C2H-605	—	
Screw-TRPS 1/4 -28 x 2-1/4 SST (RMT Housing)	HC160093	*	C2H-605	—	
Seal-Assy. Beater Shaft (Complete)	HC111875	**	C2H-605	—	
O-ring	HC160500	**	C2H-605	—	
Seal-Beater Shaft	HC160557	**	C2H-605	—	
Washer-Shaft Seal	HC133098	**	C2H-605	—	

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PART DESCRIPTION	PART NUMBER	QTY	SERIAL NUMBER (FROM – TO)		
Seal-Beater Shaft (Cup-Seal)	HC160557	1	C2H-605	—	
Seal-Push Button (Momentary Switch)	HC150506	1	C2H-605	—	A2P
Seal-Swtich Boot (Momentary Switch)	HC150512	1	A2P	—	
Sensor-10K Thermistor	HC161216	1	C2H-605	—	
Shaft-Assy. Drive	HC117336	1	C2H-605	—	
Shaft-Beater (Beater-Assy. Shake)	HC112789	1	C2H-605	—	
Shaft-Spindle 16 oz.	HC136081	1	C2H-605	—	
Shaft-Spindle 24 oz.	HC136082	1	C2H-605	—	
Sheave-5/8 Bore 7.25 OD (Driven Pulley)	HC153602	1	C2H-605	—	
Sheave-7/8 Bore 3.05 OD (Driver Pulley)	HC135620	1	C2H-605	—	
Sheet-Clean & Sanitize 78RMT	HC184757	*	C2H-605	—	
Shield-Drip (RMT Housing)	HC139756	1	C2H-605	—	
Shield-Splash (Optional)	HC140995	1	C2H-605	—	
Shield-Switch (Momentary Switch)	HC137896	1	C2H-605	—	
Shoe-Roller (RMT Housing)	HC139751	1	C2H-605	—	
Shim-Bearing 16 Ga.	HC135380	1	C2H-605	—	
Shim-Bearing 24 Ga.	HC135381	1	C2H-605	—	
Shroud-Assy. Evaporator (with fan & thermostat)	HC116516-01	1	C2H-605	—	
Shroud-Fan (Air Cooled Remote Condenser)	HC138465	1	C2H-605	—	
Sleeve-Cable Stop 3/64 (RMT Housing)	HC160508	1	C2H-605	—	
Socket-Octal (Switch Box)	HC150119	1	C2H-605	—	
Spacer-Motor (RMT Housing)	HC138793	4	C2H-605	—	
Spacer-Panel (Rear & Side Panels)	HC138456	*	C2H-605	—	
Spacer-Swing Arm (RMT Housing)	HC138800	2	C2H-605	—	
Spindle-Assy.	HC118983	1	C2H-605	—	D2H-932
Spindle-Assy.	HC119168	1	D2H-933	—	

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PART DESCRIPTION	PART NUMBER	QTY	SERIAL NUMBER (FROM – TO)		
Spinner-Replacement Kit	HC119024	1	D2H-933	—	
Spinner-Replacement Kit	HC116101	1	C2H-605	—	
Spring-Pivot LH (Hinge)	HC162052	1	C2H-605	—	
Spring-Compression MW ZN (Plunger Switch)	HC162323	1	J2N-3797	—	
Spring-Plunger Switch	HC159374	1	C2H-605	—	J2N-3796
Strip-Terminal	HC150795	2	C2H-605	—	
Stud-5/16-18 x 3/4 SST (RMT Housing)	HC160386	1	C2H-605	—	
Stud-Ass'y. Cylinder 1-15/16"	HC114341	2	C2H-605	—	
Support-MTS (MTS Relay Box)	HC138248	1	C2H-605	—	
Support-Kit Roller Bearing	HC120633	1	C2H-605	—	
Switch-Assy. Plunger Shake Press.	HC115688	1	C2H-605	—	J2N-3796
Guide-Assy. Push Rod	HC114270	1	C2H-605	—	J2N-3796
Nut-Hex #6-32 ZN	HC160309	2	C2H-605	—	J2N-3796
Nut-Hex 1/4x20 ZN (Adjusting Bolt)	HC160104	1	C2H-605	—	J2N-3796
Screw-HXHM 1/4-20x2-3/4"	HC159993	1	C2H-605	—	J2N-3796
Screw-SKHC #6-32x1 BKOX (Switch)	HC160381	2	C2H-605	—	J2N-3796
Spring-Plunger Switch	HC159374	1	C2H-605	—	J2N-3796
Switch-Roller Actuator	HC150478	1	C2H-605	—	J2N-3796
Washer-Ext. Tooth #6 ZN	HC160392	2	C2H-605	—	J2N-3796
Washer-Flat #6 Brass	HC160393	4	C2H-605	—	J2N-3796
Switch-Assy. Plunger Shake Pres.	HC120305	1	J2N-3797	—	
Bracket-Safety Switch Mounting	HC137735	2	J2N-3797	—	
Guide-Assy Push Rod	HC120304	1	J2N-3797	—	
Insulator-Switch	HC137671	2	J2N-3797	—	
Nut-Hex 1/4x20 ZN (Adjusting Bolt)	HC160104	1	J2N-3797	—	
Screw-HXHM 1/4-20x2-3/4 ZN	HC159993	1	J2N-3797	—	
Screw-RDHM #4-40 x 3/4 ZN	HC160433	4	J2N-3797	—	
Spring-Compression MW ZN	HC162323	1	J2N-3797	—	
Switch-SPDT Simul Roller	HC150476	2	J2N-3797	—	
Switch-Door Push Button	HC150416	1	C2H-605	—	K2H

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Switch-Door Push Button	HC150509	1	K2H	—	
Switch-Head Kit	HC116410	1	C2H-605	—	
Switch-Momentary Push SPST (Spindle Motor)	HC150438	1	C2H-605	—	
Switch-Pressure Switch O-ring Kit	HC117159	1	C2H-605	—	
Switch-Roller Actuator (Plunger)	HC150478	2	C2H-605	—	J2N-3796
Switch-SPDT Simul Roller (Plunger)	HC150476	1	J2N-3797	—	
Switch-Start Solid State (Relay) (Leeson MTS-Motor)	HC150893	1	C2H-605	—	H2Q
Switch-Toggle 4PDT Center Off (Selector)	HC150436	1	C2H-605	—	
Switch-Toggle 4DPT Center Off (MTS)	HC150463	1	C2H-605	—	C2I-697
Switch-Toggle SPST (Cabinet)	HC159235	1	C2H-605	—	
Switch-Toggle SPST (MTS)	HC159235	1	C2I-698	—	
Tank-Mix 6 Gallon 10-1/2" High	HC196092-01	1	C2H-605	—	
Tank-Mix 7 Gallon 13-1/4" High	HC196222	1	C2H-605	—	
Thermometer-Barrel (Cabinet Evaporator)	HC161004	1	C2H-605	—	
Thermostat-Assy. w/Cover (Cabinet) (NLA use HC118813)	HC118868	1	C2H-605	—	K2I-2773
Thermostat-CAB Kit(Cabinet)	HC118813	1	K2I-2774	—	
Thermostat-Kit (Cylinder)	HC119989	1	C2H-605	—	
Timer-.5-60 Delay on Break	HC150252-01	2	C2H-605	—	
Timer-Five Minute	HC150215	1	C2H-605	—	C2I-697
Timer-Five Minute Mech.	HC150218	1	C2I-698	—	
Timer-Recycle (NLA use HC120095)	HC150273	1	C2H-605	—	G2L
Timer-Recycle (NLA use HC120095)	HC150189	1	G2L	—	E2M
Timer-Recycle Kit	HC120095	1	E2M	—	
Tool-O-ring Removal	HC169374	1	C2H-605	—	

* As Required
** Items Included In O-Ring Kit No. HC119106
*** LH or RH — Left or right hand is determined as you face the front of the freezer.
MTS = Mix Transfer System NLA = No Longer Available
AC = Air Cooled WC = Water Cooled

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

Alphabetized Parts List

IMPORTANT: All parts shown are for standard models designed for 230V/1PH/60Hz or 208-230V/3PH/60Hz.

PART DESCRIPTION	PART NUMBER	QTY	SERIAL NUMBER (FROM – TO)		
Tray-Drip 18" Black	HC196107-02	1	C2H-605	—	
Trimstrip-Assy. EF 18"	HC118891-01	1	C2H-605	—	
Decal-Trimstrip EF Logo 18"	HC165147-01	1	C2H-605	—	
Trimstrip-Assy. SST18" (no decals)	HC118891-02	1	C2H-605	—	
Trimstrip-Assy. Sonic Shake	HC118891	1	C2H-605	—	
Decal-Trimstrip Sonic 16"	HC165175	1	C2H-605	—	
Tube-Air 8-1/2"	HC138170-03	1	C2H-605	—	
Tube-Assy. Drain	HC118883	1	C2H-605	—	
Tube-Assy. Mix Inlet (Pickup Tube)	HC118836	1	C2H-605	—	
Tube-Assy. Pickup	HC118842	1	C2H-605	—	
Tube-Mix Feed Clamp (Mix Feed Seal Assy.)	HC139823	1	C2H-605	—	
Tubing-3/8 ID x 1/2 OD (Cabinet)	HC196068	2.5	C2H-605	—	
Valve-1/2 Service Rotalock	HC155047	1	C2H-605	—	
Valve-Auto Expansion (Cabinet)	HC155449	1	C2H-605	—	
Valve-Auto Expansion (Cylinder)	HC155479	1	C2H-605	—	
Valve-Insulator (Cover-Expansion)	HC165531	2	C2H-605	—	
Valve-Duckbill-Inlet	HC199032	1	C2H-605	—	
Valve-Solenoid (NLA use HC155395 bofy & HC151477 coil)	HC155421	2	C2H-605	—	C20-701
Valve-Solenoid (NLA use HC155395 bofy & HC151477 coil)	HC155488	2	C20-702	—	G2Q
Valve-Solenoid Body 3/8 ODM	HC155395	2	G2Q	—	
Valve-Solenoid Kit	HC155434	*	C2H-605	—	
Valve-Assy. Water	HC113769	1	C2H-605	—	
Valve-Water	HC155410	1	C2H-605	—	
Valve-Water Repair Kit	HC155444	1	C2H-605	—	

* As Required
** Items Included In O-Ring Kit No. HC119106
*** LH or RH — Left or right hand is determined as you face the front of the freezer.
MTS = Mix Transfer System NLA = No Longer Available
AC = Air Cooled WC = Water Cooled

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

Alphabetized Parts List

IMPORTANT: All parts shown are for standard models designed for 230V/1PH/60Hz or 208-230V/3PH/60Hz.

PART DESCRIPTION	PART NUMBER	QTY	SERIAL NUMBER (FROM – TO)		
Washer-Curved Spring (RMT Housing) NLA use Qty1 - HC160173	HC160145	2	C2H-605	—	K2I
Washer-Spring Wave SST (RMT Housing)	HC160173	1	K2I	—	
Washer-Ext. Tooth #6 ZN (Switch Assy.)	HC160392	2	C2H-605	—	J2N-3796
Washer-Flat #6 Brass (RMT Housing Cover)	HC160393	4	C2H-605	—	
Washer-Flat #6 Brass (Switch Assy.)	HC160393	4	C2H-605	—	J2N-3796
Washer-Flat 3/8 SST (RMT Housing)	HC160169	2	C2H-605	—	
Washer-Lock #10 SST (Mix Feed Seal Assy.)	HC160166	3	C2H-605	—	
Washer-Lock 3/8 SST (RMT Housing)	HC160170	2	C2H-605	—	
Washer-Shaft Seal (Beater Shaft-Bushing)	HC133098	1	C2H-605	—	

* As Required
** Items Included In O-Ring Kit No. HC119106
*** LH or RH — Left or right hand is determined as you face the front of the freezer.
MTS = Mix Transfer System NLA = No Longer Available
AC = Air Cooled WC = Water Cooled

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

ELECTRO FREEZE®

Installation and Service Manual

for Refrigeration Technician only

FREEDOM 360º Series

Shake Freezer
Model 78RMT

184956-02 7/11

H.C. Duke & Son, LLC P/N 184956-02 July 2011 Printed in U.S.A.

Table of Contents

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1 Introduction

This Installation and Service Manual is for use by an Electro Freeze distributor or qualified service technicians only. All service technicians using this manual must follow the installation and service instructions when servicing the freezer. Failure to follow this manual when servicing the freezer is considered misuse and could violate the warranty.

Do not refer to this manual if you are not a qualified service technician. Do not attempt to service the freezer until the safety precautions are understood.

If this is the initial installation the warranty card must be filled out and returned to validate warranty.

If problems occur that are not covered in this manual, further technical assistance can be obtained by contacting your local Electro Freeze distributor or H.C. Duke & Son LLC, *Electro Freeze* Service Department as follows:

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

Fax: (309) 755-9858

E-mail: service@electrofreeze.com

2 Safety First

2.1 Recognize Safety Information

Look for this safety alert symbol throughout this manual.

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

2.2 Understand Signal Words

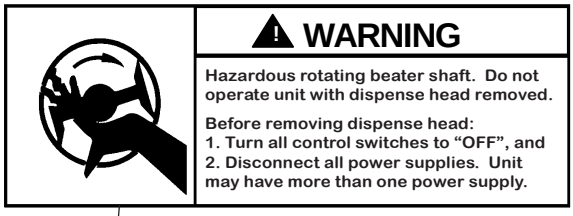
The signal words – DANGER, WARNING, and CAUTION – are used with the safety alert symbol (DANGER decals on the freezer may or may not have the safety alert symbol, but the message is the same). Decals with the words DANGER, WARNING, or CAUTION appear on the freezer. DANGER identifies the most serious 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.

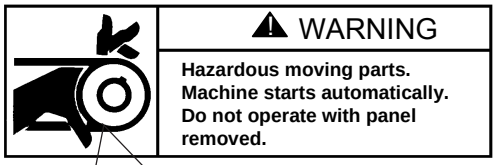
2.3 Follow Safety Instructions

Read and understand all safety messages in this manual. Read and understand the decal safety messages on the 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. Use the information and illustrations on this page to identify the decal, and call or write to your local Electro Freeze distributor or H.C. Duke & Son LLC, *Electro Freeze* Service Department for new decals.

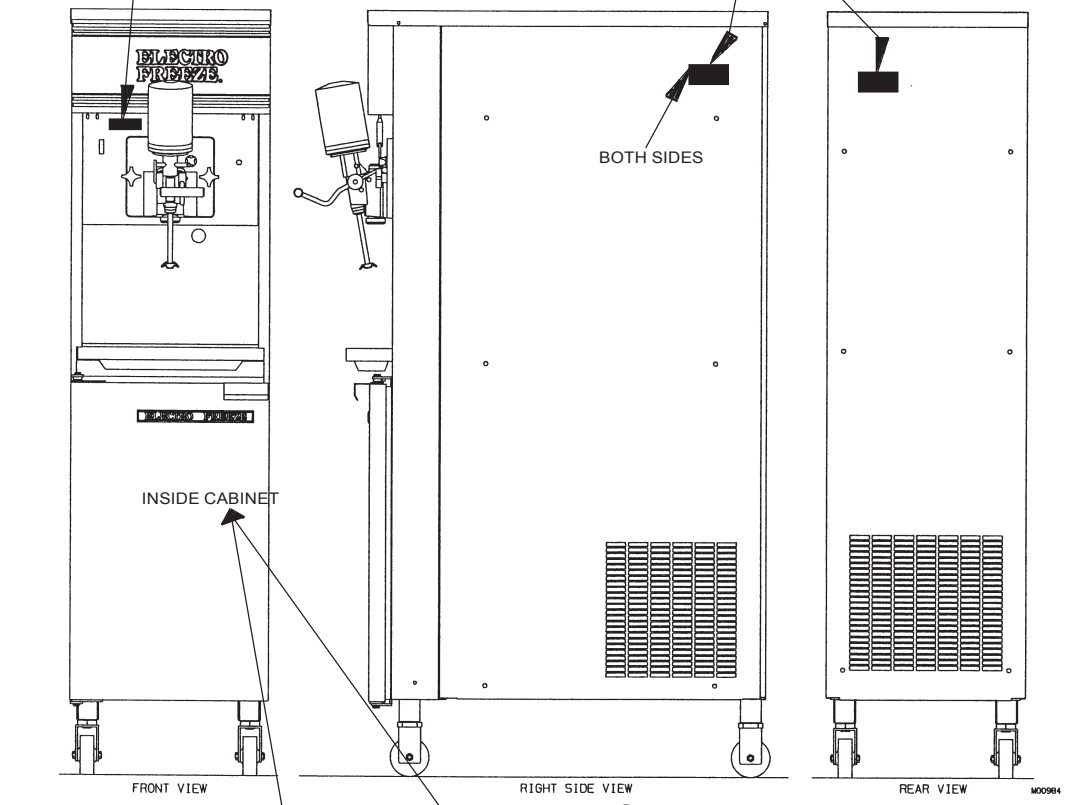
DO NOT attempt to operate the freezer until you read and understand all safety messages and the operating instructions in this manual.



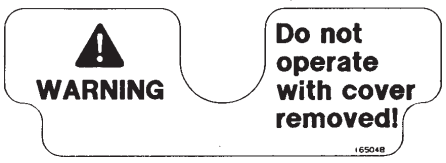
HC165025



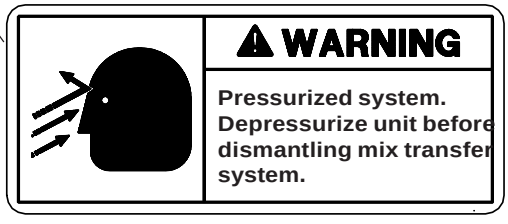
HC165126



HC165048



HC165246



2.4 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 clean, maintain, or repair the freezer until the main power supply has been disconnected. Contact your local Electro Freeze distributor or H.C. Duke & Son, *Electro Freeze* Service Department at (309) 755-4553 or (800) 755-4545 for service.

3 Service "FIRST"

When servicing Electro Freeze freezers, remember most service calls involve simple operator error or small component malfunction. Always try to approach each call in a systematic way. Use the FIRST method of diagnosing problems and servicing the freezer:

F ***Find*** the problem by listening to the operator first. Daily use of the freezer gives the operator a good "feel" for the normal operation of the freezer. Sometimes the operator will experience symptoms of more subtle problems. Listening closely will also help to establish a good working relationship with the operator.

I ***Inquire*** from the operator what they have already done to try to remedy the situation. You can avoid repetition in the work and find operational procedures that may be done incorrectly.

R ***Respond*** to the operator's concerns. Try to make the operator feel "heard." If they feel you are there to help them, they will be more patient and understanding of the work you do.

S ***Start*** by applying simple corrective measures first. For example, before removing panels, try all relevant switch combinations to trace the electrical routes and establish if a component is bad.

T ***Train*** the operator once you have determined the problem. If there is an operational problem, the operator will appreciate the information to avoid recurring problems.

3.1 Installation, Start-up, and Instruction Checklist

Remove, follow, and complete the checklist provided on the last pages of this manual to insure proper installation of the freezer.

4 Uncrating and Inspecting the Freezer

1. As soon as the freezer is received, and while the carrier is still present, inspect the shipping crate for any damage which may have occurred in transit. If the crate is broken, torn or punctured, note the damage on the carrier's freight bill and call the carrier's local agent immediately, requesting prompt inspection by their personnel.

2. The freezer should always be stored or moved in its normal upright position and moving should be accomplished by an appropriate method of large appliance handling. Do not uncrate the freezer until it has been transferred as close as possible to its location site. Do not move the freezer by "walking" it on the corners of the skid.

4.1 Uncrating the Freezer

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

1. Use caution in handling uncrating tools so as not to mar or dent the cabinet. Do not pierce the crate with a pry bar or similar tool. Note, in Figure 1, that the unit is bolted directly to the wooden pallet, or shipping base. Remove these bolts and carefully "walk" the freezer off the wooden pallet.

2. Check all separately packed components and spare parts against the packing list. If any items appear to be missing, contact your local distributor.

3. Screw each leg or caster into place at the four corners of the base (Figure 2). When the unit is in position at its intended location, the legs or casters must be adjusted until the unit is leveled. (See Section 5.1).

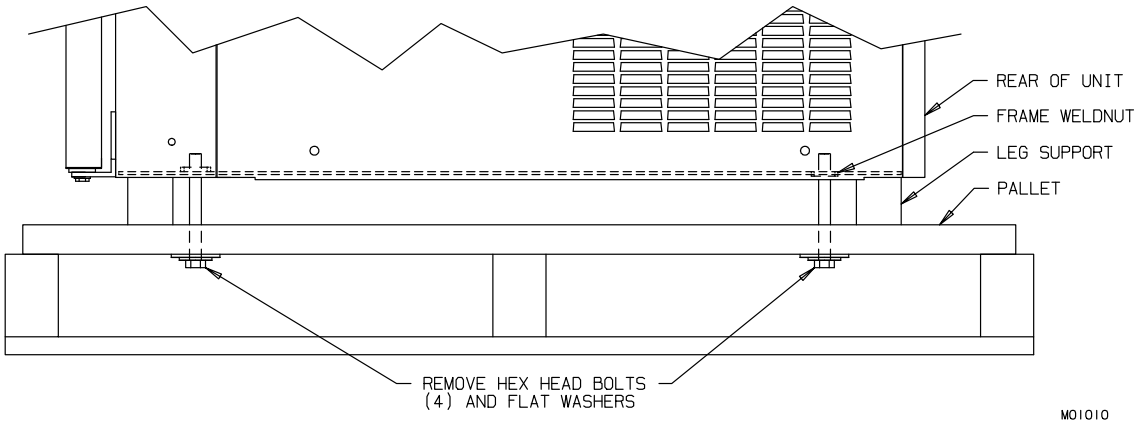


Figure 1 Freezer bolted to shipping base

—continued

4.1 Uncrating the Freezer (continued)

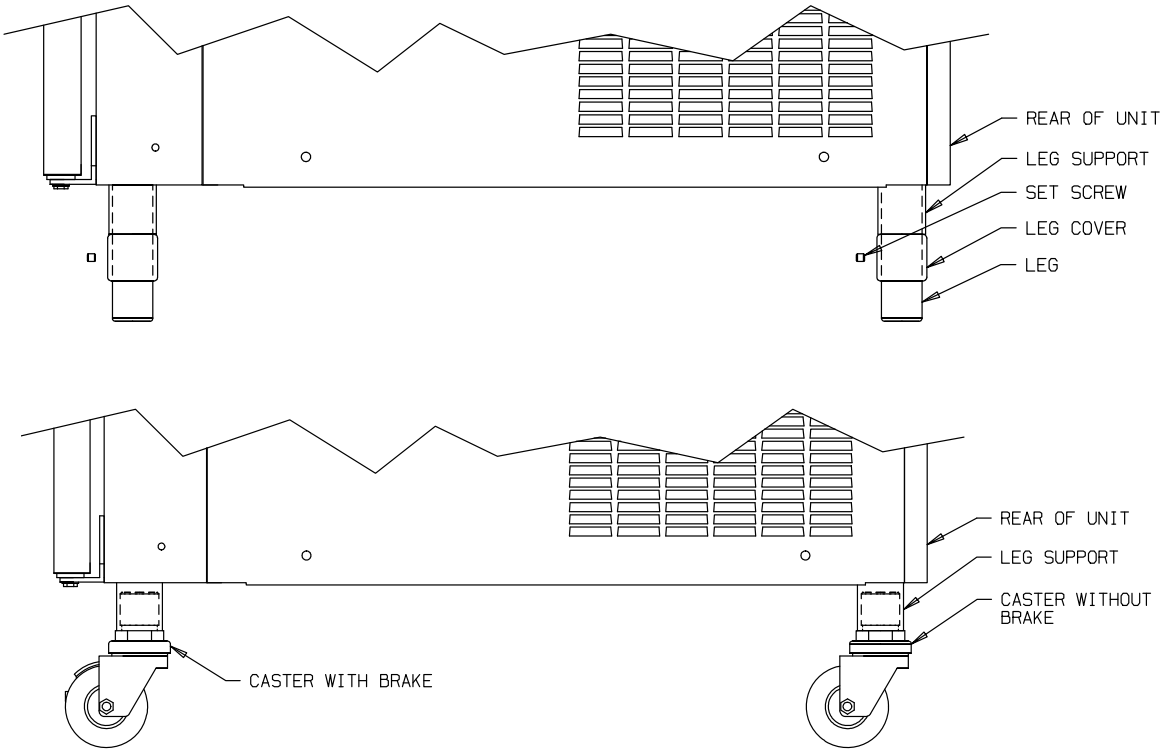


Figure 2 Installing mounting legs or casters

4.2 Inspecting the Freezer

1. Inspect the cabinet exterior for damage.

2. Remove the panels from the unit by unscrewing the attaching screws; then swing the bottom of the panel outward and pull down so that the upper edge disengages from the lip insert of the cabinet.

3. Check all tubing to make sure that metal-to-metal contact does not exist.

4. Check pulley alignment and belt tension (Section 10.3).

5. On air-cooled models, turn the condenser fan blade by hand to make sure that the blade turns freely and does not strike the shroud.

5 Installation Procedures

5.1 Placement of the Freezer

1. In positioning the freezer, be sure that it is accessible for periodic maintenance checks. Where codes permit, we recommend that the freezer be installed on casters and have flexible water and electrical connections for easy servicing and cleaning.

2. Air-cooled models require a minimum six inches (6") clearance on the rear and top panels for adequate ventilation. Anything (including cone dispensers) in this area will reduce the efficiency of these models.

3. The 78RMT freezer requires a 3/8" MPT water inlet and waste connection. The connections are found on the rear panel of the freezer 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. Also be sure that inlet water pressure is above 35 psig. If the pressure drops below 35 psig, condenser pressure will increase and result in more prolonged periods of running and overall inefficiency.

NOTE: Water-cooled freezers are not equipped with vacuum breaker valves. Be aware of local codes concerning this and all plumbing requirements.

4. The inlet water temperature should not be higher than 90°F. When inlet water temperature is higher than 90°F water usage becomes excessive and production capacity is reduced.

5. Place the freezer in its final location and level the machine by adjusting the legs or casters so that the unit is level side-to-side, and the front is approximately ¼" lower than the rear, to allow proper drainage of the freezing cylinder. If the unit is moved to a new location, be sure to check level and readjust, if necessary.

5.2 Water and Drain Connections

When making water and drain connections to water-cooled models, the following items must be taken into consideration:

1. Maintain water temperature and pressure limits as specified in Section 5.1.

2. A minimum $^{3}/_{8}$" ID water line must be provided immediately behind or adjacent to the freezer. Make sure lines are sized properly, free of corrosion, and flushed prior to connecting to the freezer. Provide a shut-off valve in the water supply to allow mobility of the freezer for servicing and cleaning. Connect the freezer to cold water only.

3. Provide a drain close to the freezer. This can be a floor drain. Do not restrict or control the flow of the drain water, as this will cause operational problems. Make the connection to the freezer with a flexible water line hose.

⇨ ***Important:***
All water cooled models must have condensers blown out if exposed to temperatures below freezing. Pressure of at least 20 psig should be put through the water lines starting inside the water valve.

4. If the water to the inlets is to be tee-connected, make sure that the pipe feeding the tee is one size larger.

⇨ ***Important:***
Do NOT install a solid connection from the drain to a sanitary service line. Allow an air break to prevent the possibility of the reverse flow of sewer water. Drain connections must comply with local code regulations.

5. If glycol system is used, refer to manufacturer's instructions. Adjust the freezer water valve to specifications in Section 7.2 Refrigeration Settings.

5.3 Electrical Requirements

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

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

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 the local power company to correct any voltage problem.

3. A main power disconnect must be supplied and should be:

   a. easily accessible

   b. within sight of the freezer

   c. provided for all poles of the wiring to the freezer

   d. installed in the line ahead of the unit connections.

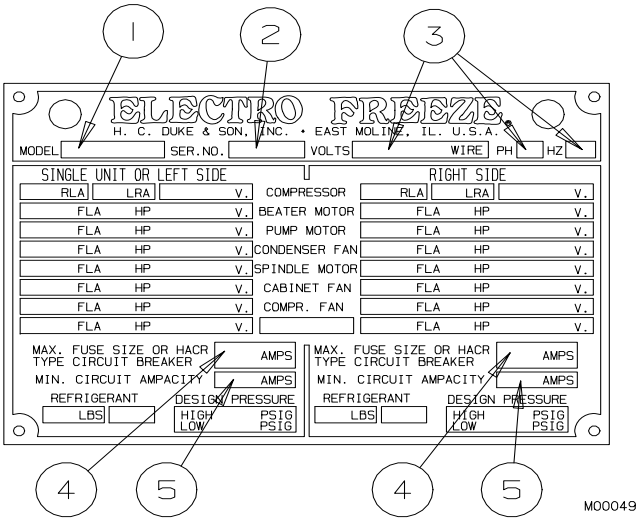
Use a disconnect box rated for the amperage noted on the nameplate of the freezer.

4. Use flexible connections, if possible. All connections must conform to local code requirements and be in compliance with the National Electric Code.

5. Use fuses or HACR type circuit breakers not exceeding the maximum rating allowed on the nameplate on the back panel of the freezer.

6. If the 120V receptacles on the freezer are to be used, a separate 120V power supply is required to be connected to the freezer service connection box marked for 120V.

5.4 Data Plate



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

5.5 Reference Information

Fill in the following information below as soon as you receive your freezer. The item numbers, encircled, correspond with the callout numbers above.

(1) Model Number_____

(2) Serial Number_____

(3) Electrical Spec: Voltage_____

Phase_____ Hertz_____

(4) Minimum Circuit Ampacity_____

(5) Maximum Fuse Size_____

Installation Date_____

Installed by_____

Address _____

_____

Phone_____

6 Tests of Installation

6.1 Head Switch Operation

The head switch feature is designed to prevent the beater shaft from being accidentally activated. The beater motor should not operate with the head assembly removed. 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. Make sure all switches are in the "OFF" position.

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.

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 "CLEAN", then the "AUTO" position. 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.

6. 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.

6.2 Cylinder Frost Pattern

The cylinder frost pattern test will show the proper refrigeration. To test the refrigeration system and certain controls, perform the following:

1. Disconnect the main power supply.

2. Remove the dispense head and beater shaft.

3. Connect the main power supply.

4. Turn the selector switch to "AUTO". Observe the frost pattern as the refrigeration system runs until the cylinder thermostat satisfies (approximately 2 minutes). There should be an even frost pattern starting 1" from the front going to the rear of the cylinder.

NOTE: During normal operation throughout the course of the day, and when not dispensing product, the compressor should run for a minimum of 12 seconds about every 15 minutes to maintain the product temperature in the cylinder.

5. Turn the manual timer knob one quarter turn. Let the refrigeration system run until it shuts off automatically (approximately 1½ minutes) to verify proper operation.

CAUTION
Hazardous moving parts.
Freezer starts automatically.

6. On water-cooled models, check to make certain that water is flowing through the condenser by feeling the water inlet and outlet tubes. The inlet tube should feel cold and the outlet tube warm. Be sure that the hand shut-off valve is fully open.

7. While the unit is operating, listen for unusual noises such as vibration (metal tubes making contact), rattles (loose mountings), or noisy belts (dry or misaligned belts.

8. All machines are carefully checked for leaks prior to shipment. Nevertheless, it is advisable to inspect all refrigerant tubing connections for leaks with an electronic leak detector. If leaks are detected, tighten the connection and check the sight glass for proper charge. If leakage persists, or if leakage is discovered at brazed joints, it will be necessary to recover the refrigerant and repair the leak.

6.3 Plunger Switch Operation

The plunger switch is a double switch designed to start the compressor and beater motor just before the product begins to flow from the plunger and provides power to the spindle motor.

NOTE: The compressor and beater motor will continue to run 12-14 seconds after closing the plunger. When the compressor shuts off the beater motor may continue to run. The delay on brake timer can be adjusted to allow for this.

To test and adjust the plunger switch:

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.

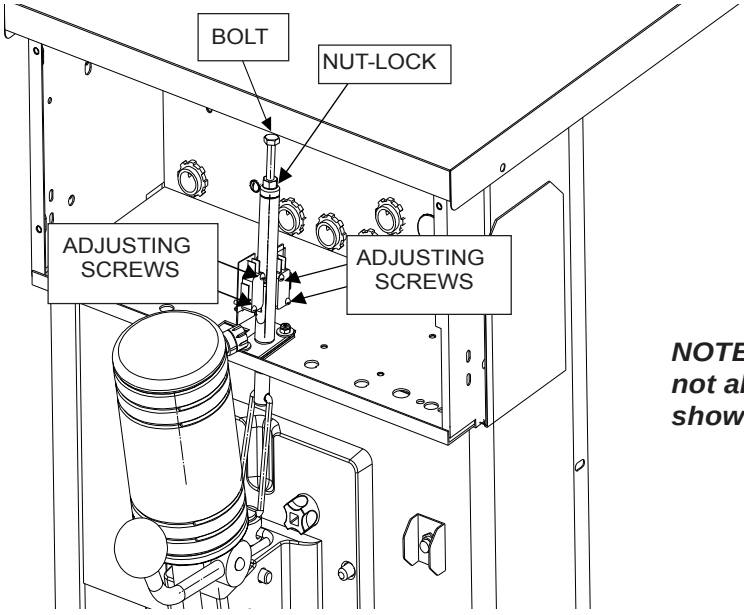
1. Install the dispensing head assembly and the plunger rod on the freezer.

2. Slowly open the dispensing plunger. The micro switch should click. If the switch does not click, a switch replacement or adjustment must be made. Remove the cover from the electrical box and slightly loosen the two adjusting screws. Adjust screws for proper actuation of the switch.

3. Tighten all screws. Recheck for proper operation.

NOTE: Excessive force on these screws may change the position of the switch assembly. Once they are in place, recheck for correct position.

4. On the top of the plunger switch assembly is an adjustment bolt and lock nut that are designed to control the amount of product being dispensed. If the product is coming out of the dispensing head too fast loosen the lock nut and turn the adjusting bolt down (clockwise). If the product is coming out too slow, loosen the locking nut and turn the bolt out (counter clockwise). When dispensing speed is proper, tighten the locking nut to the plunger switch assembly.



NOTE: For clarity not all parts are shown.

Figure 6-1 Plunger switch

6.4 Beater Rotation

The beater shaft is designed for clockwise rotation as viewed from the front of the freezer. Single phase freezers are pre-wired for proper rotation, but the direction must be checked on three-phase freezers.

CAUTION
Hazardous moving parts. Freezer starts automatically.

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. Remove one side panel.

2. Install the beater shaft assembly, head assembly, and plunger rod. Connect the main power supply. Turn the selector switch to the “CLEAN” position.

3. View the drive coupling from the side. Couplings should be turning in a clockwise direction (as viewed from the front of the freezer). If the couplings do not rotate as specified, turn the selector switch to the "OFF" position and disconnect power. Reverse position of any two of the three-phase service leads. Do not disturb any factory wiring.

4. Reconnect the main power supply and turn selector switch to the "CLEAN" position. Verify proper rotation. Turn selector switch to the "OFF" position.

5. Reinstall side panel.

7 Operating Adjustments

The freezer will need to be tested with mix for verification of proper control settings. Follow the disassembly, cleaning and assembly instructions in the Operator's Manual. Once the freezer has been assembled and sanitized, prime the freezer with mix in accordance with the Operator's Manual instructions.

The following adjustments are mandatory on installation. All adjustments must be within specifications to obtain proper operation of the freezer.

7.1 Thermostat - Cylinder

1. Turn the selector switch to "AUTO" and accurately note the time. The shake freezer should produce a servable product of 25 to 27°F (-3.9 to -2.8°C) and 45 to 55% overrun in 15 minutes or less.

2. Check the cylinder thermostat located behind the left hand side panel. Product should be set between 28 to 30°F (-2.2 to -1.1°C).

The purpose of the cylinder thermostat is to maintain an 26°F (-3.3°C) product during idle periods. If the thermostat is set too cold and product is not drawn out of the machine, a freeze-up or "popping" condition will result. DO NOT run the product dispensing temperature below 25°F (-3.9°C).

NOTE: The settings on the thermostat are ONLY to be used as a guide and may not indicate actual product temperature.

For a correct adjustment, a thermometer must be used to check the actual product temperature. The best time to check product temperature is after the third cycle with no draws between them.

Set the thermostat for the product being used. Most of the time, a temperature setting of between 28° and 30°F (-2.2 and -1.1°C) will maintain a satisfactory product. Once the thermostat is set for the mix used, it should require no further adjustment.

1. A refrigeration test gauge must be used when adjusting the suction pressure. To reduce the suction pressure, turn the adjustment screw on the expansion

7.2 Thermostat - Cabinet

The cabinet thermostat is a fixed 41° cut-in thermostat with the bulb located along the right hand side of the cabinet evaporator. If there are problems with evaporator freeze-ups refer to Chart 2: Cabinet Troubleshooting Guide before making any adjustments to the thermostat. Chart 1 shows normal run times and cut-out and cut-in air temperatures. The cabinet thermostat is pre-set at the factory to maintain a mix temperature of 38°F to 41°F.

⇨ ***Important:***
Never put warm products in the cabinet. Products must be precooled to 38°F - 41°F. The cabinet is designed to maintain the mix temperature.

—continued

CHART 1: PERFORMANCE CHART FOR FAN MOTOR P/N 151105 AND THERMOSTAT P/N 118868 OR 155483

Model	Thermostat Setting	Expected Performance	Air Temperature*
78RMT	4	45 - 55 seconds run time 3 - 4 cycles per hour	27-28° cut-out 41° cut-in
Thermometer Reading	Blue just after compressor runs, green for rest of cycle.		
* To check air temperature place a thermometer on the front mix tank cover.			

7.2 Thermostat - Cabinet (continued)

Chart 2: Cabinet Troubleshooting Guide	
Mix Temperature	It is very important to check the actual mix temperature. The cabinet is designed to maintain a mix temperature of 38°F to 41°F. Verify the product being put into the cabinet is also within this range.
Door Gasket Condition	Always verify the cabinet door gasket is in good condition and sealing properly. A worn gasket will increase the run time and cause the coil to freeze up.
Operator Error	Verify your customer is not using the cabinet to store other products. Extra loads and excessive opening of the cabinet door will increase the run time and cause the coil to freeze up. Verify that the customer is cleaning the machine at least once a week and is turning the cabinet and both selector switches to the off position to prevent the cabinet from cycling. Instruct the customer to never use a water hose to spray the inside of the cabinet to clean.
Cabinet Temperature	The cabinet thermometer will generally read in the blue (upper 20's) after the compressor runs, and green for the rest of the cycle.
Thermostat Setting	The Ranco thermostat (p/n 118868) or Danfoss thermostat (p/n 155483) should be set between 2-4 depending on the model of freezer, but always verify the cycle times and temperatures (see Chart 1: Performance Chart). Adjust accordingly. These thermostats have a fixed cut-in temperature of 41°F. Adjustment of the knob changes the differential only. To raise the cut-in in 1°F increments: 1) on the Ranco thermostat turn the external adjustment screw located on the left hand side of the control clockwise approximately ¼ turn, or 2) on the Danfoss thermostat turn the internal Torx head screw (T-7) located inside the control on the lower right hand side clockwise approximately 1/4 turn. Do not adjust more than one full turn (4°F) clockwise from base setting.
Suction Pressure Setting	The automatic expansion valve to the cabinet should be set to maintain a suction pressure of 10-11 psig with R404a refrigerant.

7.3 Refrigeration Settings

valve counterclockwise. Do not turn more than ¼ turn at a time. Let the unit operate a sufficient length of time — at least two minutes — to properly read the adjustment.

2. On self-contained water-cooled freezers:

a. Check the refrigeration pressure settings with the gauges attached to the service valves on the compressor and receiver tank. Adjust to the proper settings (See Figure 7-2 and 7-3)

1. If set correctly, the freezer will have a cycle time of 15 minutes off and 12 seconds run time. Keep the suction pressure setting as high as possible but not more than 23 PSIG.

AIR-COOLED FREEZERS

Refrigerant	Model	Cylinder Suction	Cabinet Suction	Discharge
R-404a	78RMT	26-27	10-11	215-350

WATER-COOLED FREEZERS

Refrigerant	Model	Cylinder Suction	Cabinet Suction	Discharge
R-404a	78RMT	26-27	10-11	240-245

Figure 7-2 Freezer settings

7.4 Operational Checks

It is important to observe the general performance of the freezer and make corrections as necessary.

2. Check for mix leaks around the dispensing head and the beater shaft seal in the rear of the freezer cylinder.

3 Check the adjustable delay on break dispense timer by activating the dispensing switch. This should automatically start the compressor and beater motor. When the spigot is closed, the compressor and beater motor will continue to run approximately 12-14 seconds. The beater recycle timer will allow the motor to run for additional 12 seconds. The beater recycle timer should be set 12 seconds on 15 minutes off.

NOTE: If the cylinder thermostat calls for additional refrigeration, the compressor may continue to run and will shut off when the thermostat has been satisfied.

5. Dispense some product from the freezer. The product should flow smoothly and dispense at 25 to 27 °F (-3.9 to -2.8°C). If the product comes out in spurts, slowly, or if there are popping sounds, check to see that the mix pump is operating properly.

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.

6. There should be no squeaking, squealing or slapping of the beater drive belt. With the freezer selector switch in the "OFF" position and the power suppply is

—continued

7.3 Operational Checks (continued)

disconnected, check the belt tension (½" deflection with approximately 5 pounds of pressure) and use a straight edge to check pulley alignment.

7.5 Sonic Drive In Settings

Sonic Drive In's require different settings for their products. See the following chart.

Settings for the 78RMT Freezer	
Suction Pressure - Cylinder	29-30 psig
Suction Pressure - Cabinet	10-11 psig
Head Pressure - Water Cooled	240-245 psig
1TRE - Dispense Timer Pot. Setting	12-14 Seconds
2TRE - Beater Recycle Timer Pot. Setting	12 Seconds On - 15 Minutes Off
Thermostat - Cylinder Setting	25-27°F - 6° Differental (Not lower than 25°F)
Thermostat - Cabinet Setting	5
Plunger Opening	13/16"
Sonic Product Specifications	
Air Meter - Black	15-15.5
Product Dispensing Temperature	25-27°F
Overrun	45-55%
Note: If the product is colder or the overrun is higher than the above specifications the product will have a tendency to be pulled up the spindle shaft and then thrown out of the cup.	

8 Product Information

It is important to make sure that each person who operates the freezer knows what overrun is and how to calculate it.

Refer the customer to the Operator's Manual Section 10.

8.1 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 maintaining consistency in product quality. Too much overrun (air) results in a light, fluffy product lacking the cold, refreshing appeal of a quality product. Too little overrun results in a soggy, 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 with liquid mix to the top. Measure and record the weight of the container.

3. Replace liquid mix 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." See example.

Example:

Weight of one pint of 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**

* A scale (P/N 158049) graduated in overrun percentage.

8.2 Overrun Adjustment

Overrun is regulated by the air meter. Three air meters are supplied with each freezer, each one containing a different size orifice. The smaller the hole and number, the lower the overrun. The larger the hole and number, the higher the overrun. Each half-size change of the air meter number will change the overrun 3-5%. Each full-size change will change the overrun 5-10%.

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. *It is important that the operator 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.

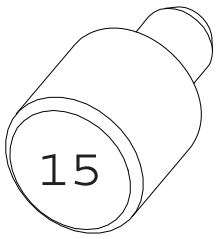


Figure 8-1 Air Meter

9 Equipment Operation

9.1 The Refrigeration System

(See Figure 9-1.) The compressor discharges the refrigerant to the condenser as a high-temperature, high-pressure gas. Either by water-cooling or air-cooling, the gas refrigerant condenses to a liquid form. This high pressure liquid flows into the receiver which serves as the refrigerant reservoir. Upon leaving the receiver, the refrigerant flows through the filter drier, sight glass, and cylinder solenoid valve.

When the cylinder evaporator thermostat calls for cooling, the cylinder solenoid coil is energized and the valve opens to permit the flow of refrigerant to the automatic expansion valve. This expansion valve controls the flow of refrigerant in the evaporator coils in such a way as to keep practically the entire coil filled with evaporating refrigerant and, in addition, to keep a constant superheat in the refrigerant vapor leaving the coil.

As the refrigerant in the cylinder evaporator absorbs the heat, it changes to a low pressure vapor. This vapor is returned to the low pressure side of the compressor through the suction line leading from the freezing cylinder, thus completing the refrigeration cycle.

The mix tube that runs from the cabinet to the cylinder has a copper heat tube that is partially wrapped around the cylinder and lays parallel to the mix tube. This copper tube is capped at each end and charged with refrigerant to draw heat away from the mix tube. A thermistor sensor is attached and can be checked for proper resistance. The resistance reading of the thermistor should be between 25,000 and 35,000 ohm's. Both tubes are wrapped.

In water-cooled systems the flow of cooling water to the condenser is metered by a pressure-controlled regulating valve. Here, two forces control the size of the valve opening through which condenser water may flow. An adjustable tension spring tends to keep the valve closed while a bellows, connected by tubing to the high-pressure side of the system, tends to open the valve. When the refrigeration system begins operation, the increased pressure caused by the compressor opens the water regulating valve and permits water to flow through the condenser. When the unit cycles off, the water continues to flow through the valve until the condensing pressure has decreased below the valve setting. (See Refrigeration Settings Section 7.2.)

9.1 The Refrigeration System (continued)

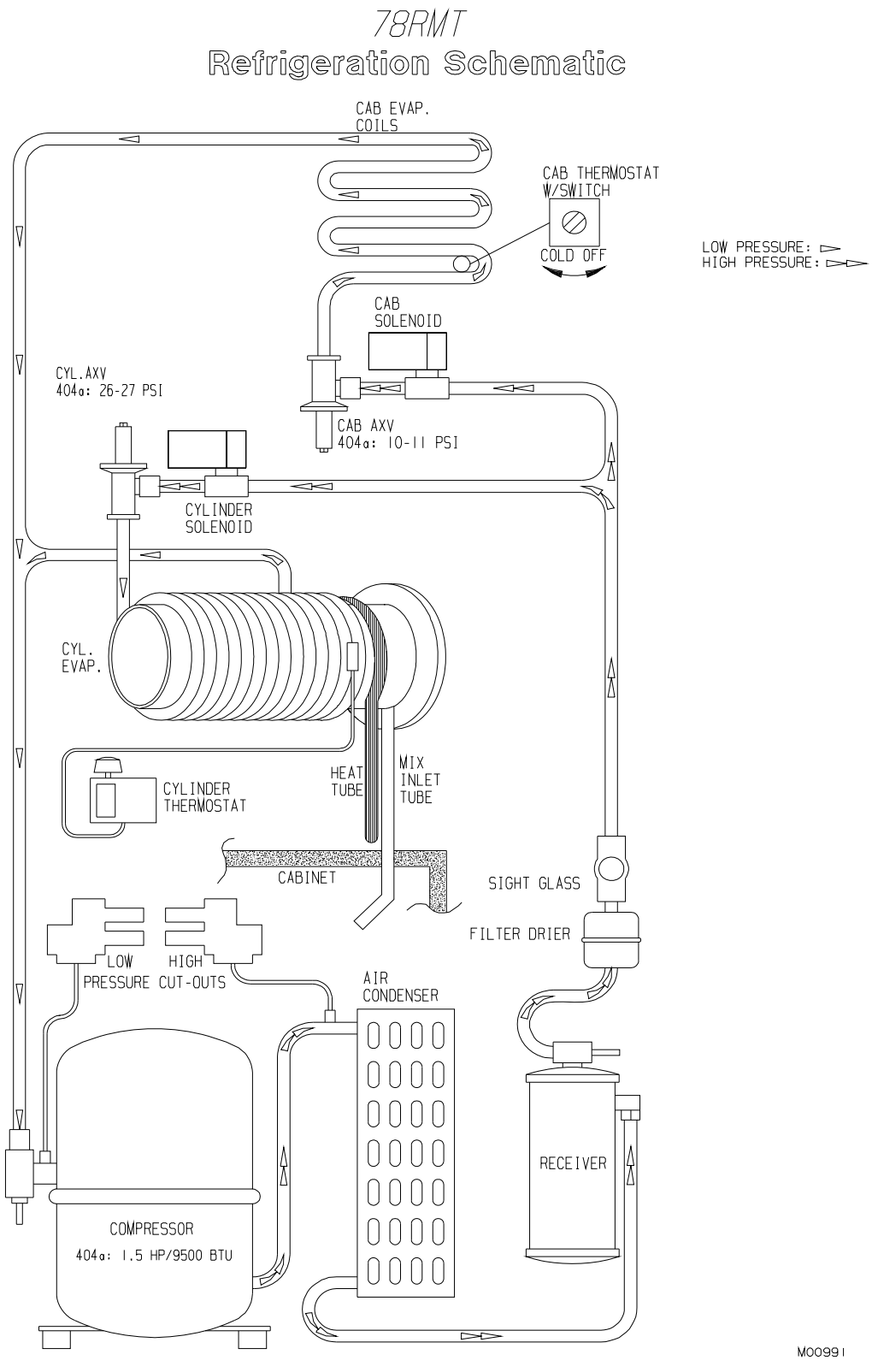


Figure 9-1 78RMT Refrigeration Schematic

9.2 The Electrical Circuit

The electrical operation of the system depends on the position of the selector switch and mode of operation. In the following discussion, five examples are considered.

1) operation when the selector switch is in the "AUTO" position but product is not being dispensed.

2) operation during the time that the product is being dispensed.

3) operation immediately after dispensing the product.

4) operation with the switch in the "CLEAN" position.

5) “OFF” compressor and beater will not operate.

Note the differences between the single-phase circuit and the three-phase circuit.

NOTE: The following schematic shown (Figure 9-2) is for a standard 78RMT Always refer to the schematic and wiring diagram supplied with the freezer.

If the head is removed, the head switch will be open, cutting power to the beater motor.

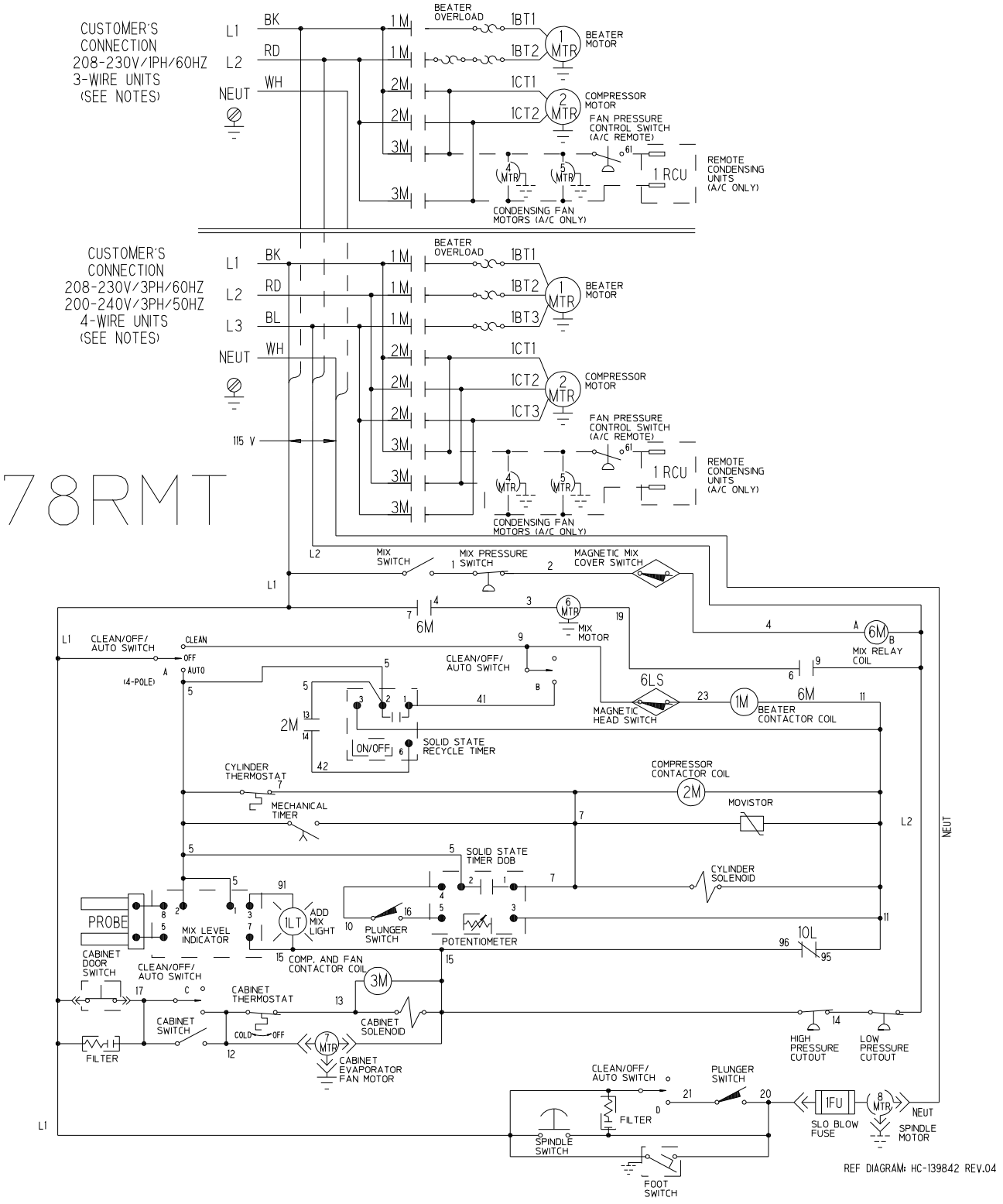
When the switch is in "AUTO" but product is not being dispensed, the refrigeration circuit is controlled by the cylinder thermostat. Note that current cannot flow through the time delay contacts or the micro-switche circuits, because both are open at this time. When the temperature in the cylinder exceeds the setting of its controlling thermostat, the thermostat contacts close, thus energizing the solenoid valve and releasing the flow of refrigerant to the cylinder coils. This action also energizes the compressor contactor and beater motor starter coils, closing the points on the contactors.

When the operator is dispensing product, the plunger switch closes the contacts 1-2 on the solid state timer. This in turn operates the contactors for the beater motor and compressor.

When the operator closes the spigot to shut off the flow of product, the plunger switch opens which starts the time delay period. The time delay contacts will remain closed for a period of 12-14 seconds after dispensing. The purpose of this delay is to refrigerate the new mix that entered the freezing cylinder when the frozen product was dispensed. Control of the refrigeration circuit is returned to the thermostat at the end of the 12-14 second period. The beater delay on break timer will be energized and run for an additional 12 seconds. The beater motor will then shut off. If the freezer is not in use the delay on break timer will energize the beater motor every 15 minutes and run for 12 seconds.

When the selector switch is in the "CLEAN" position, the refrigeration circuit is de-energized and only the beater motor starter and beater motor are energized.

9.2 The Electrical Circuit (continued)



e

freezer.

10 Maintenance and Adjustments

CAUTION
All maintenance and adjustments must be done by an authorized service technician.

CAUTION
To avoid electrical shock and 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.

10.1 Gear Reducer Lubrication Instructions

The gear reducers are heavy duty, worm-geared units manufactured to H. C. Duke & Son, Inc. specifications. The following lubrication procedures should be followed.

CAUTION
To avoid electrical shock and 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:***
DO NOT overfill. Overfilling can damage the gear reducer.

1. OIL – This is a special oil and will not mix with petroleum base oil. When adding or changing oil use only part number 158055 oil.

2. INITIAL OIL CHANGE – The oil in a new gear reducer should be drained at the end of 250 hours of operation. (30 days for 8 hour per day service, 15 days for 16 hour service, 10 days for 24 hour service).

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

4. OVERFILLING OR UNDERFILLING – If a gear reducer is overfilled with oil, the energy used in churning the excessive oil can result in overheating. If the gear reducer is underfilled, the resultant friction can cause overheating. If underfilling occurs, fill the gear reducer to the oil level plug hole. See Figure 10-1.

NOTE: Normal operation can generate temperatures up to 200°F (93°C). If overheating occurs due to overfilling, shut down the drive, remove the oil level plug and allow excess oil to drain. Reinstall the oil level plug, and restart the drive.

5. DRAINING OIL – Open oil drain plug. Drain oil with speed reducer at normal operating temperature.

6. PROPER OIL LEVEL – Fill until oil is at the bottom of the threads in the oil level plug hole.

7. INSPECTION – When changing oil, always inspect all areas around the reducer for traces of oil. If oil is found in the immediate area, repair the leak (usually an oil seal) and check for proper oil level.

10.1 Gear Reducer Lubrication Instructions (continued)

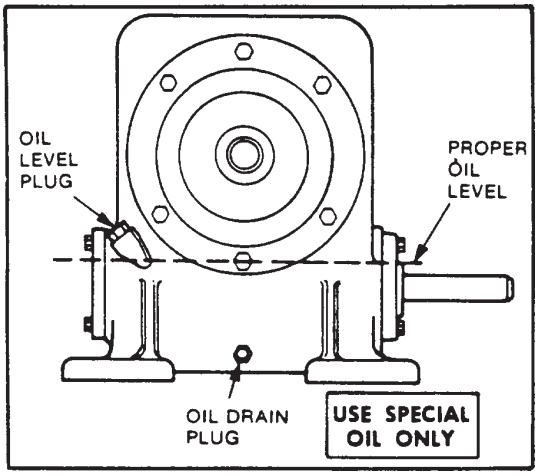


Figure 10-1 Gear Reducer

10.2 Condenser Cleaning

CAUTION

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

A. Air Cooled Condensers

At least once a month, the face area of the condensers should be inspected for accumulation of dirt and dust. Surface dirt and dust can usually be removed with a stiff brush and/or vacuum cleaner or compressed air. After brushing, hold a light between the fan blades and look through the condenser from the opposite side. This procedure will locate those areas where accumulated dirt has lodged between the condenser fins.

When using compressed air:

1. Place a damp towel or cloth over the face area of the condensers.

2. Blow dirt through the clogged areas of the condenser onto the damp towel.

3. Check the condensers periodically with a light and continue the cleaning treatment until the fins are clean.

B. Water Cooled Condensers

Depending on water conditions, the condenser may require cleaning. Usually a restricted flow of water resulting in a high head pressure indicates a dirty condenser. Flush the condenser with a commercially available condenser cleaner suitable for use on copper and rubber components.

C. Beater and Condenser Fan Motor Inspection

CAUTION

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

The beater and fan motors do not require lubrication but should be inspected and cleaned annually.

10.3 Pulley Alignment and Belt Tension

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. Remove the side panels to expose the pulleys and the belts.

2. Check the alignment of the beater motor pulley and the gear reducer pulley by placing a straight edge across the faces of the two pulleys. If the pulleys are not aligned, adjust as necessary until proper alignment is obtained.

NOTE: Most pulleys are secured with Loctite®. It may be necessary to heat for removal.

3. Depress the belt at a point midway between the two pulleys. When properly adjusted, the belt should depress ½ inch from its normal position with approximately five pounds of pressure.

4. If the belt is too tight or too loose, adjust as necessary until proper belt deflection is obtained by loosening the four (4) bolts which hold the motor mounting plate to the frame. With these loose, adjust the tension bolt in or out as required to obtain proper belt tension. Retighten bolts.

5. Periodically inspect the belts. If they are worn excessively or cracked, replace both belts, as they are manufactured in matched sets.

10.4 Beater Drive Coupling Replacement and End Play Setting

10.4.1 Beater Drive Coupling Removal

NOTE: If you are checking end play only go to Section 10.4.3

⇨ Important:
Improper drive coupling spacing will damage the beater shaft, dispensing head, and drive coupling. When checking end play settings or replacing a coupling, proceed as follows.

CAUTION
Make sure freezer is depressurized before proceeding.

1. Remove product from the cylinder.

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.

2. Remove beater shaft. (See figure 10-2 Ref.#2.)

10.4.1 Beater Drive Coupling Removal (continued)

3. Remove both drive belts (not shown).

4. Remove gear reducer bolts (Ref. #8). Six (6) bolts are located around the face of the reducer.

NOTE: Remove the top bolt last while holding the bottom of the reducer.

5. Remove the gear reducer (Ref. #1).

6. Replace two (2) bolts (Ref. #8), one (1) at the top and one (1) at the bottom, so that the reducer cover will not come off while the coupling is being changed.

7. Loosen the four (4) set screws (Ref. #7), and remove the drive coupling (Ref. #4). If the coupling is stuck tight to the output shaft, lightly tap the coupling from the back with a brass or plastic hammer and bar, as a hard hammer can damage the bearings. Sometimes, due to age, this coupling will stick so tight it will have to be removed with a pulley-removing tool or a "wheel puller."

8. Remove the key (Ref. #10).

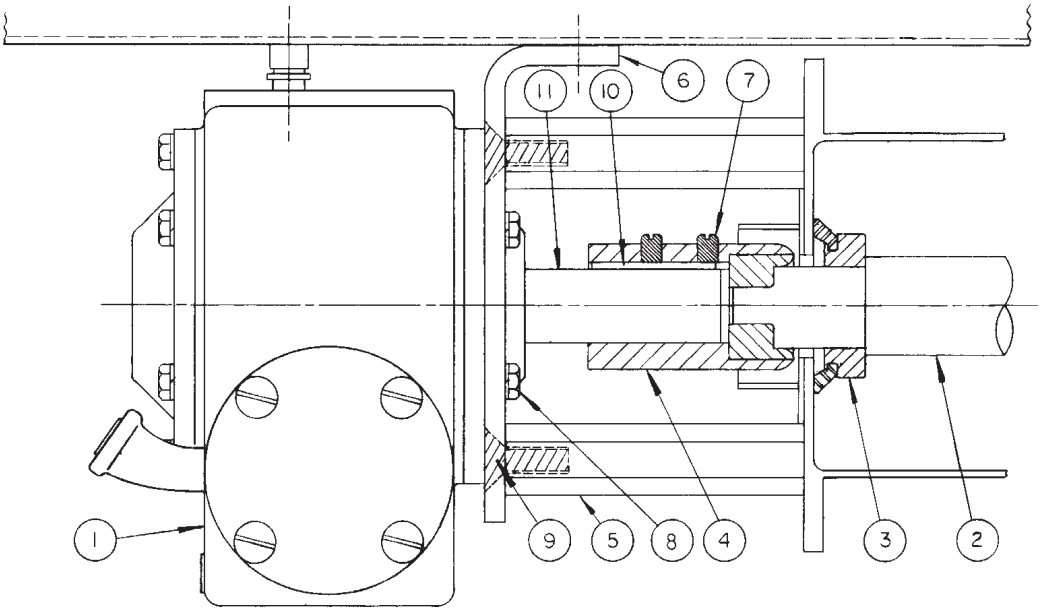


Figure 10-2

No.	DESCRIPTION	No.	DESCRIPTION
1.	Gear Reducer	7.	Set Screws
2.	Beater Shaft	8.	Bolt-Gear Reducer
3.	Shaft Seal	9.	Bolt-Reducer Mounting Plate
4.	Drive Coupling	10.	Key
5.	Spacer	11.	Output Shaft
6.	Reducer-Mounting Plate		

10.4.2 Installing the New Coupling

1. Clean gear reducer output shaft (Ref. #11) with fine emery cloth, and slide the new drive coupling on the reducer shaft. The coupling should slide on the shaft all the way without the key. If the coupling doesn't slide completely on, check both the coupling and reducer shaft for burrs. When a smooth sliding fit is achieved, remove coupling and proceed with final assembly.

2. Place key (Ref. #10) in key slot on the reducer output shaft. Keep the key flush with the front end of the output shaft (Ref.#11).

NOTE: Coat output shaft with Loctite Anti- Sieze to make future removal easier.

3. Slide the coupling (Ref.#4) until it bottoms out on the shaft. Leave the four (4) set screws loose as the coupling will have to be adjusted.

4. Remove the two (2) bolts added in preceding Step #6 of Beater Drive Coupling Removal (previous page).

5. Place one (1) gear reducer bolt (Ref. #8) in the top hole of the cylinder mounting plate.

6. Insert gear reducer onto cylinder mounting plate and start top bolt (Ref. #8). Do not tighten completely. Now insert the other bolts one at a time. When all bolts are in, tighten each bolt.

⇨ ***Important:***
Make sure the drain pan lip is on the front of the reducer mounting plate, not in between it and the reducer.

NOTE: Due to very close tolerance between the gear reducer and cylinder mounting plate, no alignment is required when installing the reducer. When the reducer bolts are tightened, the reducer will self-align with the cylinder.

10.4.3 End Play Adjustment for Beater Drive Coupling

1. Insert the beater shaft (Ref. #2) with the shaft seal and blades into the cylinder and engage beater shaft in the drive coupling.

NOTE: The four (4) set screws on the coupling must be loose, as the coupling will have to be adjusted.

2. Place the head bushing in the dispensing head.

3. Place the dispensing head into the cylinder and tighten with the hand knobs.

⇨ ***Important:***
Make sure hand knobs are tight and head is against the end of the cylinder tube.

4. Slide the drive coupling (Ref. #4) forward until it is tight against the beater shaft. Move the coupling back 3/32 of one inch (about the thickness of a dime)

5. Tighten all four set screws.

6. Replace the drive belts.

7. Turn on electrical power.

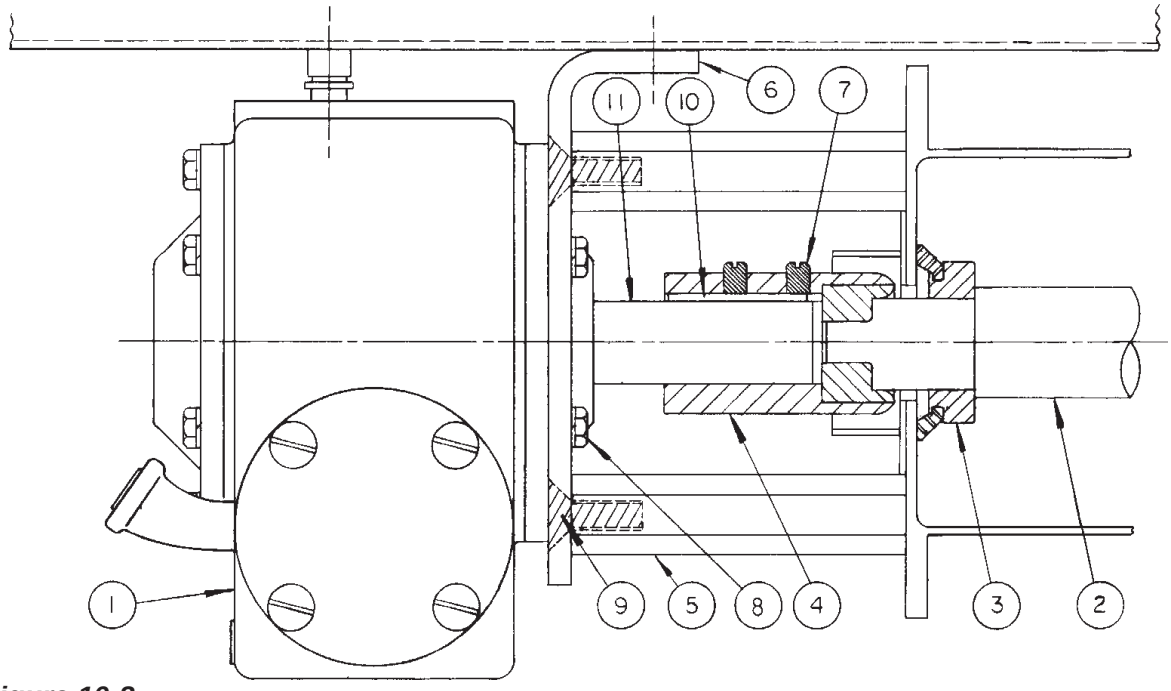


Figure 10-2

No.	DESCRIPTION
1.	Gear Reducer
2.	Beater Shaft
3.	Shaft Seal
4.	Drive Coupling
5.	Spacer
6.	Reducer-Mounting Plate
7.	Set Screws
8.	Bolt-Gear Reducer
9.	Bolt-Reducer Mounting Plate
10.	Key
11.	Output Shaft

11 Service Troubleshooting Tables

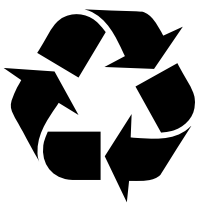
SAFETY

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 AND ADJUSTMENTS MUST BE MADE BY A QUALIFIED REFRIGERATION TECHNICIAN.

CAUTION
WHEN EVACUATING EITHER SIDE OF THE FREEZER, DO NOT OPERATE THE OPPOSITE SIDE. ALL CONTROL SWITCHES MUST BE IN THE "OFF" POSITION AND THE MAIN POWER SUPPLY DISCONNECTED. IF POWER IS APPLIED TO A COMPRESSOR IN A VACUUM, A SHORT MAY OCCUR.

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



11 Service Troubleshooting Table - continued

PROBLEM	PROBABLE CAUSE	REMEDY
Unit does not operate. 	1. Freezer unplugged.	1. Plug in freezer.
	2. Fuse or breaker blown at main disconnect.	2. Make sure your freezer is connected to a separate circuit independent from any other electrical equipment. Have technician check fuse or breaker size and check for low voltage; if not within 10% of nameplate rating call power company. Double head freezers with 2 compressors must have independent circuits.
	3. Beater motor out on overload.	3. Press overload reset button. Check for low voltage. Check product temperature.
	4. Water not turned on. (water cooled models only)	4. Check that water is turned on and hose is not kinked.
	5. Off on high pressure cut-out control.	5. Check refrigerant charge, pressure settings and high pressure control. Check for restricted water or drain line. Check condenser fans. Clean condenser
	6. Off on low pressure cut-out control.	6. Check refrigerant charge, pressure settings and low pressure control. Check for moisture in refrigeration system.
	7. Faulty selector switch.	7. Replace selector switch.
	8. Disconnected or broken wire in electrical circuit.	8. Check wiring and connections; repair or replace lead wires as necessary.
Leakage of mix or water from drain tube to drip tray. 	1. Damaged beater shaft seal or installed improperly.	1. Replace beater shaft seal or o-ring inside washer. Install properly.
	2. Beater shaft end play not set properly.	2. Set per instructions in Maintenance and Adjustment section.
	3. Drip tube mounted between reducer mounting plate and reducer.	3. Remount correctly. See section 9.4.2.
Mix leaking at dispensing head.	1. Head o-ring worn or pinched.	1. Replace o-ring.
	2. Head not properly installed.	2. Install head properly. Replace o-ring if pinched.
	3. Damaged head assembly.	3. Install new head.

11 Service Troubleshooting Tables - continued

PROBLEM	PROBABLE CAUSE	REMEDY
Dispensed product too soft. (Product temperature above 21°F [-6.1°C]). 	1. Low Overrun.	1. Check air tube, pinched or not in retainer. Air meter clean, replace or increase size.
	2. Thermostat set too high or faulty.	2. Adjust thermostat or replace.
	3. Automatic expansion valve incorrectly set or erratic in operation.	3. Adjust or replace expansion valve.
	4. Leak in refrigeration system resulting in little or no refrigeration.	4. Find refrigeration leak. Remove charge into a refrigerant recovery/recycling unit. Repair leak, evacuate and recharge system.
Product dispenses slowly out of dispensing head. 	1. Product too cold.	1. Check product temperature. Should be 18°F (-7.8°C). See Dispensed Product Too Cold.
	2. Reverse rotation on beater.	2. Correct rotation is clockwise as viewed from the front of freezer.
	3. Low overrun.	3. Check air tube, pinched or not in retainer. Air meter clean, replace or increase size.
	4. MTS pressure too low.	4. See MTS Troubleshooting Charts.
	5. Dispensed speed set to slow.	5. Adjust dispense bolt.
Dispensed product too hard. 	1. Low overrun.	1. Check air tube, pinched or not in retainer. Air meter clean, replace or increase size.
	2. Cylinder thermostat erratic or set too cold.	2. Adjust thermostat or replace.
	3. Faulty time delay. (Unit runs all the time.)	3. Replace time delay.
	4. Low suction pressure.	4. See Maintenance & Adjustments for setting.
	5. Plunger switch electrically or mechanically stuck closed.	5. Adjust or replace plunger switch.
	6. Dispense switch adjustment bolt too far down.	6. Adjust bolt. See Section 6.3 Plunger Switch Operation.
	7. Cylinder thermostat bulb down too far in bulb well.	7. Reposition bulb all the way up in the bulb well. Secure with cork.

11 Service Troubleshooting Table - continued

PROBLEM	PROBABLE CAUSE	REMEDY
Freezer runs continually and product continues to get colder.	1. Plunger switch rod engaged.	1. Close plunger completely.
	2. Plunger switch out of adjustment or defective.	2. Adjust or replace plunger switch as needed.
	3. Faulty thermostat or bulb not deep enough in well.	3. Check bulb location or replace thermostat.
	4. Contactor or relay contact points stuck.	4. Replace relay or contactor, and test head switch operation.
	5. Faulty time delay.	5. Replace time delay.
	6. Suction pressure too low.	6. Adjust expansion valve. See Maintenance and Adjustments section.
	7. Mechanical timer bad or knob caught.	7. Check timer actuation. Replace timer.
Poor or slow product recovery.	1. Dirty or blocked condenser, restricted air flow – high ambient temperature.	1. Clean condenser, lower ambient temperature.
	2. Thermostat cut-in point out of adjustment or malfunctioning.	2. Adjust or replace thermostat.
	3. Defective condenser fan motor.	3. Replace fan motor.
	4. Defective compressor.	4. See Troubleshooting Compressor/Condensing Circuit.
	5. Water flow restriction to machine or through condenser (water cooled models)	5. Remove restriction.
	6. Expansion valve set improperly or defective.	6. Adjust or replace valve.
Compressor does not operate or operates improperly.	1. Trouble in compressor condensing circuit.	1. Refer to Troubleshooting Chart-Compressor/Condensing Unit.
	2. Faulty start capacitor, run capacitor or relay. (Single phase only)	2. Replace start capacitor, run capacitor, or compressor relay.
	3. Faulty contactor.	3. Replace contactor.
	4. Disconnected or broken wire to switch or capacitor relay box. (Single phase only).	4. Check wiring and connections; repair or replace wire leads as necessary.

11 Service Troubleshooting Tables - continued

PROBLEM	PROBABLE CAUSE	REMEDY
Beater motor does not operate. ⚠	1. Head assembly is not installed.	1. Install head assembly.
	2. Beater motor overload tripped.	2. Push red reset button.
	3. Magnetic head switch defective.	3. Replace magnetic head switch.
	4. Open starter coil.	4. Replace coil.
	5. Worn out relay contacts.	5. Replace relay.
	6. Faulty capacitor assembly. (Single phase only.)	6. Replace capacitor assembly.
	7. Faulty beater motor.	7. Replace beater motor.
Compressor and beater motor operates only when dispensing. ⚠	1. Cylinder thermostat setting too warm or thermostat defective.	1. Replace or adjust thermostat.
Compressor and beater motor do not operate when dispensing. ⚠	1. Beater motor overload tripped.	1. Push red reset button.
	2. Plunger switch defective or out of adjustment.	2. Replace or adjust.
	3. Time delay defective.	3. Replace time delay
	4. Control relay defective.	4. Replace control relay.
	5. Out on HPCO or LPCO.	5. Install gauges to determine problem and correct.
Compressor does not start – hums intermittently (cycling on overload). ⚠	1. Improperly wired.	1. Check wiring against diagram.
	2. Low line voltage.	2. Check voltage. Check for other equipment on the same circuit.
	3. Open start capacitor or current relay. (single phase only)	3. Replace start capacitor or relay.
	4. High discharge pressure.	4. Check air condenser and clean if necessary. Allow for proper air flow.
	5. Defective compressor.	5. Replace compressor.

11 Service Troubleshooting Table - continued

PROBLEM	PROBABLE CAUSE	REMEDY
Compressor starts, but remains in start windings. (single phase only) 	1. Low line voltage.	1. Check voltage, check for other equipment on the same circuit.
	2. Improperly wired.	2. Check wiring against drawing. Check wire size.
	3. Current relay defective.	3. Replace current relay.
	4. Run capacitor shorted.	4. Check by disconnecting run capacitor.
	5. Start capacitor weak or defective.	5. Check capacitor, replace if necessary.
	6. High discharge pressure.	6. Check air condenser and clean if necessary.
Contactor failure, points burned and pitted. 	1. Low line voltage.	1. Make sure your freezer is connected to a SEPARATE circuit independent from any other electrical equipment. Ask power company to increase voltage to not less than 10% below data plate rating or install transformer.
	2. Excessive line voltage.	2. Ask power company to reduce voltage to maximum of 10% over data plate rating.
Capacitor failures. (single phase only) 	1. Low line voltage.	1. Ask power company to increase voltage to not less than 10% below data plate rating or install transformer.
	2. Improper capacitor or relay. (Single phase only).	2. Replace capacitor with properly rated capacitor or relay.

11.1 Service Troubleshooting Tables - continued
Compressor/Condensing Circuit

PROBLEM	PROBABLE CAUSE	REMEDY
Unit operates long or continuously. Mix not getting cold enough.	1. Dirty condenser.	1. Clean condenser.
	2. Shortage of refrigerant.	2. Remove charge into a refrigerant recovery/recycling unit, repair leak, evacuate and recharge system.
	3. Moisture in the system.	3. Remove charge into a refrigerant recovery/recycling unit, evacuate and recharge system.
	4. Glycol system problem.	4. Check glycol system.
⚠	CAUTION: All control switches must be in the "OFF" position and the main power supply CORD disconnected. If power is applied to a compressor in a vacuum a short may occur. CAUSING PERSONAL INJURY.	
	5. Compressor failing.	5. Check compressor for proper pressures. Replace if inadequate.
Discharge pressure too high.	1. Water turned off or defective water regulating valve.	1. Turn on water, replace regulating valve, or install water valve kit.
	2. Restricted water cooled condenser.	2. Clean or replace condenser.
	3. Dirty condenser.	3. Clean condenser.
	4. Unit location too warm. (air cooled).	4. Relocate unit away from restriction. Place nothing against the back or on the top of the unit.
	5. Hooked to hot water line.	5. Connect to cold water line.
	6. Glycol system problem.	6. Check glycol system.
⚠	CAUTION: All control switches must be in the "OFF" position and the main power supply CORD disconnected. If power is applied to a compressor in a vacuum a short may occur. CAUSING PERSONAL INJURY.	
	7. Refrigerant overcharge.	7. Bleed refrigerant charge into a refrigerant recovery/recycling unit, until sight glass bubbles (flashes) then add refrigerant until sight glass clears.
	8. Air in system.	8. Purge system into a refrigerant recovery/recycling unit, evacuate and recharge.

11.1 Service Troubleshooting Table - continued
Compressor/Condensing Circuit

PROBLEM	PROBABLE CAUSE	REMEDY
Discharge pressure too low. 	1. Water regulating valve open too wide. (water cooled model)	1. Adjust for proper water temperature and discharge pressure or replace valve. Or install repair kit.
	2. Shortage of refrigerant.	2. Check for leak. Remove charge into a refrigerant recovery/recycling unit, repair leak, evacuate and recharge system.
Noisy compressor. 	1. Tubing rattles.	1. Bend tubes away from contact.
	2. Spring broken internally.	2. Replace compressor.

NOTE: Contact H. C. Duke & Son, LLC, Electro Freeze Service Department for instructions prior to warranty compressor replacement.

11.2 Service Troubleshooting Tables - continued
Mix Transfer System (MTS)

PROBLEM	PROBABLE CAUSE	REMEDY
Mix leaks out of MTS.	1. Loose clamps.	1. Tighten clamps, finger tighten only.
	2. Transfer hose worn or split.	Remove cover, clean inside MTS around rollers with spray bottle provided. Install new hose. Do not twist hose.
Mix transfer system (MTS) will not operate.	1. MTS cover not on.	1. Close MTS cover.
	2. Hose not installed properly.	2. Check position – reinstall.
	3. Cover switch defective.	3. Replace cover switch.
	4. MTS relay defective.	4. Replace relay.
	5. Start capacitor defective or motor start switch defective.	5. Replace start capacitor or start switch.
	6. Pressure switch defective.	6. Replace pressure switch.
	7. Motor defective or internal overload tripped.	7. Allow enough time for motor to reset overload. Replace motor as needed.
MTS cycles on and off without dispensing.	1. Shoe clamp not tight.	1. Tighten knob.
	2. Worn transfer hose.	2. Replace hose.
	3. Leak on pressure side of system.	3. Find leak and correct, check head, drain tube and all hoses.
MTS will not prime.	1. Insufficient supply of mix.	1. Replenish mix supply.
	2. Swing clamp knob loose.	2. Tighten knob.
	3. Air hose or air meter not installed.	3. Install air hose/air meter.
	4. Mix inlet tube o-ring cut or missing.	4. Replace o-ring.
	5. Hose not installed or worn.	5. Install or replace hose .
	6. Air leak between mix inlet tube and hose.	6. Replace as needed.

11.2 Service Troubleshooting Table - continued
Mix Transfer System (MTS)

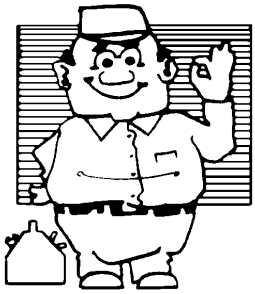
PROBLEM	PROBABLE CAUSE	REMEDY
Mix pickup tube loses prime.	1. Defective or missing duckbill valve.	1. Replace duckbill valve.
	2. Inlet clamp not tight.	2. Tighten clamp.
	3. Worn transfer hose.	3. Replace transfer hose.
	4. Mix inlet tube o-ring cut or missing.	4. Install new o-ring.
No Air (Overrun).	1. Air meter plugged.	1. Clean or replace air meter.
	2. Air tube pinched or not in retainer.	2. Place in retainer or replace tube.
Too much air, overrun too high – popping problems.	1. Defective or missing duckbill valve.	1. Install duckbill valve.
	2. Air meter too large.	2. Install smaller air meter.
	3. Air leak between mix inlet tube and hose.	3. Replace as needed.
	4. Air line hose cracked – sucking air.	4. Replace air line hose.
	5. O-ring on mix inlet tube worn or cut.	5. Replace o-ring.
MTS will not shut off.	1. Worn transfer hose.	1. Replace hose.
	2. MTS pressure too high. Pressure switch stuck in closed position.	2. Check pressure with gauges (12-14 lb). Replace switch if needed.
	3. MTS relay defective.	3. Replace relay.
Mix shoots out air meter.	1. Transfer hose worn.	1. Replace hose.
	2. MTS shoe clamp knob not tight.	2. Tighten knob.
	3. MTS pressure too high. Pressure switch stuck in closed position.	3. Check pressure with gauges (12-14 lb). Replace switch if needed.

11.3 Service Troubleshooting Tables - continued
Spindle Shaft

PROBLEM	PROBABLE CAUSE	REMEDY
Product climbing up shaft of spindle motor. 	1. Handle being held down to finish mixing product and flavor.	1. Instruct operator to use button on front panel to finish mixing product. Proper dispensing procedures are included in the video shipped with the freezer.
	2. Overrun too high.	2. Check for air leaks. Check that duckbill valve is installed.
	3. Plunger switch rod engaged.	3. Close dispenser completely.
	4. Cylinder thermostat set too erratic or cold.	4. Adjust thermostat or replace.
	5. Low suction pressure.	5. See Section 7.2 Refrigeration Settings.
	6. Plunger switch adjustment bolt too far down.	6. Adjust or replace plunger switch.
	7. Plunger switch out of adjustment or defective.	7. Adjust plunger switch as needed. See Section 6.3 Plunger Switch Operation.
	8. Mechanical timer knob caught or defective.	8. Check timer actuation. Replace timer.
	9. Faulty time delay. (Unit runs all the time)	9. Replace time delay.
	10. MTS pressure too low.	10. Check dispensing temperature.
Spindle motor does not work or works erratically. 	1. Fuse blown (spindle will not turn).	1. Replace fuse.
	2. Brushes worn.	2. Replace brushes.
	3. Motor bad.	3. Replace motor.
	4. Bearing binding up on shaft.	4. Replace bearings.
Spinner going through the bottom of the cup.	1. Cup being pushed up too hard.	1. Rest spinner on the bottom of cup and pull down on cup while dispensing.

11.3 Service Troubleshooting Table - continued
Spindle Shaft

PROBLEM	PROBABLE CAUSE	REMEDY
Spinner cutting side of cup.	1. Spinner edges sharp from using metal malt collars or metal malt cups.	1. Use only plastic malt collar. Replace spinner.



QUALITY PARTS
PROTECT
YOUR
INVESTMENT

Always use Electro Freeze replacement parts.

If you require further assistance

contact your local Electro Freeze Distributor

Name: _____

Address: _____

_____

Phone: _____

Or the factory

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@electrofreeze.com

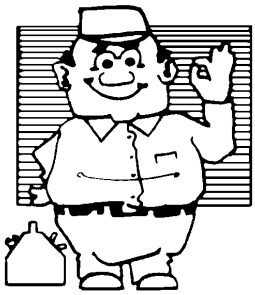
Always have the model and serial number of your freezer when contacting your distributor or factory. Components may differ with a particular serial number of the same model.

11.3 Service Troubleshooting Tables - continued
Spindle Shaft

PROBLEM	PROBABLE CAUSE	REMEDY
Product climbing up shaft of spindle motor. 	1. Handle being held down to finish mixing product and flavor.	1. See Section 8.3 – Dispensing Shakes. View video for proper dispensing procedures.
	2. Reverse rotation on beater.	2. Contact your Electro Freeze Distributor for service.
	3. Plunger switch rod engaged.	3. Close dispenser completely.
	4. Cylinder set too erratic or cold.	4. Contact your Electro Freeze Distributor for service.
	5. Low suction pressure.	5. Contact your Electro Freeze Distributor for service.
	6. Plunger switch adjustment bolt too far down.	6. Contact your Electro Freeze Distributor for service.
	7. Plunger switch out of adjustment or defective	7. Contact your Electro Freeze Distributor for service.
	8. Mechanical timer knob caught or defective.	8. Contact your Electro Freeze Distributor for service.
	9. Faulty time delay. (Unit runs all the time.)	9. Contact your Electro Freeze Distributor for service.
	10. MTS pressure too low.	10. Contact your Electro Freeze Distributor for service.
Spindle motor does not work or works erratically. 	1. Fuse blown (spindle will not turn).	1. Contact your Electro Freeze Distributor for service.
	2. Brushes worn.	2. Contact your Electro Freeze Distributor for service.
	3. Motor bad.	3. Contact your Electro Freeze Distributor for service.
	4. Bearings binding up on shaft.	4. Contact your Electro Freeze Distributor for service.
Spinner going through the	1. Cup being pushed up too hard.	1. Rest spinner on the bottom of cup and

11.3 Service Troubleshooting Table - continued
Spindle Shaft

PROBLEM	PROBABLE CAUSE	REMEDY
bottom of the cup.		pull down on cup while dispensing.
Spinner cutting side of cup.	1. Spinner edges sharp from using metal malt collars or metal malt cups.	1. Contact your Electro Freeze Distributor for service.



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_____

Phone: _____

Or the factory

H.C. Duke & Son, LCC, Electro Freeze Service Department, as follows:

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

Fax: (309) 755-9858

E-mail: service@electrofreeze.com

Always have the model and serial number of your freezer when contacting your distributor or factory. Components may differ with a particular serial number of the same model.

ELECTRO FREEZE®

INSTALLATION, START-UP AND INSTRUCTION CHECKLIST

*For Freezers with Mix Transfer Systems

Freezer Location: Account Name _____ Model No.: _____
Street Address: _____ Phone: _____ Serial No.: _____
City: _____ State: ____ Zip: _____ Voltage: _____
Distributor Name _____
Dealer or Service Agency Name: _____ Phase: _____
Street Address: _____ Phone: _____ Cooling: _____
City: _____ State: ____ Zip: _____ Installation Date: _____

IMPORTANT: This freezer must be installed by a qualified service technician in accordance with the installation instructions in the Service Manual. Contact the factory Service Department for more information at 800-755-4545.

Installation

	A Left Side	B Right Side
A. Position the Unit		
1. Inspect freezer for any transit damage.	☐	
2. Check pulley alignment, belt tension, set screws and bolt tightness.	☐	☐
3. Install casters or legs.	☐	
4. Place freezer in proper location	☐	
5. Level freezer by adjusting legs or casters. Unit should have ¼" slope to the front.	☐	
6. Allow 6" clearance for air flow.	☐	
B. Electrical Wiring		
Note: All connections must conform to local code requirements and/or be in compliance with the National Electrical Code.		
1. Check and record supply voltage at disconnect.	_____ V	_____ V
2. Check wire condition and record wire size.	_____ GA	_____ GA
Record length of run from supply box.	_____ ft.	_____ ft.
3. Wire all 2 compressor freezers with two (2) separate lines and disconnects.	☐	☐
4. Connect green ground wire to ground screw lug in service entrance junction box.	☐	☐
5. Fuse freezers between maximum fuse size and minimum circuit ampacity listed on freezer data plate. Record fuse size or breaker rating.	____	____
6. Check beater rotation (Clockwise from front)	☐	☐
7. After installation, check and record voltage at freezer under load.	____	____
8. After installation, check and record actual operation amperage.	____	____
C. Water Connections (If applicable)		
1. Connect water inlet line (cold water only) (⅜" ID for single head, ½" ID for double head).	☐	
2. Connect drain line.	☐	
3. Turn water on and check for leaks.	☐	☐
D. Final Assembly for Freezers with Mix Transfer Systems		
1. Unpack all spare parts for inspection.	☐	
2. Install and check any accessory item purchased.	☐	☐
3. Install refrigeration test gauges.	☐	☐
4. Perform the Test of Installation outlined in the Service Manual.	☐	☐

Operator/Owner Training

Assembly & 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. Some freezers have more than one disconnect switch.

1. Review and explain Operator's Manual and caution labels to operator/owner.	☐
2. Identify model and serial number tag. Record in manual.	☐
3. Explain and identify all control switches.	☐
4. Instruct the owner/operator in assembly, lubrication and disassembly procedures and explain the following:	☐
a. Plunger/dispensing rod.	☐
b. Dispensing head, plunger and serrated nozzle or spigot extension.	☐
c. Beater shaft, blades, shaft seal and bushing.	☐
d. MTS hose assembly	☐
e. Transfer hose, locating line and life (30 days maximum)	☐
f. Duckbill check valve and air hose	☐
g. Air meter number identification and care	☐
h. MTS housing and hose installation	☐
5. Wash all cylinder and dispense head parts per manual instructions. Let air dry.	☐
6. Wash cylinder with brush.	☐
7. Wash mix inlet tube with brush.	☐
8. Explain lubrication points, reassemble and install cylinder and head parts	☐
9. Reassemble and install mix transfer hose assembly.	☐
10. Before proceeding with demonstration, have operator/owner disassemble, lubricate and reassemble all parts.	☐
11. Explain and identify function and cleaning of drain tube.	☐
12. Explain and identify spare parts kit.	☐

Freezer Model No. _____

Serial No. _____

Owner/Operator Training
Machine Start-up

	A Left Side	B Right Side
1. Instruct the owner/operator on proper cleaning and sanitizing as outlined in the Operator's Manual.	☐	
2. Drain sanitizer from the freezer.	☐	☐
3. Pour at least 2-1/2 gallons of mix into each mix container.	☐	☐
4. Open dispensing plunger and air relief/bleed plug. Turn MTS switch to "ON". Leave plunger open until pure mix comes out of dispensing head then close plunger. Close air relief/bleed plug when mix is coming out of the air relief/bleed plug opening in the bottom of the head.	☐	☐
5. Allow MTS to run until it shuts off on pressure.	☐	☐
6. Turn selector switch to "AUTO"	☐	☐
7. Allow refrigeration to cycle, record cycle times once down to dispensing temperature (approxiamtely 15-20 minutes). Length of on time and off time ..... ON	_____	_____
OFF	_____	_____
8. Completely review all portions of freezer start-up.		☐
9. Explain overrun, how to check, calculate and change.		☐
10. Explain and have operator/owner sign warranty card.		☐

Installation Adjustments

		A Left Side	B Right Side
1. Check refrigerant charge - sight glass.	*First check*	☐	☐
	Second check	☐	☐
2. Check, set and record head pressure.	*First check*	_____psig	_____psig
	Second check	_____psig	_____psig
3. Check, set and record cylinder expansion valve pressure.	*First check*	_____psig	_____psig
Note: Cabinet refrigeration must be turned off while checking. (Some models)	*Second check*	_____psig	_____psig
4. Check and record cabinet suction pressure.	*First check*	_____psig	
NOTE: cylinder refrigeration must be turned off while checking. (Some models)	*Second check*	_____psig	
5. On freezers equipped with adjustable timers. Check and record settings.	*Beater Delay*	_____	_____
	Compressor Delay	_____	_____
	Beater Recycle (Platinum Series ONLY)	_____	_____
	Dispense (Platinum Series ONLY)	_____	_____
6. What product is being used.	*A Side*	_____	
	B Side	_____	
7. Set cylinder thermostat to maintain desired temperature. Record settings.	*First check*	___/___	___/___
	Second check	___/___	___/___
8. Check and record actual product dispensing temperature.	*First check*	_____°F	_____°F
	Second check	_____°F	_____°F
	Beater Delay	_____	_____
	Compressor Delay	_____	_____
9. Check and record air meter size.	*Check*	_____	_____
10. Make sure freezer cycles off with all microswitch push rods removed.		☐	☐
11. Make sure push rod starts the appropriate side and the freezer cycles off after activation in the amount of time set on the dispense timer.		☐	
12. Re-install all panels and panel screws.		☐	

NOTE: Wait approximately two (2) hours and recheck and record all installation adjustments again. Verify freezer is properly set. This check should be recorded in the second check column.

Remarks: _____

Installation Checked and Inspected By:

Print Name: _____ Signature: _____ Date: _____

Check one: ☐ Distributor ☐ Authorized Service Agency

Operator/Owner Training Completed By:

Print Name: _____ Signature: _____ Date: _____

Check one: ☐ Distributor ☐ Authorized Service Agency

I hereby certify this equipment has been inspected and is in satisfactory operating condition. It has been demonstrated for proper start-up and operating procedures. The potential dangers which could occur if the freezer is not operated properly have been explained to me and I have read and understand the warranty attached to the Warranty Registration Card.

Signature required.

Print Name: _____ Purchaser: _____ Date: _____

Print Name: _____ Operator: _____ Date: _____

IMPORTANT: THIS FORM MUST BE COMPLETELY FILED OUT AND SIGNED BEFORE RETURNING. DISTRIBUTE THIS FORM AS FOLLOWS: **1) WHITE COPY AND WARRANTY REGISTRATION CARD MAILED** TO H. C. DUKE & SON, INC., 2116 8TH AVENUE, EAST MOLINE, IL 61244, **2) YELLOW COPY RETAINED** BY INSTALLING REPRESENTATIVE , **3) PINK COPY MAILED** TO SELLING DISTRIBUTOR.