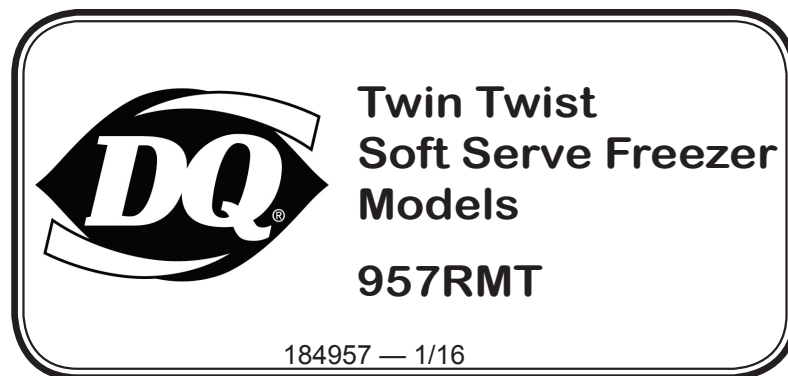




**H. C. DUKE & SON, LLC**  
2116 - 8th Avenue • East Moline, Illinois 61244

## **OPERATOR'S MANUAL**

with Illustrated Parts List





**Operator's Manual  
for the  
Soft Serve Twist Freezer  
Model 957RMT**



# SAFETY FIRST!

Follow these four steps to safety ....

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



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

2. **Understand Signal Words ....**



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

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

3. **Follow Safety Instructions ....**



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

**DO NOT** attempt to operate the 957RMT Twin Twist Soft Serve Freezer until you read and understand all safety messages and the operating instructions in this manual.

# SAFETY FIRST!

## 4. Definitions ....

---

**Trained person (or Operator):** A person who has been trained in the basic operation of the freezer. This person is knowledgeable in operation of machine startup, stopping, filling, and basic cleaning, disassembly, washing, and sanitation of the freezer.

**Freezer Technician:** A person who has been trained by a factory representative, or an experienced and qualified service person, to perform more complicated operations such as freezer installation, maintenance repairs, component replacement, is aware of hazards associated with electricity, moving parts, and takes necessary steps to protect against injury to themselves and other people.

## 5. Operate Safely ....

---

**IMPORTANT: Store Managers, owners, and supervisors must be aware of staff capabilities and that they do not perform freezer operations outside their level of knowledge or responsibility.**



**DO NOT** allow untrained personnel to maintain or service this freezer. Failure to follow this instruction may result in severe personal injury. **DO NOT** operate the freezer until all service and access covers are secured with screws. **DO NOT** attempt to repair the freezer until the main power supply has been disconnected. Some freezers have more than one disconnect switch. Contact your IDQ authorized service representative or H.C. Duke & Son, LLC Service Department for original equipment parts.

## 6. Caution ....

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- This Freezer is to be operated by trained persons. The Dispense feature, if used by public in self-serve applications, shall be monitored by trained persons able to assist people with physical, sensory or mental impaired capabilities.
- Children should not be allowed to play around this equipment.
- Do not store explosive substances such as aerosol cans with a flammable propellant in freezer.
- This appliance is not designed for outdoor weather conditions and shall not be exposed to rain.
- Do not wash machine with power sprayer. Do not install machine next to a power sprayer where splash of freezer can occur.
- Machine is designed for use in areas of normal atmosphere. It is not to be used in areas subject to explosion-proof standards.

## Safety Decal Locations

Do not attempt to operate the freezer until all safety precautions and operating instructions in this manual are read and understood.

Take notice of all warning, caution, instruction and information decals (or labels) on the freezer as shown in the figure on the next page. The labels have been put there to help maintain a safe working environment.

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

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

For factory service assistance, contact H. C. Duke & Son, LLC, Service Department by phone or FAX:



Phone: (309) 755-4553

(800) 755-4545

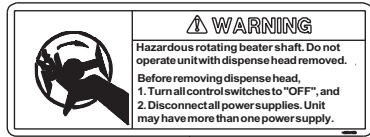
FAX: (309) 755-9858

E-mail: [service@hcduke.com](mailto:service@hcduke.com)

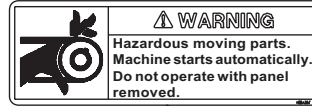
(The decals on the next page are numbered 1, 2, 3, and 4. Those numbers correspond to the numbers in the table below. The table provides the part number, description, and quantity for each decal.)

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

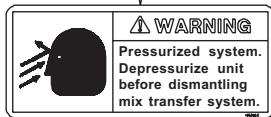
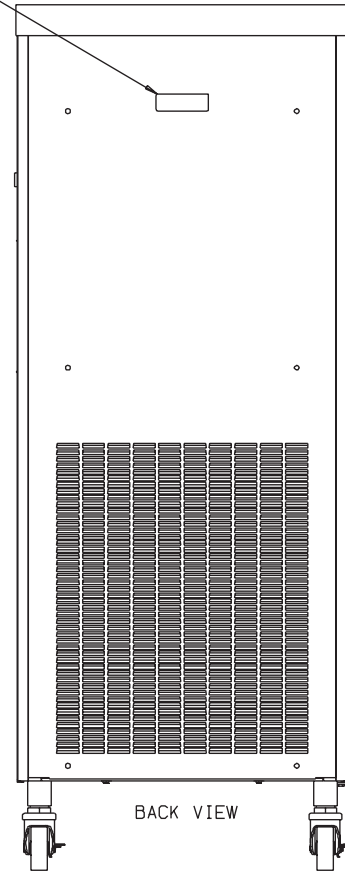
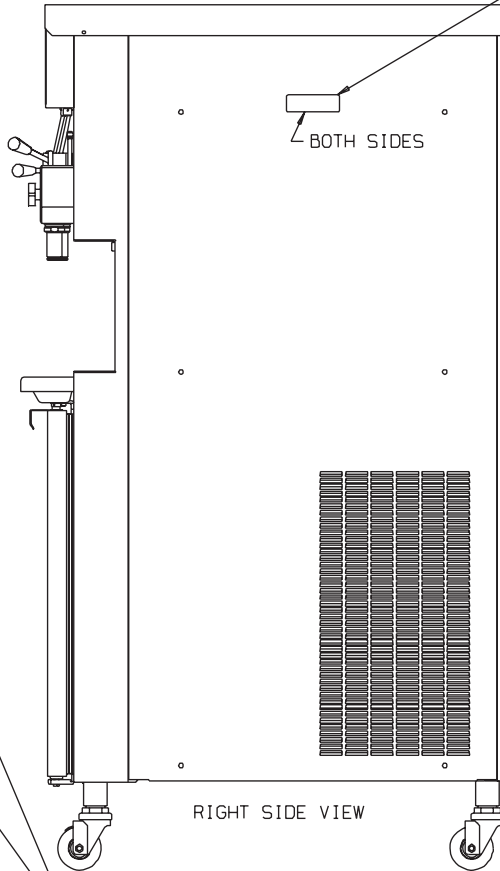
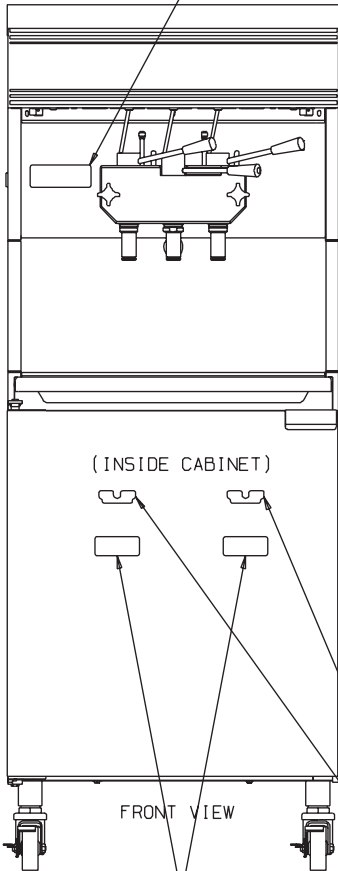
# Safety Decal Locations



HC165025  
①



HC165126  
②



HC165246  
③



HC165048  
④

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	2.3	Electrical Requirements
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# 1 Introduction

The 957RMT Freezer is designed to produce DQ frozen soft serve ice cream or DQ yogurt, with a product serving temperature of 18 to 19°F (-8 to -7°C). If such products are prepared from powdered concentrate, they should be precooled to 40°F (4°C) prior to introduction to the freezer. Use of other products in this machine is considered misuse (see Warranty.)

This manual has been prepared to assist in the training of personnel on the proper operation and general maintenance of your Duke freezer.

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

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

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

Name \_\_\_\_\_

Address \_\_\_\_\_

Phone \_\_\_\_\_

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



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

Fax number: (309) 755-9858

E-mail: [service@hcduke.com](mailto:service@hcduke.com)


# 2 Note to Installer

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

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

## 2.1 Uncrating and Inspection

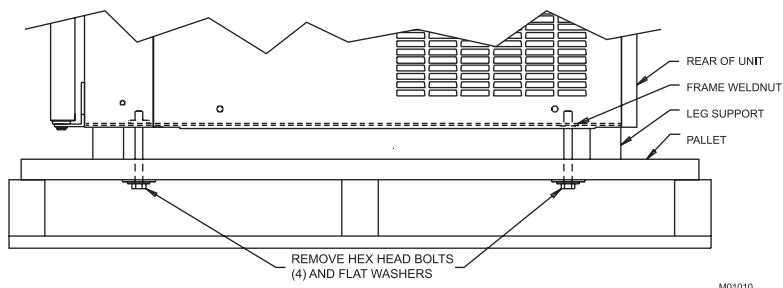
**CAUTION**


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

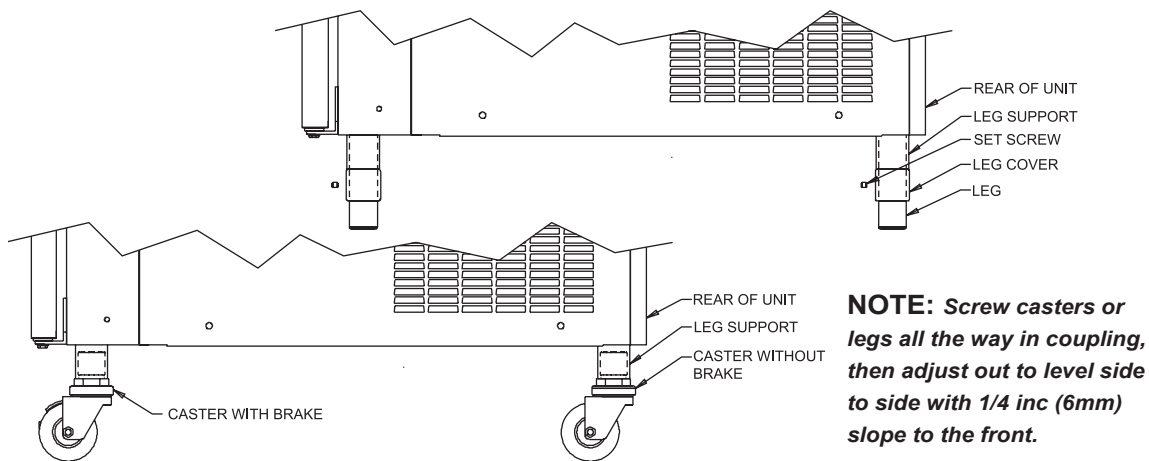
When the unit is received and while the carrier is still present, inspect the shipping carton for any damage that may have occurred in transit. If the SHOCKWATCH® label indicates red and/or the carton is broken, torn, or punctured

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

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



**Figure 2-1 Machine bolted to Shipping Base**



**Figure 2-2 Installing Mounting Legs or Casters**

— continued

## 2.2 Installation



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

1. This freezer is designed for indoor use and must be protected from outdoor weather conditions.
2. Where codes permit, we recommend that the freezer be installed on casters and have flexible water and electrical connections for service and cleaning ability.
3. **All models** require a minimum 6 inch (15 cm) clearance on either the side panels or the rear panel for adequate ventilation. Freezers designed with top air discharge require at least 24 inches (61 cm) above the top panel be free of obstructions. Anything blocking ventilation of the freezer (including cone dispensers) will reduce the efficiency of the freezer.
4. **Water cooled** double models will require a 1/2" MPT water inlet and water waste connection. Both water condensers are tied together so that one water inlet and one water waste is all that is required. The connections are found on the bottom under the compressor mounting area and are clearly tagged - "Water Inlet" and "Water Waste". A manual shut-off valve should be installed in the water inlet line at the time of installation. The water pressure must be between 35-140 psig (241-965kPa) for proper operation.
5. **Water cooled and air cooled remote** freezers require at least 12 inches (30 cm) above the top panel be free of obstructions. Anything blocking ventilation of the freezer (including cone dispensers) will reduce the efficiency of the freezer.
6. Place the freezer in the final location and level the machine by adjusting the legs or casters so that the unit is level side-to-side, and the front is approximately 1/4" lower than the rear, to allow proper drainage of the freezing cylinder.
7. **Water Cooled** Do not allow freezer to be in ambient where air temperature goes below 0°C (32°F), the freezing temperature of water.
8. **Water consumption** increases if temperature of entering water is above 20°C (65°F)

## 2.3 Electrical Requirements



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

1. Always verify electrical specifications on the data plate of each individual freezer. Data plate specifications will always supersede the information in this manual. (See Figure 3-2)
2. Supply voltage must be within  $\pm 10\%$  of voltage indicated on the nameplate. Also, on three-phase systems, voltage between phases must be balanced within 2%. (More than a 6 volt difference between any two voltage measurements at 208-230 volts indicates a possible imbalance.) Request your local power company to correct any voltage problem.
3. An easily accessible main power disconnect must be provided for all poles of the wiring to the freezer.

## 2.4 Electrical Connections



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

1. Double freezers with two compressors require one power supply for each side of the freezer. Each side of the freezer operates independently.
2. Check the data plate for fuse size, wire ampacity, and electrical specifications. (See Figure 3-2)
3. Refer to the wiring diagram provided for proper power connections.
4. Electrical connections are made in the junction boxes located mid-level behind the left side panel.



### **WARNING**

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

### **Important**

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

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

## 3 Specifications

### 3.1 Particulars

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

#### **957RMT**

Width-in./cm	26/66
Height-in./cm	67.5/171
Depth-in./cm	36.5/93
Weight-lbs./kg	847/384
Compressor (2)	2 H.P. /9500 BTUH 1.5 kw (Motor) 2.8 kw (Cooling)
Beater Motor (2)	2 H.P./1.5 kw
Refrigerant	404a
*Charge	3.75 lb/1.7 kg
Mix Container (2)	30 Qts./28.4 Liters
Cylinder (2)	4 Qts./3.8 Liters

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

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

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

### 3.2 Dimensions

The dimensions of the 957RMT are provided in Figure 3-1, below.

TOP OF UNIT MUST BE KEPT CLEAR TO ALLOW AIR EXHAUST

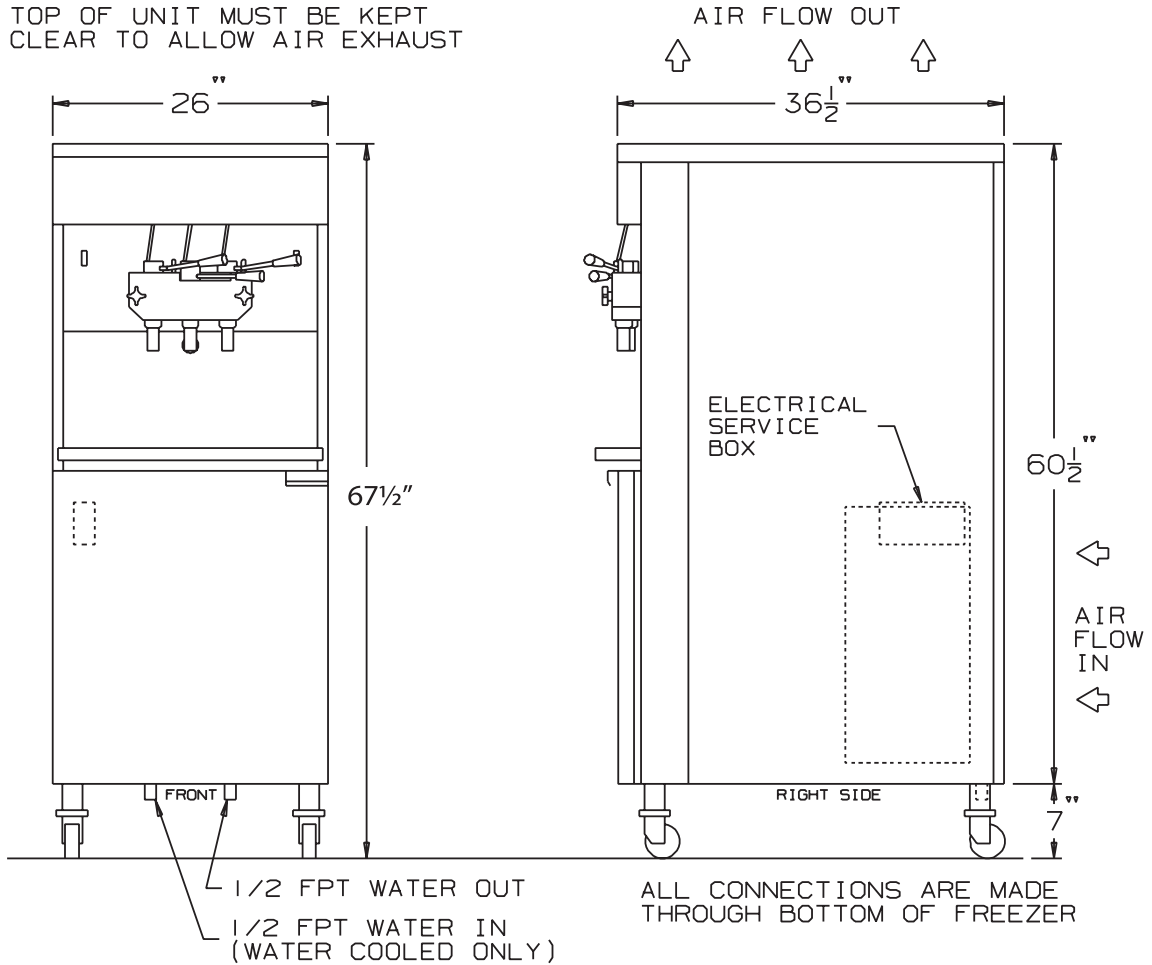
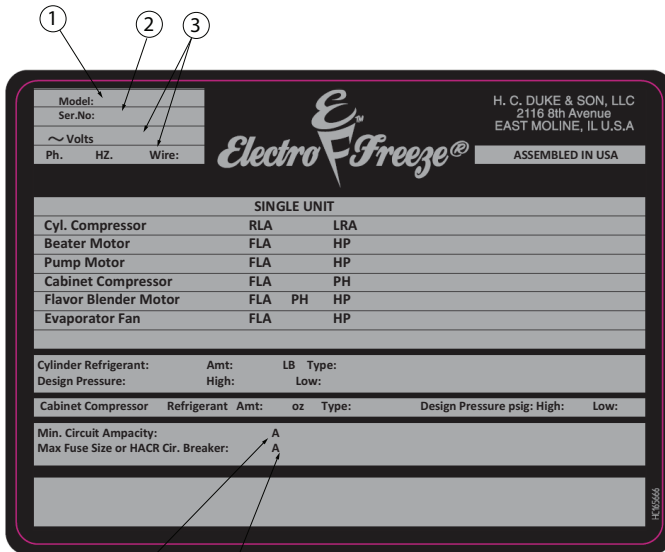


Figure 3-1

### 3.3 Data Plate



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

Figure 3-2 Data Plate



### 3.4 Reference Information

---

**Write in  
Reference  
Information HERE!**



Fill in the following information below as soon as you receive the 957RMT. (The item numbers—encircled, below—correspond with the callout numbers above.)

**IMPORTANT: Complete for reference:**

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

### 3.5 Installation Date

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Installation Date \_\_\_\_\_

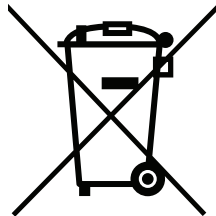
Installed by \_\_\_\_\_

Address \_\_\_\_\_  
\_\_\_\_\_

Phone \_\_\_\_\_

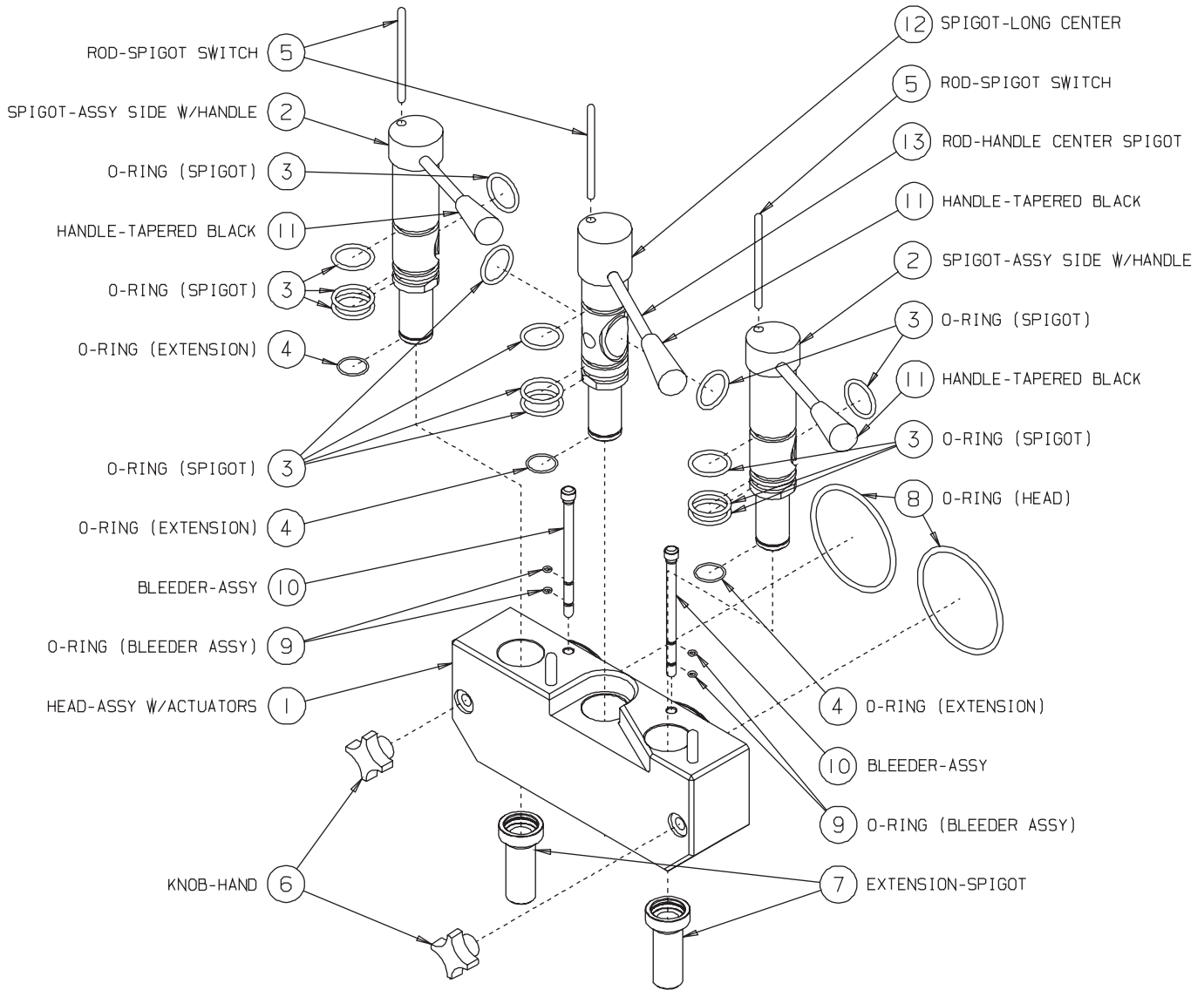
### 3.6 WEEE (Waste Electrical and Electronic Equipment)

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

# 4 Part Names and Functions



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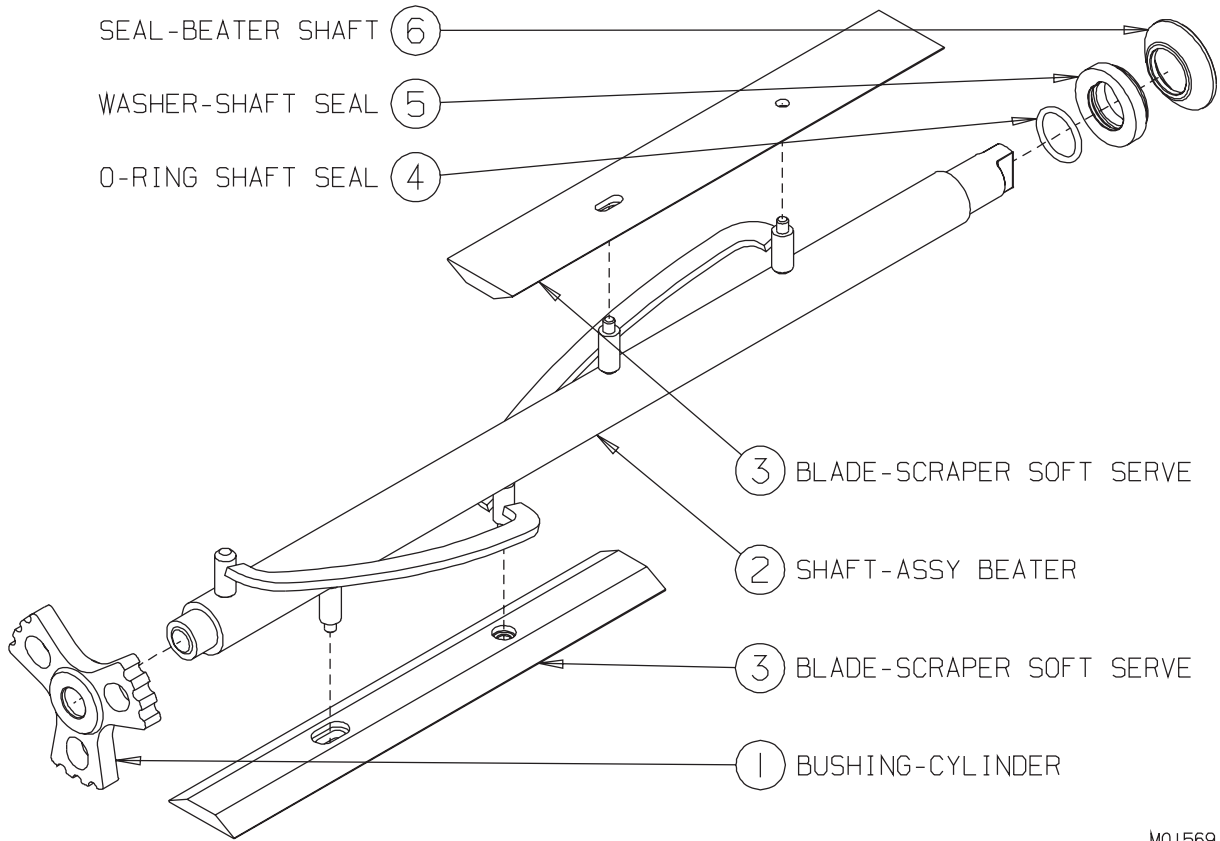
**Figure 4-1 Head Assembly**

## 4 Part Names and Functions (continued)

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

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

## 4 Part Names and Functions (continued)



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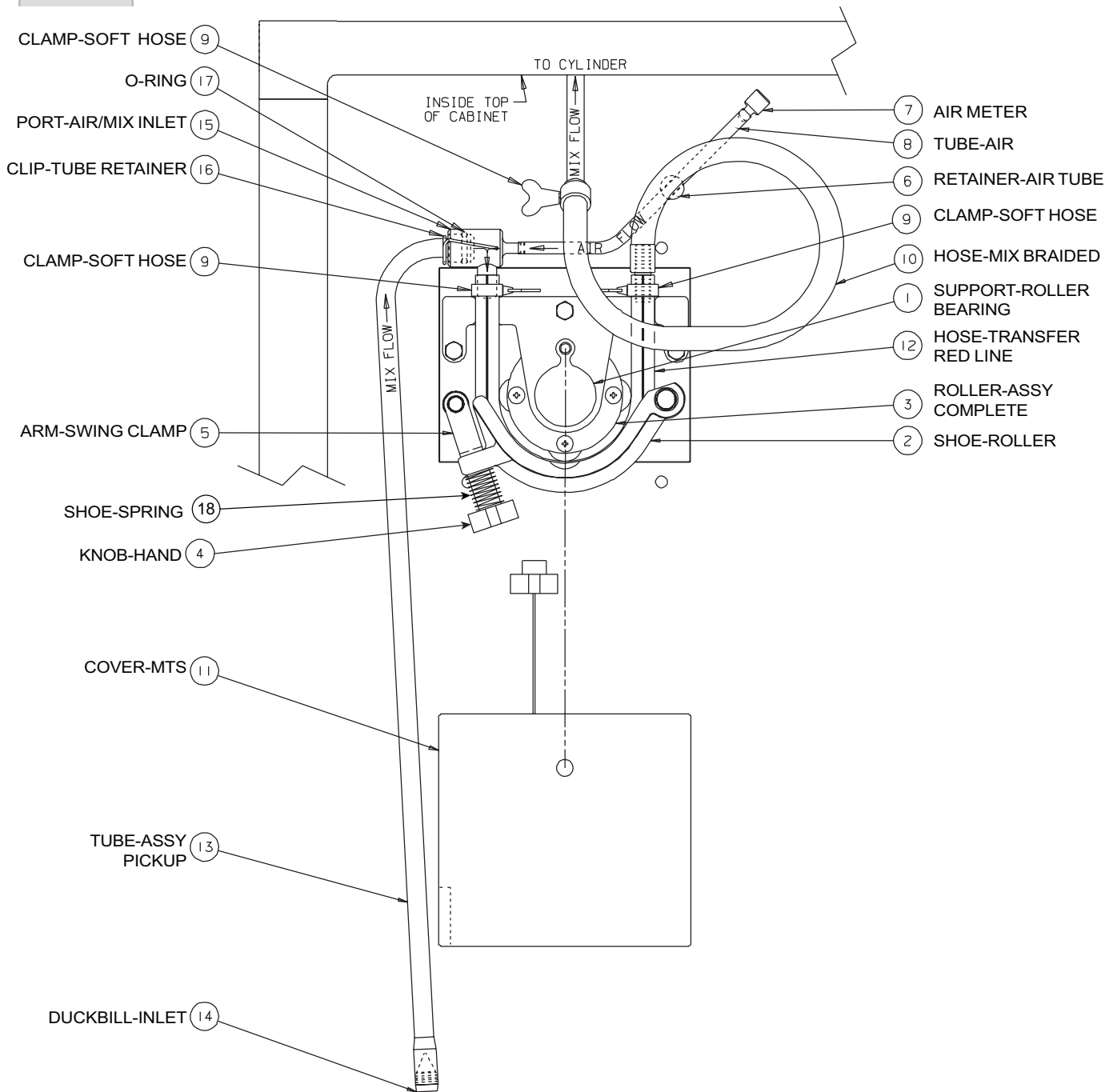
**Figure 4-2 Beater Shaft Assembly**

## 4 Part Names and Functions (continued)

*The following descriptions apply to figure 4-2. The number preceding the part name corresponds to the number in the figure.*

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

## 4 Part Names and Functions (continued)



M00833

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

## 4 Part Names and Functions (continued)

*The following descriptions apply to figure 6-3. The number preceding the part name corresponds to the number in the figure.*


- 1.) **SUPPORT - ROLLER BEARING:**  
Holds roller assembly in place.
- 2.) **SHOE - ROLLER:** Provides an opening to insert the mix transfer 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 position.
- 5.) **CLAMP - SHOE:** Swings hand knob into position over roller shoe.
- 6.) **RETAINER - AIR TUBE:** Holds air meter tube in the “up” position.
- 7.) **AIR METER:** 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:** 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.

# 5 Operator Controls

Refer to figure 5-1 on the following page for location of these controls and indicators on the 957RMT.

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

**CAUTION**



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

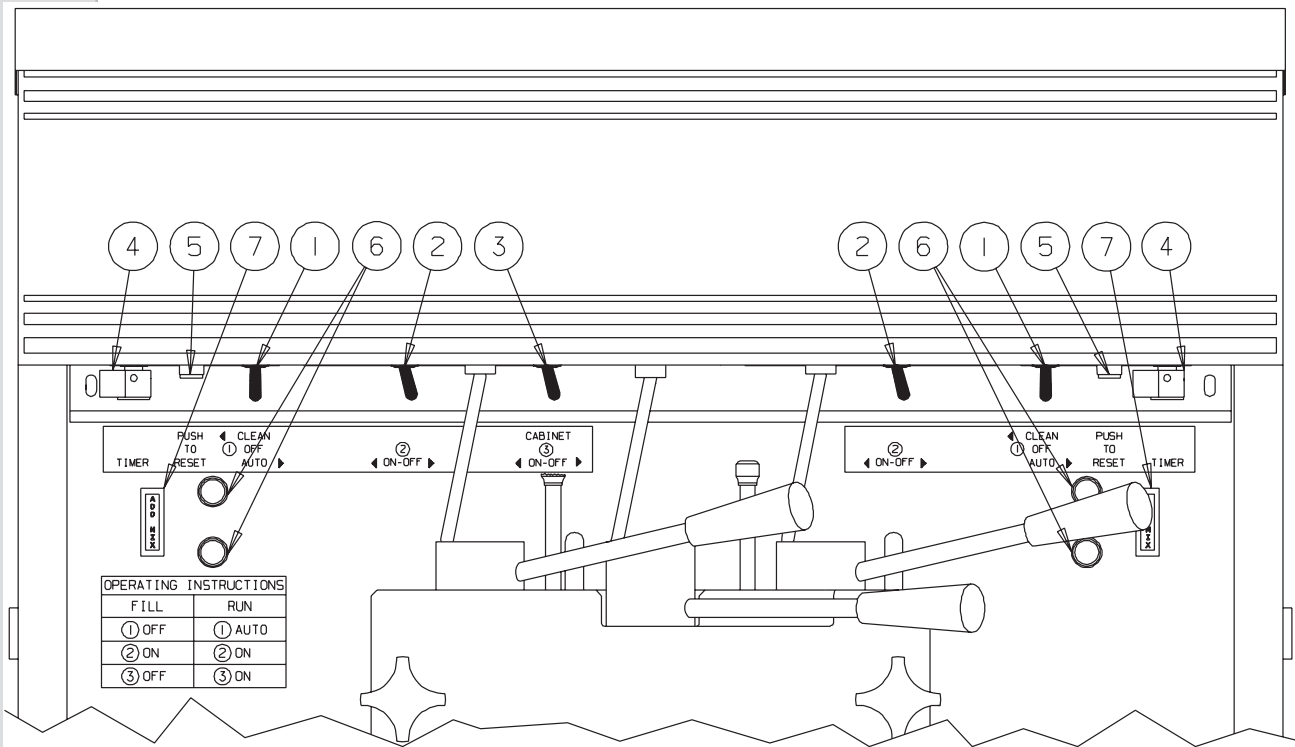


Figure 5-1

M01588

## 1. Selector Switch

This three-position switch controls the functions of your freezer.

- A. **“CLEAN”** (Left Position) - This position operates the beater only (no refrigeration to the cylinder). Always use this mode in all cleaning and sanitizing operations.
- B. **“OFF”** (Center Position) - In this position the beater motor will not operate and no refrigeration will be provided to the cylinder.

- C. **“AUTO”** (Right Position) - This position activates both the beater motor and refrigeration unit. This is the normal operating position.

**IMPORTANT:**  
**DO NOT use the AUTO position with water or sanitizer in the cylinder—the freezer will be damaged.**



## 5 Operator Controls (continued)

### 2. Mix Transfer System (MTS) Switch

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

A. **“MIX ON”** (Left Position) - Use this position when the freezer is in the normal operating mode and/or when the product is being removed from the cylinder.

B. **“OFF”** (Center Position) - In this position the MTS will not operate.

### 3. Cabinet Switch

This two-position switch controls the cabinet refrigeration.

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

A. **“ON”** (Left Position) - The cabinet thermostat controls the system refrigeration to maintain a temperature of 36° - 40°F (2°- 4°C) in the storage cabinet. This position must be used when mix is in the storage cabinet.

B. **“OFF”** (Right Position) - The cabinet will not be refrigerated in the “OFF” position, unless either selector switch is in the “ON” position.

**NOTE:** The cabinet is automatically “ON” when either selector switch is in the “AUTO” position.

### 4. Timer

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.

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

### 5. Reset - Overload

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.

**IMPORTANT:**  
*If the overload trips frequently, your freezer should be checked for proper product temperature, overrun and voltage. Contact H.C. Duke & Son, Inc. or your local refrigeration service company.*

## 6 Operator Controls (continued)

### 6. Pilot Lights

These lights indicate when the beater motor and compressor are operating together or independently.

- A. Amber — this light indicates the beater motor is operating.
- B. Red — this light indicates the compressor is operating.

### 7. Indicator Light “ADD MIX”

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” (5.1 cm) of mix in the container. For best operating results keep container full.

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

### 8. Probe - ADD MIX (not shown)

For the “ADD MIX” lights to work properly, the probes must be installed in the mix containers, with cords attached and plugged into the receptacles located in the rear wall of the cabinet.

The following diagram will show the correct positions of the switches for run and filling operations.

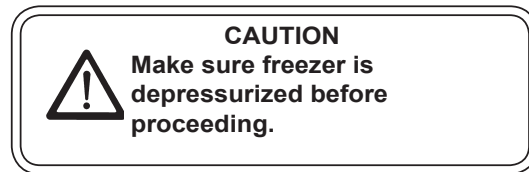
To turn the entire machine off, switches numbered 1, 2, and 3 must be in the “OFF” position.

OPERATING INSTRUCTIONS	
FILL	RUN
① OFF	① AUTO
② ON	② ON
③ OFF	③ ON

## 7 Disassembly and Cleaning

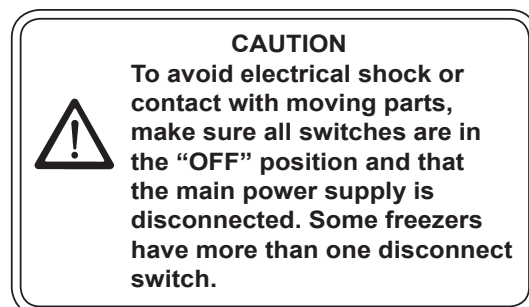
### Safety Information

This freezer uses pressure to assure consistent product quality. It is important for your safety that the freezer is depressurized slowly and completely whenever the freezer is to be drained, disassembled, cleaned, or serviced. The safety instructions in this manual will remind you when to check to make sure the freezer is depressurized. When you see this CAUTION statement



the following steps should be taken:

- 1.. Make sure both MTS pump switches and both selector switches are in the "OFF" position.
2. Place a clean bucket under the dispense head.
3. Slowly open the spigots, allowing any pressurized cleaning solution or air to escape. If there is product in the freezer refer to Section 9, Closing Procedures, 9.1 Draining Product.
4. Remove the spigot switch rods and open the spigots completely.



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 both mix transfer systems.

Following these steps will assure that the system is depressurized.

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

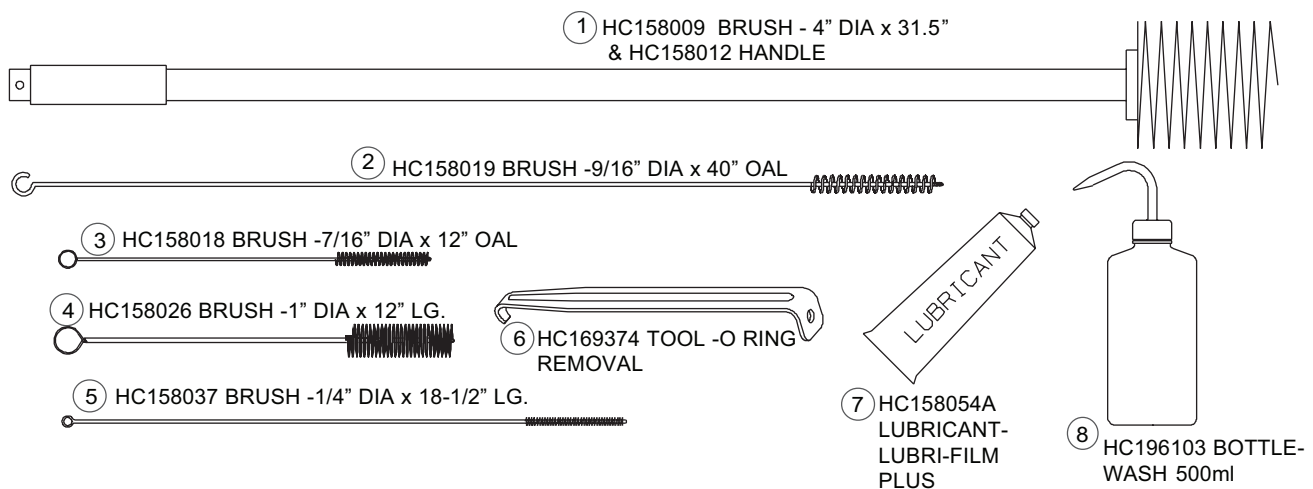
The cleaning and sanitizing instructions explained in this manual are required to maintain a clean, sanitary freezer. The freezer should be disassembled, cleaned, reassembled, lubricated and sanitized daily to ensure the best possible product quality and freezer operation.

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

## 7.1 Cleaning Accessories

The following accessories shipped with the freezer are necessary for cleaning, sanitizing, and disassembly/assembly (Figure 7-1):

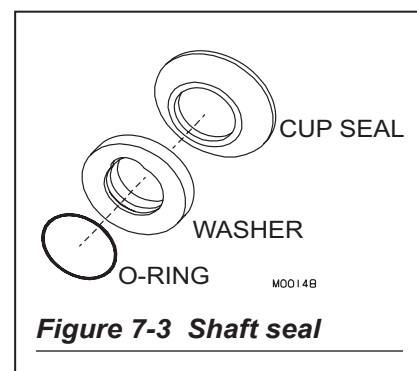
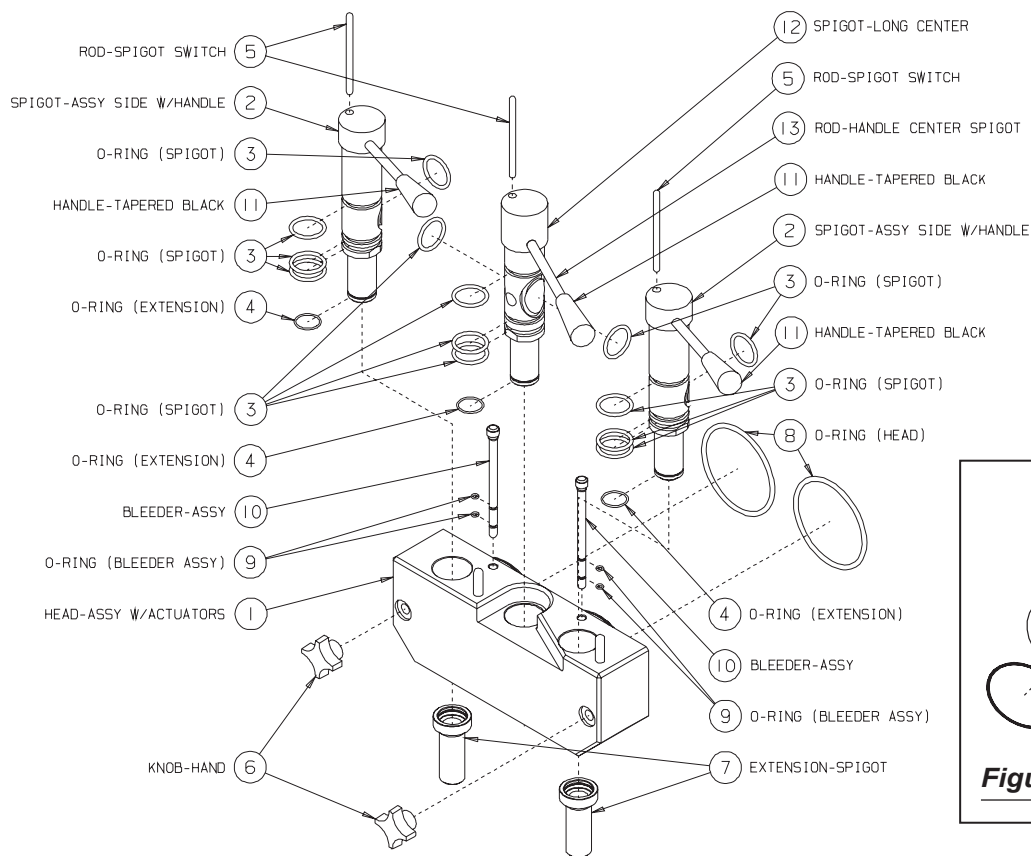
- 1.) **HC158009 BRUSH**  
**HC158012 HANDLE:** 4 inch diameter and 27 inch handle used to clean the shake cylinder.
- 2.) **HC158019 BRUSH:** 9/16 inch diameter 40 inch overall length used to clean drain tube, the mix feed tube in the ceiling of the cabinet and the pickup tube.
- 3.) **HC158018 BRUSH:**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



M00846

**Figure 7-1 Cleaning Accessories**

## 7.2 Disassembly Instructions



**Figure 7-2**

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

**CAUTION**  
Make sure freezer is depressurized before proceeding.

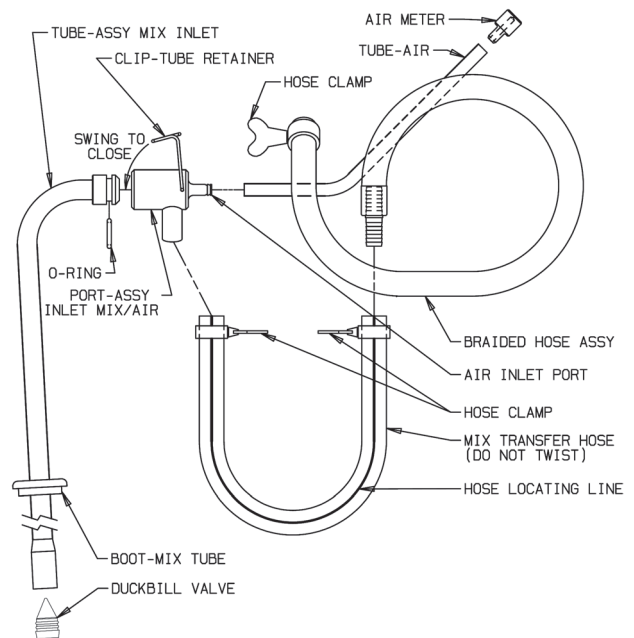
**CAUTION**  
To prevent bacteria growth, remove ALL o-rings when disassembling for cleaning. Failure to do so could create a health hazard.

1. If there is product in the freezer, refer to Sec. 9 Closing Procedures, 9.1 Draining Product.
2. (See figure 7-2.) Remove the spigot rods (5) by lifting up out. Remove the hand knobs (6) and pull the dispensing head (1) straight out.
3. Remove the cylinder bushings and beater shafts from the cylinders.
4. Remove the scraper blades and shaft seals from the beater shafts. Remove the drip tray and drip tray insert.
5. (See figure 7-3.) Remove the cup seals and o-rings from the plastic washers on the shaft seal assemblies.
6. Remove the spigot assemblies, air bleed plugs, and o-rings from the head and spigot assemblies.

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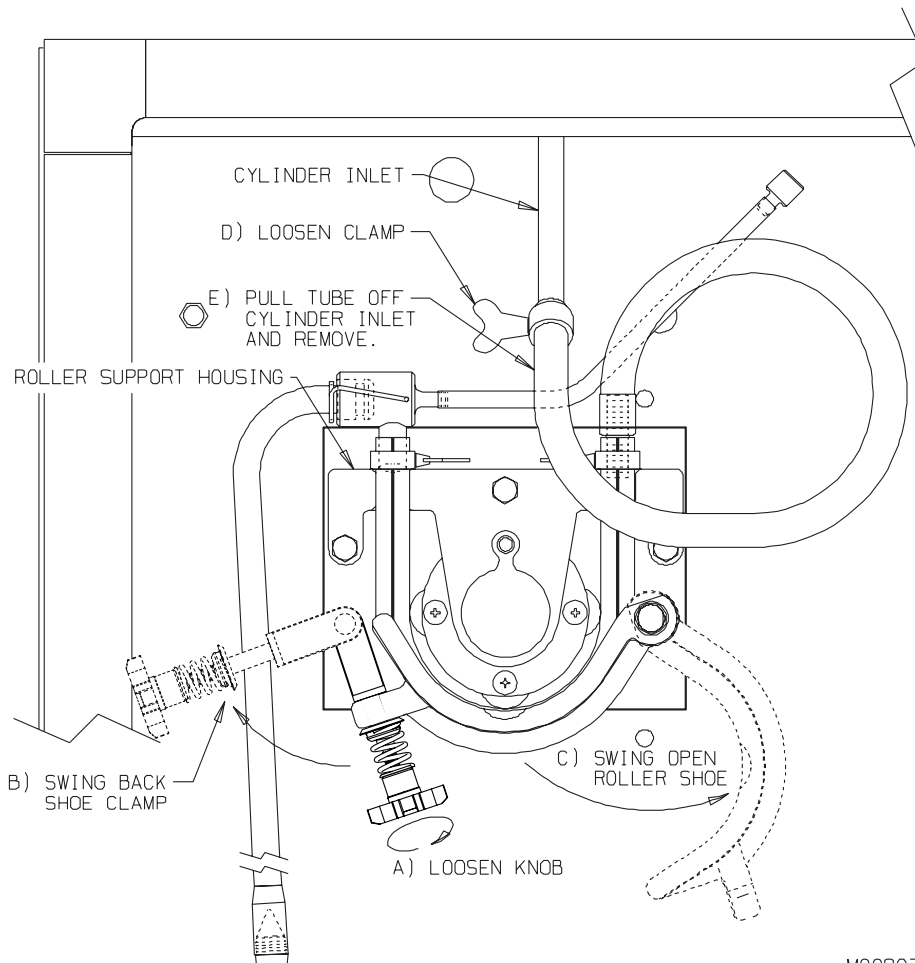
## 7.2 Disassembly Instructions (continued)

7. Remove mix tanks, covers, and low mix probes.
8. Remove the MTS hose assemblies from the Mix Transfer Systems as follows (figure 7-4):
  - a. remove cover,
  - b. loosen the hand knob,
  - c. swing back the shoe clamp,
  - d. swing open the roller shoe,
  - e. loosen the clamp on braided hose,
  - f. pull tube off cylinder inlet and slide hose assembly out of roller support housing.
9. Disassembly MTS hose assemblies as shown in figure 7-5.



**Figure 7-5 MTS**

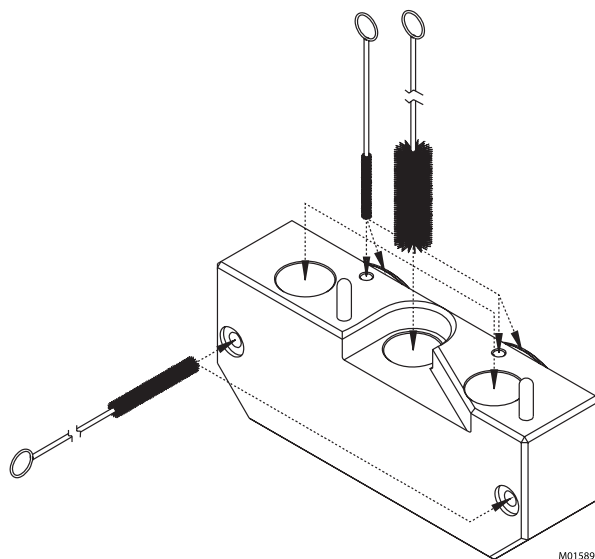
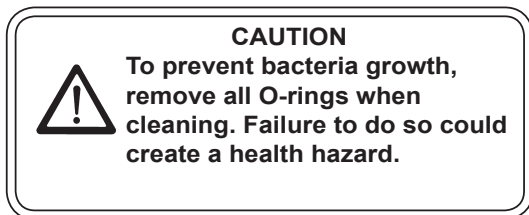
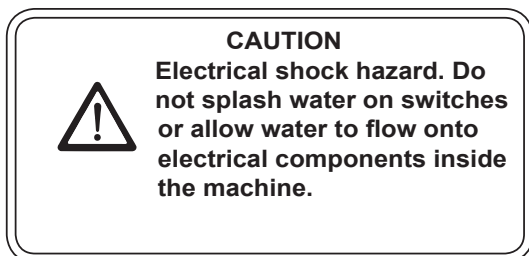
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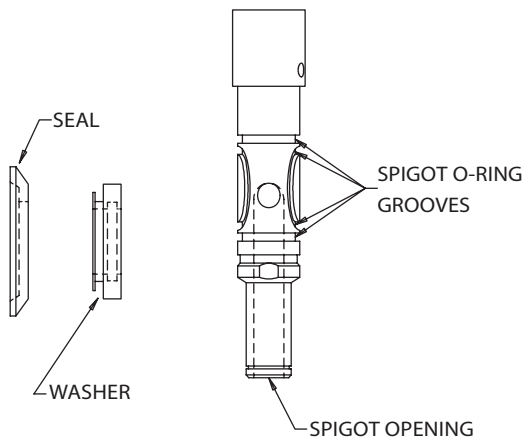
**Figure 7-4 MTS Hose Assembly**

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## 7.3 Cleaning Instructions



**Figure 7-6**



**Figure 7-7**

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

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

**Important:**

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

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

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

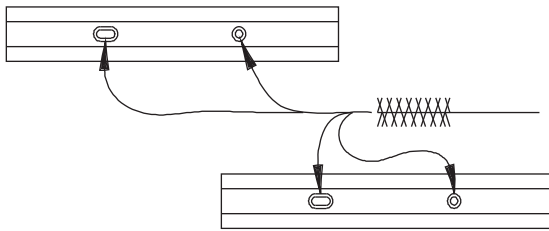
the mix tanks, pickup tube assemblies, hoses, and probes

b. the head spigot openings, center spigot ports, o-ring grooves, dispense nozzle mounting rings, and mix ports, as shown in figure 6-4

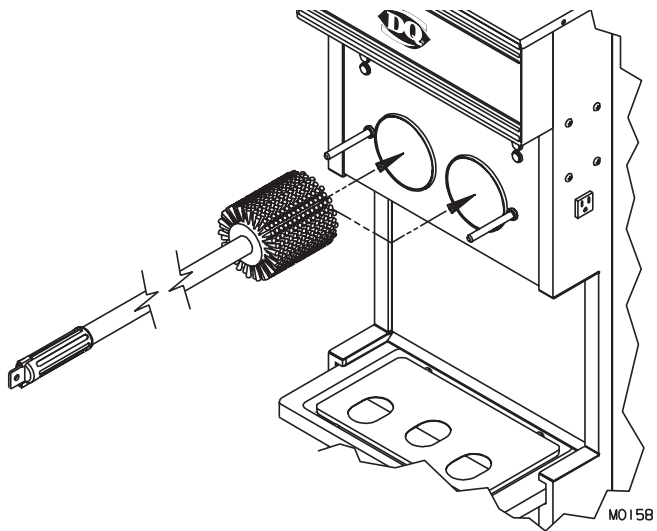
c. the spigot o-ring grooves, nozzles, the shaft cup seals, plastic washers and o-rings as shown in figure 6-5

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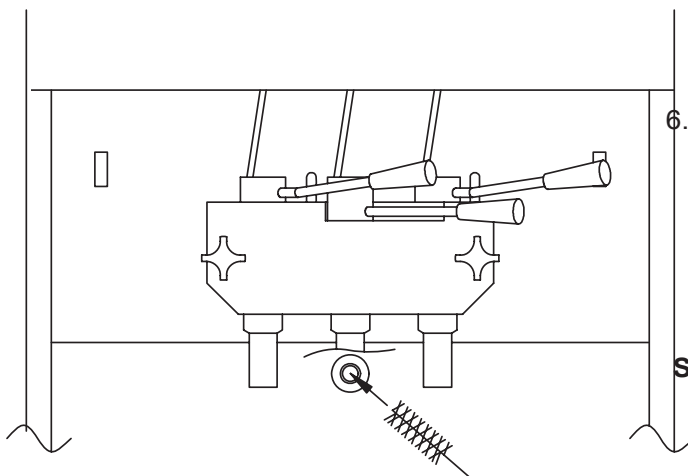
### 7.3 Cleaning Instructions (continued)



**Figure 7-8 Scraper Blade pin holes**



**Figure 7-9 Clean Cylinders**



**Figure 7-10 Clean Drain Tube**

- d. the air bleed plug o-ring grooves
- e. the beater shaft and the scraper blade pin holes, as shown in figure 6-6.

**Important:**

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

3. After all parts are washed, rinse and place them in the sanitizing solution. For proper sanitizing, the parts must remain fully immersed in the sanitizer for 5 minutes. Allow the parts to air-dry after sanitizing.
4. The following must be thoroughly brushed first with a warm dish detergent solution, then rinsed with clear water followed by the sanitizing solution.
  - a. mix feed tubes from the refrigerated cabinet to the cylinders as shown in figure 6-7
  - b. the inside of the cylinders including the back wall as shown in figure 6-8
  - c. the inside of the drain tube as shown in figure 6-9

5. Remove the drip tray and insert. Wash in a warm dish detergent solution rinse with clear water and place in sanitizing solution for 5 minutes.
6. Wash the outside of the freezer and inside of the cabinet with a warm dish detergent solution. Rinse with clear water.

**Replace worn brushes. Use only original or authorized replacement parts. See Accessories Parts List in Part II of this manual to order new brushes.**



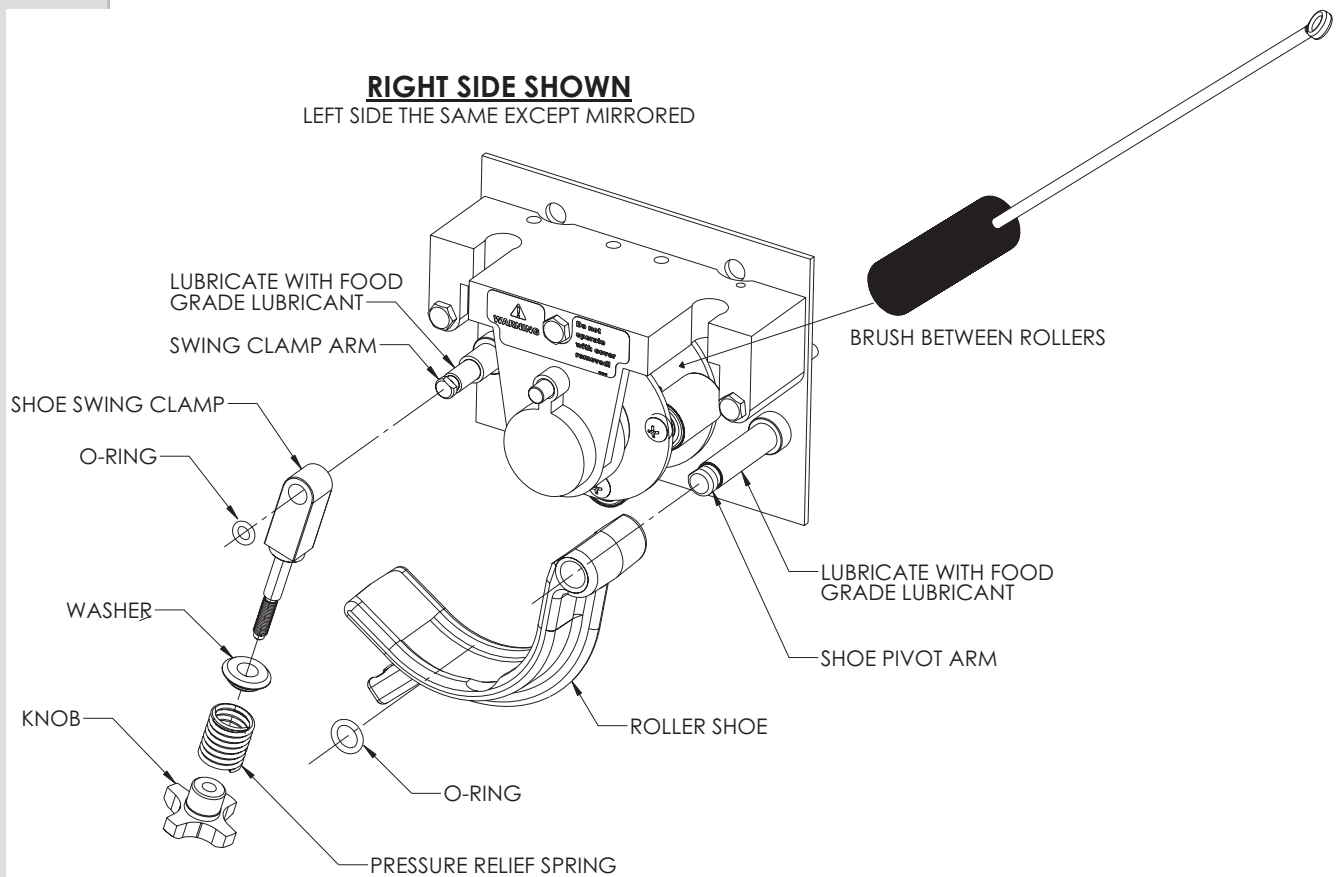
### 7.3.1 Cleaning and Lubricating - MTS Assembly

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

1. Remove the o-rings and slide the shoe off of the pivot arm and the swing clamp off of the clamp arm. See figure 6-11.
2. Carry to the sink, wash in mild detergent with the brush provided and dry thoroughly.
3. Brush in between rollers. Flush clean with water bottle.

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

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




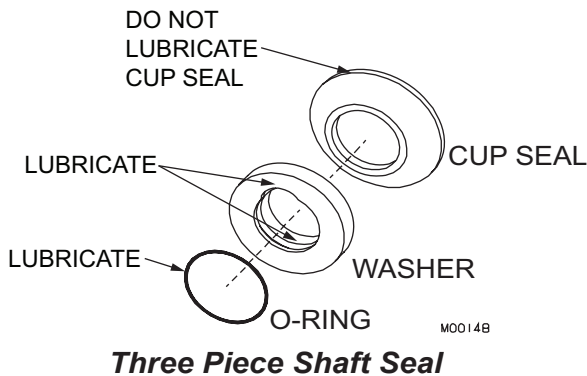
**Figure 7-11**

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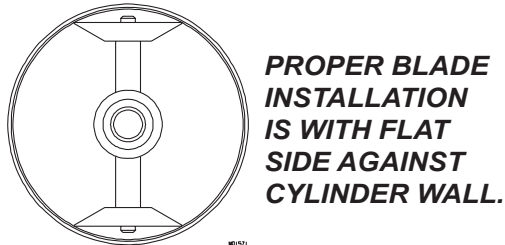
# 8 Assembly

**CAUTION**

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

**Figure 8-1 Shaft Seals**

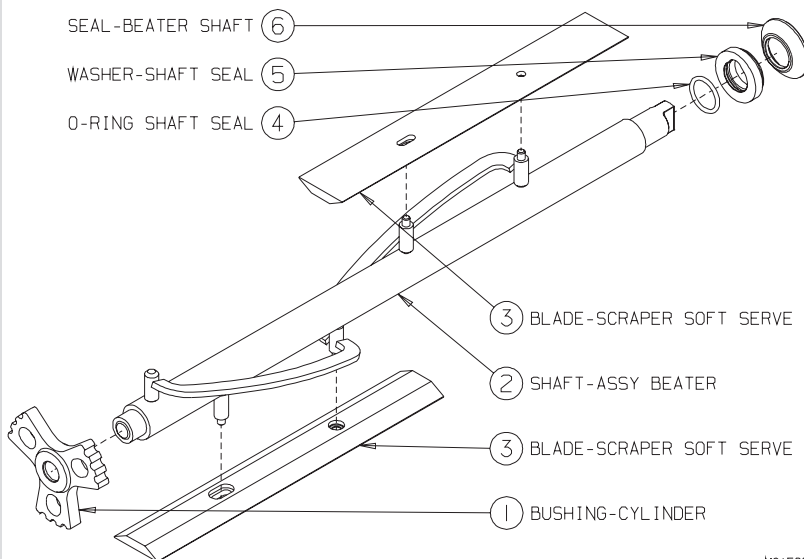


**Figure 8-2**

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

1. Install the cup seal and o-ring on the washer (see figure 1-6). Apply a light amount of approved sanitary lubricant (such as Lubri Film Plus) to the o-ring and the face of the plastic washer opposite the bell portion of the seal. Do not allow any lubricant to come into contact with the bell shaped rubber portion of the seal.
2. Install the shaft seals over the rear of the beater shafts. If using the three piece shaft seal the bell-shaped portion will be facing the rear of the freezer (see figure 8-2). Remove excess lubricant from the drive end of the beater shaft.
3. Place the scraper blades on the beater shafts, making sure the blades are installed properly. Proper blade installation is with flat side against cylinder wall. (See figure 8-3.)

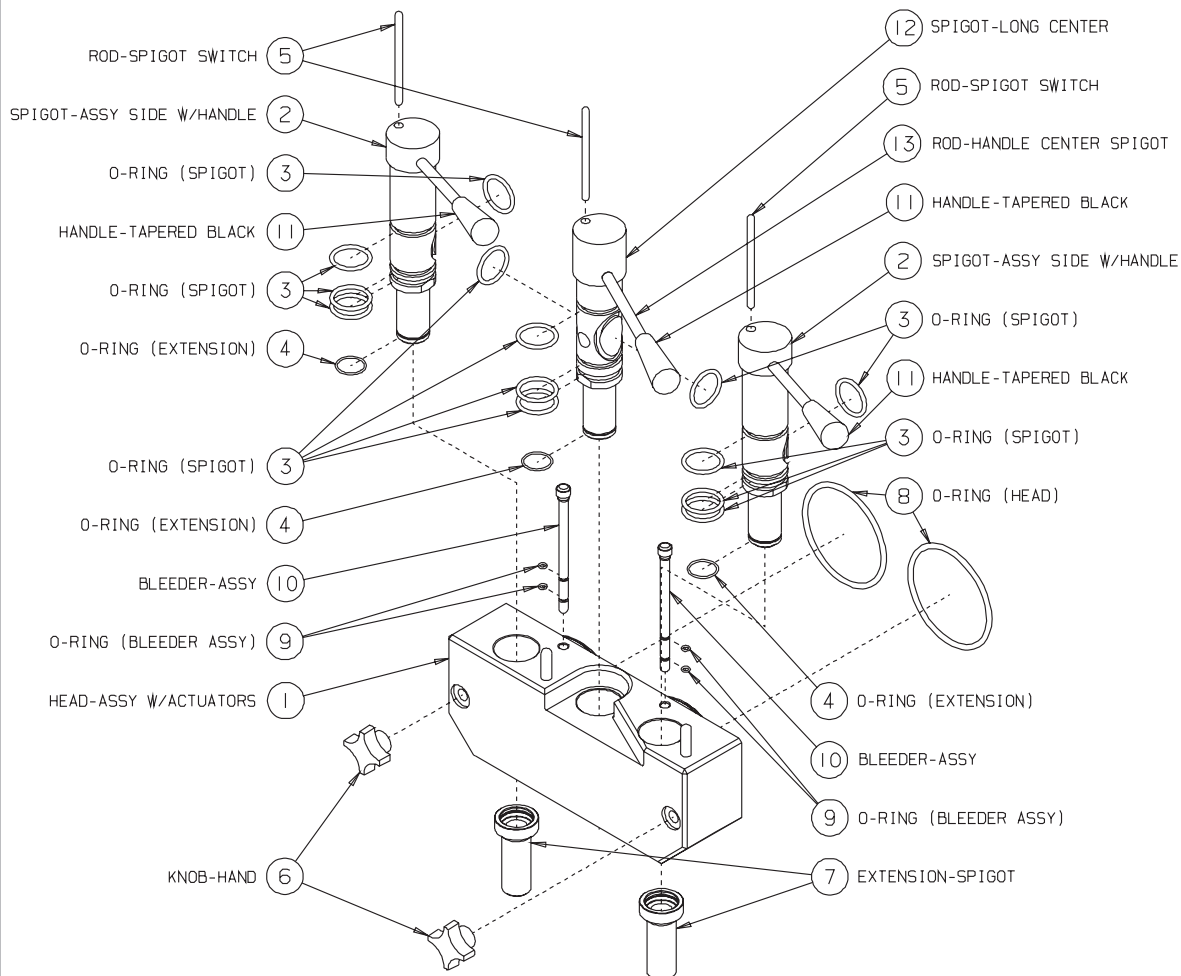
—continued



**Figure 8-3 Beater Shaft Assemblies**

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## 8 Assembly (continued)



**Figure 8-4 Head Assembly**

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

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

—continued

## 8 Assembly (continued)

**Important:**

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

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

**Important:**

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

**Important:**

**Use original H. C. Duke transfer hose only. Your freezer will not operate properly with any other type of hose. Never twist the transfer hose when assembling or installing.**

**Important:**

**Replace transfer hose every 30 days.**

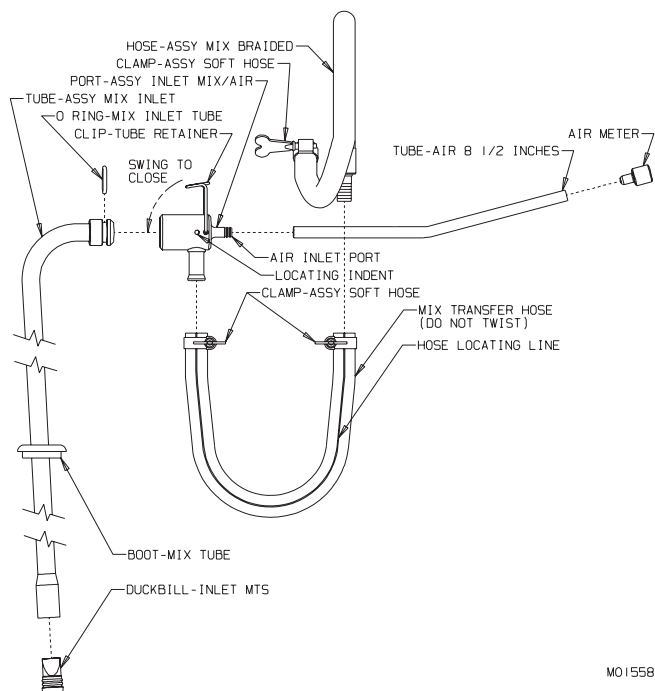
12. Assemble the MTS hose assembly as shown in figures 8-5 and 7-6. The transfer hose has a red locating line. Hold the mix/air inlet port with the transfer hose mix port on your

right and the barbed air port facing away from you. With the locating line up, slide the mix transfer hose onto the port. Then slide a clamp over the hose to secure it to the port. Finger tighten only! The thumbscrew must lie parallel to the mix/air inlet port.

13. 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.
14. Install mix tube boot with flat side first, over the tube assembly.
15. Insert the duckbill valve into the bottom of the pickup tube. Push until the two ribs are completely inserted.
16. Refer to figure 7-7. Install the MTS hose assembly by first placing the clamp next to the braided hose, above the roller bearing support on the right side and push hose into slot. Place the transfer hose under the rollers. While holding the pickup tube stretch the hose so the left hand clamp is above the roller bearing support and push the hose into the slot.

**Important:**

**Do not twist the hose assembly while installing.**



—continued

**Figure 8-5 MTS Hose Assembly**

## 8 Assembly (continued)

16. Check to ensure the transfer hose is straight and centered on the roller assembly by observing the locating line. The line should be in the same position at the inlet and outlet guides of the roller bearing support, as shown in figure 8-6.
18. Swing the shoe over hose and tighten the swing clamp hand knob in place.
19. Insert the air tube into the retainer in the back of the cabinet.
20. Insert the MTS cover over stud. Hose clamps should be exposed. Tighten cover knob. Hand tighten only.
21. Loop the braided hose towards you and slide the hose over the cylinder inlet tube. Tighten the clamp. Make sure the braided hose is not twisting transfer hose.

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

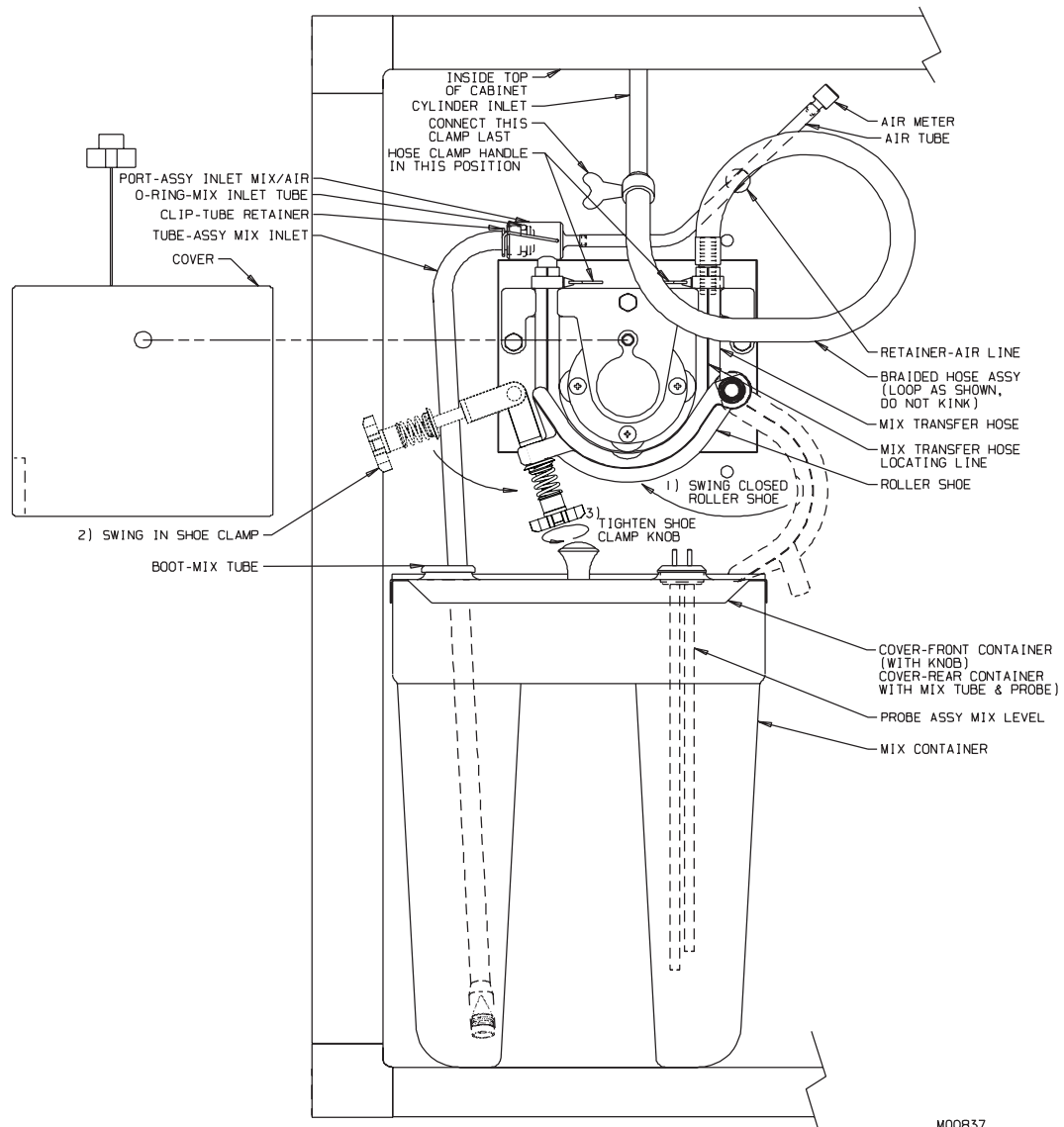


Figure 8-6 MTS

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## 9 Start-up Instructions

### 9.1 Sanitizing



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

The washing and sanitizing instructions explained in this manual are important procedures to remove bacteria and maintain a clean, sanitary freezer. IDQ requires the soft serve freezer to be disassembled, washed, and sanitized daily according to the instructions in the manual. Always sanitize prior to assembling to ensure the best possible cleanliness.



**CAUTION**  
To prevent bacteria growth, use only approved sanitizers to sanitize the machine. Sanitizing must be done just prior to starting the machine. Failure to do so could create a health hazard.

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

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

1. Prepare 2 gallons (7.5 liters) of sanitizing solution for each cylinder. Sanitizing solution must be mixed according to manufacturer's instructions to yield 100 PPM strength chlorine solution (example: Stera-Sheen Green Label). Use warm water (100° to 110°F or 37° to 43°C) to wash, rinse, and sanitize.

2. Wash and sanitize your hands and forearms.
3. Clean the interior mix tank walls, the underside of the tank covers and low mix probes with sanitizer liquid and the appropriate brush provided.
4. Place the mix tank in the refrigerated cabinet. Fill with sanitizing solution.

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

4. Immerse the pickup tubes into the sanitizer solution and sanitize the outside portion. If plastic mix bag systems are used, be sure all adapters and items that will come in contact with mix are sanitized.
6. Place an empty container under the dispensing head.
7. Open the air bleed plugs by pulling up until the plugs touch the bottom of the switch box.
8. Reconnect the main power supply to the freezer. The spigots must be closed. Place the MTS pump switches to "ON". This will push the sanitizer up into the cylinders.
9. When sanitizer flows out the bottom of the head, close the air bleed plugs.

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

10. Place both selector switches to "CLEAN" and allow the beaters to run for 5 minutes. At this time check for leaks around the head, drain tube, clamps, and MTS.
11. Drain the solution from the cylinders by slowly turning the spigot handles open.

—continued

## 9.1 Sanitizing (continued)

- Leaving the spigots open, place the selector switches to "OFF" and let the MTS force all possible sanitizer out of the freezing cylinders.

NOTE: Some sanitizer will remain in hoses and cylinder.

- Place the MTS pump switches to "OFF".
- Remove the pickup tubes, holding the top 6" portion only.
- Remove the mix tanks and empty any remaining sanitizer.

## 9.2 Priming

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

- Wash and sanitize your hands and forearms.
- Holding the top 6-inch (15cm) portion only, insert each pickup tubes into the sanitized mix tank through the small hole in the rear cover and set tanks in the cabinet.
- Slide each boot seal down on the mix tank cover.
- Fill the mix tanks with mix and install the front covers.
- Insert each sanitized mix probes through the large hole in the rear cover, and connect the probe cords to the probes and to the back of the cabinet.
- Close the cabinet door and place the cabinet switch to "ON".
- Place an empty container under the dispense head on the drip tray.
- Pull up the air bleed plugs
- Open the side spigots.
- Place the MTS pump switches to "ON" allowing the mix to push the remaining sanitizer from the freezer.
- Close the spigots one at a time when pure mix is coming out.

### Important:

**Failure to completely remove sanitizer or water from the freezing cylinder before placing in "AUTO" will cause the scraper blades to break and damage the freezer.**

- Allow the MTS to fill the cylinder until mix flows from the bottom of the air bleed plug openings in the bottom of the dispense head, close the air bleed plugs. Wait for the MTS to fill the cylinders and shut off.
- After the cylinders are pressurized and the MTS has cycled off (approximately 30 seconds) place both selector switches to "AUTO".
- Allow the freezer to cycle for 15-20 minutes. The product is now ready to serve.

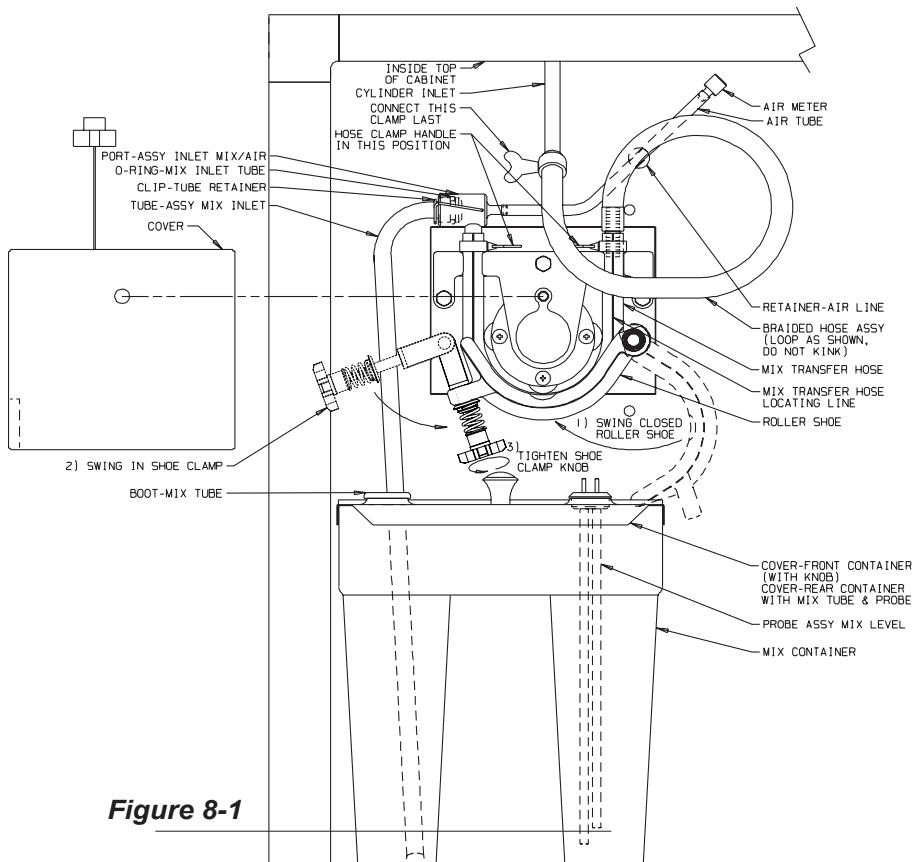


Figure 8-1

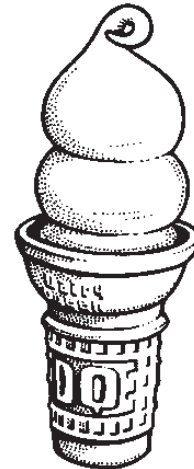
## 9.3 Dispensing Product

1. To dispense product, grasp the spigot handle, hold the container which is to be filled with product below the spigot, and slowly open the spigot until product is dispensed at a comfortable rate.
2. When the proper portion has been dispensed, close the spigot.
3. The freezer will continue to run a short time (approximately 12 seconds) following the dispensing of the product. If a large portion has just been dispensed, a longer period of time may be required for the freezer to shut off.
4. If the freezer has not been used for more than two and a half minutes, and the product requires a firm base, then dispense a small amount of mix in the spigot into a separate container.

**NOTE:** For shakes, large sundaes, floats and other similar products, this practice of drawing off a small amount into a separate container is not necessary and should be discouraged.

5. Observe the level of mix throughout the day to avoid running out of product in the mix containers or bags.
6. Periodically check the temperature and overrun of product and make sure it is within the specified limits.

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





# 10 Closing Procedures

## 10.1 Draining Product

At the end of each day of operation, the freezer must be rinsed, sanitized, and disassembled. The parts also must be washed, rinsed, sanitized, and prepared for reassembly.

To remove frozen product from the cylinders:

1. Place the selector switches in the “CLEAN” position and the MTS pump switches in the “ON” position.
2. Let the beaters run for 5 minutes. This will allow the product in the cylinders to soften.
3. In the cabinet below (see figure 9-1). Disconnect the mix probe cords from the back of the cabinet.
4. Remove each mix tanks while pulling the stainless steel pickup tube from the mix tank. Place the pickup tubes in a clean sanitized container.
5. Mix must be handled according to local health codes.
6. Place a clean sanitized container under the dispensing head.
7. Very slowly open the side spigots and dispense the semi-frozen product until it quits dispensing. To eliminate waste, dispense as much as possible for use in pints, quarts, and/or novelties.
8. Close spigots. Place the MTS pump switches and the cabinet switch to the “OFF” position.
9. Place the mix pickup tubes into a container and fill with cold water. Turn the MTS pump switches to “ON” and allow the MTS to fill and pressurize the cylinders.

— continued

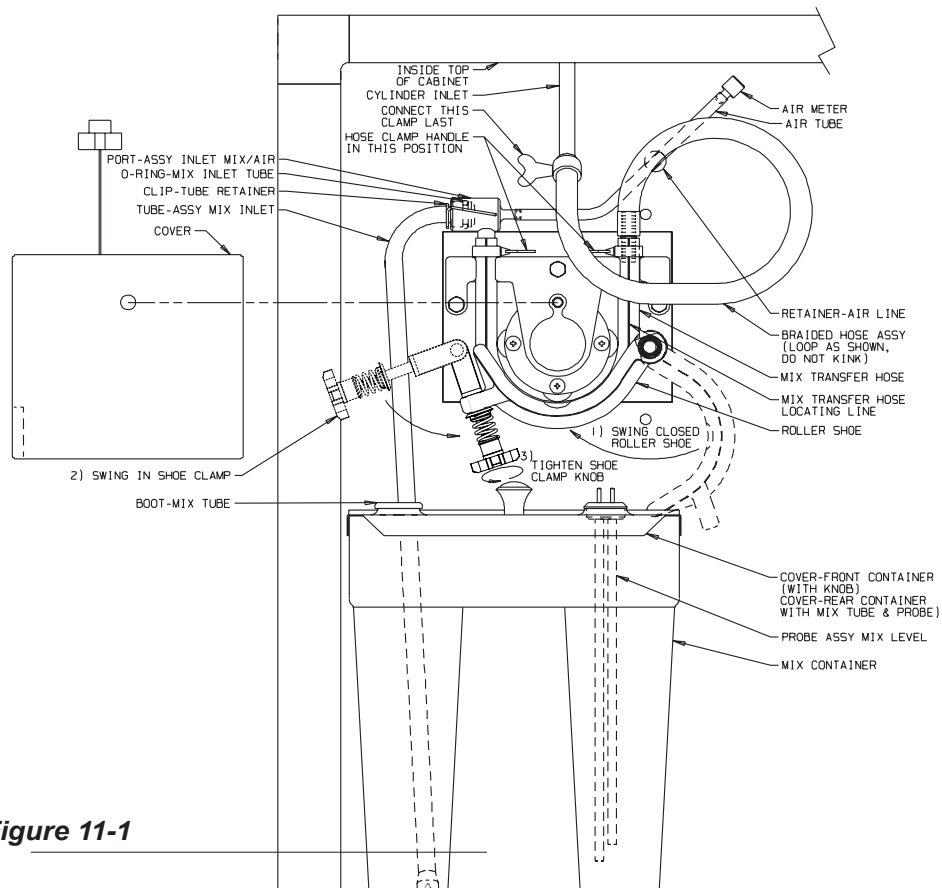


Figure 11-1

## 10.1 Draining Product (continued)

10. Very slowly open the spigots and dispense the cold water. Follow with a container of warm water and repeat until the dispensed water is clear. Drain remaining water from the cylinders.
11. Place selector switches to "OFF" and MTS pump switches to "OFF". Close the spigots
12. Prepare 2 gallons (7.5 liters) of sanitizing solution for each cylinder. Sanitizing solution must be mixed according to manufacturer's instructions to yield 100PPM available chlorine solution (example: Stera-Sheen Green Label). Use warm water (100° to 110°F or 37° to 43°C).
13. Insert the mix pickup tubes into the sanitizing solution.
14. Place an empty container under the dispense heads.
15. Pull the air bleed plugs up until they touch the bottom of the switch box. Open the spigots.
16. Place the MTS pump switches in "ON" position. When sanitizer flows out the bottom of the had, close the air bleed plugs and allow the MTS to pressurize the cylinders.
17. Place the selector switches to the "CLEAN" position and allow the beaters to run for 5 minutes.

**IMPORTANT:**

**Do NOT use the "AUTO" position with sanitizer or water in the cylinder. The freezer will be damaged.**

18. Slowly open the spigots and allow the MTS to push the sanitizer out of the cylinders. Leaving the spigots open, place the selector switches to



**CAUTION**  
Make sure the freezer is depressurized before proceeding.

"OFF". Leave the MTS pump switches on "ON" and allow the pumps to force all remaining sanitizer from the cylinders. When sanitizer quits flowing, place the MTS pump switches to "OFF"

19. Remove the pickup tubes from the sanitizing solution.
21. Refer to Disassembly and Cleaning Instructions.

## 11 General Information

### 11.1 Dairy Queen® Mix

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

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

### 11.2 Checking the Frozen DQ® Product

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

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

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

### 11.3 Product Temperature

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

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

### 11.4 Overrun

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

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

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

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

**Example:**

<b>Weight of one pint of mix</b>	<b>=</b>	<b>18 oz.</b>
<b>Weight of one pint frozen product</b>	<b>=</b>	<b><u>12 oz.</u></b>
<b>Difference</b>		<b>6 oz.</b>

**6.0 oz. divided by 12 oz. = .5**

**.5 x 100 = 50% overrun**

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

Section 10.7 is an overrun chart which shows the net weight of one measure pint of frozen Dairy Queen® product in grams, ounces, and their corresponding percentage of overrun.

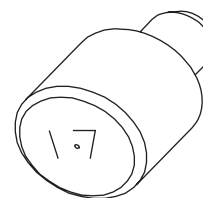
## 11.5 Overrun Adjustment

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

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

The mix will be a determining factor as to the amount of overrun you will be able to achieve. Some mixes will accept more air than others, thus affecting the size of air meter you can use.

Test to see which air meter will give you the best overrun and the best product. Run each air meter for a few hours until you make the determination. (You may have a slightly higher overrun when you first start up the freezer.) After the freezer has run long enough to dispense at least one full cylinder of product, you will have the overrun that the freezer will hold the remainder of the day.



**Figure 10-1 Air Meter**

## 11.6 Rerun

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

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

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

11.7 Overrun Chart

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

Acceptable  
Range  
for  
Overrun

## 12 Routine Maintenance

H.C. Duke and Son, Inc. recommends the following schedule to help maintain your Model 957RMT Twin Twist Soft Serve Freezer in like-new operating condition. Take the time to learn and perform these routine procedures and receive in return many years of valuable service from your freezer. Protect your investment!

### DAILY

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



#### CAUTION

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

2. Clean the cylinder, cylinder inlet tubes and drain tube with the appropriate brushes.
3. When cleaning, inspect all o-rings, seals and hoses. Replace any o-ring, seal or hose that is worn, torn, or loose fitting.
4. Wipe all exterior surfaces of the freezer to remove any splattered mix.
5. Check overrun and temperature of the product.

### AS NEEDED

#### CAUTION

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



1. Clean the Mix Transfer System:

#### **Important:**

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

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

— continued

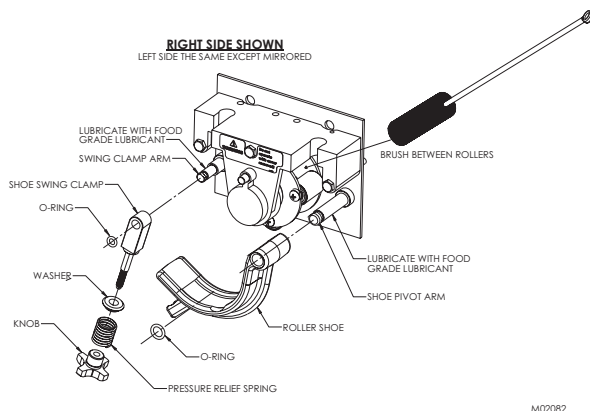
# 12 Routine Maintenance ( continued)

## AS NEEDED (continued)



**CAUTION**  
 Make sure the freezer  
 is depressurized before  
 proceeding.

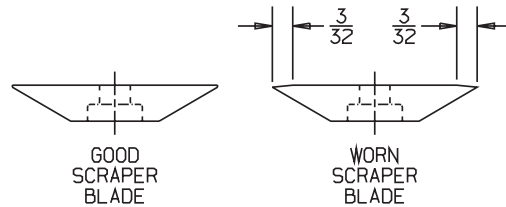
- a. Remove cover, loosen swing clamp and open shoe to gain access to the hose cavity.
- b. Remove mix transfer hose assembly.
- c. Lay a towel on the cabinet base below the MTS.
- d. Using the spray bottle supplied, flush the hose cavity and roller assembly.
- e. Use a brush (supplied) to clean in between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



**Figure 11-1**

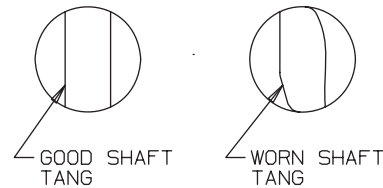
## WEEKLY

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

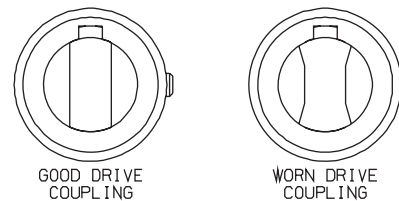


**Replace blades if worn 3/16" or more.**

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



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





## 12 Routine Maintenance (continued)

### MONTHLY

#### A. Testing the Head Switch

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

1. Be sure all switches are in the "OFF" position.
2. Disconnect the main power supply.
3. Remove the dispense head and beater shaft assemblies.
4. Connect the main power supply.
5. Turn the selector switch to the "CLEAN" position.
6. Look inside the freezing cylinder toward the rear—the drive shaft coupling should NOT be turning. Turn the switch off and disconnect the main power supply.
7. If the drive shaft coupling is turning, or you are unable to determine whether or not the shaft is turning, turn the switch to the "OFF" position, disconnect the main power supply and contact your service technician or the factory. DO NOT place the freezer in service until the problem has been fixed.



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

#### B. Water Condenser

Check the outlet water temperature of water-cooled condensers at the floor drain. Ideal water temperatures should be about 95°F (35°C) with a 70°F (21.1°C) water inlet temperature.

#### C. 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.

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



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

— continued

## 12 Routine Maintenance (continued)

### MONTHLY (continued)

#### C. Test MTS Cover Switch (cont.)

4. Look at the MTS rollers; they should NOT be rotating. If they are rotating, turn "OFF" mix switch and discontinue use until repairs can be made.
5. If there is no movement, slowly install cover and listen for the gear motor to turn on. The cover should be almost completely closed when the gear motor turns on. **DO NOT** insert

fingers or objects into roller cavity during this test. If the MTS does not operate as described here, or you are unable to determine if the MTS is operating properly, turn the switches to the "OFF" position, disconnect the main power supply and contact your service technician or the factory. **DO NOT** place the freezer in service until the problem has been corrected.

#### D. Replace the Mix Transfer Hose



**CAUTION**  
Make sure system is depressurized before proceeding.



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

### QUARTERLY

#### A. Air Condenser.

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

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

#### B. Refrigeration System

Have your H.C. Duke & Son, LLC. Distributor check the refrigeration system and make any necessary adjustments.

#### **WARNING!**

**Failure to properly maintain/clean your air condenser can cause premature compressor failure. Compressor failure due to improper condenser care will void the compressor warranty.**

## 12 Routine Maintenance (continued)

### 1500 HOURS OF OPERATION OR 6 MONTHS

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

### SEMI-ANNUALLY

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

### 5000 HOURS OF OPERATION OR 1 YEAR

1. Contact your service technician to have the oil in the gear reducer changed.

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

### ANNUALLY

#### CAUTION



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

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

## 12 Routine Maintenance (continued)

### Winter Storage

To protect the unit during seasonal shutdown, it is important to store the 957RMT Twin Twist Soft Serve Freezer properly. Please use the following procedures:

1. Disconnect all power to the freezer.
2. Disassemble and wash all parts that come into contact with the mix with a warm, mild detergent solution. Rinse in clear water and dry all parts thoroughly.
3. Store the loose parts, such as the head assembly, beater assembly, and pump parts in a safe dry place.
4. Do not lay heavy objects on the plastic or rubber parts.
5. Cover the freezer and all loose parts to protect them from dust or other elements that could contaminate them while in storage. Place the freezer in a dry location.
6. On air-cooled freezers, have condenser fins cleaned by authorized service technician.
7. On water-cooled freezers, disconnect the water supply. Use compressed air to blow out all remaining water in the condenser.

***Important;***

***The water valve must be opened in order to blow out the condenser. Failure to purge the freezer of water can result in severe damage to the cooling system. Call your local service technician for service or the H. C. Duke & Son, LLC Service Department.***

**USE ONLY ORIGINAL OR AUTHORIZED REPLACEMENT PARTS WITH THIS FREEZER.**

(See your Illustrated Replacement Parts Manual)

Should you have any questions on items that are not included in this maintenance schedule, or problems where service assistance is needed, please call your local authorized service company or H. C. Duke & Son, LLC Service Department, for factory service at **(800) 755-4545 or (309) 755-4553.**

## 13 Troubleshooting

### SAFETY



This safety alert symbol identifies important personal safety messages in this manual. When you see this symbol, be alert to the possibility of personal injury. **DO NOT** attempt to continue until the safety precautions are thoroughly understood.

### CAUTION



All maintenance and adjustments must be done by a qualified service technician.

### CAUTION



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




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

### **IMPORTANT:**


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




# 13 Troubleshooting Tables

PROBLEM	PROBABLE CAUSE	REMEDY
<b>Unit does not operate.</b> 	1. Freezer unplugged.	1. Plug in freezer.
	2. Fuse or breaker blown at main disconnect.	Make sure your freezer is connected to a separate circuit independent from any other electrical equipment. Have technician check fuse or breaker size and check for low voltage; if not within 10% of nameplate rating call power company.
	3. Beater motor out on overload.	Press overload reset button. Check product temperature. (Note: cabinet will continue to cool.)
	4. Control circuit overload open.	Press overload reset button. If freezer still does not operate contact your Your local service company.
	5. Off on high pressure cut-out or low pressure cut-out control.	5. Contact your Your local service company.
	6. Component failure.	6. Contact your Your local service company.
	7. Faulty selector switch.	7. Contact your Your local service company.
	8. Disconnected or broken wire in electrical circuit.	8. Contact your Your local service company.
<b>Mix or water leaking from drain tube to drip tray.</b> 	1. Damaged beater shaft seal or installed improperly.	1. Replace cup seal or o-ring inside bushing. Install properly.
	2. Beater shaft pitted or damaged where o-ring rides.	2. Replace beater shaft.
	3. Beater shaft end play not set properly.	3. Contact your Your local service company.
<b>Mix leaking at dispensing head.</b> 	1. Faulty head o-ring.	1. Replace o-ring.
	2. Head not properly installed.	2. Install head properly. Replace o-ring if pinched.
<b>Dispensed product too soft. (Product temperature above 19°F)</b>	1. Dirty or blocked condenser, restricted air flow.	Unblock condenser or have cleaned by your H.C. Duke & Son, LLC. Distributor.
	2. Component failure.	2. Contact your Your local service company.
	3. Leak in refrigeration system resulting in little or no refrigeration.	3. Contact your Your local service company.

## 13 Troubleshooting Tables (continued)

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

# 13 Troubleshooting Tables (continued)

PROBLEM	PROBABLE CAUSE	REMEDY
Poor or slow product recovery.	1. Dirty or blocked condenser, restricted air flow – high ambient temperature.	Have condenser cleaned by your local service company; lower ambient temperature.
	2. Thermostat cut-in point out of adjustment or malfunctioning.	2. Contact your Your local service company.
	3. Defective condenser fan motor (air cooled)	3. Contact your Your local service company.
	4. Component or compressor failure.	4. Contact your Your local service company.
Compressor does not operate or operates improperly.	1. Trouble in compressor condensing circuit	1. Contact your Your local service company.
	2. Faulty start capacitor, run capacitor or relay. (Single phase only)	2. Contact your Your local service company.
	3. Faulty contactor	3. Contact your Your local service company.
	4. Disconnected or broken wire in switch or capacitor relay box.	4. Contact your Your local service company.
Beater motor does not operate. 	1. Head assembly is not installed.	1. Install head assembly.
	2. Magnetic head switch defective.	2. Contact your Your local service company.
	3. Component failure.	3. Contact your Your local service company.
Compressor and beater motor operates only when dispensing.	1. Cylinder thermostat setting too warm or thermostat defective.	1. Contact your Your local service company.



## 13 Troubleshooting Tables (continued)

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

**13.1 Compressor/Condensing Circuit Troubleshooting Tables**







Unit operates long or continuously.	1. Dirty condenser.	1. Contact your Your local service company.
	2. Shortage of refrigerant.	2. Contact your Your local service company.
	3. Moisture in system.	3. Contact your Your local service company.
	4. Compressor failing.	4. Contact your Your local service company.

Unit operates long or continuously.	1. Water turned off or defective water regulating valve.	1. Contact your local authorized service company.
	2. Restricted water cooled condenser.	2. Contact your local authorized service company.
	3. Dirty condenser.	3. Have condenser cleaned by your local authorized service company.
	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 local authorized service company.
	6. Air in system.	6. Contact your local authorized service company.
	7. Water hose kinked or pinched. (Water cooled freezers only)	7. Move freezer and adjust hose so it is not pinched or kinked.




Discharge pressure too low.	1. Water regulating valve open too wide.	1. Contact your Your local service company.
	2. Shortage of refrigerant.	2. Contact your Your local service company.

Noisy compressor	1. Tubing rattle.	1. Contact your Your local service company.
	2. Spring broke internally.	2. Contact your Your local service company.

## 13.1 MTS Troubleshooting Tables

PROBLEM	PROBABLE CAUSE	REMEDY
Mix leaks out of MTS. 	1. Transfer hose worn or split.	1. Remove cover, clean inside MTS around rollers with spray bottle provided. Install new hose. Do not twist hose.
Mix transfer system (MTS) will not operate. 	1. Pump cover not installed.	1. Install cover.
	2. Hose not installed properly.	2. Check position – reinstall.
	3. Slide switch defective.	3. Contact your Your local service company.
	4. MTS relay defective.	4. Contact your Your local service company.
	5. Start capacitor defective or motor start switch defective.	5. Contact your Your local service company.
	6. Pressure switch defective.	6. Contact your Your local service company.
	7. Motor defective or internal overload tripped.	7. Contact your Your local service company.
MTS will not shut off. 	1. Hose broken.	1. Replace hose.
	2. Pressure switch stuck in closed position.	2. Contact your Your local service company.
MTS cycles on and off without dispensing. 	1. Worn transfer hose.	1. Replace hose.
	2. Leak on pressure side of system.	2. Contact your Your local service company.
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. Hose not installed.	4. Install hose.
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.

### 13.1 MTS Troubleshooting Tables

PROBLEM	PROBABLE CAUSE	REMEDY
<b>No air (overrun).</b> 	1. Air meter plugged.	1. Clean or replace air meter.
	2. Air tube pinched.	2. Replace tube.
<b>Too much air, overrun too high – popping problems.</b> 	1. Air meter too large.	1. Install smaller air meter.
	2. Air leak between pickup tube and hose.	2. Replace as needed.
	3. Air line hose cracked – sucking air.	3. Replace air line hose.
	4. Defective or missing duckbill valve.	4. Replace valve.
<b>Mix shoots out air meter.</b> 	1. Swing Clamp knob loose.	1. Tighten.
	2. Transfer hose worn.	2. Replace hose.
	3. MTS pressure too high.	3. Contact your Your local service company.

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

**QUALITY PARTS  
PROTECT  
YOUR  
INVESTMENT**


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



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

# **REPLACEMENT PARTS MANUAL**

with Illustrations



**SOFT SERVE  
FREEZER  
Model**

**957RMT**

184560-01 - 1/16

A rounded rectangular box containing the DQ logo on the left, which consists of the letters 'DQ' in a stylized font inside a circular shape with a ribbon-like border. To the right of the logo, the text 'SOFT SERVE FREEZER Model' is stacked vertically, followed by the model number '957RMT'. At the bottom of the box, the part number '184560-01 - 1/16' is printed.



# ILLUSTRATIONS

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

All parts listed in the manual should be ordered through:



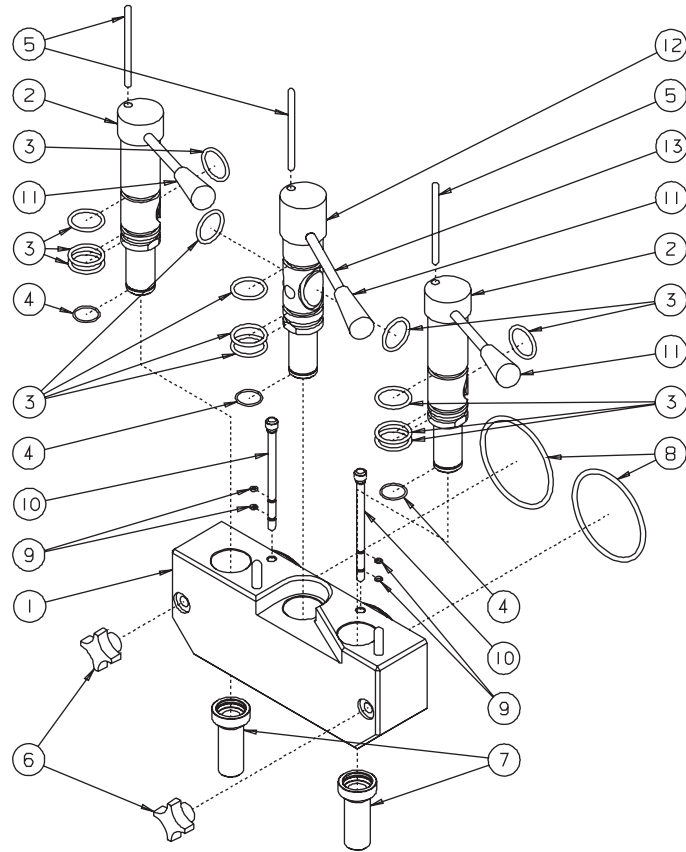
H. C. Duke & Son, LLC  
 2116 - 8th Avenue  
 East Moline, Illinois 61244  
 Telephone: (309) 755-4553 or (800) 755-4545  
 Fax: (309) 755-9858  
 E-mail: service@hcduke.com

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	<b>Accessories.....</b>	<b>17</b>
	<b>O-Ring Chart.....</b>	<b>19</b>







W01587

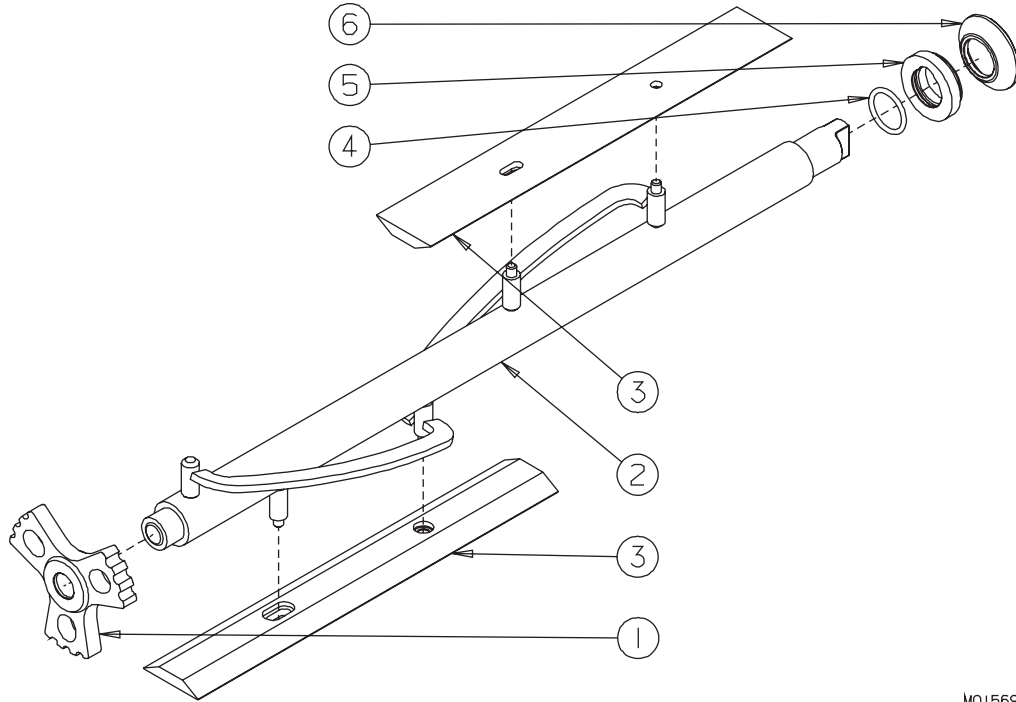
**Figure 1 Head Assembly**

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

\* Includes items 1-4 and 8-13.

**Not Shown:**

HC116410 ..... Kit - Dispense Head Switch

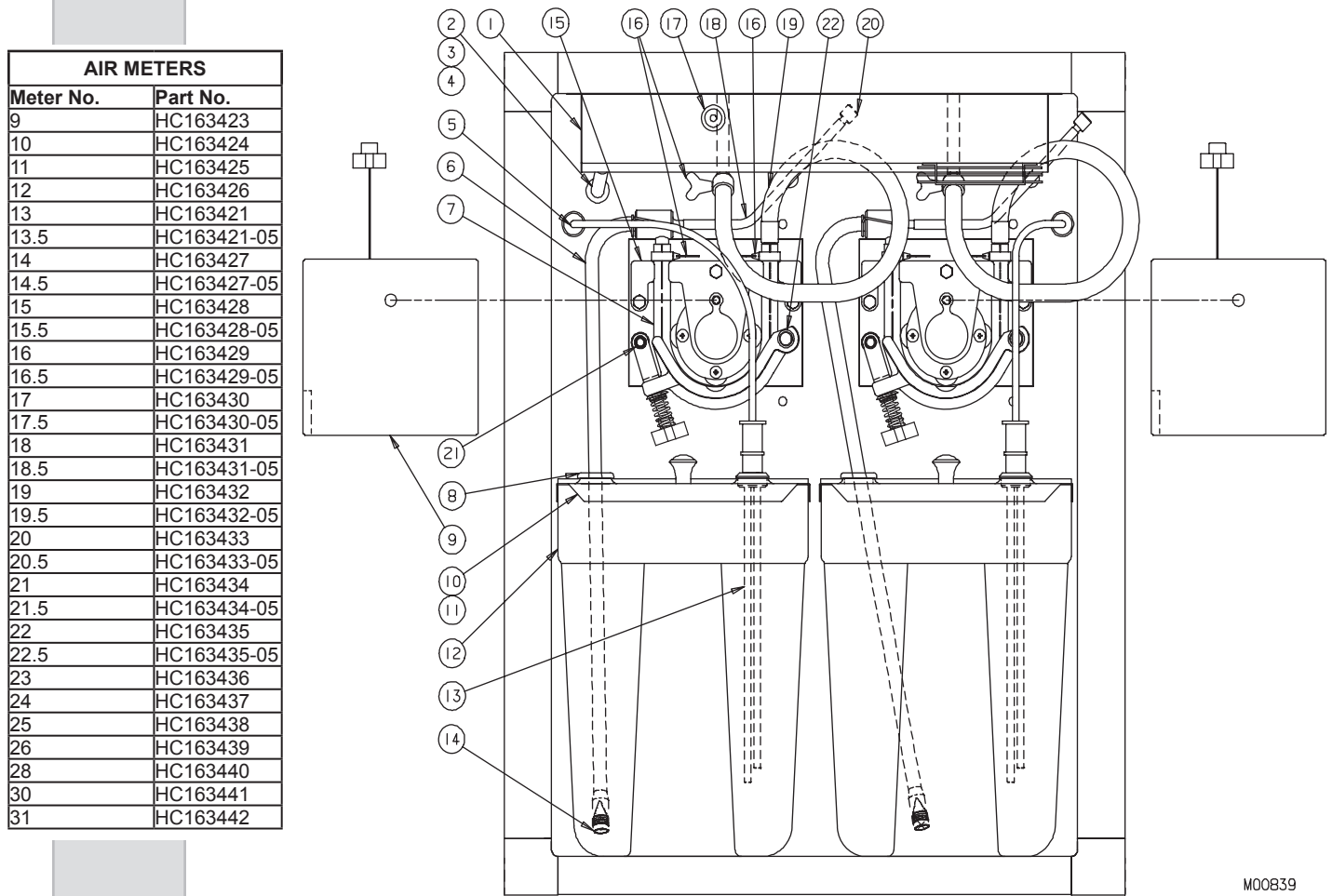


M01569

**Figure 2 Beater Shaft Assembly**

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

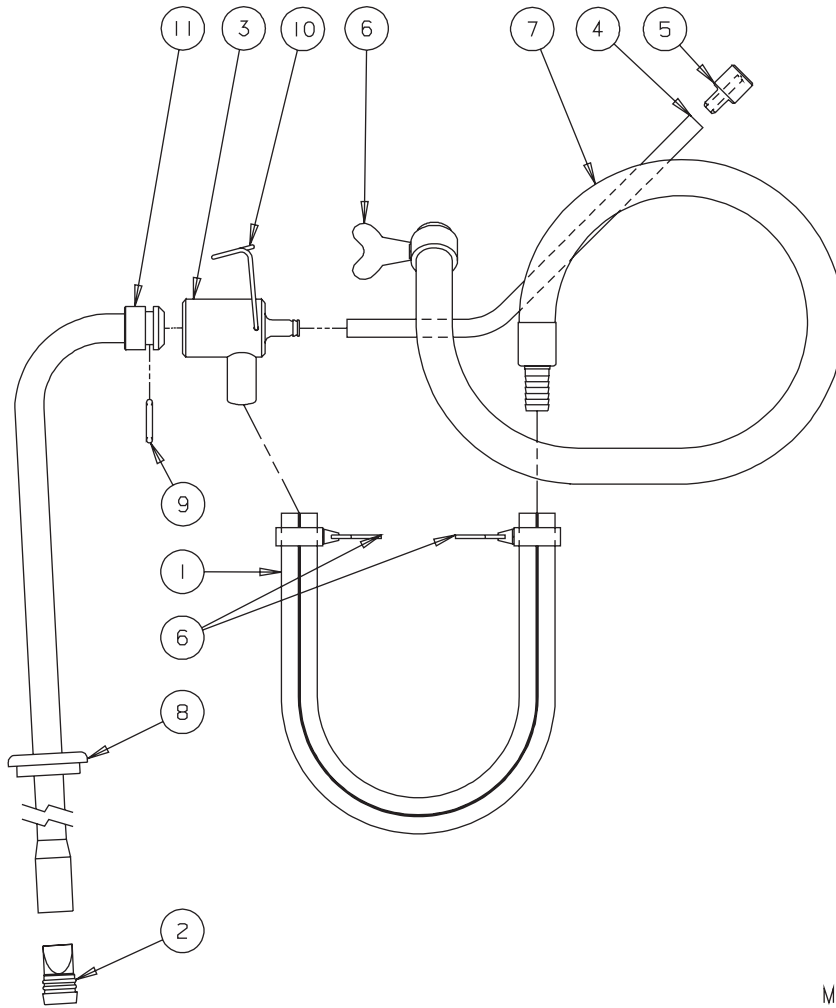
# Twin Twist Soft Serve Freezer Model 957RMT



AIR METERS	
Meter No.	Part No.
9	HC163423
10	HC163424
11	HC163425
12	HC163426
13	HC163421
13.5	HC163421-05
14	HC163427
14.5	HC163427-05
15	HC163428
15.5	HC163428-05
16	HC163429
16.5	HC163429-05
17	HC163430
17.5	HC163430-05
18	HC163431
18.5	HC163431-05
19	HC163432
19.5	HC163432-05
20	HC163433
20.5	HC163433-05
21	HC163434
21.5	HC163434-05
22	HC163435
22.5	HC163435-05
23	HC163436
24	HC163437
25	HC163438
26	HC163439
28	HC163440
30	HC163441
31	HC163442

## Figure 3 Cabinet Parts

Item	Part No.	Description	Item	Part No.	Description
1	HC117129-03	Shroud - Assy. Evaporator includes HC150821 ... Disconnect - Female HC151105 ... Fan - Intake (Cabinet) HC151076 ... Guard - Fan Open HC150612 ... Switch - Door Push Button HC161004 ... Thermometer - Barrel HC150039 Harness - Wire RMT cab side	7	HC138836	Hose - Transfer Red Line
1A	HC155111	Coil - Evaporator	8	HC199033	Boot - Mix Tube
1B	HC150040	Cord - Assy. Female Plug	9	HC119023	Cover - Assy. RMT CAB
2	HC160738	Clamp - Hose 1/2 ID Delrin (Drain)	10	HC117553	Cover - Assy. Mix Tank Front
3	HC196068	Tubing -.375 ID x .500 OD PVC	11	HC140446	Cover - Rear Mix
4	HC138919	Tube - Drain Support	12	HC196100	Tank - Mix 6 Gallon
5	HC150537	Cordset - Mix Level Probe	13	HC115397	Probe - Assy. Mix Level 10-3/4"
5A	HC150536	Receptacle - Molded Level Sensor	14	HC199032-01	Duckbill - Inlet RM MTS
6	HC118842	Tube - Assy. Pickup includes HC118765 ... Port - Assy. Inlet Mix/Air HC118836 ... Tube - Assy. Mix Inlet HC162324 ... Clip - Tube Retainer HC160502 ... O-ring	15	HC118751-03	MT - Assy CAB Redline (See Explode View-Fig. 5)
			16	HC116065	Clamp - Assy. Soft Hose 5/8
			17	HC150612	Switch - Door Push Button
			17A	HC118597	Actuator - Assy. Door Switch
			18	HC138170-02	Tube - Air 7-1/2 in.
			19	HC116094	Hose - Assy. Mix Braided
			20		Meter - Air (Order by meter number)
			21	HC160628	O-ring (Swing Clamp)
			22	HC160612	O-ring (Roller Shoe)
			<b>Not Shown:</b>		
			161004		Thermometer-Barrel



M00840

**Figure 4 MTS - RMT Hose Assembly**

Item	Part No.	Description
1	HC138836	Hose - Transfer Red Line
2	HC199032	Duckbill - Inlet (Valve)
3	HC118765*	Port - Assy. Inlet Mix/Air
4	HC138170-02	Tube - Air (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

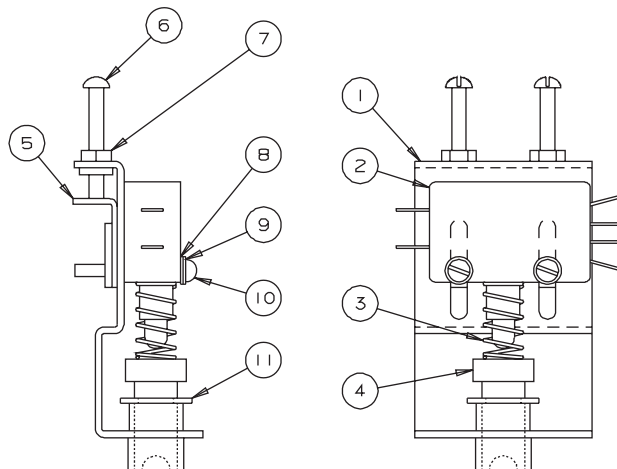
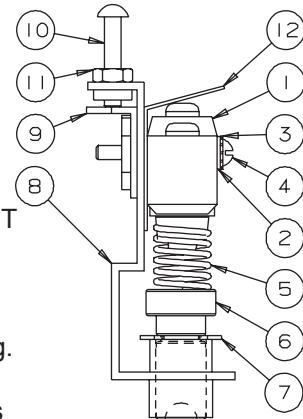
\* Can be ordered as an assembly:

118842 .....Tube - Assy. Pickup

## Figure 5 Spigot Switch Assemblies

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

\* Includes items 1-12.

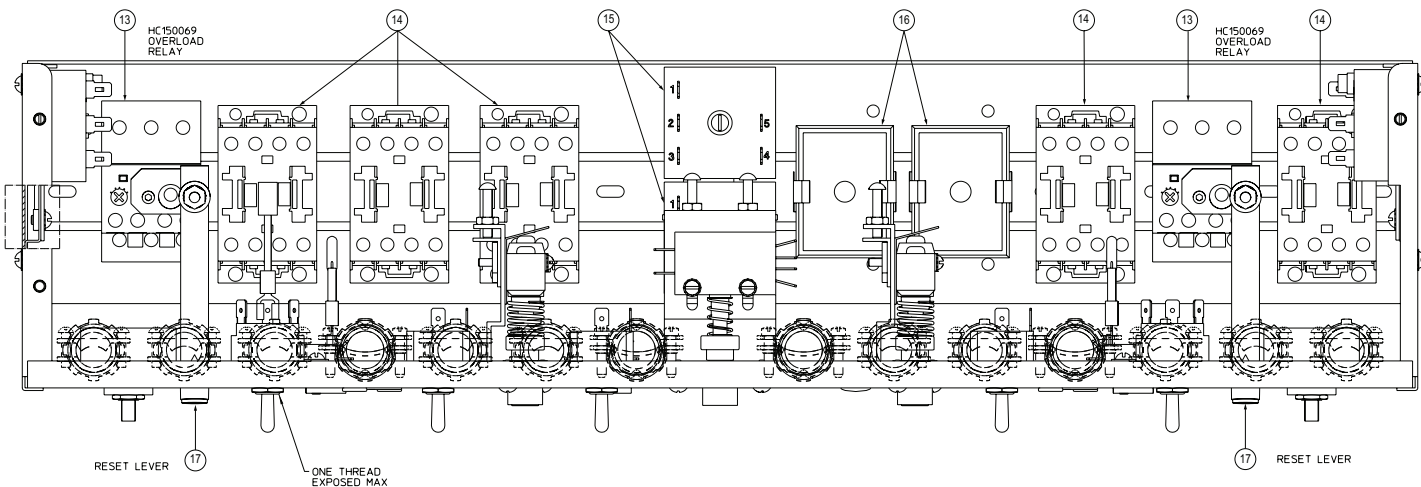
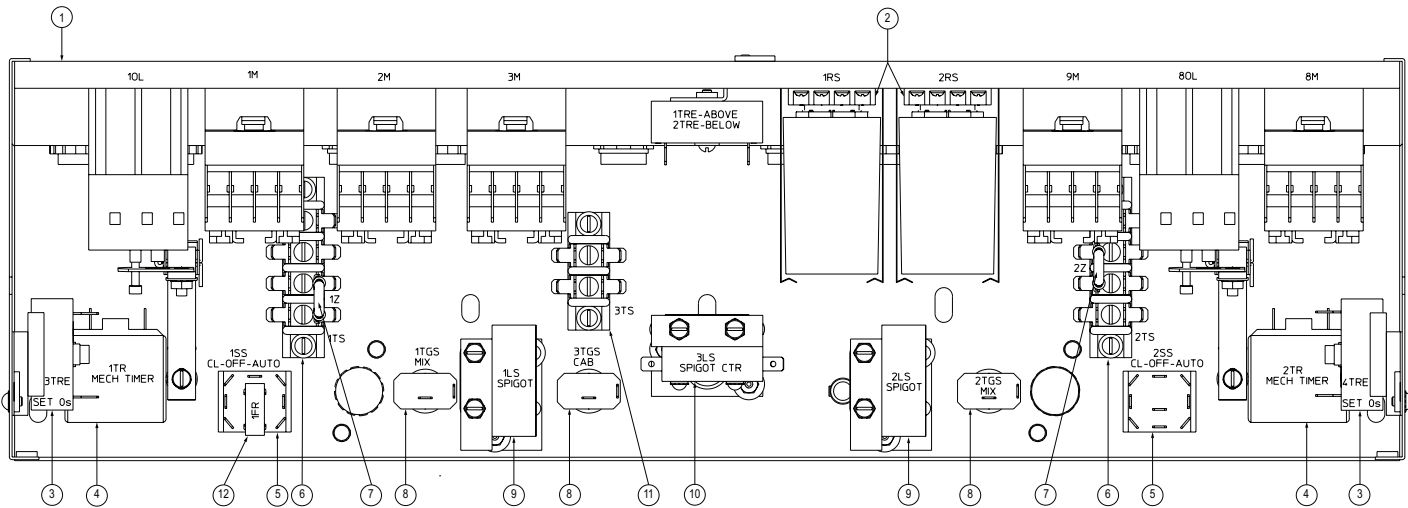


Item	Part No.	Description
**	HC114486	Switch - Assy. Spigot Center
1	HC114485	Bracket - Assy. Spigot Mtg.
2	HC150479	Switch - Push Button DPDT
3	HC162320	Spring - Spigot Switch
4	HC136124	Button - Spigot Switch
5	HC114484	Bracket - Assy. Switch Adjusting
6	HC160099	Screw - RDHM #8-32 x 1-1/8 ZN
7	HC160102	Nut - HEX #8-32 ZN
8	HC160393	Washer - Flat #6
9	HC160392	Washer - External Tooth #6 ZN
10	HC160296	Screw - RDHM #6-32 x 1-1/4 SST
11	HC160303	Ring - Retaining 1/2 External

\*\* Includes items 1-11.

# Figure 6 Switch Box (Breakdown)

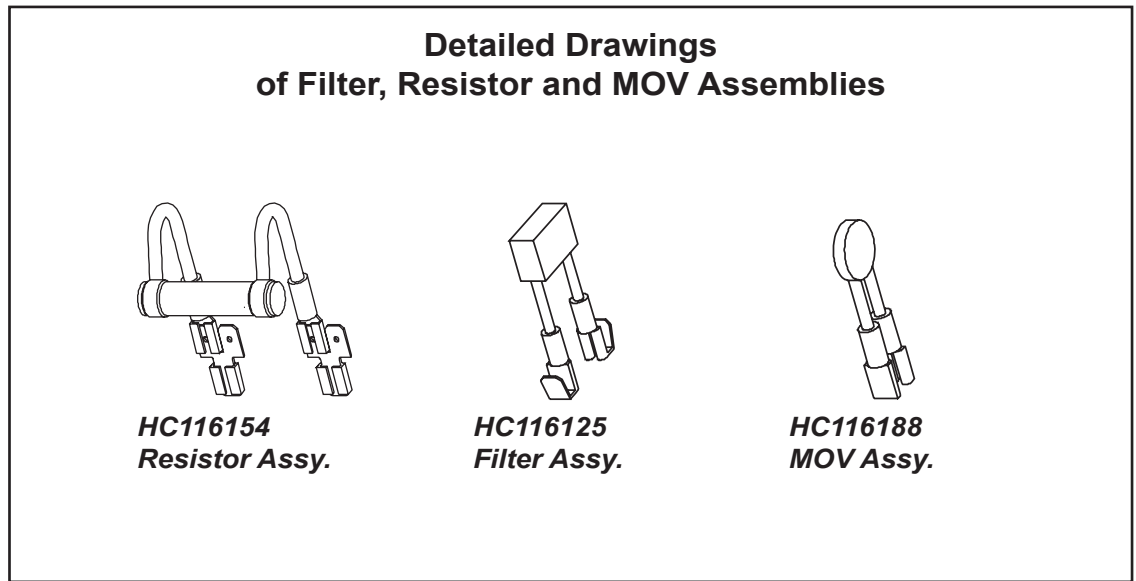
## TOP VIEW



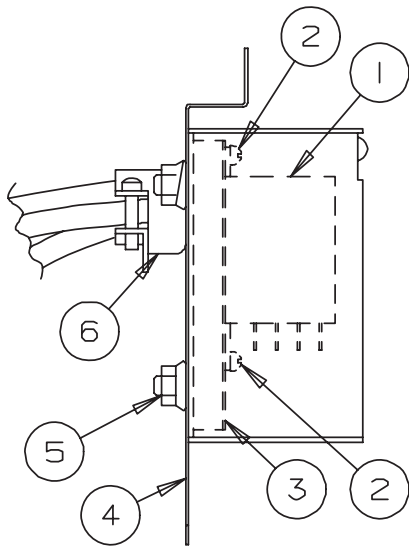
## FRONT VIEW

Item	Part No.	Description
1	HC115097	Box - Assy Electric Weldment
2	HC150119	Socket - Octal Terminal
3	HC150252-01	Timer - .5-45 Delay On Break 230V
4	HC150218	Timer - Five Minute Mech
5	HC150465	Switch - Toggle 3Pdt Ctr Off
6	HC150795	Strip - Terminal
7	HC116188	Mov - Assy
8	HC159235	Switch - Toggle SPST
9	HC113903	Switch - Assy Spigot
10	HC114486	Switch - Assy Spigot IDQ Center
11	HC150798	Strip - Terminal
12	HC116125	Filter - Assy
13	HC150069	Relay - Overload (order by Serial #)
14	HC150083	Contactor - 230V BF25
15	HC150208	Timer - 12 Sec Delay On Break
16	HC150202	Indicator - Mix Level

**Not Shown:**  
 HC162604 ..... Knob - Timer

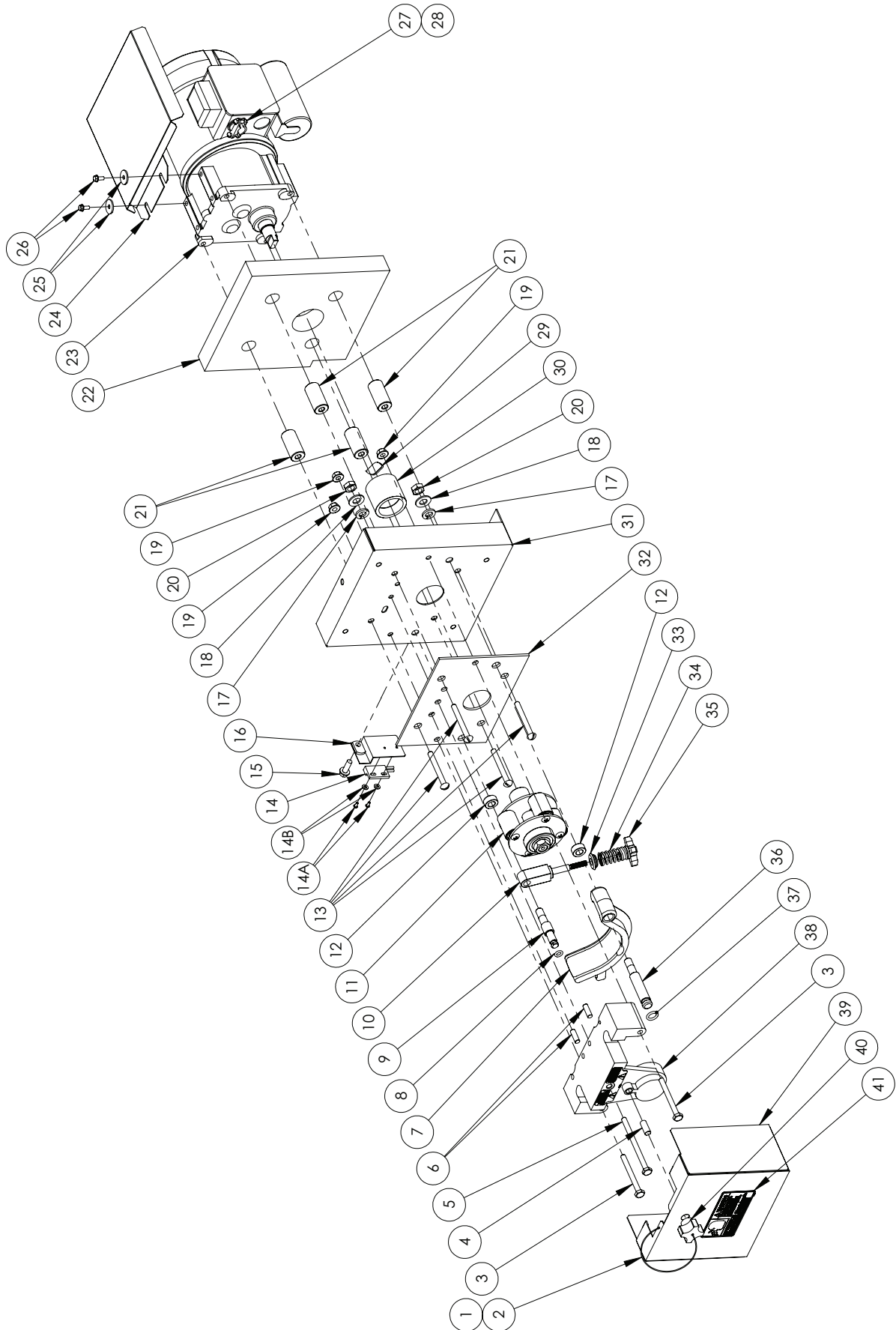


**Figure 7 Relay Box MTS**



Item	Part No.	Description
1.....	150381.....	Relay - Flange Base w/Cover
2.....	160308.....	Screw - RDHM #6-32x5/16 ZN
2A.....	160116.....	Nut - Speed #6-32 BKOX
3.....	138159.....	Bracket - Flange Relay Mtg.
4.....	138169.....	Support - MTS
5.....	159950.....	Screw - HXSF 1/4-20x1/2 ZN
5A.....	159951.....	Nut - HXSF 1/4-20 ZN
6.....	150828.....	Connector - 1/2

**Figure 9 Mix Transfer System - RMT (Breakdown)**



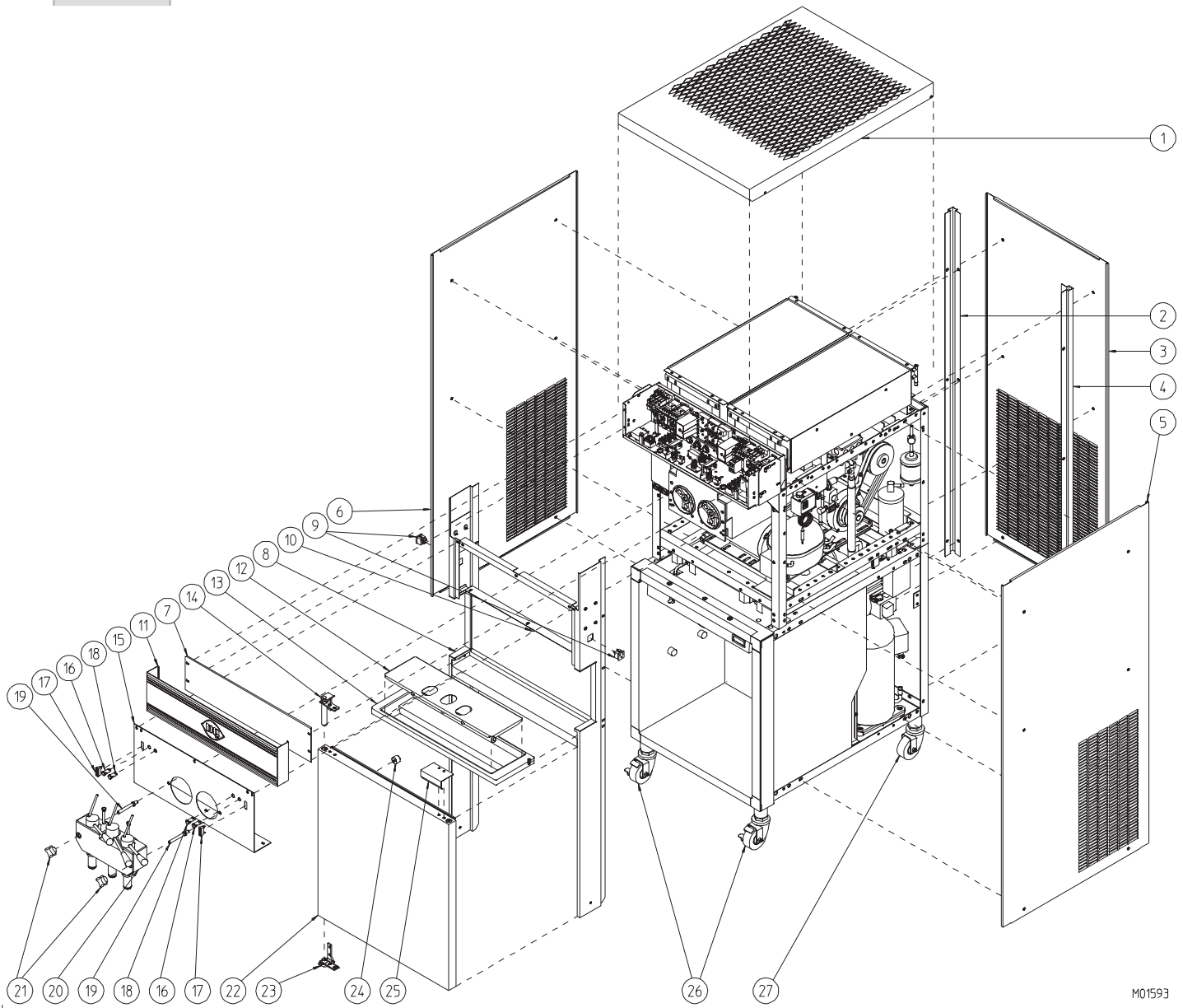


## Figure 9 Mix Transfer System - RMT (Parts)

Item	Part No.	Description
*	HC118751-03	MT - Assy Cab Red Line/Relief Bisn
1	HC138890	Lanyard - Wire
2	HC160508	Sleeve - Cable Stop 3/64
3	HC160464	Screw - HXHC 1/4-20X2 1/2 SST
4	HC160386	Stud - 5/16-18 X 3/4 SST
5	HC160465	Screw - HXHC 1/4-20X3 1/2 SST
6	HC160338	Pin - Dowel 1/4 Dia X 3/4 SST
7	HC139751	Shoe - Roller
8	HC160628	O Ring
9	HC138799	Arm - Swing Clamp
10	HC120504	Clamp - Assy Swing 1/4-20
11	HC116009	Roller - Assy Complete
12	HC138800	Spacer - Swing Arm
13	HC160093	Screw - TRPS 1/4-28X2-1/4 SST
14	HC161302	Switch - Slide/Cover
14A	HC160357	Screw - RDHM #4-40X1/4 STL
14B	HC160393	Washer - Flat #6 Brass
15	HC159939	Screw - HXSF1/4-20X11/16 SST
16	HC118763	Bracket - Assy Switch Mntg.
17	HC160170	Washer - Lock 3/8 SST
18	HC160169	Washer - Flat 3/8 SST
19	HC159933	Nut - HXSF 1/4-20 SST
20	HC159927	Nut - Hex 3/8-16 SST
21	HC138793	Spacer - Motor
22	HC165524	Block - Insulation RMT
23	HC121027	Kit - Gearmotor 1/6Hp Replacement Model Rmt Includes: HC139046-01....Gauge - Shaft Alignment RMT HC139839.....Strap - Mt Motor Rear HC160173.....Washer - Spring Wave SST
24	HC141607	Cover - Rmt Pump Motor
25	HC160137	Washer - Flat #10 X 3/4 ZN
26	HC160420	Screw - HXWF #8-32 X 3/8 ZN
27	HC150706	Connector - 3/8 Straight
28	HC118833	Cord - Assy Motor
29	HC160173	Washer - Spring Wave SST
30	HC139756	Shield - Drip
31	HC118764	Faceplate - Assy MTS
32	HC191527	Blank - Backup MTS
33	HC140711	Washer - Spring End
34	HC162330	Spring - Compression
35	HC140706	Knob - Fluted 1/4-20 Custom
36	HC138797	Arm - Shoe Pivot
37	HC160612	O Ring
38	HC138783-01	Support - Roller Bearing
39	HC118767	Cover - Assy RMT HC165246.....Decal - Warning Pressurized HC138889.....Knob - Cover RMT HC138890.....Lanyard - Wire HC160508.....Sleeve - Cable Stop 3/64
40	HC138889	Knob - Cover RMT
41	HC165246	Decal - Warning Pressurized

\* Includes all items above.

Figure 10 Panel Breakdown (sheet 1 of 2)



M01593

Hardware for Panels for 957RMT				
Panel	Screw	Nut-Speed	Spacer	Nut-Speed on Frame
Channel-Rear	HC160048	HC160117	n/a	n/a
Dispense	HC160076	HC159132	HC138456	n/a
Front	HC160076	HC159132	n/a	HC159067
Rear	HC160048	HC160114	HC138456	n/a
Side	HC159219	HC160114	HC138456	n/a
Top	HC160305	n/a	n/a	n/a
Trimstrip	HC160076	n/a	n/a	n/a
n/a – Not Applicable				

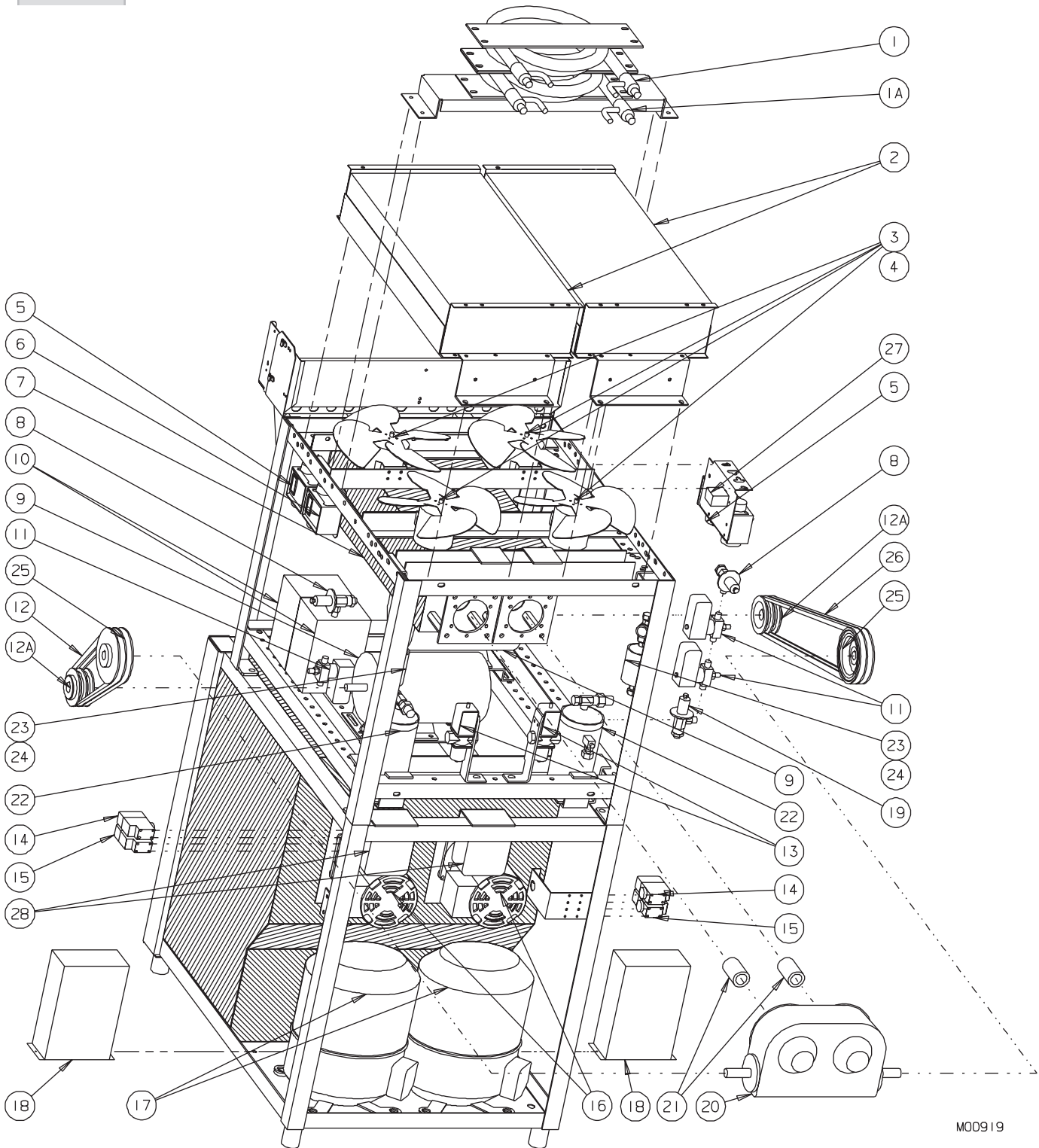
## Figure 10 Panel Breakdown (sheet 2 of 2)

Item	Part No.	Description
1.....	HC116567 .....	Panel - Assy. Top (AC)
or.....	HC114157-01 .....	Panel - Assy. Top (WC and ACR)
2.....	HC135254.....	Channel - Rear LH (Corner)
3.....	HC136313.....	Panel - Rear, WC & AC
or.....	HC138983.....	Panel - Lower Rear (ACR)
	HC138982.....	Panel - Upper Rear (ACR)
4.....	HC130021.....	Channel - Rear RH (Corner)
5.....	HC136216.....	Panel - Side RH
6.....	HC136289.....	Panel - Side LH
7.....	HC116355.....	Cover - Assy. Electric Box
8.....	HC115116 .....	Panel - Assy. Front
	HC159175 .....	Catch - Bullet (Button - Drip Tray)
	HC160289 .....	Nut - Push Round (not shown)
9.....	HC159050.....	Receptacle - Snap In
10.....	HC199016.....	Grommet - Rubber 5/8 ID
11 .....	HC119336-02.....	Trimstrip - Assy. 26" IDQ
	HC165440-02 ...	Decal - Trimstrip IDQ 26"
12.....	HC115132 .....	Insert - Tray Drip 26" w/Bumper
	HC199030 .....	Bumper - Rubber
13.....	HC196108-01 .....	Tray - Drip 26" White
14.....	HC162045.....	Hinge - Pivot 1 - 3/8 Top LH
	HC162052 .....	Spring LH
15.....	HC140128.....	Panel - Dispense
16.....	HC150562.....	Light - Pilot Amber 230V
17.....	HC150540.....	Light - Indicator 230V ADD MIX
18.....	HC150561.....	Light - Pilot Red 230V
19.....	HC114341-01.....	Stud - Assy. Cylinder 3 - 13/16
20.....	HC119915.....	Head - Assy Dispense (See Figure 1)
21.....	HC162625.....	Knob - Hand
22.....	HC114260-03.....	Door - Assy. Complete 26" IDQ
	HC160563 .....	Gasket - Door (V - Groove)
	HC136199 .....	Handle - Door
23.....	HC162046.....	Hinge - Pivot 1-3/8 Bottom LH
24.....	HC118597 .....	Actuator - Assy. Door Switch
25.....	HC136199.....	Pull - Door
26.....	HC162105.....	Caster - 1-1/4 ST PT w/Brake
27.....	HC162106.....	Caster - 1-1/4 ST PT w/o Brake

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

Panel Decals & Labels	
Part No.	Description
HC165119	6" Air Flow
HC165025	Beater Warning
HC164031	Blade Installation
HC164452	Cleaning Instructions
HC165093	Clear Overlay
HC165013	CMT Patent
HC165002	General Purpose Receipt
HC164110	MTS Connect Red Line
HC164127	Operating Instructions
HC165126	Panel Removal
HC165124	Top Air Discharge
HC165215	Trimstrip IDQ 26"
HC164062	Trimstrip LH
HC164061	Trimstrip RH
HC165246	Warning - Pressurized

Figure 11 Back/Side View (sheet 1 of 2)



M00919

## Figure 11 Back/Side View (sheet 2 of 2)

Item	Part No.	Description	Item	Part No.	Description
1	.....HC155029	..... Condenser - Water (WC)	17	.....HC119541	..... Compressor - Assy. 208 - 230/3/60 (3ph)
1A	.....HC139877	..... Bracket - Condenser Mtg. (W/C)			includes compressor and
2	.....HC155120	..... Condenser - Air (AC)			HC155054.....Drier - Filter
2A	.....HC116564	..... Bracket - Assy. Rear (AC)*			HC155419.....Valve - Access
2B	.....HC116565	..... Bracket - Assy. Front (AC)*	or.....	HC119540	..... Compressor - Assy. 208 - 230/1/60 (1 ph)
2C	.....HC113989	..... Hangar - Assy. Air Condenser*			includes compressor and
3	.....HC159023	..... Blade - Fan 11" 36° (AC)			HC151463.....Capacitor - Run
4	.....HC151077-01	..... Motor - Fan 50w 230v (AC)			HC151436.....Capacitor - Start
5	.....HC120829	..... Kit - Control Assy. Elec. Temp.			HC155054.....Drier - Filter
6	.....				HC151462.....Relay - Start
7	.....HC118689	..... Cylinder - Assy. Complete			HC155419.....Valve - Access
7A	.....HC118712	..... Kit - Pressure Switch 30 psi*	18	..... - - - -	..... Box - Capacitors (Compressor)
7B	.....HC116105	..... Nut - Assy. Pressure Switch*	19	.....HC155449	..... Valve - Automatic Expansion (Cabinet)
7C	.....HC116410	..... Kit - Dispense Head Switch*	19A	.....HC165531	..... Insulator - Expansion Valve*
7D	.....HC115004-01	..... Tube - Assy. Drain 20-1/4*	20	.....HC153341	..... Reducer - Gear ..(See Figure 11)
8	.....HC155490	..... Valve - Automatic Expansion (Cyl)	21	.....HC111964	..... Coupling - Assy. 1 Inch Drive
8A	.....HC165531	..... Insulator - Expansion Valve*	22	.....HC155071	..... Receiver - 3 lb. 3/8 ID Sweat w/o Valve
9	.....HC151052	..... Motor - 2HP (3ph)			(AC & WC)
or.....	HC118140	..... Kit - Motor & Capacitors 2HP (1ph)	or.....	HC155058	..... Receiver - 12 lb. Horizontal Mount
		includes motor and capacitors			(ACR)*
		HC150318.....Capacitor - Run	23	.....HC155054	..... Drier - Filter
		HC150872.....Capacitor - Start x2	24	.....HC155059	..... Glass - Sight
10	..... - - - -	..... Box - Motor Capacitors	25	.....HC153625	..... Sheave - 3/4 Bore 4.75 OD (Driven)
		See Item 9 - 1 Phase Motors			includes
11	.....HC155395	..... Valve - Solenoid 3/8 OD 208 - 240V			HC160495.....Screw - Sk Set
12	.....HC153161	..... Belt - V (R.H.)	25A	.....HC153322	..... Key - Drive 3/16 sq x 1-1/2*
12A	.....HC153626	..... Sheave - 7/8 Bore 3.25 OD (Driver)	26	.....HC153171	..... Belt - V (L.H.)
		HC160495.....Screw - Sk Set	27	.....HC118813	..... Kit - Cabinet Thermostat
12B	.....HC153322	..... Key - Drive 3/16 sq x 1-1/2*	28	.....HC119208	..... Box - Assy. MTS Relay (See Figure 7)
13	.....HC112080	..... Valve - Assy Water includes			
		HC132972.....Bracket	Not Shown:		
		HC155410.....Valve - Water		HC117133	..... Pan - Assy. Condensate
13A	.....HC155444	..... Kit - Water Valve Repair*		HC161216	..... Sensor - 10K Thermistor
14	.....n/a	..... HPCO see Kits in Not Shown		HC155419	..... Valve - Access
15	.....n/a	..... LPCO see Kits in Not Shown		HC155574	..... Cap - Access Valve
16	.....HC121027	..... Kit - Gearmotor Replacement		HC120494	..... Kit - HPCO 155450 Field (AC & ACR)
		Model RMT (Mix Transfer)		HC120495	..... Kit - HPCO 155702 Field (WC)
				HC120496	..... Kit - LPCO 155701 Field (AC & WC)

\* Not Shown

\*\* Order by freezer serial number.

AC = Air Cooled

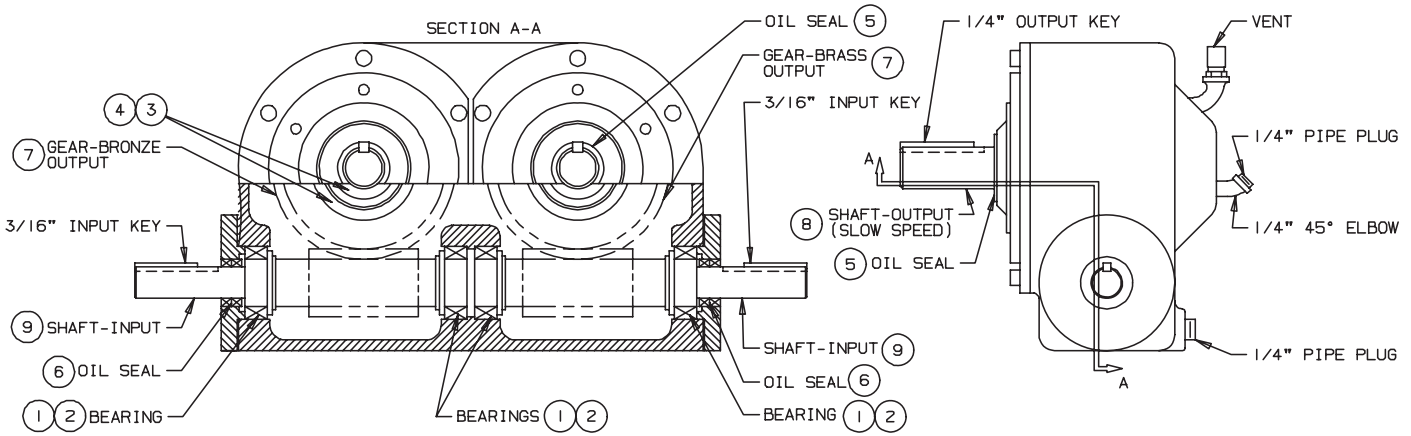
WC = Water Cooled

R.H. = Right hand side of the freezer as you face the front.

L.H. = Left hand side of the freezer as you face the front.

n/a = Not applicable for this freezer.

# Figure 12 Gear Reducer



M00057

(Order by freezer serial number)  
Model — Wintwin

HC153341 Wintwin 10 - 1 Ratio A and B Side

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

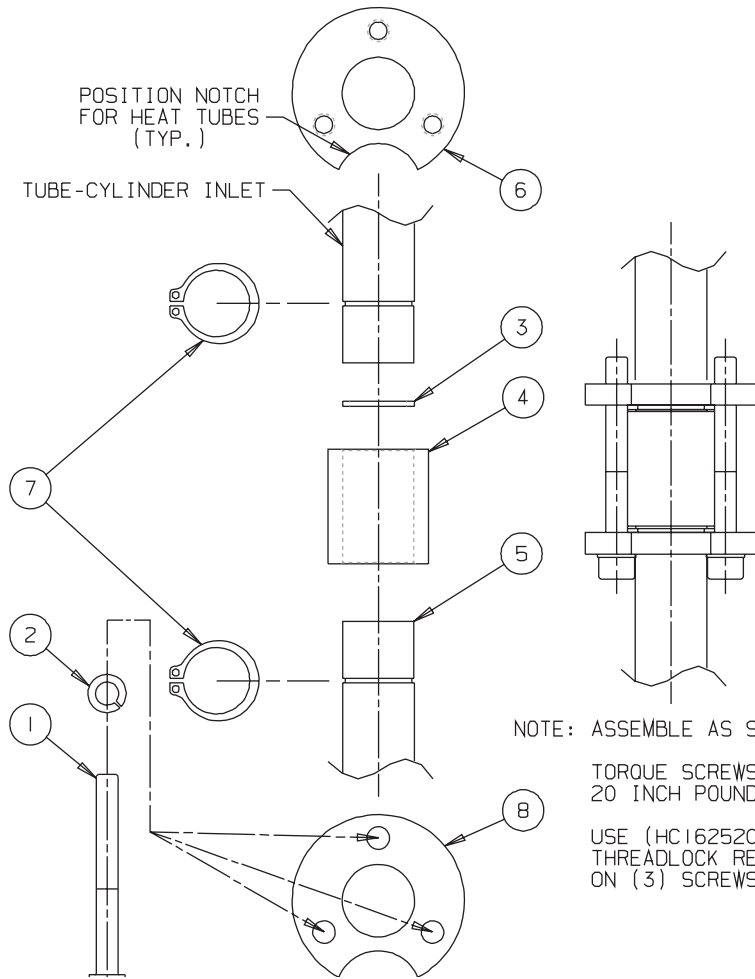
**Not Shown:**

- HC114874 ..... Kit - Reducer Gasket 4CB ..... 1 ea.
- HC111964 ..... Coupling - Assy. 1 inch Drive
- HC153322 ..... Key - Drive 3/16" High (in)
- HC153323 ..... Key - Drive 1/4" Slow (out)

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

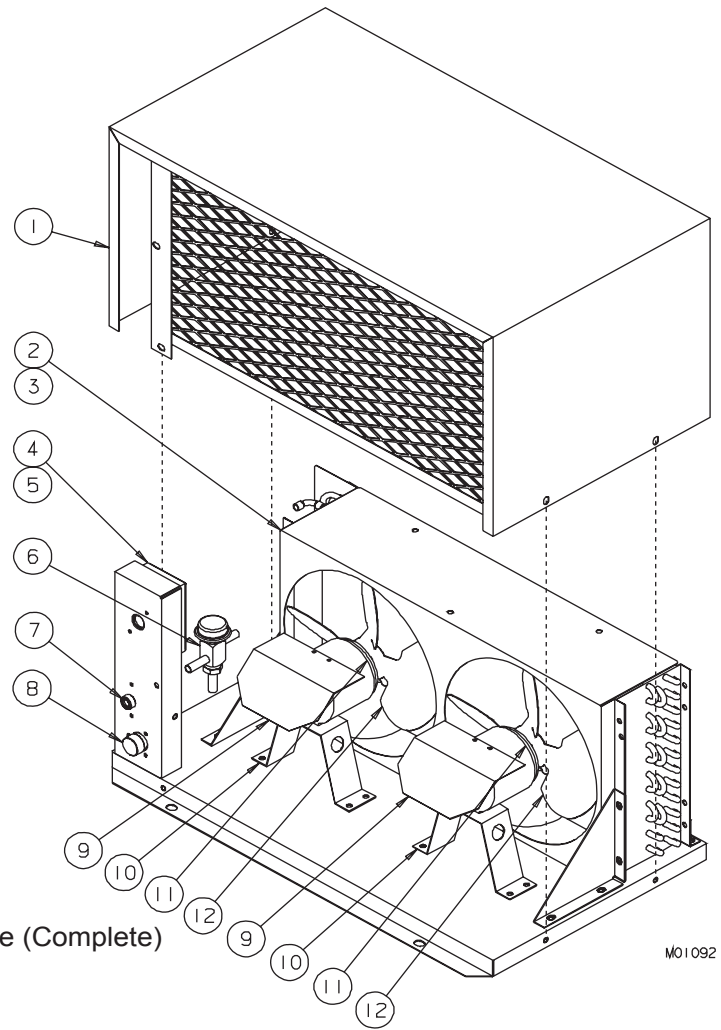
**\*\*Note:** To order oil always verify type of oil from the tag located on the gear reducer. Improper oil usage will cause the gear reducer to fail.

**Figure 13 Evaporator Mix Tube Assembly**



Item	Part No.	Description
1	HC160320	Screw - SKHC #10-24 x 1-3/4 SST
2	HC160166	Washer - Lock #10 ST
3	HC160556	Gasket - Mix Joint
4	HC139351	Collar - Alignment
5	HC139349	Tube - Mix Feed Clamp
6	HC139352	Clamp - Ring Threaded
7	HC160312	Ring - Retaining 5/8 Ext. SST
8	HC139353	Clamp - Ring

**Figure 14 Air Cooled Remote Condenser**



M01092

Item	Part No.	Description
*	HC116781-02	Condenser - Assy. 2 Hp Remote (Complete)
1	HC117207	Cover - Assy. Condenser
2	HC155101	Condenser - Air Rifled
3	HC138465	Shroud - Fan
4	HC150732	Box - Electric 2-3/4 x 4-1/2 x 2
5	HC150737	Cover - Electric Box 2-3/4 x 4-1/2
6	HC155454	Valve - Head Pressure Control
7	HC153420	Coupling - Refr. 3/8 MQC 3/8 SW
7A	HC191538	Plate - Coupling Mtg.
8	HC153418	Coupling - Refr. 1/2 MQC 1/2 SW
8A	HC153502	Flange - Refr. Coupling Mount
8B	HC153503	Cap - Dust Refr. Coupling
9	HC139017	Shield - Motor Rain
10	HC137632	Bracket - Fan Condenser
11	HC151072	Motor - Fan 50W 230V 60Hz
12	HC159029	Blade - Fan 11" Dia 36°

\* Includes items 2-12 above

**Not Shown:**

- HC155058 Receiver - 12 lb. Horizontal Mount
- HC155450 Cut Out - High Pressure 450 PSI
- HC155705 Cut Out - Low Pressure 2IN HG
- HC155466 Control - Pressure Fan
- HC155487 Valve - Check 5/8 ODF Sweat
- HC119124 Kit - 25 Foot Line Sets 404a
- HC119125 Kit - 50 Foot Line Sets 404a
- HC153419 Coupling - Refr. 3/8FQC 3/8SW
- HC153417 Coupling - Refr. 1/2FQC 1/2SW



## Accessories

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

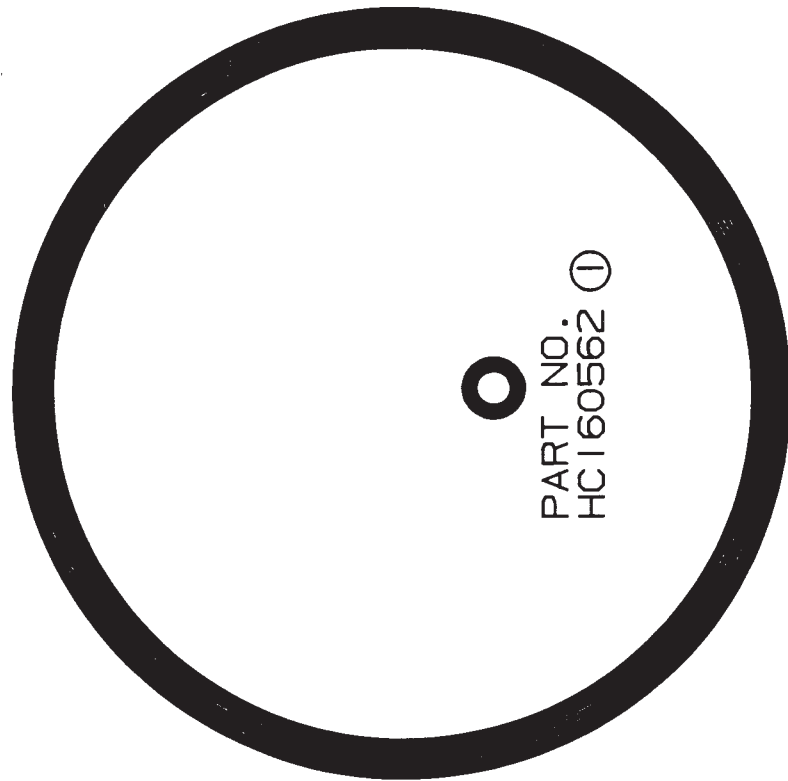


# O-Ring Chart

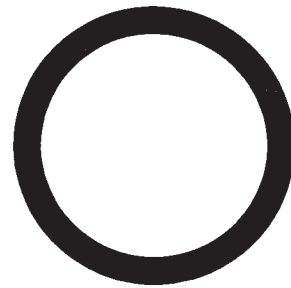
REV. B

SOFT SERVE DISPENSING HEADS

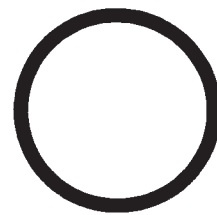
HC184238



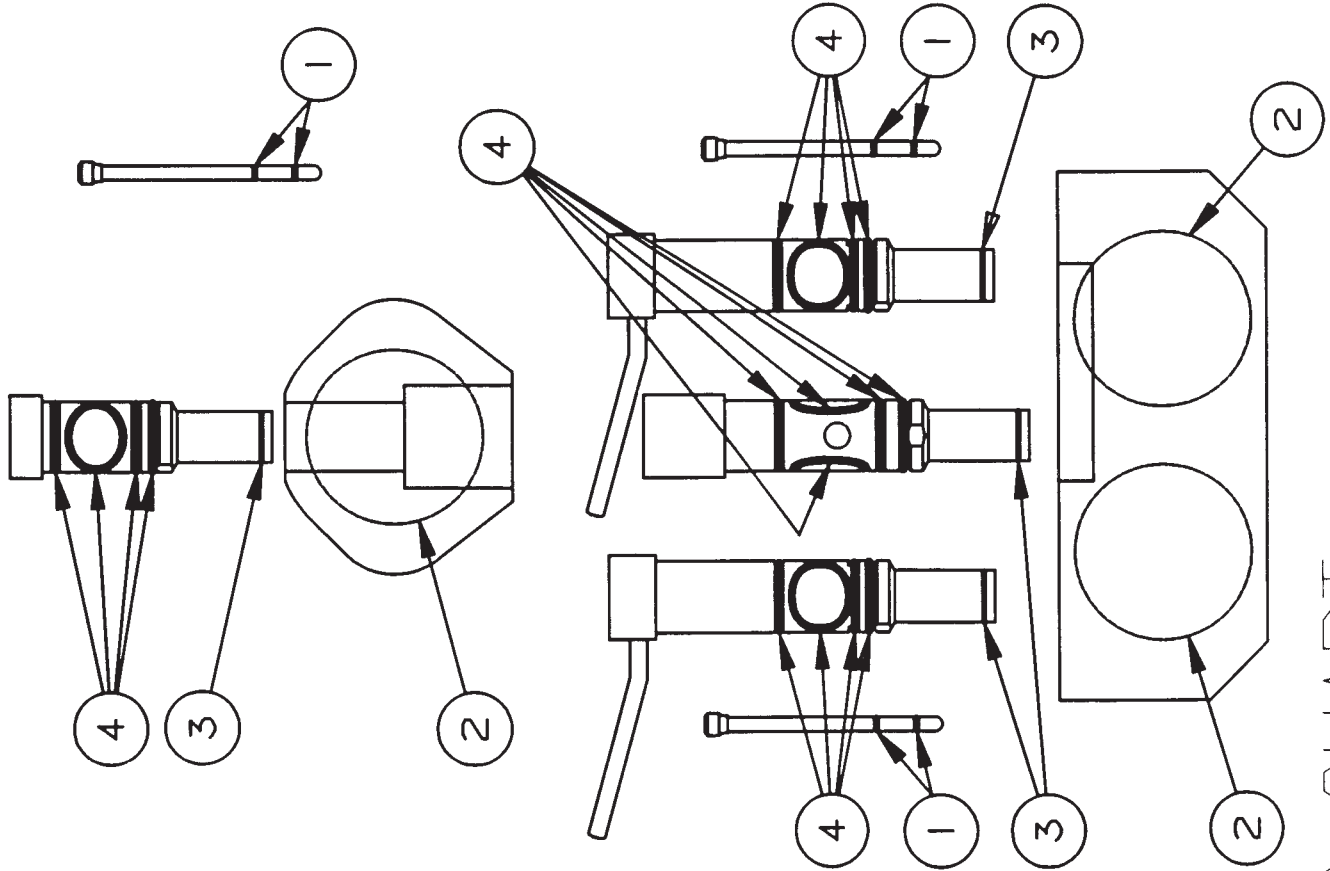
PART NO.  
HC160583 ②



PART NO.  
HC159295 ④



PART NO.  
HC160584 ③



O-RING CHART

PH. NO. 309-755-4553

H.C. DUKE & SON, INC.