

TABLE OF CONTENTS

	Table of Contents	i
	List of Illustrations	iii
	List of Charts	iv
	Specifications	v
SECTION I.-	GENERAL INFORMATION & INSTALLATION	1-1
I.	Introduction	1-1
II.	Unpacking and Inspection	1-1
III.	Location and Leveling	1-2
IV.	Electrical Connections	1-2
V.	Water Supply and Drain Connections	1-2
VI.	Final Check List	1-4
SECTION II.-	START UP OPERATION	2-1
I.	Start Up	2-1
SECTION III.-	PRINCIPLES OF OPERATION - How it Works	3-1
I.	Icemaker	3-1
II.	Electrical/Refrigeration	3-1
III.	Carbonation	3-2
IV.	Carbonator Tank	3-2
V.	Liquid Level Control	3-2
VI.	Pressure Type Dispensing Heads	3-2
VII.	Touch-O-Matic TM Faucet Assembly	3-3
VIII.	Facts About CO ²	3-3
SECTION IV.-	ADJUSTMENT AND REMOVAL AND REPLACEMENT PROCEDURES	4-1
I.	Adjustment of the Bin Thermostat Control	4-1
II.	Adjustment of the CO ² Gas Pressure	4-2
III.	Adjustment of the Drink Dispenser Faucets	4-2
IV.	Adjustment of the Leg Levelers	4-2

TABLE OF CONTENTS (Cont'd)

V.	Adjustment of the Water Regulator Assembly	4-3
VI.	Adjustment of the Water Reservoir Float	4-3
VII.	Removal & Replacement of the Auger, Water Seal, Bearings and Coupling	4-3
VIII.	Removal & Replacement of the Carbonator Tank Assembly	4-4
IX.	Removal & Replacement of a CO ² Gas Cylinder (Drum)	4-5
X.	Removal & Replacement of the Cold Plate Bin Assembly	4-5
XI.	Removal & Replacement of the Compressor Assembly	4-5
XII.	Removal & Replacement of the Condenser - Air Cooled Models	4-6
XIII.	Removal & Replacement of the Condenser - Water-Cooled Models	4-6
XIV.	Removal & Replacement of the Drier	4-6
XV.	Removal & Replacement of the Drivemotor Assembly	4-7
XVI.	Removal & Replacement of the Fan Motor Assembly - Air-Cooled Models	4-7
XVII.	Removal & Replacement of the Freezer Assembly.....	4-7
XVIII.	Removal & Replacement of the Limit Box Assembly	4-8
XIX.	Removal and Replacement of the Pressure Plate Assembly, Spout Assembly and Spout Casting	4-9
XX.	Removal & Replacement of the Pump, Motor & Bracket Assembly	4-9
XXI.	Removal & Replacement of the Pump Motor	4-10
XXII.	Removal & Replacement of the Pump.....	4-10
XXIII.	Removal & Replacement of the Touch-O-Matic ^{T.M.} Faucet Assembly	4-11
XXIV.	Removal & Replacement of the Touch-O-Matic ^{T.M.} Faucet Coil, Plunger, Spring, O-Ring	4-12
XXV.	Removal & Replacement of the Water Regulator - Assembly Water-Cooled Models.....	4-12
XXVI.	Removal & Replacement of the Water Reservoir Assembly	4-13
SECTION V.- MAINTENANCE & CLEANING INSTRUCTIONS		
I.	General	5-1
II.	Icemaker	5-1
III.	CO ² GAS - How to Locate & Stop Leaks.....	5-2
IV.	Faucet Assembly	5-2
V.	CLEANING - Icemaker	5-2
VI.	CLEANING - Faucet Assembly.....	5-3

TABLE OF CONTENTS (Cont'd)

SECTION VI.-	SERVICE DIAGNOSIS	6-1
I.	Icemaking - Refrigeration System	6-1
II.	Carbonation System	6-3
III.	Dispensing System	6-5
SECTION VII.	WIRING DIAGRAMS	7-1
	Wiring Diagram DSF-450 Air-Cooled Model	7-2
	Wiring Diagram DSF-450 Water-Cooled Model	7-3
	Wiring Diagram DSF-650 Air-Cooled Model	7-4
	Wiring Diagram DSF-650 Water Cooled Model	7-5
SECTION VIII.-	THE PARTS ILLUSTRATIONS AND PARTS AND PARTS LISTS	8-1
I.	General	8-1
II.	How to Use The Illustrations and Parts Lists	8-1
III.	How to Order Parts or Assemblies	8-1

LIST OF ILLUSTRATIONS

	Specifications - Models DSF-450 and DSF-650	v
Figure 1-1.	Installation Practice	1-3
Figure 2-1.	Post Mix Dispenser System Schematic	2-2
Figure 4-1.	Adjustment of the Temperature Control	4-1
Figure 4-2.	Removal of the Freezer Assembly	4-8
Figure 4-3.	Removal of the Limit Switch, Pressure Plate, Spout and Spout Casting	4-8
Figure 4-4.	Removal of the Pump, Motor & Bracket Assembly	4-9
Figure 4-5.	Removal of the Touch-O-Matic ^{T.M.} Solenoid Parts	4-11
Figure 4-6.	Removal of the Water Reservoir Assembly	4-13
Figure 7-1.	Wiring Diagram - DSF-450 Air-Cooled	7-2
Figure 7-2.	Wiring Diagram - DSF-450 Water-Cooled	7-3
Figure 7-3.	Wiring Diagram - DSF-650 Air-Cooled	7-4
Figure 7-4.	Wiring Diagram - DSF-650 Water-Cooled	7-5

LIST OF ILLUSTRATIONS (Cont'd)

Figure 8-A.	DSF-450/650 Icemaker/Drink Dispenser Flow Chart	8-2
Figure 8-1.	DSF-450/650 Cabinet	8-3
Figure 8-2.	Major Assemblies - Air-Cooled	8-7
Figure 8-3.	Major Assemblies - Water-Cooled	8-12
Figure 8-4.	Fan Motor & Mounting Bracket Assembly	8-18
Figure 8-5.	Water Regulator Assembly	8-19
Figure 8-6.	Pump, Motor & Bracket Assembly	8-20
Figure 8-7.	Carbonator Tank Assembly	8-21
Figure 8-8.	Freezer Assembly - DSF-450	8-23
Figure 8-9.	Freezer Assembly - DSF-650	8-26
Figure 8-10.	Drivemotor Assembly - DSF-450 1/10 H.P.	8-29
Figure 8-11.	Drivemotor Assembly - DSF-650 1/4 H.P.	8-33
Figure 8-12.	Control Box Assembly - DSF-450	8-36
Figure 8-13.	Control Box Assembly - DSF-650	8-38
Figure 8-14.	Dispensing Tower Assembly	8-41
Figure 8-15.	Touch-O-Matic ^{T.M.} Faucet Assembly	8-43

LIST OF CHARTS

Chart 3-1.	Effect of Temperature	3-4
Chart 3-2.	Effect of Pressure	3-4

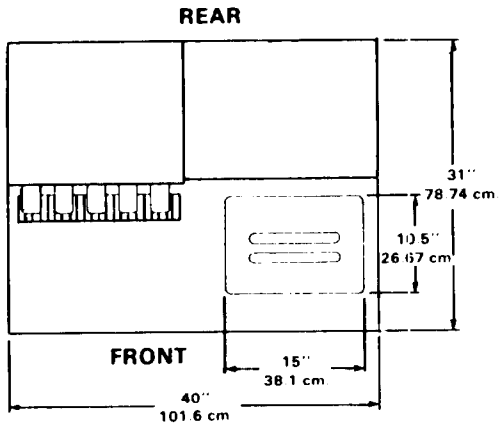


This icemaker has been engineered to our own rigid safety and performance standards. The National Sanitation Foundation (NSF) seal, signifies that it is listed with the NSF and that it complies with the materials and construction standards of the NSF. In addition, the Underwriters Laboratories, Inc., (UL) Listing Mark and the Canadian Standards Association (CSA) Monogram, both signify that its construction and design have been inspected and tested by them. NSF, UL and CSA inspectors also periodically examine production icemakers at the factory, to assure continued compliance.

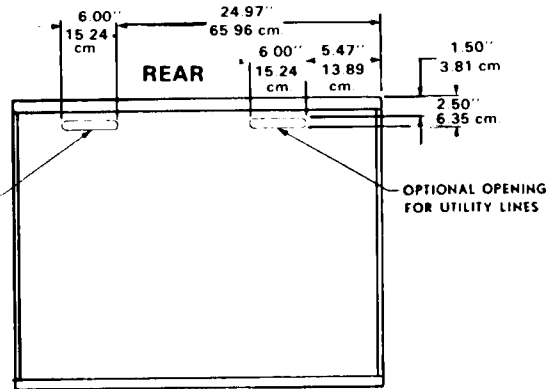
To retain the safety and performance built into this icemaker, it is important that installation and maintenance be conducted in the manner outlined in this manual.

SPECIFICATIONS

MODELS DSF-450 and DSF-650



TOP VIEW

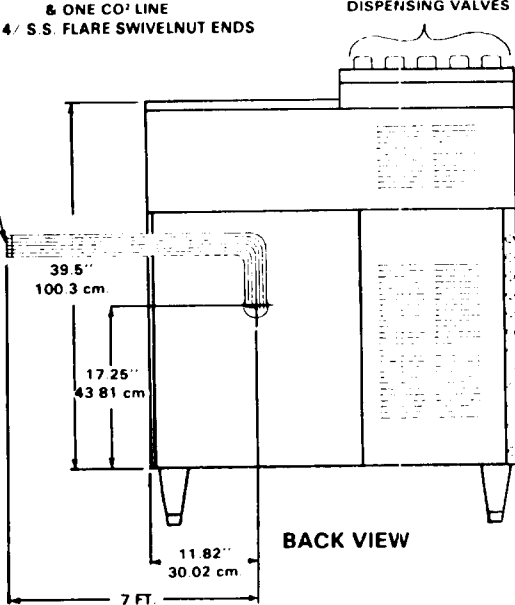


FRONT
BOTTOM VIEW

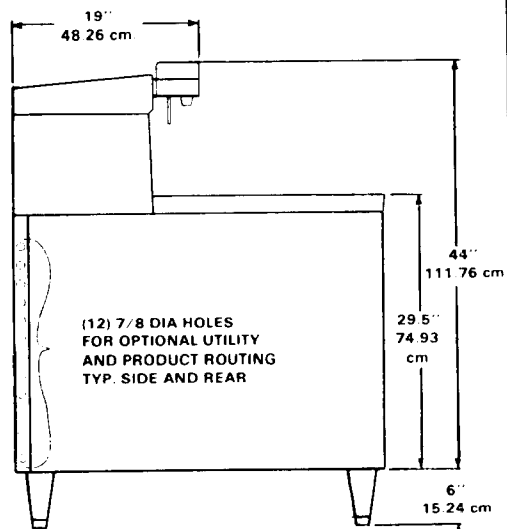
- A) 1.44" (3.66 cm.)
- B) 4.30" (22.23 cm)
- C) 6.38" (16.20 cm.)
- D) 8.38" (21.28 cm.)
- E) 10.38" (26.36 cm.)
- F) 12.38" (31.44 cm.)
- G) 14.38" (36.52 cm.)
- H) 16.38" (41.60 cm.)
- I) 18.36" (46.68 cm.)
- J) 20.38" (51.76 cm.)
- K) 22.38" (56.84 cm.)
- L) 24.38" (61.92 cm.)

FIVE SYRUP PRODUCT LINES
& ONE CO² LINE
w/1/4" S.S. FLARE SWIVELNUT ENDS

FIVE FLAVORED DRINK
DISPENSING VALVES



BACK VIEW



LEFT
SIDE VIEW

SPECIFICATIONS (Cont.)

MODEL DSF-450

Bin Storage: 215 lbs. SS bin
 Air Cooled: Model DSF450AE-1
 Water Cooled: Model DSF450WE-1
 Electrical: 115/60/1
 Est. Ship. Wt.: 470 lbs.

MODEL DSF-650

Bin Storage: 215 lbs. SS bin
 Air Cooled: Model DSF-650AE-1
 Water Cooled: Model DSF650WE-1
 Electrical: 115/60/1
 Est. Ship. Wt.: 510 lbs.

FEATURES ON BOTH MODELS

DRINK HEADS

5 Electric McCann's valves give:
 4 Carbonated flavors
 1 Non-carbonated flavor
 1 Carbonated water
 1 Non-carbonated water
 Adjustable Brix

SANITARY COLD PLATE

Sealed Cold Plate System
 Solid Aluminum Cold Plate Construction
 7 Circuit Cold Plate cools 5 syrups,
 1 Carbonated Water, 1 Plain Water.

QUICK-DISCONNECT LINES

6 service lines at back of unit
 connect quickly to syrup and gas.
 Lines are 7 ft. long.

FINISH

Charcoal Brown Enamel Base
 Stainless Steel Tops and Console
 For Stainless Steel Base order Panel Kit
 SPKDSF-650.

CARBONATION SYSTEM

Consists of Carbonator, Water Pump,
 Pump Motor, Cold Plate and all
 internal connecting lines.

TWO YEAR PARTS WARRANTY

FRONT SERVICE ACCESS PANEL

OPTIONAL LEG KIT

KLP2E - 6" metal legs, Black Enamel
 KLP2S - 6" metal legs, Nickel Plated

MODEL NUMBER		MOTORS	VOLTS	HP/WATT	F.L.A.	L.R.A.
SERIAL NUMBER		COMP.				
REFRIGERANT 12		DRIVE				
HEATER		FAN				
OZ	WATTS	OTHER				
TEST PRESSURE 140 LO - 235 HI						
A.C. SUPPLY VOLTAGE			WIRES	CYCLES	PHASE	
MAXIMUM FUSE SIZE	AMPS	MINIMUM CIRCUIT AMPACITY				
QUEEN PRODUCTS DIVISION P.O. BOX 100 535 FRONT ST. • ALBERT LEA, MN 56007						

SEE NAMEPLATE for electrical and refrigeration specifications. Remove Left Side Panel, locate NAMEPLATE on rear upright mounting bracket of Chassis. Shown at left.

Remove Left Front Door, to locate Model/Serial Number NAMEPLATE, on left upper front frame of Chassis, near the Control Box. Shown below.

MODEL NUMBER	QUEEN PRODUCTS DIVISION P.O. BOX 100 535 FRONT ST. • ALBERT LEA, MN 56007
SERIAL NUMBER	

We reserve the right to make product improvements at any time. Specifications and design are subject to change without notice.

SECTION I

GENERAL INFORMATION & INSTALLATION

I. INTRODUCTION

This manual provides the specifications and the step-by-step procedures for the installation, startup and operation, and the maintenance for the SCOTSMAN Model DSF-450 and DSF-650 Ice maker/Post Mix Drink Dispensers. Separate sections detail more specifically: General Information & Installation; Start Up Operation; Principles of Operation; Adjustment and Removal and Replacement Procedures; Maintenance and Cleaning Instructions; Service Diagnosis; Wiring Diagrams; and, the Illustrated Assemblies and Parts Lists.

Because both Models of these Ice maker/Drink Dispensers are identical in physical size and dimensions; equipment, except Freezer and Drivemotor; and in operation except production capacities as noted, all instructions and procedures apply equally to both Models, with a very few exceptions. In the few instances where there are vital technical differences between the two models, separate, well identified procedures and data are detailed, so there should be no confusion or error, in following instructions in any sections of this manual.

The Model DSF-450 and DSF-650 Ice maker/Drink Dispensers, are quality designed and constructed, and thoroughly tested icemaking and post-mix drink dispensing systems, providing the utmost in flexibility to fit the needs of a particular user.

Hood top panels are separated and removable to allow use of various syrup dispensing heads and accessories, as required.

A seven circuit Cold Plate, designed and constructed as the integral bottom of the Bin, allows use of five syrup flavors, plus cold sweet water and carbonated water circuits.

A complete built-in carbonated water system, includes a Carbonator Pump and Carbonator Tank with line connections to the Cold Plate.

All internal lines are connected prior to shipment from the factory. Six flexible tube assemblies are provided, five for connections to five syrup tanks and one for connections to the CO² High Pressure Gauge or CO² line from that gauge.

DESCRIPTION

An attractive compact cabinet of Charcoal Brown enamel base, up-to-date styling with removable panels and doors for easy access to internal lines, connections and mechanical parts. A Hood Assembly of stainless steel, attractively designed for front or back counter installation.

SEALED REFRIGERATION SYSTEM

To provide quiet efficient operation of the Ice maker, the Compressor Motor is internally spring-mounted, the Carbonator Pump is rubber-mounted and the Freezer Assembly is powered by a direct-drive, gear motor, Drivemotor Assembly

SELF-CONTAINED STORAGE BIN

These Ice maker/Drink Dispensers store their own ice supply in a heavily insulated, stainless steel ice storage Bin, with a handy Ice Access Door opening in the Hood Counter.

STANDARD OVERALL DIMENSIONS

The standard overall dimensions of the Cabinet depth, counter top height, etc., allows the automatic Ice maker/Drink Dispensers to be installed in harmony with the existing counter equipment.

II. UNPACKING AND INSPECTION

1. Call your authorized Scotsman distributor or dealer, for proper installation. He's listed under ICE MAKING EQUIPMENT and MACHINERY in the yellow pages of the telephone book.
2. Visually inspect the exterior of the shipping crate and any severe damage noted should be reported to the delivering carrier; and a concealed damage claim filed subject to inspection with carrier representative present.
3. Using nail puller, remove nails driven through the sides of the crate into the bottom skid.
4. Remove four (4) bolts from underside of the skid, which secure the skid to the base of the Cabinet.

5. Remove screws and tape, and all service panels and doors from the Cabinet.
6. Remove all internal support packing, tape and wires in machinery compartment.
7. When ordered, remove the optional leg package wired to inner machinery compartment. Install the legs in the Cabinet base sockets.
8. Check that refrigerant lines do not rub or touch lines or other surfaces, and that fan blades, if any, move freely.
9. Check that the Compressor is snug on mounts.
10. SEE NAMEPLATE on the lower part of the left rear upright mounting bracket of the Chassis, and check that the location source voltage corresponds with the voltage specified on the nameplate.

CAUTION

Improper voltage supplied to the Icemaker/Drink Dispenser will void your parts replacement program.

III. LOCATION AND LEVELING

1. Position the Cabinet in the selected permanent location.

NOTE

Prior consideration for location site shall include:

1. *Minimum room temperature 50-degrees F. and maximum room temperature 100-degrees F.*
2. *Water inlet temperatures: Min. 40-degrees F. and max. 100-degrees F.*
3. *Well ventilated location for Air-Cooled model, advising user to frequently clean Condenser, located directly behind front service door.*
4. *CONVENIENCE: Placed for practical, efficient use in a back bar or front bar location; or, fit into a standard soda fountain line up, or as an individual counter unit with double function providing flaked ice, as well as carbonated beverages.*
5. *SERVICE ACCESS: Adequate space for all service connections, located at the left rear corner of the Cabinet. A six-inch minimum clearance at rear and front lowered doors, for routing cooling air drawn into and exhausted out of the compartment to maintain proper condensing operation on Air-Cooled models.*

2. Level the Cabinet in both the left-to-right and front-to-rear directions. The optional leveling legs can be adjusted with an open end wrench.

IV. ELECTRICAL CONNECTIONS

SEE NAMEPLATE for current requirements to determine wire size to be used for electrical hookup. The DSF-450 and DSF-650 Icemaker/Drink Dispensers require a solid earth ground wire. See wiring diagram.

Be certain the Icemaker/Drink Dispenser is connected to its own electrical circuit and individually fused. The maximum allowable voltage variation should not exceed ten percent of the nameplate rating, even under starting conditions. Low voltages can cause erratic operation and may be responsible for serious damage to the overload switch and motor windings.

All external wiring should conform to the National State and local electrical code requirements. Usually an electrical permit and services of a licensed electrician will be required.

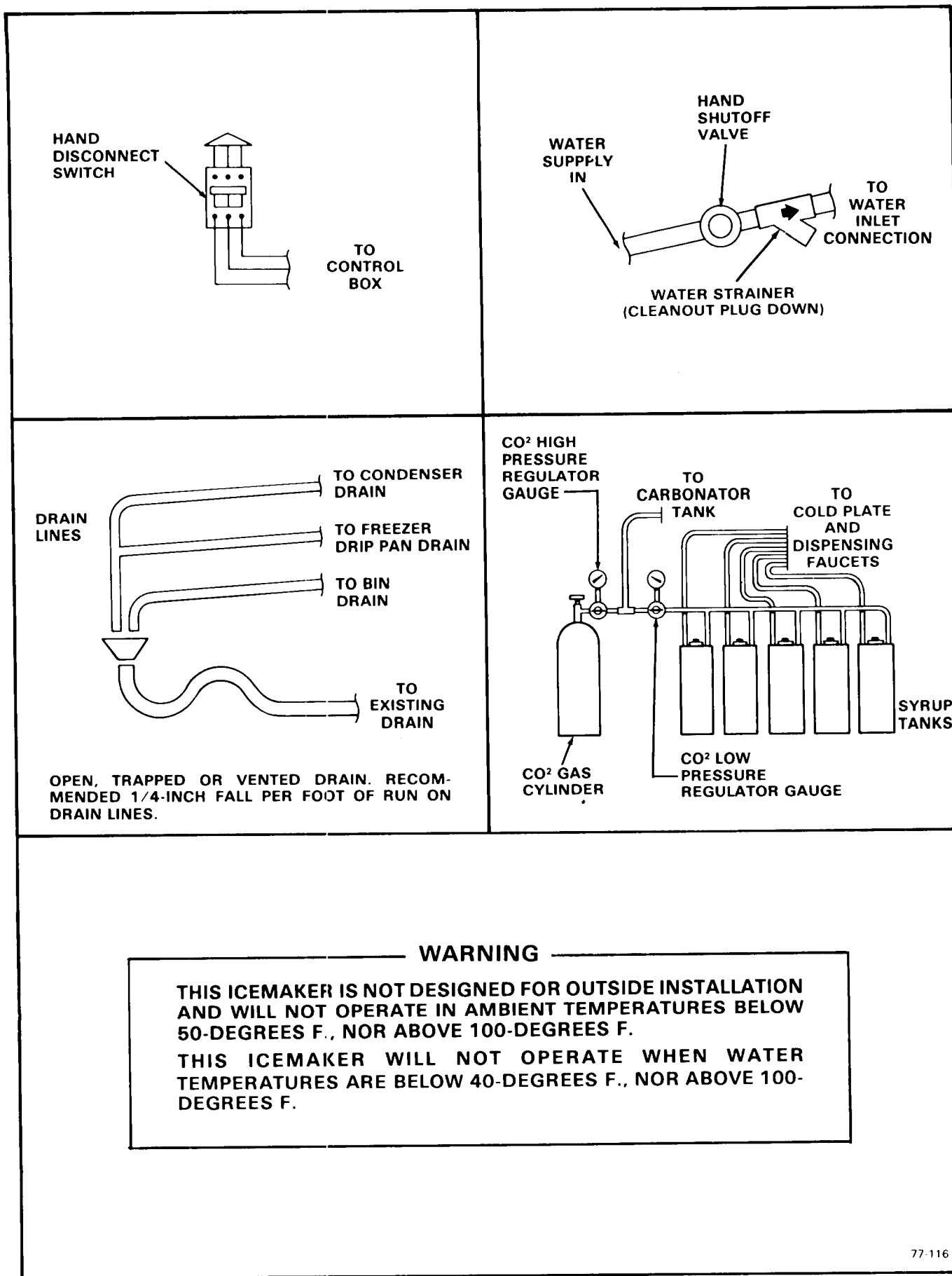
V. WATER SUPPLY AND DRAIN CONNECTIONS

A. AIR-COOLED MODELS: The recommended water supply line is a 3/8-inch O.D. copper tubing. A 3/8-inch flare fitting is provided at the water inlet. Connect to cold water supply line with standard plumbing fittings, with a shutoff valve installed in an accessible place between the water supply and the Cabinet.

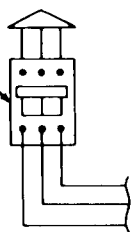
A wire mesh strainer is provided on the inlet connections of the pump, as a protection against large particles of rust, scale, etc., which may be loosened in the water pipe at the time of installation. This strainer will not prevent fine particles from damaging the pump; therefore, it is recommended a good filter be installed during any installation, and that it is absolutely essential when the water supply contains solids.

CAUTION

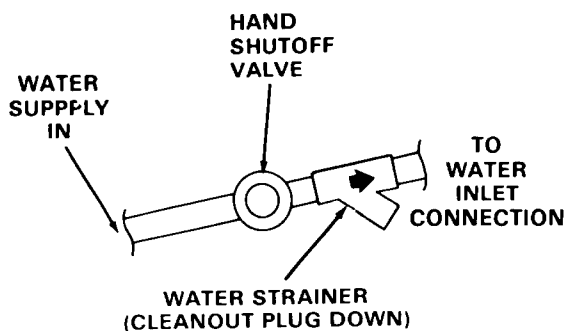
Maximum water supply pressure differential must be at least 20 psi below CO² operating pressure. If water supply pressure differential exceeds 20 psi, the carbonator may flood. So, install a water pressure regulator in the water supply line and adjust the water pressure as required.



HAND DISCONNECT SWITCH



TO CONTROL BOX

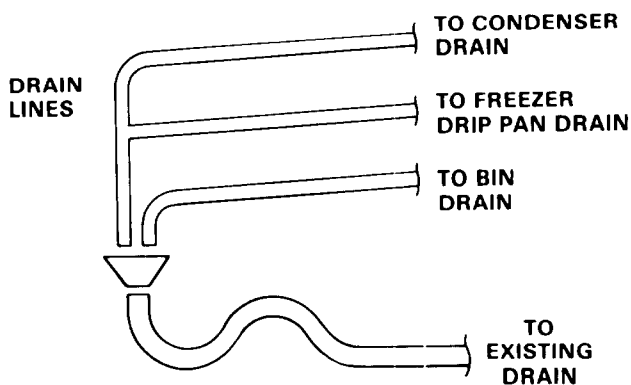


WATER SUPPLY IN

HAND SHUTOFF VALVE

TO WATER INLET CONNECTION

WATER STRAINER (CLEANOUT PLUG DOWN)



DRAIN LINES

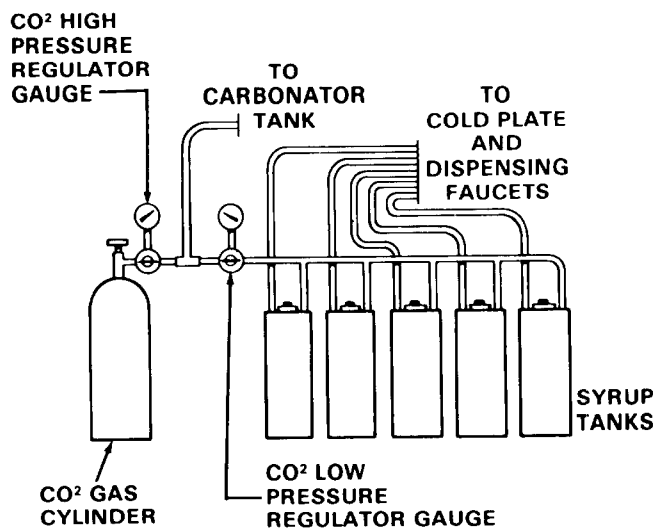
TO CONDENSER DRAIN

TO FREEZER DRIP PAN DRAIN

TO BIN DRAIN

TO EXISTING DRAIN

OPEN, TRAPPED OR VENTED DRAIN. RECOMMENDED 1/4-INCH FALL PER FOOT OF RUN ON DRAIN LINES.



CO² HIGH PRESSURE REGULATOR GAUGE

TO CARBONATOR TANK

TO COLD PLATE AND DISPENSING FAUCETS

CO² GAS CYLINDER

CO² LOW PRESSURE REGULATOR GAUGE

SYRUP TANKS

WARNING

THIS ICEMAKER IS NOT DESIGNED FOR OUTSIDE INSTALLATION AND WILL NOT OPERATE IN AMBIENT TEMPERATURES BELOW 50-DEGREES F., NOR ABOVE 100-DEGREES F.

THIS ICEMAKER WILL NOT OPERATE WHEN WATER TEMPERATURES ARE BELOW 40-DEGREES F., NOR ABOVE 100-DEGREES F.

Figure 1-1. Installation Practice

WARNING

To prevent damage to the freezer mechanism, **DO NOT** operate this unit when the water supply is **OFF**, or is **BELOW** recommended water pressure. Position the master switch to the **OFF** position, until proper water supply is resumed.

The icemaker in this Cabinet will not operate when water supply temperatures are below 40-degrees F. or above 100-degrees F.

B WATER-COOLED MODELS: On Water-cooled models a separate connection to the Condenser is required. A 3/8-inch flare fitting is provided at the water inlet and a 3/8-inch O.D. copper drain line is provided.

NOTE

The CAUTION and WARNING, in the text above for the Air-Cooled models, both apply for the Water-Cooled models. In both type installations, water supply must be installed to conform with local plumbing codes. In some cases, a plumbing permit and services of a licensed plumber will be required.

C. DRAIN CONNECTIONS: All drains are gravity type and must be 1/4-inch pitch per foot on horizontal runs. The drains to be installed to conform with the local code. Drain receptacle should be an open, trapped or vented construction.

Storage bin drain is 5/8-inch O.D. copper tubing and should be vented and run separately. See Specifications, page v.

VI. FINAL CHECK LIST

1. Is the Dispenser level? (IMPORTANT)
2. Have all electrical and piping connections been made?
3. Has the voltage been tested and checked against the nameplate rating?
4. Is the water supply line shut off valve and the electric power on?
5. Is the water reservoir filled and shut off? Correct water level should be 3/8-inch below the raised molded line, on the side of the body of the Water Reservoir.
6. Have the Cabinet and Bin been wiped clean?
7. Have the Compressor hold down nuts been checked to be sure the Compressor is snug on the mounting pads?
8. Has the owner been given the User Manual and instructed on how to operate the Ice-maker/Drink Dispenser?
9. Has the registration card been filled out? Check for correct model and serial numbers from serial plate on the Dispenser, then mail the completed card to the SCOTSMAN factory.
10. Check all refrigerant lines and conduit lines to guard against vibration or rubbing and possible failure.
11. Is there at least six inches clearance behind and around the Cabinet for proper air circulation?
12. Is the Cabinet in a room where ambient temperatures are a minimum of 50-degrees F. year around?
13. Has water supply pressure been checked to ensure a minimum of 20 psi?
14. Has the owner been given the name and telephone number of the authorized SCOTSMAN Service Agency serving him?

SECTION II

START UP OPERATION

I. START UP

1. Remove screws and the Left Front Door, Left Side Panel, Left Rear Door, Ice Access Door, and pull and unsnap the Hood Panel.
2. OPEN the water supply line shut off valve.
3. Observe the water filling operation:
 - a. Water flows into Water Reservoir.
 - b. Float moves up as water rises.
 - c. Water flows through water feed line to bottom of Freezer Assembly.
 - d. Float stops water flow, when water level reaches 3/8-inch below the molded horizontal line, on the body of the Water Reservoir.
4. Connect all lines from the Cold Plate at the bottom rear of the Cabinet, to the proper fittings on the syrup tanks, CO² Cylinder, CO² High Pressure Regulator and CO² Low Pressure Regulator. See Post Mix Dispenser System schematic.
5. CLOSE the water supply line shut off valve.
6. Rotate the Cylinder Valve on the CO² gas cylinder COUNTERCLOCKWISE to OPEN.
7. Adjust the CO² High Pressure Regulator Gauge and set at 100 PSIG.
8. Slowly open the CO² Low Pressure Regulator Gauge and set about 15 to 20 PSIG.
9. Check all syrup line fittings to Cold Plate, Dispensing Faucet connections, etc., with bubble soap and correct any leaks.
10. OPEN the Soda Water faucet for one-half minute to blow all air out of the Carbonator.
11. CLOSE the faucet.
12. OPEN the water supply line shut off valve.
13. Move the upper, manual ON-OFF toggle switch, on the front of the Control Box to the ON position and start the motor and pump for Carbonator.
14. Check all internal water connections for leaks.
15. When the Pump stops, OPEN the Soda Water faucet and hold open until a full stream of water is obtained.

16. Draw several glasses of water and observe the Water Pump operation.

NOTE

The Pump will operate after about 14 ounces of carbonated water have been drawn. The Carbonator will operate satisfactorily on CO² gas pressures from 80 to 120 PSIG. For maximum CO² gas economy, set the High Pressure Regulator Gauge at 80 PSIG; or, adjust to suit requirements of the faucets used.

17. Move the lower, manual ON-OFF toggle switch, on the front of the Control Box, to the ON position, to start the automatic ice-maker operation.
18. After two or three minutes of operation, observe that flaked ice begins dropping off the Auger and out the Ice Spout.
19. Let the system operate for about 30 minutes or until ice covers the Bin bottom. Check for any excess noise in Carbonator, or in Ice-maker, beyond normal Compressor noises:
 - a. Fan noises, when Air-Cooled: Blades touch other surfaces; Blades Bent, out-of-balance.
 - b. Vibrating type, from touching lines.
 - c. Chattering: Lack of water in Freezer. Lack of water in Pump.
 - d. Compressor loose at one or more hold-down bolts.

WARNING

DO NOT operate the Icemaker when the water supply is shut OFF, or is BELOW the recommended water pressure. Move the lower, manual ON-OFF toggle switch, on the front of the Control Box, to the OFF position immediately.

20. Hold a handful of ice around the ice storage Control Bulb to test shutoff. Less than one minute is normal for Bulb shutoff function to cause the Compressor to stop.

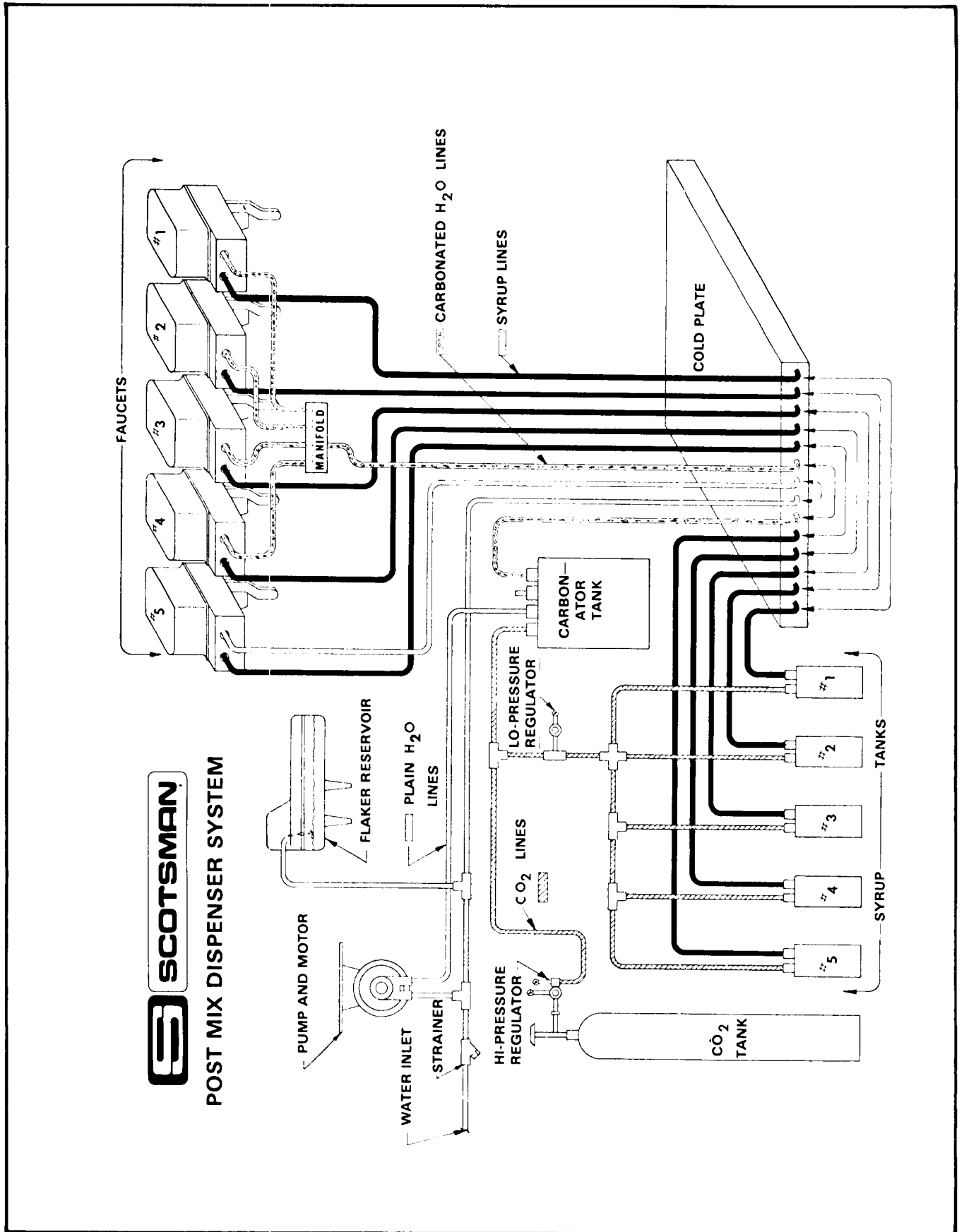


Figure 2-1. Post Mix Dispenser System Schematic

NOTE

Within minutes after the ice is removed from the Bulb, the bulb will warm up and cause the Icemaker to restart. This control is factory set and should not be reset until this testing is performed. Normal setting: about 35-degrees F. CUT-OUT and 45-degrees F. CUT-IN, to prevent short cycling.

21. Check manual reset Low Pressure Control setting.

NOTE

This safety device, inside the Control Box, is set at 0 psi to 4 psi, to prevent cutting off when the Compressor first starts up and still provide safety in

case of interruption in water supply, shortage of refrigerant, low ambient temperature, or any other cause of abnormal low suction pressures.

22. Adjust dispenser drink heads to give correct proportions of dispensed syrup and carbonated water. Refer to paragraph V-IV Faucet Assembly maintenance procedure.
23. Thoroughly explain to the owner, the significant specifications of the Dispenser, the start up and operation, going through the procedures in the User Manual operating instructions. Answer all questions about the Dispenser, by the owner; and, inform the owner of the name and telephone of the authorized SCOTSMAN Service Agency serving him.

SECTION III

PRINCIPLES OF OPERATION

How It Works

This Section of the manual details the general and specific HOW IT WORKS principles of operation, for each significant area in the DSF-450/650 Ice maker/Drink Dispenser. Included are descriptions of how the Ice maker works, the Electrical and Refrigeration Systems, as well as the Carbonation System and the key components important in the understanding of top operation requirements for good and consistent dispensing of carbonated water and drinks. Because of its importance, the last part of this Section presents significant facts about CO² gas, such as its properties, factors which govern CO² gas, the effects of pressure, how to control and produce uniform beverages. This essential information is herein documented, as a reliable reference for the operator, to expand and strengthen his knowledge in all phases of the Ice maker/Drink Dispenser operation.

I. ICEMAKER

The water supply enters at the Cabinet fitting, flows through the Strainer at the Pump and on to the Water Reservoir. The Water Reservoir functions to maintain a constant water level inside the Freezer Assembly. Water from the Reservoir enters at the bottom of the Freezer Assembly and is changed into ice by low temperatures inside the Freezer.

A stainless steel Auger within the Freezer is powered by the Drivemotor, a direct-drive gearmotor, and the rotating Auger carries the ice upward to the Ice Breaker where it is extruded into flaked ice through the Ice Spout and into the Ice Storage Bin.

Moving the manual ON-OFF toggle switch, located on the lower half of the front of the Control Box, to the ON position starts the automatic and continuous ice making process. When the Ice Storage Bin has been filled with ice up to the level of the Thermostatic Control Bulb, the sensing bulb shuts off the icemaking process. As the ice is removed from the Ice Storage Bin, the Thermostatic Control Bulb warms up, restarting the automatic icemaking process. Factory settings are 35-degrees F. CUT-OUT and 45-degrees F. CUT-IN.

Altitude correction begins at 2000 feet. CUT-IN and CUT-OUT screws should be adjusted equally, not more than one-fourth turn at a time.

II. ELECTRICAL/REFRIGERATION

The DSF-450 and DSF-650 Ice maker/Drink Dispensers are designed to operate on standard electrical supply 115 volts, 60 Hertz, single phase. Special voltage requirements are available on special order. Therefore, always CHECK NAMEPLATE for electrical information BEFORE proceeding with electrical connections to the Ice maker/Drink Dispenser.

Cold ambient temperatures and interruptions in water supply are conditions that can cause excessively hard ice and overloads within the Freezer Assembly, which is directly transmitted to the Drivemotor and in turn, will cause speed reduction or ultimate freezup. When the Drivemotor is slowed down to a pre-determined RPM, a speed sensing switch mounted on top of the motor is designed to open the electrical circuit to the Compressor. The Compressor stops operating, no more ice is produced, and the Drivemotor continues to operate rotating the Auger to clear the overload and gradually build up to full speed. At a pre-determined higher RPM Drivemotor speed, the speed sensing switch closes the electrical circuit to the Compressor, causing the normal ice making process to resume. Refer to specific details on DSF-450 and DSF-650 Drivemotors in paragraph V-II-9, on centrifugal sensing switch operation.

A Limit Switch Assembly is mounted on top of the Ice Spout and is actuated by movement of the spring-operated Pressure Plate inside the Ice Spout. The Limit Switch acts as a backup safety switch, should the Thermostatic Control Bulb fail and cause ice to jam up in the Ice Spout, and the microswitch will shut off the condensing unit only, when actuated.

There are two safety controls in the Control Box on the Water-Cooled models and one safety control in the Control Box for the Air-Cooled models. The Low Pressure Control, a manual reset, non-adjustable control, is used on both models and is set to electrically open at 0 to 4 PSIG to stop the entire icemaker. On the Water-Cooled models only, a manual reset, high head pressure control is factory set to stop the entire icemaker, should the head pressure reach 250 PSIG.

On Water-Cooled models, correct head pressure is 135 PSIG. Adjustments can be made on the Water Regulator Assembly valve. On Air-cooled models, the head pressure is normal about 130

PSIG, however, it will vary depending upon ambient air temperature.

Suction pressure should be 15 PSIG with proper refrigerant charge and the frost line should extend out from the Compressor about eight inches. Suction pressure will vary about two PSIG plus or minus, depending upon ambient temperatures and incoming water supply temperatures to the Freezer Assembly. When charging the system with refrigerant, on Water-Cooled Models, set the Compressor head pressure at 135 PSIG, and charge with refrigerant so the frost line extends out of the Compressor at least eight inches, after 15 minutes of operation, for best capacity and performance.

MODEL	DSF-450 Refrig. Chg.
Air-Cooled	20 oz. R-12 (approx.)
Water-Cooled	18 oz. R-12 (approx.)
MODEL	DSF-650 Refrig. Chg.
Air-Cooled	27 oz. R-12 (approx.)
Water-Cooled	23 oz. R-12 (approx.)

III. CARBONATION

In these SCOTSMAN Dispensers, CO² gas pressure is supplied by the CO² gas cylinder and is present throughout the system to the Carbonator Tank and keeps the water carbonated. Without adequate cooling, however, carbonation escapes rapidly after the water leaves the Carbonator Tank. Soft drinks should be dispensed at 40-degrees F., or colder. The colder the water, the greater the carbonation. Cooling with ice at 32-degrees F. can be reached and held without danger of freezing, as is true with mechanical refrigeration systems. Thus, less CO² gas is used to achieve the same degree of carbonation in a drink.

IV. CARBONATOR TANK

Incoming water is filtered to remove foreign particles or odors from the water depending upon local water conditions. It is recommended that a good water filter be installed.

From the Carbonator Pump the water is pumped to the Carbonator Tank at high pressure. The water inlet to the Carbonator Tank is a Check Valve; therefore, the water enters the Tank only when the Pump is operating and the water pressure is above CO² pressure in the Carbonator Tank. A water jet breaks up the water into fine spray, as it enters the Tank. The CO² atmosphere inside the Tank mixes with the water to produce carbonated water. The CO² gas from the CO² Cylinder enters the Tank through a Check Valve.

The carbonated water leaves the Carbonator Tank, to be chilled in the stainless steel coils in the Cold Plate, prior to being delivered to the Dispensing Faucets for use as carbonated water or mixing with syrup as carbonated drinks.

CO² gas from the CO² Cylinder is routed to two places. First, to the Carbonator Tank where it is mixed with water to produce soda or carbonated water. Second, it is routed to each of the Syrup Tanks, where the CO² gas pressure is used to force the syrup in the Tanks through the syrup lines, the stainless steel syrup cooling coils in the Cold Plate and on to the Dispensing Faucets, where it is mixed with the carbonated water to provide carbonated soft drinks.

V. LIQUID LEVEL CONTROL

The water level inside of the Carbonator Tank and the switching of the Pump is controlled by electrodes in the Tank and the Liquid Level Control.

The solid state control supplies a low voltage circuit through the Carbonator Tank. The control is highly sensitive and will operate with very pure water, even distilled water.

At start up, the pump motor relay contacts in the Liquid Level Control are closed and the Pump is in operation. As the Water rises in the Carbonator Tank, it comes in contact with the Low-Level Electrode. Nothing happens, since the wire from the Electrode connects to an open switch or contact on a relay in the Liquid Level Control. As the water continues to rise, it contacts the High-Level Electrode.

At this instant, an electrical circuit is completed from the common electrode, the body of the Tank, through the water to the High-Level Electrode, through the electronic control and back to the common electrode. The completion of this circuit indirectly energizes the relay which opens the pump motor circuit and closes a circuit to the electrode. Now as carbonated water is used and the water level drops and breaks contact with the High-Level Electrode, the Pump will remain OFF, since the relay electrode contacts provide a circuit between the High-Level and Low-Level Electrodes. As the carbonated water level continues to drop, it breaks contact with the Low-Level Electrode, which indirectly de-energizes the relay and the Pump operates and begins filling the Carbonator Tank. This cycle continues over and over again, always maintaining a carbonated water level, between the tips of the two Electrodes.

VI. PRESSURE TYPE DISPENSING HEADS

Pressure Type Dispensing Systems require a CO² High Pressure Regulator Gauge to control

pressure to the Carbonator Tank and a CO² Low Pressure Regulator Gauge to control pressure to the syrup tanks forcing syrup through lines, via the Cold Plate, to the Dispensing Heads. Normal low pressure setting is 15 to 20 PSIG.

The system is automatic in operation and requires no attention except maintaining the CO² supply and periodic servicing of water supply line filter.

WARNING

1. Insufficient water supply will cause noisy operation and eventual damage to the Pump. If the Strainer and Filter are clear and the water supply line valves open, a noisy Pump operation indicates insufficient water supply.
2. To prevent water line freeze up, should the installation be idle and exposed to freezing temperatures, disconnect the water supply line and blow all water out of the carbonation system.

VII. TOUCH-O-MATICTM. FAUCET ASSEMBLY

When the operator presses a glass, or container, against the main actuating lever of the faucet, the lever activates an electrical switch causing the solenoid coil, or coils, to become energized and the plunger(s) to be electromagnetically raised. Raising the plunger(s) allows the syrup and water, which are under pressure, to flow through their respective orifices and into the spout.

In the spouts, the various liquids are completely mixed under ideal flow conditions, to result in an homogeneous product having a minimum amount of foam. The faucet block, in which all this action takes place, is transparent, which allows visual observation of the operation. Also, visual inspection is thus provided to determine where any obstruction or problem might be located.

VIII. FACTS ABOUT CO²

CHEMICAL GAS: Carbonic Anhydride, Carbonic Gas, or Carbon Dioxide, as it is variously termed, has the chemical symbol CO². It is under normal conditions a colorless, odorless gas, one and one-half times heavier than air. Chemically, it is the combustion product of the element Carbon. It occurs in nature as the result of all types of combustion.

Carbonated Water has been found in natural springs in many parts of the world. Such springs have been known for centuries and have been highly regarded for beverage purposes.

Many of the desirable characteristics of carbonated beverages are due to the carbonic gas contained in them. It is therefore, most important to determine the proper amount of carbonation such beverages should contain, and having done that, to provide the necessary control to insure uniformity of the product in this respect at all times.

PROPERTIES:

Color	None
Odor	Pungent
Latent Heat	120 BTU/16. at 0° F.
Critical Pressure	1,055 lbs. sq. in.
Critical Temperature	87.8° F.
Pressure in drums at 70°	839 lbs. sq. in.
1 lb. CO ²	8.50 Cu. Ft. at atmospheric pressure and 50° F.
Solid CO ² (Dry Ice)	110° F.

GOVERNING FACTORS: Carbonated water is largely a mechanical mixture of CO² and water and the term, Carbonated Water, is usually understood to mean water that contains gas to its capacity.

This capacity varies with pressure and temperature. The amount of gas water will absorb increases directly with the pressure. The amount of gas water will absorb also increases as the temperature decreases.

Therefore, any measure of the actual gas content of carbonated water will depend on the two factors - pressure and temperature.

The unit of measure that has been adopted as standard is: the volume.

One volume, is the amount of gas that water will absorb at atmospheric pressure and at 60-degrees Fahrenheit. A volume of gas occupies the same space as does the water by which it is absorbed.

The pressure gauge on the carbonator, or on the regulator, or on the volume testing apparatus, does not show atmospheric pressure. This means that zero on the gauge, is atmospheric pressure, which is about 15 PSI at sea level. Chart 3-1, shows the effect of temperature change on the amount of gas water will absorb.

The pressure is constant, namely, atmospheric or zero pounds gauge. As the temperature of the water is lowered, the amount of gas it will absorb increases, until after 60-degrees F. it is one volume. See Chart 3-1, noting that from 60-degrees F. to 150-degrees F. the slope of the curve changes gradually. However, from 60-degrees F. to 32-degrees F. the curve changes more abruptly; then, for each 10-degrees difference in temperature, a decided increase in gas absorption is apparent, until 32-degrees F., or slightly above the freezing point, where 1.7

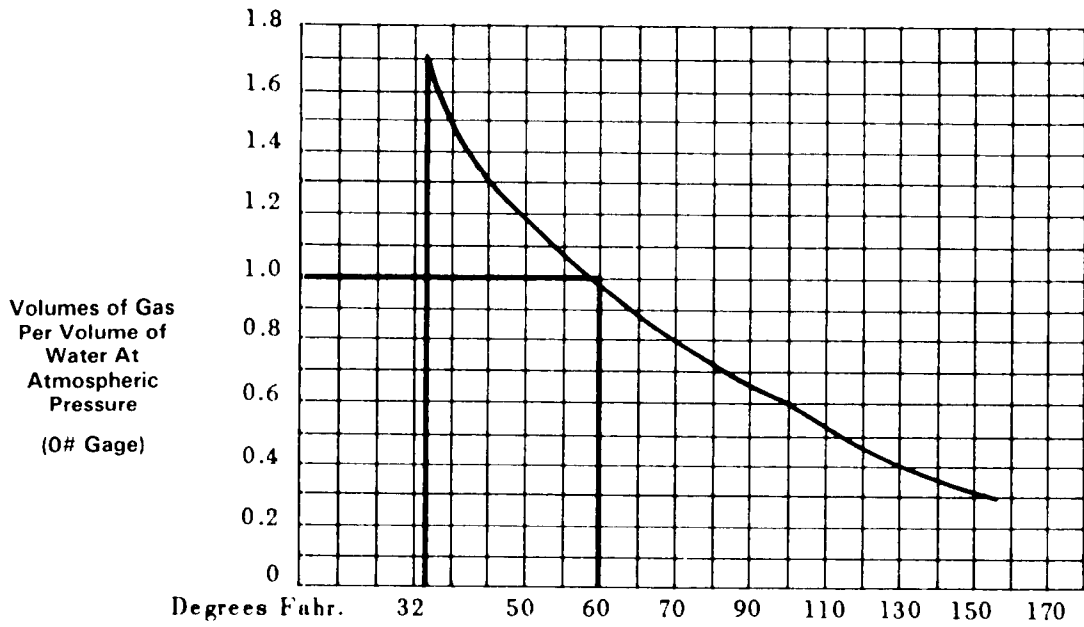


Chart shows the effect of temperature change
on the amount of gas water will absorb.

Chart 3-1. Effect of Temperature

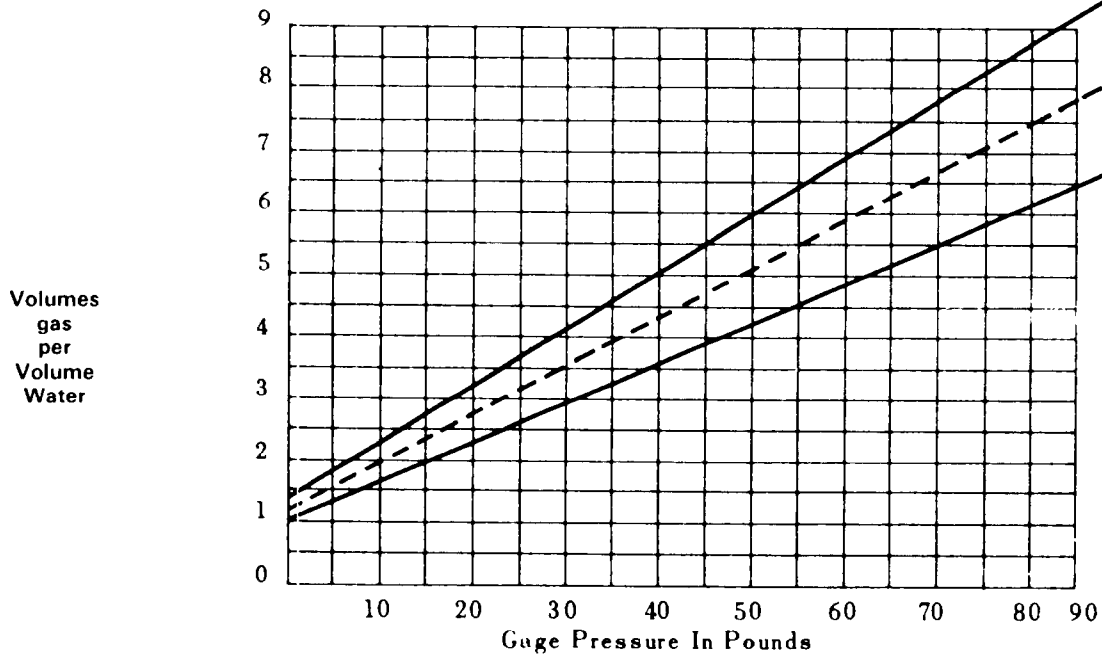


Chart 3-2. Effect of Pressure

volumes of gas is absorbed by the water at atmospheric pressure. From this curve, it will be apparent that the cooler water is, the more gas it will absorb.

EFFECT OF PRESSURE: Chart 3-2 shows the effect of increasing pressures, temperature being constant, on the amount of gas that water will absorb. Note that the chart is a straight line, of the same slope throughout, indicating that as the pressure is increased, the gas volumes increase. Furthermore, the gas volume increase is directly proportional to the pressure.

To illustrate: at zero pounds gauge and 60-degrees F., water will absorb one volume of gas, at 15 pounds increase in pressure, water at 60-degrees F. will absorb one additional volume of gas. If the temperature of the water is 45-degrees F., then, for every 15 pounds increase in pressure, the water will absorb 1.3 volumes of gas.

FOR UNIFORM BEVERAGE - Control Carbonation: Carbonation is an important taste ingredient of your beverage. One of the vital attributes of any beverage is uniform taste, drink after drink. There are four elements that influence the taste of a beverage:

1. FLAVOR
2. SWEETNESS
3. CARBONATION
4. TEMPERATURE

All but the final temperature of your drink are susceptible to direct control at your location. Flavor and sweetness standards should be and probably are definitely established by means of exact formulas.

Carbonation standards should also be established for each flavor in your line—Sparkling water, ginger ales, and other mixers should be in the High Carbonation bracket - the ideal to be sought for is the highest carbonation practically obtainable.

Coia drinks, root beer and other low acid drinks are in the next bracket, usually carbonated to three or three and one-half volumes.

Some bottlers prefer fruit drinks, especially Orange, at a lower carbonation. Determine a standard of carbonation for each flavor that you consider best for your market.

Set up definite instructions for maintaining these standards, just as you maintain standard formulas for the sugar flavor, acid and other ingredients.

FLAVOR	CARBONATION STANDARD
Root Beer	3-1/2 Volumes

Having determined the carbonation standards, it is important that all concerned know how to control the factors that will enable you to maintain them.

HOW TO PRODUCE UNIFORM BEVERAGES: Bottlers know the importance of developing the proper formula for a beverage. They fully realize that for any bottled beverage to achieve popular favor, it must be right in flavor, in taste, and in gas content.

The development of the proper formula for a beverage is, of course, an essential step in establishing that beverage in popular favor. To keep its popularity, the beverage must be the same from day-to-day and month-to-month. The formula must be followed exactly and the beverage produced in just the same manner.

This means that perfect control of variable factors is necessary to assure uniformity.

The number of volumes of gas in a finished beverage has a definite relationship to the taste of the beverage. Correct carbonation means a sparkling, pungent, thirst-quenching beverage that completely satisfies the consumer. Low carbonation leaves the beverage with a flat, insipid taste which is unsatisfactory. Finished beverages should be checked at frequent intervals to assure proper carbonation in the drink.

The amount of sugar in a beverage determines, with a given acid content, its sweetness. The sugar also has another important function in the beverage. Sugar makes the body of the beverage and body is a necessary background for any flavor. A change in the body changes the taste of the beverage even though the same flavor is used. High quality extracts are, of course, a necessity.

Control of sugar content of the beverage is very important. It depends on the Beaume of syrup used and the throw used. Variation in syrup density changes the finished beverage if the throw remains the same. Variation in the throw will also change the beverage if the syrup density is unchanged. By checking the Beaume of the finished beverage a control is established where it does the most good.

Uniform finished beverages can be made only by positive control over such variable factors in beverage production.

Check the density of your syrup with a Beaume scale.

Check the actual throw in the dispensed drink by measuring individual sample drinks.

Check the final result by using the finished drink tester on the complete beverage.

Check the carbonation in the finished beverage.

KNOW YOUR WATER: Water that is satisfactory for drinking purposes is generally satisfactory for carbonating. There are very few exceptions to this rule.

The water used for carbonating must be clean. That means free from suspended matter of all kinds, including water organisms which may be too small to see, except under a microscope.

All water should be properly filtered and it is advisable to use an activated carbon unit after the filter. The ideal set up is to follow the activated carbon unit with a paper filter. This will prevent particles of the carbon passing through, with the water.

Chemical composition of the water does not affect carbonation within the limits of potable water. If enough material were in solution to interfere with carbonation, it would not be possible to use the water for drinking purposes.

Organic matter in solution, can cause trouble if present in excessive quantities, but this trouble is removed by activated carbon.

It may be necessary to treat water chemically in some cases. Hardness can be removed by chemical treatment and that is sometimes advisable to prevent scale formation on machinery, particularly on soaker parts. Alkalinity can be reduced by chemical treatment and that is advisable if the alkalinity is high enough to affect the taste of the water, or if it is sufficient to neutralize too much of the acid in the beverage. If objectionable material is present in the raw water, that may require chemical treatment.

Such treatment, properly handled, does not affect carbonation and it does not change the necessity for proper filtration. Chemical treatment should be followed by filtration.

AIR - FOE OF CARBONATION AND HOW TO COMBAT IT: Too much air in the water interferes with proper carbonation and also causes the CO² gas to leave the water more quickly when the bottle of finished beverage is opened. It is therefore important to reduce the amount of air present to the minimum.

Some air is present in the raw water supply. More may be added in the mechanical handling

of the water. When such water reaches the carbonator, the CO² gas tends to drive it out of the water. If steps are not taken to remove it, this air will accumulate in the carbonator and much of it will be carried through in the water and into the finished beverage. That is why all liquid carbonators have an automatic air snift.

PRESSURE AND COOLING CONDITIONS: Two conditions must be maintained in order to induce and hold carbonic gas in water. They are:

1. Pressure
2. Adequate refrigeration or cooling.

Most of the cold drinks served at a soda fountain are carbonated. Therefore, nothing is more important to the successful operation of a fountain than cold, properly carbonated water to make drinks sparkling, full flavored and fully satisfying in quality.

Water is carbonated by combining it with carbonic acid gas, CO². This is done in a sealed chamber by forcing gas from a drum through a pressure regulating valve into the water in this chamber. As the carbonated water is used from this chamber, it is replaced by a high pressure water pump. The operation of this pump is controlled by an automatic switch device which senses the water level.

CO² GAS DRUMS: Drums, also called Tanks, for carbonic acid gas are made of drawn steel tubing and are built to withstand great pressure. As delivered, they contain liquid gas reduced to liquid form by tremendous compression.

Each Drum or Tank is equipped with a safety valve set to blow out before internal pressure can explode the drum itself. Once this valve pops off, the contents of a drum will escape. Drums, therefore, should always be stored in a cool place to keep the liquid from expanding and increasing pressure inside the gas drum.

Drums are classified by weight. As a rule, drums are of two sizes: 20-lb. drums and 50-lb. drums. These weights refer to the compressed liquid contents and are in addition to the tare weight, usually indicated on the head of each drum.

SECTION IV

ADJUSTMENT AND REMOVAL AND REPLACEMENT PROCEDURES

The procedures provided in this Section are arranged in alphabetical order, to make specific Adjustment and Removal and Replacement information easy to locate.

Read the instructions thoroughly before performing any Adjustment or Removal and Replacement Procedures.

I. ADJUSTMENT OF THE BIN THERMOSTAT CONTROL

The control for the Bin thermostat is the Temperature Control, located in the upper part of the Control Box Assembly,

WARNING

The adjusting screws on the Temperature Control device have very sensitive response to adjustment. **DO NOT** attempt to adjust the screw until after thoroughly reading and understanding the following instructions. Over-adjusting or erratic guessing, can foul the instrument and cause ultimate delay and part replacement, **WHICH COULD HAVE BEEN PREVENTED.**

See Figure 4-1 for location and direction of rotation, clockwise (CW) or counterclockwise (CCW), of the adjusting screws on the Temperature Control, in the particular Control Box the adjustment is to be performed.

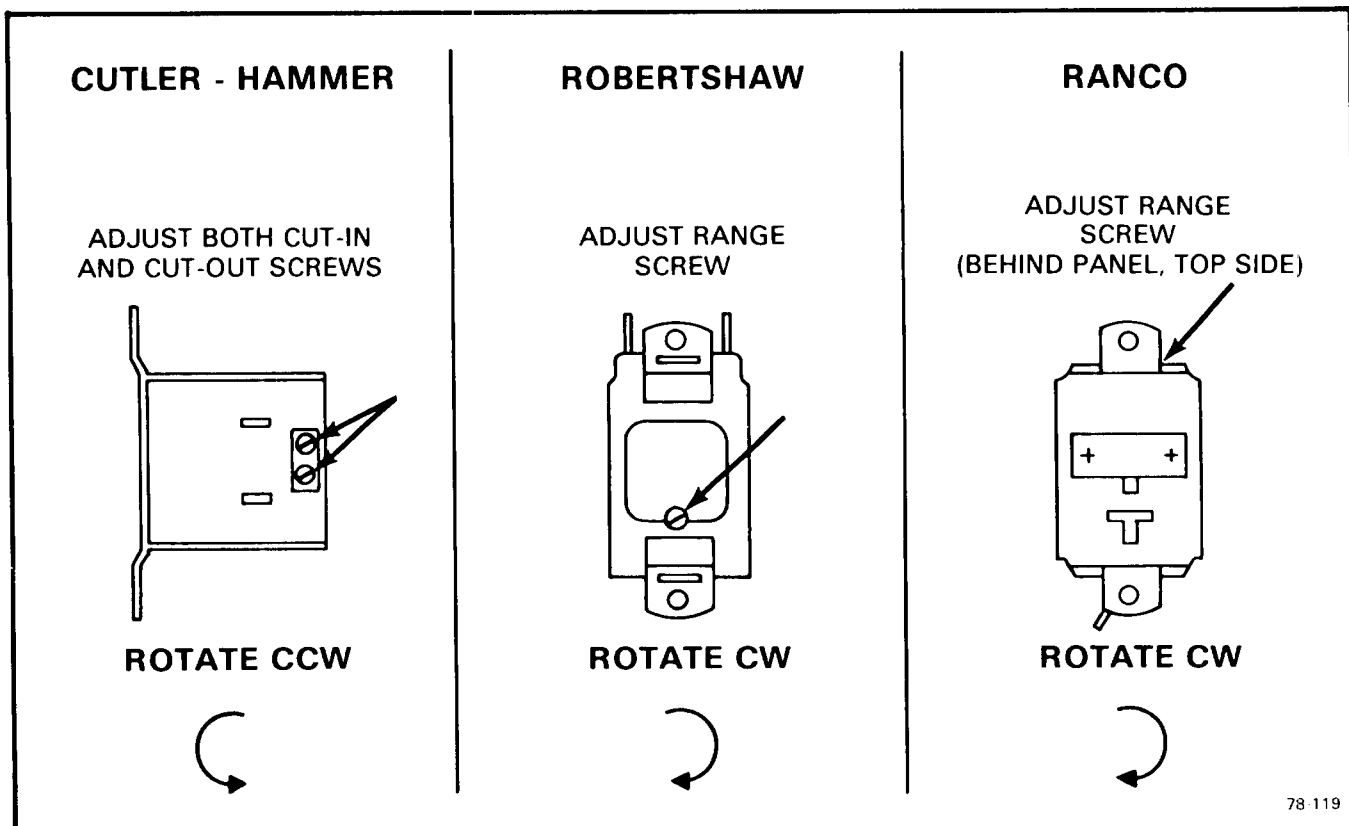


Figure 4-1. Adjustment of the Temperature Control

To Adjust the Bin Thermostat Control:

- A. Hold a handful of ice against the Capillary Bulb in the Ice Storage Bin.
- B. Slowly rotate in the appropriate direction, the adjusting screw on the Temperature Control device, in the Control Box Assembly, until the Icemaker shuts OFF.
- C. Remove ice from the Capillary Bulb; then, place warm hand on the Capillary Bulb to restart the Icemaker.
- D. Place handful of ice against the Capillary Bulb and observe that the Icemaker should shut OFF within ten seconds, usually less.

II. ADJUSTMENT OF CO² GAS PRESSURE

Two areas of CO² gas pressure require checks and adjustments to properly maintain the correct amounts and pressures for best soda dispensing operation. The CO² High Pressure, through the CO² High Pressure Regulator, for the Carbonator Tank operation, and the CO² Low Pressure Regulator for the CO² gas pressure, used to force syrup from syrup tanks to the Dispensing Faucet. When either pressures are above or below normal operating pressures, adjust as detailed in the following procedures.

To Adjust the CO² Gas Pressure:

A. CO² High Pressure - TO INCREASE:

Rotate the Adjusting Key on the CO² High Pressure Regulator **CLOCKWISE**, and observe the indicator needle on the Gauge moving to an increased pressure indication.

NOTE

*CO² gas pressures from 80 to 120 PSIG will provide satisfactory Carbonator operation. When rotating the Adjusting Key does not increase pressure, rotate the Regulator Outlet Valve **COUNTERCLOCKWISE** to **OPEN**, and observe the indicator needle on the Gauge moving to an increased pressure indication. When no increase in pressure occurs with this adjustment, the CO² Gas Cylinder must be **EMPTY**. Replace the empty CO² Gas Cylinder with a **FULL** CO² Gas Cylinder.*

B. CO² High Pressure - TO DECREASE:

Reverse the **TO INCREASE** procedure above.

C. CO² Low Pressure - TO INCREASE:

Rotate the Adjusting Key on the CO² Low Pressure Regulator **CLOCKWISE**, and observe the indicator needle on the Gauge moving to an increased pressure indication.

NOTE

*CO² gas pressures from 15 to 20 PSIG will provide satisfactory pressures to force syrup from the syrup tanks to the Dispensing Faucet. When rotating the Adjusting Key does not increase pressure, rotate the Regulator Outlet Valve **COUNTERCLOCKWISE** to **OPEN**, and observe the indicator needle on the Gauge moving to an increased pressure indication. When no increase in pressure occurs with this adjustment, the CO² Gas Cylinder must be **EMPTY**. Replace the empty CO² Gas Cylinder with a **FULL** CO² Gas Cylinder.*

D. CO² Low Pressure - TO DECREASE:

Reverse the **TO INCREASE** procedure above.

III. ADJUSTMENT OF THE DRINK DISPENSER FAUCETS.

The Metering Screws for syrup and water are located on the rear underside of the Faucet, behind the Pouring Spout. The Metering Screw for **WATER** is located on the **LEFT**, and is marked **W**. The Metering Screw for **SYRUP** is located on the **RIGHT**, and is marked **S**.

The Metering Screws have sensitive adjustment, therefore, rotate no more than one-eighth of a turn at a time.

To Adjust the Drink Dispenser Faucet:

- A. To **INCREASE** Flow: Rotate appropriate Metering Screw **OUT** or **COUNTERCLOCKWISE**, one-eighth of a turn.
- B. To **DECREASE** Flow: Rotate appropriate Metering Screw **IN** or **CLOCKWISE**, one-eighth of a turn.

IV. ADJUSTMENT OF THE LEG LEVELERS

When the Icemaker/Drink Dispenser is ordered with the optional Leg Levelers, the Cabinet must be leveled in the front-to-rear and side-to-side directions. This adjustment should be performed during initial installation of the Cabinet and anytime the Cabinet is moved from the original location to another site.

- A. Using an open-end wrench, and a carpenter's bubble level, rotate the threaded Leveler in each Leg to **RAISE** or **LOWER** the Cabinet until the Cabinet is level in the front-to-rear direction.
- B. Repeat step A, for leveling in the side-to-side direction.
- C. Recheck both the front-to-rear and the side-to-side leveling and repeat adjustments, as necessary.

V. ADJUSTMENT OF THE WATER REGULATOR ASSEMBLY

The correct head pressure on Water-Cooled models is 135 PSIG. Adjustments can be performed on the Water Regulator Assembly to increase or decrease the head pressure.

To Adjust the Water Regulator Assembly:

- A. To INCREASE the Head Pressure: Rotate the adjusting Screw, on the Water Regulator Assembly IN or CLOCKWISE.
- B. To DECREASE the Head Pressure: Rotate the adjusting Screw, on the Water Regulator Assembly OUT or COUNTERCLOCKWISE.

VI. ADJUSTMENT OF THE WATER RESERVOIR FLOAT

The correct water level in the Water Reservoir should be 3/8-inch below the raised molded line, on the side of the body of the Water Reservoir. When the water line level is above or below the raised molded line, adjustment can be performed to raise or lower the water level by bending the metal arm of the Float, inside the Water Reservoir.

To Adjust the Water Reservoir Float:

- A. To RAISE the Water Level: Hold one end of the metal arm of the Float and slightly bend the Float UP.
- B. To LOWER the Water Level: Hold one end of the metal arm of the Float and slightly bend the Float DOWN.
- C. To Perform MAJOR Adjustment:

When repair or replacement has been performed and the water level line between the Water Reservoir and the Spout Opening on top of the Freezer Assembly has been substantially altered:

1. Remove the two Screws and Lockwashers which attach the Reservoir Bracket and Water Reservoir to the vertical upright panel of the Chassis.
2. Move the Reservoir Bracket UP or DOWN, to align with the appropriate set of holes in the panel, that will properly position the Water Reservoir at the correct water line level, even with one-inch below the Spout opening.
3. Attach the Reservoir Bracket and Water Reservoir to the Panel, with the Screws and Lockwashers removed in step 1.

WARNING

Be sure the electrical power supply and the water supply are OFF, before starting any of the following REMOVAL AND REPLACEMENT procedures, as a precaution to prevent possible personal injury or damage to equipment.

VII. REMOVAL AND REPLACEMENT OF THE AUGER, WATER SEAL, BEARINGS AND COUPLING.

- A. To Remove the Auger, Water Seal, Bearings, and Coupling:
 1. Remove screws and the Left Side Panel and the Left Rear Door.
 2. Pull to unsnap each end of the Hood Panel from the Hood Assembly.
 3. Remove three screws, located behind the upper part of the left side opening of the Hood Assembly, which attach the Dispensing Tower to the Hood Assembly.
 4. Slide the Dispensing Tower toward the rear about one-half inch to disengage the slots, lift the Dispensing Tower off of the Hood Assembly and lay the Tower, with product lines attached, over the back of the Hood Assembly, out of the way.
 5. Remove the Insulation Strap, the Insulation Clip and separate the two-piece Insulation from the top of the Freezer Assembly.
 6. Perform the steps in procedures IV-XVIII and IV-XIX to remove the Limit Box, Pressure Plate Assembly, Spout Assembly and Spout Casting.
 7. Remove two Screws, Washers and the Spout Plate from Ice Breaker.
 8. Grasp the wire Cap Hook at the top of the Freezer Assembly and pull out the Auger and attached Cap, Ice Breaker, upper Bearing and O-Rings, at the top of the Auger; and, the top half of the Water Seal at the bottom of the Auger.

NOTE

When the Auger cannot be pulled out, proceed to step 16 and 17, to gain access to the bottom of the Auger. Then, with a rawhide mallet or placing a piece of wood on the bottom end of the Auger, tap the bottom of the Auger to break it loose and pull the Auger out, as in step 8 above.

9. Remove the Cap Hook from the Ice Breaker.
10. Remove the Retaining Ring and the Cap.
11. Remove the Cap Screw and Washer and remove the Ice Breaker from the Auger.
12. Clean away the old grease from the top of the Auger, the Ice Breaker, Cap, Cap Screw and Washer, and the O-Ring and Retaining Ring.
13. Inspect the O-Ring at the top of the Ice Breaker and the O-Ring at the bottom inside of the Ice Breaker, for cuts, tears and general worn condition to determine replacement.
14. Inspect the Bearing pressed into the top of the Ice Breaker; and, if it is to be replaced, remove the Retaining Ring and press the Bearing out of the Ice Breaker.
15. Slide the upper half of the Water Seal off of the bottom of the Auger.

NOTE

1. *Any time the Auger is removed for replacement, or, for the inspection and replacement of the Bearings or Coupling, use extra care in handling the Water Seal parts, so no dirt or foreign matter are deposited on the surfaces of the Seal.*
2. *If there is any doubt about the effectiveness of Water Seal or O-Ring, REPLACE THEM. A dirty, worn or faulty Water Seal or O-Ring will cause a leak and ultimately require a second, time consuming removal and replacement procedure to be performed, that COULD HAVE BEEN PREVENTED.*

16. Remove four screws and lockwashers which attach the Freezer Assembly to the Adaptor on the Drivemotor Assembly.
17. Raise the Freezer Assembly off of the Adaptor, to gain access to the Bearing and Retainer; then, temporarily secure the Freezer Assembly out of the way to allow room to work. Be careful not to damage the gasket.
18. Using a suitable length and size wooden dowel or stick inserted through the top of the open Freezer Assembly, tap the lower half of the Water Seal and the lower Bearing in the Retainer, out the bottom of the Freezer Assembly.
19. Inspect the lower half of the Water Seal. If reusable, use care to protect it from dirt, etc. prior to replacement procedure.

20. Inspect the lower Bearing in the Retainer; and, if the Bearing is to be replaced, press the Bearing out of the Retainer.
 21. Reach through the Adaptor and remove the Coupling on the Drive motor for inspection.
 22. Check the Coupling for cracks, chipping and excessive wear.
- B. To replace the Auger, Water Seal, Bearings, and Coupling, reverse the removal procedures.

NOTE

1. *When installing the Retainer assembled with Bearing, in the bottom of the Freezer Assembly, some Retainers will insert as a slip fit, and some will have to be forced into place because of very tight fit. Carefully tap a piece of wood positioned across the bottom of the Retainer, to evenly seat the Retainer in the chamber of the Freezer.*
2. *After assembling the parts on the upper end of the Auger and BEFORE installing the Cap and Cap Hook, apply an ample coating of Beacon-325 grease, P/N 19-0309-01, to the upper part of the Ice Breaker, to cover the Retaining Ring and the Cap Screw and Washer. Then, install the Cap and Cap Hook in place.*

VIII. REMOVAL AND REPLACEMENT OF THE CARBONATOR TANK ASSEMBLY

- A. To Remove the Carbonator Tank Assembly:
1. Remove screws, the Left Side Panel and Left Rear Door.
 2. Slowly pull the ring and lift the body of the Relief Valve, on the top of the Carbonator Tank, and bleed off CO² gas pressure.
 3. Tag and disconnect three product lines at the top of the Carbonator Tank Assembly.
 4. Remove screws and the Control Box Cover.
 5. Tag or identify for replacement, then disconnect, three electrical leads from the Carbonator Electrode that are attached to terminals on the Liquid Level Control inside of the Control Box
 6. Remove four screws which attach the Carbonator Tank Assembly to the rear upright mounting bracket of the Chassis; then, lower the Carbonator Tank Assembly from the horizontal mounting

bracket and remove the Tank out the rear of the Dispenser.

- B. To replace the Carbonator Tank Assembly, reverse the removal procedure.

IX. REMOVAL AND REPLACEMENT OF A CO² GAS CYLINDER (DRUM)

- A. To Remove a CO² Gas Cylinder (EMPTY):

1. CLOSE CO² Gas Cylinder Head Valve.
2. CLOSE CO² Regulator Outlet Valve.
3. Disconnect CO² Regulator from the CO² Gas Cylinder. Gauge should drop to ZERO.
4. Install Outlet Cap on threaded outlet of the CO² Gas Cylinder.
5. Remove EMPTY CO² Gas Cylinder.

- B. To replace a CO² Gas Cylinder (FULL):

1. Install FULL, replacement CO² Gas Cylinder in the position and location of the removed EMPTY Cylinder.
2. Check that Head Valve of Replacement CO² Gas Cylinder is tightly CLOSED.
3. Remove Outlet Cap from outlet of the replacement CO² Cylinder.
4. Install good or new fiber washer and attach the CO² Regulator Coupling Nut to the threaded outlet of the replacement CO² Gas Cylinder.
5. SLOWLY open the CO² Gas Cylinder Head Valve.
6. SLOWLY open the CO² Regulator Valve and observe increasing pressure on Gauge, stopping at desired working high pressure: 80 to 120 PSIG.
7. Perform checks:
 - a. CO² Regulator Coupling Nut is tightly connected to CO² Gas Cylinder.
 - b. New or good fiber washer used.
 - c. Water back-pressure Check Valve is functioning properly.
 - d. When in doubt, apply soap lather to check connections for gas leaks.
 - e. When leak occurs at either end of a hose, cut off the defective end and re-fasten hose with clamps. Otherwise, REPLACE HOSE.

Keep CO² gas supply ON at all times to ensure uniform well-carbonated water.

X. REMOVAL AND REPLACEMENT OF THE COLD PLATE BIN ASSEMBLY

- A. To Remove the Cold Plate Bin Assembly:

1. Remove screws and all side, front and rear doors and panels.
2. Tag and disconnect all product lines connected at the rear of the Cold Plate.
3. Remove 29 screws and lift away from the Dispenser Chassis, the entire Hood Assembly and Dispensing Tower, with product lines attached.
4. Carefully lift the Cold Plate Bin Assembly straight up until the front bottom edge just clears the top of the Chassis; then, tilt the top of the Bin toward the rear, moving the bottom of the Bin slightly forward and lift out of the Chassis.

- B. To replace the Cold Plate Bin Assembly, reverse the removal procedure.

XI. REMOVAL AND REPLACEMENT OF THE COMPRESSOR ASSEMBLY

NOTE

Always install a replacement Drier, any time the sealed refrigeration system is opened. Do not replace the Drier until all other repair or replacement has been completed.

- A. To remove the Compressor Assembly:

1. Remove screws and the Left Side Panel and the Left Rear Door.
2. Remove two screws and the Cover from the Compressor Junction Box.
3. Disconnect the electrical leads at the Compressor Junction Box, that originate in the Control Box.
5. Unsolder the suction line from the Compressor.
6. Unsolder the discharge line from the Compressor.
7. Unsolder the process header tube from the Compressor and retain for installation on the Replacement Compressor.
8. Remove four bolts, lockwashers and washers which secure the Compressor to the Chassis mounting base.
9. Slide the Compressor and remove through the left side opening of the Cabinet.

NOTE

Thoroughly evacuate the system to remove moisture and non-condensables.

- B. To replace the Compressor Assembly, reverse the removal procedure.

XII. REMOVAL AND REPLACEMENT OF THE CONDENSER - AIR-COOLED MODELS

NOTE

Always install a replacement Drier, any time the sealed refrigeration system is opened. Do not replace the Drier until all other repair or replacement has been completed.

- A. To Remove the Condenser:

1. Remove screws and the Left Front Door.
2. Remove screws and the Left Side Panel.
3. Bleed off or blow the refrigerant charge through the Schrader valve.
4. Remove one screw and disconnect the Drier Brace and Drier from the Condenser Shroud.
5. Unsolder and disconnect the Condenser inlet tube at the Condenser.
6. Unsolder and disconnect the Condenser outlet tube at the Condenser.
7. Remove three screws, lockwashers and washers securing the Condenser to the Chassis Base.
8. Remove the Condenser out through the front opening of the Cabinet.

NOTE

Thoroughly evacuate the system to remove moisture and non-condensables.

- B. To replace the Condenser, reverse the removal procedure.

XIII. REMOVAL AND REPLACEMENT OF THE CONDENSER - WATER-COOLED MODELS

NOTE

Always install a replacement Drier, any time the sealed refrigeration system is opened. Do not replace the Drier until all other repair or replacement has been completed.

- A. To Remove the Condenser:

1. Remove screws and the Left Front Door and the Left Side Panel.
2. Bleed off or blow the refrigerant charge through the Schrader valve.
3. Unsolder the refrigerant inlet and outlet lines from the Condenser.
4. Disconnect the water inlet and outlet lines from the Condenser.
5. Remove two bolts, lockwashers and washers which secure the Condenser to the Chassis mounting base.
6. Remove the Condenser from the Cabinet.

NOTE

Thoroughly evacuate the system to remove moisture and non-condensables.

- B. To replace the Condenser, reverse the removal procedure.

XIV. REMOVAL AND REPLACEMENT OF THE DRIER

NOTE

Always install a replacement Drier, any time the sealed refrigeration system is opened. Do not replace the Drier until all other repair or replacement has been completed.

- A. To Remove the Drier:

1. Remove screws and the Left Front Door.
2. Remove screws and the Left Side Panel.
3. Remove screw and Drier Brace attaching the Drier to the Condenser shroud on Air-Cooled models; and, the Chassis base on Water-Cooled models.
4. Bleed off or blow the refrigerant charge through the Schrader valve.
5. Unsolder refrigeration lines at top and bottom of Drier, remove the Drier and separate the Drier from the Drier Brace.

- B. To Replace the Drier:

CAUTION

1. If the factory seal is broken on the replacement Drier, exposing it to the atmosphere more than a few minutes, the Drier will absorb moisture

from the atmosphere and lose substantial ability for moisture removal.

2. Be sure the replacement Drier is installed with the arrow positioned in the direction of the refrigerant flow.

1. Remove the factory seals from the replacement Drier and install the Drier in the refrigerant lines with the arrow positioned in the direction of the refrigerant flow.
2. Install the Drier Brace on the Drier.
3. Solder the Drier into the lines, two places.
4. Purge the system and check for leaks.
5. Thoroughly evacuate the system to remove moisture and non-condensables.
6. Charge the system with refrigerant, by weight. SEE NAMEPLATE.
7. Replace the Left Front Door and the Left Side Panel and attach both with screws removed earlier.

XV. REMOVAL AND REPLACEMENT OF THE DRIVEMOTOR ASSEMBLY

A. To Remove the Drivemotor Assembly:

1. Perform all steps in procedure IV-XVII to gain access for removal of the Drivemotor Assembly.
2. Remove two bolts, lockwashers and washers which attach the Drivemotor to the horizontal mounting bracket at the rear of the Chassis.
3. Lift the Drivemotor from the bracket and out the rear of the Dispenser.

B. To replace the Drivemotor Assembly, reverse the removal procedure.

XVI. REMOVAL AND REPLACEMENT OF THE FAN MOTOR ASSEMBLY - AIR-COOLED MODELS

NOTE

Before beginning this procedure, observe the Fan Blade position on the shaft of the Fan Motor and mark the Fan Blade so it will be correctly positioned during reassembly. Direction of air flow should be toward the Fan Motor.

A. To Remove the Fan Motor Assembly:

1. Remove screws and the Left Front door.

2. Remove screws and the Left Side Panel.
3. Disconnect the electrical lead from the Fan Motor.
4. Remove two screws securing the Motor Bracket to the Chassis Base and remove the Fan Motor and Motor Bracket out through the left side opening of the Chassis.
5. Remove the nut from the end of the Fan Motor shaft and remove the Fan Blade.
6. Remove four screws securing the Fan Motor to the Motor Bracket and separate the Motor from the Bracket.

B. To replace the Fan Motor Assembly, reverse the removal procedure.

XVII. REMOVAL AND REPLACEMENT OF THE FREEZER ASSEMBLY

NOTE

1. *The Cabinet may have to be removed from its permanent location, especially if located in a corner, in order to have access to the left side and rear of the Chassis.*
2. *In addition to shutting OFF electrical power and inlet water to the Dispenser, be sure to disconnect the inlet water line at the Pump body BEFORE moving the Dispenser from the permanent location.*
3. *Always install a replacement Drier, anytime the sealed refrigeration system is opened. Do not replace the Drier until all other repair or replacement has been completed.*

A. To Remove the Freezer Assembly, see Figure 4-2:

1. Remove screws and all side, front and rear doors and panels.
2. Tag and disconnect all lines at the rear of the Cold Plate that connect to the Dispensing Tower.
3. Remove 29 screws and lift away from the Dispenser Chassis, the entire Hood Assembly and Dispensing Tower, with product lines attached.
4. Refer to procedures IV-XVIII and IV-XIX and remove the Limit Box Assembly, Pressure Plate Assembly, Spout Assembly, and the Spout Casting.
5. Remove Corbin clamp and Tygon tube from the Freezer Assembly that connects to the Water Reservoir Assembly.
6. Bleed off or blow the refrigerant charge through the Schrader valve.

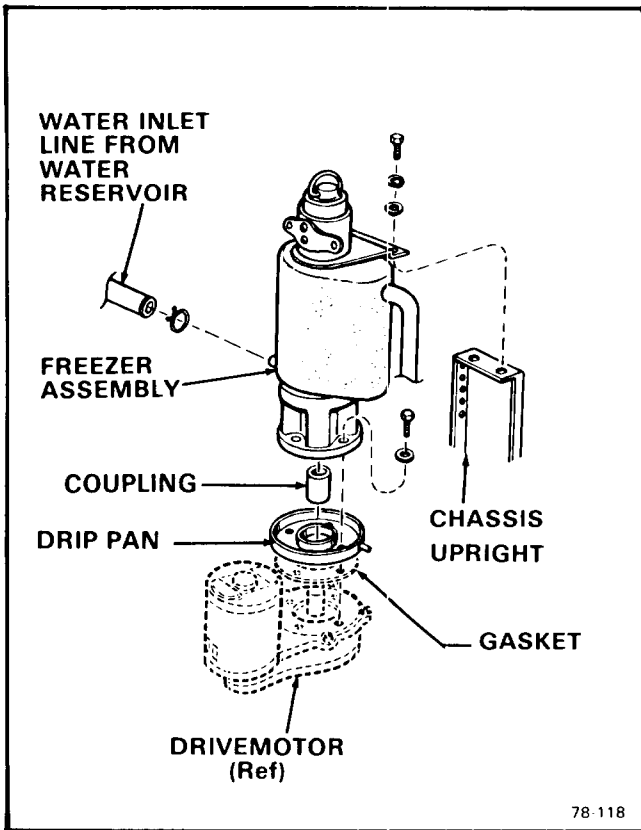


Figure 4-2. Removal of the Freezer Assembly

7. Unsolder the suction line from the Compressor.
8. Unsolder the capillary line at the Drier.
9. Remove two screws and lockwashers which attach the Freezer Assembly to the upper framework of the Chassis, just below area of the Spout Casting location.
10. Remove four screws, lockwashers and washers which attach the bottom of the Freezer Assembly to the Adaptor on the Drivemotor Assembly.
11. Lift the Freezer Assembly up and off of the Adaptor and Drivemotor Assembly.

B. To replace the freezer Assembly, reverse the removal procedure.

NOTE

Thoroughly evacuate the system to remove moisture and non-condensables

XVIII. REMOVAL AND REPLACEMENT OF THE LIMIT BOX ASSEMBLY

A. To Remove the Limit Box Assembly, see Figure 4-3:

1. Pull to unsnap each end of the Hood Panel and remove the Panel from the Hood Assembly.

2. Remove three screws, located behind the upper part of the left side opening of the Hood Assembly, which attach the Dispensing Tower to the Hood Assembly.
3. Slide the Dispensing Tower toward the rear about one-half inch to disengage the slots, lift the Dispensing Tower off of the Hood Assembly and lay the Tower, with product lines attached, on the front apron of the Dispenser.
4. Remove the Insulation Strap, the Insulation Clip and the two-piece Insulation at the top of the Freezer Assembly.
5. Remove the nut that attaches the Limit Box to the Spout Casting and slide the Limit Box away from the Freezer to disengage from the two tabs, part of the Pressure Plate Assembly.
6. Remove two screws and the Cover from the Limit Box.
7. Disconnect two electrical leads from terminals inside the Limit Box and remove the Limit Box from the Spout Casting.

B. To replace the Limit Box Assembly, reverse the removal procedure.

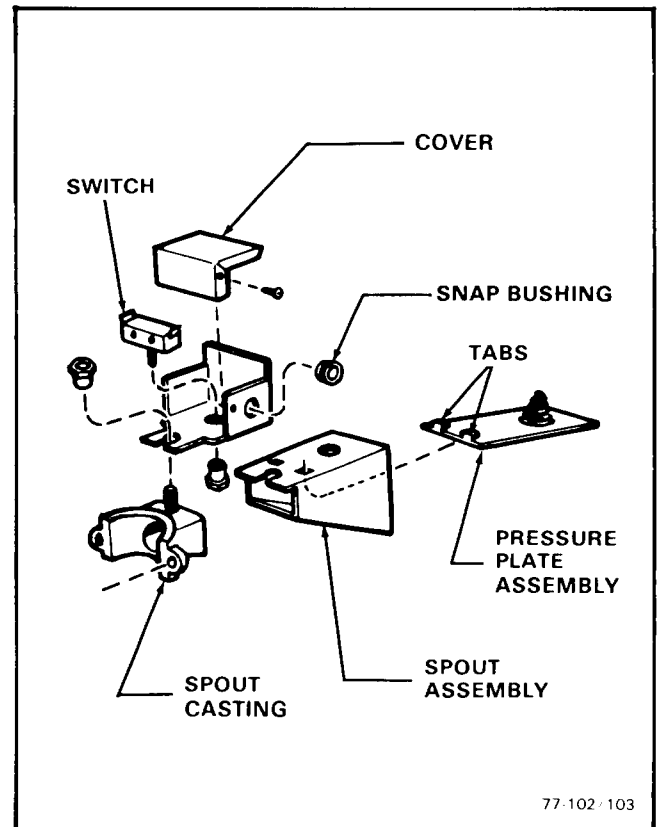


Figure 4-3. Removal of the Limit Switch, Pressure Plate, Spout and Spout Casting

XIX. REMOVAL AND REPLACEMENT OF THE PRESSURE PLATE ASSEMBLY, SPOUT ASSEMBLY AND SPOUT CASTING.

- A. To Remove the Pressure Plate Assembly, Spout Assembly and Spout Casting, see Figure 4-3:
1. Perform steps 1 through 5 of procedure IV-XVIII-A above.
 2. Reach through the right side opening of the Hood Assembly and into the Spout and remove the Pressure Plate Assembly.
 3. Grasp the Spout Assembly and work back and forth slightly and pull the Spout Assembly off of the Spout Casting and out through the inner wall of the Ice Storage Bin.
 4. Remove two screws and lockwashers and separate the Spout Casting and Spout Grommet from the Freezer. Retain the Grommet for replacement procedure.
- B. To Replace the Pressure Plate Assembly, Spout Assembly and Spout Casting reverse the removal procedure.

XX. REMOVAL AND REPLACEMENT OF THE PUMP, MOTOR AND BRACKET ASSEMBLY

- A. To Remove the Pump, Motor and Bracket Assembly, see Figure 4-4:
1. Remove Screws and the Left Front Door.
 2. Remove screws and the Left Side Panel.

CAUTION

BEFORE removing the three water lines in the next step, SLOWLY unscrew the connection of the line from the Pump to the Carbonator Tank, which is under pressure, and carefully bleed off the water pressure.

3. Disconnect the three water lines connected to the pump.
4. Loosen two screws on the cover plate to the electrical connections, located on the end of the Motor, toward the front of the Chassis.
5. Rotate the cover plate to OPEN.

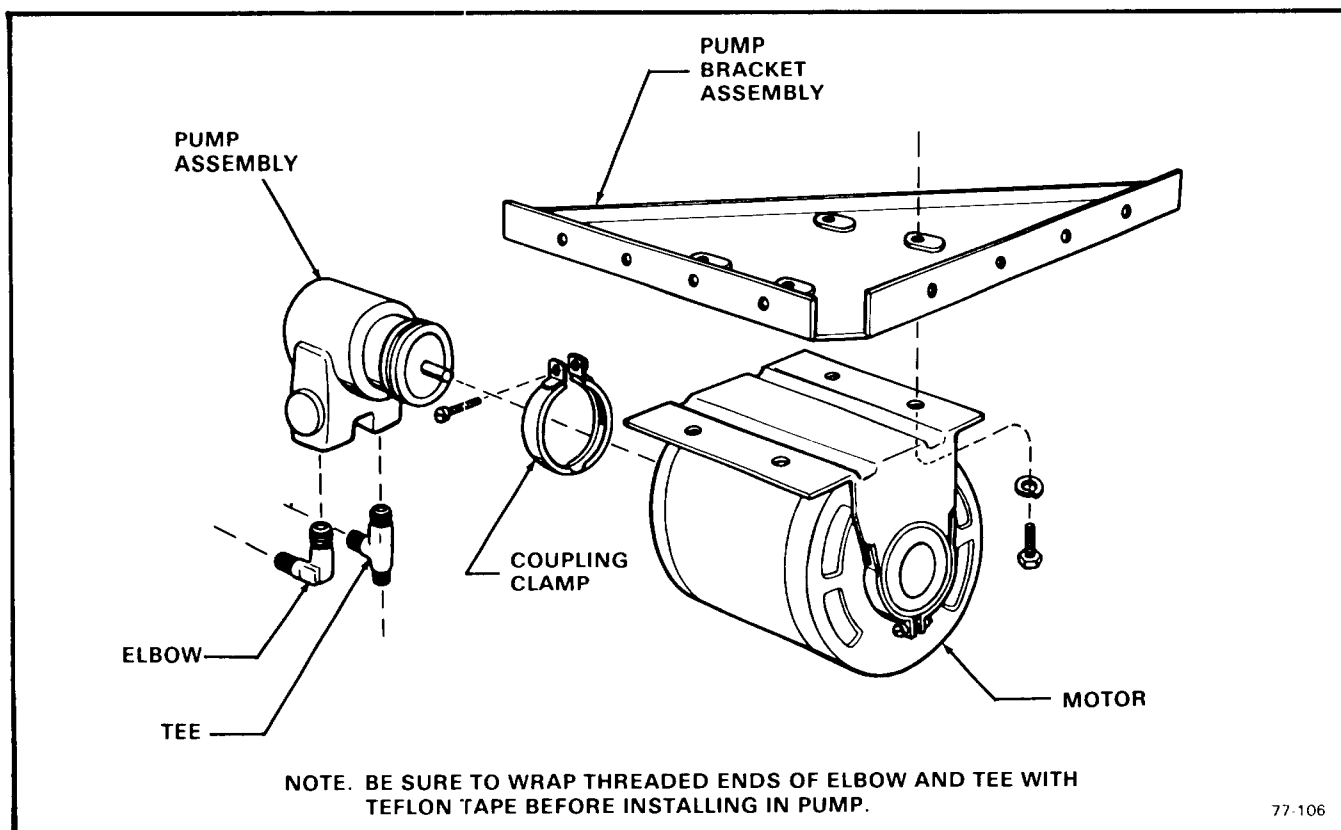


Figure 4-4. Removal of the Pump, Motor and Bracket Assembly

6. Disconnect the two electrical leads from terminals on the Motor.
7. CLOSE the cover plate.

CAUTION

BEFORE the next step, be prepared to support the Pump and Motor, and the mounting Bracket, or have an assistant helping during the removal, to prevent dropping the Motor and causing possible personal injury or damage to equipment.

8. Remove four screws attaching the Bracket to the front of the Chassis Frame.
 9. Remove four screws attaching the mounting Bracket to the left side of the Chassis Frame; then, carefully remove the Pump, and mounting Bracket through the front opening of the Chassis.
 10. Remove four bolts and washers and separate the Pump and Motor from the mounting Bracket.
- B. To replace the Pump, Motor and Bracket Assembly, reverse the removal procedure.

XXI. REMOVAL AND REPLACEMENT OF THE PUMP MOTOR

- A. To Remove the Pump Motor, see Figure 4-4:
1. Remove screws and the Left Front Door.
 2. Remove screws and the Left Side Panel.
 3. Loosen two screws on the cover plate to the electrical connections, located on the end of the Motor, toward the front of the Chassis.
 4. Rotate the cover plate to OPEN.
 5. Disconnect the two electrical leads from the terminals on the Motor.
 6. CLOSE the cover plate.
 7. Remove the screw and spread the Coupling Clamp open enough to slide the Clamp off of the Motor and onto the Pump.
 8. Carefully pull the Pump away from the Motor enough to disengage the connection.

CAUTION

BEFORE the next step, be prepared to support the Motor, or have an assistant helping during the removal, to prevent dropping the Motor and causing possible personal injury or damage to equipment.

9. Remove four screws attaching the mounting Bracket to the front of the Chassis Frame.
10. Remove four screws attaching the mounting Bracket to the left side of the Chassis; then, carefully remove the Motor and mounting Bracket through the front opening of the Chassis.
11. Remove four bolts and washers and separate the Motor from the mounting Bracket.

- B. To replace the Pump Motor, reverse the removal procedure.

NOTE

When securing the Pump to Motor with the Coupling Clamp:

1. *Fit the Clamp over the ridges on the Pump and Motor bodies.*
2. *Be sure the screw holes in the Clamp are on top.*
3. *With the thumb and forefinger of one hand, cup the bottom of the Clamp and force the Clamp up and around the bodies of the Pump and Motor, for a close fit toward the top of the Clamp.*
4. *Tighten the Clamp Screw with a screwdriver, by hand. Tighten only until tight enough that the Pump CANNOT be rotated by hand, on the Motor. DO NOT USE POWER OR AIR TOOLS.*

A small 3/16-inch wide bladed screwdriver is large enough. Further tightening may cause loud squealing noises from the Pump or Motor during operation.

XXII. REMOVAL AND REPLACEMENT OF THE PUMP

- A. To Remove the Pump, see Figure 4-4:
1. Remove screws and the Left Side Panel.

CAUTION

BEFORE removing the three water lines in the next step, SLOWLY unscrew the connection of the line from the Pump to the Carbonator Tank, which is under pressure, and carefully bleed off the water pressure.

2. Disconnect the three water lines connected to the Pump.
 3. Remove the screw and the Coupling Clamp and separate the Pump from the Motor.
 4. Remove the Elbow and the Tee from the Pump.
- B. To Replace the Pump:
1. Using Teflon tape, wrap the threaded

end of the Elbow, that is to be connected to the Pump.

2. Similarly wrap the threaded end of the Tee, that is to be connected to the Pump.
3. Install the Elbow and the Tee in the Pump in the openings and positions shown in Figure 4-4.
4. Fit the Coupling Clamp over the end of the Pump.
5. Insert the shaft of the Pump into the slot in the Motor to install the Pump on the Motor.

NOTE

When securing the Pump to Motor with the Coupling Clamp:

1. Fit the Clamp on the ridges on the Pump and Motor bodies.
2. Be sure the screw holes in the Clamp are on top.
3. With the thumb and forefinger of one hand, cup the bottom of the Clamp and force the Clamp up and around the bodies of the Pump and Motor, for a close fit toward the top of the Clamp.
4. Tighten the Clamp Screw with a screwdriver, by hand. Tighten only until tight enough that the

Pump CANNOT be rotated by hand, on the Motor. DO NOT USE POWER OR AIR TOOLS.

A small 3/16-inch wide bladed screwdriver is large enough. Further tightening may cause loud squealing noises from the Pump or Motor during operation.

6. Connect the three water lines to the Pump.
7. Replace the Left Side Panel and secure with two screws.

XXIII. REMOVAL AND REPLACEMENT OF THE TOUCH-O-MATIC^{T.M.} FAUCET ASSEMBLY

CAUTION

SCOTSMAN Parts Department DOES NOT stock repair parts for soda valves. Prevent delay and problems by determining the specific valve to be replaced and order parts from:

**McCANN's Engineering & Mfg. Co.
4570 Colorado Boulevard
Los Angeles, California 90039**

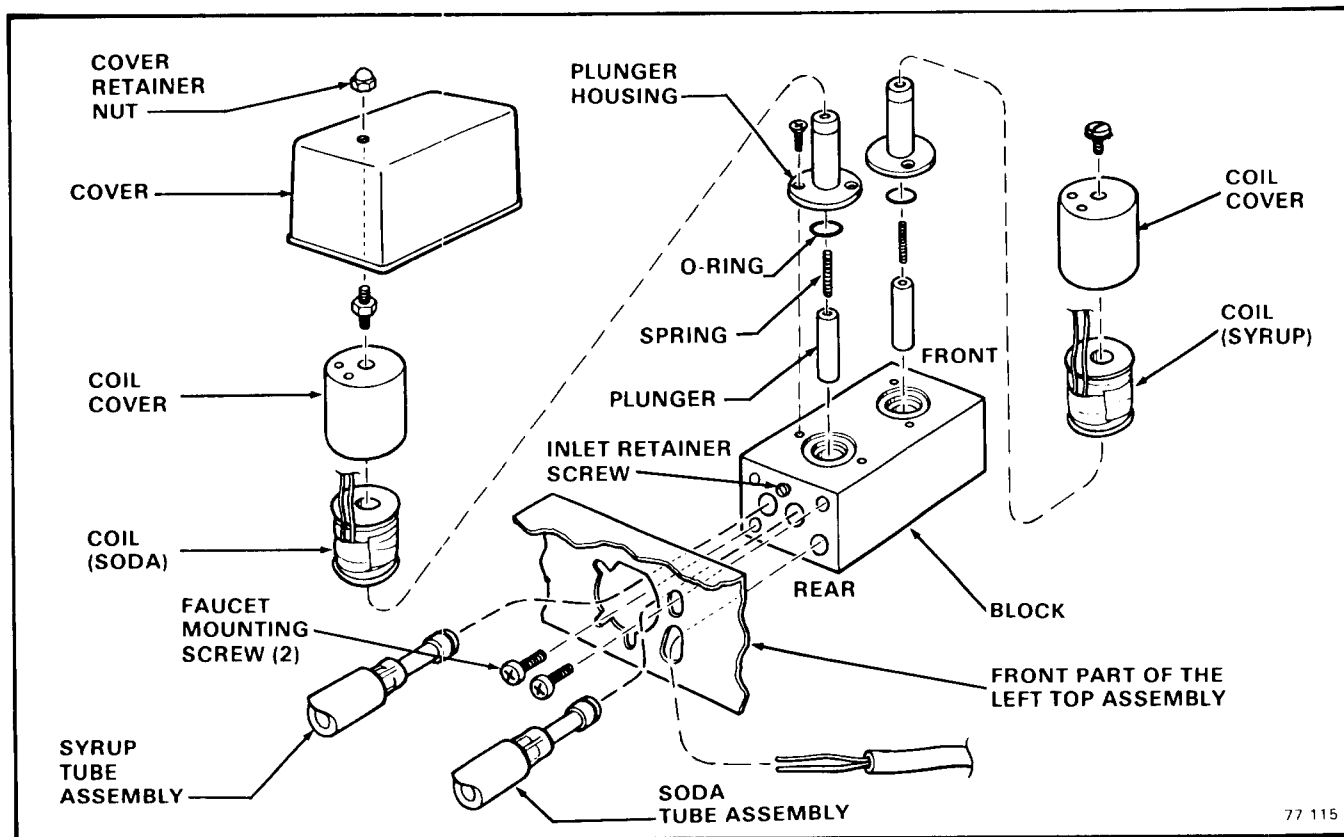


Figure 4-5. Removal of the Touch-O-Matic^{T.M.} Solenoid Parts

A. To Remove the Touch-O-Matic Faucet Assembly, see Figure 4-5:

1. SLOWLY open the check valve, on top of the Carbonator Tank Assembly, and bleed off CO² gas pressure.
2. SLOWLY open the bleeder valve, on top of the appropriate Syrup Tank Assembly, and bleed off CO² gas pressure.
3. LOOSEN the inlet Retainer Screw on the rear of the transparent block and disconnect the two Tube Assemblies from the Faucet.
4. Remove the Cover Retainer Nut and lift the Cover off of the Block.
5. Tag or otherwise identify the placement of the leads of the electrical cord connected through the rear of the Block.
6. Disconnect the leads and pull the electrical cord out through the rear of the Block.
7. Remove two Faucet Mounting Screws, which attach the Faucet Assembly to the front of the Left Top Assembly and remove the Faucet Assembly.

B. To replace the Touch-O-Matic Faucet Assembly, reverse the removal procedures.

XXIV. REMOVAL AND REPLACEMENT OF THE TOUCH-O-MATIC^{T.M.} FAUCET COIL, PLUNGER, SPRING, O-RING

A. To Remove the Coil, Plunger, Spring or O-Ring, see Figure 4-5:

2. Remove the Cover Retainer Nut and lift the cover off of the transparent Block.
3. Remove the Screw and Lockwasher from the appropriate Coil Cover and lift the wired Coil and Coil Cover off of the Block.
4. Tag or otherwise identify placement of the Coil leads; then, disconnect the Coil leads and pull the Coil and leads out of the Coil Cover.
5. Remove two flat head Screws and lift the Plunger Housing off of the Block.
6. Remove the Spring, Plunger and O-Ring from the Block.
7. Inspect and replace as necessary:
 - a. BLOCK - Plunger seat: Replace Block when seat is chipped or damaged.
 - b. O-RING - Replace O-Ring that is cut, torn or indicates worn condition.
 - c. PLUNGER - Replace Plunger, when rubber seating on bottom of Plunger is deformed.
PLUNGER HOUSING - Clean out any dirt or foreign particles inside the Plunger Housing tube, that could restrict free travel of the Plunger.
 - d. SPRING - With the Spring in the Plunger, test the feel of the spring-action. Replace broken or faulty Spring.

B. To replace the Coil, Plunger, Spring or O-Ring, reverse the removal procedures.

CAUTION

The CAUTION in the above procedure, also applies to ordering parts for this procedure.

NOTE

There are TWO Coils in each valve. The SYRUP Coil is located in the FRONT part of the valve; and, the SODA Coil is located in the REAR of the valve.

1. For removal of SODA Coil ONLY: SLOWLY bleed off CO² gas pressure at the Check Valve, on top of the Carbonator Tank Assembly.

For removal of SYRUP Coil ONLY: SLOWLY bleed off CO² gas pressure at the Bleeder Valve, on top of the appropriate Syrup Tank.

CAUTION

Be sure the O-Ring has been installed on the LOWER TUBE of the Plunger Housing, BELOW the mounting plate of the Plunger Housing, so the O-Ring will properly seat in the Block when installed.

NOTE

It is suggested, that when a friction or sticking problem occurs with the Plunger and no defects can be noted by visual inspection, a new Plunger and Spring be installed and the operation rechecked. In most instances, this will correct that problem.

XXV. REMOVAL AND REPLACEMENT OF THE WATER REGULATOR ASSEMBLY - WATER-COOLED MODELS.

A. To Remove the Water Regulator Assembly:

NOTE

Always install a replacement Drier, any time the sealed refrigeration system is opened. Do not replace the Drier until all other repair or replacement has been completed.

1. Remove screws and lift off the Left Front Door.
2. Bleed off or blow the refrigerant charge through the Schrader valve.
3. Unsolder the Capillary line from the Water Regulator Assembly, where connected at the process header.
4. Disconnect the water inlet line at the rear of the Water Regulator.
5. Disconnect the Condenser water inlet tube at the front of the Water Regulator.
6. Remove two screws, lockwashers and washers which attach the Water Regulator Assembly bracket to the Chassis base and remove the Water Regulator Assembly and bracket.

NOTE

Thoroughly evacuate the system to remove moisture and non-condensables.

- B. To replace the Water Regulator Assembly reverse the removal procedure.

XXVI. REMOVAL AND REPLACEMENT OF THE WATER RESERVOIR ASSEMBLY

- A. To Remove the Water Reservoir Assembly, see Figure 4-6:
 1. Pull to unsnap each end of the Hood Panel and remove the Hood Panel from the Hood Assembly.
 2. Remove three screws, located behind the upper part of the left side opening of the Hood Assembly, which attach the Dispensing Tower to the Hood Assembly.
 3. Slide the Dispensing Tower toward the rear about one-half inch to disengage the slots, lift the Dispensing Tower off of the Hood Assembly and lay the Tower, with product lines attached, on the front apron of the Dispenser.

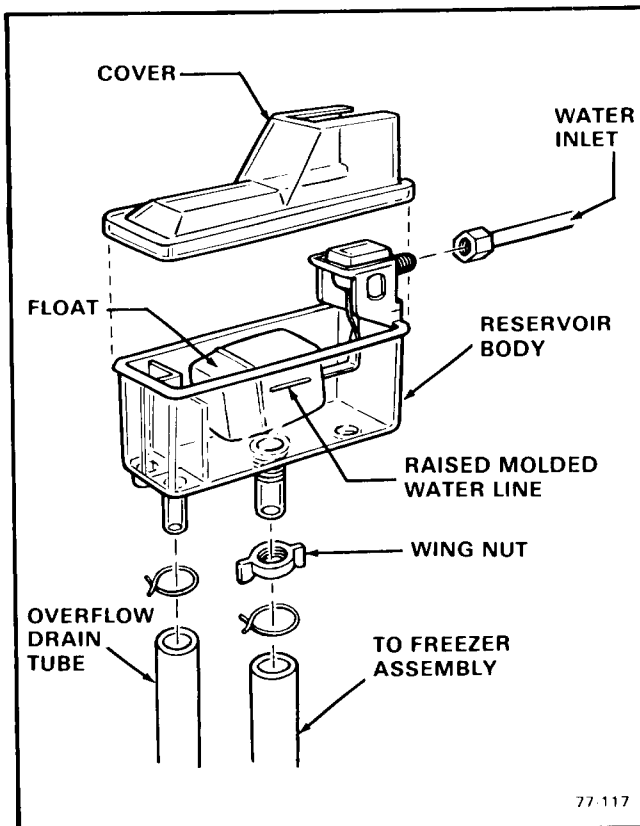


Figure 4-6. Removal of the Water Reservoir Assembly.

NOTE

Be prepared with container or rags, to catch water left in lines, when lines are disconnected in next steps, to prevent draining water on parts, components, electrical lines, etc.

4. Disconnect the water inlet tube from the Water Reservoir Assembly.
5. Remove two Corbin clamps and two tubes from the bottom of the Water Reservoir Assembly.
6. Unscrew and remove the wing nut from the bottom of the Water Reservoir Assembly.
7. Lift and remove the Water Reservoir Assembly from the mounting bracket.
- B. To replace the Water Reservoir Assembly, reverse the removal procedure.

NOTE

Check that the installed replacement Water Reservoir Assembly float moves freely. Bend metal arm of float to adjust, as necessary. The correct water level in the Water Reservoir is 3/8-inch below the raised molded line, on the side of the body of the Water Reservoir.

SECTION V

MAINTENANCE & CLEANING INSTRUCTIONS

I. GENERAL

The periods and procedures for maintenance and cleaning are given as guides and are not to be construed as absolute or invariable. Cleaning especially will vary, depending upon local water conditions and the ice volume produced and dispensed; and, the dispensing of syrup and carbonated drinks must always be considered. Each Icemaker/Drink Dispenser must be maintained individually, in accordance with its own particular location requirements.

II. ICEMAKER

THE FOLLOWING MAINTENANCE SHOULD BE SCHEDULED AT LEAST TWO TIMES PER YEAR ON THIS ICE-MAKER/DRINK DISPENSER. CALL YOUR AUTHORIZED SCOTSMAN SERVICE AGENCY.

1. Check and clean water line Strainers.
2. Remove cover from Water Reservoir and depress the float to ensure that a full stream of water enters the Reservoir.
3. Check that the Icemaker/Drink Dispenser cabinet is level, in side-to-side and front-to-rear directions.
4. Check that the water level in the Water Reservoir is below the overflow, but high enough that it does not run out of the spout opening.

NOTE

It is not abnormal for some water to emerge from the Ice Spout with flaked ice during normal ice production.

5. Clean the Water Reservoir and interior of the Freezer Assembly, using a solution of SCOTSMAN Ice Machine Cleaner. Refer to procedure V-V, CLEANING-Icemaker.

NOTE

Cleaning requirements vary according to local water conditions and individual user operation. Visual inspection of the Auger before and after cleaning will indicate frequency and procedure to be followed in local areas.

6. When doubtful about refrigerant charge, install refrigerant gauges on Schrader valves and perform steps 6 and 7. Check gauge for Compressor head pressure:
AIR-COOLED MODELS: Varies between 130 to 145 PSIG.
WATER-COOLED MODELS: Set at 135 PSIG. Adjust screw on top of Water Regulator Valve to raise or lower head pressure.
7. Check gauge for Suction line pressure:
Varies between 12 to 16 PSIG, depending upon inlet water temperature and ambient air temperature.
8. Check Drivemotor operation:
Normal operating temperatures are about 160-degrees F., which is hot to touch.
9. Check operation of the centrifugal sensing switch:
DSF-450: 1/10 HP Motor.
Switch will OPEN between 400-600 RPM and the Compressor STOPS, with the Drivemotor operating. Switch will CLOSE between 1300-1400 RPM and the Compressor will RESTART, with Drivemotor building back up to normal operating speed.
DSF-650: 1/4 HP Motor.
Switch will OPEN between 850-950 RPM and the Compressor STOPS, with the Drivemotor operating. Switch will CLOSE between 1100-1250 RPM and the Compressor will RESTART, with Drivemotor building back up to normal operating speed.
10. Remove the Insulation Strap and Clip, the Right and Left Spout Insulation pieces, the Retaining Ring and the Hook and Cap from the top of the Freezer Assembly.
11. Inspect the Top Bearing. If moisture is around Bearing, wipe clean of all grease

and apply a coating of Beacon No. 325 Grease. Replace parts removed in step 10.

NOTE

BEFORE next step, move the lower, manual ON-OFF toggle switch, on the front of the Control Box, to the OFF position to stop the Fan Motor and Icemaker.

12. Clean the Air-Cooled Condenser, using vacuum cleaner, whisk broom or brush. Instruct customer to clean frequently and to be sure Icemaker and Fan Motor are OFF.
13. Check that Fan Blades move freely, are not touching any surfaces and are not bent or out of balance.
14. Check for refrigerant leaks and for proper frost line, which should frost out of accumulator at least half way to the Compressor and in some areas, back to service valve.
15. Check for water leaks. Tighten drain line connections. Pour water down Bin drain to be sure that drain line is open and clear.
16. Check the quality of ice. Ice flakes should be wet when formed, but will cure rapidly to normal hardness in the Bin.
17. Check the Bin thermostatic Ice Control Bulb and the Pressure Plate and Limit Switch cutoff in the Ice Spout.

NOTE

The Limit Switch only shuts off the Compressor. The Bin Thermostat is factory set at 10-degrees F. differential and should keep the entire Icemaker system shut off at least 20 minutes in high ambient temperatures, longer in low ambient temperatures during normal operation. Settings are 35-degrees F. CUT-OUT and 45-degrees F. CUT IN.

III. CO² GAS - HOW TO LOCATE AND STOP LEAKS

Whenever a full CO² Gas Cylinder is connected to a carbonating system, open the CO² Gas Cylinder Head Valve until the CO² Regulator Gauge indicates maximum pressure, about 120 to 125 PSIG, then close the CO² Gas Cylinder Head Valve.

If the indicator needle on the Gauge continues to drop, there is a leak in the system. Due to some absorption of CO² gas in the water in the Carbonator, the indicator needle may drop a few pounds, but then the needle should stop, if there is no CO² gas leak.

When a CO² gas leak is detected by this method, proceed to locate leak position as follows:

1. Apply a shaving soap lather with a shaving brush to all joints, connections and valves. When there is a CO² gas leak, bubbles will appear.
2. Tighten leaky connection.
3. When CO² gas leak occurs at the CO² Gas Cylinder Head Valve, OPEN the valve all the way. Usually this closes any leak through the packing. Also tighten packing nut.

IV. FAUCET ASSEMBLY

The fastest rate of flow recommended for the Touch-O-MaticTM Faucet is two ounces per second of finished drink. In other words, a six ounce finished drink should take at least three seconds to pour. When a faster rate is used, the carbonation in the drink will be reduced.

The typical blend used, is one ounce of syrup and five ounces of water for a six ounce finished drink. However, this may vary with the brand of syrup used, be sure to check with your supplier of syrup.

The flow of syrup and water can be adjusted with metering screws located on the rear underside of the Faucet, behind the Pouring Spout. The Metering Screw for WATER is located on the LEFT and is marked W. The Metering Screw for SYRUP is located on the RIGHT and is marked S.

NOTE

These Metering Screws have sensitive adjustment, therefore, rotate no more than one-eighth of a turn at a time.

1. To INCREASE Flow: Rotate appropriate Metering Screw OUT or COUNTERCLOCKWISE one-eighth of a turn.
2. To DECREASE Flow: Rotate appropriate Metering Screw IN or CLOCKWISE one-eighth of a turn.

V. CLEANING - Icemaker

1. Remove screws and the Left Front Door.

2. Move both manual ON-OFF toggle switches, on the front of the Control Box, to the OFF position.
3. Remove the Ice Access Door and all ice from the ice storage Bin.
4. CLOSE the water supply shutoff valve; or, block the float in the Water Reservoir.
5. Disconnect the tube between the Water Reservoir and the bottom of the Freezer Assembly and drain water from the Reservoir and tube. Reconnect the tube.

WARNING

SCOTSMAN Ice Machine Cleaner contains Phosphoric and Hydroxyacetic acids. These compounds are corrosive and may cause burns if swallowed, DO NOT induce vomiting. Give large amounts of water or milk. Call Physician immediately. In case of external contact flush with water. KEEP OUT OF THE REACH OF CHILDREN.

6. Prepare cleaning solution: Mix six ounces of SCOTSMAN Ice Machine Cleaner with one and one-half quarts of hot water.
7. Remove the Cover to the Water Reservoir.
8. Slowly pour the cleaning solution into the Water Reservoir.
9. Move the lower, manual ON-OFF toggle switch, on the front of the Control Box, to the ON position.
10. Continue to slowly pour the cleaning solution into the Water Reservoir, maintain level just below the Reservoir overflow.
11. Continue icemaking, using the cleaning solution, until all the solution is used up and the Water Reservoir is almost empty. DO NOT allow the icemaker to operate with empty Reservoir.
12. Move the lower, manual ON-OFF toggle switch, on the front of the Control Box to the OFF position.
13. Wash and rinse the Water Reservoir.
14. OPEN the water supply shutoff valve; or remove the block from the float in the Water Reservoir.
15. Move the lower, manual ON-OFF toggle switch, on the front of the Control Box, to the ON position.
16. Continue icemaking for at least 15 minutes, to flush out any cleaning solution. Check ice for acid taste - continue icemaking until ice tastes sweet.
17. Move the lower manual ON-OFF toggle

switch, on the front of the Control Box, to the OFF position.

CAUTION

DO NOT use ice produced from the cleaning solution. Be sure none remains in the bin.

18. Remove all ice from the ice storage Bin.
19. Add hot water to the ice storage Bin and thoroughly wash and rinse all surfaces within the Bin.
20. Clean all parts removed from the Bin, the Ice Access Door, Splash Panel and Grill in accordance with the regulations of the local Health Authorities.
21. Pour hot water into drip pan each day, to keep drains open from slime build up.
22. Clean and sanitize the ice storage Bin each week. Syrup lines and tanks should be drained and sanitized twice each month.

VI. CLEANING - Faucet Assembly

The Faucet Assembly need not be disassembled in order to be cleaned. All that is required is to simply fill a spare syrup tank with your cleaning agent, approved by local Health Authorities. Connect the tank with the syrup line to the desired Faucet Assembly and flush the cleaning agent through the Faucet Assembly and syrup line system with CO² gas pressure. A clean water rinse may be similarly performed.

To Clean, Back Flushing:

1. Release CO² gas pressure on syrup tank.
2. Disconnect syrup line at some convenient point and place syrup line from Faucet Assembly in a container.
3. Remove Pouring Spout from Faucet Assembly and replace with the Back Flush Adapter.
4. Hold the Back Flush Adapter in place and energize Faucet allowing soda water to REVERSE FLOW through the syrup side, out through the disconnected syrup line and into the container.

NOTE

When the Back Flush Adapter is not available, DO NOT REMOVE the Pouring Spout. Place the palm of the hand on the Spout opening, to seal off the opening. A towel may be used for this step. Then energize the Faucet to achieve same REVERSE FLOW.

5. Remove and clean the Pouring Spout weekly.

SECTION VI SERVICE DIAGNOSIS

The Service Diagnosis Section is for use in aiding the serviceman in diagnosing a particular problem for pin-pointing the area in which the problem lies, thus an ever available reference for proper corrective action.

The following charts lists corrective actions for the causes of known symptoms of certain problems that can occur in the Icemaking - Refrigeration System, Carbonation System, Dispensing System.

I. ICEMAKING - REFRIGERATION SYSTEM

SYMPTOM	POSSIBLE CAUSE	CORRECTION
Water Leaks.	Defective water seal. Gravity feed line leaking. Water level in reservoir too high. Storage bin drain and connecting fittings.	Replace Seal. Check hose clamps. Adjust water level to 3/8-inch below reservoir overflow, then raise reservoir until water flows out freezer spout, then lower reservoir 3/4-inch. Check and repair.
Excessive noise or chattering.	Mineral or scale deposit on auger and inner freezing chamber walls. Intermittent water supply Water level in reservoir too low. Gear Reducer loose on frame Motor compressor not solid on rubber mounts. Gearmotor end-play or worn bearing.	For severe deposit, remove and manually polish auger, sand inner chamber walls of freezer barrel. For lighter concentration, use Scotsman Ice Machine Cleaner periodically. Check and clean water strainer. Check gravity feed line for air lock. Remove air lock. See CORRECTION for Water Leaks above. Tighten Gear Reducer. Repair or replace rubber mounts. Repair or replace bearing.
Making wet ice. (Ice melts too quickly, is not cold enough to properly cure in the Bin.)	Surrounding air temperature too high. Under or over-charge of refrigerant.	Correct or move cabinet. Recharge with proper amount. Should frost out of accumulator at least 8-inches. See nameplate for correct charge. See CORRECTION for Water Leaks above.

ICEMAKING - REFRIGERATION SYSTEM (Cont'd)

SYMPTOM	POSSIBLE CAUSE	CORRECTION
Making wet ice (Cont'd)	Back pressure too high. Faulty compressor or valve plate.	Overcharge of refrigerant, Faulty compressor or high head pressure. Lower pressure as indicated. Repair or replace compressor or valve plate.
Low ice production.	Loss of refrigerant. Under or over-charge of refrigerant. Drivemotor weak. Dirty or plugged condenser. Low water level in water reservoir. Partial restriction in capillary tube or drier. Inlet water strainer partially plugged. Corroded or stained auger due to water condition.	Check and recharge. See NAMEPLATE for correct charge. Replace Drivemotor. Clean condenser. See CORRECTION for Water leaks above. Moisture in system. Overcharge of oil in system. Remove charge by blowing back through cap tube. Replace drier and recharge. Remove screen and clean. Remove auger and clean, or use Scotsman Ice Machine Cleaner. See Maintenance Section.
Gearmotor noise.	Low on oil.	Remove case cover to check for proper oil level. Top of gears should be covered. Use: Sun Oil Company Prestige 50-EP
Icemaker will not operate.	Blown fuse in line. Bin thermostat set too high. Loose electrical connection. Switch in OFF position. Inoperative master switch. Off on manual-reset pressure control.	Replace fuse and check for cause of blown fuse. Adjust thermostat. Set at 35-degrees cut-out, 45-degrees cut-in. Check wiring. Set switch to ON position. Replace switch or thermal overload. Reset.
Icemaker continues to operate with full storage bin.	Bin thermostat not properly set or is defective.	Re-set or replace bin thermostat Re-set to 35-degrees cut-out, 45-degrees cut-in.
Compressor cycles intermittently.	Low voltage. Dirty condenser. Air circulation blocked. Inoperative condenser fan motor.	Check for overloading. Clean condenser. Remove cause or move unit. Replace motor.

ICEMAKING - REFRIGERATION SYSTEM (Cont'd)

SYMPTOM	POSSIBLE CAUSE	CORRECTION
Compressor Cycles Intermittently (cont'd)	<p>Non-condensable gases in system.</p> <p>Bin thermostat differential too small causing short cycling.</p> <p>Cycling on ice spout microswitch.</p>	<p>Check for gas leaks, evacuate and recharge.</p> <p>Widen differential 35-degrees cut-out, 45-degrees cut in.</p> <p>Set or replace Bin thermostat.</p>
Icemaker operates but makes no ice.	<p>Loss or undercharge of refrigerant.</p> <p>Water not entering freezing chamber.</p> <p>Moisture in system.</p> <p>Water seal leaking.</p> <p>Water turned off while unit was operating.</p> <p>Drivemotor or drive coupling stripped.</p>	<p>Check for leaks and recharge. See NAMEPLATE for correct charge.</p> <p>Plugged strainer or supply line. Check and clean. Air lock in gravity feed line. Check and remove air lock.</p> <p>Check, evacuate, replace drier. Recharge. See NAMEPLATE for correct charge. Replace seal.</p> <p>Freezer inlet water line froze shut. Unit must be turned off and defrosted.</p> <p>Repair or replace drivemotor or drive coupling.</p>

II. CARBONATION SYSTEM

SYMPTOM	POSSIBLE CAUSE	CORRECTION
No carbonated water, pump does not operate.	<p>Motor burnt out.</p> <p>Liquid level control.</p> <p>Bad bearings causing pump to stop.</p> <p>Tank electrode shorted.</p> <p>Pump jammed.</p>	<p>Replace pump.</p> <p>Check relay wiring, contacts. Repair or replace motor.</p> <p>Repair or replace electrode.</p> <p>Check for foreign particles in pump housing, clean or replace pump.</p>
No carbonated water (pump operates)	<p>Pump rotating backwards.</p> <p>Open in transformer, relay coil, or high level electrode.</p> <p>Worn pump.</p> <p>Pump check valve leaks.</p> <p>Pump relay bypass valve opens too soon.</p> <p>Clogged filter or inlet screen.</p> <p>Water line blocked.</p>	<p>Reverse wiring inside motor.</p> <p>Repair or replace faulty part.</p> <p>Replace pump.</p> <p>Clean or replace check valve.</p> <p>Clean; valve is adjustable, set higher; or replace bypass valve.</p> <p>Clean or replace filter or screen.</p> <p>Check for defective washer at fittings or plugged check valve on tank.</p>

CARBONATION SYSTEM (Cont'd)

SYMPTOM	POSSIBLE CAUSE	CORRECTION
Flat carbonated water.	CO ² Gas drum empty or low. CO ² Gas turned OFF. Regulator set too low. CO ² Gas line plugged by swollen washer. Water pressure too high.	Replace CO ² drum. Turn CO ² gas ON. Increase pressure. Replace washer. Adjust if possible or install water pressure regulator.
Metallic taste in Carbonated water.	Carbonated water backing up into city water line. Carbonated water line connected by mistake to brass or copper lines.	Clean water back-pressure check valve, replace washer. Make proper connection using approved tubing. Use proper beverage tubings.
Carbonated water off taste.	Oil, dirt or grease inside carbonator. Oil or pipe dope in water lines. Tainted CO ² gas. Water filter needed or filter element bad.	Clean carbonator. Clean and flush water lines. Sniff CO ² gas at drum head to determine if CO ² drum should be replaced. Install a good water filter or replace filter element.
Milky carbonated water.	Air in carbonator. Pump sucking air.	Vent carbonator. Check for loose fittings. Replace pump.
Gas only flows from dispenser valve.	Water Valve CLOSED. Pump motor not cutting on	OPEN water valve. Check liquid level control. Check carbonator tank electrode.
Carbonator fills with water.	Water turned on before CO ² pressure. Water pressure too high. CO ² gas pressure too low. CO ² gas drum empty. Open in transformer, relay coil, or high level electrode.	Shut off water supply. Empty water from tank with pump. Apply CO ² pressure first, then water pressure. Adjust if possible, or install pressure reducer. Set regulator key to deliver proper gas pressure. Replace CO ² drum. Repair or replace defective part.
Carbonated water backs up into city water line.	Dirty or worn back-pressure check valve.	Clean or replace valve seats.

CARBONATION SYSTEM (Cont'd)

SYMPTOM	POSSIBLE CAUSE	CORRECTION
Excessive pumping.	Closed water supply valve. Water supply (building or city) shut off. Automatic switch out of order. Water inlet screen clogged. Pump inlet or check valve out of order. Swollen washers in hose couplings obstruct flow of water. Tank electrode shorted.	Open valve. Re-establish source. Check switch, replace if necessary. Remove and clean screen. Repair or replace. Replace washers. Repair or replace.
Carbonator pump pounds, water running in spurts	Air in pump. Water valve CLOSED. Filter or strainer plugged. Inlet line too small.	Vent pump. OPEN water valve. Clean or replace filter-strainer. Replace with 3/8-inch or larger copper line.

III. DISPENSING SYSTEM

SYMPTOM	POSSIBLE CAUSE	CORRECTION
Syrup or water drips through spout.	Foreign matter on plunger seat. Nick or cut on plunger seat. Broken or defective plunger spring.	Operate faucet several times to flush out. Remove plunger from solenoid valve and clean valve port and plunger seat. Back flush valve. Remove plunger and replace. Remove spring and replace.
Faucet continues to dispense even when lever is not actuated.	Lever is sticking. Electric switch defective. Plunger stuck.	Clean syrup from lever and lubricate with petroleum jelly. Replace switch. Replace spring and/or clean solenoid housing. Back flush valve.
Noisy solenoid valve.	Dirt or particles in back of plunger.	Operate faucet several times to flush out. Back flush. Remove and clean plunger and solenoid housing.

DISPENSING SYSTEM (Cont'd)

SYMPTOM	POSSIBLE CAUSE	CORRECTION
<p>Acuation of lever results in no flow.</p>	<p>Defective switch. Bad solenoid coil and switch connection. Power OFF. Low voltage.</p>	<p>Replace switch. Check and correct connecton. Check circuit and fuse for power ON. Voltage at coil should be 100 volts on 115 VAC line. If voltmeter not available, turn off all lights and other electrically operated devices to check under best conditions at that location.</p>
<p>Drink too sweet, insufficient soda or water to syrup ratio (heavy drink)</p>	<p>Soda solenoid coil defective. Defective soda solenoid coil connection A non-carbonated faucet may be in a high carbonated faucet application. Insufficient soda flow due to low carbonator pressure. Obstruction in water and/or soda line. Water shut-off valve partially closed. Syrup pressure too high.</p>	<p>Replace coil. Check and correct connection. Replace with correct faucet. Check CO² supply pressure and replace tank if CO² pressure is low and/or reset regulator as required. Clean out line. Check and open freely. Check and reset low pressure regulator</p>
<p>Drink not sweet enough, excessive soda or water to syrup ratio (light drink)</p>	<p>Syrup solenoid coil defective. Defective syrup solenoid coil connection. Carbonator pressure too high. Obstruction in syrup line. Water pressure too high. Drink will also have low carbonation.</p>	<p>Replace coil. Check and correct connection. Check and correct pressure. Check transparent block to see if there is any obvious obstruction. Back flush. Remove and clean syrup plunger and solenoid coil housing. Add regulator in water inlet line.</p>
<p>Foaming of finished drink.</p>	<p>Over carbonation of soda. Carbonation of syrup. Dirty lines, valves, etc. Super cooled ice in drink. Product temperature too high. Pressure too high.</p>	<p>Reduce CO² pressure on carbonator. Reduce CO² pressure on syrup. Some root beers will foam when their CO² pressures are above 15 psi. Larger sized syrup may be required for long runs. Backflush. Remove and clean syrup plunger and solenoid coil housing. Use ice at about 32-degrees F. Product temperature must be below 42-degrees F. Reduce CO² pressure to recommended setting.</p>

DISPENSING SYSTEM (Cont'd)

SYMPTOM	POSSIBLE CAUSE	CORRECTION
Inconsistent brixing.	Dirty lines, valves, etc. CO ² supply low. Leak in CO ² line.	Backflush. Remove and clean syrup plunger and solenoid coil housing. Renew CO ² cylinder. Locate and correct.

NOTE: In new installations, objectional taste or odor, foaming and inconsistent brixing may be the result of contaminants such as oils or pipe sealing compounds. Thoroughly clean all lines prior to installing and back flush are required.

SECTION VII

WIRING DIAGRAMS

This Section is provided as an aid in understanding the electrical circuitry of the Icemaker/Drink Dispenser.

WARNING

When conducting a continuity check of the Icemaker/Drink Dispenser:

1. Disconnect the main power source.
2. DO NOT use an incandescent lamp or jumper wire, conduct all tests with a volt-ohm-meter.

The Wiring Diagrams in this Section are:

Figure 7-1. Wiring Diagram DSF-450 - Air-Cooled.

Figure 7-2. Wiring Diagram DSF-450 - Water Cooled.

Figure 7-3. Wiring Diagram DSF-650 - Air-Cooled.

Figure 7-4. Wiring Diagram DSF-650 - Water Cooled.

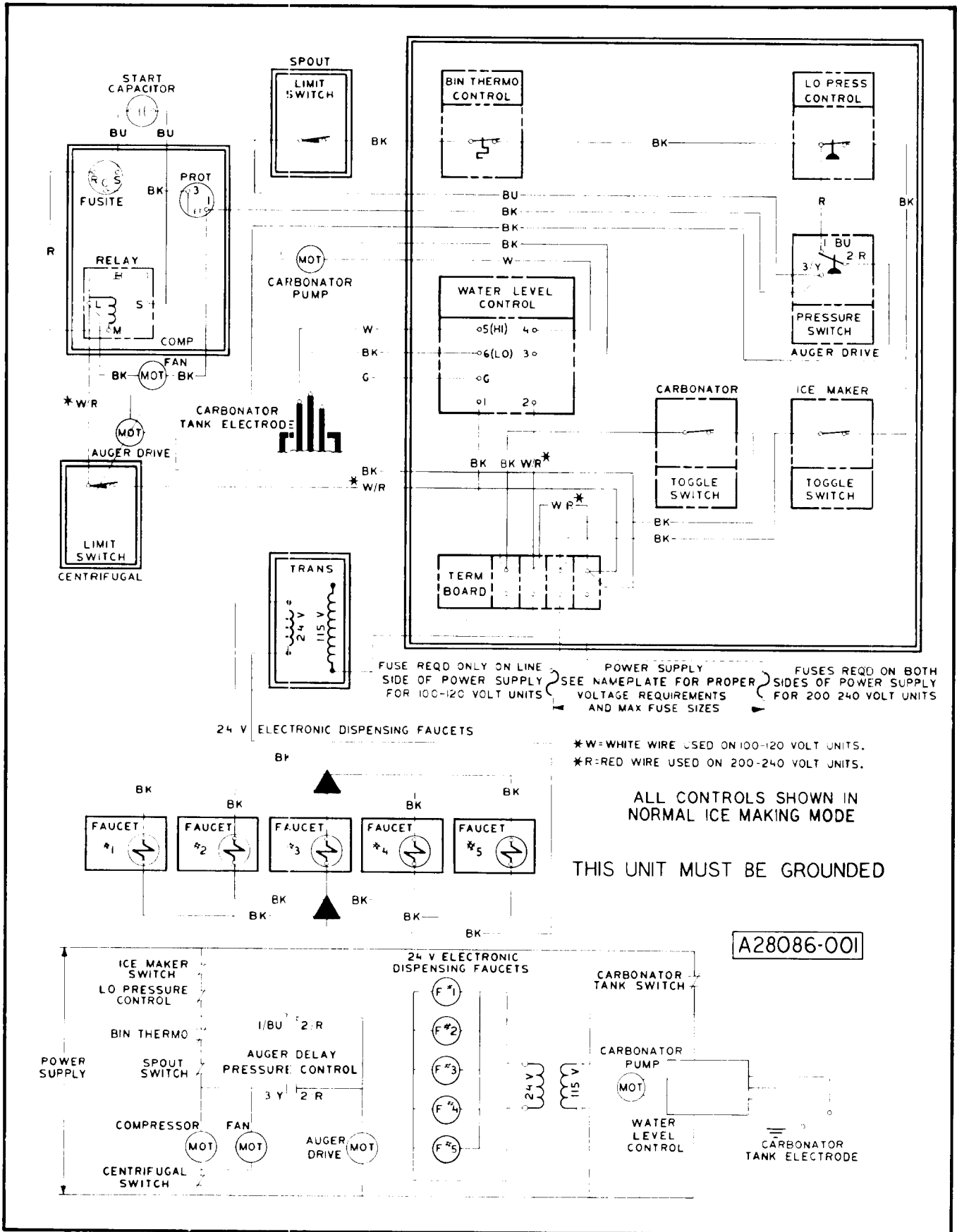


Figure 7-1. Wiring Diagram DSF-450 - Air-Cooled.

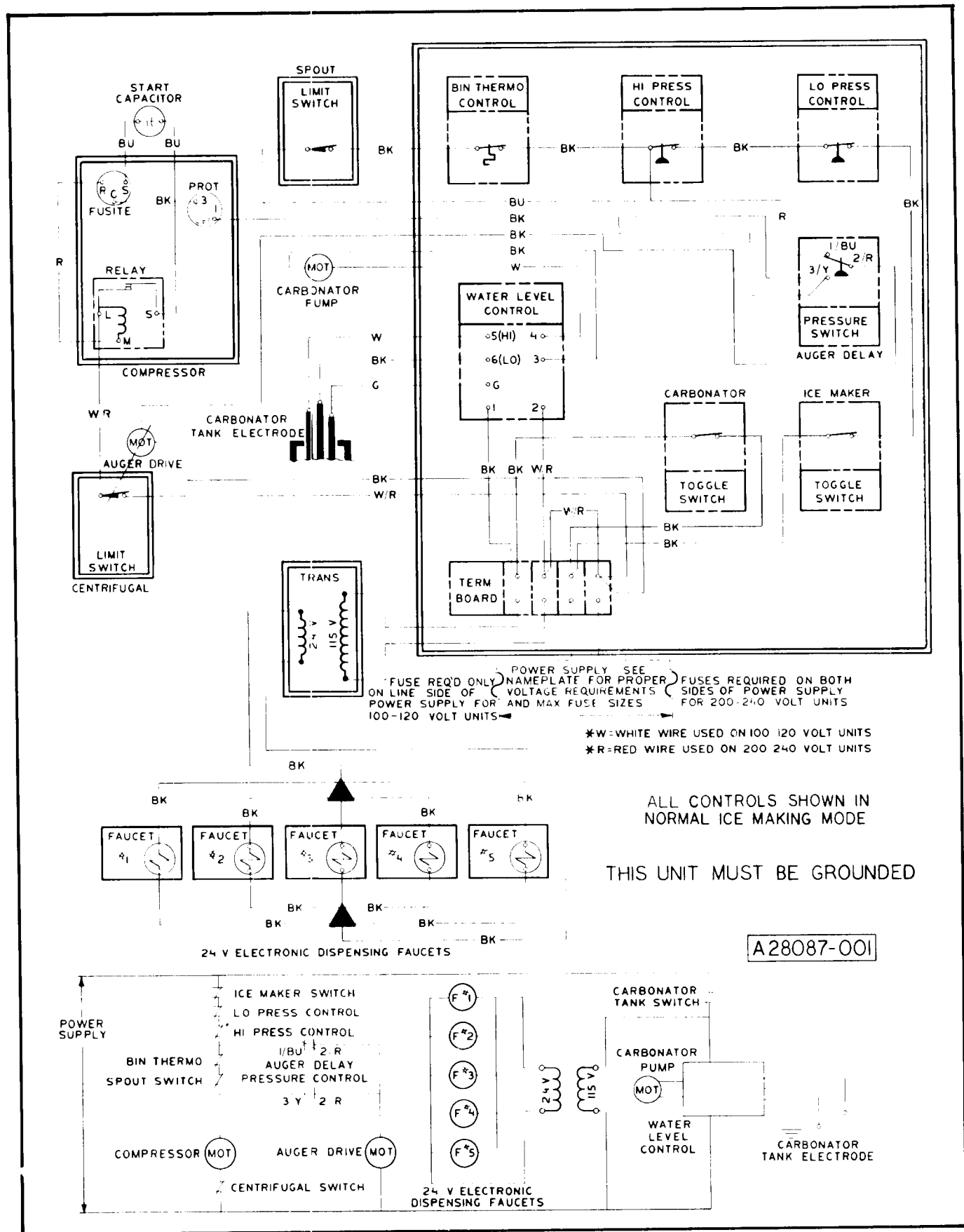


Figure 7-2. Wiring Diagram DSF-450 - Water-Cooled.

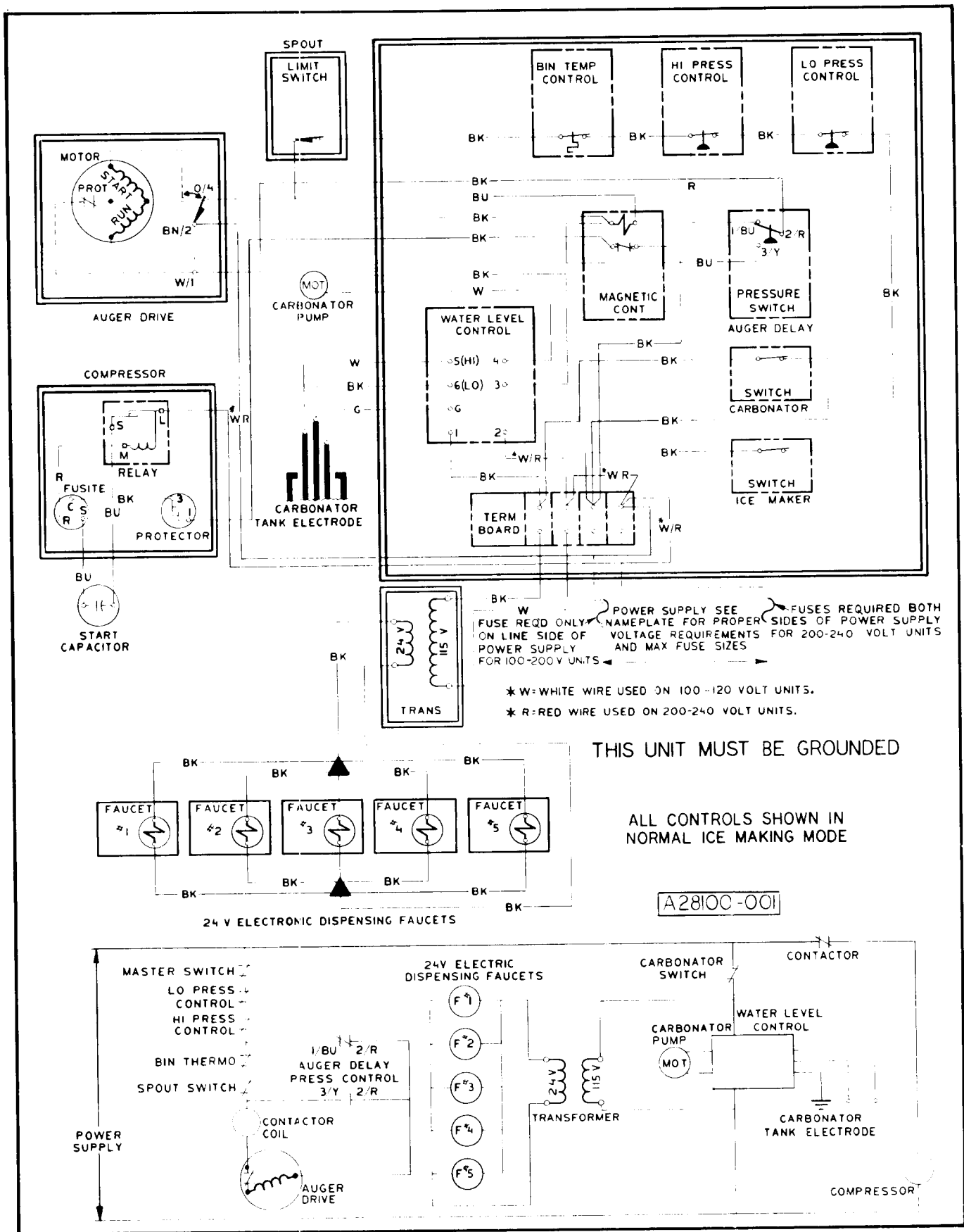


Figure 7-4. Wiring Diagram DSF-650 - Water-Cooled.

SECTION VIII

THE PARTS ILLUSTRATIONS AND PARTS LIST

I. GENERAL

This section contains the Parts Illustrations and the Parts List for each of the major assemblies in the DSF-450/650 IceMaker/Drink Dispensers.

Each Parts Illustration shows an assembly as an exploded view, with an Index Number for each part or sub-assembly, given in disassembly order. These Index Numbers key with the Parts List for the assembly and are found in the Parts List Column headed Index Number. The Description Column gives the identifying nomenclature for the item indexed. The Part Number Column gives the number of item. The Number Required Column gives the number of items required per assembly, but not necessarily the total number of parts required per IceMaker/Drink Dispenser.

All assemblies are cross-referenced both from the major assembly listing where they first appear in the Parts Listing to their break-down listing, and from the break-down listing, back to the major assembly (next higher assembly) listing.

A *No Number* designation, when used in the Part Number Column indicates the unit is not available from SCOTSMAN as an assembly. This designation is used only for the convenience and clarity of division in cataloging.

When an Index Number is followed by a letter (e.g. la, lb), the letter indicates the part listed is part of the assembly indexed by the basic Index Number. The number required of the part indexed by the number and letter combination is for only one of the assemblies indexed by the basic Index Number and not necessarily the total number or parts used in the

IceMaker/Drink Dispenser. Where the notation *Ref* occurs in the Number Required Column the number of the assemblies or parts required for use in the IceMaker/Drink Dispenser will be found under a previous Index Number or in the next higher assembly Parts Listing. The next higher listing Figure/Index number is shown in the Description Column immediately following the items description.

II. HOW TO USE THE ILLUSTRATIONS AND PARTS LIST

To find the part number of a required part or assembly, turn to the List of Illustrations and find the page number of the Parts Illustration of the major or sub-assembly containing the part. Turn to the indicated page and locate the part and its Index Number on the specific illustration. Find the Index Number on the required part in the Parts List to determine the complete description of the part.

III. HOW TO ORDER PARTS OR ASSEMBLIES

When ordering parts or assemblies, to avoid costly delays and errors in shipment, give the part number, the complete description shown in the list, and the quantities of each part or assembly required. Also include the Model name, the serial number of the IceMaker/Drink Dispenser for which the part is required, and for parts which require color matching, the color of the Cabinet.

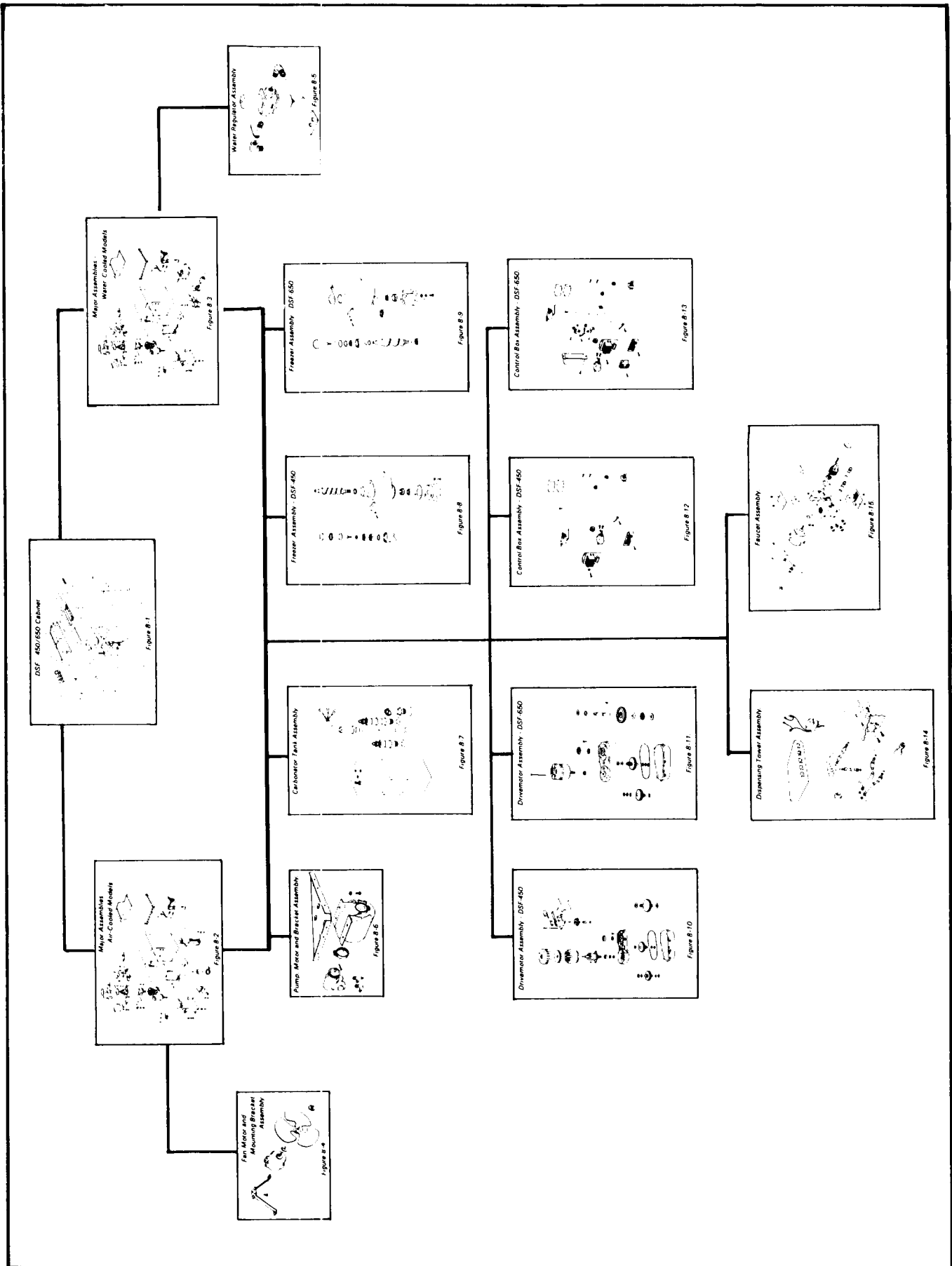


Figure 8-A. DSF-450/DSF-650 Icemaker/Drink Dispenser Flow Chart

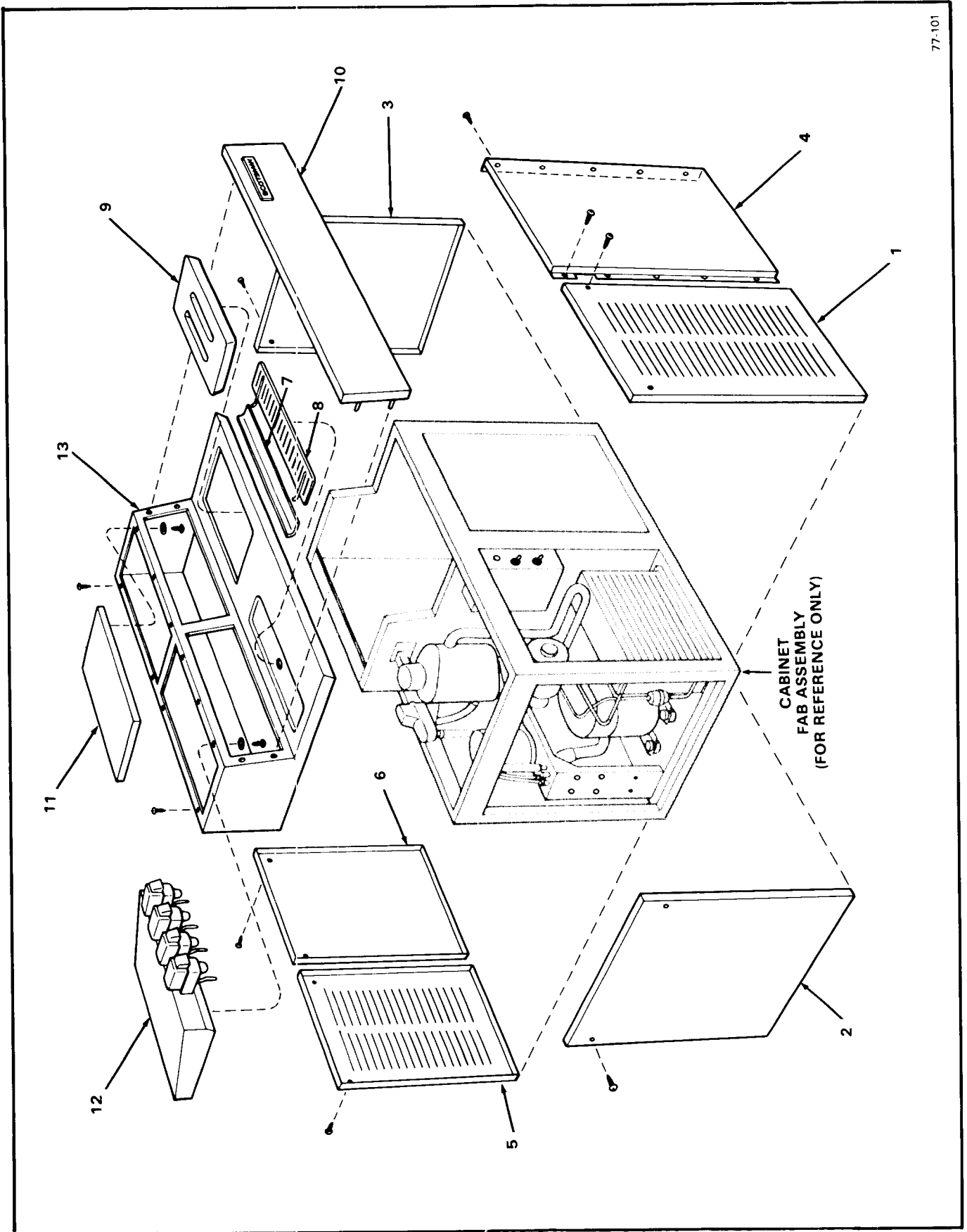


Figure 8-1. DSF-450/650 Cabinet

Figure 8-1. DSF-450/650 Cabinet

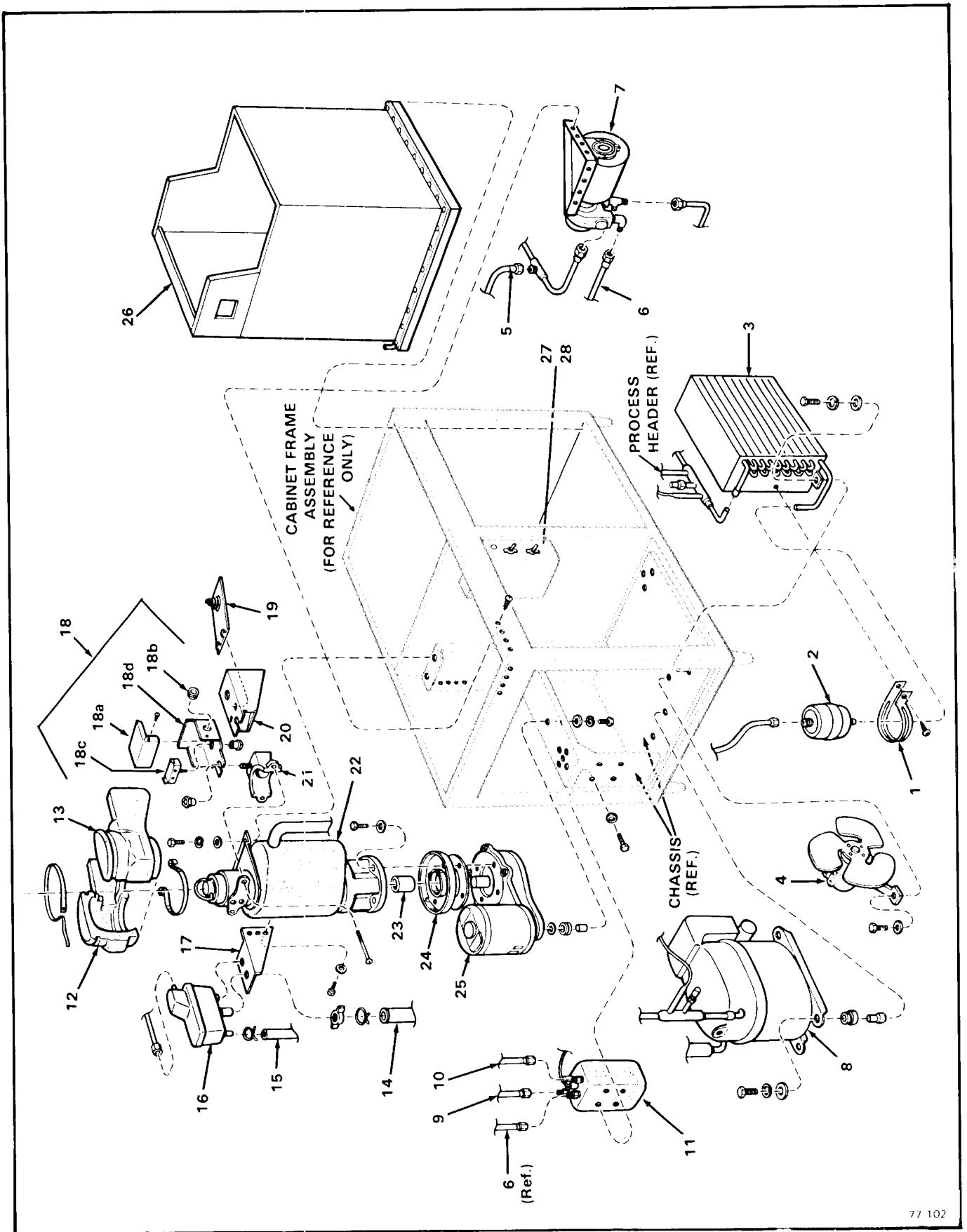
INDEX NO.	DESCRIPTION	PART NUMBER	REQ'D NUMBER
	DSF-450/650 Cabinet * * *	No Number	1
1	Door, Front (C.R.S. Painted)	A27729-001	1
	Door, Front (Stainless Steel) attaching parts, Index 1	A27729-002	1
	Screw, No. 8 x 3/4 S/T Flat Hd	03-1419-08	2
	Speed Nut, No. 8 J-Type * * *	03-1423-06	2
2	Panel, Left Side (C.R.S. Painted)	A27728-001	1
	Panel, Left Side (Stainless Steel) attaching parts, Index 2	A27728-002	1
	Screw, No. 8 x 3/4 S/T Flat Hd	03-1419-08	2
	Speed Nut, No. 8 J-Type * * *	03-1423-06	2
3	Panel, Right Side (C.R.S. Painted)	A27727-001	1
	Panel, Right Side (Stainless Steel) attaching parts, Index 3	A27727-002	1
	Screw, No. 8 x 3/4 S/T Flat Hd	03-1419-08	2
	Speed Nut, No. 8 J-Type * * *	03-1423-06	2
4	Panel, Front (C.R.S. Painted)	A17755-009	1
	Panel, Front (Stainless Steel) attaching parts, Index 4	A17755-001	1
	Screw, No. 8 x 1/2 T/F Tap * * *	03-1404-09	10
5	Door, Rear (C.R.S. Painted)	A17754-009	1

Figure 8-1. DSF-450/650 Cabinet (cont'd)

INDEX NO.	DESCRIPTION	PART NUMBER	REQ'D NUMBER
	Door, Rear (Stainless Steel)	A17754-001	1
	attaching parts, Index 5		
	Screw, No. 8 x 3/4 S/T Flat Hd	03-1419-08	2
	* * *		
6	Panel, Rear (C.R.S. Painted)	A27730-001	1
	Panel, Rear (Stainless Steel)	A27730-002	1
	attaching parts, Index 6		
	Screw, No. 8 x 3/4 T/F Tap	03-1404-12	2
	Speed Nut, No. 8 J-Type	03-1423-06	2
	* * *		
7	Panel, Splash	A23186-000	1
	* * *		
8	Grill	02-1955-00	1
	* * *		
9	Door, Ice Access (C.R.S. Painted)	02-2381-01	1
	Door, Ice Access (Stainless Steel)	02-2381-02	1
	* * *		
10	Panel, Hood	A17609-000	1
	* * *		
11	Top, Right - Fab Assembly	A17812-000	1
	Screw, No. 10-24 x 3/8 Pan Hd	03-1403-27	3
	Screw, No. 1/4-20 x 3/8 Hex Cap	03-1405-01	2
	Lockwasher, No. 10 External Tooth - Phosphor Bronze	03-1417-04	3
	* * *		
12	Tower Assembly, Dispensing	A27765-001	1
	(See Figure 8-14)		
	attaching parts, Index 12		
	Screw, No. 10-24 x 3/8 Pan Hd	03-1403-27	3
	Screw, No. 1/4-20 x 3/8 Hex Cap	03-1405-01	2
	Lockwasher, No. 10 External Tooth - Phosphor Bronze	03-1417-04	3
	* * *		

Figure 8-1. DSF-450/650 Cabinet (cont'd)

INDEX NO.	DESCRIPTION	PART NUMBER	REQ'D NUMBER
13	Hood - Fab Assembly attaching parts, Index 13 Screw, No. 8 x 1/2 T/F Tap * * *	A17616-000 03-1404-09	1 16



77 102

Figure 8-2. Major Assemblies - Air-Cooled Models.

Figure 8-2. Major Assemblies - Air-Cooled Models

INDEX NO.	DESCRIPTION	PART NUMBER	REQ'D NUMBER
	Major Assemblies - Air-Cooled Models * * *	No Number	Ref
1	Brace, Drier * * *	A09388-001	1
2	Drier attaching parts, Index 1 & 2 Screw, No. 10 x 3/8 T/F Tap (to Air-Cooled Condenser shroud) * * *	02-0544-01 03-1404-15	1 1
3	Condenser - Air-Cooled attaching parts, Index 3 Screw, No. 1/4-20 x 1/2 T/C Hex Hd Lockwasher, No. 1/4 External Tooth - Carbon Steel Zinc Plated * * *	18-0396-01 03-0571-00 03-1417-09	1 2 2
4	Bracket Assembly, Fan Motor and Mounting (See Figure 8-4) attaching parts, Index 4 Screw, No. 1/4-20 x 1/2 T/C Hex Hd Lockwasher, No. 1/4 External Tooth - Carbon Steel Zinc Plated * * *	No Number 03-0571-00 03-1417-09	1 2 2
5	Tube Assembly (Water Inlet to Cold Plate) * * *	A27737-002	1
6	Tube Assembly (Water Pump to Carbonator Tank) * * *	A27737-004	1
7	Bracket Assembly - Pump, Motor and (See Figure 8-6) attaching parts, Index 7 Screw, No. 10 x 3/8 T/F Tap * * *	No Number 03-1404-15	1 8

Figure 8-2. Major Assemblies - Air-Cooled Models (cont'd).

INDEX NO.	DESCRIPTION	PART NUMBER	REQ'D NUMBER
8	Compressor	18-3900-01	1
	attaching parts, Index 8	<i>DSF 450</i> 18-4500-00	
	Grommet	18-2200-28	4
	Sleeve, Mounting	18-2200-27	4
	Screw, No. 5/16 - 18 x 1-3/4 Hex Cap	03-1405-40	4
	Lockwasher, No. 5/16 Helical Spring	03-1410-04	4
	Washer, Special	03-1408-29	4

9	Tube Assembly (CO ² Cylinder to Carbonator Tank)	A27737-001	1

10	Tube Assembly (Carbonator Tank to Cold Plate)	A27737-005	1

11	Tank, Carbonator	A27673-001	1
	(See Figure 8-7)		
	attaching parts, Index 11		
	Screw, No. 1/4-20 x 1/2 Hex Cap	03-1405-03	4
	Lockwasher, No. 1/4 External Tooth - Carbon Steel Zinc Plated	03-1417-09	4

12	Insulation, Spout - Left	A15081-000	1
13	Insulation, Spout - Right	A15080-000	1
	attaching parts, Index 12 & 13		
	Strap, Insulation	A08733-000	1
	Clip, Insulation	02-1438-00	1

14	Tube, Potable Water (Reservoir to Freezer Inlet)	13-0674-09	1
15	Tubing, Drain (Reservoir overflow to Drip Pan)	13-0079-03	1
	attaching parts, Index 14 & 15		
	Clamp (Index 14)	02-0694-00	2
	Clamp (Index 15)	02-0535-00	1

Figure 8-2. Major Assemblies - Air-Cooled Models (cont'd).

INDEX NO.	DESCRIPTION	PART NUMBER	REQ'D NUMBER
16	Reservoir	02-2217-01	1
	Valve Assembly, Float (not shown) attaching part, Index 16	02-2217-02	1
	Wing Nut (p/o Reservoir) * * *	No Number	1
17	Bracket, Reservoir attaching parts, Index 17	A21418-001	1
	Screw, No. 1/4-20 x 1/2 T/C Hex Hd	03-0571-00	2
	Lockwasher, No. 1/4- External Tooth - Carbon Steel Zinc Plated * * *	03-1417-09	2
18	Box Assembly, Limit attaching part, Index 18	No Number	1
	Nut, No. 1/4-20 * * *	A14256-000	1
18a	Cover, Limit Box	A14241-000	1
18b	Bushing, Snap	12-1213-10	1
18c	Switch, w/Nut	12-1018-00	1
18d	Box, Limit w/Switch attaching parts, Index 18a to 18d	A14975-000	1
	Screw, No. 4 x 3/8 T/F Tap * * *	03-1404-01	2
19	Plate Assembly, Pressure * * *	A16353-000	1
20	Spout Assembly * * *	A16350-000	1
21	Casting, Spout attaching parts, Index 21	A14269-000	1
	Screw, No. 1/4-20 x 2-1/2 Pan Hd	03-1403-55	2
	Lockwasher, No. 1/4 Internal Tooth - Phosphor Bronze * * *	03-1417-07	2
22	Freezer Assembly (See Figures 8-8 & 8-9)	No Number	1

Figure 8-2. Major Assemblies - Air-Cooled Models (cont'd).

INDEX NO.	DESCRIPTION	PART NUMBER	REQ'D NUMBER
	attaching parts, Index 22		
	Screw, No. 1/4-20 x 1/2 T/C Hex Hd (to upper Chassis)	03-0571-00	2
	Lockwasher, No. 1/4 External Tooth Carbon Steel Zinc Plated (to upper Chassis)	03-1417-09	2
	Washer, Plain (to upper Chassis)	03-1407-05	2
	Screw, No. 5/16-18 x 1-1/4 Hex Cap (to Drivemotor Assembly)	03-1420-03	4
	Washer, Special (to Drivemotor Assembly)	03-1408-03	4

23	Coupling - (DSF-450)	15-0575-01	1
	Coupling - (DSF-650)	15-0573-01	1

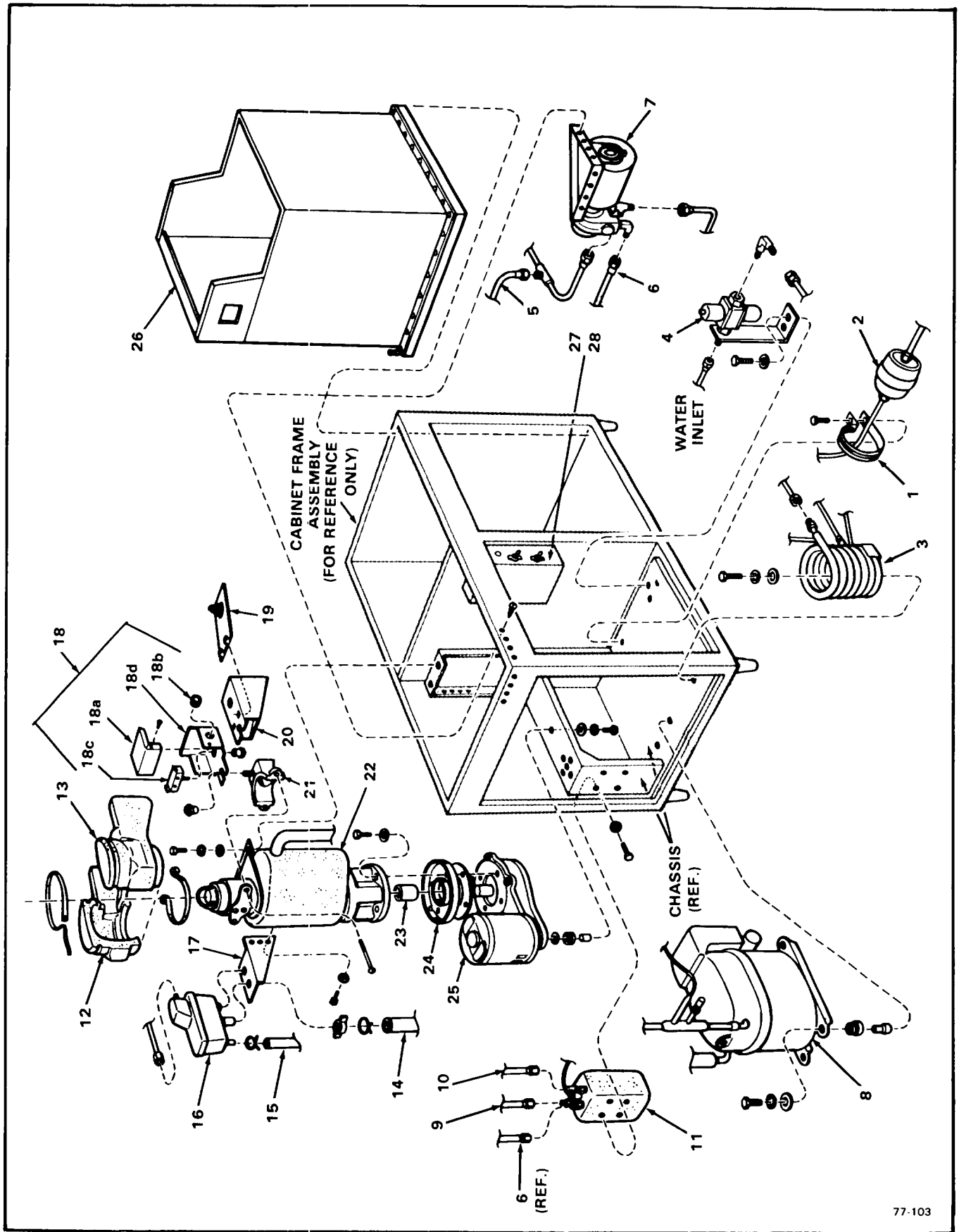
24	Pan, Drip	A24156-001	1

25	Drivemotor Assembly (See Figures 8-10 & 8-11)	No Number	1
	attaching parts, Index 25		
	Gasket - DSF-450	13-0628-000	1
	Gasket - DSF-650	13-0704-000	1
	Grommet	13-0639-00	3
	Spacer	A24925-002	3
	Screw, No. 5/16 - 18 x 1 Hex Cap	03-1405-18	8
	Lockwasher, No. 5/16 Helical Spring	03-1410-04	3
	Washer, Special	03-1408-02	6

26	Bin Assembly, Cold Plate	A27512-001	1

27	Box Assembly, Control (not shown exploded) (See Figures 8-12 & 8-13)	No Number	1

28	Cover, Control Box (not shown separate)	A23143-000	1
	attaching parts, Index 28 to 27		
	Screw, No. 10-24 x 1/4 Pan Hd	03-1403-25	4
	Lockwasher, No. 1/4 External Tooth - Carbon Steel Zinc Plated	03-1417-09	4



77-103

Figure 8-3. Major Assemblies - Water-Cooled Models

Figure 8-3. Major Assemblies - Water-Cooled Models

INDEX NO.	DESCRIPTION	PART NUMBER	REQ'D NUMBER
	Major Assemblies - Water-Cooled Models * * *	No Number	Ref
1	Brace, Drier * * *	A09388-001	1
2	Drier attaching parts, Index 1 & 2	02-0544-01	1
	Screw, No. 10-16 x 1/2 T/C (to Chassis base, Water-Cooled Condenser) * * *	03-1360-01	1
3	Condenser - Water-Cooled attaching parts, Index 3	18-3305-02	
	Screw, No. 1/4-20 x 1/2 T/C Hex Hd	03-0571-00	2
	Lockwasher, No. 1/4 External Tooth Carbon Steel Zinc Plated * * *	03-1417-09	2
4	Regulator Assembly, Water (See Figure 8-5) attaching parts, Index 4	No Number	1
	Screw, No. 1/4-20 x 1/2 T/C Hex Hd	03-0571-00	2
	Lockwasher, No. 1/4 External Tooth Carbon Steel Zinc Plated * * *	03-1417-09	2
5	Tube Assembly (Water Inlet to Cold Plate) * * *	A27737-002	1
6	Tube Assembly (Water Pump to Carbonator Tank) * * *	A27737-004	1
7	Bracket Assembly - Pump, Motor and (See Figure 8-6) attaching parts, Index 7	No Number	1
	Screw, No. 10 x 3/8 T/F Tap * * *	03-1404-15	8

Figure 8-3. Major Assemblies - Water-Cooled Models (cont'd).

INDEX NO.	DESCRIPTION	PART NUMBER	REQ'D NUMBER
8	Compressor attaching parts, Index 8	18-3900-01	1
	Grommet	18-2200-28	4
	Sleeve, Mounting	18-2200-27	4
	Screw, No. 5/16-18 x 1-3/4 Hex Cap	03-1405-40	4
	Lockwasher, No. 5/16 Helical Spring	03-1410-04	4
	Washer, Special	03-1408-29	4
	* * *		
9	Tube Assembly (CO ₂ Cylinder to Carbonator Tank)	A27737-001	1
	* * *		
10	Tube Assembly (Carbonator Tank to Cold Plate)	A27737-005	1
	* * *		
11	Tank, Carbonator (See Figure 8-7) attaching parts, Index 11	A27673-001	1
	Screw, No. 1/4-20 x 1/2 Hex Cap	03-1405-03	4
	Lockwasher, No. 1/4 External Tooth - Carbon Steel Zinc Plated	03-1417-09	4
	* * *		
12	Insulation, Spout - Left	A15081-000	1
13	Insulation, Spout - Right attaching parts, Index 12 & 13	A15080-000	1
	Strap, Insulation	A08733-000	1
	Clip, Insulation	03-1438-00	1
	* * *		
14	Tube, Potable Water (Reservoir to Freezer Inlet)	13-0674-09	1
15	Tubing, Drain (Reservoir overflow to Drip Pan) attaching parts, Index 14 & 15	13-0079-03	1

Figure 8-3. Major Assemblies - Water-Cooled Models (cont'd).

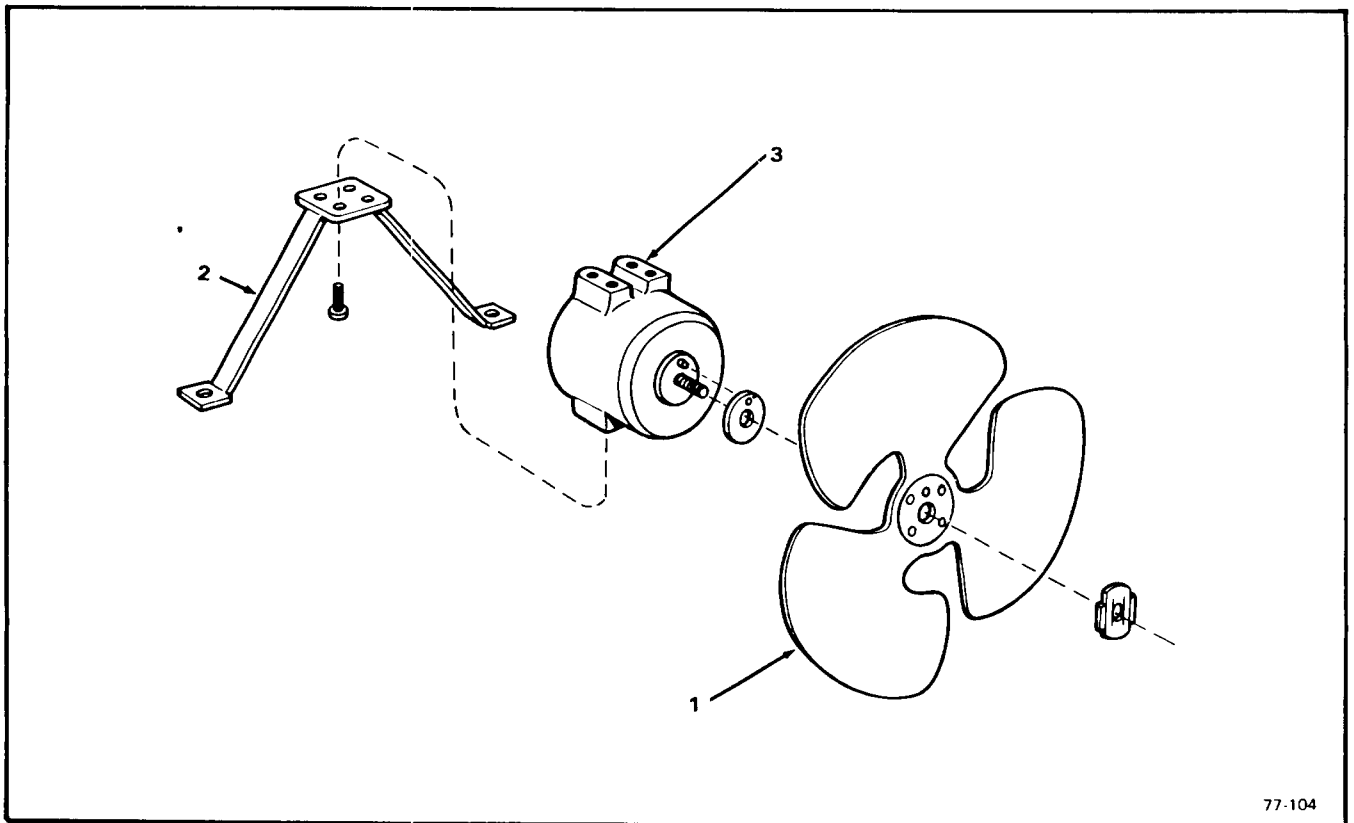
INDEX NO.	DESCRIPTION	PART NUMBER	REQ'D. NUMBER
	Clamp (Index 14)	02-0694-00	2
	Clamp (Index 15)	02-0535-00	1
	* * *		
16	Reservoir	02-2217-01	1
	attaching part, Index 16		
	Wing Nut (p/o Reservoir)	No Number	1
	* * *		
17	Bracket, Reservoir	A21418-001	1
	attaching parts, Index 17		
	Screw, No. 1/4-20 x 1/2 T/C Hex Hd	03-0571-00	2
	Lockwasher, No. 1/4 External Tooth Carbon Steel Zinc Plated	03-1417-09	2
	* * *		
18	Box Assembly, Limit	No Number	1
	attaching part, Index 18		
	Nut, No. 1/4-20	A14256-000	1
	* * *		
18a	Cover, Limit Box	A14241-000	1
18b	Bushing, Snap	12-1213-10	1
18c	Switch w/Nut	12-1018-00	1
18d	Box, Limit w/Switch	A14975-000	1
	attaching parts, Index 18a to 18d		
	Screw, No. 4 x 3/8 T/F Tap	03-1404-01	2
	* * *		
19	Plate Assembly, Pressure	A16353-000	1
	* * *		
20	Spout Assembly	A16350-000	1
	* * *		
21	Casting, Spout	A14269-000	1
	attaching parts, Index 21		

Figure 8-3. Major Assemblies - Water-Cooled Models (cont'd).

INDEX NO.	DESCRIPTION	PART NUMBER	REQ'D NUMBER
	Screw, No. 1/4-20 x 2-1/2 Pan Hd	03-1403-55	2
	Lockwasher, No. 1/4 Internal Tooth - Phosphor Bronze	03-1417-07	2
	* * *		
22	Freezer Assembly (See Figures 8-8 & 8-9) attaching parts, Index 22	No Number	1
	Screw, No. 1/4-20 x 1/2 T/C Hex Hd (to upper Chassis)	03-0571-00	2
	Lockwasher, No. 1/4 External Tooth - Carbon Steel Zinc Plated (to upper Chassis)	03-1417-09	2
	Washer, Plain (to upper Chassis)	03-1407-05	2
	Screw, No. 5/16-18 x 1-1/4 Hex Cap (to Drivemotor Assembly)	03-1420-03	4
	Washer, Special (to Drivemotor Assembly)	03-1408-03	4
	* * *		
23	Coupling - (DSF-450)	15-0575-01	1
	Coupling - (DSF-650)	15-0573-01	1
24	Pan, Drip	A24156-001	1
	* * *		
25	Drivemotor Assembly (See Figures 8-10 & 8-11) attaching parts, Index 25	No Number	1
	Gasket - DSF-450	13-0628-000	1
	Gasket - DSF-650	13-0704-000	1
	Grommet	13-0639-00	3
	Spacer	A24925-002	3
	Screw, No. 5/16-18 x 1 Hex Cap	03-1405-18	3
	Lockwasher, No. 5/16 Helical Spring	03-1410-04	3
	Washer, Special	03-1408-02	6
	* * *		
26	Bin Assembly, Cold Plate	A27512-001	1
	* * *		

Figure 8-3. Major Assemblies - Water-Cooled Models (cont'd).

INDEX NO.	DESCRIPTION	PART NUMBER	REQ'D NUMBER
27	Box Assembly, Control (not shown exploded) (See Figures 8-12 & 8-13) * * *	No Number	1
28	Cover, Control Box (not shown separate) attaching parts, Index 28 to 27 Screw, No. 10-24 x 1/4 Pan Hd Lockwasher, No. 1/4 External Tooth - Carbon Steel Zinc Plated * * *	A23143-000 03-1403-25 03-1417-09	1 4 4

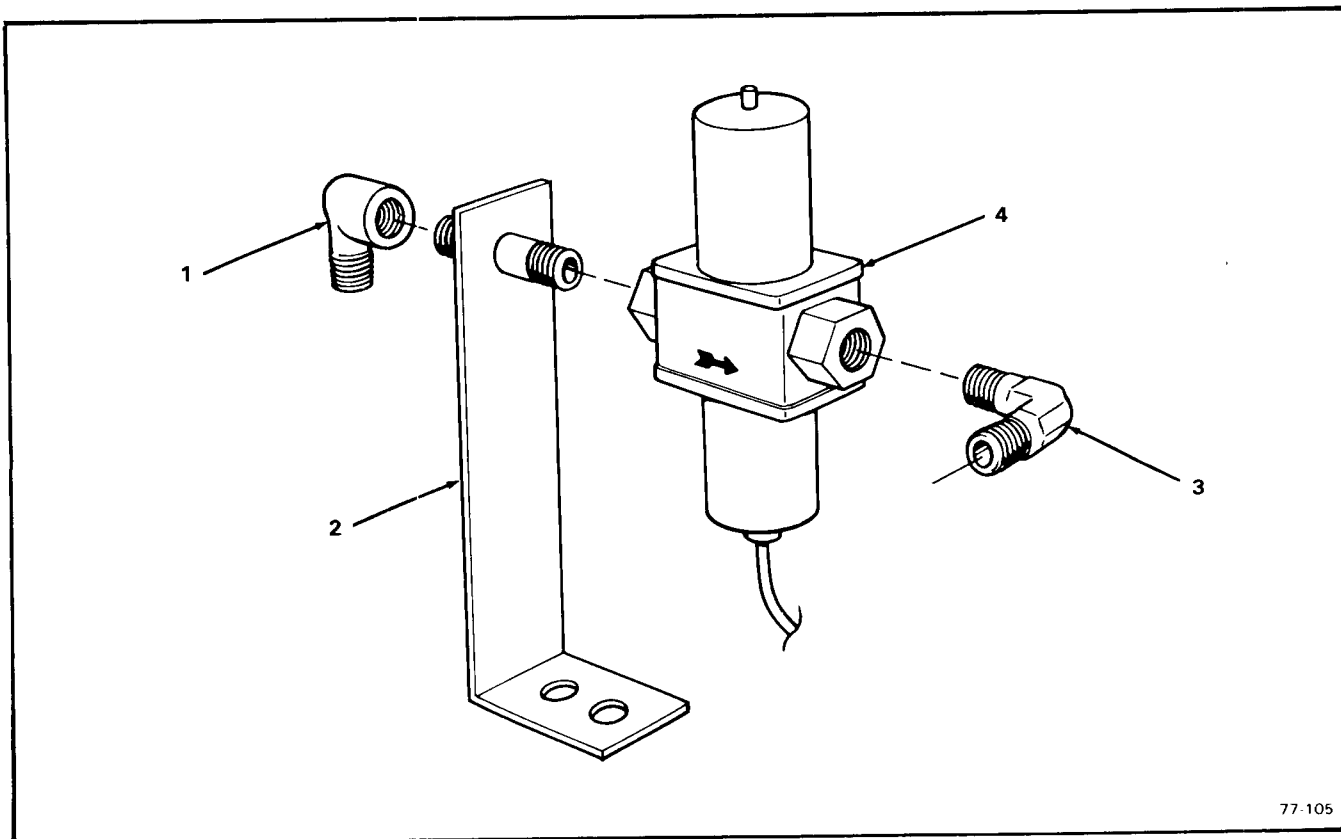


77-104

Figure 8-4. Fan Motor & Mounting Bracket Assembly

Figure 8-4. Fan Motor and Mounting Bracket Assembly

INDEX NO.	DESCRIPTION	PART NUMBER	REQ'D NUMBER
	Fan Motor and Mounting Bracket Assembly (See Figure/Index 8-2/4) for next higher Assembly) * * *	No Number	Ref.
1	Blade, Fan attaching part, Index 1 to 3 Pad, Vibration (p/o Fan Motor) Nut, Fan Mounting (p/o Fan Motor) * * *	18-0363-00 No Number No Number	1 1 1
2	Bracket, Fan Mounting * * *	A25548-001	1
3	Motor, Fan attaching parts, Index 2 to 3 Screw (p/o Fan Motor) * * *	12-1576-01	1

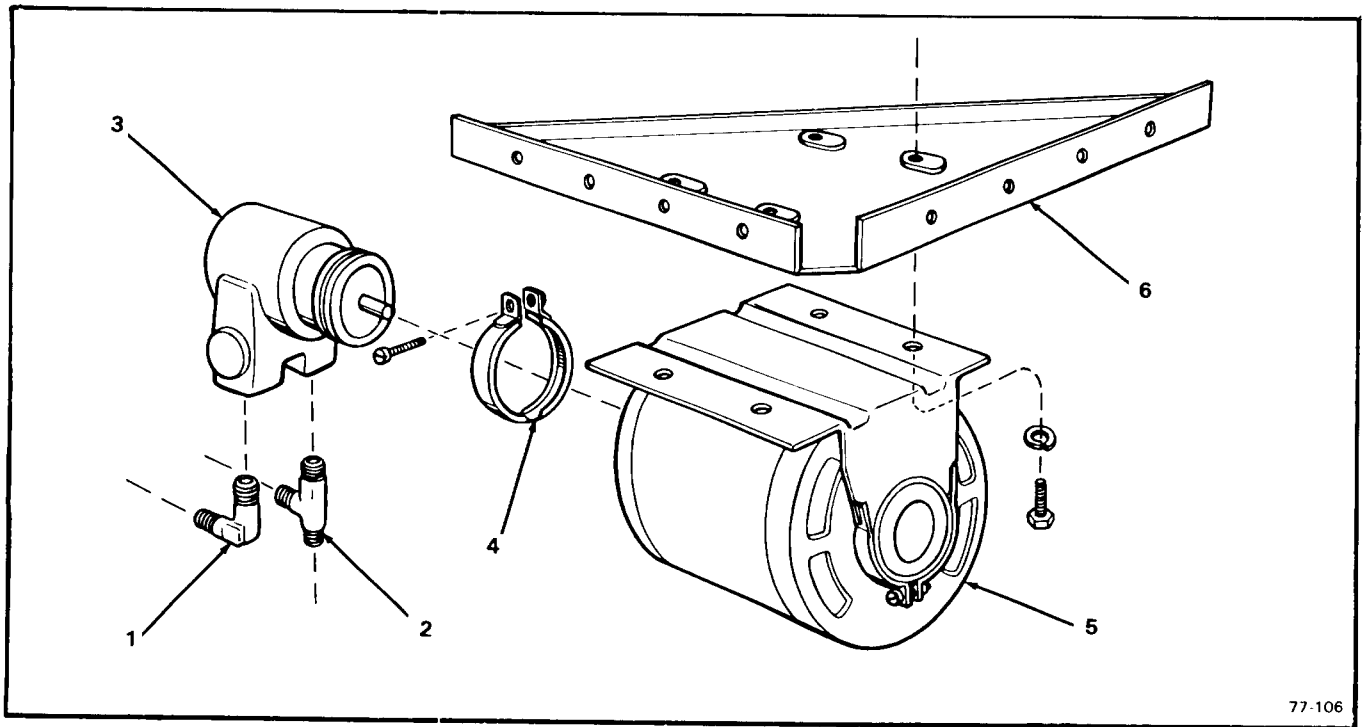


77-105

Figure 8-5. Water Regulator Assembly

Figure 8-5. Water Regulator Assembly

INDEX NO.	DESCRIPTION	PART NUMBER	REQ'D NUMBER
	Water Regulator Assembly (See Figure/Index 8-3/4 for next higher Assembly) * * *	No Number	Ref.
1	Elbow, 3/8 FPT x 3/8 Flare Brass * * *	16-0477-000	1
2	Nipple Assembly, Pipe (w/Bracket) * * *	A15924-000	1
3	Elbow, 3/8 NPT x 3/8 Flare Brass * * *	16-0401-00	1
4	Valve, Water Regulator * * *	11-0198-02	1



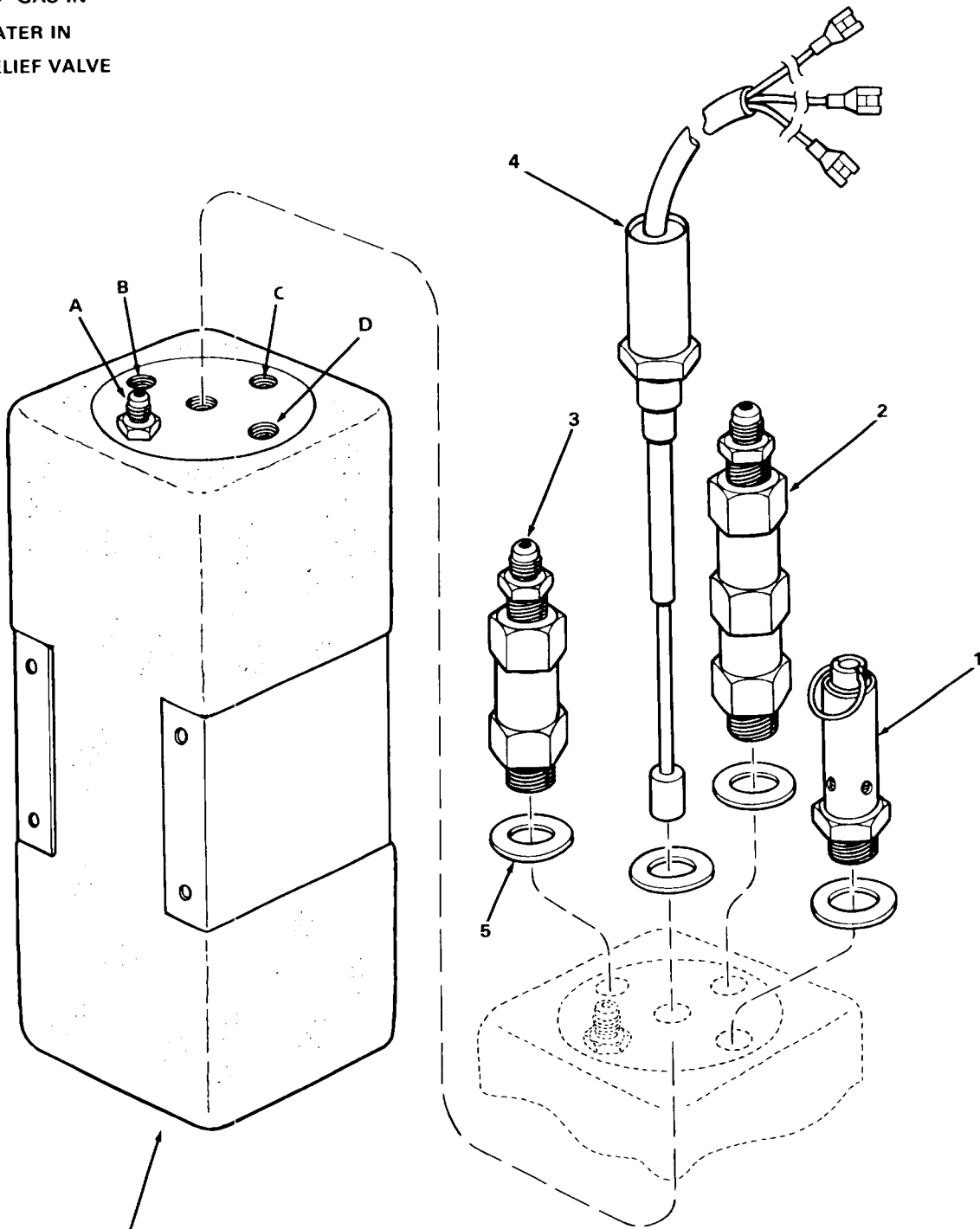
77-106

Figure 8-6. Pump, Motor & Bracket Assembly

Figure 8-6. Pump, Motor and Bracket Assembly

INDEX NO.	DESCRIPTION	PART NUMBER	REQ'D NUMBER
	Pump, Motor and Bracket, Assembly (See Figure/Index 8-2/7 and 8-3/7 for next higher Assembly) * * *	No Number	Ref.
1	Elbow - 3/8 MPS x 1/4 Flare Brass * * *	16-0401-01	1
2	Tee - 3/8 Flare x 3/8 NPT x 3/8 Flare Brass * * *	16-0648-02	2
3	Pump Assembly (V-Band, Ring Mtd.) attaching parts, Index 3 to 5	02-1526-00	1
4	Clamp, Coupling Screw, No. 10-24 x 1-1/4 Fil. Hd (p/o Clamp) * * *	02-1527-00 No Number	1 1
5	Motor (1/4 HP 115/60/1) * * *	12-1339-01	1
6	Bracket Assembly, Pump attaching parts, Index 5 to 6 Screw, No. 1/4-20 x 1/2 Hex Cap Lockwasher, No. 1/4 Helical Spring * * *	A19160-000 03-1405-03 03-1410-03	1 4 4

- A — CARBONATED WATER OUT
- B — CO² GAS IN
- C — WATER IN
- D — RELIEF VALVE



CARBONATOR TANK WITH
BRACKET & POLYURETHANE FOAM
(For Reference only)
Available only as P/N A27673-001

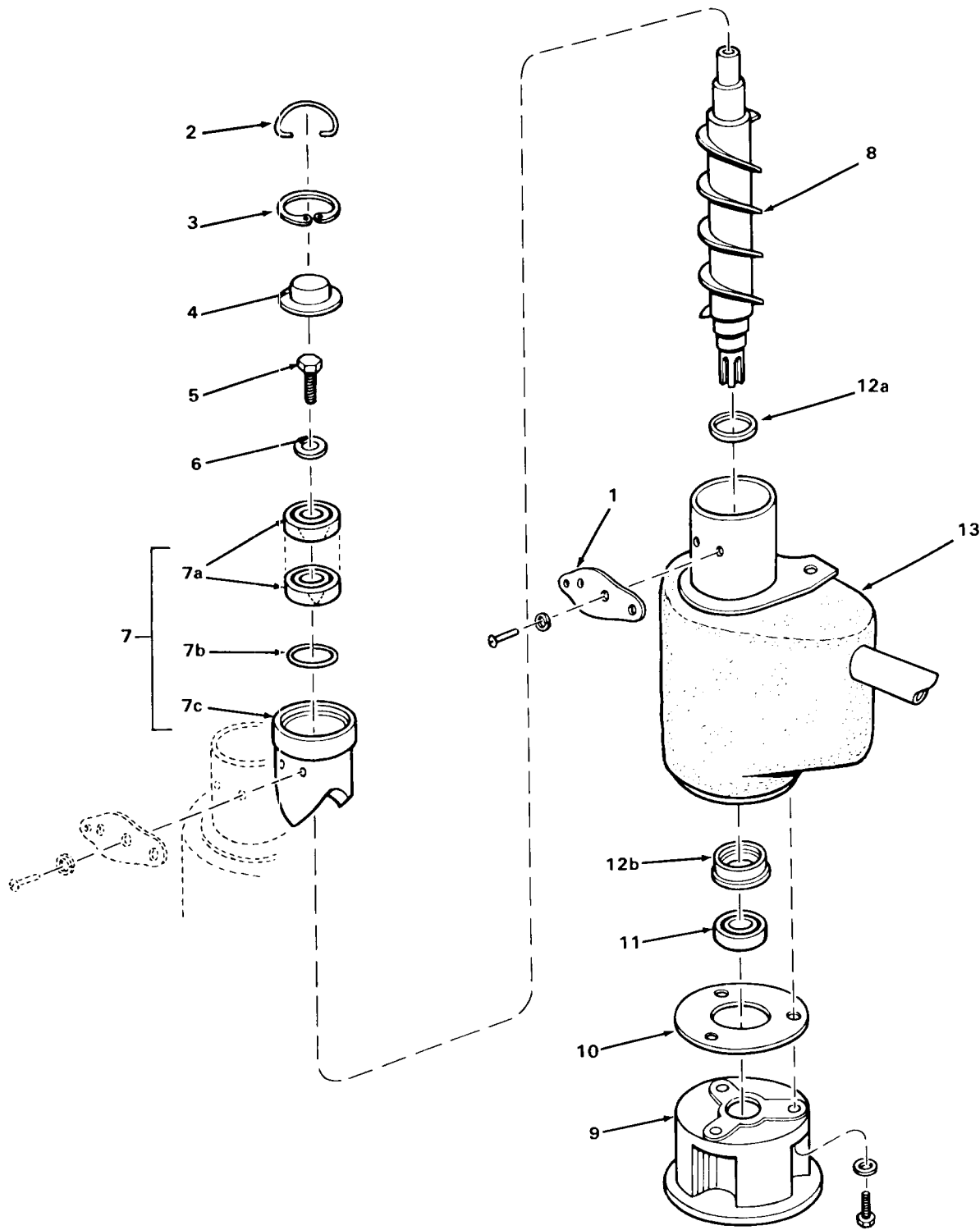
77-107

Figure 8-7. Carbonator Tank Assembly

Figure 8-7. Carbonator Tank Assembly

INDEX NO.	DESCRIPTION	PART NUMBER	REQ'D NUMBER
	Carbonator Tank Assembly (See Figure/Index 8-2/11 and 8-3/11 for next higher Assembly) * * *	A27673-001	Ref
1	Valve, Relief * * *	02-1916-03	1
2	Valve, Double Check (Water) * * *	02-1916-04	1
3	Valve, Gas Check * * *	02-1916-05	1
4	Electrode * * *	02-1916-07	1
5	Gasket (Used with Index 1, 2, 3, & 4) * * *	02-1916-02	4

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77-108

Figure 8-8. Freezer Assembly - DSF-450

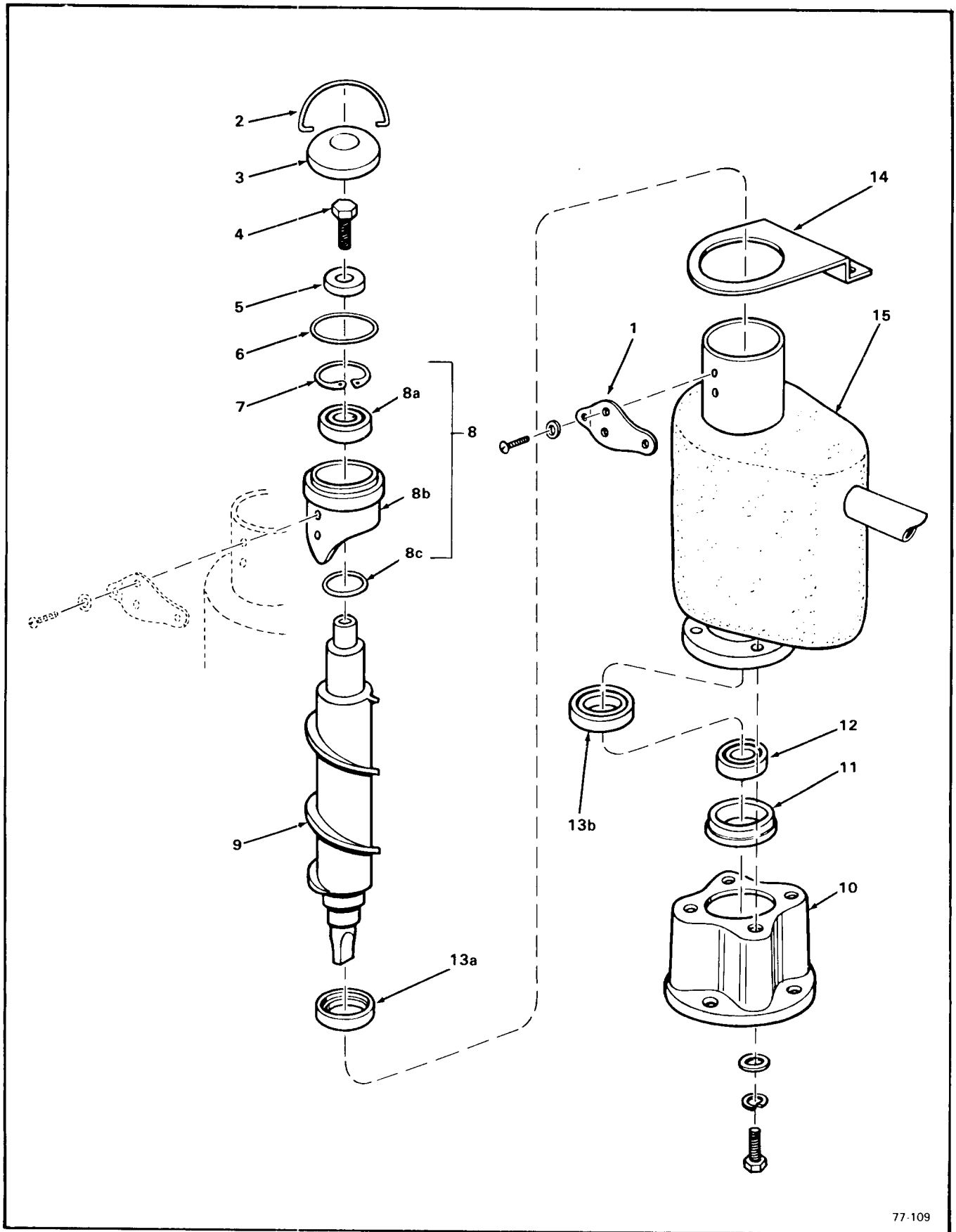
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Figure 8-8. Freezer Assembly - DSF-450

INDEX NO.	DESCRIPTION	PART NUMBER	REQ'D NUMBER
	Freezer Assembly - DSF-450 (See Figure/Index 8-2/22 and 8-3/22 for next higher Assembly) * * *	No Number	Ref
1	Plate, Casting attaching parts, Index 1, 7 & 14 Screw, No. 1/4-20 x 1/2 Pan Hd Lockwasher, No. 1/4 Helical Spring * * *	A18430-000 03-1403-48 03-1410-03	1 2 2
2	Hook, Cap * * *	A08162-000	1
3	Ring, Lock * * *	03-1558-03	1
4	Cap * * *	A07701-000	1
5	Screw, Cap	03-0758-00	1
6	Washer * * *	A07699-000	1
7	Bearing Assembly, Breaker and	A14678-001	1
7a	Bearing (matched set of two)	02-1412-00	1
7b	O-Ring	13-0617-16	1
7c	Breaker, Ice (Order P/N A14678-001) * * *	No Number	Ref.
8	Auger * * *	02-1538-00	1
9	Adaptor attaching parts, Index 9, 10, 11, 12 to 13 Screw, No. 5/16-18 x 7/8 Hex Cap Lockwasher, No. 5/16 Helical Spring * * *	08-0595-01 03-1405-42 03-1410-04	1 3 3

Figure 8-8. Freezer Assembly - DSF-450 (cont'd).

INDEX NO.	DESCRIPTION	PART NUMBER	REQ'D NUMBER
10	Gasket * * *	03-1505-00	1
11	Bearing * * *	02-0417-00	1
12	Seal, Water	A18945-000	1
12a	Seal, Upper (Fits on Index 8)	No Number	Ref
12b	Seal, Lower (Fits on top of Index 11) * * *	No Number	Ref
13	Freezer - (Repair Assembly) * * *	A27827-020	1

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77-109

Figure 8-9. Freezer Assembly - DSF-650

Figure 8-9. Freezer Assembly - DSF-650

INDEX NO.	DESCRIPTION	PART NUMBER	REQ'D NUMBER
	Freezer Assembly - DSF-650 (See Figure/Index 8-2/22 and 8-3/22 for next higher Assembly) * * *	No Number	Ref.
1	Plate, Spout attaching parts, Index 1, 9 & 15	A18431-001	1
	Screw, No. 1/4-20 x 1/2 Pan Hd	03-1403-48	2
	Lockwasher, No. 1/4 Helical Spring * * *	03-1410-03	2
2	Hook * * *	A08582-000	1
3	Cap * * *	A08581-000	1
4	Screw, No. 1/2-20 x 1 Hex Cap	03-1405-36	1
5	Washer, Brass 17/32 I.D. x 1-5/8 O.D. x 5/16 * * *	A06273-000	1
6	O-Ring (Fits into outside groove, Index 8) * * *	13-0617-20	1
7	Ring, Internal Retaining * * *	03-1558-04	1
8	Breaker Assembly, Ice	A26704-001	1
8a	Bearing (Top)	02-0646-00	1
8b	O-Ring	13-0617-15	1
8c	Breaker, Ice (Order P/N A26704-001) * * *	No Number	Ref.
9	Auger * * *	02-0617-00	1
10	Adaptor attaching parts, Index 10, 11, 12, 13 to 15	02-1620-00	1
	Screw, No. 5/16-18 x 1-1/4 Hex Cap	03-1405-41	4

✕

Figure 8-9. Freezer Assembly - DSF-650 (cont'd).

INDEX NO.	DESCRIPTION	PART NUMBER	REQ'D NUMBER
	Lockwasher, No. 5/16 Helical Spring	03-1410-04	4
	Washer, Special	03-1408-03	4
	* * *		
11	Retainer, Bearing	A10591-000	1
	* * *		
12	Bearing (Lower)	02-0619-00	1
	* * *		
13	Seal, Water	A22569-000	2
13a	Seal, Upper (Fits on Index 9)	No Number	Ref
13b	Seal, Lower (Fits on top of Index 11 & 12)	No Number	Ref
	* * *		
14	Support, Freezer	A20987-000	1
	* * *		
15	Freezer - (Repair Assembly)	A27659-020	1
	* * *		

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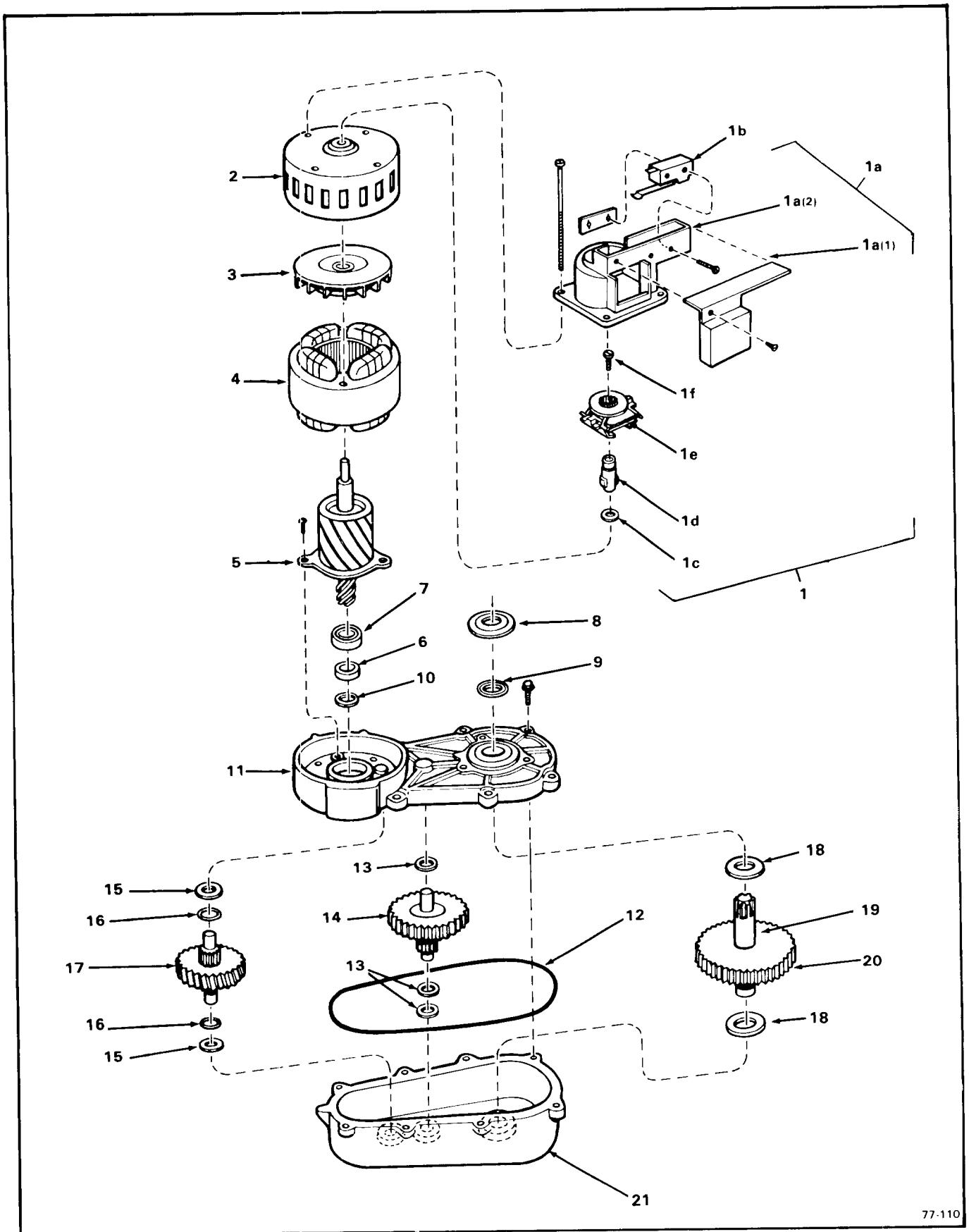


Figure 8-10. Drivemotor Assembly - DSF-450 1/10 H.P.

77-110

Figure 8-10. Drivemotor Assembly - DSF-450 (cont'd).

INDEX NO.	DESCRIPTION	PART NUMBER	REQ'D NUMBER
	Drivemotor Assembly - DSF-450 (1-10 H.P.) (See Figure/Index 8-2/25 and 8-3/25 for next higher Assembly) * * *	A25995-021	Ref.
1	Kit, Centrifugal Switch attaching parts, Index 1, 2, & 4 to 11 Screw, Motor - No. 10-32 x 5-3/32 Pan Hd * * *	A27894-001	1
1a	Kit, Centrifugal Switch Housing	A27895-001	1
1a(1)	Cover, Switch Case	No Number	1
1a(2)	Case, Switch Mounting attaching parts, Index 1a(1) to 1a(2) Screw, No. 6-32 x 1 Pan Hd * * *	No Number	1
1b	Switch attaching parts, Index 1b to 1a(2) Screw, No. 6-32 x 1 Pan Hd Nut, Speed * * *	12-2059-01	1
1c	Washer, Special * * *	03-1403-09	2
1d	Extension, Shaft	03-0886-00	2
1e	Actuator, Centrifugal attaching parts, Index 1d to 1e	03-1408-06	1
1f	Screw, No. 10-32 x 1-5/8 Pan Hd * * *	02-2371-00	1
2	Housing Assembly, Motor ✓ * * *	12-2060-01	1
3	Fan, Cooling ✓	A17047- 000 ⁶⁰²	1
		A16915-000	1

Figure 8-10. Drivemotor Assembly - DSF-450 (cont'd).

INDEX NO.	DESCRIPTION	PART NUMBER	REQ'D NUMBER
	attaching parts, Index 3 to 4		
	Setscrew * * *	03-1246-00	2
4	Stator Assembly (115/60/1) * * *	12-1400-01	1
5	Kit, Rotor and First Gear (Includes Bearing, Index 7 and Washer, Index 16)	A26454-001	1
6	Ring, Slinger	13-0617-04	1
7	Bearing, Rotor attaching parts, Index 5, 6, 7 to 10	02-1501-00	1
	Screw, No. 10-32 x 5/16 Machine (W/LW) * * *	03-1245-00	2
8	Shed, Water * * *	13-0709-01	1
9	Seal, Grease * * *	02-1503-00	1
10	Seal, Grease * * *	02-1504-00	1
11	Kit, Gear Case Cover (Includes Grease Seals, Index 9 and 10) attaching part, Index 11 thru 20 to 21)	A16920-021	1
	Screw, No. 1/4-20 x 5/8 Flange	03-1251-00	6
	Screw, No. 1/4-20 x 3/4 Flange * * *	03-1252-00	2
12	O-Ring * * *	02-1505-00	1
13	Washer, Special * * *	03-1408-06	1
14	Third Pinion Assembly, Second Gear and * * *	12-1521-00	1

Figure 8-10. Drivemotor Assembly - DSF-450 (cont'd).

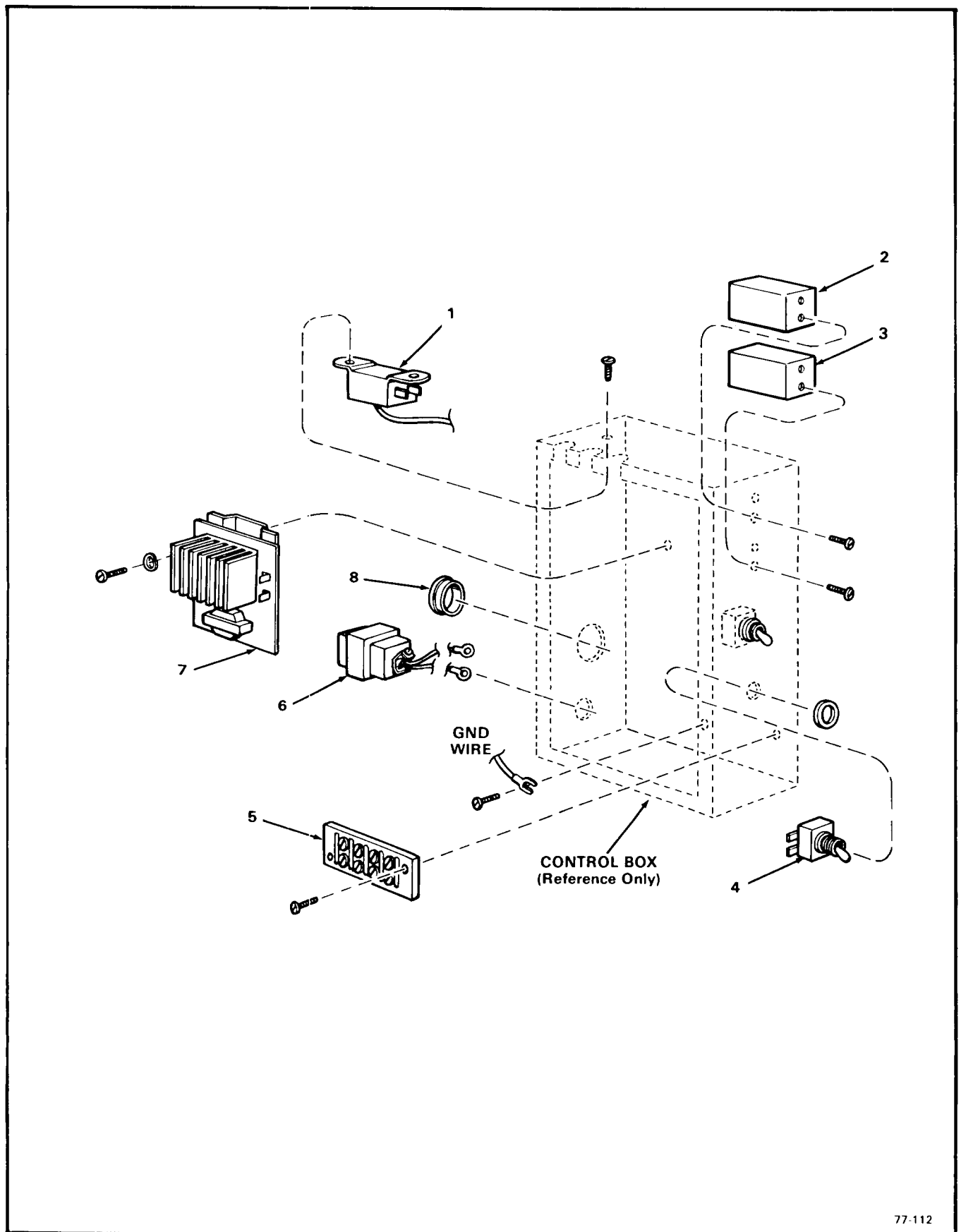
INDEX NO.	DESCRIPTION	PART NUMBER	PART NUMBER
15	Washer, Special * * *	03-1408-20	2
16	Washer, Special * * *	03-1408-19	2
17	Second Pinion Assembly, First Gear and * * *	02-2224-01	1
18	Washer, Special * * *	03-1408-21	2
19	Key * * *	03-1475-01	1
20	Shaft Assembly, Gear and Output * * *	A26650-001	1
21	Kit, Gear Case (Includes Index 9 thru 13, 16 and gear lube) * * *	A24184-001	1

Figure 8-11. Drivemotor Assembly - DSF-650

INDEX NO.	DESCRIPTION	PART NUMBER	REQ'D NUMBER
	Drivemotor Assembly - DSF-650 (1/4 H.P.) (See Figure/Index 8-2/25 and 8-3/25 for next higher Assembly * * *	A22750-021	Ref
1	Motor, Drive 115/60/1 (1/4 H.P. Split Phase) attaching part, Index 1 to 5 Screw, Motor (p/o Index 1) * * *	A26455-001	1
		No Number	4
2	Seal, Oil * * *	02-1606-00	1
3	Shed, Water * * *	13-0709-02	1
4	Seal, Oil * * *	02-1607-00	1
5	Cover Assembly, Gear Case attaching parts, Index 5 to 17 Screw, No 5/16 x 1 Flange * * *	A22200-000	1
6	O-Ring * * *	03-1251-01	6
		A26103-001	1
7	Race, Thrust * * *	02-1681-00	2
8	Ring, Retaining * * * *	03-1363-00	1
9	Race, Thrust * * *	02-1679-00	1
10	Bearing * * *	02-1680-00	1
11	Shaft, Output	02-1652-00	1

Figure 8-11. Drivemotor Assembly DSF-650 (cont'd).

INDEX NO.	DESCRIPTION	PART NUMBER	REQ'D NUMBER
	attaching part, Index 11 to 13		
12	Key (No. 91 Woodruff, Nickel Steel) * * *	03-1364-00	1
13	Gear, Output * * *	02-1653-00	1
15	Washer, Special (.515 I.D. x 875 O.D. x .028 Steel) * * *	03-1408-24	9
15	Second Pinion Assembly, First Gear and * * *	02-1603-00	1
16	Third Pinion Assembly, Second Gear and * * *	02-1604-00	1
17	Case Assembly, Gear * * *	A22199-000	1

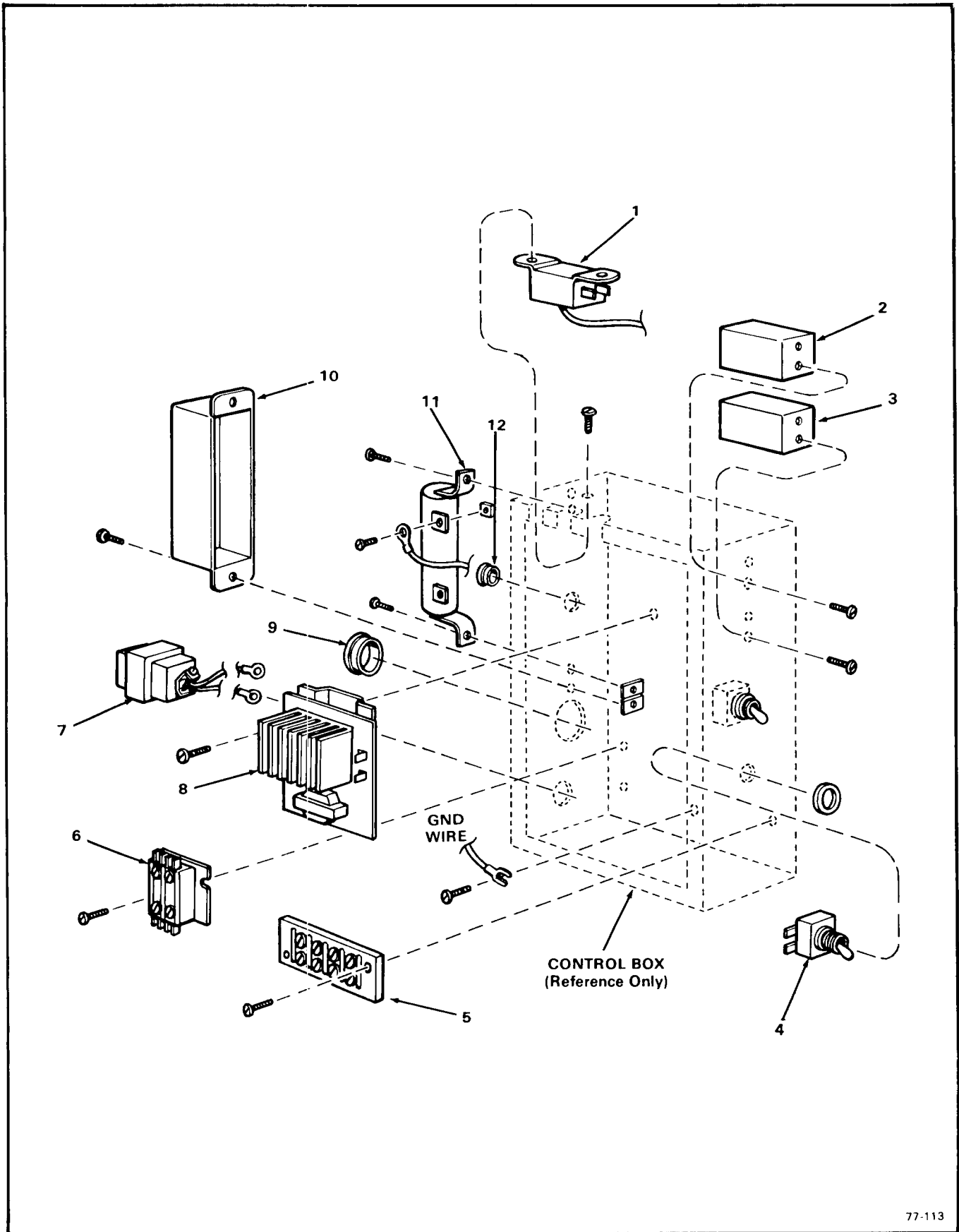


77-112

Figure 8-12. Control Box Assembly - DSF-450

Figure 8-12. Control Box Assembly - DSF-450

INDEX NO.	DESCRIPTION	PART NUMBER	REQ'D NUMBER
	Control Box Assembly - DSF-450 (See Figure/Index 8-2/27 and 8-3/27 for next higher Assembly) * * *	No Number	1
1	Control, Temperature attaching parts, Index 1 Screw, No. 8-32 x 3/8 Pan Hd * * *	11-0354-00 13-1403-17	1 2
2	Control, Lo-Pressure attaching parts, Index 2 Screw, No. 6-32 x 1/4 Pan Hd * * *	11-0358-01 03-1403-02	1 2
3	Control, Hi-Pressure (Water-Cooled Model) attaching parts, Index Screw, No. 6-32 x 1/4 Pan Hd * * *	11-0388-02 03-1403-02	1 2
4	Switch, Toggle * * *	12-0426-01	2
5	Board, Terminal attaching parts, Index 5 Screw, No. 10-24 x 3/4 Pan Hd * * *	12-0813-01 03-1403-31	1 2
6	Transformer * * *	12-1809-00	1
7	Control, Water Level attaching parts, Index 7 Screw, No. 8-32 x 3/8 Pan Hd Lockwasher, No. 8 Internal Tooth - Phosphor Bronze * * *	11-0384-01 03-1403-17 03-1417-02	1 1 1
8	Bushing, Snap * * *	12-1213-12	1



77-113

Figure 8-13. Control Box Assembly - DSF-650

Figure 8-13. Control Box Assembly - DSF-650

INDEX NO.	DESCRIPTION	PART NUMBER	REQ'D NUMBER
	Control Box Assembly - DSF-650 (See Figure/Index 8-2/27 and 8-3/27 for next higher Assembly) * * *	No Number	1
1	Control, Temperature attaching parts, Index 1 Screw, No. 8-32 x 3/8 Pan Hd * * *	11-0354-00 03-1403-17	1 2
2	Control, Lo-Pressure attaching parts, Index 2 Screw, No. 6-32 x 1/4 Pan Hd * * *	11-0358-01 03-1403-02	1 2
3	Control, Fan Pressure (Air-Cooled Model) Control, Hi-Pressure (Water-Cooled Model) attaching parts, Index 3 Screw, No. 6-32 x 1/4 Pan Hd * * *	11-0362-01 11-0388-02 03-1403-02	1 1 2
4	Switch, Toggle * * *	12-0426-01	2
5	Board, Terminal attaching parts, Index 5 Screw, No. 10-24 x 3/4 Pan Hd * * *	12-0813-01 03-1403-31	1 2
6	Contactor attaching parts, Index 6 Screw, No. 8-32 x 1/2 Pan Hd * * *	12-2041-01 03-1403-18	1 2
7	Transformer * * *	12-1809-00	1

Figure 8-13. Control Box Assembly - DSF-650 (cont'd).

INDEX NO.	DESCRIPTION	PART NUMBER	PART NUMBER
8	Control, Water Level attaching parts, Index 8 Screw, No. 8-32 x 3/8 Pan Hd Lockwasher, No. 8 Internal Tooth - Phosphor Bronze * * *	11-0384-01 03-1403-17 03-1417-02	1 1 1
9	Bushing, Snap * * *	12-1213-12	1
10	Cover, Resistor (Air-Cooled Model) attaching parts, Index 9 Screw No. 8 x 3/8 T/F Tap	A14384-000 03-1404-08	1 2
11	Resistor - 30 watt (Air-Cooled Model) attaching parts, Index 11 Screw, No. 8-32 x 3/8 Pan Hd Speed Nut, No. 8-32 attaching parts, electrical leads to Index 11 terminals Screw, No. 6-32 x 3/8 Pan Hd Speed Nut, No. 6-32 * * *	12-0474-00 03-1403-17 03-1421-04 03-1403-04 03-1421-02	1 2 2 2 2
12	Bushing, Snap * * *	12-1213-04	1

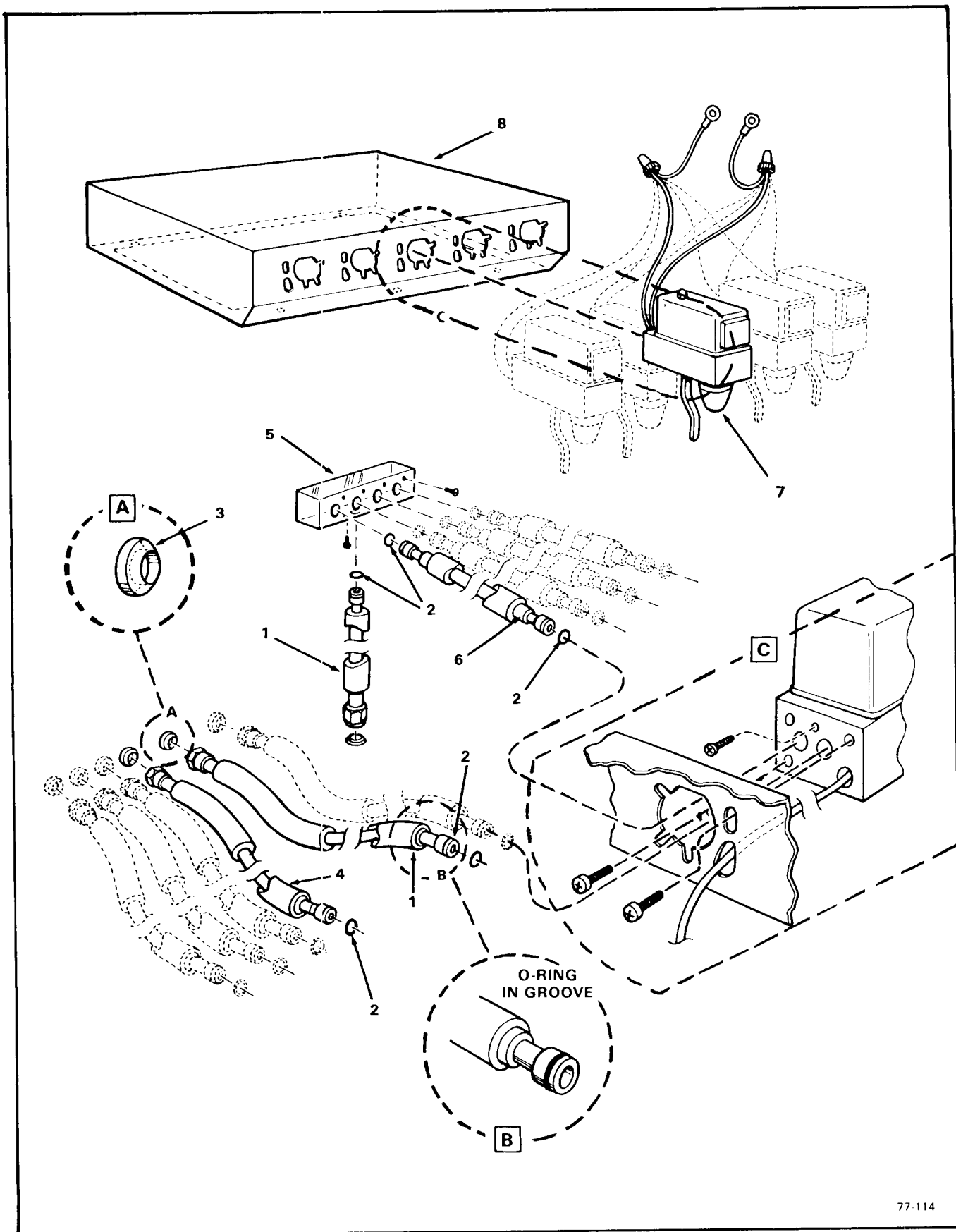
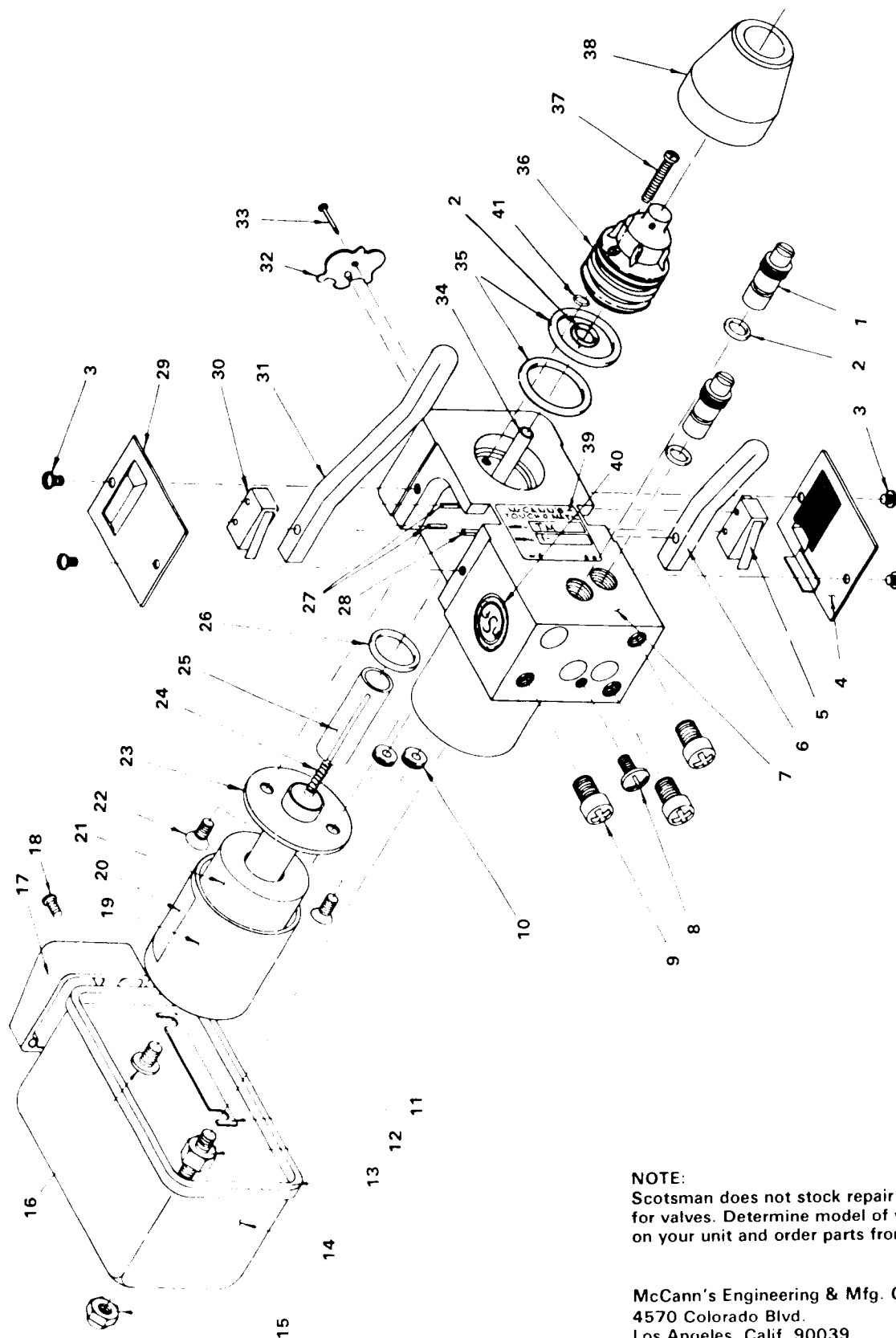


Figure 8-14. Dispensing Tower Assembly

77-114

Figure 8-14. Dispensing Tower Assembly

INDEX NO.	DESCRIPTION	PART NUMBER	REQ'D NUMBER
	Dispensing Tower Assembly See Figure/Index 8-1/12 for next higher Assembly) * * *	A27765-001	Ref
1	Tube Assembly (54-inches long) * * *	A27739-003	2
2	O-Ring * * *	13-0617-32	15
3	Washer * * *	02-1249-00	18
4	Tube Assembly (48-inches long) * * *	A27739-002	5
5	Manifold * * *	02-2417-01	1
6	Tube Assembly (10-inches long) * * *	A27740-001	4
7	Faucet - Single Lever, Carbonated Flavor (See Figure 8-15) (Faucet No. 1, No. 2, No. 3)	02-1205-16	3
	Faucet - Two Levers, Carbonated Flavor & Soda (Faucet No. 4)	02-1205-17	1
	Faucet - Two Levers, Non-Carbonated Flavor & Plain Water (Faucet No. 5)	02-1205-19	1
	attaching parts, Index 7 to 8		
	Screw, Faucet Mounting (p/o Index 7) * * *	No Number	10
8	Top Assembly, Left * * *	A17827-001	1



NOTE:
Scotsman does not stock repair parts for valves. Determine model of valve on your unit and order parts from:

McCann's Engineering & Mfg. Co.
4570 Colorado Blvd.
Los Angeles, Calif. 90039

Figure 8-15. Touch-O-Matic™ Faucet Assembly

Figure 8-15. Touch-O-Matic^{T.M.} Faucet Assembly

INDEX NO.	DESCRIPTION	PART NUMBER	REQ'D NUMBER
	Touch-O-Matic ^{T.M.} Faucet Assembly (See Figure/Index 8-14/7 for next higher Assembly) * * *	No Number	Ref.
1	Stem, Metering	1	
2	O-Ring, Metering Stem	2	
3	Screw, Side Plate	3	
4	Plate, Right Side	152	
5	Switch Assembly (3 Wires)	82	
6	Lever, Short	160	
7	Block, 20-1000	01-0001	
	Block, 20-2000	01-0002	
	Block, 20-4000	01-0003	
	Block, 20-1100 - 20-4100	01-0004	
	Block, 20-2100 - 20-3100	01-0005	
8	Screw, Inlet Retainer	5	
9	Screw, Faucet Mounting	6	
10	Grommet, Coil Housing	7	
11	Strap, Grounding	8	
	Lockwasher in place of Part No. 8 on 12 V.D.C. and 20-4000	1508	
12	Stud, Cover Mounting Short	9	
13	Cover, Gasket	10	
14	Cover (With Medallion Holes)	11	
15	Nut, Cover Retainer	13	
16	Screw, Coil Housing	14	
17	Medallion (Specify Flavor)	15	
18	Screw, Medallion Retainer	16	
19	Cover, Coil	17	
20	Label (Specify Voltage) Coil	20	

Figure 8-15. Touch-O-Matic^{T.M.} Faucet Assembly (cont'd).

INDEX NO.	DESCRIPTION	PART NUMBER	REQ'D NUMBER
21	Coil (115 V.A.C.)	22	
	Coil (12 V.A.C.)	24	
	Coil (12 V.D.C.)	29	
	Coil (24 V.A.C.)	23	
22	Screw, Plunger Housing Retainer	31	
23	Housing, Plunger	32	
24	Spring, Plunger	38	
25	Plunger, Touch-O-Matic ^{T.M.}	39	
26	O-Ring, Plunger Housing	40	
27	Roll Pin, Switch	41	
28	Roll Pin, Lever	42	
29	Plate, Left Side	151	
30	Switch Assembly, 2 Wires, Standard	137	
	Switch Assembly, 2 Wires, Special	138	
31	Lever, Long	159	
32	Crest, McCANN'S	49	
33	Pin, Crest Retainer	50	
34	Tube, Syrup	09-0017	
	Tube, Jet	89	
35	Diffuser, O-Ring	52	
36	Diffuser	09-0018	
37	Screw, Diffuser Retainer	54	
38	Spout, Pouring, Red	09-0013	
38	Spout, Pouring, Black	09-0015	
38	Spout, Pouring, Clear	09-0014	
39	Gasket	149	