

Comet Glycol Cooling Unit, 0622

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Installation/Service Manual

UCGR GLYCOL COOLING UNIT



Part No. 569000330
January 10, 2001

THIS DOCUMENT CONTAINS IMPORTANT INFORMATION

This Manual must be read and understood before installing or operating this equipment

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SAFETY INFORMATION

Recognize Safety Information

This is the safety-alert symbol. When you see this symbol on our machine or in this manual, be alert to the potentially of personal injury.

Follow recommended precautions and safe operating practices.



Understand Signal Words

A signal word - **DANGER**, **WARNING**, OR **CAUTION** is used with the safety-alert symbol. **DANGER** identifies the most serious hazards.

Safety signs with signal word **DANGER** or **WARNING** are typically near specific hazards.

General precautions are listed on **CAUTION** safety signs. **CAUTION** also calls attention to safety messages in this manual.



Follow Safety Instructions

Carefully read all safety messages in this manual and on your machine safety signs. Keep safety signs in good condition. Replace missing or damaged safety signs. Learn how to operate the machine and how to use the controls properly. Do not let anyone operate the machine without instructions. Keep your machine in proper working condition. Unauthorized modifications to the machine may impair function and/or safety and affect the machine life.

CO₂ (Carbon Dioxide) Warning

CO₂ Displaces Oxygen. Strict Attention *must* be observed in the prevention of CO₂ (carbon dioxide) gas leaks in the entire CO₂ and soft drink system. If a CO₂ gas leak is suspected, particularly in a small area, *immediately* ventilate the contaminated area before attempting to repair the leak. Personnel exposed to high concentration of CO₂ gas will experience tremors which are followed rapidly by loss of consciousness and suffocation.

Shipping, Storing, Or Relocating Unit

CAUTION: Before shipping, storing, or relocating this Unit, the syrup systems must be sanitized and all sanitizing solution *must* be purged from the syrup systems. All water *must* also be purged from the plain and carbonated water systems. A freezing ambient temperature will cause residual water remaining inside the Unit to freeze resulting in damage to internal components of the Unit.

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GENERAL INFORMATION

IMPORTANT: To the user of this manual - This manual is a guide for installing, operating, and maintaining this system. Refer to Table of Contents for page location of detailed information pertaining to questions that arise during installation, operation, service and maintenance, or troubleshooting this Cooling Unit.

GENERAL DESCRIPTION

This section gives the description and theory of operation for the UCGR Glycol Cooling Unit (hereafter referred to as a Cooling Unit).

COOLING UNIT DESCRIPTION

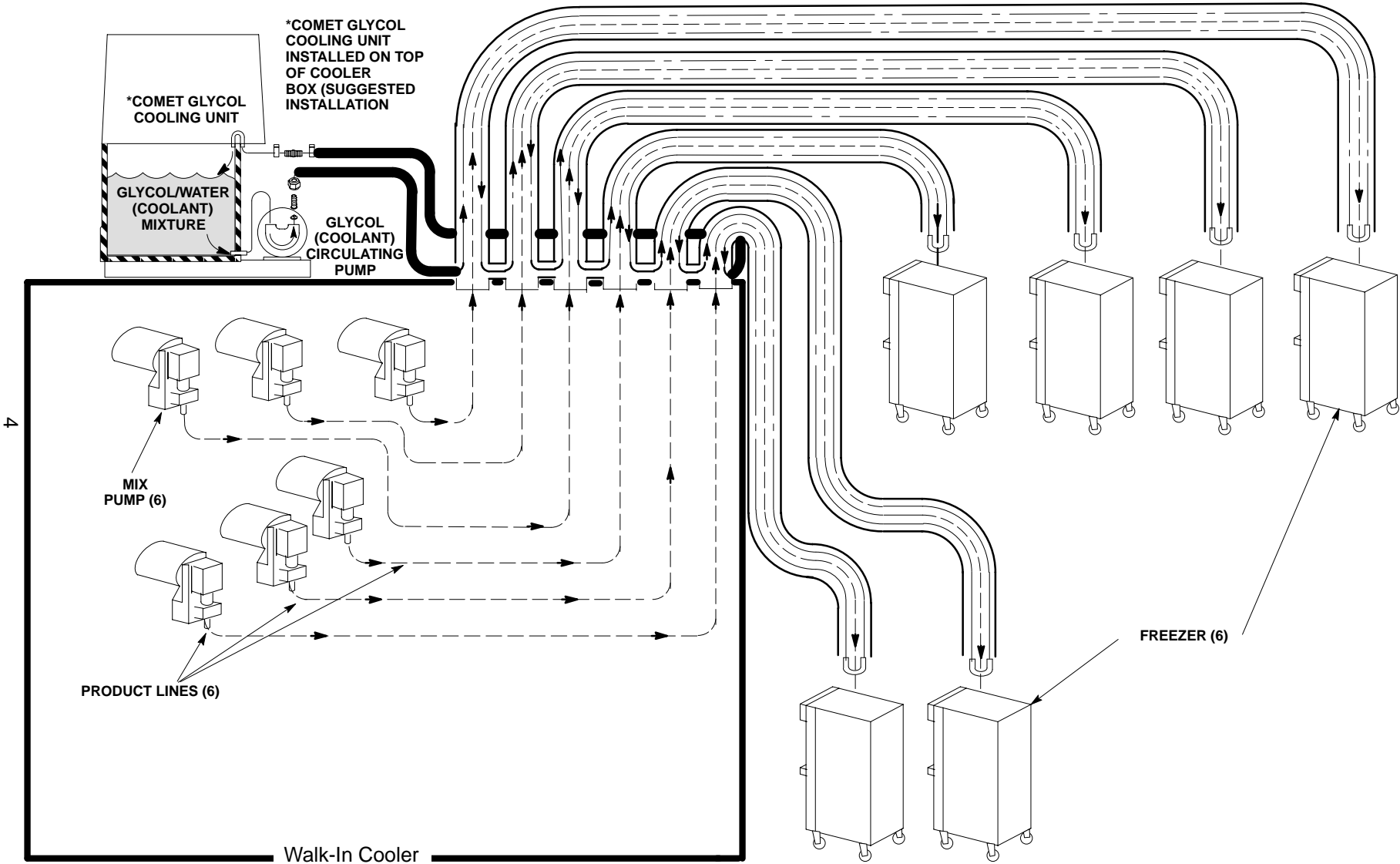
The UCGR Glycol Cooling Unit consists basically of a refrigeration system with a 1/2 horsepower compressor, a refrigerated glycol holding tank to cool the glycol/water solution, and a glycol circulating pump to circulate cold glycol/water solution (coolant) out and back through the dairy products system.

Table 1. Design Data	
Cooling Unit Model Number	111815
Overall Dimensions:	
Width	16-1/4 inches
Height	27-5/8 inches
Depth	24-1/2 inches
Weights: (approximate)	
Shipping Weight	106 Pounds
Dry Weight	102 Pounds
Capacity:	
Glycol Tank	10 gallons
Refrigeration System:	
Refrigerant Type and Charge	See Cooling Unit Nameplate
Ambient Operating Temperature	40° F to 100° F
Electrical Requirements:	
Operating Voltage	115VAC, 60Hz
Operating Current	12 Amps

THEORY OF OPERATION

Food grade propylene glycol antifreeze/water solution (coolant) is cooled by the Cooling Unit and is circulated through the glycol lines to each freezer. The glycol lines and the dairy product mix lines are covered with insulation and the dairy product mix lines are kept cool by the glycol lines. Direction of glycol (coolant) flow is from the Cooling Unit glycol tank, through glycol circulating pump, out through glycol feed line to each freezer, and back through glycol return line to the Cooling Unit.

NOTE: FOR GLYCOL CONNECTION DETAIL SEE FIGURE B



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LINE LEGEND

GLYCOL —————
 DAIRY PRODUCT - - - - -

Dairy Product Cooling System

*COMET GLYCOL COOLING UNIT
INSTALLED ON TOP OF COOLER
BOX (SUGGESTED INSTALLATION)

*COMET GLYCOL
COOLING UNIT

GLYCOL/WATER
(COOLANT)
MIXTURE

To Freezer

Trunk Lines to Freezers

GLYCOL
(COOLANT)
CIRCULATING
PUMP

Trunk Line

Product Lines

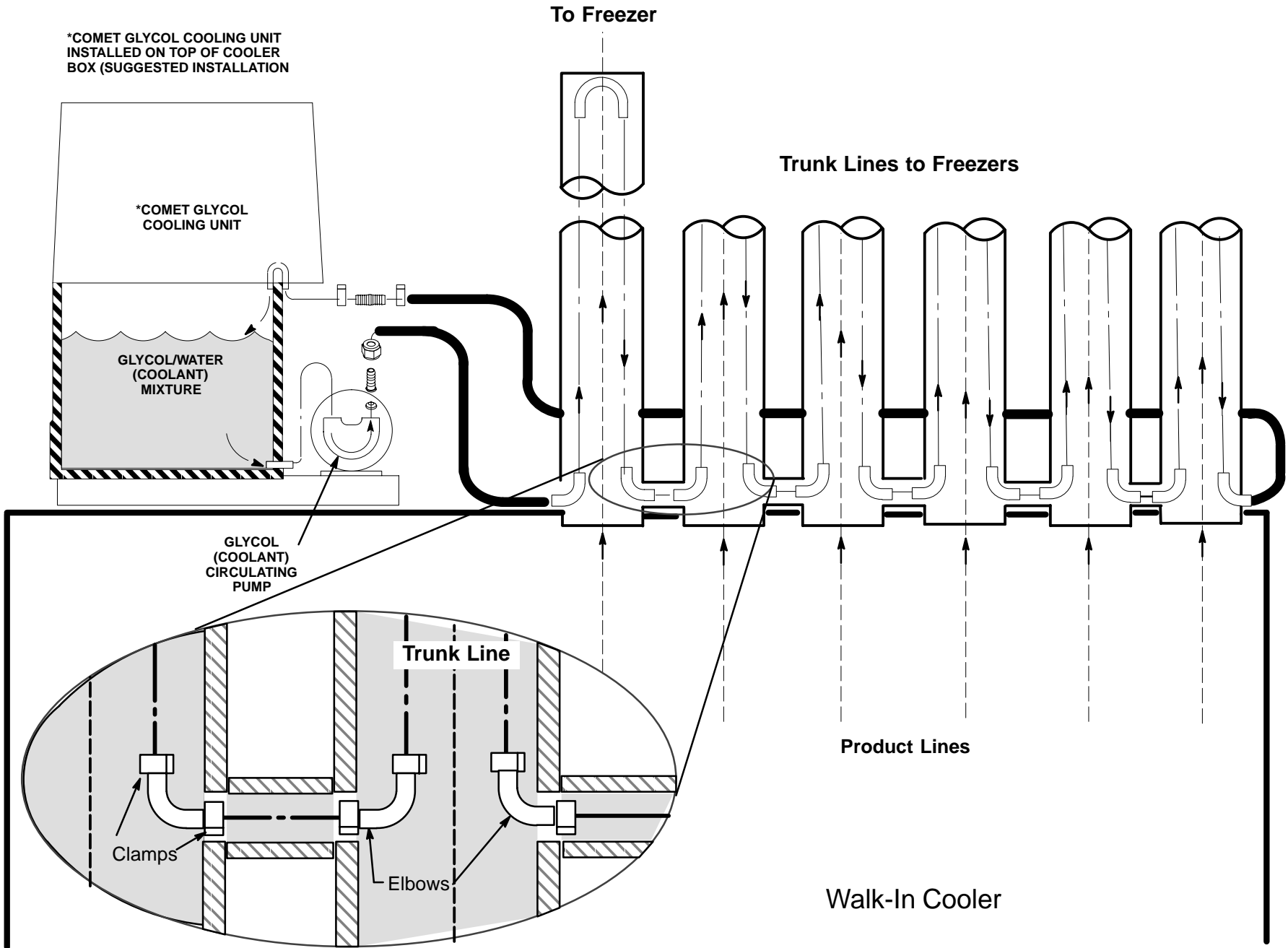
Walk-In Cooler

Clamps

Elbows

5

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INSTALLATION

UNPACKING AND INSPECTION

NOTE: The Cooling Unit was thoroughly inspected before leaving the factory and the carrier has accepted and signed for it. Any damage or irregularities should be noted at time of delivery (or not later than 15 days from date of delivery) and immediately reported to the delivering carrier. Request a written inspection report from Claims Inspector to substantiate any necessary claim. File claim with the delivering carrier, not with IMI Cornelius Inc.

1. After Cooling Unit has been unpacked, remove shipping tape and other packing material.
2. Unpack LOOSE-SHIPPED PARTS. Make sure all items are present and in good condition.

The following loose shipped parts are shipped with kit number 0576.

Item No.	Part No.	Name	Qty.
1	77900200	U-Bend Fitting	6
2	77040800	Elbow Fitting 3/8 Barb	8
3	111353000	Tubing Clamp	50
4	311242000	Swivel Nut 5/8-18	2
5	176205000	Nipple for 3/8 ID Tubing	2
6	311304000	Tapered Gasket Black	2
7	174029000	Tubing Polyethylene .375 ID x .610 OD	250 ft.
8	940079000	Rubatex Insulation, 1-3/4 ID x 1/2-inch Wall	78 ft.
9	940061000	Rubatex Insulation, 1/2-inch ID x 1/4 Wall	18 ft.
10	960050000	Insulating Tape 1/8-inch x 2-inches x 50 ft.	1
11	0622	Installation Instructions	1

The product tubing, cement and tape for sheath splices, and vinyl tape will not be shipped with the unit. It must be supplied by the parent product company. The insulation and cooling lines must be assembled by qualified personnel only.

SELECTING COOLING UNIT LOCATION

Locate Cooling Unit so the following requirements are satisfied.

IMPORTANT: Ambient temperature for Cooling Unit must not exceed 100° F. Several means are available to achieve proper ambient temperature and air circulation around the Cooling Unit which are wall air intake grilles and ceiling exhaust fans, air conditioning, etc. Check local codes.

1. Cooling Unit must be installed near a properly grounded electrical outlet with proper electrical requirements fused at 20-amperes ("slow-blow") or circuit connected through an equivalent HACR circuit breaker. No other electrical equipment should be connected to this circuit. ALL ELECTRICAL WIRING MUST CONFORM TO NATIONAL AND LOCAL ELECTRICAL CODES.

Note: circulating air, required to cool the refrigeration condenser coil, is drawn in through a grille on the front and is exhausted out through grille on top of the hood. Restricting air in and out of the Cooling Unit will decrease its cooling efficiency.

2. A minimum of 15-inches clearance *must* be maintained above the Cooling Unit to the nearest obstruction (shelf, cupboard, ceiling, etc.). The front grille of the Cooling Unit *must* be unobstructed to allow air to enter the hood.

INSTALLING SYSTEM

IMPORTANT: To insure maximum heat transfer and cooling of dairy product line:

U-BEND FITTING (item 4) should be positioned as close as possible to the inlet on the freezer. The coolant circulating lines should be held in contact with the dairy product line by spiral wrapping them in place with vinyl tape (one turn every six to twelve inches). To meet National Sanitation Foundation (NSF) approval, the ends of the RUBATEX INSULATION (item 8) *must* be taped closed around the dairy product and coolant circulating lines. It is important that NO circulating room air come in contact with the glycol coolant lines. Therefore the coolant truck line must be completely sealed

PLACING COOLING UNIT IN OPERATING LOCATION

1. Place Cooling Unit in operating location meeting requirements of SELECTING COOLING UNIT LOCATION.
2. Install SWIVEL NUT (Item 4) and NIPPLE (item 5) on end of glycol feed line. Secure connection with TUBING CLAMP (Item 3).
3. Connect glycol feed line, with swivel nut on its end, to 3/8-flare (5/8-18) male outlet fitting on Cooling Unit glycol circulating pump. Seal connection with TAPERED GASKET, BLACK (Item 6).
4. Connect glycol return line to barbed fitting in end of glycol return line protruding out front of Cooling Unit. Secure connection with TUBING CLAMP (Item 3).

FILLING COOLING UNIT TANK WITH FOOD GRADE PROPYLENE GLYCOL-TYPE ANTIFREEZE



WARNING: Use food grade propylene glycol-type anti-freeze such as Cornelius P/N 111521000 or equivalent only! Use of other than *food grade propylene glycol-type* anti-freeze such as ethylene glycol (automotive) type anti-freeze in Cooling Unit glycol tank and circulating system will create a health hazard.

1. Loosen screw securing Cooling Unit hood, then lift hood straight up to remove.
2. Remove plug from drop-in refrigeration assembly platform glycol fill hole.
3. Fill Cooling Unit tank with coolant made up of a 1 to 1 "ratio" of FOOD GRADE PROPYLENE GLYCOL-TYPE ANTI-FREEZE and water solution (coolant) until coolant runs out of overflow notch in top front corner of tank. This coolant mixture when checked with a hydrometer will read -28° F. USE LOW-MINERAL CONTENT WATER WHERE A LOCAL WATER PROBLEM EXISTS.

MAKE SURE GLYCOL TANK IS COMPLETELY FILLED WITH COOLANT BEFORE STARTING COOLING UNIT.

STARTING COOLING UNIT REFRIGERATION SYSTEM



WARNING: The Cooling Unit must be electrically grounded to prevent possible fatal electrical shock or serious injury to personnel. The Cooling Unit power cord is equipped with a three-prong plug. If a three-hole (grounded) electrical outlet is not available, use an approved method to ground the unit.

1. Make sure glycol circulating pump power switch on side of Cooling Unit (see Figure 2) is in "OFF" (down) position.
2. Plug Cooling Unit power cord into (refer to WARNING note) properly grounded electrical outlet with proper electrical requirements. **ADDITIONAL ELECTRICAL EQUIPMENT MUST NOT BE CONNECTED TO THIS CIRCUIT.**
3. Allow Cooling Unit refrigeration system to operate for two hours, then check temperature of coolant. If coolant temperature has not dropped to 26° F to 28° F, temperature control thermostat will have to be adjusted as instructed.

STARTING PROPYLENE GLYCOL ANTI-FREEZE CIRCULATING SYSTEM

1. Place Cooling Unit glycol circulating pump power switch (see Figure 2) in "ON" (up) position to start circulating pump.
2. After insulated glycol circulating system is in operation, continue adding industrial grade propylene glycol-type anti-freeze and water at a 1 to 1 "ratio" to Cooling Unit tank until coolant is at level described when filling tank.
3. Note circulating pump for quietness of operation. A noisy pump and air bubbles in return line during operation indicates air is being drawn into system on pump inlet side. If pump is noisy and air bubbles are present, check pump inlet tube connection for misaligned gasket or burr on fitting. **OPERATING PUMP IN SYSTEM CONTAINING AIR BUBBLES WILL EVENTUALLY RESULT IN PUMP DAMAGE.**
4. Check glycol circulating system connections for leaks and repair if evident.
5. Using **INSULATING TAPE** (Item 9), insulate glycol feed line connection to Cooling Unit glycol circulating pump and glycol return line connection to Cooling Unit. **FAILURE TO INSULATE LINES WILL CAUSE LINES SWEATING, FROST ACCUMULATION AND GLYCOL TO WARM UP.**
6. Install Cooling Unit hood and secure with screw.

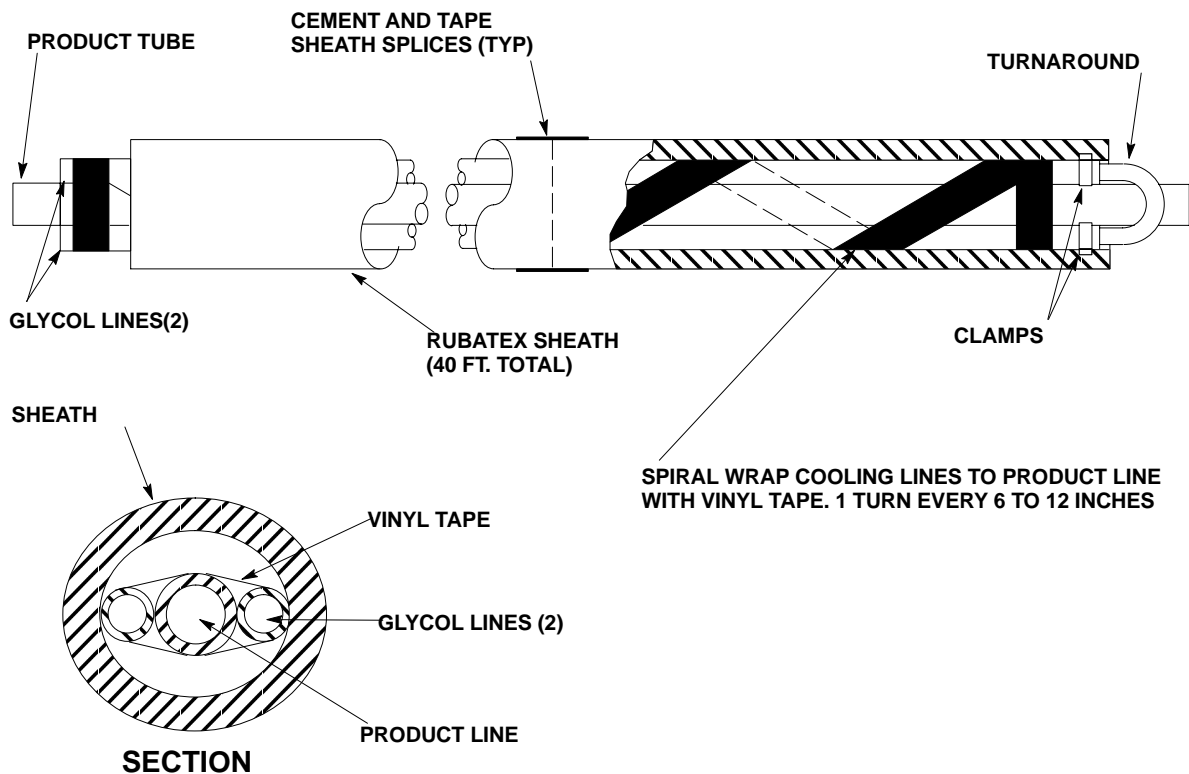


FIGURE 1. PYTHON FOR DAIRY PRODUCT COOLING

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OPERATORS INSTRUCTIONS

This section covers Cooling Unit operating controls, adjustments, and Cooling Unit maintenance.

OPERATING CONTROL

GLYCOL CIRCULATING PUMP POWER SWITCH

Glycol circulating pump power switch, located on side of Cooling Unit, must be in "ON" (up) position before pump will operate. Place switch in "OFF" (down) position to stop pump.

COOLING UNIT MAINTENANCE

CLEANING CONDENSER COIL

NOTE: Circulating air required to cool the refrigeration system condenser coil is drawn in through grille on front and is exhausted out through grille on top of the hood. Restricting air in and out of Cooling Unit will decrease its cooling efficiency.

The Cooling Unit hood top and front grilles must be kept free of obstructions at all times. Make sure nothing is stored on top or in front of hood. Refrigeration condenser coil should be periodically cleaned as instructed to maintain cooling efficiency.

REPLENISHING COOLING UNIT GLYCOL (COOLANT) TANK

The Cooling Unit tank glycol (coolant) should be periodically checked and if necessary, added to as instructed.

CLEANING COOLING UNIT EXTERIOR

The Cooling Unit exterior should be periodically cleaned as instructed.

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SERVICE AND MAINTENANCE

This section describes service and maintenance procedures to be performed on the Cooling Unit.

IMPORTANT: Only properly trained personnel should service Cooling Unit internal components and electrical wiring.



WARNING: Disconnect electrical power to Cooling Unit to prevent personal injury before attempting any internal maintenance. Only qualified personnel should service internal components or electrical wiring.

ADJUSTING COOLING UNIT GLYCOL (COOLANT) TEMPERATURE

NOTE: Cooling Unit tank glycol (coolant) temperature must be maintained at 26° F to 28° F for proper cooling of dairy products lines.

1. Loosen screw securing Cooling Unit hood, then remove hood for access to control box cover.
2. Insert screwdriver through hole in control box cover and place in thermostat control slotted adjustment screw. Turn adjustment screw to the right (clockwise) to next higher setting for a colder coolant temperature or turn adjustment screw to the left (counterclockwise) to next lower setting for a warmer coolant temperature.
3. Allow Cooling Unit to operate for at least two hours after adjustment. Recheck coolant temperature and adjust thermostat control as many times as necessary until proper coolant temperature has been achieved.
4. Install Cooling Unit hood and secure with screw.

COOLING UNIT MAINTENANCE

REMOVAL OF DROP-IN REFRIGERATION ASSEMBLY

1. Unplug Cooling Unit power cord from electrical outlet.
2. Loosen screw securing Cooling Unit hood, then lift hood straight up to remove.
3. Unplug refrigeration assembly power cord from Cooling Unit power cord.
4. Remove four shipping nuts securing drop-in refrigeration assembly in lower housing.
5. Lift drop-in refrigeration assembly up and out of Lower housing.
6. Install drop-in refrigeration assembly by reversing removal procedure.
7. Plug Cooling Unit power cord into electrical outlet.
8. Install Cooling Unit hood and secure with screw.

CLEANING CONDENSER COIL

NOTE: Circulating air required to cool the refrigeration condenser coil is drawn in through grille on front and is exhausted out through grille on top of hood. Restricting air in and out of Cooling Unit will decrease its cooling efficiency.

IMPORTANT: Cleaning condenser coil should be performed during non-dispensing period.

1. Unplug Cooling Unit power cord from electrical outlet.
2. Loosen screw securing Cooling Unit hood, then remove hood.
3. Vacuum or use soft bristle brush to clean condenser coil. If available, use low-pressure compressed air.
4. Install hood on Cooling Unit and secure with screw.
5. Plug Cooling Unit power cord into electrical outlet.

CLEANING COOLING UNIT EXTERIOR

Periodically wash all external surfaces of Cooling Unit, rinse with clean water, then wipe dry with a clean soft cloth. **DO NOT USE ABRASIVE-TYPE CLEANERS.**

REPLENISHING COOLING UNIT GLYCOL (COOLANT) TANK

1. Unplug Cooling Unit power cord from electrical outlet.



WARNING: Use food-grade propylene glycol-type anti-freeze such as Cornelius P/N 111521000 or equivalent only! Use of other than food grade propylene glycol-type anti-freeze such as ethylene glycol (automotive) type anti-freeze in Cooling Unit glycol tank and circulating system will create a health hazard.

2. Loosen screw securing Hood on Cooling Unit, then remove hood.
3. Remove plug from drop-in refrigeration assembly platform glycol fill hole.
4. Fill Cooling Unit tank with coolant made up of 1 to 1 “ratio” of food grade propylene glycol-type antifreeze and water solution until coolant runs out of overflow notch in top front corner of tank. This coolant mixture when checked with a hydrometer will read -28° F. USE LOW-MINERAL CONTENT WATER WHERE A LOCAL WATER PROBLEM EXISTS.

MAKE SURE GLYCOL TANK IS COMPLETELY FILLED WITH COOLANT BEFORE STARTING THE COOLING UNIT.

5. Install plug in drop-in refrigeration assembly platform glycol fill hole.
6. Install hood on Cooling Unit and secure with screw.
7. Plug Cooling Unit power cord into electrical outlet.

LUBRICATION

The Glycol circulating pump motor bearings must be oiled periodically. Refer to oiling instructions on motor. **DO NOT OVER OIL.**

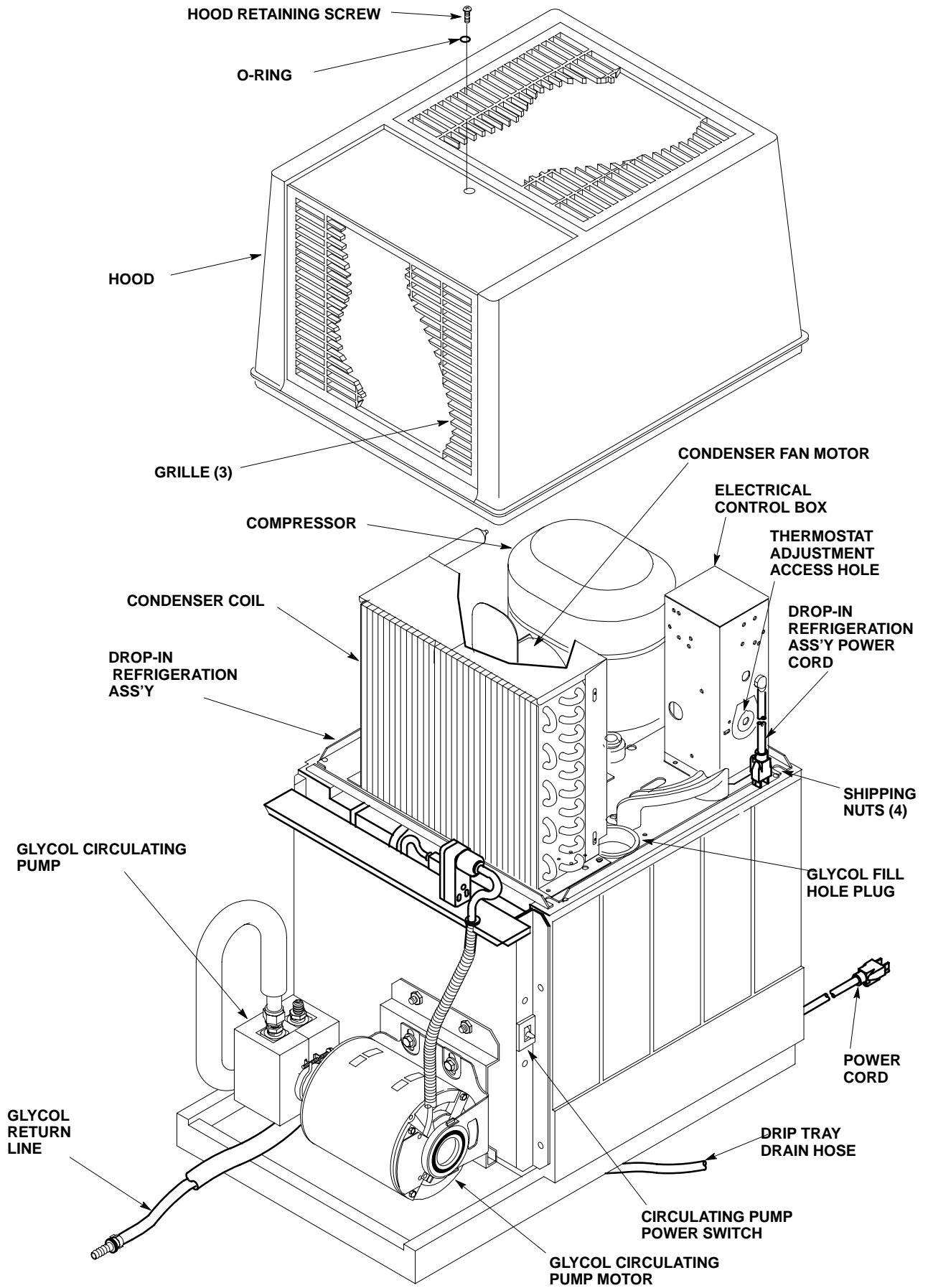


FIGURE 2. PARTS IDENTIFICATION

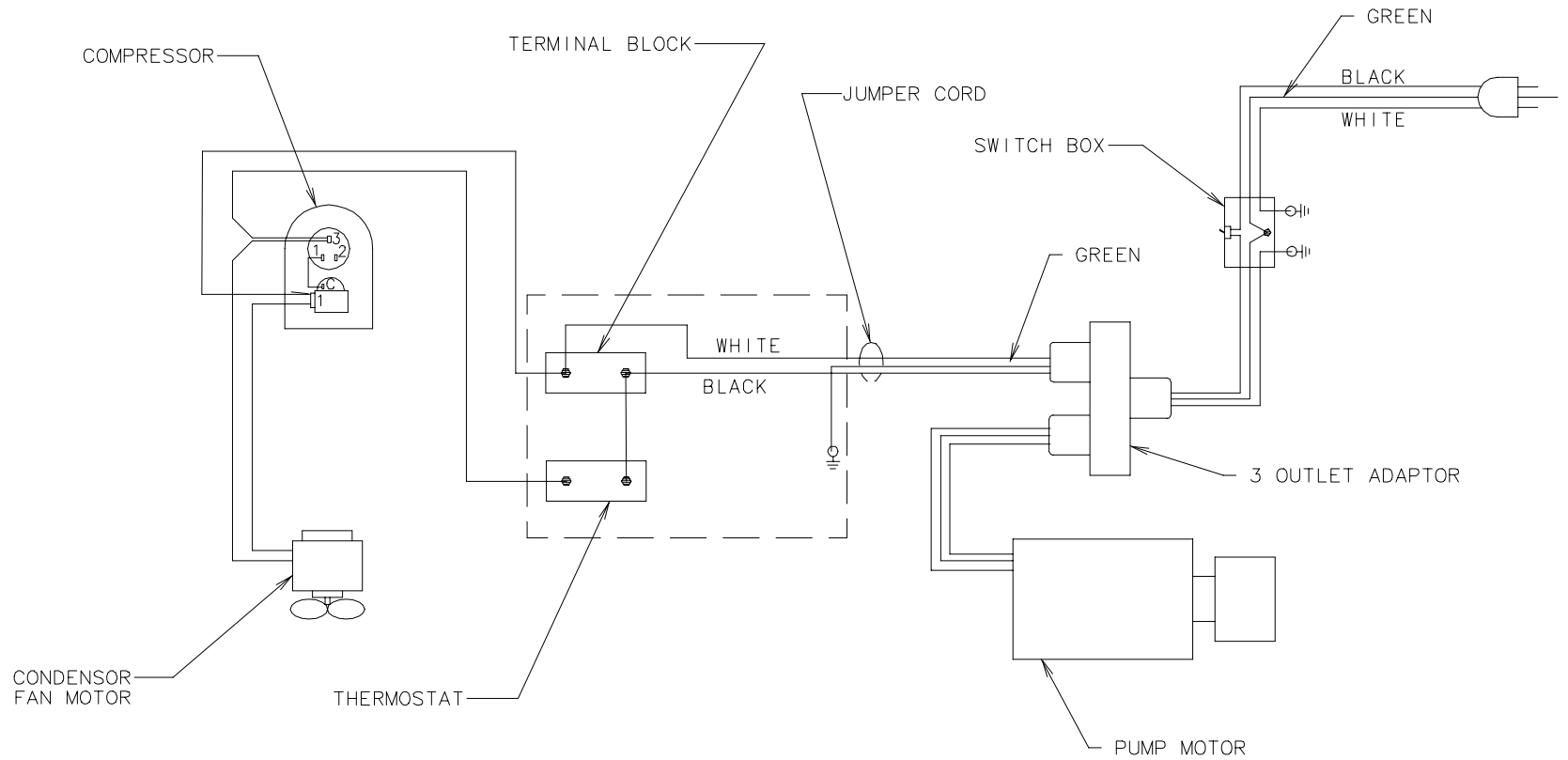


FIGURE 3. WIRING DIAGRAM

TROUBLESHOOTING



WARNING: Disconnect electrical power from Cooling Unit to prevent personal injury before attempting any internal maintenance. Only qualified Personnel should service internal components or electrical wiring.

TROUBLESHOOTING DAIRY PRODUCT SYSTEM

Trouble	Probable Cause	Remedy
DAIRY PRODUCT IN LINES TOO WARM	A. Cooling Unit tank glycol (coolant) too warm.	A. Glycol (coolant) in Cooling Unit tank should be maintained between 26° F to 28° F. Adjust temperature as instructed.
	B. Cooling Unit power cord unplugged or electrical circuit fuse blown or circuit breaker tripped.	B. Make sure power cord is plugged in or circuit fuse is not blown or circuit breaker is not tripped.
	C. Glycol circulating pump power cord unplugged, switch in "OFF" position, or inoperable pump or motor.	C. Make sure Power cord is plugged in, or repair or replace pump or motor.
	D. Inoperable Cooling Unit refrigeration system.	D. Repair Cooling Unit refrigeration system.

TROUBLESHOOTING COOLING UNIT REFRIGERATION SYSTEM

COMPRESSOR DOES NOT OPERATE.	A. Glycol (coolant) at recommended 26° F to 28° F temperature.	A. Refrigeration not called for.
	B. Cooling Unit power cord unplugged.	B. Plug in Cooling Unit power cord.
	C. No Power source (blown fuse or tripped circuit breaker).	C. Replace fuse or reset circuit breaker.
	D. Low voltage.	D. Voltage must be at least 103 volts at compressor terminals when compressor is trying to start.
	E. Loose, disconnected, or broken wiring.	E. Tighten connections or replace broken wiring.
	F. Overload protector cut out; over-heated compressor. Condenser fan motor not operating as required.	F. Compressor will cool enough to restart. Refer to "CONDENSER FAN MOTOR NOT OPERATING" in this section.
	G. Inoperative overload protector or start relay.	G. Replace inoperative part.
	H. Inoperative glycol tank temperature control.	H. Replace glycol tank temperature control.
	I. Inoperative compressor.	I. Replace compressor.

Trouble	Probable Cause	Remedy
COMPRESSOR WILL NOT STOP AFTER GLYCOL (COOLANT) HAS REACHED RECOMMENDED 26° F TO 28° F TEMPERATURE.	A. Glycol tank temperature control inoperative.	A. Replace glycol tank temperature control.
	B. Glycol tank temperature control stuck in closed position.	B. Replace glycol tank temperature control.
COMPRESSOR OPERATES CONTINUOUSLY BUT DOES NOT LOWER GLYCOL (COOLANT) TO 26°F TO 28°F.	A. Cooling Unit located in excessively hot area.	A. Refer to IMPORTANT note at start of "SELECTING COOLING UNIT LOCATION" in INSTALLATION SECTION.
	B. Air circulation through condenser coil restricted.	B. Clean condenser coil as instructed.
NOTE: If overload protector cuts out compressor, condenser fan motor will continue to operate; otherwise; troubleshooting condenser fan motor problems are same as for "COMPRESSOR DOES NOT OPERATE" paragraph plus the following:		
CONDENSER FAN MOTOR NOT OPERATING.	A. Jumper cord loose or disconnected from condenser fan motor or compressor terminals. Broken wire in cord.	A. Tighten connections or replace cord.
	B. Fan blade obstructed.	B. Remove obstruction.
	C. Inoperative condenser fan motor.	C. Replace condenser fan motor.

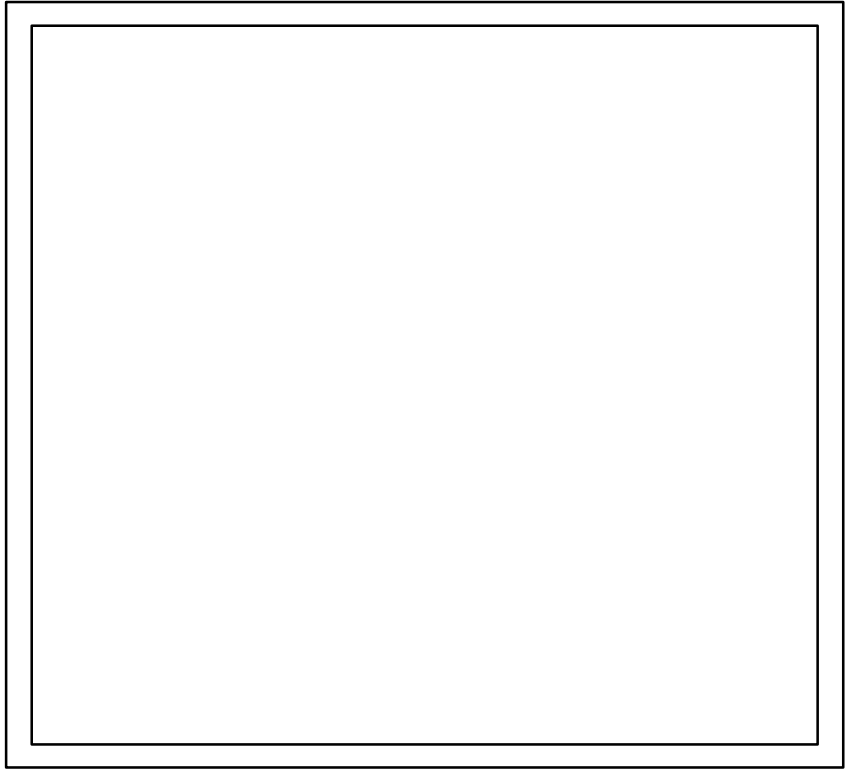
WARRANTY

IMI Cornelius Inc. warrants that all equipment and parts are free from defects in material and workmanship under normal use and service. For a copy of the warranty applicable to your Cornelius, Remcor or Wilshire product, in your country, please write, fax or telephone the IMI Cornelius office nearest you. Please provide the equipment model number, serial number and the date of purchase.

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