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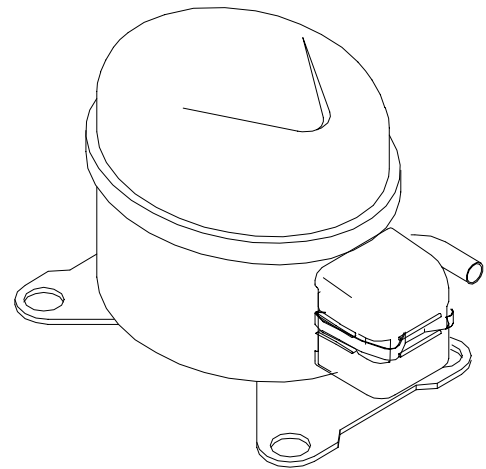
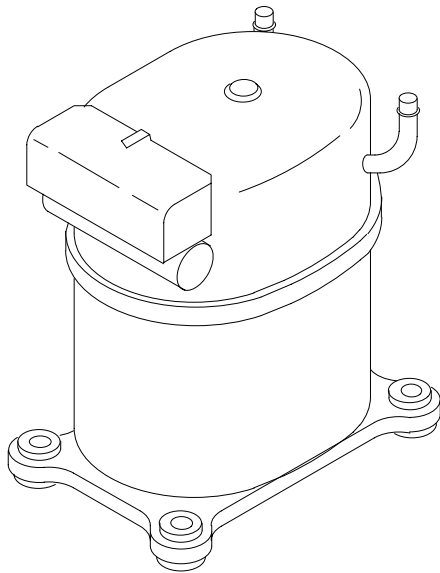
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# Installation Manual

## REFRIGERATION COMPRESSOR KIT

### (R-134A and R-404A Refrigerant)



Part No. 3724  
September 1, 1994  
Revised: October 8, 2003

**THIS DOCUMENT CONTAINS IMPORTANT INFORMATION**

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

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# INTRODUCTION

**IMPORTANT: Only certified personnel should install this refrigeration compressor kit.**

## CONTENT OF THIS INSTALLATION MANUAL.

This Installation Manual provides a general outline of the procedures used to remove an inoperative compressor and install the refrigeration compressor kit.

The manual content includes **Required Supplies and Tools and Equipment** needed; the procedure to remove the inoperative compressor, install the new compressor kit, and to test the installation. Also included in this manual is a special procedure to replace compressors in the 1050XR and 1550XR Cooling Units.

In preparation for replacing a compressor, it is strongly recommended that the Cornelius Warranty be understood. If the compressor is under warranty, contact IMI Cornelius Inc; Service Department, One Cornelius Place, Anoka Minnesota 55303-6234 for compressor return shipment instructions. Phone: (612) 421-6120 or 1-800-238-3600 FAX: 612-422-3232.

This manual applies to replacement of compressors in the field.

## REQUIRED SUPPLIES, TOOLS, AND EQUIPMENT

### REQUIRED SUPPLIES

1. Brazing alloy "Phos-Copper", "Silfos" or equivalent is required for copper-to-copper connections. These alloys contain about 15% silver. Brazing alloy. "Easy-flow" or equivalent is required for copper-to-steel connections. This alloy contains about 50% silver.
2. Flux for use with copper-to-steel connections.

### REQUIRED TOOLS AND EQUIPMENT

Tools and equipment needed for installing this kit is listed in the following table. Equivalent items may be substituted.

Required Tools and Equipment		
Item No.	Name and Description	Use
1	Torch, Oxy-fuel (acetylene, propane, etc)	Brazing
2	Torch tips size No. 2 or 3	Brazing
3	Vacuum pump and gaging with 50-micron blank-off pressure. Alternately a pump having 28.5 in. HG minimum	Removing vapor from system
4	Refrigerant recovery system	Removes refrigerant from the refrigeration system
5	Charging cylinder, visual-indicating type with a refrigerant scale and temperature correction curve, or a closed container with an accurate scale. Charging equipment must be accurate to $\pm .125$ oz.	Charging the reworked refrigeration system with refrigerant.

<b>Required Tools and Equipment (cont'd)</b>		
6	Pinch-off tool	To seal process lines after charging system with refrigerant.
7	Ammeter, clamp-on type 0-50 amp range	To measure power consumption
8	Voltmeter, 0-300VAC	To measure line voltage
9	Ohmmeter, 0-10 and 0-100,000 ohms ranges	To check resistance of electrical circuitry
10	Electronic Leak Detector capable of detecting at least 1/2 ounce/year or "Snoop" fluid	To detect refrigerant leaks
11	Dry Nitrogen (-75° F dewpoint)	To purge refrigeration system before brazing all system connections.
12	Line tapping valve (two)	To connect Refrigerant Recovery System to refrigeration system.
13	Flame Shields	Protects system components.
14	Refrigeration Gages and Manifold Set W/Hoses	Used to evacuate and charge system with refrigerant.

# COMPRESSOR KIT INSTALLATION

**IMPORTANT:** Do not change compressor until it is proven inoperative.

## REMOVING OLD COMPRESSOR AND DUAL INLET STRAINER/DRIER,

**Removal of Refrigerant-** In starting work, be advised that the following notes are directly applicable:

**IMPORTANT:** Only certified Personnel should install this kit.

Environmental Protection Agency (EPA) Federal Government rules for refrigerant recovery *must* be followed and carried out by certified Personnel. If you have any questions, contact your Employer or the EPA.



**WARNING:** to avoid possible fatal electric shock or serious injury, disconnect electrical power from the unit before starting kit installation.

1. Disconnect electrical power from the unit.



**WARNING:** To avoid electrical shock even after electrical power has been disconnected from the Unit, discharge the start capacitor by momentarily touching both terminals at the same time using an insulated screwdriver.

2. Tag electrical wires connected to the compressor for identification.
3. Disconnect electrical wires from the compressor.

Remove refrigerant gas from refrigeration system as follows:

**IMPORTANT:** *Do not* vent refrigerant gas to the atmosphere. A Refrigerant Recovery System *must* be used to reclaim refrigerant from the refrigeration system.

**Work in a well-ventilated area. Fumes from brazing may contain toxic gases.**

**Note:** The line-tapping valves are to be temporarily installed in the refrigeration system to connect the Refrigerant Recovery System to the refrigeration system. After refrigerant recovery has been completed, remove the line-tapping valves.

To maintain factory warranty, *do not* permanently install line-tapping valves or poppet-type valves in the refrigeration system. These valves have a potential for leaks.

4. At the compressor, install a line-tapping valve in the suction process line (see Figure 1).
5. At the dual inlet drier, install a second line-tapping valve on the discharge process line (see Figure 1).



**WARNING:** To avoid eye injury, wear protective glasses or goggles while working with refrigerant or brazing.

6. Connect Refrigeration Gages and Manifold Set to both of the line tapping valves installed in the process lines.
7. Connect Refrigerant Recovery System to the Refrigeration Gages and Manifold Set, then reclaim refrigerant from the refrigeration system.
8. Disconnect Refrigerant Recovery System, then connect dry nitrogen source to the Refrigeration Gages and Manifold Set. Break refrigeration system vacuum with dry nitrogen to "0" PSIG.

9. Disconnect Refrigeration Gages and Manifold Set from both of the line tapping valves installed in the process lines.

## REMOVAL OF EXISTING COMPRESSOR

1. Slide suction line insulation as far as possible away from work area to prevent heat damage.
2. Place heat shields around electric wiring, insulation, and painted surfaces to protect from accidental heat damage.



**WARNING: Nitrogen pressure must equal atmospheric pressure before heat is applied to system tubing.**

3. With refrigeration system pressure at 0-psi, use torch to remove suction and discharge lines from the compressor ports.
4. Remove cap tube and liquid lines from the dual inlet strainer/drier. Discard old dual inlet strainer/drier.
5. Remove mounting clips or bolts securing the compressor, then remove old compressor.

## INSTALLING KIT

(see Figure 1)

1. Polish tubing ends with emery cloth or a wire brush. Do not allow grit to enter tubing. Carefully clean tubing ends.
2. Place new compressor in position on the Unit, then secure compressor with clips or bolts.

**IMPORTANT: The dual inlet strainer/drier and the new compressor *must* not be uncapped for more than 10-minutes before brazing them into the refrigeration system.**

3. Install new suction process line in compressor suction process port (low-side). *DO NOT BRAZE CONNECTION AT THIS TIME.*
4. Insert discharge line into compressor discharge port.

**Note: The suction filter/drier (if provided in the kit) *must* be installed in a vertical position in the suction line close to the compressor as shown in Figure 1.**

5. Insert suction line into compressor suction line port. Cut section out of suction line to allow installing the new suction filter/drier in a vertical position in the suction line. *DO NOT BRAZE CONNECTION AT THIS TIME.*



**CAUTION: The new discharge or liquid dual inlet strainer/drier must be installed in a horizontal position for proper system operation.**

6. Install new dual inlet strainer/drier as follows:

**Note: Cap tube *must* not be cut off more than 2-inches (Notch cap tube with file, then break tube off). Cap tube *must* not be inserted more than 1/2-inch into dual inlet strainer/drier opening.**

- A. Install new dual inlet strainer/drier in horizontal position. Insert liquid line and cap tube into drier ports. *Do not* insert cap tube more than 1/2- inch into drier port. *DO NOT BRAZE CONNECTIONS AT THIS TIME.*
- B. Insert new discharge process line (high-side) into dual inlet strainer/drier port. *DO NOT BRAZE CONNECTION AT THIS TIME.*

## NITROGEN FLUSHING AND BRAZING

Flush the refrigeration system with “dry” nitrogen (-75° F dewpoint) as follows:

1. Connect nitrogen source to both process lines of the refrigeration system to purge the system before brazing system connections.
2. Purge the refrigeration system with dry nitrogen for at least 10-minutes, then disconnect nitrogen source.

**Note: Work in a well-ventilated area. Fumes from brazing may contain toxic gases.**

3. Braze all refrigeration system connections.
4. Clean flux from all brazed copper to steel connections with cold water and a wire brush.

## TESTING SYSTEM FOR REFRIGERANT LEAKS

1. Connect Refrigeration Gages and Manifold Set to both of the refrigeration system process lines.
2. Connect Refrigerant Charging Cylinder to the Refrigeration Gages and Manifold Set, then pressurize the refrigeration system to saturation with clean refrigerant of the type specified on the Unit serial plate.
3. Leak check the entire refrigeration system.

**NOTE: If a leak is suspected but cannot be detected, tape a poly or heavy paper envelope over the area to capture gas. Wait 10 minutes then check the content of the envelope for refrigerant.**

4. Disconnect the Refrigerant Charging Cylinder from the Refrigeration Gages and Manifold Set.

## CHARGING THE REFRIGERATION SYSTEM

1. Connect Refrigerant Recovery System to the Refrigeration Gages and Manifold Set.
2. Reclaim the refrigerant from the refrigeration system, then disconnect the Refrigerant Recovery System from the Refrigeration Gages and Manifold Set.
3. Connect Vacuum Pump to the Refrigeration Gages and Manifold Set.
4. Evacuate the refrigeration system to at least 100-microns.
5. Disconnect Vacuum Pump from the Refrigeration Gages and Manifold Set.

**Note: It should not be necessary to operate the refrigeration system to recharge it with liquid refrigerant.**

6. Connect Refrigerant Charging Cylinder to the Refrigeration Gages and Manifold Set.
7. Charge the refrigeration system using the type of refrigerant and exact amount specified on the Unit serial plate.
8. Disconnect Refrigerant Charging Cylinder from the Refrigeration Gages and Manifold Set.
9. Apply electrical power to the Unit.
10. Operate the unit for a short period of time. The evaporator tank should frost entirely over contact area.
11. Disconnect electrical power from the Unit.
12. Using a crimp tool, Pinch off suction process line tube twice starting from free end. Leave crimp tool applied to inner pinch.
13. Cut suction process line tube approximately 1/2 inch from outer pinch and fill open end with copper brazing alloy.
14. Remove crimp tool.
15. Repeat steps 12, 13, and 14 on discharge process line.

16. Check both process lines for leaks.
17. Apply electrical power to the Unit and allow it to operate. Check for proper operation

## **INSTALLING KIT IN 1050XR AND 1550XR COOLING UNITS**

1. To install a kit in either the 1050XR and 1550XR cooling units, proceed as follows:
2. Disconnect electrical power from the unit.
3. Remove back access grille (on side where power switch is located) to expose the compressor terminal cover.
4. Remove compressor terminal cover.
5. Perform electrical check on the compressor to confirm if compressor is inoperative.
6. If compressor is inoperative, drain water from evaporator tank.
7. Remove back panel for access to the compressor. See Figure 2.
8. Remove screws securing electrical box to rear panel.

<b>Do not vent refrigerant to atmosphere</b>
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9. Install one line tapping valve on suction process line on the compressor, and a second line tapping valve on the discharge process line located on the dual inlet strainer/drier.
10. Connect Refrigerant Recovery System to the refrigeration system.
11. Using Refrigerant Recovery System, remove refrigerant from the refrigeration system.
12. At each side panel, remove screws which support cabinet bulkhead to which evaporator is secured.
13. In front panel, loosen, but do not remove screws which support cabinet bulkhead to which evaporator tank is secured.
14. To gain clearance between top of compressor and cabinet bulkhead, raise cabinet bulkhead up from 3/4 to 1 inch and prop with a piece of 1 x 2 inch wood cut to length.
15. At the compressor, remove hex head bolts, grommet spacers and grommets securing compressor to the base.
16. Slide the compressor toward the rear of the Unit, allowing compressor to slide off base mounting pads to gain maximum clearance between top of compressor and cabinet bulkhead.
17. Refer to main text of this manual for procedure to replace a compressor.
18. Using new grommet spacers and grommet kit, secure the compressor in place.
19. Connect electrical wiring to compressor and attach protective cover.
20. Apply electrical power to unit.
21. Start and run system for about 5 minutes. Empty evaporator tank should frost entirely over contact area.
22. Remove electrical power from unit.
23. Pinch off and weld process line as described in main text.
24. Fasten cabinet bulkhead in position using removed and loosened screws.
25. Fill evaporator tank with water.
26. Install top cover.
27. Apply electrical power to unit.
28. Operate unit.



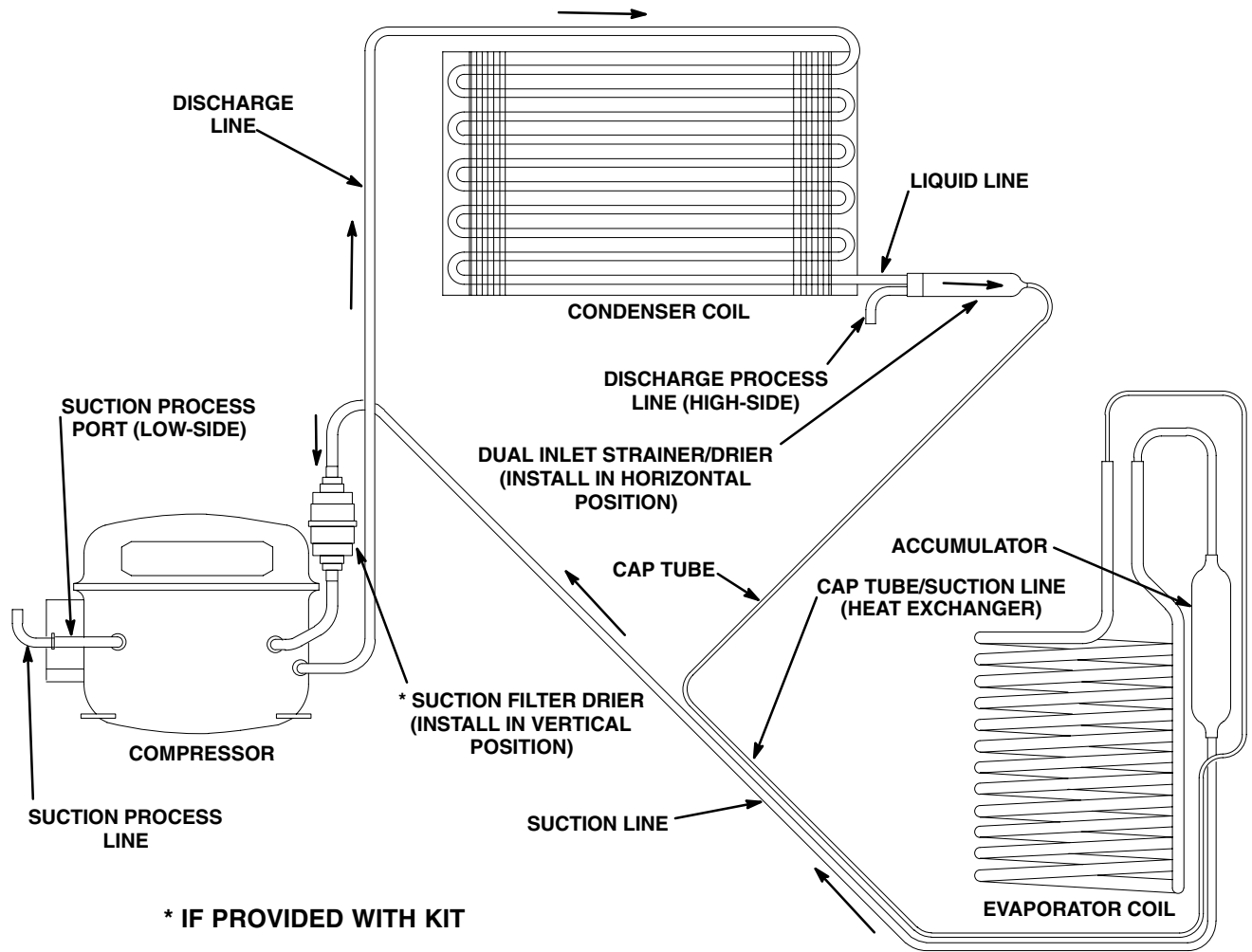


FIGURE 1. REFRIGERATION CIRCUIT AND COMPONENTS

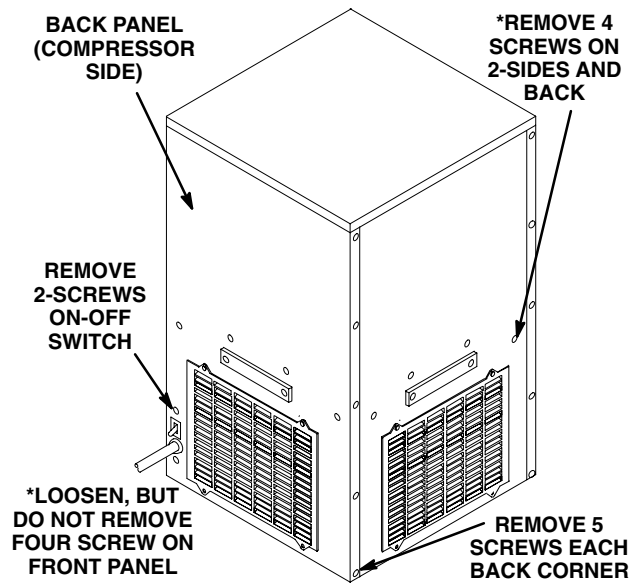


FIGURE 2. COOLING UNIT PANELS

# 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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