



CONDENSING UNIT

ALL SERIES



CONTENTS

NOMENCLATURE	3	TABLE 2	
SAFETY CONSIDERATIONS	4	REFRIGERATION OILS, COPELAND COMPRESSOR	7
INTRODUCTION	4	TABLE 3	
HANDLING	4	REFRIGERATION OILS, CARLYLE COMPRESSOR	7
INSTALLATION		TABLE 4	
STEP 1 – COMPLETE PRE-INSTALLATION CHECKS	4	REFRIGERATION OILS, BITZER COMPRESSOR	8
STEP 2 – LOCATION	4	TROUBLESHOOTING CHART	9
STEP 3 – WIRING UNIT	4	FIGURES: 1 TO 5	10
STEP 4 – PIPING	4	FIG. 1: MECHANICAL ROOM TYPICAL INSTALLATION . . .	10
STEP 5 – SUCTION LINE	5	FIG. 2: PIPE SUPPORT EXAMPLE	10
STEP 6 – LIQUID LINE	5	FIG. 3: SUPPORTING CONDENSING	
STEP 7 – LEAK TESTING AND EVACUATION	5	UNIT AND COMPRESSOR TO WALL	11
START-UP	5	FIG. 4: SUCTION P-TRAPS	11
CAUTION	5	FIG. 5: DOUBLE SUCTION RISER CONSTRUCTION . . .	12
PREPARE THE SYSTEM	5	REFRIGERATION SYSTEM	
REFRIGERANT	5	START-UP CHECK LIST	13
TABLE 1		REPLACEMENT PARTS	14
ADDITIONAL REFRIGERANT		WARRANTIES	16
CHARGE FOR WINTER OPERATION	5		
SERVICE	6		
INSPECTION	6		
CLEANING	6		
FAN MOTORS	6		
ADDING OIL	6		
SEMI-HERMETIC COMPRESSOR	6		

NOMENCLATURE

O C S - 10 0 - 1 H 2 - 9

- O = Outdoor Air-Cooled
- I = Indoor Air-Cooled
- W = Indoor Water-Cooled
- M = Indoor Sea Water-Cooled
- S = Indoor Remote Air-Cooled

UNIT VOLTAGE:

- 2 = 240/1/60
- 5 = 208-240/3/60
- 8 = 600/3/60
- 9 = 480/3/60

C = Condensing Unit

REFRIGERANT:

- 2 = R-22
- 3 = R-134a
- 4 = R-404A + R507

- S = Semi-Hermetic
- H = Hermetic
- Z = Scroll
- V = Screw

APPLICATION:

- H = High suction temperature
- M = Medium suction temperature
- L = Low suction temperature

Nominal Compressor HP-10

COMPRESSOR:

- 0 = Single Compressor
- 2 = Dual Compressor

- 1 = Copeland
- 2 = Carlyle
- 3 = Tecumseh
- 5 = Bitzer

SAFETY CONSIDERATIONS

Installing, starting up, and servicing equipment can be hazardous due to system pressures, electrical components and equipment location (roofs, elevated structures, etc.). Only trained, qualified installers and service mechanics should install, start up, and service this equipment.

When working on the equipment, observe precautions in the literature and on the tags, stickers, and labels attached to the equipment.

Follow all safety codes. Wear safety glasses and work gloves. Keep quenching cloths and fire extinguisher nearby when brazing. Use care in handling, rigging, and setting bulky equipment.

WARNING

Before installation, always check to be sure main power to systems is OFF. Electrical shock can cause personal injury or death.

INTRODUCTION

These instructions describe installation, start-up, and service for refrigeration duty or cooled indoor (IC), outdoor (OC), remote condenser (SC) and water-cooled condensing unit (WC), with hermetic (H), semi-hermetic (S) or scroll (Z) compressor for high, medium or low temperature.

HANDLING

FORK LIFT – The compressor side of the condenser unit is the heaviest side and should be facing the lift truck. Be sure the forks extend the entire length of the unit.

CRANE – The center of gravity must be identified before lifting the unit. Holes are provided to insert bars or hooks for lifting unit. To protect the casing, condenser coil, electrical box, piping and wiring, use spreader bars.

INSTALLATION

STEP 1 -

COMPLETE PRE-INSTALLATION CHECKS

Check unit for damage incurred during the shipment. File a claim immediately with transit if damage is found. Verify that the nameplate electrical requirements match the available power supply. Check the shipment for completeness.

STEP 2 - LOCATION

OUTDOOR CONDENSING UNITS

These units are installed outside on a rooftop or on the ground. Be sure to check the load capacity of the roof before installing the unit on the rooftop.

When selecting the location be sure to provide enough space for adequate air circulation and avoid air recirculation. Locate the unit near the power supply and evaporator. Allow accessibility to the unit for maintenance. If more than one unit is installed or if installing a unit close to a wall, a spacing distance of 4 ft. is required. To avoid high condensing pressure, the condenser coil must face local prevailing winds or be protected from the wind.

Units should be attached to a steel frame (field supplied) on the roof. The frame must be straight and level for proper unit operation. The unit should be securely bolted to the frame.

INDOOR CONDENSING UNITS

Adequate supply of outside air must be available. Proper ventilation must be provided to vent room air exhaust outside to avoid heat build-up. For air-cooled unit (IC), experience has shown that 1000 to 1200 CFM and 2 to 2.5 ft² of lowered area per compressor HP provides good results. Room temperature should be maintained at a minimum of 70°F. Provide enough space for adequate air circulation and avoid air recirculation. Allow accessibility to the unit for maintenance. See Fig.1.

STEP 3 – WIRING UNIT

IMPORTANT

Wire connections may have come loose during transit. Check all screws for tightness prior to starting up the unit.

All system wiring must be in compliance with all applicable local and national codes.

Internal wiring of fan motors, optional controls and contactors have been completed at factory. Wiring connections terminate on a single terminal block in the control panel and are clearly labeled on the unit.

The unit must be grounded.

All units are wired for continuous pumpdown cycle. This prevents refrigeration migration from evaporator to the compressor. The liquid line solenoid and thermostat must be wired properly.

STEP 4 – PIPING

All refrigerant system components must be installed in accordance with applicable local and national codes using proper engineering practices.

Use top quality refrigeration tubing that is internally free of dirt, humidity or other contaminants. Unsealed tubing should not be used. Long radius elbows are recommended.

Dry nitrogen must be swept through the lines while joints are brazed to avoid oxidation and carbon deposits.

All piping should be properly supported for proper operation. See Fig. 2 and 3.

IMPORTANT

The use of a calibrated pressure gauge and regulator must always be used with nitrogen gas cylinders.

STEP 5- SUCTION LINE

The suction line must be sized to maintain proper line velocities with a practical line pressure drop, which is usually equal to 20°F. To ensure proper oil return, all horizontal lines must be sloped down toward the compressor with a pitch of 1/4 in. per 10 ft. The horizontal line can be increased one size in the case of a very long run.

In situations where it is necessary for the suction line to rise, an oil trap must be installed at the bottom of the riser. To ensure oil return through a riser in the suction line, a velocity of not less than 1000 ft. per minute is required. A trap should be provided for each additional 20 ft. of riser. See Fig. 4 and 5.

Suction line should not be exposed to heat or the sun. If it is necessary to run suction line outside of the building or through heated areas in the building, the line must be insulated. The suction line must be insulated in any situation where the line may sweat.

STEP 6 – LIQUID LINE

Excessive pressure drop in the liquid line must be avoided to keep a solid column of liquid at the thermostatic expansion valve (TXV). The liquid line solenoid valve should be installed in the liquid line just ahead of the TXV. Sweating of the liquid line may occur in warm ambient due to the sub-cooled condition of the liquid in winter operation.

STEP 7 – LEAK TESTING AND EVACUATION

Leak testing and evacuation must be done in accordance with local and national codes.

Pull and hold for 24 hours a 500 micron vacuum. If not, check for leaks and make sure that gauge hoses and all caps are not leaking.

Once all refrigerant connections are made, leak test all joints before charging the system with refrigerant. After leak testing, all moisture and non-condensable gas must be evacuated from the system. Attach high vacuum line pump and gauge on both high and low pressure sides of the system.

Be sure all valves such as compressor, hot gas, receiver, and liquid solenoid valves are open. Break the vacuum in the system with the refrigerant to be used. Always charge the refrigerant into the system through a new 16 cu. in. drier (field-supplied) in the charging manifold line.

START-UP

CAUTION

Units designed for HFC Refrigerant are supplied with polyolester (POE) oil. The oil needs to be added to the system before start-up. The required amount is listed on the unit.

This oil is very hygroscopic and care should be taken when using POE.

All oil must be used at once. Any remaining oil must be properly disposed of.

PREPARE THE SYSTEM

1. Add oil to system.
2. Open all refrigeration valves.
3. Connect the high side gauge to the refrigerant receiver outlet valve and the suction fitting on the compressor.

4. Unit with scroll compressor must be checked for proper rotation.

REFRIGERANT

Add liquid refrigerant to the high side until the system pressure equals the refrigerant cylinder pressure.

R-22 REFRIGERANT – Start the compressor and add refrigerant vapor through the suction connection of the compressor until the sight glass is clear. For outdoor units with flooding valve, restrict the condenser air flow to maintain 100° to 110° F condensing and add enough refrigerant to flood the condenser coil in low ambient.

R-404, R-507 (or blend) REFRIGERANT – Start the compressor and add liquid refrigerant through a calibrated restrictor in the suction connection of the compressor until the sight glass is clear. See Table 1 for winter charge.

TABLE 1
ADDITIONAL REFRIGERANT CHARGE
FOR WINTER OPERATION

Model	Lb.	Kg
008	1.5	0.7
010	1.5	0.7
012	3.0	1.4
015	3.0	1.4
020	4.1	1.9
025	4.1	1.9
030	6.2	2.8
035	8.6	3.9
040	8.6	3.9
050	11.5	5.2
060	11.5	5.2
070	15.1	6.9
080	16.7	7.6
090	16.7	7.6
100	22.3	10.1
150	25.2	11.5
200	33.6	15.3
220	33.6	15.3
250	40.0	18.2
270	40.0	18.2
300	53.0	24.1
350	80.0	36.4
400	80.0	36.4
402/442	67.2	30.6
502/542	80.0	36.4
602	106.0	48.2
702/802	160.0	72.8

SERVICE

System operating temperature, oil level, and system pressure should be checked and recorded periodically to ensure stable system operation. For troubleshooting on common condensing unit, refer to the troubleshooting chart.

IMPORTANT

Disconnect all power before servicing.

INSPECTION

After one day of operation, check any vibration in the unit.

IMPORTANT

The compressor hold-down bolts should be checked periodically and re-tightened if necessary.

CLEANING

It is recommended that the unit be checked periodically for dirt accumulation. Grease and dust should be removed from the fan, fan guards and drain pan.

Occasional cleaning of finned surfaces can be done by first dusting the fins then cleaning with a mild detergent and warm water spray.

The inner face of the coil may be cleaned by the access panel on the side of the units or by removing the fan guards.

IMPORTANT

Do not use alkaline or acid solution as it will damage the coils. Remove the fan guard to clean the inner face of the fan coil.

FAN MOTORS

Fan motors are permanently lubricated for service-free operation. The fan motor may cycle if the coil is blocked. If motor is inoperable, check the supply voltage at the motor leads.

ADDING OIL

If oil is needed, allow the system to pump down. See Tables 3 and 4 to select proper oil.

1. Turn off all power to the unit.
2. Close the suction and discharge valves at the compressor.
3. Partially unscrew the filler hole pipe plug. Allow pressure to bleed before totally removing the plug. (The filler hole is located just above and to the left of the crankcase sight glass on most compressors).
4. Add manufacturer approved oil through the filler hole. Be sure oil has not been exposed to air or other contaminants.
5. Replace and tighten filler hole pipe plug.
6. Re-open the compressor suction and discharge valves.
7. Restart the unit.

SEMI-HERMETIC COMPRESSOR

Oil level must be maintained at 1/2 or 3/4 full as indicated on the sight glass. If oil level is low, add manufacturer approved oil to the compressor. Do not overfill. Check oil level after 2 hours. Check oil level 2 days after the addition of oil.

Excessive oil quantity in a system may lead to liquid slugging and compressor damage.

A well-balanced unit should not require any additional oil after a week of operation.

If any system requires more oil after one week of operation, the unit must be inspected to find the location of the trapped oil.

TABLE 2

REFRIGERATION OILS, COPELAND COMPRESSOR

Refrigeration Oils		R-12	R-22, R-502	R-401A, R-401B R-402A, R-408A R-409A	R-134a, R-404A R-507, R-407C R-410a
POE's	Copeland Ultra 22CC	Not acceptable	AA	AA	PL
	Copeland 3MA		AA	AA	PL*
	Mobil EAL ARCTIC 22 CC		AA	AA	PL
	ICI (Virginia KMP)		AA	AA	PL
	Emkarate RL 32CF				
MINERAL OILS	Witco Suniso 3GS	PL	PL	PL & M	NOT acceptable
	Texaco Capella WF32	PL	PL	PL & M	
	Calumet RO15 (Witco)	PL	PL	PL & M	
	Perenco Sontex 200-LT Shritene	BR and SCROLL ONLY			
	Witco LP-200	PL	PL		
AB	Copeland Ultra 200	AA	AA	PL & M	
	Shreve Zerol 200TD	AA	AA	PL & M	
	Soltex AB200A	AA	AA	PL & M	
AB MO MIX	Shell 22-12	AA	AA	PL	
	Witco R-195-0	AA	AA	PL	

LEGEND: PL: Preferred lubricant choice

AA: Acceptable Alternative

M: Mixture of Mineral oil and Alkyl Benzene (AB) with minimum 50% AB

*: ZP Scroll A/C applications

TABLE 3

REFRIGERATION OILS, CARLYLE COMPRESSOR

Refrigeration Oils		R-12, R-500 R-502, R-22	R-134a, R-404A R-507, R-407C
POE's	Castrol E68	Not acceptable	Recommended
	ICI Emkerarate RL68H		
	CPI CP-2916S		
	CPI Solest 68		
	BP marine Enersyn MP-S68		
MINERAL OILS	Mineral Witco Sunisco 3GS		
AB	Shrieve Chemical Zerol 150	Recommended	Not acceptable
	Texaco Capella WFI-32-150		
	IGI Petroleum Ind Cryol-150		

TABLE 4
REFRIGERATION OILS, BITZER COMPRESSOR

	Lubricant Type	(H) CFC R-22	Interim Blends R-401A, R-401B, R-402A, R-408A, R-409A, (MP-39, MP-66, HP-80, FX-10, FX-56)	HFC's R-134A, R-404A, R-507,R-407C
POLYOLESTER	ICI (Virgina KMP) Emkarate RL32S	A*	A*	P
	Mobil EAL Arctic 32	A*	A*	P
	Castrol Icematic SW 32	A*	A*	P
MINERAL OILS	Sunisco 3GS	A	A	Not acceptable
	Sunisco 4Gs	A	A	
	Capella Oil WF 32	A	A	
	Capella OIL WF 68	A	A	
	Esso Zerice R68	A	A	
ALKYLBENZENE	Zerol 150	P	P	Not acceptable
	Zerol 300	P	P	
	Icematic 2284	P	P	
	Esso Zerice S46	P	P	
	Esso Zerice S68	P	P	
AB/MO MIX	Shell Clavus SD 2212	P	P	Not acceptable
	Esso Zerice R46	A	A	

LEGEND: P = Preferred A = Acceptable Alternative
 * = When operating (H) CFC with ester oils the quality of refrigerant dissolved in the oil is more than doubled as compared with conventional lubricants. Special care should be taken. Refer to Bitzer Technical Bulletin KT-510-2, section 5 for additional information.

TROUBLESHOOTING CHART

PROBLEM	POSSIBLE CAUSES	POSSIBLE CORRECTIVE STEPS
Compressor will not run	<ol style="list-style-type: none"> 1. Main switch open. 2. Fuse Blown. 3. Thermal overloads tripped. 4. Defective contactor or coil. 5. System shut down by safety devices. 6. No cooling required. 7. Liquid line solenoid will not open. 8. Motor electrical trouble. 9. Loose wiring. 	<ol style="list-style-type: none"> 1. Close switch. 2. Check electrical circuits and motor winding for shorts or grounds. Investigate for possible overloading. Replace fuse after fault is corrected. 3. Overloads are automatically reset. Check unit closely when unit comes back on line. 4. Repair or replace defective parts. 5. Determine type and cause of shutdown and correct it before resetting safety switch. 6. None. Wait until unit calls for cooling. 7. Repair or replace coil. 8. Check motor for open windings, short circuit or burnout. 9. Check all wire junctions. Tighten all terminal screws.
Compressor noisy or vibrating	<ol style="list-style-type: none"> 1. Flooding of refrigerant into crankcase. 2. Improper piping support on suction or liquid line. 3. Worn compressor. 4. Scroll compressor rotation reversed. 	<ol style="list-style-type: none"> 1. Check setting of expansion valves. 2. Relocate, add or remove hangers. 3. Replace. 4. Rewire for phase change.
High discharge pressure	<ol style="list-style-type: none"> 1. Noncondensables in system. 2. System overcharges with refrigerant. 3. Discharge shutoff valve partially closed. 4. Fan not running. 5. Head pressure control setting. 6. Dirty condenser coil. 	<ol style="list-style-type: none"> 1. Remove the noncondensables. 2. Remove excess refrigerant. 3. Open valve. 4. Check electrical circuit. 5. Adjust control setting. 6. Clean condenser coil.
Low discharge pressure	<ol style="list-style-type: none"> 1. Faulty condenser temperature regulation. 2. Suction shutoff valve partially closed. 3. Insufficient refrigerant in system. 4. Low suction pressure. 5. Variable head pressure valve. 	<ol style="list-style-type: none"> 1. Check condenser control operation. 2. Open valve. 3. Check for leaks. Repair and add charge. 4. See corrective steps for low suction pressure. 5. Check valve setting.
High suction pressure	<ol style="list-style-type: none"> 1. Excessive load. 2. Expansion valve overfeeding. 	<ol style="list-style-type: none"> 1. Reduce load or add additional equipment. 2. Check remote bulb. Regulate superheat.
Low suction pressure	<ol style="list-style-type: none"> 1. Lack of refrigerant. 2. Evaporator dirty or iced. 3. Clogged suction line or compressor suction gas strainers. 4. Clogged liquid line filter drier. 5. Expansion valve malfunctioning. 6. Condensing temperature too low. 	<ol style="list-style-type: none"> 1. Check for leaks. Repair leak and add charge. 2. Clean evaporator. 3. Replace cartridge(s). 4. Clean strainers. 5. Check and reset for proper superheat. 6. Check means for regulating condensing temperature.
Low or no oil pressure	<ol style="list-style-type: none"> 1. Clogged suction oil strainer. 2. Excessive liquid in crankcase. 3. Low oil pressure safety switch defective. 4. Worn oil pump. 5. Oil pump reversing gear stuck in wrong position. 6. Worn bearings. 7. Low oil level. 8. Loose fitting on oil lines. 9. Pump housing gasket leaks. 	<ol style="list-style-type: none"> 1. Clean. 2. Check crankcase heater. Reset expansion valve for higher superheat. Check liquid line solenoid valve operation. 3. Replace oil pressure safety switch. 4. Replace oil pump. 5. Reverse direction of compressor rotation. 6. Replace compressor. 7. Add oil. 8. Check and tighten system. 9. Replace gasket.
Compressor loses oil	<ol style="list-style-type: none"> 1. Lack of refrigerant. 2. Excessive compression ring blowby. 3. Refrigerant flood-back. 4. Improper piping or traps. 	<ol style="list-style-type: none"> 1. Check for leaks and repair. Add refrigerant. 2. Replace compressor. 3. Maintain proper superheat at compressor. 4. Correct piping.
Compressor thermal protector switch open	<ol style="list-style-type: none"> 1. Operating beyond design conditions. 2. Discharge valve partially shut. 3. Blown valve plate gasket. 4. Dirty condenser coil. 5. Overcharged system. 	<ol style="list-style-type: none"> 1. Add facilities so that conditions are within allowable limits. 2. Open valve. 3. Replace gasket. 4. Clean coil. 5. Reduce charge.

FIG 1: MECHANICAL ROOM TYPICAL INSTALLATION

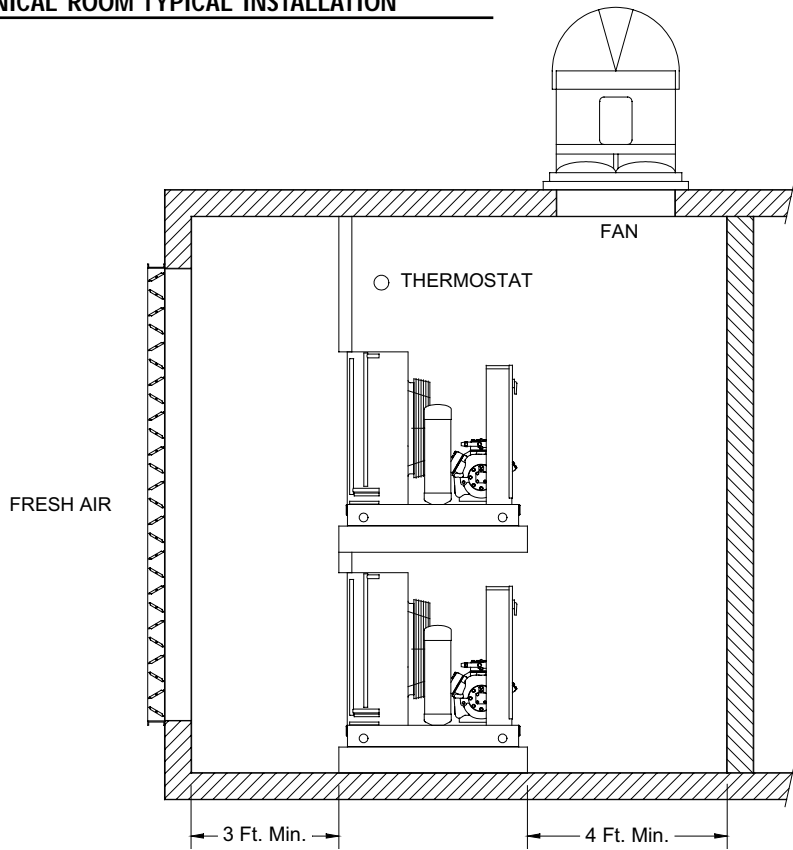


FIG. 2: PIPE SUPPORT EXAMPLE

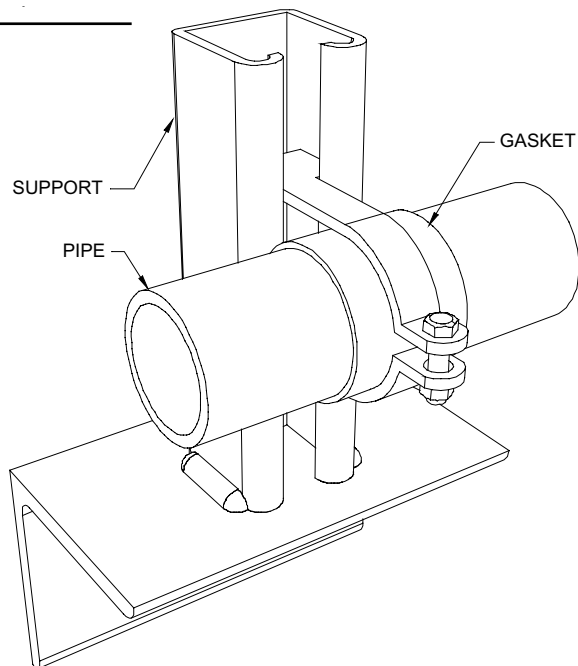
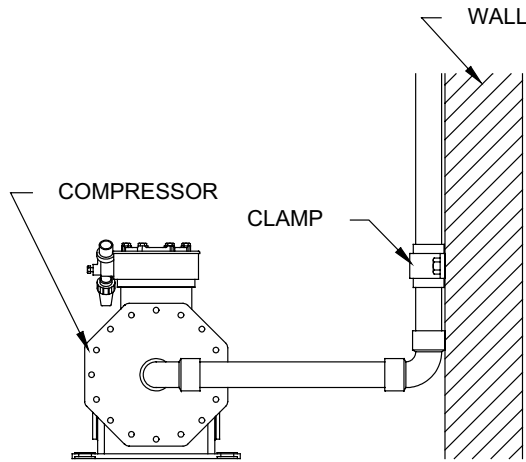
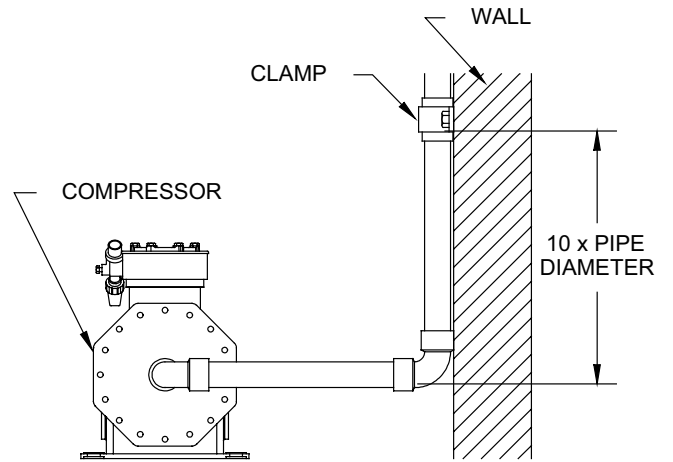


FIG 3: SUPPORTING CONDENSING UNIT AND COMPRESSOR TO WALL

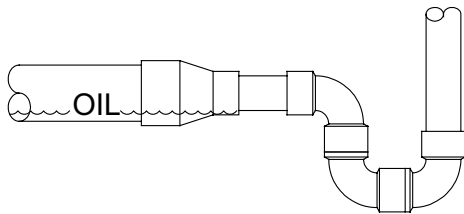


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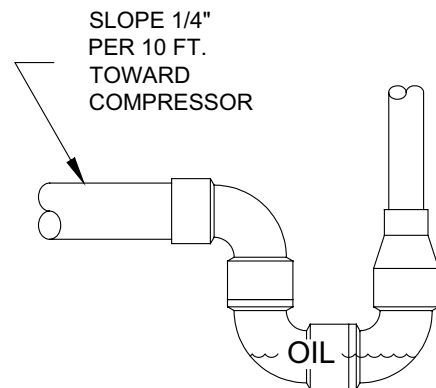


"CORRECT"

FIG 4: SUCTION P-TRAPS

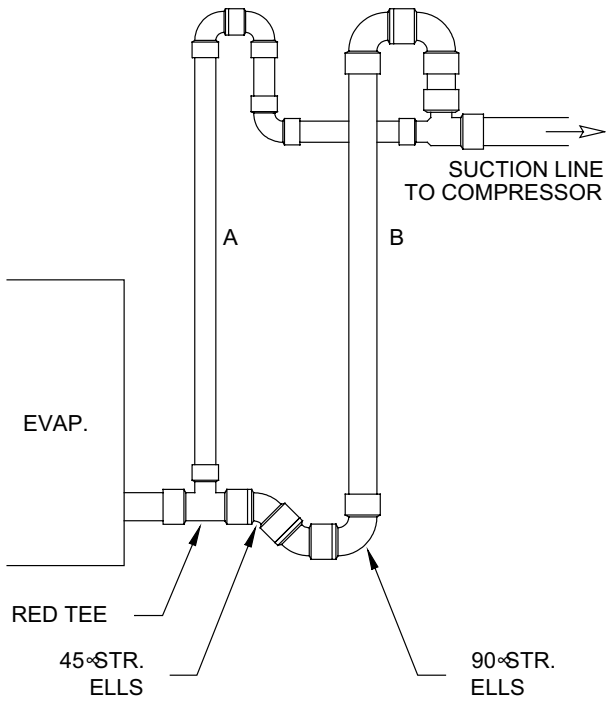


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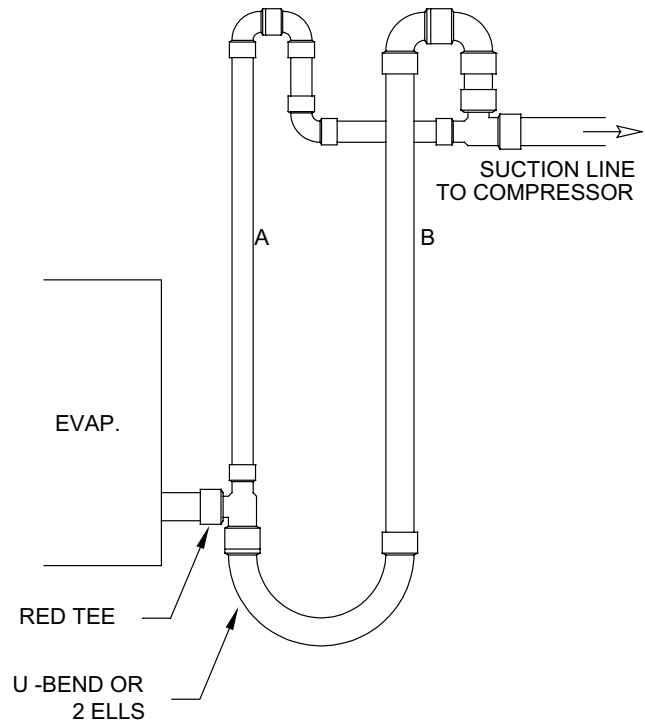


"CORRECT"

FIG 5: DOUBLE SUCTION RISER CONSTRUCTION



METHOD "A"



METHOD "B"

REFRIGERATION SYSTEM START-UP CHECK LIST

1. PRELIMINARY INFORMATION

UNIT COOLER MODEL No.:	_____	SERIAL No.:	_____
UNIT COOLER MODEL No.:	_____	SERIAL No.:	_____
CONDENSING UNIT MODEL No.:	_____	SERIAL No.:	_____
COMPRESSOR MODEL No.:	_____	SERIAL No.:	_____
COMPRESSOR MODEL No.:	_____	SERIAL No.:	_____
DATE:	_____	TECHNICIAN:	_____

2. PRE-START-UP (Check each item when completed)

_____ CHECK ALL ELECTRICAL CONNECTIONS AND TERMINALS FOR TIGHTNESS	_____ CHECK ALL FAN MOTORS AND MOTOR MOUNTS FOR TIGHTNESS
_____ VERIFY REFRIGERANT CHARGE USING CHARGING CHART LABEL ON CONDENSING UNIT	_____ CHECK DRAIN LINES AND DRAIN PAN FOR PROPER DRAINAGE
_____ CHECK REFRIGERANT AND OIL LEVEL IN SYSTEM	_____ CHECK DRAIN LINE HEATER FOR PROPER OPERATION
_____ VERIFY THAT ALL DEFROST CONTROLS ARE FUNCTIONING PROPERLY	_____ CHECK ALL FLARE CONNECTIONS FOR TIGHTNESS

3. START-UP

ELECTRICAL

COMPRESSOR VOLTAGE	L1 - L2 _____	L2 - L3 _____	L3 - L1 _____
COMPRESSOR AMPS	L1 _____	L2 _____	L3 _____
COMPRESSOR	VOLTS _____	PHASE _____	HERTZ _____
UNIT COOLER	VOLTS _____	PHASE _____	HERTZ _____

TEMPERATURES

	START-UP	AFTER 24 HOURS OF OPERATION
AMBIENT TEMPERATURE	_____ F	_____ F
DESIGN BOX TEMPERATURE	_____ F	_____ F
OPERATING BOX TEMPERATURE	_____ F	_____ F
OPERATING BOX TEMPERATURE	_____ F	_____ F
SUPERHEAT AT COMPRESSOR	_____ F	_____ F
SUCTION LINE TEMP. AT UNIT COOLER	_____ F	_____ F
SUPERHEAT AT UNIT COOLER	_____ F	_____ F

PRESSURES (in cooling mode)

REFRIGERANT SUCTION _____ PSIG	TEMP AT COMPRESSOR _____
REFRIGERANT DISCHARGE _____ PSIG	TEMP AT COMPRESSOR _____
EVACUATION: NUMBER TIMES _____	FINAL MICRON _____

UNIT COOLER DRAIN LINE TRAPPED OUTSIDE OF BOX: YES OR NO

4. CONTROLS

THERMOSTAT SETTING _____ F _____ F

DEFROST SETTING _____ /DAY _____ MINUTES FAIL-SAFE

 _____ /DAY _____ MINUTES FAIL-SAFE

5. FIELD INSTALLED EXPANSION VALVE

MANUFACTURER _____

MODEL _____

INSTALLATION, OPERATION & MAINTENANCE INSTRUCTIONS

REPLACEMENT PARTS

CONDENSING UNITS OCH, ICH, OCS, ICS, SCS, WCS, OCZ

MOTOR			
MODEL	008-017	020-220	250-802
SUFFIX-2 240/1/60	RMT 0021	RMT 0022	N/A
SUFFIX-5 208-240/3/60			RMT 0041
SUFFIX-9 480/3/60	N/A	RMT 0023	RMT 0042
SUFFIX-8 600/3/60		RMT 0033	

FAN MOTOR CAPACITOR		
MODEL	008-017	020-220
SUFFIX-2 240/1/60	REC 0003	REC 0004
SUFFIX-5 208-240/3/60		
SUFFIX-9 480/3/60	N/A	REC 0003
SUFFIX-8 600/3/60		

MOTOR MOUNT	
MODEL 008-220	MODEL 250-802
RGR 0140	RGR 0180

CONTROL TRANSFORMER			
COMPRESSOR		SUFFIX-8	SUFFIX-9
SINGLE	TWIN		
020-220	302-802	RET 0207	RET 0208
250-400		RET 0211	RET 0210
		RET 0218	RET 0219

FAN BLADE	
MODEL 008-220	MODEL 250-802
RFN 0040	RFN 0050

FAN GUARD	
MODEL 008-220	MODEL 250-802
RGR 0100	RGR 0120

HEATER

CRANKCASE		RECEIVER		OIL SEPARATOR
COPELAND COMPRESSOR	CARLYLE COMPRESSOR	008 to 220	250 to 802	ALL MODELS
2 D	06 D	REH 0300	REH 0301	REH 0300
3 D	06 E			
4 D	06 CC			
6 D		RCP 3046		
6 D DEEP SUMP	RCP 3014			
ZR 18/ZR 42	RCP 3039			
ZR 46/ZR 72	RCP 3038			
ZR 84/ZR 125	RCP 3045			
K	RCP 3015			
E				
L	RCP 3002			
N				
C	RCP 3043			
R	RCP 3042			

REPLACEMENT PARTS

CONDENSING UNITS OCH, ICH, OCS, ICS, SCS, WCS, OCZ

PRESSURE CONTROL

HIGH PRESSURE	LOW PRESSURE	FAN CYCLING	DUAL PRESSURE	UNLOADER CONTROL
REP 0052	REP 0053	REP 0050	REP 0205	REP 0051

OIL FAILURE CONTROL

MECHANICAL		ELECTRONIC		JOHNSON
COPELAND	CARLYLE	COPELAND	CARLYLE	
REP 0022	REP 0023	REP 0053	RCP 4084	REP 0107

OIL CONTROL

RATING	COMPRESSOR CONTACTOR	DISCONNECT SWITCH	
		NON FUSED	FUSED
25 A	RER 0232	-	-
30 A	RER 0233	REM 2060	REM 2041
40 A	RER 0234	-	-
50 A	RER 0235	-	-
60 A	RER 0236	REM 2064	REM 2042
75 A	RER 0237	-	-
90 A	RER 0238	-	-
100 A	-	REM 2066	REM 2043
200 A	-	REM 2029	REM 2044
400 A	-	REM 2030	REM 2045

DEFROST TIMER

AIR	GAS	ELECTRIC
REM 2032	REM 2031	REM 2031

HEAD COOLING FAN

COPELAND	CARLYLE	
ALL MODELS	030 TO 150	200 TO 802
RCP 4001	RCP 4005	RCP 4004

CONTACTOR AUXILIARY CONTACT

ALL MODELS

RER 0250

Note: Must be the same make and model as contactor.

WARRANTIES

RefPlus Inc. warrants the labeled (Serial No.) new RefPlus Inc. equipment and all parts thereof, to be free from defects in workmanship and material at the time of purchase. Applies to original purchaser only (nontransferable).

Under this warranty RefPlus Inc. shall be limited to repairing or exchanging any parts, without charge FOB factory or nearest authorized parts wholesalers, which may prove defective to the satisfaction of RefPlus Inc. within one year from date of start up, not to exceed

eighteen (18) months from date of shipment from the factory.

The warranties to repair or replace above recited, are the only warranties, express, implied, or statutory, made by RefPlus Inc. No express or implied warranties as to merchantability or fitness for a particular purpose or use. RefPlus Inc. neither assumes, nor authorizes any person to assume for it, any other obligation or liability in connection with the sale of said equipment or any part thereof.

REFPLUS INC. SHALL NOT BE LIABLE:

- 1 - For any repairs or replacement by buyer without the written consent of RefPlus Inc., or when the equipment is installed or operated in a manner contrary to the instructions covering installation and service which accompanied such equipment.
- 2 - For any damages, delays, or losses, direct or consequential, caused by defects, nor for damages caused by short or reduced supply of materials, fire, flood, strikes, acts of God, or circumstances beyond its control.
- 3 - When the failure or defect of any part or parts is incidental to ordinary wear, accident, abuse or misuse; or when the serial number of the equipment has been removed, defaced, altered, or tampered with.
- 4 - When this equipment is operated on low or improper voltages.
- 5 - When this equipment is moved to a different location other than the original installation.
- 6 - For payment of any removal or installation charges of parts or units.

EXCLUSIONS

THIS WARRANTY SHALL NOT APPLY TO LOSS OF FOOD OR REFRIGERANT DUE TO FAILURE FOR ANY REASON.

RefPlus Inc. reserves the right to make any changes in the design or specifications of any product at any time without notice.



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