

Installation Instructions

Part No. 30RC70004601 and 30RC70004701

SAFETY CONSIDERATIONS

Installation of this accessory can be hazardous due to system pressures, electrical components, and equipment location (such as a roof or elevated structure). Only trained, qualified installers and service technicians should install, start-up, and service this equipment.

Untrained personnel can perform basic maintenance functions, such as cleaning coils. All other operations should be performed by trained service personnel. Qualified installers and service technicians are required to have been trained on the following topics when installing and servicing air-conditioning equipment with A2L refrigerant such as R-32:

- Explosive potential of A2L refrigerants
- Potential ignition sources
- Safety measures for unventilated and ventilated rooms or enclosures
- Refrigerant detectors
- Concept of sealed components and sealed enclosures according to IEC 60079-15:2010
- Correct work procedures for the following:
 - Commissioning
 - Maintenance
 - Repair
 - Decommissioning
 - Disposal

When installing this accessory, observe precautions in the literature, labels attached to the equipment, and any other safety precautions that apply:

- Follow all safety codes
- Wear safety glasses and work gloves
- Use care in handling and installing this accessory

It is important to recognize safety information. This is the safety-alert symbol: . When you see this symbol on the unit and in instructions or manuals, be alert to the potential for personal injury.

Understand the signal words DANGER, WARNING, CAUTION, and NOTE. These words are used with the safety-alert symbol. DANGER identifies the most serious hazards which **will** result in severe personal injury or death. WARNING signifies hazards which **could** result in personal injury or death. CAUTION is used to identify unsafe practices, which **may** result in minor personal injury or product and property damage. NOTE is used to highlight suggestions which **will** result in enhanced installation, reliability, or operation.

SYMBOL	CODE	MEANING
	IEC 60417-5032 (2002-10)	Alternating current
	IEC 60417-5019 (2006-8)	Protective earth
	IEC 60417-5018 (2006-10)	Functional earthing
	ISO 7000-0434A (2004-01)	Caution
	ISO 7000-0790 (2004-01)	Read operator's manual
	IEC 60417-5036 (2002-10)	Dangerous voltage
	GHS02: Flammable	Flammable gas
	ISO 7010-W021 (2011-05)	Warning: flammable materials
	ISO 7000-1659 (2004-01)	Service indicator: read technical manual
	ISO 7000-1701 (2004-01)	Pressure
	ISO 7000-1641 (2004-01)	Operator's manual: operating instructions

CAUTION

This system uses R-410A, which has higher pressures than R-22 and other refrigerants. No other refrigerant may be used in this system. Suction tubing design pressure is 445 psig (3068 kPa) and liquid tubing design pressure is 656 psig (4522 kPa). Failure to use gauge set, hoses, and recovery systems designed to handle R-410A refrigerant may result in personal injury and equipment damage. If unsure about equipment, consult the equipment manufacturer.

⚠️ WARNING

DO NOT USE TORCH to remove any component. System contains oil and refrigerant under pressure.

To remove a component, wear protective gloves and goggles and proceed as follows:

- a. Shut off electrical power to unit.
- b. Recover refrigerant to relieve all pressure from system using both high-pressure and low pressure ports.
- c. Traces of vapor should be displaced with nitrogen and the work area should be well ventilated. Refrigerant in contact with an open flame produces toxic gases.
- d. Cut component connection tubing with tubing cutter and remove component from unit. Use a pan to catch any oil that may come out of the lines and as a gauge for how much oil to add to the system.
- e. Carefully un-sweat remaining tubing stubs when necessary. Oil can ignite when exposed to torch flame.

Failure to follow these procedures may result in personal injury or death.

GENERAL

The remote evaporator accessory allows for indoor relocation of the evaporator as another means of freeze protection. Maximum separation of the 30RC base unit and evaporator is limited to:

- Plate fin coils: 75 ft (22 m) of piping.
- Microchannel coils: 50 ft (15 m) of piping.

A normally open relay contact should be connected across TB5-10 and 20. The relay should be closed when the leak detector is in normal operation — no leak detected. The relay should open when a leak is detected. The unit will turn off the compressors and show an alarm.

Maximum evaporator elevation above the condensing section is limited to 15 ft (4.5 m). Relocating the evaporator introduces minimal line losses if correct piping practices are followed. See Tables 1-2 for accessory package usage and contents.

In addition to the parts supplied with the accessory package, the following material must be field supplied:

- refrigerant grade liquid, hot gas bypass, and suction line piping (length determined by installation)
- water piping and fittings
- suction and water line tubing insulation (length determined by installation)
- electrical conduit (length determined by installation)
- assorted refrigerant grade fittings according to site requirements (elbows, tees, refrigerant pipe couplings, etc.)
- 90°C appliance wire 16 AWG if evaporator heater installation is required. (Length determined by installation.)
- 1/2 in. strain reliefs

⚠️ WARNING

Electrical shock can cause personal injury and death. Shut off all power to this equipment during installation and service. There may be more than one disconnect switch. Tag all disconnect locations to alert others not to restore power until work is completed.

Table 1 — 30RC70004601 Accessory Package Contents for 30RC010-020, 035

PART NUMBER	QUANTITY	DESCRIPTION
HX30FZ001	1	JUNCTION BOX
HX38ZZ001	1	BOX, COVER
HW60EA001	2	CONNECTOR, CONDUIT, 1/2 in.
38C24601	2	VARNISH CLOTH
KH43LE125	2	DRIER, FILTER, 5/8 in. ODF
30RA500358	2	WELL, SUCTION LINE
32GB404694	3	CABLE ASY, EXV
99MH7504GC204210	4	WIRE
99MZ7504GC204210	4	WIRE
HY69DS045	6	TERMINAL, MALE
RM02EJ115	150	CABLE, 22 GA, 2 CONDUCTOR GRAY
HT32TC705	4	CRANKCASE HEATER 460V
HT32TC205	4	CRANKCASE HEATER 230V
HT32TC905	4	CRANKCASE HEATER 575V
HT32TC743	1	HEATER
HT32TC243	1	HEATER
HT32TC943	1	HEATER
2003776917	1	LABEL, READ OPERATOR'S MANUAL
2003776918	1	LABEL, A2L FLAME SYMBOL - NAME PLATE
2003776919	2	LABEL, A2L SERVICE PORT
2003776920	1	LABEL, WARNING - RISK OF FIRE 1
2003776922	1	LABEL, WARNING - RISK OF FIRE 3
2003776923	1	LABEL, WARNING - RISK OF FIRE 4
2002851493	1	LABEL, REFRIGERANT R-32
EB51RW122	2	VALVE, RELIEF, 650 PSI, R-410A
50DP504673	2	LABEL, BAR CODE

Table 2 — 30RC70004701 Accessory Package Contents for 30RC025, 030, 040-060

PART NUMBER	QUANTITY	DESCRIPTION
HX30FZ001	1	JUNCTION BOX
HX38ZZ001	1	BOX, COVER
HW60EA001	2	CONNECTOR, CONDUIT, 1/2 in.
38C24601	2	VARNISH CLOTH
KH43LE125	2	DRIER, FILTER, 5/8 in. ODF
30RA500358	2	WELL, SUCTION LINE
32GB404694	3	CABLE ASY, EXV
99MH7504GC204210	4	WIRE
99MZ7504GC204210	4	WIRE
HY69DS045	6	TERMINAL, MALE
RM02EJ115	150	CABLE, 22GA, 2 CONDUCTOR GRAY
HT32BH943	4	CRANKCASE HEATER 460V
HT32BH948	4	CRANKCASE HEATER 230V
HT32BH941	4	CRANKCASE HEATER 575V
2003776917	1	LABEL, READ OPERATOR'S MANUAL
2003776918	1	LABEL, A2L FLAME SYMBOL - NAME PLATE
2003776919	2	LABEL, A2L SERVICE PORT
2003776920	1	LABEL, WARNING - RISK OF FIRE 1
2003776922	1	LABEL, WARNING - RISK OF FIRE 3
2003776923	1	LABEL, WARNING - RISK OF FIRE 4
2002851493	1	LABEL, REFRIGERANT R-32
EB51RW122	2	VALVE, RELIEF, 650 PSI, R-410A
50DP504673	2	BAR CODE
RM04ED402	150	CABLE, 18GA, 4 CONDUCTOR BK\BN\RD\OR

INSTALLATION

Perform the following to install the remote evaporator mounting accessory:

1. Inspect package contents for any missing or damaged parts. File a claim with the shipping agency if parts are damaged. Notify your Carrier representative if any item is missing.
2. Turn off the electrical power to the unit using the optional disconnect or the field-installed disconnect and lock off using proper lockout and tag-out procedures.
3. Recover holding charge or refrigerant charge from all circuits using standard refrigeration practices before cutting any refrigerant lines.

4. Disconnect water lines, thermistors, flow switch, EXV (electronic expansion valve) cable(s) and evaporator heater wiring.
5. Because the 30RC units use polyolester (POE) oil, which can absorb moisture, it is important to minimize the amount of time that the system interior is left exposed to the atmosphere. Minimizing the exposure time of the oil to the atmosphere will minimize the amount of moisture that needs to be removed during evacuation.
6. Cut suction, liquid and hot gas bypass (if equipped) lines in area shown in Fig. 1-4. Remove evaporator/EXV assembly from unit.

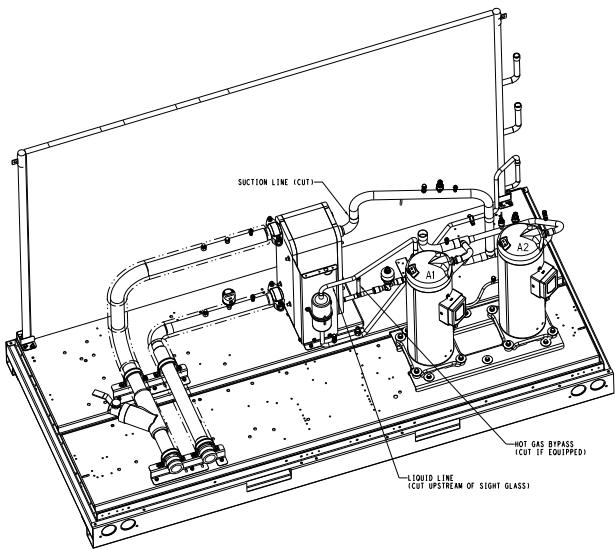


Fig. 1 — 30RC010-030 Typical Unit Evaporator Piping (30RC020 Shown)

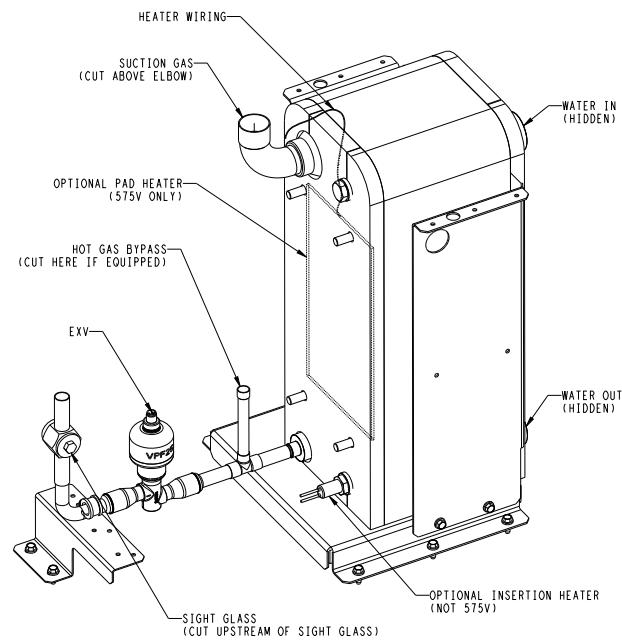


Fig. 3 — 30RC020 Evaporator Removed from Unit

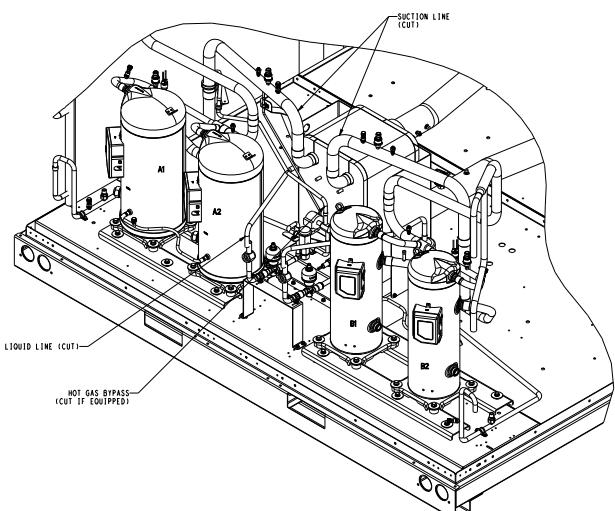


Fig. 2 — 30RC035-060 Typical Unit Evaporator Piping (30RC040 Shown)

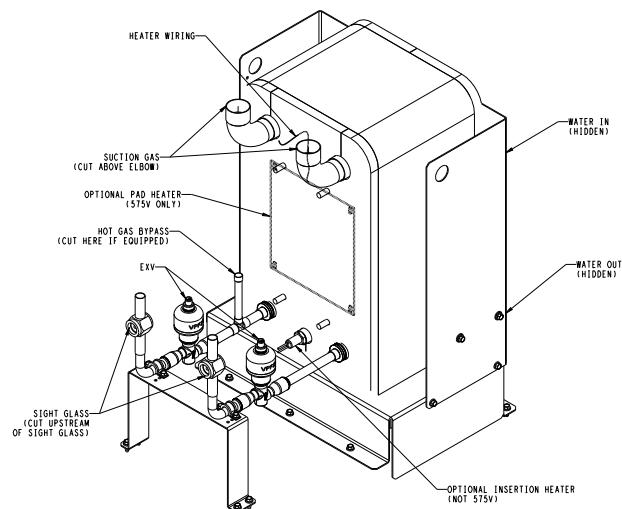


Fig. 4 — 30RC040 Evaporator Removed from Unit

7. Install evaporator in suitable location that can support the weight of the evaporator while operating. Install evaporator vertically as shown in Fig. 2-4. For 010-030 units, see Fig. 5 for evaporator dimensions.

IMPORTANT: For sizes 035-060, circuit A liquid line is on the lower left corner and circuit B liquid line is on the lower right corner. See Fig. 6.

8. Install field-supplied suction lines, hot gas bypass lines (if required), and liquid refrigerant lines from unit to evaporator according to Fig. 6-7 and Tables 3-5, using standard refrigeration practices.

9. Prior to brazing the suction line, remove the following parts from the suction line to avoid damage:

- Suction pressure transducer(s) and Schrader core(s) from the fitting(s).
- Schrader core(s) and cap(s) from pressure tap fittings.
- Return Gas Thermistor and insulation.
- High Flow Schrader port(s) and cap(s).

Be sure all wires are clear of the brazing operation to avoid damage.

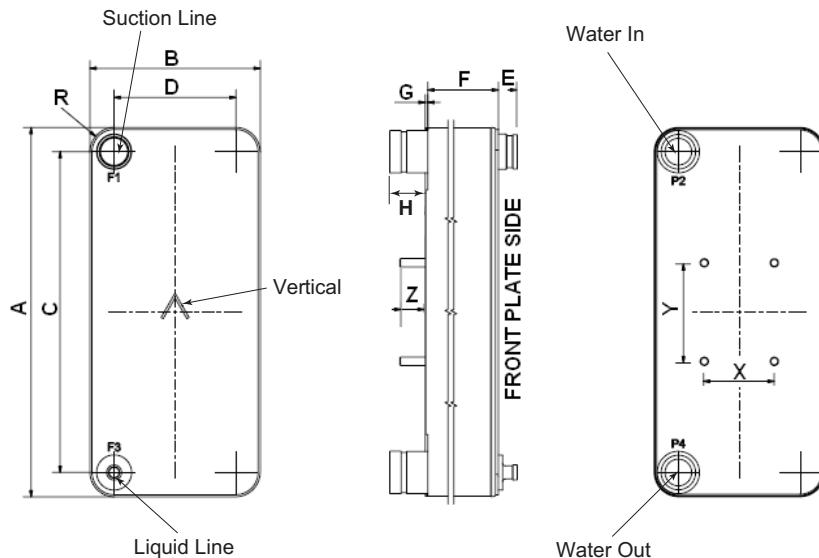
10. Use a nitrogen purge while brazing refrigerant lines. Be careful to route piping to proper refrigerant circuit. It is required that liquid line filter driers be installed between condenser(s)

and expansion device(s) to capture any foreign debris and provide additional moisture removal capacity.

11. Double suction riser is required on some units if refrigerant flow is up. See Table 5 for required units and piping details. Refer to Fig. 8 for suction riser and speed riser piping diagram.

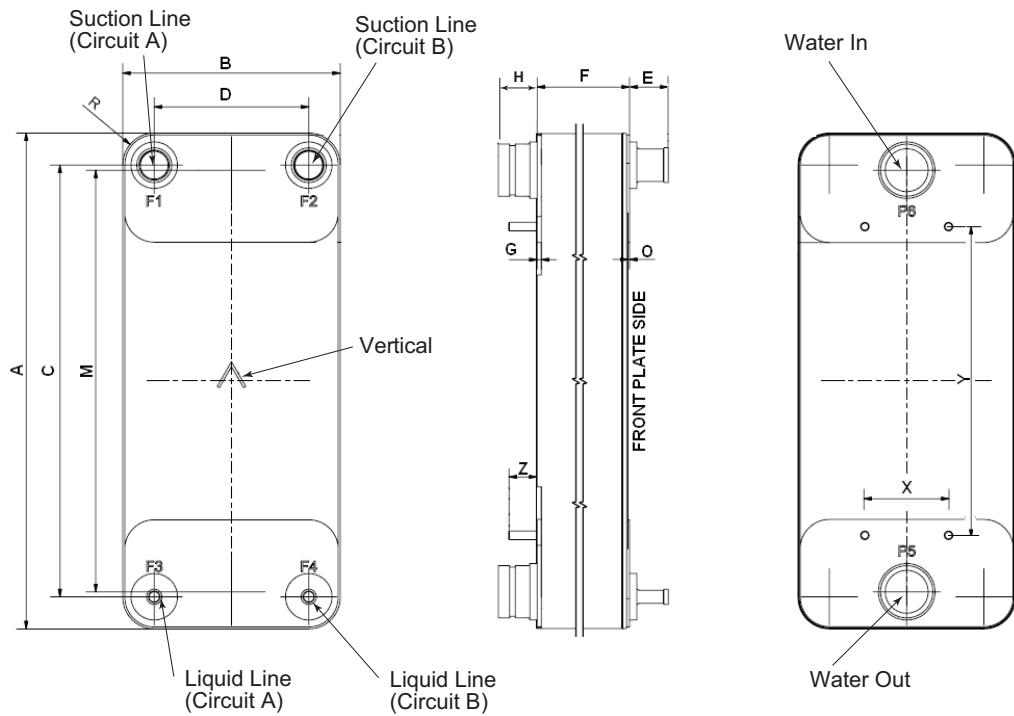
12. If hot gas bypass valve is used in remote applications, the line size should be kept to a minimum to reduce the amount of liquid refrigerant that can condense in the line during the off cycle. Liquid refrigerant in the hot gas bypass line can result in a liquid slug entering the compressor at start-up. Line size is not as critical as if sizing for discharge lines, therefore 5/8 in. OD line size is recommended for all applications. For 30RC035-060, dual circuit units should use circuit "A" hot gas bypass only. It is important to loop the hot gas bypass line over the compressor to help reduce the chance of the hot gas bypass line filling with liquid in the off cycle. The hot gas bypass valve remain with the outdoor portion of the unit. If hot gas bypass valve is installed as a factory-installed option, cut the line outlet of the valve and run the hot gas bypass line to the remote evaporator. Leave the hot gas bypass control solenoid valve where it is already located.

13. Once all brazing is complete, re-install the devices removed in Step 9.



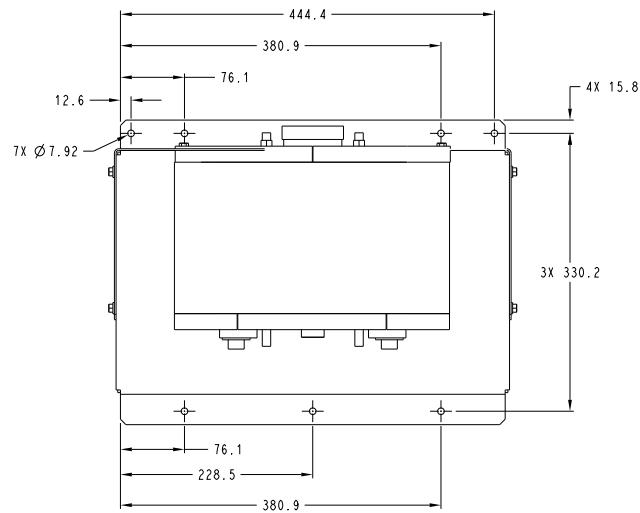
30RC UNIT SIZE	DIMENSIONS (in.)											
	A	B	C	D	E	F	G	H	R	X	Y	Z
010	496	162	472	88	40	106	2	48	25	110	298	M10 x 40
015	496	162	472	88	40	130	2	48	25	110	298	M10 x 40
020	496	162	472	88	40	173	2	48	25	110	298	M10 x 40
025	496	162	472	88	40	236	2	48	25	110	298	M10 x 40
030	496	162	472	88	40	236	2	48	25	110	298	M10 x 40

Fig. 5 — Evaporator Dimensions — 30RC010-030 Units

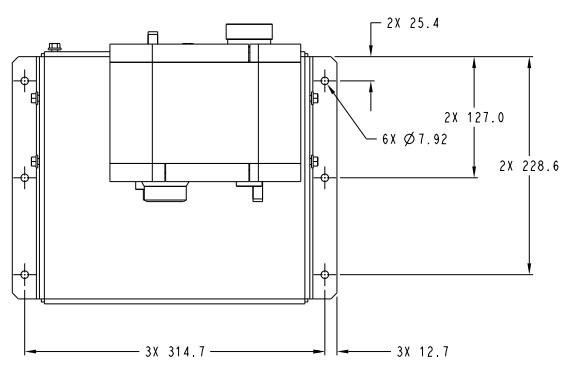


30RC UNIT SIZE	DIMENSIONS (in.)												
	A	B	C	D	E	F	G	H	M	R	X	Y	Z
035	525	289	399	177	30	179	2	48	397	25	110	286	M10 x 40
040	525	289	399	177	30	238	2	48	397	25	110	286	M10 x 40
045	525	289	399	177	30	238	2	48	397	25	110	286	M10 x 40
050	525	289	399	177	30	255	2	48	397	25	110	286	M10 x 40
055	525	289	399	177	30	281	2	48	397	25	110	286	M10 x 40
060	525	289	399	177	30	281	2	48	397	25	110	286	M10 x 40

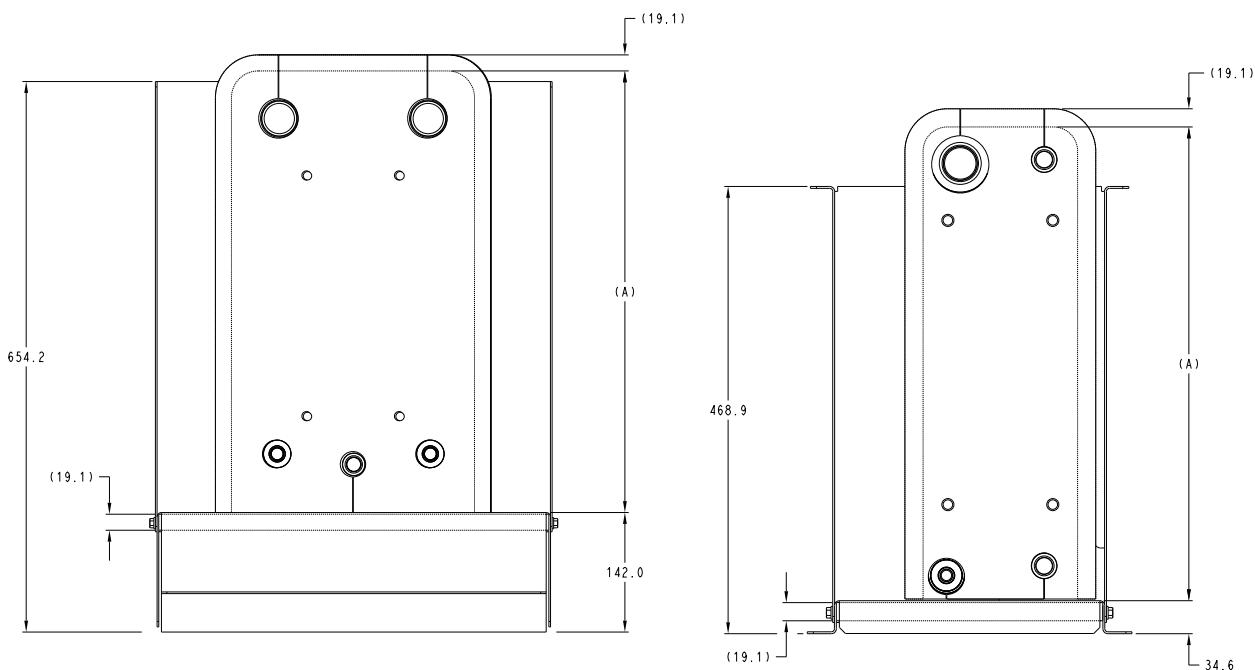
Fig. 6 — Evaporator Dimensions — 30RC035-060 Units



035-60T SHEET METAL PAN
MOUNTING LOCATION



010-30T SHEET METAL PAN
MOUNTING LOCATION



DIMENSION A REFERENCES HEAT EXCHANGER OVERALL HEIGHT.
SEE PURCHASE PART SPEC SHEET FOR THIS DIMENSION.

Fig. 7 — Dimensions (in.) and Mounting Location for Heat Exchanger Base Pan

Table 3 — Recommended Refrigerant Line Sizing^a

30RC	REFRIGERANT LINES					
	SUCTION LINE DIAMETER (in.)		LIQUID LINE BEFORE EXV DIAMETER (in.)		LIQUID LINE AFTER EXV DIAMETER (in.) ^b	
	Ckt A	Ckt B	Ckt A	Ckt B	Ckt A	Ckt B
010	1-3/8	—	5/8	—	1/2	—
015	1-3/8	—	5/8	—	1/2	—
020	1-5/8	—	5/8	—	1/2	—
025	1-5/8	—	7/8	—	5/8	—
030	1-5/8	—	7/8	—	5/8	—
035	1-3/8	1-3/8	5/8	5/8	1/2	1/2
040	1-5/8	1-5/8	7/8	5/8	1/2	1/2
045	1-5/8	1-5/8	5/8	7/8	1/2	1/2
050	1-5/8	1-5/8	7/8	7/8	5/8	5/8
055	1-5/8	1-5/8	7/8	7/8	5/8	5/8
060	1-5/8	1-5/8	7/8	7/8	5/8	5/8

NOTE(S):

- a. Shading indicates double suction risers required. Refer to Table 5 and Fig. 8 for double suction risers/speed riser piping designations.
- b. Removal of EXV assembly from heat exchanger is not recommended.

LEGEND

EXV — Electronic Expansion Valve

Table 4 — Evaporator Connection Dimensions

Unit 30RC	WATER CONNECTIONS (VICTAULIC) INLET/OUTLET (in.)	REFRIGERANT CONNECTIONS LIQUID INLET (IDS)	REFRIGERANT CONNECTIONS SUCTION OUTLET (IDS)	BPHE CARRIER P/N	EMPTY WEIGHT (lb)	OPERATING WEIGHT (lb)	EMPTY WEIGHT (kg)	OPERATING WEIGHT (kg)
010	1.5	1/2	1-3/8	LL01LV010	32	42	15	19
015	1.5	1/2	1-3/8	LL01LV015	38	51	17	23
020	1.5	1/2	1-3/8	LL01LV020	49	68	22	31
025	2	5/8	1-5/8	LL01LV030	62	93	28	42
030	2	5/8	1-5/8	LL01LV030	62	93	28	42
035	2.5	5/8	1-5/8	LL01LV035	88	140	40	64
040	2.5	5/8	1-5/8	LL01LV045	114	174	52	79
045	2.5	5/8	1-5/8	LL01LV045	114	174	52	79
050	2.5	5/8	1-5/8	LL01LV050	122	184	55	83
055	2.5	5/8	1-5/8	LL01LV059	133	199	60	90
060	2.5	5/8	1-5/8	LL01LV059	133	199	60	90

LEGEND

BPHE — Brazed Plate Heat Exchanger

IDS — Inside Diameter (Solder)

Table 5 — Double Suction Riser Line Sizing

UNIT 30RC	CIRCUIT	RECOMMENDED LINE SIZE (in.)		DOUBLE SUCTION RISER LINE SIZING (in.)			SPEED RISER (in.)
		SUCTION	LIQUID	A	B	C	D
010	A	1-3/8	5/8	7/8	1-1/8	1-3/8	7/8

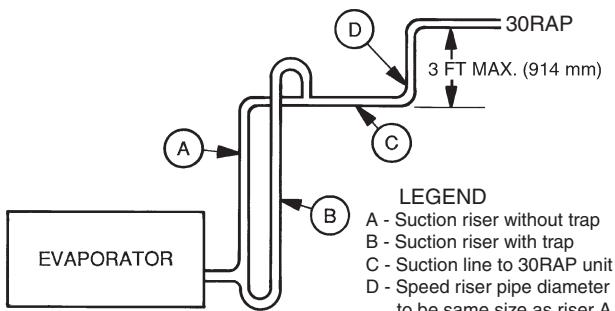


Fig. 8 — Suction Riser/Speed Riser Piping

14. Once all of the piping connections are complete, leak test the unit and then pull a deep dehydration vacuum. Connect the vacuum pump to the charging valve in the suction line and to the liquid line service valve. For best results, it is recommended that a vacuum of at least 500 microns be obtained. Afterwards, to ensure that no moisture is present in the system, perform a standing vacuum-rise test. With the unit in deep vacuum (500 microns or less), isolate the vacuum pump from the system. Observe the rate-of-rise of the vacuum in the system. If the vacuum rises by more than 50 microns in a 30-minute time period, then continue the dehydration process. Maintain a vacuum on the system until the standing vacuum requirement is met. This will ensure a dry system. By following these evacuation and dehydration procedures, the amount of moisture present in the system will be minimized.
15. Insulate evaporator with original insulation or suitable alternative if needed. Removal of insulation is not recommended.
16. Remove water strainer from unit and reinstall in new water inlet piping within 10 ft (3 m) of the evaporator. Install remainder of water piping.
17. Install entering and leaving water thermistor wells (included in kit). Thermistors should be located within 1 ft (0.3 m) of the evaporator inlet and outlet.
18. Install a 1/4 NPT fitting for the flow switch. Flow switch should be installed with at least 2 pipe diameters of straight tube in front of and behind switch and no water-side service valves between the flow switch and the evaporator. Flow switch should be installed near evaporator. Piping containing switch should be no smaller in diameter than field-supplied water lines. Remove water flow switch from the unit and reinstall in new piping. Route flow switch extension cable from the flow switch to the unit and plug it into the flow switch cable assembly, which was previously disconnected. Coil excess cable and wire tie in a convenient location.
19. Label and cut EWT (entering water temperature) and LWT (leaving water temperature) thermistors approximately 1 ft from the circuit board connector. Label and cut EXV cable(s) approximately 1 ft from the EXV board connector. Label and disconnect the existing cable.
20. The junction box supplied with the accessory is for splicing the thermistor leads and EXV Packard Weather-Pack[†] EXV connector leads from the evaporator with the cables from the base unit. Mount the junction box near the liquid refrigerant connection end of evaporator. One or two knockouts can be used. Remove a knockout from the bottom of the junction box and install HW60EA001 conduit connector for strain relief at the knockout hole. If using conduit to provide mechanical protection to the wires between the junction box and the base unit, remove another knockout. Follow local codes.
21. Install thermistors into thermistor wells in entering and leaving water piping. Run the labeled thermistor leads from the evaporator into the junction box and tighten the strain relief. Strip back the lead jackets to expose the 2 wires in each lead.
22. A 150 ft (45.7 m), 2-conductor jacketed cable is provided to connect the thermistor leads in the junction box back to the base unit. Cut the cable in half. Label both ends of one cable "EWT." Label both ends of the other cable "LWT." Run one end of the jacketed cables into the junction box and splice the cable wires to the identically tagged thermistor leads. Solder the splices and insulate them to prevent shorting.
23. Install crankcase heaters, one per compressor, and terminate in control box according to unit schematic diagram. See Table 6-7 for heater part numbers. See Fig. 9-14 for heater locations.
24. Apply refrigerant labels from kit to evaporator. Apply 2003776919 to service ports near the evaporator.
25. Charge machine with refrigerant using nameplate charge amount. Add charge according length of interconnecting piping. Charge at the liquid line. Do not charge into suction line or compressor damage will occur. Charge per unit installation instructions. Note the final charge amount for each circuit when complete on the unit.

Preliminary charge is based on 25 ft (7.6 m) of interconnecting liquid line piping between indoor and outdoor units. For liquid line piping longer than 25 ft (7.6 m), use the following information:

1/2 in. (12.7 mm) liquid line — 0.6 lb per 10 linear ft (0.27 kg per 3 m)
5/8 in. (15.9 mm) liquid line — 1.0 lb per 10 linear ft (0.45 kg per 3 m)
7/8 in. (22.2 mm) liquid line — 2.0 lb per 10 linear ft (0.91 kg per 3 m)
1-1/8 in. (28.6 mm) liquid line — 3.5 lb per 10 linear ft (1.59 kg per 3 m)
1-3/8 in. (34.9 mm) liquid line — 5.1 lb per 10 linear ft (2.32 kg per 3 m)

26. Check suction gas superheat for both circuits during steady operation. Increase set point if required, to account for suction line pressure drop and heat gain so that there is an 8°F (4.4°C) superheat leaving the evaporator when measured at the evaporator. Inspect the compressor oil sump during steady operation to ensure that oil is not foaming due to liquid flooding.
27. Check operation according to unit Controls, Start-Up, Operation, Service and Troubleshooting manual and adjust oil and refrigerant charge as necessary. After adjusting the refrigerant charge, allow each circuit to run fully loaded for 20 minutes. Stop the compressors and check the oil level. Oil level should be 1/8 to 3/8 up on the sight glass. Add oil only if necessary to bring the oil into view in the sight glass. If oil is added, run the circuit for an additional 10 minutes, then stop and check oil level. If the level remains low, check the piping system for proper design for oil return; also, check the system for leaks. If checking the oil level with unit running in part load, let unit run one hour, then run at full load for 10 minutes. If oil does not return to acceptable sight glass levels, check for correct suction piping and line sizing. Oil must be added if the oil level does not meet the requirements.
28. Replace filter drier or filter drier core if pressure drop becomes excessive after 24 hours of operation.

1. Third-party trademarks and logos are property of their respective owners.

Table 6 — 30RC025, 030, 040-060 Crankcase Heater Part Numbers

MODEL NUMBER	VOLTAGE	PART NUMBER
30RC025, 030, 040-060	460	HT32BH943
	208/230	HT32BH948
	575	HT32BH941
	380	HT32BH943

Table 7 — 30RC010-020, 035 Crankcase Heater Part Numbers

MODEL NUMBER	VOLTAGE	PART NUMBER			
		A1 COMPRESSOR	A2 COMPRESSOR	B1 COMPRESSOR	B2 COMPRESSOR
30RC010	460	HT32TC705	HT32TC743	—	—
	208/230	HT32TC205	HT32TC243	—	—
	575	HT32TC905	HT32TC943	—	—
	380	HT32TC705	HT32TC743	—	—
30RC015, 020	460	HT32TC705	HT32TC705	—	—
	208/230	HT32TC205	HT32TC205	—	—
	575	HT32TC905	HT32TC905	—	—
	380	HT32TC705	HT32TC705	—	—
30RC035	460	HT32TC705	HT32TC705	HT32TC705	HT32TC705
	208/230	HT32TC205	HT32TC205	HT32TC205	HT32TC205
	575	HT32TC905	HT32TC905	HT32TC905	HT32TC905
	380	HT32TC705	HT32TC705	HT32TC705	HT32TC705

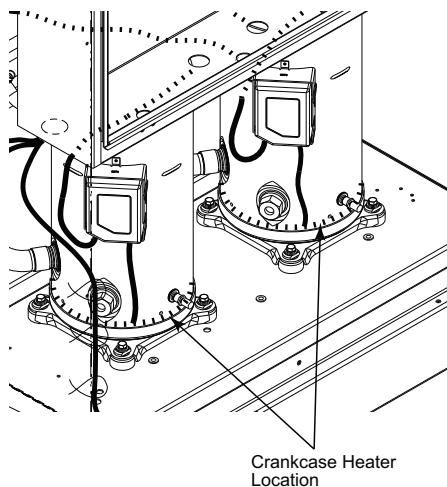


Fig. 9 — Crankcase Heater Location — 30RC010-030 Units

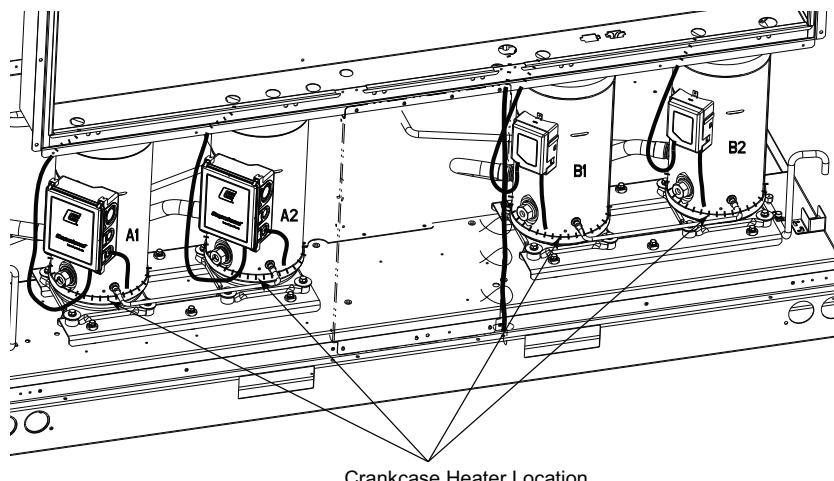
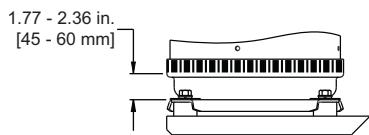
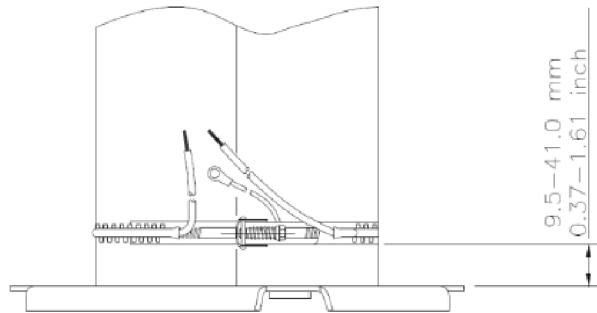


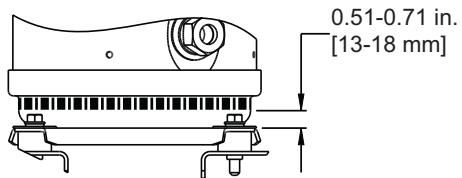
Fig. 10 — Crankcase Heater Location — 30RC035-060 Units



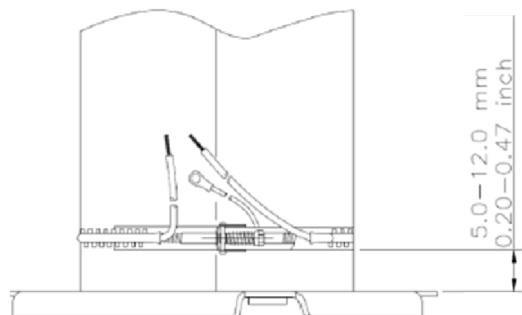
**Fig. 11 — Copeland YP137, YP154, YP182
Crankcase Heater Location**



**Fig. 13 — Copeland YP72, YPD76, YP105, YPD110,
YP123, YPD129
Crankcase Heater Location**



**Fig. 12 — Copeland YPD145, YPD163, YPD192
Crankcase Heater Location**



**Fig. 14 — Copeland YP51
Crankcase Heater Location**

