



Installation Instructions

Part No. 30RA-900---057, 30RA-900---060 and 30RA-900---067

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.

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

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

⚠ WARNING

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

⚠ 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 gage 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 mounting accessory permits indoor relocation of the evaporator from 30RAP units up to 50 ft (15.2 m) of piping away from the base unit with a maximum evaporator elevation above the condensing section of 15 ft (4.5 m). Relocating the evaporator introduces minimal line losses if correct piping practices are followed. See Tables 2 and 3 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

⚠ 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 gage 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.

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 30RAP 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. 1-5. Remove evaporator/EXV assembly from unit.

Table 1 — 30RA-900---057 Accessory Package Contents for 30RAP010, 015, 018-060

PART NUMBER	QUANTITY	DESCRIPTION
HX30FZ001	1	Junction Box, Waterproof
HX38ZZ001	1	Box Cover, Waterproof
HW60EA001	2	Conduit Connector, 1/2 in. (25.4 mm W x 60.4 mm L)
38C24601	2	Varnish Cloth, 1 in. W X 2.38 in. L
KH43LE125	2	Filter Drier
30RA500358	2	Sensor Well
32GB404694	3	Flow Switch Extension Cable, 95 ft (29.0 m)
99MH7504GC204210	4	Wire, BLK, 42 in. (1066 mm), 10 AWG
99MZ7504GC204210	4	Wire, YEL, 42 in. (1066 mm), 10 AWG
HY69DS045	6	Terminal, Male
RM02EJ115	150 ft (45.7 m)	Thermistor Cable, 2 Conductor 22 ga
HT32BH943	4	Crankcase Heater (See Table 7 for usage details.)
HT32BH948	4	Crankcase Heater (See Table 7 for usage details.)
HT32BH941	4	Crankcase Heater (See Table 7 for usage details.)

Table 2 — 30RA-900---067 Accessory Package Contents for 30RAP011 and 016

PART NUMBER	QUANTITY	DESCRIPTION
HX30FZ001	1	Junction Box, Waterproof
HX38ZZ001	1	Box Cover, Waterproof
HW60EA001	2	Conduit Connector, 1/2 in. (25.4 mm W x 60.4 mm L)
38C24601	2	Varnish Cloth, 1 in. W X 2.38 in. L
KH43LE125	2	Filter Drier
30RA500358	2	Sensor Well
32GB404694	2	Flow Switch Extension Cable, 95 ft (29.0 m)
99MH7504GC204210	4	Wire, BLK, 42 in. (1066 mm), 10 AWG
99MZ7504GC204210	4	Wire, YEL, 42 in. (1066 mm), 10 AWG
HY69DS045	6	Terminal, Male
RM02EJ115	150 ft (45.7 m)	Thermistor Cable, 2 Conductor 22 ga
HT32TC705	2	Crankcase Heater (See Table 8 for usage details.)
HT32TC205	2	Crankcase Heater (See Table 8 for usage details.)
HT32TC905	2	Crankcase Heater (See Table 8 for usage details.)
HT32TC743	1	Crankcase Heater (See Table 8 for usage details.)
HT32TC243	1	Crankcase Heater (See Table 8 for usage details.)
HT32TC943	1	Crankcase Heater (See Table 8 for usage details.)

Table 3 — 30RA-900---060 Accessory Package Contents for 30RAP070-150

PART NUMBER	QUANTITY	DESCRIPTION
HX30FZ001	1	Junction Box, Waterproof
HX38ZZ001	1	Box Cover, Waterproof
HW60EA001	2	Conduit Connector, 1/2 in. (25.4 mm W x 60.4 mm L)
38C24601	2	Varnish Cloth, 1 in. W x 2.38 in. L
30RA500358	2	Sensor Well
32GB404694	3	Flow Switch and EXV Extension Cable, 95 ft (29.0 m)
HY69DS045	6	Terminal, Male
RM02EJ115	150 ft (45.7 m)	Thermistor Cable, 2 Conductor 22 ga

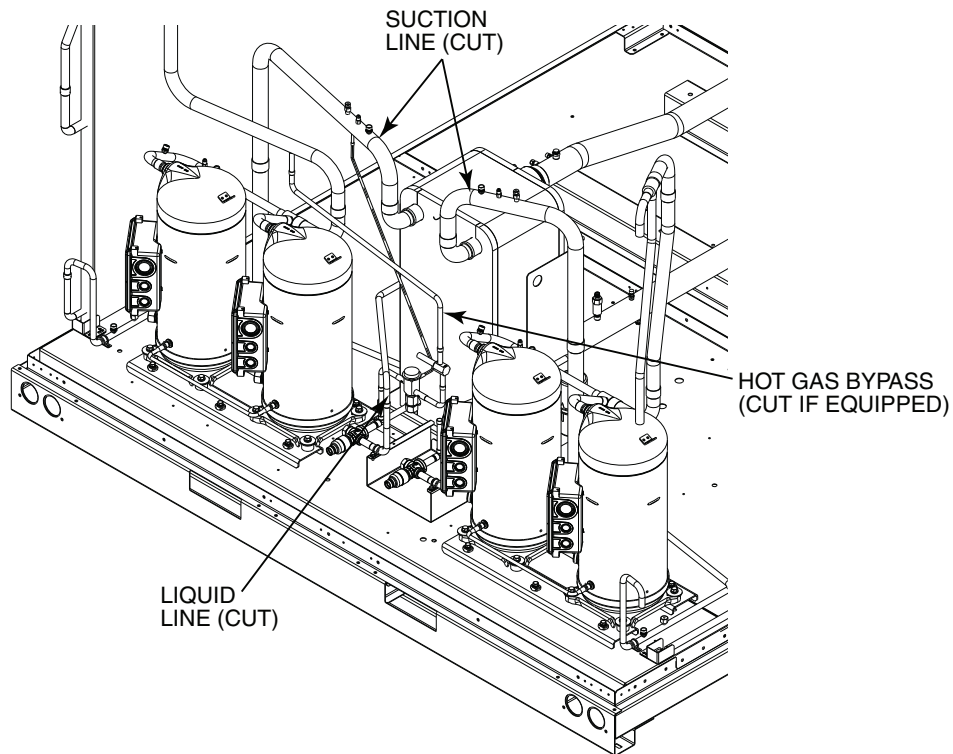


Fig. 1 — Typical Unit Evaporator Piping (30RAP035-060, Dual Circuit Shown)

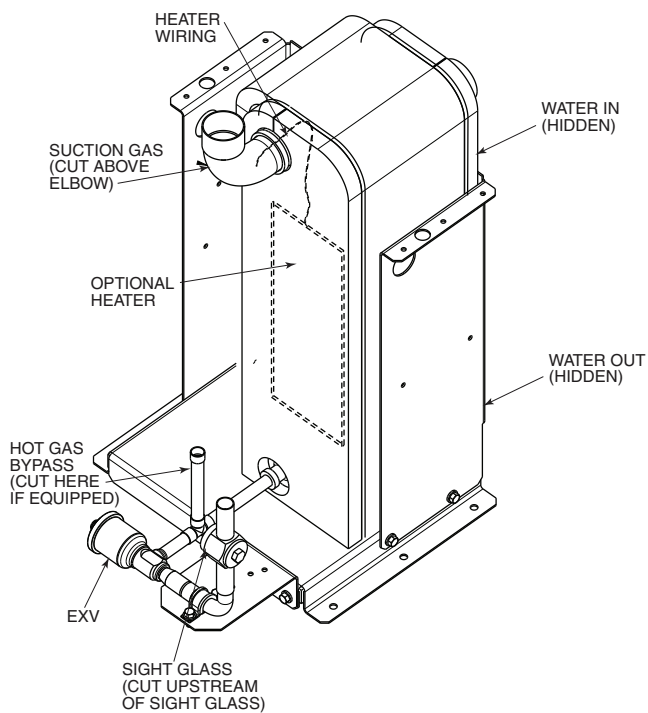


Fig. 2 — Evaporator Removed from Unit (30RAP010-030)

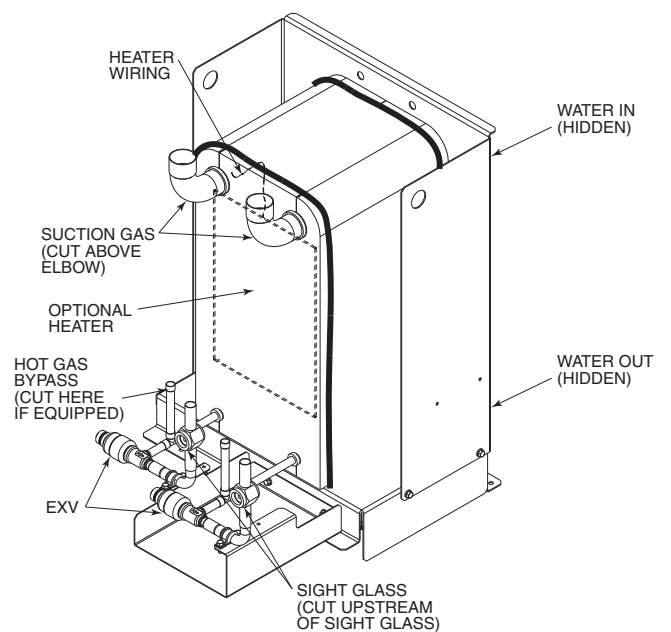


Fig. 3 — Evaporator Removed from Unit (30RAP035-060)

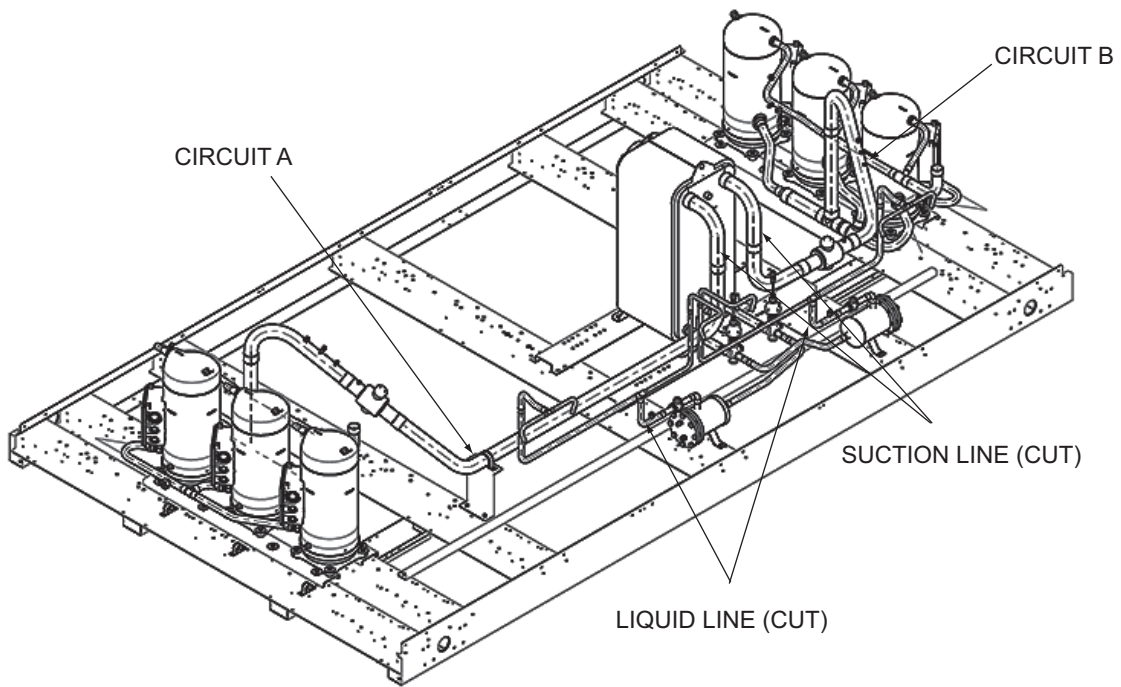


Fig. 4 — Typical Unit Evaporator Piping (30RAP070-150)

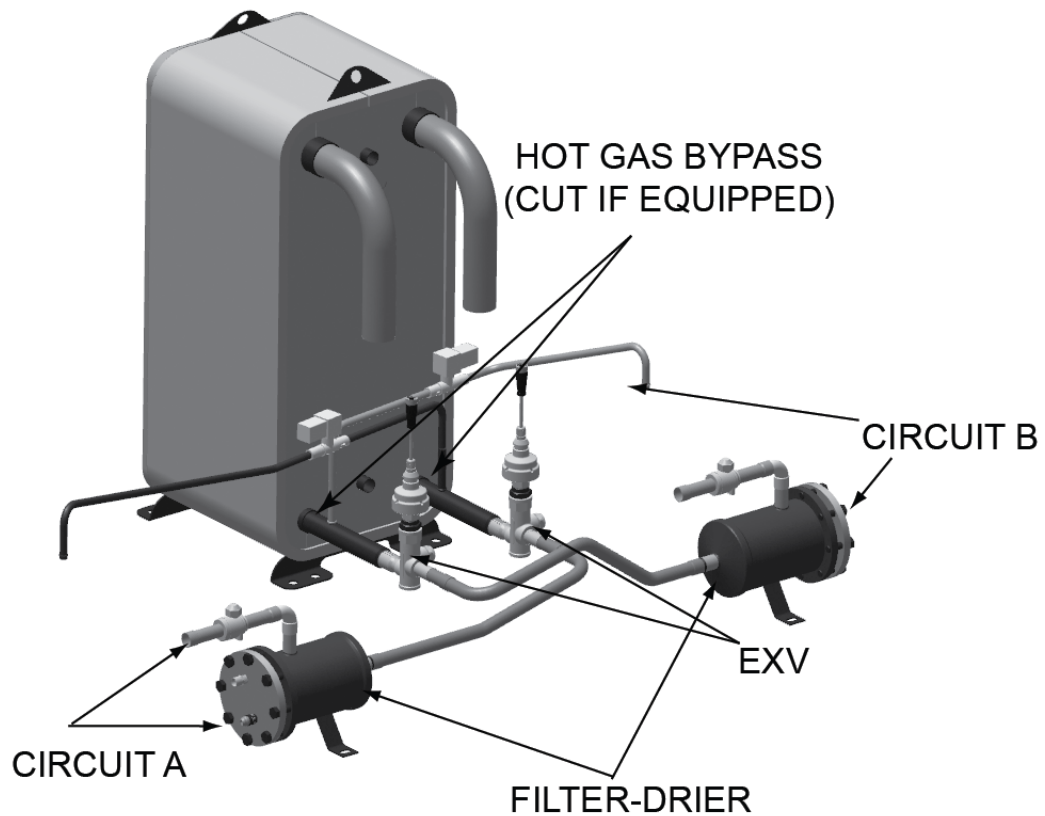


Fig. 5 — Evaporator with Hot Gas Bypass Piping (30RAP070-150)

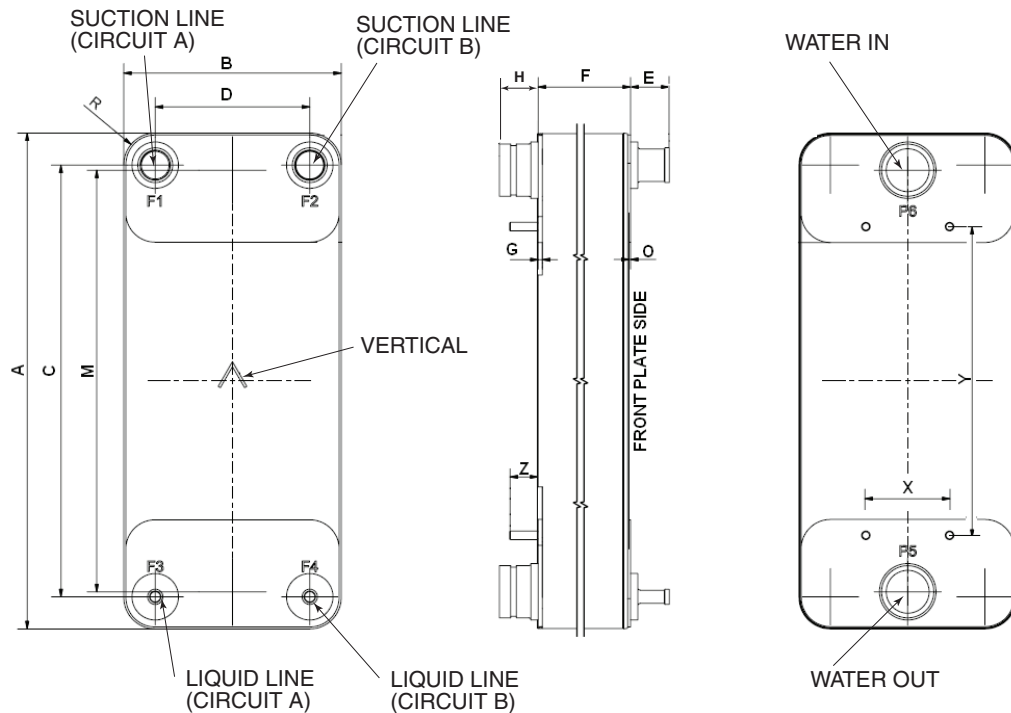
7. Install evaporator heater if necessary; if evaporator will be located in area with ambient temperature above 40°F or applied with fluid suitably treated for freeze protection, then evaporator heater is not required. Refer to the power schematic located inside the control box for heater connection detail and follow the local electrical code. Carefully note refrigerant and water connections. Install evaporator in suitable location that can support the weight of the evaporator while operating. Install evaporator vertically as shown in Fig. 3 and 5. For 070-150, reposition filter drier as necessary.

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. For sizes 070-150, circuit A liquid line is on the lower right corner and circuit B liquid line is on the lower left corner. See Fig. 7.

8. Install field-supplied suction lines, hot gas bypass lines (if required), and liquid refrigerant lines from unit to evaporator according to Fig. 6-9 and Tables 4-6, using standard refrigeration practices. 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 the condenser(s) and the expansion device(s) to

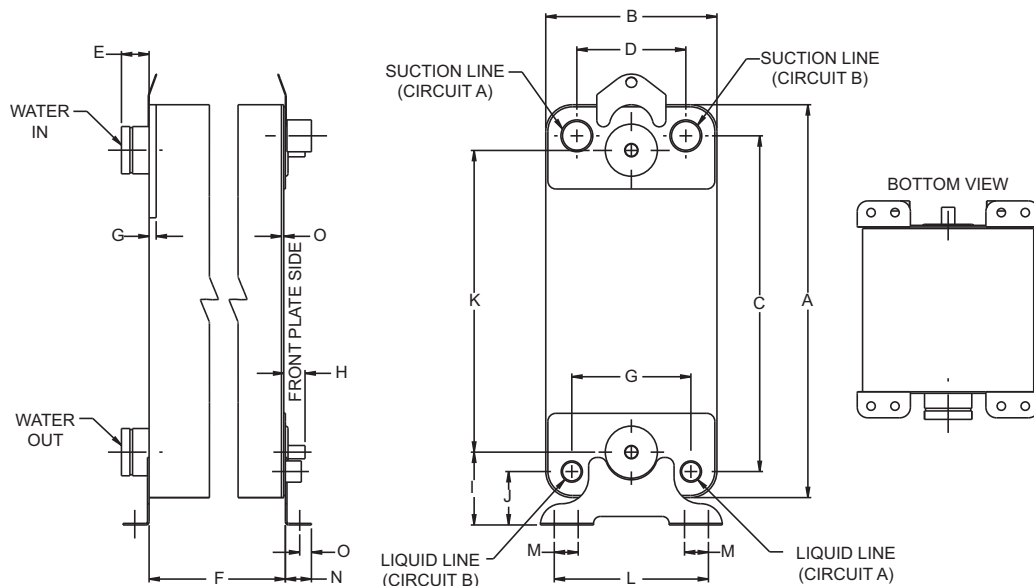
capture any foreign debris and provide additional moisture removal capacity.

9. Double suction riser is required on some units if refrigerant flow is up. See Table 6 for required units and piping details. Refer to Fig. 10 for suction riser and speed riser piping diagram.
10. 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 $\frac{5}{8}$ in. OD line size is recommended for all applications. For 30RAP010-060, dual circuit units should use circuit "A" hot gas bypass only. For 30RAP070-150, use both circuits hot gas bypass. 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.



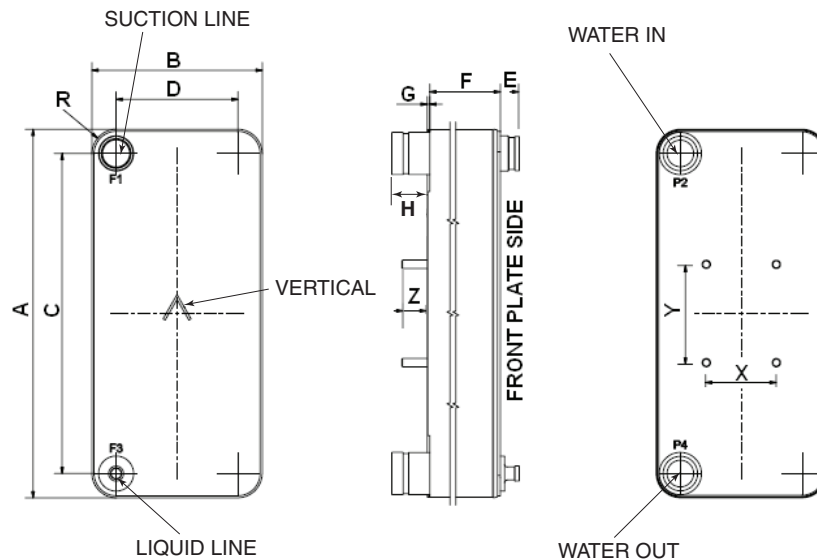
UNIT SIZE	DIMENSIONS (IN.)												
	A	B	C	D	E	F	G	H	M	R	X	Y	Z
035-045	20 3/4	9 9/16	18 1/2	2 1/2	1	8	1/8	2 1/8	18	1 3/8	4	5 1/2	1 5/8
050-060	27 3/8	12	23 3/4	8 1/2	2	9	0	2 1/8	23 1/4	1 1/4	4 5/8	17	1 5/8

Fig. 6 — Evaporator Dimensions — 30RAP035-060 Units



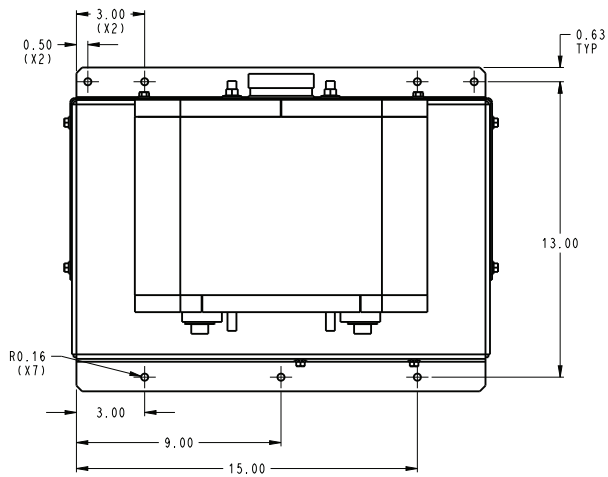
UNIT SIZE	DIMENSIONS (IN.)														
	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
070	19 1/8	9 3/4	15 3/4	6 1/8	1	18 1/4	6 1/2	1 5/8	4 1/4	3 1/2	14 1/2	7 7/8	N/A	1 7/8	7/8
080	19 1/8	9 3/4	15 3/4	6 1/8	1	20 7/8	6 1/2	1 5/8	4 1/4	3 2/4	14 1/2	7 7/8	N/A	1 7/8	7/8
090	29 1/8	12 5/8	24 7/8	8 1/8	2	12 1/8	8 7/8	2	5 3/8	4	11 3/8	11 3/8	1 3/4	1 7/8	7/8
100	29 1/8	12 5/8	24 7/8	8 1/8	2	13 3/8	8 7/8	2	5 3/8	4	11 3/8	11 3/8	1 3/4	1 7/8	7/8
115	29 1/8	12 5/8	24 7/8	8 1/8	2	15 4/8	8 7/8	2	5 3/8	4	11 3/8	11 3/8	1 3/4	1 7/8	7/8
130	29 1/8	12 5/8	24 7/8	8 1/8	2	17 1/8	8 7/8	2	5 3/8	4	11 3/8	11 3/8	1 3/4	1 7/8	7/8
150	29 1/8	12 5/8	24 7/8	8 1/8	2	19 5/8	8 7/8	2	5 3/8	4	11 3/8	11 3/8	1 3/4	1 7/8	7/8

Fig. 7 — Evaporator Dimensions — 30RAP070-150 Units

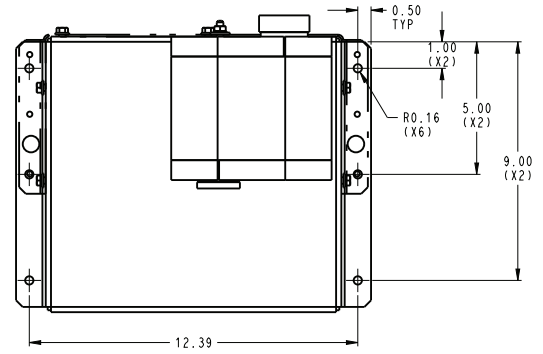


UNIT SIZE	DIMENSIONS (IN.)											
	A	B	C	D	E	F	G	H	R	X	Y	Z
010	20 3/4	4 11/16	18 1/2	2 1/2	1	3.7	1/4	13/4	1	2 3/8	8 7/8	1 1/4
015	20 3/4	4 11/16	18 1/2	2 1/2	1	4.7	1/4	13/4	1	2 3/8	8 7/8	1 1/4
016	20 3/4	4 11/16	18 1/2	2 1/2	1	6.5	1/4	13/4	1	2 3/8	8 7/8	1 1/4
018	20 3/4	4 11/16	18 1/2	2 1/2	1	5.6	1/4	13/4	1	2 3/8	8 7/8	1 1/4
020	20 3/4	4 11/16	18 1/2	2 1/2	1	7.4	1/4	13/4	1	2 3/8	8 7/8	1 1/4
025	20 3/4	4 11/16	18 1/2	2 1/2	1	9.0	1/4	13/4	1	2 3/8	8 7/8	1 1/4
030	20 3/4	9 9/16	18	6 7/8	1	8.0	1/8	2 1/8	1 3/8	4	5 1/2	1 5/8

Fig. 8 — Evaporator Dimensions — 30RAP010-030 Units



035-060 TON SHEET METAL PAN
MOUNTING LOCATION



010-030 TON SHEET METAL PAN
MOUNTING LOCATION

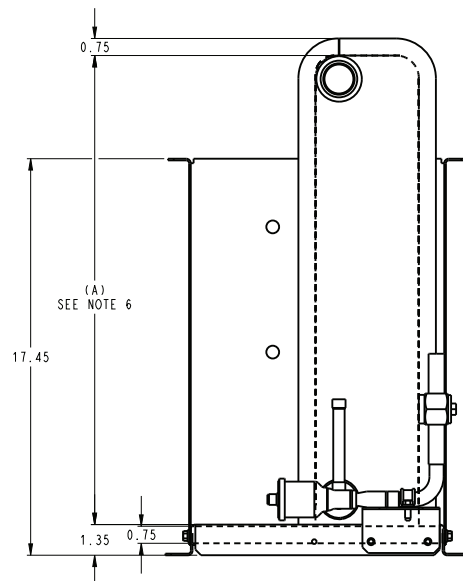
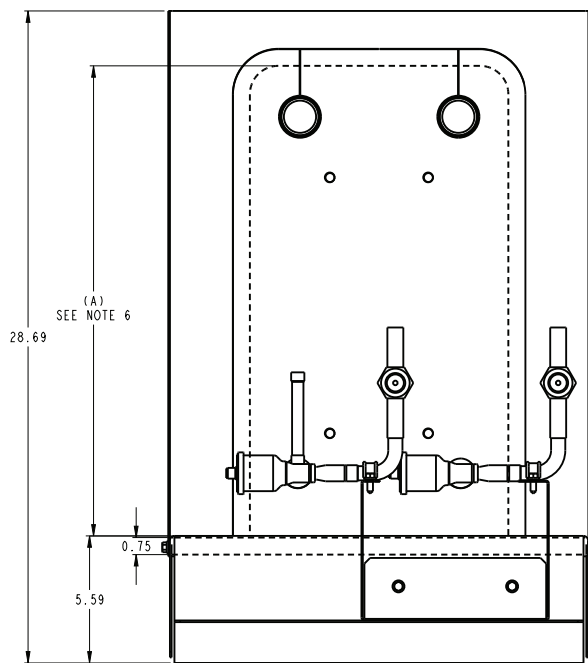


Fig. 9 — Dimensions and Mounting Location for Heat Exchanger Base Pan

Table 4 — Recommended Refrigerant Line Sizing

30RAP	REFRIGERANT LINES					
	SUCTION LINE DIAMETER (IN.)		LIQUID LINE BEFORE EXV DIAMETER (IN.)		LIQUID LINE AFTER EXV DIAMETER (IN.)*	
	Ckt A	Ckt B	Ckt A	Ckt B	Ckt A	Ckt B
010	1 ³ / ₈	—	5/ ₈	—	1/ ₂	—
011	1 ³ / ₈ †	—	5/ ₈	—	1/ ₂	—
015	1 ³ / ₈	—	5/ ₈	—	1/ ₂	—
016	1 ³ / ₈	—	5/ ₈	—	1/ ₂	—
018	1 ⁵ / ₈	—	5/ ₈	—	1/ ₂	—
020	1 ⁵ / ₈	—	5/ ₈	—	1/ ₂	—
025	1 ⁵ / ₈	—	5/ ₈	—	5/ ₈	—
030	1 ⁵ / ₈	—	5/ ₈	—	5/ ₈	—
035	1 ⁵ / ₈	1 ⁵ / ₈	5/ ₈	5/ ₈	1/ ₂	1/ ₂
040	1 ⁵ / ₈	1 ⁵ / ₈	5/ ₈	5/ ₈	1/ ₂	1/ ₂
045	1 ⁵ / ₈	1 ⁵ / ₈	5/ ₈	5/ ₈	1/ ₂	1/ ₂
050	1 ⁵ / ₈	1 ⁵ / ₈	5/ ₈	5/ ₈	5/ ₈	5/ ₈
055	1 ⁵ / ₈	1 ⁵ / ₈	5/ ₈	5/ ₈	5/ ₈	5/ ₈
060	1 ⁵ / ₈	1 ⁵ / ₈	5/ ₈	5/ ₈	5/ ₈	5/ ₈
070	1 ⁵ / ₈	2 ¹ / ₈ †	7/ ₈	7/ ₈	1 ¹ / ₈	1 ¹ / ₈
080	2 ¹ / ₈ †	2 ¹ / ₈ †	7/ ₈	7/ ₈	1 ¹ / ₈	1 ¹ / ₈
090	2 ¹ / ₈ †	2 ¹ / ₈ †	7/ ₈	7/ ₈	1 ³ / ₈	1 ³ / ₈
100	2 ⁵ / ₈ †	2 ⁵ / ₈ †	7/ ₈	1 ¹ / ₈	1 ³ / ₈	1 ³ / ₈
115	2 ⁵ / ₈ †	2 ⁵ / ₈ †	1 ¹ / ₈	1 ¹ / ₈	1 ³ / ₈	1 ³ / ₈
130	2 ⁵ / ₈ †	2 ⁵ / ₈ †	1 ¹ / ₈	1 ¹ / ₈	1 ³ / ₈	1 ³ / ₈
150	2 ⁵ / ₈ †	2 ⁵ / ₈ †	1 ¹ / ₈	1 ¹ / ₈	1 ³ / ₈	1 ³ / ₈

EXV — Electronic Expansion Valve

* Removal of EXV assembly from heat exchanger is not recommended.

† Double suction risers required. Refer to Table 6 and Fig. 10 for double suction risers/speed riser piping designations.

Table 5 — Evaporator Connection Dimensions

UNIT 30RAP	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 ¹ / ₂	1/ ₂	1 ³ / ₈	LL01SZ010	22	27	10	12
011	1 ¹ / ₂	1/ ₂	1 ³ / ₈	LL01SZ010	22	27	10	12
015	1 ¹ / ₂	1/ ₂	1 ³ / ₈	LL01SZ015	27	34	12	15
016	1 ¹ / ₂	1/ ₂	1 ³ / ₈	LL01SZ018	32	39	14	18
018	1 ¹ / ₂	1/ ₂	1 ⁵ / ₈	LL01SZ018	32	39	14	18
020	1 ¹ / ₂	1/ ₂	1 ⁵ / ₈	LL01SZ020	40	50	18	23
025	1 ¹ / ₂	5/ ₈	1 ⁵ / ₈	LL01SZ025	46	58	21	26
030	2	5/ ₈	1 ⁵ / ₈	LL01SZ032	80	96	36	44
035	2 ¹ / ₂	1/ ₂	1 ⁵ / ₈	LL01LB035	98	125	44	57
040	2 ¹ / ₂	1/ ₂	1 ⁵ / ₈	LL01LB040	118	145	53	66
045	2 ¹ / ₂	1/ ₂	1 ⁵ / ₈	LL01LB045	125	155	57	70
050	2 ¹ / ₂	5/ ₈	1 ⁵ / ₈	LL01LB050	137	172	62	78
055	2 ¹ / ₂	5/ ₈	1 ⁵ / ₈	LL01LB055	160	202	73	92
060	2 ¹ / ₂	5/ ₈	1 ⁵ / ₈	LL01LB055	160	202	73	92
070	3	1 ¹ / ₈	2 ¹ / ₈	LL01SB070	197	279	89	127
080	3	1 ¹ / ₈	2 ¹ / ₈	LL01SB080	228	323	103	147
090	3	1 ³ / ₈	2 ¹ / ₈	LL01SB090	245	351	111	159
100	3	1 ³ / ₈	2 ⁵ / ₈	LL01SB100	267	385	121	175
115	3	1 ³ / ₈	2 ⁵ / ₈	LL01SB110	304	440	138	200
130	3	1 ³ / ₈	2 ⁵ / ₈	LL01SB130	334	485	152	220
150	3	1 ³ / ₈	2 ⁵ / ₈	LL01SB150	378	551	171	250

IDS — Inside Diameter (Solder)

Table 6 — Double Suction Riser Line Sizing

UNIT 30RAP	CIRCUIT	RECOMMENDED LINE SIZE (IN.)		DOUBLE SUCTION RISER LINE SIZING (IN.)			SPEED RISER (IN.)
		SUCTION	LIQUID	A	B	C	D
011	A	1 ³ / ₈	5/ ₈	7/ ₈	1 ¹ / ₈	1 ³ / ₈	7/ ₈
070	A	1 ⁵ / ₈	7/ ₈	—	—	—	—
	B	2 ¹ / ₈	7/ ₈	1 ³ / ₈	1 ⁵ / ₈	2 ¹ / ₈	1 ³ / ₈
080	A	2 ¹ / ₈	7/ ₈	1 ³ / ₈	1 ⁵ / ₈	2 ¹ / ₈	1 ³ / ₈
	B	2 ¹ / ₈	7/ ₈	1 ³ / ₈	1 ⁵ / ₈	2 ¹ / ₈	1 ³ / ₈
090	A	2 ¹ / ₈	7/ ₈	1 ³ / ₈	1 ⁵ / ₈	2 ¹ / ₈	1 ³ / ₈
	B	2 ¹ / ₈	7/ ₈	1 ³ / ₈	1 ⁵ / ₈	2 ¹ / ₈	1 ³ / ₈
100	A	2 ⁵ / ₈	7/ ₈	1 ⁵ / ₈	2 ¹ / ₈	2 ⁵ / ₈	1 ⁵ / ₈
	B	2 ⁵ / ₈	1 ¹ / ₈	1 ⁵ / ₈	2 ¹ / ₈	2 ⁵ / ₈	1 ⁵ / ₈
115	A	2 ⁵ / ₈	1 ¹ / ₈	1 ⁵ / ₈	2 ¹ / ₈	2 ⁵ / ₈	1 ⁵ / ₈
	B	2 ⁵ / ₈	1 ¹ / ₈	1 ⁵ / ₈	2 ¹ / ₈	2 ⁵ / ₈	1 ⁵ / ₈
130	A	2 ⁵ / ₈	1 ¹ / ₈	1 ⁵ / ₈	2 ¹ / ₈	2 ⁵ / ₈	1 ⁵ / ₈
	B	2 ⁵ / ₈	1 ¹ / ₈	1 ⁵ / ₈	2 ¹ / ₈	2 ⁵ / ₈	1 ⁵ / ₈
150	A	2 ⁵ / ₈	1 ¹ / ₈	1 ⁵ / ₈	2 ¹ / ₈	2 ⁵ / ₈	1 ⁵ / ₈
	B	2 ⁵ / ₈	1 ¹ / ₈	1 ⁵ / ₈	2 ¹ / ₈	2 ⁵ / ₈	1 ⁵ / ₈

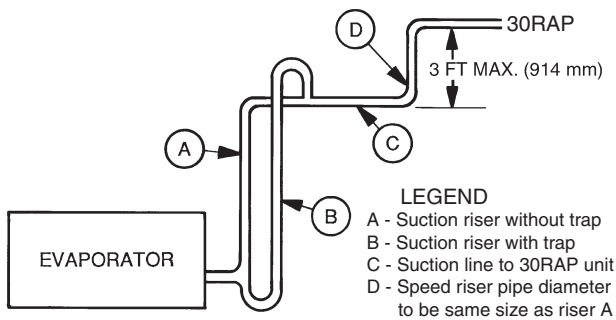


Fig. 10 — Suction Riser/Speed Riser Piping

- 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.
- Install evaporator heater (if necessary). If evaporator will be located in an area with ambient temperatures above 40°F (4.4°C) or applied with fluid suitably treated for freeze protection, then the evaporator heater is not required.
- Insulate evaporator with original insulation or suitable alternative if needed. Removal of insulation is not recommended.
- 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.
- 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.
- 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 re-install 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.

- Label and cut EWT (entering water temperature) and LWT (leaving water temperature) thermistors approximately 1 ft from the MBB (main base board) connector. For 30RAP010-060 units with a Packard Weather-Pack¹ EXV connector cable, label and cut EXV cable(s) approximately 1 ft from the EXV board connector. For 30RAP010-060 with an M12 EXV connector cable and all 30RAP070-090 units, label and disconnect the existing cable.
- The junction box supplied with the accessory is for splicing the thermistor leads and EXV Packard Weather-Pack EXV connector leads (30RAP010-060) 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.
- 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.
- 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.
- For 30RAP010-060 units with the Packard Weather-Pack EXV connector:
 - A 150 ft (45.7 m), 4-wire jacketed cable is provided to connect the EXV leads in the junction box back to the base unit. Each wire in the jacketed cable is a different color. Cut the cable in half. Label each end of one of the EXV cable "EXV A."
 - Label the ends of the other cable "EXV B" (if present).

1. Weather-Pack is a trademark of Waytek, Inc.

- c. Run one end of the jacketed cable(s) into the junction box and splice the cable wires to the identically tagged EXV cable. Solder the splices and insulate them to prevent shorting.
- d. Tighten the strain relief for the cables and secure the junction box cover with the supplied 8B-18 x 3/8-in. screw.
- e. Coil excess cables and wire tie in a convenient location.

For 30RAP010-060 with M12 EXV connectors and 30RAP070-150 units:

- a. Label each end of one of the EXV extension cable assemblies supplied with the accessory “EXV A.” Label the ends of the other assemblies “EXV B.”
 - b. Plug the electrical connectors of the appropriate EXV cable assemblies into the EXVs.
 - c. Run the other end of the cable assemblies to the base unit.
 - d. Plug the accessory EXV cable assemblies into the corresponding EXV leads located at the base unit where the EXV assemblies were removed.
 - e. Coil excess cables and wire tie in a convenient location.
22. For 30RAP010-060 units only, install crankcase heaters, one per compressor, and terminate in control box according to unit schematic diagram. See Table 7-9 for heater part numbers. See Fig. 11-16 for heater locations.
 23. 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)

24. 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.
25. 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.
26. Replace filter drier or filter drier core if pressure drop becomes excessive after 24 hours of operation.

Table 7 — 30RAP010,015,018-060 Crankcase Heater Part Numbers

MODEL NUMBER	VOLTAGE	PART NUMBER
30RAP010, 30RAP015, 30RAP018-060	460	HT32BH943
	208/230	HT32BH948
	575	HT32BH941
	380	HT32BH943

Table 8 — 30RAP011, 016 Crankcase Heater Part Numbers

MODEL NUMBER	VOLTAGE	PART NUMBER (QUANTITY)	
		A1 COMPRESSOR	A2 COMPRESSOR
30RAP011	460	HT32TC705(1)	HT32TC743(1)
	208/230	HT32TC205(1)	HT32TC243(1)
	575	HT32TC905(1)	HT32TC943(1)
	380	HT32TC705(1)	HT32TC743(1)
30RAP016	460	HT32TC705(2)	—
	208/230	HT32TC205(2)	—
	575	HT32TC905(2)	—
	380	HT32TC705(2)	—

Table 9 — Crankcase Heater Location

UNIT	CIRCUIT A COMPRESSOR		CIRCUIT B COMPRESSOR	
	A1	A2	B1	B2
30RAP010	ZP137 (Fig. 13)	—	—	—
30RAP011	ZP72 (Fig. 15)	ZP51 (Fig. 16)	—	—
30RAP015	ZP182 (Fig. 14)	—	—	—
30RAP016	ZP104 (Fig. 15)	ZP72 (Fig. 15)	—	—
38RAP018	ZP103 (Fig. 13)	ZP103 (Fig. 13)	—	—
38RAP020	ZP120 (Fig. 13)	ZP120 (Fig. 13)	—	—
38RAP025	ZP154 (Fig. 14)	ZP154 (Fig. 14)	—	—
38RAP030	ZP182 (Fig. 14)	ZP182 (Fig. 14)	—	—
38RAP035	ZP120 (Fig. 13)	ZP120 (Fig. 13)	ZP103 (Fig. 13)	ZP103 (Fig. 13)
38RAP040	ZP120 (Fig. 13)	ZP120 (Fig. 13)	ZP137 (Fig. 13)	ZP137 (Fig. 13)
38RAP045	ZP137 (Fig. 13)	ZP137 (Fig. 13)	ZP154 (Fig. 14)	ZP154 (Fig. 14)
38RAP050	ZP154 (Fig. 14)	ZP154 (Fig. 14)	ZP154 (Fig. 14)	ZP154 (Fig. 14)
38RAP055	ZP154 (Fig. 14)	ZP154 (Fig. 14)	ZP182 (Fig. 14)	ZP182 (Fig. 14)
38RAP060	ZP182 (Fig. 14)	ZP182 (Fig. 14)	ZP182 (Fig. 14)	ZP182 (Fig. 14)

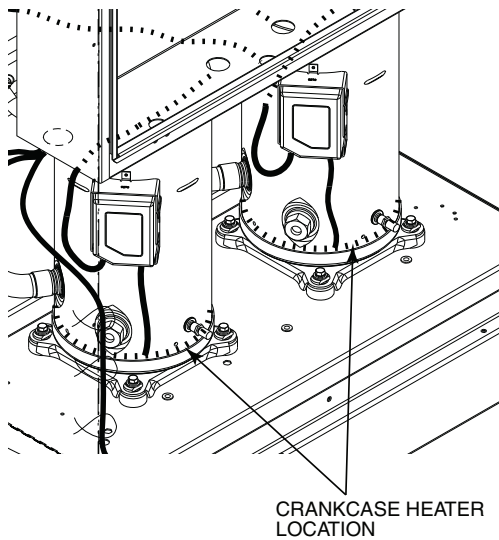


Fig. 11 — Crankcase Heater Location — 30RAP010-030 Units

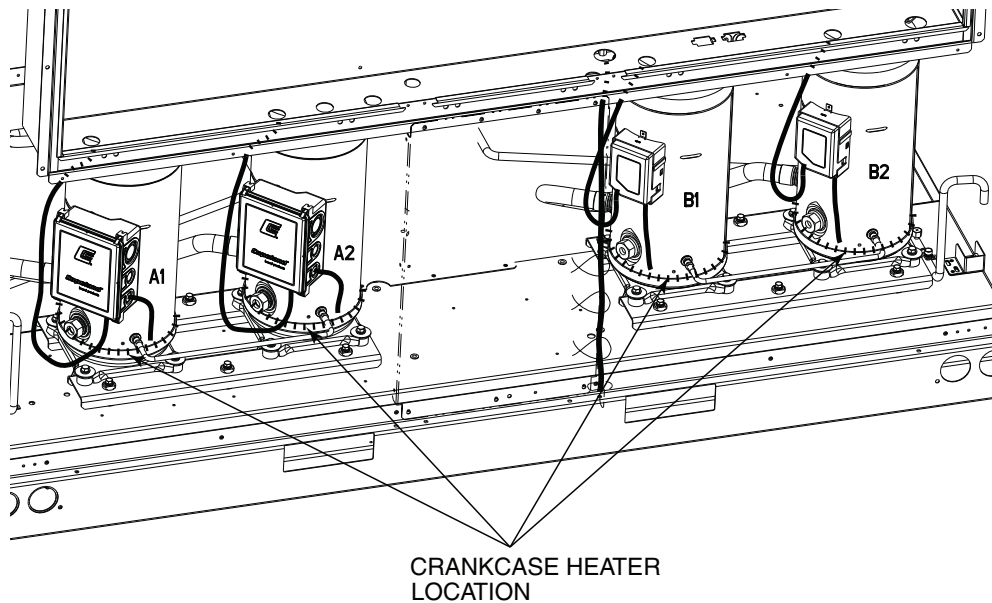


Fig. 12 — Crankcase Heater Location — 30RAP035-060 Units

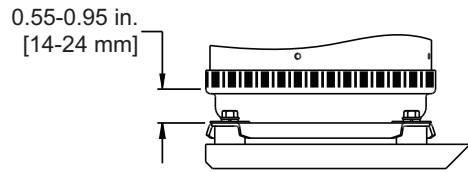


Fig. 13 — Copeland ZP/ZPD103, 120,137 Crankcase Heater Location

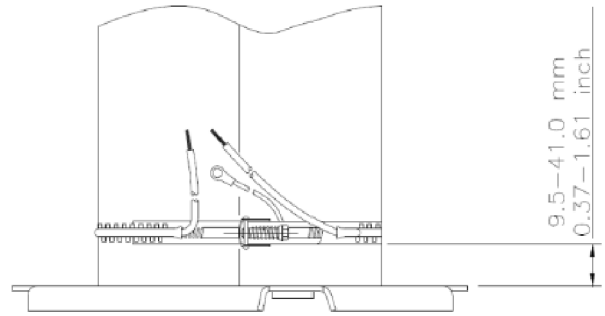


Fig. 15 — Copeland ZP72, 104, 122 Crankcase Heater Location

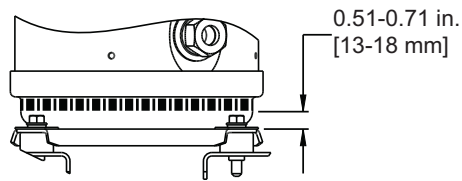


Fig. 14 — Copeland ZP/ZPD154,182 Crankcase Heater Location

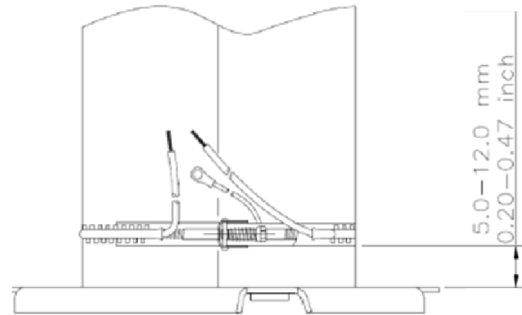


Fig. 16 — Copeland ZP51 Crankcase Heater Location