



Installation Instructions

Part No. 00EFN900002400A

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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.

GENERAL

The remote cooler mounting accessory permits indoor relocation of the cooler from 30RB units up to 75 equivalent feet of piping (22 m) away from the base unit. Relocating the cooler introduces minimal line losses if correct piping practices are followed. See Table 1 for the number of accessory packages required for each unit, and see Table 2 for accessory package contents.

NOTE: Unit sizes 315-390 are modular units that are shipped in separate sections as modules A or B as noted in position 8 of the unit model number. See Table 3 for a listing of unit sizes and modular combinations.

NOTE: The nameplate for modular units contains only the first two digits in the model number. For example, 315A and 315B nameplates read 31A and 31B.

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

- Pressure relief valves and fittings

- Cooler suction flange gasket
- Suction line tubing insulation (length determined by installation), if required
- $5/8$ -in. strain relief
- Conduit (length determined by installation)
- Refrigerant-grade liquid and suction line piping (length determined by installation).

! 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.

Table 1 — Unit Application

30RB UNIT SIZE	ACCESSORY PACKAGES REQUIRED
060-190	1
210-300	2
315-390	2

Table 2 — Accessory Package Contents

PART NO.	DESCRIPTION	QUANTITY
EP71BA343	Ball Valve, 11/8 in.	2
RM02EJ200	Wire	100 ft (30.5 m)
32GB404694	Cable Assembly (EXV Valve and Chilled Water Flow Switch)	3 (95 ft each) (28.9 m each)
AL56AU165	Screw, 88-18 x 3/8-in.	1
00PPN500000302A	Screw, M8	2
48DG500543	Junction Box	1
48DG500602	Junction Box Cover	1

EXV — Electronics Expansion Valve

Table 3 — Modular Unit Combinations

UNIT SIZE	MODULE A	MODULE B
30RBA315	30RBA160	30RBA160
30RBA330	30RBA170	30RBA160
30RBA345	30RBA170	30RBA170
30RBA360	30RBA190	30RBA170
30RBA390	30RBA190	30RBA190

NOTE: An "A" in the model number indicates the design series.

COOLER REMOVAL AND INSTALLATION

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. Determine the new location for the cooler(s). Ensure that the new location supports the cooler weight and that there is enough room for service access and tube removal. See Tables 4 and 5 to determine cooler tube connection sizes. See Table 6 for cooler weights and Fig. 1A and 1B for cooler dimensions.
3. Open and tag all electrical disconnects.

Cooler Removal — The cooler is accessible from the cooler side of the unit. The refrigerant feed components are accessible from the control box end of the unit.

To remove the cooler from the unit complete the following steps:

⚠ CAUTION

Open and tag all electrical disconnects before any work begins. Note that the cooler is heavy and both fluid-side and refrigerant-side may be under pressure. Serious personal injury and equipment damage may occur.

1. Recover refrigerant from all circuits using standard refrigeration practices. Refer to unit nameplate or installation instructions for refrigerant quantities.

Table 4 — Recommended Suction Line Pipe and Connection Sizing

30RB	SUCTION LINES								
	Recommended Line Size (in.)			Double Suction Risers (in.)					
	Circuit			Circuit A		Circuit B		Circuit C	
	A	B	C	Line A	Line B	Line A	Line B	Line A	Line B
060	2 ¹ / ₈	1 ⁵ / ₈	—	1 ³ / ₈	1 ⁵ / ₈	—	—	—	—
070	2 ¹ / ₈	1 ⁵ / ₈	—	1 ³ / ₈	1 ⁵ / ₈	—	—	—	—
080	2 ¹ / ₈	2 ¹ / ₈	—	1 ³ / ₈	1 ⁵ / ₈	1 ³ / ₈	1 ⁵ / ₈	—	—
090	2 ¹ / ₈	2 ¹ / ₈	—	1 ³ / ₈	1 ⁵ / ₈	1 ³ / ₈	1 ⁵ / ₈	—	—
100	2 ¹ / ₈	2 ¹ / ₈	—	1 ³ / ₈	1 ⁵ / ₈	1 ³ / ₈	1 ⁵ / ₈	—	—
110	2 ¹ / ₈	2 ⁵ / ₈	—	1 ³ / ₈	1 ⁵ / ₈	1 ⁵ / ₈	2 ¹ / ₈	—	—
120	2 ¹ / ₈	2 ⁵ / ₈	—	1 ³ / ₈	1 ⁵ / ₈	1 ⁵ / ₈	2 ¹ / ₈	—	—
130	2 ⁵ / ₈	2 ⁵ / ₈	—	1 ⁵ / ₈	2 ¹ / ₈	1 ⁵ / ₈	2 ¹ / ₈	—	—
150	2 ⁵ / ₈	2 ⁵ / ₈	—	1 ⁵ / ₈	2 ¹ / ₈	1 ⁵ / ₈	2 ¹ / ₈	—	—
160	2 ⁵ / ₈	2 ⁵ / ₈	—	1 ⁵ / ₈	2 ¹ / ₈	1 ⁵ / ₈	2 ¹ / ₈	—	—
170	2 ⁵ / ₈	2 ⁵ / ₈	—	1 ⁵ / ₈	2 ¹ / ₈	1 ⁵ / ₈	2 ¹ / ₈	—	—
190	2 ⁵ / ₈	2 ⁵ / ₈	—	1 ⁵ / ₈	2 ¹ / ₈	1 ⁵ / ₈	2 ¹ / ₈	—	—
210	2 ⁵ / ₈	2 ⁵ / ₈	2 ⁵ / ₈	1 ⁵ / ₈	2 ¹ / ₈	1 ⁵ / ₈	2 ¹ / ₈	1 ⁵ / ₈	2 ¹ / ₈
225	2 ⁵ / ₈	2 ⁵ / ₈	2 ⁵ / ₈	1 ⁵ / ₈	2 ¹ / ₈	1 ⁵ / ₈	2 ¹ / ₈	1 ⁵ / ₈	2 ¹ / ₈
250	2 ⁵ / ₈	2 ⁵ / ₈	2 ⁵ / ₈	1 ⁵ / ₈	2 ¹ / ₈	1 ⁵ / ₈	2 ¹ / ₈	1 ⁵ / ₈	2 ¹ / ₈
275	2 ⁵ / ₈	2 ⁵ / ₈	2 ⁵ / ₈	1 ⁵ / ₈	2 ¹ / ₈	1 ⁵ / ₈	2 ¹ / ₈	1 ⁵ / ₈	2 ¹ / ₈
300	2 ⁵ / ₈	2 ⁵ / ₈	2 ⁵ / ₈	1 ⁵ / ₈	2 ¹ / ₈	1 ⁵ / ₈	2 ¹ / ₈	1 ⁵ / ₈	2 ¹ / ₈
315A	2 ⁵ / ₈	2 ⁵ / ₈	—	1 ⁵ / ₈	2 ¹ / ₈	1 ⁵ / ₈	2 ¹ / ₈	—	—
315B	2 ⁵ / ₈	2 ⁵ / ₈	—	1 ⁵ / ₈	2 ¹ / ₈	1 ⁵ / ₈	2 ¹ / ₈	—	—
330A	2 ⁵ / ₈	2 ⁵ / ₈	—	1 ⁵ / ₈	2 ¹ / ₈	1 ⁵ / ₈	2 ¹ / ₈	—	—
330B	2 ⁵ / ₈	2 ⁵ / ₈	—	1 ⁵ / ₈	2 ¹ / ₈	1 ⁵ / ₈	2 ¹ / ₈	—	—
345A	2 ⁵ / ₈	2 ⁵ / ₈	—	1 ⁵ / ₈	2 ¹ / ₈	1 ⁵ / ₈	2 ¹ / ₈	—	—
345B	2 ⁵ / ₈	2 ⁵ / ₈	—	1 ⁵ / ₈	2 ¹ / ₈	1 ⁵ / ₈	2 ¹ / ₈	—	—
360A	2 ⁵ / ₈	2 ⁵ / ₈	—	1 ⁵ / ₈	2 ¹ / ₈	1 ⁵ / ₈	2 ¹ / ₈	—	—
360B	2 ⁵ / ₈	2 ⁵ / ₈	—	1 ⁵ / ₈	2 ¹ / ₈	1 ⁵ / ₈	2 ¹ / ₈	—	—
390A	2 ⁵ / ₈	2 ⁵ / ₈	—	1 ⁵ / ₈	2 ¹ / ₈	1 ⁵ / ₈	2 ¹ / ₈	—	—
390B	2 ⁵ / ₈	2 ⁵ / ₈	—	1 ⁵ / ₈	2 ¹ / ₈	1 ⁵ / ₈	2 ¹ / ₈	—	—

2. Disconnect the conduit and cooler heater wiring, if equipped.
3. Remove entering and leaving chilled water temperature thermistors. Make sure to label thermistors as they are removed.
4. Disconnect EXV (electronic expansion valve) cables from EXVs. Make sure to label the cables as they are removed.
5. Disconnect chilled water flow switch cable from the chilled water flow switch located on leaving water nozzle.
6. Remove the insulation on the refrigerant connection end of the cooler.
7. Unbolt the suction flanges from the cooler head. Save the bolts.
8. Remove the liquid lines by cutting the tubing between the EXV and the cooler. Be sure to leave enough room to make connections later.
9. Remove the screws from the cooler feet. Save all of the screws. Slide the cooler slightly to the left to clear the refrigerant tubing.
10. Remove the cooler by carefully sliding the cooler straight out the side of the unit.

Table 5 — Recommended Liquid Line Pipe and Connection Sizing

30RB	LIQUID LINES					
	Cooler Connections (in.)			Recommended Line Size (in.)		
	Circuit			Circuit		
	A	B	C	A	B	C
060	1 ¹ / ₈	1 ¹ / ₈	—	7/8	7/8	—
070	1 ¹ / ₈	1 ¹ / ₈	—	7/8	7/8	—
080	1 ¹ / ₈	1 ¹ / ₈	—	7/8	7/8	—
090	1 ¹ / ₈	1 ¹ / ₈	—	7/8	7/8	—
100	1 ¹ / ₈	1 ¹ / ₈	—	7/8	7/8	—
110	1 ¹ / ₈	1 ¹ / ₈	—	7/8	1 ¹ / ₈	—
120	1 ¹ / ₈	1 ¹ / ₈	—	7/8	1 ¹ / ₈	—
130	1 ¹ / ₈	1 ¹ / ₈	—	1 ¹ / ₈	1 ¹ / ₈	—
150	1 ⁵ / ₈	1 ⁵ / ₈	—	1 ¹ / ₈	1 ¹ / ₈	—
160	1 ⁵ / ₈	1 ⁵ / ₈	—	1 ¹ / ₈	1 ¹ / ₈	—
170	1 ⁵ / ₈	1 ⁵ / ₈	—	1 ¹ / ₈	1 ¹ / ₈	—
190	1 ⁵ / ₈	1 ⁵ / ₈	—	1 ¹ / ₈	1 ¹ / ₈	—
210	1 ⁵ / ₈	1 ⁵ / ₈	1 ⁵ / ₈	1 ¹ / ₈	1 ¹ / ₈	1 ¹ / ₈
225	1 ⁵ / ₈	1 ⁵ / ₈	1 ⁵ / ₈	1 ¹ / ₈	1 ¹ / ₈	1 ¹ / ₈
250	1 ⁵ / ₈	1 ⁵ / ₈	1 ⁵ / ₈	1 ¹ / ₈	1 ¹ / ₈	1 ¹ / ₈
275	1 ⁵ / ₈	1 ⁵ / ₈	1 ⁵ / ₈	1 ¹ / ₈	1 ¹ / ₈	1 ¹ / ₈
300	1 ⁵ / ₈	1 ⁵ / ₈	1 ⁵ / ₈	1 ¹ / ₈	1 ¹ / ₈	1 ¹ / ₈
315A	1 ⁵ / ₈	1 ⁵ / ₈	—	1 ¹ / ₈	1 ¹ / ₈	—
315B	1 ⁵ / ₈	1 ⁵ / ₈	—	1 ¹ / ₈	1 ¹ / ₈	—
330A	1 ⁵ / ₈	1 ⁵ / ₈	—	1 ¹ / ₈	1 ¹ / ₈	—
330B	1 ⁵ / ₈	1 ⁵ / ₈	—	1 ¹ / ₈	1 ¹ / ₈	—
345A	1 ⁵ / ₈	1 ⁵ / ₈	—	1 ¹ / ₈	1 ¹ / ₈	—
345B	1 ⁵ / ₈	1 ⁵ / ₈	—	1 ¹ / ₈	1 ¹ / ₈	—
360A	1 ⁵ / ₈	1 ⁵ / ₈	—	1 ¹ / ₈	1 ¹ / ₈	—
360B	1 ⁵ / ₈	1 ⁵ / ₈	—	1 ¹ / ₈	1 ¹ / ₈	—
390A	1 ⁵ / ₈	1 ⁵ / ₈	—	1 ¹ / ₈	1 ¹ / ₈	—
390B	1 ⁵ / ₈	1 ⁵ / ₈	—	1 ¹ / ₈	1 ¹ / ₈	—

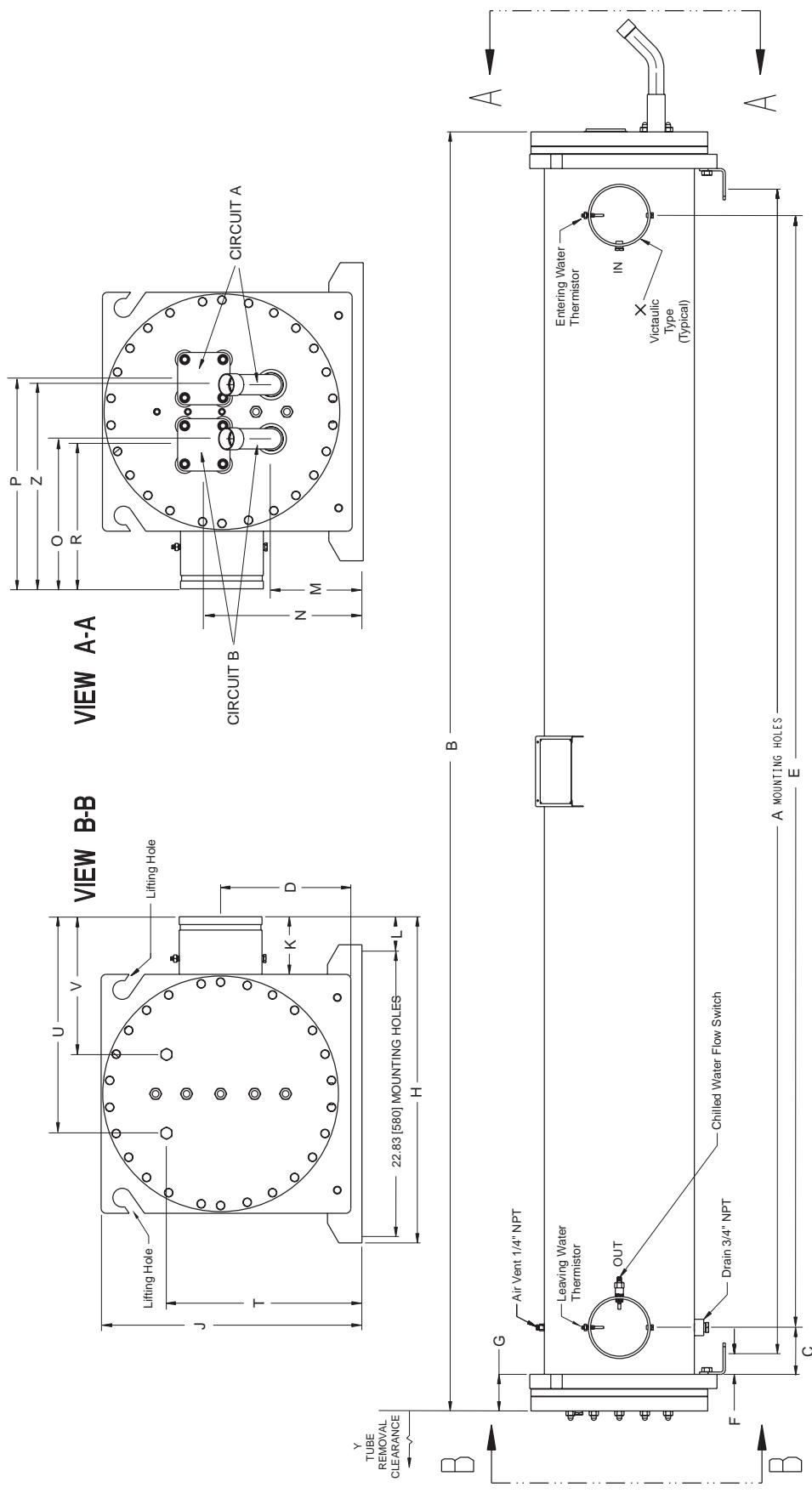
Table 6 — Nominal Cooler Weights

30RB UNIT SIZE	COOLER ESTIMATED WEIGHT (EMPTY)		NET FLUID VOLUME		COOLER ESTIMATED WEIGHT (FILLED*)	
	lb	kg	Gal.	L	lb	kg
060,070	715	325	28.2	106.7	950	432
080-100	856	389	31.3	118.5	1117	508
110-130	970	441	45.8	173.4	1352	615
150-190	1518	690	73.5	278.2	2130	968
210-300	2382	1083	86.6	327.8	3103	1410
315-390	1518	690	73.5	278.2	2130	968

*Cooler weight when filled with water or brine.

Cooler Installation — Install the cooler by following this procedure:

1. After removing the cooler from the base unit, strip back the insulation on the cooler tube sheets (if required) and use the two large holes in the top corners for lifting. See Fig. 1A. and 1B.
2. Transport the cooler to its new location, and bolt it in position. Make sure the new location has enough room to install the filter drier assembly. (See Fig. 2). Also, ensure there is sufficient room to remove the cooler tubes, if required for future service.
3. At the main base board in the base unit control box (see Fig. 3) cut the thermistor leads from J6, leaving approximately 4 ft of wire attached to the plug. Make sure to label the leads.



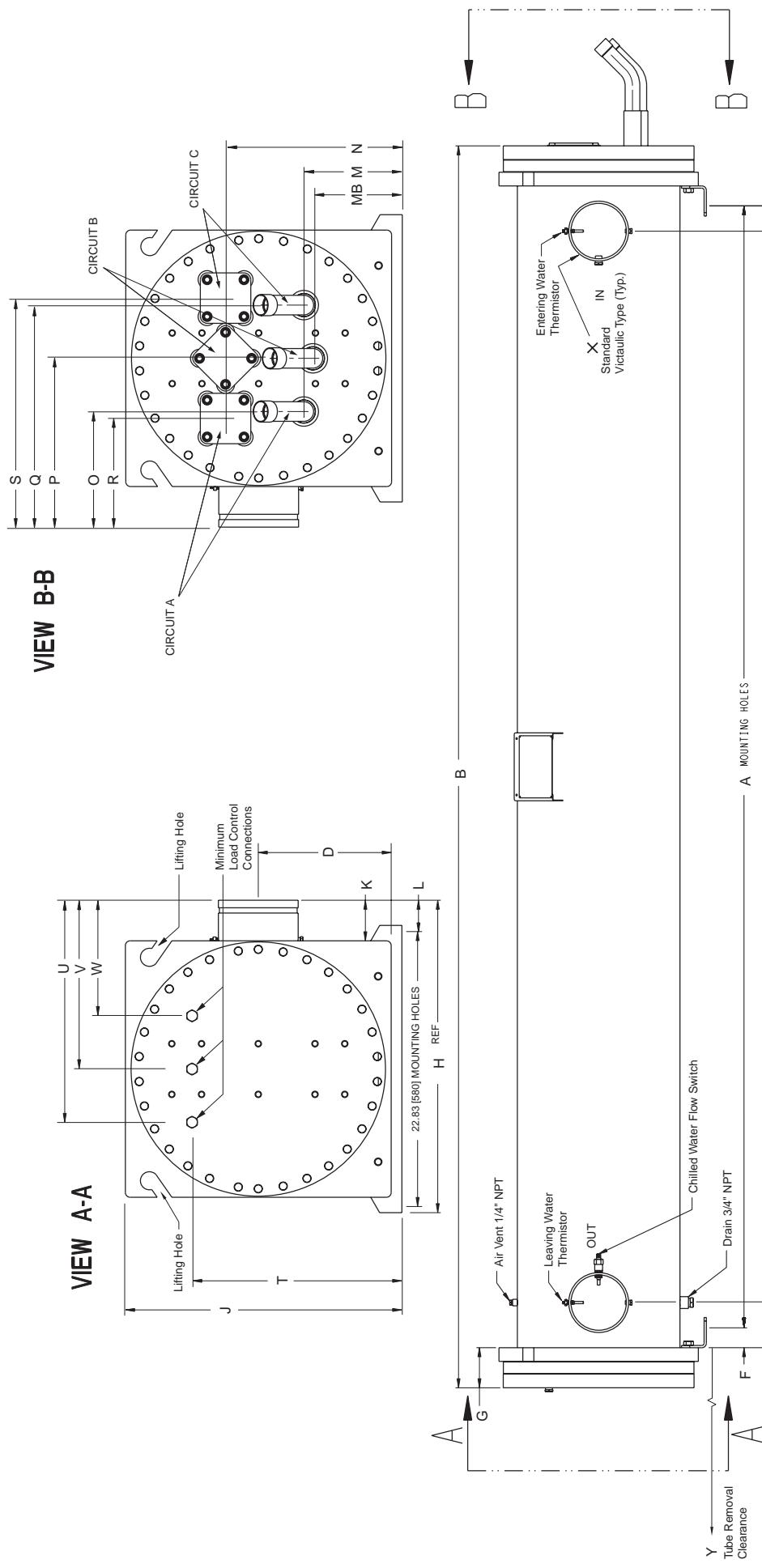
30RB UNIT SIZE	DIMENSIONS											
	A	B	C	D	E	F	G	H	J	K	L	M
060, 070	in. 64.45	76.68	5.00	8.60	58.86	2.20	3.91	24.28	17.89	4.63	0.94	6.18
	mm 1637	1947	127	218	1495	55	99	616	454	117	23	156
080, 090, 100	in. 64.45	76.68	5.00	9.23	58.86	2.20	3.91	24.91	19.14	4.61	1.56	6.18
	mm 1636	1947	127	234	1495	55	99	632	486	117	39	156
110, 120, 130	in. 94.25	106.47	5.00	10.11	88.66	2.20	3.91	25.95	19.14	5.65	2.60	6.18
	mm 2393	2704	127	256	2251	55	99	659	486	143	66	156
150, 160, 170, 190	in. 124.25	136.47	5.00	10.42	118.66	2.20	3.91	26.10	21.55	4.61	2.76	7.37
	mm 3155	3466	127	264	3013	55	99	662	547	117	70	187
315A, 315B, 330A, 330B, 345A, 345B, 360A, 360B, 390A, 390B	in. 124.25	136.47	5.00	10.42	118.66	2.20	3.91	26.10	21.55	4.61	2.76	7.37
	mm 3155	3466	127	264	3013	55	99	662	547	117	70	187

Dimensions in parentheses are for 315-390 (mm).

*Circuit A/Circuit B.

NOTE: Dimensions are in inches. Dimensions in [] are in millimeters.

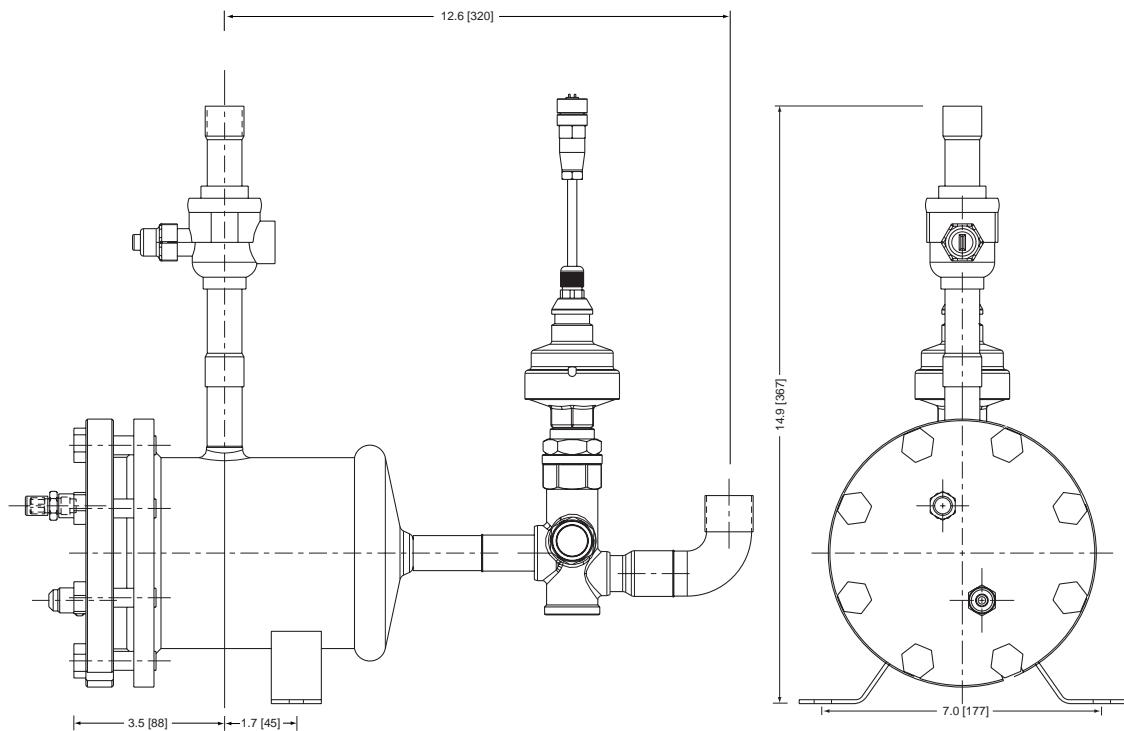
Fig. 1A — Cooler Dimensions — 30RB060-190 and 315-390 (Two Circuit Coolers)



30RB UNIT SIZE	A	B	C	D	E	F	G	H	J	K	L	M	MB	N	O	P	Q	R	S	T	U	V	W	X	Y	
210, 225, 250, 275, 300	124.25	137.53	5.00	11.04	118.66	2.20	4.44	25.95	23.64	3.37	2.61	8.18	7.43	14.68	9.60	14.02	18.44	19.02	17.43	18.44	14.02	9.60	6.00	133.20		
	in.	mm	3155	3493	127	280	3013	55	112	659	600	85	66	207	188	372	243	356	468	229	483	442	468	356	243	3383

NOTE: Dimensions are in inches. Dimensions in [] are in millimeters.

Fig. 1B — Cooler Dimensions — 30RB210-300 (Three Circuit Coolers)



NOTE: Dimensions are in inches. Dimensions in [] are in millimeters.

Fig. 2 — Filter Drier Assembly Dimensions

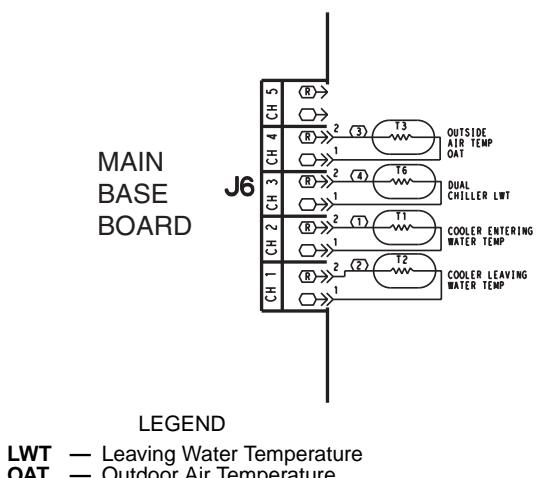


Fig. 3 — Thermistor Connections

- At the base unit, remove the filter drier, EXV, and service valve assembly. Cut the liquid line in a convenient location to allow installation of the liquid line service valves included with the accessory kit. See Fig. 4. Make sure to label the EXVs as they are removed.
- Reinstall the filter drier EXV and service valve assembly at the cooler. Keep the location of the EXVs as close to the cooler as possible. See Fig. 5.
- Following Carrier recommended piping practices, install field-supplied liquid and suction lines to reconnect the cooler with the base unit. If the cooler is located below the base unit, then double suction risers must be installed to ensure proper oil return at part load conditions. Refer to Fig. 6 and Table 4 for refrigerant pipe sizing information. As shown in Fig. 5, the new liquid lines between the service valves must each have a field-supplied relief installed as required by local codes.

⚠ WARNING

Do not shut off both service valves in either liquid line. Pressure can build within the trapped area. To avoid the possibility of personal injury or property damage, a field-supplied pressure relief valve must be installed in each liquid line between the two shutoff valves. See Fig. 5.

- If hot gas bypass is used in remote applications, 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 sizes are recommended for all applications. 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 should be installed and wired in the standard location for the unit. If hot gas bypass is installed as a factory-installed option, cut the line outlet of the valve and run the hot gas bypass line to the remote cooler. Leave the minimum load control solenoid valve where it is already located.
- Leak test the assembly using standard refrigerant practices. Repair any leaks that are found. Evacuate and charge system after testing and repairs are complete.
- Install entering and leaving water sensors in the proper locations. See Fig. 1A and 1B.
- The junction box supplied with the accessory is for splicing the thermistor leads from the cooler with the 5-wire jacketed cable from the base unit. One or two knockouts can be used. Follow local codes. Remove a knockout from the bottom of the junction box and install field-supplied strain relief at the knockout hole. If using conduit to provide mechanical protection to the thermistor wires between the junction box and the base unit, remove another knockout. See Fig. 7 for a typical installation.

CUT SUCTION LINES HERE

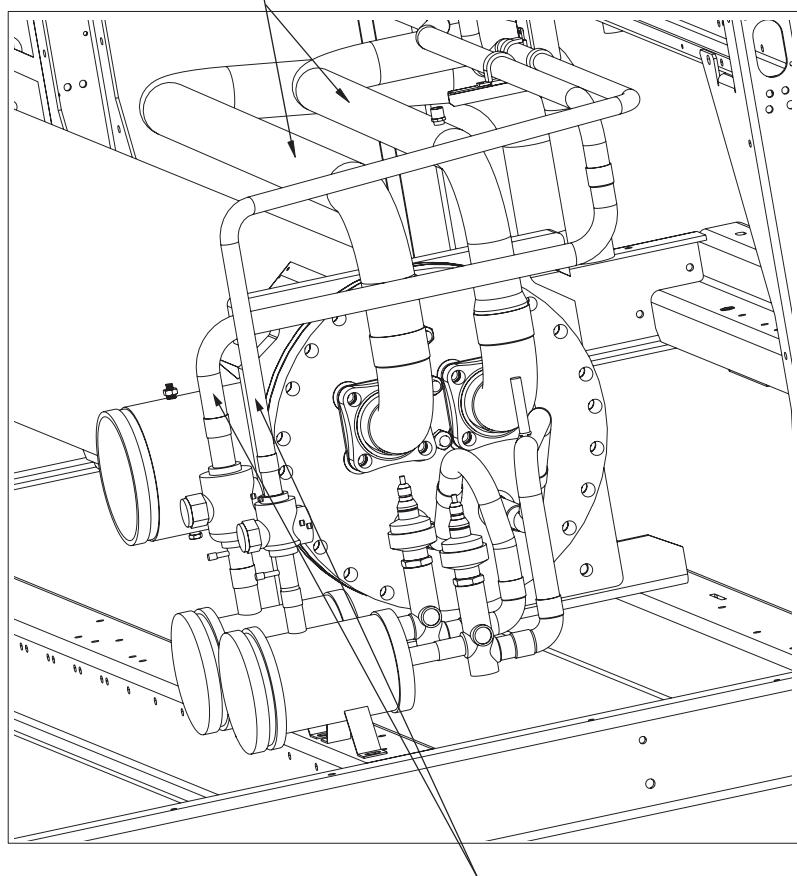


Fig. 4 — Typical Cooler Piping

11. Mount the junction box near the liquid refrigerant connection end of cooler with two M8 screws provided. Run the labeled thermistor leads from the cooler into the junction box and tighten the strain relief. Strip back the lead jackets to expose the 2 wires in each lead. See Fig. 7.
12. A 100 ft (30.5 m) 5-wire jacketed cable is provided to connect the thermistor leads in the junction box back to the base unit. Each wire in the jacketed cable is a different color.
13. Strip back the jacket of the jacketed cable on both ends to expose the 5 wires. Pick any 2 wires and label both ends of each wire "T1." Pick another pair of wires and label both ends of each "T2." One wire is not used.
14. Run one end of the jacketed cable(s) into the junction box and splice the cable wires to the identically tagged thermistor leads. Solder the splices and insulate them to prevent shorting. Tighten the strain relief for the cable(s) and secure the junction box cover with the supplied 8B-18 x 3/8-in. screw. Splicing for leads is shown in Fig. 7.
15. Run the other end of the jacketed cable(s) back to the base unit and into the control box. Tie cables to piping or run cables in conduit; follow local codes. Splice each wire in the control box to the appropriate thermistor lead. Solder the splices and insulate them to prevent short circuiting. Connect the wires to those cut from the MBB-J6 (Main Base Board) plug; T1 and T2.
16. Label each end of one of the EXV cable assemblies supplied with the accessory "EXV A." Label the ends of the other assemblies "EXV B" and "EXV C" (if used). Plug the electrical connectors of the appropriate EXV cable assemblies into the EXVs. Run the other end of the cable assemblies to the base unit. Plug the accessory EXV cable assemblies into the corresponding EXV leads located at the base unit where the EXV assemblies were removed. Coil excess cables and wire tie in a convenient location.
17. Label each end of one cable assembly supplied with the accessory "FLOW SWITCH." Connect one end of the cable assembly into the flow switch. Run the other end of the cable assemblies to the base unit and plug it into the flow switch cable assembly, which was previously disconnected. Coil excess cables and wire tie in a convenient location.
18. If charge is to be added while unit is operating, all condenser fans and compressors must be operating. It may be necessary to block condenser coils at low ambient temperatures to raise condensing pressure to approximately 450 psig (3102 kPa) to turn all condenser fans on. Do not totally block a coil to do this. Partially block all coils in uniform pattern. Charge each circuit until sight glass shows clear liquid, and has a liquid line temperature of 103 F (39 C). A chart for estimating the additional charge required is shown in the Application Data section.
19. Perform all pre-start-up and start-up procedures specified in the base unit operating instructions. Follow the supplied checklist.
20. When unit is operating correctly, verify that suction lines do not leak, then install field-supplied insulation on suction lines between unit and cooler. If necessary, reinstall insulation on cooler heads.

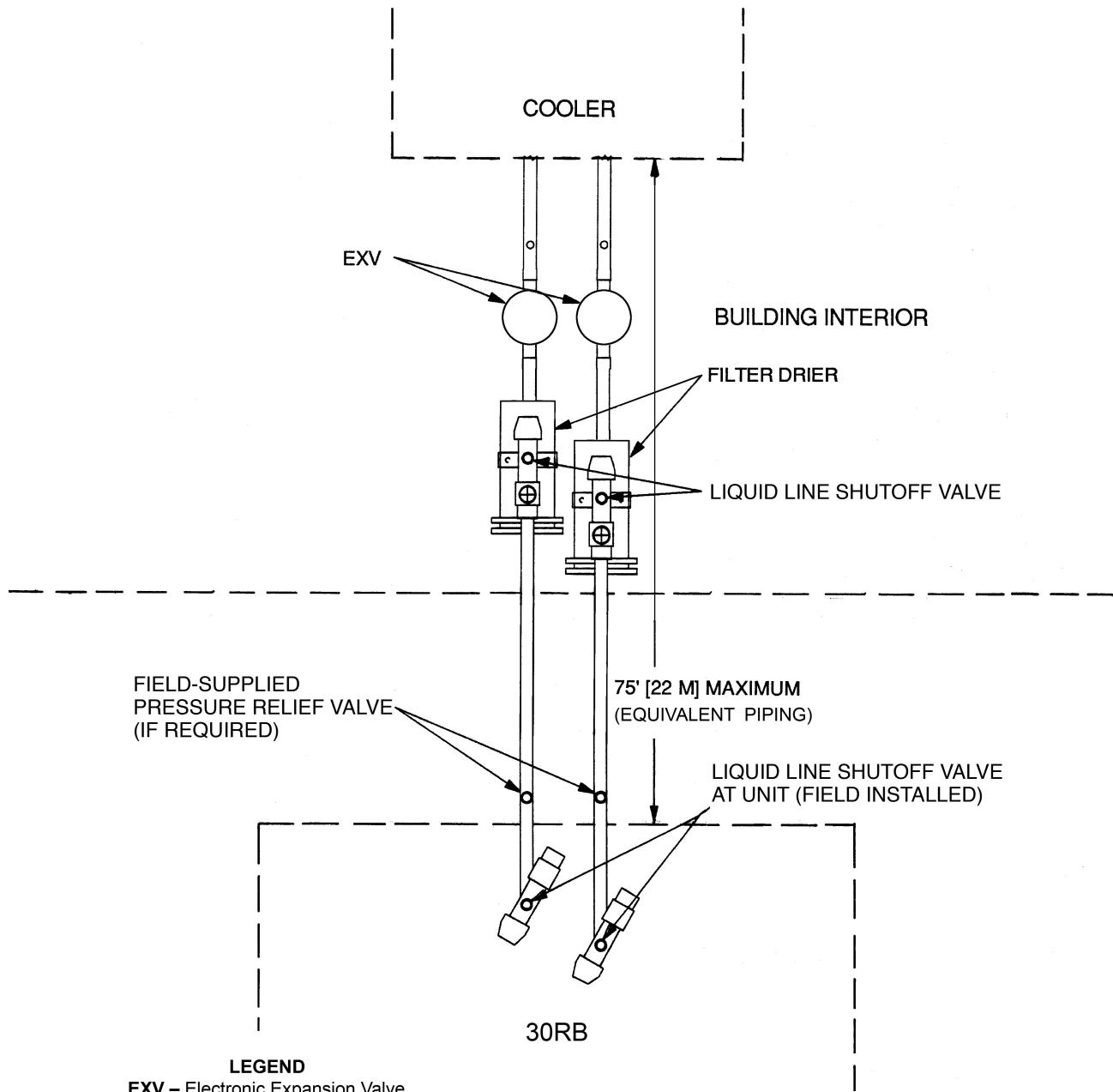


Fig. 5 — Liquid Line Piping (2-Circuit Shown)

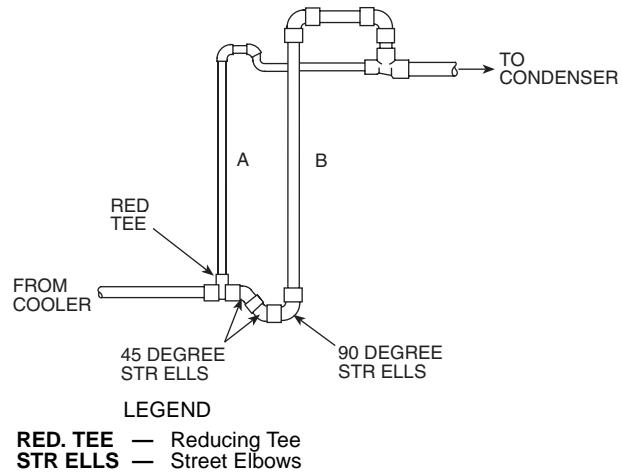


Fig. 6 — Double Suction Riser Construction Detail

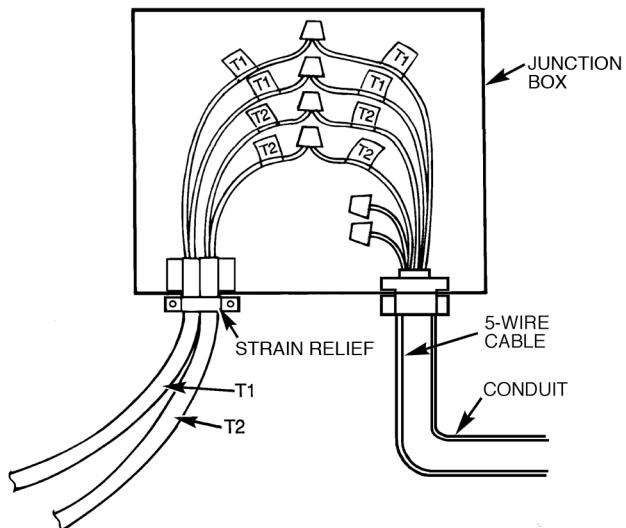


Fig. 7 — Typical Junction Box Connections

APPLICATION DATA

The remote cooler accessory allows for the indoor relocation of the evaporator as another means of freeze protection. When the evaporator is located in the heated space, an antifreeze solution is not needed and the performance degradation associated with the antifreeze solution can be avoided. With the cooler in the interior space, ASHRAE (American Society of Heating, Refrigeration and Air Conditioning Engineers) 15 considerations are required.

It is recommended that the machine be equipped with the suction service valve option for ease of installation and service.

The suction and liquid line interconnecting piping between the unit and the cooler must have refrigerant relief devices installed in accordance with ASHRAE 15 and local codes.

Choose a space the can support the weight of the cooler with the service clearances and area for refrigerant piping. See Table 7 for weights. The application is limited to a maximum of 75 equivalent feet (23 equivalent meters) of piping.

Tables 4 and 5 show recommended suction and liquid line pipe and connection sizing. When piping, use pipe suitable for the pressure duty. Suction piping working pressure is 445 psig (3068 kPa). Liquid and discharge or minimum load control piping working pressure is 656 psig (4522 kPa).

Minimum Load Control Piping — If the unit is equipped with minimum load control, additional piping is required. All lines should be $5/8$ -in. with a working pressure of 656 psig (4522 kPa). Lines should be piped as shown in Fig. 8.

System Refrigerant Charge — The 30RB units are shipped from the factory with the operating charge of a packaged system. Additional refrigerant is required for the machine to operate properly and depends upon the separation between the cooler and the machine, the line sizes, and the operating conditions. The estimated additional refrigerant charge will be the sum of the calculated liquid and suction lines and the refrigerant charges from the remote cooler piping. See Table 8. To correct for temperatures other than shown in Table 8, multiply by the factors shown in Table 9. Actual charge should be determined at the time of start-up.

Table 7 — Estimated Weights of Accessory Remote Coolers

30RB	ESTIMATED COOLER WEIGHT EMPTY lb (kg)	NET FLUID VOLUME gal (l)	ESTIMATED COOLER WEIGHT WITH WATER lb (kg)
060, 070	715 (325)	28.2 (106.7)	950 (432)
080, 090, 100	856 (389)	31.3 (118.5)	1117 (508)
110, 120, 130	970 (441)	45.8 (173.4)	1352 (615)
150, 160, 170, 190	1518 (690)	73.5 (278.2)	2130 (968)
210, 225, 250, 275, 300	2382 (1083)	86.6 (327.8)	3103 (1410)
315A, 315B, 330A, 330B, 345A, 345B, 360A, 360B, 390A, 390B	1518 (690)	73.5 (278.2)	2130 (968)

Table 8 — Estimated Additional Refrigerant Charge

R-410A WEIGHT lb (kg) OF REFRIGERANT PER 100 FT (30.48 m) OF TUBING		
Nominal Size (in.)	Suction Line 40 F (4.4 C)	Liquid Line 110 F (43.3 C)
$5/8$	0.4 (0.2)	9.7 (4.4)
$7/8$	0.7 (0.3)	20.1 (9.1)
$1\frac{1}{8}$	1.3 (0.6)	34.3 (15.6)
$1\frac{3}{8}$	1.9 (0.9)	52.3 (23.8)
$1\frac{5}{8}$	2.7 (1.2)	74.2 (33.7)
$2\frac{1}{8}$	4.7 (2.1)	128.6 (58.5)
$2\frac{5}{8}$	7.3 (3.3)	198.0 (90.0)

Table 9 — Temperature Correction Factors

R-410A CORRECTION FACTORS — ALL TEMPERATURES ARE SATURATED TEMPERATURES °F (°C)				
Suction Line		Liquid Line		
30 (-1.1)	50 (10.0)	80 (26.6)	100 (37.8)	120 (48.9)
0.83	1.19	1.10	1.04	0.96

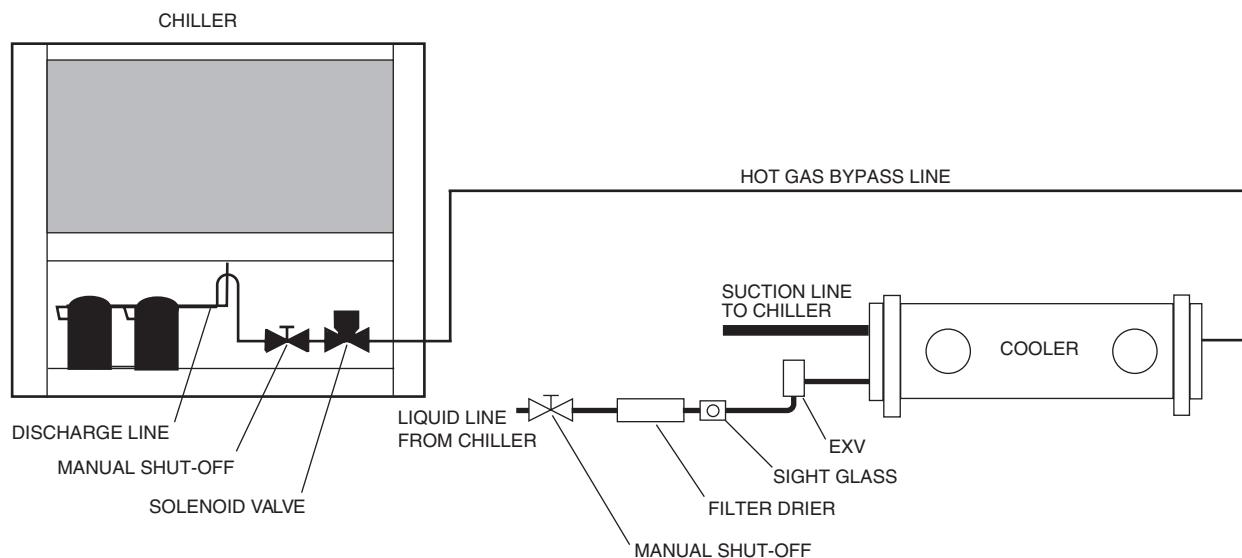


Fig. 8 — Minimum Load Control Piping (Typical)

