



Product Data

30HX076-186 Fluid-Cooled and Condenserless Chillers 50/60 Hz

70 to 175 Tons (246 to 615 kW)

Quality Assurance



Certificate No FM 21837

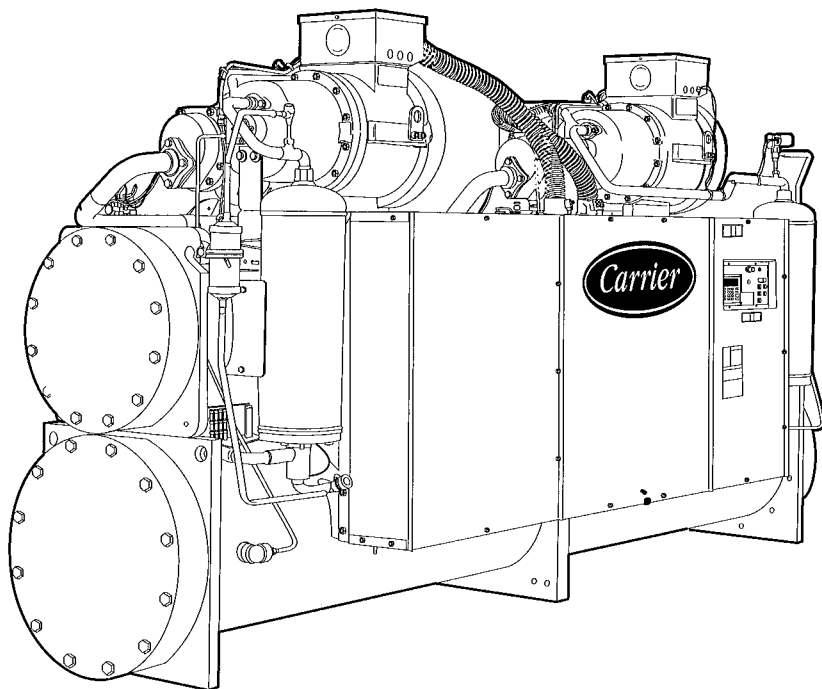
Approvals:

ISO 9002

EN 29002

BS5750 PART 2

ANSI/ASQC Q92



Fluid-cooled and condenserless chillers designed from the ground up to meet the needs of today and tomorrow, including:

- Fits through a standard door with no disassembly required
- Chlorine-free HFC-134a refrigerant
- Smooth compression using screw compressors
- Mechanically cleanable coolers and condensers (HXC)

Features/Benefits

Quality design and construction make the 30HXC (Fluid Cooled) and the 30HXA (Condenserless) units the preferred choice

Easy installation

The 30HX has a compact design that fits through a standard door opening and requires minimal indoor space. The 30HX is delivered as a complete package for easy installation. There are no extra controls, clocks, starters, or other items to install.

The 30HX also provides a single point electrical power entrance (using the accessory field-installed control transformer) and quick, easy piping using either welded or accessory victaulic-type clamp-on couplings for the cooler.

The 30HX 208/230-v and 460-v units are designed in accordance with UL (Underwriters' Laboratory, U.S.A.) standards and the 575-v units are designed in accordance with CSA (Canadian Standards Association) standards to minimize electrical inspections.

A quick start-up is assured once installation is complete, since each 30HX unit is manufactured at an ISO 9002-listed manufacturing facility to guarantee quality. In addition, all units are tested under full load at the factory to provide reliable start-up.

Easy to live with

The 30HX units have a quiet, low-vibration design featuring screw compressors

Efficiency levels of the 30HX units exceed minimums established by ASHRAE (American Society of Heating and Refrigeration Engineers) and CSA for both full- and part-load operation, thus saving on operating costs through lower electrical

costs. All 30HX units are also rated in accordance with ARI (Air Conditioning and Refrigeration Institute, U.S.A.) standards. The 60 Hz 30HXC units are ARI certified.

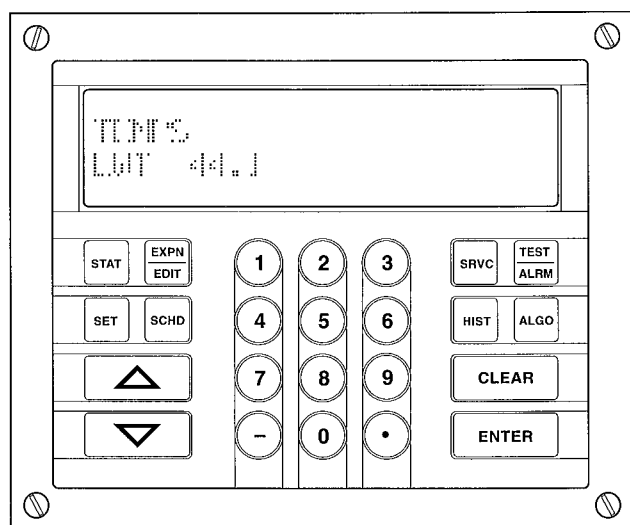
The 30HX controls are fully automatic. The leaving-fluid temperature is directly controlled, and the entering-fluid temperature is continuously monitored to detect load and flow changes. This combination provides the most precise temperature control available

Dual, independent refrigerant circuits provide reliable, dependable cooling, and the 30HX units use medium-pressure HFC-134a refrigerant to minimize stress on the compressors and ensure a long life.

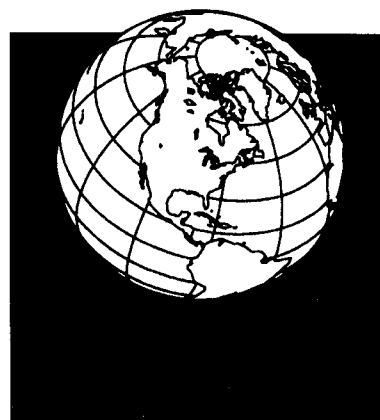
From a service standpoint, the 30HX units offer the following features:

- Use of HFC-134a refrigerant, which has no planned phase-out in its future
- Mechanically-cleanable cooler and condenser (30HXC units)
- Twin-screw compressors, which require no routine service or maintenance
- Easily accessed suction and discharge pressure and temperature information using either standard or accessory display module

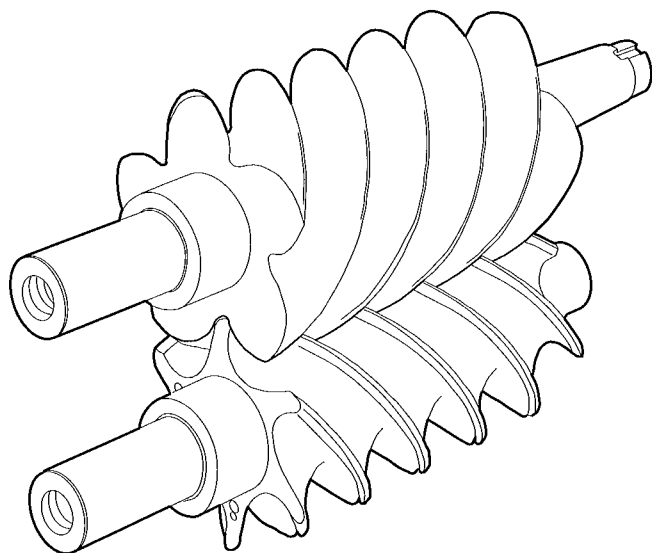
STANDARD DISPLAY MODULE



ENVIRONMENTAL LEADERSHIP



TWIN-SCREW COMPRESSOR DESIGN



HIGH-EFFICIENCY, CLEANABLE COOLER

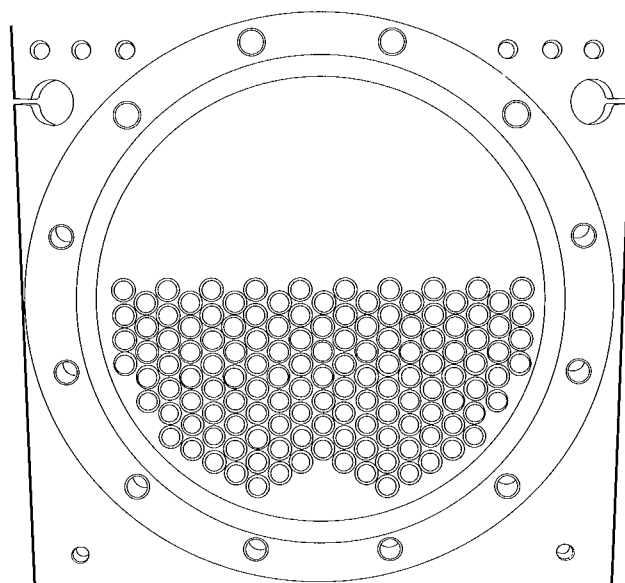
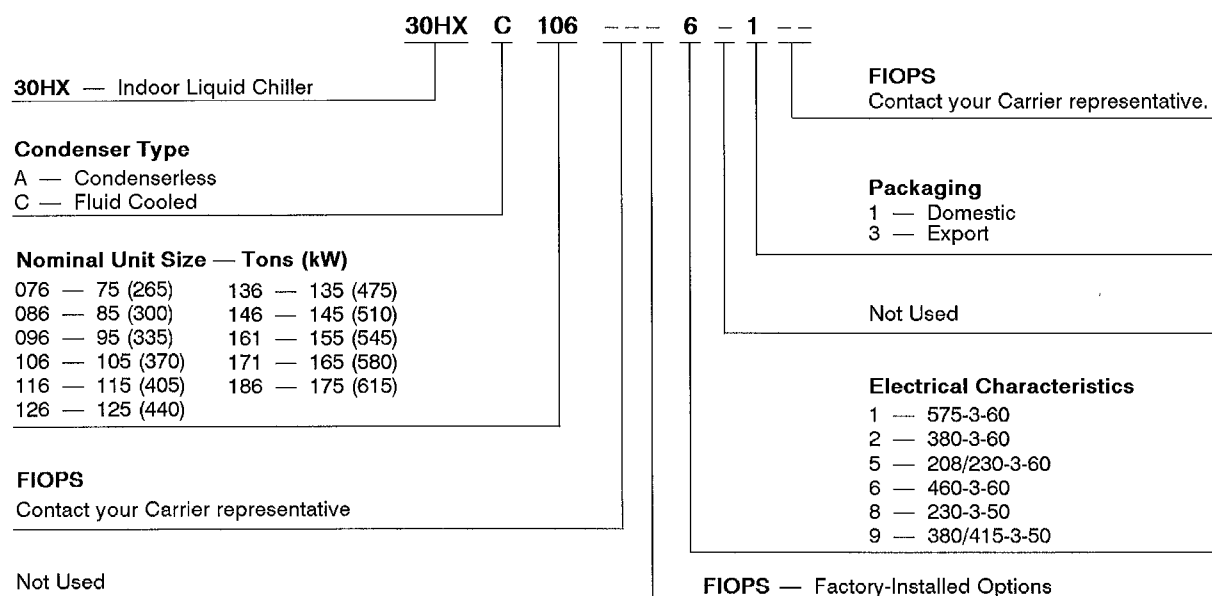


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Model number nomenclature



Physical data, English



30HX UNIT SIZE	076	086	096	106	116	126
UNIT WEIGHT (lb)*						
Fluid Cooled	5700	5723	5855	6177	6415	6465
Condenserless	4717	4744	4835	5151	5162	5205
COMPRESSORS			Semi-Hermetic, Twin Screw			
Quantity	2	2	2	2	2	2
Nominal Capacity per Compressor (tons)	39/39	46/39	56/39	66/39	66/46	66/56
Economizer	No	No	No	No	No	No
No. Capacity Steps						
Standard	5	5	5	5	5	5
Optional	6	6	6	6	6	6
Minimum Step Capacity (%)						
Standard	20	20	20	20	20	20
Optional	10	10	10	10	10	10
REFRIGERANT			HFC-134a			
Charge† (lb), Circuit A/B	55/55	66/55	79/55	95/55	95/66	95/79
COOLER TYPE			Shell and Tube with Enhanced Copper Tubes			
Net Fluid Volume (gal)	17.0	17.0	19.0	22.6	21.4	21.4
Maximum Refrigerant Pressure (psig)	220	220	220	220	220	220
Maximum Fluid-Side Pressure (psig)	300	300	300	300	300	300
CONDENSER (Water Cooled)			Shell and Tube with Enhanced Copper Tubes			
Net Fluid Volume (gal)	16.8	16.8	18.3	18.3	23.9	23.9
Maximum Refrigerant Pressure (psig)	220	220	220	220	220	220
Maximum Water-Side Pressure (psig)	300	300	300	300	300	300
CONDENSERLESS						
Maximum Refrigerant Pressure (psig)	320	320	320	320	320	320

30HX UNIT SIZE	136	146	161	171	186
UNIT WEIGHT (lb)*					
Fluid Cooled	6688	6718	7452	7660	7854
Condenserless	5308	5333	5752	5777	5946
COMPRESSORS			Semi-Hermetic, Twin Screw		
Quantity	2	2	2	2	2
Nominal Capacity per Compressor (tons)	80/56	66/80	56/80	66/80	80/80
Economizer	No	No	Yes	Yes	Yes
No. Capacity Steps					
Standard	5	5	5	5	5
Optional	6	6	6	6	6
Minimum Step Capacity (%)					
Standard	20	20	20	20	20
Optional	10	10	10	10	10
REFRIGERANT			HFC-134a		
Charge† (lb), Circuit A/B	114/79	114/95	130/90	109/130	130/130
COOLER TYPE			Shell and Tube with Enhanced Copper Tubes		
Net Fluid Volume (gal)	24.0	24.0	28.5	28.5	33.4
Maximum Refrigerant Pressure (psig)	220	220	220	220	220
Maximum Fluid-Side Pressure (psig)	300	300	300	300	300
CONDENSER (Water Cooled)			Shell and Tube with Enhanced Copper Tubes		
Net Fluid Volume (gal)	27.5	27.5	30.6	37.6	37.6
Maximum Refrigerant Pressure (psig)	220	220	220	220	220
Maximum Water-Side Pressure (psig)	300	300	300	300	300
CONDENSERLESS					
Maximum Refrigerant Pressure (psig)	320	320	320	320	320

*Weight includes weight of water or brine and refrigerant

†For 30HXC units. The 30HXA units are shipped with a holding charge only

Physical data, SI



30HX UNIT SIZE	076	086	096	106	116	126
UNIT WEIGHT (Kg)*						
Fluid Cooled	2586	2596	2656	2802	2910	2933
Condenserless	2140	2152	2193	2336	2341	2361
COMPRESSORS			Semi-Hermetic, Twin Screw			
Quantity	2	2	2	2	2	2
Nominal Capacity per Compressor (kW)	137/137	162/137	197/137	232/137	232/137	232/197
Economizer	No	No	No	No	No	No
No. Capacity Steps						
Standard	5	5	5	5	5	5
Optional	6	6	6	6	6	6
Minimum Step Capacity (%)						
Standard	20	20	20	20	20	20
Optional	10	10	10	10	10	10
REFRIGERANT			HFC-134a			
Charge* (Kg), Circuit A/B	24.9/24.9	29.9/24.9	35.8/24.9	43.1/24.9	43.1/29.9	43.1/35.8
COOLER TYPE			Shell and Tube with Enhanced Copper Tubes			
Net Fluid Volume (L)	64.3	64.3	71.9	85.5	81.0	81.0
Maximum Refrigerant Pressure (kPa)	1517	1517	1517	1517	1517	1517
Maximum Fluid-Side Pressure (kPa)	2068	2068	2068	2068	2068	2068
CONDENSER (Water Cooled)			Shell and Tube with Enhanced Copper Tubes			
Net Fluid Volume (L)	63.6	63.6	69.3	69.3	90.5	90.5
Maximum Refrigerant Pressure (kPa)	1517	1517	1517	1517	1517	1517
Maximum Water-Side Pressure (kPa)	2068	2068	2068	2068	2068	2068
CONDENSERLESS						
Maximum Refrigerant Pressure (kPa)	2205	2205	2205	2205	2205	2205

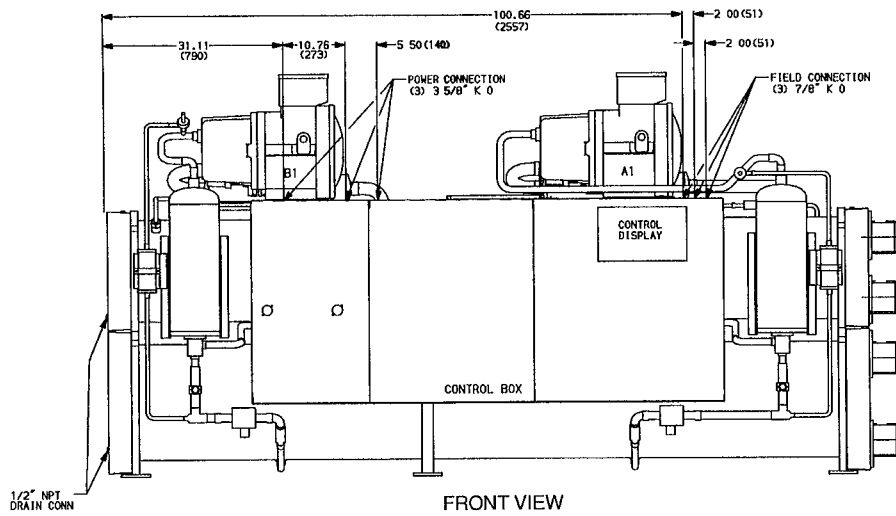
30HX UNIT SIZE	136	146	161	171	186
UNIT WEIGHT (Kg)*					
Fluid Cooled	3034	3047	3380	3476	3563
Condenserless	2408	2419	2609	2620	2697
COMPRESSORS			Semi-Hermetic, Twin Screw		
Quantity	2	2	2	2	2
Nominal Capacity per Compressor (kW)	281/197	232/281	197/281	232/281	281/281
Economizer	No	No	Yes	Yes	Yes
No. Capacity Steps					
Standard	5	5	5	5	5
Optional	6	6	6	6	6
Minimum Step Capacity (%)					
Standard	20	20	20	20	20
Optional	10	10	10	10	10
REFRIGERANT			HFC-134a		
Charge* (Kg), Circuit A/B	51.7/35.8	51.7/43.1	59.0/40.8	49.4/59.0	59.0/59.0
COOLER TYPE			Shell and Tube with Enhanced Copper Tubes		
Net Fluid Volume (L)	90.8	90.8	107.9	107.9	126.4
Maximum Refrigerant Pressure (kPa)	1517	1517	1517	1517	1517
Maximum Fluid-Side Pressure (kPa)	2068	2068	2068	2068	2068
CONDENSER (Water Cooled)			Shell and Tube with Enhanced Copper Tubes		
Net Fluid Volume (L)	104.1	104.1	115.8	142.3	142.3
Maximum Refrigerant Pressure (kPa)	1517	1517	1517	1517	1517
Maximum Water-Side Pressure (kPa)	2068	2068	2068	2068	2068
CONDENSERLESS					
Maximum Refrigerant Pressure (kPa)	2205	2205	2205	2205	2205

*Weight includes weight of water or brine and refrigerant

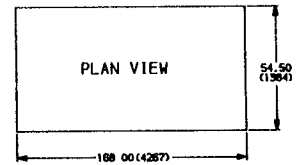
†For 30HXC units. The 30HXA units are shipped with a holding charge only

UNIT 30HXC	A	B	C	D	E	F	G	H	J	K	L	M	N	P
076	102.12 (2594)	45 87 (1165)	45 87 (1165)	9.87 (251)	9.36 (236)	43 50 (1105)	15.60 (396)	85.15 (2163)	4 00 (102)	95.00 (2413)	65 22 (1657)	1.90 (48)	47 00 (1194)	30.80 (782)
086	102.12 (2594)	45 87 (1165)	45 87 (1165)	9.87 (251)	9.36 (236)	43 50 (1105)	15.60 (396)	85.15 (2163)	4 00 (102)	95.00 (2413)	65 22 (1657)	1.90 (48)	47 00 (1194)	30.80 (782)
096	102.12 (2594)	37.63 (956)	54 12 (1375)	9.87 (251)	9.36 (236)	43 50 (1105)	15.60 (396)	85.15 (2163)	4 00 (102)	95.00 (2413)	65 22 (1657)	1.90 (48)	47 00 (1194)	30.80 (782)
106	102.12 (2594)	37.63 (956)	54 12 (1375)	10.47 (266)	10.28 (261)	45 50 (1156)	15.60 (396)	85.15 (2163)	5 00 (127)	95.00 (2413)	67.22 (1707)	1.90 (48)	47 00 (1194)	30.80 (782)
116	132.56 (3367)	72 12 (1832)	50 63 (1286)	9.87 (251)	9.36 (236)	43 50 (1105)	31.11 (790)	100.66 (2557)	4 00 (102)	126.00 (3200)	65 22 (1657)	1.70 (43)	62 20 (1580)	29.40 (747)
126	132.56 (3367)	72 12 (1832)	50 63 (1286)	9.87 (251)	9.36 (236)	43 50 (1105)	31.11 (790)	100.66 (2557)	4 00 (102)	126.00 (3200)	65 22 (1657)	1.70 (43)	62 20 (1580)	29.40 (747)
136	132.56 (3367)	72 12 (1832)	50 63 (1286)	9.87 (251)	9.36 (236)	43 50 (1105)	31.11 (790)	100.66 (2557)	4 00 (102)	126.00 (3200)	65 22 (1657)	1.70 (43)	62 20 (1580)	29.40 (747)
146	132.56 (3367)	72 12 (1832)	50 63 (1286)	9.87 (251)	9.36 (236)	43 50 (1105)	31.11 (790)	100.66 (2557)	4 00 (102)	126.00 (3200)	65 22 (1657)	1.70 (43)	62 20 (1580)	29.40 (747)

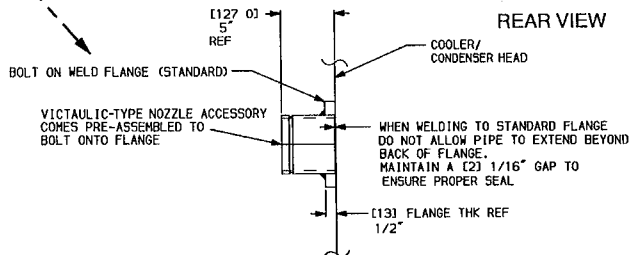
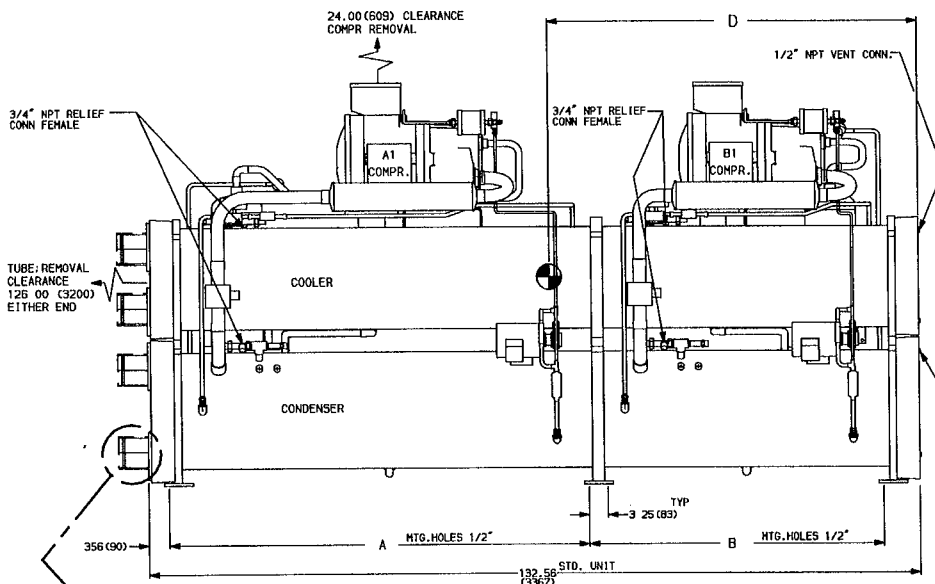
30HXC SIZES 161-186



UNIT WITH SOUND ENCLOSURE



LEAVE 36.00 (914) CLEARANCE AT SIDES OF SOUND ENCLOSURE FOR SERVICE
LEAVE POSTED CLEARANCE AT ONE END OF SOUND ENCLOSURE FOR TUBE REMOVAL



DIMENSIONS — in (mm)

UNIT 30HXC	A	B	C	D	E
161	72.12 (1832)	50.63 (1286)	2.00 (51)	63.50 (1588)	31.00 (787)
171	61.37 (1559)	61.37 (1559)	2.00 (51)	63.50 (1588)	31.00 (787)
186	61.37 (1559)	61.37 (1559)	2.00 (51)	63.50 (1588)	31.00 (787)

LEGEND

K.O. — Knockout
THK — Thickness
TYP — Typical

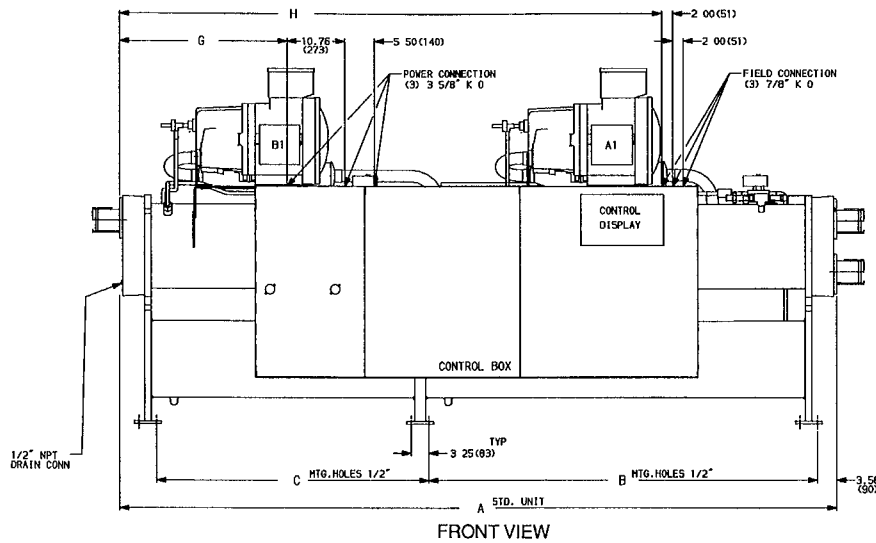
NOTES:

- Denotes center of gravity See page 10 for weight distribution
- Dimensions are in inches. Dimensions in () are in millimeters.
- Recommended service clearance around unit (front, back, and one side) is 36 in (914)

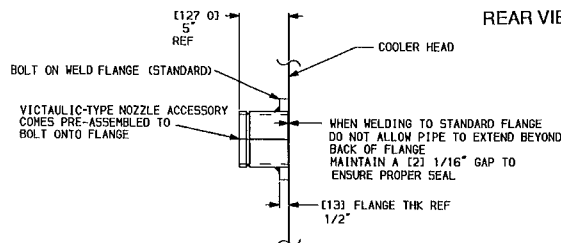
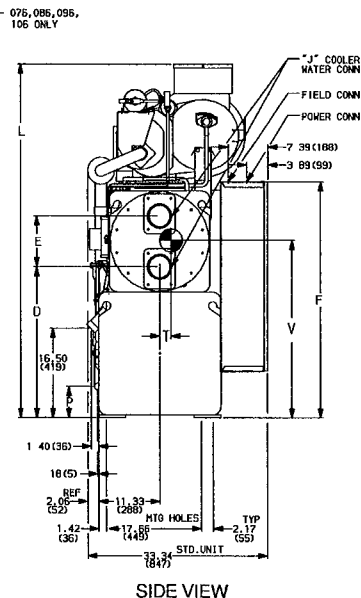
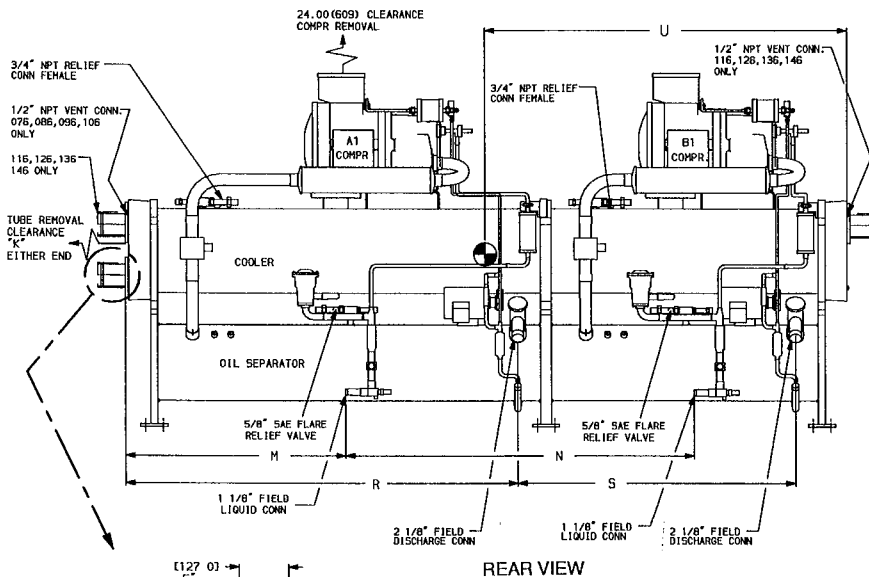
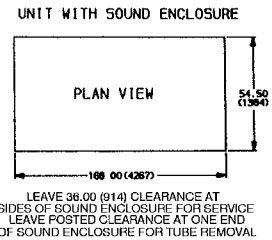
Dimensions (cont)



30HXA SIZES 076-146



LEGEND
K.O. — Knockout
SAE — Society of Automotive Engineers, U S A
THK — Thickness
TYP — Typical



NOTES:

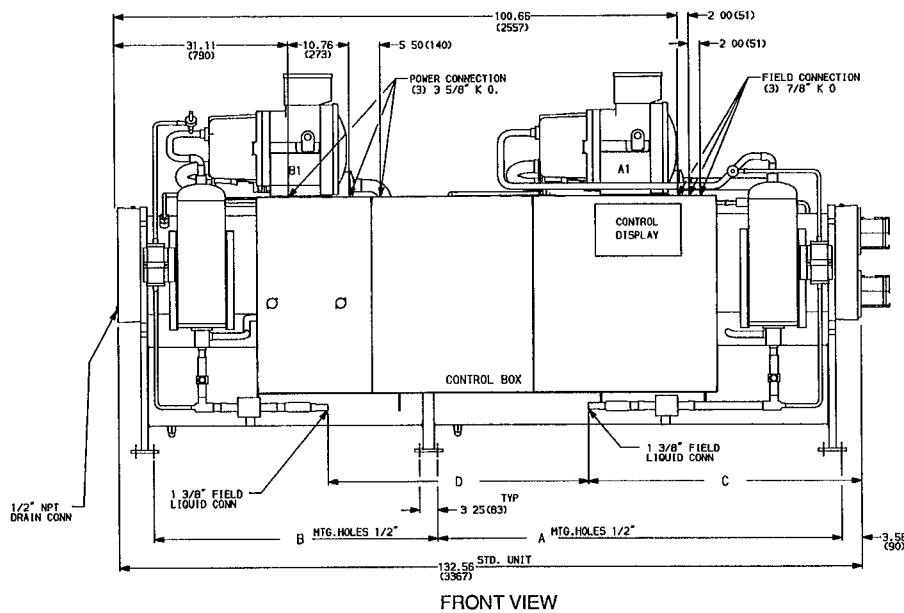
1. Denotes center of gravity See page 10 for weight distribution
2. Dimensions are in inches Dimensions in () are in millimeters
3. Recommended service clearance around unit (front, back, and one side) is 36 in (914)

DETAIL "A"
NOZZLE ACCESSORY TYPICAL

DIMENSIONS — in (mm)

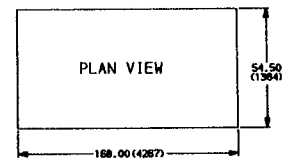
UNIT 30HXA	A	B	C	D	E	F	G	H	J	K	L	M	N	P	R	S	T	U	V
076	102.12 (2594)	45.87 (1165)	45.87 (1165)	27.81 (706)	9.36 (236)	43.50 (1105)	15.60 (396)	85.15 (2163)	4.00 (102)	95.00 (2413)	65.22 (1657)	13.93 (354)	59.48 (1511)	5.72 (145)	45.81 (1164)	46.25 (1175)	2.40 (61)	46.40 (1179)	35.00 (889)
086	102.12 (2594)	45.87 (1165)	45.87 (1165)	27.81 (706)	9.36 (236)	43.50 (1105)	15.60 (396)	85.15 (2163)	4.00 (102)	95.00 (2413)	65.22 (1657)	13.93 (354)	59.48 (1511)	5.72 (145)	45.81 (1164)	46.25 (1175)	2.40 (61)	46.40 (1179)	35.00 (889)
096	102.12 (2594)	37.63 (956)	54.12 (1375)	27.81 (706)	9.36 (236)	43.50 (1105)	15.60 (396)	85.15 (2163)	4.00 (102)	95.00 (2413)	65.22 (1657)	22.15 (563)	42.77 (1086)	5.72 (145)	54.06 (1373)	38.00 (965)	2.40 (61)	46.40 (1179)	35.00 (889)
106	102.12 (2594)	37.63 (956)	54.12 (1375)	28.41 (721)	10.28 (261)	45.50 (1156)	15.60 (396)	85.15 (2163)	5.00 (127)	95.00 (2413)	67.22 (1707)	22.15 (563)	42.77 (1086)	5.87 (149)	54.06 (1373)	38.00 (965)	2.40 (61)	46.40 (1179)	35.00 (889)
116	132.56 (3367)	72.12 (1832)	50.63 (1286)	27.81 (706)	9.36 (236)	43.50 (1105)	31.11 (790)	100.66 (2557)	4.00 (102)	126.00 (3200)	65.22 (1657)	40.16 (1020)	64.23 (1631)	5.72 (145)	72.06 (1830)	51.01 (1296)	2.30 (58)	61.00 (1549)	34.30 (871)
126	132.56 (3367)	72.12 (1832)	50.63 (1286)	27.81 (706)	9.36 (236)	43.50 (1105)	31.11 (790)	100.66 (2557)	4.00 (102)	126.00 (3200)	65.22 (1657)	40.16 (1020)	64.23 (1631)	5.72 (145)	72.06 (1830)	51.01 (1296)	2.30 (58)	61.00 (1549)	34.30 (871)
136	132.56 (3367)	72.12 (1832)	50.63 (1286)	27.81 (706)	9.36 (236)	43.50 (1105)	31.11 (790)	100.66 (2557)	4.00 (102)	126.00 (3200)	65.22 (1657)	40.16 (1020)	64.23 (1631)	5.72 (145)	72.06 (1830)	51.01 (1296)	2.30 (58)	61.00 (1549)	34.30 (871)
146	132.56 (3367)	72.12 (1832)	50.63 (1286)	27.81 (706)	9.36 (236)	43.50 (1105)	31.11 (790)	100.66 (2557)	4.00 (102)	126.00 (3200)	65.22 (1657)	40.16 (1020)	64.23 (1631)	5.72 (145)	72.06 (1830)	51.01 (1296)	2.30 (58)	61.00 (1549)	34.30 (871)

30HXA SIZES 161-186

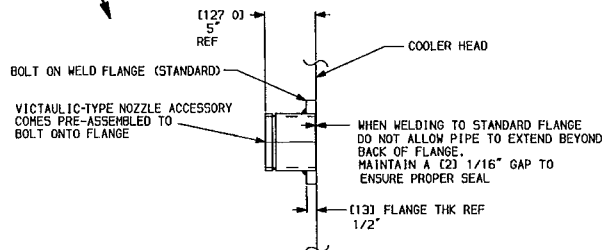
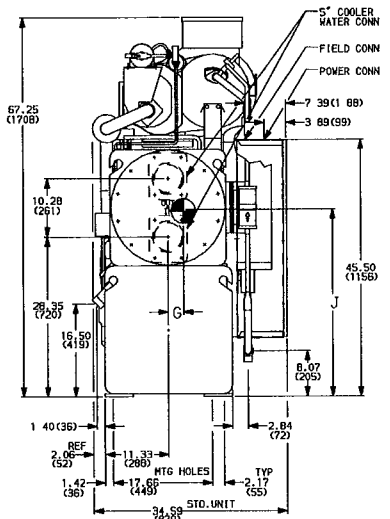
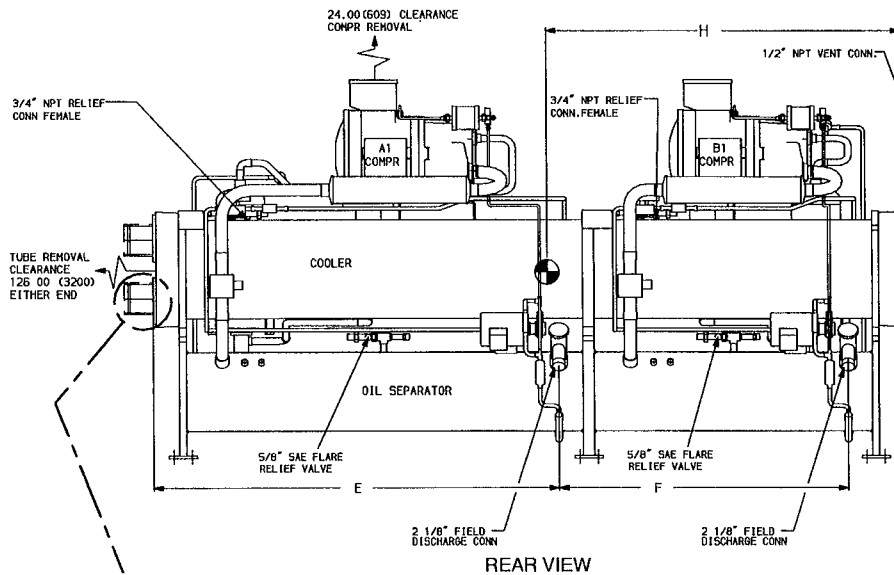


LEGEND
K.O. — Knockout
SAE — Society of Automotive Engineers, U S A
THK — Thickness
TYP — Typical

UNIT WITH SOUND ENCLOSURE



LEAVE 36.00 (914) CLEARANCE AT SIDES OF SOUND ENCLOSURE FOR SERVICE
LEAVE POSTED CLEARANCE AT ONE END OF SOUND ENCLOSURE FOR TUBE REMOVAL



NOTES:

- Denotes center of gravity See page 10 for weight distribution
- Dimensions are in inches. Dimensions in () are in millimeters
- Recommended service clearance around unit (front, back, and one side) is 36 in. (914).

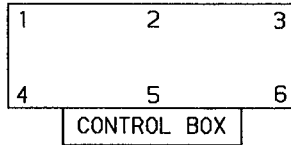
DIMENSIONS — in (mm)

UNIT 30HXA	A	B	C	D	E	F	G	H	J
161	72.12 (1832)	50.63 (1286)	48.56 (1233)	46.62 (1184)	72.06 (1830)	51.00 (1295)	2.70 (69)	62.50 (1588)	35.20 (894)
171	61.37 (1559)	61.37 (1559)	43.25 (1099)	46.62 (1184)	61.31 (1572)	61.75 (1568)	2.70 (69)	62.50 (1588)	35.20 (894)
186	61.37 (1559)	61.37 (1559)	43.25 (1099)	46.62 (1184)	61.31 (1572)	61.75 (1568)	2.70 (69)	62.50 (1588)	35.20 (894)

Dimensions (cont)



WEIGHT DISTRIBUTION — 30HXC, 30HXA



WEIGHT DISTRIBUTION AT EACH MOUNTING PLATE, 30HXC UNITS — Lb (Kg)

UNIT 30HXC	MOUNTING PLATE NO.					
	1	2	3	4	5	6
076	738 (335)	943 (428)	595 (270)	1110 (503)	1418 (643)	896 (406)
086	738 (335)	947 (430)	597 (271)	1112 (504)	1427 (647)	902 (409)
096	686 (311)	968 (439)	693 (314)	1027 (466)	1447 (656)	1034 (469)
106	730 (331)	1028 (466)	744 (337)	1073 (487)	1510 (685)	1092 (495)
116	728 (330)	1114 (505)	777 (352)	1053 (478)	1615 (733)	1127 (511)
126	738 (335)	1127 (511)	780 (354)	1061 (481)	1628 (738)	1131 (513)
136	758 (344)	1176 (533)	811 (368)	1083 (491)	1689 (766)	1171 (531)
146	763 (346)	1182 (536)	815 (370)	1085 (492)	1697 (770)	1172 (532)
161	817 (371)	1272 (577)	908 (412)	1219 (553)	1890 (857)	1346 (610)
171	936 (425)	1318 (598)	840 (381)	1379 (626)	1946 (883)	1241 (563)
186	962 (436)	1361 (617)	860 (390)	1410 (640)	1996 (905)	1265 (574)

WEIGHT DISTRIBUTION AT EACH MOUNTING PLATE, 30HXA UNITS — Lb (Kg)

UNIT 30HXA	MOUNTING PLATE NO.					
	1	2	3	4	5	6
076	555 (252)	793 (360)	418 (190)	926 (420)	1326 (601)	699 (317)
086	555 (252)	798 (362)	418 (190)	928 (421)	1340 (608)	705 (320)
096	509 (231)	808 (367)	493 (224)	848 (385)	1350 (612)	827 (375)
106	555 (252)	869 (394)	541 (245)	896 (406)	1410 (640)	880 (399)
116	530 (240)	895 (406)	540 (245)	855 (388)	1456 (660)	887 (402)
126	540 (245)	905 (410)	541 (245)	864 (392)	1468 (666)	887 (402)
136	548 (249)	926 (420)	555 (252)	873 (396)	1498 (679)	908 (412)
146	551 (250)	930 (422)	555 (252)	883 (400)	1506 (683)	908 (412)
161	560 (254)	965 (438)	598 (271)	954 (433)	1650 (748)	1025 (465)
171	627 (284)	968 (439)	534 (242)	1072 (486)	1658 (752)	918 (416)
186	648 (294)	1004 (455)	552 (250)	1110 (504)	1703 (772)	939 (426)

NOTE See pages 6-9 for center of gravity details.

Options and accessories



ITEM	FACTORY- INSTALLED OPTION	FIELD- INSTALLED ACCESSORY
Wye-Delta Start	X	
Brine	X	
Non-Fused Disconnect	X	
Expanded Display		X
Control Power Transformer		X
Minimum Load Control	X	X
Sound Reduction Enclosure		X
Vibration Isolation		X
Victaulic Connection		X
Temperature Reset Sensor		X
Chilled Fluid Flow Switch		X
Flotronic™ System Manager		X

Factory-installed options

Wye-delta start — Generally, Wye-delta start is not required when using multiple compressors since the starting current is generally less than with one larger compressor using Wye-delta start. Wye-delta start is standard on 208/230 v, 60 Hz and 230 v, 50 Hz units. It is available as a factory-installed option for all other unit voltages.

Brine — The brine option permits supply liquid temperatures to be set below 40 F (4.4 C). Refrigeration circuit components, such as the expansion device, are modified at the factory to correct for the lower refrigeration flow rates.

Non-fused disconnect — This disconnect will provide disconnect capability for main unit power located at the unit.

Minimum load control — This option allows additional capacity reduction for unit operation below the minimum step of unloading (down to 10% of the minimum unit capacity). Minimum load control is also available as a field-installed accessory.

Field-installed accessories

Control power transformer — The transformer is sized to supply the needs of the control circuit, sourcing power from the main unit power connection.

Minimum load control — This accessory allows additional capacity reduction for unit operation below the minimum step of unloading (down to 10% of the minimum unit capacity). Minimum load control is also available as a factory-installed option.

Sound reduction enclosure — This kit contains a sound enclosure that covers the entire unit to reduce sound levels.

Vibration isolation — Neoprene isolators are field installed to reduce vibration transmission from the compressor through the floor and into the conditioned space.

Expanded display — This accessory kit contains an indoor-mounted display panel for remote unit diagnostics. The panel displays 16 lines with 40 characters per line.

Victaulic connection — The kit contains a victaulic-type cooler connection to replace the standard weld-type connection.

Temperature reset sensor — This accessory sensor provides temperature reset capability from either the occupied space or outdoor-air temperature.

NOTE: Temperature reset capability using return temperature is standard.

Chilled fluid flow switch — This accessory is available for field installation and provides loss of flow protection for the 30HX chillers. Loss of flow protection is required for all 30HX chillers.

Flotronic system manager — This control can be used to regulate up to eight 30HXA or 30HXC chillers.

Application data



Leveling unit

To assure proper oil return, be sure that unit is level, particularly in its major lengthwise dimension. Determine whether special treatment is required to assure level unit before unit installation.

Cooler fluid temperature

1. *Maximum* leaving chilled-fluid temperature (LCWT) is 60 F (21 C). Unit can start and pull down with up to 95 F (35 C) entering-fluid temperature due to MOP (maximum operating pressure) feature of the expansion valve. For sustained operation, it is recommended that entering fluid temperature not exceed 85 F (29 C).
2. *Minimum* LCWT is 40 F (4 C) for standard units. Special-order brine units are required for operation with leaving fluid temperatures in the range of 39 to 15 F (4 to -9 C). For ratings below 40 F (4 C) LCWT, contact your local Carrier representative.
3. *Minimum* entering chilled-fluid temperature (ECWT) is 45 F (7.2 C). *Maximum* ECWT is 70 F (21.1 C).

Leaving-fluid temperature reset

The accessory reset sensor can be applied to the chiller to provide reset of LCWT in constant fluid flow systems. Reset reduces compressor power usage at part load when design LCWT is not necessary. Humidity control should be considered, since higher coil temperatures resulting from reset will reduce latent heat capacity. Three reset applications are offered:

From return-fluid temperature — Increases LCWT set point as return (or entering) fluid temperature decreases (indicating load decrease). Option may be used in any application where return fluid provides accurate load indication. Limitation of return-fluid reset is that the LCWT may only be reset to value of design return-fluid temperature. No additional hardware is required.

From outdoor-air temperature — Increases LCWT as outdoor ambient temperature decreases (indicating load decrease). This reset should be applied only where outdoor ambient temperature is an accurate indication of load. A field-supplied thermistor is required.

From occupied space temperature — Increases LCWT as space temperature decreases (indicating load decrease). This reset should be applied only where space temperature is an accurate indication of load. A field-supplied thermistor is required.

Condenser fluid temperature

1. *Maximum* leaving condenser fluid temperature is 105 F (40.5 C) on all 30HXC units.
2. *Minimum* entering condenser fluid temperature without condenser flow regulation is 70 F (21.1 C) at full load.

Cooler and fluid-cooled condenser temperature rise

Ratings and performance data in this publication are for a cooling temperature rise of 10° F (5.6° C). Units may be operated at a different temperature rise, provided flow limits are not exceeded and corrections to capacity, etc., are made. For minimum flow rates, see the Minimum Flow Rates table. High flow rate is limited by pressure drop that can be tolerated. If another temperature rise is used, apply LCWT correction as given in the electronic catalog chiller program.

Minimum cooler flow — Flow (maximum cooler temperature rise) for standard units is shown in the Minimum Flow Rates table. When gpm (L/s) required is lower (or rise is higher), follow recommendations below:

- a. Multiple smaller chillers can be applied in series, each providing a portion of the design temperature rise.
- b. Chilled fluid can be recirculated to raise flow rate. However, mixed temperature entering cooler must be maintained at a minimum of at least 5° F (2.8° C) above the leaving chilled fluid temperature.
- c. Special 1-pass cooler can be used. Contact your Carrier representative for further information.

MINIMUM FLOW RATES

DEVICE	UNIT SIZE	FLOW RATE, GPM (L/s)
COOLER	076	105 (6.6)
	086,096	125 (7.9)
	106-126	155 (9.8)
	136	200 (12.6)
	146	210 (13.2)
	161,171	240 (15.1)
	186	270 (17.0)
CONDENSER	076,086	105 (6.6)
	096,106	135 (8.5)
	116,126	170 (10.7)
	136,146	195 (12.3)
	161	235 (14.8)
	171,186	255 (16.1)

Maximum cooler flow (> 5 gpm/ton or < 5° F rise [$> 0.09 \text{ L/s} \cdot \text{kW}$ or $< 2.7^\circ \text{ C rise}$]) — Maximum flow results in practical maximum pressure drop through cooler.

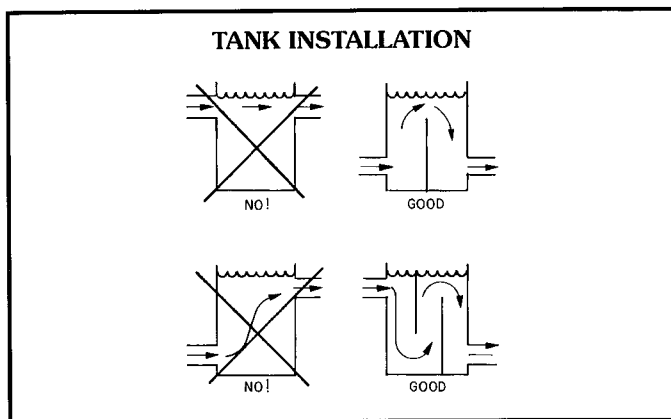
Return fluid can bypass the cooler to keep pressure drop through cooler within acceptable limits. This permits a higher ΔT with lower fluid flow through cooler and mixing after the cooler. Contact your Carrier representative if pressure drop appears excessive.

Variable cooler flow rates — These variable rates may be applied to standard 30HX series chillers. However, the unit will attempt to maintain a constant leaving chilled-fluid temperature. In such cases, minimum flow must be in excess of 3 gpm per ton (3.2 L per kW) and flow rate must change in steps of less than 10% per minute. Apply 6 gal per ton (6.5 L per kW) fluid loop volume minimum if flow rate changes more rapidly.

Minimum fluid-cooled condenser flow — This value (maximum rise) is shown in Minimum Flow Rates table. Condensers may be piped in series. Ensure leaving-fluid temperature does not exceed 105 F (40.5 C).

Chilled fluid loop volume — The chilled fluid loop volume in circulation must equal or exceed 2 gal per nominal ton of cooling (2 L per kW) for temperature stability and accuracy in normal air conditioning applications. For example, a 30HXC096 with a nominal capacity of 92.3 tons would require 184.6 gal (699 L) in circulation in the system loop.

For process jobs where accuracy is vital, or for operation at ambient temperatures below 32 F (0° C) with low unit loading conditions, there should be from 6 to 10 gal per ton (6.5 to 10.8 L per kW). To achieve this volume, it is often necessary to install a tank in the loop. Tank should be baffled to ensure there is no stratification, and that water (or brine) entering tank is adequately mixed with liquid in the tank. See below.



Fouling factor — The factor used to calculate tabulated ratings was 0.00025 ft² · hr · F/Btu (0.00044 m² · K/W). As fouling factor is increased, unit capacity decreases and compressor power increases. To determine selections at other fouling factors, use the chiller program in the electronic catalog.

Cooler and fluid-cooled condenser freeze protection — If chiller refrigerant or fluid lines are in an area where ambient conditions fall below 32 F (0° C), it is recommended that an antifreeze solution be added to protect the unit and fluid piping to a temperature 15° F (8.3° C) below the lowest anticipated temperature. For corrections to performance, refer to the chiller program in the electronic catalog.

Use only antifreeze solutions approved for heat exchanger duty. Use of automotive antifreezes is not recommended because of the fouling that can occur once their relatively short-lived inhibitors break down.

If not protected with an antifreeze solution, draining cooler and outdoor piping is recommended if system will not be used during freezing weather conditions.

30HXA remote condenser requirements

1. Ensure each refrigerant circuit has its own head pressure control.
2. Condenser must provide 15° F (8.3° C) subcooling, a maximum of 40° F (22.2° C) difference between saturated condensing temperature and outdoor ambient temperature (to prevent overload at high ambient temperatures), and a minimum of 20° F (11.1° C) difference (to assure subcooling).
3. Minimum saturated discharge temperature (SDT) is 105 F (40.5 C) at design conditions. Maximum SDT is 135 F (57.2 C).
4. Do not manifold independent refrigerant circuits into a single condenser.
5. Condenser should not be located more than 50 ft (15 m) below chiller to maintain subcooling.
6. Design discharge and liquid piping according to Carrier System Design Manual. Also see 30HX Service and Installation instructions.

Oversizing chillers

Oversizing chillers by more than 15% at design conditions must be avoided as the system operating efficiency will be adversely affected (resulting in greater and/or excessive electrical demand and cycling of compressors). When future expansion of equipment is anticipated, install a single chiller to meet present load requirements, and install a second chiller to meet the additional load demand.

It is also recommended that the installation of 2 smaller chillers be considered where operation at minimum load is critical. The operation of 2 small chillers at higher loading is preferred to operating a single chiller at or near its minimum recommended value.

The minimum load control accessory should not be used as a means to allow oversizing chillers. Minimum load control should be given consideration where substantial operating time is anticipated below the minimum unloading step.

Parallel chillers

Where chiller capacities greater than can be supplied by a single 30HX chiller are required, or where stand-by capability is desired, chillers may be installed in parallel. Units may be of the same or different sizes. However, cooler and condenser flow rates must be balanced to ensure proper flow to each chiller. The accessory Flotronic™ System Manager control should be used for proper leaving chilled fluid temperature control and to ensure proper staging sequence of up to 8 chillers. Refer to the accessory Flotronic System Manager installation instructions for further details.

Application data (cont)



Series chillers

Where a large temperature drop (greater than 25 F [13.9 C]) is desired and higher fluid pressure drop across the cooler can be tolerated, chillers may be installed in series. The leaving fluid temperature sensors need not be re-located. However, the cooler minimum entering fluid temperature limitations should be considered for the chillers located downstream of other chillers. Condensers should be piped in parallel to maximize capacity and efficiency. This should also minimize condenser pressure drop and saturated condensing temperatures. However, if condensers are piped in series, ensure that the leaving water temperature does not exceed 105 F (40.5 C).

Energy management

Demand limiting and load shedding are popular techniques used to reduce peak electric demands typically experienced during hot summer days when air conditioning loads are highest. When utility electricity demands exceed a certain level, electrical loads are turned off to keep the peak demands below a prescribed maximum limit. Compressor unloading reduces electrical demand while allowing the chiller to operate under part-load capacity and to maintain partial chilled fluid cooling.

Electrical demand can be limited by unloading the chiller to a predetermined percentage of the load. One stage of unloading can be initiated by a remote signal to significantly reduce the chiller power consumption. This power reduction applies to the full load power at nominal conditions. The demand limit control should not be cycled less than 10 minutes on and 5 minutes off.

Duty cycling

Duty cycling will cycle an electrical load at regular intervals, regardless of electrical demand. This reduces the electrical demand by "fooling" demand measuring devices. Duty cycling of the entire compressor is **NOT** recommended since motor windings and bearings will be damaged by constant cycling.

Wye-delta start

Wye-delta start is standard on 30HX 208/230 V 60 Hz units and 230 v 50 Hz units and optional on all other 30HX units. This feature is not always required on 30HX units due to the use of multiple compressors that allow small electrical load increments, but is available if required. Maximum instantaneous current flow (see ICF in Electrical Data tables on pages 21, 22, 26 and 27) should be used in determining need.

Vibration isolation

External vibration isolators are available as field-installed accessories.

Strainers

A strainer with a minimum screen size of 20 mesh should be installed in both the cooler and condenser fluid lines, just ahead of the cooler and condenser, and as close to the cooler and condenser as possible. For 30HXA units, this recommendation applies only to the cooler.

Selection procedure (with example)



Carrier's electronic catalog chiller selection program provides quick, easy selection of Carrier chillers. The program considers specific temperature and flow requirements and other factors, such as fouling and altitude correction. It can also select an air-cooled condenser for the condenserless 30HXA unit to match the required conditions. To select a 30HXA unit, use the electronic catalog or contact your Carrier representative. To select a 30HXC chiller, use the electronic catalog or follow one of the procedures below.

ENGLISH (60 Hz)

I Determine 30HXC unit size and operating conditions required to meet given capacity at given conditions.

Given:

Capacity 175 Tons
Leaving Chilled Water Temp (LCWT) 44 F
Cooler Water Temp Rise 10° F
Condenser Entering Water Temp 85 F
Condenser Water Temp Rise 10° F
Fouling Factor (Cooler and
Condenser) 00025

NOTE: For other than 10° F temperature rise, data corrections must be made using the chiller program in the electronic catalog. On some units, a change of controls is also necessary.

II From Cooling Capacities table on page 17 and pressure drop curves on page 20, determine operating data for selected unit.

Unit 30HXC186
Capacity .. 174.9 tons
Compressor Motor Power Input . 135.1 kW
Cooler Water Flow 419.2 gpm
Cooler Pressure Drop 13.0 ft of water
Condenser Water Flow 506.8 gpm
Condenser Pressure Drop 16.4 ft of water

SI (50 Hz)

I Determine unit size and operating conditions required to meet given capacity at given conditions.

Given:

Capacity 617 kW
Leaving Chilled Water Temp (LCWT) 7 C
Cooler Water Temp Rise 5.6° C
Condenser Entering Water Temp 30 C
Condenser Water Temp Rise 5.6° C
Fouling Factor (Cooler and
Condenser) 000044

NOTE: For other than 5.6° C temperature rise, data corrections must be made using the chiller program in the electronic catalog. On some units, a change of controls is also necessary.

II From Cooling Capacity table on page 19 and pressure drop curves on page 20, determine operating data for selected unit.

Unit 30HXC186
Capacity . 617.1 kW
Compressor Motor Power Input 136.5 kW
Cooler Water Flow 26.5 L/s
Cooler Pressure Drop 60.0 kPa
Condenser Water Flow 32.1 L/s
Condenser Pressure Drop 49.0 kPa

Performance data



Ratings

- All performance data are based on:
 - Cooler water temperature rise of 10° F (5.6° C).
 - Cooler fouling factor of .00025 ft² · hr · F/Btu (.000044 m² · K/W) (same for condenser on 30HXC).
 - 10° F (5.6° C) subcooling.
 - Refrigerant 134a
- Combining 30HXA units with remote condensers which have greater than (less than) the 10° F (5.6° C) subcooling in the ratings, increases (decreases) system capacity. To adjust capacity, multiply capacity ratings by 0.96; then adjust this result upward by 0.4% for each degree F (0.7% for each degree C) of available subcooling

ARI* RATINGS (60 Hz only)

UNIT 30HXC	CAPACITY		INPUT POWER (kW)	COOLER FLOW		COOLER PRESSURE DROP		CONDENSER FLOW		CONDENSER PRESSURE DROP		EER	IPLV
	Tons	kW		Gpm	L/s	Ft of Water	kPa	Gpm	L/s	Ft of Water	kPa		
076	74.0	260.3	55.5	177.5	11.2	12.2	36.5	213.5	13.5	7.2	21.5	16.0	19.4
086	81.6	287.0	62.2	195.6	12.3	14.5	43.3	235.9	14.9	8.6	25.7	15.7	18.7
096	92.3	324.6	69.5	221.2	14.0	14.3	42.7	266.4	16.8	8.9	26.6	15.9	19.0
106	102.5	360.5	78.3	245.7	15.5	13.0	38.9	296.5	18.7	10.8	32.3	15.7	18.3
116	111.5	392.1	82.9	267.4	16.9	11.3	33.8	321.2	20.3	13.7	40.9	16.1	19.2
126	120.7	424.5	90.4	289.4	18.3	13.0	38.9	348.1	22.0	15.9	47.5	16.0	19.2
136	133.9	470.9	101.2	321.1	20.3	12.4	37.1	386.8	24.4	15.1	45.1	15.9	18.4
146	143.0	502.9	109.8	342.9	21.6	14.0	41.8	414.1	26.1	17.1	51.1	15.6	18.2
161	154.3	542.7	118.5	369.9	23.3	11.6	34.7	446.8	28.2	17.7	52.9	15.6	17.8
171	163.5	575.0	125.0	392.0	24.7	12.9	38.6	473.1	29.8	14.4	43.0	15.7	18.2
186	174.9	615.1	135.1	419.2	26.4	11.8	35.3	506.8	32.0	16.4	49.0	15.5	17.7

LEGEND

EER — Energy Efficiency Ratio (Capacity [Btuh] ÷ Input Power [W])
IPLV — Integrated Part-Load Value

*Air Conditioning and Refrigeration Institute (U S A).

NOTES:

- Rated (60 Hz only) in accordance with ARI Standard 590-92 at standard rating conditions.
- Standard rating conditions are as follows:
 Cooler Conditions:
 Leaving water temperature 44 F (6.7 C)
 Entering water temperature 54 F (12.2 C)
 Condenser Conditions:
 Entering water temperature: 85 F (29.4 C)
 Flow 3 gpm per ton (0.054 L/s per kW)
 Fouling Factor (Cooler and Condenser):
 0.00025 hr x sq ft x F per Btuh (0.000044 m² x k per W)

- IPLV is a single number part-load efficiency value calculated from the system full-load efficiency values and corrected for a typical building air-conditioning application
- All data in this table is rated (60 Hz only) in accordance with ARI Standard 590-92 as represented in the Reciprocating Chiller Selection Program (E-Cat) version 2.13.



60 Hz Only

Rated in accordance with
ARI Standard 590-92



COOLING CAPACITIES **60 Hz, ENGLISH**

LCWT (F)	30HXC UNIT SIZE	CONDENSER ENTERING WATER TEMPERATURE (F)															
		75				80				85				90			
		Cap	Input kW	Cooler Flow Rate (Gpm)	Cond Flow Rate (Gpm)	Cap	Input kW	Cooler Flow Rate (Gpm)	Cond Flow Rate (Gpm)	Cap	Input kW	Cooler Flow Rate (Gpm)	Cond Flow Rate (Gpm)	Cap	Input kW	Cooler Flow Rate (Gpm)	Cond Flow Rate (Gpm)
40	076	73.5	48.7	176.0	207.7	70.5	51.6	168.9	202.4	67.6	54.4	161.9	197.3	65.0	57.4	155.5	193.0
	086	81.0	54.7	193.8	229.3	77.7	57.8	186.0	223.6	74.6	60.8	178.6	218.2	71.9	64.2	172.1	214.0
	096	91.5	60.9	219.1	258.7	87.9	64.5	210.3	252.3	84.4	68.1	201.9	246.3	81.2	71.9	194.4	241.3
	106	101.7	68.4	243.5	287.9	97.6	72.7	233.7	281.0	93.5	76.7	223.7	273.7	90.1	81.3	215.7	268.7
	116	110.5	72.5	264.5	311.6	106.1	77.1	254.0	304.2	101.7	81.5	243.5	296.6	97.8	86.1	234.1	290.3
	126	119.5	79.0	286.1	337.5	114.9	84.0	275.0	329.6	110.2	88.8	263.8	321.7	106.0	94.0	253.8	315.2
	136	132.5	89.1	317.2	375.1	127.4	94.3	304.9	366.2	122.5	99.2	293.2	357.9	118.2	104.7	283.0	351.3
	146	141.6	96.5	339.1	401.7	136.1	102.2	325.7	392.2	130.7	107.7	312.9	383.0	126.3	114.0	302.4	376.8
	161	148.2	100.5	354.9	420.1	145.8	109.4	348.9	420.1	143.2	118.6	342.8	420.0	142.0	129.4	340.0	424.3
	171	156.8	106.8	375.3	444.7	154.5	115.7	369.8	445.0	152.3	125.3	364.6	446.2	151.0	136.2	361.6	450.4
186	167.8	115.6	401.8	476.8	165.3	125.3	395.6	477.1	162.9	135.4	390.0	478.2	161.8	147.1	387.4	483.4	
42	076	76.9	49.4	184.3	216.3	73.9	52.0	177.0	210.8	70.7	55.0	169.5	205.3	67.8	57.9	162.3	200.1
	086	84.7	55.3	202.8	238.6	81.3	58.4	194.8	232.7	78.0	61.5	186.9	226.9	74.9	64.7	179.4	221.5
	096	95.7	61.8	229.2	269.2	92.0	65.1	220.4	262.7	88.2	68.8	211.4	256.1	84.6	72.4	202.8	250.0
	106	106.4	69.0	254.9	299.6	102.2	73.3	244.8	292.4	97.9	77.6	234.5	284.9	93.8	81.8	224.7	277.9
	116	115.4	73.3	276.6	324.1	111.1	77.6	266.2	316.6	106.6	82.3	255.3	308.9	102.1	86.8	244.5	301.1
	126	124.9	79.8	299.2	350.9	120.2	84.5	288.0	342.9	115.4	89.7	276.5	334.8	110.7	94.8	265.2	327.0
	136	138.4	90.3	331.7	390.2	133.3	95.1	319.4	381.1	128.1	100.3	306.8	372.0	123.1	105.4	295.0	363.6
	146	148.0	97.5	354.5	417.6	142.5	103.1	341.3	408.2	136.7	108.7	327.4	398.0	131.6	114.7	315.2	389.9
	161	153.7	100.4	368.2	433.2	151.4	109.2	362.6	433.5	148.7	118.6	356.2	433.2	146.4	128.6	350.8	434.6
	171	162.5	106.8	389.2	458.4	160.2	115.5	383.7	458.6	157.8	125.1	377.9	459.2	156.0	135.8	373.7	462.1
186	173.9	115.5	416.6	491.3	171.4	125.1	410.6	491.7	168.8	135.3	404.4	492.3	166.8	146.2	399.5	494.8	
44	076	80.3	50.2	192.6	225.0	77.3	52.4	185.4	219.3	74.0	55.5	177.5	213.5	70.9	58.5	170.0	208.1
	086	88.4	56.2	211.9	248.2	85.1	58.9	204.0	242.1	81.6	62.2	195.6	235.9	78.2	65.5	187.5	230.1
	096	99.9	62.7	239.4	279.9	96.2	65.6	230.7	273.2	92.3	69.5	221.2	266.4	88.5	73.3	212.1	259.8
	106	111.0	70.0	266.1	311.3	106.9	73.7	256.3	304.1	102.5	78.3	245.7	296.5	98.0	82.5	234.9	288.6
	116	120.5	74.2	288.9	336.8	116.0	78.6	278.2	329.0	111.5	82.9	267.4	321.2	106.8	87.7	256.0	313.1
	126	130.4	80.8	312.5	364.7	125.7	85.2	301.3	356.5	120.7	90.4	289.4	348.1	115.7	95.6	277.3	339.5
	136	144.5	91.7	346.3	405.5	139.4	95.9	334.2	396.3	133.9	101.2	321.1	386.8	128.7	106.5	308.4	377.7
	146	154.5	98.6	370.3	434.0	148.9	103.8	357.0	424.3	143.0	109.8	342.9	414.1	137.2	115.6	328.9	404.0
	161	159.1	100.7	381.5	446.5	157.0	108.9	376.3	446.8	154.3	118.5	369.9	446.8	151.5	128.5	363.2	446.7
	171	168.2	107.0	403.3	472.4	166.0	115.3	398.1	472.7	163.5	125.0	392.0	473.1	161.2	135.3	386.4	474.4
186	179.8	116.0	431.1	506.0	177.6	124.8	425.8	506.5	174.9	135.1	419.2	506.8	172.4	146.0	413.2	508.1	
46	076	83.8	50.8	201.1	233.9	80.8	53.2	193.8	228.2	77.5	56.0	185.9	222.2	74.2	59.1	177.9	216.3
	086	92.2	57.1	221.1	257.9	88.9	59.6	213.2	251.7	85.3	62.9	204.6	245.3	81.7	66.2	196.1	239.1
	096	104.2	63.6	249.9	290.9	100.5	66.5	241.1	284.1	96.5	70.1	231.5	277.0	92.5	74.1	221.8	269.9
	106	115.8	70.8	277.7	323.3	111.7	74.3	267.9	315.9	107.2	78.9	257.1	308.2	102.6	83.5	246.0	300.2
	116	125.7	75.1	301.5	349.9	121.3	78.9	291.0	342.1	116.7	83.5	279.8	334.0	111.8	88.5	268.2	325.8
	126	135.9	81.7	325.9	378.5	131.3	86.0	314.8	370.4	126.2	91.0	302.8	361.8	121.1	96.5	290.4	353.1
	136	150.7	92.9	361.5	421.3	145.6	96.9	349.2	411.9	140.0	102.1	335.9	402.1	134.4	107.6	322.5	392.4
	146	161.1	99.8	386.4	450.6	155.6	104.7	373.1	440.8	149.6	110.7	358.8	430.5	143.4	116.7	343.9	419.7
	161	164.6	100.9	394.9	459.9	162.7	108.6	390.2	460.4	160.1	118.4	383.9	460.6	157.2	128.5	377.0	460.4
	171	173.7	107.2	416.7	485.7	171.9	115.4	412.4	486.9	169.4	124.8	406.4	487.2	166.8	135.2	400.1	487.9
186	185.9	116.3	445.9	520.8	183.9	124.4	441.1	521.5	181.1	134.9	434.5	521.9	178.4	146.0	428.0	522.8	
48	076	87.0	51.3	208.7	241.7	84.3	54.0	202.4	237.2	81.1	56.4	194.7	231.2	77.5	59.7	186.1	224.8
	086	95.9	57.8	230.1	267.2	92.8	60.5	222.6	261.6	89.2	63.4	214.0	255.1	85.4	66.9	205.0	248.4
	096	108.2	64.2	259.7	301.0	104.9	67.6	251.6	295.2	100.9	70.7	242.2	288.0	96.7	74.8	232.0	280.5
	106	120.5	71.5	289.1	335.1	116.5	75.3	279.6	328.2	112.1	79.3	269.0	320.4	107.3	84.3	257.6	312.2
	116	130.4	75.6	313.0	361.6	126.5	80.0	303.7	355.3	121.9	84.1	292.6	347.0	116.9	89.2	280.6	338.5
	126	141.0	82.1	338.4	391.2	136.9	87.0	328.5	384.6	131.9	91.7	316.5	375.8	126.6	97.2	303.7	366.8
	136	156.8	93.9	376.4	436.7	151.9	98.4	364.4	427.9	146.4	102.9	351.3	417.8	140.5	108.6	337.2	407.7
	146	167.6	100.8	402.2	466.9	162.3	105.9	389.4	457.7	156.3	111.4	375.1	447.2	149.9	117.8	359.8	436.3
	161	170.1	100.8	408.3	473.0	168.3	109.0	403.9	474.2	165.9	117.9	398.2	474.4	163.0	128.3	391.1	474.3
	171	178.8	107.1	429.2	498.0	177.8	115.4	426.7	501.2	175.5	124.5	421.2	501.7	172.8	135.1	414.6	502.3
186	191.9	116.3	460.5	535.2	190.0	124.9	456.1	536.6	187.6	134.4	450.2	537.2	184.6	145.8	443.1	537.6	
50	076	90.0	51.7	216.1	249.3	88.0	54.7	211.2	246.4	84.7	57.3	203.3	240.3	81.2	60.2	194.8	233.9
	086	99.5	58.4	238.9	276.3	96.3	61.3	231.3	270.7	93.0	64.2	223.6	265.1	89.3	67.6	214.3	258.2
	096	111.9	64.6	268.7	310.2	109.3	68.5	262.5	306.6	105.3	71.6	252.9	299.2	101.1	75.4	242.7	291.5
	106	124.8	71.9	299.6	345.7	121.4	76.3	291.5	340.6	117.0	80.1	281.0	332.7	112.2	84.9	269.5	324.5
	116	135.1	76.0	324.3	373.1	131.9	80.9	316.7	368.8	127.2	85.0	305.4	360.4	122.2	89.8	293.4	351.7
	126	146.1	82.5	350.8	403.7	142.7	88.0	342.6	399.2	137.6	92.6	330.4	390.2	132.2	97.9	317.4	380.9
	136	162.2	94.4	389.3	449.9	158.3	99.8	380.0	444.3	152.8	104.0	366.8	434.0	146.8	109.7	352.5	423.6
	146	173.8	101.5	417.4	482.5	169.1	107.2	405.9	474.9	163.1	112.4	391.7	464.3	156.8	118.9	376.4	453.4
	161	174.4	100.0	418.8	483.0	174.0	109.2	417.7	488.0								

Performance data (cont)



COOLING CAPACITIES (cont) 60 HZ, SI

LCWT (C)	30HXC UNIT SIZE	CONDENSER ENTERING WATER TEMPERATURE (F)											
		25				30				35			
		Cap	Input kW	Cooler Flow Rate (L/s)	Cond Flow Rate (L/s)	Cap	Input kW	Cooler Flow Rate (L/s)	Cond Flow Rate (L/s)	Cap	Input kW	Cooler Flow Rate (L/s)	Cond Flow Rate (L/s)
4	076	249.8	49.7	10.7	12.8	231.5	54.7	9.9	12.2	217.1	60.5	9.3	11.8
	086	275.1	55.7	11.8	14.1	255.6	61.1	11.0	13.5	240.5	67.6	10.3	13.1
	096	311.0	62.2	13.4	15.9	288.9	68.4	12.4	15.2	272.0	75.7	11.7	14.8
	106	345.6	69.9	14.8	17.7	320.1	77.2	13.7	16.9	301.8	86.0	13.0	16.5
	116	375.5	74.1	16.1	19.2	348.3	82.0	15.0	18.3	327.7	91.2	14.1	17.8
	126	406.3	80.8	17.4	20.8	377.8	89.5	16.2	19.9	355.6	99.5	15.3	19.4
	136	450.5	90.9	19.3	23.1	419.7	99.8	18.0	22.1	396.7	110.5	17.0	21.6
	146	481.5	98.6	20.7	24.7	448.7	108.6	19.3	23.7	424.1	120.7	18.2	23.2
	161	510.3	104.2	21.9	26.2	495.2	120.6	21.3	26.2	490.8	141.2	21.1	26.9
	171	540.1	110.3	23.2	27.7	527.6	127.6	22.6	27.9	522.5	148.2	22.4	28.5
5	076	260.3	50.0	11.2	13.2	241.3	55.2	10.4	12.6	225.2	61.0	9.7	12.2
	086	286.6	56.2	12.3	14.6	266.1	61.8	11.4	14.0	249.3	68.2	10.7	13.5
	096	324.1	62.6	13.9	16.5	301.0	69.1	12.9	15.8	281.9	76.4	12.1	15.3
	106	360.0	70.4	15.5	18.3	333.5	77.9	14.3	17.5	312.7	86.6	13.4	17.0
	116	391.3	74.5	16.8	19.9	365.5	83.2	15.7	19.2	339.7	91.8	14.6	18.4
	126	423.4	81.2	18.2	21.5	393.2	90.2	16.9	20.6	368.5	100.2	15.8	20.0
	136	469.4	91.6	20.2	23.9	437.1	100.7	18.8	22.9	411.1	111.3	17.7	22.2
	146	501.6	99.2	21.5	25.6	466.1	109.3	20.0	24.5	439.4	121.3	18.9	23.9
	161	527.7	103.9	22.7	26.9	511.3	120.5	22.0	26.9	504.6	140.9	21.7	27.5
	171	558.3	110.1	24.0	28.5	543.6	127.2	23.4	28.6	537.1	147.9	23.1	29.2
6	076	271.2	50.6	11.7	13.7	251.2	55.8	10.8	13.1	233.5	61.4	10.0	12.6
	086	298.4	56.7	12.8	15.1	277.0	62.5	11.9	14.5	258.5	68.7	11.1	13.9
	096	337.4	63.2	14.5	17.1	313.2	69.9	13.5	16.3	292.2	76.9	12.6	15.7
	106	375.0	70.8	16.1	19.0	347.5	78.7	14.9	18.2	324.0	88.8	13.9	17.6
	116	407.1	75.2	17.5	20.6	378.5	83.5	16.3	19.7	352.0	93.3	15.1	19.0
	126	440.4	81.9	18.9	22.3	409.8	91.0	17.6	21.4	381.8	101.8	16.4	20.6
	136	488.5	92.3	21.0	24.8	454.9	101.7	19.6	23.7	426.1	111.9	18.3	22.9
	146	521.9	100.0	22.4	26.5	485.4	110.2	20.9	25.4	455.2	121.9	19.6	24.6
	161	545.4	103.6	23.4	27.7	528.8	120.5	22.7	27.7	518.7	140.5	22.3	28.1
	171	576.5	110.2	24.8	29.3	561.1	127.0	24.1	29.3	551.9	147.5	23.7	29.8
7	076	282.0	51.3	12.1	14.2	261.7	56.3	11.3	13.6	242.1	61.8	10.4	13.0
	086	310.3	57.4	13.3	15.7	288.3	63.1	12.4	15.0	267.8	69.2	11.5	14.4
	096	350.7	64.2	15.1	17.7	326.2	70.5	14.0	16.9	302.8	77.4	13.0	16.2
	106	389.4	72.3	16.8	19.7	362.2	79.4	15.6	18.8	335.6	86.0	14.4	18.2
	116	423.2	76.0	18.2	21.3	394.2	84.1	17.0	20.4	364.7	92.9	15.7	19.5
	126	457.9	82.6	19.7	23.1	426.7	91.7	18.4	22.1	395.7	101.3	17.0	21.2
	136	507.6	93.6	21.8	25.7	473.5	102.6	20.4	24.6	441.4	112.5	19.0	23.6
	146	542.7	100.8	23.3	27.4	505.6	111.2	21.7	26.3	471.4	124.2	20.3	25.4
	161	562.7	103.8	24.2	28.4	546.7	120.4	23.5	28.4	533.0	142.5	22.9	28.8
	171	594.9	110.2	25.6	30.1	579.4	127.0	24.9	30.1	567.0	147.0	24.4	30.4
8	076	293.1	52.0	12.6	14.7	272.7	56.7	11.7	14.1	251.6	62.3	10.8	13.4
	086	322.4	58.3	13.9	16.2	300.1	63.7	12.9	15.5	277.9	69.7	12.0	14.8
	096	364.4	65.0	15.7	18.3	339.6	71.0	14.6	17.5	314.3	78.1	13.5	16.7
	106	404.9	72.4	17.4	20.4	377.2	79.9	16.2	19.5	347.8	89.1	15.0	18.6
	116	439.6	76.9	18.9	22.0	410.5	84.6	17.7	21.1	379.3	93.5	16.3	20.2
	126	475.5	83.6	20.5	23.9	444.2	92.2	19.1	22.9	411.4	102.1	17.7	21.9
	136	527.3	94.8	22.7	26.5	492.8	103.4	21.2	25.4	457.9	113.3	19.7	24.4
	146	563.5	102.0	24.3	28.4	526.4	112.1	22.7	27.2	488.9	126.3	21.0	26.2
	161	580.3	104.1	25.0	29.2	565.1	120.3	24.3	29.2	547.6	141.5	23.6	29.4
	171	613.1	110.4	26.4	30.9	598.1	126.8	25.7	30.9	583.6	146.7	25.1	31.1
9	076	304.1	52.5	13.1	15.2	284.1	57.1	12.2	14.6	262.0	63.0	11.3	13.9
	086	334.7	59.0	14.4	16.8	312.4	64.2	13.4	16.1	288.9	70.5	12.4	15.3
	096	378.4	65.8	16.3	19.0	353.6	71.5	15.2	18.1	327.0	78.9	14.1	17.3
	106	420.3	73.2	18.1	21.1	392.7	80.4	16.9	20.2	362.0	88.9	15.6	19.2
	116	457.2	77.5	19.7	22.9	427.2	85.1	18.4	21.9	395.2	94.3	17.0	20.9
	126	492.8	84.3	21.2	24.6	462.1	92.7	19.9	23.7	427.5	102.7	18.4	22.6
	136	547.5	95.9	23.6	27.5	512.9	104.1	22.1	26.3	476.3	114.5	20.5	25.2
	146	585.0	103.0	25.2	29.4	547.7	112.8	23.6	28.2	507.4	124.3	21.8	26.9
	161	598.1	104.2	25.8	30.0	583.6	120.0	25.1	30.0	564.7	139.2	24.3	30.0
	171	630.3	110.5	27.1	31.6	617.5	126.4	26.6	31.7	600.6	146.4	25.9	31.9
10	076	314.1	53.0	13.5	15.7	295.5	57.7	12.7	15.1	272.6	63.5	11.7	14.3
	086	346.4	59.7	14.9	17.3	324.9	64.8	14.0	16.6	300.5	71.2	12.9	15.9
	096	390.8	66.2	16.8	19.5	367.6	72.2	15.8	18.8	340.1	79.6	14.7	17.9
	106	435.2	73.8	18.7	21.7	408.2	81.0	17.6	20.9	377.0	89.7	16.2	19.9
	116	471.2	78.0	20.3	23.5	443.9	85.9	19.1	22.6	411.7	95.1	17.7	21.6
	126	509.4	84.8	21.9	25.4	480.1	93.6	20.7	24.5	445.6	103.7	19.2	23.5
	136	566.5	96.8	24.4	28.3	533.3	104.9	23.0	27.3	495.2	115.5	21.3	26.1
	146	605.5	104.0	26.1	30.3	569.5	113.5	24.5	29.2	527.9	125.3	22.7	27.9
	161	615.1	104.0	26.5	30.7	602.2	119.5	25.9	30.8	583.3	139.2	25.1	30.8
	171	646.8	110.4	27.9	32.3	636.7	126.5	27.4	32.6	619.0	146.3	26.7	32.7
10	076	314.1	53.0	13.5	15.7	295.5	57.7	12.7	15.1	272.6	63.5	11.7	14.3
	086	346.4	59.7	14.9	17.3	324.9	64.8	14.0	16.6	300.5	71.2	12.9	15.9
	096	390.8	66.2	16.8	19.5	367.6	72.2	15.8	18.8	340.1	79.6	14.7	17.9
	106	435.2	73.8	18.7	21.7	408.2	81.0	17.6	20.9	377.0	89.7	16.2	19.9
	116	471.2	78.0	20.3	23.5	443.9	85.9	19.1	22.6	411.7	95.1	17.7	21.6
	126	509.4	84.8	21.9	25.4	480.1	93.6	20.7	24.5	445.6	103.7	19.2	23.5
	136	566.5	96.8	24.4	28.3	533.3	104.9	23.0	27.3	495.2	115.5	21.3	26.1
	146	605.5	104.0	26.1	30.3	569.5	113.5	24.5	29.2	527.9	125.3	22.7	27.9
	161	615.1	104.0	26.5	30.7	602.2	119.5	25.9	30.8	583.3	139.2	25.1	30.8
	171	646.8	110.4	27.9	32.3	636.7	126.5	27.4	32.6	619.0	146.3	26.7	32.7
	186	693.6	119.8	29.9	34.7	680.5	136.3	29.3	34.9	662.1	157.7	28.5	35.0

LEGEND

Cap — Capacity, kW
 Cond — Condenser
 kW — Compressor Motor Input Power at Rated Voltage
 LCWT — Leaving Chilled-Water Temperature (C)

COOLING CAPACITIES (cont) 50 Hz, SI

LCWT (C)	30HXC UNIT SIZE	CONDENSER ENTERING WATER TEMPERATURE (C)											
		25				30				35			
		Cap	Input kW	Cooler Flow Rate (L/s)	Cond Flow Rate (L/s)	Cap	Input kW	Cooler Flow Rate (L/s)	Cond Flow Rate (L/s)	Cap	Input kW	Cooler Flow Rate (L/s)	Cond Flow Rate (L/s)
4	076	244.9	48.5	10.5	12.5	226.9	53.4	9.7	11.9	212.7	59.1	9.1	11.6
	086	273.8	55.4	11.8	14.0	255.5	61.2	11.0	13.5	239.9	67.4	10.3	13.1
	096	311.9	62.4	13.4	16.0	291.8	69.2	12.5	15.4	274.3	76.5	11.8	14.9
	106	342.5	69.2	14.7	17.5	317.3	76.4	13.6	16.8	300.4	85.6	12.9	16.4
	116	375.9	74.2	16.1	19.2	350.0	82.4	15.0	18.4	329.8	91.8	14.2	17.9
	126	409.9	81.7	17.6	20.9	382.1	90.8	16.4	20.1	360.1	101.0	15.5	19.6
	136	454.2	91.8	19.5	23.3	425.0	101.3	18.2	22.4	401.0	111.8	17.2	21.8
	146	480.9	98.4	20.6	24.7	448.5	108.5	19.3	23.7	425.1	121.1	18.3	23.2
	161	494.2	100.1	21.2	25.3	473.8	114.3	20.3	25.0	466.0	132.5	20.0	25.5
	171	535.7	109.2	23.0	27.5	519.3	125.2	22.3	27.4	508.1	143.7	21.8	27.7
	186	576.5	119.2	24.7	29.6	559.7	136.4	24.0	29.6	551.8	157.3	23.7	30.2
5	076	255.2	48.9	11.0	13.0	236.5	54.0	10.2	12.4	220.7	59.6	9.5	11.9
	086	284.6	55.8	12.2	14.5	265.8	61.8	11.4	14.0	248.8	68.0	10.7	13.5
	096	324.1	62.6	13.9	16.5	303.6	69.9	13.0	15.9	284.5	77.2	12.2	15.4
	106	356.9	69.7	15.3	18.2	330.4	77.1	14.2	17.4	311.0	86.1	13.4	16.9
	116	391.1	74.5	16.8	19.9	364.5	83.2	15.7	19.1	341.6	92.3	14.7	18.5
	126	426.2	81.9	18.3	21.7	397.7	91.5	17.1	20.8	373.0	101.6	16.0	20.2
	136	472.3	92.3	20.3	24.1	442.1	102.2	19.0	23.2	415.8	112.7	17.9	22.5
	146	501.0	99.0	21.5	25.6	465.5	109.1	20.0	24.5	440.2	121.6	18.9	23.9
	161	511.9	100.0	22.0	26.1	491.3	114.7	21.1	25.8	479.7	132.5	20.6	26.1
	171	554.3	109.3	23.8	28.3	536.2	125.2	23.0	28.2	523.8	143.8	22.5	28.4
	186	596.5	119.1	25.6	30.5	577.8	136.4	24.8	30.4	568.0	157.3	24.4	30.9
6	076	265.8	49.4	11.4	13.4	246.3	54.5	10.6	12.8	228.8	60.0	9.8	12.3
	086	295.6	56.1	12.7	15.0	276.5	62.3	11.9	14.4	258.0	68.6	11.1	13.9
	096	336.6	63.1	14.5	17.0	315.8	70.5	13.6	16.5	295.1	77.8	12.7	15.9
	106	371.6	70.1	16.0	18.8	344.3	77.9	14.8	18.0	321.9	88.1	13.8	17.5
	116	406.2	75.0	17.5	20.5	379.8	83.8	16.3	19.8	353.8	93.9	15.2	19.1
	126	442.5	82.5	19.0	22.4	414.1	92.3	17.8	21.6	386.2	103.2	16.6	20.8
	136	490.7	92.8	21.1	24.9	459.8	103.0	19.8	24.0	431.0	113.4	18.5	23.2
	146	521.3	99.8	22.4	26.5	484.8	110.1	20.8	25.4	455.7	122.1	19.6	24.6
	161	529.6	99.8	22.8	26.8	509.4	115.0	21.9	26.6	493.9	132.4	21.2	26.7
	171	573.0	109.5	24.6	29.1	554.7	125.4	23.8	29.0	539.7	143.9	23.2	29.1
	186	616.6	119.0	26.5	31.4	597.2	136.4	25.7	31.3	584.3	157.0	25.1	31.6
7	076	276.5	50.1	11.9	13.9	256.6	55.0	11.0	13.3	237.2	60.4	10.2	12.7
	086	306.8	56.7	13.2	15.5	287.5	62.9	12.4	14.9	267.5	69.1	11.5	14.3
	096	349.4	63.9	15.0	17.6	328.1	71.0	14.1	17.0	305.9	78.4	13.2	16.4
	106	386.2	70.8	16.6	19.5	358.9	78.5	15.4	18.7	333.0	86.2	14.3	18.0
	116	421.7	75.7	18.1	21.2	395.3	84.4	17.0	20.5	366.2	93.2	15.8	19.6
	126	459.3	82.9	19.8	23.1	430.9	92.9	18.5	22.3	400.1	102.7	17.2	21.4
	136	509.3	94.0	21.9	25.7	478.3	103.8	20.6	24.8	446.7	114.1	19.2	23.9
	146	542.0	100.6	23.3	27.4	505.0	111.1	21.7	26.3	471.6	124.3	20.3	25.4
	161	546.7	100.3	23.5	27.6	527.9	115.2	22.7	27.4	509.5	134.3	21.9	27.4
	171	592.1	109.6	25.5	29.9	573.6	125.5	24.7	29.8	555.9	143.7	23.9	29.8
	186	636.2	119.2	27.4	32.2	617.1	136.5	26.5	32.1	601.0	156.7	25.9	32.3
8	076	287.4	50.8	12.4	14.4	267.4	55.4	11.5	13.8	246.7	60.9	10.6	13.1
	086	318.3	57.4	13.7	16.0	298.7	63.4	12.9	15.4	277.8	69.7	12.0	14.8
	096	362.4	64.6	15.6	18.2	340.7	71.3	14.7	17.6	317.5	78.9	13.7	16.9
	106	401.3	71.7	17.3	20.2	373.8	79.1	16.1	19.3	344.8	88.3	14.8	18.5
	116	437.5	76.4	18.8	21.9	411.0	84.8	17.7	21.2	381.1	94.0	16.4	20.3
	126	476.3	83.8	20.5	23.9	448.1	93.3	19.3	23.1	416.2	103.5	17.9	22.2
	136	528.5	95.1	22.7	26.6	496.9	104.5	21.4	25.7	463.5	115.0	19.9	24.7
	146	562.8	101.8	24.2	28.4	525.8	111.9	22.6	27.2	488.7	126.2	21.0	26.2
	161	564.3	100.6	24.3	28.4	545.9	115.2	23.5	28.2	522.8	131.6	22.5	27.9
	171	610.6	109.9	26.3	30.7	592.9	125.5	25.5	30.6	573.8	143.9	24.7	30.6
	186	655.5	119.7	28.2	33.1	637.5	136.5	27.4	33.0	618.2	156.3	26.6	33.0
9	076	298.0	51.3	12.8	14.9	278.5	55.8	12.0	14.3	256.9	61.6	11.1	13.6
	086	330.1	58.1	14.2	16.6	310.3	63.7	13.4	16.0	288.6	70.4	12.4	15.3
	096	375.9	65.2	16.2	18.8	353.7	71.7	15.2	18.2	330.0	79.7	14.2	17.5
	106	416.5	72.4	17.9	20.9	389.2	79.5	16.8	20.0	358.7	88.0	15.4	19.1
	116	453.4	77.0	19.5	22.7	427.0	85.1	18.4	21.9	396.7	94.8	17.1	21.0
	126	493.1	84.4	21.2	24.7	465.3	93.6	20.0	23.9	432.8	104.3	18.6	22.9
	136	548.2	96.1	23.6	27.5	516.2	104.9	22.2	26.5	481.8	116.1	20.7	25.5
	146	584.2	102.9	25.2	29.3	547.0	112.6	23.6	28.2	506.7	124.0	21.8	26.9
	161	582.3	100.7	25.1	29.2	564.7	115.0	24.3	29.0	541.6	132.0	23.3	28.7
	171	628.0	110.1	27.0	31.5	612.8	125.3	26.4	31.5	592.0	143.9	25.5	31.4
	186	675.5	120.0	29.1	34.0	658.7	136.3	28.4	33.9	637.7	156.4	27.5	33.9
10	076	307.7	51.7	13.3	15.3	289.7	56.4	12.5	14.8	267.3	62.1	11.5	14.1
	086	341.1	58.6	14.7	17.1	322.0	64.1	13.9	16.5	297.1	70.6	12.8	15.7
	096	388.1	65.7	16.7	19.4	367.1	72.0	15.8	18.7	342.8	80.3	14.8	18.1
	106	431.1	73.0	18.6	21.5	404.6	80.1	17.4	20.7	373.6	88.8	16.1	19.7
	116	468.2	77.3	20.2	23.3	443.1	85.6	19.1	22.6	409.2	94.9	17.7	21.5
	126	509.2	84.7	21.9	25.4	482.5	94.2	20.8	24.6	450.3	105.1	19.4	23.7
	136	566.9	96.9	24.4	28.3	535.9	105.5	23.1	27.4	500.6	117.0	21.6	26.4
	146	604.8	103.8	26.0	30.3	568.8	113.3	24.5	29.1	527.3	125.1	22.7	27.8
	161	598.7	100.6	25.8	29.9	583.6	114.8	25.1	29.8	560.7	132.4	24.1	29.6
	171	644.7	110.0	27.8	32.2	632.6	125.6	27.3	32.4	611.6	144.2	26.3	32.3
	186	694.3	119.9	29.9	34.8	679.9	136.2	29.3	34.8	658.2	156.6	28.4	34.8

LEGEND

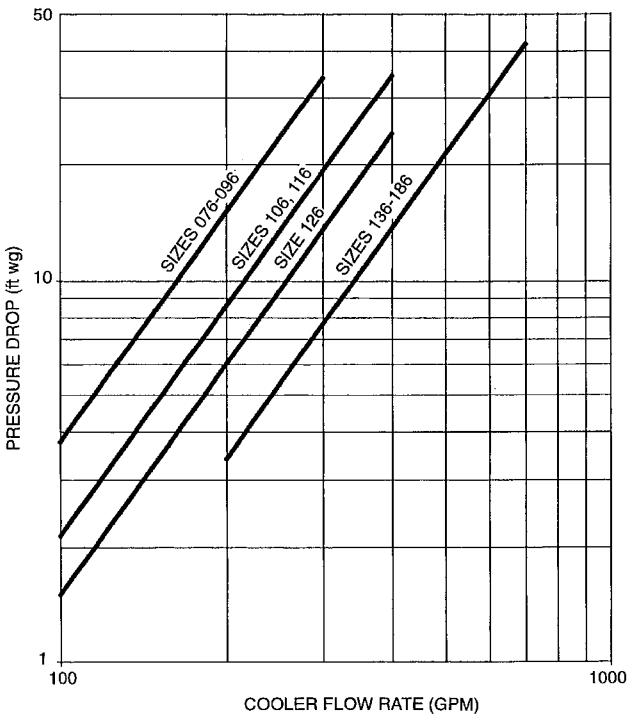
Cap — Capacity, kW
 Cond — Condenser
 kW — Compressor Motor Input Power at Rated Voltage
 LCWT — Leaving Chilled-Water Temperature (C)

Performance data (cont)

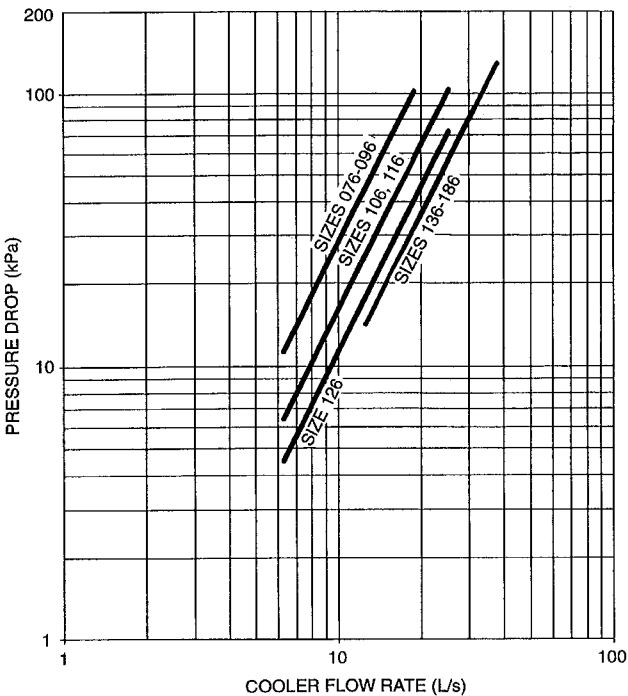


COOLER PRESSURE DROP (30HXA, 30HXC)

ENGLISH

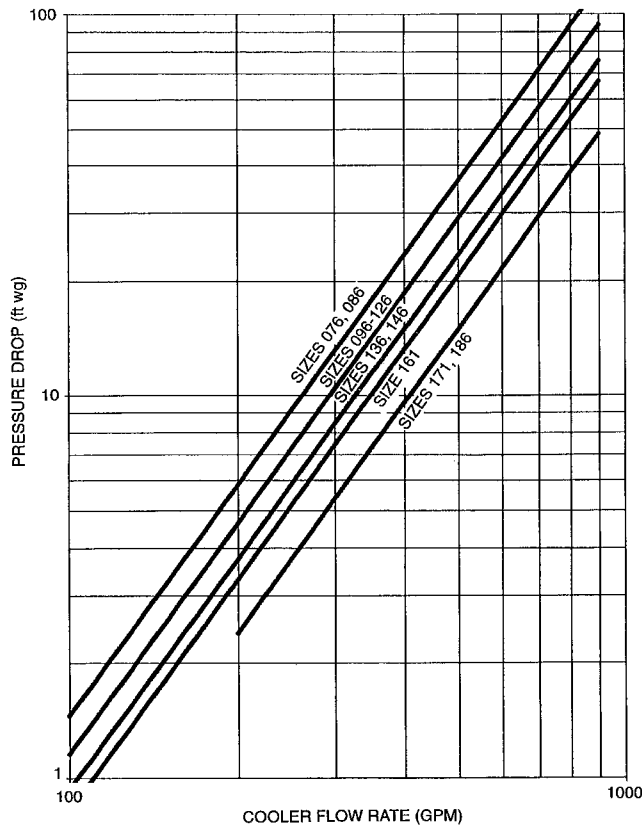


SI

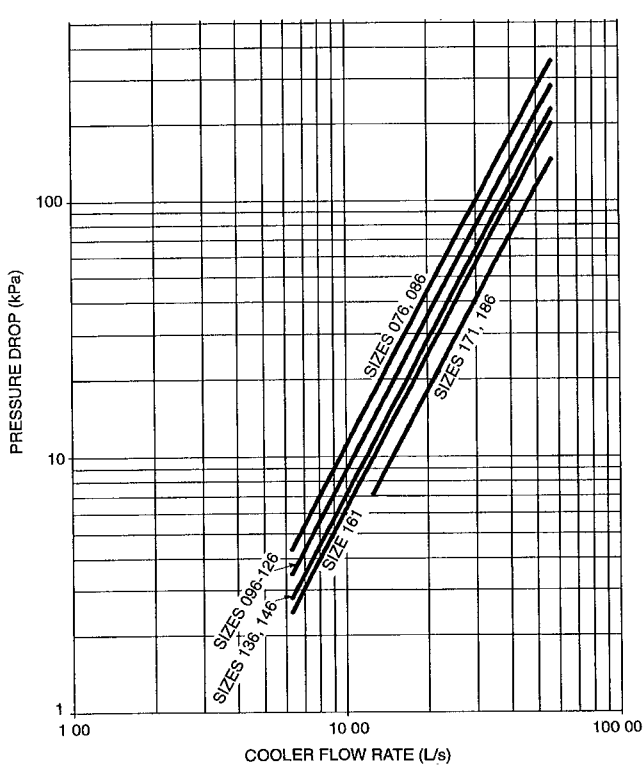


CONDENSER PRESSURE DROP (30HXC)

ENGLISH



SI



Electrical data — 30HXC fluid-cooled units



UNIT ELECTRICAL DATA

UNIT 30HXC	VOLTAGE			POWER CIRCUIT			CONTROL CIRCUIT					ICF	
	Nameplate V-Hz (3 Ph)	Supplied		MCA	MOCP	Recommended Fuse Size	Voltage (Single Ph)	Min	Max	MCA	MOCP	WD	XL
		Min	Max										
076	208/230-60	187	253	123/123	200/200	175/150	115-60	104	127	15	15	307	*
	460-60	414	506	100	150	125	115-60	104	127			148	374
	575-60	518	633	80	110	100	115-60	104	127			118	299
	380-60	342	418	121	175	150	230-60	207	254			169	419
	230-50	207	253	115/115	200/200	150/150	230-50	198	254			266	*
	380/415-50	342	440	126	175	150	230-50	198	254			165	400
086	208/230-60	187	253	148/123	250/200	200/150	115-60	104	127	15	15	307	*
	460-60	414	506	111	150	125	115-60	104	127			148	374
	575-60	518	633	89	125	100	115-60	104	127			118	299
	380-60	342	418	135	200	175	230-60	207	254			169	419
	230-50	207	253	140/115	250/200	75/150	230-50	198	254			305	*
	380/415-50	342	440	140	200	175	230-50	198	254			190	479
096	208/230-60	187	253	181/122	300/200	225/150	115-60	104	127	15	15	354	*
	460-60	414	506	126	175	150	115-60	104	127			172	449
	575-60	518	633	101	150	125	115-60	104	127			137	359
	380-60	342	418	153	225	175	230-60	207	254			195	502
	230-50	207	253	169/115	300/200	225/150	230-50	198	254			347	*
	380/415-50	342	440	158	225	200	230-50	198	254			216	562
106	208/230-60	187	253	219/123	350/200	300/150	115-60	104	127	15	15	405	*
	460-60	414	506	143	200	175	115-60	104	127			197	529
	575-60	518	633	115	175	150	115-60	104	127			158	423
	380-60	342	418	174	250	200	230-60	207	254			223	590
	230-50	207	253	202/115	350/200	250/150	230-50	198	254			397	*
	380/415-50	342	440	178	250	225	230-50	198	254			247	661
116	208/230-60	187	253	219/148	350/250	300/200	115-60	104	127	15	15	426	*
	460-60	414	506	153	225	175	115-60	104	127			207	539
	575-60	518	633	122	175	150	115-60	104	127			166	431
	380-60	342	418	185	250	225	230-60	207	254			234	601
	230-50	207	253	202/140	350/250	250/175	230-50	198	254			417	*
	380/415-50	342	440	190	250	225	230-50	198	254			259	673
126	208/230-60	187	253	219/181	350/300	300/225	115-60	104	127	15	15	452	*
	460-60	414	506	165	225	200	115-60	104	127			219	551
	575-60	518	633	131	175	150	115-60	104	127			175	440
	380-60	342	418	199	250	225	230-60	207	254			248	615
	230-50	207	253	202/169	350/300	250/225	230-50	198	254			440	*
	380/415-50	342	440	204	300	250	230-50	198	254			273	687
136	208/230-60	187	253	263/181	450/300	350/225	115-60	104	127	15	15	512	*
	460-60	414	506	184	250	225	115-60	104	127			249	646
	575-60	518	633	147	200	175	115-60	104	127			199	536
	380-60	342	418	222	300	300	230-60	207	254			282	720
	230-50	207	253	245/169	400/300	300/225	230-50	198	254			496	*
	380/415-50	342	440	230	300	300	230-50	198	254			308	797
146	208/230-60	187	253	263/219	450/350	350/300	115-60	104	127	15	15	542	*
	460-60	414	506	198	250	225	115-60	104	127			262	659
	575-60	518	633	158	225	200	115-60	104	127			210	547
	380-60	342	418	240	350	300	230-60	207	254			299	737
	230-50	207	253	245/202	400/350	300/250	230-50	198	254			523	*
	380/415-50	342	440	246	350	300	230-50	198	254			324	813

See legend and notes on page 22

Electrical data — 30HXC fluid-cooled units (cont)



UNIT ELECTRICAL DATA (cont)

UNIT 30HXC	VOLTAGE			POWER CIRCUIT			CONTROL CIRCUIT					ICF	
	Nameplate V-Hz (3 Ph)	Supplied											
		Min	Max	MCA	MOCP	Recommended Fuse Size	Voltage (Single Ph)	Min	Max	MCA	MOCP	WD	XL
161	208/230-60	187	253	285/197	500/350	350/250	115-60	104	127	15	15	591	*
	460-60	414	506	200	300	250	115-60	104	127			287	756
	575-60	518	633	160	225	200	115-60	104	127			230	605
	380-60	342	418	242	350	300	230-60	207	254			325	843
	230-50	207	253	266/182	450/300	350/225	230-50	198	254			578	*
	380/415-50	342	440	249	350	300	230-50	198	254			358	944
171	208/230-60	187	253	238/285	400/500	300/400	115-60	104	127	15	15	624	*
	460-60	414	506	215	300	250	115-60	104	127			302	771
	575-60	518	633	172	250	200	115-60	104	127			242	617
	380-60	342	418	260	350	300	230-60	207	254			343	861
	230-50	207	253	219/266	350/450	300/350	230-50	198	254			607	*
	380/415-50	342	440	267	350	300	230-50	198	254			376	962
186	208/230-60	187	253	285/285	500/500	400/400	115-60	104	127	15	15	661	*
	460-60	414	506	232	300	300	115-60	104	127			319	788
	575-60	518	633	185	250	225	115-60	104	127			255	630
	380-60	342	418	156/156	250/250	200/200	230-60	207	254			364	882
	230-50	207	253	266/266	450/450	350/350	230-50	198	254			645	*
	380/415-50	342	440	289	400	350	230-50	198	254			399	985

LEGEND

- FLA** — Full Load Amps
ICF — Maximum Instantaneous Current Flow during start-up (the point in the starting sequence where the sum of the LRA for the start-up compressor, plus the total RLA for all running compressors, plus the total FLA for all running fan motors is at a maximum)
LRA — Locked Rotor Amps
MCA — Minimum Circuit Ampacity (for wire sizing)
MOCP — Maximum Overcurrent Protection
RLA — Rated Load Amps
WD — Wye-Delta Start
XL — Across-the-Line Start

*Wye-Delta Start is standard. Not available in across-the-line start
 †The 30HX186 units have 2 terminal blocks/non-fused disconnects and 6 parallel conductors.

NOTES

1. Main power must be supplied from a field-supplied fused electrical service with a (factory- or field-installed) disconnect located in sight from the unit
2. Control circuit power must be supplied from a separate source through a field-supplied disconnect. The control circuit accessory transformer may be applied to power from the main unit power supply
3. Maximum incoming wire size for each terminal block is 500 kcmil
4. Maximum allowable phase imbalance is: voltage, 2%; amps, 5%
5. Units with one MCA value have one main terminal block. Units with 2 MCA values require multiple conductors
6. Use copper conductors only.

7. The MOCP is calculated as follows:

MOCP = (2.25) (largest RLA) + the sum of the other RLAs. Size the fuse one size down from the result. The RLAs are listed on the unit nameplate.

The recommended fuse size in amps (RFA) is calculated as follows:

RFA = (1.50) (largest RLA) + the sum of the other RLAs. Size the fuse one size up from the result. The RLAs are listed on the unit nameplate.

8. Units have the following power wiring terminal blocks and parallel conductors:

VOLTAGE	TERMINAL BLOCKS OR NON-FUSED DISCONNECTS	PARALLEL CONDUCTORS
208/230	2	6
460	1	3
575	1	3
380†	1	3
230	2	6
380/415	1	3



COMPRESSOR ELECTRICAL DATA

UNIT SIZE 30HXC	NAMEPLATE V-Hz (3 Phase)	COMPRESSOR NUMBERS			
		A1		B1	
		RLA	LRA	RLA	LRA
076-XL	208/230-60	*	*	*	*
	460-60	44.3	330	44.3	330
	575-60	35.4	264	35.4	264
	380-60	53.7	365	53.7	365
	230-50	*	*	*	*
	380/415-50	55.8	344	55.8	344
076-WD	208/230-60	98.1	209	98.1	209
	460-60	44.3	104	44.3	104
	575-60	35.4	83	35.4	83
	380-60	53.7	115	53.7	115
	230-50	92.1	174	92.1	174
	380/415-50	55.8	109	55.8	109
086-XL	208/230-60	*	*	*	*
	460-60	53.6	330	44.3	330
	575-60	42.8	264	35.4	264
	380-60	64.9	365	53.7	365
	230-50	*	*	*	*
	380/415-50	67.7	423	55.8	344
086-WD	208/230-60	118.6	209	98.1	209
	460-60	53.6	104	44.3	104
	575-60	42.8	83	35.4	83
	380-60	64.9	115	53.7	115
	230-50	111.8	213	92.1	174
	380/415-50	67.7	134	55.8	109
096-XL	208/230-60	*	*	*	*
	460-60	65.5	405	44.3	330
	575-60	52.3	324	35.4	264
	380-60	79.2	448	53.7	365
	230-50	*	*	*	*
	380/415-50	81.7	506	55.8	344
096-WD	208/230-60	144.9	256	98.1	209
	460-60	65.5	128	44.3	104
	575-60	52.3	102	35.4	83
	380-60	79.2	141	53.7	115
	230-50	134.9	255	92.1	174
	380/415-50	81.7	160	55.8	109
106-XL	208/230-60	*	*	*	*
	460-60	79.2	485	44.3	330
	575-60	63.3	388	35.4	264
	380-60	95.9	536	53.7	365
	230-50	*	*	*	*
	380/415-50	97.8	605	55.8	344
106-WD	208/230-60	175.4	307	98.1	209
	460-60	79.2	153	44.3	104
	575-60	63.3	123	35.4	83
	380-60	95.9	169	53.7	115
	230-50	161.7	305	92.1	174
	380/415-50	97.8	191	55.8	109

LEGEND

LRA — Locked Rotor Amps
RLA — Rated Load Amps
WD — Wye-Delta Start
XL — Across-the-Line Start

*Units are shipped with wye-delta start as standard. Across-the-line start is not available

Electrical data — 30HXC fluid-cooled units (cont)



COMPRESSOR ELECTRICAL DATA (cont)

UNIT SIZE 30HXC	NAMEPLATE V-Hz (3 Phase)	COMPRESSOR NUMBERS			
		A1		B1	
		RLA	LRA	RLA	LRA
116-XL	208/230-60	*	*	*	*
	460-60	79.2	485	53.6	330
	575-60	63.3	388	42.8	264
	380-60	95.9	536	64.9	365
	230-50	*	*	*	*
	380/415-50	87.8	605	67.7	423
116-WD	208/230-60	175.4	307	118.6	209
	460-60	79.2	153	53.6	104
	575-60	63.3	123	42.8	83
	380-60	95.5	169	64.9	115
	230-50	161.7	305	111.8	213
	380/415-50	97.8	191	67.7	134
126-XL	208/230-60	*	*	*	*
	460-60	79.2	485	65.5	405
	575-60	63.3	388	52.3	324
	380-60	95.9	536	79.2	448
	230-50	*	*	*	*
	380/415-50	97.8	605	81.7	506
126-WD	208/230-60	175.4	307	144.9	256
	460-60	79.2	153	65.5	128
	575-60	63.3	123	52.3	102
	380-60	95.9	169	79.2	141
	230-50	161.7	305	134.9	255
	380/415-50	97.8	191	81.7	160
136-XL	208/230-60	*	*	*	*
	460-60	94.9	580	65.5	405
	575-60	75.8	484	52.3	324
	380-60	114.9	641	79.2	448
	230-50	*	*	*	*
	380/415-50	118.8	715	81.7	506
136-WD	208/230-60	210.0	367	144.9	256
	460-60	94.6	183	65.5	128
	575-60	75.8	147	52.3	102
	380-60	114.9	203	79.2	141
	230-50	196.3	361	134.9	255
	380/415-50	118.8	226	81.7	160
146-XL	208/230-60	*	*	*	*
	460-60	94.9	580	79.2	485
	575-60	75.8	484	63.3	388
	380-60	114.9	641	95.9	536
	230-50	*	*	*	*
	380/415-50	118.8	715	97.8	605
146-WD	208/230-60	210.0	367	175.4	307
	460-60	94.9	183	79.2	153
	575-60	75.8	147	63.3	123
	380-60	114.9	203	95.9	169
	230-50	196.3	361	161.7	305
	380/415-50	118.8	226	97.8	191

LEGEND

LRA — Locked Rotor Amps
RLA — Rated Load Amps
WD — Wye-Delta Start
XL — Across-the-Line Start

*Units are shipped with wye-delta start as standard. Across-the-line start is not available.



COMPRESSOR ELECTRICAL DATA (cont)

UNIT SIZE 30HXC	NAMEPLATE V-Hz (3 Phase)	COMPRESSOR NUMBERS			
		A1		B1	
		RLA	LRA	RLA	LRA
161-XL	208/230-60	*	*	*	*
	460-60	103.1	685	71.2	525
	575-60	82.4	548	56.9	420
	380-60	124.8	757	86.2	580
	230-50	*	*	*	*
	380/415-50	128.6	856	88.2	600
161-WD	208/230-60	228.8	433	157.6	350
	460-60	103.1	216	71.2	175
	575-60	82.4	173	56.9	140
	380-60	124.8	239	86.2	193
	230-50	212.5	432	145.7	348
	380/415-50	128.6	270	88.2	200
171-XL	208/230-60	*	*	*	*
	460-60	86.1	580	103.1	685
	575-60	68.8	484	82.4	548
	380-60	104.2	641	124.8	757
	230-50	*	*	*	*
	380/415-50	105.8	715	128.6	856
171-WD	208/230-60	190.6	367	228.8	433
	460-60	86.1	183	103.1	216
	575-60	68.8	147	82.4	173
	380-60	104.2	203	124.8	239
	230-50	174.8	361	212.5	432
	380/415-50	105.8	233	128.6	270
186-XL	208/230-60	*	*	*	*
	460-60	103.1	685	103.1	685
	575-60	82.4	548	82.4	548
	380-60	124.8	757	124.8	757
	230-50	*	*	*	*
	380/415-50	128.6	856	128.6	856
186-WD	208/230-60	228.8	433	228.8	433
	460-60	103.1	216	103.1	216
	575-60	82.4	173	82.4	173
	380-60	124.8	239	124.8	239
	230-50	212.5	432	212.5	432
	380/415-50	128.6	270	128.6	270

LEGEND

LRA — Locked Rotor Amps
RLA — Rated Load Amps
WD — Wye-Delta Start
XL — Across-the-Line Start

*Units are shipped with wye-delta start as standard. Across-the-line start is not available.

Electrical data — 30HXA condenserless units



UNIT ELECTRICAL DATA

UNIT 30HXA	VOLTAGE			POWER CIRCUIT			CONTROL CIRCUIT					ICF	
	Nameplate V-Hz (3 Ph)	Supplied											
		Min	Max	MCA	MOCP	Recommended Fuse Size	Voltage (Single Ph)	Min	Max	MCA	MOCP	WD	XL
076	208/230-60	187	253	180/180	300/300	225/225	115-60	104	127	15	15	451	*
	460-60	414	506	146	200	175	115-60	104	127			218	550
	575-60	518	633	117	150	150	115-60	104	127			175	440
	380-60	342	418	177	250	200	230-60	207	254			248	615
	230-50	207	253	169/169	300/300	225/225	230-50	198	254			440	*
	380/415-50	342	440	183	250	225	230-50	198	254			273	687
086	208/230-60	187	253	215/180	350/300	300/225	115-60	104	127	15	15	511	*
	460-60	414	506	162	225	200	115-60	104	127			248	645
	575-60	518	633	130	175	150	115-60	104	127			199	536
	380-60	342	418	196	250	225	230-60	207	254			282	720
	230-50	207	253	205/169	350/300	250/225	230-50	198	254			496	*
	380/415-50	342	440	206	300	250	230-50	198	254			308	797
096	208/230-60	187	253	262/180	450/300	350/225	115-60	104	127	15	15	577	*
	460-60	414	506	183	250	225	115-60	104	127			281	750
	575-60	518	633	147	200	175	115-60	104	127			225	600
	380-60	342	418	222	300	300	230-60	207	254			318	836
	230-50	207	253	248/169	400/300	300/225	230-50	198	254			567	*
	380/415-50	342	440	231	350	300	230-50	198	254			352	938
106	208/230-60	187	253	319/180	500/300	400/225	115-60	104	127	15	15	662	*
	460-60	414	506	209	300	250	115-60	104	127			324	885
	575-60	518	633	167	250	200	115-60	104	127			259	708
	380-60	342	418	253	350	300	230-60	207	254			365	985
	230-50	207	253	300/169	500/300	400/225	230-50	198	254			620	*
	380/415-50	342	440	263	400	300	230-50	198	254			385	1042
116	208/230-60	187	253	319/215	500/350	400/300	115-60	104	127	15	15	690	*
	460-60	414	506	222	300	300	115-60	104	127			337	898
	575-60	518	633	177	250	200	115-60	104	127			269	718
	380-60	342	418	269	400	350	230-60	207	254			380	1000
	230-50	207	253	300/205	500/350	400/250	230-50	198	254			649	*
	380/415-50	342	440	281	400	350	230-50	198	254			402	1059
126	208/230-60	187	253	319/262	500/450	400/350	115-60	104	127	15	15	728	*
	460-60	414	506	239	350	300	115-60	104	127			354	915
	575-60	518	633	191	250	225	115-60	104	127			283	732
	380-60	342	418	289	400	350	230-60	207	254			401	1021
	230-50	207	253	300/248	500/400	400/300	230-50	198	254			683	*
	380/415-50	342	440	302	400	350	230-50	198	254			423	1080
136	208/230-60	187	253	389/262	700/450	500/350	115-60	104	127	15	15	791	*
	460-60	414	506	271	400	350	115-60	104	127			386	1015
	575-60	518	633	216	300	250	115-60	104	127			309	812
	380-60	342	418	328	450	400	230-60	207	254			436	1132
	230-50	207	253	369/248	600/400	450/300	230-50	198	254			817	*
	380/415-50	342	440	343	500	400	230-50	198	254			507	1346
146	208/230-60	187	253	389/319	700/500	500/400	115-60	104	127	15	15	837	*
	460-60	414	506	291	400	350	115-60	104	127			406	1035
	575-60	518	633	233	300	300	115-60	104	127			325	828
	380-60	342	418	353	500	400	230-60	207	254			461	1157
	230-50	207	253	369/300	600/500	450/400	230-50	198	254			859	*
	380/415-50	342	440	369	500	450	230-50	198	254			532	1371

See legend and notes on page 27.

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UNIT ELECTRICAL DATA (cont)

UNIT 30HXA	VOLTAGE			POWER CIRCUIT			CONTROL CIRCUIT				ICF		
	Nameplate V-Hz (3 Ph)	Supplied											
		Min	Max	MCA	MOCP	Recommended Fuse Size	Voltage (Single Ph)	Min	Max	MCA	MOCP	WD	XL
161	208/230-60	187	253	437/295	700/500	600/400	115-60	104	127	15	15	979	*
	460-60	414	506	304	450	350	115-60	104	127			478	1282
	575-60	518	633	243	350	300	115-60	104	127			382	1025
	380-60	342	418	368	500	450	230-60	207	254			539	1428
	230-50	207	253	415/275	700/450	500/350	230-50	198	254			858	*
	380/415-50	342	440	385	500	450	230-50	198	254			533	1398
171	208/230-60	187	253	359/437	600/700	450/600	115-60	104	127	15	15	1030	*
	460-60	414	506	327	450	400	115-60	104	127			501	1305
	575-60	518	633	261	350	300	115-60	104	127			401	1044
	380-60	342	418	396	500	450	230-60	207	254			567	1456
	230-50	207	253	334/415	600/700	450/500	230-50	198	254			905	*
	380/415-50	342	440	413	600	500	230-50	198	254			562	1427
186	208/230-60	187	253	437/437	700/700	600/600	115-60	104	127	15	15	1093	*
	460-60	414	506	355	500	400	115-60	104	127			529	1333
	575-60	518	633	284	400	350	115-60	104	127			539	1066
	380-60	342	418	239/239	400/400	300/300	230-60	207	254			601	1490
	230-50	207	253	415/415	700/700	500/500	230-50	198	254			970	*
	380/415-50	342	440	453	600	600	230-50	198	254			601	1466

LEGEND

- FLA** — Full Load Amps
ICF — Maximum Instantaneous Current Flow during start-up (the point in the starting sequence where the sum of the LRA for the start-up compressor, plus the total RLA for all running compressors, plus the total FLA for all running fan motors is at a maximum)
LRA — Locked Rotor Amps
MCA — Minimum Circuit Ampacity (for wire sizing)
MOCP — Maximum Overcurrent Protection
RLA — Rated Load Amps
WD — Wye-Delta Start
XL — Across-the-Line Start

*Wye-Delta Start is standard. Not available in across-the-line start.

†The 30HX186 units have 2 terminal blocks/non-fused disconnects and 6 parallel conductors.

NOTES

- 1 Main power must be supplied from a field-supplied fused electrical service with a (factory- or field-installed) disconnect located in sight from the unit.
- 2 Control circuit power must be supplied from a separate source through a field-supplied disconnect. The control circuit accessory transformer may be applied to power from the main unit power supply.
- 3 Maximum incoming wire size for each terminal block is 500 kcmil.
- 4 Maximum allowable phase imbalance is, voltage, 2%, amps, 5%.
- 5 Units with one MCA value have one main terminal block. Units with 2 MCA values require multiple conductors.
- 6 Use copper conductors only.

- 7 The MOCP is calculated as follows:

MOCP = (2.25) (largest RLA) + the sum of the other RLAs. Size the fuse one size down from the result. The RLAs are listed on the unit nameplate.

The recommended fuse size in amps (RFA) is calculated as follows:

RFA = (1.50) (largest RLA) + the sum of the other RLAs. Size the fuse one size up from the result. The RLAs are listed on the unit nameplate.

- 8 Units have the following power wiring terminal blocks and parallel conductors.

VOLTAGE	TERMINAL BLOCKS OR NON-FUSED DISCONNECTS	PARALLEL CONDUCTORS
208/230	2	6
460	1	3
575	1	3
380†	1	3
230	2	6
380/415	1	3



Electrical data — 30HXA condenserless units (cont)



COMPRESSOR ELECTRICAL DATA

UNIT SIZE 30HXA	NAMEPLATE V-Hz (3 Phase)	COMPRESSOR NUMBERS			
		A1		B1	
		RLA	LRA	RLA	LRA
076-XL	208/230-60	*	*	*	*
	460-60	64.9	485	64.9	485
	575-60	51.9	388	51.9	388
	380-60	78.7	536	78.7	536
	230-50	*	*	*	*
	380/415-50	81.5	605	81.5	605
076-WD	208/230-60	143.8	307	143.8	307
	460-60	64.9	153	64.9	153
	575-60	51.9	123	51.9	123
	380-60	78.7	169	78.7	169
	230-50	134.8	305	134.8	305
	380/415-50	81.5	191	81.5	191
086-XL	208/230-60	*	*	*	*
	460-60	77.6	580	64.9	485
	575-60	62.1	484	51.9	388
	380-60	94.0	641	78.7	536
	230-50	*	*	*	*
	380/415-50	99.2	715	81.5	605
086-WD	208/230-60	171.9	367	143.8	307
	460-60	77.6	183	64.9	153
	575-60	62.1	147	51.9	123
	380-60	94.0	203	78.7	169
	230-50	163.9	361	134.8	305
	380/415-50	99.2	226	81.5	191
096-XL	208/230-60	*	*	*	*
	460-60	94.8	685	64.9	485
	575-60	75.7	548	51.9	388
	380-60	114.7	757	78.7	536
	230-50	*	*	*	*
	380/415-50	119.9	856	81.5	685
096-WD	208/230-60	209.8	433	143.8	307
	460-60	94.8	216	64.9	153
	575-60	75.5	173	51.9	123
	380-60	114.7	239	78.7	169
	230-50	198.2	432	134.8	305
	380/415-50	119.9	270	81.5	191
106-XL	208/230-60	*	*	*	*
	460-60	115.4	820	64.9	485
	575-60	92.2	656	51.9	388
	380-60	139.7	906	78.7	536
	230-50	*	*	*	*
	380/415-50	145.4	960	81.5	605
106-WD	208/230-60	255.5	518	143.8	307
	460-60	115.4	259	64.9	153
	575-60	92.2	207	51.9	123
	380-60	139.7	286	78.7	169
	230-50	240.2	485	134.8	305
	380/415-50	145.4	303	81.5	191

LEGEND

LRA — Locked Rotor Amps
RLA — Rated Load Amps
WD — Wye-Delta Start
XL — Across-the-Line Start

*Units are shipped with wye-delta start as standard. Across-the-line start is not available.

COMPRESSOR ELECTRICAL DATA (cont)

UNIT SIZE 30HXA	NAMEPLATE V-Hz (3 Phase)	COMPRESSOR NUMBERS			
		A1		B1	
		RLA	LRA	RLA	LRA
116-XL	208/230-60	*	*	*	*
	460-60	115.4	820	77.6	580
	575-60	92.2	656	62.1	484
	380-60	139.7	906	94.0	641
	230-50	*	*	*	*
	380/415-50	145.4	960	99.2	715
116-WD	208/230-60	255.5	578	171.9	367
	460-60	115.4	259	77.6	183
	575-60	92.2	207	62.1	147
	380-60	139.7	286	94.0	203
	230-50	240.2	485	163.9	361
	380/415-50	145.4	303	99.2	226
126-XL	208/230-60	*	*	*	*
	460-60	115.4	820	94.8	685
	575-60	92.2	656	75.7	548
	380-60	139.7	906	114.7	757
	230-50	*	*	*	*
	380/415-50	145.4	960	119.9	856
126-WD	208/230-60	255.5	518	209.8	447
	460-60	115.4	259	94.8	216
	575-60	92.2	207	75.7	173
	380-60	139.7	286	114.7	239
	230-50	240.2	485	198.2	432
	380/415-50	145.4	303	119.9	270
136-XL	208/230-60	*	*	*	*
	460-60	140.7	920	94.8	685
	575-60	112.4	736	75.7	548
	380-60	170.2	1017	114.7	757
	230-50	*	*	*	*
	380/415-50	178.8	1226	119.9	856
136-WD	208/230-60	311.4	581	209.8	433
	460-60	140.7	291	94.8	216
	575-60	112.4	233	75.7	173
	380-60	170.2	321	114.7	239
	230-50	295.3	619	198.2	432
	380/415-50	178.8	387	119.9	276
146-XL	208/230-60	*	*	*	*
	460-60	140.7	920	115.4	820
	575-60	112.4	736	92.2	656
	380-60	170.2	1017	139.7	906
	230-50	*	*	*	*
	380/415-50	178.8	1226	145.4	960
146-WD	208/230-60	311.4	581	255.5	518
	460-60	140.7	291	115.4	259
	575-60	112.4	233	92.2	207
	380-60	170.2	321	139.7	286
	230-50	295.3	619	240.2	485
	380/415-50	178.8	387	145.4	303

LEGEND

LRA — Locked Rotor Amps
RLA — Rated Load Amps
WD — Wye-Delta Start
XL — Across-the-Line Start

*Units are shipped with wye-delta start as standard. Across-the-line start is not available.

Electrical data — 30HXA condenserless units (cont)



COMPRESSOR ELECTRICAL DATA (cont)

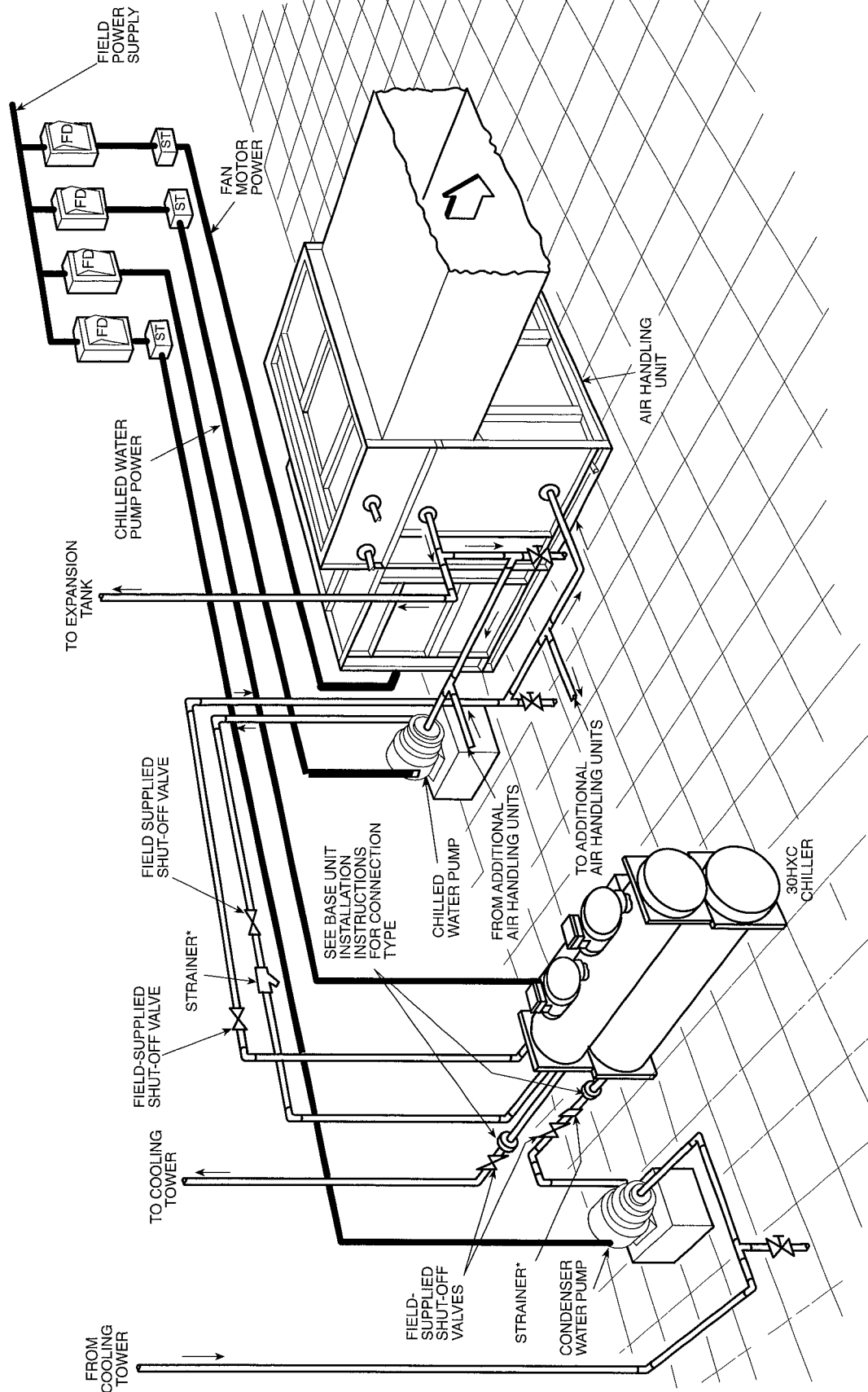
UNIT SIZE 30HXA	NAMEPLATE V-Hz (3 Phase)	COMPRESSOR NUMBERS			
		A1		B1	
		RLA	LRA	RLA	LRA
161-XL	208/230-60	*	*	*	*
	460-60	157.9	1175	106.6	790
	575-60	126.2	940	85.1	630
	380-60	191.2	1299	129.0	870
	230-50	*	*	*	*
	380/415-50	201.2	1265	133.4	1045
161-WD	208/230-60	349.6	743	235.9	527
	460-60	157.9	371	106.6	263
	575-60	126.2	297	85.1	211
	380-60	191.2	410	129.0	290
	230-50	332.3	638	220.3	607
	380/415-50	201.2	400	133.4	348
171-XL	208/230-60	*	*	*	*
	460-60	129.6	920	157.9	1175
	575-60	103.6	736	126.2	940
	380-60	156.9	1017	191.2	1299
	230-50	*	*	*	*
	380/415-50	161.7	1226	201.2	1265
171-WD	208/230-60	286.9	581	349.6	743
	460-60	129.6	291	157.9	371
	575-60	103.6	233	126.2	297
	380-60	156.9	321	191.2	410
	230-50	267.2	619	332.3	638
	380/415-50	161.7	387	201.2	400
186-XL	208/230-60	*	*	*	*
	460-60	157.9	1175	157.9	1175
	575-60	126.2	940	126.2	940
	380-60	191.2	1299	191.2	1299
	230-50	*	*	*	*
	380/415-50	201.2	1265	201.2	1265
186-WD	208/230-60	349.6	743	349.6	743
	460-60	157.9	371	157.9	371
	575-60	126.2	297	126.2	297
	380-60	191.2	410	191.2	410
	230-50	332.3	638	332.3	638
	380/415-50	201.2	400	201.2	400

LEGEND

LRA — Locked Rotor Amps
RLA — Rated Load Amps
WD — Wye-Delta Start
XL — Across-the-Line Start

*Units are shipped with wye-delta start as standard. Across-the-line start is not available.

Typical piping



NOTES:

1. Chiller must be installed levelly to maintain proper compressor oil return.
2. Wiring and piping shown are general points-of-connection guides only and are not intended for a specific installation. Wiring and piping shown are for a quick overview of system and are not in accordance with recognized standards.
3. All wiring must comply with applicable local and national codes.
4. All piping must follow standard piping techniques. Refer to Carrier System Design Manual or appropriate ASHRAE (American Society of Heating, Refrigeration, and Air Conditioning Engineers) handbook for details.
5. See Application Data section on page 12 for minimum cooler loop volume. This system may require the addition of a holding tank to ensure adequate volume.

LEGEND

- Airflow Through Air-Handling Unit
- Power Wiring
- Chilled Fluid Piping
- ST — Starter
- FD — Field-Supplied Disconnect
- * — Field Supplied.

Controls



The standard microprocessor-based control in the 30HX units provides the following functions:

- leaving fluid temperature control (using both entering and leaving fluid sensors)
- 7-day time sequence of both pump and chiller
- temperature reset from return fluid (standard) or from outdoor ambient (accessory), occupied space temperature (accessory), 4-20 mA signal (accessory), or via the optional Carrier Comfort Network (CCN)
- automatic compressor lead-lag switching based on compressor accumulated run times and number of cycles
- automatic temperature range across the cooler adjustment
- fully automatic control of the chiller components

A standard 2-line, 24-character per line display is used to accomplish the following (see figure below):

- set schedules and set points
- identify operating mode
- display current temperatures and pressures being used by the control for internal calculations
- identify abnormal (alarm or alert) conditions

An accessory 16-line, 40-character per line expanded display is also available (see figure below). This accessory displays the same information as the standard display, but has the advantage of being able to display multiple points simultaneously.

Sequence of operation

The control has a 44 F (6.2 C) leaving fluid temperature (LWT) set point as shipped from the factory. If temperature reset or demand limiting is in effect, this set point may change.

Start-up — The circulating pump is energized (either externally or by the internal timeclock). The chiller starts. (If the flow switch is applied, the chiller starts after the flow has been proven. All 30HX chillers require loss of flow protection.) The compressor starts unloaded.

NOTE: Which compressor starts first is determined by the automatic lead/lag feature.

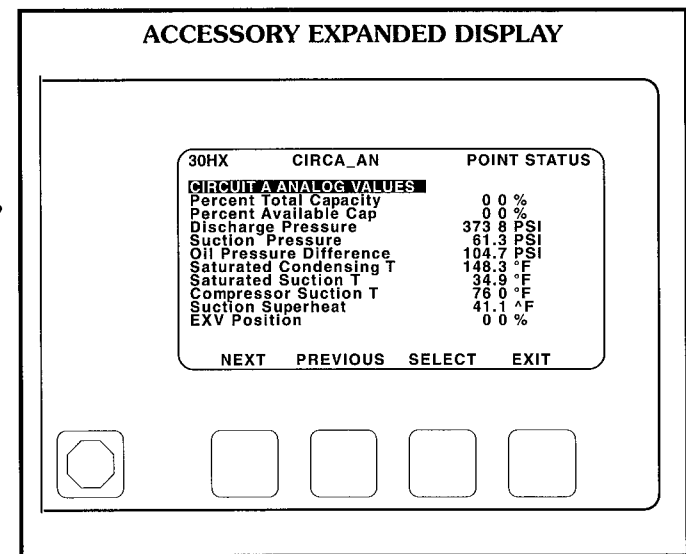
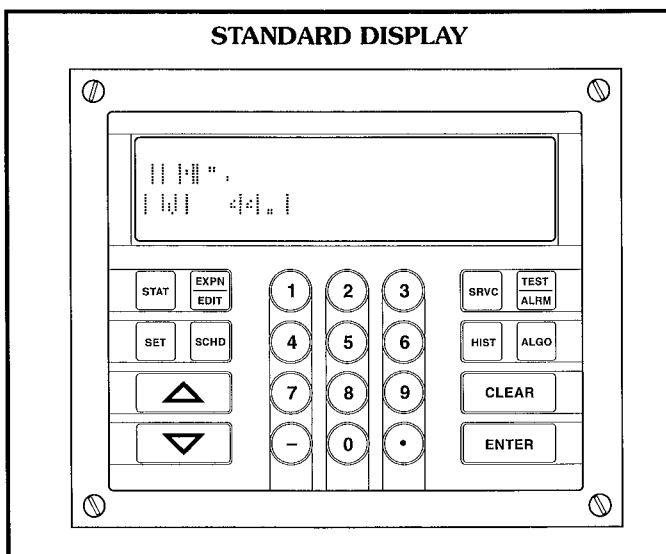
If the entering fluid temperature is 85 F (29 C) or higher, the maximum operating pressure (MOP) feature limits the suction pressure to keep the chiller on line.

Normal operation — The entering fluid temperature sensor monitors changes in entering fluid temperature to anticipate changes in the cooling load. Based on leaving fluid temperature, the control adds or subtracts capacity to maintain a constant leaving fluid temperature.

Transition to off — The chiller unloads once the “time-to-stop” signal has been given. This signal can be either internal or external.

Safeties — The 30HX control as shipped from the factory automatically deenergizes any active compressor that experiences any of the following:

- electrical overload
- thermal overload protection
- high pressure
- low oil pressure
- loss of refrigerant charge
- loss of phase protection
- reverse rotation (control prevents compressor start)
- voltage imbalance
- ground current
- low chilled fluid temperature



Guide specifications



Fluid-Cooled and Condenserless Liquid Chillers

HVAC Guide Specifications

Size Range: **70 to 175 Tons (246 to 615 kW)**

Carrier Model Number: **30HXA — Condenserless**
30HXC — Fluid Cooled

Part 1 — General

1.01 SYSTEM DESCRIPTION

- A. Microprocessor controlled, fluid-cooled (30HXC) or condenserless (30HXA) liquid chiller utilizing screw compressors and electronic expansion valves.

1.02 QUALITY ASSURANCE

- A. Unit shall be rated in accordance with ARI Standard 590, latest revision (U.S.A.). The 60 Hz 30HXC units shall be ARI certified for performance.
- B. Unit construction shall comply with ASHRAE 15 Safety Code, NEC, and ASME applicable codes (U.S.A. codes).
- C. Unit shall be manufactured at an ISO 9002 registered facility.
- D. Unit shall be fully tested (under full load) at the factory.
- E. All 208/230 v, 460 v, 575 v, 60 Hz units shall be constructed in accordance with UL or CSA standards and shall be tested and listed by ETL or ETL, Canada, as conforming to those standards. Units shall carry the ETL and ETL, Canada, labels.

1.03 DELIVERY, STORAGE, AND HANDLING

- A. Unit controls shall be capable of withstanding 150 F (66 C) storage temperatures in the control compartment
- B. Unit shall be stored and handled per unit manufacturer's recommendations.

Part 2 — Products

2.01 EQUIPMENT

A. General:

Factory assembled, single-piece, fluid-cooled (HXC) or condenserless (HXA) liquid chiller. Contained within the unit cabinet shall be all factory wiring, piping, controls, refrigerant charge (HFC-134a), and special features required prior to field start-up.

B. Compressors:

- 1. Semi-hermetic twin-screw compressors with internal muffler and check valve
- 2. Each compressor shall be equipped with a discharge shutoff valve.

C. Cooler:

- 1. Shall be tested and stamped in accordance with ASME code (U.S.A.) for a refrigerant working-side pressure of 220 psig (1517 kPa) and a maximum fluid-side pressure of 300 psig (2068 kPa).
- 2. Shall be mechanically cleanable shell-and-tube type with removable heads.
- 3. Tubes shall be internally-enhanced, seamless-copper type, and shall be rolled into tube sheets.

- 4. Shall be equipped with weld-on fluid connections
- 5. Shell shall be insulated with 3/4-in. (19-mm) closed-cell, polyvinyl-chloride foam with a maximum K factor of 0.28.
- 6. Shall have a cooler drain and vent.
- 7. Design shall incorporate 2 independent refrigerant circuits.

D. Condenser (HXC units):

- 1. Shall be tested and stamped in accordance with ASME Code (U.S.A.) for a refrigerant working-side pressure of 220 psig (1517 kPa) and a maximum water-side pressure of 300 psig (2068 kPa)
- 2. Shall be mechanically cleanable shell-and-tube type with removable heads.
- 3. Tubes shall be internally-enhanced, seamless-copper type, and shall be rolled into tube sheets.
- 4. Shall be equipped with weld-on water connections.
- 5. Design shall incorporate 2 independent refrigerant circuits.

E. Oil Separator (HXA Units):

- 1. Shall be tested and stamped in accordance with ASME Code (U.S.A.) for a refrigerant working-side pressure of 320 psig (2206 kPa)
- 2. Design shall incorporate 2 independent refrigerant circuits.

F. Refrigeration Components:

Refrigerant circuit components shall include oil separator, high and low side pressure relief devices, discharge and liquid line shutoff valves, filter drier, moisture indicating sight glass, expansion valve, refrigerant economizer (unit sizes 161-186), and complete charge of compressor oil. The HXC units shall have a complete operating charge of refrigerant HFC-134a; HXA units shall have a holding charge only.

G. Controls, Safeties, and Diagnostics:

1. Controls:

- a. Unit controls shall include as a minimum: Microprocessor, LOCAL/OFF/REMOTE switch, 2-line, 24-character per line diagnostic display with keypad
- b. Shall be capable of performing the following functions:
 - 1) Automatic compressor lead/lag switching.
 - 2) Capacity control based on leaving chilled fluid temperature with return fluid temperature sensing.
 - 3) Limit the chilled fluid temperature pull-down rate at start-up to an adjustable range of 0.2° F to 2 F (0.1° C to 1.1° C) per minute to prevent excessive demand spikes at start-up.
 - 4) Seven-day time scheduling of pump(s) and chiller(s).

2 Diagnostics:

- a. Display module shall be capable of displaying set points, time, system status (including temperatures, pressures, and percent loading), and any alarm or alert conditions.
- b. Control module, in conjunction with the microprocessor, shall be capable of displaying the output of a run test to verify operation of every switch, sensor, potentiometer, and compressor before chiller is started.

3. Safeties:

Unit shall be equipped with all necessary components, and in conjunction with the control system shall provide the unit with protection against the following:

- a. Loss of refrigerant charge.
- b. Reverse rotation.
- c. Low chilled fluid temperature.
- d. Low oil pressure.
- e. Voltage imbalance.
- f. Ground current.
- g. Thermal overload.
- h. High pressure.
- i. Electrical overload.
- j. Loss of phase.

H. Operating Characteristics:

Unit shall be capable of starting up with 95 F (35 C) entering fluid temperature to the cooler

I. Electrical Requirements:

1. Unit primary electrical power supply shall enter the unit at a single location (some units have multiple power poles)
2. Unit shall operate on 3-phase power at the voltage shown in the equipment schedule.
3. Control voltage shall be 115-v (60 Hz) or 230-v (50 Hz), single-phase, separate power supply.
4. Unit shall be shipped with factory control and power wiring installed

J Special Features:

Certain standard features are not applicable when the features designated by * are specified. For assistance in amending the specifications, contact your local Carrier Sales office.

* 1. Wye-Delta Starter:

Unit shall have a factory-installed, Wye-Delta starter to minimize electrical inrush current.

2. Sound Reduction Enclosure:

Unit shall have field-installed sound reduction enclosure which covers the entire unit to muffle compressor noise.

3. Vibration Isolation:

Unit shall be supplied with rubber-in-shear vibration isolators for field installation.

4. Control Power Transformer:

Unit shall be supplied with a field installed transformer that will supply control circuit power from the main unit power supply.

5. Non-Fused Disconnect:

Unit shall be supplied with factory-installed, non-fused electrical disconnect for main power supply

6 Chilled Fluid Flow Switch:

Unit shall be supplied with field-installed differential pressure type proof-of-flow sensing switch.

7 Victaulic Connection:

Unit shall be supplied with victaulic-type cooler connections (field installed).

8. Expanded Display:

Unit shall be supplied with indoor-mounted, remote 40-character per line, 16-line display panel. Display shall be field installed.

9. Temperature Reset Sensor:

Unit shall reset leaving chilled fluid temperature based on outdoor ambient temperature or space temperature when this sensor is installed.

* 10. Brine Option:

Unit shall be factory modified to start and operate at leaving chilled fluid temperatures of between 15 F (-9 C) and 40 F (5 C).

* 11. Minimum Load Control:

Unit shall be equipped with factory (or field) installed, microprocessor-controlled, minimum-load control that shall permit unit operation down to 10% of full capacity.

12 Flotronic™ System Manager:

Control shall enable management of multiple chillers (up to 8) in a single system.

