

Product Data

AquaSnap® Air-Cooled Chillers

60 to 300 Nominal Tons







30RB060-300 Air-Cooled Chillers and 30RB080-300 Air-Cooled Chillers with Greenspeed® Intelligence

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Features/Benefits



The AquaSnap® chiller is an effective all-in-one package that is easy to install and easy to own. AquaSnap chillers cost less to purchase and install, and then operate quietly and efficiently. Value-added features include:

- Rotary scroll compression
- Puron[®] HFC refrigerant (R-410A)
- Quiet AeroAcoustic™ fan system
- Easy to use ComfortLink controls
- Optional integrated hydronic pump package, available with variable frequency drive (VFD)
- Novation® heat exchanger technology with microchannel coil
- High-efficiency, variable-speed condenser fans (30RB080-300 with Greenspeed intelligence)

Carrier's superior chiller design provides savings at initial purchase, at installation, and for years afterward.

Cost savings right from the start

Carrier's AquaSnap chillers feature a compact, all-in-one package design that installs quickly and easily on the ground or the rooftop. The optional pump and hydronic components are already built in; this costs less than buying and installing the components individually. The chiller's fully integrated and pre-assembled hydronic system installs in minutes.

No other chiller in this class installs so easily and inexpensively. The preassembled and integrated hydronic module uses reliable top-quality components and pumps. The AquaSnap unit's high efficiency keeps operating costs down.

AquaSnap chillers make noise in the marketplace, not the workplace

The AquaSnap chiller's AeroAcoustic[™] fan system is extremely quiet. Much of the noise reduction is in frequencies where noise is most annoying, which makes AquaSnap chillers ideal for sound-sensitive environments. When lower ambient temperatures allow part load operation or during scheduled nighttime operation, the units operate with fewer fans and become even quieter. AquaSnap chillers are quiet during the day and even quieter at night.

The savings will continue to mount

Besides being affordable to buy and install, AquaSnap chillers are also affordable to operate. Carrier's Aqua Series chillers are our most efficient aircooled models. The 30RB chillers provide full-load EER (Energy Efficiency Ratio) up to 10.3^1 . The 30RB chiller provides an IPLV (integrated part load value) up to 14.3, while the 30RB chiller with Greenspeed® intelligence provides an IPLV up to 17.1.

Aqua-Snap chillers use ultra-quiet, highefficiency rotary scroll compressors, operated in tandem, trios or quads per independent circuit for greater efficiency at partial loads.

30RB chillers with Greenspeed intelligence feature a high-efficiency, variable-speed condenser fan option along with fine-tuned ComfortLink controls, which together provide premium part load efficiency to facilitate reduced utility costs over the lifespan of the chiller. Additionally, the lower sound levels achieved at part load conditions can be very beneficial for sensitive acoustic applications.

Standard DC link reactor for 30RB units with Greenspeed intelligence is included in all drives for the fans. The use of this component mitigates customer concern over electrical system harmonics, and therefore AC line reactors should not be required for applications employing 30RB chillers with Greenspeed intelligence.

Electronic expansion valve allows for precise control through all operating ranges, resulting in higher efficiencies.

Proven reliability is built in

Thousands of AquaSnap chillers are already in service around the world. This field-proven design is backed by a 12-month warranty that includes the optional hydronic system (U.S.A. and Canada only). The compressors are maintenance-free and protected by an auto-adaptive control that minimizes compressor wear. Year-round operation is standard, from -20°F (-29°C) (with optional cooler heater, low ambient control, and wind baffles) to 125°F (52°C).

Rotary scroll compressors provide smooth, quiet and reliable operation.

Multiple independent circuits are standard on all AquaSnap chillers for redundancy and greater reliability.

All-in-one package

AquaSnap chillers provide the most comprehensive chilled water circuit available for any air-cooled chiller. Included is a shell-in-tube direct expansion cooler that may be remotemounted. The cooler is also completely drainable with factory-installed vents and drains.

Electronic thermal-dispersion flow switch is included with the cooler. The switch is factory installed and tested and contains no moving parts for high reliability.

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^{1.} Model numbers that reach an EER of up to 10.3 include 090, 120, 160, and 315.



Optional integrated hydronics package is more than just a pump, it is an entire chilled water system, including:

- Single/dual pumps up to 15 hp and 140 ft (42.7 m) head
- Availability at constant speed or VFD configuration
- Strainer
- Start-up strainer (to be removed within 24 hours after chiller start-up)
- Flow regulator
- Freeze protection to -20°F (-29°C) (with freeze protection option)
- Heaters
- Required piping
- Pressure/temperature taps
- Isolation check valves for dual pump systems

The factory-installed and tested hydronics package provides faster, simpler and less expensive installation.

Environmentally balanced

Carrier's Puron® refrigerant (R-410A) enables one to make a responsible decision in the protection of the earth's ozone layer. Puron refrigerant is an HFC refrigerant that does not contain chlorine that is damaging to the ozone layer. This refrigerant is a safe, efficient, and environmentally balanced refrigerant.

Structurally sound

The base rail is industrial-quality 7 ga for maximum structural integrity. The zinc-dipped galvanized frame (with Magni-coated screws) provides the best protection on the market for corrosion resistance. With such a structurally sound base, no perimeter base rail is needed.

ComfortLink controls speak your language

The ComfortLink controls communicate in plain English, making it as easy

as possible to monitor and control each AguaSnap chiller while accurately maintaining fluid temperatures. The large scrolling marquee display acts as a window into the unit's operation, providing easy-to-read information about chiller performance and over 15 diagnostic functions. Carrier's 30 Series chillers' *Comfort*Link controls provide features such as chilled water temperature reset, demand limiting, compressor wear minimization and protection, temperature and pressure displays and diagnostic functions. These controls result in higher chiller reliability, simplified training and more productive service calls with correoperational and spondingly lower maintenance costs.

Carrier's exclusive handheld Navigator™ display provides convenience and powerful information in the palm of your hand. The Navigator display helps technicians to quickly diagnose problems and even prevent them from occurring.

All AquaSnap units are ready to be used with the Carrier Comfort Network® (CCN) system.

A BACnet¹ communication option is also available for the i-Vu® Open control system or a third-party BACnet building automation system.

Seismic certification

A seismic kit is available which will result in a unit SDS (seismic design acceleration parameter) level of 2.0.

Novation® heat exchanger technology

The Novation heat exchanger design with microchannel (MCHX) condenser coil is a robust, cost effective alternative

 BACnet is a registered trademark of ASHRAE (American Society of Heating, Refrigerating, and Air-Conditioning Engineers). to traditional coil design. These coils are offered coated or uncoated to match coil protection to site conditions. The ecoated version of this coil can withstand an 8000-hour salt spray test in accordance with ASTM B-117 Standard. The Carrier Electronic Catalog (E-Cat) can be used to determine whether or not corrosion protection is recommended for particular applications in coastal/marine environments. Following the input of the requested data, the E-Cat program output will advise the appropriate coil to be used.

Other factors described in "Selection Guide: Environmental Corrosion Protection," catalog number 04-581061-01, must also be considered to determine if corrosion protection is required.

Microchannel coils are sturdier than other coil types; thus, easier to clean without causing damage to the coil.

Due to the compact all-aluminum design, microchannel coils will reduce overall unit operating weight by 6 to 7%. The streamlined MCHX coil design reduces refrigerant charge by up to 30%.

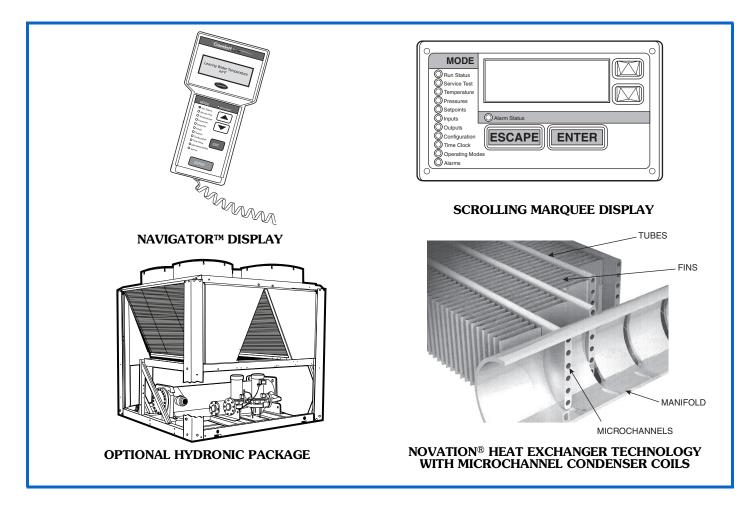
The coil is designed with rubber isolation around the powder painted coil frame to eliminate galvanic couples, which can cause corrosion due to dissimilar metals.

Optional desuperheater

For applications with a simultaneous requirement for chilled water and tempered hot water, the use of a desuperheater is an ideal solution. The production of useful hot water in conjunction with useful chilled water can lead to greatly improved COP (coefficient of performance).

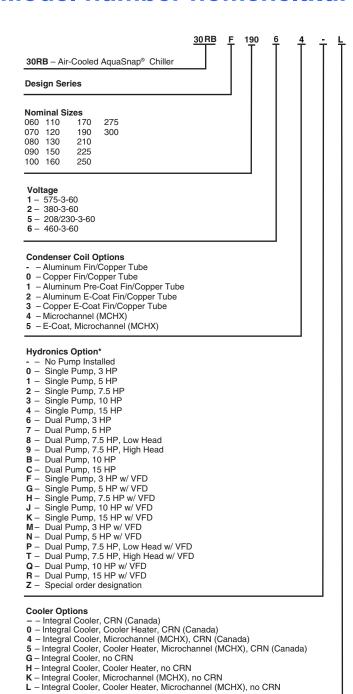
Features/Benefits (cont)





Model number nomenclature





LEGEND

Canadian Registration Number Engineered to Order Microchannel Condenser Coil CRN FTO MCHX Short Circuit Current Rating SCCR Across-the-Line Start

*Hydronic pumps not available on units 30RB060-190 with high SCCR option.

NOTE: A "Z" in position 11 indicates a special order machine. Digits following do not correspond to tables.

Quality Assurance

ISO 9001: 2015-certified processes

Packaging/Security Options L - No Packaging

- Skid, Top Crate, Bag - Coil Trim Panels

4 - Skid, Coil Trim Panels

Skid, Top Crate, Bag, Coil Trim Panels

5 - Swid, Tip Clate, Bag, Coll Thirl Fairles
7 - Coil Trim Panels, Upper and Lower Grilles
8 - Skid, Coil Trim Panels, Upper and Lower Grilles
9 - Skid, Top Crate, Bag, Coil Trim Panels, Upper and Lower Grilles
C - Trim Panels, Upper and Lower Grilles, Upper Hail Guards
D - Skid, Trim Panels, Upper and Lower Grilles, Upper Hail Guards
F - Skid, Top Crate, Bag, Trim Panels, Upper and Lower Grilles, Upper Hail Guards

Upper Hail Guards

H - Skid, Full End Covers

J - Skid, Top Crate, Bag, Full End Covers
 K - Full End Covers

Controls/Communication Options

0 - EMM

- Remote Service Point, GFI-CO

EMM, Remote Service Point, GFI-CO
 BACnet Communication

- BACnet Communication, EMM

5 - BACnet Communication, Remote Service Port, GFI-CO

BACnet Communication, EMM, Remote Service Port, GFI-CO

7 – BACnet Translator

BACnet Translator, EMM

9 - BACnet Translator, Remote Service Port, GFI-CO

- BACnet Translator, EMM, Remote Service Port, GFI-CO

H – LON TranslatorJ – LON Translator, EMM

K – LON Translator, Remote Service Port, GFI-CO
 L – LON Translator, EMM, Remote Service Port, GFI-CO

Electrical/Low Sound/High SCCR Options
- Single Point Power Connections, XL, Terminal Block

Dual Point Power Connections, XL, Terminal Block Single Point Power Connections, XL, Non-Fused Disconnect

Single Point Power Connections, XL, Non-Fused Disconnect, High SCCR
 Dual Point Power, XL, Non-Fused Disconnect

Dual Point Power, XL, Non-Fused Disconnect, High SCCR
Single Point Power Connections, XL, Terminal Block, Cmpr Blankets

Dual Point Power Connections, XL, Terminal Block, Cmpr Blankets
Single Point Power Connections, XL, Non-Fused Disconnect, Cmpr Blankets

Single Point Power Connections, XL, Non-Fused Disconnect, Cmpr Blankets, High SCCR

Dual Point Power, XL, Non-Fused Disconnect, Cmpr Blankets

 $\begin{array}{ll} \textbf{P} - \text{Dual Point Power, XL, Non-Fused Disconnect, Cmpr Blankets, High SCCR} \\ \textbf{Q} - \text{Single Point Power Connections, XL, Terminal Block, Cmpr Blankets,} \end{array}$

Cmpr Enclosures

Dual Point Power Connections, XL, Terminal Block, Cmpr Blankets, Cmpr Enclosures

Single Point Power Connections, XL, Non-Fused Disconnect, Cmpr Blankets, Cmpr Enclosures
Single Point Power Connections, XL, Non-Fused Disconnect, Cmpr Blankets,

Cmpr Enclosures, High SCCR

X – Dual Power Point, XL, Non-Fused Disconnect, Cmpr Blankets,

Cmpr Enclosures

Dual Power Point, XL, Non-Fused Disconnect, Cmpr Blankets, Cmpr Enclosures, High SCCR

Refrigeration Circuit Options

- None

0 - Suction Line Insulation

1 - Suction Service Valves

Suction Line Insulation, Suction Service Valves

- Suction Line Insulation, Low Ambient Head Pressure Control Operation - Suction Service Valves, Low Ambient Head Pressure Control Operation

- Suction Line Insulation, Suction Service Valves, Head Pressure Control

Minimum Load Control

8 - Suction Line Insulation, Minimum Load Control
9 - Suction Service Valves, Minimum Load Control

B – Low Ambient Head Pressure Control Operation, Minimum Load Control
 C – Suction Line Insulation, Suction Service Valves, Minimum Load Control

D – Suction Line Insulation, Head Pressure Control, Minimum Load Control
 F – Suction Service Valves, Head Pressure Control, Minimum Load Control

Suction Line Insulation, Suction Service Valves, Low Ambient Head Pressure Control, Operation, Minimum Load Control Operation

- Suction Service Valves, High-Efficiency Variable Condenser Fans - Suction Line Insulation, Suction Service Valve, High-Efficiency Variable

High-Efficiency Variable Condenser Fans
Suction Line Insulation, High-Efficiency Variable Condenser Fans

Suction Service Valves, High-Efficiency Variable Condenser Fans, Minimum Load Control Operation

- Suction Line Insulation, Suction Service Valve, High-Efficiency Variable Condenser Fans, Minimum Load Control Operation

High-Efficiency Variable Condenser Fans, Minimum Load Control Operation Suction Line Insulation, High-Efficiency Variable Condenser Fans, Minimum

Load Control Operation

Physical data



30RB060-300 — ENGLISH

LINIT CODD	000	070	000	000	100	440	400	400	450
UNIT 30RB OPERATING WEIGHT (lb)*	060	070	080	090	100	110	120	130	150
` ,	4 1 1 1	4 217	4 600	E 022	6 155	6.510	7 600	9.045	0.174
Al-Cu Condenser Coil	4,111	4,317	4,600	5,932	6,155	6,519	7,690	8,045	9,174
Cu-Cu Condenser Coil	4,593	4,799	5,082	6,656	6,879	7,243	8,534	9,010	10,139
MCHX Condenser Coil	3,783	3,978	4,267	5,449	5,663	6,027	7,119	7,402	8,517
REFRIGERANT TYPE†		ı	Ī	H-410A, E	XV Controlled	a System I	ı	ı	ı
Refrigerant Charge (lb) RTPF Coil, Ckt A/Ckt B/Ckt C MCHX Coil, Ckt A/Ckt B/Ckt C	89.5/34/— 40/20/—	94/34/— 40/20/—	68.5/68.5/ — 33/33/—	94/76/— 40/40/—	94/96/— 40/42/—	94/106/— 40/53/—	94/133/— 43/57/—	133/106/— 54/43/—	133/133/— 56/62/—
COMPRESSORS				S	croll, Hermetic	3			
Quantity	3	3	4	4	4	5	5	6	6
Speed (rpm)			-		3500	-			
(Qty) Compressor Model Number Ckt A	(2) SH240	(2) SH295	(2) SH240	(2) SH295	(2) SH295	(2) SH295	(2) SH295	(3) SH295	(3) SH295
(Qty) Compressor Model Number Ckt B	(1) SH240	(1) SH240	(2) SH240	(2) SH240	(2) SH295	(3) SH240	(3) SH295	(3) SH240	(3) SH295
(Qty) Compressor Model Number Ckt C	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Oil Charge (Pt, Ckt A/Ckt B/Ckt C)	26.2/13.1/	29.2/13.1/	26.2/26.2/	29.2/26.2/	29.2/29.2/	29.2/39.4/	29.2/43.8/	43.8/39.4/	43.8/43.8/
No. Capacity Steps									
Standard	3	3	4	4	4	5	5	6	6
Optional (Maximum)	4	4	5	5	5	6	6	7	7
Minimum Capacity Step (%)									
Standard	33	29	25	22	25	18	20	15	17
Optional	22	19	16	14	18	12	14	10	12
Capacity (%)									
Ckt A	67	71	50	56	50	45	40	56	50
Ckt B	33	29	50	44	50	55	60	44	50
Ckt C	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
COOLER					sion, Shell and	-			
Weight (empty, lb)	715	715	856	856	856	970	970	970	1518
Net Fluid Volume (gal)	28.2	28.2	31.3	31.3	31.3	45.8	45.8	45.8	73.5
Maximum Refrigerant Pressure (psig)	445	445	445	445	445	445	445	445	445
Maximum Water-Side Pressure without Pumps (psig)	300	300	300	300	300	300	300	300	300
Maximum Water-Side Pressure with Pumps (psig)	150	150	150	150	150	150	150	150	150
COOLER WATER CONNECTIONS (in.)									
Inlet and Outlet, Victaulic	4	4	4	4	4	6	6	6	6
Drain (NPT)	3/4	3/4	3/4	3/4	3/4	3/4	3/4	3/4	3/4
CONDENSER FANS			-	Shrouded Axi	al Type, Vertic	cal Discharge			
Standard Low Noise Type									
Fan Speed (rpm) Standard	1140	1140	1140	1140	1140	1140	1140	1140	1140
No. BladesDiameter (in.)	930	930	930	930	930	930	930	930	930
No. Fans (Ckt A/Ckt B/Ckt C)	3/1/—	3/1/—	2/2/—	3/3/—	3/3/—	3/3/—	3/4/—	4/4/—	4/4/—
CONDENSER COILS						-			
No. Coils (Ckt A/Ckt B/Ckt C)	3/1/—	3/1/—	2/2/—	3/3/—	3/3/—	3/3/—	3/4/—	4/4/	4/4/—
Total Face Area (sq ft)	94	94	94	141	141	141	164	188	188
Max Working Refrigerant Pressure (psig)	656	656	656	656	656	656	656	656	656
HYDRONIC MODULE (Optional)			Pump(s) wit	th pressure/te	mperature tap	s and combin	ation valve.		
Pump				Single or I	Dual, 1800 or	3600 rpm			
CHASSIS DIMENSIONS (in.)		<u> </u>						<u> </u>	
Length		94			141			188	
Width					88				
Height					90				
LECEND				* 0	roight doos no				

LEGEND

Al-Cu — Aluminum Fin/Copper Tube Condenser Coil
Cu-Cu — Copper Fin/Copper Tube Condenser Coil
EXV — Electronic Expansion Valve
MCHX — Microchannel Condenser Coil
N/A — Not Applicable
RTPF — Round Tube Plate Fin

* Operating weight does not include any options.

† RTPF (Round Tube Plate Fin) includes both Al-Cu and Cu-Cu coils.

- NOTES:

 1. 30RB chillers with Greenspeed® intelligence are not available in unit sizes 060 and 070.

 2. No pumps are available for unit sizes 210-300 or 060-190 with high SCCR option.



30RB060-300 — ENGLISH (cont)

LINET CORP.	100	470		210		050		200
UNIT 30RB OPERATING WEIGHT (Ib)*	160	170	190	210	225	250	275	300
	10.000	10.001	10.010	10.704	14.067	15 460	16.015	10.000
Al-Cu Condenser Coil	10,266	10,601	12,013	13,734	14,067	15,468	16,915	18,306
Cu-Cu Condenser Coil	11,472	11,807	13,460	15,181	15,514	17,157	18,845	20,477
MCHX Condenser Coil	9,475	9,799	11,064	12,772	13,093	14,349	15,647	16,893
REFRIGERANT TYPE†		İ	Í	H-410A, EXV	Controlled Syste	em I	İ	Ì
Refrigerant Charge (lb) RTPF Coil, Ckt A/Ckt B/Ckt C	162/125/—	162/133/—	162/162/—	125/125/125	125/125/125	125/125/162	162/162/125	162/162/162
MCHX Coil, Ckt A/Ckt B/Ckt C	79/63/—	79/64/—	79/87/—	59/53/64	59/59/64	59/59/89	83/87/68	83/87/94
COMPRESSORS			•	Scroll	, Hermetic			
Quantity	7	7	8	9	9	10	11	12
Speed (rpm)			•		3500	•	•	•
(Qty) Compressor Model Number Ckt A	(4) SH295	(4) SH295	(4) SH295	(3) SH295	(3) SH295	(3) SH295	(4) SH295	(4) SH295
(Qty) Compressor Model Number Ckt B	(3) SH240	(3) SH295	(4) SH295	(3) SH240	(3) SH295	(3) SH295	(4) SH295	(4) SH295
(Qty) Compressor Model Number Ckt C	N/A	N/A	N/A	(3) SH295	(3) SH295	(4) SH295	(3) SH295	(4) SH295
Oil Chargo (Bt Ckt A/Ckt B/Ckt C)	58.4/39.4/—	58.4/43.8/—	58.4/58.4/—	43.8/39.4/	43.8/43.8/	43.8/43.8/	58.4/58.4/	58.4/58.4/
Oil Charge (Pt, Ckt A/Ckt B/Ckt C)	30.4/39.4/—	30.4/43.0/—	30.4/30.4/—	43.8	43.8	58.4	43.8	58.4
No. Capacity Steps		ı	ı	i	ı	1	1 .	1
Standard	7	7	8	9	9	10	11	12
Optional (Maximum)	8	8	9	10	10	11	12	13
Minimum Capacity Step (%)		ı	r	Ī	ı	Ī	ı	Ī
Standard	13	14	13	10	11	10	9	8
Optional	8	10	9	6	8	7	7	6
Capacity (%)		i	ī	1	i	1	i	1
Ckt A	62	57	50	36	33	30	36	33
Ckt B	38	43	50	28	33	30	36	33
Ckt C	N/A	N/A	N/A	36	33	40 T	28	33
COOLER Weight (county, 1b)	1510	l 1510	1		, Shell and Tube		1 0000	0000
Weight (empty, lb)	1518 73.5	1518 73.5	1518 73.5	2382 86.6	2382 86.6	2382 86.6	2382 86.6	2382 86.6
Net Fluid Volume (gal)	73.5 445	73.5 445	73.5 445	445	445	445	445	445
Maximum Refrigerant Pressure (psig) Maximum Water-Side Pressure	445	445	445	445	445	445	445	445
without Pumps (psig)	300	300	300	300	300	300	300	300
Maximum Water-Side Pressure								
with Pumps (psig)	150	150	150	150	150	150	150	150
COOLER WATER CONNECTIONS (in.)								
Inlet and Outlet, Victaulic	6	6	6	6	6	6	6	6
Drain (NPT)	3/4	3/4	3/4	3/4	3/4	3/4	3/4	3/4
CONDENSER FANS		1	Sh	rouded Axial Ty	pe, Vertical Disc	charge	1	•
Standard Low Noise Type								
Fan Speed (rpm) Standard	1140	1140	1140	1140	1140	1140	1140	1140
No. BladesDiameter (in.)	930	930	930	930	930	930	930	930
No. Fans (Ckt A/Ckt B/Ckt C)	6/4/—	6/4/—	6/6/—	4/4/4	4/4/4	4/4/6	6/6/4	6/6/6
CONDENSER COILS		l	1	l	l	l	l	l -,-,-
No. Coils (Ckt A/Ckt B/Ckt C)	6/4/—	6/4/—	6/6/—	4/4/4	4/4/4	4/4/6	6/6/4	6/6/6
Total Face Area (sq ft)	235	235	282	282	282	328	375	422
Max Working Refrigerant Pressure (psig)	656	656	656	656	656	656	656	656
HYDRONIC MODULE (Optional)		n pressure/tem combination v						
Pump		Dual, 1800 or				Not available		
CHASSIS DIMENSIONS (in.)		,	Is	1				
Length	2:	35	ĺ	282		329	376	423
Width			•	-	88	-		-
Height					90			
LEGEND			*	Operating weigh	nt does not inclu	de any options.		

Al-Cu — Aluminum Fin/Copper Tube Condenser Coil
Cu-Cu — Copper Fin/Copper Tube Condenser Coil
EXV — Electronic Expansion Valve
MCHX — Microchannel Condenser Coil
N/A — Not Applicable
RTPF — Round Tube Plate Fin

NOTES:

- 1. 30RB chillers with Greenspeed[®] intelligence are not available in unit sizes 060 and 070.
 2. No pumps are available for unit sizes 210-300 or 060-190 with high SCCR patients.

Operating weight does not include any options.

[†] RTPF (Round Tube Plate Fin) includes both Al-Cu and Cu-Cu coils.

Physical data (cont)



30RB060-300 - SI

UNIT 30RB	060	070	080	090	100	110	120	130	150
OPERATING WEIGHT (kg)*									
Al-Cu Condenser Coil	1869	1962	2091	2697	2798	2963	3488	3649	4161
Cu-Cu Condenser Coil	2088	2181	2310	3026	3127	3292	3871	4087	4599
MCHX Condenser Coil	1716	1804	1934	2472	2569	2734	3229	3358	3863
REFRIGERANT TYPE†				R-410A, I	EXV Controlle	d System			
Refrigerant Charge (kg)									
RTPF Coil, Ckt A/Ckt B/Ckt C	40.7/15.5/—	42.7/15.5/—	31.1/31.1/—	42.6/34.5/—	42.6/43.6/—	42.6/48.1/—	42.6/60.3/—	60.3/48.1/—	60.3/60.3/—
MCHX Coil, Ckt A/Ckt B/Ckt C	18.1/9.1/—	18.1/9.1/—	14.9/14.9/—	18.1/18.1/—	18.1/19.1/—	18.1/24.0/—	19.5/25.9/—	24.5/19.5/—	25.4/28.1/—
COMPRESSORS					Scroll, Hermeti	c			
Quantity	3	3	4	4	4	5	5	6	6
Speed (r/s)					58.3	Ī		•	•
(Qty) Compressor Model Number Ckt A	(2) SH240	(2) SH295	(2) SH240	(2) SH295	(2) SH295	(2) SH295	(2) SH295	(3) SH295	(3) SH295
(Qty) Compressor Model Number Ckt B	(1) SH240	(1) SH240	(2) SH240	(2) SH240	(2) SH295	(3) SH240	(3) SH295	(3) SH240	(3) SH295
(Qty) Compressor Model Number Ckt C	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Oil Charge (L, Ckt A/Ckt B/Ckt C)	12.4/6.2/—	13.8/6.2/—	12.4/12.4/—	13.8/12.4/—	13.8/13.8/—	13.8/18.6/—	13.8/20.7/—	20.7/18.6/—	20.7/20.7/
No. Capacity Steps									
Standard	3	3	4	4	4	5	5	6	6
Optional (Maximum)	4	4	5	5	5	6	6	7	7
Minimum Capacity Step (%)									
Standard	33	29	25	22	25	18	20	15	17
Optional	22	19	16	14	18	12	14	10	12
Capacity (%)									
Ckt A	67	71	50	56	50	45	40	56	50
Ckt B	33	29	50	44	50	55	60	44	50
Ckt C	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
COOLER		1	1		ision, Shell an	d Tube Type			
Weight (empty, kg)	324	324	388	388	388	440	440	440	689
Net Fluid Volume (L)	106	106	118	118	118	173	173	173	278
Maximum Refrigerant Pressure (kPa)	3068	3068	3068	3068	3068	3068	3068	3068	3068
Maximum Water-Side Pressure without Pumps (kPa)	2068	2068	2068	2068	2068	2068	2068	2068	2068
Maximum Water-Side Pressure with Pumps (kPa)	1034	1034	1034	1034	1034	1034	1034	1034	1034
WATER CONNECTIONS (in.)									
Inlet and Outlet, Victaulic	4	4	4	4	4	6	6	6	6
Drain (NPT)	3/4	3/4	3/4	3/4	3/4	3/4	3/4	3/4	3/4
CONDENSER FANS				Shrouded Ax	ial Type, Verti	cal Discharge	•		
Standard Low Noise Type				1			1		
Fan Speed (r/s) Standard	19	19	19	19	19	19	19	19	19
No. BladesDiameter (mm)	9762	9762	9762	9762	9762	9762	9762	9762	9762
No. Fans (Ckt A/Ckt B/Ckt C)	3/1/—	3/1/—	2/2/—	3/3/—	3/3/—	3/3/—	3/4/—	4/4/	4/4/
CONDENSER COILS						_			
No. Coils (Ckt A/Ckt B/Ckt C)	3/1/—	3/1/—	2/2/—	3/3/—	3/3/—	3/3/—	3/4/—	4/4/	4/4/
Total Face Area (sq m)	8.73	8.73	8.73	13.1	13.1	13.1	15.24	17.47	17.47
Max Working Refrigeration Pressure (kPa)	4522	4522	4522	4522	4522	4522	4522	4522	4522
HYDRONIC MODULE (Optional)		•	Pump(s) w	ith pressure/te	mperature tap	s and combin	ation valve.		
Pump			,		r Dual, 29.2 o				
CHASSIS DIMENSIONS (mm)									
Length		2393			3587			4781	
Width				•	2236		•		
Height					2281				
LEGEND				* Operating	weight does r	not include an	v options.		

LEGEND

Al-Cu — Aluminum Fin/Copper Tube Condenser Coil
Cu-Cu — Copper Fin/Copper Tube Condenser Coil
EXV — Electronic Expansion Valve
MCHX — Microchannel Condenser Coil
N/A — Not Applicable
RTPF — Round Tube Plate Fin

† RTPF (Round Tube Plate Fin) includes both Al-Cu and Cu-Cu coils.

- NOTES:
 1. 30RB chillers with Greenspeed® intelligence are not available in unit sizes 060 and 070.
 2. No pumps are available for unit sizes 210-300 or 060-190 with high SCCR option.

^{*} Operating weight does not include any options.



30RB060-300 — SI (cont)

UNIT 30RB	160	170	190	210	225	250	275	300
OPERATING WEIGHT (kg)*				_	-			
Al-Cu Condenser Coil	4666	4819	5461	6243	6394	7031	7686	8321
Cu-Cu Condenser Coil	5215	5367	6118	6901	7052	7799	8566	9308
MCHX Condenser Coil	4297	4443	5019	5793	5937	6509	7096	7659
REFRIGERANT TYPE†					Controlled System			
,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		1	1					
Refrigerant Charge (kg)						56.8/56.8/	73.6/73.6/	73.5/73.5/
Std Coil, Ckt A/Ckt B/Ckt C	73.6/56.8/—	73.6/60.5/—	73.6/73.6/—	56.8/56.8/56.8	56.8/56.8/56.8	73.6	56.8	73.5
MCHX Coil, Ckt A/Ckt B/Ckt C	35.9/28.6—	35.9/29.1/—	35.9/35.9/—	26.8/24.1/29.1	26.8/26.8/29.1	26.8/26.8/	37.7/39.5/	37.6/39.5/
COMPRESSORS				0	11	40.5	30.9	42.6
	7	l -	l o	i	, Hermetic 9	10	l 44	l 10
Quantity	7	7	8	9		10	11	12
Speed (r/s)	//\ OLIGO=	I (1) 01.100=	I (1) 01100=	i	58.3	(0) 01100=		l (4) 011005
(Qty) Compressor Model Number Ckt A	(4) SH295	(4) SH295	(4) SH295	(3) SH295	(3) SH295	(3) SH295	(4) SH295	(4) SH295
(Qty) Compressor Model Number Ckt B	(3) SH240	(3) SH295	(4) SH295	(3) SH240	(3) SH295	(3) SH295	(4) SH295	(4) SH295
(Qty) Compressor Model Number Ckt C	N/A	N/A	N/A	(3) SH295	(3) SH295	(4) SH295	(3) SH295	(4) SH295
Oil Charge (L, Ckt A/Ckt B/Ckt C)	27.6/18.6/—	27.6/20.7/—	27.6/27.6/—	20.7/18.6/20.7	20.7/20.7/20.7	20.7/20.7/ 27.6	27.6/27.6/ 20.7	27.6/27.6/ 27.6
No. Capacity Steps								_,
Standard	7	7	8	9	9	10	11	12
Optional (Maximum)	8	8	9	10	10	11	12	13
Minimum Capacity Step (%)				. •		• •		
Standard	13	14	13	10	11	10	9	8
Optional	8	10	9	6	8	7	7	6
Capacity (%)		10		Ü	· ·	,	,	Ŭ
Ckt A	62	57	50	38	33	30	36	33
Ckt B	38	43	50	28	33	30	36	33
Ckt C	N/A	N/A	N/A	36	33	40	28	33
COOLER	IV/A	IN/A			, Shell and Tube		20	33
Weight (empty, kg)	689	689	689	1080	1080	1080	1080	1080
Net Fluid Volume (L)	278	278	278	327	327	327	327	327
Maximum Refrigerant Pressure (kPa)	3068	3068	3068	3068	3068	3068	3068	3068
Maximum Water-Side Pressure	0000	0000	0000	0000	0000	0000	0000	0000
without Pumps (kPa)	2068	2068	2068	2068	2068	2068	2068	2068
Maximum Water-Side Pressure								
with Pumps (kPa)	1034	1034	1034	1034	1034	1034	1034	1034
WATER CONNECTIONS (in.)								
Inlet and Outlet, Victaulic	6	6	6	6	6	6	6	6
Drain (NPT)	3/4	3/4	3/4	3/4	3/4	3/4	3/4	3/4
CONDENSER FANS			5	Shrouded Axial Ty	pe, Vertical Disc	harge		
Standard Low Noise Type								
Fan Speed (r/s) Standard	19	19	19	19	19	19	19	19
No. BladesDiameter (mm)	9762	9762	9762	9762	9762	9762	9762	9762
No. Fans (Ckt A/Ckt B/Ckt C)	6/4/—	6/4/—	6/6/—	4/4/4	4/4/4	4/4/6	6/6/4	6/6/6
CONDENSER COILS								
No. Coils (Ckt A/Ckt B/Ckt C)	6/4/—	6/4/—	6/6/—	4/4/4	4/4/4	4/4/6	6/6/4	6/6/6
Total Face Area (sq m)	21.83	21.83	26.2	26.2	26.2	30.47	34.84	39.21
Max Working Refrigeration Pressure	4522	4522	4522	4522	4522	4522	4522	4522
(kPa)	4022	4022	4022	4022	4022	4022	4022	4022
HYDRONIC MODULE (Optional)		n pressure/tem				N		
Pump		combination v or Dual, 29.2 or				Not available		
CHASSIS DIMENSIONS (mm)	Sirigie	л Duai, 23.2 UI	50.5 1/5	<u> </u>				
Length	50	75	ĺ	7169	ĺ	8363	9557	10,751
Width			I		2236	0000	1 3337	10,751
Height	1				2281			

LEGEND

Al-Cu — Aluminum Fin/Copper Tube Condenser Coil
Cu-Cu — Copper Fin/Copper Tube Condenser Coil
EXV — Electronic Expansion Valve
MCHX — Microchannel Condenser Coil
N/A — Not Applicable
RTPF — Round Tube Plate Fin

- NOTES:
 1. 30RB chillers with Greenspeed® intelligence are not available in unit sizes 060 and 070.
 2. No pumps are available for unit sizes 210-300 or 060-190 with high SCCR option.

^{*} Operating weight does not include any options.

[†] RTPF (Round Tube Plate Fin) includes both Al-Cu and Cu-Cu coils.

Physical data (cont)



UNIT WEIGHTS — STANDARD UNITS

AL/CU COIL UNITS WITHOUT PUMP — ENGLISH

				1001				
Α	В	С	D	Total				
869 891 982 1159 1173 1319	913 936 958 1397 1431 1448	1193 1275 1313 1845 1952 1964	1136 1215 1346 1531 1600 1788	4111 4317 4600 5932 6155 6519				
	MOUNT	ING WEI	GHT (lb)	No Pump	Al/Cu*			
Α	В	С	D	E	F	Total		
731 728 893 1106 1142	1762 1850 2085 2189 2220	809 818 888 1104 1108	985 1168 1228 1483 1487	2347 2531 2864 2923 3039	1056 949 1217 1463 1606	7,690 8,045 9,174 10,266 10,601		
		MOUN	TING WE	GHT (lb)	No Pum	Al/Cu*		
Α	В	С	D	E	F	G	Н	Total
1094 916 947 1122 627 899	1388 1804 1836 2271 2269 2602	1484 2139 2144 2133 2805 2792	1101 853 855 850 1292 1284	1479 1311 1313 1307 1866 1859	2004 3044 3049 3035 3808 3795	1938 2440 2569 3166 3169 3640	1526 1228 1354 1584 1080 1435	12,013 13,734 14,067 15,468 16,915 18,306
	869 891 982 1159 1173 1319 A 731 728 893 1106 1142 A 1094 916 947 1122 627	No	No Pump Al/	869 913 1193 1136 891 936 1275 1215 982 958 1313 1346 1159 1397 1845 1531 1173 1431 1952 1600 1319 1448 1964 1788 MOUNTING WEIGHT (Ib) A B C D 731 1762 809 985 728 1850 818 1168 893 2085 888 1228 1106 2189 1104 1483 1142 2220 1108 1487 MOUNTING WEIGHT MOUNTING WEIGHT 893 105 818 1168 894 1289 1104 1483 1142 2220 1108 1487 MOUNTING WEIGHT 1094 1388 1484 1101 916 1804 2139 853 947 1836 2144 855 1122 2271 2133 850 627 2269 2805 1292	No Pump Al/Cu*	No Pump Al/Cu* A	No Pump Al/Cu*	No Pump Al/Cu* A

CU/CU COIL UNITS WITHOUT PUMP — ENGLISH

			J 01111	O ****		- 01-11		OLIOI	•
UNIT			ING WEI						
30RB	Α	В	C	D	Total				
060 070 080 090 100 110	992 1014 1106 1342 1355 1503	1037 1059 1081 1584 1619 1635	1311 1393 1431 2020 2126 2139	1254 1333 1464 1711 1780 1967	4,593 4,799 5,082 6,656 6,879 7,243				
UNIT		MOUNT	ING WE	GHT (lb)	No Pump	Cu/Cu†			
30RB	Α	В	С	D	Е	F	Total		
120 130 150 160 170	837 850 1015 1252 1289	1980 2100 2334 2497 2528	917 940 1009 1266 1270	1088 1288 1348 1642 1645	2551 2764 3097 3218 3334	1161 1069 1336 1599 1742	8,534 9,010 10,139 11,472 11,807		
UNIT			MOUNT	ING WE	GHT (lb)	No Pum	Cu/Cu†		
30RB	Α	В	С	D	E	F	G	Н	Total
190 210 225 250 275	1257 1018 1049 1283 732	1595 2045 2078 2577 2554	1691 2410 2415 2404 3193	1263 978 981 976 1501	1638 1427 1429 1423 2059	2199 3297 3301 3288 4185	2133 2681 2810 3463 3446	1684 1326 1452 1744 1175	13,460 15,181 15,514 17,157 18,845
300	1064	2950	3179	1494	2053	4172	3974	1591	20,477

MCHX COIL UNITS WITHOUT PUMP — ENGLISH**

UNIT 30RB			ING WEIG Pump MC						
JUND	Α	В	С	D	Total				
060 070 080 090 100 110	800 821 911 1065 1079 1219	840 862 889 1283 1316 1339	1098 1175 1218 1695 1796 1816	1045 1120 1249 1406 1472 1653	3,783 3,978 4,267 5,449 5,663 6,027				
UNIT		MOUNT	NG WEI	1 (dl) THE	No Pump	MCHX††			
30RB	Α	В	C	D	Е	F	Total		
120 130 150 160 170	660 648 810 1020 1055	1614 1683 1914 2020 2052	737 738 805 1019 1024	915 1088 1146 1368 1374	2210 2377 2706 2698 2809	985 870 1136 1350 1485	7,119 7,402 8,517 9,475 9,799		
UNIT			MOUNT	ING WEI	GHT (lb)	No Pump	MCHX††		
30RB	Α	В	C	D	E	F	G	Н	Total
190 210 225 250 275 300	1007 852 881 1041 580 830	1278 1677 1709 2107 2099 2401	1367 1989 1996 1979 2594 2576	1014 793 796 789 1195 1185	1362 1219 1222 1212 1726 1716	1846 2831 2838 2815 3523 3502	1785 2269 2391 2937 2931 3359	1405 1142 1260 1469 999 1324	11,064 12,772 13,093 14,349 15,647 16,893

^{*}Condenser Coil: Aluminum Fins/Copper Tubing.

NOTE: 30RB chillers with Greenspeed® intelligence are not available in size 060 and 070.

AL/CU COIL UNITS WITHOUT PUMP — SI

		,			-			_	
UNIT 30RB			ING WEIO Pump Al/						
JUND	Α	В	C	D	Total				
060 070 080 090 100 110	395 405 447 527 533 600	415 425 436 635 650 658	542 580 597 839 887 893	516 552 612 696 727 813	1869 1962 2091 2697 2798 2963				
UNIT		MOUNT	ING WEI	GHT (kg)	No Pum	Al/Cu*			
30RB	Α	В	С	D	E	F	Total		
120 130 150 160 170	332 330 405 503 519	799 839 946 995 1009	367 371 403 502 503	447 530 557 674 676	1065 1148 1299 1328 1381	479 431 552 665 730	3488 3649 4161 4666 4819		
UNIT			MOUNT	ING WEI	GHT (kg)	No Pump	Al/Cu*		
30RB	A	В	C	D	E	F	G	Н	Total
190 210 225 250 275 300	497 416 431 510 285 409	631 820 835 1032 1032 1183	674 972 975 970 1275 1269	500 388 389 386 587 584	672 596 597 594 848 845	911 1384 1386 1380 1731 1725	881 1109 1168 1439 1440 1654	694 558 615 720 491 652	5461 6243 6394 7031 7689 8321

CU/CU COIL UNITS WITHOUT PUMP — SI

		, 00 0	OIL C	11110 1	VIII		,1-11	01	
UNIT			ING WEIG						
30RB	Α	В	C	D	Total	-			
060 070 080 090 100 110	451 461 503 610 616 683	471 481 491 720 736 743	596 633 651 918 966 972	570 606 665 778 809 894	2088 2181 2310 3026 3127 3292				
UNIT		MOUNT	NG WEI	GHT (kg)	No Pump	Cu/Cu†	-		
30RB	Α	В	C	D	E	F	Total		
120 130 150 160 170	380 386 461 569 586	898 952 1059 1135 1149	416 426 458 575 577	494 584 611 746 748	1157 1254 1405 1463 1516	527 485 606 727 792	3871 4087 4599 5215 5367		
UNIT			MOUNT	ING WEIG	GHT (kg)	No Pump	Cu/Cu†		
30RB	Α	В	С	D	E	F	G	Н	Total
190 210 225 250 275	571 463 477 583 333	725 930 944 1171 1161	769 1095 1098 1093 1451	574 445 446 444 682	744 649 650 647 936	1000 1498 1501 1494 1902	970 1219 1277 1574 1566	765 603 660 793 534	6118 6901 7052 7799 8566
300	484	1341	1445	679	933	1896	1807	723	9308

MCHX COIL UNITS WITHOUT PUMP — SI^{**}

UNIT 30RB			ING WEIG Pump MG						
JUND	Α	В	С	D	Total	-			
060 070 080 090 100 110	363 372 413 483 489 553	381 391 403 582 597 607	498 533 552 769 815 824	474 508 566 638 668 750	1716 1804 1934 2472 2569 2734				
UNIT		MOUNT	ING WEI	GHT (kg)	No Pum	р МСНХ		-	
30RB	Α	В	U	D	E	F	Total	-	
120 130 150 160 170	299 294 367 463 478	732 763 868 916 931	334 335 365 492 464	415 493 520 620 623	1002 1078 1227 1224 1274	447 394 515 612 673	3229 3358 3863 4297 4443		
UNIT			MOUNT	ING WEI	GHT (kg)	No Pum	MCHX		
30RB	Α	В	U	D	E	F	G	Н	Total
190 210 225 250 275 300	457 386 400 472 263 376	580 761 775 956 952 1089	620 902 905 898 1176 1168	460 360 361 358 542 537	618 553 554 550 783 778	837 1284 1287 1277 1598 1588	810 1029 1084 1332 1329 1523	637 518 571 666 453 600	5019 5793 5937 6509 7096 7659

 $[\]verb| †Condenser Coil: Copper Fins/Copper Tubing. \\$

^{**} Condenser Coil: Microchannel Design.



UNIT WEIGHTS — SINGLE PUMP UNITS

AL/CU COIL UNITS WITH SINGLE PUMP — ENGLISH

UNIT 30RB			ING WEI			_			
JUND	Α	В	С	D	Total				
060 070 080 090 100 110	1085 1107 1193 1353 1366 1565	1127 1150 1164 1620 1655 1653	1230 1312 1354 1885 1991 1974	1184 1263 1388 1575 1644 1868	4626 4832 5100 6432 6655 7059				
UNIT		MOUNTII	NG WEIG	HT (lb) S	ingle Pu	mp Al/Cu	l*	•	
2000									
30RB	Α	В	С	D	E	F	Total		
120 130 150 160 170	731 728 893 1238 1279	2062 2149 2486 2583 2609	960 969 1031 1104 1108	961 1144 1165 1483 1487	2460 2645 3035 3155 3276	F 1056 949 1217 1357 1495	8,230 8,585 9,827 10,919 11,254		
120 130 150 160	731 728 893 1238	2062 2149 2486 2583 2609	960 969 1031 1104 1108	961 1144 1165 1483 1487	2460 2645 3035 3155 3276	1056 949 1217 1357 1495	8,230 8,585 9,827 10,919	•	
120 130 150 160 170	731 728 893 1238	2062 2149 2486 2583 2609	960 969 1031 1104 1108	961 1144 1165 1483 1487	2460 2645 3035 3155 3276	1056 949 1217 1357 1495	8,230 8,585 9,827 10,919 11,254	* H	Total
120 130 150 160 170	731 728 893 1238 1279	2062 2149 2486 2583 2609	960 969 1031 1104 1108 MOUNTI	961 1144 1165 1483 1487 NG WEI	2460 2645 3035 3155 3276 GHT (lb) S	1056 949 1217 1357 1495 Single Pu	8,230 8,585 9,827 10,919 11,254 mp Al/Cu		Total 12,666

CU/CU COIL UNITS WITH SINGLE PUMP — ENGLISH

UNIT			ING WE	IGHT (lb) Cu/Cu†		•'			
30RB	Α	В	С	D	Total	-			
060 070 080 090 100 110	1208 1230 1317 1537 1549 1749	1250 1273 1287 1806 1841 1839	1348 1430 1472 2060 2166 2150	1302 1381 1506 1753 1823 2045	5,108 5,314 5,582 7,156 7,379 7,783				
UNIT		MOUNTI	NG WEIG	HT (lb) S	ingle Pun	np Cu/Cu	ı†	-	
30RB	Α	В	С	D	E	F	Total	-	
120 130 150 160 170	837 850 1015 1382 1424	2280 2399 2735 2894 2920	1068 1091 1153 1266 1270	1065 1264 1284 1642 1645	2664 2877 3269 3447 3569	1161 1069 1336 1495 1633	9,074 9,550 10,792 12,125 12,460		
UNIT			np Cu/Cu	t					
30RB	Α	В	С	D	E	F	G	Н	Total
190	1257	1718	2095	1263	1638	2374	2084	1684	14,113

MCHX COIL UNITS WITH SINGLE PUMP — ENGLISH

UNIT			ING WEI			•			
30RB	Α	В	O	D	Total				
060 070 080 090 100 110	1008 1030 1115 1251 1265 1456	1047 1069 1088 1498 1532 1537	1143 1220 1266 1743 1844 1836	1100 1174 1298 1457 1522 1738	4298 4493 4767 5949 6163 6567				
UNIT	N	OUNTIN	G WEIGI	HT (lb) Si	ngle Pun	пр МСНХ	**		
30RB	Α	В	C	D	E	F	Total		
120 130 150 160 170	660 648 810 1148 1188	1914 1982 2316 2395 2423	887 888 948 1024 1029	891 1064 1083 1376 1381	2322 2490 2877 2926 3043	985 870 1136 1259 1388	7,659 7,942 9,170 10,128 10,452		
UNIT			MOUNTIN	NG WEIG	HT (lb) S	ingle Pur	np MCHX	**	
30RB	Α	В	C	D	E	F	G	Н	Total
190	1012	1396	1747	1019	1368	2015	1748	1412	11,717

- Condenser Coil: Aluminum Fins/Copper Tubing.
 Condenser Coil: Copper Fins/Copper Tubing.
 Condenser Coil: Microchannel Design.

AL/CU COIL UNITS WITH SINGLE PUMP — SI

UNIT			ING WEIG			-			
30RB	Α	В	С	D	Total				
060 070 080 090 100 110	493 503 542 615 621 711	512 523 529 736 752 751	559 597 616 857 905 897	538 574 631 716 747 849	2103 2196 2318 2924 3025 3209				
UNIT		MOUNTIN	IG WEIG	HT (kg) S	ingle Pur	np Al/Cu	*		
30RB	Α	В	С	D	E	F	Total		
120 130 150 160 170	332 330 405 563 582	935 975 1128 1174 1186	435 440 468 502 503	436 519 528 674 676	1116 1200 1377 1434 1489	479 431 552 617 679	3733 3894 4458 4963 5116		
UNIT			np Al/Cu	*					
30RB	Α	В	С	D	E	F	G	Н	Total
190	497	686	858	500	672	990	859	694	5757

CU/CU COIL UNITS WITH SINGLE PUMP — ENGLISH

UNIT			ING WEIG			•			
30RB	Α	В	С	D	Total				
060 070 080 090 100 110	549 559 599 699 704 795	568 579 585 821 837 836	613 650 669 937 985 977	592 628 684 797 828 930	2322 2415 2537 3253 3354 3538				
UNIT	N	JOUNTIN	G WEIGH	IT (kg) Si	ngle Pun	np Cu/Cu	t	-	
30RB	Α	В	С	D	E	F	Total		
120 130 150 160 170	380 386 461 628 647	1034 1088 1241 1315 1327	484 495 523 575 577	483 573 583 746 748	1209 1305 1483 1567 1622	527 485 606 680 742	4116 4332 4895 5511 5664		
UNIT		N	JOUNTIN	G WEIGH	IT (kg) Si	ngle Pun	np Cu/Cu	t	
30RB	Α	В	С	D	E	F	G	Н	Total
190	571	781	952	574	744	1079	947	765	6415

MCHX COIL UNITS WITH SINGLE PUMP — SI

						_			
UNIT 30RB			NG WEIG Pump M						
JUND	Α	В	С	D	Total				
060 070 080 090 100 110	457 467 506 567 574 660	475 485 493 679 695 697	518 553 574 790 836 833	499 532 589 661 690 788	1949 2037 2162 2697 2795 2978				
UNIT	N	OUNTIN	G WEIGH	IT (kg) Si	ngle Pun	р МСНХ	**		
30RB	Α	В	С	D	E	F	Total		
120 130	299	868	402	404	1053	447	3474		
150 160 170	294 367 521 539	899 1051 1086 1099	403 430 464 467	483 491 624 626	1129 1305 1327 1380	394 515 571 629	3603 4160 4593 4740		
150 160	367 521	1051 1086 1099	430 464 467	491 624 626	1305 1327 1380	515 571 629	3603 4160 4593	**	
150 160 170	367 521	1051 1086 1099	430 464 467	491 624 626	1305 1327 1380	515 571 629	3603 4160 4593 4740	••	Total

NOTE: 30RB chillers with Greenspeed intelligence are not available in size 060 and 070.

Physical data (cont)



UNIT WEIGHTS — DUAL PUMP UNITS

AL/CU COIL UNITS WITH DUAL PUMP — ENGLISH

UNIT 30RB			ING WEI			•			
JUND	Α	В	C	D	Total				
060 070 080 090 100 110	1218 1240 1372 1518 1530 1741	1259 1281 1339 1808 1843 1796	1254 1336 1389 1919 2025 1983	1213 1293 1424 1611 1680 1922	4,944 5,150 5,523 6,855 7,078 7,442				
UNIT		MOUNT	NG WEI	HT (lb)	Dual Pum	p Al/Cu*			
30RB	Α	В	C	D	E	F	Total		
120 130 150 160 170	731 728 893 1336 1383	2281 2367 2864 2962 2983	1061 1071 1147 1104 1108	951 1133 1122 1483 1487	2534 2719 3177 3344 3471	1056 949 1217 1282 1415	8,613 8,968 10,419 11,511 11,846		
UNIT			MOUNT	NG WEI	Dual Pum	p Al/Cu*	-		
30RB	Α	В	С	D	E	F	G	Н	Total
190	1094	1588	2288	1101	1479	2303	1879	1526	13,258

CU/CU COIL UNITS WITH DUAL PUMP — ENGLISH

UNIT 30RB			ING WEI			•			
JUND	Α	В	C	D	Total	-			
060 070 080 090 100 110	1341 1363 1495 1702 1714 1926	1382 1405 1462 1994 2030 1982	1371 1453 1507 2095 2201 2160	1331 1411 1541 1788 1858 2099	5,426 5,632 6,005 7,579 7,802 8,166				
UNIT		MOUNT	NG WEI	GHT (lb) I	Dual Pum	p Cu/Cu	ļ	-	
30RB	A	В	C	D	Е	F	Total	-	
120 130 150 160 170	837 850 1015 1481 1527	2498 2616 3112 3273 3294	1169 1193 1270 1266 1270	1054 1252 1240 1642 1645	2739 2953 3411 3637 3763	1161 1069 1336 1420 1553	9,457 9,933 11,384 12,717 13,052		
UNIT			MOUNT	ING WEI	GHT (lb) [Dual Pum	p Cu/Cu†		
30RB	Α	В	C	D	Е	F	G	Н	Total
190	1257	1799	2492	1263	1638	2502	2071	1684	14,705
									,

MCHX COIL UNITS WITH DUAL PUMP — ENGLISH

UNIT			ING WEI Pump M	GHT (lb) CHX**		-			
30RB	Α	В	O	D	Total	_			
060 070 080 090 100 110	1137 1158 1289 1411 1424 1626	1175 1197 1258 1680 1715 1677	1171 1248 1305 1784 1884 1852	1133 1208 1338 1497 1563 1795	4,616 4,811 5,190 6,372 6,586 6,950				
UNIT		MOUNTI	NG WEI	GHT (lb) [Dual Pum	р МСНХ*	*	•'	
30RB	Α	В	С	D	E	F	Total		
120 130 150 160 170	660 648 810 1244 1289	2134 2201 2695 2759 2781	987 989 1063 1028 1033	882 1054 1041 1381 1386	2396 2564 3017 3114 3236	985 870 1136 1194 1319	8,042 8,325 9,762 10,720 11,044		
UNIT			MOUNT	ING WEI	GHT (lb) D	ual Pum	р МСНХ**	•	
30RB	Α	В	С	D	E	F	G	Н	Total
190	1016	1474	2124	1022	1373	2138	1745	1417	12,309

- * Condenser Coil: Aluminum Fins/Copper Tubing.
 † Condenser Coil: Copper Fins/Copper Tubing.
 ** Condenser Coil: Microchannel Design.

AL/CU COIL UNITS WITH DUAL PUMP — SI

UNIT 30RB			ING WEIG			=			
JUND	Α	В	С	D	Total	-			
060 070 080 090 100 110	554 564 624 690 695 791	572 582 609 822 838 817	570 607 631 872 920 901	552 588 647 732 764 874	2247 2341 2511 3116 3217 3383				
UNIT		MOUNTI	NG WEIG	HT (kg) [Dual Pum	p Al/Cu*			
30RB	Α	В	С	D	E	F	Total		
120 130 150 160 170	332 330 405 607 629	1035 1074 1299 1347 1356	481 486 520 502 503	431 514 509 674 676	1149 1233 1441 1520 1578	479 431 552 583 643	3907 4068 4726 5232 5385		
UNIT			MOUNTI	NG WEIG	HT (kg) l	Dual Pum	p Al/Cu*		
30RB	Α	В	С	D	E	F	G	Н	Total
190	497	722	1040	500	672	1047	854	1526	6014

CU/CU COIL UNITS WITH DUAL PUMP — SI

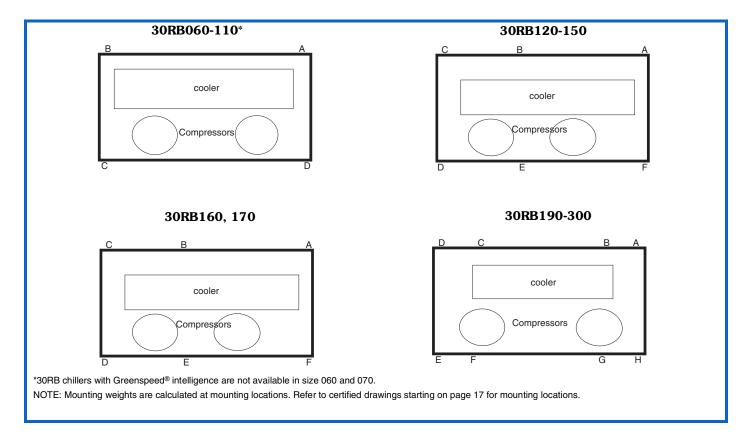
UNIT 30RB	MOUNTING WEIGHT (kg) Dual Pump Cu/Cu†								
JUND	Α	В	С	D	Total				
060 070 080 090 100 110	610 620 680 774 779 875	628 638 665 906 923 901	623 661 685 952 1000 982	605 641 701 813 845 954	2466 2560 2730 3445 3547 3712				
UNIT		MOUNTIN	NG WEIG	p Cu/Cu†					
30RB	Α	В	С	D	E	F	Total		
120 130 150 160 170	380 386 461 673 694	1133 1187 1412 1488 1497	530 541 576 575 577	478 568 562 746 748	1242 1339 1547 1653 1710	527 485 606 646 706	4290 4506 5164 5781 5933		
UNIT			MOUNTII	ual Pum	Cu/Cu†				
30RB	Α	В	С	D	E	F	G	Н	Total
190	571	818	1133	574	744	1137	941	1684	6669

MCHX COIL UNITS WITH DUAL PUMP — SI

UNIT			ING WEIC		- '				
30RB	Α	В	С	D	Total	-			
060 070 080 090 100 110	516 525 585 640 646 737	533 543 571 762 778 761	531 566 592 809 854 840	514 548 607 679 709 814	2094 2182 2355 2890 2987 3152				
UNIT		MOUNTIN	IG WEIGI	HT (kg) D	ual Pum	MCHX*	+	='	
30RB	Α	В	С	D	Е	F	Total	-	
120 130 150 160 170	299 294 367 564 585	968 998 1223 1251 1261	448 449 482 466 468	400 478 472 626 629	1087 1163 1368 1412 1468	447 394 515 541 598	3648 3776 4428 4860 5009		
UNIT			MOUNTIN	IG WEIG	HT (kg) D	ual Pum	MCHX*	+	
30RB	Α	В	С	D	E	F	G	Н	Total
190	461	668	963	463	623	970	791	643	5582

NOTE: 30RB chillers with Greenspeed intelligence are not available in size 060 and 070.





Options and accessories



ITEM	FACTORY-INSTALLED OPTION	FIELD-INSTALLED ACCESSORY
Condenser Coil Options		
MCHX E-Coated	X	
Aluminum Fin/Copper Tube	X	
Aluminum Fin/Copper Tube, Pre-Coated	X	
Aluminum Fin/Copper Tube, E-Coated	X	
Copper Fin/Copper Tube, E-Coated	X	
Copper Fin/Copper Tube Condenser Coils	X	
Controls/Communication Options		
BACnet Communication	X	
BACnet/Modbus Translator Control	X	Х
Chillervisor System Manager III Multi-Unit Control		Х
Energy Management Module (EMM)	Х	Х
LON (Local Operating Network) Translator Control	X	Х
Navigator™ Display		Х
Remote Service Port		Х
Remote Enhanced Display		Х
Touch Pilot™ Display		Х
Dual Chiller Accessory Kit		X
Cooler Options		
Freeze Protection - Cooler Heaters	Х	
Remote Cooler		Х
CRN Cooler (Canada Only)	X	
Electrical/Low Sound Options		
Unit-Mounted Main Disconnect, Non-Fused	Х	
Convenience Outlet (not available at 380 volt)	Х	Х
High SCCR (includes non-fused disconnect)(460 v only)	Х	
Low Sound - Compressor Sound Reduction Blankets	X	
Ultra Low Sound - Compressor Sound Reduction Enclosures	X	
Hydronics Option		
Hydronic Pump Package (available on unit sizes 060-190 only via ETO, not available with high SCCR)	Х	
Refrigeration Circuit Options		
High-Efficiency Variable Condenser Fans (not available on unit sizes 060 and 070)	X	
Compressor Suction Service Valve	X	
Low Ambient Temperature Head Pressure Control (not available with high-efficiency variable condenser fans)	X	Х
Minimum Load Control (not available with Leaving Fluid Temperature < 38°F [< 3.3°C])	X	X
Suction Line Insulation	X	
Security/Packaging Options		
Condenser Coil Trim Panels	X	Х
Security Grilles	X	Х
Full Hail Guard		Х
Upper Hail Guard	X	
Full End Screen	X	

LEGEND

E-Coated EMM

Epoxy Coating Applied to Entire Coil Assembly
Energy Management Module
Local Operating Network
Microchannel Heat Exchanger

Factory-installed options

Condenser coil options are available to match coil construction to the site conditions for the best durability. Refer to the Condenser Coil Corrosion Protection Options table on page 16 or the appropriate selection guide for more information.

Compressor suction service valve provides additional isolation of the compressor from the cooler vessel for service. Standard refrigerant discharge isolation and liquid valves enable service personnel to store the refrigerant charge in the cooler or condenser during servicing.

Suction line insulation is tubular, closed-cell insulation. This option is required on applications with leaving fluid temperatures below 30°F (-1.1°C) and recommended for

- Std SCCR (short circuit current rating) (5 kA).
 High SCCR 460 v (65 kA).

areas of high dewpoints where condensation may be a concern.

Hydronic pump package option adds circulating pumps, a combination valve (isolation, modulation and check), strainer, Victaulic field piping connections, insulation and heaters, and pressure/temperature taps (3). The pumps are available in single or dual (lead/lag controlled) cooler pump versions with total dynamic head external to the chiller from approximately 20 to 140 ft (6.1 m to 42.7 m). Also includes heater and insulation for freeze protection to -20°F (-29°C). The hydronic pump package is available for sizes 060-190 and cannot be used in conjunction with units with high SCCR option.

High-efficiency variable condenser fans control the speed of all fans for improvement in part load efficiency and sound levels. Additionally, high-efficiency variable condenser fans maintain head pressure control down to -20°F (-29°C)



ambient temperature with the use of glycol and wind baffles. Varying the speed of all fans on a circuit to a prescribed speed provides accurate head pressure control to the most efficient point while achieving optimum usage of the coils to accomplish excellent part load efficiency. These fans are the key component of the 30RB chiller with Greenspeed® intelligence. This option is not available on unit sizes 060 and 070.

Low ambient temperature head pressure control permits operation of the 30RB units to $-20^{\circ}F$ ($-29^{\circ}C$) outdoor ambient temperature. The control is also available as a field-installed accessory and requires field-installed wind baffles. (This option or accessory is neither required nor available with the high-efficiency variable condenser fan option.)

CRN cooler (Canada only) provides minor cooler modifications to meet Canadian code.

Unit-mounted non-fused disconnect option provides non-fused disconnect capability for power and control located at the unit. On dual point power applications, this option is not available on 30RB060-120. This option is included with the high SCCR option.

Minimum load control option allows additional capacity reduction for unit operation below the minimum step of unloading (down to 6% of the full load unit capacity, depending on unit size). Minimum load control is also available as a field-installed accessory. This option is not available on applications with leaving fluid temperature less than 38°F (3.3°C).

Security grilles protect the condenser coil from damage with coated wire grilles with openings of 1 by 4 in. (25 mm \times 102 mm). The security grille option requires the condenser coil trim panel option. Security grilles are also available as a field-installed accessory.

Condenser coil trim panels provide an aesthetic, finished appearance for the condenser coil ends of the cooler/pump connection side of the unit. Condenser coil trim panels are also available as a field-installed accessory.

Upper hail guard consists of louvered panels on the ends of the machine, which firmly fasten to the machine frame and provide coverage from the top of the unit to the bottom of the coil. A hinged accessory hail guard is also available. The accessory covers the entire unit end (both ends), and, with its hinged design, is not identical to this option.

Full end screen consists of louvered panels on the ends of the machine, providing complete coverage from the top to the bottom of the unit. This option functions as both a privacy screen and a hail guard. For hail protection, an accessory hail guard is also available. The accessory covers the entire unit end (both ends), and, with its hinged design, is not identical to this option.

High SCCR (short circuit current rating) devices allow the chiller to tolerate a $65~\mathrm{kA}$ short circuit current for a brief period of time while protecting downstream components. The high SCCR provides a higher level of protection than the standard chiller components. This option is not available on 30RB250-300. It is available only at $460~\mathrm{v}$ and includes the unit-mounted non-fused disconnect option. The standard SCCR rating for all models is $5~\mathrm{kA}$.

Low sound - compressor sound blankets reduce unit sound levels by providing an acoustic blanket on each compressor.

Ultra low sound - compressor sound enclosures provide enclosures which encase compressors that are covered with acoustic blankets.

Energy management module provides energy management capabilities to minimize chiller energy consumption. Several features are provided with this module including leaving fluid temperature reset, cooling set point reset or demand limit control from a 4 to 20 mA signal, 2-step demand limit control (from 0 to 100%) activated by a remote contact closure (one-step demand limit does not require the energy management module), and discrete input for "Ice Done" indication for ice stage system interface.

Convenience outlet includes a 4-amp GFI (ground fault interrupt) receptacle with independent fuse protection. Convenience outlet is a 115-v female receptacle.

BACnet communication option provides pre-programmed factory-installed communication capability with a BACnet MS/TP network. Allows integration with i-Vu® Open control system or a third-party BACnet building automation system. No field programming is required.

BACnet/Modbus translator control provides an interface between the chiller and a BACnet Local Area Network (LAN, i.e., MS/TP EIA-485). Field programming is required.

LON translator control provides an interface between the chiller and a Local Operating Network (LON, i.e., Lon-Works FT-10A ANSI/EIA-709.1). Field programming is required.

Field-installed accessories

Minimum load control accessory allows additional capacity reduction for unit operation below the minimum step of unloading (down to 6% of the minimum unit capacity, depending on unit size) via hot gas bypass. This accessory is not available on applications with leaving fluid temperature less than $38^{\circ}F$ ($3.3^{\circ}C$).

Full hail guard consists of hinged, louvered panels, which cover both ends of the unit. This accessory provides complete protection from hail and flying debris. For hail protection, two factory options are also available. These options directly fasten to the end of the chillers (are not hinged), and therefore are not identical to this accessory.

Navigator™ display accessory provides a portable handheld display for convenient access to unit status, operation, configuration and troubleshooting diagnostics capability. The four-line, 80-character LCD display provides clear language information in English, French, Spanish, or Portuguese. The weatherproof enclosure and industrial grade extension cord enables the Navigator display to be ideally suited for outdoor applications. Magnets located on the back of the module allow attachment to any sheet metal component for hands-free operation.

Remote enhanced display accessory kit contains a remotely mounted indoor 40-character per line, 16-line display panel for unit diagnostics.

Touch Pilot™ display used as an accessory is a cost-effective, touch-screen, remote-mount device.

Chillervisor System Manager III multi-unit control accessory allows sequencing of between two and eight chillers in parallel. Pump control is also provided.

Low ambient temperature head pressure control permits operation of the 30RB units to -20°F (-29°C) outdoor ambient temperature. The control is also available as a factory-installed option and requires field-installed wind baffles. (This option or accessory is neither required nor available with the high-efficiency variable speed fan option.)

Options and accessories (cont)



Energy management module provides energy management capabilities to minimize chiller energy consumption. Several features are provided with this module including leaving fluid temperature reset, cooling set point reset or demand limit control from a 4 to 20 mA signal, 2-step demand limit control (from 0 to 100%) activated by a remote contact closure (one-step demand limit does not require the energy management module), and discrete input for "Ice Done" indication for ice stage system interface.

Remote service port consists of a receptacle for Navigator connection. The port is housed in a waterproof enclosure conveniently located for easy access to information during operation and maintenance routines.

Convenience outlet includes a 4-amp GFI (ground fault interrupt) receptacle with independent fuse protection. Convenience outlet is a 115-v female receptacle.

Remote cooler accessory provides the additional hardware required to remotely mount the cooler from the unit. The cooler-unit separation is limited to 75 equivalent feet. The remote cooler accessory cannot be used with MCHX condenser coils or in brine applications. Never bury refrigerant piping on these or any other applications.

BACnet/Modbus translator control provides an interface between the chiller and a BACnet Local Area Network (LAN, i.e., MS/TP EIA-485). Field programming is required.

LON translator control provides an interface between the chiller and a Local Operating Network (LON, i.e., Lon-Works FT-10A ANSI/EIA-709.1). Field programming is required.

Security grilles protect the condenser coil from damage with coated wire grilles and openings of 1 by 4 in. (25 mm x 102 mm). The security grille accessory requires the condenser coil trim panel accessory. Security grilles are also available as a factory-installed option.

Condenser coil trim panels provide an aesthetic, finished appearance for the condenser coil ends of the cooler/pump connection side of the unit. Condenser coil trim panels are also available as a factory-installed option.

Dual chiller accessory kit provides the additional hardware (thermistors, wells, connectors) required for applications with 2 chillers running in parallel.

CONDENSER COIL CORROSION PROTECTION OPTIONS

ENVIRO-SHIELD™	ENVIRONMENT									
OPTION*	Standard	Mild Coastal	Severe Coastal	Industrial	Combined Industrial/Coastal					
Novation® Heat Exchanger (Standard)	See NACO Packaged Chiller Builder									
Novation Heat Exchanger, E-coat	See NACO Packaged Chiller Builder									
AL Fins	Х									
CU Fins		X								
AL Fins, E-coat			Х	Х	X					
CU Fins, E-coat			Х							
AL Fins, Pre-coated		Х								

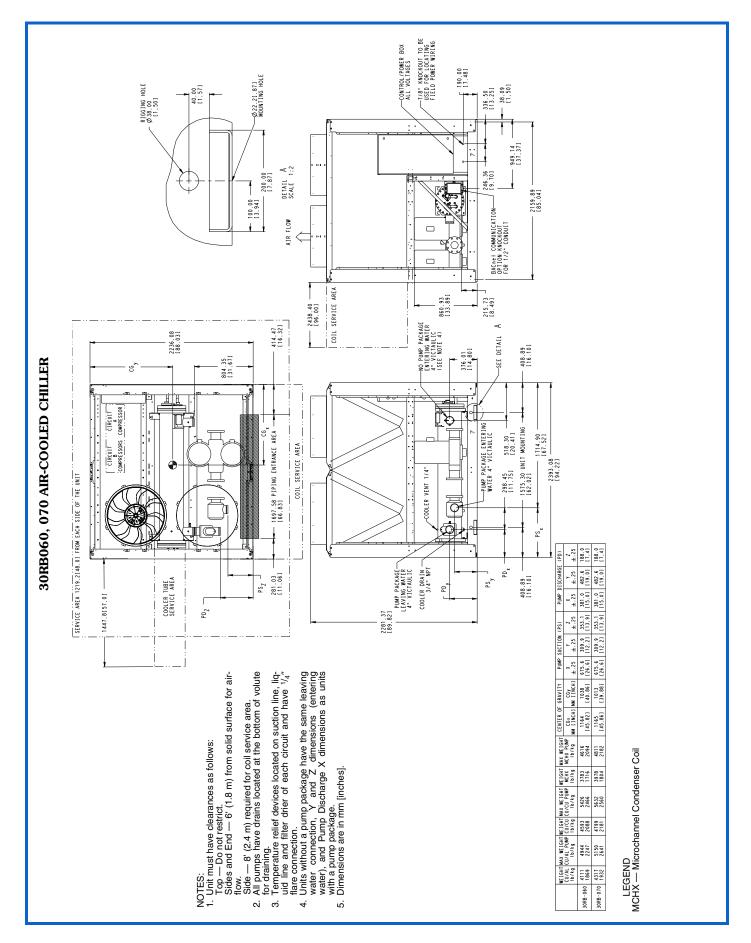
LEGEND

AL — Aluminum CU — Copper

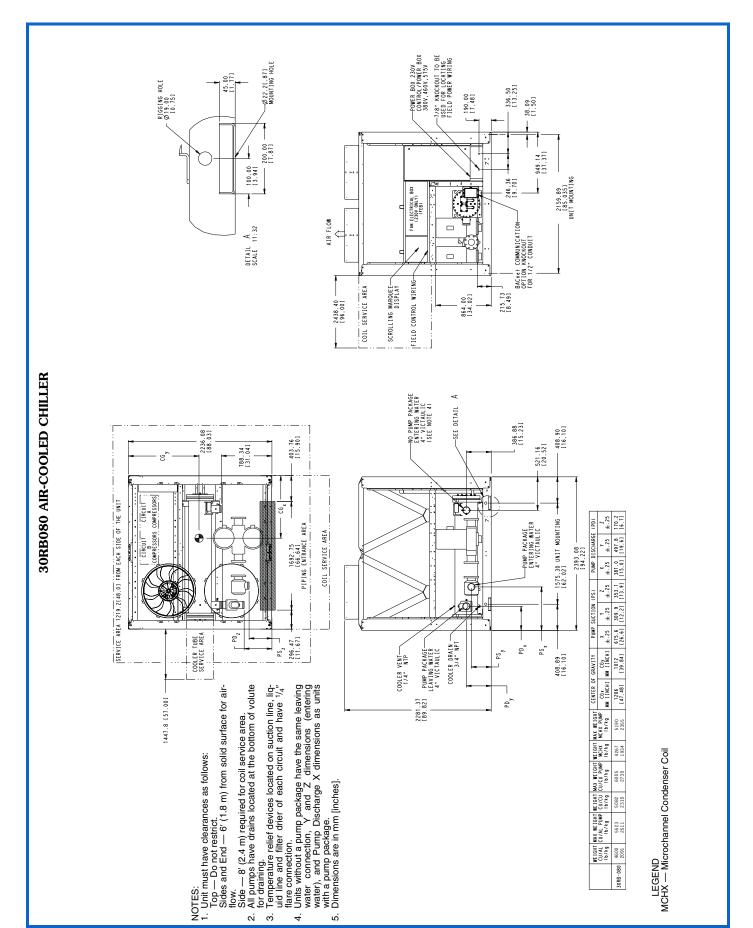
NACO — North American Commercial Operations

^{*} See NACO Packaged Chiller Builder for details. Additional corrosion protection is available. For Novation or round tube/plate fin (RTPF) heat exchangers, see selection guide "Environmental Corrosion Protection" (Publication 04-581061-01).

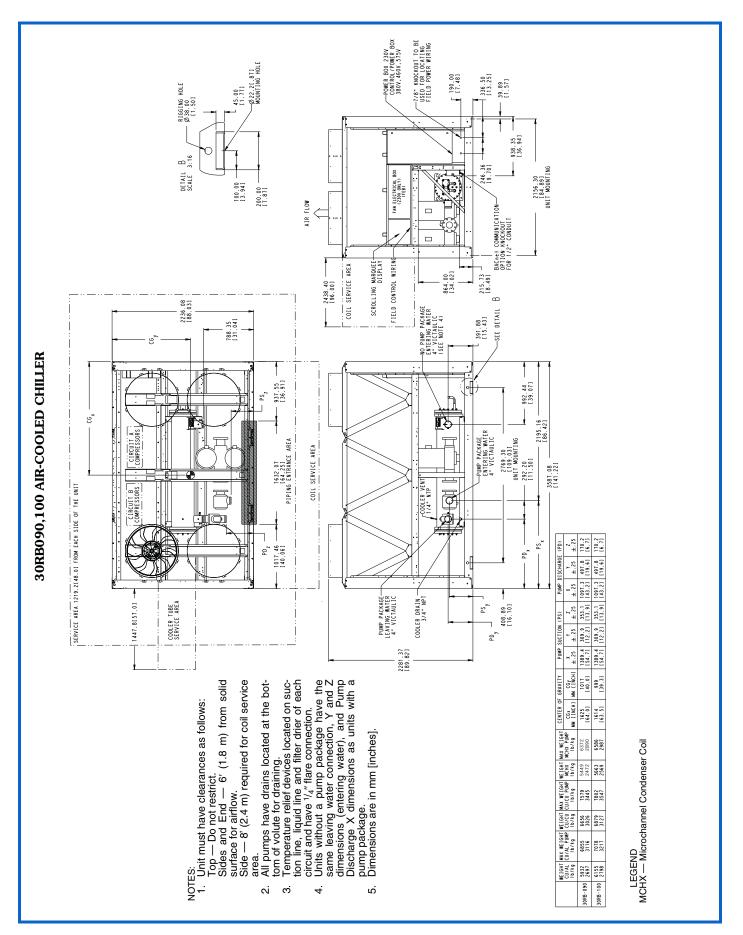




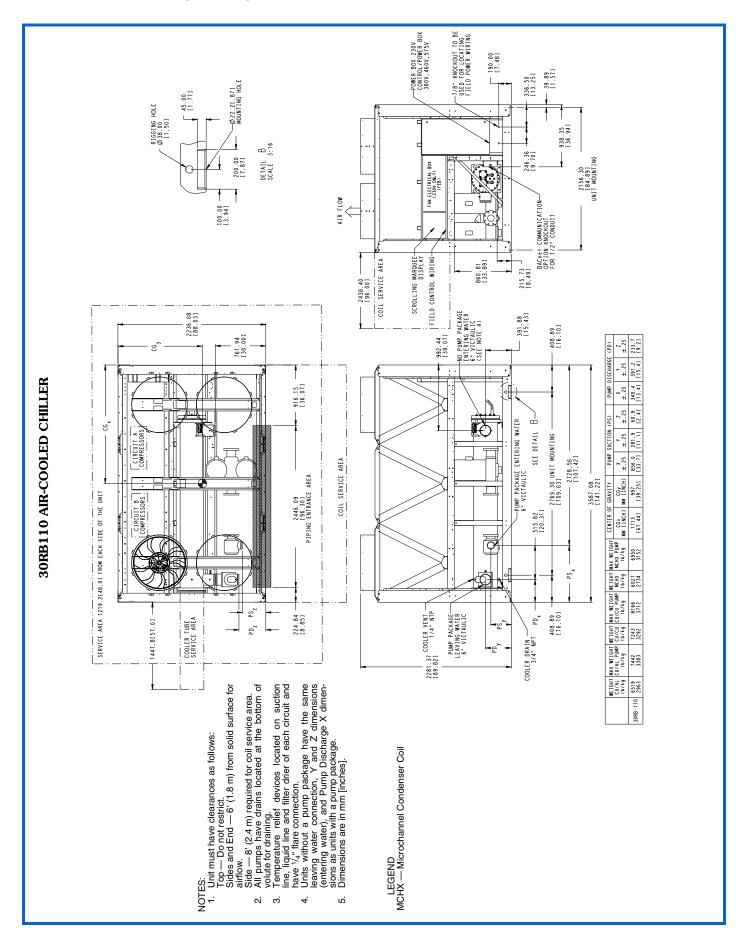








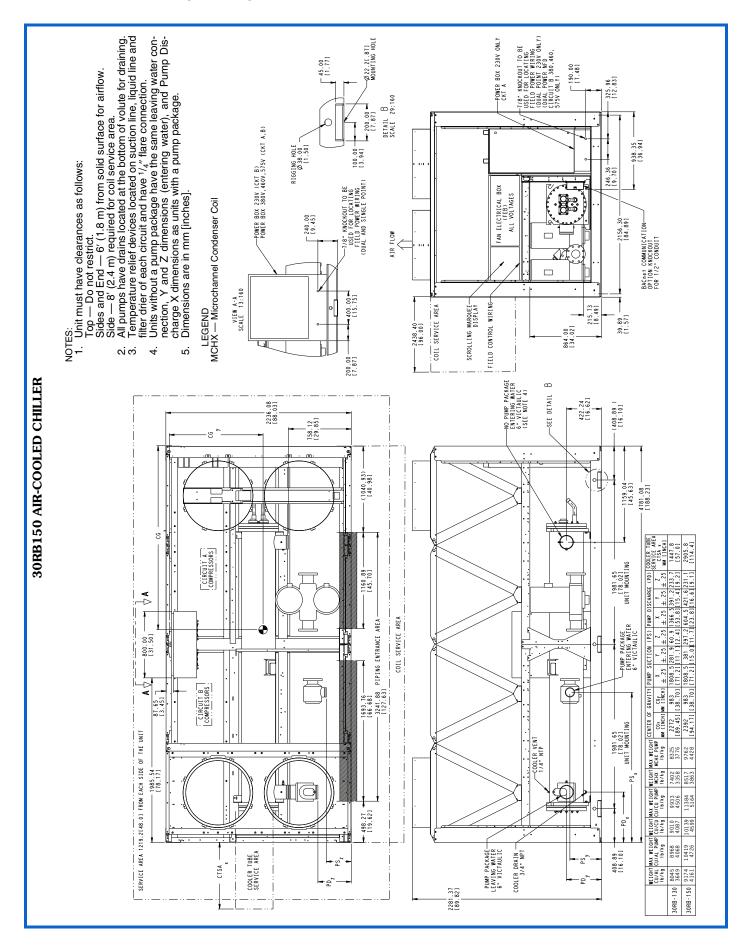




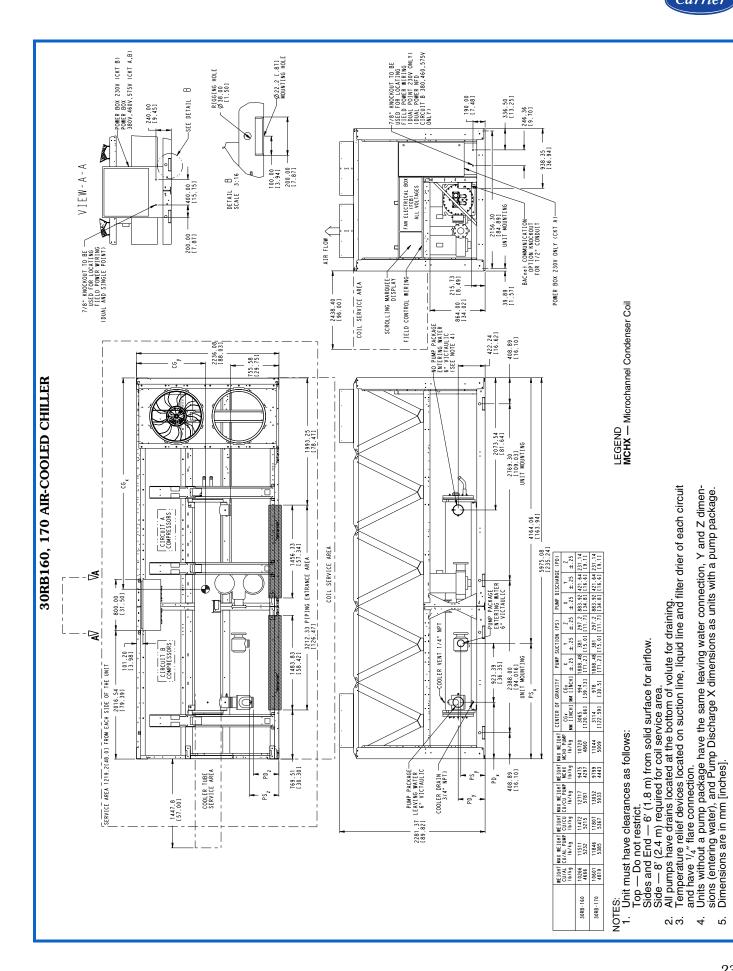


USED FOR LOCATING FIELD POWER WIRING draining. Temperature relief devices located on suction line, liquid line and filter drier of each circuit and have $^{1/4}$ " flare Units without a pump package have the same leaving water connection, Y and Z dimensions (entering water), and Pump Discharge X dimensions as units with a pump —POWER BOX 230V CONTROL/POWER BOX 380V, 460V, 575V Top — Do not restrict. Sides and End — 6' (1.8 m) from solid surface for airflow. Side — 8' (2.4 m) required for coil service area. All pumps have drains located at the bottom of volute for 336.50 [13.25] 190.00 938.35 [36.94] -Ø 22.21.871 MOUNTING HOLE NOTES: 1. Unit must have clearances as follows: RIGGING HOLE • Ø38.00 [1.50] 45.00 - 2156.30 [84.89] UNIT MOUNTING Dimensions are in mm [inches]. LEGEND MCHX — Microchannel Condenser Coil FAN ELECTRICAL BOX (230V ONLY) (FEB) DETAIL B SCALE 3:16 AIR FLOW 200.00 BACnet COMMUNICATION— OPTION KNOCKOUT FOR 1/2" CONDUIT connection. 100.00 SCROLLING MARQUEE-DISPLAY FIELD CONTROL WIRING-864.00 package. 215.73 -[8.49] COIL SERVICE AREA 2438.40 [96.00] რ 4. αi 5. 30RB120,130 AIR-COOLED CHILLER -NO PUMP PACKAGE ENTERING WATER 6" VICTAULIC (SEE NOTE 4) 391.88 -SEE DETAIL B 2236.08 [88.03] 408.89 [16.10] 761.94 [30.00] 1082.75 1159.04 ဗွဲ CIRCUIT A COMPRESSORS We like in the like 2970.06 [116.93] -PUMP PACKAGE ENTERING WATER 6" VICTAULIC 1981.65 [78.02] UNIT MOUNTING 1128.56 [96.30] PIPING ENTRANCE AREA COIL SERVICE AREA 2446.09 4781.08 [188.23] 440.92 PUMP SUCTION (PS) CIRCUIT B COMPRESSORS 939.42 [36.99] SERVICE AREA 1219.2[48.0] FROM EACH SIDE OF THE UNIT 1981.65 [78.02] UNIT MOUNTING P.S. 1252.24 e. 8042 3648 408.89 COOLER DRAIN -COOLER TUBE SERVICE AREA PUMP PACKAGE-LEAVING WATER 6" VICTAULIC - S, COOLER VENT --1447.8[57.0] ا و م 2281.37 [89.82] 3488 30RB-120

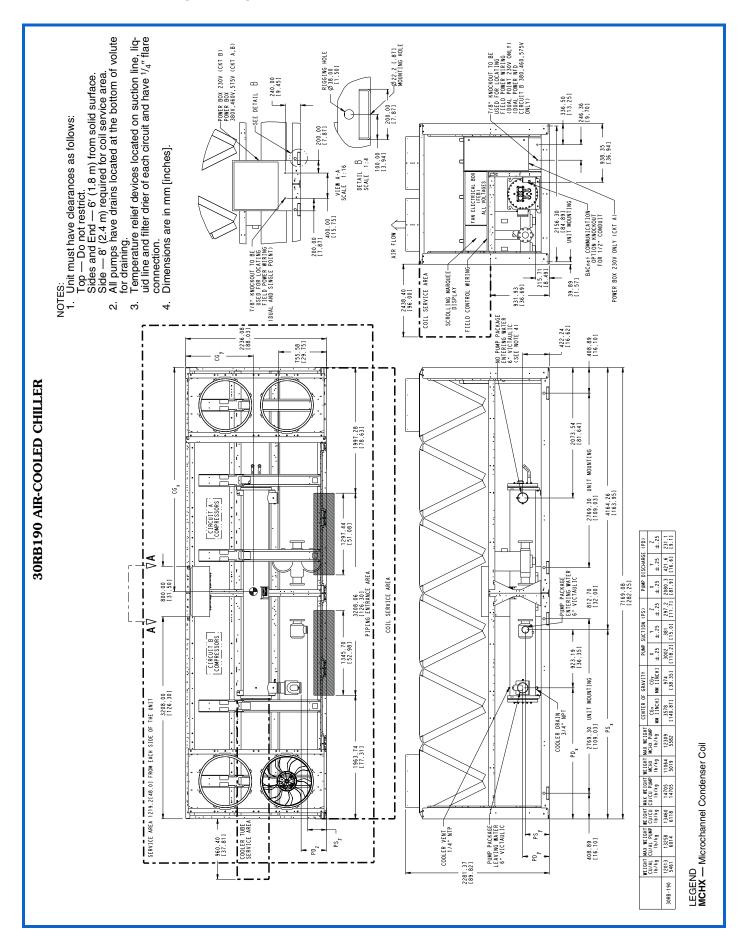




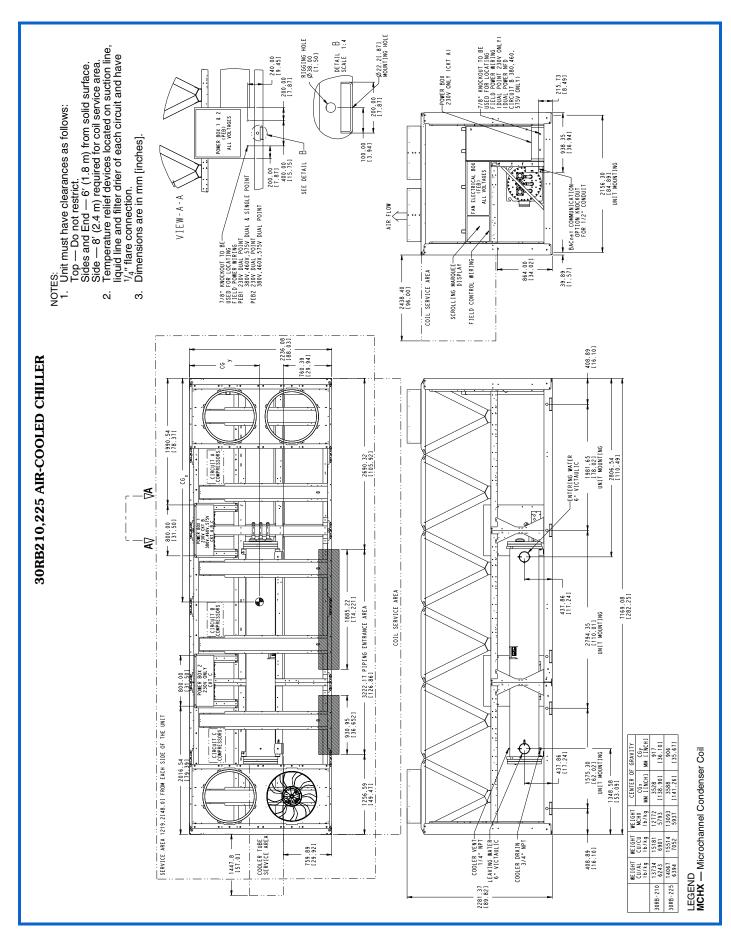




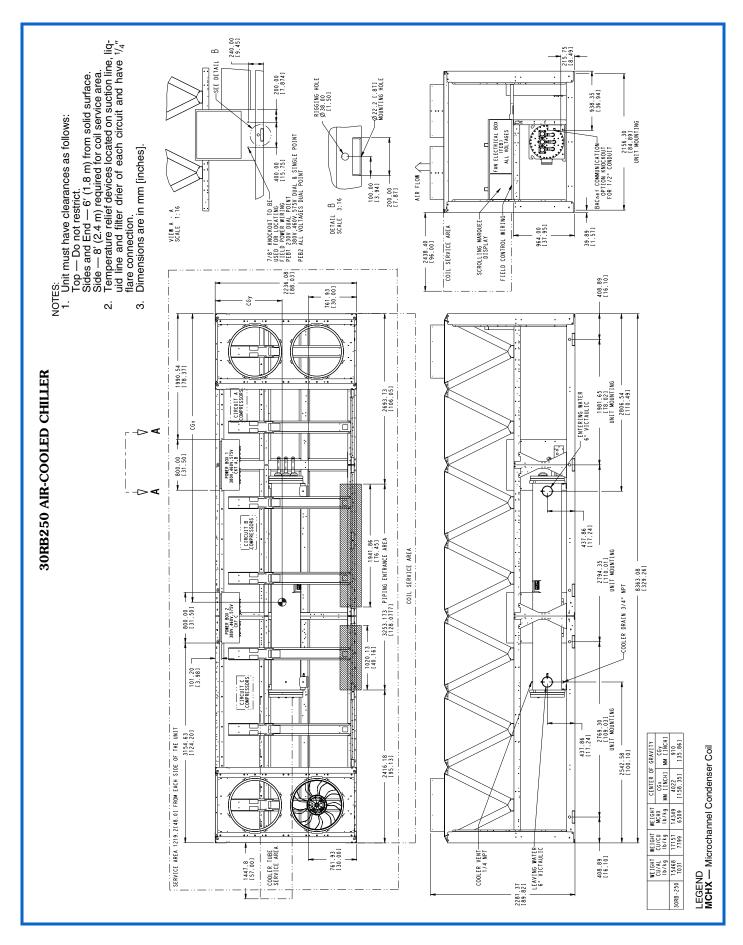




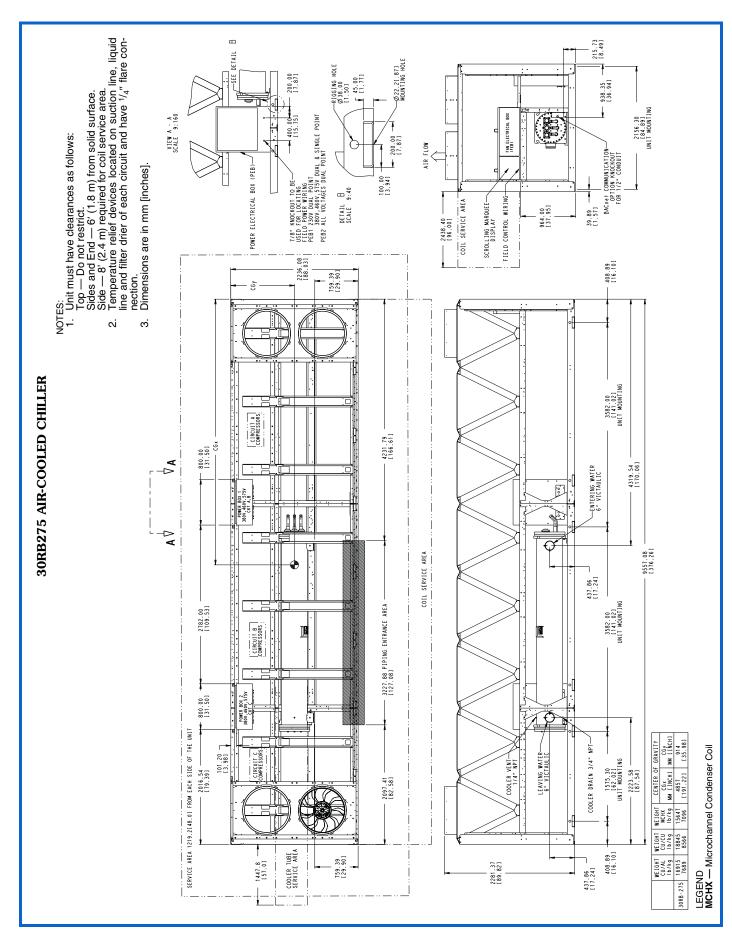




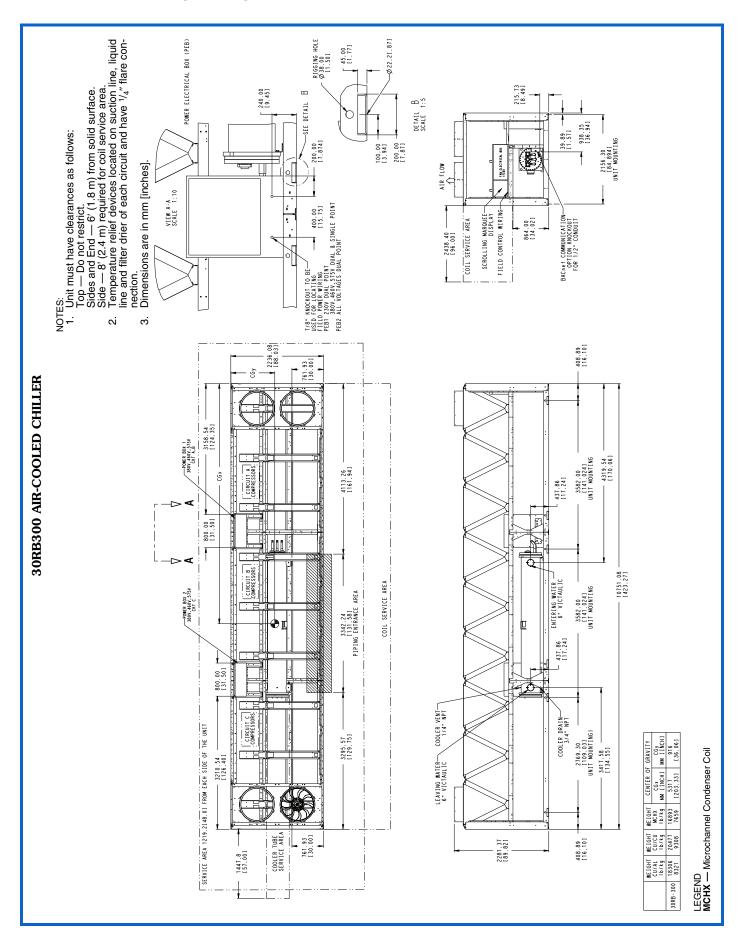












Selection procedure



Carrier's NACO (North American Commercial Operations) Packaged Chiller Builder Program provides quick, easy selection of Carrier's air-cooled liquid chillers. The program considers specific temperature, fluid and flow requirements among other factors such as fouling and altitude corrections. Before selecting a chiller, consider the following points:

Leaving water (fluid) temperature (LWT)

• If the LWT is less than $40^{\circ}F$ (4.4°C), loop freeze protection to a minimum of $30^{\circ}F$ (16.6°C) below the LWT set

point is required.

- If the LWT is to be between 15°F and 30°F (-9.4°C and -1.1°C) and the unit size is 30RB060-100, then both suction line insulation and low ambient head pressure control (or 30RB chiller with Greenspeed® intelligence) must be included. For unit sizes 30RB110-390, operation below 30°F (-1.1°C) is not available.
- If the LWT requirement is greater than 60°F (16°C), a mixing loop is required.

Entering water temperature (EWT)

 If the EWT requirement is greater than 70°F (21.1°C), a mixing loop is required. The EWT cannot exceed 70°F (21.1°C) for extended operation. Pulldown can be accomplished from 95°F (35°C).

Cooler flow rate or cooler delta-T

- The cooler delta-T must fall between 3 and 20°F (1.7 and 11°C) while still meeting both the fluid min/max temperature requirements as well as the fluid min/max flow requirements.
- For larger or smaller delta-T applications, a mixing loop is required.
- If the cooler flow is variable, then the rate of change of flow should not exceed 10% per minute. A loop volume of greater than 3 gallons per ton (3.25 L per kW) is recommended.

Cooler pressure drop

 A high cooler pressure drop can be expected when the cooler delta-T is low. A mixing loop can help to alleviate this situation.

Water quality, fouling factor

Poor water quality can increase the cooler fouling.

 Higher than standard fouling factors lead to lower capacity and higher input kW from a given chiller size compared to running the same application with better quality water (and lower fouling factors).

Operation below 32°F (0°C)

 Low ambient head pressure control (or 30RB chiller with Greenspeed intelligence) is required.

Wind baffles are required.

- Consider higher loop volumes, 6 to 10 gallons per nominal ton (6.5 to 10.75 L per kW).
- Loop freeze protection with glycol is strongly recommended to a minimum of 15°F (8°C) below lowest anticipated ambient temperature.

 Chilled water pump control is strongly recommended; otherwise override capability is required.

Consider the remote cooler option. Do not bury refrigerant piping.

Chiller idle below 32°F (0°C)

Loop freeze protection with glycol is strongly recommended to a minimum of 15°F (8°C) below lowest anticipated ambient temperature.

· Chilled water pump control is strongly recommended;

otherwise override capability is required.

- Drain the cooler This will require a small amount of glycol for residual water. Cooler heaters (if provided) will need to be disconnected.
- Consider the remote cooler option. Never bury refrigerant lines.

Ambient temperature

· Highest allowable ambient air temperature is 125°F

(52°C) for all unit sizes.

• Lowest allowable ambient temperature for the standard unit to start and operate is 32°F (0°C). With the inclusion of wind baffles (field fabricated and installed) and low ambient head pressure control (low ambient control is not required on units with Greenspeed intelligence), the unit is capable to start as low as -13°F (-25°C) and to operate as low as -20°F (-29°C) ambient temperature.

Cooling capacity requirements

- Do not oversize the chillers by more than 15% at design conditions.
- If close capacity control is required below the standard minimum step of unloading, the minimum load control option should be employed.

Coil corrosion requirements

- Coastal application
- Industrial application
- Coastal/industrial application
- Urban application
- Farming

NOTE: See NACO Packaged Chiller Builder and appropriate selection guides for more information.

Chilled water pump external head requirement

Capacity control

- Temperature reset
- Return water reset
- Outside air temperature reset
- Space temperature reset
- 4 to 20 mÅ temperature reset (requires an energy management module)

Demand limit

- 2-step (requires an energy management module)
- 4 to 20 mA (requires an energy management module)
- CCN loadshed

To select a chiller, use the Packaged Chiller Builder Program.

AquaSnap® pump selection

Several pump sizes are available for each AquaSnap chiller size to provide flexibility in matching water system requirements. A dual pump option is also available for primary/standby operation. The Carrier Packaged Chiller Builder Program must be used for pump selection.

Proper water system design is critical; cooling loads, water pressure drops and proper water line sizing must be accounted for in order to ensure proper system operation. Incorrect or incomplete analysis/design of the water loop could lead to low water flow, loss of water temperature control, and excessive cycling of chiller compressors.

Selection procedure (cont)

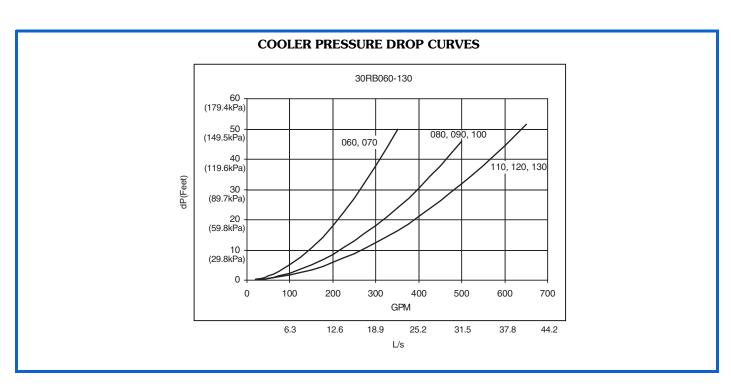


PUMP IMPELLER SIZES

LINIT	PUMP	SINGLE PUMP				DUAL PUMP			
UNIT 30RB	Нр	Option Code*	Rpm	Impeller Dia. (in.)	Pump Curve	Option Code*	Rpm	Impeller Dia. (in.)	Pump Curve
	3	0	1750	6.5	1	6	1750	6.5	V
	5	1	1750	7.3	I	7	1750	7.3	V
060 070	7.5	2	1750	8.15	Ι	8	1750	8.15	V
						9	3450	5.25	VI
	10	3	3450	5.4	П	В	3450	5.9	VI
080 090 100 110 120	5	1	1750	7.3	I	7	1750	7.3	V
	7.5	2	1750	8.15	I	8	1750	8.15	V
	10	3	3450	5.4	II	В	3450	5.4	VIIA
130	15	4	3450	6.1	II	С	3450	6.0	VIIC
	5	1	1750	6.5	IIIA	_	_	_	_
150 160	7.5	2	1750	7.4	IIIB	9	3450	5.0	VIIB
170 190	10	3	3450	4.6	IVA	В	3450	4.6	VIIIA
.50	15	4	3450	5.2	IVB	С	3450	5.2	VIIIB

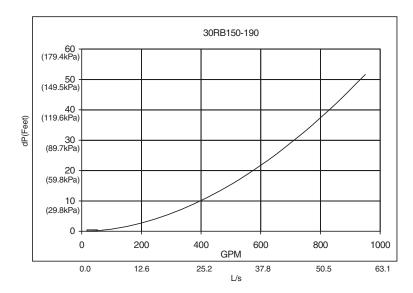
 $^{^\}star \text{Option}$ Code refers to the Hydronics Option (position 11) in the model number. See the 30RB nomenclature on page 5 for option identification.

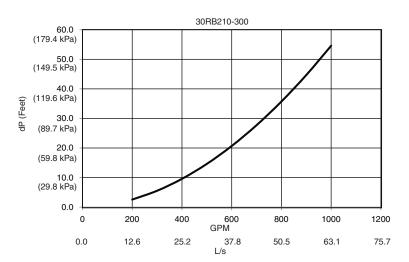
NOTE: Pump Selections are chiller-size dependent. For example, dual pump "C" on a 30RB170 chiller is not the same as dual pump "C" on a 30RB130 chiller. The pump option is not available on units with high SCCR option. The 30RB chillers with Greenspeed® intelligence are not available for size 060 and 070.





COOLER PRESSURE DROP CURVES (cont)

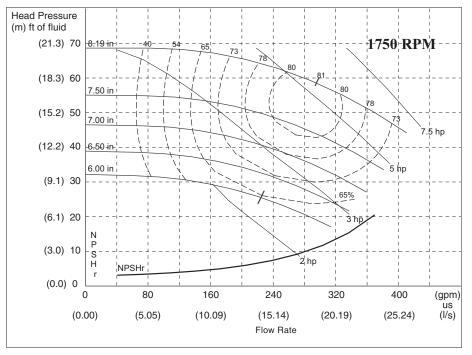




Selection procedure (cont)





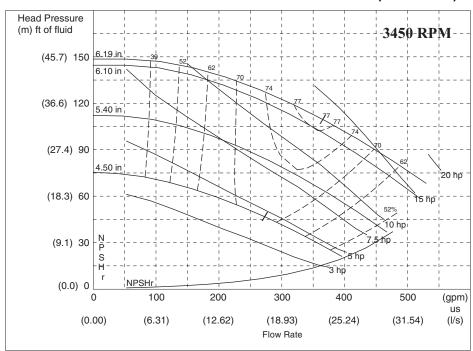


LEGEND

NPSHr — Net Positive Suction Head (Pressure) Required

NOTE: Refer to the 30RB nomenclature on page 5 for option identification. Refer to the Pump Impeller Sizes table on page 30 for more information.

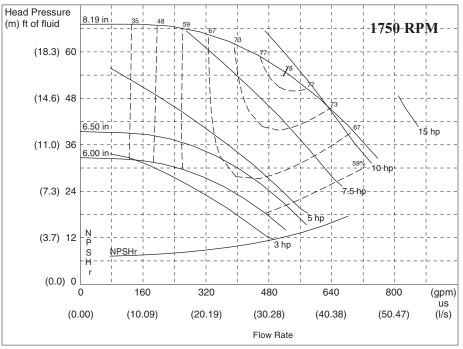
PUMP CURVE II FOR HYDRONIC PACKAGE SINGLE PUMP (Fresh Water)



LEGEND NPSHr — Net Positive Suction Head (Pressure) Required



PUMP CURVE IIIA FOR HYDRONIC PACKAGE SINGLE PUMP (Fresh Water)

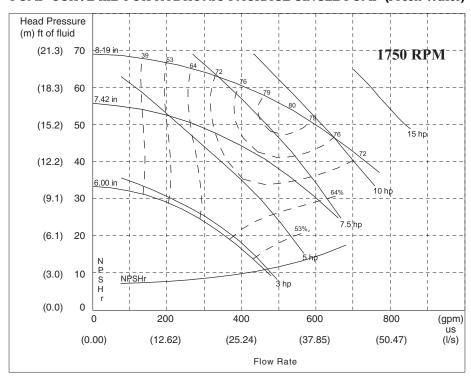


LEGEND

NPSHr — Net Positive Suction Head (Pressure) Required

NOTE: Refer to the 30RB nomenclature on page 5 for option identification. Refer to the Pump Impeller Sizes table on page 30 for more information.

PUMP CURVE IIIB FOR HYDRONIC PACKAGE SINGLE PUMP (Fresh Water)

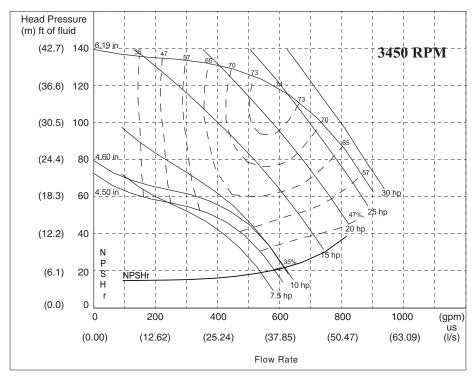


LEGEND
NPSHr — Net Positive Suction Head (Pressure) Required

Selection procedure (cont)



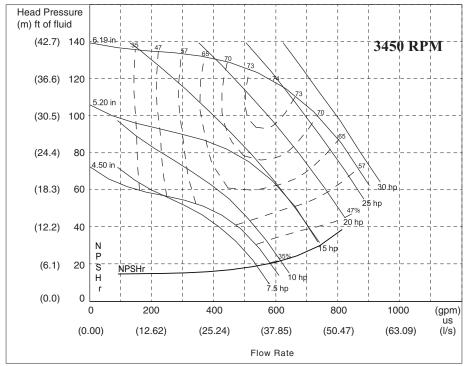




LEGEND
NPSHr — Net Positive Suction Head (Pressure) Required

NOTE: Refer to the 30RB nomenclature on page 5 for option identification. Refer to the Pump Impeller Sizes table on page 30 for more information.

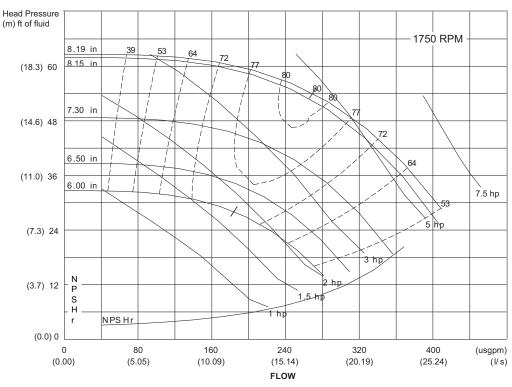
PUMP CURVE IVB FOR HYDRONIC PACKAGE SINGLE PUMP (Fresh Water)



LEGEND
NPSHr — Net Positive Suction Head (Pressure) Required



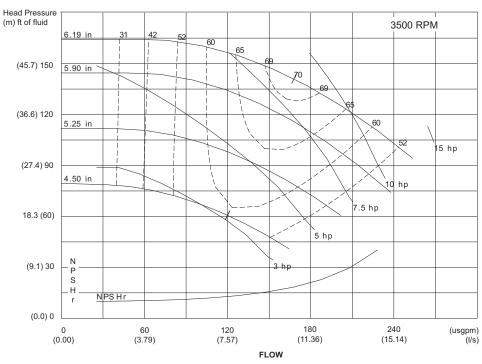




LEGEND
NPSHr — Net Positive Suction Head (Pressure) Required

NOTE: Refer to the 30RB nomenclature on page 5 for option identification. Refer to the Pump Impeller Sizes table on page 30 for more information.

PUMP CURVE VI FOR HYDRONIC PACKAGE DUAL PUMP (Fresh Water)

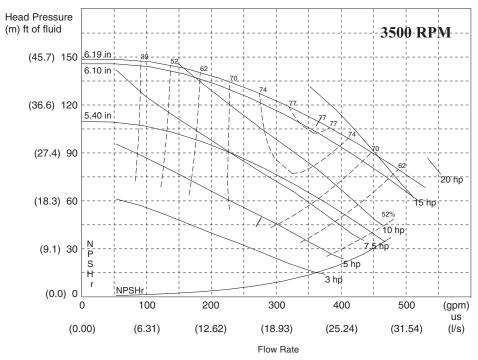


LEGEND
NPSHr — Net Positive Suction Head (Pressure) Required

Selection procedure (cont)



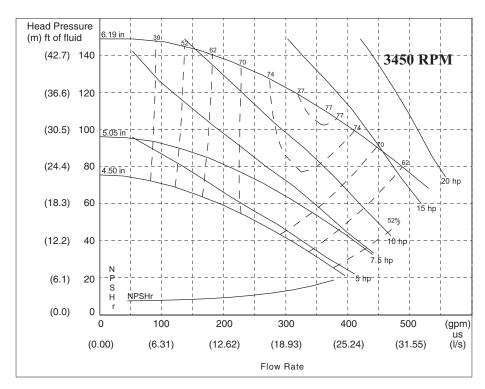




LEGEND
NPSHr — Net Positive Suction Head (Pressure) Required

NOTE: Refer to the 30RB nomenclature on page 5 for option identification. Refer to the Pump Impeller Sizes table on page 30 for more information.

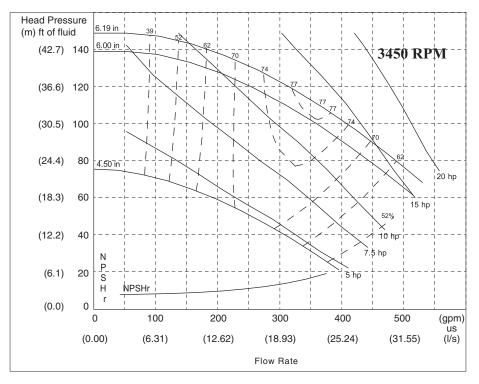
PUMP CURVE VIIB FOR HYDRONIC PACKAGE DUAL PUMP (Fresh Water)



LEGEND
NPSHr — Net Positive Suction Head (Pressure) Required



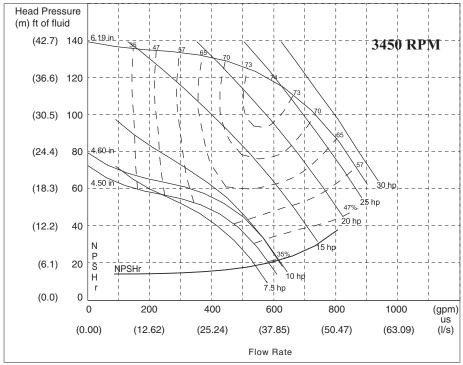




LEGEND NPSHr — Net Positive Suction Head (Pressure) Required

NOTE: Refer to the 30RB nomenclature on page 5 for option identification. Refer to the Pump Impeller Sizes table on page 30 for more information.

PUMP CURVE VIIIA FOR HYDRONIC PACKAGE DUAL PUMP (Fresh Water)



LEGEND

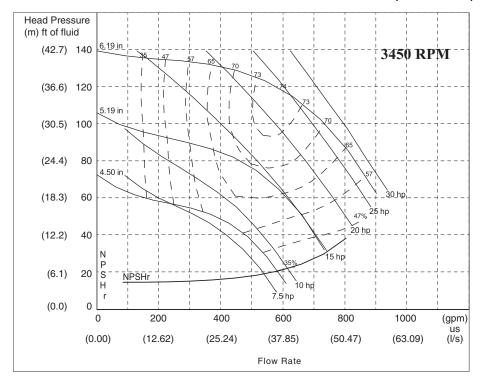
NPSHr — Net Positive Suction Head (Pressure) Required

NOTE: Refer to the 30RB nomenclature on page 5 for option identification. Refer to the Pump Impeller Sizes table on page 42 for more information.

Selection procedure (cont)





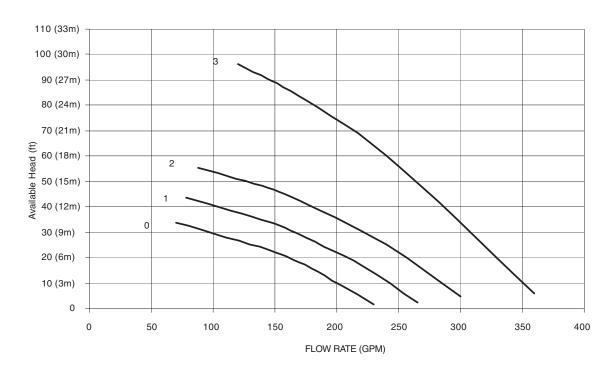


LEGEND
NPSHr — Net Positive Suction Head (Pressure) Required

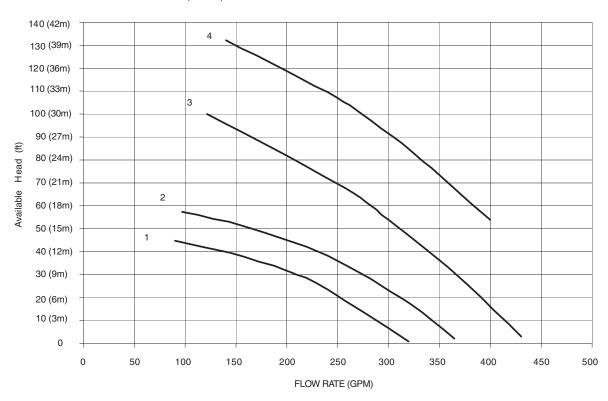
NOTE: Refer to the 30RB nomenclature on page 5 for option identification. Refer to the Pump Impeller Sizes table on page 30 for more information.







30RB080, 090, 100 — SINGLE PUMP ENVELOPE CURVES

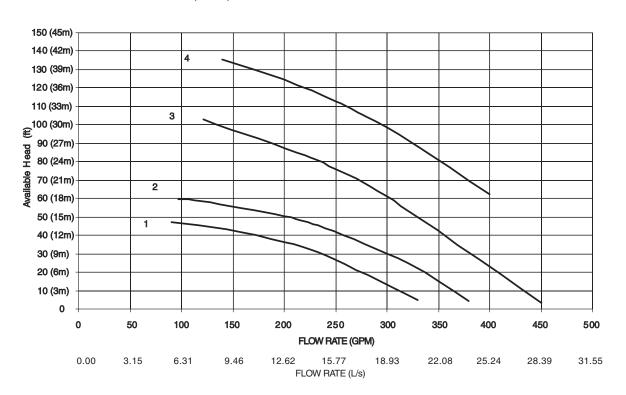


NOTE: Refer to the 30RB nomenclature on page 5 for pump envelope curve option identification.

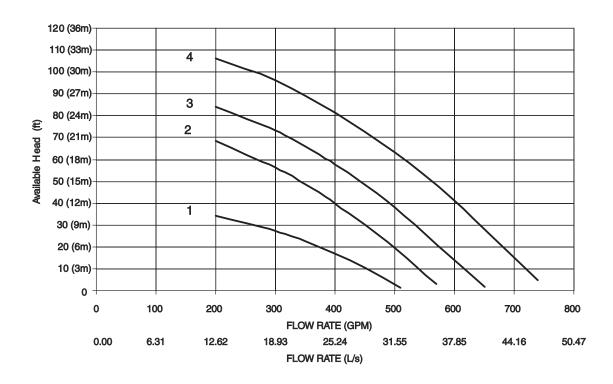
Selection procedure (cont)





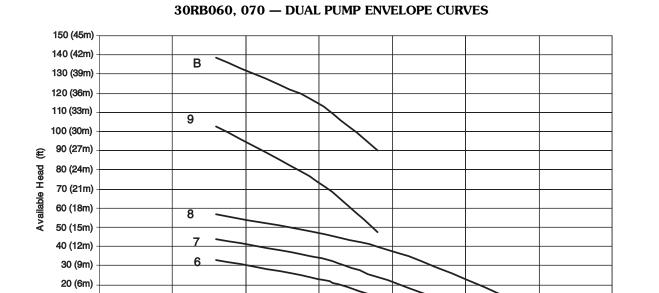


30RB150, 160, 170, 190 — SINGLE PUMP ENVELOPE CURVES



NOTE: Refer to the 30RB nomenclature on page 5 for pump envelope curve option identification.





30RB080, 090, 100 — DUAL PUMP ENVELOPE CURVES

150

9.46

200

12.62

FLOW RATE (GPM)

FLOW RATE (L/s)

250

15.77

300

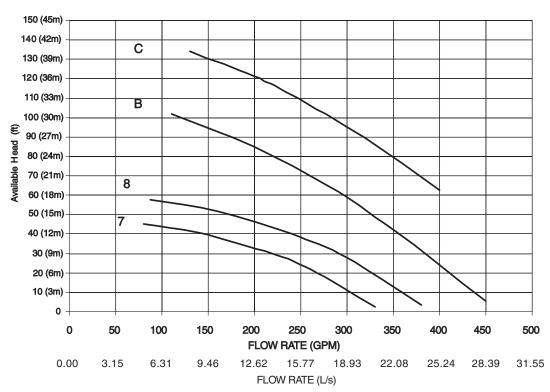
18.93

350

22.08

100

6.31



NOTE: Refer to the 30RB nomenclature on page 5 for pump envelope curve option identification.

10 (3m) 0

0

0.00

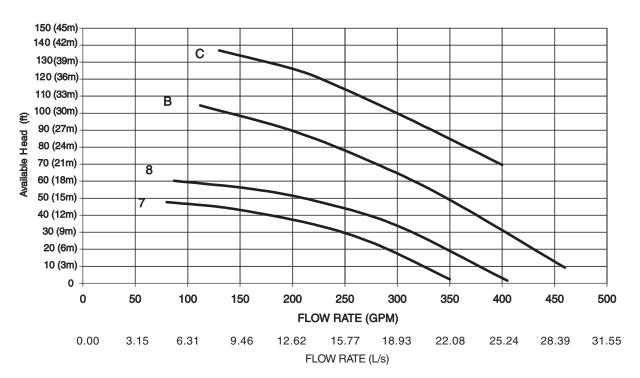
50

3.15

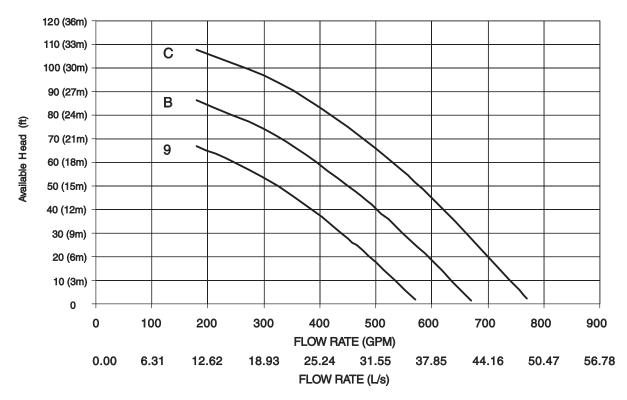
Selection procedure (cont)







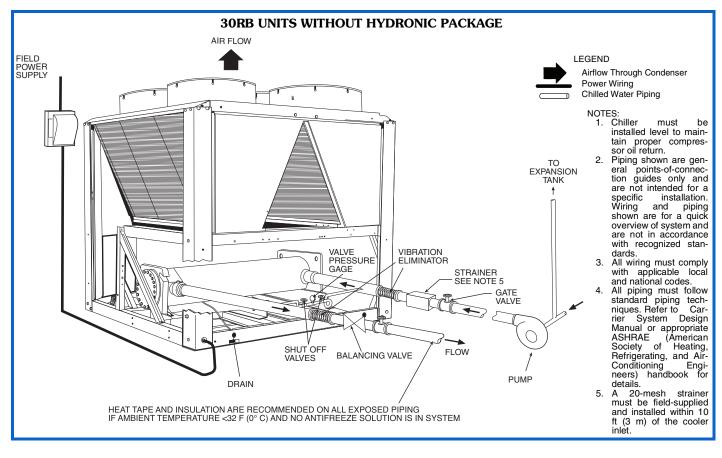
30RB150, 160, 170, 190 — DUAL PUMP ENVELOPE CURVES

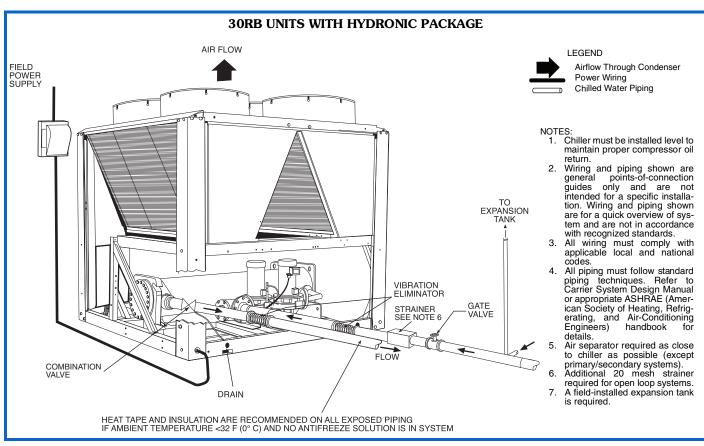


NOTE: Refer to the 30RB nomenclature on page 5 for pump envelope curve option identification.

Typical piping and wiring

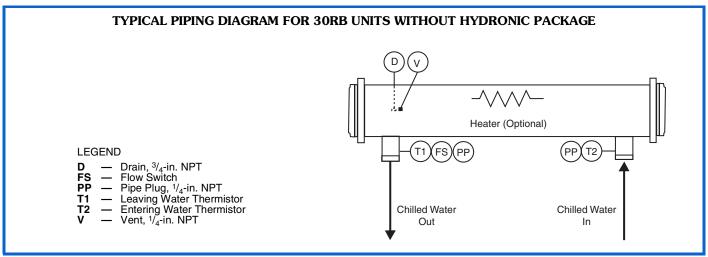


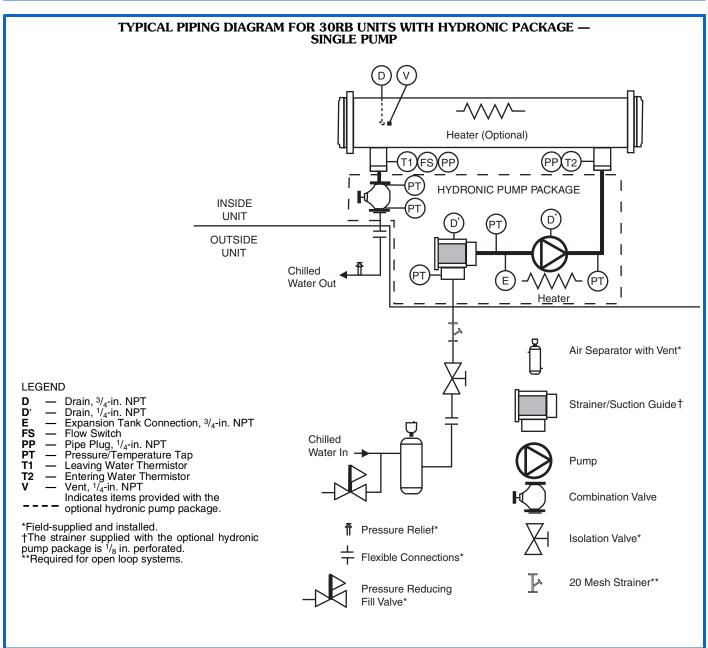




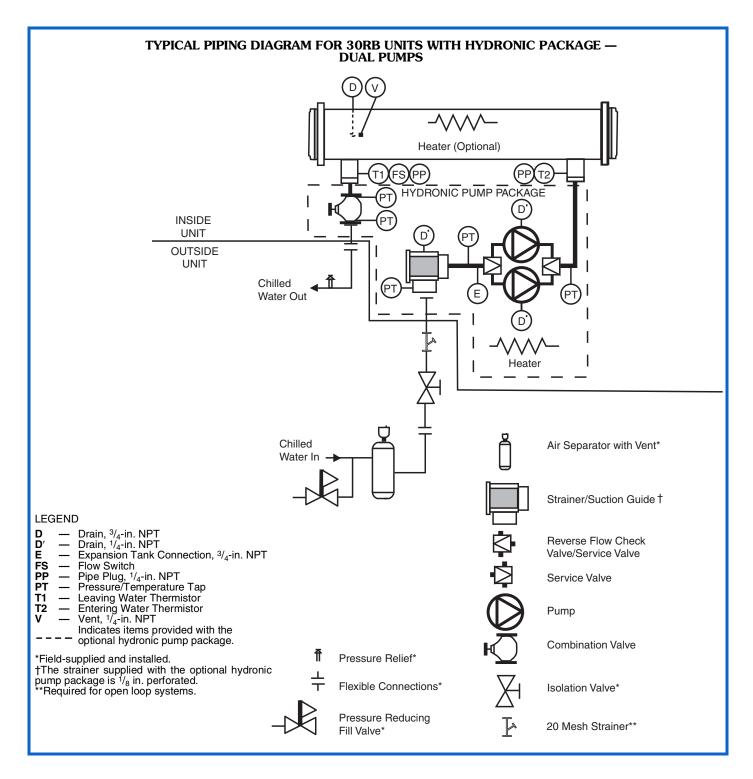
Typical piping and wiring (cont)











Electrical data



30RB060-190 ELECTRICAL DATA — SINGLE POINT UNITS

	UNIT	VOLTAGE	.	NO	HYDRON	IC PACKA	GE	3 HP PUMP, 1750 RPM			M	5	HP PUMP	, 1750 RP	M
30RB		Sup	plied	MCA	MOCP	ICF	Rec	MCA	MOCP	ICF	Rec	MCA	MOCP	ICF	Rec
UNIT SIZE	V-Hz (3 Ph)	Min	Max	XL	XL	XL	Fuse Size	XL	XL	XL	Fuse Size	XL	XL	XL	Fuse Size
	208/230-60	187	253	291.5	350	682.8	350	300.6	350	693.6	350	306.9	350	700.5	350
060	380-60	342	418	150.9	175	362.9	175	156.0	175	368.8	175	159.0	175	372.6	175
000	460-60	414	506	127.9	150	302.0	150	132.1	150	306.9	150	135.0	150	310.0	150
	575-60	518	633	102.4	125	244.7	110	105.7	125	248.6	125	107.8	125	251.1	125
	208/230-60	187	253	334.7	400	777.0	400	343.8	400	787.8	400	350.1	400	794.7	400
070	380-60	342	418	175.5	200	428.8	200	108.8	225	434.7	200	183.6	225	438.5	200
0.0	460-60	414	506	147.9	175	355.9	175	152.1	175	360.8	175	155.0	175	363.9	175
	575-60	518	633	119.8	150	287.4	150	123.1	150	291.3	150	125.2	150	293.8	150
	208/230-60	187	253	366.5	400	757.8	400	_	_		_	381.9	450	775.5	450
080	380-60	342	418	189.3	225	401.3	200	_	_	_	_	197.4	225	411.0	225
000	460-60	414	506	160.6	175	334.7	175	_	_	_	_	167.7	200	342.7	200
	575-60	518	633	128.6	150	270.9	150	_	_	1	_	134.0	150	277.3	150
	208/230-60	187	253	433.6	500	875.9	500	_			_	449.0	500	893.6	500
090	380-60	342	418	248.7	250	502.1	250	_	_	_	_	235.0	250	490.0	250
030	460-60	414	506	191.4	225	399.4	225	_	_	_	_	198.5	225	407.4	225
	575-60	518	633	154.6	175	322.2	175	_	_		_	160.0	175	328.6	175
	208/230-60	187	253	472.0	500	914.3	500	_			_	487.4	500	932.0	500
100	380-60	342	418	248.7	250	502.1	250	_	_	_	_	256.8	300	511.8	300
100	460-60	414	506	209.2	250	417.2	225	_	_	_	_	216.3	250	425.2	250
	575-60	518	633	170.0	200	337.6	200	_	_	1	_	175.4	200	344.0	200
	208/230-60	187	253	508.6	600	950.9	600	_			_	524.0	600	968.6	600
110	380-60	342	418	265.3	300	518.7	300	_	_	_	_	273.4	300	528.4	300
110	460-60	414	506	224.1	250	432.1	250	_	_	_	_	231.2	250	440.1	250
	575-60	518	633	180.8	200	348.4	200	_	_	1	_	186.2	200	354.8	200
	208/230-60	187	253	578.1	600	1020.4	600	_			_	593.5	600	1038.1	600
120	380-60	342	418	304.6	350	538.0	350	_	_	_	_	312.7	350	567.6	350
.20	460-60	414	506	256.2	300	464.2	300	_	_	_	_	263.3	300	472.2	300
	575-60	518	633	208.2	225	325.8	225	_	_	1	_	213.6	225	382.2	225
	208/230-60	187	253	626.7	700	1068.9	700	_		_	_	642.1	700	1086.6	700
130	380-60	342	418	327.7	350	581.1	350	_	_	_	_	335.8	350	590.8	350
100	460-60	414	506	276.5	300	484.5	300	_	_	_	_	283.6	300	492.5	300
	575-60	518	633	223.3	250	391.0	250	_	_	_	_	228.7	250	397.4	250
	208/230-60	187	253	684.3	700	1126.5	700	_	_	_	_	699.7	700	1144.2	700
150	380-60	342	418	360.4	400	613.8	400	_	_	_	_	368.5	400	623.5	400
	460-60	414	506	303.2	350	511.2	350	_	_	_	_	310.3	350	519.2	350
	575-60	518	633	246.4	250	414.1	250	_	_		_	251.8	300	420.5	300
	208/230-60	187	253	744.8	800	1187.0	800	_	_	_	_	760.2	800	1204.7	800
160	380-60	342	418	390.1	400	643.5	400	_	_	_	_	398.2	400	653.2	400
	460-60	414	506	328.9	350	536.9	350	_	_	_	_	336.0	350	544.9	350
	575-60	518	633	265.9	300	433.5	300	_	_	_	_	271.3	300	439.9	300
	208/230-60	187	253	802.4	1000	1244.6	1000	_		_	_	817.8	1000	1262.3	1000
170	380-60	342	418	422.8	450	676.2	450	_	_	_	_	430.9	450	685.9	450
	460-60	414	506	355.6	400	563.6	400	_	_	_	_	362.7	400	571.6	400
	575-60	518	633	289.0	300	456.6	300	_	_	_	_	294.4	300	463.0	300
	208/230-60	187	253	920.5	1000	1362.7	1000		-	_	-	935.9	1000	1380.4	1000
190	380-60	342	418	485.2	500	738.5	500	_	-	_	_	493.3	500	748.2	500
130	460-60	414	506	408.0	450	616.0	450	_	-	_	_	415.1	450	624.0	450
	575-60	518	633	331.5	350	499.1	350	_	_	_	_	336.9	350	505.5	350

LEGEND

Instantaneous Current Flow MCA Minimum Circuit AmpsMaximum Overcurrent Protection Across-the-Line Start

NOTES:

- Units are suitable for use on electrical systems where voltage supplied to the unit
- Units are suitable for use on electrical systems where voltage supplied to the unit terminals is not below or above the listed minimum and maximum limits. Maximum allowable phase imbalance is: voltage, 2%; amps 10%.

 All units have single point primary power connection. (Each unit requires its own power supply.) Main power must be supplied from a field-supplied disconnect. Cooler heater is wired into the control circuit so it is always operable as long as the power supply disconnect is on, even if any safety device is open. For MCA that is less than or equal to 380 amps, 3 conductors are required. For MCA between 381 and 760 amps, 6 conductors are required. For MCA between 761 and 1140 amps, 9 conductors are required. For MCA between 1141 and 1520 amps, 12 conductors are required. Calculation of conductors required is based on 75°C copper wire. Wiring for main field supply must be rated 75°C minimum. Use copper for all units. a. Incoming wire size range for the terminal block is no. 4 AWG (American Wire
- a. Incoming wire size range for the terminal block is no. 4 AWG (American Wire Gage) to 500 kcmil.

- b. Incoming wire size range of non-fused disconnect with MCA up to 599.9 amps is 3/0 to 500 kcmil.
- Incoming wire size range of non-fused disconnect with MCA from 600 to 799.9 amps is 1/0 to 500 kcmil.

- amps is 1/0 to 500 kcmil.

 d. Incoming wire size range of non-fused disconnect with MCA from 800 to 1199.9 amps is 250 kcmil to 500 kcmil.

 Hydronic pump packages are not available as a factory-installed option for units 30RB210-300 and 30RB060-190 with high SCCR option.

 Power draw includes both crankcase heaters and cooler heaters. Each compressor has a crankcase heater which draws 56 watts of power. Units have 1 (060-150) or 2 (160-300) cooler heaters, 825 watts each.
- 8. 30RB chillers with Greenspeed® intelligence are not available in size 060 and 070.





30RB060-190 ELECTRICAL DATA — SINGLE POINT UNITS (cont)

	UNIT \	/OLTAGI	E	7.5 H	IP PUMP,	1750/3450	RPM	10	O HP PUME	, 3450 RI	PM	1:	5 HP PUM	P, 3450 RI	PM
30RB		Sup	plied	MCA	MOCP	ICF	Rec	MCA	MOCP	ICF	Rec	MCA	MOCP	ICF	Rec
UNIT SIZE	V-Hz (3 Ph)	Min	Max	XL	XL	XL	Fuse Size	XL	XL	XL	Fuse Size	XL	XL	XL	Fuse Size
	208/230-60	187	253	313.5	350	708.5	350	316.5	350	716.4	350	_	_	_	_
060	380-60	342	418	163.2	200	376.9	175	164.9	200	381.3	175	_	_	_	_
000	460-60	414	506	138.0	150	313.6	150	139.4	150	317.2	150	_	_	_	_
	575-60	518	633	110.5	125	254.0	125	111.6	125	256.9	125	_	_	_	_
	208/230-60	187	253	356.7	450	802.7	400	359.7	450	810.6	400	_	_	_	_
070	380-60	342	418	187.8	225	442.8	225	189.5	225	447.2	225	_	_	_	_
070	460-60	414	506	158.0	175	367.5	175	159.4	200	371.1	175	_	_	_	_
	575-60	518	633	127.9	150	296.7	150	129.0	150	299.6	150	_	_	_	_
	208/230-60	187	253	388.5	450	783.5	450	391.5	450	791.4	450	403.2	450	807.6	450
080	380-60	342	418	201.6	225	415.3	225	203.3	225	419.7	225	210.3	225	428.5	225
080	460-60	414	506	170.7	200	346.3	200	172.1	200	349.9	200	177.6	200	357.2	200
	575-60	518	633	136.7	150	280.2	150	137.8	150	283.1	150	142.6	150	288.9	150
	208/230-60	187	253	455.6	500	901.6	500	458.6	500	909.5	500	470.3	500	925.7	500
090	380-60	342	418	239.2	250	494.3	250	240.9	250	498.7	250	247.9	250	507.5	300
090	460-60	414	506	201.5	225	411.0	225	202.9	225	414.6	225	208.4	250	421.9	225
	575-60	518	633	162.7	175	331.5	175	163.8	175	334.4	175	168.6	200	340.2	200
	208/230-60	187	253	494.0	500	940.0	500	497.0	500	947.9	500	508.7	600	964.1	600
400	380-60	342	418	261.0	300	516.1	300	262.7	300	520.5	300	269.7	300	529.3	300
100	460-60	414	506	219.3	250	428.8	250	220.7	250	432.4	250	226.2	250	439.7	250
	575-60	518	633	178.1	200	346.9	200	179.2	200	349.8	200	184.0	200	355.6	200
	208/230-60	187	253	530.6	600	976.6	600	533.6	600	984.5	600	545.3	600	1000.7	600
440	380-60	342	418	277.6	300	532.7	300	279.3	300	537.1	300	286.3	300	545.9	300
110	460-60	414	506	234.2	250	443.7	250	235.6	250	447.3	250	241.1	250	454.6	250
	575-60	518	633	188.9	200	357.7	200	190.0	200	360.6	200	194.8	225	366.4	225
	208/230-60	187	253	600.1	700	1046.1	700	603.1	700	1054.0	700	614.8	700	1070.2	700
400	380-60	342	418	316.9	350	572.0	350	318.6	350	576.4	350	325.6	350	585.2	350
120	460-60	414	506	266.3	300	425.8	300	267.7	300	479.4	300	273.2	300	486.7	300
	575-60	518	633	216.3	225	385.1	225	217.4	250	392.4	250	222.2	250	393.8	250
	208/230-60	187	253	648.7	700	1094.6	700	651.7	700	1102.5	700	663.4	700	1118.7	700
	380-60	342	418	340.0	350	595.1	350	341.7	350	599.5	350	348.7	350	608.3	400
130	460-60	414	506	286.6	300	496.1	300	288.0	300	499.7	300	293.5	300	507.0	300
	575-60	518	633	231.4	250	400.3	250	232.5	250	403.2	250	237.3	250	409.0	250
	208/230-60	187	253	706.3	800	1152.2	800	709.3	800	1160.1	800	721.0	800	1176.3	800
	380-60	342	418	372.7	400	627.8	400	374.4	400	632.2	400	381.4	400	641.0	400
150	460-60	414	506	313.3	350	522.8	350	314.7	350	526.4	350	320.2	350	533.7	350
	575-60	518	633	254.5	300	423.4	300	255.6	300	426.3	300	260.4	300	432.1	300
	208/230-60	187	253	766.8	800	1212.7	800	769.8	800	1220.6	800	781.5	800	1236.8	800
	380-60	342	418	402.4	450	657.5	450	404.1	450	661.9	450	411.1	450	670.7	450
160	460-60	414	506	339.0	350	548.5	350	340.4	350	552.1	350	345.9	350	559.4	350
	575-60	518	633	274.0	300	442.8	300	275.1	300	445.7	300	279.9	300	451.5	300
	208/230-60	187	253	824.4	1000	1270.3	1000	827.4	1000	1278.2	1000	839.1	1000	1294.4	1000
	380-60	342	418	435.1	450	690.2	450	436.8	450	694.6	450	443.8	450	703.4	500
170	460-60	414	506	365.7	400	575.2	400	367.1	400	578.8	400	372.6	400	586.1	400
	575-60	518	633	297.1	300	465.9	300	298.2	300	468.8	300	303.0	350	474.6	350
	208/230-60	187	253	942.5	1000	1388.4	1000	945.5	1000	1396.3	1000	957.2	1000	1412.5	1000
	380-60	342	418	497.5	500	752.5	500	499.2	500	756.9	600	506.2	600	765.7	600
190	460-60	414	506	418.1	450	627.6	450	419.5	450	631.2	450	425.0	450	638.5	450
	575-60	518	633	339.6	350	508.4	350	340.7	350	511.3	350	345.5	350	517.1	350
	373-00	510	000	000.0	000	500.∓	000	070.7	000	011.0	550	0-0.0	000	017.1	000

LEGEND

ICF — Instantaneous Current Flow
MCA — Minimum Circuit Amps
MOCP — Maximum Overcurrent Protection
XL — Across-the-Line Start

NOTES:

- Units are suitable for use on electrical systems where voltage supplied to the unit

- Units are suitable for use on electrical systems where voltage supplied to the unit terminals is not below or above the listed minimum and maximum limits. Maximum allowable phase imbalance is: voltage, 2%; amps 10%.

 All units have single point primary power connection. (Each unit requires its own power supply.) Main power must be supplied from a field-supplied disconnect. Cooler heater is wired into the control circuit so it is always operable as long as the power supply disconnect is on, even if any safety device is open. For MCA that is less than or equal to 380 amps, 3 conductors are required. For MCA between 381 and 760 amps, 6 conductors are required. For MCA between 761 and 1140 amps, 9 conductors are required. For MCA between 1141 and 1520 amps, 12 conductors are required. Calculation of conductors required is based on 75°C copper wire. Wiring for main field supply must be rated 75°C minimum. Use copper for all units. a. Incoming wire size range for the terminal block is no. 4 AWG (American Wire
- Incoming wire size range for the terminal block is no. 4 AWG (American Wire Gage) to 500 kcmil.

- b. Incoming wire size range of non-fused disconnect with MCA up to 599.9 amps is $3\!/0$ to 500 kcmil.
- c. Incoming wire size range of non-fused disconnect with MCA from 600 to 799.9 amps is 1/0 to 500 kcmil.
 d. Incoming wire size range of non-fused disconnect with MCA from 800 to 1199.9 amps is 250 kcmil to 500 kcmil.
- Hydronic pump packages are not available as a factory-installed option for units 30RB210-300 and 30RB060-190 with high SCCR option. Power draw includes both crankcase heaters and cooler heaters. Each compressional cooler heaters.
- sor has a crankcase heater which draws 56 watts of power. Units have 1 (060-150) or 2 (160-300) cooler heaters, 825 watts each.
- 30RB chillers with Greenspeed intelligence are not available in size 060 and 070.



us _{208/230} 460 575 v only

Electrical data (cont)



30RB210-300 ELECTRICAL DATA — SINGLE POINT UNITS

	UNI	VOLTAGE			NO HYDRON	IIC PACKAGE	
30RB UNIT SIZE	V H= (2 Db)	Sup	plied	MCA	MOCP	ICF	Rec Fuse
OIIII OILL	V-Hz (3 Ph)	Min	Max	XL	XL	XL	Size
	208/230-60	187	253	_	_	_	_
210	380-60	342	418	501.8	600	755.1	600
210	460-60	414	506	422.9	450	630.9	450
	575-60	518	633	342.3	350	509.9	350
	208/230-60	187	253	_	_	_	_
205	380-60	342	418	534.5	600	787.8	600
225	460-60	414	506	449.6	450	657.6	450
	575-60	518	633	365.4	400	533.0	400
	208/230-60	187	253	_	_	_	_
250	380-60	342	418	596.8	600	850.2	600
250	460-60	414	506	502.0	600	710.0	600
	575-60	518	633	408.0	450	575.6	450
	208/230-60	187	253	_	_	_	_
275	380-60	342	418	659.2	700	912.6	700
2/5	460-60	414	506	554.4	600	762.4	600
	575-60	518	633	450.5	500	618.1	500
	208/230-60	187	253	_	_	_	_
300	380-60	342	418	721.6	800	975.0	800
300	460-60	414	506	606.8	700	814.8	700
	575-60	518	633	493.0	500	660.7	500

LEGEND

ICF — Instantaneous Current Flow
MCA — Minimum Circuit Amps
MOCP— Maximum Overcurrent Protection

Across-the-Line Start

- 1. Units are suitable for use on electrical systems where voltage supplied to the unit terminals is not below or above the listed minimum and maximum limits. Maximum allowable phase imbalance is: voltage, 2%; amps 10%.
- 2. All units have single point primary power connection. (Each unit requires its own power supply.) Main power must be supplied from a field-supplied disconnect.
- Cooler heater is wired into the control circuit so it is always operable as long as the power supply disconnect is on, even if any safety device is open.
- For MCA that is less than or equal to 380 amps, 3 conductors are required.
 - For MCA between 381 and 760 amps, 6 conductors are required. For MCA between 761 and 1140 amps, 9 conductors are required. For MCA between 1141 and 1520 amps, 12 conductors are
 - Calculation of conductors required is based on 75°C copper wire.

- 5. Wiring for main field supply must be rated 75°C minimum. Use copper for all units.
 - a. Incoming wire size range for the terminal block is no. 4 AWG (American Wire Gage) to 500 kcmil.
 - b. Incoming wire size range of non-fused disconnect with MCA up to 599.9 amps is 3/0 to 500 kcmil.
 - c. Incoming wire size range of non-fused disconnect with MCA from 600 to 799.9 amps is 1/0 to 500 kcmil.
 - d. Incoming wire size range of non-fused disconnect with MCA from 800 to 1199.9 amps is 250 kcmil to 500 kcmil.
- 6. Hydronic pump packages are not available as a factory-installed option for units 30RB210-300 and 30RB060-190 with high SCCR
- Power draw includes both crankcase heaters and cooler heaters. Each compressor has a crankcase heater which draws 56 watts of power. Units have 1 (060-150) or 2 (160-300) cooler heaters, 825
- 30RB chillers with Greenspeed intelligence are not available in size 060 and 070.





30RB060-190 ELECTRICAL DATA — DUAL POINT UNITS

	UNIT VC	LTAG	Ε		NO HYDRON	IC PACKAGE		3 HP PUMP, 1750 RPM				į	HP PUME	P, 1750 RPM	
30RB	V-Hz	Sup	plied	MCA	MOCP	ICF	Rec	MCA	MOCP	ICF	Rec	MCA	MOCP	ICF	Rec
UNIT SIZE	(3 Ph)	Min	Max	XL	XL	XL	Fuse Size	XL	XL	XL	Fuse Size	XL	XL	XL	Fuse Size
060	208/230-60 380-60 460-60 575-60	187 342 414 518	253 418 506 633	168.8/141.5 86.4/ 74.1 73.6/ 62.5 59.0/ 50.0	225/200 110/110 100/ 90 80/ 70	560.0/532.8 298.4/286.1 247.7/236.6 201.2/192.3	200/175 100/ 90 90/ 80 70/ 60	177.9/141.5 91.5/ 74.1 77.8/ 62.5 62.3/ 50.0	250/200 125/110 110/ 90 80/ 70	570.8/532.8 304.3/286.1 252.6/236.6 205.1/192.3	200/175 110/ 90 90/ 80 70/ 60	184.2/141.5 94.5/ 74.1 80.7/ 62.5 64.4/ 50.0	250/200 125/110 110/ 90 90/ 70	577.7/532.8 308.1/286.1 255.7/236.6 207.6/192.3	225/175 110/ 90 90/ 80 80/ 60
070	208/230-60 380-60 460-60 575-60	187 342 414 518	253 418 506 633	212.0/141.5 110.9/ 74.1 93.6/ 62.5 76.3/ 50.0	300/200 150/110 125/ 90 110/ 70	654.2/532.8 364.3/286.1 301.6/236.6 243.9/192.3	250/175 125/ 90 110/ 80 90/ 60	221.1/141.5 116.0/ 74.1 97.8/ 62.5 79.6/ 50.0	300/200 150/110 125/ 90 110/ 70	665.0/532.8 370.2/286.1 306.5/236.6 247.8/192.3	250/175 150/ 90 110/ 80 90/ 60	227.4/141.5 119.0/ 74.1 100.7/ 62.5 81.7/ 50.0	300/200 150/110 125/ 90 110/ 70	671.9/532.8 374.0/286.1 309.6/236.6 250.3/192.3	300/175 150/ 90 125/ 80 100/ 60
080	208/230-60 380-60 460-60 575-60	187 342 414 518	253 418 506 633	216.5/168.8 112.5/ 86.4 95.2/ 73.6 76.2/ 59.0	250/225 150/110 125/100 100/ 80	607.8/560.0 324.5/298.4 269.3/247.7 218.5/201.2	250/200 125/100 110/ 90 90/ 70	_ _ _ _		_ _ _ _	_ _ _	231.9/168.8 120.6/ 86.4 102.3/ 73.6 81.6/ 59.0	300/225 150/110 125/100 100/ 80	625.5/560.0 334.2/298.4 277.3/247.7 224.9/201.2	300/200 150/100 125/ 90 90/ 70
090	208/230-60 380-60 460-60 575-60	187 342 414 518	253 418 506 633	283.6/168.8 150.1/ 86.4 126.0/ 73.6 102.2/ 59.0	350/225 175/110 150/100 125/ 80	725.9/560.0 403.5/298.4 334.0/247.7 269.8/201.2	350/200 175/100 150/ 90 125/ 70		1111			299.0/168.8 158.2/ 86.4 133.1/ 73.6 107.6/ 59.0	350/225 200/110 150/100 125/ 80	743.5/560.0 413.2/298.4 342.0/247.7 276.2/201.2	350/200 175/100 150/ 90 125/ 70
100	208/230-60 380-60 460-60 575-60	187 342 414 518	253 418 506 633	283.6/212.0 150.1/110.9 126.0/ 93.6 102.2/ 76.3	350/300 175/150 150/125 125/110	725.9/654.2 403.5/364.3 334.0/301.6 269.8/243.9	350/250 175/125 150/110 125/ 90	_ _ _ _		_ _ _ _		299.0/212.0 158.2/110.9 133.1/ 93.6 107.6/ 76.3	350/300 200/150 150/125 125/110	743.5/654.2 413.2/364.3 342.0/301.6 276.2/243.9	350/250 175/125 150/110 125/ 90
110	208/230-60 380-60 460-60 575-60	187 342 414 518	253 418 506 633	283.6/243.8 150.1/124.8 126.0/106.3 102.2/ 85.2	350/300 175/150 150/125 125/110	725.9/635.0 403.5/336.8 334.0/280.4 269.8/227.4	350/300 175/150 150/125 125/100		1111	 - -		299.0/243.8 158.2/124.8 133.1/106.3 107.6/ 85.2	350/300 200/150 150/125 125/110	743.5/635.0 413.2/336.8 342.0/280.4 276.2/227.4	350/300 175/150 150/125 125/100
120	208/230-60 380-60 460-60 575-60	187 342 414 518	253 418 506 633	295.5/306.2 156.7/160.2 131.4/135.2 106.5/110.2	350/400 200/200 150/175 125/125	737.8/748.4 410.1/413.6 339.4/343.2 274.1/277.8	350/350 175/175 150/150 125/125					310.9/306.2 164.8/160.2 138.5/135.2 111.9/110.2	400/400 200/200 175/175 125/125	755.5/748.4 419.7/413.6 347.4/343.2 280.5/277.8	350/350 200/175 150/150 125/125
130	208/230-60 380-60 460-60 575-60	187 342 414 518	253 418 506 633	401.7/243.8 212.5/124.8 178.4/106.3 144.7/ 85.2	450/300 250/150 200/125 175/110	843.9/635.0 465.9/336.8 386.4/280.4 312.4/227.4	450/300 225/150 200/125 175/100	_ _ _ _		_ _ _ _		417.1/243.8 220.6/124.8 185.5/106.3 150.1/ 85.2	500/300 250/150 225/125 175/110	861.6/635.0 475.6/336.8 394.4/280.4 318.8/227.4	450/300 250/150 200/125 175/100
150	208/230-60 380-60 460-60 575-60	187 342 414 518	253 418 506 633	401.7/306.2 212.5/160.2 178.4/135.2 144.7/110.2	450/400 250/200 200/175 175/125	843.9/748.4 465.9/413.6 386.4/343.2 312.4/277.8	450/350 225/175 200/150 175/125	_ _ _ _		_ _ _ _		417.1/306.2 220.6/160.2 185.5/135.2 150.1/110.2	500/400 250/200 225/175 175/125	861.6/748.4 475.6/413.6 394.4/343.2 318.8/277.8	450/350 250/175 200/150 175/125
160	208/230-60 380-60 460-60 575-60	187 342 414 518	253 418 506 633	519.8/243.8 274.9/124.8 230.8/106.3 187.3/ 85.2	600/300 300/150 250/125 200/110	962.0/635.0 528.3/336.8 438.8/280.4 354.9/227.4	600/300 300/150 250/125 200/100	_ _ _ _		_ _ _ _		535.2/243.8 283.0/124.8 237.9/106.3 192.7/ 85.2	600/300 300/150 250/125 225/110	979.7/635.0 538.0/336.8 446.8/280.4 361.3/227.4	600/300 300/150 250/125 225/100
170	208/230-60 380-60 460-60 575-60	187 342 414 518	253 418 506 633	519.8/306.2 274.9/160.2 230.8/135.2 187.3/110.2	600/400 300/200 250/175 200/125	962.0/748.4 528.3/413.6 438.8/343.2 354.9/277.8	600/350 300/175 250/150 200/125	_ _ _ _		_ _ _ _	_ _ _	535.2/306.2 283.0/160.2 237.9/135.2 192.7/110.2	600/400 300/200 250/175 225/125	979.7/748.4 538.0/413.6 446.8/343.2 361.3/277.8	600/350 300/175 250/150 225/125
190	208/230-60 380-60 460-60 575-60	187 342 414 518	253 418 506 633	543.7/400.4 288.0/209.5 241.6/176.8 195.9/144.1	600/450 300/250 250/200 225/175	985.9/842.6 541.3/462.9 449.6/384.8 363.5/311.7	600/450 300/225 250/200 225/175	_ _ _ _	_ _ _ _	_ _ _ _	_ _ _ _	559.1/400.4 296.1/209.5 248.7/176.8 201.3/144.1	600/450 300/250 250/200 225/175	1003.6/842.6 551.0/462.9 457.6/384.8 369.9/311.7	600/450 300/225 250/200 225/175

LEGEND

ICF — Instantaneous Current Flow (Ckt1/Ckt2)

MCA — Minimum Circuit Amps (Ckt1/Ckt2) MOCP — Maximum Overcurrent Protection (Ckt1/Ckt2)

XL — Across-the-Line Start

NOTES:

- Units are suitable for use on electrical systems where voltage supplied to the unit terminals is not below or above the listed minimum and maximum limits. Maximum allowable phase imbalance is: voltage, 2%; amps 10%.
 Control power is derived from main power. No separate control power connection is required.
- 3. Cooler heater is wired into the control circuit so it is always operable as long as the power supply disconnect is on, even if any safety device is open.

 4. For MCA that is less than or equal to 380 amps, 3 conductors are required.
- - For MCA between 381 and 760 amps, 6 conductors are required.
 - For MCA between 761 and 1140 amps, 9 conductors are required. For MCA between 1141 and 1520 amps, 12 conductors are required.
 - Calculation of conductors required is based on 75 C copper wire.

- Wiring for main field supply must be rated 75 C minimum. Use copper for all units.
 a. Incoming wire size range for the terminal block is no. 4 AWG (American Wire Gage) to 500 kcmil.
 - b. Incoming wire size range of non-fused disconnect with MCA up to 599.9 amps is 3/0 to 500 kcmil.

 - 500 kcmil.

 c. Incoming wire size range of non-fused disconnect with MCA from 600 to 799.9 amps is 1/0 to 500 kcmil.

 d. Incoming wire size range of non-fused disconnect with MCA from 800 to 1199.9 amps is 250 kcmil to 500 kcmil.
- 6. Hydronic pump packages are not available as a factory-installed option for units 30RB210-300.
- Power draw includes both crankcase heaters and cooler heaters (where used). Each compressor has a crankcase heater which draws 56 watts of power. Units ordered with the cooler heater option have 1 (060-150) or 2 (160-300) cooler heaters, 825 watts each.
 30RB chillers with Greenspeed[®] technology are not available in size 060 and 070.



Electrical data (cont)



30RB060-190 ELECTRICAL DATA — DUAL POINT UNITS (cont)

	UNIT VO	LTAG	=	7.5	HP PUMP,	1750/3450 RPI	И	10 HP PUMP, 3450 RPM					15 HP PUM	P, 3450 RPM	
30RB UNIT	V-Hz (3 Ph)	Sup	olied	MCA	MOCP	ICF	Rec Fuse	MCA	MOCP	ICF	Rec Fuse	MCA	MOCP	ICF	Rec Fuse
SIZE	V-HZ (3 PH)	Min	Max	XL	XL	XL	Size	XL	XL	XL	Size	XL	XL	XL	Size
060	208/230-60 380-60 460-60 575-60	187 342 414 518	253 418 506 633	190.8/141.5 98.7/ 74.1 83.7/ 62.5 67.1/ 50.0	250/200 125/110 110/ 90 90/ 70	585.7/532.8 312.4/286.1 259.3/236.6 210.5/192.3	225/175 110/ 90 100/ 80 80/ 60	193.8/141.5 100.4/ 74.1 85.1/ 62.5 68.2/ 50.0	250/200 125/110 110/ 90 90/ 70	593.6/532.8 316.8/286.1 262.9/236.6 213.4/192.3	225/175 110/ 90 100/ 80 80/ 60		1111		=
070	208/230-60 380-60 460-60 575-60	187 342 414 518	253 418 506 633	234.0/141.5 123.2/ 74.1 103.7/ 62.5 84.4/ 50.0	300/200 150/110 125/ 90 110/ 70	679.9/532.8 378.3/286.1 313.2/236.6 253.2/192.3	300/175 150/ 90 125/ 80 100/ 60	237.0/141.5 124.9/ 74.1 105.1/ 62.5 85.5/ 50.0	300/200 150/110 125/ 90 110/ 70	687.8/532.8 382.7/286.1 316.8/236.6 256.1/192.3	300/175 150/ 90 125/ 80 100/ 60				_ _ _
080	208/230-60	187	253	238.5/168.8	300/225	633.4/560.0	300/200	241.5/168.8	300/225	641.4/560.0	300/200	253.2/168.8	300/225	657.5/560.0	300/200
	380-60	342	418	124.8/ 86.4	150/110	338.6/298.4	150/100	126.5/ 86.4	150/110	342.9/298.4	150/100	133.5/ 86.4	150/110	351.8/298.4	150/100
	460-60	414	506	105.3/ 73.6	125/100	280.9/247.7	125/ 90	106.7/ 73.6	125/100	284.5/247.7	125/ 90	112.2/ 73.6	125/100	291.8/247.7	125/ 90
	575-60	518	633	84.3/ 59.0	110/ 80	227.8/201.2	100/ 70	85.4/ 59.0	110/ 80	230.6/201.2	100/ 70	90.2/ 59.0	110/ 80	236.5/201.2	100/ 70
090	208/230-60	187	253	305.6/168.8	350/225	751.5/560.0	350/200	308.6/168.8	400/225	759.5/560.0	350/200	320.3/168.8	400/225	775.6/560.0	350/200
	380-60	342	418	162.4/ 86.4	200/110	417.6/298.4	175/100	164.1/ 86.4	200/110	421.9/298.4	200/100	171.1/ 86.4	200/110	430.8/298.4	200/100
	460-60	414	506	136.1/ 73.6	175/100	345.6/247.7	150/ 90	137.5/ 73.6	175/100	349.2/247.7	150/ 90	143.0/ 73.6	175/100	356.5/247.7	175/ 90
	575-60	518	633	110.3/ 59.0	125/ 80	279.1/201.2	125/ 70	111.4/ 59.0	125/ 80	282.0/201.2	125/ 70	116.2/ 59.0	150/ 80	287.8/201.2	125/ 70
100	208/230-60	187	253	305.6/212.0	350/300	751.5/654.2	350/250	308.6/212.0	400/300	759.5/654.2	350/250	320.3/212.0	400/300	775.6/654.2	350/250
	380-60	342	418	162.4/110.9	200/150	417.6/364.3	175/125	164.1/110.9	200/150	421.9/364.3	200/125	171.1/110.9	200/150	430.8/364.3	200/125
	460-60	414	506	136.1/ 93.6	175/125	345.6/301.6	150/110	137.5/ 93.6	175/125	349.2/301.6	150/110	143.0/ 93.6	175/125	356.5/301.6	175/110
	575-60	518	633	110.3/ 76.3	125/110	279.1/243.9	125/ 90	111.4/ 76.3	125/110	282.0/243.9	125/ 90	116.2/ 76.3	150/110	287.8/243.9	125/ 90
110	208/230-60	187	253	305.6/243.8	350/300	751.5/635.0	350/300	308.6/243.8	400/300	759.5/635.0	350/300	320.3/243.8	400/300	775.6/635.0	350/300
	380-60	342	418	162.4/124.8	200/150	417.6/336.8	175/150	164.1/124.8	200/150	421.9/336.8	200/150	171.1/124.8	200/150	430.8/336.8	200/150
	460-60	414	506	136.1/106.3	175/125	345.6/280.4	150/125	137.5/106.3	175/125	349.2/280.4	150/125	143.0/106.3	175/125	356.5/280.4	175/125
	575-60	518	633	110.3/ 85.2	125/110	279.1/227.4	125/100	111.4/ 85.2	125/110	282.0/227.4	125/100	116.2/ 85.2	150/110	287.8/227.4	125/100
120	208/230-60	187	253	317.5/306.2	400/400	763.5/748.4	350/350	320.5/306.2	400/400	771.4/748.4	350/350	332.2/306.2	400/400	787.6/748.4	400/350
	380-60	342	418	169.0/160.2	200/200	424.1/413.6	200/175	170.7/160.2	200/200	428.5/413.6	200/175	177.7/160.2	225/200	437.3/413.6	200/175
	460-60	414	506	141.5/135.2	175/175	351.0/343.2	175/150	142.9/135.2	175/175	354.6/343.2	175/150	148.4/135.2	175/175	361.9/343.2	175/150
	575-60	518	633	114.6/110.2	125/125	283.4/277.8	125/125	115.7/110.2	125/125	286.3/277.8	125/125	120.5/110.2	150/125	292.1/277.8	150/125
130	208/230-60	187	253	423.7/243.8	500/300	869.6/635.0	450/300	426.7/243.8	500/300	877.6/635.0	500/300	438.4/243.8	500/300	893.7/635.0	500/300
	380-60	342	418	224.8/124.8	250/150	479.9/336.8	250/150	226.5/124.8	250/150	484.3/336.8	250/150	233.5/124.8	250/150	493.1/336.8	250/150
	460-60	414	506	188.5/106.3	225/125	398.0/280.4	200/125	189.9/106.3	225/125	401.6/280.4	225/125	195.4/106.3	225/125	408.9/280.4	225/125
	575-60	518	633	152.8/ 85.2	175/110	321.6/227.4	175/100	153.9/85.2	175/110	324.5/227.4	175/100	158.7/ 85.2	175/110	330.4/227.4	175/100
150	208/230-60	187	253	423.7/306.2	500/400	869.6/748.4	450/350	426.7/306.2	500/400	877.6/748.4	500/350	438.4/306.2	500/400	893.7/748.4	500/350
	380-60	342	418	224.8/160.2	250/200	479.9/413.6	250/175	226.5/160.2	250/200	484.3/413.6	250/175	233.5/160.2	250/200	493.1/413.6	250/175
	460-60	414	506	188.5/135.2	225/175	398.0/343.2	200/150	189.9/135.2	225/175	401.6/343.2	225/150	195.4/135.2	225/175	408.9/343.2	225/150
	575-60	518	633	152.8/110.2	175/125	321.6/277.8	175/125	153.9/110.2	175/125	324.5/277.8	175/125	158.7/110.2	175/125	330.4/277.8	175/125
160	208/230-60	187	253	541.8/243.8	600/300	987.7/635.0	600/300	544.8/243.8	600/300	995.6/635.0	600/300	556.5/243.8	600/300	1011.8/635.0	600/300
	380-60	342	418	287.2/124.8	300/150	542.3/336.8	300/150	288.9/124.8	300/150	546.7/336.8	300/150	295.9/124.8	300/150	555.5/336.8	350/150
	460-60	414	506	240.9/106.3	250/125	450.4/280.4	250/125	242.3/106.3	250/125	454.0/280.4	250/125	247.8/106.3	250/125	461.3/280.4	300/125
	575-60	518	633	195.4/ 85.2	225/110	364.2/227.4	225/100	196.5/ 85.2	225/110	367.1/227.4	225/100	201.3/ 85.2	225/110	372.9/227.4	225/100
170	208/230-60	187	253	541.8/306.2	600/400	987.7/748.4	600/350	544.8/306.2	600/400	995.6/748.4	600/350	556.5/306.2	600/400	1011.8/748.4	600/350
	380-60	342	418	287.2/160.2	300/200	542.3/413.6	300/175	288.9/160.2	300/200	546.7/413.6	300/175	295.9/160.2	350/200	555.5/413.6	350/175
	460-60	414	506	240.9/135.2	250/175	450.4/343.2	250/150	242.3/135.2	250/175	454.0/343.2	250/150	247.8/135.2	250/175	461.3/343.2	300/150
	575-60	518	633	195.4/110.2	225/125	364.2/277.8	225/125	196.5/110.2	225/125	367.1/277.8	225/125	201.3/110.2	225/125	372.9/277.8	225/125
190	208/230-60	187	253	565.7/400.4	600/450	1011.6/842.6	600/450	568.7/400.4	600/450	1019.5/842.6	600/450	580.4/400.4	600/450	1035.7/842.6	600/450
	380-60	342	418	300.3/209.5	350/250	555.4/462.9	350/225	302.0/209.5	350/250	559.7/462.9	350/225	309.0/209.5	350/250	568.6/462.9	350/225
	460-60	414	506	251.7/176.8	300/200	461.2/384.8	300/200	253.1/176.8	300/200	464.8/384.8	300/200	258.6/176.8	300/200	472.1/384.8	300/200
	575-60	518	633	204.0/144.1	225/175	372.8/311.7	225/175	205.1/144.1	225/175	375.7/311.7	225/175	209.9/144.1	225/175	381.5/311.7	225/175

LEGEND

Instantaneous Current Flow (Ckt1/Ckt2) Minimum Circuit Amps (Ckt1/Ckt2) ICF

MOCP — Maximum Overcurrent Protection

(Ckt1/Ckt2)

— Across-the-Line Start

NOTES:

- Units are suitable for use on electrical systems where voltage supplied to the unit terminals is not below or above the listed minimum and maximum limits. Maximum allowable phase imbalance is: voltage, 2%; amps 10%.
- Control power is derived from main power. No separate control power connection is required.
 Cooler heater is wired into the control circuit so it is always operable as long as the power
- supply disconnect is on, even if any safety device is open.

 4. For MCA that is less than or equal to 380 amps, 3 conductors are required.

 - For MCA between 381 and 760 amps, 6 conductors are required. For MCA between 761 and 1140 amps, 9 conductors are required. For MCA between 1141 and 1520 amps, 12 conductors are required. Calculation of conductors required is based on 75 C copper wire.

- 5. Wiring for main field supply must be rated 75 C minimum. Use copper for all units.
 - a. Incoming wire size range for the terminal block is no. 4 AWG (American Wire Gage) to 500 kcmil.
 - Incoming wire size range of non-fused disconnect with MCA up to 599.9 amps is 3/0 to 500 kcmil.
 - c.
 - Incoming wire size range of non-fused disconnect with MCA from 600 to 799.9 amps is 1/0 to 500 kcmil. Incoming wire size range of non-fused disconnect with MCA from 800 to 1199.9 amps is 250 kcmil to 500 kcmil.
- Hydronic pump packages are not available as a factory-installed option for units 30RB210-300.
- Power draw includes both crankcase heaters and cooler heaters (where used). Each compressor has a crankcase heater which draws 56 watts of power. Units ordered with the cooler heater option have 1 (060-150) or 2 (160-300) cooler heaters, 825 watts each.
 30RB chillers with Greenspeed® technology are not available in size 060 and 070.



208/230 460 575 v only



30RB210-300 ELECTRICAL DATA — DUAL POINT UNITS

	UNIT	VOLTAGE			NO HYDE	RONIC PACKAGE	
30RB UNIT SIZE	V U= (0 Db)	Sup	plied	MCA	MOCP	ICF	Rec Fuse
ONIT SIZE	V-Hz (3 Ph)	Min	Max	XL	XL	XL	Size
210	208/230-60	187	253	626.7/353.9	700/400	1068.9/796.2	700/400
	380-60	342	418	327.7/186.4	350/225	581.1/439.7	350/200
	460-60	414	506	233.3/200.0	250/225	441.3/408.0	250/225
	575-60	518	633	188.8/162.0	200/175	356.4/329.6	200/175
225	208/230-60	187	253	684.3/353.9	700/400	1126.5/796.2	700/400
	380-60	342	418	360.4/186.4	400/225	613.8/439.7	400/200
	460-60	414	506	260.0/200.0	300/225	468.0/408.0	300/225
	575-60	518	633	211.9/162.0	225/175	379.5/329.6	225/175
250	208/230-60	187	253	684.3/472.0	700/500	1126.5/914.3	700/500
	380-60	342	418	360.4/248.7	400/250	613.8/502.1	400/250
	460-60	414	506	303.2/209.2	350/250	511.2/417.2	350/225
	575-60	518	633	246.4/170.0	250/200	414.1/337.6	250/200
275	208/230-60	187	253	920.5/353.9	1000/400	1362.7/796.2	1000/400
	380-60	342	418	485.2/186.4	500/225	738.5/439.7	500/200
	460-60	414	506	408.0/156.8	450/175	616.0/364.8	450/175
	575-60	518	633	331.5/127.5	350/150	499.1/295.1	350/150
300	208/230-60	187	253	920.5/472.0	1000/500	1362.7/914.3	1000/500
	380-60	342	418	485.2/248.7	500/250	738.5/502.1	500/250
	460-60	414	506	408.0/209.2	450/250	616.0/417.2	450/225
	575-60	518	633	331.5/170.0	350/200	499.1/337.6	350/200

LEGEND

ICF MOCP — Maximum Overcurrent Protection (Ckt1/Ckt2)

XL — Across-the-Line Start Instantaneous Current Flow (Ckt1/Ckt2)

MCA — Minimum Circuit Amps
(Ckt1/Ckt2)

NOTES:

- Units are suitable for use on electrical systems where voltage supplied to the unit terminals is not below or above the listed minimum and maximum limits. Maximum allowable phase imbalance is: voltage, 2%; amps 10%.
- Control power is derived from main power. No separate control power connection is required.
- 3. Cooler heater is wired into the control circuit so it is always operable as long as the power supply disconnect is on, even if any safety device is open.

 4. For MCA that is less than or equal to 380 amps, 3 conductors are required.

 For MCA between 381 and 780 amps, 6 conductors are required.
- For MCA between 761 and 1140 amps, 9 conductors are required.

For MCA between 1141 and 1520 amps, 12 conductors are required.

Calculation of conductors required is based on 75 C copper wire.

- Wiring for main field supply must be rated 75 C minimum. Use copper for all units.
 a. Incoming wire size range for the terminal block is no. 4 AWG (American Wire Gage) to 500 kcmil.
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 Incoming wire size range of non-fused disconnect with MCA up to 599.9 amps is 3/0 to 500 kcmil.
 - Incoming wire size range of non-fused disconnect with MCA from 600 to 799.9 amps is 1/0 to 500 kcmil.
 - d. Incoming wire size range of non-fused disconnect with MCA from 800 to 1199.9 amps is 250 kcmil to 500 kcmil.
- 6. Hydronic pump packages are not available as a factory-installed option for units 30RB210-300.
- Power draw includes both crankcase heaters and cooler heaters (where used). Each compressor has a crankcase heater which draws 56 watts of power. Units ordered with the cooler heater option have 1 (060-150) or 2 (160-300) cooler heaters, 825 watts each.
 30RB chillers with Greenspeed® technology are not available in size 060 and 070.



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Electrical data (cont)



30RB ELECTRICAL DATA — POWER ENTRY

30RB UNIT SIZE	VOLTAGE	ELECTRICAL OPTION	CONNECTIONS	MAIN POWER ENTRANCE	CONTROL BOX	
			Single Point	Circuit 1	Combination	
060,070	208/230, 380,	Standard (Terminal Block)	Dual Point	Circuit 1	Combination	
000,070	460, 575		Duai Foint	Circuit 2	Combination	
		Non-Fused Disconnect Option*	Single Point	Circuit 1	Combination	
			Single Point	Circuit 1	Power-L	
	208/230	Standard (Terminal Block)	Dual Point	Circuit 1	Power-L	
	200/230		Duai Point	Circuit 2	Power-L	
080-120		Non-Fused Disconnect Option*	Single Point	Circuit 1	Power-L	
000-120			Single Point	Circuit 1	Combination	
	380, 460, 575	Standard (Terminal Block)	Dual Point	Circuit 1	Combination	
	360, 460, 575		Duai Point	Circuit 2	Combination	
		Non-Fused Disconnect Option*	Single Point	Circuit 1	Combination	
			Single Point	Circuit 1	Power-L	
		Standard (Terminal Block)	Dual Point	Circuit 1	Power-L	
	208/230		Duai Foint	Circuit 2	PEB1	
	208/230		Single Point	Circuit 1	Power-L	
		Non-Fused Disconnect Option	Dual Point	Circuit 1	Power-L	
130-190			Duai Foint	Circuit 2	PEB1	
130-190			Single Point	Circuit 1	PEB1	
		Standard (Terminal Block)	al Block) Dual Point Circuit 1			
	200 460 575		Duai Point	Circuit 2	PEB1	
	380, 460, 575		Single Point	Circuit 1	PEB1	
		Non-Fused Disconnect Option	Dual Point	Circuit 1	PEB1	
			Duai Point	Circuit 2	Power-L	
		Ote and and /Tempined Display	Decel Defeat	Circuit 1	Power-L	
	000/000+	Standard (Terminal Block)	Dual Point	Circuit 2	PEB2	
	208/230†	Non Fried Disconnect Ontion	Dual Daint	Circuit 1	Power-L	
		Non-Fused Disconnect Option	Dual Point	Circuit 2	PEB2	
010 005			Single Point	Circuit 1	PEB1	
210, 225		Standard (Terminal Block)	Dual Daint	Circuit 1	PEB1	
	000 400 575		Dual Point	Circuit 2	PEB1	
	380, 460, 575		Single Point	Circuit 1	PEB1	
		Non-Fused Disconnect Option	Decel Defeat	Circuit 1	PEB1	
			Dual Point	Circuit 2	Power-L	
		Ota and and (Tamasianal Display)	Decel Defeat	Circuit 1	Power-L	
	000/000±	Standard (Terminal Block)	Dual Point	Circuit 2	PEB2	
	208/230†	New Freed Div. 10.1	Description	Circuit 1	Power-L	
		Non-Fused Disconnect Option	Dual Point	Circuit 2	PEB2	
050 000			Single Point	Circuit 1	PEB1	
250-300		Standard (Terminal Block)	5 . 5	Circuit 1	PEB1	
	000 400 555	,	Dual Point	Circuit 2	PEB2	
	380, 460, 575		Single Point	Circuit 1	PEB1	
		Non-Fused Disconnect	-	Circuit 1	PEB1	
			Dual Point	Circuit 2	PEB2	

LEGEND

PEB - Power Electrical Box $^{\star}\text{Dual}$ point connection is not available when non-fused disconnect option is selected. †Single point connection not available.

NOTE: 30RB chillers with Greenspeed® technology are not available in size 060



CONDENSER FAN ELECTRICAL DATA

30RB	UNIT VOLTAGE		STANDARD CONDENSER FANS Circuit A Quantity El A (cook) Circuit P Quantity El A (cook) Circuit C Quantity El A (cook)											
UNIT SIZE	V-Hz (3 Ph)	Circuit A Quantity	FLA (each)	Circuit B Quantity	FLA (each)	Circuit C Quantity	FLA (each)							
060, 070	208/230-60 380-60 460-60 575-60	3 3 3 3	11.9 6.5 5.4 4.3	1 1 1 1	11.9 6.5 5.4 4.3	= =	_ _ _ _							
080	208/230-60 380-60 460-60 575-60	2 2 2 2	11.9 6.5 5.4 4.3	2 2 2 2	11.9 6.5 5.4 4.3	= =								
090, 100, 110	208/230-60 380-60 460-60 575-60	3 3 3 3	11.9 6.5 5.4 4.3	3 3 3 3	11.9 6.5 5.4 4.3	_ _ _	_ _ _ _							
120	208/230-60 380-60 460-60 575-60	3 3 3 3	11.9 6.5 5.4 4.3	4 4 4 4	11.9 6.5 5.4 4.3		_ _ _ _							
130, 150	208/230-60 380-60 460-60 575-60	4 4 4 4	11.9 6.5 5.4 4.3	4 4 4 4	11.9 6.5 5.4 4.3	= =	_ _ _							
160,170	208/230-60 380-60 460-60 575-60	6 6 6	11.9 6.5 5.4 4.3	4 4 4 4	11.9 6.5 5.4 4.3	= =	_ _ _							
190	208/230-60 380-60 460-60 575-60	6 6 6	11.9 6.5 5.4 4.3	6 6 6 6	11.9 6.5 5.4 4.3	_ _ _ _	_ _ _							
210, 225	208/230-60 380-60 460-60 575-60	4 4 4 4	11.9 6.5 5.4 4.3	4 4 4 4	11.9 6.5 5.4 4.3	4 4 4 4	11.9 6.5 5.4 4.3							
250	208/230-60 380-60 460-60 575-60	4 4 4 4	11.9 6.5 5.4 4.3	4 4 4 4	11.9 6.5 5.4 4.3	6 6 6	11.9 6.5 5.4 4.3							
275	208/230-60 380-60 460-60 575-60	6 6 6	11.9 6.5 5.4 4.3	6 6 6	11.9 6.5 5.4 4.3	4 4 4 4	11.9 6.5 5.4 4.3							
300	208/230-60 380-60 460-60 575-60	6 6 6	11.9 6.5 5.4 4.3	6 6 6 6	11.9 6.5 5.4 4.3	6 6 6 6	11.9 6.5 5.4 4.3							

LEGEND

FLA — Full Load Amps

NOTE: 30RB chillers with Greenspeed $^{\rm th}$ technology are not available in size 060 and 070.

PUMP ELECTRICAL DATA

PUMP HP	UNIT VOLTAGE V-Hz (3 Ph)	HYDRONIC SYSTEM (SINGLE/DUAL) FLA (each)	USED ON 30RB SIZES*
3	208/230-60 380-60 460-60 575-60	9.1 5.1 4.2 3.3	060, 070
5	208/230-60 380-60 460-60 575-60	15.4 8.1 7.1 5.4	060-190
7.5	208/230-60 380-60 460-60 575-60	22.0 12.3 10.1 8.1	060-190
10	208/230-60 380-60 460-60 575-60	25.0 14.0 11.5 9.2	060-190
15	208/230-60 380-60 460-60 575-60	36.7 21.0 17.0 14.0	080-190

LEGEND

FLA — Full Load Amps

 $^{\star}\text{Hydronic}$ pump packages are not available as a factory-installed option for units 30RB210-300.

NOTE: 30RB chillers with Greenspeed $^{\rm l\!R}$ technology are not available in size 060 and 070.

Electrical data (cont)



COMPRESSOR ELECTRICAL DATA

30RB				C	OMPR	ESSC	R				COMPRESSOR COMPRESSO														
UNIT SIZE	UNIT VOLTAGE V-Hz (3 Ph)	Α			2		3	Α		Е	_		2	В		В		С		_	2	С			4
312.5	,	RLA		RLA	LRA																				
060	208/230-60 380-60 460-60 575-60	75.0 38.4 32.7 26.2	485 260 215 175	75.0 38.4 32.7 26.2	485 260 215 175	_	_			75.0 38.4 32.7 26.2	485 260 215 175			_	_		=			_		_			_
070	208/230-60 380-60 460-60 575-60	94.2 49.3 41.6 33.9	560 315 260 210	94.2 49.3 41.6 33.9	560 315 260 210			_ _ _		75.0 38.4 32.7 26.2	485 260 215 175	_ _ _	_ _ _			1111	_ _ _	_ _ _		_ _ _	_ _ _		_ _ _	1111	=
080	208/230-60 380-60 460-60 575-60	75.0 38.4 32.7 26.2	485 260 215 175	75.0 38.4 32.7 26.2	485 260 215 175			_ _ _		75.0 38.4 32.7 26.2	485 260 215 175	75.0 38.4 32.7 26.2	485 260 215 175				=	_ _ _			_ _ _				_ _ _
090	208/230-60 380-60 460-60 575-60	94.2 49.3 41.6 33.9	560 315 260 210	94.2 49.3 41.6 33.9	560 315 260 210	1111				75.0 38.4 32.7 26.2	485 260 215 175	75.0 38.4 32.7 26.2	485 260 215 175		1111	1111			1111		1		1111	1111	
100	208/230-60 380-60 460-60 575-60	94.2 49.3 41.6 33.9	560 315 260 210	94.2 49.3 41.6 33.9	560 315 260 210			_ _ _		94.2 49.3 41.6 33.9	560 315 260 210	94.2 49.3 41.6 33.9	560 315 260 210			1111	=	_ _ _			_ _ _				_ _ _
110	208/230-60 380-60 460-60 575-60	94.2 49.3 41.6 33.9	560 315 260 210	94.2 49.3 41.6 33.9	560 315 260 210					75.0 38.4 32.7 26.2	485 260 215 175	75.0 38.4 32.7 26.2	485 260 215 175	75.0 38.4 32.7 26.2	485 260 215 175		=	_ _ _		_ _ _	_ _ _		_ _ _		_ _ _
120	208/230-60 380-60 460-60 575-60	94.2 49.3 41.6 33.9	560 315 260 210	94.2 49.3 41.6 33.9	560 315 260 210			_ _ _		94.2 49.3 41.6 33.9	560 315 260 210	94.2 49.3 41.6 33.9	560 315 260 210	94.2 49.3 41.6 33.9	560 315 260 210	1111	_ _ _	_ _ _		_ _ _	_ _ _			1111	<u>-</u>
130	208/230-60 380-60 460-60 575-60	94.2 49.3 41.6 33.9	560 315 260 210	94.2 49.3 41.6 33.9	560 315 260 210	94.2 49.3 41.6 33.9	560 315 260 210			75.0 38.4 32.7 26.2	485 260 215 175	75.0 38.4 32.7 26.2	485 260 215 175	75.0 38.4 32.7 26.2	485 260 215 175		_	_ _ _		_ _ _	_ _ _			1111	_ _ _
150	208/230-60 380-60 460-60 575-60	94.2 49.3 41.6 33.9	560 315 260 210	94.2 49.3 41.6 33.9	560 315 260 210	94.2 49.3 41.6 33.9	560 315 260 210	=		94.2 49.3 41.6 33.9	560 315 260 210	94.2 49.3 41.6 33.9	560 315 260 210	94.2 49.3 41.6 33.9	560 315 260 210	1111	=	=			_			1111	=
160	208/230-60 380-60 460-60 575-60	94.2 49.3 41.6 33.9	560 315 260 210	94.2 49.3 41.6 33.9	560 315 260 210	94.2 49.3 41.6 33.9	560 315 260 210	94.2 49.3 41.6 33.9	560 315 260 210	75.0 38.4 32.7 26.2	485 260 215 175	75.0 38.4 32.7 26.2	485 260 215 175	75.0 38.4 32.7 26.2	485 260 215 175	1111	_	_			_ _ _				_ _ _
170	208/230-60 380-60 460-60 575-60	94.2 49.3 41.6 33.9	560 315 260 210		_	_			_ _ _				_ _ _												
190	208/230-60 380-60 460-60 575-60	94.2 49.3 41.6 33.9	560 315 260 210	_ _ _		_ _ _	_ _ _				_ _ _														
210	208/230-60 380-60 460-60 575-60	94.2 49.3 41.6 33.9	560 315 260 210	94.2 49.3 41.6 33.9	560 315 260 210	94.2 49.3 41.6 33.9	560 315 260 210	_ _ _		75.0 38.4 32.7 26.2	485 260 215 175	75.0 38.4 32.7 26.2	485 260 215 175	75.0 38.4 32.7 26.2	485 260 215 175	1111	=	94.2 49.3 41.6 33.9	560 315 260 210	94.2 49.3 41.6 33.9	560 315 260 210	94.2 49.3 41.6 33.9	560 315 260 210		_ _ _
225	208/230-60 380-60 460-60 575-60	94.2 49.3 41.6 33.9	560 315 260 210	94.2 49.3 41.6 33.9	560 315 260 210	94.2 49.3 41.6 33.9	560 315 260 210	_ _ _		94.2 49.3 41.6 33.9	560 315 260 210	94.2 49.3 41.6 33.9	560 315 260 210	94.2 49.3 41.6 33.9	560 315 260 210			94.2 49.3 41.6 33.9	560 315 260 210	94.2 49.3 41.6 33.9	560 315 260 210	94.2 49.3 41.6 33.9	560 315 260 210		_ _ _
250	208/230-60 380-60 460-60 575-60	94.2 49.3 41.6 33.9	560 315 260 210	94.2 49.3 41.6 33.9	560 315 260 210	94.2 49.3 41.6 33.9	560 315 260 210			94.2 49.3 41.6 33.9	560 315 260 210	94.2 49.3 41.6 33.9	560 315 260 210	94.2 49.3 41.6 33.9	560 315 260 210	1111	_	94.2 49.3 41.6 33.9	560 315 260 210	94.2 49.3 41.6 33.9	560 315 260 210	94.2 49.3 41.6 33.9	560 315 260 210	94.2 49.3 41.6 33.9	560 315 260 210
275	208/230-60 380-60 460-60 575-60	94.2 49.3 41.6 33.9	560 315 260 210		_ _ _																				
300	208/230-60 380-60 460-60 575-60	94.2 49.3 41.6 33.9	560 315 260 210	94.2 49.3 41.6 33.9	260	94.2 49.3 41.6 33.9	560 315 260 210	94.2 49.3 41.6 33.9	560 315 260 210	94.2 49.3 41.6 33.9	560 315 260 210	94.2 49.3 41.6 33.9	560 315 260 210	94.2 49.3 41.6 33.9	560 315 260 210										

LEGEND

LRA — Locked Rotor Amps RLA — Rated Load Amps NOTE: 30RB chillers with Greenspeed technology are not available in size 060 and 070.

Controls



Microprocessor

The ComfortLink microprocessor controls overall unit operation. Its central executive routine controls a number of processes simultaneously. These include internal timers, reading inputs, analog to digital conversions, fan control, display control, diagnostic control, output relay control, demand limit, capacity control, head pressure control, and temperature reset. Some processes are updated almost continuously, others every 2 to 3 seconds, and some every 30 seconds. The microprocessor routine is started by switching the Emergency ON-OFF switch to ON position. Pump control of external pumps (where so configured) or optional internal pump, will energize the cooler pump to the internal (or CCN) time schedule (or input occupied signal from external system).

Where dual pumps are utilized only one pump will be operated at a time. The control will start the pump with the least hours. When the unit receives a call for cooling (based on a deviation from chilled water set point), the unit stages up in capacity to maintain the cooler fluid set point. The first compressor starts 1 to 3 minutes after the call for cooling. The ComfortLink microprocessor controls the capacity of the chiller by cycling compressors at a rate to satisfy actual dynamic load conditions. The control maintains leaving-fluid temperature set point shown on the scrolling marquee display board through intelligent cycling. Accuracy depends on loop volume, loop flow rate, load, outdoor-air temperature, number of stages, and particular stage being cycled off. No adjustment for cooling range or cooler flow rate is required, because the control automatically compensates for cooling range by measuring both return-fluid temperature and leaving-fluid temperature. This is referred to as leaving-fluid temperature control with return-fluid temperature compensation.

The basic logic for determining when to add or remove a stage is a time band integration of deviation from set point plus rate of change of leaving-fluid temperature. When leaving-fluid temperature is close to set point and slowly moving closer, logic prevents addition of another stage.

If $1^{\circ}F$ per minute $(0.6^{\circ}C)$ per minute) pulldown control has been selected (adjustable setting), no additional steps of capacity are added as long as the difference between leaving-fluid temperature and set point is greater than $4^{\circ}F$ ($2.2^{\circ}C$) and rate of change in leaving-fluid temperature is greater than the selected pulldown control rate. If it has been less than 90 seconds since the last capacity change, compressors will continue to run unless a safety device trips. This prevents rapid cycling and also helps return oil during short on periods.

Sensors

Thermistors are used to control temperature-sensing inputs to microprocessor. Additional thermistor sensors may be used as remote temperature sensors for optional LCWT (leaving chilled fluid temperature) reset.

- Cooler leaving chilled fluid temperature (T1)
- Cooler entering fluid (return) temperature (T2)
- Outside-air temperature (T9)

Two refrigerant pressure transducers are used in each circuit for sensing suction and discharge pressure. The microprocessor uses these inputs to control capacity and fan cycling.

- Saturated condensing temperature
- Cooler saturation temperature

Control sequence

Off cycle

If ambient temperature is below 36°F (2°C), cooler heaters (if equipped) are also energized.

Start-up

After the control circuit switches on, the prestart process takes place, then microprocessor checks itself, starts pump (if configured) and waits for temperature to stabilize. The controlled pulldown feature limits compressor loading on start-up to reduce demand on start-up and unnecessary compressor usage. The microprocessor limits supply-fluid temperature decrease (start-up only) to 1°F (0.6°C) per minute.

Capacity control

On first call for cooling, microprocessor starts initial compressor and fan stage on lead circuit.

As additional cooling is required, additional compressors are energized.

Speed at which capacity is added or reduced is controlled by temperature deviation from set point and rate of temperature change of chilled fluid.

The Main Base Board (MBB) responds to the supply chilled water temperature to cycle the compressors to match cooling load requirements.

Minimum load control valve is energized by the MBB. Valve allows hot gas to pass directly into the cooler circuit on the final step of unloading, permitting the unit to operate at lower loads with less compressor cycling.

Additional information

Detailed information on controls and operation is available in the Controls, Start-Up, Operation and Troubleshooting guide included with each unit. Packaged Service Training programs are also available. Contact your Carrier representative for more information.

High-efficiency variable condenser fans (30RB chillers with Greenspeed $^{\circledR}$ intelligence only)

All fans on a circuit run at the same speed and are controlled by a VFD with special CCN software to maintain SCT (saturated condensing temperature) set point. The set point is calculated from operating conditions and adjusted to the most efficient operating point. The high-efficiency variable condenser fan option uses Danfoss VLT 102 variable frequency drives, each with a display. Drives are connected to the LEN communication bus. Fan speed is determined by the chiller controller and communicated to the drive to provide excellent part load efficiency and reduced sound level operation over the life of the chiller.

Dual chiller control

The ComfortLink controller allows 2 chillers (piped in parallel) to operate as a single chilled water plant with standard control functions coordinated through the master chiller controller. This standard ComfortLink feature requires a communication link between the 2 chillers and, in the case of parallel chillers, requires an additional thermistor and well for each chiller.

Controls (cont)



Dynamic ComfortLink controls

Dynamic ComfortLink controls keep the chiller on line during periods of extreme operating conditions. If the entering fluid temperature is 85°F (29°C) or higher and the saturated suction temperature is 50°F (10°C) or higher the maximum operating pressure (MOP) feature limits the suction to keep the chiller online. The control automatically starts the chiller in the unloaded state to eliminate the potential of compressor overload due to high head pressure or low suction pressure. The controller will equalize run time on each circuit through the lead/lag feature. If a circuit becomes disabled, the control will automatically set the active circuit to lead, keeping the chiller online at a reduced capacity.

CAPACITY CONTROL STEPS*

UNIT 30RB	STANDARD CAPACITY STEPS (%)
060	0, 33, 67, 100
070	0, 29, 64, 100
080	0, 25, 50, 75, 100
090	0, 22, 50, 72,100
100	0, 25, 50, 75, 100
110	0, 18, 41, 59, 82, 100
120	0, 20, 40, 60, 80, 100
130	0, 15, 33, 48, 67, 81, 100
150	0, 17, 33, 50, 67, 83, 100
160	0, 13, 28, 41, 56, 69, 84, 100
170	0, 14, 29, 43, 57, 71, 86, 100
190	0, 13, 25, 38, 50, 63, 75, 88, 100
210	0, 10, 21, 33, 43, 55, 67, 76, 88, 100
225	0, 11, 22, 33, 44, 56, 67, 78, 89, 100
250	0, 10, 20, 30, 40, 50, 60, 70, 80, 90, 100
275	0, 9, 18, 27, 36, 45, 55, 64, 73, 82, 91, 100
300	0, 8, 17, 25, 33, 42, 50, 58, 67, 75, 83, 92, 100

^{*}Capacity control steps may vary due to compressor sequencing.

Standard ComfortLink controls with scrolling marquee display

A four-digit alphanumeric display shows all of the *Comfort*Link control codes (with 60-character expandable clear language), plus set points, time of day, temperatures, pressures, and superheat. Additional information can be displayed all at once with the accessory NavigatorTM display.

Navigator display

An optional 4-line, 20-character per line display and also available as a field-installed accessory.

Low-temperature override

This feature prevents LCWT from overshooting the set point and possibly causing a nuisance trip-out by the freeze protection.

High-temperature override

This feature allows chiller to add capacity quickly during rapid load variations.

Abnormal conditions

All control safeties in chiller operate through compressor protection board or control relay and microprocessor.

Loss of feedback signal to the MBB will cause the compressor(s) to shut down. For other safeties, microprocessor makes appropriate decision to shut down a compressor due to a safety trip or bad sensor reading and displays appropriate failure code on the display. Chiller remains in safety mode until reset. It then reverts to normal control when unit is reset.

Low-pressure safety

Safety cuts out if system pressure drops below minimum.

High-pressure cutout

Switch shuts down compressors if compressor discharge pressure increases to 641 psig (4420 kPa).

Compressor anti-cycling

This feature limits compressor cycling.

Loss of flow protection

Proof of flow switches are standard and installed on all 30RB chillers.

Sensor failures

Failures are detected by the microprocessor.

Temperature reset

The energy management module (EMM) is required for 4 to 20 mA reset of LCWT in constant fluid systems. Reset by return fluid, outdoor-air temperature, or space temperature does not require this option. 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 options are offered, based on the following:

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 LCWT may only be reset to value of design return fluid temperature.

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. An accessory thermistor is required.

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. An accessory thermistor and the energy management module accessory is required.

For details on applying a reset option, refer to unit Controls and Troubleshooting literature. Obtain ordering part numbers for reset option from the Packaged Chiller Builder program or contact your local Carrier representative.

Accessory controls

Demand can be limited by controlling the chiller capacity through the demand limit control (the energy management module is required for this function). This factory-installed option or accessory interfaces with microprocessor to control unit so that chiller's kW demand does not exceed its setting. It is activated from an external switch or a 4 to 20 mA signal.

The standard *Comfort*Link controller is programmed to accept various accessory temperature reset options (based on outdoor-air temperature [standard], return-fluid temperature, or space temperature), that reset the LCWT. An accessory thermistor (T10) is required if outdoor-air temperature or space temperature reset is selected. The



energy management module (EMM) is only required for temperature reset that is initiated by a 4 to 20 mA signal.

Demand limit

If applied, this limits the total power draw of unit to selected point by controlling number of operational compressors during periods of peak electrical demand. The energy management module is required for either 2-step or 4 to 20 mA demand limit.

Electronic expansion valve (EXV)

The EXV controls refrigerant flow to the cooler for different operating conditions by moving an orifice to increase or decrease the flow area through the valve based on microprocessor input. The orifice is positioned by a stepper motor through approximately 3,600 discrete steps and is monitored every three seconds. The EXV maintains an approximate 8°F (5°C) refrigerant superheat entering the compressor.

Diagnostics

The microprocessor may be put through a service test (see Controls, Start-Up, Operation, Service, and Troubleshooting literature). Service test confirms microprocessor is functional, informs observer through display the condition of each sensor and switch in chiller, and allows observer to check for proper operation of fans and compressors.

Default settings

To facilitate quick start-ups, 30RB chillers with ComfortLink controls are pre-configured with a default setting that assumes stand-alone operation supplying $44^{\circ}F$ (6.7°C) chilled water.

Configuration settings will be based on any options or accessories included with the unit at the time of manufacturing.

Date and time are set to U.S.A. Eastern Time zone and will need reconfiguring based on location and local time zone. If operation based on occupancy scheduling is desired, this will also need to be set during installation.

Ice duty

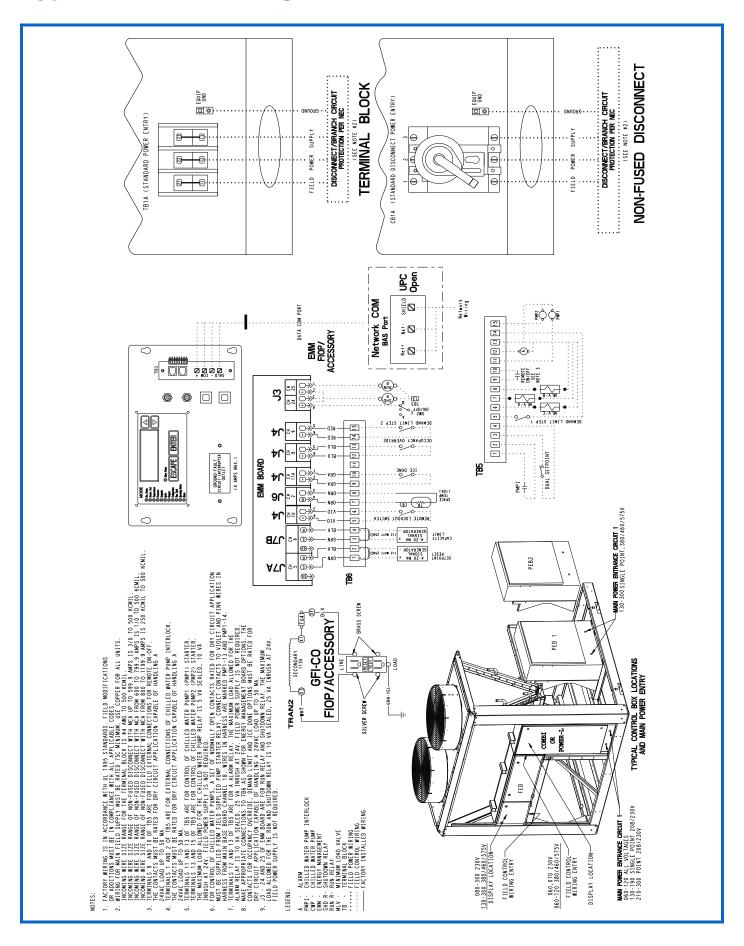
ComfortLink controls have the capability of reduced leaving fluid temperature operation for thermal storage, or ice duty. On unit sizes 060-100 the optional energy management module includes input contacts for the "ice done" signal generated by the thermal storage control system. The ice duty feature may be configured to start on an external input command or by the ComfortLink standard internal scheduling function. Ice duty may be used in combination with any other standard features offered by the energy management module and ComfortLink controls.

The production of ice, which is stored for peak cooling demands, can significantly decrease energy costs. The unit produces ice (normally at night) by supplying ice storage tanks with low temperature cooling fluid. The chiller takes advantage of reduced ambient conditions at night for ice-making mode, so the capacity suffers a lower penalty for the low leaving fluid temperatures.

At peak cooling demands the chiller and the stored ice may share the cooling load to reduce operating costs. The thermal storage system may potentially reduce the size of the chiller plant required to meet demand loads.

Typical control wiring schematic





Application data

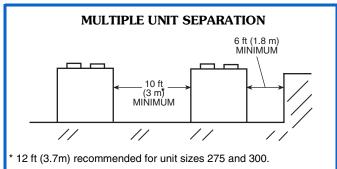


Chiller location and clearances The 30RB unit must be installed outdoors.

Do not locate near sound sensitive areas without proper acoustic consideration. For applications requiring mounting a chiller on a building rooftop, consideration should be given to using rubber-in-shear or spring isolators to minimize structure-borne transmission. Unit must be level when installed to ensure proper oil return to the compressors. Clearances must be provided around chillers for airflow, service and local code requirements. See dimensional drawings for specific unit clearance requirements. Ensure adequate clearance between adjacent chillers is maintained. A minimum of 10 ft (3048 mm) is recommended. Chiller fan is strongly recommended to be at least as high as adjacent solid walls. Installation in pits is not recommended.

Minimum clearances

The recommended minimum clearance to ensure proper airflow through the condenser coils and to allow fan maintenance is as shown below.

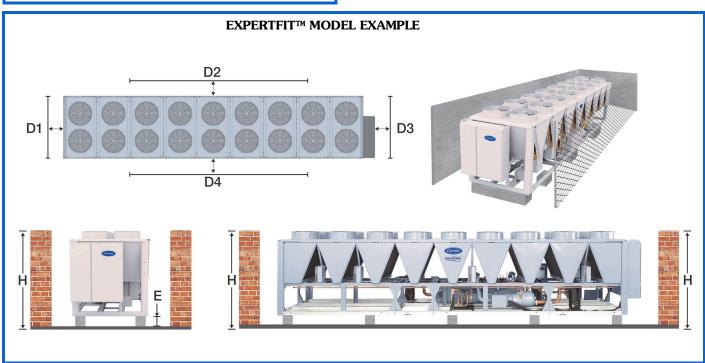


Acceptable clearance on the cooler connection side or end opposite the control box of the unit can be reduced to 3 ft (1 m) without sacrificing performance as long as the remaining three sides are unrestricted. Acceptable clearance on the side with a control box can be reduced to 4 ft (1.3 m) due to NEC (National Electric Code) regulations, without sacrificing performance as long as the remaining three sides are unrestricted. Clearances between chillers in dual chiller applications may be reduced to 6 ft (1.8 m) without sacrificing performance provided the remaining sides are unrestricted.

There are applications, however, in which recommended minimum clearances are not available. In these situations, customers request a prediction of the chiller performance within the confined space. A generalized derating factor may be insufficient to fully predict performance with various real-life physical layouts and ambient conditions.

To improve performance predictions when recommended clearances cannot be met, Carrier has developed the ExpertFit™ Software Model. An interface in the computerized chiller selection program predicts air-cooled chiller performance within a confined space, taking into account various spatial constraints and conditions, thus providing actual performance reports and not just derate guidelines.

Using this tool will provide the customer with a realistic expectation for their actual installation. The illustration below is an example of a typical installation that the software can model.



Application data (cont)



Oversizing chillers

Oversizing chillers by more than 15% at design conditions must be avoided as the system operating efficiency is adversely affected (resulting in greater or excessive electrical demand). When future expansion of equipment is anticipated, install a single chiller to meet present load requirements and add a second chiller to meet the additional load demand. It is also recommended that 2 smaller chillers be installed where operation at minimum load is critical. The operation of a smaller chiller loaded to a greater percentage over minimum is preferred to operating a single chiller at or near its minimum recommended value. Minimum load control 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.

Piping duplex units

The 30RB duplex chillers (sizes 315 - 390) are shipped and rigged as 2 separate units. The units must be piped in parallel. If units are to be aligned end-to-end, minimum spacing of 42 to 48-in. (depending on local codes) between chillers is recommended to provide adequate service access and piping clearance.

Multiple chillers

Where chiller capacities greater than can be supplied by a single 30RB chiller are required, or where standby capability is desired, chillers may be installed in parallel. Units may be of the same or different sizes with this piping arrangement. However, cooler flow rates must be balanced to ensure proper flow to each chiller.

Unit software is capable of controlling two parallel units as a single plant by making use of the dual chiller control feature. Refer to the Controls, Start-up, Operation, Service and Troubleshooting guide for further details. The accessory Chillervisor System Manager can be used to ensure proper staging sequence of up to 8 chillers arranged in a

parallel configuration. Refer to the accessory Chillervisor System Manager installation instructions for further details.

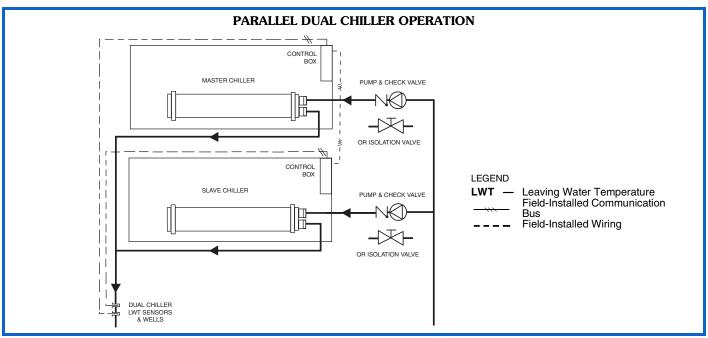
If the dual chiller algorithm is used, and the machines are installed in parallel, an additional chilled water sensor must be installed for each module. For 30RB315-390, where it is understood that these are duplex chillers comprised of 2 chillers to be installed in parallel, two factory-supplied thermistors and wells are shipped in the control box of one of the modules (for other 30RB chiller sizes which will be installed in a parallel piping configuration, a dual chiller accessory kit is available). Install one thermistor and well per chiller in the common leaving water header.

Parallel chiller control with dedicated pumps is recommended. The chiller must start and stop its own water pump located in its own piping. Check valves are required at the discharge of each pump (when the factory hydronic package option is chosen, and dual pumps are selected, the check valves are automatically supplied). If pumps are not dedicated for each chiller, then isolation valves are required. Each chiller must open and close its own isolation valve through the unit control (the valve must be connected to the pump outputs). Refer to the chiller piping configuration shown on the next page.

If a series application is required, the master/slave control feature cannot be used. Hydronic pump packages may not be applied in series applications.

Series chillers

Where a large temperature drop (greater than $20^{\circ}F$ [$11.1^{\circ}C$]) is desired or where chiller capacities greater than can be supplied by a single 30RB chiller are required or where standby capability is required, chillers may be installed in series. The leaving fluid temperature sensors need not be relocated. However, the cooler minimum entering fluid temperature limitations should be considered for the chillers located downstream of other chillers. Use of reduced pass heads may be required to keep water-side pressure drop at an acceptable level.





Cooler water temperature

- 1. Maximum leaving chilled water temperature (LCWT) for the unit is 60°F (15.6°C). Unit can start and pull down with up to 95°F (35°C) entering-water temperature. It is recommended that entering-water temperature not exceed 70°F (21.1°C).
- 2. Minimum LCWT for standard unit is 30°F (-1.1°C). For leaving-fluid temperatures between 15 and 39.9°F (-9.4°C and 3.3°C) an inhibited antifreeze solution is required. Application of chiller to 15°F (-9.4°C) is standard on unit sizes 30RB060-100 provided that the unit is supplied with suction line insulation and low ambient head pressure control or optional 30RB chillers with Greenspeed® intelligence. For unit sizes 30RB110-390, applications with leaving fluid temperatures below 30°F (-1.1°C) are not available.

NOTE: Water flowing through cooler should not exceed 100°F (38°C).

Strainers

For any application that does not have a factory-installed hydronic package, and for all open-loop applications, a screen strainer with a minimum screen size of 20 mesh must be installed a maximum of 10 ft (3.0 m) from the unit to prevent debris from damaging internal tubes of the cooler.

STRAINER REQUIREMENTS

	30RB WITH DX (SH HEAT EXCH	ELL-IN-TUBE) Anger
APPLICATION	With Hydronic Package*	Without Hydronic Package
	Type of Str	ainer
Closed Loop	¹ / ₈ -in. Perforated (Factory Supplied)	20 Mesh†
Open Loop	¹ / ₈ -in. Perforated (Factory Supplied) and 20 Mesh†	20 Mesh†

^{*} Units with a hydronic package are shipped with a fine mesh start-up strainer that must be removed within 24 hours after start-up. † A 20-mesh strainer must be field supplied and installed within 10 ft (3 m) of the cooler inlet.

Cooler flow/range

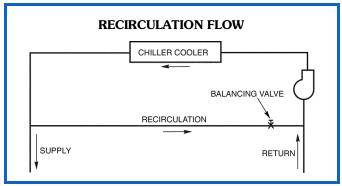
Ratings and performance data in this publication are for a cooling temperature rise of 10°F (6°C). The 30RB chillers may be operated at a different temperature rise, providing flow limits are not exceeded and corrections to system guidelines are made. For minimum and maximum cooler flow rates, see the Minimum and Maximum Cooler Flow Rates table on page 62. A high flow rate is generally limited by the maximum pressure drop that can be tolerated by the unit. The 30RB chillers are designed for a full load temperature rise of 3° to 20°F (1.7° to 11.1°C). Use the Packaged Chiller Builder Program to obtain the rating if a temperature rise other than 10°F (6°C) is used.

Minimum cooler flow (maximum cooler temperature rise)

The minimum cooler flow for standard units is shown in Minimum and Maximum Cooler Fluid Flow Rates table on page 62. When system design conditions require a lower flow (or higher rise) than the minimum allowable cooler flow, follow the recommendations below.

- a. Multiple smaller chillers may be applied in series, each providing a portion of the design temperature
- b. Cooler fluid may be recirculated to raise the flow rate to the chiller. The mixed temperature entering the cooler must be maintained to a minimum of at least 3°F (1.7°C) above the LCWT and to a maximum of no more than 20°F (11.1°C) above the LCWT.

NOTE: Recirculation flow is shown below.

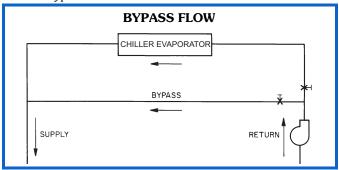


Maximum cooler flow

The maximum cooler flow (see the Minimum and Maximum Cooler Flow Rates table on page 62) results in a practical maximum pressure drop through cooler.

Return fluid may bypass the cooler to keep the pressure drop through the cooler within acceptable limits. This permits a higher delta T with lower fluid flow through cooler and mixing after the cooler. The mixed temperature entering the cooler must be maintained to a minimum of at least 3°F (1.7°C) above the LCWT and to a maximum of no more than 20°F (11.1°C) above the LCWT.

NOTE: Bypass flow is shown below.



Variable cooler flow rates

Variable flow rates may be applied to a standard chiller. The unit will, however, attempt to maintain a constant leaving chilled water temperature. In such cases, the minimum flow must be in excess of the minimum flow given in the Minimum and Maximum Cooler Fluid Flow Rates table (page 62), adjusted for glycol in the system, and the minimum fluid volume must be in excess of 3 gallons per ton (3.2 L per kW). The flow rate must change at a rate less than 10% per minute. Apply a minimum of 6 gallons per ton (6.5 L per kW) water loop volume if the flow rate changes more rapidly.

Application data (cont)



MINIMUM AND MAXIMUM COOLER FLOW RATES 30RB060-300*

30RB UNIT SIZE	MINIMUM COOLER FLOW RATE (gpm)†	MAXIMUM COOLER FLOW RATE (gpm)	MINIMUM LOOP VOLUME (gal.)	MINIMUM COOLER FLOW RATE (I/s)†	MAXIMUM COOLER FLOW RATE (I/s)	MINIMUM LOOP VOLUME (liters)
060	72	288	180	5	18	681
070	84	336	210	5	21	795
080	96	384	240	6	24	908
090	108	432	270	7	27	1022
100	120	480	300	8	30	1136
110	132	528	330	8	33	1249
120	144	576	360	9	36	1363
130	156	624	390	10	39	1476
150	180	720	450	11	45	1703
160	192	768	480	12	48	1817
170	204	816	510	13	51	1931
190	228	912	570	14	58	2158
210	252	950	630	16	60	2385
225	270	950	675	17	60	2555
250	300	950	750	19	60	2839
275	330	950	825	21	60	3123
300	360	950	900	23	60	3407

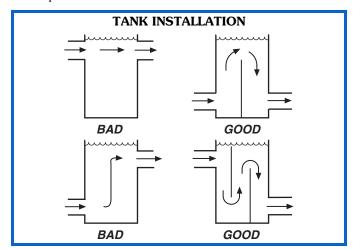
^{* 30}RB chillers with Greenspeed® intelligence are not available in size 060 and 070.

† For minimum cooler flow rate with brine applications, refer to E-cat software performance.

Fluid loop volume

The volume in circulation must equal or exceed 3 gal. per nominal ton (3.25 L per kW) of cooling for temperature stability and accuracy in normal air conditioning applications. In process cooling applications, or for operation at ambient temperature below 32°F (0°C) with low loading conditions, there should be from 6 to 10 gal. per ton (6.5 to $10.8 \, \text{L}$ 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.



The piping between the chiller and the fluid loop volume tank can be done to allow the tank to be on the return side of the chiller (tank piped to chiller inlet) or the supply side of the chiller (tank piped to the chiller outlet). However, it is recommended that the tank be piped to the return side of the chiller to buffer any changes in load to allow more stable chiller operation.

Minimum time to power chiller before start-up

In order to ensure that the crankcase heaters are provided sufficient time to raise the crankcase temperature to the required operating point, power must be applied to the control circuit a minimum or 24 hours prior to chiller start-up. On 30RB chillers, the control circuit obtains its power via a control transformer off the main 3-phase power supply. Therefore, the main (3-phase) power is to be supplied at least 24 hours prior to chiller start-up unless there are special means for providing control power.

Cooler fouling factor

The fouling factor used to calculate tabulated ratings is $0.00010~\rm{ft^2} \cdot hr \cdot ^\circ F/Btu~(0.000018~m^2 \cdot ^\circ C/W)$. As fouling factor is increased, unit capacity decreases and compressor power increases. Corrections to published ratings can be approximated by using the multipliers in the fouling factors table.

FOULING FACTORS

-	FOULING FACTOR (English) (ft²·hr·F/Btu)	FOULING FACTOR (SI) (m²-C/W)	CAPACITY MULTIPLIER	COMPRESSOR POWER MULTIPLIER	
	0.00025	0.000044	0.991	0.995	
	0.00050	0.000088	0.977	0.987	
	0.00075	0.000132	0.955	0.979	
	0.00175	0.000308	0.910	0.952	

Cooler and hydronic system freeze protection

Freeze protection for down to $-20^{\circ}F$ ($-28.9^{\circ}C$) for the cooler and hydronic package is standard. Since power is sometimes lost for extended periods during winter storms, freeze protection provided by heater tapes will be effective only if a back-up power supply can be assured for the unit's control circuit, heater and cooler pump. If not protected with an antifreeze solution, draining the cooler and outdoor piping is recommended if the system will not be used during freezing weather conditions.



Two conditions that must be considered when determining antifreeze concentration are leaving water set point and ambient freeze conditions. Both of these parameters can help determine the recommended concentration level. Higher concentration must be used to adequately protect the machine.

NOTE: Use only antifreeze solutions approved for heat exchanger duty.

For applications in which the leaving water temperature set point is less than $40^{\circ}F$ ($4.4^{\circ}C$), a suitable inhibited antifreeze solution must be used. The solution concentration must be sufficient to protect the chilled water loop to a freeze protection (first crystals) concentration of at least $15^{\circ}F$ ($8.3^{\circ}C$) below the leaving water temperature set point.

If the chiller refrigerant or fluid lines are in an area where ambient conditions fall below $34^{\circ}F$ (1°C), it is required that an antifreeze solution be added to protect the unit and fluid piping to a temperature of $15^{\circ}F$ (8.3°C) below the lowest anticipated ambient temperature.

Select concentration based on either burst or freeze protection as dictated by the application. If the chiller does not operate during the winter, nor is a start-up expected, a burst protection concentration is recommended. This concentration may not be high enough to pump the fluid through the unit. Burst protection is typically a lower concentration that will provide better performance from the machine. If the chiller does operate during winter, a freeze protection concentration is recommended. This concentration will be high enough to keep the fluid in a condition that it can be pumped at low ambient conditions.

IMPORTANT: Glycol anti-freeze solutions are highly recommended since heater tapes provide no protection in the event of a power failure.

Consult glycol fluid manufacturers for burst protection recommendations and fluid specifications.

High ambient temperature operation

High outdoor ambient chiller start-up and operation is possible for standard 30RB chillers at ambient temperatures up to $125^{\circ}F$ ($52^{\circ}C$) at nominal voltage. In some cases, where return water temperature is expected to exceed $60^{\circ}F$ ($15.5^{\circ}C$), an accessory kit may be required.

Low ambient temperature operation

Units will start and operate down to $32^{\circ}F$ (0°C) as standard.

NOTE: Minimum load on chiller must be above the minimum step of unloading.

With the inclusion of wind baffles (field-fabricated and installed) and low ambient head pressure control (low ambient control is not required on units with Greenspeed® intelligence) the unit is capable to start as low as -13°F (-25°C) and be operational to as low as -20°F (-29°C) ambient temperature. Inhibited propylene glycol or other suitable corrosion-resistant anti-freeze solution must be field supplied and installed in all units for unit operation below 34°F (1.1°C). Solution must be added to fluid loop to protect loop down to 15°F (8.3°C) below minimum operating ambient temperature. Concentration should be based on expected minimum temperature and either "Burst" or "Freeze" protection levels. At least 6 gal. per ton (6.5 L per kW) of water volume is the recommended minimum for a moderate system load.

High-efficiency variable condenser fans

Highly efficient part load performance is available with variable speed condenser fan motors controlled by variable speed drives. In most applications, the chiller will run at part load conditions the vast majority of the time, and this is particularly the case if the application has a 24/7 duty cycle. This option will lower utility costs while producing a scroll compressor design that provides excellent part load efficiency. This is the essence of 30RB chillers with Greenspeed® intelligence. (High-efficiency variable condenser fans are not available with sizes 060 and 070.)

Altitude correction factors

Correction factors must be applied to standard ratings at altitudes above 2000 ft (610 m) using the following multipliers:

ALTITUDE CORRECTION FACTORS

ALTITUDE (ft)	ALTITUDE (m)	CAPACITY MULTIPLIER	COMPRESSOR POWER MULTIPLIER
2,000	610	0.99	1.01
4,000	1220	0.98	1.02
6,000	1830	0.97	1.03
8,000	2440	0.96	1.04
10,000	3050	0.95	1.05

Condenser airflow

Airflow restrictions on units with standard fans will affect the unit capacity, condenser head pressure, and compressor power input. Correction factors to be applied for external static restrictions up to 0.2 in. wg (50 Pa) are as follows:

EXTERNAL STATIC		CAPACITY	COMPRESSOR	
in. wg	Pa	MULTIPLIER	POWER MULTIPLIER	
0.0	0.0	1.000	1.00	
0.1	25.0	0.986	1.01	
0.2	50.0	0.968	1.03	

Condenser coil protection (Enviro-Shield™)

Refer to the environmental selection guides for more information. If the standard Novation® (microchannel) coil does not meet the corrosion requirements for a given application, additional coil options are available. For specific geographical recommendations, please refer to the NACO (North American Commercial Operations) Packaged Chiller Builder program.

Aluminum fin/copper tube coils are constructed of seamless copper tubes mechanically bonded to aluminum fins. The fins have wavy enhancements. These condenser coils are recommended with remote cooler applications. These coils are not recommended for corrosive environments.

Pre-coated aluminum-fin coils have a durable epoxyphenolic coating applied to the fin prior to the fin stamping process to provide protection in mildly corrosive coastal environments. Pre-coated coils have an inert barrier between the aluminum fin and copper tube. This barrier electrically disconnects the dissimilar metals to minimize the potential for galvanic corrosion. This economical option provides substantial corrosion protection beyond the standard uncoated coil construction.

Copper-fin coils provide increased corrosion resistance compared to aluminum fin coils. All-copper coils eliminate bimetallic construction to eliminate the potential for galvanic corrosion. Application in industrial environments is

Application data (cont)



not recommended due to potential attack from sulfur, sulfur oxide, nitrogen oxides, carbon and several other industrial airborne contaminants.

E-coated Novation® coils have an extremely flexible and durable epoxy coating uniformly applied to all coil surfaces. Unlike brittle phenolic dip and bake coatings, e-coat provides superior protection with unmatched flexibility, edge coverage, metal adhesion, thermal performance and most importantly, corrosion resistance. E-coated coils provide this protection since all coil surfaces are completely encapsulated from environmental contamination. This option provides the best protection for Novation coil technology. E-coated aluminum microchannel coils shall be capable of withstanding an 8000-hour salt spray test in accordance with the ASTM (American Society for Testing and Materials) (U.S.A.) B-117 Standard.

E-coated aluminum-fin coils have the same flexible and durable epoxy coating as e-coated Novation coils. This option provides better protection compared to standard or pre-coated aluminum-fin coils in many environments.

E-coated copper-fin coils have the same flexible and durable epoxy coating as other e-coated coils. However, this option combines the natural salt and environmental resistance of all-copper construction with the highest level of corrosion protection within the round-tube, plate-fin type of coils.

Electrical/utility interests

Use of energy management practices can significantly reduce operating costs, especially during off-peak modes of operation. Demand limiting and temperature reset are 2 techniques for accomplishing efficient energy management. See Demand Limiting (also called load shedding) section below for further details.

Demand limiting (load shedding)

When a utility's demand for electricity exceeds a certain level, loads are shed to keep electricity demand below a prescribed maximum level. Typically, this happens on hot days when air conditioning is most needed. The energy management module (EMM) can be added to accomplish this reduction. Demand may be limited on unit by resetting fluid temperature, or by unloading the chiller to a given predetermined percentage of the load. Demand limit may also be driven by an external 4 to 20 mA signal. These features require a signal from an intelligent central control. Do not cycle demand limiter for less than 10 minutes on and 5 minutes off. Duty cycling cycles electrical loads at regular intervals regardless of need. This reduces the electrical operating costs of building by "fooling" demand indicating devices. Duty cycling of compressors or fans is not recommended since motor winding and bearing life will suffer from constant cycling.

Remote on-off control

Remote on-off control may be applied by hard-wired connection (see Controls and Troubleshooting literature) or by connection to a Carrier Comfort Network® (CCN) system.

Optional hydronic system selection

Select pump gpm from resulting chiller selection and total pressure loss in the system plus the chiller internal pressure loss

NOTE: Maximum gpm (L/s), pressure and pump hp must not exceed maximum on pump curve.

Pump flow can be reduced by using the factory-supplied triple-duty valve up to 10%. Beyond that, impeller trimming is recommended to reduce energy consumption. Follow local codes or ASHRAE 90.1 recommendations. Contact your Carrier representative for specific amount of trim required.

The AquaSnap® 30RB chiller will require a field-supplied expansion tank when the optional pumping package is provided.

The expansion tank is based on fluid type, temperature range, fluid pressure and loop volume.

Parallel chillers with hydronic packages require that pump inlets be equalized to prevent pump cavitation. Pump expansion tanks must be removed and located together in the common pump suction header. All materials needed for expansion tank relocation are field supplied. Appropriate measures must be taken for freeze protection.

Air separation

The AquaSnap 30RB chiller will require a field-supplied air separation device when the optional pumping package is provided.

Air must be controlled in a hydronic system if it is to perform properly. Air can block the flow of chilled water to its destinations and can cause cavitation in the pump, which will aerate the pump and potentially cause pump failure. The air separator is sized according to the total flow through the system. The air separator should be located inside the building. There are several types of air separators to choose from. For more information and product selection contact your local manufacturer's representative.

Heat reclaim (Desuperheater)

Whenever a chiller is operating, the heat removed from the cooler fluid, as well as, the energy associated with the compression process must be moved to another location. Under standard operation, an air-cooled chiller moves and releases this heat to the atmosphere. There are times, however, when it is beneficial to capture this heat and convert it into useful hot water.

A desuperheater, available with all coil types, may be used to serve this purpose. The desuperheater is available for sizes 080-300, and variable speed condenser fans are required when the desuperheater is employed. The leaving-water temperature can reach a maximum 140°F (60°C) under steady state and constant hot water flow conditions.

To operate in heat reclaim, there must be a simultaneous need for chilled water and tempered hot water. Just as the chiller operates in standard duty, the chiller always controls the leaving chilled water temperature.

The leaving hot-water temperature is a function of the entering hot water temperature, hot water flow and chiller capacity. As a consequence, these applications are useful for make-up water or preheating of process hot water systems that have alternative means of controlling the desired hot-water temperature.



Freeze protection for desuperheater

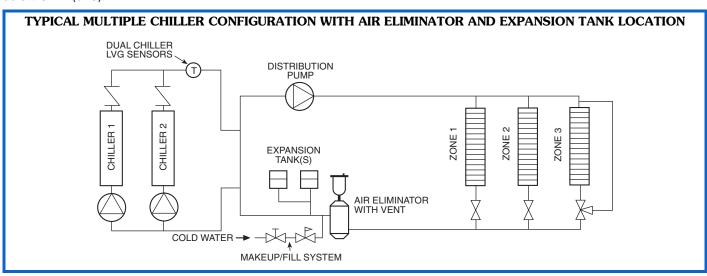
The desuperheater is located within the standard chiller envelope. Therefore, this device, as well as its associated water piping, must be located outdoors. A form of freeze protection must be provided.

The same basic guidelines that have already been discussed for cooler freeze protection and preparation for winter shutdown must be followed. The Carrier warranty does not cover damage due to freezing. The piping, however, must either be provided with heat trace or an antifreeze solution must be added to the hot water fluid.

Adding antifreeze solution is the only certain means of protecting the unit from freeze-up if the heater fails or electrical power is interrupted or lost while temperatures are below $32^{\circ}F$ (0°C).

General heat reclaim application data

The desuperheater may be used with chiller sizes 30RB080-300, and with all coil types. The overall chiller dimensions are unchanged when the desuperheater is selected. The desuperheater water piping connections are Victaulic, and field-installed piping is connected to a header such that there is only 1 hot-water inlet and 1 hot-water outlet connection.



Guide specifications



Outdoor Air-Cooled Liquid Chiller HVAC Guide Specifications

Size Range: 60 to 300 Tons
(210 to 1055 kW) Nominal
80 to 300 Tons
(280 to 1055 kW) Nominal with
Greenspeed® Intelligence

Carrier Model Number: 30RB

Part 1 — General

1.01 SYSTEM DESCRIPTION

Microprocessor controlled, air-cooled liquid chiller for outdoor installation, utilizing scroll compressors, low sound fans and optional hydronic pump system.

For units that incorporate Greenspeed intelligence, all fans are controlled with variable speed fan drive motors. Chiller software shall be specifically developed to coordinate optimal fan speed for application conditions and provide refrigerant circuit optimization, resulting in higher part-load efficiency and reduced acoustic levels.

NOTE: Hydronic pump packages are only available via ETO on 30RB060-190 units. Hydronic pump packages are not available on units with high SCCR option.

1.02 QUALITY ASSURANCE

- A. Unit shall be rated in accordance with AHRI (Air-Conditioning, Heating and Refrigeration Institute) Standard 550/590, latest edition (U.S.A.) and all units shall be in compliance with ASHRAE (American Society of Heating, Refrigeration, and Air-Conditioning Engineers) 90.1.2007 and ASHRAE 90.1 2010.
- B. Unit construction shall comply with ASHRAE 15 Safety Code, UL (Underwriters Laboratories) latest edition, and ASME (American Society of Mechanical Engineers) applicable codes (U.S.A. codes).
- C. The management system governing the manufacture of this product is ISO 9001:2015 certified.
- D. Unit shall be full load run tested at the factory.

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 air-cooled liquid chiller. Contained within the unit cabinet shall be all factory wiring, piping, controls, refrigerant charge (R-410A), and special features required prior to field start-up.

B. Materials of Construction:

- The base rail is industrial-quality, 7ga, zincdipped, galvanized frame (with Magni-coated screws).
- 2. Cabinet shall be galvanized steel casing with a baked enamel powder or pre-painted finish.
- 3. Painted parts shall withstand 1000 hours in constant neutral salt spray under ASTM B117 conditions with a 1 mm scribe per ASTM D1654. After test, painted parts shall show no signs of wrinkling or cracking, no loss of adhesion, no evidence of blistering, and the mean creepage shall not exceed ¹/₄ in. (Rating ≥ 4 per ASTM D1654) on either side of the scribe line

C. Fans:

- Condenser fans shall be direct-driven (VFD
 [variable frequency drive] controlled on units
 with Greenspeed intelligence), 9-blade airfoil
 cross-section, reinforced polymer construction,
 shrouded-axial type, and shall be statically and
 dynamically balanced with inherent corrosion
 resistance.
- 2. The variable speed drives for the condenser fans on 30RB units with Greenspeed intelligence shall include a DC link reactor.
- 3. Air shall be discharged vertically upward.
- 4. Fans shall be protected by coated steel wire safety guards.

D. Compressor/Compressor Assembly:

- 1. Fully hermetic scroll type compressors.
- Direct drive, 3500 rpm (60 Hz), protected by motor temperature sensors, suction gas cooled motor.
- 3. External vibration isolation rubber-in-shear.
- 4. Each compressor shall be equipped with crankcase heaters to minimize oil dilution.

E. Cooler:

- 1. Shell-and-tube type, direct expansion.
- 2. Tubes shall be internally enhanced seamless-copper type rolled into tube sheets.
- Shall be equipped with Victaulic-type water connections.
- Shell shall be insulated with ³/₄-in. (19-mm) PVC foam (closed-cell) with a maximum K factor of 0.28.
- 5. Design shall incorporate a minimum of 2 independent direct-expansion refrigerant circuits.
- Cooler shall be tested and stamped in accordance with ASME Code for a refrigerant working side pressure of 445 psig (3068 kPa).
 Cooler shall have a maximum water-side pressure of 300 psig (2068 kPa).
- Cooler shall be provided with a factory-installed flow switch and heater.



F. Condenser:

- 1. Coil shall be air-cooled Novation® heat exchanger technology with microchannel (MCHX) coils and shall have a series of flat tubes containing a series of multiple, parallel flow microchannels layered between the refrigerant manifolds. Coils shall consist of a two-pass arrangement. Coil construction shall consist of aluminum alloys for fins, tubes, and manifolds in combination with a corrosion-resistant coating.
- 2. Tubes shall be cleaned, dehydrated, and sealed.
- 3. Assembled condenser coils shall be leak tested and pressure tested at 656 psig (4522 kPa).
- 4. To plan the chiller installation and for ease of maintenance/coil removal, all refrigerant piping entering and leaving the condenser coils shall be located on only one side of the chiller so the coils can be removed (when needed) from the side free of piping. This is important to consider because removing the coils from the header side, although possible, involves extra labor due to extra bending and brazing of the coil headers.

G. Refrigeration Components:

Refrigerant circuit components shall include replaceable-core filter drier, moisture indicating sight glass, electronic expansion device, discharge service valve and liquid line service valves, and complete operating charge of both refrigerant R-410A and compressor oil

H. Controls, Safeties, and Diagnostics:

- 1. Unit controls shall include the following minimum components:
 - a. Microprocessor with non-volatile memory. Battery backup system shall not be accepted.
 - b. Separate terminal block for power and controls.
 - c. Control transformer to serve all controllers, relays, and control components.
 - d. ON/OFF control switch.
 - e. Replaceable solid-state controllers.
 - f. Pressure sensors shall be installed to measure suction and discharge pressure. Thermistors shall be installed to measure cooler entering and leaving fluid temperatures.
- 2. Unit controls shall include the following functions:
 - a. Automatic circuit lead/lag.
 - Hermetic scroll compressors are maintenance free and protected by an auto-adaptive control that minimizes compressor wear.
 - c. Capacity control based on leaving chilled fluid temperature and compensated by rate of change of return-fluid temperature with temperature set point accuracy to $0.1^{\circ}F$ ($0.06^{\circ}C$).

- d. Limiting the chilled fluid temperature pull-down rate at start-up to an adjustable range of 0.2°F to 2°F (0.11°C to 1.1°C) per minute to prevent excessive demand spikes at start-up.
- e. Seven-day time schedule.
- f. Leaving chilled fluid temperature reset from return fluid and outside air temperature.
- g. Chilled water pump start/stop control and primary/standby sequencing to ensure equal pump run time.
- h. Dual chiller control for parallel chiller applications without addition of hardware modules and control panels (additional thermistors and wells are required).
- Timed maintenance scheduling to signal maintenance activities for pumps, strainer maintenance and user-defined maintenance activities.
- Low ambient protection to energize cooler or hydronic system heaters.
- k. Periodic pump start to ensure pump seals are properly maintained during off-season periods.
- Single step demand limit control activated by remote contact closure.
- m. Nighttime sound mode to reduce the sound of the machine by a user-defined schedule.

3. Diagnostics:

- a. The control panel shall include, as standard, a scrolling marquee display capable of indicating the safety lockout condition by displaying a code for which an explanation may be scrolled at the display with time and date stamp.
- b. Information included for display shall be:
 - 1) Compressor lockout.
 - 2) Loss of charge.
 - 3) Low fluid flow.
 - 4) Cooler coil freeze protection.
 - 5) Cooler set point.
 - 6) Chilled water reset parameters.
 - 7) Thermistor and transducer malfunction.
 - 8) Entering and leaving-fluid temperature.
 - 9) Evaporator and condenser pressure.
 - 10) System refrigerant temperatures.
 - 11) Chiller run hours.
 - 12) Compressor run hours.
 - 13) Compressor number of starts. Time of day:
 - a) Display module, in conjunction with the microprocessor, must also be capable of displaying the output (results) of a service test. Service test shall verify operation of every switch, thermistor, fan, and compressor before chiller is started.
 - b) Diagnostics shall include the ability to review a list of the 30 most recent

Guide specifications (cont)

Carrier

- alarms with clear language descriptions of the alarm event. Display of alarm codes without the ability for clear language descriptions shall be prohibited.
- c) An alarm history buffer shall allow the user to store no less than 30 alarm events with clear language descriptions, time and date stamp event entry.
- d) The chiller controller shall include multiple connection ports for communicating with the local equipment network, the Carrier Comfort Network® (CCN) system and access to chiller control functions from any point on the chiller.
- e) The control system shall allow software upgrade without the need for new hardware modules.

Crankcase heater failure.

4. Safeties:

- a. Unit shall be equipped with thermistors and all necessary components in conjunction with the control system to provide the unit with the following protections:
 - 1) Loss of refrigerant charge.
 - 2) Reverse rotation.
 - 3) Low chilled fluid temperature.
 - 4) Thermal overload.
 - 5) High pressure.
 - 6) Electrical overload.
- b. Condenser fan and factory pump motors shall have external overcurrent protection.

I. Operating Characteristics:

- 1. Unit shall be capable of starting and running at outdoor ambient temperatures from 32°F to 125°F (0°to 52°C) for all sizes.
- 2. Unit shall be capable of starting up with 95°F (35°C) entering fluid temperature to the cooler.

J. Motors:

Condenser-fan motors shall be totally enclosed single-speed, 3-phase type with permanently lubricated bearings and Class F insulation.

K. Electrical Requirements:

- 1. Unit/module primary electrical power supply shall enter the unit at a single location.
- 2. Unit shall operate on 3-phase power at the voltage shown in the equipment schedule.
- Control points shall be accessed through terminal block.
- 4. Unit shall be shipped with factory control and power wiring installed.

L. Chilled Water Circuit:

 Chilled water circuit shall be rated for 300 psig (2068 kPa). Units with optional pump package

- are rated for 150 psig (1034 kPa) working pressure.
- 2. Thermal dispersion proof of flow switch shall be factory installed and wired.
- 3. Optional hydronic package:
 - a. 30RB060-190 units only:
 - 1) Field pipe connections shall be Victaulic type.
 - 2) Optional single or primary/standby operation pump systems. Dual pump systems shall have a pump discharge check valve.
 - Pumps shall be vertical in-line, single stage design, and capable of being serviced without disturbing piping connections.
 - a) Pump casing shall be of class 30 cast iron.
 - b) The impeller shall be of cast bronze, closed type, dynamically balanced, keyed to the shaft and secured by locking cap screw.
 - c) The hydronic kit will be provided with a flush line connection to ensure lubrication at the seal face and allow for positive venting of the seal chamber.
 - d) Each port shall be fitted with an isolation valve that allow the units to operate in parallel or standby, yet may be used to isolate one pumping unit for servicing or removal with the other pump still running.
 - e) Pump shall be rated for 150 psig (1034 kPa) working pressure.
 - f) The pump case shall have gage tappings at the suction and discharge nozzles and include drain ports.
 - g) Dual pumps shall allow for the servicing of one pump without draining the chilled water loop.
 - h) Motors shall be premium efficiency, totally enclosed fan cooled (TEFC) 3-phase type with grease lubricated ball bearings.
 - i) Each pump shall be factory tested per Hydraulic Institute Standards.
 - 4) Pressure/temperature taps (3) shall be factory installed to measure the pressure differential across the pump and across the strainer.
 - 5) Combination valve (which includes check, isolation, and modulation) shall be factory installed. Pressure/temperature taps (2) shall be factory installed to measure the pressure differential across the combination valve.
 - 6) Hydronic assembly shall have factorysupplied electric freeze protection to – 20°F (–29°C).
 - 7) Piping shall be Schedule 40 black steel.



8) Cast iron or ductile iron body ¹/₈-in. perforated strainer. A factory-installed, removable fine mesh start-up strainer for initial run period shall be included. The start-up strainer must be removed within 24 hours after chiller start-up.

M. Special Features:

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

1. High-efficiency variable condenser fans:

All fans on the unit shall have variable speed fan motors to provide higher part load efficiency and reduced acoustic levels. Each fan circuit shall have a factory-installed, independent variable speed drive with display. Variable speed drives are rated IP-55 enclosures and UL Listed. The use of this option, with the addition of antifreeze in the cooler circuit and wind baffles, shall allow running with outdoor ambient temperatures down to -20°F (-28.9°C). This option is not available with sizes 060 and 070, and it is not available in combination with low ambient head pressure control.

* 2. Low Ambient Head Pressure Control:

Unit shall be capable of running at outdoor ambient temperatures down to $-20^{\circ}F$ ($-29^{\circ}C$) with the addition of antifreeze in the cooler circuit, wind baffles, and field-installed or factory-installed solid-state head pressure control with condenser coil minimum step capacity temperature sensor. This option or accessory is neither required nor available with the high-efficiency variable condenser fan option.

3. Unit-Mounted Non-Fused Disconnect:

Unit shall be supplied with factory-installed, non-fused electrical disconnect for main power supply. This option is not available on 30RB060-120 with dual point power. This option is included with the high SCCR option.

- 4. Optional Condenser Coil Materials:
 - a. E-coated microchannel coils:

E-coated aluminum microchannel coil shall have flexible epoxy polymer coating uniformly applied to all coil external surface areas without material bridging between fins or louvers. Coating process shall ensure complete coil encapsulation, including all exposed fin edges. E-coat shall have a thickness of 0.8 to 1.2 mil with top coat having a uniform dry film thickness from 1.0 to 2.0 mil on all external coil surface areas including fin edges. E-coated coils shall have superior hardness characteristics of 2H per ASTM D3363-00 and cross hatch adhesion of 4B-5B per ASTM D3359-02. Impact resistance shall be up to 160 in./lb

(ASTM D2794-93). E-coated coil shall have superior impact resistance with no cracking, chipping, or peeling per NSF/ANSI 51-2002 Method 10.2. E-coated aluminum micro-channel coils shall be capable of withstanding an 8000-hour salt spray test in accordance with the ASTM (American Society for Testing and Materials) (U.S.A.) B-117 Standard.

b. Aluminum fin/copper tube coils:

Coil shall be constructed of seamless copper tubes mechanically bonded to aluminum fins. Fins shall have wavy enhancements. These condenser coils are recommended with remote cooler applications. These coils are not recommended for corrosive environments.

c. Pre-coated aluminum-fin coils:

Coil shall have a durable epoxy-phenolic coating to provide protection in mildly corrosive coastal environments. Coating shall be applied to the aluminum fin stock prior to the fin stamping process to create an inert barrier between the aluminum fin and copper tube. Epoxy-phenolic barrier shall minimize galvanic action between dissimilar metals.

d. Copper-fin coils:

Coil shall be constructed of copper fins mechanically bonded to copper tubes and copper tube sheets. Galvanized steel tube sheets shall not be acceptable. A polymer strip shall prevent coil assembly from contacting sheet metal coil pan to minimize potential for galvanic corrosion between the coil and pan. All-copper construction shall provide protection in moderate coastal applications.

e. E-coated aluminum-fin coils:

Coil shall have a flexible epoxy polymer coating uniformly applied to all coil surface areas without material bridging between fins. Coating process shall ensure complete coil encapsulation. Color shall be high gloss black with gloss -60° of 65 to 90% per ASTM ID523-89. Uniform dry film thickness from 0.8 to 1.2 mil on all surface areas including fin edges. Superior hardness characteristics of 2H per ASTM D3363-92A and cross hatch adhesion of 4B-5B per ASTM D3359-93. Impact resistance shall be up to 160 in./lb (ASTM D2794-93). Humidity and water immersion resistance shall be up to minimum 1000 and 250 hours respectively (ASTM D2247-92 and ASTM D870-92). Corrosion durability shall be confirmed through testing to no less than 3000 hours salt spray per ASTM B117-90. Coil construction shall be aluminum fins mechanically bonded to copper tubes.

Guide specifications (cont)



f. E-coated copper-fin coils:

Coil shall have a flexible epoxy polymer coating uniformly applied to all coil surface areas without material bridging between fins. Coating process shall ensure complete coil encapsulation. Color shall be high gloss black with gloss — 60° of 65 to 90% per ASTM D523-89. Uniform dry film thickness from 0.8 to 1.2 mil on all surface areas including fin edges. Superior hardness characteristics of 2H per ASTM D3363-92A and cross hatch adhesion of 4B-5B per ASTM D3359-93. Impact resistance shall be up to 160 in./lb (ASTM D2794-93). Humidity and water immersion resistance shall be up to minimum 1000 and 250 hours respectively (ASTM D2247-92 and ASTM D870-92). Corrosion durability shall be confirmed through testing to no less than 3000 hours salt spray per ASTM B117-90. Coil construction shall be copper-fins mechanically bonded to copper tube sheets. Galvanized steel tube sheets shall not be acceptable. A polymer strip shall prevent coil assembly from contacting sheet metal coil pan to maintain coating integrity and minimize corrosion potential between the coil and pan.

5. Heat Reclaim (Desuperheater):

Unit shall be equipped with a desuperheater (on sizes 080-300) to obtain beneficial use of some of the system heat rejection.

- a. Desuperheater shall be of brazed-plate design, and be rated for a maximum refrigerant pressure of 653 psig (4506 kPa).
- b. Desuperheater plates shall be of stainlesssteel construction.
- c. Water connections shall be Victaulic.
- d. One desuperheater per refrigerant circuit shall be provided, but the system water piping shall be of header construction so that only one inlet and one outlet water connection is required.
- e. Chillers employing desuperheaters must also employ variable speed condenser fans.
- f. For all climates which experience temperatures below 32°F (0°C), a form of freeze protections must be field-supplied (some type of glycol is recommended).
- g. A strainer with a minimum of 40 mesh must be installed within 10 ft (3 m) of the desuperheater fluid inlet to prevent debris from clogging the heat exchanger.

6. Remote Enhanced Display:

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

7. Chillervisor System Manager Multi-Unit Control: Field-installed control shall sequence between 2 and 8 chillers in parallel in a single system.

8. Minimum Load Control:

Unit shall be equipped with field-installed, microprocessor-controlled, minimum load control that shall permit unit operation down to a minimum of 6% capacity (varies with unit size). This accessory is not available on applications with leaving fluid temperature less than 38°F (3.3°C).

9. Energy Management Control Module:

A factory or field-installed module shall provide the following energy management capabilities: 4 to 20 mA signals for leaving fluid temperature reset, cooling set point reset or demand limit control; 2-step demand limit control (from 0% to 100%) activated by a remote contact closure; and discrete input for "Ice Done" indication for ice storage system interface.

10. Condenser Coil Trim Panels and Security Grilles:

Unit shall be supplied with factory or field-installed coil covers and painted grilles to protect the condenser coil and internal chiller components from physical damage.

11. Upper Hail Guard:

Unit shall be equipped with a factory-installed option consisting of louvered panels on the ends of the machine which firmly fasten to the machine frame. These panels shall cover the unit from the top to the bottom of the coils, thus providing protection of the coils from hail damage.

12. Full Hail Guard:

Unit shall be equipped with field-installed accessory consisting of hinged, louvered panels, which cover both ends of the unit. This accessory provides complete protection from hail.

13. Full End Screen:

Unit shall be equipped with a factory-installed option consisting of louvered panels that cover the machine ends from top to bottom and firmly fasten to the machine frame. These end screens function as a privacy screen and also provide hail protection.

14. BACnet¹ Communication:

Shall provide pre-programmed factory-installed communication capability with a BACnet MS/TP network. Allows integration with i-Vu® Open control system or a third-party BACnet building automation system. No field programming shall be required.

BACnet is a registered trademark of ASHRAE (American Society of Heating, Refrigeration, and Air Conditioning Engineers).



15. BACnet/Modbus¹ Translator Control:

Unit shall be supplied with factory or field-installed interface between the chiller and a BACnet Local Area Network (LAN, i.e., MS/TP EIA-485). Field programming shall be required.

16. LON Translator Control:

Unit shall be supplied with factory or field-installed interface between the chiller and a Local Operating Network (LON, i.e., Lon-Works² FT-10A ANSI/EIA-709.1). Field programming is required.

17. Navigator™ Hand Held Display:

- a. Portable hand held display module with a minimum of 4 lines and 20 characters per line, of clear English, Spanish, Portuguese or French language.
- Display menus shall provide clear language descriptions of all menu items, operating modes, configuration points and alarm diagnostics. Reference to factory codes shall not be accepted.
- c. RJ-14 connection plug shall allow display module to be connected to factory-installed receptacle.
- Industrial grade coiled extension cord shall allow the display module to be moved around the chiller.
- Magnets shall hold the display module to any sheet metal panel to allow hands-free operation.
- f. Display module shall have NEMA (National Electrical Manufacturers Association) 4x housing suitable for use in outdoor environments.
- g. Display shall have back light and contrast adjustment for easy viewing in bright sunlight or night conditions.
- h. Raised surface buttons with positive tactile response.

18. Touch Pilot™ Display:

Unit shall be supplied with a remote mount touch screen display for network attachment to the chiller.

19. Compressor Suction Service Valve:

Standard refrigerant discharge isolation and liquid valves shall enable service personnel to store the refrigerant charge in the cooler or condenser during servicing. This factory-installed option (one valve per refrigerant circuit) shall allow for

further isolation of the compressor from the cooler vessel.

20. Suction Line Insulation:

Insulation shall be tubular closed-cell insulation. This option shall be required on applications with leaving fluid temperatures below $30^{\circ}F$ (-1.1°C) and recommended for areas of high dewpoints where condensation may be a concern.

21. Remote Cooler Kit:

Shall allow remote installation of cooler. Kit shall include expansion valve and flow switch cable extensions, and instructions.

22. CRN Cooler (Canada Only):

Shall provide minor cooler modifications to meet Canadian code.

23. Compressor Sound Reduction:

Shall provide sound reduction for the scroll compressors.

- a. Unit shall be equipped with factory-installed option low sound - compressor sound reduction blanket which reduces unit sound levels by providing an acoustic blanket on each compressor.
- b. Unit shall be equipped with factory-installed option ultra low sound - compressor sound reduction enclosure which provides an enclosure to encase each compressor that is covered with an acoustic blanket.

24. High SCCR (Short Circuit Current Rating):

The optional high SCCR (short circuit current rating) device shall allow the chiller to tolerate a 65 kA short circuit current for a brief period of time while protecting downstream components. The high SCCR option shall provide a higher level of protection than the standard unit. This option is not available on 30RB250-300 units. This option includes the unit-mounted nonfused disconnect option. This option is only available in 460-v units.

25. Dual Chiller Accessory Kit:

For dual chiller applications (with units piped in parallel), unit shall be provided with the additional hardware (thermistors, wells, connectors) required for proper system operation.

26. GFI Convenience Outlet:

Shall be factory or field-installed and mounted with easily accessible 115-v female receptacle and shall include a 4-amp GFI receptacle.

27. Seismic Certification:

A seismic kit is available which will result in a unit SDS (seismic design acceleration parameter) level of 2.0.

^{1.} Modbus is a registered trademark of Schneider Electric.

^{2.} LonWorks is a registered trademark of Echelon Corporation.

