



Product Data

30GN,GT Flotronic™ and Flotronic II Air-Cooled Reciprocating Liquid Chillers 50/60 Hz

Nominal Capacities: 36 to 210 Tons
127 to 740 kW

Quality Assurance



Certificate No FM 21837

Approvals:

ISO 9002

EN 29002

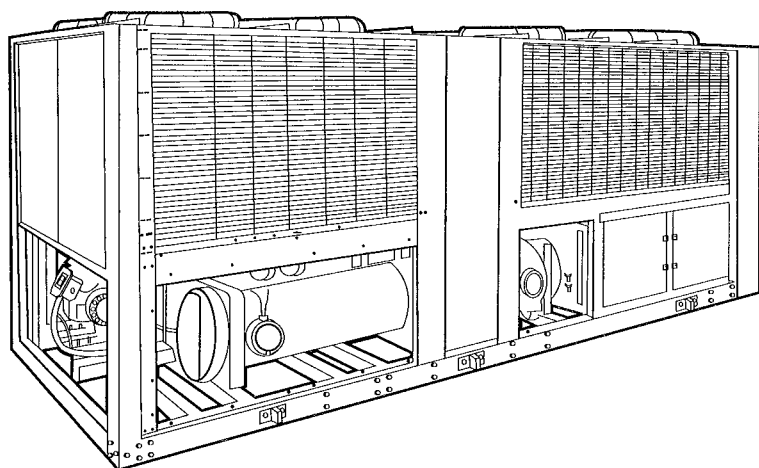
BS5750 PART 2

ANSI/ASQC Q92

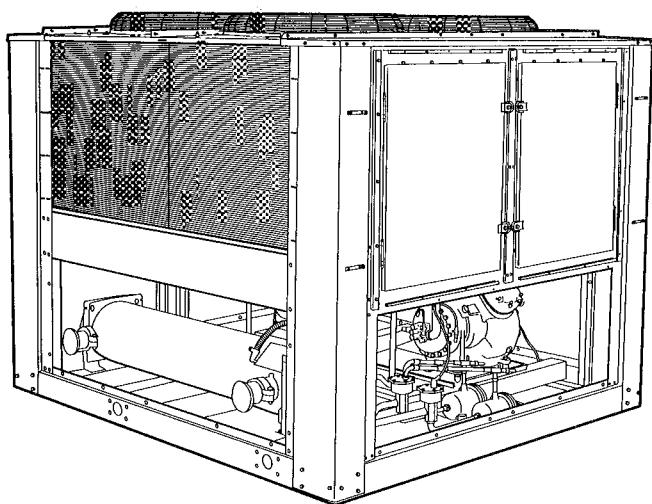
Performance Assurance



Rated in accordance with
ARI Standard 590-92
(60 Hz only)



30GT



30GN

Highly Advanced Chiller Electronics
For Years of Operating Efficiency

- wide size range
- application versatility
- long range cost savings
- dependability through high efficiency electronics
- factory tested under load
- Flotronic or Flotronic II controls

Features/Benefits

Quality design and construction

The 30GN Flotronic II and GT Flotronic chillers are the result of extensive engineering development and testing. Every component has been tested to provide many years of superior performance in every climate. Major components are qualified to 500-hour salt spray test according to the American Society for Testing and Materials (ASTM) B-117 Standard to assure longevity and reliability. All export chillers are packaged with woodboard coil protection and wood top cap. A polyvinyl bag is wrapped around the export units for increased protection against hazards of land and sea transportation to ensure product delivery in original factory condition.

Advanced technology and serviceability

The 30GT040-210 Flotronic chillers incorporate the latest in integrated microprocessor control and refrigeration cycle optimization devices. The electronic expansion valve (EXV) and the microprocessor controller let the chiller operate at low pressure refrigerant differentials, and accurately control refrigerant superheat during start-up and load changes. The result

is efficient energy usage and accurate leaving-fluid temperature (LWT) (to ± 1.25 F [± 0.7 C] from the LWT set point).

The Flotronic™ II direct digital control (30GN040-210) adds to the original Flotronic functions. It expands the capabilities of user-programmed time schedules of the chiller operation (7-day), standard return-fluid temperature reset, and real-time display of operating temperatures and pressures. Flotronic II chillers include data communication capability to the Carrier Comfort Network (CCN) and an 8-digit alpha-numeric display that is part of the chiller special interface panel.

Each of the Carrier Flotronic and Flotronic II chillers features ease of service and maintenance that add to operating savings. Built-in self diagnostics capability quickly pinpoints the location of any system problem — no need to spend costly hours guessing. The Flotronic II control maintains a valuable record of the machine's history, complete with start and run data, for periodic service or maintenance reference.

The electronic record system is invaluable for the efficiency of chiller diagnosis and long-term equipment management. Ground current sensing (070, 50 Hz and all 080-210 units) eliminates the need for refrigerant replacement by preventing compressor motor burnouts that add acids to the refrigerant.

Another advantage is the popular 06E compressor, long recognized by field technicians as easy to maintain.

Installation ease

The model 30GN (Flotronic II) and GT (Flotronic) chillers are fully packaged systems that arrive at the jobsite completely ready for installation in minimal time. On-site inspection time is also reduced because the units are UL (Underwriters' Laboratories, U.S.A.) (208/230- and 460-v) and CSA (Canadian Standards Association) listed, and meet ASME (American Society of Mechanical Engineers) standards. Important added standard features include dual refrigerant circuits, and pulldown capability from 95 F (35 C) loop temperature. Installation time is further reduced through provision for single-point electrical and cooler connections.

Design flexibility

Consulting engineers will appreciate the wide chiller operating range offered by the 30GN and GT chiller systems. The advanced microprocessor controls enable building operators to select imaginative operating control strategies for their particular needs. In addition, the units offer the best fluid temperature control through the application of proportional integral derivative (PID) logic with return fluid temperature compensation. This Carrier exclusive permits variable flow and application flexibility. These features are available for applications requiring them: Brine, copper fin/copper tube condensers, low ambient temperature operation down to -20 F, temperature reset, and 2-step load shedding (from network or remote source). See Factory-Installed Options and Field-Installed Accessories sections on pages 17 and 18 for a complete list of available choices.

Quality and reliability

To assure long life and quality performance, every standard unit is factory run tested. The dependable direct drive fans are built to NEMA (National Electrical Manufacturing Association, U.S.A.) standards, and the 06E Carrier semi-hermetic compressors are built for performance excellence in Carrier equipment worldwide. Refrigerant flow control provided by EXV precision keeps compressor motors cooler while operating at the optimum efficiency.

The automatic lead/lag control manages an even distribution of starts and run hours between refrigerant

circuits. The superior microprocessor-control package requires fewer moving control circuit parts for long life and dependability. The microprocessor controls the full refrigeration cycle (compressors, fans, and EXV to ensure efficient, synchronized operation.

Operating efficiency

The Flotronic and Flotronic II chillers offer outstanding EERs (Energy Efficiency Ratios). Exceptional part-load performance (chillers operate at part load 97% of the time) provides increased operating savings through use of multiple compressors per refrigerant circuit and suction cutoff unloading.

A fully integrated microprocessor control system (another Carrier exclusive) maintains efficient control over the compressors, EXV, and fans to optimize chiller efficiency.

The EXV allows operation at reduced condensing pressures (down to 15 psig [103 kPa] pressure differential) by letting the microprocessor operate the fans down to a lower outdoor temperature than a conventional chiller. The microprocessor senses the position of the valve and the actual condensing temperature. The EXV also increases evaporator pressure by minimizing superheat in the evaporator. Therefore, a greater percentage of the cooler is used for evaporation than in a thermostatic expansion valve (TXV) system. In a unit with a TXV, the superheat is the difference between the refrigerant temperature measured (after the compressor motor) and the satu-

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Features/Benefits (cont)



rated evaporating temperature. Up to 28% efficiency improvement at part load conditions is achieved over standard competitive chillers. The system integrated subcooler provides an extra measure of unit efficiency.

Additional increases in EER up to 15% may result with standard return fluid temperature reset.

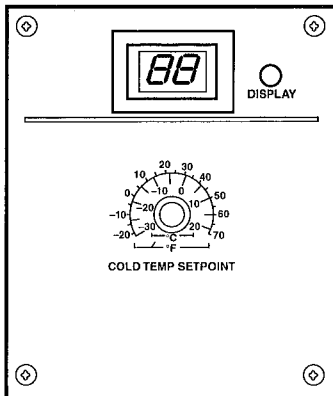
NOTE: Prove the operating savings for your building by using the Flotronic™ and Flotronic II chiller operating cost analysis on your own microcomputer, available from your local Carrier representative.

Cost-saving features

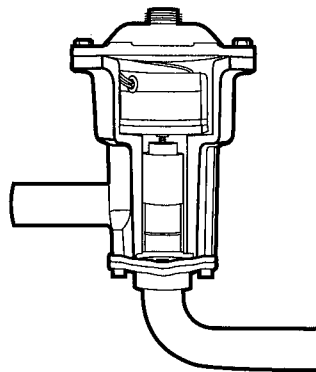
Models 30GN and GT chillers reduce operating costs with:

- Precise multiple-step capacity control.
- Operating capability at outdoor temperatures to 125 F (52 C).
- Direct-drive fan motors internally protected and shielded by PVC-coated steel wire fan guards for weather protection.
- Compressors mounted on spring-isolated steel rails or pans to minimize vibration (no need for external isolation).

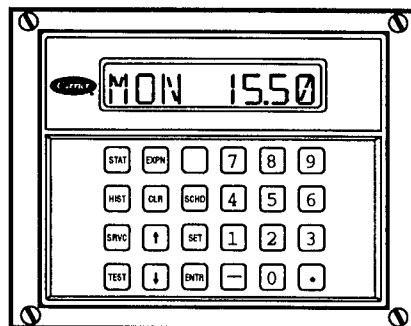
- Weather-protected controls and factory wiring
- Hinged electrical components access panels.
- Compressor crankcase heaters.
- Multiple compressor operation.
- Dual, independent refrigerant circuits.
- Oil level sight glasses.



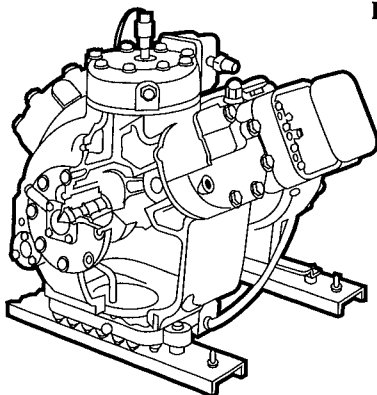
**STANDARD 30GT 2-DIGIT
FLOTROIC DISPLAY**



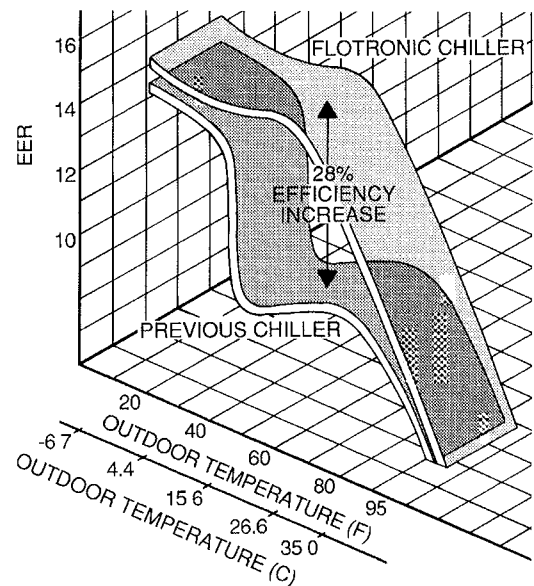
**ELECTRONIC EXPANSION
VALVE (EXV)**



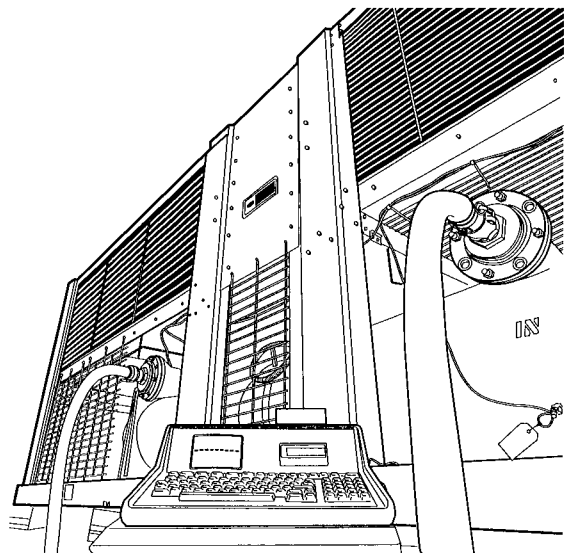
**STANDARD 30GN 8-CHARACTER
FLOTROIC II DISPLAY**



06E COMPRESSOR



**PART-LOAD EFFICIENCY
28% GAIN**



FACTORY RUN TEST

Model number nomenclature



30GT - 040 - - C 6 - 1 - -

Air-Cooled Liquid Chillers

30GN — Flotronic™ II Controls
30GT — Flotronic Controls

Compressor Start

- — Across-The-Line Start
P — Part-Wind Start

Unit Sizes

040 070 110 190
045 080 130 210
050 090 150
060 100 170

Not Used

Sound Option

- — None
L — Sound Reduction

Options

-- — NOTE: Contact your Carrier representative for details on available factory-installed options.

Packaging

1 — Domestic
3 — Export

Not Used

V-Ph-Hz

1 — 575-3-60
2 — 380-3-60 *
3 — 346-3-50
5 — 208/230-3-60
6 — 460-3-60
8 — 230-3-50
9 — 380/415-3-50

Condenser Material

- — Copper Tube, Aluminum Fins
C — Copper Tube, Copper Fins
H — Copper Tube, Aluminum Heresite Coated Fins†
J — Copper Tube, Copper Heresite Coated Fins†
K — Copper Tube, Pre-Coated Aluminum Fins†

*Export only — not for U S domestic sale.

†Contact your local Carrier representative for more details.

Physical data — 30GN,GT — English



60 HZ

UNIT SIZE		040	045	050	060	070
APPROX OPERATING WEIGHT — lb*	C-AL†	3550	3681	3856	4740	5028
	C-C**	3838	3969	4289	5157	5656
REFRIGERANT CHARGE — lb						
R-22	Ckt A	39/12	40/12	48/12	52/14	70/15
	Ckt B	48/12	46/12	60/12	54/14	69/15
COMPRESSORS, Type...rpm		Reciprocating, Semi-Hermetic...1750				
06E††	(No.) Ckt A	(1) 250	(1) 250	(1) 265	(1) 275	(1) 299
	(No.) Ckt B	(1) 250	(1) 265	(1) 275	(1) 299	(1) 299
Oil Charge — Compressor/pt		250/14, 265/19, 275/19, 299/19				
Capacity Control Steps		4	4	4	4	4
% Cap.	Ckt A	50.0	42.4	47.6	43.3	50.0
	Ckt B	50.0	57.6	52.4	56.7	50.0
Minimum Step Capacity (%)		25.0	21.2	31.7	28.8	33.3
CONDENSER FANS — Type		Propeller, Direct Drive				
Standard						
Fan Speed — rpm		1140	1140	1140	1140	1140
No. Blades...Diameter — in.		4 .30	4...30	4 .30	4 .30	4 .30
No. Fans...Total kW		4 .6.2	4...6.2	4 .6.2	6 9.3	6 .9.3
Total Airflow — cfm		35,000	35,000	34,000	52,000	51,000
High Static						
Fan Speed — rpm		1750	1750	1750	1750	1750
No. Blades...Diameter — in.		12 .30	12..30	12 ..30	12..30	12 ..30
No. Fans...Total kW		4...14.8	4 .14.8	4...14.8	6...22.2	6 22.2
Total Airflow — cfm		40,000	40,000	40,000	60,000	60,000
CONDENSER COILS — Type		Vertical and Horizontal, Plate Fin, Enhanced Tubing				
Tubes (Copper), OD — in.		0.375	0.375	0.375	0.375	0.375
No. Rows — Ckt A or B		2	2	3	2	3
Face Area sq ft — Ckt A and B Total		80.5	80.5	80.5	116.7	116.7
Max Working Pressure Refrigerant — psig		450				
COOLER — No. ...Type		One .Direct Expansion, Shell and Tube				
No. Refrigerant Circuits		2	2	2	2	2
Net Fluid Volume — Gal. (includes nozzles)		10.9	13.5	13.5	18.0	18.0
Max Working Pressure						
Refrigerant Side/Fluid Side — psig						
Standard Cooler		278/300				
Australian Code Cooler		207/150				
FLUID CONNECTIONS — in.		Cooler Inlet and Outlet; Victaulic Type				
Inlet and Outlet		3	3	3	4	4
Drain		¾ NPT				

LEGEND

OD — Outside Diameter

*Contact your local Carrier representative for more information on Epoxy- and Heresite-coated fins

†C-AL — Copper Tubing — Aluminum Fins Condenser Coil

**C-C — Copper Tubing — Copper Fins Condenser Coil

††06E250 compressors have 4 cylinders; all others have 6.

|| Based on rated external static pressure (ESP) of 0.4 in. wg or 1.0 in. wg as appropriate

NOTE: When facing the compressors, Circuit A is on the right and Circuit B is on the left.

Physical data — 30GN,GT — English (cont)



60 HZ (cont)

UNIT SIZE		080	090	100	110
APPROX OPERATING WEIGHT — lb*	C-AL†	6630	7015	8610	8660
	C-C**	7355	7740	9560	9610
REFRIGERANT CHARGE — lb					
R-22	Ckt A	78/15	78/15	98/20	98/20
	Ckt B	78/15	78/15	105/20	105/20
COMPRESSORS, Type...rpm		Reciprocating, Semi-Hermetic.. 1750			
06E††	(Qty) Ckt A	(1) 275, (1) 250	(1) 265, (1) 250	(1) 265, (1) 275	(1) 265, (1) 299
	(Qty) Ckt B	(1) 299	(2) 265	(1) 265, (1) 275	(1) 265, (1) 275
Oil Charge — Compressor/pt		250/14, 265/19, 275/19, 299/19			
Capacity Control Steps‖		7/6	11/8	11/8	11/8
% Cap.	Ckt A	56	47	50	54
	Ckt B	44	53	50	46
Minimum Step Capacity (%)‖		22/22	18/18	15/16	14/14
CONDENSER FANS — Type		Propeller, Direct Drive			
Standard/Low Noise					
Fan Speed — rpm		1140	1140	1140	1140
No. Blades...Diameter — in.		4.. 30	4.. 30	4.. 30	4.. 30
No. Fans...Total kW		6 9.4	6 9.4	8...12.7	8 12 7
Total Airflow — cfm		57,000	57,000	76,000	76,000
High Static					
Fan Speed — Rpm		1750	1750	1750	1750
No. Blades...Diameter — in.		12 30	12.. 30	12 30	12 . 30
No. Fans...Total kW		6.. 22 2	6...22.2	8 . 29 6	8 29 6
Total Airflow...cfm‡		60,000	60,000	80,000	80,000
CONDENSER COILS — Type		Vertical and Horizontal, Plate Fin, Enhanced Tubing			
Tubes (Copper), OD — in.		0.375	0 375	0 375	0.375
No. Rows — Ckt A or B		3	3	3	3
Face Area sq ft — Ckt A and B Total		128 3	128.3	168	168
Max Working Pressure Refrigerant — psig		450			
COOLER — No. ...Type		One .Direct Expansion, Shell and Tube			
No. Refrigerant Circuits		2	2	2	2
Net Fluid Volume — Gal. (includes nozzles)		24 5	24.5	30 3	30.3
Max Working Pressure					
Refrigerant Side/Fluid Side — psig					
Standard Cooler				278/300	
Australian Code Cooler				207/150	
FLUID CONNECTIONS — in.		Cooler Inlet and Outlet; Victaulic Type			
Inlet and Outlet		4	4	5	5
Drain			¾ NPT		

LEGEND

OD — Outside Diameter

*Contact your local Carrier representative for more information on Epoxy- and Heresite-coated fins.

†C-AL — Copper Tubing — Aluminum Fins Condenser Coil

**C-C — Copper Tubing — Copper Fins Condenser Coil

††06E250 compressors have 4 cylinders, all others have 6.

‡ GN/GT.

‖Based on rated external static pressure (ESP) of 0.4 in. wg or 1.0 in. wg as appropriate.

NOTE: When facing the compressors, Circuit A is on the right and Circuit B is on the left.



60 HZ (cont)

UNIT SIZE		130	150	170	190	210
APPROX OPERATING WEIGHT — lb*	C-AL†	10,046	10,481	11,293	12,676	13,380
	C-C**	11,318	11,753	12,565	14,195	14,899
REFRIGERANT CHARGE — lb						
R-22	Ckt A	133/28	143/35	153/45	178/30	190/40
	Ckt B	137/28	144/35	162/45	173/30	185/40
Total/Over Clear Glass						
COMPRESSORS, Type...rpm		Reciprocating, Semi-Hermetic ..1750				
06E††	(Qty) Ckt A	(1) 275, (1) 299	(3) 265	(3) 275	(1) 265, (1) 275, (1) 299	(3) 265, (1) 275
	(Qty) Ckt B	(1) 275, (1) 299	(2) 299	(3) 275	(1) 265, (1) 275, (1) 299	(1) 275, (2) 299
Oil Charge — Compressor/pt		265/19, 275/19, 299/19				
Capacity Control Steps		8	14/10	17/12	6/6	7/7
Ckt A		50	50	50	50	50
% Cap. Ckt B		50	50	50	50	50
Minimum Step Capacity (%)		14	11/11	11/11	13/14	11/12
CONDENSER FANS — Type		Propeller				
Standard/Low Noise						
Fan Speed — rpm		1140	1140	1140	1140	1740
No. Blades...Diameter — in.		4 .30	4. 30	4. 30	4 .30	4 .30
No. Fans...Total kW		10. .15 9	10 .15.9	10...15.9	12...19.1	12...19.1
Total Airflow — cfm		100,000	100,000	100,000	120,000	120,000
High Static						
Fan Speed — rpm		1740	1740	1740	1740	1740
No. Blades...Diameter — in.		12...30	12...30	12 .30	12...30	12...30
No. Fans...Total kW		10 .37	10. 37	10. 37	12. 44.4	12. 44.4
Total Airflow — cfm		100,000	100,000	100,000	120,000	120,000
CONDENSER COILS — Type		Vertical and Horizontal, Plate Fin, Enhanced Tubing				
Tubes (Copper), OD — in.		375	375	375	375	375
No. Rows — Ckt A or B		3	3	3	3	3
Face Area sq ft — Ckt A and B Total		225.1	225.1	225.1	268.9	268.9
Max Working Pressure Refrigerant — psig		450	450	450	450	450
COOLER — No. ...Type		One .Direct Expansion, Shell and Tube				
No. Refrigerant Circuits		2	2	2	2	2
Net Fluid Volume — Gal. (includes nozzles)		52.0	52.0	61.0	61.0	70.4
Max Working Pressure						
Refrigerant Side/Fluid Side — psig		278/300	278/300	278/300	278/300	278/300
FLUID CONNECTIONS — in.		Victaulic Type				
Inlet and Outlet		6				
Drain		¾ NPT				

LEGEND

OD — Outside Diameter

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†C-AL — Copper Tubing — Aluminum Fins Condenser Coil.

**C-C — Copper Tubing — Copper Fins Condenser Coil

††06E250 compressors have 4 cylinders; all others have 6.

|| GN/GT.

||Based on rated external static pressure (ESP) of 0.4 in. wg or 1.0 in. wg as appropriate.

NOTE: When facing the compressors, Circuit A is on the right and Circuit B is on the left.

Physical data — 30GN,GT — English (cont)



50 HZ

UNIT SIZE		040	045	050	060	070
APPROX OPERATING WEIGHT — lb*	C-AL†	3590	3736	3916	4780	5453
	C-C**	3878	4024	4349	5197	6081
REFRIGERANT CHARGE — lb R-22	Ckt A	39/12	40/12	48/12	52/14	71/15
	Ckt B	48/12	46/12	60/12	54/14	69/15
COMPRESSORS, Type...rpm		Reciprocating, Semi-Hermetic 1450				
06E††	(No.) Ckt A	(1) 250	(1) 265	(1) 275	(1) 299	(1) 265, (1) 265
	(No.) Ckt B	(1) 265	(1) 275	(1) 299	(1) 299	(1) 299
Oil Charge — Compressor/pt		250/14, 265/19, 275/19, 299/19				
Capacity Control Steps	Ckt A	4	4	4	4	7
	Ckt B	42.4	47.6	43.3	50.0	58.0
% Cap.	Ckt A	57.6	52.4	56.7	50.0	42.0
	Ckt B	21.2	31.7	28.8	33.3	19.3
CONDENSER FANS — Type		Propeller, Direct Drive				
Standard		950	950	950	950	950
Fan Speed — rpm		6.30	6.30	6.30	6.30	6.30
No. Blades...Diameter — in.		4 6.2	4 6.2	4 6.2	6.9.3	6.9.3
No. Fans...Total kW		35,000	35,000	34,000	52,000	51,000
Total Airflow — cfm						
High Static		1445	1445	1445	1445	1445
Fan Speed — rpm		12.30	12.30	12.30	12.30	12.30
No. Blades...Diameter — in.		4.14.8	4.14.8	4.14.8	6.22.2	6.22.2
No. Fans...Total kW		40,000	40,000	40,000	60,000	60,000
Total Airflow — cfm						
CONDENSER COILS — Type		Vertical and Horizontal, Plate Fin, Enhanced Tubing				
Tubes (Copper), OD — in.		0.375	0.375	0.375	0.375	0.375
No. Rows — Ckt A or B		2	2	3	2	3
Face Area sq ft — Ckt A and B Total		80.5	80.5	80.5	116.7	116.7
Max Working Pressure Refrigerant — psig		450				
COOLER — No. ...Type		One Direct Expansion, Shell and Tube				
No. Refrigerant Circuits		2	2	2	2	2
Net Fluid Volume — Gal. (includes nozzles)		10.9	13.5	13.5	18.0	18.0
Max Working Pressure		278/300				
Refrigerant Side/Fluid Side — psig		207/150				
Standard Cooler						
Australian Code Cooler						
FLUID CONNECTIONS — in.		Cooler Inlet and Outlet; Victaulic Type				
Inlet and Outlet		3	3	3	4	4
Drain		¾ NPT				

LEGEND

OD — Outside Diameter

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†C-AL — Copper Tubing — Aluminum Fins Condenser Coil

**C-C — Copper Tubing — Copper Fins Condenser Coil.

††06E250 compressors have 4 cylinders, all others have 6

|| Based on rated external static pressure (ESP) of 0.4 in. wg or 1.0 in. wg as appropriate.

NOTE: When facing the compressors, Circuit A is on the right and Circuit B is on the left

50 HZ (cont)

UNIT SIZE		080	090	100	110
APPROX OPERATING WEIGHT — lb*	C-AL†	6720	7135	8710	8840
	C-C**	7445	7860	9660	9790
REFRIGERANT CHARGE — lb					
R-22	Ckt A	78/15	78/15	98/20	98/20
	Ckt B	78/15	78/15	105/20	105/20
COMPRESSORS, Type...rpm		Reciprocating, Semi-Hermetic...1450			
06E††	(Qty) Ckt A	(1) 265, (1) 299	(1) 265, (1) 299	(1) 265, (1) 299	(2) 299
	(Qty) Ckt B	(1) 299	(1) 265, (1) 275	(1) 265, (1) 299	(2) 299
Oil Charge — Compressor/pt		250/14, 265/19, 275/19, 299/19			
Capacity Control Steps		6/8	8/11	8/11	8/11
% Cap.	Ckt A	62	54	50	50
	Ckt B	38	46	50	50
Minimum Step Capacity (%)		16/17	14/14	13/13	17/17
CONDENSER FANS — Type		Propeller, Direct Drive			
Standard/Low Noise					
Fan Speed — rpm		950	950	950	950
No. Blades...Diameter — in.		4 .30	4 .30	4 .30	4 .30
No. Fans...Total kW		6 .9.4	6 .9.4	8 .12.7	8 .12.7
Total Airflow — cfm		57,000	57,000	76,000	76,000
High Static					
Fan Speed — rpm		1445	1445	1445	1445
No. Blades...Diameter — in.		12..30	12..30	12..30	12..30
No. Fans...Total kW		6 ..22.2	6 ..22.2	8 ...29.6	8 29.6
Total Airflow...cfm¶		60,000	60,000	80,000	80,000
CONDENSER COILS — Type		Vertical and Horizontal, Plate Fin, Enhanced Tubing			
Tubes (Copper), OD — in.		0.375	0.375	0.375	0.375
No. Rows — Ckt A or B		3	3	3	3
Face Area sq ft — Ckt A and B Total		128.3	128.3	168	168
Max Working Pressure Refrigerant — psig		450			
COOLER — No. ...Type		One...Direct Expansion, Shell and Tube			
No. Refrigerant Circuits		2	2	2	2
Net Fluid Volume — Gal. (includes nozzles)		24.5	24.5	30.3	30.3
Max Working Pressure					
Refrigerant Side/Fluid Side — psig					
Standard Cooler			278/300		
Australian Code Cooler			207/150		
FLUID CONNECTIONS — in.		Cooler Inlet and Outlet; Victaulic Type			
Inlet and Outlet		4	4	5	5
Drain			¾ NPT		

LEGEND

OD — Outside Diameter

*Contact your local Carrier representative for more information on Epoxy- and Heresite-coated fins

†C-AL — Copper Tubing — Aluminum Fins Condenser Coil

**C-C — Copper Tubing — Copper Fins Condenser Coil

††06E250 compressors have 4 cylinders; all others have 6

|| GN/GT

¶Based on rated external static pressure (ESP) of 0.4 in. wg or 1.0 in. wg as appropriate

NOTE: When facing the compressors, Circuit A is on the right and Circuit B is on the left.

Physical data — 30GN,GT — English (cont)



50 HZ (cont)

UNIT SIZE		130	150	170	190	210
APPROX OPERATING WEIGHT — lb*	C-AL†	10,511	10,676	11,443	12,906	13,545
	C-C**	11,783	11,948	12,715	14,425	15,064
REFRIGERANT CHARGE — lb						
R-22	Ckt A	133/28	143/35	153/45	178/30	190/40
	Ckt B	137/28	143/35	162/45	173/30	185/40
COMPRESSORS, Type...rpm		Reciprocating, Semi-Hermetic...1450				
06E††	(Qty) Ckt A	(1) 265, (2) 275	(3) 299	(2) 275, (1) 299	(3) 299	(2) 265, (2) 299
	(Qty) Ckt B	(2) 299	(2) 299	(1) 275, (2) 299	(3) 299	(3) 299
Oil Charge — Compressor/pt		265/19, 275/19, 299/19				
Capacity Control Steps		10	10/14	12/17	6/6	7/7
% Cap.	Ckt A	52	60	48	50	52
	Ckt B	48	40	52	50	48
Minimum Step Capacity (%)		10	13/13	10/9	17/17	10/9
CONDENSER FANS — Type		Propeller				
Standard/Low Noise		950	950	950	950	950
Fan Speed — rpm		6 .30	4 .30	4 .30	4 .30	4 .30
No. Blades...Diameter — in.		10 .15.9	10 .15.9	10 .15.9	12...19.1	12 .19.1
No. Fans...Total kW		100,000	100,000	100,000	120,000	120,000
Total Airflow — cfm						
High Static		1445	1445	1445	1445	1445
Fan Speed — rpm		6 .30	12 .30	12 .30	12 .30	12 .30
No. Blades...Diameter — in.		10.. .37	10 .37	10 .37	12.. .44.4	12 .44.4
No. Fans...Total kW		100,000	100,000	100,000	120,000	120,000
Total Airflow — cfm						
CONDENSER COILS — Type		Vertical and Horizontal, Plate Fin, Enhanced Tubing				
Tubes (Copper), OD — in.		.375	.375	.375	.375	.375
No. Rows — Ckt A or B		3	3	3	3	3
Face Area sq ft — Ckt A and B Total		225.1	225.1	225.1	268.9	268.9
Max Working Pressure Refrigerant — psig		450	450	450	450	450
COOLER — No. ...Type		One .Direct Expansion, Shell and Tube				
No. Refrigerant Circuits		2	2	2	2	2
Net Fluid Volume — Gal. (includes nozzles)		52.0	52.0	61.0	61.0	70.4
Max Working Pressure Refrigerant Side/Fluid Side — psig		278/300	278/300	278/300	278/300	278/300
FLUID CONNECTIONS — in.		Victaulic Type				
Inlet and Outlet		6				
Drain		¾ NPT				

LEGEND

OD — Outside Diameter

*Contact your local Carrier representative for more information on Epoxy- and Heresite-coated fins.

†C-AL — Copper Tubing — Aluminum Fins Condenser Coil

**C-C — Copper Tubing — Copper Fins Condenser Coil.

††06E250 compressors have 4 cylinders, all others have 6.

|| GN/GT

||Based on rated external static pressure (ESP) of 0.4 in. wg or 1.0 in. wg as appropriate

NOTE When facing the compressors, Circuit A is on the right and Circuit B is on the left

Physical data — 30GN,GT — SI



60 HZ

UNIT SIZE		040	045	050	060	070
APPROX OPERATING WEIGHT — kg*	C-AL†	1610	1669	1749	2150	2280
	C-C**	1741	1800	1945	2339	2565
REFRIGERANT CHARGE — kg R-22	Ckt A	17.7/5.4	18.1/5.4	21.8/5.4	23.6/6.3	31.7/6.8
	Ckt B	21.8/5.4	20.9/5.4	27.2/5.4	24.5/6.3	31.3/6.8
Total/Over Clear Glass						
COMPRESSORS, Type...rpm 06E††	(No.) Ckt A	(1) 250	(1) 250	(1) 265	(1) 275	(1) 299
	(No.) Ckt B	(1) 250	(1) 265	(1) 275	(1) 299	(1) 299
Oil Charge — Compressor/L		250/6.6, 265/9.0, 275/9.0, 299/9.0				
Capacity Control Steps		4	4	4	4	4
% Cap.	Ckt A	50.0	42.4	47.6	43.3	50.0
	Ckt B	50.0	57.6	52.4	56.7	50.0
Minimum Step Capacity (%)		25.0	21.2	31.7	28.8	33.3
CONDENSER FANS — Type Standard		Propeller, Direct Drive				
Fan Speed — r/s		19	19	19	19	19
No. Blades...Diameter — mm		4 .762	4 .762	4 .762	4 .762	4 .762
No. Fans...Total kW		4 .6.2	4 .6.2	4 .6.2	6 .9.3	6 .9.3
Total Airflow — L/s		16 517	16 517	16 045	24 540	24 068
High Static						
Fan Speed — r/s		29	29	29	29	29
No. Blades...Diameter — mm		12 .762	12 .762	12 .762	12 .762	12 .762
No. Fans...Total kW		4 .14.8	4 .14.8	4 .14.8	6 .22.2	6 .22.2
Total Airflow — L/s		18 876	18 876	18 876	28 314	28 314
CONDENSER COILS — Type		Vertical and Horizontal, Plate Fin, Enhanced Tubing				
Tubes (Copper), OD — mm		9.53	9.53	9.53	9.53	9.53
No. Rows — Ckt A or B		2	2	3	2	3
Face Area m ² — Ckt A and B Total		7.48	7.48	7.48	10.84	10.84
Max Working Pressure Refrigerant — kPa		3103				
COOLER — No. ...Type		One.. Direct Expansion, Shell and Tube				
No. Refrigerant Circuits		2	2	2	2	2
Net Fluid Volume — L (includes nozzles)		41.3	51.2	51.2	68.3	68.3
Max Working Pressure						
Refrigerant Side/Fluid Side — kPa						
Standard Cooler						
Australian Code Cooler						
FLUID CONNECTIONS — in.		Cooler Inlet and Outlet, Victaulic Type				
Inlet and Outlet		3	3	3	4	4
Drain		¾ NPT				

LEGEND

OD — Outside Diameter

*Contact your local Carrier representative for more information on Epoxy- and Heresite-coated fins.

†C-AL — Copper Tubing — Aluminum Fins Condenser Coil

**C-C — Copper Tubing — Copper Fins Condenser Coil

††06E250 compressors have 4 cylinders; all others have 6

|| Based on rated external static pressure (ESP) of 100 Pa or 250 Pa as appropriate.

NOTE: When facing the compressors, Circuit A is on the right and Circuit B is on the left

Physical data — 30GN,GT — SI (cont)



60 HZ (cont)

UNIT SIZE		080	090	100	110
APPROX OPERATING WEIGHT — kg*	C-AL†	3013	3189	3914	3935
	C-C**	3343	3518	4346	4368
REFRIGERANT CHARGE — kg					
R-22	Ckt A	35.4/6.8	35.4/6.8	44.5/9.1	44.5/9.1
	Ckt B	35.4/6.8	35.4/6.8	47.7/9.1	47.7/9.1
COMPRESSORS, Type...r/s		Reciprocating, Semi-Hermetic...29.2			
06E††	(Qty) Ckt A	(1) 275, (1) 250	(1) 265, (1) 250	(1) 265, (1) 275	(1) 265, (1) 299
	(Qty) Ckt B	(1) 299	(2) 265	(1) 265, (1) 275	(1) 265, (1) 275
Oil Charge — Compressor/L		250/6.6, 265/9.0, 275/9.0, 299/9.0			
Capacity Control Steps		7/6	11/8	11/8	11/8
% Cap.	Ckt A	56	47	50	54
	Ckt B	44	53	50	46
Minimum Step Capacity (%)		22/22	18/18	15/16	14/14
CONDENSER FANS — Type		Propeller, Direct Drive			
Standard/Low Noise		19	19	19	19
Fan Speed — r/s		4 .762	4 .762	4 .762	4 .762
No. Blades...Diameter — mm		6 .94	6 .94	8 .127	8 .127
No. Fans...Total kW		26 898	26 898	35 864	35 864
Total Airflow — L/s					
High Static		29	29	29	29
Fan Speed — r/s		12 .762	12 .762	12 .762	12 .762
No. Blades...Diameter — mm		6 .222	6 .222	8 .296	8 .296
No. Fans...Total kW		28 315	28 315	37 750	37 750
Total Airflow...L/s					
CONDENSER COILS — Type		Vertical and Horizontal, Plate Fin, Enhanced Tubing			
Tubes (Copper), OD — mm		9.53	9.53	9.53	9.53
No. Rows — Ckt A or B		3	3	3	3
Face Area m ² — Ckt A and B Total		11.92	11.92	15.61	15.61
Max Working Pressure Refrigerant — kPa		3103			
COOLER — No. ...Type		One. Direct Expansion, Shell and Tube			
No. Refrigerant Circuits		2	2	2	2
Net Fluid Volume — L (includes nozzles)		92.9	92.9	114.6	114.6
Max Working Pressure					
Refrigerant Side/Fluid Side — kPa					
Standard Cooler				1916/2068	
Australian Code Cooler				1430/1034	
FLUID CONNECTIONS — in.		Cooler Inlet and Outlet; Victaulic-Type			
Inlet and Outlet		4	4	5	5
Drain		¾ NPT			

LEGEND

OD — Outside Diameter

*Contact your local Carrier representative for more information on Epoxy- and Heresite-coated fins

†C-AL — Copper Tubing — Aluminum Fins Condenser Coil.

**C-C — Copper Tubing — Copper Fins Condenser Coil.

††06E250 compressors have 4 cylinders; all others have 6.

|| GN/GT

¶Based on rated external static pressure (ESP) of 100 Pa or 250 Pa as appropriate

NOTE: When facing the compressors, Circuit A is on the right and Circuit B is on the left.

60 HZ (cont)

UNIT SIZE		130	150	170	190	210
APPROX OPERATING WEIGHT — kg*	C-AL†	4566	4754	5133	5761	6081
	C-C**	5144	5342	5711	6452	6772
REFRIGERANT CHARGE — kg						
R-22	Ckt A	60.5/12.7	65.0/15.9	69.5/20.5	80.9/13.6	86.4/18.2
	Ckt B	62.3/12.7	65.0/15.9	73.6/20.5	78.6/13.6	84.1/18.2
COMPRESSORS, Type...r/s		Reciprocating, Semi-Hermetic .29 2				
06E††	(Qty) Ckt A	(1) 275, (1) 299	(3) 265	(3) 275	(1) 265, (1) 275, (1) 299	(3) 265, (1) 275
	(Qty) Ckt B	(1) 275, (1) 299	(2) 299	(3) 275	(1) 265, (1) 275, (1) 299	(1) 275, (2) 299
Oil Charge — Compressor/L		265/9.0, 275/9.0, 299/9.0				
Capacity Control Steps		8	14/10	17/12	6/6	7/7
% Cap.	Ckt A	50	50	50	50	50
	Ckt B	50	50	50	50	50
Minimum Step Capacity (%)		14	11/11	11/11	13/14	11/12
CONDENSER FANS — Type		Propeller				
Standard/Low Noise						
Fan Speed — r/s		19	19	19	19	19
No. Blades...Diameter — mm		4 .762	4 .762	4 .762	4 .762	4 .762
No. Fans...Total kW		10 .15.9	10 .15.9	10...15.9	12 .19.1	12 .19.1
Total Airflow — L/s		47 190	47 190	47 190	56 630	56 630
High Static						
Fan Speed — r/s		29	29	29	29	29
No. Blades...Diameter — mm		12 .762	12...762	12 .762	12...762	12...762
No. Fans...Total kW		10 .37.0	10 .37.0	10 .37.0	12...44.4	12 .44.4
Total Airflow — L/s		47 190	47 190	47 190	56 630	56 630
CONDENSER COILS — Type		Vertical and Horizontal, Plate Fin, Enhanced Tubing				
Tubes (Copper), OD — mm		9.53	9.53	9.53	9.53	9.53
No. Rows — Ckt A or B		3	3	3	3	3
Face Area m ² — Ckt A and B Total		20.92	20.92	20.92	20.92	20.92
Max Working Pressure Refrigerant — kPa		3103	3103	3103	3103	3103
COOLER — No. ...Type		One ..Direct Expansion, Shell and Tube				
No. Refrigerant Circuits		2	2	2	2	2
Net Fluid Volume — L (includes nozzles)		197	197	229	229	267
Max Working Pressure						
Refrigerant Side/Fluid Side — kPa		1916/2068	1916/2068	1916/2068	1916/2068	1916/2068
FLUID CONNECTIONS — in.		Victaulic Type				
Inlet and Outlet		6				
Drain		¾ NPT				

LEGEND

OD — Outside Diameter

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†C-AL — Copper Tubing — Aluminum Fins Condenser Coil

**C-C — Copper Tubing — Copper Fins Condenser Coil.

††06E250 compressors have 4 cylinders, all others have 6.

|| GN/GT.

¶Based on rated external static pressure (ESP) of 100 Pa or 250 Pa as appropriate.

NOTE: When facing the compressors, Circuit A is on the right and Circuit B is on the left

Physical data — 30GN,GT — SI (cont)



50 HZ

UNIT SIZE		040	045	050	060	070
APPROX OPERATING WEIGHT — kg*	C-AL†	1628	1694	1776	2168	2473
	C-C**	1759	1825	1972	2357	2758
REFRIGERANT CHARGE — kg						
R-22	Ckt A	17.7/5.4	18.1/5.4	21.8/5.4	23.6/6.3	32.2/16.8
	Ckt B	21.8/5.4	20.9/5.4	27.2/5.4	24.5/6.3	31.3/16.8
COMPRESSORS, Type...r/s		Reciprocating, Semi-Hermetic . 24 2				
06E††	(No.) Ckt A	(1) 250	(1) 265	(1) 275	(1) 299	(1) 265, 265
	(No.) Ckt B	(1) 265	(1) 275	(1) 299	(1) 299	(1) 299
Oil Charge — Compressor/pt		250/6.6, 265/9.0, 275/9.0, 299/9.0				
Capacity Control Steps		4	4	4	4	7
% Cap.	Ckt A	42.4	47.6	43.3	50.0	58.0
	Ckt B	57.6	52.4	56.7	50.0	42.0
Minimum Step Capacity (%)		21.2	31.7	28.8	33.3	19.3
CONDENSER FANS — Type		Propeller, Direct Drive				
Standard		15.8	15.8	15.8	15.8	15.8
Fan Speed — r/s		6.762	6.762	6.762	6.762	6.762
No. Blades...Diameter — mm		4...6.2	4.6.2	4.6.2	6.9.3	6.9.3
No. Fans...Total kW		16.517	16.517	16.045	24.540	24.068
Total Airflow — L/s						
High Static		24	24	24	24	24
Fan Speed — r/s		12...762	12.762	12.762	12.762	12...762
No. Blades...Diameter — mm		4.14.8	4.14.8	4.14.8	6.22.2	6.22.2
No. Fans...Total kW		18.876	18.876	18.876	28.314	28.314
Total Airflow — L/s						
CONDENSER COILS — Type		Vertical and Horizontal, Plate Fin, Enhanced Tubing				
Tubes (Copper), OD — mm		9.53	9.53	9.53	9.53	9.53
No. Rows — Ckt A or B		2	2	3	2	3
Face Area m ² — Ckt A and B Total		7.48	7.48	7.48	10.84	10.84
Max Working Pressure Refrigerant — kPa		3103				
COOLER — No. ...Type		One Direct Expansion, Shell and Tube				
No. Refrigerant Circuits		2	2	2	2	2
Net Fluid Volume — L (includes nozzles)		41.3	51.2	51.2	68.3	68.3
Max Working Pressure		1916/2068				
Refrigerant Side/Fluid Side — kPa		1430/1034				
Standard Cooler						
Australian Code Cooler						
FLUID CONNECTIONS — in.		Cooler Inlet and Outlet; Victaulic Type				
Inlet and Outlet		3	3	3	4	4
Drain		¾ NPT				

LEGEND

OD — Outside Diameter

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†C-AL — Copper Tubing — Aluminum Fins Condenser Coil

**C-C — Copper Tubing — Copper Fins Condenser Coil

††06E250 compressors have 4 cylinders, all others have 6

|| GN/GT

¶Based on rated external static pressure (ESP) of 100 Pa or 250 Pa as appropriate.

NOTE When facing the compressors, Circuit A is on the right and Circuit B is on the left

50 HZ (cont)

UNIT SIZE		080	090	100	110
APPROX OPERATING WEIGHT — kg*	C-AL†	3055	3243	3960	4018
	C-C**	3384	3573	4390	4450
REFRIGERANT CHARGE — kg					
R-22	Ckt A	35.4/6.8	35.4/6.8	44.5/9.1	44.5/9.1
	Ckt B	35.4/6.8	35.4/6.8	47.7/9.1	47.7/9.1
COMPRESSORS, Type...r/s		Reciprocating, Semi-Hermetic ..24.2			
06E††	(Qty) Ckt A	(1) 265, (1) 299	(1) 265, (1) 299	(1) 265, (1) 299	(2) 299
	(Qty) Ckt B	(1) 299	(1) 265, (1) 275	(1) 265, (1) 299	(2) 299
Oil Charge — Compressor/L		250/6.6, 265/9.0, 275/9.0, 299/9.0			
Capacity Control Steps		6/8	8/11	8/11	8/11
% Cap.	Ckt A	62	54	50	50
	Ckt B	38	46	50	50
Minimum Step Capacity (%)		16/17	14/14	13/13	17/17
CONDENSER FANS — Type		Propeller, Direct Drive			
Standard/Low Noise					
Fan Speed — r/s		15.8	15.8	15.8	15.8
No. Blades...Diameter — mm		4 ..762	4. 762	4 762	4...762
No. Fans...Total kW		6...9.4	6 9.4	8 .12 7	8 12.7
Total Airflow — L/s		26 898	26 898	35 864	35 864
High Static					
Fan Speed — r/s		29	29	29	29
No. Blades...Diameter — mm		12 ..762	12 762	12 ..762	12 762
No. Fans...Total kW		6...22.2	6 .22.2	8 .29.6	8 ..29.6
Total Airflow — L/s¶		28 315	28 315	37 750	37 750
CONDENSER COILS — Type		Vertical and Horizontal, Plate Fin, Enhanced Tubing			
Tubes (Copper), OD — mm		9.53	9.53	9.53	9.53
No. Rows — Ckt A or B		3	3	3	3
Face Area m ² — Ckt A and B Total		11.92	11.92	15.61	15.61
Max Working Pressure Refrigerant — kPa		3103			
COOLER — No. ...Type		One Direct Expansion, Shell and Tube			
No. Refrigerant Circuits		2	2	2	2
Net Fluid Volume — L (includes nozzles)		92.9	92.9	114.6	114.6
Max Working Pressure					
Refrigerant Side/Fluid Side — kPa					
Standard Cooler			1916/2068		
Australian Code Cooler			1430/1034		
FLUID CONNECTIONS — in.		Cooler Inlet and Outlet, Victaulic Type			
Inlet and Outlet		4	4	5	5
Drain			¾ NPT		

LEGEND

OD — Outside Diameter

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†C-AL — Copper Tubing — Aluminum Fins Condenser Coil

**C-C — Copper Tubing — Copper Fins Condenser Coil

††06E250 compressors have 4 cylinders; all others have 6.

|| GN/GT

¶Based on rated external static pressure (ESP) of 100 Pa or 250 Pa as appropriate.

NOTE When facing the compressors, Circuit A is on the right and Circuit B is on the left

Physical data — 30GN,GT — SI (cont)



50 HZ (cont)

UNIT SIZE		130	150	170	190	210
APPROX OPERATING WEIGHT — kg*	C-AL†	4778	4852	5201	5866	6156
	C-C**	5335	5430	5779	6556	6847
REFRIGERANT CHARGE — kg						
R-22	Ckt A	60 5/12.7	65.0/15.9	69 5/20.5	80.9/13.6	86.4/18.2
	Ckt B	62 3/12.7	65.0/15.9	73 6/20.5	78.6/13.6	84 1/18.2
COMPRESSORS, Type...r/s		Reciprocating, Semi-Hermetic. 24 2				
06E††	(Qty) Ckt A	(1) 265, (2) 275	(3) 299	(2) 275, (1) 299	(3) 299	(2) 265, (2) 299
	(Qty) Ckt B	(2) 299	(2) 299	(1) 275, (2) 299	(3) 299	(3) 299
Oil Charge — Compressor/L		265/9.0, 275/9.0, 299/9.0				
Capacity Control Steps		10	10/14	12/17	6/6	7/7
% Cap.	Ckt A	52	60	48	50	52
	Ckt B	48	40	52	50	48
Minimum Step Capacity (%)		10	13/13	10/9	17/17	10/9
CONDENSER FANS — Type		Propeller				
Standard/Low Noise						
Fan Speed — r/s		15.8	15.8	15.8	15.8	15.8
No. Blades...Diameter — mm		6 762	4 762	4 762	4 762	4...762
No. Fans...Total kW		10 15.9	10 15.9	10.. 15.9	12.. 19.1	12 19.1
Total Airflow — L/s		47 190	47 190	47 190	56 630	56 630
High Static						
Fan Speed — r/s		24.1	24.1	24.1	24.1	24.1
No. Blades...Diameter — mm		6 762	12 762	12. 762	12. 762	12.. 762
No. Fans...Total kW		10. 37	10.. 37	10. 37	12.. 44.4	12 44.4
Total Airflow — L/s		47 190	47 190	47 190	56 630	56 630
CONDENSER COILS — Type		Vertical and Horizontal, Plate Fin, Enhanced Tubing				
Tubes (Copper), OD — mm		9.53	9.53	9.53	9.53	9.53
No. Rows — Ckt A or B		3	3	3	3	3
Face Area m ² — Ckt A and B Total		20.92	20.92	20.92	24.98	24.98
Max Working Pressure Refrigerant — kPa		3103	3103	3103	3103	3103
COOLER — No. ...Type		One. Direct Expansion, Shell and Tube				
No. Refrigerant Circuits		2	2	2	2	2
Net Fluid Volume — L (includes nozzles)		197	197	229	229	267
Max Working Pressure Refrigerant Side/Fluid Side — kPa		1916/2068	1916/2068	1916/2068	1916/2068	1916/2068
FLUID CONNECTIONS — in.		Victaulic Type				
Inlet and Outlet		6				
Drain		¾ NPT				

LEGEND

OD — Outside Diameter

*Contact your local Carrier representative for more information on Epoxy- and Heresite-coated fins

†C-AL — Copper Tubing — Aluminum Fins Condenser Coil.

**C-C — Copper Tubing — Copper Fins Condenser Coil.

††06E250 compressors have 4 cylinders, all others have 6.

|| GN/GT

¶Based on rated external static pressure (ESP) of 100 Pa or 250 Pa as appropriate.

NOTE. When facing the compressors, Circuit A is on the right and Circuit B is on the left.

Factory-installed options



Thermostatic expansion valves (TXV) (30GT040-110) are for those situations where energy savings of the EXV are secondary and equipment costs are most important. With this option, the EXV, related controls, and part-load energy savings related to the EXV function are replaced by TXVs and liquid line solenoid valves (LLSV). Minimum operating ambient temperature for TXV-equipped units with standard head pressure control is 35 F (1.7 C). Contact your Carrier representative for details on operation at temperatures below 35 F (1.7 C). This option has full micro-processor temperature control features and diagnostic capability.

Hot gas bypass option allows additional capacity reduction for unit operation below the minimum step of unloading. It is available on all 30GN040 and 30GT040-070 units.

NOTE: Accessory unloaders (where available) eliminate the need for hot gas bypass and provide a more efficient solution.

Cooler heater protects cooler to -20 F (-29 C). Includes controls and 4 cooler tape heaters (sizes 040-050), 6 heaters (sizes 060, 070), or 8 heaters (sizes 080-210) — 210 w each.

Sound reduction option consists of specially designed system of fans and acoustic enclosures for reducing sound levels without compromising chiller performance.

Low-ambient Motormaster® III head-pressure control allows unit operation to -20 F (-29 C) on all unit sizes.

Copper tube/copper fin, copper tube/aluminum heresite fin, copper tube/copper heresite fin, or copper-tube/pre-coated aluminum fin condensers prolong condenser coil life in seacoast applications.

Part-wind (PW) start generally is not required where multiple 06E compressors are installed. The starting current is usually lower than a larger compressor using PW start. However, a part-wind start option is available (denoted by a **P** in the fifth position of the unit model number) for all sizes.

Brine option for all sizes permits leaving fluid temperatures to be set between 15 and 39 F (-9.4 and 3.9 C). Refrigeration circuit components, such as the expansion device, are modified to correct for the lower refrigeration flow rates.

Non-fused electrical disconnect is available factory installed on 130-210 units.

High-static fans allow the 30GN,GT units to be used in applications with an external static pressure of up to 1 in. wg (250 kPa) (external to the chiller) at nominal condenser airflow. Two options are available: 0.4 in. wg (100 kPa) and 1 in. wg (250 kPa).

Australian code cooler (sizes 040-110) is a shell-and-tube type cooler with removable heads which is built and certified to the Australian cooler code. The cooler is stamped AS1210 and is inspected in accordance with the Australian Code for a refrigerant-side working pressure of 207 psig (1430 kPa) and a maximum fluid-side pressure of 150 psig (1034 kPa).

Field-installed accessories



Ground current protection includes an electronic sensor that monitors all phases of the 3-phase power supply to the compressor. At the first sign of a short to the ground, the sensor shuts down the compressor to prevent contamination of the refrigerant system. This protection is an accessory for 040-060 and 070 (60 Hz) sizes only (standard on 070 [50 Hz] and 080-210 sizes).

Motormaster® III head-pressure control allows unit to operate down to -20 F (-29 C) on all unit sizes

NOTE: No motor change-out is required on 60 Hz units.

Sound reduction kit consists of a specially-designed system of fans and acoustic enclosures for reducing sound levels without compromising chiller performance. No fan motor change is required, and the fan system is compatible with Motormaster III head-pressure control. This accessory is sold in sets of 2 kits per package.

Security grilles protect the chiller cooler compressors and condenser coils from damage due to vandalism.

Additional electric suction cutoff unloader(s) can be field-installed as follows:

UNITS 30	UNLOADERS
GT040-070	One on Compressor B1
GN050-070	One on Compressor A1 Two on Compressor B1
GN040	One on Compressor B1 None on Compressor A1
GN045	None on Compressor A1 Two on Compressor B1
GN080-210	One for lead compressor of each circuit. Requires use of control options board (included).

Unloader(s) eliminate the need for hot gas bypass and operate more efficiently.

Discharge and suction pressure gage panel aids in routine maintenance when reading system pressures. Both pressure gages are mounted on a common panel. Each gage is equipped with a shutoff valve. Each lead compressor requires a separate gage panel.

Remote cooler mounting permits indoor relocation of the cooler up to 75 ft (22 m) away from base unit.

Multi-chiller control — The control panel sequences up to 4 chillers and circulating pumps by sensing mixed leaving-water temperature.

The control features include:

- lead/lag control for reliable compressor operation
- 7-day programmable timeclock for scheduling flexibility and energy savings
- daylight savings time changeover for accurate scheduling
- a.m./p.m. time display
- battery back-up of programmed events for reliable operation

Oil pressure switch package includes 2 oil pressure switches for unit. The switch mounts on lead compressor in each refrigerant circuit. This is an accessory for 040-070 sizes (standard on 080-210 sizes)

Temperature reset board (30GT) is used for leaving-fluid temperature reset. Reset can be based on return-fluid temperature, space temperature, or outdoor-air temperature. The temperature reset board lets the unit reset the leaving-fluid temperature to a higher value during low load conditions. An accessory thermistor for outdoor air and space temperature reset is required.

Demand limit control module accessory has a 2-point adjustment (0 to 49% and 50 to 100%), activated by a remote 115- or 230-v signal. This module is a prewired board for 30GT units.

Hot gas bypass package includes control solenoid valves and the hot gas bypass valve. Piping and electrical connections are made easy by factory-provided piping stubs and electrical terminal blocks. This accessory is available for 30GN,GT080-210 units.

Condenser coil hail guard package includes louvered condenser coil hail guards and installation hardware.

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

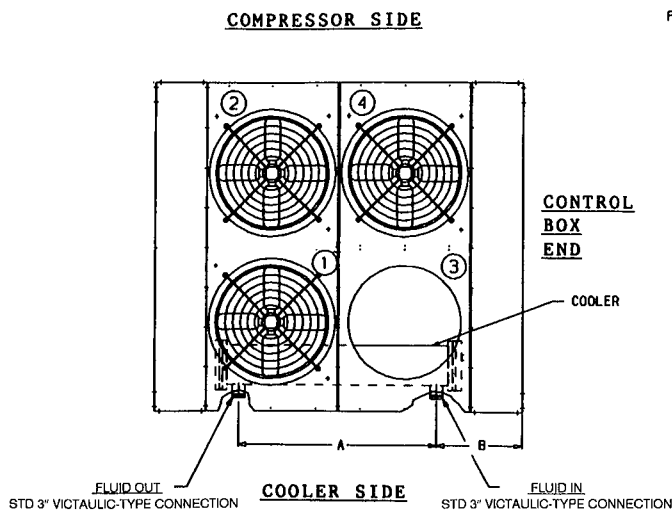
Chilled fluid flow switch accessory is available for field installation (all sizes) although low fluid flow detection is provided by the unit internal control devices.

Convenience outlet accessory kit provides 115-v, GFI (Ground Fault Indicator) female receptacle. The outlet is field mounted in the control box and is powered by the unit control circuit.

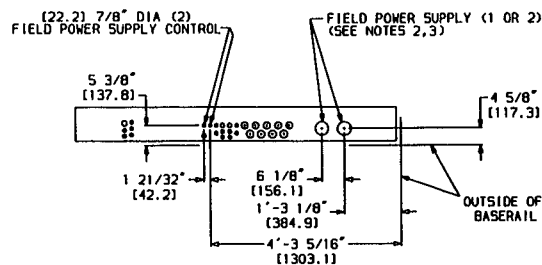
Unit control display access door provides easy access to the unit control module through a see-through door without having to open or remove control box panels.

High-ambient kit may be required in areas where the outdoor ambient temperatures are expected to be above 115 F (46.1 C) and return fluid temperatures are expected to be above 60 F (15.5 C).

Base unit dimensions — 30GN,GT040-050



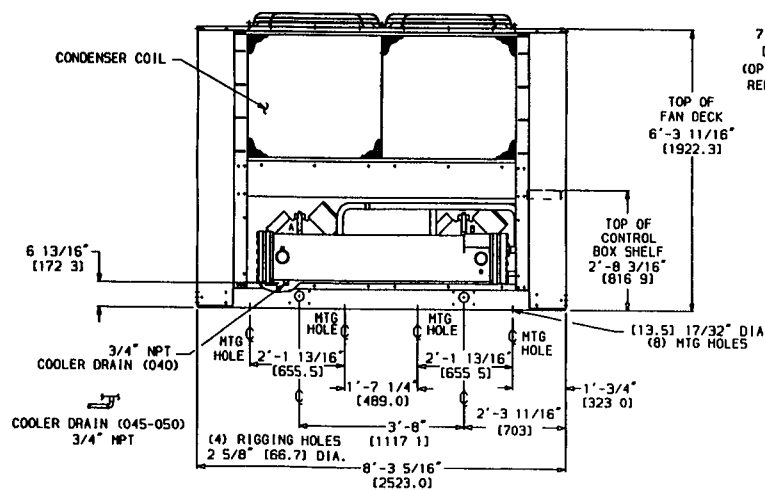
TOP VIEW



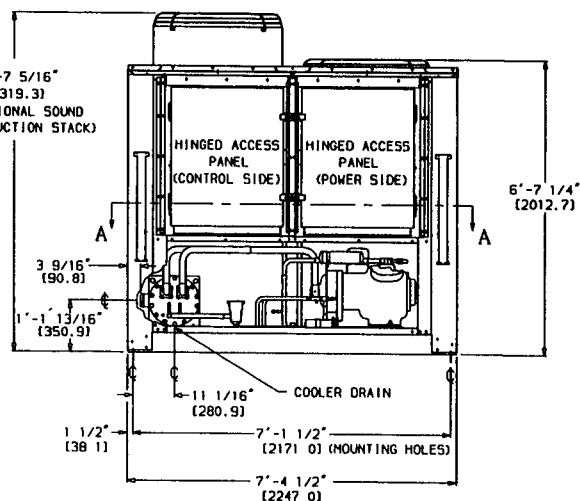
VIEW A-A

TOP VIEW OF CONTROL BOX SHELF
WITH FIELD POWER SUPPLY CONNECTIONS.

30GN,GT	A	B
040	4'-5 1/2" (1359)	1'-11 1/8" (588)
045, 050	5'-5 1/2" (1663)	1'-5 3/8" (437)



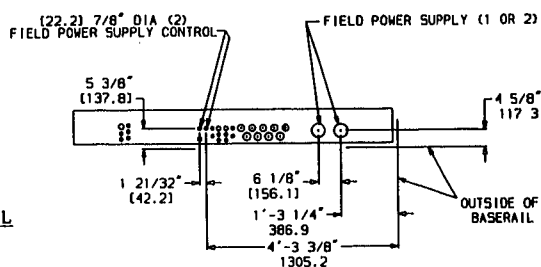
SIDE VIEW



END VIEW

NOTES.

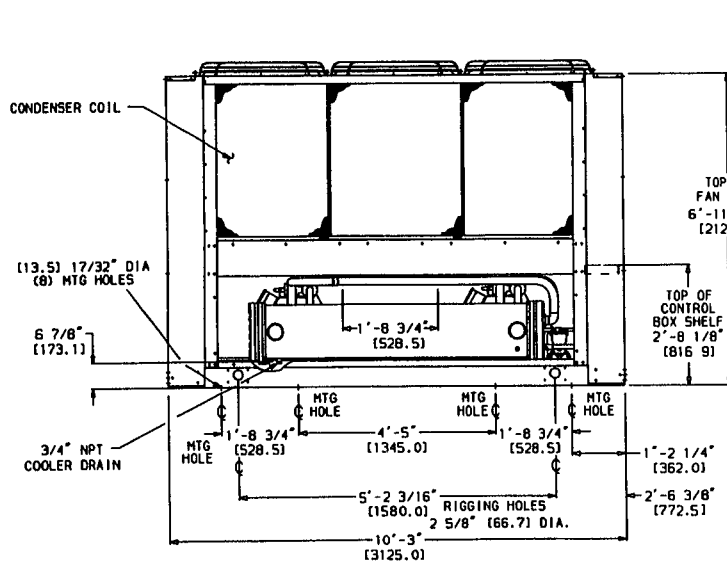
- Unit must have clearances for airflow (from solid surfaces) as follows:
Top — Do not restrict in any way.
Ends — 5 ft [1524]
Sides — 6 ft [1829]
- Two 2 in dia holes are recommended for parallel conductors on 040 and 045 (208/230 v) units
- One 3 3/8 in dia hole is recommended for single entry power on 050 (208/230 v) units
- Mounting holes may be used to mount unit to concrete pad. They are not recommended for spring isolator location
- If spring isolators are used, a perimeter support channel between the unit and the isolators is recommended
- Dimensions in [] are in millimeters



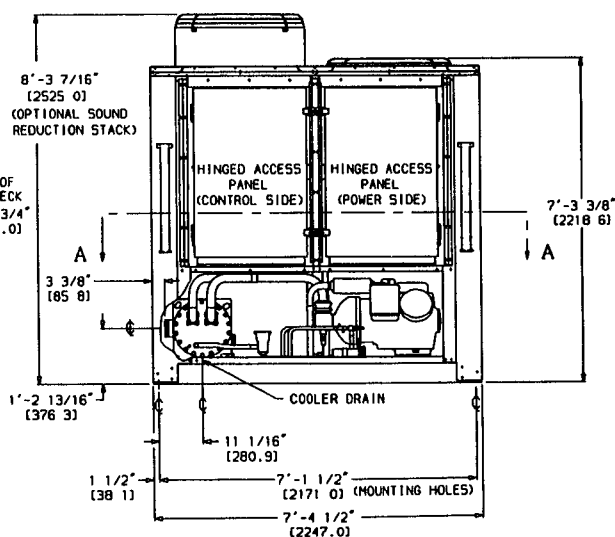
VIEW A-A

TOP VIEW OF CONTROL BOX SHELF
WITH FIELD POWER SUPPLY CONNECTIONS.

TOP VIEW



SIDE VIEW

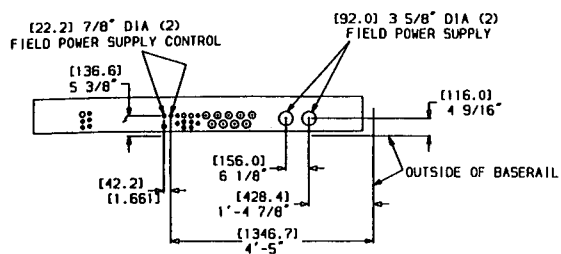


END VIEW

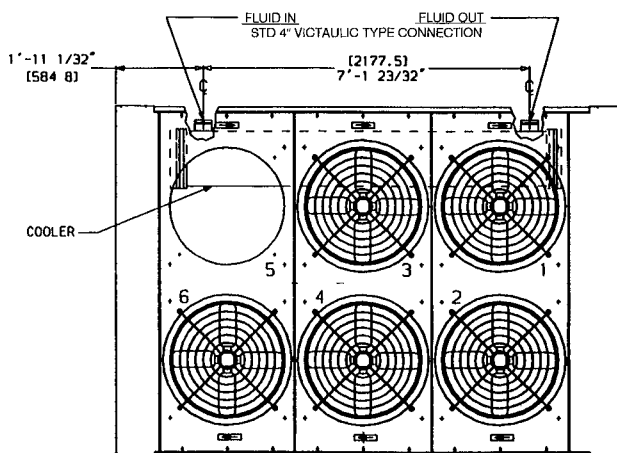
NOTES:

- NOTES:**
- 1 Unit must have clearances for airflow (from solid surfaces) as follows:
Top — Do not restrict in any way
Ends — 5 ft [1524]
Sides — 6 ft [1829]
 - 2 Mounting holes may be used to mount unit to concrete pad. They are not recommended for spring isolator location.
 - 3 If spring isolators are used, a perimeter support channel between the unit and the isolators is recommended
 - 4 Dimensions in [] are in millimeters.

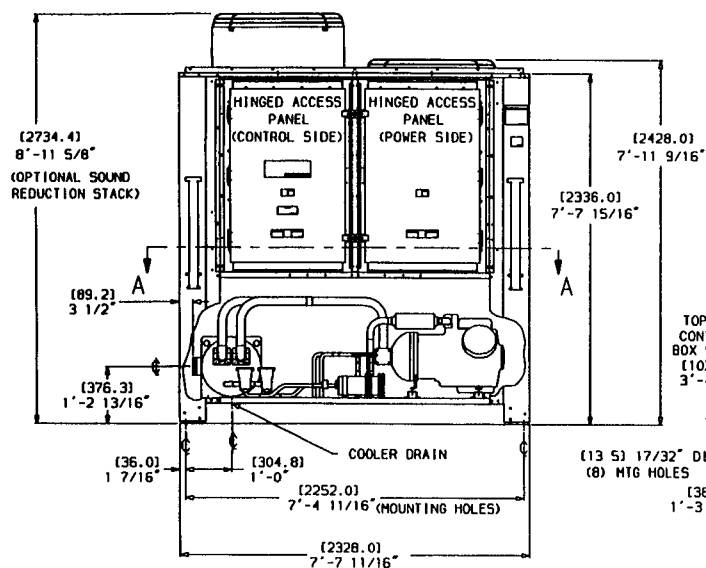
Base unit dimensions — 30GN,GT080,090



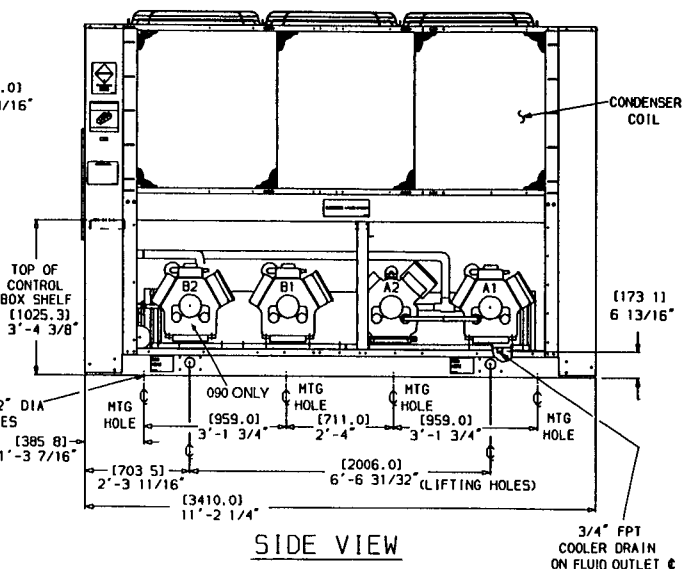
VIEW A-A
TOP VIEW OF CONTROL BOX SHELF
WITH FIELD POWER SUPPLY CONNECTIONS



TOP VIEW



END VIEW

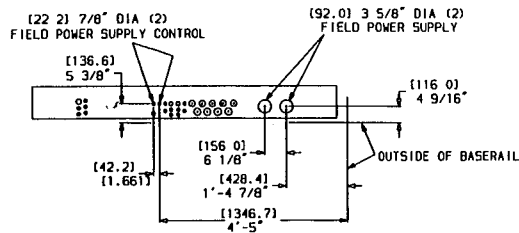


SIDE VIEW

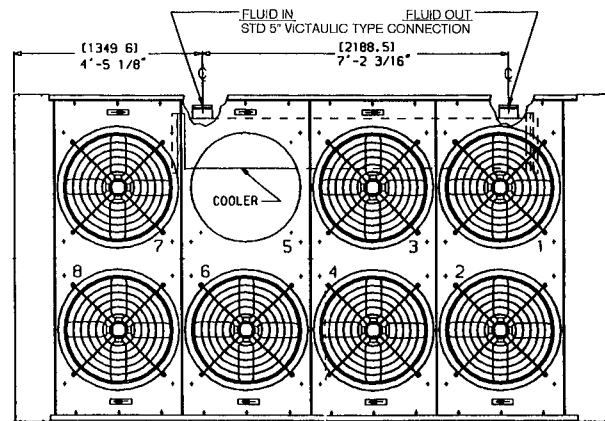
NOTES:

- Unit must have clearances for airflow (from solid surfaces) as follows:
Top — Do not restrict in any way
Ends — 5 ft [1524]
Sides — 6 ft [1829]
- Mounting holes may be used to mount unit to concrete pad. They are not recommended for spring isolator location.
- If spring isolators are used, a perimeter support channel between the unit and the isolators is recommended.
- Dimensions in [] are in millimeters.

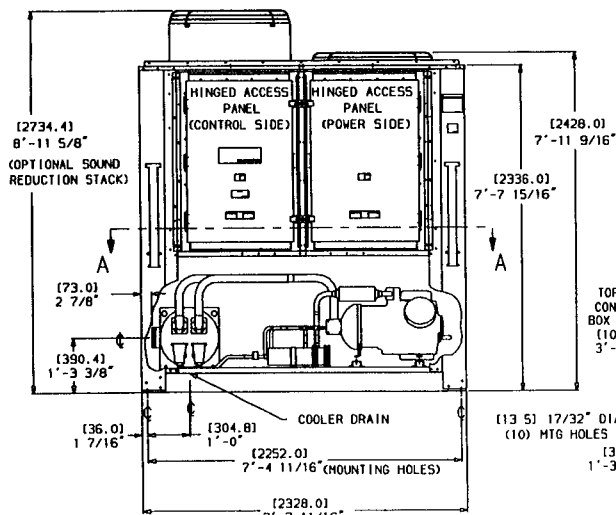
Base unit dimensions — 30GN,GT100,110



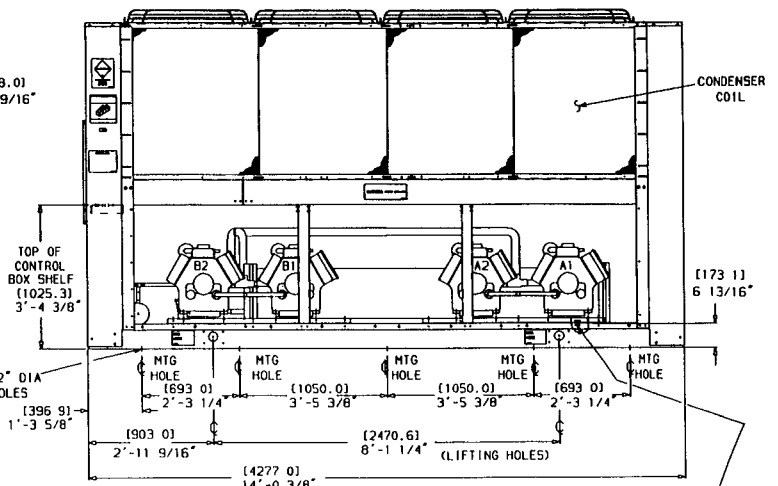
VIEW A-A
TOP VIEW OF CONTROL BOX SHELF
WITH FIELD POWER SUPPLY CONNECTIONS



TOP VIEW



END VIEW

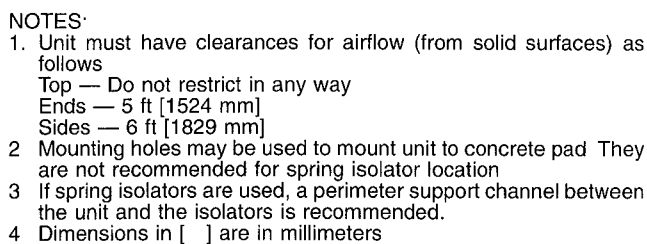


SIDE VIEW

3/4\"/>

NOTES

- Unit must have clearances for airflow (from solid surfaces) as follows
Top — Do not restrict in any way
Ends — 5 ft [1524]
Sides — 6 ft [1829]
- Mounting holes may be used to mount unit to concrete pad. They are not recommended for spring isolator location.
- If spring isolators are used, a perimeter support channel between the unit and the isolators is recommended.
- Dimensions in [] are in millimeters.



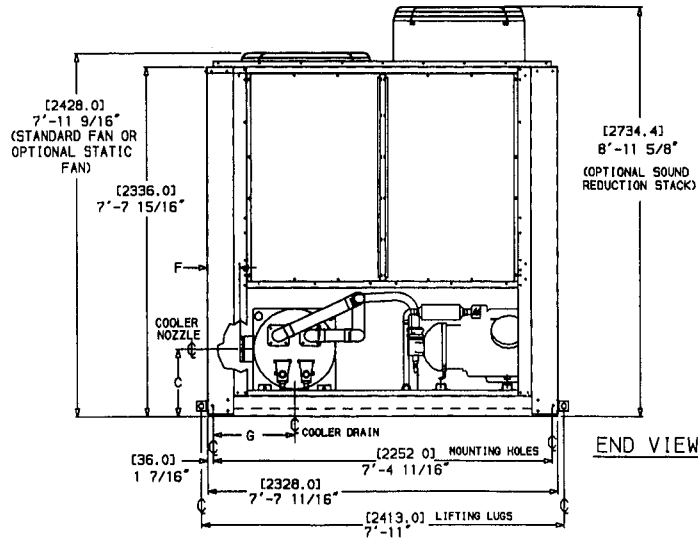
SIZE	A	B	C	D
130	9-4½ [2858]	4-1⅞ [1267]	1-4¾ [425]	0-9½ [242]
150	9-4 [2849]	4-2½ [1283]	1-4¾ [425]	0-9½ [242]
170	9-4⅞ [2865]	4-2½ [1283]	1-5⅞ [448]	0-8⅞ [219]

Base unit dimensions — 30GN,GT190,210



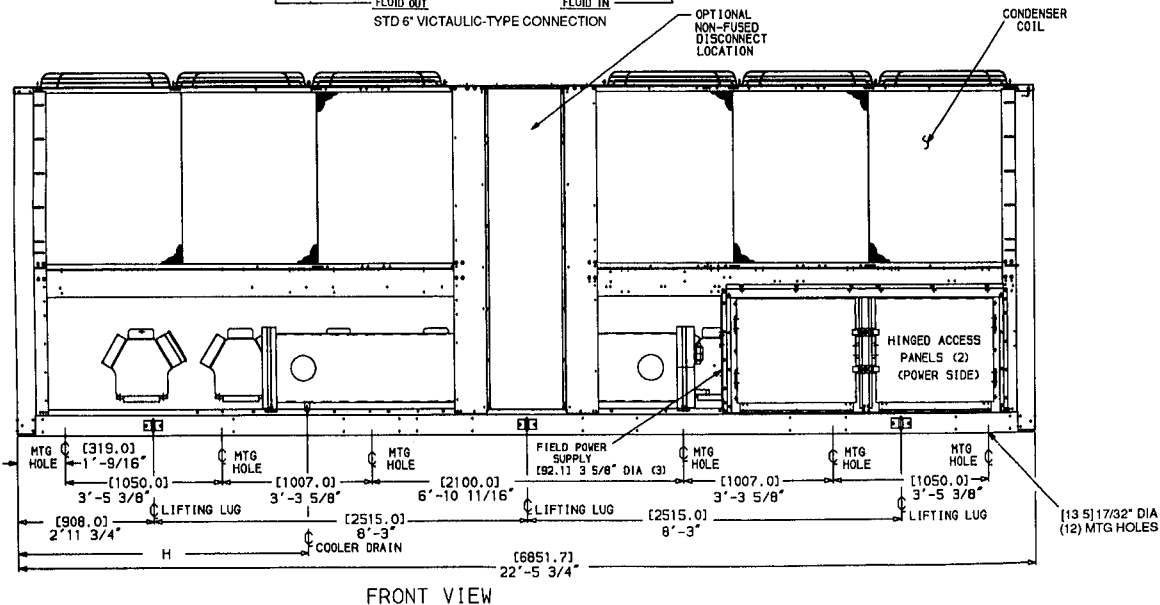
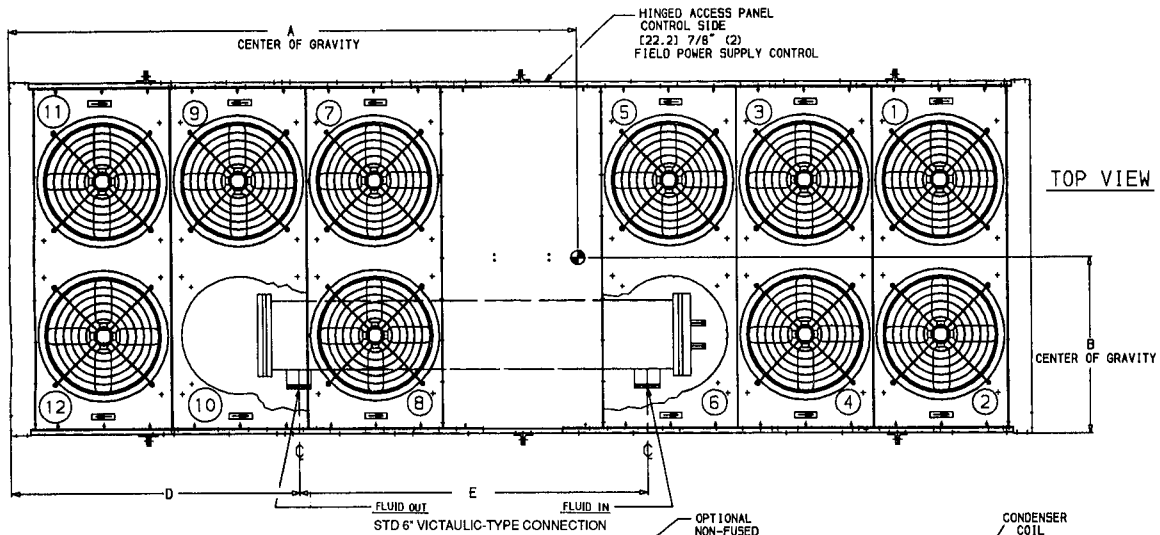
DIMENSIONS (ft-in.)

SIZE	A	B	C	D	E	F	G	H
190	11-4 [3454]	4-2½ [1283]	1-5¾ [448]	6- 3¼ [1916]	7-8¼ [2343]	8¾ [219]	1- 9 [533 4]	6- 4¼ [1941 3]
210	11-3 [3444]	4-2 [1285]	1-6¾ [468]	5-11½ [1816]	8-2¾ [2504]	9½ [242]	1-11 [584]	5-11½ [1816 2]



NOTES:

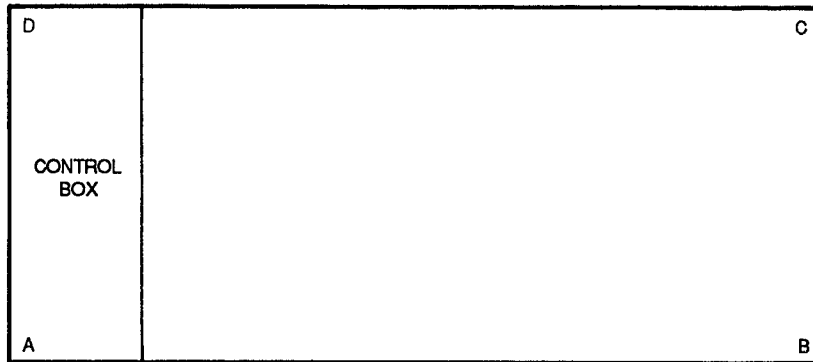
- Unit must have clearances for airflow (from solid surfaces) as follows
 Top — Do not restrict in any way
 Ends — 5 ft [1524 mm]
 Sides — 6 ft [1829 mm]
- Mounting holes may be used to mount unit to concrete pad. They are not recommended for spring isolator location.
- If spring isolators are used, a perimeter support channel between the unit and the isolators is recommended.
- Dimensions in [] are in millimeters



Base unit dimensions (cont)



Mounting Weights (Approximate) — Sizes 040-110*



UNIT SIZE 30GN,GT	CONDENSER COIL†	lb				kg			
		A	B	C	D	A	B	C	D
040	C-AL	972	876	807	895	441	397	366	406
	C-C	1044	948	879	968	473	430	399	439
045	C-AL	999	895	845	943	453	406	383	428
	C-C	1071	967	917	1015	486	438	416	460
050	C-AL	1047	948	884	976	475	430	401	443
	C-C	1155	1057	992	1085	524	479	450	492
060	C-AL	1258	1130	1130	1113	570	512	505	562
	C-C	1362	1234	1217	1344	618	560	552	609
070	C-AL	1332	1212	1184	1301	604	550	537	590
	C-C	1489	1369	1340	1458	675	621	608	661
080	C-AL	1624	1690	1666	1650	738	768	757	750
	C-C	1797	1880	1847	1831	817	854	840	832
090	C-AL	1817	1793	1720	1685	826	815	782	766
	C-C	1997	1970	1893	1880	908	895	860	855
100	C-AL	2185	2185	2120	2120	993	993	964	964
	C-C	2420	2420	2360	2360	1100	1100	1073	1073
110	C-AL	2191	2217	2136	2116	996	1007	970	962
	C-C	2428	2454	2374	2354	1104	1115	1079	1070

LEGEND

C-AL — Copper Tubing, Aluminum Fins
C-C — Copper Tubing, Copper Fins

*Points A, B, C, and D are located in the corners of the unit. See pages 19-22 for dimensions.
 †Contact your local Carrier representative for more information on Epoxy-coated and pre-coated aluminum fins.

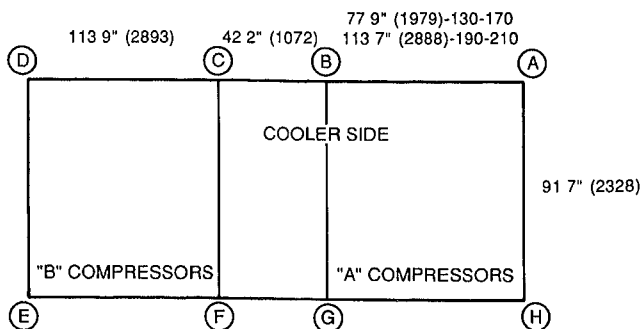
NOTE: If spring isolators are used, a perimeter support channel between the unit and the isolators is recommended.

Base unit dimensions (cont)



Mounting Weights (Approximate) — Sizes 130-210

SIZE 130-210



NOTES:

- 1 Dimensions in () are in millimeters.
- 2 If spring isolators are used, a perimeter support channel between the unit and the isolators is recommended

UNIT SIZE 30GN,GT	COND COIL*	lb								kg							
		A	B	C	D	E	F	G	H	A	B	C	D	E	F	G	H
130	C-AL	923	1466	1156	825	1411	1365	1469	1431	419	666	525	375	641	620	668	650
	C-C	1051	1593	1283	952	1601	1556	1659	1622	478	723	583	433	728	707	754	737
150	C-AL	926	1563	1160	834	1438	1375	1747	1438	420	710	527	379	653	625	794	653
	C-C	1053	1690	1287	961	1628	1566	1938	1629	478	768	585	436	740	711	880	740
170	C-AL	962	1732	1333	862	1497	1629	1816	1462	437	787	605	392	680	740	825	664
	C-C	1089	1860	1460	990	1688	1819	2007	1653	495	845	663	450	767	826	912	751
190	C-AL	1346	1942	1793	1111	1385	1799	1733	1567	611	882	815	505	629	817	787	712
	C-C	1536	2132	1983	1301	1575	1989	1923	1757	698	969	901	591	715	904	874	798
210	C-AL	1376	2128	1871	1120	1407	1846	2037	1595	625	967	850	509	639	384	925	725
	C-C	1566	2318	2061	1310	1597	2036	2227	1784	711	1053	937	595	725	925	1012	810

LEGEND

C-AL — Copper Tubing — Aluminum Fins
C-C — Copper Tubing — Copper Fins

*Contact your local Carrier representative for more information on Epoxy-coated and pre-coated aluminum fins

Application data



Leveling unit

Unit must be level when installed to ensure proper oil return to the compressors

While most outdoor locations are suitable for 30GN,GT units, the roof is a common site that presents a problem if roof has been pitched to aid in water removal. To assure proper oil return, be sure that unit is level, particularly in its major lengthwise dimension, as compressor oil return piping runs in that direction.

It should be determined prior to installation if any special treatment is required to assure a level installation

Cooler fluid temperature

1. *Maximum* leaving chilled fluid temperature (LCWT) for unit is 70 F (21 C). Unit can start and pull down with up to 95 F (35 C) entering-fluid temperature due to MOP (maximum operating pressure) feature of the TXV. For sustained operation, it is recommended that entering-fluid temperature not exceed 85 F (29.4 C).
2. *Minimum* LCWT for standard unit is 40 F (4.5 C). It is permissible to use a standard microprocessor-controlled Flotronic™ or Flotronic II chiller with leaving-fluid temperatures in the range of 34 to 39.9 F (1° to 4.4 C) only if a protective brine solution (20% antifreeze solution, or greater) is used and microprocessor DIP (dual in-line package) switch (Flotronic units only) is properly set. (See Controls and Troubleshooting literature for further information.)

Medium temperature brine application

Application of chiller for brine duty within the 39.9 to 34 F (4.4 to 1° C) range is possible with proper field change of control configuration. Application in the range 34 to 15 F (1° to -9.4 C) may require unit with factory modification. For ratings below 40 F (4.5 C) LCWT, contact your local Carrier representative.

Leaving-fluid temperature reset

Accessory board (required on Flotronic unit, standard on Flotronic II unit) may be installed in chiller to provide reset of LCWT in constant fluid flow systems. Reset reduces compressor power usage at part load when design LCWT is not necessary. Humidity control should be considered since higher coil temperatures resulting from reset will reduce latent heat capacity. Three reset options are offered, based on:

Return-fluid temperature — Increase LCWT temperature 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: 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 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 is required.

For details on applying a reset option, refer to unit Controls and Troubleshooting literature. Obtain ordering part numbers for reset option from current price pages or contact your local Carrier representative.

Cooler flow range

Ratings and performance data in this publication are for a cooling temperature rise of 10° F (6° C), and are suitable for a range from 5 to 15 F (2.8 to 8.3 C) temperature rise without adjustment. Both Flotronic and Flotronic II chillers may be operated using a different temperature range provided flow limits are not exceeded. For minimum flow rates, see Minimum Cooler Fluid Flow Rates and Minimum Loop Volume table. High flow rate is limited by pressure drop that can be tolerated. If another temperature range is used, apply LCWT correction as given in Selection Procedure example on page 33.

**MINIMUM COOLER FLUID FLOW RATES
AND MINIMUM LOOP VOLUME**

UNIT SIZE	MINIMUM FLOW		MINIMUM COOLER LOOP VOLUME	
	Gpm	L/s	Gal	L
040	37	2.3	108	408
045	38	2.4	125	472
050	38	2.4	151	572
060	48	3.0	190	719
070	48	3.0	218	823
080	60	3.8	246	930
090	60	3.8	262	992
100	73	4.6	299	1131
110	73	4.6	323	1222
130	101	6.4	375	1419
150	101	6.4	429	1624
170	135	8.5	486	1840
190	135	8.5	528	1998
210	219	13.8	603	2232

LEGEND

ARI — Air Conditioning and Refrigeration Institute
N — Liters per kW
V — Gallons per ton

NOTES

1. Minimum flow based on 1 0 fps (0.30 m/s) velocity in cooler without special cooler baffling
2. Minimum Loop Volumes: Gallons = V x ARI Cap (tons)
Liters = N x ARI Cap (kW)

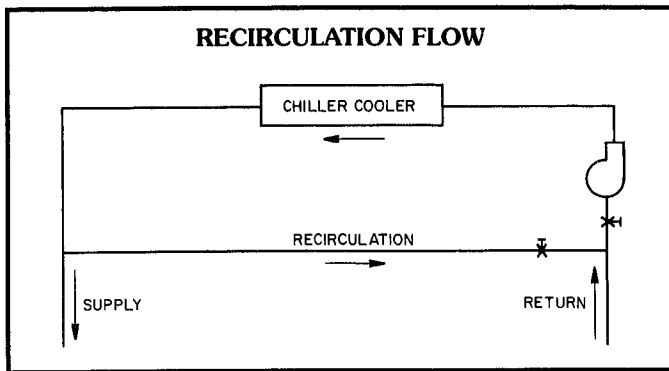
APPLICATION	V	N
Normal Air Conditioning	3	3.25
Process Type Cooling	6 to 10	6.5 to 10.8
Low Ambient Unit Operation	6 to 10	6.5 to 10.8

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

- a. Multiple smaller chillers may be applied in series, each providing a portion of the design temperature rise.
- b. Cooler fluid may be recirculated to raise flow rate. However, mixed temperature entering cooler must be maintained a minimum of at least 5° F (2.8° C) above the LCWT.
- c. Special cooler baffling is required to allow minimum flow rate to be reduced.

NOTE: Recirculation flow is shown on next page.

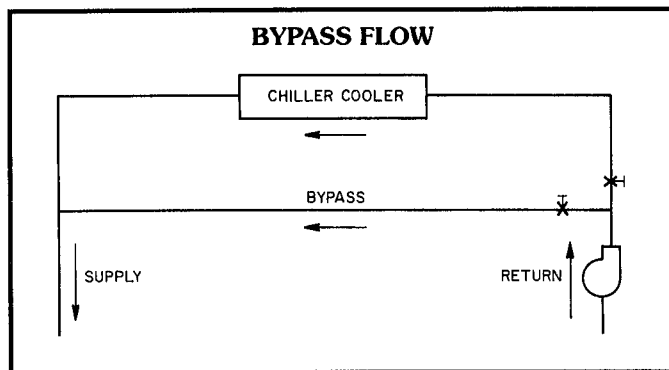
Application data (cont)



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

1. Return fluid may bypass the cooler to keep pressure drop through cooler within acceptable limits. This permits a higher ΔT with lower fluid flow through cooler and mixing after the cooler.
2. Special cooler baffling is available by special order, to permit a cooler flow rate increase of 10%.

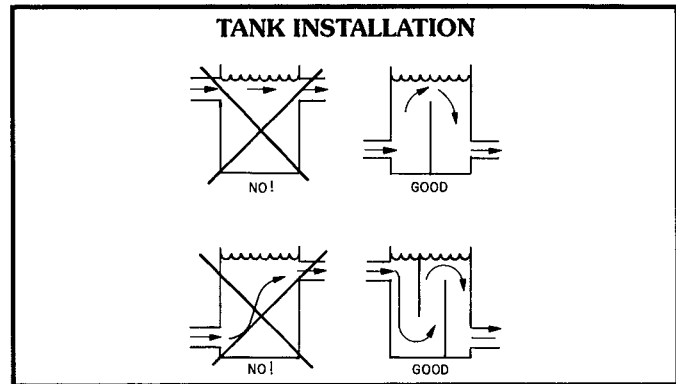
NOTE: Bypass flow is shown below.



Variable cooler flow rates — Variable rates may be applied to standard chiller. Unit will, however, attempt to maintain a constant leaving chilled fluid temperature. In such cases, minimum flow must be in excess of minimum flow given in Minimum Cooler Fluid Flow Rates and Minimum Loop Volume table, and flow rate must change in steps of less than 10% per minute. Apply 6 gal. per ton (6.5 L per kW) water loop volume minimum if flow rate changes more rapidly.

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. (For example, a 30GT210 would require 603 gal. [2232 L].) In process cooling applications, or for operation at ambient below 32°F (0°C) with low loading conditions, there should be from 6 to 10 gal. per ton (6.5 to 10.8 L per kW). To achieve this volume, it is often necessary to install a tank in the loop. Tank should be baffled to ensure there is no stratification and that water (or brine) entering tank is adequately mixed with liquid in the tank.

NOTE: Tank installation is shown in next column.



Cooler fouling factor — The fouling factor used to calculate tabulated ratings was $.00025\text{ ft}^2 \cdot \text{hr} \cdot ^\circ\text{F}/\text{Btu}$ ($.000044\text{ m}^2 \cdot ^\circ\text{C}/\text{W}$). As fouling factor is increased, unit capacity decreases and compressor power increases. Standard ratings should be corrected using following multipliers:

FOULING FACTOR		CAPACITY MULTIPLIER	COMPRESSOR POWER MULTIPLIER
English ($\text{ft}^2 \cdot \text{hr} \cdot ^\circ\text{F}/\text{Btu}$)	SI ($\text{m}^2 \cdot ^\circ\text{C}/\text{W}$)		
00025	000044	1.00	1.00
00075	000132	0.97	0.98
00175	.000308	0.91	0.91

Cooler protection — Protection against low ambient freeze-up is required for unit operation in areas that experience temperatures below 32°F (0°C). Protection should be in the form of inhibited ethylene glycol or other suitable brine.

Even though unit cooler is equipped with insulation and an electric heater that helps prevent freeze-up, it does not protect fluid piping external to unit. Use only antifreeze solutions approved for heat exchanger duty. Use of automotive type antifreezes is not recommended because of the fouling that can occur once their relatively short-lived inhibitor breaks down.

Draining cooler and outdoor piping is recommended if system is not to be used during freezing weather conditions. See Low Ambient Temperature Operation section page 29.

Condenser

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

ALTITUDE		CAPACITY MULTIPLIER	COMPRESSOR POWER MULTIPLIER
ft	m		
0	0	1.00	1.00
2000	610	0.99	1.01
4000	1220	0.98	1.02
6000	1830	0.97	1.03
8000	2440	0.96	1.04
10000	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:

EXTERNAL STATIC		CAPACITY MULTIPLIER	COMPRESSOR POWER MULTIPLIER
in. wg	Pa		
0.0	0.0	1.000	1.00
0.1	25	0.986	1.01
0.2	50	0.968	1.03

High ambient temperature

High outdoor ambient chiller start-up and operation (fully loaded) is possible for standard GN,GT chillers at ambient temperatures up to 125 F (52 C) at nominal voltage.

Low ambient temperature operation

With certain field provisions as described below, units will start and operate down to —

0° F (–18 C) for EXV units

35 F (1.7 C) for 30GT040-110 TXV units

If operation is intended below these limits, the Carrier accessory Motormaster® III condenser head pressure control and its associated components must be added. The Motormaster control allows operation down to –20 F (–29 C). Consult your Carrier representative for details.

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

Wind baffles (field fabricated and installed) — Baffles must be added to all units for operation below 32 F (0° C) if wind velocity is anticipated to be greater than 5 mph (8 km/h).

Antifreeze solution — Inhibited ethylene glycol or other suitable corrosion-resistant anti-freeze solution must be field supplied and installed in all units for unit operation below 32 F (0° C). Solution must be added to fluid loop to protect loop down to 15° F (8° C) below minimum operating ambient temperature.

Provide sufficient volume in the chilled fluid loop — At least 6 gal per ton (6.5 L per kW) of refrigeration is the recommended minimum for a moderate system load.

Capacity correction (antifreeze)

Inhibited ethylene glycol (or other suitable brine) should be used in installations where subfreezing temperatures are expected. Unit performance data must be corrected for the addition of inhibited ethylene glycol as shown in following example. Correction factors may be derived from following curves in the Inhibited Ethylene Glycol Performance chart at right.

Example: English — Where a 5 F outdoor temperature is anticipated, determine concentration of inhibited ethylene glycol to protect system to –10 F ambient temperature at zero flow.

Enter the solution crystallization point curve (at right) at –10 F, read 40% concentration of inhibited ethylene glycol is required to prevent crystals from forming in solution.

Consider the 30GT110 unit from the Selection Procedure example on page 33 (refer to correction curves at 40% solution).

Correct unit capacity — On the capacity correction curve at right, read 0.95.

$$\begin{aligned}\text{Corrected capacity} &= 0.95 \times \text{determined capacity} \\ &= 0.95 \times 110.4 \\ &= 104.9 \text{ tons}\end{aligned}$$

Correct chilled water flow — On the cooler flow correction curve below, read 1.15.

$$\begin{aligned}\text{Chilled water flow (at corrected capacity)} \\ &= \frac{24 \times \text{corrected cap in tons}}{\text{temperature rise F}} = \text{U.S. gpm}\end{aligned}$$

$$= \frac{24 \times 104.9}{14^\circ} = 179.8 \text{ U.S. gpm}$$

$$\begin{aligned}\text{Chilled water flow (40\% solution)} &= 1.15 \times 179.8 \\ &= 206.8 \text{ U.S. gpm}\end{aligned}$$

Correct cooler pressure drop — On cooler pressure drop correction curve below, read 1.33.

On cooler pressure drop curve on page 31, for 206.8 gpm, read pressure drop = 8.1 ft water gage. The pressure drop for 40% solution = 1.33 x 8.1 = 10.8 ft water.

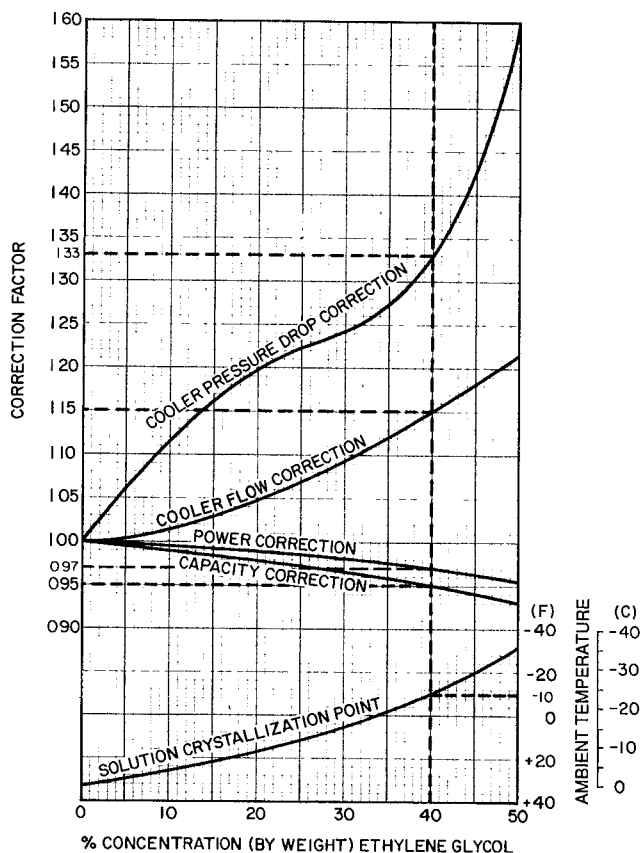
Correct compressor power input (kW) — On power correction curve below, read 0.97 correction factor at 40% ethylene glycol concentration

Power input from Selection Procedure example = 124.7 kW.

$$\text{Corrected power input} = 0.97 \times 124.7 = 120.9 \text{ kW.}$$

INHIBITED ETHYLENE GLYCOL PERFORMANCE CORRECTION FACTORS AND SOLUTION CRYSTALLIZATION POINTS

Correction factors apply to published chilled water performance ratings from 40 to 60 F (4.4 to 15.6 C) LCWT



Application data (cont)



Example: SI — Determine concentration of inhibited ethylene glycol to protect the system to -23°C ambient temperature at zero flow.

Enter the solution crystallization point curve on previous page, at -23°C , read 40% concentration inhibited ethylene glycol is required to prevent crystals from forming in solution.

Consider 30GT110 unit selected from the Selection Procedure example (refer to correction curves at 40% solution).

Correct unit capacity — On glycol performance capacity correction curve on page 29 read 0.95.

$$\begin{aligned}\text{Corrected capacity} &= 0.95 \times \text{determined capacity} \\ &= 0.95 \times 371.8 \\ &= 353.2 \text{ kW}\end{aligned}$$

Correct chilled water flow — On cooler flow correction curve on page 29, read 1.15.

Chilled water flow (at corrected capacity)

$$\begin{aligned}&= \frac{0.239 \times \text{corr cap. in kW}}{\text{temperature rise } ^{\circ}\text{C}} = \text{L/s} \\ &= \frac{0.239 \times 353.2}{7.8^{\circ}} = 10.8 \text{ L/s}\end{aligned}$$

$$\begin{aligned}\text{Chilled water flow (40\% solution)} &= 1.15 \times 10.8 \\ &= 12.4 \text{ L/s}\end{aligned}$$

Correct cooler pressure drop — On cooler pressure drop correction curve on page 29, read 1.33

On cooler pressure drop curve on page 31, for 12.4 L/s, read pressure drop = 24 kPa. The pressure drop for 40% solution = $1.33 \times 24 = 31.92 \text{ kPa}$.

Correct compressor power input (kW) — On the power correction curve on page 29, read 0.97 correction factor at 40% ethylene glycol concentration.

Power input from Selection Procedure example = 121.7 kW.

$$\text{Corrected power input} = 0.97 \times 121.7 = 118.0 \text{ kW.}$$

Oversizing chillers

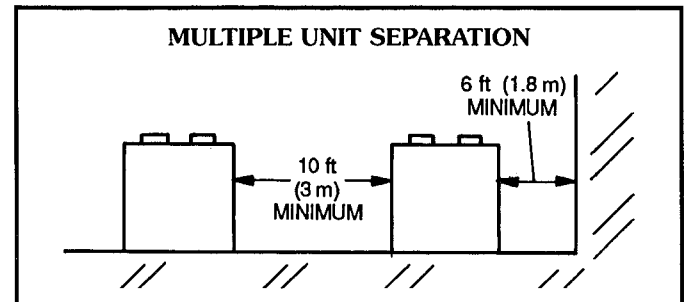
Oversizing chillers by more than 15% at design conditions must be avoided as the system operating efficiency would be adversely affected (resulting in greater or excessive electrical demand). When future expansion of equipment is anticipated, install a single chiller to meet present load requirements 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 percent of minimum is preferred to operating a single chiller at or near its minimum recommended value.

Hot gas bypass should not be used as a means to allow oversizing chillers. Hot gas bypass should be given consideration where substantial operating time is anticipated below the minimum unloading step.

Multiple chillers

Where chiller capacities greater than 210 tons (740 kW) are required, or where stand-by capability is desired, chillers may be installed in *parallel*. Units should be of equal size to ensure balanced fluid flows. Where a large temperature drop ($> 25^{\circ}\text{F}$ [13.9°C]) is desired, chillers may be installed in *series*. Fluid temperature sensors need not be moved for multiple chiller operation. A 10 ft (3 m) separation is required between units for airflow, and a 6 ft (1.8 m) distance is required from units to obstructions. See Multiple Unit Separation figure below. See Base Unit Dimensions section on page 19 for service clearances.



Electrical utility interests

Energy management — See Controls and Troubleshooting literature and accessory installation instructions for details.

Demand limiting (also called 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.

Demand may be limited on unit by resetting fluid temperature, or by using a demand limit accessory that unloads the chiller to a given predetermined percent of the load. Both 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 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 Carrier Comfort Network (CCN) with Flotronic™ II option.

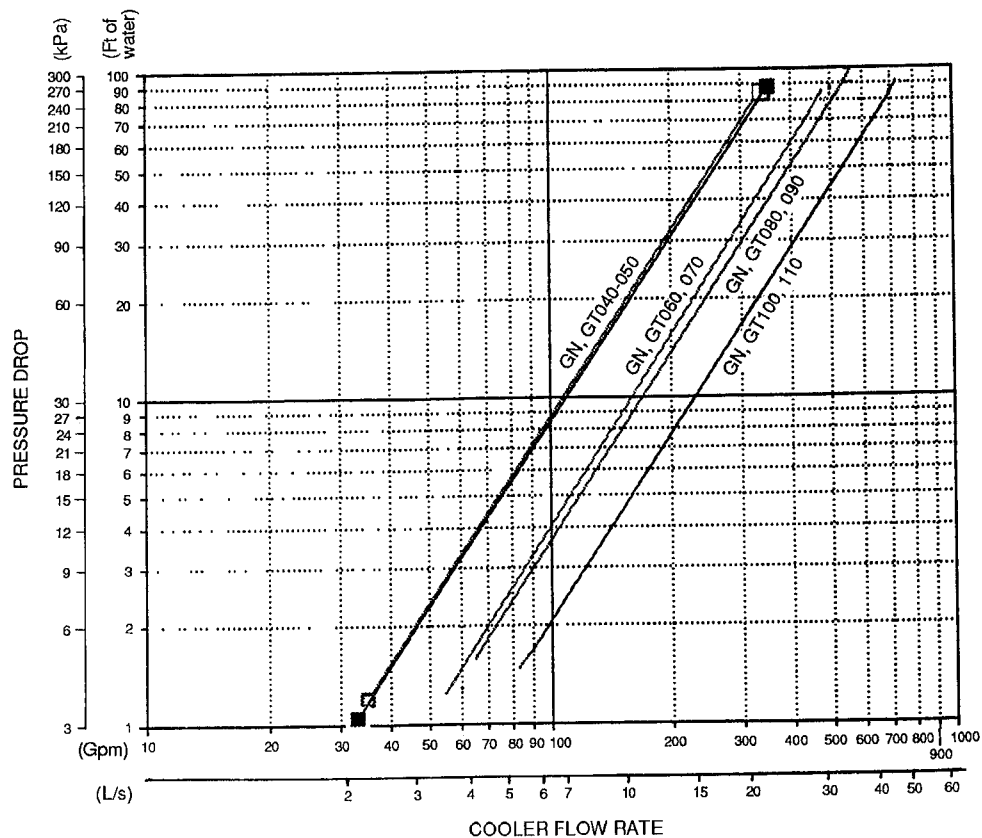
Part-wind start

This is not generally required on GN,GT chillers due to use of multiple compressors allowing smaller electrical load increments, but is available if required. Maximum instantaneous current flow (see ICF in Electrical Data table on page 45) should be used in determining need.

Strainers

It is recommended that a strainer with a minimum of 20 mesh be installed in the cooler fluid inlet line, just ahead of and as close as possible to the cooler.

COOLER FLUID PRESSURE DROP CURVES — 30GN,GT040-110 ENGLISH AND SI

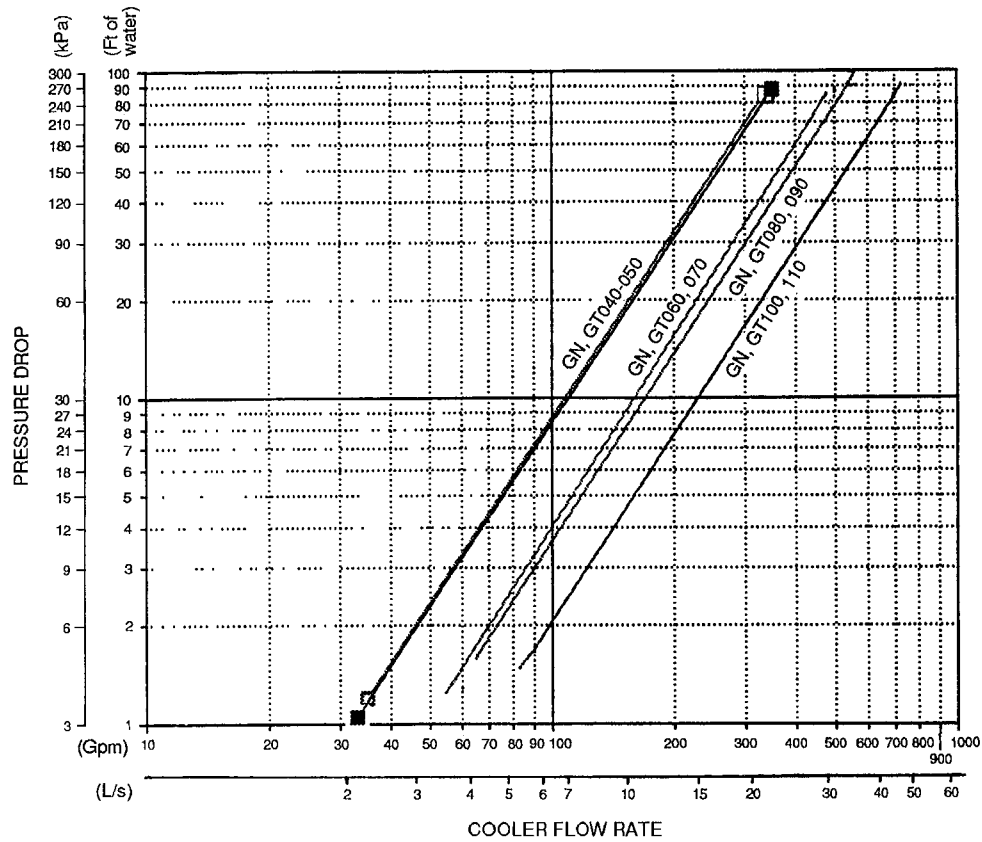


LEGEND

- 040
- 045,050

NOTE: Ft of water = 2.31 x change in psig

COOLER FLUID PRESSURE DROP CURVES — 30GN,GT040-110 ENGLISH AND SI

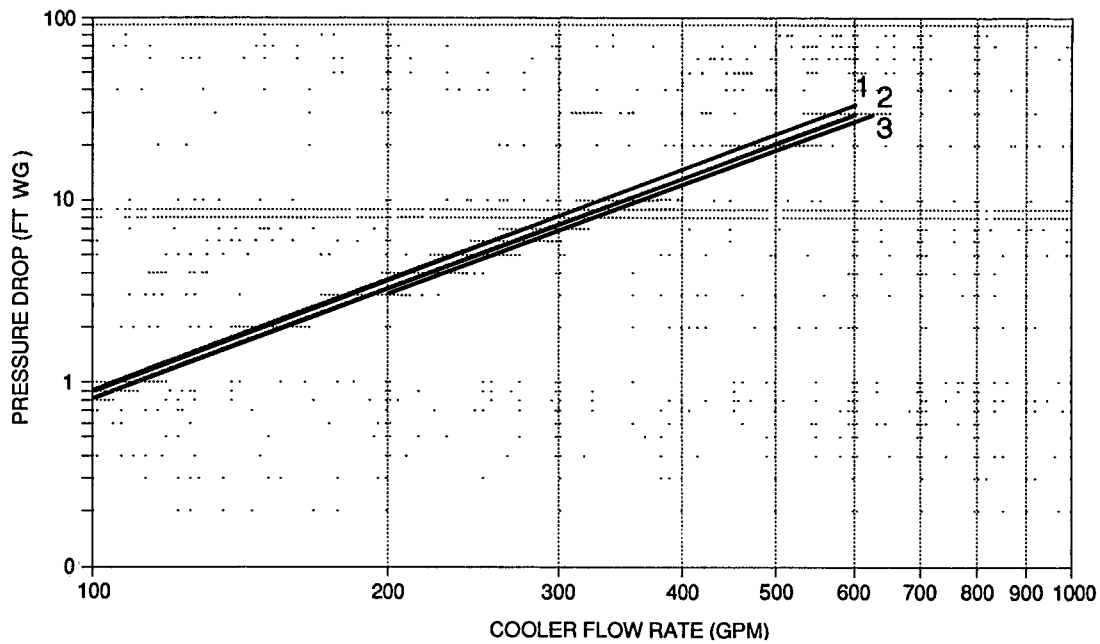


LEGEND

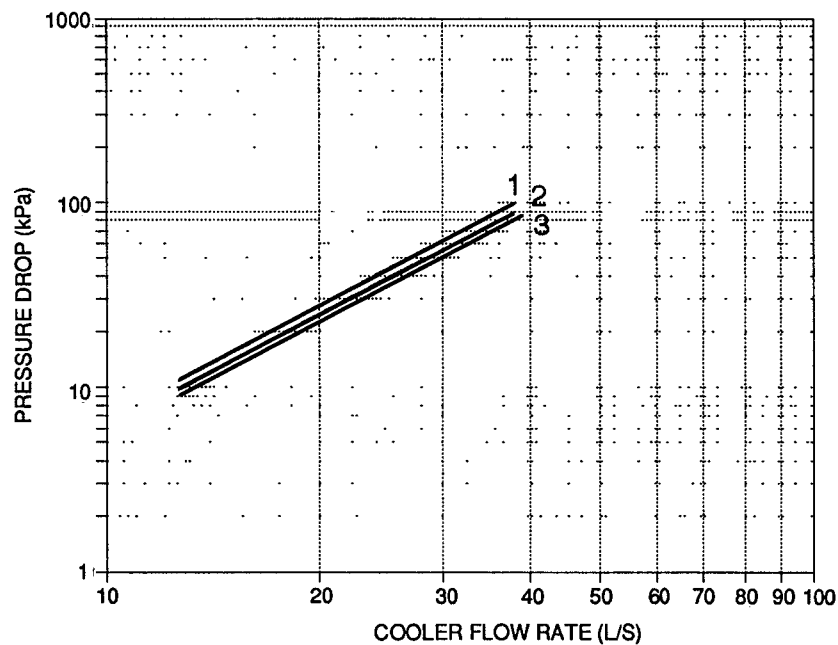
- — 040
- — 045,050

NOTE: Ft of water = 2.31 x change in psig

COOLER FLUID PRESSURE DROP CURVES — 30GN,GT130-210 ENGLISH



SI



COOLER PRESSURE DROP KEY

- 1 — 30GN,GT130,150
- 2 — 30GN,GT170,190
- 3 — 30GN,GT210

NOTE: Ft of water =2.31 x change in psig

Selection procedure — English (60 Hz) (with 30GT example)

NOTE: Carrier electronic catalog provides quick, easy computer selection of Carrier chillers. Catalog is available from your local Carrier representative.

I Determine unit size and operating conditions required to provide specified capacity at given conditions:

Capacity required 108 tons
Leaving chilled water temperature (LCWT) . . . 45 F
Chilled water temperature rise 14° F
Condenser entering-air temperature (CEAT) . . 95 F
Loop volume 350 gal.

Ratings are based on 10° F rise and are suitable for a temperature rise range from 5° to 15° F without adjustment. In this case, however, greater accuracy is desired.

II Correct LCWT for 14° F cooler water temperature rise.

Enter LCWT correction curve (page 34) at 14° F and read a correction of 0.3 F. Corrected LCWT is, therefore, 45 + 0.3 = 45.3 F.

III Determine capacity, unit size, and power input.

Enter Cooling Capacities table at given CEAT and LCWT — respectively 95 F and 45 F.

Read down capacity column until the capacity nearest to but higher than specified required capacity is reached. In this case, 109.7 tons is delivered by a 30GT110. Interpolate between 45 F and 46 F to find determined capacity and power input at corrected LCWT (45.3 F). Values are:

Capacity 110.4 tons
Power input 124.7 kW

IV Calculate corrected cooler water flow.

$$\begin{aligned} \text{Water flow} &= \frac{24 \times \text{corr cap. in tons}}{\text{temperature rise } ^\circ\text{F}} = \text{U.S. gpm} \\ &= \frac{24 \times 110.4}{14} = 189.3 \text{ U.S. gpm} \end{aligned}$$

V Calculate the cooler pressure drop.

Enter cooler pressure drop curve (page 31) at the corrected flow rate (189.3 U.S. gpm) and read, for the 30GT110, a pressure drop of 7.0 ft of water.

VI Check loop volume and cooler water flow rate.

Minimum loop volume, from application data, is 323 gal. for 30GT110. Therefore, given volume of 350 gal. is satisfactory. Minimum water flow rate, from application data, is 73 gpm for 30GT110. Flow rate of 189.3 gpm is well above minimum required.

Selection procedure — SI (60 Hz) (with 30GT example)

I Determine unit size and operating conditions required to provide specified capacity at given conditions:

Capacity required 360 kW
Leaving chilled water temperature (LCWT) 6 C
Chilled water temperature rise 7.8° C
Condenser entering air temperature (CEAT) . . 35 C
Loop volume 1300 L

Ratings are based on 6 C rise and are suitable for a temperature rise range from 2.8° to 8.3° C without adjustment. In this case, however, greater accuracy is desired.

II Correct LCWT for 7.8° C cooler water temperature rise.

Enter LCWT correction curve (page 34) at 7.8° C and read a correction of 0.14 C. Corrected LCWT is, therefore, 6 + 0.14 = 6.1 C.

III Determine capacity, unit size, and power input.

Enter Cooling Capacities table at given CEAT and LCWT — respectively 35 C and 6 C.

Read down the capacity column until the capacity nearest to but higher than the specified required capacity is

reached. In this case, 370 kW is delivered by a 30GT110. Interpolate between 6 C and 7 C to find the determined capacity and power input at corrected LCWT (6.1 C). Values are:

Capacity 371.8 kW
Power input 121.7 kW

IV Calculate corrected cooler water flow.

$$\begin{aligned} \text{Water flow} &= \frac{0.239 \times \text{corr cap. in kW}}{\text{temperature rise } ^\circ\text{C}} = \text{L/s} \\ &= \frac{0.239 \times 371.8}{7.8} = 11.4 \text{ L/s} \end{aligned}$$

V Calculate cooler pressure drop.

Enter cooler pressure drop curve (page 31) at corrected flow rate (11.4 L/s) and read, for 30GT110, a pressure drop of 17.5 kPa.

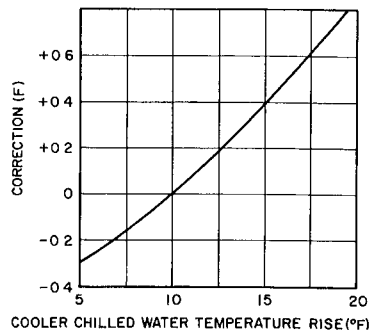
VI Check loop volume and cooler water flow rate.

Minimum loop volume, from application data, is 1222 L for 30GT110. Therefore, given volume of 1300 L is satisfactory. Minimum water flow rate, from application data, is 4.6 L/s for 30GT110. Flow rate of 11.4 L/s is well above minimum required.

Selection procedure — English and SI

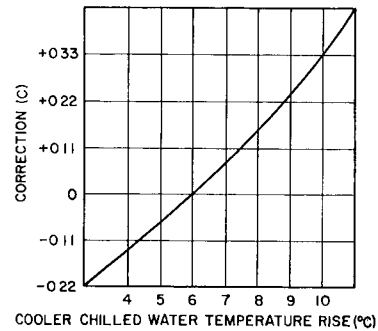


LCWT CORRECTION (ENGLISH)



Above 10 F, ADD correction to design LCWT.
Below 10 F, SUBTRACT

LCWT CORRECTION (SI)



Above 6 C, ADD correction to design LCWT.
Below 6 C, SUBTRACT.

Performance data

STANDARD RATINGS* — REFRIGERANT 22, 60 HZ

UNIT SIZE 30GN,GT	CAPACITY		COMPRESSOR POWER INPUT (kW)	FAN POWER (kW)	COOLER WATER PRESSURE DROP (ft water)	ENERGY EFFICIENCY RATIO (EER)	COEFFICIENT OF PERFORMANCE (C.O.P.)
	Tons	Btuh					
040	35.9	430,800	38.5	6.2	8.2	9.6	2.82
045	41.6	499,200	46.5	6.2	11.5	9.5	2.77
050	50.4	604,800	56.0	6.2	16.5	9.7	2.84
060	63.3	759,600	70.9	9.3	17.0	9.5	2.77
070	72.5	870,000	82.4	9.3	22.0	9.5	2.78
080	81.9	982,800	93.6	9.4	16.9	9.5	2.79
090	87.4	1,048,800	98.4	9.5	19.2	9.7	2.85
100	99.6	1,195,200	107.9	12.7	15.2	9.9	2.90
110	107.6	1,291,200	123.0	12.8	17.6	9.5	2.79
130	121.4	1,456,800	137.3	15.5	6.6	9.5	2.78
150	140.2	1,682,400	161.6	15.5	8.7	9.5	2.78
170	157.2	1,945,200	181.0	15.5	11.8	9.5	2.81
190	172.4	2,116,800	199.2	18.6	14.1	9.5	2.86
210	201.0	2,419,200	235.3	18.6	15.0	9.5	2.78

$$EER = \frac{\text{Capacity (Btuh)}}{\text{Input Power (W)}}$$

*Per ARI (Air Conditioning and Refrigeration Institute) Standard 590-92

NOTE: 95 F (35 C) condenser entering-air temperature, 54 F (12 C) entering/44 F (6.7 C) leaving cooler water; .00025 ft² hr °F/Btu (.000044 m² °C/W) cooler fouling allowance

Performance data (cont)



STANDARD RATINGS — REFRIGERANT 22, 50 HZ

UNIT SIZE 30GN,GT	CAPACITY		COMPRESSOR POWER INPUT (kW)	FAN POWER (kW)	COOLER WATER PRESSURE DROP (ft water)	ENERGY EFFICIENCY RATIO (EER)	COEFFICIENT OF PERFORMANCE (C.O.P.)
	Tons	Btuh					
040	35.0	420,000	37.8	6.2	5.3	9.54	2.79
045	41.9	502,800	47.6	6.2	8.4	9.34	2.73
050	51.1	613,200	59.4	6.2	12.3	9.35	2.74
060	60.2	722,400	68.9	9.3	11.2	9.24	2.71
070	70.1	841,200	77.8	9.3	15.0	9.67	2.83
080	81.0	972,000	92.9	9.4	11.3	9.50	2.83
090	90.6	1,087,200	105.6	9.4	14.0	9.45	2.77
100	100.2	1,202,400	112.8	12.7	9.5	9.58	2.81
110	111.0	1,332,000	134.0	12.7	11.6	9.07	2.66
130	123.5	1,482,000	140.6	15.5	6.8	9.50	2.78
150	144.6	1,735,200	175.3	15.4	9.4	9.10	2.66
170	158.3	1,899,600	186.6	15.4	11.9	9.40	2.75
190	179.6	2,155,200	213.2	18.5	15.3	9.30	2.72
210	201.0	2,412,000	238.1	18.6	14.6	9.40	2.75

$$EER = \frac{\text{Capacity (Btuh)}}{\text{Input Power (W)}}$$

NOTE: 95 F (35 C) condenser entering-air temperature, 54 F (12 C) entering/44 F (6.7 C) leaving cooler water, .00025 ft² · hr · °F/Btu (.000044 m² · °C/W) cooler fouling allowance

PART LOAD DATA, 60 HZ UNITS PERCENT DISPLACEMENT — SEQUENCE A

CAPACITY STEPS	30GT SIZE													
	040	045	050	060	070	080	090	100	110	130	150	170	190	210
1	25	21	32	29	33	22	18	15	14	14	11	11	14	12
2	50	42	78	43	50	52	35	31	29	29	19	22	27	26
3	75	79	84	86	83	67	44	39	36	36	28	28	43	37
4	100	100	100	100	100	78	53	46	43	43	33	33	59	56
5	—	—	—	—	—	89	71	65	68	64	44	44	79	68
6	—	—	—	—	—	100	80	73	75	72	58	50	100	86
7	—	—	—	—	—	—	91	92	93	93	78	61	—	100
8	—	—	—	—	—	—	100	100	100	100	83	67	—	—
9	—	—	—	—	—	—	—	—	—	—	94	78	—	—
10	—	—	—	—	—	—	—	—	—	—	100	83	—	—
11	—	—	—	—	—	—	—	—	—	—	—	94	—	—
12	—	—	—	—	—	—	—	—	—	—	—	100	—	—

PERCENT DISPLACEMENT — SEQUENCE B*

CAPACITY STEPS	30GT SIZE													
	040	045	050	060	070	080	090	100	110	130	150	170	190	210
1	25	38	35	38	33	29	18	15	14	14	17	11	14	14
2	50	58	52	57	50	52	35	31	29	29	19	22	27	26
3	75	60	67	67	83	63	44	39	36	36	33	28	43	44
4	100	81	83	81	100	78	53	46	43	43	43	33	59	56
5	—	100	84	100	—	89	71	65	68	64	58	44	79	74
6	—	—	100	—	—	100	80	73	75	72	67	50	100	86
7	—	—	—	—	—	—	91	92	93	93	75	61	—	100
8	—	—	—	—	—	—	100	100	100	100	83	67	—	—
9	—	—	—	—	—	—	—	—	—	—	92	78	—	—
10	—	—	—	—	—	—	—	—	—	—	100	83	—	—
11	—	—	—	—	—	—	—	—	—	—	—	94	—	—
12	—	—	—	—	—	—	—	—	—	—	—	100	—	—

*Accessory unloaders are required on 040-070 sizes for auto lead/lag and Sequence B.

NOTES

1. The standard 30GN unit has the same steps, but additional steps are available when accessory unloaders are used
2. Accessory hot gas bypass and accessory unloaders (where available on sizes larger than 070) are not considered. Contact your local Carrier representative for details

Performance data (cont)



PART LOAD DATA, 50 HZ UNITS PERCENT DISPLACEMENT — SEQUENCE A

CAPACITY STEPS	30GT SIZE													
	040	045	050	060	070	080	090	100	110	130	150	170	190	210
1	21	32	29	33	19	16	14	13	17	10	13	10	17	10
2	42	78	43	50	29	42	29	26	33	21	27	24	33	26
3	79	84	86	83	48	54	36	33	42	29	33	29	50	37
4	100	100	100	100	62	62	43	40	50	34	40	39	67	52
5	—	—	—	—	71	92	68	63	67	47	53	43	83	68
6	—	—	—	—	90	100	75	70	75	58	60	53	100	84
7	—	—	—	—	100	—	93	93	92	77	73	57	—	100
8	—	—	—	—	—	—	100	100	100	82	80	62	—	—
9	—	—	—	—	—	—	—	—	—	95	93	76	—	—
10	—	—	—	—	—	—	—	—	—	100	100	81	—	—
11	—	—	—	—	—	—	—	—	—	—	—	95	—	—
12	—	—	—	—	—	—	—	—	—	—	—	100	—	—

PERCENT DISPLACEMENT — SEQUENCE B*

CAPACITY STEPS	30GT SIZE													
	040	045	050	060	070	080	090	100	110	130	150	170	190	210
1	38	35	38	33	19	25	14	13	17	10	13	10	17	16
2	58	52	57	50	29	42	29	26	33	21	27	24	33	26
3	60	67	67	83	47	50	36	33	42	29	33	34	50	42
4	81	83	81	100	48	62	43	40	50	34	40	38	67	52
5	100	84	100	—	58	92	68	63	67	47	53	43	83	68
6	—	100	—	—	61	100	75	70	75	58	60	48	100	84
7	—	—	—	—	71	—	93	93	92	77	73	57	—	100
8	—	—	—	—	90	—	100	100	100	82	80	62	—	—
9	—	—	—	—	100	—	—	—	—	95	93	76	—	—
10	—	—	—	—	—	—	—	—	—	100	100	81	—	—
11	—	—	—	—	—	—	—	—	—	—	—	95	—	—
12	—	—	—	—	—	—	—	—	—	—	—	100	—	—

*Accessory unloaders are required on 040-070 sizes for auto lead/lag and Sequence B.

NOTES:

1. The standard 30GN unit has the same steps, but additional steps are available when accessory unloaders are used.
2. Accessory hot gas bypass and accessory unloaders (where available on sizes larger than 070) are not considered. Contact your local Carrier representative for details.

Part Load Efficiency Data

Carrier's reciprocating chiller selection program may be used to determine part load performance of Carrier chillers. This program has the ability to calculate part load performance based on the 'ARI LOAD' line or on a user-specified load line at either user-specified percent capacity or the actual capacity step. Contact your local Carrier representative for details.

Performance data — English



COOLING CAPACITIES, 60 HZ

UNIT SIZE 30GN,GT	LCWT (F)	CONDENSER ENTERING-AIR TEMPERATURE (F)														
		85			95			105			115			125		
		Cap.	Input kW	Cooler Flow Rate	Cap.	Input kW	Cooler Flow Rate	Cap.	Input kW	Cooler Flow Rate	Cap.	Input kW	Cooler Flow Rate	Cap.	Input kW	Cooler Flow Rate
040	40	35.6	34.9	85.3	33.8	37.4	80.8	31.9	39.8	76.3	29.9	41.9	71.5	27.9	43.9	66.7
045		41.1	42.1	98.5	38.5	44.6	92.2	35.9	46.9	86.0	33.3	49.0	79.7	30.7	50.8	73.5
050		49.7	50.8	119.0	46.8	53.9	112.1	43.9	56.8	105.2	41.0	59.4	98.2	38.1	61.7	91.2
060		62.3	64.5	149.2	58.9	68.3	141.1	55.5	71.8	132.9	52.1	74.9	124.6	48.6	77.8	116.3
070		71.3	75.0	170.6	67.6	79.3	161.9	64.0	83.3	153.2	60.3	87.0	144.4	56.6	90.5	135.6
080		80.7	85.1	193.2	76.1	89.9	182.1	71.4	94.2	170.9	66.7	98.0	159.7	61.9	101.3	148.3
090		86.4	89.0	206.8	81.1	94.4	194.1	75.9	99.4	181.6	70.6	103.9	169.0	65.3	107.9	156.4
100		97.9	97.5	234.4	92.2	103.6	220.7	86.3	109.1	206.7	80.5	114.0	192.7	74.5	118.4	178.4
110		105.7	111.5	253.0	99.6	117.8	238.5	93.6	123.6	224.0	87.5	128.9	209.4	81.4	133.7	194.9
130		120.9	126.0	289.3	114.7	133.4	274.6	108.6	140.4	259.9	102.3	146.8	244.9	95.9	152.6	229.5
150		140.4	148.2	336.0	133.3	157.0	319.1	126.1	165.4	301.8	118.9	173.3	284.7	111.7	180.8	267.3
170		156.9	165.8	375.6	148.2	175.0	354.9	139.5	183.4	334.0	130.6	190.9	312.8	121.6	197.3	291.0
190		171.8	182.4	411.3	163.0	192.8	390.2	153.9	202.4	368.3	144.5	211.2	345.9	135.2	219.2	323.6
210		197.9	214.1	473.6	186.3	224.6	445.9	174.9	234.3	418.6	163.5	243.1	391.4	—	—	—
040	42	36.7	35.3	87.9	34.8	38.0	83.4	32.9	40.4	78.8	30.9	42.7	74.0	28.8	44.7	69.1
045		42.7	42.9	102.3	40.0	45.5	95.9	37.4	48.0	89.5	34.7	50.1	83.1	32.0	52.0	76.7
050		51.5	51.7	123.4	48.6	55.0	116.4	45.6	58.0	109.3	42.6	60.7	102.2	39.6	63.1	95.0
060		64.6	65.6	154.7	61.1	69.6	146.4	57.6	73.2	138.0	54.1	76.6	129.6	50.5	79.5	121.0
070		73.7	76.4	176.6	70.0	80.8	167.8	66.3	85.0	158.8	62.5	88.9	149.8	58.8	92.5	140.8
080		83.7	86.8	200.4	78.9	91.8	189.1	74.2	96.3	177.7	69.3	100.3	166.1	64.5	103.8	154.5
090		89.6	90.8	214.6	84.2	96.4	201.8	78.9	101.6	188.9	73.5	106.3	176.0	68.1	110.5	163.1
100		101.8	99.4	243.8	95.8	105.7	229.6	89.9	111.5	215.4	83.9	116.7	201.0	77.9	121.4	186.5
110		109.8	113.8	263.0	103.6	120.4	248.2	97.4	126.4	233.2	91.1	132.0	218.3	84.9	137.0	203.4
130		124.1	127.7	297.3	117.8	135.4	282.3	111.5	142.5	267.1	105.2	149.1	252.0	98.7	155.2	236.4
150		143.9	150.2	344.8	136.7	159.3	327.5	129.5	168.0	310.2	122.2	176.1	292.7	114.8	183.8	275.0
170		161.4	168.4	386.7	152.7	178.0	365.9	143.8	186.7	344.4	134.7	194.5	322.7	—	—	—
190		176.7	185.3	423.3	167.6	196.0	401.4	158.5	206.0	379.6	149.0	215.1	356.9	139.5	223.4	334.1
210		205.4	218.9	492.0	193.6	230.0	463.9	181.8	240.0	435.5	170.1	249.2	407.4	—	—	—
040	44	37.8	35.8	90.6	35.9	38.5	86.1	33.9	41.1	81.4	31.9	43.4	76.5	29.9	45.6	71.6
045		44.3	43.7	106.1	41.6	46.5	99.6	38.8	49.0	93.1	36.1	51.3	86.5	33.3	53.3	79.9
050		53.3	52.7	127.9	50.4	56.0	120.7	47.3	59.2	113.5	44.3	62.0	106.2	41.2	64.6	98.8
060		66.9	66.8	160.3	63.3	70.9	151.8	59.8	74.7	143.2	56.1	78.2	134.6	52.5	81.3	125.8
070		76.3	77.8	182.9	72.5	82.4	173.8	68.6	86.7	164.5	64.8	90.7	155.3	60.9	94.5	146.1
080		86.7	88.5	207.8	81.9	93.6	196.3	77.0	98.3	184.6	72.1	102.6	172.7	67.1	106.3	160.8
090		92.9	92.6	222.8	87.4	98.4	209.5	81.9	103.8	196.3	76.4	108.7	183.1	70.8	113.1	169.7
100		105.7	101.3	253.5	96.6	107.9	238.8	93.5	113.9	224.1	87.4	119.4	209.5	81.2	124.3	194.6
110		114.0	116.2	273.2	107.6	123.0	258.0	101.3	129.3	242.8	94.9	135.1	227.5	88.5	140.4	212.1
130		127.3	129.5	305.2	121.4	137.3	290.1	114.6	144.7	274.6	108.0	151.4	258.9	101.5	157.8	243.3
150		147.5	152.3	353.6	140.2	161.6	336.2	132.9	170.5	318.5	125.5	178.9	300.7	117.9	186.8	282.7
170		166.0	171.1	398.0	157.2	181.0	376.8	148.2	190.0	355.2	138.9	198.1	332.9	—	—	—
190		181.8	188.4	435.8	172.4	199.2	413.4	163.1	209.6	391.0	153.6	219.1	368.3	143.8	227.7	344.6
210		213.2	224.0	511.0	201.0	235.3	481.9	189.0	245.9	453.1	176.8	255.4	423.9	—	—	—

Ratings in accordance with ARI (Air Conditioning and Refrigeration Institute, U S A) Standard 590-92

LEGEND

Cap. — Cooling Capacity Tons of Refrigeration
kW — Compressor Power Input
LCWT — Leaving Chilled Water Temperature (F)
Flow Rate — U.S. Gpm

NOTES:

- Ratings apply to units with electronic or thermostatic expansion valves
- All ratings are based on:
 - A cooler water temperature rise of 10° F. When greater accuracy is desired, correct design LCWT, before entering rating tables, by reference to the LCWT correction curve.
 - A fouling factor of 0.00025 in the cooler
 - Refrigerant 22.

- When a corrected LCWT is used, cooler pressure drop must also be corrected for new LCWT:
 - Enter rating table for corrected LCWT. By interpolation, determine corrected capacity (tons) and power input (kW) to compressor at its rated voltage
 - Calculate corrected flow rate through the cooler:

$$= \frac{24 \times \text{capacity in tons}}{\text{temperature rise } ^\circ\text{F}} = \text{U.S. gpm}$$
 - Enter cooler pressure drop curve (pages 31 and 32) at corrected flow rate and read pressure drop
- When cooler water temperature rise is less than 5 F, high flow rate will normally be accompanied by an excessive pressure drop. In such cases, contact your Carrier representative for special selection of a cooler with wider baffle spacing

Performance data — English (cont)



COOLING CAPACITIES, 60 HZ (cont)

UNIT SIZE 30GN,GT	LCWT (F)	CONDENSER ENTERING-AIR TEMPERATURE (F)														
		85			95			105			115			125		
		Cap.	Input kW	Cooler Flow Rate	Cap.	Input kW	Cooler Flow Rate	Cap.	Input kW	Cooler Flow Rate	Cap.	Input kW	Cooler Flow Rate	Cap.	Input kW	Cooler Flow Rate
040	45	38.3	36.1	92.0	36.4	38.8	87.4	34.5	41.4	82.7	32.4	43.8	77.8	30.4	46.0	72.8
045		45.1	44.1	108.1	42.3	46.9	101.5	39.6	49.5	94.9	36.8	51.8	88.3	34.0	53.9	81.6
050		54.3	53.1	130.2	51.3	56.6	122.9	48.2	59.8	115.6	45.1	62.7	108.2	42.0	65.3	100.8
060		68.0	67.4	163.1	64.5	71.6	154.6	60.8	75.5	145.9	57.2	79.0	137.1	53.5	82.2	128.3
070		77.6	78.5	186.1	73.7	83.1	176.8	69.8	87.5	167.4	65.9	91.6	158.1	62.0	95.4	148.8
080		88.2	89.4	211.5	83.3	94.6	199.8	78.4	99.4	188.1	73.4	103.7	176.1	68.4	107.6	164.1
090		94.6	93.6	226.8	89.0	99.4	213.5	83.4	104.9	200.1	77.9	109.9	186.7	72.2	114.5	173.2
100		107.7	102.3	258.3	101.6	109.0	243.6	95.4	115.1	228.8	89.2	120.7	213.8	82.9	125.8	198.8
110		116.1	117.3	278.4	109.7	124.3	263.0	103.2	130.8	247.6	96.8	136.7	232.1	90.3	142.1	216.5
130		128.9	130.3	309.2	122.6	138.3	293.9	116.1	145.7	278.3	109.6	152.7	262.9	102.9	159.0	246.8
150		149.4	153.4	358.3	142.0	162.8	340.5	134.6	171.8	322.7	127.1	180.3	304.8	119.5	188.3	286.7
170		168.3	172.5	403.7	159.4	182.5	382.3	150.4	191.7	360.5	141.1	200.0	338.3	—	—	—
190		184.3	189.9	441.9	174.8	200.9	419.2	165.4	211.3	396.6	155.9	221.0	373.9	146.0	229.8	350.2
210		217.1	226.5	520.5	204.9	238.1	491.4	192.6	248.7	461.7	180.3	258.5	432.3	—	—	—
040	46	38.9	36.3	93.3	37.0	39.1	88.7	35.0	41.7	84.0	33.0	44.2	79.1	30.9	46.4	74.0
045		45.9	44.5	110.1	43.1	47.4	103.4	40.3	50.0	96.7	37.5	52.4	90.0	34.7	54.5	83.3
050		55.2	53.6	132.4	52.2	57.1	125.1	49.1	60.3	117.7	46.0	63.3	110.3	42.8	66.0	102.7
060		69.2	68.0	166.0	65.6	72.2	157.3	61.9	76.2	148.6	58.2	79.8	139.7	54.5	83.1	130.7
070		78.9	79.2	189.3	75.0	83.9	179.9	71.1	88.4	170.5	67.1	92.5	160.9	63.1	96.5	151.4
080		89.8	90.2	215.3	84.8	95.6	203.5	79.9	100.5	191.6	74.8	104.9	179.5	69.7	108.8	167.2
090		96.3	94.5	230.9	90.6	100.5	217.4	85.0	106.0	203.9	79.3	111.1	190.2	73.6	115.8	176.7
100		109.8	103.2	263.3	103.5	110.1	248.4	97.2	116.3	233.2	90.9	122.1	218.1	84.6	127.3	203.0
110		118.3	118.5	283.7	111.8	125.6	268.2	105.3	132.2	252.5	98.7	138.3	236.8	92.1	143.9	221.0
130		130.6	131.2	313.2	124.2	139.3	297.8	117.6	146.8	282.1	111.0	153.9	266.3	104.3	160.4	250.2
150		151.3	154.5	362.8	143.8	163.9	344.8	136.3	173.1	326.9	128.8	181.7	308.9	121.1	189.8	290.5
170		170.6	173.8	409.2	161.7	184.0	387.9	152.6	193.4	365.9	143.2	201.8	343.5	—	—	—
190		186.9	191.4	448.4	177.4	202.6	425.6	167.7	213.1	402.4	158.1	222.9	379.3	148.3	232.0	355.6
210		221.0	229.0	530.1	208.7	249.0	500.6	196.3	251.8	470.8	183.9	261.8	444.0	—	—	—
040	48	40.0	36.8	96.1	38.1	39.7	91.4	36.1	42.4	86.6	34.0	44.9	81.7	31.9	47.3	76.6
045		47.5	45.4	114.1	44.7	48.3	107.3	41.9	51.1	100.4	39.0	53.6	93.6	36.1	55.8	86.7
050		57.1	54.5	137.1	54.0	58.2	129.6	50.9	61.5	122.0	47.7	64.6	114.4	44.5	67.5	106.7
060		71.6	69.1	171.8	67.9	73.6	162.9	64.2	77.7	154.0	60.4	81.5	144.9	56.6	84.9	135.8
070		81.5	80.6	195.7	77.5	85.5	186.1	73.5	90.1	176.4	69.5	94.5	166.8	65.4	98.5	157.0
080		92.9	91.9	222.9	87.9	97.5	210.9	82.8	102.6	198.7	77.7	107.2	186.4	72.4	111.4	173.8
090		99.7	96.3	239.2	93.9	102.5	225.4	88.1	108.3	211.4	82.3	113.6	197.6	76.5	118.5	183.7
100		113.8	105.2	273.2	107.5	112.2	258.0	101.1	118.8	242.6	94.6	124.8	227.0	88.1	130.3	211.5
110		122.6	120.9	294.3	116.0	128.3	278.3	109.3	135.1	262.4	102.6	141.5	246.3	95.9	147.3	230.2
130		133.9	132.9	321.3	127.4	141.2	305.7	120.8	149.0	289.8	114.0	156.2	273.6	107.2	162.9	257.3
150		155.0	156.5	372.0	147.4	166.3	353.9	139.7	175.6	335.4	132.1	184.5	317.1	124.4	192.9	298.6
170		175.3	176.6	420.8	166.3	187.1	399.1	157.0	196.7	376.8	147.5	205.5	354.0	—	—	—
190		192.1	194.4	461.0	182.3	205.9	437.6	172.5	216.6	413.9	162.8	226.9	390.8	—	—	—
210		229.0	234.1	549.5	216.4	246.4	519.3	203.8	257.8	489.0	191.0	268.2	458.3	—	—	—
040	50	41.2	37.3	98.8	39.2	40.2	94.1	37.2	43.0	89.3	35.1	45.6	84.3	32.9	48.1	79.1
045		49.2	46.2	118.1	46.3	49.3	111.2	43.4	52.1	104.2	40.5	54.7	97.2	37.6	57.1	90.2
050		59.0	55.5	141.8	55.9	59.2	134.2	52.7	62.7	126.4	49.4	66.0	118.7	46.1	68.9	110.8
060		74.0	70.3	177.7	70.3	74.9	168.7	66.4	79.2	159.5	62.6	83.1	150.3	58.7	86.7	140.9
070		84.2	82.0	202.3	80.1	87.1	192.4	76.0	91.8	182.5	71.9	96.3	172.6	67.7	100.6	162.7
080		96.2	93.7	230.9	91.0	99.4	218.5	85.8	104.7	206.0	80.6	109.6	193.4	75.2	113.9	180.6
090		103.1	98.1	247.7	97.2	104.5	233.4	91.3	110.5	219.3	85.4	116.1	205.1	79.5	121.2	190.9
100		118.0	107.1	283.4	111.5	114.5	267.8	105.0	121.3	252.0	98.4	127.5	236.3	91.7	133.2	220.1
110		127.1	123.3	305.1	120.3	130.9	288.8	113.5	138.1	272.4	106.6	144.7	255.9	99.7	150.8	239.4
130		137.2	134.7	329.5	130.6	143.2	313.7	123.9	151.2	297.5	117.1	158.6	281.2	110.1	165.5	264.4
150		158.7	158.7	381.2	151.1	168.7	362.8	143.4	178.2	344.2	135.5	187.3	325.3	—	—	—
170		180.1	179.4	432.5	170.9	190.2	410.3	161.5	200.1	387.8	151.9	209.2	364.6	—	—	—
190		197.3	197.5	473.8	187.4	209.3	449.9	177.5	220.4	426.1	167.5	230.8	402.1	—	—	—
210		237.0	239.4	569.2	224.3	252.0	538.4	211.3	263.8	507.4	198.3	274.7	476.2	—	—	—
040	60	47.0	39.7	113.1	45.0	43.0	108.2	42.6	46.0	102.5	39.4	48.4	94.7	35.9	50.3	86.5
045		56.8	49.9	136.6	52.9	53.0	127.4	49.2	55.8	118.3	45.4	58.3	109.2	41.7	60.5	100.2
050		68.9	60.0	165.8	64.5	63.9	155.2	60.1	67.4	144.7	55.8	70.5	134.2	51.5	73.2	123.8
060		84.5	75.2	203.3	79.5	79.9	191.1	74.4	84.1	178.9	69.3	87.9	166.8	64.3	91.2	154.7
070		96.2	87.9	231.4	90.5	93.0	217.8	84.9	97.6	204.3	79.4	101.8	191.0	73.9	105.6	177.8
080		107.6	99.8	258.7	100.9	105.5	242.7	94.2	110.6	226.7	—	—	—	—	—	—
090		118.3	106.1	284.6	110.3	112.4	265.4	102.5	118.1	246.5	94.7	123.3	227.8	—	—	—
100		137.7	115.9	331.3	128.9	123.5	310.1	120.1	130.4	288.9	111.4	136.6	268.0	102.7	142.1	247.1
110		150.2	135.5	361.4	141.6	143.6	340.6	132.1	150.6	317.8	122.8	157.0	295.4	113.5	162.7	273.1
130		154.6	143.6	371.8	147.5	153.2	354.8	140.3	162.2	337.6	133.0	170.8	319.9	—	—	—
150		178.1	169.5	428.5	169.9	180.7	408.7	161.6	191.4	388.8	153.3	201.7	368.7	—	—	—
170		205.0	193.6	493.1	195.1	205.9	469.4	184.2	216.7	443.1	171.1	225.0	411.6	—	—	—
190		224.4	213.1	539.7	213.8	226.5	514.3	203.1	239.3	488.5	192.2	251.2	462.3	—	—	—
210		269.5	259.7	648.2	252.9	272.0	608.4	236.5	283.2	568.8	—	—	—	—	—	—

LEGEND

Cap. — Cooling Capacity Tons of Refrigeration
 kW — Compressor Power Input
 LCWT — Leaving Chilled Water Temperature (F)
 Flow Rate — U.S. Gpm

NOTES:

- Ratings apply to units with electronic or



COOLING CAPACITIES, 50 HZ

UNIT SIZE 30GN,GT	LCWT (F)	CONDENSER ENTERING-AIR TEMPERATURE (F)														
		85			95			105			115			125		
		Cap.	Input kW	Cooler Flow Rate	Cap.	Input kW	Cooler Flow Rate	Cap.	Input kW	Cooler Flow Rate	Cap.	Input kW	Cooler Flow Rate	Cap.	Input kW	Cooler Flow Rate
040	40	34.6	34.2	82.9	32.9	36.6	78.7	31.1	39.0	74.5	29.3	41.1	70.2	27.4	43.2	65.7
045		41.3	43.2	99.0	38.9	45.7	93.1	36.4	48.0	87.1	33.9	50.0	81.2	31.4	51.8	75.2
050		50.3	54.1	120.4	47.6	57.1	113.9	44.9	59.8	107.4	42.1	62.3	100.8	39.3	64.5	94.1
060		59.2	62.7	141.7	56.0	66.2	134.2	52.9	69.4	126.7	49.8	72.4	119.2	46.7	75.1	111.7
070		69.1	70.6	165.4	65.2	74.9	156.2	61.4	78.8	147.0	57.6	82.5	137.8	53.8	85.9	128.7
080		79.7	75.4	190.8	75.2	79.6	180.1	70.9	83.4	169.6	66.5	87.0	159.2	62.1	90.3	148.7
090		89.3	95.9	213.8	84.2	101.2	201.6	79.1	106.1	189.3	74.0	110.6	177.1	68.9	114.6	164.8
100		98.3	102.4	235.3	92.8	108.1	222.2	87.3	113.3	208.9	81.8	118.2	195.8	76.3	122.7	182.8
110		108.6	122.1	260.0	102.9	128.1	246.4	97.2	133.7	232.8	91.5	138.8	219.1	85.7	143.6	205.2
130		123.5	129.0	295.7	117.2	136.6	280.5	110.7	143.6	265.0	104.3	150.2	249.6	97.7	156.2	234.0
150		144.4	161.5	345.7	137.6	170.2	329.5	130.8	178.4	313.1	123.9	186.2	296.5	116.8	193.4	279.5
170		157.8	171.2	377.7	149.5	180.3	358.0	141.2	188.8	338.0	132.8	196.4	317.8	124.2	203.4	297.3
190		178.6	196.0	427.5	169.8	206.1	406.6	161.2	215.7	386.0	152.4	224.6	364.9	143.3	232.8	343.1
210		197.6	216.9	473.0	186.7	227.3	446.9	175.8	236.9	420.8	164.9	245.7	394.8	153.9	253.7	368.5
040	42	35.7	34.7	85.5	33.9	37.2	81.2	32.1	39.6	76.9	30.3	41.9	72.6	28.4	44.0	68.0
045		42.9	44.0	102.7	40.4	46.6	96.7	37.8	49.0	90.6	35.3	51.1	84.5	32.7	53.0	78.4
050		52.1	55.1	124.8	49.3	58.2	118.2	46.5	61.0	111.5	43.7	63.6	104.7	40.9	66.0	97.9
060		61.3	63.9	146.9	58.1	67.5	139.2	54.9	70.9	131.5	51.7	74.0	123.8	48.5	76.8	116.1
070		71.6	71.9	171.4	67.7	76.4	162.1	63.7	80.5	152.7	59.8	84.3	143.3	55.9	87.8	133.9
080		82.6	76.9	197.9	78.1	81.3	187.1	73.6	85.3	176.2	69.1	89.0	165.5	64.6	92.4	154.7
090		92.6	97.9	221.9	87.3	103.4	209.2	82.1	108.5	196.7	76.9	113.1	184.1	71.6	117.4	171.5
100		102.1	104.5	244.6	96.5	110.4	231.1	90.8	115.9	217.4	85.2	121.0	204.0	79.5	125.7	190.6
110		112.8	124.8	270.2	106.9	131.0	256.0	101.0	136.9	242.1	95.1	142.2	227.9	89.2	147.2	213.8
130		126.8	130.8	303.7	120.3	138.6	288.2	113.8	145.9	272.6	107.2	152.6	256.7	100.5	158.8	240.8
150		148.0	163.8	354.5	141.1	172.7	338.0	134.1	181.2	321.4	127.1	189.2	304.5	120.0	196.7	287.4
170		162.3	174.1	388.7	153.9	183.5	368.7	145.4	192.2	348.4	136.8	200.2	327.8	128.1	207.4	306.9
190		183.6	199.3	439.9	174.7	209.6	418.5	165.8	219.5	397.3	156.9	228.7	375.9	147.6	237.2	353.6
210		204.9	221.9	490.9	193.8	232.7	464.3	182.6	247.2	437.5	171.5	251.9	410.8	—	—	—
040	44	36.8	35.2	88.1	35.0	37.8	83.8	33.1	40.2	79.4	31.3	42.6	75.0	29.3	44.8	70.4
045		44.4	44.9	106.5	41.9	47.6	100.3	39.3	50.1	94.1	36.7	52.3	87.9	34.0	54.3	81.6
050		53.9	56.1	129.2	51.1	59.4	122.5	48.2	62.3	115.7	45.4	65.0	108.7	42.4	67.5	101.8
060		63.5	65.1	152.2	60.2	68.9	144.3	56.9	72.3	136.5	53.6	75.5	128.5	50.3	78.5	120.6
070		74.1	73.3	177.6	70.1	77.8	168.1	66.1	82.1	158.4	62.1	86.1	148.8	58.1	89.7	139.2
080		85.5	78.4	205.1	81.0	82.9	194.2	76.4	87.1	183.1	71.7	91.0	171.9	67.1	94.6	160.9
090		95.9	99.9	230.0	90.6	105.6	217.1	85.2	110.9	204.2	79.8	115.7	191.3	74.4	120.2	178.4
100		106.0	106.7	254.2	100.2	112.8	240.2	94.4	118.5	226.2	88.6	123.9	212.4	82.8	128.8	198.6
110		117.0	127.5	280.4	111.0	134.0	266.0	104.9	140.1	251.4	98.9	145.7	237.0	92.8	150.9	222.5
130		130.0	132.6	311.8	123.5	140.6	296.1	116.9	148.1	280.2	110.1	155.0	263.9	103.4	161.5	247.8
150		151.6	166.1	363.4	144.6	175.3	346.7	137.5	184.0	329.7	130.4	192.2	312.6	123.2	200.0	295.2
170		166.8	176.9	399.9	158.3	186.6	379.5	149.7	195.6	358.8	140.9	203.9	337.9	132.1	211.4	316.6
190		188.8	202.7	452.6	179.6	213.2	430.5	170.6	223.3	409.0	161.5	232.9	387.1	152.1	241.8	364.6
210		212.5	227.0	509.4	201.0	238.1	481.9	189.7	248.5	454.6	178.2	258.1	427.1	—	—	—
040	45	37.3	35.4	89.5	35.5	38.1	85.1	33.6	40.6	80.7	31.8	43.0	76.2	29.8	45.2	71.5
045		45.2	45.3	108.4	42.6	48.1	102.2	40.0	50.6	95.9	37.4	52.9	89.6	34.7	54.9	83.3
050		54.8	56.7	131.5	52.0	59.9	124.7	49.1	63.0	117.8	46.2	65.7	110.8	43.2	68.2	103.7
060		64.6	65.7	154.9	61.3	69.5	146.9	57.9	73.1	138.9	54.6	76.3	130.9	51.2	79.4	122.9
070		75.4	73.9	180.8	71.3	78.6	171.1	67.3	82.9	161.4	63.2	87.0	151.6	59.2	90.7	141.9
080		87.1	79.2	208.9	82.4	83.8	197.6	77.8	88.1	186.5	73.1	92.0	175.3	68.4	95.7	164.0
090		97.6	100.9	234.1	92.2	106.7	221.1	86.8	112.1	208.1	81.3	117.1	194.9	75.8	121.6	181.8
100		108.0	107.8	259.0	102.1	114.0	244.8	96.2	119.9	230.7	90.3	125.3	216.6	84.5	130.3	202.6
110		119.0	128.9	285.5	113.0	135.5	271.0	106.9	141.7	256.4	100.8	147.4	241.7	94.6	152.8	226.9
130		131.7	133.5	315.8	125.1	141.6	299.9	118.4	149.2	284.0	111.7	156.3	267.8	104.8	162.8	251.3
150		153.4	167.3	367.7	146.4	176.6	351.0	139.3	185.4	333.9	132.1	193.7	316.7	—	—	—
170		169.1	178.4	405.6	160.6	188.2	385.0	151.9	197.4	364.1	143.0	205.8	343.0	134.1	213.5	321.5
190		191.4	204.3	458.9	182.1	215.1	436.8	172.9	225.2	414.7	163.8	235.0	392.7	154.4	244.1	370.4
210		216.3	229.5	518.8	204.7	240.9	490.9	193.2	251.5	463.3	181.6	261.3	435.5	—	—	—
040	46	37.8	35.7	90.8	36.0	38.3	86.4	34.2	40.9	82.0	32.3	43.3	77.4	30.3	45.6	72.7
045		46.0	45.8	110.4	43.4	48.6	104.1	40.7	51.1	97.7	38.1	53.5	91.4	35.4	55.5	84.9
050		55.8	57.2	133.8	52.9	60.5	126.9	50.0	63.6	119.9	47.0	66.4	112.8	44.1	69.0	105.7
060		65.7	66.4	157.6	62.3	70.2	149.5	59.0	73.8	141.5	55.6	77.2	133.4	52.2	80.3	125.2
070		76.7	74.6	183.9	72.6	79.3	174.1	68.5	83.7	164.4	64.4	87.9	154.5	60.3	91.7	144.6
080		88.7	80.0	212.7	83.9	84.6	201.2	79.2	89.0	190.0	74.5	93.0	178.7	69.7	96.8	167.1
090		99.3	101.9	238.2	93.8	107.8	225.1	88.4	113.3	211.9	82.8	118.4	198.6	77.3	123.0	185.4
100		110.0	108.9	263.8	104.1	115.3	249.6	98.1	121.2	235.3	92.2	126.8	221.1	86.2	131.9	206.7
110		121.2	130.3	290.7	115.1	137.0	276.0	108.9	143.3	261.2	102.7	149.2	246.2	96.4	154.6	231.3
130		133.4	134.4	319.9	126.8	142.6	304.1	120.0	150.3	287.9	113.2	157.5	271.5	106.2	164.1	254.8
150		155.2	168.4	372.2	148.2	177.9	355.4	141.0	186.8	338.2	133.7	195.2	320.8	—	—	—
170		171.5	179.8	411.3	162.8	189.8	390.5	154.0	199.1	369.5	145.1	207.7	348.1	136.1	215.5	326.4
190		194.0	206.0	465.2	184.6	216.9	442.9	175.3	227.2	420.5	166.0	237.0	398.3	156.7	246.3	375.8
210		220.2	232.1	528.2	208.5	243.6	500.0	196.8	254.5	472.1	185.0	264.4	443.9	—	—	—

NOTE: See legend and notes on page 40

Performance data — English (cont)



COOLING CAPACITIES, 50 HZ (cont)

UNIT SIZE 30GN,GT	LCWT (F)	CONDENSER ENTERING-AIR TEMPERATURE (F)														
		85			95			105			115			125		
		Cap.	Input kW	Cooler Flow Rate	Cap.	Input kW	Cooler Flow Rate	Cap.	Input kW	Cooler Flow Rate	Cap.	Input kW	Cooler Flow Rate	Cap.	Input kW	Cooler Flow Rate
040	48	38.9	36.2	93.5	37.1	38.9	89.0	35.2	41.6	84.6	33.3	44.1	79.9	31.3	46.4	75.2
045		47.6	46.6	114.3	45.0	49.5	107.9	42.3	52.2	101.4	39.5	54.6	94.9	36.8	56.8	88.3
050		57.7	58.2	138.4	54.7	61.7	131.4	51.8	64.9	124.2	48.8	67.8	117.0	45.7	70.5	109.7
060		68.0	67.6	163.2	64.5	71.6	154.9	61.1	75.3	146.6	57.6	78.8	138.3	54.1	82.0	129.9
070		79.3	75.9	190.4	75.1	80.8	180.3	71.0	85.4	170.3	66.8	89.7	160.3	62.6	93.7	150.1
080		91.8	81.5	220.2	86.9	86.4	208.6	82.0	90.8	196.9	77.2	95.1	185.4	72.4	99.0	173.7
090		102.7	103.9	246.6	97.2	110.1	233.2	91.6	115.8	219.7	85.9	121.1	206.2	80.2	125.9	192.5
100		114.1	111.1	273.8	107.9	117.7	259.0	101.9	123.9	244.5	95.7	129.7	229.8	89.6	135.0	215.1
110		125.5	133.1	301.3	119.2	140.1	286.2	113.0	146.6	271.1	106.6	152.7	255.8	100.2	158.4	240.5
130		136.8	136.2	328.2	130.0	144.6	312.1	123.1	152.5	295.5	116.3	160.0	279.0	109.2	166.8	262.1
150		159.0	170.8	381.5	151.7	180.4	364.1	144.5	189.6	346.8	137.1	198.3	329.1	—	—	—
170		176.2	182.8	422.8	167.4	193.0	401.7	158.4	202.6	380.2	149.4	211.4	358.5	140.2	219.6	336.4
190		199.2	209.4	478.0	189.8	220.6	455.5	180.3	231.2	432.7	170.7	241.2	409.6	—	—	—
210		228.1	237.4	547.5	216.1	249.3	518.6	204.0	260.4	489.6	192.1	270.9	460.9	—	—	—
040	50	40.1	36.7	96.2	38.2	39.5	91.7	36.3	42.2	87.2	34.3	44.8	82.5	32.3	47.2	77.6
045		49.3	47.5	118.4	46.6	50.5	111.8	43.8	53.3	105.2	41.0	55.8	98.5	38.2	58.1	91.8
050		59.6	59.3	143.1	56.6	62.9	135.9	53.6	66.2	128.6	50.5	69.3	121.3	47.4	72.1	113.8
060		70.3	68.8	168.8	66.8	73.0	160.3	63.2	76.8	151.8	59.7	80.4	143.2	56.1	83.8	134.7
070		82.1	77.3	197.1	77.7	82.3	186.7	73.4	87.0	176.4	69.2	91.5	166.2	64.9	95.6	155.8
080		94.9	83.1	227.8	90.0	88.1	216.1	85.0	92.8	204.2	80.0	97.1	192.1	75.1	101.2	180.3
090		106.3	106.0	255.2	100.6	112.3	241.5	94.8	118.3	227.7	89.1	123.8	213.8	83.3	128.8	199.9
100		118.2	113.4	283.9	112.0	120.2	268.9	105.7	126.6	253.8	99.5	132.6	238.8	93.2	138.2	223.8
110		130.0	136.0	312.2	123.5	143.2	296.6	117.1	150.0	281.1	110.6	156.3	265.5	104.0	162.2	249.7
130		140.2	138.0	336.6	133.4	146.7	320.2	126.4	154.8	303.6	119.3	162.4	286.5	112.2	169.5	269.4
150		162.7	173.2	390.7	155.4	183.0	373.1	148.0	192.4	355.2	140.5	201.3	337.4	—	—	—
170		180.9	185.7	434.4	172.0	196.3	412.9	162.9	206.1	391.1	153.7	215.3	369.0	—	—	—
190		204.5	212.8	490.9	194.9	224.3	468.1	185.2	235.2	444.7	175.5	245.5	421.5	—	—	—
210		236.2	242.7	567.0	223.8	255.0	537.4	211.5	266.6	507.8	199.1	277.3	478.1	—	—	—
040	60	45.8	39.2	110.3	43.8	42.3	105.4	41.6	45.3	100.1	38.8	47.8	93.4	35.7	49.8	85.8
045		56.7	51.3	136.5	53.1	54.3	127.8	49.5	57.1	119.1	45.9	59.5	110.5	42.4	61.7	101.9
050		69.5	64.6	167.2	65.4	68.2	157.2	61.2	71.4	147.3	57.1	74.4	137.3	53.0	77.0	127.4
060		79.9	73.7	192.2	75.2	77.9	180.9	70.6	81.7	169.8	66.0	85.1	158.7	61.4	88.2	147.7
070		95.1	83.6	228.9	90.2	89.1	216.9	84.2	93.8	202.5	78.4	98.0	188.5	72.6	101.9	174.6
080		106.6	89.0	256.4	100.1	93.9	240.8	93.7	98.4	225.3	87.3	102.4	210.1	81.0	106.1	195.0
090		122.0	114.8	293.5	114.2	121.1	274.8	106.6	126.7	256.3	98.9	131.8	238.0	—	—	—
100		138.3	123.8	332.7	129.7	130.7	312.1	121.3	137.0	291.8	113.0	142.8	271.7	104.7	148.0	251.9
110		153.6	150.9	369.5	145.6	158.7	350.3	136.4	165.1	328.0	127.4	171.0	306.5	118.6	176.4	285.2
130		157.9	147.3	379.9	150.6	157.0	362.3	143.2	166.3	344.4	135.5	175.0	326.0	—	—	—
150		182.0	185.3	437.9	174.2	196.3	419.0	166.3	206.8	400.0	157.6	216.3	379.1	—	—	—
170		205.7	201.0	494.8	196.0	213.0	471.5	185.6	223.6	446.5	173.0	232.0	415.2	—	—	—
190		232.0	230.3	558.1	221.6	243.3	533.0	211.2	255.8	507.9	200.6	267.7	482.5	—	—	—
210		267.8	263.2	644.3	251.9	275.2	606.0	236.2	286.2	568.1	—	—	—	—	—	—

LEGEND

Cap. — Cooling Capacity Tons of Refrigeration
kW — Compressor Power Input
LCWT — Leaving Chilled Water Temperature (F)
Flow Rate — U S Gpm

NOTES:

- Ratings apply to units with electronic or thermostatic expansion valves
- All ratings are based on:
 - A cooler water temperature rise of 10° F. When greater accuracy is desired, correct design LCWT, before entering rating tables, by reference to the LCWT correction curve
 - A fouling factor of 0.00025 in the cooler
 - Refrigerant 22

- When a corrected LCWT is used, cooler pressure drop must also be corrected for new LCWT:

- Enter rating table for corrected LCWT. By interpolation, determine corrected capacity (tons) and power input (kW) to compressor at its rated voltage.
- Calculate corrected flow rate through the cooler:

$$= \frac{24 \times \text{capacity in tons}}{\text{temperature rise } ^\circ\text{F}} = \text{U S gpm}$$

- On Cooler Pressure Drop chart (pages 31 and 32), enter cooler pressure drop curve at corrected flow rate and read pressure drop.

- When chilled water temperature rise is less than 5 F, high flow rate will normally be accompanied by an excessive pressure drop. In such cases, contact your Carrier representative for special selection of a cooler with wider baffle spacing

Performance data — SI



COOLING CAPACITIES — 60 HZ

UNIT SIZE 30GN,GT	LCWT (C)	CONDENSER ENTERING-AIR TEMPERATURE (C)														
		30			35			40			45			50		
		Cap.	Input kW	Cooler Flow Rate	Cap.	Input kW	Cooler Flow Rate	Cap.	Input kW	Cooler Flow Rate	Cap.	Input kW	Cooler Flow Rate	Cap.	Input kW	Cooler Flow Rate
040	4	123.1	34.9	5.3	117.3	37.2	5.0	111.3	39.3	4.8	105.1	41.2	4.5	98.7	43.0	4.2
045		141.6	42.0	6.1	133.4	44.3	5.7	125.3	46.3	5.4	117.1	48.2	5.0	108.8	49.8	4.7
050		171.3	50.8	7.4	162.3	53.5	7.0	153.2	56.1	6.6	144.1	58.4	6.2	134.9	60.5	5.8
060		214.9	64.4	9.2	204.3	67.8	8.8	193.5	70.9	8.3	182.7	73.7	7.8	171.8	76.3	7.4
070		246.0	74.9	10.6	234.6	78.7	10.1	223.1	82.3	9.6	211.6	85.6	9.1	200.1	88.7	8.6
080		278.1	84.9	11.9	263.6	89.1	11.3	248.9	92.9	10.7	234.2	96.4	10.1	219.3	99.4	9.4
090		297.4	88.9	12.8	280.9	93.6	12.1	264.4	98.0	11.3	247.9	102.0	10.6	231.5	105.7	9.9
100		337.1	97.4	14.5	318.8	102.7	13.7	300.7	107.6	12.9	282.4	112.1	12.1	263.8	116.0	11.3
110		363.9	111.2	15.6	344.8	116.8	14.8	325.9	121.9	14.0	306.9	126.7	13.2	287.8	131.0	12.4
130		418.6	126.1	18.0	399.4	132.7	17.1	380.0	138.9	16.3	360.3	144.6	15.5	340.1	149.9	14.6
150		486.4	148.2	20.9	464.0	156.1	19.9	441.4	163.6	18.9	418.8	170.7	18.0	395.9	177.4	17.0
170	5	542.5	165.7	23.3	515.3	173.8	22.1	487.8	181.3	20.9	460.0	188.0	19.7	431.6	194.0	18.5
190		594.5	182.3	25.5	566.3	191.5	24.3	537.5	200.0	23.1	508.5	208.0	21.8	479.2	215.3	20.6
210		681.5	213.2	29.3	645.2	222.5	27.7	609.5	231.1	26.2	573.3	238.9	24.6	537.8	246.1	23.1
040		126.5	35.4	5.4	120.6	37.7	5.2	114.5	39.9	4.9	108.3	41.9	4.7	101.9	43.7	4.4
045		146.5	42.8	6.3	138.1	45.1	5.9	129.8	47.2	5.6	121.4	49.2	5.2	113.0	50.9	4.9
050		177.0	51.6	7.6	167.8	54.5	7.2	158.5	57.1	6.8	149.2	59.6	6.4	139.8	61.8	6.0
060		221.9	65.4	9.5	211.1	68.9	9.1	200.1	72.2	8.6	189.1	75.1	8.1	178.0	77.8	7.6
070		253.7	76.2	10.9	242.1	80.1	10.4	230.4	83.8	9.9	218.6	87.2	9.4	206.9	90.4	8.9
080		287.4	86.5	12.3	272.6	90.8	11.7	257.6	94.8	11.1	242.5	98.4	10.4	227.4	101.6	9.8
090		307.5	90.5	13.2	290.6	95.4	12.5	273.9	100.0	11.8	257.0	104.2	11.0	240.2	108.0	10.3
100		349.1	99.1	15.0	330.7	104.7	14.2	311.9	109.7	13.4	293.2	114.4	12.6	274.4	118.6	11.8
110		376.7	113.3	16.2	357.3	119.1	15.4	337.8	124.5	14.5	318.4	129.4	13.7	298.9	133.9	12.8
130	6	428.4	127.6	18.4	409.0	134.4	17.6	389.4	140.8	16.7	369.3	146.7	15.9	349.1	152.2	15.0
150		497.6	150.1	21.4	474.9	158.2	20.4	452.0	165.9	19.4	429.0	173.2	18.4	406.0	180.1	17.4
170		556.7	168.1	23.9	529.4	176.5	22.7	501.2	184.2	21.5	472.9	191.2	20.3	444.2	197.4	19.1
190		609.7	185.0	26.2	581.4	194.4	25.0	552.4	203.2	23.7	522.8	211.4	22.5	492.8	218.9	21.2
210		705.3	217.7	30.3	667.7	227.2	28.7	631.2	236.2	27.1	594.6	244.4	25.5	557.5	251.8	23.9
040		129.9	35.8	5.6	124.0	38.2	5.3	117.8	40.4	5.1	111.5	42.5	4.8	105.1	44.5	4.5
045		151.4	43.5	6.5	142.9	45.9	6.1	134.4	48.1	5.8	125.9	50.2	5.4	117.3	52.0	5.0
050		182.7	52.4	7.9	173.3	55.4	7.5	163.9	58.2	7.0	154.4	60.7	6.6	144.8	63.0	6.2
060		229.1	66.5	9.8	218.0	70.1	9.4	206.9	73.5	8.9	195.6	76.6	8.4	184.2	79.4	7.9
070		261.7	77.4	11.2	249.7	81.4	10.7	237.7	85.3	10.2	225.8	88.8	9.7	213.7	92.2	9.2
080		296.7	88.0	12.8	281.7	92.5	12.1	266.5	96.6	11.5	251.1	100.4	10.8	235.7	103.8	10.1
090		317.9	92.1	13.7	300.7	97.2	12.9	283.5	102.0	12.1	266.2	106.2	11.4	249.0	110.3	10.7
100		361.4	100.9	15.5	342.4	106.6	14.7	323.3	111.9	13.9	304.2	116.8	13.1	284.9	121.2	12.2
110		389.8	115.4	16.8	370.0	121.4	15.9	350.1	127.0	15.1	330.1	132.1	14.2	310.2	136.9	13.3
130		438.7	129.2	18.9	418.7	136.2	18.0	398.8	142.7	17.1	378.5	148.8	16.3	357.9	154.4	15.4
150		508.7	152.0	21.9	485.9	160.2	20.9	462.7	168.2	19.9	439.2	175.6	18.9	415.9	182.7	17.9
170		571.1	170.5	24.5	543.4	179.2	23.4	515.1	187.2	22.1	486.1	194.4	20.9	458.8	200.9	19.6
190		625.2	187.6	26.9	595.9	197.3	25.6	567.0	206.4	24.4	537.4	214.9	23.1	506.5	222.6	21.8
210		728.8	222.1	31.3	691.2	232.0	29.7	653.3	241.3	28.1	615.9	249.9	26.5	578.4	257.7	24.9

LEGEND

Cap. — Cooling Capacity kW of Refrigeration
 kW — Compressor Power Input
 LCWT — Leaving Chilled Water Temperature (C)
 Flow Rate — L/s

NOTES:

- Ratings apply to units with electronic or thermostatic expansion valves
- All ratings are based on:
 - A cooler chilled water temperature rise of 6° C. When greater accuracy is desired, correct design LCWT, before entering rating tables, by reference to the LCWT correction curve.
 - A fouling factor of 0.00044 in the cooler.
 - Refrigerant 22.

- When a corrected LCWT is used, cooler pressure drop must also be corrected for new LCWT:

- Enter rating table for corrected LCWT. By interpolation, determine corrected capacity (kW) and power input (kW) to compressor at its rated voltage
- Calculate corrected flow rate through the cooler:

$$= \frac{0.239 \times \text{capacity in kW}}{\text{temperature rise } ^\circ\text{C}} = \text{L/s}$$

- Enter cooler pressure drop curve (pages 31 and 32) at corrected flow rate and read pressure drop

- When chilled water temperature rise is less than 3° C, high flow rate will normally be accompanied by an excessive pressure drop. In such cases, contact your Carrier representative for special selection of a cooler with wider baffle spacing

Performance data — SI (cont)



COOLING CAPACITIES — 60 HZ (cont)

UNIT SIZE 30GN,GT	LCWT (C)	CONDENSER ENTERING-AIR TEMPERATURE (C)														
		30			35			40			45			50		
		Cap.	Input kW	Cooler Flow Rate	Cap.	Input kW	Cooler Flow Rate	Cap.	Input kW	Cooler Flow Rate	Cap.	Input kW	Cooler Flow Rate	Cap.	Input kW	Cooler Flow Rate
040	7	133.4	36.2	5.7	127.4	38.7	5.5	121.2	41.0	5.2	114.8	43.2	4.9	108.3	45.2	4.7
045		156.4	44.3	6.7	147.8	46.8	6.4	139.1	49.1	6.0	130.4	51.2	5.6	121.6	53.1	5.2
050		188.5	53.3	8.1	179.0	56.4	7.7	169.4	59.2	7.3	159.7	61.9	6.9	149.9	64.3	6.4
060		236.3	67.6	10.2	225.1	71.3	9.7	213.7	74.8	9.2	202.2	78.0	8.7	190.6	80.9	8.2
070		269.7	78.7	11.6	257.5	82.8	11.1	245.3	86.8	10.5	233.0	90.5	10.0	220.7	93.9	9.5
080		306.3	89.6	13.2	291.1	94.2	12.5	275.6	98.5	11.9	259.9	102.5	11.2	243.9	106.0	10.5
090		328.4	93.8	14.1	310.8	99.0	13.4	293.2	103.9	12.6	275.6	108.5	11.9	257.9	112.6	11.1
100		373.9	102.6	16.1	354.5	108.5	15.2	334.9	114.0	14.4	315.4	119.1	13.6	295.8	123.8	12.7
110		403.2	117.6	17.3	382.9	123.8	16.5	362.6	129.6	15.6	342.2	134.9	14.7	321.7	139.9	13.8
130		448.9	130.8	19.3	428.9	137.9	18.4	408.3	144.6	17.6	388.1	150.9	16.7	366.9	156.7	15.8
150		520.4	153.9	22.4	496.9	162.3	21.4	473.4	170.4	20.4	449.9	178.1	19.4	426.1	185.4	18.3
170	585.6	173.0	25.2	557.6	181.9	24.0	528.9	190.2	22.7	499.7	197.7	21.5	469.7	204.3	20.2	
190	641.3	190.4	27.6	611.4	200.2	26.3	581.7	209.6	25.0	551.9	218.4	23.7	520.8	226.4	22.4	
210	753.6	226.7	32.4	714.9	237.0	30.7	676.4	246.5	29.1	637.6	255.4	27.4	—	—	—	
040	8	136.9	36.7	5.9	130.9	39.2	5.6	124.6	41.6	5.4	118.2	43.8	5.1	111.5	45.9	4.8
045		161.5	45.0	7.0	152.7	47.6	6.6	143.9	50.0	6.2	135.0	52.2	5.8	126.1	54.2	5.4
050		194.4	54.1	8.4	184.7	57.3	7.9	174.9	60.3	7.5	165.1	63.0	7.1	155.1	65.5	6.7
060		243.8	68.6	10.5	232.3	72.5	10.0	220.7	76.1	9.5	209.0	79.4	9.0	197.1	82.5	8.5
070		278.0	80.0	12.0	265.5	84.2	11.4	253.1	88.3	10.9	240.4	92.1	10.3	227.8	95.7	9.8
080		316.1	91.1	13.6	300.5	95.9	12.9	284.8	100.4	12.3	268.8	104.5	11.6	252.5	108.2	10.9
090		339.0	95.4	14.6	321.0	100.9	13.8	303.1	105.9	13.0	285.0	110.6	12.3	267.0	115.0	11.5
100		386.7	104.3	16.6	366.9	110.5	15.8	346.9	116.2	14.9	327.0	121.5	14.1	306.7	126.3	13.2
110		416.6	119.7	17.9	396.1	126.1	17.0	375.4	132.2	16.2	354.6	137.7	15.3	333.6	142.9	14.4
130		459.2	132.4	19.8	438.9	139.7	18.9	418.3	146.5	18.0	397.2	153.0	17.1	376.2	159.0	16.2
150		532.0	155.9	22.9	508.1	164.4	21.9	484.4	172.7	20.8	460.4	180.6	19.8	436.5	188.0	18.8
170	600.4	175.5	25.8	571.9	184.6	24.6	542.9	193.1	23.4	513.0	200.9	22.1	482.8	207.8	20.8	
190	657.7	193.1	28.3	627.4	203.2	27.0	596.6	212.8	25.7	566.2	221.8	24.4	535.1	230.2	23.0	
210	778.4	231.3	33.5	739.3	242.0	31.8	699.7	251.9	30.1	660.4	261.1	28.4	—	—	—	
040	9	140.5	37.1	6.0	134.3	39.7	5.8	128.0	42.2	5.5	121.5	44.5	5.2	114.8	46.7	4.9
045		166.7	45.8	7.2	157.7	48.4	6.8	148.7	50.9	6.4	139.7	53.2	6.0	130.6	55.3	5.6
050		200.4	55.0	8.6	190.6	58.3	8.2	180.6	61.3	7.8	170.5	64.2	7.3	160.4	66.8	6.9
060		251.3	69.7	10.8	239.6	73.7	10.3	227.8	77.4	9.8	215.8	80.9	9.3	203.7	84.1	8.8
070		286.3	81.2	12.3	273.5	85.6	11.8	260.9	89.8	11.2	248.1	93.8	10.7	235.3	97.5	10.1
080		326.0	92.7	14.0	310.1	97.7	13.4	294.0	102.3	12.7	277.8	106.6	12.0	261.3	110.4	11.2
090		349.7	97.1	15.1	331.5	102.7	14.3	313.0	107.9	13.5	294.7	112.8	12.7	276.3	117.3	11.9
100		399.5	106.1	17.2	379.5	112.5	16.3	359.1	118.4	15.5	338.8	123.9	14.6	318.0	129.0	13.7
110		430.4	121.9	18.5	409.4	128.5	17.6	388.2	134.7	16.7	367.1	140.6	15.8	345.7	146.0	14.9
130		469.7	134.0	20.2	449.1	141.4	19.3	428.2	148.5	18.4	406.7	155.0	17.5	385.3	161.2	16.6
150		543.7	157.8	23.4	519.8	166.6	22.4	495.4	174.9	21.3	471.1	183.0	20.3	446.8	190.7	19.2
170	615.1	178.0	26.5	586.5	187.4	25.2	557.0	196.1	24.0	527.0	204.2	22.7	—	—	—	
190	674.0	195.9	29.0	643.0	206.3	27.7	612.3	216.0	26.4	581.6	225.4	25.0	549.7	234.0	23.7	
210	803.7	235.9	34.6	763.8	247.0	32.9	723.7	257.3	31.2	683.2	266.8	29.4	—	—	—	
040	10	144.1	37.6	6.2	137.9	40.2	5.9	131.5	42.7	5.7	124.9	45.1	5.4	118.2	47.4	5.1
045		172.0	46.5	7.4	162.9	49.3	7.0	153.7	51.8	6.6	144.5	54.2	6.2	135.2	56.4	5.8
050		206.6	55.9	8.9	196.5	59.2	8.5	186.3	62.4	8.0	176.1	65.3	7.6	165.7	68.0	7.1
060		259.0	70.8	11.2	247.1	74.9	10.6	235.0	78.8	10.1	222.8	82.4	9.6	210.5	85.7	9.1
070		294.8	82.5	12.7	281.9	87.1	12.1	268.8	91.4	11.6	255.8	95.4	11.0	242.7	99.3	10.5
080		336.4	94.3	14.5	320.0	99.4	13.8	303.5	104.2	13.1	286.9	108.6	12.4	270.2	112.7	11.6
090		360.7	98.8	15.5	341.9	104.5	14.7	323.2	109.9	13.9	304.6	115.0	13.1	285.8	119.7	12.3
100		412.9	107.9	17.8	392.3	114.5	16.9	371.5	120.6	16.0	350.8	126.3	15.1	329.4	131.6	14.2
110		444.5	124.1	19.1	423.0	130.9	18.2	401.4	137.4	17.3	379.7	143.4	16.4	358.0	149.0	15.4
130		480.1	135.6	20.7	459.4	143.2	19.8	438.2	150.4	18.9	416.7	157.2	17.9	394.6	163.5	17.0
150		555.6	159.7	23.9	531.4	168.7	22.9	506.9	177.3	21.8	482.0	185.5	20.8	457.4	193.4	19.7
170	630.2	180.5	27.1	601.0	190.2	25.9	571.3	199.1	24.6	540.9	207.4	23.3	—	—	—	
190	690.5	198.7	29.7	659.0	209.3	28.4	627.9	219.3	27.0	596.5	228.9	25.7	564.2	237.7	24.3	
210	829.1	240.7	35.7	788.7	252.0	34.0	747.8	262.7	32.2	706.8	272.6	30.4	—	—	—	
040	13	155.0	38.9	6.7	148.7	41.7	6.4	142.1	44.5	6.1	135.3	47.1	5.8	128.3	49.5	5.5
045		188.4	48.9	8.1	178.8	51.9	7.7	169.1	54.7	7.3	159.4	57.3	6.9	149.2	59.7	6.4
050		225.5	58.5	9.7	214.9	62.1	9.3	204.2	65.6	8.8	193.4	68.9	8.3	182.4	71.9	7.9
060		282.8	74.1	12.2	270.2	78.6	11.7	257.5	82.8	11.1	243.8	86.6	10.5	229.6	90.0	9.9
070		321.2	86.4	13.8	307.5	91.4	13.3	293.7	96.1	12.7	279.9	100.6	12.1	265.0	104.5	11.4
080		367.9	99.2	15.9	350.6	104.8	15.1	331.5	109.8	14.3	—	—	—	—	—	—
090		394.3	104.0	17.0	374.7	110.2	16.2	353.8	115.8	15.3	332.1	121.0	14.3	310.8	125.9	13.4
100		453.9	113.3	19.6	432.1	120.5	18.6	410.1	127.3	17.7	388.0	133.7	16.7	365.5	139.6	15.8
110		488.1	130.8	21.0	465.3	138.3	20.1	442.4	145.4	19.1	419.1	152.0	18.1	395.9	158.3	17.1
130		512.8	140.4	22.1	491.1	148.6	21.2	469.1	156.3	20.2	446.4	163.6	19.3	423.7	170.5	18.3
150		591.7	165.6	25.5	566.7	175.1	24.4	541.3	184.3	23.3	515.6	193.1	22.2	489.8	201.6	21.1
170	676.3	188.1	29.2	646.2	198.6	27.9	615.1	208.3	26.5	583.5	217.4	25.2	—	—	—	
190	740.9	207.1	31.9	708.5	218.5	30.6	675.9	229.								

COOLING CAPACITIES — 50 HZ

UNIT SIZE 30GN,GT	LCWT (C)	CONDENSER ENTERING-AIR TEMPERATURE (C)														
		30			35			40			45			50		
		Cap.	Input kW	Cooler Flow Rate	Cap.	Input kW	Cooler Flow Rate	Cap.	Input kW	Cooler Flow Rate	Cap.	Input kW	Cooler Flow Rate	Cap.	Input kW	Cooler Flow Rate
040	4	119.7	34.2	5.1	114.2	36.4	4.9	108.6	38.5	4.7	102.9	40.4	4.4	97.1	42.3	4.2
045		142.4	43.1	6.1	134.7	45.3	5.8	126.9	47.3	5.4	119.1	49.1	5.1	111.3	50.8	4.8
050		173.5	54.0	7.4	165.0	56.6	7.1	156.4	59.0	6.7	147.8	61.2	6.3	139.1	63.2	6.0
060		204.1	62.6	8.8	194.3	65.7	8.3	184.5	68.5	7.9	174.7	71.2	7.5	164.9	73.7	7.1
070		238.2	70.6	10.2	226.1	74.3	9.7	214.1	77.8	9.2	202.1	81.1	8.7	190.1	84.1	8.2
080		274.7	75.2	11.8	260.7	78.9	11.2	247.0	82.3	10.6	233.3	85.5	10.0	219.6	88.5	9.4
090		307.8	95.7	13.2	291.8	100.4	12.5	275.7	104.7	11.8	259.8	108.7	11.2	243.7	112.3	10.5
100		338.4	102.1	14.5	321.3	107.1	13.8	304.0	111.8	13.0	286.9	116.2	12.3	269.8	120.2	11.6
110		374.5	121.6	16.1	356.6	126.9	15.3	338.7	131.9	14.5	320.8	136.5	13.8	302.7	140.8	13.0
130		427.6	129.0	18.4	407.7	135.8	17.5	387.4	142.1	16.6	367.1	148.0	15.8	346.7	153.4	14.9
150		500.5	161.4	21.5	479.2	169.2	20.6	457.7	176.5	19.6	435.9	183.5	18.7	413.7	190.0	17.8
170		545.7	171.0	23.4	519.8	179.1	22.3	493.7	186.6	21.2	467.2	193.5	20.1	440.4	199.8	18.9
190		618.1	195.7	26.5	591.0	204.7	25.4	563.6	213.2	24.2	535.6	221.2	23.0	507.4	228.7	21.8
210		680.9	216.0	29.2	646.6	225.2	27.8	612.5	233.7	26.3	578.4	241.6	24.8	544.1	248.8	23.4
040	5	123.1	34.7	5.3	117.5	36.9	5.0	111.8	39.0	4.8	106.0	41.1	4.6	100.1	43.0	4.3
045		147.2	43.9	6.3	139.3	46.2	6.0	131.4	48.3	5.6	123.4	50.2	5.3	115.4	51.9	5.0
050		179.1	54.9	7.7	170.4	57.6	7.3	161.7	60.1	6.9	152.9	62.5	6.6	144.0	64.6	6.2
060		210.8	63.7	9.1	200.8	66.9	8.6	190.7	69.8	8.2	180.7	72.6	7.8	170.6	75.1	7.3
070		245.9	71.7	10.6	233.6	75.6	10.0	221.4	79.3	9.5	209.1	82.7	9.0	196.9	85.8	8.5
080		283.8	76.6	12.2	269.7	80.4	11.6	255.5	84.0	11.0	241.5	87.3	10.4	227.5	90.4	9.8
090		318.1	97.5	13.7	301.6	102.3	13.0	285.2	106.8	12.3	268.8	111.0	11.5	252.5	114.8	10.8
100		350.4	104.0	15.1	332.6	109.2	14.3	314.9	114.1	13.5	297.5	118.7	12.8	279.9	122.9	12.0
110		387.4	124.1	16.6	369.0	129.6	15.9	350.6	134.7	15.1	332.3	139.5	14.3	313.9	144.0	13.5
130		437.8	130.7	18.8	417.6	137.5	17.9	397.1	144.1	17.1	376.3	150.1	16.2	355.6	155.7	15.3
150		511.7	163.5	22.0	490.1	171.5	21.1	468.3	179.0	20.1	446.2	186.1	19.2	423.9	192.9	18.2
170		559.8	173.6	24.1	533.5	181.9	22.9	506.9	189.6	21.8	480.0	196.8	20.6	452.8	203.3	19.5
190		633.6	198.6	27.2	605.9	207.9	26.0	578.5	216.6	24.9	550.2	224.9	23.6	521.5	232.6	22.4
210		704.0	220.5	30.2	669.0	230.0	28.7	634.1	238.8	27.2	599.2	247.1	25.7	564.3	254.7	24.2
040	6	126.4	35.1	5.4	120.7	37.4	5.2	115.0	39.6	4.9	109.2	41.7	4.7	103.2	43.7	4.4
045		152.1	44.7	6.5	144.0	47.0	6.2	136.0	49.2	5.8	127.8	51.2	5.5	119.7	53.0	5.1
050		184.8	55.8	7.9	176.0	58.7	7.6	167.1	61.3	7.2	158.1	63.7	6.8	149.0	65.9	6.4
060		217.6	64.8	9.4	207.3	68.1	8.9	197.0	71.1	8.5	186.7	74.0	8.0	176.4	76.6	7.6
070		253.9	72.9	10.9	241.4	76.9	10.4	228.8	80.7	9.8	216.3	84.2	9.3	203.8	87.5	8.8
080		292.9	78.0	12.6	278.7	81.9	12.0	264.3	85.6	11.4	249.8	89.0	10.7	235.5	92.3	10.1
090		328.5	99.3	14.1	311.8	104.3	13.4	294.9	108.9	12.7	278.1	113.3	12.0	261.3	117.2	11.2
100		362.5	106.0	15.6	344.5	111.4	14.8	326.4	116.4	14.0	308.3	121.2	13.3	290.3	125.6	12.5
110		400.4	126.6	17.2	381.7	132.3	16.4	362.9	137.6	15.6	344.1	142.6	14.8	325.1	147.2	14.0
130		448.1	132.3	19.3	427.6	139.4	18.4	406.8	146.0	17.5	385.9	152.3	16.6	364.6	158.0	15.7
150		523.1	165.6	22.5	501.1	173.7	21.5	479.0	181.5	20.6	456.6	188.8	19.6	434.0	195.8	18.7
170		574.1	176.2	24.7	547.4	184.7	23.5	520.4	192.7	22.4	493.1	200.1	21.2	465.4	206.9	20.0
190		649.7	201.7	27.9	621.2	211.0	26.7	592.8	220.0	25.5	564.6	228.5	24.3	535.8	236.6	23.0
210		727.3	225.0	31.3	691.9	234.9	29.7	656.1	244.0	28.2	620.4	252.6	26.7	584.6	260.5	25.1

LEGEND

Cap. — Cooling Capacity kW of Refrigeration
 kW — Compressor Power Input
 LCWT — Leaving Chilled Water Temperature (C)
 Flow Rate — L/s

NOTES:

- Ratings apply to units with electronic or thermostatic expansion valves
- All ratings are based on:
 - A cooler chilled water temperature rise of 6° C. When greater accuracy is desired, correct design LCWT, before entering rating tables, by reference to the LCWT correction curve.
 - A fouling factor of 0.00044 in the cooler
 - Refrigerant 22

- When a corrected LCWT is used, cooler pressure drop must also be corrected for new LCWT:

- Enter rating table for corrected LCWT. By interpolation, determine corrected capacity (kW) and power input (kW) to compressor at its rated voltage
- Calculate corrected flow rate through the cooler:

$$= \frac{0.239 \times \text{capacity in kW}}{\text{temperature rise } ^\circ\text{C}} = \text{L/s}$$

- On Cooler Pressure Drop chart (pages 31 and 32), enter cooler pressure drop curve at corrected flow rate and read pressure drop

- When chilled water temperature rise is less than 3° C, high flow rate will normally be accompanied by an excessive pressure drop. In such cases, contact your Carrier representative for special selection of a cooler with wider baffle spacing

Performance data — SI (cont)



COOLING CAPACITIES — 50 HZ (cont)

UNIT SIZE 30GN,GT	LCWT (C)	CONDENSER ENTERING-AIR TEMPERATURE (C)														
		30			35			40			45			50		
		Cap.	Input kW	Cooler Flow Rate	Cap.	Input kW	Cooler Flow Rate	Cap.	Input kW	Cooler Flow Rate	Cap.	Input kW	Cooler Flow Rate	Cap.	Input kW	Cooler Flow Rate
040	7	129.8	35.6	5.6	124.1	37.9	5.3	118.3	40.2	5.1	112.4	42.4	4.8	106.3	44.4	4.6
045		157.0	45.4	6.8	148.8	47.9	6.4	140.6	50.1	6.0	132.3	52.2	5.7	123.9	54.1	5.3
050		190.6	56.8	8.2	181.6	59.7	7.8	172.5	62.4	7.4	163.3	64.9	7.0	154.1	67.2	6.6
060		224.5	65.9	9.7	214.0	69.3	9.2	203.5	72.4	8.8	192.9	75.4	8.3	182.4	78.2	7.8
070		261.9	74.1	11.3	249.1	78.3	10.7	236.4	82.2	10.2	223.6	85.8	9.6	210.8	89.2	9.1
080		302.6	79.4	13.0	287.7	83.4	12.4	273.2	87.3	11.8	258.5	90.9	11.1	243.6	94.2	10.5
090		339.0	101.1	14.6	322.0	106.3	13.8	304.9	111.1	13.1	287.6	115.6	12.4	270.4	119.7	11.6
100		375.0	108.0	16.1	356.4	113.5	15.3	337.9	118.8	14.5	319.3	123.7	13.7	300.9	128.3	12.9
110		413.7	129.0	17.8	394.6	134.9	17.0	375.4	140.5	16.1	356.1	145.6	15.3	336.6	150.5	14.5
130		458.6	133.9	19.7	437.5	141.2	18.8	416.7	148.0	17.9	395.4	154.4	17.0	374.0	160.4	16.1
150		534.3	167.7	23.0	512.3	176.1	22.0	489.9	183.9	21.1	467.2	191.5	20.1	444.2	198.6	19.1
170		588.6	178.8	25.3	561.5	187.6	24.2	534.1	195.8	23.0	506.3	203.4	21.8	478.1	210.4	20.6
190	666.2	204.8	28.7	637.1	214.4	27.4	608.0	223.5	26.2	579.1	232.2	24.9	549.9	240.5	23.7	
210	751.3	229.7	32.3	714.8	239.8	30.7	678.6	249.3	29.2	642.0	258.1	27.6	605.3	266.4	26.0	
040	8	133.2	36.0	5.7	127.4	38.5	5.5	121.6	40.8	5.2	115.6	43.0	5.0	109.4	45.1	4.7
045		162.1	46.2	7.0	153.7	48.8	6.6	145.3	51.1	6.3	136.9	53.2	5.9	128.4	55.2	5.5
050		196.5	57.7	8.5	187.3	60.8	8.1	178.1	63.6	7.7	168.7	66.2	7.3	159.3	68.6	6.9
060		231.4	67.0	10.0	220.8	70.5	9.5	210.1	73.8	9.0	199.3	76.8	8.6	188.5	79.7	8.1
070		270.1	75.3	11.6	257.1	79.6	11.1	244.2	83.6	10.5	231.0	87.4	9.9	218.0	91.0	9.4
080		312.3	80.8	13.4	297.1	85.0	12.8	282.1	88.9	12.1	267.2	92.7	11.5	251.9	96.1	10.8
090		349.7	102.9	15.1	332.3	108.3	14.3	314.9	113.3	13.6	297.4	118.0	12.8	279.7	122.2	12.0
100		387.4	110.0	16.7	368.7	115.7	15.9	349.7	121.2	15.0	330.8	126.2	14.2	311.8	131.0	13.4
110		427.1	131.6	18.4	407.6	137.7	17.5	388.0	143.4	16.7	368.3	148.8	15.9	348.3	153.8	15.0
130		469.1	135.6	20.2	448.1	143.0	19.3	426.7	150.0	18.4	405.0	156.6	17.4	383.2	162.7	16.5
150		545.9	169.9	23.5	523.6	178.4	22.5	500.8	186.4	21.6	477.8	194.2	20.6	454.5	201.5	19.6
170		603.3	181.5	26.0	575.8	190.5	24.8	547.9	198.9	23.6	519.7	206.7	22.4	491.1	214.0	21.1
190	682.5	207.8	29.4	652.8	217.6	28.1	623.7	227.0	26.8	594.1	236.0	25.6	564.0	244.5	24.3	
210	775.9	234.4	33.4	738.5	244.8	31.8	701.4	254.6	30.2	664.0	263.8	28.6	—	—	—	
040	9	136.7	36.5	5.9	130.8	39.0	5.6	125.0	41.4	5.4	118.9	43.6	5.1	112.6	45.8	4.8
045		167.2	47.0	7.2	158.7	49.6	6.8	150.1	52.0	6.5	141.5	54.3	6.1	132.8	56.3	5.7
050		202.5	58.7	8.7	193.2	61.8	8.3	183.7	64.7	7.9	174.2	67.4	7.5	164.6	69.9	7.1
060		238.7	68.1	10.3	227.8	71.7	9.8	216.8	75.1	9.3	205.8	78.3	8.9	194.7	81.2	8.4
070		278.5	76.6	12.0	265.1	81.0	11.4	251.9	85.1	10.8	238.7	89.0	10.3	225.3	92.7	9.7
080		322.1	82.2	13.9	306.8	86.5	13.2	291.2	90.6	12.5	275.9	94.4	11.9	260.6	98.1	11.2
090		360.6	104.8	15.5	342.9	110.3	14.8	325.1	115.5	14.0	307.3	120.3	13.2	289.3	124.8	12.5
100		400.5	112.0	17.2	380.9	117.9	16.4	361.8	123.6	15.6	342.4	128.8	14.7	323.0	133.8	13.9
110		440.8	134.1	19.0	420.9	140.4	18.1	400.8	146.3	17.3	380.8	151.9	16.4	360.4	157.1	15.5
130		479.8	137.2	20.7	458.5	144.8	19.7	436.9	152.0	18.8	414.9	158.8	17.9	392.7	165.1	16.9
150		557.8	172.0	24.0	534.8	180.7	23.0	512.0	189.0	22.0	488.6	196.9	21.0	465.0	204.4	20.0
170		618.1	184.1	26.6	590.2	193.4	25.4	561.9	202.0	24.2	533.2	210.1	23.0	504.2	217.6	21.7
190	699.0	210.9	30.1	669.3	221.0	28.8	639.1	230.6	27.5	608.4	239.6	26.2	578.6	248.5	24.9	
210	800.8	239.1	34.5	762.6	249.9	32.8	724.4	260.0	31.2	686.5	269.5	29.6	—	—	—	
040	10	140.2	36.9	6.0	134.3	39.5	5.8	128.3	41.9	5.5	122.2	44.3	5.3	115.8	46.5	5.0
045		172.4	47.8	7.4	163.7	50.5	7.1	155.0	53.0	6.7	146.2	55.3	6.3	137.4	57.4	5.9
050		208.6	59.7	9.0	199.1	62.9	8.6	189.5	65.9	8.2	179.8	68.7	7.7	169.9	71.3	7.3
060		246.0	69.3	10.6	234.9	73.0	10.1	223.7	76.4	9.6	212.3	79.7	9.1	201.0	82.8	8.7
070		287.2	77.8	12.4	273.4	82.3	11.8	259.8	86.6	11.2	246.4	90.6	10.6	232.8	94.4	10.0
080		332.0	83.6	14.3	316.5	88.1	13.6	300.8	92.3	13.0	284.9	96.3	12.3	269.3	100.0	11.6
090		371.8	106.6	16.0	353.7	112.3	15.2	335.5	117.7	14.4	317.2	122.7	13.7	298.9	127.4	12.9
100		413.6	114.1	17.8	393.8	120.2	17.0	373.9	126.0	16.1	354.2	131.4	15.3	334.4	136.6	14.4
110		455.1	136.7	19.6	434.4	143.2	18.7	414.0	149.3	17.8	393.4	155.1	16.9	372.7	160.5	16.1
130		490.6	138.9	21.1	469.0	146.7	20.2	447.1	154.0	19.3	424.6	160.9	18.3	402.3	167.5	17.3
150		569.7	174.2	24.5	546.5	183.0	23.5	522.9	191.5	22.5	499.5	199.6	21.5	475.6	207.3	20.5
170		633.2	186.8	27.3	604.8	196.3	26.1	576.1	205.2	24.8	547.0	213.5	23.6	517.5	221.2	22.3
190	715.7	213.9	30.8	685.6	224.3	29.5	654.8	234.1	28.2	624.1	243.5	26.9	593.1	252.5	25.5	
210	826.2	244.0	35.6	787.2	255.0	33.9	748.1	265.4	32.2	709.0	275.2	30.5	—	—	—	
040	13	151.0	38.3	6.5	144.9	41.0	6.2	138.7	43.7	6.0	132.3	46.2	5.7	125.7	48.6	5.4
045		188.6	50.3	8.1	179.4	53.2	7.7	170.2	55.9	7.3	160.9	58.5	6.9	151.3	60.8	6.5
050		227.5	62.6	9.8	217.5	66.1	9.4	207.3	69.4	8.9	197.1	72.5	8.5	186.7	75.4	8.0
060		268.4	72.7	11.6	256.6	76.7	11.1	244.9	80.6	10.6	233.0	84.2	10.0	220.2	87.3	9.5
070		313.6	81.6	13.5	299.3	86.5	12.9	284.8	91.1	12.3	270.2	95.5	11.7	255.7	99.6	11.0
080		360.1	87.6	15.5	342.3	92.3	14.8	324.6	96.7	14.0	306.7	100.8	13.2	288.9	104.6	12.5
090		405.9	112.4	17.5	386.9	118.6	16.7	367.7	124.4	15.9	348.4	130.0	15.0	328.1	134.9	14.1
100		454.3	120.3	19.6	433.1	127.0	18.7	412.1	133.4	17.8	391.1	139.4	16.9	369.8	145.1	15.9
110		498.6	144.7	21.5	476.9	151.8	20.6	455.1	158.5	19.6	433.1	164.9	18.7	410.7	170.9	17.7
130		523.7	143.9	22.6	501.4	152.2	21.6	478.3	160.1	20.6	455.2	167.6	19.6	431.9	174.6	18.6
150		605.7	180.7	26.1	581.6	190.1	25.1	557.6	199.2	24.0	533.0	207.8	23.0	—	—	—
170		679.0	195.0	29.3	649.4	205.1	28.0	619.4	214.7	26.7	589.3	223.8	25.4	—	—	—
190	766.8	223.4	33.1	735.3												

Electrical data



UNIT ELECTRICAL DATA — 30GN,GT040-070

UNIT SIZE 30GN,GT	VOLTAGE			STANDARD CONDENSER FAN								HIGH STATIC CONDENSER FAN							
				MCA		MOCP		Rec Fuse Size		ICF		MCA		MOCP		Rec Fuse Size		ICF	
	Nameplate V-Hz (3 phase)	Supplied*		XL	PW	XL	PW	XL	PW	XL	PW	XL	PW	XL	PW	XL	PW	XL	PW
		Min	Max																
040	208/230-60	187	253	174.6	174.6	225	225	200	200	434.7	296.7	211.2	211.2	250	250	250	250	471.3	333.3
	460-60	414	506	100.0	100.0	100	100	100	100	218.6	148.3	114.2	114.2	125	125	125	110	232.2	162.5
	575-60	518	633	100.0	100.0	100	100	90	90	162.4	113.7	107.2	107.2	125	125	100	100	169.6	120.9
	380-60	342	418	100.0	100.0	125	100	110	100	241.2	163.9	114.0	114.0	125	125	125	125	255.2	177.9
	346-50	325	380	107.0	107.0	150	150	125	125	297.9	198.9	124.2	124.2	150	150	125	125	315.1	216.1
	380/415-50	342	440	101.1	101.4	125	125	125	125	269.6	179.3	118.3	118.6	150	150	150	150	286.8	196.5
045	208/230-60	187	253	201.8	201.8	250	250	225	225	535.7	357.7	238.4	238.4	300	300	300	300	572.3	394.3
	460-60	414	506	100.1	100.4	125	125	125	125	268.6	178.3	114.3	114.3	150	150	150	150	282.8	192.5
	575-60	518	633	100.0	100.0	125	100	100	100	206.4	139.8	107.2	107.2	125	125	110	100	213.6	147.0
	380-60	342	418	107.1	105.0	150	150	125	125	297.2	196.9	121.1	118.0	150	150	150	150	311.2	210.9
	346-50	325	380	129.8	129.8	175	175	150	150	342.5	230.5	147.0	147.0	200	200	150	150	359.7	247.7
	380/415-50	342	440	114.1	117.8	150	150	150	150	335.6	208.9	131.3	135.0	175	175	150	150	352.8	226.1
050	208/230-60	187	253	244.5	244.5	350	350	300	300	617.5	415.5	281.1	281.1	350	350	350	350	654.1	452.1
	460-60	414	506	113.1	116.8	150	150	125	150	307.6	207.9	128.3	131.0	175	175	150	150	321.8	222.1
	575-60	518	633	100.6	100.0	125	100	125	100	226.1	152.9	108.0	107.2	125	125	125	125	233.3	160.1
	380-60	342	418	126.9	127.8	175	175	150	150	341.1	228.5	140.9	141.8	175	175	175	175	355.1	242.5
	346-50	325	380	170.8	170.8	250	250	200	200	453.4	300.4	188.0	188.0	250	250	175	175	470.6	317.6
	380/415-50	342	440	140.6	145.6	200	200	175	175	403.8	267.7	157.8	162.8	225	225	175	175	421.0	284.9
060	208/230-60	187	253	323.3	323.3	450	450	400	400	823.6	547.6	378.3	378.3	500	500	450	450	878.6	602.6
	460-60	414	506	139.6	144.6	200	200	175	175	408.2	272.1	161.0	166.0	225	225	200	200	429.6	293.5
	575-60	518	633	125.4	121.0	175	150	150	150	336.8	218.7	136.2	131.8	175	175	175	175	347.6	229.5
	380-60	342	418	174.5	176.6	250	250	200	200	458.0	306.2	195.5	197.6	250	250	225	225	479.0	327.2
	346-50	325	380	205.3	205.3	250	250	250	250	487.9	334.9	231.1	231.1	300	300	225	225	513.7	360.7
	380/415-50	342	440	165.2	170.8	225	225	200	200	428.4	292.9	191.0	196.6	250	250	225	225	454.2	318.7
070	208/230-60	187	253	364.3	364.3	500	500	450	450	864.6	588.6	475.5	475.5	600	600	500	500	919.6	643.6
	460-60	414	506	163.6	169.2	225	225	200	200	426.8	291.3	196.0	190.4	250	250	225	225	448.2	312.7
	575-60	518	633	148.9	141.5	200	175	175	175	353.5	239.2	159.7	152.3	200	200	175	175	364.3	250.0
	380-60	342	418	200.7	202.3	250	250	225	225	484.2	331.9	221.7	223.3	300	300	250	250	505.2	352.9
	346-50	325	380	215.6	215.6	250	250	250	250	498.2	345.2	241.4	241.4	300	300	225	225	524.0	371.0
	380/415-50	342	440	187.0	192.7	250	250	225	225	450.2	314.8	212.8	218.5	275	275	250	250	455.2	340.6



NOTE: See Legend and Notes on page 51

Electrical data (cont)



UNIT ELECTRICAL DATA, 30GN,GT080-210

UNIT SIZE 30GN,GT	VOLTAGE			STANDARD CONDENSER FAN						HIGH STATIC CONDENSER FAN					
	Nameplate V-Hz (3 Phase)	Supplied*		MCA†	MOCP†	Rec Fuse Size		ICF		MCA†	MOCP†	Rec Fuse Size		ICF	
		Min	Max			XL	PW	XL	PW			XL	PW	XL	PW
080	208/230-60	187	253	391.3	500	450	450	896.9	620.9	446.5	500	500	500	951.9	675.9
	460-60	414	506	183.4	250	200	225	442.8	305.4	204.7	250	225	225	464.2	326.8
	575-60	518	633	160.9	200	200	175	365.6	246.9	171.8	225	200	200	376.4	257.7
	380-60	342	418	209.9	250	250	250	492.6	339.5	230.9	300	250	300	513.6	360.5
	346-50	325	380	250.1	300	275	275	532.8	379.8	276.0	350	250	300	558.6	405.6
090	380/415-50	342	440	215.8	250	250	250	472.0	337.8	234.6	250	300	300	497.8	357.7
	208/230-60	187	253	392.2	450	450	450	722.3	547.9	447.0	500	500	500	780.9	602.9
	460-60	414	506	195.6	225	225	225	361.2	273.5	217.0	250	225	250	382.6	294.9
	575-60	518	633	168.0	200	200	175	286.2	213.2	178.6	200	200	200	297.0	230.4
	380-60	342	418	205.9	250	225	225	396.0	294.5	226.9	250	250	250	417.0	315.5
100	346-50	325	380	269.3	300	275	275	552.0	399.0	295.2	350	300	300	577.8	424.8
	380/415-50	342	440	241.4	300	250	250	497.0	363.5	267.2	300	300	300	522.8	389.3
	208/230-60	187	253	462.3	500	500	500	835.2	633.2	535.6	600	600	600	908.6	706.6
	460-60	414	506	221.2	250	250	250	408.8	312.3	242.9	250	300	300	437.4	336.4
	575-60	518	633	191.1	225	225	200	289.4	233.1	205.5	225	225	200	331.0	261.0
110	380-60	342	418	242.1	250	300	300	454.8	342.8	268.6	300	300	300	482.8	370.8
	346-50	325	380	303.8	350	350	350	586.5	433.5	366.3	400	350	350	648.9	495.9
	380/415-50	342	440	266.6	300	300	300	521.6	388.7	292.8	350	350	350	556.0	418.0
	208/230-60	187	253	513.6	600	600	600	1019.2	743.2	587.2	700	600	700	1092.6	816.6
	460-60	414	506	245.2	300	250	300	500.8	367.3	273.8	300	300	300	529.4	395.9
130	575-60	518	633	212.0	250	225	200	416.6	292.1	208.8	250	200	225	394.6	306.5
	380-60	342	418	274.1	350	300	300	556.8	403.8	302.2	350	300	350	585.2	431.8
	346-50	325	380	373.0	450	400	400	655.7	502.7	407.5	450	350	400	690.1	537.1
	380/415-50	342	440	312.8	350	350	350	565.2	434.7	344.9	400	350	400	599.6	467.6
	208/230-60	187	253	610.2	700	700	700	1111.1	835.1	701.8	800	800	800	1202.7	926.7
150	460-60	414	506	305.5	350	350	350	555.9	417.9	341.1	400	400	400	591.5	453.5
	575-60	518	633	257.4	300	300	300	355.6	323.6	275.4	300	300	300	373.6	341.6
	380-60	342	418	331.1	400	400	400	612.8	460.8	366.1	400	400	400	647.8	495.8
	230-50	207	253	559.1	600	450	450	969.5	751.5	617.1	700	450	450	1027.5	809.5
	346-50	325	380	382.9	450	600	600	682.6	522.6	425.9	500	700	700	725.6	565.6
170	380/415-50	342	440	353.0	400	400	400	603.4	465.4	396.0	450	450	450	646.4	508.4
	208/230-60	187	253	664.2	800	800	800	1165.1	889.1	755.8	800	800	800	1256.7	980.7
	460-60	414	506	332.4	400	400	400	582.8	444.8	368.0	400	400	400	618.4	480.4
	575-60	518	633	283.8	300	300	300	446.0	350.0	301.8	350	350	350	464.0	368.0
	380-60	342	418	359.9	400	400	400	641.6	489.6	394.9	450	450	450	676.6	524.6
190	230-50	207	253	629.4	700	500	500	1039.8	821.8	629.4	700	500	500	1039.8	879.8
	346-50	325	380	465.1	500	700	700	764.8	604.8	508.1	600	800	800	807.8	647.8
	380/415-50	342	440	427.4	500	450	450	677.8	539.8	470.4	500	500	500	720.8	508.4
	208/230-60	187	253	727.5	800	800	800	1098.9	896.9	819.1	1000	900	900	1190.5	988.5
	460-60	414	506	364.3	400	400	400	549.9	448.9	399.9	450	450	450	585.5	484.5
210	575-60	518	633	294.6	300	350	350	418.5	348.5	312.6	350	350	350	436.5	366.5
	380-60	342	418	387.8	400	450	450	598.0	486.0	422.8	450	450	450	633.0	521.0
	230-50	207	253	677.7	700	500	500	1088.1	870.1	735.7	800	600	600	1146.1	928.1
	346-50	325	380	472.1	500	800	800	771.8	611.8	515.1	600	800	800	814.8	654.8
	380/415-50	342	440	437.7	500	500	500	688.1	550.1	480.7	500	500	500	731.1	593.1
230	208/230-60	187	253	800.0	800	1000	1000	1301.5	1025.5	910.6	1000	1000	1000	1411.5	1135.5
	460-60	414	506	400.7	450	450	450	651.1	513.1	443.5	500	500	500	693.9	555.9
	575-60	518	633	337.4	350	400	400	499.6	403.6	359.0	400	400	400	521.2	425.2
	380-60	342	418	432.5	500	500	500	714.2	562.2	474.5	500	500	500	756.2	604.2
	230-50	207	253	749.9	800	600	600	1160.3	942.3	819.5	700	700	700	1229.9	1011.9
250	346-50	325	380	554.1	600	800	800	853.8	693.8	605.7	1000	900	900	905.4	745.4
	380/415-50	342	440	509.1	600	600	600	759.5	621.5	560.7	600	600	600	811.1	673.1
	208/230-60	187	253	890.4	1000	1000	1000	1391.3	1115.3	1000.0	1000	1100	1100	1501.3	1225.3
	460-60	414	506	445.6	500	500	500	696.0	558.0	488.4	500	600	600	738.8	600.8
	575-60	518	633	374.0	400	400	400	536.2	440.2	395.6	450	450	450	557.8	461.8
270	380-60	342	418	479.3	500	500	500	761.0	609.0	521.3	600	600	600	803.0	651.0
	230-50	207	253	796.2	800	600	600	1206.6	988.3	865.8	1000	700	700	1276.2	1058.2
	346-50	325	380	567.5	600	800	800	867.2	707.2	619.1	700	800	800	918.8	758.8
	380/415-50	342	440	523.2	600	600	600	773.6	635.6	574.8	600	600	600	825.2	687.2
	208/230-60	187	253	890.4	1000	1000	1000	1391.3	1115.3	1000.0	1000	1100	1100	1501.3	1225.3

NOTE: See Legend and Notes on page 51.

CONTROL CIRCUIT

UNIT POWER SUPPLY (V-Ph-Hz)	CONTROL POWER			AMPS					
	V-Ph-Hz	Min	Max	040-070 Units		080-110 Units		130-210 Units	
				With Cooler Heater	Without Cooler Heater	With Cooler Heater	Without Cooler Heater	With Cooler Heater	Without Cooler Heater
203/230-3-60	115-1-60	104	127	30	30	30	30	30	30
460-3-60	115-1-60	104	127	30	30	30	30	30	30
575-3-60	115-1-60	104	127	30	30	30	30	30	30
380-3-60	230-1-60	207	254	15	5	15	5	15	10
346-3-50	230-1-50	198	254	15	5	15	5	15	10
230-3-50	230-1-50	198	254	—	—	—	—	15	10
380/415-3-50	230-1-50	198	254	15	5	15	5	15	10

COMPRESSOR ELECTRICAL DATA

UNIT 30GN,GT	NAMEPLATE VOLTAGE V-Hz (3 Phase)	COMPRESSOR NUMBERS						
		A1	A2	A3	A4	B1	B2	B3
		RLA/LRA	RLA/LRA	RLA/LRA	RLA/LRA	RLA/LRA	RLA/LRA	RLA/LRA
040	208/230-60	67.9/345				67.9/345		
	460-60	34.6/173				34.6/173		
	575-60	28.8/120	—/—	—/—	—/—	28.8/120	—/—	—/—
	380-60	34.6/191				34.6/191		
	346-50	33.3/191				44.9/247		
	380/415-50	34.6/173				43.6/223		
040-PW	208/230-60	67.9/207				67.9/207		
	460-60	33.3/104				33.3/104		
	575-60	28.2/ 72	—/—	—/—	—/—	28.2/ 72	—/—	—/—
	380-60	33.3/115				33.3/115		
	346-50	33.3/115				44.9/148		
	380/415-50	33.3/104				44.9/134		
045	208/230-60	67.9/345				89.7/446		
	460-60	34.6/173				43.6/223		
	575-60	28.8/120	—/—	—/—	—/—	36.5/164	—/—	—/—
	380-60	34.6/191				45.5/247		
	346-50	44.9/247				53.8/280		
	380/415-50	43.6/223				46.8/280		
045-PW	208/230-60	67.9/207				89.7/268		
	460-60	33.3/104				44.9/134		
	575-60	28.2/ 72	—/—	—/—	—/—	33.3/ 98	—/—	—/—
	380-60	33.3/115				44.9/148		
	346-50	44.9/148				53.8/168		
	380/415-50	44.9/134				48.7/152		
050	208/230-60	89.7/446				106.4/506		
	460-60	43.6/223				46.8/253		
	575-60	36.5/164	—/—	—/—	—/—	40.4/176	—/—	—/—
	380-60	45.5/247				52.6/280		
	346-50	53.8/280				79.5/382		
	380/415-50	46.8/280				65.4/345		
050-PW	208/230-60	89.7/268				106.4/304		
	460-60	44.9/134				48.7/152		
	575-60	33.3/ 98	—/—	—/—	—/—	33.3/106	—/—	—/—
	380-60	44.9/148				53.8/168		
	346-50	53.8/168				79.5/229		
	380/415-50	48.7/152				67.9/207		
060	208/230-60	106.4/506				147.7/690		
	460-60	46.8/253				65.4/345		
	575-60	40.4/176	—/—	—/—	—/—	57.1/276	—/—	—/—
	380-60	52.6/280				78.8/382		
	346-50	79.5/382				79.5/382		
	380/415-50	65.4/345				67.9/345		
060-PW	208/230-60	106.4/304				147.4/414		
	460-60	48.7/152				65.4/207		
	575-60	33.3/106	—/—	—/—	—/—	57.1/165	—/—	—/—
	380-60	53.8/168				78.8/229		
	346-50	79.5/229				79.5/229		
	380/415-50	67.9/207				65.4/207		
070	208/230-60	147.7/690	—/—			147.4/690		
	460-60	65.4/345	—/—			65.4/345		
	575-60	57.1/276	—/—	—/—	—/—	57.1/276	—/—	—/—
	380-60	78.8/382	—/—			78.8/382		
	346-50	44.9/247	44.9/247			79.5/382		
	380/415-50	43.6/223	43.6/223			65.4/345		

Electrical data (cont)



COMPRESSOR ELECTRICAL DATA (cont)

UNIT 30GN,GT	NAMEPLATE VOLTAGE V-Hz (3 Phase)	COMPRESSOR NUMBERS						
		A1	A2	A3	A4	B1	B2	B3
		RLA/LRA	RLA/LRA	RLA/LRA	RLA/LRA	RLA/LRA	RLA/LRA	RLA/LRA
070-PW	208/230-60	147.4/414	—/—	—/—	—/—	147.4/414	—/—	—/—
	460-60	67.9/207	—/—	—/—	—/—	67.9/207	—/—	—/—
	575-60	53.8/165	—/—	—/—	—/—	53.8/165	—/—	—/—
	380-60	79.5/229	—/—	—/—	—/—	79.5/229	—/—	—/—
	346-50	44.9/148	44.9/247	—/—	—/—	44.9/148	—/—	—/—
	380/415-50	44.9/134	44.9/223	—/—	—/—	44.9/134	—/—	—/—
080	208/230-60	106.4/506	67.9/345	—/—	—/—	106.4/506	—/—	—/—
	460-60	46.8/253	34.6/173	—/—	—/—	46.8/253	—/—	—/—
	575-60	40.4/176	28.8/120	—/—	—/—	40.4/176	—/—	—/—
	380-60	52.6/280	34.6/191	—/—	—/—	52.6/280	—/—	—/—
	346-50	44.9/247	79.5/382	—/—	—/—	44.9/247	—/—	—/—
	380/415-50	43.6/223	65.4/345	—/—	—/—	43.6/223	—/—	—/—
080-PW	208/230-60	106.4/304	67.9/207	—/—	—/—	106.4/304	—/—	—/—
	460-60	48.7/152	33.3/104	—/—	—/—	48.7/152	—/—	—/—
	575-60	33.3/106	28.2/72	—/—	—/—	33.3/106	—/—	—/—
	380-60	53.8/168	33.3/115	—/—	—/—	53.8/168	—/—	—/—
	346-50	44.9/148	79.5/229	—/—	—/—	44.9/148	—/—	—/—
	380/415-50	44.9/134	67.9/207	—/—	—/—	44.9/134	—/—	—/—
090	208/230-60	89.7/446	67.9/345	—/—	—/—	89.7/446	—/—	—/—
	460-60	43.6/223	34.6/173	—/—	—/—	43.6/223	—/—	—/—
	575-60	36.5/164	28.8/120	—/—	—/—	36.5/164	—/—	—/—
	380-60	45.5/247	34.6/191	—/—	—/—	45.5/247	—/—	—/—
	346-50	44.9/247	79.5/382	—/—	—/—	44.9/247	—/—	—/—
	380/415-50	43.6/223	65.4/345	—/—	—/—	43.6/223	—/—	—/—
090-PW	208/230-60	89.7/268	67.9/207	—/—	—/—	89.7/268	—/—	—/—
	460-60	44.9/134	33.3/104	—/—	—/—	44.9/134	—/—	—/—
	575-60	33.3/98	28.2/72	—/—	—/—	33.3/98	—/—	—/—
	380-60	44.9/148	33.3/115	—/—	—/—	44.9/148	—/—	—/—
	346-50	44.9/148	79.5/229	—/—	—/—	44.9/148	—/—	—/—
	380/415-50	43.6/134	67.9/207	—/—	—/—	43.6/134	—/—	—/—
100	208/230-60	89.7/446	106.4/506	—/—	—/—	89.7/446	—/—	—/—
	460-60	43.6/223	46.8/253	—/—	—/—	43.6/223	—/—	—/—
	575-60	36.5/164	40.4/176	—/—	—/—	36.5/164	—/—	—/—
	380-60	45.5/247	52.6/280	—/—	—/—	45.5/247	—/—	—/—
	346-50	44.9/247	79.5/382	—/—	—/—	44.9/247	—/—	—/—
	380/415-50	43.6/223	65.4/345	—/—	—/—	43.6/223	—/—	—/—
100-PW	208/230-60	89.7/268	106.4/304	—/—	—/—	89.7/268	—/—	—/—
	460-60	44.9/134	48.7/152	—/—	—/—	44.9/134	—/—	—/—
	575-60	33.3/98	33.3/106	—/—	—/—	33.3/98	—/—	—/—
	380-60	44.9/148	53.8/168	—/—	—/—	44.9/148	—/—	—/—
	346-50	44.9/148	79.5/229	—/—	—/—	44.9/148	—/—	—/—
	380/415-50	44.9/134	67.9/207	—/—	—/—	44.9/134	—/—	—/—
110	208/230-60	89.7/446	147.4/690	—/—	—/—	89.7/446	—/—	—/—
	460-60	43.6/223	65.4/345	—/—	—/—	43.6/223	—/—	—/—
	575-60	36.5/164	57.1/276	—/—	—/—	36.5/164	—/—	—/—
	380-60	45.5/247	78.8/382	—/—	—/—	45.5/247	—/—	—/—
	346-50	79.5/382	79.5/229	—/—	—/—	79.5/382	—/—	—/—
	380/415-50	65.4/345	65.4/207	—/—	—/—	65.4/345	—/—	—/—
110-PW	208/230-60	89.7/268	147.4/414	—/—	—/—	89.7/268	—/—	—/—
	460-60	44.9/134	67.9/207	—/—	—/—	44.9/134	—/—	—/—
	575-60	33.3/98	53.8/165	—/—	—/—	33.3/98	—/—	—/—
	380-60	44.9/148	79.5/229	—/—	—/—	44.9/148	—/—	—/—
	346-50	79.5/229	79.5/229	—/—	—/—	79.5/229	—/—	—/—
	380/415-50	67.9/207	67.9/207	—/—	—/—	67.9/207	—/—	—/—
130	208/230-60	107.7/506	151.3/690	—/—	—/—	107.7/506	—/—	—/—
	460-60	53.9/253	75.7/345	—/—	—/—	53.9/253	—/—	—/—
	575-60	41.7/176	62.2/176	—/—	—/—	41.7/176	—/—	—/—
	380-60	55.8/280	80.2/382	—/—	—/—	55.8/280	—/—	—/—
	346-50	46.8/259	55.8/294	—/—	—/—	46.8/259	—/—	—/—
	230-50	77.0/342	87.9/366	—/—	—/—	77.0/342	—/—	—/—
130-PW	208/230-60	107.7/304	151.3/414	—/—	—/—	107.7/304	—/—	—/—
	460-60	53.9/152	75.7/207	—/—	—/—	53.9/152	—/—	—/—
	575-60	41.7/106	62.2/144	—/—	—/—	41.7/106	—/—	—/—
	380-60	55.8/168	80.2/230	—/—	—/—	55.8/168	—/—	—/—
	346-50	46.8/155	55.8/155	—/—	—/—	46.8/155	—/—	—/—
	230-50	77.0/206	87.9/220	—/—	—/—	77.0/206	—/—	—/—

COMPRESSOR ELECTRICAL DATA (cont)

UNIT 30GN,GT	NAMEPLATE VOLTAGE V-Hz (3 Phase)	COMPRESSOR NUMBERS						
		A1	A2	A3	A4	B1	B2	B3
		RLA/LRA	RLA/LRA	RLA/LRA	RLA/LRA	RLA/LRA	RLA/LRA	RLA/LRA
150	208/230-60	89 8/446	89 8/446	89.8/446	—/—	151 3/690	151.3/690	—/—
	460-60	44 9/223	44 9/223	44.9/223		75 7/345	75 7/345	
	575-60	36 6/164	36.6/164	36 6/164		62 2/240	62 2/240	
	380-60	46.8/247	46 8/247	46 8/247		80 2/382	80.2/382	
	346-50	80 2/400	80.2/400	80.2/400		80 2/400	80 2/400	
	230-50	107 7/545	107 7/545	107 7/545		107 7/545	107 7/545	
150-PW	380/415-50	75.7/345	75 7/345	75 7/345	—/—	75 7/345	75 7/345	—/—
	208/230-60	89 8/268	89.8/268	89 8/268		151 3/414	151 3/414	
	460-60	44.9/134	44.9/134	44 9/134		75 7/207	75 7/207	
	575-60	36 6/ 99	36 6/ 99	36.6/ 99		62 2/144	62.2/144	
	380-60	46.8/149	46.8/149	46.8/149		80 2/230	80.2/230	
	346-50	80 2/240	80 2/240	80 2/240		80 2/240	80 2/240	
170	230-50	107 7/268	107.7/268	107.7/268	—/—	107 7/327	107 7/327	—/—
	380/415-50	75 7/327	75.7/327	75.7/327		75 7/207	75 7/207	
	208/230-60	107 7/506	107 7/506	107 7/506		107 7/506	107 7/506	107 7/506
	460-60	53.9/253	53 9/253	53 9/253		53 9/253	53.9/253	
	575-60	41.7/176	41 7/176	41.7/176		41 7/176	41 7/176	
	380-60	55 8/280	55 8/280	55.8/280		55 8/280	55 8/280	
170-PW	346-50	55.8/294	55 8/294	80.2/400	—/—	55 8/294	80 2/400	
	230-50	87.9/366	87.9/366	107 7/545		87.9/366	107.7/545	
	380/415-50	53 9/253	53.9/253	75.7/345		53.9/253	75 7/345	
	208/230-60	107.7/304	107.7/304	107 7/304		107.7/304	107.7/304	107.7/304
	460-60	53.9/152	53 9/152	53.9/152		53 9/152	53.9/152	
	575-60	41.7/106	41.7/106	41.7/106		41 7/106	41 7/106	
190	380-60	55.8/168	55.8/168	55 8/168	—/—	55 8/168	55.8/168	
	346-50	55.8/177	55 8/177	80 2/240		55 8/177	80 2/240	
	230-50	87 9/220	87 9/220	107.7/327		87 9/220	107.7/327	
	380/415-50	53 9/152	53 9/152	75 7/207		53 9/152	75 7/207	
	208/230-60	89 8/446	107 7/506	151 3/690	—/—	89.8/446	107 7/506	151 3/690
	460-60	44.9/223	53.9/253	75 7/345		44 9/223	53 9/253	
190-PW	575-60	36.6/164	41.7/176	62.2/240		36 6/164	41 7/176	
	380-60	46.8/247	55 8/280	80 2/382		46.8/247	55.8/280	
	346-50	80 2/400	80.2/400	80 2/400		80 2/400	80 2/400	
	230-50	107.7/545	107.7/545	107 7/545		107.7/545	107.7/545	
	380/415-50	75.7/345	75 7/345	75.7/345		75.7/345	75.7/345	
	208/230-60	89.8/268	107.7/304	151.3/414	—/—	89 8/268	107 7/304	151.3/414
210	460-60	44.1/349	53.9/152	75.7/207		44.9/134	53 9/152	
	575-60	36 6/ 99	41.7/106	62.2/144		36 6/ 99	41 7/106	
	380-60	46 8/149	55 8/168	80.2/230		46 8/149	55.8/168	
	346-50	80 2/240	80 2/240	80.2/240		80 2/240	80 2/240	
	230-50	107 7/327	107.7/327	107.7/327		107 7/327	107.7/327	
	380/415-50	75 7/207	75 7/207	75.7/207		75 7/207	75 7/207	
210-PW	208/230-60	89.8/446	89.8/446	89 8/446	107 7/506	107 7/506	151 3/690	151.3/690
	460-60	44.9/223	44.9/223	44 9/223	53 9/253	53 9/253	75.7/345	75.7/345
	575-60	36.6/164	36.6/164	36 6/164	41 7/176	41 7/176	62 2/240	62 2/240
	380-60	46.8/247	46 8/247	46 8/247	55 8/280	55 8/280	80 2/382	80.2/382
	346-50	46 8/259	46 8/259	80 2/400	80 2/400	80 2/400	80.2/400	80.2/400
	230-50	77 0/342	77 0/342	107 7/545	107 7/545	107 7/545	107 7/545	107.7/545
210-PW	380/415-50	44 9/223	44 9/223	75.7/345	75 7/345	75 7/345	75 7/345	75 7/345
	208/230-60	89.8/268	89.8/268	89.8/268	107.7/304	107 7/304	151.3/414	151 3/414
	460-60	44.9/134	44.9/134	44 9/134	53.9/152	53 9/152	75 7/207	75 7/207
	575-60	36.6/ 99	36.6/ 99	36.6/ 99	41 7/106	41 7/106	62 2/144	62 2/144
	380-60	46.8/149	46 8/149	46.8/149	55 8/168	55 8/168	80 2/230	80 2/230
	346-50	46 8/155	46 8/155	80 2/240	80 2/240	80.2/240	80 2/240	80.2/240
210-PW	230-50	77 0/206	77 0/206	107.7/327	107 7/327	107 7/327	107.7/327	107 7/327
	380/415-50	44 9/134	44 9/134	75.7/207	75.7/207	75 7/207	75.7/207	75.7/207

NOTE. See Legend and Notes on page 51

Electrical data (cont)



CONDENSER FAN ELECTRICAL DATA

UNIT 30GN,GT	NAMEPLATE VOLTAGE V-Hz (3 Phase)	STANDARD CONDENSER FANS					HIGH-STATIC CONDENSER FANS				
		Total Quantity	Hp	kW	(Quantity) FLA (ea)	(Quantity) LRA (ea)	Total Quantity	Hp	kW	(Quantity) FLA (ea)	(Quantity) LRA (ea)
040	208/230-60	4	1	746	(2) 5.4, (2) 5.5	(2) 31.6, (2) 30.0	4	5	3.73	(4) 14.6	(4) 41.6
	460-60				(2) 2.7, (2) 2.8	(2) 31.6, (2) 30.0				(4) 6.3	(4) 41.6
	575-60				(4) 3.4	(4) 30.0				(4) 5.2	(4) 42.0
	380-60				(4) 3.9	(4) 20.9				(4) 7.4	(4) 54.0
	346-50				(4) 4.4	(4) 20.9				(4) 8.7	(4) 53.0
	380/415-50				(4) 3.0	(4) 30.0				(4) 7.3	(4) 41.0
045	208/230-60	4	1	746	(2) 5.4, (2) 5.5	(2) 31.6, (2) 30.0	4	5	3.73	(4) 14.6	(4) 41.6
	460-60				(2) 2.7, (2) 2.8	(2) 31.6, (2) 30.0				(4) 6.3	(4) 41.6
	575-60				(4) 3.4	(4) 30.0				(4) 5.2	(4) 42.0
	380-60				(4) 3.9	(4) 20.9				(4) 7.4	(4) 54.0
	346-50				(4) 4.4	(4) 20.9				(4) 8.7	(4) 53.0
	380/415-50				(4) 3.0	(4) 30.0				(4) 7.3	(4) 41.0
050	208/230-60	4	1	746	(2) 5.4, (2) 5.5	(2) 31.6, (2) 30.0	4	5	3.73	(4) 14.6	(4) 41.6
	460-60				(2) 2.7, (2) 2.8	(2) 31.6, (2) 30.0				(4) 6.3	(4) 41.6
	575-60				(4) 3.4	(4) 30.0				(4) 5.2	(4) 42.0
	380-60				(4) 3.9	(4) 20.9				(4) 7.4	(4) 54.0
	346-50				(4) 4.4	(4) 20.9				(4) 8.7	(4) 53.0
	380/415-50				(4) 3.0	(4) 30.0				(4) 7.3	(4) 41.0
060	208/230-60	6	1	746	(4) 5.4, (2) 5.5	(4) 31.6, (2) 30.0	6	5	3.73	(6) 14.6	(6) 41.6
	460-60				(4) 2.7, (2) 2.8	(4) 31.6, (2) 30.0				(6) 6.3	(6) 41.6
	575-60				(6) 3.4	(6) 30.0				(6) 5.2	(6) 42.0
	380-60				(6) 3.9	(6) 20.9				(6) 7.4	(6) 54.0
	346-50				(6) 4.4	(6) 20.9				(6) 8.7	(6) 53.0
	380/415-50				(6) 3.0	(6) 30.0				(6) 7.3	(6) 41.0
070	208/230-60	6	1	746	(4) 5.4, (2) 5.5	(4) 31.6, (2) 30.0	6	5	3.73	(6) 14.6	(6) 41.6
	460-60				(4) 2.7, (2) 2.8	(4) 31.6, (2) 30.0				(6) 6.3	(6) 41.6
	575-60				(6) 3.4	(6) 30.0				(6) 5.2	(6) 42.0
	380-60				(6) 3.9	(6) 20.9				(6) 7.4	(6) 54.0
	346-50				(6) 4.4	(6) 20.9				(6) 8.7	(6) 53.0
	380/415-50				(6) 3.0	(6) 30.0				(6) 7.3	(6) 41.0
080,090	208/230-3-60	6	1	0.746	(4) 5.4, (2) 5.5	(4) 31.6, (2) 30.0	6	5	3.73	(6) 14.6	(6) 41.6
	460-3-60				(4) 2.7, (2) 2.8	(4) 31.6, (2) 30.0				(6) 6.3	(6) 41.6
	575-3-60				(6) 3.4	(6) 30.0				(6) 5.2	(6) 42.0
	380-3-60				(6) 3.9	(6) 20.9				(6) 7.4	(6) 54.0
	346-3-50				(6) 4.4	(6) 20.9				(6) 8.7	(6) 53.0
	380/415-3-50				(6) 3.0	(6) 30.0				(6) 7.3	(6) 41.0
100,110	208/230-3-60	8	1	0.746	(6) 5.4, (2) 5.5	(6) 31.6, (2) 30.0	8	5	3.73	(8) 14.6	(8) 41.6
	460-3-60				(6) 2.7, (2) 2.8	(6) 31.6, (2) 30.0				(8) 6.3	(8) 41.6
	575-3-60				(8) 3.4	(8) 30.0				(8) 5.2	(8) 42.0
	380-3-60				(8) 3.9	(8) 20.9				(8) 7.4	(8) 54.0
	346-3-50				(8) 4.4	(8) 20.9				(8) 8.7	(8) 53.0
	380/415-3-50				(8) 3.0	(8) 30.0				(8) 7.3	(8) 41.0
130-170	208/230-3-60	10	1	0.746	(6) 5.4, (4) 5.5	(6) 31.6, (4) 30.0	10	5	3.73	(10) 14.6	(10) 41.6
	460-3-60				(6) 2.7, (4) 2.8	(6) 31.6, (4) 30.0				(10) 6.3	(10) 41.6
	575-3-60				(10) 3.4	(10) 30.0				(10) 5.2	(10) 42.0
	380-3-60				(10) 3.9	(10) 20.9				(10) 7.4	(10) 54.0
	346-3-50				(10) 4.4	(10) 20.9				(10) 8.7	(10) 53.0
	230-3-50				(10) 6.4	(10) 30.3				(10) 12.2	(10) 41.6
190,210	380/415-3-50				(10) 3.0	(10) 30.0				(10) 7.3	(10) 41.0
	208/230-3-60	12	1	0.746	(8) 5.4, (4) 5.5	(8) 31.6, (4) 30.0	12	5	3.73	(12) 14.6	(12) 41.6
	460-3-60				(8) 2.7, (4) 2.8	(8) 31.6, (4) 30.0				(12) 6.3	(12) 41.6
	575-3-60				(12) 3.4	(12) 30.0				(12) 5.2	(12) 42.0
	380-3-60				(12) 3.9	(12) 20.9				(12) 7.4	(12) 54.0
	346-3-50				(12) 4.4	(12) 20.9				(12) 8.7	(12) 53.0
	230-3-50				(12) 6.4	(12) 30.3				(12) 12.2	(12) 41.6
	380/415-3-50				(12) 3.0	(12) 30.0				(12) 7.3	(12) 41.0

LEGEND AND NOTES FOR ELECTRICAL DATA TABLES

LEGEND

FLA	— Full Load Amps (Fan Motors)
ICF	— Maximum Instantaneous Current Flow during starting (the point in the starting sequence where the sum of the LRA for the starting compressor, plus the total RLA for all running compressors, plus the total FLA for all running fan motors is maximum)
kW	— Total condenser fan motor power input
LRA	— Locked Rotor Amps
MCA	— Minimum Circuit Amps (for wire sizing) — complies with NEC Section 430-24
MOCP	— Maximum Overcurrent Protective Device Amps
NEC	— National Electrical Code, U S A
PW	— Part Wind
Rec Fuse Size	— Recommended dual element fuse amps: 150% of largest compressor RLA plus 100% of sum of remaining compressor RLAs Size up to the next larger standard fuse size
RLA	— Rated Load Amps (Compressors)
XL	— Across-the-Line

*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%.

†Wherever across-the-line and part-wind data differs, the higher value of the two is listed.

NOTES:

- 1 All units have single point primary power connection. Main power must be supplied from a field-supplied disconnect.
- 2 The unit control circuit power (115 v, 1-ph for 208/230-, 460-, and 575-v units; 230 v, 1-ph for all other voltages) must be supplied from a separate source, through a field-supplied disconnect. The control circuit transformer accessory may be applied to power from primary unit power.
- 3 Crankcase and cooler heaters are wired into the control circuit so they are always operable as long as the control circuit power supply disconnect is on, even if any safety device is open or the unit ON-OFF or LOCAL/ENABLE-STOP-CCN circuit switch is turned to OFF or STOP position.



208/230 v
460 v
575 v



208/230 v
460 v

- 4 Units have the following power wiring terminal blocks and parallel conductors:

UNIT SIZE	VOLTAGE	TERMINAL BLOCKS	PARALLEL CONDUCTORS
040-070	208/230	1	3 (040,045), 6 (050-070)
	460	1	3
	575	1	3
	380	1	3
	346	1	3
080-110	380/415	1	3
	208/230	1	6
	460	1	3
	575	1	3
	380	1	3
130-210	346	1	3
	380/415	1	3
	208/230	3	9
	460	2	6
	575	2	6
	380	2	6
	230	3	9
	346	2	6
	380/415	2	6

- 5 Maximum incoming wire size for each terminal block is 500 kcmil.
- 6 Power draw of control circuits includes both crankcase heaters (where used) and cooler heaters. Each compressor has a crankcase heater which draws 180 watts of power. Units ordered with cooler heater option have 4 (040-050), 6 (060,070), or 8 (080-210) cooler heaters, 210 w each, and 30GT units also have a 120-w circuit board heater.

Controls

Microprocessor

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 control circuit ON-OFF circuit breaker switch to ON position. (30GT Flotronic™) or LOCAL/ENABLE-STOP-CCN switch to LOCAL/ENABLE or CCN position (30GN Flotronic II). (This switch is also used to reset microprocessor should any safety trip and also functions as circuit breaker for electronic processor and relay boards.)

On 30GN (Flotronic II) units, when the unit receives a call for cooling (either from the internal control or CCN network command), the unit stages up in capacity to maintain the cooler fluid set point. The first compressor starts 1 1/2 to 3 minutes after the call for cooling. The lead circuit can be specifically designated or randomly selected by the controls,

depending on how the unit is field configured. A field configuration is also available to determine if the unit should stage up both circuits equally or load one circuit completely before bringing on the other.

On 30GT (Flotronic) units, when the switch is closed, a 2-minute initialization routine is begun. During this time, inputs are checked, EXV and internal constants are initialized, and a **20** is displayed. If display button is pushed during this period, control goes into a 42-step quick test routine normally used for a readiness check during start-up or for service.

Microprocessor controls capacity of chiller by cycling compressors on and off at a rate to satisfy actual dynamic load conditions. Control will maintain leaving-fluid temperature set with dial on display board through intelligent cycling of compressors. Accuracy will depend 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 leaving-fluid temperature is less than 35 F (1.7 C) for water, or 6° F (3.3° C) below the set point for brine units, the unit is shut off until the fluid temperature goes to 35 F (1.7 C) or to 6° F (3.3° C) above the set point to protect against freezing.

If 1° F per minute (0.6° C per minute) pulldown control has been selected (factory setting), no additional steps of capacity will be added as long as difference between leaving-fluid temperature and set point is greater than 4° F (2.2° C) and rate of change in leaving-fluid temperature is less than 1° F per minute (0.6° C per minute).

If it has been less than 90 seconds since the last capacity change, compressors will continue to run unless a safety trips. This prevents rapid cycling and also helps return oil during short on periods.

Where available, two sequences are used to obtain circuit lead/lag operation and even out compressor operating hours. This requires accessory unloaders on some units. First, as unit turns on, microprocessor functions as a random number generator to determine which circuit will start first. Also, when decreasing from maximum stage, control will again randomly select which circuit is to run the longest.

The control also performs other special functions when turning on or off. When a circuit is to be turned off, EXV or LLSV (TXV units) is closed first, and compressor is run until conditions are met to terminate pumpout to remove refrigerant that was in the cooler. At start-up, if a circuit has not run in the last 15 minutes, circuit is run to remove any refrigerant that has migrated to the cooler. The oil pressure switch is bypassed for 2 minutes during start-up and for 45 seconds during normal operation.

Thermistors

Eight thermistors are used for temperature sensing inputs to microprocessor. (A ninth [T10] may be used as a remote temperature sensor for optional LCWT reset.)

- T1 Cooler leaving chilled fluid temperature
- T2 Cooler entering fluid (return) temperature
- T3 Saturated condensing temperature — Circuit A
- T4 Saturated condensing temperature — Circuit B
- T5 Cooler saturation temperature — Circuit A (30GT only)
- T6 Cooler saturation temperature — Circuit B (30GT only)
- T7 Return gas temperature entering compressor cylinder — Circuit A
- T8 Return gas temperature entering compressor cylinder — Circuit B
- T10 Remote temperature sensor (accessory)

The microprocessor uses these temperatures to control capacity, fan cycling, and EXV operation.

Electronic expansion valve (EXV)

To control flow of refrigerant for different operating conditions, EXV piston moves up and down over slot orifices

through which refrigerant flows to modulate size of opening. Piston is moved by a stepper motor through 1500 discrete steps. The piston is repositioned by the microprocessor every 3 seconds as required.

The EXV is used to control superheat in compressor. Two thermistors in each circuit (T5 and T7 or T6 and T8) are used to determine superheat. One thermistor (T5 or T6) is located in cooler and the other (T7 or T8) in compressor after motor in the gas passage entering the cylinders. The EXV is controlled to maintain superheat entering pistons at approximately 30 F (16 C), which results in slightly superheated refrigerant leaving cooler.

The electronic control provides for a prepurge and pump-out cycle each time the lead compressor in a circuit is started or stopped. These pumpout cycles minimize amount of excess refrigerant that can go to compressor on start-up and cause oil dilution (which would result in eventual bearing wear).

The microprocessor software is programmed so that EXV functions as a MOP (maximum operating pressure) valve, limiting the suction temperatures to 55 F (12.8 C). This makes it possible to start unit at high fluid temperatures, up to 95 F (35 C), without overloading compressor. Another feature that is factory set (which may be reconfigured in the field) limits rate of pulldown to 1° F (0.6° C) per minute, thereby reducing the kW demand on start-up.

Accessory controls

Demand can be further limited by keeping a selected number of compressors from turning on by utilizing demand limit control accessory. This interfaces with microprocessor to control unit so that chiller's kW demand does not exceed its setting. It is activated from an external switch.

Microprocessor is programmed to accept various accessory temperature reset options, based on return-fluid temperature, outdoor-air temperature, or space temperature, that reset the LCWT. An accessory thermistor (T10) is required if outdoor-air temperature or space temperature reset is selected.

Ground current protection

The 30GN, GT080-210 and 070 (50 Hz) units have ground current protection, shutting off compressor(s) if a 2 to 3 amp ground current is sensed by a toroid around the compressor power leads.

Ground current protection is also offered as accessory on 040-060 and 070 (60 Hz) sizes.

30GT Flotronic™ controls with 2-digit display/set point board

Display board, also connected to microprocessor by a ribbon cable, is used to communicate with operator. In addition to leaving-fluid set point potentiometer, board contains 2-digit LED (light-emitting diode) display. The LED display is normally off after initialization period. Pressing display button will result in LED displaying the appropriate overload or status code.

If this is done, display will show from one to 3 codes, alternating every 2 seconds, as follows:

CODE	STATUS
0-12	Capacity Stage Number of stages in operation
20-26	Operating Mode
20	Initialization
21	Temperature Reset
22	Demand Limit
24	Pulldown Control
26	Remote on-off
51-87	Overload Codes
	Alarm light/circuit energized NOTE: These codes take priority
51-58	Compressor fault
59,60	Loss of charge (circuit A, circuit B)
61	Low water flow
63,64	Low oil pressure (circuit A, circuit B)
65	Low water temperature
70	Illegal configuration
71-80	Thermistor failure
81-87	Reset/Set Point Limit Failure

These codes are summarized on a chart in each unit's control box, and are described in detail in the Controls and Troubleshooting literature.

30GN Flotronic™ II (CCN) controls with 8-character display/set point board

An eight-digit LCD (liquid crystal display) alphanumeric panel displays all of the Flotronic control codes (with explanation of codes), plus set points, time of day, and actual temperatures, pressures, and superheat.

Control sequence

Off cycle — During unit off cycle, crankcase heater is energized. If ambient temperature is below 36 F (2 C), cooler and control box heaters (30GT only) are also energized. Electronic expansion valves are closed.

Start-up — After control circuit switches on, prestart process takes place, then microprocessor checks itself and waits for temperature to stabilize. First circuit to start may be A or B (automatic lead/lag feature). 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. The EXV or LLSV (TXV units) remains closed, permitting a pumpout on start-up. After pumpout, the valves open and, if necessary, additional outdoor fans are energized. Crankcase heaters are deenergized when a compressor is started. As additional cooling is required, lag circuit starts. If further cooling is needed, compressors are added, alternating between lead and lag circuits. Speed at which capacity is added or decreased is controlled by temperature deviation from set point and rate of temperature change of chilled fluid.

As less cooling is required, circuits shut down (or unload) in an order that evens out each circuit's compressor run time. When no further cooling is called for (in each compressor circuit), EXV or LLSV (TXV units) closes and compressor and fans continue to run while pumping down cooler.

Control features

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.

Demand limit — If applied, unit step controls limit total power draw of unit to selected point by controlling number of operational compressors during periods of peak electrical demand. Consult Accessory Demand Limit Control Module Installation Instructions for further details.

Reset accessory — If applied, microprocessor compares either return fluid, space or outdoor-air temperature with the accessory board settings, and adjusts LCWT appropriately.

Electronic expansion valve and condenser-fan control — EXV opens and closes on signal from microprocessor to maintain an approximate 20° F (11° C) refrigerant superheat entering the compressor cylinders. (The compressor motor increases the refrigerant superheat from the approximate 5° F [3° C] leaving the cooler to that entering the cylinders.) Condenser fans (operated by microprocessor) run to as low an ambient as possible to maintain a minimum EXV pressure differential.

Abnormal conditions

All control safeties in chiller operate through compressor protection board or control relay and microprocessor. High-pressure switch directly shuts down compressor(s) through compressor protection board or control relay. 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 holds in safety mode until reset. It then reverts to normal control when unit is reset.

Oil pressure safety — Safety cuts out if pressure differential is below minimum (accessory on 040-060; 070, 60 Hz). Safety is bypassed on start-up for 2 minutes.

Loss-of-charge safety — Safety cuts out if system pressure drops below minimum.

High-pressure cutout — Switch shuts down compressors if compressor discharge pressure increases to 426 psig (2937 kPa).

Ground current safety — Safety opens on sensing a current-to-ground in compressor windings in excess of 2.5 amps (accessory on 040-070 [60 Hz]).

Compressor anti-cycling — This feature limits compressor cycling.

Loss of flow protection — Protection is provided by temperature differences between entering and leaving fluid temperature sensors if cooler temperature drops to 35 F (1.8 C).

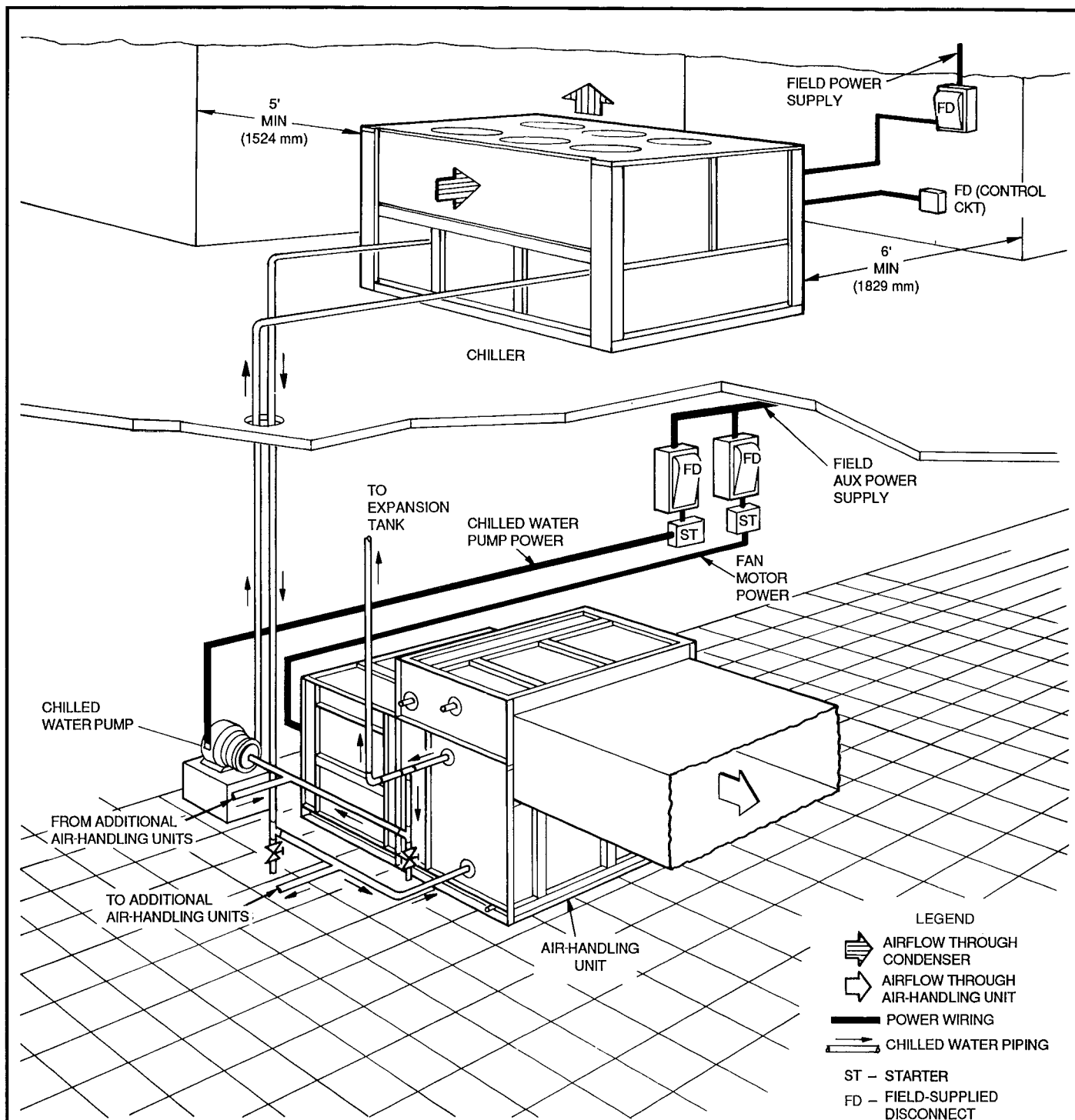
Sensor failures — Failures are detected by the microprocessor.

Diagnostics

Microprocessor may be put through quick test (see Controls and Troubleshooting literature) without additional equipment or tools. Quick test (not on Flotronic II units) confirms microprocessor is functional, informs observer through LED display the condition of each sensor and switch in chiller, and allows observer to check for proper operation of fans and compressor(s).

NOTE: The STAT test function on 30GN units allows for the same function as quick test on the 30GT units.

Typical piping and wiring



NOTES

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

Reciprocating Air-Cooled Liquid Chiller

HVAC Guide Specifications

Size Range: **36 to 210 Tons (127 to 740 kW)**
Nominal

Carrier Model Number: **30GN,GT**

Part 1 — General

1.01 SYSTEM DESCRIPTION

- A. Microprocessor controlled air-cooled liquid chiller utilizing reciprocating compressors and electronic expansion valves.

1.02 QUALITY ASSURANCE

- A. Unit shall be rated in accordance with ARI Standard 590-92 (U.S.A.).
- B. Unit construction shall be designed to conform to ASHRAE 15 latest revision safety standard, NEC (U.S.A.), and ASME (U.S.A.) applicable codes.
- C. Unit shall have UL (U.S.A.) or CSA (Canada) approvals (60 Hz).
- D. Unit shall be manufactured in a facility registered to ISO 9002/BS5750, Part 2 (International Standards Organization) manufacturing quality standard.
- E. Unit operation shall be fully tested at the factory.

1.03 DELIVERY, STORAGE, AND HANDLING

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

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-22), and special features required prior to field start-up.

B. Unit Cabinet:

- 1. Frame shall be of heavy-gage galvanized steel members
- 2. Cabinet shall be galvanized steel casing with a pre-painted finish
- 3. Cabinet shall be capable of withstanding 500-hour salt spray test in accordance with the American Society for Testing and Materials (ASTM) B-117 standard

C. Fans:

Condenser fans shall be direct-driven propeller type discharging air vertically upward and shall be equipped with the following features:

- 1. Permanently lubricated bearings
- 2. PVC coated steel wire safety guards
- 3. Statically and dynamically balanced fan blades.

D. Compressors:

- 1. Reciprocating semi-hermetic type only.
- 2. Each equipped with an automatically reversible oil pump, operating oil charge, suction and discharge shutoff valves, and an insert-type factory-sized crankcase heater to control oil dilution.
- 3. Each mounted on spring vibration isolators with an isolation efficiency of no less than 95%.
- 4. Speed shall not exceed 1750 rpm (29.2 r/s).
- 5. Cycles per hour per compressor shall not exceed 6.

E. Cooler:

- 1. Shell-and-tube type with removable heads.
- 2. Tubes shall be internally enhanced seamless-copper type rolled into tube sheets.
- 3. Equipped with victaulic-type fluid connections.
- 4. Shell shall be insulated with ¾-in. (19-mm) PVC foam (closed-cell) of maximum K factor 0.28.
- 5. Design shall incorporate 2 independent direct expansion refrigerant circuits.
- 6. Cooler shall be tested and stamped in accordance with ASME Code for a refrigerant working side pressure of 278 psig (1916 kPa). Cooler shall have a maximum fluid-side pressure of 300 psig (2068 kPa).

F. Condenser:

- 1. Coil shall be air-cooled with integral subcooler, constructed of aluminum fins mechanically bonded to seamless copper tubes which are then cleaned, dehydrated, and sealed.
- 2. Air-cooled condenser coils shall be leak tested at 150 psig (1034 kPa) and pressure tested at 450 psig (3103 kPa).

G. Refrigeration Components:

Refrigerant circuit components shall include hot gas muffler, high side pressure switch, liquid line shutoff valves, suction and discharge shutoff valves, filter drier, moisture-indicating sight glass, stepper motor actuated electronic expansion valve (EXV) or thermostatic expansion valve (TXV), and complete operating charge of refrigerant R-22 and compressor oil.

H. Controls, Safeties, and Diagnostics:

1. Controls:

- a. Unit controls shall include the following minimum components:
 - 1) Microprocessor.
 - 2) Power and control circuit terminal blocks.
 - 3) ON/OFF control switch.
 - 4) Replaceable solid-state relay panel.
 - 5) Eight-character diagnostic display/set point panel on 30GN unit. Two-digit panel on 30GT unit.
 - 6) Thermistors, and/or pressure transducers (30GN only), and potentiometers (30GT).

- b. Capable of performing the following functions:

- 1) Automatic circuit lead/lag (accessory with 30GT040-070, standard with 30GN, GT040-210).
- 2) Pumpout at beginning and end of every circuit cycle.
- 3) Capacity control based on leaving chilled fluid temperature and compensated by rate of change of return-fluid temperature.
- 4) Limiting of the chilled fluid temperature pulldown rate at start-up to 1° F (.56° C) per minute to prevent excessive demand spikes (charges) at start-up.
- 5) Seven-day time schedule (30GN only).
- 6) Leaving chilled fluid temperature reset from return fluid (30GN only).
- 7) Demand limit control with 2-point control (0 to 100% each) (30GN only).

2. Safeties:

- a. Unit shall be equipped with thermistors and/or potentiometers (30GT) and all necessary components in conjunction with the control system to provide the unit with the following protections:
- 1) Loss of refrigerant charge protection.
 - 2) Low fluid flow detection.
 - 3) Low chilled fluid temperature protection.
 - 4) Low and high superheat protection.
 - 5) Low control voltage (to unit) protection.
 - 6) High-pressure switch.
 - 7) Low oil protection for each compressor circuit (080-210).
 - 8) Ground current compressor protection (080-210 and 070, 50 Hz).
- b. Compressors shall be equipped with the following manual-reset type protections:
- 1) Pressure overload.
 - 2) Electrical overload through the use of definite-purpose contactors and calibrated, ambient compensated, magnetic trip circuit breakers. Circuit breakers shall open all 3 phases in the event of an overload in any one phase (single-phasing condition).
- c. Fan motors shall have inherent overcurrent protection

3. Diagnostics:

- a. On 30GN units, diagnostic display module shall be capable of indicating the safety lock-out condition by displaying a code for which an explanation may be scrolled at the display. On 30GT units, display module shall be capable of indicating the tripping of protections through display of a 2-digit code, for which a legend shall be provided in control panel. Information included for display shall be:
- 1) Compressor lockout.
 - 2) Loss of charge.
 - 3) Low fluid flow.
 - 4) Low oil pressure.
 - 5) Cooler freeze protection.
 - 6) High or low suction superheat.
 - 7) Thermistor, transducer (30GN only), or potentiometer (30GT only) malfunction.
 - 8) Entering and leaving-fluid temperature.
 - 9) Evaporator and condenser pressure (30GN only).
 - 10) Electronic expansion valve positions (30GN only).
 - 11) All set points (30GN only).
 - 12) Time of day (30GN only).
- b. Module in conjunction with the microprocessor must also be capable of displaying the output (results) of a run test to verify operation of every switch, thermistor, potentiometer (GT) or transducer (GN), fan, and compressor before chiller is started.
- c. Provide serial output port.

I Operating Characteristics:

1. Unit shall be capable of starting and running fully loaded at outdoor ambient temperatures from 0° F to 125 F (–18 to 52 C), without special controls.
2. Unit shall be capable of starting up with 95 F (35 C) entering-fluid temperature to the cooler.
3. Multi-step cooling capacity control shall be accomplished through the use of unloaders and compressor staging.
4. Two refrigerant circuits shall be provided to protect against loss of total capacity.
5. Unit shall have automatic lead/lag feature to automatically alternate the lead circuit to ensure even compressor wear.

J. Motors:

1. Compressor motors shall be cooled by suction gas passing around motor windings.
2. Condenser-fan motors shall be 3-phase type with permanently lubricated bearings and Class B insulation.
3. Fan motors are totally enclosed, air-over (TEAO) type in accordance with IP-55 (50 Hz only).

K. Electrical Requirements:

1. Unit primary electrical power supply (3 ph) shall be connected to a single location.
2. Unit control power (1 ph) shall be connected to a separate entry point.
3. Unit shall be shipped with factory control and power wiring installed.

L. Special Features:

Certain standard features are not applicable when the features designated by * are specified. For assistance in amending the specifications, your local Carrier Sales Office should be contacted.

* 1. Low Ambient Temperature Operation:

- a. Unit shall be capable of operating down to 0° F (–18 C) with the addition of antifreeze with suitable corrosion inhibitor in the evaporator circuit, and with the addition of field-fabricated and field-installed wind baffles. The wind baffles shall be installed when wind velocity greater than 5 mph (8 km/h) is anticipated, and ambient temperature is below 32 F (0° C).

- b. Unit shall be capable of operating down to –20 F (–29 C) with the addition of the field or factory-installed solid-state Motormaster® III control with condenser coil temperature sensor. In addition, adequate field-supplied antifreeze with suitable corrosion inhibitor protection shall be field-installed in the evaporator circuit — and where wind velocity greater than 5 mph (8 km/h) is anticipated, field-fabricated and installed wind baffles shall be required.

2. Unloaders:

Electric suction cutoff unloaders shall be field-installed as required.

* 3. Cooler Heater:

Optional factory-installed heater shall protect cooler to –20 F (–29 C).

* 4. Optional Condenser Coil Material:

Unit shall be factory equipped with a condenser coil made from copper tubes and copper fins, copper tubes and aluminum heresite fins, copper tubes and copper heresite fins, or copper tubes and pre-coated aluminum fins.

* 5. Hot Gas Bypass:

Hot gas bypass allows the unit to operate at lower capacity levels than standard. Available as a factory-installed option on 30GN040 and 30GT040-070. Available as a field-installed accessory on 30GN,GT080-210.

6. Security Condenser Grilles:

A set of metal grilles complete with support retainers and fasteners shall be provided for the protection of the condensing coils, compressors, and cooler.

7. Hail Guard:

Unit shall be field-equipped with louvered condenser coil hail guards and installation hardware.

* 8. Part-Wind Start:

Shall be factory installed to reduce compressor inrush current.

* 9. Brine Units:

Unit shall be factory-equipped to operate down to 15 F (–9 C) leaving chilled fluid temperature.

10. Flow Switch:

A chilled fluid flow switch shall be field-installed for low fluid flow detection.

* 11. Control Transformer:

A transformer shall be field-installed to permit single-point power connection combining unit primary electrical power supply with control power supply (115 v).

12. Ground current compressor protection:

Protection shall be standard with sizes 080-210 and 070 (50 Hz), accessory with all other sizes.

* 13. TXV Option (30GT040-110 unit):

Unit shall have factory-installed thermostatic expansion valves (TXV) instead of EXVs. Unit shall be capable of starting and running fully loaded at outdoor temperatures from 35 to 125 F (1° to 52 C) without special control or field provisions.

14. Demand Limit Control (30GT unit):

Unit shall be equipped with a 2-point demand limit control (0 to 49% and 50 to 100%) activated remotely by an electric signal. (Two-stage control is standard on 30GN units.)

15. Pressure Gages:

Unit shall be field-equipped with suction and discharge pressure gages with manual shutoff valves.

16. Temperature Reset Board (30GT unit):

Allows microprocessor control to compare either return or outdoor temperature with the accessory board settings and adjust leaving-water temperature accordingly. Shall include necessary sensor. (Temperature reset is standard on 30GN units.)

Guide specifications — 30GN,GT (cont)



- * 17. Sound Reduction Kits:
Unit shall be equipped with kits to reduce system noise without compromising performance.
- 18. Oil Pressure Switch:
Unit shall be equipped with an oil pressure safety switch to protect compressor against loss of lubrication (sizes 040-060, 070 [60 Hz]; standard on sizes 070 [50 Hz], 040-070 brine units, and 080-210).
- * 19. High-Static Fan:
Special condenser fans, motors, and mounts shall be factory installed allowing fans to generate 0.4 in. wg (0.10 kPa) and 1 in. wg (0.25 kPa) static pressure external to the chiller at nominal condenser airflow (cfm).
- 20. Non-Fused Disconnect (Size 130-210):
A non-fused electrical disconnect for main unit power shall be factory installed.
- * 21. Australian Code:
A shell-and-tube type cooler, certified to the Australian cooler code, shall be available from the factory (size 040-110).
- 22. Convenience Outlet:
Kit provides a 115-v, GFI female receptacle to be field mounted in control box. Receptacle shall be powered by unit control circuit.
- 23. Remote Cooler Mounting:
Kit shall provide valves and EXV cable to permit operation of cooler from a remote location (up to 75 ft [23 m] away from base unit).
- 24. Unit Control Display Access Door:
Kit contains door and necessary mounting hardware to permit control module access without opening or removing control box panels.
- 25. Multi-Chiller Control:
The multi-chiller control shall be field installed, and shall sequence up to 4 circulating pumps and chillers in parallel (one pump and proof-of-flow switch per chiller). Both the leaving fluid temperature and proof-of-flow inputs shall be monitored by the control.
- 26. High-Ambient Kit:
Field-installed kit shall contain high-ambient capacity control pressure switches, unloader coils, and all necessary hardware for installation. Kit may be required in areas where outdoor ambient temperatures are expected to be above 115 F (46.1 C) and return fluid temperatures are expected to be above 60 F (15.5 C).

