



Product Data

30GT Packaged Air-Cooled Reciprocating Chillers

15 to 35 Nominal Tons

Peak Operating Performance in Five Convenient Sizes

- multi commercial application
- cost-saving advantages
- smaller, easier to install
- outstanding EER's

Features/Benefits

Small in size, big in installation and operating savings, the ideal unit for exacting commercial requirements.

Exceptional efficiency at full and part load

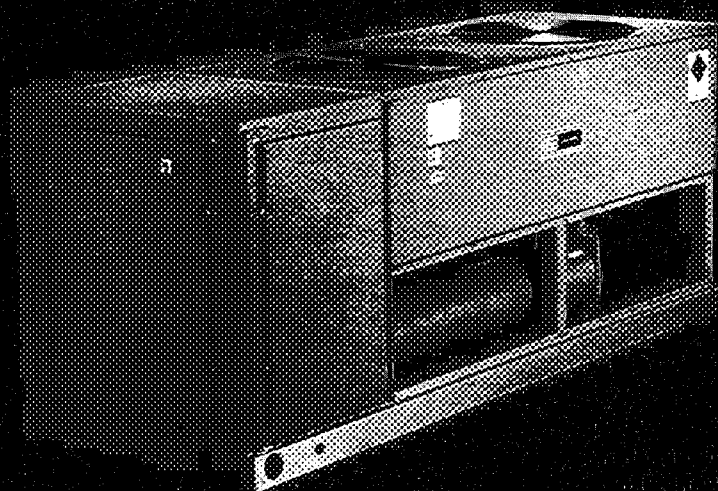
Model 30GT EER's (Energy Efficiency Ratios) are up to 10.4 for full load and 13.5 for part load for significant savings in operating expense. A special heat exchanger tube design creates larger internal surface areas for improved heat transfer, and improves the refrigerant's wetting action on the tube's inner surface.

Improved comfort for occupants

Suction cutoff unloading provides high part load efficiency from three-stage operation, allowing rapid loading and unloading of compressor cylinders to more precisely match the 30GT capacity to changing building load requirements. An extra plus in comfort is in the quiet operation of the Model 30GT. This results from the special dual-flared fan orifices, lower condenser airflow, vibration isolators and mufflers on the compressor, all of which add up to reduced noise and vibration.

Operating reliability features

Quality features include proven semi-hermetic 06D and 06E compressors. Fan motors are direct drive propeller type. Condenser coil is horizontal design which helps to prevent damage to fins during



transit and handling. Year-round dependability is also assured by the Time Guard® device which prevents rapid cycling of compressor, high and low pressure switches, thermostatically controlled cooler heating cable, control relays, calibrated magnetic trip circuit breakers and crankcase heater. Reliability is enhanced by the reduced refrigerant charge. The condenser is constructed of aluminum or copper fins mechanically bonded to seamless copper tubes.

Easier installation and rigging

The smaller and lighter packaging saves even more dollars for the building owner. The units are shipped job-ready, and arrive at the jobsite factory as-

sembled and tested, with a full R-22 operating charge. A 23-32% lower profile due to the compact, streamlined design helps eliminate many architectural problems. Horizontally positioned condenser eliminates need for low ambient wind baffles or hail guards. Vibration isolation is factory installed. Just a simple hookup to power and water lines (both are located on the same side of the unit) completes the installation procedure in cost-saving time. Units are UL and CSA approved, making electrical inspections more convenient.

Convenient serviceability

Periodic maintenance dollars are saved in the long run. Hinged access panels

provide a time-saving, quick results method of getting at all the chiller's working components. The serviceable, semi-hermetic compressor means compressor life can be prolonged through careful, periodic maintenance.

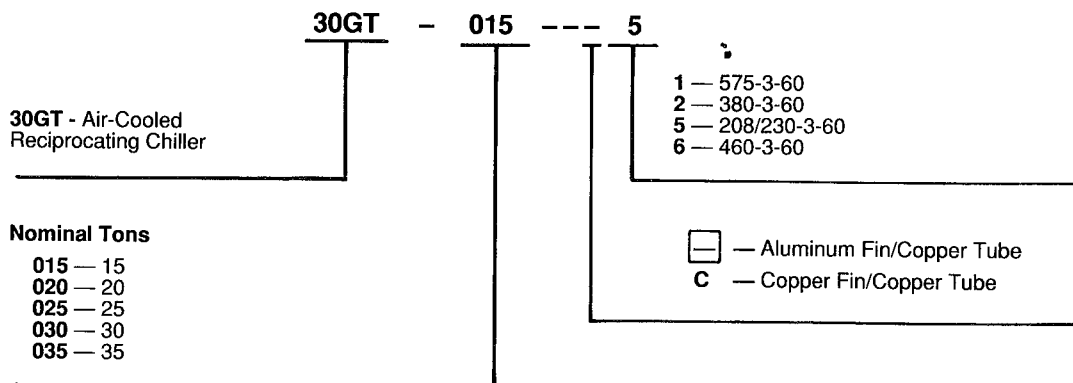
Wide application flexibility

With the range of 5 popular sizes from 15 to 35 tons, there is a size for virtually every commercial building need. There is a complete line of factory-installed options and accessories that permits unit tailoring to a variety of job specs and requirements. Copper fin/copper tube condenser coils are also available as standard production items. Model 30 GT is made to order for both new and retrofit applications.

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Model number nomenclature



Physical data

UNIT 30 GT	015	020	025	030	035
COMPRESSOR	Reciprocating, Semi-Hermetic				
No. ...Type	1. 06DG537	1.. 06E2250	1...06E7265	1...06E7275	1. .06E7299
No. Cyls (ea)...Speed, Rpm (r/s)	6 .1750 (29)	4 1750 (29)		6.. 1750 (29)	
Capacity Steps	3	2		3	
Minimum Capacity Step %	33	50*	33	33	33
REFRIGERANT CHG, R-22					
Total, lb (kg)	25.0 (11.3)	31.0 (14.1)	40.0 (18.1)	47.0 (21.3)	57.0 (25.9)
CONDENSER FANS, Type	Propeller, Direct Driven				
Fan Speed, Rpm (r/s)	1140 (19)	1140 (19)	1140 (19)	1140 (19)	1140 (19)
No. Blades...Diameter, in. (mm)			3.. 30 (762)		
No. Fans...Total kW	2.. 1.7	2. 1.7	2 .3.0	2...3.0	3...4.5
Total Airflow, Cfm (L/s)	10,600 (5000)	10,600 (5000)	15,700 (7400)	15,700 (7400)	23,700 (11,200)
CONDENSER COIL, Type	Horizontal, Plate Fin				
Tubes, Copper, in. (mm)			3/8 (9.5) O D		
Rows...Fins/in. (Fin Spacing mm)	2. 19 (1.34)	3....17 (1.49)	2.. 19 (1.34)	3. .17 (1.49)	
Total Face Area, sq ft (m ²)	23.5 (2.18)		39.2 (3.64)		58.4 (5.43)
Max. Working Pressure			450 (3103)		
Refrigerant, psig (kPa)					
COOLER	Shell and Tube, Direct Expansion				
Net Water Volume, gal. (L)	6.8 (25.7)		9.9 (37.5)		12.8 (48.4)
Max. Design Working Pressure, psig (kPa)			Refrigerant Side — 235 (1620)		
			Water Side — 150 (1034)		
WATER CONNECTIONS, in.					
Inlet and Outlet			2 FPT		2-1/2 FPT
Drain			3/4 MPT		

*Uses hot gas bypass at capacities less than 50%.

Factory-installed options

Copper fin coils.

Field-installed accessories

Motormaster® Head Pressure Control Package allows unit operation to -20 F ambient temperature by modulating condenser fan motor speed in response to refrigerant condensing temperature.

Chilled water flow switch prevents unit operation if chilled water flow stops.

Compressor oil safety switch package provides protection against

loss of oil pressure. One required for each compressor.

Gage panel package provides a suction and a discharge pressure gage for each refrigerant circuit.

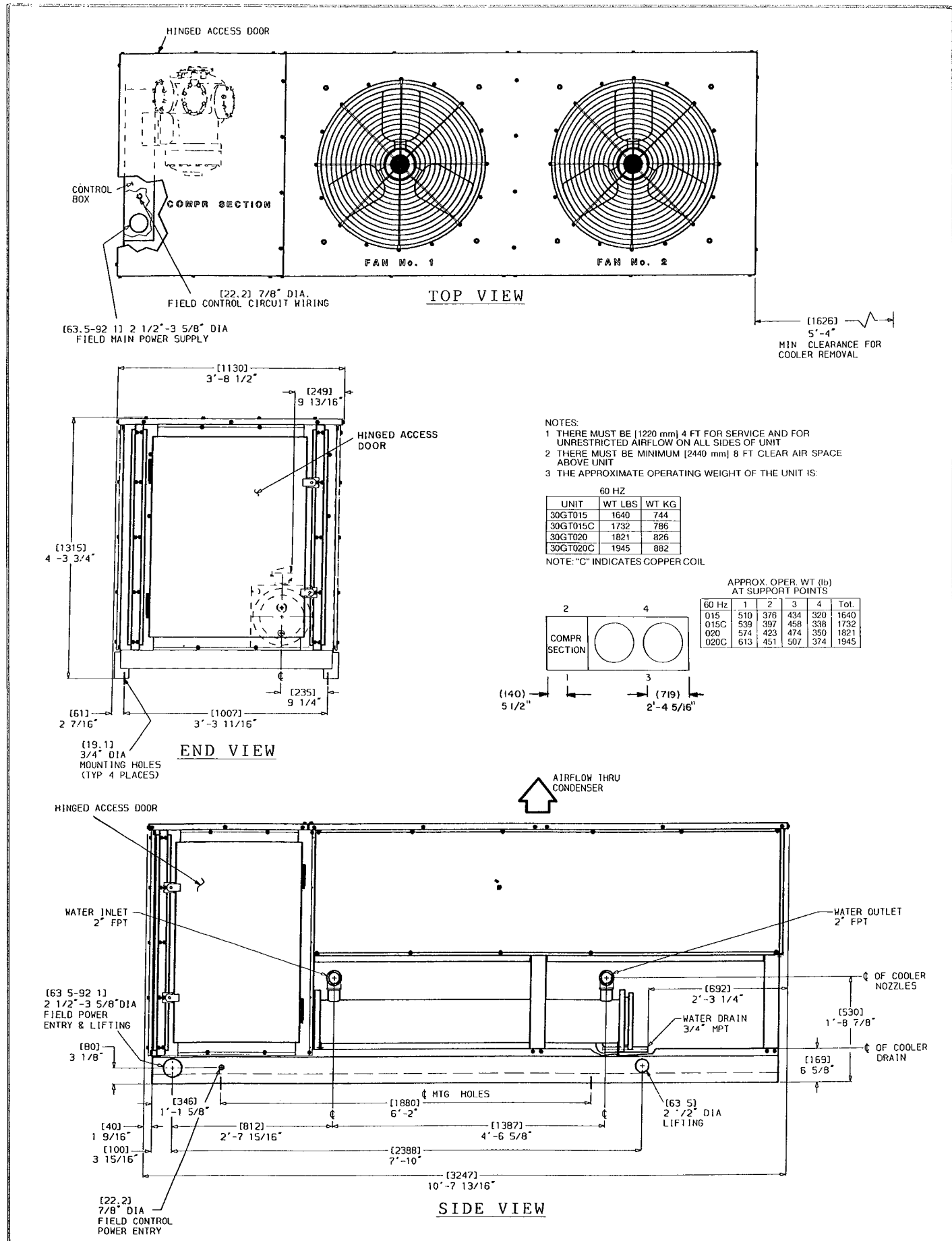
Hot gas bypass valve allows hot gas to pass directly into cooler circuit on final step of unloading, maintains constant suction pressure and permits unit

to operate at lower loads with less compressor recycling.

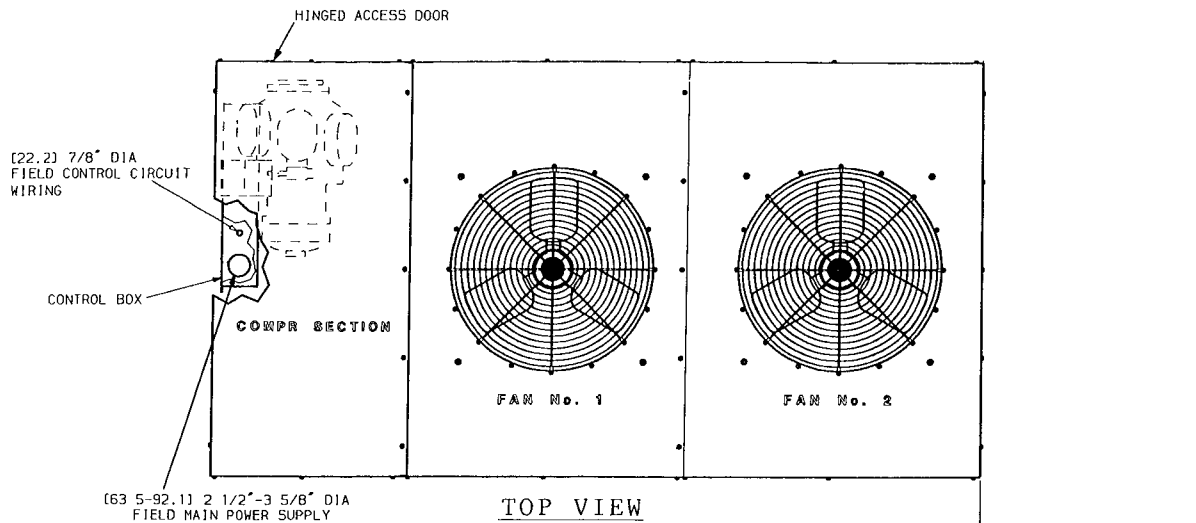
Control transformer provides control power where other source is not available.

Part winding start reduces inrush current (ICF) and locked rotor amps on start-up.

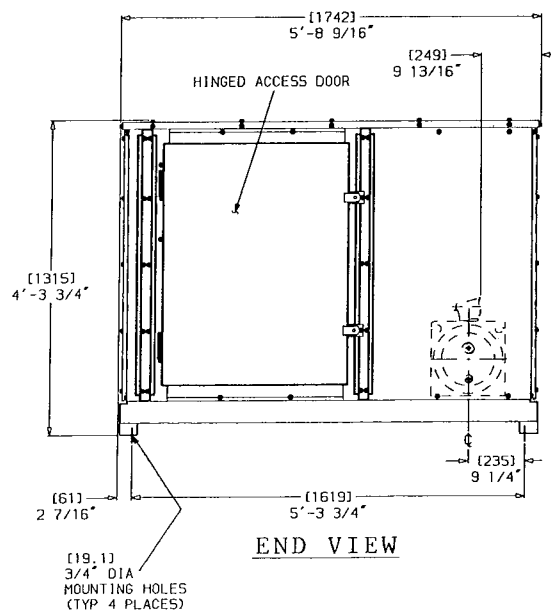
Base unit dimensions — 30GT015,020



Base unit dimensions — 30GT025,030



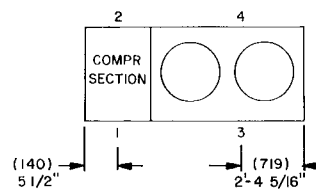
[2235] 7'-4"
MIN CLEARANCE FOR COOLER REMOVAL



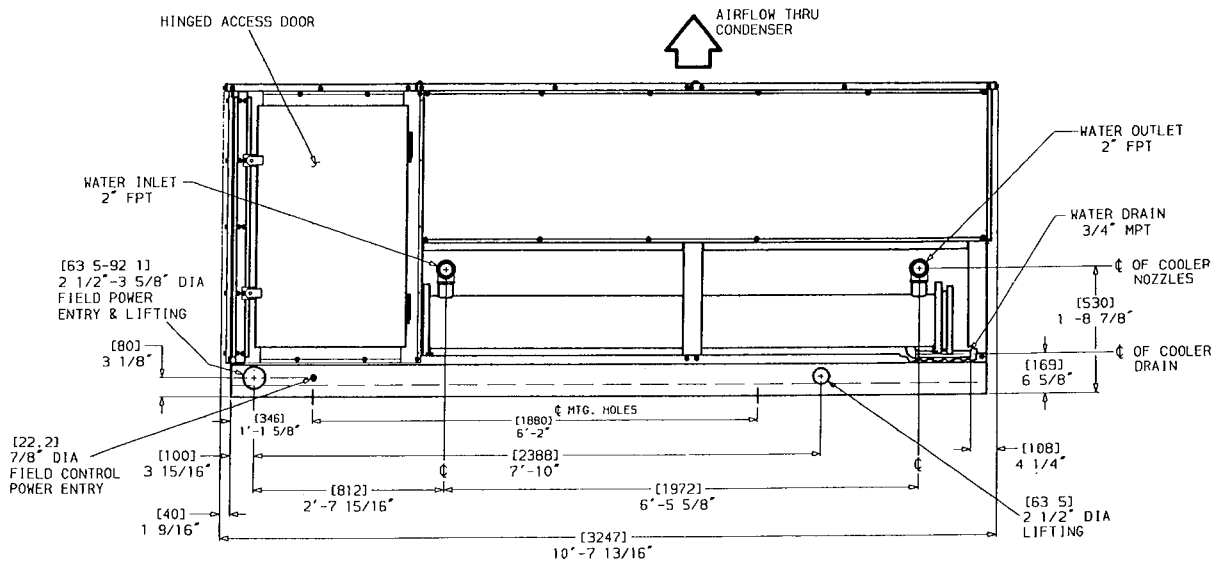
- NOTES:
- 1 THERE MUST BE (1220 mm) 4 FT FOR SERVICE AND FOR UNRESTRICTED AIRFLOW ON ALL SIDES OF UNIT
 - 2 THERE MUST BE MINIMUM (2440 mm) 8 FT CLEAR AIR SPACE ABOVE UNIT
 - 3 THE APPROXIMATE OPERATING WEIGHT OF THE UNIT IS:

60 HZ		
UNIT	WT LBS	WT KG
30GT025	2170	984
30GT025C	2324	1054
30GT030	2268	1029
30GT030C	2474	1122

NOTE: "C" INDICATES COPPER COIL

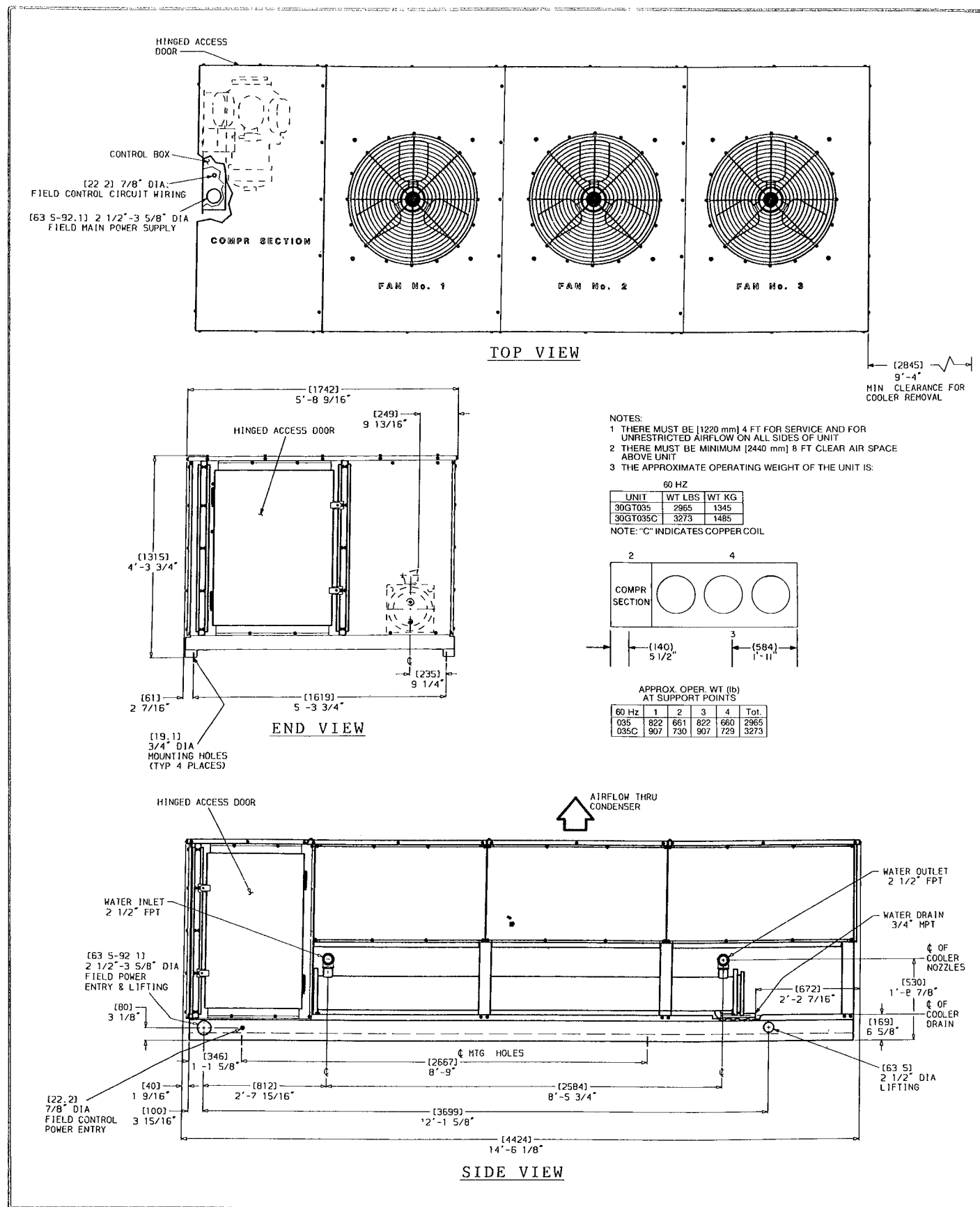


APPROX. OPER. WT (lb) AT SUPPORT POINTS					
60 HZ	1	2	3	4	Tot.
025	584	501	584	501	2170
025C	626	536	626	536	2324
030	611	523	611	523	2268
030C	666	571	666	571	2474



SIDE VIEW

Base unit dimensions — 30GT035



Selection procedure (with example) — English

I Determine job requirements.

Given:

Cooling Load 26 Tons
Leaving Chilled Water Temperature (LCWT) 44 F
Chilled Water Temperature Rise 10 F
Fouling Factor (Cooler) 0.00025
Condenser Entering Air Temperature 95 F

NOTE: For other than 10 F temperature rise, data corrections must be made; also, on some units a change of controls is necessary. Refer to Application Data for correction procedure and information on controls.

II Determine capacity, unit size, power input, and cooler flow and pressure drop.

Enter Performance Ratings table at 95 F condenser entering air temperature and 44 F LCWT. Under Cap. heading, 26.6 tons is nearest to and greater than given load (26 tons). Read directly from table:

Unit 30GT030
Capacity 26.8 tons
Power Input 30.5 kW
Cooler Flow 64.3 Gpm
Cooler Pressure Drop 8.2 ft water

Selection procedure (with example) — SI

I Determine job requirements.

Given:

Cooling Load ... 90 kW
Leaving Chilled Water Temperature (LCWT) ... 7 C
Chilled Water Temperature Rise 5.6 C
Fouling Factor (Cooler) 8.8×10^5
Condenser Entering Air Temperature 35 C

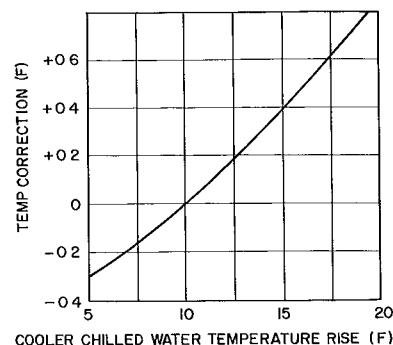
NOTE: For other than 5.6 C temperature rise, data corrections must be made; also, on some units, a change of controls is necessary. Refer to Application Data for correction procedure and information on controls.

II Determine capacity, unit size, power input, and cooler flow and pressure drop.

Enter Performance Ratings table at 35 C condenser entering air temperature and 7 C LCWT. Under Cap. heading, 96.1 kW is nearest to and greater than given load (90 kW). Read directly from table:

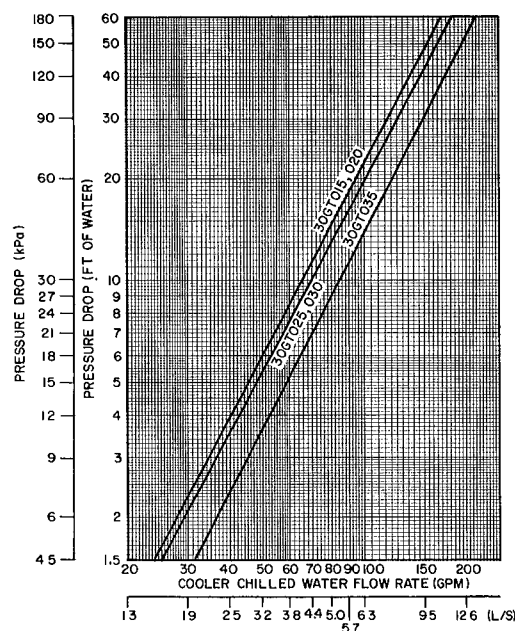
Unit 30GT030
Capacity 96.9 kW
Power Input 30.9 kW
Cooler Flow 4.2 L/s
Cooler Pressure Drop 24.4 kPa

CORRECTION FACTOR, OTHER LEAVING WATER TEMPERATURES — ENGLISH

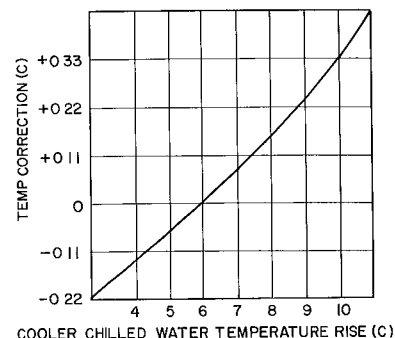


Above 10 F, ADD correction to design LCWT, below 10 F, SUBTRACT.

TOTAL COOLER PRESSURE DROP (With Nozzles) (English and SI)



CORRECTION FACTOR, OTHER LEAVING WATER TEMPERATURES — SI



Above 6 C (42.8 F), ADD correction to design LCWT, below 6 C, SUBTRACT

Performance data

COOLING CAPACITIES — 60 Hz (English)

LCWT	UNIT SIZE	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
40	015	13.8	13.0	33.1	13.1	14.0	31.3	12.3	15.1	29.5	11.5	16.0	27.6	10.8	17.0	25.8
	020	17.1	17.9	40.8	15.9	18.9	38.1	14.7	19.8	35.2	13.5	20.5	32.3	12.3	21.1	29.5
	025	23.8	24.3	57.0	22.3	25.8	53.4	20.8	27.1	49.8	19.3	28.3	46.3	17.9	29.4	42.9
	030	26.3	27.6	63.1	24.8	29.2	59.3	23.2	30.5	55.6	21.6	31.6	51.7	20.0	32.6	47.8
	035	34.2	36.6	81.9	32.3	38.6	77.3	30.4	40.5	72.9	28.6	42.2	68.4	26.7	43.7	63.9
42	015	14.4	13.2	34.4	13.6	14.3	32.5	12.8	15.4	30.7	12.0	16.4	28.8	11.2	17.4	26.9
	020	17.8	18.3	42.6	16.6	19.4	39.7	15.4	20.3	36.8	14.1	21.1	33.8	12.9	21.7	30.9
	025	24.7	24.9	59.3	23.2	26.4	55.6	21.7	27.8	52.0	20.2	29.0	48.3	18.7	30.2	44.8
	030	27.4	28.2	65.7	25.8	29.8	61.8	24.2	31.2	57.9	22.5	32.4	54.0	20.9	33.5	50.0
	035	35.5	37.3	85.1	33.6	39.4	80.4	31.7	41.4	75.8	29.7	43.1	71.2	27.8	44.8	66.6
44	015	14.9	13.5	35.7	14.1	14.6	33.8	13.3	15.7	31.9	12.5	16.8	30.0	11.7	17.8	28.0
	020	18.5	18.7	44.3	17.3	19.8	41.4	16.0	20.8	38.4	14.8	21.6	35.4	13.5	22.3	32.3
	025	25.8	25.4	61.7	24.1	27.0	57.9	22.6	28.4	54.2	21.0	29.7	50.5	19.5	31.0	46.7
	030	28.5	28.8	68.3	26.8	30.5	64.3	25.2	31.9	60.4	23.5	33.3	56.3	21.8	34.4	52.2
	035	36.9	38.0	88.4	34.9	40.2	83.7	32.9	42.3	78.9	30.9	44.1	74.1	28.9	45.9	69.3
46	015	15.5	13.7	37.1	14.7	14.9	35.2	13.8	16.0	33.1	13.0	17.1	31.2	12.1	18.2	29.1
	020	19.2	19.1	46.0	18.0	20.3	43.1	16.7	21.3	40.1	15.4	22.2	37.0	14.1	22.9	33.9
	025	26.7	25.9	64.2	25.1	27.6	60.3	23.5	29.1	56.4	21.9	30.4	52.6	20.3	31.7	48.8
	030	29.6	29.4	71.0	27.9	31.2	67.0	26.2	32.7	62.8	24.5	34.1	58.7	22.7	35.2	54.5
	035	38.3	38.8	91.8	36.2	41.1	86.9	34.2	43.2	81.9	32.1	45.2	77.1	30.1	46.9	72.2
48	015	16.1	14.0	38.5	15.2	15.2	36.5	14.4	16.4	34.5	13.5	17.5	32.4	12.6	18.6	30.3
	020	19.9	19.5	47.8	18.7	20.7	44.8	17.4	21.8	41.7	16.1	22.7	38.6	14.8	23.5	35.4
	025	27.8	26.5	66.7	26.1	28.2	62.7	24.5	29.7	58.7	22.8	31.2	54.7	21.2	32.5	50.9
	030	30.7	30.0	73.7	29.0	31.8	69.6	27.3	33.5	65.5	25.5	34.9	61.1	23.7	36.1	56.9
	035	39.7	39.5	95.3	37.6	41.9	90.2	35.5	44.1	85.2	33.4	46.1	80.1	31.3	48.0	75.0
50	015	16.6	14.2	40.0	15.8	15.1	37.9	14.9	16.7	35.8	14.0	17.9	33.7	13.1	19.0	31.5
	020	20.7	19.9	49.6	19.4	21.1	46.6	18.1	22.3	43.4	16.8	23.3	40.2	15.4	24.1	37.0
	025	28.8	27.0	69.2	27.1	28.8	65.1	25.4	30.4	61.0	23.8	31.9	57.0	22.1	33.3	53.0
	030	31.8	30.7	76.5	30.1	32.5	72.3	28.3	34.2	68.1	26.5	35.7	63.7	24.7	37.0	59.3
	035	41.2	40.3	98.8	39.0	42.7	93.7	36.9	45.1	88.5	34.7	47.2	83.2	32.5	49.1	78.0
55	015	18.2	14.9	43.7	17.3	16.3	41.5	16.3	17.6	39.2	15.4	18.8	37.0	14.4	20.0	34.7
	020	22.6	20.9	54.4	21.3	22.3	51.2	19.9	23.5	47.9	18.5	24.7	44.5	—	—	—
	025	31.6	28.5	75.9	29.8	30.3	71.5	27.9	32.1	67.1	26.1	33.8	62.8	—	—	—
	030	34.8	32.2	83.7	33.0	34.3	79.2	31.1	36.1	74.7	29.2	37.8	70.2	—	—	—
	035	44.9	42.2	108.0	42.6	44.9	102.5	40.3	47.4	96.9	38.0	49.7	91.3	35.6	51.9	85.7
60	015	18.9	15.2	45.5	17.8	16.5	42.9	16.7	17.8	40.3	15.7	19.0	37.7	14.6	20.1	35.1
	020	24.4	21.9	58.8	22.8	23.2	54.7	21.1	24.3	50.7	19.4	25.3	46.6	—	—	—
	025	32.9	29.1	79.0	30.7	30.9	73.8	28.6	32.5	68.7	26.5	34.0	63.7	—	—	—
	030	36.9	33.3	88.7	34.6	35.2	83.3	32.3	36.9	77.8	30.1	38.5	72.3	—	—	—
	035	48.8	44.2	117.5	46.0	46.8	110.5	43.1	49.2	103.7	40.3	51.4	96.9	—	—	—

Cap. — Total Capacity (Tons)
kW — Compressor Kilowatts

NOTE: Above ratings based on cooler water temperature drop of 10 F, 00025 fouling factor in cooler, and Refrigerant 22.

Ratings are in accordance with ARI Standard 590-86

Performance data (cont)

COOLING CAPACITIES — 60 Hz (SI)

LCWT	UNIT SIZE	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
4	015	48.1	13.0	2.1	45.7	14.0	2.0	43.3	14.9	1.9	40.8	15.8	1.8	38.4	16.6	1.7
	020	59.4	18.0	2.6	55.7	18.9	2.4	51.9	19.7	2.2	48.1	20.3	2.1	44.2	20.9	1.9
	025	82.9	24.4	3.6	78.1	25.7	3.4	73.3	26.9	3.2	68.6	28.0	3.0	64.0	29.0	2.8
	030	92.0	27.8	4.0	86.9	29.1	3.8	81.8	30.3	3.5	76.7	31.3	3.3	71.5	32.2	3.1
	035	119.5	36.7	5.2	113.4	38.5	4.9	107.4	40.2	4.7	101.4	41.7	4.4	95.4	43.2	4.1
5	015	49.8	13.3	2.2	47.3	14.3	2.1	44.8	15.2	1.9	42.3	16.1	1.8	39.8	17.0	1.7
	020	61.6	18.4	2.7	57.8	19.3	2.5	54.0	20.1	2.3	50.0	20.8	2.2	46.1	21.4	2.0
	025	86.0	24.9	3.7	81.0	26.2	3.5	76.2	27.5	3.3	71.3	28.6	3.1	66.6	29.7	2.9
	030	95.3	28.3	4.1	90.2	29.7	3.9	85.0	31.0	3.7	79.7	32.0	3.5	74.4	33.0	3.2
	035	123.7	37.4	5.4	117.5	39.3	5.1	111.3	41.0	4.8	105.1	42.6	4.6	99.0	44.1	4.3
6	015	51.5	13.5	2.2	49.0	14.5	2.1	46.4	15.5	2.0	43.9	16.4	1.9	41.3	17.3	1.8
	020	64.0	18.7	2.8	60.0	19.7	2.6	56.1	20.6	2.4	52.1	21.3	2.3	48.1	21.9	2.1
	025	89.1	25.4	3.9	84.1	26.8	3.6	79.0	28.1	3.4	74.1	29.3	3.2	69.2	30.3	3.0
	030	98.8	28.9	4.3	93.5	30.3	4.1	88.2	31.6	3.8	82.9	32.8	3.6	77.3	33.8	3.4
	035	128.0	38.1	5.6	121.7	40.0	5.3	115.3	41.8	5.0	109.0	43.5	4.7	102.6	45.1	4.5
7	015	53.4	13.7	2.3	50.7	14.8	2.2	48.1	15.8	2.1	45.5	16.8	2.0	42.8	17.7	1.9
	020	66.3	19.1	2.9	62.3	20.1	2.7	58.2	21.0	2.5	54.2	21.8	2.4	50.1	22.4	2.2
	025	92.3	25.9	4.0	87.1	27.3	3.8	82.0	28.7	3.6	76.9	29.9	3.3	71.8	31.0	3.1
	030	102.3	29.4	4.4	96.9	30.9	4.2	91.5	32.3	4.0	86.0	33.5	3.7	80.5	34.6	3.5
	035	132.4	38.8	5.8	125.9	40.8	5.5	119.4	42.7	5.2	112.9	44.4	4.9	106.4	46.0	4.6
8	015	55.2	14.0	2.4	52.5	15.1	2.3	49.8	16.1	2.2	47.1	17.1	2.0	44.4	18.0	1.9
	020	68.6	19.5	3.0	64.6	20.5	2.8	60.5	21.4	2.6	56.3	22.3	2.4	52.1	23.0	2.3
	025	95.5	26.4	4.2	90.3	27.9	3.9	85.0	29.3	3.7	79.8	30.5	3.5	74.7	31.7	3.2
	030	105.9	30.0	4.6	100.4	31.6	4.4	94.8	33.0	4.1	89.2	34.2	3.9	83.6	35.4	3.6
	035	137.0	39.5	6.0	130.3	41.6	5.7	123.6	43.5	5.4	116.9	45.3	5.1	110.2	47.0	4.8
9	015	57.0	14.2	2.5	54.3	15.3	2.4	51.5	16.4	2.2	48.7	17.4	2.1	45.9	18.4	2.0
	020	71.0	19.8	3.1	66.8	20.9	2.9	62.7	21.9	2.7	58.5	22.8	2.5	54.2	23.5	2.4
	025	98.8	26.9	4.3	93.4	28.4	4.1	88.1	29.9	3.8	82.7	31.2	3.6	77.5	32.4	3.4
	030	109.5	30.6	4.8	104.0	32.2	4.5	98.3	33.7	4.3	92.5	35.0	4.0	86.8	36.2	3.8
	035	141.6	40.2	6.2	134.7	42.3	5.9	127.9	44.3	5.6	121.0	46.2	5.3	114.2	48.0	5.0
10	015	58.9	14.4	2.6	56.1	15.6	2.4	53.3	16.7	2.3	50.5	17.7	2.2	47.5	18.7	2.1
	020	73.4	20.2	3.2	69.2	21.3	3.0	65.0	22.3	2.8	60.7	23.3	2.6	56.4	24.1	2.5
	025	102.3	27.4	4.5	96.7	29.0	4.2	91.2	30.5	4.0	85.8	31.9	3.7	80.3	33.1	3.5
	030	113.2	31.1	4.9	107.5	32.8	4.7	101.8	34.3	4.4	96.0	35.7	4.2	90.0	37.0	3.9
	035	146.3	40.9	6.4	139.4	43.1	6.1	132.2	45.2	5.8	125.2	47.1	5.4	118.2	49.0	5.1
13	015	64.8	15.2	2.8	61.8	16.4	2.7	58.8	17.6	2.6	55.7	18.8	2.4	52.3	19.8	2.3
	020	81.0	21.3	3.5	76.6	22.6	3.3	72.0	23.7	3.1	67.5	24.8	2.9	—	—	—
	025	112.9	29.0	4.9	107.0	30.7	4.7	101.0	32.3	4.4	94.2	33.7	4.1	—	—	—
	030	124.9	32.9	5.4	118.9	34.8	5.2	112.6	36.5	4.9	106.4	38.0	4.6	—	—	—
	035	161.1	43.1	7.0	153.6	45.5	6.7	146.0	47.8	6.4	138.4	50.0	6.0	130.8	52.0	5.7
16	015	66.2	15.3	2.9	62.7	16.5	2.7	59.3	17.7	2.6	55.9	18.8	2.4	52.5	19.8	2.3
	020	85.3	22.0	3.7	80.1	23.2	3.5	74.7	24.2	3.3	69.4	25.1	3.0	—	—	—
	025	114.9	29.3	5.0	108.0	30.9	4.7	101.2	32.3	4.4	94.6	33.7	4.1	—	—	—
	030	129.0	33.5	5.6	121.8	35.2	5.3	114.6	36.8	5.0	107.4	38.2	4.7	—	—	—
	035	170.8	44.4	7.4	161.7	46.8	7.0	152.6	49.0	6.7	143.6	51.0	6.3	134.7	52.8	5.9

Cap. — Total Capacity (Kilowatts)
kW — Compressor Kilowatts

NOTE Above ratings based on cooler water temperature drop of 5.6 C, .000044 fouling factor in cooler, and Refrigerant 22

Electrical data

MODEL 30GT		UNIT						COMPRESSOR FAN MOTORS†				CONTROL CIRCUIT	
		Volts 3 Ph - 60 Hz	Supplied*		MCA	MOCP (Fuse)	ICF	RLA	LRA	Qty	FLA (ea)	Volts 1 Ph - 60 Hz	Max Fuse Amps
			Min	Max									
015	500	208/230	187	254	76.9	125	269.6	55.8	266		3.6	115	7
	200	380	342	418	43.9	70	148.4	28.9	145		3.9	220	7
	600	460	414	508	35.7	60	121.8	25.7	120	2	1.8	115	7
	100	575	518	632	31.6	50	98.4	19.9	96		3.4	115	7
020	500	208/230	187	254	92.1	150	348.6	68	345		3.6	115	7
	200	380	342	418	51.1	80	194.4	34.6	191		3.9	220	7
	600	460	414	508	46.9	80	174.8	34.7	173	2	1.8	115	7
	100	575	518	632	42.9	70	122.4	28.9	120		3.4	115	7
025	500	208/230	187	254	124.6	200	452.2	89.8	446		6.2	115	7
	200	380	342	418	64.7	110	250.4	45.5	247		3.9	220	7
	600	460	414	508	60.7	100	226.1	43.6	223	2	3.1	115	7
	100	575	518	632	52.5	80	166.4	36.5	164		3.4	115	7
030	500	208/230	187	254	145.5	250	512.2	106	506		6.2	115	7
	200	380	342	418	73.5	125	283.4	52.6	280		3.9	220	7
	600	460	414	508	68.7	110	256.1	50	253	2	3.1	115	7
	100	575	518	632	54.9	90	178.4	38.5	176		3.4	115	7
035	500	208/230	187	254	203.0	350	702.4	147	690		6.2	115	7
	200	380	342	418	111.1	175	388.8	79.5	382		3.9	220	7
	600	460	414	508	91.0	150	351.2	65.4	345	3	3.1	115	7
	100	575	518	632	81.5	125	280.8	57.1	276		3.4	115	7

LEGEND

- FLA** — Full Load Amps
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)
LRA — Locked Rotor Amps
MCA — Minimum Circuit Amps (complies with National Electrical Code [NEC], Section 430-24)
MOCP — Maximum Overcurrent Protection
RLA — Rated Load Amps

*Units are suitable for use on electrical systems where voltage supplied to unit terminals is not below or above listed minimum and maximum limits

†All fans are protected by a single circuit breaker



General wiring notes

- The 115-1-60 control circuit power must be from a separate source, through a field-supplied fused disconnect rated at a maximum of 7 amps
- Crankcase and cooler heaters are wired in the control circuit so they are always operable as long as control power supply disconnect is on, even if any safety device is open or unit stop-start switch is off. Heaters are wired ahead of stop-start switch. They are protected by 7-amp fuse in control power supply disconnect.
- The control circuit field supply disconnect should never be open except when unit is being serviced or is to be down for a prolonged period in which case cooler should be drained. When operation is resumed, crankcase heater should be energized for 24 hours before start-up.*
- Power entry is at one end only.
- Maximum field wire sizes allowed by lugs on terminal block are:
350 MCM for models 30GT030, 035 (208/230-3-60)
2/0 AWG for all other models.
- Terminals for field power supply are suitable for copper, copper-clad aluminum or aluminum conductors. Insulation must be rated 167 F (75 C) minimum

Controls

Head pressure control

Factory-furnished fan cycling control — On all units, fan no. 2 is cycled by a fan cycling pressure switch that responds to variations in discharge pressure. Fan no. 3 on 30GT035 units is controlled by outdoor air temperature through an air temperature switch.

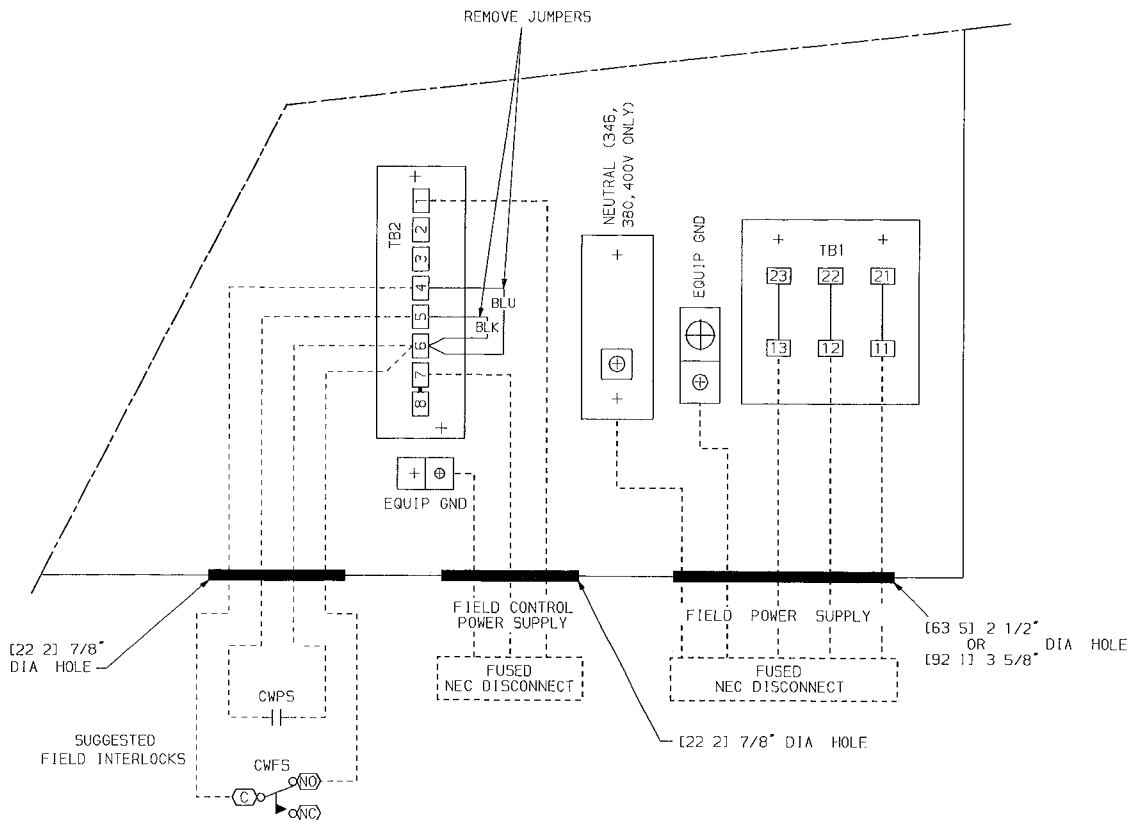
Motormaster® accessory package — Motormaster control is used in addition to fan cycling to permit operation of unit down to -20 F (-28.9 C) outdoor air temperature when properly applied. (Proper application requires unit observe minimum

flow rate, water loop volume and system load, as described in Application section.) Motormaster control varies the speed of the noncycling fan motor on all units.

Winter start control — On all units, an auxiliary switch in timer bypasses low-pressure switch for 2-1/2 minutes on start-up to avoid nuisance tripout in cold weather.

Capacity control system — Multiple-step controller responds to return chilled water temperature to cycle compressor and control compressor unloading and loading steps through factory-set 10 F (5.6 C) cooling range.

Typical wiring schematic



NOTES:

- 1 FACTORY WIRING IS IN ACCORDANCE WITH NATIONAL ELECTRICAL CODE (N.E.C., U.S.A.) ANY FIELD MODIFICATIONS OR ADDITIONS MUST BE IN COMPLIANCE WITH ALL APPLICABLE CODES
- 2 CONNECT SEPARATE SOURCE OF CONTROL POWER FROM FIELD SUPPLIED FUSED DISCONNECT TO TERMINALS 1 & 7 OF TB2 NEUTRAL SIDE MUST BE CONNECTED TO TERMINAL 7 THIS PROVIDES POWER FOR THE UNIT CONTROL CIRCUIT, COOLER HEATER AND COMPRESSOR CRANKCASE HEATER
- 3 ALL FIELD INTERLOCK CONTACTS MUST HAVE MINIMUM RATING OF 360 VA PILOT DUTY PLUS CAPACITY REQUIRED FOR FIELD INSTALLED EQUIPMENT REMOVE WIRE BETWEEN TERMINALS TB2-4 & 6 WHEN CHILLED WATER FLOW SWITCH IS FIELD-INSTALLED REMOVE WIRE BETWEEN TERMINAL TB2-5 & 6 WHEN INSTALLING CHILLED WATER PUMP STARTER AUXILIARY INTERLOCK CONTACTS

- 4 FOR INTERNAL UNIT WIRING REFERENCE
WIRING BOOK

- ## 5 VOLTAGE REQUIREMENTS.

MAIN POWER	CONTROL POWER
208/230-3-60	115-1-60
460-3-60	115-1-60
575-3-60	115-1-60
380-3-60	220-1-60

LEGEND:

CWFS - CHILLED WATER FLOW SWITCH	----- FIELD POWER WIRING
CWPS - CHILLED WATER PUMP STARTER	----- FIELD CONTROL WIRING
AUXILIARY CONTACT	----- FACTORY INSTALLED WIRING
TB - TERMINAL BLOCK	

CAPACITY CONTROL STEPS

UNIT 30GT	HERTZ	CONTROL STEPS	% CAP.	OPER CYL	TEMPERATURE, F (C)*	
					Cut-in	Cutout
020	60	1	—	2	—	—
		1	50	2	47 5 (8 6)	44± (6 7)
		2	100	4	53 5 (11 9)	50 (10 0)
015	60					
025	60	1	33	2	47 0 (8 3)	44± (6 7)
2		67	4	50 5 (10 3)	47 5 (8 6)	
3		100	6	54 0 (12 2)	51 (10 6)	
035	60					

†Uses hot gas bypass

‡Design set point

Solenoid operated cylinder bank unloader(s), energized by the multiple-step controller, varies compressor capacity by unloading and loading cylinders to match cooling load requirements

Hot gas bypass valve, standard on 30GT020 unit, is energized by multiple-step controller. Valve allows hot gas to pass directly into cooler circuit on final step of unloading. Hot gas bypass maintains constant suction pressure and permits unit to operate at lower loads with less compressor cycling. Valve starts to open when suction pressure drops to about 62 psig (427 kPa). If chilled water set point is lower or higher than 44 F (6.6 C), respectively decrease or increase the valve setting for proper operation.

Sequence of operation

At start-up, with the water temperature controller (WTC) calling for cooling and all safety devices satisfied, the control circuit switch is closed. With minimal demand for cooling, only the first WTC switch is made. The timer motor starts, the liquid line solenoid valve opens, and condenser fan no. 1 starts. Fans no. 2 and 3 start if high side pressure is higher than 260 psig (1793 kPa). After a delay by Time Guard® of 12 seconds (or longer, depending on the timer position), the compressor starts, unloaded. As cooling demand increases, unit capacity increases as follows:

Units with two-step controller — The second WTC switch makes the compressor loads and the unit is operating at full capacity.

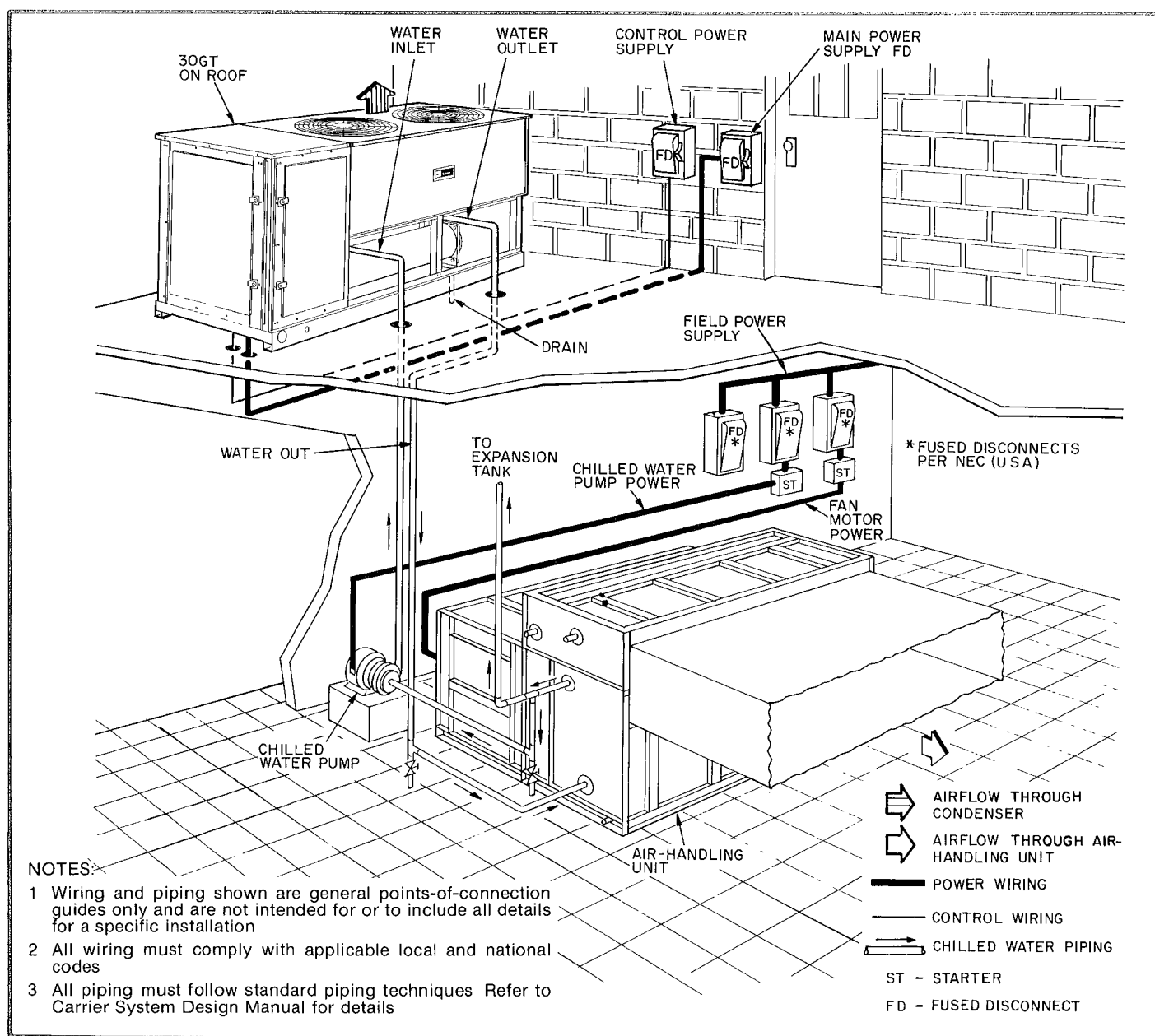
Units with three-step controller — The second WTC switch makes: one compressor unloader is de-energized increasing the capacity.

The third WTC switch makes: the second compressor unloader is de-energized increasing the unit to full capacity.

All units — A pumpout relay (POR) in the control circuit is energized when WTC no. 1 switch makes. A set of normally open POR contacts closes, completing a compressor control circuit which bypasses the WTC switches.

As cooling demand is satisfied, WTC switches break in descending sequence. The LLS valve closes, stopping the flow of liquid refrigerant to the cooler and subsequent suction gas to the compressor. After the last WTC switch breaks, the compressor continues to run because of the WTC switch bypass. With no refrigerant returning to the compressor, low side pumpout takes place and the compressor shuts down on low-pressure control. The compressor does not restart until the WTC again calls for cooling.

Typical piping and wiring



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 30GT 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 temperature

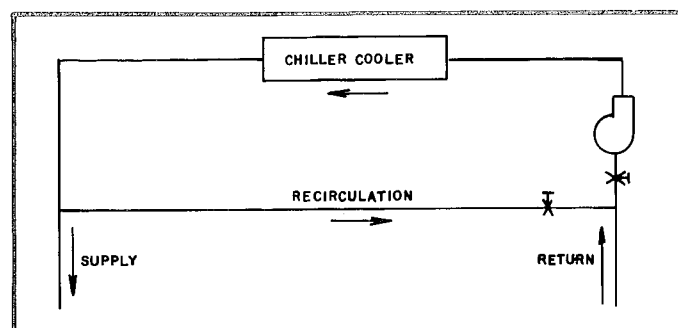
1. Maximum leaving chilled water temperature (LCWT) for Model 30GT is 60 F (16 C). Unit can start and pull down with up to 95 F (35 C) entering water temperature due to MOP (maximum operating pressure) feature of the expansion valve. For sustained operation, it is recommended that entering water temperature not exceed 85 F (29.4 C).
2. Minimum LCWT for standard Model 30GT is 40 F (4.5 C).
3. Special order medium temperature brine units must be ordered for operation with leaving water temperatures in the range of 39.9 F (4.4 C) to 15 F (-9 C). For ratings below 40 F (4.5 C) LCWT, contact your local Carrier representative.

Cooler flow range

Ratings and performance data in this publication are for a cooling range of 10 F (5.6 C). 30GT chillers with electromechanical control may be operated at a 8-12 F (4.4 to 6.6 C) temperature range provided flow limits are not exceeded. For minimum flow rates, see flow rate table. If outside this range, a change of controls is required.

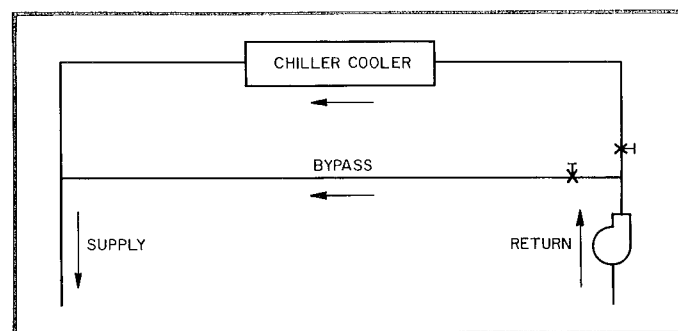
Minimum cooler flow (maximum cooler temperature range) for standard units is shown in Minimum Cooler Flow Rate table. When gpm (L/s) required is lower (or range higher), follow recommendations below:

- a. Multiple smaller chillers may be applied in series, each providing a portion of the design temperature range.
- b. Cooler water may be recirculated to raise flow rate. However, mixed temperature entering cooler must be maintained above 36 F (2.2 C) to avoid shutdown by low water temperature safety thermostat.
- c. Special cooler baffling is required to allow minimum flow rate to be reduced 12%



Maximum cooler flow (>5 gpm/ton or <5 F range [>0.09 L/s • kW or <2.7 C range]) results in practical maximum pressure drop through cooler.

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



MINIMUM/MAXIMUM COOLER FLOW RATES AND MINIMUM LOOP VOLUME

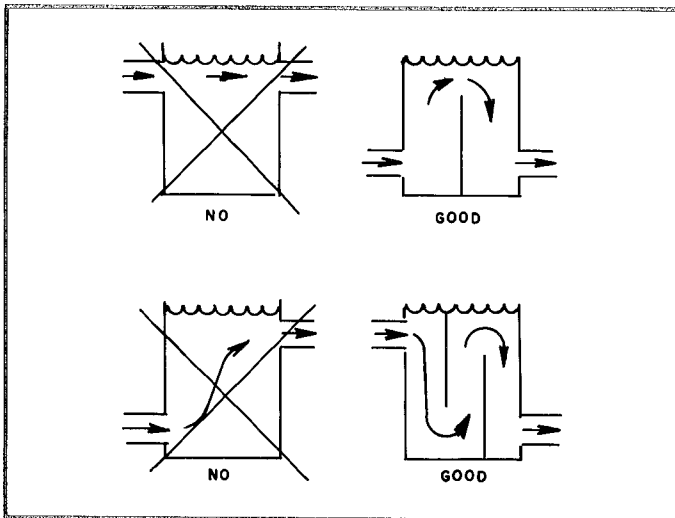
UNIT 30GT	MIN FLOW		MAX FLOW		MIN LOOP VOLUME	
	Gpm	L/s	Gpm	L/s	G	L
015	25	2	294	19	45	171
020	25	2	294	19	60	228
025	30	2	356	22	75	285
030	30	2	356	22	90	342
035	34	2	406	26	105	399

NOTES

- Minimum flow based on 1.5 fps (0.46 m/s) velocity in cooler without special cooler baffling
- 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	6.5
Low Ambient Unit Operation	6	6.5

Water loop volume — Quantity of water should range from 3 to 6 gallons per nominal ton of cooling (3.25 to 6.5 liters per kW) for temperature stability and accuracy in normal air conditioning applications. (For example, a 30GT025 would require 75 gallons (285 liters) in circulation in system loop — see table.) For process jobs where accuracy is vital there should be from 6 to 10 gallons per ton (6.5 to 10.8 liters 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 thoroughly mixed with liquid in the tank. Refer to ASHRAE guides or similar publication for information on storage tank design.



Cooler fouling factor used to calculate tabulated ratings was 0.00025 ft² • hr • °F/Btu (0.000044 m² • K/W). As fouling factor is increased, both unit capacity and compressor power decrease. Standard ratings should be corrected using following multipliers:

FOULING FACTOR		CAPACITY MULTIPLIER	COMPRESSOR POWER MULTIPLIER
English (ft ² • hr • °F/Btu)	SI (m ² • K/W)		
0.00025	0.000044	1.00	1.00
0.00075	0.000132	0.97	0.98
0.00175	0.000308	0.91	0.91

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

ALTITUDE		CAPACITY MULTIPLIER	COMPRESSOR POWER MULTIPLIER
English (ft)	SI (m)		
0	0	1.00	1.00
2,000	610	0.99	1.01
4,000	1220	0.98	1.02
6,000	1830	0.97	1.03
8,000	2440	0.96	1.04
10,000	3050	0.95	1.05

Condenser airflow restrictions 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 shown below:

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

Draining the cooler and outdoor piping is recommended if system is not to be used during freezing weather conditions.

In areas that experience subfreezing weather conditions, ethylene glycol (or other suitable brine) should be added to the system to protect cooler against loss of power.

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

Low ambient operation

Standard 30GT chillers start and operate at 35 F (2 C) and above at loads above 1/2 of the minimum chiller capacity step.

- It is recommended that field-installed chilled water piping be protected against freeze-up at lower ambient temperatures, by wrapping with field-supplied heating cable and covering with 2-in. (50-mm) thick closed-cell insulation.
- Motormaster® head pressure control and its associated components must be added for operation below 32 F (0° C). (Wind baffles and special winter start controls are not normally needed.)
- Antifreeze solution must be added to water loop in an amount sufficient to protect loop down to 15 F (8 C) below lowest expected ambient temperature.
- Provide sufficient volume in the chilled-water loop: at least 6 gallons per ton of refrigeration (6.5 liters per kilowatt), provided there is a moderate system load.

⚠ WARNING

Operation at low ambient is not recommended if minimum load on chiller is below minimum step of unloading.

Consult your local Carrier representative for complete details.

Cooler protection in form of ethylene glycol (or other suitable brine) is recommended when operating in areas which experience temperatures below 32 F (0°C) to protect cooler should there be a loss of cooler heater power. Even though unit cooler is protected with insulation and an electric heater that protects the cooler down to 10 F (-12 C), it does not protect water 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 section below for low-ambient operation

High-ambient temperature — Standard chillers can operate to 125 F (52 C) ambient temperature.

Ethylene glycol

Ethylene glycol may be added to the chilled water to protect system as shown in following curve. Unit performance data must be corrected as indicated. Examples follow:

Example — English

I Determine concentration of ethylene glycol required to protect system to -10 F (at zero flow).

Given:

Unit .. 30GT030
 Condenser Entering Air Temperature .. 95 F
 Leaving Chilled Water Temperature .. 44 F
 Chilled Water Temperature Rise .. 10 F
 Chilled Water Flow .. 64.3 Gpm
 Cooler Pressure Drop .. 8.2 ft water
 Capacity .. 26.8 tons
 Power Input .. 30.5 kW

From curve, read 40% concentration at -10 F solution crystallization point.

II Correct unit capacity.

From curve, read 0.95 capacity correction at 40% concentration

$$\begin{aligned}\text{Corrected Capacity} &= 0.95 \times \text{Given Capacity} \\ &= 0.95 \times 26.8 = 25.5 \text{ tons}\end{aligned}$$

III Correct chilled water flow.

From curve, read 1.15 Gpm correction at 40% concentration.

Chilled Water Flow (at corrected capacity)

$$= \frac{\text{Tons} \times 24}{\text{Rise } ^\circ\text{F}} = \frac{25.5 \times 24}{10} = 61.2 \text{ Gpm}$$

Chilled Water Flow (40% solution)

$$\begin{aligned}&= \frac{\text{Water}}{\text{Flow}} = 1.15 = 61.2 \times 1.15 \\ &= 70.4 \text{ Gpm}\end{aligned}$$

IV Correct cooler pressure drop.

From curve, read 1.33 cooler pressure drop correction at 40% concentration.

From Cooler Pressure Drop curve, pressure drop for 70.4 Gpm of water is 10.0 ft water. Pressure drop for 40% solution = $1.33 \times \text{pressure drop for water} = 1.33 \times 10.0 = 13.3 \text{ ft water}$.

V Correct compressor power input.

On Power Correction curve, read 0.97 correction factor at 40% concentration

$$\begin{aligned}\text{Corrected power input} &= 0.97 \times 30.5 \\ &= 29.6 \text{ kW}\end{aligned}$$

Example — SI

I Determine concentration of ethylene glycol required to protect system to -23 C (at zero flow).

Given:

Unit .. 30GT030
 Condenser Entering Air Temperature .. 35 C
 Leaving Chilled Water Temperature .. 7 C
 Chilled Water Temperature Rise .. 5.6 C
 Chilled Water Flow .. 4.2 L/s
 Cooler Pressure Drop .. 24.4 kPa
 Capacity .. 96.9 kW
 Power Input .. 30.9 kW

From curve, read 40% concentration at -23 C solution crystallization point

II Correct unit capacity.

From curve, read 0.95 capacity correction at 40% concentration.

$$\begin{aligned}\text{Corrected Capacity} &= 0.95 \times \text{Given Capacity} \\ &= 0.95 \times 96.9 = 92.1 \text{ kW}\end{aligned}$$

III Correct chilled water flow.

From curve, read 1.15 Gpm correction at 40% concentration

Chilled Water Flow (at corrected capacity)

$$= \frac{\text{Capacity (kW)}}{4.2 \times \text{Rise } ^\circ\text{C}} = \frac{92.1}{4.2 \times 5.6} = 3.92 \text{ L/s}$$

Chilled Water Flow (40% solution)

$$\begin{aligned}&= \frac{\text{Water}}{\text{Flow}} \times 1.15 = 3.92 \times 1.15 \\ &= 4.51 \text{ L/s}\end{aligned}$$

IV Correct cooler pressure drop.

From curve, read 1.33 cooler pressure drop correction at 40% concentration.

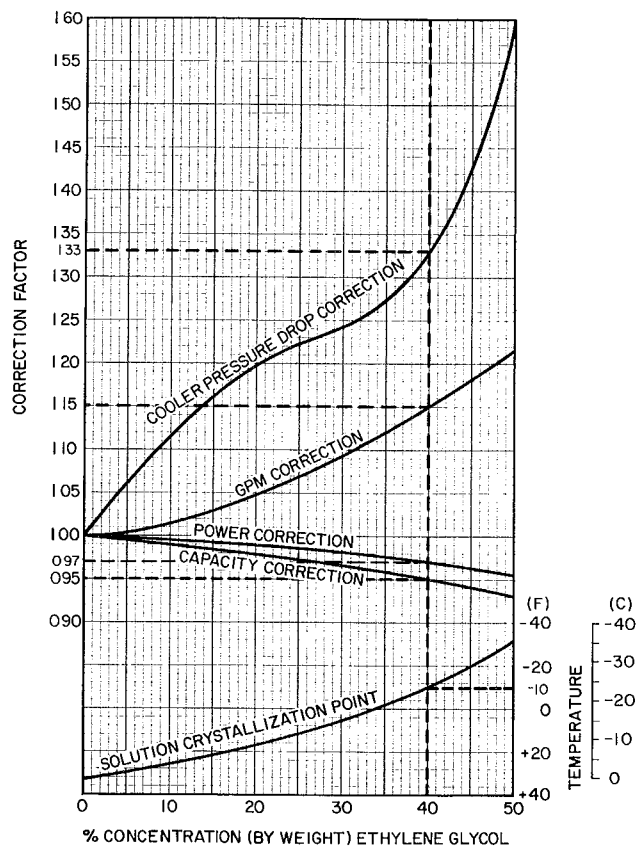
From Cooler Pressure Drop curve, pressure drop for 4.51 L/s of water is 30 kPa. Pressure drop for 40% solution = $1.33 \times \text{pressure drop for water} = 1.33 \times 34.5 = 45.9 \text{ kPa}$

V Correct compressor power input.

On Power Correction curve, read 0.97 correction factor at 40% concentration.

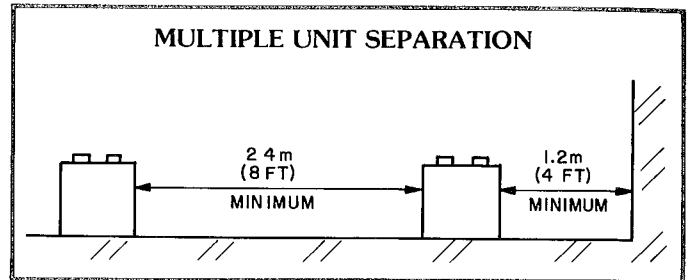
$$\begin{aligned}\text{Corrected power input} &= 0.97 \times 30.9 \\ &= 30.0 \text{ kW}\end{aligned}$$

ETHYLENE GLYCOL PERFORMANCE CORRECTION FACTORS AND SOLUTION CRYSTALLIZATION POINTS



Multiple chillers

Where chiller capacities greater than 30 tons (106 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 water flows. Where a large temperature drop (>25 F [13.9 C]) is desired, chillers may be installed in *series*. Water temperature sensors need not be removed for multiple chiller operation. An 8-ft (2.4-m) separation is required between units for airflow, and a 4-ft (1.2-m) distance is required from units to obstructions. See figure. See dimensional drawings for service clearances.



Oversizing chillers

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

It is also recommended that the installation of 2 smaller chillers be considered where operation at minimum load is critical. The operation of 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 to allow oversizing of chillers. Hot gas bypass should be given consideration where substantial operating time is anticipated below the minimum unloading step.

Guide specifications

Reciprocating Air-Cooled Liquid Chiller

HVAC Guide Specifications — Section 15703

Size Range: **15 to 35 tons, Nominal**

Carrier Model Number: **30GT**

Part 1 — General

1.01 SYSTEM DESCRIPTION

- A Electrically controlled air-cooled liquid chiller utilizing reciprocating compressor and thermal expansion valves.

1.02 QUALITY ASSURANCE

- A Unit shall be rated in accordance with ARI Standard 590, latest edition
- B. Unit construction shall comply with ANSI/ASHRAE 15-1978 Safety Code, NEC (National Electric Code, U.S.A.) and ASME applicable codes
- C Unit cabinet shall be capable of withstanding Federal Test Method Standard No. 141 (method 6061) 500 hour salt spray test
- D. Cooler shall be tested and stamped in accordance with ASME Code for a refrigerant working side pressure of 235 psig (1620 kPa) and a minimum water side pressure of 150 psig (1034 kPa)
- E Air cooled condenser coils shall be leak tested at 150 psig (1034 kPa) and pressure tested at 480 psig (3309 kPa).

1.03 DELIVERY, STORAGE AND HANDLING

- A Unit shall be shipped as a single package only
- B. Unit shall be stored and handled per unit manufacturer's recommendations

Part 2 — Products

2.01 EQUIPMENT

A. General:

Factory-assembled, single-piece, air-cooled liquid chiller. Contained within the cabinet shall be all factory wiring, piping, controls, refrigerant charge (R-22) and special features required prior to field start-up

B. Unit Cabinet:

Galvanized steel casing, zinc phosphatized, with an electrostatically applied baked enamel finish.

C. Fans:

Condenser fans shall be direct-driven propeller type discharging air vertically upward

- 1. Equipped with permanently lubricated bearings
- 2. Equipped with PVC coated steel wire safety guards.
- 3. Shafts shall have inherent corrosion resistance.
- 4. Statically and dynamically balanced.

D. Compressor:

- 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 rps)
- 5. Compressor shall unload using suction cutoff unloading.

E. Cooler:

- 1 Shell-and-tube type with removable heads
- 2. Tubes shall be seamless copper type rolled into tube sheets.
- 3. Equipped with threaded type water connections
- 4. Shell shall be insulated with 3/4-in. (17 mm) closed cell PVC foam of maximum K factor 0.28
- 5 Equipped with electric heater along the shell under the insulation to protect against cooler freeze-up

F Condenser:

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.

G Refrigeration Components:

Refrigeration circuit components shall include hot gas muffler, high side pressure relief device, liquid line shutoff valve, suction and discharge shutoff valves, filter drier, moisture indicating sight glass, thermal type expansion valve, complete operating charge of refrigerant R-22 and compressor oil.

H Controls and Safeties:

1 Controls:

- a. Unit controls shall include the following minimum components
 - 1) Power and control circuit terminal blocks.
 - 2) Stop-start control switch.
 - 3) Chilled water temperature controller
 - 4) Head pressure controller.
 - 5) Single-pumpout controller
- b Capable of performing the following functions:
 - 1) Pumpout at end of every circuit cycle.
 - 2) Capacity control based on return chilled water temperature

2. Safeties:

- a. Unit shall be equipped with necessary components in conjunction with the control system to provide the unit with the following protections:
 - 1) Loss of refrigerant charge protection.
 - 2) Low water flow protection
 - 3) Low chilled water temperature protection.
- b. Compressor shall be equipped with the following manual reset type protections:
 - 1) Thermal overload
 - 2) Pressure overload.
 - 3) Electrical overload through the use of definite-purpose contactors and calibrated, ambient compensated, magnetic trip circuit breakers. Circuit breakers shall open all three phases in the event of an overload in any one phase, or single phasing condition.
- c. Fan motors shall have inherent overcurrent protection

I. Operating Characteristics:

- 1 Unit shall be capable of starting and running fully loaded at outdoor ambient temperatures up to 115 F (46.1 C) per maximum load criteria of ARI standard 590.
- 2. Unit shall be capable of starting up with 95 F (35 C) entering water temperature to the cooler.

Guide specifications (cont)

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

K. Electrical Requirements:

1. Unit primary electrical power supply shall be connected to a single point.
2. Unit shall operate on 3-phase, 60-cycle power at the voltage shown in the equipment schedule.

L. Special Features:

Certain standard features are not applicable when features designated by * are specified.

*

1. Low Ambient Operation:

Unit shall be capable of starting and running at outdoor ambient temperatures down to -20 F (-28.9 C) with the addition of brine in the cooler circuit and Motormaster

2. Pressure Gages:

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

*

3. Condenser:

Coil shall be air cooled with integral subcooler constructed of copper fins mechanically bonded to seamless copper tubes which are then cleaned, dehydrated and sealed.

