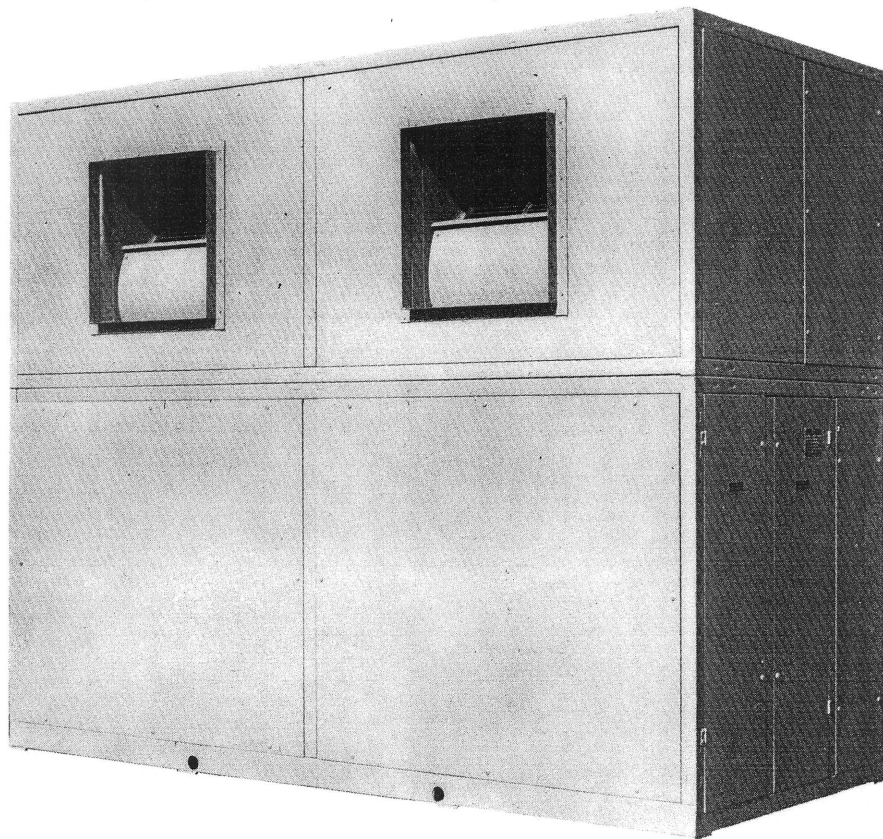


INDOOR AIR-COOLED WATER CHILLERS

SERIES CACG



Selection Data

GENERAL NOTES

1. The ratings are based on chillers with standard components. For particular conditions, certain non-standard component combinations are possible. Contact your local Trane Sales Office for assistance in selection.
2. The capacity ratings are applicable for a temperature drop within the range 4 to 8°C except as limited by the maximum or minimum water flow rates as indicated by the evaporator hydraulic resistance chart (Chart 1).
3. Ratings are based on fouling factor of 0.035 m²K/kW in the evaporator (commercially clean tubes).
The correction factors for a fouling factor of 0.088 m²K/kW are :

Cooling capacity : 0.98 (multiply capacities in Table 1 by 0.98)

Compressor power input : 0.99 (multiply capacities in Table 1 by 0.99)

Fouling factor equivalents in the imperial system are :

0.035 m²K/kW = 0.0002 ft²°Fh/BTU

0.088 m²K/kW = 0.0005 ft²°Fh/BTU

4. Compressor kW input figures do not include condenser fan motor power input. Refer to Table 2.
5. Air side pressure drops for the flat filter box are based on clean filters. For selection of the fan motor, 75 Pa should be added, to take into account the increased pressure drop of dirty filters.

SELECTION EXAMPLE

Given

Cooling load	105 kW
Leaving chilled water temperature	6°C
Entering chilled water temperature	12°C
Condenser coil entering air temperature	30°C
External air side pressure drop	350 Pa

Selection : Most suitable unit : CACG 105 R (Table 1)

EXACT CAPACITY AT DESIGN CONDITIONS AND NOMINAL AIR FLOW :

Cooling capacity (Table 1)	104.1 kW
Compressor input (Table 1)	34.5 kW
Nominal air flow (Table 2)	7.83 m ³ /s

TOTAL FAN STATIC PRESSURE REQUIRED

Condenser coil pressure drop (Chart 2)	280 Pa
Face and bypass damper (if used) (Chart 2)	35 Pa
Flat filter box (if used) (Chart 2)	130 + 75 = 205 Pa
External pressure	150 Pa
Total static pressure	670 Pa

FAN SPEED AND FAN kW CONSUMPTION (TABLE 2)

Fan speed	18.3 rev/sec
Fan shaft power	10.8 kW

To determine fan motor size multiply fan shaft power by 1.15 and select next larger motor size available.

Fan motor size required 10.8 × 1.15 = 12.4 kW

Select 15 kW fan motor

EVAPORATOR WATER FLOW AND PRESSURE DROP (CHART 1)

Water flow =	$\frac{104.1}{(12 - 6) \times 4.19} = 4.14$ l/s
Water side pressure drop	31.5 kPa

TABLE 1 — COOLING CAPACITIES AND COMPRESSOR kW INPUT

MODEL	LEAVING CHILLED WATER TEMP. (°C)	CONDENSING COIL ENTERING AIR TEMPERATURE (°C)							
		25		30		32		35	
		COOLING CAPACITY kW	COMP. kW (1)	COOLING CAPACITY kW	COMP. kW (1)	COOLING CAPACITY kW	COMP. kW (1)	COOLING CAPACITY kW	COMP. kW (1)
CACG 102 M	4	55.7	16.3	52.9	17.1	51.8	17.5	50.0	18.0
	6	58.9	16.7	56.1	17.6	54.9	18.0	53.1	18.6
	7	60.6	17.0	57.7	17.9	56.5	18.3	54.7	18.8
	8	62.3	17.2	59.3	18.1	58.1	18.5	56.2	19.1
	10	65.7	17.7	62.6	18.7	61.3	19.1	59.4	19.7
CACG 103 M	4	67.6	19.5	63.9	20.7	62.4	21.2	60.2	21.8
	6	71.5	20.0	67.7	21.3	66.2	21.8	63.9	22.5
	7	73.5	20.3	69.6	21.6	68.1	22.1	65.7	22.8
	8	75.5	20.6	71.6	21.9	70.0	22.4	67.6	23.2
	10	79.6	21.1	75.5	22.5	73.8	23.1	71.3	23.9
CACG 104 M	4	82.1	24.4	77.7	25.8	75.9	26.3	73.2	27.1
	6	86.8	25.1	82.2	26.5	80.3	27.1	77.5	27.9
	7	89.2	25.4	84.4	26.9	82.5	27.5	79.6	28.3
	8	91.5	25.7	86.7	27.3	84.8	27.9	81.8	28.8
	10	96.3	26.4	91.3	28.0	89.3	28.6	86.2	29.6
CACG 105 R	4	103.5	31.6	98.0	33.3	95.8	34.0	92.5	35.0
	6	109.7	32.6	104.1	34.5	101.8	35.2	98.3	36.3
	7	113.0	33.1	107.2	35.0	104.8	35.8	101.2	36.9
	8	116.2	33.6	110.3	35.6	107.9	36.4	104.3	37.5
	10	122.9	34.7	116.8	36.8	114.3	37.6	110.5	38.8
CACG 106 R	4	133.9	38.5	127.0	40.5	124.2	41.2	120.0	42.3
	6	141.8	39.5	134.7	41.7	131.8	42.5	127.4	43.7
	7	145.9	40.1	138.6	42.3	135.7	43.1	131.1	44.3
	8	150.0	40.6	142.6	42.9	139.5	43.7	134.9	45.0
	10	158.3	41.7	150.6	44.1	147.4	45.0	142.5	46.4
CACG 107 R	4	161.9	47.3	154.1	49.9	150.9	50.9	146.1	52.4
	6	170.7	48.5	162.6	51.3	159.3	52.4	154.3	54.0
	7	175.2	49.2	167.0	52.0	163.6	53.2	158.5	54.8
	8	179.7	49.8	171.3	52.7	167.9	53.9	162.6	56.6
	10	188.9	51.0	180.1	54.1	176.5	55.4	171.1	57.2
CACG 108 E	4	185.1	55.0	175.1	57.9	171.1	59.0	165.0	60.7
	6	196.3	56.8	185.8	59.8	181.6	61.0	175.2	62.9
	7	201.8	57.6	191.2	60.8	186.9	62.1	180.3	64.0
	8	207.4	58.5	196.7	61.8	192.2	63.1	185.5	65.1
	10	218.8	60.2	207.6	63.7	203.0	65.2	196.0	67.5

(1) Compressor kW input at full load

(2) Ratings based on a chilled water temperature drop from 4 to 8°C.

TABLE 2 — CONDENSER FAN DATA

MODEL CACG	NOMINAL AIR FLOW m ³ /s (m ³ /h)	COIL FACE VELOCITY m/s	TOTAL STATIC PRESSURE Pa (mm WG)									
			400 (40.8)		500 (51.0)		600 (61.2)		700 (71.4)		800 (81.6)	
			Rpm (rev/s) (1)	kW (2)	Rpm (rev/s) (1)	kW (2)	Rpm (rev/s) (1)	kW (2)	Rpm (rev/s) (1)	kW (2)	Rpm (rev/s) (1)	kW (2)
102 M/103 M	5.42 (19500)	3.47	1169 (19.5)	5.8	1244 (20.7)	6.4	1318 (22.0)	7.0	1400 (23.3)	7.8	1474 (24.6)	8.5
104 M	6.69 (24100)	3.52	1041 (17.4)	7.3	1111 (18.5)	8.3	1178 (19.6)	9.1	1240 (20.7)	9.8	1314 (21.9)	10.6
105 R	7.83 (28200)	3.51	926 (15.4)	8.3	1000 (16.7)	9.4	1055 (17.6)	10.1	1118 (18.6)	11.0	1177 (19.6)	11.9
106 R	9.78 (35200)	3.44	982 (16.4)	13.3	1039 (17.3)	14.5	1091 (18.2)	15.6	1144 (19.1)	16.8	1192 (19.9)	18.1
107 R	11.33 (40800)	3.29	1074 (17.9)	18.7	1120 (18.7)	20.1	1164 (19.4)	21.3	1215 (20.3)	22.6	1262 (21.0)	23.8
108 E	11.90 (42840)	3.27	1108 (18.5)	21.2	1152 (19.2)	22.4	1200 (20.0)	23.9	1243 (20.7)	25.3	1289 (21.5)	26.9

- (1) Fan speed.
- (2) Fan shaft kW. To select fan motor size, multiply fan shaft kW by 1.15 and select next larger motor available.
- (3) To obtain available external static pressure, deduct air side pressure drop of condenser coil and accessories (face and by-pass damper, filter section).

TABLE 3 — GENERAL DATA

MODEL	CACG	102 M	103 M	104 M	105 R	106 R	107 R	108 E
Compressor model		CRHM 200	CRHM 250	CRHM 300	CRHR 400	CRHR 500	CRHR 600	L2E6
Nbr of cylinders		4	6	6	4	6	6	6
Capacity control (1)	(%)	100-50	100-67	100-67	100-50	100-67-(33)	100-67-(33)	100-67-50-33
Evaporator model	EVP	282	283	284	285	286	287	288
Water storage cap.	(litres)	30	39	59	52	103	103	88
Heater cable	(W)	170	170	170	170	170	170	215
R 22 operating charge	(kg)	24	25	29	35	45	55	58
Operating weight	(kg)	1200	1250	1450	1700	2250	2350	2500

(1) () = Optional capacity step.

TABLE 4 — ELECTRICAL DATA

MODEL	CACG	102 M	103 M	104 M	105 R	106 R	107 R	108 E
Compressor Motor, Part Winding Start, 415/3/50								
Full load amps	(1)	35	47	51	73	88	110	104
Starting amps		110	130	160	180	230	280	320
Fan Motor, Star-Delta-Start, 415/3/50								
Nominal size (2)	kW	7.5	7.5	9.0	11.0	15.0	30.0	30.0
Full load amps		16.1	16.1	18.7	23.0	30.5	57.0	57.0

- (1) At 4°C saturated suction, 62.5°C saturated condensing temperature.
- (2) Other motor sizes on request.

CHART 1 — WATER PRESSURE DROP (EVAPORATOR AND INTERNAL PIPING)

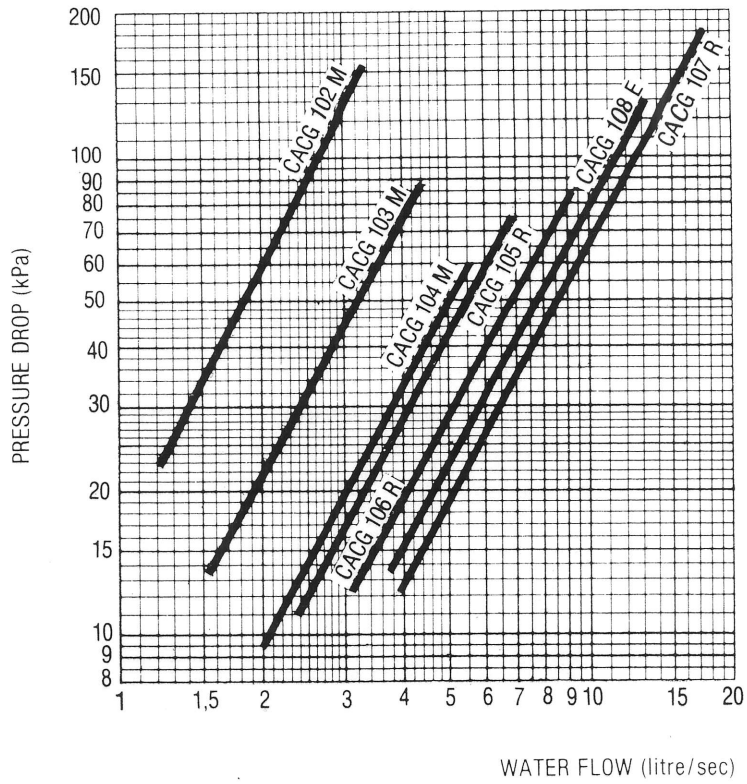
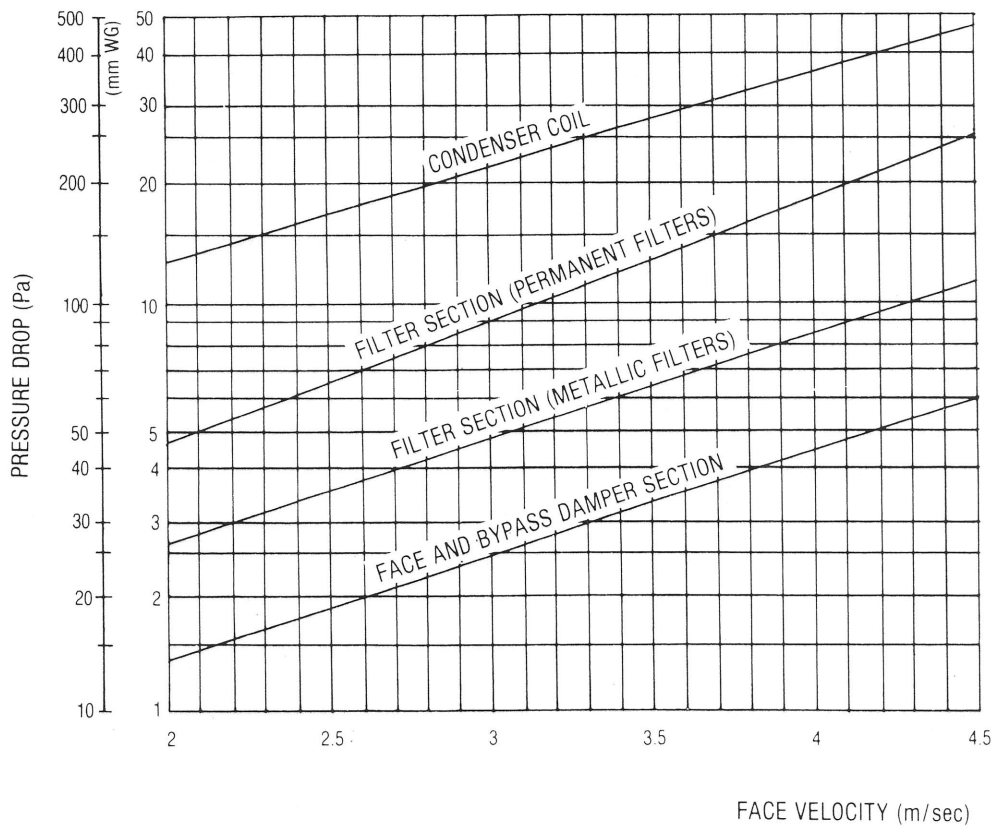
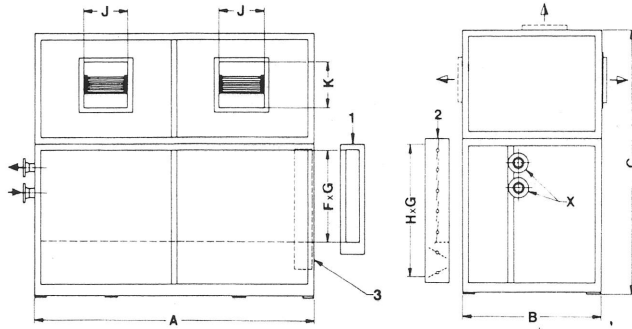


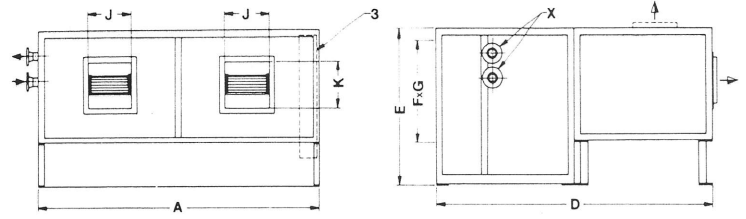
CHART 2 — AIR SIDE PRESSURE DROP



VERTICAL ARRANGEMENT



HORIZONTAL ARRANGEMENT



1. FLAT FILTER BOX
2. FACE AND BYPASS DAMPER SECTION
3. STARTER PANEL

TABLE 5 — DIMENSIONS

MODEL	VERTICAL ARRANGEMENT			HORIZONTAL ARRANGEMENT			AIR INTAKE			AIR EXHAUST		CHILLED WATER
	LENGTH	DEPTH	HEIGHT	LENGTH	DEPTH	HEIGHT	F	G	H	J	K	X
	A	B	C	A	D	E						
CACG 102 M	2310	1200	2030	2310	2400	1190	740	2210	960	460	470	1½"
CACG 103 M	2310	1200	2030	2310	2400	1190	740	2210	960	460	470	2"
CACG 104 M	2770	1200	2090	2770	2400	1190	800	2670	1020	520	505	65
CACG 105 R	2920	1300	2380	2920	2600	1330	950	2820	1170	565	560	65
CACG 106 R	2920	1400	2840	2920	2800	1570	1170	2820	1460	620	620	80
CACG 107 R	2920	1400	2840	2920	2800	1570	1420	2820	1850	620	620	80
CACG 108 E	2920	1400	2840	2920	2800	1570	1420	2820	1850	620	620	80

(1). All dimensions in mm unless otherwise noted.

(2). Chilled water connections "X" female pipe thread ISO R7 for unit sizes 102 and 103 flange for sizes 104 through 108.

(4). Dimensions are approximate. Certified drawings available upon request.

Subject to modifications.

TRANE®

BIRMINGHAM

SALES OFFICES in U.K. and EIRE

24 New John Street West, Newtown, BIRMINGHAM B19 3NB
Phone: (021) 359 6354/6 - Telex: 33 69 95

BRISTOL

Pelouquin Chambers, 18 St. Augustines Parade, BRISTOL BS1 4UL
Phone: (0272) 29 77 61 - Telex: 44 241

DUBLIN

46 Ardeevin Avenue, Lucan, Co. DUBLIN
Phone: (031) 28 09 35 - Telex: 31 082

GLASGOW

10 Napier Court, Wardpark North Industrial Estate, CUMBERNAULD G68 0LG
Phone: Cumbernauld (02367) 36927 - Telex: 779 361

LONDON

162 Windmill Road West, SUNBURY ON THAMES, Middlesex TW 16 7HB
Phone: 93 27 80 321 - Telex: 92 73 57

MANCHESTER

191 Washway Road, Sale, MANCHESTER M33 4AH
Phone: (061) 973 0051 - Telex: 66 89 48

NEWCASTLE

4/5 Hutton Terrace, Jesmond, NEWCASTLE UPON TYNE NE2 4PO
Phone: (0632) 81 36 10 - (0632) 81 02 40 - Telex: 537 259

NOTTINGHAM

60, Lenton Boulevard, NOTTINGHAM NG7 2EN
Phone: (0602) 41 22 12 - Telex: 37 75 52

