YCWM/YCRM POLARIS

WATER COOLED AND REMOTE AIR COOLED CHILLERS

INSTALLATION, COMMISSIONING, OPERATION AND MAINTENANCE

REFRIGERANT TYPE: **R22, R407C**

CE

YORK INTERNATIONAL

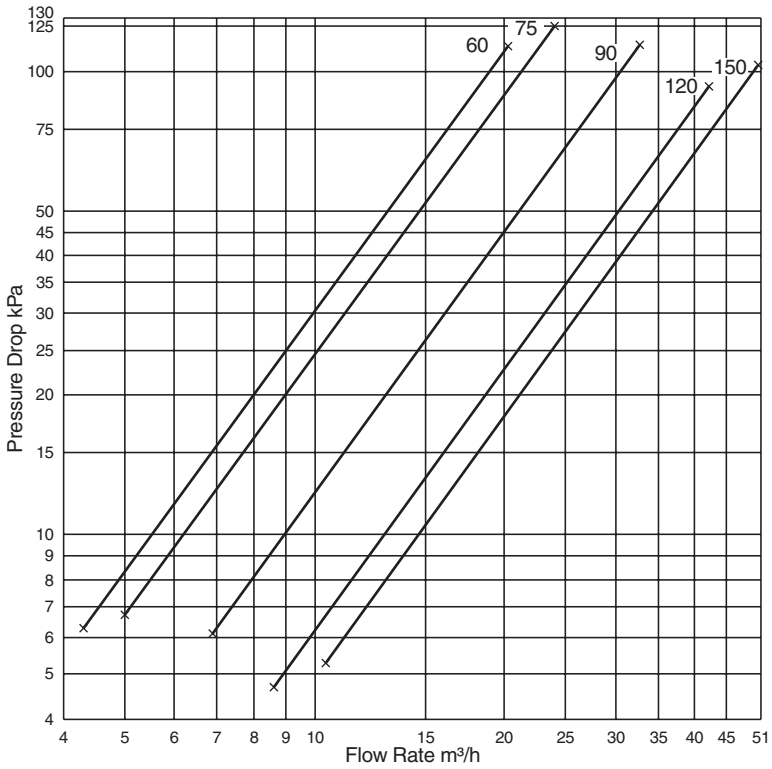
Effective from 04/99

GB

9 TECHNICAL DATA

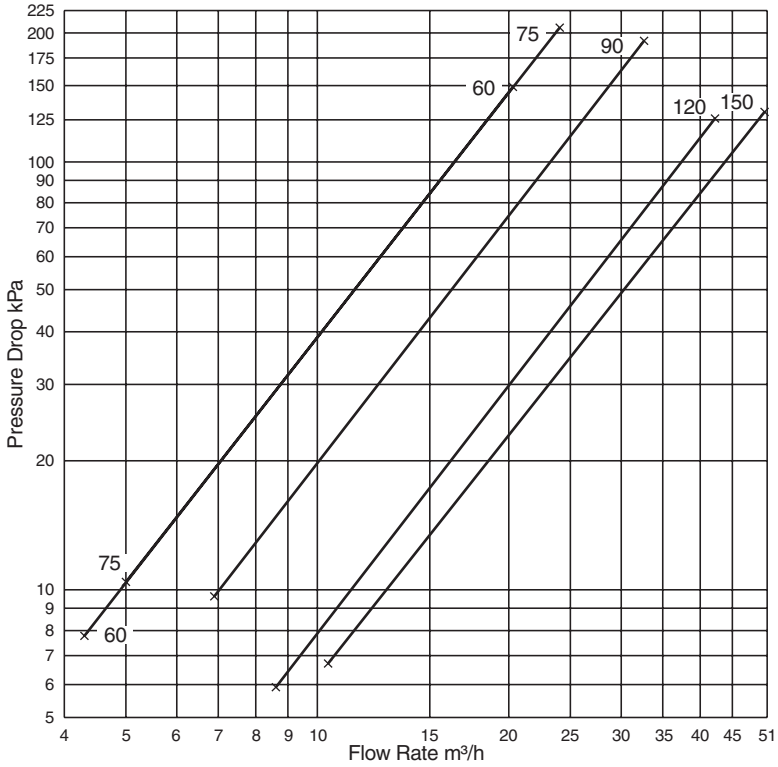
9.1 Pressure Drop Graphs

YCWM-B and YCRM-B Models 60 to 150 - Evaporators



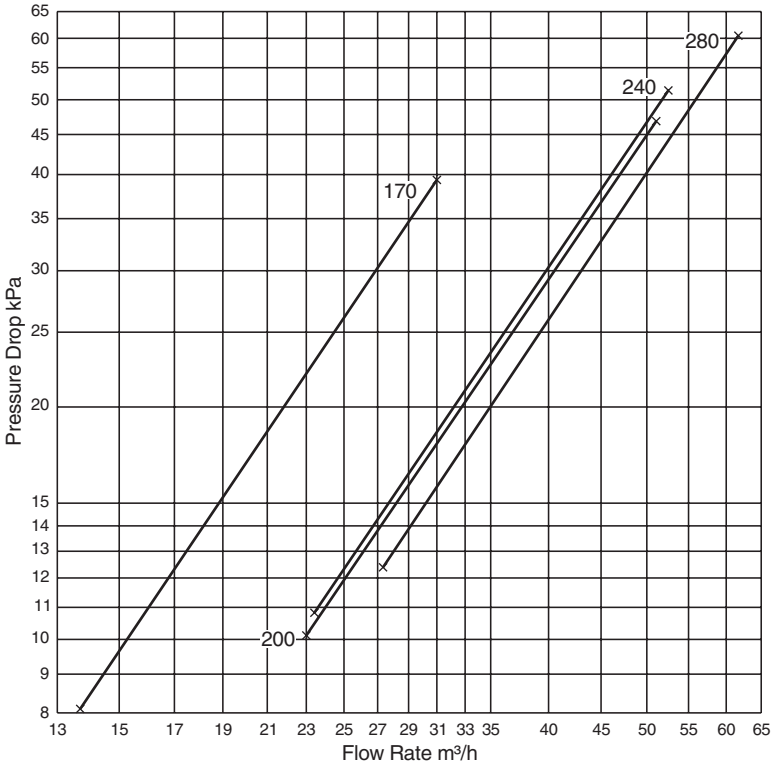
Note: Total unit flow rate is shown.

YCWM and YCRM Models 60 to 150 - Evaporators



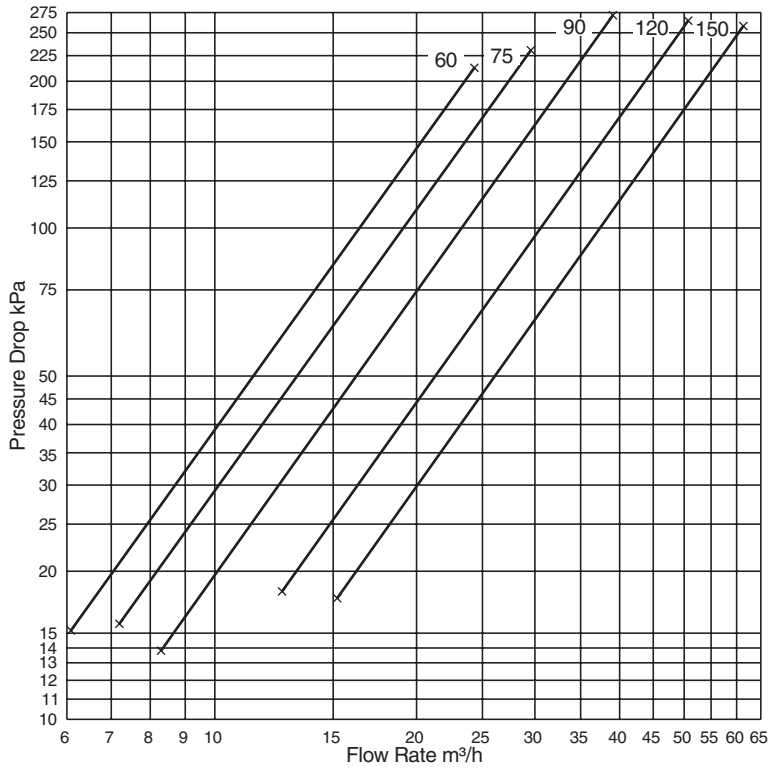
Note: Total unit flow rate is shown.

YCWM-B, YCRM-B, YCWM and YCRM Models 170 to 280 - Evaporator



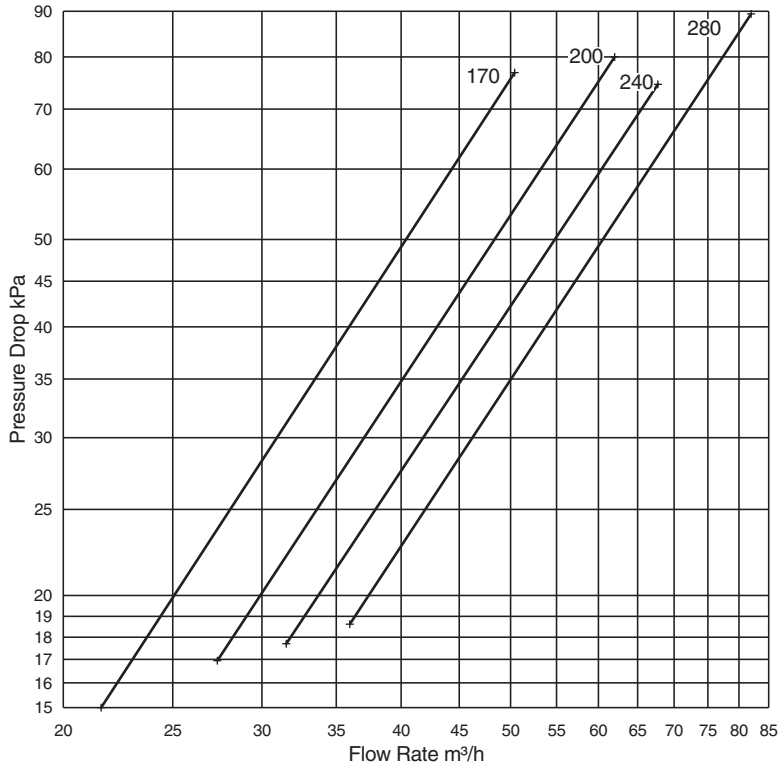
Note: Total unit flow rate is shown.

YCWM-B and YCWM Models 60 to 150 - Condensers



Note: Total unit flow rate is shown.

YCWM-B and YCWM Models 170 to 280 - Condensers



Note: Total unit flow rate is shown.

9.2 Safety Switch Settings

YCWM/YCRM		60	75	90	120	150	170	200	240	280
Low Pressure Switch	bar	0,5								
High Pressure Switch	bar	22					28			
TüV High Pressure Switch	bar	25								
Oil Pressure Switch	bar	0,8								
Anti Freezing Thermostat	°C	5								
Safety Valve	bar	24								
Evaporator Water Differential Pressure Switch		50% of Nominal Capacity								

9.3 Operational Limits

YCWM/YCRM				60		75		90		120		150	
				Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.
Chilled Liquid	Evaporator Water outlet temperature	Water outlet Brine outlet Temp. spread	°C °C °C	5 to 15 (R22) 6 to 15 (R407C) -10 to 15 (R22) -5 to 15 (R407C) 3 to 8									
	Flow rate (1)		m³/h	4,3	20,3	5.0	24,0	6,9	32,7	8,6	42,1	10,4	50,4
	Pressure drop (1)	R22	kPa	7,8	149,5	10,4	205,6	9,6	191,6	5,9	125,6	6,7	130,6
		R407C	kPa	6,3	112,9	6,7	125,1	6,1	113,8	4,7	93,0	5,3	103,4
	Max. working pressure		bar	10									
Cooling Liquid (2)	Liquid outlet temperature	Water outlet Temp. spread	°C K	25 to 50 (R22) 30 to 50 (R407C) 3 to 8									
	Flow rate (1)		m³/h	6,1	24,4	7,2	29,5	8,3	39,2	12,6	50,7	15,2	61,2
	Pressure drop (1)		kPa	15,2	212,2	15,7	230,7	13,8	271,4	18,2	265,0	17,7	258,2
	Max. working pressure		bar	10									
Power supply voltage 400 V, 3 Ø, 50 Hz (nominal)			V	360 to 440									
Recommended system water volume (3)			l	730		860		1050		1550		1750	

(1) Total unit flow rate and pressure drop are given
(2) YCWM-B & YCWM only
(3) Table shows minimum water / brine volume of system

YCWM/YCRM				170		200		240		280	
				Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.
Chilled Liquid	Evaporator Water outlet temperature	Water outlet Brine outlet Temp. spread	°C °C °C	5 to 15 (R22) 6 to 15 (R407C) -10 to 15 (R22) -5 to 15 (R407C) 3,5 to 8							
	Flow rate (1)		m³/h	13,7	31,0	23,0	51,1	23,4	52,6	27,4	61,6
	Pressure drop (1)	R22/R407C	kPa	8,1	39,4	10,1	46,9	10,8	51,3	12,4	60,4
	Max. working pressure		bar	10							
Cooling Liquid (2)	Liquid outlet temperature	Water outlet Temp. spread	°C K	25 to 50 (R22) 30 to 50 (R407C) 3 to 8							
	Flow rate (1)		m³/h	21,6	50,4	27,4	62,0	31,6	67,8	36,0	82,0
	Pressure drop (1)		kPa	15,0	77,7	16,9	80,2	17,7	74,6	18,6	89,6
	Max. working pressure		bar	10							
Power supply voltage 400 V, 3 Ø, 50 Hz (nominal)			V	360 to 440							
Recommended system water volume (3)			l	960		1160		1280		1536	

(1) Total unit flow rate and pressure drop are given
(2) YCWM-B & YCWM only
(3) Table shows minimum water / brine volume of system

9.4 Physical Data

YCWM/YCRM			60	75	90	120	150
Refrigerant Circuits			2	2	2	2	2
Refrigerant charge	R 22	kg	2	2,2	3	4	4,5
per circuit	R407C	kg	2,3	2,6	4	4,2	4,7
Compressor	Type		H(x)BG124	H(x)5G144	H(x)NG184	H(x)NG244	H(x)NG294
Note:	Theoretical displacement	m³/h	39,8	44,2	58,2	76,4	88,3
x=2 R22	Number		2	2	2	2	2
x=7 R407C	No. of cylinders		3	3	6	6	6
	Revs per minute	rpm	2900	2900	2900	2900	2900
	Oil charge per compressor	l	2,9	3,1	6,6	6,6	6,6
	No. of loading stages	%	100-50	100-50	100-50	100-50	100-50
Evaporator	Number		2	2	2	2	2
	Type (Direct Expansion) R407C		V25/60	V25/70	B45/40	V45/60	V45/70
	Type (Direct Expansion) R22		B25/50	V25/50	B45/30	B45/50	B45/60
	Water volume per evaporator	l	2,85	3,32	3,76	5,64	6,58
Water	Number		2	2	2	2	2
cooled	Type (R407C & R22)		B25/50	B25/60	B45/30	B45/40	B45/50
Condenser (1)	Water volume per condenser	l	2,37	2,85	2,82	3,76	4,7
YCWM Weight	Operating R407C (R22)	kg	440 (435)	450 (440)	587 (577)	600 (587)	621 (607)
	Shipping R407C (R22)	kg	430 (425)	440 (430)	577 (567)	590 (577)	611 (597)
YCRM Weight	Operating R407C (R22)	kg	412(407)	422 (412)	559 (549)	572(559)	593(579)
	Shipping R407C (R22)	kg	402 (397)	412 (402)	549 (539)	562(549)	583(569)
	Length	mm	1210	1210	1210	1210	1210
Dimensions	Width	mm	758	758	758	758	758
	Height	mm	1060	1060	1060	1060	1060

(1) YCWM-B & YCWM only

YCWM/YCRM			170	200	240	280
Refrigerant Circuits			2	2	2	2
Refrigerant charge	R 22	kg	9,1	9,5	10,0	13,8
per circuit	R407C	kg	8,5	8,6	9,9	11,5
Compressor	Type		H(x)NG184	H(x)NG204	H(x)NG244	H(x)NG294
Note:	Theoretical displacement	m³/h	58.25	66.35	76.4	88.3
x=2 R22	Number		4	4	4	4
x=7 R407C	No. of cylinders		6	6	6	6
	Revs per minute	rpm	2900	2900	2900	2900
	Oil charge per compressor	l	7	7	7	7
	No. of loading stages	%	100-75	100-75	100-75	100-75
		%	50-25	50-25	50-25	50-25
Evaporator	Number		1	1	1	1
(R407C & R22)	Type (Direct expansion)		EHD156R	EHD205R	EHD235R	EHD275R
	Water volume	l	41,8	62,7	58,1	53,2
Water	Number		2	2	2	2
cooled	Type (R407C & R22)		CPS120	CPS145	CPS160	CPS180
Condenser (1)	Water volume per condenser	l	6,1	7,2	8	9,4
YCWM Weight	Operating	kg	1117	1215	1251	1322
	Shipping	kg	1062	1136	1177	1250
YCRM Weight	Operating	kg	974	1061	1091	1140
	Shipping	kg	931	996	1033	1049
	Length	mm	2200	2200	2200	2200
Dimensions	Width	mm	800	800	800	800
	Height	mm	1600	1600	1600	1600

(1) YCWM-B & YCWM only

9.5 Unit Electrical Data

Model		YCWM/YCRM				
		60	**75**	**90**	**120**	**150**
Current Input (A)	Nom. Cond.	30	35	45	64	76
	Max. Cond.	34	43	52	73	88
Power Input (KW)	Nom. Cond.	16	19	23	33	41
	Max. Cond.	20	23	29	41	51

Nominal conditions at 7°C chilled water outlet temperature, 35°C condenser outlet temperature (YCWM)
Maximum conditions at 12°C chilled water outlet temperature, 50°C condenser outlet temperature (YCWM)
Nominal conditions at 7°C chilled water outlet temperature, 40°C condensing temperature (YCRM)
Maximum conditions at 12°C chilled water outlet temperature, 55°C condensing temperature (YCRM)

Model		YCWM/YCRM			
		170	**200**	**240**	**280**
Current Input (A)	Nom. Cond.	92	104	128	152
	Max. Cond.	108	124	152	184
	Max. start.	206	243	304	353
Power Input (KW)	Nom. Cond.	49	58	66	81
	Max. Cond.	63	75	85	105

Nominal conditions at 7°C chilled water outlet temperature, 35°C condenser outlet temperature (YCWM)
Maximum conditions at 12°C chilled water outlet temperature, 50°C condenser outlet temperature (YCWM)
Nominal conditions at 7°C chilled water outlet temperature, 40°C condensing temperature (YCRM)
Maximum conditions at 12°C chilled water outlet temperature, 55°C condensing temperature (YCRM)

9.6 Compressor Electrical Data

Model YCWM/ YCRM	System	Compressor	Voltage (V)	Power Input at Nom. Cond. per Comp. (kW)	Power Input at Max. Cond. per Comp. (kW)	Current at Nom Cond. per Comp. (A)	Max. Current per Comp. (A)	DOL Starting Current (A) LRA	Max. Fuse Size (A)
60	1+2	H7BG124	400	8	10	15	17	93	20
75	1+2	H75G144	400	9	12	18	22	110	25
90	1+2	H7NG184	400	12	14	23	26	125	25
120	1+2	H7NG244	400	16	20	32	37	190	40
150	1+2	H7NG294	400	20	25	38	44	215	50

Nominal conditions at 7°C chilled water outlet temperature, 35°C condenser outlet temperature (YCWM)
Maximum conditions at 12°C chilled water outlet temperature, 50°C condenser outlet temperature (YCWM)
Nominal conditions at 7°C chilled water outlet temperature, 40°C condensing temperature (YCRM)
Maximum conditions at 12°C chilled water outlet temperature, 55°C condensing temperature (YCRM)

Model YCWM YCRM	System	Compressor	Voltage (V)	Power Input at Nom. Cond. per Comp. (kW)	Power Input at Max. Cond. per Comp. (kW)	Current at Nom Cond. per Comp. (A)	Max. Current per Comp. (A)	DOL Starting Current (A) LRA	Max. Fuse Size (A)
170	1+2+3+4	H2NG184	400	12	15	23	27	125	120
200	1+2+3+4	H2NG204	400	14	18	26	31	150	160
240	1+2+3+4	H2NG244	400	17	21	32	38	190	200
280	1+2+3+4	H2NG294	400	21	27	38	46	215	250

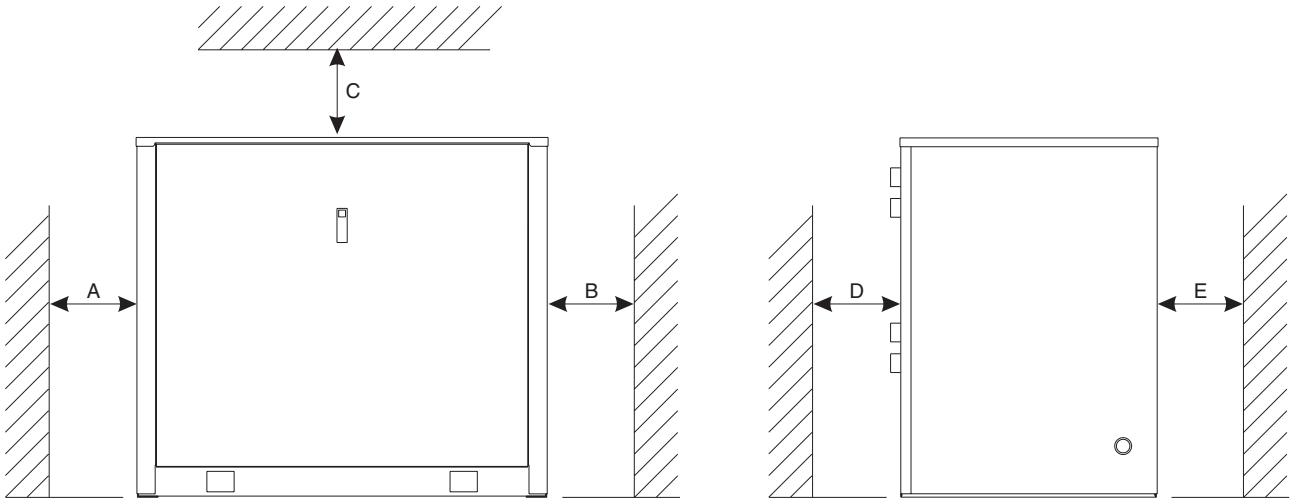
Nominal conditions at 7°C chilled water outlet temperature, 35°C condenser outlet temperature (YCWM)
Maximum conditions at 12°C chilled water outlet temperature, 50°C condenser outlet temperature (YCWM)
Nominal conditions at 7°C chilled water outlet temperature, 40°C condensing temperature (YCRM)
Maximum conditions at 12°C chilled water outlet temperature, 55°C condensing temperature (YCRM)

9.7 Sound Power Levels

YCWM/ YCRM Model	Standard Units		Units with Acoustic Kit	
	R22	R407C	R22	R407C
	Sound Power (dB(A))	Sound Power (dB(A))	Sound Power (dB(A))	Sound Power (dB(A))
60	67	70	-	-
75	68	71	-	-
90	68	71	-	-
120	69	72	-	-
150	70	73	-	-
170	90	97	74	81
200	90	97	74	81
240	91	98	75	82
280	92	99	76	83

Tolerance ± 2 dB(A)
Acoustic Kit supplied as standard on Models 60 to 150

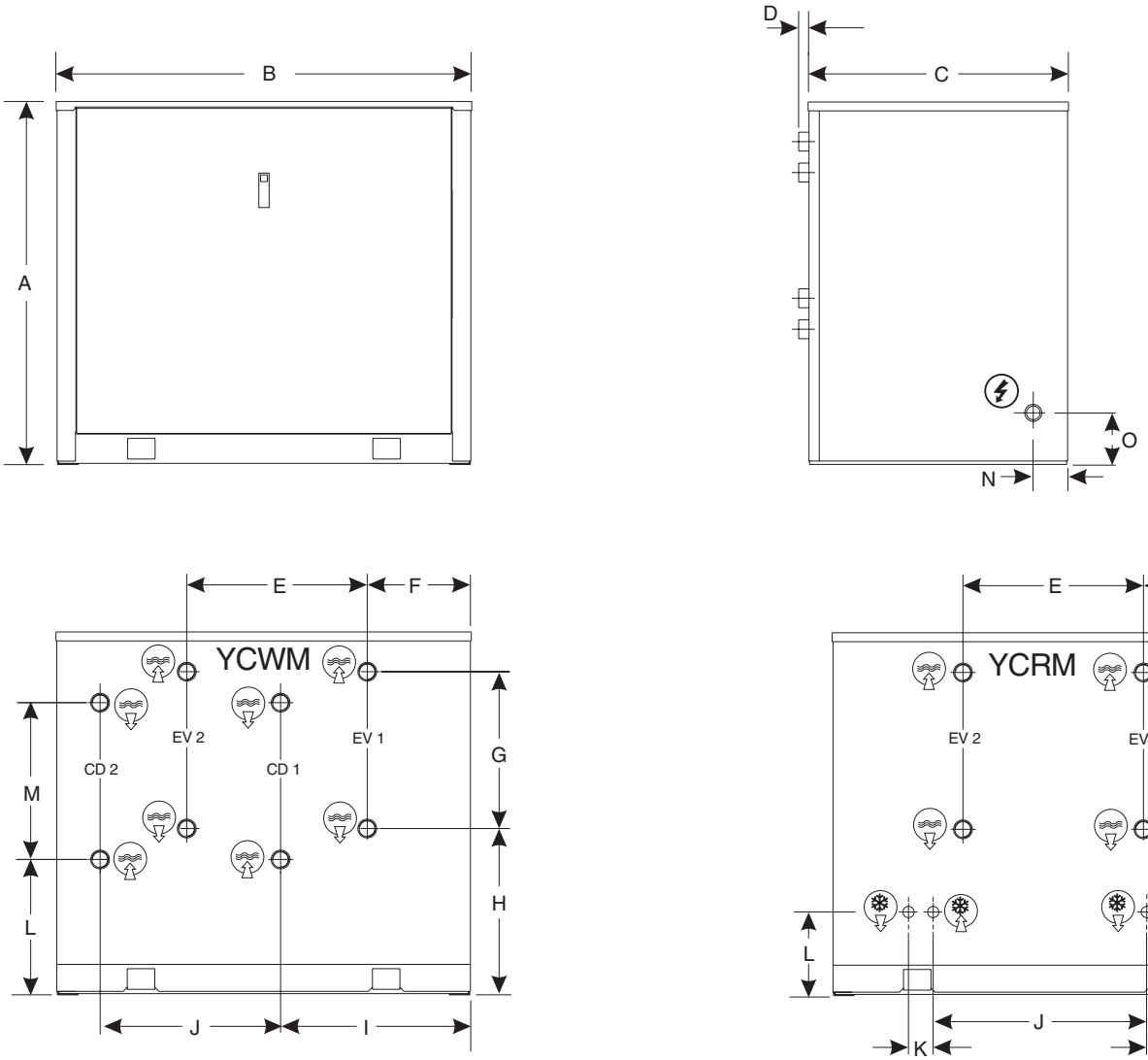
9.8 Space Requirements



Model YCWM/YCRM	Distance (mm)				
	A	B	C	D	E
60 to 150	600	600	600	600	1000
170 to 280	2200	800	1000	1000	1500

9.9 Dimensions

YCWM-B, YCRM-B, YCWM and YCRM Models 60 to 150



Note:
EV = Evaporator
CD = Condenser

YCWM																Evaporator	Condenser
Model	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	Pipe Connections	Pipe Connections
60	1060	1210	758	20	500	278	479	500	500	500	-	410	479	100	150	ISO-G 1"	ISO-G 1"
75	1060	1210	758	20	500	278	479	500	500	500	-	410	479	100	150	ISO-G 1"	ISO-G 1"
90	1060	1210	758	26	555	286	456	510	538	555	-	420	456	100	150	ISO-G 1 1/2"	ISO-G 1 1/2"
120	1060	1210	758	26	555	286	456	510	538	555	-	420	456	100	150	ISO-G 1 1/2"	ISO-G 1 1/2"
150	1060	1210	758	26	555	286	456	510	538	555	-	420	456	100	150	ISO-G 1 1/2"	ISO-G 1 1/2"

YCRM																Evaporator	Refrigerant	Refrigerant
Model	A	B	C	D	E	F	G	H	I	J	K	L	M	N	0	Pipe Connections	Inlet Connections	Outlet Connections
60	1060	1210	758	20	500	278	479	500	295	430	70	390	-	100	150	ISO-G 1"	5/8"	7/8"
75	1060	1210	758	20	500	278	479	500	295	430	70	390	-	100	150	ISO-G 1"	5/8"	7/8"
90	1060	1210	758	26	555	286	456	510	225	485	70	390	-	100	150	ISO-G 1 1/2"	7/8"	1 1/8"
120	1060	1210	758	26	555	286	456	510	225	485	70	390	-	100	150	ISO-G 1 1/2"	7/8"	1 1/8"
150	1060	1210	758	26	555	286	456	510	225	485	70	390	-	100	150	ISO-G 1 1/2"	7/8"	1 1/8"

Dimensions in mm unless stated