R-410A

WSAN-XEE 82-102-122-162-182-222-262-302

AIR TO WATER HEAT PUMP FOR OUTDOOR INSTALLATION

Installation and Use Manual

M6G240F7-02 17/03/08

TECHNICAL DATA

APPLICATION: TERMINAL UNITS

SIZE			82	102	122	162	182	222	262	302
Cooling										
Cooling capacity	1	kW	23,6	27,5	32,7	39,4	45,6	52,9	63	71,9
Comp. input power	1	kW	9	10,5	12,7	14,6	17,1	20,3	23,9	27,3
Total input power	2	kW	9,36	10,9	13	15,3	17,8	21	25	28,4
EER	1		2,52	2,53	2,51	2,57	2,56	2,51	2,52	2,53
ESEER			4,07	4,11	3,85	3,82	4	4,11	3,9	3,86
Heating										
Heat output	3	kW	28,8	32,9	37,5	45,6	53	61,9	72,4	83,7
Comp. input power	3	kW	8,66	9,93	11,4	13,4	15,8	18,3	21,1	24,5
Total input power	2	kW	9	10,3	11,7	14,1	16,5	19	22,2	25,6
COP	3		3,2	3,2	3,2	3,23	3,21	3,26	3,27	3,27
COMPRESSORS										
Compressor type			SCROLL							
No. of compressors		Nr	2							
Capacity control steps Std		Nr	3	3	2	3	3	3	3	2
Refrigerant circuits		Nr	1							
Refrigerant charge (C1)		l	3,61	3,72	3,54	5,76	5,76	6,65	7,39	8,28
INTERNAL EXCHANGER										
Type of exchanger	4		PHE							
No. Of exchangers		Nr	1							
Water flow-rate	1	l/s	1,1	1,3	1,6	1,9	2,2	2,5	3	3,4
Max Water flow-rate		l/s	1,5	1,8	2,3	2,7	3,1	4	4,6	5,4
Pressure drop		kPa	48,1	47,6	41,6	42,7	43,1	37,5	39,4	41,9
Useful pump discharge head	1	kPa	136	129	125	107	89	150	141	131
EXTERNAL SECTION FANS										
Fan type	5		AX							
No. of fans		Nr	2	2	2	4	4	4	6	6
Standard air-flow		l/s	2553	2545	2514	4965	4902	4778	7196	6971
Installed unit power		kW	0,17	0,17	0,17	0,18	0,18	0,18	0,18	0,18
CONNECTIONS										
Water fittings			1" 1/4			2"				
HYDRAULIC CIRCUIT										
Max water side pressure		kPa	550							
Safety valve calibration		kPa	600							
EXPANSION VESSEL										
Expansion vessel capacity		l	5							
Maximum water side pressure			550							
No. of expansion vessels		Nr	1							
POWER SUPPLY										
Standard power supply		V	400/3/50+N							
NOISE LEVELS										
Sound pressure level (1 m)		dB(A)	60	60	60	61	62	62	64	64
DIMENSIONS										
Length		mm	1703	1703	1703	1932	1932	1932	2332	2332
Depth		mm	675	675	675	1100	1100	1100	1100	1100
Height		mm	1209	1209	1209	1417	1417	1417	1417	1417
Packing volume		m^3	1,8	1,8	1,8	4	4	4	4,5	4,5
STANDARD UNIT WEIGHTS										
Shipping weight		kg	325	330	380	545	565	595	690	705
Operating weight		kg	315	320	370	530	550	580	675	690

(1) data referred to the following conditions :
internal exchanger water = 12/7°C
external exchanger air intake 35°C
(2) Total absorbed power is given by the compressor absorbed power + fan absorbed power + auxiliary circuit absorbed power.
(3) data referred to the following conditions :
outlet water internal exchanger 45°C
room temperature = 7°C (RH = 85%)
(4) PHE = plates
(5) AX = axial-flow fan.

SETTING THE CUT-OUT DEVICES AND CONTROLS

		On	Off			
High pressure switch	(kPa)	4200	3300			
Low pressure switch	(kPa)	200	350	Max compressor starts per hour	(n°)	10
Antifreeze protection	(°C)	4	6,5	Safety discharge thermostat	(°C)	120

APPLICATION: TERMINAL UNITS

OPERATING LIMITS (COOLING)

SIZE			82	102	122	162	182	222	262	302
EXTERNAL EXCHANGER										
Max air intake temperature	1	°C	47	47	46	47	48	47	47	47
Max air intake temperature	2	°C	49	49	48	49	48	49	49	49
Min air intake temperature	3	°C	-10							
INTERNAL EXCHANGER										
Max air intake temperature	4	°C	22							
Min. water outlet temperature	5	°C	5							
Min. water outlet temperature	6	°C	-8							

OPERATING LIMITS (HEATING)

SIZE			82	102	122	162	182	222	262	302
EXTERNAL EXCHANGER										
Max air intake temperature (W.B.)	7	°C	22	22	24	24	24	22	24	22
Min air intake temperature (W.B.)	8	°C	-7							
INTERNAL EXCHANGER										
Min. water outlet temperature		°C	28							
Max. water outlet temperature	9	°C	55							

Warning: the still air condition is meant as absence of air flow to the unit.
Any wind condition
can let air pass through the condenser coil thus worsening the operating limits of the unit
(see limits with air speed at 0,5 m/s & 1 m/s).
internal exchanger water = 12/7°C
ATTENTION: IN CASE OF PREDOMINANT WINDS, WINDBREAK BARRIERS ARE NECESSARY.
Water thermal head (min / max) are indicated in the section INTERNAL EXCHANGER PRESSURE DROP
(1) unit at full load: internal exchanger water 12/7°C
(2) internal exchanger water = 12/7°C
capacity-controlled unit (automatic capacity control)
(3) external exchanger air in quiet
(4) this limit can be exceeded for brief and transitory periods with automatic capacity control of the unit: the maximum limit is 30°C.
(5) standard unit
outside air temperature 35°C
(6) B = Low Temperature
outside air temperature 35°C
Fluid with ethylene glycol of 40%
(7) unit at full load
outlet water internal exchanger 45°C
(8) outlet water internal exchanger 45°C
(9) room temperature = 7°C (RH = 85%)

APPLICATION: UNIT FOR RADIANT PANELS

OPERATING LIMITS (COOLING)

SIZE			82	102	122	162	182	222	262	302
EXTERNAL EXCHANGER										
Max air intake temperature	1	°C	44	44	42	43	43	42	41,5	43
Max air intake temperature	2	°C	46	46	45	45	45	45	44	45
Min air intake temperature	3	°C	-10							
INTERNAL EXCHANGER										
Max air intake temperature	4	°C	22							
Min. water outlet temperature	5	°C	5							
Min. water outlet temperature	6	°C	-8							

OPERATING LIMITS (HEATING)

SIZE			82	102	122	162	182	222	262	302
EXTERNAL EXCHANGER										
Max air intake temperature (W.B.)	7	°C	22	22	24	24	24	22	24	22
Min air intake temperature (W.B.)	8	°C	-10							
INTERNAL EXCHANGER										
Min. water outlet temperature		°C	28							
Max. water outlet temperature		°C	55							

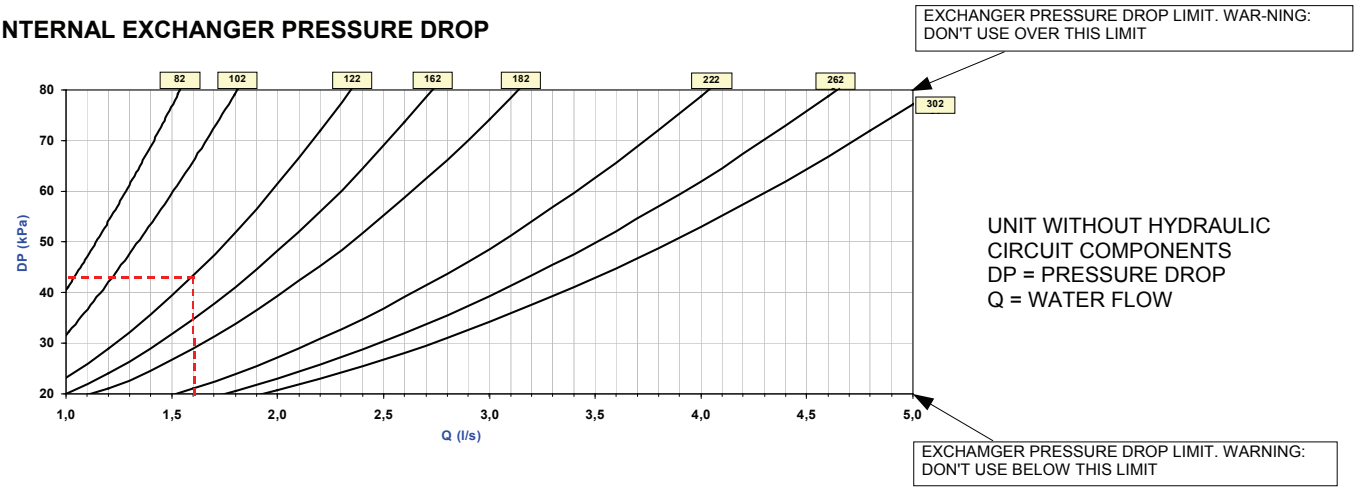
(1) unit at full load: internal exchanger water 12/7°C
(2) internal exchanger water = 12/7°C
capacity-controlled unit (automatic capacity control)
(3) external exchanger air in quiet
(4) this limit can be exceeded for brief and transitory periods with automatic capacity control of the unit: the maximum limit is 30°C.
(5) standard unit
outside air temperature 35°C
(6) B = Low Temperature
outside air temperature 35°C
Fluid with ethylene glycol of 40%
(7) unit at full load
outlet water internal exchanger 45°C
(8) outlet water internal exchanger 45°C
(9) room temperature = 7°C (RH = 85%)

SOUND LEVELS

	Sound Power Level (dB)								Sound pressure level dB(A)	Sound power level dB(A)
Size	Octave band (Hz)									
	63	125	250	500	1000	2000	4000	8000		
82	80	75	78	73	70	66	58	52	60	75
102	79	74	77	73	70	66	60	51	60	75
122	79	74	77	72	70	67	61	52	60	75
162	86	79	75	77	74	66	61	56	61	78
182	86	79	74	76	74	68	63	57	62	78
222	86	79	77	78	74	69	61	56	62	79
262	88	81	78	79	77	72	66	58	64	81
302	88	81	79	80	75	72	63	56	64	81

Notes:
Measures according to ISO 3744 regulations, with respect to the EUROVENT 8/1 certification.
the sound levels refer to the unit at full load, in the rated test conditions.
The sound pressure level refers to a distance of 1m from the external surface of the units operating in an open field.
data referred to the following conditions :
internal exchanger water = 12/7°C

INTERNAL EXCHANGER PRESSURE DROP



SIZE		82	102	122	162	182	222	262	302
Minimum flow	[l/s]	0,70	0,80	0,85	1,00	1,11	1,51	1,74	1,95
Maximum flow	[l/s]	1,52	1,80	2,85	2,71	3,05	4,05	4,65	5,00

CORRECTION FACTOR FOR ANTIFREEZE SOLUTIONS

% ethylene glycol by weight		**5%**	**10%**	**15%**	**20%**	**25%**	**30%**	**35%**	**40%**
Freezing temperature	°C	-2,0	-3,9	-6,5	-8,9	-11,8	-15,6	-19,0	-23,4
Safety temperature	°C	3,0	1,0	-1,0	-4,0	-6,0	-10,0	-14,0	-19,0
Cooling Capacity Factor	Nr	0,995	0,990	0,985	0,981	0,977	0,974	0,971	0,968
Compressor input Factor	Nr	0,997	0,993	0,990	0,988	0,986	0,984	0,982	0,981
Internal exchanger Glycol solution flow Factor	Nr	1,003	1,010	1,020	1,033	1,050	1,072	1,095	1,124
Pressure drop Factor	Nr	1,029	1,060	1,090	1,118	1,149	1,182	1,211	1,243

The correction factors shown refer to water and glycol ethylene mixes used to prevent the formation of frost on the exchangers in the water circuit during inactivity in winter.

FOULING CORRECTION FACTOR

	INTERNAL EXCHANGER	
m² °C/W	**F1**	**FK1**
0.44 x 10^(-4)	1,00	1,00
0.88 x 10^(-4)	0,97	0,99
1.76 x 10^(-4)	0,94	0,98

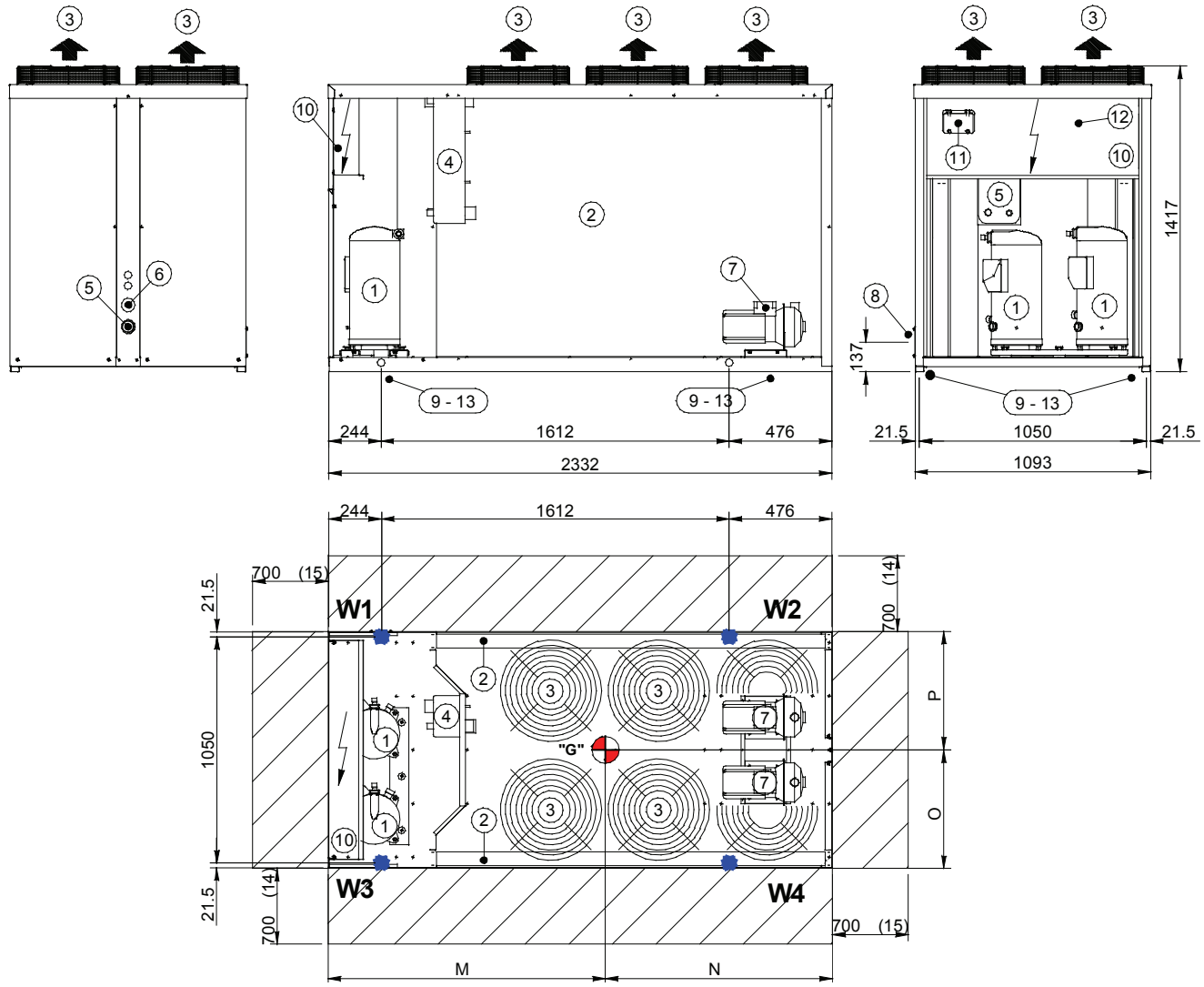
The cooling performance values provided in the tables are based on the external exchanger having clean plates (fouling factor 1). For different fouling factor values, multiply the performance by the coefficients shown in the table.
F1 = Cooling capacity correction factors
FK1 = Compressors input power correction factors

INTEGRATED HEATING CAPACITIES

Anternal exchanger inlet air temperature °C (D.B.)	**-5 / -5.4**	**0 / -0.6**	**5 / 3.9**	**OTHERS**
Heating capacity multiplication coefficient	0,89	0,88	0,94	1

To obtain the integrated heating capacities (the real heating capacity considering the defrost cycles too), multiply the kWt value in the heating performance tables by the following coefficient.

Sizes 262-302



(1) COMPRESSOR
(2) FINNED EXCHANGER
(3) HELICAL FANS
(4) PLATE EXCHANGER
(5) EXCHANGER WATER INLET
(6) EXCHANGER WATER OUTLET
(7) PUMP
(8) POWER INPUT
(9) LIFTING HOLES
(10) ELECTRICAL PANEL
(11) MICROPROCESSOR KEYBOARD
(12) MAIN ISOLATOR SWITCH
(13) VIBRATION MOUNTS POSITION
(14) MINIMUM DIMENSION FOR A PROPER AIR FLOW TO THE CONDENSER COIL.
(15) MINIMUM DIMENSION FOR A SAFE PASSAGE.
(G) BARYCENTRE
VICTAULIC CONNECTION JOINT

	Size	262	302
M	mm	1105	1100
N	mm	1227	1232
O	mm	515	513
P	mm	585	587
Length	mm	2332	2332
Depth	mm	1100	1100
Height	mm	1417	1417
W1	kg	189	193
W2	kg	128	131
W3	kg	216	221
W4	kg	142	145
Operating weight	kg	675	690
Shipping weight	kg	690	705

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