

WATER CHILLERS R22 - R407C

AIR COOLED WATER CHILLERS WITH SCROLL COMPRESSORS AND AXIAL FANS - ONE CIRCUIT

RAE...

One circuit unit

cooling capacities from 5 kW to 42 kW



RAE 51RAE 171 with water kit

- Water chillers suitable for low and medium-size air conditioning systems and for water cooling plants
- Designed for external installation
- Fan speed from 560 to 840 rpm
- Coated with pre-painted zinc steel plates
- 1 cooling circuit
- Operating conditions from +15 °C to +42 °C for standard models 51-81-91
- Operating conditions from -10 °C to +42 °C for the standard models from 121 to 421
- The following versions are available:
 - RAE... with axial fans horizontal air flow for models 51-81-91, vertical for mod. from 121
 - RAE...PS with water kit
 - RAE...K version with R407C ecological gas
 - RAE...U ultrasilenced version
- Condensing pressure control with fans speed regulation which allows the unit to work with an external air temperature down to -10 °C (on request on models 51-81- 91)
- Safety water flow switch
- Antifreeze heating coil on evaporator
- For the PS version the water kit, installed in a housing under the unit, is composed of circulating pump, buffer tank, safety valve, pressure gauge, water charge and discharge valve, air discharge valve, expansion vessel, electric control device of the pump. The water kit is an option from the model 201 and it is installed inside the unit.
- Compressors hour counter standard from model 201

Provided with:

- High-efficiency scroll compressor (COP 3.37 under ARI conditions), with low sound level (on average 6dB (A) less than the hermetic compressors), internal heat protection, installed on rubber vibration dampers, supplied with oil sump heater when necessary
- Heat-exchange external coil with high-efficiency aluminium fins and copper pipe designed for cooling fluids; independent circuits
- Low rpm axial fans directly coupled provided with heat protection, low sound level blades with wing profile, and safety protection grid
- Weld-brazed plate evaporator with heat insulation
- Electric panel, in compliance with CE norms, supplied with a main switch with magnetothermic protection
- The cooling circuit is composed of: thermostatic expansion valve, dehydrating filter, sight glass, safety device, anti-freeze thermostat, high and low pressure switches
- Unit management microprocessor for all models

Options:

- AE Electrical supply different from the standard
- BT Kit for external low temperature operation
- CS Compressor pickup counter from mod. 201
- GP Coil protection grid
- HG Hot gas by-pass
- IH Serial interface RS485
- IM Seawood packing
- MF Phase monitor
- MV Buffer tank from model 201
- P1 Pump group/Expansion vessel/safety valve/water gauge/water feeding valve from model 201
- P1H High head pump group/expansion vessel/safety valve/water gauge/water feeding valve from 201
- PA Rubber-type vibration dampers
- PQ Remote microprocessor
- RL Compressor overload relays
- RR-RM 2 different treatments for condensing coil from 201
- RV Personalized RAL paint
- SC Sound-insulation of compressors room from mod. 201 std.
- VS Solenoid valve
- VB Brine version (water temperature < 0 °C)

WATER CHILLERS R22 - R407C

AIR COOLED WATER CHILLERS WITH SCROLL COMPRESSORS AND AXIAL FANS - ONE CIRCUIT

RAE... Technical data

RAE...		51	81	91	121	141	171	191
Cooling capacity with R22	kW	5.1	7.7	9.2	11.1	13.1	16.5	18.2
Absorbed capacity with R22	kW	1.5	2.2	2.6	3.1	4.1	4.6	5.3
Cooling capacity with R407C	kW	4.9	7.3	8.8	10.6	12.5	15.7	17.3
Absorbed capacity with R407C	kW	1.6	2.4	2.8	3.3	4.4	4.9	5.6
[Fans]								
Number of fans	n	1	1	1	2	2	2	2
Rotation speed	rpm	580	850	840	560	560	840	840
Total air flow rate	l/s	580	780	940	1250	1250	1780	1780
Motor capacity	kW	0.16	0.16	0.16	0.32	0.32	0.32	0.32
Sound pressure level	dB(A)	51	51	51	54	54	54	54
[Weld-brazed plate evaporator]								
Quantity	n	1	1	1	1	1	1	1
Water flow with R22	l/s	0.24	0.37	0.44	0.53	0.63	0.79	0.87
Pressure drop with R22	kPa	17	27	25	33	33	33	39
Water flow with R407C	l/s	0.23	0.35	0.42	0.51	0.60	0.75	0.83
Pressure drop with R407C	kPa	15	24	23	30	30	30	35
[Scroll compressors]								
Number of compressors	n	1	1	1	1	1	1	1
Circuits	n	1	1	1	1	1	1	1
Capacity steps	%	0/100						
Nominal input current	A	7	12	5	6.1	7.9	8.2	10.2
Max input current	A	11	15	6	8	10	11	13
Inrush current	A	20	34	39	43	56	63	80
Total absorbed capacity with R22	kW	1.7	2.4	2.8	3.5	4.5	4.9	5.6
Total absorbed capacity with R407C	kW	1.8	2.5	2.9	3.6	4.7	5.2	5.9
[Dimensions]								
Length	mm	980	980	980	1100	1100	1100	1100
Width	mm	300	300	300	750	750	750	750
Height	mm	715	715	715	1100	1100	1100	1100
Weight	kg	70	80	90	157	160	177	185
[RAE...PS]								
Water pump	kW	0.08	0.08	0.08	0.35	0.35	0.35	0.35
Available pressure	kPa	56	42	41	58	56	52	54
Buffer tank water volume	l	20	20	20	30	30	30	30
[Dimensions RAEOPS]								
Length	mm	980	980	980	1100	1100	1100	1100
Width	mm	300	300	300	750	750	750	750
Height with water kit	mm	1000	1000	1000	1100	1100	1100	1100
Weight with water kit	kg	120	130	140	210	213	230	238
Power supply		230 V/3Ph/50 Hz			400 V/3Ph/50 Hz			

Nominal conditions: air temperature 32 °C - water temperature 7/12 °C

Sound pressure level at 1 m in open field (ISO 3746).

Note:

- Correction factors tables are on page 11

WATER CHILLERS R22 - R407C

AIR COOLED WATER CHILLERS WITH SCROLL COMPRESSORS AND AXIAL FANS - ONE CIRCUIT

RAE... Technical data

RAE		201	241	281	361	421
Cooling capacity with R22	kW	20.2	24.6	28.5	35.3	42.4
Absorbed capacity with R22	kW	5.9	7.1	8	10.1	12.8
Cooling capacity with R407C	kW	19.2	23.4	27.1	33.6	40.4
Absorbed capacity with R407C	kW	6.3	7.5	8.5	10.7	13.6
[Fans]						
Number of fans	n	2	2	2	2	2
Rotation speed	rpm	940	940	935	945	945
Total air flow rate	l/s	3330	3330	3060	4720	4720
Motor capacity	kW	0.86	0.86	0.86	1.26	1.26
Nominal absorbed current	A	4.8	4.8	4.8	4.8	4.8
Sound pressure level	dB(A)	66	66	66.5	67	67.5
[Weld-brazed plate evaporator]						
Quantity	n	1	1	1	1	1
Water flow with R22	l/s	0.97	1.18	1.36	1.69	2.03
Pressure drop with R22	kPa	44	51	50	50	50
Water flow with R407C	l/s	0.92	1.12	1.30	1.61	1.93
Pressure drop with R407C	kPa	40	46	45	45	45
[Pumps]						
Available pressure with P1	kPa	126	106	99	127	77
Motor capacity with P1	kW	0.55	0.55	0.55	0.55	0.55
Available pressure with P1H	kPa	221	186	219	187	107
Motor capacity with P1H	kW	0.75	0.75	0.75	0.75	0.75
Buffer tank water volume	l	80	80	80	180	180
[Scroll compressors]						
Number of compressors	n	1	1	1	1	1
Circuits	n	1	1	1	1	1
Capacity steps	%	0/100				
Nominal input current	A	12.0	13.2	14.6	18.2	22.1
Max input current	A	20	23	24	29	33
Inrush current	A	94	116	127	159	175
Compressors' max absorbed capacity	kW	10.2	11.8	12.8	15.1	17.5
Total absorbed capacity with R22	kW	7.3	8.5	9.4	11.9	14.6
Total absorbed capacity with R407C	kW	7.7	8.9	9.9	12.5	15.4
[Dimensions]						
Length	mm	1600	1600	1600	2000	2000
Width	mm	750	750	750	850	850
Height	mm	1260	1260	1260	1650	1650
Weight	kg	250	255	295	400	415
Power supply		400 V/ 50Hz / 3Ph + N + T				

Nominal conditions: air temperature 32 °C - water temperature 7/12 °C

Sound pressure level at 1 m in open field (ISO 3746).

Note:

- Correction factors tables are on page 11

WATER CHILLERS R22 - R407C

AIR COOLED WATER CHILLERS WITH SCROLL COMPRESSORS AND AXIAL FANS - ONE CIRCUIT

RAE...U Technical data

RAE...U		201	241	281	361	421
Cooling capacity with R22	kW	19.4	23.3	28.4	34.0	42.8
Absorbed capacity with R22	kW	6.0	7.1	7.3	9.9	12.6
Cooling capacity with R407C	kW	18.5	22.2	27.0	32.4	40.8
Absorbed capacity with R407C	kW	6.4	7.5	7.7	10.5	13.4
[Fans]						
Number of fans	n	2	2	2	2	3
Rotation speed	rpm	700	695	705	705	630
Motor capacity	kW	0.44	0.44	0.44	0.44	1.14
Total air flow rate	l/s	2360	2190	3470	3470	5420
Nominal absorbed current	A	2.3	2.3	2.3	2.3	5.9
Sound pressure level	dB(A)	62	62	62	62	63.5
[Weld-brazed plate evaporator]						
Quantity	n	1	1	1	1	1
Water flow with R22	l/s	0.93	1.11	1.36	1.62	2.04
Pressure drop with R22	kPa	41	46	50	46	51
Water flow with R407C	l/s	0.88	1.06	1.29	1.55	1.95
Pressure drop with R407C	kPa	37	42	45	42	46
[Pumps]						
Available pressure with P1	kPa	130	114	99	143	77
Motor capacity with P1	kW	0.55	0.55	0.55	0.75	0.75
Available pressure with P1H	kPa	225	204	169	193	102
Motor capacity with P1H	kW	0.75	0.75	0.75	0.75	0.75
Buffer tank water volume	l	80	80	180	180	180
[Scroll compressors]						
Number of compressors	n	1	1	1	1	1
Circuits	n	1	1	1	1	1
Capacity steps	%	0/100				
Nominal input current	A	12.1	13.2	13.9	18.5	21.8
Max input current	A	20	23	24	29	33
Inrush current	A	94	116	127	159	175
Compressors' max absorbed capacity	kW	9.3	10.6	11.0	13.9	17.9
Total absorbed capacity with R22	kW	7.0	8.1	8.3	11.1	14.5
Total absorbed capacity with R407C	kW	7.4	8.5	8.7	11.7	15.2
[Dimensions]						
Length	mm	1600	1600	2000	2000	2130
Width	mm	750	750	850	850	1100
Height	mm	1260	1260	1650	1650	1760
Weight	kg	256	261	370	400	570
Power supply		400 V/ 50Hz / 3Ph + N + T				

Nominal conditions: air temperature 32 °C - water temperature 7/12 °C

Sound pressure level at 1 m in open field (ISO 3746).

Note:

- Correction factors tables are on page 11

WATER CHILLERS R22 - R407C

AIR COOLED WATER CHILLERS WITH SCROLL COMPRESSORS AND AXIAL FANS - TWO CIRCUITS

RAE...

Two circuits units

Cooling capacities from 49 kW to 165 kW



RAE 1102U with water kit

- Water chillers suitable for various environments: blocks of flats, offices, shops and factories.
- Designed for external installation
- Strong and compact housing coated with treated and painted zinc steel plate
- Two cooling circuits
- Operating conditions: from -10°C to $+42^{\circ}\text{C}$ in the standard version (for models up to mod. 822)
- Operating conditions: from $+15^{\circ}\text{C}$ to $+42^{\circ}\text{C}$ in the standard version (for models from 842 to 1602)
- The following versions are also available
RAE...K version with ecological gas R407C
RAE...U ultrasilenced version
RAE...F version with free cooling
RAE...FU ultrasilenced free cooling version

Provided with:

- High-efficiency scroll compressor (COP 3.37 under ARI conditions), with low sound level (on average 6dB (A) less than the hermetic compressors), internal heat protection, installed on rubber vibration dampers, supplied with oil sump heater when necessary
- Heat-exchange external coil with high-efficiency aluminium fins and copper pipes designed for cooling fluids; independent circuits
- The RAE...F version is provided with the free cooling coil and modulating 3-way valve
- Low rpm axial fans directly coupled provided with heat protection, low sound level blades with wing profile, and safety protection grid
- Weld-brazed plate or shell&tube evaporator with heat insulation
- Electric panel, in compliance with CE norms, supplied with a main switch with magnetothermic protection
- The cooling circuit is composed of: thermostatic expansion valve, dehydrating filter, sight glass, safety device, antifreeze thermostat, high and low pressure switches, high and low gauge
- Condensing pressure control with fans speed regulation which allows the unit to work with an external air tempera-

ture down to -10°C (standard from the model 482 to 822 and for the free cooling version, on request from model 842)

- Safety water flow switch
- Antifreeze heating coil on evaporator
- Compressors hour counter

Options:

- AE Electric supply different from the standard
- BT Low temperature operations from model 842
- CS Compressor pickup counter
- EA Extractable tube evaporator
- G4 4 control capacity steps available from model 962 and standard from the 962.F
- GP Protection grid for the condensing coil
- IB Serial interface RS422
- IH Serial interface RS485
- IM Seawood packing
- MF Phase monitor
- MP Oversized microprocessor (from model 842 and standard in the free-cooling version)
- MV Buffer tank
- P1 Pump group/Expansion vessel/safety valve/water gauge/water feeding valve
- P1H High head pump group/Expansion vessel/safety valve/water gauge/water feeding valve
- PA/PM Rubber or spring-type vibration dampers (PM only for models from 842 onwards)
- PQ Remote microprocessor
- PT Twin-pump group/Expansion vessel/safety valve/water gauge/water feeding valve
- QR Electric board on opposite side from model 842
- RL Compressor overload relays
- RR-RM 2 different treatments for condensing coil
- RP Partial heat recovery
- RV Personalized RAL paint
- SC Sound-insulation of compressors room
- VB Brine version
- VS Solenoid valve

WATER CHILLERS R22 - R407C

AIR COOLED WATER CHILLERS WITH SCROLL COMPRESSORS AND AXIAL FANS - TWO CIRCUITS

RAE...Technical data

RAE...		482	562	702	822	842	962	1102	1402	1502	1602
Cooling capacity with R22	kW	49.2	56.8	70.6	82.8	84.8	97.9	110.2	140.5	149.3	163.7
Absorbed capacity with R22	kW	14.2	16.7	20.2	26.2	25.6	28.7	33.0	42.7	46.7	50.0
Cooling capacity with R407C	kW	46.9	54.1	67.2	78.9	80.8	93.2	105.0	133.8	142.2	155.9
Absorbed capacity with R407C	kW	15.1	17.7	21.4	27.8	27.1	30.4	35.0	45.3	49.5	53.0
[Fans]											
Number of fans	n	3	3	3	3	3	3	3	4	4	4
Rotation speed	rpm	905	905	900	900	920	920	920	900	900	900
Motor capacity	kW	1.89	1.89	1.89	1.89	2.94	2.94	2.94	3.92	3.92	3.92
Total air flow rate	l/s	7300	7300	6460	6460	9800	9800	9800	13500	13500	12700
Nominal absorbed current	A	6.6	6.6	6.6	6.6	5.3	5.3	5.3	7.0	7.0	7.0
Sound pressure level	dB(A)	70	70	71	71	72	72	72.5	72	72	72
[Evaporator]											
		Weld-brazed plate					Shell and Tube				
Quantity	n	2	2	2	2	1	1	1	1	1	1
Water flow with R22	l/s	2.35	2.71	3.37	3.96	4.09	4.68	5.27	6.71	7.13	7.82
Pressure drop with R22	kPa	50	49	50	47	27	36	39	36	40	48
Water flow with R407C	l/s	2.24	2.58	3.21	3.77	3.86	4.45	5.01	6.39	6.79	7.45
Pressure drop with R407C	kPa	45	44	45	43	24	33	35	33	36	44
[Pumps]											
Available pressure with P1	kPa	112	110	98	85	111	97	87	109	93	73
Motor capacity with P1	kW	0.75	0.75	0.75	0.75	1.10	1.10	1.10	1.50	1.50	1.50
Available pressure with P1H	kPa	162	160	148	135	146	133	122	154	143	123
Motor capacity with P1H	kW	1.1	1.1	1.1	1.1	1.5	1.5	1.5	2.2	2.2	2.2
Available pressure with PT	kPa	117	120	113	110	136	116	102	114	100	76
Motor capacity with PT	kW	1.5	1.5	1.5	1.5	1.5	1.5	1.5	2.2	2.2	2.2
Buffer tank water volume	l	180	180	180	180	720	720	720	720	720	720
[Scroll compressors]											
Number of compressors	n	2	2	2	2	2	4	4	4	4	4
Circuits	n	2	2	2	2	2	2	2	2	2	2
Capacity steps	n	2	2	2	2	2	2-4	2-4	2-4	2-4	2-4
Compressors' max absorbed capacity	kW	21	24	28	33	32	36	43	58	63	67
Nominal input current	A	25	30	36	45	45	52	62	82	85	91
Max input current	A	39	45	52	61	61	69	81	112	115	123
Inrush current	A	129	142	177	198	198	258	285	236	239	244
Total absorbed capacity with R22	kW	16.8	19.3	22.8	28.8	29.6	32.7	37.0	48.1	52.1	55.4
Total absorbed capacity with R407C	kW	17.7	20.3	24.1	30.4	31.2	34.5	39.0	50.7	54.9	58.4
[Dimensions]											
Length	mm	2130	2130	2130	2130	2610	2610	2610	3460	3460	3460
Width	mm	1100	1100	1100	1100	1245	1245	1245	1245	1245	1245
Height	mm	1760	1760	1760	1760	2085	2085	2085	2085	2085	2085
Weight	kg	607	611	682	693	1000	1115	1122	1490	1530	1530
Power supply		400V / 50Hz / 3 Ph + T + N									

Nominal conditions: air temperature 32 °C - water temperature 7/12 °C

Nominal conditions in Free-cooling: air +5 °C - water inlet 15 °C - glycol 20%

Sound pressure level measured at 1 m in free field (ISO 3746)

* External buffer tank

Notes:

- Correction factors are on page 11

WATER CHILLERS R22 - R407C

AIR COOLED WATER CHILLERS WITH SCROLL COMPRESSORS AND AXIAL FANS - TWO CIRCUITS

RAE...U Technical data

RAE...U		482	562	702	842	962	1102	1402	1502	1602
Cooling capacity with R22	kW	47.6	55.0	68.4	82.2	97.1	107.2	138.8	152.8	163.7
Absorbed capacity with R22	kW	13.6	15.5	20.8	27.2	28.6	32.6	43.5	44.9	50.1
Cooling capacity with R407C	kW	45.3	52.4	65.1	78.3	92.5	102.1	132.2	145.5	155.9
Absorbed capacity with R407C	kW	14.4	16.4	22.0	28.8	30.3	34.6	46.1	47.6	53.1
[Fans]										
Number of fans	n	3	3	3	3	4	4	4	6	6
Rotation speed	rpm	630	620	620	530	520	520	500	500	500
Motor capacity	kW	1.14	1.14	1.14	0.78	1.04	1.04	1.28	2.76	2.76
Total air flow rate	l/s	5420	4580	4580	6080	8330	8330	7900	12700	12700
Nominal absorbed current	A	4.8	4.8	4.8	1.5	2.0	2.0	2.6	3.8	3.8
Sound pressure level	dB(A)	65	65	66	67.5	68.5	68.5	68.5	68.5	68.5
[Evaporator]										
		Weld-brazed plate				Shell and Tube				
Quantity	n	2	2	2	1	1	1	1	1	1
Water flow with R22	l/s	2.27	2.63	3.27	3.93	4.64	5.12	6.63	7.30	7.82
Pressure drop with R22	kPa	47	46	46	25	35	38	35	42	48
Water flow with R407C	l/s	2.17	2.50	3.11	3.74	4.42	4.88	6.32	6.95	7.45
Pressure drop with R407C	kPa	43	42	42	23	32	34	32	38	44
[Pumps]										
Available pressure with P1	kPa	117	113	107	102	92	89	109	93	73
Motor capacity with P1	kW	0.75	0.75	0.75	1.1	1.1	1.1	1.50	1.50	1.50
Available pressure with P1H	kPa	167	163	152	137	126	120	154	143	123
Motor capacity with P1H	kW	1.1	1.1	1.1	1.5	1.5	1.5	2.2	2.2	2.2
Available pressure with PT	kPa	122	123	119	123	108	93	114	100	76
Motor capacity with PT	kW	1.5	1.5	1.5	1.5	1.5	1.5	2.2	2.2	2.2
Buffer tank water volume	l	180	180	180	720	720	720	720	720	720
[Scroll Compressors]										
Number of compressors	n	2	2	2	2	4	4	4	4	4
Circuits	n	2	2	2	2	2	2	2	2	2
Capacity steps	n	2	2	2	4	2-4	2-4	2-4	2-4	2-4
Compressors' max absorbed capacity	kW	20	22	27	31	34	40	56	60	66
Nominal input current	A	26	29	38	47	51	60	83	82	91
Max input current	A	39	45	52	61	69	81	112	115	123
Inrush current	A	129	142	177	198	258	285	236	239	244
Total absorbed capacity with R22	kW	15.5	17.4	22.7	29.1	30.7	34.7	46.3	49.2	54.4
Total absorbed capacity with R407C	kW	16.3	18.3	23.9	30.7	32.5	36.7	48.9	51.9	57.4
[Dimensions]										
Length	mm	2130	2130	2130	2610	3460	3460	3460	5150	5150
Width	mm	1100	1100	1100	1245	1245	1245	1245	1245	1245
Height	mm	1770	1770	1770	2085	2085	2085	2085	2085	2085
Weight	kg	614	618	689	1018	1459	1472	1510	2020	2020
Power supply		400V / 50Hz / 3 Ph + T + N								

Nominal conditions: air temperature 32 °C - water temperature 7/12 °C

Nominal conditions in Free-cooling: air +5 °C - water inlet 15 °C - glycol 20%

Sound pressure level measured at 1 m in free field (ISO 3746)

* External buffer tank

Notes:

- Correction factors are on page 11

WATER CHILLERS R22 - R407C

AIR COOLED WATER CHILLERS WITH SCROLL COMPRESSORS AND AXIAL FANS - TWO CIRCUITS

RAE...F Technical data

RAE...F		482	562	702	842	962	1102	1402	1502	1602
Cooling capacity with R22	kW	48.0	56.3	68.7	83.8	94.1	108.4	138.0	150.2	168.2
Absorbed capacity with R22	kW	14.0	16.1	19.8	25.7	29.9	33.5	44.0	46.3	47.6
Cooling capacity with R407C	kW	45.7	53.6	65.4	79.8	89.6	103.2	131.4	143.0	160.2
Absorbed capacity with R407C	kW	14.8	17.1	21.0	27.2	31.7	35.5	46.6	49.1	50.5
Cooling capacity in free-cooling	kW	31.9	34.1	37.1	53.5	56.4	59.6	98.2	99.8	133.4
[Fans]										
Number of fans	n	3	3	3	3	3	3	4	4	6
Rotation speed	rpm	930	920	920	910	910	910	900	900	900
Motor capacity	kW	1.6	1.6	1.6	2.9	2.9	2.9	3.9	3.9	5.9
Total air flow rate	l/s	6670	6500	6500	8750	8750	8750	11400	11000	17500
Nominal absorbed current	A	6.6	6.6	6.6	5.1	5.1	5.1	7	7	10.5
Sound pressure level	dB(A)	70	70	71	72	72	73	72	72	72
[Shell and Tube evaporator]										
Quantity	n	1	1	1	1	1	1	1	1	1
Water flow with R22	l/s	2.39	2.80	3.41	4.16	4.68	5.39	6.86	7.46	8.36
Pressure drop with R22	kPa	80	65	50	60	65	63	62	71	86
Water flow with R407C	l/s	2.27	2.66	3.25	3.97	4.45	5.13	6.53	7.11	7.96
Pressure drop with R407C	kPa	86	70	54	65	70	68	67	76	93
Pressure drop in free-cooling	kPa	90	85	70	80	85	93	98	119	99
[Pumps]										
Available pressure with P1	kPa	45	45	60	105	95	85	110	76	69
Motor capacity with P1	kW	0.75	0.75	0.75	1.5	1.5	1.5	2.2	2.2	2.2
Available pressure with P1H	kPa	60	60	110	175	165	150	124	95	100
Motor capacity with P1H	kW	1.1	1.1	1.1	2.2	2.2	2.2	3.0	3.0	3.0
Available pressure with PT	kPa	58	58	100	110	150	140	127	95	104
Motor capacity with PT	kW	1.5	1.5	1.5	2.2	2.2	2.2	3.0	3.0	3.0
Buffer tank water volume	l	200*	200*	200*	720	720	720	720	720	720
[Scroll compressors]										
Number of compressors	n	2	2	2	2	4	4	4	4	4
Circuits	n	2	2	2	2	2	2	2	2	2
Capacity steps	n	2	2	2	2	2-4	2-4	4	4	4
Compressors' max absorbed capacity	kW	21	23	28	34	38	43	60	63	67
Nominal input current	A	25	29	35	47	53	61	83	84	88
Max input current	A	39	45	52	61	69	81	112	115	123
Inrush current	A	129	142	177	198	258	285	236	239	244
Total absorbed capacity with R22	kW	16.4	18.5	22.2	30.1	34.3	37.9	50.1	52.4	55.7
Total absorbed capacity with R407C	kW	17.2	19.4	23.3	31.6	36.0	39.9	52.8	55.2	58.5
[Dimensions]										
Length	mm	3000	3000	3000	2610	2610	2610	3460	3460	3460
Width	mm	1080	1080	1080	1385	1385	1385	1385	1385	1385
Height	mm	1870	1870	1870	2085	2085	2085	2085	2085	2085
Weight	kg	863	865	885	1120	1210	1290	1890	1930	2520
Power supply		400V / 50Hz / 3Ph + T + N								

Nominal conditions: air temperature 32 °C - water temperature 7/12 °C

Nominal conditions in Free-cooling: air +5 °C - water inlet 15 °C - glycol 20%

Sound pressure level measured at 1 m in free field (ISO 3746)

* External buffer tank

Notes:

- Correction factors are on page 11

WATER CHILLERS R22 - R407C

AIR COOLED WATER CHILLERS WITH SCROLL COMPRESSORS AND AXIAL FANS - TWO CIRCUITS

RAE...F.U Technical data

RAE...FU		482	562	702	842	962	1102	1402	1502	1602
Cooling capacity with R22	kW	48.0	55.9	68.0	81.2	94.0	108.1	144.5	153.6	164.6
Absorbed capacity with R22	kW	14.0	15.5	19.3	25.8	29.9	33.1	40.7	44.4	49.5
Cooling capacity with R407C	kW	45.7	53.2	64.8	77.3	89.5	103.0	137.6	146.3	156.8
Absorbed capacity with R407C	kW	14.8	16.4	20.5	27.3	31.7	35.1	43.1	47.1	52.5
Cooling capacity in free-cooling	kW	28.9	31.9	36	46.1	56.5	73	110.2	110.2	110.2
[Fans]										
Number of fans	n	3	3	3	3	4	4	6	6	6
Rotation speed	rpm	670	670	660	660	660	660	680	680	680
Motor capacity	kW	0.9	0.9	0.96	1.52	1.76	1.76	4.2	4.2	4.2
Total air flow rate	l/s	5400	5400	5000	6400	8400	8400	13700	13700	13700
Nominal absorbed current	A	4.9	4.9	4.9	3.6	4.8	4.8	6.9	6.9	6.9
Sound pressure level	dB(A)	65	65	66	67.5	68.5	68.5	68.5	68.5	68.5
[Shell and Tube evaporator]										
Quantity	n	1	1	1	1	1	1	1	1	1
Water flow with R22	l/s	2.38	2.78	3.38	4.04	4.67	5.37	7.18	7.63	8.18
Pressure drop with R22	kPa	80	65	50	60	65	63	77	83	94
Water flow with R407C	l/s	2.27	2.65	3.22	3.84	4.45	5.12	6.84	7.27	7.79
Pressure drop with R407C	kPa	86	70	54	64	70	68	83	89	101
Pressure drop in free-cooling	kPa	90	85	70	80	85	93	77	83	94
[Pumps]										
Available pressure with P1	kPa	45	45	60	105	95	85	113	102	84
Motor capacity with P1	kW	0.75	0.75	0.75	1.5	1.5	1.5	2.2	2.2	2.2
Available pressure with P1H	kPa	60	60	110	175	165	150	144	132	107
Motor capacity with P1H	kW	1.1	1.1	1.1	2.2	2.2	2.2	3.0	3.0	3.0
Available pressure with PT	kPa	58	59	98	108	150	140	145	132	111
Motor capacity with PT	kW	1.5	1.5	1.5	2.2	2.2	2.2	3.0	3.0	3.0
Buffer tank water volume	l	200*	200*	200*	720	720	720	720	720	720
[Scroll compressors]										
Number of compressors	n	2	2	2	2	4	4	4	4	4
Circuits	n	2	2	2	2	2	2	2	2	2
Capacity steps	n	2	2	2	2	2-4	2-4	4	4	4
Compressors' max absorbed capacity	kW	20	23	27	33	38	43	56	61	67
Nominal input current	A	26	30	36	47	54	62	80	82	91
Max input current	A	39	45	52	61	69	81	112	115	123
Inrush current	A	129	142	177	198	258	285	236	239	244
Total absorbed capacity with R22	kW	15.7	17.2	21.0	28.8	33.2	36.4	47.1	50.8	55.9
Total absorbed capacity with R407C	kW	16.5	18.1	22.2	30.4	35.0	38.3	49.5	53.5	58.9
[Dimensions]										
Length	mm	3000	3000	3000	2610	3460	3460	5150	5150	5150
Width	mm	1080	1080	1080	1385	1385	1385	1385	1385	1385
Height	mm	1870	1870	1870	2085	2085	2085	2085	2085	2520
Weight	kg	868	870	890	1120	1680	1740	2480	2520	2520
Power supply	400V / 50Hz / 3 Ph + T + N									

Nominal conditions: air temperature 32 °C - water temperature 7/12 °C

Nominal conditions in Free-cooling: air +5 °C - water inlet 15 °C - glycol 20%

Sound pressure level measured at 1 m in free field (ISO 3746)

* External buffer tank

Notes:

- Correction factors are on page 11

AIRCOOLED WATER CHILLER RAE... - RAS...

OPERATION LIMITS - ABSORPTION AND CAPACITY CORRECTION FACTORS

AIR: The operation limits are listed in the descriptions of each series.

WATER: The operation temperature ranges from a minimum of +4 to a maximum of +20 °C. By adding glycole in the hydraulic circuit it is possible to reach a minimum temperature of -8 °C (to be required when ordering).

CORRECTION FACTORS FOR COOLING CAPACITY

Outlet water temp. °C	EXTERNAL AIR TEMPERATURE °C								Outlet water temp. °C
	25	28	30	32	35	38	40	42	
5	1.027	0.991	0.962	0.940	0.918	0.896	0.861	0.819	5
6	1.046	1.024	1.007	0.967	0.941	0.916	0.876	0.854	6
7	1.091	1.050	1.032	1.000	0.974	0.942	0.915	0.893	7
8	1.121	1.075	1.058	1.041	0.996	0.963	0.949	0.928	8
9	1.159	1.112	1.100	1.079	1.040	1.009	0.972	0.956	9
10	1.191	1.161	1.129	1.112	1.068	1.036	1.002	—	10
11	1.228	1.190	1.162	1.130	1.101	1.058	1.049	—	11
12	1.262	1.220	1.207	1.175	1.136	1.096	1.061	—	12
13	1.308	1.250	1.226	1.200	1.158	1.122	—	—	13
14	1.335	1.300	1.278	1.251	1.195	1.160	—	—	14
15	1.365	1.345	1.307	1.272	1.232	1.196	—	—	15

CORRECTION FACTORS FOR COMPRESSOR ABSORPTION

Outlet water temp. °C	EXTERNAL AIR TEMPERATURE °C								Outlet water temp. °C
	25	28	30	32	35	38	40	42	
5	0.870	0.909	0.943	0.963	0.995	1.021	1.047	1.065	5
6	0.900	0.927	0.962	0.981	1.010	1.045	1.068	1.092	6
7	0.910	0.946	0.980	1.000	1.032	1.071	1.096	1.116	7
8	0.930	0.972	0.996	1.021	1.051	1.089	1.112	1.135	8
9	0.948	0.990	1.008	1.036	1.075	1.111	1.141	1.162	9
10	0.965	1.005	1.035	1.061	1.098	1.138	1.158	—	10
11	0.968	1.017	1.046	1.082	1.120	1.158	1.180	—	11
12	0.996	1.031	1.072	1.095	1.140	1.170	1.207	—	12
13	1.015	1.048	1.082	1.116	1.160	1.199	—	—	13
14	1.030	1.070	1.100	1.132	1.171	1.226	—	—	14
15	1.045	1.096	1.120	1.146	1.200	1.250	—	—	15

WATER-GLYCOL OPERATION

Ethylenic glycol percentage	5%	10%	15%	20%	25%	30%	35%	40%
Freezing point	-2.1	-4.5	-7	-10	-13	-17	-21	-25
Nominal performances correction factors								
Cooling drop	0.993	0.988	0.982	0.978	0.973	0.968	0.958	0.948
Increase on water flow	1.006	1.015	1.025	1.040	1.060	1.080	1.113	1.142
Increase on pressure drop	1.040	1.090	1.125	1.187	1.25	1.312	1.375	1.460

If the machine runs with an external air temperature below 0 °C, it is advisable to use water added with glycol in the percentages listed in the above table.

Emicon S.p.a. disclaims all responsibilities in case of damages deriving from violation of this suggestion.

The correction factors listed above are not to be taken into consideration for the free-cooling units.

Please, ask for further information to our Eng. Dept.