

# RAE F Kc

## AIR COOLED CHILLERS FOR OUTDOOR INSTALLATION WITH INTEGRATED FREE COOLING MULTISCROLL SERIES

COOLING CAPACITY FROM 76 TO 612 Kw 1 AND 2 COOLING CIRCUITS

RAE 1702 F Kc + P2



Above picture is only indicative and is not binding.



Packaged air cooled chillers of **RAE F Kc series** with integrated free cooling section are suitable for outdoor installation and can be used to cool glycol fluid solutions for air conditioning or in industrial applications. Multiscroll technology allows to reach great efficiency improvements at part load, if compared to the other traditional systems for cooling capacity control. The integrated free cooling section allows to partially or totally recovering cooling capacity from external air without big consumption of energy. Units are equipped with an additional coil crossed by the liquid to be chilled and invested by the complete air flow generated by the condenser fans. As soon as the external air temperature is lower than the temperature of the fluid at the inlet of the unit (return from the plant), free cooling is going to be activated allowing the fans system to achieve the maximum cooling capacity recovered at the above conditions. The benefit obtained by the free cooling system is much bigger as much lower is the external air temperature respect the temperature value of fluid to be chilled. That's why such kind of units are suitable to be installed on air conditioning and refrigeration plants located on places where the weather annual profile is characterized by medium and low external temperatures and where the cooling demand is significant and for long periods of time. Is almost always indispensable that free cooling coils are supplied with glycol mixtures so to prevent the freezing of the fluid to be chilled and to avoid relevant breakages of exchanges. On applications where is not possible to use directly glycol mixtures, is possible to added at unit a "GLYCOL LOOP" circuit (option GYL) with witch an hydraulic separation is obtained between the free cooling coils and the whole remaining part of the plant. That circuit provides the separation thanks to an additional

water/glycol heat exchanger and is complete of a water pump for the internal fluid circulation. That pump is switched on only during free cooling operation. The coupling of high-efficiency finned exchangers and the thermo physical purity of R410A refrigerant, particularly glide-free at state exchanges, allows this range to attain EER nominal values close to 3 with ESEER higher than 4,5 during mechanical working and is possible to achieve values of EER more than 25 on free cooling operation. These units have been designed considering limited space requirements and keeping, at the same time, high cooling performances. Such result has been attained with high-quality and up-to-date components. All units are completely assembled and tested in the factory with specific quality procedures and are already equipped with all necessary hydraulic, refrigerant and electrical connections for a quick installation on site. Before factory testing, cooling circuits are tested under pressure and then supplied with R410A refrigerant and a non-freezing oil charge.

Following versions are available:

- **RAE Kc** - standard version
- **RAE S Kc** - silenced version

Reduced sound level in S versions is realized by using condensers with larger surface areas respect standard ones, reduced air flow through the coils obtained thanks to an electronic fans speed controller standard provided and soundproofed compressor cabinets.

### Operation limits (standard unit):

AIR: from 0°C to 42°C; WATER (outlet from the evaporator): from 5°C to 15°C (from -5°C to 15°C using glycol mixture)

### MAIN COMPONENTS

**Structure** made of a base and a chassis manufactured in high-thickness galvanized steel, assembled with stainless steel rivets. All galvanized steel surfaces are powder-coated with color RAL 7035.

**Scroll compressors** with R410A refrigerant, operating on one single circuit or on two independent circuits in either tandem or trio version. The compressors are installed on rubber isolation dampers, provided with direct-start motors cooled by suction gas and fitted with both overload protection and crankcase heaters. They are charged with polyester oil and the terminal board is IP54. The on-board microprocessor automatically controls the individual compressors to regulate the cooling capacity.

**Stainless steel plate evaporator** of single or dual circuit type, with UV ray-proof and high thickness close cell insulation. The max operating pressure limits are 6 bar for water side and 42 bar for refrigerant side. The evaporator is also equipped with safety water flow switch switching off the unit in case of low water flow through the evaporator.

**External condensing coils** multisection type, with micro-finned copper tubes, positioned in staggered rows and mechanically expanded into an aluminum finned pack. Fins are designed with such a shape providing the highest heat exchange efficiency (turbo-fin). The max operating pressure refrigerant side is 45 relative bar.

**External free cooling coils** made of copper tubes with optimized section so to reduce the pressure drops glycol side and aluminum finned pack. Fins are designed with such a shape providing the highest heat exchange efficiency (turbo-fin). The max operating pressure fluid side of free cooling coils is 10 relative bar. The exchanger is installed frontal to the condensing coils on a frame structurally separate.

**Axial fans**, of directly 6 poles three phases motor coupled type, with wing-profile aluminum blades, are designed not to create air turbulence. This ensures the max efficiency with the lowest sound level. So, higher efficiency with lower sound emission is assured. Each fan is provided with a galvanized steel protection grid, which is painted after construction. The IP54 fans motors are completely closed and provided with in-built overload protection thermostat, incorporated to the motor windings. On request is possible to have electronic commutated BRUSHLESS motor (option EC) so to increase energy efficiency especially during free cooling work conditions.

**Independent cooling circuits**, each provided with a shut-off valve for refrigerant charge, antifreeze sensor, shut-off valves on liquid lines, sight glass, dehydrating filter, high-pressure safety device on high pressure refrigerant side and mechanical thermostatic expansion valve up to 4102 model and electronic type for all remaining sizes, as well as high and low pressure switches and gauges and pressure transducer on high pressure side for the automatic condensing pressure regulation.

**Standard hydraulic circuit** complete of three ways ON/OFF water valve for the free cooling activation, automatic air purge valves at coils and at plate heat exchangers, glycol mixture charge and discharge valves, antifreeze probe.

**"GLYCOL LOOP" hydraulic circuit (option GVL)** complete of three ways ON/OFF water valve for the free cooling activation, automatic air purge valves at coils and at plate heat exchangers, glycol mixture charge and discharge valves, antifreeze probe, additional water/glycol mixture plate heat exchanger, three phases glycol circulation

pump for free cooling coil section.

**Electric board** built in compliance with 60204-1/IEC 204-1 standards, inside of which are placed the control system and the components for motors starting, wired and tested in the factory. It is made by a cabinet suitable for outdoor installation, containing power and control devices, microprocessor electronic board complete with keypad and display, for visualizing the several functions available, main switch of lock-door type, internal anti-condensation heater complete of safe thermostat, isolation transformer for auxiliary circuits, automatic switches, fuses and protection switches for compressors and fans, terminals for general alarm and remote ON/OFF, terminal board, relays for phase sequencing and possibility to interface to BMS systems.

### ACCESSORIES

- A Amperometer:** Electrical device to measure the electrical current absorbed by the unit.
- AE Electrical power supply different than standard:** 230 V three-phase, 460 V three-phase. Frequency 50/60 Hz.
- BT Low temperature operation (-8°C):** Electronic device for the continuous modulating voltage control of the condensing pressure through the variation of the fan rotation speed (Alternative to BF).
- BF Low ambient temperature operation (down to -20°C):** Electronic device, frequency converter type, for the continuous modulating control of the condensing pressure through the variation of the fan rotation speed (Alternative to BT).
- CF Soundproofed compressors cabinet with standard material:** Insulation of compressors by a cabinet coated with 25 mm thick sound and fireproofing material. (Available only for STANDARD version)
- CFU Soundproofed compressors cabinet with higher thickness material:** Compressor insulation with high-density sound and fireproofing materials of higher thickness. (Already included in SILENCED version)
- CFT Overall compressor and technical compartment cabinet:** Insulation with sound and fireproofing materials 25 mm thickness for compressor and technical compartment. (Not available for 6-8-10 fans version) (For 1 fan version, this option correspond to CF)
- CS Compressors inrush counter:** Electromechanical device positioned inside the electrical board, recording the total inrush starts of compressors.
- EC Axial fans with electronic commutated motor:** Made of high-performance composite material, with external rotor directly coupled to a three-phase electronically commutated motor (EC), they have the possibility of a continuous regulation of the speed by means of a 0-10V signal, completely managed by the microprocessor. Thanks to a more accurate adjustment of air flow, they allow operation of the unit with external temperature down to - 20 °C. (Alternative to BF)
- GP Condensing coil protection grid:** Metal grid to protect against accidental impacts.
- GP2 Anti-intrusion grid:** Metal protection grid to protect compressors and exchangers. (Not available with CF, CFU and CFT)
- GP3 Anti-intrusion grid with compressors cabinet:** Anti-intrusion metal protection grid coupled with soundproofed compressor cabinet. (Available with CF and CFU and not available for 6-8-10 fans version)
- GVL Integrated "GLYCOL LOOP" kit:** Composed by additional water/glycol plate heat exchanger for fluids separation at free cooling coil side. The glycol circulation to the free cooling coil is assured by an embedded three phases centrifugal pump.
- I1 Victaulic insulation on pump side:** Insulation of the joints by close-cell polyurethane material, to prevent condensation, pump side.
- I2 Victaulic insulation buffer tank side:** Insulation of the joints by close-cell

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polyurethane material, to prevent condensation, buffer tank side.

- IH RS 485 Serial interface:** Electronic card to be connected to the microprocessor to allow connection of the units to supervision systems, for a remote control and monitoring of the unit. (Alternative to IH LON or IWG)
- IH LON Protocol serial interface:** Electronic card to be connected to the microprocessor to allow connection of the units to supervision systems with LON protocol, for a remote control and monitoring of the unit. (Alternative to IH or IWG)
- IM Sea wood packing:** Fumigated sea wood case and protection bag with hygroscopic salts, suitable for long sea transports.
- IWG SNMP or TCP/IP Protocol serial interface:** Electronic card to be connected to the microprocessor to allow connection of the units to supervision systems with SNMP or TCP/IP protocol, for a remote control and monitoring of the unit. (Alternative to IH or IH LON)
- MF Phase monitor:** Electronic device that checks the correct sequence and/or the lack of one of the 3 phases, switching off the unit if necessary.
- MV Buffer tank module:** Of suitable capacity complete with expansion vessel, safety valve, water gauge, water charge and discharge valves, air purging valves, check valves for filter service operations.
- P1 Pump group:** Chilled water pump group made of a single pump, expansion vessel, safety valve water gauge, water charge and discharge valves, air purging valves, electric control of the pump. The pump is centrifugal and of mono-bloc 2-pole type.
- P1H Higher available pressure pump group:** Chilled water pump group made of a single pump, expansion vessel, safety valve water gauge, water charge and discharge valves, air purging valves, electric control of the pump. The pump is centrifugal and of mono-bloc 2-pole type.
- P2 Double pump group (only one working):** Chilled water pump group made by two pumps in parallel, expansion vessel, safety valve, water gauge, water charge and discharge valves, air purging valves, water shut-off valve on suction and check valve on discharge for each single pump, electric control of the pump. The pumps are centrifugal and of mono-bloc 2-pole type.
- P2H Higher available pressure double pump group (only one working):** Chilled water pump group made by two higher available pressure pumps in parallel, expansion vessel, safety valve, water gauge, water charge and discharge valves, air purging valves, water shut-off valve on suction and check valve on discharge for each single pump, electric control of the pump. The pumps are centrifugal and of mono-bloc 2-pole type.
- PT In-line twin pump group (only one working):** Chilled water pump group made by a twin pump group with a single impeller body and two separate electric motors. The hydraulic kit is made by an expansion vessel, safety valve, water gauge, water charge and discharge valves, air purging valves, electric control of the pump. The pumps are centrifugal and of mono-bloc 2-pole type. (Not available for one-fan units).
- PA Rubber-type vibration dampers:** Bell-shaped vibration dampers supports for isolating the unit (supplied in kit), made of base and bell in galvanized steel and natural rubber mixture.
- PM Spring-type vibration dampers:** Spring-type vibration dampers supports, for isolating the unit (supplied in kit), mainly indicated for installation in difficult and aggressive environments. Made of two steel plates containing a suitable quantity of harmonic steel springs.
- PQ Remote display:** Remote terminal, allowing displaying the temperature and humidity values detected by probes, the status of digital inputs and outputs, alarm condition, remote ON/OFF and also the possibility to remotely program parameters in microprocessor.
- RA Anti-freeze heater on evaporator:** Electrical heater installed on the evaporator, in order to prevent freezing, provided with thermostat.
- RD Shut-off valve on compressors discharge side:** They are used to isolate compressors during service operation.
- RF Power factor correction system cosfi  $\geq 0,9$ :** Electrical device made by

suitable condensers for compressor rephasing that ensure a cosfi value  $\geq 0,9$ , so to reduce absorption from electrical network.

- RH Shut-off valve on compressors suction side:** They are used to isolate compressors during service operation.
- RL Compressors overload relays:** Electromechanical protection devices against compressor's overload with displayed alarm.
- RM Condensing coil with pre-painted fins:** Double-layer treatment of condensing coils with epoxy coating.
- RP Partial heat recovery:** (about 20%) of condensing heat through a refrigerant/water plate exchanger (desuperheater) always in series to the compressors. It is used when you want to partially recover condensing heat capacity for production of sanitary water.
- RR Copper/Copper coil:** Special condensing coils with copper pipes and fins.
- RV Personalized frame painting in alternative RAL color.**
- TE Electronic thermostatic valve:** Electronic thermostatic valve that reduces the response times of the unit. Useful in case of frequent changes on cooling demand, so as to improve efficiency. (Available only for models from 801 to 4102, already included on other units)
- V Voltmeter:** Electrical device measuring the electrical voltage of the unit power supply.
- VB Brine Version:** Unit suitable for working with evaporator outlet water temperatures lower than 0°C. A 20 mm evaporator insulation will be provided.
- VS Solenoid valve:** Electromagnetic solenoid valve on each cooling circuit to cut off the liquid line at compressors switch-off.

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## Technical data sheet - RAE 801-2902 F Kc

RAE F		801 Kc	1001 Kc	1301 Kc	1501 Kc	1702 Kc	2002 Kc	2302 Kc	2502 Kc	2902 Kc
<b>Cooling capacity</b>										
Cooling capacity	kW	76,1	105,5	125,1	144,3	166,6	205,8	224,5	250,3	288,6
Absorbed power	kW	27,6	34,6	44,4	49,7	53,4	72,0	82,4	88,8	99,4
Cooling capacity in free cooling 1)	kW	37,8	62,0	84,2	83,6	96,4	123,5	129,2	133,4	136,6
EER Gross		2,76	3,05	2,82	2,90	3,12	2,86	2,73	2,82	2,90
EER NET		2,53	2,67	2,54	2,64	2,74	2,59	2,50	2,54	2,64
ESEER		3,26	3,29	3,20	3,38	3,37	3,30	3,37	3,17	3,45
EER NET with free-cooling		5,03	6,06	7,45	6,20	6,13	6,36	5,88	5,31	4,97
<b>Scroll compressors</b>										
Quantity	n	2	2	2	2	2	4	4	4	4
Standard steps capacity	n	2	2	2	2	2	4	4	4	4
Circuits	n	1	1	1	1	2	2	2	2	2
Maximum absorbed current	A	66,2	88,0	106,0	119,0	132,2	176,2	194,2	212,0	238,0
Inrush current	A	175,8	238,1	245,3	321,9	330,3	297,1	305,8	315,9	401,5
<b>Axial fans</b>										
Quantity	n	1	2	2	2	3	3	3	4	4
Rotation speed	rpm	885	885	885	885	885	885	885	885	885
Motors power	kW	2,5	5,0	5,0	5,0	7,4	7,4	7,4	9,9	9,9
Total air flow	m <sup>3</sup> /h	23000	49200	48300	44440	73650	69540	69540	97600	93000
Total air flow	l/s	6.389	13.667	13.417	12.344	20.458	19.317	19.317	27.111	25.833
Nominal absorbed current	A	5,2	10,3	10,3	10,3	15,5	15,5	15,5	20,6	20,6
<b>Brazed plate evaporator</b>										
Quantity	n	1	1	1	1	1	1	1	1	1
Fluid flow rate	m <sup>3</sup> /h	16,0	22,2	26,3	30,4	35,1	43,3	47,3	52,7	60,8
Fluid flow rate	l/s	4,4	6,2	7,3	8,4	9,7	12,0	13,1	14,6	16,9
Free cooling pressure drop	kPa	96	155	176	192	141	184	193	163	190
<b>Pump group P1</b>										
Available pressure	kPa	98	104	101	76	102	98	85	131	102
Motor power	kW	2,2	3,0	4,0	4,0	4,0	5,5	5,5	9,2	9,2
Nominal absorbed current	A	4,8	6,3	8,5	8,5	8,5	12,1	12,1	18,3	18,3
Weight	Kg	32	35	41	41	41	53	53	75	75
<b>Pump group P1H</b>										
Available pressure	kPa	230	196	185	188	227	208	196	214	182
Motor power	kW	4,0	5,5	5,5	7,5	7,5	9,2	9,2	9,2	9,2
Nominal absorbed current	A	8,5	12,1	12,1	14,2	14,2	18,3	18,3	18,3	18,3
Weight	Kg	55	42	50	60	60	71	71	71	71
<b>Pump group P2</b>										
Available pressure	kPa	98	104	101	76	102	98	85	131	102
Motor power	kW	2,2	3,0	4,0	4,0	4,0	5,5	5,5	9,2	9,2
Nominal absorbed current	A	4,8	6,3	8,5	8,5	8,5	12,1	12,1	18,3	18,3
Weight	Kg	64	70	82	82	82	106	106	150	150
<b>Pump group P2H</b>										
Available pressure	kPa	230	196	185	188	227	208	196	214	182
Motor power	kW	4,0	5,5	5,5	7,5	7,5	9,2	9,2	9,2	9,2
Nominal absorbed current	A	8,5	12,1	12,1	14,2	14,2	18,3	18,3	18,3	18,3
Weight	Kg	110	84	100	120	120	142	142	142	142
<b>Pump group PT</b>										
Available pressure	kPa	107	88	97	98	129	80	103	124	94
Motor power	kW	2,2	3,0	4,0	5,5	5,5	5,5	7,5	7,5	7,5
Nominal absorbed current	A	4,4	5,8	7,7	10,2	10,2	10,2	13,7	13,7	13,7
Weight	Kg	106	121	145	179	179	179	205	205	205
<b>Hydraulic kit</b>										
Buffer tank water volume	l	100	100	300	300	300	500	500	500	500
Weight with empty MV included	Kg	40	40	80	80	80	95	95	95	95
<b>Electrical data</b>										
Total absorbed power	kW	30,1	39,6	49,4	54,7	60,8	79,4	89,8	98,7	109,3
Total nominal absorbed current	A	49,6	66,5	80,9	89,9	101,9	131,5	146,9	161,8	179,8
Total maximum absorbed current	A	71,3	98,3	116,3	129,3	147,6	191,6	209,6	232,6	258,6
Total inrush current	A	180,9	248,4	255,6	332,2	345,7	312,5	321,2	336,5	422,1
<b>Sound pressure level</b>										
Sound pressure level 3)	dB(A)	75,2	78,2	78,0	79,1	79,4	80,0	80,3	80,4	82,1
<b>Dimensions</b>										
Length	mm	1.730	2.770	2.770	2.770	3.810	3.810	3.810	4.850	4.850
Width	mm	1.370	1.370	1.370	1.370	1.370	1.370	1.370	1.370	1.370
Height	mm	2.420	2.420	2.420	2.420	2.420	2.420	2.420	2.420	2.420
Weight	kg	1.130	1.251	1.413	1.509	1.538	2.134	2.159	2.139	2.318
Weight in operation	kg	1.135	1.258	1.421	1.519	1.545	2.143	2.169	2.151	2.331
Weight with empty MV	kg	1.170	1.291	1.493	1.589	1.618	2.229	2.254	2.234	2.413
Weight in operation with empty MV	kg	1.175	1.298	1.501	1.599	1.625	2.238	2.264	2.246	2.426
Refrigerant charge for each circuit	kg	21	23	24	35	41	48	49	47	69
<b>Power supply</b>										
Power supply	V / ph / Hz	400V / 50Hz / 3 Ph + T + N								

### NOTES

- = not available.

Nominal condition referred to: air 35 °C - evaporator fluid 7/12 °C - glycol 30%.

1) For free-cooling work mode: air 3 °C - unit's inlet fluid 12 °C - glycol 30%.

3) Measured at 1 m in open field (ISO 3746).

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## Technical data sheet - RAE 3202-6102 F Kc

RAE F		3202 Kc	3402 Kc	3602 Kc	3802 Kc	4102 Kc	4902 Kc	5202 Kc	5602 Kc	6102 Kc
<b>Cooling capacity</b>										
Cooling capacity	kW	322,2	331,1	360,6	378,0	390,2	495,7	527,8	555,5	612,1
Absorbed power	kW	112,0	121,6	120,8	129,4	140,0	162,0	187,8	191,2	198,0
Cooling capacity in free cooling 1)	kW	168,2	170,1	202,1	206,1	206,1	233,3	281,3	287,7	345,4
EER Gross		2,88	2,72	2,98	2,92	2,79	3,06	2,81	2,91	3,09
EER NET		2,59	2,47	2,71	2,67	2,56	2,79	2,59	2,63	2,81
ESEER		3,20	3,16	3,35	3,36	3,34	3,87	3,68	3,64	3,94
EER NET with free-cooling		5,31	5,02	6,07	5,82	5,43	5,22	5,57	5,38	6,36
<b>Scroll compressors</b>										
Quantity	n	4	4	4	4	4	6	6	6	6
Standard steps capacity	n	4	4	4	4	4	4	4	4	4
Circuits	n	2	2	2	2	2	2	2	2	2
Maximum absorbed current	A	264,2	284,2	304,2	314,2	324,2	396,0	456,0	466,0	486,0
Inrush current	A	422,7	438,9	420,1	457,7	470,0	505,5	530,5	561,8	569,0
<b>Axial fans</b>										
Quantity	n	5	5	5	5	5	8	8	10	10
Rotation speed	rpm	885	885	885	885	885	895	895	895	895
Motors power	kW	12,4	12,4	12,4	12,4	12,4	16,0	16,0	20,0	20,0
Total air flow	m <sup>3</sup> /h	125500	125500	110500	110500	110500	153600	148800	201500	189000
Total air flow	l/s	34.861	34.861	30.694	30.694	30.694	42.667	41.333	55.972	52.500
Nominal absorbed current	A	25,8	25,8	25,8	25,8	25,8	31,2	31,2	39,0	39,0
<b>Brazed plate evaporator</b>										
Quantity	n	1	1	1	1	1	1	1	1	1
Fluid flow rate	m <sup>3</sup> /h	67,8	69,7	75,9	79,6	82,1	104,4	111,1	116,9	128,9
Fluid flow rate	l/s	18,8	19,4	21,1	22,1	22,8	29,0	30,9	32,5	35,8
Free cooling pressure drop	kPa	209	221	149	163	172	155	133	181	177
<b>Pump group P1</b>										
Available pressure	kPa	80	67	121	107	97	81	97	88	82
Motor power	kW	9,2	9,2	9,2	9,2	9,2	11,0	11,0	15,0	15,0
Nominal absorbed current	A	18,3	18,3	18,3	18,3	18,3	22,3	22,3	27,6	27,6
Weight	Kg	75	75	75	75	75	88	88	93	93
<b>Pump group P1H</b>										
Available pressure	kPa	197	184	241	227	218	207	214	199	181
Motor power	kW	15,0	15,0	15,0	15,0	15,0	15,0	15,0	18,5	18,5
Nominal absorbed current	A	27,6	27,6	27,6	27,6	27,6	27,6	27,6	31,5	31,5
Weight	Kg	85	85	85	85	85	85	85	135	135
<b>Pump group P2</b>										
Available pressure	kPa	80	67	121	107	97	81	97	88	82
Motor power	kW	9,2	9,2	9,2	9,2	9,2	11,0	11,0	15,0	15,0
Nominal absorbed current	A	18,3	18,3	18,3	18,3	18,3	22,3	22,3	27,6	27,6
Weight	Kg	150	150	150	150	150	176	176	186	186
<b>Pump group P2H</b>										
Available pressure	kPa	197	184	241	227	218	207	214	199	181
Motor power	kW	15,0	15,0	15,0	15,0	15,0	15,0	15,0	18,5	18,5
Nominal absorbed current	A	27,6	27,6	27,6	27,6	27,6	27,6	27,6	31,5	31,5
Weight	Kg	170	170	170	170	170	170	170	270	270
<b>Pump group PT</b>										
Available pressure	kPa	70	131	120	106	98	96	105	92	91
Motor power	kW	7,5	11,0	11,0	11,0	11,0	11,0	11,0	18,5	18,5
Nominal absorbed current	A	13,7	22,0	22,0	22,0	22,0	22,0	22,0	34,2	34,2
Weight	Kg	205	304	313	313	313	313	313	367	367
<b>Hydraulic kit</b>										
Buffer tank water volume	l	800	800	800	800	1100	1100	1100	1100	1100
Weight with empty MV included	Kg	145	145	145	145	220	220	220	220	220
<b>Electrical data</b>										
Total absorbed power	kW	124,4	134,0	133,2	141,8	152,4	178,0	203,8	211,2	218,0
Total nominal absorbed current	A	206,6	225,8	229,8	240,8	255,0	293,4	347,4	358,2	364,2
Total maximum absorbed current	A	289,9	309,9	329,9	339,9	349,9	427,2	487,2	505,0	525,0
Total inrush current	A	448,4	464,6	445,8	483,4	495,7	536,7	561,7	600,8	608,0
<b>Sound pressure level</b>										
Sound pressure level 3)	dB(A)	82,5	82,4	82,9	82,9	84,1	82,2	81,9	84,1	84,6
<b>Dimensions</b>										
Length	mm	5.890	5.890	5.890	5.890	5.890	4.750	4.750	5.720	5.720
Width	mm	1.370	1.370	1.370	1.370	1.370	2.300	2.300	2.300	2.300
Height	mm	2.420	2.420	2.420	2.420	2.420	2.560	2.560	2.560	2.560
Weight	kg	2.386	2.441	2.787	2.849	2.901	4.010	4.281	4.226	4.974
Weight in operation	kg	2.407	2.462	2.813	2.874	2.929	4.042	4.317	4.262	5.016
Weight with empty MV	kg	2.531	2.586	2.932	2.994	3.121	4.230	4.501	4.446	5.194
Wight in operation with empty MV	kg	2.552	2.607	2.958	3.019	3.149	4.262	4.537	4.482	5.236
Refrigerant charge for each circuit	kg	61	61	84	84	84	135	137	128	163
<b>Power supply</b>										
Power supply	V / ph / Hz	400V / 50Hz / 3 Ph + T + N								
<b>NOTES</b>										
- = not available.										
Nominal condition referred to: air 35 °C - evaporator fluid 7/12 °C - glycol 30%.										
1) For free-cooling work mode: air 3 °C - unit's inlet fluid 12 °C - glycol 30%.										
3) Measured at 1 m in open field (ISO 3746).										