

RAE Kc

AIR COOLED CHILLERS FOR OUTDOOR INSTALLATION MULTISCROLL COMPRESSORS

COOLING CAPACITY FROM 153 TO 623 kW 1 AND 2 COOLING CIRCUITS



Above pictures are only indicative and are not binding.



Packaged air cooled chillers of **RAE Kc series** are suitable for outdoor installation and can be used to cool pure 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 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. 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 AM Kc** - standard version for markets without regulations "ERP 2018"
- **RAE U Kc** - ultra silenced version
- **RAE U AM Kc** - ultra silenced version for markets without regulations "ERP 2018"

- **RAE S Kc** - ultra silenced version

Reduced sound level in versions S and U is realised by using condensers with larger surface areas as well as soundproofed compressor cabinets. On the U version, the electronic fans speed control is also standard provided.

Operation limits (standard unit):

AIR: from 10 to 42°C; WATER (outlet from the evaporator): From 5 to 15°C.

MAIN COMPONENTS

Structure made of a base and a chassis manufactured in high-thickness galvanised steel, assembled with stainless steel rivets. All galvanised steel surfaces are powder-coated with colour 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 high thickness close cell insulation and UV ray-proof. 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.

Heat-exchange external coils with micro-finned copper tubes, positioned in staggered rows and mechanically expanded into an aluminium 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.

Axial fans, of directly coupled type, with wing-profile aluminium blades, are designed not to create air turbulence. This ensures the max efficiency with the lowest sound level. 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.

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, as well as high and low pressure switches and gauges.

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, 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. (Included in S version)
- CFU Soundproofed compressors cabinet with higher thickness material:** Compressor insulation with high-density sound and fireproofing materials of higher thickness. (Included in U 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 BT and 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 (only available with CF and CFU).
- 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 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 Seawood packing:** Fumigated seawood 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 of enbloc 2-pole type for standard and S versions, 4-pole for U version.
- 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 of enbloc 2-pole type for standard and S versions, 4-pole for U version.
- 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 of enbloc 2-pole type for standard and S versions, 4-pole for U version.
- P2H Higher available pressure double pump group (only one**

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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 of enbloc 2-pole type for standard and S versions, 4-pole for U version

- 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 hydronic 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 of enbloc 2-pole type for standard and S versions, 4-pole for U version. (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 to display the temperature values detected by probes, the alarm digital inputs, the outputs and the remote ON/OFF of the unit, to change and program of the parameters, the signaling and the display of the present alarms.
- 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 $\cos\phi \geq 0,9$:** Electrical device made by suitable condensers for compressor rephasing that ensure a $\cos\phi$ 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.
- RT Total heat recovery:** (100%) of condensing heat by refrigerant/water heat exchanger in alternative and in parallel to the condensing air section. It is used when you want to completely recover condensing heat capacity for production of sanitary water or for heating applications.
- 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.
- 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.

Technical data sheet - RAE 1602-5902 Kc

RAE... KC		1602	1902	2402	2802	3202	3512	4002	4602	5102	5502	5902
Cooling capacity												
Cooling capacity	kW	153,3	194,1	240,9	277,6	312,1	355,5	399,5	465,4	501,4	551,8	588,1
Absorbed power	kW	49,26	63,78	82,00	93,28	104,28	118,90	131,80	155,78	171,98	182,88	196,20
EER Gross		3,11	3,04	2,94	2,98	2,99	2,99	3,03	2,99	2,92	3,02	3,00
EER NET		2,83	2,73	2,69	2,69	2,73	2,71	2,79	2,72	2,68	2,78	2,73
SEER		3,83	3,80	3,81	3,96	3,87	4,00	3,87	4,16	4,12	4,15	4,08
Scroll Compressors												
Quantity	n	4	4	4	4	4	4	4	6	6	6	6
Standard steps capacity	n	4	4	4	4	4	4	4	6	6	6	6
Circuits	n	2	2	2	2	2	2	2	2	2	2	2
Maximum absorbed current	A	139,70	164,55	194,55	229,40	264,40	299,25	334,25	393,80	428,80	463,80	496,00
Inrush current	A	249,70	309,55	379,55	429,40	444,40	559,25	579,25	538,80	648,80	668,80	691,00
Axial fans												
Quantity	n	2	3	3	4	4	5	5	8	8	8	10
Rotation speed	rpm	885	885	885	885	885	885	885	885	885	885	885
Motors power	kW	4,96	7,44	7,44	9,92	9,92	12,40	12,40	15,52	15,52	15,52	19,40
Total air flow	m ³ /h	50540	80130	75960	106800	101070	133530	126370	169140	169140	162380	211470
Nominal absorbed current	A	10,30	15,45	15,45	20,60	20,60	25,75	25,75	31,20	31,20	31,20	39,00
Brazed plate evaporator												
Quantity	n	1	1	1	1	1	1	1	1	1	1	1
Water flow rate	m ³ /h	26,4	33,4	41,4	47,7	53,7	61,1	68,7	80,0	86,2	94,9	101,2
Pressure drop	kPa	31	48	58	56	71	58,5	53,5	47,5	55	62	73
Pump group P1												
Available pressure	kPa	100	106	111	101	88	110	111	140	128	112	119
Motor power	kW	1,9	3,0	4,0	4,0	4,0	5,5	5,5	7,5	7,5	7,5	9,2
Nominal absorbed current	A	5,0	6,5	8,3	8,5	8,5	10,2	11,0	14,0	14,0	14,0	16,5
Weight	Kg	15	35	41	44	44	53	53	58	58	58	75
Pump group P1H												
Available pressure	kPa	228	210	231	249	224,0	232	264	250	240	235	196
Motor power	kW	3,0	5,5	5,5	7,5	7,5	7,5	11,0	11,0	11,0	11,0	11,0
Nominal absorbed current	A	5,7	10,7	10,3	15,0	15,0	15,0	21,5	21,5	21,5	21,5	21,5
Weight	Kg	55	35	50	60	60	60	81	81	81	81	81
Pump group P2												
Available pressure	kPa	100	106	111	101	88,0	110	111	140	128	112	119
Motor power	kW	1,9	3,0	4,0	4,0	4,0	5,5	5,5	7,5	7,5	7,5	9,2
Nominal absorbed current	A	5,0	6,5	8,3	8,5	8,5	10,2	11,0	14,0	14,0	14,0	16,5
Weight	Kg	31	70	82	88	88	106	106	116	116	116	150
Pump group P2H												
Available pressure	kPa	228	210	231	249	224	232	264	250	240	235	196
Motor power	kW	3,0	5,5	5,5	7,5	7,5	7,5	11,0	11,0	11,0	11,0	11,0
Nominal absorbed current	A	5,7	10,7	10,3	15,0	15,0	15,0	21,5	21,5	21,5	21,5	21,5
Weight	Kg	110	70	100	120	120	120	162	162	162	162	162
Pump group PT												
Available pressure	kPa	155	91	105	134	94	91	144	120	112	102	142
Motor power	kW	3,0	3,0	4,0	5,5	5,5	5,5	7,5	7,5	7,5	7,5	11,0
Nominal absorbed current	A	6,1	6,1	7,8	10,3	10,3	10,3	13,8	13,8	13,8	13,8	20,2
Weight	Kg	123	123	137	168	168	168	182	182	182	182	267
Hydraulic kit												
Buffer tank water volume	l	250	400	400	800	800	1100	1100	1100	1100	1100	1100
Weight with empty MV included	Kg	80	95	95	145	145	220	220	220	220	220	220
Electrical data												
Total absorbed power	kW	54,22	71,22	89,44	103,2	114,2	131,3	144,2	171,3	187,5	198,4	215,6
Total nominal absorbed current	A	102,1	125	154	177,6	195,2	224,2	245,1	293,2	318,4	336,2	365,4
Total maximum absorbed current	A	150	180	210	250	285	325	360	425	460	495	535
Total inrush current	A	260	325	395	450	465	585	605	570	680	700	730
Sound pressure level												
Sound pressure level 2)	dB(A)	79,0	80,0	80,0	81,0	81,0	82,0	82,0	83,0	83,0	83,0	84,0
Dimensions												
Length	mm	2660	3700	3700	4740	4740	5780	5780	4750	4750	4750	5720
Width	mm	1370	1370	1370	1370	1370	1370	1370	2300	2300	2300	2300
Height	mm	2420	2420	2420	2420	2420	2420	2420	2560	2560	2560	2560
Transport weight	kg	1166	1620	1776	1954	2066	2248	2410	3278	3368	3592	4038
Weight in operation	kg	1176	1630	1788	1972	2084	2272	2440	3318	3408	3634	4080
Alimentazione elettrica												
Alimentazione elettrica	V / ph / Hz	400 V/ 50Hz / 3Ph + T										
NOTES												
Nominal condition referred to: air 35 °C - chilled water 7/12 °C.												
2) Measured at 1 m in open field (ISO 3746).												

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Technical data sheet - RAE 1602-5902 AM Kc

RAE... AM KC		1602	1902	2402	2802	3202	3512	4002	4602	5102	5502	5902
Cooling capacity												
Cooling capacity	kW	147,7	184,9	234	266,4	303,5	348	390	455,3	488,7	529,7	582,9
Absorbed power	kW	51,55	68,76	85,78	98,06	108,38	122,18	136,90	163,70	180,50	192,38	200,58
EER Gross		2,87	2,69	2,73	2,72	2,80	2,85	2,85	2,78	2,71	2,75	2,91
EER NET		2,61	2,51	2,51	2,53	2,57	2,63	2,61	2,59	2,53	2,55	2,70
SEER		3,34	3,40	3,55	3,51	3,38	3,58	3,43	3,60	3,58	3,73	3,80
Scroll Compressors												
Quantity	n	4	4	4	4	4	4	4	6	6	6	6
Standard steps capacity	n	4	4	4	4	4	4	4	4	4	4	4
Circuits	n	2	2	2	2	2	2	2	2	2	2	2
Maximum absorbed current	A	139,70	169,70	194,55	234,55	264,40	304,40	334,25	399,25	434,25	463,80	503,80
Inrush current	A	249,70	314,70	379,55	434,55	444,40	564,40	579,25	544,25	654,25	668,80	698,80
Axial fans												
Quantity	n	2	2	3	3	4	4	5	5	5	8	8
Rotation speed	rpm	885	885	885	885	885	885	885	885	885	885	885
Motors power	kW	4,96	4,96	7,44	7,44	9,92	9,92	12,40	12,40	12,40	15,52	15,52
Total air flow	m ³ /h	53400	50540	80130	75960	106800	101070	133530	126370	120320	169140	162380
Nominal absorbed current	A	10,30	10,30	15,45	15,45	20,60	20,60	25,75	25,75	25,75	31,20	31,20
Brazed plate evaporator												
Quantity	n	1	1	1	1	1	1	1	1	1	1	1
Water flow rate	m ³ /h	25,4	31,8	40,2	45,8	52,2	59,9	67,1	78,3	84,1	91,1	100,3
Pressure drop	kPa	29	44	53,5	52	67,5	56,5	51	45,5	52,5	57,5	72,5
Pump group P1												
Available pressure	kPa	100	106	111	101	88	110	92	140	140	112	119
Motor power	kW	1,9	3,0	4,0	4,0	4,0	5,5	5,5	7,5	7,5	7,5	9,2
Nominal absorbed current	A	5,0	6,5	8,3	8,5	8,5	10,2	10,2	14,0	14,0	14,0	16,5
Weight	Kg	15	35	41	44	44	53	53	58	58	58	75
Pump group P1H												
Available pressure	kPa	228	210	231	249	224,0	232	196	250	250	235	196
Motor power	kW	3,0	5,5	5,5	7,5	7,5	7,5	7,5	11,0	11,0	11,0	11,0
Nominal absorbed current	A	5,7	10,7	10,3	15,0	15,0	15,0	15,0	21,5	21,5	21,5	21,5
Weight	Kg	55	35	50	60	60	60	60	81	81	81	81
Pump group P2												
Available pressure	kPa	100	106	111	101	88,0	110	92	140	140	112	119
Motor power	kW	1,9	3,0	4,0	4,0	4,0	5,5	5,5	7,5	7,5	7,5	9,2
Nominal absorbed current	A	5,0	6,5	8,3	8,5	8,5	10,2	10,2	14,0	14,0	14,0	16,5
Weight	Kg	31	70	82	88	88	106	106	116	116	116	150
Pump group P2H												
Available pressure	kPa	228	210	231	249	224	232	196	250	250	235	196
Motor power	kW	3,0	5,5	5,5	7,5	7,5	7,5	7,5	11,0	11,0	11,0	11,0
Nominal absorbed current	A	5,7	10,7	10,3	15,0	15,0	15,0	15,0	21,5	21,5	21,5	21,5
Weight	Kg	110	70	100	120	120	120	120	162	162	162	162
Pump group PT												
Available pressure	kPa	155	91	105	134	94	91	94	120	120	102	142
Motor power	kW	3,0	3,0	4,0	5,5	5,5	5,5	5,5	7,5	7,5	7,5	11,0
Nominal absorbed current	A	6,1	6,1	7,8	10,3	10,3	10,3	10,3	13,8	13,8	13,8	20,2
Weight	Kg	123	123	137	168	168	168	166	182	182	182	267
Hydraulic kit												
Buffer tank water volume	l	250	250	400	400	800	800	1100	1100	1100	1100	1100
Weight with empty MV included	Kg	80	80	95	95	145	145	220	220	220	220	220
Electrical data												
Total absorbed power	kW	56,51	73,72	93,22	105,5	118,3	132,1	149,3	176,1	192,9	207,9	216,1
Total nominal absorbed current	A	105,4	126,3	158,8	178,7	201,1	223,6	252,7	299	325,1	350,1	363,7
Total maximum absorbed current	A	150	180	210	250	285	325	360	425	460	495	535
Total inrush current	A	260	325	395	450	465	585	605	570	680	700	730
Sound pressure level												
Sound pressure level 2)	dB(A)	79,0	79,0	80,0	80,0	81,0	81,0	82,0	82,0	82,0	83,0	83,0
Dimensions												
Length	mm	2660	2660	3700	3700	4740	4740	5780	5780	5780	4750	4750
Width	mm	1370	1370	1370	1370	1370	1370	1370	1370	1370	2300	2300
Height	mm	2420	2420	2420	2420	2420	2420	2420	2420	2420	2560	2560
Transport weight	kg	1110	1516	1690	1870	1954	2200	2270	2752	2982	3380	3592
Weight in operation	kg	1120	1526	1702	1888	1972	2224	2300	2792	3022	3422	3634
Power supply												
Power supply	V / ph / Hz	400 V / 50Hz / 3Ph + T										
NOTES												
Nominal condition referred to: air 35 °C - chilled water 7/12 °C.												
2) Measured at 1 m in open field (ISO 3746).												

Technical data sheet - RAE 1602-5902 U Kc

RAE... U Kc		1602	1902	2402	2802	3202	3512	4002	4602	5102	5502	5902
Cooling capacity												
Cooling capacity	kW	155,6	194,3	241,2	276,6	310,6	353,8	393,5	470	504,9	540,8	591,6
Absorbed power	kW	45,55	61,69	78,59	90,88	101,70	116,00	133,20	150,28	166,28	180,20	191,00
EER Gross		3,42	3,15	3,07	3,04	3,05	3,05	2,95	3,13	3,04	3,00	3,10
EER NET		2,94	2,81	2,73	2,74	2,72	2,76	2,70	2,83	2,78	2,71	2,81
SEER		3,96	3,84	3,86	3,97	3,82	4,01	3,80	4,22	4,15	4,17	4,10
Scroll Compressors												
Quantity	n	4	4	4	4	4	4	4	6	6	6	6
Standard steps capacity	n	4	4	4	4	4	4	4	6	6	6	6
Circuits	n	2	2	2	2	2	2	2	2	2	2	2
Maximum absorbed current	A	129,6	154,6	189,4	219,4	254,3	289,3	319,3	383,8	413,8	446,0	481,0
Inrush current	A	244,6	304,6	369,4	419,4	434,3	544,3	574,3	523,8	633,8	656,0	671,0
Axial fans												
Quantity	n	3	3	4	4	5	5	5	8	8	10	10
Rotation speed	rpm	885	885	885	885	885	885	885	885	885	885	885
Motors power	kW	7,4	7,4	9,9	9,9	12,4	12,4	12,4	15,5	15,5	19,4	19,4
Total air flow	m ³ /h	62620	58560	83450	78030	104340	97570	91770	129030	122900	170090	161340
Nominal absorbed current	A	15,5	15,5	20,6	20,6	25,8	25,8	25,8	31,2	31,2	39,0	39,0
Brazed plate evaporator												
Quantity	n	1	1	1	1	1	1	1	1	1	1	1
Water flow rate	m ³ /h	26,8	33,4	41,5	47,6	53,4	60,9	67,7	80,8	86,8	93,0	101,8
Pressure drop	kPa	32	48	58,5	55,18	68,5	56	44,5	46,5	55	59	69
Pump group P1												
Available pressure	kPa	100	106	111	101	88	110	111	140	128	112	119
Motor power	kW	1,9	3,0	4,0	4,0	4,0	5,5	5,5	7,5	7,5	7,5	9,2
Nominal absorbed current	A	5,0	6,5	8,3	8,5	8,5	10,2	11,0	14,0	14,0	14,0	16,5
Weight	Kg	15	35	41	44	44	53	53	58	58	58	75
Pump group P1H												
Available pressure	kPa	228	210	231	249	224,0	232	264	250	240	235	196
Motor power	kW	3,0	5,5	5,5	7,5	7,5	7,5	11,0	11,0	11,0	11,0	11,0
Nominal absorbed current	A	5,7	10,7	10,3	15,0	15,0	15,0	21,5	21,5	21,5	21,5	21,5
Weight	Kg	55	35	50	60	60	60	81	81	81	81	81
Pump group P2												
Available pressure	kPa	100	106	111	101	88,0	110	111	140	128	112	119
Motor power	kW	1,9	3,0	4,0	4,0	4,0	5,5	5,5	7,5	7,5	7,5	9,2
Nominal absorbed current	A	5,0	6,5	8,3	8,5	8,5	10,2	11,0	14,0	14,0	14,0	16,5
Weight	Kg	31	70	82	88	88	106	106	116	116	116	150
Pump group P2H												
Available pressure	kPa	228	210	231	249	224	232	264	250	240	235	196
Motor power	kW	3,0	5,5	5,5	7,5	7,5	7,5	11,0	11,0	11,0	11,0	11,0
Nominal absorbed current	A	5,7	10,7	10,3	15,0	15,0	15,0	21,5	21,5	21,5	21,5	21,5
Weight	Kg	110	70	100	120	120	120	162	162	162	162	162
Pump group PT												
Available pressure	kPa	155	91	105	134	94	91	144	120	112	102	142
Motor power	kW	3,0	3,0	4,0	5,5	5,5	5,5	7,5	7,5	7,5	7,5	11,0
Nominal absorbed current	A	6,1	6,1	7,8	10,3	10,3	10,3	13,8	13,8	13,8	13,8	20,2
Weight	Kg	123	123	137	168	168	168	182	182	182	182	267
Hydraulic kit												
Buffer tank water volume	l	400	400	800	800	1100	1100	1100	1100	1100	1100	1100
Weight with empty MV included	Kg	95	95	145	145	220	220	220	220	220	220	220
Electrical data												
Total absorbed power	kW	52,99	69,13	88,51	100,8	114,1	128,4	145,6	165,8	181,8	199,6	210,4
Total nominal absorbed current	A	99,2	119,0	150,4	170,0	191,8	214,9	242,5	279,4	304,5	333,2	350,6
Total maximum absorbed current	A	145	170	210	240	280	315	345	415	445	485	520
Total inrush current	A	260	320	390	440	460	570	600	555	665	695	710
Sound pressure level												
Sound pressure level 2)	dB(A)	68,0	68,0	69,0	69,0	71,0	71,0	71,0	74,0	74,0	75,0	75,0
Dimensions												
Length	mm	3700	3700	4740	4740	5780	5780	5780	4750	4750	5720	5720
Width	mm	1370	1370	1370	1370	1370	1370	1370	2300	2300	2300	2300
Height	mm	2420	2420	2420	2420	2420	2420	2420	2560	2560	2560	2560
Transport weight	kg	1400	1834	1990	2196	2244	2518	2686	3678	3996	4210	4482
Weight in operation	kg	1410	1844	2002	2214	2262	2542	2716	3718	4036	4252	4524
Power supply												
Power supply	V / ph / Hz	400 V / 50Hz / 3Ph + T										
NOTES												
Nominal condition referred to: air 35 °C - chilled water 7/12 °C.												
2) Measured at 1 m in open field (ISO 3746).												

LIQUID CHILLERS - AIR COOLED

Technical data sheet - RAE 1602-5902 U AM Kc

RAE...U AM KC		1602	1902	2402	2802	3202	3512	4002	4602	5102	5502	5902
Cooling capacity												
Cooling capacity	kW	147,1	188,1	231,5	269,5	301,1	345,3	387,5	450,7	500,6	537,9	573,5
Absorbed power	kW	52,29	67,15	86,29	97,72	110,02	124,35	138,45	163,72	174,32	189,92	205,50
EER Gross		2,81	2,80	2,68	2,76	2,74	2,78	2,80	2,75	2,87	2,83	2,79
EER NET		2,65	2,62	2,54	2,59	2,59	2,61	2,65	2,60	2,72	2,69	2,64
SEER		3,54	3,50	3,58	3,63	3,58	3,68	3,66	3,93	4,03	3,85	3,85
Scroll Compressors												
Quantity	n	4	4	4	4	4	4	4	6	6	6	6
Standard steps capacity	n	4	4	4	4	4	4	4	4	4	4	4
Circuits	n	2	2	2	2	2	2	2	2	2	2	2
Maximum absorbed current	A	139,2	161,3	201,3	228,4	268,4	300,5	330,5	397,2	427,2	467,2	497,7
Inrush current	A	254,2	311,3	381,3	428,4	448,4	555,5	585,5	537,2	647,2	677,2	687,7
Axial fans												
Quantity	n	2	3	3	4	4	5	5	8	8	8	10
Rotation speed	rpm	885	885	885	885	885	885	885	885	885	885	885
Motors power	kW	3,1	4,7	4,7	6,3	6,3	7,9	7,9	9,7	9,7	9,7	12,1
Total air flow	m ³ /h	33795	62620	58565	83450	78035	104340	97575	136045	129030	122900	170095
Nominal absorbed current	A	5,8	8,7	8,7	11,6	11,6	14,5	14,5	17,8	17,8	17,8	22,3
Brazed plate evaporator												
Quantity	n	1	1	1	1	1	1	1	1	1	1	1
Water flow rate	m ³ /h	25,3	32,4	39,8	46,4	51,8	59,4	66,7	77,5	86,1	92,5	98,6
Pressure drop	kPa	29	45	54	52,5	64,5	53,5	43,5	43	54,5	58,5	65
Pump group P1												
Available pressure	kPa	100	106	111	101	88	110	92	140	128	112	119
Motor power	kW	1,9	3,0	4,0	4,0	4,0	5,5	5,5	7,5	7,5	7,5	9,2
Nominal absorbed current	A	5,0	6,5	8,3	8,5	8,5	10,2	10,2	14,0	14,0	14,0	16,5
Weight	Kg	15	35	41	44	44	53	53	58	58	58	75
Pump group P1H												
Available pressure	kPa	228	210	231	249	224,0	232	196	250	240	235	196
Motor power	kW	3,0	5,5	5,5	7,5	7,5	7,5	7,5	11,0	11,0	11,0	11,0
Nominal absorbed current	A	5,7	10,7	10,3	15,0	15,0	15,0	15,0	21,5	21,5	21,5	21,5
Weight	Kg	55	35	50	60	60	60	60	81	81	81	81
Pump group P2												
Available pressure	kPa	100	106	111	101	88,0	110	92	140	128	112	119
Motor power	kW	1,9	3,0	4,0	4,0	4,0	5,5	5,5	7,5	7,5	7,5	9,2
Nominal absorbed current	A	5,0	6,5	8,3	8,5	8,5	10,2	10,2	14,0	14,0	14,0	16,5
Weight	Kg	31	70	82	88	88	106	106	116	116	116	150
Pump group P2H												
Available pressure	kPa	228	210	231	249	224	232	196	250	240	235	196
Motor power	kW	3,0	5,5	5,5	7,5	7,5	7,5	7,5	11,0	11,0	11,0	11,0
Nominal absorbed current	A	5,7	10,7	10,3	15,0	15,0	15,0	15,0	21,5	21,5	21,5	21,5
Weight	Kg	110	70	100	120	120	120	120	162	162	162	162
Pump group PT												
Available pressure	kPa	155	91	105	134	94	91	94	120	112	102	142
Motor power	kW	3,0	3,0	4,0	5,5	5,5	5,5	5,5	7,5	7,5	7,5	11,0
Nominal absorbed current	A	6,1	6,1	7,8	10,3	10,3	10,3	10,3	13,8	13,8	13,8	20,2
Weight	Kg	123	123	137	168	168	168	166	182	182	182	267
Hydraulic kit												
Buffer tank water volume	l	250	400	400	800	800	1100	1100	1100	1100	1100	1100
Weight with empty MV included	Kg	80	95	95	145	145	220	220	220	220	220	220
Electrical data												
Total absorbed power	kW	55,43	71,86	91	104	116,3	132,2	146,3	173,4	184	199,6	217,6
Total nominal absorbed current	A	101,7	122,6	152,5	174,3	194,2	220,5	243,5	290,3	307,6	332,3	361,1
Total maximum absorbed current	A	145	170	210	240	280	315	345	415	445	485	520
Total inrush current	A	260	320	390	440	460	570	600	555	665	695	710
Sound pressure level												
Sound pressure level 2)	dB(A)	66,0	68,0	68,0	69,0	69,0	72,0	72,0	74,0	74,0	74,0	75,0
Dimensions												
Length	mm	2660	3700	3700	4740	4740	5780	5780	4750	4750	4750	5720
Width	mm	1370	1370	1370	1370	1370	1370	1370	2300	2300	2300	2300
Height	mm	2420	2420	2420	2420	2420	2420	2420	2560	2560	2560	2560
Transport weight	kg	1324	1748	1904	2084	2196	2378	2540	3458	3768	4000	4210
Weight in operation	kg	1338	1762	1920	2104	2216	2404	2572	3502	3812	4046	4256
Power supply												
Power supply	V / ph / Hz	400 V / 50Hz / 3Ph + T										
NOTES												
Nominal condition referred to: air 35 °C - chilled water 7/12 °C.												
2) Measured at 1 m in open field (ISO 3746).												

RAE Kc
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Technical data sheet - RAE 1501-3402 S Kc

RAE S		1501 Kc	1702 Kc	2002 Kc	2302 Kc	2502 Kc	2902 Kc	3202 Kc	3402 Kc
Cooling capacity									
Cooling capacity	kW	146,9	168,1	206,2	228,0	250,0	291,0	323,0	346,0
Absorbed power	kW	49,6	54,0	73,2	82,2	91,2	100,4	114,8	117,2
EER Gross		2,96	3,11	2,82	2,77	2,74	2,90	2,81	2,95
EER NET		2,79	2,86	2,65	2,62	2,61	2,73	2,67	2,77
ESEER		3,28	3,30	3,39	3,52	3,49	3,47	3,48	3,43
Scroll Compressors									
Quantity	n	2	2	4	4	4	4	4	4
Standard steps capacity	n	2	2	4	4	4	4	4	4
Circuits	n	1	2	2	2	2	2	2	2
Nominal absorbed current	A	79,4	87,4	118,4	131,4	144,4	160,2	184,8	193,4
Maximum absorbed current	A	119,0	132,0	176,0	194,0	212,0	238,0	264,0	284,0
Inrush current	A	321,8	330,7	298,8	305,7	318,3	402,3	425,6	428,3
Axial fans									
Quantity	n	2	3	3	3	3	4	4	5
Rotation speed	rpm	685	685	685	685	685	685	685	685
Motors power	kW	3,1	4,7	4,7	4,7	4,7	6,3	6,3	7,9
Total air flow	m ³ /h	34.600	67.200	60.150	53.700	51.750	80.200	67.920	100.250
Nominal absorbed current	A	5,8	8,7	8,7	8,7	8,7	11,6	11,6	14,5
Brazed plate evaporator									
Quantity	n	1	1	1	1	1	1	1	1
Water flow rate	m ³ /h	25,3	28,9	35,5	39,2	43,0	50,1	55,6	59,5
Pressure drop	kPa	54	65	62	62	70	64	76	65
Pump group P1									
Available pressure	kPa	92	136	116	103	142	115	114	91
Motor power	kW	3,0	4,0	4,0	4,0	5,5	5,5	9,2	9,2
Nominal absorbed current	A	7,2	9,2	9,2	9,2	12,5	12,5	18,2	18,2
Weight	Kg	54	90	90	90	105	105	173	173
Pump group P1H									
Available pressure	kPa	212	194	180	203	192	190	251	221
Motor power	kW	5,5	5,5	5,5	9,2	9,2	9,2	15,0	15,0
Nominal absorbed current	A	12,5	12,5	12,5	18,2	18,2	18,2	31,0	31,0
Weight	Kg	105	105	105	173	173	173	204	204
Pump group P2									
Available pressure	kPa	92	136	116	103	142	115	114	91
Motor power	kW	3,0	4,0	4,0	4,0	5,5	5,5	9,2	9,2
Nominal absorbed current	A	7,2	9,2	9,2	9,2	12,5	12,5	18,2	18,2
Weight	Kg	108	180	180	180	210	210	346	346
Pump group P2H									
Available pressure	kPa	212	194	180	203	192	190	251	221
Motor power	kW	5,5	5,5	5,5	9,2	9,2	9,2	15,0	15,0
Nominal absorbed current	A	12,5	12,5	12,5	18,2	18,2	18,2	31,0	31,0
Weight	Kg	210	210	210	346	346	346	408	408
Pump group PT									
Available pressure	kPa	102	121	111	108	92	124	134	118
Motor power	kW	3,0	3,0	4,0	4,0	4,0	5,5	11,0	11,0
Nominal absorbed current	A	6,4	6,4	8,2	8,2	8,2	11,4	21,5	21,5
Weight	Kg	158	168	180	180	180	204	346	346
Hydraulic kit									
Buffer tank water volume	l	250	250	400	400	400	800	1100	1100
Weight with empty MV included	Kg	80	80	95	95	95	145	220	220
Electrical data									
Total absorbed power	kW	52,7	58,7	77,9	86,9	95,9	106,7	205,5	210,7
Total nominal absorbed current	A	85,2	96,1	127,1	140,1	153,1	171,8	337,4	350,2
Total maximum absorbed current	A	124,8	140,7	184,7	202,7	220,7	249,6	491,0	511,0
Total inrush current	A	327,6	339,4	307,5	314,4	327,0	413,9	581,2	594,0
Sound pressure level									
Sound pressure level 2)	dB(A)	74,4	74,6	75,1	75,4	74,8	76,4	79,5	80,8
Dimensions									
Length	mm	2.660	3.700	3.700	3.700	3.700	4.740	5.720	5.720
Width	mm	1.370	1.370	1.370	1.370	1.370	1.370	2.300	2.300
Height	mm	2.420	2.420	2.420	2.420	2.420	2.420	2.560	2.560
Weight	kg	1.464	1.480	1.895	2.005	2.096	2.160	4.465	4.566
Weight with empty MV included	kg	1.544	1.560	1.990	2.100	2.191	2.305	4.685	4.786
Power supply									
Power supply	V / ph / Hz	400 V / 50Hz / 3Ph + T							
NOTES									
Nominal condition referred to: air 35 °C - chilled water 7/12 °C.									
2) Measured at 1 m in open field (ISO 3746).									

Technical data sheet - RAE 3602-6102 S Kc

RAE S		3602 Kc	3802 Kc	4102 Kc	4902 Kc	5202 Kc	5602 Kc	6102 Kc
Cooling capacity								
Cooling capacity	kW	367,0	383,0	406,0	496,0	538,0	572,0	623,0
Absorbed power	kW	120,8	129,4	136,0	166,2	187,8	192,8	198,0
EER Gross		3,04	2,96	2,99	2,98	2,86	2,97	3,15
EER NET		2,85	2,79	2,82	2,81	2,72	2,78	2,96
ESEER		3,45	3,54	3,53	3,50	3,50	3,55	3,60
Scroll Compressors								
Quantity	n	4	4	4	6	6	6	6
Standard steps capacity	n	4	4	4	4	4	4	4
Circuits	n	2	2	2	2	2	2	2
Nominal absorbed current	A	204,0	215,0	223,2	267,6	315,6	312,4	325,2
Maximum absorbed current	A	304,0	314,0	324,0	396,0	456,0	466,0	486,0
Inrush current	A	420,0	457,6	465,4	510,0	530,0	556,2	569,0
Axial fans								
Quantity	n	5	5	5	8	8	10	10
Rotation speed	rpm	685	685	685	685	685	685	685
Motors power	kW	7,9	7,9	7,9	10,2	10,2	12,7	12,7
Total air flow	m ³ /h	94.400	94.400	87.000	130.800	118.000	163.500	149.000
Nominal absorbed current	A	14,5	14,5	14,5	20,0	20,0	25,0	25,0
Brazed plate evaporator								
Quantity	n	1	1	1	1	1	1	1
Water flow rate	m ³ /h	63,1	65,9	69,8	85,3	92,5	98,4	107,2
Pressure drop	kPa	70	53	57	70	72	63	73
Pump group P1								
Available pressure	kPa	103	106	86	147	130	114	91
Motor power	kW	5,5	5,5	5,5	9,2	9,2	9,2	9,2
Nominal absorbed current	A	11,9	11,9	11,9	18,2	18,2	18,2	18,2
Weight	Kg	77	77	77	173	173	173	173
Pump group P1H								
Available pressure	kPa	211	220	210	187	174	251	221
Motor power	kW	11,0	11,0	11,0	11,0	11,0	15,0	15,0
Nominal absorbed current	A	21,4	21,4	21,4	21,4	21,4	31,0	31,0
Weight	Kg	186	186	186	186	186	204	204
Pump group P2								
Available pressure	kPa	103	106	86	147	130	114	91
Motor power	kW	5,5	5,5	5,5	9,2	9,2	9,2	9,2
Nominal absorbed current	A	11,9	11,9	11,9	18,2	18,2	18,2	18,2
Weight	Kg	154	154	154	346	346	346	346
Pump group P2H								
Available pressure	kPa	211	220	210	187	174	251	221
Motor power	kW	11,0	11,0	11,0	11,0	11,0	15,0	15,0
Nominal absorbed current	A	21,4	21,4	21,4	21,4	21,4	31,0	31,0
Weight	Kg	372	372	372	372	372	408	408
Pump group PT								
Available pressure	kPa	91	106	123	102	133	134	118
Motor power	kW	5,5	7,5	11,0	11,0	11,0	11,0	11,0
Nominal absorbed current	A	11,4	15,2	21,5	21,5	21,5	21,5	21,5
Weight	Kg	234	275	346	346	346	346	346
Hydraulic kit								
Buffer tank water volume	l	1100	1100	1100	1100	1100	1100	1100
Weight with empty MV included	Kg	220	220	220	220	220	220	220
Electrical data								
Total absorbed power	kW	128,7	137,3	143,9	176,4	198,0	205,5	210,7
Total nominal absorbed current	A	218,5	229,5	237,7	287,6	335,6	337,4	350,2
Total maximum absorbed current	A	318,5	328,5	338,5	416,0	476,0	491,0	511,0
Total inrush current	A	434,5	472,1	479,9	530,0	550,0	581,2	594,0
Sound pressure level								
Sound pressure level 2)	dB(A)	77,1	77,8	79,3	79,0	78,4	79,5	80,8
Dimensions								
Length	mm	5.780	5.780	5.780	4.750	4.750	5.720	5.720
Width	mm	1.370	1.370	1.370	2.300	2.300	2.300	2.300
Height	mm	2.420	2.420	2.420	2.560	2.560	2.560	2.560
Weight	kg	2.517	2.609	2.756	3.615	3.850	4.465	4.566
Weight with empty MV included	kg	2.737	2.829	2.976	3.835	4.070	4.685	4.786
Power supply								
Power supply	V / ph / Hz	400 V / 50Hz / 3Ph + T						
NOTES								
Nominal condition referred to: air 35 °C - chilled water 7/12 °C.								
2) Measured at 1 m in open field (ISO 3746).								