

# RAE Kc

## AIR COOLED CHILLER WITH SCROLL COMPRESSORS AND AXIAL FANS

COOLING CAPACITY FROM 5,5 TO 18,2 kW 1 COOLING CIRCUIT

RAE 41 M Kc



RAE 181 Kc



Above pictures are only indicative and are not binding.



The air cooled chillers of **RAE Kc series** are designed for outdoor installation and are particularly suitable for small and medium sized air conditioning systems, in residential and commercial applications. Therefore during their design, it has been given a particular care for dimensions and sound level, so to have compact and silent units at the same time. They can also be matched to fancoils or terminal units or for water cooling in small industrial processes. They are all available with 1 refrigerant circuit. Thanks to their compact dimensions and to the several options available, these units are particularly easy to install in small spaces. They are completely assembled and tested in the factory and supplied with refrigerant and non-freezing oil charge. Therefore, once on site, also with pump and hydraulic tank, the units only need to be positioned and electrically and hydraulically connected.

The following versions are available:

- **RAE Kc** standard version  
Horizontal air flow for models from 41M to 101  
Vertical air flow for models from 131 to 181
- **RAE PS Kc** with hydraulic kit

**Operation limits** (standard units):

AIR: from 15 to 45°C; WATER (out from evaporator): from 5 to 15°C.

### MAIN COMPONENTS

**Frame** made of galvanized steel plate, suitably treated to resist to external agents and then painted in RAL 7035 colour. The compressor section is completely closed and suitably isolated from the air flow; inside of it, the compressor and the main components are placed so to facilitate also the service operations. The external panels, easy to be dismantled, allow the full access in case of service. For size from 41 to 101, the compressor section is still insulated with close-cell polyurethane foam material. For PS version, the hydraulic kit is installed at the bottom of the unit for size from 41 to 101 and it is composed of: circulation pump, buffer tank, safety valve, pressure gauge, water filling and discharge valves, purging valve, expansion vessel. For other sizes, there is no change in dimensions.

**High-efficiency scroll compressor** (EER 3.37 under ARI conditions), with low sound level, internal heat protection, installed on rubber vibration dampers, supplied with crankcase heater when necessary. Size 41M is provided with hermetic piston compressor.

**Heat-exchange external coil** with copper tube and specially corrugated aluminum fins for a better efficiency. It is suitably sized with a wide exchange surface, so to allow the unit operation also at very high external air temperatures. On request, in case of installation in aggressive

environments, several coil protection treatments are available.

**Low rpm axial fans**, of directly coupled type, with 6-8 pole electrical motor complete with in-built overload protection, electronic balance, low sound level blades with wing profile and safety protection grid. On request, it is available the modulating fans speed regulation (option BT).

**Weld-brazed plate evaporator** in AISI 316 stainless steel, with pipes and patented manifold so to reach a high heat exchange coefficient. Its design allows a uniform water distribution, compatibly with pressure drops. The exchanger is provided with close-cell insulating material. The evaporator is also equipped with safety water flow switch switching off the unit in case of low water flow through the evaporator.

**Cooling circuit** composed of thermostatic expansion valve, dehydrating filter, sight glass, safety device, antifreeze thermostat, high and low pressure switches.

**Electric board** in compliance with CE norms, contained in a suitable partition protected by the internal safety panel, provided with a main switch and an external panel to be opened. It is complete with remote switches, overload protections, transformer for auxiliaries and terminal board. In case of PS version, the electrical control of the pump group is provided.

**Unit management microprocessor** installed on the internal safety panel of the electrical board, complete with compressors hour counter.

### ACCESSORIES

- AE Electrical power supply:** Different from standard: mainly, 230V triphase, 460V triphase. Frequency 50/60 Hz.
- BT Low temperature operation** (down to -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).
- GP Condensing coil protection grid:** Metal protection grid against accidental impacts.
- HG Hot gas by-pass** (from model 131): Mechanical device for modulating cooling capacity.
- IH RS 485 serial interface:** Electronic card to be connected to microprocessor, to allow communication between the units and a Carel supervision system. It is possible to fully control the unit from remote. For connection to other supervision systems, the protocol of the controlled parameters is available on request.
- IM Sea wood packing:** Fumigated sea wood case and protection bag with hygroscopic salts, suitable for long sea transports.
- MF Phase monitor:** Electronic device controlling the correct sequence and/or the eventual lack of one of the 3 phases, switching off the unit if necessary.
- MT High and low pressure gauges** (from size 131) for measuring circuit pressure.
- PA Rubber-type vibration dampers:** Bell-shaped vibration dampers supports for insulating the unit (supplied in kit), made of base and bell in galvanized steel and natural rubber mixture.

**PQ Remote microprocessor:** Remote terminal, allowing to display the temperature and humidity 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 sound signal and the display of the present alarms.

**RA Anti-freeze heater on evaporator:** Electrical heater installed on the evaporator, in order to prevent freezing and provided with thermostat.

**RL Compressors overload relays:** Electromechanical protection devices against compressor's overload with displayed alarm.

**RM Condensing coil with pre-painted fins:** Superficial treatment of the condensing coils with epoxy coating.

**RR Copper/copper condensing coils:** Special execution of the condensing coils with copper pipe and fins.

**RV Personalized frame painting in RAL colour.**

**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 prevent refrigerant migrations and consequent flooding of compressors.

# LIQUID CHILLERS - AIR COOLED

## Technical data sheet - RAE 41-181 Kc

RAE		41 M Kc	71 M Kc	101 M Kc	101 Kc	131 Kc	151 Kc	161 Kc	181 Kc
<b>Cooling capacity</b>									
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Absorbed power	kW	5,5	7,5	8,6	8,7	11,1	13,2	17,4	18,2
EER		3,06	3,00	2,87	2,81	3,36	3,14	3,41	3,19
<b>Compressors</b>									
Quantity	n	1	1	1	1	1	1	1	1
Circuits	n	1	1	1	1	1	1	1	1
Standard steps capacity	n	1	1	1	1	1	1	1	1
Nominal absorbed current	A	6,6	10,8	14,3	5,6	5,5	6,4	9,0	10,3
Maximum absorbed current	A	17,0	19,0	22,0	10,0	12,0	14,0	16,0	18,0
Inrush current	A	54,0	76,0	86,0	46,0	56,0	68,0	77,0	81,0
<b>Axial fans</b>									
Quantity	n	1	1	1	1	2	2	2	2
Rotation speed	rpm	900	900	900	900	900	900	900	900
Motors power	kW	0,15	0,15	0,15	0,15	0,29	0,29	0,29	0,29
Total air flow	m <sup>3</sup> /h	3.600	3.850	3.850	3.850	7.500	7.500	6.984	6.984
Total air flow	l/s	1.000	1.069	1.069	1.069	2.083	2.083	1.940	1.940
Nominal absorbed current	A	0,6	0,6	0,6	0,6	1,3	1,3	1,3	1,3
<b>Brazed plate evaporator</b>									
Quantity	n	1	1	1	1	1	1	1	1
Water flow rate	m <sup>3</sup> /h	0,9	1,3	1,5	1,5	1,9	2,3	3,0	3,1
Water flow rate	l/s	0,25	0,36	0,42	0,42	0,53	0,64	0,83	0,86
Pressure drop	kPa	26	39	21	21	33	44	36	40
<b>Electrical data</b>									
Total absorbed power	kW	1,95	2,65	3,15	3,25	3,59	4,49	5,39	5,99
<b>Sound pressure level</b>									
Sound pressure level 2)	dB(A)	50	50	50	50	54	55	55	56
<b>Dimensions</b>									
Length	mm	980	980	980	980	1.100	1.100	1.100	1.100
Width	mm	325	325	325	325	750	750	750	750
Height	mm	715	715	715	715	1.100	1.100	1.100	1.100
Weight	kg	122	125	128	128	205	209	226	228
Refrigerant charge	kg	1,5	2,0	2,1	2,1	3,3	3,3	5,1	5,1
<b>[RAE...PS]</b>									
Water pump motor power	kW	0,08	0,08	0,08	0,08	0,18	0,18	0,18	0,18
Available pressure	kPa	61	52	55	55	67	54	65	56
Buffer tank water volume	l	30	30	30	30	30	30	30	30
<b>Dimensions [RAE...PS]</b>									
Length with water kit included	mm	980	980	980	980	1.100	1.100	1.100	1.100
Width with water kit included	mm	325	325	325	325	750	750	750	750
Height with water kit included	mm	1.000	1.000	1.000	1.000	1.100	1.100	1.100	1.100
Weight with empty water kit included	kg	158	161	164	164	238	241	259	260
Refrigerant charge	kg	1,5	2,0	2,1	2,1	3,3	3,3	5,1	5,1
<b>Power supply</b>									
Power supply	V / ph / Hz	230 V/50 Hz / 1Ph + N + T				400 V/50 Hz / 3Ph + N + T			

Nominal condition referred to: air 35 °C - chilled water 7/12 °C.

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