RAE N C Kc/Kr

AIR COOLED CHILLERS FOR INDOOR INSTALLATION
EQUIPPED WITH SCROLL COMPRESSORS AND PLUG-FAN

Cooling capacity from 36 kW to 267 kW

R410A

R454B

AIR

EC

ERP 2021

HIGHLY SUSTAINABLE

VERSIONS

RAE N C - standard version

Packaged air cooled heat pumps of RAE N C series are suitable for indoor installation since they are provided with condensing centrifugal plug-fan with directly coupled motor and they can be ducted with a high available pressure. They are suitable for small and medium sized air conditioning systems, in residential and commercial applications. They can be also connected to fancoil units or used to cool pure fluid solutions for air conditioning or in industrial applications.
Multiscroll technology allows to reach great efficiency improvements at part loads, 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 or R454B refrigerant, particularly glide-free at state exchanges, allows this range to attain EER nominal values close to 3.
These units have been designed considering limited footprint 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 test, cooling circuits are tested under pressure and then charged with refrigerant and a non-freezing oil charge.

Units CE certified in compliance with the European regulation 2016/2281 ERP 2021.

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. The technical compartment, including the electrical board and compressors, is completely closed and isolated from the air flow. The external panels, to be easily dismantled, allow the full access to the main components.
The airflow crossing the condensing coil can be ducted both on the inlet and outlet, keeping the available pressure to the condensing fans section.
The unit is available with air outlet on top (standard) or from the front (on request).
The condensing air inlet and outlet sections are provided with suitable connection frames for the external aeraulic ducts.
When required, the hydraulic kit (buffer tank and pump group) is installed inside the unit.

SCROLL COMPRESSOR
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 evaporator is also equipped with safety water flow switch switching off the unit in case of low water flow through the evaporator.

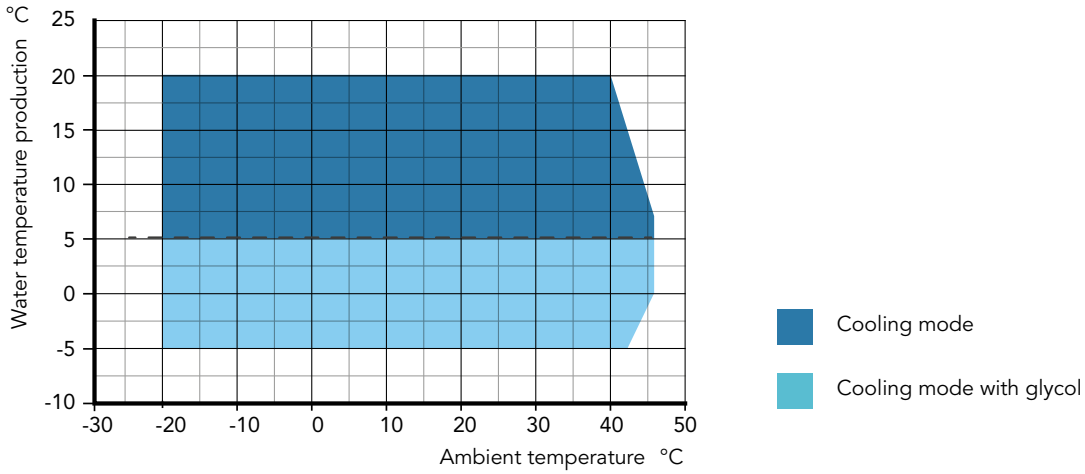
HEAT EXCHANGE EXTERNAL COILS
With micro-finned copper tubes, positioned in staggered rows and mechanically expanded into an aluminium finned pack. Fins are designed with such a shape providing the highest heat exchange efficiency (turbo-fin).The max operating pressure refrigerant side is 45 relative bar.
The front section of the coil can include as an optional a protection grid to protect it from accidental impacts.

RADIAL PLUG-FANS
Of directly coupled type, with wing-profile aluminium blades so not to create air turbulence, made of high-performance composite material. They therefore ensure the highest efficiency together with the lowest sound level. Each fan is suitably sized to ensure the correct air flow to the condensing coil for indoor ductable installation. The IP 54 fan motors are permanents magnets with electronic switching EC type, completely closed and provided with in-built overload protection, incorporated to the motor windings. The modulating control of the condensing pressure through the fans speed regulation is supplied as standard, allowing the unit operation down to – 20°C of external air.

COOLING CIRCUIT
Each provided with a shut-off valve for refrigerant charge, antifreeze sensor, shut-off valves on liquid lines, certified liquid receiver, 4-way valve for cycle inversion, sight glass, dehydrating filter, high-pressure safety device on high pressure refrigerant side and mechanical thermostatic expansion valve up to 3802 model and electronic type for all remaining sizes, as well as high and low pressure switches and gauges.

ELECTRICAL BOARD
Built in compliance with CE Norms, 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 and possibility to interface to BMS systems.

OPERATING RANGE



ACCESSORIES

RAE N C Kc / Kr		361	471	541	681	801	921	1051	1171
Amperometer	A	o	o	o	o	o	o	o	o
Electrical power supply different than standard	AE	o	o	o	o	o	o	o	o
Soundproofed compressors cabinet with higher thickness material	CFU	o	o	o	o	o	o	o	o
Compressors inrush counter	CS	o	o	o	o	o	o	o	o
Axial fans with electronic commutated motor	EC	•	•	•	•	•	•	•	•
Condensing coil protection grid	GP	o	o	o	o	o	o	o	o
Victaulic insulation on pump side	I1	o	o	o	o	o	o	o	o
Victaulic insulation buffer tank side	I2	o	o	o	o	o	o	o	o
RS 485 Serial interface	IH	o	o	o	o	o	o	o	o
LON Protocol serial interface	IH-LON	o	o	o	o	o	o	o	o
Seawood packing	IM	o	o	o	o	o	o	o	o
TCP/IP Protocol serial interface	IWG	o	o	o	o	o	o	o	o
Phase monitor	MF	o	o	o	o	o	o	o	o
Buffer tank module	MV	o	o	o	o	o	o	o	o
Pump group	P1	o	o	o	o	o	o	o	o
Higher available pressure pump group	P1H	o	o	o	o	o	o	o	o
Double pump group	P2	o	o	o	o	o	o	o	o
Higher available pressure double pump group	P2H	o	o	o	o	o	o	o	o
Rubber-type vibration dampers	PA	o	o	o	o	o	o	o	o
Spring-type vibration dampers	PM	o	o	o	o	o	o	o	o
Remote display	PQ	o	o	o	o	o	o	o	o
In-line twin pump group (only one working)	PT	--	--	--	o	o	o	o	o
Anti-freeze heater on evaporator	RA	o	o	o	o	o	o	o	o
Shut-off valve on compressors discharge side	RD	o	o	o	o	o	o	o	o
Power factor correction system cosfi ≥0,9	RF	o	o	o	o	o	o	o	o
Shut-off valve on compressors suction side	RH	o	o	o	o	o	o	o	o
Compressor overload relays	RL	o	o	o	o	o	o	o	o
Condensing coil with pre-painted fins	RM	o	o	o	o	o	o	o	o
Copper/Copper coil	RR	o	o	o	o	o	o	o	o
Gravity overpressure damper	SV	o	o	o	o	o	o	o	o
Electronic thermostatic valve	TE	o	o	o	o	o	o	o	o
Voltmeter	V	o	o	o	o	o	o	o	o
Brine Version	VB	o	o	o	o	o	o	o	o
Solenoid valve	VS	o	o	o	o	o	o	o	o
Partial heat recovery	RP	o	o	o	o	o	o	o	o
Total heat recovery	RT	o	o	o	o	o	o	o	o

• Standard, o Optional, -- Not available

RAE N C Kc / Kr		1301	1501	1602	1671	1902	2102	2412	2652
Amperometer	A	o	o	o	o	o	o	o	o
Electrical power supply different than standard	AE	o	o	o	o	o	o	o	o
Soundproofed compressors cabinet with higher thickness material	CFU	o	o	o	o	o	o	o	o
Compressors inrush counter	CS	o	o	o	o	o	o	o	o
Axial fans with electronic commutated motor	EC	•	•	•	•	•	•	•	•
Condensing coil protection grid	GP	o	o	o	o	o	o	o	o
Victaulic insulation on pump side	I1	o	o	o	o	o	o	o	o
Victaulic insulation buffer tank side	I2	o	o	o	o	o	o	o	o
RS 485 Serial interface	IH	o	o	o	o	o	o	o	o
LON Protocol serial interface	IH-LON	o	o	o	o	o	o	o	o
Seawood packing	IM	o	o	o	o	o	o	o	o
TCP/IP Protocol serial interface	IWG	o	o	o	o	o	o	o	o
Phase monitor	MF	o	o	o	o	o	o	o	o
Buffer tank module	MV	o	o	o	o	o	o	o	o
Pump group	P1	o	o	o	o	o	o	o	o
Higher available pressure pump group	P1H	o	o	o	o	o	o	o	o
Double pump group	P2	o	o	o	o	o	o	o	o
Higher available pressure double pump group	P2H	o	o	o	o	o	o	o	o
Rubber-type vibration dampers	PA	o	o	o	o	o	o	o	o
Spring-type vibration dampers	PM	o	o	o	o	o	o	o	o
Remote display	PQ	o	o	o	o	o	o	o	o
In-line twin pump group (only one working)	PT	o	o	o	o	o	o	o	o
Anti-freeze heater on evaporator	RA	o	o	o	o	o	o	o	o
Shut-off valve on compressors discharge side	RD	o	o	o	o	o	o	o	o
Power factor correction system cosfi ≥0,9	RF	o	o	o	o	o	o	o	o
Shut-off valve on compressors suction side	RH	o	o	o	o	o	o	o	o
Compressor overload relays	RL	o	o	o	o	o	o	o	o
Condensing coil with pre-painted fins	RM	o	o	o	o	o	o	o	o
Copper/Copper coil	RR	o	o	o	o	o	o	o	o
Gravity overpressure damper	SV	o	o	o	o	o	o	o	o
Electronic thermostatic valve	TE	o	o	o	o	o	o	o	o
Voltmeter	V	o	o	o	o	o	o	o	o
Brine Version	VB	o	o	o	o	o	o	o	o
Solenoid valve	VS	o	o	o	o	o	o	o	o
Partial heat recovery	RP	o	o	o	o	o	o	o	o
Total heat recovery	RT	o	o	o	o	o	o	o	o

• Standard, o Optional, -- Not available

TECHNICAL DATA

RAE N C Kc		361	471	541	681	801	921	1051	1171
Cooling capacity	kW	36,7	47,4	54,6	66,7	76,4	91,03	105	116,5
Total input power	kW	11,7	14,8	17,5	23,2	23,2	30,3	34,6	36,8
Nominal input current	A	25,1	31,3	36,3	45,6	47,7	59,9	67,0	69,7
EER	W/W	3,14	3,20	3,12	2,88	3,29	3,00	3,03	3,17
SEER (EN14825)	W/W	4,37	4,43	4,32	4,29	4,56	4,38	4,6	4,47
Circuits	n°	1	1	1	1	1	1	1	1
Compressors	n°	2	2	2	2	2	2	2	2
Refrigerant data R410A									
Refrigerant charge	kg	8	10	13	12	19	16	21	26
Global warming potential (GWP)	-	2088	2088	2088	2088	2088	2088	2088	2088
Equivalent CO_2 charge	t	16,2	21,5	26,9	24,5	40,3	33,8	44,7	55,3
Fans (1)									
Quantity	n°	2	2	2	2	2	3	3	4
Total air flow	m^3/h	14680	15480	15770	23540	22680	31620	32590	32490
Total power input	kW	2,2	2,5	2,7	4,8	3,7	5,8	6,4	5,5
Total input current	A	3,9	4,4	4,6	7,6	6,5	9,4	10,2	9,5
Evaporator (2)									
Quantity	n°	1	1	1	1	1	1	1	1
Water flow	m^3/h	6,3	8,2	9,4	11,5	13,1	15,7	18,1	20,0
Pressure drop	kPa	29,8	28,2	36,1	39,3	37,8	51,7	50,5	60,1
Weight									
Transport weight	kg	683	772	796	972	1037	1316	1371	1429
Operating weight	kg	686	776	800	976	1043	1321	1376	1435
Dimensions									
Length	mm	1600	1600	1600	2400	2400	3200	3200	3200
Width	mm	1050	1050	1050	1050	1050	1050	1050	1050
Height	mm	1895	1895	1895	1895	1895	1895	1895	1895
Sound data									
Total LWA (3)	dB(A)	90	90	90	92	92	94	94	94
Total SPL 10m (4)	dB(A)	60,2	60,2	60,2	61,8	61,8	63,6	63,6	63,6
Power supply									
Voltage/phase/frequency	V/ph/Hz	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50
General electrical data									
Maximum input power	[kW]	24,2	25,6	29,4	35,7	41,0	47,0	52,2	59,0
Maximum input current	[A]	40,0	46,4	53,2	72,0	80,0	87,2	97,6	106,8
Inrush current	[A]	126,0	156,2	170,6	181,0	220,0	289,8	336,5	345,7

RAE N C Kc		1301	1501	1671	1602	1902	2102	2412	2652
Cooling capacity	kW	131,2	148	159,6	154,3	184,8	212,1	229,9	266,7
Total input power	kW	45,3	49	51,3	50,6	61	70	76,3	90,3
Nominal input current	A	84,7	91,5	94,8	101,2	117,6	132,3	141,4	163,3
EER	W/W	2,90	3,02	3,11	3,05	3,03	3,03	3,01	2,95
SEER (EN14825)	W/W	4,56	4,48	4,85	4,72	4,56	4,58	4,86	4,81
Circuits	n°	1	1	1	2	2	2	2	2
Compressors	n°	2	2	2	4	4	4	4	4
Refrigerant data R410A									
Refrigerant charge	kg	24	32	39	31	40	51	41	51
Global warming potential (GWP)	-	2088	2088	2088	2088	2088	2088	2088	2088
Equivalent CO_2 charge	t	50,0	66,4	81,5	64,7	84,4	105,8	86,1	107,2
Fans (1)									
Quantity	n°	4	4	4	5	5	5	5	5
Total air flow	m^3/h	43690	45860	43240	61060	61030	61430	75270	73390
Total power input	kW	8,2	9,3	8,4	12,0	12,3	12,8	12,7	12,7
Total input current	A	13,2	14,7	13,5	18,9	19,2	19,9	19,4	19,3
Evaporator (2)									
Quantity	n°	1	1	1	1	1	1	1	1
Water flow	m^3/h	22,6	25,5	27,5	26,5	31,8	36,5	39,5	43,6
Pressure drop	kPa	75,2	62,2	56,6	29,4	40,6	34,5	39,9	41,2
Weight									
Transport weight	kg	1680	1808	1879	2260	2362	2466	2663	2698
Operating weight	kg	1686	1816	1888	2267	2371	2476	2675	2716
Dimensions									
Length	mm	3700	3700	3700	4600	4600	4600	4600	4600
Width	mm	1250	1250	1250	1250	1250	1250	1250	1250
Height	mm	2220	2220	2220	2220	2220	2220	2220	2220
Sound data									
Total LWA (3)	dB(A)	95	96	97	96	97	97	100	100
Total SPL 10m (4)	dB(A)	64,9	65,8	65,8	66,2	66,2	66,2	69,2	69,7
Power supply									
Voltage/phase/frequency	V/ph/Hz	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50
General electrical data									
Maximum input power	[kW]	69,2	74,4	78,1	78,9	90,8	101,0	107,0	128,0
Maximum input current	[A]	123,6	134,0	140,8	1550,	169,4	190,2	195,6	229,2
Inrush current	[A]	368,2	378,6	466,2	295,0,0	372	429,1	434,5	473,8

(1) Ambient air temperature 35°C
(2) Fluid: Water - In/out Temperature: 12/7°C
(3) Sound power level in accordance with ISO 3744.
(4) Sound pressure level at 10m from the unit in free field conditions, in accordance with ISO 3744

RAE N C Kr		361	471	541	681	801	921	1051	1171
Cooling capacity	kW	38	49	56	69	79	94	108	120
Total input power	kW	12	15	18	24	24	31	35	38
Nominal input current	A	26	32	37	47	49	61	68	71
EER	W/W	3,2	3,2	3,2	2,9	3,3	3,0	3,1	3,2
SEER (EN14825)	W/W	4,44	4,50	4,39	4,36	4,63	4,45	4,67	4,54
Circuits	n°	1	1	1	1	1	1	1	1
Compressors	n°	2	2	2	2	2	2	2	2
Refrigerant data R454B									
Refrigerant charge	kg	8	10	13	12	19	16	21	26
Global warming potential (GWP)	-	466	466	466	466	466	466	466	466
Equivalent CO_2 charge	t	3,7	4,7	6,1	5,6	8,9	7,5	9,8	12,1
Fans (1)									
Quantity	n°	2	2	2	2	2	3	3	4
Total air flow	m^3/h	14680	15480	15770	23540	22680	31620	32590	32490
Total power input	kW	2,2	2,5	2,7	4,8	3,7	5,8	6,4	5,5
Total input current	A	3,9	4,4	4,6	7,6	6,5	9,4	10,2	9,5
Evaporator (2)									
Quantity	n°	1	1	1	1	1	1	1	1
Water flow	m^3/h	6,5	8,4	9,7	11,8	13,6	16,1	18,6	20,7
Pressure drop	kPa	29,5	27,9	35,7	38,9	37,4	51,2	50,0	59,5
Weight									
Transport weight	kg	691	781	806	984	1049	1332	1387	1446
Operating weight	kg	694	785	810	988	1056	1337	1393	1452
Dimensions									
Length	mm	1600	1600	1600	2400	2400	3200	3200	3200
Width	mm	1050	1050	1050	1050	1050	1050	1050	1050
Height	mm	1895	1895	1895	1895	1895	1895	1895	1895
Sound data									
Total LWA (3)	dB(A)	90	90	90	92	92	94	94	94
Total SPL 10m (4)	dB(A)	60,2	60,2	60,2	61,8	61,8	63,6	63,6	63,6
Power supply									
Voltage/phase/frequency	V/ph/Hz	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50
General electrical data									
Maximum input power	[kW]	24,2	25,6	29,4	35,7	41,0	47,0	52,2	59,0
Maximum input current	[A]	40,0	46,4	53,2	72,0	80,0	87,2	97,6	106,8
Inrush current	[A]	126,0	156,2	170,6	181,0	220,0	289,8	336,5	345,7

RAE N C Kr		1301	1501	1671	1602	1902	2102	2412	2652
Cooling capacity	kW	135	152	164	159	190	218	237	275
Total input power	kW	46	50	52	52	62	71	78	92
Nominal input current	A	86	93	97	103	120	135	144	167
EER	W/W	2,9	3,1	3,1	3,1	3,1	3,1	3,0	3,0
SEER (EN14825)	W/W	4,63	4,55	4,93	4,79	4,63	4,65	4,94	4,89
Circuits	n°	1	1	1	2	2	2	2	2
Compressors	n°	2	2	2	4	4	4	4	4
Refrigerant data R454B									
Refrigerant charge	kg	24	32	39	31	40	51	41	51
Global warming potential (GWP)	-	466	466	466	466	466	466	466	466
Equivalent CO_2 charge	t	11,2	14,9	18,2	14,4	18,6	23,8	19,1	23,8
Fans (1)									
Quantity	n°	4	4	4	5	5	5	5	5
Total air flow	m^3/h	43690	45860	43240	61060	61030	61430	75270	73390
Total power input	kW	8,2	9,3	8,4	12,0	12,3	12,8	12,7	12,7
Total input current	A	13,2	14,7	13,5	18,9	19,2	19,9	19,4	19,3
Evaporator (2)									
Quantity	n°	1	1	1	1	1	1	1	1
Water flow	m^3/h	23,3	26,3	28,3	27,4	32,8	37,6	40,8	47,3
Pressure drop	kPa	74,4	61,6	56,0	29,1	40,2	34,1	39,5	40,8
Weight									
Transport weight	kg	1700	1830	1902	2287	2390	2496	2695	2730
Operating weight	kg	1706	1838	1911	2294	2399	2506	2707	2749
Dimensions									
Length	mm	3700	3700	3700	4600	4600	4600	4600	4600
Width	mm	1250	1250	1250	1250	1250	1250	1250	1250
Height	mm	2220	2220	2220	2220	2220	2220	2220	2220
Sound data									
Total LWA (3)	dB(A)	95	96	97	96	97	97	100	100
Total SPL 10m (4)	dB(A)	64,9	65,8	65,8	66,2	66,2	66,2	69,2	69,7
Power supply									
Voltage/phase/frequency	V/ph/Hz	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50
General electrical data									
Maximum input power	[kW]	69,2	74,4	78,1	78,9	90,8	101,0	107,0	128,0
Maximum input current	[A]	123,0	134,0	140,8	155,0	169,4	190,2	195,6	229,2
Inrush current	[A]	368,2	378,6	466,0	295,0	372,0	429,1	434,5	473,8

(1) Ambient air temperature 35°C
(2) Fluid: Water - In/out Temperature: 12/7°C
(3) Sound power level in accordance with ISO 3744.
(4) Sound pressure level at 10m from the unit in free field conditions, in accordance with ISO 3744