



CHILLERS
CATALOGUE

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THE PROJECT

ALWAYS FORWARD, POWERFULLY

EMICON is a manufacturer of climate control equipment that is tailored to both commercial applications and IT cooling, where reliability and performance are vital parameters in every project design. Emicon manufactures products covering multiple sectors from commercial climate control through to **IT cooling** with a large range of industry leading **Chillers, Heat pumps, CRAC units** and **Roof-Top packages**. The designs are highly flexible and incorporate numerous versions and accessories which allow selections to be tailored to the application. In addition, the flexibility of the manufacturing division allows non-standard designs to be considered.

THE ENVIRONMENT

EFFICIENCY AND SUSTAINABILITY

For Emicon, **Research and Development** into materials and products to enhance their efficiency and lower their environmental impact is fundamental to the group culture. The company is represented in the industry bodies that continually advise on climate change impact and are thus at the forefront of current knowledge. These efforts have resulted in Emicon launching new ranges of units that utilize materials and **refrigerants with the lowest Global warming impact** such as **HFO 1234ze**, a gas with very high efficiency and low GWP (=6), as well as natural refrigerants such as **R290** (GWP=3).

THE ENVIRONMENTAL POLICY

In addition to meeting the customer's requirements and maintaining a leading market position, EMICON maintains a quality culture in its operations that **safeguards the environment** by protecting the ecosystem and **preventing pollution** by adherence to national environmental standards. We invest heavily in **personnel training**, which generates a culture of **involvement** and **motivation** and maintains a healthy work environment. Emicon also ensure that the necessary infrastructures for safe and proper performance of their employees work activities are in place.



40

EXPORT COUNTRIES



PRODUCTION SITES



EMICON OFFICES



DISTRIBUTORS

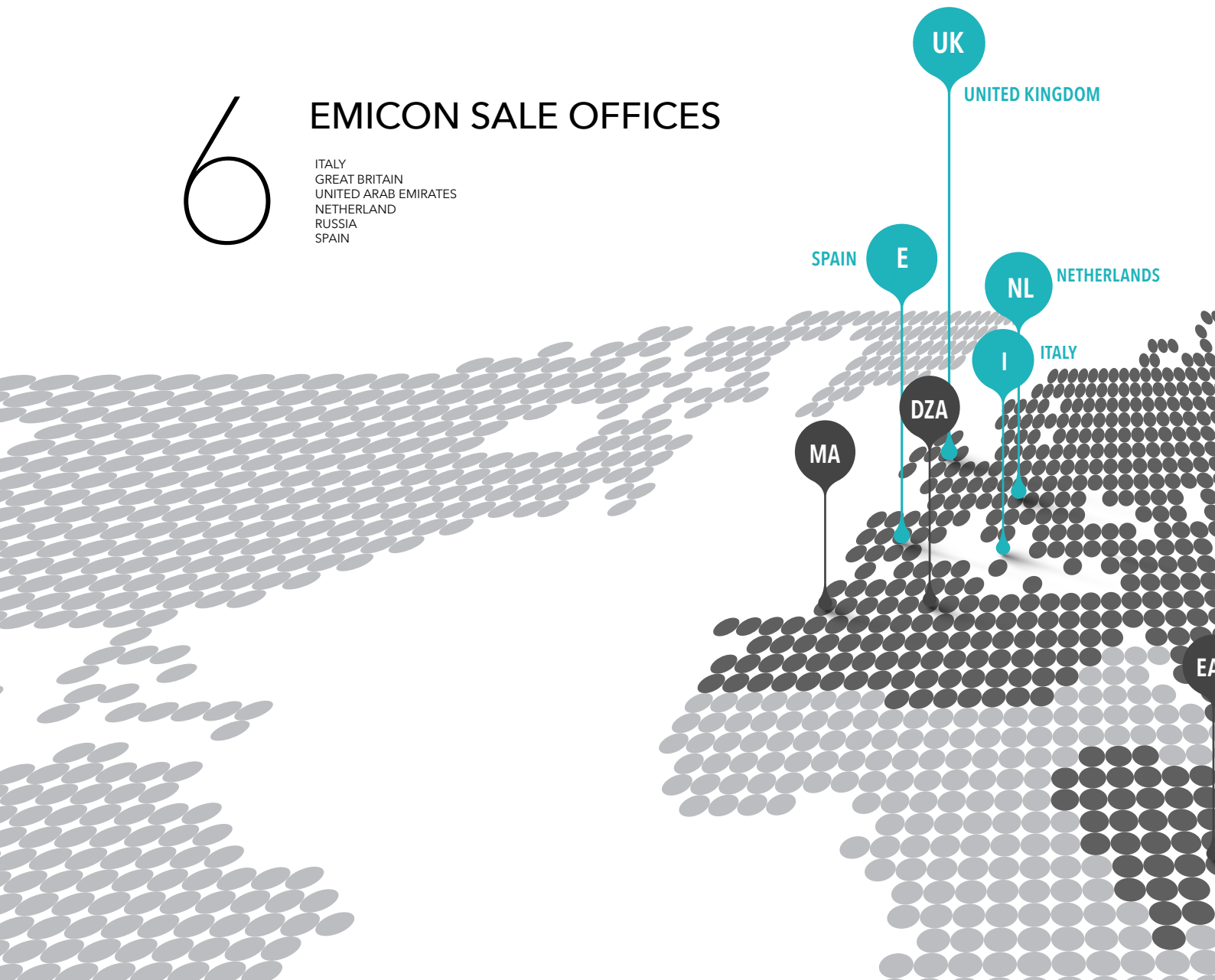
EMICON

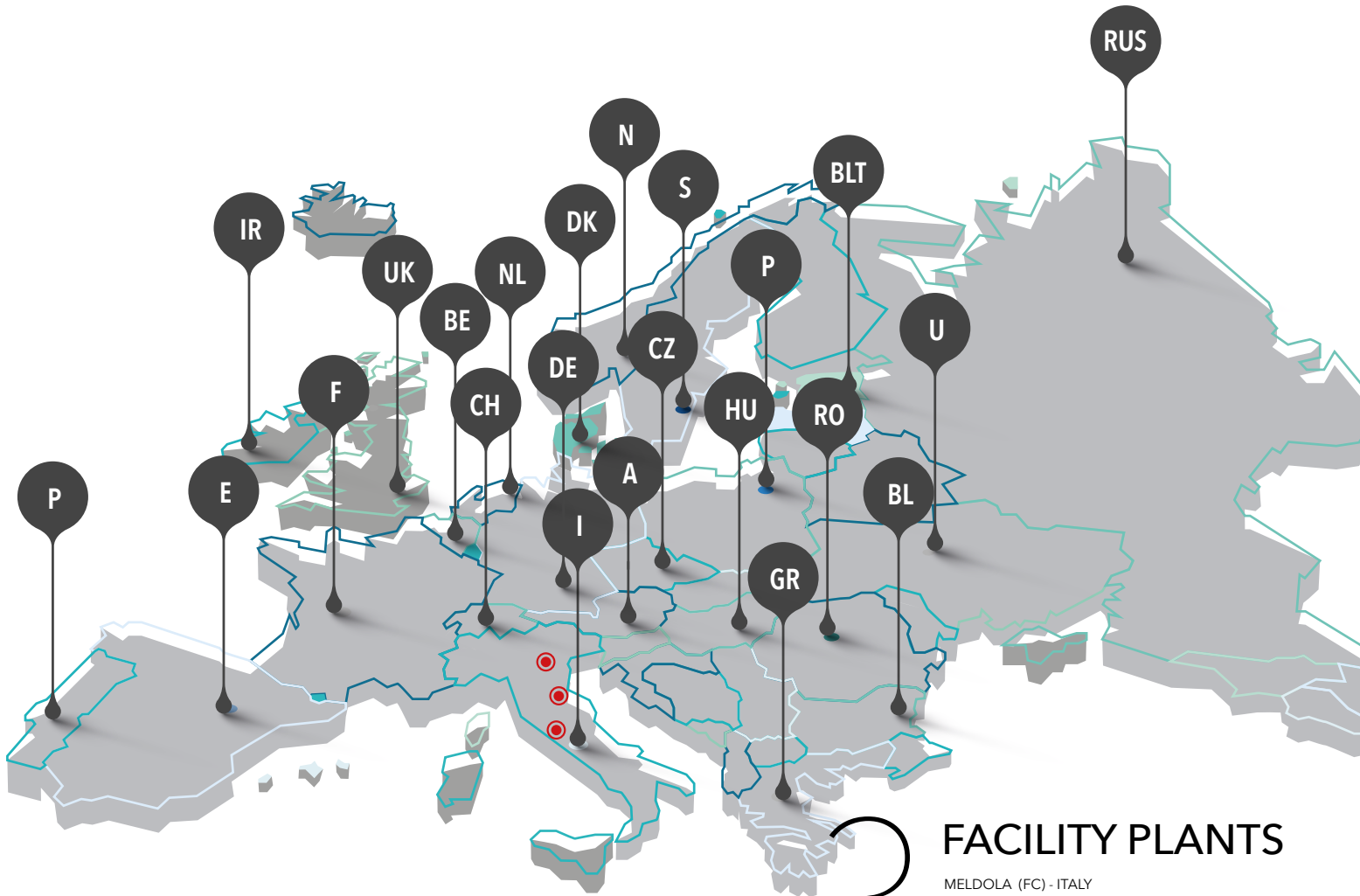
WORLDWIDE

6

EMICON SALE OFFICES

ITALY
GREAT BRITAIN
UNITED ARAB EMIRATES
NETHERLAND
RUSSIA
SPAIN

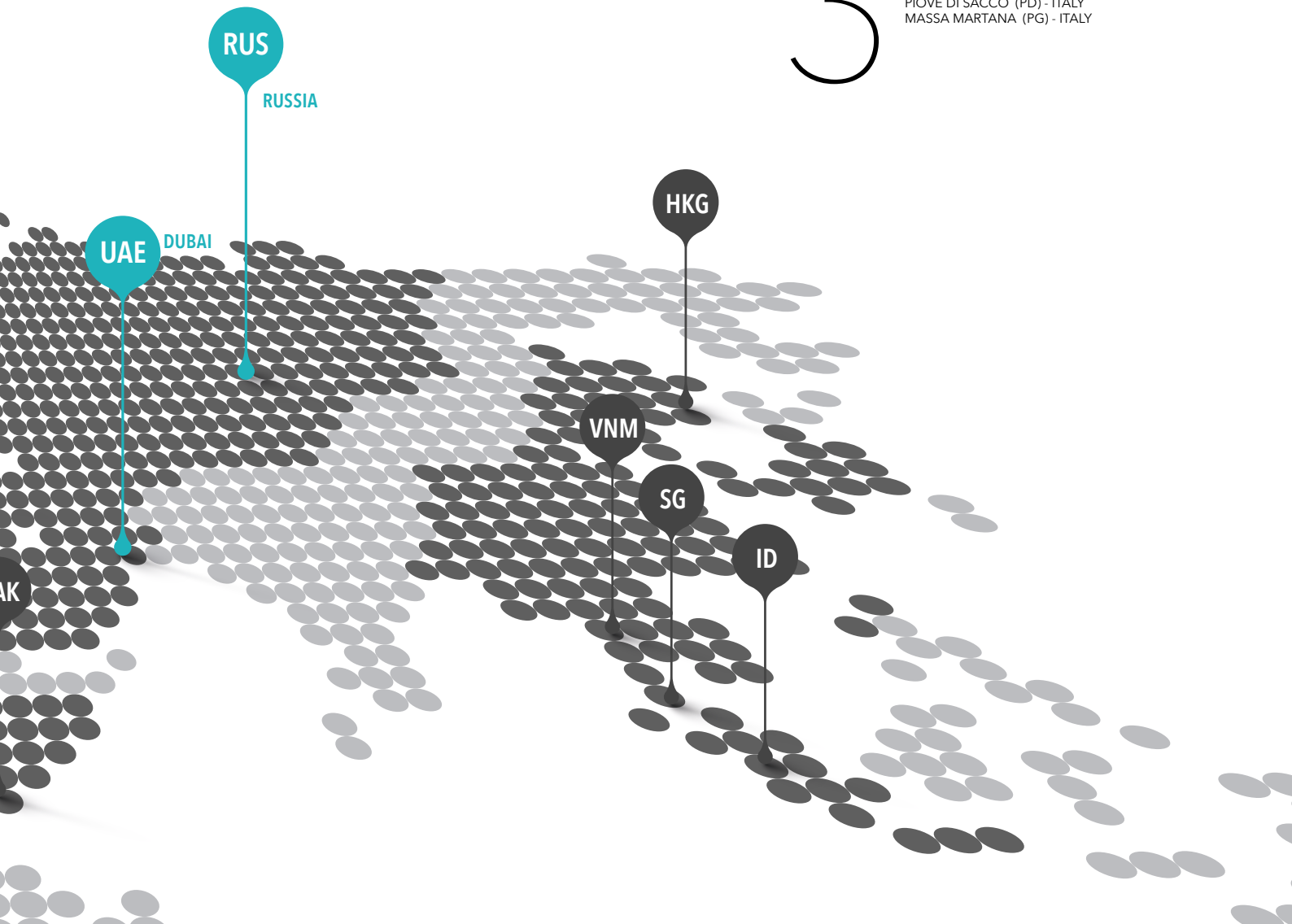


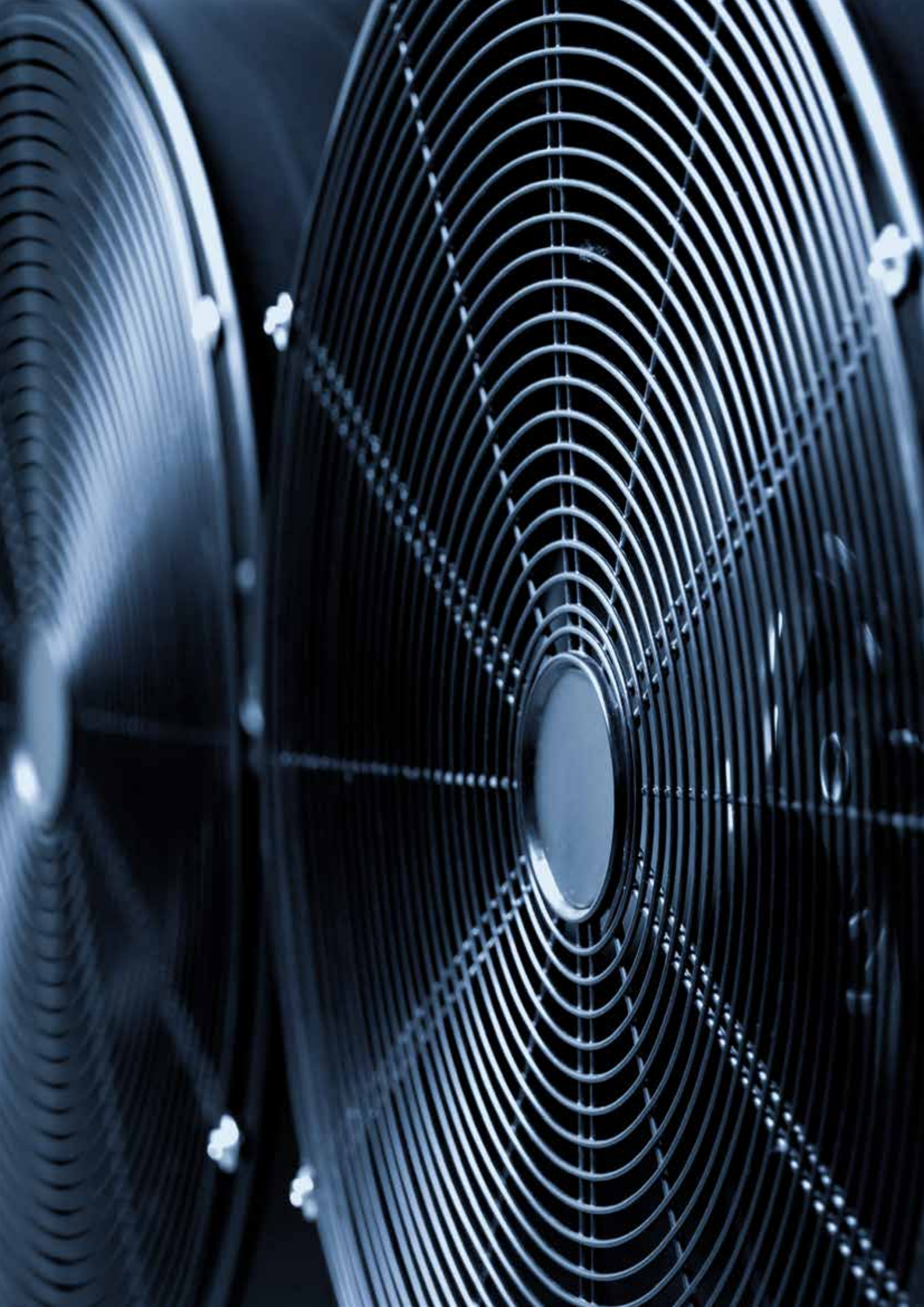


3

FACILITY PLANTS

MELDOLA (FC) - ITALY
 PIOVE DI SACCO (PD) - ITALY
 MASSA MARTANA (PG) - ITALY





PHILOSOPHY

PASSION AND EFFICIENCY

In the last decade, the **air conditioning world** has experienced a continuous, remarkable and still alive evolution process, which has led to a different approach to the market and to the products by the manufacturers. The main worldwide companies, which operate in the comfort field (mainly in residential applications), have found in the **Italian technology** the answer to a lack of know-how in chillers and air conditioning field. In fact the companies, following a common globalization process, have started an intensive campaign of international acquisitions, but this has led some negative consequences, such as the loss of some pluses in terms of organization and production, which moreover had made the Italian companies well know all over the world in the past.

Residential air conditioning field is based on highly industrialized, standardized and large-scale productions, with distribution through mass channels; the **professional chiller** and **precision air conditioning world** follows, instead, much more complex dynamics: the technical solutions, the production organization, as well as the choice of the distribution channel, must take care of the **"specificity of the application"**; the manufacturer must be able to grant a **flexible production system**, associated with an adequate development of technology, applied in a dynamic way, able to meet the peculiarity of the different installation needs. Unifying the two worlds would mean a pauperization of the entire European and specifically of the Mediterranean "solutions" market, the Italian industry was leader in.

EMICON, as a "historical" representative of the **Italian industry**, has never stopped its **commitment in the research and development** of its products for professional conditioning, keeping the same quality level of its worldwide competitors, also thanks to the use of national excellence with specific skills, as well as a strong partnership and acquisitions policy, maintaining in this way an open and **flexible approach to the market**, with a wide range of standard and tailor made solutions.

The **improvement** of this complex industrial model implies a very careful selection of **human resources**, paying the greatest attention to the competence and experience of all the technical, sales and production staff.

EMICON recognizes in the **talent and professionalism** of its workers, both internal and external ones, a heritage to be preserved, through the creation of a comfortable and familiar work ambient, despite the large structural dimensions achieved.

The industrial philosophy of EMICON is aimed at the acquisition of some **excellences in the air conditioning field**, the creation of new business realities -still in progress- and the continuous investments in the already existing production facilities in Italy, thereby consolidating the Group's growing leadership role in the professional **air conditioning market**.

THE EMICON

LABS

CLIMATIC ROOMS

EMICON has **climatic rooms** and **testing stations** where units produced are subject to strict **functional** and **performance** tests, with the possibility of simulating the real design climatic conditions. A double hydronic circuit (hot and cold) allows to carry out **operation tests on all types of units**, both for IT Cooling and hydronic units, packaged, 2 or 4 pipes, air cooled, water cooled and split, up to a cooling capacity of 1500 kW.

It is possible, for our customers, to attend the functioning and performance test. Thanks to some webcams, it is possible to **remotely attend the test**.

CHARACTERISTICS

The climatic room is an environment inside of which, by means of auxiliary and heat recovery systems, we create a **controlled microclimate** in terms of air **temperature** and **humidity**, where the heat transfer fluids are treated according to the specific characteristics of the unit.

The types of units that can be tested are **air or water cooled units**, available as **chiller** or **reversible heat pump** versions according to **EN14511** standard.

The operating limits of fluid temperature can vary between **-5°C** and **65°C**. The ambient temperature (inside the room) can reach a maximum of 52°C for summer operation and a minimum of -7°C for winter cycle.

CLOSE CONTROL UNITS

EMICON's Laboratory allows the **performance test** of chilled water and air cooled direct expansion **close control units**, with the possibility to simulate climatic conditions from 15°C to 35°C.

PROPANE

We recently built a the test area **exclusively** dedicated to chillers and heat pumps operating with natural **Propane refrigerant (R290)**, making us able to carry out performance and functional tests of units with a cooling capacity up to 700 kW both in cooling only and in winter cycle reversible configurations. The use of **ATEX** components, refrigerant leak detection systems, connected to acoustic signals and forced-type exhaust systems guarantee a **high safety degree** in this area.





REFERENCES





POCKOCMOC



MEDICALPARK



POLITECNICO
DI TORINO

BT Group



FENDI



Royal Albert Hall

Yandex



PHILHARMONIE
DE PARIS



ADX | سوق
أبوظبي
للأوراق المالية
ABU DHABI SECURITIES EXCHANGE



BNP PARIBAS



{ BnF | Bibliothèque
nationale de France

ERICSSON

LEGEND



Air cooled



Water cooled



Units with a ground source



Remote condensing



Free cooling



High efficiency



Silenced version



Ultra-silenced version



ERP2021-compliant unit



Cooling only



Reversible unit



Heating only



Multipurpose Unit



R410a Refrigerant (Kc)



R454B Eco-friendly refrigerant (Kr)



R134a Refrigerant (Ka)



R513A Eco-friendly refrigerant (Ke)



R1234ze Eco-friendly refrigerant (Kh)



Propane R290 Eco-friendly refrigerant (Kp)



Plug-fan with AC motor



Plug-fan with EC motor



Axial fan with AC motor



Axial fan with EC motor



Centrifugal fan



Scroll Compressors



Compressori Scroll inverter



Semi-hermetic reciprocating compressors



Magnetic-levitation centrifugal compressors



Semi-hermetic screw compressors



Semi-hermetic screw inverter compressors



Microchannel coils



Thermodynamic recovery



Active thermodynamic recovery



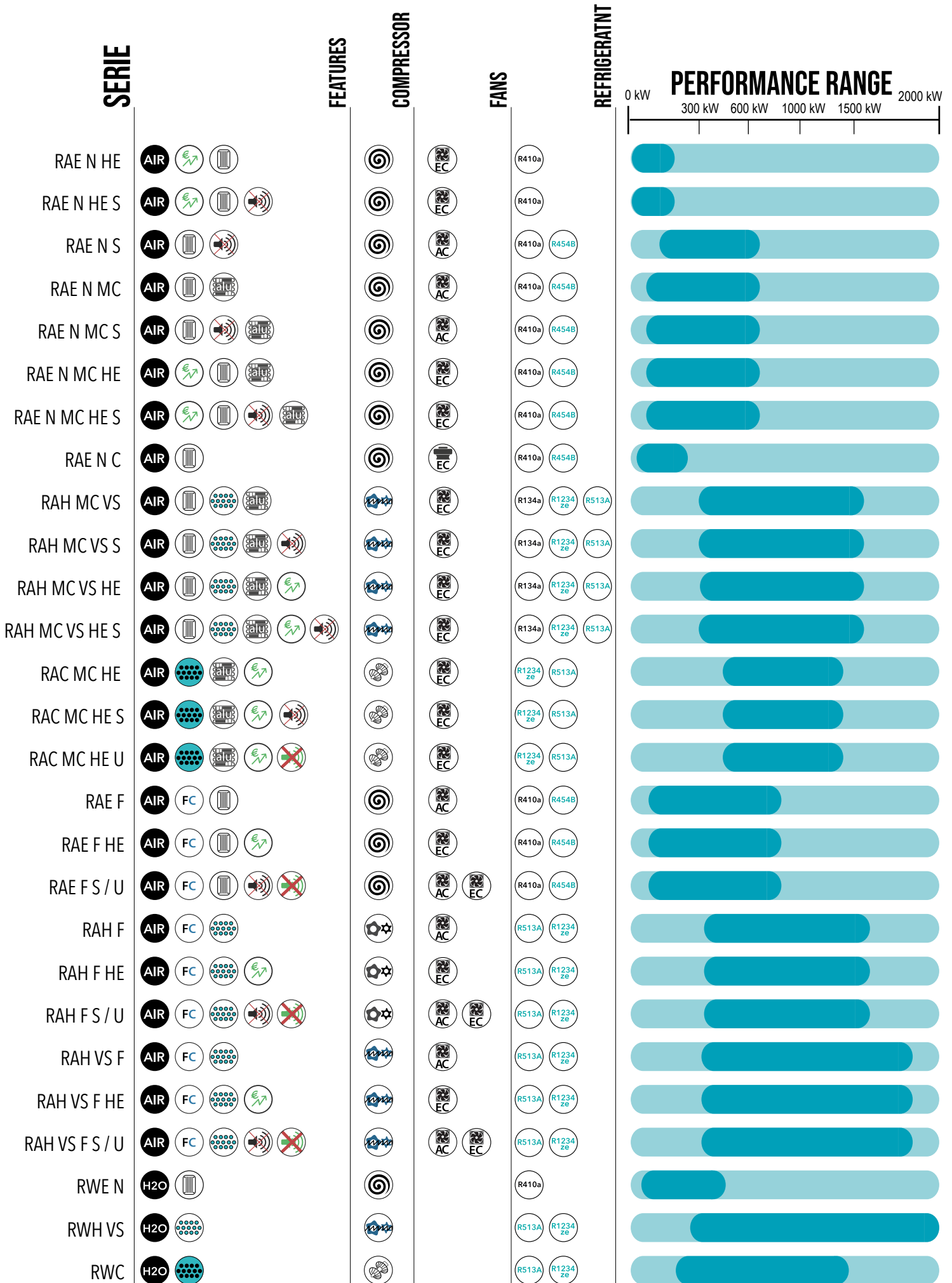
Plate exchanger



Shell and tube exchanger

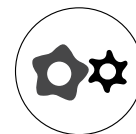
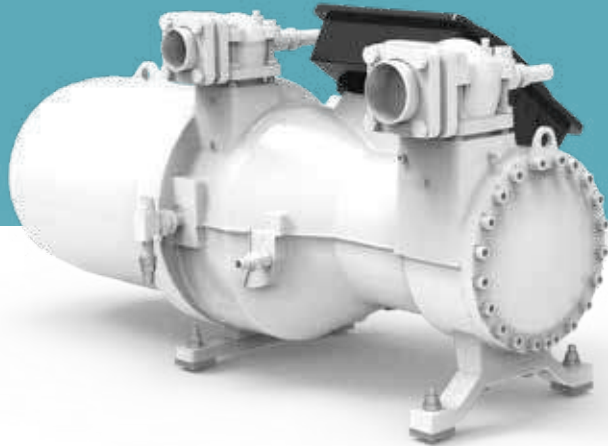


Shell & tube flooded exchanger

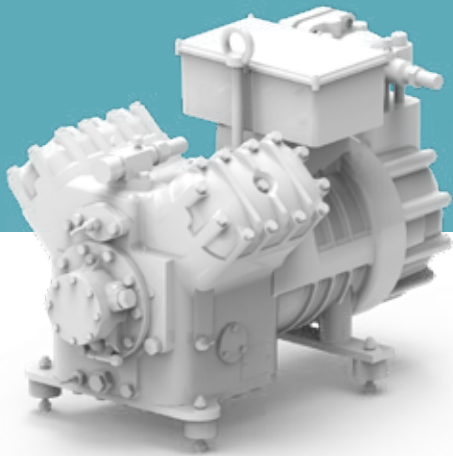
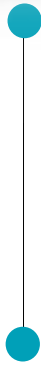




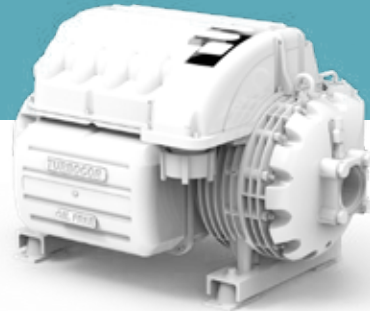
SCROLL / SCROLL INVERTER Compressor



Semi-hermetic SCREW / SCREW INVERTER compressor



Semi-hermetic RECIPROCATING compressors



MAGNETIC-LEVITATION centrifugal compressors

RAE N HE Kc

AIR COOLED CHILLERS FOR OUTDOOR INSTALLATION EQUIPPED WITH SCROLL COMPRESSORS AND AXIAL FANS

Cooling capacity from 18 kW to 195 kW



R410a



AIR



EC



ERP
2021

VERSIONS

RAE N HE - high efficiency version

RAE N S HE - high efficiency silenced version

Packaged air cooled chillers of RAE N series are suitable for outdoor installation and can be used to cool pure fluid solutions for air conditioning or in industrial applications.

All the units are totally factory assembled and tested, following specific quality procedures. Besides they are totally hydraulic, cooling and electrical connected permitting a quick installation once on site. Before the test the cooling circuits of each unit are subjected to a pressure test and then charged with Refrigerant R410A or R454B and non-freezing oil. So, once on site, the units must be only positioned and electrically and hydraulically connected.

For versions S, the reduction of the sound level is achieved thanks to an increase of the condensing surfaces, to the fan speed reduction and to the sound-proofed compressor cabinet.

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

MAIN COMPONENTS

STRUCTURE

All units are made from hot-galvanised sheet steel, painted with polyurethane powder enamel and stoved at 180°C to provide maximum protection against corrosion. The frame is self-supporting with removable panels. All screws and rivets used are made from stainless steel. The standard colour of the units is RAL9018.

SCROLL COMPRESSOR

Scroll compressors with R410a refrigerant, operating on one or two independent circuits in single, 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.

SOURCE HEAT EXCHANGER

The source heat exchanger is made from copper pipes and aluminium fins. Dimensioning of the copper pipes and the aluminium fins is optimized in order to obtain excellent performance. The tubes are mechanically expanded into the fins in order to maximise heat transfer. Furthermore, the design guarantees a low air side pressure drop thus enabling the use of low rotation speed (and hence low noise) fans. All heat exchangers are supplied standard with fins hydrophilic coating.

USER HEAT EXCHANGERS

The user heat exchanger is a braze welded, plate type heat exchanger, manufactured from AISI 316 stainless steel. The use of this type of exchanger results in a massive reduction of the refrigerant charge of the unit compared to a traditional shell-in-tube type. A further advantage is a reduction in the overall dimensions of the unit.

The exchangers are factory insulated with flexible close cell material and can be fitted with an antifreeze heater (accessory). Each exchanger is fitted with a temperature sensor on the discharge water side for antifreeze protection.

AXIAL FANS

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. Aluminum blades with wings profile are suitably designed to avoid any turbulence in the air detachment zone, granting in this way the max efficiency with the minimum noise level. The fan is equipped with galvanized steel protection grid painted after the construction. These fans, thanks to a more accurate regulation of the airflow, allow the unit to operate with an external air temperature up to -20 °C.

COOLING CIRCUITS

Each cooling circuit is equipped with the following elements: filter drier, sight glass, electronic thermostatic valve, high and low pressure safety valves, shut-off valve on liquid line, non-return valve on compressor discharge, high and low pressure gauges, high and low pressure switches, temperature probes to evaporator inlet and outlet. The above-mentioned components are connected in a close circuit through copper pipes and connections. The permanent junctions among components are made by brazing or welding, following processes and made by qualified staff.

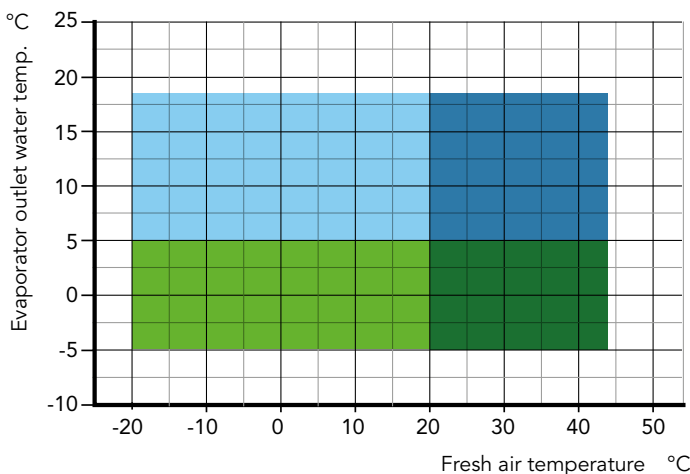
ELECTRICAL BOARD

The enclosure is manufactured in order to comply with the requirements of the electromagnetic compatibility standards CEE EN60204. Access to the enclosure is quick and easy thanks to hinged panels. The following components are supplied as standard on all units: main switch, a sequence relay that disables the power supply in the event that the phase sequence is incorrect (scroll compressors can be damaged if they rotate in the wrong direction), thermal overloads (protection of pumps and fans), compressor fuses, control circuit automatic breakers, compressor contactors, fan contactors and pump contactors. The terminal board has volt free contacts for remote ON-OFF, Summer/ winter change over (heat pumps only) and general alarm.

MICROPROCESSOR

All the units are subject to a safety cycle with continuity tests on the protection circuit, insulation resistance and tension test (dielectric strength). The unit management is realized by the management program uploaded in the electronic microprocessor. The microprocessor is made up of: an electronic control board with terminals for working parameters transmission and control devices activation, a user interface board with programming buttons and graphic display to show operation status and alarms. The electronic control board manages all the devices installed in the unit based on the values of the operation variables, with the following main functions: unit ON/OFF from board or from remote position, management and storage of alert and alarm status. The user interface display of the microprocessor allows also to see the following information: working parameters set values, functional variables values; analogue and digital inputs and outputs status, unit operation status, alert and alarm indications. Possibility to interface EMS/BMS management systems.

OPERATING RANGE



ACCESSORIES

RAE N HE KC / RAE N HE S KC		191	251	311	411	461	511	601	651
Axial fans with electronic commutated motor	EC	•	•	•	•	•	•	•	•
RS 485 Serial interface	IH	o	o	o	o	o	o	o	o
High and low pressure gauges	MT	o	o	o	o	o	o	o	o
Antifreeze kit for pump/s	NSP	o	o	o	o	o	o	o	o
Antifreeze kit for pump/s + tank	NSPS	o	o	o	o	o	o	o	o
Pump group	P1	o	o	o	o	o	o	o	o
Double pump group	P2	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
Integrated hydraulic kit 1 pump + Water tank	PS	o	o	o	o	o	o	o	o
Integrated hydraulic kit 2 pumps + Water tank	PTS	o	o	o	o	o	o	o	o
User heat exchanger antifreeze kit for basic unit	RQK	o	o	o	o	o	o	o	o
Electronic soft starter	SF	o	o	o	o	o	o	o	o
Electronic thermostatic valve	TE	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

• Standard, o Optional, -- Not available

RAE N HE KC / RAE N HE S KC		751	901	951	1101	1201	1401	1551	2001
Axial fans with electronic commutated motor	EC	•	•	•	•	•	•	•	•
RS 485 Serial interface	IH	o	o	o	o	o	o	o	o
High and low pressure gauges	MT	o	o	o	o	o	o	o	o
Antifreeze kit for pump/s	NSP	o	o	o	o	o	o	o	o
Antifreeze kit for pump/s + tank	NSPS	o	o	o	o	o	o	o	o
Pump group	P1	o	o	o	o	o	o	o	o
Double pump group	P2	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
Integrated hydraulic kit 1 pump + Water tank	PS	o	o	o	o	o	o	o	o
Integrated hydraulic kit 2 pumps + Water tank	PTS	o	o	o	o	o	o	o	o
User heat exchanger antifreeze kit for basic unit	RQK	o	o	o	o	o	o	o	o
Electronic soft starter	SF	o	o	o	o	o	o	o	o
Electronic thermostatic valve	TE	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

• Standard, o Optional, -- Not available

TECHNICAL DATA

RAE N HE Kc		191	251	311	411	461	511	601	651
Cooling capacity	kW	19,6	26,7	32,3	42,8	46,8	55,0	61,5	68,4
Total input power	kW	6,3	8,6	10,3	13,8	15,0	17,1	19,6	22,0
Nominal input current	A	13,3	16,7	18,6	25,3	27,3	31,8	35,3	40,9
EER	W/W	3,10	3,11	3,13	3,11	3,11	3,22	3,13	3,11
SEER (EN14825)	W/W	4,11	4,20	4,19	4,11	4,12	4,20	4,19	4,19
Circuits	n°	1	1	1	1	1	1	1	1
Compressors	n°	2	2	2	2	2	2	2	2
Refrigerant R410A									
Refrigerant charge	kg	6,5	6,5	6,5	10,0	8,5	8,5	14,5	14,5
Global warming potential (GWP)	-	2088	2088	2088	2088	2088	2088	2088	2088
Equivalent CO ₂ charge	t	13,57	13,57	13,57	20,88	17,74	17,74	30,27	30,27
Axial fans ⁽¹⁾									
Quantity	n°	2	2	2	2	2	2	2	2
Total air flow	m ³ /h	8990	8913	17188	17079	17026	18949	18862	18802
Total power input	kW	0,39	0,38	1,05	1,04	1,04	0,97	0,95	0,93
Total input current	A	1,75	1,73	2,24	2,22	2,22	2,13	2,12	2,12
Evaporator ⁽²⁾									
Quantity	n°	1	1	1	1	1	1	1	1
Water flow	m ³ /h	3,36	4,56	5,53	7,33	8,01	9,42	10,54	11,72
Pressure drop	kPa	10,0	17,0	11,7	12,4	10,0	13,7	13,8	12,4
Weight									
Transport weight	kg	547	547	670	690	720	1035	1035	1044
Operating weight	kg	560	560	967	1016	1015	1040	1060	1070
Dimensions									
Length	mm	1915	1915	2400	2400	2400	2905	2905	2905
Width	mm	875	875	1145	1145	1145	1145	1145	1145
Height	mm	1490	1490	1670	1670	1670	1840	1840	1840
Sound data									
Total LWA ⁽³⁾	dB(A)	75	75	75	75	77	77	77	78
Total SPL 10m ⁽⁴⁾	dB(A)	43	43	43	43	45	45	45	46
Power supply									
Voltage/phase/frequency	V/ph/Hz	400/3+N/50	400/3+N/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]	9,80	12,6	16,1	20,1	21,7	25,0	27,4	30,8
Maximum input current	[A]	17,6	22,0	26,5	34,3	44,5	46,5	52,5	64,5
Inrush current	[A]	57,8	75,0	80,5	115,0	135,0	143,0	146,0	174,0

RAE N HE Kc		751	901	951	1101	1201	1401	1551	2001
Cooling capacity	kW	82,6	93,5	104,5	121,4	133,3	151,6	168,9	195,0
Total input power	kW	26,2	30,0	33,6	38,1	42,9	48,7	54,3	62,7
Nominal input current	A	50,5	55,6	61,0	68,2	75,8	86,2	97,2	109,0
EER	W/W	3,15	3,12	3,11	3,19	3,11	3,11	3,11	3,11
SEER (EN14825)	W/W	4,14	4,13	4,12	4,13	4,19	4,13	4,17	4,18
Circuits	n°	1	1	1	1	1	1	1	1
Compressors	n°	2	2	2	2	2	2	2	2
Refrigerant R410A									
Refrigerant charge	kg	19,0	19,0	20,0	28,0	30,0	30,0	30,0	30,0
Global warming potential (GWP)	-	2088	2088	2088	2088	2088	2088	2088	2088
Equivalent CO ₂ charge	t	39,67	39,67	41,76	58,46	62,64	62,64	62,64	62,64
Axial fans ⁽¹⁾									
Quantity	n°	2	2	2	3	3	3	3	3
Total air flow	m ³ /h	41115	40998	40875	61987	61834	61624	61450	62820
Total power input	kW	2,94	2,88	2,81	4,38	4,37	4,29	4,17	4,16
Total input current	A	6,31	6,29	6,27	9,46	9,43	9,40	9,37	9,20
Evaporator ⁽²⁾									
Quantity	n°	1	1	1	1	1	1	1	1
Water flow	m ³ /h	14,12	16,02	17,84	20,78	22,82	25,93	28,78	33,43
Pressure drop	kPa	18,3	22,4	26,4	20,4	20,4	13,1	15,4	28,0
Weight									
Transport weight	kg	1094	1134	1204	1520	1539	1557	1577	1736
Operating weight	kg	1100	1140	1210	1530	1550	1570	1590	1750
Dimensions									
Length	mm	2905	2905	2905	3905	3905	3905	3905	3905
Width	mm	1145	1145	1145	1145	1145	1145	1145	1145
Height	mm	1840	1840	1840	1890	1890	1890	1890	2280
Sound data									
Total LWA ⁽³⁾	dB(A)	83	84	85	87	88	88	88	89
Total SPL 10m ⁽⁴⁾	dB(A)	51	52	53	55	56	56	56	57
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]	37,7	43,3	49,0	55,9	60,9	69,4	77,9	86,8
Maximum input current	[A]	75,8	81,8	87,8	100,0	109,0	126,0	142,0	160,0
Inrush current	[A]	216,0	267,0	273,0	324,0	332,0	370,0	387,0	485,0

(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 HE S Kc		191	251	311	411	461	511	601	651
Cooling capacity	kW	20,5	27,0	31,9	42,6	46,1	54,0	61,2	68,1
Total input power	kW	6,6	8,7	10,2	13,7	14,9	17,4	19,6	22,0
Nominal input current	A	14,6	17,7	18,0	25,0	27,0	31,6	35,5	41,1
EER	W/W	3,11	3,10	3,14	3,11	3,10	3,11	3,12	3,10
SEER (EN14825)	W/W	4,14	4,11	4,15	4,13	4,11	4,16	4,15	4,15
Circuits	n°	1	1	1	1	1	1	1	1
Compressors	n°	2	2	2	2	2	2	2	2
Refrigerant R410A									
Refrigerant charge	kg	6,5	6,5	6,5	10,0	8,5	8,5	14,5	14,5
Global warming potential (GWP)	-	2088	2088	2088	2088	2088	2088	2088	2088
Equivalent CO ₂ charge	t	13,57	13,57	13,57	20,88	17,74	17,74	30,27	30,27
Axial fans ⁽¹⁾									
Quantity	n°	2	2	2	2	2	2	2	2
Total air flow	m ³ /h	11669	11591	13900	13791	13738	15749	15678	15636
Total power input	kW	0,72	0,70	0,76	0,74	0,74	0,71	0,68	0,67
Total input current	A	3,24	3,21	1,27	1,26	1,25	1,18	1,17	1,17
Evaporator ⁽²⁾									
Quantity	n°	1	1	1	1	1	1	1	1
Water flow	m ³ /h	3,5	4,6	5,5	7,3	7,9	9,2	10,5	11,7
Pressure drop	kPa	10,4	18,0	11,4	12,0	9,6	13,1	13,1	11,8
Weight									
Transport weight	kg	547	547	680	710	740	1035	1035	1044
Operating weight	kg	570	570	967	1016	1015	1060	1080	1090
Dimensions									
Length	mm	1915	1915	2400	2400	2400	2905	2905	2905
Width	mm	875	875	1145	1145	1145	1145	1145	1145
Height	mm	1490	1490	1670	1670	1670	1840	1840	1840
Sound data									
Total LWA ⁽³⁾	dB(A)	70	70	70	70	72	72	72	73
Total SPL 10m ⁽⁴⁾	dB(A)	38	38	38	38	40	40	40	41
Power supply									
Voltage/phase/frequency	V/ph/Hz	400/3+N/50	400/3+N/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]	10,1	12,9	15,8	19,7	21,3	24,6	27,0	30,4
Maximum input current	[A]	19,2	23,6	25,5	33,3	43,5	45,5	51,5	63,5
Inrush current	[A]	59,4	76,6	79,5	114,0	134,0	142,0	144,0	172,0

RAE N HE S Kc		751	901	951	1101	1201	1401	1551	2001
Cooling capacity	kW	80,7	91,2	103,2	118,8	130,1	150,1	166,8	189,1
Total input power	kW	25,4	29,4	33,3	36,9	42,0	48,1	53,8	60,8
Nominal input current	A	49,1	54,6	60,6	66,0	74,0	85,2	96,7	107,0
EER	W/W	3,18	3,10	3,10	3,22	3,10	3,12	3,10	3,11
SEER (EN14825)	W/W	4,16	4,17	4,16	4,20	4,11	4,25	4,12	4,27
Circuits	n°	1	1	1	1	1	1	1	1
Compressors	n°	2	2	2	2	2	2	2	2
Refrigerant R410A									
Refrigerant charge	kg	19,0	19,0	20,0	28,0	30,0	30,0	30,0	30,0
Global warming potential (GWP)	-	2088	2088	2088	2088	2088	2088	2088	2088
Equivalent CO ₂ charge	t	39,67	39,67	41,76	58,46	62,64	62,64	62,64	62,64
Axial fans ⁽¹⁾									
Quantity	n°	2	2	2	3	3	3	3	3
Total air flow	m ³ /h	31482	31373	31277	47528	47380	47180	46991	48165
Total power input	kW	1,45	1,42	1,38	2,18	2,17	2,21	2,04	2,04
Total input current	A	3,94	3,92	3,91	5,91	5,89	5,87	5,84	5,77
Evaporator ⁽²⁾									
Quantity	n°	1	1	1	1	1	1	1	1
Water flow	m ³ /h	13,9	15,6	17,7	20,3	22,2	25,6	25,6	32,4
Pressure drop	kPa	17,6	21,4	25,2	19,6	19,4	12,5	14,7	27,3
Weight									
Transport weight	kg	1094	1134	1204	1520	1539	1557	1577	1736
Operating weight	kg	1120	1160	1230	1560	1580	1600	1620	1780
Dimensions									
Length	mm	2905	2905	2905	3905	3905	3905	3905	3905
Width	mm	1145	1145	1145	1145	1145	1145	1145	1145
Height	mm	1840	1840	1840	1890	1890	1890	1890	2280
Sound data									
Total LWA ⁽³⁾	dB(A)	75	77	78	80	81	81	81	83
Total SPL 10m ⁽⁴⁾	dB(A)	43	45	46	48	49	49	49	51
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]	35,5	41,2	46,8	52,7	57,7	66,2	74,7	83,6
Maximum input current	[A]	72,4	78,4	84,4	95,1	104,0	120,0	137,0	155,0
Inrush current	[A]	212,0	263,0	269,0	319,0	327,0	365,0	382,0	480,0

(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 S Kc/Kr

AIR COOLED CHILLERS FOR OUTDOOR INSTALLATION EQUIPPED WITH SCROLL COMPRESSORS AND AXIAL FANS

Cooling capacity from 143 kW to 640 kW



R410a

R454B



AIR



AC



ERP
2021

VERSIONS

RAE N S - silenced version

Packaged air cooled chillers of RAE N S 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 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 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 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.

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.

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. With this type of fans the air flow rate that invests the heat exchange coil is adjusted with more precision allowing the unit to operate with external temperatures up to -20°C while maintaining high efficiency.

AXIAL FANS WITH INVERTER SYSTEM

(only 6102 size)

With 6-poles electrical motor with external rotor directly coupled to the impeller and driven by a V/F inverter system which

controls the condensation temperature. Aluminum blades with wings profile are suitably designed to avoid any turbulence in the air detachment zone, granting in this way the max efficiency with the minimum noise level. The fan is equipped with galvanized steel protection grid painted after the construction. The fan motors are of totally closed type and have got a protection factor IP54 and protection winding-flooded thermostat.

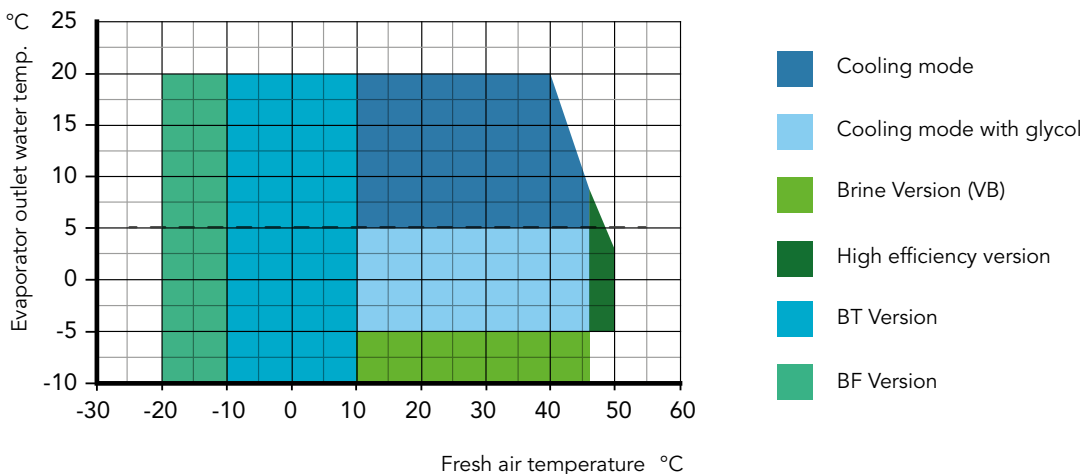
COOLING CIRCUIT

Each provided with a shut-off valve for refrigerant charge, anti-freeze 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 S Kc/Kr

RAE N S Kc / Kr		1501	1701	2002	2302	2502	2902	3202	3402
Amperometer	A	0	0	0	0	0	0	0	0
Electrical power supply different than standard	AE	0	0	0	0	0	0	0	0
Operation in cooling mode down to -20°C	BF	0	0	0	0	0	0	0	0
Operation in cooling mode down to -10°C	BT	0	0	0	0	0	0	0	0
Overall compressor and technical compartment cabinet	CFT	0	0	0	0	0	0	0	0
Soundproofed compressors cabinet with higher thickness material	CFU	0	0	0	0	0	0	0	0
Compressors inrush counter	CS	0	0	0	0	0	0	0	0
Axial fans with electronic commutated motor	EC	0	0	0	0	0	0	0	0
Condensing coil protection grid	GP	0	0	0	0	0	0	0	0
Anti-intrusion grid	GP3	0	0	0	0	0	0	0	0
Victaulic insulation on pump side	I1	0	0	0	0	0	0	0	0
Victaulic insulation buffer tank side	I2	0	0	0	0	0	0	0	0
RS 485 Serial interface	IH	0	0	0	0	0	0	0	0
LON Protocol serial interface	IH-LON	0	0	0	0	0	0	0	0
Seawood packing	IM	0	0	0	0	0	0	0	0
TCP/IP Protocol serial interface	IWG	0	0	0	0	0	0	0	0
Phase monitor	MF	0	0	0	0	0	0	0	0
Buffer tank module	MV	0	0	0	0	0	0	0	0
Pump group	P1	0	0	0	0	0	0	0	0
Pump + tank	P1+MV	0	0	0	0	0	0	0	0
Higher available pressure pump group	P1H	0	0	0	0	0	0	0	0
Higher available pressure pump group + tank	P1H+MV	0	0	0	0	0	0	0	0
Double pump group	P2	0	0	0	0	0	0	0	0
Double pump group + tank	P2+MV	0	0	0	0	0	0	0	0
Higher available pressure double pump group	P2H	0	0	0	0	0	0	0	0
Higher available pressure double pump group + tank	P2H+MV	0	0	0	0	0	0	0	0
Rubber-type vibration dampers	PA	0	0	0	0	0	0	0	0
Spring-type vibration dampers	PM	0	0	0	0	0	0	0	0
Remote display	PQ	0	0	0	0	0	0	0	0
In-line twin pump group (only one working)	PT	0	0	0	0	0	0	0	0
In-line twin pump group (only one working) + tank	PT+MV	0	0	0	0	0	0	0	0
Anti-freeze heater on evaporator	RA	0	0	0	0	0	0	0	0
Shut-off valve on compressors discharge side	RD	0	0	0	0	0	0	0	0
Power factor correction system cosfi ≥0,9	RF	0	0	0	0	0	0	0	0
Shut-off valve on compressors suction side	RH	0	0	0	0	0	0	0	0
Compressor overload relays	RL	0	0	0	0	0	0	0	0
Batteria con alette preverniciate	RM	0	0	0	0	0	0	0	0
Partial heat recovery	RP	0	0	0	0	0	0	0	0
Copper/Copper coil	RR	0	0	0	0	0	0	0	0
Total heat recovery	RT	0	0	0	0	0	0	0	0
Personalized frame painting	RV	0	0	0	0	0	0	0	0
Electronic thermostatic valve	TE	•	•	•	•	•	•	•	•
Voltmeter	V	0	0	0	0	0	0	0	0
Brine Version	VB	0	0	0	0	0	0	0	0
Solenoid valve	VS	0	0	0	0	0	0	0	0

• Standard, 0 Optional, -- Not available

RAE N S Kc / Kr		3602	4102	4402	4902	5202	5602	6102
Amperometer	A	o	o	o	o	o	o	o
Electrical power supply different than standard	AE	o	o	o	o	o	o	o
Operation in cooling mode down to -20°C	BF	o	o	o	o	o	o	•
Operation in cooling mode down to -10°C	BT	o	o	o	o	o	o	--
Overall compressor and technical compartment cabinet	CFT	o	o	--	--	--	--	--
Soundproofed compressors cabinet with higher thickness material	CFU	o	o	o	o	o	o	o
Compressors inrush counter	CS	o	o	o	o	o	o	o
Axial fans with electronic commutated motor	EC	o	o	o	o	o	o	o
Condensing coil protection grid	GP	o	o	o	o	o	o	o
Anti-intrusion grid	GP3	o	o	o	o	o	o	o
Victaulic insulation on pump side	I1	o	o	o	o	o	o	o
Victaulic insulation buffer tank side	I2	o	o	o	o	o	o	o
RS 485 Serial interface	IH	o	o	o	o	o	o	o
LON Protocol serial interface	IH-LON	o	o	o	o	o	o	o
Seawood packing	IM	o	o	o	o	o	o	o
TCP/IP Protocol serial interface	IWG	o	o	o	o	o	o	o
Phase monitor	MF	o	o	o	o	o	o	o
Buffer tank module	MV	o	o	o	o	o	o	o
Pump group	P1	o	o	o	o	o	o	o
Pump + tank	P1+MV	o	o	o	o	o	o	o
Higher available pressure pump group	P1H	o	o	o	o	o	o	o
Higher available pressure pump group + tank	P1H+MV	o	o	o	o	o	o	o
Double pump group	P2	o	o	o	o	o	o	o
Double pump group + tank	P2+MV	o	o	o	o	o	o	o
Higher available pressure double pump group	P2H	o	o	o	o	o	o	o
Higher available pressure double pump group + tank	P2H+MV	o	o	o	o	o	o	o
Rubber-type vibration dampers	PA	o	o	o	o	o	o	o
Spring-type vibration dampers	PM	o	o	o	o	o	o	o
Remote display	PQ	o	o	o	o	o	o	o
In-line twin pump group (only one working)	PT	o	o	o	o	o	o	o
In-line twin pump group (only one working) + tank	PT+MV	o	o	o	o	o	o	o
Anti-freeze heater on evaporator	RA	o	o	o	o	o	o	o
Shut-off valve on compressors discharge side	RD	o	o	o	o	o	o	o
Power factor correction system cosfi ≥0,9	RF	o	o	o	o	o	o	o
Shut-off valve on compressors suction side	RH	o	o	o	o	o	o	o
Compressor overload relays	RL	o	o	o	o	o	o	o
Condensing coil with pre-painted fins	RM	o	o	o	o	o	o	o
Partial heat recovery	RP	o	o	o	o	o	o	o
Copper/Copper coil	RR	o	o	o	o	o	o	o
Total heat recovery	RT	o	o	o	o	o	o	o
Personalized frame painting	RV	o	o	o	o	o	o	o
Electronic thermostatic valve	TE	•	•	•	•	•	•	•
Voltmeter	V	o	o	o	o	o	o	o
Brine Version	VB	o	o	o	o	o	o	o
Solenoid valve	VS	o	o	o	o	o	o	o

• Standard, o Optional, -- Not available

RAE N S Kc		1501	1701	2002	2302	2502	2902	3202	3402
Cooling capacity	kW	143,0	162,1	205,9	237,0	254,7	289,4	317,6	344,5
Total input power	kW	49,5	59,1	71,1	84,8	92,1	102,8	105,4	116,5
Nominal input current	A	84,6	100,3	126,1	148,2	157,0	174,7	179,4	197,7
EER	W/W	2,89	2,74	2,90	2,79	2,77	2,81	3,01	2,96
SEER (EN14825)	W/W	4,21	4,10	4,14	4,19	4,14	4,10	4,39	4,14
Circuits	n°	1	1	2	2	2	2	2	2
Compressors	n°	2	2	4	4	4	4	4	4
Refrigerant R410A									
Refrigerant charge	kg	38	24	38	48	58	48	78	60
Global warming potential (GWP)	-	2088	2088	2088	2088	2088	2088	2088	2088
Equivalent CO ₂ charge	t	79,3	50,1	79,3	100,2	121,1	100,2	162,9	125,3
Axial fans ⁽¹⁾									
Quantity	n°	2	3	3	3	3	4	4	5
Total air flow	m ³ /h	34630	67280	62850	59010	55750	83770	74250	104720
Total power input	kW	2,8	4,0	4,0	4,1	4,1	5,4	5,5	6,7
Total input current	A	5,2	7,5	7,6	7,7	7,7	10,2	10,3	12,7
Evaporator ⁽²⁾									
Quantity	n°	1	1	1	1	1	1	1	1
Water flow	m ³ /h	24,6	27,9	35,4	40,8	43,8	49,8	54,6	59,3
Pressure drop	kPa	32,3	33,3	25,9	33,2	37,7	32,6	36,5	36,4
Weight									
Transport weight	kg	1455	1473	1885	1994	2086	2147	2379	2389
Operating weight	kg	1464	1480	1894	2004	2096	2160	2392	2410
Dimensions									
Length	mm	2660	3700	3700	3700	3700	4740	4740	5780
Width	mm	1370	1370	1370	1370	1370	1370	1370	1370
Height	mm	2420	2420	2420	2420	2420	2420	2420	2420
Sound data									
Total LWA ⁽³⁾	dB(A)	89,0	89,0	90,0	91,0	91,0	92,0	92,0	93,0
Total SPL 10m ⁽⁴⁾	dB(A)	57,0	56,9	57,9	58,9	58,9	59,8	59,8	60,6
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]	65,1	75,6	90,4	110,8	118,3	130,3	137,7	149,6
Maximum input current	[A]	119,8	139,9	173,9	207,5	215,9	239,6	253,2	276,9
Inrush current	[A]	364,4	465,3	412,8	452,1	460,5	484,2	578,6	602,3
RAE N S Kc		3602	4102	4402	4902	5202	5602	6102	
Cooling capacity	kW	379,4	399,0	435,8	504,7	543,2	602,3	640,7	
Total input power	kW	128,7	147,0	137,9	168,0	183,5	195,1	213,8	
Nominal input current	A	217,5	247,0	241,6	286,0	310,7	330,5	360,0	
EER	W/W	2,95	2,71	3,16	3,00	2,96	3,09	3,00	
SEER (EN14825)	W/W	4,23	4,13	4,54	4,58	4,57	4,55	4,59	
Circuits	n°	2	2	2	2	2	2	2	
Compressors	n°	4	6	6	6	6	6	6	
Refrigerant R410A									
Refrigerant charge	kg	78	100	96	124	152	152	154	
Global warming potential (GWP)	-	2088	2088	2088	2088	2088	2088	2088	
Equivalent CO ₂ charge	t	162,9	208,8	200,4	258,9	317,4	317,4	321,6	
Axial fans ⁽¹⁾									
Quantity	n°	5	5	8	8	8	10	10	
Total air flow	m ³ /h	98300	92900	133130	126380	121020	157980	158010	
Total power input	kW	6,8	6,8	8,4	8,4	8,4	10,6	10,6	
Total input current	A	12,8	12,9	15,9	15,9	16,0	20,0	19,9	
Evaporator ⁽²⁾									
Quantity	n°	1	1	1	1	1	1	1	
Water flow	m ³ /h	65,3	68,6	74,9	86,8	93,4	103,6	110,2	
Pressure drop	kPa	43,1	31,3	32,9	40,8	46,4	55,6	52,7	
Weight									
Transport weight	kg	2495	2495	3202	3584	3818	4428	4529	
Operating weight	kg	2516	2516	3228	3614	3850	4465	4566	
Dimensions									
Length	mm	5780	5780	4750	4750	4750	5720	5720	
Width	mm	1370	1370	2300	2300	2300	2300	2300	
Height	mm	2420	2420	2560	2560	2560	2560	2560	
Sound data									
Total LWA ⁽³⁾	dB(A)	93,0	93,0	94,0	94,0	94,0	95,0	95,0	
Total SPL 10m ⁽⁴⁾	dB(A)	60,6	60,6	61,6	61,6	61,6	62,5	62,5	
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	
General electrical data									
Maximum input power	[kW]	170,0	187,8	190,0	226,6	244,4	264,7	282,5	
Maximum input current	[A]	310,5	344,9	350,4	412,4	446,8	486,2	520,6	
Inrush current	[A]	635,9	670,3	675,8	657,0	772,2	811,6	846,0	

(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 S Kr		1501	1701	2002	2302	2502	2902	3202	3402
Cooling capacity	kW	147,3	167,0	212,1	244,1	262,3	298,1	327,1	354,8
Total input power	kW	50,5	60,3	72,5	86,5	93,9	104,9	107,5	118,8
Nominal input current	A	86,3	102,3	128,6	151,2	160,1	178,2	183,0	201,7
EER	W/W	2,9	2,8	2,9	2,8	2,8	2,8	3,0	3,0
SEER (EN14825)	W/W	4,26	4,15	4,19	4,24	4,19	4,15	4,44	4,19
Circuits	n°	1	1	2	2	2	2	2	2
Compressors	n°	2	2	4	4	4	4	4	4
Refrigerant R454B									
Refrigerant charge	kg	38	24	38	48	58	48	78	60
Global warming potential (GWP)	-	466	466	466	466	466	466	466	466
Equivalent CO ₂ charge	t	17,7	11,2	17,7	22,4	27,0	22,4	36,3	28,0
Axial fans ⁽¹⁾									
Quantity	n°	2	3	3	3	3	4	4	5
Total air flow	m ³ /h	34630	67280	62850	59010	55750	83770	74250	104720
Total power input	kW	2,8	4,0	4,0	4,1	4,1	5,4	5,5	6,7
Total input current	A	5,2	7,5	7,6	7,7	7,7	10,2	10,3	12,7
Evaporator ⁽²⁾									
Quantity	n°	1	1	1	1	1	1	1	1
Water flow	m ³ /h	25,4	28,8	36,5	42,0	45,2	51,3	56,3	61,1
Pressure drop	kPa	31,9	32,9	25,6	32,8	37,2	32,2	36,0	35,9
Weight									
Transport weight	kg	1475	1493	1911	2021	2114	2176	2411	2421
Operating weight	kg	1484	1500	1920	2031	2124	2189	2424	2443
Dimensions									
Length	mm	2660	3700	3700	3700	3700	4740	4740	5780
Width	mm	1370	1370	1370	1370	1370	1370	1370	1370
Height	mm	2420	2420	2420	2420	2420	2420	2420	2420
Sound data									
Total LWA ⁽³⁾	dB(A)	89,0	89,0	90,0	91,0	91,0	92,0	92,0	93,0
Total SPL 10m ⁽⁴⁾	dB(A)	57,0	56,9	57,9	58,9	58,9	59,8	59,8	60,6
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]	65,1	75,6	90,4	110,8	118,3	130,3	137,7	149,6
Maximum input current	[A]	119,8	139,9	173,9	207,5	215,9	239,6	253,2	276,9
Inrush current	[A]	364,4	465,3	412,8	452,1	460,5	484,2	578,6	602,3
RAE N S Kr		3602	4102	4402	4902	5202	5602	6102	
Cooling capacity	kW	390,8	411,0	448,9	519,8	559,5	620,4	659,9	
Total input power	kW	131,3	149,9	140,7	171,4	187,2	199,0	218,1	
Nominal input current	A	221,9	251,9	246,4	291,7	316,9	337,1	367,2	
EER	W/W	3,0	2,7	3,2	3,0	3,0	3,1	3,0	
SEER (EN14825)	W/W	4,28	4,18	4,60	4,64	4,63	4,61	4,65	
Circuits	n°	2	2	2	2	2	2	2	
Compressors	n°	4	6	6	6	6	6	6	
Refrigerant R454B									
Refrigerant charge	kg	78	100	96	124	152	152	154	
Global warming potential (GWP)	-	466	466	466	466	466	466	466	
Equivalent CO ₂ charge	t	36,3	46,6	44,7	57,8	70,8	70,8	71,8	
Axial fans ⁽¹⁾									
Quantity	n°	5	5	8	8	8	10	10	
Total air flow	m ³ /h	98300	92900	133130	126380	121020	157980	158010	
Total power input	kW	6,8	6,8	8,4	8,4	8,4	10,6	10,6	
Total input current	A	12,8	12,9	15,9	15,9	16,0	20,0	19,9	
Evaporator ⁽²⁾									
Quantity	n°	1	1	1	1	1	1	1	
Water flow	m ³ /h	67,3	70,8	77,3	89,5	96,3	106,8	113,6	
Pressure drop	kPa	42,5	30,9	32,5	40,3	45,8	48,9	46,7	
Weight									
Transport weight	kg	2529	2529	3245	3633	3870	4488	4590	
Operating weight	kg	2550	2550	3272	3663	3902	4526	4628	
Dimensions									
Length	mm	5780	5780	4750	4750	4750	5720	5720	
Width	mm	1370	1370	2300	2300	2300	2300	2300	
Height	mm	2420	2420	2560	2560	2560	2560	2560	
Sound data									
Total LWA ⁽³⁾	dB(A)	93,0	93,0	94,0	94,0	94,0	95,0	95,0	
Total SPL 10m ⁽⁴⁾	dB(A)	60,6	60,6	61,6	61,6	61,6	62,5	62,5	
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	
General electrical data									
Maximum input power	[kW]	170,0	187,8	190,0	226,6	244,4	264,7	282,5	
Maximum input current	[A]	310,5	344,9	350,4	412,4	446,8	486,2	520,6	
Inrush current	[A]	635,9	670,3	675,8	657,0	772,2	811,6	846,0	

(1) Ambient air temperature 35°C

(2) Fluid: Water - In/out Temperature: 12/7°C

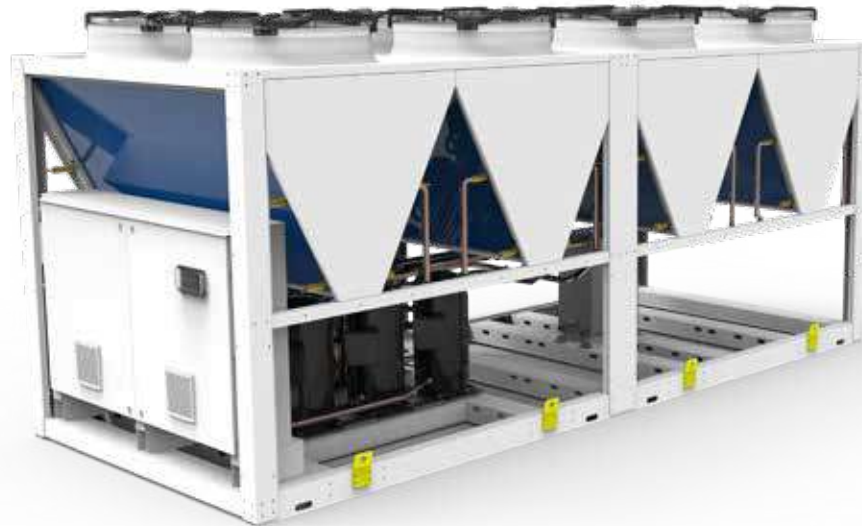
(3) Sound power level in accordance with ISO 3744.

(4) Sound pressure level at 10m from the unit in free field conditions, in accordance with ISO 3744

RAE N MC Kc/Kr

AIR COOLED CHILLERS FOR OUTDOOR INSTALLATION
EQUIPPED WITH SCROLL COMPRESSORS,
AXIAL FANS AND MICROCHANNEL CONDENSING COILS

Cooling capacity from 78 kW to 636 kW



R410a

R454B



AIR



VERSIONS

- RAE N MC** - standard version
- RAE N MC S** - silenced version
- RAE N MC HE** - high efficiency version
- RAE N MC S HE** - high efficiency silenced version

Packaged air cooled chillers of RAE N MC 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.

All the units are totally factory assembled and tested, following specific quality procedures. Besides they are totally hydraulic, cooling and electrical connected permitting a quick installation once on site. Before the test the cooling circuits of each unit are subjected to a pressure test and then charged with Refrigerant R410A or R454B and non-freezing oil. So, once on site, the units must be only positioned and electrically and hydraulically connected.

Reduced sound level in versions S is realised by using condensers with larger surface areas as well as sound-proofed compressor cabinets.

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

MAIN COMPONENTS

STRUCTURE

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, easily accessible, contains the compressors and the main components.

SCROLL COMPRESSOR

Scroll compressors operating on one or two independent circuits in single, 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 45 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 COIL

Totally made up of aluminum alloy to grant a perfect and continuous contact among tubes and fins optimizing the thermal exchange and reducing dimensions.

The high passivation degree of the used alloy, besides the peculiar assembling way, avoids the possibility to have galvanic corrosion phenomena. On demand it is also possible to provide the units installed in particularly aggressive environments with surface treatments against exchangers environmental corrosion. The cross "V" arrangement of the condensing coils makes the units of this series perfectly each other modular, granting at the same time the easiest access to the technical room both for checking operations required during the normal unit functioning and for maintenance.

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. With this type of fans the air flow rate that invests the heat exchange coil is adjusted with more precision allowing the unit to operate with external temperatures up to -20°C while maintaining high efficiency.

AXIAL FANS WITH INVERTER SYSTEM (only for mod. 5002+6502)

With 6-poles electrical motor with external rotor directly coupled to the impeller and driven by a V/F inverter system which controls the condensation temperature. Aluminum blades with wings profile are suitably designed to avoid any turbulence in the air detachment zone, granting in this way the max efficiency with the minimum noise level. The fan is equipped with galvanized steel protection grid painted after the construction. The fan motors are of totally closed type and have got a protection factor IP54 and protection winding-flooded thermostat.

INDEPENDENT COOLING CIRCUITS

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 electronic thermostatic expansion valve, as well as high and low pressure switches and gauges.

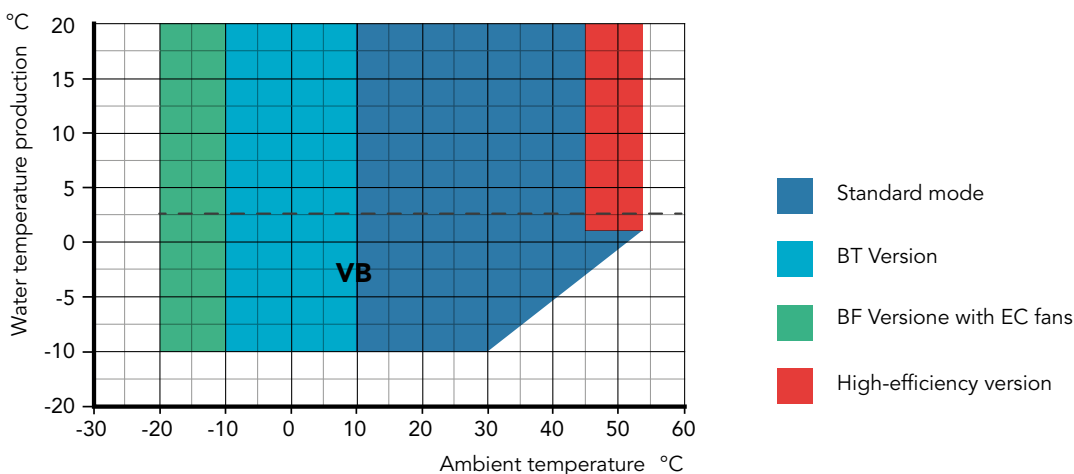
ELECTRICAL BOARD

In compliance with CE Norms, contained in a suitable section protected by internal safety panel, provided with a lock-door main switch. Inside all the control and protection components are suitably placed, together with terminal board and auxiliaries. The electrical board also includes the control device for power supply phases to prevent the compressor wrong side rotation. Microprocessor and relevant display are also placed inside the electrical cabinet.

MICROPROCESSOR

For unit management installed inside the electrical cabinet, with double evaporator in/out control of the chilled water temperature, as well as control of working parameters and equalization of compressors working hours, failures auto-detection system, alarm log, start and set point timeslot programming, possibility of remote management and supervision by enabling standard communication protocols management.

OPERATING RANGE



ACCESSORIES

RAE N MC KC

RAE N MC KC / RAE N MC S KC		801	1001	1301	1501	1651	1701	2001	2402	2702
Amperometer	A	o	o	o	o	o	o	o	o	o
Electrical power supply different than standard	AE	o	o	o	o	o	o	o	o	o
Operation in cooling mode down to -20°C	BF	o	o	o	o	o	o	--	o	o
Operation in cooling mode down to -10°C	BT	o	o	o	o	o	o	--	o	o
Compressors inrush counter	CS	o	o	o	o	o	o	o	o	o
Axial fans with electronic commutated motor	EC	o	o	o	o	o	o	•	o	o
Condensing coil protection grid	GP	o	o	o	o	o	o	o	o	o
Anti-intrusion grid	GP1	o	o	o	o	o	o	o	o	o
Victaulic insulation on pump side	I1	o	o	o	o	o	o	o	o	o
Victaulic insulation buffer tank side	I2	o	o	o	o	o	o	o	o	o
RS 485 Serial interface	IH	o	o	o	o	o	o	o	o	o
LON Protocol serial interface	IH-LON	o	o	o	o	o	o	o	o	o
Seawood packing	IM	o	o	o	o	o	o	o	o	o
TCP/IP Protocol serial interface	IWG	o	o	o	o	o	o	o	o	o
Phase monitor	MF	o	o	o	o	o	o	o	o	o
Buffer tank module	MV	o	o	o	o	o	o	o	o	o
Pump group	P1	o	o	o	o	o	o	o	o	o
Pump + tank	P1+MV	o	o	o	o	o	o	o	o	o
Higher available pressure pump group	P1H	o	o	o	o	o	o	o	o	o
Higher available pressure pump group + tank	P1H+MV	o	o	o	o	o	o	o	o	o
Double pump group	P2	o	o	o	o	o	o	o	o	o
Double pump group + tank	P2+MV	o	o	o	o	o	o	o	o	o
Higher available pressure double pump group	P2H	o	o	o	o	o	o	o	o	o
Higher available pressure double pump group + tank	P2H+MV	o	o	o	o	o	o	o	o	o
Rubber-type vibration dampers	PA	o	o	o	o	o	o	o	o	o
Anti-corrosive protection of the condensing coils (Powder coating)	PCP	o	o	o	o	o	o	o	o	o
Spring-type vibration dampers	PM	o	o	o	o	o	o	o	o	o
Remote display	PQ	o	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	o
In-line twin pump group (only one working) + tank	PT+MV	o	o	o	o	o	o	o	o	o
Anti-freeze heater on evaporator	RA	o	o	o	o	o	o	o	o	o
Shut-off valve on compressors discharge side	RD	o	o	o	o	o	o	o	o	o
Power factor correction system cosφ ≥ 0,9	RF	o	o	o	o	o	o	o	o	o
Shut-off valve on compressors suction side	RH	o	o	o	o	o	o	o	o	o
Compressor overload relays	RL	o	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	o
Brine Version	VB	o	o	o	o	o	o	o	o	o
Solenoid valve	VS	o	o	o	o	o	o	o	o	o
Partial heat recovery	RP	o	o	o	o	o	o	o	o	o
Total heat recovery	RT	o	o	o	o	o	o	o	o	o

• Standard, o Optional, -- Not available

RAE N MC KC / RAE N MC S KC		3102	3502	3802	4002	5002	5402	6002	6502
Amperometer	A	0	0	0	0	0	0	0	0
Electrical power supply different than standard	AE	0	0	0	0	0	0	0	0
Operation in cooling mode down to -20°C	BF	0	0	0	0	●	●	●	●
Operation in cooling mode down to -10°C	BT	0	0	0	0	--	--	--	--
Compressors inrush counter	CS	0	0	0	0	0	0	0	0
Axial fans with electronic commutated motor	EC	0	0	0	0	0	0	0	0
Condensing coil protection grid	GP	0	0	0	0	0	0	0	0
Anti-intrusion grid	GP1	0	0	0	0	0	0	0	0
Victaulic insulation on pump side	I1	0	0	0	0	0	0	0	0
Victaulic insulation buffer tank side	I2	0	0	0	0	0	0	0	0
RS 485 Serial interface	IH	0	0	0	0	0	0	0	0
LON Protocol serial interface	IH-LON	0	0	0	0	0	0	0	0
Seawood packing	IM	0	0	0	0	0	0	0	0
TCP/IP Protocol serial interface	IWG	0	0	0	0	0	0	0	0
Phase monitor	MF	0	0	0	0	0	0	0	0
Buffer tank module	MV	0	0	0	0	0	0	0	0
Pump group	P1	0	0	0	0	0	0	0	0
Pump + tank	P1+MV	0	0	0	0	0	0	0	0
Higher available pressure pump group	P1H	0	0	0	0	0	0	0	0
Higher available pressure pump group + tank	P1H+MV	0	0	0	0	0	0	0	0
Double pump group	P2	0	0	0	0	0	0	0	0
Double pump group + tank	P2+MV	0	0	0	0	0	0	0	0
Higher available pressure double pump group	P2H	0	0	0	0	0	0	0	0
Higher available pressure double pump group + tank	P2H+MV	0	0	0	0	0	0	0	0
Rubber-type vibration dampers	PA	0	0	0	0	0	0	0	0
Anti-corrosive protection of the condensing coils (Powder coating)	PCP	0	0	0	0	0	0	0	0
Spring-type vibration dampers	PM	0	0	0	0	0	0	0	0
Remote display	PQ	0	0	0	0	0	0	0	0
In-line twin pump group (only one working)	PT	0	0	0	0	0	0	0	0
In-line twin pump group (only one working) + tank	PT+MV	0	0	0	0	0	0	0	0
Anti-freeze heater on evaporator	RA	0	0	0	0	0	0	0	0
Shut-off valve on compressors discharge side	RD	0	0	0	0	0	0	0	0
Power factor correction system cosφ ≥ 0,9	RF	0	0	0	0	0	0	0	0
Shut-off valve on compressors suction side	RH	0	0	0	0	0	0	0	0
Compressor overload relays	RL	0	0	0	0	0	0	0	0
Electronic thermostatic valve	TE	0	0	0	●	●	●	●	●
Voltmeter	V	0	0	0	0	0	0	0	0
Brine Version	VB	0	0	0	0	0	0	0	0
Solenoid valve	VS	0	0	0	0	0	0	0	0
Partial heat recovery	RP	0	0	0	0	0	0	0	0
Total heat recovery	RT	0	0	0	0	0	0	0	0

● Standard, 0 Optional, -- Not available

TECHNICAL DATA

RAE N MC Kc		801	1001	1301	1501	1651	2001
Cooling capacity	kW	81,7	103,0	128,0	146,0	167,0	201,0
Total input power	kW	25,1	33,1	44,0	47,4	55,6	71,0
Nominal input current	A	49,3	60,7	76,6	83,8	96,5	118,4
EER	W/W	3,25	3,11	2,91	3,08	3,00	2,83
SEER (EN14825)	W/W	4,13	4,30	4,30	4,21	4,30	4,10
Circuits	n°	1	1	1	1	1	1
Compressors	n°	2	2	2	2	2	2
Refrigerant data R410A							
Refrigerant charge	kg	12	12	13	17	18	18
Global warming potential (GWP)	-	2088	2088	2088	2088	2088	2088
Equivalent CO ₂ charge	t	25,2	25,8	26,6	35,8	36,8	38,1
Axial fans ⁽¹⁾							
Quantity	n°	2	2	2	3	3	3
Total air flow	m ³ /h	40750	40870	40900	60000	60010	71120
Total power input	kW	3,0	2,9	2,9	4,5	4,5	5,6
Total input current	A	6,4	6,4	6,3	9,7	9,6	8,8
Evaporator ⁽²⁾							
Quantity	n°	1	1	1	1	1	1
Water flow	m ³ /h	14,1	17,7	22,1	25,2	28,7	34,6
Pressure drop	kPa	40,7	53	44,9	41,4	53,3	62,3
Weight							
Transport weight	kg	1000	1090	1170	1538	1696	1809
Operating weight	kg	1008	1100	1182	1550	1710	1825
Dimensions							
Length	mm	2590	2590	2590	3630	3630	3630
Width	mm	1370	1370	1370	1370	1370	1370
Height	mm	2570	2570	2570	2570	2570	2570
Sound data							
Total LWA ⁽³⁾	dB(A)	85,5	88,4	89,8	90,8	91,6	94,3
Total SPL 10m ⁽⁴⁾	dB(A)	55,0	57,9	59,3	60,2	61,0	63,7
Power supply							
Voltage/phase/frequency	V/ph/Hz	3/400/50	3/400/50	3/400/50	3/400/50	3/400/50	3/400/50
General electrical data							
Maximum input power	[kW]	37,7	46,6	60,6	67,7	76,6	99,0
Maximum input current	[A]	75,8	90,4	111,4	125,7	142,9	176,3
Inrush current	[A]	215,8	329,3	356	370,3	468,3	501,7

(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 MC HE Kc		801	1001	1301	1501	1651	1701	2102	2402	2702
Cooling capacity	kW	82,6	105,0	135,0	148,0	169,0	165,0	210,0	239,0	268,0
Total input power	kW	24,3	32,4	42,0	46,7	55,1	48,9	65,6	73,5	88,6
Nominal input current	A	46,7	58,5	72,5	80,4	93,7	89,0	117,9	127,5	151,3
EER	W/W	3,40	3,24	3,21	3,17	3,07	3,37	3,20	3,25	3,02
SEER (EN14825)	W/W	4,72	4,80	4,91	4,70	4,76	4,77	4,89	4,83	4,83
Circuits	n°	1	1	1	1	1	1	2	2	2
Compressors	n°	2	2	2	2	2	2	4	4	4
Refrigerant data R410A										
Refrigerant charge	kg	12	13	16,7	17	18	26	31	35	38
Global warming potential (GWP)	-	2088	2088	2088	2088	2088	2088	2088	2088	2088
Equivalent CO ₂ charge	t	25,8	26,6	34,9	35,8	36,8	54,3	64,7	73,1	79,3
Axial fans ⁽¹⁾										
Quantity	n°	2	2	3	3	3	2	4	4	4
Total air flow	m ³ /h	38140	41750	59900	62080	65870	73210	89020	93240	97880
Total power input	kW	1,9	2,5	3,5	3,9	4,6	4,9	5,6	6,3	7,2
Total input current	A	1,9	2,5	3,5	3,9	4,5	12,6	8,9	9,8	11,0
Evaporator ⁽²⁾										
Quantity	n°	1	1	1	1	1	1	1	1	1
Water flow	m ³ /h	14,2	18,2	23,3	25,5	29,1	28,4	36,2	41,1	46,2
Pressure drop	kPa	35,7	31,6	58,1	42,2	38,1	14,9	29,8	25,1	31,1
Weight										
Transport weight	kg	1000	1090	1538	1696	1809	1598	1871	1977	1988
Operating weight	kg	1008	1100	1550	1710	1825	1609	1894	2004	2027
Dimensions										
Length	mm	2590	2590	3630	3630	3630	2680	2680	2680	2680
Width	mm	1370	1370	1370	1370	1370	2260	2260	2260	2260
Height	mm	2570	2570	2570	2570	2570	2470	2470	2470	2470
Sound data										
Total LWA ⁽³⁾	dB(A)	86,5	88,5	90,8	92,0	91,8	91,0	91,0	93,0	94,0
Total SPL 10m ⁽⁴⁾	dB(A)	56,0	58,0	60,1	61,4	61,1	58,9	58,9	61,0	61,9
Power supply										
Voltage/phase/frequency	V/ph/Hz	3/400/50	3/400/50	3/400/50	3/400/50	3/400/50	400/3/50	400/3/50	400/3/50	400/3/50
General electrical data										
Maximum input power	[kW]	39,9	48,8	65,8	71,0	79,9	73,5	97,6	105	126
Maximum input current	[A]	75,4	90,0	114,7	125,1	142,3	136,4	183,2	191,6	225,2
Inrush current	[A]	215,4	328,9	359,3	369,7	467,7	461,8	422,1	430,5	469,8
RAE N MC HE Kc		3102	3502	4002	4402	5102	5602	6302	6602	
Cooling capacity	kW	303,0	319,0	393,0	431,0	500,0	539,0	591,0	636,0	
Total input power	kW	94,2	101,0	124,0	135,0	162,0	179,0	191,0	209,0	
Nominal input current	A	167,4	177,0	217,2	243,3	288,2	313,3	338,1	363,9	
EER	W/W	3,22	3,16	3,17	3,19	3,09	3,01	3,09	3,04	
SEER (EN14825)	W/W	4,79	4,87	4,68	4,59	4,77	4,75	4,67	4,63	
Circuits	n°	2	2	2	2	2	2	2	2	
Compressors	n°	4	4	4	4	6	6	6	6	
Refrigerant data R410A										
Refrigerant charge	kg	44	49	56	63	74	80	89	94	
Global warming potential (GWP)	-	2088	2088	2088	2088	2088	2088	2088	2089	
Equivalent CO ₂ charge	t	91,9	102,3	116,9	131,5	154,5	167,0	185,8	196,4	
Axial fans ⁽¹⁾										
Quantity	n°	6	6	6	8	8	8	10	10	
Total air flow	m ³ /h	124400	127300	162300	201700	214900	217800	262800	271700	
Total power input	kW	8,0	8,5	11,8	13,1	15,3	15,9	18,1	20,0	
Total input current	A	18,8	18,8	26,5	35,5	35,3	35,3	44,2	44,2	
Evaporator ⁽²⁾										
Quantity	n°	1	1	1	1	1	1	1	1	
Water flow	m ³ /h	52,1	54,9	67,6	74,1	86,1	92,8	102,0	109,0	
Pressure drop	kPa	36,8	40,3	44,0	54,8	46,3	50,4	59,5	57,4	
Weight										
Transport weight	kg	2473	2478	2579	2988	3422	3488	3941	3952	
Operating weight	kg	2519	2526	2639	3054	3502	3579	4037	4054	
Dimensions										
Length	mm	4020	4020	4020	5360	5360	5360	6700	6700	
Width	mm	2260	2260	2260	2260	2260	2260	2260	2260	
Height	mm	2470	2470	2470	2470	2470	2470	2470	2470	
Sound data										
Total LWA ⁽³⁾	dB(A)	94,0	94,0	96,0	98,0	96,0	98,0	98,0	100,0	
Total SPL 10m ⁽⁴⁾	dB(A)	62,2	61,7	63,3	65,6	63,4	65,7	65,6	67,2	
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]	136	143	177	200	236	254	277	295	
Maximum input current	[A]	251,4	265,0	326,9	371,6	433,6	468,0	512,7	547,1	
Inrush current	[A]	496,0	590,4	652,3	697,0	678,2	793,4	838,1	872,5	

(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 MC S Kc		801	1001	1301	1501	1651	1701	2001	2402	2702
Cooling capacity	kW	78,3	97,9	120,0	141,0	159,0	181,4	190,0	225,8	273,3
Total input power	kW	25,3	34,1	46,7	47,9	56,7	53,4	72,0	75,4	90,0
Nominal input current	A	48,0	60,6	79,2	82,3	96,22	92,9	120,2	130,7	154,8
EER	W/W	3,09	2,87	2,57	2,94	2,80	3,40	2,64	3,00	3,04
SEER (EN14825)	W/W	4,29	4,27	4,24	4,37	4,36	4,53	4,10	4,41	4,30
Circuits	n°	1	1	1	1	1	1	1	2	2
Compressors	n°	2	2	2	2	2	2	2	4	4
Refrigerant data R410A										
Refrigerant charge	kg	12	12	13	17	18	12	18	22	22
Global warming potential (GWP)	-	2088	2088	2088	2088	2088	2088	2088	2088	2088
Equivalent CO ₂ charge	t	25,2	25,8	26,6	35,8	36,8	25,1	38,1	45,9	45,9
Axial fans ⁽¹⁾										
Quantity	n°	2	2	2	3	3	4	3	4	4
Total air flow	m ³ /h	31420	31440	31470	44760	44760	68440	50410	68520	84590
Total power input	kW	1,79	1,78	1,76	2,71	2,70	4,20	2,11	4,20	5,4
Total input current	A	3,4	3,3	3,3	5,1	5,0	7,9	3,9	7,9	10,2
Evaporator ⁽²⁾										
Quantity	n°	1	1	1	1	1	1	1	1	1
Water flow	m ³ /h	13,5	16,9	20,6	24,3	27,5	31,2	32,7	38,8	47,0
Pressure drop	kPa	37,7	48,6	39,7	39	34,4	16,7	56,4	37,7	32,5
Weight										
Transport weight	kg	1000	1090	1170	1538	1696	1598	1809	2089	2114
Operating weight	kg	1008	1100	1182	1550	1710	1609	1825	2101	2127
Dimensions										
Length	mm	2590	2590	2590	3630	3630	2680	3630	2680	2680
Width	mm	1370	1370	1370	1370	1370	2260	1370	2260	2260
Height	mm	2570	2570	2570	2570	2570	2470	2570	2470	2470
Sound data										
Total LWA ⁽³⁾	dB(A)	80,6	84,2	85,8	87,5	88,4	86,0	91,0	86,0	87,0
Total SPL 10m ⁽⁴⁾	dB(A)	50,1	53,7	55,3	56,9	57,7	53,9	60,4	53,9	54,9
Power supply										
Voltage/phase/frequency	V/ph/Hz	3/400/50	3/400/50	3/400/50	3/400/50	3/400/50	400/3/50	3/400/50	400/3/50	400/3/50
General electrical data										
Maximum input power	[kW]	36,1	45,0	59,0	65,3	74,2	75,9	99,0	98,2	119,9
Maximum input current	[A]	72,0	86,6	107,6	120,0	137,2	141,2	176,3	183,6	218,8
Inrush current	[A]	212,0	325,5	352,2	364,6	462,6	466,6	501,7	422,5	463,4

RAE N MC S Kc		3102	3502	3802	4002	5002	5402	6002	6502	
Cooling capacity	kW	293,8	327,9	376,5	399,5	502,9	547,5	608,8	635,5	
Total input power	kW	101,0	102,8	129,4	144,1	166,4	183,9	194,8	212,3	
Nominal input current	A	172,3	176,2	218,5	242,9	283,9	312,2	331,4	359,2	
EER	W/W	2,91	3,19	2,91	2,77	3,02	2,98	3,13	2,99	
SEER (EN14825)	W/W	4,32	4,45	4,31	4,17	4,57	4,60	4,70	4,58	
Circuits	n°	2	2	2	2	2	2	2	2	
Compressors	n°	4	4	4	4	6	6	6	6	
Refrigerant data R410A										
Refrigerant charge	kg	24	32	32	34	42	46	54	56	
Global warming potential (GWP)	-	2088	2088	2088	2088	2088	2088	2088	2088	
Equivalent CO ₂ charge	t	50,1	66,8	66,8	71,0	87,8	96,1	112,8	116,9	
Axial fans ⁽¹⁾										
Quantity	n°	4	6	6	6	8	8	10	10	
Total air flow	m ³ /h	84640	102750	102840	126930	169150	169200	211420	211460	
Total power input	kW	5,3	6,3	6,2	8,0	10,8	10,7	13,5	13,5	
Total input current	A	10,1	11,8	11,7	15,2	20,4	20,3	25,6	25,5	
Evaporator ⁽²⁾										
Quantity	n°	1	1	1	1	1	1	1	1	
Water flow	m ³ /h	50,5	56,4	64,8	68,7	86,5	94,2	104,7	109,3	
Pressure drop	kPa	32,9	38,0	41,8	47,4	64,0	48,4	55,7	53,7	
Weight										
Transport weight	kg	2204	2615	2672	2724	3557	3649	4048	4109	
Operating weight	kg	2223	2637	2696	2754	3590	3685	4091	4156	
Dimensions										
Length	mm	2680	4020	4020	4020	5360	5360	6700	6700	
Width	mm	2260	2260	2260	2260	2260	2260	2260	2260	
Height	mm	2470	2470	2470	2470	2470	2470	2470	2470	
Sound data										
Total LWA ⁽³⁾	dB(A)	88,0	87,0	88,0	91,0	89,0	91,0	91,0	93,0	
Total SPL 10m ⁽⁴⁾	dB(A)	55,9	54,7	55,7	58,7	56,6	58,6	58,4	60,4	
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]	130,3	138,9	169,7	189,4	229,2	247,0	267,9	285,7	
Maximum input current	[A]	239,6	256,6	311,0	347,8	415,6	450,0	490,2	524,6	
Inrush current	[A]	484,2	582,0	636,4	673,2	660,2	775,4	815,6	850,0	

(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 MC HE S Kc		801	1001	1301	1501	1651
Cooling capacity	kW	80,4	102,0	132,0	144,0	165,0
Total input power	kW	24,5	33,1	41,8	46,4	54,9
Nominal input current	A	46,7	59,4	72,0	79,8	93,3
EER	W/W	3,28	3,08	3,16	3,10	3,01
SEER (EN14825)	W/W	4,54	4,62	4,82	4,58	4,66
Circuits	n°	1	1	1	1	1
Compressors	n°	2	2	2	2	2
Refrigerant data R410A						
Refrigerant charge	kg	12	13	16,7	17	18
Global warming potential (GWP)	-	2088	2088	2088	2088	2088
Equivalent CO ₂ charge	t	25,8	26,6	34,9	35,8	36,8
Axial fans ⁽¹⁾						
Quantity	n°	2	2	3	3	3
Total air flow	m ³ /h	32770	36870	49480	50950	53920
Total power input	kW	1,2	1,7	2,0	2,2	2,6
Total input current	A	2,3	3,0	3,8	4,1	4,6
Evaporator ⁽²⁾						
Quantity	n°	1	1	1	1	1
Water flow	m ³ /h	13,8	17,5	22,8	24,8	28,4
Pressure drop	kPa	34,0	29,7	55,8	40,3	36,5
Weight						
Transport weight	kg	1000	1090	1538	1696	1809
Operating weight	kg	1008	1100	1550	1710	1825
Dimensions						
Length	mm	2590	2590	3630	3630	3630
Width	mm	1370	1370	1370	1370	1370
Height	mm	2570	2570	2570	2570	2570
Sound data						
Total LWA ⁽³⁾	dB(A)	82,5	85,4	87,1	87,8	88,6
Total SPL 10m ⁽⁴⁾	dB(A)	52,0	54,9	56,5	57,1	58,0
Power supply						
Voltage/phase/frequency	V/ph/Hz	3/400/50	3/400/50	3/400/50	3/400/50	3/400/50
General electrical data						
Maximum input power	[kW]	39,9	48,8	65,8	71,0	79,9
Maximum input current	[A]	75,4	90,0	114,7	125,1	142,3
Inrush current	[A]	215,4	328,9	359,3	369,7	467,7

(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 MC Kr		801	1001	1301	1501	1651	2001
Cooling capacity	kW	80,6	103,0	129,0	147,0	167,0	205,0
Total input power	kW	23,8	32,2	43,8	46,0	53,4	66,6
Nominal input current	A	47,0	59,5	74,0	79,9	94,7	115,0
EER	W/W	3,39	3,20	2,95	3,20	3,13	3,08
SEER (EN14825)	W/W	4,24	4,54	4,39	4,33	4,43	4,42
Circuits	n°	1	1	1	1	1	1
Compressors	n°	2	2	2	2	2	2
Refrigerant data R454B							
Refrigerant charge	kg	12	12	13	17	18	18
Global warming potential (GWP)	-	466	466	466	466	466	466
Equivalent CO ₂ charge	t	5,6	5,6	6,1	7,9	8,4	8,4
Axial fans ⁽¹⁾							
Quantity	n°	2	2	2	3	3	3
Total air flow	m ³ /h	38718	38479	38177	58225	57986	68915
Total power input	kW	3,02	3,00	2,97	4,48	4,46	5,59
Total input current	A	6,50	6,45	6,39	9,66	9,62	8,85
Evaporator ⁽²⁾							
Quantity	n°	1	1	1	1	1	1
Water flow	m ³ /h	13,89	17,83	22,23	25,25	28,83	35,27
Pressure drop	kPa	41,9	49,5	54,3	53,9	55,1	26,3
Weight							
Transport weight	kg	1000	1090	1170	1538	1696	1809
Operating weight	kg	1008	1100	1182	1550	1710	1825
Dimensions							
Length	mm	2590	2590	2590	3630	3630	3630
Width	mm	1370	1370	1370	1370	1370	1370
Height	mm	2570	2570	2570	2570	2570	2570
Sound data							
Total LWA ⁽³⁾	dB(A)	85	88	90	91	92	94
Total SPL 10m ⁽⁴⁾	dB(A)	53	56	58	59	59	62
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
General electrical data							
Maximum input power	[kW]	36,4	50,1	58,3	70,2	80,7	99,0
Maximum input current	[A]	64,2	98,0	115,0	130,0	180,0	223,0
Inrush current	[A]	233	296	353	368	418	461

(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 MC S Kr		801	1001	1301	1501	1651	1701	2001	2402	2702
Cooling capacity	kW	79,0	101,0	125,0	143,0	161,0	171,0	198,0	22,3	264,0
Total input power	kW	23,4	32,2	44,9	46,4	54,5	50,9	67,1	75,1	86,9
Nominal input current	A	44,9	58,0	74,3	78,4	94,1	89,6	116,0	130,0	146,0
EER	W/W	3,38	3,14	2,78	3,08	2,95	3,36	2,95	2,97	3,04
SEER (EN14825)	W/W	4,59	4,66	4,44	4,51	4,57	4,83	4,28	4,72	4,75
Circuits	n°	1	1	1	1	1	1	1	2	2
Compressors	n°	2	2	2	2	2	2	2	4	4
Refrigerant data R454B										
Refrigerant charge	kg	12	12	13	17	18	16	18	26	28
Global warming potential (GWP)	-	466	466	466	466	466	466	466	466	466
Equivalent CO ₂ charge	t	5,6	5,6	6,1	7,9	8,4	7,5	8,4	12,1	13,0
Axial fans ⁽¹⁾										
Quantity	n°	2	2	2	3	3	4	3	4	4
Total air flow	m ³ /h	29491	29256	28975	43036	42800	58859	51587	58142	77348
Total power input	kW	1,81	1,80	1,78	2,71	2,70	3,62	2,57	3,56	5,45
Total input current	A	3,39	3,36	3,32	5,08	5,05	6,67	4,62	6,67	10,3
Evaporator ⁽²⁾										
Quantity	n°	1	1	1	1	1	1	1	1	1
Water flow	m ³ /h	13,61	17,34	21,52	24,54	27,76	29,38	34,01	38,45	45,46
Pressure drop	kPa	40,4	47,1	51,0	51,0	51,5	57,0	24,6	39,9	31,8
Weight										
Transport weight	kg	1000	1090	1170	1538	1696	1598	1809	2089	2114
Operating weight	kg	1008	1100	1182	1550	1710	1690	1825	2101	2127
Dimensions										
Length	mm	2590	2590	2590	3630	3630	2680	3630	2680	2680
Width	mm	1370	1370	1370	1370	1370	2260	1370	2260	2260
Height	mm	2570	2570	2570	2570	2570	2470	2570	2470	2470
Sound data										
Total LWA ⁽³⁾	dB(A)	81	84	86	87	88	86	91	86	87
Total SPL 10m ⁽⁴⁾	dB(A)	49	52	54	55	56	54	59	54	55
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	400/3/50
General electrical data										
Maximum input power	[kW]	34,8	48,5	56,7	67,8	78,3	79,4	99,0	104,0	115,0
Maximum input current	[A]	60,4	94,2	111,0	124,0	174,0	176,0	223,0	234,0	226,0
Inrush current	[A]	229	292	349	362	412	414	461	432	464

RAE N MC S Kr		3102	3502	3802	4002	5002	5402	6002	6502	
Cooling capacity	kW	286,0	303,0	364,0	410,0	481,0	528,0	586,0	626,0	
Total input power	kW	95,2	98,2	121,0	132,0	155,0	171,0	180,0	196,0	
Nominal input current	A	161,0	170,0	204,0	230,0	257,0	289,0	311,0	343,0	
EER	-	3,00	3,09	3,01	3,11	3,10	3,09	3,26	3,19	
SEER (EN14825)	-	4,84	5,18	5,02	4,83	4,88	5,00	5,00	5,10	
Circuits	n°	2	2	2	2	2	2	2	2	
Compressors	n°	4	4	4	4	6	6	6	6	
Refrigerant data R454B										
Refrigerant charge	kg	30	40	42	44	54	58	70	72	
Global warming potential (GWP)	-	466	466	466	466	466	466	466	466	
Equivalent CO ₂ charge	t	14,0	18,6	19,6	20,5	25,2	27,0	32,6	33,6	
Axial fans ⁽¹⁾										
Quantity	n°	4	6	6	6	8	8	10	10	
Total air flow	m ³ /h	77050	87655	87105	115897	155023	154731	194003	193551	
Total power input	kW	5,42	5,38	5,34	8,16	10,9	10,9	13,7	13,7	
Total input current	A	10,2	10,1	9,99	15,4	20,7	20,6	25,9	25,9	
Evaporator ⁽²⁾										
Quantity	n°	1	1	1	1	1	1	1	1	
Water flow	m ³ /h	44,19	52,05	62,63	70,50	82,84	90,88	100,8	107,8	
Pressure drop	kPa	33,0	38,0	44,3	43,6	58,3	48,5	53,5	50,8	
Weight										
				2672						
Transport weight	kg	2204	2615	2696	2724	3557	3649	4048	4109	
Operating weight	kg	2223	2637		2754	3590	3685	4091	4156	
Dimensions										
Length	mm	2680	4020	4020	4020	5360	5360	6700	6700	
Width	mm	2260	2260	2260	2260	2260	2260	2260	2260	
Height	mm	2470	2470	2470	2470	2470	2470	2470	2470	
Sound data										
Total LWA ⁽³⁾	dB(A)	88	87	88	91	89	91	91	93	
Total SPL 10m ⁽⁴⁾	dB(A)	56	55	56	59	56	59	59	60	
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]	135,0	137,0	166,0	189,0	220,0	241,0	265,0	286,0	
Maximum input current	[A]	248,0	326,0	337,0	441,0	362,0	461,0	566,0	665,0	
Inrush current	[A]	486	564	575	679	599	699	804	903	

(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 MC HE Kr		801	1001	1301	1501	1651	1701	2102	2402	2702
Cooling capacity	kW	81,9	106,0	134,0	146,0	167,0	163,0	214,0	244,0	271,0
Total input power	kW	23,3	32,1	42,2	46,1	53,7	48,0	63,8	74,5	87,2
Nominal input current	A	44,8	57,9	73,9	80,6	95,2	87,7	116,0	129,0	145,0
EER	W/W	3,52	3,30	3,18	3,17	3,11	3,40	3,35	3,28	3,11
SEER (EN14825)	W/W	5,19	5,26	4,99	4,86	4,91	4,93	5,46	5,13	5,01
Circuits	n°	1	1	1	1	1	1	2	2	2
Compressors	n°	2	2	2	2	2	2	4	4	4
Refrigerant data R454B										
Refrigerant charge	kg	12	13	17	17	18	26	31	35	38
Global warming potential (GWP)	-	466	466	466	466	466	466	466	466	466
Equivalent CO ₂ charge	t	5,6	6,1	7,9	7,9	8,4	12,1	14,4	16,3	17,7
Axial fans ⁽¹⁾										
Quantity	n°	2	2	3	3	3	4	4	4	4
Total air flow	m ³ /h	38594	42420	55105	56934	58196	69350	84713	89684	90543
Total power input	kW	2,37	3,15	3,92	4,32	4,60	5,39	6,26	7,33	7,55
Total input current	A	4,05	5,13	9,99	9,97	9,92	12,9	10,2	11,6	11,9
Evaporator ⁽²⁾										
Quantity	n°	1	1	1	1	1	1	1	1	1
Water flow	m ³ /h	14,11	18,28	23,07	25,20	28,74	28,02	36,88	42,02	46,61
Pressure drop	kPa	33,1	39,1	59,2	54,4	55,9	53,4	29,2	25,2	30,6
Weight										
Transport weight	kg	1000	1090	1538	1696	1809	1598	1871	1977	1988
Operating weight	kg	1008	1100	1550	1710	1825	1609	1894	2004	2027
Dimensions										
Length	mm	2590	2590	3630	3630	3630	2680	2680	2680	2680
Width	mm	1370	1370	1370	1370	1370	2260	2260	2260	2260
Height	mm	2570	2570	2570	2570	2570	2470	2470	2470	2470
Sound data										
Total LWA ⁽³⁾	dB(A)	86	88	91	92	92	91	91	93	94
Total SPL 10m ⁽⁴⁾	dB(A)	54	56	59	60	60	59	59	61	62
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	400/3/50
General electrical data										
Maximum input power	[kW]	38,6	52,3	60,2	70,2	80,7	72,6	105,0	112,0	121,0
Maximum input current	[A]	63,8	97,6	119,0	130,0	180,0	173,0	195,0	241,0	230,0
Inrush current	[A]	233	296	357	368	418	411	393	439	467

RAE N MC HE Kr		3102	3502	4002	4402	5102	5602	6302	6602	
Cooling capacity	kW	303,0	323,0	380,0	433,0	497,0	540,0	593,0	641,0	
Total input power	kW	90,5	97,9	116,0	128,0	155,0	170,0	181,0	195,0	
Nominal input current	A	160,0	175,0	205,0	235,0	265,0	294,0	323,0	351,0	
EER	W/W	3,35	3,30	3,28	3,38	3,21	3,18	3,28	3,29	
SEER (EN14825)	W/W	5,21	5,39	5,12	4,86	4,93	4,94	4,95	4,89	
Circuits	n°	2	2	2	2	2	2	2	2	
Compressors	n°	4	4	4	4	6	6	6	6	
Refrigerant data R454B										
Refrigerant charge	kg	44	49	56	63	74	80	89	94	
Global warming potential (GWP)	-	466	466	466	466	466	466	466	466	
Equivalent CO ₂ charge	t	20,5	22,8	26,1	29,4	34,5	37,3	41,5	43,8	
Axial fans ⁽¹⁾										
Quantity	n°	6	6	6	8	8	8	10	10	
Total air flow	m ³ /h	111063	113902	147692	185522	196170	201742	241042	247922	
Total power input	kW	8,17	8,86	11,4	15,3	16,0	16,4	19,7	20,2	
Total input current	A	19,9	19,9	26,8	36,1	35,8	35,8	44,8	44,7	
Evaporator ⁽²⁾										
Quantity	n°	1	1	1	1	1	1	1	1	
Water flow	m ³ /h	52,10	55,64	65,39	74,43	85,58	92,84	102,1	110,2	
Pressure drop	kPa	36,1	40,6	38,6	48,8	44,3	47,0	55,6	53,8	
Weight										
Transport weight	kg	2473	2478	2579	2988	3422	3488	3941	3952	
Operating weight	kg	2519	2526	2639	3054	3502	3579	4037	4054	
Dimensions										
Length	mm	4020	4020	4020	5360	5360	5360	6700	6700	
Width	mm	2260	2260	2260	2260	2260	2260	2260	2260	
Height	mm	2470	2470	2470	2470	2470	2470	2470	2470	
Sound data										
Total LWA ⁽³⁾	dB(A)	94	94	96	98	96	98	98	100	
Total SPL 10m ⁽⁴⁾	dB(A)	62	62	63	66	63	66	66	67	
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]	140,0	141,0	174,0	200,0	227,0	248,0	574,0	295,0	
Maximum input current	[A]	260,0	337,0	356,0	465,0	380,0	479,0	588,0	688,0	
Inrush current	[A]	498	575	594	703	617	717	826	926	

(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 MC HE S Kr		801	1001	1301	1501	1651
Cooling capacity	kW	80,7	103,0	134,0	146,0	166,0
Total input power	kW	23,6	32,6	41,1	45,0	52,6
Nominal input current	A	45,3	58,6	68,9	76,2	91,3
EER	W/W	3,42	3,16	3,26	3,24	3,16
SEER (EN14825)	W/W	4,74	4,86	5,07	4,93	4,95
Circuits	n°	1	1	1	1	1
Compressors	n°	2	2	2	2	2
Refrigerant data R454B						
Refrigerant charge	kg	12	13	17	17	18
Global warming potential (GWP)	-	466	466	466	466	466
Equivalent CO ₂ charge	t	5,6	6,1	7,9	7,9	8,4
Axial fans ⁽¹⁾						
Quantity	n°	2	2	3	3	3
Total air flow	m ³ /h	28048	29230	50778	52187	51964
Total power input	kW	1,73	1,79	2,40	2,60	2,59
Total input current	A	3,38	3,36	4,38	4,68	4,65
Evaporator ⁽²⁾						
Quantity	n°	1	1	1	1	1
Water flow	m ³ /h	13,90	17,83	23,12	25,08	28,65
Pressure drop	kPa	31,6	36,4	58,5	53,6	54,6
Weight						
Transport weight	kg	1000	1090	1538	1696	1809
Operating weight	kg	1008	1100	1550	1710	1825
Dimensions						
Length	mm	2590	2590	3630	3630	3630
Width	mm	1370	1370	1370	1370	1370
Height	mm	2570	2570	2570	2570	2570
Sound data						
Total LWA ⁽³⁾	dB(A)	83	85	57	88	89
Total SPL 10m ⁽⁴⁾	dB(A)	51	53	55	56	56
Power supply						
Voltage/phase/frequency	V/ph/Hz	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50
General electrical data						
Maximum input power	[kW]	34,8	48,5	63,5	73,5	84,0
Maximum input current	[A]	60,4	94,2	118,0	130,0	179,0
Inrush current	[A]	229	292	356	367	417

(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 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



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.

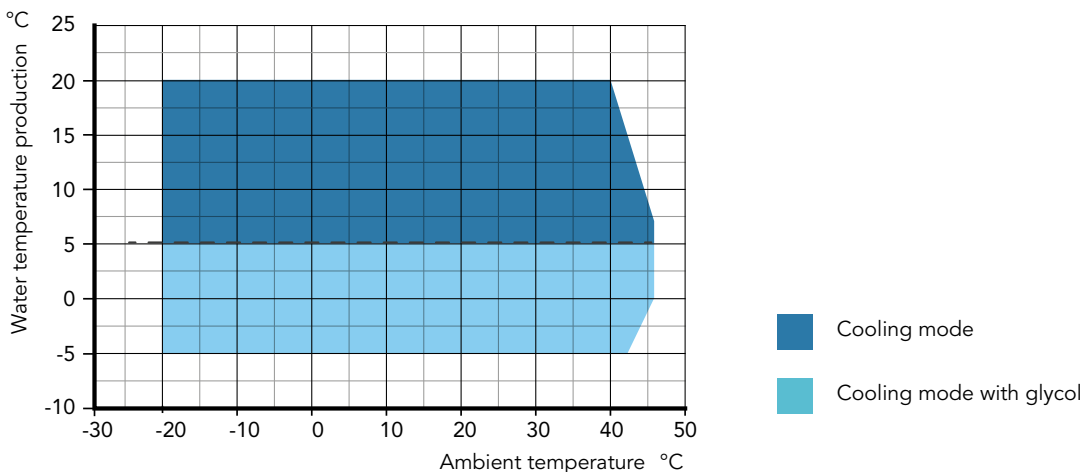
COOLING CIRCUIT

Each provided with a shut-off valve for refrigerant charge, anti-freeze 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

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	155,0	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

RAH MC VS Ka/Kh/Ke

AIR COOLED CHILLERS FOR OUTDOOR INSTALLATION

EQUIPPED WITH INVERTER SCREW COMPRESSORS, AXIAL FANS
AND MICROCHANNEL CONDENSING COILS

Cooling capacity from 306 kW to 1555 kW



R134a

R513A

R1234
ze



VERSIONS

RAH MC VS - standard version

RAH MC VS S - silenced version

RAH MC VS HE - high efficiency version

RAH MC VS HE S - high efficiency silenced version

The air-cooled chillers of this serie are suitable for outdoor installation and are particularly suitable for cooling liquid solutions, used for industrial applications or air conditioning systems, in which it is necessary to ensure excellent performance and low environmental impact. The machines are designed as outdoor units in compliance with European standards EN378 and its updates and are able to meet the seasonal efficiency requirements established by Regulation (EU) 2016/2281-LOT21.

The units of this series are equipped with two screw compressors, each with a continuous control of the cooling capacity, realized thanks to an in-built inverter. Each compressor operates on a single totally independent circuit, thus ensuring the maximum reliability.

All the units are totally factory assembled and tested, following specific quality procedures. Besides, they are totally hydraulic, cooling and electrical connected, permitting a quick installation once on site. Before the test, the cooling circuits of each unit are subject to a pressure tightness test and then charged with Refrigerant and

non-freezing oil. Therefore, once on site, the units must be only positioned and electrically and hydraulically connected.

The reduction of the sound level in the silenced version is reached thanks to refrigerant/air exchangers with wider surfaces and a compressor cabinet insulated with higher thickness soundproof material.

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

MAIN COMPONENTS

STRUCTURE

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 section contains compressors and the other cooling circuit elements.

COMPRESSORS semi-hermetic screw type with INVERTER

Compressors of semi-hermetic screw type, controlled by integrated frequency inverter, allowing to adapt the power to the load variations ensuring at the same time the maximum efficiency at different operating conditions. The compressors are provided with motor thermal protection, rotation direction control, crank-case heater, oil filter, oil service valve, POE oil charge and vibration dumpers kit. Compressors lubrication is of forced type without pump, to avoid excessive oil migrations to the cooling circuit, compressors are equipped with an oil separator on discharge side. Both compressors are equipped with an oil flow safety switch, an optoelectronic device operating in case the oil flow inside the compressor falls below the minimum threshold.

EXTERNAL CONDENSING COIL

Totally made up of aluminum alloy to grant a perfect and continuous contact among tubes and fins optimizing the thermal exchange and reducing dimensions.

The high passivation degree of the used alloy, besides the peculiar assembling way, avoids the possibility to have galvanic corrosion phenomena. On demand it is also possible to provide the units installed in particularly aggressive environments with surface treatments against exchangers environmental corrosion. The cross "V" arrangement of the condensing coils makes the units of this series perfectly each other modular, granting at the same time the easiest access to the technical room both for checking operations required during the normal unit functioning and for maintenance.

STAINLESS STEEL PLATE EVAPORATOR (size 352+552)

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 45 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.

SHELL AND TUBE EVAPORATOR (sizes 652+1502)

Tube bundle type with dry expansion and pure electrolytic copper tubes, shell and tube plate made up of carbon steel. The exchanger is provided with anti-condensation insulation made up of a nitrile rubber and polyethylene foam with a thickness of 8mm externally protected by an embossed scratchproof poly-

ethylene film. The hydraulic connection are of elastic Victaulic type. Inside the shell, some plastic and corrosion-proof baffles, allowing a correct water distribution and making the tube bundle particularly strong and vibration free, even with high water flows. The evaporator is also provided with a safety water flow switch that does not allow the unit to operate in case of water flow rate lack to the evaporator.

AXIAL FANS

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. Aluminum blades with wings profile are suitably designed to avoid any turbulence in the air detachment zone, granting in this way the max efficiency with the minimum noise level. The fan is equipped with galvanized steel protection grid painted after the construction. These fans, thanks to a more accurate regulation of the airflow, allow the unit to operate with an external air temperature up to - 20 °C.

COOLING CIRCUIT

Cooling circuit made up of electronic thermostatic expansion valve, sight glass, high pressure safety device, anti-freeze protection on evaporator, high and low pressure switches, dehydrating filter with replaceable cartridges, shut-off valve on liquid line.

Each compressor operates on an independent circuit granting in this way, a considerable reliability.

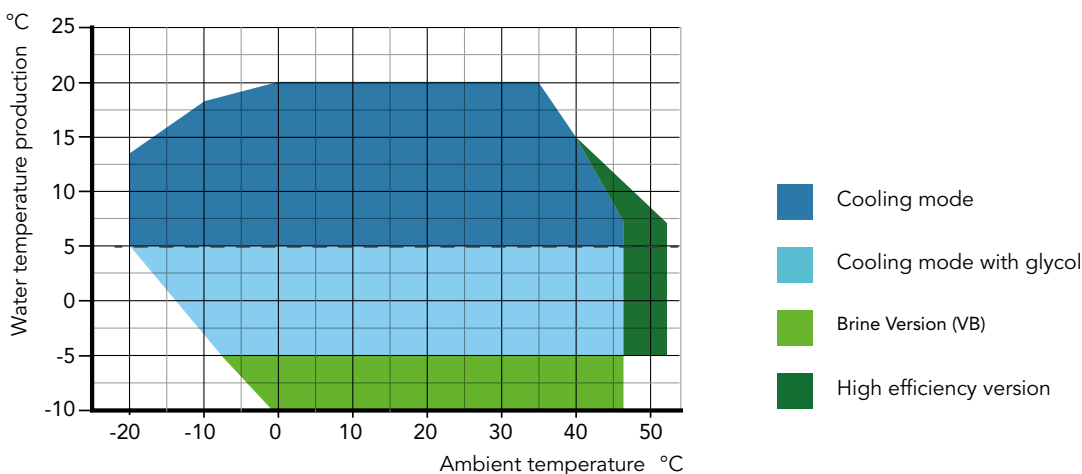
ELECTRICAL BOARD

In compliance with CE Norms, contained in a suitable section protected by internal safety panel, provided with a lock-door main switch. Inside all the control and protection components are suitably placed, together with terminal board and auxiliaries. The electrical board also includes the control device for power supply phases to prevent the compressor wrong side rotation. Microprocessor and relevant display are also placed inside the electrical cabinet.

MICROPROCESSOR

For unit management installed inside the electrical cabinet, with double evaporator in/out control of the chilled water temperature, as well as control of working parameters and equalization of compressors working hours, failures auto-detection system, alarm log, start and set point timeslot programming, possibility of remote management and supervision by enabling standard communication protocols management, complete with compressors hour counter.

OPERATING RANGE



ACCESSORIES

RAH MC VS / RAH MC VS S		352	402	452	552	652	752	852
Amperometer + Voltmeter	A+V	o	o	o	o	o	o	o
Compressors inrush counter	CS	o	o	o	o	o	o	o
Anti-corrosive protection of the condensing coils	ECP	o	o	o	o	o	o	o
Condensing coil protection grid	GP	o	o	o	o	o	o	o
Anti-intrusion grid	GP1	o	o	o	o	o	o	o
RS 485 Serial interface	IH	o	o	o	o	o	o	o
BACNET Protocol serial interface	IH-BAC	o	o	o	o	o	o	o
Buffer tank module	MV	o	o	o	o	o	o	o
Pump group	P1	o	o	o	o	o	o	o
Higher available pressure pump group	P1H	o	o	o	o	o	o	o
Double pump group	P2	o	o	o	o	o	o	o
Higher available pressure double pump group	P2H	o	o	o	o	o	o	o
Rubber-type vibration dampers	PA	o	o	o	o	o	o	o
Anti-corrosive protection of the condensing coils (Powder coating)	PCP	o	o	o	o	o	o	o
Spring-type vibration dampers	PM	o	o	o	o	o	o	o
Remote display	PQ	o	o	o	o	o	o	o
Anti-freeze heater on evaporator	RA	o	o	o	o	o	o	o
Shut-off valve on compressors discharge side	RD	o	o	o	o	o	o	o
Shut-off valve on compressors suction side	RH	o	o	o	o	o	o	o
Brine Version	VB	o	o	o	o	o	o	o
Partial heat recovery	RP	o	o	o	o	o	o	o
Total heat recovery	RT	o	o	o	o	o	o	o

RAH MC VS / RAH MC VS S		952	1052	1102	1252	1352	1452	1502
Amperometer + Voltmeter	A+V	o	o	o	o	o	o	o
Compressors inrush counter	CS	o	o	o	o	o	o	o
Anti-corrosive protection of the condensing coils	ECP	o	o	o	o	o	o	o
Condensing coil protection grid	GP	o	o	o	o	o	o	o
Anti-intrusion grid	GP1	o	o	o	o	o	o	o
RS 485 Serial interface	IH	o	o	o	o	o	o	o
BACNET Protocol serial interface	IH-BAC	o	o	o	o	o	o	o
Buffer tank module	MV	o	o	o	o	o	o	o
Pump group	P1	o	o	o	o	o	o	o
Higher available pressure pump group	P1H	o	o	o	o	o	o	o
Double pump group	P2	o	o	o	o	o	o	o
Higher available pressure double pump group	P2H	o	o	o	o	o	o	o
Rubber-type vibration dampers	PA	o	o	o	o	o	o	o
Anti-corrosive protection of the condensing coils (Powder coating)	PCP	o	o	o	o	o	o	o
Spring-type vibration dampers	PM	o	o	o	o	o	o	o
Remote display	PQ	o	o	o	o	o	o	o
Anti-freeze heater on evaporator	RA	o	o	o	o	o	o	o
Shut-off valve on compressors discharge side	RD	o	o	o	o	o	o	o
Shut-off valve on compressors suction side	RH	o	o	o	o	o	o	o
Brine Version	VB	o	o	o	o	o	o	o
Partial heat recovery	RP	o	o	o	o	o	o	o
Total heat recovery	RT	o	o	o	o	o	o	o

• Standard, o Optional, -- Not available

RAH MC VS HE		482	552	592	652	702	812	902	1042	1162	1252
Amperometer + Voltmeter	A+V	o	o	o	o	o	o	o	o	o	o
Compressors inrush counter	CS	o	o	o	o	o	o	o	o	o	o
Anti-corrosive protection of the condensing coils	ECP	o	o	o	o	o	o	o	o	o	o
Condensing coil protection grid	GP	o	o	o	o	o	o	o	o	o	o
Anti-intrusion grid	GP1	o	o	o	o	o	o	o	o	o	o
RS 485 Serial interface	IH	o	o	o	o	o	o	o	o	o	o
BACNET Protocol serial interface	IH-BAC	o	o	o	o	o	o	o	o	o	o
Buffer tank module	MV	o	o	o	o	o	o	o	o	o	o
Pump group	P1	o	o	o	o	o	o	o	o	o	o
Higher available pressure pump group	P1H	o	o	o	o	o	o	o	o	o	o
Double pump group	P2	o	o	o	o	o	o	o	o	o	o
Higher available pressure double pump group	P2H	o	o	o	o	o	o	o	o	o	o
Rubber-type vibration dampers	PA	o	o	o	o	o	o	o	o	o	o
Anti-corrosive protection of the condensing coils (Powder coating)	PCP	o	o	o	o	o	o	o	o	o	o
Spring-type vibration dampers	PM	o	o	o	o	o	o	o	o	o	o
Remote display	PQ	o	o	o	o	o	o	o	o	o	o
Anti-freeze heater on evaporator	RA	o	o	o	o	o	o	o	o	o	o
Shut-off valve on compressors discharge side	RD	o	o	o	o	o	o	o	o	o	o
Shut-off valve on compressors suction side	RH	o	o	o	o	o	o	o	o	o	o
Brine Version	VB	o	o	o	o	o	o	o	o	o	o
Partial heat recovery	RP	o	o	o	o	o	o	o	o	o	o
Total heat recovery	RT	o	o	o	o	o	o	o	o	o	o

RAH MC VS HE S		432	492	532	602	742	862	982	1062	1172
Amperometer + Voltmeter	A+V	o	o	o	o	o	o	o	o	o
Compressors inrush counter	CS	o	o	o	o	o	o	o	o	o
Anti-corrosive protection of the condensing coils	ECP	o	o	o	o	o	o	o	o	o
Condensing coil protection grid	GP	o	o	o	o	o	o	o	o	o
Anti-intrusion grid	GP1	o	o	o	o	o	o	o	o	o
RS 485 Serial interface	IH	o	o	o	o	o	o	o	o	o
BACNET Protocol serial interface	IH-BAC	o	o	o	o	o	o	o	o	o
Buffer tank module	MV	o	o	o	o	o	o	o	o	o
Pump group	P1	o	o	o	o	o	o	o	o	o
Higher available pressure pump group	P1H	o	o	o	o	o	o	o	o	o
Double pump group	P2	o	o	o	o	o	o	o	o	o
Higher available pressure double pump group	P2H	o	o	o	o	o	o	o	o	o
Rubber-type vibration dampers	PA	o	o	o	o	o	o	o	o	o
Anti-corrosive protection of the coils (Powder coating)	PCP	o	o	o	o	o	o	o	o	o
Spring-type vibration dampers	PM	o	o	o	o	o	o	o	o	o
Remote display	PQ	o	o	o	o	o	o	o	o	o
Anti-freeze heater on evaporator	RA	o	o	o	o	o	o	o	o	o
Shut-off valve on compressors discharge side	RD	o	o	o	o	o	o	o	o	o
Shut-off valve on compressors suction side	RH	o	o	o	o	o	o	o	o	o
Brine Version	VB	o	o	o	o	o	o	o	o	o
Partial heat recovery	RP	o	o	o	o	o	o	o	o	o
Total heat recovery	RT	o	o	o	o	o	o	o	o	o

• Standard, o Optional, -- Not available

TECHNICAL DATA

RAH MC VS Ke		352	402	452	552	652	752	852
Cooling capacity	kW	368,7	417,2	490,3	592,3	666,4	761,2	873,4
Total input power	kW	123,0	142,0	158,0	199,0	222,0	251,0	298,0
Nominal input current	A	199,6	228,5	248,2	318,8	357,3	401,7	462,3
EER	W/W	3,0	2,9	3,1	3,0	3,0	3,0	2,9
SEER (EN14825)	W/W	5,01	4,92	5,18	5,13	4,92	4,91	4,83
Circuits	n°	2	2	2	2	2	2	2
Compressors	n°	2	2	2	2	2	2	2
Refrigerant data R513A								
Refrigerant charge	kg	52	54	68	82	90	104	112
Global warming potential (GWP)	-	573	573	573	573	573	573	573
Equivalent CO ₂ charge	t	29,8	30,9	39,0	47,0	51,6	59,6	64,2
Fans ⁽¹⁾								
Quantity	n°	6	6	8	10	10	12	12
Total air flow	m ³ /h	147600	147000	196880	245600	245400	294960	293520
Total power input	kW	18	18	24	30	30	36	36
Total input current	A	27,6	27,6	36,8	46,0	46,0	55,2	55,2
Evaporator ⁽²⁾								
Quantity	n°	1	1	1	1	1	1	1
Water flow	m ³ /h	63,4	71,7	84,3	101,9	114,6	130,9	150,2
Pressure drop	kPa	18	16	17	18	26	32	45
Weight								
Transport weight	kg	3158	3204	3718	4736	4820	5462	6478
Operating weight	kg	3216	3270	3796	4826	4930	5672	6760
Dimensions								
Length	mm	3920	3920	5060	6200	6200	7340	7340
Width	mm	2260	2260	2260	2260	2260	2260	2260
Height	mm	2650	2650	2650	2650	2650	2650	2650
Sound data								
Total LWA ⁽³⁾	dB(A)	97	98	99	102	102	102	103
Total SPL 10m ⁽⁴⁾	dB(A)	65,0	65,4	66,2	69,4	69,5	69,8	70,0
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
General electrical data								
Maximum input power	[kW]	120,0	139,0	154,0	194,0	217,0	245,0	292,0
Maximum input current	[A]	274	308	357	436	488	563	637
Inrush current	[A]	**	**	**	**	**	**	**
RAH MC VS Ke		952	1052	1102	1252	1352	1452	1502
Cooling capacity	kW	990,9	1060,9	1143,3	1308,1	1421,4	1493,5	1555,3
Total input power	kW	334,0	365,0	388,0	439,0	484,0	507,0	532,0
Nominal input current	A	510,0	564,8	608,3	682,9	753,4	795,2	835,3
EER	W/W	3,0	2,9	2,9	3,0	2,9	2,9	2,9
SEER (EN14825)	W/W	4,86	4,74	4,87	4,92	4,83	4,82	4,76
Circuits	n°	2	2	2	2	2	2	2
Compressors	n°	2	2	2	2	2	2	2
Refrigerant data R513A								
Refrigerant charge	kg	130	134	144	168	182	190	194
Global warming potential (GWP)	-	573	573	573	573	573	573	573
Equivalent CO ₂ charge	t	74,5	76,8	82,5	96,3	104,3	108,9	111,2
Fans ⁽¹⁾								
Quantity	n°	14	14	16	18	20	20	20
Total air flow	m ³ /h	342580	341880	391520	440460	489600	488800	488200
Total power input	kW	42	42	48	54	60	60	60
Total input current	A	64,4	64,4	73,6	82,8	92,0	92,0	92,0
Evaporator ⁽²⁾								
Quantity	n°	1	1	1	1	1	1	1
Water flow	m ³ /h	170,4	182,5	196,6	225,0	244,5	256,9	267,5
Pressure drop	kPa	52	41	47	44	59	43	50
Weight								
Transport weight	kg	7084	7232	7650	8280	8896	9212	9232
Operating weight	kg	7382	7520	7938	8652	9258	9678	9686
Dimensions								
Length	mm	8480	8480	9620	10760	11900	11900	11900
Width	mm	2260	2260	2260	2260	2260	2260	2260
Height	mm	2650	2650	2650	2650	2650	2650	2650
Sound data								
Total LWA ⁽³⁾	dB(A)	103	105	105	105	106	106	106
Total SPL 10m ⁽⁴⁾	dB(A)	70,4	71,7	71,9	72,1	72,4	72,8	72,8
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
General electrical data								
Maximum input power	[kW]	327,0	358,0	380,0	430,0	474,0	497,0	522,0
Maximum input current	[A]	730	780	840	851	1004	1058	1112
Inrush current	[A]	**	**	**	**	**	**	**

(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

RAH MC VS S Ke		352	402	452	552	652	752	852
Cooling capacity	kW	306,9	348,1	412,0	477,9	554,1	605,6	728,2
Total input power	kW	96,8	111,8	124,4	160,4	174,0	194,0	235,6
Nominal input current	A	166,3	190,9	206,5	270,0	297,6	329,3	386,3
EER	W/W	3,2	3,1	3,3	3,0	3,2	3,1	3,1
SEER (EN14825)	W/W	5,03	4,89	5,21	4,80	4,92	4,78	4,81
Circuits	n°	2	2	2	2	2	2	2
Compressors	n°	2	2	2	2	2	2	2
Refrigerant data R513A								
Refrigerant charge	kg	48	52	64	68	82	90	104
Global warming potential (GWP)	-	573	573	573	573	573	573	573
Equivalent CO ₂ charge	t	27,5	29,8	36,7	39,0	47,0	51,6	59,6
Fans ⁽¹⁾								
Quantity	n°	6	6	8	8	10	10	12
Total air flow	m ³ /h	123120	122880	163680	163600	205100	204500	245280
Total power input	kW	11	11	14	14	18	18	22
Total input current	A	18,0	18,0	24,0	24,0	30,0	30,0	36,0
Evaporator ⁽²⁾								
Quantity	n°	1	1	1	1	1	1	1
Water flow	m ³ /h	52,8	59,9	70,9	82,2	95,3	104,2	125,3
Pressure drop	kPa	16	16	16	16	16	22	29
Weight								
Transport weight	kg	3194	3238	3742	4432	4816	4920	6322
Operating weight	kg	3244	3296	3808	4510	4906	5030	6532
Dimensions								
Length	mm	3920	3920	5060	5060	6200	6200	7340
Width	mm	2260	2260	2260	2260	2260	2260	2260
Height	mm	2650	2650	2650	2650	2650	2650	2650
Sound data								
Total LWA ⁽³⁾	dB(A)	91	91	92	94	94	95	95
Total SPL 10m ⁽⁴⁾	dB(A)	58,7	59,0	60,0	61,6	61,8	62,0	62,6
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
General electrical data								
Maximum input power	[kW]	95,0	110,0	122,0	158,0	171,0	191,0	232,0
Maximum input current	[A]	275	309	358	428	490	556	640
Inrush current	[A]	**	**	**	**	**	**	**
RAH MC VS S Ke		952	1052	1102	1252	1352	1452	1502
Cooling capacity	kW	836,4	883,7	953,8	1050,6	1133,0	1236,0	1297,8
Total input power	kW	266,2	290,2	307,8	331,4	366,0	403,0	425,0
Nominal input current	A	428,3	472,4	508,5	549,8	607,0	666,3	702,6
EER	W/W	3,1	3,0	3,1	3,2	3,1	3,1	3,1
SEER (EN14825)	W/W	4,85	4,69	4,85	4,88	4,74	4,73	4,73
Circuits	n°	2	2	2	2	2	2	2
Compressors	n°	2	2	2	2	2	2	2
Refrigerant data R513A								
Refrigerant charge	kg	120	120	134	154	162	176	182
Global warming potential (GWP)	-	573	573	573	573	573	573	573
Equivalent CO ₂ charge	t	68,8	68,8	76,8	88,2	92,8	100,8	104,3
Fans ⁽¹⁾								
Quantity	n°	14	14	16	18	20	20	20
Total air flow	m ³ /h	286580	285740	327360	368640	419400	411000	410200
Total power input	kW	25	25	29	32	36	36	36
Total input current	A	42,0	42,0	48,0	54,0	60,0	60,0	60,0
Evaporator ⁽²⁾								
Quantity	n°	1	1	1	1	1	1	1
Water flow	m ³ /h	143,9	152,0	164,1	180,7	194,9	212,6	223,2
Pressure drop	kPa	42	46	49	41	47	40	51
Weight								
Transport weight	kg	7080	7200	7676	8088	8684	8996	9016
Operating weight	kg	7362	7482	7984	8376	8972	9368	9378
Dimensions								
Length	mm	8480	8480	9620	10760	11900	11900	11900
Width	mm	2260	2260	2260	2260	2260	2260	2260
Height	mm	2650	2650	2650	2650	2650	2650	2650
Sound data								
Total LWA ⁽³⁾	dB(A)	96	97	97	97	98	98	98
Total SPL 10m ⁽⁴⁾	dB(A)	63,1	63,9	64,2	64,4	64,8	65,0	65,3
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
General electrical data								
Maximum input power	[kW]	262,0	286,0	303,0	326,0	360,0	397,0	419,0
Maximum input current	[A]	733	783	843	854	1008	1062	1116
Inrush current	[A]	**	**	**	**	**	**	**

(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

RAH MC VS HE Ke		482	552	592	652	702	812	902	1042	1162	1252
Cooling capacity	kW	483,0	538,0	603,0	649,0	703,0	783,0	874,0	1040,0	1130,0	1250,0
Total input power	kW	166,7	189,1	212,4	222,6	239,7	265,1	304,2	360,9	393,4	437,0
Nominal input current	A	275,8	309,6	345,0	360,4	385,4	424,6	484,4	581,6	630,8	704,8
EER	W/W	2,90	2,85	2,84	2,91	2,93	2,95	2,87	2,88	2,87	2,86
SEER (EN14825)	W/W	5,51	5,42	5,32	5,51	5,38	5,55	5,43	5,31	5,42	5,40
Circuits	n°	2	2	2	2	2	2	2	2	2	2
Compressors	n°	2	2	2	2	2	2	2	2	2	2
Refrigerant data R513A											
Refrigerant charge	kg	72,0	80,0	90,0	102,0	116,0	134,0	148,0	158,0	180,0	186,0
Global warming potential (GWP)	-	573	573	573	573	573	573	573	573	573	573
Equivalent CO ₂ charge	t	41,3	45,8	51,6	58,4	66,5	76,8	84,8	90,5	103,1	106,6
Fans ⁽¹⁾											
Quantity	n°	8	8	10	12	12	14	14	16	18	18
Total air flow	m ³ /h	196800	196080	245900	289440	294720	339920	343980	392640	442080	440460
Total power input	kW	24,0	24,0	30,0	36,0	36,0	42,0	42,0	48,0	54,0	54,0
Total input current	A	36,8	36,8	46,0	55,2	55,2	64,4	64,4	73,6	82,8	82,8
Evaporator ⁽²⁾											
Quantity	n°	1	1	1	1	1	1	1	1	1	1
Water flow	m ³ /h	83,1	92,5	103,7	111,6	121,1	134,7	150,3	178,9	194,4	215,0
Pressure drop	kPa	12,4	17,5	21,4	20,0	32,9	22,2	20,5	27,7	33,6	32,6
Weight											
Transport weight	kg	4124	4188	4536	4878	5368	5902	6174	7292	7746	7946
Operating weight	kg	4214	4298	4646	4998	5642	6190	6546	7664	8142	8400
Dimensions											
Length	mm	5060	5060	6200	7340	7340	8480	8480	9620	10760	10760
Width	mm	2260	2260	2260	2260	2260	2260	2260	2260	2260	2260
Height	mm	2650	2650	2650	2650	2650	2650	2650	2650	2650	2650
Sound data											
Total LWA ⁽³⁾	dB(A)	102,8	102,8	103,2	103,3	104,3	104,3	106,3	106,4	106,5	108,0
Total SPL 10m ⁽⁴⁾	dB(A)	70,4	70,4	70,7	70,6	71,6	71,5	73,5	73,5	73,5	75,0
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	400/3/50	400/3/50
General electrical data											
Maximum input power	[kW]	161	182	205	213	231	249	289	351	383	426
Maximum input current	[A]	478	478	568	578	578	587	747	743	752	1066
Inrush current	[A]	**	**	**	**	**	**	**	**	**	**

(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

RAH MC VS HE S Ke		432	492	532	602	742	862	982	1062	1172
Cooling capacity	kW	438,8	496,5	542,8	609,8	727,2	888,9	1003,2	1081,5	1205,1
Total input power	kW	143,4	169,5	182,2	210,6	246,9	295,7	320,8	348,9	383,0
Nominal input current	A	242,2	282,0	301,4	344,4	399,0	484,0	524,0	572,0	626,0
EER	W/W	3,1	2,9	3,0	2,9	2,9	3,0	3,1	3,1	3,1
SEER (EN14825)	W/W	5,14	5,53	4,91	5,32	5,47	4,92	5,56	5,68	5,65
Circuits	n°	2	2	2	2	2	2	2	2	2
Compressors	n°	2	2	2	2	2	2	2	2	2
Refrigerant data R513A										
Refrigerant charge	kg	68	72	82	90	116	134	158	168	186
Global warming potential (GWP)	-	573	573	573	573	573	573	573	573	573
Equivalent CO ₂ charge	t	39,0	41,3	47,0	51,6	66,5	76,8	90,5	96,3	106,6
Fans ⁽¹⁾										
Quantity	n°	8	8	10	10	12	14	16	18	18
Total air flow	m ³ /h	164080	163360	205300	204400	245400	285740	326720	368280	367020
Total power input	kW	14	14	18	18	22	25	29	32	32
Total input current	A	24,0	24,0	30,0	30,0	36,0	42,0	48,0	54,0	54,0
Evaporator ⁽²⁾										
Quantity	n°	1	1	1	1	1	1	1	1	1
Water flow	m ³ /h	75,5	85,4	93,4	104,9	125,1	152,9	172,6	186,0	207,3
Pressure drop	kPa	14	13	15	22	35	28	26	30	31
Weight										
Transport weight	kg	4188	4248	4572	4676	5538	6722	7452	7750	8116
Operating weight	kg	4266	4338	4662	4786	5812	7010	7824	8122	8570
Dimensions										
Length	mm	5060	5060	6200	6200	7340	8480	9620	10760	10760
Width	mm	2260	2260	2260	2260	2260	2260	2260	2260	2260
Height	mm	2650	2650	2650	2650	2650	2650	2650	2650	2650
Sound data										
Total LWA ⁽³⁾	dB(A)	92	93	94	94	95	96	97	98	99
Total SPL 10m ⁽⁴⁾	dB(A)	60,0	61,0	61,5	61,5	62,4	63,3	63,8	65,3	66,3
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	400/3/50
General electrical data										
Maximum input power	[kW]	139,0	162,0	177,0	202,0	245,0	290,0	311,0	342,0	372,0
Maximum input current	[A]	478	478	568	568	738	907	917	1066	1066
Inrush current	[A]	**	**	**	**	**	**	**	**	**

(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

RAH MC VS Kh		352	402	502	552	652	752	852	952	1052	1202
Cooling capacity	kW	312,1	442,9	504,7	570,6	663,3	758,1	877,6	995,0	1087,7	1217,5
Total input power	kW	102,5	149,8	169,2	188,2	212,3	243,4	280,0	314,3	342,3	380,5
Nominal input current	A	172,5	252,3	284,9	316,8	357,4	409,8	471,4	529,2	576,3	640,5
EER	W/W	3,70	3,36	3,48	3,61	3,64	3,65	3,60	3,65	3,62	3,66
SEER (EN14825)	W/W	3,05	2,96	2,98	3,03	3,12	3,11	3,13	3,17	3,18	3,20
Circuits	n°	2	2	2	2	2	2	2	2	2	2
Compressors	n°	2	2	2	2	2	2	2	2	2	2
Refrigerant data R1234Ze											
Refrigerant charge	kg	54	61	85	89	94	111	116	135	139	162
Global warming potential (GWP)	-	6	6	6	6	6	6	6	6	6	6
Equivalent CO ₂ charge	t	0,32	0,37	0,51	0,53	0,56	0,67	0,70	0,81	0,83	0,97
Fans ⁽¹⁾											
Quantity	n°	6	6	8	10	10	12	12	14	14	16
Total air flow	m ³ /h	145800	145800	194400	239000	239000	286800	286800	333900	333900	381600
Total power input	kW	18,0	18,0	24,0	30,0	30,0	36,0	36,0	42,0	42,0	48,0
Total input current	A	27,8	27,8	37,1	46,4	46,4	55,7	55,7	64,9	64,9	74,2
Evaporator ⁽²⁾											
Quantity	n°	1	1	1	1	1	1	1	1	1	1
Water flow	m ³ /h	53,7	76,3	86,9	98,3	114,2	130,5	151,1	171,3	187,3	209,6
Pressure drop	kPa	17,1	16,5	37,9	40,2	39,4	39,8	41,9	42,1	37,5	42,6
Weight											
Transport weight	kg	3248	3294	4138	5066	5140	5582	6598	7224	7372	7810
Operating weight	kg	3306	3360	4406	5336	5492	5792	6880	7522	7660	8098
Dimensions											
Length	mm	3920	3920	5060	6200	6200	7340	7340	8480	8480	9620
Width	mm	2260	2260	2260	2260	2260	2260	2260	2260	2260	2260
Height	mm	2650	2650	2650	2650	2650	2650	2650	2650	2650	2650
Sound data											
Total LWA ⁽³⁾	dB(A)	98,2	98,4	99,0	101,5	101,8	102,8	102,9	103,4	104,8	104,9
Total SPL 10m ⁽⁴⁾	dB(A)	77,6	77,8	78,4	80,9	81,2	81,4	81,5	82,0	82,9	83,0
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	400/3/50	400/3/50
General electrical data											
Maximum input power	[kW]	206,8	248,2	284,5	329,1	373,0	428,8	488,2	466,2	580,3	649,9
Maximum input current	[A]	348	418	479	554	628	722	822	785	977	1094
Inrush current	[A]	**	**	**	**	**	**	**	**	**	**
RAH MC VS S Kh		352	402	502	552	652	752	852	952	1052	1202
Cooling capacity	kW	304,3	372,9	424,4	480,0	558,3	638,6	737,5	836,4	914,6	1021,8
Total input power	kW	95,9	117,1	134,8	149,2	169,4	193,8	221,9	251,1	274,6	304,8
Nominal input current	A	161,4	197,1	227,0	251,3	285,2	326,3	373,6	422,7	462,3	513,2
EER	W/W	3,58	3,51	3,52	3,66	3,69	3,71	3,68	3,70	3,67	3,70
SEER (EN14825)	W/W	3,17	3,18	3,15	3,22	3,30	3,29	3,32	3,33	3,33	3,35
Circuits	n°	2	2	2	2	2	2	2	2	2	2
Compressors	n°	2	2	2	2	2	2	2	2	2	2
Refrigerant data R1234Ze											
Refrigerant charge	kg	52	57	70	85	89	105	111	128	132	151
Global warming potential (GWP)	-	6	6	6	6	6	6	6	6	6	6
Equivalent CO ₂ charge	t	0,31	0,34	0,42	0,51	0,53	0,63	0,67	0,77	0,79	0,91
Fans ⁽¹⁾											
Quantity	n°	6	6	8	10	10	12	12	14	14	16
Total air flow	m ³ /h	119700	119700	159600	199500	199500	239400	239400	279300	279300	319200
Total power input	kW	10,8	10,8	14,4	18,0	18,0	21,6	21,6	25,2	25,2	28,8
Total input current	A	16,7	16,7	22,3	27,8	27,8	33,4	33,4	39,0	39,0	44,5
Evaporator ⁽²⁾											
Quantity	n°	1	1	1	1	1	1	1	1	1	1
Water flow	m ³ /h	52,4	64,2	73,1	82,7	96,1	110,0	127,0	144,0	157,5	175,9
Pressure drop	kPa	16,2	15,7	41,1	40,6	41,2	38,7	39,8	40,0	35,6	40,5
Weight											
Transport weight	kg	3330	3375	4570	4820	5411	6471	6532	7321	7493	7946
Operating weight	kg	3381	3433	4649	5066	5657	6684	6745	7607	7779	8258
Dimensions											
Length	mm	3920	3920	5060	6200	6200	7340	7340	8480	8480	9620
Width	mm	2260	2260	2260	2260	2260	2260	2260	2260	2260	2260
Height	mm	2650	2650	2650	2650	2650	2650	2650	2650	2650	2650
Sound data											
Total LWA ⁽³⁾	dB(A)	91,4	91,6	94,1	94,2	94,4	95,3	95,5	95,6	96,6	97,2
Total SPL 10m ⁽⁴⁾	dB(A)	71,1	71,3	73,5	73,6	73,8	73,9	74,1	74,2	74,7	75,3
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	400/3/50	400/3/50
General electrical data											
Maximum input power	[kW]	200,2	241,8	275,5	318,2	362,3	415,2	474,6	450,9	564,9	632,5
Maximum input current	[A]	337	407	464	536	610	699	799	759	951	1065
Inrush current	[A]	**	**	**	**	**	**	**	**	**	**

(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

RAH MC VS HE Kh		352	402	502	552	652	752	852	952	1052	1102
Cooling capacity	kW	388,3	430,5	487,2	514,5	592,2	747,6	795,9	844,2	961,8	1073,1
Total input power	kW	126,8	138,5	160,5	168,0	202,0	233,6	252,7	272,4	301,3	343,3
Nominal input current	A	213,5	233,2	270,2	282,8	340,1	393,2	425,4	458,6	507,3	577,9
EER	W/W	3,78	3,76	3,73	3,73	3,57	3,78	3,78	3,76	3,80	3,71
SEER (EN14825)	W/W	3,06	3,11	3,04	3,06	2,93	3,20	3,15	3,10	3,19	3,13
Circuits	n°	2	2	2	2	2	2	2	2	2	2
Compressors	n°	2	2	2	2	2	2	2	2	2	2
Refrigerant data R1234Ze											
Refrigerant charge	kg	75	77	94	96	112	120	139	160	162	185
Global warming potential (GWP)	-	6	6	6	6	6	6	6	6	6	6
Equivalent CO ₂ charge	t	0,45	0,46	0,56	0,58	0,67	0,72	0,83	0,96	0,97	1,11
Fans ⁽¹⁾											
Quantity	n°	8	8	10	10	12	12	14	16	16	18
Total air flow	m ³ /h	194208	194208	242760	242760	291312	291312	339864	388416	388416	436968
Total power input	kW	24,0	24,0	30,0	30,0	36,0	36,0	42,0	48,0	48,0	54,0
Total input current	A	37,1	37,1	46,4	46,4	55,7	55,7	64,9	74,2	74,2	83,5
Evaporator ⁽²⁾											
Quantity	n°	1	1	1	1	1	1	1	1	1	1
Water flow	m ³ /h	66,9	74,1	83,9	88,6	102,0	128,7	137,1	145,4	165,6	184,8
Pressure drop	kPa	39,6	40,1	39,3	39,6	41,1	40,4	42,6	42,8	38,1	43,3
Weight											
Transport weight	kg	4754	4818	5166	4799	5374	5469	6178	7290	7385	7946
Operating weight	kg	4959	5038	5401	5039	5642	5737	6546	7662	7757	8390
Dimensions											
Length	mm	5060	5060	6200	6200	7340	7340	8480	9620	9620	10760
Width	mm	2260	2260	2260	2260	2260	2260	2260	2260	2260	2260
Height	mm	2650	2650	2650	2650	2650	2650	2650	2650	2650	2650
Sound data											
Total LWA ⁽³⁾	dB(A)	100,5	100,7	101,4	103,9	104,2	105,2	105,3	105,9	107,3	107,4
Total SPL 10m ⁽⁴⁾	dB(A)	79,9	80,1	80,8	83,3	83,6	83,8	83,9	84,5	85,4	85,5
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	400/3/50	400/3/50
General electrical data											
Maximum input power	[kW]	283,3	283,3	336,2	336,2	437,1	532,3	537,6	542,9	626,0	631,5
Maximum input current	[A]	477	477	566	566	736	896	905	914	1054	1063
Inrush current	[A]	**	**	**	**	**	**	**	**	**	**
RAH MC VS HE S Kh											
Cooling capacity	kW	384,6	426,4	482,6	509,6	586,6	740,5	788,3	836,2	952,6	1062,9
Total input power	kW	119,3	131,2	151,1	162,3	190,9	226,7	243,7	257,7	290,7	327,4
Nominal input current	A	200,8	220,9	254,3	273,2	321,4	381,6	410,2	433,8	489,4	551,2
EER	W/W	3,67	3,65	3,63	3,62	3,46	3,68	3,67	3,65	3,69	3,60
SEER (EN14825)	W/W	3,22	3,25	3,19	3,14	3,07	3,27	3,24	3,25	3,28	3,25
Circuits	n°	2	2	2	2	2	2	2	2	2	2
Compressors	n°	2	2	2	2	2	2	2	2	2	2
Refrigerant data R1234Ze											
Refrigerant charge	kg	73	75	91	105	110	132	147	151	169	175
Global warming potential (GWP)	-	6	6	6	6	6	6	6	6	6	6
Equivalent CO ₂ charge	t	0,44	0,45	0,55	0,63	0,66	0,79	0,88	0,91	1,01	1,05
Fans ⁽¹⁾											
Quantity	n°	8	8	10	12	12	14	16	16	18	18
Total air flow	m ³ /h	194208	194208	242760	291312	291312	339864	388416	388416	436968	436968
Total power input	kW	14,4	14,4	18,0	21,6	21,6	25,2	28,8	28,8	32,4	32,4
Total input current	A	22,3	22,3	27,8	33,4	33,4	39,0	44,5	44,5	50,1	50,1
Evaporator ⁽²⁾											
Quantity	n°	1	1	1	1	1	1	1	1	1	1
Water flow	m ³ /h	66,2	73,4	83,1	87,8	101,0	127,5	135,7	144,0	164,0	183,0
Pressure drop	kPa	39,6	40,1	39,3	37,8	38,6	40,4	42,5	42,7	38,1	43,2
Weight											
Transport weight	kg	4754	4818	5166	5374	5474	6179	7290	7443	7946	8224
Operating weight	kg	4959	5038	5401	5642	5747	6415	7662	7823	8390	8684
Dimensions											
Length	mm	5060	5060	6200	7340	7340	8480	9620	9620	10760	10760
Width	mm	2260	2260	2260	2260	2260	2260	2260	2260	2260	2260
Height	mm	2650	2650	2650	2650	2650	2650	2650	2650	2650	2650
Sound data											
Total LWA ⁽³⁾	dB(A)	92,6	93,6	93,6	94,4	94,8	95,9	96,6	97,2	98,0	98,9
Total SPL 10m ⁽⁴⁾	dB(A)	72,0	73,0	73,0	73,8	74,2	74,5	75,2	75,8	76,1	77,0
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	400/3/50	400/3/50
General electrical data											
Maximum input power	[kW]	274,5	274,4	325,6	328,5	423,5	522,2	525,8	525,7	611,8	611,8
Maximum input current	[A]	462	462	548	553	713	879	885	885	1030	1030
Inrush current	[A]	**	**	**	**	**	**	**	**	**	**

(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

RAC MC HE Ke/Kh

HIGH EFFICIENCY AIR COOLED CHILLERS FOR OUTDOOR INSTALLATION
EQUIPPED WITH BRUSHLESS OIL-FREE TURBOCOR COMPRESSORS, AXIAL FANS
AND MICROCHANNEL CONDENSING COILS

Cooling capacity from 443 kW to 1396 kW



R513A

R1234
ze



AIR



EC



ERP
2021

VERSIONS

- RAC MC HE Kh** - High efficiency version
- RAC MC HE S Kh** - High-efficiency silenced version
- RAC MC HE U Kh** - High-efficiency ultra-silenced version

The monoblock air-cooled chillers of RAC MC series are suitable for external installation and are particularly indicated for liquid cooling in air conditioning and industrial process plants, where high efficiency with partial loads, quietness and long lifetime must be granted.

The extreme compactness of both compressor and condensing section has allowed to produce chillers with a compact design and resulting reduced weight if compared to traditional chillers with same cooling capacity. This aspect connected to the lack of lubricating oil in the cooling circuit, allows to significantly reduce the maintenance costs and to make the most of the heat exchangers in their global thermal exchange surface.

All the units are totally factory assembled and tested following specific quality procedures. They are also totally hydraulically and electrically connected so, once on site, they can be quickly installed. Before final

test, cooling circuits are pressure tightness tested and charged with the refrigerant. Therefore, once on site, the units must only be positioned and hydraulically and electrically connected.

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

MAIN COMPONENTS

STRUCTURES

Made up of high-thickness galvanized carbon steel, epoxy-powder RAL 7035 painted elements. The structure is strongly fixed through galvanized self-locking bolts and nuts able to absorb any mechanical stress due to handling and transport. Evaporating section, compressors and regulation valve can be easily accessed and inspected in order to make check and maintenance operation easier and safer.

COMPRESSORS

Double-stage, magnetic-levitation centrifugal hermetic Compressors (without mechanical bearings). They are oil-free and provided with in-built electronic management system, pressure and temperature probes, direct-cooling system and inverter for speed regulation. Each compressor is equipped with rubber type anti-vibration dampers, suction side shut-off valve, discharge side shut-off valve with in-built check valve, suction filter, double stage hot gas by-pass system for start phases, liquid refrigerant line with sight-glass and valve for compressor direct and controlled cooling. Compressors are suitably weather protected, being installed inside a sealed and sound-proof cabinet, easy to be inspected thanks side panels provided with ¼ turn locks which can be opened through special keys. The electrical cabinet with interlocked double panels can be opened by an external main switch positioned on the unit front side.

EVAPORATOR

Shell & tube flooded Evaporator (Falling film). Refrigerant is outside the tubes and inside a carbon steel shell; the flooding level is controlled by an electronic sensor which grants the max efficiency at any load condition. Refrigerant side design pressure is 16,5 bar. Water side one is 10 bar. The exchange tube, the chilled solutions (water or glycol solutions) flows in, is made up of pure corrugated copper to optimize thermal exchange. The exchange shell is covered by 10 mm thickness, fire retardant, closed cell material and protected by scratch-resistant coating. Hydraulic connections are of Victaulic type.

CONDENSING COILS

External Condensing Coils made up of finned pack heat-exchangers with cross-fin pure electrolytic copper pipes and louvered aluminium fins. On demand, if the units are installed in particularly aggressive environments, it is possible to realize coils with a double-layer epoxy paint or to realized a totally pure copper coil (option RM and RR).

FANS

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. Aluminum blades with wings profile are suitably designed to avoid any turbulence in the air detachment zone, granting in this way the max efficiency with the minimum noise level. The fan is equipped with galvanized steel protection grid painted after the construction. These fans, thanks to a more accurate regulation of the airflow, allow the unit to operate with an external air temperature up to - 20 °C.

REFRIGERANT CIRCUIT

Cooling Circuits mainly consisting of: electronic thermostatic valve with in-built microprocessor to regulate the refrigerant flow even with compressor partial load operation, also work-

ing as complete closure solenoid valve, shut-off valves on each compressor discharge line and shut-off valve on suction side, discharge side non-return valve, liquid line shut-off valve, dehydrating filter with interchangeable artridges, sight-glass, hot gas by-pass line with tandem or trio-compressors, liquid tapping line for compressors internal cooling, high and low pressure safety valve, gauges, high and low pressure transducers, high and low pressure switches.

ELECTRICAL BOARD

Contained inside a housing suitable for external installation (IP 54) and consisting of: lockable main switch, contactors, amperometric and thermal protections insulation switches for low tension auxiliaries derivation, conductors numbered as relevant terminals, passive filters for harmonics and electromagnetic interferences removal, user interface consisting of alphanumeric backlit display, special microprocessor electronic board, thermostat on electrical board for internal temperature control in case of operation or parking where external temperatures are below 0°C, forced electrical cabinet ventilation to grant the right operation of those components subject to relevant sunlight.

MICROPROCESSOR

Electronic Microprocessor consisting of IN/OUT electronic board, LCD Graphic Display, LED signals and keyboard. This microprocessor allows the PID regulation of evaporator outlet water temperature and the working parameters setting, as well as the alarms management, the measured values (temperature, working hours etc...) reading and the possibility to control them through a supervision system. It also allows the reading and setting of: all the INPUTS and OUTPUTS, all the system working parameters as well to display all the existing alarms.

ACCESSORIES

RAC MC Ke/Kh

RAC MC Ke/Kh		451	562	682	812	983	1404
Amperometer	A	o	o	o	o	o	o
Operation in cooling mode down to -20°C	BF	•	•	•	•	•	•
Axial fans with electronic commutated motor	EC	o	o	o	o	o	o
Mechanical flow switch	FL	o	o	o	o	o	o
Condensing coil protection grid	GP	o	o	o	o	o	o
Anti-intrusion grid	GP1	o	o	o	o	o	o
RS 485 serial interface	IH	o	o	o	o	o	o
Seawood packing	IM	o	o	o	o	o	o
BACNET Protocol serial interface	IH-BAC	o	o	o	o	o	o
Rubber-type vibration dampers	PA	o	o	o	o	o	o
Spring-type vibration dampers	PM	o	o	o	o	o	o
Remote display	PQ	o	o	o	o	o	o
Voltmeter	V	o	o	o	o	o	o
Compressors overload relays	RL	o	o	o	o	o	o
Condensing coil with pre-painted fins	RP	o	o	o	o	o	o
Copper/copper condensing coils	RT	o	o	o	o	o	o

RAC MC Ke/Kh		451	562	682	812	983	1404
Amperometer	A	o	o	o	o	o	o
Operation in cooling mode down to -20°C	BF	•	•	•	•	•	•
Axial fans with electronic commutated motor	EC	o	o	o	o	o	o
Mechanical flow switch	FL	o	o	o	o	o	o
Condensing coil protection grid	GP	o	o	o	o	o	o
Anti-intrusion grid	GP1	o	o	o	o	o	o
RS 485 serial interface	IH	o	o	o	o	o	o
Seawood packing	IM	o	o	o	o	o	o
BACNET Protocol serial interface	IH-BAC	o	o	o	o	o	o
Rubber-type vibration dampers	PA	o	o	o	o	o	o
Spring-type vibration dampers	PM	o	o	o	o	o	o
Remote display	PQ	o	o	o	o	o	o
Voltmeter	V	o	o	o	o	o	o
Compressors overload relays	RL	o	o	o	o	o	o
Condensing coil with pre-painted fins	RP	o	o	o	o	o	o
Copper/copper condensing coils	RT	o	o	o	o	o	o

• Standard, o Optional, -- Not available

TECHNICAL DATA

RAC MC HE S Ke		251	351	401	502	552	652
Cooling capacity ⁽¹⁾	kW	281,0	380,0	430,0	504,0	560,0	672,0
Total input power ⁽¹⁾	kW	82,9	112,3	133,7	145,2	166,8	205,7
Nominal input current ⁽¹⁾	A	139,6	189,0	225,1	244,4	280,7	346,3
EER ⁽¹⁾	W/W	4,33	4,23	3,92	4,30	4,09	3,96
SEER (EN14825) ⁽¹⁾	W/W	3,39	3,38	3,22	3,47	3,36	3,27
Circuits	n°	1	1	1	1	1	1
Compressors	n°	1	1	1	2	2	2
Compressor power input	kW	64,9	89,9	109,7	117,2	136,8	169,7
Refrigerant data R513A							
Global warming potential (GWP)	-	573	573	573	573	573	573
Fans							
Quantity	n°	6	8	8	10	10	12
Total air flow	m ³ /h	145656	191880	194208	238200	242760	291312
Total power input	kW	18,0	22,4	24,0	28,0	30,0	36,0
Evaporator							
Quantity	n°	1	1	1	1	1	1
Water flow	m ³ /h	48,4	65,4	74,0	86,8	96,4	115,7
Pressure drop	kPa	30,0	34,0	34,5	33,7	35,0	32,9
Weight							
Transport weight	kg	3459	3758	3833	4140	4223	4537
Operating weight	kg	3552	3861	3948	4267	4364	4694
Dimensions							
Length	mm	3920	5060	5060	6200	6200	7340
Width	mm	2260	2260	2260	2260	2260	2260
Height	mm	2650	2650	2650	2650	2650	2650
Sound data							
Total LWA ⁽²⁾	dB(A)	90,2	90,8	91,3	91,9	92,5	93,0
Total SPL 10m ⁽³⁾	dB(A)	69,6	70,2	70,7	71,3	71,9	72,4
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
General electrical data							
Maximum input power	[kW]	206,7	295,3	296,4	215,7	217,5	307,7
Maximum input current	[A]	348	497	499	363	366	518
Inrush current	[A]	**	**	**	**	**	**

RAC MC HE S Ke		752	852	953	1054	1154	1254
Cooling capacity ⁽¹⁾	kW	762,0	861,0	963,0	1060,0	1176,0	1280,0
Total input power ⁽¹⁾	kW	229,9	260,1	289,8	320,6	359,0	417,5
Nominal input current ⁽¹⁾	A	387,0	437,9	487,8	539,8	604,3	702,8
EER ⁽¹⁾	W/W	4,06	4,06	4,02	3,98	3,93	3,64
SEER (EN14825) ⁽¹⁾	W/W	3,32	3,31	3,32	3,31	3,28	3,07
Circuits	n°	1	1	1	2	2	2
Compressors	n°	2	3	3	4	4	4
Compressor power input	kW	187,9	212,1	239,4	266,6	299,0	351,5
Refrigerant data R513A							
Global warming potential (GWP)	-	573	573	573	573	573	573
Fans							
Quantity	n°	14	16	18	18	20	22
Total air flow	m ³ /h	339864	388416	428760	436968	485520	534072
Total power input	kW	42,0	48,0	50,4	54,0	60,0	66,0
Evaporator							
Quantity	n°	1	1	1	1	1	1
Water flow	m ³ /h	131,2	148,3	165,8	182,5	202,5	220,4
Pressure drop	kPa	34,8	36,9	37,1	32,5	37,6	43,0
Weight							
Transport weight	kg	4858	5185	5519	5629	5972	6321
Operating weight	kg	5032	5378	5733	5867	6236	6614
Dimensions							
Length	mm	8480	9620	10760	10760	11900	13040
Width	mm	2260	2260	2260	2260	2260	2260
Height	mm	2650	2650	2650	2650	2650	2650
Sound data							
Total LWA ⁽²⁾	dB(A)	93,6	94,2	94,8	95,4	96,0	96,6
Total SPL 10m ⁽³⁾	dB(A)	73,0	73,6	74,2	74,8	75,4	76,0
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
General electrical data							
Maximum input power	[kW]	313,1	234,0	458,0	429,4	435,5	609,5
Maximum input current	[A]	527	394	771	723	733	1026
Inrush current	[A]	**	**	**	**	**	**

(1) Water: In/out Temperature: 12/7°C; Ambient air temperature 35°C

(2) Sound power level in accordance with ISO 3744.

(3) Sound pressure level at 10m from the unit in free field conditions, in accordance with ISO 3744

RAC MC HE U Ke		251	351	401	502	552	652
Cooling capacity ⁽¹⁾	kW	252,0	355,0	410,0	488,0	540,0	642,0
Total input power ⁽¹⁾	kW	72,7	103,0	117,0	140,0	163,7	194,1
Nominal input current ⁽¹⁾	A	122,4	173,4	197,0	235,6	275,7	326,8
EER ⁽¹⁾	W/W	4,21	4,01	4,06	4,00	3,80	3,80
SEER (EN14825) ⁽¹⁾	W/W	3,47	3,45	3,50	3,49	3,30	3,31
Circuits	n°	1	1	1	1	1	1
Compressors	n°	1	1	1	2	2	2
Compressor power input	kW	59,9	88,6	101,0	122,0	142,1	168,9
Refrigerant data R513A							
Global warming potential (GWP)	-	573	573	573	573	573	573
Fans							
Quantity	n°	8	8	10	10	12	14
Total air flow	m³/h	151600	159600	189500	199500	238800	279300
Total power input	kW	12,8	14,4	16,0	18,0	21,6	25,2
Evaporator							
Quantity	n°	1	1	1	1	1	1
Water flow	m³/h	43,4	61,1	70,6	84,0	93,0	110,6
Pressure drop	kPa	32,0	36,6	37,1	36,3	34,8	35,6
Weight							
Transport weight	kg	3702	3776	4079	4160	4470	4786
Operating weight	kg	3807	3892	4207	4303	4628	4962
Dimensions							
Length	mm	5060	5060	6200	6200	7340	8480
Width	mm	2260	2260	2260	2260	2260	2260
Height	mm	2650	2650	2650	2650	2650	2650
Sound data							
Total LWA ⁽²⁾	dB(A)	86,7	87,2	87,8	88,3	88,9	89,4
Total SPL 10m ⁽³⁾	dB(A)	66,1	66,6	67,2	67,7	68,3	68,8
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
General electrical data							
Maximum input power	[kW]	201,9	287,5	289,2	206,8	209,6	297,6
Maximum input current	[A]	340	484	487	348	353	501
Inrush current	[A]	**	**	**	**	**	**

RAC MC HE U Ke		752	852	953	1054	1154	1254
Cooling capacity ⁽¹⁾	kW	742,0	843,0	936,0	1028,0	1144,0	1244,0
Total input power ⁽¹⁾	kW	222,4	248,2	279,6	304,6	348,3	385,7
Nominal input current ⁽¹⁾	A	374,5	417,8	470,7	512,8	586,4	649,3
EER ⁽¹⁾	W/W	3,83	3,84	3,79	3,83	3,65	3,59
SEER (EN14825) ⁽¹⁾	W/W	3,34	3,40	3,35	3,37	3,28	3,23
Circuits	n°	1	1	1	2	2	2
Compressors	n°	2	3	3	4	4	4
Compressor power input	kW	193,6	219,4	247,2	268,6	313,1	346,1
Refrigerant data R513A							
Global warming potential (GWP)	-	573	573	573	573	573	573
Fans							
Quantity	n°	16	18	18	20	22	22
Total air flow	m³/h	319200	341100	359100	399000	416900	438900
Total power input	kW	28,8	28,8	32,4	36,0	35,2	39,6
Evaporator							
Quantity	n°	1	1	1	1	1	1
Water flow	m³/h	127,8	145,2	161,2	177,0	197,0	214,2
Pressure drop	kPa	37,4	39,5	39,7	35,1	40,2	44,0
Weight							
Transport weight	kg	5108	5437	5546	5926	6227	6318
Operating weight	kg	5304	5654	5786	6193	6524	6649
Dimensions							
Length	mm	9620	10760	10760	11900	13040	13040
Width	mm	2260	2260	2260	2260	2260	2260
Height	mm	2650	2650	2650	2650	2650	2650
Sound data							
Total LWA ⁽²⁾	dB(A)	90,0	90,5	91,1	91,6	92,2	92,8
Total SPL 10m ⁽³⁾	dB(A)	69,4	69,9	70,5	71,0	71,6	72,2
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
General electrical data							
Maximum input power	[kW]	301,1	216,8	441,3	413,4	412,2	585,1
Maximum input current	[A]	507	365	743	696	694	985
Inrush current	[A]	**	**	**	**	**	**

(1) Water: In/out Temperature: 12/7°C; Ambient air temperature 35°C

(2) Sound power level in accordance with ISO 3744.

(3) Sound pressure level at 10m from the unit in free field conditions, in accordance with ISO 3744

RAC MC HE S Kh		251	502	753	1004
Cooling capacity ⁽¹⁾	kW	261,0	522,0	783,0	1044,0
Total input power ⁽¹⁾	kW	75,6	152,8	226,5	303,6
Nominal input current ⁽¹⁾	A	127,2	257,3	381,3	511,1
EER Gross ⁽¹⁾	W/W	4,53	4,25	4,39	4,29
EER Net ⁽¹⁾	W/W	3,45	3,42	3,46	3,44
Circuits	n°	1	1	1	2
Compressors	n°	1	2	3	4
Compressor power input	kW	57,6	122,8	178,5	243,6
Refrigerant data R1234Ze					
Global warming potential (GWP)	-	6	6	6	6
Fans					
Quantity	n°	6	10	16	20
Total air flow	m ³ /h	145656	242760	388416	485520
Total power input	kW	18,0	30,0	48,0	60,0
Evaporator					
Quantity	n°	1	1	1	1
Water flow	m ³ /h	44,9	89,9	134,8	179,8
Pressure drop	kPa	30,0	33,7	36,9	37,1
Weight					
Transport weight	kg	3473	4157	5208	5998
Operating weight	kg	3568	4285	5403	6267
Dimensions					
Length	mm	3920	6200	9620	11900
Width	mm	2260	2260	2260	2260
Height	mm	2650	2650	2650	2650
Sound data					
Total LWA ⁽²⁾	dB(A)	90,3	92,0	94,9	97,6
Total SPL 10m ⁽³⁾	dB(A)	69,7	71,4	73,5	75,7
Power supply					
Voltage/phase/frequency	V/ph/Hz	400/3/50	400/3/50	400/3/50	400/3/50
General electrical data					
Maximum input power	[kW]	114,7	223,3	338,0	447,3
Maximum input current	[A]	193	376	569	753
Inrush current	[A]	**	**	**	**

RAC MC HE U Kh		251	502	753	1004
Cooling capacity ⁽¹⁾	kW	261,0	502,0	783,0	1004,0
Total input power ⁽¹⁾	kW	75,9	143,4	222,1	280,8
Nominal input current ⁽¹⁾	A	127,8	241,4	373,9	472,7
EER Gross ⁽¹⁾	W/W	4,24	4,12	4,13	4,16
EER Net ⁽¹⁾	W/W	3,44	3,50	3,53	3,58
Circuits	n°	1	1	1	2
Compressors	n°	1	2	3	4
Compressor power input	kW	61,5	121,8	189,7	241,2
Refrigerant data R1234Ze					
Global warming potential (GWP)	-	6	6	6	6
Fans					
Quantity	n°	8	12	18	22
Total air flow	m ³ /h	159600	239400	359100	438900
Total power input	kW	14,4	21,6	32,4	39,6
Evaporator					
Quantity	n°	1	1	1	1
Water flow	m ³ /h	44,9	86,4	134,8	172,9
Pressure drop	kPa	30,0	33,7	36,9	37,1
Weight					
Transport weight	kg	3765	4546	5532	6345
Operating weight	kg	3869	4705	5752	6642
Dimensions					
Length	mm	5060	7340	10760	13040
Width	mm	2260	2260	2260	2260
Height	mm	2650	2650	2650	2650
Sound data					
Total LWA ⁽²⁾	dB(A)	86,8	88,4	91,2	93,8
Total SPL 10m ⁽³⁾	dB(A)	66,2	67,8	69,8	71,9
Power supply					
Voltage/phase/frequency	V/ph/Hz	400/3/50	400/3/50	400/3/50	400/3/50
General electrical data					
Maximum input power	[kW]	111,1	215,6	323,7	428,3
Maximum input current	[A]	187	363	545	721
Inrush current	[A]	**	**	**	**

(1) Water: In/out Temperature: 12/7°C; Ambient air temperature 35°C

(2) Sound power level in accordance with ISO 3744.

(3) Sound pressure level at 10m from the unit in free field conditions, in accordance with ISO 3744

RAE F Kc/Kr

AIR COOLED CHILLERS FOR OUTDOOR INSTALLATION

WITH INTEGRATED FREE COOLING, EQUIPPED WITH SCROLL COMPRESSORS AND AXIAL FANS

Cooling capacity from 91 kW to 853 kW



R410a

R454B



AIR

FC



AC

EC



ERP 2021

VERSIONS

RAE F - standard version

RAE F HE - high efficiency version

RAE F S e U - silenced and ultra-silenced versions **on request**

Packaged air cooled chillers of RAE F 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 recover 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.

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 refrigerant and a non-freezing oil charge.

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

MAIN COMPONENTS

STRUCTURE

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 COMPRESSOR

Scroll compressors operating on one or two independent circuits in single, 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 45 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 COIL

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.

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 in respect to 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.

It is almost always recommended 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 exchangers.

On applications where is not possible to directly use glycol mixtures, it is possible to add a "GLYCOL LOOP" circuit (option GYL) with which 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.

AXIAL FANS

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. Aluminum blades with wings profile are suitably designed to avoid any turbulence in the air detachment zone, granting in this way the max efficiency with the minimum noise level. The fan is equipped with galvanized steel protection grid painted after the construction. These fans, thanks to a more accurate regulation of the airflow, allow the unit to operate with an external air temperature up to - 20 °C.

INDEPENDENT COOLING CIRCUITS

Each provided with a shut-off valve for refrigerant charge, anti-freeze 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 3602 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. Provided with three-way water valve ON/OFF to activate the free-cooling mode, automatic air vent valves on plate coils and exchangers, glycol solution charge and/or discharge valves, anti-freeze probe.

ELECTRICAL BOARD

In compliance with CE Norms, contained in a suitable section protected by internal safety panel, provided with a lock-door main switch. Inside all the control and protection components are suitably placed, together with terminal board and auxiliaries. The electrical board also includes the control device for power supply phases to prevent the compressor wrong side rotation. Microprocessor and relevant display are also placed inside the electrical cabinet.

ACCESSORIES

RAE F Kc/Kr		801	1001	1301	1501	1701	2001	2302	2602	3002
Amperometer	A	o	o	o	o	o	o	o	o	o
Electrical power supply different than standard	AE	□	□	□	□	□	□	□	□	□
Operation in cooling mode down to -20°C	BF	•	•	•	•	•	•	•	•	•
Operation in cooling mode down to -10°C	BT	o	o	o	o	o	o	o	o	o
Soundproofed compressors cabinet with standard material	CF	•	•	•	•	•	•	•	•	•
Overall compressor and technical compartment cabinet	CFT	o	o	o	o	o	o	o	o	o
Soundproofed compressors cabinet with polyester material	CFU	o	o	o	o	o	o	o	o	o
Compressors inrush counter	CS	o	o	o	o	o	o	o	o	o
Axial fans with electronic commutated motor	EC	o	o	o	o	o	o	o	o	o
Condensing coil protection grid	GP	o	o	o	o	o	o	o	o	o
Anti-intrusion grid	GP2	o	o	o	o	o	o	o	o	o
Anti-intrusion grid with compressors cabinet	GP3	--	--	--	--	--	--	--	--	--
Glycol loop	GYL	□	□	□	□	□	□	□	□	□
Victaulic insulation on pump side	I1	o	o	o	o	o	o	o	o	o
Victaulic insulation buffer tank side	I2	o	o	o	o	o	o	o	o	o
RS 485 Serial interface	IH	o	o	o	o	o	o	o	o	o
LON Protocol serial interface	IH-LON	o	o	o	o	o	o	o	o	o
Seawood packing	IM	o	o	o	o	o	o	o	o	o
TCP/IP Protocol serial interface	IWG	o	o	o	o	o	o	o	o	o
Phase monitor	MF	•	•	•	•	•	•	•	•	•
Buffer tank module	MV	□	□	□	□	□	□	□	□	□
Pump group	P1	o	o	o	o	o	o	o	o	o
Higher available pressure pump group	P1H	o	o	o	o	o	o	o	o	o
Double pump group	P2	o	o	o	o	o	o	o	o	o
Higher available pressure double pump group	P2H	o	o	o	o	o	o	o	o	o
Rubber-type vibration dampers	PA	o	o	o	o	o	o	o	o	o
Safety water flow switch	PF	•	•	•	•	•	•	•	•	•
Spring-type vibration dampers	PM	o	o	o	o	o	o	o	o	o
Remote display	PQ	o	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	o
Anti-freeze heater on evaporator	RA	o	o	o	o	o	o	o	o	o
Shut-off valve on compressors discharge side	RD	o	o	o	o	o	o	o	o	o
Power factor correction system cosφ ≥0,9	RF	o	o	o	o	o	o	o	o	o
Shut-off valve on compressors suction side	RH	o	o	o	o	o	o	o	o	o
Compressor overload relays	RL	o	o	o	o	o	o	o	o	o
Condensing coil with pre-painted fins	RM	o	o	o	o	o	o	o	o	o
Partial heat recovery	RP	o	o	o	o	o	o	o	o	o
Copper/Copper coil	RR	o	o	o	o	o	o	o	o	o
Total heat recovery	RT	□	□	□	□	□	□	□	□	□
Personalized frame painting in alternative RAL colour	RV	o	o	o	o	o	o	o	o	o
Coil with double layer treatment	TDS	o	o	o	o	o	o	o	o	o
Electronic thermostatic valve	TE	o	o	o	o	o	o	o	o	o
Electronic thermostatic valve with solenoid valve	TE+VS	o	o	o	o	o	o	o	o	o
Voltmeter	V	o	o	o	o	o	o	o	o	o
Brine Version	VB	o	o	o	o	o	o	o	o	o
Solenoid valve	VS	o	o	o	o	o	o	o	o	o

• Standard, o Optional, -- Not available

RAE F Kc/Kr		3302	3602	4002	4802	5202	5402	5602	6002
Amperometer	A	o	o	o	o	o	o	o	o
Electrical power supply different than standard	AE	□	□	□	□	□	□	□	□
Operation in cooling mode down to -20°C	BF	•	•	•	•	•	•	•	•
Operation in cooling mode down to -10°C	BT	o	o	o	o	o	o	o	o
Soundproofed compressors cabinet with standard material	CF	•	•	•	•	•	•	•	•
Overall compressor and technical compartment cabinet	CFT	--	--	--	--	--	--	--	--
Soundproofed compressors cabinet with polyester 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	o	o	o	o	o	o	o	o
Condensing coil protection grid	GP	o	o	o	o	o	o	o	o
Anti-intrusion grid	GP2	--	--	--	--	--	--	--	--
Anti-intrusion grid with compressors cabinet	GP3	o	o	o	o	o	o	o	o
Glycol loop	GYL	□	□	□	□	□	□	□	□
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	•	•	•	•	•	•	•	•
Buffer tank module	MV	□	□	□	□	□	□	□	□
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
Safety water flow switch	PF	•	•	•	•	•	•	•	•
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 cosφ ≥ 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
Partial heat recovery	RP	o	o	o	o	o	o	o	o
Copper/Copper coil	RR	o	o	o	o	o	o	o	o
Total heat recovery	RT	□	□	□	□	□	□	□	□
Personalized frame painting in alternative RAL colour	RV	o	o	o	o	o	o	o	o
Coil with double layer treatment	TDS	o	o	o	o	o	o	o	o
Electronic thermostatic valve	TE	o	o	o	o	o	•	•	•
Electronic thermostatic valve with solenoid valve	TE+VS	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

• Standard, o Optional, -- Not available

RAE F HE Kc/Kr		801	1001	1301	1501	1701	2001	2302	2602	3002
Amperometer	A	o	o	o	o	o	o	o	o	o
Electrical power supply different than standard	AE	□	□	□	□	□	□	□	□	□
Soundproofed compressors cabinet with standard material	CF	●	●	●	●	●	●	●	●	●
Overall compressor and technical compartment cabinet	CFT	o	o	o	o	o	o	--	--	--
Soundproofed compressors cabinet with polyester material	CFU	o	o	o	o	o	o	o	o	o
Compressors inrush counter	CS	o	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	o
Anti-intrusion grid	GP2	o	o	o	o	o	o	--	--	--
Anti-intrusion grid with compressors cabinet	GP3	--	--	--	--	--	--	o	o	o
Glycol loop	GYL	□	□	□	□	□	□	□	□	□
Victaulic insulation on pump side	I1	o	o	o	o	o	o	o	o	o
Victaulic insulation buffer tank side	I2	o	o	o	o	o	o	o	o	o
RS 485 Serial interface	IH	o	o	o	o	o	o	o	o	o
LON Protocol serial interface	IH-LON	o	o	o	o	o	o	o	o	o
Seawood packing	IM	o	o	o	o	o	o	o	o	o
TCP/IP Protocol serial interface	IWG	o	o	o	o	o	o	o	o	o
Phase monitor	MF	●	●	●	●	●	●	●	●	●
Buffer tank module	MV	□	□	□	□	□	□	□	□	□
Pump group	P1	o	o	o	o	o	o	o	o	o
Higher available pressure pump group	P1H	o	o	o	o	o	o	o	o	o
Double pump group	P2	o	o	o	o	o	o	o	o	o
Higher available pressure double pump group	P2H	o	o	o	o	o	o	o	o	o
Rubber-type vibration dampers	PA	o	o	o	o	o	o	o	o	o
Safety water flow switch	PF	●	●	●	●	●	●	●	●	●
Spring-type vibration dampers	PM	o	o	o	o	o	o	o	o	o
Remote display	PQ	o	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	o
Anti-freeze heater on evaporator	RA	o	o	o	o	o	o	o	o	o
Shut-off valve on compressors discharge side	RD	o	o	o	o	o	o	o	o	o
Power factor correction system cosfi ≥0,9	RF	o	o	o	o	o	o	o	o	o
Shut-off valve on compressors suction side	RH	o	o	o	o	o	o	o	o	o
Compressor overload relays	RL	o	o	o	o	o	o	o	o	o
Condensing coil with pre-painted fins	RM	o	o	o	o	o	o	o	o	o
Partial heat recovery	RP	o	o	o	o	o	o	o	o	o
Copper/Copper coil	RR	o	o	o	o	o	o	o	o	o
Total heat recovery	RT	□	□	□	□	□	□	□	□	□
Personalized frame painting in alternative RAL colour	RV	o	o	o	o	o	o	o	o	o
Coil with double layer treatment	TDS	o	o	o	o	o	o	o	o	o
Electronic thermostatic valve	TE	●	●	●	●	●	●	●	●	●
Voltmeter	V	o	o	o	o	o	o	o	o	o
Brine Version	VB	o	o	o	o	o	o	o	o	o
Solenoid valve	VS	o	o	o	o	o	o	o	o	o

● Standard, o Optional, -- Not available

RAE F HE Kc/Kr		3302	3602	4002	4802	5202	5402	5602	6002
Amperometer	A	o	o	o	o	o	o	o	o
Electrical power supply different than standard	AE	□	□	□	□	□	□	□	□
Soundproofed compressors cabinet with standard material	CF	•	•	•	•	•	•	•	•
Overall compressor and technical compartment cabinet	CFT	--	--	--	--	--	--	--	--
Soundproofed compressors cabinet with polyester 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
Anti-intrusion grid	GP2	--	--	--	--	--	--	--	--
Anti-intrusion grid with compressors cabinet	GP3	o	o	o	o	o	o	o	o
Glycol loop	GYL	□	□	□	□	□	□	□	□
Victoriaulic insulation on pump side	I1	o	o	o	o	o	o	o	o
Victoriaulic 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	•	•	•	•	•	•	•	•
Buffer tank module	MV	□	□	□	□	□	□	□	□
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
Safety water flow switch	PF	•	•	•	•	•	•	•	•
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
Partial heat recovery	RP	o	o	o	o	o	o	o	o
Copper/Copper coil	RR	o	o	o	o	o	o	o	o
Total heat recovery	RT	□	□	□	□	□	□	□	□
Personalized frame painting in alternative RAL colour	RV	o	o	o	o	o	o	o	o
Coil with double layer treatment	TDS	o	o	o	o	o	o	o	o
Electronic thermostatic valve	TE	•	•	•	•	•	•	•	•
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

• Standard, o Optional, -- Not available

TECHNICAL DATA

RAE F Kc		801	1001	1301	1501	1701	2001	2302	2602	3002
Cooling mode (R410A) ⁽¹⁾										
Cooling capacity	kW	91,4	118,0	147,4	170,1	192,8	245,0	265,0	294,0	340,2
Compressor input power	kW	22,3	27,9	34,7	40,5	46,2	60,2	62,6	69,4	80,9
Total input power	kW	26,7	32,7	40,0	47,1	53,5	68,2	71,4	78,6	90,6
Nominal input current	A	47,0	57,7	70,5	83,0	94,2	120,1	125,8	138,5	159,6
EER Gross	W/W	4,10	4,23	4,25	4,20	4,17	4,07	4,23	4,24	4,21
EER Net	W/W	3,42	3,60	3,68	3,61	3,61	3,59	3,71	3,74	3,75
Flow rate ⁽⁴⁾	m ³ /h	17,0	21,9	27,4	31,6	35,9	45,6	49,3	54,7	63,3
Pressure drop	kPa	66,8	70,4	72,5	63,7	64,4	74,4	70,4	69,9	65,3
Circuits	n°	1	1	1	1	1	1	2	2	2
Compressors	n°	2	2	2	2	2	2	4	4	4
Free Cooling ⁽²⁾										
Cooling capacity	kW	82,7	85,2	87,7	124,0	127,8	131,6	165,4	170,4	175,5
Input power	kW	4,4	4,8	5,3	6,6	7,3	8,0	8,8	9,2	9,7
Input current	A	8,4	9,3	10,2	12,7	13,9	15,3	16,9	17,7	18,6
EER	W/W	18,8	17,6	16,5	18,8	17,6	16,5	18,8	18,4	18,1
Flow rate ⁽⁴⁾	m ³ /h	15,7	16,1	16,6	23,5	24,2	24,9	31,3	32,3	33,2
Pressure drop	kPa	154,7	136,1	124,6	133,2	127,4	120,3	126,4	122,3	116,0
Free Cooling ⁽³⁾										
Cooling capacity	kW	57,03	58,75	60,51	85,55	88,12	90,76	114,07	117,49	121,01
Input power	kW	4,4	4,8	5,3	6,6	7,3	8,0	8,8	9,2	9,7
Input current	A	8,4	9,3	10,2	12,7	13,9	15,3	16,9	17,7	18,6
EER	W/W	13,0	12,1	11,4	13,0	12,1	11,4	13,0	12,7	12,5
Flow rate ⁽⁴⁾	m ³ /h	10,8	11,1	11,5	16,2	16,7	17,2	21,6	22,3	22,9
Pressure drop	kPa	73,6	64,7	59,3	63,3	60,6	57,2	60,1	58,2	55,2
Axial fans										
Quantity	n°	2	2	2	3	3	3	4	4	4
Total air flow	m ³ /h	41100	44400	46700	61500	66400	69700	81500	88100	92400
Total power input	kW	4,4	4,8	5,3	6,6	7,3	8,0	8,8	9,2	9,7
Total input current	A	8,4	9,3	10,2	12,7	13,9	15,3	16,9	17,7	18,6
Weight										
Transport weight	kg	1340	1390	1506	1735	1810	1916	2190	2310	2440
Operating weight	kg	1358	1408	1524	1762	1837	1943	2226	2346	2476
Dimensions										
Length	mm	2770	2770	2770	3810	3810	3810	4850	4850	4850
Width	mm	1370	1370	1370	1370	1370	1370	1370	1370	1370
Height	mm	2420	2420	2420	2420	2420	2420	2420	2420	2420
Sound data										
Total LWA ⁽⁵⁾	dB(A)	96,4	96,7	97	98,1	98,7	99,1	100,3	100,5	100,9
Total SPL 1m ⁽⁶⁾	dB(A)	77,8	78,1	78,4	78,9	79,5	79,9	80,6	80,8	81,2
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	400/3/50
General electrical data										
Maximum input power	[A]	77	86	109	126	145	185	192	212	246
Maximum input current	[A]	218	282	347	370	394	509	443	485	545

(1) Water in/out: 15/10°C - Ambient air temperature 30°C

(2) Water in/out: 15/10°C - Ambient air temperature 0°C

(3) Water in/out: 15/10°C - Ambient air temperature 5°C

(4) Hydraulic data referred to fluid Glycol 30%

(5) Sound power level in accordance with ISO 3744.

(6) Sound pressure level at 1m from the unit in free field conditions, in accordance with ISO 3744

RAE F Kc		3302	3602	4002	4802	5202	5402	5602	6002
Cooling mode (R410A) ⁽¹⁾									
Cooling capacity	kW	385,0	437,8	490,0	530,3	578,4	630,6	682,8	735,0
Compressor input power	kW	92,4	105,6	118,8	169,2	138,6	151,8	165,0	178,2
Total input power	kW	105,6	120,1	136,4	188,5	158,8	174,0	191,4	207,2
Nominal input current	A	186,0	211,6	240,3	332,2	279,8	306,6	337,2	365,1
EER Gross	W/W	4,17	4,15	4,12	3,13	4,17	4,15	4,14	4,12
EER Net	W/W	3,65	3,64	3,59	2,81	3,64	3,62	3,57	3,55
Flow rate ⁽⁴⁾	m ³ /h	71,6	81,4	91,1	98,6	107,6	117,3	127,0	136,7
Pressure drop	kPa	64,8	73,4	76,6	64,8	57,1	66,8	64,4	66,3
Circuits	n°	2	2	2	2	2	2	2	2
Compressors	n°	4	4	4	6	6	6	6	6
Free Cooling ⁽²⁾									
Cooling capacity	kW	276,0	284,3	368,0	379,0	460,0	473,8	552,0	568,6
Input power	kW	13,2	14,5	17,6	19,4	20,2	22,2	26,4	29,0
Input current	A	25,3	27,8	33,8	37,1	38,7	42,6	50,6	55,7
EER	W/W	20,9	19,6	20,9	19,6	22,8	21,3	20,9	19,6
Flow rate ⁽⁴⁾	m ³ /h	52,3	53,8	69,7	71,8	87,1	89,7	104,6	107,7
Pressure drop	kPa	132,5	130,1	142,8	132,4	135,4	137,1	141,7	139,1
Free Cooling ⁽³⁾									
Cooling capacity	kW	190,34	196,06	253,79	261,41	317,24	326,76	380,69	392,11
Input power	kW	13,2	14,5	17,6	19,4	20,2	22,2	26,4	29,0
Input current	A	25,3	27,8	33,8	37,1	38,7	42,6	50,6	55,7
EER	W/W	14,4	13,5	14,4	13,5	15,7	14,7	14,4	13,5
Flow rate ⁽⁴⁾	m ³ /h	36,1	37,1	48,1	49,5	60,1	61,9	72,1	74,3
Pressure drop	kPa	63,0	61,9	67,9	63,0	64,4	65,2	67,4	66,2
Axial fans									
Quantity	n°	6	6	8	8	10	10	12	12
Total air flow	m ³ /h	107800	116500	143200	153600	178300	188900	211900	228800
Total power input	kW	13,2	14,5	17,6	19,4	20,2	22,2	26,4	29,0
Total input current	A	25,3	27,8	33,8	37,1	38,7	42,6	50,6	55,7
Weight									
Transport weight	kg	3425	3684	4065	4318	4425	4825	5130	5536
Operating weight	kg	3481	3741	4140	4394	4518	4919	5242	5649
Dimensions									
Length	mm	3775	3775	4750	4750	5720	5720	6700	6700
Width	mm	2300	2300	2300	2300	2300	2300	2300	2300
Height	mm	2560	2560	2560	2560	2560	2560	2560	2560
Sound data									
Total LWA ⁽⁵⁾	dB(A)	99,4	100,2	101,6	102,2	103,6	104,1	105,2	105,7
Total SPL 1m ⁽⁶⁾	dB(A)	79,6	80,4	81,3	81,9	82,9	83,4	84,1	84,6
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	[A]	285	323	364	429	468	487	512	552
Maximum input current	[A]	569	648	689	674	791	813	838	877

(1) Water in/out: 15/10°C - Ambient air temperature 30°C

(2) Water in/out: 15/10°C - Ambient air temperature 0°C

(3) Water in/out: 15/10°C - Ambient air temperature 5°C

(4) Hydraulic data referred to fluid Glycol 30%

(5) Sound power level in accordance with ISO 3744.

(6) Sound pressure level at 1m from the unit in free field conditions, in accordance with ISO 3744

RAE F HE Kc		801	1001	1301	1501	1701	2001	2302	2602	3002
Cooling mode (R410A) ⁽¹⁾										
Cooling capacity	kW	107,9	137,8	174,5	201,8	230,7	283,3	311,0	358,9	415,0
Compressor input power	kW	21,6	27,1	35,3	40,9	46,6	58,0	61,9	71,5	83,1
Total input power	kW	25,4	31,3	41,0	47,2	54,2	66,4	73,3	83,5	95,6
Nominal input current	A	44,7	55,1	72,3	83,1	95,5	117,0	129,2	147,1	168,5
EER Gross	W/W	5,00	5,08	4,94	4,93	4,95	4,88	5,02	5,02	5,00
EER Net	W/W	4,25	4,40	4,25	4,28	4,26	4,27	4,24	4,30	4,34
Flow rate ⁽⁴⁾	m ³ /h	20,1	25,6	32,5	37,5	42,9	52,7	57,8	66,8	77,2
Pressure drop	kPa	71,8	75,3	79,7	70,4	72,4	77,5	74,6	81,7	76,2
Circuits	n°	1	1	1	1	1	1	2	2	2
Compressors	n°	2	2	2	2	2	2	4	4	4
Free Cooling ⁽²⁾										
Cooling capacity	kW	85,3	85,6	126,0	133,2	158,7	166,5	278,8	288,6	291,3
Input power	kW	3,8	4,2	5,7	6,3	7,6	8,4	11,4	12,0	12,6
Input current	A	7,3	8,0	10,9	12,0	14,6	16,0	21,9	23,0	24,1
EER	W/W	22,5	20,5	22,1	21,2	20,9	19,9	24,5	24,1	23,2
Flow rate ⁽⁴⁾	m ³ /h	16,2	16,2	23,9	25,2	30,1	31,5	52,8	54,7	55,2
Pressure drop	kPa	144,6	128,1	141,1	129,8	133,5	125,8	160,2	152,8	137,0
Free Cooling ⁽³⁾										
Cooling capacity	kW	58,84	59,01	86,90	91,86	109,45	114,83	192,28	199,03	200,90
Input power	kW	3,8	4,2	5,7	6,3	7,6	8,4	11,4	12,0	12,6
Input current	A	7,3	8,0	10,9	12,0	14,6	16,0	21,9	23,0	24,1
EER	W/W	15,5	14,1	15,2	14,7	14,4	13,7	16,9	16,6	16,0
Flow rate ⁽⁴⁾	m ³ /h	11,1	11,2	16,5	17,4	20,7	21,8	36,4	37,7	38,1
Pressure drop	kPa	68,8	60,9	67,1	61,7	63,5	59,8	76,2	72,7	65,1
Axial fans										
Quantity	n°	2	2	3	3	4	4	6	6	6
Total air flow	m ³ /h	42400	44600	63900	68700	80400	87200	110400	118200	121200
Total power input	kW	3,8	4,2	5,7	6,3	7,6	8,4	11,4	12,0	12,6
Total input current	A	7,3	8,0	10,9	12,0	14,6	16,0	21,9	23,0	24,1
Weight										
Transport weight	kg	1340	1390	1690	1787	2020	2145	3180	3225	3296
Operating weight	kg	1358	1408	1717	1814	2055	2181	3236	3282	3353
Dimensions										
Length	mm	2770	2770	3810	3810	4850	4850	3775	3775	3775
Width	mm	1370	1370	1370	1370	1370	1370	2300	2300	2300
Height	mm	2420	2420	2420	2420	2420	2420	2560	2560	2560
Sound data										
Total LWA ⁽⁵⁾	dB(A)	94,6	94,9	95,2	96,3	96,9	97,3	98,5	98,7	99,1
Total SPL 1m ⁽⁶⁾	dB(A)	76,0	76,3	76,6	77,1	77,7	78,1	78,8	79,0	79,4
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	400/3/50
General electrical data										
Maximum input power	[A]	76	85	110	125	146	186	197	217	251
Maximum input current	[A]	217	281	348	369	395	510	448	490	550

(1) Water in/out: 15/10°C - Ambient air temperature 30°C

(2) Water in/out: 15/10°C - Ambient air temperature 0°C

(3) Water in/out: 15/10°C - Ambient air temperature 5°C

(4) Hydraulic data referred to fluid Glycol 30%

(5) Sound power level in accordance with ISO 3744.

(6) Sound pressure level at 1m from the unit in free field conditions, in accordance with ISO 3744

RAE F HE Kc		3302	3602	4002	4802	5202	5402	5602	6002
Cooling mode (R410A) ⁽¹⁾									
Cooling capacity	kW	458,8	509,2	568,2	678,0	733,7	770,5	793,6	853,5
Compressor input power	kW	92,7	103,4	114,2	139,5	148,6	156,1	160,4	171,2
Total input power	kW	107,9	120,1	133,2	160,4	171,4	181,1	187,0	200,5
Nominal input current	A	190,0	211,7	234,7	282,6	302,0	319,1	329,5	353,2
EER Gross	W/W	4,95	4,92	4,97	4,86	4,94	4,94	4,95	4,99
EER Net	W/W	4,25	4,24	4,27	4,23	4,28	4,25	4,24	4,26
Flow rate ⁽⁴⁾	m ³ /h	85,3	94,7	105,7	126,1	136,4	143,3	147,6	158,7
Pressure drop	kPa	72,2	77,3	80,8	82,4	71,3	76,0	68,0	69,8
Circuits	n°	2	2	2	2	2	2	2	2
Compressors	n°	4	4	4	6	6	6	6	6
Free Cooling ⁽²⁾									
Cooling capacity	kW	374,5	382,4	464,8	477,2	560,4	576,2	665,4	673,2
Input power	kW	15,2	16,7	19,0	20,9	22,8	25,1	26,6	29,3
Input current	A	29,2	32,1	36,4	40,1	43,7	48,1	51,0	56,1
EER	W/W	24,6	22,9	24,5	22,8	24,6	23,0	25,0	23,0
Flow rate ⁽⁴⁾	m ³ /h	70,9	72,4	88,0	90,4	106,1	109,1	126,0	127,5
Pressure drop	kPa	147,9	143,2	154,1	140,4	141,1	142,1	147,6	143,1
Free Cooling ⁽³⁾									
Cooling capacity	kW	258,28	263,72	320,55	329,10	386,45	397,38	458,90	464,28
Input power	kW	15,2	16,7	19,0	20,9	22,8	25,1	26,6	29,3
Input current	A	29,2	32,1	36,4	40,1	43,7	48,1	51,0	56,1
EER	W/W	17,0	15,8	16,9	15,7	16,9	15,8	17,3	15,9
Flow rate ⁽⁴⁾	m ³ /h	48,9	50,0	60,7	62,3	73,2	75,3	86,9	87,9
Pressure drop	kPa	70,3	68,1	73,3	66,8	67,1	67,6	70,2	68,0
Axial fans									
Quantity	n°	8	8	10	10	12	12	14	14
Total air flow	m ³ /h	148800	158400	184000	192000	217200	232800	263200	273000
Total power input	kW	15,2	16,7	19	20,9	22,8	25,1	26,6	29,3
Total input current	A	29,2	32,1	36,4	40,1	43,7	48,1	51,0	56,1
Weight									
Transport weight	kg	3925	4098	4296	4415	4990	5124	5620	5760
Operating weight	kg	4000	4174	4390	4510	5103	5238	5752	5893
Dimensions									
Length	mm	4750	4750	5720	5720	6700	6700	7670	7670
Width	mm	2300	2300	2300	2300	2300	2300	2300	2300
Height	mm	2560	2560	2560	2560	2560	2560	2560	2560
Sound data									
Total LWA ⁽⁵⁾	dB(A)	97,6	98,4	99,8	100,4	101,8	102,3	103,4	103,9
Total SPL 1m ⁽⁶⁾	dB(A)	77,8	78,6	79,5	80,1	81,1	81,6	82,3	82,8
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	[A]	289	327	366	432	473	492	512	552
Maximum input current	[A]	573	652	691	677	796	818	838	877

(1) Water in/out: 15/10°C - Ambient air temperature 30°C

(2) Water in/out: 15/10°C - Ambient air temperature 0°C

(3) Water in/out: 15/10°C - Ambient air temperature 5°C

(4) Hydraulic data referred to fluid Glycol 30%

(5) Sound power level in accordance with ISO 3744.

(6) Sound pressure level at 1m from the unit in free field conditions, in accordance with ISO 3744

RAE F Kr		801	1001	1301	1501	1701	2001	2302	2602	3002
Cooling mode (R454B) ⁽¹⁾										
Cooling capacity	kW	99,5	128,0	162,2	187,6	214,4	262,3	286,2	333,6	385,7
Compressor input power	kW	21,1	26,3	34,3	39,7	45,3	56,4	61,1	69,5	80,7
Total input power	kW	25,5	31,2	39,6	46,3	52,5	64,4	69,9	78,7	90,4
Nominal input current	A	44,9	54,9	69,8	81,6	92,5	113,4	123,2	138,6	159,2
EER Gross	W/W	4,72	4,86	4,73	4,72	4,74	4,65	4,68	4,80	4,78
EER Net	W/W	3,91	4,11	4,09	4,05	4,08	4,07	4,09	4,24	4,27
Flow rate ⁽⁴⁾	m ³ /h	18,5	23,8	30,2	34,9	39,9	48,8	53,2	62,0	71,7
Pressure drop	kPa	83,2	87,2	92,3	81,5	83,8	89,7	86,3	94,6	88,3
Circuits	n°	1	1	1	1	1	1	2	2	2
Compressors	n°	2	2	2	2	2	2	4	4	4
Free Cooling ⁽²⁾										
Cooling capacity	kW	82,7	85,2	87,7	124,0	127,8	131,6	165,4	170,4	175,5
Input power	kW	4,4	4,8	5,3	6,6	7,3	8,0	8,8	9,2	9,7
Input current	A	8,4	9,3	10,2	12,7	13,9	15,3	16,9	17,7	18,6
EER	W/W	18,8	17,6	16,5	18,8	17,6	16,5	18,8	18,4	18,1
Flow rate ⁽⁴⁾	m ³ /h	15,7	16,1	16,6	23,5	24,2	24,9	31,3	32,3	33,2
Pressure drop	kPa	157,6	138,0	126,0	135,0	128,9	121,4	127,9	123,6	116,9
Free Cooling ⁽³⁾										
Cooling capacity	kW	57,03	58,75	60,51	85,55	88,12	90,76	114,07	117,49	121,01
Input power	kW	4,4	4,8	5,3	6,6	7,3	8,0	8,8	9,2	9,7
Input current	A	8,4	9,3	10,2	12,7	13,9	15,3	16,9	17,7	18,6
EER	W/W	13,0	12,1	11,4	13,0	12,1	11,4	13,0	12,7	12,5
Flow rate ⁽⁴⁾	m ³ /h	10,8	11,1	11,5	16,2	16,7	17,2	21,6	22,3	22,9
Pressure drop	kPa	75,0	65,7	59,9	64,2	61,3	57,8	60,8	58,8	55,6
Axial fans										
Quantity	n°	2	2	2	3	3	3	4	4	4
Total air flow	m ³ /h	41100	44400	46700	61500	66400	69700	81500	88100	92400
Total power input	kW	4,4	4,8	5,3	6,6	7,3	8,0	8,8	9,2	9,7
Total input current	A	8,4	9,3	10,2	12,7	13,9	15,3	16,9	17,7	18,6
Weight										
Transport weight	kg	1340	1390	1506	1735	1810	1916	2190	2310	2440
Operating weight	kg	1358	1408	1524	1762	1837	1943	2226	2346	2476
Dimensions										
Length	mm	2770	2770	2770	3810	3810	3810	4850	4850	4850
Width	mm	1370	1370	1370	1370	1370	1370	1370	1370	1370
Height	mm	2420	2420	2420	2420	2420	2420	2420	2420	2420
Sound data										
Total LWA ⁽⁵⁾	dB(A)	96,4	96,7	97	98,1	98,7	99,1	100,3	100,5	100,9
Total SPL 1m ⁽⁶⁾	dB(A)	77,8	78,1	78,4	78,9	79,5	79,9	80,6	80,8	81,2
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	400/3/50
General electrical data										
Maximum input power	[A]	77	86	109	126	145	185	192	212	246
Maximum input current	[A]	218	282	347	370	394	509	443	485	545

(1) Water in/out: 15/10°C - Ambient air temperature 30°C

(2) Water in/out: 15/10°C - Ambient air temperature 0°C

(3) Water in/out: 15/10°C - Ambient air temperature 5°C

(4) Hydraulic data referred to fluid Glycol 30%

(5) Sound power level in accordance with ISO 3744.

(6) Sound pressure level at 1m from the unit in free field conditions, in accordance with ISO 3744

RAE F Kr		3302	3602	4002	4802	5202	5402	5602	6002
Cooling mode (R454B) ⁽¹⁾									
Cooling capacity	kW	426,4	471,5	528,0	627,3	678,3	705,8	735,9	791,5
Compressor input power	kW	90,0	102,2	114,1	135,5	147,4	153,3	159,3	171,2
Total input power	kW	103,2	116,8	131,7	154,9	167,6	175,6	185,7	200,2
Nominal input current	A	181,8	205,7	232,1	272,9	295,3	309,3	327,2	352,7
EER Gross	W/W	4,74	4,61	4,63	4,63	4,60	4,60	4,62	4,62
EER Net	W/W	4,13	4,04	4,01	4,05	4,05	4,02	3,96	3,95
Flow rate ⁽⁴⁾	m ³ /h	79,3	87,7	98,2	116,7	126,1	131,3	136,9	147,2
Pressure drop	kPa	83,6	89,5	93,5	95,5	82,5	88,0	78,7	80,8
Circuits	n°	2	2	2	2	2	2	2	2
Compressors	n°	4	4	4	6	6	6	6	6
Free Cooling ⁽²⁾									
Cooling capacity	kW	276,0	284,3	368,0	379,0	460,0	473,8	552,0	568,6
Input power	kW	13,2	14,5	17,6	19,4	20,2	22,2	26,4	29,0
Input current	A	25,3	27,8	33,8	37,1	38,7	42,6	50,6	55,7
EER	W/W	20,9	19,6	20,9	19,6	22,8	21,3	20,9	19,6
Flow rate ⁽⁴⁾	m ³ /h	52,3	53,8	69,7	71,8	87,1	89,7	104,6	107,7
Pressure drop	kPa	134,3	131,8	145,1	134,1	137,4	139,2	143,9	141,3
Free Cooling ⁽³⁾									
Cooling capacity	kW	190,34	196,06	253,79	261,41	317,24	326,76	380,69	392,11
Input power	kW	13,2	14,5	17,6	19,4	20,2	22,2	26,4	29,0
Input current	A	25,3	27,8	33,8	37,1	38,7	42,6	50,6	55,7
EER	W/W	14,4	13,5	14,4	13,5	15,7	14,7	14,4	13,5
Flow rate ⁽⁴⁾	m ³ /h	36,1	37,1	48,1	49,5	60,1	61,9	72,1	74,3
Pressure drop	kPa	63,9	62,7	69,0	63,8	65,3	66,2	68,5	67,2
Axial fans									
Quantity	n°	6	6	8	8	10	10	12	12
Total air flow	m ³ /h	107800	116500	143200	153600	178300	188900	211900	228800
Total power input	kW	13,2	14,5	17,6	19,4	20,2	22,2	26,4	29,0
Total input current	A	25,3	27,8	33,8	37,1	38,7	42,6	50,6	55,7
Weight									
Transport weight	kg	3425	3684	4065	4318	4425	4825	5130	5536
Operating weight	kg	3481	3741	4140	4394	4518	4919	5242	5649
Dimensions									
Length	mm	3775	3775	4750	4750	5720	5720	6700	6700
Width	mm	2300	2300	2300	2300	2300	2300	2300	2300
Height	mm	2560	2560	2560	2560	2560	2560	2560	2560
Sound data									
Total LWA ⁽⁵⁾	dB(A)	99,4	100,2	101,6	102,2	103,6	104,1	105,2	105,7
Total SPL 1m ⁽⁶⁾	dB(A)	79,6	80,4	81,3	81,9	82,9	83,4	84,1	84,6
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	[A]	285	323	364	429	468	487	512	552
Maximum input current	[A]	569	648	689	674	791	813	838	877

(1) Water in/out: 15/10°C - Ambient air temperature 30°C

(2) Water in/out: 15/10°C - Ambient air temperature 0°C

(3) Water in/out: 15/10°C - Ambient air temperature 5°C

(4) Hydraulic data referred to fluid Glycol 30%

(5) Sound power level in accordance with ISO 3744.

(6) Sound pressure level at 1m from the unit in free field conditions, in accordance with ISO 3744

RAE F HE Kr		801	1001	1301	1501	1701	2001	2302	2602	3002
Cooling mode (R454B) ⁽¹⁾										
Cooling capacity	kW	93,1	118,9	150,6	174,1	199,1	244,5	268,3	309,7	358,1
Compressor input power	kW	19,3	24,3	31,7	36,7	41,8	52,0	55,5	64,1	74,4
Total input power	kW	23,1	28,5	37,4	42,9	49,4	60,4	66,9	76,1	87,0
Nominal input current	A	40,8	50,2	65,8	75,6	87,0	106,4	117,9	134,0	153,3
EER Gross	W/W	4,81	4,89	4,76	4,75	4,77	4,70	4,83	4,83	4,81
EER Net	W/W	4,02	4,18	4,03	4,06	4,03	4,05	4,01	4,07	4,12
Flow rate ⁽⁴⁾	m ³ /h	17,3	22,1	28,0	32,4	37,0	45,5	49,9	57,6	66,6
Pressure drop	kPa	52,8	55,4	58,6	51,8	53,2	57,0	54,8	60,1	56,1
Circuits	n°	1	1	1	1	1	1	2	2	2
Compressors	n°	2	2	2	2	2	2	4	4	4
Free Cooling ⁽²⁾										
Cooling capacity	kW	85,3	85,6	126,0	133,2	158,7	166,5	278,8	288,6	291,3
Input power	kW	3,8	4,2	5,7	6,3	7,6	8,4	11,4	12,0	12,6
Input current	A	7,3	8,0	10,9	12,0	14,6	16,0	21,9	23,0	24,1
EER	W/W	22,5	20,5	22,1	21,2	20,9	19,9	24,5	24,1	23,2
Flow rate ⁽⁴⁾	m ³ /h	16,2	16,2	23,9	25,2	30,1	31,5	52,8	54,7	55,2
Pressure drop	kPa	144,0	127,8	140,6	129,4	133,1	125,4	159,4	152,1	136,5
Free Cooling ⁽³⁾										
Cooling capacity	kW	58,84	59,01	86,90	91,86	109,45	114,83	192,28	199,03	200,90
Input power	kW	3,8	4,2	5,7	6,3	7,6	8,4	11,4	12,0	12,6
Input current	A	7,3	8,0	10,9	12,0	14,6	16,0	21,9	23,0	24,1
EER	W/W	15,5	14,1	15,2	14,7	14,4	13,7	16,9	16,6	16,0
Flow rate ⁽⁴⁾	m ³ /h	11,1	11,2	16,5	17,4	20,7	21,8	36,4	37,7	38,1
Pressure drop	kPa	68,5	60,8	66,9	61,6	63,3	59,7	75,8	72,4	64,9
Axial fans										
Quantity	n°	2	2	3	3	4	4	6	6	6
Total air flow	m ³ /h	42400	44600	63900	68700	80400	87200	110400	118200	121200
Total power input	kW	3,8	4,2	5,7	6,3	7,6	8,4	11,4	12,0	12,6
Total input current	A	7,3	8,0	10,9	12,0	14,6	16,0	21,9	23,0	24,1
Weight										
Transport weight	kg	1340	1390	1690	1787	2020	2145	3180	3225	3296
Operating weight	kg	1358	1408	1717	1814	2055	2181	3236	3282	3353
Dimensions										
Length	mm	2770	2770	3810	3810	4850	4850	3775	3775	3775
Width	mm	1370	1370	1370	1370	1370	1370	2300	2300	2300
Height	mm	2420	2420	2420	2420	2420	2420	2560	2560	2560
Sound data										
Total LWA ⁽⁵⁾	dB(A)	94,6	94,9	95,2	96,3	96,9	97,3	98,5	98,7	99,1
Total SPL 1m ⁽⁶⁾	dB(A)	76,0	76,3	76,6	77,1	77,7	78,1	78,8	79,0	79,4
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	400/3/50
General electrical data										
Maximum input power	[A]	76	85	110	125	146	186	197	217	251
Maximum input current	[A]	217	281	348	369	395	510	448	490	550

(1) Water in/out: 15/10°C - Ambient air temperature 30°C

(2) Water in/out: 15/10°C - Ambient air temperature 0°C

(3) Water in/out: 15/10°C - Ambient air temperature 5°C

(4) Hydraulic data referred to fluid Glycol 30%

(5) Sound power level in accordance with ISO 3744.

(6) Sound pressure level at 1m from the unit in free field conditions, in accordance with ISO 3744

RAE F HE Kr		3302	3602	4002	4802	5202	5402	5602	6002
Cooling mode (R454B) ⁽¹⁾									
Cooling capacity	kW	395,9	439,4	490,2	585,0	633,0	664,8	684,7	736,5
Compressor input power	kW	83,1	92,7	102,4	125,0	133,2	139,9	143,8	153,5
Total input power	kW	98,3	109,4	121,4	145,9	156,0	164,9	170,4	182,7
Nominal input current	A	173,1	192,8	213,8	257,1	274,8	290,6	300,2	321,9
EER Gross	W/W	4,77	4,74	4,79	4,68	4,75	4,75	4,76	4,80
EER Net	W/W	4,03	4,02	4,04	4,01	4,06	4,03	4,02	4,03
Flow rate ⁽⁴⁾	m ³ /h	73,6	81,7	91,2	108,8	117,7	123,6	127,3	137,0
Pressure drop	kPa	53,1	56,9	59,4	60,6	52,4	55,9	50,0	51,4
Circuits	n°	2	2	2	2	2	2	2	2
Compressors	n°	4	4	4	6	6	6	6	6
Free Cooling ⁽²⁾									
Cooling capacity	kW	374,5	382,4	464,8	477,2	560,4	576,2	665,4	673,2
Input power	kW	15,2	16,7	19,0	20,9	22,8	25,1	26,6	29,3
Input current	A	29,2	32,1	36,4	40,1	43,7	48,1	51,0	56,1
EER	W/W	24,6	22,9	24,5	22,8	24,6	23,0	25,0	23,0
Flow rate ⁽⁴⁾	m ³ /h	70,9	72,4	88,0	90,4	106,1	109,1	126,0	127,5
Pressure drop	kPa	147,3	142,7	153,4	139,8	140,6	141,6	147,0	142,5
Free Cooling ⁽³⁾									
Cooling capacity	kW	258,28	263,72	320,55	329,10	386,45	397,38	458,90	464,28
Input power	kW	15,2	16,7	19,0	20,9	22,8	25,1	26,6	29,3
Input current	A	29,2	32,1	36,4	40,1	43,7	48,1	51,0	56,1
EER	W/W	17,0	15,8	16,9	15,7	16,9	15,8	17,3	15,9
Flow rate ⁽⁴⁾	m ³ /h	48,9	50,0	60,7	62,3	73,2	75,3	86,9	87,9
Pressure drop	kPa	70,1	67,9	73,0	66,5	66,9	67,3	69,9	67,8
Axial fans									
Quantity	n°	8	8	10	10	12	12	14	14
Total air flow	m ³ /h	148800	158400	184000	192000	217200	232800	263200	273000
Total power input	kW	15,2	16,7	19	20,9	22,8	25,1	26,6	29,3
Total input current	A	29,2	32,1	36,4	40,1	43,7	48,1	51,0	56,1
Weight									
Transport weight	kg	3925	4098	4296	4415	4990	5124	5620	5760
Operating weight	kg	4000	4174	4390	4510	5103	5238	5752	5893
Dimensions									
Length	mm	4750	4750	5720	5720	6700	6700	7670	7670
Width	mm	2300	2300	2300	2300	2300	2300	2300	2300
Height	mm	2560	2560	2560	2560	2560	2560	2560	2560
Sound data									
Total LWA ⁽⁵⁾	dB(A)	97,6	98,4	99,8	100,4	101,8	102,3	103,4	103,9
Total SPL 1m ⁽⁶⁾	dB(A)	77,8	78,6	79,5	80,1	81,1	81,6	82,3	82,8
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	[A]	289	327	366	432	473	492	512	552
Maximum input current	[A]	573	652	691	677	796	818	838	877

(1) Water in/out: 15/10°C - Ambient air temperature 30°C

(2) Water in/out: 15/10°C - Ambient air temperature 0°C

(3) Water in/out: 15/10°C - Ambient air temperature 5°C

(4) Hydraulic data referred to fluid Glycol 30%

(5) Sound power level in accordance with ISO 3744.

(6) Sound pressure level at 1m from the unit in free field conditions, in accordance with ISO 3744

RAH F Ke/Kh

AIR COOLED CHILLERS FOR OUTDOOR INSTALLATION WITH INTEGRATED FREE COOLING

EQUIPPED WITH SCREW COMPRESSORS AND AXIAL FANS

Cooling capacity from 338 kW to 1586 kW



VERSIONS

RAH F - standard version

RAH F HE - high efficiency version

RAH F S e U - silenced and ultra-silenced version **on request**

Packaged air cooled chillers of RAH F eries 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.

Semi-hermetic screw 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 recover 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.

The combination of high efficiency finned exchangers with the thermophysical purity of refrigerant used, almost glide-free during the changes of state, allows having nominal EER near 3 with ESEER above 4, 5 in mechanical operation. EER can exceed 25 in free-cooling mode.

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 refrigerant and a non-freezing oil charge.

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

COMPONENTS

STRUCTURE

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.

COMPRESSORS semi-hermetic screw type with INVERTER

Compressors of semi-hermetic screw type, controlled by integrated frequency inverter, allowing to adapt the power to the load variations ensuring at the same time the maximum efficiency at different operating conditions. The compressors are provided with motor thermal protection, rotation direction control, crank-case heater, oil filter, oil service valve, POE oil charge and vibration dumpers kit. Compressors lubrication is of forced type without pump, to avoid excessive oil migrations to the cooling circuit, compressors are equipped with an oil separator on discharge side. Both compressors are equipped with an oil flow safety switch, an optoelectronic device operating in case the oil flow inside the compressor falls below the minimum threshold.

SHELL & TUBE EVAPORATOR

Tube bundle type with dry expansion and pure electrolytic copper tubes, shell and tube plate made up of carbon steel. The exchanger is provided with anti-condensation insulation made up of a nitrile rubber and polyethylene foam with a thickness of 8mm externally protected by an embossed scratchproof polyethylene film. The hydraulic connection are of elastic Victaulic type. Inside the shell, some plastic and corrosion-proof baffles, allowing a correct water distribution and making the tube bundle particularly strong and vibration free, even with high water flows. The evaporator is also provided with a safety water flow switch that does not allow the unit to operate in case of water flow rate lack to the evaporator.

EXTERNAL CONDENSING COIL

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. As soon as the temperature of the air entering the free-cooling coil is lower than the temperature of the return flow, the free-cooling system is activated, allowing the ventilated system to obtain the maximum refrigerant recovery at those conditions. The benefit obtained by the free-cooling system is much bigger as much lower is the external temperature respect the 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 to prevent the freezing of the fluid to be chilled and to avoid relevant breakages of exchangers. On applications where is not possible to use directly glycol mixture, is possible to added at unit a "GLYCOL LOOP" circuit (GYL option) with which an hydraulic separation is obtained between the free-cooling coils and the whole remaining part of the hydronic 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.

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 galvanised 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. These fans, thanks to a more accurate regulation of the airflow, allow the unit to operate with an external air temperature up to - 20 °C.

INDEPENDENT COOLING CIRCUITS

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 electronic thermostatic expansion valve, 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.

STANDARD HYDRONIC CIRCUIT

Provided with three-way water valve ON/OFF to activate the free-cooling mode, automatic air vent valves on plate coils and exchangers, glycol solution charge and/or discharge valves, anti-freeze probe.

ACCESSORIES

RAH F Ke

RAH F Ke		302	352	402	482	542	602	722	822	952	1102	1202	1302
Amperometer	A	o	o	o	o	o	o	o	o	o	o	o	o
Electrical power supply different than standard	AE	□	□	□	□	□	□	□	□	□	□	□	□
Operation in cooling mode down to -20°C	BF	o	o	o	o	o	o	o	o	o	o	o	o
Operation in cooling mode down to -10°C	BT	•	•	•	•	•	•	•	•	•	•	•	•
Soundproofed compressors cabinet with standard material	CF	•	•	•	•	•	•	•	•	•	•	•	•
Soundproofed compressors cabinet with higher thickness material	CFU	o	o	o	o	o	o	o	o	o	o	o	o
Compressors inrush counter	CS	o	o	o	o	o	o	o	o	o	o	o	o
Star/Delta	DS	•	•	•	•	•	•	•	•	•	•	•	•
Axial fans with electronic commutated motor	EC	o	o	o	o	o	o	o	o	o	o	o	o
Condensing coil protection grid	GP	o	o	o	o	o	o	o	o	o	o	o	o
Anti-intrusion grid	GP3	o	o	o	o	o	o	o	o	o	o	o	o
Glycol loop	GYL	□	□	□	□	□	□	□	□	□	□	□	□
Victaulic insulation on pump side	I1	o	o	o	o	o	o	o	o	o	o	o	o
Victaulic insulation buffer tank side	I2	o	o	o	o	o	o	o	o	o	o	o	o
Watch card	IG	o	o	o	o	o	o	o	o	o	o	o	o
RS 485 Serial interface	IH	o	o	o	o	o	o	o	o	o	o	o	o
LON Protocol serial interface	IH-LON	o	o	o	o	o	o	o	o	o	o	o	o
Seawood packing	IM	o	o	o	o	o	o	o	o	o	o	o	o
TCP/IP Protocol serial interface	IWG	o	o	o	o	o	o	o	o	o	o	o	o
Liquid injection	LI	o	o	o	o	o	o	o	o	o	o	o	o
Modulating capacity control	M12	o	o	o	o	o	o	o	o	o	o	o	o
Phase monitor	MF	•	•	•	•	•	•	•	•	•	•	•	•
Buffer tank module	MV	□	□	□	□	□	□	□	□	□	□	□	□
Oil flow safety switch	OS	o	o	o	o	o	o	o	o	o	o	o	o
Pump group	P1	o	o	o	o	o	o	o	o	o	o	o	o
Higher available pressure pump group	P1H	o	o	o	o	o	o	o	o	o	o	o	o
Single pump variable flow	P1VS	o	o	o	o	o	o	o	o	o	o	o	o
Double pump group	P2	o	o	o	o	o	o	o	o	o	o	o	o
Higher available pressure double pump group	P2H	o	o	o	o	o	o	o	o	o	o	o	o
Double pump variable flow	P2VS	o	o	o	o	o	o	o	o	o	o	o	o
Rubber-type vibration dampers	PA	o	o	o	o	o	o	o	o	o	o	o	o
Safety water flow switch	PF	•	•	•	•	•	•	•	•	•	•	•	•
Spring-type vibration dampers	PM	o	o	o	o	o	o	o	o	o	o	o	o
Remote display	PQ	o	o	o	o	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	o	o	o	o
Anti-freeze heater on evaporator	RA	o	o	o	o	o	o	o	o	o	o	o	o
Shut-off valve on compressors discharge side	RD	•	•	•	•	•	•	•	•	•	•	•	•
Power factor correction system cosφ ≥ 0,9	RF	o	o	o	o	o	o	o	o	o	o	o	o
Shut-off valve on compressors suction side	RH	o	o	o	o	o	o	o	o	o	o	o	o
Compressor overload relays	RL	o	o	o	o	o	o	o	o	o	o	o	o
Condensing coil with pre-painted fins	RM	o	o	o	o	o	o	o	o	o	o	o	o
Partial heat recovery	RP	o	o	o	o	o	o	o	o	o	o	o	o
Copper/Copper coil	RR	o	o	o	o	o	o	o	o	o	o	o	o
Total heat recovery	RT	□	□	□	□	□	□	□	□	□	□	□	□
Personalized frame painting	RV	o	o	o	o	o	o	o	o	o	o	o	o
Coil with double layer treatment	TDS	o	o	o	o	o	o	o	o	o	o	o	o
Electronic thermostatic valve	TE	•	•	•	•	•	•	•	•	•	•	•	•
Voltmeter	V	o	o	o	o	o	o	o	o	o	o	o	o
Brine Version	VB	o	o	o	o	o	o	o	o	o	o	o	o
Solenoid valve	VS	o	o	o	o	o	o	o	o	o	o	o	o

• Standard, o Optional, -- Not available

RAH F HE Ke		302	352	402	482	542	602	722	822	952	1102	1202	1302
Amperometer	A	o	o	o	o	o	o	o	o	o	o	o	o
Electrical power supply different than standard	AE	□	□	□	□	□	□	□	□	□	□	□	□
Soundproofed compressors cabinet with standard material	CF	•	•	•	•	•	•	•	•	•	•	•	•
Soundproofed compressors cabinet with higher thickness material	CFU	o	o	o	o	o	o	o	o	o	o	o	o
Compressors inrush counter	CS	o	o	o	o	o	o	o	o	o	o	o	o
Star/Delta	DS	•	•	•	•	•	•	•	•	•	•	•	•
Axial fans with electronic commutated motor	EC	•	•	•	•	•	•	•	•	•	•	•	•
Condensing coil protection grid	GP	o	o	o	o	o	o	o	o	o	o	o	o
Anti-intrusion grid	GP3	o	o	o	o	o	o	o	o	o	o	o	o
Glycol loop	GYL	□	□	□	□	□	□	□	□	□	□	□	□
Victaulic insulation on pump side	I1	o	o	o	o	o	o	o	o	o	o	o	o
Victaulic insulation buffer tank side	I2	o	o	o	o	o	o	o	o	o	o	o	o
Watch card	IG	o	o	o	o	o	o	o	o	o	o	o	o
RS 485 Serial interface	IH	o	o	o	o	o	o	o	o	o	o	o	o
LON Protocol serial interface	IH-LON	o	o	o	o	o	o	o	o	o	o	o	o
Seawood packing	IM	o	o	o	o	o	o	o	o	o	o	o	o
TCP/IP Protocol serial interface	IWG	o	o	o	o	o	o	o	o	o	o	o	o
Liquid injection	LI	o	o	o	o	o	o	o	o	o	o	o	o
Modulating capacity control	M12	o	o	o	o	o	o	o	o	o	o	o	o
Phase monitor	MF	•	•	•	•	•	•	•	•	•	•	•	•
Buffer tank module	MV	□	□	□	□	□	□	□	□	□	□	□	□
Oil flow safety switch	OS	o	o	o	o	o	o	o	o	o	o	o	o
Pump group	P1	o	o	o	o	o	o	o	o	o	o	o	o
Higher available pressure pump group	P1H	o	o	o	o	o	o	o	o	o	o	o	o
Single pump variable flow	P1VS	o	o	o	o	o	o	o	o	o	o	o	o
Double pump group	P2	o	o	o	o	o	o	o	o	o	o	o	o
Higher available pressure double pump group	P2H	o	o	o	o	o	o	o	o	o	o	o	o
Double pump variable flow	P2VS	o	o	o	o	o	o	o	o	o	o	o	o
Rubber-type vibration dampers	PA	o	o	o	o	o	o	o	o	o	o	o	o
Safety water flow switch	PF	•	•	•	•	•	•	•	•	•	•	•	•
Spring-type vibration dampers	PM	o	o	o	o	o	o	o	o	o	o	o	o
Remote display	PQ	o	o	o	o	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	o	o	o	o
Anti-freeze heater on evaporator	RA	o	o	o	o	o	o	o	o	o	o	o	o
Shut-off valve on compressors discharge side	RD	•	•	•	•	•	•	•	•	•	•	•	•
Power factor correction system cosfi ≥0,9	RF	o	o	o	o	o	o	o	o	o	o	o	o
Shut-off valve on compressors suction side	RH	o	o	o	o	o	o	o	o	o	o	o	o
Compressor overload relays	RL	o	o	o	o	o	o	o	o	o	o	o	o
Condensing coil with pre-painted fins	RM	o	o	o	o	o	o	o	o	o	o	o	o
Partial heat recovery	RP	o	o	o	o	o	o	o	o	o	o	o	o
Copper/Copper coil	RR	o	o	o	o	o	o	o	o	o	o	o	o
Total heat recovery	RT	□	□	□	□	□	□	□	□	□	□	□	□
Personalized frame painting	RV	o	o	o	o	o	o	o	o	o	o	o	o
Coil with double layer treatment	TDS	o	o	o	o	o	o	o	o	o	o	o	o
Electronic thermostatic valve	TE	•	•	•	•	•	•	•	•	•	•	•	•
Voltmeter	V	o	o	o	o	o	o	o	o	o	o	o	o
Brine Version	VB	o	o	o	o	o	o	o	o	o	o	o	o
Solenoid valve	VS	o	o	o	o	o	o	o	o	o	o	o	o

• Standard, o Optional, -- Not available

RAH F Kh		302	352	402	482	542	602	722	822	902	1002
Amperometer	A	o	o	o	o	o	o	o	o	o	o
Electrical power supply different than standard	AE	□	□	□	□	□	□	□	□	□	□
Operation in cooling mode down to -20°C	BF	o	o	o	o	o	o	o	o	o	o
Operation in cooling mode down to -10°C	BT	•	•	•	•	•	•	•	•	•	•
Soundproofed compressors cabinet with standard material	CF	•	•	•	•	•	•	•	•	•	•
Soundproofed compressors cabinet with higher thickness material	CFU	o	o	o	o	o	o	o	o	o	o
Compressors inrush counter	CS	o	o	o	o	o	o	o	o	o	o
Star/Delta	DS	•	•	•	•	•	•	•	•	•	•
Axial fans with electronic commutated motor	EC	o	o	o	o	o	o	o	o	o	o
Condensing coil protection grid	GP	o	o	o	o	o	o	o	o	o	o
Anti-intrusion grid	GP3	o	o	o	o	o	o	o	o	o	o
Glycol loop	GYL	□	□	□	□	□	□	□	□	□	□
Victaulic insulation on pump side	I1	o	o	o	o	o	o	o	o	o	o
Victaulic insulation buffer tank side	I2	o	o	o	o	o	o	o	o	o	o
Watch card	IG	o	o	o	o	o	o	o	o	o	o
RS 485 Serial interface	IH	o	o	o	o	o	o	o	o	o	o
LON Protocol serial interface	IH-LON	o	o	o	o	o	o	o	o	o	o
Seawood packing	IM	o	o	o	o	o	o	o	o	o	o
TCP/IP Protocol serial interface	IWG	o	o	o	o	o	o	o	o	o	o
Liquid injection	LI	o	o	o	o	o	o	o	o	o	o
Modulating capacity control	M12	o	o	o	o	o	o	o	o	o	o
Phase monitor	MF	•	•	•	•	•	•	•	•	•	•
Buffer tank module	MV	□	□	□	□	□	□	□	□	□	□
Oil flow safety switch	OS	o	o	o	o	o	o	o	o	o	o
Pump group	P1	o	o	o	o	o	o	o	o	o	o
Higher available pressure pump group	P1H	o	o	o	o	o	o	o	o	o	o
Single pump variable flow	P1VS	o	o	o	o	o	o	o	o	o	o
Double pump group	P2	o	o	o	o	o	o	o	o	o	o
Higher available pressure double pump group	P2H	o	o	o	o	o	o	o	o	o	o
Double pump variable flow	P2VS	o	o	o	o	o	o	o	o	o	o
Rubber-type vibration dampers	PA	o	o	o	o	o	o	o	o	o	o
Safety water flow switch	PF	•	•	•	•	•	•	•	•	•	•
Spring-type vibration dampers	PM	o	o	o	o	o	o	o	o	o	o
Remote display	PQ	o	o	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	o	o
Anti-freeze heater on evaporator	RA	o	o	o	o	o	o	o	o	o	o
Shut-off valve on compressors discharge side	RD	•	•	•	•	•	•	•	•	•	•
Power factor correction system cosφ ≥0,9	RF	o	o	o	o	o	o	o	o	o	o
Shut-off valve on compressors suction side	RH	o	o	o	o	o	o	o	o	o	o
Compressor overload relays	RL	o	o	o	o	o	o	o	o	o	o
Condensing coil with pre-painted fins	RM	o	o	o	o	o	o	o	o	o	o
Partial heat recovery	RP	o	o	o	o	o	o	o	o	o	o
Copper/Copper coil	RR	o	o	o	o	o	o	o	o	o	o
Total heat recovery	RT	□	□	□	□	□	□	□	□	□	□
Personalized frame painting	RV	o	o	o	o	o	o	o	o	o	o
Coil with double layer treatment	TDS	o	o	o	o	o	o	o	o	o	o
Electronic thermostatic valve	TE	•	•	•	•	•	•	•	•	•	•
Voltmeter	V	o	o	o	o	o	o	o	o	o	o
Brine Version	VB	o	o	o	o	o	o	o	o	o	o
Solenoid valve	VS	o	o	o	o	o	o	o	o	o	o

• Standard, o Optional, -- Not available

RAH F HE Kh		302	352	402	482	542	602	722	822	902	1002
Amperometer	A	o	o	o	o	o	o	o	o	o	o
Electrical power supply different than standard	AE	□	□	□	□	□	□	□	□	□	□
Soundproofed compressors cabinet with standard material	CF	•	•	•	•	•	•	•	•	•	•
Soundproofed compressors cabinet with higher thickness material	CFU	o	o	o	o	o	o	o	o	o	o
Compressors inrush counter	CS	o	o	o	o	o	o	o	o	o	o
Star/Delta	DS	•	•	•	•	•	•	•	•	•	•
Axial fans with electronic commutated motor	EC	•	•	•	•	•	•	•	•	•	•
Condensing coil protection grid	GP	o	o	o	o	o	o	o	o	o	o
Anti-intrusion grid	GP3	o	o	o	o	o	o	o	o	o	o
Glycol loop	GYL	□	□	□	□	□	□	□	□	□	□
Victaulic insulation on pump side	I1	o	o	o	o	o	o	o	o	o	o
Victaulic insulation buffer tank side	I2	o	o	o	o	o	o	o	o	o	o
Watch card	IG	o	o	o	o	o	o	o	o	o	o
RS 485 Serial interface	IH	o	o	o	o	o	o	o	o	o	o
LON Protocol serial interface	IH-LON	o	o	o	o	o	o	o	o	o	o
Seawood packing	IM	o	o	o	o	o	o	o	o	o	o
TCP/IP Protocol serial interface	IWG	o	o	o	o	o	o	o	o	o	o
Liquid injection	LI	o	o	o	o	o	o	o	o	o	o
Modulating capacity control	M12	o	o	o	o	o	o	o	o	o	o
Phase monitor	MF	•	•	•	•	•	•	•	•	•	•
Buffer tank module	MV	□	□	□	□	□	□	□	□	□	□
Oil flow safety switch	OS	o	o	o	o	o	o	o	o	o	o
Pump group	P1	o	o	o	o	o	o	o	o	o	o
Higher available pressure pump group	P1H	o	o	o	o	o	o	o	o	o	o
Single pump variable flow	P1VS	o	o	o	o	o	o	o	o	o	o
Double pump group	P2	o	o	o	o	o	o	o	o	o	o
Higher available pressure double pump group	P2H	o	o	o	o	o	o	o	o	o	o
Double pump variable flow	P2VS	o	o	o	o	o	o	o	o	o	o
Rubber-type vibration dampers	PA	o	o	o	o	o	o	o	o	o	o
Safety water flow switch	PF	•	•	•	•	•	•	•	•	•	•
Spring-type vibration dampers	PM	o	o	o	o	o	o	o	o	o	o
Remote display	PQ	o	o	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	o	o
Anti-freeze heater on evaporator	RA	o	o	o	o	o	o	o	o	o	o
Shut-off valve on compressors discharge side	RD	•	•	•	•	•	•	•	•	•	•
Power factor correction system cosfi ≥0,9	RF	o	o	o	o	o	o	o	o	o	o
Shut-off valve on compressors suction side	RH	o	o	o	o	o	o	o	o	o	o
Compressor overload relays	RL	o	o	o	o	o	o	o	o	o	o
Condensing coil with pre-painted fins	RM	o	o	o	o	o	o	o	o	o	o
Partial heat recovery	RP	o	o	o	o	o	o	o	o	o	o
Copper/Copper coil	RR	o	o	o	o	o	o	o	o	o	o
Total heat recovery	RT	□	□	□	□	□	□	□	□	□	□
Personalized frame painting	RV	o	o	o	o	o	o	o	o	o	o
Coil with double layer treatment	TDS	o	o	o	o	o	o	o	o	o	o
Electronic thermostatic valve	TE	•	•	•	•	•	•	•	•	•	•
Voltmeter	V	o	o	o	o	o	o	o	o	o	o
Brine Version	VB	o	o	o	o	o	o	o	o	o	o
Solenoid valve	VS	o	o	o	o	o	o	o	o	o	o

• Standard, o Optional, -- Not available

TECHNICAL DATA

RAH F Ke		302	352	402	482	542	602	722	822	952	1102	1202	1302
Cooling mode (R513A) ⁽¹⁾													
Cooling capacity	kW	341,7	399,4	453,7	551,8	617,6	690,3	818,5	944,3	1085,1	1244,4	1372,6	1496,1
Compressor input power	kW	91,9	104,6	119,4	147,5	163,0	182,8	214,1	248,3	283,6	326,6	359,3	393,2
Total input power	kW	111,1	125,7	143,4	173,9	191,8	214,5	247,7	285,2	322,0	368,9	407,3	446,0
Nominal input current	A	195,7	221,5	252,7	306,4	338,0	377,8	436,3	502,5	567,3	649,9	717,6	785,7
EER Gross	W/W	3,72	3,82	3,80	3,74	3,79	3,78	3,82	3,80	3,83	3,81	3,82	3,81
EER Net	W/W	3,08	3,18	3,16	3,17	3,22	3,22	3,30	3,31	3,37	3,37	3,37	3,35
Flow rate ⁽⁴⁾	m ³ /h	63,5	74,3	84,4	102,6	114,9	128,4	152,2	175,6	201,8	231,4	255,3	278,2
Pressure drop	kPa	54,9	54,4	55,0	56,1	57,0	53,6	51,3	52,7	54,1	55,2	56,4	56,4
Circuits	n°	2	2	2	2	2	2	2	2	2	2	2	2
Compressors	n°	2	2	2	2	2	2	2	2	2	2	2	2
Free Cooling ⁽²⁾													
Cooling capacity	kW	521,2	532,2	650,9	660,1	784,2	799,0	917,0	924,4	1042,3	1064,3	1301,8	1320,3
Input power	kW	19,2	21,12	24	26,4	28,8	31,68	33,6	36,96	38,4	42,24	48	52,8
Input current	A	36,8	40,5	46,0	50,6	55,2	60,8	64,4	70,9	73,6	81,0	92,1	101,3
EER	W/W	27,1	25,2	27,1	25,0	27,2	25,2	27,3	25,0	27,1	25,2	27,1	25,0
Flow rate ⁽⁴⁾	m ³ /h	98,7	100,8	123,3	125,0	148,5	151,3	173,7	175,1	197,4	201,6	246,6	250,1
Pressure drop	kPa	313,7	281,4	298,8	264,6	276,6	255,7	248,1	233,6	233,0	223,1	233,9	226,8
Free Cooling ⁽³⁾													
Cooling capacity	kW	264,28	269,86	330,07	334,76	397,66	405,17	465,03	468,76	528,55	539,72	660,14	669,52
Input power	kW	19,2	21,1	24,0	26,4	28,8	31,7	33,6	37,0	38,4	42,2	48,0	52,8
Input current	A	36,8	40,5	46,0	50,6	55,2	60,8	64,4	70,9	73,6	81,0	92,1	101,3
EER	W/W	13,8	12,8	13,8	12,7	13,8	12,8	13,8	12,7	13,8	12,8	13,8	12,7
Flow rate ⁽⁴⁾	m ³ /h	50,1	51,1	62,5	63,4	75,3	76,7	88,1	88,8	100,1	102,2	125,0	126,8
Pressure drop	kPa	80,7	72,4	76,8	68,0	71,1	65,8	63,8	60,1	59,9	57,4	60,1	58,3
Axial fans													
Quantity	n°	8	8	10	10	12	12	14	14	16	16	20	20
Total air flow	m ³ /h	156800	164640	196000	205800	235200	246960	274400	288120	313600	329280	392000	411600
Total power input	kW	19,2	21,1	24,0	26,4	28,8	31,7	33,6	37,0	38,4	42,2	48,0	52,8
Total input current	A	36,8	40,5	46,0	50,6	55,2	60,8	64,4	70,9	73,6	81,0	92,1	101,3
Weight													
Transport weight	kg	4690	4837	5936	6088	7783	7932	8442	8598	9565	9729	10620	10793
Operating weight	kg	4874	5024	6166	6320	8059	8212	8765	8923	9933	10103	11079	11257
Dimensions													
Length	mm	4750	4750	5720	5720	6700	6700	7670	7670	9800	9800	10770	10770
Width	mm	2300	2300	2300	2300	2300	2300	2300	2300	2300	2300	2300	2300
Height	mm	2560	2560	2560	2560	2560	2560	2560	2560	2560	2560	2560	2560
Sound data													
Total LWA ⁽⁵⁾	dB(A)	101,9	102,4	102,9	103,4	103,9	104,4	104,9	105,4	105,9	106,4	106,9	107,4
Total SPL 1m ⁽⁶⁾	dB(A)	81,3	81,8	82,3	82,8	83,3	83,8	84,3	84,8	85,3	85,8	86,3	86,8
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	400/3/50	400/3/50	400/3/50	400/3/50
General electrical data													
Maximum input power	[A]	283	321	366	441	497	569	646	737	840	801	1004	1121
Maximum input current	[A]	341	393	458	538	618	686	824	904	1079	1132	1399	1579

(1) Water in/out: 15/10°C - Ambient air temperature 30°C

(2) Water in/out: 15/10°C - Ambient air temperature 0°C

(3) Water in/out: 15/10°C - Ambient air temperature 5°C

(4) Hydraulic data referred to fluid Glycol 30%

(5) Sound power level in accordance with ISO 3744.

(6) Sound pressure level at 1m from the unit in free field conditions, in accordance with ISO 3744

RAH F HE Ke		302	352	402	482	542	602	722	822	952	1102	1202	1302
Cooling mode (R513A) ⁽¹⁾													
Cooling capacity	kW	365,6	427,4	485,9	589,9	654,7	731,8	867,6	1001,0	1150,2	1319,1	1454,9	1585,9
Compressor input power	kW	86,0	98,8	112,8	140,5	155,3	174,1	203,9	236,4	270,1	311,1	342,2	374,5
Total input power	kW	102,4	119,3	135,3	165,1	182,3	202,8	235,4	269,2	306,2	352,1	391,4	428,6
Nominal input current	A	180,4	210,3	238,4	290,9	321,2	357,2	414,8	474,3	539,4	620,3	689,5	755,1
EER Gross	W/W	4,25	4,32	4,31	4,20	4,22	4,20	4,26	4,23	4,26	4,24	4,25	4,24
EER Net	W/W	3,57	3,58	3,59	3,57	3,59	3,61	3,68	3,72	3,76	3,75	3,72	3,70
Flow rate ⁽⁴⁾	m ³ /h	68,0	79,5	90,4	109,7	121,8	136,1	161,3	186,2	213,9	245,3	270,6	294,9
Pressure drop	kPa	52,2	51,7	52,3	53,3	54,2	50,9	48,7	50,1	51,4	52,4	53,6	53,6
Circuits	n°	2	2	2	2	2	2	2	2	2	2	2	2
Compressors	n°	2	2	2	2	2	2	2	2	2	2	2	2
Free Cooling ⁽²⁾													
Cooling capacity	kW	389,7	482,4	494,6	585,3	591,4	674,2	681,1	779,4	786,5	964,8	1170,6	1182,8
Input power	kW	16,4	20,5	22,6	24,6	27,1	28,7	31,6	32,8	36,1	41,0	49,2	54,1
Input current	A	31,5	39,3	43,2	47,2	51,9	55,0	60,5	62,9	69,2	78,6	94,4	103,8
EER	W/W	23,8	23,5	21,9	23,8	21,9	23,5	21,6	23,8	21,8	23,5	23,8	21,9
Flow rate ⁽⁴⁾	m ³ /h	73,8	91,4	93,7	110,9	112,0	127,7	129,0	147,6	149,0	182,8	221,7	224,0
Pressure drop	kPa	159,5	166,3	154,2	152,4	143,9	142,8	129,2	129,5	122,9	127,1	134,0	128,9
Free Cooling ⁽³⁾													
Cooling capacity	kW	268,76	332,69	341,10	403,66	407,86	464,97	469,72	537,52	542,41	665,38	807,31	815,72
Input power	kW	16,4	20,5	22,6	24,6	27,1	28,7	31,6	32,8	36,1	41,0	49,2	54,1
Input current	A	31,5	39,3	43,2	47,2	51,9	55,0	60,5	62,9	69,2	78,6	94,4	103,8
EER	W/W	16,4	16,2	15,1	16,4	15,1	16,2	14,9	16,4	15,0	16,2	16,4	15,1
Flow rate ⁽⁴⁾	m ³ /h	50,9	63,0	64,6	76,5	77,3	88,1	89,0	101,8	102,7	126,0	152,9	154,5
Pressure drop	kPa	75,8	79,1	73,3	72,5	68,4	67,9	61,4	61,6	58,5	60,4	63,7	61,3
Axial fans													
Quantity	n°	8	10	10	12	12	14	14	16	16	20	24	24
Total air flow	m ³ /h	163200	204000	214200	244800	257040	285600	299880	326400	342720	408000	489600	514080
Total power input	kW	16,4	20,5	22,6	24,6	27,1	28,7	31,6	32,8	36,1	41,0	49,2	54,1
Total input current	A	31,5	39,3	43,2	47,2	51,9	55,0	60,5	62,9	69,2	78,6	94,4	103,8
Weight													
Transport weight	kg	4825	5931	6079	7778	7924	8435	8576	9552	9695	10587	11722	11895
Operating weight	kg	5017	6170	6322	8067	8215	8768	8912	9937	10082	11064	12299	12477
Dimensions													
Length	mm	4750	5720	5720	6700	6700	7670	7670	9800	9800	10770	13200	13200
Width	mm	2300	2300	2300	2300	2300	2300	2300	2300	2300	2300	2300	2300
Height	mm	2560	2560	2560	2560	2560	2560	2560	2560	2560	2560	2560	2560
Sound data													
Total LWA ⁽⁵⁾	dB(A)	101,3	101,9	102,4	103,0	103,6	104,1	104,7	105,3	105,9	106,5	107,1	107,7
Total SPL 1m ⁽⁶⁾	dB(A)	80,7	81,3	81,8	82,4	83,0	83,5	84,1	84,7	85,3	85,9	86,5	87,1
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	400/3/50	400/3/50	400/3/50	400/3/50
General electrical data													
Maximum input power	[A]	283	321	366	441	497	569	646	737	840	801	1004	1121
Maximum input current	[A]	341	393	458	538	618	686	824	904	1079	1132	1399	1579

(1) Water in/out: 15/10°C - Ambient air temperature 30°C
(2) Water in/out: 15/10°C - Ambient air temperature 0°C
(3) Water in/out: 15/10°C - Ambient air temperature 5°C
(4) Hydraulic data referred to fluid Glycol 30%

(5) Sound power level in accordance with ISO 3744.
(6) Sound pressure level at 1m from the unit in free field conditions, in accordance with ISO 3744

RAH F Kh		302	352	402	482	542	602	722	822	902	1002
Cooling mode (R1234Ze) ⁽¹⁾											
Cooling capacity	kW	338,2	408,7	459,5	529,9	610,7	690,3	816,2	927,0	1020,5	1147,5
Compressor input power	kW	87,8	106,3	120,9	137,5	156,3	176,7	208,2	235,0	257,4	290,0
Total input power	kW	107,0	127,4	144,9	163,9	185,1	208,4	241,8	271,9	295,8	332,3
Nominal input current	A	188,6	224,5	255,4	288,8	326,1	367,1	426,0	479,1	521,1	585,4
EER Gross	W/W	3,85	3,84	3,80	3,85	3,91	3,91	3,92	3,95	3,96	3,96
EER Net	W/W	3,16	3,21	3,17	3,23	3,30	3,31	3,38	3,41	3,45	3,45
Flow rate ⁽⁴⁾	m ³ /h	62,9	76,0	85,4	98,5	113,6	128,4	151,8	172,4	189,8	213,4
Pressure drop	kPa	55,8	55,2	55,9	57,0	57,9	54,4	52,1	53,5	54,9	56,0
Circuits	n°	2	2	2	2	2	2	2	2	2	2
Compressors	n°	2	2	2	2	2	2	2	2	2	2
Free Cooling ⁽²⁾											
Cooling capacity	kW	383,2	391,3	478,6	485,4	576,6	587,5	674,3	679,7	766,4	782,6
Input power	kW	19,2	21,1	24,0	26,4	28,8	31,7	33,6	37,0	38,4	42,2
Input current	A	36,8	40,5	46,0	50,6	55,2	60,8	64,4	70,9	73,6	81,0
EER	W/W	20,0	18,5	19,9	18,4	20,0	18,5	20,1	18,4	20,0	18,5
Flow rate ⁽⁴⁾	m ³ /h	72,6	74,1	90,7	91,9	109,2	111,3	127,7	128,7	145,2	148,2
Pressure drop	kPa	172,2	150,5	160,9	147,6	151,5	138,9	134,9	127,8	130,2	125,0
Free Cooling ⁽³⁾											
Cooling capacity	kW	264,28	269,86	330,07	334,76	397,66	405,17	465,03	468,76	528,55	539,72
Input power	kW	19,2	21,1	24,0	26,4	28,8	31,7	33,6	37,0	38,4	42,2
Input current	A	36,8	40,5	46,0	50,6	55,2	60,8	64,4	70,9	73,6	81,0
EER	W/W	13,8	12,8	13,8	12,7	13,8	12,8	13,8	12,7	13,8	12,8
Flow rate ⁽⁴⁾	m ³ /h	50,1	51,1	62,5	63,4	75,3	76,7	88,1	88,8	100,1	102,2
Pressure drop	kPa	81,9	71,6	76,5	70,2	72,1	66,1	64,2	60,8	61,9	59,5
Axial fans											
Quantity	n°	8	8	10	10	12	12	14	14	16	16
Total air flow	m ³ /h	156800	164640	196000	205800	235200	246960	274400	288120	313600	329280
Total power input	kW	19,2	21,1	24,0	26,4	28,8	31,7	33,6	37,0	38,4	42,2
Total input current	A	36,8	40,5	46,0	50,6	55,2	60,8	64,4	70,9	73,6	81,0
Weight											
Transport weight	kg	4810	4980	6528	6695	7920	8093	8635	8821	9810	10165
Operating weight	kg	4994	5167	6758	6927	8196	8373	8958	9146	10178	10539
Dimensions											
Length	mm	4750	4750	5720	5720	6700	6700	7670	7670	9800	9800
Width	mm	2300	2300	2300	2300	2300	2300	2300	2300	2300	2300
Height	mm	2560	2560	2560	2560	2560	2560	2560	2560	2560	2560
Sound data											
Total LWA ⁽⁵⁾	dB(A)	103,6	104,0	104,5	105,0	105,5	106,0	106,5	107,0	107,5	108,0
Total SPL 1m ⁽⁶⁾	dB(A)	83,0	83,4	83,9	84,4	84,9	85,4	85,9	86,4	86,9	87,4
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	400/3/50	400/3/50
General electrical data											
Maximum input power	[A]	357	431	488	559	637	727	830	791	986	1101
Maximum input current	[A]	426	503	581	646	782	859	1033	1081	1335	1508

(1) Water in/out: 15/10°C - Ambient air temperature 30°C

(2) Water in/out: 15/10°C - Ambient air temperature 0°C

(3) Water in/out: 15/10°C - Ambient air temperature 5°C

(4) Hydraulic data referred to fluid Glycol 30%

(5) Sound power level in accordance with ISO 3744.

(6) Sound pressure level at 1m from the unit in free field conditions, in accordance with ISO 3744

RAH F HE Kh		302	352	402	482	542	602	722	822	902	1002
Cooling mode (R1234Ze) ⁽¹⁾											
Cooling capacity	kW	357,8	438,4	499,4	561,9	655,5	749,2	866,8	982,1	1075,7	1203,0
Compressor input power	kW	82,7	101,7	117,1	127,3	146,5	166,8	194,4	219,1	242,0	267,7
Total input power	kW	99,1	122,2	139,6	151,9	173,5	195,5	226,0	251,9	278,1	308,7
Nominal input current	A	174,6	215,4	246,0	267,7	305,7	344,4	398,2	443,8	490,0	543,8
EER Gross	W/W	4,33	4,31	4,27	4,41	4,48	4,49	4,46	4,48	4,44	4,49
EER Net	W/W	3,61	3,59	3,58	3,70	3,78	3,83	3,84	3,90	3,87	3,90
Flow rate ⁽⁴⁾	m ³ /h	66,5	81,5	92,9	104,5	121,9	139,3	161,2	182,6	200,1	223,7
Pressure drop	kPa	52,2	51,7	52,3	53,3	54,2	50,9	48,7	50,1	51,4	52,4
Circuits	n°	2	2	2	2	2	2	2	2	2	2
Compressors	n°	2	2	2	2	2	2	2	2	2	2
Free Cooling ⁽²⁾											
Cooling capacity	kW	389,7	482,4	494,6	585,3	591,4	674,2	681,1	779,4	786,5	964,8
Input power	kW	16,4	20,5	22,6	24,6	27,1	28,7	31,6	32,8	36,1	41,0
Input current	A	31,5	39,3	43,2	47,2	51,9	55,0	60,5	62,9	69,2	78,6
EER	W/W	23,8	23,5	21,9	23,8	21,9	23,5	21,6	23,8	21,8	23,5
Flow rate ⁽⁴⁾	m ³ /h	73,8	91,4	93,7	110,9	112,0	127,7	129,0	147,6	149,0	182,8
Pressure drop	kPa	162,2	162,9	151,2	158,0	143,7	140,8	129,2	130,7	126,5	133,0
Free Cooling ⁽³⁾											
Cooling capacity	kW	268,76	332,69	341,10	403,66	407,86	464,97	469,72	537,52	542,41	665,38
Input power	kW	16,4	20,5	22,6	24,6	27,1	28,7	31,6	32,8	36,1	41,0
Input current	A	31,5	39,3	43,2	47,2	51,9	55,0	60,5	62,9	69,2	78,6
EER	W/W	16,4	16,2	15,1	16,4	15,1	16,2	14,9	16,4	15,0	16,2
Flow rate ⁽⁴⁾	m ³ /h	50,9	63,0	64,6	76,5	77,3	88,1	89,0	101,8	102,7	126,0
Pressure drop	kPa	77,1	77,5	71,9	75,1	68,4	66,9	61,5	62,2	60,2	63,2
Axial fans											
Quantity	n°	8	10	10	12	12	14	14	16	16	20
Total air flow	m ³ /h	163200	204000	214200	244800	257040	285600	299880	326400	342720	408000
Total power input	kW	16,4	20,5	22,6	24,6	27,1	28,7	31,6	32,8	36,1	41,0
Total input current	A	31,5	39,3	43,2	47,2	51,9	55,0	60,5	62,9	69,2	78,6
Weight											
Transport weight	kg	4945	6074	6671	8385	8061	8596	8769	9775	9940	11023
Operating weight	kg	5137	6313	6914	8674	8352	8929	9105	10160	10327	11500
Dimensions											
Length	mm	4750	5720	5720	6700	6700	7670	7670	9800	9800	10770
Width	mm	2300	2300	2300	2300	2300	2300	2300	2300	2300	2300
Height	mm	2560	2560	2560	2560	2560	2560	2560	2560	2560	2560
Sound data											
Total LWA ⁽⁵⁾	dB(A)	102,6	103,2	103,7	104,3	104,9	105,4	106,0	106,6	107,2	107,8
Total SPL 1m ⁽⁶⁾	dB(A)	82,0	82,6	83,1	83,7	84,3	84,8	85,4	86,0	86,6	87,2
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	400/3/50	400/3/50
General electrical data											
Maximum input power	[A]	357	431	488	559	637	727	830	791	986	1101
Maximum input current	[A]	426	503	581	646	782	859	1033	1081	1335	1508

(1) Water in/out: 15/10°C - Ambient air temperature 30°C

(2) Water in/out: 15/10°C - Ambient air temperature 0°C

(3) Water in/out: 15/10°C - Ambient air temperature 5°C

(4) Hydraulic data referred to fluid Glycol 30%

(5) Sound power level in accordance with ISO 3744.

(6) Sound pressure level at 1m from the unit in free field conditions, in accordance with ISO 3744

RAH VS F Ke/Kh

AIR COOLED CHILLERS FOR OUTDOOR INSTALLATION WITH INTEGRATED FREE COOLING

EQUIPPED WITH SCREW INVERTER COMPRESSORS AND AXIAL FANS

Cooling capacity from 308 kW to 1837 kW



VERSIONS

RAH VS F - standard version

RAH VS F HE - high efficiency version

RAH VS F S e U - silenced and ultra-silenced version **on request**

Packaged air cooled chillers of RAH VS F eries 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.

Semi-hermetic screw inverter 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 recover 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.

The combination of high efficiency finned exchangers with the thermophysical purity of refrigerant used, almost glide-free during the changes of state, allows having nominal EER near 3 with ESEER above 5 in mechanical 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 refrigerant and a non-freezing oil charge.

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

COMPONENTS

STRUCTURE

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.

COMPRESSORS semi-hermetic screw type with INVERTER

Compressors of semi-hermetic screw type, controlled by integrated frequency inverter, allowing to adapt the power to the load variations ensuring at the same time the maximum efficiency at different operating conditions. The compressors are provided with motor thermal protection, rotation direction control, crank-case heater, oil filter, oil service valve, POE oil charge and vibration dumpers kit. Compressors lubrication is of forced type without pump, to avoid excessive oil migrations to the cooling circuit, compressors are equipped with an oil separator on discharge side. Both compressors are equipped with an oil flow safety switch, an optoelectronic device operating in case the oil flow inside the compressor falls below the minimum threshold.

SHELL & TUBE EXCHANGER

Shell & tube exchanger of dry expansion type with pure electrolytic copper tubes and plate carbon steel shell. The exchanger is equipped with a condensation-proof insulation, made by close cell polyurethane foam material as well as an external UV ray-resistant and scratch-proof cover. Inside the shell some plastic corrosion-proof baffles are suitably placed. They favour a right water distribution and make the tube bundle particularly strong and vibration-free, even with very high water flows. The exchanger design pressure (waterside) is 10 bar.

EXTERNAL CONDENSING COIL

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. As soon as the temperature of the air entering the free-cooling coil is lower than the temperature of the return flow, the free-cooling system is activated, allowing the ventilated system to obtain the maximum refrigerant recovery at those conditions. The benefit obtained by the free-cooling system is much bigger as much lower is the external temperature respect the 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.. It is almost always indispensable that free-cooling coils are supplied with glycol mixtures to prevent the freezing of the fluid to be chilled and to avoid relevant breakages of exchangers. On applications where is not possible to use directly glycol mixture, is possible to added at unit a "GLYCOL LOOP" circuit (GYL option) with which an hydraulic separation is obtained between the free-cooling coils and the whole remaining part of the hydronic 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.

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 galvanised 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. These fans, thanks to a more accurate regulation of the airflow, allow the unit to operate with an external air temperature up to - 20 °C.

INDEPENDENT COOLING CIRCUITS

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 electronic thermostatic expansion valve, 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.

STANDARD HYDRONIC CIRCUIT

Provided with three-way water valve ON/OFF to activate the free-cooling mode, automatic air vent valves on plate coils and exchangers, glycol solution charge and/or discharge valves, anti-freeze probe.

ACCESSORIES

RAH VS F Ke

RAH VS F Ke		352	402	452	552	622	702	852	952	1102	1252	1352	1502
Amperometer	A	o	o	o	o	o	o	o	o	o	o	o	o
Electrical power supply different than standard	AE	□	□	□	□	□	□	□	□	□	□	□	□
Operation in cooling mode down to -20°C	BF	o	o	o	o	o	o	o	o	o	o	o	o
Operation in cooling mode down to -10°C	BT	•	•	•	•	•	•	•	•	•	•	•	•
Soundproofed compressors cabinet with standard material	CF	•	•	•	•	•	•	•	•	•	•	•	•
Soundproofed compressors cabinet with higher thickness material	CFU	o	o	o	o	o	o	o	o	o	o	o	o
Axial fans with electronic commutated motor	EC	o	o	o	o	o	o	o	o	o	o	o	o
Condensing coil protection grid	GP	o	o	o	o	o	o	o	o	o	o	o	o
Anti-intrusion grid	GP3	o	o	o	o	o	o	o	o	o	o	o	o
Glycol loop	GYL	□	□	□	□	□	□	□	□	□	□	□	□
Victaulic insulation on pump side	I1	o	o	o	o	o	o	o	o	o	o	o	o
Victaulic insulation buffer tank side	I2	o	o	o	o	o	o	o	o	o	o	o	o
Watch card	IG	o	o	o	o	o	o	o	o	o	o	o	o
RS 485 Serial interface	IH	o	o	o	o	o	o	o	o	o	o	o	o
LON Protocol serial interface	IH-LON	o	o	o	o	o	o	o	o	o	o	o	o
Seawood packing	IM	o	o	o	o	o	o	o	o	o	o	o	o
TCP/IP Protocol serial interface	IWG	o	o	o	o	o	o	o	o	o	o	o	o
Liquid injection	LI	o	o	o	o	o	o	o	o	o	o	o	o
Phase monitor	MF	•	•	•	•	•	•	•	•	•	•	•	•
Buffer tank module	MV	□	□	□	□	□	□	□	□	□	□	□	□
Oil flow safety switch	OS	o	o	o	o	o	o	o	o	o	o	o	o
Pump group	P1	o	o	o	o	o	o	o	o	o	o	o	o
Higher available pressure pump group	P1H	o	o	o	o	o	o	o	o	o	o	o	o
Variable flow Single pump	P1VS	o	o	o	o	o	o	o	o	o	o	o	o
Double pump group	P2	o	o	o	o	o	o	o	o	o	o	o	o
Higher available pressure double pump group	P2H	o	o	o	o	o	o	o	o	o	o	o	o
Double pump variable flow	P2VS	o	o	o	o	o	o	o	o	o	o	o	o
Rubber-type vibration dampers	PA	o	o	o	o	o	o	o	o	o	o	o	o
Safety water flow switch	PF	•	•	•	•	•	•	•	•	•	•	•	•
Spring-type vibration dampers	PM	o	o	o	o	o	o	o	o	o	o	o	o
Remote display	PQ	o	o	o	o	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	o	o	o	o
Anti-freeze heater on evaporator	RA	o	o	o	o	o	o	o	o	o	o	o	o
Shut-off valve on compressors discharge side	RD	•	•	•	•	•	•	•	•	•	•	•	•
Shut-off valve on compressors suction side	RH	o	o	o	o	o	o	o	o	o	o	o	o
Compressor overload relays	RL	o	o	o	o	o	o	o	o	o	o	o	o
Condensing coil with pre-painted fins	RM	o	o	o	o	o	o	o	o	o	o	o	o
Partial heat recovery	RP	o	o	o	o	o	o	o	o	o	o	o	o
Copper/Copper coil	RR	o	o	o	o	o	o	o	o	o	o	o	o
Total heat recovery	RT	□	□	□	□	□	□	□	□	□	□	□	□
Personalized frame painting	RV	o	o	o	o	o	o	o	o	o	o	o	o
Coil with double layer treatment	TDS	o	o	o	o	o	o	o	o	o	o	o	o
Electronic thermostatic valve	TE	•	•	•	•	•	•	•	•	•	•	•	•
Voltmeter	V	o	o	o	o	o	o	o	o	o	o	o	o
Brine Version	VB	o	o	o	o	o	o	o	o	o	o	o	o
Solenoid valve	VS	o	o	o	o	o	o	o	o	o	o	o	o

• Standard, o Optional, -- Not available

RAH VS F HE Ke		352	402	452	552	622	702	852	952	1102	1252	1352	1502
Amperometer	A	o	o	o	o	o	o	o	o	o	o	o	o
Electrical power supply different than standard	AE	□	□	□	□	□	□	□	□	□	□	□	□
Soundproofed compressors cabinet with standard material	CF	•	•	•	•	•	•	•	•	•	•	•	•
Soundproofed compressors cabinet with higher thickness material	CFU	o	o	o	o	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	o	o	o	o
Anti-intrusion grid	GP3	o	o	o	o	o	o	o	o	o	o	o	o
Glycol loop	GYL	□	□	□	□	□	□	□	□	□	□	□	□
Victaulic insulation on pump side	I1	o	o	o	o	o	o	o	o	o	o	o	o
Victaulic insulation buffer tank side	I2	o	o	o	o	o	o	o	o	o	o	o	o
Watch card	IG	o	o	o	o	o	o	o	o	o	o	o	o
RS 485 Serial interface	IH	o	o	o	o	o	o	o	o	o	o	o	o
LON Protocol serial interface	IH-LON	o	o	o	o	o	o	o	o	o	o	o	o
Seawood packing	IM	o	o	o	o	o	o	o	o	o	o	o	o
TCP/IP Protocol serial interface	IWG	o	o	o	o	o	o	o	o	o	o	o	o
Liquid injection	LI	o	o	o	o	o	o	o	o	o	o	o	o
Phase monitor	MF	•	•	•	•	•	•	•	•	•	•	•	•
Buffer tank module	MV	□	□	□	□	□	□	□	□	□	□	□	□
Oil flow safety switch	OS	o	o	o	o	o	o	o	o	o	o	o	o
Pump group	P1	o	o	o	o	o	o	o	o	o	o	o	o
Higher available pressure pump group	P1H	o	o	o	o	o	o	o	o	o	o	o	o
Variable flow Single pump	P1VS	o	o	o	o	o	o	o	o	o	o	o	o
Double pump group	P2	o	o	o	o	o	o	o	o	o	o	o	o
Higher available pressure double pump group	P2H	o	o	o	o	o	o	o	o	o	o	o	o
Double pump variable flow	P2VS	o	o	o	o	o	o	o	o	o	o	o	o
Rubber-type vibration dampers	PA	o	o	o	o	o	o	o	o	o	o	o	o
Safety water flow switch	PF	•	•	•	•	•	•	•	•	•	•	•	•
Spring-type vibration dampers	PM	o	o	o	o	o	o	o	o	o	o	o	o
Remote display	PQ	o	o	o	o	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	o	o	o	o
Anti-freeze heater on evaporator	RA	o	o	o	o	o	o	o	o	o	o	o	o
Shut-off valve on compressors discharge side	RD	•	•	•	•	•	•	•	•	•	•	•	•
Shut-off valve on compressors suction side	RH	o	o	o	o	o	o	o	o	o	o	o	o
Compressor overload relays	RL	o	o	o	o	o	o	o	o	o	o	o	o
Condensing coil with pre-painted fins	RM	o	o	o	o	o	o	o	o	o	o	o	o
Partial heat recovery	RP	o	o	o	o	o	o	o	o	o	o	o	o
Copper/Copper coil	RR	o	o	o	o	o	o	o	o	o	o	o	o
Total heat recovery	RT	□	□	□	□	□	□	□	□	□	□	□	□
Personalized frame painting	RV	o	o	o	o	o	o	o	o	o	o	o	o
Coil with double layer treatment	TDS	o	o	o	o	o	o	o	o	o	o	o	o
Electronic thermostatic valve	TE	•	•	•	•	•	•	•	•	•	•	•	•
Voltmeter	V	o	o	o	o	o	o	o	o	o	o	o	o
Brine Version	VB	o	o	o	o	o	o	o	o	o	o	o	o
Solenoid valve	VS	o	o	o	o	o	o	o	o	o	o	o	o

• Standard, o Optional, -- Not available

RAH VS F Kh		282	322	352	452	502	562	652	752	852	982	1102	1202
Amperometer	A	o	o	o	o	o	o	o	o	o	o	o	o
Electrical power supply different than standard	AE	□	□	□	□	□	□	□	□	□	□	□	□
Operation in cooling mode down to -20°C	BF	o	o	o	o	o	o	o	o	o	o	o	o
Operation in cooling mode down to -10°C	BT	●	●	●	●	●	●	●	●	●	●	●	●
Soundproofed compressors cabinet with standard material	CF	●	●	●	●	●	●	●	●	●	●	●	●
Soundproofed compressors cabinet with higher thickness material	CFU	o	o	o	o	o	o	o	o	o	o	o	o
Axial fans with electronic commutated motor	EC	o	o	o	o	o	o	o	o	o	o	o	o
Condensing coil protection grid	GP	o	o	o	o	o	o	o	o	o	o	o	o
Anti-intrusion grid	GP3	o	o	o	o	o	o	o	o	o	o	o	o
Glycol loop	GYL	□	□	□	□	□	□	□	□	□	□	□	□
Victaulic insulation on pump side	I1	o	o	o	o	o	o	o	o	o	o	o	o
Victaulic insulation buffer tank side	I2	o	o	o	o	o	o	o	o	o	o	o	o
Watch card	IG	o	o	o	o	o	o	o	o	o	o	o	o
RS 485 Serial interface	IH	o	o	o	o	o	o	o	o	o	o	o	o
LON Protocol serial interface	IH-LON	o	o	o	o	o	o	o	o	o	o	o	o
Seawood packing	IM	o	o	o	o	o	o	o	o	o	o	o	o
TCP/IP Protocol serial interface	IWG	o	o	o	o	o	o	o	o	o	o	o	o
Liquid injection	LI	o	o	o	o	o	o	o	o	o	o	o	o
Phase monitor	MF	●	●	●	●	●	●	●	●	●	●	●	●
Buffer tank module	MV	□	□	□	□	□	□	□	□	□	□	□	□
Oil flow safety switch	OS	o	o	o	o	o	o	o	o	o	o	o	o
Pump group	P1	o	o	o	o	o	o	o	o	o	o	o	o
Higher available pressure pump group	P1H	o	o	o	o	o	o	o	o	o	o	o	o
Variable flow Single pump	P1VS	o	o	o	o	o	o	o	o	o	o	o	o
Double pump group	P2	o	o	o	o	o	o	o	o	o	o	o	o
Higher available pressure double pump group	P2H	o	o	o	o	o	o	o	o	o	o	o	o
Double pump variable flow	P2VS	o	o	o	o	o	o	o	o	o	o	o	o
Rubber-type vibration dampers	PA	o	o	o	o	o	o	o	o	o	o	o	o
Safety water flow switch	PF	●	●	●	●	●	●	●	●	●	●	●	●
Spring-type vibration dampers	PM	o	o	o	o	o	o	o	o	o	o	o	o
Remote display	PQ	o	o	o	o	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	o	o	o	o
Anti-freeze heater on evaporator	RA	o	o	o	o	o	o	o	o	o	o	o	o
Shut-off valve on compressors discharge side	RD	●	●	●	●	●	●	●	●	●	●	●	●
Shut-off valve on compressors suction side	RH	o	o	o	o	o	o	o	o	o	o	o	o
Compressor overload relays	RL	o	o	o	o	o	o	o	o	o	o	o	o
Condensing coil with pre-painted fins	RM	o	o	o	o	o	o	o	o	o	o	o	o
Partial heat recovery	RP	o	o	o	o	o	o	o	o	o	o	o	o
Copper/Copper coil	RR	o	o	o	o	o	o	o	o	o	o	o	o
Total heat recovery	RT	□	□	□	□	□	□	□	□	□	□	□	□
Personalized frame painting	RV	o	o	o	o	o	o	o	o	o	o	o	o
Coil with double layer treatment	TDS	o	o	o	o	o	o	o	o	o	o	o	o
Electronic thermostatic valve	TE	●	●	●	●	●	●	●	●	●	●	●	●
Voltmeter	V	o	o	o	o	o	o	o	o	o	o	o	o
Brine Version	VB	o	o	o	o	o	o	o	o	o	o	o	o
Solenoid valve	VS	o	o	o	o	o	o	o	o	o	o	o	o

● Standard, o Optional, -- Not available

RAH VS F HE Kh		282	322	352	452	502	562	652	752	852	982	1102	1202
Amperometer	A	o	o	o	o	o	o	o	o	o	o	o	o
Electrical power supply different than standard	AE	□	□	□	□	□	□	□	□	□	□	□	□
Soundproofed compressors cabinet with standard material	CF	•	•	•	•	•	•	•	•	•	•	•	•
Soundproofed compressors cabinet with higher thickness material	CFU	o	o	o	o	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	o	o	o	o
Anti-intrusion grid	GP3	o	o	o	o	o	o	o	o	o	o	o	o
Glycol loop	GYL	□	□	□	□	□	□	□	□	□	□	□	□
Victaulic insulation on pump side	I1	o	o	o	o	o	o	o	o	o	o	o	o
Victaulic insulation buffer tank side	I2	o	o	o	o	o	o	o	o	o	o	o	o
Watch card	IG	o	o	o	o	o	o	o	o	o	o	o	o
RS 485 Serial interface	IH	o	o	o	o	o	o	o	o	o	o	o	o
LON Protocol serial interface	IH-LON	o	o	o	o	o	o	o	o	o	o	o	o
Seawood packing	IM	o	o	o	o	o	o	o	o	o	o	o	o
TCP/IP Protocol serial interface	IWG	o	o	o	o	o	o	o	o	o	o	o	o
Liquid injection	LI	o	o	o	o	o	o	o	o	o	o	o	o
Phase monitor	MF	•	•	•	•	•	•	•	•	•	•	•	•
Buffer tank module	MV	□	□	□	□	□	□	□	□	□	□	□	□
Oil flow safety switch	OS	o	o	o	o	o	o	o	o	o	o	o	o
Pump group	P1	o	o	o	o	o	o	o	o	o	o	o	o
Higher available pressure pump group	P1H	o	o	o	o	o	o	o	o	o	o	o	o
Variable flow Single pump	P1VS	o	o	o	o	o	o	o	o	o	o	o	o
Double pump group	P2	o	o	o	o	o	o	o	o	o	o	o	o
Higher available pressure double pump group	P2H	o	o	o	o	o	o	o	o	o	o	o	o
Double pump variable flow	P2VS	o	o	o	o	o	o	o	o	o	o	o	o
Rubber-type vibration dampers	PA	o	o	o	o	o	o	o	o	o	o	o	o
Safety water flow switch	PF	•	•	•	•	•	•	•	•	•	•	•	•
Spring-type vibration dampers	PM	o	o	o	o	o	o	o	o	o	o	o	o
Remote display	PQ	o	o	o	o	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	o	o	o	o
Anti-freeze heater on evaporator	RA	o	o	o	o	o	o	o	o	o	o	o	o
Shut-off valve on compressors discharge side	RD	•	•	•	•	•	•	•	•	•	•	•	•
Shut-off valve on compressors suction side	RH	o	o	o	o	o	o	o	o	o	o	o	o
Compressor overload relays	RL	o	o	o	o	o	o	o	o	o	o	o	o
Condensing coil with pre-painted fins	RM	o	o	o	o	o	o	o	o	o	o	o	o
Partial heat recovery	RP	o	o	o	o	o	o	o	o	o	o	o	o
Copper/Copper coil	RR	o	o	o	o	o	o	o	o	o	o	o	o
Total heat recovery	RT	□	□	□	□	□	□	□	□	□	□	□	□
Personalized frame painting	RV	o	o	o	o	o	o	o	o	o	o	o	o
Coil with double layer treatment	TDS	o	o	o	o	o	o	o	o	o	o	o	o
Electronic thermostatic valve	TE	•	•	•	•	•	•	•	•	•	•	•	•
Voltmeter	V	o	o	o	o	o	o	o	o	o	o	o	o
Brine Version	VB	o	o	o	o	o	o	o	o	o	o	o	o
Solenoid valve	VS	o	o	o	o	o	o	o	o	o	o	o	o

• Standard, o Optional, -- Not available

TECHNICAL DATA

RAH VS F Ke		352	402	452	552	622	702	852	952	1102	1252	1352	1502
Cooling mode (R513A) ⁽¹⁾													
Cooling capacity	kW	390,0	450,5	514,8	631,3	710,5	813,0	957,5	1092,6	1279,0	1449,0	1567,8	1728,6
Compressor input power	kW	110,7	126,5	142,3	179,3	196,6	223,4	260,0	293,5	341,9	384,4	423,7	460,3
Total input power	kW	129,1	146,8	165,3	204,6	224,2	253,8	292,2	328,9	378,7	424,9	469,7	510,9
Nominal input current	A	227,5	258,6	291,3	360,5	395,1	447,1	514,8	579,5	667,1	748,6	827,5	900,1
EER Gross	W/W	3,52	3,56	3,62	3,52	3,61	3,64	3,68	3,72	3,74	3,77	3,70	3,76
EER Net	W/W	3,02	3,07	3,11	3,09	3,17	3,20	3,28	3,32	3,38	3,41	3,34	3,38
Flow rate ⁽⁴⁾	m ³ /h	72,5	83,8	95,7	117,4	132,1	151,2	178,1	203,2	237,9	269,5	291,6	321,5
Pressure drop	kPa	54,8	54,2	54,9	56,0	56,9	53,5	51,2	52,6	54,0	55,0	56,2	56,2
Circuits	n°	2	2	2	2	2	2	2	2	2	2	2	2
Compressors	n°	2	2	2	2	2	2	2	2	2	2	2	2
Free Cooling ⁽²⁾													
Cooling capacity	kW	383,2	391,3	478,6	485,4	576,6	587,5	674,3	679,7	766,4	782,6	957,2	970,8
Input power	kW	18,4	20,2	23,0	25,3	27,6	30,4	32,2	35,4	36,8	40,5	46,0	50,6
Input current	A	35,3	38,8	44,1	48,5	52,9	58,2	61,8	67,9	70,6	77,6	88,2	97,0
EER	W/W	20,8	19,3	20,8	19,2	20,9	19,4	20,9	19,2	20,8	19,3	20,8	19,2
Flow rate ⁽⁴⁾	m ³ /h	72,6	74,1	90,7	91,9	109,2	111,3	127,7	128,7	145,2	148,2	181,3	183,9
Pressure drop	kPa	152,9	140,4	147,2	132,3	136,9	127,0	124,3	119,1	118,1	114,7	119,7	116,4
Free Cooling ⁽³⁾													
Cooling capacity	kW	264,28	269,86	330,07	334,76	397,66	405,17	465,03	468,76	528,55	539,72	660,14	669,52
Input power	kW	18,4	20,2	23,0	25,3	27,6	30,4	32,2	35,4	36,8	40,5	46,0	50,6
Input current	A	35,3	38,8	44,1	48,5	52,9	58,2	61,8	67,9	70,6	77,6	88,2	97,0
EER	W/W	14,4	13,3	14,4	13,2	14,4	13,3	14,4	13,2	14,4	13,3	14,4	13,2
Flow rate ⁽⁴⁾	m ³ /h	50,1	51,1	62,5	63,4	75,3	76,7	88,1	88,8	100,1	102,2	125,0	126,8
Pressure drop	kPa	72,7	66,8	70,0	62,9	65,1	60,4	59,1	56,6	56,2	54,5	57,0	55,4
Axial fans													
Quantity	n°	8	8	10	10	12	12	14	14	16	16	20	20
Total air flow	m ³ /h	149600	157080	187000	196350	224400	235620	261800	274890	299200	314160	374000	392700
Total power input	kW	18,4	20,2	23,0	25,3	27,6	30,4	32,2	35,4	36,8	40,5	46,0	50,6
Total input current	A	35,3	38,8	44,1	48,5	52,9	58,2	61,8	67,9	70,6	77,6	88,2	97,0
Weight													
Transport weight	kg	4865	5012	6131	6283	7978	8157	8667	8823	9810	9974	10895	11068
Operating weight	kg	5049	5199	6361	6515	8254	8437	8990	9148	10178	10348	11354	11532
Dimensions													
Length	mm	4750	4750	5720	5720	6700	6700	7670	7670	9800	9800	10770	10770
Width	mm	2300	2300	2300	2300	2300	2300	2300	2300	2300	2300	2300	2300
Height	mm	2560	2560	2560	2560	2560	2560	2560	2560	2560	2560	2560	2560
Sound data													
Total LWA ⁽⁵⁾	dB(A)	103,7	104,1	104,6	105,1	105,6	106,1	106,6	107,1	107,6	108,2	108,7	109,2
Total SPL 1m ⁽⁶⁾	dB(A)	83,1	83,5	84,0	84,5	85,0	85,5	86,0	86,5	87,0	87,6	88,1	88,6
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	400/3/50	400/3/50	400/3/50	400/3/50
General electrical data													
Maximum input power	[A]	281	319	364	439	495	566	644	734	837	798	1000	1117
Maximum input current	[A]	**	**	**	**	**	**	**	**	**	**	**	**

(1) Water in/out: 15/10°C - Ambient air temperature 30°C

(2) Water in/out: 15/10°C - Ambient air temperature 0°C

(3) Water in/out: 15/10°C - Ambient air temperature 5°C

(4) Hydraulic data referred to fluid Glycol 30%

(5) Sound power level in accordance with ISO 3744.

(6) Sound pressure level at 1m from the unit in free field conditions, in accordance with ISO 3744

RAH VS F HE Ke		352	402	452	552	622	702	852	952	1102	1252	1352	1502
Cooling mode (R513A) ⁽¹⁾													
Cooling capacity	kW	435,8	502,6	579,0	704,0	792,7	906,7	1066,4	1217,0	1415,8	1604,8	1740,6	1837,7
Compressor input power	kW	108,1	122,3	142,9	175,5	199,4	226,1	267,9	304,5	351,7	395,5	436,0	471,6
Total input power	kW	124,3	142,6	165,2	199,8	226,2	254,5	299,2	336,9	387,4	436,1	484,7	525,2
Nominal input current	A	219,0	251,2	291,0	352,0	398,6	448,4	527,1	593,6	682,6	768,3	854,0	925,3
EER Gross	W/W	4,03	4,11	4,05	4,01	3,97	4,01	3,98	4,00	4,03	4,06	3,99	3,90
EER Net	W/W	3,51	3,53	3,51	3,52	3,50	3,56	3,56	3,61	3,65	3,68	3,59	3,50
Flow rate ⁽⁴⁾	m ³ /h	81,0	93,5	107,7	130,9	147,4	168,6	198,3	226,3	263,3	298,5	323,7	341,8
Pressure drop	kPa	50,6	50,1	50,7	51,7	52,5	49,4	47,3	48,6	49,9	50,8	51,9	51,9
Circuits	n°	2	2	2	2	2	2	2	2	2	2	2	2
Compressors	n°	2	2	2	2	2	2	2	2	2	2	2	2
Free Cooling ⁽²⁾													
Cooling capacity	kW	389,7	482,4	494,6	585,3	591,4	674,2	681,1	779,4	786,5	964,8	1170,6	1182,8
Input power	kW	16,2	20,3	22,3	24,4	26,8	28,4	31,3	32,5	35,7	40,6	48,7	53,6
Input current	A	31,1	38,9	42,8	46,7	51,4	54,5	60,0	62,3	68,5	77,9	93,4	102,8
EER	W/W	24,0	23,8	22,1	24,0	22,1	23,7	21,8	24,0	22,0	23,8	24,0	22,1
Flow rate ⁽⁴⁾	m ³ /h	73,8	91,4	93,7	110,9	112,0	127,7	129,0	147,6	149,0	182,8	221,7	224,0
Pressure drop	kPa	140,0	145,9	136,4	135,1	128,3	126,3	118,0	118,7	114,0	117,1	122,4	120,3
Free Cooling ⁽³⁾													
Cooling capacity	kW	268,76	332,69	341,10	403,66	407,86	464,97	469,72	537,52	542,41	665,38	807,31	815,72
Input power	kW	16,2	20,3	22,3	24,4	26,8	28,4	31,3	32,5	35,7	40,6	48,7	53,6
Input current	A	31,1	38,9	42,8	46,7	51,4	54,5	60,0	62,3	68,5	77,9	93,4	102,8
EER	W/W	16,5	16,4	15,3	16,6	15,2	16,4	15,0	16,5	15,2	16,4	16,6	15,2
Flow rate ⁽⁴⁾	m ³ /h	50,9	63,0	64,6	76,5	77,3	88,1	89,0	101,8	102,7	126,0	152,9	154,5
Pressure drop	kPa	66,6	69,4	64,9	64,2	61,0	60,1	56,1	56,4	54,2	55,7	58,2	57,2
Axial fans													
Quantity	n°	8	10	10	12	12	14	14	16	16	20	24	24
Total air flow	m ³ /h	158800	198500	208425	238200	250110	277900	291795	317600	333480	397000	476400	500220
Total power input	kW	16,2	20,3	22,3	24,4	26,8	28,4	31,3	32,5	35,7	40,6	48,7	53,6
Total input current	A	31,1	38,9	42,8	46,7	51,4	54,5	60,0	62,3	68,5	77,9	93,4	102,8
Weight													
Transport weight	kg	4993	6109	6267	7976	8142	8673	8824	9800	9963	10855	12004	12177
Operating weight	kg	5185	6348	6510	8265	8433	9006	9160	10185	10350	11332	12581	12759
Dimensions													
Length	mm	4750	5720	5720	6700	6700	7670	7670	9800	9800	10770	13200	13200
Width	mm	2300	2300	2300	2300	2300	2300	2300	2300	2300	2300	2300	2300
Height	mm	2560	2560	2560	2560	2560	2560	2560	2560	2560	2560	2560	2560
Sound data													
Total LWA ⁽⁵⁾	dB(A)	103,0	103,5	104,0	104,5	105,0	105,5	106,0	106,5	107,0	107,5	108,0	108,5
Total SPL 1m ⁽⁶⁾	dB(A)	82,4	82,9	83,4	83,9	84,4	84,9	85,4	85,9	86,4	86,9	87,4	87,9
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	400/3/50	400/3/50	400/3/50	400/3/50
General electrical data													
Maximum input power	[A]	277	319	363	437	494	563	643	729	835	799	1006	1124
Maximum input current	[A]	**	**	**	**	**	**	**	**	**	**	**	**

(1) Water in/out: 15/10°C - Ambient air temperature 30°C
(2) Water in/out: 15/10°C - Ambient air temperature 0°C
(3) Water in/out: 15/10°C - Ambient air temperature 5°C
(4) Hydraulic data referred to fluid Glycol 30%

(5) Sound power level in accordance with ISO 3744.
(6) Sound pressure level at 1m from the unit in free field conditions, in accordance with ISO 3744

RAH VS F Kh		282	322	352	452	502	562	652	752	852	982	1102	1202
Cooling mode (R1234Ze) ⁽¹⁾													
Cooling capacity	kW	308,6	353,0	404,4	495,6	565,7	638,2	745,7	850,9	986,5	1117,4	1222,6	1367,5
Compressor input power	kW	80,9	92,1	102,1	128,1	144,1	158,1	182,1	206,1	242,2	272,2	300,2	332,2
Total input power	kW	98,9	111,9	123,4	150,6	168,8	185,1	211,8	237,6	276,8	308,2	343,7	377,2
Nominal input current	A	174,2	197,1	217,5	265,3	297,5	326,1	373,2	418,7	487,7	542,9	605,6	664,6
EER Gross	W/W	3,82	3,83	3,96	3,87	3,93	4,04	4,09	4,13	4,07	4,11	4,07	4,12
EER Net	W/W	3,12	3,16	3,28	3,29	3,35	3,45	3,52	3,58	3,56	3,63	3,56	3,63
Flow rate ⁽⁴⁾	m ³ /h	57,4	65,6	75,2	92,2	105,2	118,7	138,7	158,2	183,5	207,8	227,4	254,3
Pressure drop	kPa	55,8	55,2	55,2	55,9	57,0	57,9	54,4	52,1	53,5	54,9	56,0	56,0
Circuits	n°	2	2	2	2	2	2	2	2	2	2	2	2
Compressors	n°	2	2	2	2	2	2	2	2	2	2	2	2
Free Cooling ⁽²⁾													
Cooling capacity	kW	383,2	391,3	391,3	478,6	485,4	576,6	587,5	674,3	679,7	766,4	782,6	956,2
Input power	kW	18,0	19,8	21,4	22,5	24,8	27,0	29,7	31,5	34,7	36,0	43,6	45,0
Input current	A	34,5	38,0	41,0	43,2	47,5	51,8	57,0	60,4	66,5	69,0	83,5	86,3
EER	W/W	21,3	19,8	18,3	21,3	19,6	21,4	19,8	21,4	19,6	21,3	18,0	21,2
Flow rate ⁽⁴⁾	m ³ /h	72,6	74,1	74,1	90,7	91,9	109,2	111,3	127,7	128,7	145,2	148,2	181,1
Pressure drop	kPa	187,2	168,4	151,6	152,1	141,5	147,0	133,0	131,9	124,4	124,8	121,8	126,4
Free Cooling ⁽³⁾													
Cooling capacity	kW	264,28	269,86	269,86	330,07	334,76	397,66	405,17	465,03	468,76	528,55	539,72	659,45
Input power	kW	18,0	19,8	21,4	22,5	24,8	27,0	29,7	31,5	34,7	36,0	43,6	45,0
Input current	A	34,5	38,0	41,0	43,2	47,5	51,8	57,0	60,4	66,5	69,0	83,5	86,3
EER	W/W	14,7	13,6	12,6	14,7	13,5	14,7	13,6	14,8	13,5	14,7	12,4	14,7
Flow rate ⁽⁴⁾	m ³ /h	50,1	51,1	51,1	62,5	63,4	75,3	76,7	88,1	88,8	100,1	102,2	124,9
Pressure drop	kPa	89,0	80,1	72,1	72,3	67,3	69,9	63,3	62,8	59,1	59,4	57,9	60,1
Axial fans													
Quantity	n°	8	8	8	10	10	12	12	14	14	16	16	20
Total air flow	m ³ /h	156800	164640	169579	196000	205800	235200	246960	274400	288120	313600	302526	392000
Total power input	kW	18,0	19,8	21,4	22,5	24,8	27,0	29,7	31,5	34,7	36,0	43,6	45,0
Total input current	A	34,5	38,0	41,0	43,2	47,5	51,8	57,0	60,4	66,5	69,0	83,5	86,3
Weight													
Transport weight	kg	4960	5107	6226	6398	8093	8297	8807	9003	9990	10194	11115	11308
Operating weight	kg	5144	5294	6413	6628	8325	8573	9087	9326	10315	10562	11489	11767
Dimensions													
Length	mm	4750	4750	4750	5720	5720	6700	6700	7670	7670	9800	9800	10770
Width	mm	2300	2300	2300	2300	2300	2300	2300	2300	2300	2300	2300	2300
Height	mm	2560	2560	2560	2560	2560	2560	2560	2560	2560	2560	2560	2560
Sound data													
Total LWA ⁽⁵⁾	dB(A)	104,3	104,8	104,8	105,3	105,8	106,2	106,7	107,3	107,8	108,3	108,8	109,8
Total SPL 1m ⁽⁶⁾	dB(A)	83,7	84,2	84,2	84,7	85,2	85,6	86,1	86,7	87,2	87,7	88,2	89,2
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	400/3/50	400/3/50	400/3/50	400/3/50
General electrical data													
Maximum input power	[A]	281	318	361	433	489	560	639	726	832	789	996	1106
Maximum input current	[A]	**	**	**	**	**	**	**	**	**	**	**	**

(1) Water in/out: 15/10°C - Ambient air temperature 30°C
 (2) Water in/out: 15/10°C - Ambient air temperature 0°C
 (3) Water in/out: 15/10°C - Ambient air temperature 5°C
 (4) Hydraulic data referred to fluid Glycol 30%

(5) Sound power level in accordance with ISO 3744.
 (6) Sound pressure level at 1m from the unit in free field conditions, in accordance with ISO 3744

RAH VS F HE Kh		282	322	352	452	502	562	652	752	852	982	1102	1202
Cooling mode (R1234Ze) ⁽¹⁾													
Cooling capacity	kW	325,8	379,8	424,1	519,7	593,0	668,6	779,6	888,3	1030,0	1155,8	1275,7	1412,4
Compressor input power	kW	76,8	87,9	99,7	125,3	142,0	154,8	178,1	202,7	241,2	273,2	297,1	331,8
Total input power	kW	93,2	108,4	120,2	152,4	166,6	186,4	206,8	238,8	274,0	318,3	346,3	385,9
Nominal input current	A	164,1	191,1	211,8	268,4	293,5	328,4	364,3	420,8	482,7	560,7	610,1	679,9
EER Gross	W/W	4,24	4,32	4,25	4,15	4,18	4,32	4,38	4,38	4,27	4,23	4,29	4,26
EER Net	W/W	3,50	3,50	3,53	3,41	3,56	3,59	3,77	3,72	3,76	3,63	3,68	3,66
Flow rate ⁽⁴⁾	m ³ /h	60,6	70,6	78,9	96,7	110,3	124,3	145,0	165,2	191,6	214,9	237,3	262,7
Pressure drop	kPa	51,2	50,7	50,7	51,3	52,3	53,2	50,0	47,9	49,2	50,5	51,5	51,5
Circuits	n°	2	2	2	2	2	2	2	2	2	2	2	2
Compressors	n°	2	2	2	2	2	2	2	2	2	2	2	2
Free Cooling ⁽²⁾													
Cooling capacity	kW	391,5	486,6	499,2	591,2	598,4	679,8	681,1	783,0	786,5	973,2	1182,4	1196,8
Input power	kW	16,4	20,5	20,5	27,1	24,6	31,6	28,7	36,1	32,8	45,1	49,2	54,1
Input current	A	31,5	39,3	39,3	51,9	47,2	60,5	55,0	69,2	62,9	86,5	94,4	103,8
EER	W/W	23,9	23,7	24,4	21,8	24,3	21,5	23,7	21,7	24,0	21,6	24,0	22,1
Flow rate ⁽⁴⁾	m ³ /h	74,2	92,2	94,6	112,0	113,3	128,8	129,0	148,3	149,0	184,3	224,0	226,7
Pressure drop	kPa	174,7	184,4	170,9	166,9	153,3	155,0	137,6	136,6	127,7	135,1	143,9	136,3
Free Cooling ⁽³⁾													
Cooling capacity	kW	270,00	335,59	344,28	407,72	412,69	468,83	469,72	540,00	542,41	671,17	815,45	825,38
Input power	kW	16,4	20,5	20,5	27,1	24,6	31,6	28,7	36,1	32,8	45,1	49,2	54,1
Input current	A	31,5	39,3	39,3	51,9	47,2	60,5	55,0	69,2	62,9	86,5	94,4	103,8
EER	W/W	16,5	16,4	16,8	15,1	16,8	14,9	16,4	15,0	16,5	14,9	16,6	15,3
Flow rate ⁽⁴⁾	m ³ /h	51,1	63,6	65,2	77,2	78,2	88,8	89,0	102,3	102,7	127,1	154,5	156,3
Pressure drop	kPa	83,1	87,7	81,3	79,4	72,9	73,7	65,4	65,0	60,8	64,3	68,4	64,8
Axial fans													
Quantity	n°	8	10	10	12	12	14	14	16	16	20	24	24
Total air flow	m ³ /h	160200	200250	210263	240300	252315	280350	294368	320400	336420	400500	480600	504630
Total power input	kW	16,4	20,5	20,5	27,1	24,6	31,6	28,7	36,1	32,8	45,1	49,2	54,1
Total input current	A	31,5	39,3	39,3	51,9	47,2	60,5	55,0	69,2	62,9	86,5	94,4	103,8
Weight													
Transport weight	kg	5113	6239	6407	8136	8302	8853	9014	9995	10163	11065	12224	12407
Operating weight	kg	5306	6479	6652	8427	8596	9189	9350	10381	10550	11545	12806	12995
Dimensions													
Length	mm	4750	5720	5720	6700	6700	7670	7670	9800	9800	10770	13200	13200
Width	mm	2300	2300	2300	2300	2300	2300	2300	2300	2300	2300	2300	2300
Height	mm	2560	2560	2560	2560	2560	2560	2560	2560	2560	2560	2560	2560
Sound data													
Total LWA ⁽⁵⁾	dB(A)	103,2	103,7	104,2	104,7	105,2	105,7	106,2	106,7	107,2	107,7	108,2	108,7
Total SPL 1m ⁽⁶⁾	dB(A)	82,6	83,1	83,6	84,1	84,6	85,1	85,6	86,1	86,6	87,1	87,6	88,1
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	400/3/50	400/3/50	400/3/50	400/3/50
General electrical data													
Maximum input power	[A]	277	319	359	442	489	569	637	735	829	806	1006	1124
Maximum input current	[A]	**	**	**	**	**	**	**	**	**	**	**	**

(1) Water in/out: 15/10°C - Ambient air temperature 30°C
 (2) Water in/out: 15/10°C - Ambient air temperature 0°C
 (3) Water in/out: 15/10°C - Ambient air temperature 5°C
 (4) Hydraulic data referred to fluid Glycol 30%

(5) Sound power level in accordance with ISO 3744.
 (6) Sound pressure level at 1m from the unit in free field conditions, in accordance with ISO 3744

RWE N Kc Kr

WATER COOLED CHILLERS WATER CONDENSED FOR INDOOR INSTALLATION EQUIPPED WITH SCROLL COMPRESSORS

Cooling capacity from 54 kW to 476 kW



R410a



H2O



ERP 2021

The water cooled chillers of RWE N series are designed for indoor installation and are particularly suitable for small and medium sized air conditioning systems with different applications like multiple dwellings and commercial application, whereas a water ring for heat dissipation is available.

They are all available with 1 or 2 cooling circuits.

The units have been designed to be extremely compact, with anyway an easy access for both ordinary and extraordinary maintenance.

Thanks to their compact dimensions (for the whole range, the width is 750mm) and to the several available options, these units are particularly easy to install also in small spaces, with no building works.

They are completely factory assembled and tested and supplied with refrigerant and non-freezing oil charge.

Therefore, once on site, the units only need to be positioned and electrically and hydraulically connected.

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

COMPONENTS

STRUCTURE

Strong and compact frame, made of bended and RAL 7035 coloured steel profiles, supporting all the main components, installed at sight.

On request, the compressors can be acoustically isolated by a soundproofing cabinet with standard material (option CF) or by high density fireproof material with increased thickness (option CFU), in order to further reduce unit sound level.

COMPRESSOR

High-efficiency orbiting spirals Scroll Compressor working with R410A, with low sound level, internal heat protection and installed on rubber vibration dampers.

EVAPORATOR AND CONDENSER

Of weld-brazed plate type, in AISI 316 stainless steel, with pipes and patented manifold so to reach a high heat exchange coefficient, 1 or 2 circuits. Its design allows a uniform water distribution, compatibly with pressure drops.

The exchanger is provided with large thickness close-cell insulating material. Max working pressure is 10 bar for water side and 42 bar for refrigerant one.

COOLING CIRCUIT

Composed of mechanical thermostatic expansion valve (electronic type from 2892 model to 4782), dehydrating filter, safety valve on high pressure side, high and low pressure switches.

ELECTRICAL BOARD

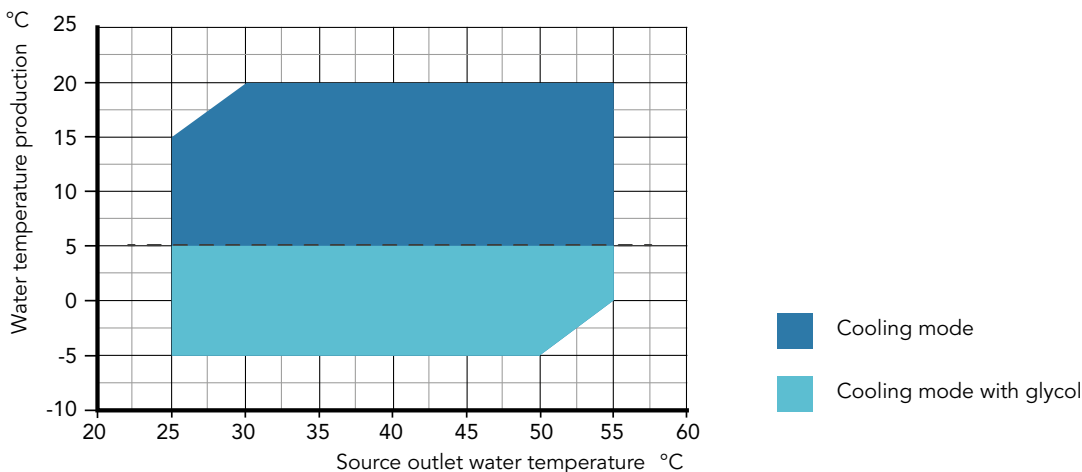
In compliance with 60204-1/IEC 204-1 standard, containing all the components for the managing system and the ones required for motors start, factory connected and tested.

Made up of: structure suitable for containing power and managing devices, electronic card equipped with keyboard and 3 digit display integrated in the microprocessor for displaying all different functions, main switch, transformer for auxiliaries, automatic switches, contactors for compressors protection and managing, contacts for cumulative alarms and remote ON/OFF, spring type terminal board, interfacing pre-arrangement for BMS management.

MICROPROCESSOR

Electronic unit management Microprocessor easily accessible, equipped with compressor hour counter and display installed on the external panel.

OPERATING RANGE



ACCESSORIES

RWE N KC		511	611	771	891	1022	1222	1542
Amperometer	A	o	o	o	o	o	o	o
Electrical power supply different than standard	AE	o	o	o	o	o	o	o
Soundproofed compressors cabinet with standard material	CF	o	o	o	o	o	o	o
Compressor inrush counter	CS	o	o	o	o	o	o	o
Crankcase heater	EHC	o	o	o	o	o	o	o
Watch card	IG	o	o	o	o	o	o	o
RS 485 Serial interface	IH	o	o	o	o	o	o	o
Serial Interface RS 485 with advanced microprocessor	IH+MP	o	o	o	o	o	o	o
Seawood packing	IM	o	o	o	o	o	o	o
Wooden platform packing	IR	o	o	o	o	o	o	o
Phase monitor	MF	o	o	o	o	o	o	o
Advanced microprocessor	MP	o	o	o	o	o	o	o
High and low pressure gauges	MT	o	o	o	o	o	o	o
Rubber-type vibration dampers	PA	o	o	o	o	o	o	o
Safety water flow switch	PF	o	o	o	o	o	o	o
Remote display	PQ	o	o	o	o	o	o	o
Remote terminal with advanced microprocessor	PQ+MP	o	o	o	o	o	o	o
Anti-freeze heater on evaporator	RA	o	o	o	o	o	o	o
Shut-off valve on compressors discharge side	RD	o	o	o	o	o	o	o
Power factor correction system cosφ ≥0,9	RF	o	o	o	o	o	o	o
Shut-off valve on compressors suction side	RH	o	o	o	o	o	o	o
Compressor overload relays	RL	o	o	o	o	o	o	o
Electronic soft starter	SF	o	o	o	o	o	o	o
Electronic thermostatic valve	TE	o	o	o	o	o	o	o
Voltmeter	V	o	o	o	o	o	o	o
Brine Version	VB	o	o	o	o	o	o	o
Solenoid valve	VS	o	o	o	o	o	o	o
Partial heat recovery	RP	o	o	o	o	o	o	o
Total heat recovery	RT	o	o	o	o	o	o	o

• Standard, o Optional, -- Not available

RWE N KC

RWE N KC		1782	2382	2892	3812	4182	4782
Amperometer	A	o	o	o	o	o	o
Electrical power supply different than standard	AE	o	o	o	o	o	o
Soundproofed compressors cabinet with standard material	CF	o	o	o	o	o	o
Compressor inrush counter	CS	o	o	o	o	o	o
Crankcase heater	EHC	o	o	o	o	o	o
Watch card	IG	o	o	o	o	o	o
RS 485 Serial interface	IH	o	o	o	o	o	o
Serial Interface RS 485 with advanced microprocessor	IH+MP	o	o	o	o	o	o
Seawood packing	IM	o	o	o	o	o	o
Wooden platform packing	IR	o	o	o	o	o	o
Phase monitor	MF	o	o	o	o	o	o
Advanced microprocessor	MP	o	o	o	o	o	o
High and low pressure gauges	MT	o	o	o	o	o	o
Rubber-type vibration dampers	PA	o	o	o	o	o	o
Safety water flow switch	PF	o	o	o	o	o	o
Remote display	PQ	o	o	o	o	o	o
Remote terminal with advanced microprocessor	PQ+MP	o	o	o	o	o	o
Anti-freeze heater on evaporator	RA	o	o	o	o	o	o
Shut-off valve on compressors discharge side	RD	o	o	o	o	o	o
Power factor correction system cosfi ≥0,9	RF	o	o	o	o	o	o
Shut-off valve on compressors suction side	RH	o	o	o	o	o	o
Compressor overload relays	RL	o	o	o	o	o	o
Electronic soft starter	SF	o	o	o	o	o	o
Electronic thermostatic valve	TE	o	o	•	•	•	•
Voltmeter	V	o	o	o	o	o	o
Brine Version	VB	o	o	o	o	o	o
Solenoid valve	VS	o	o	o	o	o	o
Partial heat recovery	RP	o	o	o	o	o	o
Total heat recovery	RT	o	o	o	o	o	o

• Standard, o Optional, -- Not available

ACCESSORIES

RWE N KR		511	611	771	891	1022	1222	1542
Amperometer	A	o	o	o	o	o	o	o
Electrical power supply different than standard	AE	o	o	o	o	o	o	o
Soundproofed compressors cabinet with standard material	CF	o	o	o	o	o	o	o
Compressor inrush counter	CS	o	o	o	o	o	o	o
Crankcase heater	EHC	o	o	o	o	o	o	o
Watch card	IG	o	o	o	o	o	o	o
RS 485 Serial interface	IH	o	o	o	o	o	o	o
Serial Interface RS 485 with advanced microprocessor	IH+MP	o	o	o	o	o	o	o
Seawood packing	IM	o	o	o	o	o	o	o
Wooden platform packing	IR	o	o	o	o	o	o	o
Phase monitor	MF	o	o	o	o	o	o	o
Advanced microprocessor	MP	o	o	o	o	o	o	o
High and low pressure gauges	MT	o	o	o	o	o	o	o
Rubber-type vibration dampers	PA	o	o	o	o	o	o	o
Safety water flow switch	PF	o	o	o	o	o	o	o
Remote display	PQ	o	o	o	o	o	o	o
Remote terminal with advanced microprocessor	PQ+MP	o	o	o	o	o	o	o
Anti-freeze heater on evaporator	RA	o	o	o	o	o	o	o
Shut-off valve on compressors discharge side	RD	o	o	o	o	o	o	o
Power factor correction system cosφ ≥0,9	RF	o	o	o	o	o	o	o
Shut-off valve on compressors suction side	RH	o	o	o	o	o	o	o
Compressor overload relays	RL	o	o	o	o	o	o	o
Electronic soft starter	SF	o	o	o	o	o	o	o
Electronic thermostatic valve	TE	o	o	o	o	o	o	o
Voltmeter	V	o	o	o	o	o	o	o
Brine Version	VB	o	o	o	o	o	o	o
Solenoid valve	VS	o	o	o	o	o	o	o
Partial heat recovery	RP	o	o	o	o	o	o	o
Total heat recovery	RT	o	o	o	o	o	o	o

• Standard, o Optional, -- Not available

RWE N KR		1782	2382	2892	3812	4182	4782
Amperometer	A	o	o	o	o	o	o
Electrical power supply different than standard	AE	o	o	o	o	o	o
Soundproofed compressors cabinet with standard material	CF	o	o	o	o	o	o
Compressor inrush counter	CS	o	o	o	o	o	o
Crankcase heater	EHC	o	o	o	o	o	o
Watch card	IG	o	o	o	o	o	o
RS 485 Serial interface	IH	o	o	o	o	o	o
Serial Interface RS 485 with advanced microprocessor	IH+MP	o	o	o	o	o	o
Seawood packing	IM	o	o	o	o	o	o
Wooden platform packing	IR	o	o	o	o	o	o
Phase monitor	MF	o	o	o	o	o	o
Advanced microprocessor	MP	o	o	o	o	o	o
High and low pressure gauges	MT	o	o	o	o	o	o
Rubber-type vibration dampers	PA	o	o	o	o	o	o
Safety water flow switch	PF	o	o	o	o	o	o
Remote display	PQ	o	o	o	o	o	o
Remote terminal with advanced microprocessor	PQ+MP	o	o	o	o	o	o
Anti-freeze heater on evaporator	RA	o	o	o	o	o	o
Shut-off valve on compressors discharge side	RD	o	o	o	o	o	o
Power factor correction system cosfi ≥0,9	RF	o	o	o	o	o	o
Shut-off valve on compressors suction side	RH	o	o	o	o	o	o
Compressor overload relays	RL	o	o	o	o	o	o
Electronic soft starter	SF	o	o	o	o	o	o
Electronic thermostatic valve	TE	o	o	•	•	•	•
Voltmeter	V	o	o	o	o	o	o
Brine Version	VB	o	o	o	o	o	o
Solenoid valve	VS	o	o	o	o	o	o
Partial heat recovery	RP	o	o	o	o	o	o
Total heat recovery	RT	o	o	o	o	o	o

• Standard, o Optional, -- Not available

TECHNICAL DATA

RWE N Kc		511	611	771	891	1022	1222	1542
Cooling capacity	kW	54,4	62,0	81,4	92,9	108,2	121,8	162,8
Total input power	kW	11,7	13,8	16,9	20,3	23,9	27,3	36,2
Nominal input current	A	24,0	28,1	31,4	39,9	47,6	56,7	68,7
EER	W/W	4,65	4,49	4,82	4,58	4,53	4,46	4,50
SEER (EN14825)	W/W	5,33	5,32	5,21	5,27	5,80	5,40	5,52
Circuits	n°	1	1	1	1	2	2	2
Compressors	n°	2	2	2	2	4	4	4
Refrigerant data R410A								
Refrigerant charge	kg	4	4	5	6	19	19	26
Global warming potential (GWP)	-	2088	2088	2088	2088	2088	2088	2088
Equivalent CO ₂ charge	t	8,4	8,4	10,4	12,5	40,1	40,1	54,3
Condenser ⁽¹⁾								
Quantity	n°	1	1	1	1	1	1	1
Flow rate	m ³ /h	10,9	12,5	16,2	18,7	21,9	24,8	33,0
Total input current	kW	33,4	42,5	40,9	30,7	22,2	27,7	31,5
Evaporator ⁽²⁾								
Quantity	n°	1	1	1	1	1	1	1
Water flow	m ³ /h	8,9	10,2	13,3	15,3	17,8	20,0	26,8
Pressure drop	kPa	33,1	41,7	37,2	47,0	26,8	33,1	32,7
Weight								
Transport weight	kg	428	443	459	612	721	741	790
Operating weight	kg	436	451	470	624	738	758	814
Dimensions								
Length	mm	1500	1500	1500	1500	2500	2500	2500
Width	mm	750	750	750	750	750	750	750
Height	mm	1600	1600	1800	1800	1800	1800	1800
Sound data								
Total LWA ⁽³⁾	dB(A)	74	77	79	80	75	77	78
Total SPL 10m ⁽⁴⁾	dB(A)	42,5	45,5	47,4	48,4	43,3	45,3	46,3
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
General electrical data								
Maximum input power	[kW]	19,4	23,2	29,5	33,9	41,2	46,4	60,0
Maximum input current	[A]	36,4	43,2	62,0	68,0	75,6	86,4	118,0
Inrush current	[A]	146,2	160,6	171,0	208,0	193,0	203,8	258,0

(1) Fluid: Water - In/out Temperature: 30/35°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

* Units only available for the non-EU market

RWE N Kc		1782	2382	2892	3812	4182*	4782*
Cooling capacity	kW	198,5	244,7	314,0	393,8	429,5	475,7
Total input power	kW	43,3	52,7	69,8	89,4	103,0	114
Nominal input current	A	78,3	98,4	121,7	154,1	171,9	190,3
EER	W/W	4,58	4,64	4,50	4,40	4,17	4,17
SEER (EN14825)	W/W	5,47	5,75	5,49	5,35	4,90	4,82
Circuits	n°	2	2	2	2	2	2
Compressors	n°	4	4	4	4	4	4
Refrigerant data R410A							
Refrigerant charge	kg	30	47	49	71	68	80
Global warming potential (GWP)	-	2088	2088	2088	2088	2088	2088
Equivalent CO ₂ charge	t	63,5	97,7	102,7	147,8	141,1	167,0
Condenser ⁽¹⁾							
Quantity	n°	1	1	1	1	1	1
Flow rate	m ³ /h	40,0	49,2	63,3	79,8	87,6	97,0
Total input current	kW	38,2	30,6	47,7	48,5	78,4	73,5
Evaporator ⁽²⁾							
Quantity	n°	1	1	1	1	1	1
Water flow	m ³ /h	32,6	40,1	51,4	64,5	70,4	77,9
Pressure drop	kPa	30,6	35,1	42,1	49,2	92,6	86,6
Weight							
Transport weight	kg	1102	1197	1277	1346	1404	1508
Operating weight	kg	1131	1239	1322	1411	1454	1567
Dimensions							
Length	mm	3000	3000	3000	3000	3000	3000
Width	mm	750	850	850	850	850	850
Height	mm	1800	2030	2030	2030	2030	2030
Sound data							
Total LWA ⁽³⁾	dB(A)	85	88	85	88	88	95
Total SPL 10m ⁽⁴⁾	dB(A)	53,2	56,2	53,2	56,2	56,2	63,2
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
General electrical data							
Maximum input power	[kW]	70,9	85,7	114	142	162	180
Maximum input current	[A]	138,4	165,2	207,2	262,4	296	330,4
Inrush current	[A]	341	404,1	451,8	587,8	621,4	655,8

(1) Fluid: Water - In/out Temperature: 30/35°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
* Units only available for the non-EU market

RWE N Kr		511	611	771	891	1022	1222	1542
Cooling capacity	kW	22,0	61,9	83,9	88,7	111,0	123,0	160,0
Total input power	kW	11,2	12,7	16,6	18,8	22,8	26,3	34,3
Nominal input current	A	24,3	26,3	31,8	37,6	47,1	53,7	68,2
EER	W/W	4,91	4,87	5,05	4,72	4,87	4,68	4,66
SEER (EN14825)	W/W	6,12	5,95	6,08	5,60	6,37	6,04	6,01
Circuits	n°	1	1	1	1	2	2	2
Compressors	n°	2	2	2	2	4	4	4
Refrigerant data R454B								
Refrigerant charge	kg	5	5	8	8	10	12	16
Global warming potential (GWP)	-	466	466	466	466	466	466	466
Equivalent CO ₂ charge	t	2,3	2,3	3,7	3,7	4,7	5,6	7,5
Condenser ⁽¹⁾								
Quantity	n°	1	1	1	1	1	1	1
Flow rate	m ³ /h	11,41	12,85	17,31	18,50	23,03	25,83	33,50
Pressure drop	kPa	21,4	26,5	26,6	30,0	16,1	19,8	23,4
Evaporator ⁽²⁾								
Quantity	n°	1	1	1	1	1	1	1
Water flow	m ³ /h	9,47	10,66	14,45	15,28	19,02	21,24	27,54
Pressure drop	kPa	20,7	25,6	33,4	36,9	11,1	20,8	21,5
Weight								
Transport weight	kg	429	432	455	462	715	758	799
Operating weight	kg	441	444	470	478	732	782	829
Dimensions								
Length	mm	1500	1500	1500	1500	2500	2500	2500
Width	mm	750	750	750	750	750	750	750
Height	mm	1600	1600	1800	1800	1800	1800	1800
Sound data								
Total LWA ⁽³⁾	dB(A)	77	78	79	81	79	81	83
Total SPL 10m ⁽⁴⁾	dB(A)	46	47	47	49	47	50	51
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
General electrical data								
Maximum input power	[kW]	19,6	22,8	29,0	32,6	40,3	45,6	58,6
Maximum input current	[A]	35,4	39,4	48,8	56,4	69,8	78,8	101,0
Inrush current	[A]	106	162	182	225	192	201	269

(1) Fluid: Water - In/out Temperature: 30/35°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

* Units only available for the non-EU market

RWE N Kr		1782	2382	2892	3812	4182*	4782*
Cooling capacity	kW	177,0	234,0	301,0	383,0	419,0	467,0
Total input power	kW	38,9	51,4	67,6	83,4	91,1	103,0
Nominal input current	A	77,2	96,8	116,0	150,0	159,0	183,0
EER	W/W	4,55	4,55	4,45	4,59	4,60	4,53
SEER (EN14825)	W/W	5,66	5,78	5,74	5,83	8,78	5,68
Circuits	n°	2	2	2	2	2	2
Compressors	n°	4	4	4	4	4	4
Refrigerant data R454B							
Refrigerant charge	kg	16	22	31	43	48	48
Global warming potential (GWP)	-	466	466	466	466	466	466
Equivalent CO ₂ charge	t	7,5	10,3	14,4	20,0	22,4	22,4
Condenser ⁽¹⁾							
Quantity	n°	1	1	1	1	1	1
Flow rate	m ³ /h	37,15	49,10	63,44	80,21	87,76	98,03
Pressure drop	kPa	28,2	31,9	34,9	38,1	36,0	43,9
Evaporator ⁽²⁾							
Quantity	n°	1	1	1	1	1	1
Water flow	m ³ /h	30,43	40,42	51,77	65,80	72,05	80,35
Pressure drop	kPa	25,7	33,0	39,5	37,8	44,5	54,2
Weight							
Transport weight	kg	833	983	1254	1403	1581	1615
Operating weight	kg	863	1023	1311	1483	1669	1704
Dimensions							
Length	mm	3000	3000	3000	3000	3000	3000
Width	mm	750	850	850	850	850	850
Height	mm	1800	2030	2030	2030	2030	2030
Sound data							
Total LWA ⁽³⁾	dB(A)	84	87	92	94	95	97
Total SPL 10m ⁽⁴⁾	dB(A)	52	55	60	62	63	65
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
General electrical data							
Maximum input power	[kW]	65,2	92,6	109,0	150,0	159,0	180,0
Maximum input current	[A]	113,0	180,0	215,0	336,0	325,0	424,0
Inrush current	[A]	282	378	452	574	563	662

(1) Fluid: Water - In/out Temperature: 30/35°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

* Units only available for the non-EU market

RWH VS Ke/Kh

**WATER COOLED CHILLERS WATER CONDENSED FOR INDOOR INSTALLATION
EQUIPPED WITH SCREW COMPRESSORS FULL INVERTER
AND SHELL AND TUBE EXCHANGER**

Cooling capacity from 269 kW to 2020 kW

R513A

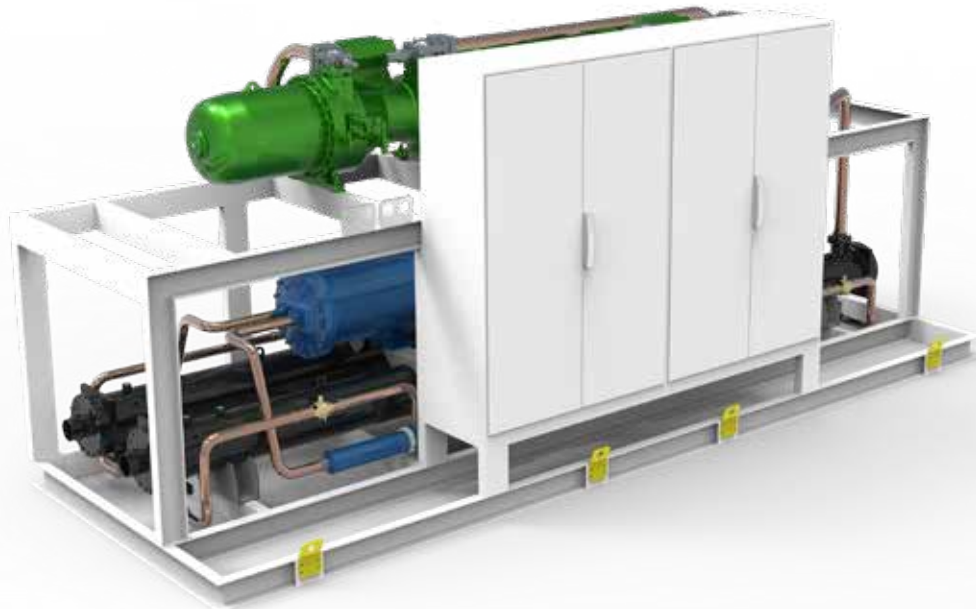
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H2O



ERP
2021



VERSIONS

RWH VS - standard version

The modular water cooled chillers of RWH...VS KE series are suitable for external installations and are particularly indicated to cool fluid solutions for industrial applications or air conditioning systems of commercial sector, where it is necessary to grant a very low environmental impact, class A efficiency and the compliance with the seasonal efficiency requirements specified on the EU Regulation 2016/2281.

The units of this series are equipped with two semi-hermetic screw compressors; each one provided with constant control of the cooling capacity through dedicated external inverter, each compressor operates on a single independent circuit thus ensuring the highest reliability.

All the units are totally factory assembled and tested, following specific quality procedures. Besides, they are hydraulic, cooling and electrical connected allowing a quick installation once on site. Before the test, the cool-

ing circuits of each unit are subjected to a pressure test and then charged with refrigerant and non-freezing oil. Therefore, once on site, the units must only be positioned and electrically and hydraulically connected.

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

COMPONENTS

FRAME

Robust and compact supporting structure, built with folded and painted steel profiles that integrates the exchangers of the evaporator and tube bundle condenser unit and on which all components are mounted. On demand, the compressors can be acoustically insulated with a cabinet covered with a standard sound-proofed material or with a double thickness sound-proofing material to further reduce the unit sound level.

COMPRESSORS semi-hermetic screw type with INVERTER

Compressors of semi-hermetic screw type, controlled by integrated frequency inverter, allowing to adapt the power to the load variations ensuring at the same time the maximum efficiency at different operating conditions. The compressors are provided with motor thermal protection, rotation direction control, crankcase heater, oil filter, oil service valve, POE oil charge and vibration dumpers kit. Compressors lubrication is of forced type without pump, to avoid excessive oil migrations to the cooling circuit, compressors are equipped with an oil separator on discharge side. Both compressors are equipped with an oil flow safety switch, an optoelectronic device operating in case the oil flow inside the compressor falls below the minimum threshold.

EVAPORATOR

Tube bundle type with dry expansion and pure electrolytic copper tubes, shell and tube plate made up of carbon steel. The exchanger is provided with anti-condensation insulation made up of a nitrile rubber and polyethylene foam with a thickness of 8mm externally protected by an embossed scratchproof polyethylene film. The hydraulic connection are of elastic Victaulic type. Inside the shell, some plastic and corrosion-proof baffles, allowing a correct water distribution and making the tube bundle particularly strong and vibration free, even with high water flows. The evaporator is also provided with a safety water flow switch that does not allow the unit to operate in case of water flow rate lack to the evaporator.

CONDENSER

The condenser, complete with victaulic couplings, of singlepass type with water flow on the tube side (finned externally and internally lined) and refrigerant flow on the shell side.

COOLING CIRCUITS

Each cooling circuit is equipped with the following elements: filter drier, sight glass, electronic thermostatic valve, high and low pressure safety valves, shut-off valve on liquid line, non-return valve on compressor discharge, high and low pressure gauges, high and low pressure switches, temperature probes to evapo-

erator inlet and outlet.

The above-mentioned components are connected in a close circuit through copper pipes and connections. The permanent junctions among components are made by brazing or welding, following processes and made by qualified staff.

ELECTRIC BOARD

The electrical cabinet of the unit, is realized in compliance with current European Standards inside a metal compartment with protection degree IP54 suitable for external installation and separated from airflow.

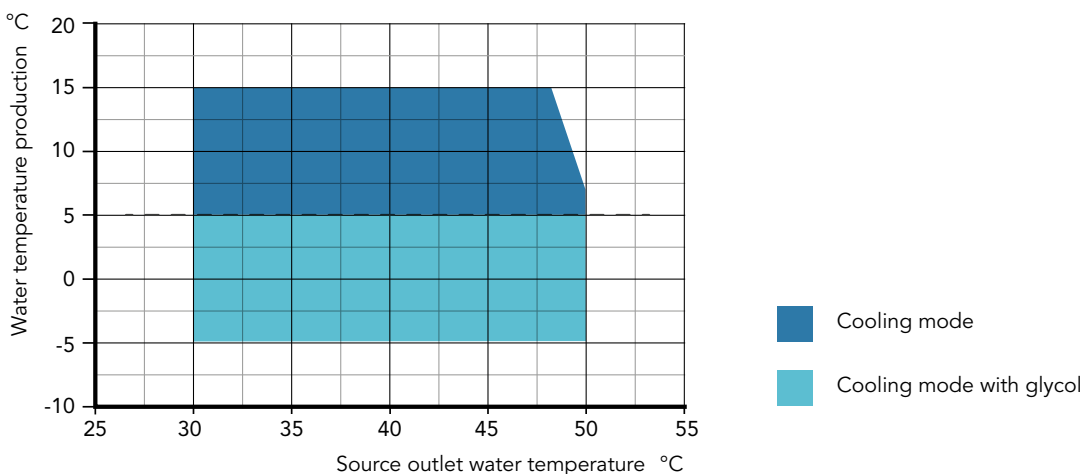
The main features are: three-phase power supply 400V/3ph/50Hz on all models (if not differently required); low voltage auxiliary circuit 24Vac with insulation transformer; lockable mechanical main switch; protection automatic switches; terminal box for signal and management free-comtacts.

The opening panel of the a.m electrical cabinet is equipped with main switch. Inside the compartment the following main components are also installed: contactors; automatic overload protection switches; transformers; numbered wires; low voltage auxiliary circuit; terminals; management and control electronic cards.

MICROPROCESSOR

All the units are subject to a safety cycle with continuity tests on the protection circuit, insulation resistance and tension test (dielectric strength). The unit management is realized by the management program uploaded in the electronic microprocessor. The microprocessor is made up of: an electronic control board with terminals for working parameters transmission and control devices activation, a user interface board with programming buttons and graphic display to show operation status and alarms. The electronic control board manages all the devices installed in the unit based on the values of the operation variables, with the following main functions: unit ON/OFF from board or from remote position, management and storage of alert and alarm status. The user interface display of the microprocessor allows also to see the following information: working parameters set values, functional variables values; analogue and digital inputs and outputs status, unit operation status, alert and alarm indications. Possibility to interface EMS/BMS management systems.

OPERATING RANGE



RWH VS Ke		271	331	431	521	302	432	562	702	762
Amperometer+Voltmeter	A+V	o	o	o	o	o	o	o	o	o
Compressors cabinet in rock wool.	CFR	o	o	o	o	o	o	o	o	o
RS 485 Serial interface	IH	o	o	o	o	o	o	o	o	o
BAC-NET Serial interface	IH BAC	o	o	o	o	o	o	o	o	o
Wooden platform packing	IR	o	o	o	o	o	o	o	o	o
Fumigated wooden crate packing.	IE	o	o	o	o	o	o	o	o	o
Seawood packing	IM	o	o	o	o	o	o	o	o	o
SNMP or TCP/IP Protocol serial interface	IWG	o	o	o	o	o	o	o	o	o
Rubber-type vibration dampers	PA	o	o	o	o	o	o	o	o	o
Spring-type vibration dampers	PM	o	o	o	o	o	o	o	o	o
Remote display	PQ	o	o	o	o	o	o	o	o	o
Anti-freeze heater on evaporator	RA	o	o	o	o	o	o	o	o	o
Shut-off valve on compressors discharge side	RD	o	o	o	o	o	o	o	o	o
Shut-off valve on compressors suction side	RH	o	o	o	o	o	o	o	o	o
Partial heat recovery	RP	o	o	o	o	o	o	o	o	o
Brine Version	VB	o	o	o	o	o	o	o	o	o
Mixing valve for condensing control	VCP	o	o	o	o	o	o	o	o	o
Pressostatic valve for condensing control	VP	--	--	--	--	--	o	o	o	o

• Standard, o Optional, -- Not available

RWH VS Ke		862	1052	1192	1382	1562	1573	1793	2063
Amperometer+Voltmeter	A+V	0	0	0	0	0	0	0	0
Compressors cabinet in rock wool.	CFR	0	0	0	0	0	0	0	0
RS 485 Serial interface	IH	0	0	0	0	0	0	0	0
BAC-NET Serial interface	IH BAC	0	0	0	0	0	0	0	0
Wooden platform packing	IR	0	0	0	0	0	0	0	0
Fumigated wooden crate packing.	IE	0	0	0	0	0	0	0	0
Seawood packing	IM	0	0	0	0	0	0	0	0
SNMP or TCP/IP Protocol serial interface	IWG	0	0	0	0	0	0	0	0
Rubber-type vibration dampers	PA	0	0	0	0	0	0	0	0
Spring-type vibration dampers	PM	0	0	0	0	0	0	0	0
Remote display	PQ	0	0	0	0	0	0	0	0
Anti-freeze heater on evaporator	RA	0	0	0	0	0	0	0	0
Shut-off valve on compressors discharge side	RD	0	0	0	0	0	0	0	0
Shut-off valve on compressors suction side	RH	0	0	0	0	0	0	0	0
Partial heat recovery	RP	0	0	0	0	0	0	0	0
Brine Version	VB	0	0	0	0	0	0	0	0
Mixing valve for condensing control	VCP	0	0	0	0	0	0	0	0
Pressostatic valve for condensing control	VP	--	--	--	--	--	--	--	--

• Standard, 0 Optional, -- Not available

RWH VS Ke		271	331	431	521	302	432	562	702	762
Cooling capacity	kW	269	337	421	510	302	414	543	678	738
Total input power	kW	59,4	72,5	89,9	109	63,8	89,2	118	145	158
Nominal input current	A	94,9	109,7	144,7	168,1	107,6	149,7	190,0	219,5	252,5
EER	W/W	4,53	4,65	4,68	4,68	4,73	4,64	4,60	4,68	4,67
SEER (EN14825)	W/W	7,04	7,12	7,10	7,13	7,21	7,24	7,28	7,30	7,35
Circuits	n°	1	1	1	1	2	2	2	2	2
Compressors	n°	1	1	1	1	2	2	2	2	2
Refrigerant data R513A										
Refrigerant charge	kg	42	94	88	82	70	62	80	186	178
Global warming potential (GWP)		573	573	573	573	573	573	573	573	573
Equivalent CO ₂ charge	t	24,1	53,9	50,4	47,0	40,1	35,5	45,8	106,6	102,0
Condenser ⁽¹⁾										
Quantity	n°	1	1	1	1	2	2	2	2	2
Flow rate	m ³ /h	56,5	70,4	87,9	106,5	62,9	86,6	113,7	141,6	154,1
Total input current	kW	29,0	27,0	31,1	25,2	27,0	27,0	29,2	37,6	27,1
Evaporator ⁽²⁾										
Quantity	n°	1	1	1	1	1	1	1	1	1
Water flow	m ³ /h	46,3	58,0	72,4	87,7	51,9	71,2	93,4	116,6	126,9
Pressure drop	kPa	51,0	39,0	43,9	42,8	48,0	42,0	41,8	40,7	47,6
Weight										
Transport weight	kg	1476	1974	2172	2790	2046	2506	2910	3952	4062
Operating weight	kg	1648	2148	2422	3182	2220	2752	3304	4352	4470
Dimensions										
Length	mm	4700	4700	4700	4700	4700	4700	4700	4700	4700
Width	mm	1550	1550	1550	1550	1850	1850	1850	1850	1850
Height	mm	1750	1750	1750	1750	2200	2200	2200	2200	2200
Sound data										
Total LWA ⁽³⁾	dB(A)	94,8	95,1	96,2	96,5	96,9	97,3	97,8	98,1	98,8
Total SPL 10m ⁽⁴⁾	dB(A)	62,7	63,0	64,1	64,4	64,6	65,0	65,6	65,9	66,5
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	400/3/50
General electrical data										
Maximum input power	[kW]	59,4	72,5	89,9	109,0	63,8	89,2	118,0	145,0	158,0
Maximum input current	[A]	128,0	156,0	203,0	233,0	148,0	196,0	256,0	312,0	354,0
Inrush current	[A]	**	**	**	**	**	**	**	**	**
RWH VS Ke		862	1052	1192	1382	1562	1573	1793	2063	
Cooling capacity	kW	841	1020,0	1170,0	1340	1430	1530	1750	2020	
Total input power	kW	180	217,0	245,0	278	287	325	369	415	
Nominal input current	A	289,5	336,1	380,1	418,5	460,2	504,2	570,2	627,9	
EER	W/W	4,67	4,70	4,78	4,82	4,98	4,71	4,74	4,87	
SEER (EN14825)	W/W	7,26	7,32	7,42	7,49	7,61	7,43	7,41	7,58	
Circuits	n°	2	2	2	2	2	3	3	3	
Compressors	n°	2	2	2	2	2	3	3	3	
Refrigerant data R513A										
Refrigerant charge	kg	174	160	152	238	228	238	226	358	
Global warming potential (GWP)		573	573	573	573	573	573	573	573	
Equivalent CO ₂ charge	t	99,7	91,7	87,1	136,4	130,6	136,4	129,5	205,1	
Condenser ⁽¹⁾										
Quantity	n°	2	2	2	2	2	3	3	3	
Flow rate	m ³ /h	175,6	212,8	243,4	278,3	295,3	319,1	364,5	418,8	
Total input current	kW	31,1	25,3	28,1	32,1	23,4	25,3	28,2	32,1	
Evaporator ⁽²⁾										
Quantity	n°	1	1	1	1	1	1	1	1	
Water flow	m ³ /h	144,7	175,4	201,2	230,5	246,0	263,2	301,0	347,4	
Pressure drop	kPa	53,5	46,7	30,2	54,6	33,1	38,0	48,7	44,9	
Weight										
Transport weight	kg	4450	5888	6070	7096	7388	8864	9088	10214	
Operating weight	kg	5074	6526	6790	8092	8394	9880	10104	11428	
Dimensions										
Length	mm	4700	5000	5000	5000	5000	5600	5600	5600	
Width	mm	1850	2150	2150	2150	2150	2300	2300	2300	
Height	mm	2300	2450	2450	2550	2550	2550	2550	2550	
Sound data										
Total LWA ⁽³⁾	dB(A)	99,7	100,0	100,2	101,6	101,9	102,3	102,5	104,4	
Total SPL 10m ⁽⁴⁾	dB(A)	67,5	67,6	67,8	69,2	69,5	69,8	70,0	71,9	
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]	180	217	245	278	287	325	369	415	
Maximum input current	[A]	406	466	532	612	690	699	798	918	
Inrush current	[A]	**	**	**	**	**	**	**	**	

(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

RWH VS Kh		271	301	401	501	302	402	522	622	762
Cooling capacity	kW	277	315	429	504	314	407	553	630	765
Total input power	kW	56,4	64,3	86,6	98,1	65,1	84,7	112,9	128,5	156,6
Nominal input current	A	97,2	110,7	149,1	168,8	112,1	145,8	194,4	221,3	269,6
EER	W/W	4,90	4,90	4,96	5,13	4,82	4,81	4,90	4,90	4,89
SEER (EN14825)	W/W	7,07	7,16	7,14	7,16	7,24	7,28	7,32	7,34	7,39
Circuits	n°	1	1	1	1	2	2	2	2	2
Compressors	n°	1	1	1	1	2	2	2	2	2
Refrigerant data R1234ze										
Refrigerant charge	kg	45	101	94	88	75	67	86	200	191
Global warming potential (GWP)		6	6	6	6	6	6	6	6	6
Equivalent CO ₂ charge	t	0,27	0,61	0,57	0,53	0,45	0,40	0,52	1,20	1,15
Condenser ⁽¹⁾										
Quantity	n°	1	1	1	1	2	2	2	2	2
Flow rate	m ³ /h	57,4	65,3	88,8	103,6	65,2	84,7	114,7	130,6	158,7
Total input current	kW	28,6	26,6	30,7	24,8	26,6	26,6	28,8	37,1	26,7
Evaporator ⁽²⁾										
Quantity	n°	1	1	1	1	1	1	1	1	1
Water flow	m ³ /h	47,6	54,1	73,8	86,6	54,0	70,0	95,2	108,3	131,6
Pressure drop	kPa	48,8	37,3	42,0	41,0	45,9	40,2	40,0	38,9	45,5
Weight										
Transport weight	kg	1514	2012	2210	2828	2126	2586	2990	4032	4142
Operating weight	kg	1686	2186	2460	3220	2300	2832	3384	4432	4550
Dimensions										
Length	mm	4700	4700	4700	4700	4700	4700	4700	4700	4700
Width	mm	1550	1550	1550	1550	1850	1850	1850	1850	1850
Height	mm	1750	1750	1750	1750	2200	2200	2200	2200	2200
Sound data										
Total LWA ⁽³⁾	dB(A)	94,0	94,3	95,4	95,7	96,1	96,5	97,0	97,3	98,0
Total SPL 10m ⁽⁴⁾	dB(A)	62,2	62,5	63,6	63,9	64,1	64,5	65,0	65,3	66,0
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	400/3/50
General electrical data										
Maximum input power	[kW]	115,9	131,6	177,4	201,6	132,8	174	231,8	263	318,6
Maximum input current	[A]	268	257	322	373	238,6	324	448	514	564
Inrush current	[A]	*	*	*	*	*	*	*	*	*
RWH VS Kh		852	1002	1142	1202	1352	1603	1853	2003	
Cooling capacity	kW	859	1007	1145	1234	1370	1660	1889	2015	
Total input power	kW	173,9	196,1	221,9	250,3	276,0	339	386	398,5	
Nominal input current	A	299,4	337,7	382,0	430,9	475,3	583,1	664,0	686,1	
EER	W/W	4,94	5,13	5,16	4,93	4,96	4,90	4,90	5,06	
SEER (EN14825)	W/W	7,29	7,36	7,46	7,52	7,65	7,46	7,45	7,62	
Circuits	n°	2	2	2	2	2	3	3	3	
Compressors	n°	2	2	2	2	2	3	3	3	
Refrigerant data R1234ze										
Refrigerant charge	kg	187	172	163	256	245	256	243	384	
Global warming potential (GWP)		6	6	6	6	6	6	6	6	
Equivalent CO ₂ charge	t	1,12	1,03	0,98	1,53	1,47	1,53	1,46	2,31	
Condenser ⁽¹⁾										
Quantity	n°	2	2	2	2	2	3	3	3	
Flow rate	m ³ /h	177,8	207,2	235,3	255,6	283,4	344,2	391,7	415,6	
Total input current	kW	30,7	24,9	27,7	31,6	23,1	24,9	27,8	31,6	
Evaporator ⁽²⁾										
Quantity	n°	1	1	1	1	1	1	1	1	
Water flow	m ³ /h	147,7	173,2	196,9	212,2	235,6	285,5	324,9	346,6	
Pressure drop	kPa	51,2	44,7	28,9	52,2	31,7	36,4	46,6	43,0	
Weight										
Transport weight	kg	4530	6008	6190	7216	7508	9054	9278	10404	
Operating weight	kg	5154	6646	6910	8212	8514	10070	10294	11618	
Dimensions										
Length	mm	4700	5000	5000	5000	5000	5600	5600	5600	
Width	mm	1850	2150	2150	2150	2150	2300	2300	2300	
Height	mm	2300	2450	2450	2550	2550	2550	2550	2550	
Sound data										
Total LWA ⁽³⁾	dB(A)	98,9	99,2	99,4	100,8	101,1	101,4	101,6	103,5	
Total SPL 10m ⁽⁴⁾	dB(A)	66,9	67,1	67,3	68,7	69,0	69,2	69,4	71,3	
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]	354,8	403,2	449	531	579,4	604,8	673,5	796,5	
Maximum input current	[A]	644	746	840	1140	1192	1119	1260	1710	
Inrush current	[A]	*	*	*	*	*	*	*	*	

(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

RWC Ke/Kh

**WATER COOLED CHILLERS WATER CONDENSED FOR INDOOR INSTALLATION
EQUIPPED WITH BRUSHLESS OIL-FREE TURBOCOR COMPRESSORS**

Cooling capacity from 210 kW to 1800 kW

R513A

R1234
ze



H2O



ERP
2021



The monoblock air-cooled chillers of RWC series are suitable for external installation and are particularly indicated for liquid cooling in air conditioning and industrial process plants, where high efficiency with partial loads, quietness and long lifetime must be granted.

Units are equipped with magnetic levitation centrifugal compressors and flooded shell and tube evaporator. The magnetic levitation technology means that there is no mechanical friction in the compressor, allowing oil-free refrigeration circuits.

All the units are totally factory assembled and tested following specific quality procedures. They are also totally hydraulically and electrically connected so, once

on site, they can be quickly installed. Before final test, cooling circuits are pressure tightness tested and charged with the refrigerant. Therefore, once on site, the units must only be positioned and hydraulically and electrically connected.

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

COMPONENTS

FRAME

Robust and compact supporting structure, built with folded and painted steel profiles that integrates the exchangers of the evaporator and tube bundle condenser unit and on which all components are mounted. On demand, the compressors can be acoustically insulated with a cabinet covered with a standard sound-proofed material or with a double thickness sound-proofing material to further reduce the unit sound level.

COMPRESSORS

Double-stage, magnetic-levitation centrifugal hermetic Compressors (without mechanical bearings). They are oil-free and provided with in-built electronic management system, pressure and temperature probes, direct-cooling system and inverter for speed regulation. Each compressor is equipped with rubber type anti-vibration dampers, suction side shut-off valve, discharge side shut-off valve with in-built check valve, suction filter, double stage hot gas by-pass system for start phases, liquid refrigerant line with sight-glass and valve for compressor direct and controlled cooling. Compressors are suitably weather protected, being installed inside a sealed and sound-proof cabinet, easy to be inspected thanks side panels provided with ¼ turn locks which can be opened through special keys. The electrical cabinet with interlocked double panels can be opened by an external main switch positioned on the unit front side.

EVAPORATOR

Shell & tube flooded (Falling Film) Evaporator. Refrigerant is outside the tubes and inside a carbon steel shell; the flooding level is controlled by an electronic sensor which grants the max efficiency at any load condition. Refrigerant side design pressure is 16,5 bar. Water side one is 10 bar. The exchange tube, the chilled solutions (water or glycol solutions) flows in, is made up of pure corrugated copper to optimize thermal exchange. The exchange shell is covered by 10 mm thickness, fire retardant, closed cell material and protected by scratch-resistant coating. Hydraulic connections are of Victaulic type.

CONDENSER

The units are equipped with shell and tube condenser with two water-side and one refrigerant-side passages. Made from copper tubing and built in such a way as to ensure high efficiency for the entire life of the exchanger: in fact, the tube is equipped with a special spiral which stops incrustation forming.

The discharge gas from all compressors enters the top of the vessel and surrounds the tube bundle. As the cooling tower water passes through the tube bundle, the refrigerant surrounding the tube bundle changes state from a high-temperature, high pressure superheated vapour to a high pressure, sub-cooled liquid.

COOLING CIRCUITS

Each cooling circuit is equipped with the following elements: filter drier, sight glass, electronic thermostatic valve, high and low pressure safety valves, shut-off valve on liquid line, non-return valve on compressor discharge, high and low pressure gauges, high and low pressure switches, temperature probes to evaporator inlet and outlet. The above-mentioned components are connected in a close circuit through copper pipes and connections. The permanent junctions among components are made by brazing or welding, following processes and made by qualified staff.

ELECTRIC BOARD

The electrical cabinet of the unit, is realized in compliance with current European Standards inside a metal compartment with protection degree IP54 suitable for external installation and separated from airflow.

The main features are: three-phase power supply 400V/3ph/50Hz on all models (if not differently required); low voltage auxiliary circuit 24Vac with insulation transformer; lockable mechanical main switch; protection automatic switches; terminal box for signal and management free-contacts.

The opening panel of the a.m electrical cabinet is equipped with main switch. Inside the compartment the following main components are also installed: contactors; automatic overload protection switches; transformers; numbered wires; low voltage auxiliary circuit; terminals; management and control electronic cards.

MICROPROCESSOR

All the units are subject to a safety cycle with continuity tests on the protection circuit, insulation resistance and tension test (dielectric strength). The unit management is realized by the management program uploaded in the electronic microprocessor. The microprocessor is made up of: an electronic control board with terminals for working parameters transmission and control devices activation, a user interface board with programming buttons and graphic display to show operation status and alarms. The electronic control board manages all the devices installed in the unit based on the values of the operation variables, with the following main functions: unit ON/OFF from board or from remote position, management and storage of alert and alarm status. The user interface display of the microprocessor allows also to see the following information: working parameters set values, functional variables values; analogue and digital inputs and outputs status, unit operation status, alert and alarm indications. Possibility to interface EMS/BMS management systems.

ACCESSORIES

RWC		211	311	371	591	422	622	742	1182
Insulated condensers	CC	o	o	o	o	o	o	o	o
Insulation of compressors by a cabinet with soundproofing material	CF	o	o	o	o	o	o	o	o
Mechanical flow switch	FL	o	o	o	o	o	o	o	o
RS 485 Serial interface	IH	o	o	o	o	o	o	o	o
BAC-NET Serial interface	IH-BAC	o	o	o	o	o	o	o	o
Rubber-type vibration dampers	PA	o	o	o	o	o	o	o	o
Safety water flow switch	PF	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
Pressostatic valve for condensing control	VP	o	o	o	o	o	o	o	o

RWC		633	933	1113	1773	844	1244	1484
Insulated condensers	CC	o	o	o	o	o	o	o
Insulation of compressors by a cabinet with soundproofing material	CF	o	o	o	o	o	o	o
Mechanical flow switch	FL	o	o	o	o	o	o	o
RS 485 Serial interface	IH	o	o	o	o	o	o	o
BAC-NET Serial interface	IH-BAC	o	o	o	o	o	o	o
Rubber-type vibration dampers	PA	o	o	o	o	o	o	o
Safety water flow switch	PF	o	o	o	o	o	o	o
Spring-type vibration dampers	PM	o	o	o	o	o	o	o
Remote display	PQ	o	o	o	o	o	o	o
Pressostatic valve for condensing control	VP	o	o	o	o	o	o	o

• Standard, o Optional, -- Not available

TECHNICAL DATA

RWC Kh		221	311	442	622	663	933	884	1244
Cooling capacity	kW	220,0	310,0	442,0	623,0	667,0	933,0	884,0	1247,0
Total input power	kW	37,6	49,4	76,1	99,8	113,7	149,2	151,2	198,6
Nominal input current	A	63,2	83,2	128,1	168,0	191,3	251,2	254,5	334,3
EER Gross	W/W	5,86	6,28	5,81	6,24	5,87	6,25	5,85	6,28
EER Net	W/W	5,86	6,28	5,81	6,24	5,87	6,25	5,85	6,28
Circuits	n°	1	1	1	1	1	1	1	1
Compressors	n°	1	1	2	2	3	3	4	4
Compressor input power		37,6	49,4	76,1	99,8	113,7	149,2	151,2	198,6
Refrigerant data R1234ze									
Refrigerant charge	kg	191	300	332	446	446	690	517	863
Global warming potential (GWP)		6	6	6	6	6	6	6	6
Equivalent CO ₂ charge	t	1,1	1,8	2,0	2,7	2,7	4,1	3,1	5,2
Condenser ⁽¹⁾									
Quantity	n°	1	1	1	1	1	1	1	1
Flow rate	m ³ /h	44,4	61,9	89,2	124,5	134,4	186,4	178,3	248,9
Total input current	kW	56	52	57	52	54	34	32	47
Evaporator ⁽²⁾									
Quantity	n°	1	1	1	1	1	1	1	1
Flow rate	m ³ /h	37,9	53,4	76,1	107,3	114,9	160,7	152,2	214,7
Pressure drop	kPa	30	34	36	23	24	30	25	47
Weight									
Transport weight	kg	1400	1929	1821	2993	3050	4057	3708	5496
Operating weight	kg	1514	2096	1999	3297	3354	4480	4090	6018
Dimensions									
Length	mm	2750	2750	3550	3550	3550	3550	4400	4400
Width	mm	1500	1500	1500	1500	1870	1870	1950	1950
Height	mm	2270	2270	2270	2270	2350	2350	2500	2500
Sound data									
Total LWA ⁽³⁾	dB(A)	90,5	91,3	93,8	94,6	96,1	96,3	99,0	99,0
Total SPL 10m ⁽⁴⁾	dB(A)	58,5	59,3	61,7	62,5	62,5	64,2	66,7	66,7
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]	165	228	330	456	495	684	660	912
Maximum input current	[A]	**	**	**	**	**	**	**	**

(1) Fluid: Water - In/out Temperature: 30/35°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

RWC Ke		211	311	371	591	422	622	742	1182
Cooling capacity	kW	210,0	310,0	370,0	590,0	420,0	620,0	740,0	1180,0
Total input power	kW	37,1	54,5	65,6	102,7	74,2	109,1	131,2	205,4
Nominal input current	A	62,5	91,8	110,4	172,9	124,9	183,6	220,9	345,8
EER Gross	W/W	5,66	5,68	5,64	5,74	5,66	5,68	5,64	5,74
EER Net	W/W	5,66	5,68	5,64	5,74	5,66	5,68	5,64	5,74
Circuits	n°	1	1	1	1	1	1	1	1
Compressors	n°	1	1	1	1	2	2	2	2
Compressor input power	kW	37,1	54,5	65,6	102,7	74,2	109,1	131,2	205,4
Refrigerant data R513A									
Refrigerant charge	kg	191	300	298	476	332	446	509	679
Global warming potential (GWP)		573	573	573	573	573	573	573	573
Equivalent CO ₂ charge	t	109,4	171,9	170,8	272,7	190,2	255,6	291,7	389,1
Condenser ⁽¹⁾									
Quantity	n°	1	1	1	1	1	1	1	1
Flow rate	m ³ /h	42,6	62,8	75,0	119,3	85,1	125,5	150,0	238,6
Total input current	kW	56	52	40	50	57	52	64	42
Evaporator ⁽²⁾									
Quantity	n°	1	1	1	1	1	1	1	1
Flow rate	m ³ /h	36,2	53,4	63,7	101,6	72,3	106,8	127,4	203,2
Pressure drop	kPa	30	34	36	36	36	23	25	35
Weight									
Transport weight	kg	1388	1929	2197	3323	1797	2993	3565	4826
Operating weight	kg	1502	2096	2414	3651	1975	3297	3904	5358
Dimensions									
Length	mm	2750	2750	2750	2750	3550	3550	3550	3550
Width	mm	1500	1500	1500	1500	1500	1500	1500	1500
Height	mm	2270	2270	2270	2270	2270	2270	2270	2270
Sound data									
Total LWA ⁽³⁾	dB(A)	90,5	91,3	96,5	98,6	93,8	94,6	98,6	98,9
Total SPL 10m ⁽⁴⁾	dB(A)	58,5	59,3	64,5	66,6	61,7	62,5	66,5	66,7
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	[A]	160	231	187	216	160	231	374	432
Maximum input current	[A]	**	**	**	**	**	**	**	**

RWC Ke		633	933	1113	1773	844	1244	1484
Cooling capacity	kW	630,0	930,0	1110,0	1770,0	840,0	1240,0	1480,0
Total input power	kW	111,3	163,6	196,8	320,4	148,4	218,1	265,6
Nominal input current	A	187,4	275,4	331,3	539,4	249,8	367,2	447,2
EER Gross	W/W	5,66	5,68	5,64	5,52	5,66	5,68	5,57
EER Net	W/W	5,66	5,68	5,64	5,52	5,66	5,68	5,57
Circuits	n°	1	1	1	1	1	1	1
Compressors	n°	3	3	3	3	4	4	4
Compressor input power	kW	111,3	163,6	196,8	320,4	148,4	218,1	265,6
Refrigerant data R513A								
Refrigerant charge	kg	446	690	676	796	517	863	796
Global warming potential (GWP)		573	573	573	573	573	573	573
Equivalent CO ₂ charge	t	255,6	395,4	387,3	456,1	296,2	494,5	456,1
Condenser ⁽¹⁾								
Quantity	n°	1	1	1	1	1	1	1
Flow rate	m ³ /h	127,7	188,3	225,0	360,0	170,2	251,1	300,6
Total input current	kW	54	34	40	95	32	47	70
Evaporator ⁽²⁾								
Quantity	n°	1	1	1	1	1	1	1
Flow rate	m ³ /h	108,5	160,1	191,1	304,8	144,6	213,5	254,9
Pressure drop	kPa	24	30	26	66	25	47	47
Weight								
Transport weight	kg	3014	4057	5024	5836	3660	5496	5932
Operating weight	kg	3318	4480	5547	6440	4042	6018	6536
Dimensions								
Length	mm	3550	3550	3550	4400	4400	4400	4400
Width	mm	1870	1870	1870	1950	1950	1950	1950
Height	mm	2350	2350	2350	2500	2500	2500	2500
Sound data								
Total LWA ⁽³⁾	dB(A)	96,1	96,3	97,5	99,6	99,0	99,0	102,0
Total SPL 10m ⁽⁴⁾	dB(A)	62,5	64,2	65,4	67,3	66,7	66,7	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
General electrical data								
Maximum input power	[A]	160	231	561	648	640	924	748
Maximum input current	[A]	**	**	**	**	**	**	**

(1) Fluid: Water - In/out Temperature: 30/35°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

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