RAH T Ka

AIR COOLED CHILLERS WITH SCREW COMPRESSORS AND AXIAL FANS

COOLING CAPACITY FROM 155 TO 747 kW 1 AND 2 COOLING CIRCUITS

RAH 2502 T Ka

Above picture is only indicative and is not binding.

The air cooled chillers of **RAH T Ka series** are designed for outdoor installation and are particularly suitable for industrial applications. They can also be used for medium and big air conditioning systems and to be matched to fancoils or terminal units. These units are standard provided by a technical housing, always protected by panels. They are all available with 2 independent refrigerant circuits, with free-cooling coil (version F) and, when required, provided with buffer tanks of remarkable capacity, with no change in the overall dimensions. Thanks to the several options available, these units are particularly flexible and can be easily adapted to all installation sites. They are completely assembled and tested in the factory 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.

The available versions with R134a (Ka) refrigerants are the following:

- **Ka - standard version**
- **S.Ka - silenced version:** Oversized coil, reduced air flow, fans with a lower rotation speed, technical partition insulated by means of soundproofing material.
- **U.Ka - ultra-silenced version:** Oversized coil, reduced air flow, fans with a very low rotation speed, technical partition insulated by means of soundproofing material with bituminous rubber coating, vibration dampers on compressors suction and discharge pipes, mufflers on discharge pipes, compressors fixed on spring-type vibration dampers.
- **F.Ka - standard version with free-cooling coil**
- **FS.Ka - silenced version with free-cooling coil:** Oversized coil, reduced air flow, fans with a lower rotation speed, technical partition insulated by means of soundproofing material.
- **FU.Ka - ultra-silenced version with free-cooling coil:** Oversized coil, reduced air flow, fans with a very low rotation speed, technical partition insulated by means of soundproofing material with bituminous rubber coating, vibration dampers on compressors suction and discharge pipes, mufflers on discharge pipes, compressors fixed on spring-type vibration dampers.

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

MAIN COMPONETS

Strong and compact **frame** made of pressed and bended galvanized steel profiles, panels and base-frame of high thickness galvanized and painted steel and coated by rust-proof paint, suitable to resist to external agents.

The technical housing, completely closed and suitably isolated from the air flow, is containing the compressors and the main components. The external panels, easily to be dismantled, allow the complete access in case of service, without compromising the operation of the unit itself. When required, the hydraulic kit (buffer tank and pump group) are installed inside the unit, with no change in overall dimensions.

Semi-hermetic screw compressors equipped with capacity steps, motor thermal protection, oil crankcase heater and phase monitor. The compressors lubrication is of forced type, with no pump and in order to prevent many oil migrations to the cooling circuit, the compressors are provided with an oil separator, in-built to the discharge side. The electrical motor is foreseen for lower inrush current and, in this is case, the unit is equipped with an automatic partial load inrush device and mechanical interlock of the inrush control switches, to prevent accidental short circuits (options DS and PW).

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

For free-cooling version (F) only, **additional free-cooling water coil** with copper tube and aluminum fins, complete with mixing valve, for production of chilled water by means of the very low external air temperatures. This allow a remarkable reduction of the compressors working hours with a consequent energy saving, also considering that each circuit is completely independent.

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

Dry expansion **shell and tube evaporator** with two refrigerant circuits and one water circuit, with very low pressure drops. Shell and tubes plate made in carbon steel and copper tubes. Some plastic and corrosion-proof baffles are suitably placed inside the shell, allowing a correct water distribution and making the tube bundle particularly strong and vibration-free, also in case of very high water flows.

Cooling circuit composed of thermostatic expansion valve, dehydrating filter, sight glass, high pressure safety device, antifreeze thermostat, high and low pressure switches, high and low pressure gauges, non-return valve on discharge side, shut-off valve on liquid line, shut-off valve on compressor discharge side.

Electric board in compliance with CE norms, contained in a suitable partition protected by the internal safety panel, provided with a lock-door main switch. Inside, it is complete with all control and protection switches, the terminal board and auxiliaries. The electrical board also includes the control device for power supply phases, to prevent the compressor to turn in the wrong sense. The microprocessor, complete with display, is also placed inside the electrical board.

Unit management microprocessor installed on the internal safety panel of the electrical board, controlling the chilled water temperature regulation, the working parameters, auto-detection failure system, remote management and supervision, complete with compressors hour counter.

ACCESSORIES

A **Amperometer:** Electrical device for measuring the intensity of electrical current absorbed by the unit.

BT **Low temperature operation** (down to -8°C): Electronic device for the continuous modulating voltage control of the condensing pressure through the variation of the fan rotation speed (Alternative to BF).

BF **Low ambient temperature operation** (down to -20°C): Electronic device, frequency converter type, for the continuous modulating control of the condensing pressure through the variation of the fan rotation speed (Alternative to BT).

CE **UV protection on water insulation:** Particular coat of the evaporator and of water insulations with UV ray proof material.

CS **Compressors inrush counter:** Electromechanical device positioned inside the electrical board, recording the total inrush starts of compressors.

DS **Star/delta:** Electric device of close transition type to reduce the inrush current, complete with short circuit safety by mechanical interlock.

FA **Condensing coil protection filters:** Washable metal filters with very low pressure drop, protecting the condensing coils from dirt, with aluminum mesh against dust and leaves.

GP **Condensing coil protection grid:** Metal protection grid against accidental impacts, made of 50x50 4-mesh wire.

I1 **Victaulic insulation on pump side:** Insulation of the joints by close-cell polyurethane material, to prevent condense, pump side.

I2 **Victaulic insulation on buffer tank side:** Insulation of the joints by close-cell polyurethane material, to prevent condense, buffer tank side.

I3 **Victaulic insulation for the free-cooling version:** Insulation of the joints by close-cell polyurethane material, to prevent condense, free-cooling side.

IG **Watch card:** Electronic card to program the switch-over and rotation between units, after a pre-set time.

IH **RS 485 serial interface:** Electronic card to be connected to microprocessor, to allow communication between the units and a Carel supervision system. It is possible to fully control the unit from remote. For connection to other supervision systems, the protocol of the controlled parameters is available on request.

IM **Seawood packing:** Fumigated seawood case and protection bag with hygroscopic salts, suitable for long sea transports.

LI **Liquid injection:** Mechanical device allowing a better cooling of compressors at very high compression level.

M12 **Modulating capacity control for 2-circuit units:** By means of some valves installed on compressors, the capacity is modulated from 12,5 to 100%.

MV **Buffer tank** of suitable capacity complete with expansion vessel, safety valve, water gauge, water charge and discharge valves, air purging valves.

OS **Oil flow safety switch:** In-built in the compressor oil separator, it indicates the eventual decrease of the oil level.

P1 **Single pump group:** Chilled water pump group composed of single pump, expansion vessel, safety valve, water gauge, water charge and discharge valves, air purging valves, electrical control of the pump. The pump is of 2 pole centrifugal packaged type.

P1H **Higher available pressure pump group:** Chilled water higher available pressure pump group composed of single pump, expansion vessel, safety valve, water gauge, water charge and discharge valves, air purging valves, electrical control of the pump. The pump is of 2

pole centrifugal packaged type.

PA **Rubber-type vibration dampers:** Bell-shaped vibration dampers supports for insulating the unit (supplied in kit), made of base and bell in galvanized steel and natural rubber mixture (not available when option MV is required).

PF **Safety water flow switch:** Installed on evaporator, it switches off the unit in case of lack of water flow rate through the evaporator.

PM **Spring-type vibration dampers:** Spring-type vibration dampers support, for insulating the unit (supplied in kit), mainly indicated for installation in difficult and aggressive environments. Made of two steel plates containing a suitable quantity of harmonic steel springs.

PQ **Remote display:** Remote terminal, allowing to display the temperature and humidity values detected by probes, the alarm digital inputs, the outputs and the remote ON/OFF of the unit, to change and program of the parameters, the sound signal and the display of the present alarms.

PT **Twin pump group:** Chilled water pump group composed of twin pump, expansion vessel, safety valve, water gauge, water charge and discharge valves, air purging valves, electrical control of the pump, automatic switch in case of failure of the working pump. The pump is of 2 pole centrifugal packaged type.

PW **Part-winding:** Equipment for step compressors starting, reducing of about 35% the inrush current of each compressor.

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

RF **Power factor correction system cosfi >0,9:** Electrical device made of suitable condensers for compressors rephasing, ensuring a cosfi value ≥0,9, so to reduce the power absorption from the electrical network.

RH **Shut-off valve on suction side:** They are used to isolate compressors during service operations.

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

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

RP **Partial heat recovery** (about 20%) of the condensing heat, by means of a refrigerant/water plate exchanger (desuperheater), always in series to the compressors. It is requested when you need to produce sanitary water, by recovering condensing heat capacity.

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

RT **Total heat recovery** (100%) of the condensing heat, by means of a refrigerant/water plate exchanger, always in series to the compressors. It is requested when you need to produce sanitary water, by recovering condensing heat capacity, and /or for dehumidification. It is necessary to consider option BT and it is not available on free cooling.

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

SC **Insulated compressors housing** with sound proofing material (included on silenced version).

SU **Insulated compressors housing with bituminous rubber sound proofing material**, muffler on discharge pipe and vibration dampers for compressors (included on ultra-silenced version).

TE **Electronic thermostatic valve:** It is requested to make a very accurate regulation of the refrigerant flow and to limit variations of cooling capacity and evaporator leaving temperature water during operation in transitions and for a better performance with fixed superheating.

V **Voltmeter:** Electrical device measuring the electrical tension in the power supply of the unit.

VB **Brine version:** Unit suitable for working with evaporator outlet water temperatures lower than 0°C. A 20 mm evaporator insulation will be provided.

VS **Solenoid valve:** Electromagnetic solenoid valve on each cooling circuit to cut off the liquid line at compressors switch-off.

Technical data sheet - RAH 2502-8002 T Ka

RAH		2502 Ka	2802 Ka	3202 Ka	3602 Ka	4602 Ka	5202 Ka	6002 Ka	6802 Ka	8002 Ka
Cooling capacity										
Cooling capacity 1)	kW	260,0	290,0	320,0	348,0	432,0	465,0	568,0	608,0	737,0
Absorbed power	kW	73,0	88,0	103,0	126,0	166,0	188,0	198,0	244,0	282,0
EER		3,56	3,30	3,11	2,76	2,60	2,47	2,87	2,49	2,61
Screw compressors										
Quantity	n	2	2	2	2	2	2	2	2	2
Standard steps capacity	n	6	6	6	6	6	6	6	6	6
Continuous control capacity (option)	%					0 - 12 ÷ 100				
Circuits	n	2	2	2	2	2	2	2	2	2
Nominal absorbed current	A	133,2	150,3	177,9	195,3	276,1	305,8	319,6	370,8	433,2
Maximum absorbed current	A	196,0	248,0	288,0	324,0	364,0	430,0	462,0	560,0	620,0
Inrush current	A	547,0	609,0	729,0	848,0	983,0	1158,0	1254,0	1644,0	1752,0
Inrush current with opt. PW/DS	A	365,0	414,0	494,0	585,0	702,0	827,0	895,0	1235,0	1319,0
Axial fans										
Quantity	n	6	6	6	6	6	6	8	8	10
Rotation speed	rpm	880	880	880	880	880	880	880	880	880
Motors power	kW	12,0	12,0	12,0	12,0	12,0	12,0	16,0	16,0	20,0
Total air flow	m^3/h	126.000	126.000	126.000	126.000	117.000	117.000	156.000	156.000	195.000
Total air flow	l/s	35.000	35.000	35.000	35.000	32.500	32.500	43.333	43.333	54.167
Nominal absorbed current	A	24,0	24,0	24,0	24,0	24,0	24,0	32,0	32,0	40,0
Shall and tube evaporator										
Quantity	n	1	1	1	1	1	1	1	1	1
Water flow rate	m^3/h	44,7	49,9	55,0	59,9	74,3	80,0	97,7	104,6	126,8
Water flow rate	l/s	12,4	13,9	15,3	16,6	20,6	22,2	27,1	29,0	35,2
Pressure drop	kPa	61	66	79	48	59	33	47	46	36
Water volume	l	63	80	80	90	114	162	162	184	452
Pump Group P1										
Available pressure	kPa	121	114	98	127	108	131	102	196	190
Motor power	kW	5,5	5,5	5,5	5,5	5,5	5,5	5,5	15,0	15,0
Absorbed current	A	11,1	11,1	11,1	11,1	11,1	11,1	11,1	26,5	26,5
Inrush current	A	70,0	70,0	70,0	70,0	70,0	70,0	70,0	194,0	194,0
Weight	kg	91	91	91	91	91	91	91	160	160
Pump group P1H										
Available pressure	kPa	171	165	148	178	160	183	154	305	297
Motor power	kW	7,5	7,5	7,5	7,5	7,5	7,5	7,5	22,0	22,0
Absorbed current	A	14,7	14,7	14,7	14,7	14,7	14,7	14,7	39,0	39,0
Inrush current	A	105,0	105,0	105,0	105,0	105,0	105,0	105,0	273,0	273,0
Weight	kg	99	99	99	99	99	99	99	192	192
Pump group PT										
Available pressure	kPa	167	160	142	170	148	170	135	298	288
Motor power	kW	7,5	7,5	7,5	7,5	7,5	7,5	7,5	22,0	22,0
Absorbed current	A	14,7	14,7	14,7	14,7	14,7	14,7	14,7	39,0	39,0
Inrush current	A	105,0	105,0	105,0	105,0	105,0	105,0	105,0	273,0	273,0
Weight	Kg	196	196	196	196	196	196	196	379	379
Hydraulic kit										
Expansion vessel	l	25	25	25	25	25	25	25	25	25
Quantity	n	2	2	2	2	2	2	2	2	2
Buffer tanks 900 l		•	•	•	•	•	•	•	•	•
Buffer tanks 1500 l		---	---	---	---	---	---	•	•	•
Buffer tanks 1800 l		---	---	---	---	---	---	---	---	•
Buffer tanks 2400 l		---	---	---	---	---	---	---	---	---
Electrical data										
Total absorbed power	kW	85,0	100,0	115,0	138,0	178,0	200,0	214,0	260,0	302,0
Total nominal absorbed current	A	157,2	174,3	201,9	219,3	300,1	329,8	351,6	402,8	473,2
Maximum absorbed current	A	220,0	272,0	312,0	348,0	388,0	454,0	494,0	592,0	660,0
Total inrush current	A	571,0	633,0	753,0	872,0	1.007,0	1.182,0	1.286,0	1.676,0	1.792,0
Total inrush current with opt. PW/DS	A	389,0	438,0	518,0	609,0	726,0	851,0	927,0	1.267,0	1.359,0
Sound pressure level										
Sound pressure level 2)	dB(A)	78	78	78	78	79	79	80	80	82
Dimensions										
Lenght	mm	5.082	5.082	5.082	5.082	5.082	5.082	6.120	6.960	7.997
Width	mm	2.244	2.244	2.244	2.244	2.244	2.244	2.244	2.244	2.244
Height	mm	2.370	2.370	2.370	2.370	2.370	2.370	2.370	2.370	2.370
Transport weight 3)	kg	3.535	3.554	3.576	3.648	4.492	4.689	5.140	6.109	6.713
Weight in operation	kg	3.598	3.634	3.656	3.737	4.606	4.850	5.302	6.293	7.165
Refrigerant charge for each circuit	kg	38	40	40	41	55	61	75	78	88
Power supply										
Power supply	V / ph / Hz	400 V / 50 Hz / 3 Ph + T								

NOTES

1) Nominal condition referred to: air 35 °C - chilled water 12/7 °C.
2) Measured at 1 m in open field (ISO 3746).
3) Oil and refrigerant charge included.

Technical data sheet - RAH 2202-8002 T S Ka

RAH S		2202 Ka	2502 Ka	2802 Ka	3202 Ka	3602 Ka	4602 Ka	5202 Ka	6002 Ka	6802 Ka	8002 Ka
Cooling capacity											
Cooling capacity 1)	kW	218,0	252,0	279,0	306,0	329,0	431,0	464,0	534,0	633,0	747,0
Absorbed power	kW	63,0	77,0	92,0	110,0	134,0	166,0	188,0	212,0	234,0	277,0
EER		3,46	3,27	3,03	2,78	2,46	2,60	2,47	2,52	2,71	2,70
Screw compressors											
Quantity	n	2	2	2	2	2	2	2	2	2	2
Standard steps capacity	n	6	6	6	6	6	6	6	6	6	6
Continuous control capacity (option)	%	0 - 12 ÷ 100									
Circuits	n	2	2	2	2	2	2	2	2	2	2
Nominal absorbed current	A	115,7	136,7	154,6	176,5	205,4	263,6	283,0	329,5	373,4	440,5
Maximum absorbed current	A	158,0	196,0	248,0	288,0	324,0	364,0	430,0	462,0	560,0	620,0
Inrush current	A	434,2	547,2	609,2	729,2	847,6	983,0	1.158,0	1.254,0	1.644,4	1.752,0
Inrush current with opt. PW/DS	A	285,2	365,2	414,2	494,2	584,6	702,0	827,0	895,0	1.235,0	1.319,0
Axial fans											
Quantity	n	6	6	6	6	6	8	8	8	10	12
Rotation speed	rpm	660	660	660	660	660	660	660	660	660	660
Motors power	kW	7,5	7,5	7,5	7,5	7,5	10	10	10	12,5	15
Total air flow	m^3/h	96.000	96.000	96.000	96.000	96.000	128.000	128.000	120.000	150.000	180.000
Total air flow	l/s	26.667	26.667	26.667	26.667	26.667	35.556	35.556	33.333	41.667	50.000
Nominal absorbed current	A	13,8	13,8	13,8	13,8	13,8	18,4	18,4	18,4	23	27,6
Shall and tube evaporator											
Quantity	n	1	1	1	1	1	1	1	1	1	1
Water flow rate	m^3/h	37,5	43,3	48,0	52,6	56,6	74,1	79,8	91,8	108,9	128,5
Water flow rate	l/s	10,4	12,0	13,3	14,6	15,7	20,6	22,2	25,5	30,2	35,7
Pressure drop	kPa	44	57	62	73	44	58	33	42	50	37
Water volume	l	63	63	80	80	90	114	162	162	184	452
Pump Group P1											
Available pressure	kPa	141	125	120	106	133	109	131	112	191	188
Motor power	kW	5,5	5,5	5,5	5,5	5,5	5,5	5,5	5,5	15,0	15,0
Absorbed current	A	11,1	11,1	11,1	11,1	11,1	11,1	11,1	11,1	26,5	26,5
Inrush current	A	70,0	70,0	70,0	70,0	70,0	70,0	70,0	70,0	194,0	194,0
Weight	kg	91	91	91	91	91	91	91	91	160	160
Pump group P1H											
Available pressure	kPa	192	175	170	156	184	160	183	164	299	296
Motor power	kW	7,5	7,5	7,5	7,5	7,5	7,5	7,5	7,5	22,0	22,0
Absorbed current	A	14,7	14,7	14,7	14,7	14,7	14,7	14,7	14,7	39,0	39,0
Inrush current	A	105,0	105,0	105,0	105,0	105,0	105,0	105,0	105,0	273,0	273,0
Weight	kg	99	99	99	99	99	99	99	99	192	192
Pump group PT											
Available pressure	kPa	189	172	166	151	178	149	170	147	292	286
Motor power	kW	7,5	7,5	7,5	7,5	7,5	7,5	7,5	7,5	22,0	22,0
Absorbed current	A	14,7	14,7	14,7	14,7	14,7	14,7	14,7	15,0	39,0	39,0
Inrush current	A	105,0	105,0	105,0	105,0	105,0	105,0	105,0	105,0	273,0	273,0
Weight	Kg	196	196	196	196	196	196	196	196	379	379
Hydraulic kit											
Expansion vessel	l	25	25	25	25	25	25	25	25	25	25
Quantity	n	2	2	2	2	2	2	2	2	2	2
Buffer tanks 900 l		•	•	•	•	•	•	•	•	•	•
Buffer tanks 1500 l		---	---	---	---	---	•	•	•	•	•
Buffer tanks 1800 l		---	---	---	---	---	---	---	---	•	•
Buffer tanks 2400 l		---	---	---	---	---	---	---	---	---	•
Electrical data											
Total absorbed power	kW	70,5	84,5	99,5	117,5	141,5	176,0	198,0	222,0	246,5	292,0
Total nominal absorbed current	A	129,5	150,5	168,4	190,3	219,2	282,0	301,4	347,9	396,4	468,1
Maximum absorbed current	A	171,8	209,8	261,8	301,8	337,8	382,4	448,4	480,4	583,0	647,6
Total inrush current	A	448,0	561,0	623,0	743,0	861,4	1001,4	1176,4	1272,4	1667,4	1779,6
Total inrush current with opt. PW/DS	A	299,0	379,0	428,0	508,0	598,4	720,4	845,4	913,4	1258,0	1346,6
Sound pressure level											
Sound pressure level 2)	dB(A)	73	73	73	74	75	76	77	77	78	79
Dimensions											
Lenght	mm	5.082	5.082	5.082	5.082	5.082	6.120	6.120	6.120	7.997	9.035
Width	mm	2.244	2.244	2.244	2.244	2.244	2.244	2.244	2.244	2.244	2.244
Height	mm	2.370	2.370	2.370	2.370	2.370	2.370	2.370	2.370	2.370	2.370
Transport weight 3)	kg	3.513	3.535	3.554	3.576	3.648	4.800	4.997	5.140	6.534	7.139
Weight in operation	kg	3.576	3.598	3.634	3.656	3.737	4.914	5.158	5.302	6.718	7.591
Refrigerant charge for each circuit	kg	38	38	40	40	41	55	61	75	92	101
Power supply											
Power supply	V / ph / Hz	400 V / 50 Hz / 3 Ph + T									
NOTES											

1) Nominal condition referred to: air 35 °C - chilled water 12/7 °C.
2) Measured at 1 m in open field (ISO 3746).
3) Oil and refrigerant charge included.

Technical data sheet - RAH 1802-6802 T U Ka

RAH U		1802 Ka	2202 Ka	2502 Ka	2802 Ka	3202 Ka	3602 Ka	4602 Ka	5202 Ka	6002 Ka	6802 Ka
Cooling capacity											
Cooling capacity 1)	kW	199,0	211,0	242,0	267,0	289,0	326,0	427,0	483,0	547,0	633,0
Absorbed power	kW	53,0	66,0	81,0	98,0	117,0	136,0	168,0	180,0	207,0	234,0
EER		3,75	3,20	2,99	2,72	2,47	2,40	2,54	2,68	2,64	2,71
Screw compressors											
Quantity	n	2	2	2	2	2	2	2	2	2	2
Standard steps capacity	n	6	6	6	6	6	6	6	6	6	6
Continuous control capacity (option)	%	0 - 12 ÷ 100									
Circuits	n	2	2	2	2	2	2	2	2	2	2
Nominal absorbed current	A	79,7	118,2	141,0	153,9	185,3	209,6	269,3	279,9	342,4	379,7
Maximum absorbed current	A	112,0	158,0	196,0	248,0	288,0	324,0	364,0	430,0	462,0	560,0
Inrush current	A	361,0	434,0	547,0	609,0	729,0	848,0	983,0	1.158,0	1.254,0	1.644,4
Inrush current with opt. PW/DS	A	209,0	285,0	365,0	414,0	494,0	585,0	702,0	827,0	895,0	1.235,0
Axial fans											
Quantity	n	6	6	6	6	6	6	8	10	10	12
Rotation speed	rpm	530	530	530	530	530	530	530	530	530	530
Motors power	kW	4,6	4,6	4,6	4,6	4,6	4,6	6,2	7,7	7,7	9,2
Total air flow	m^3/h	75.000	75.000	75.000	75.000	75.000	69.000	92.000	125.000	115.000	138.000
Total air flow	l/s	20.833	20.833	20.833	20.833	20.833	19.167	25.556	34.722	31.944	38.333
Nominal absorbed current	A	9,0	9,0	9,0	9,0	9,0	9,0	12,0	15,0	15,0	18,0
Shall and tube evaporator											
Quantity	n	1	1	1	1	1	1	1	1	1	1
Water flow rate	m^3/h	34,2	36,3	41,6	45,9	49,7	56,1	73,4	83,1	94,1	108,9
Water flow rate	l/s	9,5	10,1	11,6	12,8	13,8	15,6	20,4	23,1	26,1	30,2
Pressure drop	kPa	38	42	54	57	66	43	57	35	44	50
Water volume	l	63	63	63	80	80	90	114	162	162	184
Pump Group P1											
Available pressure	kPa	149	144	130	126	115	135	110	126	109	191
Motor power	kW	5,5	5,5	5,5	5,5	5,5	5,5	5,5	5,5	5,5	15,0
Absorbed current	A	11,1	11,1	11,1	11,1	11,1	11,1	11,1	11,1	11,1	26,5
Inrush current	A	70,0	70,0	70,0	70,0	70,0	70,0	70,0	70,0	70,0	194,0
Weight	kg	91	91	91	91	91	91	91	91	91	160
Pump group P1H											
Available pressure	kPa	199	194	180	177	165	185	161	178	160	299
Motor power	kW	7,5	7,5	7,5	7,5	7,5	7,5	7,5	7,5	7,5	22,0
Absorbed current	A	14,7	14,7	14,7	14,7	14,7	14,7	14,7	14,7	14,7	39,0
Inrush current	A	105,0	105,0	105,0	105,0	105,0	105,0	105,0	105,0	105,0	273,0
Weight	kg	99	99	99	99	99	99	99	99	99	192
Pump group PT											
Available pressure	kPa	197	192	177	172	160	179	150	164	142	292
Motor power	kW	7,5	7,5	7,5	7,5	7,5	7,5	7,5	7,5	7,5	22,0
Absorbed current	A	14,7	14,7	14,7	14,7	14,7	14,7	14,7	14,7	14,7	39,0
Inrush current	A	105,0	105,0	105,0	105,0	105,0	105,0	105,0	105,0	105,0	273,0
Weight	Kg	196	196	196	196	196	196	196	196	196	379
Hydraulic kit											
Expansion vessel	l	25	25	25	25	25	25	25	25	25	25
Quantity	n	2	2	2	2	2	2	2	2	2	2
Buffer tanks 900 l		•	•	•	•	•	•	•	•	•	•
Buffer tanks 1500 l		---	---	---	---	---	---	•	•	•	•
Buffer tanks 1800 l		---	---	---	---	---	---	---	•	•	•
Buffer tanks 2400 l		---	---	---	---	---	---	---	---	---	•
Electrical data											
Total absorbed power	kW	57,6	70,6	85,6	102,6	121,6	140,6	174,2	187,7	214,7	243,2
Total nominal absorbed current	A	88,7	127,2	150,0	162,9	194,3	218,6	281,3	294,9	357,4	397,7
Maximum absorbed current	A	121,0	167,0	205,0	257,0	297,0	333,0	376,0	445,0	477,0	578,0
Total inrush current	A	370,0	443,0	556,0	618,0	738,0	857,0	995,0	1.173,0	1.269,0	1.662,4
Total inrush current with opt. PW/DS	A	218,0	294,0	374,0	423,0	503,0	594,0	714,0	842,0	910,0	1.253,0
Sound pressure level											
Sound pressure level 2)	dB(A)	70	70	70	70	71	72	73	74	74	75
Dimensions											
Lenght	mm	5082	5082	5082	5082	5082	5082	6120	7158	7158	9035
Width	mm	2244	2244	2244	2244	2244	2244	2244	2244	2244	2244
Height	mm	2370	2370	2370	2370	2370	2370	2370	2370	2370	2370
Transport weight 3)	kg	3085	3488	3509	3529	3550	3714	4888	5350	5522	7524
Weight in operation	kg	3148	3551	3572	3609	3630	3803	5002	5512	5684	7709
Refrigerant charge for each circuit	kg	38	38	38	40	40	52	69	71	89	105
Power supply											
Power supply	V / ph / Hz	400 V / 50 Hz / 3 Ph + T									
NOTES											

1) Nominal condition referred to: air 35 °C - chilled water 12/7 °C.
2) Measured at 1 m in open field (ISO 3746).
3) Oil and refrigerant charge included.

Technical data sheet - RAH 2202-8002 T F Ka

RAH F		2202 Ka	2502 Ka	2802 Ka	3202 Ka	3602 Ka	4602 Ka	5202 Ka	6002 Ka	6802 Ka	8002 Ka
Cooling capacity											
Cooling capacity 1)	kW	215,0	248,0	275,0	301,0	324,0	423,0	492,0	529,0	628,0	738,0
Absorbed power	kW	62,7	76,4	91,9	108,9	133,6	165,8	172,6	209,2	230,2	273,9
EER		3,43	3,25	2,99	2,76	2,43	2,55	2,85	2,53	2,73	2,69
Cooling capacity in free cooling 4)	kW	193,3	198,7	199,9	203,7	213,9	267,8	279,1	281,5	349,3	404,1
Screw compressors											
Quantity	n	2	2	2	2	2	2	2	2	2	2
Standard steps capacity	n	6	6	6	6	6	6	6	6	6	6
Continuous control capacity (option)	%	0 - 12 ÷ 100									
Circuits	n	2	2	2	2	2	2	2	2	2	2
Nominal absorbed current	A	115,0	135,4	153,0	174,5	202,8	256,0	292,4	329,5	367,3	432,0
Maximum absorbed current	A	158,0	196,0	248,0	288,0	324,0	364,0	430,0	462,0	560,0	620,0
Inrush current	A	434,0	547,0	609,0	729,0	848,0	983,0	1.158,0	1.254,0	1.644,0	1.752,0
Inrush current with opt. PW/DS	A	285,0	365,0	414,0	494,0	585,0	702,0	827,0	895,0	1.235,0	1.319,0
Axial fans											
Quantity	n	6	6	6	6	6	8	8	8	10	12
Rotation speed	rpm	880	880	880	880	880	880	880	880	880	880
Motors power	kW	12,0	12,0	12,0	12,0	12,0	16,0	16,0	16,0	20,0	24,0
Total air flow	m^3/h	105.000	105.000	105.000	105.000	105.000	140.000	132.000	132.000	165.000	198.000
Total air flow	l/s	29.167	29.167	29.167	29.167	29.167	38.889	36.667	36.667	45.833	55.000
Nominal absorbed current	A	24,0	24,0	24,0	24,0	24,0	32,0	32,0	32,0	40,0	48,0
Shall and tube evaporator											
Quantity	n	1	1	1	1	1	1	1	1	1	1
Water flow rate 1)	m^3/h	36,9	42,6	47,2	51,6	55,6	72,6	84,4	90,7	107,8	126,5
Water flow rate 1)	l/s	10,3	11,8	13,1	14,3	15,4	20,2	23,4	25,2	29,9	35,1
Pressure drop	kPa	43	56	60	71	43	56	36	41	49	36
Free cooling pressure drop	kPa	110	144	96	114	101	90	109	123	140	142
Water circuit volume	l	187	187	204	204	214	280	328	328	392	702
Pump Group P1											
Available pressure 1)	kPa	159	127	148	126	157	168	175	189	143	103
Motor power	kW	11,0	11,0	11,0	11,0	11,0	11,0	11,0	11,0	11,0	11,0
Absorbed current	A	20,0	20,0	20,0	20,0	20,0	20,0	20,0	20,0	20,0	20,0
Inrush current	A	170,0	170,0	170,0	170,0	170,0	170,0	170,0	170,0	170,0	170,0
Weight	kg	134	134	134	134	134	134	134	134	134	134
Pump group P1H											
Available pressure 1)	kPa	245	212	233	212	243	255	263	277	232	193
Motor power	kW	15,0	15,0	15,0	15,0	15,0	15,0	15,0	15,0	15,0	15,0
Absorbed current	A	26,5	26,5	26,5	26,5	26,5	26,5	26,5	26,5	26,5	26,5
Inrush current	A	194,0	194,0	194,0	194,0	194,0	194,0	194,0	194,0	194,0	194,0
Weight	kg	147	147	147	147	147	147	147	147	147	147
Pump group PT											
Available pressure 1)	kPa	242	208	229	206	237	244	248	259	208	184
Motor power	kW	15,0	15,0	15,0	15,0	15,0	15,0	15,0	15,0	15,0	22,0
Absorbed current	A	26,5	26,5	26,5	26,5	26,5	26,5	26,5	26,5	26,5	39,0
Inrush current	A	194,0	194,0	194,0	194,0	194,0	194,0	194,0	194,0	194,0	273,0
Weight	Kg	294	294	294	294	294	294	294	294	294	294
Hydraulic kit											
Expansion vessel	l	25	25	25	25	25	25	25	25	25	25
Quantity	n	2	2	2	2	2	2	2	2	2	2
Buffer tanks 900 l		•	•	•	•	•	•	•	•	•	•
Buffer tanks 1500 l		---	---	---	---	---	•	•	•	•	•
Buffer tanks 1800 l		---	---	---	---	---	---	---	---	•	•
Buffer tanks 2400 l		---	---	---	---	---	---	---	---	---	•
Electrical data											
Total absorbed power	kW	74,7	88,4	103,9	120,9	145,6	181,8	188,6	225,2	250,2	297,9
Total nominal absorbed current	A	139,0	159,4	177,0	198,5	226,8	288,0	324,4	361,5	407,3	480,0
Maximum absorbed current	A	182,0	220,0	272,0	312,0	348,0	396,0	462,0	494,0	600,0	668,0
Total inrush current	A	458,0	571,0	633,0	753,0	872,0	1015,0	1190,0	1286,0	1684,0	1800,0
Total inrush current with opt. PW/DS	A	309,0	389,0	438,0	518,0	609,0	734,0	859,0	927,0	1275,0	1367,0
Sound pressure level											
Sound pressure level 2)	dB(A)	78	78	78	78	79	79	80	80	82	82
Dimensions											
Lenght	mm	5.082	5.082	5.082	5.082	5.082	6.120	6.120	6.120	7.158	9.035
Width	mm	2.244	2.244	2.244	2.244	2.244	2.244	2.244	2.244	2.244	2.244
Height	mm	2.370	2.370	2.370	2.370	2.370	2.370	2.370	2.370	2.370	2.370
Transport weight 3)	kg	3.826	3.847	3.867	3.888	3.960	5.258	5.577	5.598	7.103	7.817
Weight in operation	kg	4.013	4.034	4.071	4.092	4.174	5.538	5.905	5.926	7.495	8.520
Refrigerant charge for each circuit	kg	38	38	40	40	41	55	75	75	92	101
Power supply											
Power supply	V / ph / Hz	400 V / 50 Hz / 3 Ph + T									

NOTES

1) Nominal condition referred to: air 35 °C - chilled water 12/7 °C.
2) Measured at 1 m in open field (ISO 3746).
3) Oil and refrigerant charge included.
4) Free-cooling work mode : air 5 °C - unit's inlet water 15 °C - glycol 20 %.

Technical data sheet - RAH 1802-6802 T FS Ka

RAH FS		1802 Ka	2202 Ka	2502 Ka	2802 Ka	3202 Ka	3602 Ka	4602 Ka	5202 Ka	6002 Ka	6802 Ka
Cooling capacity											
Cooling capacity 1)	kW	197,0	208,0	237,0	261,0	282,0	326,0	428,0	462,0	549,0	633,0
Absorbed power	kW	53,0	66,2	81,3	98,2	117,0	132,7	163,5	185,3	201,2	228,0
EER		3,72	3,14	2,92	2,66	2,41	2,46	2,62	2,49	2,73	2,78
Cooling capacity in free cooling 4)	kW	158,9	160,5	162,1	164,7	170,2	169,2	225,7	227,7	281,5	308,0
Screw compressors											
Quantity	n	2	2	2	2	2	2	2	2	2	2
Standard steps capacity	n	6	6	6	6	6	6	6	6	6	6
Continuous control capacity (option)	%	0 - 12 ÷ 100									
Circuits	n	2	2	2	2	2	2	2	2	2	2
Nominal absorbed current	A	96,5	117,7	140,1	153,9	184,2	206,3	264,4	294,4	326,5	320,8
Maximum absorbed current	A	130,2	158,0	196,0	248,0	288,0	324,0	364,0	430,0	462,0	560,0
Inrush current	A	403,2	434,0	547,0	609,0	729,0	848,0	983,0	1158,0	1254,0	1644,0
Inrush current with opt. PW/DS	A	234,2	285,0	365,0	414,0	494,0	585,0	702,0	827,0	895,0	1235,0
Axial fans											
Quantity	n	6	6	6	6	6	6	8	8	10	12
Rotation speed	rpm	660	660	660	660	660	660	660	660	660	660
Motors power	kW	8,0	8,0	8,0	8,0	8,0	8,0	10,0	10,0	13,0	15,0
Total air flow	m^3/h	78.000	78.000	78.000	78.000	78.000	75.000	100.000	100.000	125.000	150.000
Total air flow	l/s	21.667	21.667	21.667	21.667	21.667	20.833	27.778	27.778	34.722	41.667
Nominal absorbed current	A	13,8	13,8	13,8	13,8	13,8	13,8	18,4	18,4	23,0	27,6
Shall and tube evaporator											
Quantity	n	1	1	1	1	1	1	1	1	1	1
Water flow rate 1)	m^3/h	33,8	35,7	40,7	44,8	48,4	56,0	73,4	79,3	94,2	108,6
Water flow rate 1)	l/s	9,4	9,9	11,3	12,4	13,4	15,6	20,4	22,0	26,2	30,2
Pressure drop	kPa	37	41	52	55	63	43	57	32	44	50
Free cooling pressure drop	kPa	95	104	85	94	110	103	112	97	115	111
Water circuit volume	l	187	187	187	204	204	214	280	328	370	434
Pump Group P1											
Available pressure 1)	kPa	195	185	157	177	161	176	171	195	177	138
Motor power	kW	11,0	11,0	11,0	11,0	11,0	11,0	11,0	11,0	11,0	11,0
Absorbed current	A	20,0	20,0	20,0	20,0	20,0	20,0	20,0	20,0	20,0	20,0
Inrush current	A	170,0	170,0	170,0	170,0	170,0	170,0	170,0	170,0	170,0	170,0
Weight	kg	134	134	134	134	134	134	134	134	134	134
Pump group P1H											
Available pressure 1)	kPa	280	270	242	263	247	262	258	282	265	227
Motor power	kW	15,0	15,0	15,0	15,0	15,0	15,0	15,0	15,0	15,0	15,0
Absorbed current	A	26,5	26,5	26,5	26,5	26,5	26,5	26,5	26,5	26,5	26,5
Inrush current	A	194,0	194,0	194,0	194,0	194,0	194,0	194,0	194,0	194,0	194,0
Weight	kg	147	147	147	147	147	147	147	147	147	147
Pump group PT											
Available pressure 1)	kPa	278	268	239	259	242	256	247	269	247	202
Motor power	kW	15,0	15,0	15,0	15,0	15,0	15,0	15,0	15,0	15,0	15,0
Absorbed current	A	26,5	26,5	26,5	26,5	26,5	26,5	26,5	26,5	26,5	26,5
Inrush current	A	194,0	194,0	194,0	194,0	194,0	194,0	194,0	194,0	194,0	194,0
Weight	Kg	294	294	294	294	294	294	294	294	294	294
Hydraulic kit											
Expansion vessel	l	25	25	25	25	25	25	25	25	25	25
Quantity	n	2	2	2	2	2	2	2	2	2	2
Buffer tanks 900 l		•	•	•	•	•	•	•	•	•	•
Buffer tanks 1500 l		---	---	---	---	---	---	•	•	•	•
Buffer tanks 1800 l		---	---	---	---	---	---	---	---	•	•
Buffer tanks 2400 l		---	---	---	---	---	---	---	---	---	•
Electrical data											
Total absorbed power	kW	61,0	74,2	89,3	106,2	125,0	140,7	173,5	195,3	214,2	243,0
Total nominal absorbed current	A	110,3	131,5	153,9	167,7	198,0	220,1	282,8	312,8	349,5	348,4
Maximum absorbed current	A	144,0	171,8	209,8	261,8	301,8	337,8	382,4	448,4	485,0	587,6
Total inrush current	A	417,0	447,8	560,8	622,8	742,8	861,8	1.001,4	1.176,4	1.277,0	1.671,6
Total inrush current with opt. PW/DS	A	248,0	298,8	378,8	427,8	507,8	598,8	720,4	845,4	918,0	1.262,6
Sound pressure level											
Sound pressure level 2)	dB(A)	73	73	73	74	75	75	76	76	78	78
Dimensions											
Lenght	mm	5.082	5.082	5.082	5.082	5.082	5.082	6.120	6.120	7.158	9.035
Width	mm	2.244	2.244	2.244	2.244	2.244	2.244	2.244	2.244	2.244	2.244
Height	mm	2.370	2.370	2.370	2.370	2.370	2.370	2.370	2.370	2.370	2.370
Transport weight 3)	kg	3.423	3.826	3.847	3.867	3.888	4.052	5.381	5.577	6.134	7.638
Weight in operation	kg	3.610	4.013	4.034	4.071	4.092	4.266	5.660	5.905	6.504	8.073
Refrigerant charge for each circuit	kg	38	38	38	40	40	52	69	75	89	105
Power supply											
Power supply	V / ph / Hz	400 V / 50 Hz / 3 Ph + T									
NOTES											

2) Measured at 1 m in open field (ISO 3746).
3) Oil and refrigerant charge included.
4) Free-cooling work mode : air 5 °C - unit's inlet water 15 °C - glycol 20 %.

Technical data sheet - RAH 1502-6002 T FU Ka

RAH FU		1502 Ka	1802 Ka	2202 Ka	2502 Ka	2802 Ka	3202 Ka	3602 Ka	4602 Ka	5202 Ka	6002 Ka
Cooling capacity											
Cooling capacity 1)	kW	155,0	191,0	201,0	227,0	248,0	281,0	324,0	414,0	472,0	547,0
Absorbed power	kW	41,4	55,6	69,7	86,0	104,5	117,6	133,4	169,4	181,2	201,7
EER		3,74	3,44	2,88	2,64	2,37	2,39	2,43	2,44	2,60	2,71
Cooling capacity in free cooling 4)	kW	130,3	135,6	136,6	138,9	140,2	135,5	188,8	234,5	226,1	249,8
Screw compressors											
Quantity	n	2	2	2	2	2	2	2	2	2	2
Standard steps capacity	n	6	6	6	6	6	6	6	6	6	6
Continuous control capacity (option)	%	0 - 12 ÷ 100									
Circuits	n	2	2	2	2	2	2	2	2	2	2
Nominal absorbed current	A	81,1	98,9	120,6	144,9	160,3	188,1	199,6	258,7	293,0	333,3
Maximum absorbed current	A	112,0	130,2	158,0	196,0	248,0	288,0	324,0	364,0	430,0	462,0
Inrush current	A	361,0	403,2	434,0	547,0	609,0	729,0	848,0	983,0	1158,0	1254,0
Inrush current with opt. PW/DS	A	209,0	234,2	285,0	365,0	414,0	494,0	585,0	702,0	827,0	895,0
Axial fans											
Quantity	n	6	6	6	6	6	6	8	10	10	12
Rotation speed	rpm	530	530	530	530	530	530	530	530	530	530
Motors power	kW	4,5	4,5	4,5	4,5	4,5	4,5	6,0	7,5	7,5	9,0
Total air flow	m^3/h	61.500	61.500	61.500	61.500	61.500	57.000	82.000	102.500	95.000	114.000
Total air flow	l/s	17.083	17.083	17.083	17.083	17.083	15.833	22.778	28.472	26.389	31.667
Nominal absorbed current	A	9,0	9,0	9,0	9,0	9,0	9,0	12,0	15,0	15,0	18,0
Shall and tube evaporator											
Quantity	n	1	1	1	1	1	1	1	1	1	1
Water flow rate 1)	m^3/h	26,6	32,8	34,5	39,0	42,5	48,2	55,6	71,0	81,0	93,9
Water flow rate 1)	l/s	7,4	9,1	9,6	10,8	11,8	13,4	15,4	19,7	22,5	26,1
Pressure drop	kPa	63	35	38	48	50	63	43	54	34	44
Free cooling pressure drop	kPa	79	89	97	121	85	108	114	97	87	105
Water circuit volume	l	173	187	187	187	204	204	256	322	370	412
Pump Group P1											
Available pressure 1)	kPa	184	210	201	178	198	175	204	176	188	176
Motor power	kW	11,0	11,0	11,0	11,0	11,0	11,0	11,0	11,0	11,0	11,0
Absorbed current	A	20,0	20,0	20,0	20,0	20,0	20,0	20,0	20,0	20,0	20,0
Inrush current	A	170,0	170,0	170,0	170,0	170,0	170,0	170,0	170,0	170,0	170,0
Weight	kg	134	134	134	134	134	134	134	134	134	134
Pump group P1H											
Available pressure 1)	kPa	269	295	287	263	284	261	290	263	276	264
Motor power	kW	15,0	15,0	15,0	15,0	15,0	15,0	15,0	15,0	15,0	15,0
Absorbed current	A	26,5	26,5	26,5	26,5	26,5	26,5	26,5	26,5	26,5	26,5
Inrush current	A	194,0	194,0	194,0	194,0	194,0	194,0	194,0	194,0	194,0	194,0
Weight	kg	147	147	147	147	147	147	147	147	147	147
Pump group PT											
Available pressure 1)	kPa	267	293	284	260	280	256	284	252	262	246
Motor power	kW	15,0	15,0	15,0	15,0	15,0	15,0	15,0	15,0	15,0	15,0
Absorbed current	A	26,5	26,5	26,5	26,5	26,5	26,5	26,5	26,5	26,5	26,5
Inrush current	A	194,0	194,0	194,0	194,0	194,0	194,0	194,0	194,0	194,0	194,0
Weight	Kg	294	294	294	294	294	294	294	294	294	294
Hydraulic kit											
Expansion vessel	l	25	25	25	25	25	25	25	25	25	25
Quantity	n	2	2	2	2	2	2	2	2	2	2
Buffer tanks 900 l		•	•	•	•	•	•	•	•	•	•
Buffer tanks 1500 l		---	---	---	---	---	---	•	•	•	•
Buffer tanks 1800 l		---	---	---	---	---	---	---	•	•	•
Buffer tanks 2400 l		---	---	---	---	---	---	---	---	---	•
Electrical data											
Total absorbed power	kW	46,4	60,6	74,7	91,0	109,5	122,6	139,4	177,4	189,2	210,7
Total nominal absorbed current	A	90,1	107,9	129,6	153,9	169,3	197,1	211,6	273,7	308,0	351,3
Maximum absorbed current	A	121,0	139,2	167,0	205,0	257,0	297,0	336,0	379,0	445,0	480,0
Total inrush current	A	370,0	412,2	443,0	556,0	618,0	738,0	860,0	998,0	1173,0	1272,0
Total inrush current with opt. PW/DS	A	218,0	243,2	294,0	374,0	423,0	503,0	597,0	717,0	842,0	913,0
Sound pressure level											
Sound pressure level 2)	dB(A)	69	70	70	70	71	72	72	73	73	74
Dimensions											
Lenght	mm	5.082	5.082	5.082	5.082	5.082	5.082	6.120	7.158	7.158	8.196
Width	mm	2.244	2.244	2.244	2.244	2.244	2.244	2.244	2.244	2.244	2.244
Height	mm	2.370	2.370	2.370	2.370	2.370	2.370	2.370	2.370	2.370	2.370
Transport weight 3)	kg	3.251	3.398	3.800	3.821	3.841	3.954	4.471	5.723	6.070	6.618
Weight in operation	kg	3.424	3.585	3.987	4.008	4.045	4.158	4.727	6.045	6.440	7.030
Refrigerant charge for each circuit	kg	36	38	38	38	40	51	52	66	89	102
Power supply											
Power supply	V / ph / Hz	400 V / 50 Hz / 3 Ph + T									

NOTES

1) Nominal condition referred to: air 35 °C - chilled water 12/7 °C.
2) Measured at 1 m in open field (ISO 3746).
3) Oil and refrigerant charge included.
4) Free-cooling work mode : air 5 °C - unit's inlet water 15 °C - glycol 20 %.