RAC Ka

AIR COOLED CHILLERS WITH BRUSHLESS OIL-FREE COMPRESSORS

COOLING CAPACITY FROM 359 TO 1398 kW - 1 OR 2 COOLING CIRCUITS

RAC 411 Ka

Above picture is only indicative and is not binding.

The units of **RAC Ka series** are particularly indicated for liquid cooling in the air conditioning and industrial process plants, where high efficiency at partial loads and maximum quietness must be granted. These groups have a compact design and a lower weight if compared to the traditional chillers of similar capacity. These units are completely assembled and tested in the factory and supplied with refrigerant charge. Therefore, once on site, the units only need to be positioned and electrically and hydraulically connected.

Following versions are available:

- **RAC Ka Standard:** For condensing section, the use of 6-pole axial fans (990 rpm) with inverter regulation together with performing condensing coils allows to have a good energy efficiency (EER) and low sound levels.

- **RAC HE Ka High-efficiency:** Thanks to the low condensing levels at the same external air temperature and the use of ECO system on compressor, it is possible to reach remarkable EER values. This range is provided with variable speed EC Brushless fans.

- **RAC U Ka Ultra silenced:** Thanks to wide heat exchange surface, the condensing coils allow the unit operation at a reduced air flow, with a consequent reduction on the sound level of the external fan section.

Operation limits:
AIR: from -8°C to +42°C with fans regulated by inverter
AIR: from -20°C to +42°C with EC brushless fans (option)
WATER (out from evaporator): from 4 to 25°C

Operation limit for free-cooling silenced version:
AIR: from -8°C to +42°C with fans regulated by inverter
AIR: from -20°C to +42°C with EC brushless fans (option)
WATER (out from evaporator): from 4 to 25°C

For free-cooling operation, the minimum external temperature is depending on the glycol percentage of the water circuit.

MAIN COMPONENTS
The **frame** is made of galvanized carbon steel structural, treated with high-thickness epoxy powders paint of colour RAL 7035.
It is strongly fixed by self-blocking galvanized nuts and bolts, so to absorb any mechanical stress due to handling and transport.

The two-stage oil-free centrifugal **compressor** (with no mechanical bearings)

is provided with in-built electronic control, pressure and temperature sensors, direct cooling system and inverter for capacity regulation.
Each compressor is complete with rubber anti-vibration dampers, shut off valve on suction side, shut-off valves on discharge side with in-built non return valve, filter on suction side, two-stage hot gas by-pass for inrush phases, sight glass on liquid refrigerant line and shut-off valve for the controlled and direct cooling of compressor.
Its peculiarity allows the continuous regulation of the cooling capacity, changing the speed of the two-stage compression device, with all the advantages of a direct current brushless motor, in which the electrical absorption reduces in a more proportional way than the loading decrease. The result is remarkably high seasonal efficiency values (ESEER).

Suitably designed **evaporator** so to guarantee high level of E.E.R., E.S.E.E.R. and I.P.L.V. The water-refrigerant exchanger is of flooded type, with a single refrigerant passage (shell side) and water multi-passage internal piping, able to operate with a small difference between the evaporating and the outlet fluid temperature, with very low pressure drops and overheating values.
The exchanger is completely insulated with close cell and fire-retardant material of 10 mm thickness, protected with anti-scratch coating. The evaporator is provided with level switch and sight glass for flooding control and water differential switch.
Only for HE version, an economizer system (ECO) is in-built in the evaporator so to achieve a further increase on cooling capacity and ensure the non-return of liquid to the compressor.

Condensing coils: Finned pack exchanger with pure electrolytic copper pipes and louvered aluminium fins of suitable spacing so to avoid any obstruction to the air flow. On request, anti-corrosion treatments are also available (double layer epoxy treatment or copper-copper pipes). The frame is made of anodized aluminium of suitable thickness so to ensure the coil stiffness and, at the same time, resistance against external corrosion.

Free-cooling coil (only for F.S Ka version): Additional free-cooling water coil with copper tube and aluminium fins, for production of chilled water by means of the very low external air temperatures. This allows a remarkable reduction of the compressors working hours with a consequent energy saving, also considering that each circuit is completely independent. It is complete with 3-way mixing valve with 0-10V control.

Low rpm **axial fans**, provided with protection grid, directly coupled to high efficiency motor with external rotor and condensing control by V/F inverter system.
For operation down to -20°C external air, EC brushless fans will be provided (option EC). In this case the advantage at partial loads could be even 55%, if compared to a traditional control system.

Cooling circuit: Each circuit, realized with copper pipes, is mainly composed of: electronic thermostatic valve with in-built microprocessor and display for regulation of the refrigerant flow, also when the compressor is working at partial loads, and acting as solenoid valve when completely closed, shut-off valves on compressor's discharge side and one shut-off valve on suction line, non return valve on discharge side, shut-off valve on liquid line, dehydrating filter with replaceable cartridge, sight glass, hot gas by-pass line with tandem or trio compressors, liquid bleeding line for internal cooling of compressors, high and low pressure safety valve, high and low pressure gauges, high and low pressure transducers, high and low pressure switches.

Electrical board: It is included in a cabinet suitable for outdoor installation (IP 54) and it is provided with: main switch of lock-door type remote control switches, amps and overload protections, isolating transformers for low voltage auxiliary circuits, numbered wires, passive filters to avoid harmonics and disturbances due to the electrical power supply, active filters to prevent electromagnetic interferences (EMI), according to EN 61000-6 and IEEE 519, alphanumeric backlighted user display, microprocessor electronic board, thermostat for control of the inside temperature, in case of operation or positioning at external temperatures lower than 0°C, forced ventilation of the electrical board so to ensure operation of those devices under a continuous sun radiance. On request, a double electrical supply is available, separating the three-phase supply from the low tension single-phase supply of the control and auxiliary circuits.

Microprocessor: It is made of a IN/OUT electronical board, a LCD display, key board and LED signals.
This microprocessor allows the PID regulation of the evaporator outlet water temperature, the set of the operation parameters, the alarm management, the reading of the measured values (temperatures, working hours, etc) and the possibility to control them through a supervision system.
It is also possible to read and to set inputs and outputs, all the operating parameters of the unit and to display all the existing alarms.

ACCESSORIES

- **A** **Amperometer:** Electrical device for measuring the intensity of electrical current absorbed by the unit.
- **DR** **Refrigerant leakage detector:** this device immediately detects eventual refrigerant leakages in the unit.
- **EC** **EC Brushless fans:** Control of condensing temperature through the regulation of the air flow by means of EC Brushless axial fans, allowing the operation down to -20°C external temperature. The indicated limit of external air temperature are referred to the absence of wind, rain, snow or other atmospherical events affecting the heat exchange through the condensing coil.
- **FA** **Anti-pollen filters on condensing coils:** interchangeable flat filters of metal mesh type, placed on the incoming air front surface of the coils.
- **FL** **Mechanical flow** switch on water side, made of a paddle device for monitoring the proper water flow rate through the evaporator.
- **GP** **Condensing coil protection grid:** metal protection grid against accidental impacts, made of 50x50 4-mesh wire.
- **GP1** **Protection grid for compressors section:** metal protection grid against accidental impacts.
- **GSM** **SMS Data transmission card** for unit supervision through a mobile telephone line. In this way, you can completely and remotely supervising the unit through a mobile phone, receiving SMS for diagnostics.
- **KWP** **Device for electrical power measurement**, for measuring and recording the active and reactive power.
- **IH** **RS 485 serial interface:** electronic card to be connected to microprocessor, to allow communication between the units and a Modbus supervision system. It is possible to fully and remotely control the unit. 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.
- **MV** **Buffer tank** of suitable capacity complete with expansion vessel, safety valve, water gauge, water charge and discharge valves, air purging valves.

P1 **Single pump group - standard available pressure**, composed of single pump for user side complete of shut-off valves, water gauge, water charge and purging valves.

P1H **Single pump group - higher available pressure**, composed of single pump for user side complete of shut-off valves, water gauge, water charge and purging valves.

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.

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** 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 buzzer and the display of the present alarms.

PV **Quick start after electrical black-out:** this device allows the compressors re-start within 2 minutes from the return of power supply after electrical black-out.

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.

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

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.

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

Technical data sheet - RAC 351-752 Ka

RAC		351 Ka	411 Ka	451 Ka	512 Ka	562 Ka	602 Ka	642 Ka	682 Ka	752 Ka
Cooling capacity										
Cooling capacity	kW	359,0	410,0	445,0	510,0	560,0	604,0	640,0	680,0	750,0
Absorbed power	kW	108,3	129,0	137,0	151,8	171,0	179,2	181,4	193,4	219,0
EER		3,31	3,18	3,25	3,36	3,27	3,37	3,53	3,52	3,42
ESEER European		4,98	4,84	5,01	5,07	5,07	5,08	5,11	5,09	5,11
Centrifugal compressors two stage oil free										
Quantity	n	1	1	1	2	2	2	2	2	2
Circuits	n	1	1	1	1	1	1	1	1	1
Nominal absorbed current	A	177,4	197,9	231,4	249,4	281,0	293,4	310,6	314,0	349,6
Maximum absorbed current	A	244,4	244,4	244,4	304,4	313,0	313,0	463,0	463,0	471,6
Axial fans										
Quantity	n	8	8	8	8	10	10	10	10	12
Motors power	kW	15,6	15,6	15,6	15,6	19,5	19,5	19,5	19,5	23,8
Total air flow	m^3/h	171.200	168.320	155.200	148.800	210.400	194.000	194.000	186.000	232.800
Total air flow	l/s	47.556	46.756	43.111	41.333	58.444	53.889	53.889	51.667	64.667
Nominal absorbed current	A	31,2	31,2	31,2	31,2	39	39	39	39	47,4
Flooded shell and tube evaporator										
Quantity	n	1	1	1	1	1	1	1	1	1
Water flow rate	m^3/h	61,6	70,4	76,4	87,6	96,1	103,7	109,9	116,7	128,8
Water flow rate	l/s	17,1	19,6	21,2	24,3	26,7	28,8	30,5	32,4	35,8
Pressure drop	kPa	29	24	22	18	76	58	66	72	71
Water volume	l	65	76	88	107	81	95	95	95	110
P1 Pump group										
Available pressure with P1	kPa	119	122	114	106	119	114	111	115	149
Motor power with P1	kW	5,5	5,5	7,5	7,5	7,5	7,5	7,5	7,5	11,0
Nominal absorbed current	A	12,1	12,1	14,2	14,2	13,7	13,7	13,7	13,7	22,0
P1H Pump group										
Available pressure with P1H	kPa	208	206	227	220	204	203	217	229	216
Motor power with P1	kW	7,5	7,5	11,0	11,0	11,0	11,0	15,0	15,0	15,0
Nominal absorbed current	A	13,7	13,7	22,0	22,0	22,0	22,0	28,5	28,5	28,5
Sound power level ISO 3744										
Sound power level	dB(A)	86,8	86,8	86,8	88,1	89,7	89,7	89,1	89,1	89,5
Dimensions										
Lenght	mm	4.750	4.750	4.750	4.750	5.720	5.720	5.720	5.720	6.690
Width	mm	2.300	2.300	2.300	2.300	2.300	2.300	2.300	2.300	2.300
Height	mm	2.560	2.560	2.560	2.560	2.560	2.560	2.560	2.560	2.560
Transport weight 3)	kg	3.780	3.920	4.120	4.230	4.770	4.830	4.860	4.980	5.230
Power supply										
Power supply	V / ph / Hz	400 V / 50 Hz / 3 Ph + T								
NOTES										

Nominal condition referred to: air 35 °C - chilled water 7/12 °C.
3) Refrigerant charge included.

Technical data sheet - RAC 812-1404 Ka

RAC		812 Ka	853 Ka	893 Ka	983 Ka	1083 Ka	1203 Ka	1283 Ka	1404 Ka
Cooling capacity									
Cooling capacity	kW	810,0	850,0	892,0	984,0	1.084,0	1.190,0	1.280,0	1.398,0
Absorbed power	kW	244,6	249,1	265,9	273,1	303,8	348,7	390,1	407,6
EER		3,31	3,41	3,35	3,60	3,57	3,41	3,28	3,43
ESEER European		5,09	5,22	5,14	5,23	5,23	5,21	5,15	5,07
Centrifugal compressors two stage oil free									
Quantity	n	2	3	3	3	3	3	3	4
Circuits	n	1	1	1	1	1	1	1	2
Nominal absorbed current	A	374,0	412,7	434,0	466,1	516,1	591,2	656,0	691,2
Maximum absorbed current	A	471,6	465,2	465,2	690,2	698,8	716,0	716,0	926,0
Axial fans									
Quantity	n	12	14	14	14	16	20	20	20
Motors power	kW	23,8	27,7	27,7	27,7	31,7	39,6	39,6	39,6
Total air flow	m^3/h	223.200	294.560	271.600	260.400	297.600	420.800	372.000	372.000
Total air flow	l/s	62.000	81.822	75.444	72.333	82.667	116.889	103.333	103.333
Nominal absorbed current	A	47,4	55,3	55,3	55,3	63,2	79,0	79,0	79,0
Flooded shell and tube evaporator									
Quantity	n	1	1	1	1	1	1	1	2
Water flow rate	m^3/h	139,1	145,9	153,1	168,9	186,1	204,3	219,7	240,0
Water flow rate	l/s	38,6	40,5	42,5	46,9	51,7	56,7	61,0	66,7
Pressure drop	kPa	82	59	64	78	68	82	76	91
Water volume	l	110	134	134	134	163	163	189	189
P1 Pump group									
Available pressure with P1	kPa	133	125	125	111	144	127	111	125
Motor power with P1	kW	11,0	11,0	11,0	11,0	15,0	15,0	15,0	18,5
Nominal absorbed current	A	22,0	22,0	22,0	22,0	28,5	28,5	28,5	34,2
P1H Pump group									
Available pressure with P1H	kPa	207	203	222	210	239	221	207	185
Motor power with P1	kW	18,5	18,5	18,5	18,5	22,0	22,0	22,0	22,0
Nominal absorbed current	A	34,2	34,2	34,2	34,2	40,7	40,7	40,7	40,7
Sound power level ISO 3744									
Sound power level	dB(A)	89,5	90,0	90,0	90,1	90,6	91,7	91,7	92,3
Dimensions									
Lenght	mm	6.690	7.670	7.670	7.670	9.120	10.570	10.570	10.570
Width	mm	2.300	2.300	2.300	2.300	2.300	2.300	2.300	2.300
Height	mm	2.560	2.560	2.560	2.560	2.560	2.560	2.560	2.560
Transport weight 3)	kg	5.360	6.120	6.310	6.440	6.980	9.860	9.920	10.120
Power supply									
Power supply	V / ph / Hz	400 V / 50 Hz / 3 Ph + T							
NOTES									

Nominal condition referred to: air 35 °C - chilled water 7/12 °C.
3) Refrigerant charge included.

Technical data sheet - RAC 351-752 U Ka

RAC U		351 Ka	411 Ka	451 Ka	512 Ka	562 Ka	602 Ka	642 Ka	752 Ka
Cooling capacity									
Cooling capacity	kW	359	395	420	472	530	572	601	720
Absorbed power	kW	103,6	117,2	126,1	137,4	155,9	168,9	173,3	207,4
EER		3,47	3,37	3,33	3,44	3,40	3,39	3,47	3,47
ESEER European		4,89	4,88	4,79	4,99	4,98	4,97	4,82	4,82
Centrifugal compressors two stage oil free									
Quantity	n	1	1	1	2	2	2	2	2
Circuits	n	1	1	1	1	1	1	1	1
Nominal absorbed current	A	173,6	194,8	208,8	221,8	251,0	271,0	291,4	345,6
Maximum absorbed current	A	230,0	230,0	230,0	290,0	295,0	295,0	445,0	450,0
Axial fans									
Quantity	n	8	8	8	8	10	10	10	12
Motors power	kW	10,2	10,2	10,2	10,2	12,7	12,7	12,7	15,2
Total air flow	m^3/h	138.160	134.400	129.600	116.400	168.000	162.000	162.000	194.400
Total air flow	l/s	38.378	37.333	36.000	32.333	46.667	45.000	45.000	54.000
Nominal absorbed current	A	20,0	20,0	20,0	20,0	25,0	25,0	25,0	30,0
Flooded shell and tube evaporator									
Quantity	n	1	1	1	1	1	1	1	1
Water flow rate	m^3/h	61,6	67,8	72,1	81,0	91,0	98,2	103,2	123,6
Water flow rate	l/s	17,1	18,8	20,0	22,5	25,3	27,3	28,7	34,3
Pressure drop	kPa	29	22	20	25	20	80	57	66
Water volume	l	65	76	88	88	107	81	95	110
P1 Pump group									
Available pressure with P1	kPa	124	134	126	122	105	130	125	121
Motor power with P1	kW	5,5	5,5	7,5	7,5	7,5	11,0	11,0	11,0
Nominal absorbed current	A	11,0	11,0	15,0	15,0	15,0	22,2	22,2	22,2
P1H Pump group									
Available pressure with P1H	kPa	186	196	228	229	219	224	219	216
Motor power with P1	kW	11,0	11,0	18,5	18,5	18,5	18,5	18,5	18,5
Nominal absorbed current	A	22,2	22,2	35,0	35,0	35,0	35,0	35,0	35,0
Sound power level ISO 3744									
Sound power level	dB(A)	79,1	79,1	79,1	80,6	81,7	81,7	81,8	82,0
Dimensions									
Lenght	mm	4.750	4.750	4.750	4.750	5.720	5.720	5.720	6.690
Width	mm	2.300	2.300	2.300	2.300	2.300	2.300	2.300	2.300
Height	mm	2.560	2.560	2.560	2.560	2.560	2.560	2.560	2.560
Transport weight 3)	kg	3.884	4.020	4.160	4.320	4.785	4.850	4.920	5.320
Power supply									
Power supply	V / ph / Hz	400 V / 50 Hz / 3 Ph + T							
NOTES									

Nominal condition referred to: air 35 °C - chilled water 7/12 °C.
3) Refrigerant charge included.

Technical data sheet - RAC 853-1404 U Ka

RAC U		853 Ka	893Ka	983 Ka	1083 Ka	1203 Ka	1283 Ka	1404 Ka
Cooling capacity								
Cooling capacity	kW	810	865	925	980	1130	1210	1360
Absorbed power	kW	241,3	259,3	275,8	286,1	343,1	385,7	381,4
EER		3,36	3,34	3,35	3,43	3,29	3,14	3,57
ESEER European		4,92	4,90	4,95	4,98	4,91	4,88	4,93
Centrifugal compressors two stage oil free								
Quantity	n	3	3	3	3	3	3	4
Circuits	n	1	1	1	1	1	1	2
Nominal absorbed current	A	387,2	414,5	461,6	478,3	569,0	636,2	636,4
Maximum absorbed current	A	440,0	440,0	665,0	670,0	680,0	680,0	890,0
Axial fans								
Quantity	n	14	14	14	16	20	20	20
Motors power	kW	17,8	17,8	17,8	20,3	25,4	25,4	25,4
Total air flow	m^3/h	235.200	226.800	203.700	232.800	336.000	324.000	318.000
Total air flow	l/s	65.333	63.000	56.583	64.667	93.333	90.000	88.333
Nominal absorbed current	A	387,2	414,5	461,6	478,3	569,0	636,2	636,4
Flooded shell and tube evaporator								
Quantity	n	1	1	1	1	1	1	2
Water flow rate	m^3/h	139,1	148,5	158,8	168,2	194,0	207,7	233,5
Water flow rate	l/s	38,6	41,2	44,1	46,7	53,9	57,7	64,9
Pressure drop	kPa	81	61	69	78	75	67	84
Water volume	l	110	134	134	134	163	189	189
P1 Pump group								
Available pressure with P1	kPa	109	125	115	149	126	112	102
Motor power with P1	kW	11,0	11,0	11,0	15,0	15,0	15,0	18,5
Nominal absorbed current	A	22,2	22,2	22,2	28,8	28,8	28,8	35,0
P1H Pump group								
Available pressure with P1H	kPa	201	218	206	199	215	200	188
Motor power with P1	kW	18,5	18,5	18,5	18,5	22,0	22,0	30,0
Nominal absorbed current	A	35,0	35,0	35,0	35,0	41,5	41,5	55,7
Sound power level ISO 3744								
Sound power level	dB(A)	82,1	82,1	83,3	83,3	83,8	83,8	84,8
Dimensions								
Lenght	mm	7.670	7.670	7.670	9.120	10.570	10.570	10.570
Width	mm	2.300	2.300	2.300	2.300	2.300	2.300	2.300
Height	mm	2.560	2.560	2.560	2.560	2.560	2.560	2.560
Transport weight 3)	kg	5.460	6.230	6.490	7.740	9.960	10.060	10.230
Power supply								
Power supply	V / ph / Hz	400 V / 50 Hz / 3 Ph + T						
NOTES								
Nominal condition referred to: air 35 °C - chilled water 7/12 °C.								
3) Refrigerant charge included.								

Technical data sheet - RAC 321-1163 HE Ka

RAC HE		321 Ka	391 Ka	451 Ka	512 Ka	562 Ka	642 Ka	712 Ka	802 Ka	862 Ka	943 Ka	1063 Ka	1163 Ka
Cooling capacity													
Cooling capacity	kW	321,2	392,8	452,4	507,8	562,0	640,2	711,8	803,0	863,7	944,0	1067,6	1155,5
Absorbed power	kW	84,4	99,9	117,0	126,6	142,4	166,2	183,3	204,4	222,1	243,6	269,1	293,7
Maximum absorbed current	A	171,0	246,0	255,0	315,0	324,0	324,0	483,0	483,0	492,0	495,0	720,0	720,0
EER	kW/kW	3,81	3,93	3,87	4,01	3,95	3,85	3,88	3,93	3,89	3,88	3,97	3,93
ESEER European		5,37	5,69	5,56	5,82	5,78	5,65	5,40	5,45	5,70	5,69	5,86	5,72
Centrifugal compressors two stage oil free													
Quantity	n	1	1	1	2	2	2	2	2	2	3	3	3
Circuits	n	1	1	1	1	1	1	1	1	1	1	1	1
Axial fans													
Quantity	n	8	8	10	10	12	12	14	14	16	20	20	20
Motors power	kW	19,8	19,8	24,8	24,8	29,8	29,8	34,7	34,7	39,7	49,6	49,6	49,6
Total air flow	m^3/h	176.800	174.400	221.000	210.500	261.600	252.960	305.200	299.600	337.280	436.000	421.800	421.800
Total air flow	l/s	49.111	48.444	61.389	58.472	72.667	70.267	84.778	83.222	93.689	121.111	117.167	117.167
Nominal absorbed current	A	36,0	36,0	45,0	45,0	54,0	54,0	63,0	63,0	72,0	90,0	90,0	90,0
Flooded shell and tube evaporator													
Quantity	n	1	1	1	1	1	1	1	1	1	1	1	1
Water flow rate	m^3/h	55,1	67,4	77,7	87,2	96,5	109,9	122,2	137,8	148,3	162,1	183,3	198,4
Water flow rate	l/s	15,3	18,7	21,6	24,2	26,8	30,5	33,9	38,3	41,2	45,0	50,9	55,1
Pressure drop	kPa	23	22	23	18	77	65	64	79	61	72	67	61
Water volume	l	65	76	88	107	81	95	110	110	134	134	163	189
P1 Pump group													
Available pressure with P1	kPa	127	99	113	117	108	87	101	83	105	87	104	93
Motor power with P1	kW	5,5	5,5	5,5	7,5	7,5	7,5	11,0	11,0	11,0	11,0	15,0	18,5
Nominal absorbed current	A	12,1	12,1	12,1	13,7	13,7	13,7	22,0	22,0	22,0	22,0	28,5	34,2
P1H Pump group													
Available pressure with P1H	kPa	240	186	202	223	210	175	191	186	202	176	194	165
Motor power with P1H	kW	7,5	7,5	9,2	11,0	11,0	15,0	15,0	18,5	18,5	18,5	22,0	22,0
Nominal absorbed current	A	14,2	14,2	18,3	22,3	22,3	27,6	27,6	31,5	31,5	31,5	41,5	41,5
Sound power level ISO 3744													
Sound power level	dB(A)	92,0	92,4	93,6	93,5	94,0	94,0	94,9	94,9	95,4	96,5	96,9	96,9
Dimensions													
Lenght	mm	4.750	4.750	5.720	5.720	6.690	6.690	7.670	7.670	9.120	10.570	10.570	10.570
Width	mm	2.300	2.300	2.300	2.300	2.300	2.300	2.300	2.300	2.300	2.300	2.300	2.300
Height	mm	2.560	2.560	2.560	2.560	2.560	2.560	2.560	2.560	2.560	2.560	2.560	2.560
Transport weight 3)	kg	4.030	4.440	4.870	4.960	5.380	5.490	6.280	6.570	7.085	9.650	10.110	10.110
Power supply													
Power supply	V / ph / Hz	400 V / 50 Hz / 3 Ph + T											
NOTES													

Nominal condition referred to: air 35 °C - chilled water 7/12 °C.
3) Refrigerant charge included.