

# RAE Kc

## AIR COOLED CHILLERS FOR OUTDOOR INSTALLATION MULTISCROLL SERIES

COOLING CAPACITY FROM 78 TO 618 kW 1 AND 2 COOLING CIRCUITS

RAE 4102 Kc + CF + GP3 + PT

RAE 6102 S Kc



Above pictures are only indicative and are not binding.



Packaged air cooled chillers of **RAE Kc 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 refrigerant, particularly glide-free at state exchanges, allows this range to attain EER nominal values close to 3 with ESEER higher than 4,5. 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 R410a refrigerant and a non-freezing oil charge.

Following versions are available:

- **RAE Kc** - standard version
- **RAE S Kc** - silenced version
- **RAE U Kc** - ultra silenced version

Reduced sound level in versions S and U is realised by using condensers with

larger surface areas as well as soundproofed compressor cabinets. On the U version, the electronic fans speed control is also standard provided.

**Operation limits** (standard unit):

AIR: from 10 to 45°C; WATER (outlet from the evaporator): From 5 to 15°C.

### 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 compressors** with R410a refrigerant, 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 max operating pressure limits are 6 bar for water side and 42 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.

**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.

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

**Electric board** built in compliance with 60204-1/IEC 204-1 standards, 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, relays for phase sequencing and possibility to interface to BMS systems.

### ACCESSORIES

- A Amperometer:** Electrical device to measure the electrical current absorbed by the unit.
- AE Electrical power supply different than standard:** 230 V three-phase, 460 V three-phase. Frequency 50/60 Hz.
- BT Low temperature operation (-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).
- CF Soundproofed compressors cabinet with standard material:** Insulation of compressors by a cabinet coated with 25 mm thick sound and fireproofing material. (Included in S version)
- CFU Soundproofed compressors cabinet with higher thickness material:** Compressor insulation with high-density sound and fireproofing materials of higher thickness. (Included in U version)
- CFT Overall compressor and technical compartment cabinet:** Insulation with sound and fireproofing materials 25 mm thickness for compressor and technical compartment. (Not available for 6-8-10 fans version) (For 1 fan version, this option correspond to CF)

- CS Compressors inrush counter:** Electromechanical device positioned inside the electrical board, recording the total inrush starts of compressors.
- EC Axial fans with electronic commutated motor:** Made of high-performance composite material, 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. Thanks to a more accurate adjustment of air flow, they allow operation of the unit with external temperature down to -20 °C. (Alternative to BT and BF)
- GP Condensing coil protection grid:** Metal grid to protect against accidental impacts.
- GP2 Anti-intrusion grid:** Metal protection grid to protect compressors and exchangers. (not available with CF, CFU and CFT)
- GP3 Anti-intrusion grid with compressors cabinet:** Anti-intrusion metal protection grid coupled with soundproofed compressor cabinet (only available with CF and CFU).
- I1 Victaulic insulation on pump side:** Insulation of the joints by close-cell polyurethane material, to prevent condensation, pump side.
- I2 Victaulic insulation buffer tank side:** Insulation of the joints by close-cell polyurethane material, to prevent condensation, buffer tank side.
- IH RS 485 Serial interface:** Electronic card to be connected to the microprocessor to allow connection of the units to supervision systems, for a remote control and monitoring of the unit. (Alternative to IH LON or IWG)
- IH LON Protocol serial interface:** Electronic card to be connected to the microprocessor to allow connection of the units to supervision systems with LON protocol, for a remote control and monitoring of the unit. (Alternative to IH or IWG)
- IM Seawood packing:** Fumigated seawood case and protection bag with hygroscopic salts, suitable for long sea transports.
- IWG SNMP or TCP/IP Protocol serial interface:** Electronic card to be connected to the microprocessor to allow connection of the units to supervision systems with SNMP or TCP/IP protocol, for a remote control and monitoring of the unit. (Alternative to IH or IH LON)
- MF Phase monitor:** Electronic device that checks the correct sequence and/or the lack of one of the 3 phases, switching off the unit if necessary.
- MV Buffer tank module:** Of suitable capacity complete with expansion vessel, safety valve, water gauge, water charge and discharge valves, air purging valves, check valves for filter service operations.
- P1 Pump group:** Chilled water pump group made of a single pump, expansion vessel, safety valve water gauge, water charge and discharge valves, air purging valves, electric control of the pump. The pump is of enbloc 2-pole type for standard and S versions, 4-pole for U version.
- P1H Higher available pressure pump group:** Chilled water pump group made of a single pump, expansion vessel, safety valve water gauge, water charge and discharge valves, air purging valves, electric control of the pump. The pump is of enbloc 2-pole type for standard and S versions, 4-pole for U version.
- P2 Double pump group (only one working):** Chilled water pump group made by two pumps in parallel, expansion vessel, safety valve, water gauge, water charge and discharge valves, air purging valves, water shut-off valve on suction and check valve on discharge for each single pump, electric control of the pump. The pumps are of enbloc 2-pole type for standard and S versions, 4-pole for U version.
- P2H Higher available pressure double pump group (only one working):** Chilled water pump group made by two higher available pressure pumps in parallel, expansion vessel, safety valve, water gauge,

water charge and discharge valves, air purging valves, water shut-off valve on suction and check valve on discharge for each single pump, electric control of the pump. The pumps are of enbloc 2-pole type for standard and S versions, 4-pole for U version

- PT In-line twin pump group** (only one working): Chilled water pump group made by a twin pump group with a single impeller body and two separate electric motors. The hydronic kit is made by an expansion vessel, safety valve, water gauge, water charge and discharge valves, air purging valves, electric control of the pump. The pumps are of enbloc 2-pole type for standard and S versions, 4-pole for U version. (Not available for one-fan units).
- PA Rubber-type vibration dampers:** Bell-shaped vibration dampers supports for isolating 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 supports, for isolating 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 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 signaling and the display of the present alarms.
- RA Anti-freeze heater on evaporator:** Electrical heater installed on the evaporator, in order to prevent freezing, provided with thermostat.
- RD Shut-off valve on compressors discharge side:** They are used to isolate compressors during service operation.
- RF Power factor correction system  $\cos\phi \geq 0,9$ :** Electrical device made by suitable condensers for compressor rephasing that ensure a  $\cos\phi$  value  $\geq 0,9$ , so to reduce absorption from electrical network.
- RH Shut-off valve on compressors suction side:** They are used to isolate compressors during service operation.
- RL Compressors overload relays:** Electromechanical protection devices against compressor's overload with displayed alarm.
- RM Condensing coil with pre-painted fins:** Double-layer treatment of condensing coils with epoxy coating.
- RP Partial heat recovery:** (about 20%) of condensing heat through a refrigerant/water plate exchanger (desuperheater) always in series to the compressors. It is used when you want to partially recover condensing heat capacity for production of sanitary water.
- RR Copper/Copper coil:** Special condensing coils with copper pipes and fins.
- RT Total heat recovery:** (100%) of condensing heat by refrigerant/water heat exchanger in alternative and in parallel to the condensing air section. It is used when you want to completely recover condensing heat capacity for production of sanitary water or for heating applications.
- RV Personalized frame painting in alternative RAL color.**
- TE Electronic thermostatic valve:** Electronic thermostatic valve that reduces the response times of the unit. Useful in case of frequent changes on cooling demand, so as to improve efficiency.
- V Voltmeter:** Electrical device measuring the electrical voltage of the unit power supply.
- 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.

# LIQUID CHILLERS - AIR COOLED

## Technical data sheet - RAE 801-2902 Kc

| RAE                                                               |             | 801 Kc                    | 1001 Kc | 1301 Kc | 1501 Kc | 1702 Kc | 2002 Kc | 2302 Kc | 2502 Kc | 2902 Kc |
|-------------------------------------------------------------------|-------------|---------------------------|---------|---------|---------|---------|---------|---------|---------|---------|
| Cooling capacity                                                  |             |                           |         |         |         |         |         |         |         |         |
| Cooling capacity                                                  | kW          | 78,7                      | 102,2   | 130,6   | 151,8   | 170,2   | 208,0   | 237,0   | 257,0   | 293,0   |
| Absorbed power                                                    | kW          | 26,8                      | 37,2    | 42,8    | 47,3    | 53,6    | 72,4    | 77,6    | 87,6    | 99,4    |
| EER Gross                                                         |             | 2,94                      | 2,75    | 3,05    | 3,21    | 3,18    | 2,87    | 3,05    | 2,93    | 2,95    |
| EER NET                                                           |             | 2,69                      | 2,57    | 2,73    | 2,90    | 2,90    | 2,61    | 2,79    | 2,71    | 2,74    |
| ESEER                                                             |             | 3,10                      | 3,49    | 3,07    | 3,19    | 3,29    | 3,04    | 3,28    | 3,26    | 3,34    |
| Scroll compressors                                                |             |                           |         |         |         |         |         |         |         |         |
| Quantity                                                          | n           | 2                         | 2       | 2       | 2       | 2       | 4       | 4       | 4       | 4       |
| Standard steps capacity                                           | n           | 2                         | 2       | 2       | 2       | 2       | 4       | 4       | 4       | 4       |
| Circuits                                                          | n           | 1                         | 1       | 1       | 1       | 2       | 2       | 2       | 2       | 2       |
| Maximum absorbed current                                          | A           | 66,1                      | 88,1    | 106,0   | 119,0   | 132,0   | 176,1   | 194,1   | 212,1   | 238,1   |
| Inrush current                                                    | A           | 175,7                     | 240,0   | 244,0   | 320,4   | 330,5   | 297,9   | 300,8   | 314,4   | 401,5   |
| Axial fans                                                        |             |                           |         |         |         |         |         |         |         |         |
| Quantity                                                          | n           | 1                         | 1       | 2       | 2       | 2       | 3       | 3       | 3       | 3       |
| Rotation speed                                                    | rpm         | 885                       | 885     | 885     | 885     | 885     | 885     | 885     | 885     | 885     |
| Motors power                                                      | kW          | 2,5                       | 2,5     | 5,0     | 5,0     | 5,0     | 7,4     | 7,4     | 7,4     | 7,4     |
| Total air flow                                                    | m³/h        | 26.150                    | 24.600  | 54.120  | 48.530  | 47.140  | 82.050  | 76.050  | 76.050  | 73.800  |
| Total air flow                                                    | l/s         | 7.264                     | 6.833   | 15.033  | 13.481  | 13.094  | 22.792  | 21.125  | 21.125  | 20.500  |
| Nominal absorbed current                                          | A           | 5,2                       | 5,2     | 10,3    | 10,3    | 10,3    | 15,5    | 15,5    | 15,5    | 15,5    |
| Brazed plate evaporator                                           |             |                           |         |         |         |         |         |         |         |         |
| Quantity                                                          | n           | 1                         | 1       | 1       | 1       | 1       | 1       | 1       | 1       | 1       |
| Water flow rate                                                   | m³/h        | 13,5                      | 17,6    | 22,5    | 26,1    | 29,3    | 35,8    | 40,8    | 44,2    | 50,4    |
| Water flow rate                                                   | l/s         | 3,8                       | 4,9     | 6,2     | 7,3     | 8,1     | 9,9     | 11,3    | 12,3    | 14,0    |
| Pressure drop                                                     | kPa         | 47                        | 49      | 49      | 48      | 66      | 65      | 66      | 75      | 63      |
| Pump group P1                                                     |             |                           |         |         |         |         |         |         |         |         |
| Available pressure                                                | kPa         | 104                       | 120     | 102     | 100     | 126     | 106     | 111     | 124     | 101     |
| Motor power                                                       | kW          | 1,1                       | 1,5     | 1,9     | 1,9     | 3,0     | 3,0     | 4,0     | 4,0     | 4,0     |
| Nominal absorbed current                                          | A           | 3,1                       | 3,8     | 5,0     | 5,0     | 6,2     | 6,5     | 8,3     | 8,5     | 8,5     |
| Weight                                                            | Kg          | 13                        | 14      | 15      | 15      | 27      | 35      | 41      | 44      | 44      |
| Pump group P1H                                                    |             |                           |         |         |         |         |         |         |         |         |
| Available pressure                                                | kPa         | 203                       | 272     | 251     | 228     | 198     | 210     | 231     | 200     | 249     |
| Motor power                                                       | kW          | 3,0                       | 3,0     | 3,0     | 3,0     | 3,0     | 5,5     | 5,5     | 5,5     | 7,5     |
| Nominal absorbed current                                          | A           | 5,7                       | 5,7     | 5,7     | 5,7     | 5,7     | 10,7    | 10,3    | 10,3    | 15,0    |
| Weight                                                            | Kg          | 34                        | 55      | 55      | 55      | 55      | 35      | 50      | 50      | 60      |
| Pump group P2                                                     |             |                           |         |         |         |         |         |         |         |         |
| Available pressure                                                | kPa         | 104                       | 120     | 102     | 100     | 126     | 106     | 111     | 124     | 101     |
| Motor power                                                       | kW          | 1,1                       | 1,5     | 1,9     | 1,9     | 3,0     | 3,0     | 4,0     | 4,0     | 4,0     |
| Nominal absorbed current                                          | A           | 3,1                       | 3,8     | 5,0     | 5,0     | 6,2     | 6,5     | 8,3     | 8,5     | 8,5     |
| Weight                                                            | Kg          | 25                        | 28      | 31      | 31      | 54      | 70      | 82      | 88      | 88      |
| Pump group P2H                                                    |             |                           |         |         |         |         |         |         |         |         |
| Available pressure                                                | kPa         | 203                       | 272     | 251     | 228     | 198     | 210     | 231     | 200     | 249     |
| Motor power                                                       | kW          | 3,0                       | 3,0     | 3,0     | 3,0     | 3,0     | 5,5     | 5,5     | 5,5     | 7,5     |
| Nominal absorbed current                                          | A           | 5,7                       | 5,7     | 5,7     | 5,7     | 5,7     | 10,7    | 10,3    | 10,3    | 15,0    |
| Weight                                                            | Kg          | 68                        | 110     | 110     | 110     | 110     | 70      | 100     | 100     | 120     |
| Pump group PT                                                     |             |                           |         |         |         |         |         |         |         |         |
| Available pressure                                                | kPa         | 88                        | 124     | 151     | 155     | 116     | 91      | 105     | 84      | 134     |
| Motor power                                                       | kW          | 1,5                       | 2,2     | 3,0     | 3,0     | 3,0     | 3,0     | 4,0     | 4,0     | 5,5     |
| Nominal absorbed current                                          | A           | 3,3                       | 4,6     | 6,1     | 6,1     | 6,1     | 6,1     | 7,8     | 7,8     | 10,3    |
| Weight                                                            | Kg          | 94                        | 99      | 118     | 123     | 123     | 123     | 137     | 137     | 168     |
| Hydraulic kit                                                     |             |                           |         |         |         |         |         |         |         |         |
| Buffer tank water volume                                          | l           | 100                       | 100     | 250     | 250     | 250     | 400     | 400     | 400     | 800     |
| Weight with empty MV included                                     | Kg          | 40                        | 40      | 80      | 80      | 80      | 95      | 95      | 95      | 145     |
| Electrical data                                                   |             |                           |         |         |         |         |         |         |         |         |
| Total absorbed power                                              | kW          | 29,3                      | 39,7    | 47,8    | 52,3    | 58,6    | 79,8    | 85,0    | 95,0    | 106,8   |
| Total nominal absorbed current                                    | A           | 48,6                      | 65,2    | 78,3    | 86,5    | 97,3    | 132,7   | 140,1   | 154,7   | 174,7   |
| Total maximum absorbed current                                    | A           | 71,2                      | 93,2    | 116,3   | 129,3   | 142,3   | 191,5   | 209,5   | 227,5   | 253,5   |
| Total inrush current                                              | A           | 180,9                     | 245,2   | 254,3   | 330,7   | 340,8   | 313,4   | 316,3   | 329,9   | 417,0   |
| Sound pressure level                                              |             |                           |         |         |         |         |         |         |         |         |
| Sound pressure level 2)                                           | dB(A)       | 75,2                      | 75,2    | 78,0    | 79,1    | 79,1    | 80,0    | 80,3    | 79,7    | 80,7    |
| Dimensions                                                        |             |                           |         |         |         |         |         |         |         |         |
| Length                                                            | mm          | 1.620                     | 1.620   | 2.660   | 2.660   | 2.660   | 3.700   | 3.700   | 3.700   | 3.700   |
| Width                                                             | mm          | 1.370                     | 1.370   | 1.370   | 1.370   | 1.370   | 1.370   | 1.370   | 1.370   | 1.370   |
| Height                                                            | mm          | 2.420                     | 2.420   | 2.420   | 2.420   | 2.420   | 2.420   | 2.420   | 2.420   | 2.420   |
| Weight                                                            | kg          | 982                       | 1.042   | 1.177   | 1.266   | 1.320   | 1.707   | 1.823   | 1.825   | 1.968   |
| Weight with empty MV included                                     | kg          | 1.022                     | 1.082   | 1.257   | 1.346   | 1.400   | 1.802   | 1.918   | 1.920   | 2.113   |
| Refrigerant charge                                                | kg          | 9                         | 12      | 19      | 22      | 28      | 34      | 36      | 38      | 46      |
| Power supply                                                      |             |                           |         |         |         |         |         |         |         |         |
| Power supply                                                      | V / ph / Hz | 400 V/ 50Hz / 3Ph + N + T |         |         |         |         |         |         |         |         |
| NOTES                                                             |             |                           |         |         |         |         |         |         |         |         |
| Nominal condition referred to: air 35 °C - chilled water 7/12 °C. |             |                           |         |         |         |         |         |         |         |         |
| 2) Measured at 1 m in open field (ISO 3746)                       |             |                           |         |         |         |         |         |         |         |         |

## Technical data sheet - RAE 3202-6102 Kc

| RAE                                                               |             | 3202 Kc                  | 3402 Kc | 3602 Kc | 3802 Kc | 4102 Kc | 4902 Kc | 5202 Kc | 5602 Kc | 6102 Kc |
|-------------------------------------------------------------------|-------------|--------------------------|---------|---------|---------|---------|---------|---------|---------|---------|
| Cooling capacity                                                  |             |                          |         |         |         |         |         |         |         |         |
| Cooling capacity                                                  | kW          | 325,0                    | 346,0   | 367,0   | 388,0   | 416,0   | 492,0   | 526,0   | 565,0   | 618,0   |
| Absorbed power                                                    | kW          | 113,2                    | 117,2   | 120,6   | 127,2   | 132,0   | 167,4   | 193,2   | 191,2   | 200,4   |
| EER Gross                                                         |             | 2,87                     | 2,95    | 3,04    | 3,05    | 3,15    | 2,94    | 2,72    | 2,96    | 3,08    |
| EER NET                                                           |             | 2,69                     | 2,72    | 2,81    | 2,83    | 2,88    | 2,74    | 2,56    | 2,73    | 2,86    |
| ESEER                                                             |             | 3,33                     | 3,22    | 3,27    | 3,40    | 3,30    | 3,33    | 3,32    | 3,34    | 3,42    |
| Scroll compressors                                                |             |                          |         |         |         |         |         |         |         |         |
| Quantity                                                          | n           | 4                        | 4       | 4       | 4       | 4       | 6       | 6       | 6       | 6       |
| Standard steps capacity                                           | n           | 4                        | 4       | 4       | 4       | 4       | 4       | 4       | 4       | 4       |
| Circuits                                                          | n           | 2                        | 2       | 2       | 2       | 2       | 2       | 2       | 2       | 2       |
| Maximum absorbed current                                          | A           | 264,1                    | 284,0   | 304,0   | 314,0   | 324,1   | 396,1   | 456,0   | 466,0   | 486,0   |
| Inrush current                                                    | A           | 423,8                    | 428,3   | 420,3   | 455,2   | 460,6   | 511,5   | 537,0   | 561,8   | 572,0   |
| Axial fans                                                        |             |                          |         |         |         |         |         |         |         |         |
| Quantity                                                          | n           | 3                        | 4       | 4       | 4       | 5       | 5       | 6       | 8       | 8       |
| Rotation speed                                                    | rpm         | 885                      | 885     | 885     | 885     | 885     | 885     | 895     | 895     | 895     |
| Motors power                                                      | kW          | 7,4                      | 9,9     | 9,9     | 9,9     | 12,4    | 12,4    | 12,0    | 16,0    | 16,0    |
| Total air flow                                                    | m³/h        | 73.800                   | 102.400 | 99.200  | 92.800  | 128.000 | 116.000 | 112.920 | 167.200 | 156.800 |
| Total air flow                                                    | l/s         | 20.500                   | 28.444  | 27.556  | 25.778  | 35.556  | 32.222  | 31.367  | 46.444  | 43.556  |
| Nominal absorbed current                                          | A           | 15,5                     | 20,6    | 20,6    | 20,6    | 25,8    | 25,8    | 25,8    | 34,4    | 34,4    |
| Brazed plate evaporator                                           |             |                          |         |         |         |         |         |         |         |         |
| Quantity                                                          | n           | 1                        | 1       | 1       | 1       | 1       | 1       | 1       | 1       | 1       |
| Water flow rate                                                   | m³/h        | 55,9                     | 59,5    | 63,1    | 66,7    | 71,6    | 84,6    | 90,5    | 97,2    | 106,3   |
| Water flow rate                                                   | l/s         | 15,5                     | 16,5    | 17,5    | 18,5    | 19,9    | 23,5    | 25,1    | 27,0    | 29,5    |
| Pressure drop                                                     | kPa         | 74                       | 63      | 70      | 54      | 61      | 67      | 70      | 61      | 71      |
| Pump group P1                                                     |             |                          |         |         |         |         |         |         |         |         |
| Available pressure                                                | kPa         | 88                       | 110     | 99      | 92      | 111     | 140     | 128     | 112     | 119     |
| Motor power                                                       | kW          | 4,0                      | 5,5     | 5,5     | 5,5     | 5,5     | 7,5     | 7,5     | 7,5     | 9,2     |
| Nominal absorbed current                                          | A           | 8,5                      | 10,2    | 10,2    | 10,2    | 11,0    | 14,0    | 14,0    | 14,0    | 16,5    |
| Weight                                                            | Kg          | 44                       | 53      | 53      | 53      | 53      | 58      | 58      | 58      | 75      |
| Pump group P1H                                                    |             |                          |         |         |         |         |         |         |         |         |
| Available pressure                                                | kPa         | 224                      | 232     | 201     | 196     | 264     | 250     | 240     | 235     | 196     |
| Motor power                                                       | kW          | 7,5                      | 7,5     | 7,5     | 7,5     | 11,0    | 11,0    | 11,0    | 11,0    | 11,0    |
| Nominal absorbed current                                          | A           | 15,0                     | 15,0    | 15,0    | 15,0    | 21,5    | 21,5    | 21,5    | 21,5    | 21,5    |
| Weight                                                            | Kg          | 60                       | 60      | 60      | 60      | 81      | 81      | 81      | 81      | 81      |
| Pump group P2                                                     |             |                          |         |         |         |         |         |         |         |         |
| Available pressure                                                | kPa         | 88                       | 110     | 99      | 92      | 111     | 140     | 128     | 112     | 119     |
| Motor power                                                       | kW          | 4,0                      | 5,5     | 5,5     | 5,5     | 5,5     | 7,5     | 7,5     | 7,5     | 9,2     |
| Nominal absorbed current                                          | A           | 8,5                      | 10,2    | 10,2    | 10,2    | 11,0    | 14,0    | 14,0    | 14,0    | 16,5    |
| Weight                                                            | Kg          | 88                       | 106     | 106     | 106     | 106     | 116     | 116     | 116     | 150     |
| Pump group P2H                                                    |             |                          |         |         |         |         |         |         |         |         |
| Available pressure                                                | kPa         | 224                      | 232     | 201     | 196     | 264     | 250     | 240     | 235     | 196     |
| Motor power                                                       | kW          | 7,5                      | 7,5     | 7,5     | 7,5     | 11,0    | 11,0    | 11,0    | 11,0    | 11,0    |
| Nominal absorbed current                                          | A           | 15,0                     | 15,0    | 15,0    | 15,0    | 21,5    | 21,5    | 21,5    | 21,5    | 21,5    |
| Weight                                                            | Kg          | 120                      | 120     | 120     | 120     | 162     | 162     | 162     | 162     | 162     |
| Pump group PT                                                     |             |                          |         |         |         |         |         |         |         |         |
| Available pressure                                                | kPa         | 94                       | 91      | 89      | 94      | 144     | 120     | 112     | 102     | 142     |
| Motor power                                                       | kW          | 5,5                      | 5,5     | 5,5     | 5,5     | 7,5     | 7,5     | 7,5     | 7,5     | 11,0    |
| Nominal absorbed current                                          | A           | 10,3                     | 10,3    | 10,3    | 10,3    | 13,8    | 13,8    | 13,8    | 13,8    | 20,2    |
| Weight                                                            | Kg          | 168                      | 168     | 166     | 166     | 182     | 182     | 182     | 182     | 267     |
| Hydraulic kit                                                     |             |                          |         |         |         |         |         |         |         |         |
| Buffer tank water volume                                          | l           | 800                      | 800     | 1100    | 1100    | 1100    | 1100    | 1100    | 1100    | 1100    |
| Weight with empty MV included                                     | Kg          | 145                      | 145     | 220     | 220     | 220     | 220     | 220     | 220     | 220     |
| Electrical data                                                   |             |                          |         |         |         |         |         |         |         |         |
| Total absorbed power                                              | kW          | 120,6                    | 127,1   | 130,5   | 137,1   | 144,4   | 179,8   | 205,2   | 207,2   | 216,4   |
| Total nominal absorbed current                                    | A           | 197,9                    | 214,0   | 225,0   | 232,4   | 242,6   | 295,2   | 349,8   | 353,6   | 363,2   |
| Total maximum absorbed current                                    | A           | 279,5                    | 304,6   | 324,6   | 334,6   | 349,8   | 421,8   | 481,8   | 500,4   | 520,4   |
| Total inrush current                                              | A           | 439,3                    | 448,9   | 440,9   | 475,8   | 486,4   | 537,3   | 562,8   | 596,2   | 606,4   |
| Sound pressure level                                              |             |                          |         |         |         |         |         |         |         |         |
| Sound pressure level 2)                                           | dB(A)       | 80,6                     | 82,1    | 81,6    | 82,6    | 84,1    | 83,6    | 81,6    | 83,3    | 84,7    |
| Dimensions                                                        |             |                          |         |         |         |         |         |         |         |         |
| Length                                                            | mm          | 3.700                    | 4.740   | 4.740   | 4.740   | 5.780   | 5.780   | 3.770   | 4.750   | 4.750   |
| Width                                                             | mm          | 1.370                    | 1.370   | 1.370   | 1.370   | 1.370   | 1.370   | 2.300   | 2.300   | 2.300   |
| Height                                                            | mm          | 2.420                    | 2.420   | 2.420   | 2.420   | 2.420   | 2.420   | 2.560   | 2.560   | 2.560   |
| Weight                                                            | kg          | 2.063                    | 2.102   | 2.225   | 2.433   | 2.375   | 2.875   | 3.572   | 3.496   | 3.810   |
| Weight with empty MV included                                     | kg          | 2.208                    | 2.247   | 2.445   | 2.653   | 2.595   | 3.095   | 3.792   | 3.716   | 4.030   |
| Refrigerant charge                                                | kg          | 52                       | 56      | 68      | 74      | 78      | 82      | 86      | 90      | 94      |
| Power supply                                                      |             |                          |         |         |         |         |         |         |         |         |
| Power supply                                                      | V / ph / Hz | 400 V/ 50Hz/ 3Ph + N + T |         |         |         |         |         |         |         |         |
| NOTES                                                             |             |                          |         |         |         |         |         |         |         |         |
| Nominal condition referred to: air 35 °C - chilled water 7/12 °C. |             |                          |         |         |         |         |         |         |         |         |
| 2) Measured at 1 m in open field (ISO 3746).                      |             |                          |         |         |         |         |         |         |         |         |