



**AIR COOLED WATER CHILLERS, CONDENSING UNITS AND  
HEAT PUMPS WITH AXIAL FANS**

***LDK***

**SERIES**



**TECHNICAL MANUAL**



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**SAFETY LAWS**

HIDROS SRL's equipment and their component parts have been designed in compliance with the harmonised EC norms in force and other European and national norms as required by the Council Directive (98/37 and later amendments).

The equipment is also compliant with:

- Norms EN 292-1 e 292-2
- Norma EN 294
- Norms EN 378-1, 378-2, 378-3 e 378-4
- Norma EN 418
- Norma EN 953
- Norma EN 1050
- Norma EN 60204-1
- Norma EN 61000-6-2
- Norma EN 61000-6-4
- Community Directives 98/37/CE, 97/23/CE, 93/68/CEE, 89/336/CEE 73/23/CEE

**GENERAL SAFETY GUIDELINES**

Before beginning to operate on LDK units every user must be perfectly knowledgeable about the functions of the equipment and its controls and must have read and understood the information container in this manual.



**It's strictly forbidden to remove and/or tamper with any safety device.**



**Any routine or not-routine maintenance operation shall be carried out when the equipment has been shut down, disconnected from electric and pneumatic power source and after its pneumatic system has been discharged.**



**Do not put your hands or insert screwdrivers, spanners or other tools into moving parts of the equipment.**



**The equipment supervisor and the maintenance man must receive training suitable for the performance of their tasks in safety**



**Operators must know how to use personal protective devices and must know the accident-prevention guidelines contained in national and international laws and norms.**

**WORKERS' HEALTH AND SAFETY**

The European Community has adopted a number of directives on workplace health and safety, which include directives **89/391/CEE**, **89/686/CEE**, **89/655/CEE**, **86/188/CEE** and **77/576/CEE**. Every employer shall implement such provisions and ensure that workers respect them:



**Do not tamper with or replace parts of the equipment without the specific consent of the manufacturer. The manufacturer shall have no responsibility whatsoever in case of unauthorised operations.**



**Using components, expendable materials or spare parts that do not correspond to those recommended by the manufacturer and/or listed in this manual may be dangerous for the operators and/or damage the equipment**



**The operator's workplace must be kept clean, tidy and free from objects that may hamper free movements. Appropriate lighting of the work place shall be provided so as to allow the operator to carry out the required operations safely. Poor or too strong lighting can cause risks.**



**Ensure that work places are always adequately ventilated and that aspirators are working, in good condition and in compliance with the requirements of the laws in force..**

**PROTECTIVE EQUIPMENT**

Nelle operazioni di utilizzo e manutenzione delle unità UTH è necessario prevedere l'uso di mezzi personali di protezione quali: When operating and maintaining the UTH unit, use the following personal protective equipment.



**Protective clothing: Maintenance men and operators must wear protective clothing that complies with the basic safety requirements currently in force. In case of slippery floors users must wear safety shoes with non-slip soles.**



**Gloves: During maintenance or cleaning operation protection gloves must be used**



**Mask and goggles: Respiratory protection (mask) and eye protection (goggles) should be used during cleaning and maintenance operations.**

**SAFETY SIGNS**

The equipment features the following safety signs, which must be complied with:



**General hazard**



**Electric shock hazard**

## TECHNICAL CHARACTERISTICS

### Frame

All LDK units are made from hot-galvanised thick sheet metal, painted with polyurethane powder enamel at 180°C to ensure the best resistance against the atmospheric agents. The frame is self-supporting with removable panels. All screws and rivets for outdoor installations are in stainless steel. The colour of the units is RAL 7035.

### Refrigerant circuit

The refrigerant gas used in these units is R407C. The refrigerant circuit is made by using international primary brands components and according to ISO 97/23 concerning welding procedures. Each refrigerant circuit is totally independent from the other. Any incorrect operation of one circuit does not influence the other circuit. The refrigerant circuit includes:

- liquid line manual shut-off valve,
- sight glass,
- filter drier,
- thermal expansion valve with external equalizer,
- electric expansion valve with electronic control to optimize the efficiency in part load conditions (option),
- reverse cycle valve (for heat pump version only),
- one way valve (for heat pump version only),
- liquid receiver (for heat pump version only),
- Schrader valves for maintenance and control,
- pressure safety device (according to PED regulation).

### Compressors

The compressors are scroll type, with crankcase heater and thermal overload protection by a klixon embedded in the motor winding. They are mounted in a separate chamber in order to be separated from the air stream. The crankcase heater is always powered when the compressors are in stand-by. The inspection is possible through the frontal panel of the unit that allows the maintenance of the compressors even if the unit is working. The compressors used are all in tandem execution. This solution allows much higher efficiencies in partial loads compared to the units with independent refrigerant circuits.

### Condensers

The condensers are made of copper pipes and aluminium fins. The diameter of the copper pipes is 3/8" and the thickness of the aluminium fins is 0,1 mm. The tubes are mechanically expanded into the aluminium fins to improve the heat exchange factor. The geometry of these condensers guarantees a low air side pressure drop and then the use of low rotation (and low noise emission) fans. The condensers can be protected by a metallic filter to be installed on request.

### Fans

The fans are axial type with aerofoil blades. They are statically and dynamically balanced and supplied complete of the safety fan guard according to EN 60335. They are mounted on the unit frame by interposition of rubber vibration dampers. The electric motors are all at 6 poles (about 900 rpm) in the low noise versions, 8 poles (about 750 rpm) in the extra low noise versions. The motors are directly driven with an integrated thermal overload protection. The protection class of the motors is IP 54.

### Evaporators

The evaporators are made of AISI 316 stainless steel braze-welded plates type. From size 045 to size 130 are single water side circuit, from the size 140 they are double circuit "cross flow" type. The use of these kinds of evaporators allows a massive reduction of the refrigerant charge of the unit compared to the traditional shell-in-tube evaporators and increases the efficiency of the refrigerant cycle in partial loads. The evaporators are factory insulated with flexible close cell material and can be equipped with antifreeze heater (optional). Each evaporator is provided with a temperature sensor as antifreeze protection.

**Electric enclosure**

The electric switch board is made according to electromagnetic compatibility norms CEE 73/23 and 89/336. The accessibility to the board is possible after removing the front panel of the unit and the OFF positioning of the main switch. The moisture protection degree is IP55. In all LDK units are installed, standard, the compressors sequence relay who disables the operation of the compressor in case the power supply phase sequence is not the correct one (scroll compressors in fact, can be damaged if they rotate reverse wise). The following components are also standard installed: main switch, magnetic-thermal switches (as a protection of pumps and fans), compressors fuses, control circuit automatic breakers, compressor contactors, fan contactors, pump contactors. The terminal board is supplied with voltage free contacts for remote ON-OFF , Summer / winter change over (heat pumps only) and general alarm.

**Microprocessors**

All LDK units are supplied standard with microprocessor controls. The microprocessor controls the following functions: regulation of the water temperature, antifreeze protection, compressor timing, compressor automatic starting sequence, alarm reset, potential free contact for remote general alarm, alarms and operation leds. Upon request any microprocessor can be connected to a BMS system for the remote control and management. The technical department is available to study, together with the customer, different solutions using MODBUS; LONWORKS; BACNET or TREND protocols.

**Control and protection devices**

All units are supplied with the following control and protection devices: Return water temperature sensor, installed on the return water line from the plant (12°C), antifreeze protection sensor installed on the outlet water temperature (7°C), high pressure switch with manual reset, low pressure switch with automatic reset, high pressure safety valve, compressor thermal overload protection, fans thermal overload protection, flow switch.

## OTHER VERSIONS

### Unit with integrated hydraulic circuit (A versions)

The LDK chillers can be delivered as option, with a built in hydraulic kit that includes:

**Water tank** in different sizes (depending on the size of the unit), factory insulated with flexible close cell material and prepared for the installation of antifreeze kit (option). The water tank is installed to minimize the inevitable fluctuations in the water temperature due to the compressors starts and stops.

**Water pump**, centrifugal type, is available in single or double configuration. In this case one pump is running, one pump is in stand-by. The change over can be manual (by manual selector installed in the electric box) or automatically controlled by the microprocessor (option).

In the hydraulic circuit are also present the expansion vessel, the safety valve and the manual valves with fittings.

### Heat pumps version (HP)

The heat pump versions are provided with a 4 way reverse cycle valve and are suitable to produce hot water up to a temperature of 45-50°C. They are always supplied with liquid receiver and a second thermostatic valve to optimize the efficiency of the refrigerant cycle in heating and in cooling. The microprocessor is set for automatic defrost (in case of operation in severe ambient conditions) and for summer/winter change over.

### Free cooling version (FC)

The FREE COOLING option is a system designed to grant an important energy saving, when the cooling system is operating continuously, also during the winter season (computer rooms, telephone exchange plants, etc.). The free-cooling device is using the low ambient air temperature to cool down the water in the system. In some situations the chilled water can be even produced without the work of the compressors with consequent massive reduction of electric power consumption. The FREE COOLING system is composed by the following components:

- Free cooling coil:** It is essentially a heat exchanger made of copper tubes and aluminium fins with bleeding valves.
- Microprocessor control:** It is the "heart" of the system; it allows the correct control of all the parameters performing the best efficiency of the system in the different ambient conditions.
- 3 way valve:** It is an ON/OFF 3 way valve that opens or closes the FREE COOLING circuit depending on the signal coming from the microprocessor control.
- Head pressure control:** It is a device that allows the correct condensing pressure in the refrigerant circuit when the ambient conditions are low. In the units equipped with FREE COOLING system, this device is composed by solenoid valves that close some refrigerant circuits in the condensing coil in order to reduce its exchange capacity and to keep a suitable condensing pressure level.

### Low noise version (LS)

The low noise version LS includes the complete insulation of the compressor vane with high density sound absorption material.

### Extra low noise version (XL)

The extra low noise version is especially designed to be installed in applications where the sound level is the most important key. The units are built with a special insulation of the compressor box and oversized condensing coils. The units are also equipped with low rpm fan motors (8 poles).

### Condensing unit version (CN)

The condensing unit version is supplied without refrigerant charge (only a nitrogen charge), without evaporator and thermostatic valve. The microprocessor control is present in all units as well as the sight glass, filter drier, liquid line solenoid valve and the refrigerant lines shut off manual valves.

**WATER CHILLERS AND HEAT PUMPS  
LDK /LS (Low noise version)  
TECHNICAL DATA**

| Mod.                                 |         | 039      | 045      | 050      | 060      | 070      | 080      | 090      | 110      |
|--------------------------------------|---------|----------|----------|----------|----------|----------|----------|----------|----------|
| Refrigerant                          |         | R407C    | R407C    | R407C    | R407C    | R407C    | R407C    | R407C    | R407C    |
| Cooling capacity                     | Kw      | 37       | 45,0     | 52,0     | 58,0     | 64,0     | 78,0     | 90,0     | 104,0    |
| Compressors input power              | Kw      | 12,6     | 15,1     | 17,2     | 19,3     | 21,5     | 25,8     | 29,9     | 33,9     |
| Water flow rate                      | l/h     | 6490     | 7910     | 9290     | 10320    | 11520    | 13590    | 15650    | 18400    |
| Water pressure drops                 | Kpa     | 26,2     | 32,4     | 31,5     | 23,3     | 30,1     | 30,4     | 27,6     | 26,5     |
|                                      |         |          |          |          |          |          |          |          |          |
| Heating capacity                     | Kw      | 38,5     | 47,0     | 55,0     | 62,0     | 68,0     | 83,0     | 95,0     | 107,0    |
| Compressors input power              | Kw      | 12,9     | 15,2     | 17,3     | 19,5     | 21,7     | 26,4     | 30,3     | 34,2     |
| Water flow rate                      | l/h     | 6630     | 8085     | 9460     | 10665    | 11695    | 14275    | 16340    | 18400    |
| Water pressure drops                 | Kpa     | 28,5     | 33,8     | 32,6     | 24,8     | 31,0     | 33,5     | 30,0     | 26,5     |
|                                      |         |          |          |          |          |          |          |          |          |
| Free cooling capacity                | kW      | ---      | ---      | 43       | 43       | 43       | 45       | 70       | 72       |
| Input power                          | kW      | ---      | ---      | 1,4      | 1,4      | 1,4      | 1,4      | 2,1      | 2,1      |
| Water flow rate                      | l/h     | ---      | ---      | 9290     | 10320    | 11520    | 13590    | 15650    | 18400    |
| Water pressure drops                 | Kpa     | ---      | ---      | 90       | 96       | 117      | 131      | 87       | 85       |
|                                      |         |          |          |          |          |          |          |          |          |
| Total input current (A version)      | A       | 32,4     | 36       | 37,4     | 40,1     | 42,8     | 52,6     | 62,0     | 67,5     |
| Total peak current                   | A       | 121,4    | 148,4    | 154,4    | 194,4    | 194,0    | 235,4    | 265,1    | 275,1    |
| Maximum input current                | A       | 39,4     | 45,4     | 49,4     | 54,4     | 59,4     | 69,4     | 81,1     | 91,1     |
| Power supply                         | V/Ph/Hz | 400/3/50 |          |          |          |          |          |          |          |
| Airflow                              | m3/h    | 10800    | 10800    | 18800    | 18800    | 18000    | 17280    | 28080    | 27000    |
| Fans                                 | n° x kW | 2 x 0,37 | 2 x 0,37 | 2 x 0,69 | 2 x 0,69 | 2 x 0,69 | 2 x 0,69 | 3 x 0,69 | 3 x 0,69 |
| Compressor                           | type    | Scroll   |          |          |          |          |          |          |          |
|                                      | n°      | 2        | 2        | 2        | 2        | 2        | 2        | 2        | 2        |
| Refrigerant circuit                  | n°      | 1        | 1        | 1        | 1        | 1        | 1        | 1        | 1        |
| Step controls                        | n°      | 2        | 2        | 2        | 2        | 2        | 2        | 2        | 2        |
| Sound power level <sup>(1)</sup>     | dB(A)   | 77       | 77       | 79       | 79       | 80       | 80       | 82       | 82,5     |
| Sound pressure level <sup>(2)</sup>  | dB(A)   | 49       | 49       | 51       | 51       | 52       | 52       | 54       | 54,5     |
| Water pump (option)                  | Kw      | 1,1      | 1,1      | 1,1      | 1,1      | 1,1      | 1,5      | 1,5      | 2,2      |
| Pump available pressure (option)     | kPa     | 165      | 160      | 141      | 125      | 110      | 150      | 130      | 150      |
| Water tank capacity (option)         | l       | 180      | 180      | 300      | 300      | 300      | 300      | 530      | 530      |
| Expansion vessel (option)            | l       | 18       | 18       | 18       | 18       | 18       | 18       | 18       | 18       |
| Lenght                               | mm      | 1870     | 1870     | 2608     | 2608     | 2608     | 2608     | 3608     | 3608     |
| Width                                | mm      | 850      | 850      | 1105     | 1105     | 1105     | 1105     | 1105     | 1105     |
| Height                               | mm      | 1406     | 1406     | 1759     | 1759     | 1759     | 1759     | 1759     | 1759     |
| Weight (Standard configuration)      | Kg      | 570      | 590      | 710      | 725      | 760      | 810      | 1070     | 1150     |
| Weight (Hydraulic kit configuration) | Kg      | 730      | 750      | 880      | 895      | 930      | 980      | 1280     | 1360     |

Performances are referred to the following conditions:

Cooling: ambient air temperature 35 °C; evaporator water temperature in/out 12/7 °C.

Heating: ambient air temperature 8.3 °C DB, 6.1 °C WB ; condenser water temperature in/out 40/45 °C.

Free cooling: ambient air temperature 2°C; water inlet temperature 15°C, glycol 20%, nominal waterflow, compressors switched off.

(1): Sound power level according to ISO 3746.

(2): Sound pressure level measured at 10 mt from the unit in free field conditions direction factor Q=2 according to ISO 3746.

**WATER CHILLERS AND HEAT PUMPS  
LDK / LS (Low noise version)  
TECHNICAL DATA**

| Mod.                                 |         | 120      | 130      | 140      | 160      | 190     | 210     | 240     | 260     |
|--------------------------------------|---------|----------|----------|----------|----------|---------|---------|---------|---------|
| Refrigerant                          |         | R407C    | R407C    | R407C    | R407C    | R407C   | R407C   | R407C   | R407C   |
| Cooling capacity                     | kW      | 115,5    | 128      | 142      | 156      | 181     | 206,1   | 232     | 256     |
| Compressors input power              | kW      | 38       | 42,1     | 47,3     | 51,7     | 59,7    | 67,8    | 76      | 84,2    |
| Water flow rate                      | l/h     | 20640    | 22190    | 24600    | 27180    | 31990   | 36290   | 41450   | 45240   |
| Water pressure drops                 | Kpa     | 29,4     | 30,0     | 30,8     | 36,0     | 39,6    | 42,7    | 49,0    | 51,2    |
|                                      |         |          |          |          |          |         |         |         |         |
| Heating capacity                     | kW      | 120      | 132      | 150      | 165      | 189     | 217     | 242     | 267     |
| Compressors input power              | kW      | 38,5     | 42,9     | 48,1     | 52,8     | 60,6    | 68,4    | 77,1    | 85,8    |
| Water flow rate                      | l/h     | 20640    | 22700    | 25800    | 28380    | 32510   | 37320   | 41620   | 45920   |
| Water pressure drops                 | Kpa     | 29,4     | 31,3     | 33,8     | 39,2     | 40,9    | 45,1    | 49,4    | 52,7    |
|                                      |         |          |          |          |          |         |         |         |         |
| Free cooling capacity                | kW      | 72       | 72       | 94       | 94       | 110     | 115     | 135     | 135     |
| Input power                          | kW      | 2,1      | 2,1      | 2,8      | 2,8      | 6       | 6       | 8       | 8       |
| Water flow rate                      | l/h     | 20640    | 22190    | 24600    | 27180    | 31990   | 36290   | 41450   | 45240   |
| Water pressure drops                 | Kpa     | 94       | 100      | 85       | 87       | 82      | 92      | 115     | 118     |
|                                      |         |          |          |          |          |         |         |         |         |
| Total input current (A version)      | A       | 76,4     | 85,5     | 96,3     | 104,7    | 126,6   | 144,0   | 160,2   | 178,4   |
| Total peak current                   | A       | 322,1    | 333,1    | 290      | 304      | 351     | 369     | 431     | 453     |
| Maximum input current                | A       | 102,1    | 113,1    | 119,9    | 138,3    | 167,6   | 185,6   | 211,6   | 233,6   |
| Power supply                         | V/Ph/Hz | 400/3/50 |          |          |          |         |         |         |         |
| Airflow                              | m3/h    | 25920    | 25920    | 36000    | 34920    | 55800   | 55800   | 58800   | 58800   |
| Fans                                 | n° x kW | 3 x 0,69 | 3 x 0,69 | 4 x 0,69 | 4 x 0,69 | 3 x 2,0 | 3 x 2,0 | 4 x 2,0 | 4 x 2,0 |
| Compressor                           | type    | Scroll   |          |          |          |         |         |         |         |
|                                      | n°      | 2        | 2        | 4        | 4        | 4       | 4       | 4       | 4       |
| Refrigerant circuit                  | n°      | 1        | 1        | 2        | 2        | 2       | 2       | 2       | 2       |
| Step controls                        | n°      | 2        | 2        | 4        | 4        | 4       | 4       | 4       | 4       |
| Sound power level <sup>(1)</sup>     | dB(A)   | 82,9     | 83,1     | 83,5     | 84       | 86      | 86      | 89      | 89      |
| Sound pressure level <sup>(2)</sup>  | dB(A)   | 54,9     | 55,1     | 55,5     | 56       | 58      | 58      | 61      | 61      |
| Water pump (option)                  | kW      | 2,2      | 2,2      | 2,2      | 3,0      | 3,0     | 3,0     | 4,0     | 4,0     |
| Pump available pressure (option)     | kPa     | 120      | 130      | 105      | 180      | 140     | 110     | 170     | 155     |
| Water tank capacity (option)         | l       | 530      | 530      | 530      | 670      | 670     | 670     | 670     | 670     |
| Expansion vessel (option)            | l       | 18       | 118      | 18       | 18       | 18      | 18      | 18      | 18      |
| Lenght                               | mm      | 3608     | 3608     | 4108     | 4108     | 4708    | 4708    | 4708    | 4708    |
| Width                                | mm      | 1105     | 1105     | 1105     | 1105     | 1105    | 1105    | 1105    | 1105    |
| Height                               | mm      | 1759     | 1759     | 2179     | 2179     | 2262    | 2262    | 2262    | 2262    |
| Weight (Standard configuration)      | Kg      | 1200     | 1230     | 1650     | 1700     | 1960    | 2050    | 2160    | 2480    |
| Weight (Hydraulic kit configuration) | Kg      | 1410     | 1440     | 1860     | 2000     | 2260    | 2350    | 2460    | 2780    |

Performances are referred to the following conditions:

Cooling: ambient air temperature 35 °C; evaporator water temperature in/out 12/7 °C.

Heating: ambient air temperature 8.3 °C DB, 6.1 °C WB ; condenser water temperature in/out 40/45 °C.

Free cooling: ambient air temperature 2°C; water inlet temperature 15°C, glycol 20%, nominal waterflow, compressors switched off.

(1): Sound power level according to ISO 3746.

(2): Sound pressure level measured at 10 mt from the unit in free field conditions direction factor Q=2 according to ISO 3746.

**WATER CHILLERS AND HEAT PUMPS  
LDK / LS (Low noise version)  
TECHNICAL DATA**

| Mod.                                 |         | 300      | 320   | 380    | 430    | 500    |  |  |  |
|--------------------------------------|---------|----------|-------|--------|--------|--------|--|--|--|
| Refrigerant                          |         | R407C    | R407C | R407C  | R407C  | R407C  |  |  |  |
| Cooling capacity                     | kW      | 290      | 321   | 383    | 432    | 481    |  |  |  |
| Compressors input power              | kW      | 92,4     | 100,6 | 126,4  | 138,7  | 150,9  |  |  |  |
| Water flow rate                      | l/h     | 49880    | 55200 | 65800  | 74300  | 82700  |  |  |  |
| Water pressure drops                 | Kpa     | 34       | 39    | 32     | 38     | 44     |  |  |  |
|                                      |         |          |       |        |        |        |  |  |  |
| Free cooling capacity                | kW      | 185      | 185   | 235    | 245    | 240    |  |  |  |
| Input power                          | kW      | 12       | 12    | 16     | 16     | 16     |  |  |  |
| Water flow rate                      | l/h     | 49880    | 55200 | 65800  | 74300  | 82700  |  |  |  |
| Water pressure drops                 | Kpa     | 107      | 121   | 113    | 121    | 141    |  |  |  |
|                                      |         |          |       |        |        |        |  |  |  |
| Total input current (A version)      | A       | 201,4    | 220   | 279,2  | 301,7  | 324,2  |  |  |  |
| Total peak current                   | A       | 510      | 534   | 582    | 641    | 672,5  |  |  |  |
| Maximum input current                | A       | 262,6    | 287,2 | 362    | 393,5  | 425    |  |  |  |
| Power supply                         | V/Ph/Hz | 400/3/50 |       |        |        |        |  |  |  |
| Airflow                              | m3/h    | 89000    | 88500 | 119000 | 118000 | 118000 |  |  |  |
| Fans                                 | n° x kW | 6 x 2    | 6 x 2 | 8 x 2  | 8 x 2  | 8 x 2  |  |  |  |
| Compressor                           | type    | Scroll   |       |        |        |        |  |  |  |
|                                      | n°      | 4        | 4     | 6      | 6      | 6      |  |  |  |
| Refrigerant circuit                  | n°      | 2        | 2     | 2      | 2      | 2      |  |  |  |
| Step controls                        | n°      | 4        | 4     | 6      | 6      | 6      |  |  |  |
| Sound power level <sup>(1)</sup>     | dB(A)   | 90       | 90    | 91     | 91     | 91     |  |  |  |
| Sound pressure level <sup>(2)</sup>  | dB(A)   | 62       | 62    | 63     | 63     | 63     |  |  |  |
| Water pump (option)                  | kW      | 4        | 5,5   | 7,5    | 7,5    | 7,5    |  |  |  |
| Pump available pressure (option)     | kPa     | 160      | 172   | 210    | 190    | 160    |  |  |  |
| Water tank capacity (option)         | l       | 670      | 670   | 670    | 670    | 670    |  |  |  |
| Expansion vessel (option)            | l       | 25       | 25    | 50     | 50     | 50     |  |  |  |
| Lenght                               | mm      | 4108     | 4108  | 4708   | 4708   | 4708   |  |  |  |
| Width                                | mm      | 2210     | 2210  | 2210   | 2210   | 2210   |  |  |  |
| Height                               | mm      | 2262     | 2262  | 2262   | 2262   | 2262   |  |  |  |
| Weight (Standard configuration)      | Kg      | 2750     | 2800  | 3100   | 3150   | 3210   |  |  |  |
| Weight (Hydraulic kit configuration) | Kg      | 3150     | 3220  | 3550   | 3610   | 3690   |  |  |  |

Performances are referred to the following conditions:

Cooling: ambient air temperature 35 °C; evaporator water temperature in/out 12/7 °C.

Free cooling: ambient air temperature 2°C; water inlet temperature 15°C, glycol 20%, nominal waterflow, compressors switched off.

(1): Sound power level according to ISO 3746.

(2): Sound pressure level measured at 10 mt from the unit in free field conditions direction factor Q=2 according to ISO 3746.

**WATER CHILLERS AND HEAT PUMPS  
LDK / XL (Extra low noise version)  
TECHNICAL DATA**

| Mod.                                 |         | 039      | 045 | 050      | 060      | 070      | 080      | 090      | 110      |
|--------------------------------------|---------|----------|-----|----------|----------|----------|----------|----------|----------|
| Refrigerant                          |         | ---      | --- | R407C    | R407C    | R407C    | R407C    | R407C    | R407C    |
| Cooling capacity                     | kW      | ---      | --- | 52       | 58       | 64       | 78       | 90       | 104      |
| Compressors input power              | kW      | ---      | --- | 17,2     | 19,3     | 21,5     | 25,8     | 29,9     | 33,9     |
| Water flow rate                      | l/h     | ---      | --- | 9290     | 10320    | 11520    | 13590    | 15650    | 18400    |
| Water pressure drops                 | Kpa     | ---      | --- | 31,5     | 23,3     | 30,1     | 30,4     | 27,2     | 26,5     |
|                                      |         |          |     |          |          |          |          |          |          |
| Heating capacity                     | kW      | ---      | --- | 55,0     | 62,0     | 68,0     | 83,0     | 95,0     | 107,0    |
| Compressors input power              | kW      | ---      | --- | 17,3     | 19,5     | 21,7     | 26,4     | 30,3     | 34,2     |
| Water flow rate                      | l/h     | ---      | --- | 9460     | 10665    | 11695    | 14275    | 16340    | 18400    |
| Water pressure drops                 | Kpa     | ---      | --- | 32,6     | 24,8     | 31,0     | 33,5     | 30,0     | 26,5     |
|                                      |         |          |     |          |          |          |          |          |          |
| Total input current (A version)      | A       | ---      | --- | 37,4     | 40,1     | 42,8     | 52,6     | 62       | 67,5     |
| Total peak current                   | A       | ---      | --- | 154,4    | 194,4    | 194      | 235,4    | 265,1    | 275,1    |
| Maximum input current                | A       | ---      | --- | 49,4     | 54,4     | 59,4     | 69,4     | 81,1     | 91,1     |
| Power supply                         | V/Ph/Hz | 400/3/50 |     |          |          |          |          |          |          |
| Airflow                              | m3/h    | ---      | --- | 24000    | 24000    | 24000    | 24000    | 35000    | 35000    |
| Fans                                 | n° x kW | ---      | --- | 2 x 1,23 | 2 x 1,23 | 2 x 1,23 | 2 x 1,23 | 3 x 1,23 | 3 x 1,23 |
| Compressor                           | type    | Scroll   |     |          |          |          |          |          |          |
|                                      | n°      | ---      | --- | 2        | 2        | 2        | 2        | 2        | 2        |
| Refrigerant circuit                  | n°      | ---      | --- | 1        | 1        | 1        | 1        | 1        | 1        |
| Step controls                        | n°      | ---      | --- | 2        | 2        | 2        | 2        | 2        | 2        |
| Sound power level <sup>(1)</sup>     | dB(A)   | ---      | --- | 76       | 76       | 78       | 78       | 79,5     | 79,9     |
| Sound pressure level <sup>(2)</sup>  | dB(A)   | ---      | --- | 48       | 48       | 50       | 50       | 51,5     | 51,9     |
| Water pump (option)                  | kW      | ---      | --- | 1,1      | 1,1      | 1,1      | 1,5      | 1,5      | 2,2      |
| Pump available pressure (option)     | kPa     | ---      | --- | 141      | 125      | 110      | 150      | 130      | 150      |
| Water tank capacity (option)         | l       | ---      | --- | 300      | 300      | 300      | 300      | 530      | 530      |
| Expansion vessel (option)            | l       | ---      | --- | 18       | 18       | 18       | 18       | 18       | 18       |
| Lenght                               | mm      | ---      | --- | 2608     | 2608     | 2608     | 2608     | 3608     | 3608     |
| Width                                | mm      | ---      | --- | 1105     | 1105     | 1105     | 1105     | 1105     | 1105     |
| Height                               | mm      | ---      | --- | 1842     | 1842     | 1842     | 1842     | 1842     | 1842     |
| Weight (Standard configuration)      | Kg      | ---      | --- | 710      | 725      | 760      | 810      | 1070     | 1150     |
| Weight (Hydraulic kit configuration) | Kg      | ---      | --- | 880      | 895      | 930      | 980      | 1280     | 1360     |

Performances are referred to the following conditions:

Cooling: ambient air temperature 35 °C; evaporator water temperature in/out 12/7 °C.

Heating: ambient air temperature 8.3 °C DB, 6.1 °C WB ; condenser water temperature in/out 40/45 °C.

(1): Sound power level according to ISO 3746.

(2): Sound pressure level measured at 10 mt from the unit in free field conditions direction factor Q=2 according to ISO 3746.

**WATER CHILLERS AND HEAT PUMPS  
LDK / XL (Extra low noise version)  
TECHNICAL DATA**

| Mod.                                 |         | 120      | 130      | 140      | 160      | 190      | 210      | 240 | 260 |
|--------------------------------------|---------|----------|----------|----------|----------|----------|----------|-----|-----|
| Refrigerant                          |         | R407C    | R407C    | R407C    | R407C    | R407C    | R407C    | --- | --- |
| Cooling capacity                     | kW      | 115,5    | 128      | 142      | 156      | 181      | 206,1    | --- | --- |
| Compressors input power              | kW      | 38       | 42,1     | 47,3     | 51,7     | 59,7     | 67,8     | --- | --- |
| Water flow rate                      | l/h     | 20640    | 22190    | 24600    | 27180    | 31990    | 36290    | --- | --- |
| Water pressure drops                 | Kpa     | 29,4     | 30,0     | 30,8     | 36       | 39,6     | 42,7     | --- | --- |
|                                      |         |          |          |          |          |          |          |     |     |
| Heating capacity                     | kW      | 120      | 132      | 150      | 165      | 189      | 217      | --- | --- |
| Compressors input power              | kW      | 38,5     | 42,9     | 48,1     | 52,8     | 60,6     | 68,4     | --- | --- |
| Water flow rate                      | l/h     | 20640    | 22700    | 25800    | 28380    | 32510    | 37320    | --- | --- |
| Water pressure drops                 | Kpa     | 29,4     | 31,3     | 33,8     | 39,2     | 40,9     | 45,1     | --- | --- |
|                                      |         |          |          |          |          |          |          |     |     |
| Total input current (A version)      | A       | 76,4     | 85,5     | 96,3     | 104,7    | 126,6    | 144      | --- | --- |
| Total peak current                   | A       | 322,1    | 333,1    | 290      | 304      | 351      | 369      | --- | --- |
| Maximum input current                | A       | 102,1    | 113,1    | 119,9    | 138,3    | 167,6    | 185,6    | --- | --- |
| Power supply                         | V/Ph/Hz | 400/3/50 |          |          |          |          |          |     |     |
| Airflow                              | m3/h    | 33000    | 33000    | 33000    | 33000    | 64000    | 62000    | --- | --- |
| Fans                                 | n° x kW | 3 x 1,23 | 3 x 1,23 | 3 x 1,23 | 3 x 1,23 | 4 x 1,25 | 4 x 1,25 | --- | --- |
| Compressor                           | type    | Scroll   |          |          |          |          |          |     |     |
|                                      | n°      | 2        | 2        | 4        | 4        | 4        | 4        | --- | --- |
| Refrigerant circuit                  | n°      | 1        | 1        | 2        | 2        | 2        | 2        | --- | --- |
| Step controls                        | n°      | 2        | 2        | 4        | 4        | 4        | 4        | --- | --- |
| Sound power level <sup>(1)</sup>     | dB(A)   | 80,1     | 80,5     | 81       | 81,3     | 84       | 84       | --- | --- |
| Sound pressure level <sup>(2)</sup>  | dB(A)   | 52,1     | 52,5     | 53       | 53,3     | 56       | 56       | --- | --- |
| Water pump (option)                  | kW      | 2,2      | 2,2      | 2,2      | 3,0      | 3,0      | 3,0      | --- | --- |
| Pump available pressure (option)     | kPa     | 120      | 130      | 105      | 180      | 140      | 110      | --- | --- |
| Water tank capacity (option)         | l       | 530      | 530      | 530      | 670      | 670      | 670      | --- | --- |
| Expansion vessel (option)            | l       | 18       | 18       | 18       | 18       | 18       | 18       | --- | --- |
| Lenght                               | mm      | 3608     | 3608     | 4108     | 4108     | 4708     | 4708     | --- | --- |
| Width                                | mm      | 1105     | 1105     | 1105     | 1105     | 1105     | 1105     | --- | --- |
| Height                               | mm      | 1842     | 1842     | 2262     | 2262     | 2262     | 2262     | --- | --- |
| Weight (Standard configuration)      | Kg      | 1200     | 1230     | 1650     | 1700     | 1960     | 2050     | --- | --- |
| Weight (Hydraulic kit configuration) | Kg      | 1410     | 1440     | 1860     | 2000     | 2260     | 2350     | --- | --- |

Performances are referred to the following conditions:

Cooling: ambient air temperature 35 °C; evaporator water temperature in/out 12/7 °C.

Heating: ambient air temperature 8.3 °C DB, 6.1 °C WB ; condenser water temperature in/out 40/45 °C.

(1): Sound power level according to ISO 3746.

(2): Sound pressure level measured at 10 mt from the unit in free field conditions direction factor Q=2 according to ISO 3746.

**CONDENSING UNITS  
LDK / CN/ LS (Low noise version)  
TECHNICAL DATA**

| Mod.                                |         | 039      | 045      | 050      | 060      | 070      | 080      | 090      | 110      |
|-------------------------------------|---------|----------|----------|----------|----------|----------|----------|----------|----------|
| Refrigerant                         |         | R407C    | R407C    | R407C    | R407C    | R407C    | R407C    | R407C    | R407C    |
| Cooling capacity                    | Kw      | 43,0     | 52,0     | 61,0     | 67,5     | 75,5     | 90,0     | 103      | 120,5    |
| Compressors input power             | Kw      | 13,1     | 15,7     | 17,5     | 20,5     | 22,3     | 27,8     | 32,1     | 34,9     |
| Total input current                 | A       | 29,5     | 33,1     | 34,5     | 37,2     | 39,9     | 49,7     | 57,7     | 62,2     |
| Total peak current                  | A       | 116,6    | 143,5    | 150,5    | 190,5    | 195,1    | 228,3    | 256,6    | 267,8    |
| Maximum input current               | A       | 32,7     | 38,5     | 44,5     | 49,1     | 53,7     | 58,1     | 70,6     | 81,8     |
| Power supply                        | V/Ph/Hz | 400/3/50 |          |          |          |          |          |          |          |
| Airflow                             | m3/h    | 10800    | 10800    | 18800    | 18800    | 18000    | 17280    | 28080    | 27000    |
| Fans                                | n° x kW | 2 x 0,37 | 2 x 0,37 | 2 x 0,69 | 2 x 0,69 | 2 x 0,69 | 2 x 0,69 | 3 x 0,69 | 3 x 0,69 |
| Compressors                         | n°      | 2        | 2        | 2        | 2        | 2        | 2        | 2        | 2        |
| Refrigerant circuit                 | n°      | 1        | 1        | 1        | 1        | 1        | 1        | 1        | 1        |
| Step controls                       | n°      | 2        | 2        | 2        | 2        | 2        | 2        | 2        | 2        |
| Sound power level <sup>(1)</sup>    | dB(A)   | 77       | 77       | 79       | 79       | 80       | 80       | 82       | 82,5     |
| Sound pressure level <sup>(2)</sup> | dB(A)   | 49       | 49       | 51       | 51       | 52       | 52       | 54       | 54,5     |
| Lenght                              | mm      | 1870     | 1870     | 2608     | 2608     | 2608     | 2608     | 3608     | 3608     |
| Width                               | mm      | 850      | 850      | 1105     | 1105     | 1105     | 1105     | 1105     | 1105     |
| Height                              | mm      | 1406     | 1406     | 1759     | 1759     | 1759     | 1759     | 1759     | 1759     |
| Weight                              | Kg      | 545      | 560      | 690      | 705      | 740      | 790      | 1040     | 1120     |

| Mod.                                |         | 120      | 130      | 140      | 160      | 190     | 210     | 240     | 260     |
|-------------------------------------|---------|----------|----------|----------|----------|---------|---------|---------|---------|
| Refrigerant                         |         | R407C    | R407C    | R407C    | R407C    | R407C   | R407C   | R407C   | R407C   |
| Cooling capacity                    | kW      | 135,5    | 146,0    | 161,5    | 177,5    | 210     | 239     | 273     | 297,5   |
| Compressors input power             | kW      | 39,9     | 45,2     | 50,9     | 55,6     | 62      | 73,8    | 79,8    | 90,4    |
| Total input current                 | A       | 71,1     | 80,2     | 91,0     | 99,4     | 117,0   | 134,4   | 150,6   | 168,8   |
| Total peak current                  | A       | 292,8    | 301,3    | 282,0    | 286,4    | 331,6   | 354,0   | 391,5   | 408,5   |
| Maximum input current               | A       | 90,3     | 98,8     | 111,8    | 116,2    | 145,6   | 168,0   | 189,0   | 206,0   |
| Power supply                        | V/Ph/Hz | 400/3/50 |          |          |          |         |         |         |         |
| Airflow                             | m3/h    | 25920    | 25920    | 36000    | 34920    | 55800   | 55800   | 58800   | 58800   |
| Fans                                | n° x kW | 3 x 0,69 | 3 x 0,69 | 4 x 0,69 | 4 x 0,69 | 3 x 2,0 | 3 x 2,0 | 4 x 2,0 | 4 x 2,0 |
| Compressors                         | n°      | 2        | 2        | 4        | 4        | 4       | 4       | 4       | 4       |
| Refrigerant circuit                 | n°      | 1        | 1        | 2        | 2        | 2       | 2       | 2       | 2       |
| Step controls                       | n°      | 2        | 2        | 4        | 4        | 4       | 4       | 4       | 4       |
| Sound power level <sup>(1)</sup>    | dB(A)   | 82,9     | 83,1     | 83,5     | 84       | 86      | 86      | 89      | 89      |
| Sound pressure level <sup>(2)</sup> | dB(A)   | 54,9     | 55,1     | 55,5     | 56       | 58      | 58      | 61      | 61      |
| Lenght                              | mm      | 3608     | 3608     | 4108     | 4108     | 4708    | 4708    | 4708    | 4708    |
| Width                               | mm      | 1105     | 1105     | 1105     | 1105     | 1105    | 1105    | 1105    | 1105    |
| Height                              | mm      | 1759     | 1759     | 2179     | 2179     | 2262    | 2262    | 2262    | 2262    |
| Weight                              | Kg      | 1170     | 1200     | 1610     | 1660     | 1910    | 2000    | 2100    | 2420    |

Performances are referred to the following conditions:

Cooling: ambient air temperature 35 °C; evaporation temperature 5 °C.

(1): Sound power level according to ISO 3746.

(2): Sound pressure level measured at 10 mt from the unit in free field conditions direction factor Q=2 according to ISO 3746.

**CONDENSING UNITS**  
**LDK / CN/ XL (Extra low noise version)**  
**TECHNICAL DATA**

| Mod.                                |         | 039      | 045 | 050      | 060      | 070      | 080      | 090      | 110      |
|-------------------------------------|---------|----------|-----|----------|----------|----------|----------|----------|----------|
| Refrigerant                         |         | ---      | --- | R407C    | R407C    | R407C    | R407C    | R407C    | R407C    |
| Cooling capacity                    | Kw      | ---      | --- | 61,0     | 67,5     | 75,5     | 90,0     | 103      | 120,5    |
| Compressors input power             | Kw      | ---      | --- | 17,5     | 20,5     | 22,3     | 27,8     | 32,1     | 34,9     |
| Total input current                 | A       | ---      | --- | 33,6     | 36,3     | 39,0     | 48,8     | 57,0     | 66,8     |
| Total peak current                  | A       | ---      | --- | 149,6    | 189,6    | 194,2    | 227,4    | 255,9    | 267,1    |
| Maximum input current               | A       | ---      | --- | 43,6     | 48,2     | 52,8     | 57,2     | 69,9     | 81,1     |
| Power supply                        | V/Ph/Hz | 400/3/50 |     |          |          |          |          |          |          |
| Airflow                             | m3/h    | ---      | --- | 24000    | 24000    | 24000    | 24000    | 35000    | 35000    |
| Fans                                | n° x kW | ---      | --- | 2 x 1,23 | 2 x 1,23 | 2 x 1,23 | 2 x 1,23 | 3 x 1,23 | 3 x 1,23 |
| Compressors                         | n°      | ---      | --- | 2        | 2        | 2        | 2        | 2        | 2        |
| Refrigerant circuit                 | n°      | ---      | --- | 1        | 1        | 1        | 1        | 1        | 1        |
| Step controls                       | n°      | ---      | --- | 2        | 2        | 2        | 2        | 2        | 2        |
| Sound power level <sup>(1)</sup>    | dB(A)   | ---      | --- | 76       | 77       | 78       | 78       | 79,5     | 79,9     |
| Sound pressure level <sup>(2)</sup> | dB(A)   | ---      | --- | 48       | 49       | 50       | 50       | 51,5     | 51,9     |
| Lenght                              | mm      | ---      | --- | 2608     | 2608     | 2608     | 2608     | 3608     | 3608     |
| Width                               | mm      | ---      | --- | 1105     | 1105     | 1105     | 1105     | 1105     | 1105     |
| Height                              | mm      | ---      | --- | 1842     | 1842     | 1842     | 1842     | 1842     | 1842     |
| Weight                              | Kg      | ---      | --- | 690      | 705      | 740      | 790      | 1040     | 1120     |

| Mod.                                |         | 120      | 130      | 140      | 160      | 190      | 210      | 240 | 260 |
|-------------------------------------|---------|----------|----------|----------|----------|----------|----------|-----|-----|
| Refrigerant                         |         | R407C    | R407C    | R407C    | R407C    | R407C    | R407C    | --- | --- |
| Cooling capacity                    | kW      | 135,5    | 146,0    | 161,5    | 177,5    | 210      | 239      | --- | --- |
| Compressors input power             | kW      | 39,9     | 45,2     | 50,9     | 55,6     | 62       | 73,8     | --- | --- |
| Total input current                 | A       | 75,7     | 84,8     | 94,4     | 102,8    | 123,8    | 141,2    | --- | --- |
| Total peak current                  | A       | 292,1    | 300,6    | 280,1    | 284,5    | 328,8    | 351,2    | --- | --- |
| Maximum input current               | A       | 89,6     | 98,1     | 109,9    | 114,3    | 142,8    | 165,2    | --- | --- |
| Power supply                        | V/Ph/Hz | 400/3/50 |          |          |          |          |          |     |     |
| Airflow                             | m3/h    | 33000    | 33000    | 33000    | 33000    | 64000    | 62000    | --- | --- |
| Fans                                | n° x kW | 3 x 1,23 | 3 x 1,23 | 3 x 1,23 | 3 x 1,23 | 4 x 1,25 | 4 x 1,25 | --- | --- |
| Compressors                         | n°      | 2        | 2        | 4        | 4        | 4        | 4        | --- | --- |
| Refrigerant circuit                 | n°      | 1        | 1        | 2        | 2        | 2        | 2        | --- | --- |
| Step controls                       | n°      | 2        | 2        | 4        | 4        | 4        | 4        | --- | --- |
| Sound power level <sup>(1)</sup>    | dB(A)   | 80,1     | 80,5     | 81       | 81,3     | 84       | 84       | --- | --- |
| Sound pressure level <sup>(2)</sup> | dB(A)   | 52,1     | 52,5     | 53       | 53,3     | 56       | 56       | --- | --- |
| Lenght                              | mm      | 3608     | 3608     | 4108     | 4108     | 4708     | 4708     | --- | --- |
| Width                               | mm      | 1105     | 1105     | 1105     | 1105     | 1105     | 1105     | --- | --- |
| Height                              | mm      | 1842     | 1842     | 2262     | 2262     | 2262     | 2262     | --- | --- |
| Weight                              | Kg      | 1170     | 1200     | 1610     | 1660     | 1910     | 2000     | --- | --- |

Performances are referred to the following conditions:

Cooling: ambient air temperature 35 °C; evaporation temperature 5 °C.

(1): Sound power level according to ISO 3746.

(2): Sound pressure level measured at 10 mt from the unit in free field conditions direction factor Q=2 according to ISO 3746.

**LDK  
COOLING CAPACITY AND COMPRESSORS INPUT POWER**

| Mod. | TWUE (°C) | PF (kW)   |      |      |      |      | PA (kW)   |      |      |      |      |
|------|-----------|-----------|------|------|------|------|-----------|------|------|------|------|
|      |           | TAMB (°C) |      |      |      |      | TAMB (°C) |      |      |      |      |
|      |           | 20        | 25   | 30   | 35   | 40   | 20        | 25   | 30   | 35   | 40   |
| 039  | 1         | 34,6      | 32,5 | 30,4 | 28,3 |      | 8,9       | 10,0 | 11,2 | 12,7 | 14,2 |
|      | 3         | 37,7      | 35,4 | 33,2 | 30,9 | 28,7 | 8,9       | 9,9  | 11,2 | 12,6 | 14,3 |
|      | 5         | 41,0      | 38,6 | 36,2 | 33,8 | 31,4 | 8,9       | 9,9  | 11,2 | 12,6 | 14,3 |
|      | 7         | 44,5      | 41,9 | 39,3 | 37,0 | 34,2 | 8,9       | 9,9  | 11,1 | 12,6 | 14,3 |
|      | 9         | 48,2      | 45,5 | 42,7 | 39,9 | 37,2 | 8,9       | 9,9  | 11,1 | 12,5 | 14,2 |
|      | 11        | 52,2      | 49,2 | 46,3 | 43,3 | 40,4 | 9,0       | 9,9  | 11,0 | 12,5 | 14,2 |
|      | 13        | 56,4      | 53,2 | 50,1 | 46,9 | 43,8 | 9,1       | 9,9  | 11,0 | 12,5 | 14,1 |
|      | 15        | 60,8      | 57,4 | 54,1 | 50,7 | 47,4 | 9,2       | 10,0 | 11,1 | 12,4 | 14,1 |

| Mod. | TWUE (°C) | PF (kW)   |      |      |      |      | PA (kW)   |      |      |      |      |
|------|-----------|-----------|------|------|------|------|-----------|------|------|------|------|
|      |           | TAMB (°C) |      |      |      |      | TAMB (°C) |      |      |      |      |
|      |           | 20        | 25   | 30   | 35   | 40   | 20        | 25   | 30   | 35   | 40   |
| 045  | 1         | 42,4      | 40,0 | 37,5 | 35,0 | 32,4 | 10,7      | 12,0 | 13,5 | 15,1 | 16,8 |
|      | 3         | 46,0      | 43,4 | 40,8 | 38,1 | 35,4 | 10,7      | 12,0 | 13,5 | 15,1 | 16,9 |
|      | 5         | 49,8      | 47,0 | 44,2 | 41,4 | 38,4 | 10,7      | 12,0 | 13,4 | 15,1 | 16,9 |
|      | 7         | 53,9      | 50,9 | 47,9 | 45,0 | 41,7 | 10,7      | 12,0 | 13,4 | 15,1 | 16,9 |
|      | 9         | 58,2      | 55,0 | 51,8 | 48,6 | 45,2 | 10,6      | 11,9 | 13,4 | 15,1 | 16,9 |
|      | 11        | 62,7      | 59,4 | 56,0 | 52,5 | 49,0 | 10,6      | 11,9 | 13,4 | 15,1 | 16,9 |
|      | 13        | 67,5      | 64,0 | 60,4 | 56,7 | 52,9 | 10,6      | 11,9 | 13,4 | 15,0 | 16,9 |
|      | 15        | 72,6      | 68,8 | 65,0 | 61,1 | 57,1 | 10,6      | 11,9 | 13,4 | 15,0 | 16,9 |

| Mod. | TWUE (°C) | PF (kW)   |      |      |      |      | PA (kW)   |      |      |      |      |
|------|-----------|-----------|------|------|------|------|-----------|------|------|------|------|
|      |           | TAMB (°C) |      |      |      |      | TAMB (°C) |      |      |      |      |
|      |           | 20        | 25   | 30   | 35   | 40   | 20        | 25   | 30   | 35   | 40   |
| 050  | 1         | 49,3      | 46,5 | 43,7 | 40,7 | 37,7 | 12,2      | 13,7 | 15,4 | 17,2 | 19,2 |
|      | 3         | 53,4      | 50,5 | 47,4 | 44,2 | 41,0 | 12,1      | 13,6 | 15,3 | 17,2 | 19,3 |
|      | 5         | 57,8      | 54,6 | 51,3 | 48,0 | 44,5 | 12,1      | 13,6 | 15,3 | 17,2 | 19,3 |
|      | 7         | 62,4      | 59,0 | 55,5 | 52,0 | 48,3 | 12,0      | 13,5 | 15,3 | 17,2 | 19,3 |
|      | 9         | 67,3      | 63,7 | 60,0 | 56,2 | 52,3 | 12,0      | 13,5 | 15,2 | 17,2 | 19,3 |
|      | 11        | 72,4      | 68,6 | 64,7 | 60,7 | 56,6 | 12,0      | 13,5 | 15,2 | 17,1 | 19,3 |
|      | 13        | 77,9      | 73,9 | 69,7 | 65,5 | 61,1 | 12,0      | 13,4 | 15,1 | 17,1 | 19,3 |
|      | 15        | 83,7      | 79,4 | 75,0 | 70,5 | 65,9 | 12,0      | 13,4 | 15,1 | 17,0 | 19,2 |

| Mod. | TWUE (°C) | PF (kW)   |      |      |      |      | PA (kW)   |      |      |      |      |
|------|-----------|-----------|------|------|------|------|-----------|------|------|------|------|
|      |           | TAMB (°C) |      |      |      |      | TAMB (°C) |      |      |      |      |
|      |           | 20        | 25   | 30   | 35   | 40   | 20        | 25   | 30   | 35   | 40   |
| 060  | 1         | 55,0      | 51,9 | 48,7 | 45,4 | 42,0 | 13,7      | 15,3 | 17,2 | 19,3 | 21,6 |
|      | 3         | 59,6      | 56,2 | 52,8 | 49,3 | 45,6 | 13,7      | 15,3 | 17,2 | 19,3 | 21,7 |
|      | 5         | 64,4      | 60,9 | 57,2 | 53,4 | 49,6 | 13,7      | 15,3 | 17,2 | 19,3 | 21,7 |
|      | 7         | 69,6      | 65,8 | 61,9 | 58,0 | 53,8 | 13,7      | 15,3 | 17,2 | 19,3 | 21,8 |
|      | 9         | 75,0      | 71,0 | 66,8 | 62,6 | 58,2 | 13,7      | 15,3 | 17,2 | 19,3 | 21,8 |
|      | 11        | 80,8      | 76,5 | 72,1 | 67,6 | 62,9 | 13,7      | 15,3 | 17,2 | 19,3 | 21,8 |
|      | 13        | 86,9      | 82,3 | 77,7 | 72,9 | 68,0 | 13,8      | 15,3 | 17,2 | 19,3 | 21,8 |
|      | 15        | 93,3      | 88,5 | 83,6 | 78,5 | 73,3 | 13,9      | 15,4 | 17,2 | 19,3 | 21,8 |

TWUE: Evaporator Outlet water temperature (°C)  
 TAMB: Ambient temperature (°C)  
 PA: Compressors input power (Kw)  
 PF: Cooling capacity (Kw)

**LDK  
COOLING CAPACITY AND COMPRESSORS INPUT POWER**

| Mod. | TWUE (°C) | PF (kW)   |      |      |      |      | PA (kW)   |      |      |      |      |
|------|-----------|-----------|------|------|------|------|-----------|------|------|------|------|
|      |           | TAMB (°C) |      |      |      |      | TAMB (°C) |      |      |      |      |
|      |           | 20        | 25   | 30   | 35   | 40   | 20        | 25   | 30   | 35   | 40   |
| 070  | 1         | 60,7      | 57,2 | 53,7 | 50,0 | 46,2 | 15,2      | 17,0 | 19,1 | 21,4 | 24,0 |
|      | 3         | 65,7      | 62,0 | 58,2 | 54,3 | 50,3 | 15,2      | 17,0 | 19,1 | 21,5 | 24,1 |
|      | 5         | 71,1      | 67,1 | 63,1 | 58,9 | 54,6 | 15,3      | 17,0 | 19,1 | 21,5 | 24,2 |
|      | 7         | 76,7      | 72,5 | 68,2 | 64,0 | 59,2 | 15,3      | 17,1 | 19,1 | 21,5 | 24,2 |
|      | 9         | 82,7      | 78,3 | 73,7 | 68,9 | 64,1 | 15,4      | 17,1 | 19,1 | 21,5 | 24,2 |
|      | 11        | 89,1      | 84,3 | 79,5 | 74,4 | 69,3 | 15,5      | 17,2 | 19,2 | 21,5 | 24,3 |
|      | 13        | 95,8      | 90,8 | 85,6 | 80,3 | 74,8 | 15,6      | 17,2 | 19,2 | 21,6 | 24,3 |
| 15   | 102,9     | 97,6      | 92,1 | 86,4 | 80,7 | 15,8 | 17,4      | 19,3 | 21,6 | 24,3 |      |

| Mod. | TWUE (°C) | PF (kW)   |       |       |      |      | PA (kW)   |      |      |      |      |
|------|-----------|-----------|-------|-------|------|------|-----------|------|------|------|------|
|      |           | TAMB (°C) |       |       |      |      | TAMB (°C) |      |      |      |      |
|      |           | 20        | 25    | 30    | 35   | 40   | 20        | 25   | 30   | 35   | 40   |
| 080  | 1         | 73,9      | 69,8  | 65,5  | 61,1 | 56,6 | 18,2      | 20,4 | 23,1 | 26,0 | 29,2 |
|      | 3         | 80,0      | 75,6  | 71,1  | 66,4 | 61,6 | 18,1      | 20,4 | 23,0 | 26,0 | 29,3 |
|      | 5         | 86,5      | 81,8  | 77,0  | 72,0 | 66,9 | 18,2      | 20,3 | 22,9 | 25,8 | 29,3 |
|      | 7         | 93,4      | 88,4  | 83,3  | 78,0 | 72,5 | 18,3      | 20,3 | 22,9 | 25,8 | 29,3 |
|      | 9         | 100,8     | 95,4  | 89,9  | 84,3 | 78,5 | 18,4      | 20,4 | 22,9 | 25,8 | 29,2 |
|      | 11        | 108,5     | 102,8 | 97,0  | 91,0 | 84,8 | 18,7      | 20,5 | 22,9 | 25,8 | 29,2 |
|      | 13        | 116,7     | 110,7 | 104,5 | 98,1 | 91,6 | 19,1      | 20,7 | 22,9 | 25,7 | 29,1 |
| 15   | 125,4     | 119,0     | 112,4 | 105,7 | 98,7 | 19,5 | 21,0      | 23,1 | 25,8 | 29,1 |      |

| Mod. | TWUE (°C) | PF (kW)   |       |       |       |       | PA (kW)   |      |      |      |      |
|------|-----------|-----------|-------|-------|-------|-------|-----------|------|------|------|------|
|      |           | TAMB (°C) |       |       |       |       | TAMB (°C) |      |      |      |      |
|      |           | 20        | 25    | 30    | 35    | 40    | 20        | 25   | 30   | 35   | 40   |
| 090  | 1         | 86,1      | 81,2  | 76,0  | 70,7  | 65,1  | 21,1      | 23,6 | 26,5 | 29,8 | 33,5 |
|      | 3         | 93,3      | 88,0  | 82,6  | 76,9  | 71,0  | 21,1      | 23,6 | 26,5 | 29,8 | 33,6 |
|      | 5         | 100,9     | 95,3  | 89,5  | 83,5  | 77,2  | 21,2      | 23,7 | 26,5 | 29,8 | 33,6 |
|      | 7         | 109,0     | 103,1 | 96,9  | 90,0  | 83,9  | 21,3      | 23,7 | 26,6 | 29,9 | 33,7 |
|      | 9         | 117,5     | 111,2 | 104,7 | 98,0  | 90,9  | 21,4      | 23,8 | 26,6 | 29,9 | 33,7 |
|      | 11        | 126,5     | 119,9 | 113,0 | 105,9 | 98,5  | 21,5      | 23,9 | 26,7 | 30,0 | 33,8 |
|      | 13        | 136,1     | 129,1 | 121,8 | 114,3 | 106,4 | 21,7      | 24,0 | 26,8 | 30,1 | 33,8 |
| 15   | 146,2     | 138,8     | 131,1 | 123,1 | 114,9 | 21,9  | 24,1      | 26,9 | 30,1 | 33,9 |      |

| Mod. | TWUE (°C) | PF (kW)   |       |       |       |       | PA (kW)   |      |      |      |      |
|------|-----------|-----------|-------|-------|-------|-------|-----------|------|------|------|------|
|      |           | TAMB (°C) |       |       |       |       | TAMB (°C) |      |      |      |      |
|      |           | 20        | 25    | 30    | 35    | 40    | 20        | 25   | 30   | 35   | 40   |
| 110  | 1         | 98,3      | 92,6  | 86,5  | 80,2  | 73,6  | 24,0      | 26,7 | 29,9 | 33,5 | 37,8 |
|      | 3         | 106,5     | 100,5 | 94,1  | 87,3  | 80,3  | 24,1      | 26,9 | 30,0 | 33,6 | 37,8 |
|      | 5         | 115,2     | 108,8 | 102,1 | 95,0  | 87,6  | 24,2      | 27,0 | 30,1 | 33,8 | 37,9 |
|      | 7         | 124,5     | 117,7 | 110,5 | 104,0 | 95,2  | 24,3      | 27,1 | 30,3 | 33,9 | 38,1 |
|      | 9         | 134,2     | 127,1 | 119,5 | 111,6 | 103,4 | 24,3      | 27,2 | 30,4 | 34,1 | 38,2 |
|      | 11        | 144,6     | 137,0 | 129,1 | 120,7 | 112,1 | 24,3      | 27,3 | 30,5 | 34,2 | 38,4 |
|      | 13        | 155,5     | 147,5 | 139,1 | 130,4 | 121,2 | 24,2      | 27,3 | 30,7 | 34,4 | 38,5 |
| 15   | 167,0     | 158,6     | 149,8 | 140,6 | 131,0 | 24,2  | 27,3      | 30,7 | 34,5 | 38,7 |      |

TWUE: Evaporator Outlet water temperature (°C)  
 TAMB: Ambient temperature (°C)  
 PA: Compressors input power (Kw)  
 PF: Cooling capacity (Kw)

**LDK  
COOLING CAPACITY AND COMPRESSORS INPUT POWER**

| Mod. | TWUE (°C) | PF (kW)   |       |       |       |       | PA (kW)   |      |      |      |      |
|------|-----------|-----------|-------|-------|-------|-------|-----------|------|------|------|------|
|      |           | TAMB (°C) |       |       |       |       | TAMB (°C) |      |      |      |      |
|      |           | 20        | 25    | 30    | 35    | 40    | 20        | 25   | 30   | 35   | 40   |
| 120  | 1         | 111,1     | 104,1 | 96,9  | 89,4  | 81,8  | 27,0      | 30,0 | 33,6 | 37,7 | 42,6 |
|      | 3         | 120,5     | 113,1 | 105,5 | 97,6  | 89,4  | 27,2      | 30,2 | 33,7 | 37,8 | 42,6 |
|      | 5         | 130,6     | 122,7 | 114,6 | 106,2 | 97,6  | 27,3      | 30,3 | 33,8 | 37,9 | 42,6 |
|      | 7         | 141,3     | 132,9 | 124,3 | 115,5 | 106,3 | 27,5      | 30,5 | 34,0 | 38,0 | 42,7 |
|      | 9         | 152,6     | 143,8 | 134,7 | 125,3 | 115,6 | 27,6      | 30,6 | 34,1 | 38,2 | 42,8 |
|      | 11        | 164,6     | 155,2 | 145,6 | 135,7 | 125,4 | 27,7      | 30,8 | 34,3 | 38,3 | 42,9 |
|      | 13        | 177,2     | 167,4 | 157,2 | 146,7 | 135,9 | 27,9      | 31,0 | 34,5 | 38,5 | 43,1 |
| 15   | 190,6     | 180,2     | 169,4 | 158,3 | 146,9 | 28,0  | 31,1      | 34,6 | 38,6 | 43,2 |      |

| Mod. | TWUE (°C) | PF (kW)   |       |       |       |       | PA (kW)   |      |      |      |      |
|------|-----------|-----------|-------|-------|-------|-------|-----------|------|------|------|------|
|      |           | TAMB (°C) |       |       |       |       | TAMB (°C) |      |      |      |      |
|      |           | 20        | 25    | 30    | 35    | 40    | 20        | 25   | 30   | 35   | 40   |
| 130  | 1         | 123,8     | 115,6 | 107,2 | 98,6  | 90,0  | 30,0      | 33,3 | 37,3 | 41,9 | 47,3 |
|      | 3         | 134,5     | 125,8 | 116,9 | 107,8 | 98,6  | 30,2      | 33,5 | 37,4 | 42,0 | 47,3 |
|      | 5         | 145,9     | 136,7 | 127,2 | 117,5 | 107,7 | 30,4      | 33,7 | 37,5 | 42,0 | 47,3 |
|      | 7         | 158,1     | 148,2 | 138,1 | 128,0 | 117,4 | 30,7      | 33,9 | 37,7 | 42,1 | 47,4 |
|      | 9         | 170,9     | 160,5 | 149,8 | 138,9 | 127,8 | 30,9      | 34,1 | 37,8 | 42,3 | 47,4 |
|      | 11        | 184,5     | 173,4 | 162,1 | 150,6 | 138,8 | 31,2      | 34,3 | 38,0 | 42,4 | 47,5 |
|      | 13        | 199,0     | 187,2 | 175,2 | 163,0 | 150,5 | 31,5      | 34,6 | 38,3 | 42,6 | 47,6 |
| 15   | 214,2     | 201,7     | 189,0 | 176,1 | 162,9 | 31,8  | 34,9      | 38,5 | 42,8 | 47,7 |      |

| Mod. | TWUE (°C) | PF (kW)   |       |       |       |       | PA (kW)   |      |      |      |      |
|------|-----------|-----------|-------|-------|-------|-------|-----------|------|------|------|------|
|      |           | TAMB (°C) |       |       |       |       | TAMB (°C) |      |      |      |      |
|      |           | 20        | 25    | 30    | 35    | 40    | 20        | 25   | 30   | 35   | 40   |
| 140  | 1         | 134,6     | 127,0 | 119,2 | 111,1 | 102,8 | 33,4      | 37,4 | 42,1 | 47,3 | 53,3 |
|      | 3         | 145,8     | 137,6 | 129,3 | 120,7 | 111,9 | 33,4      | 37,4 | 42,1 | 47,3 | 53,4 |
|      | 5         | 157,6     | 148,9 | 140,0 | 130,9 | 121,5 | 33,4      | 37,4 | 42,0 | 47,3 | 53,5 |
|      | 7         | 170,2     | 161,0 | 151,5 | 142,0 | 131,7 | 33,6      | 37,4 | 42,0 | 47,3 | 53,5 |
|      | 9         | 183,5     | 173,7 | 163,6 | 153,2 | 142,6 | 33,8      | 37,5 | 42,0 | 47,3 | 53,5 |
|      | 11        | 197,6     | 187,2 | 176,5 | 165,4 | 154,1 | 34,2      | 37,7 | 42,0 | 47,3 | 53,4 |
|      | 13        | 212,5     | 201,5 | 190,1 | 178,4 | 166,4 | 34,7      | 37,9 | 42,1 | 47,3 | 53,4 |
| 15   | 228,3     | 216,6     | 204,5 | 192,1 | 179,4 | 35,3  | 38,3      | 42,3 | 47,4 | 53,4 |      |

| MOD. | TWUE (°C) | PF (kW)   |       |       |       |       | PA (kW)   |      |      |      |      |
|------|-----------|-----------|-------|-------|-------|-------|-----------|------|------|------|------|
|      |           | TAMB (°C) |       |       |       |       | TAMB (°C) |      |      |      |      |
|      |           | 20        | 25    | 30    | 35    | 40    | 20        | 25   | 30   | 35   | 40   |
| 160  | 1         | 147,8     | 139,5 | 131,0 | 122,2 | 113,2 | 36,3      | 40,9 | 46,1 | 52,0 | 58,4 |
|      | 3         | 160,1     | 151,2 | 142,1 | 132,8 | 123,1 | 36,3      | 40,7 | 46,0 | 52,0 | 58,6 |
|      | 5         | 173,1     | 163,7 | 154,0 | 144,0 | 133,7 | 36,4      | 40,7 | 45,9 | 51,9 | 58,6 |
|      | 7         | 186,9     | 176,9 | 166,5 | 156,0 | 145,0 | 36,6      | 40,7 | 45,8 | 51,7 | 58,5 |
|      | 9         | 201,5     | 190,8 | 179,9 | 168,6 | 157,0 | 36,9      | 40,8 | 45,7 | 51,6 | 58,4 |
|      | 11        | 217,0     | 205,7 | 194,0 | 182,0 | 169,7 | 37,4      | 41,0 | 45,7 | 51,5 | 58,3 |
|      | 13        | 233,4     | 221,4 | 209,0 | 196,3 | 183,2 | 38,1      | 41,4 | 45,8 | 51,5 | 58,2 |
| 15   | 250,7     | 237,9     | 224,8 | 211,3 | 197,5 | 39,1  | 41,9      | 46,1 | 51,5 | 58,1 |      |

TWUE: Evaporator Outlet water temperature (°C)  
TAMB: Ambient temperature (°C)  
PA: Compressors input power (Kw)  
PF: Cooling capacity (Kw)

**LDK  
COOLING CAPACITY AND COMPRESSORS INPUT POWER**

| Mod. | TWUE (°C) | PF (kW)   |       |       |       |       | PA (kW)   |      |      |      |      |
|------|-----------|-----------|-------|-------|-------|-------|-----------|------|------|------|------|
|      |           | TAMB (°C) |       |       |       |       | TAMB (°C) |      |      |      |      |
|      |           | 20        | 25    | 30    | 35    | 40    | 20        | 25   | 30   | 35   | 40   |
| 190  | 1         | 172,2     | 162,3 | 152,0 | 141,3 | 130,2 | 42,2      | 47,2 | 52,9 | 59,5 | 67,0 |
|      | 3         | 186,6     | 176,1 | 165,1 | 153,7 | 141,9 | 42,3      | 47,2 | 53,0 | 59,6 | 67,1 |
|      | 5         | 201,8     | 190,6 | 179,0 | 167,0 | 154,4 | 42,4      | 47,3 | 53,1 | 59,7 | 67,2 |
|      | 7         | 217,9     | 206,1 | 193,8 | 181,0 | 167,7 | 42,5      | 47,4 | 53,2 | 59,7 | 67,3 |
|      | 9         | 235,0     | 222,5 | 209,5 | 195,9 | 181,9 | 42,7      | 47,6 | 53,3 | 59,9 | 67,4 |
|      | 11        | 253,1     | 239,8 | 226,1 | 211,8 | 196,9 | 43,0      | 47,8 | 53,4 | 60,0 | 67,5 |
|      | 13        | 272,2     | 258,2 | 243,6 | 228,5 | 212,8 | 43,3      | 48,0 | 53,6 | 60,1 | 67,6 |
|      | 15        | 292,4     | 277,6 | 262,2 | 246,2 | 229,7 | 43,7      | 48,3 | 53,8 | 60,3 | 67,8 |

| Mod. | TWUE (°C) | PF (kW)   |       |       |       |       | PA (kW)   |      |      |      |      |
|------|-----------|-----------|-------|-------|-------|-------|-----------|------|------|------|------|
|      |           | TAMB (°C) |       |       |       |       | TAMB (°C) |      |      |      |      |
|      |           | 20        | 25    | 30    | 35    | 40    | 20        | 25   | 30   | 35   | 40   |
| 210  | 1         | 196,7     | 185,2 | 173,1 | 160,4 | 147,1 | 48,0      | 53,5 | 59,8 | 67,0 | 75,5 |
|      | 3         | 213,1     | 200,9 | 188,1 | 174,7 | 160,7 | 48,2      | 53,7 | 60,0 | 67,3 | 75,7 |
|      | 5         | 230,5     | 217,6 | 204,1 | 189,9 | 175,1 | 48,4      | 54,0 | 60,3 | 67,5 | 75,9 |
|      | 7         | 248,9     | 235,4 | 221,1 | 206,1 | 190,5 | 48,5      | 54,2 | 60,6 | 67,8 | 76,1 |
|      | 9         | 268,5     | 254,1 | 239,1 | 223,3 | 206,8 | 48,6      | 54,4 | 60,8 | 68,1 | 76,4 |
|      | 11        | 289,2     | 274,0 | 258,1 | 241,5 | 224,1 | 48,6      | 54,5 | 61,1 | 68,4 | 76,7 |
|      | 13        | 311,0     | 295,0 | 278,3 | 260,8 | 242,5 | 48,5      | 54,6 | 61,3 | 68,7 | 77,1 |
|      | 15        | 334,0     | 317,2 | 299,6 | 281,2 | 261,9 | 48,3      | 54,7 | 61,5 | 69,0 | 77,4 |

| Mod. | TWUE (°C) | PF (kW)   |       |       |       |       | PA (kW)   |      |      |      |      |
|------|-----------|-----------|-------|-------|-------|-------|-----------|------|------|------|------|
|      |           | TAMB (°C) |       |       |       |       | TAMB (°C) |      |      |      |      |
|      |           | 20        | 25    | 30    | 35    | 40    | 20        | 25   | 30   | 35   | 40   |
| 240  | 1         | 222,1     | 208,1 | 193,7 | 178,8 | 163,5 | 54,0      | 60,1 | 67,2 | 75,4 | 85,1 |
|      | 3         | 241,1     | 226,2 | 210,9 | 195,1 | 178,9 | 54,3      | 60,4 | 67,4 | 75,6 | 85,2 |
|      | 5         | 261,2     | 245,5 | 229,2 | 212,5 | 195,3 | 54,6      | 60,7 | 67,7 | 75,8 | 85,3 |
|      | 7         | 282,5     | 265,9 | 248,7 | 232,0 | 212,7 | 54,9      | 61,0 | 68,0 | 76,0 | 85,4 |
|      | 9         | 305,2     | 287,5 | 269,3 | 250,5 | 231,2 | 55,2      | 61,3 | 68,3 | 76,3 | 85,6 |
|      | 11        | 329,1     | 310,5 | 291,2 | 271,3 | 250,9 | 55,5      | 61,6 | 68,6 | 76,6 | 85,9 |
|      | 13        | 354,4     | 334,7 | 314,3 | 293,3 | 271,7 | 55,7      | 61,9 | 68,9 | 76,9 | 86,2 |
|      | 15        | 381,2     | 360,3 | 338,8 | 316,6 | 293,8 | 56,0      | 62,2 | 69,2 | 77,3 | 86,5 |

| Mod. | TWUE (°C) | PF (kW)   |       |       |       |       | PA (kW)   |      |      |      |      |
|------|-----------|-----------|-------|-------|-------|-------|-----------|------|------|------|------|
|      |           | TAMB (°C) |       |       |       |       | TAMB (°C) |      |      |      |      |
|      |           | 20        | 25    | 30    | 35    | 40    | 20        | 25   | 30   | 35   | 40   |
| 260  | 1         | 247,5     | 231,1 | 214,3 | 197,3 | 179,9 | 60,0      | 66,7 | 74,5 | 83,8 | 94,7 |
|      | 3         | 269,0     | 251,6 | 233,7 | 215,6 | 197,1 | 60,4      | 67,0 | 74,8 | 83,9 | 94,6 |
|      | 5         | 291,9     | 273,3 | 254,4 | 235,1 | 215,4 | 60,9      | 67,4 | 75,0 | 84,1 | 94,7 |
|      | 7         | 316,1     | 296,4 | 276,3 | 256,0 | 234,9 | 61,4      | 67,8 | 75,3 | 84,2 | 94,7 |
|      | 9         | 341,9     | 320,9 | 299,6 | 277,8 | 255,6 | 61,9      | 68,2 | 75,7 | 84,5 | 94,8 |
|      | 11        | 369,1     | 346,9 | 324,2 | 301,1 | 277,6 | 62,4      | 68,7 | 76,1 | 84,8 | 95,0 |
|      | 13        | 397,9     | 374,4 | 350,4 | 325,9 | 301,0 | 63,0      | 69,2 | 76,5 | 85,1 | 95,2 |
|      | 15        | 428,4     | 403,5 | 378,0 | 352,1 | 325,7 | 63,6      | 69,7 | 77,0 | 85,5 | 95,5 |

TWUE: Evaporator Outlet water temperature (°C)  
TAMB: Ambient temperature (°C)  
PA: Compressors input power (Kw)  
PF: Cooling capacity (Kw)

**LDK  
COOLING CAPACITY AND COMPRESSORS INPUT POWER**

| Mod. | TWUE (°C) | PF (kW)   |       |       |        |       | PA (kW)   |      |      |       |       |
|------|-----------|-----------|-------|-------|--------|-------|-----------|------|------|-------|-------|
|      |           | TAMB (°C) |       |       |        |       | TAMB (°C) |      |      |       |       |
|      |           | 20        | 25    | 30    | 35     | 40    | 20        | 25   | 30   | 35    | 40    |
| 300  | 1         | 275,9     | 258,8 | 240,9 | 221,8  | 201,4 | 65,7      | 73,2 | 81,8 | 91,8  | 103,3 |
|      | 3         | 299,9     | 281,7 | 262,8 | 242,7  | 221,4 | 66,1      | 73,5 | 82,1 | 92,0  | 103,5 |
|      | 5         | 325,5     | 306,1 | 286,0 | 264,9  | 242,5 | 66,5      | 73,8 | 82,3 | 92,2  | 103,6 |
|      | 7         | 352,7     | 332,1 | 310,7 | 290,40 | 264,9 | 67,0      | 74,2 | 82,7 | 92,4  | 103,8 |
|      | 9         | 381,7     | 359,7 | 337,0 | 313,4  | 288,6 | 67,6      | 74,7 | 83,0 | 92,7  | 103,9 |
|      | 11        | 412,6     | 389,0 | 364,8 | 339,8  | 313,7 | 68,2      | 75,2 | 83,4 | 93,0  | 104,1 |
|      | 13        | 445,4     | 420,2 | 394,5 | 367,9  | 340,3 | 68,9      | 75,8 | 83,9 | 93,3  | 104,4 |
| 15   | 480,3     | 453,4     | 425,9 | 397,8 | 368,6  | 69,7  | 76,4      | 84,4 | 93,7 | 104,6 |       |

| Mod. | TWUE (°C) | PF (kW)   |       |       |       |       | PA (kW)   |      |       |       |       |
|------|-----------|-----------|-------|-------|-------|-------|-----------|------|-------|-------|-------|
|      |           | TAMB (°C) |       |       |       |       | TAMB (°C) |      |       |       |       |
|      |           | 20        | 25    | 30    | 35    | 40    | 20        | 25   | 30    | 35    | 40    |
| 320  | 1         | 304,3     | 286,5 | 267,4 | 246,3 | 222,8 | 71,3      | 79,7 | 89,1  | 99,8  | 112,0 |
|      | 3         | 330,8     | 311,9 | 291,8 | 269,9 | 245,7 | 71,7      | 80,0 | 89,4  | 100,1 | 112,3 |
|      | 5         | 359,1     | 338,9 | 317,7 | 294,8 | 269,7 | 72,2      | 80,3 | 89,7  | 100,4 | 112,6 |
|      | 7         | 389,3     | 367,7 | 345,1 | 321,0 | 294,9 | 72,7      | 80,7 | 90,0  | 100,6 | 112,8 |
|      | 9         | 421,6     | 398,4 | 374,3 | 348,9 | 321,6 | 73,4      | 81,2 | 90,3  | 100,9 | 113,0 |
|      | 11        | 456,1     | 431,1 | 405,4 | 378,5 | 349,8 | 74,1      | 81,7 | 90,7  | 101,2 | 113,3 |
|      | 13        | 493,0     | 466,0 | 438,5 | 409,9 | 379,7 | 74,9      | 82,4 | 91,2  | 101,5 | 113,5 |
| 15   | 532,3     | 503,3     | 473,8 | 443,4 | 411,5 | 75,9  | 83,1      | 91,7 | 101,9 | 113,8 |       |

| Mod. | TWUE (°C) | PF (kW)   |       |       |       |       | PA (kW)   |       |       |       |       |
|------|-----------|-----------|-------|-------|-------|-------|-----------|-------|-------|-------|-------|
|      |           | TAMB (°C) |       |       |       |       | TAMB (°C) |       |       |       |       |
|      |           | 20        | 25    | 30    | 35    | 40    | 20        | 25    | 30    | 35    | 40    |
| 380  | 1         | 371,3     | 346,7 | 321,5 | 295,9 | 269,9 | 90,0      | 100,0 | 111,8 | 125,7 | 142,0 |
|      | 3         | 403,6     | 377,4 | 350,6 | 323,4 | 295,7 | 90,6      | 100,5 | 112,2 | 125,9 | 142,0 |
|      | 5         | 437,8     | 410,0 | 381,6 | 352,6 | 323,1 | 91,3      | 101,0 | 112,6 | 126,1 | 142,0 |
|      | 7         | 474,2     | 444,6 | 414,4 | 383,0 | 352,3 | 92,0      | 101,6 | 113,0 | 126,4 | 142,1 |
|      | 9         | 512,8     | 481,4 | 449,3 | 416,7 | 383,4 | 92,8      | 102,3 | 113,5 | 126,8 | 142,3 |
|      | 11        | 553,6     | 520,3 | 486,4 | 451,7 | 416,4 | 93,6      | 103,0 | 114,1 | 127,2 | 142,5 |
|      | 13        | 596,9     | 561,6 | 525,6 | 488,9 | 451,5 | 94,5      | 103,8 | 114,8 | 127,7 | 142,8 |
| 15   | 642,5     | 605,2     | 567,1 | 528,2 | 488,6 | 95,4  | 104,6     | 115,5 | 128,3 | 143,2 |       |

| Mod. | TWUE (°C) | PF (kW)   |       |       |       |       | PA (kW)   |       |       |       |       |
|------|-----------|-----------|-------|-------|-------|-------|-----------|-------|-------|-------|-------|
|      |           | TAMB (°C) |       |       |       |       | TAMB (°C) |       |       |       |       |
|      |           | 20        | 25    | 30    | 35    | 40    | 20        | 25    | 30    | 35    | 40    |
| 430  | 1         | 413,9     | 388,2 | 361,3 | 332,7 | 302,1 | 98,5      | 109,7 | 122,7 | 137,7 | 155,0 |
|      | 3         | 449,9     | 422,6 | 394,2 | 364,1 | 332,1 | 99,1      | 110,2 | 123,1 | 138,0 | 155,2 |
|      | 5         | 488,2     | 459,2 | 429,0 | 397,4 | 363,8 | 99,8      | 110,8 | 123,5 | 138,3 | 155,4 |
|      | 7         | 529,1     | 498,1 | 466,1 | 432,0 | 397,4 | 100,6     | 111,4 | 124,0 | 138,7 | 155,6 |
|      | 9         | 572,6     | 539,5 | 505,4 | 470,0 | 432,9 | 101,4     | 112,0 | 124,5 | 139,1 | 155,9 |
|      | 11        | 618,9     | 583,5 | 547,3 | 509,7 | 470,6 | 102,4     | 112,8 | 125,1 | 139,5 | 156,2 |
|      | 13        | 668,2     | 630,3 | 591,7 | 551,9 | 510,5 | 103,4     | 113,7 | 125,8 | 140,0 | 156,6 |
| 15   | 720,5     | 680,0     | 638,9 | 596,6 | 552,9 | 104,6 | 114,6     | 126,5 | 140,6 | 157,0 |       |

| Mod. | TWUE (°C) | PF (kW)   |       |       |       |       | PA (kW)   |       |       |       |       |
|------|-----------|-----------|-------|-------|-------|-------|-----------|-------|-------|-------|-------|
|      |           | TAMB (°C) |       |       |       |       | TAMB (°C) |       |       |       |       |
|      |           | 20        | 25    | 30    | 35    | 40    | 20        | 25    | 30    | 35    | 40    |
| 500  | 1         | 456,4     | 429,8 | 401,1 | 369,5 | 334,3 | 107,0     | 119,5 | 133,6 | 149,7 | 168,0 |
|      | 3         | 496,2     | 467,9 | 437,7 | 404,9 | 368,5 | 107,6     | 120,0 | 134,1 | 150,1 | 168,4 |
|      | 5         | 538,6     | 508,4 | 476,5 | 442,1 | 404,5 | 108,3     | 120,5 | 134,5 | 150,5 | 168,8 |
|      | 7         | 584,0     | 551,6 | 517,7 | 481,0 | 442,4 | 109,1     | 121,1 | 135,0 | 150,9 | 169,2 |
|      | 9         | 632,4     | 597,6 | 561,5 | 523,4 | 482,4 | 110,0     | 121,8 | 135,5 | 151,3 | 169,6 |
|      | 11        | 684,2     | 646,7 | 608,1 | 567,8 | 524,7 | 111,1     | 122,6 | 136,1 | 151,8 | 169,9 |
|      | 13        | 739,5     | 699,1 | 657,8 | 614,9 | 569,6 | 112,4     | 123,5 | 136,8 | 152,3 | 170,3 |
| 15   | 798,5     | 754,9     | 710,7 | 665,1 | 617,2 | 113,8 | 124,6     | 137,6 | 152,9 | 170,7 |       |

TWUE: Evaporator Outlet water temperature (°C)  
 TAMB: Ambient temperature (°C)  
 PA: Compressors input power (Kw)  
 PF: Cooling capacity (Kw)

**LDK / HP  
HEATING CAPACITY AND COMPRESSORS INPUT POWER**

| Mod. | TAMB (°C) | PH kW     |      |      |      |      |      | PA (kW)   |      |      |      |      |      |
|------|-----------|-----------|------|------|------|------|------|-----------|------|------|------|------|------|
|      |           | TWUC (°C) |      |      |      |      |      | TWUC (°C) |      |      |      |      |      |
|      |           | 30        | 35   | 40   | 45   | 50   | 55   | 30        | 35   | 40   | 45   | 50   | 55   |
| 039  | -5        | 25,1      | 24,7 | 24,5 | 24,3 | ---  | ---  | 9,1       | 9,9  | 10,7 | 11,6 | ---  | ---  |
|      | 0         | 30,3      | 29,8 | 29,5 | 29,3 | 20,3 | ---  | 9,2       | 10,2 | 11,2 | 12,3 | 13,5 | ---  |
|      | 5         | 36,2      | 35,6 | 35,1 | 34,9 | 31,7 | ---  | 9,2       | 10,3 | 11,5 | 12,8 | 14,1 | ---  |
|      | 8         | 40,2      | 39,4 | 38,8 | 38,5 | 38,2 | ---  | 9,1       | 10,2 | 11,5 | 12,9 | 14,4 | ---  |
|      | 10        | 43,0      | 42,2 | 41,5 | 41,0 | 40,7 | ---  | 9,1       | 10,2 | 11,5 | 12,9 | 14,5 | ---  |
|      | 15        | 51,1      | 49,8 | 48,8 | 48,0 | 47,5 | ---  | 9,0       | 10,1 | 11,4 | 12,9 | 14,6 | ---  |
|      | 20        | 60,5      | 58,8 | 57,3 | 56,1 | 55,2 | 54,5 | 9,0       | 10,0 | 11,3 | 12,9 | 14,6 | 16,6 |

| Mod. | TAMB (°C) | PH kW     |      |      |      |      |      | PA (kW)   |      |      |      |      |      |
|------|-----------|-----------|------|------|------|------|------|-----------|------|------|------|------|------|
|      |           | TWUC (°C) |      |      |      |      |      | TWUC (°C) |      |      |      |      |      |
|      |           | 30        | 35   | 40   | 45   | 50   | 55   | 30        | 35   | 40   | 45   | 50   | 55   |
| 045  | -5        | 32,1      | 31,9 | 31,8 | 31,8 | ---  | ---  | 11,0      | 12,1 | 13,4 | 14,9 | ---  | ---  |
|      | 0         | 37,9      | 37,5 | 37,2 | 37,0 | 37,0 | ---  | 11,0      | 12,2 | 13,6 | 15,1 | 16,8 | ---  |
|      | 5         | 44,8      | 44,1 | 43,5 | 43,1 | 42,8 | ---  | 11,0      | 12,3 | 13,7 | 15,2 | 17   | ---  |
|      | 8         | 49,4      | 48,6 | 47,8 | 47,0 | 46,7 | ---  | 11,0      | 12,3 | 13,7 | 15,2 | 17   | ---  |
|      | 10        | 52,8      | 51,8 | 50,9 | 50,2 | 49,6 | ---  | 11,0      | 12,3 | 13,7 | 15,3 | 17,1 | ---  |
|      | 15        | 62,1      | 60,8 | 59,5 | 58,4 | 57,4 | ---  | 10,9      | 12,2 | 13,7 | 15,4 | 17,2 | ---  |
|      | 20        | 73,0      | 71,2 | 69,5 | 67,9 | 66,5 | 65,2 | 10,9      | 12,2 | 13,7 | 15,4 | 17,2 | 19,3 |

| Mod. | TAMB (°C) | PH kW     |      |      |      |      |      | PA (kW)   |      |      |      |      |      |
|------|-----------|-----------|------|------|------|------|------|-----------|------|------|------|------|------|
|      |           | TWUC (°C) |      |      |      |      |      | TWUC (°C) |      |      |      |      |      |
|      |           | 30        | 35   | 40   | 45   | 50   | 55   | 30        | 35   | 40   | 45   | 50   | 55   |
| 050  | -5        | 37,3      | 36,8 | 36,2 | 35,6 | ---  | ---  | 12,3      | 13,4 | 14,5 | 15,7 | ---  | ---  |
|      | 0         | 44,2      | 43,6 | 42,9 | 42,3 | 41,7 | ---  | 12,5      | 14,0 | 15,2 | 16,6 | 18,1 | ---  |
|      | 5         | 52,1      | 51,2 | 50,4 | 49,7 | 48,9 | ---  | 12,5      | 14,0 | 15,6 | 17,1 | 18,9 | ---  |
|      | 8         | 57,4      | 56,4 | 55,4 | 55,0 | 53,7 | ---  | 12,5      | 14,0 | 15,6 | 17,3 | 19,2 | ---  |
|      | 10        | 61,2      | 60,1 | 59,0 | 58,0 | 57,0 | ---  | 12,5      | 14,0 | 15,6 | 17,5 | 19,4 | ---  |
|      | 15        | 71,8      | 70,2 | 68,8 | 67,4 | 66,2 | ---  | 12,3      | 13,9 | 15,6 | 17,6 | 19,7 | ---  |
|      | 20        | 84,1      | 82,0 | 80,1 | 78,3 | 76,6 | 75,0 | 12,2      | 13,8 | 15,6 | 17,5 | 19,7 | 22,1 |

| Mod. | TAMB (°C) | PH kW     |      |      |      |      |      | PA (kW)   |      |      |      |      |      |
|------|-----------|-----------|------|------|------|------|------|-----------|------|------|------|------|------|
|      |           | TWUC (°C) |      |      |      |      |      | TWUC (°C) |      |      |      |      |      |
|      |           | 30        | 35   | 40   | 45   | 50   | 55   | 30        | 35   | 40   | 45   | 50   | 55   |
| 060  | -5        | 42,3      | 41,7 | 41,2 | 40,7 | ---  | ---  | 13,7      | 15   | 16,4 | 17,9 | ---  | ---  |
|      | 0         | 50,0      | 49,3 | 48,7 | 48,1 | 47,6 | ---  | 13,9      | 15,4 | 17,1 | 18,8 | 20,7 | ---  |
|      | 5         | 59,0      | 58,0 | 57,1 | 56,3 | 55,6 | ---  | 14,0      | 15,6 | 17,4 | 19,3 | 21,4 | ---  |
|      | 8         | 65,0      | 63,8 | 62,7 | 62,0 | 60,9 | ---  | 14,0      | 15,7 | 17,5 | 19,5 | 21,8 | ---  |
|      | 10        | 69,3      | 68,0 | 66,7 | 65,6 | 64,6 | ---  | 14,0      | 15,7 | 17,6 | 19,6 | 21,9 | ---  |
|      | 15        | 81,4      | 79,5 | 77,8 | 76,3 | 74,9 | ---  | 13,9      | 15,6 | 17,6 | 19,8 | 22,2 | ---  |
|      | 20        | 95,5      | 93,0 | 90,7 | 88,6 | 86,7 | 84,9 | 13,9      | 15,6 | 17,6 | 19,8 | 22,3 | 25,0 |

| Mod. | TAMB (°C) | PH kW     |       |       |      |      |      | PA (kW)   |      |      |      |      |      |
|------|-----------|-----------|-------|-------|------|------|------|-----------|------|------|------|------|------|
|      |           | TWUC (°C) |       |       |      |      |      | TWUC (°C) |      |      |      |      |      |
|      |           | 30        | 35    | 40    | 45   | 50   | 55   | 30        | 35   | 40   | 45   | 50   | 55   |
| 070  | -5        | 46,7      | 46,2  | 45,7  | 45,4 | ---  | ---  | 15,1      | 16,7 | 18,4 | 20,2 | ---  | ---  |
|      | 0         | 55,2      | 54,5  | 53,9  | 53,4 | 53   | ---  | 15,4      | 17,1 | 19   | 21   | 23,2 | ---  |
|      | 5         | 65,1      | 64,0  | 63,1  | 62,3 | 61,7 | ---  | 15,5      | 17,3 | 19,3 | 21,5 | 24   | ---  |
|      | 8         | 71,8      | 70,4  | 69,2  | 68,0 | 67,4 | ---  | 15,5      | 17,3 | 19,4 | 21,7 | 24,3 | ---  |
|      | 10        | 76,6      | 75,0  | 73,7  | 72,5 | 71,5 | ---  | 15,5      | 17,3 | 19,5 | 21,8 | 24,4 | ---  |
|      | 15        | 90,0      | 87,8  | 85,9  | 84,2 | 82,7 | ---  | 15,5      | 17,4 | 19,5 | 22,0 | 24,7 | ---  |
|      | 20        | 105,6     | 102,8 | 100,2 | 97,8 | 95,7 | 93,8 | 15,6      | 17,4 | 19,6 | 22,0 | 24,8 | 27,9 |

**TWUC:** Condenser Outlet water temperature (°C)  
**TAMB:** Ambient temperature dry bulb (°C)  
**PA:** Compressors input power (Kw)  
**PH:** Heating capacity (Kw)

**LDK / HP  
HEATING CAPACITY AND COMPRESSORS INPUT POWER**

| Mod. | TAMB (°C) | PH (kW)   |       |       |       |       |       | PA (kW)   |      |      |      |      |      |
|------|-----------|-----------|-------|-------|-------|-------|-------|-----------|------|------|------|------|------|
|      |           | TWUC (°C) |       |       |       |       |       | TWUC (°C) |      |      |      |      |      |
|      |           | 30        | 35    | 40    | 45    | 50    | 55    | 30        | 35   | 40   | 45   | 50   | 55   |
| 080  | -5        | 56,3      | 55,5  | 54,7  | 53,7  | ---   | ---   | 18,4      | 20,1 | 21,7 | 23,4 | ---  | ---  |
|      | 0         | 66,8      | 65,9  | 65,1  | 64,3  | 63,4  | ---   | 18,7      | 20,8 | 22,9 | 25,1 | 27,3 | ---  |
|      | 5         | 78,6      | 77,5  | 76,5  | 75,5  | 74,6  | ---   | 18,7      | 21,0 | 23,5 | 26,1 | 28,9 | ---  |
|      | 8         | 86,6      | 85,2  | 83,9  | 83,0  | 81,8  | ---   | 18,6      | 21,0 | 23,6 | 26,4 | 29,4 | ---  |
|      | 10        | 92,3      | 90,7  | 89,2  | 88,0  | 86,8  | ---   | 18,6      | 20,9 | 23,6 | 26,5 | 29,7 | ---  |
|      | 15        | 108,4     | 106,0 | 103,9 | 102,1 | 100,5 | ---   | 18,5      | 20,8 | 23,5 | 26,6 | 30,0 | ---  |
|      | 20        | 127,3     | 124,0 | 121,0 | 118,3 | 116,0 | 113,9 | 18,7      | 20,8 | 23,4 | 26,5 | 30,0 | 33,8 |

| Mod. | TAMB (°C) | PH (kW)   |       |       |       |       |       | PA (kW)   |      |      |      |      |      |
|------|-----------|-----------|-------|-------|-------|-------|-------|-----------|------|------|------|------|------|
|      |           | TWUC (°C) |       |       |       |       |       | TWUC (°C) |      |      |      |      |      |
|      |           | 30        | 35    | 40    | 45    | 50    | 55    | 30        | 35   | 40   | 45   | 50   | 55   |
| 090  | -5        | 64,7      | 64    | 63,5  | 63,2  | ---   | ---   | 21,1      | 23,5 | 26,3 | 29,3 | ---  | ---  |
|      | 0         | 76,5      | 75,5  | 74,6  | 73,9  | 73,4  | ---   | 21,3      | 23,8 | 26,7 | 29,8 | 33,4 | ---  |
|      | 5         | 90,4      | 88,8  | 87,4  | 86,2  | 85,3  | ---   | 21,4      | 24,0 | 26,9 | 30,2 | 33,9 | ---  |
|      | 8         | 99,8      | 97,8  | 96,0  | 95,0  | 93,2  | ---   | 21,4      | 24,0 | 27,0 | 30,3 | 34,1 | ---  |
|      | 10        | 106,5     | 104,3 | 102,3 | 100,5 | 98,9  | ---   | 21,5      | 24,1 | 27,0 | 30,4 | 34,2 | ---  |
|      | 15        | 125,4     | 122,4 | 119,6 | 117,1 | 114,8 | ---   | 21,5      | 24,1 | 27,1 | 30,5 | 34,4 | ---  |
|      | 20        | 147,3     | 143,4 | 139,8 | 136,4 | 133,2 | 130,3 | 21,7      | 24,3 | 27,2 | 30,6 | 34,5 | 39,0 |

| Mod. | TAMB (°C) | PH (kW)   |       |       |       |       |       | PA (kW)   |      |      |      |      |      |
|------|-----------|-----------|-------|-------|-------|-------|-------|-----------|------|------|------|------|------|
|      |           | TWUC (°C) |       |       |       |       |       | TWUC (°C) |      |      |      |      |      |
|      |           | 30        | 35    | 40    | 45    | 50    | 55    | 30        | 35   | 40   | 45   | 50   | 55   |
| 110  | -5        | 73,4      | 72,7  | 72,5  | 72,0  | ---   | ---   | 23,9      | 27   | 30,8 | 33,8 | ---  | ---  |
|      | 0         | 86,7      | 85,4  | 84,4  | 83,8  | 83,8  | ---   | 23,9      | 26,8 | 30,4 | 34,5 | 39,5 | ---  |
|      | 5         | 102,7     | 100,6 | 98,8  | 97,3  | 96,3  | ---   | 24,1      | 26,9 | 30,3 | 34,2 | 38,9 | ---  |
|      | 8         | 113,6     | 111,0 | 108,7 | 107,0 | 105,1 | ---   | 24,2      | 27,0 | 30,3 | 34,2 | 38,8 | ---  |
|      | 10        | 121,4     | 118,6 | 115,9 | 113,5 | 111,5 | ---   | 24,3      | 27,2 | 30,4 | 34,2 | 38,7 | ---  |
|      | 15        | 143,2     | 139,6 | 136,1 | 132,7 | 129,7 | ---   | 24,6      | 27,5 | 30,7 | 34,5 | 38,8 | ---  |
|      | 20        | 168,2     | 163,9 | 159,5 | 155,2 | 151,1 | 147,4 | 24,8      | 27,8 | 31,1 | 34,8 | 39,1 | 44,1 |

| Mod. | TAMB (°C) | PH (kW)   |       |       |       |       |       | PA (kW)   |      |      |      |      |      |
|------|-----------|-----------|-------|-------|-------|-------|-------|-----------|------|------|------|------|------|
|      |           | TWUC (°C) |       |       |       |       |       | TWUC (°C) |      |      |      |      |      |
|      |           | 30        | 35    | 40    | 45    | 50    | 55    | 30        | 35   | 40   | 45   | 50   | 55   |
| 120  | -5        | 82,2      | 81,2  | 80,7  | 80,0  | ---   | ---   | 26,8      | 30,3 | 34,5 | 38,2 | ---  | ---  |
|      | 0         | 97,9      | 96,1  | 94,7  | 93,9  | 93,7  | ---   | 26,8      | 30,2 | 34,2 | 38,9 | 44,4 | ---  |
|      | 5         | 116,6     | 113,8 | 111,5 | 109,6 | 108,3 | ---   | 27,0      | 30,3 | 34,1 | 38,6 | 43,9 | ---  |
|      | 8         | 129,3     | 126,0 | 123,0 | 120,0 | 118,5 | ---   | 27,2      | 30,4 | 34,2 | 38,5 | 43,7 | ---  |
|      | 10        | 138,5     | 134,8 | 131,3 | 128,3 | 125,8 | ---   | 27,3      | 30,5 | 34,2 | 38,6 | 43,7 | ---  |
|      | 15        | 164,1     | 159,3 | 154,7 | 150,4 | 146,7 | ---   | 27,7      | 30,8 | 34,5 | 38,7 | 43,7 | ---  |
|      | 20        | 193,7     | 187,7 | 181,8 | 176,3 | 171,1 | 166,5 | 28,1      | 31,2 | 34,8 | 39,0 | 43,8 | 49,4 |

| Mod. | TAMB (°C) | PH (kW)   |       |       |       |       |       | PA (kW)   |      |      |      |      |      |
|------|-----------|-----------|-------|-------|-------|-------|-------|-----------|------|------|------|------|------|
|      |           | TWUC (°C) |       |       |       |       |       | TWUC (°C) |      |      |      |      |      |
|      |           | 30        | 35    | 40    | 45    | 50    | 55    | 30        | 35   | 40   | 45   | 50   | 55   |
| 130  | -5        | 89,5      | 89,5  | 87,7  | 87,0  | ---   | ---   | 29,6      | 33,6 | 38,2 | 42,5 | ---  | ---  |
|      | 0         | 107,3     | 105,1 | 103,5 | 102,5 | 102,4 | ---   | 29,8      | 33,5 | 38   | 43,2 | 49,3 | ---  |
|      | 5         | 128,2     | 124,9 | 122,2 | 120,1 | 118,7 | ---   | 30,0      | 33,6 | 38,0 | 43   | 48,9 | ---  |
|      | 8         | 142,5     | 138,5 | 135,0 | 132,0 | 129,9 | ---   | 30,2      | 33,8 | 38,0 | 42,9 | 48,7 | ---  |
|      | 10        | 152,8     | 148,3 | 144,2 | 140,8 | 138,1 | ---   | 30,3      | 33,9 | 38,0 | 42,9 | 48,6 | ---  |
|      | 15        | 181,5     | 175,6 | 170,2 | 165,2 | 160,9 | ---   | 30,8      | 34,2 | 38,2 | 43,0 | 48,5 | ---  |
|      | 20        | 215,0     | 207,5 | 200,4 | 193,8 | 187,9 | 182,6 | 31,3      | 34,6 | 38,6 | 43,2 | 48,5 | 54,7 |

TWUC: Condenser Outlet water temperature (°C)  
TAMB: Ambient temperature dry bulb (°C)  
PA: Compressors input power (Kw)  
PH: Heating capacity (Kw)

**LDK / HP  
HEATING CAPACITY AND COMPRESSORS INPUT POWER**

| Mod. | TAMB (°C) | PH (kW)   |       |       |       |       |       | PA (kW)   |      |      |      |      |      |
|------|-----------|-----------|-------|-------|-------|-------|-------|-----------|------|------|------|------|------|
|      |           | TWUC (°C) |       |       |       |       |       | TWUC (°C) |      |      |      |      |      |
|      |           | 30        | 35    | 40    | 45    | 50    | 55    | 30        | 35   | 40   | 45   | 50   | 55   |
| 140  | -5        | 102,1     | 100,9 | 99,6  | 98,4  | ---   | ---   | 33,5      | 36,8 | 40,1 | 43,6 | ---  | ---  |
|      | 0         | 120,8     | 119,3 | 118   | 116,7 | 115,5 | ---   | 34,1      | 37,9 | 41,9 | 46,2 | 50,6 | ---  |
|      | 5         | 142,2     | 140,1 | 138,3 | 136,7 | 135,2 | ---   | 34,2      | 38,3 | 42,8 | 47,7 | 52,9 | ---  |
|      | 8         | 156,7     | 154,1 | 151,7 | 150,0 | 148   | ---   | 34,1      | 38,3 | 43,0 | 48,1 | 53,7 | ---  |
|      | 10        | 167,1     | 164,0 | 161,3 | 159,0 | 157,0 | ---   | 34,1      | 38,3 | 43,1 | 48,4 | 54,1 | ---  |
|      | 15        | 196,2     | 191,8 | 187,9 | 184,5 | 181,5 | ---   | 34,0      | 38,2 | 43,0 | 48,6 | 54,7 | ---  |
|      | 20        | 230,3     | 224,3 | 218,8 | 214,0 | 209,6 | 205,8 | 34,3      | 38,2 | 42,9 | 48,5 | 54,8 | 61,8 |

| Mod. | TAMB (°C) | PH (kW)   |       |       |       |       |       | PA (kW)   |      |      |      |      |      |
|------|-----------|-----------|-------|-------|-------|-------|-------|-----------|------|------|------|------|------|
|      |           | TWUC (°C) |       |       |       |       |       | TWUC (°C) |      |      |      |      |      |
|      |           | 30        | 35    | 40    | 45    | 50    | 55    | 30        | 35   | 40   | 45   | 50   | 55   |
| 160  | -5        | 112,0     | 110,5 | 108,8 | 106,9 | ---   | ---   | 36,7      | 40,1 | 43,5 | 46,7 | ---  | ---  |
|      | 0         | 132,6     | 131,0 | 129,4 | 127,8 | 126,1 | ---   | 37,4      | 41,6 | 45,9 | 50,3 | 54,7 | ---  |
|      | 5         | 156,1     | 153,9 | 152,0 | 150,1 | 148,4 | ---   | 37,4      | 42,0 | 47,0 | 52,3 | 57,8 | ---  |
|      | 8         | 171,9     | 169,2 | 166,8 | 165,0 | 162,6 | ---   | 37,3      | 42,0 | 47,2 | 52,8 | 58,9 | ---  |
|      | 10        | 183,3     | 180,1 | 177,3 | 174,8 | 172,6 | ---   | 37,1      | 41,9 | 47,2 | 53,1 | 59,4 | ---  |
|      | 15        | 215,1     | 210,5 | 206,4 | 202,8 | 199,6 | ---   | 37,0      | 41,6 | 47,0 | 53,2 | 60,0 | ---  |
|      | 20        | 252,7     | 246,1 | 240,2 | 235,0 | 230,5 | 226,4 | 37,4      | 41,6 | 46,8 | 52,9 | 59,9 | 67,7 |

| Mod. | TAMB (°C) | PH (kW)   |       |       |       |       |       | PA (kW)   |      |      |      |      |      |
|------|-----------|-----------|-------|-------|-------|-------|-------|-----------|------|------|------|------|------|
|      |           | TWUC (°C) |       |       |       |       |       | TWUC (°C) |      |      |      |      |      |
|      |           | 30        | 35    | 40    | 45    | 50    | 55    | 30        | 35   | 40   | 45   | 50   | 55   |
| 190  | -5        | 129,4     | 128   | 126,9 | 126,3 | ---   | ---   | 42,3      | 47,1 | 52,5 | 58,6 | ---  | ---  |
|      | 0         | 153,1     | 150,9 | 149,1 | 147,7 | 146,9 | ---   | 42,6      | 47,6 | 53,3 | 59,7 | 66,8 | ---  |
|      | 5         | 180,7     | 177,6 | 174,7 | 172,4 | 170,5 | ---   | 42,8      | 47,9 | 53,8 | 60,4 | 67,8 | ---  |
|      | 8         | 199,5     | 195,6 | 192,1 | 189,0 | 186,4 | ---   | 42,9      | 48,0 | 54,0 | 60,6 | 68,2 | ---  |
|      | 10        | 213,0     | 208,6 | 204,6 | 200,9 | 197,8 | ---   | 42,9      | 48,1 | 54,0 | 60,8 | 68,4 | ---  |
|      | 15        | 250,8     | 244,8 | 239,3 | 234,1 | 229,5 | ---   | 43,1      | 48,3 | 54,2 | 61,1 | 68,8 | ---  |
|      | 20        | 294,6     | 286,9 | 279,6 | 272,7 | 266,4 | 260,6 | 43,5      | 48,5 | 54,4 | 61,3 | 69,1 | 77,9 |

| Mod. | TAMB (°C) | PH (kW)   |       |       |       |       |       | PA (kW)   |      |      |      |      |      |
|------|-----------|-----------|-------|-------|-------|-------|-------|-----------|------|------|------|------|------|
|      |           | TWUC (°C) |       |       |       |       |       | TWUC (°C) |      |      |      |      |      |
|      |           | 30        | 35    | 40    | 45    | 50    | 55    | 30        | 35   | 40   | 45   | 50   | 55   |
| 210  | -5        | 149,4     | 148   | 147,4 | 146,0 | ---   | ---   | 47,8      | 54,1 | 61,5 | 70,5 | ---  | ---  |
|      | 0         | 176,9     | 174,0 | 171,7 | 170,3 | 170,1 | ---   | 47,8      | 53,7 | 60,7 | 69,1 | 79   | ---  |
|      | 5         | 209,6     | 205,2 | 201,3 | 198,0 | 195,7 | ---   | 48,1      | 53,8 | 60,6 | 68,5 | 77,8 | ---  |
|      | 8         | 232,0     | 226,6 | 221,7 | 217,0 | 213,8 | ---   | 48,5      | 54,1 | 60,7 | 68,4 | 77,5 | ---  |
|      | 10        | 248,1     | 242,1 | 236,5 | 231,4 | 227,0 | ---   | 48,7      | 54,3 | 60,8 | 68,5 | 77,5 | ---  |
|      | 15        | 292,8     | 285,3 | 277,9 | 270,8 | 264,4 | ---   | 49,2      | 54,9 | 61,4 | 68,9 | 77,7 | ---  |
|      | 20        | 344,3     | 335,1 | 326,0 | 316,9 | 308,4 | 300,4 | 49,6      | 55,5 | 62,1 | 69,6 | 78,2 | 88,1 |

TWUC: Condenser Outlet water temperature (°C)  
TAMB: Ambient temperature dry bulb (°C)  
PA: Compressors input power (Kw)  
PH: Heating capacity (Kw)

**LDK / HP  
HEATING CAPACITY AND COMPRESSORS INPUT POWER**

| Mod. | TAMB (°C) | PH kW     |       |       |       |       |       | PA (kW)   |      |      |      |      |      |
|------|-----------|-----------|-------|-------|-------|-------|-------|-----------|------|------|------|------|------|
|      |           | TWUC (°C) |       |       |       |       |       | TWUC (°C) |      |      |      |      |      |
|      |           | 30        | 35    | 40    | 45    | 50    | 55    | 30        | 35   | 40   | 45   | 50   | 55   |
| 240  | -5        | 165,3     | 163,3 | 162,2 | 160,5 | ---   | ---   | 53,5      | 60,6 | 69   | 78,8 | ---  | ---  |
|      | 0         | 197,1     | 193,4 | 190,5 | 188,8 | 188,4 | ---   | 53,7      | 60,4 | 68,4 | 77,8 | 88,8 | ---  |
|      | 5         | 234,8     | 229,2 | 224,3 | 220,5 | 217,8 | ---   | 54,1      | 60,6 | 68,2 | 77,3 | 87,8 | ---  |
|      | 8         | 260,5     | 253,7 | 247,6 | 242,0 | 238,3 | ---   | 54,4      | 60,8 | 68,3 | 77,1 | 87,5 | ---  |
|      | 10        | 279,0     | 271,4 | 264,4 | 258,3 | 253,2 | ---   | 54,7      | 61,0 | 68,5 | 77,2 | 87,3 | ---  |
|      | 15        | 330,7     | 320,8 | 311,5 | 302,9 | 295,2 | ---   | 55,4      | 61,7 | 68,9 | 77,4 | 87,3 | ---  |
|      | 20        | 390,4     | 378,2 | 366,3 | 355,0 | 344,6 | 335,1 | 56,1      | 62,4 | 69,6 | 78,0 | 87,6 | 98,8 |

| Mod. | TAMB (°C) | PH kW     |       |       |       |       |       | PA (kW)   |      |      |      |      |       |
|------|-----------|-----------|-------|-------|-------|-------|-------|-----------|------|------|------|------|-------|
|      |           | TWUC (°C) |       |       |       |       |       | TWUC (°C) |      |      |      |      |       |
|      |           | 30        | 35    | 40    | 45    | 50    | 55    | 30        | 35   | 40   | 45   | 50   | 55    |
| 260  | -5        | 181,2     | 178,5 | 177,1 | 175,5 | ---   | ---   | 59,3      | 67,1 | 76,4 | 87,4 | ---  | ---   |
|      | 0         | 217,3     | 212,7 | 209,3 | 207,2 | 206,7 | ---   | 59,5      | 67,1 | 76   | 86,5 | 98,6 | ---   |
|      | 5         | 259,9     | 253,1 | 247,4 | 242,9 | 239,9 | ---   | 60,0      | 67,3 | 75,9 | 86,0 | 97,8 | ---   |
|      | 8         | 289,0     | 280,7 | 273,5 | 267,0 | 262,7 | ---   | 60,4      | 67,5 | 76,0 | 85,0 | 97,4 | ---   |
|      | 10        | 310,0     | 300,7 | 292,3 | 285,1 | 279,3 | ---   | 60,7      | 67,7 | 76,1 | 85,8 | 97,2 | ---   |
|      | 15        | 368,5     | 356,4 | 345,1 | 334,9 | 326,0 | ---   | 61,6      | 68,4 | 76,5 | 85,9 | 97,0 | ---   |
|      | 20        | 436,5     | 421,2 | 406,7 | 393,1 | 380,8 | 369,8 | 62,7      | 69,3 | 77,1 | 86,3 | 97,0 | 109,4 |

**TWUC:** Condenser Outlet water temperature (°C)  
**TAMB:** Ambient temperature dry bulb (°C)  
**PA:** Compressors input power (Kw)  
**PH:** Heating capacity (Kw)

**LDK / CN  
COOLING CAPACITY AND COMPRESSORS INPUT POWER**

| Mod. | TEVP (°C) | PF (kW)   |      |      |      |      |      | PA (kW)   |      |      |      |      |      |
|------|-----------|-----------|------|------|------|------|------|-----------|------|------|------|------|------|
|      |           | TAMB (°C) |      |      |      |      |      | TAMB (°C) |      |      |      |      |      |
|      |           | 30        | 35   | 40   | 45   | 50   | 55   | 30        | 35   | 40   | 45   | 50   | 55   |
| 039  | 0         | 41,6      | 39,2 | 36,9 | 34,6 | 32,3 | 30,2 | 9,2       | 10,3 | 11,7 | 13,2 | 14,9 | 16,8 |
|      | 1         | 43,3      | 40,9 | 38,5 | 36,1 | 33,8 | 31,5 | 9,2       | 10,3 | 11,7 | 13,2 | 14,9 | 16,9 |
|      | 3         | 47,0      | 44,4 | 41,8 | 39,3 | 36,8 | 34,3 | 9,1       | 10,3 | 11,6 | 13,2 | 14,9 | 16,9 |
|      | 5         | 50,9      | 48,1 | 45,4 | 43,0 | 40,0 | 37,4 | 9,2       | 10,2 | 11,6 | 13,1 | 14,9 | 16,9 |
|      | 7         | 55,0      | 52,1 | 49,2 | 46,2 | 43,4 | 40,6 | 9,2       | 10,2 | 11,5 | 13,1 | 14,9 | 16,9 |
|      | 9         | 59,4      | 56,3 | 53,1 | 50,1 | 47,0 | 44,0 | 9,2       | 10,2 | 11,5 | 13,1 | 14,9 | 16,9 |

| Mod. | TEVP (°C) | PF (kW)   |      |      |      |      |      | PA (kW)   |      |      |      |      |      |
|------|-----------|-----------|------|------|------|------|------|-----------|------|------|------|------|------|
|      |           | TAMB (°C) |      |      |      |      |      | TAMB (°C) |      |      |      |      |      |
|      |           | 30        | 35   | 40   | 45   | 50   | 55   | 30        | 35   | 40   | 45   | 50   | 55   |
| 045  | 0         | 50,6      | 47,9 | 45,2 | 42,4 | 39,6 | 36,7 | 11,1      | 12,5 | 14,0 | 15,7 | 17,5 | 19,6 |
|      | 1         | 52,7      | 49,9 | 47,0 | 44,2 | 41,3 | 38,3 | 11,1      | 12,5 | 14,0 | 15,7 | 17,6 | 19,6 |
|      | 3         | 56,9      | 54,0 | 50,9 | 47,9 | 44,8 | 41,6 | 11,1      | 12,4 | 14,0 | 15,7 | 17,6 | 19,7 |
|      | 5         | 61,5      | 58,3 | 55,1 | 52,0 | 48,5 | 45,2 | 11,1      | 12,4 | 14,0 | 15,7 | 17,6 | 19,7 |
|      | 7         | 66,2      | 62,9 | 59,4 | 56,0 | 52,5 | 48,9 | 11,0      | 12,4 | 14,0 | 15,7 | 17,6 | 19,7 |
|      | 9         | 71,3      | 67,7 | 64,1 | 60,4 | 56,7 | 52,9 | 11,0      | 12,4 | 13,9 | 15,7 | 17,6 | 19,8 |

| Mod. | TEVP (°C) | PF (kW)   |      |      |      |      |      | PA (kW)   |      |      |      |      |      |
|------|-----------|-----------|------|------|------|------|------|-----------|------|------|------|------|------|
|      |           | TAMB (°C) |      |      |      |      |      | TAMB (°C) |      |      |      |      |      |
|      |           | 30        | 35   | 40   | 45   | 50   | 55   | 30        | 35   | 40   | 45   | 50   | 55   |
| 050  | 0         | 59,4      | 56,3 | 53,1 | 49,8 | 46,5 | 43,0 | 12,3      | 13,9 | 15,6 | 17,5 | 19,6 | 21,9 |
|      | 1         | 61,7      | 58,5 | 55,2 | 51,9 | 48,4 | 44,9 | 12,3      | 13,8 | 15,6 | 17,5 | 19,6 | 21,9 |
|      | 3         | 66,6      | 63,2 | 59,7 | 56,1 | 52,5 | 48,7 | 12,2      | 13,8 | 15,6 | 17,5 | 19,7 | 22,0 |
|      | 5         | 71,8      | 68,2 | 64,5 | 61,0 | 56,8 | 52,8 | 12,2      | 13,7 | 15,5 | 17,5 | 19,7 | 22,1 |
|      | 7         | 77,3      | 73,5 | 69,5 | 65,5 | 61,4 | 57,2 | 12,2      | 13,7 | 15,5 | 17,5 | 19,7 | 22,1 |
|      | 9         | 83,1      | 79,0 | 74,9 | 70,6 | 66,3 | 61,8 | 12,2      | 13,7 | 15,4 | 17,4 | 19,7 | 22,2 |

| Mod. | TEVP (°C) | PF (kW)   |      |      |      |      |      | PA (kW)   |      |      |      |      |      |
|------|-----------|-----------|------|------|------|------|------|-----------|------|------|------|------|------|
|      |           | TAMB (°C) |      |      |      |      |      | TAMB (°C) |      |      |      |      |      |
|      |           | 30        | 35   | 40   | 45   | 50   | 55   | 30        | 35   | 40   | 45   | 50   | 55   |
| 060  | 0         | 66,4      | 62,8 | 59,1 | 55,3 | 51,5 | 47,6 | 14,4      | 16,2 | 18,2 | 20,4 | 22,9 | 25,6 |
|      | 1         | 69,0      | 65,3 | 61,5 | 57,6 | 53,6 | 49,6 | 14,4      | 16,1 | 18,2 | 20,4 | 22,9 | 25,7 |
|      | 3         | 74,5      | 70,5 | 66,5 | 62,4 | 58,2 | 53,9 | 14,4      | 16,1 | 18,2 | 20,5 | 23,0 | 25,8 |
|      | 5         | 80,3      | 76,1 | 71,8 | 67,5 | 63,0 | 58,4 | 14,4      | 16,1 | 18,2 | 20,5 | 23,0 | 25,9 |
|      | 7         | 86,4      | 82,0 | 77,4 | 72,8 | 68,1 | 63,3 | 14,4      | 16,1 | 18,1 | 20,5 | 23,1 | 25,9 |
|      | 9         | 92,9      | 88,2 | 83,4 | 78,5 | 73,5 | 68,4 | 14,4      | 16,1 | 18,1 | 20,5 | 23,1 | 26,0 |

| Mod. | TEVP (°C) | PF (kW)   |      |      |      |      |      | PA (kW)   |      |      |      |      |      |
|------|-----------|-----------|------|------|------|------|------|-----------|------|------|------|------|------|
|      |           | TAMB (°C) |      |      |      |      |      | TAMB (°C) |      |      |      |      |      |
|      |           | 30        | 35   | 40   | 45   | 50   | 55   | 30        | 35   | 40   | 45   | 50   | 55   |
| 070  | 0         | 74,0      | 70,0 | 65,9 | 61,8 | 57,5 | 53,2 | 15,6      | 17,5 | 19,7 | 22,2 | 24,9 | 28,0 |
|      | 1         | 76,9      | 72,8 | 68,6 | 64,3 | 59,9 | 55,5 | 15,7      | 17,5 | 19,7 | 22,2 | 25,0 | 28,1 |
|      | 3         | 83,0      | 78,6 | 74,2 | 69,6 | 65,0 | 60,2 | 15,7      | 17,6 | 19,7 | 22,2 | 25,0 | 28,2 |
|      | 5         | 89,4      | 84,8 | 80,1 | 75,5 | 70,3 | 65,3 | 15,7      | 17,6 | 19,8 | 22,3 | 25,1 | 28,2 |
|      | 7         | 96,3      | 91,4 | 86,3 | 81,2 | 76,0 | 70,7 | 15,8      | 17,6 | 19,8 | 22,3 | 25,1 | 28,3 |
|      | 9         | 103,5     | 98,3 | 93,0 | 87,5 | 82,0 | 76,4 | 15,9      | 17,7 | 19,8 | 22,3 | 25,1 | 28,3 |

TEVP: Evaporation temperature (°C)  
TAMB: Ambient temperature dry bulb (°C)  
PA: Compressors input power (Kw)  
PF: Cooling capacity (Kw)

**LDK / CN  
COOLING CAPACITY AND COMPRESSORS INPUT POWER**

| Mod. | TEVP (°C) | PF (kW)   |       |       |       |      |      | PA (kW)   |      |      |      |      |      |
|------|-----------|-----------|-------|-------|-------|------|------|-----------|------|------|------|------|------|
|      |           | TAMB (°C) |       |       |       |      |      | TAMB (°C) |      |      |      |      |      |
|      |           | 30        | 35    | 40    | 45    | 50   | 55   | 30        | 35   | 40   | 45   | 50   | 55   |
| 080  | 0         | 88,0      | 83,3  | 78,4  | 73,5  | 68,4 | 63,2 | 19,3      | 21,8 | 24,7 | 27,9 | 31,4 | 35,2 |
|      | 1         | 91,5      | 86,6  | 81,6  | 76,5  | 71,3 | 65,9 | 19,3      | 21,8 | 24,6 | 27,9 | 31,4 | 35,2 |
|      | 3         | 98,7      | 93,5  | 88,2  | 82,8  | 77,3 | 71,6 | 19,3      | 21,7 | 24,6 | 27,8 | 31,4 | 35,4 |
|      | 5         | 106,4     | 100,9 | 95,3  | 90,0  | 83,6 | 77,6 | 19,4      | 21,7 | 24,5 | 27,8 | 31,4 | 35,5 |
|      | 7         | 114,6     | 108,7 | 102,8 | 96,7  | 90,4 | 84,0 | 19,6      | 21,8 | 24,5 | 27,7 | 31,4 | 35,5 |
|      | 9         | 123,2     | 117,0 | 110,7 | 104,2 | 97,6 | 90,9 | 19,8      | 21,8 | 24,5 | 27,7 | 31,3 | 35,5 |

| Mod. | TEVP (°C) | PF (kW)   |       |       |       |       |       | PA (kW)   |      |      |      |      |      |
|------|-----------|-----------|-------|-------|-------|-------|-------|-----------|------|------|------|------|------|
|      |           | TAMB (°C) |       |       |       |       |       | TAMB (°C) |      |      |      |      |      |
|      |           | 30        | 35    | 40    | 45    | 50    | 55    | 30        | 35   | 40   | 45   | 50   | 55   |
| 090  | 0         | 101,6     | 96,0  | 90,1  | 84,1  | 77,8  | 71,3  | 22,5      | 25,2 | 28,4 | 32,0 | 36,0 | 40,6 |
|      | 1         | 105,6     | 99,8  | 93,8  | 87,6  | 81,2  | 74,5  | 22,5      | 25,2 | 28,4 | 32,0 | 36,1 | 40,7 |
|      | 3         | 114,1     | 107,9 | 101,6 | 95,05 | 88,2  | 81,2  | 22,6      | 25,3 | 28,4 | 32,0 | 36,1 | 40,8 |
|      | 5         | 123,0     | 116,5 | 109,8 | 103,0 | 95,7  | 88,3  | 22,7      | 25,4 | 28,5 | 32,1 | 36,2 | 40,8 |
|      | 7         | 132,4     | 125,6 | 118,5 | 111,2 | 103,7 | 95,9  | 22,8      | 25,4 | 28,5 | 32,1 | 36,2 | 40,9 |
|      | 9         | 142,4     | 135,2 | 127,8 | 120,0 | 112,1 | 103,9 | 22,9      | 25,5 | 28,6 | 32,2 | 36,3 | 41,0 |

| Mod. | TEVP (°C) | PF (kW)   |       |       |       |       |       | PA (kW)   |      |      |      |      |      |
|------|-----------|-----------|-------|-------|-------|-------|-------|-----------|------|------|------|------|------|
|      |           | TAMB (°C) |       |       |       |       |       | TAMB (°C) |      |      |      |      |      |
|      |           | 30        | 35    | 40    | 45    | 50    | 55    | 30        | 35   | 40   | 45   | 50   | 55   |
| 110  | 0         | 118,5     | 112,1 | 105,3 | 98,2  | 90,8  | 83,2  | 24,6      | 27,4 | 30,7 | 34,4 | 38,8 | 43,8 |
|      | 1         | 123,2     | 116,6 | 109,7 | 102,4 | 94,8  | 87,0  | 24,6      | 27,5 | 30,7 | 34,5 | 38,8 | 43,9 |
|      | 3         | 133,0     | 126,1 | 118,7 | 111,1 | 103,1 | 94,9  | 24,7      | 27,6 | 30,9 | 34,6 | 38,9 | 43,9 |
|      | 5         | 143,4     | 136,1 | 128,4 | 120,5 | 112,0 | 103,3 | 24,7      | 27,7 | 31,0 | 34,9 | 39,1 | 44,0 |
|      | 7         | 154,4     | 146,7 | 138,6 | 130,1 | 121,3 | 112,2 | 24,8      | 27,8 | 31,2 | 34,9 | 39,2 | 44,2 |
|      | 9         | 166,0     | 157,8 | 149,3 | 140,5 | 131,2 | 121,7 | 24,8      | 27,9 | 31,3 | 35,1 | 39,4 | 44,3 |

| Mod. | TEVP (°C) | PF (kW)   |       |       |       |       |       | PA (kW)   |      |      |      |      |      |
|------|-----------|-----------|-------|-------|-------|-------|-------|-----------|------|------|------|------|------|
|      |           | TAMB (°C) |       |       |       |       |       | TAMB (°C) |      |      |      |      |      |
|      |           | 30        | 35    | 40    | 45    | 50    | 55    | 30        | 35   | 40   | 45   | 50   | 55   |
| 120  | 0         | 134,8     | 126,8 | 118,5 | 109,9 | 101,2 | 92,3  | 28,2      | 31,5 | 35,2 | 39,6 | 44,7 | 50,6 |
|      | 1         | 140,3     | 132,0 | 123,5 | 114,7 | 105,7 | 96,5  | 28,3      | 31,5 | 35,3 | 39,6 | 44,7 | 50,5 |
|      | 3         | 151,7     | 143,0 | 134,0 | 124,7 | 115,2 | 105,5 | 28,5      | 31,7 | 35,4 | 39,7 | 44,7 | 50,5 |
|      | 5         | 163,8     | 154,6 | 145,1 | 135,5 | 125,3 | 115,0 | 28,6      | 31,8 | 35,6 | 39,9 | 44,8 | 50,5 |
|      | 7         | 176,6     | 166,9 | 156,8 | 146,5 | 135,9 | 125,1 | 28,8      | 32,0 | 35,7 | 40,0 | 44,9 | 50,6 |
|      | 9         | 190,2     | 179,9 | 169,3 | 158,4 | 147,3 | 135,9 | 28,9      | 32,1 | 35,9 | 40,1 | 45,0 | 50,7 |

| Mod. | TEVP (°C) | PF (kW)   |       |       |       |       |       | PA (kW)   |      |      |      |      |      |
|------|-----------|-----------|-------|-------|-------|-------|-------|-----------|------|------|------|------|------|
|      |           | TAMB (°C) |       |       |       |       |       | TAMB (°C) |      |      |      |      |      |
|      |           | 30        | 35    | 40    | 45    | 50    | 55    | 30        | 35   | 40   | 45   | 50   | 55   |
| 130  | 0         | 147,0     | 137,6 | 128,0 | 118,3 | 108,5 | 98,5  | 32,0      | 35,7 | 40,0 | 45,0 | 50,9 | 57,6 |
|      | 1         | 153,1     | 143,4 | 133,6 | 123,6 | 113,4 | 103,1 | 32,1      | 35,8 | 40,0 | 45,0 | 50,9 | 57,5 |
|      | 3         | 165,8     | 155,6 | 145,1 | 134,5 | 123,7 | 112,9 | 32,3      | 35,9 | 40,1 | 45,1 | 50,8 | 57,4 |
|      | 5         | 179,3     | 168,4 | 157,4 | 146,0 | 134,7 | 123,2 | 32,5      | 36,1 | 40,3 | 45,2 | 50,8 | 57,4 |
|      | 7         | 193,6     | 182,1 | 170,4 | 158,5 | 146,4 | 134,2 | 32,8      | 36,3 | 40,4 | 45,2 | 50,9 | 57,3 |
|      | 9         | 208,7     | 196,5 | 184,1 | 171,6 | 158,8 | 145,9 | 33,0      | 36,5 | 40,6 | 45,4 | 50,9 | 57,3 |

TEVP: Evaporation temperature (°C)  
 TAMB: Ambient temperature dry bulb (°C)  
 PA: Compressors input power (Kw)  
 PF: Cooling capacity (Kw)

**LDK / CN  
COOLING CAPACITY AND COMPRESSORS INPUT POWER**

| Mod. | TEVP (°C) | PF (kW)   |       |       |       |       |       | PA (kW)   |      |      |      |      |      |
|------|-----------|-----------|-------|-------|-------|-------|-------|-----------|------|------|------|------|------|
|      |           | TAMB (°C) |       |       |       |       |       | TAMB (°C) |      |      |      |      |      |
|      |           | 30        | 35    | 40    | 45    | 50    | 55    | 30        | 35   | 40   | 45   | 50   | 55   |
| 140  | 0         | 158,7     | 150,1 | 141,3 | 132,3 | 123,1 | 113,7 | 35,5      | 40,0 | 45,1 | 50,9 | 57,2 | 64,2 |
|      | 1         | 165,0     | 156,1 | 147,0 | 137,7 | 128,2 | 118,6 | 35,6      | 40,0 | 45,1 | 50,9 | 57,3 | 64,3 |
|      | 3         | 178,1     | 168,7 | 159,0 | 149,1 | 139,0 | 128,7 | 35,6      | 40,0 | 45,1 | 50,9 | 57,4 | 64,6 |
|      | 5         | 192,0     | 182,0 | 171,7 | 161,5 | 150,5 | 139,6 | 35,7      | 40,0 | 45,0 | 50,9 | 57,4 | 64,7 |
|      | 7         | 206,7     | 196,0 | 185,2 | 174,1 | 162,7 | 151,1 | 35,9      | 40,0 | 45,0 | 50,8 | 57,4 | 64,8 |
|      | 9         | 222,2     | 211,0 | 199,4 | 187,7 | 175,6 | 163,4 | 36,2      | 40,2 | 45,0 | 50,8 | 57,4 | 64,9 |

| Mod. | TEVP (°C) | PF (kW)   |       |       |       |       |       | PA (kW)   |      |      |      |      |      |
|------|-----------|-----------|-------|-------|-------|-------|-------|-----------|------|------|------|------|------|
|      |           | TAMB (°C) |       |       |       |       |       | TAMB (°C) |      |      |      |      |      |
|      |           | 30        | 35    | 40    | 45    | 50    | 55    | 30        | 35   | 40   | 45   | 50   | 55   |
| 160  | 0         | 174,4     | 165,1 | 155,5 | 145,6 | 135,6 | 125,3 | 38,7      | 43,6 | 49,4 | 55,8 | 62,8 | 70,3 |
|      | 1         | 181,3     | 171,7 | 161,8 | 151,6 | 141,3 | 130,7 | 38,7      | 43,6 | 49,3 | 55,7 | 62,9 | 70,5 |
|      | 3         | 195,7     | 185,4 | 174,9 | 164,2 | 153,2 | 142,0 | 38,7      | 43,5 | 49,2 | 55,7 | 62,9 | 70,8 |
|      | 5         | 211,0     | 200,1 | 188,9 | 177,5 | 165,8 | 153,9 | 38,9      | 43,5 | 49,1 | 55,6 | 62,9 | 70,9 |
|      | 7         | 227,1     | 215,5 | 203,7 | 191,6 | 179,2 | 166,6 | 39,2      | 43,5 | 49,0 | 55,4 | 62,8 | 71,0 |
|      | 9         | 244,2     | 231,9 | 219,4 | 206,6 | 193,5 | 180,1 | 39,6      | 43,7 | 49,0 | 55,4 | 62,7 | 71,0 |

| Mod. | TEVP (°C) | PF (kW)   |       |       |       |       |       | PA (kW)   |      |      |      |      |      |
|------|-----------|-----------|-------|-------|-------|-------|-------|-----------|------|------|------|------|------|
|      |           | TAMB (°C) |       |       |       |       |       | TAMB (°C) |      |      |      |      |      |
|      |           | 30        | 35    | 40    | 45    | 50    | 55    | 30        | 35   | 40   | 45   | 50   | 55   |
| 190  | 0         | 206,5     | 195,4 | 183,8 | 171,8 | 159,4 | 146,6 | 43,5      | 48,8 | 54,8 | 61,7 | 69,6 | 78,4 |
|      | 1         | 214,7     | 203,2 | 191,3 | 179,0 | 166,3 | 153,1 | 43,6      | 48,8 | 54,9 | 61,8 | 69,6 | 78,5 |
|      | 3         | 231,7     | 219,6 | 207,1 | 194,0 | 180,6 | 166,7 | 43,7      | 48,9 | 54,9 | 61,9 | 69,8 | 78,7 |
|      | 5         | 249,8     | 237,0 | 223,7 | 210,0 | 195,8 | 181,2 | 43,9      | 49,8 | 55,9 | 62,0 | 69,9 | 78,8 |
|      | 7         | 268,9     | 255,4 | 241,4 | 226,9 | 211,9 | 196,5 | 44,1      | 49,2 | 55,2 | 62,1 | 70,0 | 78,9 |
|      | 9         | 289,1     | 274,8 | 260,1 | 244,8 | 229,1 | 212,8 | 44,4      | 49,4 | 55,3 | 62,2 | 70,1 | 79,1 |

| Mod. | TEVP (°C) | PF (kW)   |       |       |       |       |       | PA (kW)   |      |      |      |      |      |
|------|-----------|-----------|-------|-------|-------|-------|-------|-----------|------|------|------|------|------|
|      |           | TAMB (°C) |       |       |       |       |       | TAMB (°C) |      |      |      |      |      |
|      |           | 30        | 35    | 40    | 45    | 50    | 55    | 30        | 35   | 40   | 45   | 50   | 55   |
| 210  | 0         | 237,0     | 223,5 | 209,2 | 194,3 | 178,9 | 162,9 | 51,9      | 58,0 | 65,0 | 73,1 | 82,5 | 93,4 |
|      | 1         | 246,5     | 232,6 | 218,0 | 202,7 | 186,9 | 170,4 | 52,0      | 58,1 | 65,1 | 73,2 | 82,5 | 93,4 |
|      | 3         | 266,3     | 251,6 | 236,2 | 220,2 | 203,5 | 186,2 | 52,2      | 58,4 | 65,4 | 73,5 | 82,7 | 93,4 |
|      | 5         | 287,2     | 271,8 | 255,6 | 239,0 | 221,2 | 203,1 | 52,4      | 58,7 | 65,7 | 73,8 | 83,0 | 93,6 |
|      | 7         | 309,4     | 293,1 | 276,1 | 258,4 | 240,0 | 221,0 | 52,5      | 58,9 | 66,0 | 74,1 | 83,3 | 93,8 |
|      | 9         | 332,8     | 315,7 | 297,8 | 279,3 | 260,0 | 240,0 | 52,6      | 59,1 | 66,3 | 74,4 | 83,6 | 94,1 |

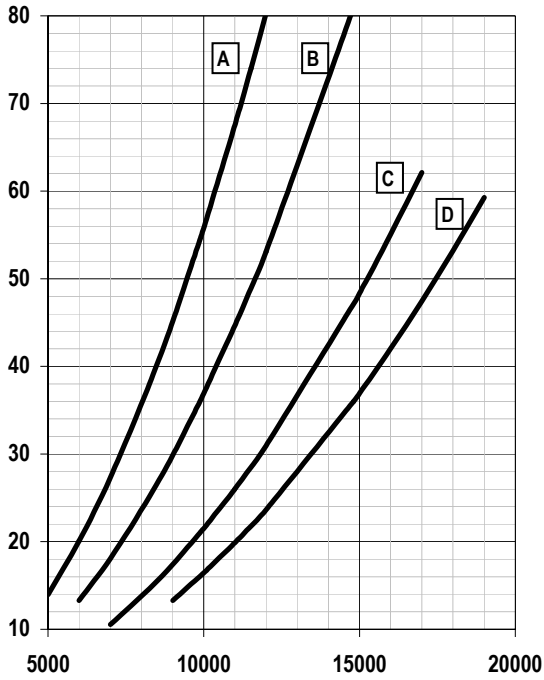
| Mod. | TEVP (°C) | PF (kW)   |       |       |       |       |       | PA (kW)   |      |      |      |      |       |
|------|-----------|-----------|-------|-------|-------|-------|-------|-----------|------|------|------|------|-------|
|      |           | TAMB (°C) |       |       |       |       |       | TAMB (°C) |      |      |      |      |       |
|      |           | 30        | 35    | 40    | 45    | 50    | 55    | 30        | 35   | 40   | 45   | 50   | 55    |
| 240  | 0         | 272,1     | 255,8 | 239,1 | 221,9 | 204,3 | 186,2 | 56,5      | 63,0 | 70,5 | 79,3 | 89,4 | 101,2 |
|      | 1         | 283,1     | 266,4 | 249,2 | 231,5 | 213,4 | 194,8 | 56,7      | 63,1 | 70,6 | 79,3 | 89,4 | 101,1 |
|      | 3         | 306,2     | 288,5 | 270,3 | 251,7 | 232,5 | 212,9 | 57,0      | 63,4 | 70,9 | 79,5 | 89,5 | 101,1 |
|      | 5         | 330,6     | 312,0 | 292,8 | 273,0 | 252,8 | 232,1 | 57,3      | 63,7 | 71,2 | 79,8 | 89,7 | 101,1 |
|      | 7         | 356,4     | 336,8 | 316,5 | 295,7 | 274,4 | 252,6 | 57,5      | 64,0 | 71,5 | 80,0 | 89,9 | 101,2 |
|      | 9         | 383,8     | 363,0 | 341,6 | 319,7 | 297,2 | 274,2 | 57,8      | 64,3 | 71,8 | 80,3 | 90,1 | 101,4 |

| Mod. | TEVP (°C) | PF (kW)   |       |       |       |       |       | PA (kW)   |      |      |      |       |       |
|------|-----------|-----------|-------|-------|-------|-------|-------|-----------|------|------|------|-------|-------|
|      |           | TAMB (°C) |       |       |       |       |       | TAMB (°C) |      |      |      |       |       |
|      |           | 30        | 35    | 40    | 45    | 50    | 55    | 30        | 35   | 40   | 45   | 50    | 55    |
| 260  | 0         | 299,4     | 280,2 | 260,7 | 241,0 | 220,9 | 200,6 | 64,1      | 71,4 | 80,0 | 90,1 | 101,8 | 115,2 |
|      | 1         | 311,8     | 292,0 | 272,0 | 251,6 | 230,9 | 210,1 | 64,3      | 71,6 | 80,7 | 90,1 | 101,7 | 115,1 |
|      | 3         | 337,7     | 316,8 | 295,5 | 273,9 | 252,0 | 229,9 | 64,7      | 71,9 | 80,3 | 90,2 | 101,7 | 114,9 |
|      | 5         | 365,1     | 343,0 | 320,4 | 297,5 | 274,4 | 250,9 | 65,1      | 72,2 | 80,6 | 90,4 | 101,7 | 114,8 |
|      | 7         | 394,1     | 370,7 | 346,9 | 322,7 | 298,2 | 273,3 | 65,6      | 72,6 | 80,9 | 90,5 | 101,8 | 114,7 |
|      | 9         | 424,9     | 400,1 | 374,9 | 349,3 | 323,4 | 297,2 | 66,1      | 73,1 | 81,2 | 90,8 | 101,9 | 114,6 |

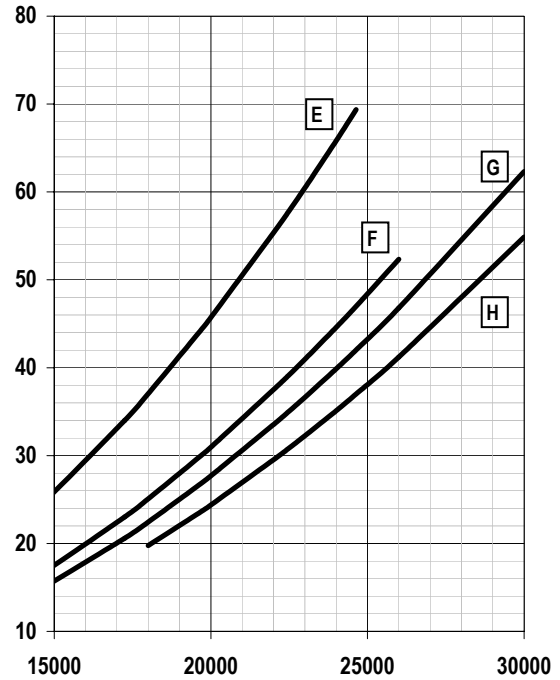
TEVP: Evaporation temperature (°C)  
PA: Compressors input power (Kw)

TAMB: Ambient temperature dry bulb (°C)  
PF: Cooling capacity (Kw)

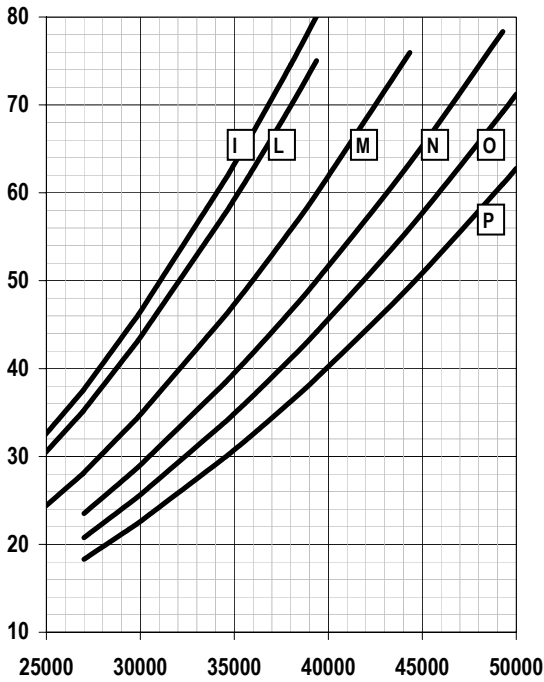
EVAPORATOR PRESSURE DROPS



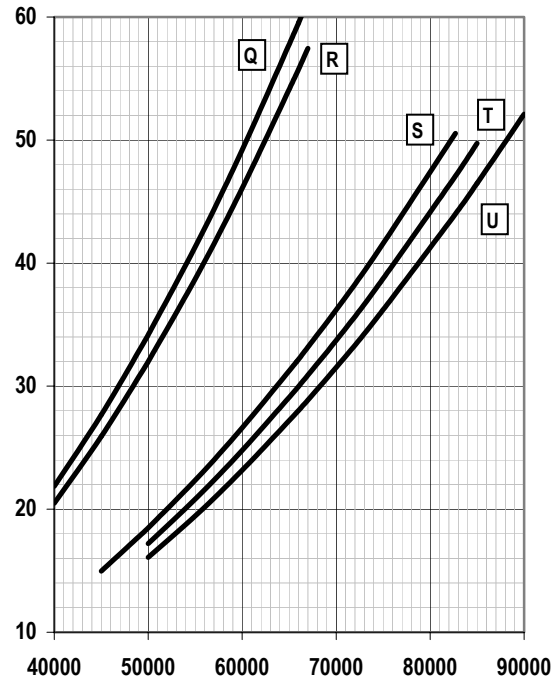
A: Ldk039-045 B: Ldk050  
C: Ldk060-070 D: Ldk080



E: Ldk090 F: Ldk110  
G: Ldk120 H: Ldk130

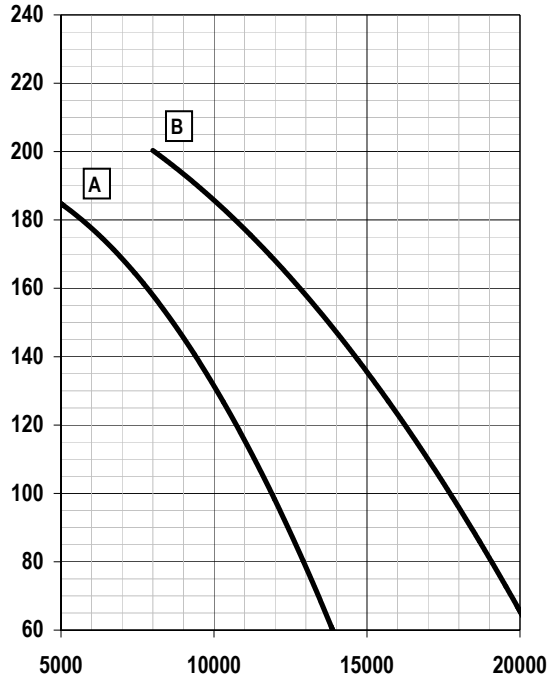


I: Ldk140 L: Ldk160 M: Ldk190  
N: Ldk210 O: Ldk240 P: Ldk260

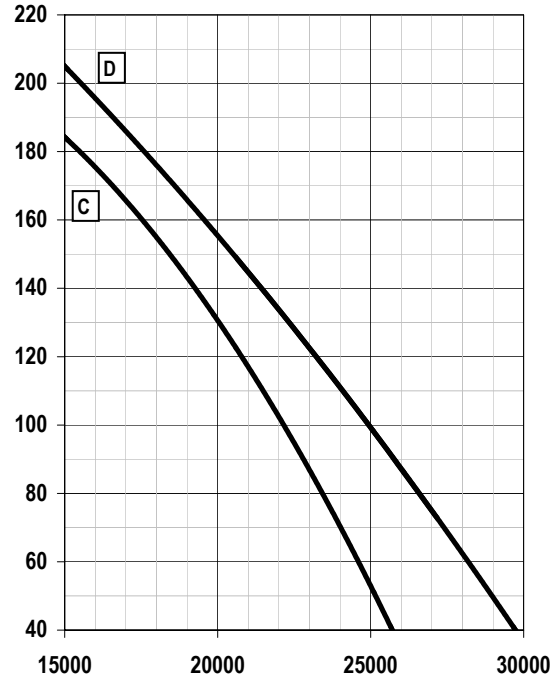


Q: Ldk300 R: Ldk320 S: Ldk380  
T: Ldk430 U: Ldk500

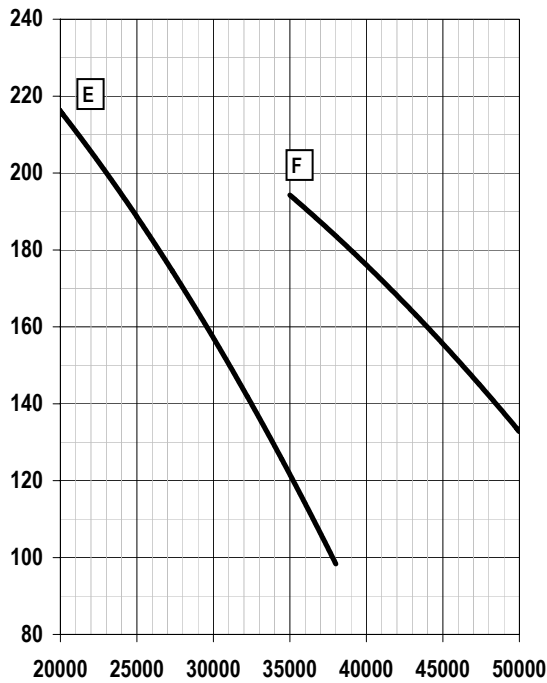
**WATER PUMPS AVAILABLE STATIC PRESSURE**



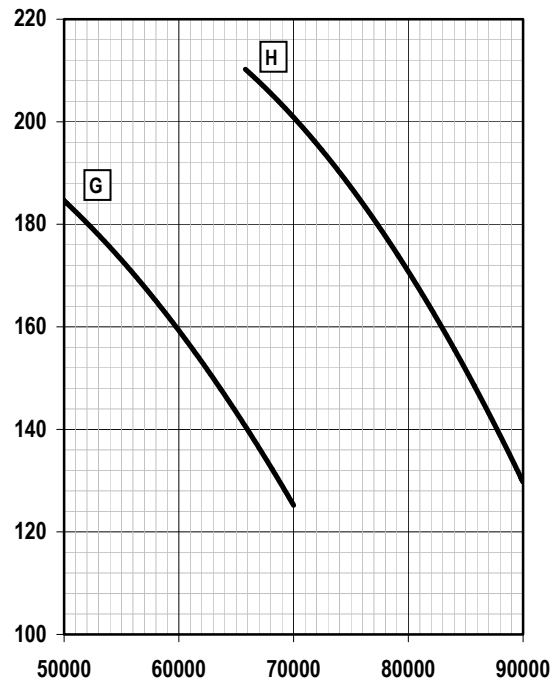
A: Ldk039,045,050,060,070  
B: Ldk080, 090



C: Ldk110, 120  
D: Ldk130, 140

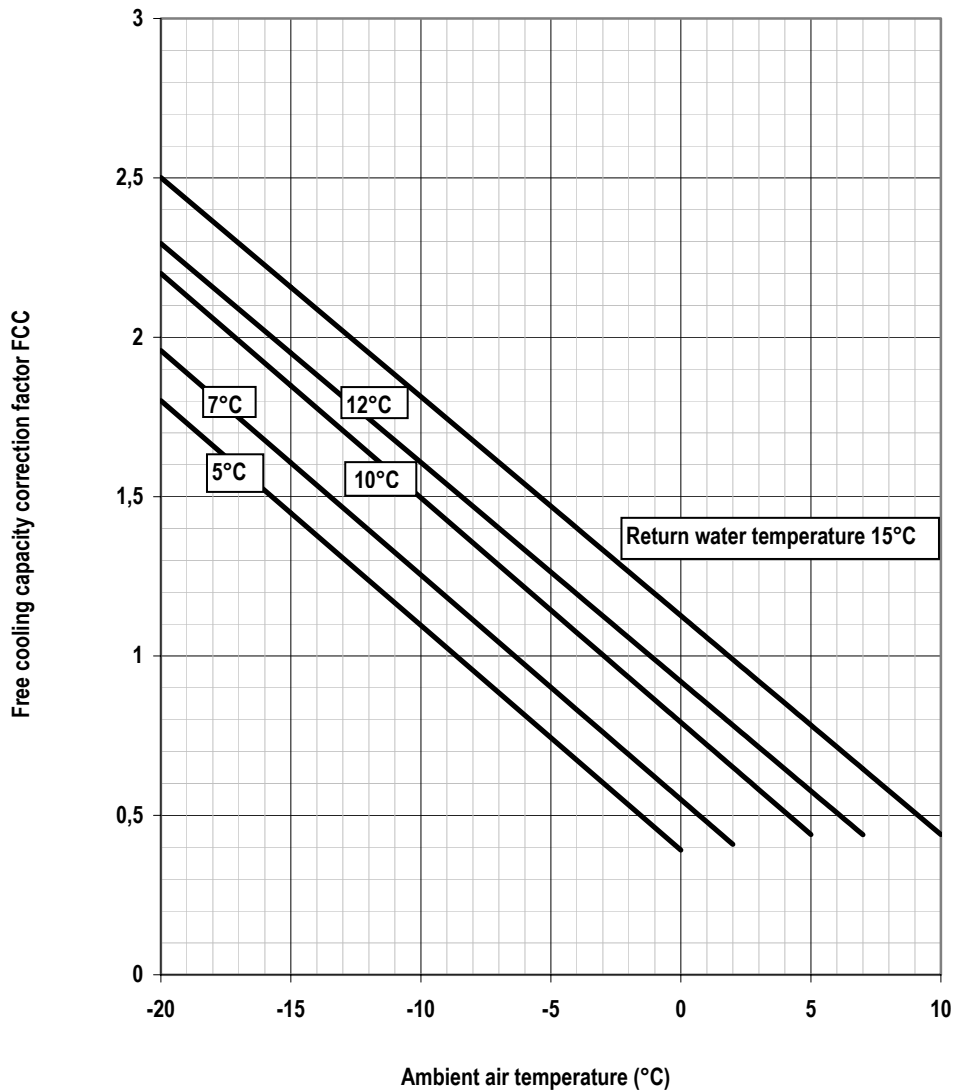


E: Ldk160,190,210  
F: Ldk 240, 260



G: Ldk300, 320  
H: Ldk380, 430, 500

FREE COOLING CAPACITY



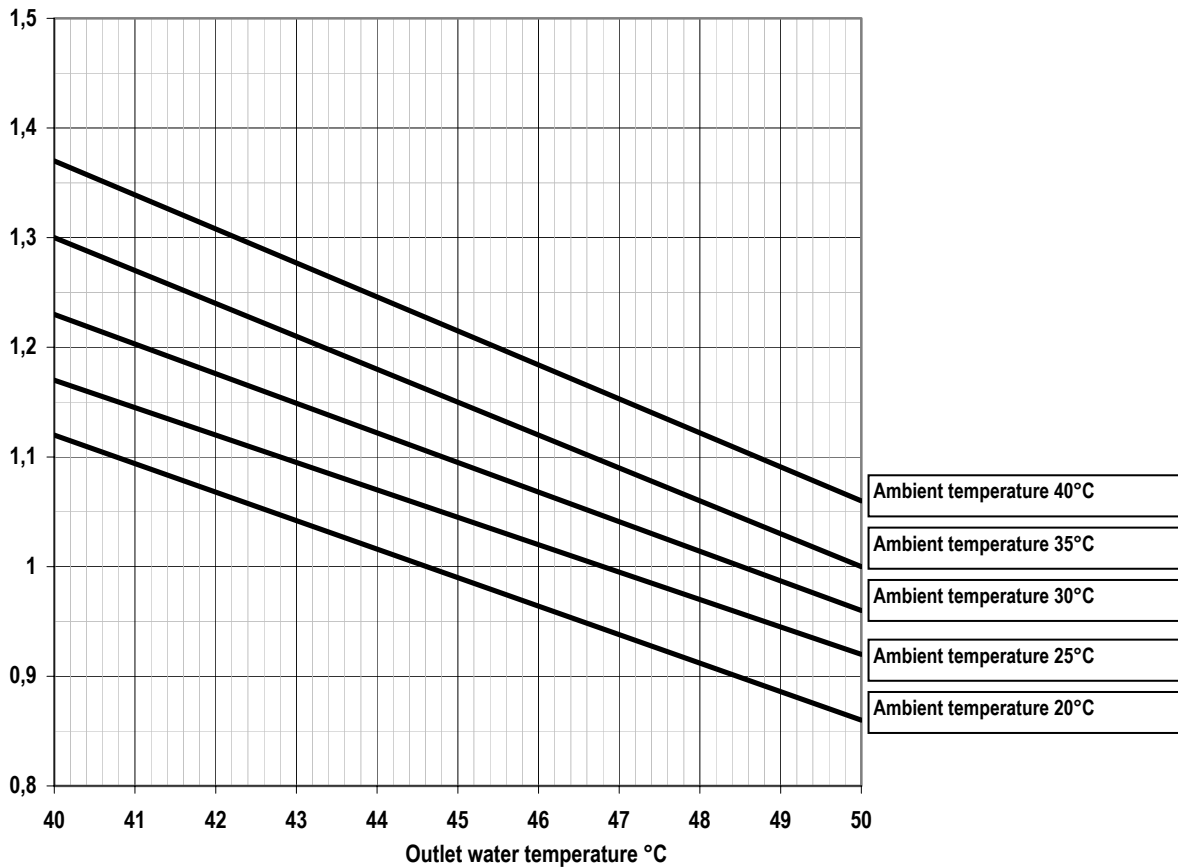
|                               |    |            |            |            |            |            |            |            |            |
|-------------------------------|----|------------|------------|------------|------------|------------|------------|------------|------------|
| <b>Mod.</b>                   |    | <b>039</b> | <b>045</b> | <b>050</b> | <b>060</b> | <b>070</b> | <b>080</b> | <b>090</b> | <b>110</b> |
| Nominal Free cooling capacity | kW | ---        | ---        | 43         | 43         | 43         | 45         | 70         | 72         |
| <b>Mod.</b>                   |    | <b>120</b> | <b>130</b> | <b>140</b> | <b>160</b> | <b>190</b> | <b>210</b> | <b>240</b> | <b>260</b> |
| Nominal Free cooling capacity | kW | 72         | 72         | 94         | 94         | 110        | 115        | 135        | 135        |
| <b>Mod.</b>                   |    | <b>300</b> | <b>320</b> | <b>380</b> | <b>430</b> | <b>500</b> |            |            |            |
| Nominal Free cooling capacity | kW | 185        | 185        | 235        | 245        | 240        |            |            |            |

The nominal Free Cooling capacity is obtained when all compressors are OFF, the return water temperature from the system is 15°C and the ambient temperature is 2°C. To calculate the free cooling capacity in different conditions please refer to the above diagram. The FCC factor obtained by the diagram has to be multiplied by the nominal Free cooling capacity reported in the table.

**PARTIAL HEAT RECOVERY CAPACITY**

| Mod.                                   |     | 039   | 045   | 050   | 060   | 070   | 080  | 090  | 110   |
|--|-----|-------|-------|-------|-------|-------|------|------|-------|
| Partial heat recovery nominal capacity | kW  | 9,5   | 12,8  | 13,0  | 15,0  | 15,3  | 18,5 | 21,5 | 24,8  |
| Water flow                             | l/h | 1635  | 2200  | 2240  | 2580  | 2630  | 3190 | 3700 | 4270  |
| Water pressure drops                   | kPa | 10    | 14    | 11    | 15    | 16    | 18   | 11   | 15    |
| Mod.                                   |     | 120   | 130   | 140   | 160   | 190   | 210  | 240  | 260   |
| Partial heat recovery nominal capacity | kW  | 27,5  | 30,0  | 34,0  | 37,0  | 43,0  | 49,0 | 55,0 | 61,5  |
| Water flow                             | l/h | 4730  | 5160  | 5850  | 6360  | 7400  | 8430 | 9460 | 10570 |
| Water pressure drops                   | kPa | 13    | 18    | 18    | 25    | 11    | 15   | 19   | 25    |
| Mod.                                   |     | 300   | 320   | 380   | 430   | 500   |      |      |       |
| Partial heat recovery nominal capacity | kW  | 69,0  | 76,0  | 91,5  | 102,8 | 114   |      |      |       |
| Water flow                             | l/h | 11850 | 13000 | 15750 | 17700 | 19600 |      |      |       |
| Water pressure drops                   | kPa | 20    | 25    | 25    | 29    | 35    |      |      |       |

The nominal value refers to an ambient temperature 35°C and outlet water temperature 50°C (Dt 5°C).

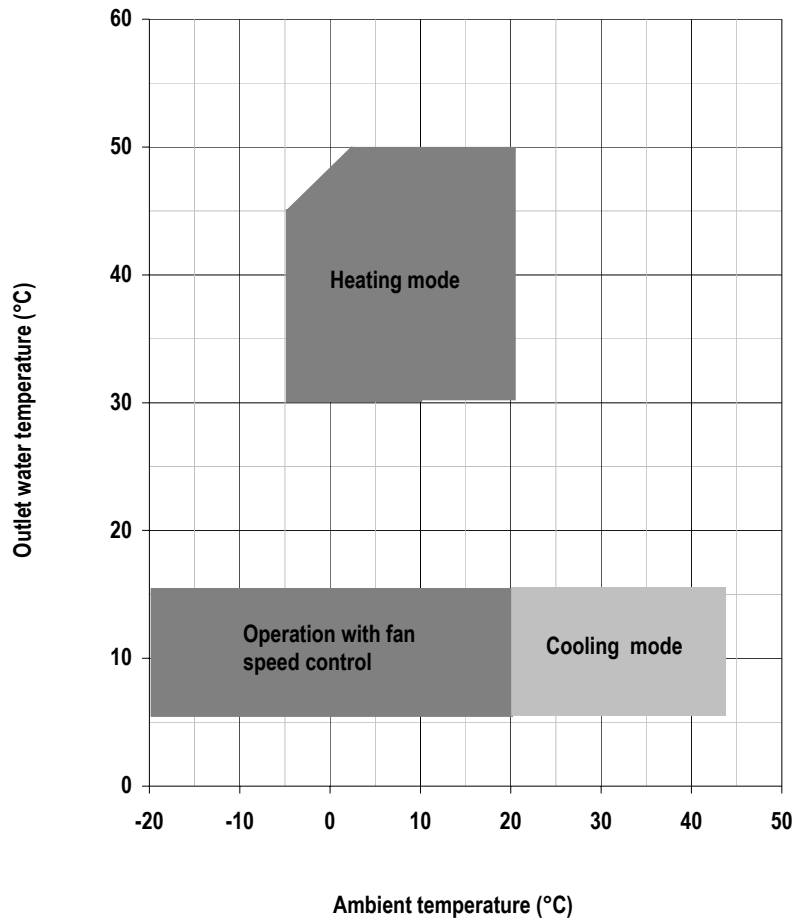


The heat recovery capacity in different conditions can be obtained multiplying the nominal capacity (See above), by the correction factor indicated in the table.



**WARNING:** Partial heat recovery can only operates in cooling mode; in case of heat pump version in heating mode it is necessary to isolate the heat recovery, otherwise the unit can be damaged. The warranty will not be valid in case the heat recovery is not isolated.

**OPERATION LIMITS**



**Evaporator water flow rate**

The nominal water flow rate given by HIDROS is referred to a Dt of 5 °C. Maximum flow rate allowed is the one that presents a Dt of 3 °C: higher values may cause too high pressure drop. The minimum water flow rate allowed is the one presenting a Dt of 8 °C. Insufficient values cause too low evaporating temperatures with the action of safety devices which would stop the unit.

**Chilled water temperature (summer operation)**

The minimum temperature allowed at the evaporator outlet is 5 °C. To work below this limit, the unit should need some structural modifications. In this case contact our company. The maximum temperature allowed at the evaporator inlet is 20 °C.

**Hot water temperature (winter operation)**

Once the system is on temperature, water temperature at the condenser inlet does not have to be less than 25 °C: lower values could cause incorrect working operation of the compressor and compressor failure may occur. The maximum water temperature at the condenser outlet does not have to exceed 50 °C.

**Ambient air temperature**

The units are designed and manufactured to operate, in cooling, with ambient air temperature included in range of 20 to 43 °C. If a fan speed control is installed then the minimum ambient air temperature is -20°C. In winter operation (heat pump cycle) from -5°C to 20°C.

**COMPRESSORS CAPACITY STEP CONTROLS**

| Mod. | Number of compressors |        |        |        |        |        |
|------|-----------------------|--------|--------|--------|--------|--------|
|      | 1                     | 2      | 3      | 4      | 5      | 6      |
| 039  | 50%                   | 50%    |        |        |        |        |
| 045  | 50%                   | 50%    |        |        |        |        |
| 050  | 50%                   | 50%    |        |        |        |        |
| 060  | 44%                   | 56%    |        |        |        |        |
| 070  | 50%                   | 50%    |        |        |        |        |
| 080  | 50%                   | 50%    |        |        |        |        |
| 090  | 43%                   | 57%    |        |        |        |        |
| 110  | 50%                   | 50%    |        |        |        |        |
| 120  | 45%                   | 55%    |        |        |        |        |
| 130  | 50%                   | 50%    |        |        |        |        |
| 140  | 22,5%                 | 22,5%  | 27,5%  | 27,5%  |        |        |
| 160  | 25%                   | 25%    | 25%    | 25%    |        |        |
| 190  | 21,5%                 | 21,5%  | 28,5%  | 28,5%  |        |        |
| 210  | 25%                   | 25%    | 25%    | 25%    |        |        |
| 240  | 22,5%                 | 22,5%  | 27,5%  | 27,5%  |        |        |
| 260  | 25%                   | 25%    | 25%    | 25%    |        |        |
| 300  | 22%                   | 22%    | 28%    | 28%    |        |        |
| 320  | 25%                   | 25%    | 25%    | 25%    |        |        |
| 380  | 16,66%                | 16,66% | 16,66% | 16,66% | 16,66% | 16,66% |
| 430  | 14,66%                | 14,66% | 14,66% | 18,66% | 18,66% | 18,66% |
| 500  | 16,66%                | 16,66% | 16,66% | 16,66% | 16,66% | 16,66% |

**CORRECTION TABLES Operation with glycol**

| Glicol percentage | Freezing point (°C) | CCF   | IPCF  | WFCF | PDCF |
|-------------------|---------------------|-------|-------|------|------|
| 10                | -3,2                | 0,985 | 1     | 1,02 | 1,08 |
| 20                | -7,8                | 0,98  | 0,99  | 1,05 | 1,12 |
| 30                | -14,1               | 0,97  | 0,98  | 1,09 | 1,22 |
| 40                | -22,3               | 0,965 | 0,97  | 1,14 | 1,25 |
| 50                | -33,8               | 0,955 | 0,965 | 1,2  | 1,33 |

- CCF:** Capacity correction factor
- IPCF:** Input power correction factor
- WFCF:** Water flow correction factor
- PDCF:** Pressure drops correction factor.

The water flow rate and pressure drop correction factors are to be applied directly to the values given for operation without glycol. The water flow rate correction factor is calculated in order to maintain the same temperature difference as that which would be obtained without glycol. The pressure drop correction factor takes into account the different flow rate obtained from the application of the flow rate correction factor.

**CORRECTION TABLES Different Fouling factors**

| Fouling factor | 0,00005 | 0,0001 | 0,0002 |
|----------------|---------|--------|--------|
| CCCP           | 1       | 0,98   | 0,94   |
| IPCF           | 1       | 0,98   | 0,95   |

- CCF =** Cooling capacity correction factor.
- IPCF =** Input power correction factor.

SOUND DATA

| SOUND LEVELS LOW NOISE VERSION |                   |      |      |      |      |      |      |      |       |       |       |
|--------------------------------|-------------------|------|------|------|------|------|------|------|-------|-------|-------|
| Mod.                           | Octave bands (Hz) |      |      |      |      |      |      |      | Lw    |       | Lp    |
|                                | 63                | 125  | 250  | 500  | 1K   | 2K   | 4K   | 8K   | dB    | dB(A) | dB(A) |
|                                | dB                | dB   | dB   | dB   | dB   | dB   | dB   | dB   |       |       |       |
| 039/LS                         | 90,1              | 81,3 | 75,2 | 73,7 | 72,6 | 67,2 | 63,8 | 54,7 | 90,9  | 77,0  | 49    |
| 045/LS                         | 90,1              | 81,3 | 75,2 | 73,7 | 72,6 | 67,2 | 63,8 | 54,7 | 90,9  | 77,0  | 49    |
| 050/LS                         | 92,1              | 83,3 | 77,2 | 75,7 | 74,6 | 69,2 | 65,8 | 56,7 | 92,9  | 79,0  | 51    |
| 060/LS                         | 92,1              | 83,3 | 77,2 | 75,7 | 74,6 | 69,2 | 65,8 | 56,7 | 92,9  | 79,0  | 51    |
| 070/LS                         | 93,1              | 84,3 | 78,2 | 76,7 | 75,6 | 70,2 | 66,8 | 57,7 | 93,9  | 80,0  | 52    |
| 080/LS                         | 93,1              | 84,3 | 78,2 | 76,7 | 75,6 | 70,2 | 66,8 | 57,7 | 93,9  | 80,0  | 52    |
| 090/LS                         | 95,1              | 86,3 | 80,2 | 78,7 | 77,6 | 72,2 | 68,8 | 59,7 | 95,9  | 82,0  | 54    |
| 110/LS                         | 95,6              | 86,8 | 80,7 | 79,2 | 78,1 | 72,7 | 69,3 | 60,2 | 96,4  | 82,5  | 54,5  |
| 120/LS                         | 96,0              | 87,2 | 81,1 | 79,6 | 78,5 | 73,1 | 69,7 | 60,6 | 96,8  | 82,9  | 54,9  |
| 130/LS                         | 96,2              | 87,4 | 81,3 | 79,8 | 78,7 | 73,3 | 69,9 | 60,8 | 97,0  | 83,1  | 55,1  |
| 140/LS                         | 96,6              | 87,8 | 81,7 | 80,2 | 79,1 | 73,7 | 70,3 | 61,2 | 97,4  | 83,5  | 55,5  |
| 160/LS                         | 97,1              | 88,3 | 82,2 | 80,7 | 79,6 | 74,2 | 70,8 | 61,7 | 98,0  | 84,0  | 56    |
| 190/LS                         | 99,1              | 90,3 | 84,2 | 82,7 | 81,6 | 76,2 | 72,8 | 63,7 | 99,9  | 86,0  | 58    |
| 210/LS                         | 99,1              | 90,3 | 84,2 | 82,7 | 81,6 | 76,2 | 72,8 | 63,7 | 99,9  | 86,0  | 58    |
| 240/LS                         | 102,1             | 93,3 | 87,2 | 85,7 | 84,6 | 79,2 | 75,8 | 66,7 | 102,9 | 89,0  | 61    |
| 260/LS                         | 102,1             | 93,3 | 87,2 | 85,7 | 84,6 | 79,2 | 75,8 | 66,7 | 102,9 | 89,0  | 61    |
| 300/LS                         | 103,1             | 94,3 | 88,2 | 86,7 | 85,6 | 80,2 | 76,8 | 67,7 | 103,9 | 90,0  | 62    |
| 320/LS                         | 103,1             | 94,3 | 88,2 | 86,7 | 85,6 | 80,2 | 76,8 | 67,7 | 103,9 | 90,0  | 62    |
| 380/LS                         | 104,1             | 95,3 | 89,2 | 87,7 | 86,6 | 81,2 | 77,8 | 68,7 | 104,9 | 91,0  | 63    |
| 430/LS                         | 104,1             | 95,3 | 89,2 | 87,7 | 86,6 | 81,2 | 77,8 | 68,7 | 104,9 | 91,0  | 63    |
| 500/LS                         | 104,1             | 95,3 | 89,2 | 87,7 | 86,6 | 81,2 | 77,8 | 68,7 | 104,9 | 91,0  | 63    |

| SOUND LEVELS EXTRA LOW NOISE VERSION |                   |      |      |      |      |      |      |      |      |       |       |
|--------------------------------------|-------------------|------|------|------|------|------|------|------|------|-------|-------|
| Mod.                                 | Octave bands (Hz) |      |      |      |      |      |      |      | Lw   |       | Lp    |
|                                      | 63                | 125  | 250  | 500  | 1K   | 2K   | 4K   | 8K   | Db   | dB(A) | dB(A) |
|                                      | dB                | dB   | dB   | dB   | dB   | dB   | dB   | dB   |      |       |       |
| 039/XL                               | Not available     |      |      |      |      |      |      |      |      |       |       |
| 045/XL                               | Not available     |      |      |      |      |      |      |      |      |       |       |
| 050/XL                               | 89,1              | 80,3 | 74,2 | 72,7 | 71,6 | 66,2 | 62,8 | 53,7 | 89,9 | 76,0  | 48    |
| 060/XL                               | 89,1              | 80,3 | 74,2 | 72,7 | 71,6 | 66,2 | 62,8 | 53,7 | 89,9 | 76,0  | 48    |
| 070/XL                               | 91,1              | 82,3 | 76,2 | 74,7 | 73,6 | 68,2 | 64,8 | 55,7 | 91,9 | 78,0  | 50    |
| 080/XL                               | 91,1              | 82,3 | 76,2 | 74,7 | 73,6 | 68,2 | 64,8 | 55,7 | 91,9 | 78,0  | 50    |
| 090/XL                               | 92,6              | 83,8 | 77,7 | 76,2 | 75,1 | 69,7 | 66,3 | 57,2 | 93,4 | 79,5  | 51,5  |
| 110/XL                               | 93,0              | 84,2 | 78,1 | 76,6 | 75,5 | 70,1 | 66,7 | 57,6 | 93,8 | 79,9  | 51,9  |
| 120/XL                               | 93,2              | 84,4 | 78,3 | 76,8 | 75,7 | 70,3 | 66,9 | 57,8 | 94,0 | 80,1  | 52,1  |
| 130/XL                               | 93,6              | 84,8 | 78,7 | 77,2 | 76,1 | 70,7 | 67,3 | 58,2 | 94,4 | 80,5  | 52,5  |
| 140/XL                               | 94,1              | 85,3 | 79,2 | 77,7 | 76,6 | 71,2 | 67,8 | 58,7 | 95,0 | 81,0  | 53    |
| 160/XL                               | 94,4              | 85,6 | 79,5 | 78,0 | 76,9 | 71,5 | 68,1 | 59,0 | 95,3 | 81,3  | 53,3  |
| 190/XL                               | 97,1              | 88,3 | 82,2 | 80,7 | 79,6 | 74,2 | 70,8 | 61,7 | 98,0 | 84,0  | 56    |
| 210/XL                               | 97,1              | 88,3 | 82,2 | 80,7 | 79,6 | 74,2 | 70,8 | 61,7 | 98,0 | 84,0  | 56    |
| 240/XL                               | Not available     |      |      |      |      |      |      |      |      |       |       |
| 260/XL                               | Not available     |      |      |      |      |      |      |      |      |       |       |
| 300/XL                               | Not available     |      |      |      |      |      |      |      |      |       |       |
| 320/XL                               | Not available     |      |      |      |      |      |      |      |      |       |       |
| 380/XL                               | Not available     |      |      |      |      |      |      |      |      |       |       |
| 430/XL                               | Not available     |      |      |      |      |      |      |      |      |       |       |
| 500/XL                               | Not available     |      |      |      |      |      |      |      |      |       |       |

Lw: Sound power level according to ISO 3746.

Lp: Sound pressure level measured at 10 mt from the unit in free field conditions direction factor Q=2 according to ISO 3746.

### SAFETY DEVICE SETTING

| Device                        |     | Capacity Steps |              | Capacity steps |              | Reset Type |
|-------------------------------|-----|----------------|--------------|----------------|--------------|------------|
|                               |     | 2              |              | 4              |              |            |
|                               |     | Set-point      | Differential | Set point      | Differential |            |
| Control thermostat (summer)   | °C  | 10             | 2            | 9              | 3            | ...        |
| Control thermostat (winter)   | °C  | 42             | 2            | 43             | 3            | ...        |
| Anti-freeze thermostat        | °C  | 4              | 6            | 4              | 6            | MANUAL     |
| Electric heater thermostat    | °C  | 4              | 6            | 4              | 6            | MANUAL     |
| High pressure switch          | Bar | 28             | 7            | 28             | 7            | MANUAL     |
| Low pressure switch           | Bar | 0,7            | 1            | 0,7            | 1            | MANUAL     |
| Water safety valve (Optional) | Bar | 6              | ...          | 6              | ...          | ...        |

### ELECTRIC DATA

|                   |         |              |                   |         |              |
|-------------------|---------|--------------|-------------------|---------|--------------|
| Power supply      | V/~ /Hz | 400 / 3 / 50 | Control board     | V/~ /Hz | 24 / 1 / 50  |
| Auxiliary circuit | V/~ /Hz | 230 / 1 / 50 | Fans power supply | V/~ /Hz | 400 / 3 / 50 |

Electric data may change for updating. It is therefore necessary to refer always to the wiring diagram inside the units.



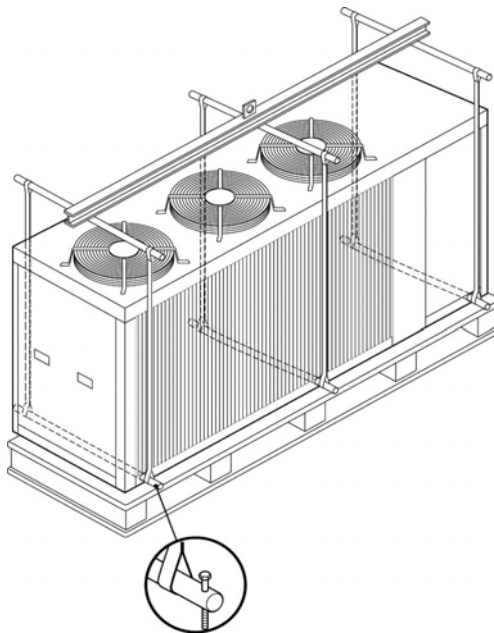
**WARNING: All this operation described in next chapters MUST BE DONE BY TRAINED PEOPLE ONLY. Before every operation of servicing on the unit, be sure that the electric supply is disconnected.**

### INSPECTION

When installing or servicing the unit, it is necessary to strictly follow the rules reported on this manual, to conform to all the specifications of the labels on the unit, and to take any possible precautions of the case. Not observing the rules reported on this manual can create dangerous situations. After receiving the unit, immediately check its integrity. The unit left the factory in perfect condition; any eventual damage must be questioned to the carrier and recorded on the Delivery Note before it is signed. HIDROS must be informed, within 8 days, of the extent of the damage. The Customer should prepare a written statement of any severe damage.

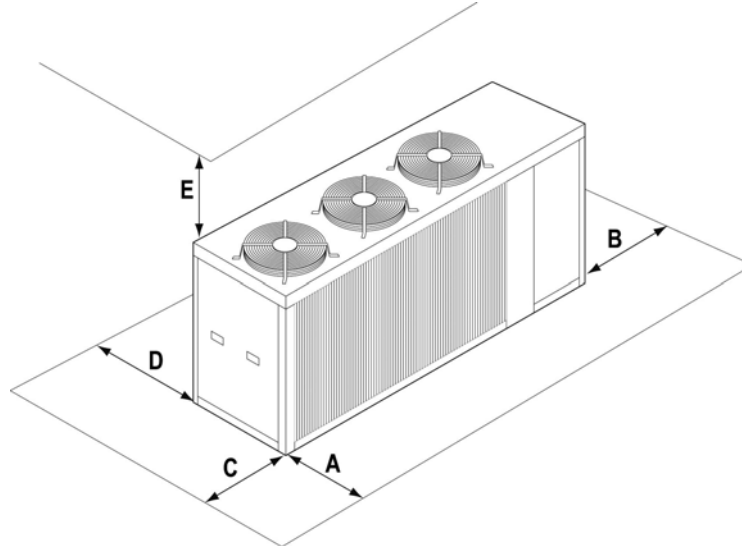
### LIFTING AND HANDLING

When unloading the unit, it is highly recommended to avoid any sudden move in order to protect refrigerant circuit, copper tubes or any other unit component. Units can be lifted by using a forklift or, in alternative, using belts, being sure that the method of lifting does not damage the lateral panels and the cover. It is important to keep the unit horizontal at all time to avoid damages to the internal components.

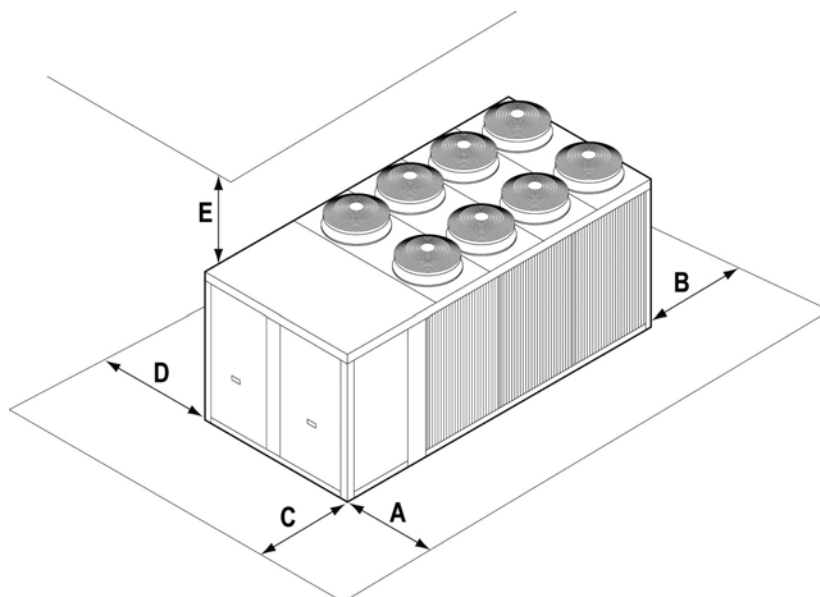


**LOCATION AND MINIMUM TECHNICAL CLEARANCES**

LDK units are designed for external installation: any cover over the unit and location near trees (even if they partially cover the unit) must be avoided in order to prevent air by-pass. It is advisable to create a proper basement, with a size similar to unit foot-print. Unit vibration level is very low: it is advisable however, to fit a rigid rubber band between basement and unit base-frame. If it is the case, it is possible to install anti-vibration mounts (spring or rubber), to keep vibrations at a very low level. Absolute care must be taken to ensure adequate air volume to the condenser. Re-circulation of discharge air must be avoided; not observing this point will result in poor performance or activation of safety controls. For these reasons it is necessary to observe the following clearances:



| Mod.            | A    | B    | C    | D    | E    |
|-----------------|------|------|------|------|------|
| 039-045         | 1000 | 800  | 800  | 800  | 3000 |
| 050-060-070-080 | 1500 | 800  | 800  | 800  | 3000 |
| 090-110-120-130 | 1500 | 1000 | 1000 | 1000 | 3000 |
| 140-160         | 1500 | 1000 | 1000 | 1000 | 4000 |
| 190-210-240-260 | 2000 | 1000 | 1000 | 1000 | 4000 |



| Mod.                | A    | B    | C    | D    | E    |
|---------------------|------|------|------|------|------|
| 300-320-380-430-500 | 2000 | 1000 | 2000 | 2000 | 5000 |



**WARNING:** The equipment should be installed so that maintenance and/or repair services be possible. The warranty does not cover costs due to lifting apparatus and platforms or other lifting systems required by the warranty interventions.



**WARNING:** All the maintenance operation must be done by TRAINED PEOPLE only.



**WARNING:** Before any service operation on the unit, be sure that the electric supply is disconnected.



**WARNING:** Inside the unit some moving components are present. Be very careful when operating in their surroundings even if the electric supply is disconnected.



**WARNING:** The top shell and discharge line of compressor are usually at high temperature level. Be very careful when operating in their surroundings.

**WARNING:** Aluminium coil fins are very sharp and can cause serious wounds. Be very careful when operating in their surroundings



**WARNING:** After servicing operation close the unit with cover panels, fixing them with locking screws

### HYDRAULIC CONNECTIONS

Unit water pipe-work must be installed in accordance with national and local regulation, pipes can be made either in steel , galvanized steel or PVC. Pipes have to be designed depending on the nominal waterflow and the hydraulic pressure drops of the system. All pipes must be insulated with closed-cell material of adequate thickness. The chiller has to be connected to the piping by using flexible joints. Piping should include:

- Temperature and pressure gauges for the ordinary maintenance or servicing operations.
- Shut-off manual valves to separate the unit from the hydraulic circuit.
- Metallic filters to be mounted on the inlet pipe with a mesh not larger than 1 mm.
- Vent valves, expansion tank with water filling, discharge valve.



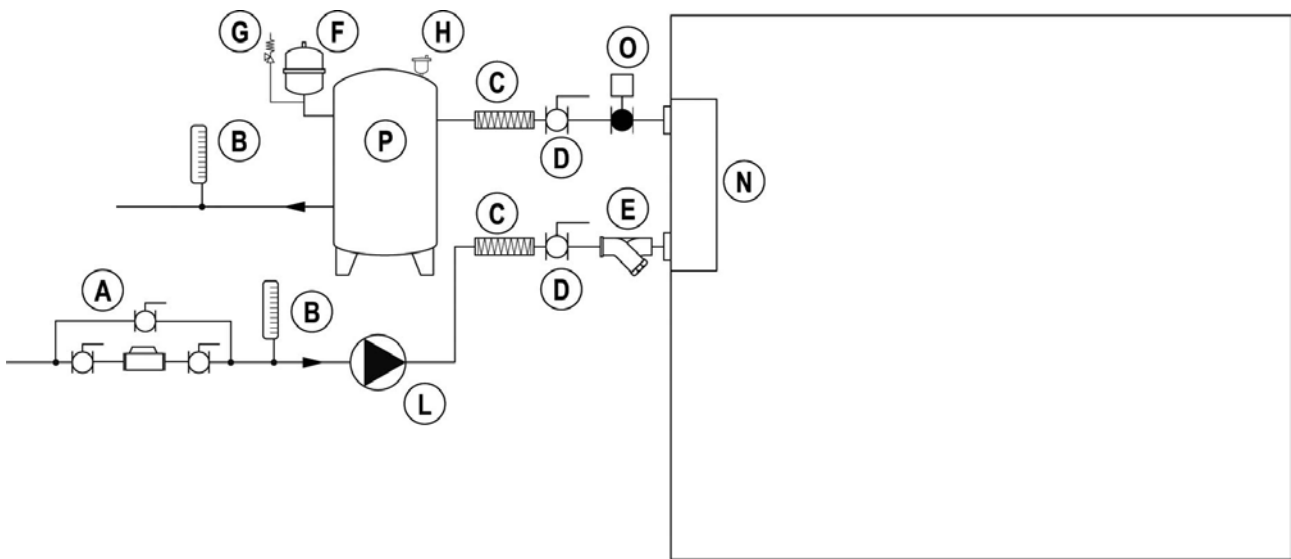
**WARNING:** Unit water inlet must be in correspondence with the connection labelled: "USER WATER IN", otherwise the heat exchangers may freeze.

**WARNING:** It is compulsory to install on the USER WATER IN connection a metallic filter with a mesh not larger than 1 mm. The presence of the filter is to be considered mandatory, the warranty will no longer be valid if it is removed. The filter must be kept clean, so make sure it is clean after the unit has been installed, and then check it periodically.

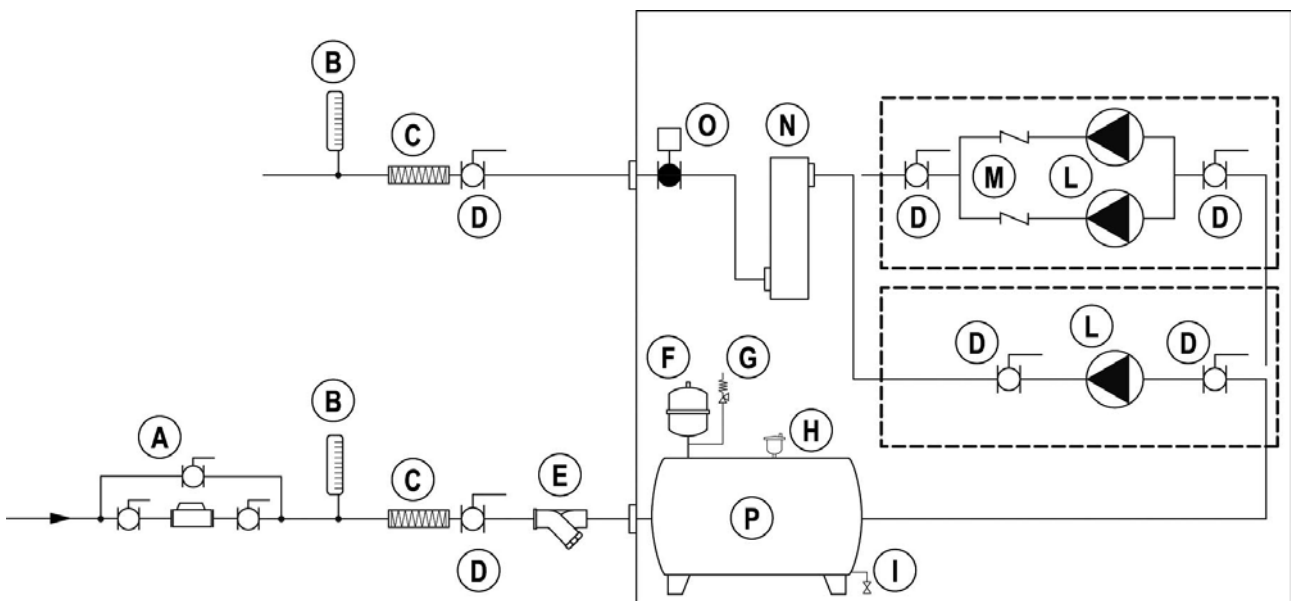


**WARNING:** All units are factory supplied with the flow switch ( it is factory installed in the "A" versions, supplied loose in the standard versions). The flow switch **MUST BE INSTALLED** on the water outlet connection (labelled USER WATER OUT); If the flow switch is altered, removed, or the water filter should not be present on the unit, the warranty will be invalidated. Please refer to the wiring diagram for flow switch electric connections.

Basic version hydraulic components



“A” version hydraulic components



|   |                      |   |                           |
|---|----------------------|---|---------------------------|
| A | System filling group | H | Vent valve                |
| B | Thermometer          | I | Water tank Drainage valve |
| C | Flexible connection  | L | Water pump                |
| D | Ball shut-off valve  | M | One way valve             |
| E | Water strainer       | N | Evaporator                |
| F | Expansion vessel     | O | Flow switch               |
| G | Safety valve         | P | Water tank                |

### LDK / CN REFRIGERANT CONNECTIONS

Condensing unit (CN versions) must be connected to the indoor unit by refrigerant lines. The condensing units are supplied without refrigerant charge and filled with nitrogen. All models are supplied with microprocessor control.

On split-system applications, piping layout is determined by sections location and building structure. Piping should be as shorter as possible in order to reduce pressure drops in refrigerant circuit and the refrigerant charge in the system. Maximum admitted pipe length is 30 meters.

Refrigerant line diameters for "CN" versions

| Distance [m] | 10                  |             | 20           |             | 30           |             |
|--------------|---------------------|-------------|--------------|-------------|--------------|-------------|
|              | Suction [mm]        | Liquid [mm] | Suction [mm] | Liquid [mm] | Suction [mm] | Liquid [mm] |
| 039          | 35                  | 18          | 35           | 18          | 35           | 18          |
| 045          | 35                  | 22          | 42           | 22          | 42           | 22          |
| 050          | 35                  | 22          | 42           | 22          | 42           | 22          |
| 060          | 42                  | 22          | 42           | 22          | 42           | 22          |
| 070          | 42                  | 28          | 42           | 28          | 54           | 28          |
| 080          | 42                  | 28          | 42           | 28          | 54           | 28          |
| 090          | 54                  | 28          | 54           | 28          | 54           | 28          |
| 110          | 54                  | 28          | 54           | 28          | 54           | 28          |
| 120          | 54                  | 35          | 54           | 35          | 54           | 35          |
| 130          | 54                  | 35          | 67           | 35          | 67           | 35          |
| 140          | 42                  | 28          | 42           | 28          | 54           | 28          |
| 160          | 42                  | 28          | 42           | 28          | 54           | 28          |
| 190          | 54                  | 28          | 54           | 28          | 54           | 28          |
| 210          | 54                  | 28          | 54           | 28          | 54           | 28          |
| 240          | 54                  | 35          | 54           | 35          | 67           | 35          |
| 260          | 54                  | 35          | 67           | 35          | 67           | 35          |
| 300          | Contact the company |             |              |             |              |             |
| 320          |                     |             |              |             |              |             |
| 380          |                     |             |              |             |              |             |
| 430          |                     |             |              |             |              |             |
| 500          |                     |             |              |             |              |             |

Refrigerant charge for liquid line

| Liquid line diameter | Refrigerant charge g/m | Liquid line diameter | Refrigerant charge g/m |
|----------------------|------------------------|----------------------|------------------------|
| 18 mm                | 220                    | 28 mm                | 590                    |
| 22 mm                | 360                    | 35 mm                | 890                    |

Cooling capacity correction factors

| Mod.     | Refr. Line 0 mt. | Refr. Line = 10 mt. | Refr. Line 20 mt. | Refr. Line 30 mt. |
|----------|------------------|---------------------|-------------------|-------------------|
| LDK / CN | 1                | 0,98                | 0,96              | 0,95              |

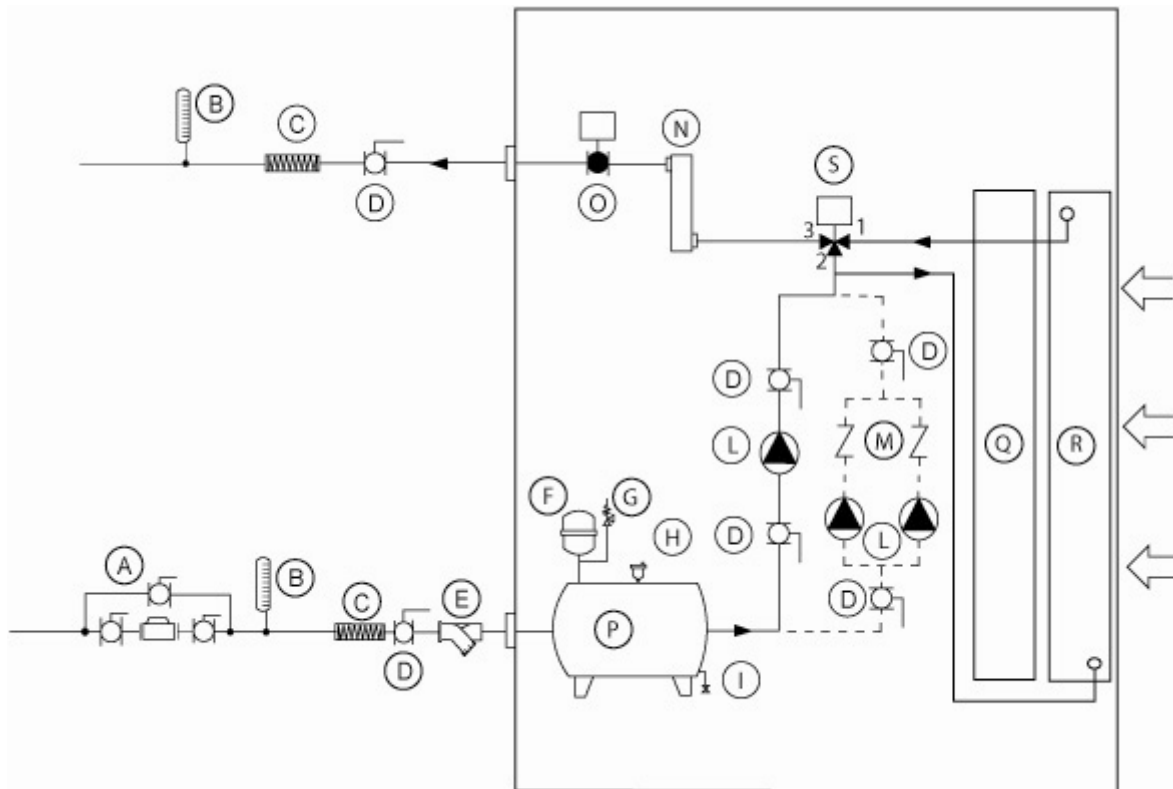
### LDK / FC FREE COOLING VERSION

The free cooling versions can operate in 3 different working modes. The free-cooling coil is installed in series with the water chiller evaporator; the 3 way valve controls the water flow through the coil. When the ambient temperature is lower than the return water temperature the microprocessor allows the water flow to pass through the free-cooling coil first, then through the evaporator.

**Cooling mode (Summer operation)** Ambient temperature is higher than the return water temperature. In this case, the ambient conditions are not suitable to allow Free Cooling operation; the 3 way valve is closed and the water flow passes to the evaporator where it is cooled. The compressors, fans, and the water pump are activated; the unit operates like a normal liquid cooler.

**Free cooling mode (Winter operation)** Ambient temperature is much lower than the return water temperature. In this case, the ambient conditions are suitable to allow Free Cooling operation; the 3 way valve opens and the water flow passes into the free cooling coil where the ambient conditions are sufficient to give the total required load. In this case the pump and the fans are in operation, while the compressors are stopped. In this case, the free cooling system works in substitution of the water chiller.

**Cooling mode + Free cooling (Mid-season operation)** Ambient temperature is lower than the return water temperature. In this case, the ambient conditions are suitable to allow Free Cooling operation; the 3 way valve opens and water flow passes into the free cooling coil although the ambient conditions are not sufficiently low to give the total required load. The microprocessor control then, activates the compressors (Pump and fans are already in operation) to satisfy the required load. In this case the free cooling system works in integration of the water chiller. In such conditions also the head pressure control device is activated.



|   |                           |   |                   |
|---|---------------------------|---|-------------------|
| A | System filling group      | L | Water pump        |
| B | Thermometer               | M | One way valve     |
| C | Flexible connection       | N | Evaporator        |
| D | Ball shut-off valve       | O | Flow switch       |
| E | Water strainer            | P | Water tank        |
| F | Expansion vessel          | Q | Condensing coil   |
| G | Safety valve              | R | Free cooling coil |
| H | Vent valve                | S | 3 Way valve       |
| I | Water tank Drainage valve |   |                   |

### REMOTE CONTROL PANEL



**WARNING:** The remote control panel is connected to the water chiller by 2 wires of 2,5 mm<sup>2</sup> section. Power supply cables must be separated by remote control wires. Maximum distance 50 metres.

#### MODELS 039÷130



Dimensions : 100 x 64 mm

#### MODELS 140 ÷500



Dimensions: 100 x 64 mm



**WARNING:** The remote control panel can not be installed in area in with strong vibrations, corrosive gases, excess of dirtiness or high humidity level. Leave free the area near the cooling openings.

### FAN SPEED CONTROL (optional)

If unit operation below 20 °C is required, fan speed control must be present in the unit. This device will allow unit operation under low ambient temperature, by reducing condenser air flow and obtaining in this way permissible operating parameters. This device can be used as well to reduce unit sound level emission when ambient temperature is decreasing (i.e. during night time).



**WARNING: Fan speed control is factory pre-set. The values must never be modified**

### ELECTRICAL CONNECTIONS

It must be verified that electric supply is corresponding to the unit electric nominal data (tension, phases, frequency) reported on the label in the front panel of the unit. Power connections must be made in accordance to the wiring diagram enclosed with the unit and in accordance to the norms in force. Power cable and line protection must be sized according to the specification reported on the form of the wiring diagram enclosed with the unit.



**WARNING: The line voltage fluctuations can not be more than  $\pm 5\%$  of the nominal value, while the voltage unbalance between one phase and another can not exceed 2%. If those tolerances should not be respected, please contact our Company.**



**WARNING: Electric supply must be in the limits shown: in the opposite case warranty will terminate immediately. Before every operation on the electric section, be sure that the electric supply is disconnected.**

**WARNING: The Flow switch must be connected following the indication reported in the wiring diagram. Never bridge the flow switch connections in the terminal board. Guarantee will be invalidated if flow switch connections are altered or not properly made.**

### START UP

#### Before start-up

- Check that all power cables are properly connected and all terminals are hardly fixed.
- The voltage at the phase R S T is the one shown in the unit labels.
- Check that there is not any refrigerant leakage.
- Check that crankcase heaters are powered correctly.
- Check that all water connections are properly installed and all indications on unit labels are observed.
- The system must be bleed off in order to eliminate any air.
- Before proceeding to start up check that all the cover panels are re-located in the proper position and locked with fastening screws.



**WARNING: Crankcase heaters must be powered at least 12 hours before start up by closing the main switch (heaters are automatically supplied when main switch is closed). The crankcase heaters are working properly if after some minutes the compressor crankcase temperature is about 10÷15°C higher than ambient temperature**

#### Start up

Please refer to the microprocessor manual enclosed with the unit.

#### If the unit should not start:

- Check that the control thermostat is set to the correct value.



**WARNING: Do not modify internal wiring of the unit otherwise warranty will terminate immediately.**

**WARNING: for heat pump versions, the summer/winter operation must be selected at the beginning of the related season. Frequent change over of the seasonal operation mode must be avoided in order to prevent severe damage to compressors.**

### Controls during unit operation

- Check the fans rotation. If the rotation is incorrect, disconnect the main switch and change over any two phases of the incoming main supply to reverse motor rotation:
- Check that water temperature at evaporator inlet is near to the set point of the control thermostat.
- For “A” version units (units with pumps and storage tank) if the motor driven pump should be noisy, slowly close discharge shut-off valve until normal working conditions are restored. This trouble may occur when system pressure drop is quite different from pump available pressure.

### Refrigerant charge checking

- After few hours the unit is working, check that sight glass shows a green colour core: if the core is yellow moisture would be present in the circuit. In this case it is necessary circuit dehydration to be carried out by qualified people only. Check that at the sight glass there is no continuous vapour bubbles presence. In this case additional refrigerant charge could be required. It is however allowed the presence of few vapour bubbles.
- Few minutes after the start up, working on summer operating mode (cooling), check that condensing temperature, is approximately 15 °C higher than condenser inlet air temperature. Check moreover that evaporation temperature is about 5 °C lower than the evaporator outlet temperature.
- Check that refrigerant superheat on the evaporator is about 5-7 °C
- Check if refrigerant sub-cooling on the condenser is about 5-7 °C.

### Unit switch OFF

Please refer to the microprocessor manual enclosed with the unit.



**WARNING: Never switch off the unit (for temporary stop), by opening the main switch: this component should be used only to disconnect the unit from power supply when the current is not passing through, i.e. when the unit is in OFF mode. Moreover, with no supply to crankcase heater, at the unit start up, compressor could be seriously damaged.**

## MAINTENANCE AND PERIODIC CHECKS



**WARNING: All operations described in this chapter MUST BE DONE BY TRAINED PEOPLE ONLY. Before every operation of servicing on the unit, be sure that the electric supply is disconnected. The top shell and discharge line of compressor are usually at high temperature level. Be very careful when operating in their surroundings. Aluminium coil fins are very sharp and can cause serious wounds. Be very careful when operating in their surroundings. After servicing operation close the unit with cover panels, fixing them with locking screws.**

It is a good rule to carry on periodic checks in order to verify the correct operation of the unit.

- Check that safety and control devices work correctly as previously described (monthly).
- Check all the terminals on the electric board and on the compressor are properly fixed. Periodic cleaning of the sliding terminals of the contactors should be done.
- Verify refrigerant charge checking sight glass (monthly).
- Check there is no oil leakage from compressor (monthly).
- Check there is no water leakage in the hydraulic system (monthly).
- If the unit is to be expected to be stopped for a long period, unit hydraulic circuit should be emptied from all the tubes and heat exchanger. This operation is compulsory if, during seasonal stop, ambient temperature is expected to go down below the freezing point of employed mixture (typical seasonal operation).
- Check flow switch proper working (monthly).
- Check compressor crankcase heater proper supply and functioning (monthly).
- Clean metallic filters on water pipings (monthly).
- Clean finned coils metallic filters with compressed air in the opposite direction of the air flow. If filters should be fully clogged, clean them with a water jet (monthly).
- -Check mounting of fan blades and their balancing (every 4 months).
- Check the colour of the sight glass core (green=no moisture, yellow=moisture present): if it has a yellow colour, change the refrigerant filter (every 4 months).

### REFRIGERANT CIRCUIT REPAIR

**In the case that refrigerant circuit should be discharged, all the refrigerant must be recovered with proper machines.** The system must be charged with nitrogen, using a gas bottle with a pressure reducing valve, until 15 bar pressure is reached. Any eventual leakage must be searched with a bubble leak finder. In case bubbles appear discharge the circuit before welding with proper alloys.



**WARNING: Never use oxygen instead of nitrogen: explosions may occur.**

### ENVIRONMENT PROTECTION

According to European norms dealing with the use of depleting stratospheric ozone substances, it is forbidden to release refrigerants fluids in the atmosphere. They must be redelivered to the seller or to proper gathering points at the end of their operating life. Refrigerant R407C is mentioned among controlled substances and for this reason it must be subjected to said norms. **A particular care is recommended during service operations in order to reduce as much as possible any refrigerant loss.**

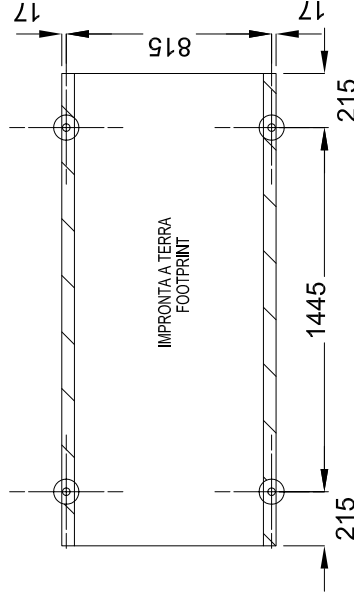
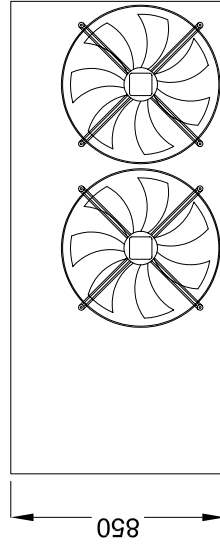
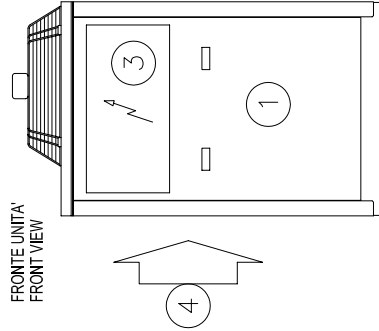
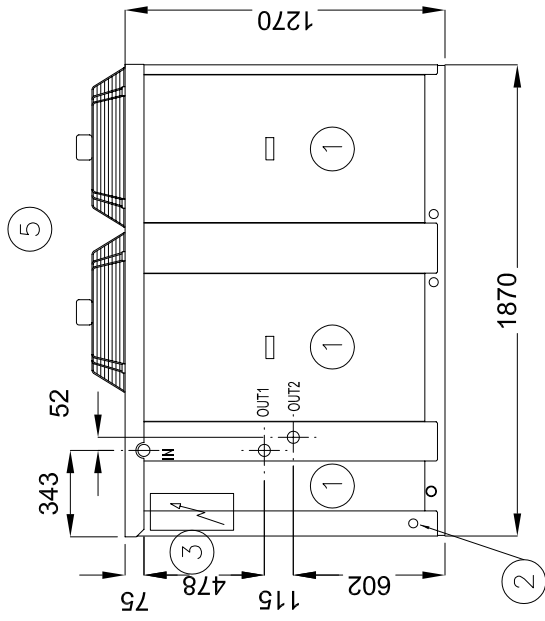
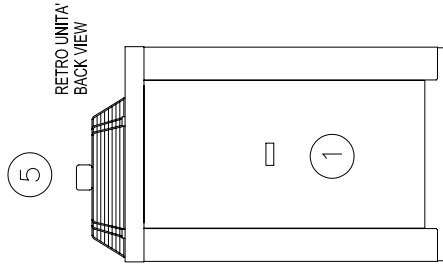
### UNIT OUT OF SERVICE

Once the unit is arrived at the end of its life and needs to be removed or replaced, the following operations are recommended:

- the unit refrigerant has to be recovered by trained people and sent to proper collecting centre;
- compressor lubricating oil has to be recovered and sent to proper collecting centre;
- the frame and various components, if not usable any longer, have to be dismantled and divided according to their nature; particularly copper and aluminium, which are present in conspicuous quantity in the unit. These operations allow easy material recover and recycling process, reducing environmental impact.

### FAULT FINDING

Please refer to the unit microprocessor manual.



|      |   |
|------|---|
| 1    | PANNELLI DI ISPEZIONE<br>INSPECTION PANEL               |
| 2    | INGRESSO ALIMENTAZIONE ELETTRICA<br>POWER SUPPLY INLET  |
| 3    | QUADRO ELETTRICO<br>ELECTRICAL BOX                      |
| 4    | ASPIRAZIONE<br>SUCTION                                  |
| 5    | MANDATA<br>AIR OUTLET                                   |
| IN   | INGRESSO ACQUA UTENTE<br>USER WATER INLET R 1 1/4"      |
| OUT1 | USCITA ACQUA UTENTE<br>USER WATER OUTLET R 1 1/4"       |
| OUT2 | USCITA ACQUA UTENTE<br>USER WATER OUTLET UNITS R 1 1/4" |

- ◇ OPZIONALE/OPTIONAL
- SOLO SU TAGLIE/ONLY ON SIZE

Denominazione/Denomination

**SCHEMA DIMENSIONALE REFRIGERATORE LDK 039 - 045  
WATER CHILLER DIMENSIONAL DRAWING LDK 039 - 045**

|  |                  |                              |   |                            |                    |                                       |
|--|------------------|------------------------------|---|----------------------------|--------------------|---------------------------------------|
| Disegno/Drawing<br><b>SD.1LDK.0065</b>   | Rev.<br><b>A</b> | Data/Date<br><b>03/10/06</b> | Foglio<br>Sheet N. <b>1</b> di <b>1</b> | Scala/Scale<br><b>1:30</b> | Form.<br><b>A4</b> | Visto/Checked by<br><b>MARCATO F.</b> |
| Sost. il dis./Replace draw.<br>Sost. dal dis./Replaced by draw.<br><b>Dis./Draftsman</b> |                  |                              |   |                            |                    | Ordine-Order                          |



Descrizione modifica/Review description

Visto/Checked by

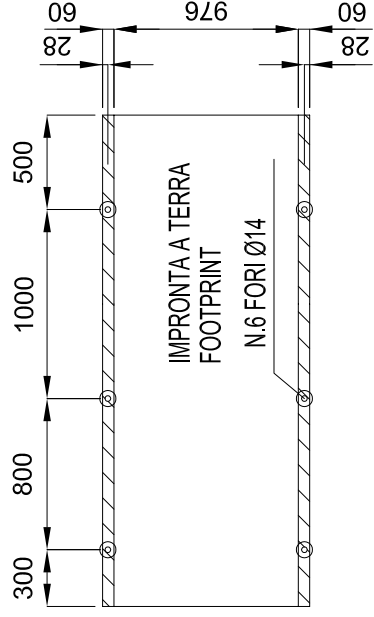
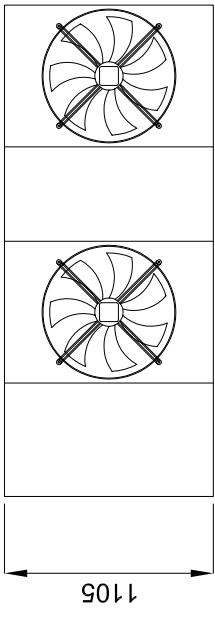
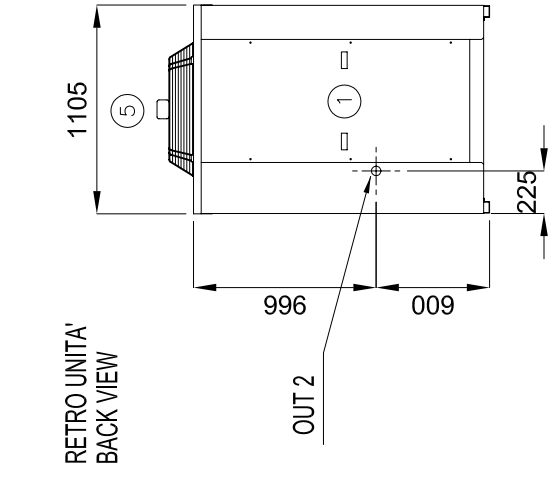
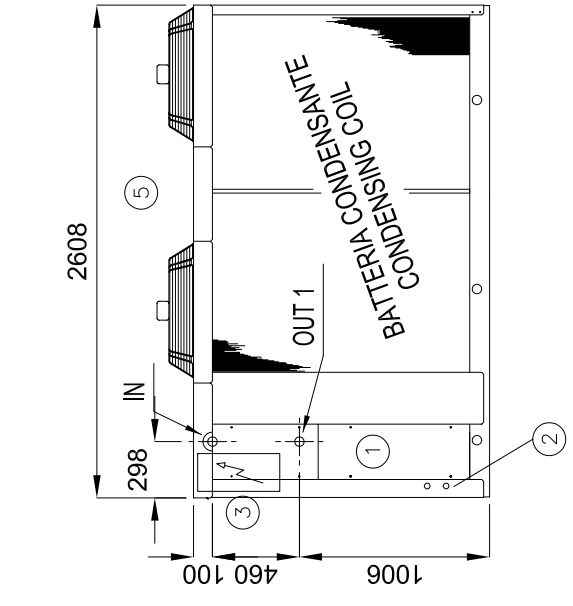
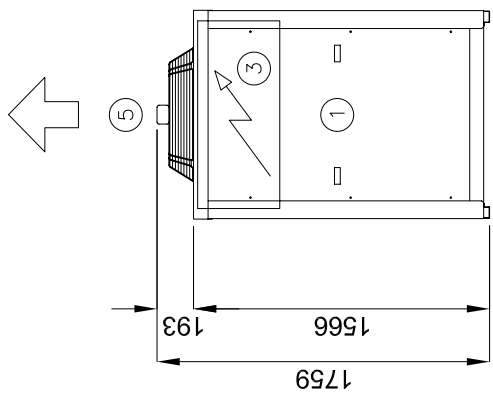
Dis./Draftsman

Data/Date

REV

00

FRONTE UNITA'  
FRONT VIEW



|      |  |
|------|--|
| 1    | PANNELLI DI ISPEZIONE<br>INSPECTION PANEL  |
| 2    | INGRESSO ALIMENTAZIONE ELETTRICA<br>POWER SUPPLY INLET                           |
| 3    | QUADRO ELTRICO<br>ELECTRICAL BOX   |
| 4    | ASPIRAZIONE<br>SUCTION   |
| 5    | MANDATA<br>AIR OUTLET  |
| IN   | INGRESSO ACQUA UTENTE<br>USER WATER INLET R 1 1/2"                               |
| OUT1 | USCITA ACQUA UTENTE LDK<br>USER WATER OUTLET LDK R 1 1/2"                        |
| OUT2 | USCITA ACQUA UTENTE VERSIONI LDK / A<br>USER WATER OUTLET UNITS LDK / A R 1 1/2" |

|  |   |
|--|---|
|  |   |
| <b>SCHEMA DIMENSIONALE REFRIGERATORE LDK 50-60-70-80</b><br><b>WATER CHILLER DIMENSIONAL DRAWING LDK 50-60-70-80</b> |   |
| Disegno/Drawing<br><b>SD.1LDK.0035</b>   | Rev. <b>A</b><br>Sost. dal dis./Replaced by draw.   |
| Data/Date<br><b>13/09/06</b>   | Foglio<br>Sheet N. <b>1</b> di <b>1</b> of <b>1</b> |
| Dis./Draftsman<br><b>MARCATO F.</b>  | Scala/Scale<br><b>1:40</b>                          |
| Visto/Checked by   | Form.<br><b>A4</b>                                  |
| Dis./Draftsman   | Visto/Checked by                                    |
| Ordine-Order   | Dis./Draftsman                                      |

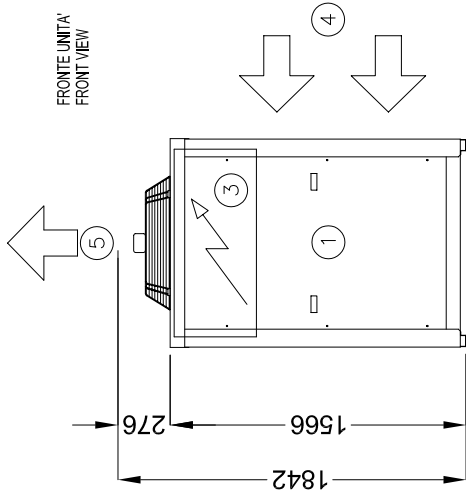
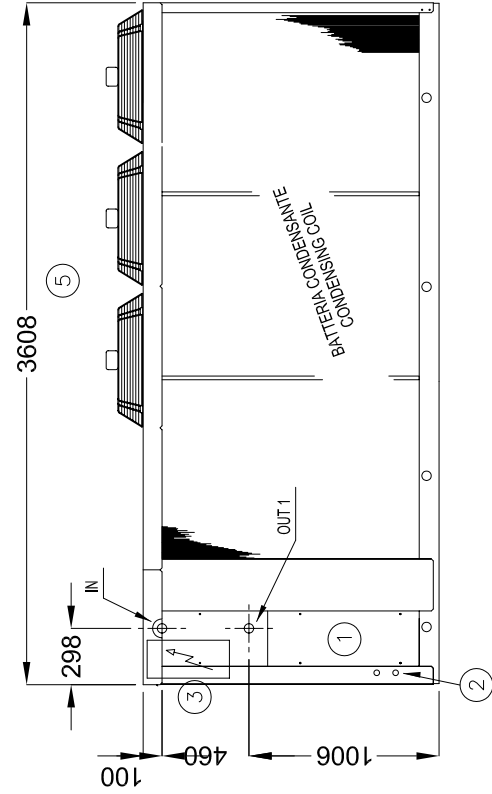
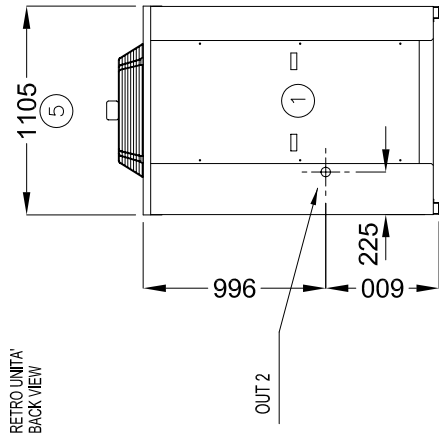
- ◇ OPZIONALE/OPTIONAL
- SOLO SU TAGLIE/ONLY ON SIZE

**REV**

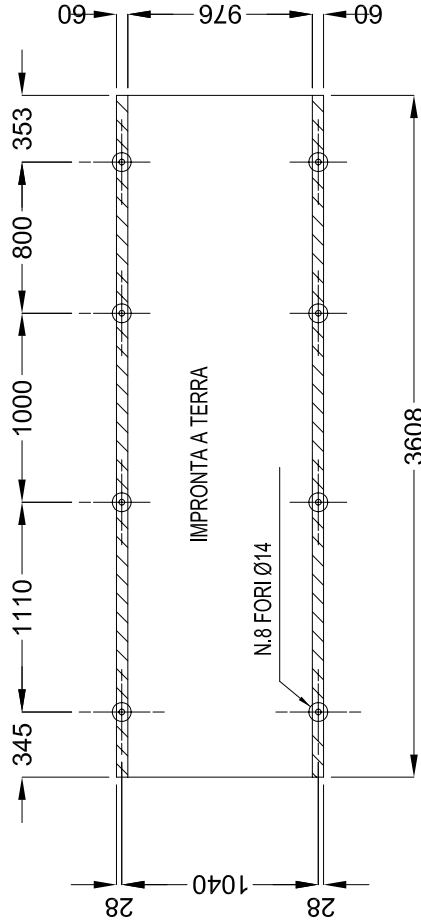
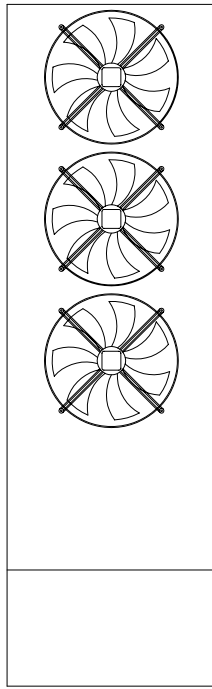
CD

1

Descrizione modifica/Review description



|      |  |
|------|--|
| 1    | PANNELLI DI ISPEZIONE<br>INSPECTION PANEL  |
| 2    | INGRESSO ALIMENTAZIONE ELETTRICA<br>POWER SUPPLY INLET                             |
| 3    | QUADRO ELTRICO<br>ELECTRICAL BOX   |
| 4    | ASPIRAZIONE<br>SUCTION   |
| 5    | MANDATA<br>AIR OUTLET  |
| IN   | INGRESSO ACQUA UTENTE<br>USER WATER INLET R 2"                                     |
| OUT1 | USCITA ACQUA UTENTE LDK<br>USER WATER OUTLET LDK<br>R 2"                           |
| OUT2 | USCITA ACQUA UTENTE VERSIONI<br>LDK / A<br>USER WATER OUTLET UNITS LDK / A<br>R 2" |



Descrizione modifica/Review description

Visto/Checked by

Dis./Draftsman

Data/Date

REV

Denominazione/Denomination

**SCHEMA DIMENSIONALE REFRIGERATORE LDK 090-110-120-130**  
**WATER CHILLER DIMENSIONAL DRAWING LDK 090-110-120-130**

Disegno/Drawing  
**SD.1LDK.0040**

Rev. A  
Foglio Sheet N. 1 di 1  
Data/Date 13/09/06  
Form. A4

Scala/Scale 1:40  
Visto/Checked by

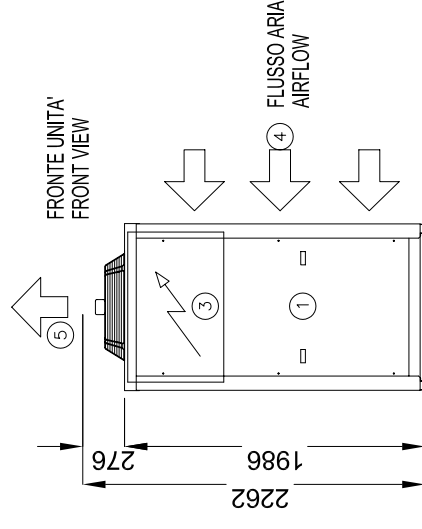
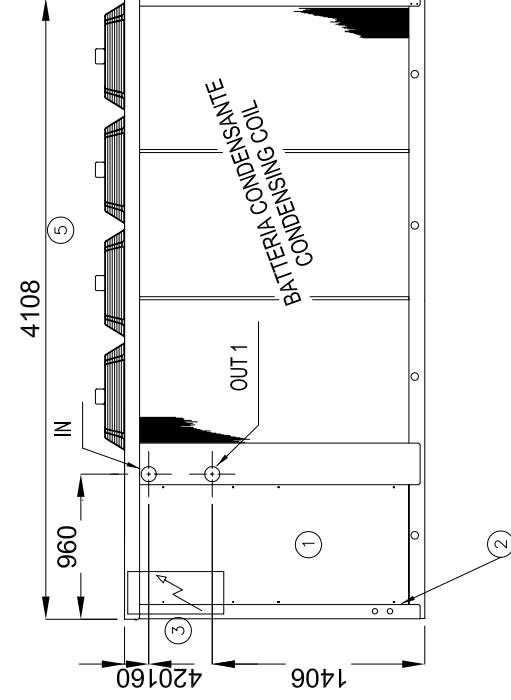
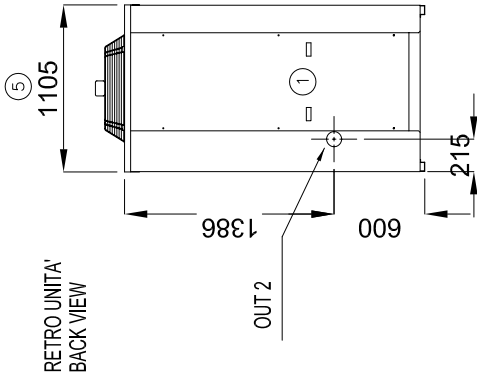
◇ OPZIONALE/OPTIONAL

○ SOLO SU TAGLIE/ONLY ON SIZE

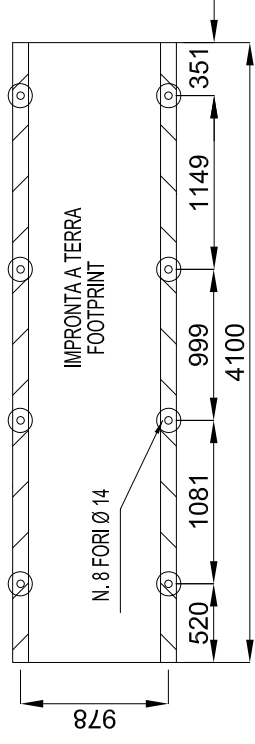
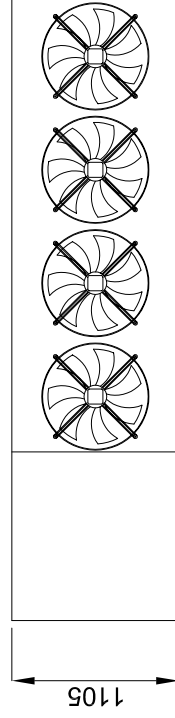
Dis./Draftsman  
**MARCATO F.**

Ordine-Order





|      |   |
|------|---|
| 1    | PANNELLI DI ISPEZIONE<br>INSPECTION PANEL                                       |
| 2    | INGRESSO ALIMENTAZIONE ELETTRICA<br>POWER SUPPLY INLET                          |
| 3    | QUADRO ELETTRICO<br>ELECTRICAL BOX  |
| 4    | ASPIRAZIONE<br>SUCTION  |
| 5    | MANDATA<br>AIR OUTLET   |
| IN   | INGRESSO ACQUA UTENTE<br>USER WATER INLET R2 1/2"                               |
| OUT1 | USCITA ACQUA UTENTE LDK<br>USER WATER OUTLET LDK R2 1/2"                        |
| OUT2 | USCITA ACQUA UTENTE VERSIONI LDK / A<br>USER WATER OUTLET UNITS LDK / A R2 1/2" |



Descrizione modifica/Review description

Visto/Checked by

Dis./Draftsman

Data/Date

REV

Denominazione/Denomination

**SCHEMA DIMENSIONALE REFRIGERATORE LDK 140 - 160**  
**WATER CHILLER DIMENSIONAL DRAWING LDK 140 - 160**

Disegno/Drawing  
**SD.1LDK.0045**

Rev. A  
Foglio Sheet N. 1 di 1  
Scala/Scale 1:50  
Form. A4

Sost. il dis./Replace draw.

Dis./Draftsman  
**MARCATO F.**  
Visto/Checked by

◇ OPZIONALE/OPTIONAL  
○ SOLO SU TAGLIE/ONLY ON SIZE

Ordine-Order



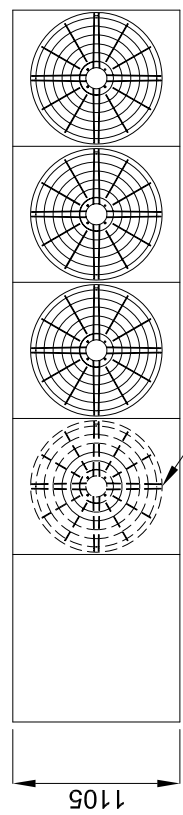
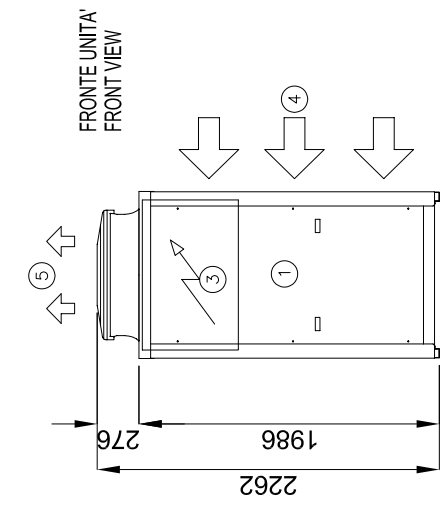
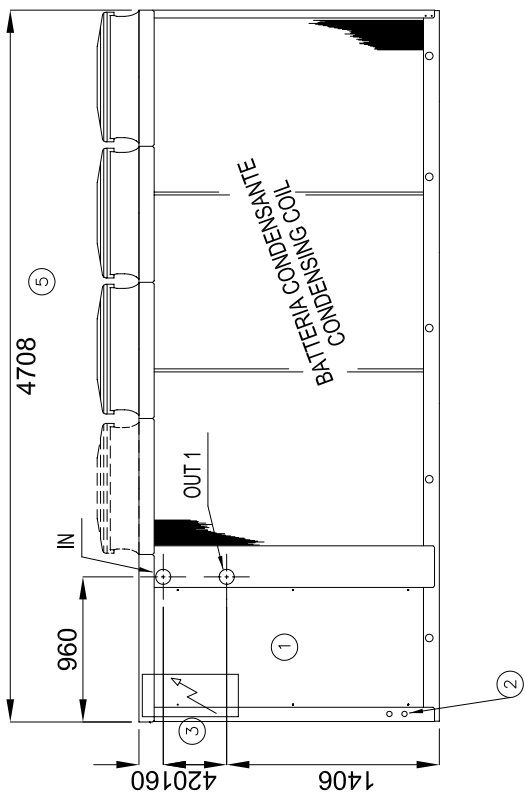
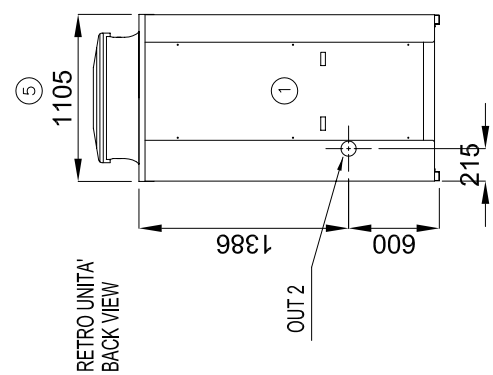
|      |  |
|------|--|
| 1    | PANNELLI DI ISPEZIONE<br>INSPECTION PANEL  |
| 2    | INGRESSO ALIMENTAZIONE ELETTRICA<br>POWER SUPPLY INLET                           |
| 3    | QUADRO ELTTRICO<br>ELECTRICAL BOX  |
| 4    | ASPIRAZIONE<br>SUCTION   |
| 5    | MANDATA<br>AIR OUTLET  |
| IN   | INGRESSO ACQUA UTENTE<br>USER WATER INLET R 2 1/2"                               |
| OUT1 | USCITA ACQUA UTENTE LDK<br>USER WATER OUTLET LDK R 2 1/2"                        |
| OUT2 | USCITA ACQUA UTENTE VERSIONI LDK / A<br>USER WATER OUTLET UNITS LDK / A R 2 1/2" |

Denominazione/Denomination

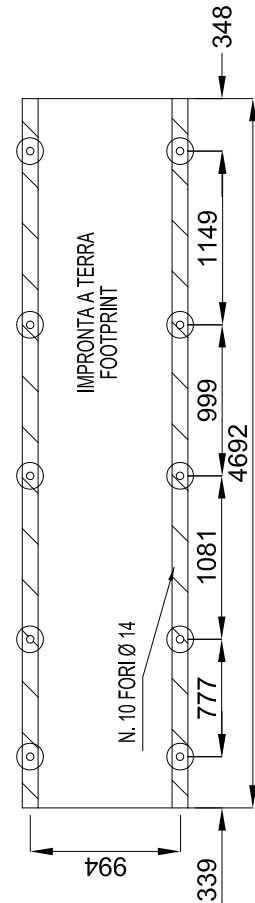
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**WATER CHILLER DIMENSIONAL DRAWING LDK 190 - 210 - 240 - 260**

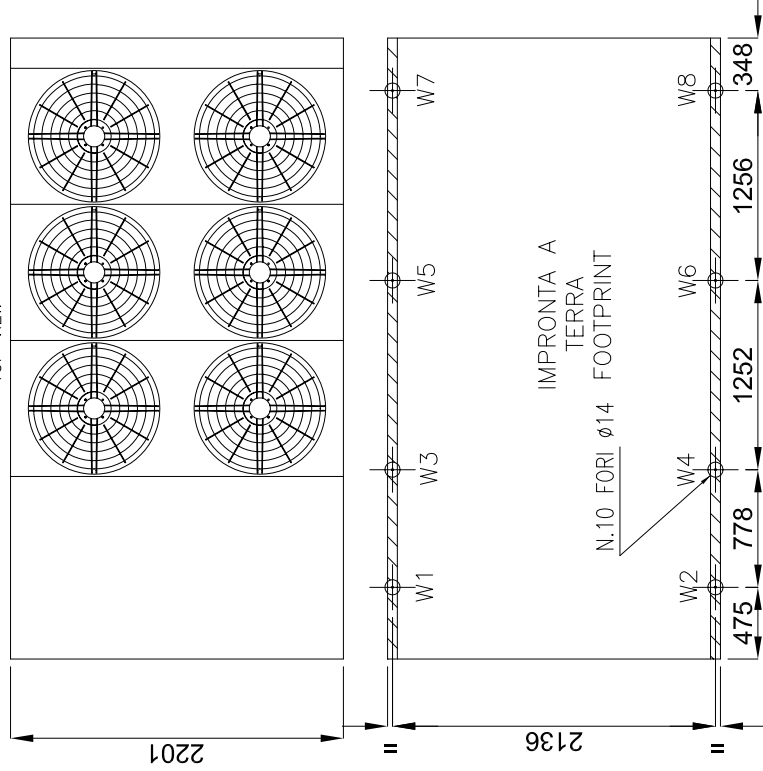
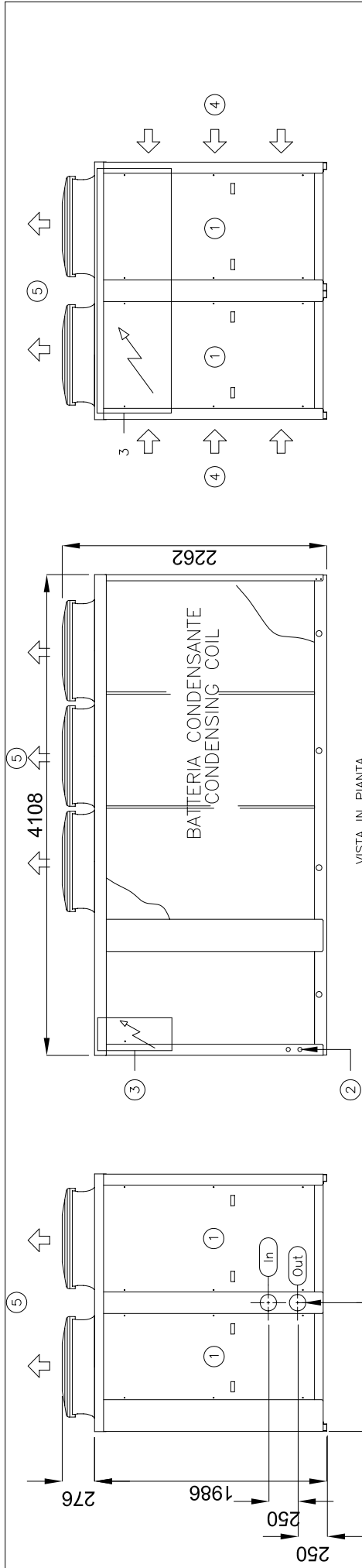
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|--|------------------|------------------------------|---|----------------------------|--------------------|
| Disegno/Drawing<br><b>SD.1LDK.0050</b> | Rev.<br><b>A</b> | Data/Date<br><b>13/09/06</b> | Foglio<br>Sheet N. <b>1</b> di <b>1</b> | Scala/Scale<br><b>1:50</b> | Form.<br><b>A4</b> |
| Sost. il dis./Replace draw.            |                  |                              | Dis./Draftsman<br><b>MARCATO F.</b>     |                            | Visto/Checked by   |

Ordine-Order



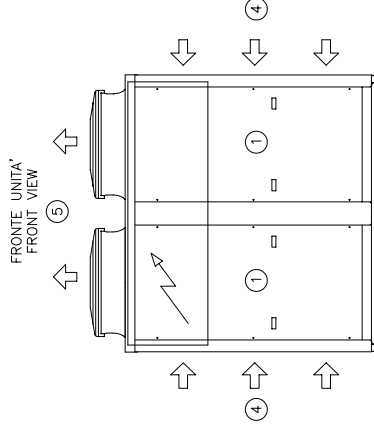
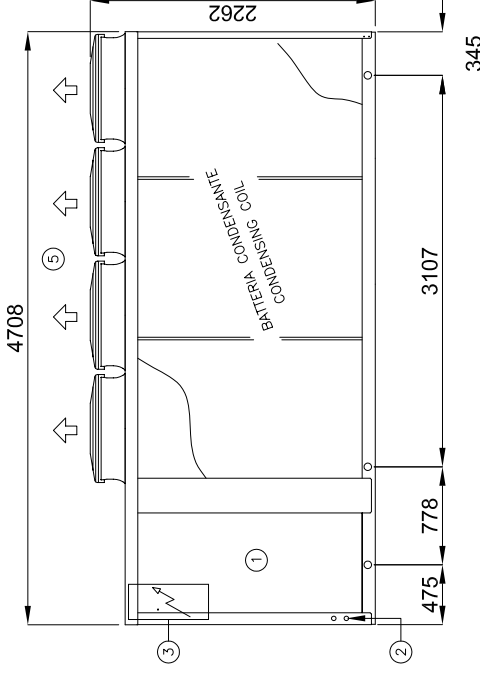
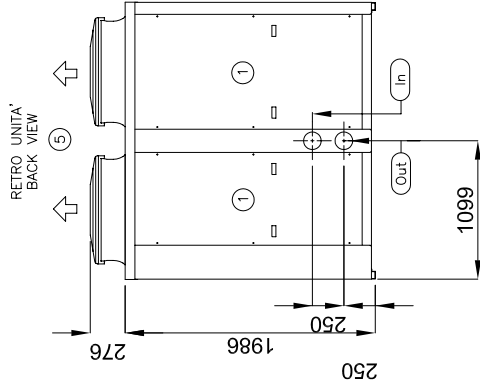
VENTILATORE PRESENTE SOLO SU LDK 240-260  
 FAN INSTALLED ONLY ON LDK 240-260 MODELS



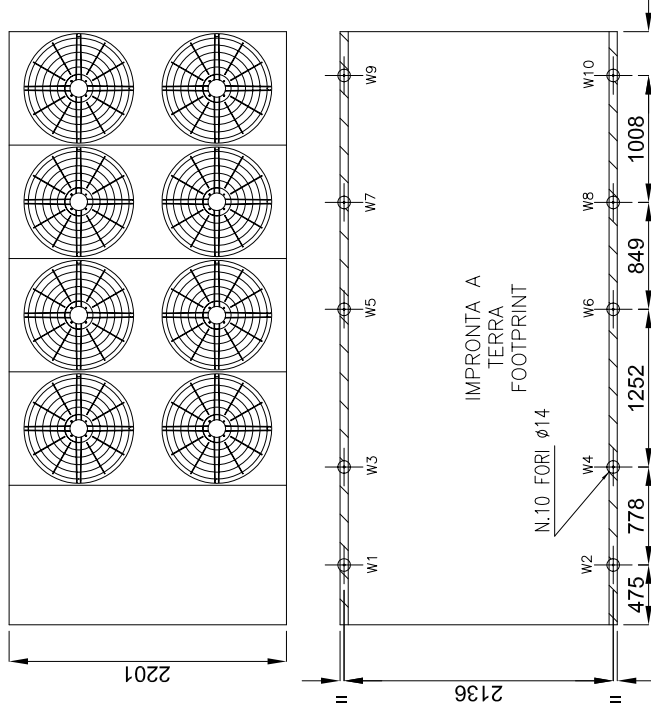


|     |  |
|-----|--|
| 1   | PANNELLI DI ISPEZIONE<br>INSPECTION PANEL              |
| 2   | INGRESSO ALIMENTAZIONE ELETTRICA<br>POWER SUPPLY INLET |
| 3   | QUADRO ELETTRICO<br>ELECTRICAL BOX                     |
| 4   | ASPIRAZIONE<br>SUCTION                                 |
| 5   | MANDATA<br>AIR OUTLET                                  |
| IN  | INGRESSO ACQUA UTENTE<br>USER WATER INLET              |
| OUT | USCITA ACQUA UTENTE<br>USER WATER OUTLET               |

|     |   |   |           |   |      |           |                |                  |              |
|-----|---|---|-----------|---|------|-----------|----------------|------------------|--------------|
| REV | C | : | Data/Date | Denominazione/Denomination  |      |           | Form.          | Visto/Checked by | Ordine-Order |
|     |   |   |           | Disegno/Drawing   | Rev. | Data/Date |                |                  |              |
|     |   |   |           | SD.1LDK.0055  | A    | 13/09/06  | N. 1 di 1      | A4               |              |
|     |   |   |           | Sost. il dis./Replace draw.   |      |           | Dis./Draftsman |                  |              |
|     |   |   |           | Sost. il dis./Replaced by draw.   |      |           | MARCATO F.     |                  |              |
|     |   |   |           | SCHEMA DIMENSIONALE LDK 300 - 320   |      |           |                |                  |              |
|     |   |   |           | DIMENSIONAL DRAWING LDK 300 - 320   |      |           |                |                  |              |
|     |   |   |           | <div style="display: flex; justify-content: space-between;"> <div> <p>◇ OPZIONALE/OPTIONAL</p> <p>○ SOLO SU TAGLIE/ONLY ON SIZE</p> </div> <div style="text-align: right;"> </div> </div> |      |           |                |                  |              |



VISTA IN PIANTA  
TOP VIEW



|     |  |
|-----|--|
| 1   | PANNELLI DI ISPEZIONE<br>INSPECTION PANEL              |
| 2   | INGRESSO ALIMENTAZIONE ELETTRICA<br>POWER SUPPLY INLET |
| 3   | QUADRO ELETTRICO<br>ELECTRICAL BOX                     |
| 4   | ASPIRAZIONE<br>SUCTION                                 |
| 5   | MANDATA<br>AIR OUTLET                                  |
| IN  | INGRESSO ACQUA UTENTE<br>USER WATER INLET              |
| OUT | USCITA ACQUA UTENTE<br>USER WATER OUTLET               |

Descrizione modifica/Review description

Visto/Checked by

Dis./Draftsman

Data/Date

REV

Denominazione/Denomination

**SCHEMA DIMENSIONALE LDK 380-430-500  
DIMENSIONAL DRAWING LDK 380-430-500**

Disegno/Drawing

**SD.1LDK.0060**

Sost. il dis./Replace draw.

Rev.

**A**

Sost. dal dis./Replaced by draw.

Data/Date

**13/09/06**

Sost. da dis./Replaced by draw.

Foglio  
Sheet

**N. 1 di 1**

Dis./Draftsman

**MARCATO F.**

Scala/Scale

**1:50**

Visto/Checked by

**A4**

Form.

**A4**

Visto/Checked by

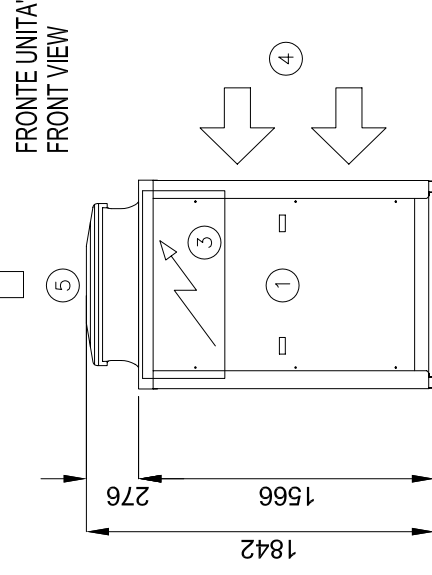
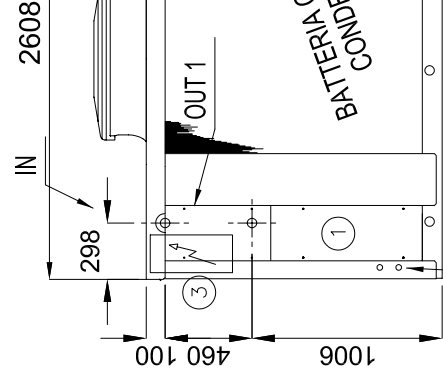
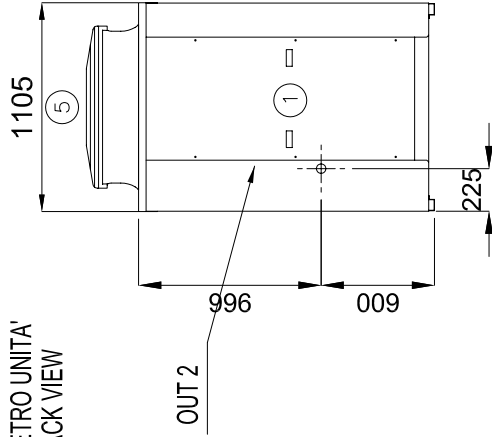
**A4**

**Ferrolli**

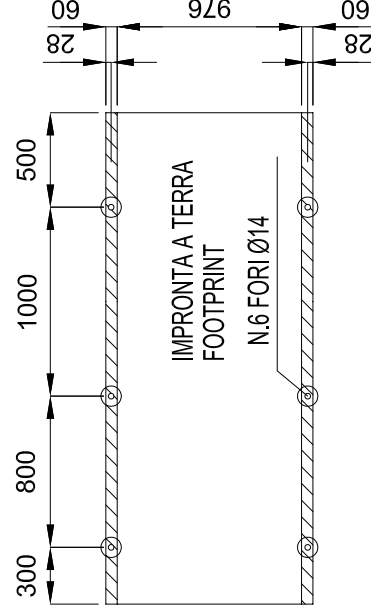
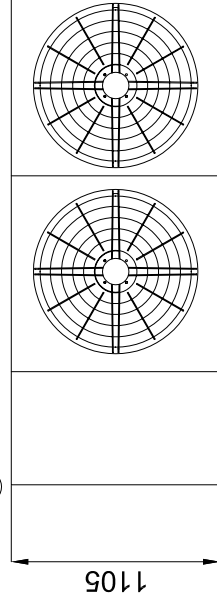
Ordine-Order

- ◇ OPZIONALE/OPTIONAL
- SOLO SU TAGLIE/ONLY ON SIZE

RETRO UNITA'  
BACK VIEW



|      |  |
|------|--|
| 1    | PANNELLI DI ISPEZIONE<br>INSPECTION PANEL  |
| 2    | INGRESSO ALIMENTAZIONE ELETTRICA<br>POWER SUPPLY INLET                           |
| 3    | QUADRO ELTRICO<br>ELECTRICAL BOX   |
| 4    | ASPIRAZIONE<br>SUCTION   |
| 5    | MANDATA<br>AIR OUTLET  |
| IN   | INGRESSO ACQUA UTENTE<br>USER WATER INLET R 1 1/2"                               |
| OUT1 | USCITA ACQUA UTENTE LDK<br>USER WATER OUTLET LDK R 1 1/2"                        |
| OUT2 | USCITA ACQUA UTENTE VERSIONI LDK / A<br>USER WATER OUTLET UNITS LDK / A R 1 1/2" |



Descrizione modifica/Review description

Visto/Checked by

Dis./Draftsman

Data/Date

Rev

REV

Denominazione/Denomination

SCHEMA DIMENSIONALE REFRIGERATORE LDK 050-060-070-080 XL  
WATER CHILLER DIMENSIONAL DRAWING LDK 050-060-070-080 XL

Disegno/Drawing

SD.1LDK.0010

Rev.

A

Data/Date

13/09/06

Foglio

N. 1 di 1

Scala/Scale

1:40

Form.

A4



Sost. il dis./Replace draw.

Dis./Draftsman

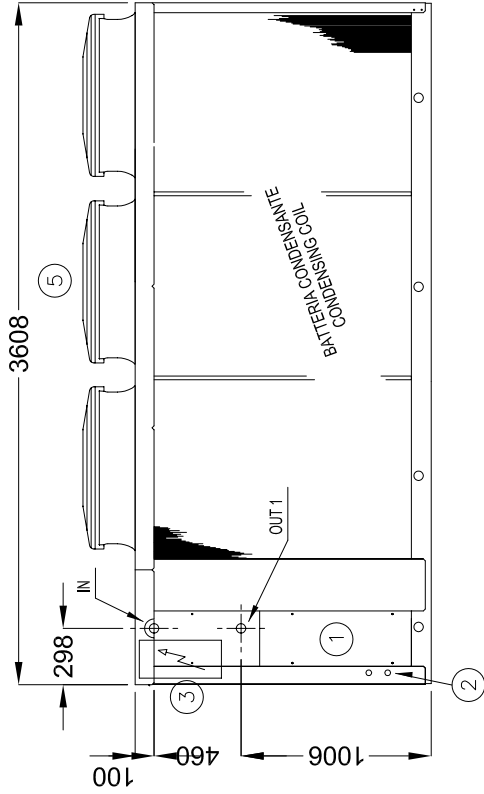
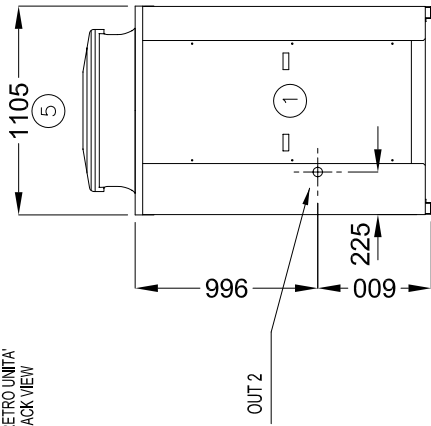
MARCATO F.

Visto/Checked by

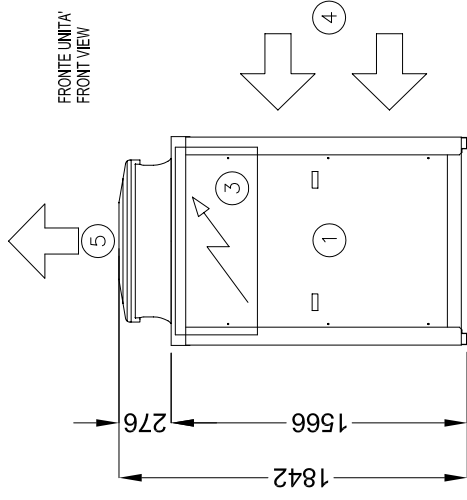
Ordine-Order



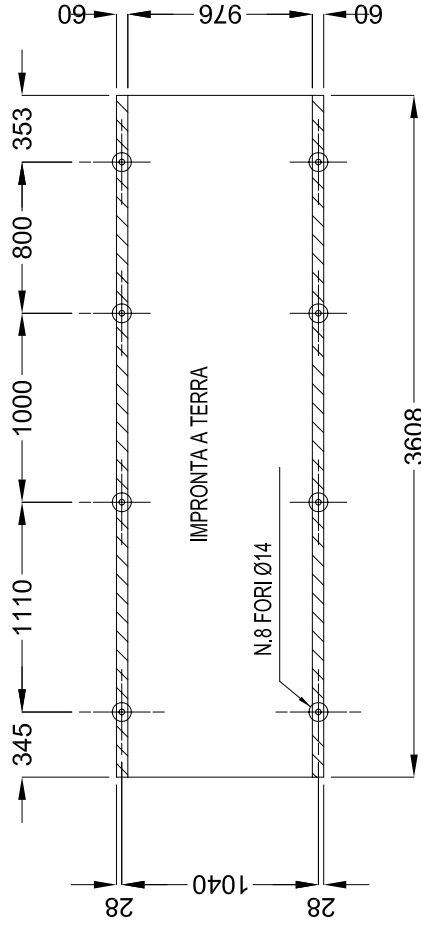
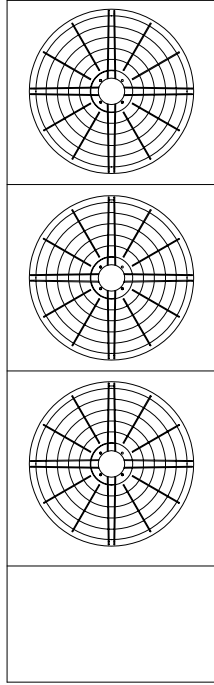
RETRO UNITA'  
BACK VIEW



FRONTE UNITA'  
FRONT VIEW



|      |  |
|------|--|
| 1    | PANNELLI DI ISPEZIONE<br>INSPECTION PANEL  |
| 2    | INGRESSO ALIMENTAZIONE ELETTRICA<br>POWER SUPPLY INLET                             |
| 3    | QUADRO ELTRICO<br>ELECTRICAL BOX   |
| 4    | ASPIRAZIONE<br>SUCTION   |
| 5    | MANDATA<br>AIR OUTLET  |
| IN   | INGRESSO ACQUA UTENTE<br>USER WATER INLET R 2"                                     |
| OUT1 | USCITA ACQUA UTENTE LDK<br>USER WATER OUTLET LDK<br>R 2"                           |
| OUT2 | USCITA ACQUA UTENTE VERSIONI<br>LDK / A<br>USER WATER OUTLET UNITS LDK / A<br>R 2" |



Descrizione modifica/Review description

Visto/Checked by

Dis./Draftsman

Data/Date

REV

Denominazione/Denomination

SCHEMA DIMENSIONALE REFRIGERATORE LDK 090-110-120-130 XL  
WATER CHILLER DIMENSIONAL DRAWING LDK 090-110-120-130 XL

Disegno/Drawing

SD.1LDK.0015

Rev.

A

Data/Date

13/09/06

Foglio

Sheet

N. di

1

of

1

Scala/Scale

1:40

Form.

A4



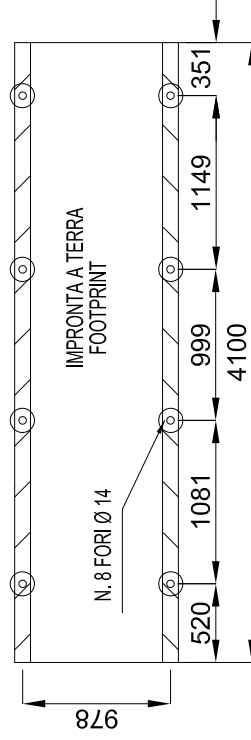
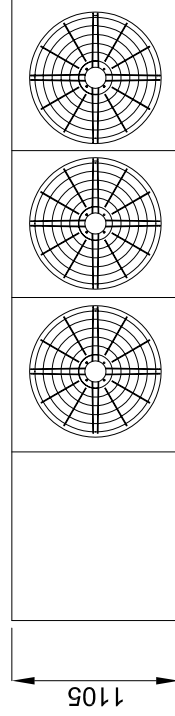
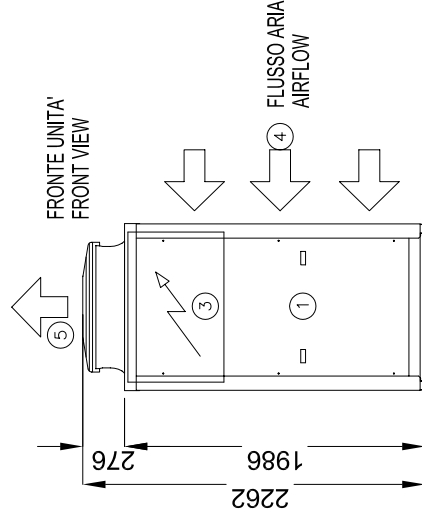
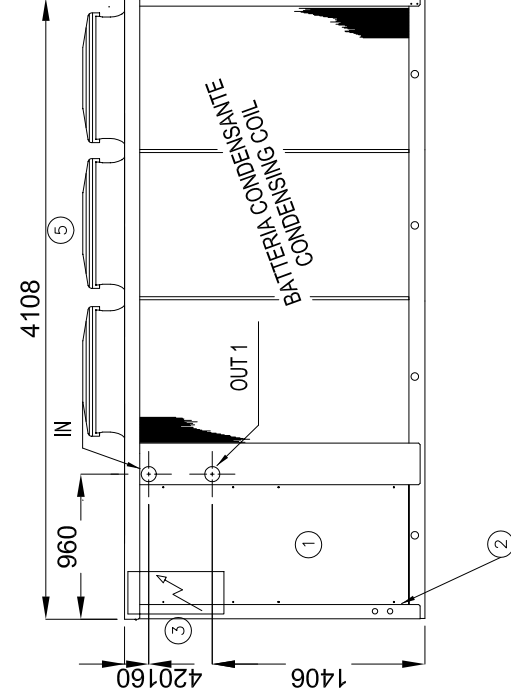
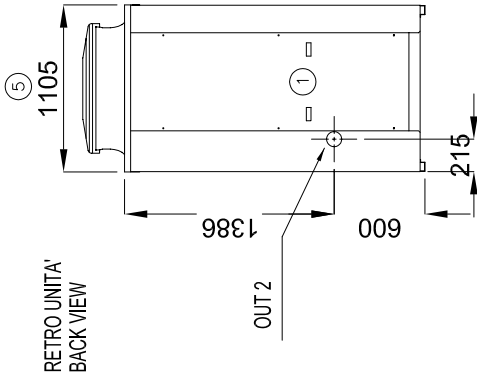
Visto/Checked by

Dis./Draftsman

MARCATO F.

Ordine-Order

**Ferrolli**



|      |   |
|------|---|
| 1    | PANNELLI DI ISPEZIONE<br>INSPECTION PANEL                                       |
| 2    | INGRESSO ALIMENTAZIONE ELETTRICA<br>POWER SUPPLY INLET                          |
| 3    | QUADRO ELETTRICO<br>ELECTRICAL BOX  |
| 4    | ASPIRAZIONE<br>SUCTION  |
| 5    | MANDATA<br>AIR OUTLET   |
| IN   | INGRESSO ACQUA UTENTE<br>USER WATER INLET R2 1/2"                               |
| OUT1 | USCITA ACQUA UTENTE LDK<br>USER WATER OUTLET LDK R2 1/2"                        |
| OUT2 | USCITA ACQUA UTENTE VERSIONI LDK / A<br>USER WATER OUTLET UNITS LDK / A R2 1/2" |

Descrizione modifica/Review description

Visto/Checked by

Dis./Draftsman

Data/Date

Rev

REV

Denominazione/Denomination

SCHEMA DIMENSIONALE REFRIGERATORE LDK 140 - 160 XL  
WATER CHILLER DIMENSIONAL DRAWING LDK 140 - 160 XL

Disegno/Drawing

SD.1LDK.0020

Rev.

A

Data/Date

13/09/06

Foglio  
Sheet

N. 1 di 1

Scala/Scale

1:50

Form.

A4



Visto/Checked by

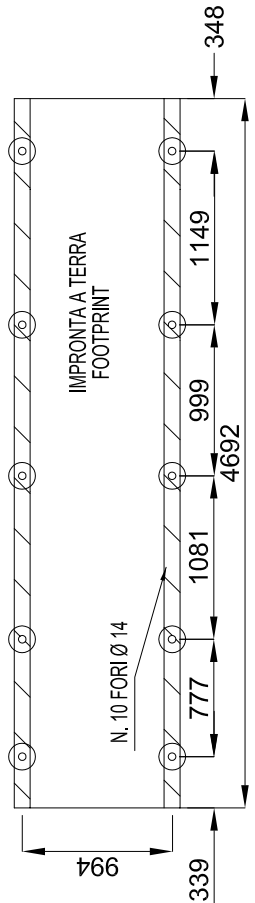
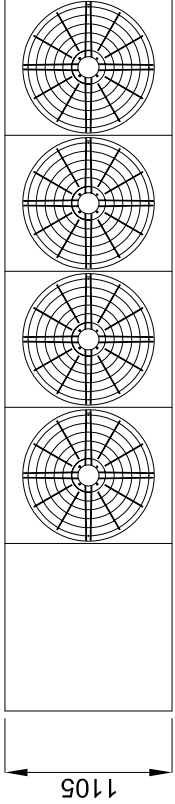
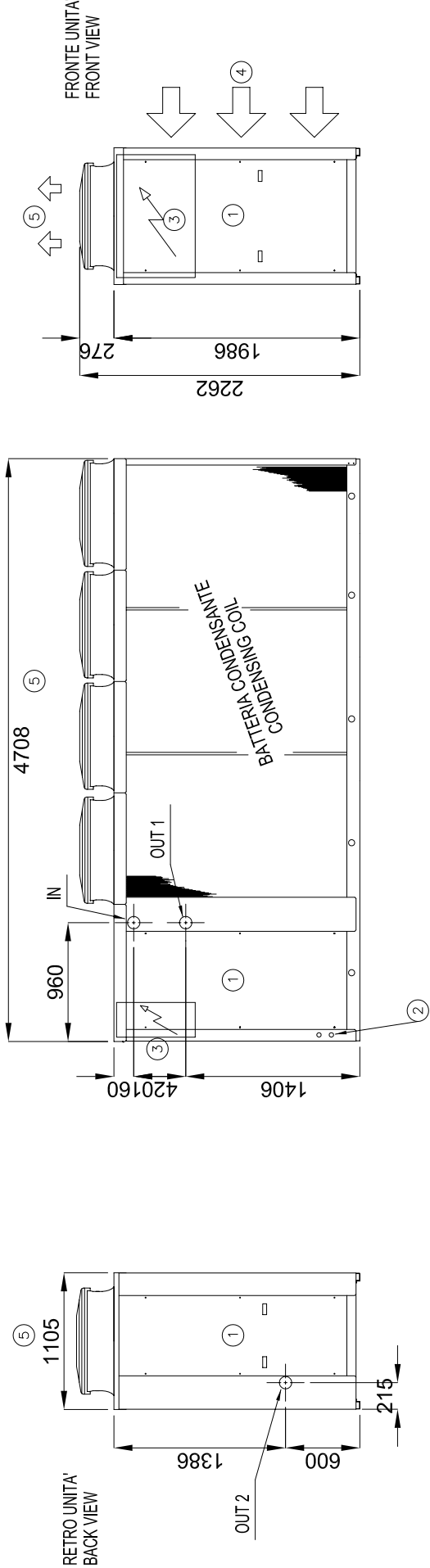
MARCATO F.

Dis./Draftsman

Ordine-Order



|      |  |
|------|--|
| 1    | PANNELLI DI ISPEZIONE<br>INSPECTION PANEL  |
| 2    | INGRESSO ALIMENTAZIONE ELETTRICA<br>POWER SUPPLY INLET                           |
| 3    | QUADRO ELETTRICO<br>ELECTRICAL BOX   |
| 4    | ASPIRAZIONE<br>SUCTION   |
| 5    | MANDATA<br>AIR OUTLET  |
| IN   | INGRESSO ACQUA UTENTE<br>USER WATER INLET R 2 1/2"                               |
| OUT1 | USCITA ACQUA UTENTE LDK<br>USER WATER OUTLET LDK R 2 1/2"                        |
| OUT2 | USCITA ACQUA UTENTE VERSIONI LDK / A<br>USER WATER OUTLET UNITS LDK / A R 2 1/2" |



Denominazione/Denomination  
**SCHEMA DIMENSIONALE REFRIGERATORE LDK 190 - 210 XL**  
**WATER CHILLER DIMENSIONAL DRAWING LDK 190 - 210 XL**

|  |                  |                              |                                      |                            |                    |
|--|------------------|------------------------------|--------------------------------------|----------------------------|--------------------|
| Disegno/Drawing<br><b>SD.1LDK.0025</b> | Rev.<br><b>A</b> | Data/Date<br><b>13/09/06</b> | Foglio Sheet N. <u>1</u> di <u>1</u> | Scala/Scale<br><b>1:50</b> | Form.<br><b>A4</b> |
| Sost. il dis./Replace draw.            |                  |                              | Dis./Draftsman<br><b>MARCATO F.</b>  |                            | Visto/Checked by   |
|  |                  |                              |                                      |                            | Ordine-Order       |

OPZIONALE/OPTIONAL  
SOLO SU TAGLIE/ONLY ON SIZE

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