# i-CHILLER

Innovative, Intelligent, Industrial

# TECHNICAL MANUAL


***Next Generation Chiller Technology***

Cooling capacity 1.4 - 166kW

ics cool energy

# Contents

# TECHNICAL SPECIFICATIONS



## 1. GENERAL I-CHILLER

The i-Chiller is an air cooled liquid chiller, designed for industrial use and for installation in an external environment. A broad range of options available in product configuration and accessories in kit form, complete the already generous standard equipment and allow this machine to meet the majority of requirements of industrial applications. The i-Chiller is therefore the solution for all applications that require high performance, reliability, continuity of operation and reduced management costs.

All the i-Chiller models are equipped with a high efficiency finned coil evaporator immersed in a hydraulic storage tank. Thanks to the technology of this evaporator the i-Chiller ensures reliable operation in particularly demanding applications and also with liquids containing impurities. The standard hydraulic storage tank also assures optimum precision in the control of temperature even in the presence of highly variable thermal loads from the user and simplifies installation.

The i-Chiller units are equipped with a finned coil condenser, axial fans and scroll compressors installed on a refrigeration circuit **(mod. iC215 - iC535)** and two refrigeration circuits **(mod. iC640 - iC660)**. The refrigerant used is R410A.

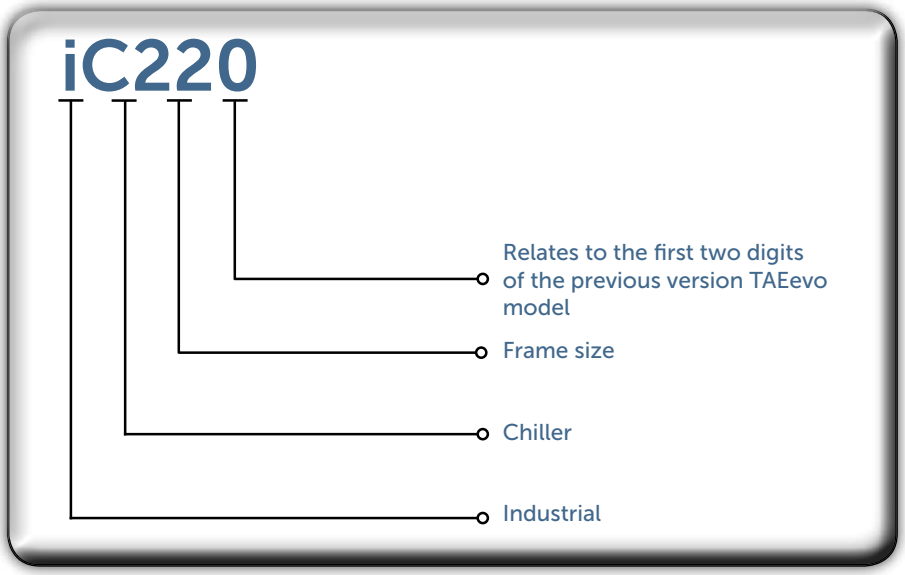
Management of the i-Chiller is provided by an iCHiLL 208CX parametric microprocessor control capable of managing all the main functions, including outlet water temperature control, alarms and external interface.

The i-Chiller units are available in standard version with power supply 400V/3/50Hz, and in the dual-frequency version **(mod. iC215 - iC416)** with a double power supply 400V/3/50Hz - 460V/3/60Hz. The degree of electrical protection is IP44 for the **mod. iC215 - iC220** and IP54 for the **mod. iC303 - iC660.**

**The standard product, which is intended for the states of the EEC and EFTA, is subject to:**

- Electromagnetic Compatibility Directive 2004/108/EC.
- Machine Directive 2006 42.
- Pressure equipment 97/23/CE (PED).
- The electrical panel of the machine is made in accordance with IEC standard EN 60204-1.

## 2. NAMEPLATE



## 3. VERSIONS

*i-Chiller is available in the following versions:*

### Standard Version
The standard version is equipped with a carbon steel tank suitable for all industrial processes with hydraulic circuit under pressure, and atmospheric if the filling tank kit is present.
Materials in contact with the process water are:
• carbon steel, copper, aluminium, brass, rubber (piping).

### Non Ferrous Version (Mod. iC215 - iC535)
Suitable for operation with aggressive process fluids that react with carbon steel. The evaporator is made completely in copper and protected by a brass frame. The cylindrical storage tank made of AISI 304 stainless steel is suitable for pressurised hydraulic circuits.
Materials in contact with the process water are:
• AISI304 stainless steel, copper, brass, rubber (piping).

### Version for low environmental temperature -20°C (mod. iC303 - iC660)
This version always provides for: a heating element in the electrical panel controlled by a thermostat and electronic adjustment of the speed of the fans. If glycol is not present in the plant, it is advisable to associate this with the "Evaporator Anti-freeze Protection" option (see par. 17.1 on page 10).

### Dual-frequency version 400V/3/50Hz - 460V/3/60Hz (mod. iC215 - iC416)
This version is always equipped with: a hydraulic circuit equal to the basic version, P3 pump or without pump, axial fans with ON/OFF control, standard environmental temperature.

### Version with high head pressure fans (mod. iC303 - iC660)
- Mod. iC303 - iC416: centrifugal fans with upper outlet opening and ON/OFF control.
- Mod. iC520 - iC660: high pressure axial fans and inverter adjustment.

## 4. ADVANTAGES DERIVED FROM THE USE OF A STORAGE TANK

In a refrigeration system designed for use in an industrial process the user load may present significant and sudden variations, or working conditions that are very different from nominal conditions for long periods. Consequently the chiller supplying the plant is frequently required to operate at maximum capacity (in the proximity of its operating limits) or alternatively with periods subject to frequent ON/OFF cycles. This type of working is detrimental to the lifetime of compressors and often results in significant fluctuations of the chilled water temperature - clearly undesirable both from the energy efficiency standpoint and also in relation to the requirements of the process.
The benefits deriving from the use of the storage tank present on all the i-Chiller units as standard can be summarised as follows:

- The units offer a reservoir of water at the preset temperature for the process to be controlled: in this manner the "energy stored" in the tank is able to compensate for the imbalances caused by sudden changes in load demand from the user.
- Operation of compressors in highly stable conditions: in this case the chiller can run with almost unvarying inlet temperature irrespective of surrounding conditions. Together with a constant water flow rate,this is a primary condition in order to ensure the maximum lifetime of the compressors.
- Reduction of the frequency of peaks and guarantee of sufficient duration of each period of running and each period of stopping of the compressors.

## 5. TESTING

All chillers are tested in a test chamber in order to check correct operation. The main checks performed are as follows:

- the correct instalment of all components and the absence of refrigerant leaks.
- electrical safety tests as prescribed by EN 60204-1.
- correct operation of microprocessor and correct values of all the operating parameters.
- the temperature probes and pressure transducers.

At the time of installation the units require exclusively electrical and hydraulic connections, thus maximising reliability levels. It is always advisable to install a filter on the unit inlet.

## 6. CONSTRUCTION CONFIGURATIONS

By combining the configurations described below with the accessories available as sales kits the units can be customised to meet a very broad range of plant requirements.

**WARNING:** when configuring the unit it should be remembered that not all combinations are possible. Always consult the PERFORMANCE AND TECHNICAL DATA section for the model in question or contact us.

**REFRIGERANT:**
- R410A (ODP=0)

**POWER SUPPLY:**
- 400V/3/50Hz: standard
- 400V 3/50Hz - 460V/3/60Hz : dual-frequency (mod. iC215 - iC416)
- 460V/3/60Hz UL certification (see dedicated documentation)

**EXTERNAL AIR TEMPERATURE:**
- STANDARD (-5 °C)
- LOW TEMP. VERSION ENVIRONMENT (-20 °C) (mod. iC303 - iC660)

**PUMP**:
- SP: (without pump with electrical panel suitable to provide supply to a P3 external pump)
- P3
- P5
- P3+P3 (mod. iC520 - iC660)
- P5+P5 (mod. iC520 - iC660)

**TANK AND HYDRAULIC CIRCUIT:**

- standard
- Non Ferrous version with cylindrical stainless steel tank + evaporator with finned copper / copper coil iC215 - iC535

**FANS:**
- axial (standard)
- centrifugal (mod. iC303 - iC416)
- axial high pressure (mod. iC520 - iC660)

**AXIAL FANS CONTROL:**
- ON/OFF (standard)
- Electronic control (mod. iC303 - iC660)

**CONDENSING COILS PROTECTION:**

- ABSENT (standard)
- Painting process (optional)

**EVAPORATOR FROST PROTECTION:**
- ABSENT (standard)
- PRESENT (optional)

**HYDRAULIC CIRCUIT MANUAL FILLING CONTAINER KIT:**
- ABSENT (standard)
- PRESENT (mod. iC303 - iC660)

**START COMPRESSORS:**
- DIRECT: (standard)

*below is a data sheet which summarises the compatibility of the options available:*

| CONFIGURATION | CONFIGURATION NOT AVAILABLE WITH THE FOLLOWING OPTIONS: |
|---|---|
| -20°C external air | Fine adjustment of temperature (laser) |
| | Power supply dual frequency 400/3/50Hz - 460/3/60Hz |
| | Mod. iC215 - iC220 |
| | Centrifugal fans (iC303 - iC416) |
| Dual frequency 400/3/50Hz - 460/3/60Hz | Centrifugal fans or high pressure axials fans |
| | Electronic fan speed regulation |
| | -20°C external air |
| | Mod. iC520 - iC660 |
| | Pumps: P5 / P3 + P3 / P5 + P5 |
| Double pumps: P3+P3 / P5+P5 | Mod. iC215 - iC416 |
| | Dual frequency 400/3/50Hz - 460/3/60Hz |
| Centrifugal fans | Mod. iC215 - iC220, iC520 - iC660 |
| | Eectronic fan speed regulation |
| | -20°C external air |
| | Power supply dual frequency 400/3/50Hz - 460/3/60Hz |
| | Fine adjustement of temperature (laser) |
| High head pressure axials fans | Mod. iC215 - iC416 |
| | Fine adjustement of temperature (laser) |
| | Power supply dual frequency 400/3/50Hz - 460/3/60Hz |
| Electronic fans speed control | Mod. iC215 - iC220 |
| | Fine adjustement of temperature (laser) |
| | Centrifugal fans |
| | Power supply dual frequency 400/3/50Hz - 460/3/60Hz |
| Condenser coil protection filters | Mod. iC215 - iC220 |
| Manual tank kit | Mod. iC215 - iC220 |

## 7. COMPRESSOR

Refrigerant compressors with orbiting scrolls, 2-pole electric motor, mounted on rubber antivibration dampers. These compressors feature protection against overheating, excessive currents and against temperature values that are too high for the exhaust gases.

The crankcase heater standard is automatically supplied when the unit stops (the chiller must be switched on), preventing dilution of the oil by the refrigerant when the compressor is shut down, thus ensuring proper lubrication of the mechanical components even at low temperature environment.

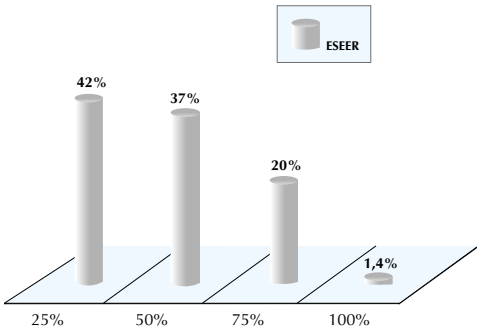
Thanks to the low weight of the rotating components and the absence of suction and discharge valves, the scroll compressors offer a series of benefits: higher energy efficiency, reduced pressure drops on the suction side, significantly lower noise level, reduced vibration on the delivery side, high resistance to possible liquid hammering. The compressors are installed within a compartment separate from the condensing vane, allowing maintenance tasks even when the machine is running.

The models iC520 - iC660 use two compressors connected in parallel for each circuit increasing performance with partial loads and thus maximise the ESEER Seasonal Energy

This solution using the "unloading" function, also allows the starting up of the system, and the operation of the machine, even in conditions very different from the nominal ones.

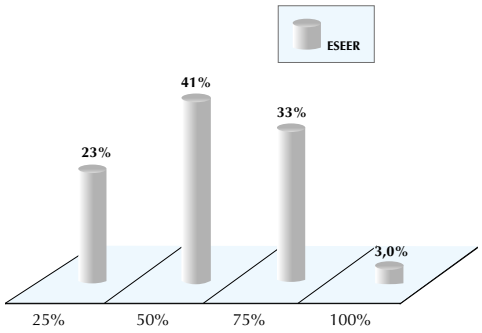
(*) Given that partial load energy efficiency ratings specifically for industrial applications do not exist, the Seasonal Energy Efficiency Ratio is reported for each unit.
The Seasonal Energy Efficiency Ratio used in the European design context characterises the average weighted efficiency of a chiller. This ratio expresses the relationship between the useful effect (energy removed from interior spaces) and the typical expenditure of energy (electricity consumed) of a refrigerating machine during the entire season of operation. In relation to the various different operating conditions and the frequency with which they occur, these indicators are calculated by assigning a different energy weight to the corresponding output values of the unit For example ESEER = 4 means that during an entire season of operation 1 kWh of electrical power is required on average to remove 4 kWh of heat energy from the air conditioned spaces.

ESEER operating time percentages




Thermal load percentage

ESEER energy weights




Thermal load percentage

## 8. EVAPORATOR

High-efficiency finned coil exchanger made with copper pipes and aluminium fins, shoulders and cabinet made of galvanised steel.

Installed inside the water storage tank, the evaporator cools the process fluid that flows in contact with the finned surface, exchanging heat with the refrigerant fluid evaporating inside the tubes. This particular technical solution allows the i-Chiller to operate with high flow rates and reduced pressure drops, ensuring a high level of reliability in heavy industrial applications and also with liquids containing impurities.

The antifreeze function of the microprocessor controls the outlet temperature of the water while protecting the evaporator from the danger of freezing. A level sensor inside of the tank protects the chiller from the lack of process fluid. All evaporators installed on the i-Chillers can work with antifreeze solutions and, generally, with all other liquids that are compatible with the materials utilised in the hydraulic circuit (refer to the list of materials in contact with process fluids). All evaporators comply with the European Council pressure vessels directive.

## 9. CONDENSING COIL

Finned coil heat exchanger consisting of tubes and the manifolds in copper, corrugated fins in aluminium, and shoulders in galvanized sheet metal. These coils are sized and designed utilising the latest computerised design technology, making it possible to achieve very high EER efficiency values. Thanks to the positioning on only one side of the machine, installation is also facilitated when the spaces available are restricted (example: close to a wall). From mod. iC303 the condenser is protected by removable metal filters to facilitate cleaning procedures (in mod. iC215 - iC220 protection is provided by a panel grid).

## 10. FANS

Mod. iC215 - iC220 are provided with axial fans equipped with painted sickle-shaped galvanised steel sheet blades that are directly connected to the electric motor (IP44). Mod. iC303 - iC660 are provided with axial fans made in die-cast aluminium, sickle-shaped blades in aluminium or galvanized steel sheet covered with polypropylene and electric motor IP54. All the fans' motors are provided with built-in thermal circuit breakers.

The fans are statically and dynamically balanced and equipped with external safety grilles.

The motors feature 4 or 6-poles with external rotor to maximise the energy efficiency and to reduce the magnetic noise if they are regulated by means of a phase cut-off system (optional), and are protected with a chain of thermistors. Standard fan control for models iC215 - iC535 is ON/OFF type managed by pressure switches. In models iC640 - iC660 control is in step mode with pressure transducer. For models iC303 - iC660 continuous control of the rotation speed is available as an option (cutting phase) depending on the condensation pressure.

## 11. REFRIGERATION CIRCUIT

*The refrigeration circuit comprises:*
- Mechanical thermostatic expansion valve with external equalization: located at the inlet of the evaporator, it controls the flow of refrigerant according to the thermal load. This valve optimises compressor performance, ensuring sufficient superheating of the gas on the suction side in all operating conditions.
- Filter-dryer hygroscopic molecular sieves: it retains the impurities and any traces of moisture present in the refrigeration circuit.
- Liquid refrigerant and humidity flow indicator: installed on the liquid line, it enables checking of the correct charge of refrigerant gas (presence of bubbles) and for any moisture in the refrigerant circuit.
- High and low pressure refrigerant pressure gauges: available from model iC303, they are installed on the frontal panel.
- HP High pressure and LP low pressure refrigerant pressure switches.
- PV fan pressure switch: for ON/OFF control of the fans (Mod. iC215-iC535).
- Pressure transducer: mod. iC640 - iC660; mod. iC303 - iC660, equipped with electronic control of fans (when present).
- Schrader service valves.

All of the braze welded joints are made with silver alloy and the cold pipes are insulated to prevent the condensation of moisture.

## 12. STRUCTURE AND CASING

All models have a structure with the compressor compartment separate both from the compartment where the tank and the condensing coil are located and from the electrical cabinet, thereby simplifying maintenance operations. Units from model iC215 - iC416 are equipped with a fully enclosed cabinet with structural panels and pump installed in the compressors compartment. i-Chiller models iC520 - iC660 are equipped with a fully enclosed cabinet, plinth composed of longitudinal beams and crossmembers, and uprights to support the outer panelling The plinth, uprights and all outer panels and/or enclosure panels are made of galvanized carbon steel sheet and assembled by means of galvanised steel rivets or stainless steel metric screws to facilitate removal. All panels undergo a phosphor degreasing phase followed by epoxy polyester power coating. The plinth and the coolant pressure gauge panel are in RAL 5013 blue colour, while the rest of the structure and panels are in RAL 7035 light grey.

## 13. HYRAULIC GROUP

### INERTIAL STORAGE TANK

All models are equipped with a cylindrical inertial storage tank (containing the evaporator) externally insulated by an insulating and anti-condensation layer. Sized for operation in closed hydraulic circuits and with maximum pressure of 6 barg, the storage tank can also be used in open hydraulic circuits if equipped with the tank filling kit. The standard tank is in carbon steel while in the Non Ferrous version the AISI 304 stainless steel is used.

The tank is equipped with a drain valve so that it can be emptied. A bleed valve is available to vent air during the process of filling the hydraulic circuit.

### HYDRAULIC BY-PASS

All i-Chillers are equipped with an internal by-pass between the hydraulic outlet and inlet connections. In case of an incorrect closing of inlet/outlet connections, the hydraulic by-pass allows the machine and the pump to preserve their integrity, ensuring a minimum fluid flow necessary for both the anti-freeze alarm and the pump circuit breaker interventions.

Warning: the by-pass has been designed only for preserving the integrity of the machine if the shut-off valves fail to close. The by-pass operation with continuous cycles for extended periods is strictly forbidden.

### LEVEL SENSOR

Conductive-type level sensor. If the process fluid within the storage tank is insufficient, the operation of the machine is blocked.

### PUMPS

The pumps are centrifugal type with motors in IE2/IE3 class according to the models (International Regulation IEC 60034-30) with seals made of silicon carbide / silicon carbide / EPDM material. The pumps are available in two different configurations: pump P3 with nominal pressure head 3 bar and pump P5 with nominal pressure head 5 bar. It is, however, possible to configure the units without pumps on board or with two pumps P3+P3 or P5+P5 in parallel (mod. iC520 - iC660).

*Pump materials in contact with process water:*
- pump P3: fully stainless steel up to mod. iC525; for the remaining models, the pump body is made of cast iron.
- pump P5: fully stainless steel up to mod. iC416; for the remaining models, the pump body is made of cast iron.
- pump P3 and P5 pump completely in stainless steel for the Non Ferrous version (see "Non Ferrous Versions) for pressure circuits.

### BLEED VALVE

Bleed valve: installed on the top of the cylindrical tank, the bleed valve is used to vent any air pockets in the tank.

### WATER PRESSURE GAUGE

A water pressure gauge on the unit's rear panel indicates the water pressure at the unit outlet and plant filling pressure (with pump stopped).

## 14. ELECTRICAL PANEL

The electrical cabinet is designed and wired in compliance with the Low Voltage Directive 2006/95/EC, standard EN 60204-1 and electromagnetic compatibility directive 2004/108/EC.

It is composed of an enclosure accommodating all the components secured to a mounting plate, with a hinged door having a perimeter seal mounted to the cabinet structure. For the mod. iC215 - iC220 it is composed by a cover panel with a perimeter seal. The unit's controller is mounted on the door, and it is protected by an openable transparent polycarbonate cover; the door is also equipped with the main disconnect switch with safety door lock (door cannot be opened until the electrical cabinet power has been disconnected). The electrical cabinet utilises components sourced from premium manufacturers and ensures a level of weather protection that is commensurate with outdoor installation of the chiller (protection rating IP54). The power section includes automatic thermal-magnetic cut-outs for the protection of power devices such as compressors, fans and centrifugal pumps, a series of contactors and a phase monitor for protection of the unit from the absence of phase and from incorrect phase sequence. The control section includes the transformer feeding the auxiliaries and the microprocessor circuit boards. A voltage-free general alarm contact plus fitting for remote ON/OFF are also available.

The dual-frequency version is provided to operate with voltage 400V/3/50Hz. In order to power the machine with 460V/3/60Hz the power supply must be changed to the transformer primary circuit of the control circuit.

## 15. CONTROL AND SAFETY DEVICES

High pressure transducers: standard for the mod. iC640 - iC660 and optional for mod. iC303 - iC535 equipped with electronic control of the fans, for mod. iC408 - iC416 with centrifugal fans and for mod. iC520 - iC660 equipped with high pressure fans. The pressure transducers measure the compressor discharge pressure with the resulting signal utilised by the electronic controller for the following functions: high pressure measurement and alarms, condensing pressure regulation through the fans electronic speed control, unloading for high pressure and fans step control.

**Temperature probes:** installed on the hydraulic circuit, they measure the temperature values of: evaporator outlet water (antifreeze function), storage tank outlet water (temperature control function). A probe for external air temperature (when antifreeze heaters are present).

**High and low pressure switches with automatic reset:** they are installed on the refrigerant circuit high/low pressure side, respectively; they stop the compressor if anomalous working pressures are detected.

**Fans pressure switch:** used for ON/OFF control of the axial fans.
**Conductive point level sensor:** installed in the tank where it is used to shutdown the unit if an insufficient water level is detected.

**Axial fans electronic control device mod. iC303 - iC660**: this device consists of an electronic controller board (Phase Cut) which changes the rpm of the axial fans on the basis of the condensation pressure detected by the high pressure transducer. This logic allows correct operation in cooling also with outside temperatures below -5°C.

**Anti-freezing heating elements:** these are heating wire elements wound around the cylindrical tank and pumps; their working is controlled electronically by means of an environmental temperature probe. (see par. 17.1 on page 10).

## 16. MICROPROCESSOR CONTROL STANDARD VERSION

The i-Chiller is controlled and managed by the iCHILL 208CX electronic controller with parametric dual display and icon based identification of functions. Thanks to the control menu it is possible to visualize the working conditions, the parameters and the possible alarms. The control is installed on the electrical panel and is protected by a flip-up polycarbonate cover.

iCHILL 208CX

The controller manages the following functions:
- Thermostatic control depending on the process fluid output temperature (neutral zone or proportional).
- Process fluid output temperature display.
- Measurement and display of the external temperature for management of the antifreeze heaters (when present) and management of start-up of the pump under conditions of low external temperature.
- Management of the automatic rotation of the starting sequence of compressors for equalisation of the operating times for each compressor (mod. iC520 - iC660).
- Measurement and display of the condensation pressure (mod. iC303 - iC660 and mod. iC303 - iC535 with electronic control of the fans, mod. iC408 - iC416 with centrifugal fans and mod. iC520 - iC660 high pressure fans).
- Unloading function in the two-circuit units (mod. iC640 -iC660 and mod. iC520 - iC535 and with electronic control of the fans), which allows the start-up and the operation of the unit also under conditions that are much more severe than nominal ones.
- Management of anti-freezing heaters and pump switch on with low ambient temperature.
- Display of the alarm history.
- TTL serial interface (KIT required for conversion to RS485).
- Management of alarm messages:
  - high condensing pressure alarm.
  - low evaporation pressure alarm.
  - freeze alarm on water at evaporator outlet.
  - compressor fault alarm.
  - pump thermal protection alarm.
  - tank level alarm.
  - count of operating hours of the unit and of the individual compressors.

A voltage-free contact is provided for the remote general alarm signal.

## 17. OPTIONS, KITS AND SPECIAL DESIGNS

### 17.1 OPTIONS

Options must be specified at the time of order because they can only be installed in the factory.

- **EVAPORATOR ANTI-FREEZE HEATER:** the anti-freeze heaters are wires wrapped around the tank and the pump (if provided). They are enabled by the microprocessor controller on the basis of the temperature measured by an external probe. For external temperatures lower than the set point the controller also activates the pump (if present). The heaters provide protection of the evaporator for external temperatures below 0°C and greater than or equal to -10°C. For temperatures below -10°C and higher than -20°C, in addition to the anti-freeze heaters option double insulation on the tank and pumps (special unit) must be installed. As an alternative, it is necessary to provide an adequate quantity of anti-freeze additive. When the unit is equipped with the tank kit, it is advisable to use mixtures of water and liquid anti-freeze, as the plastic kit is not compatible with any anti-freeze heater.

- **DOUBLE PUMP P3+P3 or P5+P5 (mod. iC520 - iC660):** stand-by operation. Switching between the two pumps is controlled by the electronic controller in order to equalise the operating times. The pumps are always provided with check valves and on/off cocks at the delivery and intake of each pump.
  - P3+P3: double pump P3 with nominal pressure of approximately 3 bar.
  - P5+P5: double pump P5 with nominal pressure of approximately 5 bar.

- **VERSION WITHOUT PUMP:** includes the provision for electric power of an external pump equivalent to a P3.

- **CENTRIFUGAL FANS (mod. iC303 - iC416):** double intake fans with the rotor shrink-fitted directly on the electric motor shaft and upper outlet opening. These fans are controlled by means of pressure switches/transducers with ON/OFF type regulation when a single fan is present or in STEP when 2 or 3 fans are present.

- **EC AXIAL FANS WITH HIGH HEAD PRESSURE (mod. iC520 - iC660):** axial fans with high prevalence and high efficiency with EC motor brushless synchronous and electronic adjustment with inverter.

- **ELECTRONIC AXIAL FANS SPEED CONTROLLER:** electronic control of the speed of rotation by phase cut regulator managed by the electronic control on the basis of the condensing pressure detected by a pressure transducer. Always present in the version for low environmental temperature -20°C (mod. iC303 - iC660)

- **POWER SUPPLY 460V/3/60Hz UL certification:** see relative documentation.

- **PAINTED CONDENSING COIL:** epoxy primer and polyurethane-base paint (RAL 7001) to the coils, collectors and bends.

### 17.2 KITS

The kits are supplied separately, generally at the same time of the unit, and installed by the user. They can be supplied later as spare parts, modification kits, completion kits etc.:

- **HYDRAULIC CIRCUIT MANUAL FILLING TANK KIT:** the tank kit ensures filling of the tank and hydraulic circuit when the latter is not pressurised (open circuits). The kit is composed of:
  - plastic tank for filling the circuit and displaying the water level.
  - galvanized and painted sheet steel supporting frame/casing;
  - connecting fittings with tank.

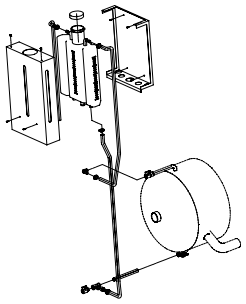
The tank kit may be installed directly on the unit at the factory and is also available in "sales kit" version. For models iC215 - iC220 it is not possible to choose the kit from the configurator but it is only available in the "sales kit" version.

- **AUTOMATIC FILLING KIT HYDRAULIC CIRCUIT:** the automatic filling kit provides automatic filling of pressurised circuits (closed hydraulic circuits). Kit composition:
  - pressure reducer with valve.
  - pressure gauge.
  - automatic bleed valve.
  - pressure relief valve.
  - expansion tank.
  - preassembled connecting fittings.

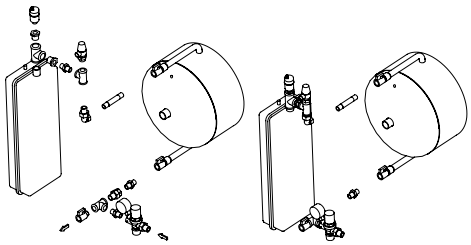
- **AUTOMATIC GLYCOL PUMPING GROUP:** The kit consists of a 300 l stainless steel tank, expansion tank, pump, 230V single phase electrical panel.

- **GLYCOL FILLING KIT:** this kit can be used for filling the hydraulic circuit manually, it is composed by a polyethilene pipe with hermetic plug and brass fittings.

- **HYDRAULIC CONNECTIONS KITS:** this kit allows the conversion of the standard thread GAS UNI ISO 7/1 (BSP) to the NPT F ANSIB1.20.1.



Tank kit

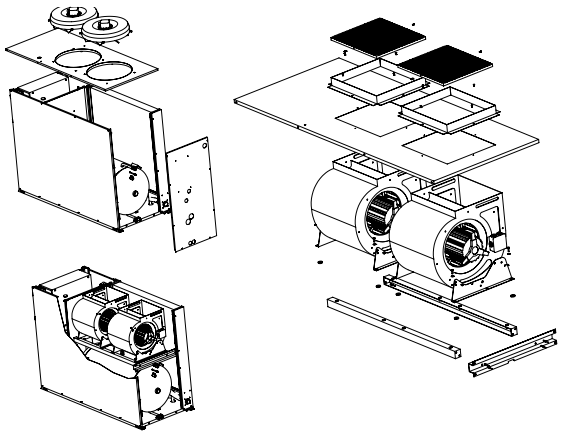


Automatic filling kit

- **EXTERNAL MANUAL HYDRAULIC By-pass KIT** (special).

- **EXTERNAL AUTOMATIC HYDRAULIC** By-pass KIT (special).

- **KIT CENTRIFUGAL FANS** (mod. iC303 - iC416): this kit allows the axial fans replacement with centrifugal fans.



Mod. iC408 - iC416

VICX620

- **AXIAL FANS KIT ELECTRONIC SPEED CONTROL:** power 400V/3/50Hz

- **KIT CONDENSING COIL PROTECTION METAL FILTERS** (Mod. iC303 - iC660).

- **KIT REMOTE ON/OFF:** This kit makes it possible to remotise the unit's ON/OFF up to a maximum distance of 150m and consists of a plastic box with a transparent lid. It features an ON/OFF switch and two LEDs, a green one to indicate plant ON and red one to indicate plant OFF status

- **KIT REMOTE TERMINAL VICX620 WITH LED DISPLAY:** This kit makes it possible to remotise all functions of the unit's onboard electronic controller up to a maximum distance of 150 m (shielded cable required - not supplied). This terminals also performs the remote ON/OFF function.

- **KIT REMOTE TERMINAL VISOGRAPH VGI890 LCD DISPLAY:** backlit semi-graphic user terminal, makes it possible to remotise all functions of the unit's onboard electronic controller up to a maximum distance of 150m (shielded cable required - not supplied). Thanks to the use of icons, multi-function keys with dynamic description and moving

images, the visualisations, and the information are easy to understand. This terminals also performs the remote ON/OFF function.

## REMOTE X

- **REMOTE ACCESS** connectivity to your i-Chiller, 24/7. Can monitor up to 4 chillers simultaneosly, and provide more convenient improved control for the end user.

- **REMOTE ACCESS CONNECTIVITY TO YOUR I-CHILLER, 24/7.** Can monitor up to 4 chillers simultaneosly, and provide more convenient improved control for the end user.

- **REMOTE X** gives cooling processes an intelligent edge, and with a wide variety of features, it is already revolutionising the way in which companies are controlling their temperature requirements.

*Compatibility, accessibility and support wherever you are.*

- **TIGHTER MONITORING, REPORTING AND ENERGY CONTROL WITH REMOTE X.**

- **REMOTE X** offers the option of producing reports on connected chillers, allowing for tighter monitoring to ascertain how effectively a unit runs over periods of time. Due to its customisable nature, it produces stats and audit trails of alarms, temperatures, and a wealth of other chiller activity.

- **THE SOFTWARE IS ACCESSIBLE IN REAL TIME 24 HOURS A DAY, 365 DAYS A YEAR** with total support from engineers at our offices strategically placed throughout the UK. Remote X really does offer comprehensive control anytime, anywhere.

*Remote X*

## 17.3 SPECIAL DESIGNS

The special features are not described in detail in our catalogues. The feasibility of special designs must be assessed, confirmed, and priced on a case by case basis in communication with our sales offices before placing the order.

- Water flow switch: device to protect the evaporator from the absence of water flow.
- Copper-copper condensing coils: with copper tubes and fins and brass shoulders.
- **FIN GUARD/BLYGOLD** treatment for condensing coils: consisting of a passivating primer and a polyurethane-based top coat
- R407F version for outlet water temperature up to -20°C.
- R134a version for external air temperature up to +50°C.
- Centrifugal fans electronic control.

## 18. LIFTING

All units are positioned and secured to pallets, on which they can be handled by means of forklift trucks and pallet trucks. The units can also be moved even when not standing on a pallet thanks to features on the plinth (mod. iC215 - iC535).

The iC520 - iC660 models can be handled by inserting lifting bars into the plinth and utilising lifting straps. The bars for lifting and handling aren't supplied as standard

## SELECTION GUIDE

Selection of a chiller is performed by means of the tables given in the "Selection guide" and by means of the Data Tables relative to each model. For correct selection of a chiller it is necessary:

1) Ensure that the operating limits specified in the "Working limits table are complied with."

2) Ensure that the flow rate of water to be cooled is between the flow values specified in the "General Data" table of each unit; excessively low flow rates will result in laminar flow and, consequently, a risk of freezing and poor temperature control; in contrast, excessively high flow rates lead to excessive load drops and possible bursting of evaporator piping.

3) Add ethylene glycol or other antifreeze liquids when using the chiller at water outlet temperatures below 5°C; consult the "Water and ethylene glycol solutions" table to find the quantity of ethylene glycol required and to assess the reduction in cooling duty, the increase in compressor power input, and the increase in evaporator pressure drops due to the presence of ethylene glycol.

4) The iChiller models are installed at altitudes in excess of 500m, assess the reduction of cooling performance and the increase in compressor power input values by means of the coefficients given in the "Condenser corrective coefficients" table.

5) If the temperature difference between the evaporator water inlet andoutlet differs by 5°C, correct the cooling capacity and power input utilising the "ΔT corrective coefficients ≠ 5°C" tables.

# i-CHILLER

Innovative, Intelligent, Industrial

## PERFORMANCE AND TECHNICAL DATA 50 Hz VERSION

### GENERAL DATA - 50Hz

| | | iC003 | iC105 | iC110 | iC215 | iC220 | iC303 | iC305 | iC408 | iC410 | iC412 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Cooling capacity (1) | kW | 1.4 | 2.5 | 4.4 | 7,00 | 8,30 | 13,3 | 19,4 | 30,1 | 39,2 | 48,3 |
| Total absorbed power (1) | kW | 0.5 | 0.73 | 1.32 | 1,95 | 1,77 | 3,08 | 4,29 | 7,31 | 8,40 | 10,6 |
| EER (1) | - | - | - | - | 3,58 | 4,69 | 4,32 | 4,53 | 4,12 | 4,67 | 4,54 |
| Cooling capacity (2) | kW | - | - | - | 5,00 | 5,96 | 9,58 | 13,9 | 22,3 | 29,1 | 35,9 |
| Total absorbed power (2) | kW | - | - | - | 2,16 | 2,19 | 3,52 | 4,95 | 8,18 | 9,60 | 12,0 |
| EER (2) | - | - | - | - | 2,31 | 2,72 | 2,72 | 2,81 | 2,73 | 3,03 | 2,99 |
| Compressor | | | | | | | | | | | |
| Cooling circuits | N° | - | - | - | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| Compressors for each circuit | N° | - | - | - | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| Capacity control | % | - | - | - | 0-100 | 0-100 | 0-100 | 0-100 | 0-100 | 0-100 | 0-100 |
| ESEER | - | - | - | - | 2,79 | 3,28 | 3,21 | 3,27 | 3,18 | 3,51 | 3,46 |
| Electrical power supply (3) | | | | | | | | | | | |
| Power | V/Ph/Hz | 230±10%/1/50 | | | 400 ± 10% / 3 - PE / 50 | | | | | | |
| Auxiliary | V/Ph/Hz | - | | | 24 - 230 ± 10% / 1 / 50 | | | | | | |
| Condensers | | | | | | | | | | | |
| Condenser number | N° | - | - | - | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| Ranks number | N° | - | - | - | 2 | 4 | 2 | 4 | 4 | 4 | 5 |
| Total frontal surface | $m^2$ | - | - | - | 0,31 | 0,31 | 0,63 | 0,63 | 1,1 | 1,1 | 1,1 |
| Axial fans | | | | | | | | | | | |
| Fans number | N° | - | - | - | 1 | 1 | 1 | 1 | 1 | 2 | 2 |
| Total airflow | $m^3/h$ | 900 | 2200 | 2100 | 3500 | 3150 | 6500 | 6150 | 8150 | 14200 | 13600 |
| Nominal power (each) | kW | 0.065 | 0.146 | 0.146 | 0,203 | 0,203 | 0,48 | 0,48 | 0,71 | 0,71 | 0,71 |
| Centrifugal fans/high pressure axials fans | | | | | | | | | | | |
| Fans number | N° | - | - | - | - | - | 1 | 1 | 2 | 2 | 2 |
| Total airflow | $m^3/h$ | - | - | - | - | - | 6600 | 6000 | 9200 | 12800 | 12800 |
| Available head pressure | Pa | - | - | - | - | - | 159 | 188 | 265 | 134 | 115 |
| Nominal power (each) | kW | - | - | - | - | - | 1,1 | 1,1 | 1,1 | 1,1 | 1,1 |
| Hydraulic group | | | | | | | | | | | |
| Water flow rate P3 (4) | $m^3/h$ | 0.24/0.34 | 0.43/1.2 | 0.76/1.2 | 0,4/4,8 | 0,4/4,8 | 0,7/6 | 0,9/6 | 1,9/9,1 | 2,1/9,3 | 2,6/18 |
| Available pump head pressure P3 (5) | barg | 1.18/0.54 | 2.78/0.46 | 2.78/0.46 | 3,0/1,4 | 3,0/1,4 | 3,1/1,6 | 3,0/1,5 | 3,0/1,5 | 2,9/1,6 | 2,8/1,7 |
| Nominal power P3 | kW | 0.25 | 0.33 | 0.33 | 0,55 | 0,55 | 0,75 | 0,75 | 0,9 | 0,9 | 1,85 |
| Water flow rate P5 (4) | $m^3/h$ | - | - | - | 0,4/4,8 | 0,4/4,8 | 0,7/4,3 | 0,9/4,5 | 1,9/12,6 | 2,1/12,6 | 2,6/12,6 |
| Available pump head pressure P5 (5) | barg | - | - | - | 5,4/3,0 | 5,4/3,0 | 5,3/3,7 | 5,2/3,5 | 5,2/3,2 | 5,2/3,6 | 5,2/3,6 |
| Nominal power P5 | kW | - | - | - | 1,1 | 1,1 | 1,1 | 1,1 | 2,2 | 2,2 | 2,2 |
| Tank volume | l | - | - | - | 60 | 60 | 115 | 115 | 140 | 255 | 255 |
| Max pressure | barg | - | - | - | 6 | 6 | 6 | 6 | 6 | 6 | 6 |
| Water connections | Rp | - | - | - | 3/4" | 3/4" | 1" | 1" | 1 1/2" | 1 1/2" | 1 1/2" |
| Sound levels (6) | | | | | | | | | | | |
| Sound power | dB (A) | - | - | - | 80,4 | 80,4 | 81,1/86,8 | 81,1/86,8 | 81,6/89,2 | 82,1/89,2 | 82,1/89,2 |
| Sound pressure | dB (A) | - | - | - | 52,4 | 52,4 | 53,1/58,8 | 53,1/58,8 | 53,6/61,2 | 54,1/61,2 | 54,1/61,2 |
| Dimensions and installed weight (7) | | | | | | | | | | | |
| Width | mm | 325 | 575 | 575 | 560 | 560 | 660 | 660 | 760 | 760 | 760 |
| Length | mm | 728 | 652 | 652 | 1265 | 1265 | 1310 | 1310 | 1865 | 1865 | 1865 |
| Height | mm | 540 | 805 | 805 | 794 | 794 | 1400 | 1400 | 1447 | 1447 | 1447 |
| Weight without pump | kg | - | - | - | 194 | 198 | 320 | 339 | 451 | 613 | 626 |
| Weight with P3 | kg | 63 | 106 | 113 | 206 | 210 | 333 | 351 | 464 | 626 | 643 |
| Weight with P5 | kg | - | - | - | 212 | 216 | 337 | 356 | 477 | 639 | 652 |

(1) Evaporator water inlet/outlet temperature 20/15°C, external air temperature 25°C.

(2) Evaporator water inlet/outlet temperature 12/7°C, external air temperature 35°C.

(3) Protection class IP44 for models iC003 - iC220. Protection class IP54 for models iC303 - iC660.

(4) Mimimum and maximum water flow pump.

(5) Available head pressure at outlet unit at the minimum and maximum water flow rate.

(6) The first value refers to the version with axial fans, the second value refers to the version with centrifugal fans. Sound power: determined on the basis of measurements taken in accordance with the standard ISO 3744. Sound pressure at 10 m: average value obtained in free field on a reflective surface at a distance of 10m from the side of the condenser coils and at a height of 1.6m from the unit support base. Values with tolerance +/- 2 dB(A). The sound levels refer to operation of the unit under full load in nominal conditions.

(7) The weights of the units are referred to the configuration with axial fans.

Data declared according to UNI EN 14511:2011.

## GENERAL DATA - 50Hz

| | | iC416 | iC520 | iC525 | iC530 | iC535 | iC640 | iC650 | iC660 |
|---|---|---|---|---|---|---|---|---|---|
| Cooling capacity (1) | kW | 55,5 | 64,1 | 75,7 | 84,1 | 96,2 | 123,2 | 146,4 | 166,1 |
| Total absorbed power (1) | kW | 13,6 | 14,7 | 18,1 | 19,1 | 23,7 | 29,4 | 33,6 | 38,8 |
| EER (1) | - | 4,08 | 4,35 | 4,19 | 4,40 | 4,06 | 4,19 | 4,36 | 4,27 |
| Cooling capacity (2) | kW | 41,5 | 47,5 | 55,6 | 62,0 | 71,7 | 91,3 | 107,7 | 122,4 |
| Total absorbed power (2) | kW | 14,9 | 16,7 | 20,6 | 21,7 | 26,4 | 33,3 | 38,5 | 44,0 |
| EER (2) | - | 2,79 | 2,84 | 2,70 | 2,86 | 2,72 | 2,74 | 2,80 | 2,78 |
| Compressor | | | | | | | | | |
| Cooling circuits | N° | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 2 |
| Compressors for each circuit | N° | 1 | 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| Capacity control | % | 0-100 | 0-50-100 | 0-50-100 | 0-50-100 | 0-50-100 | 0-25-50-75-100 | 0-25-50-75-100 | 0-25-50-75-100 |
| ESEER | - | 3,17 | 4,36 | 4,35 | 4,33 | 4,17 | 4,15 | 4,38 | 4,34 |
| Electrical power supply (3) | | | | | | | | | |
| Power | V/Ph/Hz | | 400 ± 10% / 3 - PE / 50 | | | | | | |
| Auxiliary | V/Ph/Hz | | 24 - 230 ± 10% / 1 / 50 | | | | | | |
| Condensers | | | | | | | | | |
| Condenser number | N° | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| Ranks number | N° | 5 | 4 | 5 | 5 | 5 | 3 | 4 | 5 |
| Total frontal surface | $m^2$ | 1,1 | 2,16 | 2,16 | 2,16 | 2,16 | 4,2 | 4,2 | 4,2 |
| Axial fans | | | | | | | | | |
| Fans number | N° | 2 | 2 | 2 | 3 | 3 | 2 | 2 | 2 |
| Total airflow | $m^3/h$ | 13600 | 16200 | 16000 | 22200 | 21600 | 45800 | 44400 | 42800 |
| Nominal power (each) | kW | 0,71 | 0,71 | 0,71 | 0,71 | 0,71 | 2,1 | 2,1 | 2,1 |
| Centrifugal fans/high pressure axials | | | | | | | | | |
| Fans number | N° | 2 | 2 | 2 | 3 | 3 | 2 | 2 | 2 |
| Total airflow | $m^3/h$ | 12800 | 14600 | 14600 | 20100 | 20100 | 40000 | 40000 | 40000 |
| Available head pressure | Pa | 115 | 151 | 144 | 150 | 142 | 198 | 185 | 172 |
| Nominal power (each) | kW | 1,1 | 0,9 | 0,9 | 0,9 | 0,9 | 2,8 | 2,8 | 2,8 |
| Hydraulic group | | | | | | | | | |
| Water flow rate P3 (4) | $m^3/h$ | 3,2/18 | 3,4/18 | 3,4/18 | 4,8/27 | 5,6/27 | 6,6/48 | 8,1/48 | 9,4/48 |
| Available pump head pressure P3 (5) | barg | 2,8/1,7 | 2,8/2,1 | 2,8/2,1 | 3,3/0,9 | 3,3/0,9 | 3,9/1,5 | 3,8/1,5 | 3,8/1,5 |
| Nominal power P3 | kW | 1,85 | 1,85 | 1,85 | 2,2 | 2,2 | 4 | 4 | 4 |
| Water flow rate P5 (4) | $m^3/h$ | 3,2/12,6 | 3,4/27 | 3,4/27 | 4,8/27 | 5,6/27 | 6,6/48 | 8,1/48 | 9,4/48 |
| Available pump head pressure P5 (5) | barg | 5,1/3,7 | 5,2/2,4 | 5,2/2,4 | 5,1/2,4 | 5,1/2,4 | 5,5/3,1 | 5,5/3,1 | 5,5/3,1 |
| Nominal power P5 | kW | 2,2 | 4 | 4 | 4 | 4 | 7,5 | 7,5 | 7,5 |
| Tank volume | l | 255 | 350 | 350 | 350 | 350 | 500 | 500 | 500 |
| Max pressure | barg | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 |
| Water connections | Rp | 1 1/2" | 2" | 2" | 2" | 2" | 2 1/2" | 2 1/2" | 2 1/2" |
| Sound levels (6) | | | | | | | | | |
| Sound power | dB (A) | 83/89,2 | 84,3/85,0 | 84,3/85,0 | 86/86,7 | 86/86,7 | 89,5/91,1 | 89,5/91,1 | 89,5/91,1 |
| Sound pressure | dB (A) | 55,0/61,2 | 56,3/57,0 | 56,3/57,0 | 58,0/58,7 | 58,0/58,7 | 61,5/63,1 | 61,5/63,1 | 61,5/63,1 |
| Dimensions and installed weight (7) | | | | | | | | | |
| Width | mm | 760 | 865 | 865 | 865 | 865 | 1255 | 1255 | 1255 |
| Length | mm | 1865 | 2255 | 2255 | 2255 | 2255 | 3295 | 3295 | 3295 |
| Height | mm | 1447 | 2065 | 2065 | 2065 | 2065 | 2159 | 2159 | 2159 |
| Weight without pump | kg | 650 | 957 | 1018 | 999 | 1020 | 1654 | 1703 | 1730 |
| Weight with P3 | kg | 667 | 974 | 1035 | 1038 | 1059 | 1701 | 1750 | 1777 |
| Weight with P5 | kg | 676 | 1011 | 1072 | 1053 | 1074 | 1733 | 1782 | 1809 |
| Weight with double P3 | kg | - | 992 | 1053 | 1078 | 1099 | 1750 | 1799 | 1826 |
| Weight with double P5 | kg | - | 1066 | 1127 | 1108 | 1129 | 1814 | 1863 | 1890 |

(1) Evaporator water inlet/outlet temperature 20/15°C, external air temperature 25°C.

(2) Evaporator water inlet/outlet temperature 12/7°C, external air temperature 35°C.

(3) Protection class IP44 for models iC003 - iC220. Protection class IP54 for models iC303 - iC660.

(4) Mimimum and maximum water flow pump.

(5) Available head pressure at outlet unit at the minimum and maximum water flow rate.

(6) The first value refers to the version with axial fans, the second value refers to the version with centrifugal fans. Sound power: determined on the basis of measurements taken in accordance with the standard ISO 3744. Sound pressure at 10m: average value obtained in free field on a reflective surface at a distance of 10 m from the side of the condenser coils and at a height of 1.6m from the unit support base. Values with tolerance +/- 2 dB(A). The sound levels refer to operation of the unit under full load in nominal conditions.

(7) The weights of the units are referred to the configuration with axial fans.

Data declared according to UNI EN 14511:2011.

## ELECTRICAL DATA - 50Hz

| Model | Version | Hz | With axial fans | | | With centrifugal fans / axials fans high head pressure | | |
|---|---|---|---|---|---|---|---|---|
| | | | with on/off fans and electronic fan speed | | | with on/off fans and step | | |
| | | | FLI (kW) | FLA (A) | ICF (A) | FLI (kW) | FLA (A) | ICF (A) |
| iC003 | SP | - | - | - | - | - | - | - |
| | P3 | 50 | 1,0 | 5,0 | 19 | - | - | - |
| | P5 | - | - | - | - | - | - | - |
| iC105 | SP | - | - | - | - | - | - | - |
| | P3 | 50 | 1,6 | 7,0 | 23 | - | - | - |
| | P5 | - | - | - | - | - | - | - |
| iC110 | SP | - | - | - | - | - | - | - |
| | P3 | 50 | 2,1 | 9,0 | 37 | - | - | - |
| | P5 | - | - | - | - | - | - | - |
| iC215 | SP | 50 | 2,9 | 4,9 | 26 | - | - | - |
| | P3 | 50 | 3,8 | 6,5 | 28 | - | - | - |
| | P5 | 50 | 4,7 | 8,1 | 29 | - | - | - |
| iC220 | SP | 50 | 3,1 | 5,3 | 32 | - | - | - |
| | P3 | 50 | 3,9 | 6,9 | 34 | - | - | - |
| | P5 | 50 | 4,9 | 8,5 | 35 | - | - | - |
| iC303 | SP | 50 | 4,8 | 8,4 | 48 | 6,8 | 12,4 | 48 |
| | P3 | 50 | 5,7 | 10,2 | 50 | 7,8 | 14,1 | 50 |
| | P5 | 50 | 6,6 | 11,6 | 51 | 8,6 | 15,6 | 51 |
| iC305 | SP | 50 | 6,4 | 11,1 | 64 | 8,4 | 15,0 | 64 |
| | P3 | 50 | 7,4 | 12,9 | 66 | 9,4 | 16,8 | 66 |
| | P5 | 50 | 8,2 | 14,3 | 67 | 10,2 | 18,2 | 67 |
| iC408 | SP | 50 | 10,8 | 17,8 | 111 | 15,1 | 26,2 | 111 |
| | P3 | 50 | 12,0 | 20,2 | 113 | 16,4 | 28,6 | 113 |
| | P5 | 50 | 14,2 | 23,9 | 117 | 18,6 | 32,3 | 117 |
| iC410 | SP | 50 | 13,1 | 22,2 | 118 | 16,7 | 29,2 | 118 |
| | P3 | 50 | 14,4 | 24,6 | 120 | 18,0 | 31,6 | 120 |
| | P5 | 50 | 16,6 | 28,3 | 124 | 20,2 | 35,3 | 124 |
| iC412 | SP | 50 | 16,1 | 27,1 | 140 | 19,7 | 34,1 | 140 |
| | P3 | 50 | 18,3 | 31,3 | 144 | 21,9 | 38,3 | 144 |
| | P5 | 50 | 19,6 | 33,2 | 146 | 23,2 | 40,2 | 146 |
| iC416 | SP | 50 | 18,3 | 32,8 | 174 | 21,9 | 39,8 | 174 |
| | P3 | 50 | 20,5 | 37,0 | 178 | 24,1 | 44,0 | 178 |
| | P5 | 50 | 21,8 | 38,9 | 180 | 25,4 | 45,9 | 180 |
| iC520 | SP | 50 | 21,5 | 35,7 | 130 | 21,9 | 35,8 | 130 |
| | P3 | 50 | 23,7 | 39,9 | 134 | 24,1 | 40,0 | 135 |
| | P5 | 50 | 26,0 | 43,3 | 138 | 26,4 | 43,4 | 138 |
| iC525 | SP | 50 | 24,8 | 41,6 | 140 | 25,2 | 41,8 | 140 |
| | P3 | 50 | 27,0 | 45,9 | 144 | 27,4 | 46,0 | 145 |
| | P5 | 50 | 29,3 | 49,3 | 148 | 29,7 | 49,4 | 148 |
| iC530 | SP | 50 | 28,5 | 47,9 | 164 | 29,0 | 48,1 | 164 |
| | P3 | 50 | 31,1 | 52,5 | 168 | 31,6 | 52,7 | 168 |
| | P5 | 50 | 33,0 | 55,5 | 171 | 33,5 | 55,7 | 171 |
| iC535 | SP | 50 | 33,7 | 58,5 | 202 | 34,2 | 58,7 | 203 |
| | P3 | 50 | 36,3 | 63,1 | 207 | 36,8 | 63,3 | 207 |
| | P5 | 50 | 38,2 | 66,1 | 210 | 38,7 | 66,3 | 210 |
| iC640 | SP | 50 | 44,4 | 73,9 | 168 | 45,6 | 73,9 | 168 |
| | P3 | 50 | 48,9 | 81,6 | 176 | 50,1 | 81,6 | 176 |
| | P5 | 50 | 52,8 | 87,9 | 182 | 54,0 | 87,9 | 182 |
| iC650 | SP | 50 | 51,0 | 85,8 | 184 | 52,2 | 85,8 | 184 |
| | P3 | 50 | 55,5 | 93,5 | 192 | 56,7 | 93,5 | 192 |
| | P5 | 50 | 59,4 | 99,8 | 198 | 60,6 | 99,8 | 198 |
| iC660 | SP | 50 | 56,9 | 95,6 | 211 | 58,1 | 95,6 | 211 |
| | P3 | 50 | 61,4 | 103 | 219 | 62,6 | 103 | 219 |
| | P5 | 50 | 65,3 | 110 | 225 | 66,5 | 110 | 225 |

**SP** = without pump;
**P3** = pump P3;
**P5** = pump P5;
**FLI** = max power absorbed in the working limits condition;
**FLA** = max current absorbed in the working limits condition;
**ICF** = Start-up current at the start of the last compressor in the working limits condition.

## SOUND LEVELS - 50Hz

| Model | Version | Octave bands (Hz) | | | | | | | | Power | Pressure |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 63 | 125 | 250 | 500 | 1000 | 2000 | 4000 | 8000 | | |
| | | Sound power level Lw dB (A) | | | | | | | | dB (A) | dB (A)10m |
| iC003 | axials | - | - | - | - | - | - | - | - | 76.2 | 48.2 |
| iC105 | axials | - | - | - | - | - | - | - | - | 76.3 | 48.3 |
| iC110 | axials | - | - | - | - | - | - | - | - | 76.3 | 48.3 |
| iC215 | axials | 48,2 | 61,2 | 73,5 | 75,8 | 75,2 | 71,0 | 63,3 | 53,8 | 80,4 | 52,4 |
| iC220 | axials | 48,2 | 61,2 | 73,5 | 75,8 | 75,2 | 71,0 | 63,3 | 53,8 | 80,4 | 52,4 |
| iC303 | axials | 52,1 | 73,5 | 74,4 | 70,7 | 76,6 | 72,2 | 65,2 | 57,4 | 81,1 | 53,1 |
| | centrifugal | 47,3 | 57,7 | 70,0 | 77,8 | 81,4 | 81,2 | 80,8 | 72,8 | 86,8 | 58,8 |
| iC305 | axials | 52,1 | 73,5 | 74,4 | 70,7 | 76,6 | 72,2 | 65,2 | 57,4 | 81,1 | 53,1 |
| | centrifugal | 47,3 | 57,7 | 70,0 | 77,8 | 81,4 | 81,2 | 80,8 | 72,8 | 86,8 | 58,8 |
| iC408 | axials | 50,6 | 69,4 | 69,7 | 72,7 | 78,4 | 75,0 | 68,9 | 58,6 | 81,6 | 53,6 |
| | centrifugal | 47,4 | 58,6 | 71,0 | 79,5 | 83,8 | 84,1 | 83,1 | 74,9 | 89,2 | 61,2 |
| iC410 | axials | 50,9 | 69,8 | 70,2 | 73,2 | 78,9 | 75,5 | 69,4 | 59,0 | 82,1 | 54,1 |
| | centrifugal | 47,4 | 58,6 | 71,0 | 79,5 | 83,8 | 84,1 | 83,1 | 74,9 | 89,2 | 61,2 |
| iC412 | axials | 50,9 | 69,8 | 70,2 | 73,2 | 78,9 | 75,5 | 69,4 | 59,0 | 82,1 | 54,1 |
| | centrifugal | 47,4 | 58,6 | 71,0 | 79,5 | 83,8 | 84,1 | 83,1 | 74,9 | 89,2 | 61,2 |
| iC416 | axials | 51,5 | 70,6 | 71,0 | 74,0 | 79,7 | 76,3 | 70,1 | 59,6 | 83 | 55,0 |
| | centrifugal | 47,4 | 58,6 | 71,0 | 79,5 | 83,8 | 84,1 | 83,1 | 74,9 | 89,2 | 61,2 |
| iC520 | axials | 59,9 | 71,9 | 73,0 | 75,1 | 81,0 | 77,9 | 71,4 | 59,3 | 84,3 | 56,3 |
| | axials high pressure | 60,4 | 72,5 | 73,6 | 75,8 | 81,7 | 78,5 | 72,0 | 59,8 | 85,0 | 57,0 |
| iC525 | axials | 59,9 | 71,9 | 73,0 | 75,1 | 81,0 | 77,9 | 71,4 | 59,3 | 84,3 | 56,3 |
| | axials high pressure | 60,4 | 72,5 | 73,6 | 75,8 | 81,7 | 78,5 | 72,0 | 59,8 | 85,0 | 57,0 |
| iC530 | axials | 61,2 | 73,4 | 74,5 | 76,7 | 82,8 | 79,5 | 72,9 | 60,5 | 86 | 58,0 |
| | axials high pressure | 61,7 | 74,0 | 75,2 | 77,4 | 83,5 | 80,2 | 73,5 | 61,1 | 86,7 | 58,7 |
| iC535 | axials | 61,2 | 73,4 | 74,5 | 76,7 | 82,8 | 79,5 | 72,9 | 60,5 | 86 | 58,0 |
| | axials high pressure | 61,7 | 74,0 | 75,2 | 77,4 | 83,5 | 80,2 | 73,5 | 61,1 | 86,7 | 58,7 |
| iC640 | axials | 63,9 | 76,6 | 77,8 | 80,1 | 86,4 | 83,0 | 76,1 | 63,2 | 89,5 | 61,5 |
| | axials high pressure | 65,1 | 78,1 | 79,3 | 81,6 | 88,0 | 84,6 | 77,5 | 64,4 | 91,1 | 63,1 |
| iC650 | axials | 63,9 | 76,6 | 77,8 | 80,1 | 86,4 | 83,0 | 76,1 | 63,2 | 89,5 | 61,5 |
| | axials high pressure | 65,1 | 78,1 | 79,3 | 81,6 | 88,0 | 84,6 | 77,5 | 64,4 | 91,1 | 63,1 |
| iC660 | axials | 63,9 | 76,6 | 77,8 | 80,1 | 86,4 | 83,0 | 76,1 | 63,2 | 89,5 | 61,5 |
| | axials high pressure | 65,1 | 78,1 | 79,3 | 81,6 | 88,0 | 84,6 | 77,5 | 64,4 | 91,1 | 63,1 |

Sound power: determined on the basis of measurements taken in accordance with the standard ISO 3744. Sound pressure at 10m: average value obtained in free field on a reflective surface at a distance of 10m from the side of the condenser coils and at a height of 1.6m from the unit support base. Values with tolerance +/- 2 dB(A). The sound levels refer to operation of the unit under full load in nominal conditions.

| Distance | KdB |
|---|---|
| (1) L (m) | |
| 1 | 15 |
| 3 | 10 |
| 5 | 6 |
| 10 | 0 |

(1) To calculate a different distance of the sound pressure level, use the formula: dB(A)L=dB(A)10m+Kdb.

## PERFORMANCE DATA - 50Hz

### iC215

| Glycol | tu | External air temperature ta (°C) 25 | | | 32 | | | 35 | | | 38 | | | 40 | | | 43 | | | ta max |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (°C) | Pf (kW) | Pa (kW) | Fw (m³/h) | Pf (kW) | Pa (kW) | Fw (m³/h) | Pf (kW) | Pa (kW) | Fw (m³/h) | Pf (kW) | Pa (kW) | Fw (m³/h) | Pf (kW) | Pa (kW) | Fw (m³/h) | Pf (kW) | Pa (kW) | Fw (m³/h) | (°C) |
| 35% | -10 | 2,6 | 1,4 | 0,4 | 2,4 | 1,7 | 0,4 | 2,3 | 1,8 | 0,4 | 2,2 | 2,0 | 0,4 | - | - | - | - | - | - | 39 |
| 35% | -7 | 3,0 | 1,5 | 0,5 | 2,7 | 1,7 | 0,5 | 2,6 | 1,9 | 0,4 | 2,5 | 2,0 | 0,4 | 2,4 | 2,1 | 0,4 | - | - | - | 41 |
| 25% | -5 | 3,4 | 1,5 | 0,6 | 3,1 | 1,8 | 0,5 | 3,0 | 1,9 | 0,5 | 2,8 | 2,1 | 0,5 | 2,7 | 2,2 | 0,5 | 2,6 | 2,3 | 0,4 | 43 |
| 25% | -3 | 3,7 | 1,6 | 0,6 | 3,4 | 1,8 | 0,6 | 3,3 | 1,9 | 0,6 | 3,1 | 2,1 | 0,5 | 3,0 | 2,2 | 0,5 | 2,9 | 2,4 | 0,5 | 44 |
| 20% | 0 | 4,3 | 1,6 | 0,7 | 4,0 | 1,9 | 0,7 | 3,8 | 2,0 | 0,7 | 3,6 | 2,1 | 0,6 | 3,5 | 2,2 | 0,6 | 3,3 | 2,4 | 0,6 | 46 |
| 20% | 3 | 4,9 | 1,6 | 0,8 | 4,5 | 1,9 | 0,8 | 4,3 | 2,1 | 0,7 | 4,1 | 2,2 | 0,7 | 4,0 | 2,3 | 0,7 | 3,8 | 2,5 | 0,6 | 46 |
| | 5 | 5,4 | 1,7 | 0,9 | 4,9 | 2,0 | 0,8 | 4,7 | 2,1 | 0,8 | 4,5 | 2,3 | 0,8 | 4,4 | 2,4 | 0,7 | 4,1 | 2,5 | 0,7 | 46 |
| | 7 | 5,7 | 1,7 | 1,0 | 5,2 | 2,0 | 0,9 | 5,0 | 2,2 | 0,9 | 4,8 | 2,3 | 0,8 | 4,6 | 2,4 | 0,8 | 4,4 | 2,6 | 0,8 | 46 |
| | 9 | 6,0 | 1,8 | 1,0 | 5,5 | 2,1 | 0,9 | 5,3 | 2,2 | 0,9 | 5,0 | 2,4 | 0,9 | 4,9 | 2,5 | 0,8 | 4,6 | 2,6 | 0,8 | 46 |
| | 11 | 6,3 | 1,8 | 1,1 | 5,8 | 2,1 | 1,0 | 5,6 | 2,3 | 1,0 | 5,3 | 2,4 | 0,9 | 5,1 | 2,5 | 0,9 | 4,9 | 2,7 | 0,8 | 45 |
| | 13 | 6,7 | 1,9 | 1,1 | 6,1 | 2,2 | 1,0 | 5,9 | 2,3 | 1,0 | 5,6 | 2,5 | 1,0 | 5,4 | 2,6 | 0,9 | 5,1 | 2,8 | 0,9 | 44 |
| | 15 | 7,0 | 2,0 | 1,2 | 6,4 | 2,3 | 1,1 | 6,1 | 2,4 | 1,1 | 5,9 | 2,6 | 1,0 | 5,7 | 2,7 | 1,0 | 5,4 | 2,9 | 0,9 | 43 |
| | 17 | 7,4 | 2,0 | 1,3 | 6,7 | 2,4 | 1,2 | 6,5 | 2,5 | 1,1 | 6,2 | 2,7 | 1,1 | 6,0 | 2,8 | 1,0 | - | - | - | 42 |
| | 20 | 7,9 | 2,2 | 1,4 | 7,2 | 2,5 | 1,2 | 6,9 | 2,7 | 1,2 | 6,6 | 2,8 | 1,1 | 6,4 | 2,9 | 1,1 | - | - | - | 40 |

### iC220

| Glycol | tu | External air temperature ta (°C) 25 | | | 32 | | | 35 | | | 38 | | | 40 | | | 43 | | | ta max |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (°C) | Pf (kW) | Pa (kW) | Fw (m³/h) | Pf (kW) | Pa (kW) | Fw (m³/h) | Pf (kW) | Pa (kW) | Fw (m³/h) | Pf (kW) | Pa (kW) | Fw (m³/h) | Pf (kW) | Pa (kW) | Fw (m³/h) | Pf (kW) | Pa (kW) | Fw (m³/h) | (°C) |
| 35% | -10 | 2,7 | 1,8 | 0,5 | 2,5 | 2,1 | 0,4 | 2,4 | 2,2 | 0,4 | 2,3 | 2,5 | 0,4 | - | - | - | - | - | - | 39 |
| 35% | -7 | 3,2 | 1,8 | 0,5 | 3,0 | 2,0 | 0,5 | 2,9 | 2,2 | 0,5 | 2,7 | 2,4 | 0,5 | 2,6 | 2,5 | 0,5 | - | - | - | 42 |
| 25% | -5 | 3,7 | 1,7 | 0,6 | 3,4 | 2,0 | 0,6 | 3,3 | 2,2 | 0,6 | 3,2 | 2,4 | 0,5 | 3,1 | 2,5 | 0,5 | 2,9 | 2,7 | 0,5 | 44 |
| 25% | -3 | 4,1 | 1,7 | 0,7 | 3,8 | 2,0 | 0,7 | 3,7 | 2,2 | 0,6 | 3,5 | 2,4 | 0,6 | 3,4 | 2,5 | 0,6 | 3,3 | 2,7 | 0,6 | 46 |
| 20% | 0 | 4,9 | 1,7 | 0,8 | 4,6 | 2,0 | 0,8 | 4,4 | 2,2 | 0,8 | 4,2 | 2,4 | 0,7 | 4,1 | 2,5 | 0,7 | 3,9 | 2,7 | 0,7 | 46 |
| 20% | 3 | 5,7 | 1,7 | 1,0 | 5,2 | 2,0 | 0,9 | 5,0 | 2,2 | 0,9 | 4,8 | 2,3 | 0,8 | 4,7 | 2,5 | 0,8 | 4,5 | 2,7 | 0,8 | 46 |
| | 5 | 6,3 | 1,7 | 1,1 | 5,8 | 2,0 | 1,0 | 5,6 | 2,2 | 1,0 | 5,4 | 2,4 | 0,9 | 5,3 | 2,5 | 0,9 | 5,0 | 2,7 | 0,9 | 46 |
| | 7 | 6,7 | 1,7 | 1,1 | 6,2 | 2,0 | 1,1 | 6,0 | 2,2 | 1,0 | 5,7 | 2,4 | 1,0 | 5,6 | 2,5 | 1,0 | 5,3 | 2,7 | 0,9 | 46 |
| | 9 | 7,1 | 1,7 | 1,2 | 6,5 | 2,0 | 1,1 | 6,3 | 2,2 | 1,1 | 6,1 | 2,4 | 1,0 | 5,9 | 2,5 | 1,0 | 5,6 | 2,7 | 1,0 | 46 |
| | 11 | 7,5 | 1,7 | 1,3 | 6,9 | 2,1 | 1,2 | 6,7 | 2,2 | 1,1 | 6,4 | 2,4 | 1,1 | 6,2 | 2,5 | 1,1 | 6,0 | 2,7 | 1,0 | 46 |
| | 13 | 7,9 | 1,8 | 1,4 | 7,3 | 2,1 | 1,3 | 7,0 | 2,2 | 1,2 | 6,8 | 2,4 | 1,2 | 6,6 | 2,5 | 1,1 | 6,3 | 2,7 | 1,1 | 46 |
| | 15 | 8,3 | 1,8 | 1,4 | 7,7 | 2,1 | 1,3 | 7,4 | 2,2 | 1,3 | 7,2 | 2,4 | 1,2 | 7,0 | 2,5 | 1,2 | 6,7 | 2,7 | 1,1 | 46 |
| | 17 | 8,8 | 1,8 | 1,5 | 8,2 | 2,1 | 1,4 | 7,9 | 2,3 | 1,4 | 7,6 | 2,4 | 1,3 | 7,4 | 2,5 | 1,3 | 7,1 | 2,7 | 1,2 | 46 |
| | 20 | 9,6 | 1,8 | 1,6 | 8,9 | 2,1 | 1,5 | 8,6 | 2,3 | 1,5 | 8,3 | 2,5 | 1,4 | 8,1 | 2,6 | 1,4 | 7,7 | 2,8 | 1,3 | 46 |

### iC303

| Glycol | tu | External air temperature ta (°C) 25 | | | 32 | | | 35 | | | 38 | | | 40 | | | 43 | | | ta max |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (°C) | Pf (kW) | Pa (kW) | Fw (m³/h) | Pf (kW) | Pa (kW) | Fw (m³/h) | Pf (kW) | Pa (kW) | Fw (m³/h) | Pf (kW) | Pa (kW) | Fw (m³/h) | Pf (kW) | Pa (kW) | Fw (m³/h) | Pf (kW) | Pa (kW) | Fw (m³/h) | (°C) |
| 35% | -10 | 5,0 | 2,6 | 0,9 | 4,6 | 2,9 | 0,8 | 4,4 | 3,1 | 0,7 | 4,2 | 3,3 | 0,7 | 4,1 | 3,5 | 0,7 | - | - | - | 40 |
| 35% | -7 | 5,8 | 2,6 | 1,0 | 5,3 | 3,0 | 0,9 | 5,1 | 3,2 | 0,9 | 4,9 | 3,4 | 0,8 | 4,7 | 3,5 | 0,8 | 4,5 | 3,8 | 0,8 | 43 |
| 25% | -5 | 6,5 | 2,6 | 1,1 | 6,0 | 3,0 | 1,0 | 5,7 | 3,2 | 1,0 | 5,5 | 3,4 | 0,9 | 5,3 | 3,6 | 0,9 | 5,0 | 3,9 | 0,9 | 45 |
| 25% | -3 | 7,2 | 2,7 | 1,2 | 6,6 | 3,1 | 1,1 | 6,3 | 3,3 | 1,1 | 6,0 | 3,5 | 1,0 | 5,8 | 3,6 | 1,0 | 5,5 | 3,9 | 0,9 | 46 |
| 20% | 0 | 8,4 | 2,7 | 1,4 | 7,7 | 3,1 | 1,3 | 7,4 | 3,3 | 1,3 | 7,0 | 3,6 | 1,2 | 6,8 | 3,7 | 1,2 | 6,5 | 4,0 | 1,1 | 46 |
| 20% | 3 | 9,5 | 2,8 | 1,6 | 8,7 | 3,2 | 1,5 | 8,3 | 3,4 | 1,4 | 8,0 | 3,6 | 1,4 | 7,7 | 3,8 | 1,3 | 7,4 | 4,1 | 1,3 | 46 |
| | 5 | 10,3 | 2,8 | 1,8 | 9,5 | 3,3 | 1,6 | 9,1 | 3,5 | 1,6 | 8,7 | 3,7 | 1,5 | 8,4 | 3,9 | 1,4 | 8,0 | 4,1 | 1,4 | 46 |
| | 7 | 10,9 | 2,9 | 1,9 | 10,0 | 3,3 | 1,7 | 9,6 | 3,5 | 1,6 | 9,2 | 3,7 | 1,6 | 8,9 | 3,9 | 1,5 | 8,5 | 4,2 | 1,5 | 46 |
| | 9 | 11,4 | 2,9 | 2,0 | 10,5 | 3,4 | 1,8 | 10,1 | 3,6 | 1,7 | 9,7 | 3,8 | 1,7 | 9,4 | 4,0 | 1,6 | 8,9 | 4,2 | 1,5 | 46 |
| | 11 | 12,0 | 3,0 | 2,1 | 11,1 | 3,4 | 1,9 | 10,6 | 3,6 | 1,8 | 10,2 | 3,9 | 1,7 | 9,9 | 4,0 | 1,7 | 9,4 | 4,3 | 1,6 | 46 |
| | 13 | 12,6 | 3,0 | 2,2 | 11,6 | 3,5 | 2,0 | 11,2 | 3,7 | 1,9 | 10,7 | 3,9 | 1,8 | 10,4 | 4,1 | 1,8 | 9,9 | 4,3 | 1,7 | 46 |
| | 15 | 13,3 | 3,1 | 2,3 | 12,2 | 3,5 | 2,1 | 11,8 | 3,7 | 2,0 | 11,3 | 4,0 | 1,9 | 11,0 | 4,1 | 1,9 | 10,4 | 4,4 | 1,8 | 45 |
| | 17 | 14,0 | 3,1 | 2,4 | 12,9 | 3,6 | 2,2 | 12,4 | 3,8 | 2,1 | 11,9 | 4,0 | 2,1 | 11,6 | 4,2 | 2,0 | 11,1 | 4,5 | 1,9 | 44 |
| | 20 | 15,2 | 3,2 | 2,6 | 14,0 | 3,7 | 2,4 | 13,5 | 3,9 | 2,3 | 12,9 | 4,2 | 2,2 | 12,5 | 4,3 | 2,2 | 12,0 | 4,6 | 2,1 | 43 |

### iC305

| Glycol | tu | External air temperature ta (°C) 25 | | | 32 | | | 35 | | | 38 | | | 40 | | | 43 | | | ta max |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (°C) | Pf (kW) | Pa (kW) | Fw (m³/h) | Pf (kW) | Pa (kW) | Fw (m³/h) | Pf (kW) | Pa (kW) | Fw (m³/h) | Pf (kW) | Pa (kW) | Fw (m³/h) | Pf (kW) | Pa (kW) | Fw (m³/h) | Pf (kW) | Pa (kW) | Fw (m³/h) | (°C) |
| 35% | -10 | 7,1 | 3,8 | 1,2 | 6,3 | 4,3 | 1,1 | 5,9 | 4,5 | 1,0 | 5,5 | 4,8 | 0,9 | 5,3 | 5,0 | 0,9 | - | - | - | 41 |
| 35% | -7 | 8,4 | 3,8 | 1,4 | 7,5 | 4,4 | 1,3 | 7,1 | 4,6 | 1,2 | 6,7 | 4,9 | 1,1 | 6,4 | 5,1 | 1,1 | 5,9 | 5,4 | 1,0 | 44 |
| 25% | -5 | 9,4 | 3,8 | 1,6 | 8,5 | 4,4 | 1,5 | 8,1 | 4,7 | 1,4 | 7,6 | 5,0 | 1,3 | 7,3 | 5,1 | 1,2 | 6,8 | 5,5 | 1,2 | 46 |
| 25% | -3 | 10,4 | 3,9 | 1,8 | 9,4 | 4,4 | 1,6 | 9,0 | 4,7 | 1,5 | 8,5 | 5,0 | 1,5 | 8,2 | 5,2 | 1,4 | 7,7 | 5,5 | 1,3 | 46 |
| 20% | 0 | 12,1 | 4,0 | 2,1 | 11,0 | 4,5 | 1,9 | 10,5 | 4,8 | 1,8 | 10,0 | 5,1 | 1,7 | 9,7 | 5,3 | 1,7 | 9,1 | 5,6 | 1,6 | 46 |
| 20% | 3 | 13,6 | 4,0 | 2,3 | 12,5 | 4,6 | 2,1 | 12,0 | 4,8 | 2,1 | 11,4 | 5,1 | 2,0 | 11,0 | 5,3 | 1,9 | 10,4 | 5,7 | 1,8 | 46 |
| | 5 | 14,9 | 4,1 | 2,5 | 13,7 | 4,6 | 2,3 | 13,1 | 4,9 | 2,2 | 12,5 | 5,2 | 2,1 | 12,1 | 5,4 | 2,1 | 11,5 | 5,7 | 2,0 | 46 |
| | 7 | 15,7 | 4,1 | 2,7 | 14,5 | 4,7 | 2,5 | 13,9 | 5,0 | 2,4 | 13,3 | 5,2 | 2,3 | 12,9 | 5,4 | 2,2 | 12,2 | 5,8 | 2,1 | 46 |
| | 9 | 16,6 | 4,2 | 2,8 | 15,3 | 4,7 | 2,6 | 14,7 | 5,0 | 2,5 | 14,1 | 5,3 | 2,4 | 13,7 | 5,5 | 2,3 | 13,0 | 5,8 | 2,2 | 46 |
| | 11 | 17,5 | 4,2 | 3,0 | 16,2 | 4,8 | 2,8 | 15,5 | 5,0 | 2,7 | 14,9 | 5,3 | 2,6 | 14,4 | 5,6 | 2,5 | 13,8 | 5,9 | 2,4 | 46 |
| | 13 | 18,4 | 4,2 | 3,2 | 17,0 | 4,8 | 2,9 | 16,4 | 5,1 | 2,8 | 15,7 | 5,4 | 2,7 | 15,3 | 5,6 | 2,6 | 14,5 | 5,9 | 2,5 | 46 |
| | 15 | 19,4 | 4,3 | 3,3 | 18,0 | 4,9 | 3,1 | 17,3 | 5,2 | 3,0 | 16,6 | 5,5 | 2,8 | 16,1 | 5,7 | 2,8 | 15,4 | 6,0 | 2,6 | 46 |
| | 17 | 20,6 | 4,4 | 3,5 | 19,0 | 4,9 | 3,3 | 18,3 | 5,2 | 3,2 | 17,6 | 5,5 | 3,0 | 17,1 | 5,7 | 2,9 | 16,3 | 6,1 | 2,8 | 45 |
| | 20 | 22,3 | 4,4 | 3,8 | 20,6 | 5,0 | 3,5 | 19,9 | 5,3 | 3,4 | 19,1 | 5,6 | 3,3 | 18,6 | 5,8 | 3,2 | 17,8 | 6,2 | 3,1 | 44 |

**tu**: evaporator outlet water temperature;

**ta**: external air temperature;

**Pf**: cooling capacity;

**Pa**: total power absorbed;

**Fw**: water flow rate (ΔT = 5°C).

Interpolation is allowed, extrapolation is not permitted.

To calculate Pf, Pa and Fw for ΔT≠ 5°C when examining the table "Correction factors for ΔT ≠ 5°C".

**Value includes the correction factor for ethylene glycol.**

Data declared according to UNI EN 14511:2011.

## iC408

| Glycol | tu | External air temperature ta (°C) 25 | | | 32 | | | 35 | | | 38 | | | 40 | | | 43 | | | ta max |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Pf | Pa | Fw | Pf | Pa | Fw | Pf | Pa | Fw | Pf | Pa | Fw | Pf | Pa | Fw | Pf | Pa | Fw | |
| | (°C) | (kW) | (kW) | (m³/h) | (kW) | (kW) | (m³/h) | (kW) | (kW) | (m³/h) | (kW) | (kW) | (m³/h) | (kW) | (kW) | (m³/h) | (kW) | (kW) | (m³/h) | (°C) |
| 35% | -10 | 13,5 | 5,9 | 2,3 | 12,2 | 6,8 | 2,1 | 11,6 | 7,3 | 2,0 | 10,9 | 7,8 | 1,9 | 10,4 | 8,2 | 1,8 | - | - | - | 41 |
| 35% | -7 | 15,0 | 6,0 | 2,6 | 13,7 | 6,9 | 2,3 | 13,0 | 7,4 | 2,2 | 12,4 | 7,9 | 2,1 | 11,9 | 8,3 | 2,0 | 11,1 | 8,9 | 1,9 | 43 |
| 25% | -5 | 16,4 | 6,1 | 2,8 | 15,0 | 7,0 | 2,6 | 14,3 | 7,5 | 2,4 | 13,6 | 8,0 | 2,3 | 13,1 | 8,4 | 2,2 | 12,3 | 9,0 | 2,1 | 45 |
| 25% | -3 | 17,7 | 6,2 | 3,0 | 16,2 | 7,1 | 2,8 | 15,5 | 7,6 | 2,7 | 14,8 | 8,1 | 2,5 | 14,2 | 8,5 | 2,4 | 13,4 | 9,1 | 2,3 | 46 |
| 20% | 0 | 19,9 | 6,3 | 3,4 | 18,3 | 7,3 | 3,1 | 17,6 | 7,7 | 3,0 | 16,8 | 8,3 | 2,9 | 16,2 | 8,7 | 2,8 | 15,3 | 9,3 | 2,6 | 46 |
| 20% | 3 | 22,1 | 6,5 | 3,8 | 20,4 | 7,4 | 3,5 | 19,6 | 7,9 | 3,3 | 18,7 | 8,4 | 3,2 | 18,1 | 8,8 | 3,1 | 17,2 | 9,4 | 2,9 | 46 |
| | 5 | 23,8 | 6,6 | 4,1 | 22,0 | 7,6 | 3,8 | 21,1 | 8,1 | 3,6 | 20,2 | 8,6 | 3,5 | 19,6 | 9,0 | 3,4 | 18,6 | 9,6 | 3,2 | 46 |
| | 7 | 25,0 | 6,7 | 4,3 | 23,1 | 7,7 | 4,0 | 22,3 | 8,2 | 3,8 | 21,4 | 8,7 | 3,7 | 20,7 | 9,1 | 3,5 | 19,7 | 9,7 | 3,4 | 46 |
| | 9 | 26,3 | 6,9 | 4,5 | 24,3 | 7,8 | 4,2 | 23,4 | 8,3 | 4,0 | 22,5 | 8,9 | 3,9 | 21,8 | 9,2 | 3,7 | 20,8 | 9,9 | 3,6 | 46 |
| | 11 | 27,6 | 7,0 | 4,7 | 25,5 | 8,0 | 4,4 | 24,6 | 8,5 | 4,2 | 23,6 | 9,0 | 4,1 | 22,9 | 9,4 | 3,9 | 21,9 | 10,0 | 3,8 | 46 |
| | 13 | 28,9 | 7,2 | 5,0 | 26,7 | 8,1 | 4,6 | 25,8 | 8,6 | 4,4 | 24,8 | 9,2 | 4,2 | 24,0 | 9,6 | 4,1 | 22,9 | 10,2 | 3,9 | 45 |
| | 15 | 30,1 | 7,3 | 5,2 | 27,9 | 8,3 | 4,8 | 26,9 | 8,8 | 4,6 | 25,9 | 9,3 | 4,4 | 25,2 | 9,7 | 4,3 | 24,0 | 10,4 | 4,1 | 44 |
| | 17 | 31,7 | 7,5 | 5,5 | 29,4 | 8,5 | 5,1 | 28,3 | 9,0 | 4,9 | 27,2 | 9,6 | 4,7 | 26,5 | 9,9 | 4,6 | 25,3 | 10,6 | 4,4 | 43 |
| | 20 | 34,1 | 7,8 | 5,9 | 31,6 | 8,9 | 5,4 | 30,5 | 9,4 | 5,2 | 29,4 | 9,9 | 5,0 | 28,5 | 10,3 | 4,9 | - | - | - | 42 |

## iC410

| Glycol | tu | External air temperature ta (°C) 25 | | | 32 | | | 35 | | | 38 | | | 40 | | | 43 | | | ta max |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Pf | Pa | Fw | Pf | Pa | Fw | Pf | Pa | Fw | Pf | Pa | Fw | Pf | Pa | Fw | Pf | Pa | Fw | |
| | (°C) | (kW) | (kW) | (m³/h) | (kW) | (kW) | (m³/h) | (kW) | (kW) | (m³/h) | (kW) | (kW) | (m³/h) | (kW) | (kW) | (m³/h) | (kW) | (kW) | (m³/h) | (°C) |
| 35% | -10 | 16,3 | 7,3 | 2,8 | 15,2 | 8,2 | 2,6 | 14,5 | 8,7 | 2,5 | 13,8 | 9,3 | 2,3 | 13,3 | 9,7 | 2,3 | 12,5 | 10,4 | 2,1 | 43 |
| 35% | -7 | 18,4 | 7,3 | 3,1 | 17,0 | 8,3 | 2,9 | 16,3 | 8,8 | 2,8 | 15,5 | 9,4 | 2,6 | 15,0 | 9,8 | 2,6 | 14,2 | 10,5 | 2,4 | 45 |
| 25% | -5 | 20,5 | 7,3 | 3,5 | 18,8 | 8,4 | 3,2 | 18,0 | 8,9 | 3,1 | 17,2 | 9,5 | 2,9 | 16,6 | 9,9 | 2,8 | 15,7 | 10,6 | 2,7 | 46 |
| 25% | -3 | 22,3 | 7,4 | 3,8 | 20,5 | 8,5 | 3,5 | 19,6 | 9,0 | 3,4 | 18,7 | 9,6 | 3,2 | 18,2 | 10,0 | 3,1 | 17,2 | 10,7 | 2,9 | 46 |
| 20% | 0 | 25,5 | 7,5 | 4,4 | 23,5 | 8,6 | 4,0 | 22,5 | 9,2 | 3,9 | 21,6 | 9,8 | 3,7 | 20,9 | 10,2 | 3,6 | 19,9 | 10,9 | 3,4 | 46 |
| 20% | 3 | 28,5 | 7,7 | 4,9 | 26,3 | 8,8 | 4,5 | 25,3 | 9,3 | 4,3 | 24,3 | 9,9 | 4,2 | 23,5 | 10,4 | 4,0 | 22,4 | 11,0 | 3,8 | 46 |
| | 5 | 31,1 | 7,8 | 5,3 | 28,7 | 8,9 | 4,9 | 27,6 | 9,5 | 4,7 | 26,5 | 10,1 | 4,5 | 25,7 | 10,5 | 4,4 | 24,5 | 11,2 | 4,2 | 46 |
| | 7 | 32,7 | 7,9 | 5,6 | 30,2 | 9,1 | 5,2 | 29,1 | 9,6 | 5,0 | 27,9 | 10,2 | 4,8 | 27,1 | 10,6 | 4,6 | 25,8 | 11,3 | 4,4 | 46 |
| | 9 | 34,3 | 8,0 | 5,9 | 31,8 | 9,2 | 5,4 | 30,6 | 9,7 | 5,2 | 29,4 | 10,3 | 5,0 | 28,5 | 10,7 | 4,9 | 27,2 | 11,4 | 4,7 | 46 |
| | 11 | 35,9 | 8,2 | 6,2 | 33,3 | 9,3 | 5,7 | 32,1 | 9,8 | 5,5 | 30,9 | 10,4 | 5,3 | 30,0 | 10,9 | 5,1 | 28,6 | 11,6 | 4,9 | 46 |
| | 13 | 37,6 | 8,3 | 6,4 | 34,8 | 9,4 | 6,0 | 33,6 | 10,0 | 5,8 | 32,3 | 10,6 | 5,5 | 31,4 | 11,0 | 5,4 | 30,0 | 11,7 | 5,2 | 46 |
| | 15 | 39,2 | 8,4 | 6,7 | 36,4 | 9,5 | 6,3 | 35,1 | 10,1 | 6,0 | 33,8 | 10,7 | 5,8 | 32,8 | 11,1 | 5,6 | 31,4 | 11,8 | 5,4 | 46 |
| | 17 | 41,3 | 8,6 | 7,1 | 38,4 | 9,7 | 6,6 | 37,1 | 10,3 | 6,4 | 35,7 | 10,9 | 6,1 | 34,7 | 11,3 | 6,0 | 33,2 | 12,0 | 5,7 | 46 |
| | 20 | 44,7 | 8,8 | 7,7 | 41,6 | 10,0 | 7,2 | 40,1 | 10,6 | 6,9 | 38,6 | 11,2 | 6,6 | 37,6 | 11,6 | 6,5 | 36,0 | 12,3 | 6,2 | 46 |

## iC412

| Glycol | tu | External air temperature ta (°C) 25 | | | 32 | | | 35 | | | 38 | | | 40 | | | 43 | | | ta max |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Pf | Pa | Fw | Pf | Pa | Fw | Pf | Pa | Fw | Pf | Pa | Fw | Pf | Pa | Fw | Pf | Pa | Fw | |
| | (°C) | (kW) | (kW) | (m³/h) | (kW) | (kW) | (m³/h) | (kW) | (kW) | (m³/h) | (kW) | (kW) | (m³/h) | (kW) | (kW) | (m³/h) | (kW) | (kW) | (m³/h) | (°C) |
| 35% | -10 | 20,3 | 8,8 | 3,5 | 18,9 | 10,0 | 3,2 | 18,2 | 10,5 | 3,1 | 17,4 | 11,2 | 3,0 | 16,8 | 11,6 | 2,9 | 16,0 | 12,3 | 2,7 | 44 |
| 35% | -7 | 22,8 | 8,9 | 3,9 | 21,1 | 10,2 | 3,6 | 20,2 | 10,8 | 3,5 | 19,4 | 11,4 | 3,3 | 18,8 | 11,9 | 3,2 | 17,8 | 12,6 | 3,0 | 46 |
| 25% | -5 | 25,1 | 9,0 | 4,3 | 23,2 | 10,3 | 4,0 | 22,3 | 11,0 | 3,8 | 21,4 | 11,6 | 3,7 | 20,7 | 12,1 | 3,5 | 19,7 | 12,8 | 3,4 | 46 |
| 25% | -3 | 27,4 | 9,2 | 4,7 | 25,3 | 10,5 | 4,3 | 24,3 | 11,1 | 4,2 | 23,3 | 11,8 | 4,0 | 22,6 | 12,3 | 3,9 | 21,5 | 13,0 | 3,7 | 46 |
| 20% | 0 | 31,4 | 9,4 | 5,4 | 29,1 | 10,7 | 5,0 | 27,9 | 11,4 | 4,8 | 26,8 | 12,1 | 4,6 | 26,0 | 12,5 | 4,4 | 24,6 | 13,3 | 4,2 | 46 |
| 20% | 3 | 35,2 | 9,6 | 6,0 | 32,6 | 10,9 | 5,6 | 31,3 | 11,6 | 5,4 | 30,0 | 12,3 | 5,1 | 29,1 | 12,8 | 5,0 | 27,7 | 13,6 | 4,7 | 46 |
| | 5 | 38,4 | 9,8 | 6,6 | 35,6 | 11,2 | 6,1 | 34,2 | 11,8 | 5,9 | 32,8 | 12,6 | 5,6 | 31,7 | 13,1 | 5,4 | 30,3 | 13,9 | 5,2 | 46 |
| | 7 | 40,3 | 10,0 | 6,9 | 37,4 | 11,3 | 6,4 | 35,9 | 12,0 | 6,2 | 34,5 | 12,7 | 5,9 | 33,4 | 13,2 | 5,7 | 31,8 | 14,0 | 5,5 | 46 |
| | 9 | 42,3 | 10,1 | 7,3 | 39,2 | 11,5 | 6,7 | 37,7 | 12,2 | 6,5 | 36,2 | 12,9 | 6,2 | 35,1 | 13,4 | 6,0 | 33,4 | 14,2 | 5,7 | 46 |
| | 11 | 44,3 | 10,3 | 7,6 | 41,0 | 11,7 | 7,0 | 39,5 | 12,4 | 6,8 | 37,8 | 13,1 | 6,5 | 36,8 | 13,6 | 6,3 | 35,0 | 14,4 | 6,0 | 46 |
| | 13 | 46,3 | 10,5 | 7,9 | 42,8 | 11,9 | 7,4 | 41,3 | 12,5 | 7,1 | 39,6 | 13,3 | 6,8 | 38,5 | 13,8 | 6,6 | 36,6 | 14,6 | 6,3 | 46 |
| | 15 | 48,3 | 10,6 | 8,3 | 44,7 | 12,0 | 7,7 | 43,1 | 12,7 | 7,4 | 41,3 | 13,4 | 7,1 | 40,1 | 14,0 | 6,9 | 38,2 | 14,8 | 6,6 | 46 |
| | 17 | 50,9 | 10,9 | 8,7 | 47,2 | 12,3 | 8,1 | 45,4 | 13,0 | 7,8 | 43,6 | 13,7 | 7,5 | 42,3 | 14,2 | 7,3 | 40,4 | 15,0 | 6,9 | 46 |
| | 20 | 55,0 | 11,3 | 9,5 | 50,9 | 12,7 | 8,8 | 49,1 | 13,4 | 8,4 | 47,2 | 14,1 | 8,1 | 45,7 | 14,6 | 7,9 | 43,7 | 15,4 | 7,5 | 46 |

## iC416

| Glycol | tu | External air temperature ta (°C) 25 | | | 32 | | | 35 | | | 38 | | | 40 | | | 43 | | | ta max |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Pf | Pa | Fw | Pf | Pa | Fw | Pf | Pa | Fw | Pf | Pa | Fw | Pf | Pa | Fw | Pf | Pa | Fw | |
| | (°C) | (kW) | (kW) | (m³/h) | (kW) | (kW) | (m³/h) | (kW) | (kW) | (m³/h) | (kW) | (kW) | (m³/h) | (kW) | (kW) | (m³/h) | (kW) | (kW) | (m³/h) | (°C) |
| 35% | -10 | 24,5 | 10,5 | 4,2 | 22,5 | 12,0 | 3,8 | 21,6 | 12,8 | 3,7 | 20,6 | 13,6 | 3,5 | 20,0 | 14,2 | 3,4 | 18,9 | 15,2 | 3,2 | 43 |
| 35% | -7 | 27,1 | 10,8 | 4,6 | 25,0 | 12,3 | 4,3 | 24,0 | 13,0 | 4,1 | 23,0 | 13,8 | 3,9 | 22,3 | 14,4 | 3,8 | 21,2 | 15,4 | 3,6 | 45 |
| 25% | -5 | 29,7 | 11,1 | 5,1 | 27,4 | 12,6 | 4,7 | 26,4 | 13,3 | 4,5 | 25,2 | 14,1 | 4,3 | 24,5 | 14,7 | 4,2 | 23,3 | 15,6 | 4,0 | 46 |
| 25% | -3 | 32,2 | 11,3 | 5,5 | 29,8 | 12,8 | 5,1 | 28,6 | 13,5 | 4,9 | 27,4 | 14,3 | 4,7 | 26,6 | 14,9 | 4,5 | 25,3 | 15,9 | 4,3 | 46 |
| 20% | 0 | 36,7 | 11,7 | 6,3 | 33,9 | 13,2 | 5,8 | 32,6 | 13,9 | 5,6 | 31,3 | 14,7 | 5,4 | 30,4 | 15,3 | 5,2 | 28,9 | 16,2 | 4,9 | 46 |
| 20% | 3 | 40,9 | 12,0 | 7,0 | 37,9 | 13,5 | 6,5 | 36,5 | 14,3 | 6,2 | 35,0 | 15,1 | 6,0 | 34,0 | 15,6 | 5,8 | 32,4 | 16,6 | 5,5 | 46 |
| | 5 | 44,3 | 12,4 | 7,6 | 41,0 | 13,9 | 7,0 | 39,5 | 14,6 | 6,8 | 37,9 | 15,4 | 6,5 | 36,8 | 16,0 | 6,3 | 35,1 | 16,9 | 6,0 | 46 |
| | 7 | 46,6 | 12,6 | 8,0 | 43,1 | 14,1 | 7,4 | 41,5 | 14,9 | 7,1 | 39,8 | 15,7 | 6,8 | 38,6 | 16,3 | 6,6 | 36,9 | 17,2 | 6,3 | 46 |
| | 9 | 48,8 | 12,9 | 8,4 | 45,2 | 14,4 | 7,7 | 43,5 | 15,2 | 7,5 | 41,8 | 16,0 | 7,2 | 40,6 | 16,5 | 7,0 | 38,8 | 17,4 | 6,6 | 46 |
| | 11 | 51,0 | 13,1 | 8,8 | 47,2 | 14,7 | 8,1 | 45,5 | 15,5 | 7,8 | 43,7 | 16,3 | 7,5 | 42,5 | 16,8 | 7,3 | 40,6 | 17,7 | 7,0 | 45 |
| | 13 | 53,2 | 13,4 | 9,1 | 49,3 | 15,0 | 8,5 | 47,5 | 15,7 | 8,2 | 45,6 | 16,5 | 7,8 | 44,4 | 17,1 | 7,6 | 42,4 | 18,0 | 7,3 | 45 |
| | 15 | 55,5 | 13,6 | 9,5 | 51,4 | 15,3 | 8,8 | 49,5 | 16,0 | 8,5 | 47,6 | 16,8 | 8,2 | 46,2 | 17,4 | 7,9 | 44,1 | 18,3 | 7,6 | 44 |
| | 17 | 58,4 | 13,9 | 10,0 | 54,1 | 15,6 | 9,3 | 52,1 | 16,4 | 9,0 | 50,1 | 17,2 | 8,6 | 48,7 | 17,8 | 8,4 | 46,5 | 18,7 | 8,0 | 43 |
| | 20 | 62,8 | 14,5 | 10,8 | 58,1 | 16,2 | 10,0 | 56,0 | 17,0 | 9,6 | 53,8 | 17,8 | 9,3 | 52,3 | 18,4 | 9,0 | - | - | - | 41 |

**tu:** evaporator outlet water temperature;

**ta:** external air temperature;

**Pf:** cooling capacity;

**Pa:** total power absorbed;

**Fw:** water flow rate (ΔT = 5°C).

Interpolation is allowed, extrapolation is not permitted.

To calculate Pf, Pa and Fw for ΔT≠ 5°C when examining the table "Correction factors for ΔT ≠ 5°C".

**Value includes the correction factor for ethylene glycol.**

Data declared according to UNI EN 14511:2011.

## iC520

| Glycol | tu | External air temperature ta (°C) | | | | | | | | | | | | | | | | | | ta max |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 25 | | | 32 | | | 35 | | | 38 | | | 40 | | | 43 | | | |
| | | Pf | Pa | Fw | Pf | Pa | Fw | Pf | Pa | Fw | Pf | Pa | Fw | Pf | Pa | Fw | Pf | Pa | Fw | |
| | (°C) | (kW) | (kW) | (m³/h) | (kW) | (kW) | (m³/h) | (kW) | (kW) | (m³/h) | (kW) | (kW) | (m³/h) | (kW) | (kW) | (m³/h) | (kW) | (kW) | (m³/h) | (°C) |
| 35% | -10 | 26,8 | 12,0 | 4,6 | 24,3 | 13,9 | 4,1 | 23,1 | 14,9 | 3,9 | 21,8 | 16,0 | 3,7 | 20,9 | 16,7 | 3,6 | - | - | - | 41 |
| 35% | -7 | 30,0 | 12,2 | 5,1 | 27,4 | 14,2 | 4,7 | 26,1 | 15,1 | 4,5 | 24,7 | 16,2 | 4,2 | 23,8 | 17,0 | 4,1 | 22,2 | 18,3 | 3,8 | 43 |
| 25% | -5 | 33,1 | 12,4 | 5,6 | 30,4 | 14,3 | 5,2 | 29,0 | 15,3 | 4,9 | 27,6 | 16,4 | 4,7 | 26,6 | 17,2 | 4,5 | 24,9 | 18,5 | 4,3 | 45 |
| 25% | -3 | 36,1 | 12,6 | 6,2 | 33,2 | 14,5 | 5,7 | 31,7 | 15,5 | 5,4 | 30,3 | 16,6 | 5,2 | 29,2 | 17,4 | 5,0 | 27,5 | 18,7 | 4,7 | 46 |
| 20% | 0 | 41,4 | 12,8 | 7,1 | 38,2 | 14,8 | 6,5 | 36,7 | 15,8 | 6,3 | 35,1 | 16,9 | 6,0 | 33,9 | 17,7 | 5,8 | 32,1 | 19,0 | 5,5 | 46 |
| 20% | 3 | 46,5 | 13,1 | 8,0 | 43,0 | 15,1 | 7,4 | 41,4 | 16,1 | 7,1 | 39,6 | 17,2 | 6,8 | 38,4 | 18,0 | 6,6 | 36,5 | 19,3 | 6,2 | 46 |
| | 5 | 50,7 | 13,4 | 8,7 | 46,9 | 15,4 | 8,0 | 45,1 | 16,4 | 7,7 | 43,3 | 17,5 | 7,4 | 42,0 | 18,3 | 7,2 | 40,0 | 19,6 | 6,8 | 46 |
| | 7 | 53,3 | 13,7 | 9,1 | 49,4 | 15,7 | 8,5 | 47,5 | 16,7 | 8,1 | 45,6 | 17,8 | 7,8 | 44,3 | 18,5 | 7,6 | 42,2 | 19,8 | 7,2 | 46 |
| | 9 | 56,0 | 13,9 | 9,6 | 51,9 | 15,9 | 8,9 | 50,0 | 16,9 | 8,6 | 48,0 | 18,0 | 8,2 | 46,7 | 18,8 | 8,0 | 44,5 | 20,1 | 7,6 | 46 |
| | 11 | 58,7 | 14,2 | 10,1 | 54,4 | 16,2 | 9,3 | 52,4 | 17,2 | 9,0 | 50,4 | 18,3 | 8,7 | 49,0 | 19,1 | 8,4 | 46,8 | 20,4 | 8,0 | 46 |
| | 13 | 61,3 | 14,5 | 10,5 | 56,9 | 16,5 | 9,8 | 55,0 | 17,5 | 9,4 | 52,9 | 18,6 | 9,1 | 51,4 | 19,4 | 8,8 | 49,1 | 20,7 | 8,4 | 46 |
| | 15 | 64,1 | 14,7 | 11,0 | 59,5 | 16,8 | 10,2 | 57,4 | 17,8 | 9,9 | 55,2 | 18,9 | 9,5 | 53,7 | 19,7 | 9,2 | 51,4 | 21,0 | 8,8 | 45 |
| | 17 | 67,5 | 15,1 | 11,6 | 62,7 | 17,2 | 10,8 | 60,5 | 18,2 | 10,4 | 58,2 | 19,3 | 10,0 | 56,6 | 20,2 | 9,7 | 54,2 | 21,5 | 9,3 | 44 |
| | 20 | 72,6 | 15,8 | 12,5 | 67,5 | 17,9 | 11,6 | 65,2 | 18,9 | 11,2 | 62,8 | 20,0 | 10,8 | 61,1 | 20,8 | 10,5 | 58,6 | 22,1 | 10,1 | 43 |

## iC525

| Glycol | tu | External air temperature ta (°C) | | | | | | | | | | | | | | | | | | ta max |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 25 | | | 32 | | | 35 | | | 38 | | | 40 | | | 43 | | | |
| | | Pf | Pa | Fw | Pf | Pa | Fw | Pf | Pa | Fw | Pf | Pa | Fw | Pf | Pa | Fw | Pf | Pa | Fw | |
| | (°C) | (kW) | (kW) | (m³/h) | (kW) | (kW) | (m³/h) | (kW) | (kW) | (m³/h) | (kW) | (kW) | (m³/h) | (kW) | (kW) | (m³/h) | (kW) | (kW) | (m³/h) | (°C) |
| 35% | -10 | 31,3 | 14,7 | 5,3 | 28,3 | 17,0 | 4,8 | 26,9 | 18,1 | 4,6 | 25,5 | 19,4 | 4,3 | 24,6 | 20,3 | 4,2 | - | - | - | 40 |
| 35% | -7 | 34,9 | 15,0 | 6,0 | 31,7 | 17,3 | 5,4 | 30,3 | 18,5 | 5,2 | 28,8 | 19,7 | 4,9 | 27,7 | 20,6 | 4,7 | - | - | - | 42 |
| 25% | -5 | 38,7 | 15,2 | 6,6 | 35,2 | 17,6 | 6,0 | 33,6 | 18,8 | 5,7 | 32,0 | 20,1 | 5,5 | 30,9 | 21,0 | 5,3 | 29,1 | 22,4 | 5,0 | 43 |
| 25% | -3 | 42,3 | 15,5 | 7,2 | 38,6 | 17,9 | 6,6 | 36,9 | 19,0 | 6,3 | 35,1 | 20,3 | 6,0 | 33,9 | 21,2 | 5,8 | 32,1 | 22,7 | 5,5 | 45 |
| 20% | 0 | 48,9 | 15,8 | 8,4 | 44,7 | 18,3 | 7,6 | 42,8 | 19,5 | 7,3 | 40,8 | 20,8 | 7,0 | 39,4 | 21,7 | 6,7 | 37,3 | 23,2 | 6,4 | 46 |
| 20% | 3 | 55,1 | 16,2 | 9,4 | 50,5 | 18,7 | 8,6 | 48,4 | 19,9 | 8,3 | 46,2 | 21,2 | 7,9 | 44,7 | 22,1 | 7,7 | 42,4 | 23,6 | 7,3 | 46 |
| | 5 | 60,1 | 16,6 | 10,3 | 55,2 | 19,1 | 9,4 | 52,9 | 20,3 | 9,1 | 50,5 | 21,6 | 8,6 | 48,9 | 22,5 | 8,4 | 46,2 | 24,0 | 7,9 | 46 |
| | 7 | 63,0 | 16,9 | 10,8 | 58,0 | 19,4 | 9,9 | 55,6 | 20,6 | 9,5 | 53,2 | 21,9 | 9,1 | 51,5 | 22,8 | 8,8 | 48,8 | 24,3 | 8,4 | 46 |
| | 9 | 66,2 | 17,2 | 11,3 | 61,0 | 19,7 | 10,5 | 58,4 | 20,9 | 10,0 | 55,8 | 22,2 | 9,6 | 54,1 | 23,2 | 9,3 | 51,4 | 24,7 | 8,8 | 46 |
| | 11 | 69,4 | 17,4 | 11,9 | 63,8 | 20,0 | 10,9 | 61,3 | 21,2 | 10,5 | 58,6 | 22,6 | 10,1 | 56,8 | 23,5 | 9,7 | 54,0 | 25,0 | 9,3 | 46 |
| | 13 | 72,6 | 17,8 | 12,5 | 66,9 | 20,3 | 11,5 | 64,3 | 21,5 | 11,0 | 61,5 | 22,9 | 10,6 | 59,5 | 23,9 | 10,2 | 56,6 | 25,4 | 9,7 | 45 |
| | 15 | 75,7 | 18,1 | 13,0 | 69,9 | 20,6 | 12,0 | 67,1 | 21,9 | 11,5 | 64,3 | 23,2 | 11,0 | 62,4 | 24,2 | 10,7 | 59,3 | 25,7 | 10,2 | 44 |
| | 17 | 79,7 | 18,5 | 13,7 | 73,5 | 21,1 | 12,6 | 70,7 | 22,3 | 12,1 | 67,7 | 23,7 | 11,6 | 65,7 | 24,6 | 11,3 | 62,6 | 26,2 | 10,8 | 43 |
| | 20 | 85,8 | 19,2 | 14,8 | 79,2 | 21,8 | 13,6 | 76,2 | 23,1 | 13,1 | 73,0 | 24,4 | 12,6 | 70,9 | 25,4 | 12,2 | - | - | - | 41 |

## iC530

| Glycol | tu | External air temperature ta (°C) | | | | | | | | | | | | | | | | | | ta max |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 25 | | | 32 | | | 35 | | | 38 | | | 40 | | | 43 | | | |
| | | Pf | Pa | Fw | Pf | Pa | Fw | Pf | Pa | Fw | Pf | Pa | Fw | Pf | Pa | Fw | Pf | Pa | Fw | |
| | (°C) | (kW) | (kW) | (m³/h) | (kW) | (kW) | (m³/h) | (kW) | (kW) | (m³/h) | (kW) | (kW) | (m³/h) | (kW) | (kW) | (m³/h) | (kW) | (kW) | (m³/h) | (°C) |
| 35% | -10 | 35,9 | 15,6 | 6,1 | 33,1 | 17,9 | 5,6 | 31,6 | 19,1 | 5,4 | 30,2 | 20,3 | 5,1 | 29,2 | 21,2 | 5,0 | - | - | - | 41 |
| 35% | -7 | 40,2 | 15,8 | 6,9 | 36,9 | 18,3 | 6,3 | 35,3 | 19,5 | 6,0 | 33,7 | 20,7 | 5,7 | 32,7 | 21,6 | 5,6 | 30,9 | 23,1 | 5,3 | 43 |
| 25% | -5 | 44,2 | 16,1 | 7,5 | 40,6 | 18,6 | 6,9 | 38,9 | 19,8 | 6,6 | 37,2 | 21,1 | 6,4 | 35,9 | 22,0 | 6,1 | 34,1 | 23,5 | 5,8 | 45 |
| 25% | -3 | 48,0 | 16,3 | 8,2 | 44,1 | 18,9 | 7,5 | 42,3 | 20,1 | 7,2 | 40,4 | 21,4 | 6,9 | 39,2 | 22,3 | 6,7 | 37,1 | 23,8 | 6,3 | 46 |
| 20% | 0 | 54,7 | 16,7 | 9,3 | 50,3 | 19,3 | 8,6 | 48,3 | 20,5 | 8,3 | 46,2 | 21,8 | 7,9 | 44,8 | 22,8 | 7,7 | 42,5 | 24,3 | 7,3 | 46 |
| 20% | 3 | 61,0 | 17,1 | 10,4 | 56,3 | 19,7 | 9,6 | 54,1 | 20,9 | 9,3 | 51,9 | 22,3 | 8,9 | 50,2 | 23,2 | 8,6 | 47,7 | 24,8 | 8,2 | 46 |
| | 5 | 66,4 | 17,5 | 11,4 | 61,3 | 20,1 | 10,5 | 58,9 | 21,4 | 10,1 | 56,3 | 22,7 | 9,6 | 54,6 | 23,7 | 9,4 | 51,9 | 25,2 | 8,9 | 46 |
| | 7 | 69,8 | 17,8 | 12,0 | 64,5 | 20,4 | 11,1 | 62,0 | 21,7 | 10,6 | 59,4 | 23,0 | 10,2 | 57,6 | 24,0 | 9,9 | 54,8 | 25,5 | 9,4 | 46 |
| | 9 | 73,3 | 18,1 | 12,6 | 67,8 | 20,7 | 11,6 | 65,2 | 22,0 | 11,2 | 62,5 | 23,4 | 10,7 | 60,6 | 24,3 | 10,4 | 57,7 | 25,9 | 9,9 | 46 |
| | 11 | 76,8 | 18,5 | 13,2 | 70,9 | 21,0 | 12,2 | 68,4 | 22,3 | 11,7 | 65,5 | 23,7 | 11,2 | 63,5 | 24,7 | 10,9 | 60,6 | 26,2 | 10,4 | 46 |
| | 13 | 80,5 | 18,8 | 13,8 | 74,4 | 21,4 | 12,8 | 71,6 | 22,7 | 12,3 | 68,6 | 24,1 | 11,8 | 66,6 | 25,0 | 11,4 | 63,5 | 26,6 | 10,9 | 46 |
| | 15 | 84,1 | 19,1 | 14,4 | 77,8 | 21,7 | 13,4 | 74,9 | 23,0 | 12,9 | 71,9 | 24,4 | 12,3 | 69,7 | 25,4 | 12,0 | 66,4 | 27,0 | 11,4 | 46 |
| | 17 | 88,5 | 19,6 | 15,2 | 82,0 | 22,2 | 14,1 | 79,0 | 23,5 | 13,6 | 75,8 | 24,9 | 13,0 | 73,6 | 25,8 | 12,6 | 70,1 | 27,4 | 12,1 | 46 |
| | 20 | 95,5 | 20,3 | 16,4 | 88,5 | 22,9 | 15,2 | 85,2 | 24,2 | 14,7 | 81,8 | 25,6 | 14,1 | 79,4 | 26,6 | 13,7 | 75,9 | 28,2 | 13,1 | 44 |

## iC535

| Glycol | tu | External air temperature ta (°C) | | | | | | | | | | | | | | | | | | ta max |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 25 | | | 32 | | | 35 | | | 38 | | | 40 | | | 43 | | | |
| | | Pf | Pa | Fw | Pf | Pa | Fw | Pf | Pa | Fw | Pf | Pa | Fw | Pf | Pa | Fw | Pf | Pa | Fw | |
| | (°C) | (kW) | (kW) | (m³/h) | (kW) | (kW) | (m³/h) | (kW) | (kW) | (m³/h) | (kW) | (kW) | (m³/h) | (kW) | (kW) | (m³/h) | (kW) | (kW) | (m³/h) | (°C) |
| 35% | -10 | 42,1 | 18,6 | 7,2 | 38,8 | 21,4 | 6,6 | 37,3 | 22,7 | 6,4 | 35,6 | 24,2 | 6,1 | 34,5 | 25,3 | 5,9 | - | - | - | 42 |
| 35% | -7 | 46,7 | 19,1 | 8,0 | 43,1 | 21,8 | 7,4 | 41,4 | 23,2 | 7,1 | 39,7 | 24,7 | 6,8 | 38,4 | 25,8 | 6,6 | 36,5 | 27,5 | 6,2 | 44 |
| 25% | -5 | 51,4 | 19,5 | 8,8 | 47,5 | 22,3 | 8,1 | 45,7 | 23,7 | 7,8 | 43,6 | 25,2 | 7,5 | 42,3 | 26,3 | 7,2 | 40,2 | 28,0 | 6,9 | 46 |
| 25% | -3 | 55,6 | 19,9 | 9,5 | 51,4 | 22,7 | 8,8 | 49,5 | 24,1 | 8,5 | 47,4 | 25,6 | 8,1 | 46,0 | 26,6 | 7,9 | 43,7 | 28,4 | 7,5 | 46 |
| 20% | 0 | 63,1 | 20,4 | 10,8 | 58,5 | 23,3 | 10,0 | 56,3 | 24,7 | 9,6 | 54,0 | 26,2 | 9,2 | 52,4 | 27,3 | 9,0 | 49,9 | 29,0 | 8,5 | 46 |
| 20% | 3 | 70,2 | 21,0 | 12,0 | 65,0 | 23,9 | 11,1 | 62,6 | 25,3 | 10,7 | 60,1 | 26,8 | 10,3 | 58,3 | 27,9 | 10,0 | 55,6 | 29,7 | 9,5 | 46 |
| | 5 | 76,5 | 21,6 | 13,1 | 70,9 | 24,5 | 12,1 | 68,2 | 25,9 | 11,7 | 65,5 | 27,5 | 11,2 | 63,6 | 28,6 | 10,9 | 60,6 | 30,3 | 10,4 | 46 |
| | 7 | 80,3 | 22,0 | 13,8 | 74,4 | 24,9 | 12,7 | 71,7 | 26,4 | 12,3 | 68,7 | 27,9 | 11,8 | 66,7 | 29,0 | 11,4 | 63,7 | 30,8 | 10,9 | 46 |
| | 9 | 84,4 | 22,4 | 14,5 | 78,1 | 25,4 | 13,4 | 75,2 | 26,9 | 12,9 | 72,2 | 28,4 | 12,4 | 69,9 | 29,5 | 12,0 | 66,9 | 31,2 | 11,5 | 46 |
| | 11 | 88,4 | 22,8 | 15,2 | 81,9 | 25,8 | 14,0 | 78,8 | 27,3 | 13,5 | 75,7 | 28,8 | 13,0 | 73,4 | 30,0 | 12,6 | 70,0 | 31,7 | 12,0 | 46 |
| | 13 | 92,2 | 23,2 | 15,8 | 85,5 | 26,3 | 14,7 | 82,5 | 27,7 | 14,2 | 79,2 | 29,3 | 13,6 | 76,9 | 30,4 | 13,2 | 73,4 | 32,2 | 12,6 | 46 |
| | 15 | 96,2 | 23,7 | 16,5 | 89,2 | 26,8 | 15,3 | 85,9 | 28,2 | 14,8 | 82,5 | 29,8 | 14,2 | 80,2 | 30,9 | 13,8 | 76,6 | 32,7 | 13,1 | 46 |
| | 17 | 101 | 24,3 | 17,4 | 93,9 | 27,4 | 16,1 | 90,5 | 28,9 | 15,6 | 86,9 | 30,5 | 14,9 | 84,5 | 31,6 | 14,5 | 80,7 | 33,3 | 13,9 | 45 |
| | 20 | 109 | 25,1 | 18,8 | 101,4 | 28,3 | 17,4 | 97,7 | 29,8 | 16,8 | 93,9 | 31,4 | 16,1 | 91,2 | 32,5 | 15,7 | 87,0 | 34,4 | 15,0 | 43 |

**tu:** evaporator outlet water temperature;

**ta:** external air temperature;

**Pf:** cooling capacity;

**Pa:** total power absorbed;

**Fw:** water flow rate (ΔT = 5°C).

Interpolation is allowed, extrapolation is not permitted.

To calculate Pf, Pa and Fw for ΔT≠ 5°C when examining the table "Correction factors for ΔT ≠ 5°C".

**Value includes the correction factor for ethylene glycol.**

Data declared according to UNI EN 14511:2011.

| iC640 | | External air temperature ta (°C) | | | | | | | | | | | | | | | | | | ta max |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 25 | | | 32 | | | 35 | | | 38 | | | 40 | | | 43 | | | |
| Glycol | tu | Pf | Pa | Fw | Pf | Pa | Fw | Pf | Pa | Fw | Pf | Pa | Fw | Pf | Pa | Fw | Pf | Pa | Fw | (°C) |
| | (°C) | (kW) | (kW) | (m³/h) | (kW) | (kW) | (m³/h) | (kW) | (kW) | (m³/h) | (kW) | (kW) | (m³/h) | (kW) | (kW) | (m³/h) | (kW) | (kW) | (m³/h) | |
| 35% | -10 | 51,9 | 24,8 | 8,8 | 47,6 | 28,3 | 8,1 | 45,2 | 30,2 | 7,7 | 42,5 | 32,3 | 7,3 | 40,7 | 33,8 | 6,9 | - | - | - | 41 |
| 35% | -7 | 58,4 | 24,9 | 10,0 | 53,4 | 28,7 | 9,1 | 51,0 | 30,6 | 8,7 | 48,4 | 32,7 | 8,3 | 46,5 | 34,2 | 7,9 | 43,3 | 36,7 | 7,4 | 43 |
| 25% | -5 | 64,5 | 25,3 | 11,0 | 59,2 | 29,1 | 10,1 | 56,6 | 31,0 | 9,7 | 53,8 | 33,1 | 9,2 | 51,9 | 34,6 | 8,9 | 48,8 | 37,1 | 8,3 | 45 |
| 25% | -3 | 70,0 | 25,5 | 12,0 | 64,4 | 29,4 | 11,0 | 61,7 | 31,3 | 10,5 | 58,9 | 33,4 | 10,1 | 56,8 | 34,9 | 9,7 | 53,6 | 37,4 | 9,2 | 46 |
| 20% | 0 | 79,9 | 26,0 | 13,7 | 73,7 | 29,9 | 12,6 | 70,8 | 31,8 | 12,1 | 67,7 | 33,9 | 11,6 | 65,5 | 35,4 | 11,2 | 62,0 | 37,9 | 10,6 | 46 |
| 20% | 3 | 89,2 | 26,6 | 15,3 | 82,5 | 30,4 | 14,1 | 79,4 | 32,3 | 13,6 | 76,0 | 34,5 | 13,0 | 73,7 | 36,0 | 12,6 | 70,0 | 38,5 | 12,0 | 46 |
| | 5 | 97,2 | 27,1 | 16,7 | 90,0 | 31,0 | 15,4 | 86,7 | 32,9 | 14,8 | 83,1 | 35,0 | 14,2 | 80,6 | 36,6 | 13,8 | 76,7 | 39,1 | 13,1 | 46 |
| | 7 | 102 | 27,5 | 17,5 | 94,8 | 31,4 | 16,2 | 91,3 | 33,3 | 15,6 | 87,7 | 35,5 | 15,0 | 85,1 | 37,0 | 14,6 | 81,1 | 39,5 | 13,9 | 46 |
| | 9 | 107 | 28,0 | 18,4 | 99,6 | 31,9 | 17,1 | 96,0 | 33,8 | 16,5 | 92,2 | 36,0 | 15,8 | 89,7 | 37,5 | 15,4 | 85,6 | 40,0 | 14,7 | 46 |
| | 11 | 113 | 28,4 | 19,3 | 104 | 32,4 | 17,9 | 101 | 34,3 | 17,3 | 97,0 | 36,4 | 16,6 | 94,2 | 38,0 | 16,2 | 90,0 | 40,5 | 15,4 | 46 |
| | 13 | 118 | 28,9 | 20,2 | 109 | 32,9 | 18,8 | 106 | 34,8 | 18,1 | 102 | 37,0 | 17,4 | 98,8 | 38,5 | 17,0 | 94,6 | 41,0 | 16,2 | 46 |
| | 15 | 123 | 29,4 | 21,2 | 114 | 33,4 | 19,6 | 110 | 35,4 | 18,9 | 106 | 37,5 | 18,2 | 103 | 39,1 | 17,7 | 98,9 | 41,6 | 17,0 | 46 |
| | 17 | 130 | 30,1 | 22,3 | 121 | 34,1 | 20,7 | 116 | 36,1 | 20,0 | 112 | 38,3 | 19,3 | 109 | 39,8 | 18,7 | 104,4 | 42,4 | 17,9 | 46 |
| | 20 | 140 | 31,4 | 24,1 | 130 | 35,3 | 22,4 | 126 | 37,3 | 21,6 | 121 | 39,5 | 20,8 | 118 | 41,1 | 20,3 | 113,1 | 43,6 | 19,4 | 44 |

| iC650 | | External air temperature ta (°C) | | | | | | | | | | | | | | | | | | ta max |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 25 | | | 32 | | | 35 | | | 38 | | | 40 | | | 43 | | | |
| Glycol | tu | Pf | Pa | Fw | Pf | Pa | Fw | Pf | Pa | Fw | Pf | Pa | Fw | Pf | Pa | Fw | Pf | Pa | Fw | (°C) |
| | (°C) | (kW) | (kW) | (m³/h) | (kW) | (kW) | (m³/h) | (kW) | (kW) | (m³/h) | (kW) | (kW) | (m³/h) | (kW) | (kW) | (m³/h) | (kW) | (kW) | (m³/h) | |
| 35% | -10 | 61,3 | 28,0 | 10,4 | 55,9 | 32,2 | 9,5 | 53,3 | 34,4 | 9,1 | 50,6 | 36,8 | 8,6 | 48,7 | 38,5 | 8,3 | - | - | - | 41 |
| 35% | -7 | 69,0 | 28,2 | 11,8 | 62,7 | 32,8 | 10,7 | 59,9 | 35,0 | 10,2 | 56,9 | 37,4 | 9,7 | 54,9 | 39,1 | 9,4 | 51,9 | 41,9 | 8,9 | 43 |
| 25% | -5 | 76,3 | 28,7 | 13,0 | 69,5 | 33,3 | 11,9 | 66,5 | 35,5 | 11,3 | 63,3 | 37,9 | 10,8 | 61,1 | 39,7 | 10,4 | 57,8 | 42,4 | 9,9 | 45 |
| 25% | -3 | 83,0 | 29,1 | 14,2 | 75,8 | 33,7 | 12,9 | 72,5 | 35,9 | 12,4 | 69,1 | 38,3 | 11,8 | 66,8 | 40,1 | 11,4 | 63,2 | 42,9 | 10,8 | 46 |
| 20% | 0 | 94,9 | 29,7 | 16,2 | 87,0 | 34,3 | 14,9 | 83,3 | 36,6 | 14,3 | 79,6 | 39,1 | 13,6 | 76,9 | 40,8 | 13,2 | 73,0 | 43,7 | 12,5 | 46 |
| 20% | 3 | 106 | 30,4 | 18,1 | 97,5 | 35,0 | 16,7 | 93,5 | 37,3 | 16,0 | 89,4 | 39,8 | 15,3 | 86,5 | 41,5 | 14,8 | 82,2 | 44,4 | 14,1 | 46 |
| | 5 | 116 | 31,0 | 19,8 | 107 | 35,7 | 18,2 | 102 | 38,0 | 17,5 | 97,8 | 40,5 | 16,7 | 94,8 | 42,3 | 16,2 | 90,0 | 45,1 | 15,4 | 46 |
| | 7 | 122 | 31,5 | 20,9 | 112 | 36,2 | 19,2 | 108 | 38,5 | 18,5 | 103 | 41,0 | 17,7 | 99,9 | 42,8 | 17,1 | 94,9 | 45,6 | 16,3 | 46 |
| | 9 | 128 | 31,9 | 21,9 | 118 | 36,7 | 20,2 | 113 | 39,0 | 19,4 | 108 | 41,5 | 18,6 | 105 | 43,3 | 18,0 | 99,9 | 46,2 | 17,1 | 46 |
| | 11 | 134 | 32,5 | 23,0 | 124 | 37,2 | 21,2 | 119 | 39,6 | 20,4 | 114 | 42,1 | 19,5 | 111 | 43,8 | 19,0 | 105 | 46,7 | 18,0 | 46 |
| | 13 | 140 | 33,0 | 24,1 | 129 | 37,8 | 22,2 | 125 | 40,1 | 21,4 | 119 | 42,7 | 20,5 | 116 | 44,5 | 19,9 | 110 | 47,3 | 18,9 | 46 |
| | 15 | 146 | 33,6 | 25,1 | 135 | 38,4 | 23,3 | 130 | 40,7 | 22,4 | 125 | 43,2 | 21,5 | 121 | 45,0 | 20,8 | 116 | 47,9 | 19,9 | 46 |
| | 17 | 154 | 34,3 | 26,5 | 143 | 39,1 | 24,6 | 138 | 41,5 | 23,6 | 132 | 44,0 | 22,7 | 128 | 45,7 | 22,0 | 122 | 48,6 | 21,0 | 46 |
| | 20 | 167 | 35,5 | 28,7 | 154 | 40,3 | 26,5 | 149 | 42,7 | 25,6 | 143 | 45,2 | 24,6 | 139 | 47,1 | 23,9 | 132 | 49,9 | 22,8 | 45 |

| iC660 | | External air temperature ta (°C) | | | | | | | | | | | | | | | | | | ta max |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 25 | | | 32 | | | 35 | | | 38 | | | 40 | | | 43 | | | |
| Glycol | tu | Pf | Pa | Fw | Pf | Pa | Fw | Pf | Pa | Fw | Pf | Pa | Fw | Pf | Pa | Fw | Pf | Pa | Fw | (°C) |
| | (°C) | (kW) | (kW) | (m³/h) | (kW) | (kW) | (m³/h) | (kW) | (kW) | (m³/h) | (kW) | (kW) | (m³/h) | (kW) | (kW) | (m³/h) | (kW) | (kW) | (m³/h) | |
| 35% | -10 | 69,4 | 31,7 | 11,8 | 63,6 | 36,4 | 10,8 | 60,8 | 38,7 | 10,4 | 57,9 | 41,2 | 9,9 | 55,8 | 43,0 | 9,5 | - | - | - | 40 |
| 35% | -7 | 77,6 | 32,3 | 13,2 | 71,0 | 37,2 | 12,1 | 68,0 | 39,5 | 11,6 | 64,8 | 42,0 | 11,1 | 62,6 | 43,8 | 10,7 | - | - | - | 42 |
| 25% | -5 | 85,9 | 32,8 | 14,7 | 78,7 | 37,8 | 13,4 | 75,4 | 40,2 | 12,9 | 71,9 | 42,8 | 12,3 | 69,5 | 44,6 | 11,9 | 65,8 | 47,5 | 11,2 | 44 |
| 25% | -3 | 93,6 | 33,3 | 16,0 | 85,9 | 38,3 | 14,7 | 82,3 | 40,8 | 14,1 | 78,6 | 43,4 | 13,4 | 76,0 | 45,2 | 13,0 | 71,9 | 48,2 | 12,3 | 45 |
| 20% | 0 | 108 | 34,1 | 18,4 | 98,9 | 39,2 | 16,9 | 94,8 | 41,7 | 16,2 | 90,6 | 44,3 | 15,5 | 87,6 | 46,2 | 15,0 | 83,1 | 49,2 | 14,2 | 46 |
| 20% | 3 | 121 | 34,8 | 20,6 | 111 | 40,1 | 19,0 | 106 | 42,5 | 18,2 | 102 | 45,2 | 17,4 | 98,6 | 47,1 | 16,9 | 93,6 | 50,2 | 16,0 | 46 |
| | 5 | 132 | 35,8 | 22,5 | 121 | 40,9 | 20,8 | 116 | 43,4 | 19,9 | 111 | 46,1 | 19,1 | 108 | 48,0 | 18,5 | 102 | 51,1 | 17,5 | 46 |
| | 7 | 138 | 36,3 | 23,7 | 128 | 41,5 | 21,9 | 122 | 44,0 | 21,0 | 117 | 46,8 | 20,1 | 113 | 48,7 | 19,4 | 108 | 51,8 | 18,5 | 46 |
| | 9 | 145 | 37,0 | 24,9 | 134 | 42,2 | 23,0 | 129 | 44,7 | 22,1 | 123 | 47,4 | 21,1 | 119 | 49,3 | 20,4 | 113 | 52,5 | 19,4 | 46 |
| | 11 | 152 | 37,5 | 26,1 | 140 | 42,8 | 24,1 | 135 | 45,4 | 23,1 | 129 | 48,1 | 22,2 | 125 | 50,1 | 21,5 | 119 | 53,2 | 20,4 | 46 |
| | 13 | 159 | 38,2 | 27,3 | 147 | 43,5 | 25,2 | 141 | 46,0 | 24,2 | 135 | 48,8 | 23,2 | 131 | 50,8 | 22,5 | 125 | 53,9 | 21,4 | 46 |
| | 15 | 166 | 38,8 | 28,5 | 153 | 44,1 | 26,4 | 148 | 46,7 | 25,3 | 141 | 49,5 | 24,3 | 137 | 51,5 | 23,5 | 130 | 54,6 | 22,4 | 46 |
| | 17 | 175 | 39,7 | 30,1 | 162 | 45,0 | 27,8 | 156 | 47,6 | 26,7 | 149 | 50,4 | 25,6 | 144 | 52,5 | 24,8 | 138 | 55,6 | 23,7 | 46 |
| | 20 | 189 | 41,1 | 32,5 | 175 | 46,5 | 30,0 | 168 | 49,1 | 28,9 | 161 | 51,9 | 27,7 | 156 | 53,9 | 26,9 | 149 | 57,1 | 25,6 | 44 |

**tu:** evaporator outlet water temperature;

**ta:** external air temperature;

**Pf:** cooling capacity;

**Pa:** total power absorbed;

**Fw:** water flow rate (ΔT = 5°C).

Interpolation is allowed, extrapolation is not permitted.

To calculate Pf, Pa and Fw for ΔT≠ 5°C when examining the table "Correction factors for ΔT ≠ 5°C".

**Value includes the correction factor for ethylene glycol.**

Data declared according to UNI EN 14511:2011.

## PERFORMANCE AND TECHNICAL DATA DUAL FREQUENCY VERSION 50/60Hz

### GENERAL DATA - 50Hz: see the table at page 12

### GENERAL DATA - 60Hz

| | | iC215 | iC220 | iC303 | iC305 | iC408 | iC410 | iC412 | iC416 |
|---|---|---|---|---|---|---|---|---|---|
| Cooling capacity (1) | kW | 8,48 | 9,98 | 15,9 | 22,7 | 35,4 | 45,7 | 55,9 | 64,2 |
| Total absorbed power (1) | kW | 2,38 | 2,17 | 3,77 | 5,41 | 8,98 | 10,6 | 13,3 | 17,0 |
| EER (1) | - | 3,57 | 4,59 | 4,23 | 4,20 | 3,95 | 4,32 | 4,20 | 3,78 |
| Cooling capacity (2) | kW | 6,08 | 7,19 | 11,5 | 16,3 | 26,2 | 33,9 | 41,7 | 48,1 |
| Total absorbed power (2) | kW | 2,64 | 2,66 | 4,29 | 6,19 | 10,1 | 12,0 | 15,0 | 18,5 |
| EER (2) | - | 2,30 | 2,70 | 2,68 | 2,63 | 2,59 | 2,83 | 2,78 | 2,60 |
| Compressor | | | | | | | | | |
| Cooling circuits | N° | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| Compressors for each circuit | N° | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| Capacity control | % | 0-100 | 0-100 | 0-100 | 0-100 | 0-100 | 0-100 | 0-100 | 0-100 |
| ESEER | - | 2,72 | 3,15 | 3,13 | 3,06 | 3,04 | 3,27 | 3,21 | 2,95 |
| Electrical power supply (3) | | | | | | | | | |
| Power | V/Ph/Hz | 400 / 460 ± 10% / 3 - PE / 50 / 60 | | | | | | | |
| Auxiliary | V/Ph | 24 AC / 230 AC | | | | | | | |
| Condensers | | | | | | | | | |
| Condenser number | N° | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| Ranks number | N° | 2 | 4 | 2 | 4 | 4 | 4 | 5 | 5 |
| Total frontal surface | $m^2$ | 0,31 | 0,31 | 0,63 | 0,63 | 1,1 | 1,1 | 1,1 | 1,1 |
| Axial fans | | | | | | | | | |
| Fans number | N° | 1 | 1 | 1 | 1 | 1 | 2 | 2 | 2 |
| Total airflow | $m^3/h$ | 3500 | 3150 | 6500 | 6150 | 8150 | 14200 | 13600 | 13600 |
| Nominal power (each) 50/60 Hz | kW | 0,29 / 0,45 | 0,29 / 0,45 | 0,48 / 0,76 | 0,48 / 0,76 | 0,69 / 1,03 | 0,69 / 1,03 | 0,69 / 1,03 | 0,69 / 1,03 |
| Hydraulic group | | | | | | | | | |
| Water flow rate P3 (4) | $m^3/h$ | 0,4 / 4,8 | 0,4 / 4,8 | 0,4 / 4,8 | 0,4 / 4,8 | 2,3 / 9,0 | 2,3 / 9,0 | 3,5 / 16,2 | 3,5 / 16,2 |
| Available pump head pressure P3 (5) | barg | 3,1 / 2,0 | 3,1 / 2,0 | 3,1 / 2,0 | 3,1 / 2,0 | 3,1 / 1,9 | 3,1 / 1,9 | 2,4 / 2,0 | 2,4 / 2,0 |
| Available pump head pressure P3 60 Hz (5) | barg | 4,4 / 2,8 | 4,4 / 2,8 | 4,4 / 2,8 | 4,4 / 2,8 | 4,3 / 2,9 | 4,3 / 2,9 | 3,4 / 2,5 | 3,4 / 2,5 |
| Nominal power P3 | kW | 1,1 | 1,1 | 1,1 | 1,1 | 2,2 | 2,2 | 2,2 | 2,2 |
| Tank volume | l | 60 | 60 | 115 | 115 | 140 | 255 | 255 | 255 |
| Max pressure | barg | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 |
| Water connections | Rp | 3/4" | 3/4" | 1" | 1" | 1 1/2" | 1 1/2" | 1 1/2" | 1 1/2" |
| Sound levels (6) | | | | | | | | | |
| Sound power | dB (A) | 80,4 | 80,4 | 81,1/86,8 | 81,1/86,8 | 81,6/89,2 | 82,1/89,2 | 82,1/89,2 | 83/89,2 |
| Sound pressure | dB (A) | 52,4 | 52,4 | 53,1/58,8 | 53,1/58,8 | 53,6/61,2 | 54,1/61,2 | 54,1/61,2 | 55,0/61,2 |
| Dimensions and installed weight (7) | | | | | | | | | |
| Width | mm | 560 | 560 | 660 | 660 | 760 | 760 | 760 | 760 |
| Length | mm | 1265 | 1265 | 1310 | 1310 | 1865 | 1865 | 1865 | 1865 |
| Height | mm | 794 | 794 | 1400 | 1400 | 1447 | 1447 | 1447 | 1447 |
| Weight without pump | kg | 194 | 198 | 320 | 339 | 451 | 613 | 626 | 650 |
| Weight with P3 | kg | 211 | 215 | 336 | 355 | 470 | 632 | 647 | 671 |

(1) Evaporator water inlet/outlet temperature 20/15°C, external air temperature 25°C.
(2) Evaporator water inlet/outlet temperature 12/7°C, external air temperature 35°C.
(3) Protection class IP44 for models iC003 - iC220. Protection class IP54 for models iC303 - iC660.
(4) Mimimum and maximum water flow pump.
(5) Available head pressure at outlet unit at the minimum and maximum water flow rate.
(6) The first value refers to the version with axial fans, the second value refers to the version with centrifugal fans. Sound power: determined on the basis of measurements taken in accordance with the standard ISO 3744. Sound pressure at 10m: average value obtained in free field on a reflective surface at a distance of 10m from the side of the condenser coils and at a height of 1.6m from the unit support base. Values with tolerance +/- 2 dB(A). The sound levels refer to operation of the unit under full load in nominal conditions.
(7) The weights of the units are referred to the configuration with axial fans.
Data declared according to UNI EN 14511:2011.

## ELECTRICAL DATA - 50/60 Hz

With axial fans

| Model | Version | Hz | Fans with on/off | | |
|---|---|---|---|---|---|
| | | | FLI (kW) | FLA (A) | ICF (A) |
| iC215 | SP | 50 | 3,1 | 5,0 | 26 |
| | P3 | 50 | 4,0 | 6,9 | 28 |
| iC220 | SP | 50 | 3,2 | 5,4 | 32 |
| | P3 | 50 | 4,1 | 7,3 | 34 |
| iC303 | SP | 50 | 4,8 | 8,4 | 48 |
| | P3 | 50 | 5,6 | 10,3 | 50 |
| iC305 | SP | 50 | 6,4 | 11,1 | 64 |
| | P3 | 50 | 7,3 | 13,0 | 66 |
| iC408 | SP | 50 | 10,7 | 17,8 | 111 |
| | P3 | 50 | 12,5 | 21,4 | 115 |
| iC410 | SP | 50 | 13,1 | 22,1 | 118 |
| | P3 | 50 | 14,9 | 25,7 | 122 |
| iC412 | SP | 50 | 16,0 | 27,0 | 140 |
| | P3 | 50 | 17,8 | 30,6 | 144 |
| iC416 | SP | 50 | 18,3 | 32,7 | 174 |
| | P3 | 50 | 20,1 | 36,3 | 178 |
| iC215 | SP | 60 | 3,8 | 5,3 | 27 |
| | P3 | 60 | 5,2 | 7,6 | 29 |
| iC220 | SP | 60 | 4,0 | 5,7 | 31 |
| | P3 | 60 | 5,4 | 8,0 | 33 |
| iC303 | SP | 60 | 5,9 | 8,9 | 46 |
| | P3 | 60 | 7,4 | 11,2 | 48 |
| iC305 | SP | 60 | 7,9 | 11,3 | 62 |
| | P3 | 60 | 9,3 | 13,6 | 64 |
| iC408 | SP | 60 | 13,1 | 18,7 | 114 |
| | P3 | 60 | 15,4 | 22,4 | 118 |
| iC410 | SP | 60 | 16,1 | 23,3 | 125 |
| | P3 | 60 | 18,3 | 27,0 | 129 |
| iC412 | SP | 60 | 19,6 | 28,4 | 150 |
| | P3 | 60 | 22,6 | 32,9 | 155 |
| iC416 | SP | 60 | 22,4 | 34,3 | 173 |
| | P3 | 60 | 25,3 | 38,9 | 178 |

**SP** = without pump;

**P3** = pump P3;

**FLI** = max power absorbed in the working limits condition;

**FLA** = max power absorbed in the working limits condition;

**ICF** = start-up current at the start of the last compressor in the working limits condition.

## SOUND LEVEL - 60Hz

| Model | Version | Octave bands (Hz) | | | | | | | | Power | Pressure | Distance | KdB |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 63 | 125 | 250 | 500 | 1000 | 2000 | 4000 | 8000 | | | | |
| | | Sound power level Lw dB (A) | | | | | | | | dB (A) | dB (A)10m | (1) L (m) | |
| iC215 | axials | 50,3 | 63,3 | 75,6 | 77,9 | 77,3 | 73,1 | 65,4 | 55,9 | 54,5 | 82,5 | 1 | 15 |
| iC220 | axials | 49,7 | 62,7 | 75,0 | 77,3 | 76,7 | 72,5 | 64,8 | 55,3 | 53,9 | 81,9 | 3 | 10 |
| iC303 | axials | 53,6 | 75,0 | 75,9 | 72,2 | 78,1 | 73,7 | 66,7 | 58,9 | 54,6 | 82,6 | 5 | 6 |
| iC305 | axials | 54,7 | 76,1 | 77,0 | 73,3 | 79,2 | 74,8 | 77,8 | 60,0 | 55,7 | 83,7 | 10 | 0 |
| iC408 | axials | 52,9 | 71,7 | 72,0 | 75,0 | 80,7 | 77,3 | 71,2 | 60,9 | 55,9 | 83,9 | | |
| iC410 | axials | 53,8 | 72,7 | 73,1 | 76,1 | 81,8 | 78,4 | 72,3 | 61,9 | 57,0 | 85,0 | | |
| iC412 | axials | 53,0 | 71,9 | 72,3 | 75,3 | 81,0 | 77,6 | 71,5 | 61,1 | 56,2 | 84,2 | | |
| iC416 | axials | 53,6 | 72,7 | 73,1 | 76,1 | 81,8 | 78,4 | 72,2 | 61,7 | 57,1 | 85,1 | | |

Sound power: determined on the basis of measurements taken in accordance with the standard ISO 3744. Sound pressure at 10m: average value obtained in free field on a reflective surface at a distance of 10m from the side of the condenser coils and at a height of 1.6m from the unit support base. Values with tolerance +/- 2 dB(A). The sound levels refer to operation of the unit under full load in nominal conditions. (1) To calculate a different distance of the sound pressure level use the formula: dB(A) L=dB(A)10m+Kdb.

## PERFORMANCE DATA - 50Hz: see the tables at pages 18 - 19

## PERFORMANCE DATA - 60Hz

### iC215

| Glycol | tu | External air temperature ta (°C) 25 | | | 32 | | | 35 | | | 38 | | | 40 | | | 43 | | | ta max |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Pf | Pa | Fw | Pf | Pa | Fw | Pf | Pa | Fw | Pf | Pa | Fw | Pf | Pa | Fw | Pf | Pa | Fw | |
| | (°C) | (kW) | (kW) | (m³/h) | (kW) | (kW) | (m³/h) | (kW) | (kW) | (m³/h) | (kW) | (kW) | (m³/h) | (kW) | (kW) | (m³/h) | (kW) | (kW) | (m³/h) | (°C) |
| 35% | -10 | 3,0 | 1,9 | 0,5 | 2,8 | 2,1 | 0,5 | 2,7 | 2,3 | 0,5 | 2,6 | 2,4 | 0,4 | - | - | - | - | - | - | 39 |
| 35% | -7 | 3,5 | 1,9 | 0,6 | 3,3 | 2,2 | 0,6 | 3,1 | 2,3 | 0,5 | 3,0 | 2,5 | 0,5 | 2,9 | 2,6 | 0,5 | - | - | - | 42 |
| 25% | -5 | 4,1 | 1,9 | 0,7 | 3,7 | 2,2 | 0,6 | 3,6 | 2,4 | 0,6 | 3,4 | 2,5 | 0,6 | 3,3 | 2,7 | 0,6 | 3,1 | 2,9 | 0,5 | 44 |
| 25% | -3 | 4,5 | 2,0 | 0,8 | 4,1 | 2,3 | 0,7 | 3,9 | 2,4 | 0,7 | 3,8 | 2,6 | 0,6 | 3,7 | 2,7 | 0,6 | 3,5 | 2,9 | 0,6 | 45 |
| 20% | 0 | 5,2 | 2,0 | 0,9 | 4,8 | 2,3 | 0,8 | 4,6 | 2,5 | 0,8 | 4,4 | 2,6 | 0,8 | 4,3 | 2,8 | 0,7 | 4,0 | 2,9 | 0,7 | 46 |
| 20% | 3 | 5,9 | 2,1 | 1,0 | 5,4 | 2,4 | 0,9 | 5,2 | 2,5 | 0,9 | 5,0 | 2,7 | 0,9 | 4,8 | 2,8 | 0,8 | 4,6 | 3,0 | 0,8 | 46 |
| | 5 | 6,5 | 2,1 | 1,1 | 6,0 | 2,4 | 1,0 | 5,7 | 2,6 | 1,0 | 5,5 | 2,8 | 0,9 | 5,3 | 2,9 | 0,9 | 5,1 | 3,1 | 0,9 | 46 |
| | 7 | 6,9 | 2,2 | 1,2 | 6,3 | 2,5 | 1,1 | 6,1 | 2,6 | 1,0 | 5,8 | 2,8 | 1,0 | 5,6 | 2,9 | 1,0 | 5,4 | 3,1 | 0,9 | 46 |
| | 9 | 7,3 | 2,2 | 1,2 | 6,7 | 2,5 | 1,1 | 6,4 | 2,7 | 1,1 | 6,2 | 2,9 | 1,1 | 6,0 | 3,0 | 1,0 | 5,7 | 3,2 | 1,0 | 46 |
| | 11 | 7,7 | 2,2 | 1,3 | 7,0 | 2,6 | 1,2 | 6,8 | 2,8 | 1,2 | 6,5 | 2,9 | 1,1 | 6,3 | 3,1 | 1,1 | 6,0 | 3,3 | 1,0 | 46 |
| | 13 | 8,1 | 2,3 | 1,4 | 7,4 | 2,7 | 1,3 | 7,1 | 2,8 | 1,2 | 6,8 | 3,0 | 1,2 | 6,6 | 3,1 | 1,1 | 6,3 | 3,3 | 1,1 | 46 |
| | 15 | 8,5 | 2,4 | 1,5 | 7,8 | 2,7 | 1,3 | 7,5 | 2,9 | 1,3 | 7,2 | 3,1 | 1,2 | 7,0 | 3,2 | 1,2 | 6,6 | 3,4 | 1,1 | 45 |
| | 17 | 9,0 | 2,5 | 1,5 | 8,2 | 2,8 | 1,4 | 7,9 | 3,0 | 1,4 | 7,6 | 3,2 | 1,3 | 7,3 | 3,3 | 1,3 | 7,0 | 3,5 | 1,2 | 44 |
| | 20 | 9,6 | 2,6 | 1,7 | 8,9 | 3,0 | 1,5 | 8,5 | 3,2 | 1,5 | 8,1 | 3,4 | 1,4 | 7,9 | 3,5 | 1,4 | 7,5 | 3,7 | 1,3 | 43 |

### iC220

| Glycol | tu | External air temperature ta (°C) 25 | | | 32 | | | 35 | | | 38 | | | 40 | | | 43 | | | ta max |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Pf | Pa | Fw | Pf | Pa | Fw | Pf | Pa | Fw | Pf | Pa | Fw | Pf | Pa | Fw | Pf | Pa | Fw | |
| | (°C) | (kW) | (kW) | (m³/h) | (kW) | (kW) | (m³/h) | (kW) | (kW) | (m³/h) | (kW) | (kW) | (m³/h) | (kW) | (kW) | (m³/h) | (kW) | (kW) | (m³/h) | (°C) |
| 35% | -10 | 3,1 | 2,4 | 0,5 | 3,0 | 2,6 | 0,5 | 2,9 | 2,8 | 0,5 | 2,8 | 3,0 | 0,5 | - | - | - | - | - | - | 39 |
| 35% | -7 | 3,7 | 2,3 | 0,6 | 3,5 | 2,5 | 0,6 | 3,4 | 2,7 | 0,6 | 3,3 | 2,9 | 0,6 | 3,2 | 3,1 | 0,5 | 3,0 | 3,4 | 0,5 | 43 |
| 25% | -5 | 4,3 | 2,2 | 0,7 | 4,1 | 2,5 | 0,7 | 3,9 | 2,7 | 0,7 | 3,8 | 2,9 | 0,6 | 3,7 | 3,1 | 0,6 | 3,5 | 3,3 | 0,6 | 45 |
| 25% | -3 | 4,8 | 2,2 | 0,8 | 4,6 | 2,5 | 0,8 | 4,4 | 2,7 | 0,8 | 4,2 | 2,9 | 0,7 | 4,1 | 3,0 | 0,7 | 3,9 | 3,3 | 0,7 | 46 |
| 20% | 0 | 5,8 | 2,2 | 1,0 | 5,5 | 2,5 | 0,9 | 5,3 | 2,7 | 0,9 | 5,1 | 2,9 | 0,9 | 4,9 | 3,0 | 0,8 | 4,7 | 3,3 | 0,8 | 46 |
| 20% | 3 | 6,7 | 2,1 | 1,1 | 6,3 | 2,5 | 1,1 | 6,0 | 2,7 | 1,0 | 5,8 | 2,9 | 1,0 | 5,7 | 3,0 | 1,0 | 5,4 | 3,2 | 0,9 | 46 |
| | 5 | 7,6 | 2,1 | 1,3 | 7,0 | 2,5 | 1,2 | 6,8 | 2,7 | 1,2 | 6,5 | 2,9 | 1,1 | 6,4 | 3,0 | 1,1 | 6,1 | 3,2 | 1,0 | 46 |
| | 7 | 8,0 | 2,1 | 1,4 | 7,4 | 2,5 | 1,3 | 7,2 | 2,7 | 1,2 | 6,9 | 2,9 | 1,2 | 6,7 | 3,0 | 1,2 | 6,5 | 3,2 | 1,1 | 46 |
| | 9 | 8,5 | 2,1 | 1,5 | 7,9 | 2,5 | 1,4 | 7,6 | 2,7 | 1,3 | 7,3 | 2,9 | 1,3 | 7,1 | 3,0 | 1,2 | 6,8 | 3,2 | 1,2 | 46 |
| | 11 | 9,0 | 2,1 | 1,5 | 8,3 | 2,5 | 1,4 | 8,0 | 2,7 | 1,4 | 7,8 | 2,9 | 1,3 | 7,6 | 3,0 | 1,3 | 7,2 | 3,2 | 1,2 | 46 |
| | 13 | 9,4 | 2,2 | 1,6 | 8,8 | 2,5 | 1,5 | 8,5 | 2,7 | 1,5 | 8,2 | 2,9 | 1,4 | 8,0 | 3,0 | 1,4 | 7,7 | 3,2 | 1,3 | 46 |
| | 15 | 10,0 | 2,2 | 1,7 | 9,3 | 2,5 | 1,6 | 9,0 | 2,7 | 1,5 | 8,7 | 2,9 | 1,5 | 8,5 | 3,0 | 1,5 | 8,1 | 3,3 | 1,4 | 46 |
| | 17 | 10,6 | 2,2 | 1,8 | 9,9 | 2,6 | 1,7 | 9,5 | 2,7 | 1,6 | 9,2 | 2,9 | 1,6 | 9,0 | 3,1 | 1,5 | 8,6 | 3,3 | 1,5 | 46 |
| | 20 | 11,5 | 2,2 | 2,0 | 10,7 | 2,6 | 1,8 | 10,4 | 2,8 | 1,8 | 10,0 | 2,9 | 1,7 | 9,8 | 3,1 | 1,7 | 9,4 | 3,3 | 1,6 | 46 |

### iC303

| Glycol | tu | External air temperature ta (°C) 25 | | | 32 | | | 35 | | | 38 | | | 40 | | | 43 | | | ta max |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Pf | Pa | Fw | Pf | Pa | Fw | Pf | Pa | Fw | Pf | Pa | Fw | Pf | Pa | Fw | Pf | Pa | Fw | |
| | (°C) | (kW) | (kW) | (m³/h) | (kW) | (kW) | (m³/h) | (kW) | (kW) | (m³/h) | (kW) | (kW) | (m³/h) | (kW) | (kW) | (m³/h) | (kW) | (kW) | (m³/h) | (°C) |
| 35% | -10 | 5,9 | 3,2 | 1,0 | 5,5 | 3,6 | 0,9 | 5,2 | 3,8 | 0,9 | 5,0 | 4,1 | 0,9 | 4,8 | 4,3 | 0,8 | - | - | - | 40 |
| 35% | -7 | 6,9 | 3,2 | 1,2 | 6,3 | 3,7 | 1,1 | 6,1 | 3,9 | 1,0 | 5,8 | 4,2 | 1,0 | 5,6 | 4,3 | 1,0 | 5,3 | 4,6 | 0,9 | 43 |
| 25% | -5 | 7,8 | 3,3 | 1,3 | 7,1 | 3,7 | 1,2 | 6,8 | 4,0 | 1,2 | 6,5 | 4,2 | 1,1 | 6,3 | 4,4 | 1,1 | 6,0 | 4,7 | 1,0 | 45 |
| 25% | -3 | 8,6 | 3,3 | 1,5 | 7,9 | 3,8 | 1,3 | 7,5 | 4,0 | 1,3 | 7,2 | 4,3 | 1,2 | 7,0 | 4,5 | 1,2 | 6,6 | 4,8 | 1,1 | 46 |
| 20% | 0 | 10,0 | 3,4 | 1,7 | 9,2 | 3,9 | 1,6 | 8,8 | 4,1 | 1,5 | 8,4 | 4,4 | 1,4 | 8,2 | 4,5 | 1,4 | 7,8 | 4,8 | 1,3 | 46 |
| 20% | 3 | 11,3 | 3,4 | 1,9 | 10,4 | 3,9 | 1,8 | 10,0 | 4,2 | 1,7 | 9,6 | 4,4 | 1,6 | 9,3 | 4,6 | 1,6 | 8,8 | 4,9 | 1,5 | 46 |
| | 5 | 12,3 | 3,5 | 2,1 | 11,3 | 4,0 | 1,9 | 10,9 | 4,2 | 1,9 | 10,4 | 4,5 | 1,8 | 10,1 | 4,7 | 1,7 | 9,6 | 5,0 | 1,6 | 46 |
| | 7 | 13,0 | 3,6 | 2,2 | 12,0 | 4,0 | 2,0 | 11,5 | 4,3 | 2,0 | 11,0 | 4,6 | 1,9 | 10,7 | 4,7 | 1,8 | 10,2 | 5,1 | 1,7 | 46 |
| | 9 | 13,6 | 3,6 | 2,3 | 12,5 | 4,1 | 2,1 | 12,0 | 4,3 | 2,1 | 11,5 | 4,6 | 2,0 | 11,2 | 4,8 | 1,9 | 10,6 | 5,1 | 1,8 | 46 |
| | 11 | 14,1 | 3,7 | 2,4 | 13,0 | 4,2 | 2,2 | 12,5 | 4,4 | 2,1 | 12,0 | 4,7 | 2,1 | 11,6 | 4,9 | 2,0 | 11,1 | 5,2 | 1,9 | 46 |
| | 13 | 14,7 | 3,7 | 2,5 | 13,5 | 4,2 | 2,3 | 13,0 | 4,5 | 2,2 | 12,5 | 4,7 | 2,1 | 12,1 | 4,9 | 2,1 | 11,5 | 5,3 | 2,0 | 46 |
| | 15 | 15,4 | 3,8 | 2,6 | 14,2 | 4,3 | 2,4 | 13,7 | 4,5 | 2,3 | 13,1 | 4,8 | 2,3 | 12,7 | 5,0 | 2,2 | 12,1 | 5,3 | 2,1 | 46 |
| | 17 | 16,3 | 3,8 | 2,8 | 15,0 | 4,4 | 2,6 | 14,4 | 4,6 | 2,5 | 13,9 | 4,9 | 2,4 | 13,5 | 5,1 | 2,3 | 12,9 | 5,4 | 2,2 | 45 |
| | 20 | 17,6 | 3,9 | 3,0 | 16,2 | 4,5 | 2,8 | 15,6 | 4,8 | 2,7 | 15,0 | 5,0 | 2,6 | 14,6 | 5,2 | 2,5 | 13,9 | 5,6 | 2,4 | 44 |

### iC305

| Glycol | tu | External air temperature ta (°C) 25 | | | 32 | | | 35 | | | 38 | | | 40 | | | 43 | | | ta max |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Pf | Pa | Fw | Pf | Pa | Fw | Pf | Pa | Fw | Pf | Pa | Fw | Pf | Pa | Fw | Pf | Pa | Fw | |
| | (°C) | (kW) | (kW) | (m³/h) | (kW) | (kW) | (m³/h) | (kW) | (kW) | (m³/h) | (kW) | (kW) | (m³/h) | (kW) | (kW) | (m³/h) | (kW) | (kW) | (m³/h) | (°C) |
| 35% | -10 | 8,3 | 4,7 | 1,4 | 7,4 | 5,3 | 1,3 | 6,9 | 5,6 | 1,2 | 6,4 | 6,0 | 1,1 | 6,1 | 6,2 | 1,0 | - | - | - | 41 |
| 35% | -7 | 9,8 | 4,7 | 1,7 | 8,7 | 5,4 | 1,5 | 8,3 | 5,7 | 1,4 | 7,8 | 6,1 | 1,3 | 7,4 | 6,3 | 1,3 | 6,9 | 6,7 | 1,2 | 43 |
| 25% | -5 | 11,0 | 4,8 | 1,9 | 9,9 | 5,5 | 1,7 | 9,4 | 5,8 | 1,6 | 8,9 | 6,2 | 1,5 | 8,5 | 6,4 | 1,5 | 7,9 | 6,8 | 1,4 | 45 |
| 25% | -3 | 12,2 | 4,9 | 2,1 | 11,0 | 5,6 | 1,9 | 10,5 | 5,9 | 1,8 | 9,9 | 6,2 | 1,7 | 9,5 | 6,5 | 1,6 | 8,9 | 6,8 | 1,5 | 46 |
| 20% | 0 | 14,1 | 5,0 | 2,4 | 12,9 | 5,6 | 2,2 | 12,3 | 6,0 | 2,1 | 11,7 | 6,3 | 2,0 | 11,3 | 6,6 | 1,9 | 10,6 | 6,9 | 1,8 | 46 |
| 20% | 3 | 16,0 | 5,0 | 2,7 | 14,6 | 5,7 | 2,5 | 14,0 | 6,0 | 2,4 | 13,4 | 6,4 | 2,3 | 12,9 | 6,6 | 2,2 | 12,2 | 7,0 | 2,1 | 46 |
| | 5 | 17,5 | 5,1 | 3,0 | 16,0 | 5,8 | 2,7 | 15,4 | 6,1 | 2,6 | 14,7 | 6,5 | 2,5 | 14,1 | 6,7 | 2,4 | 13,4 | 7,1 | 2,3 | 46 |
| | 7 | 18,4 | 5,2 | 3,2 | 17,0 | 5,9 | 2,9 | 16,3 | 6,2 | 2,8 | 15,5 | 6,5 | 2,7 | 15,0 | 6,8 | 2,6 | 14,3 | 7,2 | 2,4 | 46 |
| | 9 | 19,5 | 5,2 | 3,3 | 17,9 | 5,9 | 3,1 | 17,2 | 6,3 | 2,9 | 16,5 | 6,6 | 2,8 | 15,9 | 6,9 | 2,7 | 15,1 | 7,3 | 2,6 | 46 |
| | 11 | 20,5 | 5,3 | 3,5 | 18,9 | 6,0 | 3,2 | 18,2 | 6,3 | 3,1 | 17,4 | 6,7 | 3,0 | 16,9 | 6,9 | 2,9 | 16,0 | 7,3 | 2,7 | 46 |
| | 13 | 21,6 | 5,3 | 3,7 | 19,9 | 6,0 | 3,4 | 19,2 | 6,4 | 3,3 | 18,3 | 6,7 | 3,1 | 17,8 | 7,0 | 3,1 | 16,9 | 7,4 | 2,9 | 46 |
| | 15 | 22,7 | 5,4 | 3,9 | 21,0 | 6,1 | 3,6 | 20,2 | 6,5 | 3,5 | 19,3 | 6,8 | 3,3 | 18,8 | 7,1 | 3,2 | 17,9 | 7,5 | 3,1 | 45 |
| | 17 | 24,0 | 5,5 | 4,1 | 22,2 | 6,2 | 3,8 | 21,4 | 6,5 | 3,7 | 20,5 | 6,9 | 3,5 | 19,9 | 7,2 | 3,4 | 19,0 | 7,6 | 3,3 | 44 |
| | 20 | 26,1 | 5,6 | 4,5 | 24,1 | 6,3 | 4,1 | 23,2 | 6,7 | 4,0 | 22,3 | 7,0 | 3,8 | 21,7 | 7,3 | 3,7 | - | - | - | 42 |

**tu**: evaporator outlet water temperature;

**ta**: external air temperature;

**Pf**: cooling capacity;

**Pa**: total power absorbed;

**Fw**: water flow rate (ΔT = 5°C).

Interpolation is allowed, extrapolation is not permitted.

To calculate Pf, Pa and Fw for ΔT≠ 5°C when examining the table "Correction factors for ΔT ≠ 5°C".

**Value includes the correction factor for ethylene glycol.**

Data declared according to UNI EN 14511:2011.

## iC408

| Glycol | tu | External air temperature ta (°C) | | | | | | | | | | | | | | | | | | ta max |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 25 | | | 32 | | | 35 | | | 38 | | | 40 | | | 43 | | | |
| | | Pf | Pa | Fw | Pf | Pa | Fw | Pf | Pa | Fw | Pf | Pa | Fw | Pf | Pa | Fw | Pf | Pa | Fw | |
| | (°C) | (kW) | (kW) | (m³/h) | (kW) | (kW) | (m³/h) | (kW) | (kW) | (m³/h) | (kW) | (kW) | (m³/h) | (kW) | (kW) | (m³/h) | (kW) | (kW) | (m³/h) | (°C) |
| 35% | -10 | 15,9 | 7,2 | 2,7 | 14,3 | 8,4 | 2,4 | 13,6 | 8,9 | 2,3 | 12,8 | 9,6 | 2,2 | 12,2 | 10,0 | 2,1 | - | - | - | 41 |
| 35% | -7 | 17,6 | 7,4 | 3,0 | 16,1 | 8,5 | 2,7 | 15,3 | 9,1 | 2,6 | 14,5 | 9,7 | 2,5 | 13,9 | 10,2 | 2,4 | 13,0 | 10,9 | 2,2 | 43 |
| 25% | -5 | 19,3 | 7,5 | 3,3 | 17,6 | 8,6 | 3,0 | 16,8 | 9,2 | 2,9 | 16,0 | 9,9 | 2,7 | 15,4 | 10,3 | 2,6 | 14,4 | 11,1 | 2,5 | 44 |
| 25% | -3 | 20,8 | 7,6 | 3,6 | 19,1 | 8,7 | 3,3 | 18,2 | 9,3 | 3,1 | 17,3 | 10,0 | 3,0 | 16,7 | 10,4 | 2,9 | 15,7 | 11,2 | 2,7 | 45 |
| 20% | 0 | 23,4 | 7,8 | 4,0 | 21,6 | 8,9 | 3,7 | 20,7 | 9,5 | 3,5 | 19,7 | 10,2 | 3,4 | 19,0 | 10,6 | 3,3 | 18,0 | 11,4 | 3,1 | 46 |
| 20% | 3 | 25,9 | 8,0 | 4,4 | 23,9 | 9,1 | 4,1 | 23,0 | 9,7 | 3,9 | 22,0 | 10,4 | 3,8 | 21,3 | 10,8 | 3,6 | 20,1 | 11,6 | 3,4 | 46 |
| | 5 | 28,0 | 8,1 | 4,8 | 25,8 | 9,3 | 4,4 | 24,8 | 9,9 | 4,3 | 23,8 | 10,6 | 4,1 | 23,1 | 11,0 | 3,9 | 21,9 | 11,8 | 3,7 | 46 |
| | 7 | 29,4 | 8,3 | 5,0 | 27,2 | 9,5 | 4,7 | 26,2 | 10,1 | 4,5 | 25,1 | 10,7 | 4,3 | 24,3 | 11,2 | 4,2 | 23,1 | 11,9 | 4,0 | 46 |
| | 9 | 30,9 | 8,5 | 5,3 | 28,6 | 9,6 | 4,9 | 27,5 | 10,2 | 4,7 | 26,4 | 10,9 | 4,5 | 25,6 | 11,4 | 4,4 | 24,4 | 12,1 | 4,2 | 46 |
| | 11 | 32,3 | 8,6 | 5,5 | 30,0 | 9,8 | 5,1 | 28,9 | 10,4 | 5,0 | 27,7 | 11,1 | 4,8 | 26,9 | 11,5 | 4,6 | 25,6 | 12,3 | 4,4 | 45 |
| | 13 | 33,9 | 8,8 | 5,8 | 31,4 | 10,0 | 5,4 | 30,3 | 10,6 | 5,2 | 29,1 | 11,3 | 5,0 | 28,2 | 11,7 | 4,8 | 26,9 | 12,5 | 4,6 | 45 |
| | 15 | 35,4 | 9,0 | 6,1 | 32,8 | 10,2 | 5,6 | 31,6 | 10,8 | 5,4 | 30,4 | 11,5 | 5,2 | 29,5 | 11,9 | 5,1 | 28,2 | 12,7 | 4,8 | 44 |
| | 17 | 37,3 | 9,2 | 6,4 | 34,5 | 10,4 | 5,9 | 33,3 | 11,1 | 5,7 | 32,0 | 11,7 | 5,5 | 31,1 | 12,2 | 5,3 | 29,7 | 13,0 | 5,1 | 43 |
| | 20 | 40,0 | 9,6 | 6,9 | 37,2 | 10,9 | 6,4 | 35,8 | 11,5 | 6,2 | 34,5 | 12,1 | 5,9 | 33,5 | 12,6 | 5,8 | - | - | - | 41 |

## iC410

| Glycol | tu | External air temperature ta (°C) | | | | | | | | | | | | | | | | | | ta max |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 25 | | | 32 | | | 35 | | | 38 | | | 40 | | | 43 | | | |
| | | Pf | Pa | Fw | Pf | Pa | Fw | Pf | Pa | Fw | Pf | Pa | Fw | Pf | Pa | Fw | Pf | Pa | Fw | |
| | (°C) | (kW) | (kW) | (m³/h) | (kW) | (kW) | (m³/h) | (kW) | (kW) | (m³/h) | (kW) | (kW) | (m³/h) | (kW) | (kW) | (m³/h) | (kW) | (kW) | (m³/h) | (°C) |
| 35% | -10 | 19,2 | 9,1 | 3,3 | 17,7 | 10,2 | 3,0 | 16,9 | 10,9 | 2,9 | 16,1 | 11,6 | 2,7 | 15,5 | 12,1 | 2,6 | - | - | - | 42 |
| 35% | -7 | 21,7 | 9,1 | 3,7 | 19,8 | 10,4 | 3,4 | 19,0 | 11,0 | 3,2 | 18,1 | 11,8 | 3,1 | 17,5 | 12,3 | 3,0 | 16,5 | 13,1 | 2,8 | 44 |
| 25% | -5 | 24,0 | 9,2 | 4,1 | 21,9 | 10,5 | 3,7 | 21,0 | 11,2 | 3,6 | 20,0 | 11,9 | 3,4 | 19,4 | 12,4 | 3,3 | 18,3 | 13,2 | 3,1 | 46 |
| 25% | -3 | 26,1 | 9,3 | 4,5 | 23,9 | 10,7 | 4,1 | 22,9 | 11,3 | 3,9 | 21,9 | 12,0 | 3,7 | 21,2 | 12,5 | 3,6 | 20,1 | 13,4 | 3,4 | 46 |
| 20% | 0 | 29,8 | 9,5 | 5,1 | 27,4 | 10,9 | 4,7 | 26,3 | 11,5 | 4,5 | 25,2 | 12,2 | 4,3 | 24,4 | 12,7 | 4,2 | 23,1 | 13,6 | 4,0 | 46 |
| 20% | 3 | 33,3 | 9,7 | 5,7 | 30,7 | 11,0 | 5,3 | 29,5 | 11,7 | 5,1 | 28,3 | 12,4 | 4,8 | 27,4 | 13,0 | 4,7 | 26,1 | 13,8 | 4,5 | 46 |
| | 5 | 36,3 | 9,8 | 6,2 | 33,5 | 11,2 | 5,7 | 32,2 | 11,9 | 5,5 | 30,9 | 12,6 | 5,3 | 29,9 | 13,1 | 5,1 | 28,5 | 14,0 | 4,9 | 46 |
| | 7 | 38,1 | 10,0 | 6,5 | 35,3 | 11,4 | 6,0 | 33,9 | 12,0 | 5,8 | 32,5 | 12,8 | 5,6 | 31,5 | 13,3 | 5,4 | 30,1 | 14,1 | 5,2 | 46 |
| | 9 | 40,0 | 10,1 | 6,9 | 37,0 | 11,5 | 6,4 | 35,7 | 12,2 | 6,1 | 34,2 | 12,9 | 5,9 | 33,2 | 13,5 | 5,7 | 31,7 | 14,3 | 5,4 | 46 |
| | 11 | 41,9 | 10,3 | 7,2 | 38,8 | 11,7 | 6,7 | 37,4 | 12,3 | 6,4 | 35,9 | 13,1 | 6,2 | 34,9 | 13,6 | 6,0 | 33,2 | 14,5 | 5,7 | 46 |
| | 13 | 43,8 | 10,4 | 7,5 | 40,6 | 11,8 | 7,0 | 39,0 | 12,5 | 6,7 | 37,6 | 13,2 | 6,4 | 36,5 | 13,8 | 6,3 | 34,8 | 14,6 | 6,0 | 46 |
| | 15 | 45,7 | 10,6 | 7,8 | 42,3 | 12,0 | 7,3 | 40,8 | 12,7 | 7,0 | 39,2 | 13,4 | 6,7 | 38,1 | 13,9 | 6,5 | 36,4 | 14,8 | 6,2 | 46 |
| | 17 | 48,2 | 10,8 | 8,3 | 44,7 | 12,2 | 7,7 | 43,1 | 12,9 | 7,4 | 41,5 | 13,6 | 7,1 | 40,2 | 14,2 | 6,9 | 38,5 | 15,0 | 6,6 | 46 |
| | 20 | 52,0 | 11,1 | 8,9 | 48,4 | 12,5 | 8,3 | 46,7 | 13,2 | 8,0 | 44,9 | 14,0 | 7,7 | 43,6 | 14,5 | 7,5 | 41,7 | 15,4 | 7,2 | 45 |

## iC412

| Glycol | tu | External air temperature ta (°C) | | | | | | | | | | | | | | | | | | ta max |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 25 | | | 32 | | | 35 | | | 38 | | | 40 | | | 43 | | | |
| | | Pf | Pa | Fw | Pf | Pa | Fw | Pf | Pa | Fw | Pf | Pa | Fw | Pf | Pa | Fw | Pf | Pa | Fw | |
| | (°C) | (kW) | (kW) | (m³/h) | (kW) | (kW) | (m³/h) | (kW) | (kW) | (m³/h) | (kW) | (kW) | (m³/h) | (kW) | (kW) | (m³/h) | (kW) | (kW) | (m³/h) | (°C) |
| 35% | -10 | 23,8 | 10,9 | 4,1 | 22,1 | 12,4 | 3,8 | 21,2 | 13,1 | 3,6 | 20,2 | 13,9 | 3,4 | 19,5 | 14,4 | 3,3 | 18,5 | 15,3 | 3,2 | 43 |
| 35% | -7 | 26,6 | 11,1 | 4,5 | 24,5 | 12,6 | 4,2 | 23,6 | 13,4 | 4,0 | 22,5 | 14,2 | 3,8 | 21,8 | 14,7 | 3,7 | 20,7 | 15,6 | 3,5 | 45 |
| 25% | -5 | 29,3 | 11,3 | 5,0 | 27,1 | 12,9 | 4,6 | 26,0 | 13,6 | 4,4 | 24,8 | 14,5 | 4,2 | 24,1 | 15,0 | 4,1 | 22,8 | 15,9 | 3,9 | 46 |
| 25% | -3 | 31,9 | 11,4 | 5,4 | 29,5 | 13,1 | 5,0 | 28,3 | 13,8 | 4,8 | 27,0 | 14,7 | 4,6 | 26,2 | 15,3 | 4,5 | 24,9 | 16,2 | 4,3 | 46 |
| 20% | 0 | 36,6 | 11,7 | 6,3 | 33,8 | 13,4 | 5,8 | 32,5 | 14,2 | 5,6 | 31,1 | 15,0 | 5,3 | 30,1 | 15,6 | 5,1 | 28,7 | 16,5 | 4,9 | 46 |
| 20% | 3 | 40,8 | 12,0 | 7,0 | 37,8 | 13,7 | 6,5 | 36,4 | 14,5 | 6,2 | 34,9 | 15,3 | 6,0 | 33,8 | 15,9 | 5,8 | 32,1 | 16,9 | 5,5 | 46 |
| | 5 | 44,7 | 12,3 | 7,7 | 41,3 | 14,0 | 7,1 | 39,7 | 14,8 | 6,8 | 38,1 | 15,6 | 6,5 | 36,9 | 16,3 | 6,3 | 35,0 | 17,2 | 6,0 | 46 |
| | 7 | 46,9 | 12,5 | 8,0 | 43,4 | 14,2 | 7,4 | 41,7 | 15,0 | 7,1 | 40,0 | 15,9 | 6,8 | 38,8 | 16,5 | 6,6 | 36,9 | 17,5 | 6,3 | 46 |
| | 9 | 49,2 | 12,7 | 8,4 | 45,4 | 14,4 | 7,8 | 43,8 | 15,2 | 7,5 | 41,9 | 16,1 | 7,2 | 40,6 | 16,7 | 7,0 | 38,7 | 17,7 | 6,6 | 46 |
| | 11 | 51,5 | 12,9 | 8,8 | 47,5 | 14,6 | 8,2 | 45,7 | 15,4 | 7,8 | 43,8 | 16,3 | 7,5 | 42,5 | 16,9 | 7,3 | 40,4 | 17,9 | 6,9 | 46 |
| | 13 | 53,8 | 13,1 | 9,2 | 49,7 | 14,8 | 8,5 | 47,8 | 15,6 | 8,2 | 45,8 | 16,5 | 7,9 | 44,5 | 17,2 | 7,6 | 42,3 | 18,2 | 7,3 | 46 |
| | 15 | 55,9 | 13,3 | 9,6 | 51,7 | 15,0 | 8,9 | 49,7 | 15,9 | 8,5 | 47,8 | 16,8 | 8,2 | 46,4 | 17,4 | 8,0 | 44,2 | 18,4 | 7,6 | 46 |
| | 17 | 59,0 | 13,6 | 10,1 | 54,5 | 15,3 | 9,4 | 52,5 | 16,2 | 9,0 | 50,3 | 17,1 | 8,6 | 48,8 | 17,7 | 8,4 | 46,6 | 18,7 | 8,0 | 46 |
| | 20 | 63,7 | 14,1 | 11,0 | 58,9 | 15,8 | 10,1 | 56,6 | 16,7 | 9,7 | 54,3 | 17,6 | 9,3 | 52,7 | 18,2 | 9,1 | 50,3 | 19,3 | 8,6 | 45 |

## iC416

| Glycol | tu | External air temperature ta (°C) | | | | | | | | | | | | | | | | | | ta max |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 25 | | | 32 | | | 35 | | | 38 | | | 40 | | | 43 | | | |
| | | Pf | Pa | Fw | Pf | Pa | Fw | Pf | Pa | Fw | Pf | Pa | Fw | Pf | Pa | Fw | Pf | Pa | Fw | |
| | (°C) | (kW) | (kW) | (m³/h) | (kW) | (kW) | (m³/h) | (kW) | (kW) | (m³/h) | (kW) | (kW) | (m³/h) | (kW) | (kW) | (m³/h) | (kW) | (kW) | (m³/h) | (°C) |
| 35% | -10 | 28,5 | 13,1 | 4,9 | 26,2 | 14,9 | 4,5 | 25,1 | 15,9 | 4,3 | 23,9 | 16,9 | 4,1 | 23,1 | 17,7 | 3,9 | - | - | - | 42 |
| 35% | -7 | 31,6 | 13,5 | 5,4 | 29,1 | 15,3 | 5,0 | 27,9 | 16,2 | 4,8 | 26,7 | 17,2 | 4,6 | 25,8 | 18,0 | 4,4 | 24,5 | 19,2 | 4,2 | 44 |
| 25% | -5 | 34,6 | 13,8 | 5,9 | 31,9 | 15,6 | 5,5 | 30,7 | 16,5 | 5,2 | 29,3 | 17,5 | 5,0 | 28,4 | 18,3 | 4,9 | 27,0 | 19,5 | 4,6 | 46 |
| 25% | -3 | 37,5 | 14,1 | 6,4 | 34,6 | 15,9 | 5,9 | 33,3 | 16,8 | 5,7 | 31,9 | 17,8 | 5,4 | 30,9 | 18,5 | 5,3 | 29,3 | 19,7 | 5,0 | 46 |
| 20% | 0 | 42,7 | 14,5 | 7,3 | 39,4 | 16,4 | 6,7 | 37,9 | 17,3 | 6,5 | 36,3 | 18,3 | 6,2 | 35,2 | 19,0 | 6,0 | 33,5 | 20,2 | 5,7 | 46 |
| 20% | 3 | 47,6 | 15,0 | 8,1 | 44,0 | 16,8 | 7,5 | 42,4 | 17,7 | 7,3 | 40,6 | 18,7 | 7,0 | 39,4 | 19,4 | 6,7 | 37,5 | 20,6 | 6,4 | 46 |
| | 5 | 51,6 | 15,4 | 8,8 | 47,7 | 17,3 | 8,2 | 45,8 | 18,2 | 7,8 | 44,0 | 19,2 | 7,5 | 42,7 | 19,9 | 7,3 | 40,6 | 21,0 | 7,0 | 46 |
| | 7 | 54,0 | 15,7 | 9,3 | 50,0 | 17,6 | 8,6 | 48,1 | 18,5 | 8,3 | 46,2 | 19,5 | 7,9 | 44,8 | 20,2 | 7,7 | 42,7 | 21,3 | 7,3 | 46 |
| | 9 | 56,5 | 16,0 | 9,7 | 52,4 | 17,9 | 9,0 | 50,4 | 18,9 | 8,6 | 48,3 | 19,9 | 8,3 | 46,9 | 20,6 | 8,0 | 44,8 | 21,7 | 7,7 | 45 |
| | 11 | 59,2 | 16,3 | 10,2 | 54,7 | 18,3 | 9,4 | 52,6 | 19,2 | 9,0 | 50,5 | 20,2 | 8,7 | 49,1 | 20,9 | 8,4 | 46,9 | 22,0 | 8,0 | 44 |
| | 13 | 61,7 | 16,7 | 10,6 | 57,1 | 18,6 | 9,8 | 55,0 | 19,6 | 9,4 | 52,8 | 20,6 | 9,1 | 51,3 | 21,3 | 8,8 | 48,9 | 22,4 | 8,4 | 43 |
| | 15 | 64,2 | 17,0 | 11,0 | 59,4 | 19,0 | 10,2 | 57,2 | 19,9 | 9,8 | 54,9 | 20,9 | 9,4 | 53,4 | 21,6 | 9,2 | 51,0 | 22,7 | 8,8 | 43 |
| | 17 | 67,5 | 17,4 | 11,6 | 62,4 | 19,5 | 10,7 | 60,1 | 20,4 | 10,3 | 57,7 | 21,4 | 9,9 | 56,1 | 22,1 | 9,6 | - | - | - | 42 |
| | 20 | 72,6 | 18,1 | 12,5 | 67,2 | 20,2 | 11,6 | 64,7 | 21,1 | 11,1 | 62,1 | 22,1 | 10,7 | 60,3 | 22,9 | 10,4 | - | - | - | 40 |

**tu:** evaporator outlet water temperature;

**ta:** external air temperature;

**Pf:** cooling capacity;

**Pa:** total power absorbed;

**Fw:** water flow rate (ΔT = 5°C).

Interpolation is allowed, extrapolation is not permitted.

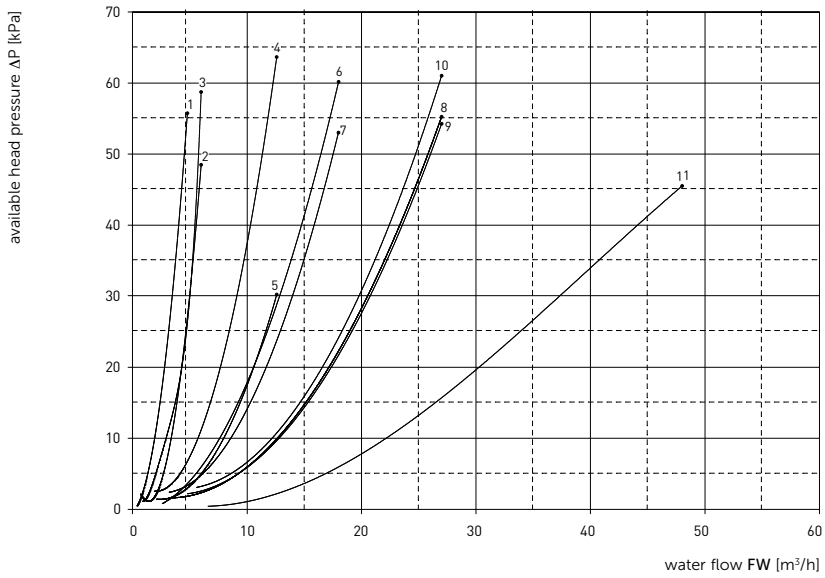
To calculate Pf, Pa and Fw for ΔT≠ 5°C when examining the table "Correction factors for ΔT ≠ 5°C".

**Value includes the correction factor for ethylene glycol.**

Data declared according to UNI EN 14511:2011.

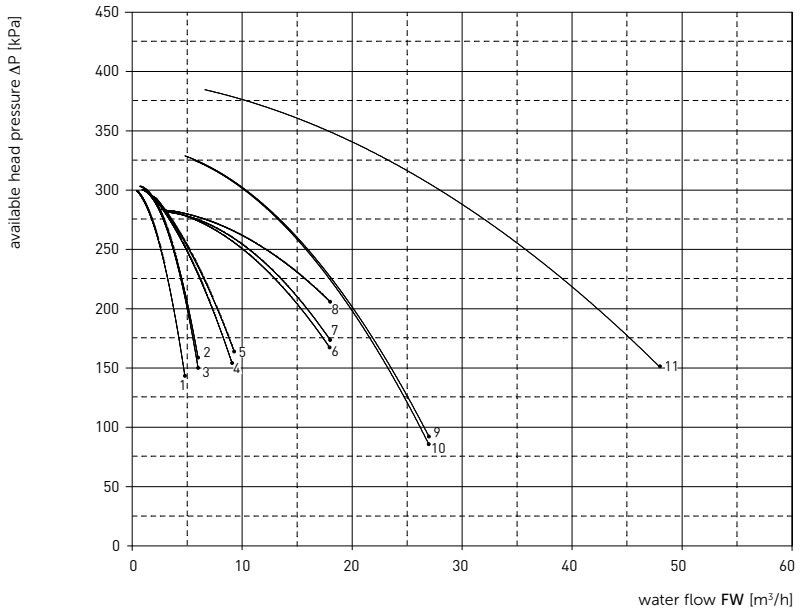
## EVAPORATOR PRESSURE DROPS AND AVAILABLE HEAD PRESSURE

### EVAPORATORS PRESSURE DROPS



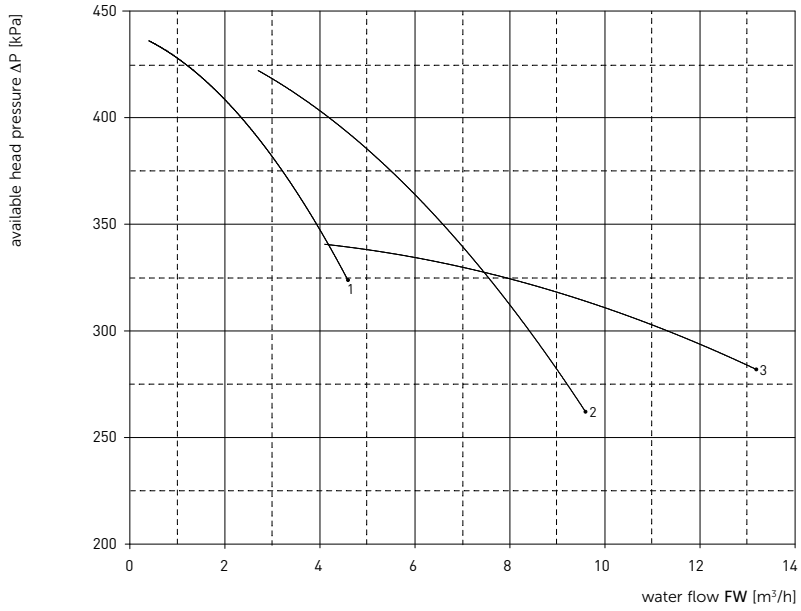

1: iC215 - iC220
2: iC303
3: iC305
4: iC408
5: iC410
6: iC412
7: iC416
8: iC520 - iC525
9: iC530
10: iC535
11: iC640 - iC660

### AVAILABLE PRESSURE WITH PUMP P3 - 50Hz



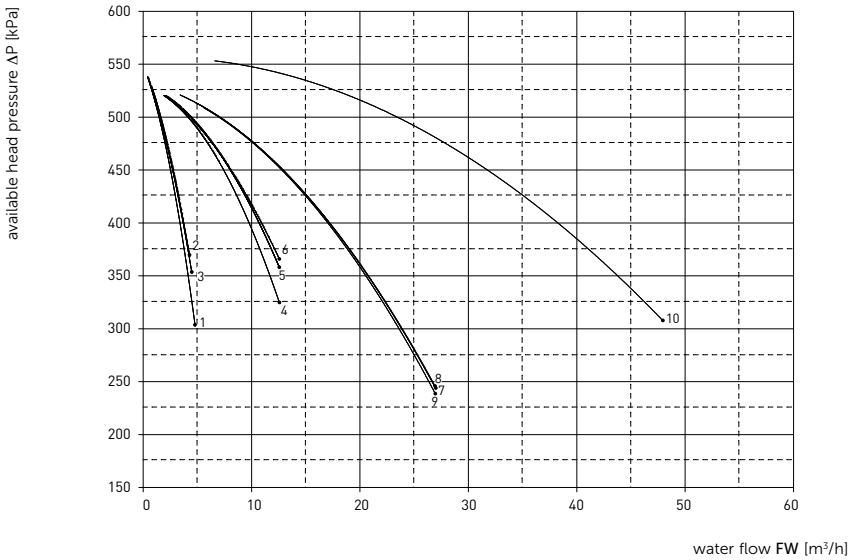

1: iC215 - iC220
2: iC303
3: iC305
4: iC408
5: iC410
6: iC412
7: iC416
8: iC520 - iC525
9: iC530
10: iC535
11: iC640 - iC660

### AVAILABLE PRESSURE WITH PUMP P3 - 60Hz



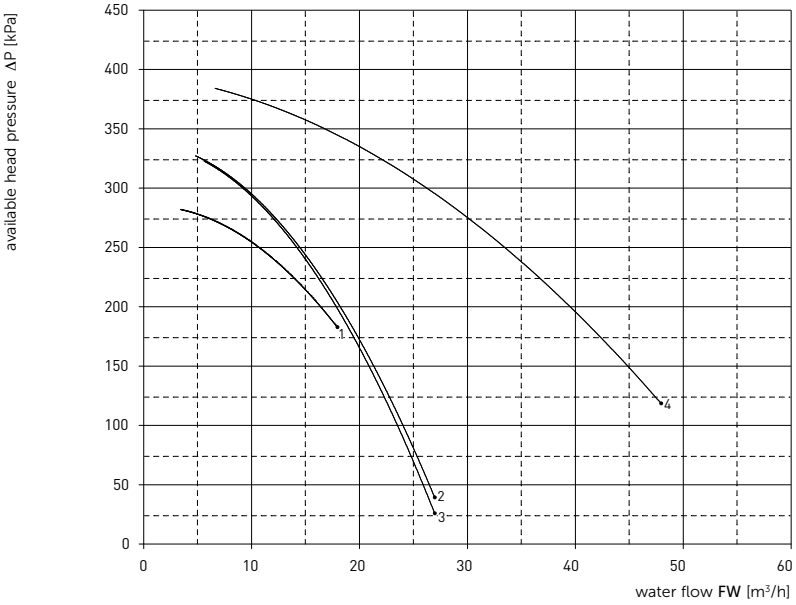

1: iC215 - iC220 - iC303 - iC305
2: iC408 - iC410
3: iC412 - iC416

## AVAILABLE PRESSURE WITH PUMP P5 - 50Hz



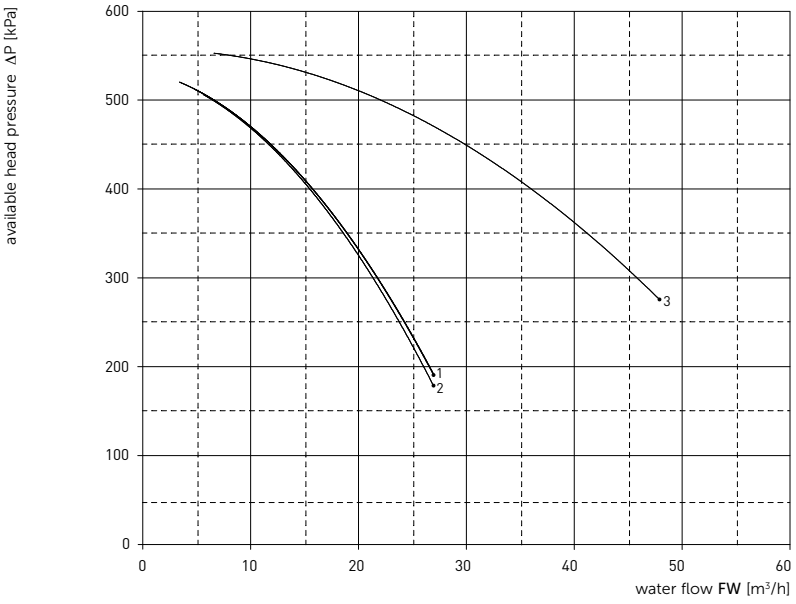

1: iC215 - iC220
2: iC303
3: iC305
4: iC408
5: iC410
6: iC412
7: iC416
8: iC520 - iC525
9: iC530
10: iC535
11: iC640 - iC660

## AVAILABLE PRESSURE WITH DOUBLE PUMP P3 + P3 - 50Hz




1: iC520 - iC525
2: iC530
3: iC535
4: iC640 - iC660

## AVAILABLE PRESSURE WITH DOUBLE PUMP P5 + P5 - 50Hz




1: iC520 - iC525 - iC530
2: iC535
3: iC640 - iC660

# WORKING LIMITS AND CORRECTION FACTORS

## WORKING LIMITS

| Type control fans | External air temperature | | Evaporator inlet water temperature | | Evaporator outlet water temperature | | Delta T of the water | | Pressure in hydraulic circuits, water side with tank | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Min | Max | Min | Max | Min | Max | Min | Max | Min | Max |
| | °C | | °C | | °C | | °C | | barg | |
| On / Off | -5 | 43 (2) | 0 | 35 | -5 | 30 | 4 | 10 | 0 | 6 |
| | 5 | 43 (2) | -5 | 35 | -10 | 30 | | | | |
| Electronic | -5 | 43 (2) | -5 | 35 | -10 | 30 | | | | |
| | -20 (1) | 43 (2) | -5 | 35 | -10 | 30 | | | | |

For outlet water temperature <+5°C and external air temperature <= 0°C, it is necessary to use an antifreeze solution.

**(1)** Value is refered to the unit with configurator option (-20°C external air temperature). The unit is equipped with electronic fans regulation, crankcase heater and heater electrical panel. If the glycol is not used it is advisable to equipped the unit with frost protection, see paragraph 17.1 options "evaporator anti-freeze heater".

**(2)** Reference values for the complete series. The maximum external air temperatureis refered to the outlet water temperature equal to 15°C. Verify at the differents external air temperature in the performance data.

**Note**: - for the min/max ΔT evaporator side take referece to the selection software.

## SOLUTIONS OF WATER AND ETHYLENE GLYCOL

| | | % Ethylene glycol by weight | | | | | |
|---|---|---|---|---|---|---|---|
| | | 0 | 10 | 20 | 30 | 40 | 50 |
| Freezing temperature | (°C) | 0 | -3,7 | -8,7 | -15,3 | -23,5 | -35,6 |
| Cooling capacity correction factor (kW) | Kf1 | 1,00 | 0,99 | 0,98 | 0,97 | 0,96 | 0,93 |
| Absorbed power correction factor (kW) | Kp1 | 1,00 | 0,99 | 0,98 | 0,98 | 0,97 | 0,95 |
| Water flow correction factor [1] ($m^3/h$) | KFWE1 | 1,00 | 1,02 | 1,05 | 1,07 | 1,11 | 1,13 |
| Pressure drop correction factor (kPa) | Kdp1 | 1,00 | 1,08 | 1,17 | 1,25 | 1,33 | 1,41 |

Multiply the unit performance by the correction factors given in the table (Pf* = Pf x Kf1). If the value already includes the glycol correction factor do not use this table. (1) KFWE1 = Correction factor (refers to the cooling capacity corrected by Kf) to obtain the water flow with a ΔT of 5°C.

## CORRECTION FACTORS ΔT ≠ 5°C (WATER EVAPORATOR)

| | | ΔT | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| Cooling capacity correction factor | kf4 | 0,99 | 1,00 | 1,01 | 1,01 | 1,02 | 1,02 | 1,03 |
| Absorbed power correction factor | kp4 | 0,99 | 1,00 | 1,00 | 1,01 | 1,01 | 1,04 | 1,08 |

Multiply the unit performance by the correction factors given in table. The new water flow to the evaporator is calculated with the following equation: Fw (l/h) = Pf* (kW) x 860 / ΔT where ΔT is the delta T of the water through the evaporator (°C).

## CONDENSER CORRECTION FACTORS

| | | Altitude (m) | | | | | |
|---|---|---|---|---|---|---|---|
| | | 0 | 500 | 1000 | 1500 | 2000 | 2500 |
| Cooling capacity correction factor (kW) | Kf3 | 1 | 0,990 | 0,980 | 0,977 | 0,972 | 0,960 |
| Absorbed power correction factor (kW) | Kp3 | 1 | 1,005 | 1,012 | 1,018 | 1,027 | 1,034 |
| Derating of the max external air temperature(*) | Kt3(°C) | 0 | 0,6 | 1,1 | 1,8 | 2,5 | 3,3 |

Multiply the unit performance by the correction factors given in table (Pf* = Pf x Kf3, Pa* = Pa x Kp3). (*) To obtain the maximum external air temperature, subtract the values indicated from the maximum external air temperature in the performance table (Ta* = Ta-Kt3).

## THERMAL INSULATION THICKNESS LIMITS

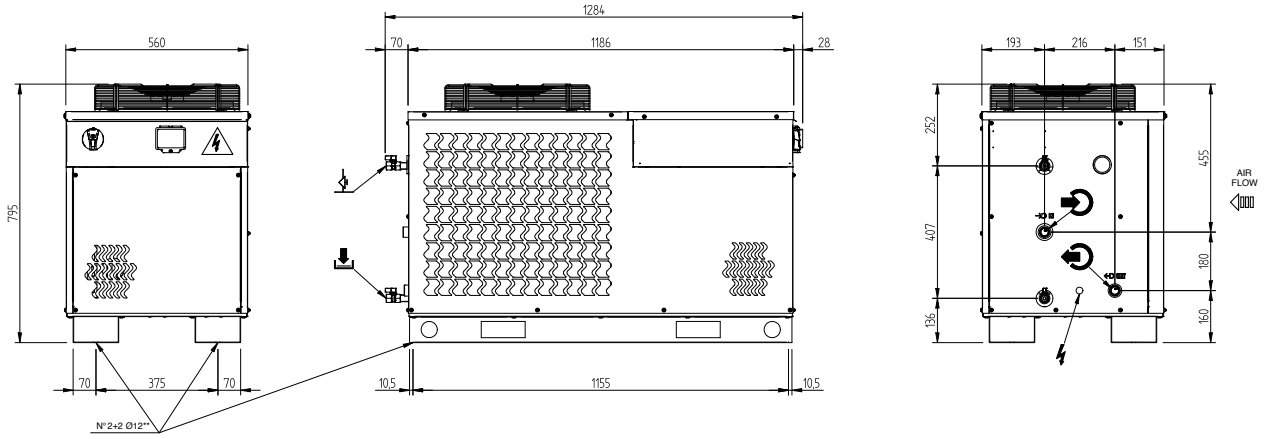
| | | Standard insulation thickness 10 mm (*) | | | | | 20 mm (*) |
|---|---|---|---|---|---|---|---|
| Ambient temperature | 10°C | 20°C | 30°C | 35°C | 40°C | 45°C | 47°C |
| Water outlet temperature | RH Max | | | | | | |
| -10°C | 77% | 71% | 64% | 62% | 60% | 57% | 77% |
| -5°C | 83% | 72% | 68% | 65% | 63% | 61% | 80% |
| 7°C | 97% | 87% | 77% | 75% | 73% | 68% | 83% |
| 15°C | 99% | 95% | 85% | 82% | 78% | 75% | 86% |

The values in the table refer to the thickness of the thermal insulation of the hydraulic circuit and they show the maximum relative humidity above which ambient moisture condenses (these values are ot the operation limits of the chillers).

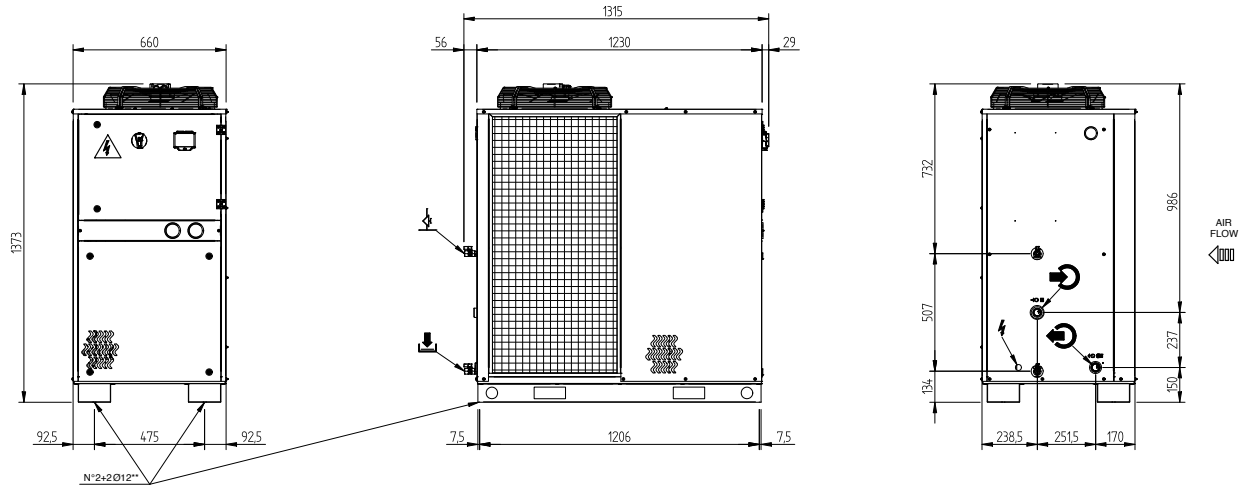
*(*) Closed cell thermal insulation.*

## OVERALL DIMENSIONS

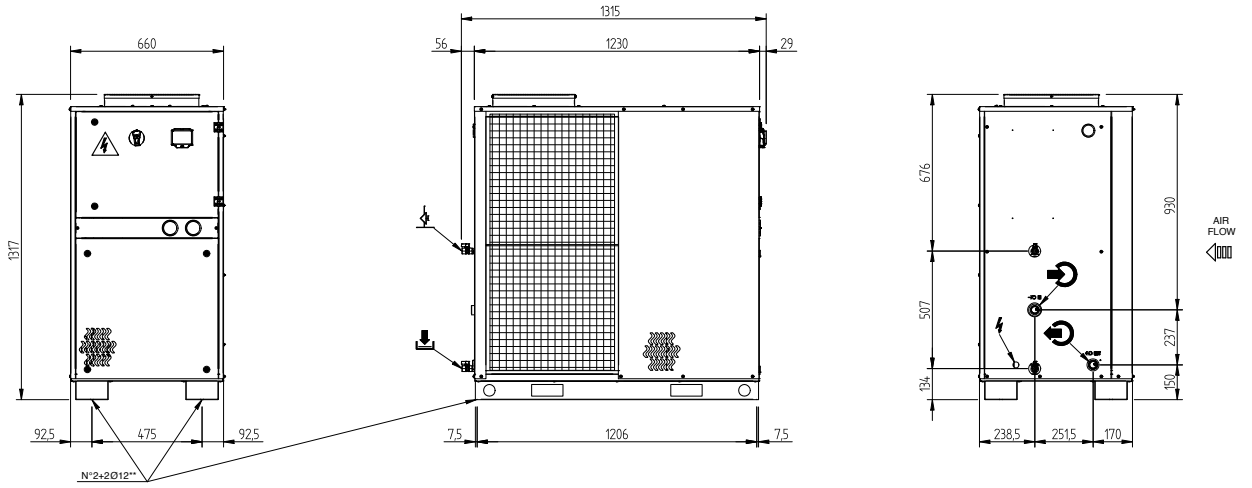
### i-Chiller iC215 - iC220




### i-Chiller iC303 - iC305
### axial fans




### i-Chiller iC303 - iC305
### centrifugal fans




| | iC215 | iC220 | iC303 | iC305 |
|---|---|---|---|---|
| Water inlet | Rp 3/4" | Rp 3/4" | Rp 1" | Rp 1" |
| Water outlet | Rp 3/4" | Rp 3/4" | Rp 1" | Rp 1" |

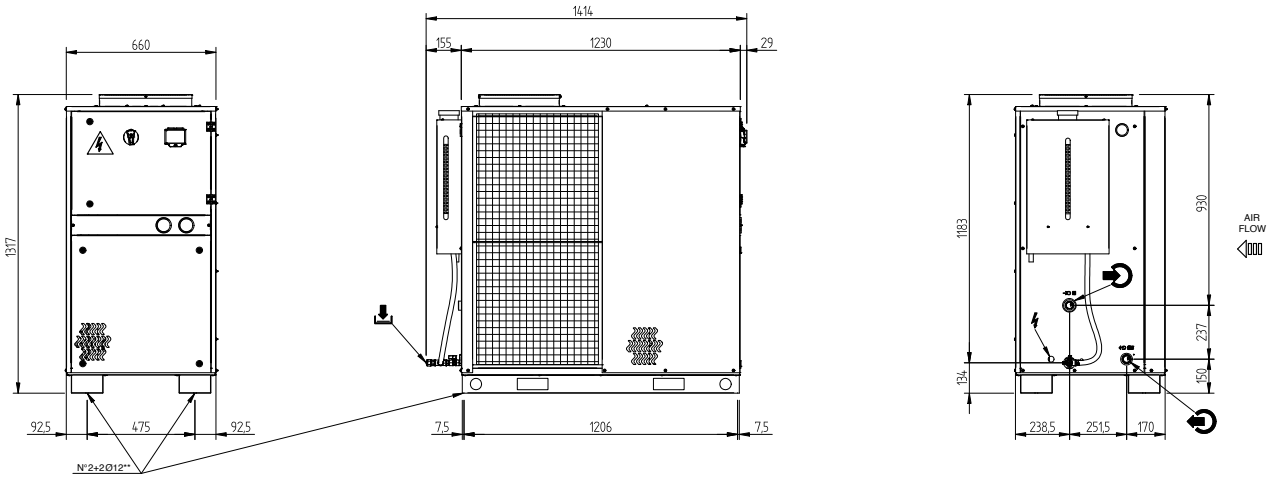
** Holes

Electrical power supply

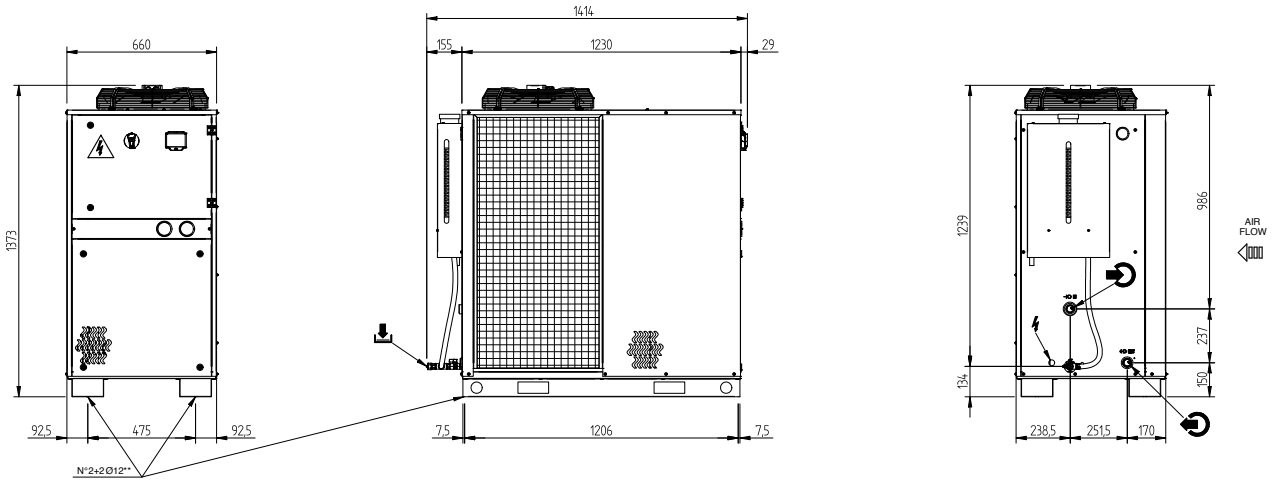
Air vent = Rp 1/2"

Water discharge = Rp 1/2"

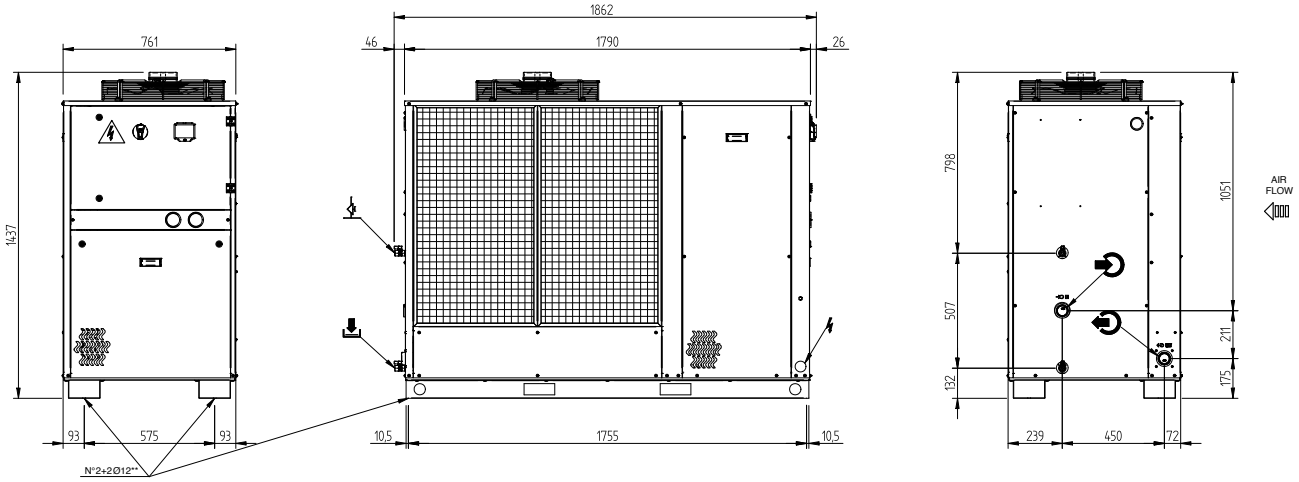
## i-Chiller iC303 - iC305
## centrifugal fans and kit tank




## i-Chiller iC303 - iC305
## axial fans and kit tank




## i-Chiller iC408
## axial fans




| | iC303 | iC305 | iC408 |
|---|---|---|---|
| Water inlet | Rp 1" | Rp 1" | Rp 1"1/2 |
| Water outlet | Rp 1" | Rp 1" | Rp 1"1/2 |

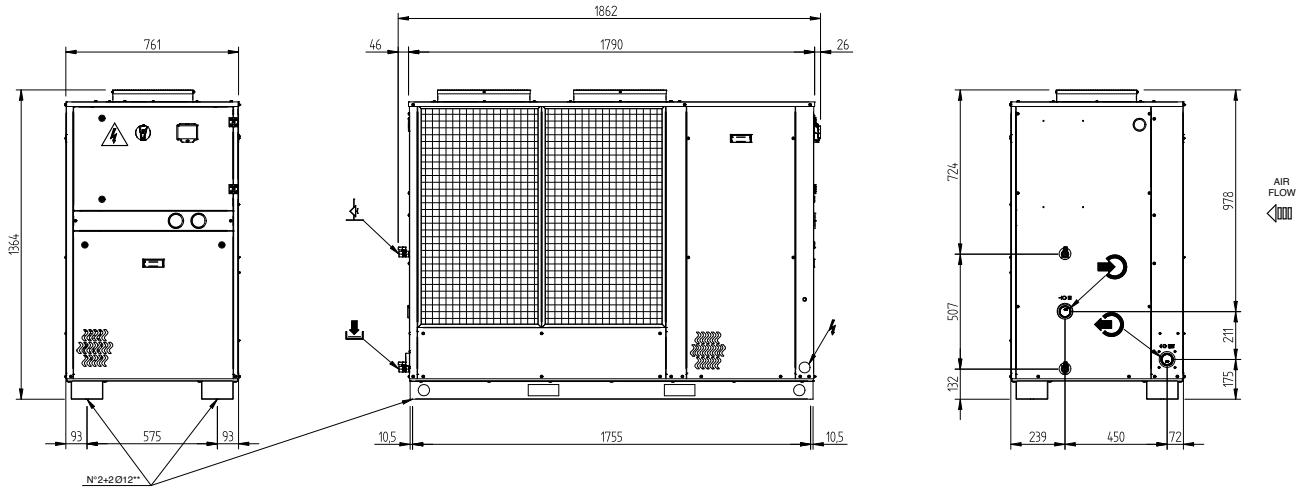
✶✶ Holes

Electrical power supply

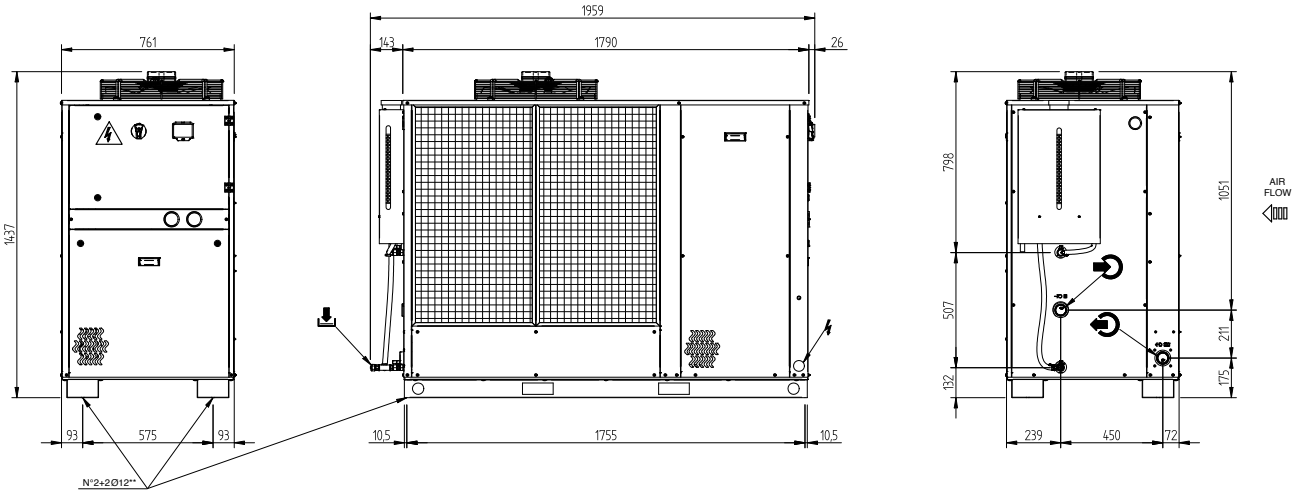
Air vent = Rp 1/2"

Water discharge = Rp 1/2"

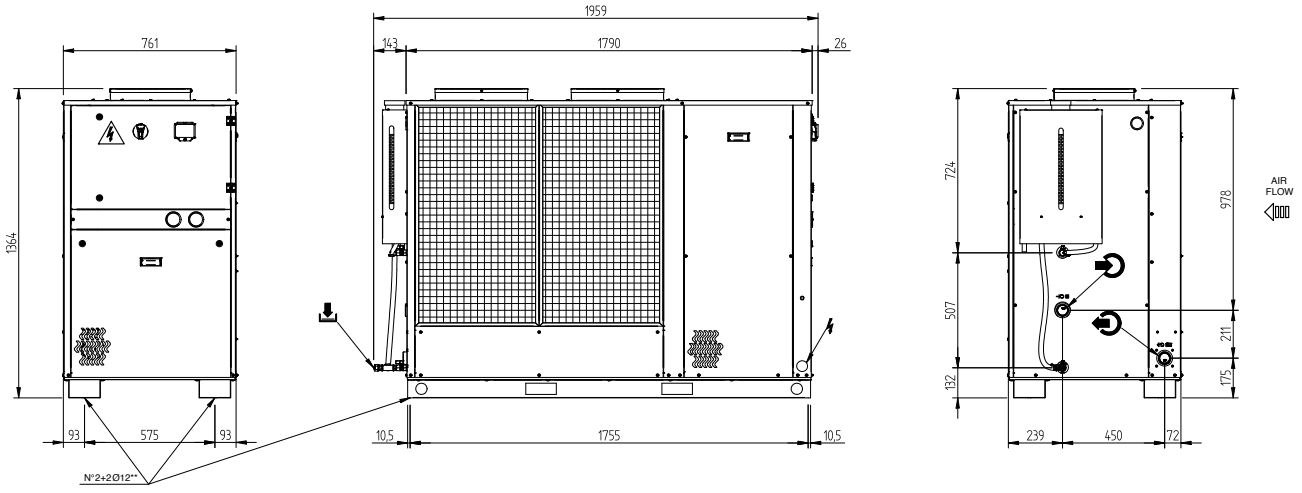
## i-Chiller iC408
## centrifugal fans




## i-Chiller iC408
## axial fans and kit tank




## i-Chiller iC408
## centrifugal fans and kit tank




| | iC408 |
|---|---|
| Water inlet | Rp 1"1/2 |
| Water outlet | Rp 1"1/2 |

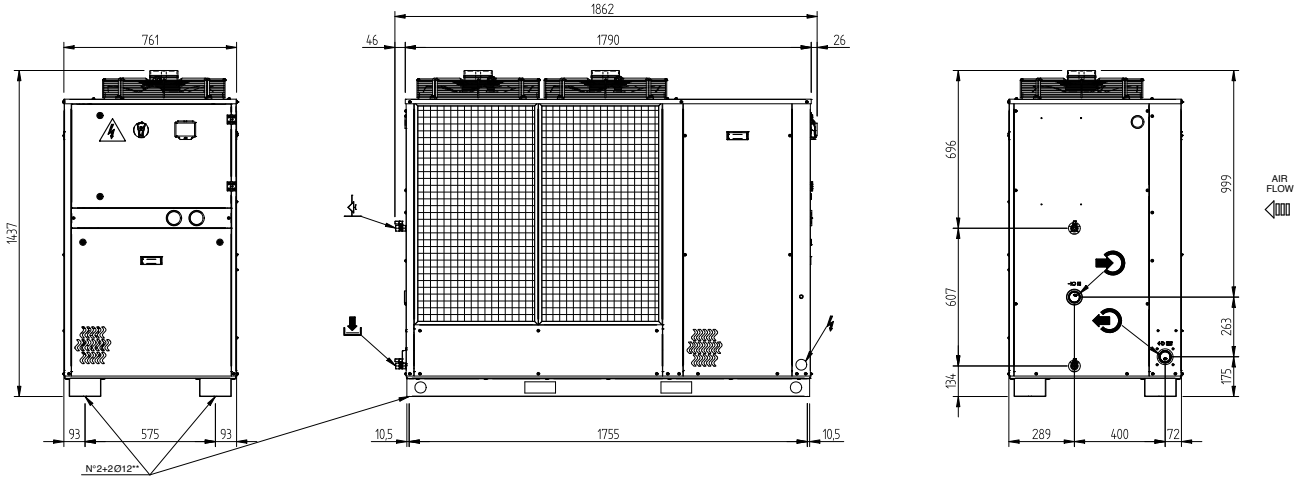
** Holes

Electrical power supply

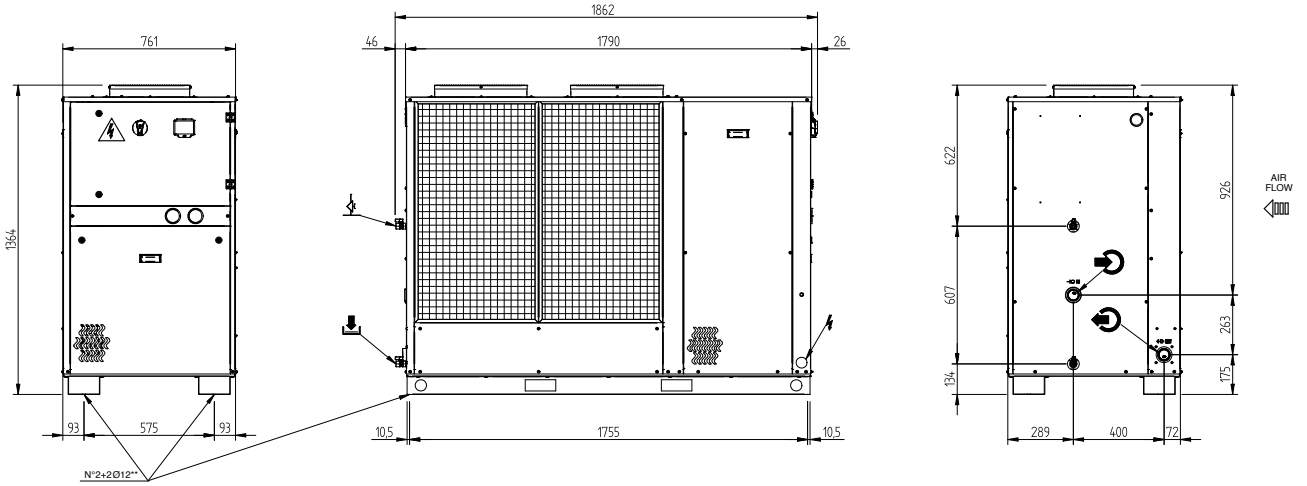
Air vent = Rp 1/2"

Water discharge = Rp 1/2"

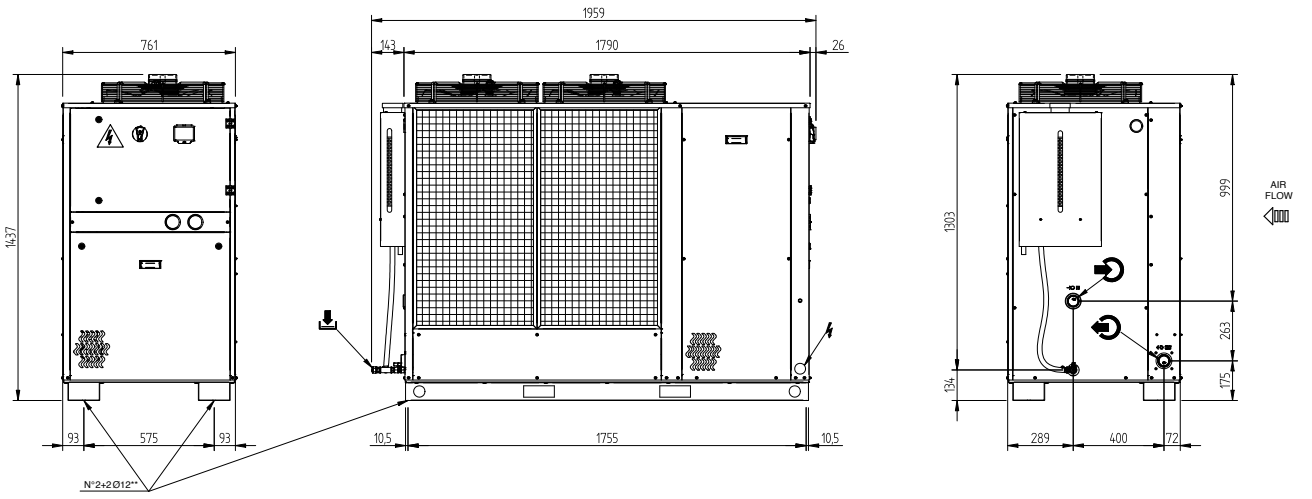
## i-Chiller iC410 - iC412 - iC416
## centrifugal fans and kit tank




## i-Chiller iC410 - iC412 - iC416
## centrifugal fans




## i-Chiller iC410 - iC412 - iC416
## axial fans and kit tank




| | iC410 | iC412 | iC416 |
|---|---|---|---|
| Water inlet | Rp 1" 1/2 | Rp 1" 1/2 | Rp 1" 1/2 |
| Water outlet | Rp 1" 1/2 | Rp 1" 1/2 | Rp 1" 1/2 |

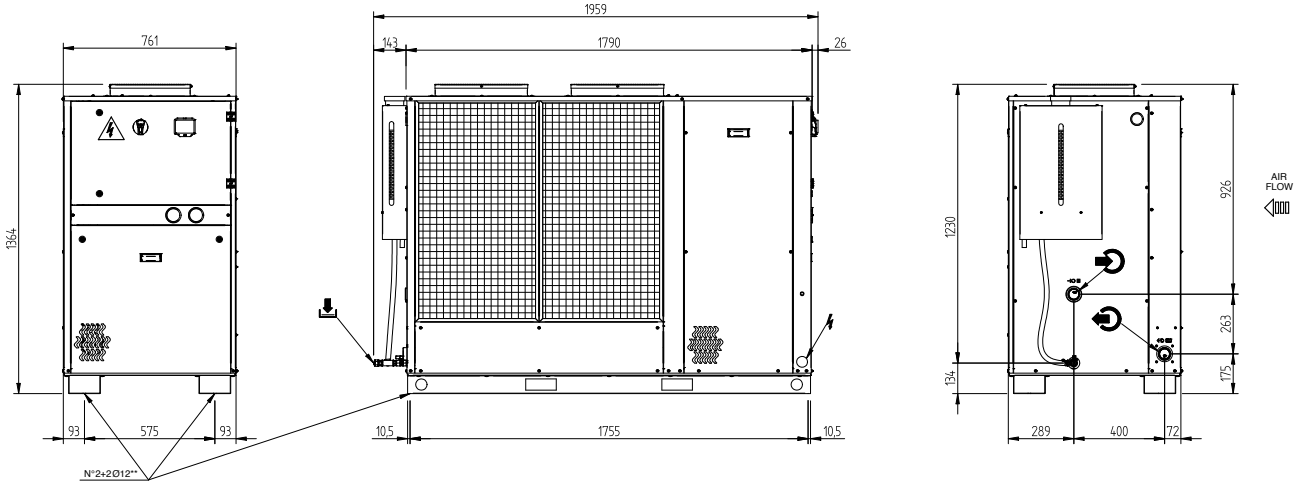
** Holes

Electrical power supply

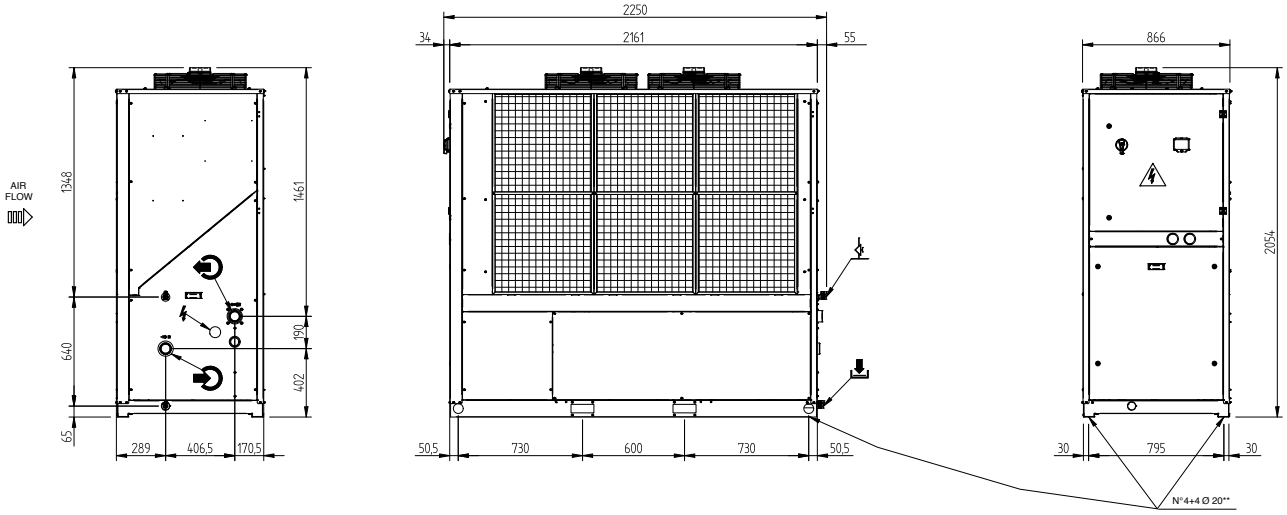
Air vent = Rp 1/2"

Water discharge = Rp 1/2"

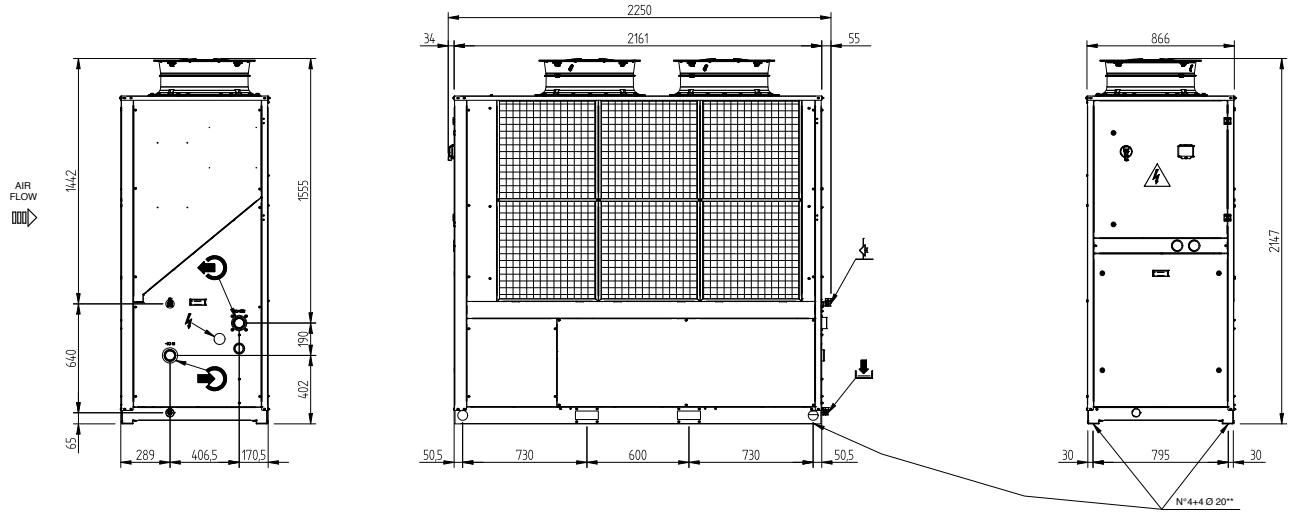
## i-Chiller iC410 - iC412 - iC416
## centrifugal fans and kit tank




## iChiller iC520 - iC525
## axial fans




## iChiller iC520 - iC525
## high pressure axial fans




| | iC410 | iC412 | iC416 | iC520 | iC525 |
|---|---|---|---|---|---|
| Water inlet | Rp 1" 1/2 | Rp 1" 1/2 | Rp 1" 1/2 | Rp 2" | Rp 2" |
| Water outlet | Rp 1" 1/2 | Rp 1" 1/2 | Rp 1" 1/2 | Rp 2" | Rp 2" |

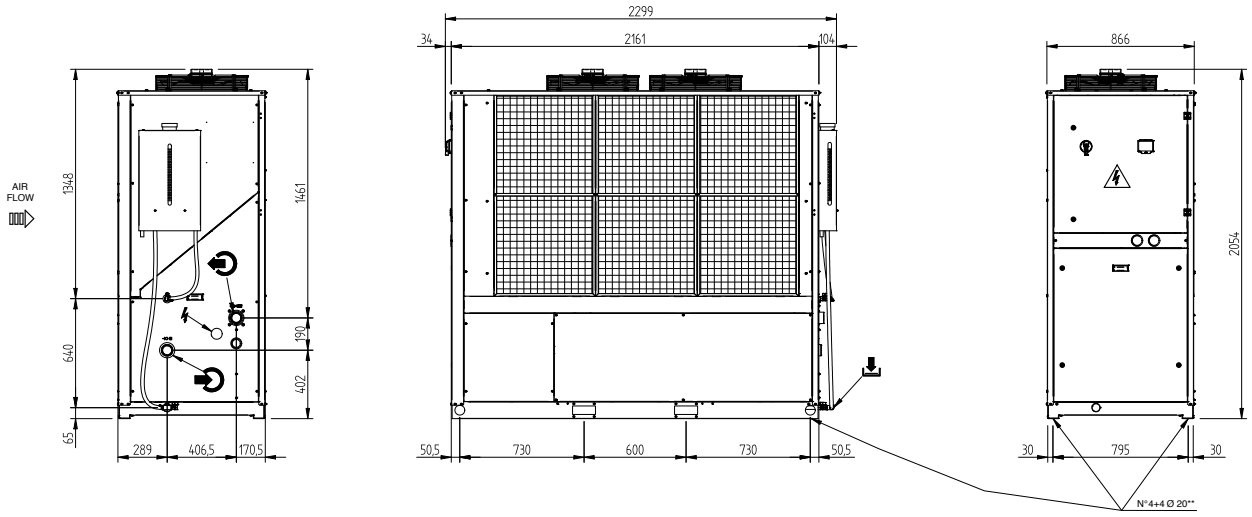
** Holes

Electrical power supply

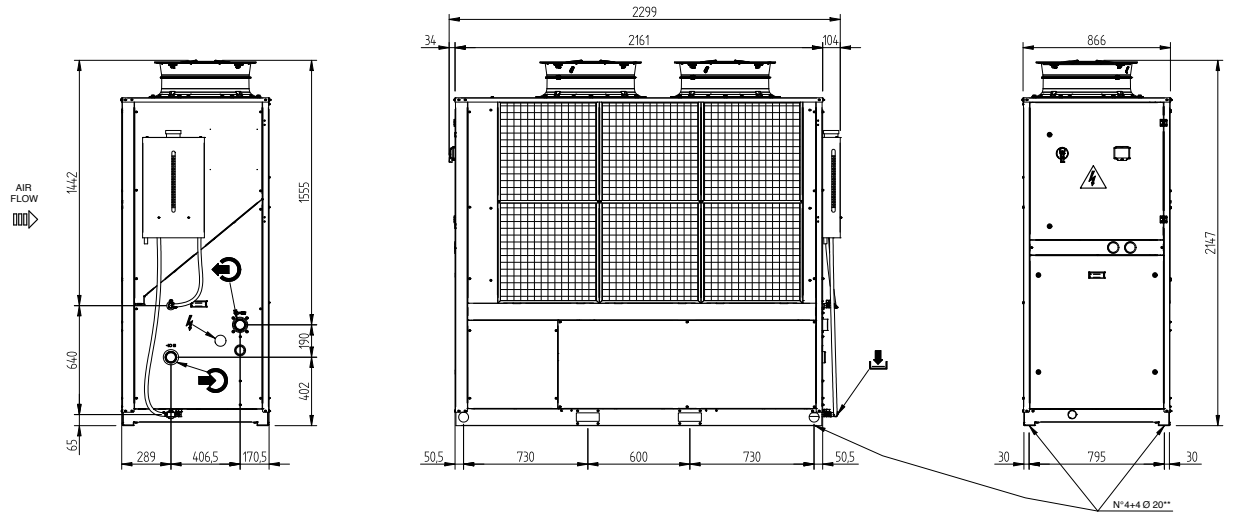
Air vent = Rp 1/2"

Water discharge = Rp 1/2"

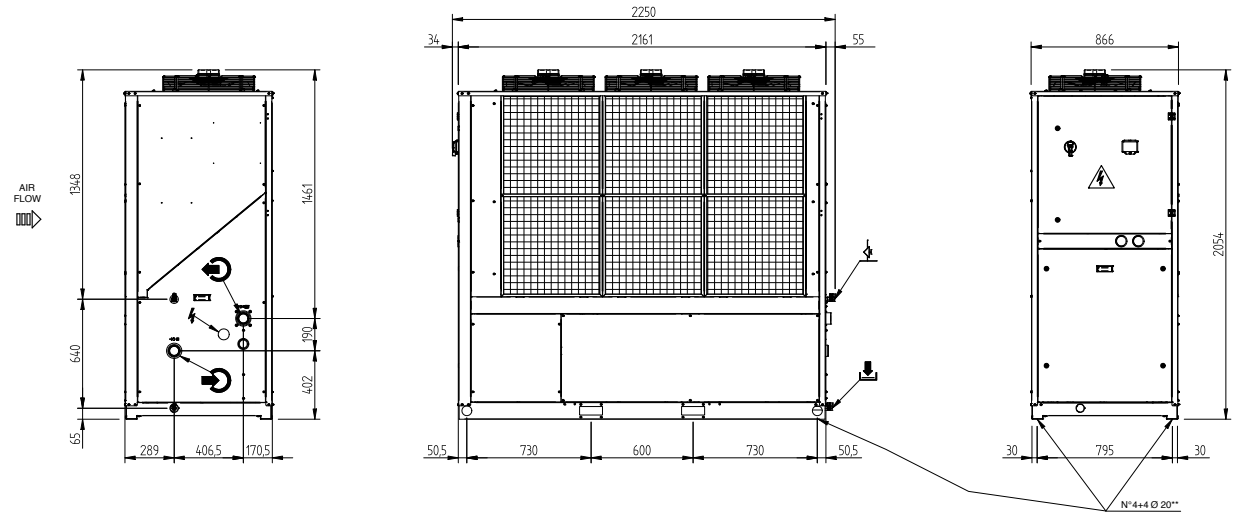
## i-Chiller iC520 - iC525
## axial fans and kit tank




## i-Chiller iC520 - iC525
## high pressure axial fans and kit tank




## i-Chiller iC530 - iC535
## axial fans




| | IC520 | iC525 | iC530 | iC535 |
|---|---|---|---|---|
| Water inlet | Rp 2" | Rp 2" | Rp 2" | Rp 2" |
| Water outlet | Rp 2" | Rp 2" | Rp 2" | Rp 2" |

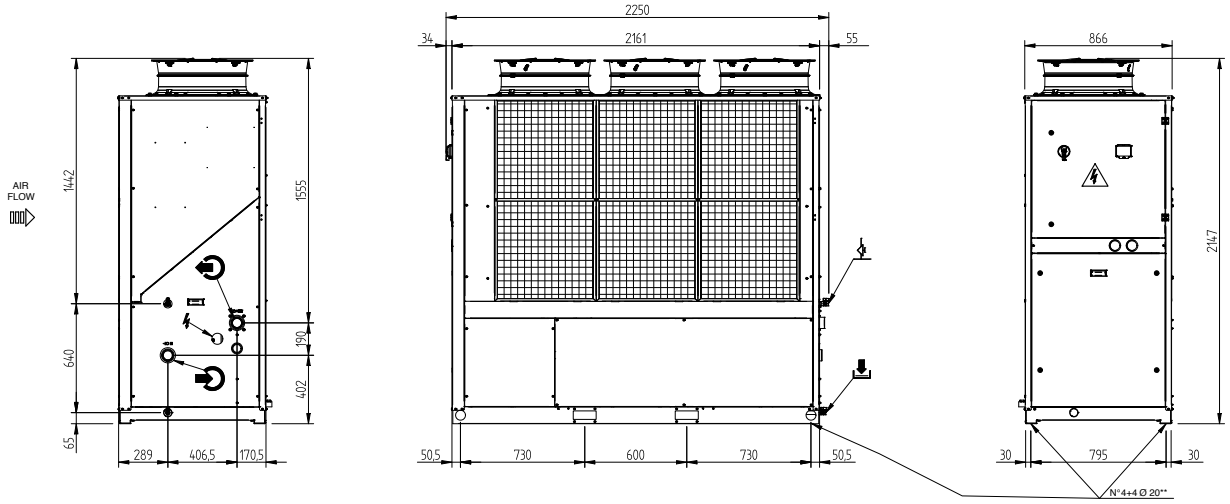
** Holes

Electrical power supply

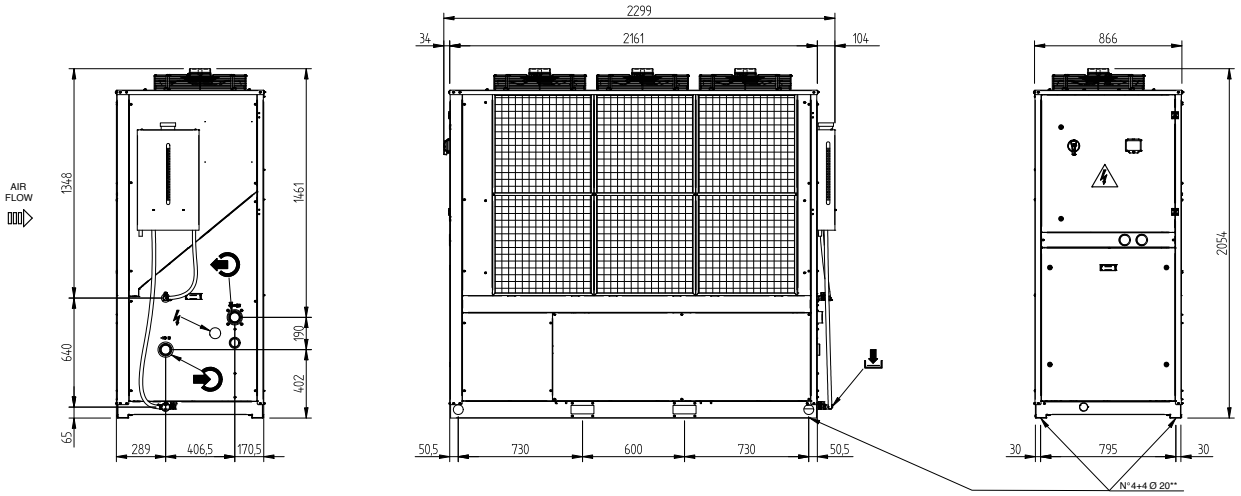
Air vent = Rp 1/2"

Water discharge = Rp 1/2"

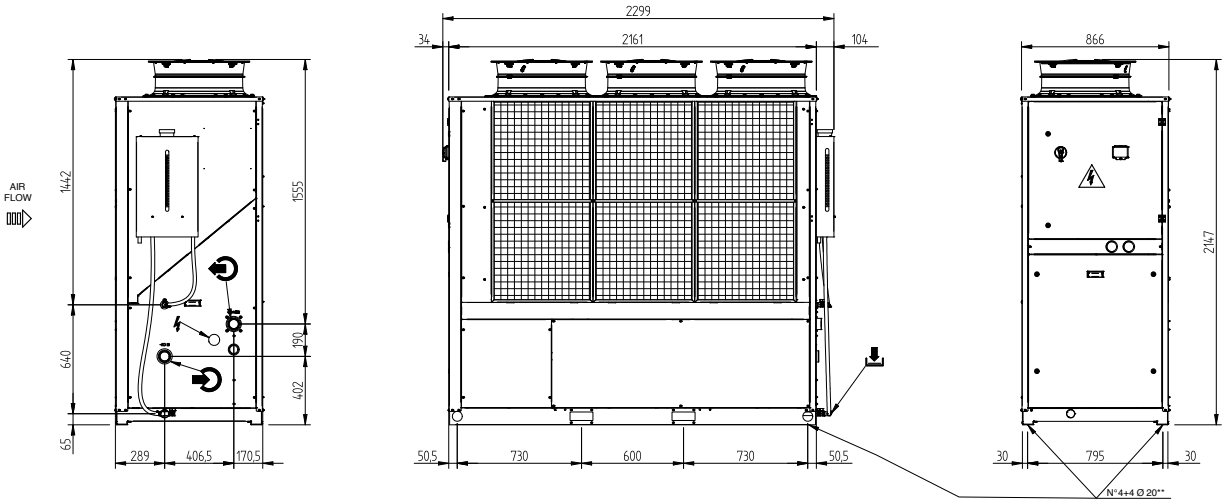
## i-Chiller iC530 - iC535
## high pressure fans




## i-Chiller iC530 - iC535
## axial fans and kit tank




## i-Chiller iC530 - iC535
## high pressure axial fans and kit tank




| | iC530 | iC535 |
|---|---|---|
| Water inlet | Rp 2" | Rp 2" |
| Water outlet | Rp 2" | Rp 2" |

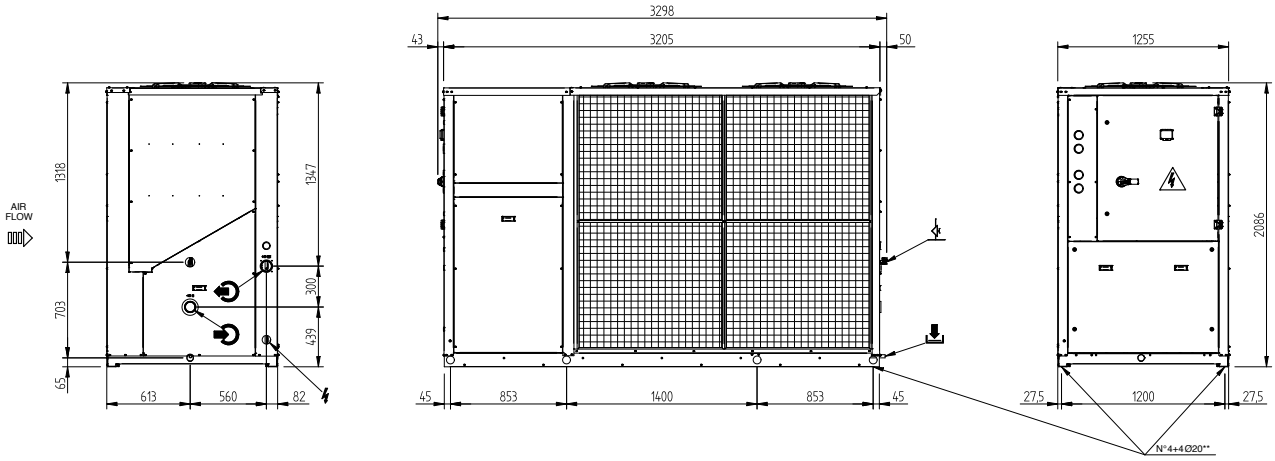
** Holes

Electrical power supply

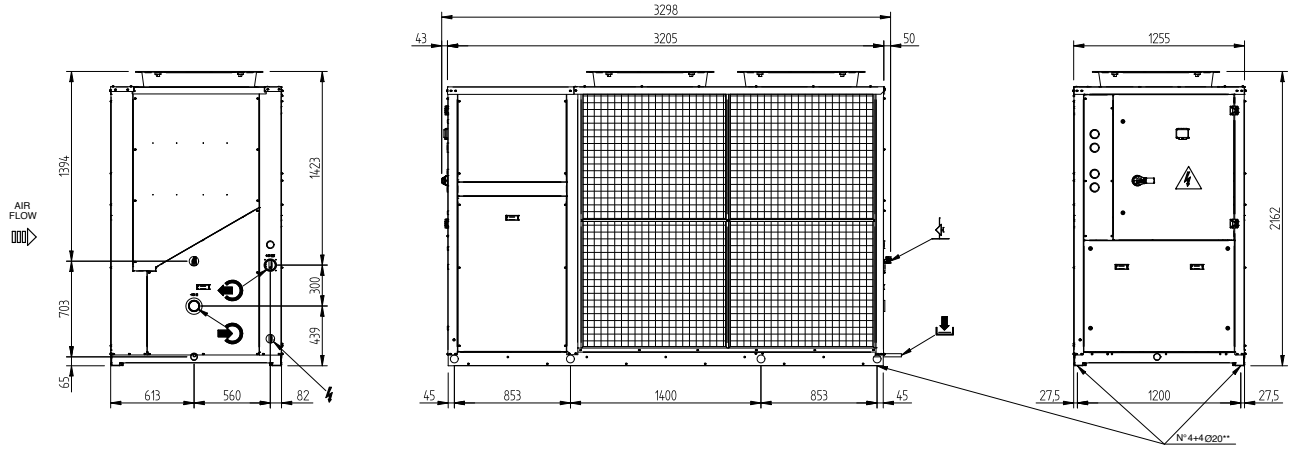
Air vent = Rp 1/2"

Water discharge = Rp 1/2"

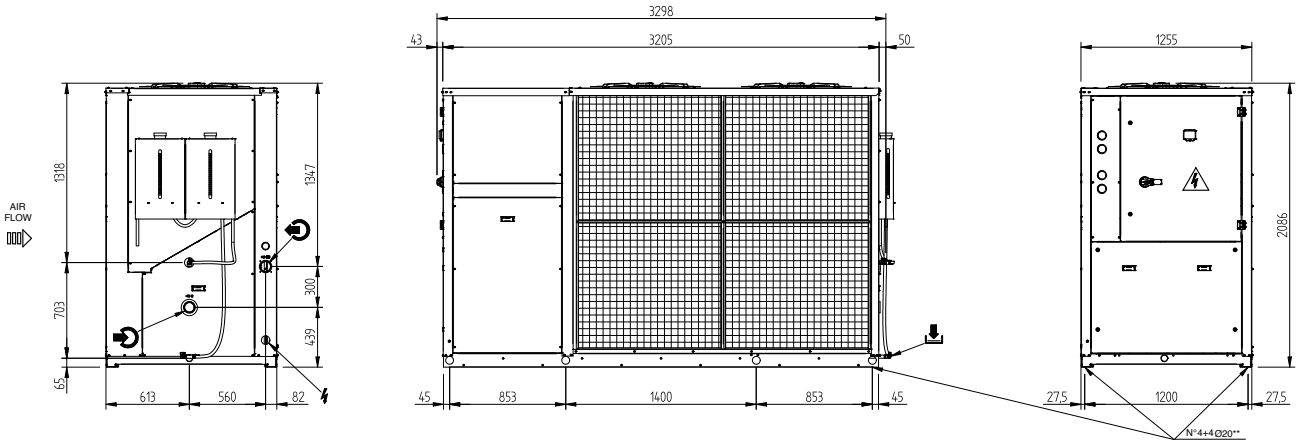
## i-Chiller iC640 - iC650 - iC660
## axial fans




## i-Chiller iC640 - iC650 - iC660
## high pressure axial fans




## i-Chiller iC640 - iC650 - iC660
## axial fans and kit tank



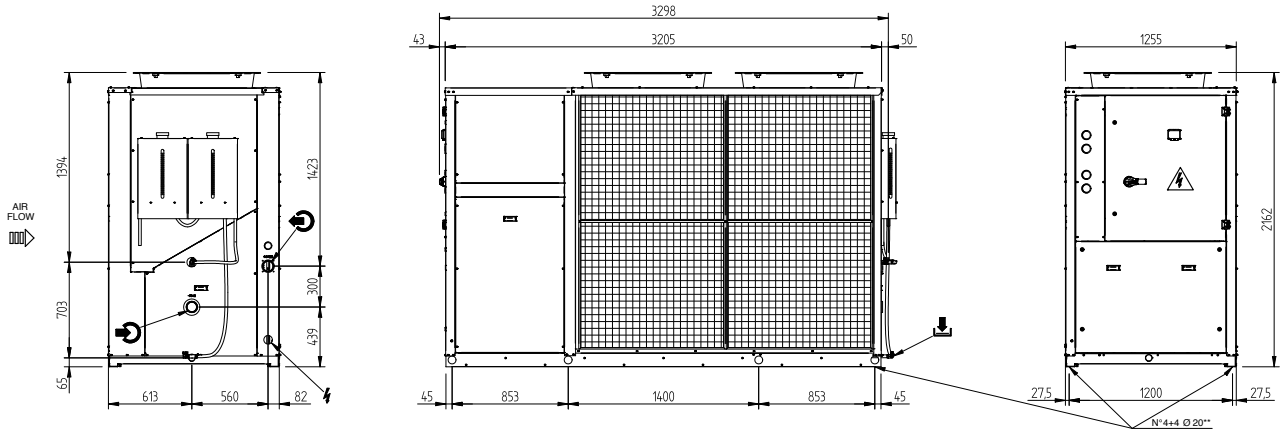

** Holes

Air vent = Rp 1/2"

Electrical power supply

Water discharge = Rp 1/2"

## i-Chiller iC640 - iC650 - iC660
## high pressure axial fans and kit tank




| | 402 | 502 | 602 |
|---|---|---|---|
| Water inlet | Rp 2" 1/2 | Rp 2" 1/2 | Rp 2" 1/2 |
| Water outlet | Rp 2" 1/2 | Rp 2" 1/2 | Rp 2" 1/2 |

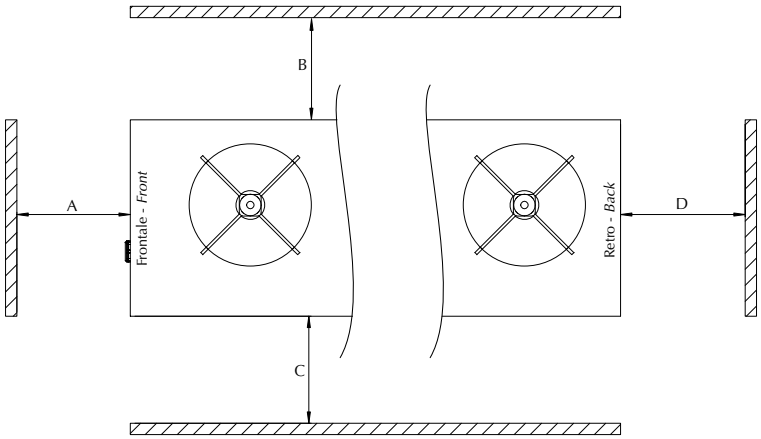
** Holes

Electrical power supply

Air vent = Rp 1/2"

Water discharge = Rp 1/2"

## CLEARANCES




Minimum distance to respect (mm).

| | | A | B | C | D |
|---|---|---|---|---|---|
| Axial | i-Chiller iC215 | 1000 | 0 | 1000 | 1100 |
| | i-Chiller iC220 | 1000 | 0 | 1000 | 1100 |
| | i-Chiller iC303 | 1000 | 0 | 1000 | 1100 |
| | i-Chiller iC305 | 1000 | 0 | 1000 | 1100 |
| | i-Chiller iC408 | 1000 | 0 | 1000 | 1100 |
| | i-Chiller iC410 | 1000 | 0 | 1000 | 1100 |
| | i-Chiller iC412 | 1000 | 0 | 1000 | 1100 |
| | i-Chiller iC416 | 1000 | 0 | 1000 | 1100 |
| | i-Chiller iC520 | 1200 | 1200 | 2000 | 2000 |
| | i-Chiller iC525 | 1200 | 1200 | 2000 | 2000 |
| | i-Chiller iC530 | 1200 | 1200 | 2000 | 2000 |
| | i-Chiller iC535 | 1200 | 1200 | 2000 | 2000 |
| | i-Chiller iC640 | 1200 | 1200 | 2000 | 2500 |
| | i-Chiller iC650 | 1200 | 1200 | 2000 | 2500 |
| | i-Chiller iC660 | 1200 | 1200 | 2000 | 2500 |

| | | | | | |
|---|---|---|---|---|---|
| Centrifugal | i-Chiller iC303 | 1000 | 0 | 1000 | 1100 |
| | i-Chiller iC305 | 1000 | 0 | 1000 | 1100 |
| | i-Chiller iC408 | 1000 | 0 | 1000 | 1100 |
| | i-Chiller iC410 | 1000 | 0 | 1000 | 1100 |
| | i-Chiller iC412 | 1000 | 0 | 1000 | 1100 |
| | i-Chiller iC416 | 1000 | 0 | 1000 | 1100 |

## INSTALLATION GUIDE

**The chillers must be installed in compliance with the following indications:**

**a)** The units must be installed horizontally to ensure correct return of oil to the compressors.

**b)** Ensure the clearances prescribed in the catalogue are observed.

**c)** To the extent possible, place the machine so as to minimize the effects due to the noise, vibration, etc. Specifically, ensure the units are installed as far as possible from areas in which noise emissions could result in disturbance; in this context do not install the chiller under windows or between two residential units vibration transmitted to ground must be reduced by the use of antivibration devices mounted beneath the unit, flexible couplings on the water piping connections and on the trunking containing the electrical power feeding cables.

**d)** Always hook up the electrical connection of the unit with reference to the wiring diagram supplied with it.

**e)** Make the machine hydraulic connections, installing the following:
- antivibration connections.
- shut-off valves (gate valves) to isolate the unit from the hydraulic circuit.
- air venting valves at the highest points of the circuit.
- drain valves at the lowest points of the circuit.
- pump and expansion vessel (closed circuits) if not already supplied on the unit.
- flow switch (to be supplied by the customer).
- strainer (0,5 / 0,8 mm mesh) at unit inlet to protect the exchanger from any metal chips or debris in the piping.

**g)** Install suitable wind screens protecting the condensing coils if the chiller is required to operate with ambient temperatures below 0°C and if it is envisaged that the condensing coils could be subject to wind velocities in excess of 2 m/s.

**h)** If the application requires cooling capacities that are greater than the maximum available with a single unit, the chillers can be hydraulically connected in parallel, provided the units in question are identical to avoid creating situations of imbalance in waterflow rates.

**i)** It is essential to ensure an adequate volume of air on the intake and delivery sides of the condensing coils. It is also important to avoid problems of recirculation of air between the intake and delivery sides to avoid impairment of the unit's performance or even a shut-down of normal operation. When using several chillers connected in parallel with the condensing coils located facing each other it is essential to maintain a minimum distance between the condensing coils. For the minimum distance values refer to the technical catalogue.

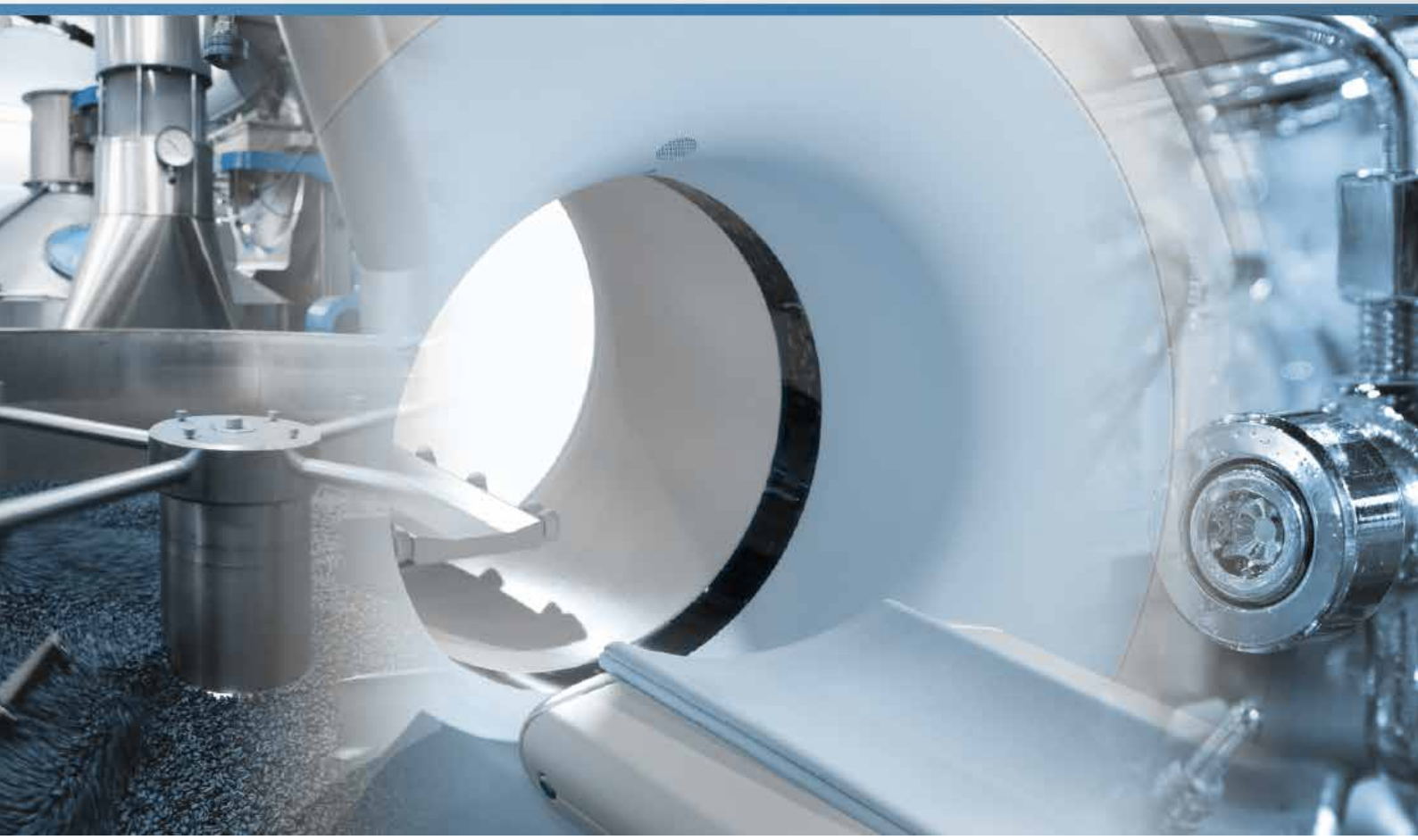
**l)** If it is necessary to treat water flow rates that are higher than the maximum permissible flow rate associated with the chiller, it is advisable to set up a by-pass between the chiller inlet and outlet.

**m)** If it is necessary to treat water flow rates that are lower than the minimum permissible flow rate associated with the chiller, it is advisable to set up a by-pass between the chiller outlet and inlet.

**n)** Always ensure all the air is bled out of the hydraulic circuit to ensure correct operation.

**o)** Always drain the hydraulic circuit during winter shutdowns. Alternatively, ensure the circuit is filled with a suitable antifreeze solution.

# CONTACT US



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