



# TAE<sup>ev</sup>in TECH

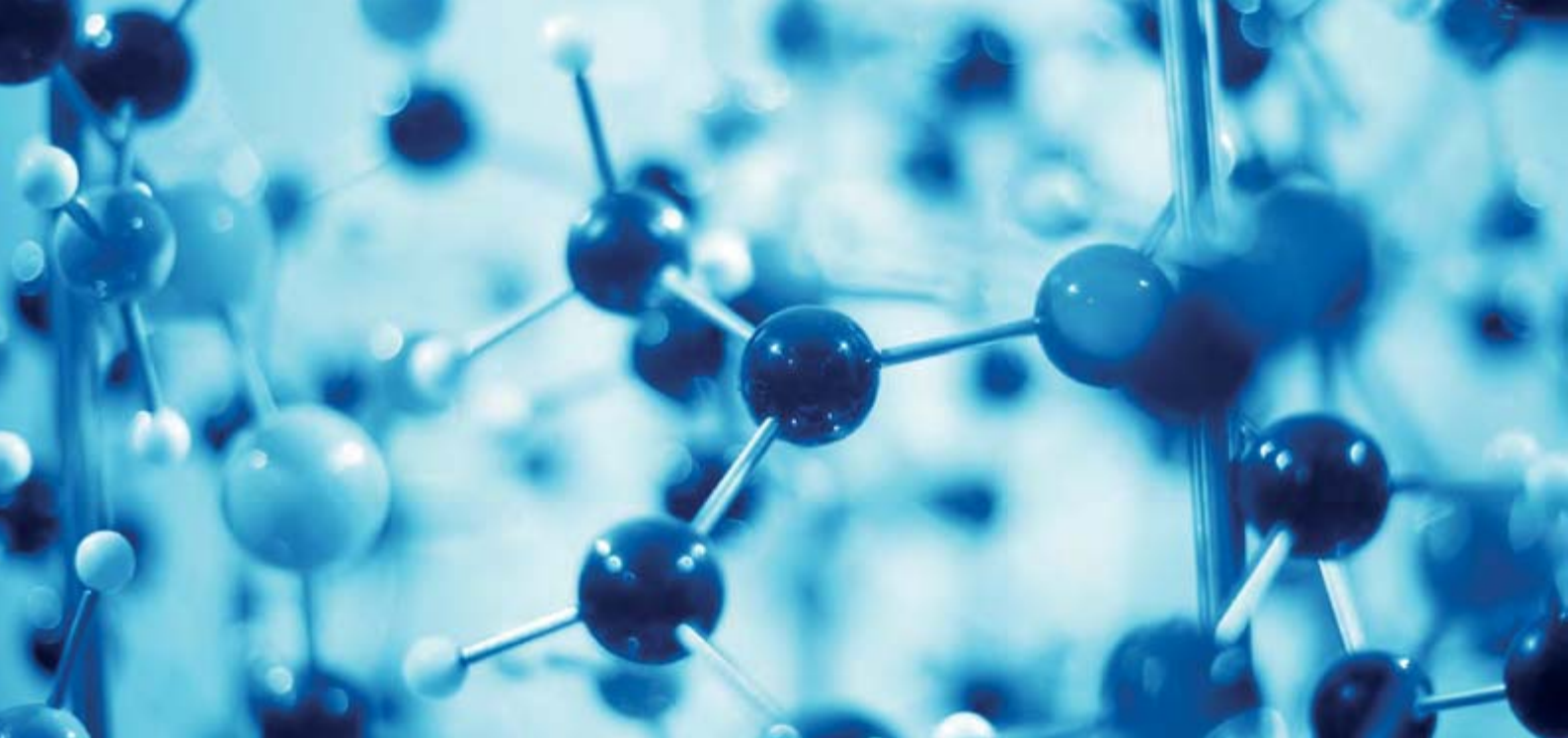
Air cooled industrial chillers with Scroll compressors and R410A refrigerant.  
Cooling capacity 7 – 230 kW



*Cooling your industry,  
optimising your process.*



Cooling, conditioning, purifying.



# TAE<sup>evn</sup> TECH

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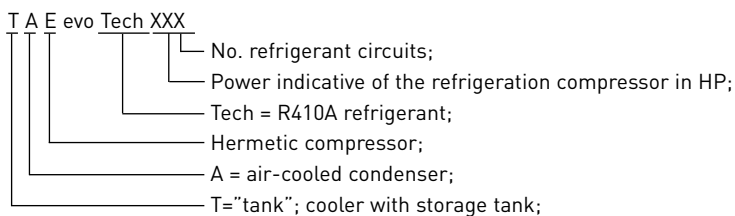
## 1. General

TAEevo Tech 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. TAEevo Tech is therefore the solution for all applications that require high performance, reliability, continuity of operation and reduced management costs.

All the TAEevo Tech models are equipped with a high efficiency finned coil evaporator immersed in a hydraulic storage tank. Thanks to the technology of this evaporator the TAEevo Tech 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 TAEevo Tech units are equipped with a finned coil condenser, axial fans and scroll compressors installed on a refrigeration circuit (mod. 015-401) and two refrigeration circuits (mod. 402-802). The refrigerant used is R410A.

## 2. Nameplate



Management of the TAEevo Tech 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 TAEevo Tech units are available in standard version with power supply 400V/3/50 Hz, and in the dual-frequency version (mod.015-161) with a double power supply 400V/3/50 Hz - 460V/3/60 Hz. The degree of electrical protection is IP44 for the mod. 015-020 and IP54 for the mod.031-802.

In order to satisfy every specific system needs TAEevo Tech chillers are available also in Non Ferrous Version, low environmental temperature -20 °C (mod. 031-802), high head pressure fans, high efficiency HE version with Eurovent A Class.

- 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 equipment of the machine is made in accordance with IEC standard EN 60204-1.

All data in this catalogue refer to standard units and nominal operating conditions (unless otherwise specified).

### 3. Versions

TAEvo Tech is available in the following versions:

#### Basic Version

The basic 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. 015-351)

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. 031 - 802)

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).

#### Dual-frequency version 400V/3/50 Hz - 460V/3/60 Hz (mod. 015-161)

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. 031 - 802)

- Mod. 031-161: centrifugal fans with upper outlet opening and ON/OFF control.
- Mod. 201-802: high pressure axial fans and inverter adjustment.

**HE high efficiency version (mod. 031-802):** high energy efficiency version (Eurovent A Class) equipped with high efficiency EC fans with inverter technology and oversized condensing coils.

### 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 TAEvo Tech 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 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 EN60204-1;
- 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

#### VERSION:

- STANDARD
- HE high efficiency version (mod. 031-802)

#### POWER SUPPLY:

- 400V/3/50Hz: standard
- 400V /3/50Hz - 460V /3/60Hz : dual-frequency (mod. 015-161)
- 460V-3-60Hz UL certification (see dedicated documentation)

#### EXTERNAL AIR TEMPERATURE:

- STANDARD (-5 °C)
- LOW TEMP. VERSION ENVIRONMENT (-20 °C) (mod. 031-802)

#### PUMP:

- SP: (without pump with electrical panel suitable to provided to supply a P3 external pump)
- P3
- P5

- P3+P3 (mod. 201-802)
- P5+P5 (mod. 201-802)

**TANK AND HYDRAULIC CIRCUIT:**

- standard
- Non Ferrous version with cylindrical stainless steel tank + evaporator with finned copper / copper coil 015-351)

**FANS:**

- axial (standard)
- centrifugal (mod. 031-161)
- axial high pressure (mod. 201-802)

**AXIAL FANS CONTROL:**

- ON/OFF (standard)
- Electronic control (mod. 031-802)

**CONDENSING COILS PROTECTION:**

- ABSENT (standard)
- Painting process

**EVAPORATOR FROST PROTECTION:**

- ABSENT (standard)
- PRESENT

**HYDRAULIC CIRCUIT MANUAL FILLING CONTAINER KIT:**

- ABSENT (standard)
- PRESENT (mod.031-802)

**START COMPRESSORS:**

- DIRECT: (standard)
- SOFT STARTER (mod. 381-802)

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

Configuration	Configuration not available with the following options:
-20 °C external air	Fine ajustement of temperature (laser)
	Power supply dual frequency 400/3/50 Hz - 460/3/60 Hz
	Mod. 015 - 020
	Centrifugal fans (031-161)
Dual frequency 400/3/50 Hz - 460/3/60 Hz	Centrifugal fans or high pressure axials fans
	Electronic speed fans regulation
	-20 °C external air
	Mod. 201 - 802
	HE high efficiency version
	Pumps: P5 / P3 + P3 / P5 + P5
Double pumps: P3+P3 / P5+P5	Mod. 015 - 161
	Dual frequency 400/3/50 Hz - 460/3/60 Hz
Centrifugal fans	Mod. 015 - 020, 201 - 802
	Electronic speed fans regulation
	-20 °C external air
	HE high efficiency version
	Power supply dual frequency 400/3/50 Hz - 460/3/60 Hz
	Fine ajustement of temperature (laser)
High head pressure axials fans	Mod. 015 - 161
	Fine ajustement of temperature (laser)
	HE high efficiency version
	Power supply dual frequency 400/3/50 Hz - 460/3/60 Hz
Electronic fans speed control	Mod. 015 - 020
	Fine ajustement of temperature (laser)
	Centrifugal fans
Condenser coil protection filters	Power supply dual frequency 400/3/50 Hz - 460/3/60 Hz
Manual tank kit	Mod. 015 - 020
HE	Mod. 015 - 020 - 161 - 351 - 401 - 602
	Version with fine regulation of temperature (laser)
	-20 °C external air
	Dual frequency 400/3/50 Hz - 460/3/60 Hz
	Centrifugal fans
	High head pressure EC axials fans
	ON/OFF axial fans regulation
Electronic expansion valve	Mod. 015 - 051

## 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.

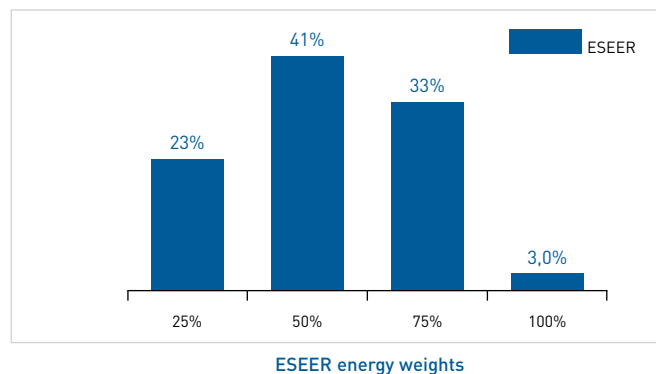
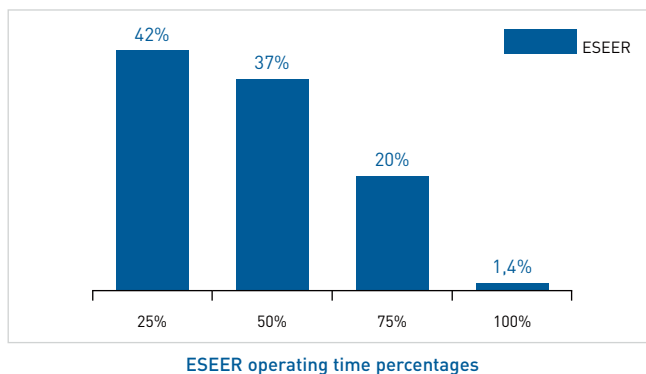
Thanks to the low weight of the rotating components and the absence of suction and discharge valves, the scroll compressors offer a series of benefits: higher energy efficiency, reduced pressure drops on the suction side, significantly lower noise level, reduced vibration on the delivery side, high resistance 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 201 - 802 use two compressors connected in parallel for each circuit increasing performance with partial loads and thus maximise the ESEER Seasonal Energy Efficiency Ratio. This solution,

using the “unloading” function, also allows the starting up 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 interiorspaces) 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.



## 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 TAEvo Tech 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 TAEvo Tech 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. 031 the condenser is protected by removable metal filters to facilitate cleaning procedures (in mod. 015-020 protection is provided by a panel grid).

## 10. Fans

Mod. 015-020 are provided with axial fans equipped with painted sickle-shaped galvanized steel sheet blades that are directly connected to the electric motor (IP44). Mod. 031-802 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 maximize 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 015-401 is ON/OFF type managed by pressure switches. In models 402-802 control is in step mode with pressure transducer. For models 031-802 is available as an option the continuous control of the rotation speed (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.

## 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 015 to 161 are equipped with a fully enclosed cabinet with structural panels and pump installed in the compressors compartment. Units from model 201 to 802 are equipped with a fully enclosed cabinet, plinth composed of longitudinal beams and crossmembers, and uprights

HE version is equipped as standard with high efficiency EC fans with inverter technology. The EC electronic switching technology, thanks to the continuous adjustment of fans speed at partial load allows the reduction of noise levels together with a decrease in power consumption.

- **High and low pressure refrigerant pressure gauges:** available from model 031, 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. 015-401).
- **Pressure transducer:** mod. 402-602; mod. 031-802, equipped with electronic control of fans (when present).
- **Schrader service valves;**

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

## 13. Hydraulic 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 TAEvo Tech 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.

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 galvanized 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.

### 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 barg 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. 201 to 802).

Pump materials in contact with process water:

- pump P3: fully stainless steel up to mod. 251; for the remaining models, the pump body is made of cast iron;
- pump P5: fully stainless steel up to mod. 161; 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. 015-020 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 circuitboards. 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. 402-802 and optional for mod.031-401 equipped with electronic control of the fans, for mod. 081-161 with centrifugal fans and for mod. 201-802 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. 031-802:** 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)

## 16. Microprocessor control standard version

TAEvo Tech is controlled and managed by the IC208CX 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.



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. 201-802);

- Measurement and display of the condensation pressure (mod. 402-802 and mod. 031-401 with electronic control of the fans, mod. 081-161 with centrifugal fans and mod. 201-802 high pressure fans);
- Unloading function in the two-circuit units (mod. 402-802 and mod. 201-401 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 remotisation of a 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. 201- 802):** 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 barg;
  - P5+P5: double pump P5 with nominal pressure of approximately 5 barg;

### 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.:

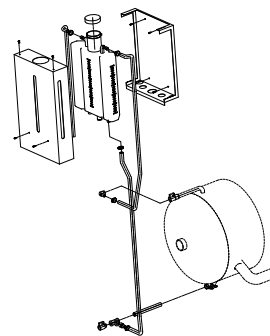
- **HYDRAULIC CIRCUIT MANUAL FILLING TANK KIT:** the tank kit ensures filling of the tank and hydraulic circuit when the latter is not pressurised (open circuits). The kit is composed of:
  - plastic tank for filling the circuit and displaying the water level;
  - galvanized and painted sheet steel supporting 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 015-020 it is not possible to choose the kit from the configurator but it is only available in the "sales kit" version.

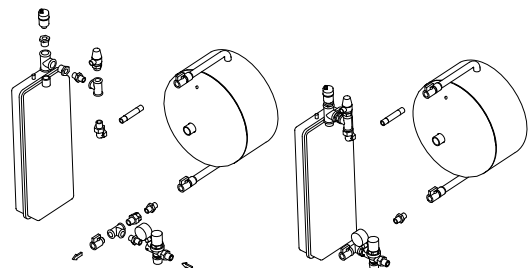
- **AUTOMATIC FILLING KIT HYDRAULIC CIRCUIT:** the automatic filling kit provides automatic filling of pressurised circuits (closed hydraulic circuits). Kit composition:
  - pressure reducer with valve;
  - pressure gauge;
  - automatic bleed valve;
  - pressure relief valve;
  - expansion tank;
  -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

- **VERSION WITHOUT PUMP:** includes the provision for electric power of an external pump equivalent to a P3.
- **CENTRIFUGAL FANS (mod. 031-161):** 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. 201-802):** 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. 031 - 802)
- **POWER SUPPLY 460V/3/60 Hz UL certification:** see relative documentation.
- **ELECTRONIC EXPANSION VALVE:** the use of this device allows the improvement of cooling performance in a much broader field than the thermostatic expansion valve, a reduction of fluctuations in water temperature and an accurate precision of the regulation in operation at partial loads.

- **GLYCOL FILLING KIT:** this kit can be used for filling the hydraulic circuit manually, it is composed by a polyethylene 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.

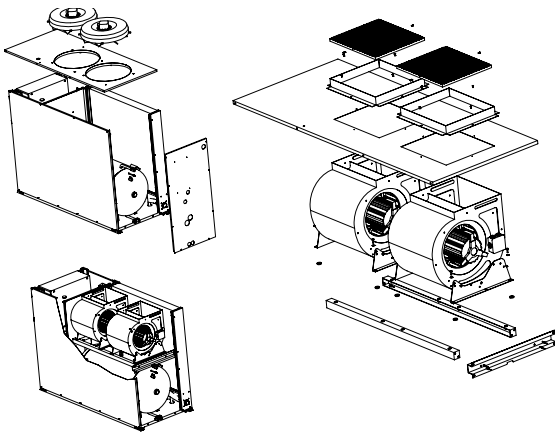


Tank kit



Automatic filling kit

- **EXTERNAL MANUAL HYDRAULIC By-pass KIT** (special).
- **EXTERNAL AUTOMATIC HYDRAULIC By-pass KIT** (special).
- **KIT CENTRIFUGAL FANS (mod.031 -161)**: this kit allows the axial fans replacement with centrifugal fans.



Mod. 081-161

- **AXIAL FANS KIT ELECTRONIC SPEED CONTROL:** power 400V/3/50Hz
- **KIT CONDENSING COIL PROTECTION METAL FILTERS (Mod. 031-802).**
- **KIT REMOTE ON/OFF:** This kit makes it possible to remotise the unit's ON/OFF up to a maximum distance of 150 m 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.



VICX620

- **KIT REMOTE TERMINAL VISOGRAPH VG1890 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 150 m (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 understandable. This terminals also performs the remote ON/OFF function.



VISOGRAPH VG1890

#### • **SUPERVISOR KIT xWEB300D**

xWEB300D, is a monitoring, control and supervision systems on the market, is able to manage up to 6 units equipped with IC121, IC208CX, IC281 controllers with RS485 interface (the specific RS485 kit must be installed on each unit). Kit composition:

- xWEB300D;
- quick connection guide;
- CD ROM with manuals.

xWEB300D is a small web server equipped with a Linux OS, capable of communicating with a local or remote PC via a standard LAN port. With just a normal browser (Microsoft Internet Explorer® or Firefox®) with no need for dedicated software, it is possible to display all device data, managing parameters and alarms.

xWEB300D features:

- Power supply 110-230Vac ±10%, 50/60Hz;
- 1 LAN port (RJ45 connector) for local or remote interface with a PC;
- 1 RS485 serial port for connection of devices (ModBUS – RTU);
- 1 RS232 port for connection of an external modem
- 1 configurable relay;
- 1 data unit connection USB port
- 8MB internal memory for data storage (up to 1 year).

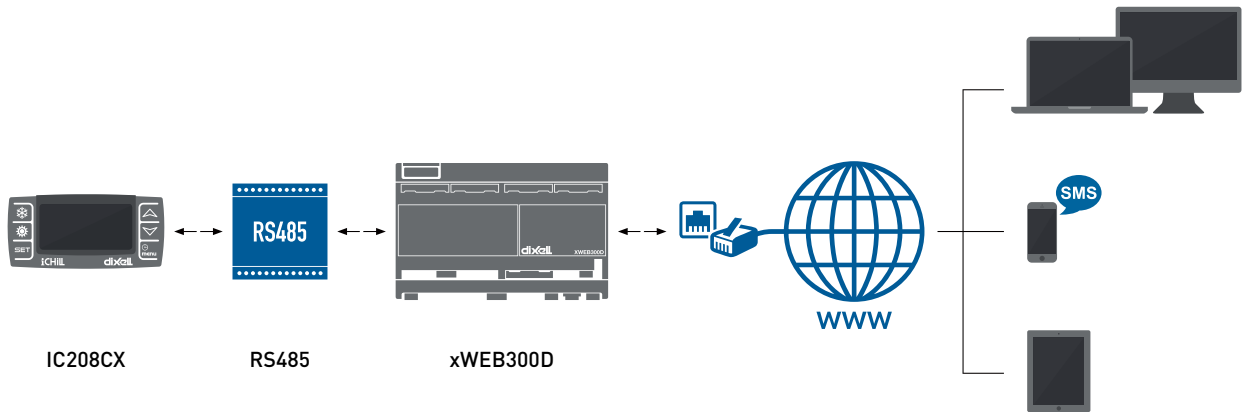
xWEB300D provides the following functions in Web page format both on a local connection (by means of a serial cable - not included) or on a remote connection (version must have internal GPRS modem or Internet link via LAN port):

- DATA EXPORT: data and graphs exported in Excel® format
- RS485 LINE-CHECK: functional test of RS485 serial lines;
- RUN TIME: display of several units in the same window simultaneously;
- GRAPHICS: graphics representing multiple analogical values, output status and alarms

Depending on the available connection, xWEB300D can call service by FAX, SMS text message or e-mail (e.g. when an alarm trips) and connect to PDAs and smartphones.

**• xWEB300D SUPERVISOR KIT + BUILT-IN GPRS MODEM:**  
 xWEB300D is available in a version with an internal GPRS modem. In this configuration xWEB300D can call service (e.g. when an alarm

trips) by FAX, SMS text message, or e-mail and connect to PDAs, smartphones or remote PCs.



**• RS 485 SUPERVISOR KIT**  
 This accessory allows the unit to be connected to BMS supervision systems with RS485 electrical standard and MODBUS protocol. It is composed of a serial cable and an

optically coupled serial interface, which is necessary in order to convert the 5-wire TTL signal (at the output of electronic controllers IC208CX) into an RS485 signal.

Optically coupled interface RS485



**• GATEWAY TREND KIT:** It allows connection of the unit and its supervisor by a Trend control network. This kit must necessarily be combined with kit "RS485 Modbus supervisor kit".

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 protects 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. 015-351).

The 201-802 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
- 4) If TAEvo Tech models are installed at altitudes in excess of 500 m, 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 and outlet differs by 5 °C, correct the cooling capacity and power input utilising the " $\Delta T$  corrective coefficients  $\neq 5$  °C" tables.

duty, the increase in compressor power input, and the increase in evaporator pressure drops due to the presence of ethylene glycol.

# PERFORMANCE AND TECHNICAL DATA 50 Hz VERSION

## GENERAL DATA - 50 Hz

		015	020	031	051	081	101	121	161	201	251
Cooling capacity (1)	kW	7,00	8,30	13,3	19,4	30,1	39,2	48,3	55,5	64,1	75,7
Total absorbed power (1)	kW	1,95	1,77	3,08	4,29	7,31	8,40	10,6	13,6	14,7	18,1
EER (1)	-	3,58	4,69	4,32	4,53	4,12	4,67	4,54	4,08	4,35	4,19
Cooling capacity (2)	kW	5,00	5,96	9,58	13,9	22,3	29,1	35,9	41,5	47,5	55,6
Total absorbed power (2)	kW	2,16	2,19	3,52	4,95	8,18	9,60	12,0	14,9	16,7	20,6
EER (2)	-	2,31	2,72	2,72	2,81	2,73	3,03	2,99	2,79	2,84	2,70

### Compressor

Cooling circuits	N°	1	1	1	1	1	1	1	1	1	1
Compressors for each circuit	N°	1	1	1	1	1	1	1	1	2	2
Capacity control	%	0-100	0-100	0-100	0-100	0-100	0-100	0-100	0-100	0-50-100	0-50-100
ESEER	-	2,79	3,28	3,21	3,27	3,18	3,51	3,46	3,17	4,36	4,35

### 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	1	1
Ranks number	N°	2	4	2	4	4	4	5	5	4	5
Total frontal surface	m <sup>2</sup>	0,31	0,31	0,63	0,63	1,1	1,1	1,1	1,1	2,16	2,16

### Axial fans

Fans number	N°	1	1	1	1	1	2	2	2	2	2
Total airflow	m <sup>3</sup> /h	3500	3150	6500	6150	8150	14200	13600	13600	16000	16000
Nominal power (each)	kW	0,203	0,203	0,48	0,48	0,71	0,71	0,71	0,71	0,71	0,71

### Centrifugal fans/high pressure axials fans

Fans number	N°	-	-	1	1	2	2	2	2	2	2
Total airflow	m <sup>3</sup> /h	-	-	6600	6000	9200	12800	12800	12800	14600	14600
Available head pressure	Pa	-	-	159	188	265	134	115	115	1	144
Nominal power (each)	kW	-	-	1,1	1,1	1,1	1,1	1,1	1,1	0,9	0,9

### Hydraulic group

Water flow rate P3 (4)	m <sup>3</sup> /h	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	3,2/18	3,4/18	3,4/18
Available pump head pressure P3 (5)	barg	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	2,8/1,7	2,8/2,1	2,8/2,1
Nominal power P3	kW	0,55	0,55	0,75	0,75	0,9	0,9	1,85	1,85	1,85	1,85
Water flow rate P5 (4)	m <sup>3</sup> /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	3,2/12,6	3,4/27	3,4/27
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	5,1/3,7	5,2/2,4	5,2/2,4
Nominal power P5	kW	1,1	1,1	1,1	1,1	2,2	2,2	2,2	2,2	4	4
Tank volume	l	60	60	115	115	140	255	255	255	350	350
Max pressure	barg	6	6	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"	2"	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	84,3/85,0	84,3/85,0
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	56,3/57,0	56,3/57,0

### Dimensions and installed weight (7)

Width	mm	560	560	660	660	761	761	761	761	866	866
Length	mm	1284	1284	1315	1315	1862	1862	1862	1862	2250	2250
Height	mm	795	795	1373	1373	1437	1437	1437	1437	2054	2054
Weight without pump	kg	193	198	312	335	470	629	639	655	931	1014
Weight with P3	kg	205	210	324	347	483	642	656	672	948	1031
Weight with P5	kg	211	216	329	352	496	655	665	681	985	1068
Weight with double P3	kg	-	-	-	-	-	-	-	-	966	1049
Weight with double P5	kg	-	-	-	-	-	-	-	-	1040	1123

(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 IP 44 for models 015-020. Protection class IP 54 for models 031-802.

(4) Minimum 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 10 m from the side of the condenser coils and at a height of 1,6 m from the unit support base. Values with tolerance +/- 2 dB. 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 - 50 Hz

		301	351	381	401	402	502	602	702	802
Cooling capacity (1)	kW	84,1	96,2	120,6	136,0	123,2	146,4	166,1	199,8	230,1
Total absorbed power (1)	kW	19,1	23,7	26,4	29,0	29,4	33,6	38,8	44,7	52,9
EER (1)	-	4,40	4,06	4,58	4,69	4,19	4,36	4,27	4,47	4,35
Cooling capacity (2)	kW	62,0	71,7	88,8	99,6	91,3	107,7	122,4	150,3	175,3
Total absorbed power (2)	kW	21,7	26,4	29,1	32,1	33,3	38,5	44,0	50,2	58,5
EER (2)	-	2,86	2,72	3,06	3,11	2,74	2,80	2,78	3,00	3,00

### Compressor

Cooling circuits	N°	1	1	1	1	2	2	2	2	2
Compressors for each circuit	N°	2	2	2	2	2	2	2	2	2
Capacity control	%	0-50-100	0-50-100	0-50-100	0-50-100	0-25-50-75-100				
ESEER	-	4,33	4,17	4,08	4,08	4,15	4,38	4,34	4,44	4,36

### 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	2	2
Ranks number	N°	5	5	4	5	3	4	5	3	4
Total frontal surface	m <sup>2</sup>	2,16	2,16	2,99	2,99	4,2	4,2	4,2	5,8	5,8

### Axial fans

Fans number	N°	3	3	2	2	2	2	2	3	3
Total airflow	m <sup>3</sup> /h	22200	21600	37000	35000	45800	44400	42800	63900	62100
Nominal power (each)	kW	0,71	0,71	1,9	1,9	2,1	2,1	2,1	1,9	1,9

### Centrifugal fans/high pressure axials

Fans number	N°	3	3	2	2	2	2	2	3	3
Total airflow	m <sup>3</sup> /h	20100	20100	40000	40000	40000	40000	40000	60000	60000
Available head pressure	Pa	150	142	186	194	198	185	172	191	176
Nominal power (each)	kW	0,9	0,9	2,8	2,8	2,8	2,8	2,8	2,8	2,8

### Hydraulic group

Water flow rate P3 (4)	m <sup>3</sup> /h	4,8/27	5,6/27	7,2/35	8,0/35	6,6/48	8,1/48	9,4/48	12,5/56	14,9/56
Available pump head pressure P3 (5)	barg	3,3/0,9	3,3/0,9	3,5/2,5	3,5/2,5	3,9/1,5	3,8/1,5	3,8/1,5	3,3/2,5	3,3/2,5
Nominal power P3	kW	2,2	2,2	4	4	4	4	4	5,5	5,5
Water flow rate P5 (4)	m <sup>3</sup> /h	4,8/27	5,6/27	7,2/42	8,0/42	6,6/48	8,1/48	9,4/48	12,5/72	14,9/72
Available pump head pressure P5 (5)	barg	5,1/2,4	5,1/2,4	5,3/4,2	5,3/4,2	5,5/3,1	5,5/3,1	5,5/3,1	4,8/3,4	4,8/3,4
Nominal power P5	kW	4	4	7,5	7,5	7,5	7,5	7,5	9,2	9,2
Tank volume	l	350	350	410	410	500	500	500	678	678
Max pressure	barg	6	6	6	6	6	6	6	6	6
Water connections	Rp	2"	2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	3"	3"

### Sound levels (6)

Sound power	dB (A)	86/86,7	86/86,7	88,3/89,2	89,7/90,4	89,5/91,1	89,5/91,1	89,5/91,1	90,2/91,1	90,6/91,4
Sound pressure	dB (A)	58,0/58,7	58,0/58,7	60,3/61,2	61,7/62,4	61,5/63,1	61,5/63,1	61,5/63,1	62,2/63,1	62,6/63,4

### Dimensions and installed weight (7)

Width	mm	866	866	1150	1150	1255	1255	1255	1250	1250
Length	mm	2250	2250	2790	2790	3298	3298	3298	3535	3535
Height	mm	2054	2054	2090	2090	2119	2119	2119	2151	2151
Weight without pump	kg	1025	1036	1366	1451	1654	1703	1739	2213	2233
Weight with P3	kg	1064	1075	1408	1493	1701	1750	1786	2267	2287
Weight with P5	kg	1079	1090	1432	1517	1733	1782	1818	2290	2310
Weight with double P3	kg	1104	1115	1459	1544	1750	1799	1835	2333	2353
Weight with double P5	kg	1134	1145	1507	1592	1814	1863	1899	2379	2399

(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 IP 44 for models 015-020. Protection class IP 54 for models 031-802.

(4) Minimum 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 10 m from the side of the condenser coils and at a height of 1,6 m from the unit support base. Values with tolerance +/- 2 dB. 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 Hz

Model	Version	Hz	With axial fans			With centrifugal fans / axial 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)
015	SP	50	2,9	4,9	26	-	-	-
	P3	50	3,8	6,5	28	-	-	-
	P5	50	4,7	8,1	29	-	-	-
020	SP	50	3,1	5,3	32	-	-	-
	P3	50	3,9	6,9	34	-	-	-
	P5	50	4,9	8,5	35	-	-	-
031	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
051	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
081	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
101	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
121	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
161	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
201	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
251	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
301	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
351	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
381	SP	50	37,6	67,8	212	39,0	68,0	212
	P3	50	42,1	75,4	219	44,0	76,0	220
	P5	50	45,9	81,4	225	47,0	82,0	226
401	SP	50	43,2	74,3	263	45,0	75,0	263
	P3	50	47,7	81,9	270	49,0	82,0	271
	P5	50	51,5	87,9	276	53,0	88,0	277
402	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
502	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
602	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
702	SP	50	64,3	108,8	225	67,0	109	225
	P3	50	70,5	119,3	235	73,0	120	236
	P5	50	74,4	126,0	242	77,0	127	242
802	SP	50	73,3	131,7	276	76,0	132	276
	P3	50	79,5	142,2	286	82,0	143	287
	P5	50	83,4	148,9	293	86,0	150	294

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 - 50 Hz

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) <sub>10m</sub>
015	axials	48,2	61,2	73,5	75,8	75,2	71,0	63,3	53,8	80,4	52,4
020	axials	48,2	61,2	73,5	75,8	75,2	71,0	63,3	53,8	80,4	52,4
031	axials	52,1	73,5	74,4	70,7	76,6	72,2	65,2	57,4	81,1	53,1
	centrifugals	47,3	57,7	70,0	77,8	81,4	81,2	80,8	72,8	86,8	58,8
051	axials	52,1	73,5	74,4	70,7	76,6	72,2	65,2	57,4	81,1	53,1
	centrifugals	47,3	57,7	70,0	77,8	81,4	81,2	80,8	72,8	86,8	58,8
081	axials	50,6	69,4	69,7	72,7	78,4	75,0	68,9	58,6	81,6	53,6
	centrifugals	47,4	58,6	71,0	79,5	83,8	84,1	83,1	74,9	89,2	61,2
101	axials	50,9	69,8	70,2	73,2	78,9	75,5	69,4	59,0	82,1	54,1
	centrifugals	47,4	58,6	71,0	79,5	83,8	84,1	83,1	74,9	89,2	61,2
121	axials	50,9	69,8	70,2	73,2	78,9	75,5	69,4	59,0	82,1	54,1
	centrifugals	47,4	58,6	71,0	79,5	83,8	84,1	83,1	74,9	89,2	61,2
161	axials	51,5	70,6	71,0	74,0	79,7	76,3	70,1	59,6	83	55,0
	centrifugals	47,4	58,6	71,0	79,5	83,8	84,1	83,1	74,9	89,2	61,2
201	axials	59,9	71,9	73,0	75,1	81,0	77,9	71,4	59,3	84,3	56,3
	high pressure	60,4	72,5	73,6	75,8	81,7	78,5	72,0	59,8	85,0	57,0
251	axials	59,9	71,9	73,0	75,1	81,0	77,9	71,4	59,3	84,3	56,3
	high pressure	60,4	72,5	73,6	75,8	81,7	78,5	72,0	59,8	85,0	57,0
301	axials	61,2	73,4	74,5	76,7	82,8	79,5	72,9	60,5	86	58,0
	high pressure	61,7	74,0	75,2	77,4	83,5	80,2	73,5	61,1	86,7	58,7
351	axials	61,2	73,4	74,5	76,7	82,8	79,5	72,9	60,5	86	58,0
	high pressure	61,7	74,0	75,2	77,4	83,5	80,2	73,5	61,1	86,7	58,7
381	axials	53,5	71,7	73,0	80,0	84,9	81,9	78,1	73,2	88,3	60,3
	high pressure	59,5	70,9	77,3	82,4	84,4	83,3	78,5	73,2	89,2	61,2
401	axials	53,8	71,7	73,2	82,4	86,0	83,0	80,4	73,0	89,7	61,7
	high pressure	59,6	71,0	77,4	84,0	85,7	84,2	80,7	73,1	90,4	62,4
402	axials	63,9	76,6	77,8	80,1	86,4	83,0	76,1	63,2	89,5	61,5
	high pressure	65,1	78,1	79,3	81,6	88,0	84,6	77,5	64,4	91,1	63,1
502	axials	63,9	76,6	77,8	80,1	86,4	83,0	76,1	63,2	89,5	61,5
	high pressure	65,1	78,1	79,3	81,6	88,0	84,6	77,5	64,4	91,1	63,1
602	axials	63,9	76,6	77,8	80,1	86,4	83,0	76,1	63,2	89,5	61,5
	high pressure	65,1	78,1	79,3	81,6	88,0	84,6	77,5	64,4	91,1	63,1
702	axials	55,7	73,4	74,7	82,3	86,5	83,6	80,5	75,7	90,2	62,2
	high pressure	61,4	72,8	79,0	84,5	86,1	85,1	80,9	75,8	91,1	63,1
802	axials	55,4	73,5	74,9	82,4	87,0	84,4	80,7	76,1	90,6	62,6
	high pressure	61,3	72,8	79,1	84,5	86,5	85,7	81,1	76,1	91,4	63,4

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 10 m from the side of the condenser coils and at a height of 1,6 m from the unit support base. Values with tolerance +/- 2 dB. 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:  $dB(A)_L = dB(A)_{10m} + K_{db}$ .











602		External air temperature ta (°C)																		ta max (°C)
		25			32			35			38			40			43			
		Glycol tu (°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)	
35%	-10	70,1	31,8	13,5	64,1	36,5	12,3	61,3	38,8	11,8	-	-	-	-	-	-	-	-	-	35
35%	-7	78,3	32,3	15,0	71,7	37,2	13,8	68,6	39,6	13,2	-	-	-	-	-	-	-	-	-	39
25%	-5	86,3	32,9	16,0	79,1	37,9	14,6	75,8	40,3	14,0	72,2	42,8	13,4	-	-	-	-	-	-	37
25%	-3	94,0	33,4	17,4	86,3	38,4	16,0	82,7	40,8	15,3	78,9	43,4	14,6	76,3	45,3	14,1	-	-	-	40
20%	0	107,8	34,1	19,6	99,2	39,2	18,0	95,1	41,7	17,3	90,8	44,4	16,5	87,9	46,2	16,0	-	-	-	42
20%	3	120,9	34,9	22,0	111,2	40,1	20,2	106,8	42,6	19,4	102,1	45,3	18,6	98,9	47,2	18,0	93,8	50,2	17,1	44
	5	131,7	35,8	22,5	121,4	40,9	20,8	116,4	43,4	19,9	111,4	46,1	19,1	107,9	48,0	18,5	102,4	51,1	17,5	45
20%	7	138,5	36,3	23,7	127,6	41,5	21,9	122,4	44,0	21,0	117,0	46,8	20,1	113,3	48,7	19,4	107,8	51,8	18,5	46
	9	145,2	37,0	24,9	133,9	42,2	23,0	128,6	44,7	22,1	122,9	47,4	21,1	119,2	49,3	20,4	113,4	52,5	19,4	46
20%	11	152,3	37,5	26,1	140,4	42,8	24,1	134,8	45,4	23,1	129,1	48,1	22,2	125,2	50,1	21,5	119,0	53,2	20,4	45
	13	159,3	38,2	27,3	146,9	43,5	25,2	141,2	46,0	24,2	135,2	48,8	23,2	131,1	50,8	22,5	124,8	53,9	21,4	44
20%	15	166,1	38,8	28,5	153,5	44,1	26,4	147,5	46,7	25,3	141,3	49,5	24,3	137,0	51,5	23,5	130,4	54,6	22,4	43
	17	175,1	39,7	30,1	161,7	45,0	27,8	155,6	47,6	26,7	149,1	50,4	25,6	144,7	52,4	24,9	137,7	55,6	23,7	43
20%	20	189,1	41,1	32,5	174,6	46,5	30,0	167,9	49,1	28,9	160,9	51,9	27,7	156,1	53,9	26,9	-	-	-	40

702		External air temperature ta (°C)																		ta max (°C)
		25			32			35			38			40			43			
		Glycol tu (°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)	
35%	-10	89,9	37,1	17,3	83,1	41,9	16,0	79,7	44,3	15,3	76,1	46,9	14,6	73,6	48,7	14,2	-	-	-	40
35%	-7	101,1	37,7	19,4	93,2	42,9	17,9	89,4	45,3	17,2	85,4	48,0	16,4	82,7	49,8	15,9	-	-	-	42
25%	-5	110,8	38,3	20,5	102,1	43,6	18,9	98,0	46,1	18,1	93,7	48,8	17,3	90,7	50,7	16,8	86,0	53,7	15,9	44
25%	-3	119,8	38,9	22,1	110,4	44,2	20,4	106,0	46,7	19,6	101,4	49,5	18,7	98,2	51,4	18,2	93,2	54,4	17,2	46
20%	0	135,3	39,7	24,6	124,8	45,1	22,7	119,9	47,7	21,8	114,7	50,5	20,8	111,1	52,4	20,2	105,5	55,5	19,2	46
20%	3	150,1	40,6	27,3	138,6	46,0	25,2	133,2	48,7	24,2	127,4	51,5	23,2	123,5	53,5	22,4	117,3	56,6	21,3	46
	5	161,6	41,4	27,7	149,1	46,9	25,5	143,3	49,5	24,5	137,1	52,3	23,5	132,9	54,4	22,8	126,2	57,6	21,6	46
20%	7	169,5	42,1	29,1	156,5	47,5	26,8	150,3	50,2	25,8	143,9	53,0	24,7	139,3	55,1	23,9	132,5	58,3	22,7	46
	9	177,5	42,7	30,4	163,8	48,2	28,1	157,4	50,9	27,0	150,8	53,7	25,9	146,2	55,8	25,1	139,1	59,0	23,9	46
20%	11	185,2	43,4	31,8	171,1	48,9	29,3	164,4	51,5	28,2	157,5	54,4	27,0	152,7	56,5	26,2	145,4	59,7	24,9	44
	13	192,4	44,0	33,0	178,0	49,5	30,6	171,1	52,3	29,4	163,8	55,2	28,1	159,1	57,2	27,3	151,4	60,5	26,0	43
20%	15	199,8	44,7	34,3	184,6	50,2	31,7	177,5	52,9	30,5	170,1	55,8	29,2	165,0	57,9	28,3	157,4	61,1	27,0	43
	17	210,8	45,8	36,2	194,8	51,2	33,5	187,1	53,9	32,2	179,3	56,9	30,8	174,0	58,9	29,9	-	-	-	42
20%	20	227,6	47,5	39,1	210,2	52,9	36,1	202,2	55,6	34,8	194,0	58,4	33,4	-	-	-	-	-	-	39

802		External air temperature ta (°C)																		ta max (°C)
		25			32			35			38			40			43			
		Glycol tu (°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)	
35%	-10	104,7	42,9	20,1	97,0	48,1	18,6	93,1	50,9	17,9	89,0	54,0	17,1	-	-	-	-	-	-	39
35%	-7	117,7	43,8	22,6	108,8	49,3	20,9	104,6	52,1	20,1	100,2	55,1	19,3	97,2	57,3	18,7	-	-	-	42
25%	-5	129,0	44,8	23,9	119,4	50,3	22,1	114,8	53,0	21,2	110,1	56,0	20,4	106,9	58,2	19,8	101,8	61,8	18,8	44
25%	-3	139,3	45,5	25,8	128,9	51,1	23,8	124,2	53,8	23,0	119,1	56,8	22,0	115,7	59,0	21,4	110,3	62,5	20,4	45
20%	0	157,0	46,7	28,5	145,5	52,4	26,4	140,2	55,1	25,5	134,6	58,1	24,5	130,8	60,2	23,8	124,8	63,7	22,7	46
20%	3	173,9	47,9	31,6	161,2	53,7	29,3	155,4	56,4	28,2	149,4	59,4	27,1	145,1	61,5	26,4	138,7	65,0	25,2	46
	5	187,1	48,9	32,0	173,5	54,8	29,7	167,2	57,5	28,6	160,7	60,5	27,5	156,3	62,7	26,8	149,4	66,1	25,6	46
20%	7	196,0	49,7	33,6	181,8	55,7	31,2	175,3	58,5	30,0	168,6	61,5	28,9	164,0	63,6	28,1	156,7	67,0	26,9	46
	9	204,8	50,7	35,1	190,2	56,5	32,6	183,4	59,4	31,5	176,4	62,4	30,2	171,6	64,5	29,4	164,2	67,9	28,1	46
20%	11	213,4	51,5	36,6	198,4	57,4	34,0	191,3	60,3	32,8	184,1	63,3	31,6	179,1	65,4	30,7	171,4	68,8	29,4	44
	13	221,9	52,2	38,1	206,2	58,4	35,4	198,7	61,1	34,1	191,6	64,2	32,9	186,3	66,3	32,0	178,3	69,8	30,6	44
20%	15	230,1	52,9	39,5	213,5	59,3	36,7	206,0	62,2	35,4	198,4	65,1	34,1	193,2	67,2	33,2	185,0	70,6	31,8	43
	17	242,6	54,0	41,7	225,2	60,5	38,7	217,4	63,4	37,4	209,0	66,6	35,9	203,6	68,7	35,0	-	-	-	42
20%	20	261,8	55,8	45,0	243,1	62,4	41,8	234,6	65,4	40,3	225,8	68,6	38,8	219,9	70,7	37,8	-	-	-	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.

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

GENERAL DATA - 50 Hz: see the table at page 14

## GENERAL DATA - 60 Hz

		015	020	031	051	081	101	121	161
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
<b>Compressor</b>									
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
<b>Electrical power supply (3)</b>									
Power	V/Ph/Hz	400V +- 10%/3 - PE/50Hz 460V +- 10%/3 - PE/50Hz							
Auxiliary	V/Ph	24 AC / 230 AC							
<b>Condensers</b>									
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 <sup>2</sup>	0,31	0,31	0,63	0,63	1,1	1,1	1,1	1,1
<b>Axial fans</b>									
Fans number	N°	1	1	1	1	1	2	2	2
Total airflow	m <sup>3</sup> /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
<b>Hydraulic group</b>									
Water flow rate P3 (4)	m <sup>3</sup> /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"
<b>Sound levels (6)</b>									
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
<b>Dimensions and installed weight (7)</b>									
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 IP 44 for models 015-020. Protection class IP 54 for models 031-602.

(4) Minimum 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 10 m from the side of the condenser coils and at a height of 1,6 m from the unit support base. Values with tolerance +/- 2 dB. 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)
015	SP	50	3,1	5,0	26
	P3	50	4,0	6,9	28
020	SP	50	3,2	5,4	32
	P3	50	4,1	7,3	34
031	SP	50	4,8	8,4	48
	P3	50	5,6	10,3	50
051	SP	50	6,4	11,1	64
	P3	50	7,3	13,0	66
081	SP	50	10,7	17,8	111
	P3	50	12,5	21,4	115
101	SP	50	13,1	22,1	118
	P3	50	14,9	25,7	122
121	SP	50	16,0	27,0	140
	P3	50	17,8	30,6	144
161	SP	50	18,3	32,7	174
	P3	50	20,1	36,3	178

015	SP	60	3,8	5,3	27
	P3	60	5,2	7,6	29
020	SP	60	4,0	5,7	31
	P3	60	5,4	8,0	33
031	SP	60	5,9	8,9	46
	P3	60	7,4	11,2	48
051	SP	60	7,9	11,3	62
	P3	60	9,3	13,6	64
081	SP	60	13,1	18,7	114
	P3	60	15,4	22,4	118
101	SP	60	16,1	23,3	125
	P3	60	18,3	27,0	129
121	SP	60	19,6	28,4	150
	P3	60	22,6	32,9	155
161	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 - 60 Hz

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) <sub>10m</sub>	(1) L (m)	
015	axials	50,3	63,3	75,6	77,9	77,3	73,1	65,4	55,9	54,5	82,5	1	15
020	axials	49,7	62,7	75,0	77,3	76,7	72,5	64,8	55,3	53,9	81,9	3	10
031	axials	53,6	75,0	75,9	72,2	78,1	73,7	66,7	58,9	54,6	82,6	5	6
051	axials	54,7	76,1	77,0	73,3	79,2	74,8	77,8	60,0	55,7	83,7	10	0
081	axials	52,9	71,7	72,0	75,0	80,7	77,3	71,2	60,9	55,9	83,9		
101	axials	53,8	72,7	73,1	76,1	81,8	78,4	72,3	61,9	57,0	85,0		
121	axials	53,0	71,9	72,3	75,3	81,0	77,6	71,5	61,1	56,2	84,2		
161	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 10 m: 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 1,6 m from the unit support base. Values with tolerance +/- 2 dB. 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 AND TECHNICAL DATA HE VERSION

## GENERAL DATA - 50 Hz

		031	051	081	101	121	201	251
Cooling capacity (1)	kW	13,0	17,4	31,4	41,9	48,7	61,5	75,2
Total absorbed power (1)	kW	2,71	3,61	6,78	8,81	10,2	13,1	15,9
EER (1)	-	4,79	4,80	4,64	4,75	4,77	4,70	4,74
Cooling capacity (2)	kW	9,90	13,3	23,2	31,2	36,0	45,8	56,0
Total absorbed power (2)	kW	3,19	4,27	7,44	10,0	11,5	14,6	18,0
EER (2)	-	3,11	3,12	3,12	3,12	3,12	3,14	3,12

### Compressor

Cooling circuits	N°	1	1	1	1	1	1	1
Compressors for each circuit	N°	1	1	1	1	1	2	2
Capacity control	%	0-100	0-100	0-100	0-100	0-100	0-50-100	0-50-100
ESEER	-	3,46	3,56	3,32	3,52	3,58	4,39	4,38

### 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
Ranks number	N°	4	5	5	5	5	5	5
Total frontal surface	m <sup>2</sup>	0,63	0,63	1,1	1,1	1,1	2,16	2,16

### Axial fans

Fans number	N°	1	1	2	2	2	2	3
Total airflow	m <sup>3</sup> /h	6200	6200	14200	14200	14200	15900	22500
Nominal power (each)	kW	0,59	0,66	1	1	1	1	1

### Hydraulic group

Water flow rate P3 (4)	m <sup>3</sup> /h	0,7/6	0,8/6	1,7/9,1	2,2/9,3	2,5/18	4/18	4,9/18
Available pump head pressure P3 (5)	barg	3,1/1,6	3,0/1,5	3,0/1,5	2,9/1,6	2,8/1,7	2,8/2,1	2,8/2,1
Nominal power P3	kW	0,75	0,75	0,9	0,9	1,85	1,85	1,85
Water flow rate P5 (4)	m <sup>3</sup> /h	0,7/4,3	0,8/4,5	1,7/12,6	2,2/12,6	2,5/12,6	4/27	4,9/18
Available pump head pressure P5 (5)	barg	5,3/3,7	5,3/3,5	5,2/3,2	5,2/3,6	5,2/3,6	5,2/2,4	5,1/2,4
Nominal power P5	kW	1,1	1,1	2,2	2,2	2,2	4	4
Tank volume	l	115	115	140	255	255	350	350
Max pressure	barg	6	6	6	6	6	6	6
Water connections	Rp	1"	1"	1 1/2"	1 1/2"	1 1/2"	2"	2"

### Sound levels (6)

Sound power	dB (A)	83,6	83,6	84,4	84,5	84,5	86,1	87,4
Sound pressure	dB (A)	55,6	55,6	56,4	56,5	56,5	58,1	59,4

### Dimensions and installed weight (7)

Width	mm	660	660	760	760	760	865	865
Length	mm	1310	1310	1865	1865	1865	2255	2255
Height	mm	1415	1415	1460	1460	1460	2078	2078
Weight without pump	kg	321	334	494	646	642	930	1035
Weight with P3	kg	333	346	507	659	659	947	1052
Weight with P5	kg	338	351	520	672	668	984	1089

(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 IP 54 for models 031-802.

(4) Minimum 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 10 m from the side of the condenser coils and at a height of 1,6 m from the unit support base. Values with tolerance +/- 2 dB. 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 - 50 Hz

		301	381	402	502	702	802
Potenza frigorifera (1)	kW	82,4	113,1	118,7	146,4	188,6	221,9
Potenza assorbita totale (1)	kW	17,1	23,3	25,2	30,7	37,4	46,6
EER (1)	-	4,81	4,85	4,71	4,77	5,05	4,77
Potenza frigorifera (2)	kW	61,0	85,7	88,2	108,5	142,4	168,6
Potenza assorbita totale (2)	kW	19,5	26,2	28,3	35,0	42,4	52,1
EER (2)	-	3,13	3,27	3,12	3,10	3,36	3,24
<b>Compressor</b>							
Cooling circuits	N°	1	1	2	2	2	2
Compressors for each circuit	N°	2	2	2	2	2	2
Capacity control	%	0-50-100	0-50-100	0-25-50-75-100	0-25-50-75-100	0-25-50-75-100	0-25-50-75-100
ESEER	-	4,37	4,32	4,29	4,47	4,49	4,44
<b>Electrical power supply (3)</b>							
Power	V/Ph/Hz	400 ± 10% / 3 - PE / 50					
Auxiliary	V/Ph/Hz	24 - 230 ± 10% / 1 / 50					
<b>Condensers</b>							
Condenser number	N°	1	1	1	1	2	2
Ranks number	N°	5	5	4	5	4	5
Total frontal surface	m <sup>2</sup>	2,16	2,99	4,2	4,2	5,8	5,8
<b>Axial fans</b>							
Fans number	N°	3	2	2	2	3	3
Total air flow	m <sup>3</sup> /h	22500	37400	42400	41600	62700	60900
Nominal power (each)	kW	1	1,95	1,95	1,95	1,95	1,95
<b>Hydraulic group</b>							
Water flow rate P3 (4)	m <sup>3</sup> /h	5,3/27	7,0/35	7,9/48	9,2/48	11,2/56	13,8/56
Available pump head pressure P3 (5)	barg	3,3/0,9	3,5/2,1	3,8/1,5	3,8/1,5	3,3/2,0	3,3/2,0
Nominal power P3	kW	2,2	4	4	4	5,5	5,5
Water flow rate P5 (4)	m <sup>3</sup> /h	5,3/27	7,0/42	7,9/48	9,2/48	11,2/72	13,8/72
Available pump head pressure P5 (5)	barg	5,1/2,4	5,3/3,6	5,5/3,1	5,5/3,1	5,1/2,7	5,1/2,7
Nominal power P5	kW	4	7,5	7,5	7,5	9,2	9,2
Tank volume	l	350	410	500	500	678	678
Max pressure	barg	6	6	6	6	6	6
Water connections	Rp	2"	2 1/2"	2 1/2"	2 1/2"	3"	3"
<b>Sound levels (6)</b>							
Sound power	dB (A)	87,4	88,3	90,5	90,5	90,2	90,6
Sound pressure	dB (A)	59,4	60,3	62,5	62,5	62,2	62,6
<b>Dimensions and installed weight (7)</b>							
Width	mm	865	1150	1255	1255	1250	1250
Length	mm	2255	2790	3295	3295	3535	3535
Height	mm	2078	2090	2105	2105	2151	2151
Weight without pump	kg	1030	1397	1686	1748	2262	2288
Weight with P3	kg	1069	1441	1777	1831	2318	2344
Weight with P5	kg	1084	1465	1765	1827	2341	2367

(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 IP 54 for models 031-802.

(4) Minimum 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 10 m from the side of the condenser coils and at a height of 1,6 m from the unit support base. Values with tolerance +/- 2 dB. 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 Hz

Model	Version	Hz	With axial fan		
			FLI (kW)	FLA (A)	ICF (A)
031	SP	50	5,3	9,2	48
	P3	50	6,3	11	50
	P5	50	7,1	12	51
051	SP	50	6,5	10	52
	P3	50	7,4	12	53
	P5	50	8,3	14	55
081	SP	50	10,9	18	95
	P3	50	12	20	97
	P5	50	14	24	101
101	SP	50	14	23	118
	P3	50	15	25	120
	P5	50	17	29	124
121	SP	50	15	25	118
	P3	50	17	29	122
	P5	50	19	31	124
201	SP	50	20	32	113
	P3	50	22	36	117
	P5	50	24	40	120
251	SP	50	25	41	140
	P3	50	27	45	144
	P5	50	29	49	147
301	SP	50	26	44	142
	P3	50	29	48	147
	P5	50	31	51	150
381	SP	50	35	61	177
	P3	50	40	68	184
	P5	50	44	74	190
402	SP	50	40	64	145
	P3	50	44	72	152
	P5	50	48	78	159
502	SP	50	48	78	177
	P3	50	52	86	185
	P5	50	56	92	191
702	SP	50	59	97	213
	P3	50	65	108	223
	P5	50	69	114	230
802	SP	50	69	118	262
	P3	50	75	129	273
	P5	50	79	136	280

SP = without pump;

P3 = pump P3;

P5 = pump P5;

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 - 50 Hz

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] <sub>10m</sub>	(1) L (m)	
031	axial	52,1	73,5	74,4	70,7	76,6	72,2	65,2	57,4	81,1	53,1	1	15
051	axial	52,1	73,5	74,4	70,7	76,6	72,2	65,2	57,4	81,1	53,1	3	10
081	axial	50,6	69,4	69,7	72,7	78,4	75,0	68,9	58,6	81,6	53,6	5	6
101	axial	50,9	69,8	70,2	73,2	78,9	75,5	69,4	59,0	82,1	54,1	10	0
121	axial	50,9	69,8	70,2	73,2	78,9	75,5	69,4	59,0	82,1	54,1		
201	axial	59,9	71,9	73,0	75,1	81,0	77,9	71,4	59,3	84,3	56,3		
251	axial	59,9	71,9	73,0	75,1	81,0	77,9	71,4	59,3	84,3	56,3		
301	axial	61,2	73,4	74,5	76,7	82,8	79,5	72,9	60,5	86	58,0		
381	axial	53,5	71,7	73,0	80,0	84,9	81,9	78,1	73,2	88,3	60,3		
402	axial	63,9	76,6	77,8	80,1	86,4	83,0	76,1	63,2	89,5	61,5		
502	axial	63,9	76,6	77,8	80,1	86,4	83,0	76,1	63,2	89,5	61,5		
702	axial	55,7	73,4	74,7	82,3	86,5	83,6	80,5	75,7	90,2	62,2		
802	axial	55,4	73,5	74,9	82,4	87,0	84,4	80,7	76,1	90,6	62,6		

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 10 m from the side of the condenser coils and at a height of 1,6 m from the unit support base. Values with tolerance +/- 2 dB. 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:  $dB(A)_L = dB(A)_{10m} + Kdb$ .





381		External air temperature ta (°C)																		ta max (°C)
		25			32			35			38			40			43			
Glycol	tu (°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)	
25%	-5	61,3	20,8	10,5	57,6	23,0	9,8	55,5	24,2	9,5	53,3	25,6	9,1	51,7	26,5	8,8	49,4	28,1	8,4	46
25%	-3	66,6	20,9	11,4	62,3	23,3	10,6	60,0	24,5	10,3	57,7	25,9	9,9	56,1	26,8	9,6	53,5	28,4	9,1	46
20%	0	75,7	21,1	13,0	70,5	23,7	12,0	68,0	25,0	11,6	65,4	26,3	11,2	63,6	27,3	10,9	60,7	28,8	10,4	46
20%	3	84,1	21,5	14,4	78,3	24,2	13,4	75,6	25,4	12,9	72,7	26,8	12,4	70,8	27,8	12,1	67,7	29,3	11,6	46
	5	90,8	21,9	15,5	84,5	24,6	14,5	81,5	25,9	14,0	78,5	27,2	13,4	76,3	28,2	13,1	73,0	29,7	12,5	46
	7	95,3	22,2	16,3	88,8	24,9	15,2	85,7	26,2	14,7	82,5	27,6	14,1	80,3	28,5	13,8	76,8	30,1	13,2	46
	9	99,9	22,5	17,1	93,1	25,2	16,0	89,9	26,5	15,4	86,5	27,9	14,8	84,2	28,9	14,4	80,7	30,4	13,8	46
	11	104,5	22,8	17,9	97,3	25,5	16,7	94,0	26,8	16,1	90,5	28,2	15,5	88,2	29,2	15,1	84,4	30,8	14,5	46
	13	108,9	23,1	18,7	101,5	25,8	17,4	98,0	27,1	16,8	94,4	28,6	16,2	92,0	29,5	15,8	88,1	31,1	15,1	46
	15	113,1	23,3	19,4	105,3	26,2	18,1	101,8	27,5	17,5	98,2	28,9	16,9	95,6	29,9	16,4	91,6	31,4	15,7	46
	17	119,4	23,7	20,5	111,2	26,6	19,1	107,4	27,9	18,5	103,5	29,4	17,8	100,8	30,4	17,3	96,7	31,9	16,6	46
	20	129,2	24,4	22,2	120,4	27,3	20,7	116,4	28,6	20,0	112,3	30,1	19,3	109,2	31,1	18,8	104,8	32,7	18,0	44

402		External air temperature ta (°C)																		ta max (°C)
		25			32			35			38			40			43			
Glycol	tu (°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)	
25%	-5	60,5	22,4	10,3	57,0	24,9	9,7	54,9	26,4	9,4	52,8	28,1	9,0	51,2	29,4	8,7	-	-	-	42
25%	-3	66,2	22,4	11,3	62,0	25,1	10,6	59,8	26,6	10,2	57,4	28,3	9,8	55,8	29,6	9,5	53,1	31,7	9,1	43
20%	0	76,2	22,6	13,0	70,9	25,6	12,1	68,4	27,1	11,7	65,8	28,8	11,3	64,0	30,0	10,9	61,0	32,1	10,4	46
20%	3	85,3	23,0	14,6	79,4	26,0	13,6	76,7	27,5	13,1	73,8	29,2	12,6	71,8	30,4	12,3	68,6	32,5	11,7	46
	5	93,1	23,4	15,9	86,7	26,4	14,8	83,7	27,9	14,3	80,6	29,6	13,8	78,4	30,9	13,4	74,9	32,9	12,8	46
	7	98,1	23,8	16,8	91,3	26,8	15,6	88,2	28,3	15,1	85,0	30,0	14,6	82,7	31,2	14,2	79,1	33,2	13,5	46
	9	103,2	24,1	17,7	96,1	27,1	16,5	92,9	28,6	15,9	89,5	30,3	15,3	87,1	31,5	14,9	83,3	33,6	14,3	46
	11	108,2	24,5	18,6	101,0	27,5	17,3	97,6	29,0	16,7	94,0	30,7	16,1	91,6	31,9	15,7	87,7	33,9	15,0	46
	13	113,6	24,8	19,5	105,8	27,9	18,2	102,3	29,4	17,6	98,5	31,1	16,9	95,9	32,3	16,5	92,0	34,3	15,8	46
	15	118,7	25,2	20,4	110,8	28,3	19,0	107,1	29,8	18,4	103,2	31,5	17,7	100,5	32,7	17,3	96,3	34,7	16,5	46
	17	125,4	25,7	21,5	116,9	28,8	20,1	113,1	30,3	19,4	109,2	32,0	18,8	106,3	33,2	18,3	101,9	35,2	17,5	46
	20	135,7	26,7	23,3	126,6	29,7	21,8	122,4	31,2	21,1	118,1	32,9	20,3	115,1	34,1	19,8	110,4	36,1	19,0	45

502		External air temperature ta (°C)																		ta max (°C)
		25			32			35			38			40			43			
Glycol	tu (°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)	
25%	-5	75,2	26,5	12,8	69,0	30,6	11,8	66,1	32,6	11,3	63,1	34,7	10,8	60,9	36,3	10,4	-	-	-	41
25%	-3	82,0	26,8	14,0	75,4	30,9	12,9	72,3	32,9	12,4	69,1	35,1	11,8	66,8	36,6	11,4	-	-	-	42
20%	0	94,2	27,3	16,1	86,9	31,4	14,9	83,5	33,4	14,3	79,9	35,6	13,7	77,4	37,2	13,2	73,5	39,7	12,6	44
20%	3	105,7	27,8	18,1	97,7	32,0	16,7	94,0	34,0	16,1	90,1	36,2	15,4	87,4	37,8	15,0	83,2	40,3	14,2	46
	5	115,5	28,4	19,8	106,9	32,5	18,3	102,9	34,5	17,6	98,8	36,8	16,9	95,9	38,3	16,4	91,4	40,9	15,7	46
	7	121,5	28,8	20,8	112,6	32,9	19,3	108,5	35,0	18,6	104,2	37,2	17,9	101,2	38,8	17,3	96,6	41,3	16,5	46
	9	127,7	29,2	21,9	118,3	33,4	20,3	114,0	35,4	19,6	109,7	37,6	18,8	106,6	39,2	18,3	101,8	41,8	17,5	46
	11	133,9	29,7	23,0	124,4	33,8	21,3	119,9	35,9	20,6	115,2	38,1	19,8	112,0	39,7	19,2	107,0	42,3	18,4	46
	13	140,1	30,2	24,0	130,2	34,3	22,3	125,6	36,4	21,6	120,8	38,6	20,7	117,7	40,1	20,2	112,5	42,7	19,3	46
	15	146,4	30,7	25,1	135,9	34,9	23,3	131,3	37,0	22,5	126,4	39,1	21,7	123,0	40,7	21,1	117,7	43,3	20,2	46
	17	154,6	31,4	26,6	143,7	35,5	24,7	138,8	37,6	23,8	133,6	39,8	23,0	129,9	41,4	22,3	124,5	44,0	21,4	46
	20	167,0	32,5	28,7	155,4	36,7	26,7	150,1	38,7	25,8	144,6	41,0	24,9	140,8	42,6	24,2	135,0	45,1	23,2	46

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.



702		External air temperature ta (°C)																		ta max (°C)
		25			32			35			38			40			43			
Glycol	tu (°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)	
25%	-5	100,9	34,0	17,2	94,9	37,6	16,2	91,2	39,8	15,6	87,4	42,2	14,9	84,8	43,9	14,5	80,6	46,6	13,8	44
25%	-3	109,8	34,0	18,8	102,9	37,9	17,6	99,0	40,2	16,9	94,9	42,6	16,2	92,0	44,3	15,7	87,7	47,0	15,0	46
20%	0	125,4	34,1	21,4	116,7	38,5	19,9	112,4	40,8	19,2	107,8	43,2	18,4	104,7	44,9	17,9	99,8	47,7	17,1	46
20%	3	139,9	34,5	23,9	130,0	39,1	22,2	125,2	41,4	21,4	120,3	43,8	20,6	116,8	45,5	20,0	111,5	48,3	19,1	46
	5	151,1	35,1	25,9	140,5	39,7	24,1	135,4	41,9	23,2	130,1	44,4	22,3	126,4	46,1	21,7	120,7	48,9	20,7	46
	7	158,8	35,5	27,2	147,7	40,1	25,3	142,4	42,4	24,4	136,9	44,8	23,5	133,1	46,5	22,8	127,2	49,3	21,8	46
	9	166,6	36,0	28,6	155,0	40,6	26,6	149,5	42,8	25,6	143,9	45,3	24,7	139,9	47,0	24,0	133,7	49,8	22,9	46
	11	174,1	36,4	29,9	162,2	41,0	27,8	156,6	43,3	26,9	150,6	45,7	25,8	146,5	47,4	25,1	140,1	50,2	24,0	46
	13	181,6	36,9	31,2	169,2	41,5	29,0	163,4	43,7	28,0	157,3	46,2	27,0	153,0	47,9	26,3	146,5	50,7	25,1	46
	15	188,6	37,4	32,4	175,8	41,9	30,2	169,9	44,2	29,2	163,5	46,6	28,1	159,2	48,4	27,3	152,4	51,1	26,2	46
	17	199,0	38,1	34,2	185,6	42,6	31,9	179,2	44,9	30,8	172,8	47,3	29,7	168,3	49,0	28,9	161,2	51,8	27,7	46
	20	215,6	39,4	37,1	201,2	43,8	34,6	194,4	45,9	33,4	187,4	48,4	32,2	182,5	50,1	31,4	175,1	52,9	30,1	44

802		External air temperature ta (°C)																		ta max (°C)
		25			32			35			38			40			43			
Glycol	tu (°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)	
25%	-5	121,2	40,8	20,7	113,4	45,5	19,4	109,2	48,0	18,6	104,8	50,7	17,9	101,8	52,7	17,4	97,0	55,8	16,6	46
25%	-3	131,7	41,0	22,5	122,6	46,1	20,9	118,2	48,6	20,2	113,5	51,3	19,4	110,3	53,3	18,8	105,2	56,4	18,0	46
20%	0	149,3	41,8	25,5	138,7	47,1	23,7	133,8	49,6	22,9	128,5	52,3	22,0	125,0	54,3	21,4	119,3	57,4	20,4	46
20%	3	165,7	42,7	28,4	154,1	48,0	26,4	148,6	50,5	25,4	143,0	53,3	24,5	139,0	55,2	23,8	132,9	58,4	22,7	46
	5	179,0	43,4	30,6	166,4	48,8	28,5	160,5	51,4	27,5	154,4	54,2	26,4	150,2	56,1	25,7	143,6	59,3	24,6	46
	7	187,8	44,0	32,2	174,7	49,5	29,9	168,6	52,1	28,9	162,2	54,9	27,8	157,8	56,8	27,0	150,9	60,0	25,9	46
	9	196,8	44,6	33,7	183,1	50,1	31,4	176,7	52,7	30,3	170,0	55,5	29,2	165,5	57,5	28,4	158,3	60,7	27,2	46
	11	205,4	45,4	35,2	191,3	50,8	32,8	184,7	53,4	31,7	177,8	56,2	30,5	173,0	58,2	29,7	165,6	61,4	28,4	46
	13	213,7	46,0	36,7	199,3	51,4	34,2	192,4	54,1	33,0	185,2	56,9	31,8	180,4	58,9	31,0	172,7	62,0	29,6	46
	15	221,9	46,6	38,1	206,7	52,2	35,5	199,6	54,7	34,3	192,2	57,6	33,0	187,2	59,6	32,1	179,2	62,8	30,8	46
	17	234,0	47,4	40,2	218,0	53,1	37,5	210,5	55,8	36,2	202,9	58,6	34,9	197,4	60,5	33,9	189,3	63,7	32,5	46
	20	253,4	48,8	43,6	235,8	54,6	40,6	227,8	57,4	39,2	219,5	60,2	37,7	213,7	62,3	36,8	204,9	65,5	35,2	45

tu: evaporator outlet water temperature;

ta: external air temperature;

Pf: cooling capacity;

Pa: total power absorbed;

Fw: water flow rate ( $\Delta T = 5 \text{ }^\circ\text{C}$ ).

Interpolation is allowed, extrapolation is not permitted.

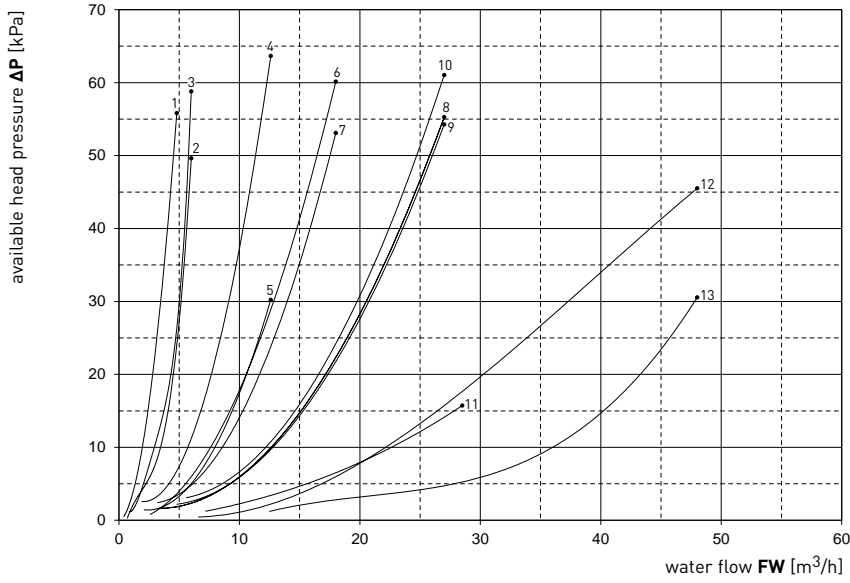
To calculate Pf, Pa and Fw for  $\Delta T \neq 5 \text{ }^\circ\text{C}$  when examining the table "Correction factors for  $\Delta T \neq 5 \text{ }^\circ\text{C}$ ".

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

Data declared according to UNI EN 14511:2011.

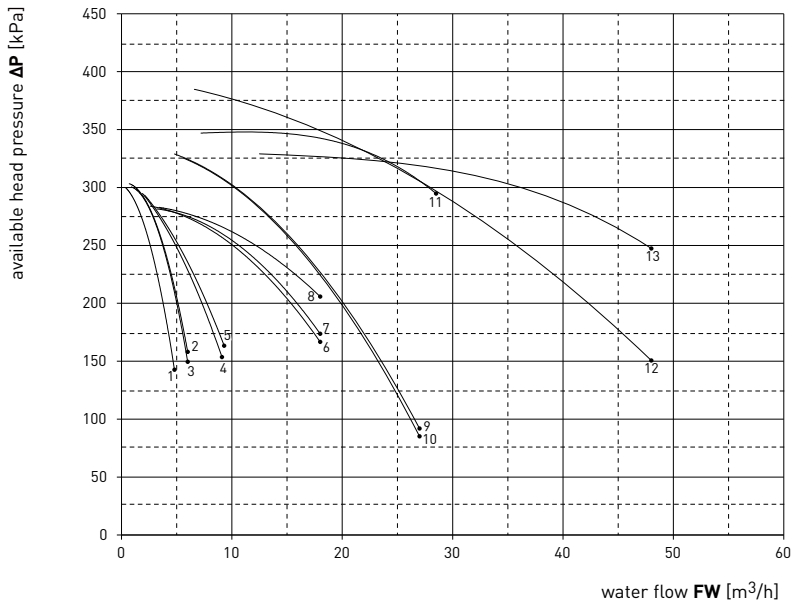
# EVAPORATOR PRESSURE DROPS AND AVAILABLE HEAD PRESSURE

## EVAPORATORS PRESSURE DROPS



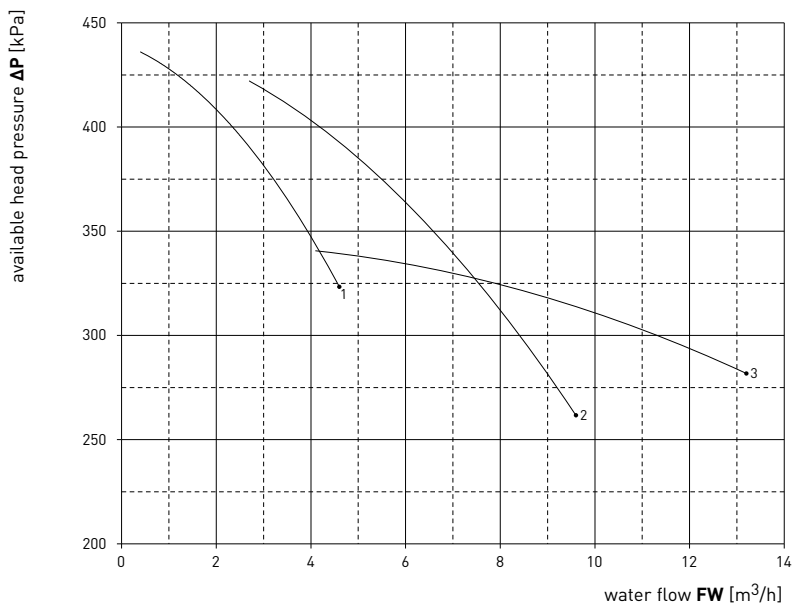
- 1: TAEevo Tech 015 - 020
- 2: TAEevo Tech 031
- 3: TAEevo Tech 051
- 4: TAEevo Tech 081
- 5: TAEevo Tech 101
- 6: TAEevo Tech 121
- 7: TAEevo Tech 161
- 8: TAEevo Tech 201 - 251
- 9: TAEevo Tech 301
- 10: TAEevo Tech 351
- 11: TAEevo Tech 381 - 401
- 12: TAEevo Tech 402 - 502 - 602
- 13: TAEevo Tech 702 - 802

## AVAILABLE PRESSURE WITH PUMP P3 - 50 Hz



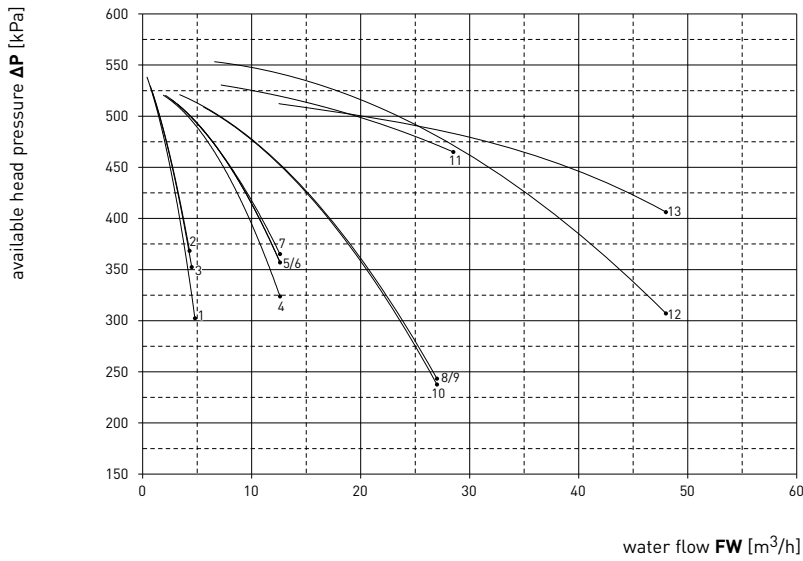
- 1: TAEevo Tech 015 - 020
- 2: TAEevo Tech 031
- 3: TAEevo Tech 051
- 4: TAEevo Tech 081
- 5: TAEevo Tech 101
- 6: TAEevo Tech 121
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- 8: TAEevo Tech 201 - 251
- 9: TAEevo Tech 301
- 10: TAEevo Tech 351
- 11: TAEevo Tech 381 - 401
- 12: TAEevo Tech 402 - 502 - 602
- 13: TAEevo Tech 702 - 802

## AVAILABLE PRESSURE WITH PUMP P3 - 60 Hz



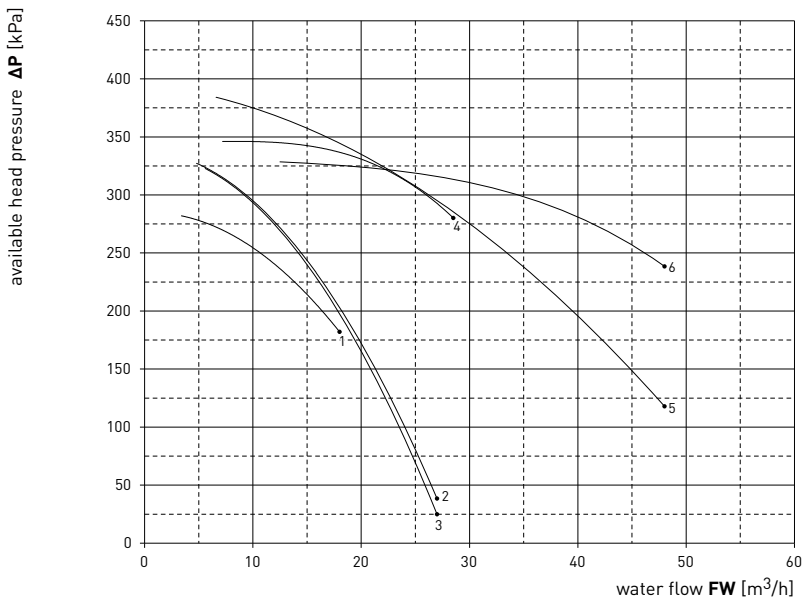
- 1: TAEevo Tech 015 - 020 - 031 - 051
- 2: TAEevo Tech 081 - 101
- 3: TAEevo Tech 121 - 161

## AVAILABLE PRESSURE WITH PUMP P5 - 50 Hz



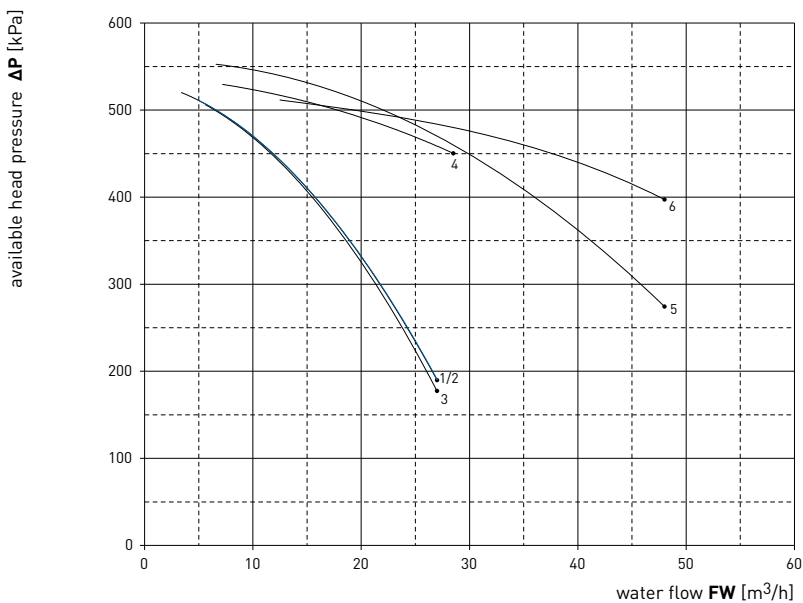
- 1: TAEevo Tech 015 - 020
- 2: TAEevo Tech 031
- 3: TAEevo Tech 051
- 4: TAEevo Tech 081
- 5: TAEevo Tech 101
- 6: TAEevo Tech 121
- 7: TAEevo Tech 161
- 8: TAEevo Tech 201 - 251
- 9: TAEevo Tech 301
- 10: TAEevo Tech 351
- 11: TAEevo Tech 381 - 401
- 12: TAEevo Tech 402 - 502 - 602
- 13: TAEevo Tech 702 - 802

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



- 1: TAEevo Tech 201 - 251
- 2: TAEevo Tech 301
- 3: TAEevo Tech 351
- 4: TAEevo Tech 381 - 401
- 5: TAEevo Tech 402 - 502 - 602
- 6: TAEevo Tech 702 - 802

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



- 1: TAEevo Tech 201 - 251
- 2: TAEevo Tech 301
- 3: TAEevo Tech 351
- 4: TAEevo Tech 381 - 401
- 5: TAEevo Tech 402 - 502 - 602
- 6: TAEevo Tech 702 - 802

# WORKING LIMITS AND CORRECTION FACTORS

## WORKING LIMITS

	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 fan regulation	-5	43 [2]	-5	35	-10	30				
	-20 [1]	43 [2]	-5	35	-10	30				
HE version	-10	46 [2]	-5 [3]	35	-10 [3]	30				

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

**(1)** Value is referred 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 equip 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 temperature is referred to the outlet water temperature equal to 15 °C.

**(3)** Only for models TAEvo Tech HE from 201 to 802 inlet water temperature -5 °C and outlet water temperature -10 °C only with an electronic thermostatic option.

**Note:** - for the min/max  $\Delta T$  evaporator side take reference to the selection software.

## SOLUTIONS OF WATER AND ETHYLENE GLYCOL

		% Ethylene glycol by weight					
		0	10	20	25	30	35
Freezing temperature	[°C]	0	-3,7	-8,7	-11,8	-15,3	-19,6
Cooling capacity correction factor [kW]	Kf1	1,00	0,99	0,98	0,97	0,97	0,96
Absorbed power correction factor [kW]	Kp1	1,00	0,99	0,98	0,98	0,98	0,97
Water flow correction factor <sup>(1)</sup> [m <sup>3</sup> /h]	KFE1	1,00	1,02	1,05	1,06	1,07	1,09
Pressure drop correction factor [kPa]	Kdp1	1,00	1,08	1,17	1,21	1,25	1,29

Multiply the unit performance by the correction factors given in the table ( $Pf^* = Pf \times Kf1$ ). If the value already includes the glycol correction factor do not use this table. (1) KFE1 = Correction factor (refers to the cooling capacity corrected by Kf) to obtain the water flow with a  $\Delta T$  of 5 °C.

## CORRECTION FACTORS $\Delta T \neq 5$ °C (WATER EVAPORATOR)

		$\Delta T$						
		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)  $\times 860 / \Delta T$  where  $\Delta T$  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 ( $Pf^* = Pf \times Kf3$ ,  $Pa^* = Pa \times Kp3$ ). [\*] 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

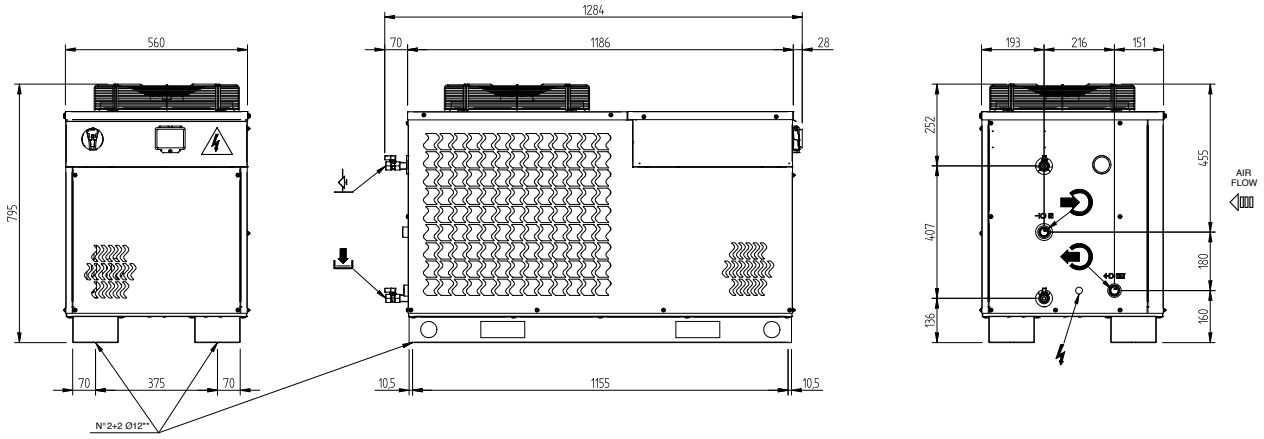
Ambient temperature	10 °C	Standard insulation thickness 10 mm [*]						20 mm [*]
		20 °C	30 °C	35 °C	40 °C	45 °C	47 °C	
Water outlet temperature		RH Max						
-10 °C	77%	71%	64%	62%	60%	57%	77%	
-5 °C	83%	72%	68%	65%	63%	61%	80%	
7 °C	97%	87%	77%	75%	73%	68%	83%	
15 °C	99%	95%	85%	82%	78%	75%	86%	

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 at the operation limits of the chillers).

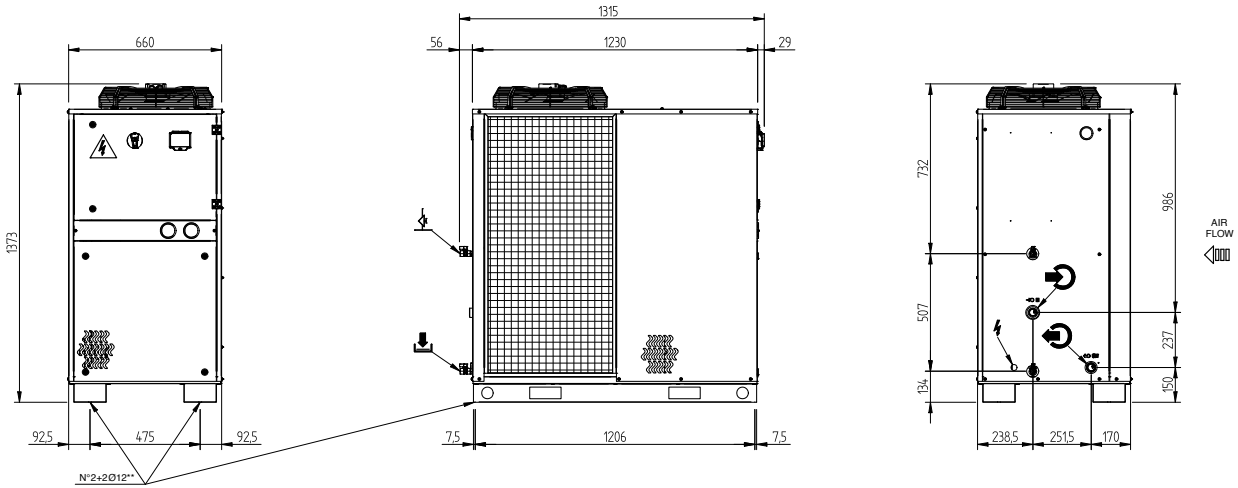
[\*] Closed cell thermal insulation.

# OVERALL DIMENSIONS

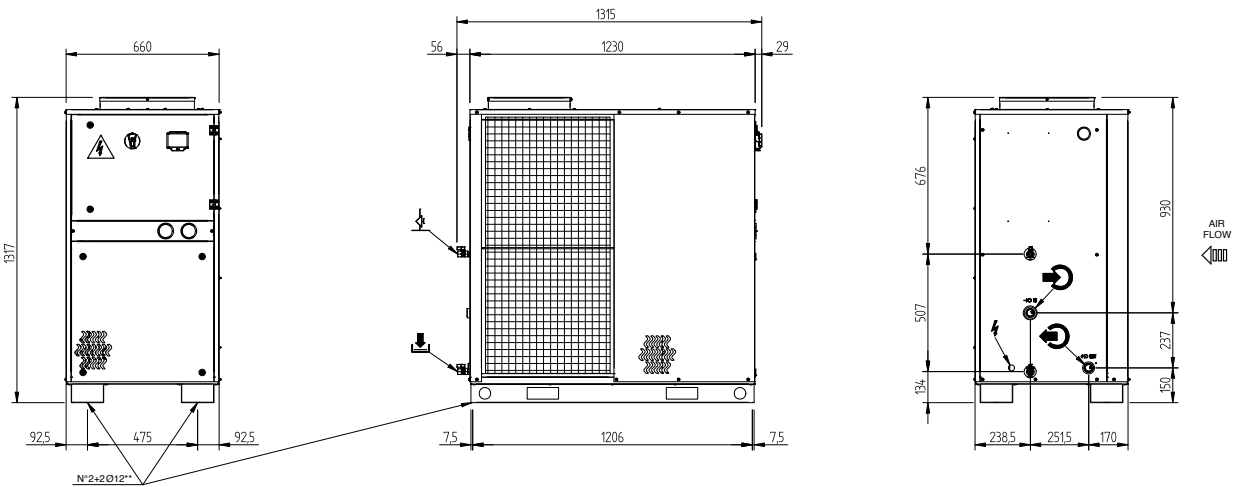
## TAEvo Tech 015 - 020



## TAEvo Tech 031 - 051 axial fans



## TAEvo Tech 031 - 051 centrifugal fans



	015	020	031	051
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

Power supply

Air vent = Rp 1/2"

Water discharge = Rp 1/2"

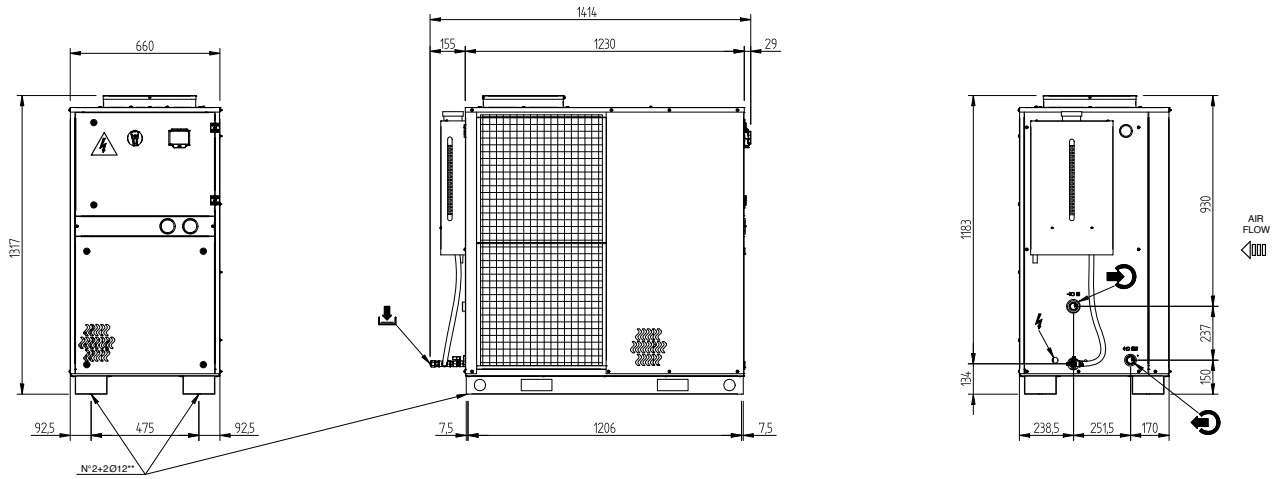
MTA

TAEvo Tech

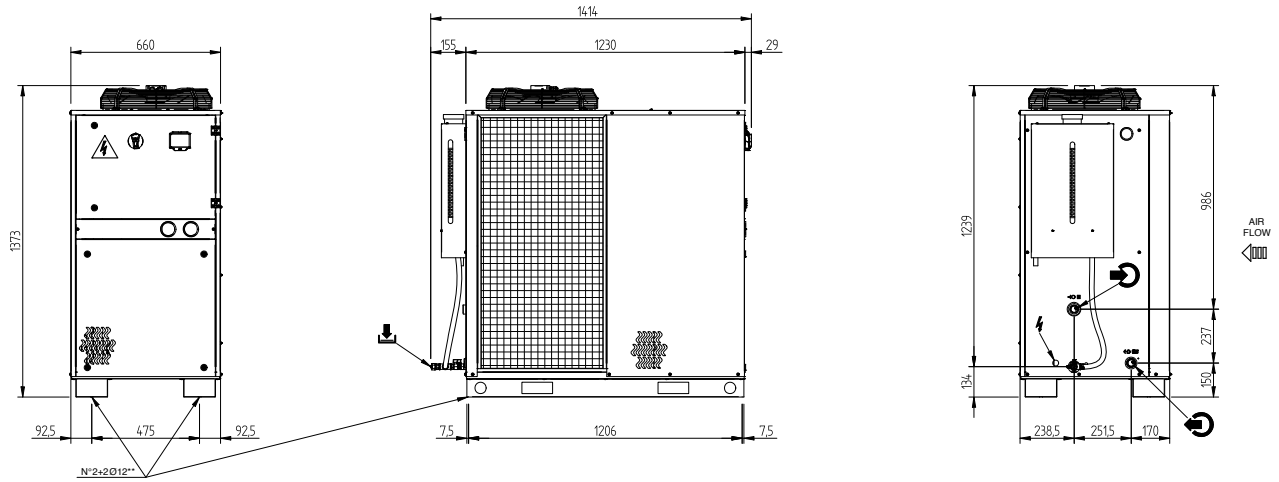


MTA

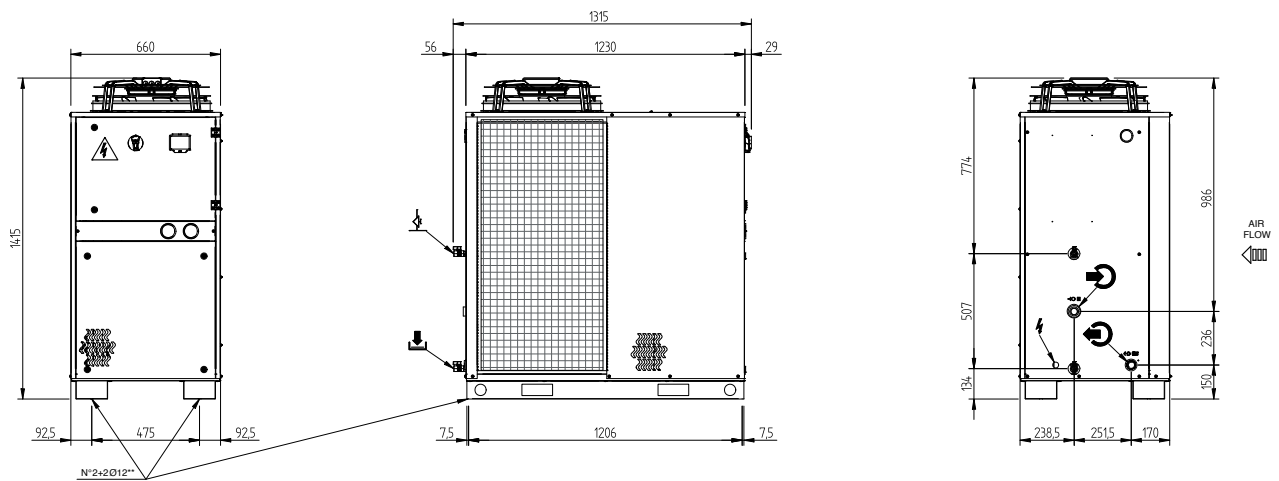
### TAEvo Tech 031 - 051 centrifugal fans and kit tank



### TAEvo Tech 031 - 051 axial fans and kit tank



### TAEvo Tech 031 - 051 axial fans HE version



	031	051
Water inlet	Rp 1"	Rp 1"
Water outlet	Rp 1"	Rp 1"

\*\* Holes

Power supply

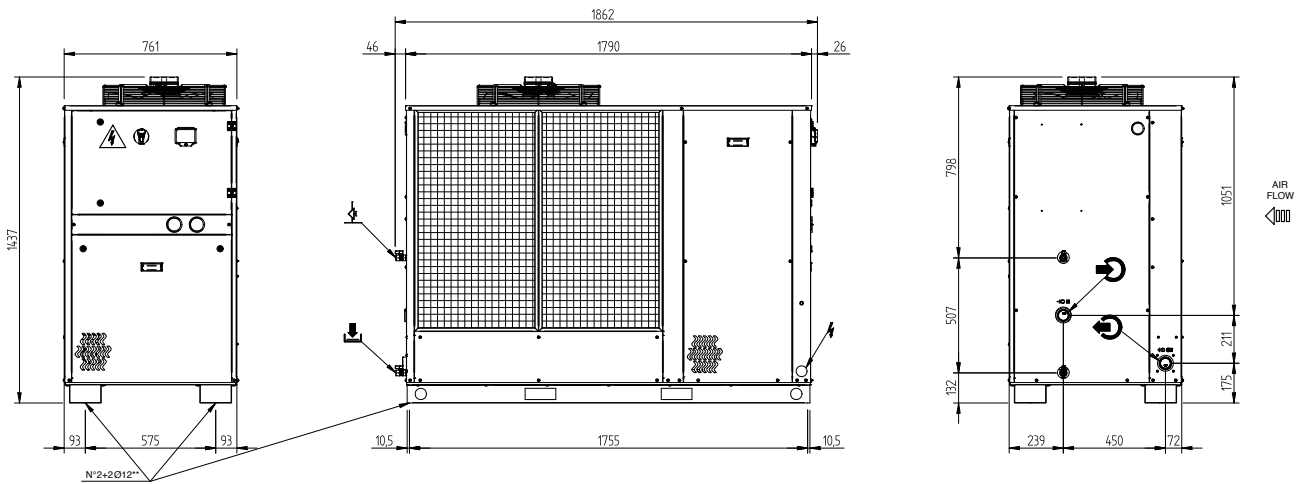
Air vent = Rp 1/2"

Water discharge = Rp 1/2"

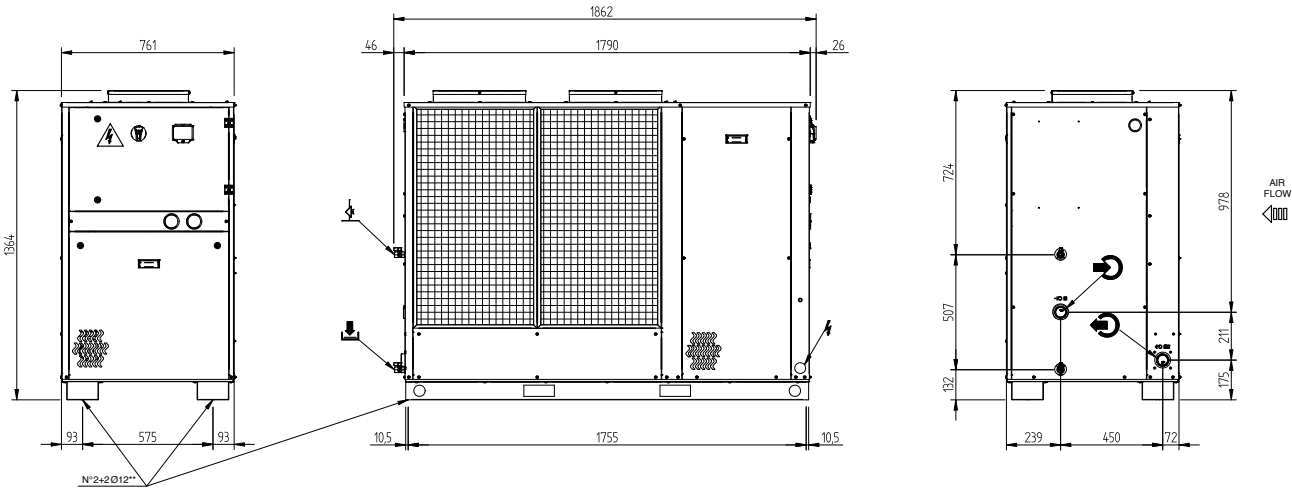
TAEvo Tech



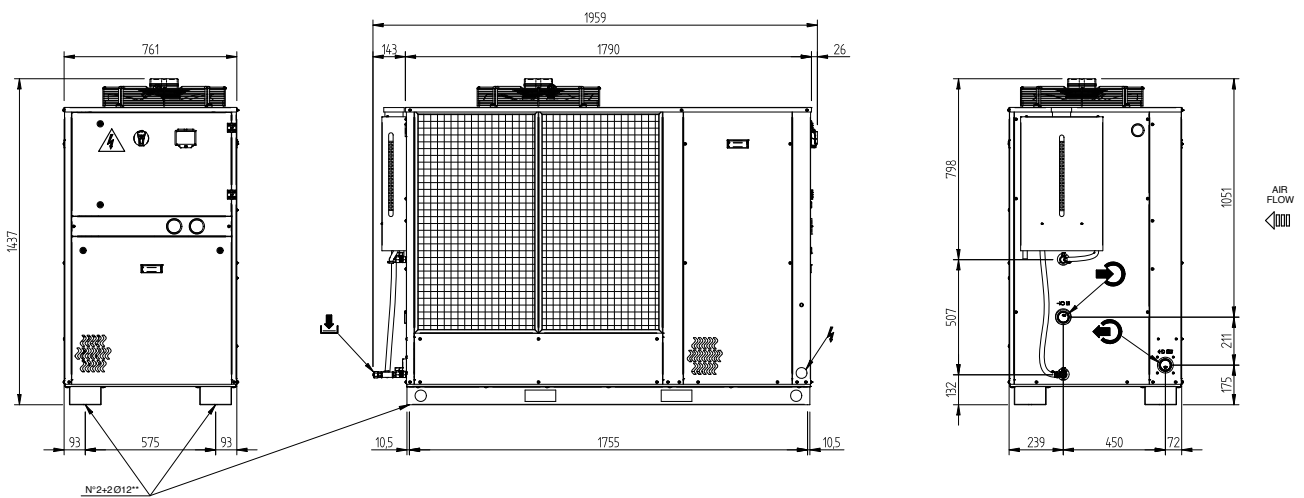
**TAEvo Tech 081  
axial fans**



**TAEvo Tech 081  
centrifugal fans**



**TAEvo Tech 081  
axial fans and kit tank**



081	
	Water inlet Rp 1"1/2
	Water outlet Rp 1"1/2

\*\* Holes

Power supply

Air vent = Rp 1/2"

Water discharge = Rp 1/2"

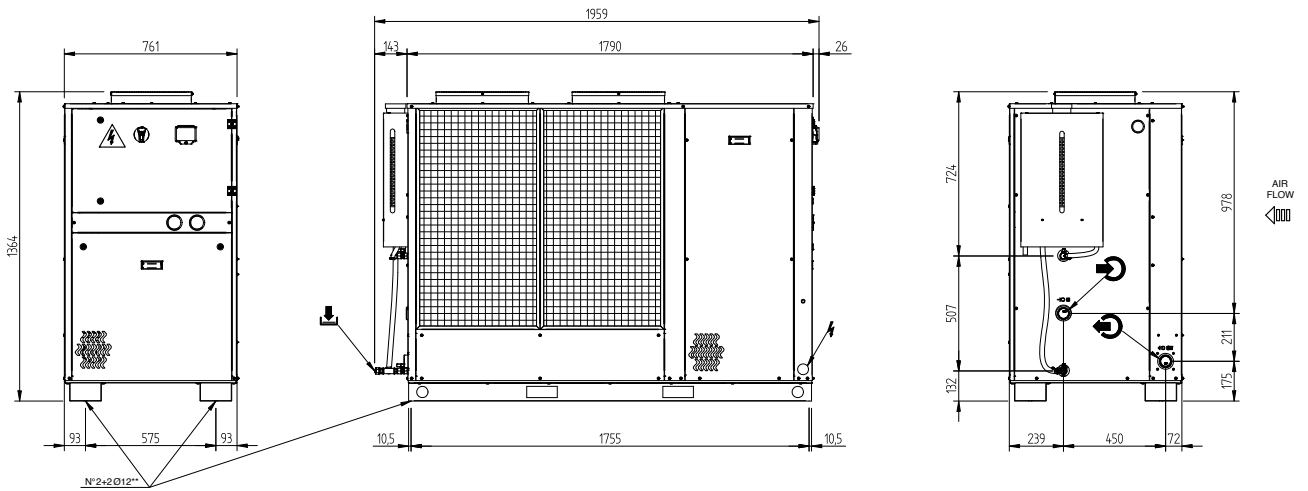


TAEvo Tech

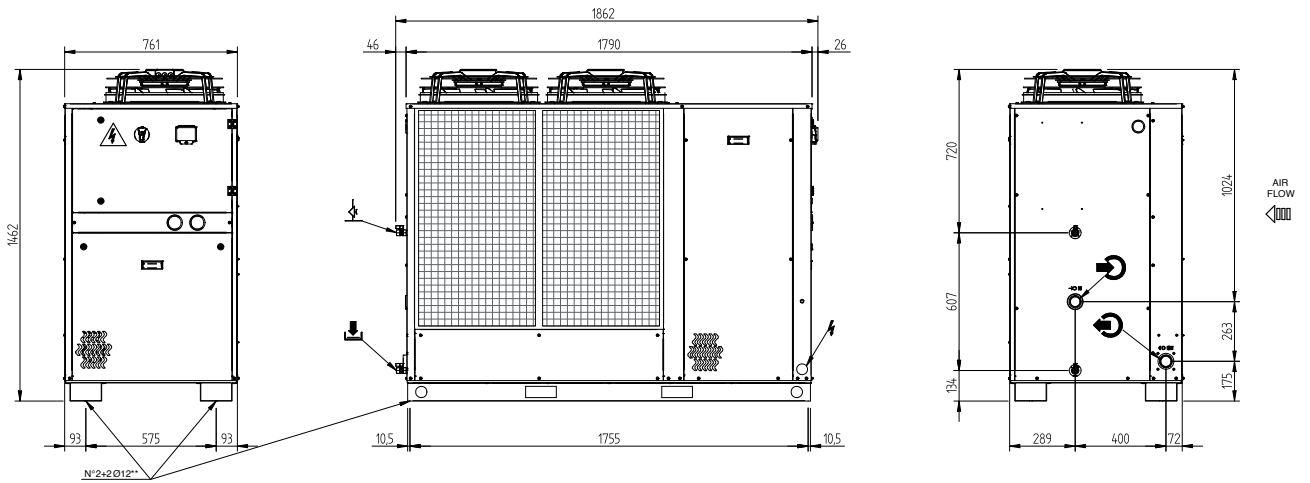


MTA

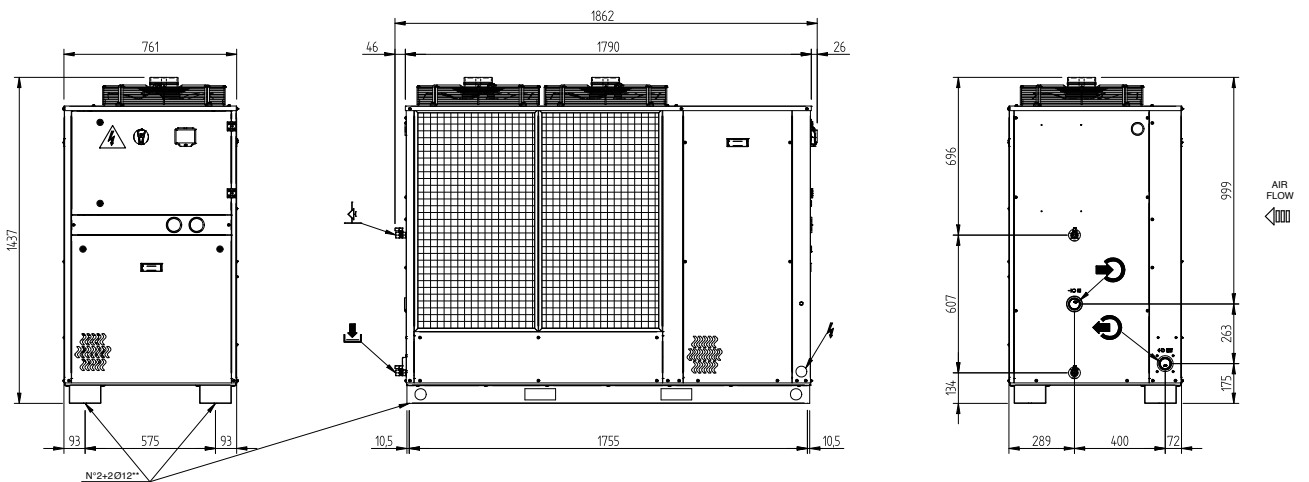
### TAEvo Tech 081 centrifugal fans and kit tank



### TAEvo Tech 081 - 121 axial fans HE version



### TAEvo Tech 101 - 121 - 161 axial fans



	101	121	161
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

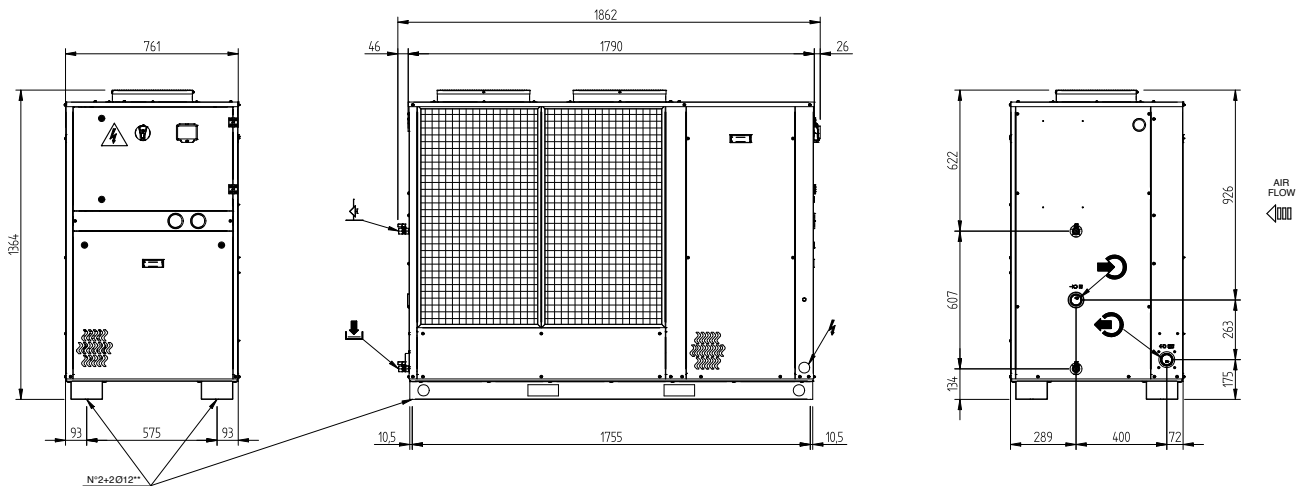
Power supply

Air vent = Rp 1/2"

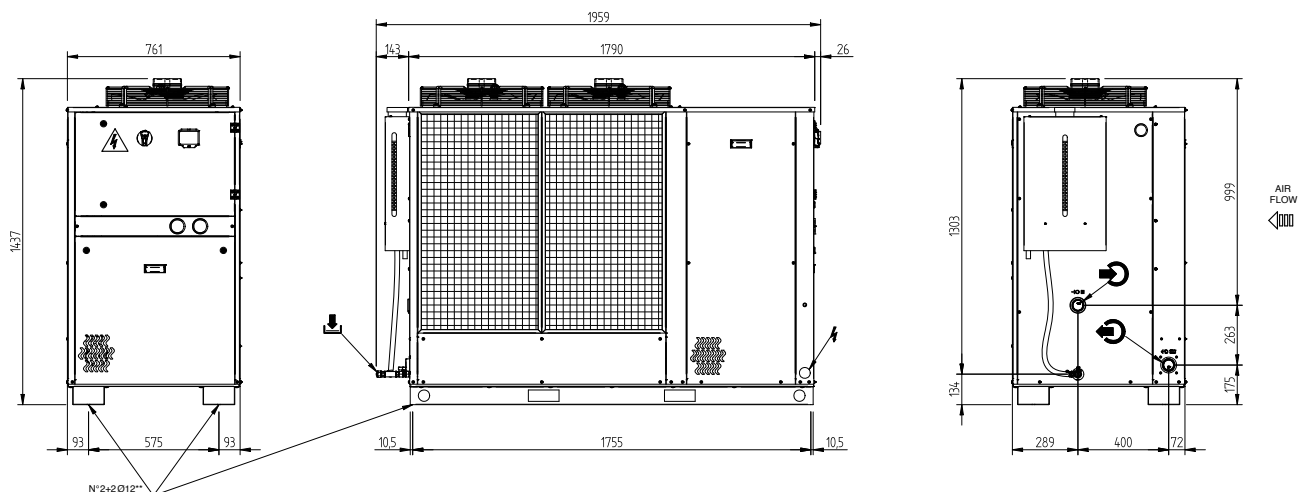
Water discharge = Rp 1/2"

TAEvo Tech

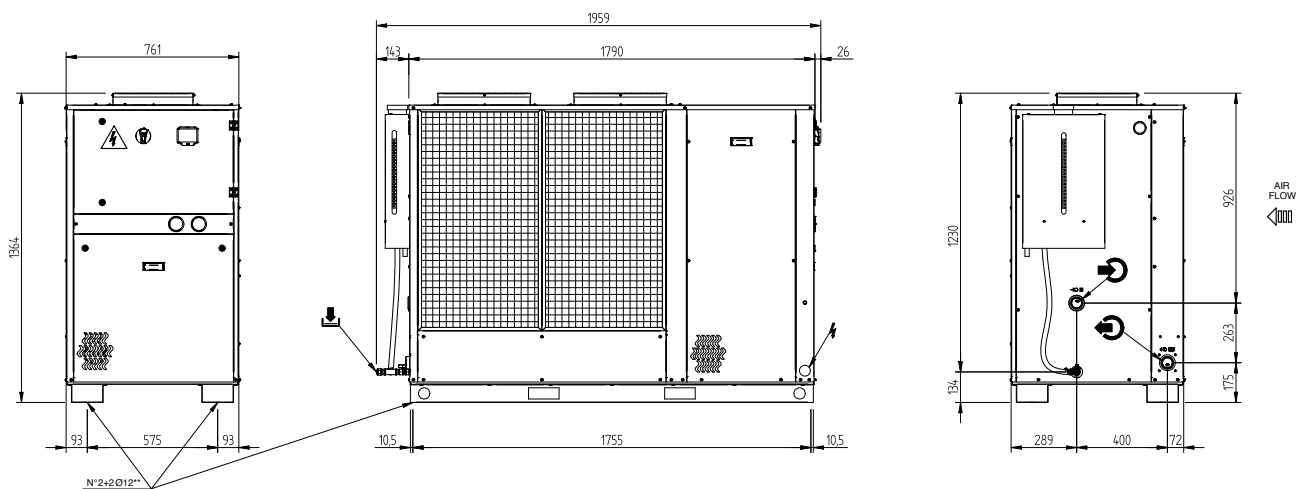
### TAEvo Tech 101 - 121 - 161 centrifugal fans



### TAEvo Tech 101 - 121 - 161 axial fans and kit tank



### TAEvo Tech 101 - 121 - 161 centrifugal fans and kit tank



	101	121	161
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

Power supply

Air vent = Rp 1/2"

Water discharge = Rp 1/2"

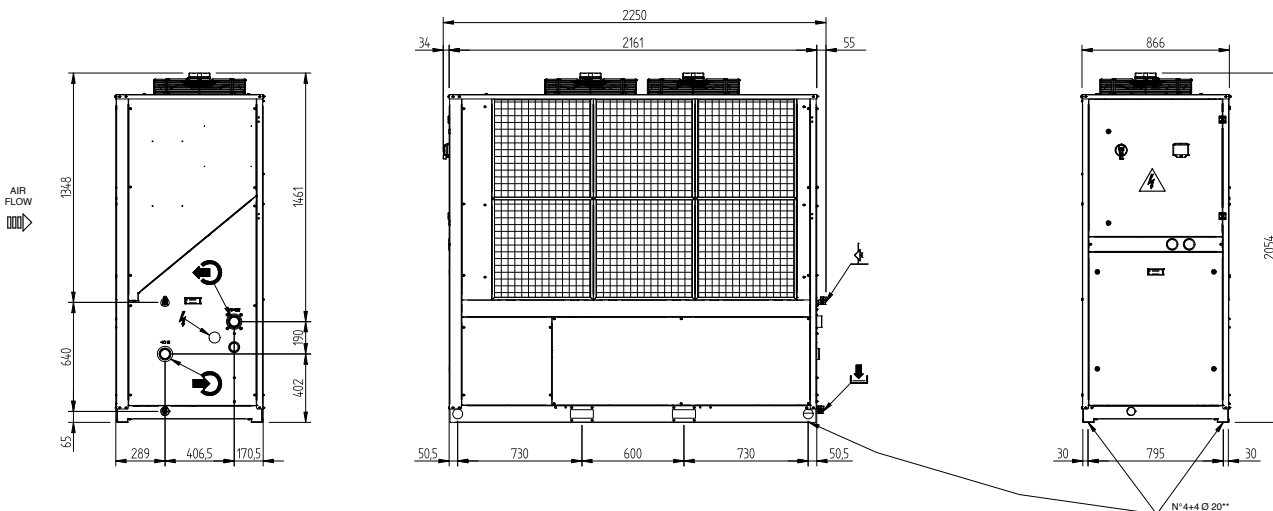


TAEvo Tech

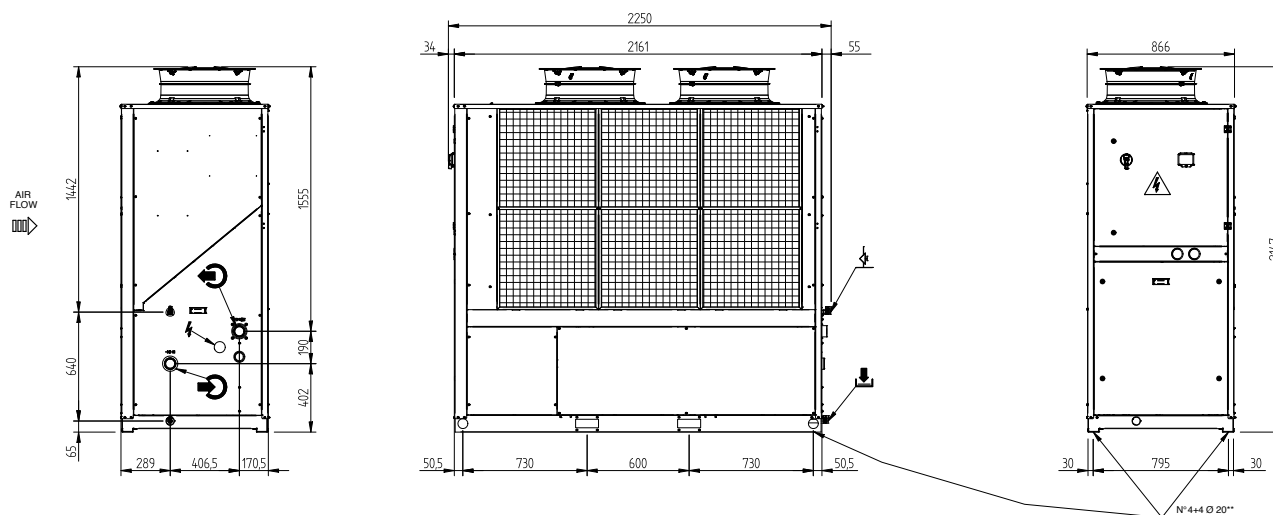


MTA

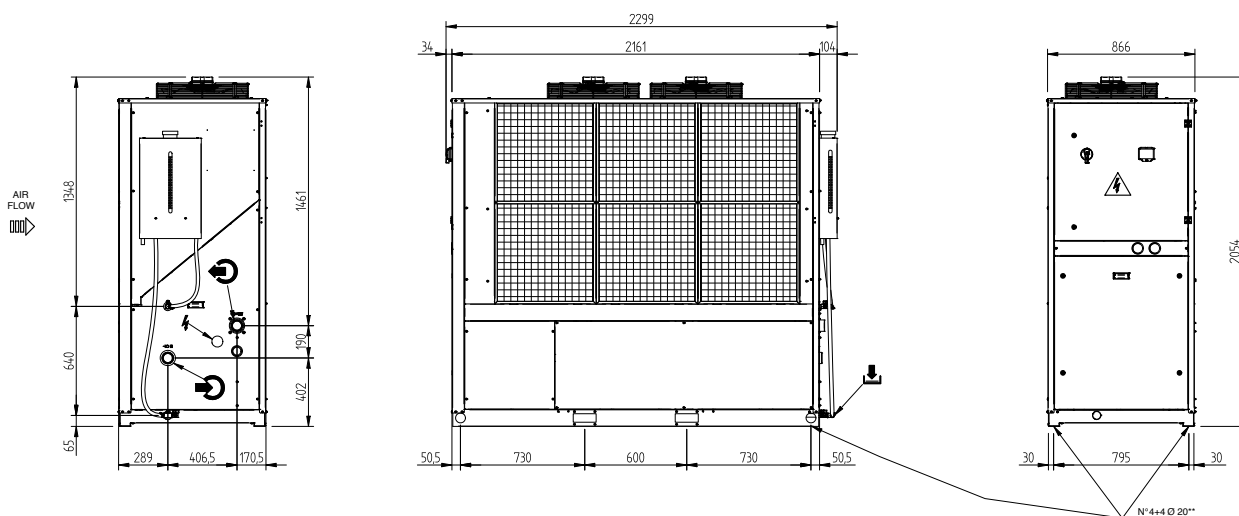
### TAEvo Tech 201 - 251 axial fans



### TAEvo Tech 201 - 251 high pressure axial fans



### TAEvo Tech 201 - 251 axial fans and kit tank



	201	251
	Water inlet Rp 2"	Rp 2"
	Water outlet Rp 2"	Rp 2"

\*\* Holes

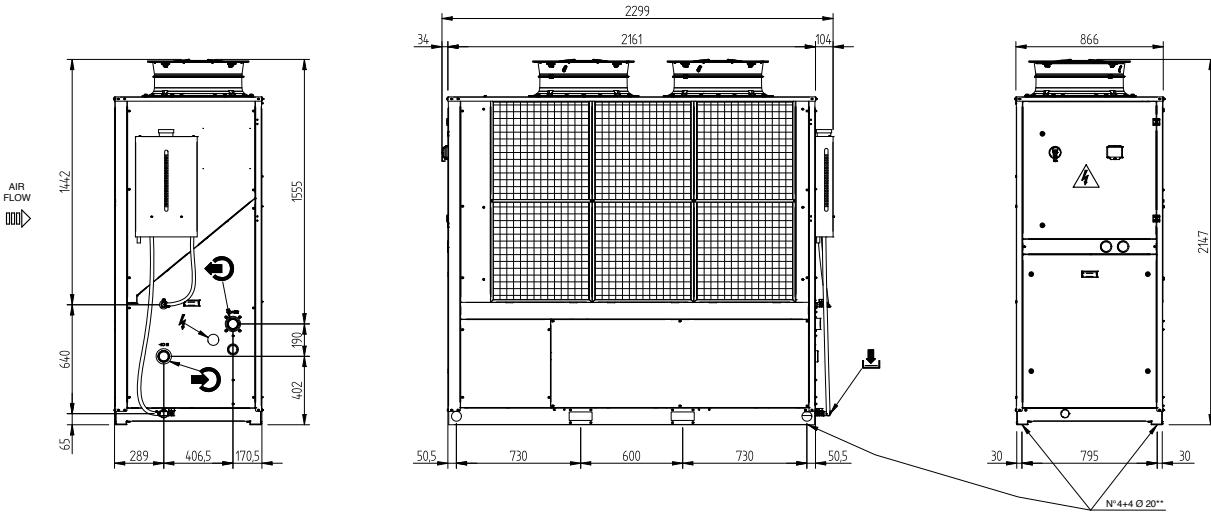
Power supply

Air vent = Rp 1/2"

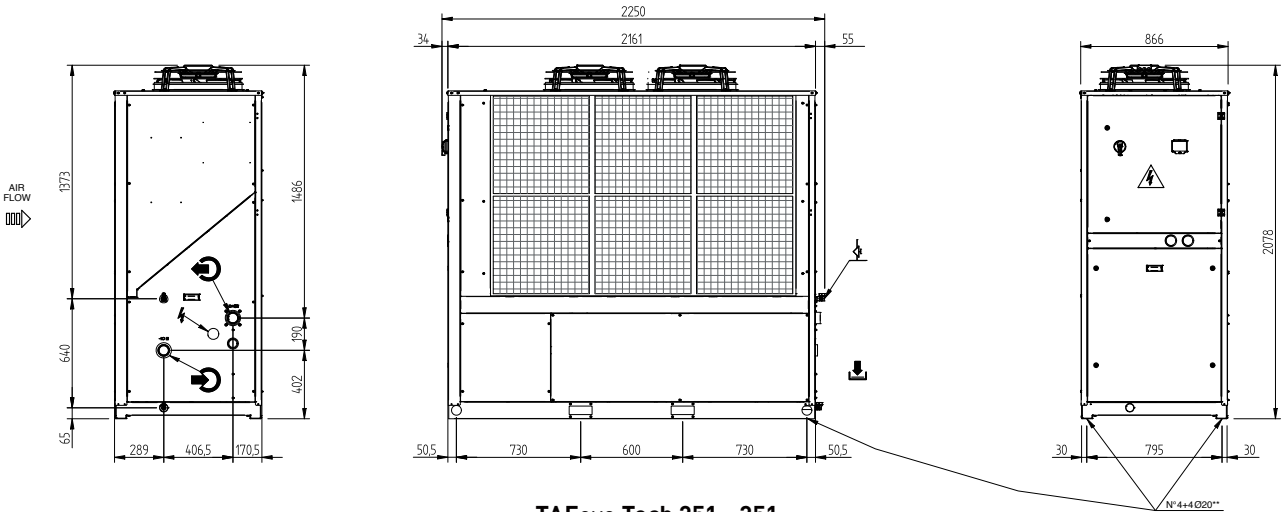
Water discharge = Rp 1/2"

TAEvo Tech

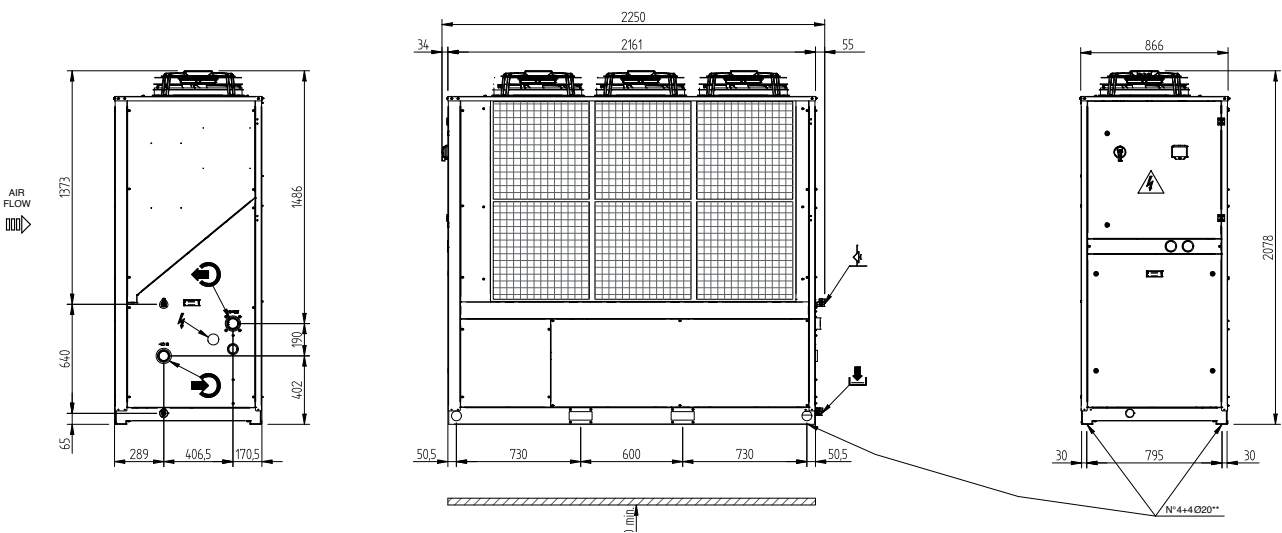
**TAEvo Tech 201 - 251**  
**high pressure axial fans and kit tank**





**TAEvo Tech 201**  
**axial fans HE version**





**TAEvo Tech 251 - 351**  
**axial fans HE version**




	201	251	301	351
 Water inlet	Rp 2"	Rp 2"	Rp 2"	Rp 2"
 Water outlet	Rp 2"	Rp 2"	Rp 2"	Rp 2"

\*\* Holes

 Power supply

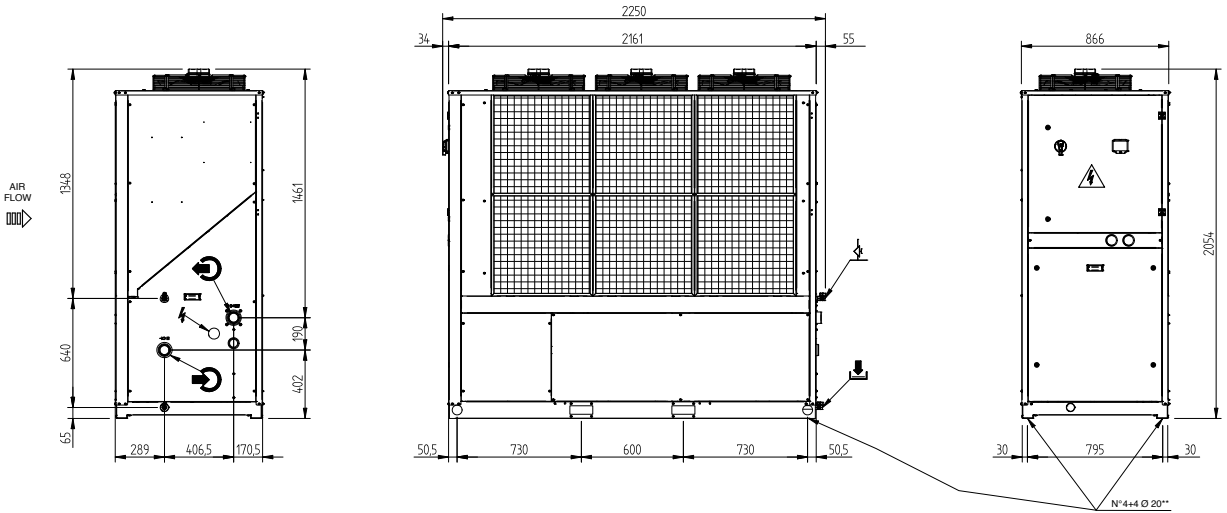
 Air vent = Rp 1/2"

 Water discharge = Rp 1/2"

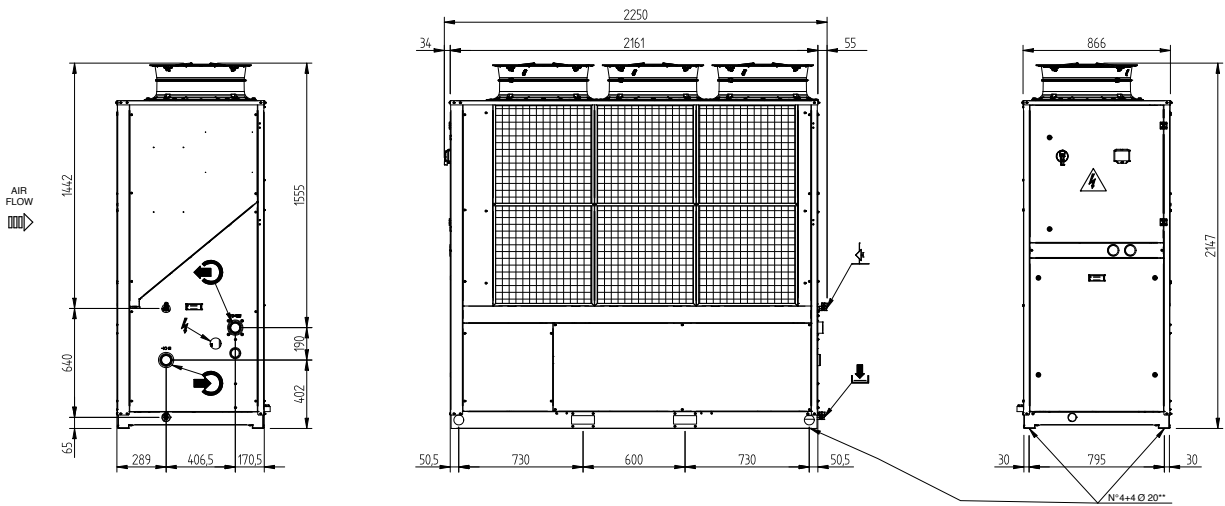


MTA

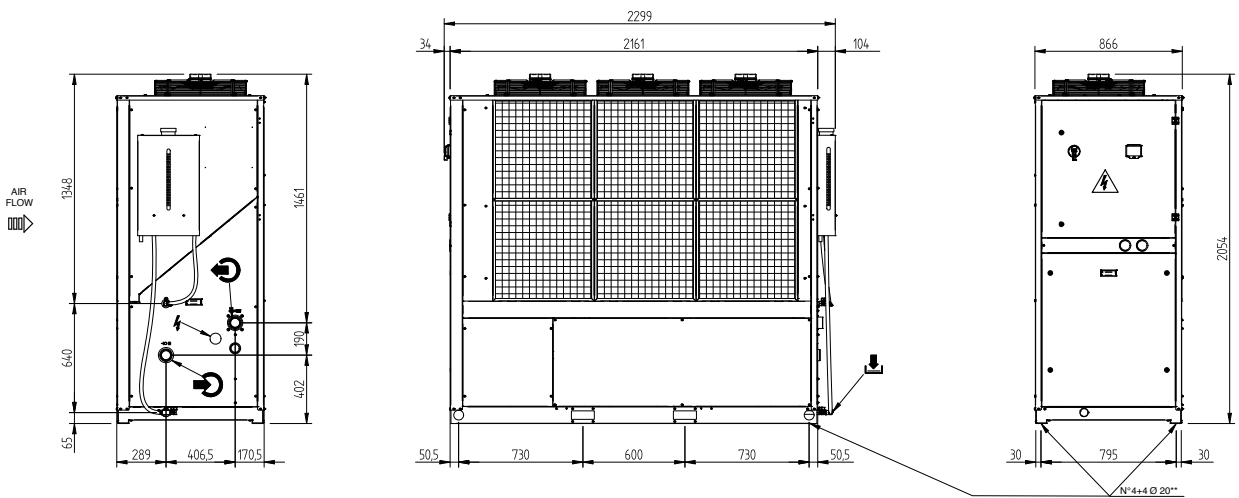
### TAEvo Tech 301 - 351 axial fans



### TAEvo Tech 301 - 351 high pressure fans



### TAEvo Tech 301 - 351 axial fans and kit tank



	301	351
	Water inlet	Rp 2"
	Water outlet	Rp 2"

\*\* Holes

Power supply

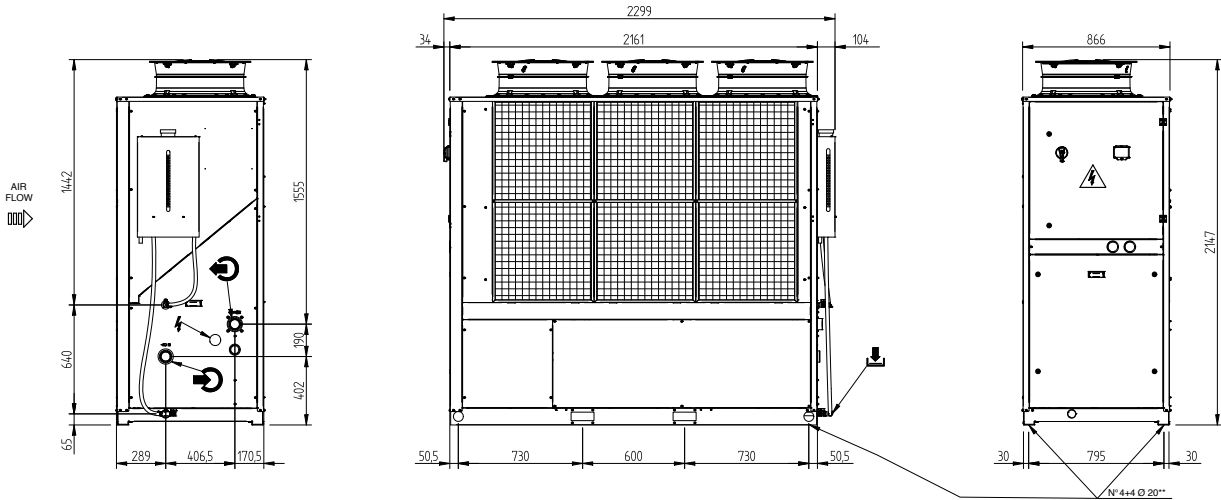
Air vent = Rp 1/2"

Water discharge = Rp 1/2"

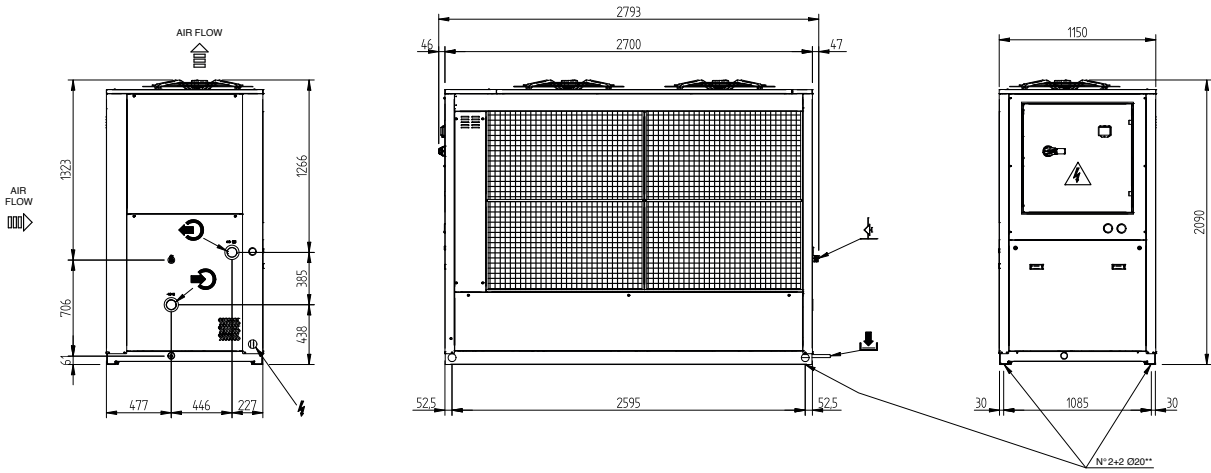
TAEvo Tech



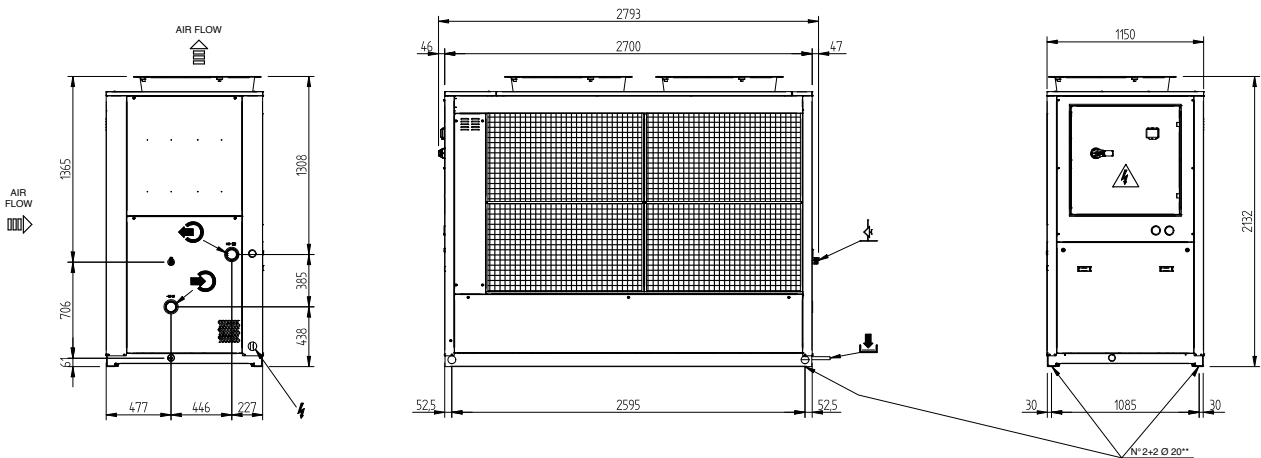
**TAEvo Tech 301 - 351**  
high pressure axial fans and kit tank



**TAEvo Tech 381 - 401**  
axial fans



**TAEvo Tech 381 - 401**  
high pressure axial fans



	301	351	381	401
Water inlet	Rp 2"	Rp 2"	Rp 2" 1/2	Rp 2" 1/2
Water outlet	Rp 2"	Rp 2"	Rp 2" 1/2	Rp 2" 1/2

\*\* Holes

Power supply

Air vent = Rp 1/2"

Water discharge = Rp 1/2"

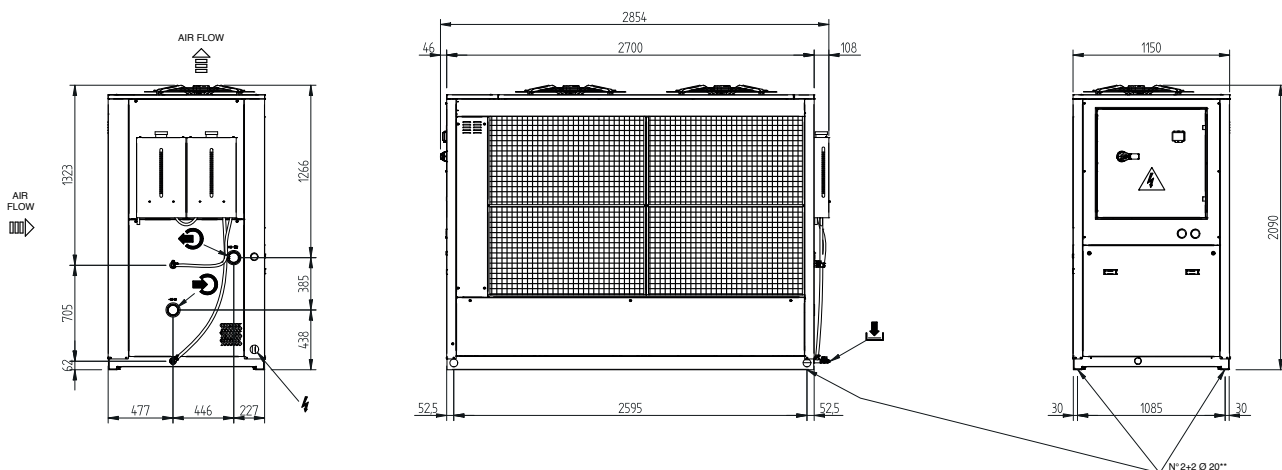


TAEvo Tech

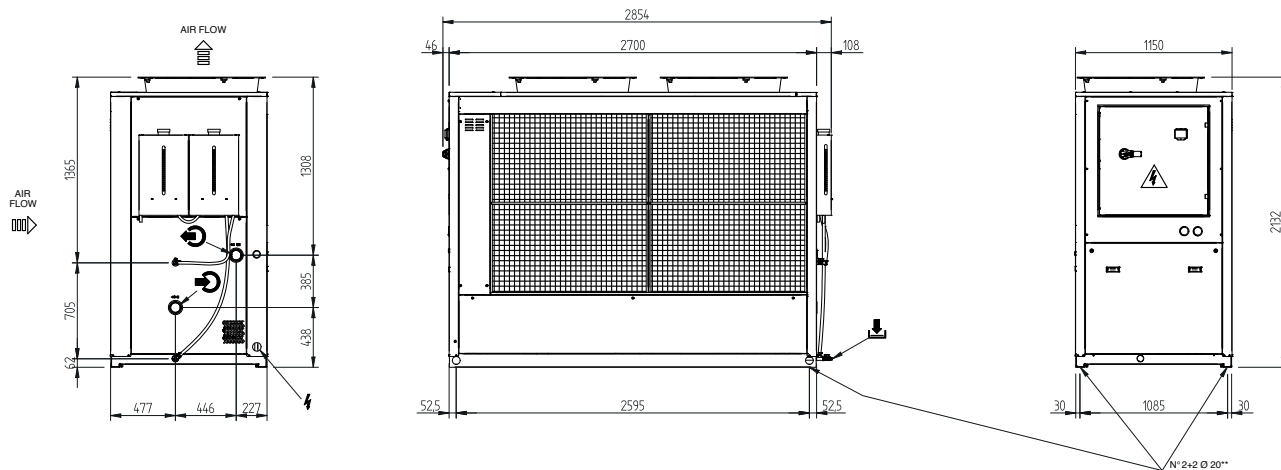


MTA

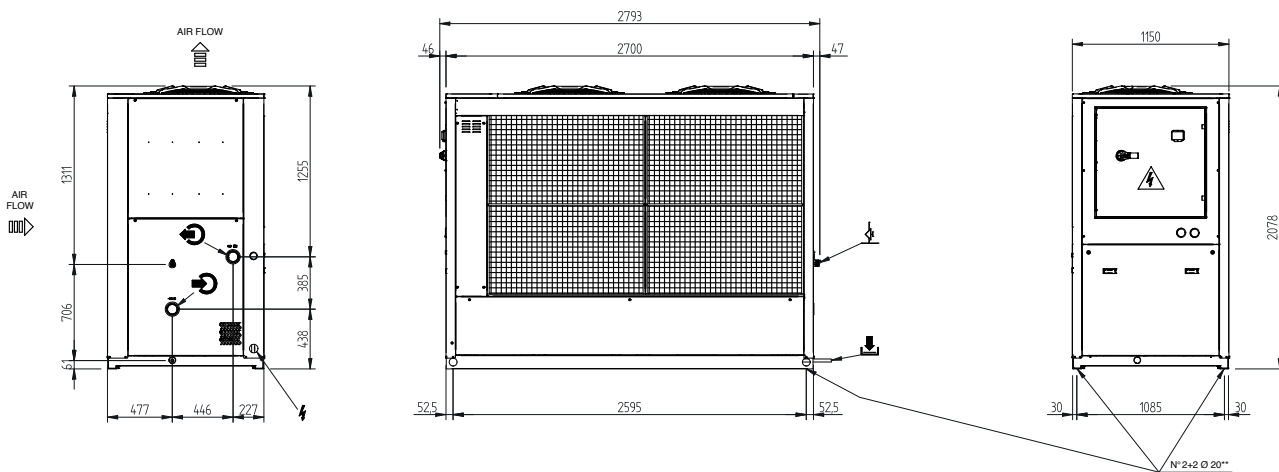
### TAEvo Tech 381 - 401 axial fans and kit tank



### TAEvo Tech 381 - 401 high pressure axial fans and kit tank



### TAEvo Tech 381 axial fans HE version



TAEvo Tech

	381	401
	Water inlet Rp 2" 1/2	Rp 2" 1/2
	Water outlet Rp 2" 1/2	Rp 2" 1/2

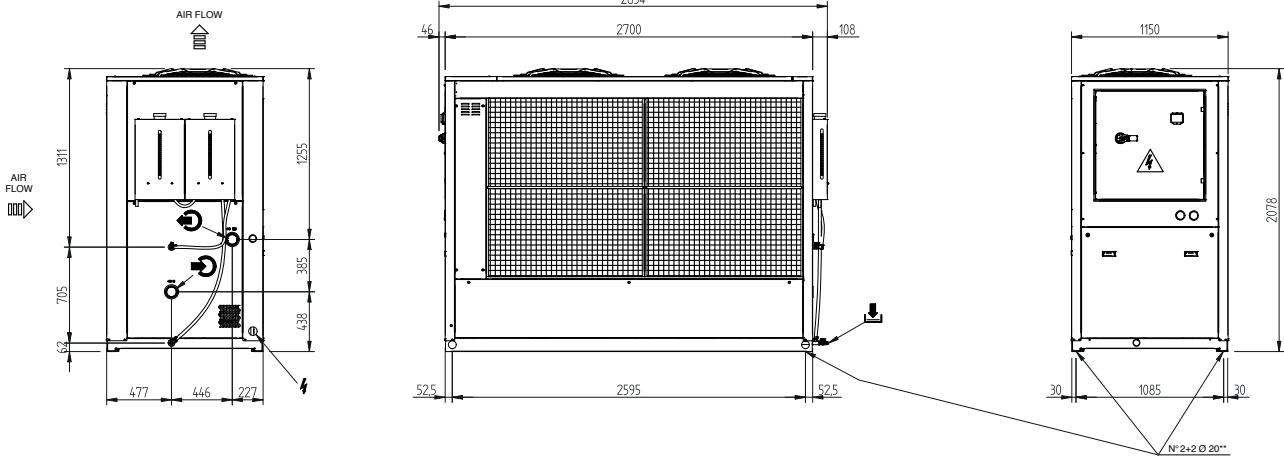
\*\* Holes

Power supply

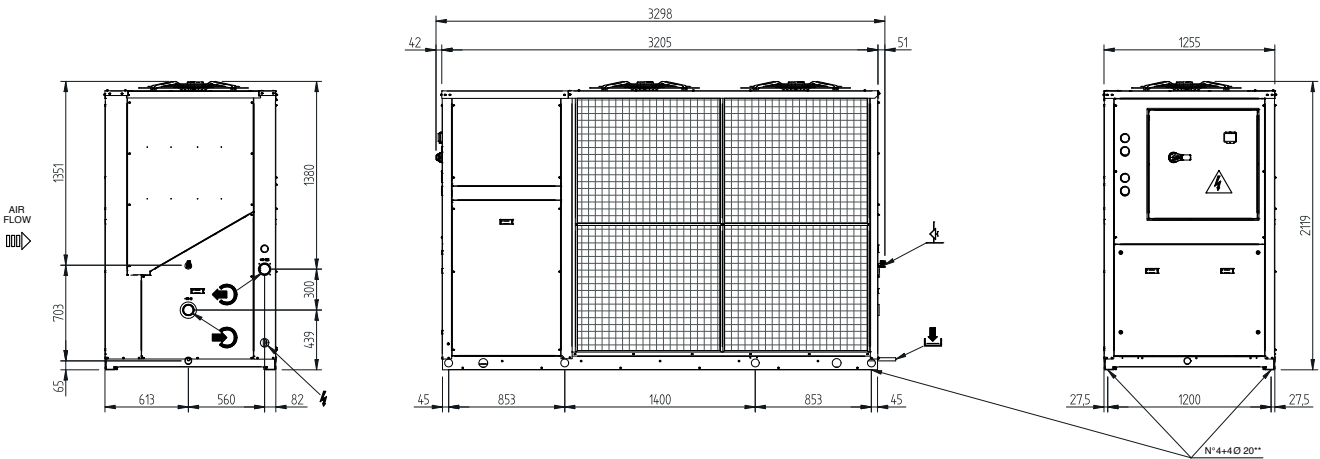
Air vent = Rp 1/2"

Water discharge = Rp 1/2"

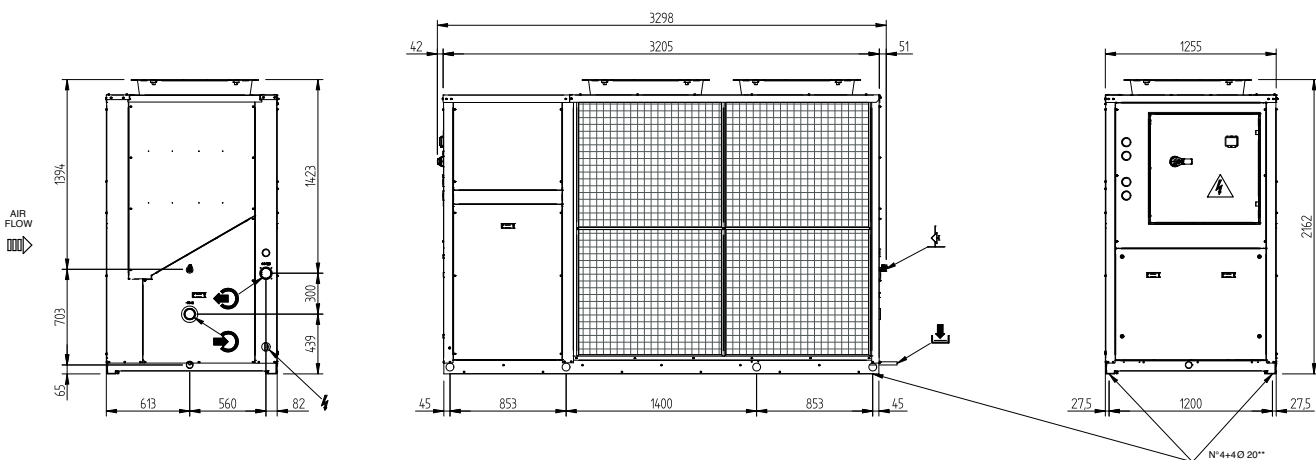
**TAEvo Tech 381**  
axial fans and kit tank HE version



**TAEvo Tech 402 - 502 - 602**  
axial fans



**TAEvo Tech 402 - 502 - 602**  
high pressure axial fans



	381	402	502	602
Water inlet	Rp 2" 1/2	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	Rp 2" 1/2

\*\* Holes

Power supply

Air vent = Rp 1/2"

Water discharge = Rp 1/2"

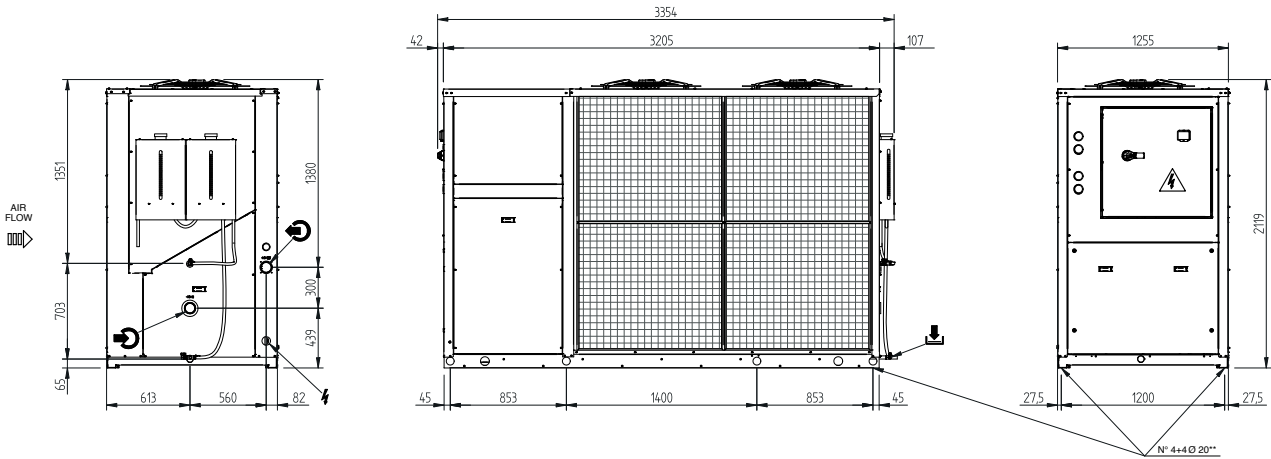


TAEvo Tech

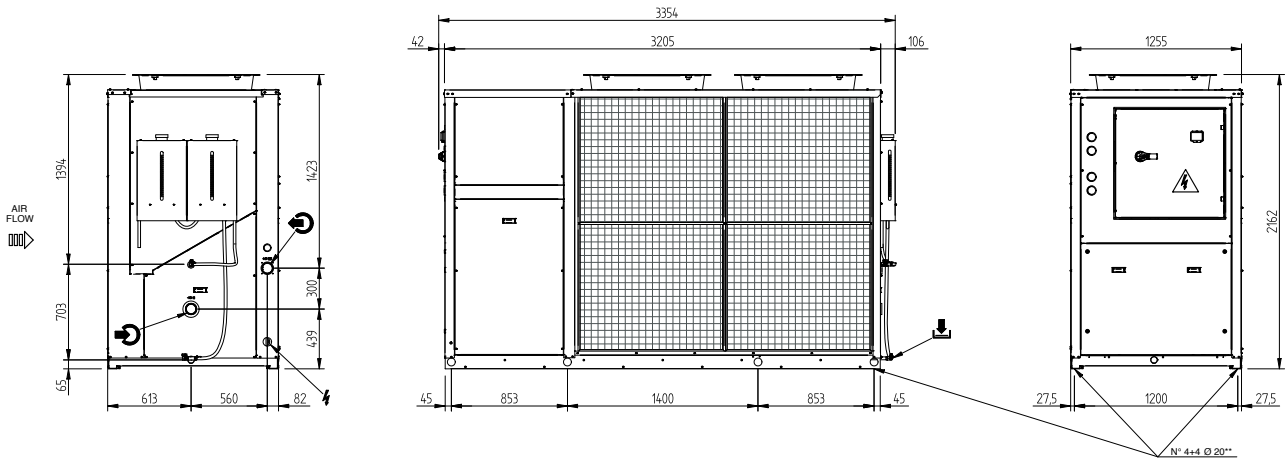


MTA

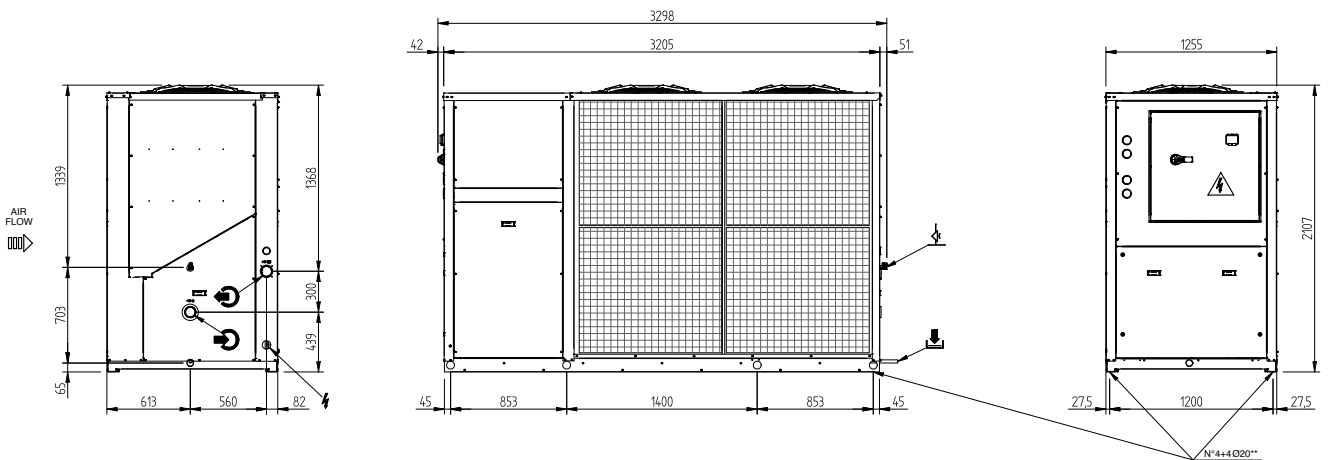
### TAEvo Tech 402 - 502 - 602 axial fans and kit tank



### TAEvo Tech 402 - 502 - 602 high pressure axial fans and kit tank



### TAEvo Tech 402 - 502 axial fans HE version



TAEvo Tech

	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

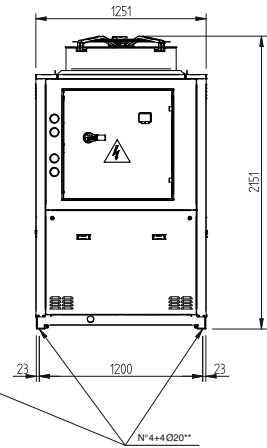
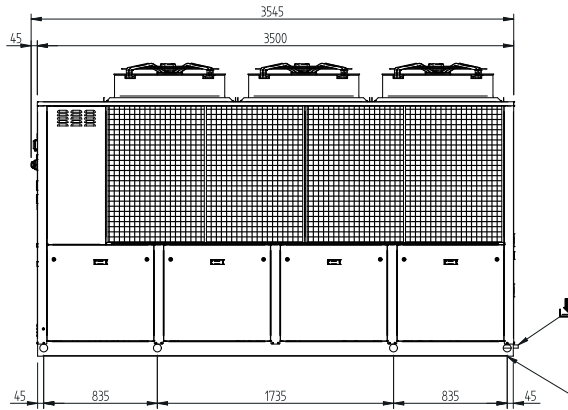
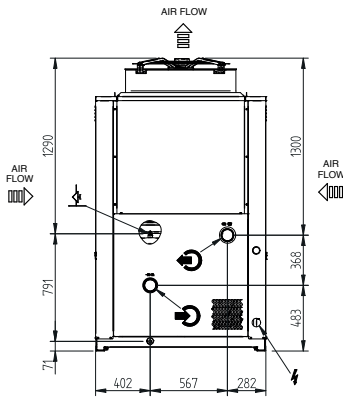
\*\* Holes

Power supply

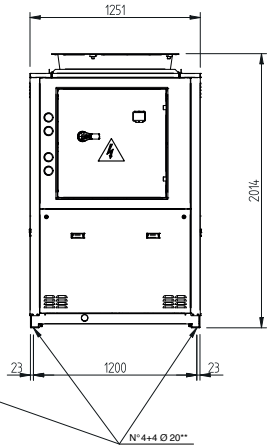
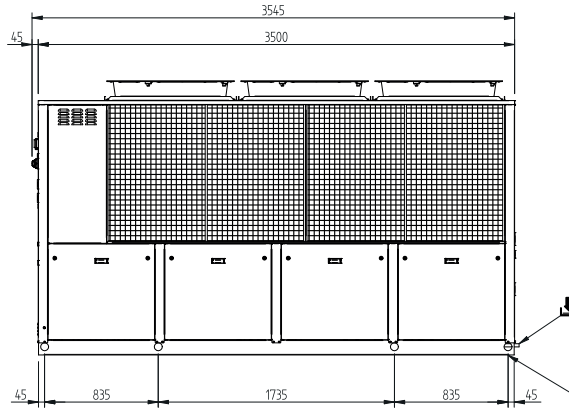
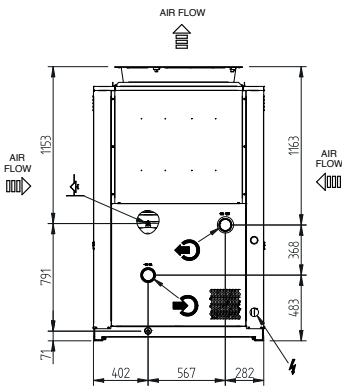
Air vent = Rp 1/2"

Water discharge = Rp 1/2"

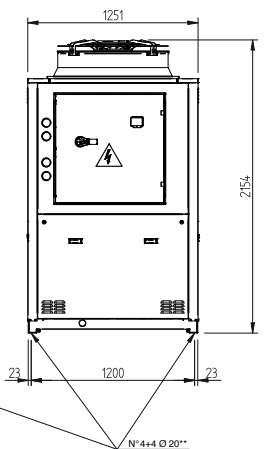
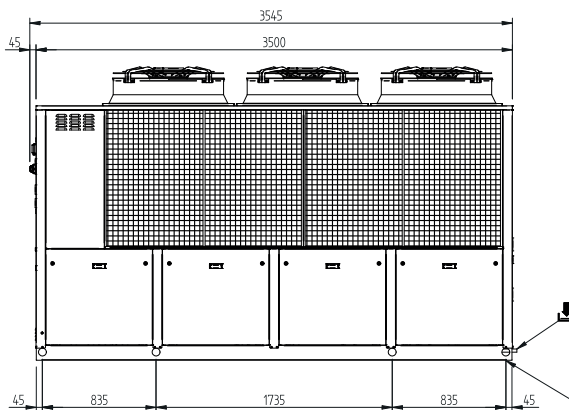
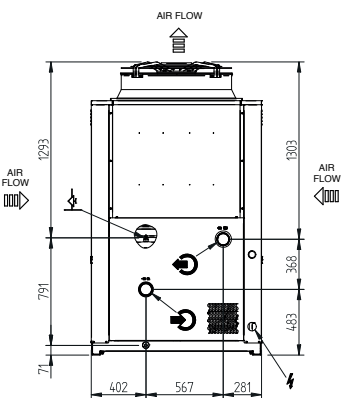
### TAEvo Tech 702 - 802 axial fans





### TAEvo Tech 702 - 802 high pressure axial fans





### TAEvo Tech 702 - 802 axial fans HE version



	702	802
 Water inlet	Rp 3"	Rp 3"
 Water outlet	Rp 3"	Rp 3"

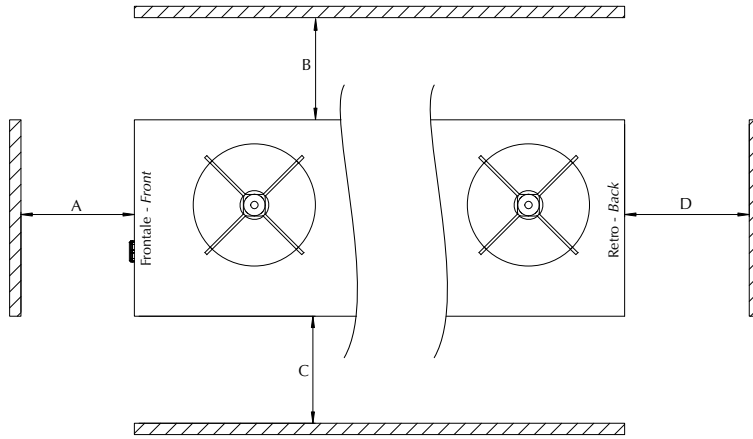
\*\* Holes

 Power supply

 Air vent = Rp 1/2"

 Water discharge = Rp 1/2"

# CLEARANCES



Minimum distance to respect (mm).

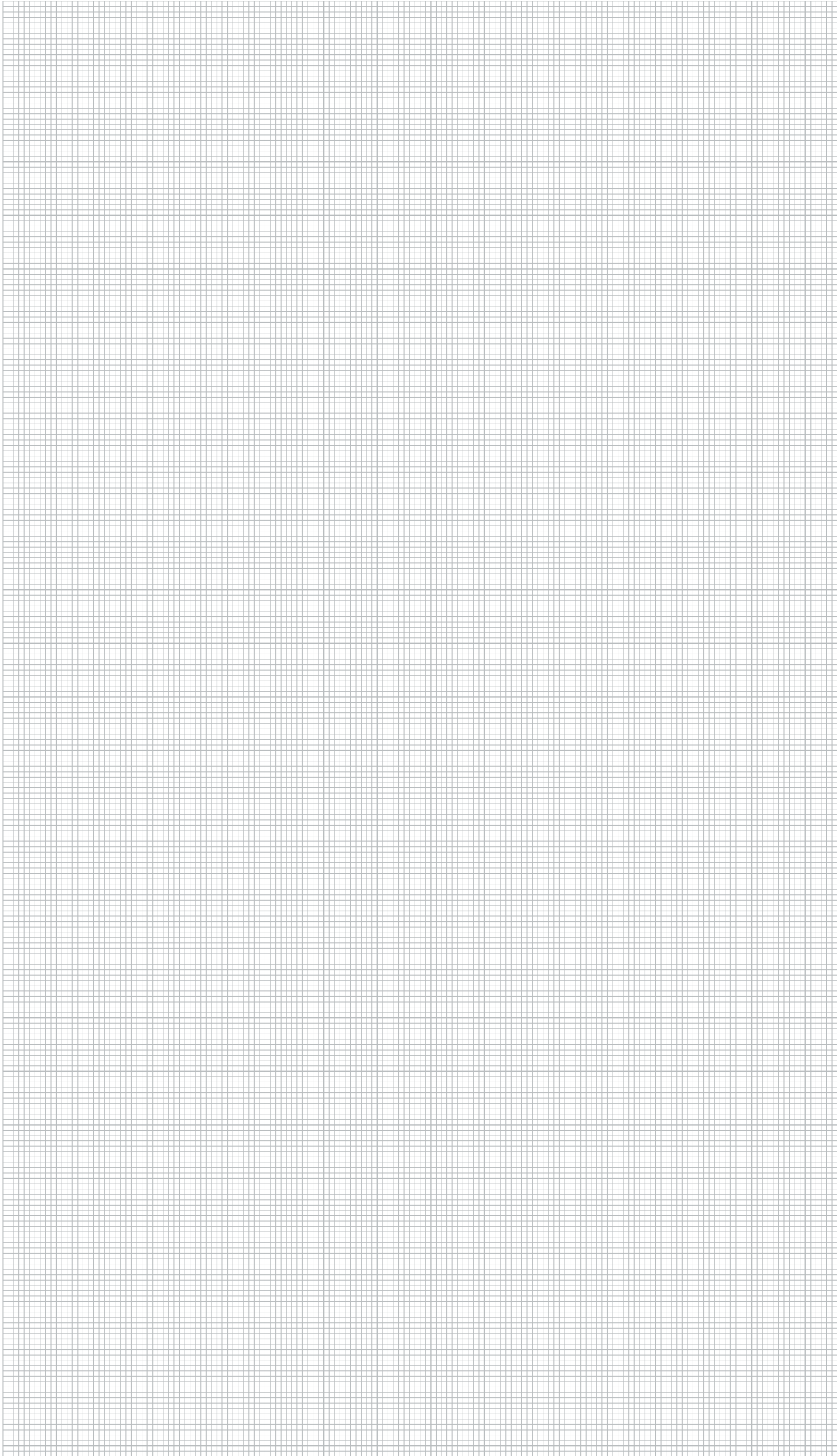
		A	B	C	D
Axials / High pressure axials	TAE <sub>evo</sub> Tech 015	1000	0	1000	1100
	TAE <sub>evo</sub> Tech 020	1000	0	1000	1100
	TAE <sub>evo</sub> Tech 031	1000	0	1000	1100
	TAE <sub>evo</sub> Tech 051	1000	0	1000	1100
	TAE <sub>evo</sub> Tech 081	1000	0	1000	1100
	TAE <sub>evo</sub> Tech 101	1000	0	1000	1100
	TAE <sub>evo</sub> Tech 121	1000	0	1000	1100
	TAE <sub>evo</sub> Tech 161	1000	0	1000	1100
	TAE <sub>evo</sub> Tech 201	1200	1200	2000	2000
	TAE <sub>evo</sub> Tech 251	1200	1200	2000	2000
	TAE <sub>evo</sub> Tech 301	1200	1200	2000	2000
	TAE <sub>evo</sub> Tech 351	1200	1200	2000	2000
	TAE <sub>evo</sub> Tech 381	1200	1200	2000	2500
	TAE <sub>evo</sub> Tech 401	1200	1200	2000	2500
	TAE <sub>evo</sub> Tech 402	1200	1200	2000	2500
TAE <sub>evo</sub> Tech 502	1200	1200	2000	2500	
TAE <sub>evo</sub> Tech 602	1200	1200	2000	2500	
TAE <sub>evo</sub> Tech 702	1200	1500	1500	2500	
TAE <sub>evo</sub> Tech 802	1200	1500	1500	2500	
Centrifugals	TAE <sub>evo</sub> Tech 031	1000	0	1000	1100
	TAE <sub>evo</sub> Tech 051	1000	0	1000	1100
	TAE <sub>evo</sub> Tech 081	1000	0	1000	1100
	TAE <sub>evo</sub> Tech 101	1000	0	1000	1100
	TAE <sub>evo</sub> Tech 121	1000	0	1000	1100
	TAE <sub>evo</sub> Tech 161	1000	0	1000	1100
HE	TAE <sub>evo</sub> Tech 031	1000	0	1000	1100
	TAE <sub>evo</sub> Tech 051	1000	0	1000	1100
	TAE <sub>evo</sub> Tech 081	1000	0	1000	1100
	TAE <sub>evo</sub> Tech 121	1000	0	1000	1100
	TAE <sub>evo</sub> Tech 201	1200	1200	2000	2000
	TAE <sub>evo</sub> Tech 251	1200	1200	2000	2000
	TAE <sub>evo</sub> Tech 301	1200	1200	2000	2000
	TAE <sub>evo</sub> Tech 381	1200	1200	2000	2500
	TAE <sub>evo</sub> Tech 402	1200	1200	2000	2500
	TAE <sub>evo</sub> Tech 502	1200	1200	2000	2500
	TAE <sub>evo</sub> Tech 702	1200	1500	1500	2500
	TAE <sub>evo</sub> Tech 802	1200	1500	1500	2500

## INSTALLATION GUIDE

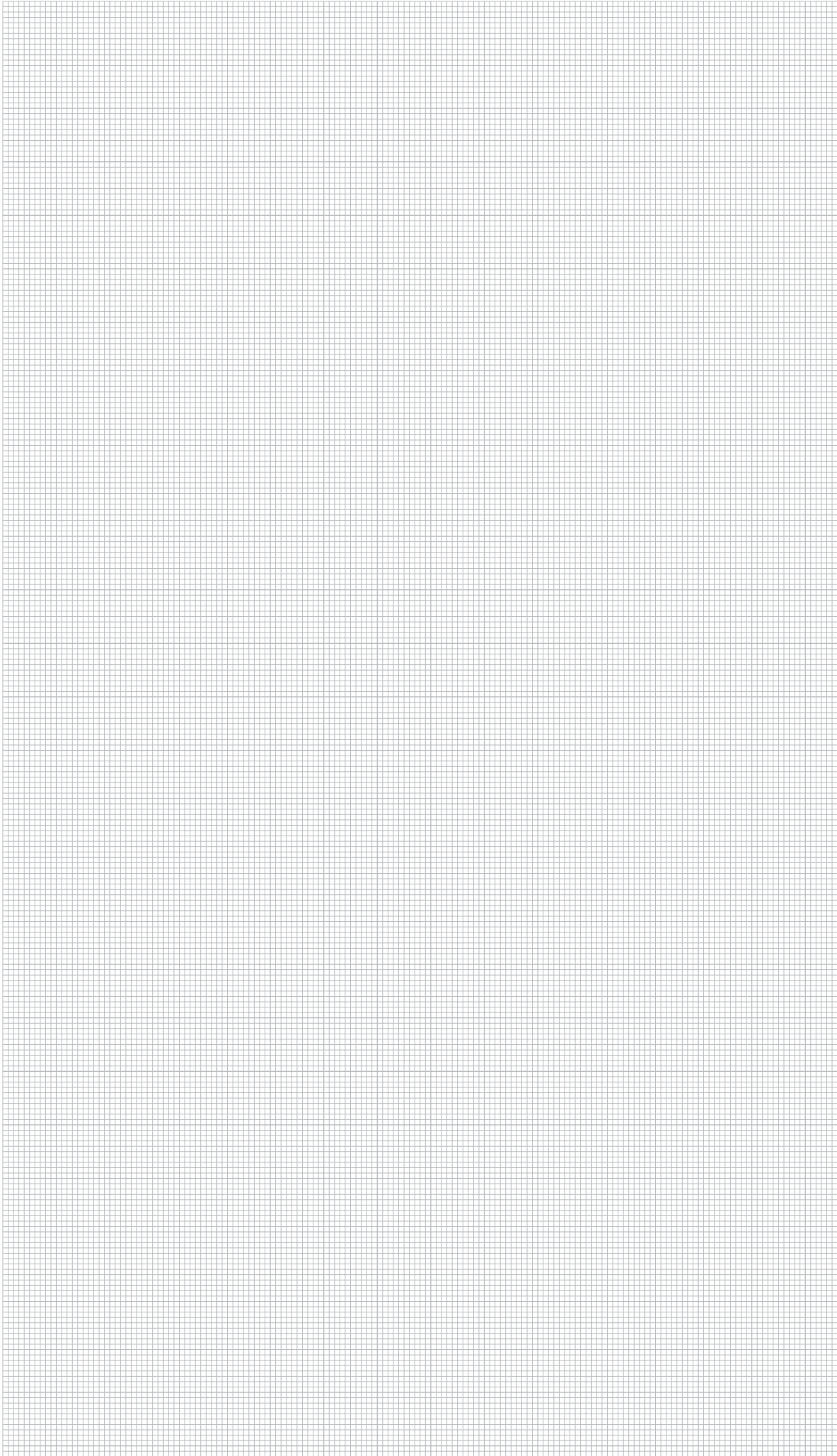
The chillers must be installed in compliance with the following indications:

- 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.













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MTA products comply with European safety directives, as recognised by the CE symbol.



MTA participates in the E.C.C. programme for LCP-HP. Certified products are listed on: www.eurovent-certification.com. Eurovent Certification applied to the units:  
- Air/Water with cooling capacity up to 600 kW  
- Water/Water up to 1500 kW



EAC Declaration



Cooling, conditioning, purifying.