

TWE^{even}_{TECH}

ErP 
Tier 2
COMPLIANT 

Water cooled industrial chillers with Scroll compressors and R410A refrigerant
Nominal cooling capacity 12,4 – 191,7 kW



*Cooling your industry,
optimising your process.*



Cooling, conditioning, purifying.



TWE^{ev}in TECH

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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

TECHNICAL SPECIFICATIONS

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1. General

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

All the TWEevo 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 TWEevo 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 TWEevo Tech units are equipped with plate condenser (mod. 031-161) and shell & tube condenser (mod. 201-802) with scroll compressors installed on one refrigerant circuit (mod. 031-401) and two refrigerant circuits (mod. 402-802). The refrigerant used is R410A.

Management of the TWEevo 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 TWEevo Tech units are available in standard version with power supply 400V/3/50 Hz and in the 460V/3/60 Hz UL. The degree of electrical protection is IP54.

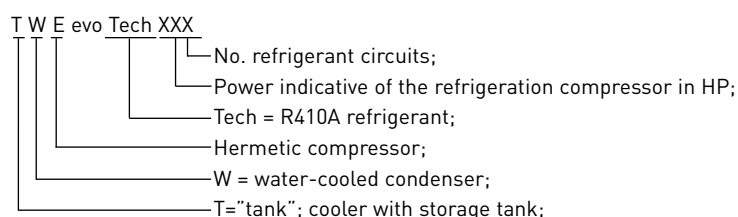
In order to satisfy every specific system needs TWEevo Tech chillers are available also in Non Ferrous Version, (mod. 031-351) suitable to treat fluids with corrosive effect on carbon steel.

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

- Electromagnetic Compatibility Directive 2004/108/CE;
- Machine Directive 2006 42;
- Pressure Equipment Directive 2014/68/EU (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).

2. Nameplate



3. Versions

TWEevo 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).

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 TWEevo Tech units as standard can be summarised as follows:

Non Ferrous Version (Mod. 031-351)

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).

- 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

POWER SUPPLY:

- 400V/3/50Hz: standard
- 460V-3-60Hz UL certification (see dedicated documentation)

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 031-351)

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)

CONDENSING CONTROL:

- ABSENT (standard)
- TOWER
- WELL

DIFFERENTIAL HYDRAULIC BY-PASS VALVE - EVAPORATOR SIDE:

- ABSENT (standard)
- PRESENT (MOD. 031-351 e 402-602)

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

Configuration	Configuration not available with the following options:
Double pumps: P3+P3 / P5+P5	Mod. 031 - 161
Electronic expansion valve	Mod. 031 - 051
Differential hydraulic by-pass valve	Mod. 381-401-702-802
	P3+P3 / P5 +P5 / SP
Soft starter	Mod. 031-351

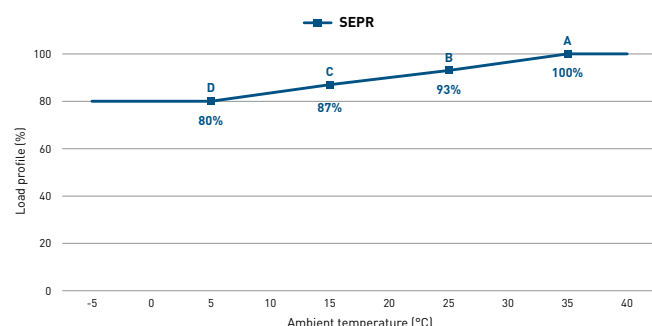
7. Compressor

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 valve, 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 models 201-802 use two compressors connected in parallel for each circuit and, using the "unloading" function, allows the start-up and the operation of the machine even even in condition far from the nominal ones.

The entire range has been built with the focus on maximising the seasonal energy performance ratio both for high temperature process cooling SEPR HT (Tw 12/7 °C) and for medium temperature process cooling SEPR MT (Tw -2/-8 °C).

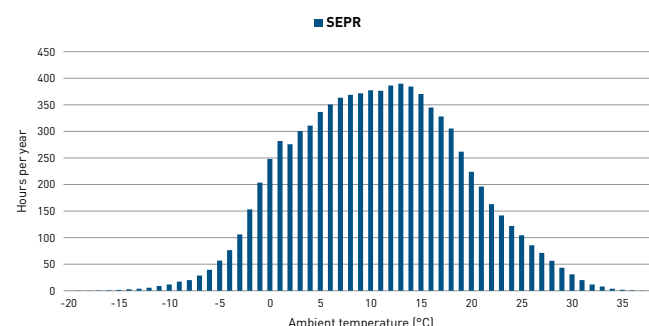


SEPR HT

The Seasonal Energy Performance Ratio High Temperature (SEPR HT), used in the European design context, expresses the ratio between the cooling demand and the total absorbed power of the unit during the entire year of operation, considering the maximum operating load point (Tw evaporator 12/7 °C Tw condenser 30/35 °C) and the three partial load points. The higher the SEPR HT value is, the more energy efficient of the unit will be, considering the annual process cooling context with outlet water temperature 7 °C.

SEPR MT

The Seasonal Energy Performance Ratio Medium Temperature (SEPR MT), used in the European design context, expresses the ratio between the cooling demand and the total absorbed power of the unit during the entire year of operation, considering the maximum operating load point (Tw evaporator -2/-8 °C Tw condenser 30/35 °C) and the three partial load points. The higher the SEPR MT value is, the more energy efficient of the unit will be, considering the annual process cooling context with outlet water temperature 8 °C.



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 TWEevo 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.

9. Condensers

The water cooled condensers, one for each cooling circuit, are plate type in stainless steel brazed with copper tubes (mod. 031 - 161) and shell & tube type in carbon steel and copper tubes (mod. 201 - 802). All the condensers are optimized for the use of the R410A refrigerant. The installation of the water filters (suitable to intercept any debris) at the condenser inlet, is at customer charge.

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 TWEevo 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.

In case that the water cooling inlet temperature to the condenser is lower than the minimum value specified in the operating range table (see page 25), it is necessary to provide the servo-driven modulating valves or the pressure control valves (see page 26).

10. Refrigeration circuit

The refrigeration circuit comprises:

- **Electronic expansion valve.**
- **Filter-dryer hygroscopic molecular sieves:** it retains the impurities and any traces of moisture present in the refrigeration circuit.
- **Liquid refrigerant and humidity flow indicator:** installed on the liquid line, it enables checking of the correct charge of refrigerant gas (presence of bubbles) and for any moisture in the refrigerant circuit.
- **High and low pressure refrigerant pressure gauges:** they are installed on the frontal panel.
- **HP High pressure and LP low pressure refrigerant pressure switches.**

11. Structure and casing

Units from model 031 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 to support the outer panelling. The plinth, uprights and all outer panels and/or enclosure panels are

- **High pressure transducer:** mod. 402-802. The mod.031-401 are equipped with HP transducer in conjunction with with modulating valve. In this case the pressure transducer is used both for adjusting the modulating valve and the unloading management.

- **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.

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.

12. 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 TWEevo 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.

13. Electrical panel

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

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. The unit's controller is mounted on the door, and it is protected by an openable transparent

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).

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, 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

14. Control and safety devices

High pressure transducer: mod. 402-802. The mod.031-401 are equipped with HP transducer in conjunction with with modulating valve. 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 modulating valve, 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 (for the management of the anti freezing heaters and of the dynamic set point function).

15. Microprocessor control standard version

In mod. 031 ÷ 351 the IC208CXI is installed on the cabinet door, while in models 381 ÷ 802 the electronic controller is internally secured to the electrical panel and on the door of the control panel is located a semi-graphic LCD display. Thanks to the control menu it is possible to visualize the working conditions, the parameters and the possible alarms.



IC208CX (mod. 031-351)



semi-graphic LCD display (mod. 381-802)

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;

16. Options, kits and special designs

16.1 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

the microprocessor circuitboards. A voltage-free general alarm contact plus fitting for remote ON/OFF are also available.

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.

Conductive point level sensor: installed in the tank where it is used to shutdown the unit if an insufficient water level is detected.

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. 16.1).

- Management of the automatic rotation of the starting sequence of compressors for equalisation of the operating times for each compressor (mod. 201-802);
- Dynamic set point function: the microprocessor allows the operating setpoint to be modified by adding or subtracting a coefficient proportional to the external air temperature;
- Measurement and display of the condensation pressure (Mod. 402-802 or mod.031-401 if equipped with modulating valve);
- Unloading function in the two-circuit units (mod. 402-802 or mod.031-401 if equipped with modulating valve), 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.

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;
- **VERSION WITHOUT PUMP:** includes the provision for electric power of an external pump equivalent to a P3.
- **POWER SUPPLY 460V/3/60 Hz UL certification:** see relative documentation.
- **SOFT STARTERS (mod. 381-802):** they allow the reduction of the inrush current during compressor start-up. These devices thus allow to preserve the compressors from mechanical stress, resulting in reduction of maintenance and downtime. The soft starters are not compatible with capacitive elements. Any power

factor correction systems should not work simultaneously at start of the soft starter. This accessory is installed at the factory, so it must be specified when ordering.

- **CONDENSING PRESSURE CONTROL:** each model can be equipped with condensation control valves located inside the carpentry and suitable for operation with "water tower" (temperature difference between inlet and outlet water to the condenser of about 5 °C) or with "well water" (temperature difference between the condenser water inlet and outlet of about 10 °C) (see the pressostatic valves/2 way modulating valves list pag. 28).
- **AUTOMATIC HYDRAULIC BY-PASS (mod. 031-351, 402-602):** this option features an adjustable pressure relief valve with proportional operating characteristics in gunmetal. The valve is intalled inside the carpentry.

16.2 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.

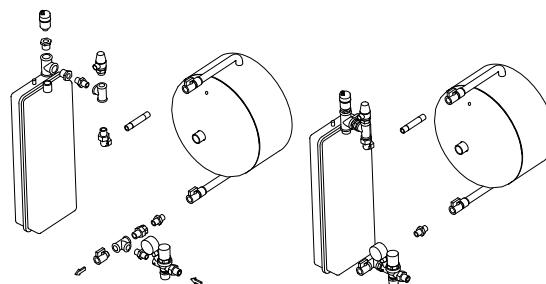
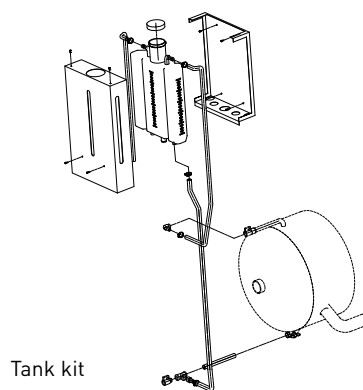
- **AUTOMATIC FILLING KIT HYDRAULIC CIRCUIT:** the automatic filling kit provides automatic filling of pressurised circuits (closed hydraulic circuits). Kit composition:
 - pressure reducer with valve;
 - pressure gauge;
 - automatic bleed valve;
 - pressure relief valve;
 - expansion tank;
 - preassembled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

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

- **CONDENSING CONTROL VALVE KIT:** available for all models, depending on the configuration TOWER / WELL includes a pressure valve or one or more modulating valves.

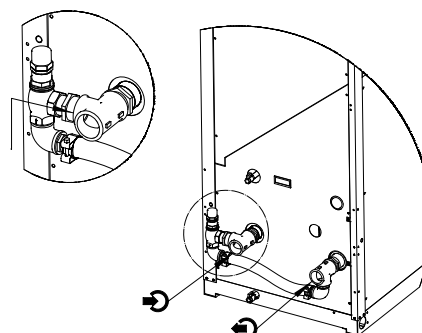
- **GLYCOL FILLING KIT:** this kit can be used for filling the hydraulic circuit manually, it is composed by a polyethylene pipe with hermetic plug and brass fittings.

- **HYDRAULIC CONNECTIONS KITS:** this kit allows the conversion of the standard thread GAS UNI ISO 7/1 (BSP) to the NPT FANSIB1.20.1.



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

- **DIFFERENTIAL HYDRAULIC BY-PASS KIT - evaporator side.** This kit features an adjustable pressure relief valve with proportional operating characteristics in gunmetal.



• **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 (mod. 031-351):** this kit makes it possible to remotise all functions of the unit's onboardelectronic 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 VGI890 LCD DISPLAY (mod. 031-351): 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 VGI890

• **ADAPTER KIT FOR REMOTE TERMINALS VICX620 and VGI890 (mod.381-802)**

• **SUPERVISOR KIT xWEB300D EVO**

xWE300D EVO is a system to monitor, control and supervise up to 247 units equipped with IC208CX/IC121C/IC121CX/IC281L controllers

(with the RS485 kit installed on the unit) or xDRIVE.

Kit composition:

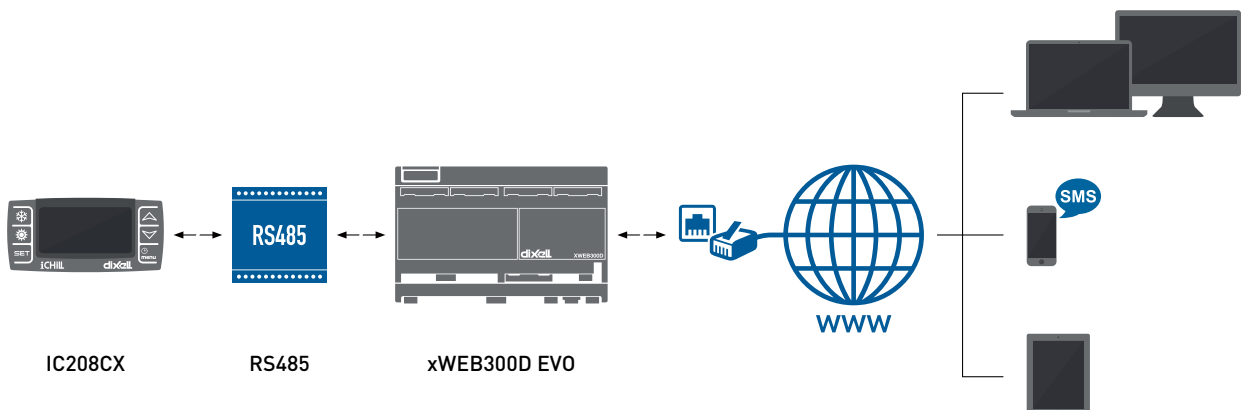
- xWEB300D EVO;
- Quick connection guide;
- USB with manuals.

With the use of a web browser (Internet Explorer®, Google Chrome®, Safari® or Firefox®), it is possible to access to the xWEB300D EVO web page, to display all the device data, to manage the parameters and alarms and to view the operating graphics.

xWEB300D EVO 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 devices connection (MODBUS - RTU);
- 1 USB port for stored data download;
- 4Gbit Flash memory and 64MB RAM for data storage;
- E-mail notification available for alarms.

Depending on the connection availability, xWEB300D EVO could send e-mail (in case of alarm) and connect to PDA or smartphone. Internet connection (via LAN or external GPRS modem) is required for remote access.



• 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

• **KIT CONVERTER RS485:** The kit features a serial key XJ485CX + a serial cable CAB/RS 5 pin 20 cm long. This kit is necessary for each unit included in a MASTER/SLAVE system managed by a Modularity kit for IC208CX.

• **MODULARITY FOR IC208CX:** the kit includes a programmable microprocessor (MASTER) installed inside an electric panel (IP54 protection grade and power supply 230V / 1ph / 50Hz-60Hz) and includes a semi-graphic LCD backlit VISOGRAPH VGI890. Through the installation of the modularity kit and a converter RS485 kit for each unit is possible modularity from 2 to 5 units (SLAVE).

17. 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.

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

- 1) Ensure that the operating limits specified in the "Working limits" table are complied with".
- 2) Ensure that the flow rate of water to be cooled is between the flow values specified in the "General Data" table of each unit; excessively low flow rates will result in laminar flow and, consequently, a risk of freezing and poor temperature control; in contrast, excessively high flow rates lead to excessive load drops and possible bursting of evaporator piping.
- 3) Add ethylene glycol or other antifreeze liquids when using the chiller at water outlet temperatures below 5 °C; consult the "Water and ethylene glycol solutions" table to find the quantity of ethylene glycol required and to assess the reduction in cooling duty, the increase in compressor power input, and the increase in evaporator pressure drops due to the presence of ethylene glycol.

PERFORMANCE AND TECHNICAL DATA

GENERAL DATA

		031	051	081	101	121	161	201	251
Cooling capacity (1)	kW	10,27	15,21	26,77	30,20	38,39	44,19	51,62	57,37
Total absorbed power (1)	kW	2,37	3,53	6,24	7,05	9,12	10,46	12,98	14,75
EER (1)	-	4,33	4,31	4,29	4,28	4,21	4,22	3,98	3,89
SEPR HT (2)	-	7,39	7,65	7,43	7,42	7,12	7,09	7,54	7,43
SEPR MT (3)	-	3,84	4,18	4,12	4,13	4,06	4,19	4,31	4,34
Cooling capacity (4)		12,39	18,28	31,71	35,30	44,16	51,57	60,94	67,56
Total absorbed power (4)		2,66	4,09	6,99	7,91	10,29	11,84	14,68	16,70
EER (4)		4,66	4,47	4,54	4,46	4,29	4,36	4,15	4,05

Compressor

Cooling circuits	N°	1	1	1	1	1	1	1	1
Compressors for each circuit	N°	1	1	1	1	1	1	2	2
Capacity control	%	0-100	0-100	0-100	0-100	0-100	0-100	0-50-100	0-50-100

Electrical power supply (5)

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
Condenser type	-	plate						shell and tube	
Min/max waterflow condenser	m³/h	1,6 / 7,5	1,6 / 7,5	3,2 / 11,0	3,2 / 11,0	4,3 / 11,0	4,3 / 11,0	7,0 / 25,7	7,0 / 25,7
Secondary water connections	Rp	1 1/4"	1 1/4"	1 1/2"	1 1/2"	1 1/2"	1 1/2"	2"	2"

Hydraulic group

Water flow rate P3 (6)	m³/h	0,9/6,0	0,9/6,0	1,9/9,6	2,1/9,6	2,6/18,0	3,2/18,0	3,4/18,0	3,4/18,0
Available pump head pressure P3 (7)	barg	3,1/1,6	3,0/1,5	3,0/1,3	2,9/1,3	2,8/1,7	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	1,85
Water flow rate P5 (6)	m³/h	0,7/4,8	0,9/4,8	1,9/12,6	2,1/12,6	2,6/12,6	3,2/12,6	3,4/21,6	3,4/21,6
Available pump head pressure P5 (7)	barg	5,3/3,3	5,2/3,3	5,2/3,2	5,2/3,6	5,2/3,6	5,1/3,7	5,2/3,5	5,2/3,5
Nominal power P5	kW	1,1	1,1	2,2	2,2	2,2	2,2	4	4
Tank volume	l	115	115	140	255	255	255	350	350
Max pressure	barg	6	6	6	6	6	6	6	6
Primary water connections	Rp	1"	1"	1 1/2"	1 1/2"	1 1/2"	1 1/2"	2"	2"

Sound levels (8)

Sound power	dB (A)	68,0	76,3	70,4	76,0	77,5	78,2	78,0	79,0
Sound pressure	dB (A)	40,0	48,3	42,4	48,0	49,5	50,2	50,0	51,0

Dimensions and installed weight (9)

Width	mm	660	660	760	760	760	760	865	865
Length	mm	1310	1310	1865	1865	1865	1865	2255	2255
Height	mm	1265	1265	1310	1310	1310	1310	1930	1930
Weight without pump	kg	303	323	466	633	632	653	968	1050
Weight with P3	kg	315	335	479	646	649	670	985	1067
Weight with P5	kg	320	340	492	659	658	679	1022	1104
Weight with double P3	kg	/	/	/	/	/	/	1002	1084
Weight with double P5	kg	/	/	/	/	/	/	1076	1158

- (1) Evaporator water inlet/outlet temperature 12/7 °C, condenser water inlet/outlet temperature 30/35 °C;
 (2) Data declared in compliance with the European Regulation (EU) 2016/2281 with regard to ecodesign requirements for cooling products and high temperature process chillers;
 (3) Data declared in compliance with the European Regulation (EU) 2015/1095 with regard to ecodesign requirements for cooling products and medium temperature process chillers;
 (4) Evaporator water inlet/outlet temperature 20/15 °C, condenser water inlet/outlet temperature 35/40 °C;
 (5) Protection class IP 54;
 (6) Minimum and maximum water flow pump;
 (7) Available head pressure at outlet unit at the minimum and maximum water flow rate;
 (8) 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;
 (9) The operating weights indicated are refers to the water filled systems.
 Data declared according to UNI EN 14511:2018. All data refers to standard units without accessories/options witch require an electrical feeding source and in nominal working conditions. The data declared in this document anticipate those that will be published in the next release Eurovent on november.

GENERAL DATA

		301	351	381	401	402	502	602	702	802
Cooling capacity (1)	kW	65,54	75,77	82,61	94,93	101,60	113,06	127,25	150,64	167,75
Total absorbed power (1)	kW	17,25	20,49	21,73	25,69	25,74	29,30	34,18	39,18	43,65
EER (1)	-	3,80	3,70	3,80	3,70	3,95	3,86	3,72	3,84	3,84
SEPR HT (2)	-	7,09	7,01	7,05	7,05	7,45	7,38	7,04	7,45	7,23
SEPR MT (3)	-	4,26	4,22	4,29	4,22	4,26	4,33	4,19	4,57	4,53
Cooling capacity (4)		76,93	88,84	97,87	112,82	118,39	132,21	147,83	172,06	191,69
Total absorbed power (4)		19,60	23,24	24,71	29,31	29,20	33,22	38,89	44,19	49,27
EER (4)		3,93	3,82	3,96	3,85	4,05	3,98	3,80	3,89	3,89

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	0-22-50-72-100			

Electrical power supply (5)

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	2	2	2	2	2
Condenser type	-	shell and tube								
Min/max waterflow condenser	m³/h	8,0 / 31,3	11,0 / 44,3	11,0 / 44,3	12,0 / 49,9	7,0 / 27,9	7,0 / 27,9	7,5 / 28,1	9,0 / 35,0	11,0 / 44,3
Secondary water connections	Rp	2"	2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	3"	3"

Hydraulic group

Water flow rate P3 (6)	m³/h	4,8/20,0	5,6/20,0	7,2/36,0	8,0/36,0	6,6/36,0	8,1/36,0	9,0/36,0	12,5/56,0	14,9/56,0
Available pump head pressure P3 (7)	barg	3,5/2,2	3,5/2,2	3,5/1,9	3,5/1,9	3,5/2,1	3,5/2,1	3,5/2,1	3,3/2,0	3,3/2,0
Nominal power P3	kW	2,2	2,2	4	4	4	4	4	5,5	5,5
Water flow rate P5 (6)	m³/h	4,8/21,6	5,6/21,6	7,2/42,0	8,0/42,0	6,6/42,0	8,1/42,0	9,4/42,0	12,5/72,0	14,9/72,0
Available pump head pressure P5 (7)	barg	5,2/3,5	5,1/3,4	5,3/3,6	5,3/3,6	5,3/3,9	5,3/3,9	5,3/3,9	5,1/2,7	5,1/2,7
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
Primary water connections	Rp	2"	2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	2 1/2"	3"	3"

Sound levels (8)

Sound power	dB [A]	80,6	82,2	83,0	86,0	81,6	83,1	84,4	85,5	86,5
Sound pressure	dB [A]	52,6	54,2	55,0	58,0	53,6	55,1	56,4	57,5	58,5

Dimensions and installed weight (9)

Width	mm	865	865	1150	1150	1255	1255	1255	1251	1251
Length	mm	2255	2255	2790	2790	3295	3295	3295	3550	3550
Height	mm	1930	1930	2020	2020	2050	2050	2050	1870	1870
Weight without pump	kg	1062	1066	1407	1481	1697	1744	1783	2260	2285
Weight with P3	kg	1101	1105	1449	1523	1744	1791	1830	2314	2339
Weight with P5	kg	1116	1120	1473	1547	1776	1823	1862	2337	2362
Weight with double P3	kg	1140	1144	1491	1565	1791	1838	1877	2368	2393
Weight with double P5	kg	1170	1174	1539	1613	1855	1902	1941	2414	2439

- (1) Evaporator water inlet/outlet temperature 12/7 °C, condenser water inlet/outlet temperature 30/35 °C;
 (2) Data declared in compliance with the European Regulation (EU) 2016/2281 with regard to ecodesign requirements for cooling products and high temperature process chillers;
 (3) Data declared in compliance with the European Regulation (EU) 2015/1095 with regard to ecodesign requirements for cooling products and medium temperature process chillers;
 (4) Evaporator water inlet/outlet temperature 20/15 °C, condenser water inlet/outlet temperature 35/40 °C;
 (5) Protection class IP 54;
 (6) Minimum and maximum water flow pump;
 (7) Available head pressure at outlet unit at the minimum and maximum water flow rate;
 (8) 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;
 (9) The operating weights indicated are refers to the water filled systems.

Data declared according to UNI EN 14511:2018. All data refers to standard units without accessories/options which require an electrical feeding source and in nominal working conditions. The data declared in this document anticipate those that will be published in the next release Eurovent on november.-

ELECTRICAL DATA

Model	Version	Hz	FLI (kW)	FLA (A)	ICF1 (A)
031	SP	50	7,2	4,4	43
	P3	50	9,0	5,4	45
	P5	50	11	6,2	46
051	SP	50	10	6,6	67
	P3	50	12	7,5	69
	P5	50	14	8,3	70
081	SP	50	18	11	142
	P3	50	21	12	144
	P5	50	25	14	148
101	SP	50	20	12	142
	P3	50	22	13	144
	P5	50	26	15	148
121	SP	50	26	15	158
	P3	50	30	17	162
	P5	50	32	19	164
161	SP	50	29	17	197
	P3	50	33	19	201
	P5	50	36	21	203
201	SP	50	37	21	160
	P3	50	41	23	164
	P5	50	45	26	169
251	SP	50	40	24	162
	P3	50	44	26	166
	P5	50	49	28	171
301	SP	50	45	27	178
	P3	50	50	30	183
	P5	50	54	32	187
351	SP	50	55	32	223
	P3	50	60	35	227
	P5	50	64	37	231
381	SP	50	59	34	226
	P3	50	66	39	234
	P5	50	72	43	240
401	SP	50	68	41	244
	P3	50	76	45	252
	P5	50	82	49	258
402	SP	50	73	42	197
	P3	50	81	47	204
	P5	50	87	51	210
502	SP	50	80	47	202
	P3	50	87	52	209
	P5	50	93	55	215
602	SP	50	91	54	223
	P3	50	98	58	231
	P5	50	104	62	237
702	SP	50	102	61	235
	P3	50	113	67	245
	P5	50	119	71	252
802	SP	50	117	69	285
	P3	50	128	75	295
	P5	50	134	79	302

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;

ICF1 = Start-up current at the start of the last compressor in the working limits condition.

SOUND LEVELS

Model	Octave bands (Hz)								Power	Pressure	Distance	KdB
	63	125	250	500	1000	2000	4000	8000				
	Sound power level L _w dB [A]								dB [A]	dB [A] _{10 m}	(1) L (m)	
031	26,7	20,9	36,3	58,0	62,5	63,1	58,2	61,6	68,0	40,0	1	15
051	33,6	33,8	49,2	67,9	70,5	71,5	65,3	69,9	76,3	48,3	3	10
081	28,0	27,3	43,1	62,6	65,1	66,2	59,6	61,2	70,4	42,4	5	6
101	33,6	32,9	48,7	68,2	70,7	71,8	65,2	66,8	76,0	48,0	10	0
121	39,1	36,5	48,0	70,8	70,2	72,7	70,9	67,4	77,5	49,5		
161	34,0	33,6	54,6	70,5	72,1	73,7	70,9	67,4	78,2	50,2		
201	35,5	34,8	50,6	70,1	72,6	73,7	67,1	68,7	78,0	50,0		
251	36,6	35,9	51,7	71,2	73,7	74,8	68,2	69,8	79,0	51,0		
301	41,1	38,9	52,1	73,5	74,2	76,0	72,8	70,9	80,6	52,6		
351	41,6	39,7	57,0	75,1	75,7	77,7	75,3	71,8	82,2	54,2		
381	38,6	38,2	59,2	75,2	76,7	78,3	75,5	72,0	83,0	55,0		
401	43,4	43,0	61,5	79,5	80,7	80,1	78,6	71,6	86,0	58,0		
402	39,3	38,5	54,3	73,8	76,3	77,4	70,8	72,4	81,6	53,6		
502	40,8	40,0	55,8	75,3	77,8	78,9	72,3	73,9	83,1	55,1		
602	44,9	42,7	55,9	77,3	78,0	79,8	76,6	74,7	84,4	56,4		
702	45,8	43,6	56,7	78,2	78,9	80,7	77,5	75,6	85,5	57,5		
802	46,8	44,6	57,8	79,2	79,9	81,7	78,5	76,6	86,5	58,5		

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 DATA

031		Outlet water condenser temperature tc (°C)																		tc max (°C)
Glycol	tu (°C)	30			35			40			45			50			55			
		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)	
35%	-10	5,2	2,2	1,0	4,8	2,5	0,9	4,4	2,8	0,8	4,0	3,2	0,8							45
35%	-7	6,1	2,1	1,2	5,7	2,4	1,1	5,3	2,8	1,0	4,8	3,2	0,9							48
25%	-5	6,9	2,1	1,3	6,4	2,4	1,2	6,0	2,7	1,1	5,5	3,1	1,0	5,0	3,6	0,9				50
25%	-3	7,5	2,1	1,4	7,0	2,4	1,3	6,5	2,7	1,2	6,1	3,1	1,1	5,5	3,6	1,0				52
20%	0	8,5	2,1	1,5	7,9	2,4	1,4	7,4	2,7	1,4	6,9	3,1	1,3	6,4	3,5	1,2	5,8	4,1	1,1	55
20%	3	9,4	2,1	1,7	8,8	2,4	1,6	8,3	2,7	1,5	7,8	3,1	1,4	7,2	3,5	1,3	6,6	4,0	1,2	55
	5	10,3	2,1	1,8	9,7	2,4	1,7	9,1	2,7	1,6	8,5	3,1	1,5	7,9	3,5	1,4	7,3	4,0	1,2	55
	7	10,9	2,1	1,9	10,3	2,4	1,8	9,7	2,7	1,7	9,1	3,0	1,6	8,5	3,5	1,5	7,8	4,0	1,3	55
	9	11,6	2,1	2,0	10,9	2,4	1,9	10,3	2,7	1,8	9,7	3,0	1,7	9,0	3,4	1,6	8,4	3,9	1,4	55
	11	12,3	2,1	2,1	11,6	2,4	2,0	11,0	2,7	1,9	10,3	3,0	1,8	9,7	3,4	1,7	8,9	3,9	1,5	55
	13	13,1	2,1	2,3	12,3	2,4	2,1	11,7	2,7	2,0	11,0	3,0	1,9	10,3	3,4	1,8	9,5	3,9	1,6	55
	15	13,9	2,1	2,4	13,1	2,4	2,2	12,4	2,7	2,1	11,7	3,0	2,0	10,9	3,4	1,9	10,2	3,9	1,7	55
	17	14,8	2,1	2,6	14,0	2,4	2,4	13,2	2,7	2,3	12,5	3,0	2,1	11,7	3,4	2,0	10,9	3,9	1,9	55
	20	16,4	2,1	2,8	15,3	2,4	2,6	14,5	2,7	2,5	13,7	3,0	2,4	12,9	3,4	2,2	12,0	3,8	2,1	55

051		Outlet water condenser temperature tc (°C)																		tc max (°C)
Glycol	tu (°C)	30			35			40			45			50			55			
		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)	
35%	-10	8,0	3,0	1,5	7,5	3,5	1,4	6,9	4,0	1,3										44
35%	-7	9,3	3,0	1,8	8,7	3,5	1,7	8,1	4,0	1,6	7,5	4,5	1,5							47
25%	-5	10,4	3,0	1,9	9,7	3,5	1,8	9,1	4,0	1,7	8,4	4,5	1,6							49
25%	-3	11,2	3,1	2,1	10,5	3,5	2,0	9,9	4,0	1,8	9,3	4,5	1,7	8,5	5,2	1,6				51
20%	0	12,6	3,1	2,3	11,8	3,5	2,2	11,2	4,0	2,0	10,5	4,5	1,9	9,7	5,2	1,8				54
20%	3	13,9	3,1	2,5	13,1	3,5	2,4	12,4	4,0	2,3	11,6	4,6	2,1	10,8	5,2	2,0	9,9	6,0	1,8	55
	5	15,2	3,1	2,6	14,3	3,5	2,5	13,5	4,0	2,3	12,7	4,6	2,2	11,8	5,2	2,0	10,9	5,9	1,9	55
	7	16,2	3,1	2,8	15,2	3,5	2,6	14,4	4,0	2,5	13,5	4,5	2,3	12,6	5,2	2,2	11,7	5,9	2,0	55
	9	17,2	3,1	3,0	16,2	3,5	2,8	15,3	4,0	2,6	14,4	4,6	2,5	13,4	5,2	2,3	12,4	5,9	2,1	55
	11	18,2	3,2	3,1	17,1	3,6	2,9	16,3	4,0	2,8	15,3	4,6	2,6	14,3	5,2	2,5	13,3	5,9	2,3	55
	13	19,3	3,2	3,3	18,2	3,6	3,1	17,2	4,1	3,0	16,3	4,6	2,8	15,2	5,2	2,6	14,1	5,9	2,4	55
	15	20,5	3,2	3,5	19,3	3,6	3,3	18,3	4,1	3,1	17,3	4,6	3,0	16,2	5,2	2,8	15,0	5,9	2,6	55
	17	21,9	3,2	3,8	20,5	3,7	3,5	19,5	4,1	3,4	18,4	4,7	3,2	17,2	5,3	3,0	16,0	6,0	2,8	55
	20	24,0	3,3	4,1	22,6	3,7	3,9	21,4	4,2	3,7	20,2	4,7	3,5	19,0	5,3	3,3	17,7	6,0	3,0	55

tu: evaporator outlet water temperature (chiller); tc: condenser outlet water 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 14511:2018. All data refers to standard units without accessories/options which require an electrical feeding source and in nominal working conditions. The data declared in this document anticipate those that will be published in the next release Eurovent on november.

PERFORMANCE DATA

081		Outlet water condenser temperature tc (°C)																		tc max [°C]
		30			35			40			45			50			55			
Glycol	tu	Pf	Pa	Fw	Pf	Pa	Fw	Pf	Pa	Fw	Pf	Pa	Fw	Pf	Pa	Fw	Pf	Pa	Fw	
	[°C]	[kW]	[kW]	[m³/h]	[kW]	[kW]	[m³/h]	[kW]	[kW]	[m³/h]	[kW]	[kW]	[m³/h]	[kW]	[kW]	[m³/h]	[kW]	[kW]	[m³/h]	
35%	-10	15,7	5,4	3,0	14,7	5,9	2,8	13,9	6,6	2,7	13,0	7,4	2,5							46
35%	-7	17,6	5,4	3,4	16,5	6,0	3,2	15,6	6,6	3,0	14,5	7,4	2,8							49
25%	-5	19,1	5,5	3,5	17,9	6,0	3,3	16,9	6,7	3,1	15,9	7,4	2,9	14,8	8,3	2,7				51
25%	-3	20,4	5,5	3,8	19,2	6,1	3,6	18,1	6,7	3,4	17,0	7,4	3,2	15,9	8,3	2,9				52
20%	0	22,6	5,6	4,1	21,3	6,1	3,9	20,1	6,7	3,7	18,9	7,5	3,4	17,7	8,3	3,2	16,4	9,3	3,0	55
20%	3	24,8	5,6	4,5	23,2	6,2	4,2	22,1	6,8	4,0	20,8	7,5	3,8	19,5	8,3	3,5	18,1	9,3	3,3	55
	5	26,8	5,6	4,6	25,3	6,2	4,3	23,9	6,8	4,1	22,6	7,5	3,9	21,1	8,4	3,6	19,6	9,3	3,4	55
	7	28,4	5,6	4,9	26,8	6,2	4,6	25,4	6,9	4,4	23,9	7,6	4,1	22,5	8,4	3,9	20,9	9,3	3,6	55
	9	30,1	5,6	5,2	28,4	6,3	4,9	26,9	6,9	4,6	25,4	7,6	4,4	23,8	8,4	4,1	22,2	9,3	3,8	55
	11	31,8	5,6	5,5	30,0	6,3	5,2	28,5	6,9	4,9	26,9	7,7	4,6	25,3	8,5	4,3	23,5	9,4	4,0	55
	13	33,5	5,6	5,8	31,7	6,3	5,4	30,1	7,0	5,2	28,4	7,7	4,9	26,7	8,5	4,6	24,9	9,4	4,3	55
	15	35,3	5,5	6,1	33,3	6,3	5,7	31,7	7,0	5,5	30,0	7,7	5,2	28,2	8,6	4,9	26,3	9,5	4,5	55
	17	37,8	5,5	6,5	35,5	6,2	6,1	33,8	7,0	5,8	32,0	7,8	5,5	30,1	8,6	5,2	28,1	9,5	4,8	55
	20	41,4	5,3	7,1	39,1	6,2	6,7	37,3	7,0	6,4	35,1	7,8	6,0	33,0	8,7	5,7	30,9	9,6	5,3	55

101		Outlet water condenser temperature tc [°C]																		tc max [°C]
		30			35			40			45			50			55			
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)	
35%	-10	17,7	6,1	3,4	16,6	6,8	3,2	15,7	7,5	3,0	14,8	8,3	2,8							46
35%	-7	19,8	6,2	3,8	18,5	6,8	3,6	17,5	7,5	3,4	16,5	8,4	3,2							48
25%	-5	21,6	6,2	4,0	20,3	6,9	3,8	19,2	7,6	3,6	18,1	8,4	3,3	16,8	9,3	3,1				50
25%	-3	23,0	6,2	4,3	21,6	6,9	4,0	20,5	7,6	3,8	19,3	8,4	3,6	18,1	9,3	3,4				52
20%	0	25,5	6,3	4,6	24,0	7,0	4,4	22,7	7,7	4,1	21,4	8,5	3,9	20,1	9,4	3,7	18,7	10,4	3,4	55
20%	3	27,8	6,3	5,1	26,3	7,0	4,8	24,9	7,7	4,5	23,5	8,6	4,3	22,1	9,4	4,0	20,5	10,4	3,7	55
	5	30,3	6,3	5,2	28,6	7,0	4,9	26,9	7,8	4,6	25,5	8,6	4,4	23,9	9,5	4,1	22,3	10,5	3,8	55
	7	32,0	6,3	5,5	30,2	7,0	5,2	28,8	7,8	4,9	27,0	8,6	4,6	25,4	9,5	4,4	23,7	10,5	4,1	55
	9	33,9	6,3	5,8	31,9	7,1	5,5	30,3	7,8	5,2	28,6	8,7	4,9	26,8	9,6	4,6	25,1	10,6	4,3	55
	11	35,7	6,3	6,1	33,6	7,1	5,8	31,9	7,9	5,5	30,2	8,7	5,2	28,4	9,6	4,9	26,5	10,6	4,6	55
	13	37,5	6,3	6,4	35,3	7,1	6,1	33,6	7,9	5,8	31,8	8,8	5,5	29,9	9,7	5,1	28,0	10,7	4,8	55
	15	39,6	6,3	6,8	37,3	7,1	6,4	35,3	7,9	6,1	33,4	8,8	5,7	31,5	9,7	5,4	29,4	10,7	5,1	55
	17	42,2	6,2	7,3	39,7	7,1	6,8	37,5	7,9	6,5	35,8	8,8	6,2	33,5	9,8	5,8	31,4	10,8	5,4	55
	20	46,2	6,1	8,0	43,6	7,0	7,5	41,5	7,9	7,2	39,3	8,8	6,8	36,8	9,8	6,3	34,5	10,8	5,9	55

121		Outlet water condenser temperature tc [°C]																		tc max [°C]
		30			35			40			45			50			55			
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]	
35%	-10	22,4	7,8	4,3	21,0	8,6	4,1	19,9	9,5	3,8	18,8	10,4	3,6							45
35%	-7	24,8	7,9	4,8	23,4	8,7	4,5	22,2	9,6	4,3	20,9	10,6	4,0							48
25%	-5	27,1	8,0	5,0	25,5	8,8	4,7	24,2	9,7	4,5	22,8	10,7	4,2	21,4	11,7	4,0				50
25%	-3	29,1	8,0	5,4	27,2	8,9	5,0	25,8	9,8	4,8	24,4	10,8	4,5	22,9	11,8	4,2				52
20%	0	32,2	8,1	5,9	30,4	9,0	5,5	28,8	9,9	5,2	27,3	10,9	5,0	25,4	12,0	4,6				54
20%	3	35,1	8,2	6,4	33,2	9,0	6,0	31,5	10,0	5,7	29,8	11,0	5,4	28,0	12,1	5,1	26,1	13,3	4,8	55
	5	38,4	8,2	6,6	36,0	9,1	6,2	34,2	10,1	5,9	32,4	11,1	5,6	30,4	12,2	5,2	28,3	13,4	4,9	55
	7	40,3	8,2	6,9	38,4	9,1	6,6	36,2	10,1	6,2	34,2	11,2	5,9	32,2	12,3	5,5	30,0	13,5	5,2	55
	9	42,5	8,2	7,3	40,1	9,2	6,9	38,2	10,2	6,6	36,1	11,2	6,2	34,0	12,4	5,8	31,7	13,6	5,4	55
	11	44,7	8,2	7,7	42,4	9,2	7,3	40,2	10,2	6,9	38,0	11,3	6,5	35,8	12,5	6,1	33,4	13,7	5,7	55
	13	47,3	8,2	8,1	44,3	9,2	7,6	42,2	10,3	7,3	39,9	11,3	6,9	37,6	12,5	6,5	35,2	13,8	6,0	55
	15	49,5	8,2	8,5	46,4	9,2	8,0	44,2	10,3	7,6	41,9	11,4	7,2	39,4	12,6	6,8	36,9	13,8	6,3	55
	17	52,7	8,2	9,1	49,8	9,2	8,6	47,3	10,3	8,1	44,5	11,5	7,7	41,9	12,6	7,2	39,2	13,9	6,8	55
	20	57,7	8,2	10,0	54,5	9,3	9,4	51,8	10,4	8,9	49,1	11,5	8,5	46,2	12,7	8,0	43,0	14,0	7,4	55

161		Outlet water condenser temperature tc [°C]																		tc max [°C]
		30			35			40			45			50			55			
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]	
35%	-10	26,4	9,0	5,1	24,8	9,9	4,8	23,5	10,8	4,5	22,2	11,9	4,3							46
35%	-7	29,2	9,1	5,6	27,5	10,0	5,3	26,0	11,0	5,0	24,6	12,1	4,7							49
25%	-5	31,9	9,1	5,9	30,0	10,1	5,6	28,5	11,1	5,3	26,9	12,2	5,0	25,0	13,4	4,6				51
25%	-3	34,0	9,2	6,3	32,0	10,1	5,9	30,4	11,2	5,6	28,7	12,3	5,3	26,7	13,5	4,9				52
20%	0	37,5	9,2	6,8	35,3	10,3	6,4	33,5	11,3	6,1	31,7	12,5	5,8	29,7	13,7	5,4	27,7	15,0	5,0	55
20%	3	41,0	9,3	7,5	38,6	10,3	7,0	36,7	11,4	6,7	34,7	12,6	6,3	32,5	13,9	5,9	30,4	15,2	5,5	55
	5	44,3	9,4	7,6	41,9	10,4	7,2	39,5	11,5	6,8	37,5	12,7	6,4	35,2	14,0	6,0	32,8	15,4	5,6	55
	7	46,9	9,4	8,0	44,2	10,5	7,6	42,2	11,6	7,2	39,6	12,8	6,8	37,3	14,1	6,4	34,8	15,5	6,0	55
	9	49,5	9,5	8,5	46,7	10,5	8,0	44,4	11,6	7,6	41,9	12,9	7,2	39,3	14,1	6,8	36,8	15,6	6,3	55
	11	52,0	9,5	8,9	49,1	10,6	8,4	46,7	11,7	8,0	44,2	12,9	7,6	41,6	14,2	7,2	38,7	15,6	6,7	55
	13	55,1	9,5	9,5	51,6	10,6	8,9	49,1	11,8	8,5	46,5	13,0	8,0	43,8	14,3	7,5	41,0	15,8	7,0	55
	15	57,9	9,6	10,0	54,6	10,7	9,4	51,6	11,8	8,9	48,9	13,1	8,4	46,0	14,4	7,9	43,1	15,9	7,4	55
	17	61,6	9,7	10,6	58,1	10,7	10,0	54,8	11,9	9,4	52,0	13,2	9,0	49,0	14,5	8,4	45,9	16,0	7,9	55
	20	67,5	9,8	11,6	63,7	10,9	11,0	60,6	12,1	10,5	57,4	13,3	9,9	54,1	14,7	9,3	50,3	16,2	8,7	55

201		Outlet water condenser temperature tc (°C)																		tc max (°C)
		30			35			40			45			50			55			
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)	
35%	-10	30,2	11,0	5,8	28,3	12,2	5,4	26,6	13,6	5,1										44
35%	-7	33,6	11,1	6,5	31,5	12,3	6,1	29,7	13,6	5,7	27,8	15,3	5,4							47
25%	-5	36,6	11,2	6,8	34,3	12,4	6,4	32,4	13,7	6,0	30,4	15,3	5,6							49
25%	-3	39,2	11,3	7,3	36,7	12,5	6,8	34,7	13,8	6,4	32,6	15,3	6,0	30,3	17,1	5,6				51
20%	0	43,7	11,5	7,9	41,1	12,6	7,5	38,6	13,9	7,0	36,3	15,4	6,6	33,8	17,2	6,2				53
20%	3	47,8	11,6	8,7	45,0	12,8	8,2	42,6	14,0	7,8	40,1	15,5	7,3	37,3	17,2	6,8	34,5	19,2	6,3	55
	5	52,1	11,7	8,9	48,7	12,9	8,3	46,2	14,2	7,9	43,6	15,6	7,5	40,7	17,3	7,0	37,8	19,2	6,5	55
	7	54,8	11,8	9,4	51,6	13,0	8,9	49,0	14,3	8,4	46,2	15,8	7,9	43,2	17,4	7,4	40,2	19,3	6,9	55
	9	57,9	11,8	9,9	54,6	13,1	9,4	51,8	14,4	8,9	48,9	15,9	8,4	45,8	17,5	7,9	42,6	19,4	7,3	55
	11	61,4	11,8	10,5	57,5	13,1	9,9	54,6	14,5	9,4	51,6	16,0	8,9	48,4	17,6	8,3	45,1	19,5	7,7	55
	13	64,7	11,8	11,1	60,9	13,2	10,5	57,6	14,6	9,9	54,4	16,1	9,3	51,1	17,8	8,8	47,6	19,6	8,2	55
	15	68,1	11,8	11,7	64,2	13,2	11,0	60,9	14,7	10,5	57,2	16,2	9,8	53,8	17,9	9,3	50,2	19,8	8,6	55
	17	72,4	11,8	12,5	68,3	13,3	11,8	64,9	14,8	11,2	61,3	16,3	10,6	57,2	18,1	9,8	53,4	19,9	9,2	55
	20	79,2	11,7	13,7	74,8	13,3	12,9	71,1	14,9	12,3	67,3	16,5	11,6	63,2	18,2	10,9	59,0	20,1	10,2	55

251		Outlet water condenser temperature tc (°C)																		tc max [°C]
		30			35			40			45			50			55			
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]	
35%	-10	33,7	12,6	6,5	31,6	13,9	6,1	29,9	15,4	5,8										44
35%	-7	37,4	12,7	7,2	35,1	14,0	6,8	33,2	15,5	6,4	31,3	17,2	6,0							46
25%	-5	40,8	12,8	7,6	38,3	14,1	7,1	36,2	15,6	6,7	34,1	17,3	6,3							48
25%	-3	43,6	12,9	8,1	40,9	14,2	7,6	38,7	15,7	7,2	36,5	17,4	6,8	34,1	19,3	6,3				50
20%	0	48,6	13,0	8,9	45,4	14,4	8,3	43,0	15,9	7,8	40,5	17,6	7,4	37,9	19,4	6,9				53
20%	3	53,2	13,1	9,7	50,1	14,5	9,1	47,5	16,0	8,6	44,5	17,7	8,1	41,7	19,6	7,6	38,8	21,7	7,1	55
	5	57,7	13,2	9,9	54,3	14,7	9,3	51,5	16,2	8,8	48,6	17,9	8,3	45,6	19,7	7,8	42,2	21,8	7,2	55
	7	60,9	13,3	10,4	57,4	14,8	9,8	54,3	16,3	9,3	51,5	18,0	8,8	48,3	19,8	8,3	45,0	21,9	7,7	55
	9	64,2	13,4	11,0	60,6	14,8	10,4	57,5	16,4	9,9	54,4	18,1	9,3	51,1	20,0	8,8	47,7	22,0	8,2	55
	11	68,1	13,4	11,7	64,1	14,9	11,0	60,6	16,5	10,4	57,4	18,2	9,9	53,9	20,1	9,3	50,4	22,1	8,7	55
	13	71,8	13,4	12,3	67,6	15,0	11,6	64,2	16,6	11,0	60,4	18,4	10,4	56,8	20,2	9,8	53,1	22,3	9,1	55
	15	75,5	13,5	13,0	71,1	15,0	12,2	67,6	16,7	11,6	63,9	18,4	11,0	59,8	20,4	10,3	55,9	22,4	9,6	55
	17	80,3	13,5	13,8	75,7	15,1	13,0	71,9	16,8	12,4	68,0	18,6	11,7	63,5	20,5	10,9	59,4	22,6	10,2	55
	20	87,8	13,5	15,1	82,9	15,2	14,3	78,8	16,9	13,6	74,6	18,8	12,8	70,2	20,7	12,1	65,6	22,8	11,3	55

301		Outlet water condenser temperature tc [°C]																		tc max [°C]
		30			35			40			45			50			55			
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]	
35%	-10	38,7	14,5	7,5	36,4	16,0	7,0	34,4	17,6	6,6										43
35%	-7	43,0	14,7	8,3	40,4	16,2	7,8	38,2	17,9	7,4	36,0	19,7	6,9							46
25%	-5	46,8	14,8	8,7	44,0	16,4	8,1	41,6	18,0	7,7	39,2	19,9	7,3							48
25%	-3	50,0	15,0	9,3	47,0	16,5	8,7	44,5	18,2	8,2	41,9	20,1	7,7	39,2	22,1	7,3				50
20%	0	55,4	15,2	10,1	52,1	16,7	9,5	49,3	18,5	9,0	46,4	20,3	8,4	43,4	22,4	7,9				52
20%	3	60,9	15,3	11,1	57,3	16,9	10,4	54,1	18,7	9,8	50,9	20,6	9,3	47,7	22,7	8,7	44,3	25,0	8,1	55
	5	65,9	15,5	11,3	62,0	17,1	10,6	58,9	18,9	10,1	55,5	20,8	9,5	51,7	22,9	8,9	48,1	25,2	8,2	55
	7	69,6	15,6	11,9	65,5	17,2	11,2	61,9	19,0	10,6	58,7	21,0	10,1	55,1	23,0	9,5	51,0	25,4	8,7	55
	9	73,3	15,7	12,6	69,1	17,4	11,9	65,7	19,2	11,3	61,8	21,1	10,6	58,2	23,2	10,0	54,3	25,5	9,3	55
	11	77,7	15,7	13,4	73,2	17,5	12,6	69,2	19,3	11,9	65,4	21,3	11,2	61,4	23,4	10,6	57,3	25,7	9,8	55
	13	81,9	15,8	14,1	77,1	17,6	13,3	73,1	19,5	12,6	68,7	21,5	11,8	64,6	23,6	11,1	60,3	25,9	10,4	55
	15	86,1	15,9	14,8	81,1	17,7	13,9	76,9	19,6	13,2	72,2	21,6	12,4	67,9	23,8	11,7	63,4	26,1	10,9	55
	17	91,5	15,9	15,8	86,2	17,8	14,8	81,8	19,7	14,1	77,3	21,8	13,3	72,5	24,0	12,5	67,3	26,4	11,6	55
	20	100,1	16,0	17,3	94,3	17,9	16,3	89,6	19,9	15,4	84,6	22,0	14,6	79,5	24,2	13,7	74,1	26,7	12,8	55

351		Outlet water condenser temperature tc (°C)																		tc max (°C)
		30			35			40			45			50			55			
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)	
35%	-10	44,9	17,2	8,6	42,3	18,9	8,1	40,1	20,8	7,7										43
35%	-7	49,7	17,5	9,6	46,8	19,2	9,0	44,4	21,2	8,5	41,9	23,2	8,1							45
25%	-5	54,2	17,7	10,0	51,0	19,5	9,5	48,4	21,4	9,0	45,7	23,5	8,5							47
25%	-3	57,8	17,8	10,7	54,4	19,7	10,1	51,6	21,6	9,6	48,7	23,8	9,0							49
20%	0	64,0	18,0	11,7	60,3	19,9	11,0	57,2	22,0	10,4	54,0	24,2	9,8	50,6	26,5	9,2				52
20%	3	70,5	18,2	12,8	65,9	20,2	12,0	62,6	22,2	11,4	59,0	24,5	10,7	55,4	26,9	10,1				54
	5	76,4	18,4	13,1	72,1	20,3	12,4	68,6	22,4	11,8	64,3	24,8	11,0	60,2	27,2	10,3	56,1	29,9	9,6	55
	7	81,2	18,5	13,9	75,8	20,5	13,0	72,4	22,6	12,4	68,5	24,9	11,8	63,8	27,4	11,0	59,4	30,1	10,2	55
	9	84,8	18,6	14,6	80,1	20,6	13,8	76,1	22,8	13,1	72,1	25,1	12,4	67,8	27,6	11,6	62,8	30,4	10,8	55
	11	89,8	18,7	15,4	84,2	20,8	14,5	80,1	23,0	13,8	75,9	25,3	13,0	71,4	27,8	12,3	66,7	30,6	11,5	55
	13	94,4	18,8	16,3	89,0	20,9	15,3	84,0	23,1	14,5	79,7	25,5	13,7	75,0	28,1	12,9	70,1	30,8	12,1	55
	15	99,2	18,9	17,1	93,5	21,0	16,1	88,8	23,2	15,3	83,5	25,7	14,4	78,7	28,3	13,5	73,6	31,1	12,7	55
	17	105,5	19,0	18,2	99,5	21,1	17,1	94,5	23,4	16,3	89,3	25,9	15,4	83,3	28,5	14,4	78,1	31,3	13,4	55
	20	114,5	19,3	19,7	108,9	21,4	18,8	103,5	23,7	17,8	97,9	26,2	16,9	92,0	28,8	15,9	85,9	31,7	14,8	55

PERFORMANCE DATA

381		Outlet water condenser temperature tc (°C)																		tc max [°C]
		30			35			40			45			50			55			
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]	
35%	-10	48,3	18,3	9,3	45,4	20,2	8,7	43,1	22,1	8,3										43
35%	-7	54,0	18,6	10,4	50,7	20,5	9,8	48,1	22,6	9,2	45,3	24,7	8,7							45
25%	-5	58,9	18,8	10,9	55,3	20,8	10,2	52,4	22,9	9,7	49,4	25,1	9,1							47
25%	-3	62,9	19,0	11,6	59,1	20,9	10,9	56,0	23,1	10,4	52,7	25,4	9,8							49
20%	0	69,6	19,2	12,7	65,4	21,2	11,9	62,0	23,4	11,3	58,4	25,8	10,6	54,6	28,3	9,9				52
20%	3	76,6	19,3	13,9	72,2	21,4	13,1	68,0	23,7	12,4	64,1	26,1	11,7	60,0	28,7	10,9				54
	5	82,5	19,5	14,1	77,9	21,6	13,3	73,9	23,9	12,7	69,7	26,3	11,9	64,9	29,0	11,1	60,3	31,9	10,3	55
	7	87,4	19,6	15,0	82,6	21,7	14,2	77,6	24,1	13,3	73,8	26,6	12,7	69,3	29,2	11,9	64,0	32,2	11,0	55
	9	92,8	19,7	15,9	87,1	21,9	14,9	82,7	24,3	14,2	77,7	26,7	13,3	73,3	29,5	12,6	68,3	32,4	11,7	55
	11	98,2	19,8	16,9	91,9	22,1	15,8	87,3	24,4	15,0	82,5	27,0	14,2	77,5	29,7	13,3	72,2	32,7	12,4	55
	13	103,7	19,9	17,8	97,7	22,1	16,8	92,6	24,6	15,9	87,1	27,2	15,0	81,8	30,0	14,1	76,3	32,9	13,1	55
	15	109,5	20,0	18,8	103,1	22,3	17,7	97,9	24,7	16,8	92,3	27,3	15,9	86,2	30,2	14,8	80,5	33,2	13,8	55
	17	116,4	20,1	20,0	109,6	22,4	18,9	104,0	24,9	17,9	98,2	27,5	16,9	92,1	30,4	15,8	85,5	33,5	14,7	55
	20	126,6	20,3	21,8	119,9	22,6	20,6	113,9	25,1	19,6	107,6	27,8	18,5	101,0	30,7	17,4	94,2	33,9	16,2	55

401		Outlet water condenser temperature tc (°C)																		tc max [°C]
		30			35			40			45			50			55			
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]	
35%	-10	55,5	21,3	10,7	52,2	23,6	10,1	49,5	26,1	9,5										42
35%	-7	62,1	21,7	11,9	58,4	23,9	11,2	55,4	26,5	10,7	52,2	29,3	10,0							45
25%	-5	67,8	22,0	12,6	63,8	24,2	11,8	60,5	26,7	11,2	57,0	29,6	10,6							47
25%	-3	72,4	22,2	13,4	68,2	24,5	12,6	64,6	27,0	12,0	60,9	29,8	11,3							49
20%	0	80,2	22,5	14,6	75,5	24,8	13,7	71,6	27,4	13,0	67,5	30,2	12,3	63,2	33,4	11,5				51
20%	3	88,6	22,8	16,1	82,9	25,2	15,1	78,5	27,8	14,3	74,1	30,6	13,5	69,4	33,8	12,6				54
	5	95,5	23,0	16,4	90,1	25,4	15,4	85,1	28,1	14,6	80,2	31,0	13,8	75,1	34,2	12,9	69,9	37,7	12,0	55
	7	101,7	23,2	17,4	94,9	25,7	16,3	90,6	28,3	15,5	85,6	31,2	14,7	79,8	34,5	13,7	74,2	38,0	12,7	55
	9	106,4	23,4	18,3	100,5	25,9	17,3	95,6	28,6	16,4	90,5	31,5	15,5	85,0	34,7	14,6	78,7	38,3	13,5	55
	11	113,1	23,5	19,4	105,9	26,1	18,2	100,9	28,9	17,3	95,4	31,8	16,4	89,7	35,0	15,4	83,7	38,6	14,4	55
	13	119,5	23,7	20,5	112,6	26,3	19,3	106,9	29,1	18,4	100,6	32,1	17,3	94,6	35,4	16,3	88,4	38,9	15,2	55
	15	126,0	23,8	21,7	118,8	26,5	20,4	112,8	29,3	19,4	106,5	32,4	18,3	99,6	35,7	17,1	93,2	39,3	16,0	55
	17	133,9	23,9	23,0	126,3	26,6	21,7	119,9	29,5	20,6	113,3	32,7	19,5	106,3	36,0	18,3	98,8	39,7	17,0	55
	20	145,2	24,1	25,0	137,2	26,9	23,6	131,2	29,9	22,6	124,0	33,1	21,3	116,5	36,5	20,0	108,7	40,2	18,7	55

402		Outlet water condenser temperature tc (°C)																		tc max [°C]
		30			35			40			45			50			55			
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]	
35%	-10	59,0	21,9	11,4	55,1	24,3	10,6	51,8	27,2	10,0										43
35%	-7	65,6	22,2	12,6	61,4	24,5	11,8	57,9	27,2	11,1	54,2	30,5	10,4							46
25%	-5	71,7	22,4	13,3	67,1	24,6	12,4	63,3	27,3	11,7	59,3	30,5	11,0							48
25%	-3	77,1	22,5	14,3	71,8	24,8	13,3	67,8	27,4	12,5	63,5	30,5	11,8	59,1	34,2	10,9				50
20%	0	85,5	22,8	15,5	80,2	25,1	14,6	75,8	27,6	13,8	71,2	30,6	12,9	65,9	34,2	12,0				52
20%	3	93,5	23,0	17,0	87,9	25,3	16,0	83,2	27,9	15,1	78,2	30,9	14,2	73,0	34,3	13,3	67,1	38,4	12,2	55
	5	101,9	23,2	17,5	95,1	25,6	16,3	90,4	28,2	15,5	85,0	31,1	14,6	79,4	34,5	13,6	73,6	38,4	12,6	55
	7	107,6	23,4	18,5	101,6	25,7	17,4	95,5	28,4	16,4	90,2	31,3	15,5	84,3	34,7	14,5	78,2	38,5	13,4	55
	9	113,7	23,5	19,5	107,0	26,0	18,4	101,3	28,6	17,4	95,3	31,5	16,3	89,3	34,9	15,3	82,9	38,7	14,2	55
	11	119,9	23,5	20,6	112,8	26,1	19,4	107,0	28,8	18,4	100,8	31,8	17,3	94,4	35,1	16,2	87,7	38,8	15,1	55
	13	126,7	23,5	21,8	118,8	26,2	20,4	112,6	29,0	19,3	106,3	32,0	18,3	99,6	35,3	17,1	92,7	39,1	15,9	55
	15	133,2	23,5	22,9	125,4	26,3	21,6	118,4	29,2	20,4	111,8	32,2	19,2	104,9	35,5	18,0	97,6	39,3	16,8	55
	17	141,7	23,6	24,4	133,4	26,5	23,0	126,7	29,3	21,8	119,0	32,5	20,5	111,7	35,9	19,2	104,0	39,6	17,9	55
	20	155,2	23,4	26,7	146,3	26,5	25,2	138,9	29,6	23,9	131,3	32,7	22,6	123,2	36,2	21,2	114,2	40,0	19,7	55

502		Outlet water condenser temperature tc (°C)																		tc max [°C]
		30			35			40			45			50			55			
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]	
35%	-10	66,1	25,0	12,7	61,9	27,7	11,9	58,4	30,7	11,2										43
35%	-7	73,4	25,2	14,1	68,8	27,9	13,2	65,0	30,9	12,5	61,1	34,3	11,7							45
25%	-5	80,1	25,4	14,8	75,1	28,1	13,9	71,0	31,1	13,1	66,7	34,5	12,3							47
25%	-3	85,6	25,6	15,8	80,3	28,3	14,9	75,9	31,3	14,0	71,3	34,7	13,2							49
20%	0	95,4	25,9	17,4	89,6	28,6	16,3	84,8	31,6	15,4	79,3	35,0	14,4	74,1	38,7	13,5				52
20%	3	104,4	26,1	19,0	98,1	28,9	17,8	92,9	31,9	16,9	87,5	35,2	15,9	81,5	39,0	14,8				54
	5	113,4	26,3	19,4	106,6	29,1	18,3	101,0	32,2	17,3	95,2	35,5	16,3	89,1	39,2	15,3	82,8	43,4	14,2	55
	7	120,0	26,4	20,6	113,1	29,3	19,4	106,3	32,5	18,2	100,8	35,8	17,3	94,4	39,5	16,2	87,8	43,6	15,1	55
	9	126,6	26,5	21,7	119,2	29,5	20,5	113,0	32,6	19,4	106,5	36,0	18,3	99,9	39,7	17,1	92,9	43,8	15,9	55
	11	133,4	26,6	22,9	125,6	29,6	21,6	119,1	32,8	20,4	112,4	36,2	19,3	105,5	40,0	18,1	98,2	44,1	16,9	55
	13	141,0	26,8	24,2	132,1	29,7	22,7	125,3	33,0	21,5	118,4	36,5	20,3	111,1	40,2	19,1	103,6	44,3	17,8	55
	15	148,1	26,8	25,5	139,4	29,9	24,0	132,2	33,2	22,7	124,4	36,7	21,4	116,8	40,4	20,1	109,0	44,6	18,7	55
	17	157,7	26,8	27,1	148,4	30,0	25,6	140,8	33,4	24,2	132,2	37,0	22,7	124,3	40,7	21,4	116,0	44,9	20,0	55
	20	172,7	26,7	29,8	162,6	30,1	28,0	154,4	33,6	26,6	145,8	37,3	25,1	136,9	41,2	23,6	127,3	45,3	21,9	55

602		Outlet water condenser temperature tc (°C)																		tc max [°C]
		30			35			40			45			50			55			
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)	
35%	-10	74,8	28,7	14,4	70,1	31,7	13,5	66,3	35,0	12,8										42
35%	-7	83,1	29,1	16,0	77,9	32,1	15,0	73,7	35,5	14,2	69,3	39,2	13,3							45
25%	-5	90,7	29,4	16,8	85,1	32,5	15,8	80,5	35,8	14,9	75,7	39,5	14,0							47
25%	-3	96,8	29,7	17,9	90,9	32,8	16,8	85,9	36,1	15,9	80,9	39,9	15,0							48
20%	0	107,4	30,1	19,5	100,8	33,2	18,3	95,4	36,6	17,4	89,7	40,4	16,3	83,9	44,5	15,3				51
20%	3	118,0	30,4	21,5	110,9	33,6	20,2	105,1	37,0	19,1	98,4	40,9	17,9	92,0	45,0	16,7				54
	5	128,2	30,7	22,0	120,6	33,9	20,7	114,2	37,5	19,6	107,6	41,3	18,4	100,7	45,4	17,3	93,0	50,1	15,9	55
	7	136,3	30,9	23,4	127,3	34,2	21,8	120,8	37,7	20,7	113,8	41,6	19,5	106,6	45,8	18,3	99,1	50,4	17,0	55
	9	142,7	31,2	24,5	134,4	34,5	23,1	127,4	37,9	21,9	120,2	41,9	20,6	112,6	46,1	19,3	104,7	50,7	18,0	55
	11	150,3	31,3	25,8	141,4	34,8	24,3	134,1	38,4	23,0	126,7	42,2	21,8	118,7	46,4	20,4	110,5	51,1	19,0	55
	13	158,7	31,4	27,3	149,2	34,9	25,7	140,9	38,7	24,2	133,0	42,6	22,9	124,9	46,7	21,5	116,3	51,4	20,0	55
	15	166,7	31,5	28,7	156,8	35,1	27,0	147,8	38,9	25,4	139,6	42,9	24,0	131,2	47,0	22,5	122,3	51,7	21,0	55
	17	177,3	31,6	30,5	166,7	35,3	28,7	158,2	39,1	27,2	148,3	43,2	25,5	139,3	47,6	24,0	130,0	52,1	22,4	55
	20	194,2	31,7	33,5	182,8	35,5	31,5	173,3	39,5	29,8	163,4	43,7	28,2	153,3	48,1	26,4	142,1	53,0	24,5	55

702		Outlet water condenser temperature tc [°C]																		tc max [°C]
		30			35			40			45			50			55			
Glicole	tu	Pf	Pa	Fw	Pf	Pa	Fw	Pf	Pa	Fw	Pf	Pa	Fw	Pf	Pa	Fw	Pf	Pa	Fw	
	[°C]	(kW)	(kW)	(m³/h)	(kW)	(kW)	(m³/h)	(kW)	(kW)	(m³/h)	(kW)	(kW)	(m³/h)	(kW)	(kW)	(m³/h)	(kW)	(kW)	(m³/h)	
35%	-10	90,4	32,9	17,4	84,9	36,2	16,3	80,2	39,8	15,4										43
35%	-7	101,3	33,4	19,5	95,1	36,8	18,3	89,9	40,5	17,3	84,5	44,6	16,2							46
25%	-5	110,4	33,8	20,4	103,6	37,3	19,2	97,9	41,1	18,1	92,0	45,1	17,0							48
25%	-3	117,7	34,1	21,8	110,4	37,7	20,4	104,4	41,5	19,3	98,1	45,6	18,2	91,6	50,1	17,0				50
20%	0	130,2	34,5	23,7	121,7	38,2	22,1	115,1	42,1	20,9	108,2	46,3	19,7	101,0	50,9	18,4				52
20%	3	141,7	34,8	25,8	132,2	38,6	24,2	126,2	42,5	22,9	118,2	46,9	21,5	110,4	51,5	20,1				54
	5	152,9	35,1	26,2	142,6	38,9	24,4	135,4	43,0	23,2	127,5	47,3	21,8	119,2	52,0	20,4	110,0	57,2	18,8	55
	7	160,2	35,3	27,5	150,6	39,2	25,8	142,5	43,2	24,4	134,4	47,7	23,0	125,8	52,5	21,6	116,2	57,7	19,9	55
	9	168,9	35,4	29,0	158,2	39,4	27,1	150,0	43,6	25,7	141,3	48,1	24,2	132,3	52,9	22,7	122,9	58,1	21,1	55
	11	177,1	35,5	30,4	166,6	39,5	28,6	157,1	43,9	27,0	148,2	48,4	25,4	138,8	53,2	23,8	129,0	58,5	22,1	55
	13	185,3	35,6	31,8	174,2	39,7	29,9	165,0	44,0	28,3	154,8	48,7	26,6	145,1	53,6	24,9	135,0	58,9	23,2	55
	15	193,1	35,6	33,2	181,6	39,8	31,2	172,1	44,2	29,6	161,2	49,0	27,7	151,3	53,9	26,0	140,9	59,3	24,2	55
	17	205,1	35,7	35,3	193,0	39,9	33,2	182,8	44,4	31,4	172,3	49,2	29,6	161,2	54,3	27,7	149,4	59,8	25,7	55
	20	223,2	36,3	38,5	210,8	40,5	36,3	199,9	44,8	34,4	188,5	49,6	32,4	176,5	54,8	30,4	164,2	60,4	28,3	55

802		Outlet water condenser temperature tc [°C]																		tc max [°C]
		30			35			40			45			50			55			
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)	
35%	-10	101,6	36,9	19,5	95,4	40,6	18,4	90,4	44,6	17,4										44
35%	-7	113,4	37,4	21,8	106,5	41,3	20,5	100,8	45,4	19,4	94,9	49,9	18,2							46
25%	-5	123,4	37,8	22,8	115,9	41,8	21,4	109,6	46,0	20,3	103,2	50,5	19,1							48
25%	-3	131,3	38,1	24,3	123,3	42,1	22,8	116,7	46,4	21,6	109,9	51,0	20,3	102,8	56,0	19,0				50
20%	0	145,2	38,4	26,4	135,7	42,6	24,7	128,5	47,0	23,4	120,9	51,8	22,0	113,1	56,9	20,6				52
20%	3	157,8	38,8	28,7	148,5	43,0	27,0	140,8	47,5	25,6	131,9	52,4	24,0	123,4	57,6	22,4	114,7	63,3	20,8	55
	5	169,9	39,1	29,1	158,5	43,4	27,2	151,1	48,0	25,9	142,5	52,9	24,4	133,5	58,1	22,9	123,3	64,0	21,1	55
	7	178,1	39,3	30,6	167,7	43,6	28,8	158,6	48,3	27,2	150,2	53,3	25,8	140,8	58,6	24,1	130,3	64,5	22,3	55
	9	187,8	39,4	32,2	176,2	43,9	30,2	167,2	48,6	28,7	157,9	53,6	27,1	148,1	59,1	25,4	137,9	64,9	23,7	55
	11	196,9	39,6	33,8	185,3	44,0	31,8	175,1	48,9	30,1	165,4	54,0	28,4	155,3	59,4	26,7	144,7	65,3	24,8	55
	13	206,0	39,7	35,4	193,8	44,2	33,3	183,9	49,1	31,6	172,8	54,3	29,7	162,4	59,8	27,9	151,5	65,8	26,0	55
	15	214,5	40,2	36,9	202,1	44,4	34,7	191,7	49,3	33,0	179,9	54,6	30,9	169,2	60,2	29,1	157,9	66,2	27,1	55
	17	228,0	40,4	39,2	214,7	45,0	37,0	203,8	49,6	35,1	192,3	54,9	33,1	179,5	60,7	30,9	167,6	66,7	28,8	55
	20	248,2	40,9	42,7	235,0	45,4	40,5	223,2	50,4	38,4	210,8	55,8	36,3	197,9	61,2	34,1	184,5	67,4	31,8	55

tu: evaporator outlet water temperature (chiller); **tc:** condenser outlet water temperature; **Pf:** cooling capacity; **Pa:** total power absorbed; **Fw:** water flow rate ($\Delta T = 5^\circ\text{C}$).

Interpolation is allowed, extrapolation is not permitted.

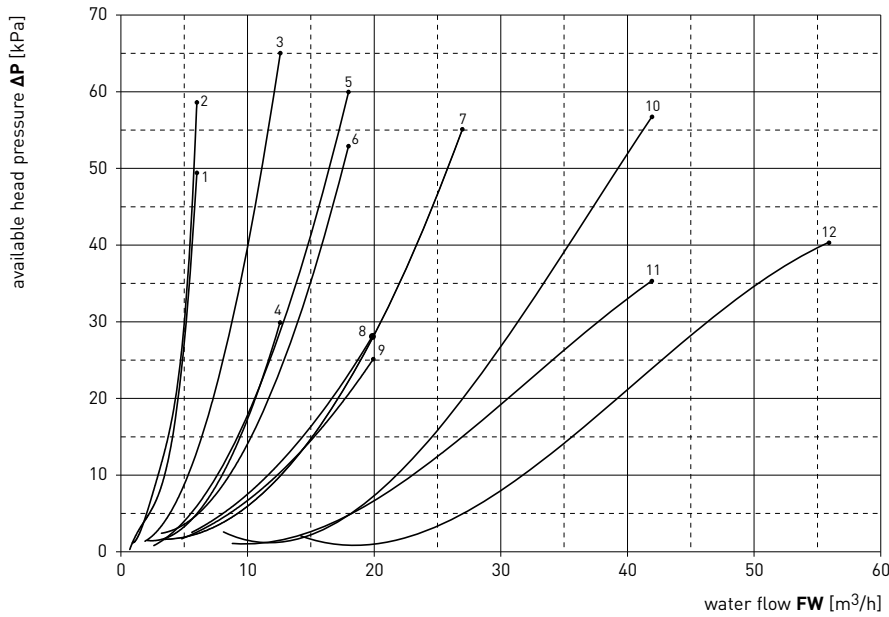
To calculate Pf, Pa and Fw for $\Delta T \neq 5^\circ\text{C}$ when examining the table "Correction factors for $\Delta T \neq 5^\circ\text{C}$ ".

Value includes the correction factor for ethylene glycol.

Data declared according to UNI EN 14511:2018. All data refers to standard units without accessories/options which require an electrical feeding source and in nominal working conditions. The data declared in this document anticipate those that will be published in the next release Eurovent on november.

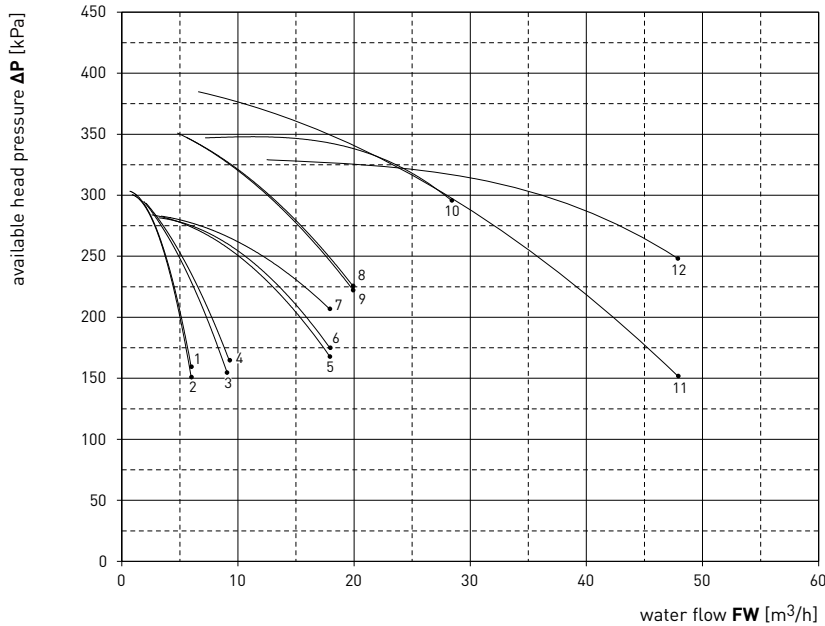
EVAPORATOR PRESSURE DROPS AND AVAILABLE HEAD PRESSURE

EVAPORATORS PRESSURE DROPS



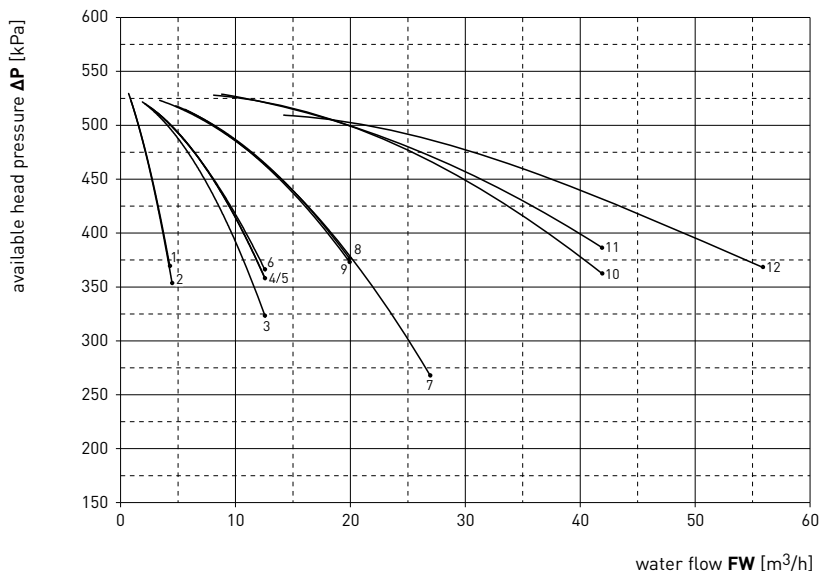
- 1: TWEEvo Tech 031
- 2: TWEEvo Tech 051
- 3: TWEEvo Tech 081
- 4: TWEEvo Tech 101
- 5: TWEEvo Tech 121
- 6: TWEEvo Tech 161
- 7: TWEEvo Tech 201 - 251
- 8: TWEEvo Tech 301
- 9: TWEEvo Tech 351
- 10: TWEEvo Tech 381 - 401
- 11: TWEEvo Tech 402 - 502 - 602
- 12: TWEEvo Tech 702 - 802

AVAILABLE PRESSURE WITH PUMP P3



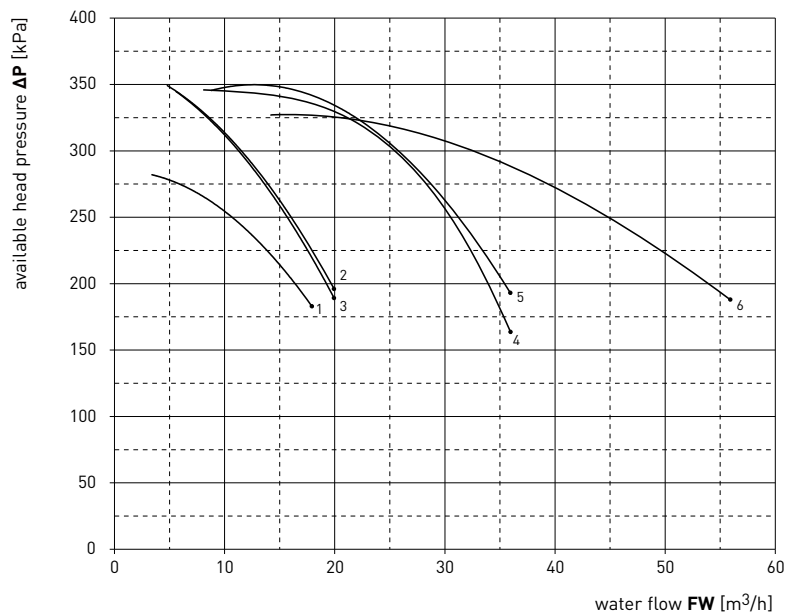
- 1: TWEEvo Tech 031
- 2: TWEEvo Tech 051
- 3: TWEEvo Tech 081
- 4: TWEEvo Tech 101
- 5: TWEEvo Tech 121
- 6: TWEEvo Tech 161
- 7: TWEEvo Tech 201 - 251
- 8: TWEEvo Tech 301
- 9: TWEEvo Tech 351
- 10: TWEEvo Tech 381 - 401
- 11: TWEEvo Tech 402 - 502 - 602
- 12: TWEEvo Tech 702 - 802

AVAILABLE PRESSURE WITH PUMP P5



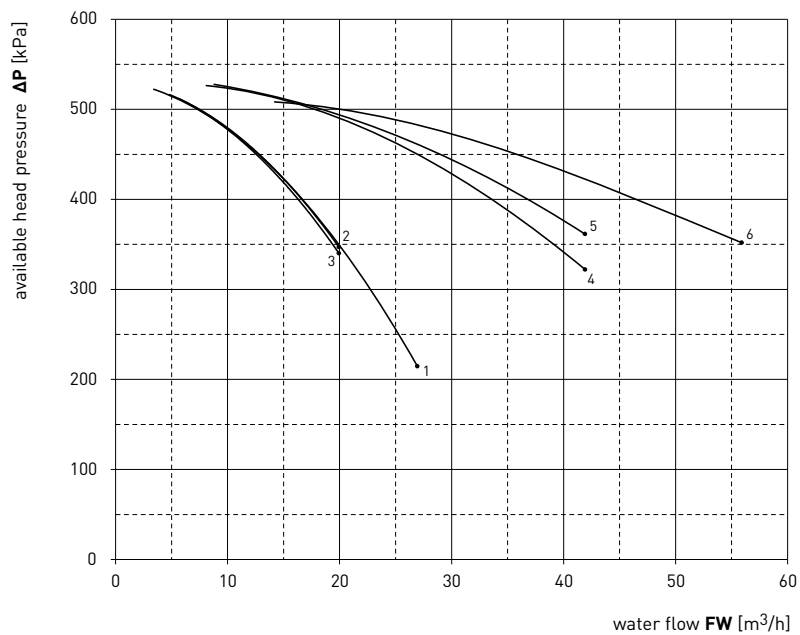
- 1: TWEEvo Tech 031
- 2: TWEEvo Tech 051
- 3: TWEEvo Tech 081
- 4: TWEEvo Tech 101
- 5: TWEEvo Tech 121
- 6: TWEEvo Tech 161
- 7: TWEEvo Tech 201 - 251
- 8: TWEEvo Tech 301
- 9: TWEEvo Tech 351
- 10: TWEEvo Tech 381 - 401
- 11: TWEEvo Tech 402 - 502 - 602
- 12: TWEEvo Tech 702 - 802

AVAILABLE PRESSURE WITH DOUBLE PUMP P3 + P3 - 50 Hz



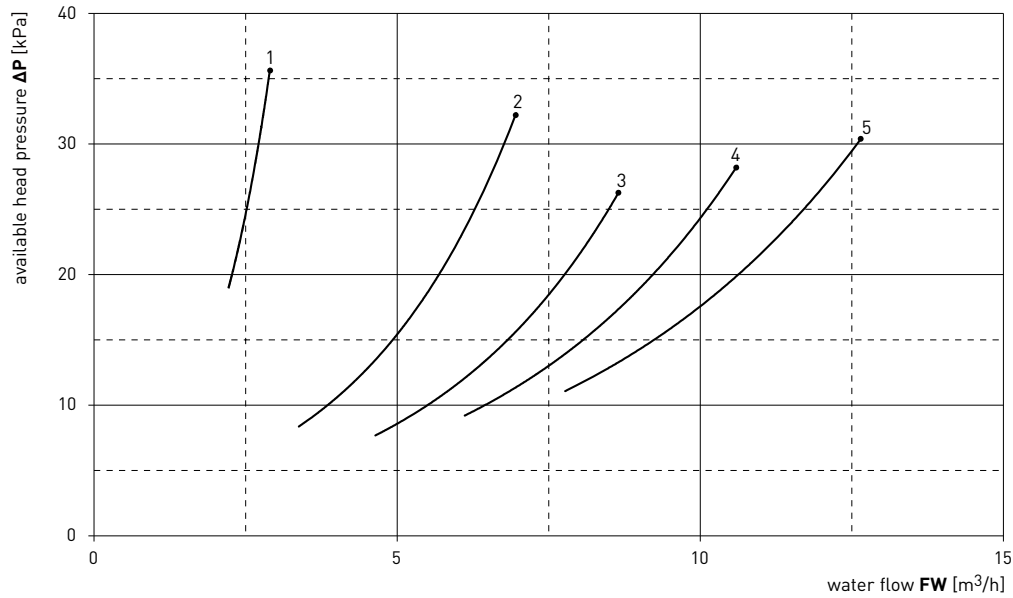
- 1: TWEEvo Tech 201 - 251
- 2: TWEEvo Tech 301
- 3: TWEEvo Tech 351
- 4: TWEEvo Tech 381 - 401
- 5: TWEEvo Tech 402 - 502 - 602
- 6: TWEEvo Tech 702 - 802

AVAILABLE PRESSURE WITH DOUBLE PUMP P5 + P5 - 50 Hz



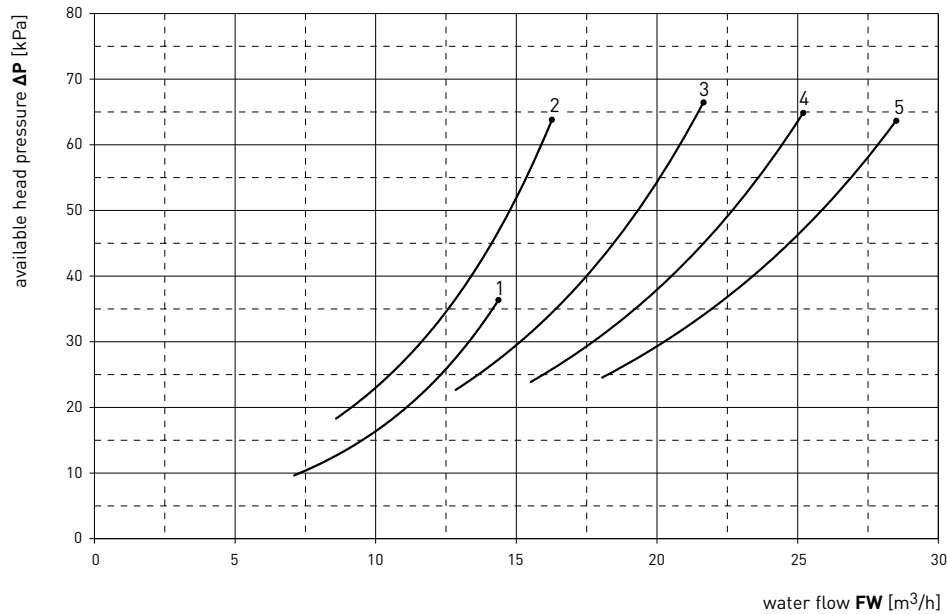
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- 2: TWEEvo Tech 301
- 3: TWEEvo Tech 351
- 4: TWEEvo Tech 381 - 401
- 5: TWEEvo Tech 402 - 502 - 602
- 6: TWEEvo Tech 702 - 802

CONDENSER PRESSURE DROPS



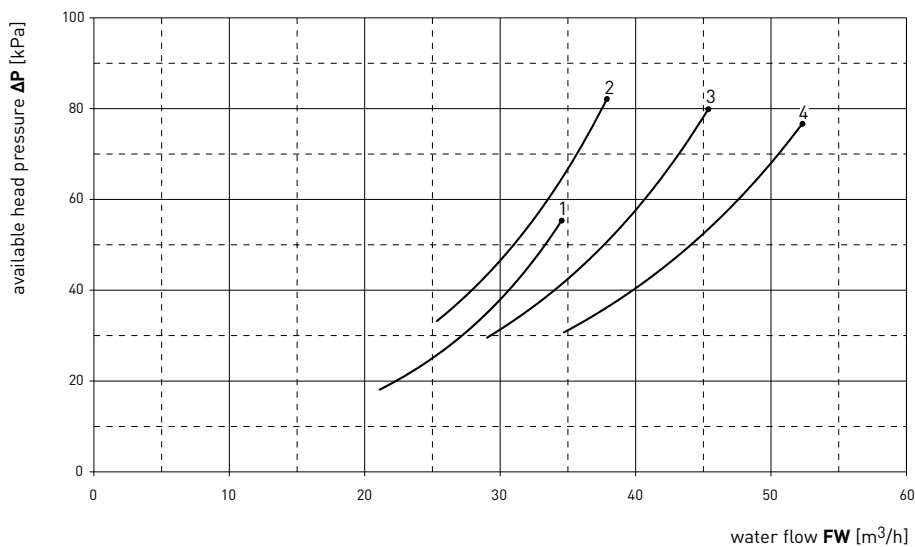
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- 2: TWEEvo Tech 081
- 3: TWEEvo Tech 101
- 4: TWEEvo Tech 121
- 5: TWEEvo Tech 161

CONDENSER PRESSURE DROPS



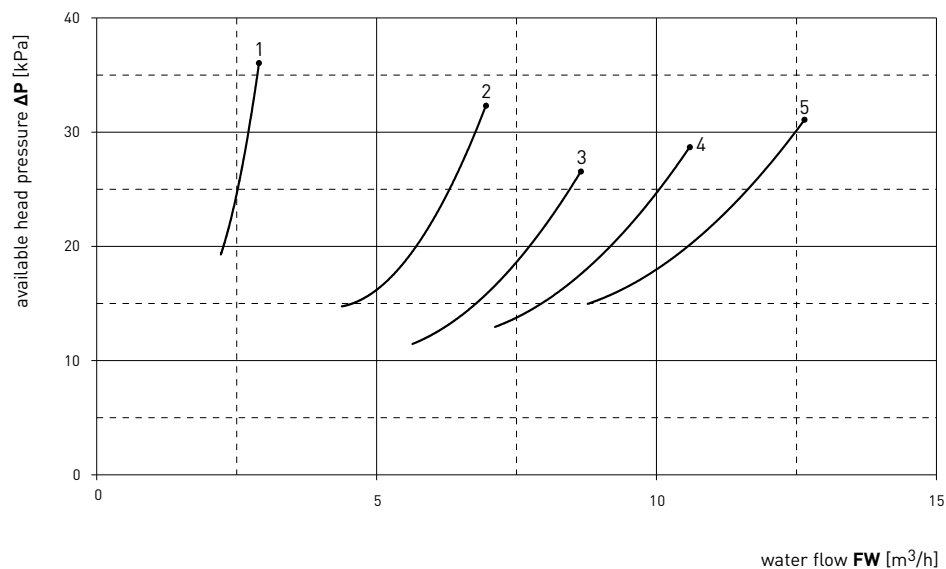
- 1: TWEEvo Tech 201
- 2: TWEEvo Tech 251 - 301
- 3: TWEEvo Tech 351
- 4: TWEEvo Tech 381
- 5: TWEEvo Tech 401

CONDENSER PRESSURE DROPS



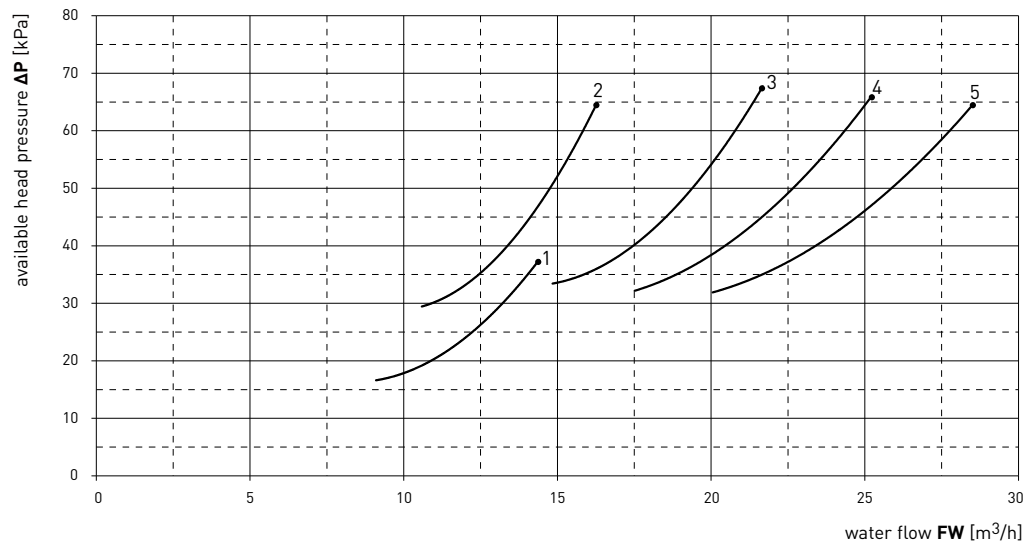
- 1: TWEEvo Tech 402 - 502
- 2: TWEEvo Tech 602
- 3: TWEEvo Tech 702
- 4: TWEEvo Tech 802

CONDENSER PRESSURE DROPS WITH PRESSOSTATIC / MODULATING VALVE (TOWER WATER)



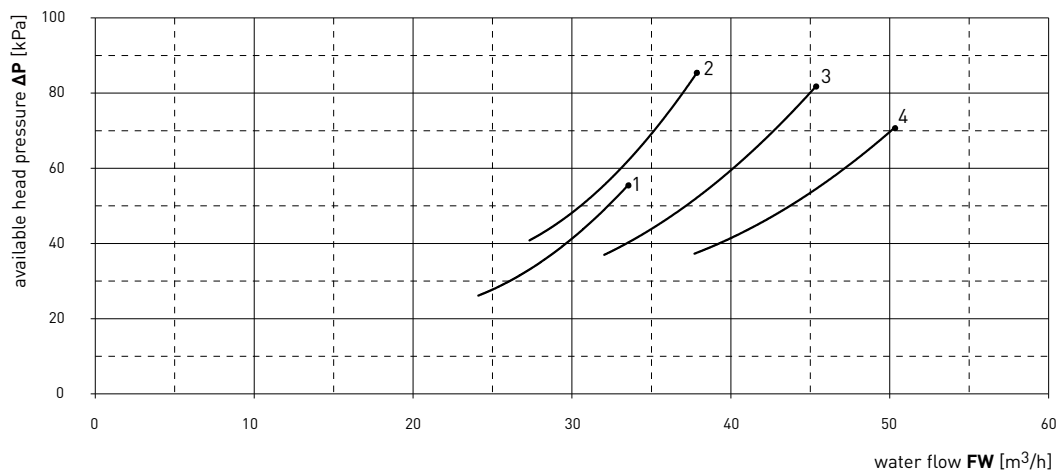
- 1: TWEEvo Tech 031 - 051
- 2: TWEEvo Tech 081
- 3: TWEEvo Tech 101
- 4: TWEEvo Tech 121
- 5: TWEEvo Tech 161

CONDENSER PRESSURE DROPS WITH PRESSOSTATIC / MODULATING VALVE (TOWER WATER)



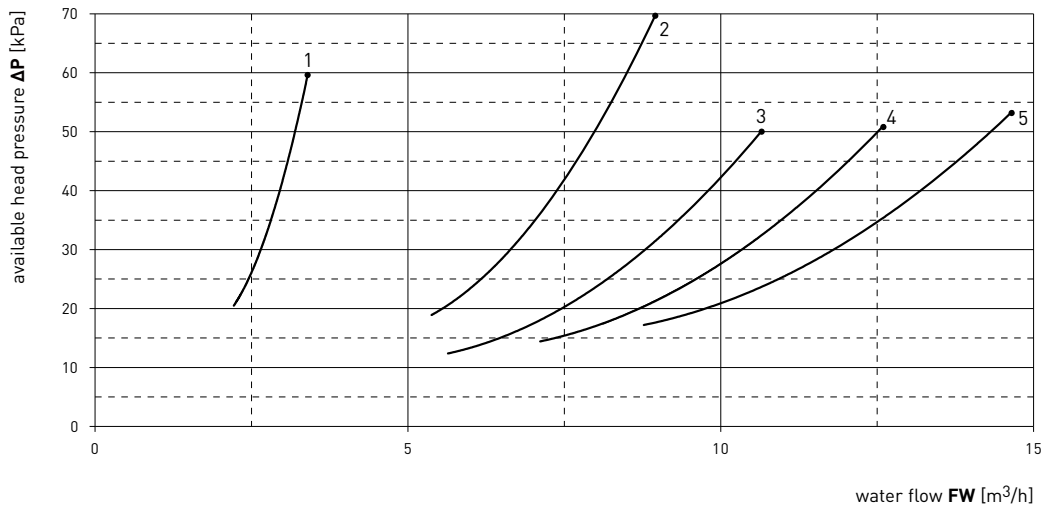
- 1: TWEEvo Tech 201
- 2: TWEEvo Tech 251 - 301
- 3: TWEEvo Tech 351
- 4: TWEEvo Tech 381
- 5: TWEEvo Tech 401

CONDENSER PRESSURE DROPS WITH PRESSOSTATIC / MODULATING VALVE (TOWER WATER)



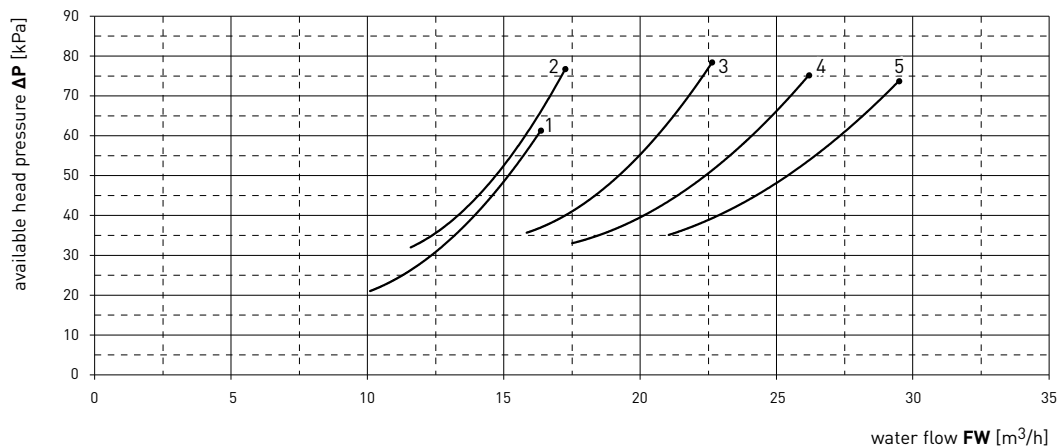
- 1: TWEEvo Tech 402 - 502
- 2: TWEEvo Tech 602
- 3: TWEEvo Tech 702
- 4: TWEEvo Tech 802

CONDENSER PRESSURE DROPS WITH PRESSOSTATIC / MODULATING VALVE (WELL WATER)



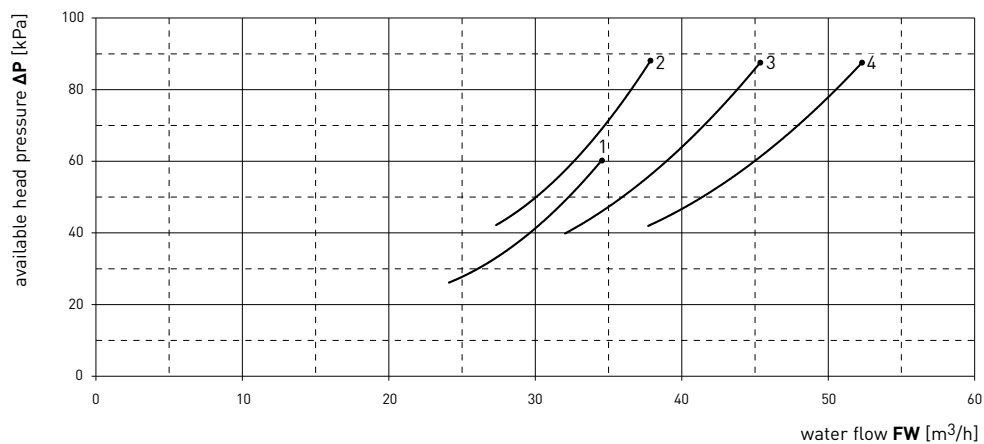
- 1: TWEEvo Tech 031 - 051
- 2: TWEEvo Tech 081
- 3: TWEEvo Tech 101
- 4: TWEEvo Tech 121
- 5: TWEEvo Tech 161

CONDENSER PRESSURE DROPS WITH PRESSOSTATIC / MODULATING VALVE (WELL WATER)



- 1: TWEEvo Tech 201
- 2: TWEEvo Tech 251 - 301
- 3: TWEEvo Tech 351
- 4: TWEEvo Tech 381
- 5: TWEEvo Tech 401

CONDENSER PRESSURE DROPS WITH PRESSOSTATIC / MODULATING VALVE (WELL WATER)



- 1: TWEEvo Tech 402 - 502
- 2: TWEEvo Tech 602
- 3: TWEEvo Tech 702
- 4: TWEEvo Tech 802

WORKING LIMITS AND CORRECTION FACTORS

WORKING LIMITS

		Min	Max
External air temperature	°C	-5	46
Evaporator inlet water temperature	°C	-5	35
Evaporator outlet water temperature	°C	-10	30
Condenser inlet water temperature	°C	25	45
Condenser outlet water temperature	°C	30	(1)
Pressure in hydraulic circuits, water side with tank	barg	0	6

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

For inlet water temperature $\leq +25$ °C, it is necessary to use the condensing pressure control valve.

(1) See data tables with the unit's performances based on the user temperatures.

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	0,96	0,93
Absorbed power correction factor (kW)	Kp1	1,00	0,99	0,98	0,98	0,97	0,95
Water flow correction factor ⁽¹⁾ (m ³ /h)	K _{FWE1}	1,00	1,02	1,05	1,07	1,11	1,13
Pressure drop correction factor (kPa)	Kdp1	1,00	1,08	1,17	1,25	1,33	1,41

Multiply the unit performance by the correction factors given in the table ($Pf^* = Pf \times Kf1$). If the value already includes the glycol correction factor do not use this table. (1) K_{FWE1} = Correction factor (refers to the cooling capacity corrected by Kf) to obtain the water flow with a ΔT of 5 °C.

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

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

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

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

		ΔT		
		5	10	15
Cooling capacity correction factor	Kf3	1,00	0,96	0,92
Absorbed power correction factor	Kp3	1,00	1,09	1,21

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

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

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

(*) Closed cell thermal insulation.

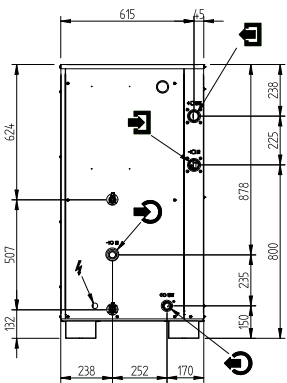
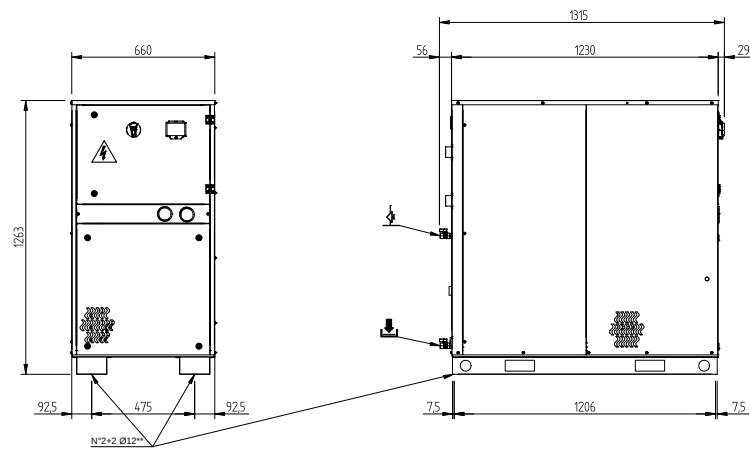
PRESSOSTATIC VALVES AND MODULATING DATA TABLE

TOWER WATER					
	Type	Model	Number	Kv [m ³ /h]	Connections
TWEevo Tech 031	Pressostatic valve	WVFX 25	1	5,5	G 1"
TWEevo Tech 051		WVFX 25	1	5,5	G 1"
TWEevo Tech 081	Modulating valve	VSBS	1	16	G 1. 1/4"
TWEevo Tech 101		VSBS	1	16	G 1. 1/4"
TWEevo Tech 121		VSBS	1	16	G 1. 1/4"
TWEevo Tech 161		VSBS	1	16	G 1. 1/4"
TWEevo Tech 201		VSBS	1	16	G 1. 1/4"
TWEevo Tech 251		VSBS	1	22	G 1. 1/2"
TWEevo Tech 301		VSBS	1	22	G 1. 1/2"
TWEevo Tech 351		VSBS	1	30	G 2"
TWEevo Tech 381		VSBS	1	30	G 2"
TWEevo Tech 401		VSBSA	1	40	G 2"
TWEevo Tech 402		VSBS	2	16	G 1. 1/4"
TWEevo Tech 502		VSBS	2	22	G 1. 1/2"
TWEevo Tech 602		VSBS	2	22	G 1. 1/2"
TWEevo Tech 702		VSBS	2	30	G 2"
TWEevo Tech 802		VSBSA	2	40	G 2"

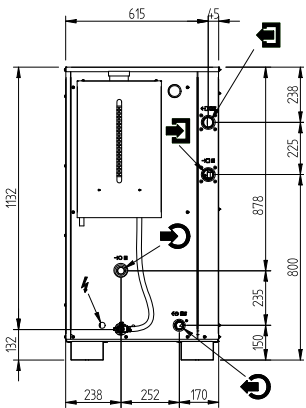
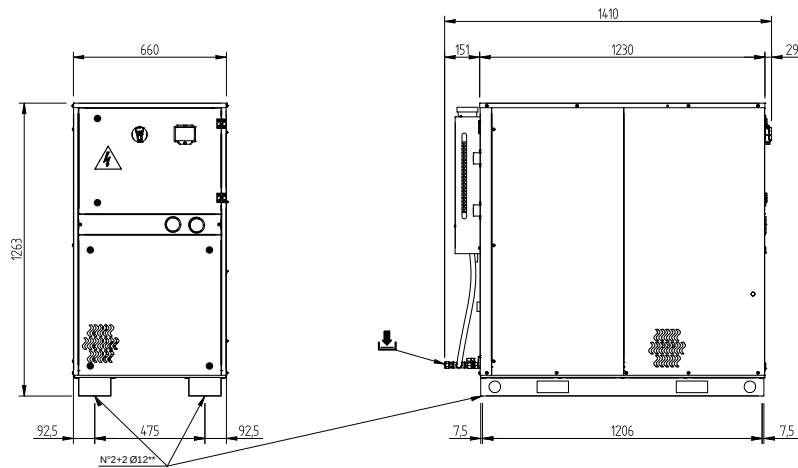
WELL WATER					
	Type	Model	Number	Kv [m ³ /h]	Connections
TWEevo Tech 031	Pressostatic valve	WVFX 15	1	1,9	G 1/2"
TWEevo Tech 051		WVFX 20	1	3,4	G 3/4"
TWEevo Tech 081		WVFX 25	1	5,5	G 1"
TWEevo Tech 101		WVFX 25	1	5,5	G 1"
TWEevo Tech 121		WVFX 25	1	5,5	G 1"
TWEevo Tech 161		WVFX 25	1	5,5	G 1"
TWEevo Tech 201		WVFX 25	1	5,5	G 1"
TWEevo Tech 251	Modulating valve	VSBS	1	16	G 1. 1/4"
TWEevo Tech 301		VSBS	1	16	G 1. 1/4"
TWEevo Tech 351		VSBS	1	16	G 1. 1/4"
TWEevo Tech 381		VSBS	1	16	G 1. 1/4"
TWEevo Tech 401		VSBS	1	16	G 1. 1/4"
TWEevo Tech 402		VSBS	2	16	G 1. 1/4"
TWEevo Tech 502		VSBS	2	16	G 1. 1/4"
TWEevo Tech 602		VSBS	2	16	G 1. 1/4"
TWEevo Tech 702		VSBS	2	16	G 1. 1/4"
TWEevo Tech 802		VSBS	2	16	G 1. 1/4"

OVERALL DIMENSIONS

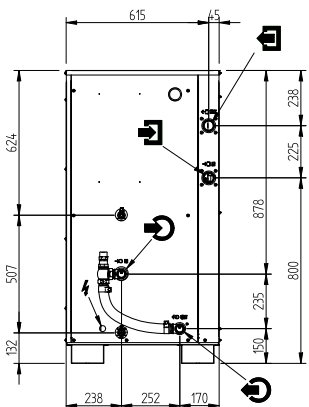
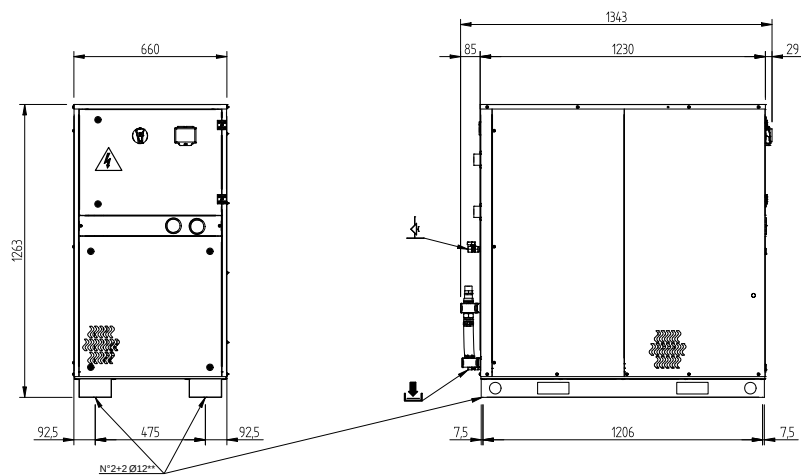
TWEevo Tech 031 - 051
standard version



TWEevo Tech 031 - 051
standard version with tank kit



TWEevo Tech 031 - 051
standard version with by-pass

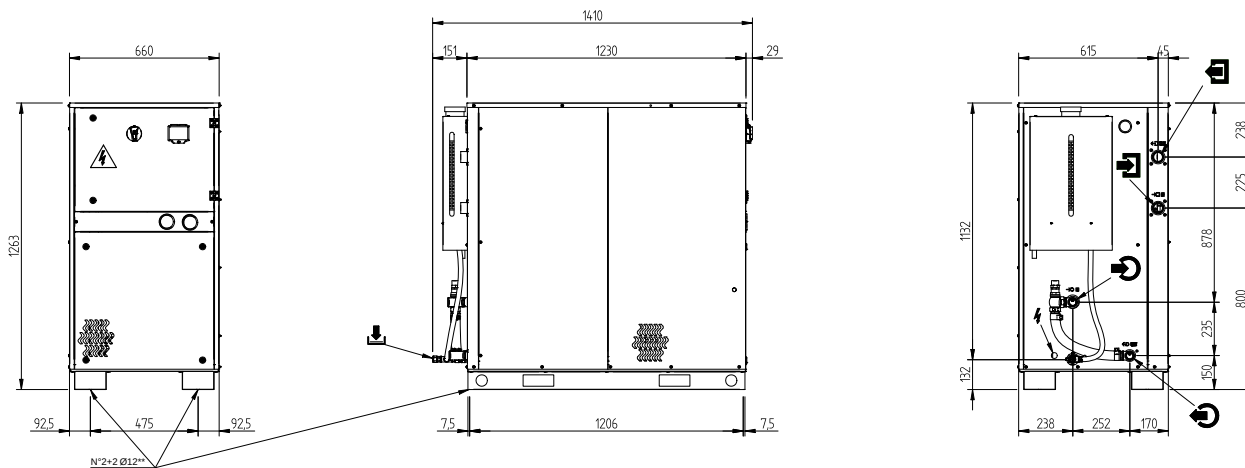


	031	051
 Water inlet	Rp 1"	Rp 1"
 Water outlet	Rp 1"	Rp 1"
 Condenser water inlet	Rp 1" 1/4	Rp 1" 1/4
 Condenser water outlet	Rp 1" 1/4	Rp 1" 1/4

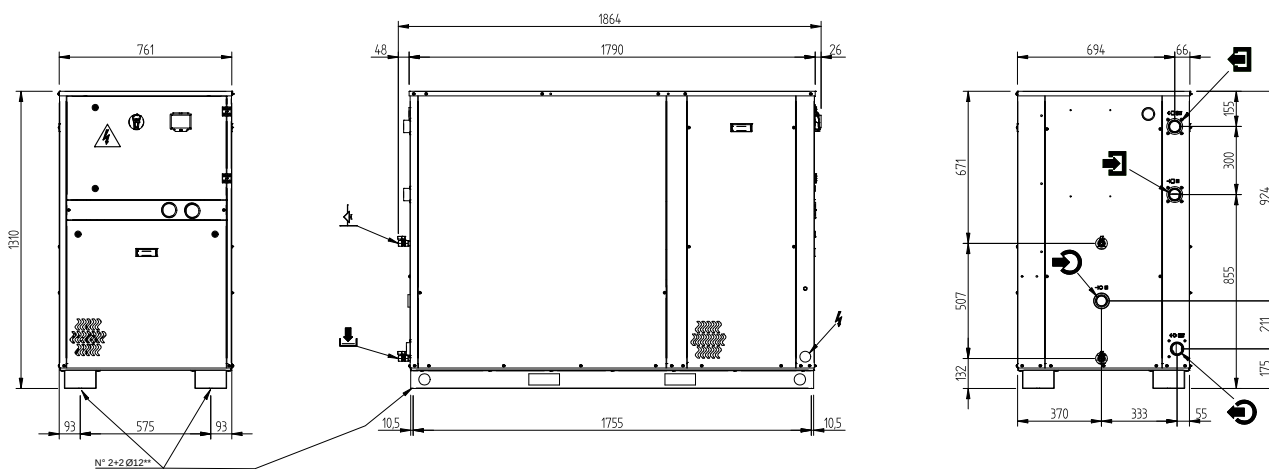
** Holes

-  Power supply
-  Air vent = Rp 1/2"
-  Water discharge = Rp 1/2"

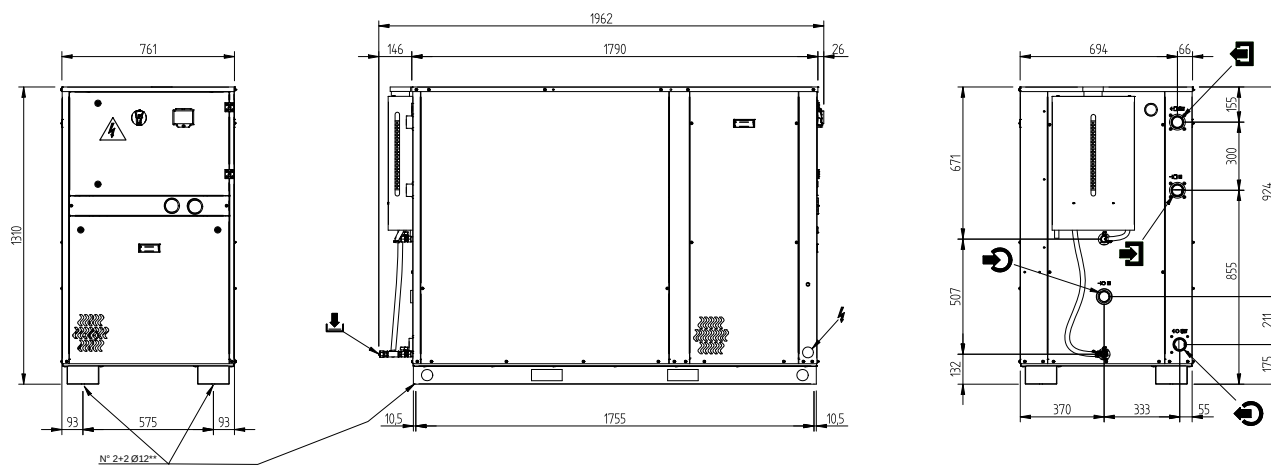
TWE^{evo} Tech 031 - 051
standard version with by-pass and tank kit



TWE^{evo} Tech 081
standard version



TWE^{evo} Tech 081
standard version with tank kit



	031	051	081
Water inlet	Rp 1"	Rp 1"	Rp 1"1/2
Water outlet	Rp 1"	Rp 1"	Rp 1"1/2
Condenser water inlet	Rp 1" 1/4	Rp 1" 1/4	Rp 1"1/2
Condenser water outlet	Rp 1" 1/4	Rp 1" 1/4	Rp 1"1/2

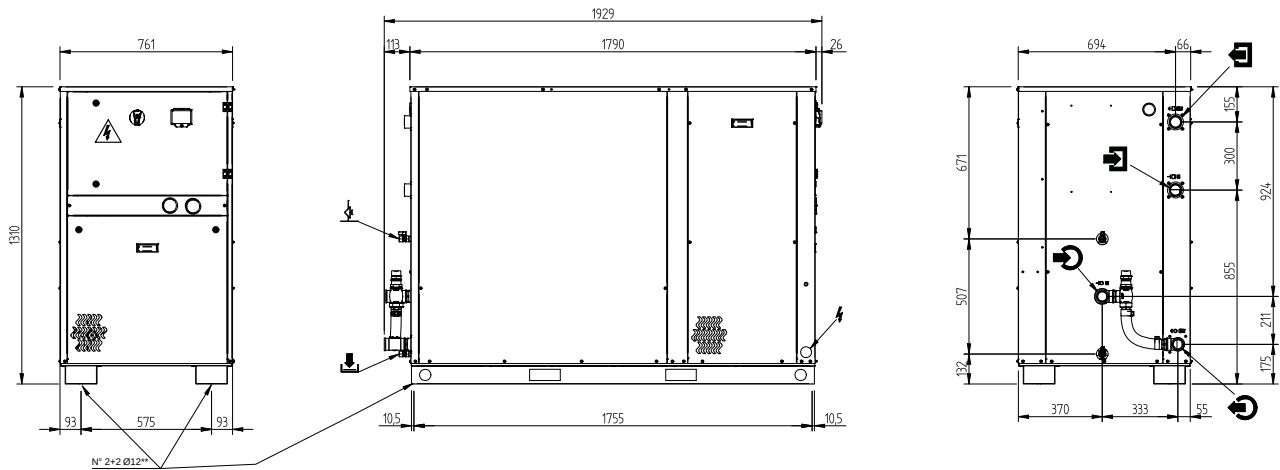
****** Holes

Power supply

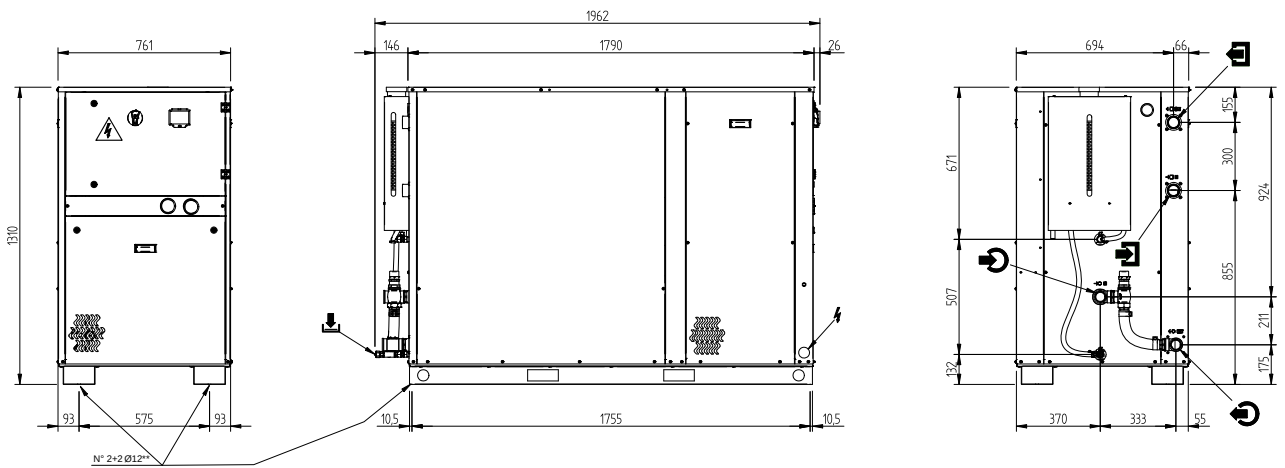
Air vent = Rp 1/2"

Water discharge = Rp 1/2"

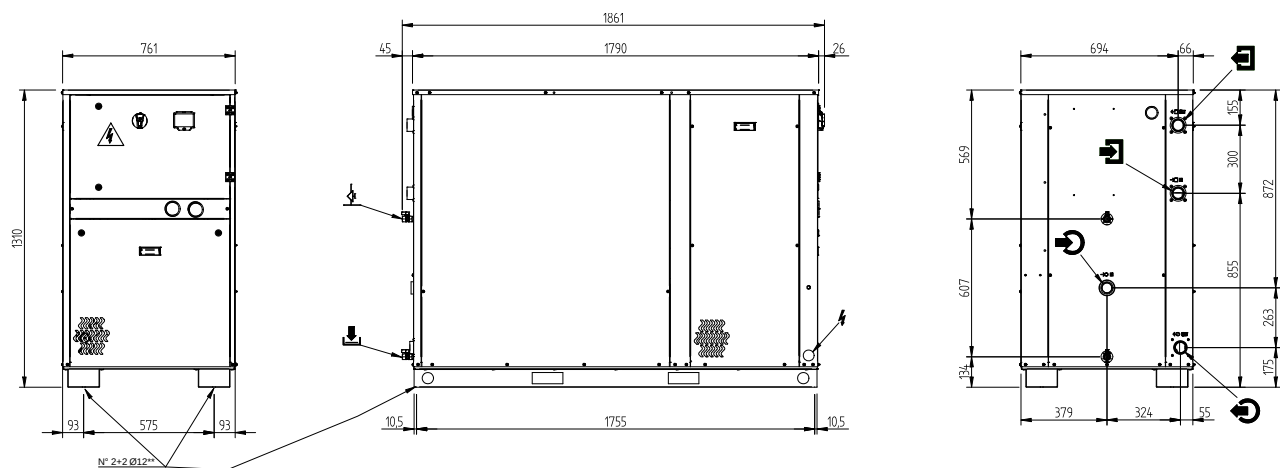
TWEevo Tech 081
standard version with by-pass



TWEevo Tech 081
standard version with by-pass and tank kit



TWEevo Tech 101 - 121 - 161
standard version



	081	101	121	161
Water inlet	Rp 1"1/2	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	Rp 1"1/2
Condenser water inlet	Rp 1"1/2	Rp 1"1/2	Rp 1"1/2	Rp 1"1/2
Condenser water outlet	Rp 1"1/2	Rp 1"1/2	Rp 1"1/2	Rp 1"1/2

**** Holes**



Power supply

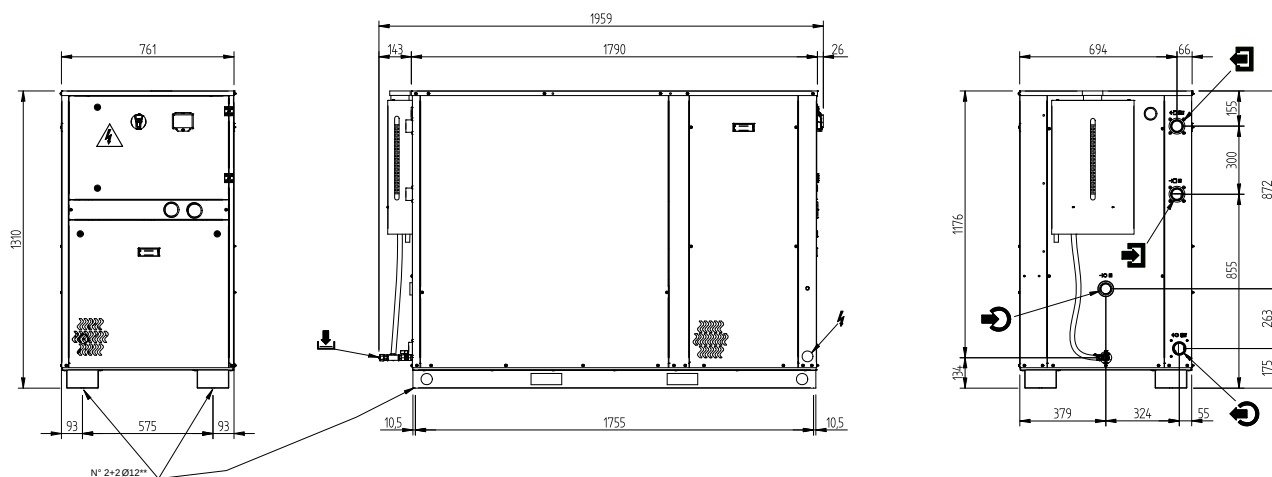


Air vent = Rp 1/2"

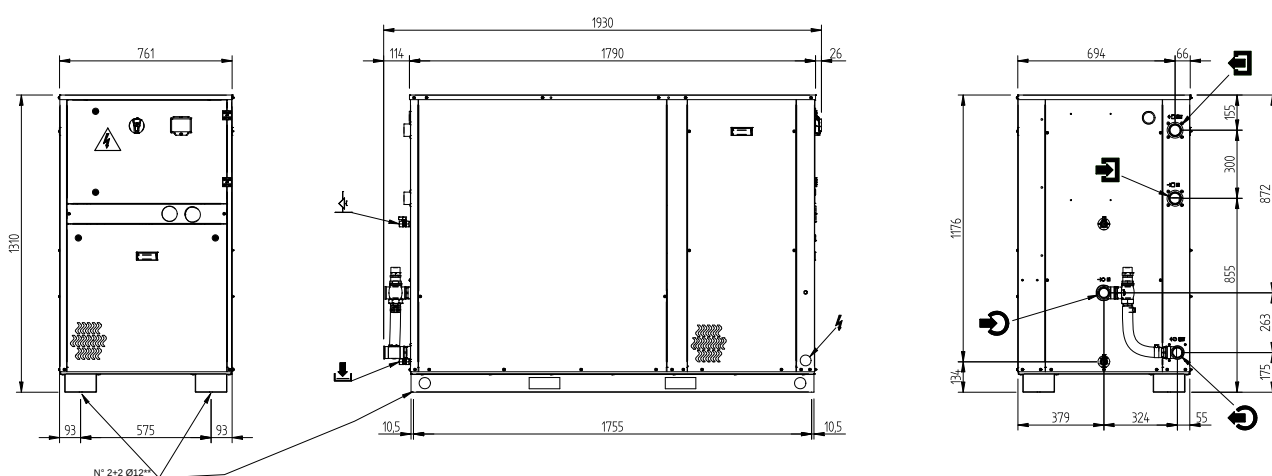


Water discharge = Rp 1/2"

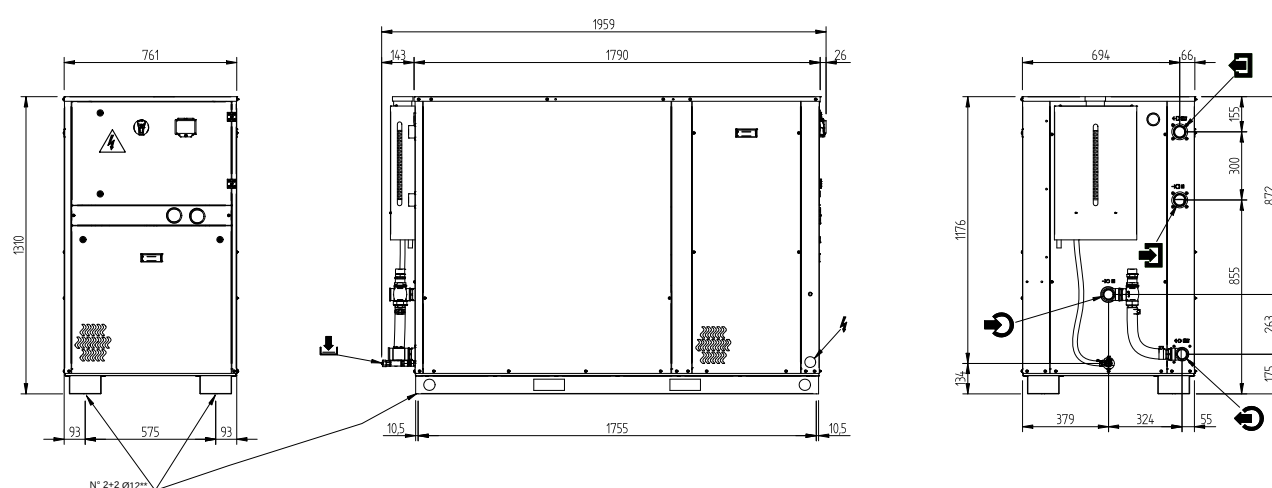
TWEvo Tech 101 - 121 - 161 standard version with tank kit



TWEvo Tech 101 - 121 - 161 standard version with by-pass



TWEvo Tech 101 - 121 - 161 standard version with by-pass and tank kit



	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
 Condenser water inlet	Rp 1"1/2	Rp 1"1/2	Rp 1"1/2
 Condenser water outlet	Rp 1"1/2	Rp 1"1/2	Rp 1"1/2

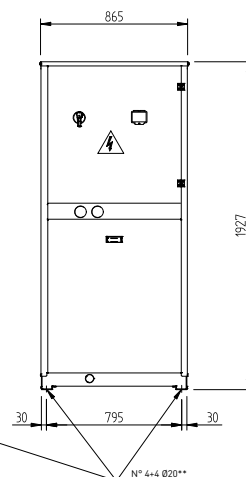
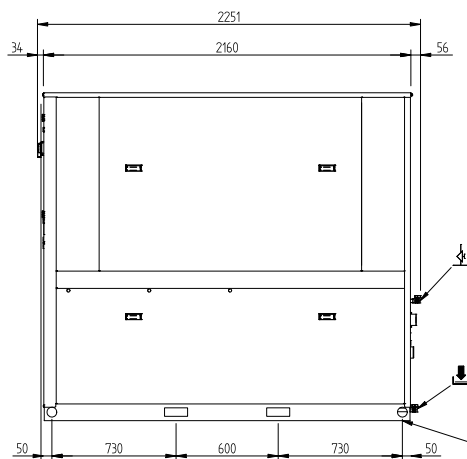
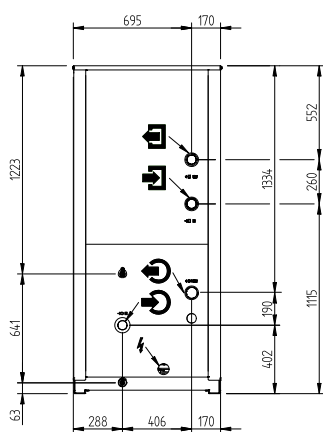
** Holes

 Power supply

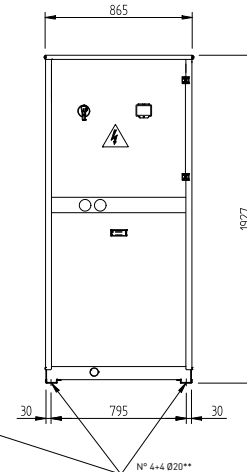
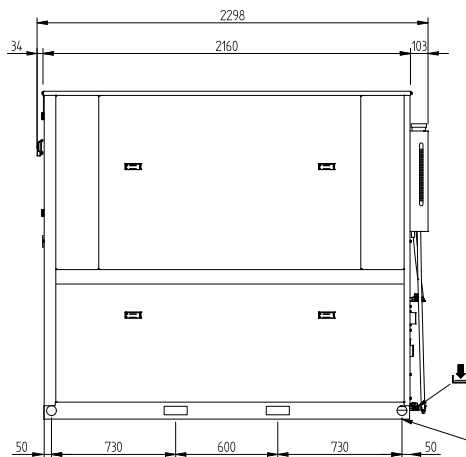
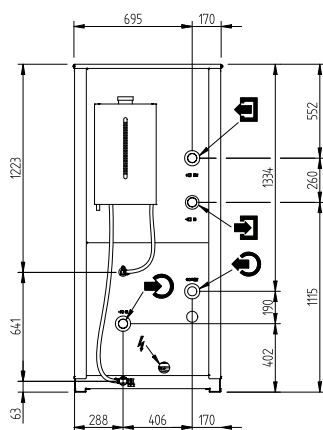
 Air vent = Rp 1/2"

 Water discharge = Rp 1/2"

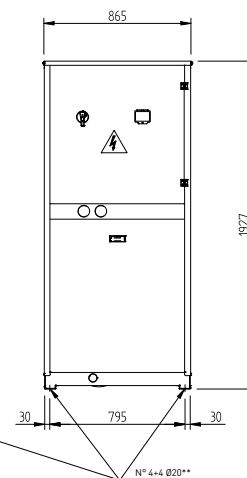
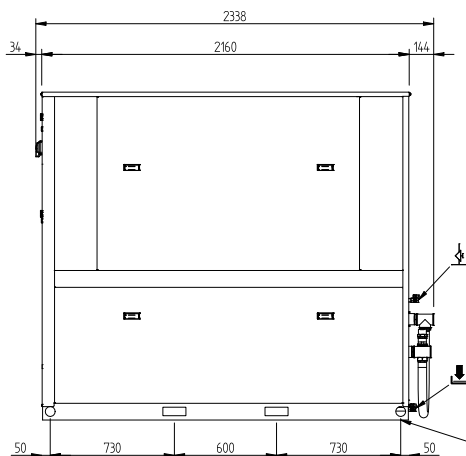
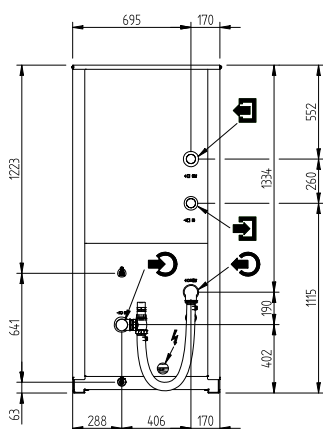
TWEevo Tech 201 - 251 - 301 - 351 standard version



TWEevo Tech 201 - 251 - 301 - 351 standard version with tank kit



TWEevo Tech 201 - 251 - 301 - 351 standard version with by-pass



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

** Holes



Power supply

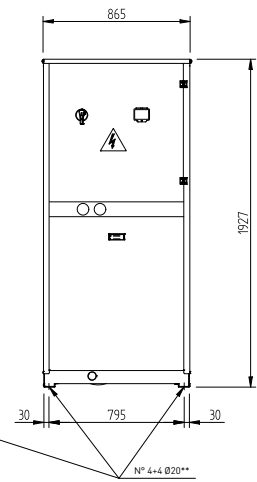
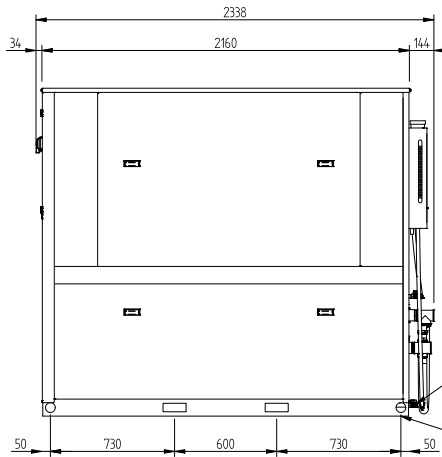
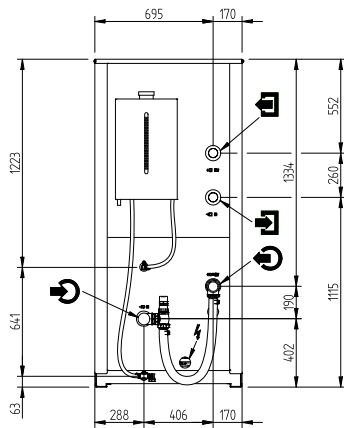


Air vent = Rp 1/2"

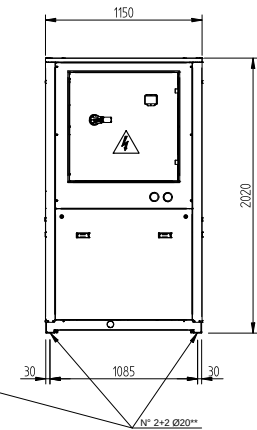
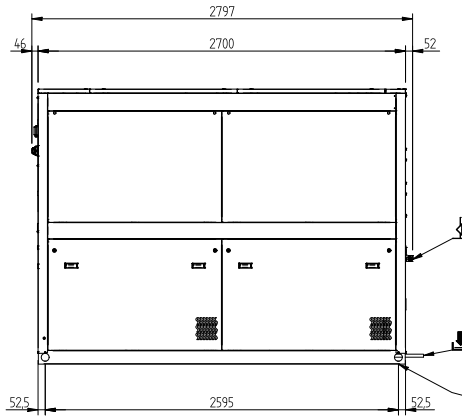
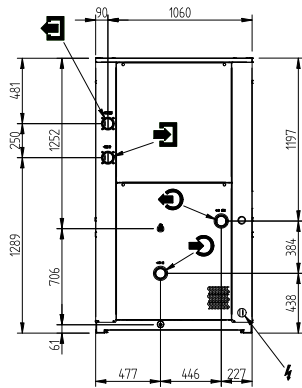


Water discharge = Rp 1/2"

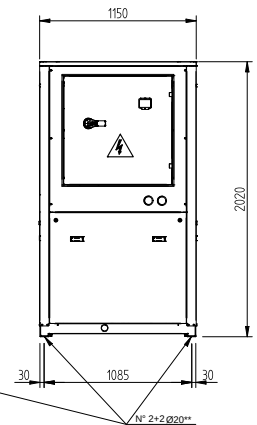
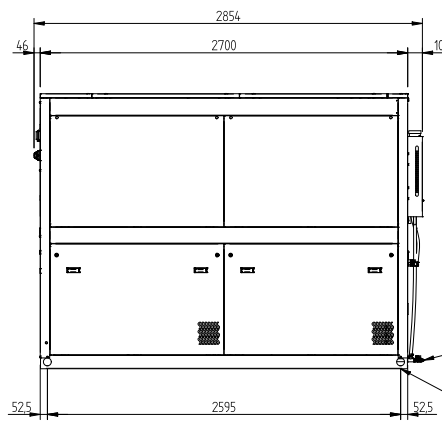
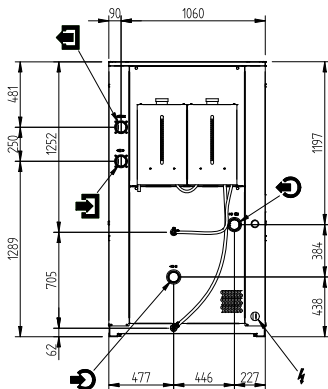
TWEevo Tech 201 - 251 - 301 - 351
standard version with by-pass and tank kit



TWEevo Tech 381 - 401
standard version



TWEevo Tech 381 - 401
standard version with tank kit



	201	251	301	351	381	401
Water inlet	Rp 2"	Rp 2"	Rp 2"	Rp 2"	Rp 2" 1/2	Rp 2" 1/2
Water outlet	Rp 2"	Rp 2"	Rp 2"	Rp 2"	Rp 2" 1/2	Rp 2" 1/2
Condenser water inlet	Rp 2"	Rp 2"	Rp 2"	Rp 2"	Rp 2" 1/2	Rp 2" 1/2
Condenser water outlet	Rp 2"	Rp 2"	Rp 2"	Rp 2"	Rp 2" 1/2	Rp 2" 1/2

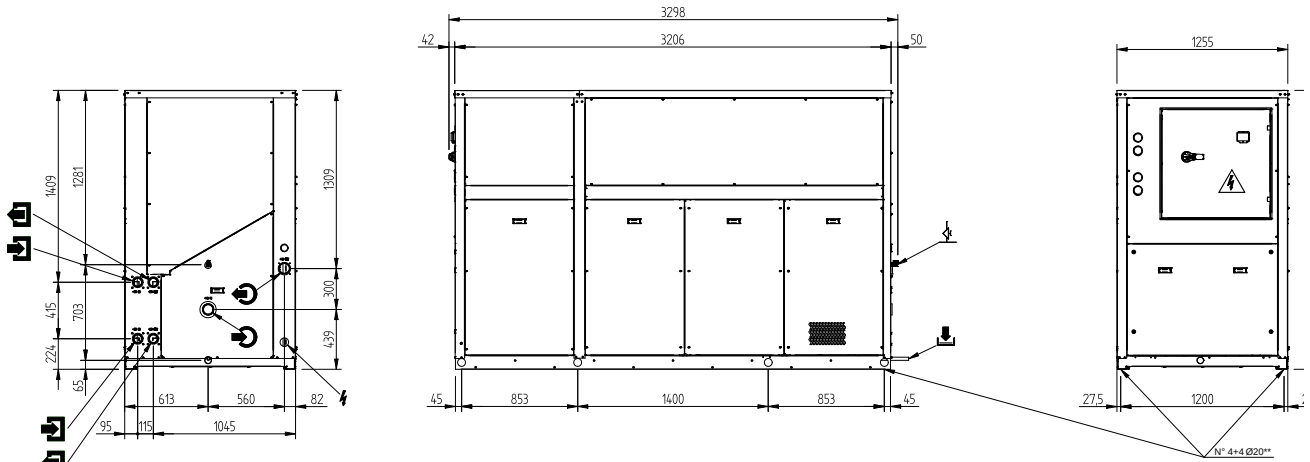
**** Holes**

Power supply

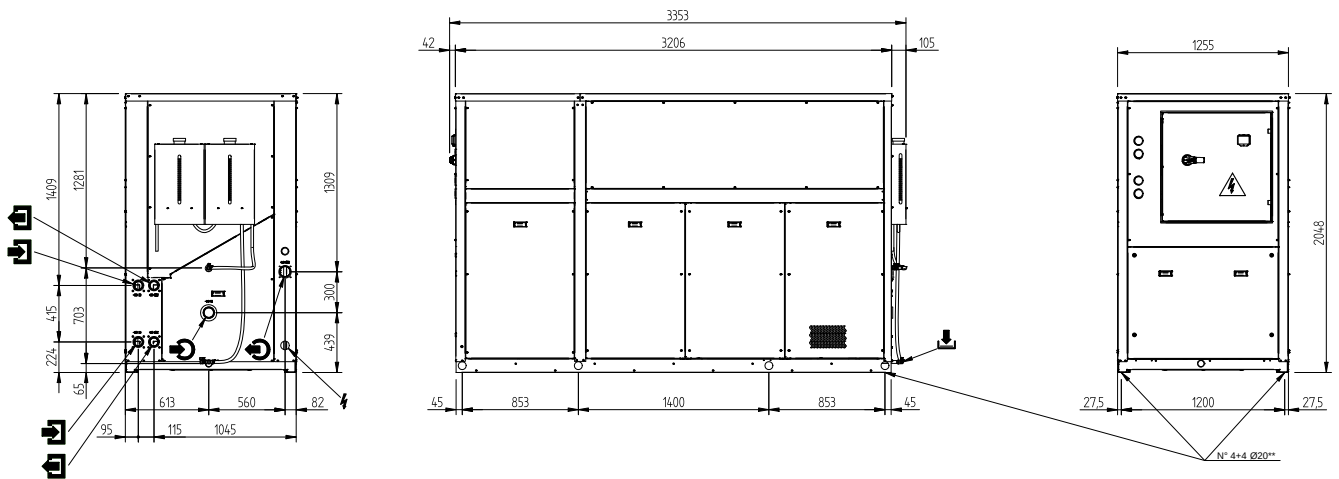
Air vent = Rp 1/2"

Water discharge = Rp 1/2"

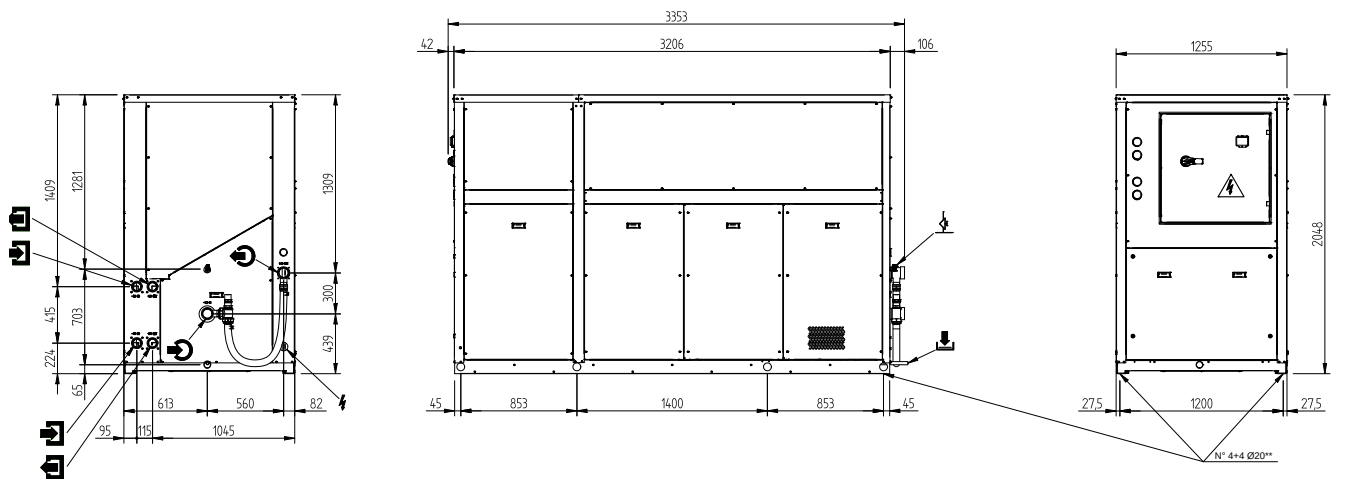
TWEevo Tech 402 - 502 - 602
standard version



TWEevo Tech 402 - 502 - 602
standard version with tank kit



TWEevo Tech 402 - 502 - 602
standard version with by-pass

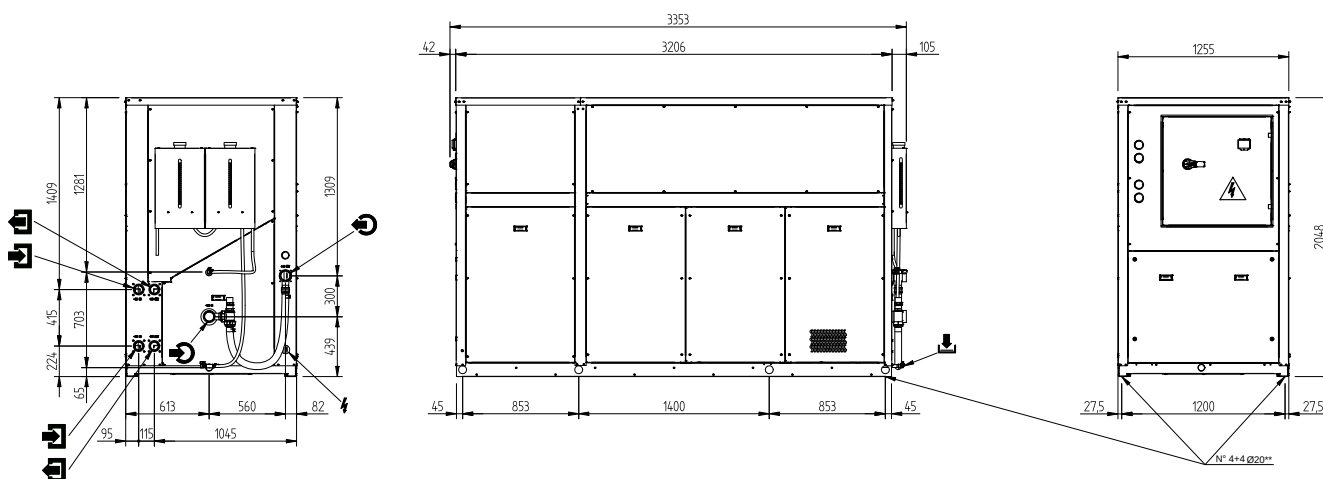


	402	502	602
 Water inlet	Rp 2"1/2	Rp 2"1/2	Rp 2"1/2
 Water outlet	Rp 2"1/2	Rp 2"1/2	Rp 2"1/2
 Condenser water inlet	Rp 2"	Rp 2"	Rp 2"
 Condenser water outlet	Rp 2"	Rp 2"	Rp 2"

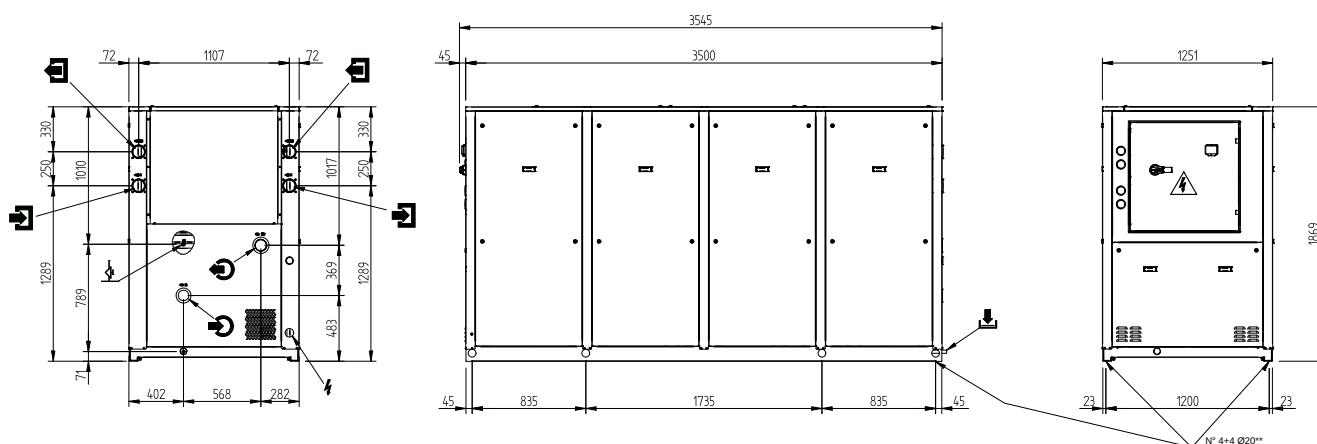
**** Holes**

-  Power supply
-  Air vent = Rp 1/2"
-  Water discharge = Rp 1/2"

TWEevo Tech 402 - 502 - 602
standard version with by-pass and tank kit



TWEevo Tech 702 - 802
standard version



	402	502	602	702	802
Water inlet	Rp 2"1/2	Rp 2"1/2	Rp 2"1/2	Rp 3"	Rp 3"
Water outlet	Rp 2"1/2	Rp 2"1/2	Rp 2"1/2	Rp 3"	Rp 3"
Condenser water inlet	Rp 2"	Rp 2"	Rp 2"	Rp 3"	Rp 3"
Condenser water outlet	Rp 2"	Rp 2"	Rp 2"	Rp 3"	Rp 3"

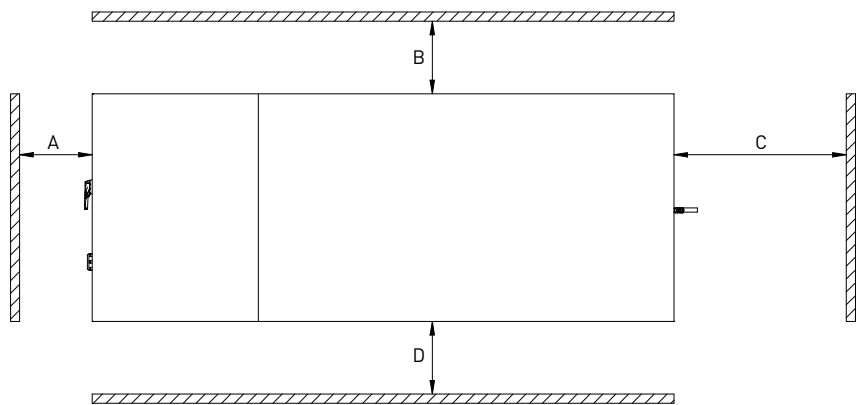
****** Holes

Power supply

Air vent = Rp 1/2"

Water discharge = Rp 1/2"

OVERALL DIMENSIONS



Minimum distance to respect (mm).

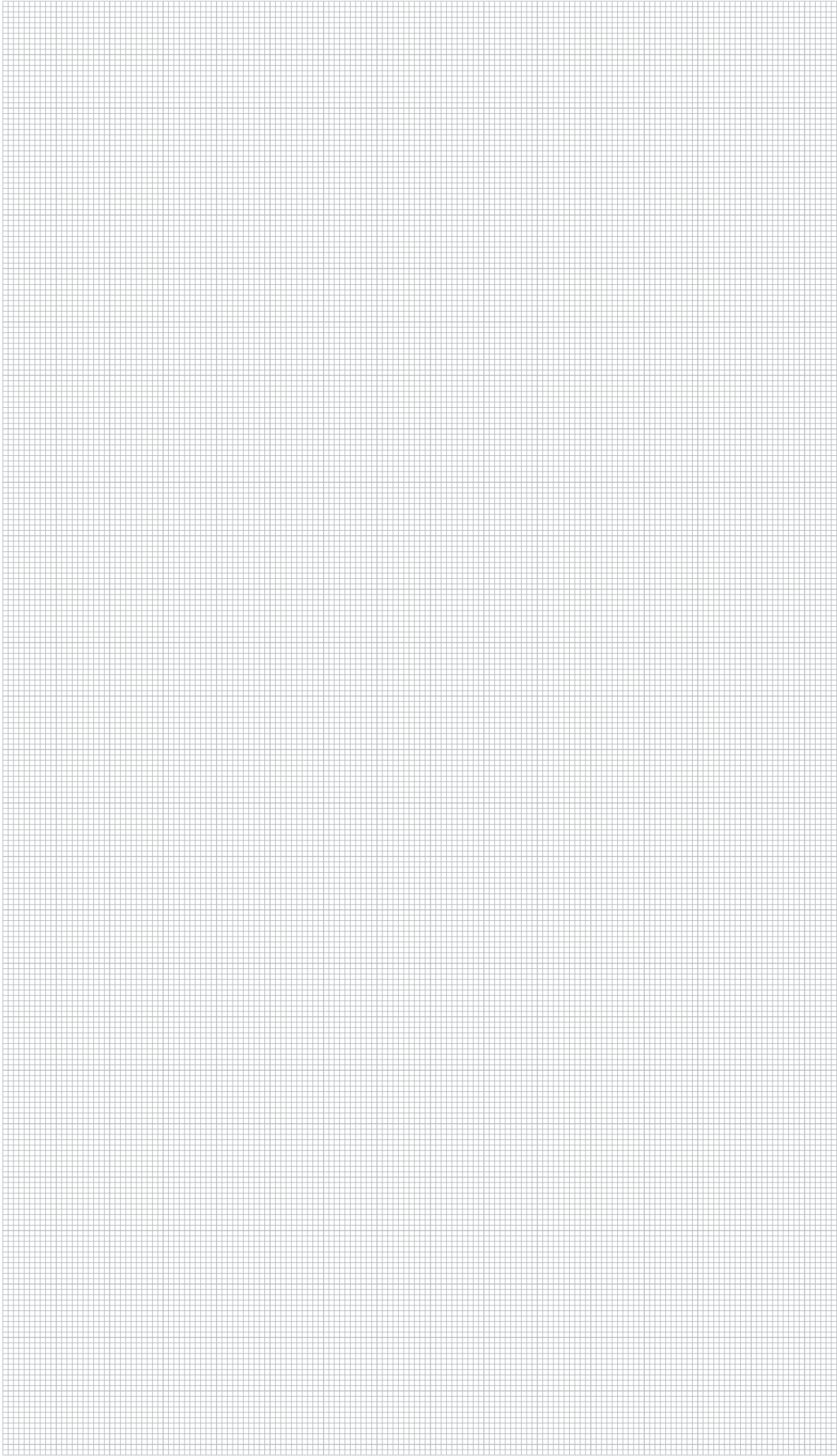
	A	B	C	D
TWEEvo Tech 031	1000	1000	1100	1000
TWEEvo Tech 051	1000	1000	1100	1000
TWEEvo Tech 081	1000	1000	1100	1000
TWEEvo Tech 101	1000	1000	1100	1000
TWEEvo Tech 121	1000	1000	1100	1000
TWEEvo Tech 161	1000	1000	1100	1000
TWEEvo Tech 201	1200	1200	2000	1200
TWEEvo Tech 251	1200	1200	2000	1200
TWEEvo Tech 301	1200	1200	2000	1200
TWEEvo Tech 351	1200	1200	2000	1200
TWEEvo Tech 381	1200	1200	2500	1200
TWEEvo Tech 401	1200	1200	2500	1200
TWEEvo Tech 402	1200	1200	2500	1200
TWEEvo Tech 502	1200	1200	2500	1200
TWEEvo Tech 602	1200	1200	2500	1200
TWEEvo Tech 702	1200	1200	2500	1200
TWEEvo Tech 802	1200	1200	2500	1200

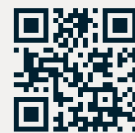
INSTALLATION GUIDE

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);
 - strainers (0,5 / 0,8 mm mesh) at unit inlet to protect the exchangers (evaporator and condenser/s) from any metal chips or debris in the piping.
- f) 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.
- g) 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.
- h) 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.
- i) Always ensure all the air is bled out of the hydraulic circuit to ensure correct operation.
- l) Always drain the hydraulic circuit during winter shutdowns; alternatively, ensure the circuit is filled with a suitable antifreeze solution.







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EAC Declaration



Cooling, conditioning, purifying.