

K20328EN ed.1



TCAVBZ-TCAVIZ 1270÷21600

TCAVSZ 1270÷21600

Z-Power Range

*Packaged air cooled water chillers with axial fans.
Range with semihermetic screw compressors and R134a refrigerant gas.*

R134a



Index

Description of the unit	4
General Features	6
Declared conditions of use	6
Structural features	7
Electrical Control Board	7
Versions	7
Available Installations	7
Factory Fitted Accessories	8
Accessories supplied separately	8
Technical Data	9
Electronic controls.....	19
Electronic controller	19
KTR – Remote keyboard	19
Serial Connection.....	20
Performance.....	20
Performance.....	21
Performances and pressure drops accessories RC100 and DS	31
Energy efficiency at partial loads - ESEER and IPLV indexes	35
Loss of evaporator load	36
Sound power and pressure	37
Functioning limits	39
Use of antifreeze solutions	39
Protection from freezing for seasonal stoppage	39
Dimensions and clearances	40
Clearance and positioning	51
Lifting and Handling	51
Storage	51
Distribution of the weights	52
Accessories weights	55
Water circuits	56
Electrical connections	57

Description of the unit

A complete and flexible range

Thirty-two models from 270 to 1600 kW. This allows a punctual choice of the model depending on the cooling capacity requested in utility without waste. The Z-POWER range chillers are also suitable for all types of installation, also thanks to the extended functioning limits. The standard unit works regularly from 42÷45°C of outdoor air temperature up to 5°C (up to -15°C with accessory F115). Also, it can function up to 50°C with partialised cooling capacity.

ESEER and IPLV

The chillers function at medium-level during their life span, supplying lower cooling capacities with respect to those for which they were purchased. To evaluate the average efficiency, use ESEER (European) and IPLV indexes (American). The chillers in the Z-POWER range have been developed to allow excellent efficiency at partial loads and to obtain high ESEER and IPLV values, with consequent decrease of energy consumption.



Components optimised for R134a

The components used in the Z-POWER range have been appropriately developed to perform at high energy levels with R134a gas. The screw compressors and the tube and shell or plate heat exchangers dedicated to this gas are among the top of the range elements. The ventilating section has been dimensioned to allow excellent heat exchange with reduced noise levels. Moreover, the electronic expansion valve allows precise, quick and punctual regulation in the different load conditions.

The versions

Different versions are available to respond to the specific noise requirements of the installations. The decrease in noise of the soundproofed version, with acoustic insulation of the compressors compartment, can be further implemented thanks to the reduction of the speed of the fans in the silenced version. The correct functioning and performances are guaranteed thanks to the optimised designing of the ventilating section. The electronics in the silenced version allows the chiller to work at an outdoor air temperature up to 50°C, even with partialisation of the cooling capacity and increase of the noise above 40÷43°C.

A range full of accessories

In addition to the traditional accessories, the chillers of the Z-POWER range can be equipped with total or partial recovery exchangers for hot water production up to 60°C. Adjustment devices of the fans speed are available in applications with outdoor air temperatures up to -15°C. Upon request, the chillers can be equipped with pumping unit with single or double electric pump. Chillers up to 500 kW using plate heat exchangers can be equipped with pumping unit with 1100 litre storage tank and single or double electric pump.

Condensing section

The geometry of the condensing section and the fluid dynamic flow generated by the fans have been designed to maximise efficiency of heat exchange and balancing the pressure drops, keeping the noise introduced into the environment low. Also the standard machine envisions a pressostatic step-type condensing control to allow operation up to +5 °C outdoor air temperature.

Evaporator

Plate or tube and shell evaporator (depending on model). The evaporator is equipped with two refrigerant circuits (one for each compressor), improving efficiency to partial loads.

**Compressor**

Semi-hermetic screw compressors specifically developed to function with R134a refrigerant are used in the Z-POWER range. Each compressor has 3 partialisation steps that become 4 if the economiser is present, thus enabling the chiller to operate in an excellent manner, even with partial loads, with a significant energy saving. The option enabling the modulating control of the cooling capacity is also available.

EEV: Electronic expansion valve

The chillers are equipped as per standard with latest generation electronic expansion valve managed by microprocessor control. As well as allowing precise control of the refrigerant gas flow, it allows accurate functioning of the chiller unit with an efficient response speed with respect to the traditional thermostatic expansion valve.

General Features

Declared conditions of use

TCAVBZ units are monobloc water chillers with air-cooled condensation and axle fans. TCAVIZ- TCAVSZ units are monobloc water chillers with air-cooled condensation and axle fans, in silenced set-up. The use of TCAVBZ, TCAVIZ and TCAVSZ chillers is envisioned in air conditioning installations where it is necessary chilled water, not for human consumption.

The machine is designed for outdoor installation.

The units comply with the following Directives:

- 2006/42/EC Machinery Directive;
- Low voltage Directive 2006/95/EC;
- Electromagnetic compatibility Directive 2004/108/EC;
- Pressure equipment directive 97/23/EEC (PED).

Guide to reading the code

"SERIES" code

"MODEL" code

T	C	A	V	B	Z	1-2	270÷1600
Water chiller	Cooling only	Axle fans	Semi-hermetic screw compressors	Basic version	R134a refrigerant gas	Number of compressors	Approximate cooling capacity (in kW)
				I Soundproofed version			
				S Silenced version			

Example: TCAVBZ 21110

- Water chiller;
- Cooling only;
- With axle fans;
- With two semi-hermetic screw compressors;
- Basic version;
- With R134a refrigerant gas;
- Nominal cooling capacity of approximately 1110.

Structural features

- Support structure realised in galvanised sheet steel and painted with polyester powders (RAL 9018 white).
- Semi-hermetic high efficiency screw compressors and specifically developed to function with R134a refrigerant. The compressor has star-delta starting with reduced starting current by means of an equaliser valve and load partialisation, complete with integral protection and crankcase heater.
- The compressors are also equipped with cut-off valves on the refrigerant discharge pipe.
- Partialisation of cooling capacity of the chiller as in the following table:

Model	Compressors/ Steps	Circuits
1270+1390	1/3	1
2331+2641	2/6	2
2681+21600	2/8	2

- Water side shell and tube exchanger with dry heat expansion in countercurrent type plates. The tube and shell heat exchanger is realised in carbon steel with copper pipes, air vent valve and water drain cock. The plate heat exchanger is made of stainless steel, equipped with double refrigerant circuit and single water-side circuit to improve energy efficiency with partial loads. Both types of heat exchangers are equipped with closed cell expanded polyurethane rubber insulation with protective film against U.V.A. rays.
- Victaulic hydraulic connection on evaporator, threaded female or Victaulic connections on heat recovery unit or on desuperheater.
- Air side heat exchanger made up from coils with mechanically expanded copper pipes on aluminium fins with reversible geometry to increase energy efficiency.
- Electric helical fans, with internal circuit breaker protection and accident-prevention protection grids. The fans are provided with pressostatic regulation to ensure operation up to +5°C outdoor air temperature.
- Cooling circuits realised with mild copper tube and welded with silver and steel alloys. Each cooling circuit is complete with cartridge drier filter, load connections, high pressure switch with manual rearm, low pressure switch with automatic rearm, gas passage indicator and presence of any humidity, electronic expansion valve (hermetic closure on the liquid line with unit at standstill), cock on the liquid line, safety valves on high pressure sections, intake line insulation closed cell expanded polyurethane rubber insulation with protective film against U.V.A. rays.
- Ecological R134A refrigerant fluid load.

Electrical Control Board

- Electric control board in compliance with IEC Standards, in waterproof casing complete with:
 - electrical wiring arranged for power supply 400V-3ph-50Hz;
 - transformer for auxiliary circuit;
 - 230V-1ph-50Hz auxiliary power supplies;
 - 24V-1ph-50Hz control power supplies;
 - compressor protection phase monitor;
 - power contactors;
 - remote controls: remote ON/OFF, double Set-point (DSP accessory);
 - remote machine controls: compressor(s) functioning light, general lock light;
 - manoeuvre isolator switch, with door interlocking isolator;
 - automatic protection switch on auxiliary circuit;
 - protection fuses for each compressor (optional is the version with circuit breaker switches protecting each compressor);
 - automatic switches for fans protection;
 - auxiliary circuit protection fuses.
- Programmable electronic board with microprocessor, controlled by the keyboard inserted in the machine, remote controllable up to 1000 metres. This electronic board performs the following functions:
 - regulation and setting of unit inlet water temperature (with optional CCL accessory - linear capacity control - regulation is performed based on the outlet water temperature from evaporator);
 - management of safety timers; work timer for every compressor; automatic inversion of the compressors intervention sequence; the circulation pump or utility service (both on evaporator side and on condenser side); electronic anti-freeze protection; partialisation steps, the functions that regulate the intervention mode of the individual parts making up the machine;
 - management of the electronic expansion valve (EEV) with possibility of reading and displaying the intake temperature, the evaporation pressure, overheating and open state of the valve.
 - displaying of programmed functioning parameters, of temperatures of unit inlet and outlet water, of condensation, evaporation pressures and any alarms;
- Multi-language management (Italian, English, French, German, Spanish) of displays.
- Management of alarms log. In particular, for every alarm, the following are memorised:
 - date and time of intervention;
 - alarm code and description;
 - inlet/outlet water temperatures values when the alarm intervened;
 - the condensation/evaporation pressure values at the time of the alarm;
 - alarm delay time from the switch-on of the connected device;
 - compressor status at moment of alarm;
 - self-diagnosis with continuous monitoring of the unit functioning status.
- Advanced functions:
 - set-up for serial connection with RS 485 output for dialogue with main BSM, centralised systems and supervision networks.
 - management of time bands and operation parameters with the possibility of daily/weekly functioning programs;
 - check-up and monitoring of scheduled maintenance status;
 - computer-assisted unit testing.

Versions

B- Basic version (TCAVBZ).

I- Soundproofed version with sound-resistant covering of the compressor (TCAVIZ).

S- Silenced version complete with soundproofed covering on compressors and reduced speed fans (TCAVSZ).

Available Installations

Standard:

Installation without pump and without water buffer tank.

Pump:

P1 – Installation with pump.

P2 – Installation with increased static pressure pump.

DP1 – Installation with double pump, including an automatically activated pump in stand-by.

DP2 – Installation with increased static pressure double pump, including an automatically activated pump in stand-by.

Tank & Pump:

ASP1 – Installation with pump and water buffer tank.

ASP2 – Installation with increased static pressure pump and water buffer tank.

ASDP1 – Installation with double pump, including an automatically activated pump in stand-by and storage.

ASDP2 – Installation with increased static pressure double pump, including an automatically activated pump in stand-by and storage.

Factory Fitted Accessories

P1 – Installation with pump.
P2 – Installation with increased static pressure pump.
DP1 – Installation with double pump, including an automatically activated pump in stand-by.
DP2 – Installation with increased static pressure double pump, including an automatically activated pump in stand-by.
ASP1 – Installation with pump and water buffer tank.
ASP2 – Installation with increased static pressure pump and water buffer tank.
ASDP1 – Installation with double pump, including an automatically activated pump in stand-by and storage.
ASDP2 – Installation with increased static pressure double pump, including an automatically activated pump in stand-by and storage.
DS - Desuperheater with partial recovery of the condensation heat.
RC100 - Heat recovery with 100% recovery of the condensation heat. The accessory is complete of condensing control FI10 and differential pressure switch on the recovery exchanger.
TRD - Thermostat with display of the inlet water temperature at the recovery unit/desuperheater with possibility to set the activation set-point of an external regulation device if present.
FI10 - Electronic proportional device for continuous pressure regulation of the fan rotation speed up to the outdoor air temperature of -10°C.
FI15 - EC-FAN for the stepless speed regulation down to an outside air temperature of -15°C.
CR – Power factor correction capacitors (cosØ > 0,94).
IM - Unit with circuit breaker switches protecting compressors and fans.
FDL - Forced Download Compressors, partialisation or compressors switch-off to limit the absorbed current and power (Digital Input).
CCL - Unit with linear capacity control compressors (25-100% for models with 2 compressors).
RR - Unit with compressor suction cut-off valves (the discharge valve is as per standard).
SLO - Oil level sensor (this accessory is recommended in installations where visual control of the compressor sight-glass is difficult or where a more in-depth monitoring is required).
GM – High and low pressure gauges for each refrigerant circuit, complete of capillaries.
CMT - Control of minimum and maximum values of power voltage.
RA - Anti-freeze electric resistance on evaporator complete with activator.
RDR - Antifreeze electric heater for desuperheater/recovery unit (only with DS or RC100), to prevent the risk of ice formation inside the recovery exchanger when the machine is switched off (as long is the unit is not disconnected from the power supply).

RAS - Storage tank antifreeze electric heater to prevent the risk of ice formation inside the inertial storage tank when the machine is switched off (as long as the unit is not disconnected from the power supply).
DSP - Double Set-point (Digital Input).
CS – Remotely modifies scrolling Set-point via analogue signal (4-20 mA).
BT - Low temperature produced water, option complete with accessory FI10
SS - RS 485 serial interface for logic dialogue with Building Automation, centralised systems and supervision network (proprietary protocol, Modbus RTU).
FTT10 - LON serial interface for connection to BMS with standard LON FTT10 protocol.
RAP - Unit with copper/pre-painted aluminium condensation coils.
BRR – Unit with copper/copper condensation coils.
RPB - Condensing coils protection mesh.
RPE -Lower compartment protection mesh.
SAM – Spring anti-vibration mountings (supplied not installed).

Accessories supplied separately

KTR - Remote keypad for remote control, with the same functions as the one built into the unit.

Technical Data

Table "A": Technical Data

TCAVBZ - TCAVIZ		1270	1310	1350	1390
Nominal cooling capacity (*)	kW	270,0	309,0	350,0	389,0
E.E.R. (*)		2,70	2,81	2,70	2,70
E.S.E.E.R.		3,47	3,59	3,45	3,44
I.P.L.V.		3,59	3,72	3,58	3,56
Sound pressure TCAVBZ (*) (**)	dB(A)	63	64	64	65
Sound pressure TCAVIZ (*) (**)	dB(A)	61	62	62	63
Sound power TCAVBZ (*) (**)	dB(A)	97	98	98	98
Sound power TCAVIZ (*) (**)	dB(A)	95	96	96	96
Compressors/steps	n°/n°	1/3	1/3	1/3	1/3
Circuits	n°	1	1	1	1
Fans	n° x kW	6 x 2,00	6 x 2,00	6 x 2,00	6 x 2,00
Fans nominal flow rate	m³/h	117600	116400	116400	114000
Evaporator	Type	Shell and tube			
Evaporator nominal water flow (*)	m³/h	46,3	53,0	60,1	66,7
Evaporator nominal pressure drops (*)	kPa	39	42	34	41
Evaporator water content	l	143	111	113	113
Residual head P1 (*)	kPa	96	68	94	56
Residual head P2 (*)	kPa	140	114	149	104
Electrical data		1270	1310	1350	1390
Electrical power supply	V-ph-Hz	400-3-50	400-3-50	400-3-50	400-3-50
Auxiliary power supply	V-ph-Hz	230-1-50	230-1-50	230-1-50	230-1-50
Electrical control power supply	V-ph-Hz	24-1-50	24-1-50	24-1-50	24-1-50
Total absorbed power (■)	kW	100,0	110,0	129,5	144,0
Nominal current (■)	A	165	180	203	229
Maximum current (■)	A	207	231	261	292
Starting current (■)	A	385	385	398	477
Pump absorbed power (P1/P2)	kW	3,0/4,0	3,0/4,0	4,0/5,5	4,0/5,5
Pump absorbed current (P1/P2)	A	6,0/8,0	6,0/8,0	8,0/11,0	8,0/11,0
Dimensions		1270	1310	1350	1390
Width (W)	mm	2260	2260	2260	2260
Length (a)	mm	3830	3830	3830	3830
Height (c)	mm	2430	2430	2430	2430

(*) In the following conditions: condenser inlet air temperature 35°C; cooled water temperature 7°C; temperature differential at the evaporator 5 K; fouling factor equal to $0.35 \times 10^{-4} \text{ m}^2 \text{ K/W}$.

(**) Sound pressure level in dB(A) referring to a 10 m distance from the unit, in free field and directionality factor equal to Q=2. The noise data refers to the unit without pump.

(***) Total sound power level in dB(A) on the basis of the measurements made in compliance with the UNI EN-ISO9614 and Eurovent 8/1 Standards. The noise data refers to the unit without pump.

(■) Absorbed current/absorbed power value without electric pump.

For the amount of R134a refrigerant load and Polyester oil load (POE), refer to the serial number plate on board machine.

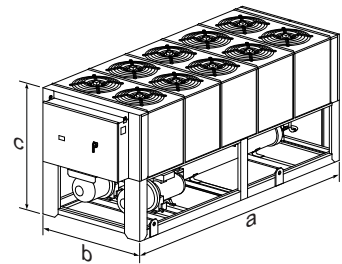


Table "A": Technical Data

TCAVBZ - TCAVIZ		2331	2351	2371	2391	2421	2461	2511
Nominal cooling capacity (*)	kW	331,1	350,7	370,6	388,5	413,6	454,4	505,7
E.E.R. (*)		2,94	2,95	2,92	2,90	2,93	2,92	2,91
E.S.E.E.R.		3,96	3,97	3,97	3,99	3,99	3,92	3,84
I.P.L.V.		4,11	4,11	4,12	4,13	4,15	4,07	3,98
Sound pressure TCAVBZ (*) (**)	dB(A)	63	63	63	63	64	64	64
Sound pressure TCAVIZ (*) (**)	dB(A)	61	61	61	61	62	62	62
Sound power TCAVBZ (*) (**)	dB(A)	97	97	97	97	98	98	98
Sound power TCAVIZ (*) (**)	dB(A)	95	95	95	95	96	96	96
Compressors/steps	n°/n°	2/6	2/6	2/6	2/6	2/6	2/6	2/6
Circuits	n°	2	2	2	2	2	2	2
Fans	n° x kW	6 x 2.00	6 x 2.00	6 x 2.00	6 x 2.00	8 x 2.0	8 x 2.0	8 x 2.0
Fans nominal flow rate	m³/h	134000	132000	130000	130000	180000	176800	173600
Evaporator	Type	Plates/Shell and tube (STE accessory)						
Evaporator nominal water flow (*)	m³/h	56,8	60,2	63,6	66,7	71,0	78,0	86,8
Evaporator nominal pressure drops (*)	kPa	16	18	20	18	21	23	27
Evaporator water content	l	53	53	53	65	65	70	70
STE Accessory pressure drops (*) (●)	kPa	43	48	53	58	41	50	61
STE Accessory water content (*) (●)	l	111	111	111	111	113	113	113
Residual head P1 (*)	kPa	98	86	72	86	113	99	79
Residual head P2 (*)	kPa	143	131	117	121	151	137	118
Residual head ASP1 (*)	kPa	67	50	33	43	65	40	36
Residual head ASP2 (*)	kPa	112	95	78	78	102	79	73
Tank water content (ASP1/ASP2)	l	1100	1100	1100	1100	1100	1100	1100
Electrical data		2331	2351	2371	2391	2421	2461	2511
Electrical power supply	V-ph-Hz	400-3-50	400-3-50	400-3-50	400-3-50	400-3-50	400-3-50	400-3-50
Auxiliary power supply	V-ph-Hz	230-1-50	230-1-50	230-1-50	230-1-50	230-1-50	230-1-50	230-1-50
Electrical control power supply	V-ph-Hz	24-1-50	24-1-50	24-1-50	24-1-50	24-1-50	24-1-50	24-1-50
Total absorbed power (■)	kW	112,6	118,9	126,9	134,0	141,2	155,6	173,8
Nominal current (■)	A	185	200	221	233	246	267	292
Maximum current (■)	A	234	249	264	281	305	337	368
Starting current (■)	A	288	322	337	398	422	487	518
Pump absorbed power (P1/P2)	kW	3,0/4,0	3,0/4,0	3,0/4,0	3,0/4,0	4,0/5,5	4,0/5,5	4,0/5,5
Pump absorbed current (P1/P2)	A	6,0/8,0	6,0/8,0	6,0/8,0	6,0/8,0	8,0/10,0	8,0/10,0	8,0/10,0
Dimensions		2331	2351	2371	2391	2421	2461	2511
Width (W)	mm	2260	2260	2260	2260	2260	2260	2260
Length (a)	mm	3830	3830	3830	3830	4830	4830	4830
Height (c)	mm	2430	2430	2430	2430	2430	2430	2430

(*) In the following conditions: condenser inlet air temperature 35°C; cooled water temperature 7°C; temperature differential at the evaporator 5 K; fouling factor equal to $0.35 \times 10^{-4} \text{ m}^2 \text{ K/W}$.

(**) Sound pressure level in dB(A) referring to a 10 m distance from the unit, in free field and directionality factor equal to Q=2. The noise data refers to the unit without pump.

(***) Total sound power level in dB(A) on the basis of the measurements made in compliance with the UNI EN-ISO9614 and Eurovent 8/1 Standards. The noise data refers to the unit without pump.

(●) Shell and tube evaporator accessory (STE) available for models 2331-2511.

(■) Absorbed current/absorbed power value without electric pump.

For the amount of R134a refrigerant load and Polyester oil load (POE), refer to the serial number plate on board machine.

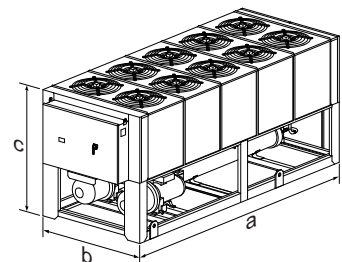


Table "A": Technical Data

TCAVBZ - TCAVIZ		2551	2571	2611	2641	2681	2701	2710
Nominal cooling capacity (*)	kW	541,2	565,0	606,2	641,5	671,5	691,1	710,0
E.E.R. (*)		2,97	2,94	2,90	2,90	2,92	2,90	2,96
E.S.E.E.R.		3,92	3,99	3,97	3,96	3,96	3,96	3,96
I.P.L.V.		4,07	4,15	4,13	4,11	4,11	4,12	4,10
Sound pressure TCAVBZ (*) (**)	dB(A)	65	65	65	65	66	66	66
Sound pressure TCAVIZ (*) (**)	dB(A)	63	63	63	63	64	64	64
Sound power TCAVBZ (*) (**)	dB(A)	98	98	98	98	99	99	100
Sound power TCAVIZ (*) (**)	dB(A)	96	96	96	96	97	97	98
Compressors/steps	n°/n°	2/6	2/6	2/6	2/6	2/8	2/8	2/8
Circuits	n°	2	2	2	2	2	2	2
Fans	n° x kW	10 x 2.0	10 x 2.0	10 x 2.0	10 x 2.0	12 x 2.0	12 x 2.0	12 x 2.0
Fans nominal flow rate	m³/h	224400	224400	220600	216800	269200	269200	269200
Evaporator	Type	Shell and tube						
Evaporator nominal water flow (*)	m³/h	92,9	96,9	104,0	110,1	115,2	118,6	121,8
Evaporator nominal pressure drops (*)	kPa	42	45	39	44	47	50	64
Evaporator water content	l	256	256	250	250	250	250	250
Residual head P1 (*)	kPa	103	96	83	71	61	54	-
Residual head P2 (*)	kPa	142	135	122	111	101	94	-
Electrical data		2551	2571	2611	2641	2681	2701	2710
Electrical power supply	V-ph-Hz	400-3-50	400-3-50	400-3-50	400-3-50	400-3-50	400-3-50	400-3-50
Auxiliary power supply	V-ph-Hz	230-1-50	230-1-50	230-1-50	230-1-50	230-1-50	230-1-50	230-1-50
Electrical control power supply	V-ph-Hz	24-1-50	24-1-50	24-1-50	24-1-50	24-1-50	24-1-50	24-1-50
Total absorbed power (■)	kW	182,2	192,2	209,0	221,2	230,0	238,3	240,0
Nominal current (■)	A	308	326	351	367	382	395	394
Maximum current (■)	A	384	414	438	462	470	470	470
Starting current (■)	A	558	588	588	612	620	620	620
Pump absorbed power (P1/P2)	kW	5,5/7,5	5,5/7,5	5,5/7,5	5,5/7,5	5,5/7,5	5,5/7,5	-
Pump absorbed current (P1/P2)	A	11,5/15,5	11,5/15,5	11,5/15,5	11,5/15,5	11,5/15,5	11,5/15,5	-
Dimensions		2551	2571	2611	2641	2681	2701	2710
Width (W)	mm	2260	2260	2260	2260	2260	2260	2260
Length (a)	mm	5830	5830	5830	5830	6680	6680	6680
Height (c)	mm	2430	2430	2430	2430	2430	2430	2430

(*) In the following conditions: condenser inlet air temperature 35°C; cooled water temperature 7°C; temperature differential at the evaporator 5 K; fouling factor equal to $0.35 \times 10^{-4} \text{ m}^2 \text{ K/W}$.

(**) Sound pressure level in dB(A) referring to a 10 m distance from the unit, in free field and directionality factor equal to Q=2. The noise data refers to the unit without pump.

(***) Total sound power level in dB(A) on the basis of the measurements made in compliance with the UNI EN-ISO9614 and Eurovent 8/1 Standards. The noise data refers to the unit without pump.

(■) Absorbed current/absorbed power value without electric pump.

For the amount of R134a refrigerant load and Polyester oil load (POE), refer to the serial number plate on board machine.

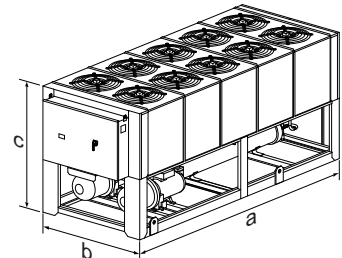


Table "A": Technical Data

TCAVBZ - TCAVIZ		2750	2810	2870	2940	2990	21020	21060
Nominal cooling capacity (*)	kW	751,1	809,3	863,4	935,5	984,6	1016,0	1052,0
E.E.R. (*)		2,98	2,96	2,91	3,01	2,98	3,05	3,13
E.S.E.E.R.		3,72	3,69	3,53	3,76	3,74	3,80	3,93
I.P.L.V.		4,12	4,09	4,03	4,17	4,14	4,21	4,34
Sound pressure TCAVBZ (*) (**)	dB(A)	66	67	67	68	68	68	69
Sound pressure TCAVIZ (*) (**)	dB(A)	64	65	65	66	66	66	67
Sound power TCAVBZ (*) (**)	dB(A)	100	100	103	101	101	101	102
Sound power TCAVIZ (*) (**)	dB(A)	98	98	101	99	99	99	100
Compressors/steps	n°/n°	2/8	2/8	2/8	2/8	2/8	2/8	2/8
Circuits	n°	2	2	2	2	2	2	2
Fans	n° x kW	12 x 2.0	14 x 2.0	14 x 2.0	14 x 2.0	14 x 2.0	14 x 2.0	14 x 2.0
Fans nominal flow rate	m³/h	269200	322200	318800	315000	315000	309400	303800
Evaporator	Type	Shell and tube						
Evaporator nominal water flow (*)	m³/h	128,9	138,9	148,1	160,5	168,9	174,2	180,4
Evaporator nominal pressure drops (*)	kPa	64	47	53	40	48	58	39
Evaporator water content	l	250	427	427	419	410	408	398
Electrical data		2750	2810	2870	2940	2990	21020	21060
Electrical power supply	V-ph-Hz	400-3-50	400-3-50	400-3-50	400-3-50	400-3-50	400-3-50	400-3-50
Auxiliary power supply	V-ph-Hz	230-1-50	230-1-50	230-1-50	230-1-50	230-1-50	230-1-50	230-1-50
Electrical control power supply	V-ph-Hz	24-1-50	24-1-50	24-1-50	24-1-50	24-1-50	24-1-50	24-1-50
Total absorbed power	kW	252,0	273,2	296,2	310,6	329,9	333,4	335,7
Nominal current	A	413	438	465	490	523	529	533
Maximum current	A	470	509	540	571	602	619	630
Starting current	A	620	641	672	751	782	872	883
Dimensions		2750	2810	2870	2940	2990	21020	21060
Width (W)	mm	2260	2260	2260	2260	2260	2260	2260
Length (a)	mm	6680	7680	7680	7680	7680	7680	7680
Height (c)	mm	2430	2430	2430	2430	2430	2430	2430

(*) In the following conditions: condenser inlet air temperature 35°C; cooled water temperature 7°C; temperature differential at the evaporator 5 K; fouling factor equal to $0.35 \times 10^{-4} \text{ m}^2 \text{ K/W}$.

For the amount of R134a refrigerant load and Polyester oil load (POE), refer to the serial number plate on board machine.

(**) Sound pressure level in dB(A) referring to a 10 m distance from the unit, in free field and directionality factor equal to Q=2. The noise data refers to the unit without pump.

(***) Total sound power level in dB(A) on the basis of the measurements made in compliance with the UNI EN-ISO9614 and Eurovent 8/1 Standards. The noise data refers to the unit without pump.

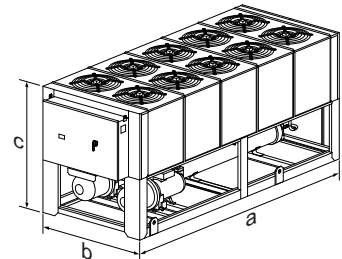


Table "A": Technical Data

TCAVBZ - TCAVIZ		21110	21180	21250	21330	21400	21500	21600
Nominal cooling capacity (*)	kW	1107,0	1180,0	1252,0	1333,0	21400,0	1500,0	1602,0
E.E.R. (*)		2,99	3,07	3,15	3,15	3,12	3,12	3,11
E.S.E.E.R.		3,74	3,84	3,93	3,96	4,01	4,06	4,08
I.P.L.V.		4,14	4,25	4,35	4,36	4,30	4,33	4,39
Sound pressure TCAVBZ (*) (**)	dB(A)	69	69	69	69	70	71	71
Sound pressure TCAVIZ (*) (**)	dB(A)	67	67	67	67	68	69	69
Sound power TCAVBZ (*) (**)	dB(A)	102	102	102	102	103	104	104
Sound power TCAVIZ (*) (**)	dB(A)	100	100	100	100	101	102	102
Compressors/steps	n°/n°	2/8	2/8	2/8	2/8	2/8	2/8	2/8
Circuits	n°	2	2	2	2	2	2	2
Fans	n° x kW	16 x 2.0	16 x 2.0	16 x 2.0	18 x 2.0	20 x 2.0	24 x 2.0	24 x 2.0
Fans nominal flow rate	m³/h	359200	353200	347200	340200	378000	460800	453600
Evaporator	Type	Shell and tube						
Evaporator nominal water flow (*)	m³/h	190,0	202,4	214,7	228,7	240,2	257,4	274,9
Evaporator nominal pressure drops (*)	kPa	42	51	63	55	60	54	60
Evaporator water content	l	398	387	376	493	493	528	528
Electrical data		21110	21180	21250	21330	21400	21500	21600
Electrical power supply	V-ph-Hz	400-3-50	400-3-50	400-3-50	400-3-50	400-3-50	400-3-50	400-3-50
Auxiliary power supply	V-ph-Hz	230-1-50	230-1-50	230-1-50	230-1-50	230-1-50	230-1-50	230-1-50
Electrical control power supply	V-ph-Hz	24-1-50	24-1-50	24-1-50	24-1-50	24-1-50	24-1-50	24-1-50
Total absorbed power	kW	370,5	384,3	397,7	423,0	448,8	480,8	515,0
Nominal current	A	601	634	668	714	762	812	864
Maximum current	A	692	740	788	841	894	960	1000
Starting current	A	973	1081	1129	1217	1270	1379	1419
Dimensions		21110	21180	21250	21330	21400	21500	21600
Width (W)	mm	2260	2260	2260	2260	2260	2260	2260
Length (a)	mm	8980	8980	8980	9980	10980	12980	12980
Height (c)	mm	2430	2430	2430	2430	2430	2430	2430

(*) In the following conditions: condenser inlet air temperature 35°C; cooled water temperature 7°C; temperature differential at the evaporator 5 K; fouling factor equal to $0.35 \times 10^{-4} \text{ m}^2 \text{ K/W}$.

For the amount of R134a refrigerant load and Polyester oil load (POE), refer to the serial number plate on board machine.

(**) Sound pressure level in dB(A) referring to a 10 m distance from the unit, in free field and directionality factor equal to Q=2. The noise data refers to the unit without pump.

(***) Total sound power level in dB(A) on the basis of the measurements made in compliance with the UNI EN-ISO9614 and Eurovent 8/1 Standards. The noise data refers to the unit without pump.

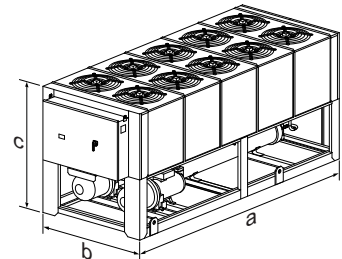


Table "A": Technical Data

TCAVSZ		1270	1310	1350	1390
Nominal cooling capacity (*)	kW	260,0	300,0	340,0	374,0
E.E.R. (*)		2,63	2,71	2,60	2,55
E.S.E.E.R.		3,29	3,41	3,27	3,26
I.P.L.V.		3,41	3,54	3,39	3,37
Sound pressure (*) (**)	dB(A)	57	58	58	59
Sound power (*) (**)	dB(A)	91	92	92	92
Compressors/steps	n°/n°	1/3	1/3	1/3	1/3
Circuits	n°	1	1	1	1
Fans	n° x kW	6 x 1.25	6 x 1.25	6 x 1.25	6 x 1.25
Fans nominal flow rate	m³/h	92000	91000	91000	89000
Evaporator	Type	Shell and tube			
Evaporator nominal water flow (*)	m³/h	44,6	51,5	58,3	64,2
Evaporator nominal pressure drops (*)	kPa	36	40	32	38
Evaporator water content	l	143	111	113	113
Residual head P1 (*)	kPa	105	76	103	71
Residual head P2 (*)	kPa	149	122	160	122

Electrical data		1270	1310	1350	1390
Electrical power supply	V-ph-Hz	400-3-50	400-3-50	400-3-50	400-3-50
Auxiliary power supply	V-ph-Hz	230-1-50	230-1-50	230-1-50	230-1-50
Electrical control power supply	V-ph-Hz	24-1-50	24-1-50	24-1-50	24-1-50
Total absorbed power (■)	kW	99,0	110,5	130,9	146,7
Nominal current (■)	A	162	177	204	232
Maximum current (■)	A	207	231	261	292
Starting current (■)	A	385	385	398	477
Pump absorbed power (P1/P2)	kW	3,0/4,0	3,0/4,0	4,0/5,5	4,0/5,5
Pump absorbed current (P1/P2)	A	6,0/8,0	6,0/8,0	8,0/11,0	8,0/11,0

Dimensions		1270	1310	1350	1390
Width (W)	mm	2260	2260	2260	2260
Length (a)	mm	3830	3830	3830	3830
Height (c)	mm	2430	2430	2430	2430

(*) In the following conditions: condenser inlet air temperature 35°C; cooled water temperature 7°C; temperature differential at the evaporator 5 K; fouling factor equal to $0.35 \times 10^{-4} \text{ m}^2 \text{ K/W}$.

(**) Sound pressure level in dB(A) referring to a 10 m distance from the unit, in free field and directionality factor equal to Q=2. The noise data refers to the unit without pump.

(***) Total sound power level in dB(A) on the basis of the measurements made in compliance with the UNI EN-ISO9614 and Eurovent 8/1 Standards. The noise data refers to the unit without pump.

(■) Absorbed current/absorbed power value without electric pump.

For the amount of R134a refrigerant load and Polyester oil load (POE), refer to the serial number plate on board machine.

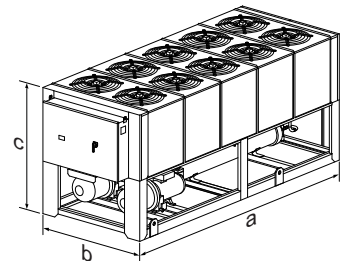


Table "A": Technical Data

TCAVSZ		2331	2351	2371	2391	2421	2461	2511
Nominal cooling capacity (*)	kW	320,6	338,9	359,1	373,3	401,1	439,0	486,9
E.E.R. (*)		2,84	2,83	2,80	2,71	2,85	2,80	2,76
E.S.E.E.R.		3,76	3,79	3,82	3,84	3,86	3,74	3,61
I.P.L.V.		3,90	3,93	3,96	3,99	4,01	3,88	3,74
Sound pressure (*) (**)	dB(A)	57	57	57	57	58	58	58
Sound power (*) (**)	dB(A)	91	91	91	91	92	92	92
Compressors/steps	n°/n°	2/6	2/6	2/6	2/6	2/6	2/6	2/6
Circuits	n°	2	2	2	2	2	2	2
Fans	n° x kW	6 x 1,25	6 x 1,25	6 x 1,25	6 x 1,25	8 x 1,25	8 x 1,25	8 x 1,25
Fans nominal flow rate	m³/h	104400	102800	101200	101200	140400	137800	135200
Evaporator	Type	Plates/Shell and tube (STE accessory)						
Evaporator nominal water flow (*)	m³/h	55,0	58,1	61,6	64,1	68,8	75,3	83,5
Evaporator nominal pressure drops (*)	kPa	15	16	18	17	20	22	25
Evaporator water content	l	53	53	53	65	65	70	70
STE Accessory pressure drops (*) (●)	kPa	39	44	48	52	37	46	56
STE Accessory water content (*) (●)	l	111	111	111	111	113	113	113
Residual head P1 (*)	kPa	105	93	80	91	117	104	87
Residual head P2 (*)	kPa	150	138	125	126	155	143	125
Residual head ASP1 (*)	kPa	75	60	43	51	72	50	48
Residual head ASP2 (*)	kPa	120	105	88	86	109	88	83
Tank water content (ASP1/ASP2)	l	1100	1100	1100	1100	1100	1100	1100
Electrical data								
Electrical power supply	V-ph-Hz	400-3-50	400-3-50	400-3-50	400-3-50	400-3-50	400-3-50	400-3-50
Auxiliary power supply	V-ph-Hz	230-1-50	230-1-50	230-1-50	230-1-50	230-1-50	230-1-50	230-1-50
Electrical control power supply	V-ph-Hz	24-1-50	24-1-50	24-1-50	24-1-50	24-1-50	24-1-50	24-1-50
Total absorbed power (■)	kW	112,7	119,6	128,2	137,6	140,8	156,6	176,2
Nominal current (■)	A	185	201	223	239	245	269	296
Maximum current (■)	A	234	249	264	281	305	337	368
Starting current (■)	A	288	322	337	398	422	487	518
Pump absorbed power (P1/P2)	kW	3,0/4,0	3,0/4,0	3,0/4,0	3,0/4,0	4,0/5,5	4,0/5,5	4,0/5,5
Pump absorbed current (P1/P2)	A	6,0/8,0	6,0/8,0	6,0/8,0	6,0/8,0	8,0/10,0	8,0/10,0	8,0/10,0
Dimensions								
Width (W)	mm	2260	2260	2260	2260	2260	2260	2260
Length (a)	mm	3830	3830	3830	3830	4830	4830	4830
Height (c)	mm	2430	2430	2430	2430	2430	2430	2430

(*) In the following conditions: condenser inlet air temperature 35°C; cooled water temperature 7°C; temperature differential at the evaporator 5 K; fouling factor equal to $0.35 \times 10^{-4} \text{ m}^2 \text{ K/W}$.

(**) Sound pressure level in dB(A) referring to a 10 m distance from the unit, in free field and directionality factor equal to Q=2. The noise data refers to the unit without pump.

(***) Total sound power level in dB(A) on the basis of the measurements made in compliance with the UNI EN-ISO9614 and Eurovent 8/1 Standards. The noise data refers to the unit without pump.

(●) Shell and tube evaporator accessory (STE) available for models 2331-2511.

(■) Absorbed current/absorbed power value without electric pump.

For the amount of R134a refrigerant load and Polyester oil load (POE), refer to the serial number plate on board machine.

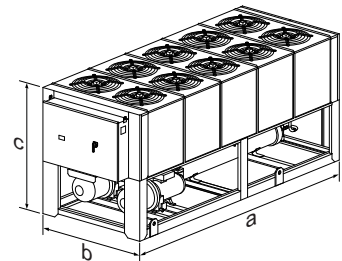


Table "A": Technical Data

TCAVSZ		2551	2571	2611	2641	2681	2701	2710
Nominal cooling capacity (*)	kW	524,7	546,9	585,0	617,3	651,9	671,6	690,0
E.E.R. (*)		2,88	2,84	2,77	2,75	2,82	2,78	2,82
E.S.E.E.R.		3,73	3,84	3,83	3,83	3,81	3,80	3,80
I.P.L.V.		3,87	3,99	3,98	3,97	3,96	3,95	3,92
Sound pressure (*) (**)	dB(A)	59	59	59	59	60	60	60
Sound power (*) (**)	dB(A)	92	92	92	92	93	93	94
Compressors/steps	n°/n°	2/6	2/6	2/6	2/6	2/8	2/8	2/8
Circuits	n°	2	2	2	2	2	2	2
Fans	n° x kW	10 x 1.25	10 x 1.25	10 x 1.25	10 x 1.25	12 x 1.25	12 x 1.25	12 x 1.25
Fans nominal flow rate	m³/h	175600	175600	172600	168800	210400	210400	218700
Evaporator	Type	Shell and tube						
Evaporator nominal water flow (*)	m³/h	90,0	93,8	100,4	105,9	111,9	115,2	118,4
Evaporator nominal pressure drops (*)	kPa	39	42	36	40	44	46	61
Evaporator water content	l	256	256	250	250	250	250	250
Residual head P1 (*)	kPa	107	101	89	79	68	61	-
Residual head P2 (*)	kPa	147	140	129	119	107	101	-
Electrical data		2551	2571	2611	2641	2681	2701	2710
Electrical power supply	V-ph-Hz	400-3-50	400-3-50	400-3-50	400-3-50	400-3-50	400-3-50	400-3-50
Auxiliary power supply	V-ph-Hz	230-1-50	230-1-50	230-1-50	230-1-50	230-1-50	230-1-50	230-1-50
Electrical control power supply	V-ph-Hz	24-1-50	24-1-50	24-1-50	24-1-50	24-1-50	24-1-50	24-1-50
Total absorbed power (■)	kW	181,9	192,7	211,0	224,6	231,3	241,2	245,0
Nominal current (■)	A	307	327	354	373	384	400	402
Maximum current (■)	A	384	414	438	462	470	470	470
Starting current (■)	A	558	588	588	612	620	620	620
Pump absorbed power (P1/P2)	kW	5,5/7,5	5,5/7,5	5,5/7,5	5,5/7,5	5,5/7,5	5,5/7,5	-
Pump absorbed current (P1/P2)	A	11,5/15,5	11,5/15,5	11,5/15,5	11,5/15,5	11,5/15,5	11,5/15,5	-
Dimensions		2551	2571	2611	2641	2681	2701	2710
Width (W)	mm	2260	2260	2260	2260	2260	2260	2260
Length (a)	mm	5830	5830	5830	5830	6680	6680	6680
Height (c)	mm	2430	2430	2430	2430	2430	2430	2430

(*) In the following conditions: condenser inlet air temperature 35°C; cooled water temperature 7°C; temperature differential at the evaporator 5 K; fouling factor equal to $0.35 \times 10^{-4} \text{ m}^2 \text{ K/W}$.

(**) Sound pressure level in dB(A) referring to a 10 m distance from the unit, in free field and directionality factor equal to Q=2. The noise data refers to the unit without pump.

(***) Total sound power level in dB(A) on the basis of the measurements made in compliance with the UNI EN-ISO9614 and Eurovent 8/1 Standards. The noise data refers to the unit without pump.

(■) Absorbed current/absorbed power value without electric pump.

For the amount of R134a refrigerant load and Polyester oil load (POE), refer to the serial number plate on board machine.

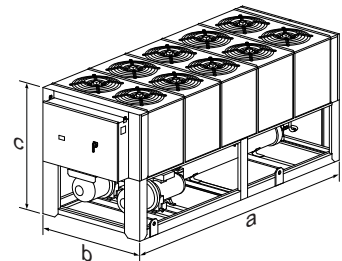


Table "A": Technical Data

TCAVSZ		2750	2810	2870	2940	2990	21020	21060
Nominal cooling capacity (*)	kW	732,0	785,9	838,0	908,6	954,0	984,6	1019,7
E.E.R. (*)		2,85	2,82	2,77	2,86	2,81	2,87	2,95
E.S.E.E.R.		3,56	3,53	3,35	3,57	3,50	3,59	3,69
I.P.L.V.		3,94	3,91	3,83	3,95	3,89	3,97	4,09
Sound pressure (*) (**)	dB(A)	60	61	61	62	62	62	63
Sound power (*) (**)	dB(A)	94	94	97	95	95	95	96
Compressors/steps	n°/n°	2/8	2/8	2/8	2/8	2/8	2/8	2/8
Circuits	n°	2	2	2	2	2	2	2
Fans	n° x kW	12 x 1.25	14 x 1.25	14 x 1.25	14 x 1.25	14 x 1.25	14 x 1.25	14 x 1.25
Fans nominal flow rate	m³/h	218700	255200	252400	248400	248400	244200	240000
Evaporator	Type	Shell and tube						
Evaporator nominal water flow (*)	m³/h	125,6	134,8	143,8	155,9	163,7	168,9	175,0
Evaporator nominal pressure drops (*)	kPa	61	45	50	37	45	55	37
Evaporator water content	l	250	427	427	419	410	408	398
Electrical data		2750	2810	2870	2940	2990	21020	21060
Electrical power supply	V-ph-Hz	400-3-50	400-3-50	400-3-50	400-3-50	400-3-50	400-3-50	400-3-50
Auxiliary power supply	V-ph-Hz	230-1-50	230-1-50	230-1-50	230-1-50	230-1-50	230-1-50	230-1-50
Electrical control power supply	V-ph-Hz	24-1-50	24-1-50	24-1-50	24-1-50	24-1-50	24-1-50	24-1-50
Total absorbed power	kW	257,0	278,4	303,0	318,2	339,6	343,3	346,0
Nominal current	A	422	447	475	502	539	545	549
Maximum current	A	470	509	540	571	602	619	630
Starting current	A	620	641	672	751	782	872	883
Dimensions		2750	2810	2870	2940	2990	21020	21060
Width (W)	mm	2260	2260	2260	2260	2260	2260	2260
Length (a)	mm	6680	7680	7680	7680	7680	7680	7680
Height (c)	mm	2430	2430	2430	2430	2430	2430	2430

(*) In the following conditions: condenser inlet air temperature 35°C; cooled water temperature 7°C; temperature differential at the evaporator 5 K; fouling factor equal to $0.35 \times 10^{-4} \text{ m}^2 \text{ K/W}$.

(**) Sound pressure level in dB(A) referring to a 10 m distance from the unit, in free field and directionality factor equal to $Q=2$. The noise data refers to the unit without pump.

(***) Total sound power level in dB(A) on the basis of the measurements made in compliance with the UNI EN-ISO9614 and Eurovent 8/1 Standards. The noise data refers to the unit without pump.

For the amount of R134a refrigerant load and Polyester oil load (POE), refer to the serial number plate on board machine.

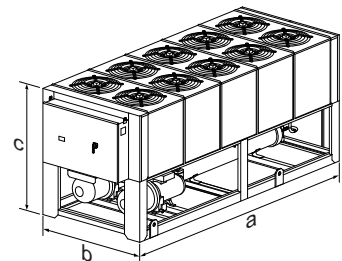


Table "A": Technical Data

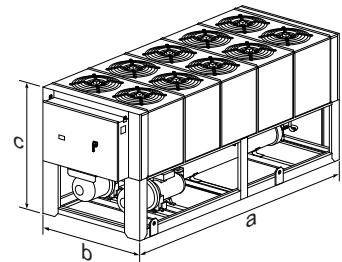
TCAVSZ		21110	21180	21250	21330	21400	21500	21600
Nominal cooling capacity (*)	kW	1071,8	1142,7	1212,2	1288,0	1353,0	1446,7	1548,0
E.E.R. (*)		2,78	2,85	2,90	2,91	2,92	2,88	2,80
E.S.E.E.R.		3,47	3,54	3,63	3,65	3,82	3,81	3,72
I.P.L.V.		3,85	3,93	4,02	4,02	4,01	4,00	3,87
Sound pressure (*) (**)	dB(A)	63	63	63	63	64	65	65
Sound power (*) (**)	dB(A)	96	96	96	96	97	98	98
Compressors/steps	n°/n°	2/8	2/8	2/8	2/8	2/8	2/8	2/8
Circuits	n°	2	2	2	2	2	2	2
Fans	n° x kW	16 x 1.25	16 x 1.25	16 x 1.25	18 x 1.25	20 x 1.25	24 x 1.25	24 x 1.25
Fans nominal flow rate	m³/h	279200	274800	270400	261000	290000	356400	348000
Evaporator	Type	Shell and tube						
Evaporator nominal water flow (*)	m³/h	183,9	196,1	208,0	221,0	232,1	248,2	265,6
Evaporator nominal pressure drops (*)	kPa	40	48	60	51	56	51	56
Evaporator water content	l	398	387	376	493	493	528	528
Electrical data		21110	21180	21250	21330	21400	21500	21600
Electrical power supply	V-ph-Hz	400-3-50	400-3-50	400-3-50	400-3-50	400-3-50	400-3-50	400-3-50
Auxiliary power supply	V-ph-Hz	230-1-50	230-1-50	230-1-50	230-1-50	230-1-50	230-1-50	230-1-50
Electrical control power supply	V-ph-Hz	24-1-50	24-1-50	24-1-50	24-1-50	24-1-50	24-1-50	24-1-50
Total absorbed power	kW	385,0	401,2	417,3	442,6	464,0	501,9	553,0
Nominal current	A	624	662	700	747	788	847	928
Maximum current	A	692	740	788	841	894	960	1000
Starting current	A	973	1081	1129	1217	1270	1379	1419
Dimensions		21110	21180	21250	21330	21400	21500	21600
Width (W)	mm	2260	2260	2260	2260	2260	2260	2260
Length (a)	mm	8980	8980	8980	9980	10980	12980	12980
Height (c)	mm	2430	2430	2430	2430	2430	2430	2430

(*) In the following conditions: condenser inlet air temperature 35°C; cooled water temperature 7°C; temperature differential at the evaporator 5 K; fouling factor equal to $0.35 \times 10^{-4} \text{ m}^2 \text{ K/W}$.

(**) Sound pressure level in dB(A) referring to a 10 m distance from the unit, in free field and directionality factor equal to Q=2. The noise data refers to the unit without pump.

(***) Total sound power level in dB(A) on the basis of the measurements made in compliance with the UNI EN-ISO9614 and Eurovent 8/1 Standards. The noise data refers to the unit without pump.

For the amount of R134a refrigerant load and Polyester oil load (POE), refer to the serial number plate on board machine.










Electronic controls

Electronic controller

The keyboard with display makes it possible to view the working temperature and all the unit process variables, as well as providing access to setting parameters for the operating set points and their modification. For purposes of technical assistance, it allows password-protected access to the unit's management parameters (access for authorised personnel only).

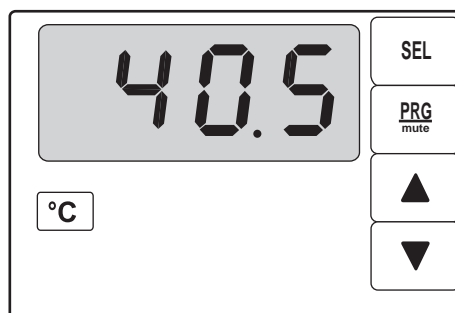


-  **DISPLAY:**
displays the numbers and the values of all the parameters (i.e. outlet water temperature etc.), any alarm codes and resource status by means of strings.
-  **ALARM key:**
makes it possible to display the code and reset any alarms.
-  **PROGRAM key:**
makes it possible to programme the machine's fundamental functioning parameters.
-  **ESC key:**
makes it possible to switch the unit on and off.
- UP key:** 
used to scroll through the list of parameters, statuses and any alarms; makes it possible to modify set points.
- ENTER key:** 
allows confirmation of the selected parameters.
- DOWN key:** 
used to scroll through the list of parameters, statuses and any alarms; makes it possible to modify set points.






KTR – Remote keyboard

The remote keyboard with display (KTR) allows the remote control and display of all of the unit's digital and analogue process variables. It is therefore possible to control all the machine functions directly in the room. It allows setting and management of time periods. The temporary presence of two devices, on-board machine keyboard and remote keyboard, will cause the on-board machine terminal to be disabled.

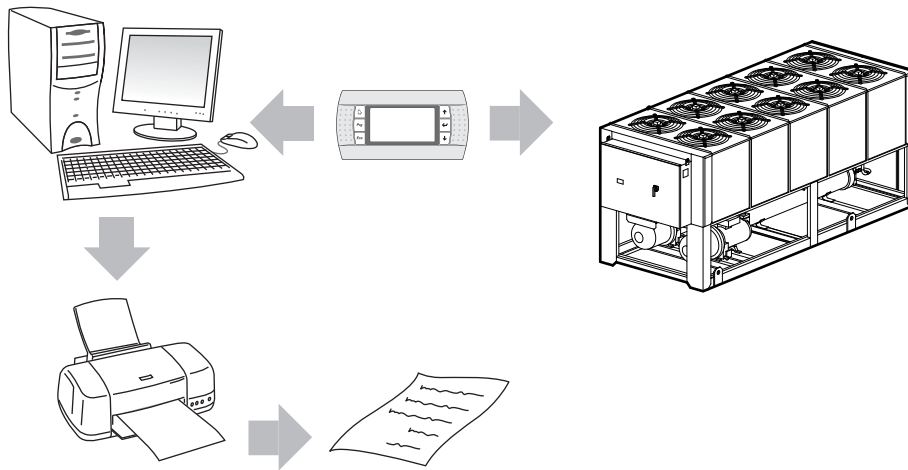
TRD – Thermostat with display



The introduction in machine of the thermostat accessory with display (TRD) allows displaying of the inlet water temperature at the recovery unit/desuperheater and setting the activation set-point of an external regulation device (e.g. ON/OFF 3-way valve), allowing a rational and efficient use of the recovered thermal energy.

-  **DISPLAY:**
displays the recovery unit/desuperheater inlet water temperature value.
-  **SEL key:**
allows setting the activation Set-point and differential of any external adjustment device.
-  **PRG/mute key:**
allows access to the parameters programming menu.
-  **UP key:**
allows scrolling the menu and modify the parameters.
-  **DOWN key:**
allows scrolling the menu and modify the parameters.

Serial Connection



Serial Connection

Alternatively, the electronic control, with which all units are supplied, can communicate with an external system through a serial communication line.

Supervision

In general, a supervision system allows access to all unit functions, such as:

- Making all settings which are accessible through the keyboard;
- Reading all process variables of the inputs and outputs, whether digital or analogue;
- Reading the various alarm codes which are present, and resetting them as necessary;
- reading all programming parameters and varying some of them.

Note

For further information, contact the RHOSS after-sales support service.

Performance

Choice of machine and use of the performance tables

- Table "B" supplies the cooling capacity (QF) and the absorbed electric power (P), depending on the temperature of the evaporator outlet water with constant temperature differentials $\Delta t = 5^{\circ}\text{C}$ and of the temperature of the outdoor air.
- Table "D" supplies the E.E.R., ESEER and IPLV indexes values for each model.
- Table "E" supplies the cooling capacity (%) and the total absorbed power (%) for each model, in correspondence of each supplied cooling capacity step.
- Within operating limits, table "B" may permit interpolations of performance but extrapolations are not permitted.
- Table "F" supplies the sound power in dB by octave band, the total sound power level in dB(A) and the sound pressure values in dB(A) for each model at different distances.
- Table "H" shows the values of corrective coefficients to be applied to the nominal values if water with glycol is used.

Performance

Table "B": TCAVBZ – TCAVIZ cooling capacity

Model	Tue (°C)	Ta											
		25 (°C)		30 (°C)		32 (°C)		35 (°C)		40 (°C)		42 (°C)	
		QF kW	P kW	QF kW	P kW	QF kW	P kW	QF kW	P kW	QF kW	P kW	QF kW	P kW
1270	5	278,7	84,9	266,2	90,5	260,8	92,9	252,8	96,7	237,7	103,8	231,4	106,9
	7	297,8	87,9	284,4	93,6	279,0	96,0	270,0	100,0	254,3	107,2	247,5	110,2
	9	317,3	91,1	303,4	96,9	297,2	99,4	288,0	103,4	271,2	110,6	264,4	113,5
	11	337,6	94,4	322,8	100,3	316,2	102,9	306,4	106,9	288,9	114,0	282,1	117,0
	13	358,4	97,9	342,6	104,0	336,1	106,6	325,6	110,7	307,9	117,6	300,1	120,5
1310	5	319,7	93,4	304,8	99,5	298,6	102,3	288,9	106,7	271,9	115,0	264,7	118,6
	7	342,1	96,3	326,6	102,6	319,9	105,4	309,0	110,0	290,8	118,4	283,5	122,1
	9	365,5	99,5	348,9	106,0	341,8	108,8	330,6	113,3	311,7	121,9	303,3	125,6
	11	389,5	103,0	371,8	109,6	364,7	112,5	352,8	117,1	332,5	125,7	324,1	129,5
	13	414,7	106,7	395,7	113,3	387,6	116,3	375,4	121,0	354,3	129,8	345,4	133,6
1350	5	363,4	109,0	345,6	116,6	338,6	119,9	327,2	125,3	307,3	135,2	298,8	139,3
	7	388,4	112,9	369,8	120,6	361,7	124,0	350,0	129,5	328,7	139,5	320,0	143,8
	9	413,5	117,0	394,1	124,9	386,0	128,3	373,4	133,9	351,1	144,1	341,3	148,5
	11	440,8	121,4	420,0	129,3	411,3	132,9	397,4	138,5	374,0	148,9	364,6	153,2
	13	468,1	126,0	445,9	134,0	436,7	137,7	422,9	143,4	398,0	153,8	387,9	158,0
1390	5	403,1	121,0	384,1	129,6	376,0	133,5	363,5	139,6	341,6	150,9	332,0	155,6
	7	431,0	125,1	410,6	133,8	401,9	137,7	389,0	144,0	365,9	155,4	355,2	160,4
	9	460,2	129,5	438,3	138,5	429,0	142,5	415,2	148,8	390,5	160,4	380,5	165,5
	11	489,6	134,3	467,3	143,5	457,4	147,5	442,6	153,9	416,2	165,7	405,5	170,8
	13	-	-	496,5	148,7	487,1	152,8	470,7	159,3	443,0	171,3	431,7	176,4

Ta = Outdoor air temperature (dry bulb).

Tue = Evaporator water output temperature (Δt input/output 5 K).

QF = Cooling capacity (fouling factor equal to $0.35 \times 10^{-4} \text{ m}^2 \text{ K/W}$).

P = Total electrical power absorbed.

Table "B": TCAVBZ – TCAVIZ cooling capacity

Model	Tue (°C)	Ta											
		25 (°C)		30 (°C)		32 (°C)		35 (°C)		40 (°C)		42 (°C)	
		QF kW	P kW	QF kW	P kW	QF kW	P kW	QF kW	P kW	QF kW	P kW	QF kW	P kW
2331	5	335,6	95,2	323,2	101,8	317,8	104,7	309,6	109,4	294,1	117,9	287,4	121,6
	7	359,5	98,3	346,2	104,9	340,4	107,9	331,1	112,6	315,2	121,3	308,0	125,0
	9	383,3	101,4	369,8	108,3	363,7	111,3	354,3	116,1	336,7	124,9	329,1	128,7
	11	408,3	104,8	394,0	111,8	387,4	114,9	377,4	119,8	359,4	128,8	351,2	132,5
	13	434,5	108,3	419,2	115,5	412,2	118,7	401,6	123,6	382,4	132,7	373,8	136,6
2351	5	354,6	100,4	341,9	107,4	336,5	110,5	327,4	115,5	311,1	124,6	304,5	128,6
	7	379,7	103,4	365,6	110,6	359,9	113,8	350,7	118,9	333,9	128,2	326,3	132,2
	9	405,5	106,8	391,1	114,1	385,0	117,3	374,6	122,5	356,7	131,9	348,6	136,0
	11	432,6	110,3	417,2	117,8	410,7	121,1	399,7	126,4	380,6	136,0	372,7	140,1
	13	459,7	114,1	443,9	121,7	437,1	125,1	426,0	130,4	405,0	140,1	396,6	144,2
2371	5	375,0	106,8	361,4	114,4	355,6	117,8	346,1	123,2	329,5	133,1	322,5	137,4
	7	400,9	110,3	386,9	118,0	380,8	121,4	370,6	126,9	353,5	137,0	345,4	141,3
	9	427,5	113,6	413,2	121,6	406,7	125,1	395,8	130,7	377,6	141,0	369,0	145,3
	11	456,7	117,4	440,8	125,5	433,8	129,1	422,9	134,8	402,9	145,1	394,4	149,5
	13	485,9	121,3	469,8	129,7	462,3	133,3	450,7	139,1	429,4	149,6	420,3	154,1
2391	5	393,7	112,7	379,7	120,8	372,7	124,4	363,2	130,1	345,3	140,5	338,0	145,0
	7	421,3	116,3	405,9	124,6	399,1	128,2	388,5	134,0	369,6	144,6	361,3	149,2
	9	449,0	120,1	432,8	128,6	425,6	132,3	415,1	138,2	394,4	149,0	385,7	153,6
	11	477,4	124,1	461,0	132,8	453,4	136,6	441,6	142,6	420,5	153,5	411,3	158,2
	13	507,8	128,3	489,8	137,2	481,8	141,1	469,3	147,2	447,1	158,3	437,4	162,9
2421	5	418,9	119,4	403,9	127,6	396,9	131,4	386,3	137,3	368,6	147,9	360,8	152,4
	7	447,4	122,9	431,5	131,4	424,1	135,2	413,6	141,2	394,2	151,9	386,6	156,4
	9	477,3	126,5	460,5	135,3	452,7	139,1	441,6	145,2	421,1	156,0	413,1	160,5
	11	508,6	130,5	490,9	139,4	482,7	143,3	471,0	149,2	450,1	160,1	441,0	164,7
	13	540,1	134,6	521,4	143,7	514,2	147,6	501,1	153,6	479,1	164,5	470,2	169,1
2461	5	459,6	131,1	442,5	140,4	435,6	144,6	424,7	151,2	404,8	163,2	396,0	168,3
	7	491,4	135,1	473,3	144,7	466,0	148,9	454,4	155,6	432,8	167,7	424,0	172,8
	9	523,5	139,2	504,4	149,1	497,3	153,3	485,0	160,1	462,8	172,3	453,5	177,5
	11	557,8	143,6	538,3	153,6	530,1	157,9	517,8	164,7	494,3	176,9	483,9	182,2
	13	593,8	148,3	573,2	158,4	565,3	162,7	550,8	169,8	526,8	182,0	515,7	187,2
2511	5	510,4	145,7	492,7	156,3	484,6	161,1	471,8	168,7	450,1	182,5	441,2	188,3
	7	546,0	150,1	526,6	161,2	518,0	166,1	505,7	173,8	482,1	187,5	472,1	193,5
	9	582,7	155,0	562,2	166,1	553,7	171,1	539,4	179,0	515,1	192,8	505,2	198,7
	11	621,2	159,8	599,5	171,3	589,9	176,3	574,8	184,3	549,8	198,2	538,6	204,2
	13	660,2	165,0	637,2	176,8	627,8	181,9	613,3	189,7	585,4	203,6	574,3	209,8

Ta = Outdoor air temperature (dry bulb).

Tue = Evaporator water output temperature (Δt input/output 5 K).

QF = Cooling capacity (fouling factor equal to $0.35 \times 10^{-4} \text{ m}^2 \text{ K/W}$).

P = Total electrical power absorbed.

Table "B": TCAVBZ – TCAVIZ cooling capacity

Model	Tue (°C)	Ta											
		25 (°C)		30 (°C)		32 (°C)		35 (°C)		40 (°C)		42 (°C)	
		QF kW	P kW	QF kW	P kW	QF kW	P kW	QF kW	P kW	QF kW	P kW	QF kW	P kW
2551	5	550,5	155,3	530,2	165,7	521,2	170,2	506,6	177,5	481,8	190,9	471,7	196,5
	7	586,5	159,6	564,4	170,2	555,1	174,9	541,2	182,2	514,5	195,7	503,0	201,5
	9	623,8	164,0	601,0	174,8	591,5	179,5	575,9	187,1	548,5	200,7	536,6	206,6
	11	662,4	168,7	639,0	179,6	629,2	184,4	613,2	192,1	583,1	206,0	570,8	211,9
2571	13	702,5	173,6	678,4	184,7	668,2	189,6	650,5	197,2	620,2	211,3	606,3	217,3
	5	574,8	163,5	553,4	174,5	544,3	179,4	529,7	187,1	503,7	201,3	492,5	207,4
	7	612,7	167,9	590,6	179,3	580,1	184,3	565,0	192,2	537,1	206,5	525,5	212,7
	9	652,0	172,8	628,0	184,1	617,2	189,2	601,7	197,3	571,8	211,9	559,8	218,2
2611	11	692,8	177,8	668,1	189,6	657,0	194,7	639,7	202,7	608,9	217,4	595,4	223,7
	13	733,8	183,1	708,3	195,0	696,9	200,2	679,1	208,4	646,1	223,2	632,2	229,5
	5	620,4	177,6	594,8	189,7	584,1	195,0	567,9	203,5	538,4	219,1	526,3	225,8
	7	661,6	182,9	635,3	195,0	622,8	200,3	606,2	209,0	574,4	224,8	562,0	231,6
2641	9	702,8	188,4	675,8	200,6	663,7	206,0	645,9	214,7	613,2	230,7	598,9	237,6
	11	747,0	194,1	717,7	206,6	706,0	212,1	687,0	220,8	651,9	236,9	637,3	243,9
	13	791,3	200,0	761,1	212,7	749,1	218,3	728,0	227,2	692,0	243,4	676,9	250,5
	5	658,6	188,1	631,3	200,7	620,4	206,3	602,0	215,4	569,9	232,1	556,3	239,4
2681	7	702,6	193,5	673,1	206,3	660,4	212,0	641,5	221,2	608,6	238,1	594,5	245,5
	9	746,8	199,1	716,4	212,1	703,4	217,8	683,2	227,2	647,9	244,5	634,2	251,9
	11	794,0	205,2	761,3	218,3	747,9	224,0	727,1	233,4	690,1	250,9	673,8	258,6
	13	841,4	211,7	807,8	224,8	794,0	230,7	772,6	240,2	733,0	257,7	716,3	265,4
2701	5	681,4	194,4	657,5	208,3	647,3	214,5	630,5	224,5	601,1	243,0	588,4	251,0
	7	725,2	199,5	700,7	213,6	688,7	219,9	671,5	230,0	640,6	248,8	626,9	256,9
	9	770,5	205,0	743,9	219,2	733,3	225,5	714,0	235,8	682,5	254,9	668,5	263,1
	11	817,6	210,8	790,4	225,3	777,8	231,7	759,0	242,0	724,1	261,2	661,3	254,7
2710	13	866,3	217,0	836,8	231,6	824,8	238,1	805,6	248,6	769,1	267,8	702,8	261,3
	5	694,6	199,3	673,7	214,8	664,6	221,7	649,9	232,9	622,1	253,4	610,7	262,4
	7	738,4	204,2	716,3	220,0	706,2	227,0	691,1	238,3	662,8	259,2	649,5	268,3
	9	783,8	209,6	759,6	225,6	749,3	232,6	733,9	244,1	703,3	265,2	611,5	246,5
2710	11	829,2	215,2	805,3	231,5	793,9	238,7	778,2	250,3	745,2	271,5	651,0	252,8
	13	876,1	221,2	852,7	237,8	840,2	244,9	822,4	256,7	706,4	251,8	691,8	259,3
	5	713,6	200,7	692,2	216,3	682,8	223,2	667,6	234,5	639,1	255,3	627,4	264,3
	7	758,6	205,6	735,9	221,5	725,5	228,6	710,0	240,0	680,9	261,0	667,3	270,2
2710	9	805,2	211,1	780,4	227,2	769,7	234,2	753,9	245,8	722,5	267,1	628,3	248,3
	11	851,8	216,8	827,3	233,1	815,7	240,4	799,5	252,1	765,6	273,5	668,8	254,6
	13	900,1	222,7	876,0	239,5	863,2	246,7	844,9	258,5	725,8	253,6	710,8	261,1

Ta = Outdoor air temperature (dry bulb).

Tue = Evaporator water output temperature (Δt input/output 5 K).

QF = Cooling capacity (fouling factor equal to $0.35 \times 10^{-4} \text{ m}^2 \text{ K/W}$).

P = Total electrical power absorbed.

Table "B": TCAVBZ – TCAVIZ cooling capacity

Model	Tue (°C)	Ta											
		25 (°C)		30 (°C)		32 (°C)		35 (°C)		40 (°C)		42 (°C)	
		QF kW	P kW	QF kW	P kW	QF kW	P kW	QF kW	P kW	QF kW	P kW	QF kW	P kW
2750	5	754,9	210,5	732,2	227,0	722,3	234,3	706,3	246,2	676,1	268,1	663,7	277,6
	7	802,5	215,7	778,4	232,5	767,5	240,0	751,1	252,0	720,3	274,2	705,9	283,9
	9	851,8	221,5	825,5	238,5	814,3	245,9	797,6	258,1	764,3	280,6	664,6	260,7
	11	901,1	227,5	875,2	244,8	862,9	252,4	845,8	264,8	809,9	287,3	707,5	267,4
	13	952,2	233,8	926,7	251,4	913,1	259,1	893,8	271,6	767,8	266,4	751,9	274,3
2810	5	820,4	229,0	793,7	246,6	781,6	254,3	759,8	266,9	725,0	289,7	709,2	299,6
	7	873,7	235,0	842,3	252,5	829,9	260,4	809,3	273,2	770,6	296,4	664,7	271,8
	9	925,2	241,3	894,9	259,2	882,1	267,1	858,9	279,9	819,0	303,5	708,7	278,8
	11	980,8	248,0	947,6	266,2	934,4	274,3	910,5	287,2	869,5	311,0	754,6	285,9
	13	1036,4	255,2	1002,2	273,4	988,7	281,6	964,1	294,7	822,0	285,3	801,3	293,4
2870	5	876,5	247,7	846,5	266,9	834,6	275,4	813,0	289,1	774,1	314,3	660,7	285,3
	7	931,5	253,8	900,7	273,6	886,6	282,3	863,4	296,2	824,3	321,7	706,7	292,3
	9	988,8	260,6	955,0	280,2	939,5	289,1	917,7	303,4	874,4	329,4	753,7	299,7
	11	1048,4	267,8	1012,7	287,9	997,6	296,8	973,0	310,9	822,7	298,8	801,8	307,6
	13	1108,2	275,5	1072,6	295,9	1055,0	304,9	1030,7	319,1	874,2	306,6	852,6	315,6
2940	5	947,6	259,6	914,3	279,7	899,4	288,5	875,9	302,9	833,8	329,1	815,2	340,5
	7	1011,0	266,5	975,3	287,0	959,3	296,1	935,5	310,6	890,3	337,4	767,2	309,1
	9	1079,1	274,2	1040,7	294,9	1023,4	303,8	997,9	318,8	951,0	345,9	822,4	317,6
	11	1148,5	282,6	1109,1	303,5	1090,6	312,7	1063,1	327,4	903,9	317,3	880,5	326,5
	13	1218,8	291,3	1176,6	312,3	1158,8	321,7	1129,4	336,7	963,2	326,4	938,2	335,8
2990	5	998,3	274,7	962,1	296,5	945,8	306,1	922,1	321,5	876,8	349,8	858,1	362,1
	7	1065,1	282,7	1027,7	304,5	1011,7	314,2	984,6	329,9	937,4	358,7	807,9	329,7
	9	1134,9	291,0	1096,4	313,3	1077,4	323,1	1049,9	338,8	999,1	367,9	865,5	339,1
	11	1207,7	300,1	1164,4	322,4	1145,8	332,4	1118,3	348,4	949,8	338,7	924,5	348,6
	13	1281,5	309,6	1237,1	332,4	1217,2	342,4	1187,6	358,7	1015,0	348,7	987,9	358,6
21020	5	1023,2	276,9	988,3	299,3	973,4	309,1	948,8	324,8	904,9	353,7	885,5	366,1
	7	1094,8	285,0	1057,6	307,5	1041,2	317,4	1015,5	333,4	968,5	362,6	837,4	335,4
	9	1169,1	293,8	1129,6	316,5	1111,6	326,6	1084,8	342,7	1034,5	371,9	898,7	344,9
	11	1244,5	303,2	1202,7	326,1	1186,0	336,2	1156,4	352,2	1102,8	382,1	962,7	354,8
	13	1323,6	312,8	1279,4	335,9	1259,5	346,1	1230,6	362,5	1055,4	355,0	1029,3	365,1
21060	5	1065,5	279,2	1028,4	301,7	1011,1	311,6	986,6	327,5	938,3	356,2	918,3	368,7
	7	1136,3	286,9	1096,6	309,8	1080,0	319,6	1051,6	335,7	1001,9	365,0	980,4	377,7
	9	1210,2	294,8	1167,6	317,9	1152,2	328,1	1121,7	344,3	1068,4	373,9	933,6	348,4
	11	1290,1	304,0	1244,2	326,7	1225,4	336,9	1195,1	353,2	1137,9	383,2	998,3	358,3
	13	1368,4	313,1	1322,0	336,1	1301,8	346,4	1269,4	362,8	1208,2	392,8	1064,1	368,4

Ta = Outdoor air temperature (dry bulb).

Tue = Evaporator water output temperature (Δt input/output 5 K).

QF = Cooling capacity (fouling factor equal to $0.35 \times 10^{-4} \text{ m}^2 \text{ K/W}$).

P = Total electrical power absorbed.

Table "B": TCAVBZ – TCAVIZ cooling capacity

Model	Tue (°C)	Ta											
		25 (°C)		30 (°C)		32 (°C)		35 (°C)		40 (°C)		42 (°C)	
		QF kW	P kW	QF kW	P kW	QF kW	P kW	QF kW	P kW	QF kW	P kW	QF kW	P kW
21110	5	1123,7	301,8	1080,6	330,3	1063,2	342,7	1034,6	362,1	985,7	396,6	811,3	353,5
	7	1199,2	310,8	1154,9	339,4	1136,3	351,8	1107,3	370,5	1054,7	404,9	874,7	362,6
	9	1278,1	319,9	1230,6	348,4	1212,7	360,5	1181,7	379,5	969,4	361,1	943,7	371,7
	11	1360,7	329,7	1312,0	357,6	1290,3	369,5	1259,4	388,3	1040,6	370,3	1014,9	381,1
21180	5	1196,5	309,5	1152,0	340,6	1133,2	354,3	1106,5	376,3	1055,9	416,4	874,6	370,3
	7	1278,9	317,6	1231,0	348,6	1210,7	362,3	1179,7	384,3	1127,6	424,5	943,0	379,4
	9	1360,4	325,9	1311,4	357,0	1292,1	370,8	1258,8	393,0	1041,3	376,5	1013,4	388,5
	11	1448,0	334,7	1395,4	365,7	1372,0	379,3	1338,9	401,4	1117,7	385,8	1087,8	398,1
21250	5	1270,3	316,7	1222,5	350,1	1202,5	365,3	1174,0	390,2	1122,0	435,5	939,2	387,0
	7	1355,0	323,5	1303,6	357,0	1284,6	372,7	1251,5	397,7	1198,0	443,0	1010,7	395,7
	9	1443,7	330,9	1391,4	365,3	1368,3	380,9	1335,2	405,5	1277,6	450,7	1086,2	404,9
	11	1533,7	338,8	1477,5	373,3	1455,4	388,8	1419,8	413,3	1193,5	400,9	1163,7	414,7
21330	5	1335,9	343,0	1298,1	375,5	1280,1	390,2	1254,1	413,8	1205,5	457,1	1016,0	406,8
	7	1418,7	351,3	1375,8	384,3	1359,5	399,1	1333,0	423,0	1281,1	466,6	1085,6	416,4
	9	1500,3	360,1	1458,7	393,6	1439,9	408,8	1412,7	432,6	1182,3	413,2	1156,0	426,5
	11	1589,4	369,0	1544,6	403,0	1525,3	418,1	1495,2	442,2	1257,9	423,5	1230,9	437,0
21400	5	1400,2	371,3	1362,8	402,4	1343,0	416,4	1317,2	438,3	1269,5	479,2	1077,4	430,0
	7	1486,8	380,8	1444,5	412,5	1426,2	426,5	1400,0	448,8	1349,2	490,3	1150,5	440,9
	9	1574,5	390,8	1533,3	422,4	1514,8	436,6	1485,7	459,1	1431,6	501,3	1224,6	452,1
	11	-	-	1623,5	433,3	1604,5	447,7	1575,0	470,7	1330,2	450,2	1301,4	463,6
21500	5	1498,6	399,9	1459,2	432,1	1439,6	446,6	1412,6	469,8	1358,4	512,9	1336,1	531,7
	7	1590,3	409,7	1547,6	442,5	1530,1	457,2	1500,0	480,8	1444,4	524,2	1240,7	478,4
	9	1688,0	419,9	1644,5	453,0	1624,0	467,8	1593,2	491,7	1533,8	536,0	1322,0	490,3
	11	1787,0	431,1	1742,5	464,3	1721,5	479,2	1687,1	502,9	1626,3	547,7	1406,5	503,0
21600	5	1599,9	428,9	1555,1	463,2	1537,8	478,6	1508,0	503,1	1453,3	549,0	1430,8	569,0
	7	1696,1	440,2	1650,3	474,8	1632,5	490,0	1602,0	515,0	1543,4	561,7	1520,4	581,9
	9	1798,3	451,1	1751,6	486,3	1730,9	502,2	1699,7	527,3	1639,7	574,6	1417,4	528,0
	11	1902,0	463,3	1856,8	498,2	1835,5	514,0	1800,8	539,5	1736,6	587,5	1508,2	541,5
	13	-	-	-	-	-	-	1906,0	552,9	1633,8	540,2	1599,8	555,4

Ta = Outdoor air temperature (dry bulb).

Tue = Evaporator water output temperature (Δt input/output 5 K).

QF = Cooling capacity (fouling factor equal to $0.35 \times 10^{-4} \text{ m}^2 \text{ K/W}$).

P = Total electrical power absorbed.

Table "B": TCAVSZ cooling capacity

Model	Tue (°C)	Ta											
		25 (°C)		30 (°C)		32 (°C)		35 (°C)		40 (°C)		42 (°C)	
		QF	P	QF	P	QF	P	QF	P	QF	P	QF	P
		kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW
1270	5	270,0	83,0	257,3	88,9	252,1	91,5	243,8	95,5	228,7	102,9	222,6	106,0
	7	288,4	86,3	274,9	92,3	268,8	94,9	260,0	99,0	244,2	106,4	238,0	109,3
	9	306,8	89,7	292,4	95,8	286,3	98,4	276,9	102,6	260,5	109,9	253,8	112,9
	11	326,0	93,3	311,1	99,5	304,6	102,2	294,5	106,4	277,4	113,5	270,3	116,5
	13	345,5	97,0	329,6	103,3	322,7	106,1	312,5	110,1	294,7	117,2	287,1	120,2
1310	5	311,8	92,5	296,7	99,2	290,5	102,1	280,5	106,9	263,4	115,5	255,8	119,2
	7	333,1	95,9	316,9	102,7	310,3	105,7	300,0	110,5	281,6	119,2	274,0	123,1
	9	355,4	99,4	338,5	106,3	331,5	109,4	320,0	114,3	300,8	123,3	292,6	127,2
	11	378,2	103,2	360,2	110,3	352,6	113,3	340,9	118,3	320,4	127,4	311,6	131,4
	13	401,3	107,2	382,7	114,4	374,7	117,6	362,2	122,7	340,9	131,9	332,1	135,7
1350	5	355,7	109,0	337,5	117,1	330,5	120,6	318,7	126,3	298,6	136,6	290,1	141,0
	7	379,6	113,2	360,6	121,4	352,6	125,1	340,0	130,9	318,8	141,4	309,8	145,9
	9	404,1	117,6	383,7	126,1	375,7	129,8	362,7	135,7	339,6	146,4	330,3	150,7
	11	429,6	122,4	407,9	131,0	399,3	134,8	385,4	140,8	362,2	151,4	352,3	155,8
	13	455,6	127,4	433,0	136,2	423,8	140,1	409,0	146,1	384,2	156,7	374,8	161,1
1390	5	389,9	121,7	370,7	131,0	362,3	135,1	350,0	141,5	328,4	153,3	319,0	158,4
	7	416,8	126,4	395,7	135,9	387,2	140,1	374,0	146,7	350,3	158,7	340,7	163,9
	9	444,0	131,4	422,4	141,1	413,3	145,3	398,7	152,0	373,8	164,3	363,5	169,5
	11	472,3	136,6	449,3	146,5	439,5	150,8	424,4	157,8	397,8	170,1	387,4	175,3
	13	-	-	476,7	152,3	466,2	156,7	450,7	163,8	422,9	176,1	411,7	181,3

Ta = Outdoor air temperature (dry bulb).

Tue = Evaporator water output temperature (Δt input/output 5 K).

QF = Cooling capacity (fouling factor equal to $0.35 \times 10^{-4} \text{ m}^2 \text{ K/W}$).

P = Total electrical power absorbed.

Table "B": TCAVSZ cooling capacity

Model	Tue (°C)	Ta											
		25 (°C)		30 (°C)		32 (°C)		35 (°C)		40 (°C)		42 (°C)	
		QF kW	P kW	QF kW	P kW	QF kW	P kW	QF kW	P kW	QF kW	P kW	QF kW	P kW
2331	5	326,6	94,1	313,8	101,1	308,4	104,2	299,7	109,0	283,8	117,9	277,2	121,8
	7	348,7	97,4	335,6	104,6	329,8	107,7	320,6	112,7	303,6	121,7	296,5	125,6
	9	371,9	100,9	357,9	108,2	351,8	111,4	341,9	116,5	324,4	125,7	316,8	129,6
	11	396,1	104,5	381,2	112,0	374,0	115,3	364,2	120,4	345,6	129,7	337,5	133,7
	13	420,8	108,4	405,0	116,0	398,0	119,4	386,8	124,6	367,0	134,1	359,1	138,0
2351	5	344,4	99,7	331,8	107,2	325,4	110,4	316,9	115,8	300,2	125,2	293,1	129,3
	7	368,8	103,3	354,2	110,9	348,6	114,2	338,9	119,6	321,7	129,3	314,1	133,4
	9	393,3	106,9	378,3	114,8	371,7	118,2	361,4	123,7	343,0	133,6	335,0	137,8
	11	418,9	110,8	403,0	118,9	395,9	122,4	385,0	127,9	365,4	137,9	357,5	142,2
	13	445,1	114,9	428,1	123,1	421,3	126,7	409,6	132,3	388,8	142,5	380,4	146,6
2371	5	364,5	106,6	350,5	114,7	344,8	118,3	335,3	124,0	318,3	134,4	311,3	138,9
	7	390,3	110,4	375,3	118,8	369,2	122,4	359,1	128,2	341,0	138,7	332,9	143,2
	9	416,2	114,3	400,9	122,9	394,3	126,6	383,5	132,5	364,2	143,2	355,7	147,8
	11	444,0	118,5	427,0	127,3	420,0	131,1	408,6	137,1	388,0	147,8	378,9	152,5
	13	471,1	122,9	453,7	131,8	446,3	135,7	434,1	141,8	412,8	152,8	403,1	157,6
2391	5	381,3	114,5	366,4	123,1	359,4	127,0	349,5	133,1	331,1	144,1	323,3	149,0
	7	406,4	118,5	390,5	127,5	383,8	131,4	373,3	137,6	353,9	148,8	345,7	153,7
	9	433,2	122,8	416,5	131,9	409,4	135,9	397,6	142,3	377,2	153,7	368,5	158,5
	11	460,0	127,2	442,4	136,7	434,8	140,7	423,1	147,2	400,8	158,7	391,7	163,6
	13	488,6	131,9	470,1	141,6	461,4	145,8	449,1	152,3	425,6	164,0	415,9	169,0
2421	5	407,4	117,6	391,4	126,5	385,0	130,3	374,6	136,6	356,4	147,6	349,2	152,3
	7	435,2	121,6	419,5	130,7	412,1	134,5	401,1	140,8	381,2	151,8	373,7	156,5
	9	464,3	125,7	446,4	135,0	439,4	139,0	428,3	145,2	407,4	156,3	399,5	161,1
	11	493,5	129,9	475,3	139,5	467,9	143,5	456,3	149,7	434,9	161,0	425,1	165,8
	13	524,1	134,6	505,6	144,1	497,7	148,2	485,5	154,5	462,2	165,9	453,4	170,8
2461	5	445,9	130,5	429,0	140,5	421,0	144,9	410,2	151,8	389,9	164,3	381,7	169,6
	7	475,6	134,9	458,3	145,3	450,5	149,7	439,0	156,6	417,6	169,1	408,9	174,4
	9	508,0	139,6	489,1	150,1	481,5	154,6	468,7	161,7	446,0	174,3	436,8	179,7
	11	540,1	144,6	520,7	155,1	512,6	159,7	499,1	166,9	475,8	179,6	465,4	185,0
	13	573,6	149,7	553,8	160,5	544,6	165,1	531,0	172,4	506,4	185,3	495,4	190,7
2511	5	495,2	146,4	475,9	157,9	467,9	162,9	454,7	170,9	433,2	185,2	423,8	191,2
	7	528,6	151,2	508,8	163,0	500,3	168,1	486,9	176,2	463,5	190,6	453,5	196,6
	9	563,6	156,5	543,2	168,6	533,6	173,8	520,1	182,0	495,4	196,4	484,8	202,5
	11	599,6	162,1	578,1	174,5	568,6	179,7	553,6	188,0	527,4	202,6	516,3	208,8
	13	637,3	168,1	614,5	180,7	604,5	185,8	589,4	194,1	561,0	208,9	550,0	215,2

Ta = Outdoor air temperature (dry bulb).

Tue = Evaporator water output temperature (Δt input/output 5 K).

QF = Cooling capacity (fouling factor equal to $0.35 \times 10^{-4} \text{ m}^2 \text{ K/W}$).

P = Total electrical power absorbed.

Table "B": TCAVSZ cooling capacity

Model	Tue (°C)	Ta											
		25 (°C)		30 (°C)		32 (°C)		35 (°C)		40 (°C)		42 (°C)	
		QF	P	QF	P	QF	P	QF	P	QF	P	QF	P
		kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW	kW
2551	5	536,4	153,4	515,3	164,4	506,4	169,1	491,9	176,8	467,4	190,7	456,3	196,7
	7	571,7	158,1	549,9	169,4	540,2	174,2	524,7	181,9	498,4	196,0	486,9	202,0
	9	608,4	163,1	584,7	174,5	575,3	179,5	558,7	187,4	530,4	201,5	518,6	207,5
	11	645,1	168,2	620,8	179,9	609,8	184,9	594,0	192,9	564,9	207,3	551,5	213,5
	13	683,2	173,5	658,1	185,5	646,8	190,6	629,3	198,7	599,4	213,3	585,6	219,6
2571	5	559,1	162,2	536,8	173,8	527,9	179,0	512,4	187,1	486,2	201,8	474,6	208,2
	7	595,1	167,3	572,1	179,2	561,8	184,4	546,9	192,7	518,3	207,5	506,8	213,9
	9	632,4	172,5	608,7	184,7	598,1	190,1	581,6	198,5	552,1	213,6	539,1	219,9
	11	671,1	178,0	645,5	190,5	634,5	195,9	617,5	204,4	586,0	219,8	573,8	226,3
	13	711,1	183,9	684,8	196,6	672,2	202,0	654,7	210,7	622,3	226,2	608,5	232,8
2611	5	601,4	177,7	576,1	190,4	565,5	196,0	548,9	204,9	519,1	221,0	507,2	228,1
	7	640,3	183,4	614,3	196,2	603,4	201,9	585,0	211,0	554,3	227,6	540,7	234,7
	9	680,6	189,3	652,5	202,6	641,3	208,2	622,4	217,4	589,4	234,2	575,4	241,4
	11	722,4	195,5	692,1	209,0	680,5	214,9	660,3	224,3	625,7	241,3	612,0	248,4
	13	764,2	202,0	734,4	215,7	721,1	221,7	700,3	231,3	664,8	248,5	649,2	255,9
2641	5	637,2	189,0	609,0	202,5	596,9	208,4	579,5	218,0	547,3	235,6	533,9	243,3
	7	677,4	194,9	648,3	208,7	635,9	214,8	617,3	224,6	583,5	242,6	569,1	250,1
	9	719,0	201,2	689,2	215,2	676,4	221,5	656,5	231,4	621,1	249,6	606,9	257,5
	11	763,6	208,0	731,4	222,1	718,3	228,6	696,4	238,5	659,9	257,0	643,9	265,0
	13	808,2	215,0	775,1	229,3	760,1	235,8	739,1	246,1	700,1	264,7	683,7	272,9
2681	5	665,0	193,1	639,8	207,9	629,7	214,6	613,0	225,1	583,0	244,5	527,1	236,7
	7	706,7	198,9	680,9	213,9	669,8	220,6	651,9	231,3	621,3	251,1	563,0	243,0
	9	750,7	204,9	723,5	220,3	711,3	227,0	693,1	238,1	659,3	258,1	600,2	249,7
	11	796,3	211,2	767,7	226,9	754,4	233,8	734,9	244,9	653,6	248,9	638,0	256,5
	13	842,7	218,0	811,7	233,9	799,0	240,9	779,1	252,1	693,2	256,2	677,1	264,0
2701	5	679,0	199,1	657,6	215,8	647,8	223,1	632,4	235,0	604,1	256,7	519,4	235,0
	7	720,8	204,8	697,4	221,8	687,4	229,3	671,6	241,2	642,7	263,3	554,7	241,2
	9	764,1	210,7	740,2	228,0	730,0	235,7	713,1	248,0	605,0	240,3	591,3	247,8
	11	808,9	217,0	782,8	234,6	772,5	242,4	754,4	254,8	644,0	247,1	628,6	254,6
	13	855,4	223,6	828,8	241,5	816,4	249,4	797,1	262,0	683,0	254,3	667,1	262,1
2710	5	696,8	202,3	674,9	219,2	664,8	226,8	649,9	238,8	621,7	260,8	534,8	239,1
	7	740,4	208,0	717,2	225,3	707,0	232,8	690,0	245,0	660,4	267,5	570,4	245,4
	9	785,6	214,0	759,4	231,6	749,0	239,4	732,5	251,8	622,6	244,4	608,7	252,1
	11	830,7	220,3	804,8	238,2	794,2	246,1	775,7	258,7	662,7	251,3	646,9	259,0
	13	879,2	227,0	851,0	245,2	839,3	253,2	820,4	266,0	702,7	258,6	686,5	266,3

Ta = Outdoor air temperature (dry bulb).

Tue = Evaporator water output temperature (Δt input/output 5 K).

QF = Cooling capacity (fouling factor equal to $0.35 \times 10^{-4} \text{ m}^2 \text{ K/W}$).

P = Total electrical power absorbed.

Table "B": TCAVSZ cooling capacity

Model	Tue (°C)	Ta											
		25 (°C)		30 (°C)		32 (°C)		35 (°C)		40 (°C)		42 (°C)	
		QF kW	P kW	QF kW	P kW	QF kW	P kW	QF kW	P kW	QF kW	P kW	QF kW	P kW
2750	5	739,2	212,1	715,9	229,9	705,3	237,8	689,4	250,4	659,5	273,6	567,3	250,8
	7	785,5	218,1	760,9	236,3	750,0	244,1	732,0	257,0	700,6	280,6	605,1	257,4
	9	833,4	224,4	805,6	242,9	794,6	251,0	777,1	264,1	660,5	256,4	645,7	264,4
	11	881,3	231,0	853,8	249,8	842,5	258,1	822,9	271,4	703,0	263,6	686,3	271,7
2810	5	932,7	238,1	902,8	257,2	890,4	265,6	870,3	279,0	745,5	271,3	728,2	279,4
	7	801,7	230,7	772,6	249,5	759,7	257,8	739,9	271,1	702,7	295,2	601,5	267,8
	9	851,4	237,4	820,4	256,4	807,2	264,9	785,9	278,4	658,1	266,7	642,0	274,9
	11	901,1	244,3	869,3	263,7	855,7	272,5	833,8	286,2	701,6	273,9	683,4	282,4
2870	5	954,8	251,7	921,1	271,6	906,0	280,3	882,4	294,2	746,9	281,5	728,0	290,1
	7	1008,5	259,5	973,8	279,6	957,2	288,5	932,9	302,5	793,1	290,0	772,7	298,4
	9	855,7	250,4	824,3	271,0	810,7	280,2	789,4	294,9	655,8	280,2	638,8	289,1
	11	908,1	257,5	875,8	278,8	861,8	288,1	838,0	303,0	700,5	287,8	681,2	296,8
2940	5	962,6	265,0	927,4	286,7	913,0	296,2	889,5	311,3	745,4	295,7	725,5	305,0
	7	1019,3	273,1	983,1	295,2	966,2	304,9	941,9	320,0	792,0	303,9	772,3	313,3
	9	1078,2	281,7	1038,8	304,0	1021,4	313,8	995,4	329,4	842,3	312,5	821,0	322,0
	11	923,8	262,6	889,8	284,3	875,2	294,0	850,5	309,2	806,3	337,3	689,9	305,5
2990	5	985,9	270,7	949,2	292,9	933,5	302,6	908,6	318,2	760,4	304,7	740,5	314,2
	7	1050,8	279,5	1011,4	302,0	994,4	311,7	967,6	327,6	813,7	313,7	790,9	323,4
	9	1116,6	288,7	1076,2	311,6	1058,0	321,6	1029,3	337,6	869,6	323,3	846,7	333,0
	11	1185,1	298,3	1141,7	321,5	1122,3	331,7	1091,4	347,8	928,2	333,6	903,6	343,1
21020	5	972,7	279,6	935,7	303,1	919,6	313,5	894,9	330,0	847,3	359,8	726,2	326,7
	7	1038,0	288,5	998,1	312,6	980,7	323,1	954,0	339,6	799,2	326,0	777,6	336,2
	9	1104,3	298,0	1063,1	322,3	1044,4	333,0	1015,8	350,1	856,2	336,1	833,0	346,3
	11	1173,4	308,0	1129,1	332,6	1109,0	343,5	1080,0	360,7	914,5	346,8	889,7	356,9
21060	5	1245,1	318,5	1197,6	343,5	1178,0	354,5	1144,9	372,0	973,8	357,8	948,9	368,3
	7	998,2	281,7	961,4	305,8	946,7	316,3	922,4	333,2	876,6	363,8	750,7	331,8
	9	1066,8	291,0	1027,5	315,5	1011,3	326,2	984,6	343,3	828,8	331,2	806,8	341,7
	11	1137,6	300,8	1095,8	325,6	1078,0	336,5	1050,0	353,7	888,3	341,6	865,4	352,5
21060	5	1209,1	311,0	1166,3	336,1	1146,8	347,1	1117,6	364,6	950,2	352,8	926,5	363,5
	7	1285,8	321,9	1238,8	347,4	1217,4	358,2	1187,0	376,0	1014,6	364,6	987,5	375,3
	9	1039,4	284,4	999,3	308,8	982,4	319,4	954,6	336,4	907,3	367,1	780,5	336,9
	11	1106,7	293,4	1065,7	318,1	1047,5	328,9	1019,7	346,0	966,9	376,8	836,6	346,6
21060	5	1179,1	302,8	1135,2	327,9	1115,6	338,5	1085,8	355,9	920,5	346,1	895,5	356,9
	7	1252,4	312,7	1205,3	337,9	1184,5	348,9	1152,5	366,5	984,2	356,8	957,5	367,7
	11	1328,6	322,8	1278,3	348,3	1258,6	359,4	1224,4	377,3	1049,1	368,2	1020,5	378,7

Ta = Outdoor air temperature (dry bulb).

Tue = Evaporator water output temperature (Δt input/output 5 K).

QF = Cooling capacity (fouling factor equal to $0.35 \times 10^{-4} \text{ m}^2 \text{ K/W}$).

P = Total electrical power absorbed.

Table "B": TCAVSZ cooling capacity

Model	Tue (°C)	Ta											
		25 (°C)		30 (°C)		32 (°C)		35 (°C)		40 (°C)		42 (°C)	
		QF kW	P kW	QF kW	P kW	QF kW	P kW	QF kW	P kW	QF kW	P kW	QF kW	P kW
21110	5	1094,5	311,0	1050,2	341,7	1031,2	354,7	1004,9	374,9	802,5	350,1	780,7	360,9
	7	1166,1	320,9	1120,6	351,8	1102,2	364,7	1071,8	385,0	866,9	359,8	841,8	370,8
	9	1240,8	331,3	1194,0	361,6	1174,2	374,5	1143,9	395,2	931,6	369,8	906,5	381,0
	11	1318,6	341,8	1270,8	371,7	1249,6	384,7	1217,1	405,4	1002,0	380,5	975,0	391,9
21180	5	1402,1	352,0	1348,4	381,9	1328,3	395,0	1141,5	364,7	1072,1	391,3	1045,3	402,8
	7	1166,0	319,1	1120,3	352,9	1101,8	367,7	1071,5	391,3	865,6	366,3	842,0	378,7
	9	1242,1	328,6	1195,1	362,6	1173,1	377,5	1142,7	401,2	933,3	376,0	906,1	388,5
	11	1321,3	338,1	1270,9	372,2	1249,7	387,3	1217,1	411,0	1003,0	386,2	975,8	398,8
21250	5	1403,9	347,7	1349,9	382,2	1329,7	397,1	1294,6	420,9	1074,6	397,1	1045,3	410,0
	7	1487,1	357,5	1432,2	392,4	1410,4	407,1	1373,0	431,2	1149,8	408,4	1118,6	421,4
	9	1572,3	363,9	1513,2	402,0	1490,1	419,0	1452,9	446,4	1225,1	425,9	1193,9	440,6
	11	1235,6	327,1	1188,9	364,4	1169,3	381,3	1139,1	407,9	925,9	383,3	902,3	396,9
21330	5	1315,9	335,9	1265,9	373,9	1244,8	390,8	1212,2	417,3	998,3	392,7	971,0	406,8
	7	1399,7	344,8	1346,1	383,3	1323,3	400,0	1290,9	426,7	1070,8	402,9	1041,5	417,2
	9	1484,3	354,1	1429,4	392,5	1405,0	409,4	1370,3	436,4	1147,1	414,2	1118,0	428,6
	11	1572,3	363,9	1513,2	402,0	1490,1	419,0	1452,9	446,4	1225,1	425,9	1193,9	440,6
21400	5	1299,6	353,6	1258,1	390,0	1240,3	406,2	1214,4	431,7	997,8	401,6	973,1	415,3
	7	1377,3	363,4	1334,9	400,5	1314,4	416,7	1288,0	442,6	1064,6	412,5	1039,3	426,2
	9	1457,9	373,7	1412,3	411,3	1393,6	427,7	1364,4	454,0	1134,0	423,9	1106,1	437,5
	11	1539,1	384,4	1492,5	422,4	1473,4	439,0	1270,8	402,3	1204,0	435,6	1175,3	449,8
21500	5	-	-	1575,6	433,8	1556,1	450,9	1345,1	413,9	1276,5	447,8	1247,0	462,3
	7	1365,6	376,7	1322,4	411,3	1304,8	427,0	1275,1	451,5	1054,8	421,1	1028,3	434,6
	9	1447,5	387,8	1403,5	423,5	1383,3	439,1	1353,0	464,0	1123,5	433,3	1094,5	446,5
	11	1532,6	399,5	1485,5	435,9	1464,8	451,8	1433,8	477,1	1194,7	445,6	1164,9	459,4
21600	5	1620,8	411,6	1572,7	448,7	1549,3	464,9	1515,4	490,7	1266,7	458,3	1236,0	472,6
	7	-	-	-	-	-	-	1415,8	438,6	1339,2	471,9	1307,6	486,1
	9	1455,3	411,3	1412,0	447,4	1392,7	463,5	1361,1	488,7	1307,7	536,2	-	-
	11	1543,0	422,8	1498,6	459,5	1478,9	475,8	1446,7	501,9	1216,1	479,1	1188,1	493,8
21500	5	1634,1	435,3	1586,2	472,6	1568,6	489,1	1535,6	515,2	1293,7	492,1	1262,7	507,2
	7	1731,3	447,9	1682,3	485,8	1661,6	502,5	1625,2	529,4	1374,2	505,7	1342,3	520,9
	9	1826,6	461,0	1776,5	499,4	1755,4	516,5	1718,1	543,8	1457,7	520,1	1422,6	535,5
	11	1556,1	453,0	1509,7	493,1	1490,0	510,2	1458,1	538,4	1401,4	589,7	1196,2	532,1
21600	5	1650,9	466,4	1603,3	506,7	1583,3	524,4	1548,0	553,0	1306,7	530,2	1275,9	546,8
	7	1746,7	480,4	1700,6	520,8	1677,4	538,9	1644,0	568,0	1390,4	545,3	1356,5	562,0
	9	1848,7	494,6	1799,0	536,0	1775,1	553,8	1741,0	583,4	1475,0	560,3	1440,0	577,3
	11	-	-	1900,9	551,3	1876,6	569,9	1838,8	600,0	1565,0	576,2	1529,0	593,2

Ta = Outdoor air temperature (dry bulb).

Tue = Evaporator water output temperature (Δt input/output 5 K).

QF = Cooling capacity (fouling factor equal to $0.35 \times 10^{-4} \text{ m}^2 \text{ K/W}$).

P = Total electrical power absorbed.

Performances and pressure drops accessories RC100 and DS

Model TCAVBZ - TCAVIZ	RC100					DS				
	Tw °C	Qt kW	Q m³/h	Δp kPa	C l	Tw °C	Qt kW	Q m³/h	Δp kPa	C l
1270	35/40	363,8	63,2	49,4	33	40/50	71,0	6,3	8,4	8
	40/45	355,0	61,8	47,4		45/55	63,6	5,6	6,9	
	45/50	346,4	61,5	47,0		50/60	55,5	4,9	5,4	
1310	35/40	414,8	72,1	49,2	38	40/50	81,0	7,1	10,7	8
	40/45	404,0	70,4	47,1		45/55	71,7	6,3	8,6	
	45/50	393,4	69,9	46,5		50/60	61,6	5,4	6,5	
1350	35/40	475,9	82,7	35,7	51	40/50	93,0	8,2	13,7	8
	40/45	464,0	80,8	34,2		45/55	83,1	7,3	11,2	
	45/50	452,3	80,4	33,8		50/60	72,5	6,3	8,8	
1390	35/40	530,3	92,2	36,5	56	40/50	103,0	9,1	15,6	10
	40/45	517,0	90,1	35,0		45/55	91,8	8,1	12,7	
	45/50	504,6	89,7	34,7		50/60	79,6	7,0	9,8	
2331	35/40	436,7	75,9	64,6	38	40/50	84,0	7,4	13,6	9
	40/45	429,0	74,7	62,8		45/55	74,2	6,5	10,9	
	45/50	420,7	74,7	62,8		50/60	63,5	5,6	8,2	
2351	35/40	462,0	80,3	71,5	38	40/50	89,0	7,8	15,1	9
	40/45	454,0	79,1	69,5		45/55	78,6	6,9	12,1	
	45/50	445,3	79,1	69,6		50/60	67,1	5,9	9,1	
2371	35/40	489,9	85,2	79,5	38	40/50	94,0	8,3	16,7	9
	40/45	482,0	84,0	77,5		45/55	82,9	7,3	13,3	
	45/50	472,5	83,9	77,4		50/60	70,7	6,2	10,0	
2391	35/40	516,1	89,7	70,4	45	40/50	99,0	8,7	11,3	10
	40/45	507,0	88,3	68,4		45/55	87,5	7,7	9,0	
	45/50	497,1	88,3	68,4		50/60	74,8	6,5	6,8	
2421	35/40	543,3	94,5	77,2	45	40/50	104,0	9,2	8,4	12
	40/45	535,0	93,2	75,4		45/55	91,5	8,0	6,7	
	45/50	524,7	93,2	75,4		50/60	77,7	6,8	5,0	
2461	35/40	598,6	104,1	65,2	61	40/50	115,0	10,1	10,1	12
	40/45	590,0	102,8	63,7		45/55	101,4	8,9	8,0	
	45/50	578,8	102,8	63,8		50/60	86,3	7,5	6,0	
2511	35/40	669,1	116,3	79,6	61	40/50	128,0	11,3	12,2	12
	40/45	659,0	114,8	77,7		45/55	112,9	9,9	9,7	
	45/50	647,7	115,1	78,1		50/60	96,3	8,4	7,3	
2551	35/40	713,2	124,0	47,7	66	40/50	136,0	12,0	7,8	16
	40/45	699,0	121,8	46,1		45/55	119,8	10,5	6,2	
	45/50	682,7	121,3	45,8		50/60	101,9	8,9	4,6	
2571	35/40	748,0	130,1	51,9	66	40/50	143,0	12,6	8,5	16
	40/45	732,0	127,5	50,1		45/55	126,4	11,1	6,8	
	45/50	716,2	127,3	49,9		50/60	108,1	9,5	5,2	
2611	35/40	806,8	140,3	55,6	71	40/50	154,0	13,6	9,8	16
	40/45	790,0	137,6	53,8		45/55	136,0	11,9	7,8	
	45/50	771,2	137,0	53,4		50/60	116,3	10,2	5,9	
2641	35/40	856,6	148,9	52,1	76	40/50	163,0	14,4	10,8	16
	40/45	837,0	145,8	50,2		45/55	143,6	12,6	8,6	
	45/50	816,6	145,1	49,7		50/60	122,6	10,7	6,5	
2681	35/40	885,5	154,0	55,3	76	40/50	170,0	15,0	11,7	16
	40/45	871,0	151,7	53,9		45/55	150,3	13,2	9,3	
	45/50	856,7	152,2	54,2		50/60	128,7	11,3	7,1	
2701	35/40	909,6	158,1	58,1	76	40/50	175,0	15,4	12,3	16
	40/45	899,0	156,6	57,1		45/55	155,3	13,6	9,9	
	45/50	889,5	158,1	58,0		50/60	133,6	11,7	7,6	

Model TCAVBZ - TCAVIZ	RC100					DS				
	Tw	Qt (*)	Q	Δp	C	Tw	Qt (*)	Q	Δp	C
	°C	kW	m³/h	kPa	l	°C	kW	m³/h	kPa	l
2710	35/40	930,8	161,8	60,5	76	40/50	175,0	15,4	12,3	15
	40/45	920,0	160,3	59,5		45/55	155,3	13,6	9,9	
	45/50	910,3	161,8	60,5		50/60	133,6	11,7	7,6	
2750	35/40	983,5	171,0	66,8	76	40/50	185,0	16,3	13,6	15
	40/45	972,0	169,3	65,7		45/55	164,2	14,4	11,0	
	45/50	961,8	170,9	66,8		50/60	141,2	12,4	8,4	
2810	35/40	1061,8	184,6	60,0	89	40/50	199,0	17,5	15,5	15
	40/45	1047,0	182,4	58,7		45/55	179,9	15,8	12,9	
	45/50	1031,1	183,2	59,3		50/60	159,4	13,9	10,4	
2870	35/40	1139,6	198,1	49,3	102	40/50	213,0	18,8	17,5	15
	40/45	1124,0	195,8	48,3		45/55	192,5	16,9	14,6	
	45/50	1108,7	197,0	48,8		50/60	170,4	14,9	11,7	
2940	35/40	1228,4	213,6	52,3	107	40/50	230,0	20,3	20,9	17
	40/45	1210,0	210,8	51,1		45/55	208,0	18,3	17,4	
	45/50	1043,5	185,4	40,6		50/60	183,9	16,1	14,0	
2990	35/40	1296,3	225,4	52,4	112	40/50	243,0	21,4	21,0	19
	40/45	1277,0	222,5	51,2		45/55	219,9	19,3	17,6	
	45/50	1258,1	223,5	51,7		50/60	195,2	17,1	14,2	
21020	35/40	1329,8	231,2	54,9	112	40/50	249,0	22,0	22,0	19
	40/45	1312,0	228,5	53,8		45/55	225,1	19,8	18,3	
	45/50	1291,5	229,5	54,2		50/60	199,5	17,5	14,8	
21060	35/40	1369,7	238,1	57,9	112	40/50	257,0	22,7	23,3	19
	40/45	1350,0	235,2	56,6		45/55	231,7	20,4	19,3	
	45/50	1326,0	235,6	56,8		50/60	204,7	17,9	15,5	
21110	35/40	1453,8	252,8	56,7	121	40/50	273,0	24,1	25,9	19
	40/45	1436,0	250,1	55,7		45/55	247,2	21,7	21,7	
	45/50	1418,6	252,1	56,5		50/60	220,2	19,3	17,6	
21180	35/40	1535,4	266,9	55,6	135	40/50	289,0	25,5	24,3	21
	40/45	1521,0	265,0	54,8		45/55	261,9	23,0	20,3	
	45/50	1509,6	268,2	56,0		50/60	232,9	20,4	16,5	
21250	35/40	1616,4	281,0	50,4	149	40/50	305,0	26,9	22,9	22
	40/45	1606,0	279,8	50,0		45/55	275,9	24,2	19,1	
	45/50	1599,6	284,2	51,5		50/60	244,8	21,4	15,4	

Tw = Inlet/outlet water temperature.

Qt = Recovery unit heating capacity.

Q = Recovery unit water flow rate.

Δp = Recovery unit pressure drops.

C = Recovery unit water content.

Functioning limits:

RC100:

- Produced hot water temperature 35÷50°C with admitted water temperature differential 4÷6 K;
- The minimum inlet water temperature admitted is equal to 30□.
- With accessory RC100 the unit is provided with accessory FI10.

DS:

- Produced hot water temperature 45÷60°C with admitted water temperature differential 5÷10 K;
- The minimum inlet water temperature admitted is equal to 40□.

(*) Heating capacity with recovery unit fouling factor equal to $0.35 \times 10^{-4} \text{ m}^2 \text{ KW}$. Conditions referred to unit complete with condensation control, chilled water temperature of 7°C and evaporator temperature differential of 5 K.

Attention

The units equipped with recovery unit permanently placed in series to compressor must be started in conformity with the dispositions of Ministerial Decree 1/12/2004 n. 329. This law is only valid in Italy. For installation in other countries, please abide by the local laws in force. The DHW can only be produced with the use of a further heat exchanger suitable for the purpose. Refer to the current laws and Standard in the place of installation.

Model TCAVSZ	RC100					DS				
	Tw	Qt	Q	Δp	C	Tw	Qt	Q	Δp	C
	°C	kW	m³/h	kPa	l	°C	kW	m³/h	kPa	l
1270	35/40	363,8	63,2	49,4	33	40/50	70,0	6,2	8,2	8
	40/45	355,0	61,8	47,4		45/55	63,0	5,5	6,8	
	45/50	346,4	61,5	47,0		50/60	55,5	4,9	5,4	
1310	35/40	414,8	72,1	49,2	38	40/50	80,0	7,1	10,5	8
	40/45	404,0	70,4	47,1		45/55	71,4	6,3	8,5	
	45/50	393,4	69,9	46,5		50/60	61,9	5,4	6,6	
1350	35/40	475,9	82,7	35,7	51	40/50	92,0	8,1	13,5	8
	40/45	464,0	80,8	34,2		45/55	82,8	7,3	11,1	
	45/50	452,3	80,4	33,8		50/60	72,9	6,4	8,8	
1390	35/40	530,3	92,2	36,5	56	40/50	102,0	9,0	15,4	10
	40/45	517,0	90,1	35,0		45/55	91,6	8,0	12,7	
	45/50	504,6	89,7	34,7		50/60	80,5	7,0	10,0	
2331	35/40	436,7	75,9	64,6	38	40/50	82,0	7,2	13,1	9
	40/45	429,0	74,7	62,8		45/55	72,9	6,4	10,6	
	45/50	420,7	74,7	62,8		50/60	63,1	5,5	8,1	
2351	35/40	462,0	80,3	71,5	38	40/50	87,0	7,7	14,5	9
	40/45	454,0	79,1	69,5		45/55	77,3	6,8	11,7	
	45/50	445,3	79,1	69,6		50/60	66,9	5,9	9,0	
2371	35/40	489,9	85,2	79,5	38	40/50	93,0	8,2	16,4	9
	40/45	482,0	84,0	77,5		45/55	82,8	7,3	13,3	
	45/50	472,5	83,9	77,4		50/60	71,6	6,3	10,2	
2391	35/40	516,1	89,7	70,4	45	40/50	97,0	8,6	10,9	10
	40/45	507,0	88,3	68,4		45/55	86,6	7,6	8,8	
	45/50	497,1	88,3	68,4		50/60	75,1	6,6	6,9	
2421	35/40	543,3	94,5	77,2	45	40/50	103,0	9,1	8,3	12
	40/45	535,0	93,2	75,4		45/55	91,2	8,0	6,6	
	45/50	524,7	93,2	75,4		50/60	78,4	6,9	5,0	
2461	35/40	598,6	104,1	65,2	61	40/50	113,0	10,0	9,8	12
	40/45	590,0	102,8	63,7		45/55	100,3	8,8	7,9	
	45/50	578,8	102,8	63,8		50/60	86,5	7,6	6,0	
2511	35/40	669,1	116,3	79,6	61	40/50	126,0	11,1	11,9	12
	40/45	659,0	114,8	77,7		45/55	112,0	9,8	9,6	
	45/50	647,7	115,1	78,1		50/60	96,7	8,5	7,4	
2551	35/40	713,2	124,0	47,7	66	40/50	134,0	11,8	7,6	16
	40/45	699,0	121,8	46,1		45/55	118,8	10,4	6,1	
	45/50	682,7	121,3	45,8		50/60	102,2	8,9	4,7	
2571	35/40	748,0	130,1	51,9	66	40/50	141,0	12,4	8,3	16
	40/45	732,0	127,5	50,1		45/55	125,4	11,0	6,7	
	45/50	716,2	127,3	49,9		50/60	108,4	9,5	5,2	
2611	35/40	806,8	140,3	55,6	71	40/50	152,0	13,4	9,5	16
	40/45	790,0	137,6	53,8		45/55	135,2	11,9	7,7	
	45/50	771,2	137,0	53,4		50/60	116,9	10,2	5,9	
2641	35/40	856,6	148,9	52,1	76	40/50	160,0	14,1	10,5	16
	40/45	837,0	145,8	50,2		45/55	142,2	12,5	8,5	
	45/50	816,6	145,1	49,7		50/60	122,4	10,7	6,5	
2681	35/40	885,5	154,0	55,3	76	40/50	168,0	14,8	11,4	16
	40/45	871,0	151,7	53,9		45/55	149,5	13,1	9,3	
	45/50	856,7	152,2	54,2		50/60	129,5	11,3	7,1	
2701	35/40	909,6	158,1	58,1	76	40/50	174,0	15,3	12,2	16
	40/45	899,0	156,6	57,1		45/55	155,4	13,6	9,9	
	45/50	889,5	158,1	58,0		50/60	135,2	11,8	7,7	

Model TCAVSZ	RC100					DS				
	Tw	Qt (*)	Q	Δp	C	Tw	Qt (*)	Q	Δp	C
	°C	kW	m³/h	kPa	l	°C	kW	m³/h	kPa	l
2710	35/40	930,8	161,8	60,5	76	40/50	173,0	15,3	12,0	15
	40/45	920,0	160,3	59,5		45/55	154,3	13,6	9,8	
	45/50	910,3	161,8	60,5		50/60	134,0	11,7	7,6	
2750	35/40	983,5	171,0	66,8	76	40/50	183,0	16,1	13,3	15
	40/45	972,0	169,3	65,7		45/55	163,2	14,3	10,8	
	45/50	961,8	170,9	66,8		50/60	141,8	12,4	8,4	
2810	35/40	1061,8	184,6	60,0	89	40/50	197,0	17,4	15,2	15
	40/45	1047,0	182,4	58,7		45/55	179,3	15,7	12,8	
	45/50	1031,1	183,2	59,3		50/60	159,5	14,0	10,4	
2870	35/40	1139,6	198,1	49,3	102	40/50	211,0	18,6	17,2	15
	40/45	1124,0	195,8	48,3		45/55	191,2	16,8	14,4	
	45/50	1108,7	197,0	48,8		50/60	170,3	14,9	11,7	
2940	35/40	1228,4	213,6	52,3	107	40/50	228,0	20,1	20,5	17
	40/45	1210,0	210,8	51,1		45/55	206,5	18,1	17,2	
	45/50	1043,5	185,4	40,6		50/60	183,9	16,1	14,0	
2990	35/40	1296,3	225,4	52,4	112	40/50	240,0	21,2	20,6	19
	40/45	1277,0	222,5	51,2		45/55	218,2	19,2	17,3	
	45/50	1258,1	223,5	51,7		50/60	194,9	17,0	14,1	
21020	35/40	1329,8	231,2	54,9	112	40/50	247,0	21,8	21,7	19
	40/45	1312,0	228,5	53,8		45/55	224,7	19,7	18,3	
	45/50	1291,5	229,5	54,2		50/60	200,7	17,6	14,9	
21060	35/40	1369,7	238,1	57,9	112	40/50	254,0	22,4	22,8	19
	40/45	1350,0	235,2	56,6		45/55	230,5	20,3	19,1	
	45/50	1326,0	235,6	56,8		50/60	205,9	18,0	15,6	
21110	35/40	1453,8	252,8	56,7	121	40/50	270,0	23,8	25,4	19
	40/45	1436,0	250,1	55,7		45/55	246,2	21,6	21,5	
	45/50	1418,6	252,1	56,5		50/60	220,7	19,3	17,7	
21180	35/40	1535,4	266,9	55,6	135	40/50	286,0	25,2	23,8	21
	40/45	1521,0	265,0	54,8		45/55	260,8	22,9	20,2	
	45/50	1509,6	268,2	56,0		50/60	233,9	20,5	16,6	
21250	35/40	1616,4	281,0	50,4	149	40/50	302,0	26,6	22,5	22
	40/45	1606,0	279,8	50,0		45/55	274,9	24,1	19,0	
	45/50	1599,6	284,2	51,5		50/60	246,8	21,6	15,7	

Tw = Inlet/outlet water temperature.

Qt = Recovery unit heating capacity.

Q = Recovery unit water flow rate.

Δp = Recovery unit pressure drops.

C = Recovery unit water content.

Functioning limits:

RC100:

- Produced hot water temperature 35÷50°C with admitted water temperature differential 4÷6 K;
- The minimum inlet water temperature admitted is equal to 30□.
- With accessory RC100 the unit is provided with accessory FI10.

DS:

- Produced hot water temperature 45÷60°C with admitted water temperature differential 5÷10 K;
- The minimum inlet water temperature admitted is equal to 40□.

(*) Heating capacity with recovery unit fouling factor equal to $0.35 \times 10^{-4} \text{ m}^2 \text{ KW}$. Conditions referred to unit complete with condensation control, chilled water temperature of 7°C and evaporator temperature differential of 5 K.

Attention

The units equipped with recovery unit permanently placed in series to compressor must be started in conformity with the dispositions of Ministerial Decree 1/12/2004 n. 329. This law is only valid in Italy. For installation in other countries, please abide by the local laws in force. The DHW can only be produced with the use of a further heat exchanger suitable for the purpose. Refer to the current laws and Standard in the place of installation.

Energy efficiency at partial loads - ESEER and IPLV indexes

- o The E.E.R. index represents an estimate of the energy efficiency of the cooling unit in nominal design conditions. In reality, the operating time of a chiller in nominal conditions is usually less than the operating time in partial load conditions.
- o The IPLV (Integrated Part Load Value) and ESEER indexes (European Seasonal EER) are those that estimate the average seasonal energy efficiency of the cooling unit on four load and outdoor air temperature conditions. In general, two chillers that have the same EER value can have different IPLV or ESEER values. In fact, for an air-cooled cooling unit, the average energy efficiency depends on the design choices and the temperature of the air entering the condensing coil.
- o The IPLV and ESEER indexes, introduced respectively by the ARI (American Refrigeration Institute - ARI standard 550/590) and the European Community (EECCAC Energy Efficiency and Certification of Central Air Conditioners project), have the same formulation, but differ due to outdoor air temperatures (see table "C") and for the energy weights that are assigned to the four load conditions considered for the calculation: 100%, 75%, 50% and 25% and for Tw produced (6.7°C IPLV / 7°C ESEER).

$$IPLV = \frac{1 \cdot EER_{100\%} + 42 \cdot EER_{75\%} + 45 \cdot EER_{50\%} + 12 \cdot EER_{25\%}}{100}$$

$$ESEER = \frac{3 \cdot EER_{100\%} + 33 \cdot EER_{75\%} + 41 \cdot EER_{50\%} + 23 \cdot EER_{25\%}}{100}$$

where EER_{100%}EER_{75%}EER_{50%}EER_{25%} represent the efficiencies of the cooling unit in the four load conditions and at the temperatures indicated in table "C".

Table "C": load and temperatures conditions

Load	Outdoor air temperature	
	IPLV	ESEER
100%	35.0□	35□
75%	26.7□	30□
50%	18.3□	25□
25%	12.8□	20□

o Table "D" shows the E.E.R., ESEER and IPLV values for each model. The high values of energy efficiency at partial loads were achieved thanks to optimisation of the heat exchangers and use of fans units independently managed according to the load conditions.

Table "E" shows the cooling capacity (%) and the total absorbed power (%) for each model, in correspondence of each supplied cooling capacity step.

Table "E"

Steps (*)			Models		
			1270÷1390	2331÷2641	2681÷21600
1	P	kW	50	27	27
	QF	kW	52	28	28
2	P	kW	77	42	35
	QF	kW	78	44	37
3	P	kW	100	50	45
	QF	kW	100	50	46
4	P	kW	-	77	50
	QF	kW	-	78	50
5	P	kW	-	93	76
	QF	kW	-	94	78
6	P	kW	-	100	84
	QF	kW	-	100	86
7	P	kW	-	-	95
	QF	kW	-	-	96
8	P	kW	-	-	100
	QF	kW	-	-	100

QF = Cooling capacity (%)
 P = Total electrical power absorbed (%)
 (*) At nominal conditions.

Table "D": EER - ESEER - IPLV for TCAVBZ - TCAVIZ

Models	EER	ESEER	IPLV
1270	2,70	3,47	3,59
1310	2,81	3,59	3,72
1350	2,70	3,45	3,58
1390	2,70	3,44	3,56
2331	2,94	3,96	4,11
2351	2,95	3,97	4,11
2371	2,92	3,97	4,12
2391	2,90	3,99	4,13
2421	2,93	3,99	4,15
2461	2,92	3,92	4,07
2511	2,91	3,84	3,98
2551	2,97	3,92	4,07
2571	2,94	3,99	4,15
2611	2,90	3,97	4,13
2641	2,90	3,96	4,11
2681	2,92	3,96	4,11
2701	2,90	3,96	4,12
2710	2,96	3,96	4,10
2750	2,98	3,72	4,12
2810	2,96	3,69	4,09
2870	2,91	3,53	4,03
2940	3,01	3,76	4,17
2990	2,98	3,74	4,14
21020	3,05	3,80	4,21
21060	3,13	3,93	4,34
21110	2,99	3,74	4,14
21180	3,07	3,84	4,25
21250	3,15	3,93	4,35
21330	3,15	3,96	4,36
21400	3,12	4,01	4,30
21500	3,12	4,06	4,33
21600	3,11	4,08	4,39

Table "D": EER - ESEER - IPLV for TCAVSZ

Models	EER	ESEER	IPLV
1270	2,63	3,29	3,41
1310	2,71	3,41	3,54
1350	2,60	3,27	3,39
1390	2,55	3,26	3,37
2331	2,84	3,76	3,90
2351	2,83	3,79	3,93
2371	2,80	3,82	3,96
2391	2,71	3,84	3,99
2421	2,85	3,86	4,01
2461	2,80	3,74	3,88
2511	2,76	3,61	3,74
2551	2,88	3,73	3,87
2571	2,84	3,84	3,99
2611	2,77	3,83	3,98
2641	2,75	3,83	3,97
2681	2,82	3,81	3,96
2701	2,78	3,80	3,95
2710	2,82	3,80	3,92
2750	2,85	3,56	3,94
2810	2,82	3,53	3,91
2870	2,77	3,35	3,83
2940	2,86	3,57	3,95
2990	2,81	3,50	3,89
21020	2,87	3,59	3,97
21060	2,95	3,69	4,09
21110	2,78	3,47	3,85
21180	2,85	3,54	3,93
21250	2,90	3,63	4,02
21330	2,91	3,65	4,02
21400	2,92	3,82	4,01
21500	2,88	3,81	4,00
21600	2,80	3,72	3,87

Loss of evaporator load

Calculation of Pressure Drops

o The water flow rate at the exchanger is calculated according to the following formula:

$$G = (QF \times 0.86) : \Delta T$$

• Where:

G (m³/h) = water flow rate at the exchanger;

QF (kW) = cooling capacity;

ΔT (°C) = temperature differential;

o The pressure drops can be achieved from the selection software or estimated with the following approximate formula:

$$\Delta p_w = \Delta p_{w_{nom}} \times (G : G_{nom})^2$$

• Where:

ΔPr (kPa) = Pressure drop at the evaporator;

ΔPr_{nom} (kPa) = nominal pressure drop at the evaporator (table “Technical features”);

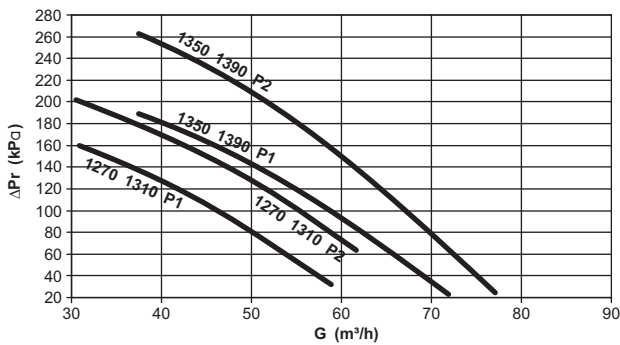
G (m³/h) = water flow rate at the evaporator;

G_{nom} (m³/h) = nominal water flow rate at the evaporator (table “Technical Features”).

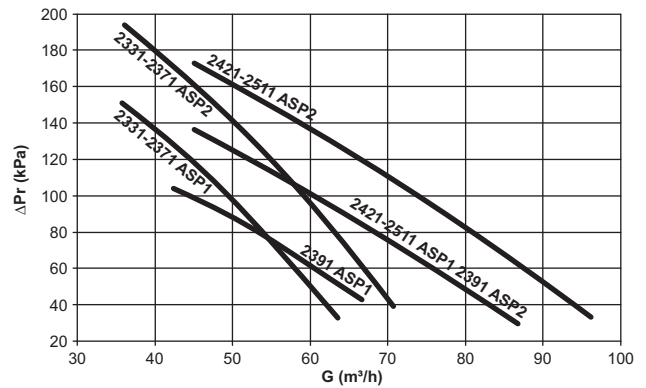
Calculation of residual static pressure

The residual static pressure values can be obtained from the selection software or from graphics, based on envisioned flow rates.

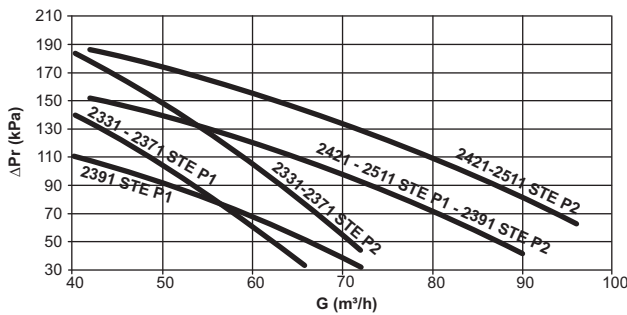
TCAVBZ-TCAVIZ-TCAVSZ 1270÷1390 P1-P2



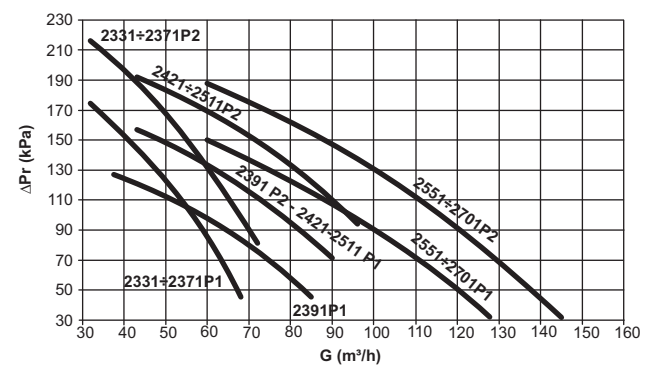
TCAVBZ-TCAVIZ-TCAVSZ 2331÷2511 ASP1-ASP2



TCAVBZ-TCAVIZ-TCAVSZ 2331÷2511 P1-P2



TCAVBZ-TCAVIZ-TCAVSZ 2331÷2701 P1-P2



ΔPr = Pressure drop.
G = Water flow rate.

N.B.:

For all machines, refer to the admissible operating limits and thermal differences (ΔT).

Sound power and pressure

Table "F": Sound power levels in dB by octave band, total sound power level in dB(A) and the sound pressure levels in dB(A) at different distances.

TCAVBZ

Models	125 Hz	250 Hz	500 Hz	1,000 Hz	2,000 Hz	4,000 Hz	8,000 Hz	Lw	Lp (1) (*)	Lp (10)
	dB	dB	dB	dB	dB	dB	dB	dB(A)	dB(A)	dB(A)
1270	100	98	96	92	86	79	74	97	79	63
1310	101	99	97	93	87	80	75	98	80	64
1350	101	99	97	93	87	80	75	98	80	64
1390	101	99	97	93	87	80	75	98	81	65
2331	100	98	96	92	86	79	74	97	79	63
2351	100	98	96	92	86	79	74	97	79	63
2371	100	98	96	92	86	79	74	97	79	63
2391	100	98	96	92	86	79	74	97	79	63
2421	101	99	97	93	87	80	75	98	80	64
2461	101	99	97	93	87	80	75	98	80	64
2511	101	99	97	93	87	80	75	98	80	64
2551	101	99	97	93	87	80	75	98	81	65
2571	101	99	97	93	87	80	75	98	81	65
2611	101	99	97	93	87	80	75	98	81	65
2641	101	99	97	93	87	80	75	98	81	65
2681	102	100	98	94	88	81	76	99	82	66
2701	102	100	98	94	88	81	76	99	82	66
2710	103	101	99	95	89	82	77	100	82	66
2750	103	101	99	95	89	82	77	100	82	66
2810	103	101	99	95	89	82	77	100	82	67
2870	106	104	102	98	92	85	80	103	82	67
2940	104	102	100	96	90	83	78	101	82	68
2990	104	102	100	96	90	83	78	101	82	68
21020	104	102	100	96	90	83	78	101	82	68
21060	105	103	101	97	91	84	79	102	83	69
21110	105	103	101	97	91	84	79	102	83	69
21180	105	103	101	97	91	84	79	102	83	69
21250	105	103	101	97	91	84	79	102	83	69
21330	105	103	101	97	91	84	79	102	83	69
21400	106	104	102	98	92	85	80	103	84	70
21500	107	105	103	99	93	86	81	104	85	71
21600	107	105	103	99	93	86	81	104	85	71

Lw Total sound power level in dB(A) on the basis of the measurements made in compliance with the UNI EN-ISO9614 and Eurovent 8/1 Standards.

Lp Sound pressure levels in dB(A).

For the TCAVIZ version (soundproofed) subtract 2 dB(A) from the values of models TCAVBZ.

Important:

The Eurovent certification refers to the Lw sound power value in dB(A) and it is the only binding acoustic data.

The sound pressure levels refer to values calculated from the sound power for units installed in free field with directionality factor Q=2. In brackets is the measurement distance in metres.

The noise data refers to the unit without pump.

It is not possible to extrapolate sound pressure values for distances less than 10 m.

With outdoor air temperatures below 25°C, or in presence of accessory F110/ F115 for outdoor temperatures below 5°C, the machine decreases its noise to a value below the nominal indicated in table.

TCAVSZ

Models	125 Hz	250 Hz	500 Hz	1,000 Hz	2,000 Hz	4,000 Hz	8,000 Hz	Lw	Lp (1) (*)	Lp (10)
	dB	dB	dB	dB	dB	dB	dB	dB(A)	dB(A)	dB(A)
1270	94	92	90	86	80	73	68	91	73	57
1310	95	93	91	87	81	74	69	92	74	58
1350	95	93	91	87	81	74	69	92	74	58
1390	95	93	91	87	81	74	69	92	75	59
2331	94	92	90	86	80	73	68	91	73	57
2351	94	92	90	86	80	73	68	91	73	57
2371	94	92	90	86	80	73	68	91	73	57
2391	94	92	90	86	80	73	68	91	73	57
2421	95	93	91	87	81	74	69	92	74	58
2461	95	93	91	87	81	74	69	92	74	58
2511	95	93	91	87	81	74	69	92	74	58
2551	95	93	91	87	81	74	69	92	75	59
2571	95	93	91	87	81	74	69	92	75	59
2611	95	93	91	87	81	74	69	92	75	59
2641	95	93	91	87	81	74	69	92	75	59
2681	96	94	92	88	82	75	70	93	76	60
2701	96	94	92	88	82	75	70	93	76	60
2710	97	95	93	89	83	76	71	94	76	60
2750	97	95	93	89	83	76	71	94	76	60
2810	97	95	93	89	83	76	71	94	76	61
2870	100	98	96	92	86	79	74	97	76	61
2940	98	96	94	90	84	77	72	95	76	62
2990	98	96	94	90	84	77	72	95	76	62
21020	98	96	94	90	84	77	72	95	76	62
21060	99	97	95	91	85	78	73	96	77	63
21110	99	97	95	91	85	78	73	96	77	63
21180	99	97	95	91	85	78	73	96	77	63
21250	99	97	95	91	85	78	73	96	77	63
21330	99	97	95	91	85	78	73	96	77	63
21400	100	98	96	92	86	79	74	97	78	64
21500	101	99	97	93	87	80	75	98	79	65
21600	101	99	97	93	87	80	75	98	79	65

Lw Total sound power level in dB(A) on the basis of the measurements made in compliance with the UNI EN-ISO9614 and Eurovent 8/1 Standards.

Lp Sound pressure levels in dB(A).

Important:

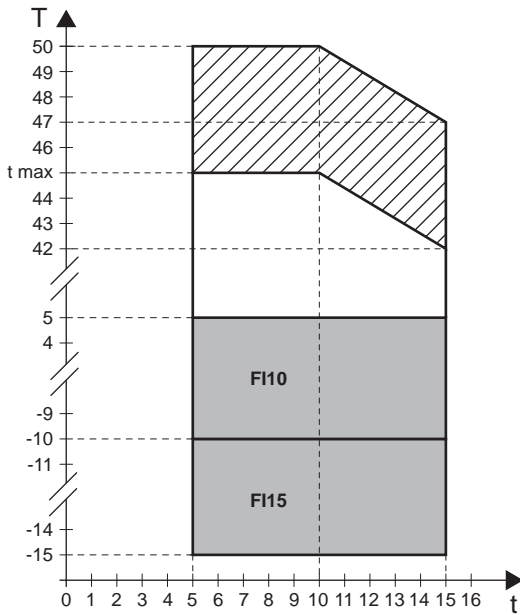
The Eurovent certification refers to the Lw sound power value in dB(A) and it is the only binding acoustic data.

The sound pressure levels refer to values calculated from the sound power for units installed in free field with directionality factor Q=2. In brackets is the measurement distance in metres.

It is not possible to extrapolate sound pressure values for distances less than 10 m.

With outdoor air temperatures below 25°C, or in presence of accessory F110/ F115 for outdoor temperatures below 5°C, the machine decreases its noise to a value below the nominal indicated in table.

Functioning limits



T (°C) = Outdoor air temperature (D.B.).

t (°C) = Temperature of the water produced.

Temperature differential at the evaporator: $\Delta T = 3 + 8^\circ\text{C}$.

However, consider the minimum and maximum flow rates in the table at the side.

Model	TCAVBZ - TCAVIZ	TCAVSZ
1270÷2641	max t = 45°C (1) (2)	max t = 43°C (1) (3)
2681÷21600	max t = 42°C (1) (2)	max t = 40°C (1) (3)

- (1) Evaporator water temperature (IN/OUT) 12/7.
- (2) Maximum outdoor air temperature with unit in standard operation running on full.
- (3) Maximum outdoor air temperature with unit in silenced mode.

Table "G": Evaporator water flow rate limits

Model	Min	Max
1270	m³/h 22	65
1310	m³/h 26	78
1350÷1390	m³/h 30	85
2331÷2391 (*)	m³/h 40	110
2421÷2511 (*)	m³/h 40	135
2551÷2571	m³/h 60	135
2611÷2750	m³/h 75	165
2810	m³/h 90	190
2870	m³/h 90	200
2940÷2990	m³/h 100	220
21020	m³/h 110	240
21060÷21110	m³/h 120	255
21180÷21400	m³/h 130	290
21500÷21600	m³/h 195	330

(*) Values referred to shell and tube evaporator accessory (STE).

Use of antifreeze solutions

The use of ethylene glycol is recommended if you do not wish to drain the water from the hydraulic system during the winter stoppage, or if the unit has to supply chilled water at temperatures lower than 5°C. The addition of glycol changes the physical properties of the water and consequently the performance of the unit. The proper percentage of glycol to be added to the system can be obtained from the most demanding functioning conditions from those shown below.

Protection from freezing for seasonal stoppage

Table "H" shows the multipliers which allow the changes in performance of the units to be determined in proportion to the required percentage of ethylene glycol. The multipliers refer to the following conditions: condenser inlet air temperature 35°C; chilled water temperature 7°C; temperature differential at evaporator 5°C.

For different functioning conditions, the same coefficients can be used as their variations are negligible. Resistance on the water side exchanger (RA accessory) avoid unwanted effects from freezing during the winter operating stoppages.

Table "H"

Minimum outdoor air temperature °C	2	0	-3	-6	-10	-15	-20
% glycol in weight	10	15	20	25	30	35	40
Freezing temperature °C	-5	-7	-10	-13	-16	-20	-25
fc G	1.025	1.039	1.054	1.072	1.093	1.116	1.14
fc Δpw	1.085	1.128	1.191	1.255	1.319	1.383	1.468
fc QF	0.975	0.967	0.963	0.956	0.948	0.944	0.937
fc P	0.993	0.991	0.99	0.988	0.986	0.983	0.981

fc QF = Cooling capacity correction factor.

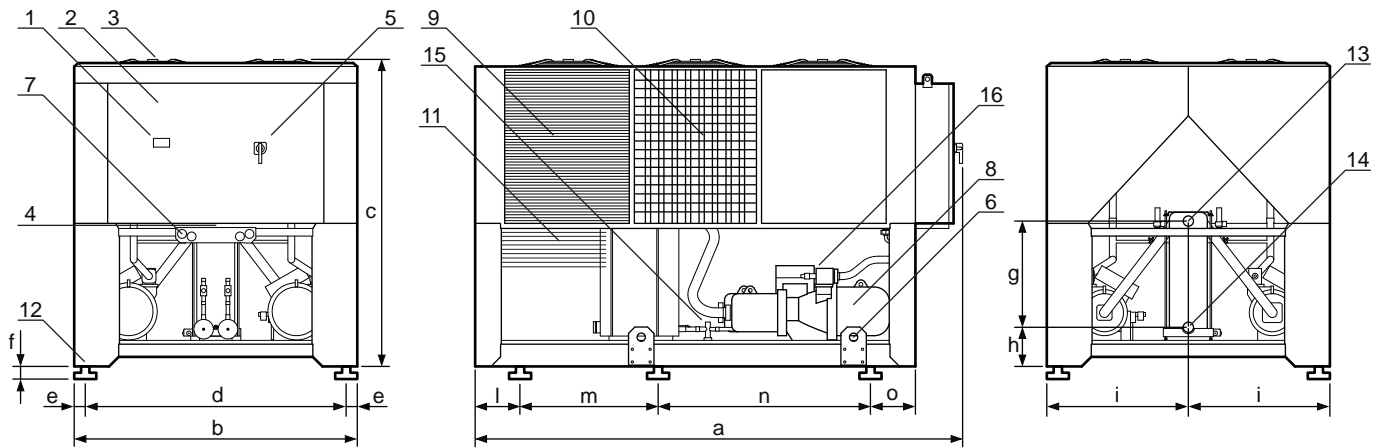
fc P = Correction factor for the total absorbed electrical current.

fc Δpw = Correction factor of the pressure drops in the evaporator.

fc G = Correction factor of the glycol water flow to the evaporator.

Dimensions and clearances

TCAVBZ – TCAVIZ – TCAVSZ 2331-2351-2371-2391. Model with plate evaporator.



1. Control panel;
2. Electrical control board;
3. Fan;
4. Power supply inlet;
5. Manoeuvre isolator switch;
6. Lifting hook;
7. Manometers (accessory);
8. Compressor and pressure switches;
9. Coil;
10. Coil protection mesh (accessory);
11. Lower compartment protection mesh (accessory);
12. Anti-vibrating (accessory);
13. "Victaulic" type connections evaporator inlet water;
14. "Victaulic" type connections evaporator outlet water;
15. Electronic expansion valve;
16. Soundproofing (TCAVIZ-TCAVSZ).

Model	2331	2351	2371	2391
a	mm 3830	3830	3830	3830
b	mm 2260	2260	2260	2260
c	mm 2430	2430	2430	2430
d	mm 2100	2100	2100	2100
e	mm 60	60	60	60
f (*)	mm 100	100	100	100
g	mm 769	769	769	769
h	mm 313	313	313	313
i	mm 1113	1113	1113	1113
l	mm 356	356	356	356
m	mm 1100	1100	1100	1100
n	mm 1650	1650	1650	1650
o	mm 356	356	356	356
13/14	DN80	DN80	DN80	DN80

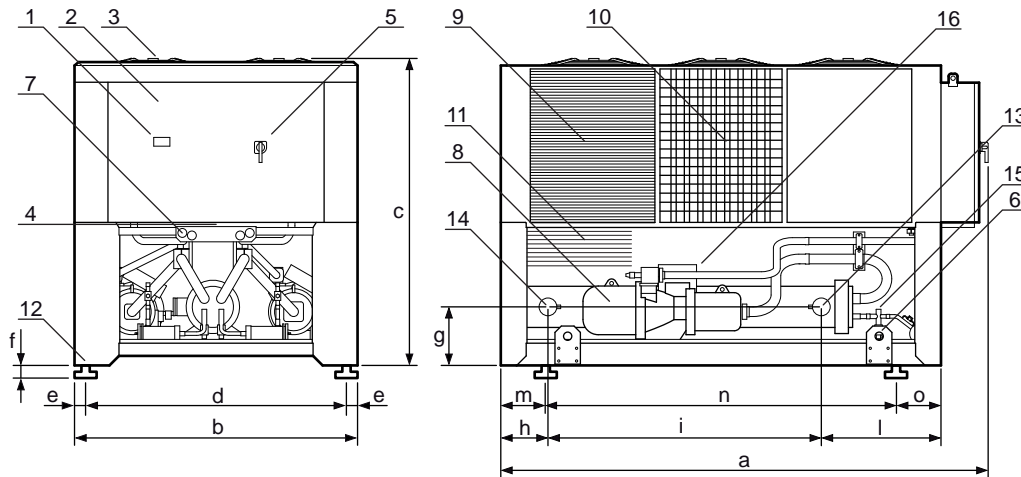
(*) These measurements are indicative for the presence of a levelling jack above the anti-vibrating.

ATTENTION!

The desuperheater (DS), recovery unit (RC100) and the electric pumps accessories in PUMP/TANK&PUMP set-ups have not been measured as the data is subject to evaluations and modifications by our technical department. For any information contact our pre-sales department.

TCAVBZ – TCAVIZ – TCAVSZ 1270-1310-1350-1390. Model with tube and shell evaporator.

TCAVBZ – TCAVIZ – TCAVSZ 2331-2351-2371-2391. Model with STE accessory.



- 1. Control panel;
- 2. Electrical control board;
- 3. Fan;
- 4. Power supply inlet;
- 5. Manoeuvre isolator switch;
- 6. Lifting hook;
- 7. Manometers (accessory);
- 8. Compressor and pressure switches;
- 9. Coil;
- 10. Coil protection mesh (accessory);
- 11. Lower compartment protection mesh (accessory);
- 12. Anti-vibrating (accessory);
- 13. "Victaulic" type connections evaporator inlet water;
- 14. "Victaulic" type connections evaporator outlet water;
- 15. Electronic expansion valve;
- 16. Soundproofing (TCAVIZ-TCAVSZ).

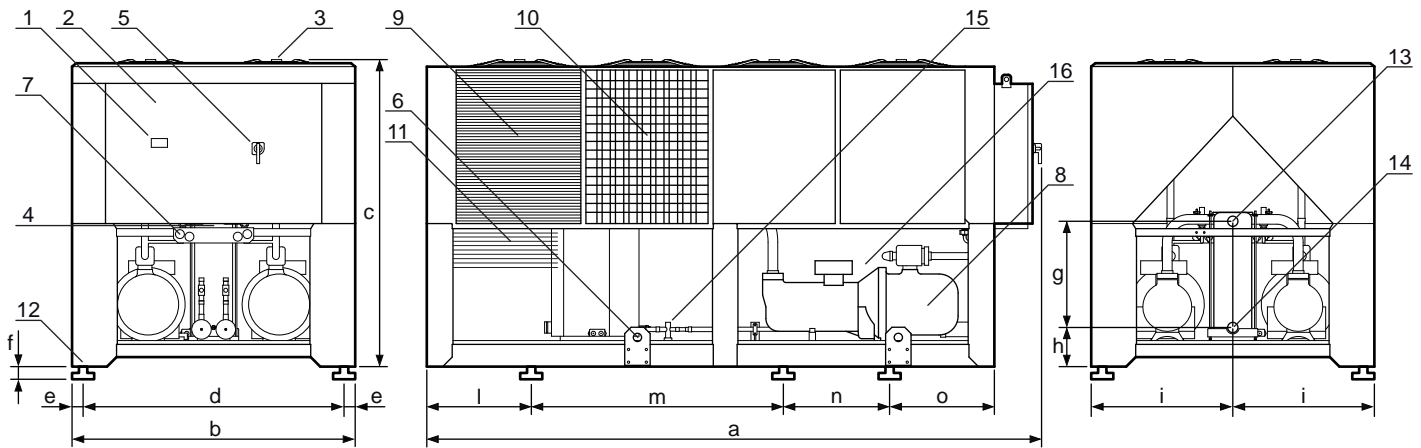
Model	1270	1310	1350	1390	2331	2351	2371	2391
a	mm 3830	3830	3830	3830	3830	3830	3830	3830
b	mm 2260	2260	2260	2260	2260	2260	2260	2260
c	mm 2430	2430	2430	2430	2430	2430	2430	2430
d	mm 2100	2100	2100	2100	2100	2100	2100	2100
e	mm 60	60	60	60	60	60	60	60
f (*)	mm 100	100	100	100	100	100	100	100
g	mm 471	471	471	471	471	471	471	471
h	mm 371	371	371	371	371	371	371	371
i	mm 2150	2150	2150	2150	2150	2150	2150	2150
l	mm 941	941	941	941	941	941	941	941
m	mm 356	356	356	356	356	356	356	356
n	mm 2750	2750	2750	2750	2750	2750	2750	2750
o	mm 356	356	356	356	356	356	356	356
13/14	DN125	DN125	DN125	DN125	DN125	DN125	DN125	DN125

(*) These measurements are indicative for the presence of a levelling jack above the anti-vibrating.

ATTENTION!

The desuperheater (DS), recovery unit (RC100) and the electric pumps accessories in PUMP/TANK&PUMP set-ups have not been measured as the data is subject to evaluations and modifications by our technical department. For any information contact our pre-sales department.

TCAVBZ – TCAVIZ – TCAVSZ 2421-2461-2511. Model with plate evaporator.



1. Control panel;
2. Electrical control board;
3. Fan;
4. Power supply inlet;
5. Manoeuvre isolator switch;
6. Lifting hook;
7. Manometers (accessory);
8. Compressor and pressure switches;
9. Coil;
10. Coil protection mesh (accessory);
11. Lower compartment protection mesh (accessory);
12. Anti-vibrating (accessory);
13. "Victaulic" type connections evaporator inlet water;
14. "Victaulic" type connections evaporator outlet water;
15. Electronic expansion valve;
16. Soundproofing (TCAVIZ-TCAVSZ).

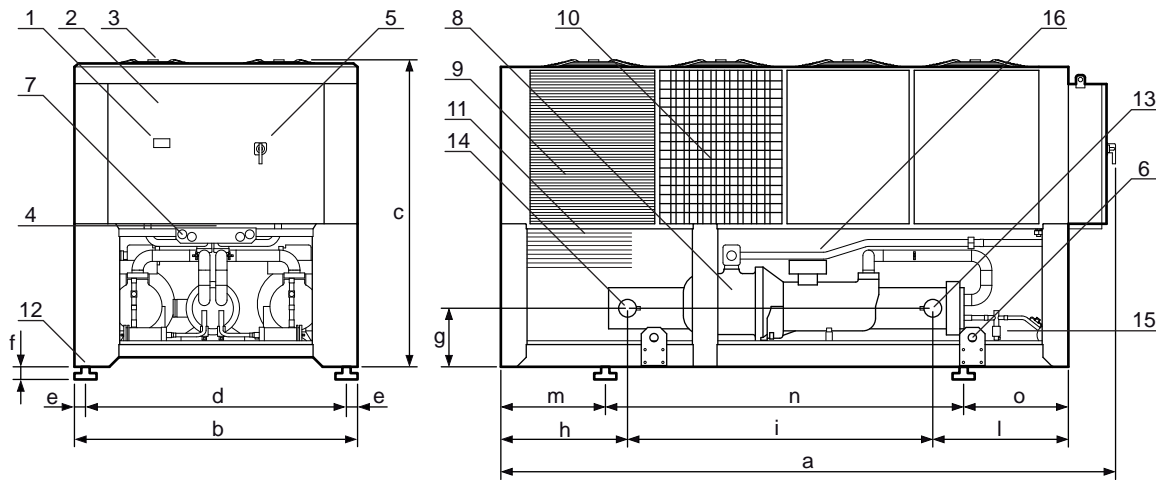
Model	2421	2461	2511
a	mm 4830	4830	4830
b	mm 2260	2260	2260
c	mm 2430	2430	2430
d	mm 2100	2100	2100
e	mm 60	60	60
f (*)	mm 100	100	100
g	mm 769	769	769
h	mm 313	313	313
i	mm 1113	1113	1113
l	mm 806	806	806
m	mm 2000	2000	2000
n	mm 850	850	850
o	mm 806	806	806
13/14	DN80	DN80	DN80

(*) These measurements are indicative for the presence of a levelling jack above the anti-vibrating.

ATTENTION!

The desuperheater (DS), recovery unit (RC100) and the electric pumps accessories in PUMP/TANK&PUMP set-ups have not been measured as the data is subject to evaluations and modifications by our technical department. For any information contact our pre-sales department.

TCAVBZ – TCAVIZ – TCAVSZ 2421-2461-2511. Model with STE accessory.



1. Control panel;
2. Electrical control board;
3. Fan;
4. Power supply inlet;
5. Manoeuvre isolator switch;
6. Lifting hook;
7. Manometers (accessory);
8. Compressor and pressure switches;
9. Coil;
10. Coil protection mesh (accessory);
11. Lower compartment protection mesh (accessory);
12. Anti-vibrating (accessory);
13. "Victaulic" type connections evaporator inlet water;
14. "Victaulic" type connections evaporator outlet water;
15. Electronic expansion valve;
16. Soundproofing (TCAVIZ-TCAVSZ).

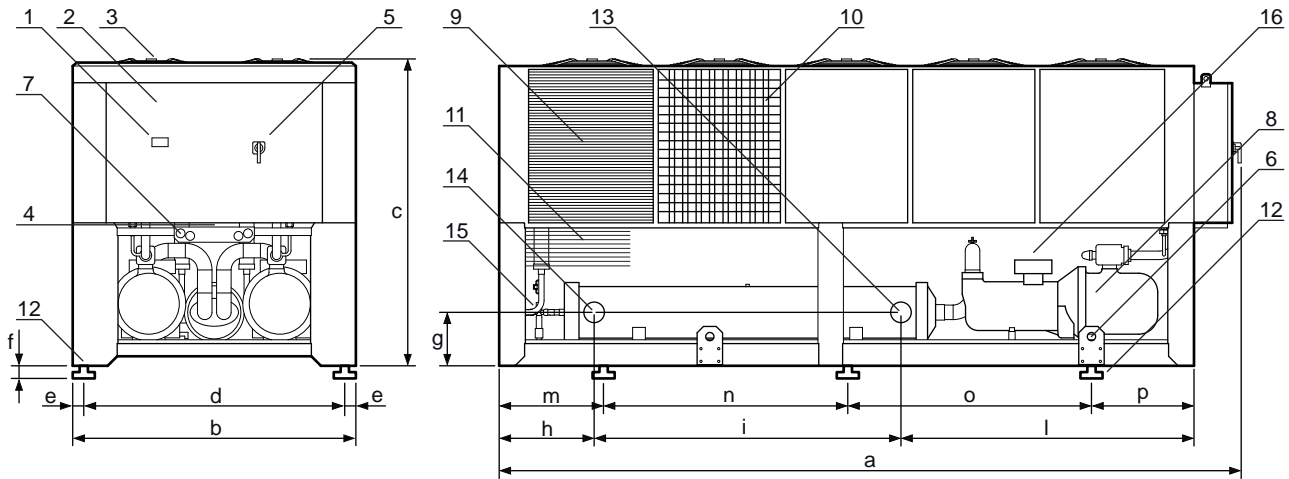
Model	2421	2461	2511
a	mm 4830	4830	4830
b	mm 2260	2260	2260
c	mm 2430	2430	2430
d	mm 2100	2100	2100
e	mm 60	60	60
f (*)	mm 100	100	100
g	mm 471	471	471
h	mm 996	996	996
i	mm 2400	2400	2400
l	mm 1066	1066	1066
m	mm 806	806	806
n	mm 2850	2850	2850
o	mm 806	806	806
13/14	DN125	DN125	DN125

(*) These measurements are indicative for the presence of a levelling jack above the anti-vibrating.

ATTENTION!

The desuperheater (DS), recovery unit (RC100) and the electric pumps accessories in PUMP/TANK&PUMP set-ups have not been measured as the data is subject to evaluations and modifications by our technical department. For any information contact our pre-sales department.

TCAVBZ – TCAVIZ – TCAVSZ 2551-2571-2611-2641. Model with tube and shell evaporator.



1. Control panel;
2. Electrical control board;
3. Fan;
4. Power supply inlet;
5. Manoeuvre isolator switch;
6. Lifting hook;
7. Manometers (accessory);
8. Compressor and pressure switches;
9. Coil;
10. Coil protection mesh (accessory);
11. Lower compartment protection mesh (accessory);
12. Anti-vibrating (accessory);
13. "Victaulic" type connections evaporator inlet water;
14. "Victaulic" type connections evaporator outlet water;
15. Electronic expansion valve;
16. Soundproofing (TCAVIZ-TCAVSZ).

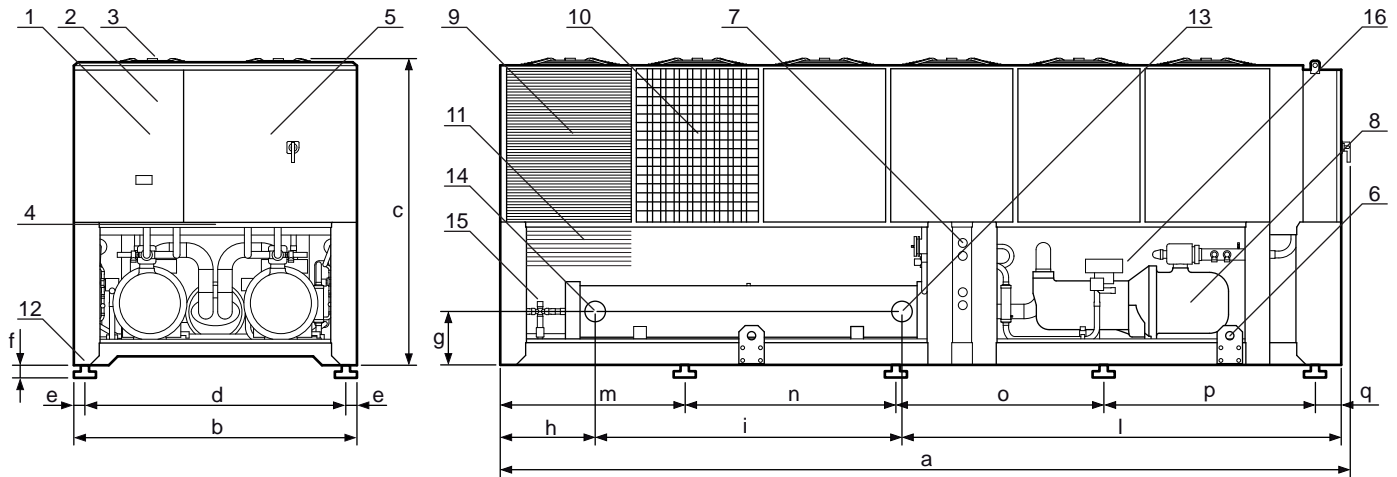
Model	2551	2571	2611	2641
a	mm 5830	5830	5830	5830
b	mm 2260	2260	2260	2260
c	mm 2430	2430	2430	2430
d	mm 2100	2100	2100	2100
e	mm 60	60	60	60
f (*)	mm 100	100	100	100
g	mm 426	426	426	426
h	mm 746	746	746	746
i	mm 2412	2412	2412	2412
l	mm 2304	2304	2304	2304
m	mm 806	806	806	806
n	mm 1925	1925	1925	1925
o	mm 1925	1925	1925	1925
p	mm 806	806	806	806
13/14	DN150	DN150	DN150	DN150

(*) These measurements are indicative for the presence of a levelling jack above the anti-vibrating.

ATTENTION!

The desuperheater (DS), recovery unit (RC100) and the electric pumps accessories in PUMP/TANK&PUMP set-ups have not been measured as the data is subject to evaluations and modifications by our technical department. For any information contact our pre-sales department.

TCAVBZ – TCAVIZ – TCAVSZ 2681-2701-2710-2750. Model with tube and shell evaporator.



1. Control panel;
2. Electrical control board;
3. Fan;
4. Power supply inlet;
5. Manoeuvre isolator switch;
6. Lifting hook;
7. Manometers (accessory);
8. Compressor and pressure switches;
9. Coil;
10. Coil protection mesh (accessory);
11. Lower compartment protection mesh (accessory);
12. Anti-vibrating (accessory);
13. "Victaulic" type connections evaporator inlet water;
14. "Victaulic" type connections evaporator outlet water;
15. Electronic expansion valve;
16. Soundproofing (TCAVIZ-TCAVSZ).

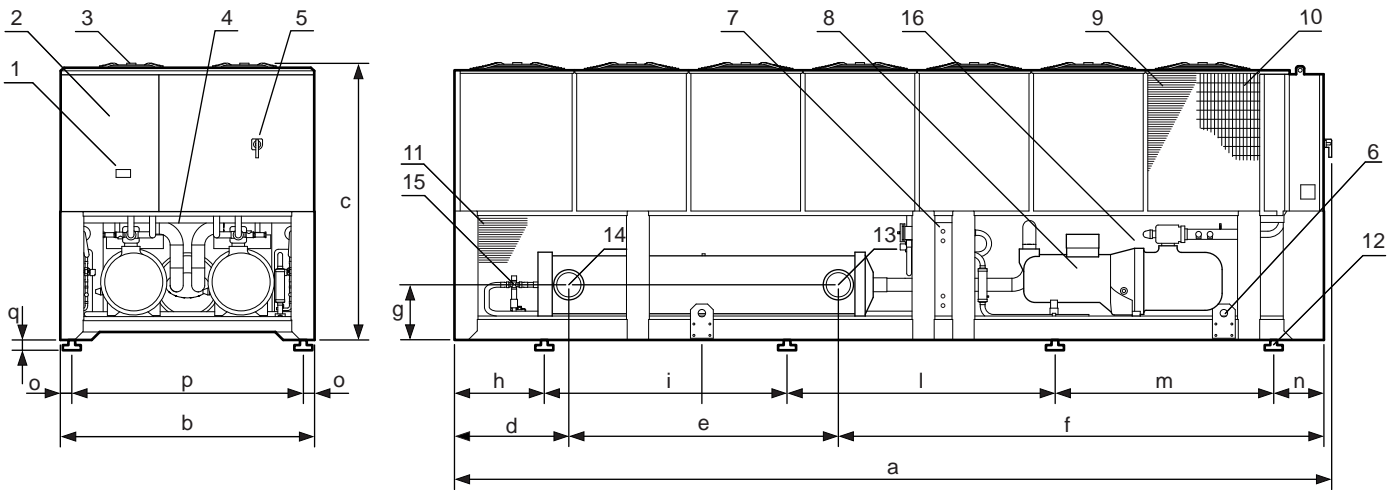
Model	2681	2701	2710	2750
a	mm 6680	6680	6680	6680
b	mm 2260	2260	2260	2260
c	mm 2430	2430	2430	2430
d	mm 2100	2100	2100	2100
e	mm 60	60	60	60
f (*)	mm 100	100	100	100
g	mm 426	426	426	426
h	mm 746	746	746	746
i	mm 2412	2412	2412	2412
l	mm 3454	3454	3454	3454
m	mm 1456	1456	1456	1456
n	mm 1650	1650	1650	1650
o	mm 1650	1650	1650	1650
p	mm 1650	1650	1650	1650
q	mm 206	206	206	206
13/14	DN150	DN150	DN150	DN150

(*) These measurements are indicative for the presence of a levelling jack above the anti-vibrating.

ATTENTION!

The desuperheater (DS), recovery unit (RC100) and the electric pumps accessories in PUMP/TANK&PUMP set-ups have not been measured as the data is subject to evaluations and modifications by our technical department. For any information contact our pre-sales department.

TCAVBZ – TCAVIZ – TCAVSZ 2810-2870-2940-2990-21020-21060. Model with tube and shell evaporator.



- 1. Control panel;
- 2. Electrical control board;
- 3. Fan;
- 4. Power supply inlet;
- 5. Manoeuvre isolator switch;
- 6. Lifting hook;
- 7. Manometers (accessory);
- 8. Compressor and pressure switches;
- 9. Coil;
- 10. Coil protection mesh (accessory);
- 11. Lower compartment protection mesh (accessory);
- 12. Anti-vibrating (accessory);
- 13. "Victaulic" type connections evaporator inlet water;
- 14. "Victaulic" type connections evaporator outlet water;
- 15. Electronic expansion valve;
- 16. Soundproofing (TCAVIZ-TCAVSZ).

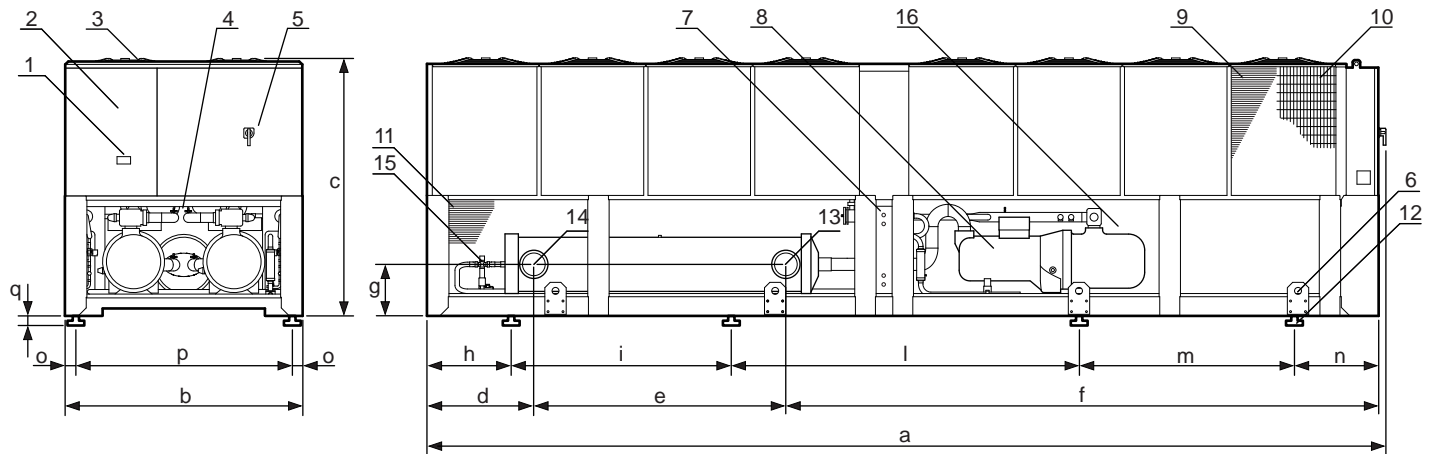
Model	2810	2870	2940	2990	21020	21060
a	mm 7680	7680	7680	7680	7680	7680
b	mm 2260	2260	2260	2260	2260	2260
c	mm 2430	2430	2430	2430	2430	2430
d	mm 1000	1000	1000	1000	723	723
e	mm 2360	2360	2360	2360	2910	2910
f	mm 4250	4250	4250	4250	3980	3980
g	mm 484	484	484	484	484	484
h	mm 806	806	806	806	806	806
i	mm 2000	2000	2000	2000	2000	2000
l	mm 2950	2950	2950	2950	2950	2950
m	mm 1650	1650	1650	1650	1650	1650
n	mm 206	206	206	206	206	206
o	mm 80	80	80	80	80	80
p	mm 2100	2100	2100	2100	2100	2100
q (*)	mm 100	100	100	100	100	100
13/14	DN200	DN200	DN200	DN200	DN200	DN200

(*) These measurements are indicative for the presence of a levelling jack above the anti-vibrating.

ATTENTION!

The desuperheater (DS), recovery unit (RC100) and the electric pumps accessories in PUMP/TANK&PUMP set-ups have not been measured as the data is subject to evaluations and modifications by our technical department. For any information contact our pre-sales department.

TCAVBZ – TCAVIZ – TCAVSZ 21110-21180-21250. Model with tube and shell evaporator.



- 1. Control panel;
- 2. Electrical control board;
- 3. Fan;
- 4. Power supply inlet;
- 5. Manoeuvre isolator switch;
- 6. Lifting hook;
- 7. Manometers (accessory);
- 8. Compressor and pressure switches;
- 9. Coil;
- 10. Coil protection mesh (accessory);
- 11. Lower compartment protection mesh (accessory);
- 12. Anti-vibrating (accessory);
- 13. "Victaulic" type connections evaporator inlet water;
- 14. "Victaulic" type connections evaporator outlet water;
- 15. Electronic expansion valve;
- 16. Soundproofing (TCAVIZ-TCAVSZ).

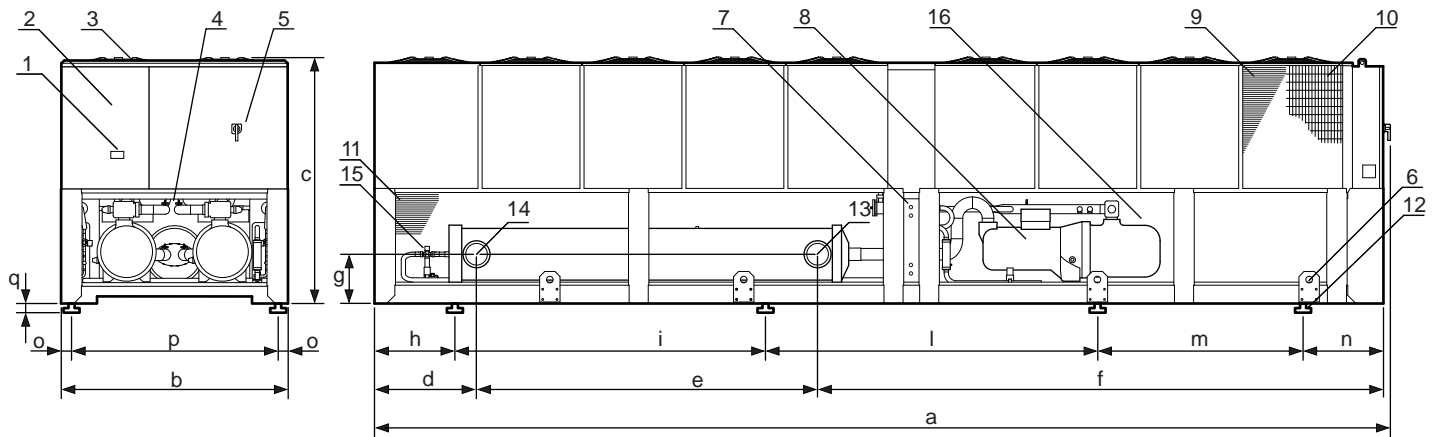
Model	21110	21180	21250
a	mm 8980	8980	8980
b	mm 2260	2260	2260
c	mm 2430	2430	2430
d	mm 723	723	723
e	mm 2910	2910	2910
f	mm 5280	5280	5280
g	mm 484	484	484
h	mm 806	806	806
i	mm 2000	2000	2000
l	mm 3300	3300	3300
m	mm 2000	2000	2000
n	mm 806	806	806
o	mm 80	80	80
p	mm 2100	2100	2100
q (*)	mm 100	100	100
13/14	DN200	DN200	DN200

(*) These measurements are indicative for the presence of a levelling jack above the anti-vibrating.

ATTENTION!

The desuperheater (DS), recovery unit (RC100) and the electric pumps accessories in PUMP/TANK&PUMP set-ups have not been measured as the data is subject to evaluations and modifications by our technical department. For any information contact our pre-sales department.

TCAVBZ – TCAVIZ – TCAVSZ 21330. Model with tube and shell evaporator.



1. Control panel;
2. Electrical control board;
3. Fan;
4. Power supply inlet;
5. Manoeuvre isolator switch;
6. Lifting hook;
7. Manometers (accessory);
8. Compressor and pressure switches;
9. Coil;
10. Coil protection mesh (accessory);
11. Lower compartment protection mesh (accessory);
12. Anti-vibrating (accessory);
13. "Victaulic" type connections evaporator inlet water;
14. "Victaulic" type connections evaporator outlet water;
15. Electronic expansion valve;
16. Soundproofing (TCAVIZ-TCAVSZ).

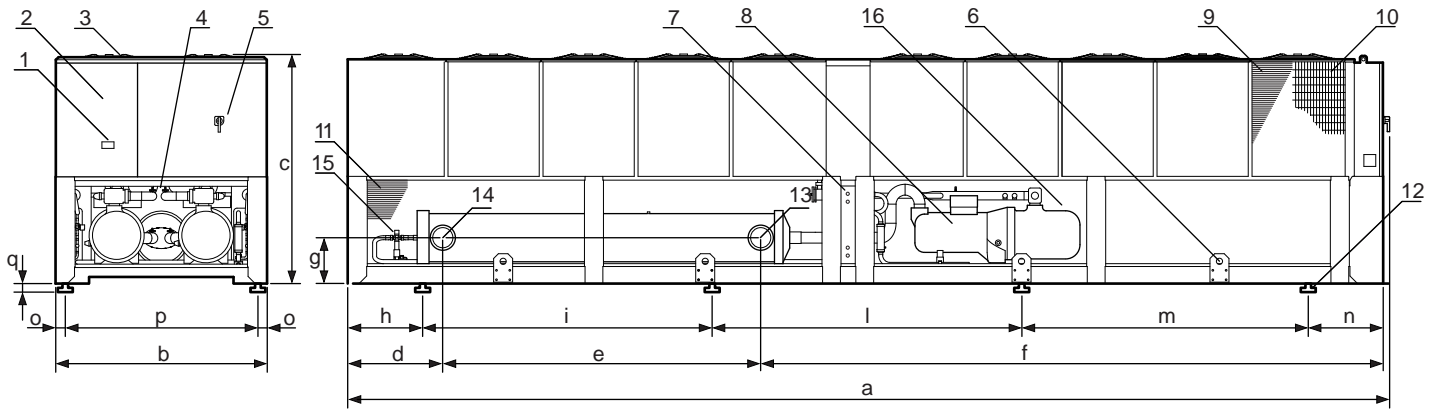
Model	21330
a	mm 9980
b	mm 2260
c	mm 2430
d	mm 1132
e	mm 3210
f	mm 5570
g	mm 464
h	mm 806
i	mm 3000
l	mm 3300
m	mm 2000
n	mm 806
o	mm 80
p	mm 2100
q (*)	mm 100
13/14	DN200

(*) These measurements are indicative for the presence of a levelling jack above the anti-vibrating.

ATTENTION!

The desuperheater (DS), recovery unit (RC100) and the electric pumps accessories in PUMP/TANK&PUMP set-ups have not been measured as the data is subject to evaluations and modifications by our technical department. For any information contact our pre-sales department.

TCAVBZ – TCAVIZ – TCAVSZ 21400. Model with tube and shell evaporator.



1. Control panel;
2. Electrical control board;
3. Fan;
4. Power supply inlet;
5. Manoeuvre isolator switch;
6. Lifting hook;
7. Manometers (accessory);
8. Compressor and pressure switches;
9. Coil;
10. Coil protection mesh (accessory);
11. Lower compartment protection mesh (accessory);
12. Anti-vibrating (accessory);
13. "Victaulic" type connections evaporator inlet water;
14. "Victaulic" type connections evaporator outlet water;
15. Electronic expansion valve;
16. Soundproofing (TCAVIZ-TCAVSZ).

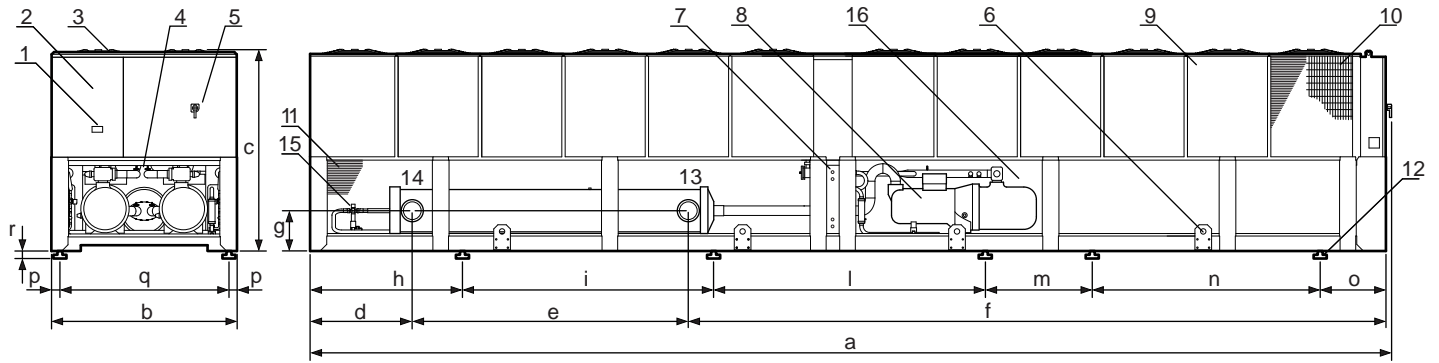
Model	21400	
a	mm	10980
b	mm	2260
c	mm	2430
d	mm	1132
e	mm	3210
f	mm	6570
g	mm	464
h	mm	806
i	mm	3000
l	mm	3300
m	mm	3000
n	mm	806
o	mm	80
p	mm	2100
q (*)	mm	100
13/14		DN200

(*) These measurements are indicative for the presence of a levelling jack above the anti-vibrating.

ATTENTION!

The desuperheater (DS), recovery unit (RC100) and the electric pumps accessories in PUMP/TANK&PUMP set-ups have not been measured as the data is subject to evaluations and modifications by our technical department. For any information contact our pre-sales department.

TCAVBZ – TCAVIZ – TCAVSZ 21500-21600. Model with tube and shell evaporator.



1. Control panel;
2. Electrical control board;
3. Fan;
4. Power supply inlet;
5. Manoeuvre isolator switch;
6. Lifting hook;
7. Manometers (accessory);
8. Compressor and pressure switches;
9. Coil;
10. Coil protection mesh (accessory);
11. Lower compartment protection mesh (accessory);
12. Anti-vibrating (accessory);
13. "Victaulic" type connections evaporator inlet water;
14. "Victaulic" type connections evaporator outlet water;
15. Electronic expansion valve;
16. Soundproofing (TCAVIZ-TCAVSZ).

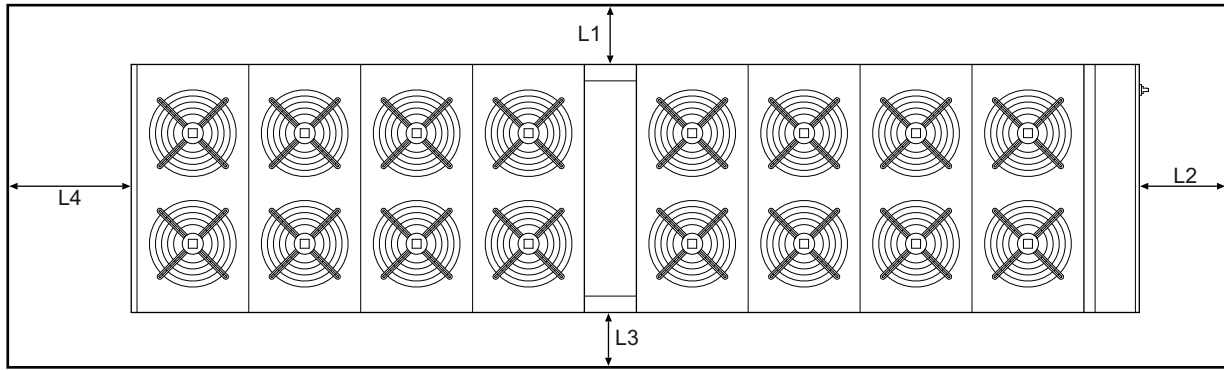
Model	21500	21600
a	mm 12980	12980
b	mm 2260	2260
c	mm 2430	2430
d	mm 1257	1257
e	mm 3210	3210
f	mm 8445	8445
g	mm 464	464
h	mm 1856	1856
i	mm 2950	2950
l	mm 2600	2600
m	mm 2000	2000
n	mm 2820	2820
o	mm 686	686
p	mm 80	80
q	mm 2100	2100
r (*)	mm 100	100
13/14	DN200	DN200

(*) These measurements are indicative for the presence of a levelling jack above the anti-vibrating.

ATTENTION!

The desuperheater (DS), recovery unit (RC100) and the electric pumps accessories in PUMP/TANK&PUMP set-ups have not been measured as the data is subject to evaluations and modifications by our technical department. For any information contact our pre-sales department.

Clearance and positioning



Model	TCAVBZ – TCAVIZ - TCAVSZ			
	L1	L2	L3	L4
1270÷1390 mm	1800	1500	2000	3500 (*)
2331÷2511 mm	1800	1500	2000	1500 / 3500 (*)
2551÷21600 mm	1800	1500	2000	3500 (*)

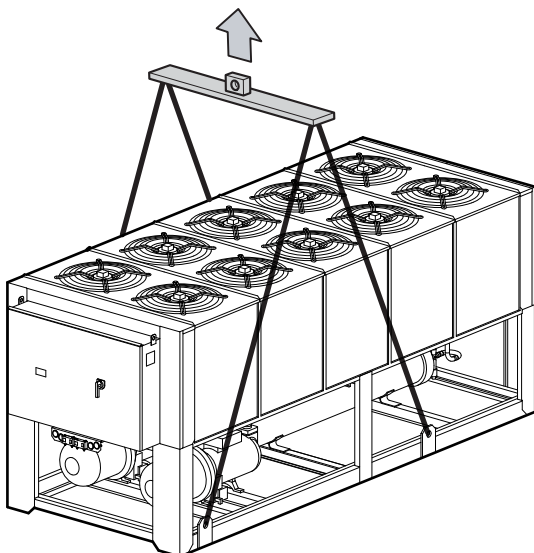
(*) Maximum distance necessary at the extraction of the tube and shell heat exchanger.

N.B.:

- The space above the unit must be free from obstacles. If the unit is completely surrounded by walls, the distances specified are still valid, provided that at least two adjacent walls are not higher than the unit itself. There must be a minimum gap of at least 3.5m between the top of the unit and any obstacles above it.
- If more than one unit is installed, the minimum distance between the finned coils should be at least 2.5 m.
- For further information, contact the RHOSS after-sales support service.

Installation

- The unit is provided with Victaulic type hydraulic connections on the water inlet and outlet of the air conditioning system.
- The unit should be positioned to comply with the minimum recommended clearances, bearing in mind the access to water and electrical connections.
- The unit can be equipped with anti-vibration mountings on request (SAM).
- It is advised to install air vent valves, shut-off valves to isolate the unit from the remainder of the system and a low pressure drops filter on the water inlet in the chiller.



Lifting and Handling

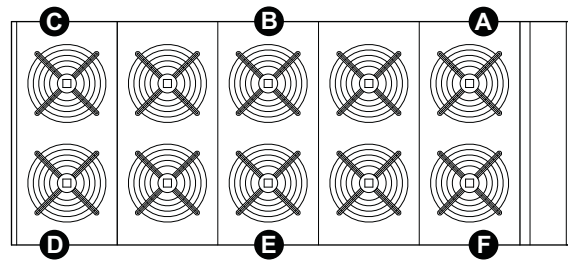
Lifting and movement of the unit must be performed with care, in order to avoid damages to the external structure and to the internal mechanical and electrical components. The unit can only be handled and/or lifted from the specific attachments provided on the basic framework. Use suitably long chains to guarantee stable lifting.

Storage

- The units cannot be stacked.
- The temperature limits for storage are -9°+45°C.
- During lifting and movement operations ensure the unit always remains in horizontal position.

Distribution of the weights

TCAVBZ – TCAVIZ – TCAVSZ 2331÷2511. Model with plates evaporator.



Model	TCAVBZ						
	2331	2351	2371	2391	2421	2461	2511
Empty weight (*)	3420	3490	3500	3580	3920	4100	4280
Weight (**)	3485	3555	3565	3656	3996	4182	4362
A kg	939	963	966	974	850	900	919
B kg	526	546	546	553	731	780	800
C kg	264	279	277	283	404	445	462
D kg	306	307	308	328	438	452	489
E kg	544	547	549	573	734	750	793
F kg	906	913	919	945	839	855	899

Model	TCAVIZ - TCAVSZ						
	2331	2351	2371	2391	2421	2461	2511
Empty weight (*)	3720	3790	3800	3880	4220	4400	4580
Weight (**)	3785	3855	3865	3956	4296	4482	4662
A kg	1024	1048	1051	1059	935	985	1004
B kg	589	609	609	616	794	843	863
C kg	266	281	279	285	406	447	464
D kg	308	309	310	330	440	454	491
E kg	607	610	612	636	797	813	856
F kg	991	998	1004	1030	924	940	984

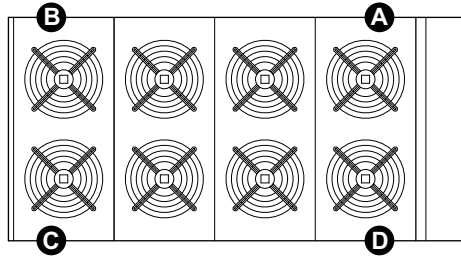
Model	TCAVBZ with TANK & PUMP accessory						
	2331	2351	2371	2391	2421	2461	2511
Empty weight (*)	3930	4000	4010	4090	4470	4650	4830
Weight (**)	5095	5165	5175	5266	5646	5832	6012
A kg	848	869	873	882	641	658	712
B kg	852	871	871	878	886	1201	955
C kg	787	803	802	808	1221	1185	1279
D kg	828	831	832	852	1234	1177	1283
E kg	890	895	897	920	939	907	998
F kg	890	896	900	926	725	704	785

Model	TCAVIZ - TCAVSZ with TANK & PUMP accessory						
	2331	2351	2371	2391	2421	2461	2511
Empty weight (*)	4230	4300	4310	4390	4770	4950	5130
Weight (**)	5395	5465	5475	5566	5946	6132	6312
A kg	933	954	958	967	726	743	797
B kg	915	934	934	941	949	1264	1018
C kg	789	805	804	810	1223	1187	1281
D kg	830	833	834	854	1236	1179	1285
E kg	953	958	960	983	1002	970	1061
F kg	975	981	985	1011	810	789	870

(*) The weight includes accessories RPE and RPB.

(**) The weight and its distribution in the support points includes accessories RPE and RPB and the amount of water contained in the heat exchanger. For the TANK & PUMP versions the weight includes the water contained in the storage (1100 litres).

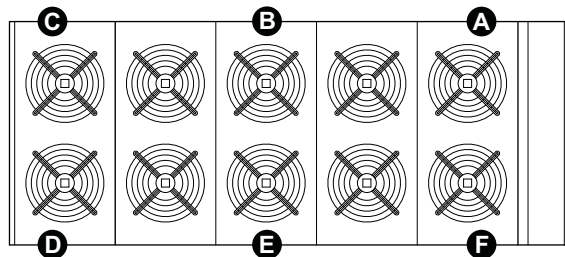
TCAVBZ – TCAVIZ – TCAVSZ 1270=2511. Model with shell and tube evaporator.



Model	TCAVBZ										
	1270	1310	1350	1390	2331	2351	2371	2391	2421	2461	2511
Empty weight (*)	3300	3350	3650	3700	3390	3450	3520	3530	3940	4120	4290
Weight (**)	3443	3461	3763	3813	3501	3561	3631	3641	4053	4233	4403
A kg	979	987	1015	1115	828	842	859	861	1093	1142	1187
B kg	823	826	890	969	918	933	952	954	926	967	1006
C kg	759	760	875	817	917	933	951	954	942	983	1023
D kg	882	888	983	912	838	853	869	872	1092	1141	1187

Model	TCAVIZ - TCAVSZ										
	1270	1310	1350	1390	2331	2351	2371	2391	2421	2461	2511
Empty weight (*)	3450	3500	3830	3850	3690	3750	3820	3830	4240	4420	4590
Weight (**)	3593	3611	3943	3963	3801	3861	3931	3941	4353	4533	4703
A kg	826	975	1063	1092	903	917	934	936	1168	1217	1262
B kg	946	854	935	1003	993	1008	1027	1029	1001	1042	1081
C kg	961	840	918	905	992	1008	1026	1029	1017	1058	1098
D kg	860	942	1027	963	913	928	944	947	1167	1216	1262

TCAVBZ – TCAVIZ – TCAVSZ 2551=2641. Model with shell and tube evaporator.



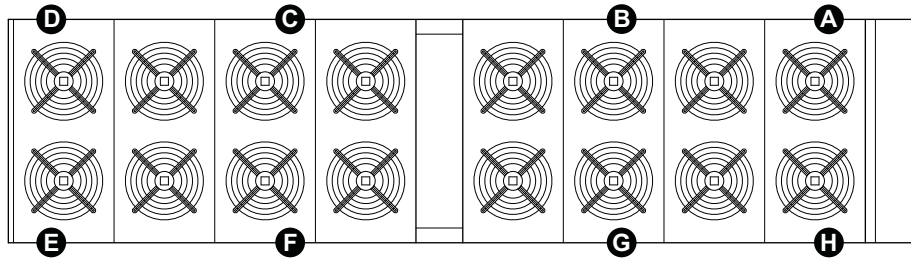
Model	TCAVBZ			
	2551	2571	2611	2641
Empty weight (*)	4760	4780	4800	4820
Weight (**)	5016	5036	5050	5070
A kg	1185	1189	1193	1197
B kg	842	846	848	851
C kg	482	484	485	487
D kg	506	508	510	512
E kg	844	847	849	853
F kg	1157	1162	1165	1170

Model	TCAVIZ - TCAVSZ			
	2551	2571	2611	2641
Empty weight (*)	5060	5080	5100	5120
Weight (**)	5316	5336	5350	5370
A kg	1270	1274	1278	1282
B kg	905	909	911	914
C kg	484	486	487	489
D kg	508	510	512	514
E kg	907	910	912	916
F kg	1242	1247	1250	1255

(*) The weight includes accessories RPE and RPB.

(**) The weight and its distribution in the support points includes accessories RPE and RPB and the amount of water contained in the heat exchanger. For the TANK & PUMP versions the weight includes the water contained in the storage (1100 litres).

TCAVBZ – TCAVIZ – TCAVSZ 2681÷21400. Model with tube and shell evaporator.



Model	TCAVBZ							
	2681	2701	2710	2750	2810	2870	2940	2990
Empty weight (*)	5160	5210	5310	5310	6400	6620	6790	6820
Weight (**)	5410	5460	5560	5560	6700	6920	7210	7230
A kg	548	553	566	566	838	868	903	906
B kg	671	677	689	689	811	811	853	855
C kg	733	740	753	753	836	860	897	900
D kg	740	747	759	759	848	885	919	922
E kg	742	748	761	761	875	942	970	972
F kg	736	743	755	755	865	921	952	955
G kg	678	684	697	697	799	786	831	832
H kg	562	568	580	580	828	847	885	888

Model	TCAVBZ						
	21020	21060	21110	21180	21250	21330	21400
Empty weight (*)	6940	6970	8530	8740	8930	9330	9690
Weight (**)	7350	7370	8930	9130	9310	9870	10230
A kg	920	922	1125	1148	1173	1245	1252
B kg	881	884	998	1042	1045	1294	1335
C kg	916	919	1107	1135	1155	1253	1303
D kg	933	935	1155	1175	1203	1129	1200
E kg	972	974	1283	1280	1331	1136	1211
F kg	958	960	1235	1241	1283	1260	1315
G kg	864	867	950	1001	996	1301	1347
H kg	906	909	1077	1108	1124	1252	1267

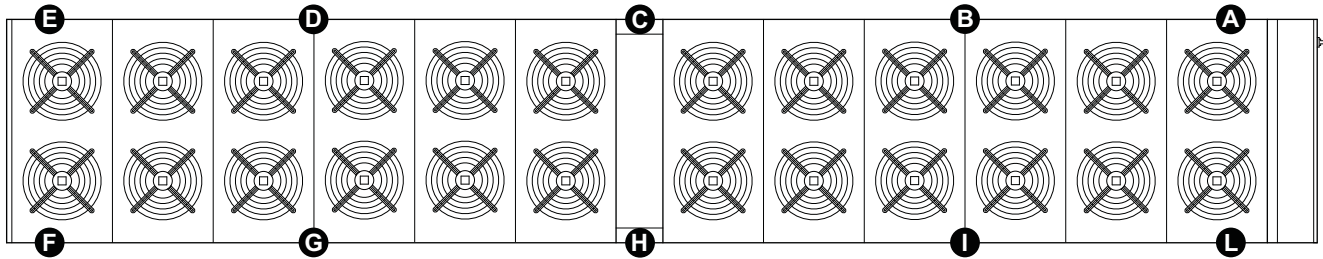
Model	TCAVIZ - TCAVSZ							
	2681	2701	2710	2750	2810	2870	2940	2990
Empty weight (*)	5460	5510	5610	5610	6750	6970	7140	7170
Weight (**)	5710	5760	5860	5860	7050	7270	7560	7580
A kg	621	626	639	639	882	911	947	950
B kg	744	750	762	762	854	852	894	896
C kg	736	743	756	756	879	904	941	943
D kg	741	748	760	760	892	930	964	967
E kg	743	749	762	762	920	989	1017	1020
F kg	739	746	758	758	910	968	998	1001
G kg	751	757	770	770	841	826	871	873
H kg	635	641	653	653	872	890	928	930

Model	TCAVIZ - TCAVSZ						
	21020	21060	21110	21180	21250	21330	21400
Empty weight (*)	7290	7320	8880	9090	9280	9680	10040
Weight (**)	7700	7720	9280	9480	9660	10220	10580
A kg	964	966	1169	1192	1217	1245	1252
B kg	923	926	1037	1081	1084	1382	1423
C kg	960	962	1150	1178	1198	1341	1391
D kg	978	980	1201	1220	1249	1129	1200
E kg	1018	1020	1333	1330	1381	1136	1211
F kg	1003	1006	1283	1289	1331	1348	1403
G kg	905	908	987	1040	1033	1389	1435
H kg	949	952	1120	1150	1167	1252	1267

(*) The weight includes accessories RPE and RPB.

(**) The weight and its distribution in the support points includes accessories RPE and RPB and the amount of water contained in the heat exchanger. For the TANK & PUMP versions the weight includes the water contained in the storage (1100 litres).

TCAVBZ – TCAVIZ – TCAVSZ 21500-21600. Model with tube and shell evaporator.



Model	TCAVBZ		TCAVIZ - TCAVSZ	
	21500	21600	21500	21600
Empty weight (*)	9840	10080	10190	10430
Weight (**)	10380	10620	10730	10970
A kg	665	703	665	703
B kg	878	908	965	995
C kg	1040	1063	1128	1151
D kg	1266	1280	1266	1280
E kg	1331	1338	1331	1338
F kg	1331	1340	1331	1340
G kg	1267	1284	1267	1284
H kg	1042	1070	1130	1157
I kg	884	916	971	1004
L kg	676	718	676	718

(*) The weight includes accessories RPE and RPB.

(**) The weight and its distribution in the support points includes accessories RPE and RPB and the amount of water contained in the heat exchanger. For the TANK & PUMP versions the weight includes the water contained in the storage (1100 litres).

Accessories weights

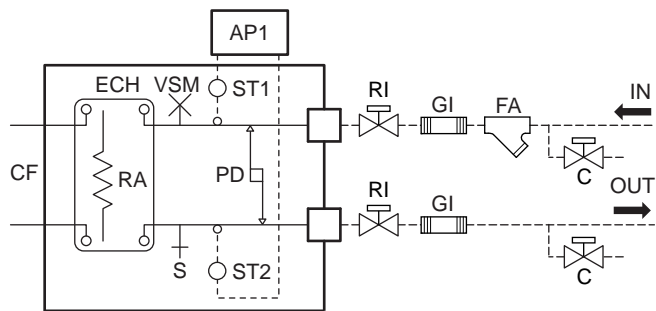
With accessories RC100, DS and PUMP the total weight of the machine chosen from the above tables must be added to the weights of the accessory reported in the following table; the weight of the TANK & PUMP version already includes the weight of the PUMP accessory.

Models	PUMP	RC100	DS
1270 kg	160	200	100
1310 kg	160	220	100
1350 kg	170	310	100
1390 kg	170	330	100
2331 kg	120	550	140
2351 kg	120	550	140
2371 kg	120	550	140
2391 kg	120	550	140
2421 kg	130	600	160
2461 kg	130	600	160
2511 kg	130	600	160
2551 kg	230	530	220
2571 kg	230	530	220
2611 kg	230	530	220
2641 kg	230	530	220
2681 kg	230	530	220
2701 kg	230	530	220
2710 kg	-	530	220
2750 kg	-	530	220
2810 kg	-	528	182
2870 kg	-	622	182
2940 kg	-	636	188
2990 kg	-	650	194
21020 kg	-	650	194
21060 kg	-	650	194
21110 kg	-	674	194
21180 kg	-	737	199
21250 kg	-	800	204
21330 kg	-	-	-
21400 kg	-	-	-
21500 kg	-	-	-
21600 kg	-	-	-

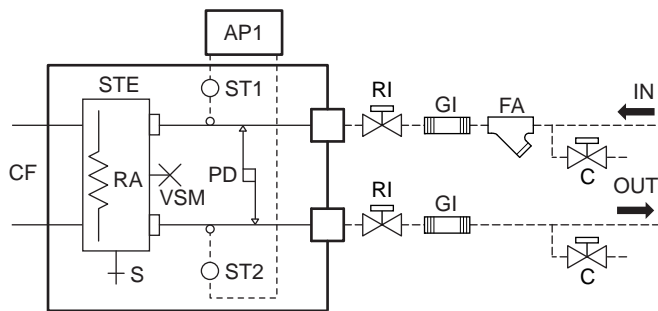
Water circuits

TCAVBZ - TCAVIZ – TCAVSZ

Models with plates exchanger

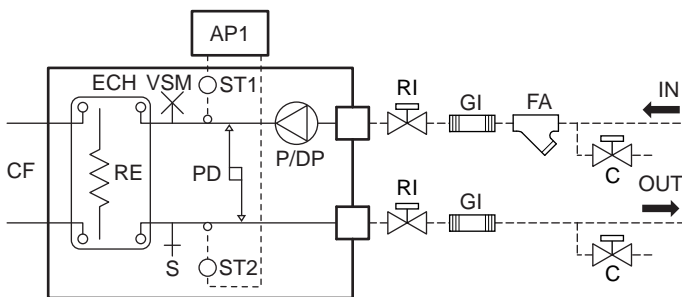


Models with tube and shell exchanger

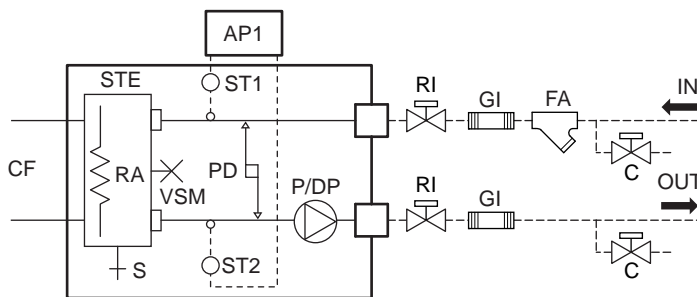


TCAVBZ - TCAVIZ - TCAVSZ P1/P2 – DP1/DP2

Models with plates exchanger

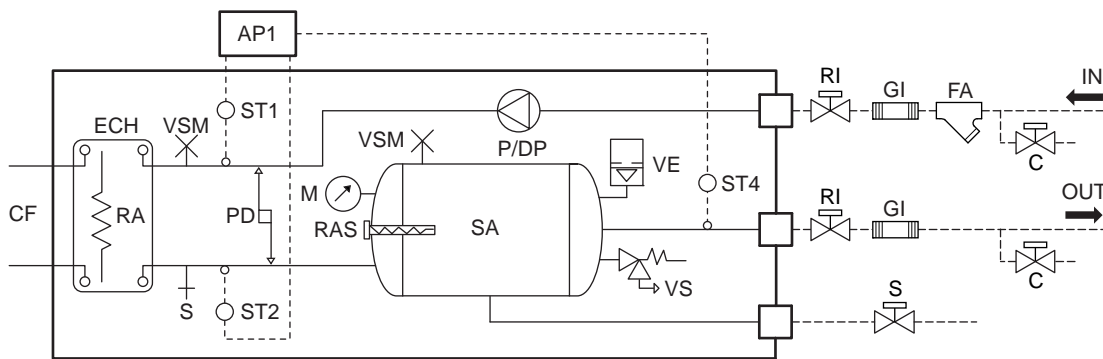


Models with tube and shell exchanger



TCAVBZ - TCAVIZ – TCAVSZ ASP1/ASP2 - ASDP1/ASDP2

Models with plates exchanger



- | | |
|---|--|
| CF Refrigerant circuit | ST2 Primary outlet temperature probe |
| ECH Plates exchanger | ST4 Storage outlet temperature probe |
| STE Tube and shell exchanger | VE Expansion vessel (24 litres) |
| RA Evaporator anti-freeze resistance (accessory) | M Manometer |
| PD Water differential pressure switch | P Pump (maximum admissible pressure PN6 – 600kPa) |
| VSM Manual bleed valve | DP Double pump (maximum admissible pressure PN6 – 600kPa) |
| VS Safety valve (600kPa calibration) | FA Water filter (connection by installer) |
| SA Storage tank (1100 litres) | S System water drain cock; |
| RAS Storage anti-freeze resistance (accessory) | C Charge/drain valve (connection by installer) |
| AP1 Electronic controller | RI Shut-valve valve (connection by installer) |
| ST1 Primary inlet temperature probe | GI Anti-vibrating fitting (connection by installer) |
| | --- Connections by installer |

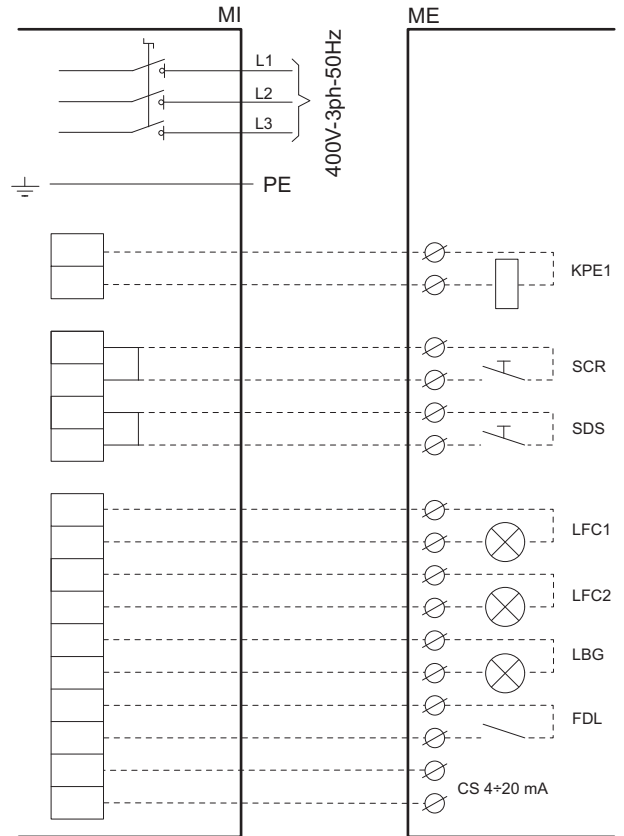
Electrical connections

- L** Line.
- PE** Earth connection.
- MI** Internal terminal board.
- ME** External terminal board.
- AG** General alarm.
- KPE1** Evaporator pump wiring (consensus at voltage 230 Vac).
- SCR** Remote control selector (control with clean contact).
- SDS** Double set-point connector (DSP accessory) (control with clean contact).
- LFC1** Compressor 1 functioning light (consensus in voltage 230 Vac).
- LFC2** Compressor 2 functioning light (consensus in voltage 230 Vac).
- LBG** Machine general lock light (consensus in voltage 230 Vac).
- FDL** Forced download compressors (FDL accessory) (control with clean contact).
- CS** Shifting Set-point (CS accessory) (signal 4+20 mA).
- - - Connection by installer.

- o The electrical panel (IP54) is accessible from the front panel of the unit.
- o Connections must be made in compliance with current standards and with the diagrams provided with the machine.
- o Machine earthing is legally compulsory.
- o Always install a main automatic switch or fuses with adequate capacity and blackout power in a protected area or near the machine.

ATTENTION!

The following diagrams only show the connections to be made by the installer.
 For electrical connections to the unit and the accessories, follow the wiring diagrams which are supplied with them.



Models	Line Section	PE section	Commands and controls section
1270	mm ² 120	70	1,5
1310	mm ² 150	70	1,5
1350	mm ² 150	70	1,5
1390	mm ² 185	95	1,5
2331	mm ² 120	70	1,5
2351	mm ² 120	70	1,5
2371	mm ² 150	70	1,5
2391	mm ² 150	70	1,5
2421	mm ² 185	95	1,5
2461	mm ² 2 x 95	95	1,5
2511	mm ² 2 x 95	95	1,5
2551	mm ² 2 x 95	95	1,5
2571	mm ² 2 x 95	95	1,5
2611	mm ² 2 x 120	120	1,5
2641	mm ² 2 x 120	120	1,5
2681	mm ² 2 x 120	120	1,5
2701	mm ² 2 x 120	120	1,5
2710	mm ² 2 x 120	120	1,5
2750	mm ² 2 x 120	120	1,5
2810	mm ² 2 x 150	150	1,5
2870	mm ² 2 x 150	150	1,5
2940	mm ² 2 x 185	185	1,5
2990	mm ² 2 x 185	185	1,5
21020	mm ² 2 x 185	185	1,5
21060	mm ² 2 x 185	185	1,5
21110	mm ² 2 x 240	240	1,5
21180	mm ² 2 x 240	240	1,5
21250	mm ² 2 x 240	240	1,5
21330	mm ² 3 x 150	240	1,5
21400	mm ² 3 x 185	240	1,5
21500	mm ² 3 x 185	240	1,5
21600	mm ² 3 x 185	240	1,5



K20328EN ed.1 04.11-000 - Stampa:



TCAVBZ-TCAVIZ 1270÷21600

TCAVSZ 1270÷21600

Z-Power range

RHOSS S.P.A.

Via Oltre Ferrovia, 32 - 33033 Codroipo (UD) - Italy
tel. +39 0432 911611 - fax +39 0432 911600
rhoss@rhoss.it - www.rhoss.it - www.rhoss.com

IR GROUP S.A.S.U.

7 rue du Pont à Lunettes - 69390 Vourles - France
tél. +33 (0)4 72 31 86 31 - fax +33 (0)4 72 31 86 30
exportsales@rhoss.it

RHOSS Deutschland GmbH

Hölzlestraße 23, D-72336 Balingen, OT Engstlatt - Germany
tel. +49 (0)7433 260270 - fax +49 (0)7433 2602720
info@rhoss.de - www.rhoss.de

Uffici commerciali Italia: / Italy branch offices:

Codroipo (UD)
33033 Via Oltre Ferrovia, 32
tel. +39 0432 911611 - fax +39 0432 911600

Agrate Brianza (MI)
20041 Centro Colleoni - Palazzo Taurus, 1
tel. +39 039 6898394 - fax +39 039 6898395

RHOSS S.P.A. declines all responsibilities for possible mistakes in the catalogue and reserves the right to alter the features of their products without notice in the interests of continuous improvement.

