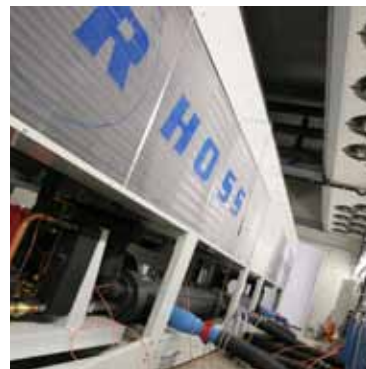


K20323EN ed.2



TCHVBZ-TCHVIZ 1201÷31631 H.E. Z-Flow range

*High efficiency monobloc water chillers with water-cooled condensation.
Semi-hermetic screw compressors and R134a refrigerant*



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General features

Declared conditions of use

TCHVBZ units are packaged water-cooled water chillers with semi-hermetic screw compressors.
 TCHVIZ units are the chillers in soundproofed version.
 TCHVBZ and TCHVIZ units are available in version for operation as a heat pump by means of the inversion of the water circuit.

They are intended to be used in air conditioning systems that require a supply of chilled water (TCHVBZ-TCHVIZ) or hot water (TCHVBZ-TCHVIZ in the heat pump version with inversion of the water circuit).

The machine is designed for indoor installation.

The units conform to the following Directives:

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

Guide to reading the code

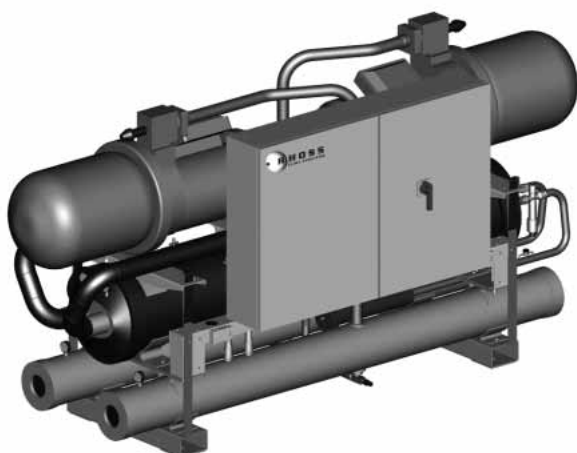
"SERIE" code

"MODEL" code

T	C	H	V	B	Z	1-2-3	201÷1631
Water chiller or heat pump	Cooling only	Water cooled	Semi-hermetic screw compressors	Standard version	R134a refrigerant charge	No. of compressors	Approximate cooling capacity (kW)
				I Soundproofed version			

Example: TCHVBZ 2841 H.E.

- Water cooled water chiller;
- Standard operation;
- 2 semi-hermetic screw compressors;
- Approximately nominal cooling capacity 840 kW.



Structural features

- Compact load bearing structure made of galvanized steel sections and polyester powder-coated (WHITE RAL 9018).
- Semi-hermetic screw compressors with high energy efficiency, specifically designed to work with R134a gas. The compressor start-up is part-winding or star-triangle type with starting current limited by equalizer and load stepping, complete with integral protection and crankcase heater. The compressors are also complete with intercept valve on the refrigerant outlet pipe.
- The step capacity control therefore occurs as shown in the following table:

Model	Compressors/ Steps n.	Circuits n.
1201÷1601	1/3	1
2411÷21261	2/6	2
31301÷31631	3/9	3

- User side (evaporator) shell and tube dry expansion heat exchanger with counter-flow thermal exchange. It is made of carbon steel with inner rifled copper pipes, with water differential pressure switch, air bleed valve, water discharge cock, Victaulic type water connections and insulation of closed cell expanded polyurethane rubber with anti U.V. protection layer.
- Condenser shell of shell-and-tube type in carbon steel with copper pipes with integral finning, complete with high pressure safety valve and service connection with cock on refrigerant high pressure circuit. In the versions with heat pump set-up (inversion of water circuit), the condensers are lagged with insulation in closed cell expanded polyurethane rubber.
- 5" female threaded water connections.
- Refrigerant circuit is made with mild copper tubes and silver alloy welding or with A106 steel tubes, and is complete with: cartridge filter-drier, charge connections, manual reset high pressure switch, indicator of gas passage and any presence of humidity, electronic expansion valve, intercept valve on the liquid line, safety valve in the high pressure section, suction line insulation of closed cell expanded polyurethane rubber with anti U.V. protection layer.
- Refrigerant high and low pressure gauge for each refrigeration circuit.
- Refrigerant charge of eco-friendly R134a.

Electrical panel

- Electrical panel complying with IEC standards, water proof box complete with:
 - electrical wiring configured for power supply 400V-3ph-50Hz;
 - transformer for auxiliary circuit;
 - auxiliary power supply: 230V-1ph-50Hz;
 - control power supply: 24V-1ph-50Hz;
 - phase monitoring to protect the compressor;
 - power contactors;
 - remote controls: remote ON/OFF, dual set point (DSP accessory), summer/winter selector (only in HPH version);
 - remotable machine controls: compressor(s) operation indicator light, general lockout indicator light;
 - general isolator with door interlock on the power supply;
 - automatic protection switch on auxiliary power circuit;
 - overload fuses for each compressor (the version with magneto-thermal switches for the protection of each compressor is optional);
 - fuses for auxiliary circuit.
- Programmable microprocessor electronic control board, managed by keyboard inserted in machine, remotable up to 1,000 m. This electronic board performs the following functions:
 - For the standard unit, adjustment and control are made on evaporator inlet temperature (with the optional accessory CCL - stepless capacity control - chiller are managed through the evaporator outlet water temperature);
 - management of the safety delays; hour run meter of each compressor; automatic inversion of compressor operation sequence; circulation or user service pump (on both the evaporator and condenser side); electronic anti-freeze protection; of the load steps, of functions that integrate the workings of individual devices fitted to the unit;
 - management of the electronic expansion valve (EEV) with possibility to read and display suction temperature, evaporation pressure, overheating and valve opening status.
 - LCD display of programmed set points, of inlet/outlet water temperatures, of the condensing pressures, of alarms;
- Multilanguage management (Italian, English, French, German, Spanish) of display information.
- Alarm history management. The following is memorized for each alarm (only if the KSC accessory is present):
 - date and time of activation;
 - alarm code and description;
 - the water inlet/outlet temperature values when the alarm intervened;
 - condensation pressure values at the time of the alarm;
 - alarm delay time from the switch-on of the connected device;
 - compressor status when the alarm intervened.
- self-diagnosis with continuous monitoring of the machine's operational status.
- Advanced functions:
 - configured for serial connection via RS 485 port for communication with building automation, centralised systems and supervision networks.
 - management of time bands and operation parameters with the possibility of daily/weekly programming;
 - check up and verification of programmed maintenance status;
 - computer-aided testing of the units.

Versions

- B-** High energy efficiency standard version (TCHVBZ).
- I-** High energy efficiency soundproofed version, with soundproof jackets on compressors (TCHVIZ).

Factory-fitted accessories

DS - Desuperheater.

RC100 - 100% recovery with condensation heat recuperator.

TRD - Thermostat with display to show the water temperature at the recuperator/desuperheater inlet with the possibility of programming the activation set-point of a possible remote regulation device.

HPH - version for operation as a heat pump by means of inversion of the cycle on the water circuit. The version provides the possibility of displaying the condenser inlet and outlet water temperature and of setting and displaying the set point and temperature differential of the condenser inlet hot water. The condensers are covered with insulation in closed cell expanded polyurethane rubber.

CR - Power factor correction capacitors ($\cos\phi > 0,94$).

IM - thermal overloads switches for the protection of the compressors.

FDL - Forced Download Compressors, partialisation or compressors switch-off to limit the absorbed current and power (Digital Input).

CCL - stepless compressor capacity control (for example, for a two compressors unit, the capacity control is from 25% to 100%).

RR - Units with intercept valve on the compressor inlet (valve comes as standard on outlet). Not available on models 1531-1611-21031-21111-21181-21261-31351-31401-31461-31521-31591-31631.

SLO - oil level sensor (this accessory is suggested in condenserless units, when it is difficult to visual check the pilot lamp of the compressor or when a more detailed monitoring is requested).

SPS - refrigerant pressure signal on high and low side, on card.

CMT - control of power supply voltage MIN/MAX values.

RA - Evaporator antifreezing electrical heater with switch.

DSP - double set point.

CS - set point setting (4-20 mA).

BSP - 0-10 V signal for management of external condensation control systems, with variable-speed pump or water flow rate control valves.

SS - RS 485 serial interface for communicating with building management systems, centralised control systems and supervision networks (proprietary protocol, Modbus RTU).

FTT10 - LON serial interface - Serial interface for connection to BMS with protocol LON standard FTT10.

Accessori forniti separatamente

KSC - Scheda clock per visualizzare data/ora, per la gestione della macchina con fasce orarie giornaliere e setti manuali e setti manuali di start/stop, con possibilità di variarne il set-point.

KSA - Supporti anti vibranti in gomma.

KSAM - Supporti anti vibranti a molla.

KTR - Tastiera remota per comando a distanza, con funzionalità identiche a quella inserita in macchina.

Technical Data

Table "A": Technical Data

TCHVBZ - TCHVIZ		1201	1231	1281	1311
Nominal cooling capacity (*)	kW	204	231	283	309
Condenser heat rejection (*)	kW	243,2	275,3	337,2	368,3
E.E.R. (*)		5,06	5,05	5,07	5,05
E.S.E.E.R.		6,00	5,83	5,84	5,80
Refrigerant circuits	n.	1	1	1	1
Screw compressor/steps	n.	1/3	1/3	1/3	1/3
Sound pressure TCHVBZ (***)	dB(A)	77	77	80	80
Sound power TCHVBZ (**)	dB(A)	94	94	97	97
Sound pressure TCHVIZ (***)	dB(A)	75	75	78	78
Sound power TCHVIZ (**)	dB(A)	92	92	95	95
Evaporator type		Shell and tube			
Evaporator nominal water flow (*)	m³/h	35,0	39,6	48,6	53,0
Evaporator nominal pressure drops (*)	kPa	31	32	31	36
Evaporator water connections types		Victaulic			
Evaporator water connection dimensions	Ø	DN 100	DN 100	DN 100	DN 100
Condenser type		Shell and tube			
Number of condensers	n.	1	1	1	1
Condenser nominal water flow (*)	m³/h	42,4	48,0	58,8	64,2
Condenser nominal pressure drops (*)	kPa	26	26	30	28
Condenser water connections types		GF			
Condenser water connection dimensions	Ø	5"	5"	5"	5"
Evaporator water contents	l	124	118	113	113
Condenser water contents	l	19	21	24	26
R134a refrigerant charge	kg	See serial No. plate			
Polyester oil charge	kg	See serial No. plate			
Electrical data		1201	1231	1281	1311
Total absorbed power(*)	kW	40,4	45,7	55,9	61,1
Electrical power supply	V-ph-Hz	400/3/50			
Auxiliary power supply	V-ph-Hz	230/1/50			
Control power supply	V-ph-Hz	12/1/50			
Nominal current(*)	A	71	80	92	106
Maximum current	A	96	109	129	147
Starting current	A	290	350	439	520
TCHVBZ dimensions		1201	1231	1281	1311
Length (L)	mm	3460	3460	3440	3440
Height (H)	mm	1460	1460	1460	1460
Depth (P)	mm	1000	1000	1000	1000
TCHVIZ dimensions, soundproofed version					
Length (L)	mm	3500	3500	3500	3500
Height (H)	mm	1460	1460	1460	1460
Depth (P)	mm	1000	1000	1000	1000

(*) At the following conditions: Inlet/outlet evaporator water temperature 12°C / 7°C; inlet/outlet condenser water temperature 30°C / 35°C.

(**) Total sound power level in dB (A) based on measurements made in accordance with the UNI EN-ISO9614.

(***) Sound pressure in a open field on reflecting plane; value at a distance of 1 meter from the unit side and at a height of 1 meter from the support plane.

Table "A": Technical Data

TCHVBZ - TCHVIZ		1351	1421	1481	1531	1611
Nominal cooling capacity (*)	kW	354	418	480	535	608
Condenser heat rejection (*)	kW	422,0	498,3	572,2	637,7	724,7
E.E.R. (*)		5,05	5,05	5,05	5,05	5,06
E.S.E.E.R.		6,00	6,01	5,87	5,83	6,03
Refrigerant circuits	n.	1	1	1	1	1
Screw compressor/steps	n.	1/3	1/3	1/3	1/3	1/3
Sound pressure TCHVBZ (***)	dB(A)	80	80	80	81	81
Sound power TCHVBZ (**)	dB(A)	97	97	97	98	98
Sound pressure TCHVIZ (***)	dB(A)	78	78	78	79	79
Sound power TCHVIZ (**)	dB(A)	95	95	95	96	96
Evaporator type		Shell and tube				
Evaporator nominal water flow (*)	m ³ /h	60,7	71,7	82,4	91,8	104,3
Evaporator nominal pressure drops (*)	kPa	41	49	48	48	44
Evaporator water connections types		Victaulic				
Evaporator water connection dimensions	Ø	DN 125	DN 125	DN 125	DN 150	DN 150
Condenser type		Shell and tube				
Number of condensers	n.	1	1	1	1	1
Condenser nominal water flow (*)	m ³ /h	73,6	86,9	99,8	111,2	126,4
Condenser nominal pressure drops (*)	kPa	36	31	34	29	37
Condenser water connections types		GF				
Condenser water connection dimensions	Ø	5"	5"	5"	5"	5"
Evaporator water contents	l	170	164	159	271	263
Condenser water contents	l	26	34	37	45	45
R134a refrigerant charge	kg	See serial No. plate				
Polyester oil charge	kg	See serial No. plate				
Electrical data		1351	1421	1481	1531	1611
Total absorbed power(*)	kW	70,1	82,8	95,0	105,9	120,3
Electrical power supply	V-ph-Hz	400/3/50				
Auxiliary power supply	V-ph-Hz	230/1/50				
Control power supply	V-ph-Hz	12/1/50				
Nominal current(*)	A	122	141	159	175	205
Maximum current	A	168	196	222	246	284
Starting current	A	612	318	436	465	586
TCHVBZ dimensions		1351	1421	1481	1531	1611
Length (L)	mm	3450	3450	3450	3450	3450
Height (H)	mm	1640	1640	1640	1740	1740
Depth (P)	mm	1000	1000	1000	1000	1000
TCHVIZ dimensions, soundproofed version						
Length (L)	mm	3580	3580	3580	3580	3580
Height (H)	mm	1640	1640	1640	1740	1740
Depth (P)	mm	1000	1000	1000	1000	1000

(*) At the following conditions: Inlet/outlet evaporator water temperature 12°C / 7°C; inlet/outlet condenser water temperature 30°C / 35°C.

(**) Total sound power level in dB (A) based on measurements made in accordance with the UNI EN-ISO9614.

(***) Sound pressure in a open field on reflecting plane; value at a distance of 1 meter from the unit side and at a height of 1 meter from the support plane.

Table "A": Technical Data

TCHVBZ - TCHVIZ		2411	2431	2461	2511
Nominal cooling capacity (*)	kW	407,0	435,0	462,0	514,0
Condenser heat rejection (*)	kW	485,1	518,4	550,7	612,8
E.E.R. (*)		5,06	5,06	5,05	5,05
E.S.E.E.R.		5,93	5,85	5,82	5,85
Refrigerant circuits	n.	2	2	2	2
Screw compressor/steps	n.	2/6	2/6	2/6	2/6
Sound pressure TCHVBZ (***)	dB(A)	80	80	80	81
Sound power TCHVBZ (**)	dB(A)	97	97	97	99
Sound pressure TCHVIZ (***)	dB(A)	78	78	78	79
Sound power TCHVIZ (**)	dB(A)	95	95	95	97
Evaporator type		Shell and tube			
Evaporator nominal water flow (*)	m³/h	69,8	74,6	79,3	88,2
Evaporator nominal pressure drops (*)	kPa	44	38	43	31
Evaporator water connections types		Victaulic			
Evaporator water connection dimensions	Ø	DN 125	DN 125	DN 125	DN 150
Condenser type		Shell and tube			
Number of condensers	n.	1	1	1	1
Condenser nominal water flow (*)	m³/h	84,6	90,4	96,0	106,9
Condenser nominal pressure drops (*)	kPa	26	28	25	30
Condenser water connections types		GF	GF	GF	GF
Condenser water connection dimensions	Ø	5"	5"	5"	5"
Evaporator water contents	l	164	159	159	263
Condenser water contents	l	2x19	19/21	2x21	21/24
R134a refrigerant charge	kg	See serial No. plate			
Polyester oil charge	kg	See serial No. plate			
Electrical data		2411	2431	2461	2511
Total absorbed power(*)	kW	80,5	86,0	91,4	101,9
Electrical power supply	V-ph-Hz	400/3/50			
Auxiliary power supply	V-ph-Hz	230/1/50			
Control power supply	V-ph-Hz	12/1/50			
Nominal current(*)	A	142	151	160	172
Maximum current	A	192	205	218	238
Starting current	A	386	446	459	548
TCHVBZ dimensions		2411	2431	2461	2511
Length (L)	mm	3880	3880	4000	4070
Height (H)	mm	1840	1840	1840	1960
Depth (P)	mm	1300	1300	1300	1300
TCHVIZ dimensions, soundproofed version					
Length (L)	mm	4350	4350	4350	4350
Height (H)	mm	1880	1880	1880	1990
Depth (P)	mm	1300	1300	1300	1300

(*) At the following conditions: Inlet/outlet evaporator water temperature 12°C / 7°C; inlet/outlet condenser water temperature 30°C / 35°C.

(**) Total sound power level in dB (A) based on measurements made in accordance with the UNI EN-ISO9614.

(***) Sound pressure in a open field on reflecting plane; value at a distance of 1 meter from the unit side and at a height of 1 meter from the support plane.

Condenser heat rejection				
	2411	2431	2461	2511
Circuits	%	%	%	%
Circuit 1	50	47	50	45
Circuit 2	50	53	50	55

Compressor start-up	Part-winding	Delta-star
	Models	1201÷1351 2411÷2711

Table "A": Technical Data

TCHVBZ - TCHVIZ		2561	2601	2631	2681	2711
Nominal cooling capacity (*)	kW	565,0	599,0	629,0	677,0	715,0
Condenser heat rejection (*)	kW	673,3	713,6	749,6	806,4	852,4
E.E.R. (*)		5,06	5,07	5,06	5,08	5,05
E.S.E.E.R.		5,99	6,01	5,98	5,90	5,88
Refrigerant circuits	n.	2	2	2	2	2
Screw compressor/steps	n.	2/6	2/6	2/6	2/6	2/6
Sound pressure TCHVBZ (***)	dB(A)	81	81	81	81	81
Sound power TCHVBZ (**)	dB(A)	99	99	99	99	99
Sound pressure TCHVIZ (***)	dB(A)	79	79	79	79	79
Sound power TCHVIZ (**)	dB(A)	97	97	97	97	97
Evaporator type		Shell and tube				
Evaporator nominal water flow (*)	m ³ /h	96,9	102,8	107,9	116,2	122,7
Evaporator nominal pressure drops (*)	kPa	38	46	50	42	47
Evaporator water connections types		Victaulic				
Evaporator water connection dimensions	Ø	DN 150	DN 150	DN 150	DN 150	DN 150
Condenser type		Shell and tube				
Number of condensers	n.	1	1	1	1	1
Condenser nominal water flow (*)	m ³ /h	117,4	124,4	130,7	140,6	148,6
Condenser nominal pressure drops (*)	kPa	30	31	29	32	36
Condenser water connections types		GF				
Condenser water connection dimensions	Ø	5"	5"	5"	5"	5"
Evaporator water contents	l	263	256	256	241	241
Condenser water contents	l	2x24	24/26	2x26	2x26	2x26
R134a refrigerant charge	kg	See serial No. plate				
Polyester oil charge	kg	See serial No. plate				
Electrical data		2561	2601	2631	2681	2711
Total absorbed power (*)	kW	111,7	118,1	124,3	133,4	141,6
Electrical power supply	V-ph-Hz	400/3/50				
Auxiliary power supply	V-ph-Hz	230/1/50				
Control power supply	V-ph-Hz	12/1/50				
Nominal current (*)	A	184	198	212	228	244
Maximum current	A	258	276	294	315	336
Starting current	A	568	649	667	759	780
TCHVBZ dimensions		2561	2601	2631	2681	2711
Length (L)	mm	4070	4070	4070	4070	4070
Height (H)	mm	1960	1960	1960	1960	1960
Depth (P)	mm	1300	1300	1300	1300	1300
TCHVIZ dimensions, soundproofed version						
Length (L)	mm	4350	4350	4350	4350	4350
Height (H)	mm	1990	1990	1990	1990	1990
Depth (P)	mm	1300	1300	1300	1300	1300

(*) At the following conditions: Inlet/outlet evaporator water temperature 12°C / 7°C; inlet/outlet condenser water temperature 30°C / 35°C.

(**) Total sound power level in dB (A) based on measurements made in accordance with the UNI EN-ISO9614.

(***) Sound pressure in a open field on reflecting plane; value at a distance of 1 meter from the unit side and at a height of 1 meter from the support plane.

Condenser heat rejection					
	2561	2601	2631	2681	2711
Circuits	%	%	%	%	%
Circuit 1	50	47	50	47	50
Circuit 2	50	53	50	53	50

Compressor start-up		Part-winding	Delta-star
Models		120 1÷1351	142 1÷1611
		241 1÷2711	278 1÷21261
			31301÷31631

Table "A": Technical Data

TCHVBZ - TCHVIZ		2781	2841	2901	2961
Nominal cooling capacity (*)	kW	778,0	839,0	901,0	958,0
Condenser heat rejection (*)	kW	927,2	1000,1	1074,0	1142,1
E.E.R. (*)		5,06	5,05	5,05	5,05
E.S.E.E.R.		5,86	5,89	6,03	5,99
Refrigerant circuits	n.	2	2	2	2
Screw compressor/steps	n.	2/6	2/6	2/6	2/6
Sound pressure TCHVBZ (***)	dB(A)	81	81	81	81
Sound power TCHVBZ (**)	dB(A)	99	99	99	99
Sound pressure TCHVIZ (***)	dB(A)	79	79	79	79
Sound power TCHVIZ (**)	dB(A)	97	97	97	97
Evaporator type		Shell and tube			
Evaporator nominal water flow (*)	m³/h	133,5	144,0	154,6	164,4
Evaporator nominal pressure drops (*)	kPa	55	64	46	51
Evaporator water connections types		Victaulic			
Evaporator water connection dimensions	Ø	DN 150	DN 150	DN 200	DN 200
Condenser type		Shell and tube			
Number of condensers	n.	2	2	2	2
Condenser nominal water flow (*)	m³/h	161,7	174,4	187,3	199,1
Condenser nominal pressure drops (*)	kPa	38	30	33	32
Condenser water connections types		GF	GF	GF	GF
Condenser water connection dimensions	Ø	5"	5"	5"	5"
Evaporator water contents	l	241	241	419	419
Condenser water contents	l	26/34	2x34	34/37	2x37
R134a refrigerant charge	kg	See serial No. plate			
Polyster oil charge	kg	See serial No. plate			
Electrical data		2781	2841	2901	2961
Total absorbed power(*)	kW	153,8	166,1	178,4	189,8
Electrical power supply	V-ph-Hz	400/3/50			
Auxiliary power supply	V-ph-Hz	230/1/50			
Control power supply	V-ph-Hz	12/1/50			
Nominal current(*)	A	263	282	300	318
Maximum current	A	364	392	418	444
Starting current	A	486	514	632	658
TCHVBZ dimensions		2781	2841	2901	2961
Length (L)	mm	4120	4000	4000	4000
Height (H)	mm	1840	1840	1910	1910
Depth (P)	mm	1300	1300	1300	1300
TCHVIZ dimensions, soundproofed version					
Length (L)	mm	4350	4350	4350	4350
Height (H)	mm	1990	1990	2090	2060
Depth (P)	mm	1300	1300	1300	1300

(*) At the following conditions: Inlet/outlet evaporator water temperature 12°C / 7°C; inlet/outlet condenser water temperature 30°C / 35°C.

(**) Total sound power level in dB (A) based on measurements made in accordance with the UNI EN-ISO9614.

(***) Sound pressure in a open field on reflecting plane; value at a distance of 1 meter from the unit side and at a height of 1 meter from the support plane.

Condenser heat rejection				
	2781	2841	2901	2961
Circuits	%	%	%	%
Circuit 1	47	50	46	50
Circuit 2	53	50	54	50

Compressor start-up		Part-winding	Delta-star
Models		120 1÷135 1	142 1÷16 1 1
		241 1÷27 1 1	278 1÷212 6 1
			313 0 1÷316 3 1

Table "A": Technical Data

TCHVBZ - TCHVIZ		21031	21111	21181	21261
Nominal cooling capacity (*)	kW	1029,0	1109,0	1181,0	1258,0
Condenser heat rejection (*)	kW	1225,9	1317,6	1401,7	1492,7
E.E.R. (*)		5,07	5,16	5,19	5,20
E.S.E.E.R.		5,98	6,02	5,98	5,97
Refrigerant circuits	n.	2	2	2	2
Screw compressor/steps	n.	2/6	2/6	2/6	2/6
Sound pressure TCHVBZ (***)	dB(A)	81	81	81	81
Sound power TCHVBZ (**)	dB(A)	99	99	99	99
Sound pressure TCHVIZ (***)	dB(A)	79	79	79	79
Sound power TCHVIZ (**)	dB(A)	97	97	97	97
Evaporator type		Shell and tube			
Evaporator nominal water flow (*)	m ³ /h	176,6	190,3	202,6	215,8
Evaporator nominal pressure drops (*)	kPa	38	44	53	58
Evaporator water connections types		Victaulic			
Evaporator water connection dimensions	Ø	DN 200	DN 200	DN 200	DN 200
Condenser type		Shell and tube			
Number of condensers	n.	2	2	2	2
Condenser nominal water flow (*)	m ³ /h	213,8	229,7	244,4	260,3
Condenser nominal pressure drops (*)	kPa	34	29	33	36
Condenser water connections types		GF	GF	GF	GF
Condenser water connection dimensions	Ø	5"	5"	5"	5"
Evaporator water contents	l	401	401	392	392
Condenser water contents	l	37/45	2x45	2x45	2x45
R134a refrigerant charge	kg	See serial No. plate			
Polyester oil charge	kg	See serial No. plate			
Electrical data		21031	21111	21181	21261
Total absorbed power(*)	kW	203,0	215,0	227,5	242,0
Electrical power supply	V-ph-Hz	400/3/50			
Auxiliary power supply	V-ph-Hz	230/1/50			
Control power supply	V-ph-Hz	12/1/50			
Nominal current(*)	A	334	350	380	410
Maximum current	A	468	492	530	568
Starting current	A	687	711	832	870
TCHVBZ dimensions		21031	21111	21181	21261
Length (L)	mm	4000	4000	4000	4000
Height (H)	mm	1950	1950	1950	1950
Depth (P)	mm	1300	1300	1300	1300
TCHVIZ dimensions, soundproofed version					
Length (L)	mm	4350	4350	4350	4350
Height (H)	mm	2060	2060	2060	2060
Depth (P)	mm	1300	1300	1300	1300

(*) At the following conditions: Inlet/outlet evaporator water temperature 12°C / 7°C; inlet/outlet condenser water temperature 30°C / 35°C.

(**) Total sound power level in dB (A) based on measurements made in accordance with the UNI EN-ISO9614.

(***) Sound pressure in a open field on reflecting plane; value at a distance of 1 meter from the unit side and at a height of 1 meter from the support plane.

Condenser heat rejection				
	21031	21111	21181	21261
Circuits	%	%	%	%
Circuit 1	47	50	47	50
Circuit 2	53	50	53	50

Compressor start-up		Part-winding	Delta-star
Models		1201÷1351	1421÷1611
		2411÷2711	2781÷21261
		31301÷31631	

Table "A": Technical Data

TCHVBZ - TCHVIZ		31301	31351	31401	31461	31521	31591	31631
Nominal cooling capacity (*)	kW	1308,0	1356,0	1406,0	1463,0	1524,0	1583,0	1635,0
Condenser heat rejection (*)	kW	1552,1	1611,5	1672,8	1741,2	1813,4	1882,9	1945,5
E.E.R. (*)		5,20	5,15	5,11	5,10	5,11	5,12	5,11
E.S.E.E.R.		6,06	6,01	6,05	6,00	6,02	6,01	6,02
Refrigerant circuits	n.	3	3	3	3	3	3	3
Screw compressor/steps	n.	3/9	3/9	3/9	3/9	3/9	3/9	3/9
Sound pressure TCHVBZ (***)	dB(A)	82	82	82	83	83	83	83
Sound power TCHVBZ (**)	dB(A)	101	101	101	102	102	102	102
Sound pressure TCHVIZ (***)	dB(A)	80	80	80	81	81	81	81
Sound power TCHVIZ (**)	dB(A)	99	99	99	100	100	100	100
Evaporator type		Shell and tube						
Evaporator nominal water flow (*)	m³/h	224,4	232,7	241,2	251,0	261,5	271,6	280,5
Evaporator nominal pressure drops (*)	kPa	49	52	55	59	63	67	71
Evaporator water connections types		Victaulic						
Evaporator water connection dimensions	Ø	DN 200	DN 200	DN 200	DN 200	DN 200	DN 200	DN 200
Condenser type		Shell and tube						
Number of condensers	n.	3	3	3	3	3	3	3
Condenser nominal water flow (*)	m³/h	270,6	281,0	291,7	303,6	316,2	328,3	339,2
Condenser nominal pressure drops (*)	kPa	30	32	33	32	33	34	26
Condenser water connections types		GF	GF	GF	GF	GF	GF	GF
Condenser water connection dimensions	Ø	5"	5"	5"	5"	5"	5"	5"
Evaporator water contents	l	578	578	578	578	578	578	578
Condenser water contents	l	3x37	3x37	3x37	3x37	3x45	3x45	3x45
R134a refrigerant charge	kg	See serial No. plate						
Polyester oil charge	kg	See serial No. plate						
Electrical data		31301	31351	31401	31461	31521	31591	31631
Total absorbed power(*)	kW	251,6	263,4	275,1	286,8	298,3	309,2	320,1
Electrical power supply	V-ph-Hz	400/3/50						
Auxiliary power supply	V-ph-Hz	230/1/50						
Control power supply	V-ph-Hz	12/1/50						
Nominal current(*)	A	423	441	459	477	493	509	525
Maximum current	A	588	614	640	666	690	714	738
Starting current	A	710	828	854	880	909	933	957
TCHVBZ dimensions		31301	31351	31401	31461	31521	31591	31631
Length (L)	mm	4940	4940	4940	4940	4940	4940	4940
Height (H)	mm	2220	2220	2220	2220	2220	2220	2220
Depth (P)	mm	1700	1700	1700	1700	1700	1700	1700
TCHVIZ dimension s, soundproofed version								
Length (L)	mm	5020	5020	5020	5020	5020	5020	5020
Height (H)	mm	2340	2340	2340	2340	2340	2340	2340
Depth (P)	mm	1700	1700	1700	1700	1700	1700	1700

(*) At the following conditions: Inlet/outlet evaporator water temperature 12°C / 7°C; inlet/outlet condenser water temperature 30°C / 35°C.

(**) Total sound power level in dB (A) based on measurements made in accordance with the UNI EN-ISO9614.

(***) Sound pressure in a open field on reflecting plane; value at a distance of 1 meter from the unit side and at a height of 1 meter from the support plane.

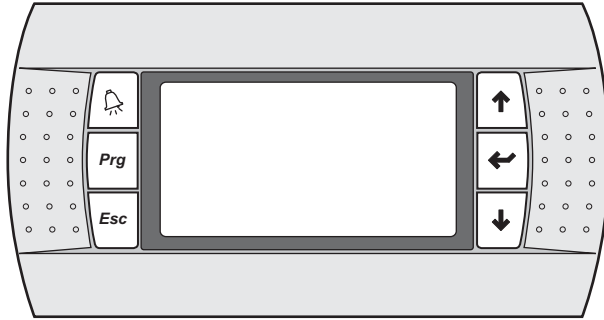
Condenser heat rejection							
	31301	31351	31401	31461	31521	31591	31631
Circuits	%	%	%	%	%	%	%
Circuit 1	33,3	36,0	34,5	33,3	36,0	34,5	33,3
Circuit 2	33,3	32,0	34,5	33,3	32,0	34,5	33,3
Circuit 3	33,3	32,0	31,0	33,3	32,0	31,0	33,3








Compressor start-up		Part-winding	Delta-star
Models		1201÷1351	1421÷1611
		2411÷2711	2781÷21261
			31301÷31631

Electronci 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

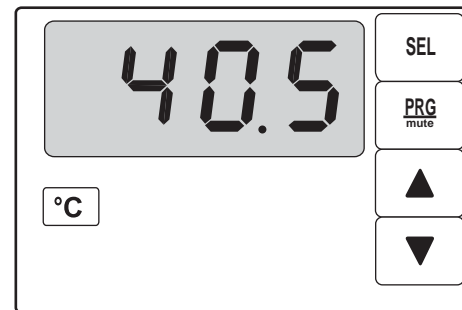
The remote keyboard with display (KTR) allows the remote control and display of all of the unit's digital and analogue process variables. It is therefore possible to control all the machine functions directly in the room. It allows setting and management of time periods.

The temporary presence of two devices, on-board machine keyboard and remote keyboard, will cause the on-board machine terminal to be disabled.






Clock card

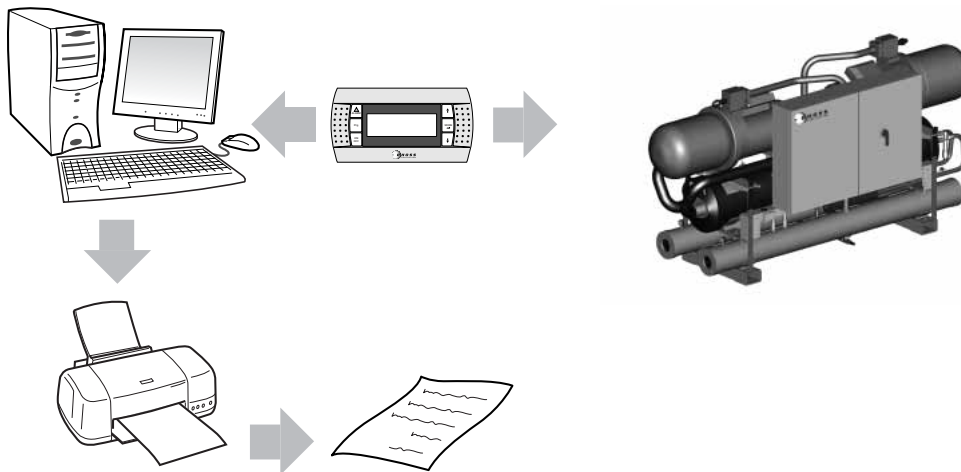
Fitting the clockcard (KSC) ensures more flexible and efficient operation of the unit, displaying the date/time and allowing the unit to be managed with daily and weekly time bands for switching the unit on/off and changing the set point.

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

- Tables **B** provides, for each TCHVBZ-TCHVIZ model, the cooling capacity (QF), the total absorbed current (P) and the rejected heating capacity (QT), based on the cooling tower water at the condenser and evaporator outlet with temperature differentials $\Delta T = 5^\circ\text{C}$: in the case of models TCHVBZ-TCHVIZ with HPH accessory (heat pump set-up with inversion of water circuit) the value QT is the value of the heating capacity available to the user.
- Within the operating limits (see page 32), the values in tables **B** may allow interpolations of performance, whereas extrapolations are not permitted.
- Tables **C** and **D** include the performance corrective coefficients, upon variation of the temperature differential ΔT between the water inlet and outlet of the exchangers.
- The graph "**table M**" shows the pressure drop curves of the evaporator for models TCHVBZ-TCHVIZ.
- The graph "**table N**" shows the pressure drop curves of the condensers for models TCHVBZ-TCHVIZ.
- Table **O** shows the corrective coefficient values to be applied if water with glycol added is used.
- Table **P** contains the sound pressure levels in dB by octave bands and the total sound power in dB(A) for standard machines (TCHVBZ).
- Table **Q** contains the sound pressure levels in dB by octave bands and the levels of sound pressure and total sound power in dB(A) for soundproofed machines (TCHVIZ).

Example:

- Design conditions for a water-cooled chiller:
 - Cooling capacity required = 410 kW;
 - Water temperature produced at the evaporator = 7°C ;
 - Temperature differential ΔT at the evaporator = 5°C ;
 - Inlet temperature at the condenser = 30°C .

Using the values indicated in table "**A**", and supposing a temperature differential $\Delta T = 5^\circ\text{C}$ at the condenser, it is observed that the model TCHVBZ 1421 meets the requirement with:

QF = 418,0 kW; P = 82,8 kW;
QT = 498 kW.

The water flow G to be sent to the exchangers is obtained by using the following formulae:

G (m³/h) evaporator = $(QF \times 0,86) \div \Delta T = (405,0 \times 0,86) \div 5 = 69,7$ (m³/h).

G (m³/h) condenser = $(QT \times 0,86) \div \Delta T = (472,0 \times 0,86) \div 5 = 81,2$ (m³/h).

From the technical features table it is possible to obtain the pressure drops values Δp_w of the evaporator and condenser respectively for the nominal values:

Δp_w evaporator = 49 kPa;

Δp_w condenser = 31 kPa;

To reduce the flow of water to be sent to the condenser, it is necessary to increase the temperature differential ΔT . Supposing then to work with a ΔT at the condenser of 8°C .

With a temperature of the condenser inlet water $T_{\text{in}} = 30^\circ\text{C}$ the new condenser outlet water temperature will be:

Condenser outlet temperature = $30^\circ\text{C} + 8^\circ\text{C} = 38^\circ\text{C}$.

- Using the corrective coefficients kct QF and kct P in table C the new values for QFI and PI are calculated:

QFI = QF x kct QF = $418,0 \times 0,97 = 405,5$ kW;

PI = P x kct P = $82,8 \times 0,96 = 79,5$ kW;

QTI = (QFI + PI) x 0,97 = $(405,5 + 79,5) \times 0,97 = 482,6$ kW.

The new water flows G to be sent to the exchangers are obtained from the following formulae:

G (m³/h) evaporator = $(405,5 \times 0,86) \div 5 = 69,7$ (m³/h);

G (m³/h) condenser = $(482,6 \times 0,86) \div 8 = 51,9$ (m³/h).

From the graphs "**table M**" e "**table N**" it is possible to extrapolate the values of the pressure drops Δp_w at the evaporator and at the condenser based on the new flows.

Otherwise the following simplified formulae can be used:

Δp_w evaporator = $\Delta p_w \times (G_i \div G)^2 = 49 \times (69,7 \div 71,9)^2 = 43,7$ kPa;

Δp_w condenser = $\Delta p_w \times (G_i \div G)^2 = 31 \times (51,9 \div 85,6)^2 = 11,4$ kPa

Performance

Table "B": performance data TCHVBZ – TCHVIZ 1201÷1611 H.E.

Model	Tue (°C)	Tuc (°C)														
		25 (°C)			30 (°C)			35 (°C)			40 (°C)			45 (°C)		
		QF kW	QT kW	P kW	QF kW	QT kW	P kW	QF kW	QT kW	P kW	QF kW	QT kW	P kW	QF kW	QT kW	P kW
1201	5	206,1	236,8	31,6	198,6	233,2	35,7	190,6	229,6	40,2	182,0	225,8	45,2	172,4	221,6	50,7
	7	219,8	250,6	31,8	212,4	247,2	35,9	204,0	243,2	40,4	194,6	238,6	45,4	184,6	234,0	50,9
	9	234,0	265,0	32,0	226,3	261,3	36,1	217,8	257,2	40,6	207,9	252,2	45,7	197,3	247,1	51,3
	11	248,9	280,1	32,2	240,5	275,7	36,3	231,6	271,3	40,9	221,7	266,3	46,0	210,6	260,7	51,7
	13	263,9	295,3	32,4	255,9	291,4	36,6	246,4	286,4	41,2	236,0	281,0	46,4	224,3	274,8	52,1
	15	-	-	-	271,2	306,9	36,8	262,0	302,3	41,5	250,7	296,1	46,8	238,3	289,2	52,5
1231	5	233,1	267,7	35,7	224,8	263,9	40,3	215,9	259,9	45,4	205,8	255,5	51,2	195,0	250,7	57,4
	7	249,0	283,8	35,9	240,3	279,7	40,6	231,0	275,3	45,7	220,4	270,4	51,5	208,9	264,9	57,7
	9	265,5	300,5	36,1	256,3	295,9	40,8	246,6	291,2	46,0	235,8	286,0	51,8	223,5	279,9	58,1
	11	282,2	317,5	36,4	273,4	313,3	41,1	262,9	307,8	46,3	251,6	302,2	52,2	238,5	295,3	58,6
	13	299,9	335,4	36,6	290,4	330,6	41,4	279,7	325,0	46,7	267,6	318,6	52,6	254,3	311,6	59,1
	15	-	-	-	308,5	348,9	41,7	297,6	343,3	47,1	284,7	336,2	53,1	270,5	328,4	59,7
1281	5	287,1	329,6	43,8	276,7	324,5	49,3	264,9	318,8	55,6	252,7	313,3	62,5	239,3	307,2	70,0
	7	306,3	349,0	44,0	295,0	343,1	49,6	283,0	337,2	55,9	270,2	331,1	62,8	256,0	324,4	70,5
	9	325,5	368,5	44,3	314,3	362,8	50,0	302,0	356,6	56,3	288,7	350,1	63,3	273,8	342,7	71,0
	11	345,8	389,2	44,7	334,8	383,6	50,3	321,6	376,6	56,7	307,7	369,6	63,8	291,9	361,4	71,6
	13	367,5	411,2	45,0	355,6	404,8	50,7	342,1	397,6	57,2	327,2	389,6	64,3	310,8	380,8	72,2
	15	-	-	-	376,9	426,6	51,2	362,5	418,5	57,7	347,3	410,3	64,9	330,6	401,4	73,0
1311	5	312,6	359,0	47,8	301,4	353,6	53,8	289,4	348,4	60,8	276,7	343,2	68,6	263,2	338,2	77,3
	7	332,7	379,4	48,1	321,2	373,8	54,2	309,0	368,3	61,1	296,0	362,8	68,9	281,6	356,9	77,6
	9	354,0	400,9	48,4	342,3	395,2	54,5	329,2	388,9	61,5	315,3	382,5	69,3	301,0	376,8	78,1
	11	376,0	423,3	48,8	363,4	416,7	54,9	350,0	410,0	61,9	335,8	403,5	69,8	320,9	397,1	78,6
	13	398,7	446,4	49,2	386,5	440,2	55,4	372,2	432,7	62,4	357,7	426,0	70,4	341,7	418,6	79,3
	15	-	-	-	409,6	463,8	55,9	394,9	456,0	63,0	380,2	449,1	71,0	363,2	440,8	80,0
1351	5	358,5	411,7	54,8	345,3	405,2	61,8	331,7	399,3	69,7	316,9	393,1	78,6	301,5	387,3	88,5
	7	382,5	436,0	55,2	369,1	429,4	62,2	354,0	422,0	70,1	338,8	415,5	79,1	322,7	409,0	89,0
	9	406,6	460,5	55,6	392,8	453,5	62,6	377,4	445,9	70,6	361,9	439,1	79,6	344,6	431,5	89,6
	11	432,2	486,6	56,1	418,1	479,3	63,1	402,4	471,5	71,2	385,7	463,5	80,2	368,1	455,7	90,3
	13	458,6	513,6	56,7	443,4	505,2	63,7	427,3	496,9	71,8	410,3	488,8	80,9	391,4	479,8	91,1
	15	-	-	-	471,1	533,6	64,4	453,8	524,1	72,5	435,6	514,8	81,7	416,4	505,7	92,1
1421	5	424,5	488,1	65,6	408,6	479,8	73,4	390,9	470,6	82,2	372,1	461,3	92,0	351,8	451,6	102,9
	7	452,4	516,5	66,1	436,1	507,8	73,9	418,0	498,3	82,8	398,8	488,7	92,7	377,2	477,8	103,7
	9	481,1	545,8	66,7	464,5	536,9	74,6	446,0	527,0	83,5	426,4	517,1	93,5	403,4	504,9	104,6
	11	511,7	577,1	67,4	493,8	566,8	75,3	475,9	557,6	84,2	454,0	545,5	94,3	431,0	533,3	105,5
	13	542,3	608,4	68,1	525,0	598,7	76,0	505,7	588,2	85,1	483,4	575,8	95,3	459,9	563,3	106,6
	15	-	-	-	557,1	631,7	76,9	536,4	619,8	86,0	513,6	607,0	96,3	488,7	593,3	107,8
1481	5	486,5	559,5	75,3	468,7	550,4	84,2	449,2	540,7	94,3	427,7	530,1	105,6	403,4	517,9	118,0
	7	518,5	592,1	75,9	500,3	582,7	84,9	480,0	572,2	95,0	457,5	560,6	106,3	432,8	548,1	118,9
	9	551,5	625,8	76,6	533,0	616,0	85,6	511,7	604,6	95,8	488,3	592,3	107,2	463,0	579,3	119,9
	11	586,6	661,7	77,4	566,6	650,4	86,4	545,5	639,2	96,6	521,0	626,0	108,2	493,7	611,1	121,0
	13	621,7	697,6	78,2	601,3	686,0	87,3	579,7	674,4	97,6	553,7	659,7	109,3	526,4	645,0	122,3
	15	-	-	-	638,1	723,7	88,2	615,0	710,7	98,7	588,4	695,6	110,5	559,5	679,4	123,6
1531	5	540,4	621,4	83,5	520,7	611,5	93,6	501,0	602,8	104,9	478,9	593,0	117,6	456,6	584,2	131,5
	7	576,4	658,3	84,4	556,3	648,0	94,5	535,0	637,7	105,9	512,4	627,4	118,6	488,6	617,2	132,6
	9	612,4	695,1	85,3	591,9	684,5	95,5	570,1	673,8	106,9	547,1	663,2	119,7	521,6	651,5	133,9
	11	651,9	735,6	86,3	631,0	724,5	96,4	607,6	712,5	108,1	582,8	700,2	121,0	556,8	687,9	135,2
	13	691,5	776,2	87,3	668,9	763,6	97,6	646,2	752,2	109,3	620,9	739,6	122,4	593,1	725,8	136,8
	15	-	-	-	710,4	806,2	98,8	686,0	793,3	110,6	659,0	779,2	123,9	629,4	763,8	138,6
1611	5	614,8	706,9	94,9	593,0	696,1	106,3	569,1	684,7	119,2	543,9	673,3	133,4	517,9	662,5	149,1
	7	655,2	748,2	95,9	633,0	737,2	107,4	608,0	724,7	120,3	582,3	712,9	134,6	553,7	699,6	150,4
	9	697,0	791,1	97,0	674,2	779,5	108,6	648,7	766,6	121,5	621,8	753,7	136,0	592,0	739,4	152,0
	11	741,4	836,7	98,2	716,8	823,3	109,8	689,4	808,6	122,9	661,9	795,3	137,5	631,5	780,5	153,6
	13	787,1	883,5	99,4	760,6	868,5	111,2	732,6	853,3	124,4	703,2	838,1	139,1	672,2	823,0	155,5
	15	-	-	-	807,1	916,3	112,6	778,6	900,7	125,9	747,1	883,8	140,9	714,0	866,9	157,6

Tuc = Condenser outlet water temperature (inlet/outlet $\Delta T = 5^\circ\text{C}$)Tue = Evaporator outlet water temperature (inlet/outlet $\Delta T = 5^\circ\text{C}$)QF = Cooling capacity with a fouling factor of $0,35 \times 10^{-4} \text{ m}^2 \text{ K/W}$ QT = Heating capacity with a fouling factor of $0,35 \times 10^{-4} \text{ m}^2 \text{ K/W}$

P = Total electrical power absorbed.

Table "B": performance data TCHVBZ – TCHVIZ 2411÷2711 H.E.

Model	Tuc (°C)	Tuc (°C)														
		25 (°C)			30 (°C)			35 (°C)			40 (°C)			45 (°C)		
		QF kW	QT kW	P kW	QF kW	QT kW	P kW	QF kW	QT kW	P kW	QF kW	QT kW	P kW	QF kW	QT kW	P kW
2411	5	410,6	471,7	63,0	396,1	465,0	71,0	380,2	457,9	80,1	363,3	450,6	90,0	343,9	441,8	100,9
	7	438,5	500,0	63,4	423,7	493,1	71,5	407,0	485,1	80,5	388,8	476,6	90,5	368,5	467,0	101,5
	9	467,3	529,1	63,7	451,3	521,0	71,9	434,2	512,8	81,0	415,6	504,0	91,1	394,4	493,4	102,1
	11	497,0	559,2	64,1	481,6	551,7	72,3	463,2	542,3	81,5	443,2	532,1	91,7	421,1	520,9	102,9
	13	528,6	591,2	64,5	511,9	582,5	72,8	493,1	572,7	82,1	472,2	561,8	92,4	449,2	549,8	103,7
15	-	-	-	-	543,1	614,3	73,4	524,0	604,2	82,7	501,6	591,9	93,1	477,1	578,7	104,7
2431	5	439,3	504,6	67,3	423,3	496,9	75,9	406,2	489,1	85,5	388,0	481,3	96,2	367,1	471,8	107,9
	7	468,7	534,3	67,6	452,9	526,9	76,3	435,0	518,4	86,0	415,4	509,2	96,7	393,6	498,8	108,5
	9	499,0	565,0	68,0	482,9	557,3	76,7	464,7	548,5	86,4	443,6	538,0	97,3	421,4	527,3	109,2
	11	530,8	597,1	68,4	514,4	589,3	77,2	494,7	579,2	87,1	473,3	568,4	98,0	449,5	556,2	110,0
	13	564,7	631,5	68,9	546,3	621,8	77,8	526,7	611,8	87,7	504,9	600,7	98,8	479,6	587,2	110,9
15	-	-	-	-	-	-	-	559,7	645,4	88,4	536,3	632,9	99,6	510,0	618,5	111,9
2461	5	466,2	535,5	71,4	450,1	528,4	80,7	431,9	520,2	91,0	412,6	511,8	102,3	391,1	502,4	114,7
	7	498,0	567,5	71,7	480,5	559,2	81,1	462,0	550,7	91,4	441,3	541,0	102,8	418,8	530,7	115,4
	9	529,7	599,7	72,2	513,0	592,1	81,5	493,0	582,1	91,9	471,8	572,1	103,4	447,9	560,5	116,1
	11	563,5	633,9	72,6	546,4	625,8	81,9	526,0	615,7	92,5	503,4	604,5	104,2	478,4	591,8	116,9
	13	599,4	670,3	73,1	580,8	660,9	82,6	560,1	650,5	93,2	535,9	637,7	104,9	509,3	623,7	117,9
15	-	-	-	-	-	-	-	594,0	685,1	93,9	569,3	671,9	105,8	542,3	657,6	118,9
2511	5	520,5	597,8	79,7	501,3	588,5	89,9	480,7	579,0	101,3	458,0	568,5	113,9	433,1	557,1	127,8
	7	556,0	633,8	80,2	536,3	624,0	90,4	514,0	612,8	101,9	490,2	601,4	114,6	464,3	589,0	128,6
	9	592,5	670,8	80,7	571,1	659,4	91,0	549,0	648,5	102,6	524,1	636,0	115,4	497,0	622,6	129,5
	11	630,2	709,1	81,3	608,4	697,3	91,7	585,1	685,3	103,3	559,0	671,8	116,3	530,0	656,6	130,5
	13	668,9	748,3	81,9	646,7	736,3	92,4	623,0	724,1	104,2	595,7	709,5	117,3	565,4	693,1	131,7
15	-	-	-	-	687,6	778,0	93,2	660,6	762,5	105,1	633,4	748,2	118,4	601,2	730,2	133,0
2561	5	572,9	657,8	87,5	551,7	647,2	98,5	528,4	636,2	111,1	504,3	625,4	124,8	477,4	613,2	140,0
	7	610,5	695,9	88,0	588,8	685,0	99,2	565,0	673,3	111,7	539,1	660,9	125,6	511,0	647,6	140,8
	9	649,9	735,8	88,6	628,4	725,2	99,8	602,8	711,8	112,4	575,7	698,3	126,4	546,4	683,9	141,8
	11	690,5	777,0	89,2	668,5	766,0	100,5	642,4	752,2	113,2	614,1	737,7	127,4	582,8	721,5	143,0
	13	733,7	820,9	89,9	709,9	808,2	101,3	683,2	793,9	114,1	653,6	778,2	128,5	621,0	761,0	144,3
15	-	-	-	-	752,5	851,6	102,2	725,2	836,9	115,2	693,6	819,3	129,6	660,4	801,7	145,7
2601	5	606,0	695,6	92,4	583,7	684,7	104,1	559,8	673,7	117,4	535,0	663,2	132,2	507,1	651,2	148,6
	7	646,8	737,0	93,0	624,1	725,8	104,8	599,0	713,6	118,1	572,3	701,3	133,0	543,8	688,8	149,5
	9	687,5	778,4	93,7	664,2	766,5	105,5	639,4	754,7	118,9	611,4	741,3	133,9	581,0	727,0	150,5
	11	730,8	822,4	94,4	707,1	810,2	106,3	680,3	796,5	119,8	651,8	782,8	135,0	620,0	767,2	151,8
	13	777,0	869,4	95,3	751,3	855,4	107,3	724,0	841,3	120,9	693,4	825,5	136,2	661,0	809,6	153,2
15	-	-	-	-	796,8	901,9	108,3	768,9	887,3	122,1	737,0	870,5	137,6	701,6	851,7	154,7
2631	5	636,9	731,2	97,2	612,9	719,1	109,5	588,8	708,7	123,6	562,9	698,1	139,4	535,4	687,7	157,0
	7	678,2	773,1	97,8	654,4	761,2	110,1	629,0	749,6	124,3	601,9	737,9	140,2	573,2	726,4	157,9
	9	722,1	817,6	98,5	697,1	804,7	110,9	670,5	791,8	125,1	642,9	779,8	141,1	612,9	767,0	158,9
	11	766,7	863,1	99,4	741,2	849,7	111,9	714,1	836,4	126,1	685,2	823,1	142,2	653,8	809,1	160,1
	13	814,2	911,5	100,3	788,2	897,7	112,9	758,9	882,4	127,3	729,5	868,6	143,4	696,7	853,4	161,5
15	-	-	-	-	835,0	945,7	114,1	806,7	931,3	128,5	775,1	915,7	144,9	740,1	898,3	163,1
2681	5	685,9	787,1	104,3	660,6	774,6	117,5	633,5	762,0	132,5	605,2	750,1	149,4	574,8	738,0	168,2
	7	732,2	834,1	105,1	705,6	820,4	118,3	677,0	806,4	133,4	647,3	793,3	150,5	615,5	779,6	169,2
	9	779,0	881,8	106,0	751,9	867,5	119,2	721,9	852,3	134,4	691,6	838,7	151,6	658,4	823,9	170,6
	11	827,3	931,1	107,0	800,5	917,3	120,4	770,0	901,6	135,7	737,3	885,6	152,9	702,6	869,5	172,1
	13	878,0	982,9	108,1	850,6	968,6	121,6	818,6	951,5	137,0	785,3	935,1	154,4	749,0	917,5	173,7
15	-	-	-	-	902,2	1021,4	122,9	869,5	1003,8	138,5	834,7	986,0	156,0	796,8	967,1	175,6
2711	5	724,6	832,0	110,7	697,6	818,6	124,7	669,6	806,1	140,7	639,6	793,4	158,6	607,5	780,6	178,5
	7	772,0	880,2	111,5	744,5	866,3	125,6	715,0	852,4	141,6	683,6	838,4	159,6	650,0	824,4	179,8
	9	822,6	931,7	112,5	793,6	916,5	126,7	762,7	901,2	142,8	730,7	886,8	160,9	695,6	871,2	181,0
	11	873,0	983,2	113,6	844,3	968,3	127,8	812,8	952,5	144,0	779,2	936,6	162,3	742,6	919,8	182,7
	13	926,7	1038,1	114,8	897,5	1022,7	129,1	864,4	1005,4	145,4	829,3	988,3	163,9	790,1	969,0	184,4
15	-	-	-	-	952,2	1078,8	130,5	918,5	1061,1	147,0	880,8	1041,4	165,6	840,9	1021,7	186,4

ATTENTION!

At the evaporator and at the condenser, the temperature differential ΔT between the inlet water and the outlet water must be between 3°C and 8°C.

Nominal operating conditions

Inlet/outlet evaporator water 12°C / 7°C, inlet/outlet condenser water 30°C / 35°C.

Table "C": corrective coefficients ΔT condenser water

For ΔT of the condenser water different from 5°C (ΔT minimum of 3°C and ΔT maximum of 8°C), for a given inlet water temperature (respectively 25°C, 30°C, 35°C, 40°C and 45°C), apply the following corrective coefficients to the data in tables:

ΔT	Kct QF	Kct P
3°C	1,01	0,99
5°C	1	1
8°C	0,97	0,96

Table "D": corrective coefficients ΔT evaporator water

For temperature differentials ΔT of the evaporator water different from 5°C, for a given outlet water temperature (respectively 5°C, 7°C, 8°C, 9°C, 10°C 13°C and 15°C), apply the following corrective coefficients to the data in tables:

ΔT	Kct QF	Kct P
3°C	0,99	0,99
5°C	1	1
8°C	1,01	1,01

Table "B": performance data TCHVBZ – TCHVIZ 2781÷21261 H.E.

Model	Tue (°C)	Tuc (°C)														
		25 (°C)			30 (°C)			35 (°C)			40 (°C)			45 (°C)		
		QF kW	QT kW	P kW	QF kW	QT kW	P kW	QF kW	QT kW	P kW	QF kW	QT kW	P kW	QF kW	QT kW	P kW
2781	5	789,0	906,5	121,1	760,6	892,4	135,9	728,6	876,7	152,7	694,7	861,2	171,6	658,7	845,4	192,5
	7	841,3	959,6	122,0	810,6	943,4	136,9	778,0	927,2	153,8	743,4	911,0	172,8	705,0	893,0	193,8
	9	895,3	1014,7	123,1	863,9	997,8	138,0	830,7	981,1	155,0	793,6	962,5	174,1	754,5	943,9	195,3
	11	950,9	1071,5	124,3	918,9	1054,0	139,3	885,0	1036,7	156,4	846,3	1016,6	175,6	805,5	996,6	197,0
	13	1008,2	1130,0	125,6	975,6	1112,0	140,6	941,0	1094,2	157,9	900,6	1072,6	177,3	858,1	1051,0	198,9
15	-	-	-	-	-	-	998,6	1153,3	159,5	957,5	1131,5	179,4	912,3	1107,4	201,1	
2841	5	851,5	979,1	131,5	820,0	962,7	147,1	785,7	945,7	164,9	747,8	927,0	184,7	707,0	907,4	206,6
	7	905,3	1033,9	132,6	874,8	1018,7	148,3	839,0	1000,1	166,1	801,2	981,6	186,0	757,9	959,7	208,0
	9	964,3	1094,1	133,8	931,4	1076,4	149,5	894,9	1057,3	167,4	854,5	1036,4	187,5	810,3	1013,7	209,7
	11	1025,1	1156,1	135,0	989,8	1136,2	150,9	952,5	1116,3	168,9	911,3	1094,7	189,1	864,5	1069,8	211,6
	13	1087,7	1220,0	136,4	1051,7	1199,5	152,4	1013,6	1179,0	170,5	969,9	1155,2	191,0	922,1	1129,4	213,7
15	-	-	-	-	-	-	1074,8	1242,0	172,4	1030,2	1217,4	193,0	979,6	1189,2	216,1	
2901	5	914,1	1051,2	141,3	880,0	1033,4	158,1	841,8	1013,6	177,1	801,3	993,6	198,2	756,7	971,7	221,7
	7	974,0	1112,3	142,6	939,1	1093,6	159,3	901,0	1074,0	178,4	858,6	1052,3	199,7	810,8	1027,4	223,3
	9	1038,1	1177,7	143,9	1002,4	1158,3	160,7	962,3	1136,8	179,9	917,8	1113,1	201,3	867,9	1086,2	225,1
	11	1104,3	1245,2	145,3	1066,6	1223,9	162,2	1024,5	1200,6	181,5	979,0	1176,1	203,2	926,8	1147,2	227,2
	13	1172,7	1315,2	146,9	1135,2	1294,2	163,9	1091,0	1268,8	183,3	1042,3	1241,3	205,2	988,9	1211,6	229,6
15	-	-	-	1204,9	1365,7	165,8	1159,7	1339,5	185,4	1109,8	1311,1	207,5	1052,9	1278,1	232,2	
2961	5	973,0	1118,8	150,3	936,5	1099,7	168,2	897,8	1080,5	188,4	852,9	1057,6	211,0	805,7	1034,5	235,9
	7	1037,1	1184,2	151,7	999,7	1164,1	169,5	958,0	1142,1	189,8	914,1	1120,1	212,4	863,6	1094,0	237,5
	9	1105,5	1253,9	153,0	1067,2	1233,1	171,0	1024,5	1210,1	191,3	976,3	1184,1	214,2	924,6	1156,9	239,5
	11	1174,0	1324,0	154,6	1134,7	1302,0	172,5	1091,0	1278,2	193,0	1042,8	1252,4	216,1	987,7	1222,1	241,7
	13	1246,9	1398,4	156,2	1206,7	1375,8	174,3	1159,7	1348,8	194,9	1110,3	1322,0	218,2	1052,9	1289,6	244,0
15	-	-	-	1281,0	1451,9	176,2	1232,9	1424,0	197,0	1180,1	1394,0	220,5	1121,4	1360,8	246,8	
21031	5	1043,4	1199,1	160,5	1003,9	1178,0	179,5	963,0	1158,3	201,3	918,5	1137,1	225,4	870,1	1114,5	252,0
	7	1112,5	1269,7	162,1	1072,0	1247,9	181,3	1029,0	1225,9	203,0	983,4	1203,8	227,2	932,8	1179,3	254,1
	9	1183,9	1342,8	163,8	1143,7	1321,3	183,1	1098,4	1297,2	204,9	1051,8	1274,2	229,3	997,5	1246,2	256,4
	11	1260,1	1420,7	165,6	1217,7	1397,2	185,0	1170,1	1370,9	207,0	1121,2	1345,9	231,7	1065,7	1316,9	259,0
	13	1338,8	1501,4	167,6	1295,4	1476,9	187,1	1246,8	1449,8	209,3	1192,8	1420,0	234,2	1136,1	1390,1	261,9
15	-	-	-	1373,0	1556,6	189,3	1325,9	1531,3	211,8	1270,7	1500,7	237,1	1210,1	1467,3	265,2	
21111	5	1119,8	1284,2	169,5	1079,4	1263,7	190,0	1036,5	1243,1	213,0	991,1	1222,4	238,5	943,0	1201,9	266,9
	7	1194,3	1360,5	171,3	1152,9	1338,9	191,8	1109,0	1317,6	215,0	1061,2	1294,5	240,5	1010,8	1271,6	268,9
	9	1273,8	1441,7	173,1	1228,9	1416,9	193,8	1183,9	1394,5	217,1	1133,8	1369,5	243,0	1081,0	1344,5	271,7
	11	1353,3	1523,2	175,2	1307,4	1497,4	195,9	1261,4	1474,2	219,4	1210,1	1448,3	245,6	1153,5	1419,8	274,5
	13	1438,1	1610,1	177,3	1391,1	1583,5	198,3	1341,4	1556,6	221,9	1286,3	1527,2	248,4	1228,3	1497,7	277,7
15	-	-	-	1474,8	1669,5	200,7	1423,9	1641,8	224,6	1367,6	1611,5	251,4	1308,3	1581,1	281,2	
21181	5	1195,1	1369,1	179,4	1150,6	1345,7	201,1	1104,7	1323,3	225,4	1057,3	1302,1	252,4	1005,8	1279,5	282,2
	7	1273,4	1449,4	181,4	1227,9	1424,9	203,1	1181,0	1401,7	227,5	1129,9	1377,0	254,7	1077,3	1353,5	284,7
	9	1356,8	1534,8	183,5	1309,0	1508,0	205,2	1258,4	1481,3	229,8	1207,6	1457,1	257,2	1151,1	1429,9	287,4
	11	1440,1	1620,1	185,6	1391,3	1592,7	207,6	1342,3	1567,6	232,3	1286,3	1538,5	260,0	1227,3	1509,2	290,6
	13	1528,8	1711,2	188,0	1478,9	1682,6	210,0	1426,1	1654,1	235,1	1367,5	1622,7	263,1	1305,9	1591,1	294,0
15	-	-	-	1569,2	1775,6	212,8	1512,5	1743,5	238,1	1452,6	1711,0	266,4	1389,7	1678,7	297,9	
21261	5	1274,7	1459,8	190,8	1225,7	1433,0	213,7	1179,0	1411,5	239,7	1126,9	1387,3	268,5	1071,9	1363,0	300,1
	7	1355,9	1543,0	192,9	1308,4	1517,9	216,0	1258,0	1492,7	242,0	1204,8	1467,6	270,9	1148,6	1442,2	302,7
	9	1445,0	1634,2	195,1	1393,7	1605,5	218,4	1342,3	1579,5	244,5	1286,5	1551,9	273,6	1227,8	1524,3	305,7
	11	1534,2	1725,8	197,5	1481,8	1696,0	220,8	1429,2	1669,0	247,2	1370,9	1639,2	276,6	1306,7	1606,4	309,0
	13	1629,0	1823,0	200,0	1575,4	1792,2	223,5	1518,9	1761,5	250,1	1456,4	1727,7	279,7	1390,9	1694,2	312,7
15	-	-	-	1671,9	1891,4	226,3	1611,3	1856,9	253,2	1547,5	1822,4	283,4	1477,7	1785,0	316,8	

Tuc = Condenser outlet water temperature (inlet/outlet $\Delta T = 5^\circ C$)Tue = Evaporator outlet water temperature (inlet/outlet $\Delta T = 5^\circ C$)QF = Cooling capacity with a fouling factor of $0,35 \times 10^{-4} m^2 K/W$ QT = Heating capacity with a fouling factor of $0,35 \times 10^{-4} m^2 K/W$

P = Total electrical power absorbed.

Table "B": performance data TCHVBZ – TCHVIZ 31301÷31631 H.E.

Model	Tue (°C)	Tuc (°C)														
		25 (°C)			30 (°C)			35 (°C)			40 (°C)			45 (°C)		
		QF kW	QT kW	P kW	QF kW	QT kW	P kW	QF kW	QT kW	P kW	QF kW	QT kW	P kW	QF kW	QT kW	P kW
31301	5	1325,6	1518,8	199,2	1275,9	1492,1	222,9	1224,4	1466,6	249,7	1167,1	1438,4	279,7	1102,5	1405,9	312,8
	7	1412,7	1607,6	200,9	1364,6	1582,6	224,7	1308,0	1552,1	251,6	1248,2	1521,5	281,8	1182,2	1487,8	315,1
	9	1502,8	1699,4	202,7	1453,6	1673,4	226,6	1395,7	1641,8	253,7	1334,6	1610,1	284,0	1264,5	1572,7	317,7
	11	1598,5	1797,2	204,8	1545,4	1767,2	228,7	1486,4	1734,8	256,1	1424,0	1702,1	286,7	1349,5	1660,6	320,7
	13	1694,4	1895,2	207,0	1643,1	1867,3	231,1	1579,9	1830,8	258,7	1513,3	1794,2	289,6	1437,3	1751,6	324,0
15	-	-	-	1740,9	1967,6	233,7	1679,3	1932,9	261,4	1611,3	1895,3	292,8	1530,8	1848,7	327,7	
31351	5	1371,4	1573,7	208,6	1322,4	1548,8	233,4	1267,8	1521,5	261,5	1210,1	1494,4	293,1	1146,5	1465,0	328,3
	7	1461,9	1666,0	210,4	1411,8	1639,8	235,1	1356,0	1611,5	263,4	1294,4	1580,6	295,0	1226,7	1547,1	330,3
	9	1555,3	1760,9	212,0	1504,1	1733,7	236,7	1447,1	1704,4	265,3	1384,2	1672,2	296,9	1315,1	1637,4	332,3
	11	1651,8	1859,1	213,7	1599,5	1831,1	238,8	1541,2	1800,3	267,1	1477,0	1767,4	299,4	1403,7	1728,7	335,0
	13	1754,2	1963,7	216,0	1700,7	1934,3	240,8	1638,4	1900,0	269,7	1572,8	1865,8	302,1	1498,0	1826,2	338,3
15	-	-	-	1802,3	2038,3	243,3	1741,5	2005,5	272,2	1671,6	1967,5	305,0	1592,3	1923,7	341,7	
31401	5	1422,8	1634,3	218,0	1371,0	1607,7	244,0	1316,2	1581,3	273,3	1255,7	1552,4	305,9	1189,2	1521,4	342,5
	7	1514,9	1727,8	219,5	1464,7	1703,0	245,7	1406,0	1672,8	275,1	1344,2	1643,2	308,2	1273,6	1608,1	344,8
	9	1612,8	1827,8	221,6	1558,7	1798,9	247,6	1498,8	1767,7	277,2	1435,6	1736,7	310,4	1363,5	1700,4	347,3
	11	1713,9	1930,6	223,4	1658,6	1900,8	249,7	1597,4	1868,4	279,4	1530,1	1833,7	313,0	1453,6	1793,4	350,3
	13	1818,3	2037,3	225,8	1761,8	2006,2	252,0	1699,2	1972,5	281,8	1627,6	1933,9	315,8	1549,5	1892,4	353,5
15	-	-	-	1868,1	2115,1	254,6	1804,2	2080,5	284,8	1731,1	2040,5	319,0	1648,5	1995,0	357,2	
31461	5	1478,7	1699,0	227,1	1426,4	1673,1	254,3	1368,6	1644,7	284,6	1304,9	1614,2	318,9	1235,1	1581,0	356,6
	7	1575,6	1797,7	229,0	1522,2	1770,6	256,1	1463,0	1741,2	286,8	1395,2	1706,8	321,2	1321,2	1669,5	359,1
	9	1678,4	1902,5	231,0	1621,1	1871,7	258,3	1557,9	1838,2	289,0	1488,6	1802,5	323,6	1413,1	1764,2	362,0
	11	1781,9	2008,2	233,3	1723,3	1976,0	260,5	1658,7	1941,6	291,6	1587,9	1904,5	326,4	1507,9	1862,1	365,2
	13	1888,6	2117,2	235,7	1828,7	2083,9	263,1	1762,7	2048,3	294,4	1690,4	2010,1	329,6	1605,8	1963,5	368,8
15	-	-	-	1940,4	2198,2	265,8	1870,0	2158,5	297,4	1793,3	2116,3	333,0	1709,9	2071,5	372,8	
31521	5	1538,0	1766,8	235,9	1485,7	1741,8	264,0	1427,7	1715,0	296,2	1363,9	1685,5	331,5	1294,2	1654,2	371,1
	7	1639,5	1870,3	237,9	1583,3	1841,6	266,3	1524,0	1813,4	298,3	1458,8	1782,7	333,9	1384,8	1747,3	373,7
	9	1744,4	1977,1	239,9	1686,9	1947,3	268,5	1623,5	1915,2	300,7	1556,9	1883,6	336,8	1481,3	1846,4	376,4
	11	1852,7	2087,8	242,4	1793,9	2056,8	271,0	1729,1	2023,4	303,4	1658,2	1987,8	339,8	1578,1	1946,8	380,1
	13	1964,4	2202,1	245,0	1904,3	2169,8	273,7	1838,1	2135,3	306,4	1762,8	2095,6	343,1	1681,0	2053,4	383,9
15	-	-	-	2018,3	2286,7	276,7	1950,7	2251,0	309,6	1873,7	2210,1	346,8	1787,2	2163,7	388,1	
31591	5	1595,4	1832,0	243,9	1540,4	1806,0	273,8	1482,3	1779,9	306,8	1418,5	1752,4	344,2	1351,5	1725,0	385,1
	7	1698,6	1937,6	246,4	1642,3	1909,8	275,8	1583,0	1882,9	309,2	1517,8	1854,1	346,7	1446,5	1822,7	387,8
	9	1808,0	2049,0	248,5	1747,7	2017,8	278,5	1687,0	1989,7	312,1	1617,6	1956,6	349,5	1544,8	1924,0	390,9
	11	1921,0	2164,7	251,2	1859,4	2132,1	281,1	1794,5	2100,0	314,9	1723,5	2065,6	352,7	1646,3	2028,8	394,3
	13	2037,6	2284,0	254,0	1974,6	2250,1	284,0	1905,4	2214,0	318,1	1832,9	2178,4	356,2	1754,0	2140,5	398,5
15	-	-	-	2093,5	2372,0	287,1	2022,8	2334,7	321,5	1945,8	2295,1	360,1	1862,2	2253,0	402,9	
31631	5	1648,5	1893,1	252,2	1590,9	1865,6	283,2	1533,0	1841,3	317,8	1469,3	1814,9	356,3	1402,4	1789,1	398,7
	7	1753,2	2000,0	254,4	1697,0	1974,0	285,6	1635,0	1945,5	320,1	1569,9	1917,9	358,8	1501,5	1890,9	401,4
	9	1866,8	2116,1	257,0	1806,6	2086,2	288,2	1743,2	2056,4	322,9	1673,9	2025,1	362,1	1601,2	1993,8	404,7
	11	1981,4	2233,5	259,9	1919,8	2201,9	290,8	1855,0	2171,1	325,9	1784,2	2138,3	365,1	1707,1	2103,6	408,8
	13	2102,5	2357,1	262,5	2039,5	2324,6	293,9	1970,5	2289,9	329,3	1895,2	2253,2	369,1	1816,4	2216,9	412,9
15	-	-	-	2160,2	2448,7	297,4	2089,6	2412,8	333,2	2012,6	2374,6	373,2	1929,2	2334,2	417,5	

ATTENTION !

At the evaporator and at the condenser, the temperature differential ΔT between the inlet water and the outlet water must be between 3°C and 8°C.

Nominal operating conditions

Inlet/outlet evaporator water 12°C / 7°C,
inlet/outlet condenser water 30°C / 35°C.

Table "C": corrective coefficients ΔT condenser water

For ΔT of the condenser water different from 5°C (ΔT minimum of 3°C and ΔT maximum of 8°C), for a given inlet water temperature (respectively 25°C, 30°C, 35°C, 40°C and 45°C), apply the following corrective coefficients to the data in tables:

ΔT	Kct QF	Kct P
3°C	1,01	0,99
5°C	1	1
8°C	0,97	0,96

Table "D": corrective coefficients ΔT evaporator water

For temperature differentials ΔT of the evaporator water different from 5°C, for a given outlet water temperature (respectively 5°C, 7°C, 8°C, 9°C, 10°C 13°C and 15°C), apply the following corrective coefficients to the data in tables:

ΔT	Kct QF	Kct P
3°C	0,99	0,99
5°C	1	1
8°C	1,01	1,01

Performances and pressure drops accessories RC100 and DS

MODEL TCHVBZ-TCHVIZ	1201			1231			
STANDARD-SOUNDPROOFED VERSION							
Technical data							
RC100 - 100% recuperator							
Inlet/outlet water temperature	°C	30/35	35/40	40/45	30/35	35/40	40/45
Nominal heating capacity (*)	kW	243,2	238,6	234,0	275,3	270,4	264,9
Recuperator nominal water flow	m³/h	41,8	41,0	40,2	47,4	46,5	45,6
Recuperator nominal pressure drops	kPa	25	24	23	25	24	23
Recuperator water contents	L	19	19	19	21	21	21
DS - Desuperheater							
Inlet/outlet water temperature	°C	30/40	35/45	-	30/40	35/45	-
Nominal heating capacity (*)	kW	48,6	44,7	-	55,1	50,7	-
Recuperator nominal water flow	m³/h	4,2	3,8	-	4,7	4,4	-
Recuperator nominal pressure drops	kPa	26	21	-	17	15	-
Recuperator water contents	L	2	2	-	2,3	2,3	-

MODEL TCHVBZ-TCHVIZ	1281			1311			
STANDARD-SOUNDPROOFED VERSION							
Technical data							
RC100 - 100% recuperator							
Inlet/outlet water temperature	°C	30/35	35/40	40/45	30/35	35/40	40/45
Nominal heating capacity (*)	kW	337,2	331,1	324,4	368,3	362,8	356,9
Recuperator nominal water flow	m³/h	58,0	57,0	55,8	63,3	62,4	61,4
Recuperator nominal pressure drops	kPa	29	28	27	27	26	26
Recuperator water contents	L	24	24	24	26	26	26
DS - Desuperheater							
Inlet/outlet water temperature	°C	30/40	35/45	-	30/40	35/45	-
Nominal heating capacity (*)	kW	67,4	62	-	73,7	67,8	-
Recuperator nominal water flow	m³/h	5,8	5,3	-	6,3	5,8	-
Recuperator nominal pressure drops	kPa	28	23	-	20	17	-
Recuperator water contents	L	2,6	2,6	-	2,9	2,9	-

MODEL TCHVBZ-TCHVIZ	1351			1421			
STANDARD-SOUNDPROOFED VERSION							
Technical data							
RC100 - 100% recuperator							
Inlet/outlet water temperature	°C	30/35	35/40	40/45	30/35	35/40	40/45
Nominal heating capacity (*)	kW	422,0	415,5	409,0	498,3	488,7	477,8
Recuperator nominal water flow	m³/h	72,6	71,5	70,4	85,7	84,1	82,2
Recuperator nominal pressure drops	kPa	35	34	33	30	29	28
Recuperator water contents	L	26	26	26	34	34	34
DS - Desuperheater							
Inlet/outlet water temperature	°C	30/40	35/45	-	30/40	35/45	-
Nominal heating capacity (*)	kW	84,4	77,6	-	99,7	91,7	-
Recuperator nominal water flow	m³/h	7,3	6,7	-	8,6	7,9	-
Recuperator nominal pressure drops	kPa	28	24	-	27	23	-
Recuperator water contents	L	2,9	2,9	-	3,7	3,7	-

Functioning limits:**RC100:**

- temperature of hot water produced 25÷45°C with permitted water temperature differential 4÷6°C;
- the minimum permitted inlet water temperature is 20°C.

DS:

- temperature of hot water produced 35÷45°C with permitted water temperature differential 5÷10°C;
- the minimum permitted inlet water temperature is 25°C.

- **NOTA:** It is possible to increase the desuperheater water temperature by increasing the condenser inlet/outlet water temperature, with a reduction of the unit's efficiency.

Performance refer to the unit with chilled water temperature 7°C, with evaporator temperature differential 5°C.

Performance of DS is referred to inlet/outlet condenser water temperature 30°C / 35°C.

(*) Heating capacity with recuperator and desuperheater fouling factor of $0,35 \times 10^{-4} \text{ m}^2 \text{ K/W}$.

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. 309.

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MODEL TCHVBZ-TCHVIZ	1481				1531		
STANDARD-SOUNDPROOFED VERSION							
Technical data							
RC100 - 100% recuperator							
Inlet/outlet water temperature	°C	30/35	35/40	40/45	30/35	35/40	40/45
Nominal heating capacity (*)	kW	572,2	560,6	548,1	637,7	627,4	617,2
Recuperator nominal water flow	m³/h	98,4	96,4	94,3	109,7	107,9	106,2
Recuperator nominal pressure drops	kPa	33	32	30	28	27	26
Recuperator water contents	L	37	37	37	45	45	45
DS - Desuperheater							
Inlet/outlet water temperature	°C	30/40	35/45	-	30/40	35/45	-
Nominal heating capacity (*)	kW	114,4	105,2	-	127,5	117,3	-
Recuperator nominal water flow	m³/h	9,8	9,0	-	11,0	10,1	-
Recuperator nominal pressure drops	kPa	25	21	-	25	21	-
Recuperator water contents	L	4,1	4,1	-	5,0	5,0	-

MODEL TCHVBZ-TCHVIZ	1611			
STANDARD-SOUNDPROOFED VERSION				
Technical data				
RC100 - 100% recuperator				
Inlet/outlet water temperature	°C	30/35	35/40	40/45
Nominal heating capacity (*)	kW	724,7	712,9	699,6
Recuperator nominal water flow	m³/h	124,6	122,6	120,3
Recuperator nominal pressure drops	kPa	36	35	34
Recuperator water contents	L	45	45	45
DS - Desuperheater				
Inlet/outlet water temperature	°C	30/40	35/45	-
Nominal heating capacity (*)	kW	144,9	133,3	-
Recuperator nominal water flow	m³/h	12,5	11,5	-
Recuperator nominal pressure drops	kPa	33	28	-
Recuperator water contents	L	5,0	5,0	-

Functioning limits:**RC100:**

- temperature of hot water produced 25÷45°C with permitted water temperature differential 4÷6°C;
- the minimum permitted inlet water temperature is 20°C.

DS:

- temperature of hot water produced 35÷45°C with permitted water temperature differential 5÷10°C;
- the minimum permitted inlet water temperature is 25°C.

- **NOTA:** It is possible to increase the desuperheater water temperature by increasing the condenser inlet/outlet water temperature, with a reduction of the unit's efficiency.

Performance refer to the unit with chilled water temperature 7°C, with evaporator temperature differential 5°C.

Performance of DS is referred to inlet/outlet condenser water temperature 30°C / 35°C.

(*) Heating capacity with recuperator and desuperheater fouling factor of $0,35 \times 10^{-4} \text{ m}^2 \text{ K/W}$.

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. 309.

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MODEL TCHVBZ-TCHVIZ		2411			2431		
STANDARD-SOUNDPROOFED VERSION							
Technical data							
RC100 - 100% recuperator							
Inlet/outlet water temperature	°C	30/35	35/40	40/45	30/35	35/40	40/45
Nominal heating capacity (*)	kW	485,1	476,6	467,0	518,4	509,2	498,8
Recuperator nominal water flow	m³/h	83,4	82,0	80,3	89,2	87,6	85,8
Recuperator nominal pressure drops	kPa	25	24	23	27	26	25
Recuperator water contents	L	2x19	2x19	2x19	19/21	19/21	19/21
DS - Desuperheater							
Inlet/outlet water temperature	°C	30/40	35/45	-	30/40	35/45	-
Nominal heating capacity (*)	kW	97	89,2	-	103,7	95,4	-
Recuperator nominal water flow	m³/h	8,3	7,7	-	8,9	8,2	-
Recuperator nominal pressure drops	kPa	25	22	-	20	17	-
Recuperator water contents	L	2x2,0	2x2,0	-	2,0/2,3	2,0/2,3	-
MODEL TCHVBZ-TCHVIZ							
		2461			2511		
STANDARD-SOUNDPROOFED VERSION							
Technical data							
RC100 - 100% recuperator							
Inlet/outlet water temperature	°C	30/35	35/40	40/45	30/35	35/40	40/45
Nominal heating capacity (*)	kW	550,7	541,0	530,7	612,8	601,4	589,0
Recuperator nominal water flow	m³/h	94,7	93,1	91,3	105,4	103,4	101,3
Recuperator nominal pressure drops	kPa	24	24	23	29	28	27
Recuperator water contents	L	2x21	2x21	2x21	21/24	21/24	21/24
DS - Desuperheater							
Inlet/outlet water temperature	°C	30/40	35/45	-	30/40	35/45	-
Nominal heating capacity (*)	kW	110,1	101,3	-	122,6	112,8	-
Recuperator nominal water flow	m³/h	9,5	8,7	-	10,5	9,7	-
Recuperator nominal pressure drops	kPa	19	16	-	22	19	-
Recuperator water contents	L	2x2,3	2x2,3	-	2,3/2,6	2,3/2,6	-
MODEL TCHVBZ-TCHVIZ							
		2561			2601		
STANDARD-SOUNDPROOFED VERSION							
Technical data							
RC100 - 100% recuperator							
Inlet/outlet water temperature	°C	30/35	35/40	40/45	30/35	35/40	40/45
Nominal heating capacity (*)	kW	673,3	660,9	647,6	713,6	701,3	688,8
Recuperator nominal water flow	m³/h	115,8	113,7	111,4	122,7	120,6	118,5
Recuperator nominal pressure drops	kPa	29	28	27	30	29	28
Recuperator water contents	L	2x24	2x24	2x24	24/26	24/26	24/26
DS - Desuperheater							
Inlet/outlet water temperature	°C	30/40	35/45	-	30/40	35/45	-
Nominal heating capacity (*)	kW	134,7	123,9	-	142,7	131,3	-
Recuperator nominal water flow	m³/h	11,6	10,7	-	12,3	11,3	-
Recuperator nominal pressure drops	kPa	28	24	-	31	26	-
Recuperator water contents	L	2x2,6	2x2,6	-	2,6/2,9	2,6/2,9	-

Functioning limits:**RC100:**

- temperature of hot water produced 25÷45°C with permitted water temperature differential 4÷6°C;
- the minimum permitted inlet water temperature is 20°C.

DS:

- temperature of hot water produced 35÷45°C with permitted water temperature differential 5÷10°C;
- the minimum permitted inlet water temperature is 25°C.

- **NOTA:** It is possible to increase the desuperheater water temperature by increasing the condenser inlet/outlet water temperature, with a reduction of the unit's efficiency.

Performance refer to the unit with chilled water temperature 7°C, with evaporator temperature differential 5°C.

Performance of DS is referred to inlet/outlet condenser water temperature 30°C / 35°C.

(*) Heating capacity with recuperator and desuperheater fouling factor of $0,35 \times 10^{-4} \text{ m}^2 \text{ K/W}$.

Attention

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MODEL TCHVBZ-TCHVIZ		2631			2681		
STANDARD-SOUNDPROOFED VERSION							
Technical data							
RC100 - 100% recuperator							
Inlet/outlet water temperature	°C	30/35	35/40	40/45	30/35	35/40	40/45
Nominal heating capacity (*)	kW	749,6	737,9	726,4	806,4	793,3	779,6
Recuperator nominal water flow	m³/h	128,9	126,9	124,9	138,7	136,4	134,1
Recuperator nominal pressure drops	kPa	28	27	26	31	30	29
Recuperator water contents	L	2x26	2x26	2x26	2x26	2x26	2x26
DS - Desuperheater							
Inlet/outlet water temperature	°C	30/40	35/45	-	30/40	35/45	-
Nominal heating capacity (*)	kW	149,9	137,9	-	161,3	148,4	-
Recuperator nominal water flow	m³/h	12,9	11,9	-	13,9	12,8	-
Recuperator nominal pressure drops	kPa	23	19	-	25	21	-
Recuperator water contents	L	2x2,9	2x2,9	-	2x2,9	2x2,9	-
MODEL TCHVBZ-TCHVIZ							
		2711			2781		
STANDARD-SOUNDPROOFED VERSION							
Technical data							
RC100 - 100% recuperator							
Inlet/outlet water temperature	°C	30/35	35/40	40/45	30/35	35/40	40/45
Nominal heating capacity (*)	kW	852,4	838,4	824,4	927,2	911,0	893,0
Recuperator nominal water flow	m³/h	146,6	144,2	141,8	159,5	156,7	153,6
Recuperator nominal pressure drops	kPa	35	34	33	37	36	34
Recuperator water contents	L	2x26	2x26	2x26	26/34	26/34	26/34
DS - Desuperheater							
Inlet/outlet water temperature	°C	30/40	35/45	-	30/40	35/45	-
Nominal heating capacity (*)	kW	170,5	156,9	-	185,4	170,6	-
Recuperator nominal water flow	m³/h	14,7	13,5	-	15,9	14,7	-
Recuperator nominal pressure drops	kPa	29	24	-	33	28	-
Recuperator water contents	L	2x2,9	2x2,9	-	2,9/3,7	2,9/3,7	-
MODEL TCHVBZ-TCHVIZ							
		2841			2901		
STANDARD-SOUNDPROOFED VERSION							
Technical data							
RC100 - 100% recuperator							
Inlet/outlet water temperature	°C	30/35	35/40	40/45	30/35	35/40	40/45
Nominal heating capacity (*)	kW	1000,1	981,6	959,7	1074,0	1052,3	1027,4
Recuperator nominal water flow	m³/h	172,0	168,8	165,1	184,7	181,0	176,7
Recuperator nominal pressure drops	kPa	29	28	27	32	31	29
Recuperator water contents	L	2x34	2x34	2x34	34/37	34/37	34/37
DS - Desuperheater							
Inlet/outlet water temperature	°C	30/40	35/45	-	30/40	35/45	-
Nominal heating capacity (*)	kW	200	184	-	214,8	197,6	-
Recuperator nominal water flow	m³/h	17,2	15,8	-	18,5	17,0	-
Recuperator nominal pressure drops	kPa	27	22	-	23	19	-
Recuperator water contents	L	2x3,7	2x3,7	-	3,7/4,1	3,7/4,1	-

Functioning limits:**RC100:**

- temperature of hot water produced 25÷45°C with permitted water temperature differential 4÷6°C;
- the minimum permitted inlet water temperature is 20°C.

DS:

- temperature of hot water produced 35÷45°C with permitted water temperature differential 5÷10°C;
- the minimum permitted inlet water temperature is 25°C.

- **NOTA:** It is possible to increase the desuperheater water temperature by increasing the condenser inlet/outlet water temperature, with a reduction of the unit's efficiency.

Performance refer to the unit with chilled water temperature 7°C, with evaporator temperature differential 5°C.

Performance of DS is referred to inlet/outlet condenser water temperature 30°C / 35°C.

(*) Heating capacity with recuperator and desuperheater fouling factor of $0,35 \times 10^{-4}$ m² K/W.

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. 309.

This law is only valid in Italy. For installation in other countries, please abide by the local laws in force.

MODEL TCHVBZ-TCHVIZ		2961			21031		
STANDARD-SOUNDPROOFED VERSION							
Technical data							
RC100 - 100% recuperator							
Inlet/outlet water temperature	°C	30/35	35/40	40/45	30/35	35/40	40/45
Nominal heating capacity (*)	kW	1142,1	1120,1	1094,0	1225,9	1203,8	1179,3
Recuperator nominal water flow	m³/h	196,4	192,7	188,2	210,9	207,1	202,8
Recuperator nominal pressure drops	kPa	31	30	29	33	32	31
Recuperator water contents	L	2x37	2x37	2x37	37/45	37/45	37/45
DS - Desuperheater							
Inlet/outlet water temperature	°C	30/40	35/45	-	30/40	35/45	-
Nominal heating capacity (*)	kW	228,4	210,1	-	245,2	225,6	-
Recuperator nominal water flow	m³/h	19,6	18,1	-	21,1	19,4	-
Recuperator nominal pressure drops	kPa	26	22	-	25	22	-
Recuperator water contents	L	2x4,1	2x4,1	-	4,1/5,0	4,1/5,0	-

MODEL TCHVBZ-TCHVIZ		21111			21181		
STANDARD-SOUNDPROOFED VERSION							
Technical data							
RC100 - 100% recuperator							
Inlet/outlet water temperature	°C	30/35	35/40	40/45	30/35	35/40	40/45
Nominal heating capacity (*)	kW	1317,6	1294,5	1271,6	1401,7	1377,0	1353,5
Recuperator nominal water flow	m³/h	226,6	222,7	218,7	241,1	236,8	232,8
Recuperator nominal pressure drops	kPa	28	27	26	32	31	30
Recuperator water contents	L	2x45	2x45	2x45	2x45	2x45	2x45
DS - Desuperheater							
Inlet/outlet water temperature	°C	30/40	35/45	-	30/40	35/45	-
Nominal heating capacity (*)	kW	263,5	242,4	-	280,3	257,9	-
Recuperator nominal water flow	m³/h	22,7	20,8	-	24,1	22,2	-
Recuperator nominal pressure drops	kPa	26	22	-	29	25	-
Recuperator water contents	L	2x5,0	2/5,0	-	2/5,0	2/5,0	-

MODEL TCHVBZ-TCHVIZ		21261		
STANDARD-SOUNDPROOFED VERSION				
Technical data				
RC100 - 100% recuperator				
Inlet/outlet water temperature	°C	30/35	35/40	40/45
Nominal heating capacity (*)	kW	1492,7	1467,6	1442,2
Recuperator nominal water flow	m³/h	256,8	252,4	248,1
Recuperator nominal pressure drops	kPa	35	34	33
Recuperator water contents	L	2x45	2x45	2x45
DS - Desuperheater				
Inlet/outlet water temperature	°C	30/40	35/45	-
Nominal heating capacity (*)	kW	298,5	274,6	-
Recuperator nominal water flow	m³/h	25,7	23,6	-
Recuperator nominal pressure drops	kPa	34	29	-
Recuperator water contents	L	2x5,0	2x5,0	-

Functioning limits:**RC100:**

- temperature of hot water produced 25÷45°C with permitted water temperature differential 4÷6°C;
- the minimum permitted inlet water temperature is 20°C.

DS:

- temperature of hot water produced 35÷45°C with permitted water temperature differential 5÷10°C;
- the minimum permitted inlet water temperature is 25°C.

- **NOTA:** It is possible to increase the desuperheater water temperature by increasing the condenser inlet/outlet water temperature, with a reduction of the unit's efficiency.

Performance refer to the unit with chilled water temperature 7°C, with evaporator temperature differential 5°C.

Performance of DS is referred to inlet/outlet condenser water temperature 30°C / 35°C.

(*) Heating capacity with recuperator and desuperheater fouling factor of $0,35 \times 10^{-4}$ m² K/W.

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. 309.

This law is only valid in Italy. For installation in other countries, please abide by the local laws in force.

MODEL TCHVBZ-TCHVIZ	31301				31351		
STANDARD-SOUNDPROOFED VERSION							
Technical data							
RC100 - 100% recuperator							
Inlet/outlet water temperature	°C	30/35	35/40	40/45	30/35	35/40	40/45
Nominal heating capacity (*)	kW	1552,1	1521,5	1487,8	1611,5	1580,6	1547,1
Recuperator nominal water flow	m³/h	267,0	261,7	255,9	277,2	271,9	266,1
Recuperator nominal pressure drops	kPa	29	28	27	31	30	29
Recuperator water contents	L	3x37	3x37	3x37	3x37	3x37	3x37
DS - Desuperheater							
Inlet/outlet water temperature	°C	30/40	35/45	-	30/40	35/45	-
Nominal heating capacity (*)	kW	310,4	285,6	-	322,3	296,5	-
Recuperator nominal water flow	m³/h	26,7	24,6	-	27,7	25,5	-
Recuperator nominal pressure drops	kPa	21	18	-	22	19	-
Recuperator water contents	L	3x4,1	3x4,1	-	3x4,1	3x4,1	-

MODEL TCHVBZ-TCHVIZ	31401				31461		
STANDARD-SOUNDPROOFED VERSION							
Technical data							
RC100 - 100% recuperator							
Inlet/outlet water temperature	°C	30/35	35/40	40/45	30/35	35/40	40/45
Nominal heating capacity (*)	kW	1672,8	1643,2	1608,1	1741,2	1706,8	1669,5
Recuperator nominal water flow	m³/h	287,7	282,6	276,6	299,5	293,6	287,2
Recuperator nominal pressure drops	kPa	32	31	30	31	30	29
Recuperator water contents	L	3x37	3x37	3x37	3x37	3x37	3x37
DS - Desuperheater							
Inlet/outlet water temperature	°C	30/40	35/45	-	30/40	35/45	-
Nominal heating capacity (*)	kW	334,6	307,8	-	348,2	320,3	-
Recuperator nominal water flow	m³/h	28,8	26,5	-	29,9	27,5	-
Recuperator nominal pressure drops	kPa	24	20	-	27	23	-
Recuperator water contents	L	3x4,1	3x4,1	-	3x4,1	3x4,1	-

Functioning limits:**RC100:**

- temperature of hot water produced 25÷45°C with permitted water temperature differential 4÷6°C;
- the minimum permitted inlet water temperature is 20°C.

DS:

- temperature of hot water produced 35÷45°C with permitted water temperature differential 5÷10°C;
- the minimum permitted inlet water temperature is 25°C.

- **NOTA:** It is possible to increase the desuperheater water temperature by increasing the condenser inlet/outlet water temperature, with a reduction of the unit's efficiency.

Performance refer to the unit with chilled water temperature 7°C, with evaporator temperature differential 5°C.

Performance of DS is referred to inlet/outlet condenser water temperature 30°C / 35°C.

(*) Heating capacity with recuperator and desuperheater fouling factor of $0,35 \times 10^{-4}$ m² K/W.

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. 309.

This law is only valid in Italy. For installation in other countries, please abide by the local laws in force.

MODEL TCHVBZ-TCHVIZ	31521				31591		
STANDARD-SOUNDPROOFED VERSION							
Technical data							
RC100 - 100% recuperator							
Inlet/outlet water temperature	°C	30/35	35/40	40/45	30/35	35/40	40/45
Nominal heating capacity (*)	kW	1813,4	1728,7	1747,3	1882,9	1854,1	1822,7
Recuperator nominal water flow	m³/h	311,9	306,6	300,5	323,9	318,9	313,5
Recuperator nominal pressure drops	kPa	32	31	30	33	32	31
Recuperator water contents	L	3x37	3x37	3x37	3x37	3x37	3x37
DS - Desuperheater							
Inlet/outlet water temperature	°C	30/40	35/45	-	30/40	35/45	-
Nominal heating capacity (*)	kW	362,7	333,7	-	376,6	346,5	-
Recuperator nominal water flow	m³/h	31,2	28,7	-	32,4	29,8	-
Recuperator nominal pressure drops	kPa	28	24	-	31	27	-
Recuperator water contents	L	3x4,1	3x4,1	-	3x4,1	3x4,1	-

MODEL TCHVBZ-TCHVIZ	31631			
STANDARD-SOUNDPROOFED VERSION				
Technical data				
RC100 - 100% recuperator				
Inlet/outlet water temperature	°C	30/35	35/40	40/45
Nominal heating capacity (*)	kW	1945,5	1917,9	1890,9
Recuperator nominal water flow	m³/h	334,6	329,9	325,2
Recuperator nominal pressure drops	kPa	25	25	24
Recuperator water contents	L	3x37	3x37	3x37
DS - Desuperheater				
Inlet/outlet water temperature	°C	30/40	35/45	-
Nominal heating capacity (*)	kW	389,1	358	-
Recuperator nominal water flow	m³/h	33,5	30,8	-
Recuperator nominal pressure drops	kPa	33	28	-
Recuperator water contents	L	3x4,1	3x4,1	-

Functioning limits:**RC100:**

- temperature of hot water produced 25÷45°C with permitted water temperature differential 4÷6°C;
- the minimum permitted inlet water temperature is 20°C.

DS:

- temperature of hot water produced 35÷45°C with permitted water temperature differential 5÷10°C;
- the minimum permitted inlet water temperature is 25°C.

- **NOTA:** It is possible to increase the desuperheater water temperature by increasing the condenser inlet/outlet water temperature, with a reduction of the unit's efficiency.

Performance refer to the unit with chilled water temperature 7°C, with evaporator temperature differential 5°C.

Performance of DS is referred to inlet/outlet condenser water temperature 30°C / 35°C.

(•) Heating capacity with recuperator and desuperheater fouling factor of $0,35 \times 10^{-4}$ m² K/W.

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. 309.

This law is only valid in Italy. For installation in other countries, please abide by the local laws in force.

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 "E") and for the energy weights that are assigned to the four load conditions considered for the calculation: 100%, 75%, 50% and 25% and for T_w 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 "E".

Table "E": load and temperatures conditions

Load	Outdoor air temperature	
	IPLV	ESEER
100%	29,4°C	30°C
75%	23,9°C	26°C
50%	18,3°C	22°C
25%	18,3°C	18°C

- o Table "F" shows the E.E.R. and ESEER values for each model. The high values of energy efficiency at partial loads were achieved thanks to optimisation of the heat exchangers.

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

Table "G"

Steps (*)		Models		
		1201÷1611	2411÷21261	31301÷31631
1	P kW	60	30	18
	QF kW	59	31	18
2	P kW	79	40	25
	QF kW	80	41	26
3	P kW	100	50	33
	QF kW	100	50	34
4	P kW	-	79	52
	QF kW	-	81	52
5	P kW	-	90	58
	QF kW	-	91	60
6	P kW	-	100	67
	QF kW	-	100	67
7	P kW	-	-	85
	QF kW	-	-	85
8	P kW	-	-	91
	QF kW	-	-	92
9	P kW	-	-	100
	QF kW	-	-	100

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

Table "F": EER - ESEER for TCHVBZ - TCHVIZ

Models	EER	ESEER
1201	5,06	6,00
1231	5,05	5,83
1281	5,07	5,84
1311	5,05	5,80
1351	5,05	6,00
1421	5,05	6,01
1481	5,05	5,87
1531	5,05	5,83
1611	5,06	6,03
2411	5,06	5,93
2431	5,06	5,85
2461	5,05	5,82
2511	5,05	5,85
2561	5,06	5,99
2601	5,07	6,01
2631	5,06	5,98
2681	5,08	5,90
2711	5,05	5,88
2781	5,06	5,86
2841	5,05	5,89
2901	5,05	6,03
2961	5,05	5,99
21031	5,07	5,98
21111	5,16	6,02
21181	5,19	5,98
21261	5,20	5,97
31301	5,20	6,06
31351	5,15	6,01
31401	5,11	6,05
31461	5,10	6,00
31521	5,11	6,02
31591	5,12	6,01
31631	5,11	6,02

Loss of evaporator load

Calculation of Pressure Drops

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

$$G = (Q \times 0,86) : \Delta T$$

• Where:

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

Q (kW) = heat exchanged, which may be QF (for the evaporator) or QT (for the condenser), depending on the exchanger considered;

ΔT (°C) = temperature differential;

o The pressure drops can be found in the graphs “table M”, “table N” or calculated with the following formulae:

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

• where:

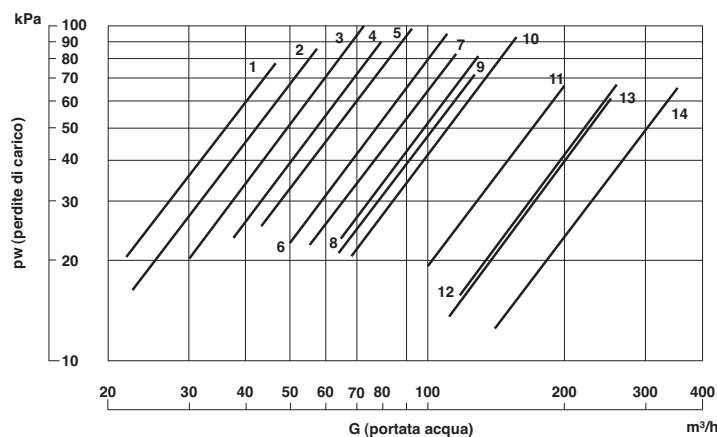
Δp_w (kPa) = pressure drop at the exchanger in consideration;

Δp_{w_{nom}} (kPa) = nominal pressure drop at the exchanger in consideration (“technical features” table);

G (kW) = water flow at the exchanger in consideration;

G_{nom} (kW) = water flow at the exchanger in consideration (“technical features” table).

Table “M”: evaporator pressure drops TCHVBZ-TCHVIZ 1201÷31631 H.E.

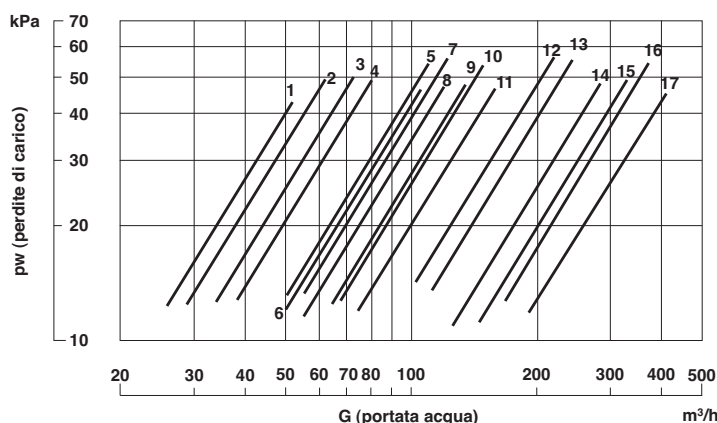


- 1 = model 1201
- 2 = model 1231
- 3 = model 1281-1311
- 4 = model 1351
- 5 = model 1421-2411
- 6 = model 1481-2431-2461
- 7 = model 1531
- 8 = model 2601-2631
- 9 = model 1611-2511-2561
- 10 = model 2681-2711-2781-2841
- 11 = model 2901-2961
- 12 = model 21181-21261
- 13 = model 21031-21111
- 14 = model 31301÷31631

N.B.:

For all machines, in any case refer to the operating limits shown on page 32 and the admissible temperature differentials ΔT.

Table “N”: condenser pressure drops TCHVBZ-TCHVIZ 1201÷31631 H.E.

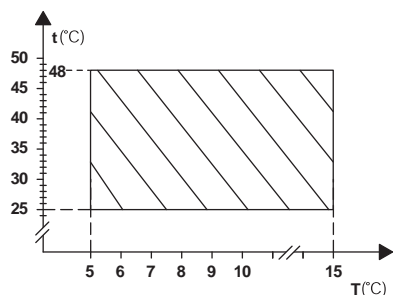


- 1 = model 1201
- 2 = model 1231
- 3 = model 1281
- 4 = model 1311-1351
- 5 = model 1421
- 6 = model 2144-2431
- 7 = model 1481
- 8 = model 2461-2511
- 9 = model 1531-1611
- 10 = model 2561-2601
- 11 = model 2631-2681-2711-2781
- 12 = model 2841-2901
- 13 = model 2961-21031
- 14 = model 21111-21261-21181
- 15 = model 31301-31351-31401
- 16 = model 31461-31521-31591
- 17 = model 31631

N.B.:

For all machines, in any case refer to the operating limits shown on page 32 and the admissible temperature differentials ΔT.

Functioning limits



T (°C) = evaporator outlet temperature

t (°C) = condenser outlet temperature

Standard operation.

o The graph of the operating limits is valid for temperature differentials ΔT at the evaporator and at the condenser equal to 5°C.

o Units can also be provided on request to supply chilled water at less than 5°C.

Temperature differentials permitted through the exchangers:

o Temperature differential at evaporator $\Delta T = 3 \div 8^\circ\text{C}$.

o Temperature differential at condenser $\Delta T = 3 \div 8^\circ\text{C}$.

o Consider the minimum and maximum water flow indicated in the tables. **For water flows out of the ranges shown, please call the RHOSS S.P.A. presale service.**

ATTENTION!

The machines have been conceived and designed **exclusively for indoor installation.**

If outdoor installation is required, it will necessitate modifications which must be evaluated by our technical office.

Use of antifreeze solutions

o 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

o Table "O" shows the multipliers which allow the changes in performance of the units to be determined in proportion to the required percentage of ethylene glycol.

o The multipliers refer to the following conditions: condenser inlet air temperature 30°C; chilled water temperature 7°C; temperature differential at evaporator 5°C.

o For different functioning conditions, the same coefficients can be used as their variations are negligible.

**TCHVBZ-TCHVIZ:
evaporator water flow**

Model		Min.	Max.
1201	m³/h	23	46
1231	m³/h	23	59
1281	m³/h	30	80
1311	m³/h	30	80
1351	m³/h	39	80
1421	m³/h	45	92
1481	m³/h	50	110
1531	m³/h	55	115
1611	m³/h	65	135
2411	m³/h	45	92
2431	m³/h	50	110
2461	m³/h	50	110
2511	m³/h	65	135
2561	m³/h	65	135
2601	m³/h	65	135
2631	m³/h	65	135
2681	m³/h	68	170
2711	m³/h	68	170
2781	m³/h	68	170
2841	m³/h	68	170
2901	m³/h	100	200
2961	m³/h	100	200
21031	m³/h	125	270
21111	m³/h	125	270
21181	m³/h	135	270
21261	m³/h	135	270
31301	m³/h	170	330
31351	m³/h	170	330
31401	m³/h	170	330
31461	m³/h	170	330
31521	m³/h	170	360
31591	m³/h	170	360
31631	m³/h	170	360

**TCHVBZ-TCHVIZ:
condenser water flow**

Model		Min.	Max.
1201	m³/h	25	53
1231	m³/h	28	62
1281	m³/h	34	72
1311	m³/h	38	80
1351	m³/h	38	80
1421	m³/h	50	105
1481	m³/h	57	120
1531	m³/h	65	140
1611	m³/h	65	140
2411	m³/h	50	106
2431	m³/h	53	115
2461	m³/h	56	124
2511	m³/h	62	134
2561	m³/h	68	144
2601	m³/h	72	152
2631	m³/h	76	160
2681	m³/h	76	160
2711	m³/h	76	160
2781	m³/h	88	192
2841	m³/h	100	210
2901	m³/h	107	226
2961	m³/h	114	240
21031	m³/h	122	264
21111	m³/h	130	283
21181	m³/h	130	283
21261	m³/h	130	283
31301	m³/h	150	315
31351	m³/h	157	330
31401	m³/h	164	345
31461	m³/h	171	360
31521	m³/h	179	380
31591	m³/h	187	405
31631	m³/h	195	420

Table "O" TCHVBZ-TCHVIZ

& glycol by weight	10	15	20	25	30
Freezing temperature °C	-5	-7	-10	-13	-16
fc G	1.025	1.039	1.054	1.072	1.093
fc Δp_w	1.085	1.128	1.191	1.255	1.319
fc QF	0.975	0.967	0.963	0.956	0.948
fc P	0.993	0.991	0.99	0.988	0.986

fc QF = Cooling capacity correction factor.

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

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

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

Sound power and pressure

Table "P": 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.

TCHVBZ

Models	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz	Lp	Lw
	dB	dB	dB	dB	dB	dB	dB	dB(A)	dB(A)
1201	58	71	73	74	69	63	55	77	94
1231	59	73	72	74	70	63	53	77	94
1281	51	70	79	77	68	55	44	80	97
1310	54	71	74	79	71	57	45	80	97
1351	57	80	76	78	68	52	40	80	97
1421	74	76	75	78	72	63	51	80	97
1481	70	82	77	76	70	62	52	80	97
1531	71	83	78	78	71	63	53	81	98
1611	71	83	78	78	71	63	53	81	98
2411	60	76	75	77	72	66	55	80	97
2431	61	76	74	77	72	66	55	80	97
2461	61	76	75	77	72	66	56	80	97
2511	61	76	75	79	72	67	56	81	99
2561	52	71	80	78	69	56	45	81	99
2601	52	71	80	78	69	56	45	81	99
2631	56	72	75	80	71	58	46	81	99
2681	58	81	75	79	71	58	46	81	99
2711	58	81	77	79	69	53	41	81	99
2781	58	81	78	79	69	53	43	81	99
2841	74	80	77	78	69	63	51	81	99
2901	71	83	75	78	69	63	51	81	99
2961	71	83	78	77	71	63	53	81	99
21031	71	83	78	77	72	62	55	81	99
21111	71	83	78	77	71	63	53	81	99
21181	71	83	78	77	71	63	53	81	99
21261	71	83	78	77	71	63	53	81	99
31301	72	83	79	78	72	64	55	82	101
31351	72	83	79	78	71	64	55	82	101
31401	72	84	79	78	72	64	54	82	101
31461	72	84	79	79	73	65	56	83	102
31521	73	84	80	79	72	67	58	83	102
31591	73	85	83	77	73	65	58	83	102
31631	74	85	83	77	73	66	58	83	102

Lw Total sound power level in dB(A) on the basis of the measurements made in compliance with the UNI EN-ISO 9614.

Lp Sound pressure in a open field on reflecting plane; value at a distance of 1 meter from the unit side and at a height of 1 meter from the support plane.

Table "Q": 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.

TCHVIZ

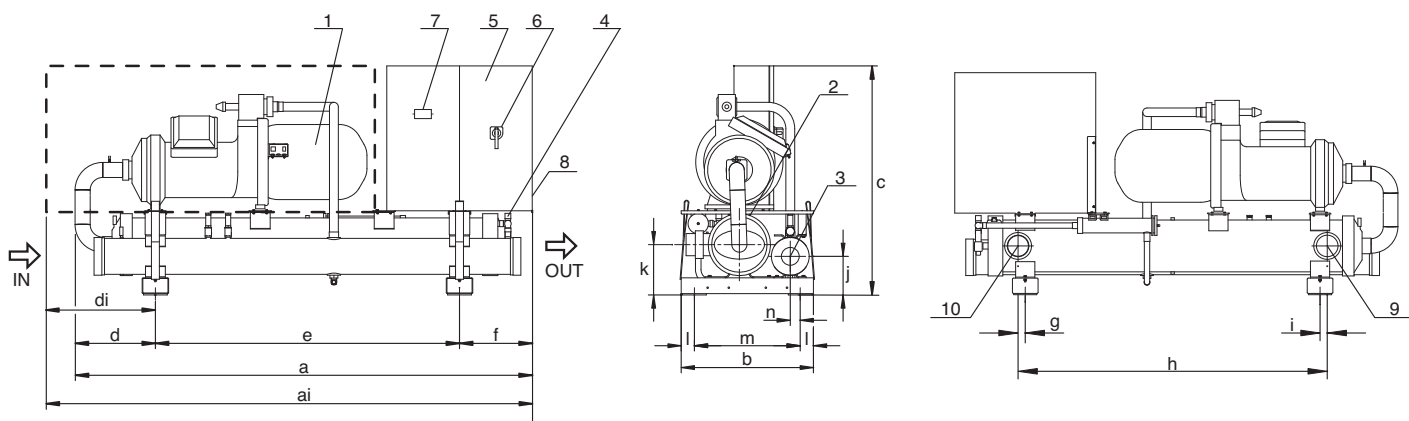
Models	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz	Lp	Lw
	dB	dB	dB	dB	dB	dB	dB	dB(A)	dB(A)
1201	56,5	69,5	71,5	72,5	67,5	61,5	53,5	75	92
1231	57,5	71,5	70,5	72,5	68	61,5	51,5	75	92
1281	49,5	68,5	77,5	75,5	66,5	53,5	42,5	78	95
1310	52,5	69,5	72,5	76,5	69,5	55,5	43,5	78	95
1351	55,5	78,5	73,5	76,5	66,5	50,5	38,5	78	95
1421	72,5	74,5	73,5	75,5	70,5	61,5	49,5	78	95
1481	68,5	80,5	75,5	74,5	67,5	60,5	50,5	78	95
1531	69,5	81,5	75,5	75,5	69,5	61,5	51,5	79	96
1611	69,5	81,5	75,5	75,5	69,5	61,5	51,5	79	96
2411	58,5	74,5	73,5	75,5	70,5	64,5	53,5	78	95
2431	59,5	74,5	72,5	75,5	70,5	64,5	53,5	78	95
2461	59,5	74,5	73,5	75,5	70,5	64,5	54,5	78	95
2511	59,5	74,5	73,5	76,5	70,5	65,5	54,5	79	97
2561	50,5	69,5	78,5	76,5	67,5	54,5	43,5	79	97
2601	50,5	69,5	78,5	76,5	67,5	54,5	43,5	79	97
2631	54,5	70,5	73,5	77,5	69,5	56,5	44,5	79	97
2681	56,5	78,5	73,5	77,5	69,5	56,5	44,5	79	97
2711	56,5	78,5	74,5	77,5	67,5	51,5	39,5	79	97
2781	56,5	78,5	74,5	77,5	67,5	51,5	41,5	79	97
2841	72,5	78,5	75,5	76,5	67,5	61,5	49,5	79	97
2901	69,5	81,5	73,5	76,5	67,5	61,5	49,5	79	97
2961	69,5	81,5	76,5	75	69,5	61,5	51,5	79	97
21031	69,5	81,5	76,5	75,5	69,5	60,5	53,5	79	97
21111	69,5	81,5	76,5	75	69,5	61,5	51,5	79	97
21181	69,5	81,5	76,5	75	69,5	61,5	51,5	79	97
21261	69,5	81,5	76,5	75	69,5	61,5	51,5	79	97
31301	70,5	81,5	77,5	76,5	70,5	62,5	53,5	80	99
31351	70,5	81,5	77,5	76,5	69,5	62,5	53,5	80	99
31401	70,5	82,5	77,5	76,5	70,5	62,5	52,5	80	99
31461	70,5	82,5	77,5	77,5	71,5	63,5	54,5	81	100
31521	71,5	82,5	78,5	77,5	70,5	65,5	56,5	81	100
31591	71,5	83,5	80,5	75	71,5	63,5	56,5	81	100
31631	72,5	83,5	80,5	75	71,5	64,5	56,5	81	100

Lw Total sound power level in dB(A) on the basis of the measurements made in compliance with the UNI EN-ISO 9614.

Lp Sound pressure in a open field on reflecting plane; value at a distance of 1 meter from the unit side and at a height of 1 meter from the support plane.

Dimensions and clearances

TCHVBZ standard version – TCHVIZ soundproofed version 1201+1611 H.E.



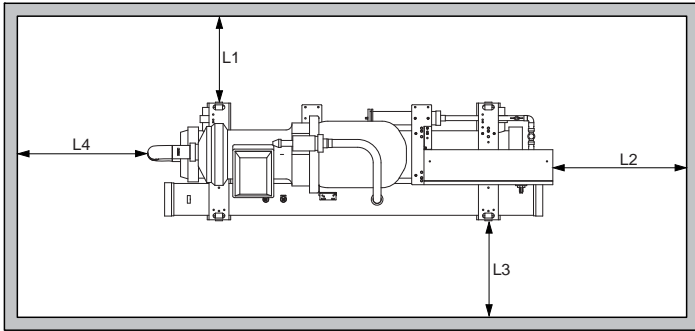
- 1. Compressor;
- 2. Evaporator;
- 3. Condenser;
- 4. Electronic expansion valve;
- 5. Electrical panel;
- 6. Main switch;
- 7. Control panel;
- 8. Electrical connection input;
- 9. Evaporator water inlet. Victaulic connections;
- 10. Evaporator water outlet. Victaulic connections;
- TCHVIZ compressor soundproofing;

Model		1201	1231	1281	1311	1351	1421	1481	1531	1611
Dimensions										
a	mm	3460	3460	3440	3440	3450	3450	3450	3450	3450
ai	mm	3500	3500	3500	3500	3580	3580	3580	3580	3580
b	mm	1000	1000	1000	1000	1000	1000	1000	1000	1000
c (*)	mm	1460	1460	1460	1460	1640	1640	1640	1740	1740
d	mm	644	644	625	625	600	600	600	610	610
di	mm	684	684	684	684	730	730	730	730	730
e	mm	2300	2300	2300	2300	2300	2300	2300	2300	2300
f	mm	516	516	515	515	550	550	550	550	550
g	mm	93	93	93	93	75	75	75	56	56
h	mm	2486	2486	2486	2486	2450	2450	2450	2412	2412
i	mm	93	93	93	93	75	75	75	56	56
j	mm	293	293	293	293	293	293	293	293	293
k	mm	293	293	293	293	330	330	330	382	382
l	mm	100	100	100	100	100	100	100	100	100
m	mm	800	800	800	800	800	800	800	800	800
n	mm	75	75	75	75	75	75	75	75	75
Evaporator water inlet		DN100	DN100	DN100	DN100	DN125	DN125	DN125	DN150	DN150
Evaporator water outlet		DN100	DN100	DN100	DN100	DN125	DN125	DN125	DN150	DN150
Condenser water inlet	GF	5"	5"	5"	5"	5"	5"	5"	5"	5"
Condenser water outlet	GF	5"	5"	5"	5"	5"	5"	5"	5"	5"

(*) If the KSA anti-vibration accessory will be used, the dimension "c" should be expected to increase by about MAX 180 mm.
 If the KSAM anti-vibration accessory will be used, the dimension "c" should be expected to increase by about MAX 160 mm.
 For further information contact RHOSS sales support service.

N.B.
 the input for the electrical connection is located in the lower right part of the electrical panel.

Clearance distances



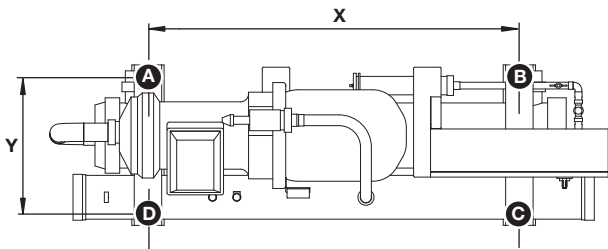
Installation

- The unit should be placed in accordance with the minimum technical service distances advised in figure, to allow access to the water and electrical connections, as well as access for maintenance of the exchangers.
- The unit may be equipped with anti-vibration supports, available on request (KSA-KSAM).

Model		1201	1231	1281	1311	1351	1421	1481	1531	1611
Clearances										
L1	mm	600	600	600	600	600	600	600	600	600
L2	mm	800	800	800	800	800	800	800	800	800
L3	mm	1000	1000	1000	1000	1000	1000	1000	1000	1000
L4 (*)	mm	3500	3500	3500	3500	3500	3500	3500	3500	3500

(*) Maximum distance necessary to allow the extraction of the shell and tube exchanger.

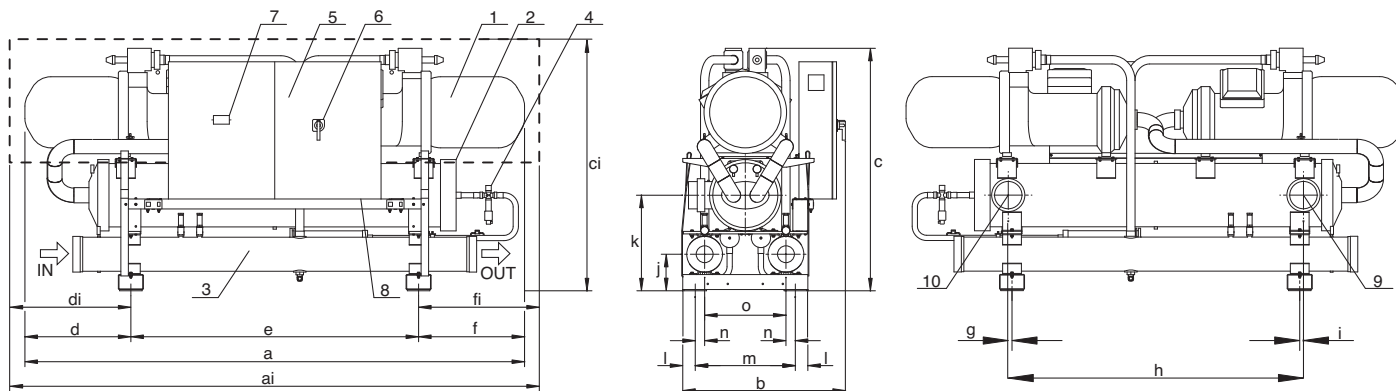
Plan view of the KSA-KSAM anti-vibration supports and weight distribution on fixing points for standard and soundproofed version.



The distribution on the fixing points of the anti-vibration supports (KSA-KSAM) refers to a fully soundproofed machine with accessories.

Model		1201	1231	1281	1311	1351	1421	1481	1531	1611
Empty weight TCHVBZ	kg	1343	1369	1715	1733	1885	2374	2413	2652	2697
Charged weight TCHVBZ	kg	1485	1509	1853	1874	2082	2577	2610	2978	3005
Empty weight TCHVIZ	kg	1598	1624	1970	1988	2140	2629	2668	2917	2952
Charged weight TCHVIZ	kg	1740	1764	2108	2129	2337	2832	2865	3233	3260
Support										
A	kg	438	441	608	613	647	788	797	906	917
B	kg	373	375	443	447	521	636	642	729	735
C	kg	421	430	442	448	519	627	634	710	713
D	kg	508	518	615	621	650	781	792	888	895
X	mm	2300	2300	2300	2300	2300	2300	2300	2300	2300
Y	mm	800	800	800	800	800	800	800	800	800

TCHVBZ standard version – TCHVIZ soundproofed version 2411-2711 H.E.



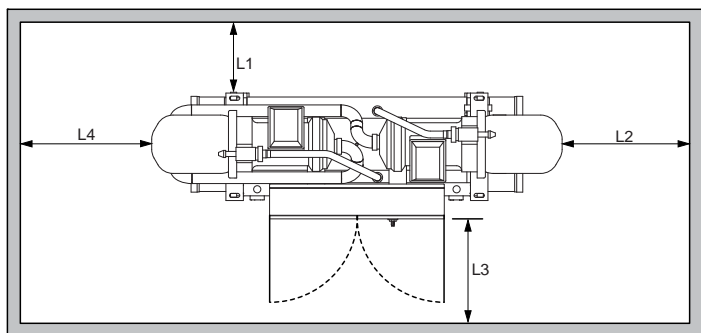
- 1. Compressor;
 - 2. Evaporator;
 - 3. Condenser;
 - 4. Electronic expansion valve;
 - 5. Electrical panel;
 - 6. Main switch;
 - 7. Control panel;
 - 8. Electrical connection input;
 - 9. Evaporator water inlet. Victaulic connections;
 - 10. Evaporator water outlet. Victaulic connections;
- TCHVIZ compressor soundproofing;

Model		2411	2431	2461	2511	2561	2601	2631	2681	2711
Dimensions										
a	mm	3880	3880	4000	4070	4070	4070	4070	4070	4070
ai	mm	4350	4350	4350	4350	4350	4350	4350	4350	4350
b	mm	1300	1300	1300	1300	1300	1300	1300	1300	1300
c (*)	mm	1840	1840	1840	1960	1960	1960	1960	1960	1960
d	mm	1880	1880	1880	1990	1990	1990	1990	1990	1990
di	mm	877	877	997	977	977	977	977	977	977
e	mm	1028	1028	1028	1028	1028	1028	1028	1028	1028
f	mm	2300	2300	2300	2300	2300	2300	2300	2300	2300
g	mm	703	703	703	793	793	793	793	793	793
h	mm	1022	1022	1022	1022	1022	1022	1022	1022	1022
i	mm	75	75	75	56	56	56	56	56	56
j	mm	293	293	293	293	293	293	293	293	293
k	mm	576	576	576	728	728	728	728	728	728
l	mm	100	100	100	100	100	100	100	100	100
m	mm	800	800	800	800	800	800	800	800	800
n	mm	75	75	75	75	75	75	75	75	75
o	mm	650	650	650	650	650	650	650	650	650
Evaporator water inlet		DN125	DN125	DN125	DN150	DN150	DN150	DN150	DN150	DN150
Evaporator water outlet		DN125	DN125	DN125	DN150	DN150	DN150	DN150	DN150	DN150
Condenser water inlet	GF	5"	5"	5"	5"	5"	5"	5"	5"	5"
Condenser water outlet	GF	5"	5"	5"	5"	5"	5"	5"	5"	5"

(*) If the KSA anti-vibration accessory will be used, the dimension "c" should be expected to increase by about MAX 180 mm.
 If the KSAM anti-vibration accessory will be used, the dimension "c" should be expected to increase by about MAX 160 mm
 For further information contact RHOSS sales support service.

N.B.
 the input for the electrical connection is located in the lower right part of the electrical panel.

Clearance distances



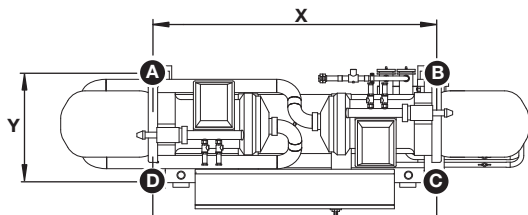
Installation

- The unit should be placed in accordance with the minimum technical service distances advised in figure, to allow access to the water and electrical connections, as well as access for maintenance of the exchangers.
- The unit may be equipped with anti-vibration supports, available on request (KSA-KSAM).

Model		2411	2431	2461	2511	2561	2601	2631	2681	2711
Clearances										
L1	mm	600	600	600	600	600	600	600	600	600
L2	mm	800	800	800	800	800	800	800	800	800
L3	mm	1300	1300	1300	1300	1300	1300	1300	1300	1300
L4 (*)	mm	3500	3500	3500	3500	3500	3500	3500	3500	3500

(*) Maximum distance necessary to allow the extraction of the shell and tube exchanger.

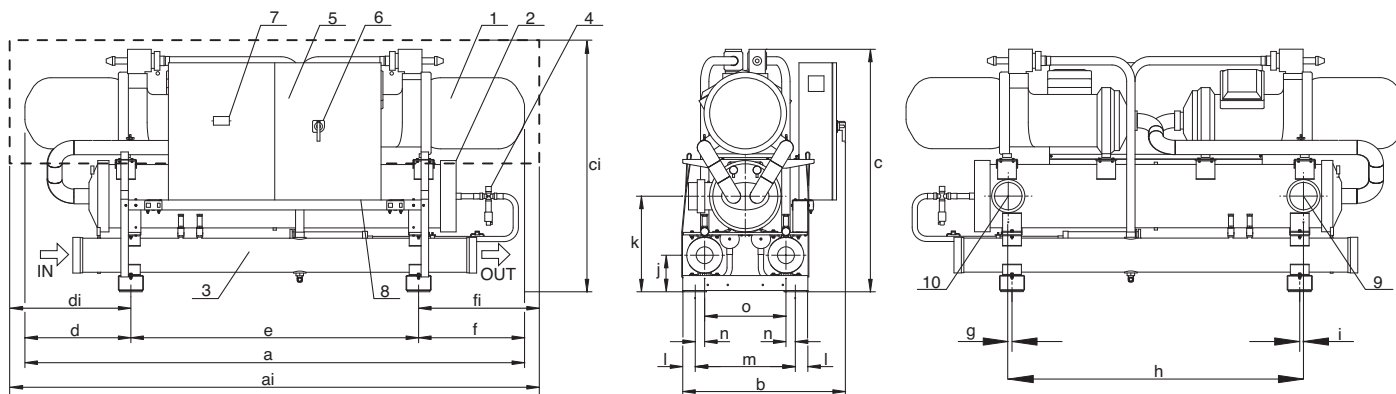
Plan view of the KSA-KSAM anti-vibration supports and weight distribution on fixing points for standard and soundproofed version.



The distribution on the fixing points of the anti-vibration supports (KSA-KSAM) refers to a fully soundproofed machine with accessories.

Model		2411	2431	2461	2511	2561	2601	2631	2681	2711
Empty weight TCHVBZ	kg	2386	2413	2458	2953	3287	3320	4010	3404	3447
Charged weight TCHVBZ	kg	2589	2613	2660	3263	3609	3627	3646	3700	3742
Empty weight TCHVIZ	kg	2816	2843	2888	3383	3727	3750	3267	3834	3877
Charged weight TCHVIZ	kg	3019	3043	3090	3693	4039	4057	4076	4130	4172
Support										
A	kg	632	638	652	830	897	898	903	926	947
B	kg	650	659	667	926	906	913	915	926	921
C	kg	844	851	860	1092	1092	1099	1104	1108	1107
D	kg	893	895	911	845	1144	1147	1154	1170	1197
X	mm	2300	2300	2300	2300	2300	2300	2300	2300	2300
Y	mm	800	800	800	800	800	800	800	800	800

TCHVBZ standard version – TCHVIZ soundproofed version 2781+21261 H.E.



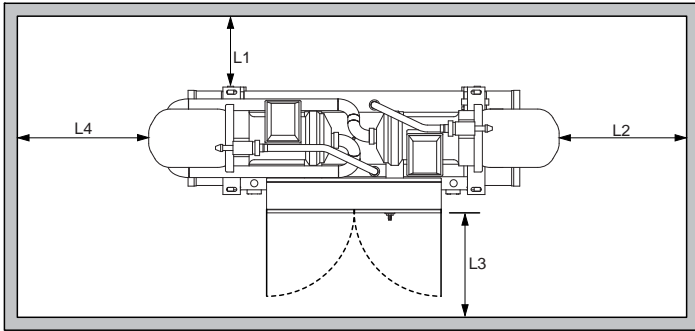
1. Compressor;
 2. Evaporator;
 3. Condenser;
 4. Electronic expansion valve;
 5. Electrical panel;
 6. Main switch;
 7. Control panel;
 8. Electrical connection input;
 9. Evaporator water inlet. Victaulic connections;
 10. Evaporator water outlet. Victaulic connections;
- TCHVIZ compressor soundproofing;

Model		2781	2841	2901	2961	21031	21111	21181	21261
Dimensions									
a	mm	4120	4000	4000	4000	4000	4000	4000	4000
ai	mm	4350	4350	4350	4350	4350	4350	4350	4350
b	mm	1300	1300	1300	1300	1300	1300	1300	1300
c (*)	mm	1840	1840	1910	1910	1950	1950	1950	1950
d	mm	1990	1990	2090	2060	2060	2060	2060	2060
di	mm	973	853	853	853	853	853	853	853
e	mm	1028	1028	1028	1028	1028	1028	1028	1028
f	mm	2300	2300	2300	2300	2300	2300	2300	2300
g	mm	847	847	847	847	847	847	847	847
h	mm	1022	1022	1022	1022	1022	1022	1022	1022
i	mm	56	56	30	30	30	30	30	30
j	mm	293	293	293	293	293	293	293	293
k	mm	728	728	766	766	766	766	766	766
l	mm	100	100	100	100	100	100	100	100
m	mm	800	800	800	800	800	800	800	800
n	mm	75	75	75	75	75	75	75	75
o	mm	650	650	650	650	650	650	650	650
Evaporator water inlet		DN150	DN150	DN200	DN200	DN200	DN200	DN200	DN200
Evaporator water outlet		DN150	DN150	DN200	DN200	DN200	DN200	DN200	DN200
Condenser water inlet	GF	5"	5"	5"	5"	5"	5"	5"	5"
Condenser water outlet	GF	5"	5"	5"	5"	5"	5"	5"	5"

(*) If the KSA anti-vibration accessory will be used, the dimension "c" should be expected to increase by about MAX 180 mm.
 If the KSAM anti-vibration accessory will be used, the dimension "c" should be expected to increase by about MAX 160 mm.
 For further information contact RHOSS sales support service.

N.B.
 the input for the electrical connection is located in the lower right part of the electrical panel.

Clearance distances



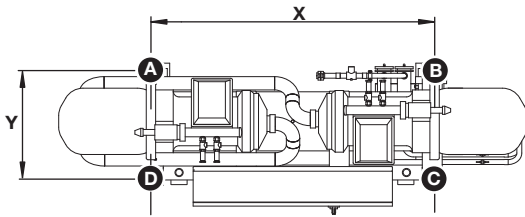
Installation

- The unit should be placed in accordance with the minimum technical service distances advised in figure, to allow access to the water and electrical connections, as well as access for maintenance of the exchangers.
- The unit may be equipped with anti-vibrations supports, available on request (KSA-KSAM).

Model		2781	2841	2901	2961	21031	21111	21181	21261
Clearances									
L1	mm	600	600	600	600	600	600	600	600
L2	mm	800	800	800	800	800	800	800	800
L3	mm	1300	1300	1300	1300	1300	1300	1300	1300
L4 (*)	mm	3500	3500	3500	3500	3500	3500	3500	3500

(*) Maximum distance necessary to allow the extraction of the shell and tube exchanger.

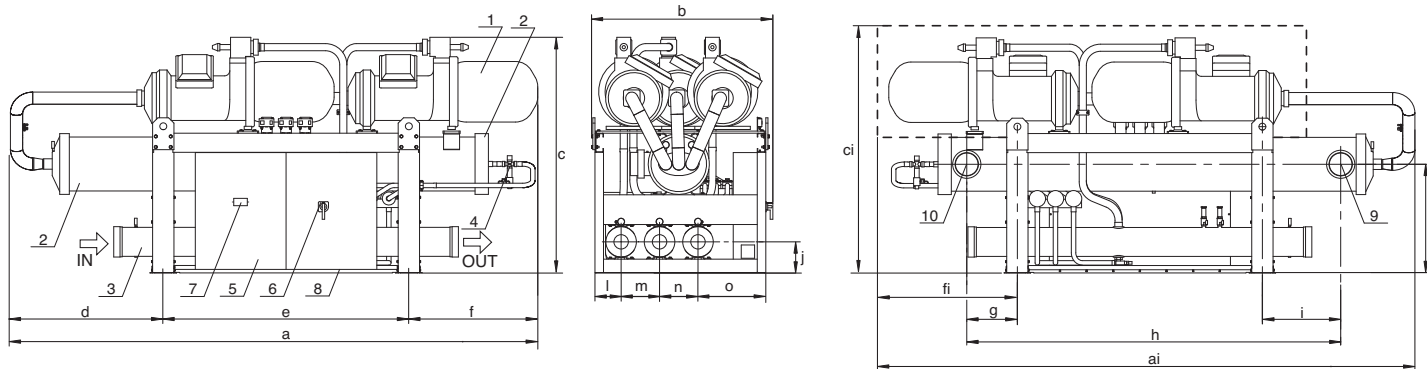
Plan view of the KSA-KSAM anti-vibration supports and weight distribution on fixing points for standard and soundproofed version.



The distribution on the fixing points of the anti-vibration supports (KSA-KSAM) refers to a fully soundproofed machine with accessories.

Model		2781	2841	2901	2961	21031	21111	21181	21261
Empty weight TCHVBZ	kg	3880	4366	4596	4629	4739	4830	4878	4914
Charged weight TCHVBZ	kg	4183	4676	5086	5122	5223	5321	5360	5396
Empty weight TCHVIZ	kg	4310	4796	5026	5059	5169	5260	5308	5344
Charged weight TCHVIZ	kg	4613	5106	5516	5552	5653	5751	5790	5826
Support									
A	kg	901	1177	1273	1286	1301	1336	1337	1349
B	kg	1198	1186	1292	1295	1340	1345	1359	1358
C	kg	1393	1366	1475	1480	1517	1529	1543	1544
D	kg	1155	1417	1516	1531	1535	1581	1581	1595
X	mm	2300	2300	2300	2300	2300	2300	2300	2300
Y	mm	800	800	800	800	800	800	800	800

TCHVBZ standard version – TCHVIZ soundproofed version 31301÷31631 H.E.



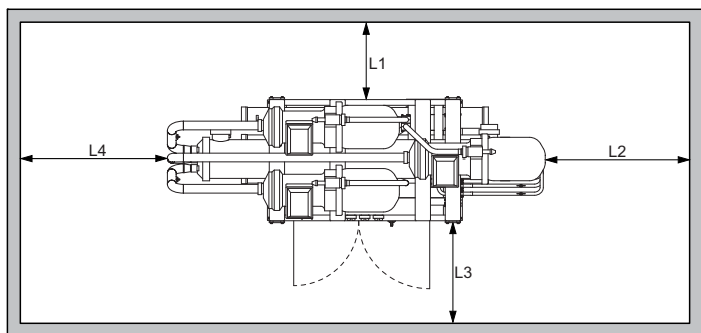
1. Compressor;
 2. Evaporator;
 3. Condenser;
 4. Electronic expansion valve;
 5. Electrical panel;
 6. Main switch;
 7. Control panel;
 8. Electrical connection input;
 9. Evaporator water inlet. Victaulic connections;
 10. Evaporator water outlet. Victaulic connections;
- - - TCHVIZ compressor soundproofing;

Model		31301	31351	31401	31461	31521	31591	31631
Dimensions								
a	mm	4940	4940	4940	4940	4940	4940	4940
ai	mm	5020	5020	5020	5020	5020	5020	5020
b	mm	1700	1700	1700	1700	1700	1700	1700
c (*)	mm	2220	2220	2220	2220	2220	2220	2220
ci (*)		2340	2340	2340	2340	2340	2340	2340
d	mm	1433	1433	1433	1433	1433	1433	1433
e	mm	2300	2300	2300	2300	2300	2300	2300
f	mm	1207	1207	1207	1207	1207	1207	1207
fi		1290	1290	1290	1290	1290	1290	1290
g	mm	475	475	475	475	475	475	475
h	mm	3510	3510	3510	3510	3510	3510	3510
l	mm	735	735	735	735	735	735	735
j	mm	294	294	294	294	294	294	294
k	mm	1022	1022	1022	1022	1022	1022	1022
l	mm	245	245	245	245	245	245	245
m	mm	360	360	360	360	360	360	360
n	mm	360	360	360	360	360	360	360
o	mm	635	635	635	635	635	635	635
Evaporator water inlet		DN200	DN200	DN200	DN200	DN200	DN200	DN200
Evaporator water outlet		DN200	DN200	DN200	DN200	DN200	DN200	DN200
Condenser water inlet	GF	5"	5"	5"	5"	5"	5"	5"
Condenser water outlet	GF	5"	5"	5"	5"	5"	5"	5"

(*) If the KSA anti-vibration accessory will be used, the dimension "c" should be expected to increase by about MAX 180 mm.
 If the KSAM anti-vibration accessory will be used, the dimension "c" should be expected to increase by about MAX 160 mm.
 For further information contact RHOSS sales support service.

N.B.
 the input for the electrical connection is located in the lower right part of the electrical panel.

Clearance distances



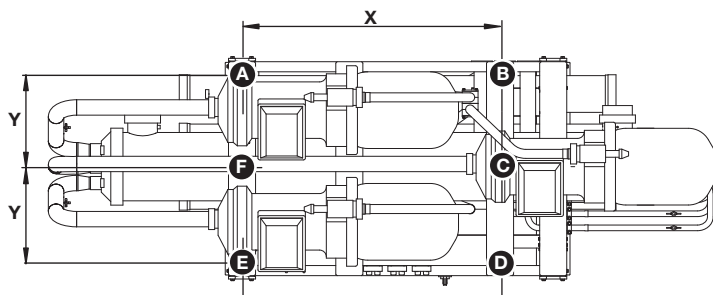
Installation

- The unit should be placed in accordance with the minimum technical service distances advised in figure, to allow access to the water and electrical connections, as well as access for maintenance of the exchangers.
- The unit may be equipped with anti-vibration supports, available on request (KSA-KSAM).

Model		31301	31351	31401	31461	31521	31591	31631
Clearances								
L1	mm	600	600	600	600	600	600	600
L2	mm	800	800	800	800	800	800	800
L3	mm	1300	1300	1300	1300	1300	1300	1300
L4 (*)	mm	4200	4200	4200	4200	4200	4200	4200

(*) Maximum distance necessary to allow the extraction of the shell and tube exchanger.

Plan view of the KSA-KSAM anti-vibration supports and weight distribution on fixing points for standard and soundproofed version.



The distribution on the fixing points of the anti-vibration supports (KSA-KSAM) refers to a fully soundproofed machine with accessories.

Model		31301	31351	31401	31461	31521	31591	31631
Empty weight TCHVBZ	kg	6735	6767	6792	6831	6920	7008	7097
Charged weight TCHVBZ	kg	7448	7480	7505	7544	7633	7721	7825
Empty weight TCHVIZ	kg	7335	7367	7392	7431	7520	7608	7697
Charged weight TCHVIZ	kg	8048	8080	8105	8144	8233	8321	8425
Support								
A	kg	1247	1256	1256	1268	1272	1278	1297
B	kg	1516	1520	1527	1537	1540	1566	1586
C	kg	1513	1516	1524	1530	1543	1568	1596
D	kg	1456	1460	1469	1470	1494	1517	1530
E	kg	1150	1157	1158	1160	1189	1190	1210
F	kg	1226	1231	1231	1239	1255	1262	1266
X	mm	2300	2300	2300	2300	2300	2300	2300
Y	mm	650	650	650	650	650	650	650

Electrical connections

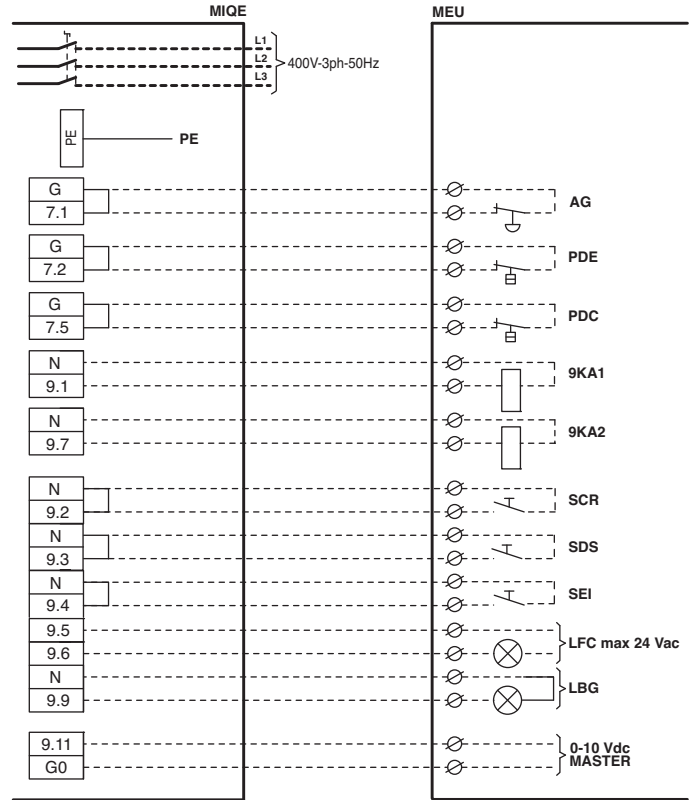
TCHVBZ-TCHVIZ 1201÷1611 H.E.

- MIQE** Internal electrical panel terminal board
- MEU** External user terminal board
- AG** General alarm
- KA1** Evaporator pump contactor control (Live contact)
- KA2** Condenser pump contactor control (only TCHVBZ-TCHVIZ) (Live contact)
- LBG** Machine general lock light (consensus in voltage 230 Vac).
- LFC** Compressor operation indicator light (Clean contact)
- L** Line
- PDC** Condenser differential pressure switch
- PDE** Evaporator differential pressure switch
- PE** Earth connection
- SCR** Remote control selector (Control with clean contact)
- SDS** Dual set point selector (Control with clean contact)
- SEI** Summer/winter selector (Clean contact)
- Connection by installer

- o The access to the electrical board (IP20) is possible through the front panel of the unit.
- o The connections must be carried out in accordance with current standards and with the electrical wiring diagram included.
- o Earthing is compulsory by law.
- o Always install the unit in a protected area, and near the machine place an automatic main switch, or fuses, of suitable capacity and interruption power.

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.



Model		1201	1231	1281	1311	1351	1421	1481	1531	1611
Electrical data										
Line sections	mm ²	35	50	70	70	95	120	150	150	185
PE section	mm ²	35	25	35	35	50	70	70	70	95
Remote control section	mm ²	1,5	1,5	1,5	1,5	1,5	1,5	1,5	1,5	1,5
Maximum absorbed current	A	96	109	129	147	168	196	222	246	284
Starting current	A	290	350	439	520	612	318	436	465	586

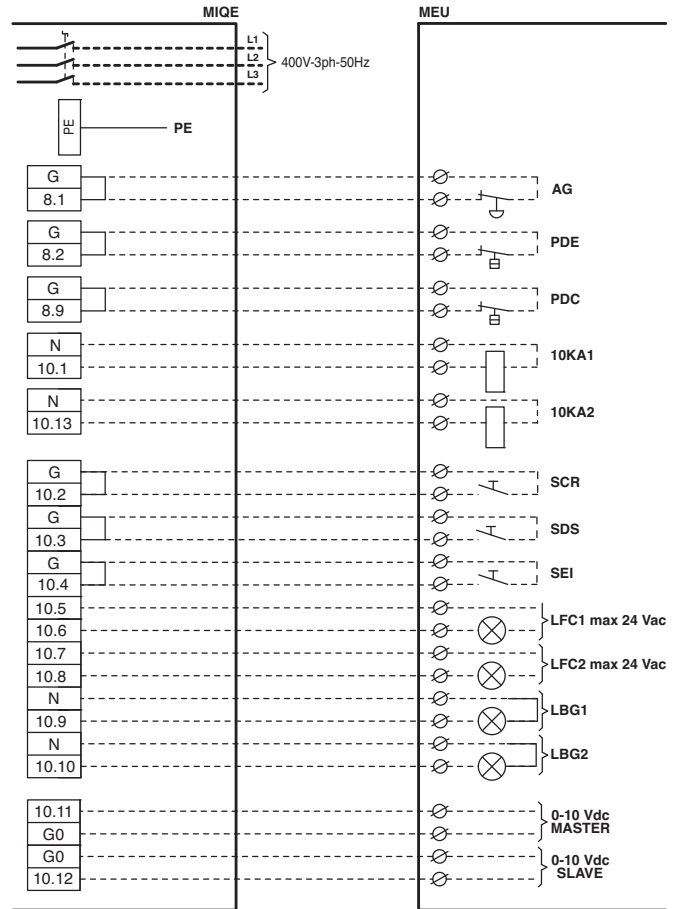
TCHVBZ-TCHVIZ 2411÷21261 H.E.

- MIQE** Internal electrical panel terminal board
- MEU** External user terminal board
- AG** General alarm
- KA1** Evaporator pump contactor control (Live contact)
- KA2** Condenser pump contactor control (only TCHVBZ-TCHVIZ) (Live contact)
- LBG1-2** General shutdown indicator light 1-2 (230 VAC supply consent)
- LFC1-2** Compressor 1-2 operation indicator light (Clean contact)
- L** Line
- PDC** Condenser differential pressure switch
- PDE** Evaporator differential pressure switch
- PE** Earth connection
- SCR** Remote control selector (Control with clean contact)
- SDS** Dual set point selector (Control with clean contact)
- SEI** Summer/winter selector (Clean contact)
- Connection by installer

- o The access to the electrical board (IP20) is possible through the front panel of the unit.
- o The connections must be carried out in accordance with current standards and with the electrical wiring diagram included.
- o Earthing is compulsory by law.
- o Always install the unit in a protected area, and near the machine place an automatic main switch, or fuses, of suitable capacity and interruption power.

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.



Model		2411	2431	2461	2511	2561	2601	2631	2681	2711
Electrical data										
Line sections	mm ²	120	120	120	150	150	185	185	240	240
PE section	mm ²	70	70	70	70	70	95	95	120	120
Remote control section	mm ²	1,5	1,5	1,5	1,5	1,5	1,5	1,5	1,5	1,5
Maximum absorbed current	A	192	205	218	238	258	276	294	315	336
Starting current	A	386	446	459	548	568	649	667	759	780

Model		2781	2841	2901	2691	21031	21111	21181	21261
Electrical data									
Line sections	mm ²	300	300	400	400	400	400	400	400
PE section	mm ²	150	150	185	185	185	185	185	240
Remote control section	mm ²	1,5	1,5	1,5	1,5	1,5	1,5	1,5	1,5
Maximum absorbed current	A	364	392	418	444	468	492	530	568
Starting current	A	486	514	632	658	687	711	832	870

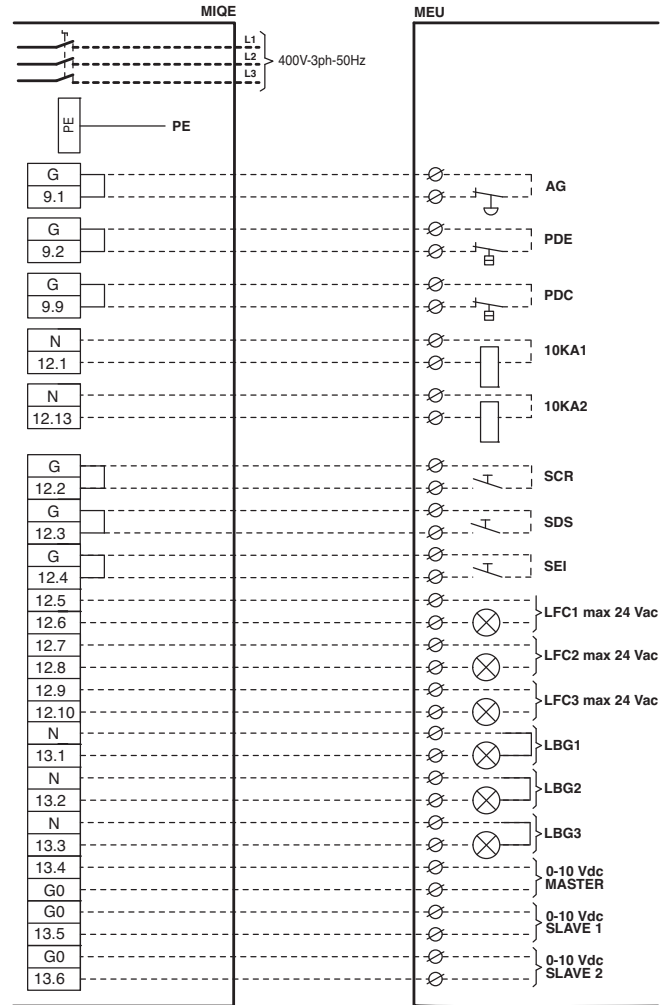
TCHVBZ-TCHVIZ 31301 ÷ 31631 H.E.

- MIQE** Internal electrical panel terminal board
- MEU** External user terminal board
- AG** General alarm
- KA1** Evaporator pump contactor control (Live contact)
- KA2** Condenser pump contactor control (only TCHVBZ-TCHVIZ) (Live contact)
- LBG1-2-3** General shutdown indicator light 1-2-3 (230 VAC supply consent)
- LFC1-2-3** Compressor 1-2-3 operation indicator light (Clean contact)
- L** Line
- PDC** Condenser differential pressure switch
- PDE** Evaporator differential pressure switch
- PE** Earth connection
- SCR** Remote control selector (Control with clean contact)
- SDS** Dual set point selector (Control with clean contact)
- SEI** Summer/winter selector (Clean contact)
- Connection by installer

- The access to the electrical board (IP20) is possible through the front panel of the unit.
- The connections must be carried out in accordance with current standards and with the electrical wiring diagram included.
- Earthing is compulsory by law.
- Always install the unit in a protected area, and near the machine place an automatic main switch, or fuses, of suitable capacity and interruption power.

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.



Model		31301	31351	31401	31461	31521	31591	31631
Electrical data								
Line sections	mm ²	2x120	2x185	2x185	2x185	2x240	2x240	2x240
PE section	mm ²	2x70	2x95	2x95	2x95	2x120	2x120	2x120
Remote control section	mm ²	1,5	1,5	1,5	1,5	1,5	1,5	1,5
Maximum absorbed current	A	423	614	640	666	690	714	738
Starting current	A	588	828	854	880	909	933	957



K20323EN ed.2 06.11-000 - Stampa:



TCHVBZ-TCHVIZ 1201÷31631 H.E. Z-Flow range

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