Water refrigerators and heat pump air water

RPE X - HPE X 5÷17

A2B® ACCORRONI® E. G.

Technical Information

RPE X - HPE X 5÷17

Water refrigerators and heat pump air/water
SERIE RPE - HPE X
Models 5 - 7,5 - 8,5 - 10 - 13 - 15 - 17 R410a

Technical features

This manual is composed from 3 sections:

- ***SECTION A - GENERAL INFORMATION***
  Description and technical features of the water refrigerator and air/water heating pump

- ***SECTION B – TECHNICAL FEATURES***

- ***SECTION C – USE ISTRUCTIONS AND MAINTENANCE***

Important notes:

1 - For the correct and safety working of the machinery the installer, the user and the technical service have to respect all rules in the present manual

2 - Advise following **"WARNING!"** is extremely important. If not applied, risk of damage and injury to the user/operator may occur. Advises written in bolt type shall be carefully read and strictly followed.

3 - A2B Accorroni E.G. Srl is not responsible for any change of the standards applied.

4 - All technical data, aesthetic, devices and accessories may be modified at any time by A2B Accorroni EG Srl for product development.

5 - The laws and norms reported in the present manual refer to the legislation valid on the date of issue. Any upgrade and changes to the local laws and norms might not be reported in the present manual but shall be considered by the user/installation workman.

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SECTION A - GENERAL INFORMATIONS

1. GENERAL CARACHTERISTICS

1.1 CLASSIFICATION

The machinery in the present manual is defined as:
"Refrigerator and heating pump mono block air/water".
All water refrigerators are signed as RPE, the heating pumps nominated HPE, with addition e numeric code of the power in kW.

1.2 CERTIFICATIONS - MARK CE

RPE - HPE X are conform to the norms as follows 97/23/CE, 98/37/CEE, 73/23/CEE, 89/336/CEE, nd modified 93/68/CEE.
The machineries are tagged with mark CE and its are tested in respect of the CE norms.

1.3 BUILDING CARACHTERISTIC

RPE/HPE X are created for out-door installation, with protection class IP24 and feeding mono phase 230V~ 50Hz (mod. 5÷17) or three phase 400V 3N~ 50Hz (mod. 10÷17): the models 10÷17 can be mono or three phased.
All appliances are equipped with a microprocessor for the control and the regulation of the work and safety of the units.
The adaption algorithm of the SET POINT – function sliding of temperature of SET – and the control of the partial mode (0/50/100%) of the compressors tandem (mod. RPE-HPE X10÷17) permits, often, the elimination of the tank.
The performance of the appliance are better used by high energy efficiency values, using the big surfaces of the thermo exchangers and the thermo dynamic characteristics of gas R410a.

Other building features:

- the **casing** is realised with Inox steel AISI 304. The compressor is insulated from the air/refrigerant exchanger; this insulation contributes of the protection of the electro-mechanics components and of the low sound level;
- the **compressor** is of rotary type on high efficiency and low sound level, function with refrigerant R 410a, mounted above elastic supports anti-vibration, automated with electrical mono phase motor;
- the **exchanger air/gas refrigerant** is realised with cooper pipes and aluminium wings, high surface of thermo exchange;
- the **fan group** is composed from 1 or 2 fans helicoidally with exocrine motors mono phase with internal protection. The fans are equipped with a protection grille;
- the **warm exchanger water/gas refrigerant**, on plates type from steel inox AIS I316, is insulated with an external casing on closed cellules to reduce the thermo dispersions;
- the **cooling circuit** and the connections between the single components are realised from cooper. In the cooling circuit are situated the thermostatic valve, cycle inversion's valve, liquid's separator and receiver (models heat pump), pressure switch of low and high pressure, filter dehydration;
- the **electrical panel** is situated inside the machinery;
- the **control system** of the microprocessor is easy to be reach.

1.4 PACKING CONTAINS

Packing – wood's pallet, with plastic protection.
The technical data are reported on the external tag.
The present manual and the warranty certificate are inside the little box on compressor's side and should be delivered to the end user.

1.5 ACCESSORIES FROM FACTORY OR ON DEMAND

The large range of accessories available from factory or on demand improve the performances of the appliance (Tab.1).

1.6 USE

The appliances are created for cooling and, or heating of the water in the conditioning plants and should be used only for this purposes.

WARNING! All other uses, not descript in this manual, will be considerate as improper. The manufacturer excludes any responsibility for damage of person, animals

or goods due to non observance of the rules and instructions of this manual – as deformation of the product, not correct installation, error of regulation and bad maintenance.
The warranty will be cancelled by improper use.

1.7 SAFETY

WARRANTY! Only skilled person is authorized to make the installation and the technical service of the machinery.

All norm for electrical feeding and connections should be observed.

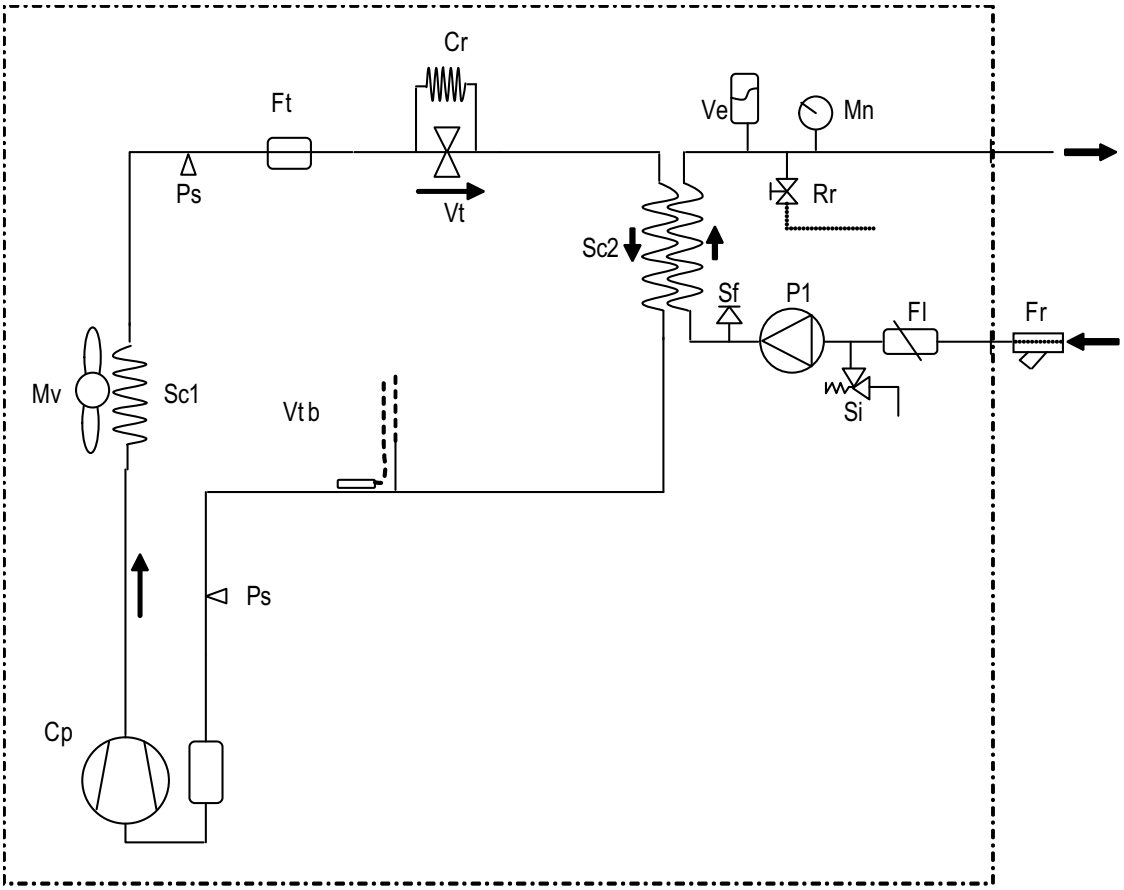
During the operation of installation and technical service to observe safety conditions and instruction from the manual. Distance limits and electrical connections should not be modified.

Before each technical intervention the general electrical feeding should be switch off.

Table1 – Devices from factory and accessories on demand

Description	*RPE/HPE 5*	*RPE/HPE 7,5*	*RPE/HPE 8,5*	*RPE/HPE 10,5*	*RPE/HPE 13*	*RPE/HPE 15*	*RPE/HPE 17*
Water pump	From factory	From factory	From factory	From factory	From factory	From factory	From factory
Expansion vase	From factory	From factory	From factory	From factory	From factory	From factory	From factory
Securety valve	From factory	From factory	From factory	From factory	From factory	From factory	From factory
Off / On load tap	From factory	From factory	From factory	From factory	From factory	From factory	From factory
Water pressure manometer 0-10 bar	From factory	From factory	From factory	From factory	From factory	From factory	From factory
Relief valve	From factory	From factory	From factory	From factory	From factory	From factory	From factory
Flow meter	From factory	From factory	From factory	From factory	From factory	From factory	From factory
Water filter	From factory	From factory	From factory	From factory	From factory	From factory	From factory
Tank	Accessory	Accessory	Accessory	Accessory	Not available	Not available	Not available
Water pump high prevalence	Not available	Accessory	Accessory	Accessory	Accessory	Accessory for models RPE not available for modes HPE	Not available
Electronic control fan rotation	From factory	From factory	From factory	From factory	From factory	From factory	From factory
Communication vetween PC and control box	From factory	From factory	From factory	From factory	From factory	From factory	From factory
Remote control	Accessory	Accessory	Accessory	Accessory	Accessory	Accessory	Accessory
Kit alarm remote	Accessory	Accessory	Accessory	Accessory	Accessory	Accessory	Accessory
Kit remote control compressor	Accessory	Accessory	Accessory	Accessory	Accessory	Accessory	Accessory
Acoustic compressor device	From factory	From factory	From factory	From factory	From factory	From factory	From factory
Anti-vibrant floor installation	From factory	From factory	From factory	From factory	From factory	From factory	From factory
Anti-vibrant floor fix	Accessory	Accessory	Accessory	Accessory	Accessory	Accessory	From factory
Exchanger air/gas with hydrophilic wings	On demand	On demand	On demand	On demand	On demand	On demand	On demand
Exchanger air/gas with painted wings	On demand	On demand	On demand	On demand	On demand	On demand	On demand

SCHEMA COOLING / HYDRO CIRCUIT RPE X5 ÷ 8,5 R410a

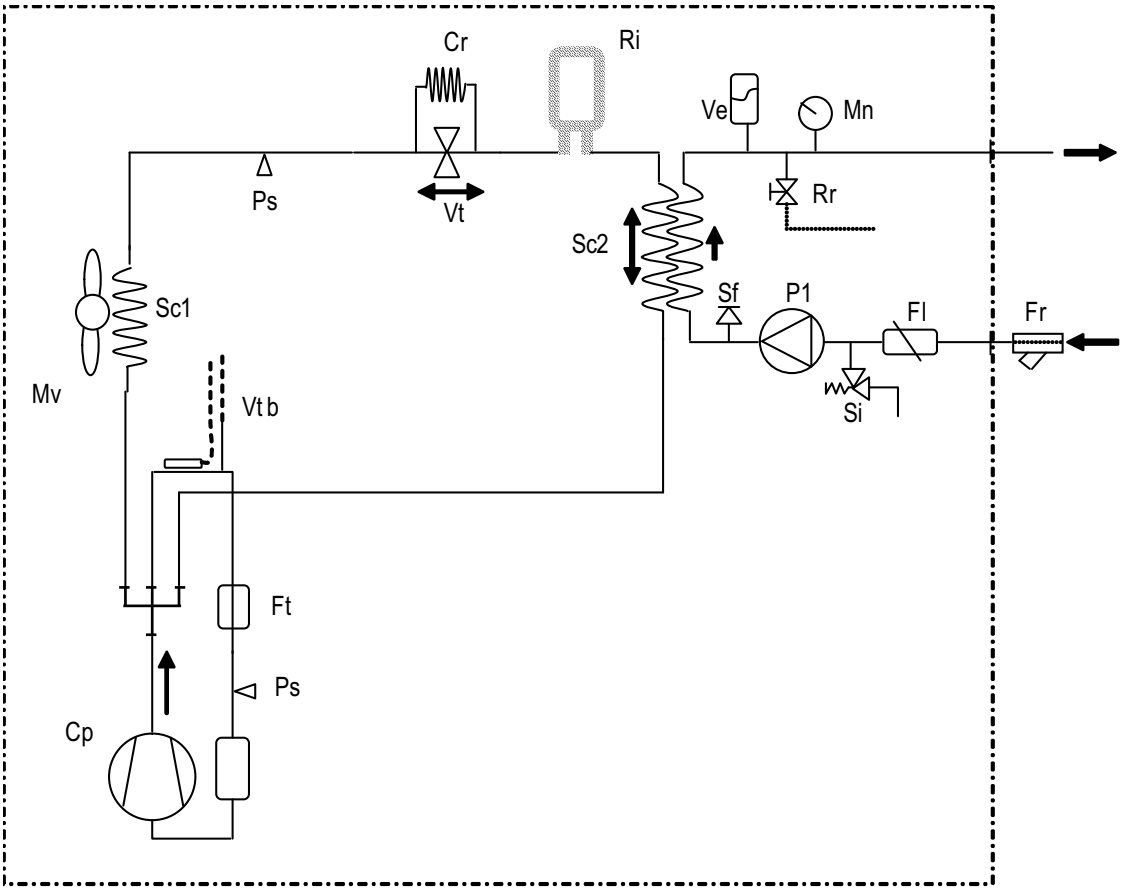


LEGEND

Cp	Compressor
Cr	Capillary
Fl	Flow meter
Ft	Hydro filter
Fr	Filter hydro circuit
Mv	Air fan
Mn	Manometer
P1	Water pump
Ps	Pressure connection 5/16"
Rr	Off/on load tap
Sc1	Exchanger water side
Sc2	Exchanger gas side
Si	Security valve
Sf	Relief valve
Ve	Expansion vase
Vt	Thermostatic valve b-flow
Vt b	Equilibrator + Vt bulb

Fig. 1a

SCHEMA COOLING / HYDRO CIRCUIT HPE X5 ÷ 8,5 R410a

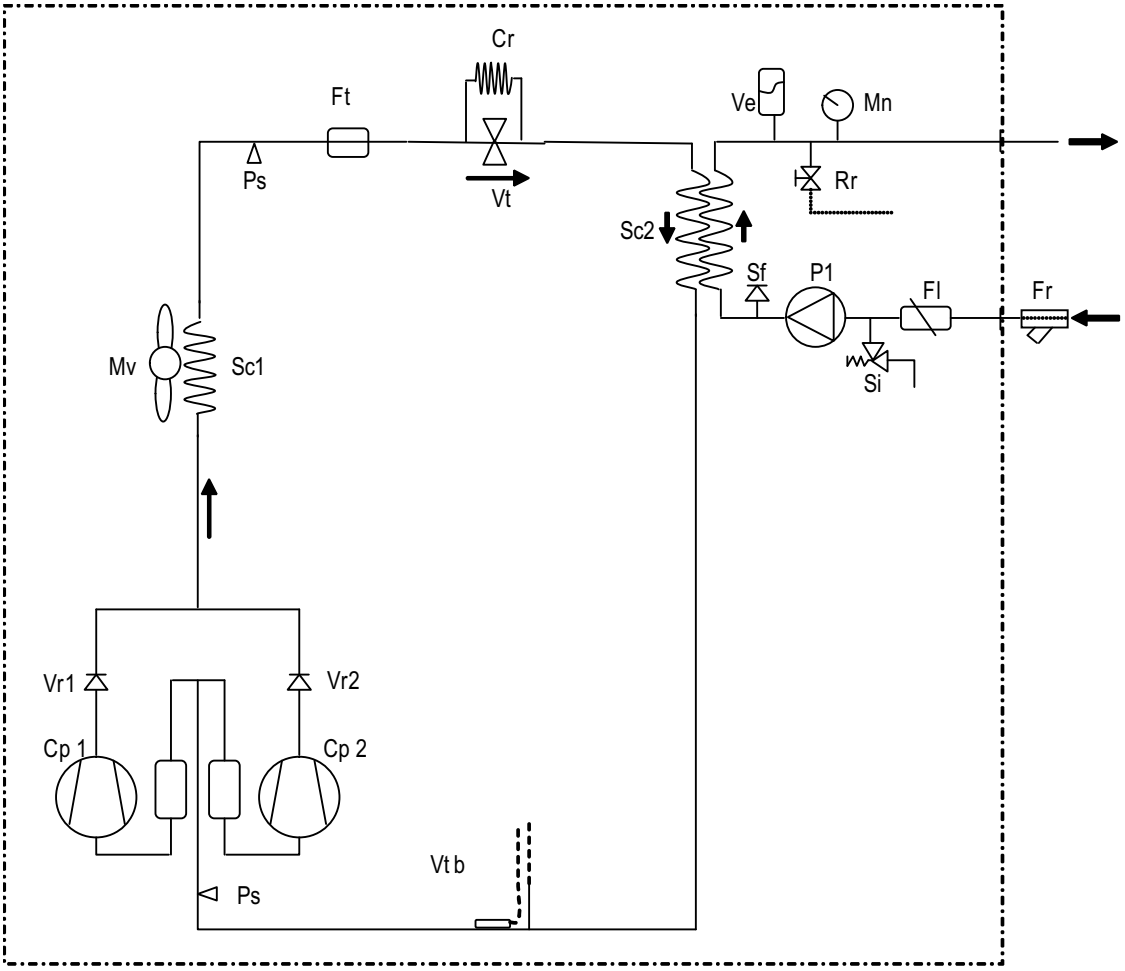


LEGEND

Cp	Compressor
Cr	Capillary
Fl	Flow meter
Ft	Hydro filter
Fr	Filter hydro circuit
Mv	Air fan
Mn	Manometer
P1	Water pump
Ps	Pressure connection 5/16"
Ri	Liquid receiver
Rr	Off/on load tap
Sc1	Exchanger water side
Sc2	Exchanger gas side
Si	Security valve
Sf	Relief valve
Ve	Expansion vase
Vi	Inversion valve
Vt	Thermostatic valve b-flow
Vt b	Equilibrator + Vt bulb

Fig. 1b

SCHEMA COOLING / HYDRO CIRCUIT RPE X10 ÷ 17 R410a

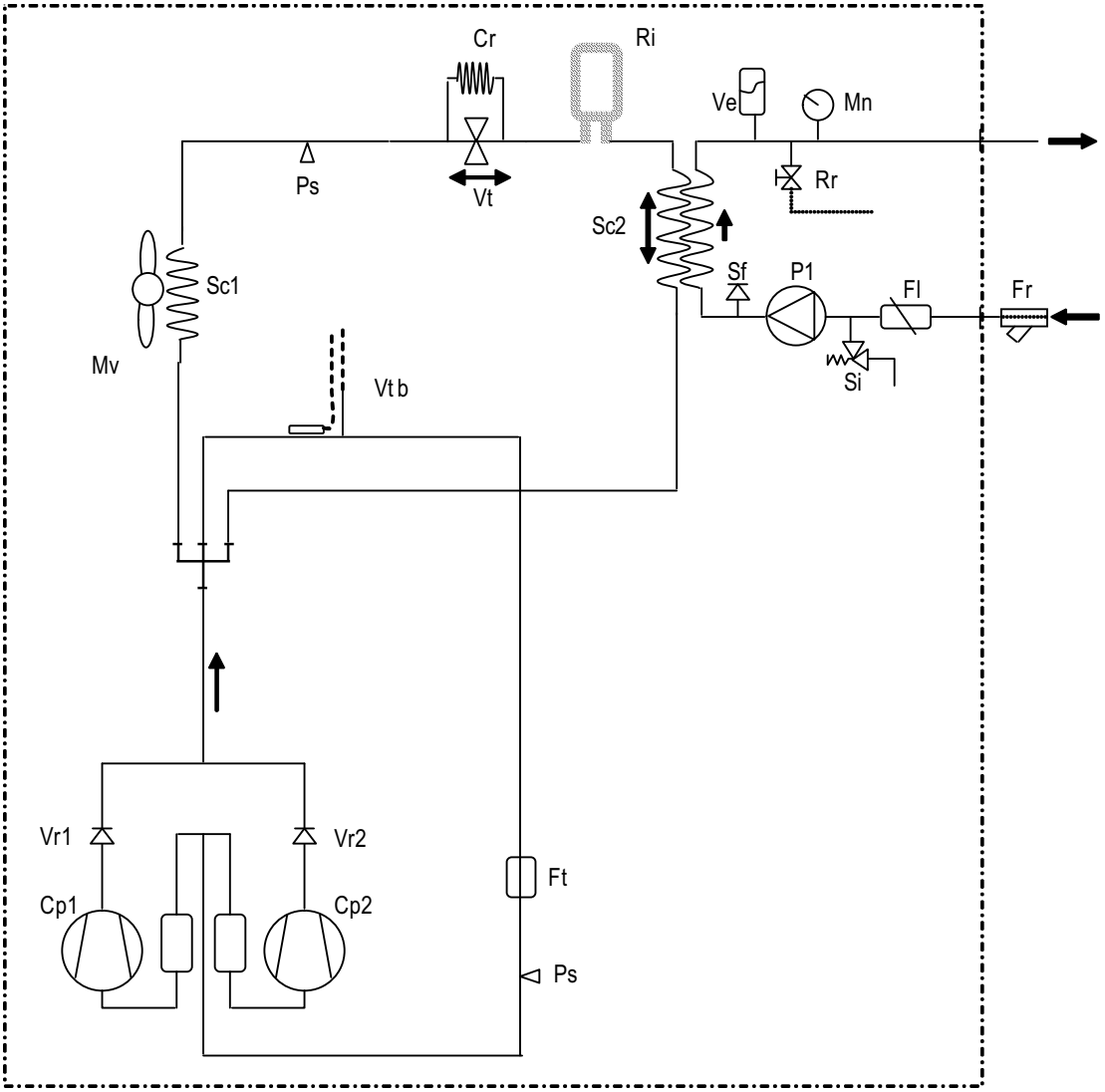


LEGEND

Cp1-Cp2	Compressor
Cr	Capillary
Fl	Flow meter
Ft	Hydro filter
Fr	Filter hydro circuit
Mv	Air fan
Mn	Manometer
P1	Water pump
Ps	Pressure connection 5/16"
Rr	Off/on load tap
Sc1	Exchanger water side
Sc2	Exchanger gas side
Si	Security valve
Sf	Relief valve
Ve	Expansion vase
Vr1-2	Not return valve CP1-2
Vt	Thermostatic valve b-flow
Vt b	Equilibrator + Vt bulb

Fig. 1c

SCHEMA COOLING / HYDRO CIRCUIT HPE X10 ÷ 17 R410a



LEGEND

Cp1-Cp2	Compressor
Cr	Capillary
Fl	Flow meter
Ft	Hydro filter
Fr	Filter hydro circuit
Mv	Air fan
Mn	Manometer
P1	Water pump
Ps	Pressure connection 5/16"
Ri	Liquid receiver
Rr	Off/on load tap
Sc1	Exchanger water side
Sc2	Exchanger gas side
Si	Security valve
Sf	Relief valve
Ve	Expansion vase
Vi	Inversion valve
Vr1-2	Not return valve CP1-2
Vt	Thermostatic valve b-flow
Vt b	Equilibrator + Vt bulb

Fig. 1d

1.8 Table 2 - Technical Data - RPE X5÷17 R410a

Description / model		RPE X5	RPE X7,5	RPE X8,5	RPE X10	RPE X13	RPE X15	RPE X17
Refrigerating power [1]	kW	4,78	6,35	7,37	9,54	12,69	13,71	14,73
Total Power of Absorbed electricity	kW	1,97	2,65	3,09	3,96	5,30	5,74	6,18
Rise of current [2]	A	36,8	61,0	63,0	36,8	61,0	63,0	63,0
Total absorbed current [2]	A	8,82	11,3	13,2	16,9	22,6	24,5	26,3
Power of Absorbed electricity L1 (auxiliary)	kW	NA			0,45	0,46	0,48	0,49
Power of Absorbed electricity L2/L3 (1/2 compressors)	kW	NA			1,75	2,42	2,63	2,84
Absorbed current L1	A	NA			2,02	2,04	2,13	2,17
Absorbed current L2/L3	A	NA			7,43	10,27	11,16	12,08
EER	W/W	2,47	2,44	2,43	2,45	2,43	2,42	2,43
Nominal water capacity	l/h	822	1.092	1.268	1.641	2.183	2.358	2.534
Min. water capacity	l/h	514	683	792	1.026	1.364	1.474	1.583
Useful standard prevalence	kPa	39,0	50,0	49,8	40,0	44,0	43,0	58,0
Useful prevalence – Optional vers. Height pressure [3]	kPa	NA	90,2	90,0	75,0	70,0	55,0	NA
Total absorbed electric power	kW	NA	2,71	3,15	4,02	5,36	5,81	NA
EER	W/W	NA	2,42	2,42	2,44	2,43	2,41	NA
Scale of partiality		1	1	1	2	2	2	2
Cooling power of partial charge (compressors 1/2)	kW	NA			5,20	5,46 / 8,12	7,65	8,20
absorbed electric power (compressors 1/2)	kW	NA			2,03	2,10 / 3,05	2,94	3,14
EER on partial charge	W/W	NA			2,64	2,71 / 2,74	2,68	2,71
Max. absorbed electric power [2] [4]	kW	2,43	3,27	3,81	4,88	6,53	7,07	7,62
Max absorbed current [2] [4]	A	10,4	14,1	16,4	21,0	28,1	30,5	32,8
Max. absorbed electric power L1/L2 [4]	kW	NA			2,21	3,04	3,30	3,56
Max absorbed current L1/L2 [4]	A	NA			9,8	13,5	14,6	15,8
Magnet thermo of protection (L1-L2/L3)	A	16	16	20	10-16	10-16	10-20	10-20
Power supply	Volt/Hz	230/1~/50			230/1~/50 - 400/3N~/50			
Grade of protection		IP 24						
External air temperature d.b. Min - Max	°C	da -10 a +45						
Entry water temp. Min-Max	°C	da 0 a +23						
Max Content of glycol	%	35						
Max water pressure	kPa	300						
Circuits	n.	1	1	1	1	1	1	1
Compressors	n.	1	1	1	2	2	2	2
Type of compressors		Rotativo						
Refrigerate gas		R410a						
Max pressure refrigerate	kPa	4.200						
Charge of refrigerate gas	g	1.100	1.350	1.300	2.200	2.450	2.650	2.600
Capacity of expansion vase	l	1			2			4
Max pressure	kPa	600						
Pre-charge pressure	kPa	150						
Hydraulic attachments	"	1 / 1						
Water content in the hydraulic circuit	l	0,616	0,710	0,850	0,980	1,080	1,120	1,150
Min. water content in the system	l	10	16	16	10	16	16	16
Ventilators – number X diameter		1 x Ø 450			2 x Ø 450			
Nominal air capacity	m^3/h	2.200	3.000	3.200	4.400	6.000	6.200	6.400
Sound pressure [5]	db(A)	40,2	41,5	42,0	43,2	44,5	44,8	45,0
Dimensions Height	mm	670	870		1277	1460		1660
Dimensions Lenght	mm	925						
Dimensions Depth	mm	368						
Net weight	kg	67	81	85	124	136	142	149

1) Air temperature 35° w.b.; entry water temp. 12 °C ΔT 5 °C
2) Value for mono-phase charge
3) Fabric installed option
4) Air temperature 45°C d.b.; entry water temp. 23 °C ΔT 5 °C
5) 10 m. in open space

NA Not applicable

1.8 Table 3 - Technical Data - HPE X5÷17 R410a (part first)

Description / model		HPE X5		HPE X7,5		HPE X8,5		HPE X10		HPE X13		HPE X15		HPE X17	
		cold	heat	cold	heat	cold	heat	cold	heat	cold	heat	cold	heat	cold	heat
Colling/heating power [1]	kW	4,45	5,50	5,96	7,45	6,98	8,28	9,05	10,50	10,20	12,60	12,94	15,40	13,96	16,54
Power of Absorbed electricity	kW	1,96	1,98	2,67	2,69	3,09	2,95	3,94	3,99	4,48	4,38	5,73	5,86	6,12	6,13
Rise of current [2]	A	36,8		61,0		63,0		36,8		61,0		63,0		63,0	
Total absorbed current [2]	A	8,3	8,4	11,4	11,5	13,2	12,6	16,8	17,0	19,1	18,7	24,4	25,0	26,1	26,2
Power of Absorbed electricity L1 (auxiliary)	kW	NA						0,46	0,48	0,46	0,48	0,51	0,51	0,51	0,51
Power of Absorbed electricity L2/L3 (compr. 1/2)	kW	NA						1,74	1,75	2,01	1,95	2,61	2,67	2,81	2,81
Absorbed current L1	A	NA						2,0	2,1	2,0	2,1	2,3	2,3	2,3	2,3
Absorbed current L2/L3	A	NA						7,4	7,4	8,5	8,3	11,1	11,3	11,9	11,9
EER / COP	W/W	2,31	2,78	2,27	2,77	2,30	2,81	2,33	2,63	2,32	2,88	2,31	2,63	2,31	2,70
Nominal water capacity	l/h	765	946	1.025	1.281	1.201	1.424	1.557	1.806	1.754	2.167	2.226	2.649	2.401	2.845
Min. water capacity	l/h	478	591	641	801	751	890	973	1.129	1.096	1.354	1.391	1.656	1.501	1.778
Useful standard prevalence	kPa	41,5	34,0	50,0	43,0	49,8	47,6	43,2	39,0	50,0	39,9	58,0	38,0	40,0	38,8
Useful prevalence – Optional vers. Height pres. [3]	kPa	NA		90,2	82,4	90,0	86,0	75,0	72,8	70,0	45,0	NA			
Total absorbed electric power	kW	NA		2,71	2,74	3,14	3,00	4,02	4,06	4,53	4,44	NA			
EER I COP	W/W	NA		2,31	2,72	2,30	2,76	2,31	2,59	2,32	2,84	NA			
Scale of partiality		1		1		1		2		2		2		2	
Power of partial charge refrigerating (compr. 1/2)	kW	NA						5,10	5,80	4,75/6,52	5,98/7,53	6,26	7,73	7,13	8,81
absorbed electric power (compr. 1/2)	kW	NA						2,01	2,04	1,94/2,60	2,05/2,66	2,69	2,75	2,99	3,08
EER / COP on partial charge	W/W	NA						2,62	2,84	2,55/2,59	2,91/2,84	2,44	2,81	2,50	2,86
Max. absorbed electric power [2] [4]	kW	2,41	2,44	3,29	3,31	3,81	3,63	4,86	4,91	5,52	5,40	7,06	7,22	7,55	7,56
Max absorbed current [2] [4]	A	10,4	10,5	14,2	14,2	16,4	15,6	20,9	21,2	23,8	23,2	30,4	31,1	32,5	32,5
Max. absorbed electric power L1/L2 [4]	kW	NA						2,20	2,22	2,53	2,46	3,28	3,36	3,52	3,52
Max absorbed current L1/L2 [4]	A	NA						9,8	9,8	11,2	10,9	14,5	14,9	15,6	15,6
Magnet thermo of protection (L1-L2/L3)	A	16		16		20		10-16		10-16		10-20		10-20	
Power supply	Volt/Hz	230/1~/50						230/1~/50 - 400/3N~/50							
Grade of protection		IP 24													

1.8 Table 3 - Technical Data - HPE X5÷17 R410a (part second)

Description / model		HPE X5		HPE X7,5		HPE X8,5		HPE X10		HPE X13		HPE X15		HPE X17	
		cool	heat	cold	heat	cold	heat	cold	heat	cold	heat	cold	heat	cold	heat
External air temperature d.b. Min - Max	°C	da -10 a +45 in cooling / da -10 a +20 in heating													
Entry water temp. Min - Max	°C	da 0 a +23 in cooling / da +30 a +50 in heating													
Max Content of glycol	%	35													
Max water pressure	kPa	300													
Circuits	n.	1		1		1		1		1		1		1	
Compressors	n.	1		1		1		2		2		2		2	
Type of compressors		Rotativo													
Refrigerate gas		R410a													
Max pressure refrigerate	kPa	4.200													
Charge of refrigerate gas	g	1.250		1.600		1.600		2.450		3.100		3.100		3.200	
Capacity of expansion vase	l	1						2						4	
Max pressure	kPa	600													
Pre-charge pressure	kPa	150													
Hydraulic attachments	"	1 / 1													
Water content in the hydraulic circuit	l	0,616		0,710		0,850		0,980		1,080		1,120		1,150	
Min. water content in the system	l	10		16		16		10		16		16		16	
Ventilators – number X diameter		1 x Ø 450						2 x Ø 450							
Nominal air capacity	m^3/h	2.200		3.000		3.200		4.400		6.000		6.200		6.400	
Sound pressure [5]	db(A)	40,2	41,0	41,5	42,0	42,0	42,5	43,2	43,8	44,5	45,0	44,8	45,2	45,0	45,5
Dimensions Height	mm	670		870				1277		1460				1660	
Dimensions Lengh	mm	925													
Dimensions Depth	mm	368													
Net weight	kg	72		86		93		135		148		152		164	

1) Cooling: Air temperature 35°C d.b.; entry water temperature 12 °C ΔT 5 °C
Heating: air temperature 7°C d.b. – 6°C w.b.; water entry 40 °C ΔT 5 °C

2) Value of mono-phase charge

3) Optional fabric installation

4) Cooling: Air temperature 45°C d.b.; water entry temperature 23 °C ΔT 5 °C
Heating: Air temperature 20°C d.b.; water entry 50 °C ΔT 5 °C

5) 10 m. open space

NA = Not applicable

1.9 ELECTRICAL SCHEMA RPE/HPE X5-7,5-8,5 R410a

LEGEND

Cc = Condensates compressors
CP1 = Contact HEAT/COOL remote (only mod. HPE)
CP2 = Remote On/Off contact
Cr = Electronic control
F = Fusible 5 A
Fl = Water flow meter
Fr = Radio filter
Hp = Pressure switch of Max.
Lp = Pressure switch of Min.
M = Clamp
Mc = Motor of compressor
Mg = Thermo magnetic protection
Mv1 = Fan motor
P = Water pump
Ra1 = Relay auxiliary (optional) 230V AC
Ra2 = Relay alarm (optional) 12V AC
Rc = Relay compressor
Rs = Spool relay of anti frost resistance (optional)
Scc = Interface card electrical control (Cr)
St1 = Water sensor entry
St2 = Water sensor issue
St3 = Exchanger sensor
Tk = Modulation card Mc1-Mv2
Tr = Transformer of electrical feeding
Vi = Valve of inversion (only mod. HPE)
_ _ _ = Connection to be made
____ = Connection made

Models	RPE-HPE X5	RPE-HPE X7,5	RPE-HPE X8,5
Thermo magnetic of protection	L1	L1	L1
	16A	20A	20A

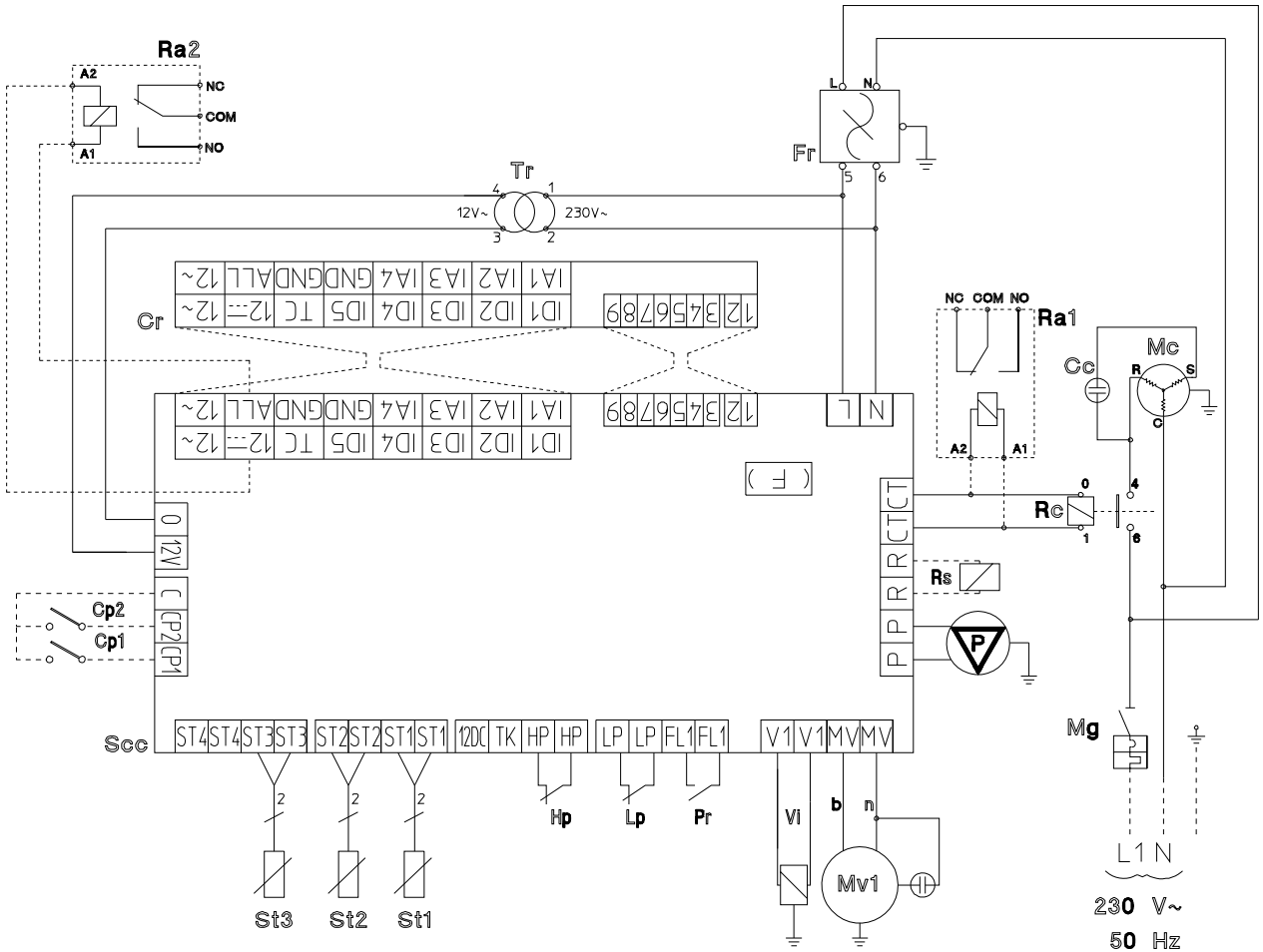


Fig. 2

1.9 ELECTRICAL SCHEMA RPE/HPE X10-13-15-17 R410a (400V 3N~)

Models	RPE-HPE X10			RPE-HPE X13		
Thermo magnetic of protection	L1	L2	L3	L1	L2	L3
	10A	16A		10A	16A	20A
Models	**RPE-HPE X15**			**RPE-HPE X17**		
Thermo magnetic of protection	L1	L2	L3	L1	L2	L3
	10A	20A		10A	20A	

LEGEND

Cc	= Condensates compressors
CP1	= Contact HEAT/COOL remote (only mod. HPE)
CP2	= Remote On/Off contact
Cr	= Electronic control
EXP	= Control box compressor 2
F	= Fusible 5 A
F4	= Fusible 2.5 A
Fl	= Water flow meter
Fr	= Radio filter
Hp	= Pressure switch of Max.
Lp	= Pressure switch of Min.
M	= Clamp
Mc1-Mc2	= Motors of compressor
Mg	= Thermo magnetic protection
Mv1-Mv2	= Fan motors
P	= Water pump
Ra1	= Relay auxiliary (optional) 230V AC
Ra2	= Relay alarm (optional) 12V AC
Rc1-Rc2	= Relay compressor
Rs	= Spool relay of anti frost resistance (optional)
Scc	= Interface card electrical control (Cr)
St1	= Water sensor entry
St2	= Water sensor issue
St3	= Exchanger sensor
Tk	= Modulation card Mc1-Mv2
Tr	= Transformer of electrical feeding
Vi	= Valve of inversion (only mod. HPE)
_ _ _	= Connection to be made
____	= Connection made

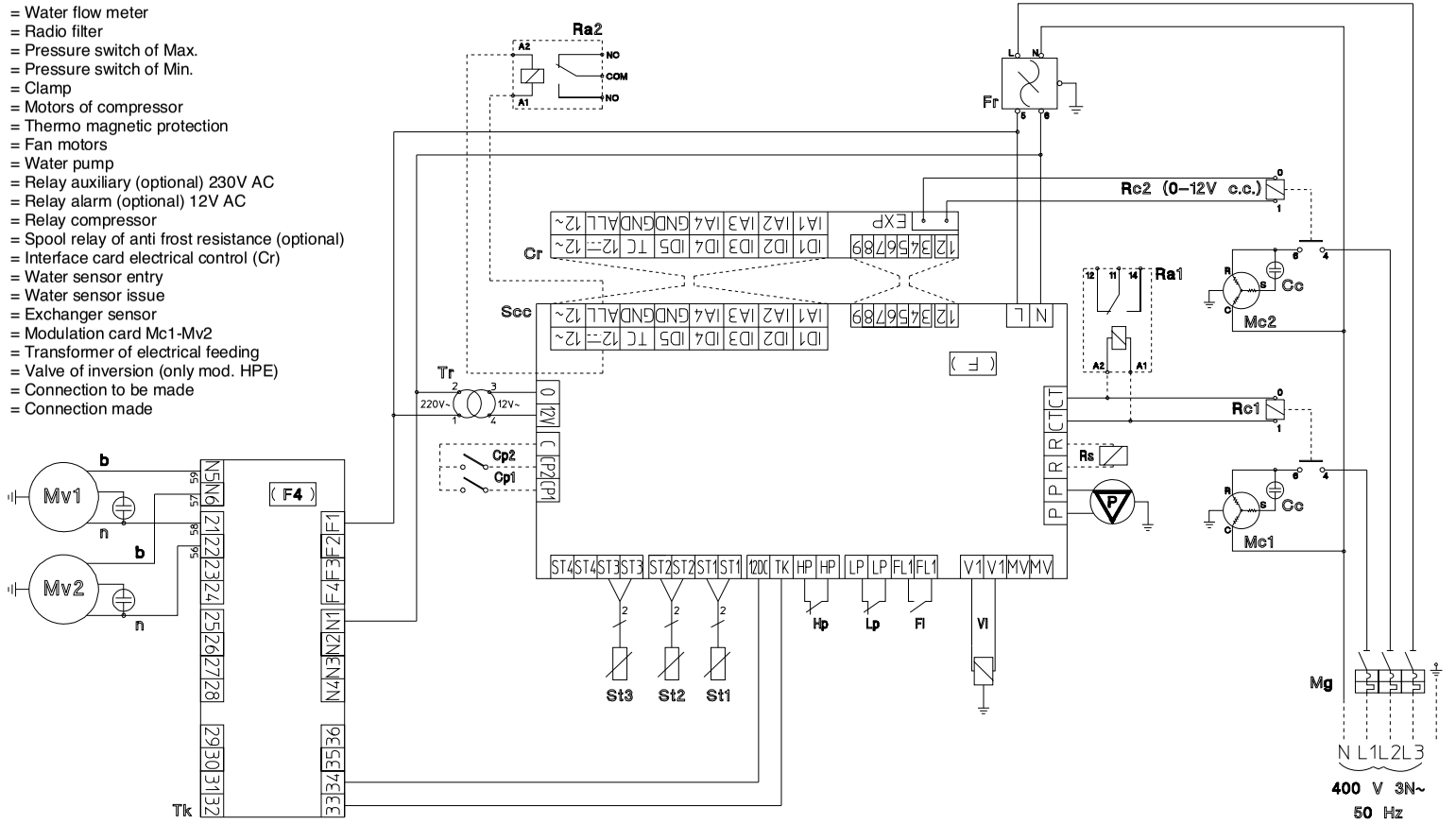


Fig. 3

1.9 ELECTRICAL SCHEMA RPE/HPE X10-13-15-17 R410a (230V 3N~)

Models	RPE-HPE X10			RPE-HPE X13		
Thermo magnetic of protection	L1	L2	L3	L1	L2	L3
	10A	16A		10A	16A	20A
Models	**RPE-HPE X15**			**RPE-HPE X17**		
Thermo magnetic of protection	L1	L2	L3	L1	L2	L3
	10A	20A		10A	20A	

LEGEND

Cc	= Condensates compressors
CP1	= Contact HEAT/COOL remote (only mod. HPE)
CP2	= Remote On/Off contact
Cr	= Electronic control
EXP	= Control box compressor 2
F	= Fusible 5 A
F4	= Fusible 2.5 A
Fl	= Water flow meter
Fr	= Radio filter
Hp	= Pressure switch of Max.
Lp	= Pressure switch of Min.
M	= Clamp
Mc1-Mc2	= Motors of compressor
Mg	= Thermo magnetic protection
Mv1-Mv2	= Fan motors
P	= Water pump
Ra1	= Relay auxiliary (optional) 230V AC
Ra2	= Relay alarm (optional) 12V AC
Rc1-Rc2	= Relay compressor
Rs	= Spool relay of anti frost resistance (optional)
Scc	= Interface card electrical control (Cr)
St1	= Water sensor entry
St2	= Water sensor issue
St3	= Exchanger sensor
Tk	= Modulation card Mc1-Mv2
Tr	= Transformer of electrical feeding
Vi	= Valve of inversion (only mod. HPE)
– – –	= Connection to be made
———	= Connection made

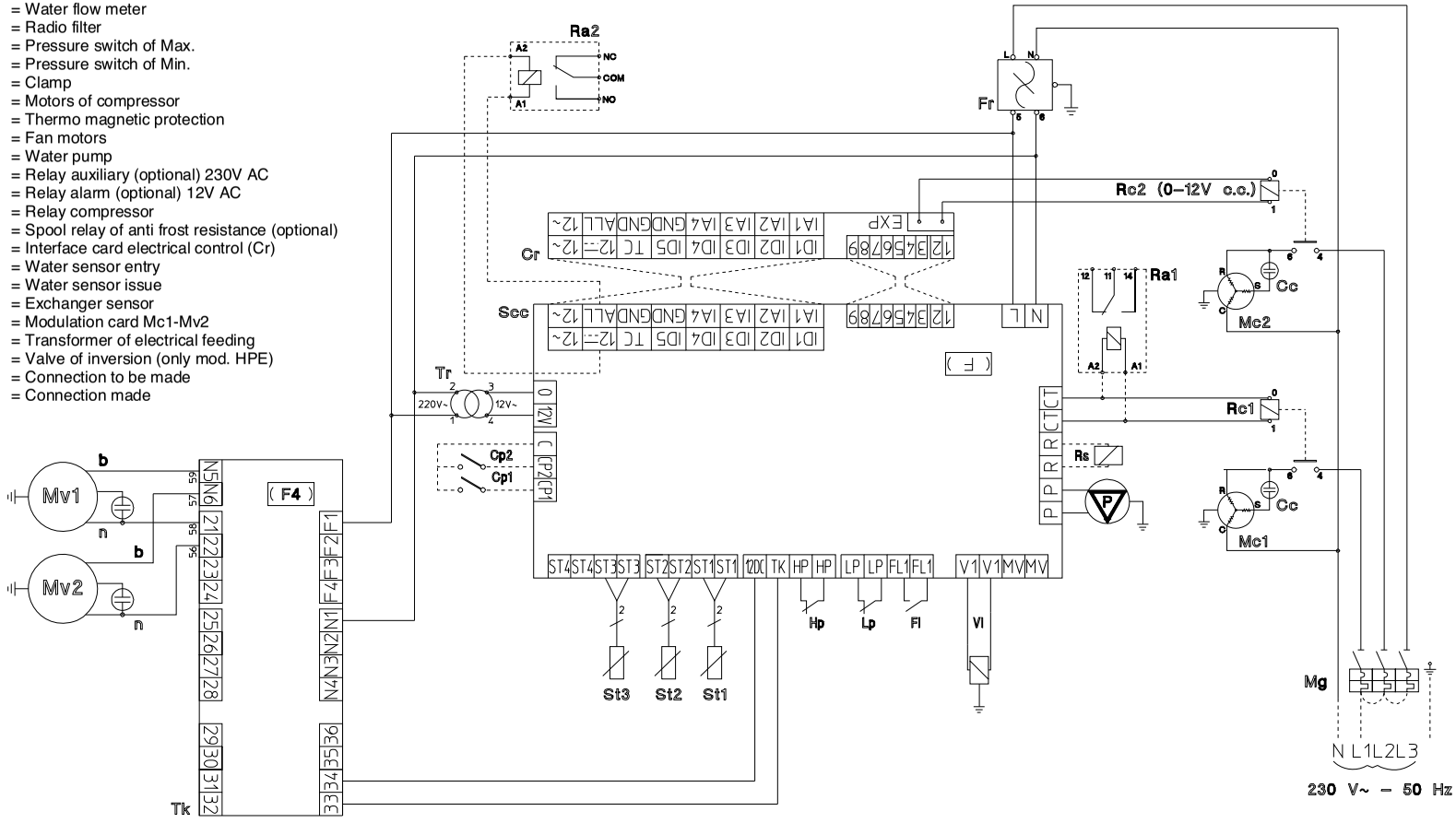
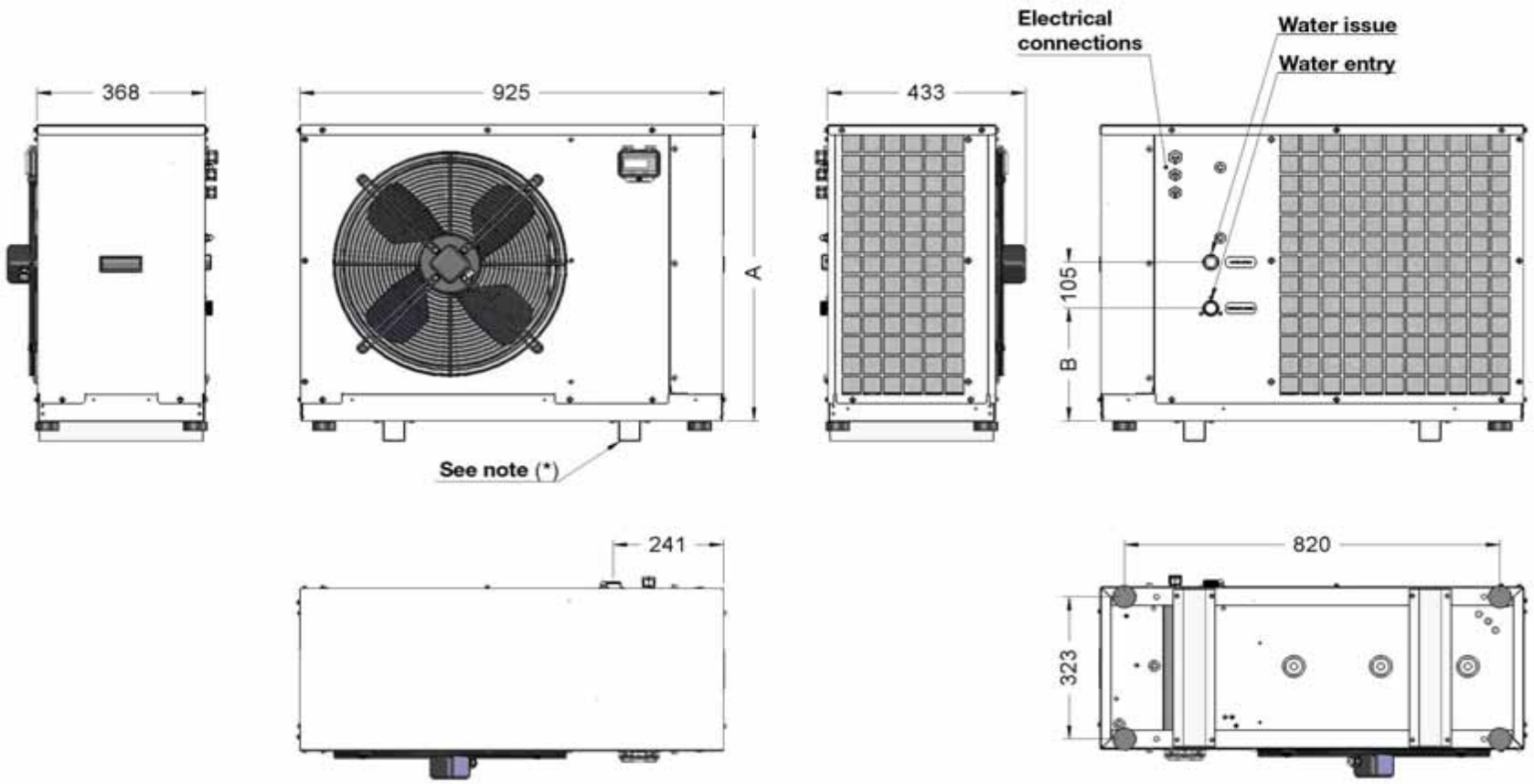


Fig. 4

1.10 DIMENSIONS - RPE/HPE X5 - 7,5 - 8,5 R410a

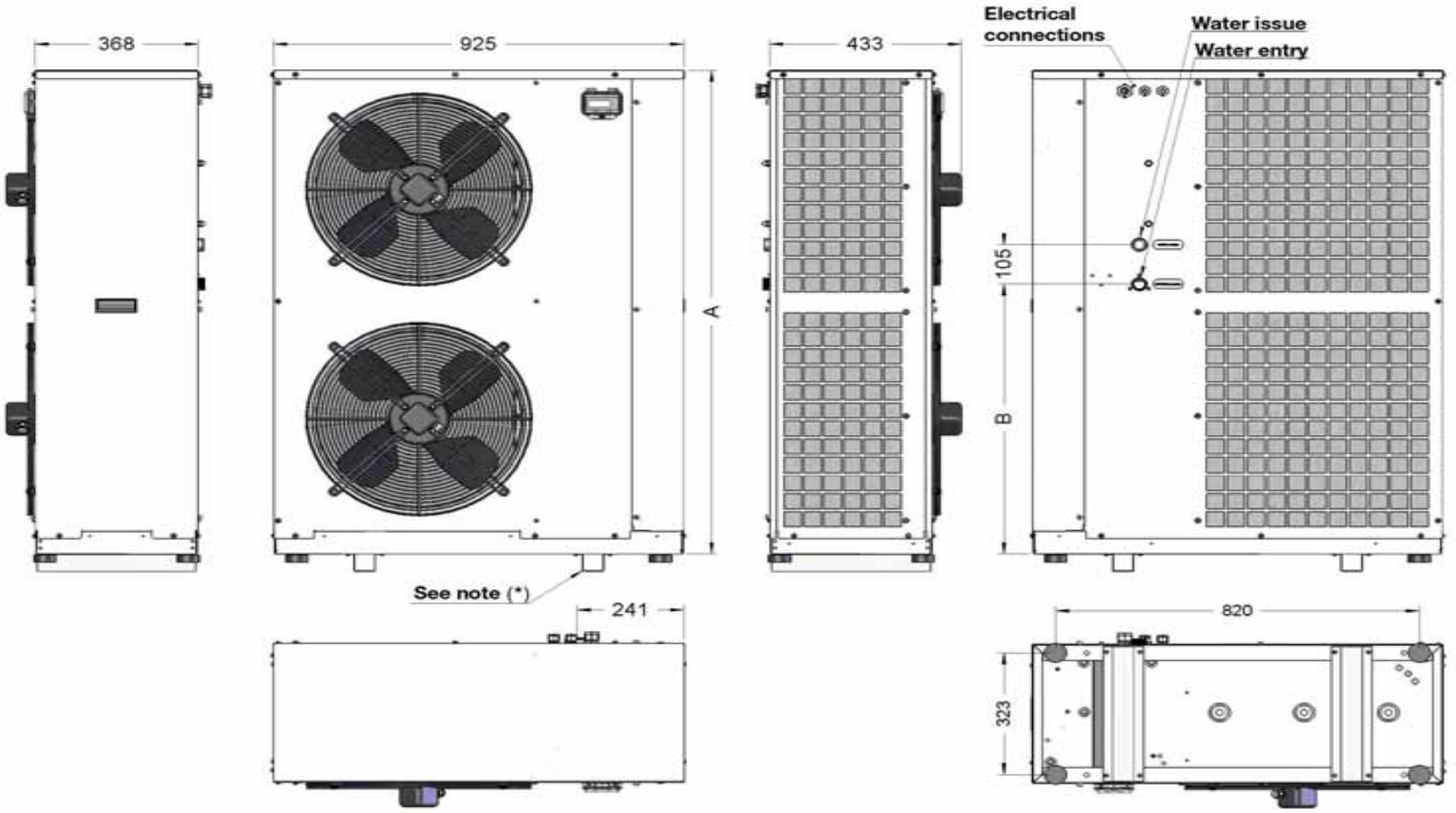


(*) Movement brackets. Toremove after installation

Mod.	A	B
RPE-HPE X5	670	256
RPE-HPE X7,5 - 8,5	872	456

Fig. 5

1.10 DIMENSIONS - RPE/HPE X10 - 13 - 15 - 17 R410a



(*) **Movement brackets. To remove after installation.**

Mod.	A	B
RPE-HPE X10	1279	713
RPE-HPE X13 - 15	1479	713
RPE-HPE X17	1679	843

Fig. 6

1.11 VIEW - RPE X R410a (mono compressor)

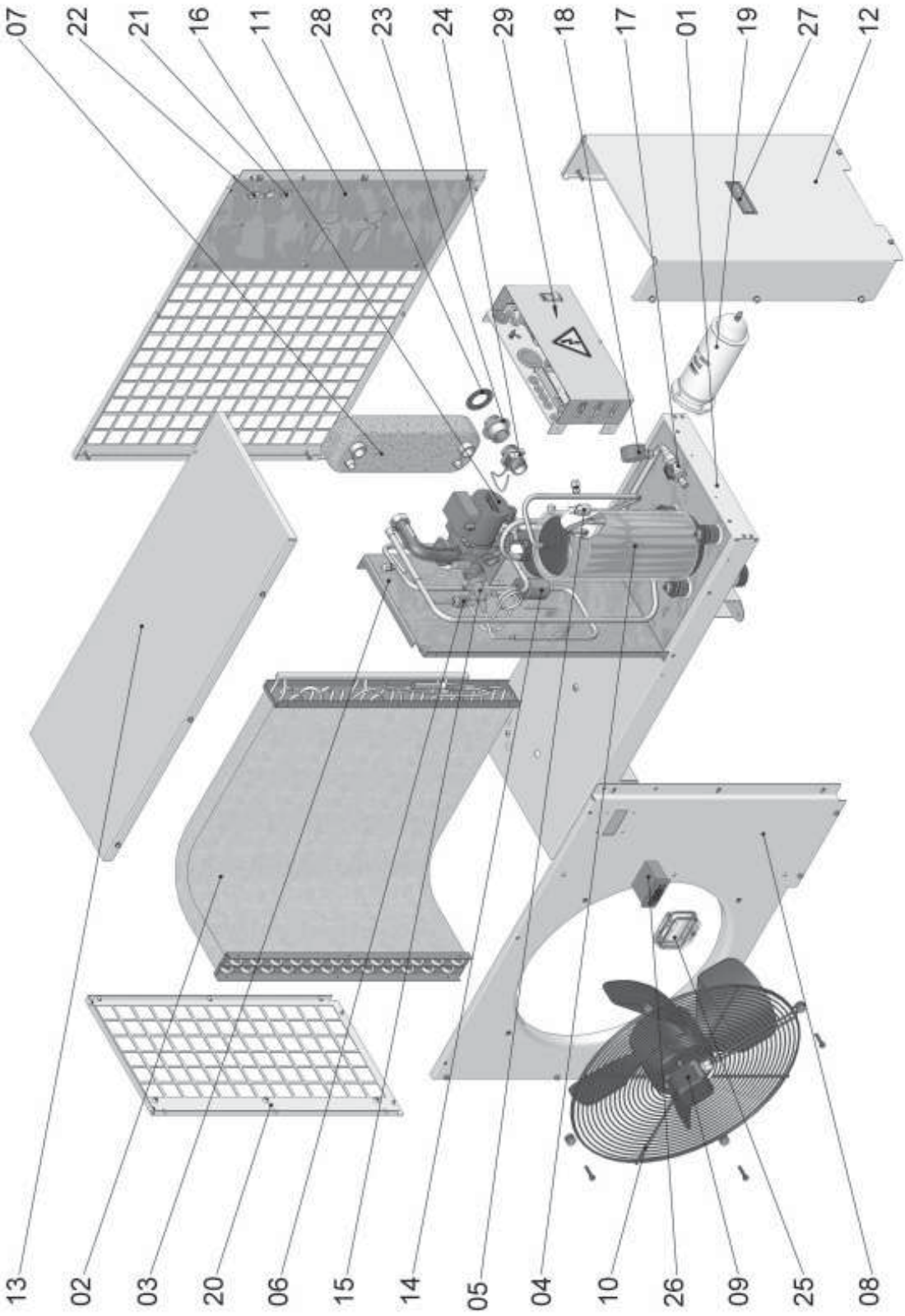


Fig. 7

1.11 VIEW - HPE X R410a (mono compressor)

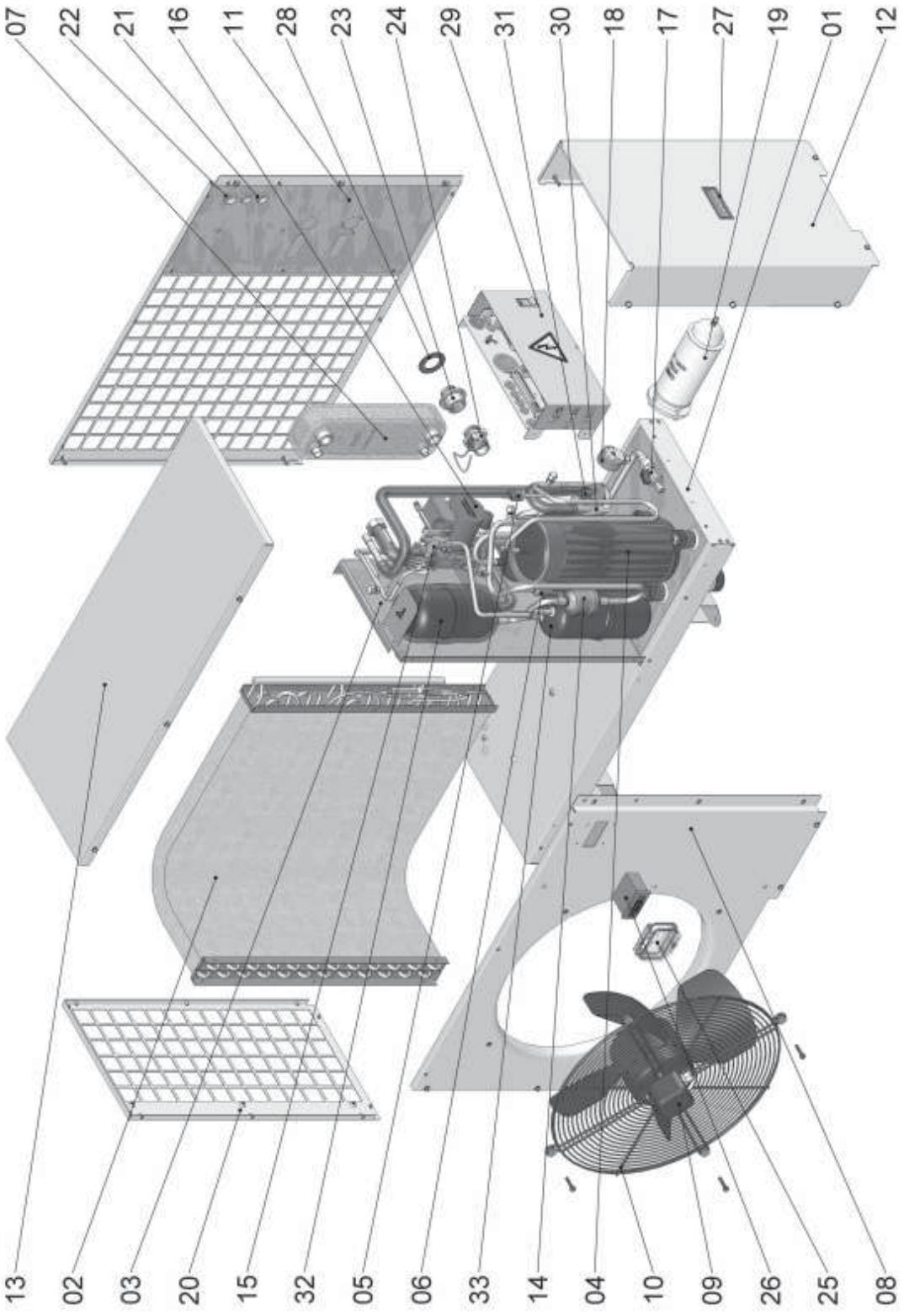


Fig. 8

Legend view drawing RPE X R410a (mono compressor) (fig.7)

01 Base
02 Wings exchanger
03 Separator panel
04 Compressor
05 High pressure switch
06 Low pressure switch
07 Plate exchanger
08 Fan panel
09 Fan
10 Fan grille Ø450
11 Side grille panel
12 Front panel
13 Top panel
14 Dehydrator filter
15 Thermostatic valve
16 Water pump
17 Water discharge valve
18 Water manometter 10bar
19 Expansion vase
20 Back grille panel
21 Cable fix PG13,5
22 Cable fix PG16
23 Connection 1”
24 Flowmeter
25 Control protection group
26 Control panel
27 Plastic handle
28 Gummy insulation
29 Electrical board

Legend view drawing HPE X R410a (mono compressor) (fig.8)

01 Base
02 Wings exchanger
03 Separator panel
04 Compressor
05 High pressure switch
06 Low pressure switch
07 Plate exchanger
08 Fan panel
09 Fan
10 Fan grille Ø450
11 Side grille panel
12 Front panel
13 Top panel
14 Dehydrator filter
15 Thermostatic valve
16 Water pump
17 Water discharge valve
18 Water manometter 10bar
19 Expansion vase
20 Back grille panel
21 Cable fix PG13,5
22 Cable fix PG16
23 Connection 1”
24 Flowmeter
25 Control protection group
26 Control panel
27 Plastic handle
28 Gummy insulation
29 Electrical board
30 Cycle inversion valve
31 Bobbin valve
32 Liquid receiver
33 Liquid’s separator

1.11 VIEW - RPE X R410a (bicompressor)

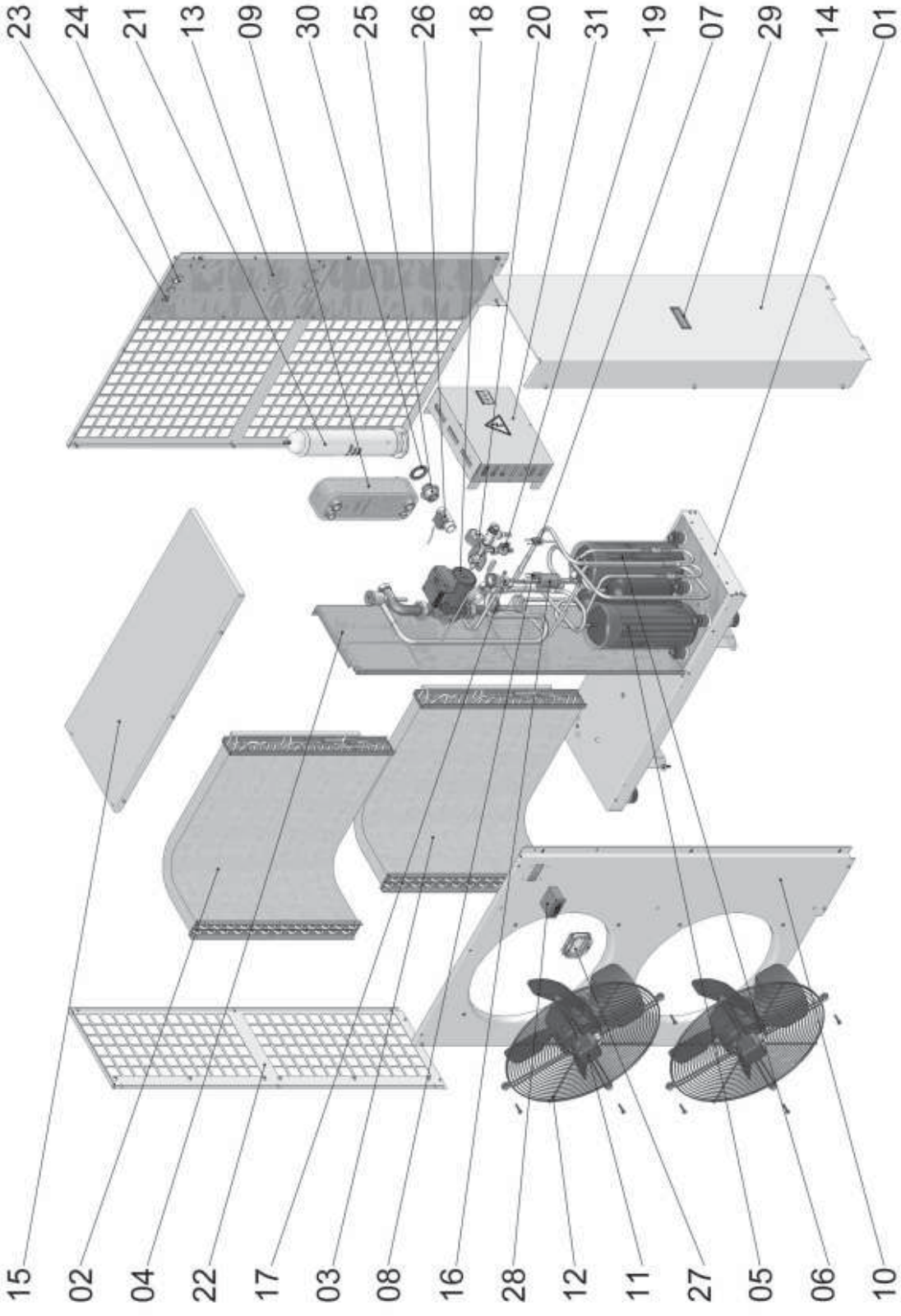
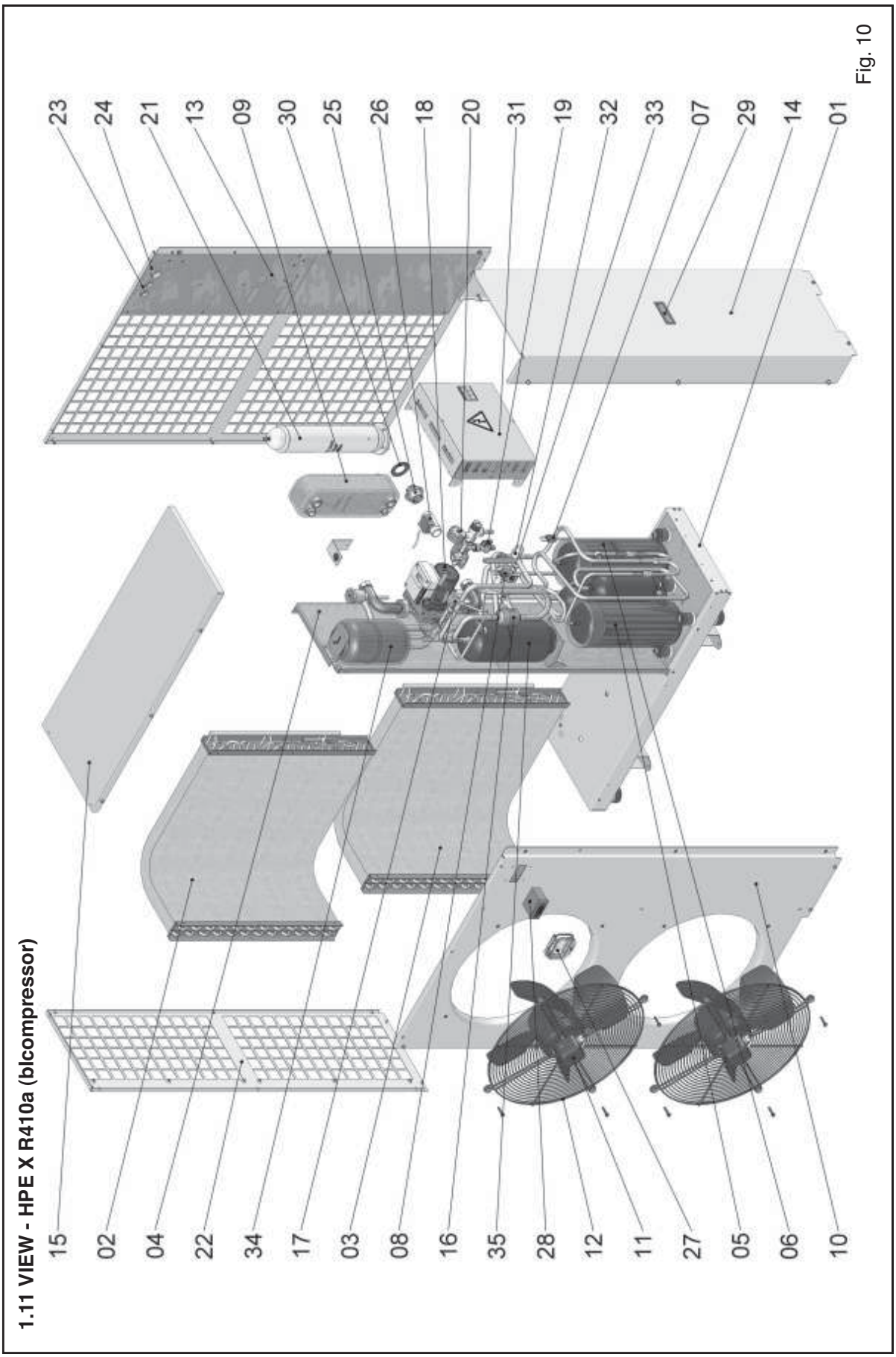


Fig. 9


1.11 VIEW - HPE X R410a (blcompressor)
23
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09
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19
32
33
07
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14
01
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02
04
22
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17
03
08
16
35
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12
11
27
05
06
10

Fig. 10

Legend view drawing RPE X R410a (bicompressor) (fig.9)

01 Base
02 Wings exchanger 1
03 Wings exchanger 2
04 Separator panel
05 Compressor 1
06 Compressor 2
07 High pressure switch
08 Low pressure switch
09 Plate exchanger
10 Fan panel
11 Fan
12 Fan grille Ø450
13 Side grille panel
14 Front panel
15 Top panel
16 Dehydrator filter
17 Thermostatic valve
18 Water pump
19 Water discharge valve
20 Water manometter 10bar
21 Expansion vase
22 Back grille panel
23 Cable fix PG13,5
24 Cable fix PG16
25 Connection 1”
26 Flowmeter
27 Control protection group
28 Control panel
29 Plastic handle
30 Gummy insulation
31 Electrical board

Legend view drawing HPE X R410a (bicompressor) (fig.10)

001 Base
02 Wings exchanger 1
03 Wings exchanger 2
04 Separator panel
05 Compressor 1
06 Compressor 2
07 High pressure switch
08 Low pressure switch
09 Plate exchanger
10 Fan panel
11 Fan
12 Fan grille Ø450
13 Side grille panel
14 Front panel
15 Top panel
16 Dehydrator filter
17 Thermostatic valve
18 Water pump
19 Water discharge valve
20 Water manometter 10bar
21 Expansion vase
22 Back grille panel
23 Cable fix PG13,5
24 Cable fix PG16
25 Connection 1”
26 Flowmeter
27 Control protection group
28 Control panel
29 Plastic handle
30 Gummy insulation
31 Electrical board
32 Cycle inversion valve
33 Bobbin valve cycle inversion
34 Liquid receiver
35 Liquid separator

1.12 GRAPHICS AND PERFORMANCE TABLE

The graphics with the technical data can be used to definite different performances of the machinery than the nominal values.

Important to know is as follows:

- the thermo jump of water is considerate as constant at 5°C, in cool and heat mode: for different DT is possible to correct the values of cooling/heat power using reported in table 4-5 index;

- the liquid transporter is water with a heat of 1;

- use of solutions anti frost with glycol ethylene, concentration max 35%, brings a correction of the values of cooling and electrical power, graphic 5-6;

- the absorbed electrical power is the total of energy – from compressor, water pump, fans and the electrical control;

- the values of thermo power for HPE, graphic 2, net from defrost, with constant humidity at 87%;

- the graphic of expansion vase was created for water and anti-frost solution with different concentrations of weight of glycol ethylene:

water ..... T_{max}= 58°C, T_{min}= 3°C;
water + glycol al 10% T_{max}= 58°C, T_{min}= -2°C;
water + glycol al 20% T_{max}= 58°C, T_{min}= -4°C;
water + glycol al 35% T_{max}= 58°C, T_{min}= -15°C

1.12.1 Using of the graphics

Graphics 1-2: Index of correction of the cooling/ heat power regarding the influence of T water and T air d.b., permits to calculate the cooling/ heat power using the values of air temperature and the temperature of water intake.

- Working in mode Cool

Example A:with an air temperature d.b. at 30°C and intake water at 18°C, the correction index from the graphic is 1,215; multiplication - this coefficient with the power = the cooling power at real conditions.

- Working in mode Heat

Example B: with an air temperature d.b. at 0°C and intake water at 30°C, the correction index from the graphic is 0,78; multiplication - this coefficient with the power = heating power at real conditions.

Graphics 3-4: Index of correction elect. Power absorbed using water T and T air d.b. permits to definite the total absorbed elect. power, using air temperature and the water intake temperature.

- Working in mode Cool

Example C: with an air temperature d.b. at 30°C and intake water temperature at 18°C, the correction's index is 0,94; multiplication this coefficient with the power = absorbed elect. Power for the real conditions.

Tab. 4: Index of correction thermo power in mode cooling - variable ΔT water with air temperature d.b. 35°C

Description	Thermo jump of water		
	3°C	5°C	8°C
Index of correction	0,97	1,00	0,99

Tab. 5: Index of correction thermo power in mode heating - variable ΔT water with intake water 7°C d.b. and 87% relative humidity

Description	Thermo jump of water			
	3°C	5°C	8°C	10°C
Index of correction	1,011	1,000	0,970	0,965

- Working in mode Heat

Example D: with air temperature d.b. at 0°C and intake water at 30°C, the correction's index is 0,81; multiplication this coefficient with the power = total absorbed elect. power at real conditions.

Graphics 7-8: Expansion vase RPE/HPE X5 ÷ 8,5 and RPE/HPE X10 ÷ 17

To definite the volume of the expansion vase, when the total volume of the plant exceeds the limit value of the curve with axe "volume plant", considering the percent of glycol ethylene in the liquid.

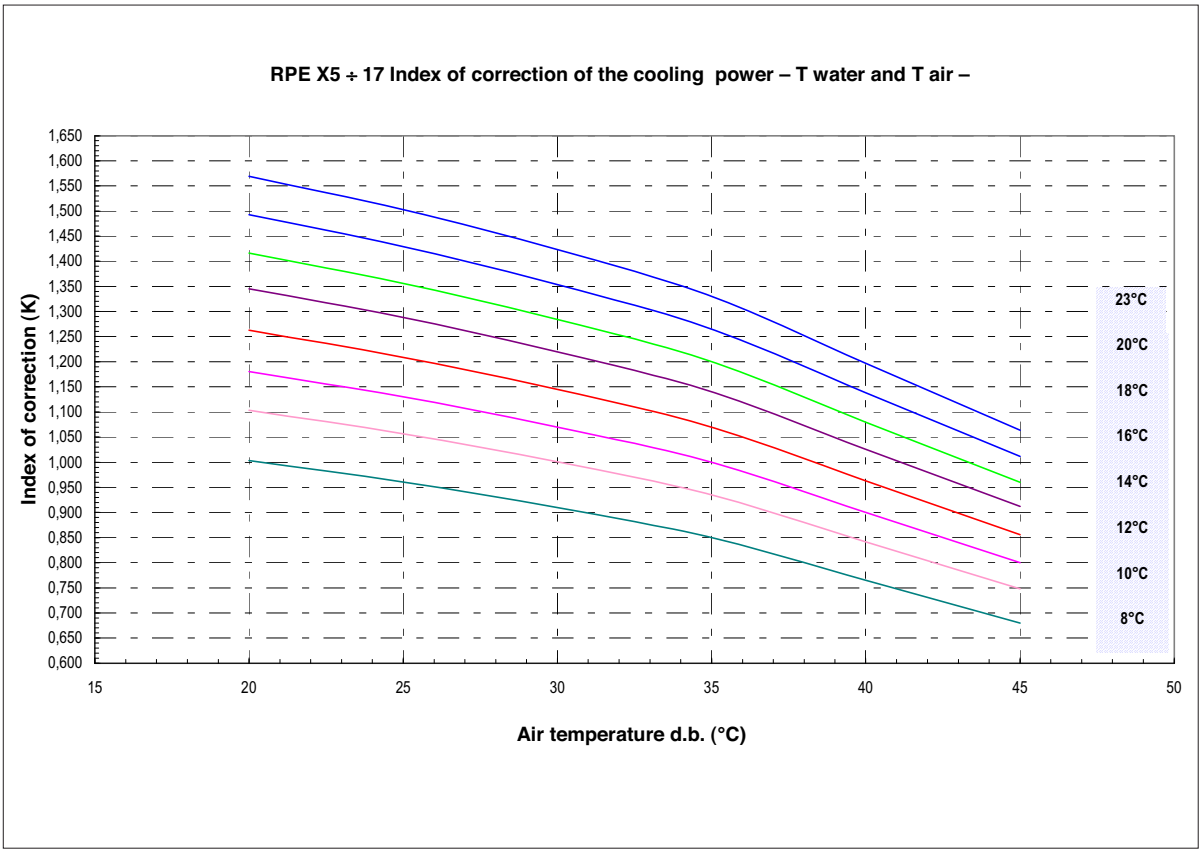
Example E: using RPE/HPE X5÷8,5, for hydro plant only with water with volume 60 l, the expansion vase should have capacity of 1 l; the same plant with water solution - glycol at 40% needs a integrate vase with capacity 3 l.

Graphic 10: Index of correction of the useful prevalence.

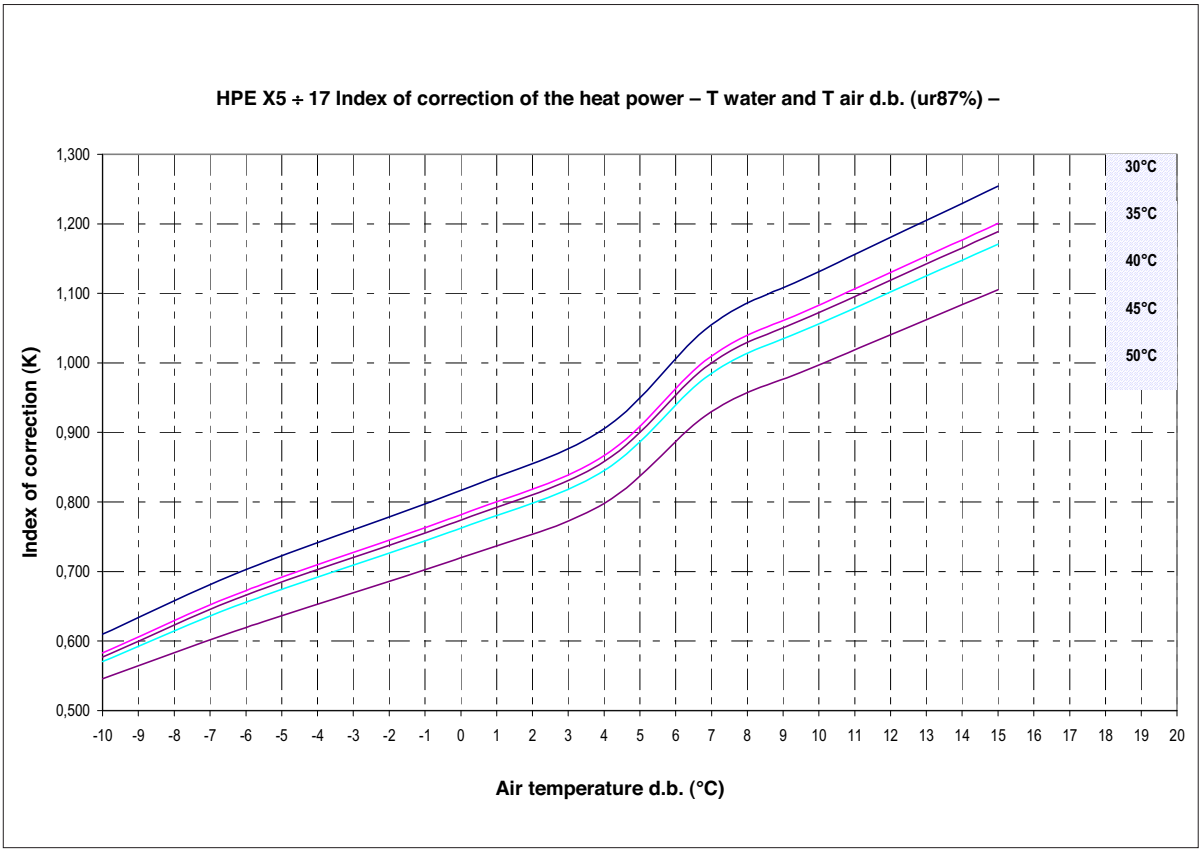
It permits to definite the useful prevalence for the machinery, considering the percent of glycol ethylene and the average of temperature between entry and issue.

Example F: solution of glycol at 10% with average temperature 30°C, corresponds a correction coefficient 0.975; The graphics are realised in according to labour test in our technical centre.

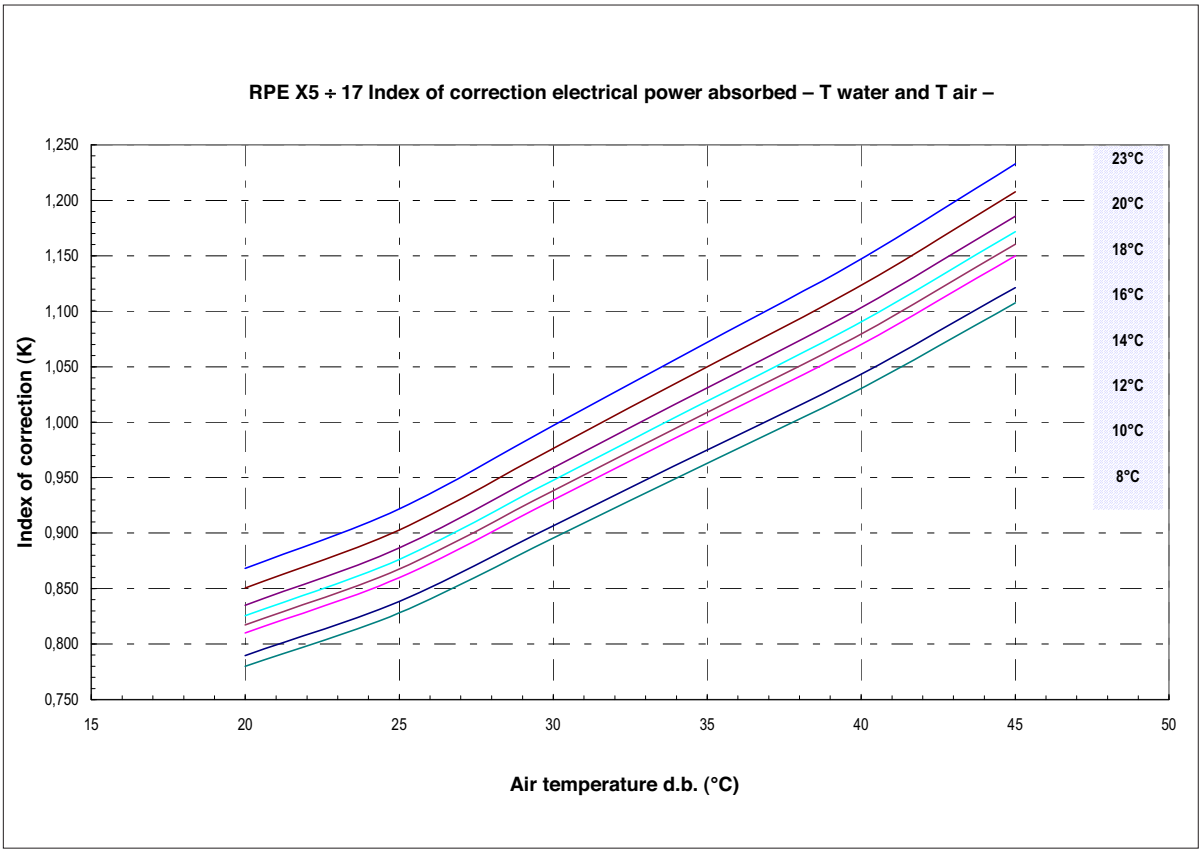
Graphic 1



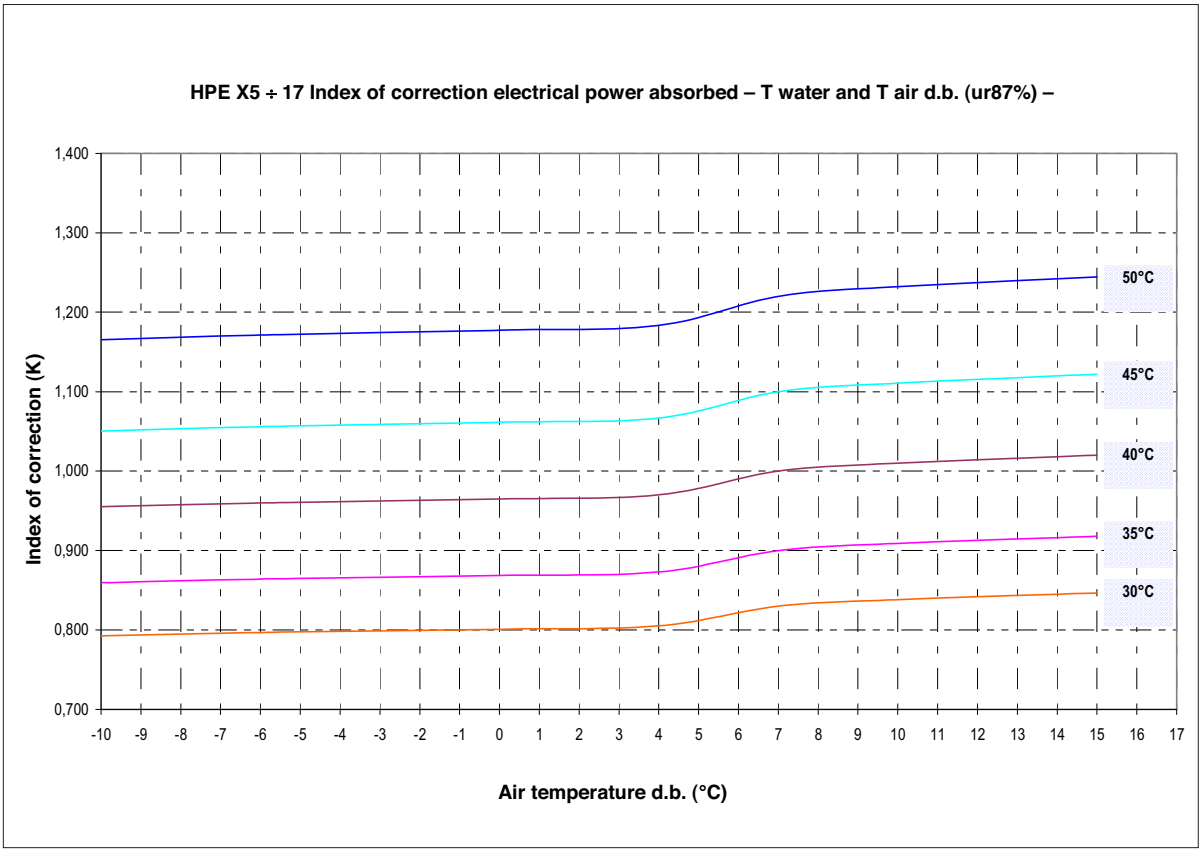
Graphic 2



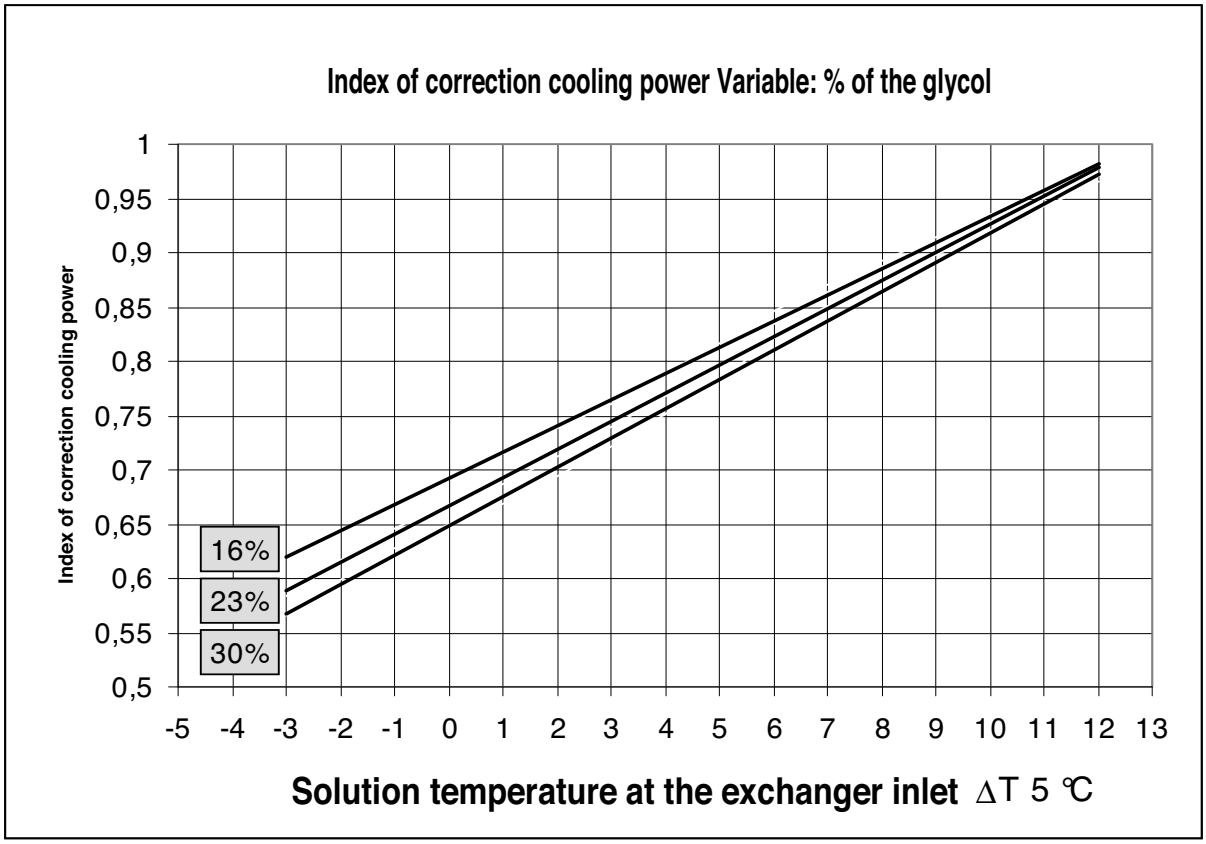
Graphic 3



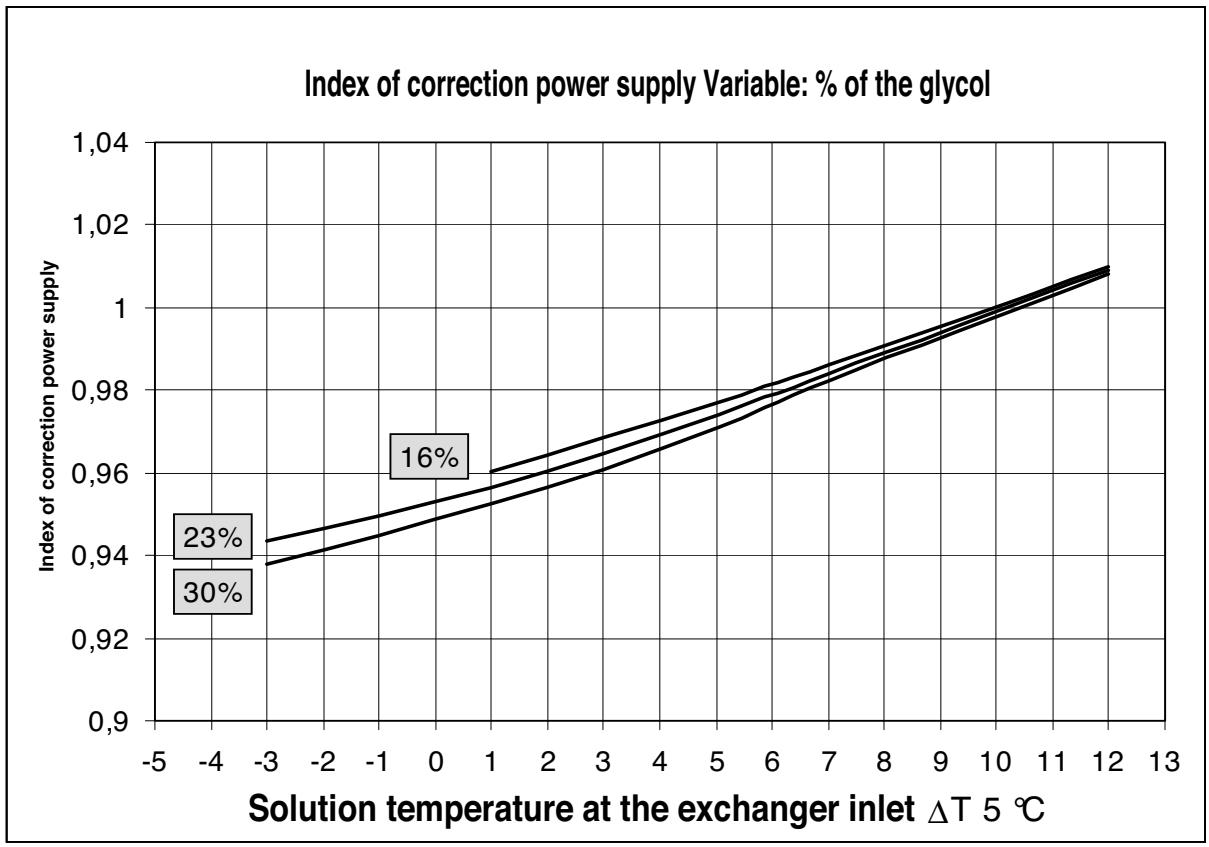
Graphic 4



Graphic 5

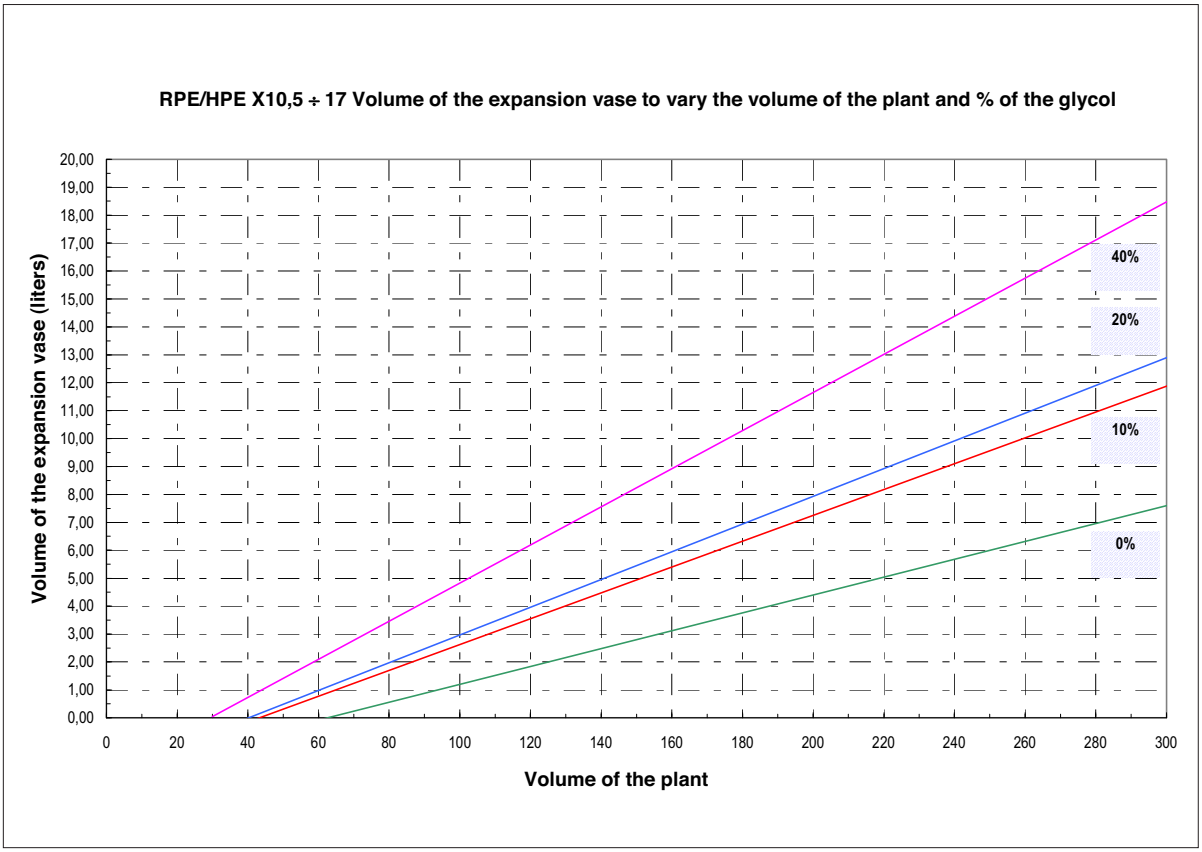


Graphic 6

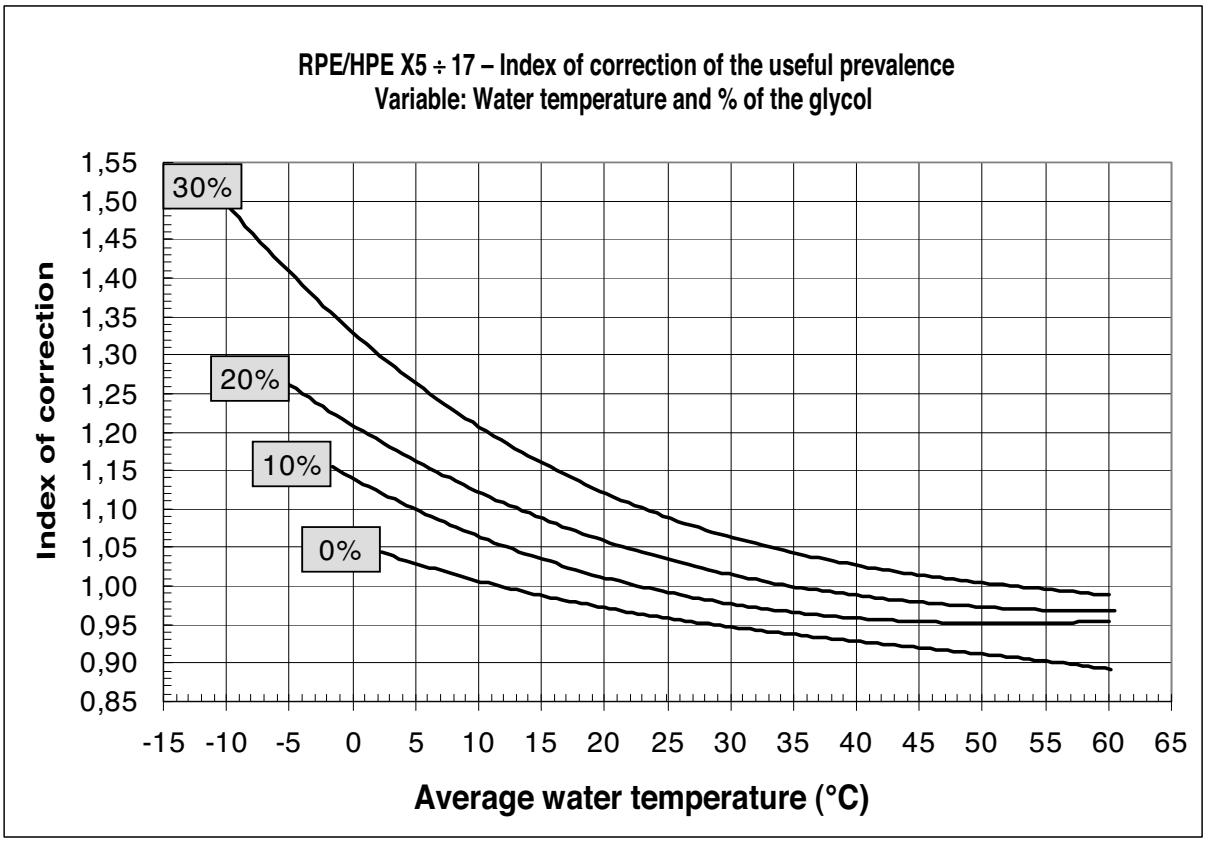


Graphic 7

Graphic 8



Graphic 10


RPE/HPE X5 ÷ 17 – Index of correction of the useful prevalence
Variable: Water temperature and % of the glycol
Index of correction
1,55
1,50
1,45
1,40
1,35
1,30
1,25
1,20
1,15
1,10
1,05
1,00
0,95
0,90
0,85
30%
20%
10%
0%
-15 -10 -5 0 5 10 15 20 25 30 35 40 45 50 55 60 65
Average water temperature (°C)

2. SAFETY AND CONTROL DEVICES

2.1 MICROPROCESSOR CONTROL

IThe system is composed from an electrical card on microprocessor (fig. 11) with integrated display, accessible directly from outside. It permits the control of the following parameters:

- set point and heating or cooling mode;
- control and visualisation of the water temperatures in entry and issue;
- control and visualisation of the temperatures of the exchanger air/gas refrigerant;
- delay of compressor starting;
- control of min. temperature in issue water;
- control defrost (only heating pump);
- visualisation of the safety intervention;
- regulation of the speed of the fan rotation;
- control anti-frost resistance;
- control min. pressure and max. cooling circuit;
- control and visualisation of the alarms.

2.1.1 MICROPROCESSOR

The general functions of the microprocessor can be activated from the control panel (fig. 11).

Fig. 11

LEGEND SIMBOLS AND KEY:

LED Heat mode: access (HPE) is in mode heating.

LED Cool mode: access if the machinery is in cooling mode.

LED 1 Compressor: access, if the compressor is working

LED Anti-frost: access, if defrosting is activated

LED Resistance: access, if the defrosting resistance is working.

KEY MODE selection of the working mode:

- for versions HPE (heatig pump), following the steps:

  Standby - Cooling - Heating - Stand by;

- for versions RPE (only cooling), following steps:

  Standby - Cooling - Stand by.

Note: in **Menu** mode the key has the function **UP** (arrow = increase of the selected value)

KEY ON-OFF start, stop and alarms reset.

- One single touch resets all alarms;

- long press (2 seconds) pass from ON to OFF, and contrary;

- in OFF mode it remains on, only the decimal point on display.

Note: : in mode **Menu** the key **DOWN** (arrow down = reducing of the value).

Pressing on Keys MODE and ON-OFF for less as two seconds, you are in mode Menu.
Contrary, if press for more than 2 seconds, you are going down to the introduction mask (see menu legend- fig. 21).
The key board permits the following functions:
Start, stop, pass from cool to heat mode, modify parameters, receive general information on two levels:

1. User;

2. Maintenance man.

To entry in mode “Programming user” you need an entry code.

2.1.2 KEY BOARD AND MICROPROCESSOR

a) how to change the value of set point;
b) how to entry in programming;
c) how to see the hours of working of the compressor and the hydro pump;
d) how to see the values of working.
a) how to change the value of set point

a) How to change the value of set point

Press (for lessa than 2 seconds) the keys **ON-OFF** and **MODE** for first level of the menu **"Set"** (fig. 12); press more the keys **ON-OFF** and **MODE** for second level of menu, and with key **UP or DOWN,** go to the desiderated function of setting (see fig. 13 - Set Cooling = **Coo** or Set Heating = **HEA**).
Press **ON-OFF** and **MODE** for modify the set point with **UP or DOWN** (fig. 14).

Fig. 12

For issue from the menu, press the keys **ON-OFF** and **MODE** for more than 2 seconds till to start mask.

Fig. 13

b) how to entry in programming;

How to entry in programming press (for less than 2 seconds) the keys **ON-OFF** and **MODE** for the first level of the menu; with the keys **UP or DOWN** go to Password (fig. 15).
Press the keys **ON-OFF** and **MODE** for next mask.

Fig. 14

Use the keys **UP or DOWN** for insert a Password with value 47 (fig. 16).
To issue from the menu, press keys **ON-OFF** and **MODE** for more than 2 seconds, fig. 21 (structure of the menu).
Press **ON-OFF** and **MODE** to entry In the family of under menu and replay the operations above.
To modify the parameter, press **UP or DOWN.**
To issue from the menu press keys **ON-OFF** and **MODE** fore more than 2 seconds.

Fig. 15

c) how to see the hours of working of the compressor and the hydro pump

How to see the hours of compressor and hydro pump working press (less than tow seconds) the bottoms **ON-OFF** and **MODE** for access in

Fig. 16

the first level of the menu; press **UP or DOWN** following the function Ore funzionamento (OHr - see fig. 17).
Entry - press **ON-OFF** and **MODE**. Moving **UP or DOWN** selection the desiderated function (hours compressor = OH1 - hours pump =OHP - see fig. 18). Press **ON-OFF** and **MODE** to see the selected parameter.
To issue from the menu going up the levels, pressing **ON-OFF** and **MODE** for more than 2 seconds.

d) how to see the values of working

How to see the values of working press (less than 2 seconds) **ON-OFF** and **MODE** for entry in the first level of the menu; pressing **UP or DOWN** folloing the function “Ingressi analogici” (tP) or “Visualizzazione errori” (Err) (fig. 19).
Entry pressing **ON-OFF** and **MODE**. Moving with **UP or DOWN** selection he desiderated field, with the following possibilities:

Fig. 17

CAMPO TP

t01 = (°C) sensor ST1 temperature water entry (fig. 20);

t02 = (°C) sensor ST2 temperature water issue

t03 = (°C) sensor ST3 temperature exchanger air/gas refrigerant

CAMPO Err

- - - = no alarm active;

E** = code alam active (see point 6.1).

Fig. 18

Press **ON-OFF** and **MODE** to see the value of the selected field.

To issue from the menu, going up the levels, pressing **ON-OFF** and **MODE** for more than 2 seconds.

Fig. 20

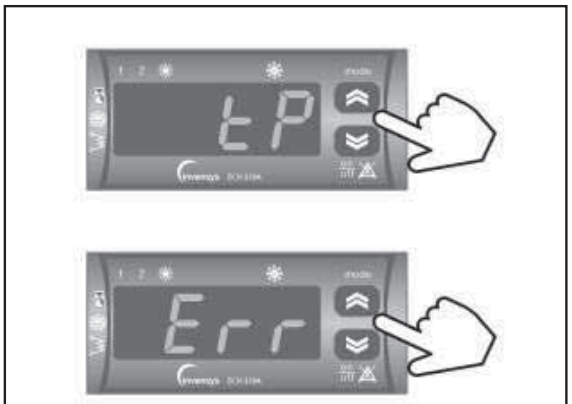


Fig. 19

2.2 PROTECTION OF THE COOLING CIRCUIT

The protection of the cooling circuit and of the compressor is controlled by the pressure - low/ high - in the circuit.
When the values are major than the limits, an alarm for block of the system will be activated.
The same compressor includs a thermo protection. It will be active when the conditions of the compressor’s work are going out from the limits.

2.3 PROTECTION OF THE HYDRO CIRCUIT

When the water flow is very low, a flowmeter mounted before the pump gives the signal to the microprocessor and blocks the compressor.

The mechanic filter on metallic net, supplied from factory, should be mounted in aspiration.

2.4 CONTROL DE-FROSTE (Mod. HPE)

The defrost of the exchanger air/gas refrigerant is when the cycle will be inverted:from heat to cool.
The defrost is not more than 5 min., and usually, is present when the external temperature, at h.b. is minor than 6°C. In such conditions is normal that the machinery has only one defrost each hour.
During the defrost phase the fan of the condensate is stand by. When the condense temperature exceeds the pre-set value of temperature, the fan will be activated on minimal speed.

2.5 CONTROL COMPRESSORS START TANDEM (mod. RPE-HPE X10÷17)

The start of the bough compressors is not simultaneously.
The start is delayed to prevent the over load of current.
The switch off is also not simultaneously. First will be switch off the compressor with major number of work hours (balance of duration).

2.6 FUNCTION ADAPTIVE

The integration of the tank in the chiller produces the inertia and limits the number of starting and switch off of the compressor.

The function Adaptive (slide of temperature SET) modifying SET POINT and hysteresis of the thermo regulator, simulates the presence of exchanger and permits the installation without this component.
Some inserted parameters determines the increase or the reduction of the SET POINT, according to the time of work, till min. 3°C in mode cooling and 58°C in mode heating.

Such values should be consider as limits before the alarms - defrost and high pressure:
if the water temperature in issue reaches the values 3° or 58°C the compressor stops and it follows original SET POINT and hysteresis.

ATTENTION! For low temperatures the parameter C09 should be modified considering the concentration of glycol and the parameter A11 (see tab.6)

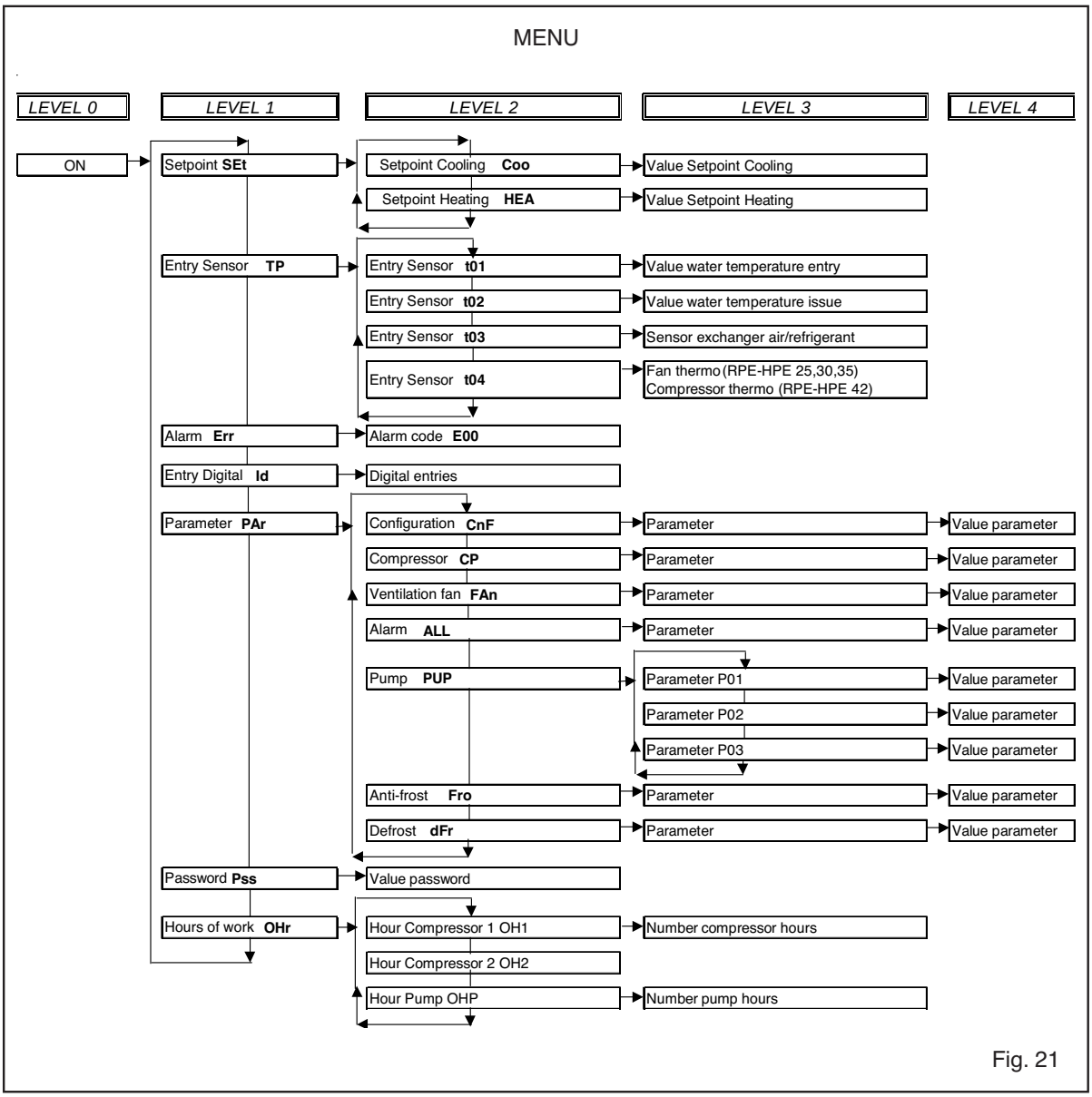


Fig. 21

SECTION B - TECHNICAL FEATURES

3. WARNING

3.1 QUALIFICATION OF THE INSTALLER

ATTENTION! The installation and the technical check-out should be made from skilled technician.

3.2 PRELIMINARY INFORMATIONS

Before installation check the project of the plant out and verify that all required authorizations are present.

3.3 TRASPORT AND MANIPULATION

The machinery will be delivered in wood's pallet, with paper and plastic protections.
The appliance can be lift or moved only through adequate equipment or by qualified persons, balancing correctly the weight (fig. 22).

ATTENTION! During the shipment and the moving the machinery should be in vertical position.

When delivered in bad condition, please request immediately damage report to the transporter. Damaged machinery doesn't be installed.

3.4 INSTRUCTIONS

The present manual is a part of the machinery and should be recommended ever in case of technical problems.

ATTENTION! By installation or technical intervention all recommendations in the present manual should respected. When the connections will be changes or some modification of the machinery will be made, the manufacturer is not responsible for damage and the warranty will be annulated.

UPLIFT OF THE MACHINERY

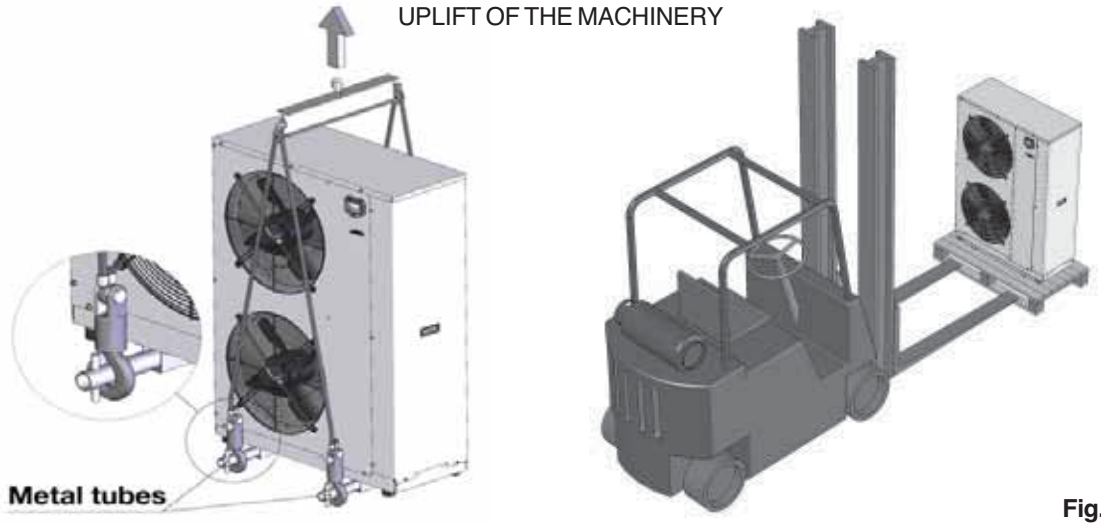


Fig. 22

4. INSTALLATION

4.1 GENERAL INDICATIONS

Before installation observe the following indications:

a) the machinery should be installed in protected zone;

b) the installation in corrosive zone is not permitted; closer to see, the appliance needs more technical care and obviously its life will be shorter;

c) the installation area should be free from obstacle between the exchanger; to avoid installation in a corner where usually it's an accumulation of dust, leaf, etc;

d) to avoid an installation in a tight places, in little courtyard to prevent acoustics phenomena; inform you about the permitted noise level in the zone of installation;

e) to avoid current of fan air directly into windows or entry doors. (fig. 23);

f) do not install the chiller close to source of heat or risk of fire zone;

g) to be sure that the electrical plant is correct;

h) for the easy access to the machinery to respect the recommended limits of distance (fig. 24);

ZONES OF RESPECT

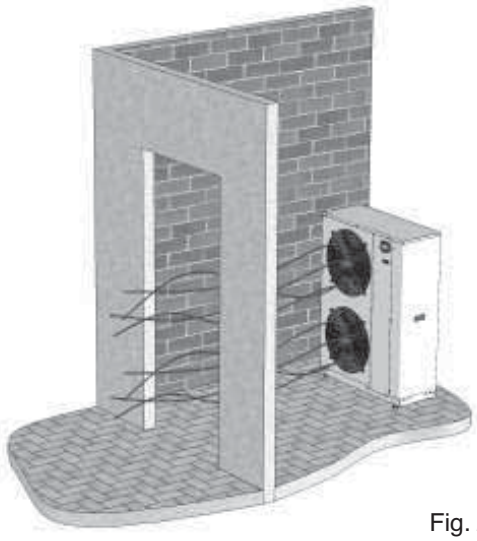


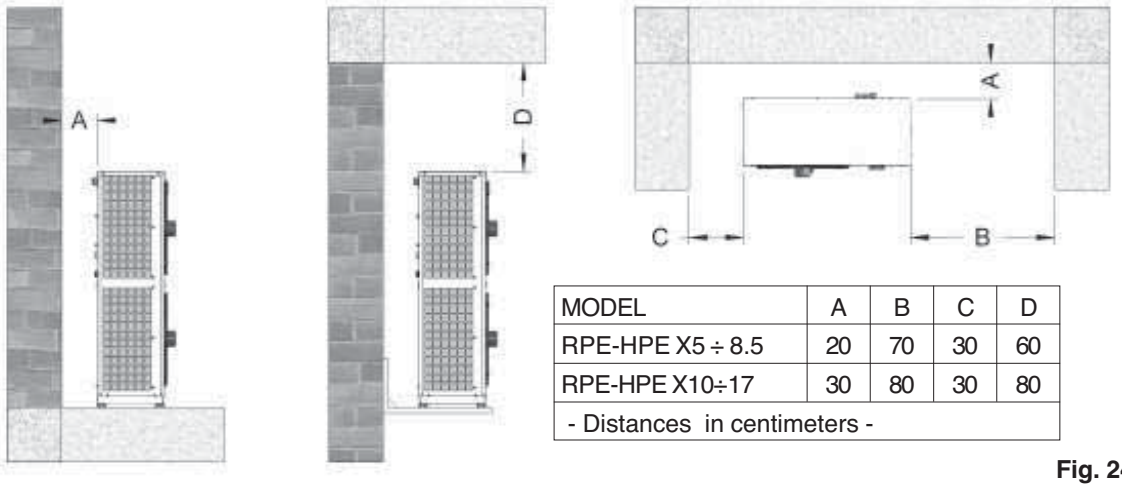
Fig. 23

i) to check if the floor standing support plate is adequate for the weight of the chiller, In case of wall installation, the wall's bracket should have a corrosion protection.

ATTENTION!
Be sure that the wall resistance and the wall brackets can be able to support the weight of the chiller;

j) for the models in heating pump, due to elimination of the condense water, to provide a drain device.

DISTANCES OF RESPECT



MODEL	A	B	C	D
RPE-HPE X5 ÷ 8.5	20	70	30	60
RPE-HPE X10÷17	30	80	30	80
- Distances in centimeters -				

Fig. 24

4.2 OPERATION OF INSTALLATION

4.2.1 Fixing

The unit was created for out door installation without special support; nevertheless, it should have a solid position. If floor standing mounting is requested, will be needed the anti vibrant gummy supports.

4.2.2 Hydro connections

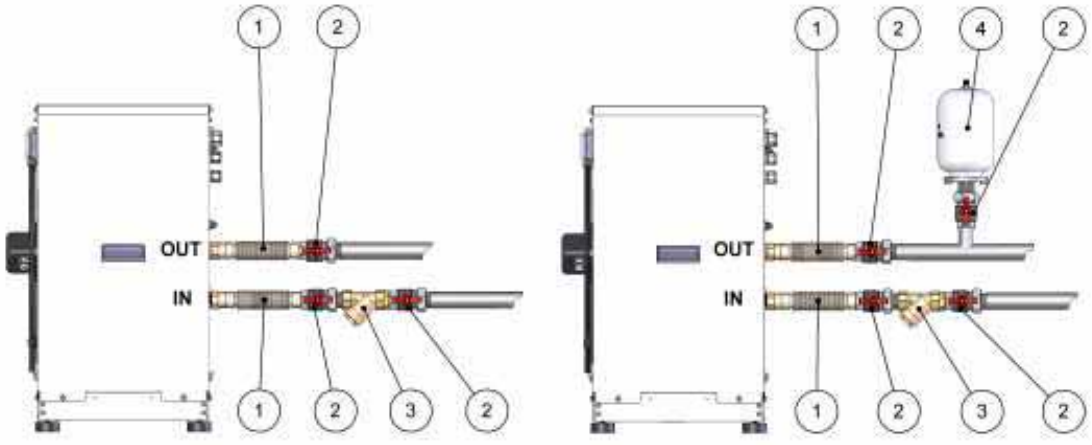
The components and the accessories should be choose from the installer according to the local lows and to the technical norms.

ATTENTION! The circulator mounted on board of the unit is able to supply the nominal water flow with the needed prevalence of the table of technical data. Verify that the loss of charge of the plant doesn't exceed the useful available prevalence.

Recommendations:

- installation of the relief valve in the higher point of the pipes;
- the diameter of the aspiration line should be not inferior than such unit's connection;
- to limit the horizontal length of the aspiration pipe inclining it with 2° to the top.;
- to fix the piping to avoid that the connections of the unit support the weight of all pipes;
- to install valves of interception on the water outgoing/aspiration pipes, because of technical maintenance and to avoid discharge of the whole plant;
- to use flexible joints to avoid vibration transmissions;
- to install a adequate discharge system with reintegration;
- all pipes should be correctly insulated to prevent thermo loss and condense formations;
- **to use anti-frost solutions (water/glycol ethylene with max. concentration of 35%) if the out door temperature is / or lower than 1°C and when the temperature of water outgoing is/lower than 3°C;**

RECOMMENDED HYDRO CONNECTIONS



LEGEND

1 = Anti vibrant joint
2 = Gate valve
3 = Water filter
4 = integrated expansion valve (vedi par. 1.12)

Fig. 25

ATTENTION! It is very important to install the net water filter in entry of the chiller, (fig. 25).

Connect the hydro pipes to the water entry/issue attachments (side position and tagged from factory).

ATTENTION! Before filling of the plant, make sure that all pipes are empty from sand, slag or rust.
It is recommendable to clean the piping before filling.

To fill the plant and check out if the interception's valves and the discharge tap are working good. To eliminate all air formations in the piping through the relief valves.

To continue to fill the plant till pressure 1,5 bar. check out The hydro attachments and the connections of the joints. After some hours it is recommendable to verify the pressure another game and if necessary to make a reintegration.

4.3 ELECTRICAL FEEDING

The models RPE/HPE X5, 7,5 and 8,5 have to be on tension of 230 V ~ 50 Hz. All other models can be feeded with with tension 400V~ 3N 50Hz or 230 V ~ 50 Hz.

ATTENTION! All electrical connections have to be done from a skilled technician.
Respect the local low norms in reference.

To install an electrical plant switcher off with 3 mm opening.
For the triple phase's plant can be used a magnet thermo switcher.

4.3.1 Electrical connections On/Off and Heat/Cool remote

Collect C and CP2 (On/Off), and C and CP1 (Heat/Cool) (fig. 26).
Only for the models heating pump, the configuration have to be made in the Menu (CnF) and select in the parameter H27 a value between 0 and 1 (see section "How to enter in programming, point 2.1.2).

ELECTRICAL SCHEMA HEAT/COOL REMOTE

CP1 = Normally open COOL, close HEAT
CP2 = Normally open ON, close OFF

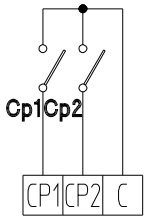


Fig. 26

The circulated pressure is not elevated and it can be used cables with section 0,75 mm² , also for big distance.

The connection cables for ON/OFF and HEAT/COOL remote have to be separated from the pressure conductors.

4.4 HYDRO PUMP

The hydro pump can be configured in two modes:

1. continue function (from factory);

2. on demand (compressor).

From factory the pump is starting in mode On and it switch off by Off.
When the water temperature reaches the value SET and the compressor will be switched off, the pump remains ON.

This function gives the optimal work of the unit and it is recommendable for the big part of plants.

It is possible to select the configuration "on demand". In this case the pump will be activated when the water temperature needs it.
When the water temperature reaches the value SET the pump switches off (fig. 27).

4.5 USE WITH LOW WATER TEMPERATURE

ATTENTION! In cooling mode, with water temperature in issue on/or under 3°C, it is necessary the use of glycol ethylene and modify the parameters "Anti-frost" and "Electrical resistance" (tab. 6-7).
(Attention of the parameter C09)

5. STARTING

5.1 VERIFY THE FIRST START

Before starting make sure as follows:

- all safety recommendations from the technical manual are present;

- the unit is fixed to the floor or to the support plate; the position of the unit is free from obstacles and the access to, is easy;

- the hydro and electrical connections, especially the ground connection, are correct;

- the water filter is mounted in aspiration;

- devices of interception, charge, discharge and relief are installed correctly.

ATTENTION! If the unit is installed in disaccording to the present manual or the local low norms, the warranty will be immediately compromised.

5.2 FUNCTION

The starting or the function's mode can be selected directly from the microprocessor key board ON-OFF and MODE, or using the remote connection.

Give tension to the unit through the general switcher, first check out the safety conditions above.
After selected ON mode and if the temperature of SET is lower than the value pre-selected, 3 min of pause will be necessary to the start of the compressor.
From this moment the unit works in automatic mode with on/off cycles according to the reaching of SET temperature or of the function adaptive. (eliminate schema - fig.28).

5.2.1 Procedure

After starting you have to check out the correct work of the plant, as follows:

- the water pump should be not noisy. When noisy, it means that there is an air inside the pipes or the water flow is not enough;

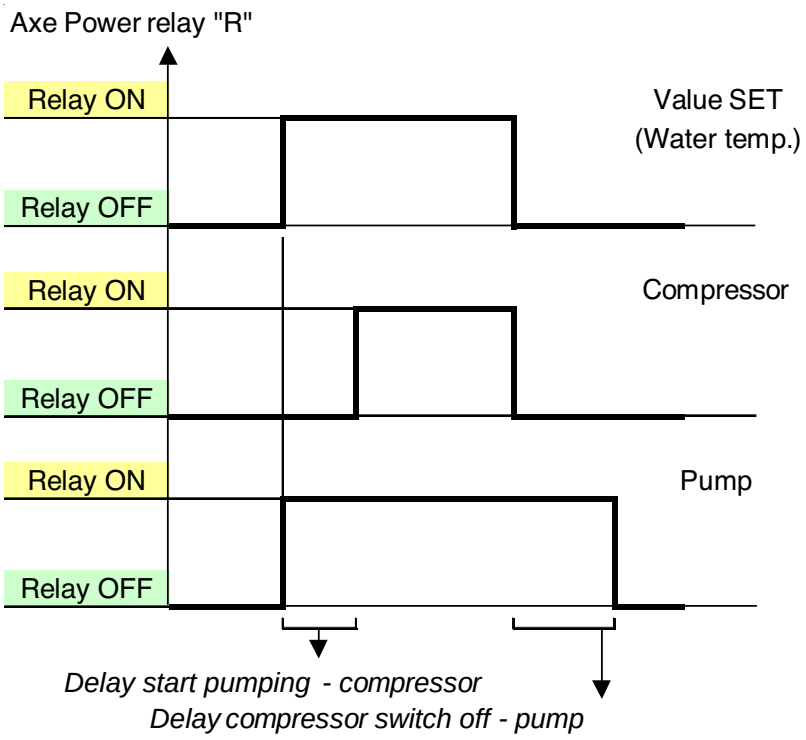
- the electrical tension should be between 210-250 Volt for the models mono phase; 380-420 Volt for the other models with triple phase.
When the values are lower/higher, it means that there is a fall of tension on the electrical line.
This event can created damage of the compressor;

- the thermo jump, measured between entry/ issue have to be 3 and 8°C; minor values than 3°C indicates a very big water flow; when the value is major than 8°C, the water flow is very low. To verify the water temperatures in entry/ issue, see point 2.1.2

- d) visualisation on the display of the microprocessor.

If the above conditions aren't present, switch off the unit.

PUMP SCHEMA



Selection from factory			
Description	Parameter	Value	U.M.
Delay ON	P02	120	s
Delay OFF	P03	180	s

Fig. 27

Tab 6 - Selection set point alarm anti-frost by low water temperature (solution water - glycol ethylene)

Concentration Glycol Ethylene	Set Point alarm defrost parameter A11 (°C)	Point of frost (°C)	Limit min. setpoint cooling H04	Set Point Block Compensation Adaptive C09
10%	0	-3	6	2
20%	-5	-8	1	-3
30%	-12	-18	-6	-10

Tab. 7 - Selection set point resistance defrost by low temperature (solution of water - glycol ethylene)

Concentration Glycol Ethylene	Set Point resistance parameter R07 and R08(°C)	Point of frost (°C)
10%	-1	-3
20%	-6	-8
30%	-15	-18

6. ALARMS AND DIAGNOSTIC

6.1 VISUALISATION OF THE ALARMS AND DIAGNOSTIC

When is present an error in the work of the unit, the microprocessor switches it off. For identification of the alarms (see tab. 8.1).

The alarms are separated in three categories;

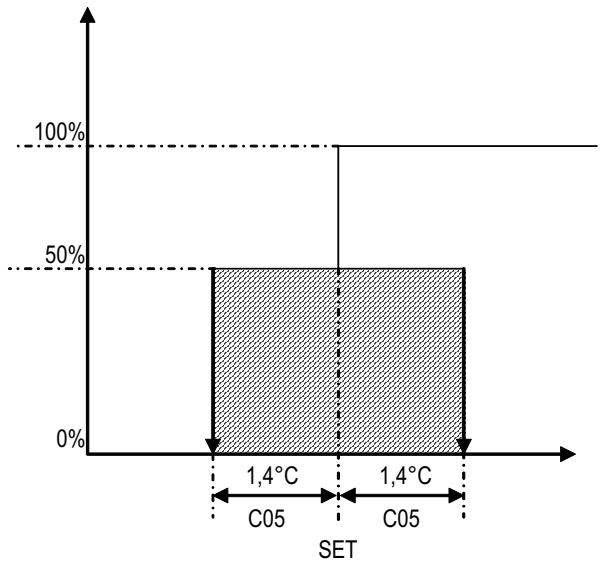
1. MANUAL START (reset press On/Off);

2. AUTOMATIC START (automatic with the correct conditions);

3. AUTOMATIC START (when the number of automatic start is major, the start should be manual).

In case of more than one alarms, enter in the menu (Err) and follow point 2.1.2 - d).

RPE/HPE X10÷17 - GRAFPHIC PARTIALITY OF THERMO / COOLING POWER



100% = the both compressor are on
50% = only one compressor on
0% = both compressor are off
1,4°C = differential of partiality set
SET = temperature value

E ample:
SET = 12°C
When the water temperature reaches SET, one of the compressors is going off;
the other compressor is continuing to work until the water temperature is in the interval +/- 1,4°C

Fig. 28

Table 8 - Alarm Description

Alarm Codes	Description	Reset	Note	Possible causes	
				Cooling mode	Heating mode
E00	**OFF remote** active	*	ON/OFF remote	*	
E01	Pressure switch of Max	Manual	When the pressure switch of Max is activated	Leak of air circulation in the exchangers: fan damage, dirty exchanger, bad installation	Leak of water circulation in the exchangers: filter is dirty, big dispersions of charge in the pipes, water temperature in entry is very high
E02	Pressure switch of Min.	Automatic till 2 interventions for hour. Third intervention is manual	When the pressure switch of Min. is activated. It is not active by defrosting (mod. HPE) and by compressor starting	Miss of charge, hydro filter is dirty, interception valve closed (damage of the spool)	Leak of air circulation in the exchangers, miss of charge, hydro filter is dirty, interception valve closed (damage of the spool)
E05	Anti frost alarm	Automatic till 2 interventions for hour. Third intervention is manual	By heating mode is not active when the compressor is starting	Poor water flow of the pump: the filter is dirty, damage of the pump, presence of air. Set point is very low	Not possible for the model HPE
E06	Damage sensor **ST2** (water issue)	Automatic	Active when the sensor is: in short, broken or with values out of -50 / 100 °C	The sensor is damage. The correct value of resistance should be between 329.200 and 973 Ω example: at 20 °C = 12.090 Ω	
E07	Damage sensor **ST3** (exchanger air/gas)	Automatic	Active when the sensor is: in short, broken or with values out of -50 / 100 °C	The sensor is damage. The correct value of resistance should be between 329.200 and 973 Ω example: at 20 °C = 12.090 Ω	
E11	High pressure analogical (sensor ST3)	Manual	Active when the temperature of condense, read by the sensor ST3 exceeds the value in the parameter Pa A14	Leak of air circulation in the exchangers: fan damage, dirty exchanger, bad installation	Not possible for the model HPE

Alarm Code	Description	Reset	Note	Possible causes	
				Cooling mode	Heating mode
E12	**Low pressure analogical (sensor ST3)**	Automatic till 2 interventions for hour. Third intervention is manual	Active when the temperature of evaporation, read by sensor ST3 exceeds the value in the parameter Pa A14. It is not active for the time in the parameter Pa A16 from the compressor start or from the cycle inversion (mod. HPE)	Not possible for models RPE	Leak of air circulation in the exchanger: fan damage, dirty exchanger, bad installation
E40	**Damage sensor ST1** (exchanger air/gas refrigerant)	Automatic	Active when the sensor is: in short, broken, or with values exceeding -50/100 °C	Sensor damage. The correct value of resistance should be between 329.200 and 973 , example: at 20 °C=12.090	
E41	**Differential pressure** switch hydro circuit	Automatic till 2 interventions for hour. Third intervention is manual	It is not active for the time in the parameter Pa A03 by starting of the heat pump. Active when the contact is opened for the time in the parameter Pa 04. Will be deactivated when the contact is closed for the time in the parameter Pa 05	Poor water flow: the filter isa dirty, damage of the pump, big dispersions in the pipes, presence of air.	
E44	**Cooling circuit discharged**	**Manual**	Active when the thermo rise (ST1-ST2) of the exchanger water/gas refrigerant, is same or minor then the value in the parameter Pa A20 and after the time of the parameter Pa A21 and A22	Very big water flow, dispersions in the cooling circuit.	
E45	**Configuration error**	Automatic	Is related to ST1 and ST2. To be configured as digital entries.	Configuration from analogical entries to digitals	
E46	**Over temperature** (exchanger water/gas refrigerant)	Automatic	Active when the sensor ST1 (exchanger water/gas refrigerant) leads a value major than the parameter Pa A25 for a time exceeding the value in the parameter Pa A26	Not possible for models RPE	Leak the water circulation in the exchanger: damge filter, big dispersions in the pipes, water temperature in the entry very high

7. RIPARATION - REMPLACEMENT OF COMPONENTS

For intervention or replacement of component we recommend the special technical assistance. Please use only original spare parts.
Work ever in safety conditions.

Before technical intervention switch off the general electrical supply and than the selector on the unit's board.

For eventual discharge or charge with refrigerant gas, use ever the special devices to protect the ambiance.

7.1 COOLING CIRCUIT

When it is necessary to upload the cooling circuit, follow the steps under:

- replacement of the filter dehydrator;

- clearing of the circuit;

- drying and high vacuum;

- test and recharge of the gas.

7.1.1 Drying and vacuum of the plant

To eliminate water, humidity and all gas from the oil solution of the compressor, it is necessary to proceed with the drying and vacuum.

If inside the plant is a water in liquid status, you should heat a little bit the parts where it is accumulated.

The pump should be on high vacuum;it is recommended a pump min. flow 90 l/min.
The vacuum grade should be verified with a vacuum meter for average vacuum and electronic, with micron resolution.

- High vacuum:

- collect the pump to the system 1/4 SAE;

- collect the vacuum meter

- continue till min. 350 - 500 micron for min. 30 min.

7.1.2 Cleaning of the circuit

ATTENTION! In case of motor burning with perforation of the covering, it is necessary to clean the cooling circuit.

ATTENTION! Do not aspirate vapour of refrigerant from the compressor. To avoid a contact with the skin when oil from the compressor is coming.

7.1.3 Refrigerant charge

ATTENTION! Do not charge refrigerant in liquid status in aspiration. Damage of the compressor.

Follow the steps:

- collect the bottle of refrigerant gas to the system through the pipes and connections 1/4 SAE;

- insert the refrigerant in liquid status:

  a) load till the needed charge;

  b) till between the bottle and the unit there is a pressure equilibrium;

- start the unit, when necessary, load more refrigerant. This operation have to be made in aspiration of the compressor,inserting the refrigerant in liquid form and step by step;

- check out the charge, see point 7.1.4.

7.1.4 Control of refrigerant charge with the method over heating

The control of the charge can be made by value of overheating on the aspiration pipe, reducing the vapour pressure and the temperature in the closer pressure take pipe.

This values will be correct when the unit works more than 20 min. and in the normal climate conditions.

ATTENTION! Before measuring please check out if all devices are in good conditions.

Verify the over heating:

- start the unit;

- insert inside the pressure connection (in the big pipe close to the compressor) the manometer of low pressure;

- wait for 20 min. to stabilize the values;

- measure the value of temperature on the big pipe (phase vapour), closet o the pressure connection and using a contact sensor;

- check the value of the temperature in the manometer, close to the value of the pressure.

The temperature in the thermometer should be major than the temperature in the manometer with a difference between 3 and 8 °C. – cooling mode; and between 1 and 5°C - heating mode.

8. PERIODIC OPERATION OF MAINTENANCE

ATTENTION! To switch off ever the general electrical feeding.

8.1 CLEANING OF THE EXCHANGERS

The clearing of the compressor should be made min. two time in year. In the beginning of the season of work and when necessary due to technical intervention.

For clearing please use a vacuum cleaner or soft brush. If possible to clean very carefully with compress air the wings of the exchanger.

8.2 YEARLY CONTROL

For the correct work of the unit please as follows:

- charge control of refrigerant and function's parameters;

- verify electrical tension and absorption;

- check out all safety and control devises;

- water filter cleaning;

- control of the hydro plant, presence of air in the piping and eventual integration of charge;

- control and tight the hydro and electro connections;

- verify the covering, pay attention to the corrosion. **For units installed close to the see, it is necessary to check the real status of the appliance min. one time in year.**

SECTION C - INFORMATION OF THE USER

9. GENERAL

The mark CE of the products obliges all manufacture to check out regularly the production for conformity and warranty of the units.

9.1 USE OF THE INSTRUCTIONS

The not respect of the in the present manual instructions compromises the warranty of the unit.

9.2 UNPROPER USE - RECCOMENDATIONS

The units are created for cooling or heating of the ambiance. Therefore the use is strongly limited only for these objects.

Please follow the recommendation belong:

- do not insert tools, paper or other objects through the protection grills of the fans (fig. 29);
- do not lay on the wings surface of the exchangers (fig. 30);
- do not open the covering panels;
- do not touch the unit without choose, with wet or humid foods or other parts;
- do not clean the external parts of the units Fig. 29 when the general electrical feeding is on;

DO NOT INSERT OBJECTS TROUGHT THE PROTECTION GRILLS OF THE FANS

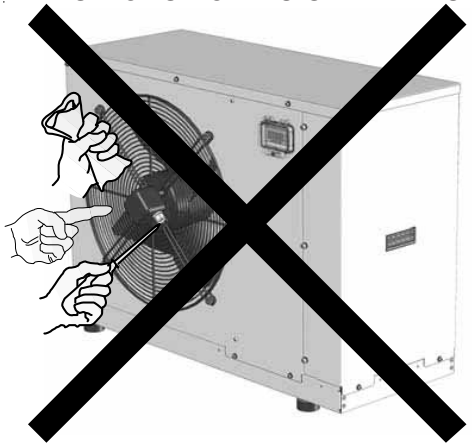


Fig. 29

DO NOT LAY ON THE WINGS SURFACE

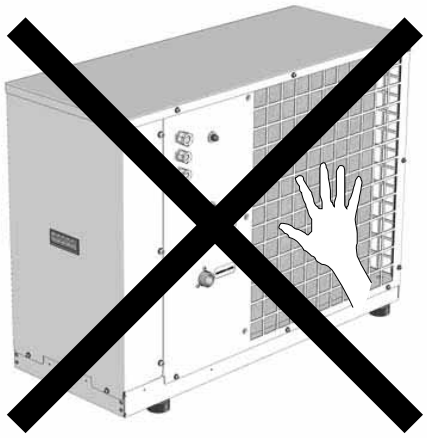


Fig. 30

- do not permit that kinds or ancient people coming in contact with the unit.

9.3 FIRST START

The first start of the unit should be made by the specialised technician.

9.4 START - SWITCH OFF

The start of the unit and the section of the mode can be made directly from the key board of the microprocessor (botton ON-OFF and botton MODE) or, if present, from the remote control.

9.4.1 Start

- Give tension to the unit through the general switcher;
- press the botton ON-OFF (fig. 31). On the display you will see the water temperature in the entry;
- for cooling, press one time on MODE (fig. 32),a “cooling” led will be illuminated;
- for heating, press two times on MODE (fig.32), a “heating” led will be illuminated;

If the temperature of SET (saved in the microprocessor) demands the working of the unit. The led of the compressor blinks and after few of minutesthe compressor will be on. From this moment the unitwill be work in automatic mode, with cycles of on and off according to the SET temperature and of thevalue of different selected temperature.

9.4.2 Switch off

- Press the button ON-OFF, the display will be off. Only the led “power” will be on (electrical feeding);

- if the unit should remain off for a long periods, switch OFF the general supply.

ATTENTION! In case of low outside temperature,It is possible an frost formation, with possible damage. Verify the use of liquid defrost. When not, the plant should be discharged.

9.5 MAINTENAITION AND CONTROLS

Periodic programming of the controls of the unit. It means that the all system should work correctly, offering an ambiance comfort.

For the version RPE one time in year, for the models HPE two times.

When the installation is close to the see it is recommendable to use the version in stainless steel INOX.

Fig. 31

Fig. 32

DICHIARAZIONE DI CONFORMITA'

Fornitore : A2B Accorroni E.G. srl

Indirizzo : 60027 Osimo (AN) – Via D'Ancona,37

Tel 071/723991 – Fax 071/7133153

Apparecchio : RPE X HPE X (refrigeratori e pompe di calore)

Modello : 5 – 7,5 – 8,5 – 10 – 13 – 15 – 17 – 22 – 25 – 30 – 37 – 42 – 55 – 58 – 62 – 72 – 80 – 90 – 105 – 120 – 135 – 155 – 170

DICHIARA

che il prodotto è conforme alle seguenti norme armonizzate:

- CEI EN 60335-2-40 Norma di sicurezza riguardante le pompe di calore elettriche, i condizionatori d'aria e i deumidificatori

- CEI EN 61000-6-1 Immunità ed emissione elettromagnetica per l'ambiente residenziale

- CEI EN 61000-6-3 Immunità ed emissione elettromagnetica per l'ambiente residenziale

- CEI EN 61000-6-2 Immunità ed emissione elettromagnetica per l'ambiente industriale

- CEI EN 61000-6-4 Immunità ed emissione elettromagnetica per l'ambiente industriale

- EN378 Refrigerating system and heat pumps - Safety and environmental requirements

- UNI EN 12735 Tubi di rame tondi senza saldatura per condizionamento e refrigerazione

- UNI EN 14276 Attrezzature a pressione per sistemi di refrigerazione e per pompe di calore

soddisfando così i requisiti essenziali delle seguenti direttive:

- Direttiva LVD 2006/95/CE

- Direttiva compatibilità elettromagnetica EMC2004/108/CE

- Direttiva Macchine: 2006/42/CE

- Direttiva PED in materia di attrezzature a pressione 97/23/CE (MODULO A)

Osimo, Settembre 2010

CE

A2B Accorroni E.G. srl

Il legale Rappresentante

Altamura Lorenza

ALtamura Lorenza

NOTE:

NOTE:

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