AERMEC
air conditioning

60Hz | R410A | FREE COOLING

INSTALLATION MANUAL

CHILLER
- EXTERNAL UNITS
- HIGHT EFFICIENCY
- POWER SUPPLY 60Hz

NRL free-cooling 2000-3600

EN

AERMEC COMPANY QUALITY SYSTEM ICIM ISO 9001:2000 - Cert. n° 0128/5 CISQ IQNet AERMEC S.P.A.

C ETL LISTED US Intertek

AHRI CERTIFIED® www.ahridirectory.org Air-Cooled Chillers AHRI Standard 550/590

4 0 8 6 9 5 5 _ 0 1

Dear Customer,
Thank you for choosing AERMEC. It is the fruit of many years of experience and special design studies and has been made of the highest grade materials and with cutting edge technology.
In addition, all our products bear the EC mark indicating that they meet the requirements of the European Machine Directive regarding safety. The standard of quality is permanently being monitored and AERMEC products are therefore a synonym for Safety, Quality and Reliability.

The data may undergo modifications considered necessary for the improvement of the product, at any time and without the obligation for any notice thereof.

Thank you again.
AERMEC S.p.A

Standards and directives to be followed in the design and manufacture of the unit:

STANDARD

1. UL 1995 Heating and cooling equipment

2. ANSI/NFPA Sstandard 70 National Electrical code (N.E.C.)

3. CSA C.22.1.- C.22.2 Safety Standard Electrical Installation

SAFETY LEVEL

IP24

ACOUSTIC PART

ISO DIS 9614/2 (sound intensity method)

REFRIGERANT GAS (R410A)

This unit contains fluorinated greenhouse gases covered by the Kyoto Protocol. Maintenance and disposal operations must be only carried out by qualified staff, in compliance with existing laws.

DANGER!

The refrigerant circuit is under pressure. Moreover, very high temperatures an be reached. The appliance may only be pened by an SAT service technician or by a qualified technician.

Work on the cooling circuit may only be carried out by a qualified refrigeration technician.

R410A REFRIGERANT GAS

The cooler comes supplied with a ufficient quantity of R410A refrigerant gas. This refrigerant is chlorine-free and does not damage the ozone layer. R410A is not flammable. However, all maintenance operations must be carried out exclusively by a specialised technician using suitable protective equipment

DANGER OF ELECTRICAL DISCHARGE!

Before opening the heat pump, completely disconnect the appliance from the power mains.

1. GENERAL WARNINGS FOR THE INSTALLER

AERMEC NRLs are constructed according to the recognised technical standards and safety regulations. They have been designed for air conditioning must be destined to this use compatibly with their performance features. Any contractual or extracontractual liability of the Company is excluded for injury/damage to persons, animals or objects owing to installation, regulation and maintenance errors or improper use. All uses not expressly indicated in this manual are prohibited

1.1. PRESERVATION OF THE DOCUMENTATION

1. The instructions along with all the related documentation must be given to the user of the system, who assumes the responsibility to conserve the instructions so that they are always at hand in case of need.
2. LRead this sheet carefully; the execution of all works must be performed by qualified staff, according to Standards in force ion this subject in different countries.
3. The appliance must be installed in such a way as to enable maintenance and/or repairs to be carried out.
4. The appliance warranty does not cover the costs for ladder trucks, scaffolding, or other elevation systems that may become necessary for carrying out servicing under warranty.
5. Do not modify or tamper with the chiller as dangerous situations can be created and the manufacturer will not be liable for any damage caused. The validity of the warranty shall be void in the event of failure to comply with the above-mentioned indications.

1.2. WARNINGS REGARDING SAFETY AND INSTALLATION STANDARDS

1. The chiller must be installed by a qualified and suitably trained technician, in compliance with the national legislation in force in the country of destination.
   AERMEC will not assume any responsibility for damage due to failure to follow these instructions.
2. Before beginning any operation, READ THESE INSTRUCTIONS CAREFULLY AND CARRY OUT THE SAFETY CHECKS TO REDUCE ALL RISK OF DANGER TO A MINIMUM. All the staff involved must have thorough knowledge of the operations and any dangers that may arise at the moment in which the installation operations are carried out.

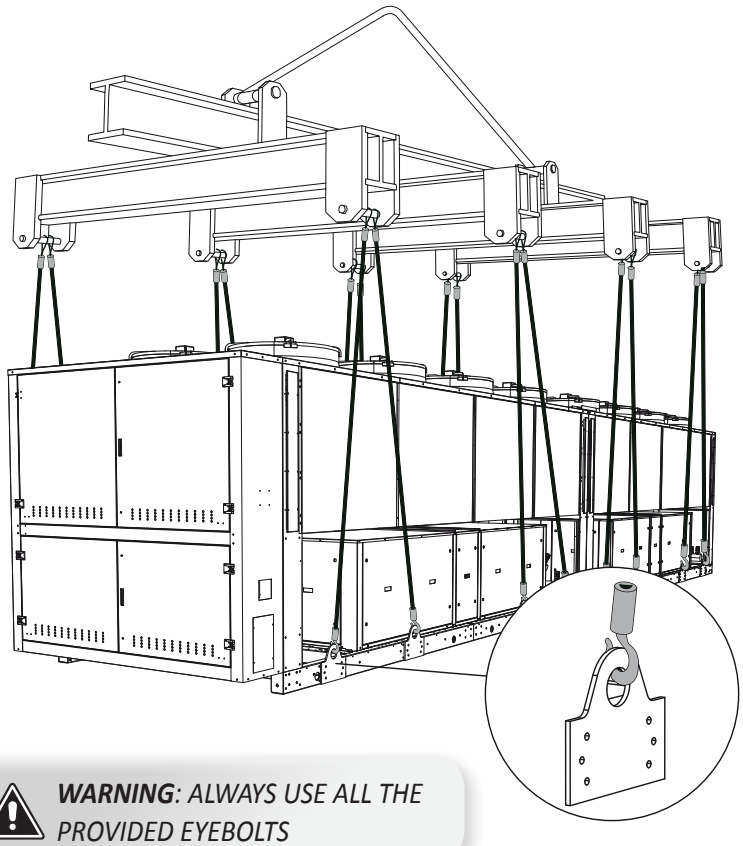
2. SELECTION AND PLACE OF INSTALLATION

Before beginning installation consent with client and pay attention to the following recommendations:

1. The support surface must be capable of supporting the unit weight;
2. The safety differences between the unit and ther appliances or structures must be scrupulously respected so that the inlet and outlet AIR from the fans is free to circulate;
3. The unit must be installed by an enabled technician in compliance with the national legislation in force in the country of destination, respecting the minimum technical spaces in order to allow maintenance.

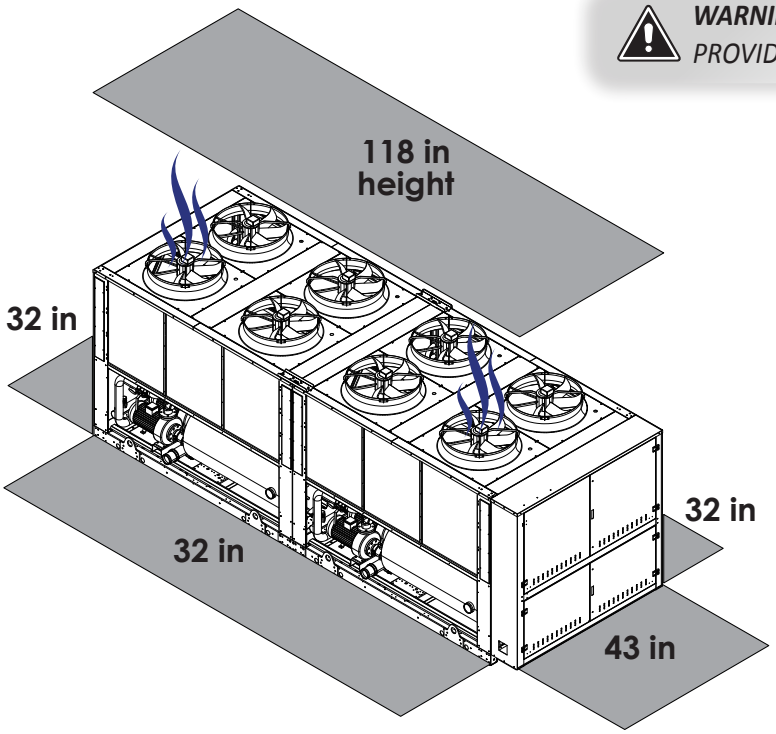
2.1. POSITIONING

The machine is delivered from the factory wrapped in estincoil. Before moving the unit, check the lifting capacity of the machines used.
Once the packaging has been removed, the unit must be handled by qualified personnel with the suitable equipment. To handle the machine: see figure hook up the lifting belts to the provided eyebolts (as indicated in figure).
WARNING: ALWAYS USE ALL THE PROVIDED EYEBOLTS
Interpose protections between the straps and the machine to prevent the structure of the unit being damaged by the straps.
It is absolutely forbidden to stand under the unit.
Take into account that when the chiller is working, vibrations may be generated; it is therefore advisable to install anti-vibration supports (AVX accessories), fitting them to the holes in the base according to the assembly diagram.
It is compulsory to provide the necessary technical spaces, to allow REGULAR AND EXTRAORDINARY MAINTENANCE INTERVENTIONS Fasten the unit by checking carefully that its on the same level; check that easy access to the hydraulic and electric part is allowed.



***WARNING**: ALWAYS USE ALL THE PROVIDED EYEBOLTS*

2.2. MINIMUM TECHNICAL SPACES

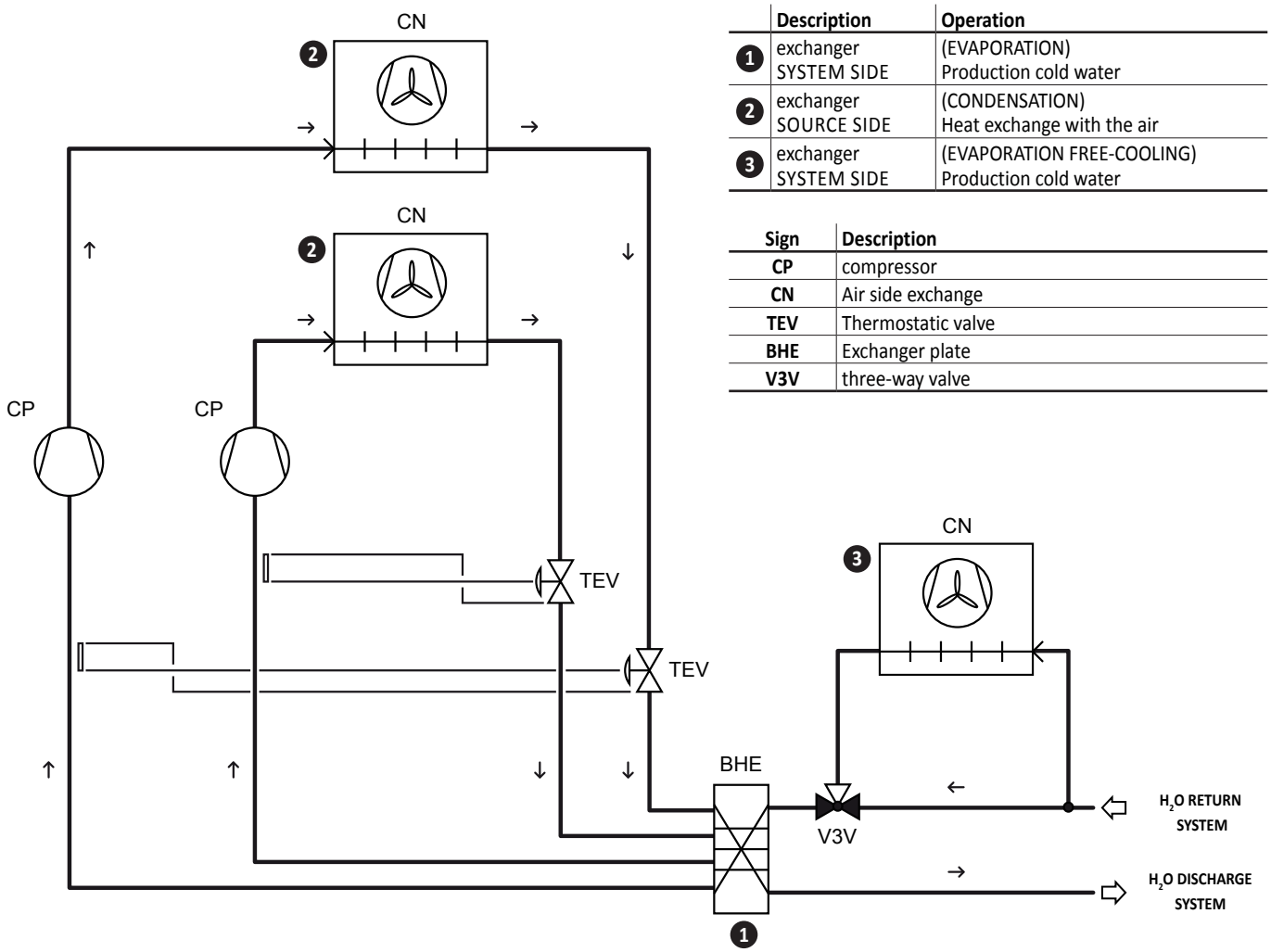


3. CHECK LIST

Ciruit	**Components**						
Cooling circuit **Model**	**F**			**with D**			
Resistance carter compressor	yes			yes			
High pressure switch	yes			yes			
Low pressure switch	no			no			
High pressure trasducer	yes			yes			
Low pressure trasducer	yes			yes			
Solenoid valve of hot gas injecton	no			yes			
By-pass valve of hot gas	yes			yes			
Exchanger (EV- EV/CN)	yes			yes			
Exchanger (desuperheater)	no			yes			
Exchanger (glycol free)	no			no			
Cock the liquid and discharge	yes			yes			
hydraulic circuit **Version "F 00"**	**200**	**220**	**250**	**280**	**300**	**330**	**360**
Water filter	yes	yes	yes	yes	yes	yes	yes
Flow switch	yes	yes	yes	yes	yes	yes	yes
Air vent	yes	yes	yes	yes	yes	yes	yes
hydraulic circuit **Version "P1...P4"**	**200**	**220**	**250**	**280**	**300**	**330**	**360**
Water filter	yes	yes	yes	yes	yes	yes	yes
Flow switch	yes	yes	yes	yes	yes	yes	yes
Safety valve	yes	yes	yes	yes	yes	yes	yes
Air vent	yes	yes	yes	yes	yes	yes	yes
Pump	yes	yes	yes	yes	yes	yes	yes
Expansion tank	yes	yes	yes	yes	yes	yes	yes
hydraulic circuit **Version "01...04"**	**200**	**220**	**250**	**280**	**300**	**330**	**360**
Water filter	yes	yes	yes	yes	yes	yes	yes
Flow switch	yes	yes	yes	yes	yes	yes	yes
Safety valve	yes	yes	yes	yes	yes	yes	yes
Air vent	yes	yes	yes	yes	yes	yes	yes
Pump	yes	yes	yes	yes	yes	yes	yes
Expansion tank	yes	yes	yes	yes	yes	yes	yes
Storage tank	yes	yes	yes	yes	yes	yes	yes
Version with DESUPERHEATER "D"							
hydraulic circuit **Version "F with D"**	**200**	**220**	**250**	**280**	**300**	**330**	**360**
Water filter	no	no	no	no	no	no	no
Differential pressure switch	no	no	no	no	no	no	no
Flow switch	no	no	no	no	no	no	no
Exchanger (desuperheater)	yes	yes	yes	yes	yes	yes	yes
hydraulic circuit **Version "A with D "**	**200**	**220**	**250**	**280**	**300**	**330**	**360**
Water filter (desuperheater)	no	no	no	no	no	no	no
Differential pressure switch (desuperheater)	no	no	no	no	no	no	no
Flow switch (desuperheater)	no	no	no	no	no	no	no
Exchanger (desuperheater)	yes	yes	yes	yes	yes	yes	yes
Safety valve	yes	yes	yes	yes	yes	yes	yes
Air vent	yes	yes	yes	yes	yes	yes	yes
Pump	yes	yes	yes	yes	yes	yes	yes
Expansion tank	yes	yes	yes	yes	yes	yes	yes
Storage tank	yes	yes	yes	yes	yes	yes	yes

4. PRINCIPLE OF OPERATION SCHEMES

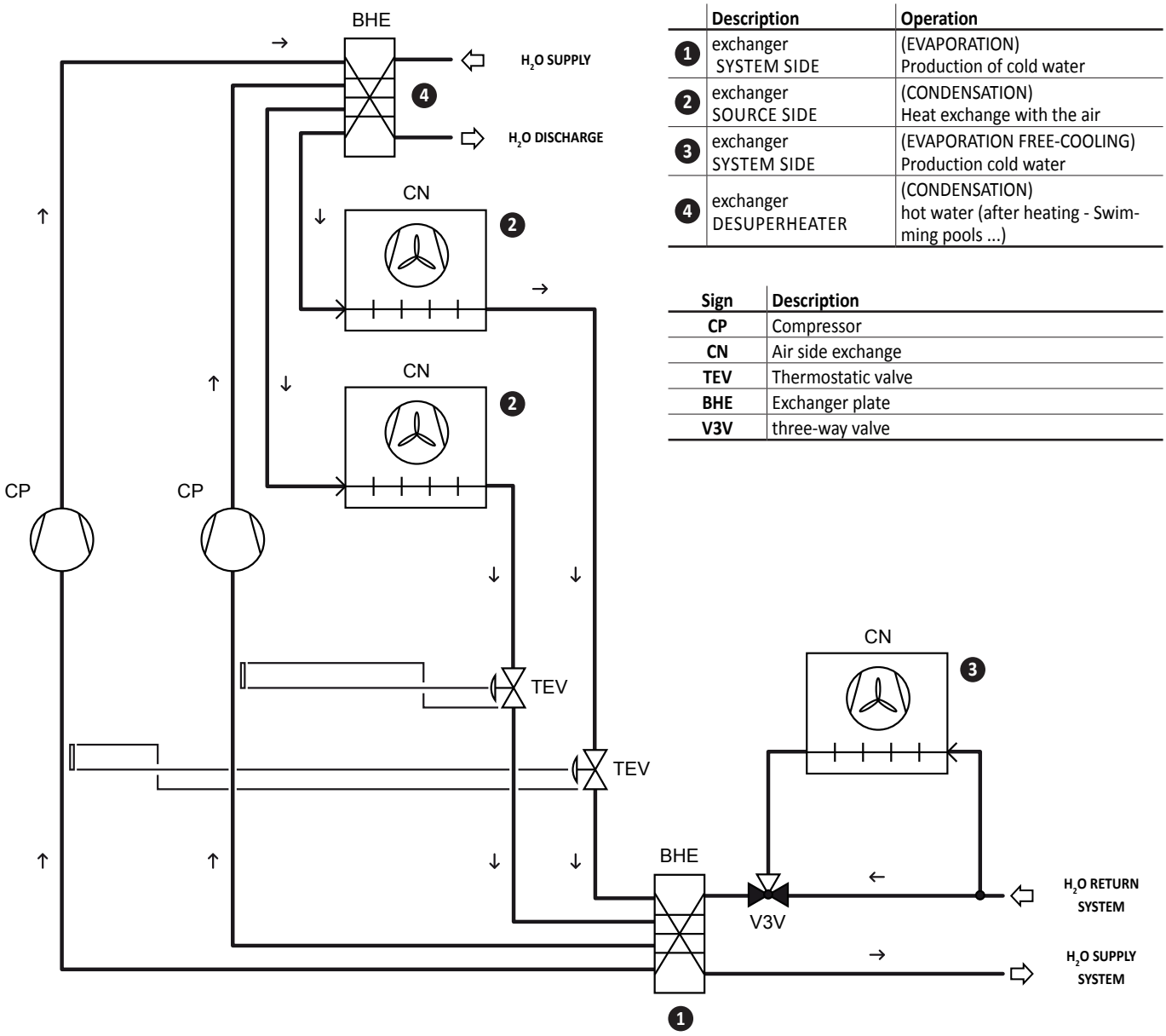
4.1. PRODUCTION OF COLD WATER ONLY THE SYSTEM



	Description	Operation
1	exchanger SYSTEM SIDE	(EVAPORATION) Production cold water
2	exchanger SOURCE SIDE	(CONDENSATION) Heat exchange with the air
3	exchanger SYSTEM SIDE	(EVAPORATION FREE-COOLING) Production cold water

Sign	Description
CP	compressor
CN	Air side exchange
TEV	Thermostatic valve
BHE	Exchanger plate
V3V	three-way valve

4.2. COLD WATER PRODUCTION AND THE SYSTEM RECOVERY (DESUPERHEATER)

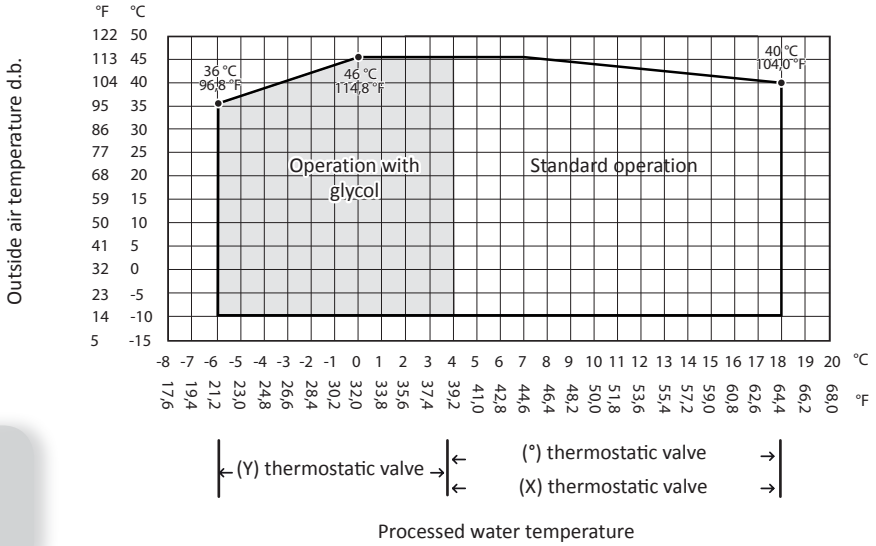


	Description	Operation
1	exchanger SYSTEM SIDE	(EVAPORATION) Production of cold water
2	exchanger SOURCE SIDE	(CONDENSATION) Heat exchange with the air
3	exchanger SYSTEM SIDE	(EVAPORATION FREE-COOLING) Production cold water
4	exchanger DESUPERHEATER	(CONDENSATION) hot water (after heating - Swimming pools ...)

Sign	Description
CP	Compressor
CN	Air side exchange
TEV	Thermostatic valve
BHE	Exchanger plate
V3V	three-way valve

5. OPERATING LIMITS

The devices in their standard configurations are not suitable for installation in salty environments. For the operating limits, refer to diagram, valid for AHRI standard conditions.
Wind breaks should be implemented if the unit is installed in particularly windy areas, to prevent a malfunction of the unit.



ATTENTION
When the unit is installed in particularly windy areas, we recommend installing wind barriers if wind speed exceeds 2.5 m/s.

5.1. DESIGN SPECIFICATIONS

ATTENTION
Contact our technical sales department if the unit needs to operated outside the operating limits.

REFRIGERANT SIDE		High pressure side	Low pressure side
Acceptable maximum pressure	bar/PSI	45/653	30/435
Acceptable maximum temperature	°C / °F	120 / 257	51 / 131
Acceptable minimum temperature	°C / °F	-30 /- 22	-30 / -22

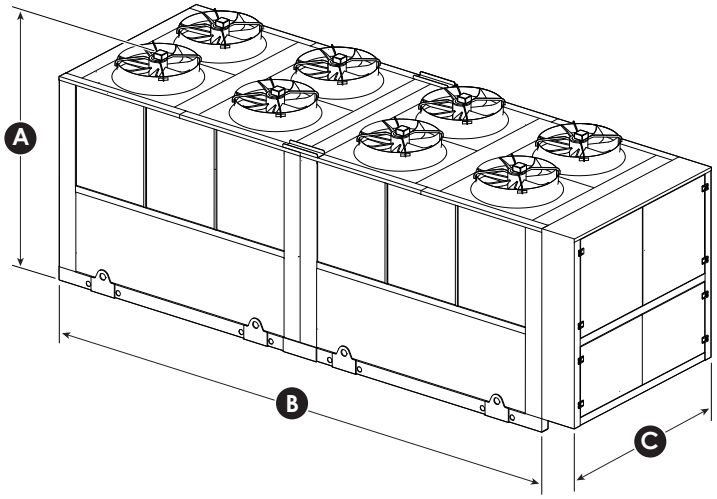
WATER SIDE		
Acceptable maximum pressure	bar/PSI	6/87

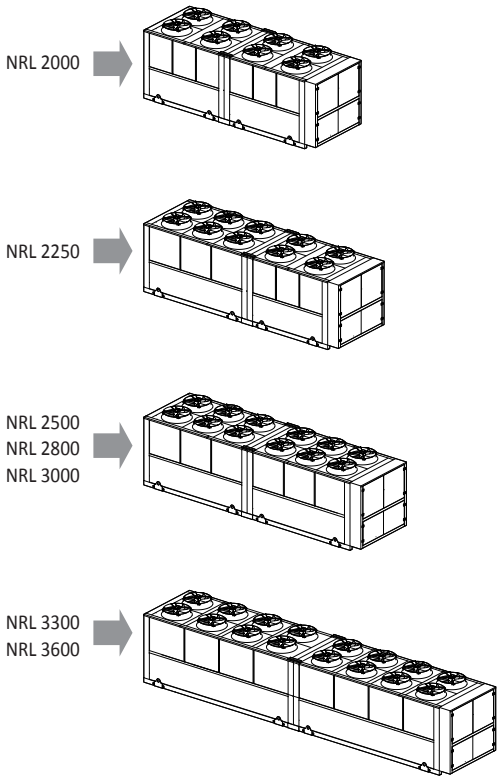
Hydarulic circuit safety valve
(only in version with storage tank or with pump)
Calibrated at 6/87 bar/PSI and with piped discharge, which intervents by discharging overpressure if abnormal work pressure occur.

Note:
1 - In summer mode the unit can be started with external air 46°C/114,8°F and water inlet 35°C/95°F. In winter mode the unit can be started with external air -15°C/5°F and water inlet 20°C/68°F. Operate in such conditions is permitted only for a short time and to bring the system up to temperature. To reduce the time of this operation, it is recommended to install a three-way valve that allows bypassing water from the system utilities, until the conditions that allow the unit to work within the permitted operation limits are achieved.

6. DIMENSIONAL TABLES

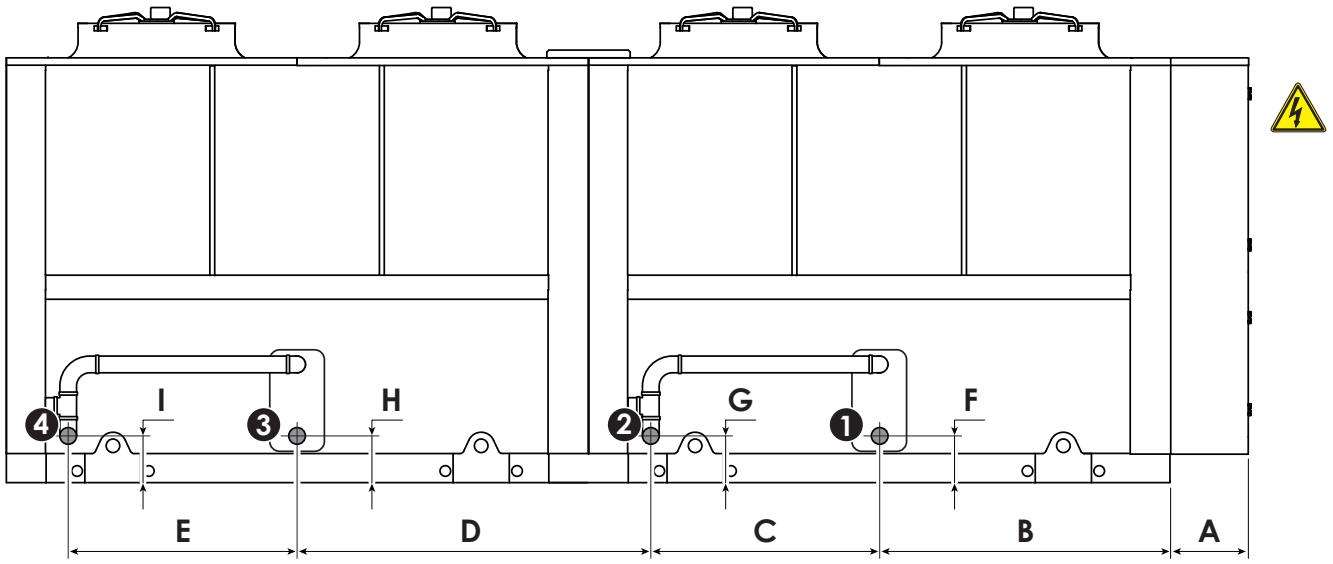
6.1. MAXIMUM DIMENSIONS (ALL VERSIONS)





Model		2000	2250	2500	2800	3000	3300	3600
DIMENSION								
Height A	in	96.46	96.46	96.46	96.46	96.46	96.46	96.46
Depth B	in	251.97	285.43	318.90	318.90	318.90	437.01	437.01
Width C	in	86.61	86.61	86.61	86.61	86.61	86.61	86.61
Number of fan	°n	8	10	12	12	12	16	16

6.2. HYDRAULIC CONNECTIONS - STANDARD VERSIONS (00)

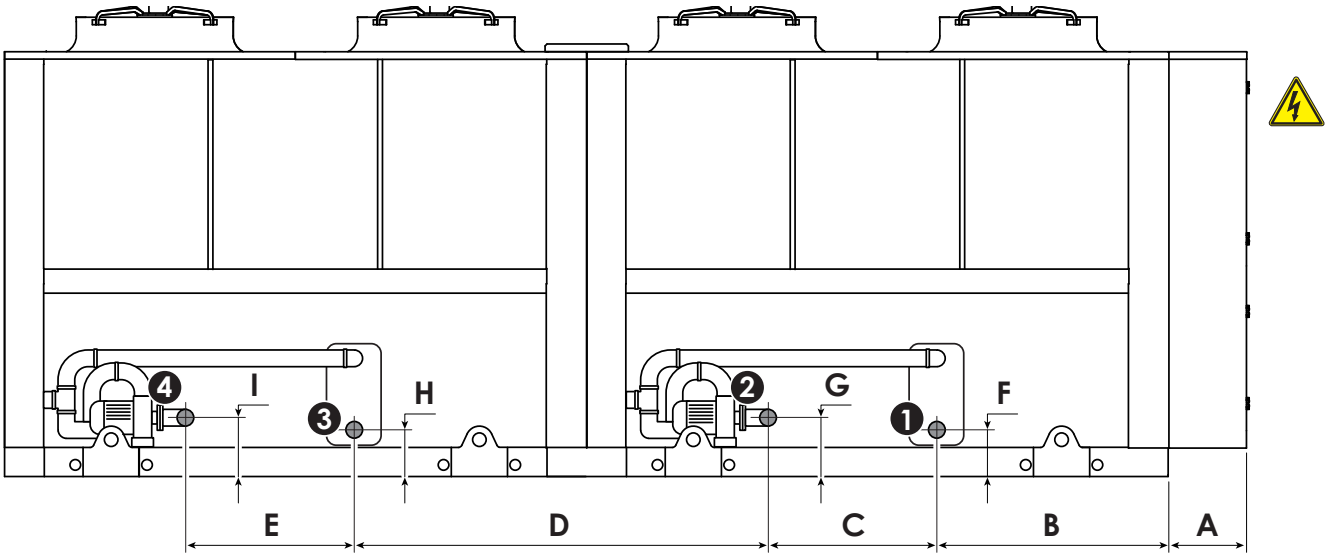


Model		2000	2250	2500	2800	3000	3300	3600
DIMENSION								
A	in (mm)	15,75 (400)	15,75 (400)	15,75 (400)	15,75 (400)	15,75 (400)	15,75 (400)	15,75 (400)
B	in (mm)	59,06 (1500)	59,06 (1500)	75,75 (1924)	75,75 (1924)	75,75 (1924)	105,35 (2676)	105,35 (2676)
C	in (mm)	47,64 (1210)	47,64 (1210)	62,24 (1581)	62,24 (1581)	62,24 (1581)	91,77 (2331)	91,77 (2331)
D	in (mm)	70,47 (1790)	87,20 (2215)	89,33 (2269)	89,33 (2269)	89,33 (2269)	118,86 (3019)	118,86 (3019)
E	in (mm)	47,64 (1210)	62,20 (1580)	62,24 (1581)	62,24 (1581)	62,24 (1581)	91,77 (2331)	91,77 (2331)
F	in (mm)	9,49 (241)	9,49 (241)	9,49 (241)	11,06 (281)	11,06 (281)	11,02 (280)	11,02 (280)
G	in (mm)	9,49 (241)	9,49 (241)	9,49 (241)	9,49 (241)	9,49 (241)	9,49 (241)	9,49 (241)
H	in (mm)	9,49 (241)	9,49 (241)	9,49 (241)	11,06 (281)	11,06 (281)	11,02 (280)	11,02 (280)
I	in (mm)	9,49 (241)	9,49 (241)	9,49 (241)	9,49 (241)	9,49 (241)	9,49 (241)	9,49 (241)

HYDRAULIC CONNECTION								
1	In/Out	OUT	OUT	OUT	OUT	OUT	OUT	OUT
	Tipe	VICTAULIC	VICTAULIC	VICTAULIC	VICTAULIC	VICTAULIC	VICTAULIC	VICTAULIC
	Ø	3"	3"	4"	4"	4"	4"	4"
2	In/Out	IN	IN	IN	IN	IN	IN	IN
	Tipe	VICTAULIC	VICTAULIC	VICTAULIC	VICTAULIC	VICTAULIC	VICTAULIC	VICTAULIC
	Ø	3"	3"	4"	4"	4"	4"	4"
3	In/Out	OUT	OUT	OUT	OUT	OUT	OUT	OUT
	Tipe	VICTAULIC	VICTAULIC	VICTAULIC	VICTAULIC	VICTAULIC	VICTAULIC	VICTAULIC
	Ø	3"	4"	4"	4"	4"	4"	4"
4	In/Out	IN	IN	IN	IN	IN	IN	IN
	Tipe	VICTAULIC	VICTAULIC	VICTAULIC	VICTAULIC	VICTAULIC	VICTAULIC	VICTAULIC
	Ø	3"	4"	4"	4"	4"	4"	4"

NOTE
The drawings are only examples of the hydraulic connection.

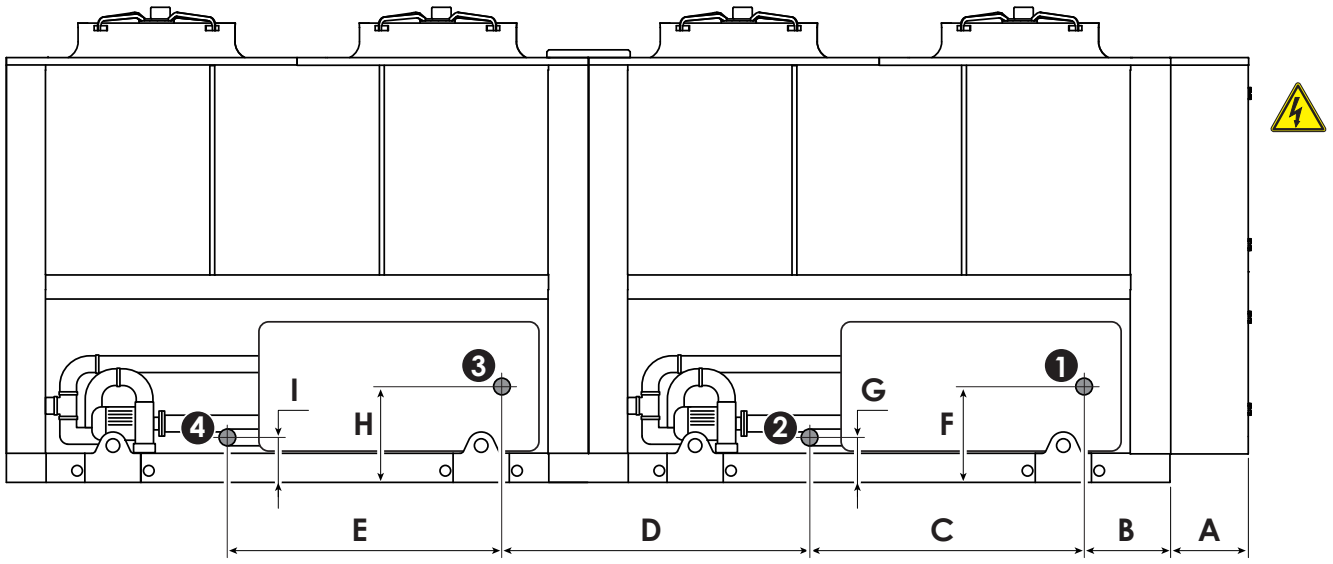
6.3. HYDRAULIC CONNECTIONS - VERSIONS WITH PUMP (P3-P4)



Model		2000	2250	2500	2800	3000	3300	3600
DIMENSION								
A	in (mm)	15,75 (400)	15,75 (400)	15,75 (400)	15,75 (400)	15,75 (400)	15,75 (400)	15,75 (400)
B	in (mm)	59,06 (1500)	59,06 (1500)	75,79 (1925)	75,79 (1925)	75,79 (1925)	105,28 (2674)	105,35 (2676)
C	in (mm)	7,87 (200)	7,87 (200)	7,87 (200)	7,87 (200)	7,87 (200)	4,33 (110)	4,33 (110)
D	in (mm)	110,24 (2800)	127,01 (3226)	143,7 (3650)	143,7 (3650)	143,7 (3650)	210,63 (5350)	206,3 (5240)
E	in (mm)	7,87 (200)	7,87 (200)	7,87 (200)	7,87 (200)	7,87 (200)	4,33 (110)	4,33 (110)
F	in (mm)	9,49 (241)	9,49 (241)	9,57 (243)	11,02 (280)	11,02 (280)	11,02 (280)	11,02 (280)
G	in (mm)	16,65 (423)	16,65 (423)	16,65 (423)	16,65 (423)	16,65 (423)	16,65 (423)	16,65 (423)
H	in (mm)	9,49 (241)	9,49 (241)	9,49 (241)	11,02 (280)	11,02 (280)	11,02 (280)	11,02 (280)
I	in (mm)	16,65 (423)	16,65 (423)	16,65 (423)	16,65 (423)	16,65 (423)	16,65 (423)	16,65 (423)
HYDRAULIC CONNECTION								
❶	In/Out	OUT	OUT	OUT	OUT	OUT	OUT	OUT
	Tipe	VICTAULIC	VICTAULIC	VICTAULIC	VICTAULIC	VICTAULIC	VICTAULIC	VICTAULIC
	Ø	4"	4"	4"	4"	4"	4"	4"
❷	In/Out	IN	IN	IN	IN	IN	IN	IN
	Tipe	VICTAULIC	VICTAULIC	VICTAULIC	VICTAULIC	VICTAULIC	VICTAULIC	VICTAULIC
	Ø	4"	4"	4"	4"	4"	4"	4"
❸	In/Out	OUT	OUT	OUT	OUT	OUT	OUT	OUT
	Tipe	VICTAULIC	VICTAULIC	VICTAULIC	VICTAULIC	VICTAULIC	VICTAULIC	VICTAULIC
	Ø	4"	4"	4"	4"	4"	4"	4"
❹	In/Out	IN	IN	IN	IN	IN	IN	IN
	Tipe	VICTAULIC	VICTAULIC	VICTAULIC	VICTAULIC	VICTAULIC	VICTAULIC	VICTAULIC
	Ø	4"	4"	4"	4"	4"	4"	4"

NOTE
The drawings are only examples of the hydraulic connection.

6.4. HYDRAULIC CONNECTIONS - VERSIONS WITH STORAGE TANK AND PUMP (03-04)

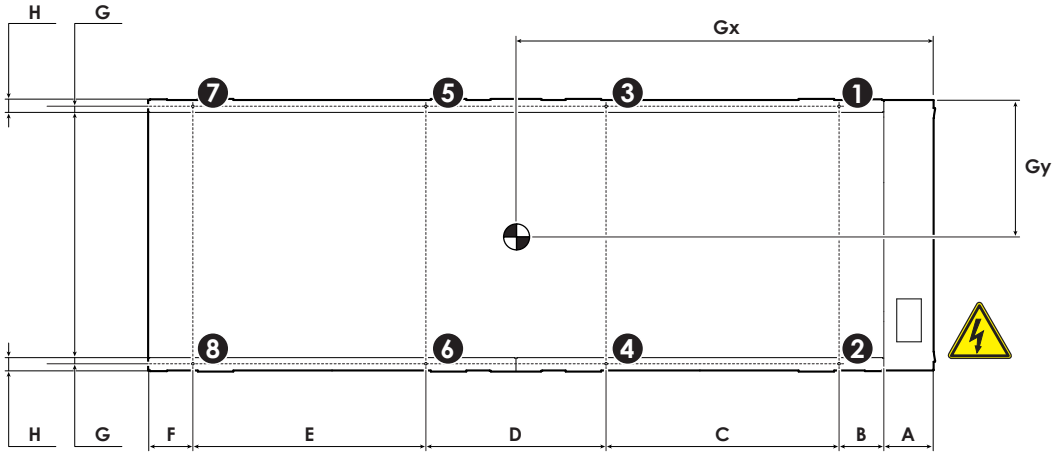


Model		2000	2250	2500	2800	3000	3300	3600
DIMENSION								
A	in (mm)	15,75 (400)	15,75 (400)	15,75 (400)	15,75 (400)	15,75 (400)	15,75 (400)	15,75 (400)
B	in (mm)	13,82 (351)	13,82 (351)	13,82 (351)	13,82 (351)	13,82 (351)	43,23 (1098)	43,23 (1098)
C	in (mm)	61,57 (1564)	61,57 (1564)	61,89 (1572)	61,89 (1572)	61,89 (1572)	62,09 (1577)	62,09 (1577)
D	in (mm)	56,54 (1436)	56,14 (1426)	89,65 (2277)	89,65 (2277)	89,65 (2277)	148,54 (3773)	148,54 (3773)
E	in (mm)	61,57 (1564)	62,36 (1584)	61,89 (1572)	61,89 (1572)	61,89 (1572)	62,09 (1577)	62,09 (1577)
F	in (mm)	22,52 (572)	22,52 (572)	22,52 (572)	22,52 (572)	22,52 (572)	22,52 (572)	22,52 (572)
G	in (mm)	9,49 (241)	9,49 (241)	9,49 (241)	11,02 (280)	11,02 (280)	11,02 (280)	11,02 (280)
H	in (mm)	22,52 (572)	22,52 (572)	22,52 (572)	22,52 (572)	22,52 (572)	22,52 (572)	22,52 (572)
I	in (mm)	9,49 (241)	9,49 (241)	9,49 (241)	11,02 (280)	11,02 (280)	11,02 (280)	11,02 (280)

HYDRAULIC CONNECTION								
1	In/Out	IN	IN	IN	IN	IN	IN	IN
	Tipe	VICTAULIC	VICTAULIC	VICTAULIC	VICTAULIC	VICTAULIC	VICTAULIC	VICTAULIC
	Ø	4"	4"	4"	4"	4"	4"	4"
2	In/Out	OUT	OUT	OUT	OUT	OUT	OUT	OUT
	Tipe	VICTAULIC	VICTAULIC	VICTAULIC	VICTAULIC	VICTAULIC	VICTAULIC	VICTAULIC
	Ø	4"	4"	4"	4"	4"	4"	4"
3	In/Out	IN	IN	IN	IN	IN	IN	IN
	Tipe	VICTAULIC	VICTAULIC	VICTAULIC	VICTAULIC	VICTAULIC	VICTAULIC	VICTAULIC
	Ø	4"	4"	4"	4"	4"	4"	4"
4	In/Out	OUT	OUT	OUT	OUT	OUT	OUT	OUT
	Tipe	VICTAULIC	VICTAULIC	VICTAULIC	VICTAULIC	VICTAULIC	VICTAULIC	VICTAULIC
	Ø	4"	4"	4"	4"	4"	4"	4"

NOTE
The drawings are only examples of the hydraulic connection.

6.5. POSITION AVX AND PERCENTAGE WEIGHT DISTRIBUTION (NRL 2000)



DIMENSION	in (mm)	A	B	C	D	E	F	G	H
Model									
2000		15,75 (400)	14,37 (365)	74,80 (1900)	57,87 (1470)	74,80 (1900)	14,37 (365)	1,97 (50)	3,94 (100)

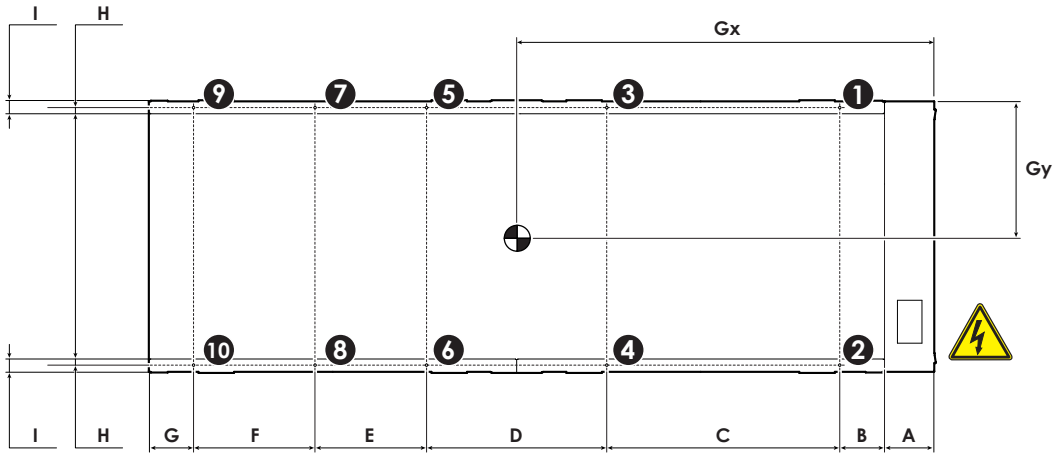
CENTER OF GRAVITY

		Empty			Running			
		Center of gravity		Weight (lb)	Center of gravity		Weight (lb)	
Model	Version	Gx (in)	Gy (in)		Gx (in)	Gy (in)	Unit	Water
2000	00	124	51	11707	124	50	12655	948
	03	123	48	13206	122	42	17372	4167
	04	123	47	13470	122	41	17637	4167
	P3	125	49	12434	126	47	13757	1323
	P4	125	49	12699	126	47	14021	1323

PERCENTAGE OF WEIGHT DISTRIBUTION SUPPORTS

		Percentage of weight distribution supports (%)							
Model	Version	1	2	3	4	5	6	7	8
2000	00	11,0%	15,0%	12,4%	16,9%	9,8%	13,3%	9,2%	12,5%
	03	13,9%	12,9%	14,8%	13,7%	13,6%	12,7%	9,6%	8,9%
	04	14,0%	12,8%	14,9%	13,6%	13,8%	12,6%	9,6%	8,7%
	P3	11,2%	13,6%	13,5%	16,4%	10,6%	12,9%	9,8%	11,9%
	P4	11,3%	13,3%	13,8%	16,3%	10,8%	12,8%	9,9%	11,8%

6.6. POSITION AVX AND PERCENTAGE WEIGHT DISTRIBUTION (NRL 2250)



DIMENSION	in (mm)	A	B	C	D	E	F	G	H	I
Model										
2250		15,75 (400)	14,37 (365)	74,80 (1900)	43,31 (1100)	61,42 (1560)	61,42 (1560)	14,37 (365)	1,97 (50)	3,94 (100)

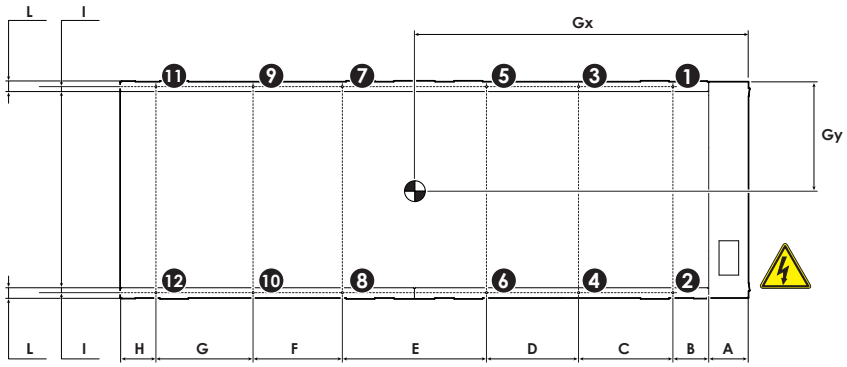
CENTER OF GRAVITY

		Empty			Running			
		Center of gravity		Weight (lb)	Center of gravity		Weight (lb)	
Model	Version	Gx (in)	Gy (in)		Gx (in)	Gy (in)	Unit	Water
2250	00	138	52	13140	139	50	14132	992
	03	137	48	14727	135	43	18938	4211
	04	136	47	15080	135	42	19290	4211
	P3	140	50	13955	141	48	15322	1367
	P4	140	49	14308	142	47	15675	1367

PERCENTAGE OF WEIGHT DISTRIBUTION SUPPORTS

		Percentage of weight distribution supports (%)									
Model	Version	❶	❷	❸	❹	❺	❻	❼	❽	❾	❿
2250	00	9,6%	13,4%	10,4%	14,6%	6,4%	8,9%	9,0%	12,5%	6,3%	8,8%
	03	12,4%	12,1%	12,6%	12,3%	7,4%	7,2%	12,4%	12,0%	5,8%	5,7%
	04	12,6%	12,0%	12,7%	12,1%	7,5%	7,1%	12,6%	12,0%	5,8%	5,5%
	P3	9,5%	11,9%	12,0%	14,9%	6,0%	7,6%	10,1%	12,6%	6,8%	8,5%
	P4	9,5%	11,5%	12,4%	15,0%	5,9%	7,2%	10,4%	12,7%	6,9%	8,4%

6.7. POSITION AVX AND PERCENTAGE WEIGHT DISTRIBUTION (NRL 2500 - 2800 - 3000)



DIMENSION	in (mm)	A	B	C	D	E	F	G	H	I	L
Model											
2500		15,75 (400)	14,37 (365)	61,42 (1560)	61,42 (1560)	28,74 (730)	61,42 (1560)	61,42 (1560)	14,37 (365)	1,97 (50)	3,94 (100)
2800		15,75 (400)	14,37 (365)	61,42 (1560)	61,42 (1560)	28,74 (730)	61,42 (1560)	61,42 (1560)	14,37 (365)	1,97 (50)	3,94 (100)
3000		15,75 (400)	14,37 (365)	61,42 (1560)	61,42 (1560)	28,74 (730)	61,42 (1560)	61,42 (1560)	14,37 (365)	1,97 (50)	3,94 (100)

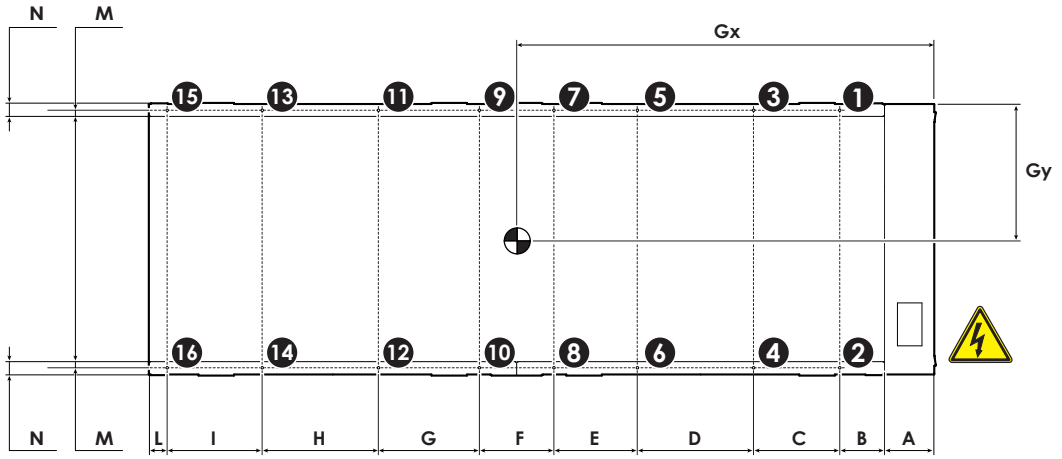
CENTER OF GRAVITY

		Empty			Running			
		Center of gravity		Weight (lb)	Center of gravity		Weight (lb)	
Model	Version	Gx (in)	Gy (in)		Gx (in)	Gy (in)	Unit	Water
2500	00	152	52	14551	153	51	15587	1036
	03	150	49	16138	148	43	20393	4255
	04	150	48	16491	148	43	20746	4255
	P3	152	50	15366	153	48	16777	1411
	P4	153	49	15719	153	48	17130	1411
2800	00	153	52	14969	154	51	16116	1146
	03	152	49	16557	149	44	20922	4365
	04	151	48	16909	149	43	21275	4365
	P3	155	50	15785	156	49	17306	1521
	P4	155	50	16138	156	48	17659	1521
3000	00	155	52	15476	155	51	16733	1257
	03	152	49	17130	150	44	21605	4475
	04	152	48	17549	150	43	22024	4475
	P3	156	50	16358	157	48	17990	1631
	P4	156	49	16777	157	48	18409	1631

PERCENTAGE OF WEIGHT DISTRIBUTION SUPPORTS

		Percentage of weight distribution supports (%)											
		❶	❷	❸	❹	❺	❻	❼	❽	❾	❿	⓫	⓬
Model	Version												
2500	00	8,0%	11,3%	9,4%	13,2%	4,6%	6,5%	5,7%	8,0%	8,0%	11,2%	5,8%	8,1%
	03	10,4%	10,5%	11,7%	11,8%	3,5%	3,5%	9,0%	9,1%	10,0%	10,0%	5,2%	5,2%
	04	10,6%	10,4%	11,9%	11,7%	3,4%	3,4%	9,2%	9,1%	10,1%	10,0%	5,2%	5,1%
	P3	8,1%	10,3%	10,7%	13,6%	4,3%	5,5%	6,1%	7,7%	9,2%	11,7%	5,7%	7,2%
	P4	8,1%	10,0%	11,1%	13,7%	4,3%	5,3%	6,2%	7,6%	9,5%	11,8%	5,6%	7,0%
2800	00	7,8%	11,2%	9,0%	13,0%	5,0%	7,2%	5,5%	7,8%	7,8%	11,1%	6,0%	8,6%
	03	10,2%	10,4%	11,4%	11,6%	3,9%	4,0%	8,7%	8,9%	9,8%	10,0%	5,4%	5,6%
	04	10,3%	10,4%	11,5%	11,6%	3,8%	3,9%	8,9%	9,0%	9,9%	9,9%	5,4%	5,4%
	P3	7,7%	10,0%	10,2%	13,2%	5,4%	7,0%	5,2%	6,7%	9,0%	11,7%	6,1%	7,9%
	P4	7,7%	9,7%	10,5%	13,2%	5,5%	6,9%	5,1%	6,4%	9,4%	11,8%	6,1%	7,7%
3000	00	7,5%	10,6%	9,6%	13,4%	5,0%	7,0%	5,2%	7,4%	8,3%	11,7%	5,9%	8,3%
	03	9,9%	10,0%	11,8%	12,0%	3,9%	4,0%	8,5%	8,6%	10,3%	10,4%	5,4%	5,5%
	04	10,0%	10,0%	12,0%	11,9%	3,8%	3,8%	8,7%	8,6%	10,4%	10,3%	5,3%	5,3%
	P3	7,4%	9,4%	10,7%	13,6%	5,4%	6,8%	5,0%	6,3%	9,6%	12,2%	6,0%	7,6%
	P4	7,4%	9,1%	11,1%	13,6%	5,5%	6,7%	4,8%	6,0%	10,0%	12,3%	6,1%	7,4%

6.8. POSITION AVX AND PERCENTAGE WEIGHT DISTRIBUTION (NRL 3300 - 3600)



DIMENSION	in	A	B	C	D	E	F	G	H	I	L	M	N
Model													
3300		15,75 (400)	15,75 (400)	75,39 (1915)	28,35 (720)	75,39 (1915)	31,50 (800)	75,39 (1915)	28,35 (720)	75,39 (1915)	15,75 (400)	1,97 (50)	3,94 (100)
3600		15,75 (400)	15,75 (400)	75,39 (1915)	28,35 (720)	75,39 (1915)	31,50 (800)	75,39 (1915)	28,35 (720)	75,39 (1915)	15,75 (400)	1,97 (50)	3,94 (100)

CENTER OF GRAVITY

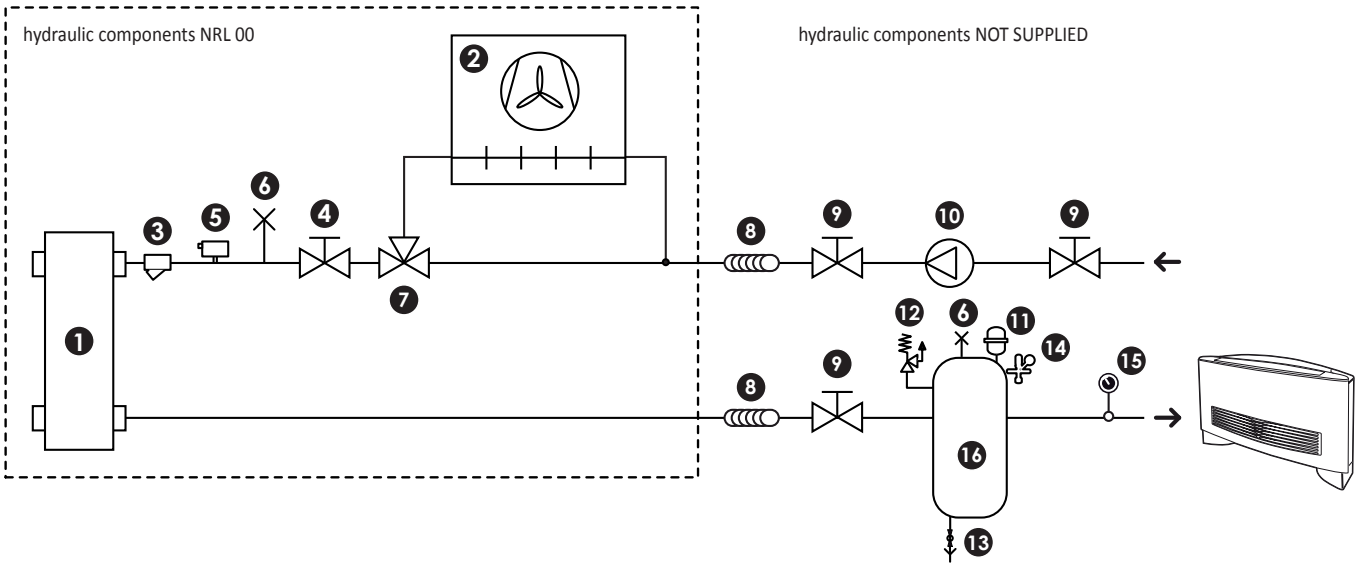
		Empty			Running			
		Center of gravity		Weight (lb)	Center of gravity		Weight (lb)	
		Gx (in)	Gy (in)		Gx (in)	Gy (in)	Unit	Water
3300	00	204	52	18850	206	51	20283	1433
	03	203	49	20503	203	45	25155	4652
	04	203	48	20922	203	44	25574	4652
	P3	206	50	19731	208	49	21539	1808
	P4	206	50	20150	208	48	21958	1808
3600	00	204	52	19886	205	51	21495	1609
	03	203	49	21539	203	45	26367	4828
	04	203	49	21958	203	45	26786	4828
	P3	205	50	20768	207	49	22752	1984
	P4	206	50	21186	207	48	23171	1984

PERCENTAGE OF WEIGHT DISTRIBUTION SUPPORTS

		Percentage of weight distribution supports (%)															
		❶	❷	❸	❹	❺	❻	❼	❽	❾	❿	⓫	⓬	⓭	⓮	⓯	⓰
3300	00	7,1%	9,9%	6,9%	9,8%	3,8%	5,4%	3,5%	5,0%	5,5%	7,7%	7,4%	10,5%	2,4%	3,4%	4,9%	6,9%
	03	7,7%	8,2%	10,5%	11,2%	3,2%	3,4%	2,7%	2,9%	7,2%	7,7%	10,5%	11,1%	2,0%	2,2%	4,6%	4,9%
	04	7,8%	8,1%	10,8%	11,3%	3,1%	3,3%	2,6%	2,7%	7,3%	7,6%	10,7%	11,2%	2,0%	2,1%	4,6%	4,8%
	P3	7,0%	9,0%	7,2%	9,3%	4,7%	6,1%	3,5%	4,6%	5,4%	7,0%	7,7%	9,9%	3,3%	4,3%	4,8%	6,3%
	P4	6,9%	8,7%	7,3%	9,1%	5,0%	6,3%	3,5%	4,5%	5,4%	6,8%	7,7%	9,7%	3,6%	4,5%	4,8%	6,1%
3600	00	7,1%	10,1%	7,1%	10,0%	3,6%	5,1%	3,3%	4,7%	5,8%	8,2%	7,5%	10,6%	2,3%	3,2%	4,7%	6,7%
	03	7,8%	8,4%	10,5%	11,3%	3,0%	3,3%	2,6%	2,8%	7,4%	8,0%	10,4%	11,2%	1,9%	2,1%	4,5%	4,8%
	04	7,8%	8,3%	10,8%	11,4%	3,0%	3,1%	2,5%	2,6%	7,6%	8,0%	10,6%	11,2%	1,9%	2,0%	4,5%	4,7%
	P3	7,1%	9,2%	7,3%	9,5%	4,5%	5,8%	3,3%	4,3%	5,8%	7,5%	7,7%	10,0%	3,1%	4,1%	4,7%	6,1%
	P4	7,0%	8,9%	7,4%	9,4%	4,7%	6,0%	3,3%	4,2%	5,7%	7,3%	7,8%	9,8%	3,4%	4,3%	4,7%	5,9%

7. HYDRAULIC CIRCUIT

7.1. HYDRAULIC CIRCUIT (VERSIONS 00)



	STANDARD COMPONENT
1	Exchanger plate
2	Free-cooling coil
3	Water filter
4	Ball stop
5	Flow switch
6	Air Vent
7	3-way valve

	RECOMMENDED COMPONENTS NOT SUPPLIED (CHARGED TO THE INSTALLER)
8	Anti-vibration couplings
9	Ball stop
10	Pump
11	Expansion tank
12	Safety valve
13	Storage tank ball stop drain
14	Charging unit
15	Manometer
16	Storage tank

PH	6-8
Electric conductivity	less than 200 mV/cm (25°C/77°F)
Chloride ions	less than 50 ppm
Sulphuric acid ions	less than 50 ppm
Total iron	less than 0.3 ppm
Alkalinity M	less than 50 ppm
Total hardness	less than 50 ppm
Sulphur ions	none
ammonia ions	none
Silicone ions	less than 30 ppm

ATTENTION
The choice and the installation of components external to the NRL up to the installer, who must operate according to the rules of good technical design and in compliance with the regulations in force in the country of destination.

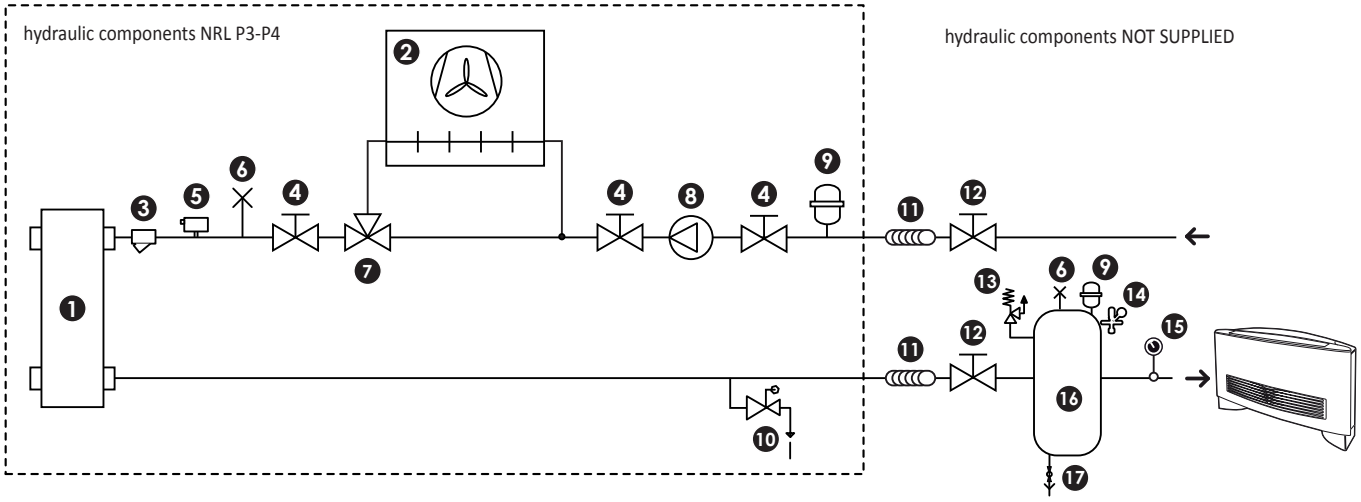
ATTENTION
The hydraulic pipes connecting to the machine must be properly sized to the actual flow of water required by the system in operation. The water flow to the exchanger must always be constant.

ATTENTION
Carefully wash the plant, before connecting the unit. This allows cleaning to remove any residue such as weld spatter, slag, rust or other impurities from the pipes. These substances may otherwise accumulate in and cause a machine malfunction. The connecting pipes should be supported so as not to weigh, with their weight on the unit.

ATTENTION
The hydraulic parallel is in charge of the installer.

NOTE
The drawings are only examples of the hydraulic circuit.

7.2. HYDRAULIC CIRCUIT (VERSIONS P3-P4)



	STANDARD COMPONENT
1	Exchanger plate
2	Free-cooling coil
3	Water filter
4	Ball stop
5	Flow switch
6	Air Vent
7	3-way valve
8	Pump
9	Expansion tank
10	Ball stop drain

	RECOMMENDED COMPONENTS NOT SUPPLIED (CHARGED TO THE INSTALLER)
11	Anti-vibration couplings
12	Ball stop
13	Safety valve
14	Charging unit
15	Manometer
16	Storage tank
17	Storage tank ball stop drain

PH	6-8
Electric conductivity	less than 200 mV/cm (25°C/77°F)
Chloride ions	less than 50 ppm
Sulphuric acid ions	less than 50 ppm
Total iron	less than 0.3 ppm
Alkalinity M	less than 50 ppm
Total hardness	less than 50 ppm
Sulphur ions	none
ammonia ions	none
Silicone ions	less than 30 ppm

ATTENTION
The choice and the installation of components external to the NRL up to the installer, who must operate according to the rules of good technical design and in compliance with the regulations in force in the country of destination.

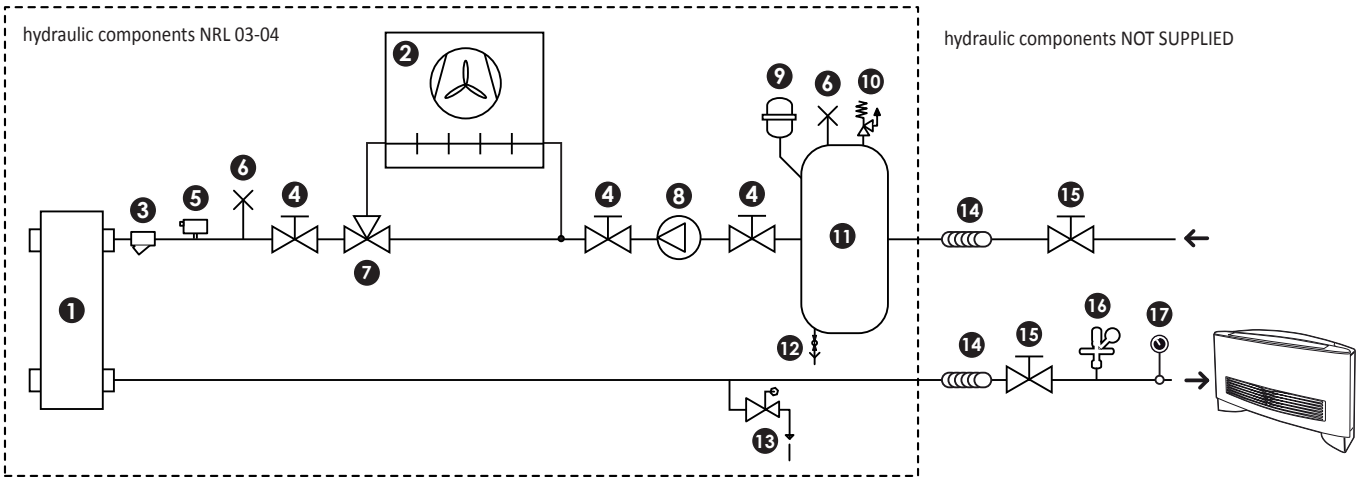
ATTENTION
The hydraulic pipes connecting to the machine must be properly sized to the actual flow of water required by the system in operation. The water flow to the exchanger must always be constant.

ATTENTION
Carefully wash the plant, before connecting the unit. This allows cleaning to remove any residue such as weld spatter, slag, rust or other impurities from the pipes. These substances may otherwise accumulate in and cause a machine malfunction. The connecting pipes should be supported so as not to weigh, with their weight on the unit.

ATTENTION
The hydraulic parallel is in charge of the installer.

NOTE
The drawings are only examples of the hydraulic circuit.

7.3. HYDRAULIC CIRCUIT (VERSIONS 03-04)



	STANDARD COMPONENT
1	Exchanger plate
2	Free-cooling coil
3	Water filter
4	Ball stop
5	Flow switch
6	Air Vent
7	3-way valve
8	Pump
9	Expansion tank
10	Safety valve
11	Storage tank
12	Storage tank ball stop drain
13	Ball stop drain

	RECOMMENDED COMPONENTS NOT SUPPLIED (CHARGED TO THE INSTALLER)
14	Anti-vibration couplings
15	Ball stop
16	Charging unit
17	Manometer

PH	6-8
Electric conductivity	less than 200 mV/cm (25°C/77°F)
Chloride ions	less than 50 ppm
Sulphuric acid ions	less than 50 ppm
Total iron	less than 0.3 ppm
Alkalinity M	less than 50 ppm
Total hardness	less than 50 ppm
Sulphur ions	none
ammonia ions	none
Silicone ions	less than 30 ppm

ATTENTION
The choice and the installation of components external to the NRL up to the installer, who must operate according to the rules of good technical design and in compliance with the regulations in force in the country of destination.

ATTENTION
The hydraulic pipes connecting to the machine must be properly sized to the actual flow of water required by the system in operation. The water flow to the exchanger must always be constant.

ATTENTION
Carefully wash the plant, before connecting the unit. This allows cleaning to remove any residue such as weld spatter, slag, rust or other impurities from the pipes. These substances may otherwise accumulate in and cause a machine malfunction. The connecting pipes should be supported so as not to weigh, with their weight on the unit.

ATTENTION
The hydraulic parallel is in charge of the installer.

NOTE
The drawings are only examples of the hydraulic circuit.

ATTENTION
In case of version with pumping unit, without standby pump, it is recommended to install unidirectional valves to the delivery of each module.
So water reflow is avoided in the circuit of the pump/s from the other circuit.

For NRL 2250 model with pumping unit, it is recommended the installation, to the delivery of the module 1250, of a capacity balance valve, to balance the capacities between the two evaporators (module
1000 and 1250).

It is necessary, that the water flow rate to the chiller unit complies with the values reported in the performance tables.

The systems loaded with anti-freeze or specific regulations, need the water backflow system.
Special supply/recovery water, is carried out with appropriate treatment systems.

7.4. SYSTEM LOAD

- Before starting the load, check that the system drain tap is closed.
- Open all the drain valves of the system and of the related terminals.
- Open the shut-off devices of the system.
- Start the filling by slowly opening the water system load cock placed outside the machine.
- When water begins to flow from the terminal vent valves, close them and continue loading up to read on the gauge the value of 1.5 bar.

The system is loaded at a pressure between 1 and 2 bar.
It is advisable to repeat this operation once the machine has worked for some hours and to periodically check the system pressure, restoring if it drops below 1 bar.
Check the hydraulic seal of the joints.

7.5. EMPTYING THE SYSTEM

- Before starting to drain the system, turn "off" the unit
- Check that the water system load/restore tap is closed
- Open the drain tap outside the machine and all the vent valves of the system and the corresponding terminals.

If the system uses glycol, this liquid should not be drained to the environment because it is a pollutant. It must be collected and, if possible, reused.

8. ELECTRICAL WIRINGS

The default NRL chillers are completely wired and only need the connection to the power supply net, downstream to a group switch, according to the to the regulations in force in the country where the machine is installed.
It is also suggested to check:

• the mains supply characteristics, to ensure it is suitable for the levels indicated in the electrical data table, also taking into consideration any other equipment that may be operating at the same time.
• The unit is only powered after the last (hydraulic and electric) installations.
• Follow the connections instructions of the phase conductors, and earth.
• The power line will have a special protection upstream against short circuits and earth losses that sections the system according to other users.
• The voltage should be within a tolerance of ± 10% of the rated supply voltage of the machine (for Three-phase units displacement max 3% between the phases). If these parameters are not respected, contact the energy supplier. For electrical wirings use isolated double cables according to the standards in force in the different countries.
• It is necessary to use a omnipolar thermomagnetic switch, in compliance with the CEI-EN standards (contact opening of at least 3 mm), with adequate switch capability and differential protection based on the followed electrical data table, installed as close as possible to the machine.
• It is necessary to carry out an efficient earth connection. The manufacturer can not be held responsible for any damage caused by the failure and ineffective earthing of the machine.
• For units with Three-phase power check the correct connection of the phases.

WARNING
It is forbidden to use water pipes for the earthing of the machine.

8.1. RECOMMENDED SECTION OF ELECTRIC CABLES

The cable sections indicated in the table are advised for a maximum length of 50 m.
For higher lengths or different types of cable installation, it will be the DESIGNERS responsibility to carefully measure the line main switch, the supply power line and the earthing protection connection, and the working connection cables:
• the length
• the type of cable
• Absorption of the unit and its physical position, and room temperature.

WARNING:
Check that all power cables are
correctly secured to the terminals when switched on for the first time and after 30 days of use. Afterwards, check the connection of the power cables every six months. Slack terminals could cause the cables and components to overheat.

ATTENTION
All electrical operations must be carried out by qualified personnel, in accordance with the corresponding regulations, trained and informed about the risks related to such operations.

ATTENTION
The characteristics of electric lines and related components must be established by personnel authorised to design electric installations, following international regulations and the national regulations of the country in which the unit is installed, in compliance with the legislative regulations in force at the moment of installation.

ATTENTION
For installation requirements, the wiring layout supplied with the unit must be compulsory referred to. The wiring layout together with the manuals must be kept in good conditions and readily accessible for future operations on the unit.

ATTENTION
it is compulsory to check the machine sealing before connecting the electrical wiring. The machine should only be powered once the hydraulic and electric operations are completed.

NRL	Power supply	Compressor [n°]	Fans [n°]	TOTAL ABSORPTION						Recon FUSE [A]	
				L.R.A. [A]		M.C.A. [A]		M.O.P. [A]			
				Versions without pump	Versions with pump	Versions without pump	Versions with pump	Versions without pump	Versions with pump	Versions without pump	Versions with pump
2000	460V-3-60Hz	8	8	501	514	318	331	352	365	350	350
	575V-3-60Hz			403	413	257	267	284	295	250	250
2250	460V-3-60Hz	8	10	594	610	380	396	427	443	400	400
	575V-3-60Hz			501	513	311	324	350	362	300	350
2500	460V-3-60Hz	8	12	655	673	441	459	488	506	450	500
	575V-3-60Hz			553	568	364	379	403	417	400	400
2800	460V-3-60Hz	10	12	735	753	501	519	561	580	500	500
	575V-3-60Hz			603	618	433	448	488	503	450	500
3000	460V-3-60Hz	12	12	791	813	557	579	617	639	600	600
	575V-3-60Hz			668	686	498	516	553	571	500	500
3300	460V-3-60Hz	12	16	844	866	610	632	670	692	600	600
	575V-3-60Hz			693	711	523	541	578	596	500	500
3600	460V-3-60Hz	12	16	857	879	644	666	690	712	600	600
	575V-3-60Hz			721	738	531	549	570	588	500	500

NOTE
Field wiring by others which complies to the National Electrical Code & Local Codes.

KEY
L.R.A.: Peack current
M.C.A.: Maximum current
M.O.P.: Maximum overcurrent protection

8.2. CONNECTIONTOTHEPOWERSUPPLY

Check there is no voltage on the electric line you want to use.

8.3. TO ACCESS THE ELECTRIC BOX:

• Turn ¼ the screws of the electrical panel in counter-clockwise direction.
• Turn the handle of the door lock knife switch to OFF (see figure 1) In this way, there is access to the electrical panel.

8.4. ELECTRICAL POWER CONNECTION

For functional connection of the unit take the supply power cable to the electrical panel inside the unit fig.2 in the previous page and connect it to the knife switch terminals observing the phase, and the earth. fig.3

8.5. AUXILIARY CONNECTIONS AT THE USER/INSTALLER EXPENSE

The terminals indicated in future explanations are part of the GR3 control boards. For installation requirements, refer to the wiring diagram supplied with the unit. The wiring diagram together with the manuals must be kept in good conditions and readily accessible for future operations on the unit.

8.6. AUXILIARY SWITCH (IAD)

To prepare the auxiliary switch, connect the device to the clamp 4 of the control board M7 SC and to the clamp 4 of the remote panel.

8.7. PUMP CONTACTOR (CP01 - CP02)

To prepare the pump contactor, connect the device CP01 to the clamp 2 of the control board M16 SC and the device CP02 to the clamp 4 and 6 of the control board M1 SE2.

8.8. EXTERNAL ALARM (EA)

To prepare an external alarm device, connect the device contact to the clamp 1 and 2 of the control board M17.

8.9. CONNECTION PR3 (STANDARD)

Connect the remote panel PR3 to the control board M7 SC (as shown below), remember that the maximum allowed distance is 50 m.
THE PR3 CONNECTED MUST BE ENABLED, AS WELL. See next procedure

Fig.1

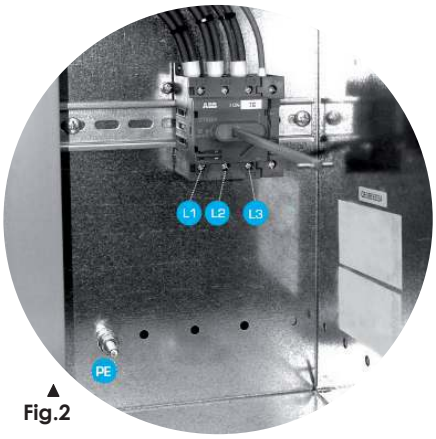


Fig.2

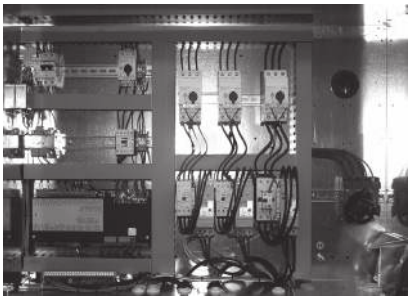
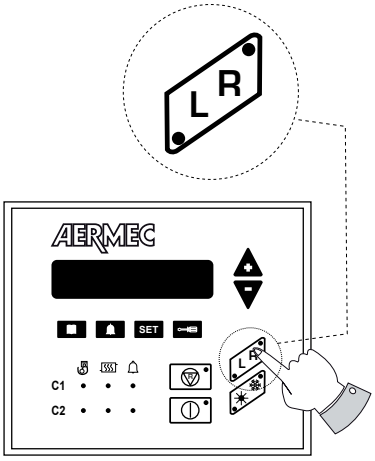
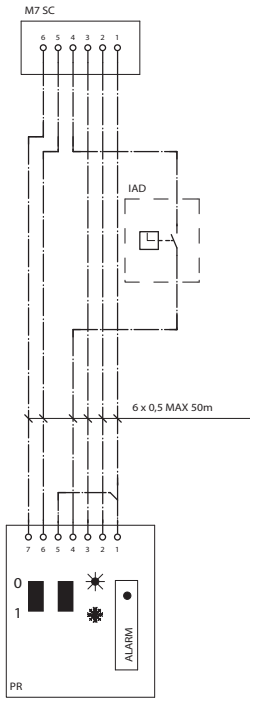


Fig.3

Key fig. 2	
L1	Line 1
L2	Line 2
L3	Line 3
PE	Earth



CONNECTION REMOTE PANEL - PR3



ENABLING REMOTE PANEL - PR3

To enable the remote panel PR3:
• act on the L/R key on the small panel of the GR3 on the machine (as shown in the figure above)
• when the LED next to the letter R (Remote) lights up, the machine function will be enabled by the remote panel.

9. CONTROL AND FIRST START-UP

9.1. PREPARATION FOR COMMISSIONING

Bear in mind that a free start-up service is offered by the Aermec Technical Service for the unit of this series, at the request of Aermec customers or legitimate owners and in ITALY only.
The start-up must be previously agreed on the basis of the system implementation times. Before the intervention of the AERMEC After Sales Service, all the operations (electrical and hydraulic hook ups, loading and breather from the system) must be completed.

Before starting the unit make sure that:
• All the safety conditions have been respected;
• The unity has been properly fixed to the support base;
• The minimum technical spaces have been observed;
• Water connections have been performed respecting the input and output;
• The hydraulic system has been loaded and vented.
• The hydraulic circuit taps are open;
• The electrical connections have been properly carried out;
• The voltage is within a tolerance of 10% of the unit nominal voltage;
• The earthing has been carried out correctly;
• Tightening of all electrical and hydraulic connections have been well carried out.

9.2. FIRST COMMISSIONING OF THE MACHINE

Before activating the unit:
• Close the electric panel lid.
• Position the door lock knife switch of the machine on ON, turning the handle down. (fig4)
• Press the key ON to start the machine (fig 5),
• when the access LED appears the unit is ready for the operation.

9.3. SEASON CHANGEOVER

• For each seasonal change check that the operation conditions return to the limit;
• Check that the absorption current of the compressor is less than the maximum indicated in the technical data table;
• Check in the models with Three-phase supply power that the noise level of the compressor is not abnormal, in this case invert a phase;
• Make sure that the voltage value are within the prefixed limits and that the displacements between the three phases (Three-phase supply power) do not get above 3%.

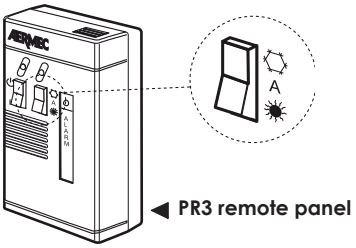
9.3.1. SEASON CHANGE OF THE PANEL ON THE MACHINE

To activate the season change, just press the indicated key in (fig. 6). To ensure that the operation is successful, machine must be active as remote or local.
For further information refer to the USE manual.

9.3.2. SEASON CHANGE OF PR3

Just act directly on the switch. The machine turns off automatically and it restarts with the selected operation mode.

ATTENTION
The first start-up has to be carried out with the standard settings, only at last test vary the values of the operation Set Point.
Before starting, power the unit for at least 12-24 hours by positioning the protection thermomagnetic switch and the door lock knife switch on ON fig.1.
Make sure that the control panel is turned off until it allows the oil heater system the compressor casing.



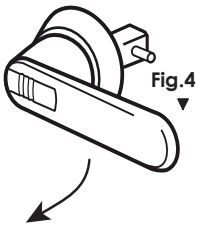


Fig.4

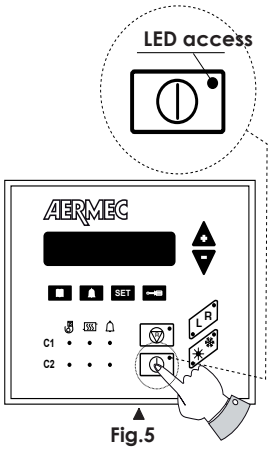


Fig.5

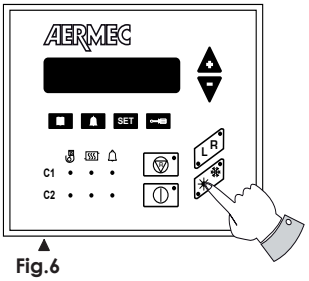


Fig.6

10. FUNCTIONING CHARACTERISTICS

10.1. COOLING SET POINT

(Default defined) = 44.6°F/7°C, Δt = 10.01°F/5°C.

10.2. COMPRESSOR START DELAY

To prevent the compressor start too close to each other, two functions have been arranged.
- Minimum time from last turn-off 60 seconds.
- Minimum time from last start 300 seconds.

10.3. CIRCULATION PUMP

The electronic board provides an output to manage the circulation pump.
After the first 10 seconds of the pump operation, when the water flow rate is running, activate the function of water flow rate alarm (flow switch).

10.4. ANTI-FREEZE ALARM

The anti-freeze alarm is active as if the machine is turned-off or if the machine is in standby mode. In order to prevent breakage of the plate-type exchanger due to freezing water contained, the compressor is locked (if the machine is turned on under 39.2°F/4°C) and the resistance starts up (if standby below 41°F/5°C). If the temperature detected by the probe in the exchanger output and in the chiller input is below 39.2°F/4°C.

WARNING:
THE ANTI-FREEZE SET TEMPERATURE CAN BE VARIED ONLY BY AN AUTHORISED SERVICE CENTRE AND ONLY AFTER VERIFYING THAT IN THE WATER CIRCUIT IS AN ANTI-FREEZE SOLUTION.

The intervention of this alarm sets the compressor block and not of the pump, which remains active, and the resistance starts-up if installed.

For the restoration of the normal functions of the temperature of the water output have to come back over 39.2°F/4°C, the reset is manual.
WARNING:
AT ANY INTERVENTIONS OF THIS ALARM IT IS RECOMMENDED TO IMMEDIATELY CONTACT THE NEAREST TECHNICAL SERVICE ASSISTANCE

10.5. WATER FLOW RATE ALARM

The GR3 manages a water flow alarm controlled by a flow meter installed as standard on the machine.
This type of safety device can activate after the first 10 operating seconds of the pump if the water flow is insufficient.
This alarm sets the block of the compressor and the pump.

ATTENTION
Inspection, maintenance and possible repair operations must be carried out only by an authorised technician according to the law.

ATTENTION
A deficient check/maintenance operation may result in damage to things and people.

ATTENTION
For machines installed near the sea the maintenance intervals must be halved.

11. REGULAR MAINTENANCE

Any cleaning operation is forbidden before disconnecting the unit from the power supply.
Check for voltage before operating.
Periodic maintenance is essential to maintain the unit in perfect working order under the functional as well as the energetic aspect.
Therefore it is essential to provide yearly controls for the:

11.1. HYDRAULIC CIRCUIT

Control:
• Water circuit filling;
• Water filter cleaning;
• Flow switch control;
• Air in the circuit (leaks);
• That the water flow rate to the evaporator is always constant;
• The hydraulic piping thermal insulation state;
• Where provided the percentage of glycol.

11.2. ELECTRIC CIRCUIT

Control:
• Efficiency of safety devices;
• Electrical power supply;
• Electrical power consumption;
• Connections tightened;
• Function of the compressor housing resistance.

11.3. CHILLER CIRCUIT

Control:
• Compressor conditions;
• Efficiency of the plate-type exchanger resistance;
• Working pressure;
• Loss test for the control of the sealing of the refrigerant circuit;
• Function of high and low pressure switches;
• Perform the necessary checks on the filter-drier to verify their efficiency.

11.4. MECHANICAL CONTROLS

Control:
• The screws, compressors and the electric box of the unit external panelling are properly tightened. If they are poorly tightened, they produce abnormal noise and vibrations;
• The structure conditions; if necessary, treat oxidised parts with paints suitable for eliminating or reducing oxidation.

12. EXTRAORDINARY MAINTENANCE

The NRL are loaded with R410A gas and tested in the factory. In normal conditions, no Technical Assistance Service operation is needed for the refrigerant gas check. Along time, however, small leaks from the joints may be generated. Due to these leaks, the refrigerant comes out and the circuit is drained, causing the unit malfunction. In these cases, the refrigerant leakage points are found and repaired, and the cooling circuit is recharged, operating in compliance with Law 28 December 1993 no. 549.

12.1. LOADING PROCEDURE

The loading procedure is as follows:
• Empty and dehydrated the entire refrigeration circuit using a vacuum pump connected to the low grip as to the high grip of high pressure till the vacuum gauge reading up to about 10 Pa. Wait some minutes and check that this value does not goes back again over 50 Pa.
• Connect the refrigerant gas bomb or a load cylinder to the grip on the low-pressure line.
• Charge the amount of refrigerant gas indicated on the characteristics plate of the machine.
• After any operation control that the liquid indicator indicates a dry circuit (dry-green) In case of partial loss the circuit has to be emptied completely before reloading it.
• The refrigerant R410A has to be loaded only in liquid phase.
• Different operating conditions from the normal can result in different values.
• Leak testing or leaking research must be carried out only by using refrigerant gas R410A by checking with a suitable leak detection.
• It is prohibited to use in the refrigeration circuit, oxygen or acetylene or other flammable or poisonous gas because they can cause explosions or intoxication.

ATTENTION
A machine logbook should ideally be kept (not supplied, but at the user's responsibility), allowing the operation carried out on the unit to be tracked, and to facilitate the organisation of operations making the troubleshooting and prevention of possible failures to machine easier. The logbook should contain, the type of operation performed (routine maintenance, inspection or repair), description of the operation, measures implemented.

ATTENTION
it is forbidden to CHARGE the cooling circuits with a refrigerant different from the one indicated. If a different refrigerant gas is used, the compressor may result seriously damaged.

ATTENTION
Provided that the disposal of the unit is carried out according to the rules in force in different countries.

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