AERMEC

R410A

Installation and Maintenance Manual

MULTIPURPOSE UNIT WATER / WATER

- INDOOR UNIT
- 2-PIPE SYSTEM
- 4-PIPE SYSTEM

NXP
0500÷1650

EN

CE

18.10 6068951_01

TRANSLATION FROM ORIGINAL

Dear Customer,
Thank you for choosing an AERMEC product. This product is the result of many years of experience and in-depth engineering research, and it is built using top quality materials and advanced technologies.
In addition, the applied mark guarantees that our appliances fully comply with the safety requirements defined by the applicable product's rules. We constantly monitor the quality level, and as a result AERMEC products are synonymous with Safety, Quality, and Reliability.

Aermec reserves the right to make all modification deemed necessary for improving the product at any time with any modification of technical data.

Thank you again.
AERMEC S.p.A

INDEX

DECLARATION OF CONFORMITY

AERMEC S.p.A.
37040 Bevilacqua (VR) Italy – Via Roma, 996
Tel. (+39) 0442 633111 – Fax (+39) 0442 93577
www.aermec.com

DICHIARAZIONE DI CONFORMITÀ CE / EC DECLARATION OF CONFORMITY / DECLARATION DE CONFORMITE CE
KONFORMITÄTSERKLÄRUNG EG / DECLARACIÓN DE CONFORMIDAD CE

NXP

MODEL* _____

SERIAL NUMBER_____

DATE_____

Noi, firmatari della presente, dichiariamo sotto la nostra esclusiva responsabilità che l'insieme in oggetto così definito:
We, the undersigned, hereby declare under our own responsibility that the assembly in question, defined as follows:
Nous, Signataires du présent acte, déclarons sous notre responsabilité exclusive que le groupe cité à l'objet défini de la façon suivante:
Die Unterzeichner erklären unter eigener Verantwortung, dass die oben genannte Maschineneinheit, bestehend aus:
Nosotros, los abajo firmantes, declaramos bajo nuestra exclusiva responsabilidad, que el conjunto en cuestión, denominado:

Nome / Name / Nom / Name / Nombre	**NXP**
Tipo / Type / Type / Typ / Tipo	**Multipurpose Unit | Water-Water**
Modello / Model / Modèle / Model / Modelo	**0500÷1650**

A cui questa dichiarazione si riferisce è conforme a tutte le disposizioni pertinenti delle seguenti direttive:
To which this declaration refers, complies with all the provisions related to the following directives:
Auquel cette déclaration se réfère, est conforme à toutes les dispositions relatives des directives suivantes:
Das Gerät, auf welches sich diese Erklärung bezieht, entspricht allen Verordnungen im Zusammenhang mit den folgenden Richtlinien:
A la que esta declaración se refiere, es conforme con todas las disposiciones pertinentes de las siguientes directivas:

Direttiva Macchine: 2006/42/CE
Direttiva Compatibilità Elettromagnetica EMCD: 2014/30/UE
Direttiva PED in materia di attrezzature a pressione: 2014/68/UE
Direttiva RoHS sulla restrizione dell'uso di determinate sostanze pericolose nelle AEE: 2011/65/UE

L'oggetto della dichiarazione di cui sopra è conforme alle pertinenti normative di armonizzazione dell'Unione:
The above-mentioned declaration complies with the harmonised European standards:
L'objet de la déclaration reportée ci-dessus est conforme aux normes d'harmonisation relatives de l'Union:
Der Gegenstand der genannten Erklärung entspricht den diesbezüglichen harmonisierten Normen der europäischen Gemeinschaft:
El objeto de la declaración de arriba es conforme con las normativas pertinentes de armonización de la Unión:

CEI EN 60204-1: 2006	**CEI EN 61000-6-1: 2007**	**UNI EN 378-2: 2017**
UNI EN ISO 12100: 2010	**CEI EN 61000-6-3: 2007**	**UNI EN 12735-1: 2016**

La presente dichiarazione di conformità è rilasciata sotto la responsabilità esclusiva del fabbricante.
This declaration of conformity has been released under the exclusive responsibility of the manufacturer.
La déclaration de conformité présente est délivrée sous la responsabilité exclusive du fabricant.
Diese Konformitätserklärung wurde unter der ausschließlichen Verantwortung des Herstellers ausgestellt.
Esta declaración de conformidad se ha otorgado bajo la responsabilidad exclusiva del fabricante.

La persona autorizzata a costituire il fascicolo tecnico è Luca Martin. Il prodotto, in accordo con la direttiva 2014/68/UE, soddisfa la procedura di Garanzia qualità Totale (modulo H) con certificato n.06/270-QT3664 Rev.10 emesso dall'organismo notificato n.1131 CEC via Pisacane 46 Legnano (MI) - Italy.
The person authorised to compile the technical file is Luca Martin. The product, in agreement with Directive 2014/68/EU, satisfies the Total quality Guarantee procedure (form H) with certificate no. 06/270-QT3664 Rev. 10 issued by the notified body n.1131 CEC via Pisacane 46 Legnano (MI) - Italy.
La personne autorisée à constituer le dossier technique est Luca Martin. Le produit, selon la directive 2014/68/UE, respecte la procédure de Garantie de qualité Totale (module H) par le certificat n.06/270-QT3664 Rév. 10 émis par l'organisme notifié n.1131 CEC via Pisacane 46 Legnano (MI) - Italie.
Die bevollmächtigt, die technischen Unterlagen zusammenzustellen ist Luca Martin. In Übereinstimmung mit der Richtlinie 2014/68/EU, erfüllt das Produkt die Anforderungen des Verfahrens der umfassenden Qualitätssicherung (Modul H), Zertifikat Nr.06/270-QT3664 Rev. 10, ausgestellt durch benannte Stelle Nr. 1131 CEC Via Pisacane 46, Legnano (MI) - Italy.
La persona facultada para elaborar el expediente técnico es Luca Martin. El producto, conforme a la directiva 2014/68/UE, cumple con el procedimiento de Garantía de calidad total (módulo H) con certificado n. 06/270-QT3664 Rev. 10 emitido por el organismo autorizado n. 1131 CEC via Pisacane 46 Legnano (MI) - Italia.

** NOTA: La presente dichiarazione non è valida per tutte le macchine non conformi al regolamento 2016/2281 ed elencate nella Tabella 1 sotto riportata.*
** NOTE: This declaration is not valid for machines not compliant with regulation 2016/2281 and listed in Table 1 below.*
** REMARQUE: Cette déclaration n'est pas valable pour les machines non conformes au règlement 2016/2281 et listées dans le tableau 1 ci-dessous.*
** ANMERKUNG: Diese Erklärung gilt nicht für Maschinen, die nicht der Verordnung 2016/2281 entsprechen und in der nachstehenden Tabelle 1 aufgeführt sind.*
** NOTA: Esta declaración no es válida para máquinas que no cumplen con la regulación 2016/2281 y se enumeran en la Tabla 1 a continuación.*

Bevilacqua (VR)

Commercial Director
Luigi Zucchi

GENERAL WARNINGS

This product is a complex machine. Things and persons may be exposed to risks during installation, operation, maintenance or repair, caused by certain conditions or components, such as for example, but not only, refrigerant, oils, moving mechanical parts pressure, heat sources, electricity.
This products and its documentation, including this manual, are intended for persons in possession of appropriate training to enable them to operate correctly and safely. Before performing any operation on this equipment, it is essential for the operating personnel to have read and understood all manuals and any other material of reference. They must also know and observe the standards applicable to the activities to be performed.

ATTENTION
Any intervention on the unit must be performed by authorised and qualified experienced technicians, in accordance with current regulations.

The unit shows the following risks:

- ***Risk of electric discharges.***
- ***Risk of injuries due to rotating parts.***
- ***Risk of injuries due to sharp edges and heavy weights.***
- ***Risk of injuries due to high pressure gas.***
- ***Risk of injuries due to high or low temperatures of components.***
- ***Substances inside the water;***
- ***Fire risk.***
- ***In the event of the refrigerant catching fire, hazardous gases may be generated.***

It is vital that all work on the unit is performed in compliance with the local standards. All work on the system must be performed to perfection

PRECAUTIONS AGAINST RESIDUAL RISKS

Instructions

- Install the unit according to the requirements herein
- **The personnel nearing the machine must be competent in the use of this refrigerant and observe the current regulations.**
- **Personnel that come into contact with the machine must be competent in the use of this refrigerant and respect regulations currently in force. Assess the procedures Aermec requires and local fire prevention regulations to prevent inconsistencies in our requirements and regulations currently in force.**
- Regularly perform all maintenance operations provided for in this manual
- Wear personal protective equipment **(gloves, eye protection, helmet, …)** appropriate to the operations to be performed; do not wear clothes or accessories that may get caught or be sucked by the air flows; gather and tie your hair up before entering the unit
- The machine must be transported in compliance with current regulations, taking into account the features of the fluids inside and their characterisation described in the safety data sheet
- An inadequate transport may damage the machine, also generating refrigerant leaks. Before commissioning, check for leaks and make any necessary repairs.
- The installation must comply with the requirements of EN378-3 and the local current regulations. In particular, indoor installation must ensure adequate ventilation and provide refrigerant detectors when necessary.
- The machine must not be installed in environments with risk of explosion but in a suitable place. In particular, if intended for indoor use, it cannot be installed outdoors
- The machines must be installed in structures protected from lightning as provided by the applicable laws and technical standards
- The overall fire risk assessment at the place of installation (i.e. fire load calculation) is the responsibility of the user.
- Keep fire extinguishers near the machine suitable for putting out fires on electrical equipment and, for lubricant oil of the compressor and the refrigerant as provided by the relative safety data sheets (for example a CO_2 fire extinguisher)
- It is not permitted to walk or place other bodies on the machines
- Make the plant engineering connections to the unit according to the instructions in this manual
- It is mandatory to install a water filter on the evaporator, penalty invalidation of the warranty
- Do not bend or hit pipes containing under pressure fluids
  Do not exceed the maximum allowable pressure (PS) of the unit's water circuit shown on the serial number plate
- Before removing elements along the under pressure water circuits, shut-off the pipe section involved and gradually drain the fluid until its pressure and that of the atmosphere are balanced.
- The unit contains under pressure refrigerant gas: no operation must be performed on under pressure equipment except during maintenance that must be carried out by competent and authorised personnel
- Perform brazing or welding only on empty pipes and clear of any lubricating oil residues; do not near flames or other heat sources to the pipes containing refrigerant fluid
- Do not work with naked flames near the unit
- In order to avoid an environmental risk, make sure that any fluid leaks are recovered in suitable devices in compliance with local regulations.
- Do not use your hands to control any refrigerant leaks
- An accidental release of refrigerant may cause risk of suffocation due to a lack of oxygen: install the machine in a well ventilated environment in accordance with EN 378-3 and local regulations currently in force. Those who come into contact with the machine must be equipped with a leak detector that is calibrated and validated to reveal any used refrigerant leaks.
- The unit is fitted out with overpressure relief devices (safety valves): in the event that these devices start, the refrigerant gas is released at high temperature and high velocity.
  Prevent the gas flow from harming people or things; if necessary, channel the leak according to the EN 378-3 standard and local regulations currently in force, paying particular attention to channel

fluids that pertain to safety groups other than A1 toward open and secure spaces.
- Keep all lubricants in properly marked containers do not keep flammable liquids near the plant
- Do not remove the protections from mobile elements while the unit is running
- Do not use cables with inadequate section or flying connections, not even for limited periods or emergencies
- Check the unit is properly earthed before starting it
- Before opening the electrical panel, disconnect the unit from the mains by means of the external isolator
- In case of units with shunt capacitors, wait 3 minutes from when power supply was disconnected from the unit before accessing inside the electrical panel
- If the unit is equipped with integrated inverter compressors, disconnect the power supply and wait at least 15 minutes before accessing for maintenance: the internal components remain live for this time, generating the risk of electrocution
- The safety devices must be maintained efficient and periodically checked as prescribed by current regulations
- In case a piece is disassembled, make sure it is correctly reassembled before restarting the unit
- Even with the unit off, prevent the fluid in contact with the heat exchangers exceed the temperature limits indicated in the documentation and freeze.
- Do not send the heat exchangers fluids other than water or its mixtures with ethylene glycol/propylene in a maximum concentration of 30%
- The machine must only be employed for the use for which it was made; any other use can be dangerous and void the warranty
- Install the unit at a distance enough from the exhaust wells, to ensure that the possible loss of gas may reach and pollute the aquifer

Preventions

- Make sure that the protections of mobile elements are correctly in place before restarting the unit
- Fans, motors and belt drives may be in motion: always wait for them to stop and take appropriate precautions to prevent their activation before accessing them
- the machine and the pipes have very hot and very cold surfaces that lead to risk of burns
- Before opening a machine panel, ascertain whether it is or not firmly connected to it by hinges
- Louvers of the heat exchangers, edges of the components and metal panels can generate cuts
- The installation must ensure that the temperature of the fluid entering the unit is maintained stable and within the provided limits; therefore, pay attention to the adjustment of any external thermal exchange and control devices (drycooler, evaporating towers, area valves, ...), to the adequate dimensioning of the mass of fluid circulating in the plant (in particular when plant areas are excluded) and to install systems for the recirculation of the necessary fluid flow rate so as to maintain the machine temperatures within the allowed limits (e.g. during the start-up phase).
- The material used for the machine protective packaging must always be kept out of the reach of children as it is a source of danger
- In units with compressors in parallel, do not disable the individual compressors for long periods.
- This appliance can be used by children aged from 8 years and above and persons with reduced physical, sensory or mental capabilities or lack of experience and necessary knowledge if they are supervised or have received instructions concerning use of the appliance in a safe way and understand the hazards involved. Children should not play with the appliance. Cleaning and maintenance intended to be performed by the user should not be performed by children without supervision.

RECEPTION

TRANSPORT AND HANDLING

The unit must be handled by qualified personnel. Carefully follow the lifting instructions on the labels placed on the unit.
The unit must be lifted with extreme care to prevent knocks to the frame, panels, electrical panel, etc..

NOTE: Plastic elements can be used to protect the units against damage during transport. The machine is also wrapped in packaging. We recommend keeping this protection during all transport and lifting operations and not remove the plastic elements until commissioning.

If the unit has anti-vibration supports, they must be installed on the unit before final positioning.

Inspection upon receipt

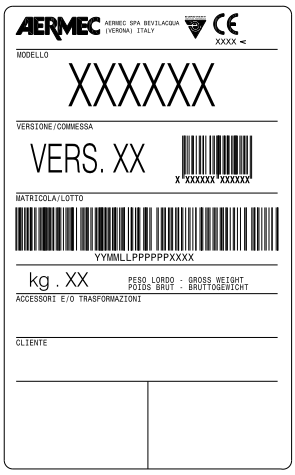
Perform the following check upon receipt of the product.

- Check that the exterior has not been damaged in any way.
- Check that the lifting and transport devices are appropriate to the type of equipment and compliant with the transport and handling instructions attached to this manual.
- Check that the accessories required for on-site installation have been delivered and are operational.
- If the unit is provided pre-loaded with refrigerant, make sure there have been no leaks.
- Check that the equipment supplied corresponds to the order and delivery note

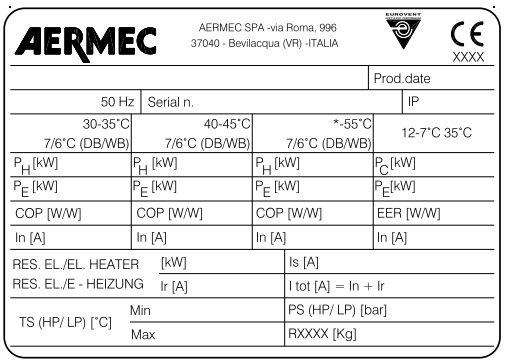
Product identification

The Aermec products can be identified by the **packaging label** bearing the identification data of the product and by the **technical plate** bearing the performance and technical data of your unit.

If the product is damaged, send a registered letter with the details of the problem to the shipping company within 48 working hours from delivery.

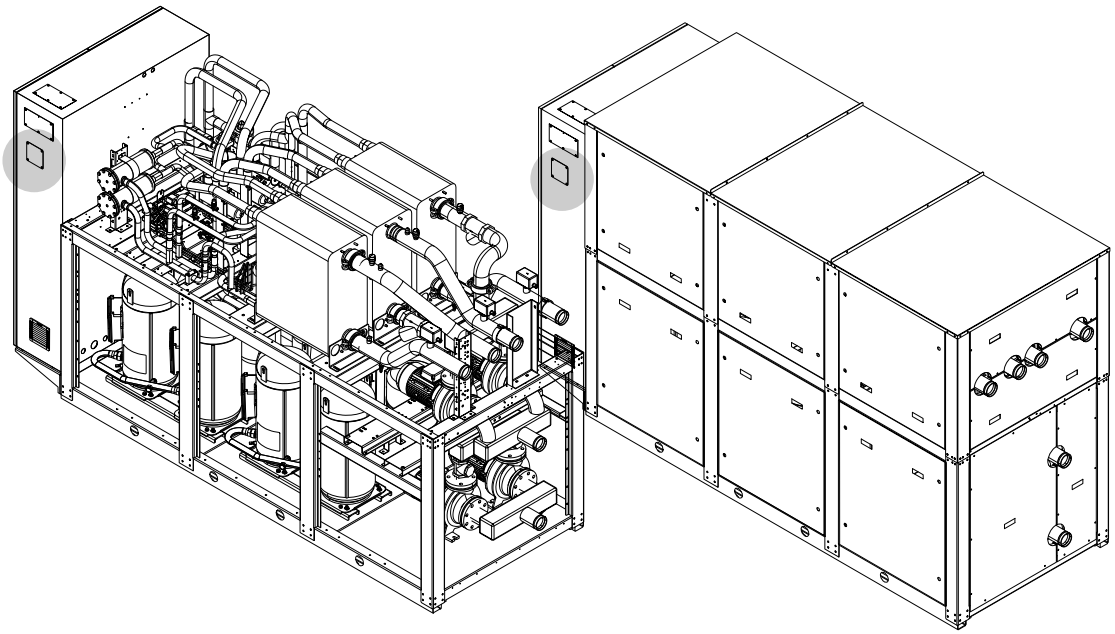


Packaging label



Technical plate

Technical plate

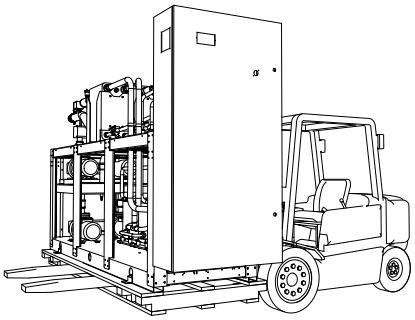


LIFT THE UNIT

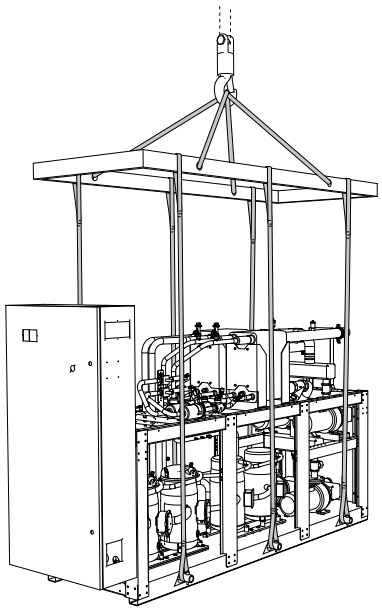
Before lifting the unit, place protections between the belts and the framework to prevent damage to the structure.
The units NXP are delivered with lifting eyebolts, for lifting use suitable straps, hook the lifting chains to the eyebolts provided.

- Follow all safety regulations and standards
- Wear protective goggles and work gloves
- Pay the utmost attention to heavy and bulky equipment during lifting and handling, and when placing it on the ground.
- All panels must be tightly fixed before moving the unit;
- Before lifting, check the specific weight on the technical plate.
- Use all, and only, the lifting points indicated;
- Use ropes in compliance with Standards and of equal length;
- Handle the unit with care and without sudden movements
- Do not stand under the unit during lifting
- The machine must be kept in a vertical position

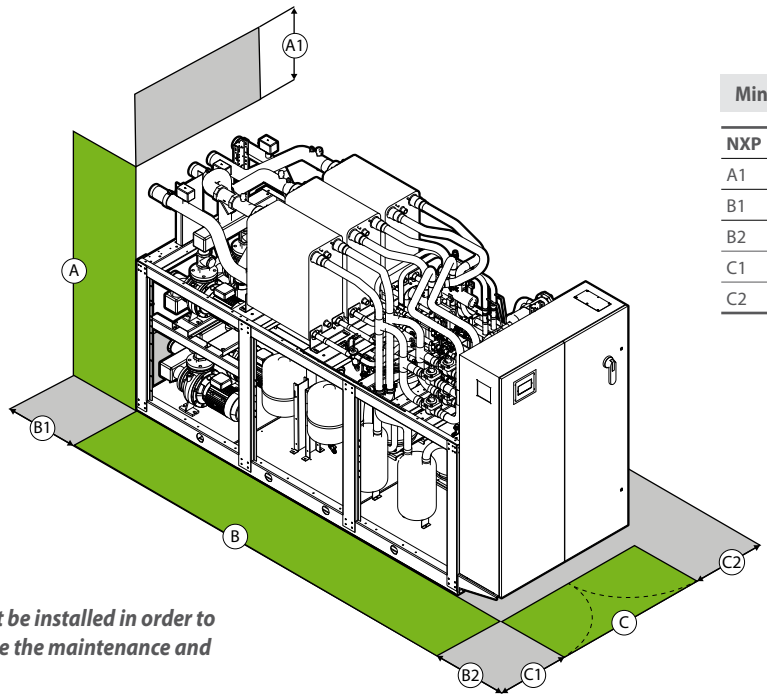
Attention: the units cannot be stacked



ATTENTION
The unit comes fixed on a pallet.
Use forklifts for handling



MINIMUM TECHNICAL SPACES



The unit must be installed in order to make possible the maintenance and / or repair.

Minimum technical spaces		
NXP		
A1	mm	1000
B1	mm	800
B2	mm	1100
C1	mm	800
C2	mm	800

STORAGE

It may happen that, after receipt, the units are not to be immediately installed and are kept in storage. In case of medium-long term storage, we recommend applying the following procedures:

- Make sure there is no water inside the hydraulic systems.
- Do not remove the protections from the heat exchanger.
- Do not remove the plastic protective films.
- Make sure that the electrical panels are closed.
- Before using the equipment, store all items provided in a dry and clean place so that they can be used in the future. We recommend storing the unit in a dry and sheltered place (especially for units intended for indoors).

NOTE The maximum storage temperature of the units depends on the type of refrigerant contained, see table. Beyond this limit, there is a risk of refrigerant leaking through the safety valves.

Maximum storage temperature

Refrigerant	Type	Class	Max. Temp. (°C)
R134a	HFC	A1	<50°C
R410A	HFC	A1	<50°C
R1234ze	HFO	A2L	<50°C
R513A	HFO	A1	<50°C

PLACEMENT AND INSTALLATION REQUIREMENTS

For unit installation it is important to perform the following preliminary preparation tasks:

- When installing, make sure that the atmospheric or environmental agents do not affect and corrode the cooling circuit components, causing the refrigerant to leak in the environment and, if so, make the appropriate adjustments.
- The air-cooled units with fans are designed for outdoor installation. Contact Aermec before making any type of installation.
- The water-cooled units are designed for indoor installation. Contact Aermec before making any type of installation.
- For the positioning of the air-cooled units for outdoor use, choose a place that is not exposed to excessive wind (install windbreaks if the wind speed exceeds 2.2 m/s).
- The soil under the unit must be flat, smooth and sufficiently strong to withstand the weight of the unit with a full refrigerant load, as well as the occasional presence of the normal maintenance equipment.
- In locations exposed to frost, if the unit is installed on soil, the support base must rest on concrete columns with a depth greater than the normal depth of frost of the soil. It is always advisable to build a support base separate from the main building to avoid the transmission of vibrations.
- For normal applications, the rigidity of the unit and the positioning of point loads allow for an installation that minimises vibrations. In the case of installations requiring particularly low vibration levels, you can use the anti-vibration supports.

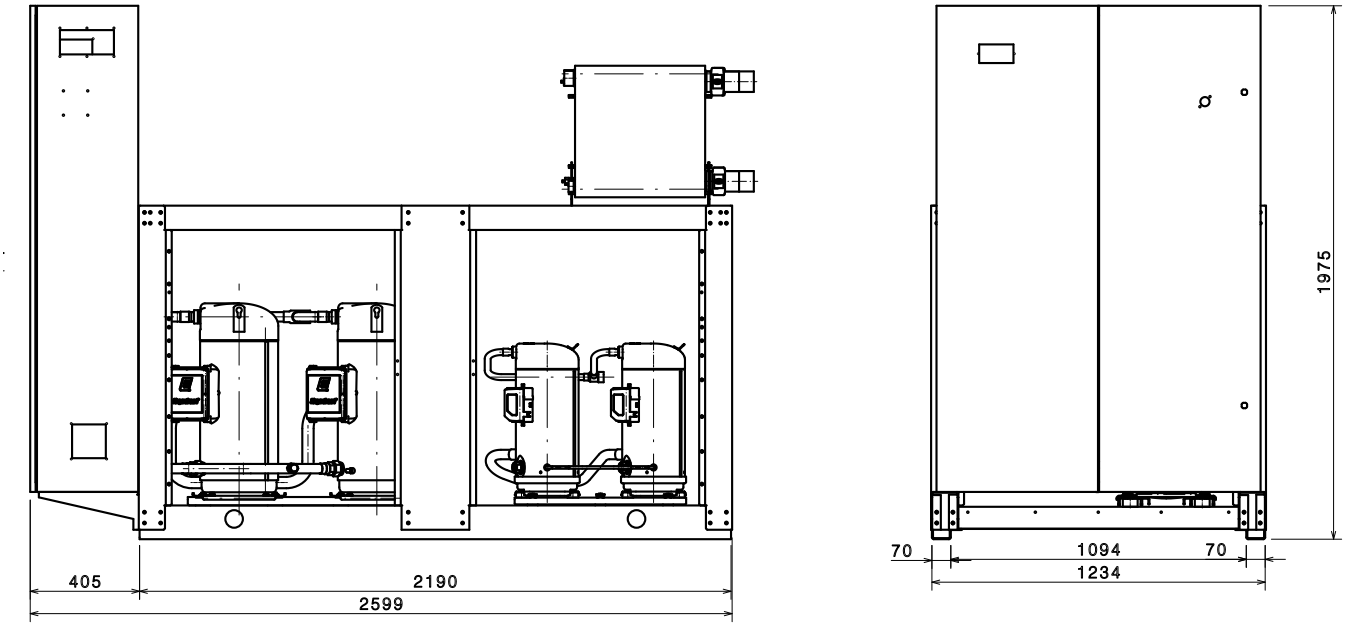
ATTENTION: The use of anti-vibration supports MUST be combined with the installation in the unit water piping of flexible couplings. The anti-vibration supports must be fixed to the unit BEFORE it is earthed. AERMEC is not responsible for the choice of capacity of the anti-vibration supports.

- The unit must be fixed to the anti-vibration supports and these firmly fixed to the concrete base, see chapter weight distribution and minimum technical spaces
- Check that the contact surfaces of the anti-vibration supports are levelled to the base. If necessary, use spacers or level the base but, in any case, make sure that the anti-vibration supports rest flat on the base surface.
- It is essential that the units are installed leaving sufficient space around them to allow easy access to the components for maintenance and repair purposes.

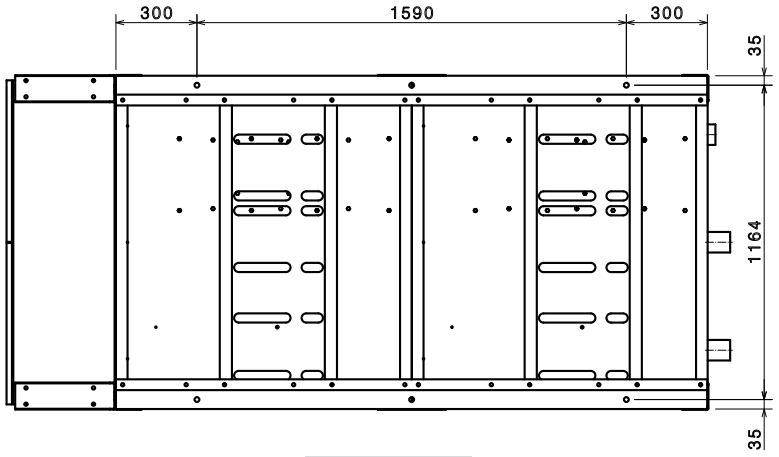
ATTENTION: It is important that the units are installed flat. The improper installation of the unit invalidates the warranty.

DIMENSIONS (mm)

NXP 0500÷0750 (VERSIONE °)

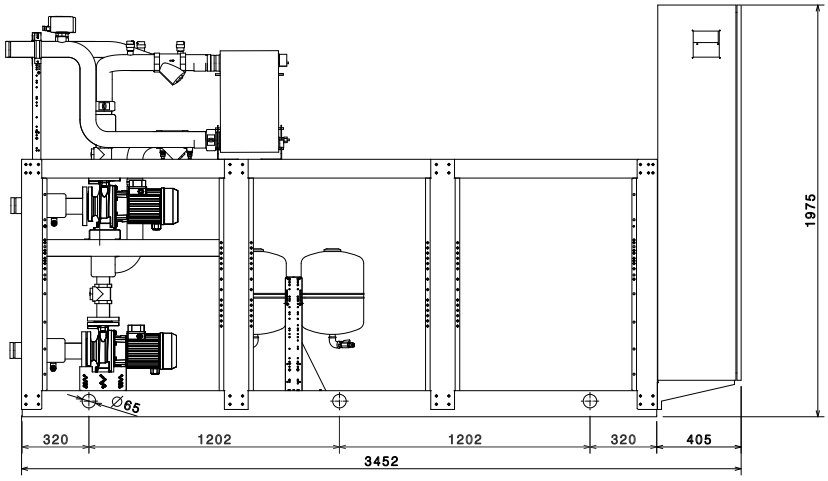


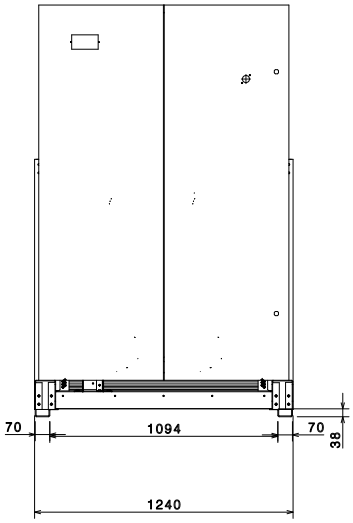
ANTIVIBRANT POSITION MOUNTS



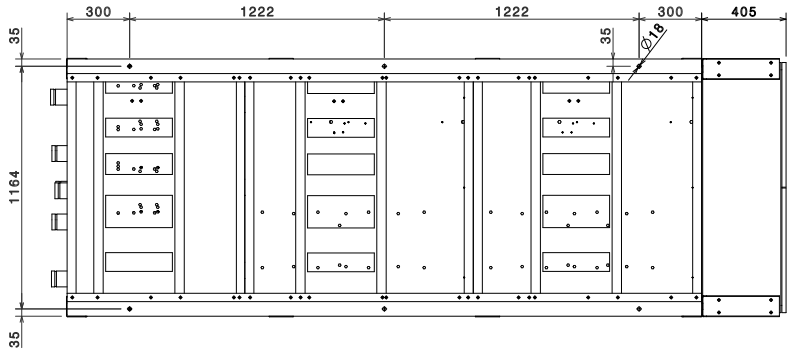
bottom view

NXP 0500÷0750 (VERSION °) WITH PUMP



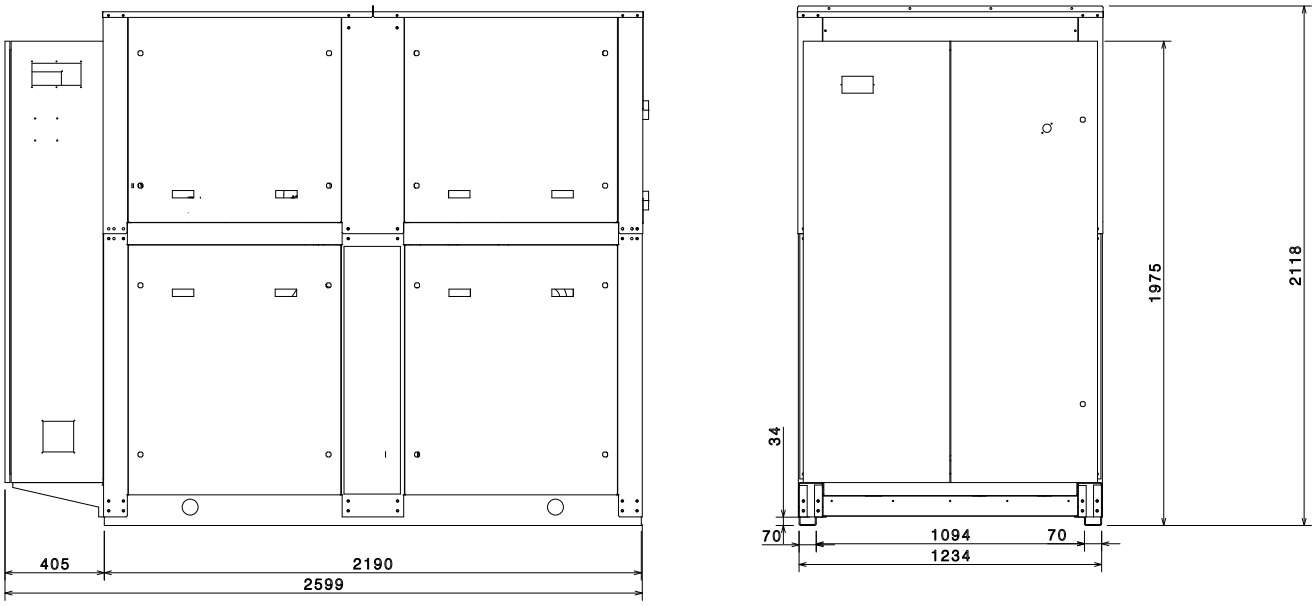


ANTIVIBRANT POSITION MOUNTS

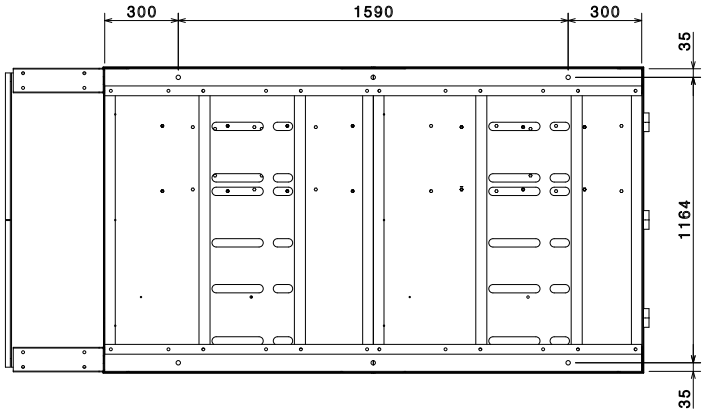


bottom view

NXP 0500÷0750 (VERSION L)

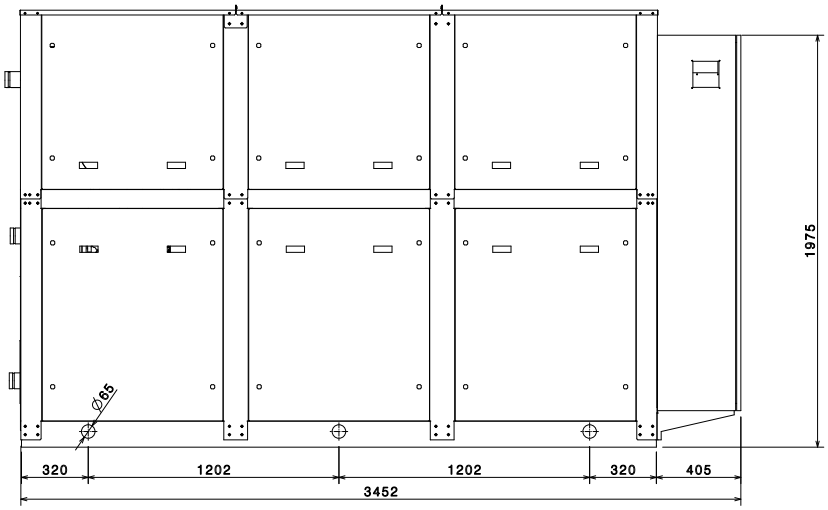


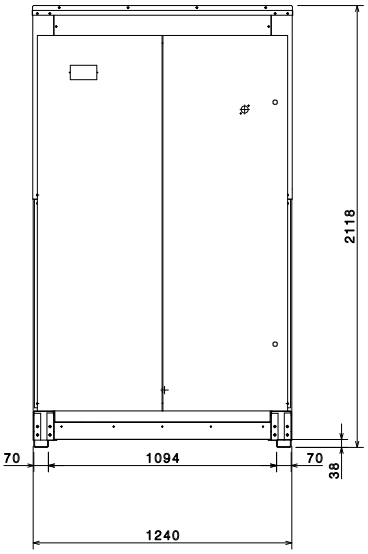
ANTIVIBRANT POSITION MOUNTS



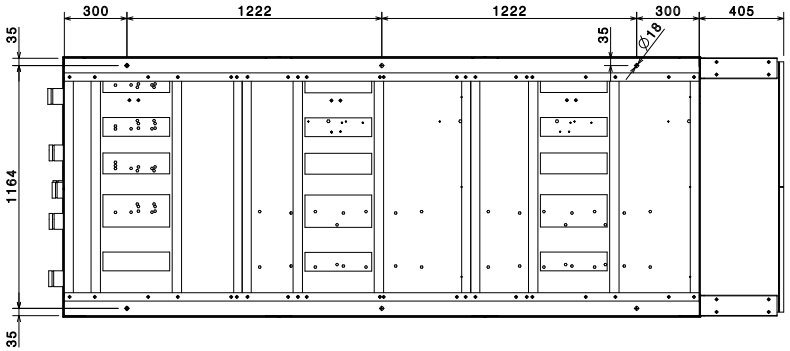
bottom view

NXP 0500÷0750 (VERSION L) WITH PUMP



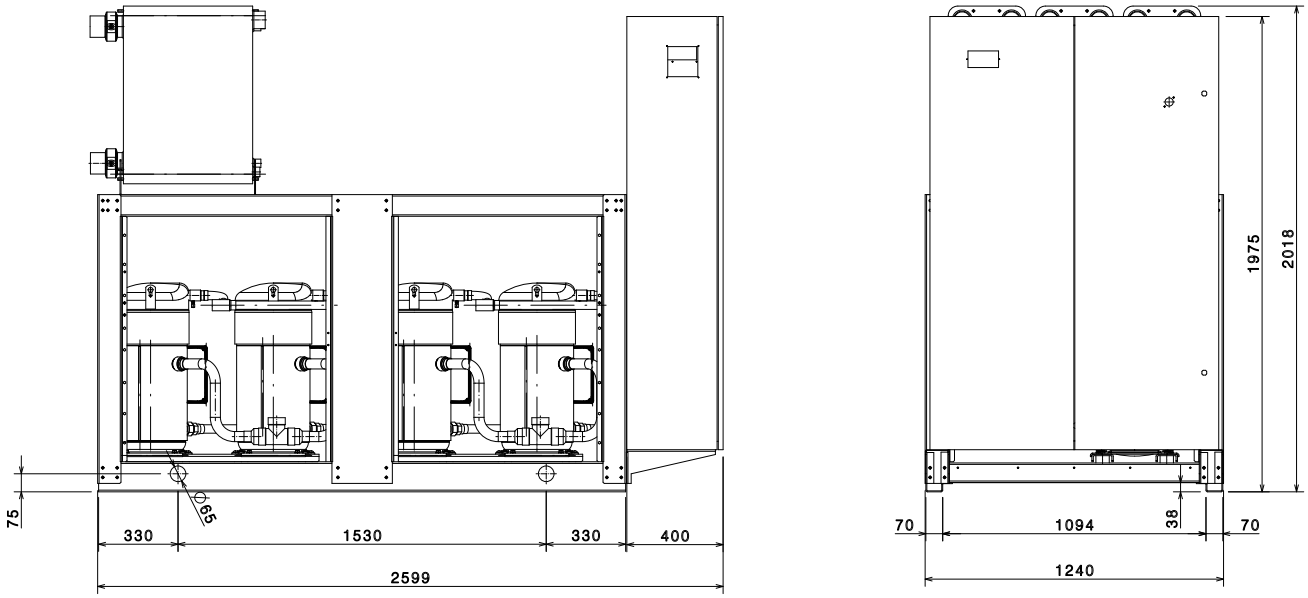


ANTIVIBRANT POSITION MOUNTS

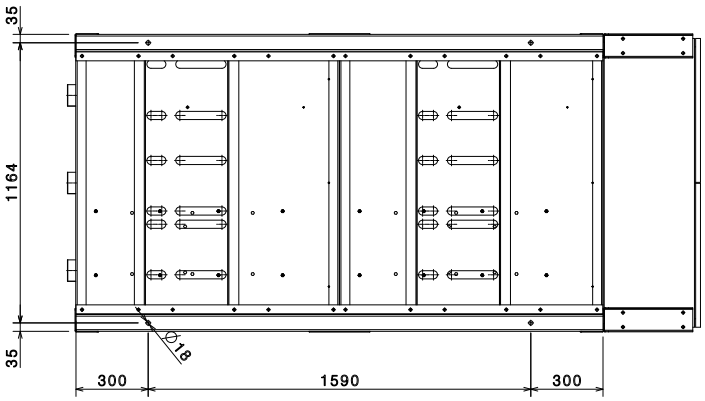


bottom view

NXP 0800÷1650 (VERSION °)

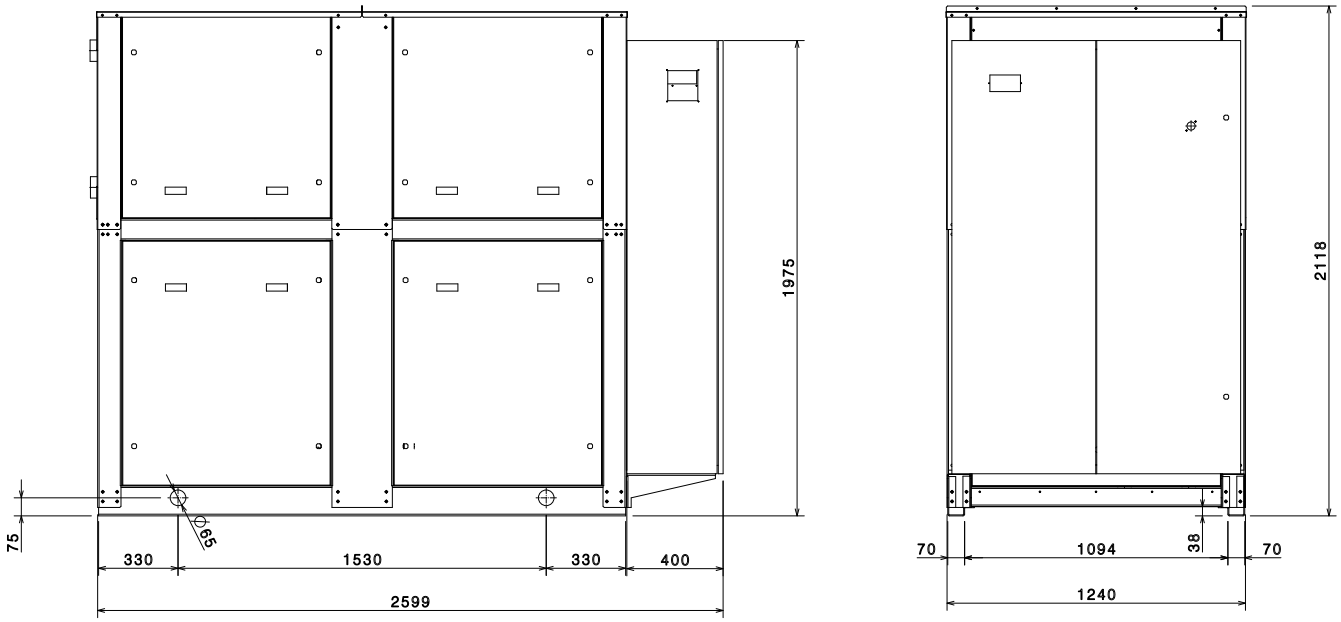


ANTIVIBRANT POSITION MOUNTS

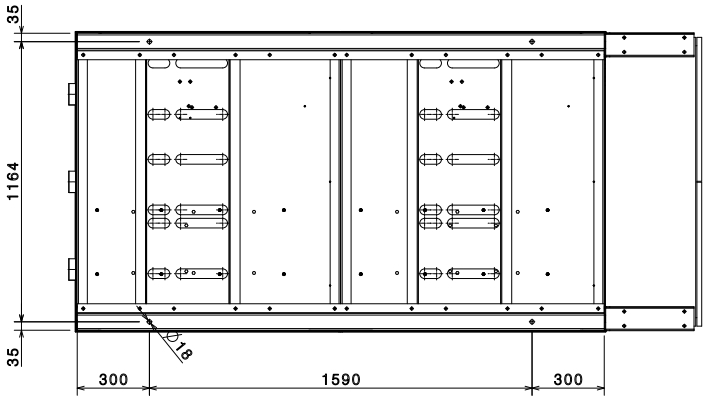


bottom view

NXP 0800÷1650 (VERSION L)



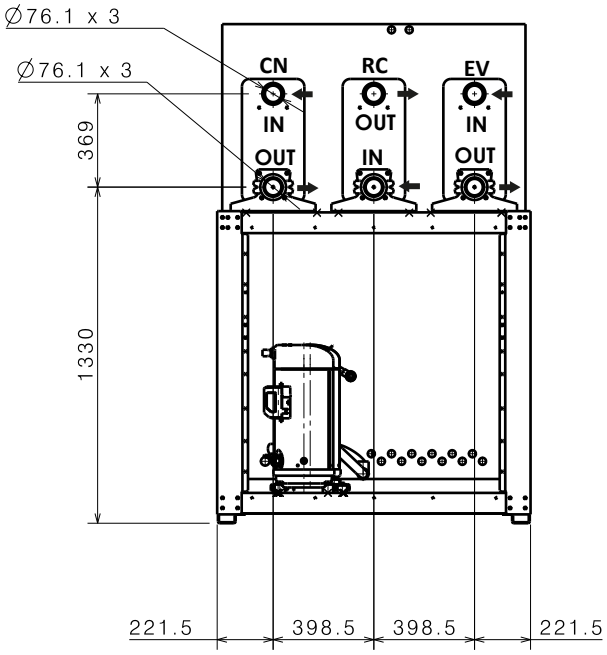
ANTIVIBRANT POSITION MOUNTS



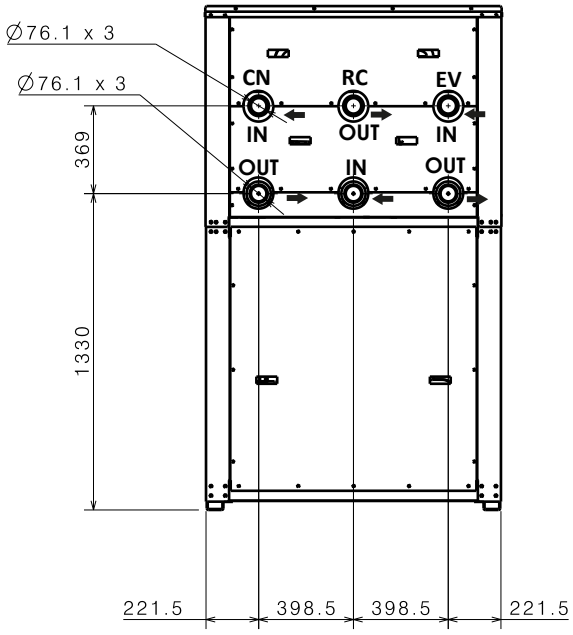
bottom view

HYDRAULIC CIRCUITS

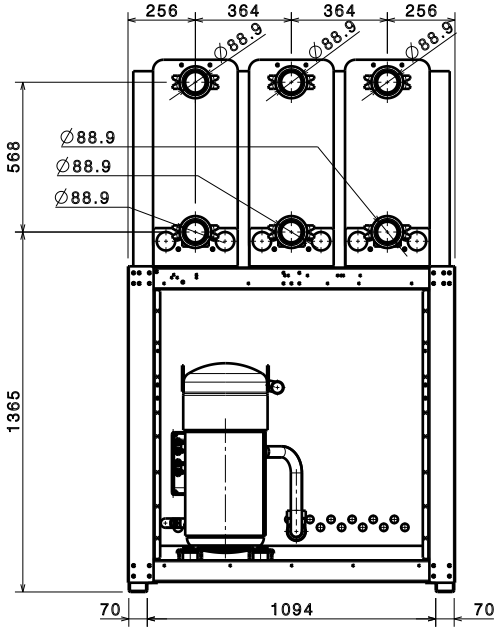
NXP 0500÷0750 (°)



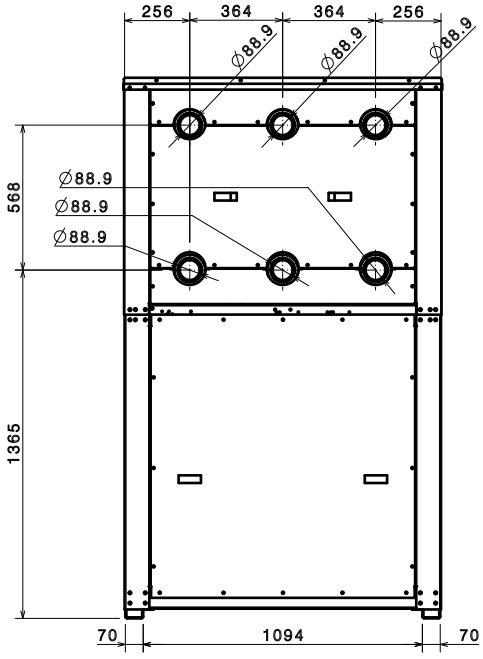
NXP 0500÷0750 (L)



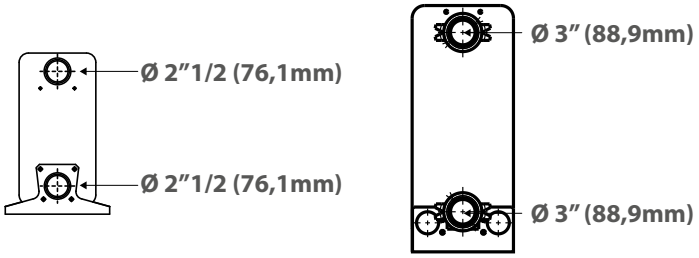
NXP 0800÷1650 (°)



NXP 0800÷1650 (L)



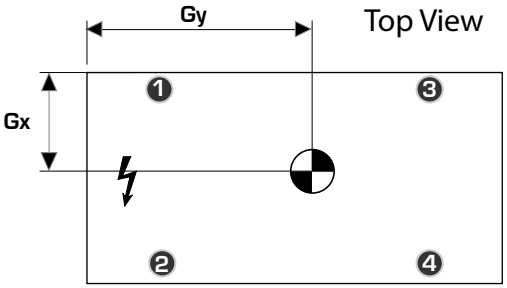
Hydraulic connection (grooved joints)



Key

EV Exchanger side (hot/cold)
RC Exchanger side (DHW)
CN Exchanger side (geothermal)

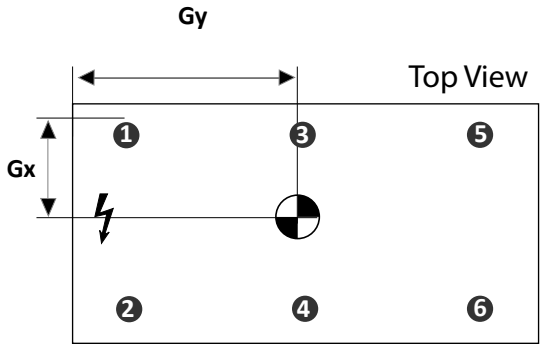
PERCENTAGE WEIGHT DISTRIBUTION ON SUPPORTS



WITHOUT PUMPS

EMPTY WEIGHT

Size	Type	Weight	Barycentre		Weight distribution percentage on supports unit operating (%)				Kit Avx
			Xg	Yg	1	2	3	4	
NXP0500	°	990	708	1319	27%	35%	17%	22%	AVX350
NXP0550	°	1000	710	1345	26%	34%	17%	23%	
NXP0600	°	1110	717	1468	22%	30%	20%	28%	AVX351
NXP0650	°	1130	719	1474	22%	30%	21%	28%	
NXP0700	°	1180	715	1509	21%	28%	22%	29%	
NXP0750	°	1380	729	1447	22%	31%	19%	27%	
NXP0800	°	1680	737	1619	17%	25%	24%	34%	AVX352
NXP0900	°	1700	737	1622	17%	25%	24%	34%	
NXP1000	°	1890	723	1671	17%	23%	26%	35%	AVX353
NXP1250	°	1960	728	1673	16%	23%	25%	35%	
NXP1400	°	2060	728	1673	16%	23%	25%	35%	
NXP1500	°	2100	729	1675	16%	23%	25%	36%	AVX354
NXP1650	°	2270	721	1663	17%	23%	25%	35%	
NXP0500	L	1230	692	1429	24%	30%	20%	25%	AVX351
NXP0550	L	1230	692	1428	24%	30%	20%	25%	
NXP0600	L	1340	700	1519	21%	27%	23%	29%	AVX355
NXP0650	L	1360	702	1523	21%	27%	23%	29%	
NXP0700	L	1420	700	1549	21%	26%	23%	30%	
NXP0750	L	1570	717	1494	21%	29%	21%	28%	AVX356
NXP0800	L	1910	724	1633	18%	24%	25%	34%	AVX353
NXP0900	L	1930	724	1635	17%	24%	25%	34%	
NXP1000	L	2120	713	1678	17%	22%	26%	35%	
NXP1250	L	2190	718	1678	17%	22%	26%	35%	AVX354
NXP1400	L	2270	719	1682	16%	22%	26%	35%	
NXP1500	L	2400	714	1634	18%	24%	25%	33%	
NXP1650	L	2500	716	1686	16%	22%	26%	35%	



PUMPS VERSION

EMPTY WEIGHT

Size	Type	Weight	Barycentre		Weight distribution percentage on supports unit operating (%)						Kit AVX
			Xg	Yg	1	2	3	4	5	6	
NXP0500	NV °	1230	656	1649	22%	25%	14%	15%	11%	13%	AVX357
NXP0550	NV °	1240	658	1656	22%	24%	14%	16%	11%	13%	
NXP0600	NV °	1360	664	1713	19%	22%	16%	18%	11%	13%	AVX358
NXP0650	NV °	1380	666	1714	19%	22%	16%	18%	11%	13%	
NXP0700	NV °	1450	662	1743	18%	21%	17%	19%	11%	13%	
NXP0750	NV °	1690	671	1712	19%	22%	17%	20%	11%	12%	AVX359
NXP0800	NV °	1960	690	1764	16%	19%	20%	24%	10%	12%	AVX360
NXP0900	NV °	2060	680	1816	15%	18%	19%	23%	11%	13%	
NXP1000	NV °	2310	688	1893	15%	18%	22%	27%	8%	10%	AVX361
NXP1250	NV °	2380	692	1888	14%	18%	22%	27%	8%	10%	
NXP1400	NV °	2500	692	1890	14%	18%	22%	28%	8%	10%	
NXP1500	NV °	2540	694	1887	14%	18%	23%	28%	8%	10%	
NXP1650	NV °	2720	688	1898	14%	17%	23%	28%	8%	10%	
NXP0500	NV L	1560	656	1649	22%	25%	14%	15%	11%	13%	AVX358
NXP0550	NV L	1570	658	1656	22%	24%	14%	16%	11%	13%	
NXP0600	NV L	1690	664	1713	19%	22%	16%	18%	11%	13%	AVX359
NXP0650	NV L	1710	666	1714	19%	22%	16%	18%	11%	13%	
NXP0700	NV L	1780	662	1743	18%	21%	17%	19%	11%	13%	
NXP0750	NV L	2020	671	1712	19%	22%	17%	20%	11%	12%	AVX360
NXP0800	NV L	2290	690	1764	16%	19%	20%	24%	10%	12%	
NXP0900	NV L	2390	680	1816	15%	18%	19%	23%	11%	13%	
NXP1000	NV L	2660	688	1893	15%	18%	22%	27%	8%	10%	AVX361
NXP1250	NV L	2730	692	1888	14%	18%	22%	27%	8%	10%	
NXP1400	NV L	2850	692	1890	14%	18%	22%	28%	8%	10%	AVX362
NXP1500	NV L	2890	694	1887	14%	18%	23%	28%	8%	10%	
NXP1650	NV L	3070	688	1898	14%	17%	23%	28%	8%	10%	
NXP0500	PZ °	1340	635	1768	21%	22%	14%	14%	15%	15%	AVX357
NXP0550	PZ °	1350	646	1774	20%	22%	14%	15%	14%	15%	
NXP0600	PZ °	1490	650	1829	18%	20%	15%	17%	14%	16%	AVX359
NXP0650	PZ °	1500	652	1828	18%	20%	16%	17%	14%	16%	
NXP0700	PZ °	1600	647	1864	17%	18%	16%	18%	15%	16%	
NXP0750	PZ °	1880	652	1848	17%	19%	16%	18%	14%	16%	
NXP0800	PZ °	2110	676	1860	15%	17%	19%	22%	12%	15%	AVX363
NXP0900	PZ °	2300	659	1945	14%	16%	19%	21%	15%	16%	
NXP1000	PZ °	2560	680	2033	13%	16%	21%	25%	12%	14%	AVX364
NXP1250	PZ °	2630	684	2024	13%	16%	21%	25%	11%	14%	
NXP1400	PZ °	2770	684	2028	13%	16%	21%	26%	11%	14%	
NXP1500	PZ °	2810	686	2024	13%	16%	21%	26%	11%	14%	
NXP1650	PZ °	3010	680	2032	13%	15%	22%	26%	11%	13%	
NXP0500	PZ L	1670	635	1768	21%	22%	14%	14%	15%	15%	AVX359
NXP0550	PZ L	1680	646	1774	20%	22%	14%	15%	14%	15%	
NXP0600	PZ L	1820	650	1829	18%	20%	15%	17%	14%	16%	
NXP0650	PZ L	1830	652	1828	18%	20%	16%	17%	14%	16%	
NXP0700	PZ L	1930	647	1864	17%	18%	16%	18%	15%	16%	
NXP0750	PZ L	2210	652	1848	17%	19%	16%	18%	14%	16%	AVX363
NXP0800	PZ L	2440	676	1860	15%	17%	19%	22%	12%	15%	
NXP0900	PZ L	2630	659	1945	14%	16%	19%	21%	15%	16%	AVX364
NXP1000	PZ L	2910	680	2033	13%	16%	21%	25%	12%	14%	
NXP1250	PZ L	2980	684	2024	13%	16%	21%	25%	11%	14%	
NXP1400	PZ L	3120	684	2028	13%	16%	21%	26%	11%	14%	
NXP1500	PZ L	3160	686	2024	13%	16%	21%	26%	11%	14%	
NXP1650	PZ L	3360	680	2032	13%	15%	22%	26%	11%	13%	

HYDRAULIC CONNECTIONS

The units may be available with or without integrated hydronic kit, in any case:

ATTENTION The choice and installation of components external to the unit is 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 connection pipes to the unit must be suitably dimensioned for the effective water flow rate requested by the system when running. The water flow rate to the heat exchanger must always be constant

ATTENTION Wash the system thoroughly before connecting the unit. This cleaning will eliminate any residues such as welding drips, scale, rust, or other impurities from the piping. These substances can also deposit inside and cause unit malfunctions. The connection piping must be adequately supported so that its weight does not rest on the appliance

CONNECTIONS

Before starting the system, check that the hydraulic circuits are connected to the current exchangers (or, that the evaporator in the air/water units or evaporator and condenser in the water water units or the intake and flow fittings have not been reversed). The water circulation pump must preferably be installed upstream so that the evaporator/condenser is subject to a positive pressure. The water inlet and outlet connections are indicated in the dimension tables in this manual, or available on www.aermec.com

It is important to follow the recommendations (not complete) below:

- The water pipes must not transmit radial or axial forces or vibrations to the exchangers (use flexible hoses to reduce the transmitted vibrations)
- It is necessary to install manual or automatic vent valves in the highest points of the circuit; and also provide discharge fittings in the lowest points to allow emptying the entire circuit
- To maintain the pressure in the circuits, you must install an expansion tank and a safety valve
- Respect the water inlet and outlet connections shown on the unit
- Install manometer on the water inlet and outlet fittings.
- Install stop valve near the water inlet and outlet fittings.
- After performing a leak test, insulate the pipes to reduce heat loss and prevent the formation of condensation
- If the external water pipes are in an area where it is likely that the environment temperature drops below 0°C, insulate the pipes and provide an electric heater. As an option, you can also protect the pipes inside the unit.
- Check the continuity of the earthing.

ATTENTION You must install the water filter supplied, in the hydraulic circuit upstream of the heat exchanger. FAILURE TO DO THIS INVALIDATES THE WARRANTY.

ATTENTION The charge or discharge of the heat exchange fluids must be made during installation by qualified technicians using the fittings provided on the hydraulic circuit. Never use the unit heat exchangers to top-up the heat exchanger fluid.

DISCHARGING SYSTEM

In the event the system is stopped during winter, the water in the heat exchanger can freeze damaging the heat exchanger irreversibly. To prevent danger of freezing, three solutions are possible:

1. Full water discharge from the unit.
2. Using the resistances. In this case the resistances must always be supplied with electrical power for the entire period of possible freezing (machine in stand-by).
3. Operation with glycol/water fluid, with a percentage of glycol based on the minimum outdoor temperature expected.

ANTI-FREEZE PROTECTION

ATTENTION: the addition of glycol is the only effective protection against freezing; the glycol/water solution must be sufficiently concentrated to ensure proper protection and prevent ice forming at minimum temperature provided for a given installation. Take the necessary precautions if using non-passivated anti-freeze solutions (monoethylene glycol or monopropylene glycol). Corrosion phenomena may occur with these anti-freeze solutions in contact with oxygen.
However, always refer to the glycol supplier documentation to check its recommended concentration.

WATER FEATURES

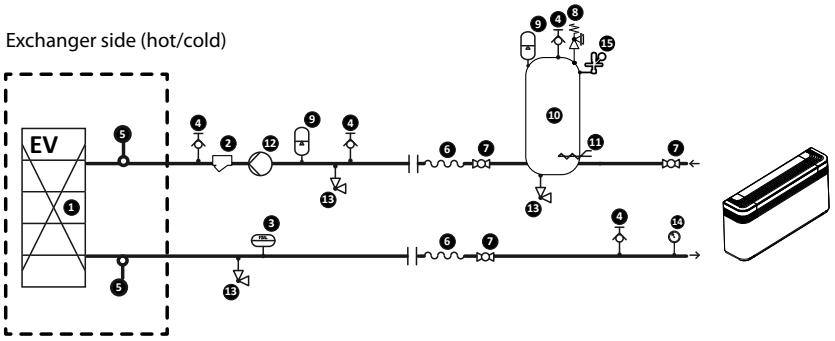
System: Chiller with plate heat exchanger	
PH	7,5-9
Electric conductivity	100-500µS/cm
Total hardness	4,5-8,5°dH
Temperature	< 65°C
Oxygen content	< 0,1 ppm
Max. glycol amount	50%
Phosphates (PO4)	< 2ppm
Manganese (Mn)	< 0,05 ppm
Iron (Fe)	< 0,3 ppm
Alkalinity (HCO3)	70 - 300 ppm
Chloride ions (Cl-)	< 50 ppm
Sulphate ions (SO4)	< 50 ppm
Sulphide ion (S)	none
Ammonium ions (NH4)	none
Silica (SiO2)	< 30ppm

MAIN HYDRAULIC CIRCUIT

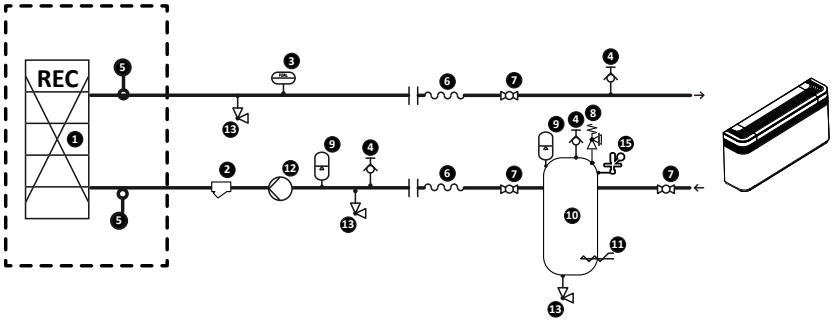
NXP WITHOUT PUMPS

Unit **Components recommended**

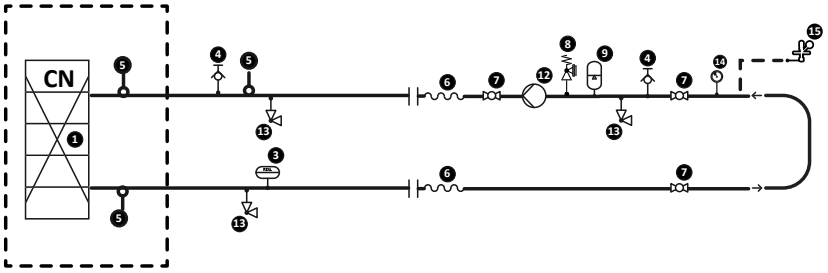
Exchanger side (hot/cold)



Exchanger side (DHW)



Exchanger side (geothermal)



COMPONENTS PROVIDED AS STANDARD

1. Plate exchanger
5. Water temperature probes (IN/OUT)

HYDRAULIC COMPONENTS RECOMMENDED EXTERNAL TO UNIT (RESPONSIBILITY OF THE INSTALLER)

2. Water filter
3. Flow switch
4. Air vent valve
6. Anti-vibration joints
7. Cut-off valve
8. Safety valve
9. Expansion Tank
10. System buffer tank (installation recommended whenever the system water content is less than that indicated in tab.)
11. Antifreeze electric heater
12. Pump
13. Drain valve
14. Gauge
15. Automatic fill point

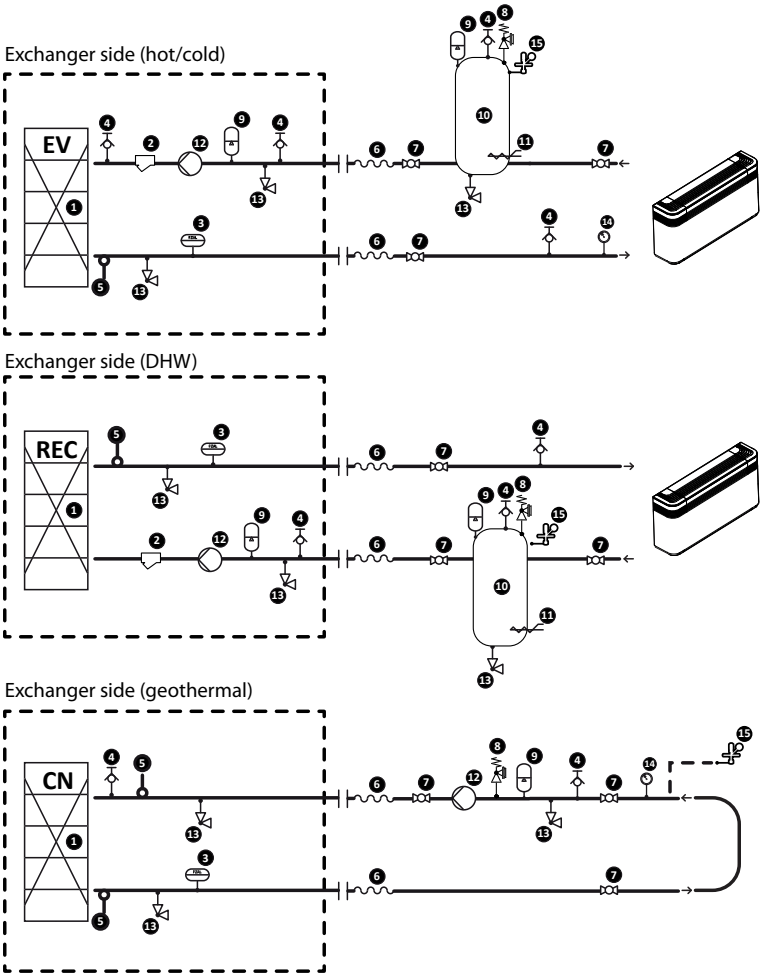
RECOMMENDED MINIMUM WATER CONTENT

MINIMUM WATER CONTENT		NXP 0500	NXP 0550	NXP 0600	NXP 0650	NXP 0700	NXP 0750	NXP 0800	NXP 0900	NXP 1000	NXP 1250	NXP 1400	NXP 1500	NXP 1650
Compressors / Circuits	n°/n°	3/2	3/2	4/2	4/2	4/2	4/2	4/2	4/2	4/2	4/2	4/2	4/2	4/2
System side | Recovery side	l/kW	7												
RECOMENDED WATER CONTENT (*)														
System side | Recovery side	l/kW	14												

(*) Minimum water content for process applications or operating at low external temperatures and low load.
Control on leaving water temperature.
Design Δt less than 5°C.

NXP WITH PUMPS

Unit **Components recommended**



COMPONENTS PROVIDED AS STANDARD

1. Plate exchanger
2. Water filter
3. Flow switch
4. Air vent valve
5. Water temperature probes (IN/OUT)
9. Expansion Tank
12. Pump
13. Drain valve

HYDRAULIC COMPONENTS RECOMMENDED EXTERNAL TO UNIT (RESPONSIBILITY OF THE INSTALLER)

4. Air vent valve
6. Anti-vibration joints
7. Cut-off valve
8. Safety valve
9. Expansion Tank
10. System buffer tank (installation recommended whenever the system water content is less than that indicated in tab.)
11. Antifreeze electric heater
12. Pump
13. Drain valve
14. Gauge
15. Automatic fill point

RECOMMENDED MINIMUM WATER CONTENT

MINIMUM WATER CONTENT		NXP 0500	NXP 0550	NXP 0600	NXP 0650	NXP 0700	NXP 0750	NXP 0800	NXP 0900	NXP 1000	NXP 1250	NXP 1400	NXP 1500	NXP 1650
Compressors / Circuits	n°/n°	3/2	3/2	4/2	4/2	4/2	4/2	4/2	4/2	4/2	4/2	4/2	4/2	4/2
System side | Recovery side	l/kW	7												
RECOMENDED WATER CONTENT (*)														
System side | Recovery side	l/kW	14												

(*) Minimum water content for process applications or operating at low external temperatures and low load.
Control on leaving water temperature.
Design Δt less than 5°C.

ELECTRICAL CONNECTIONS

The units are completely wired at the factory and only require connection to the electric power supply mains, downstream from a unit switch, according to that envisioned by the Standards in force on this subject in the country of installation.
It s also advised to check that:

- The electrical mains features are suitable for the absorption values indicated in the electrical data table, also taking into consideration any other machines functioning at the same time.
- The unit is only powered when installation has been completed (hydraulic and electric).
- Respect the connection indications of the phase, and earth wires.
- The power supply line must have a relevant protection mounted upstream against short circuits and dispersions to earth, which isolates the system with respect to other utilities.
- The voltage must be within a tolerance of ±10% of the nominal power supply voltage of the machine (for unbalanced three-phase unit max 3% between the phases). Whenever these parameters are not respected, contact the electric energy public body.
- For electric connections, use the cables with double isolation according to the Standards in force on this subject in the different countries.

it is mandatory:

- The use of an omnipolar magnet circuit breaker switch, in compliance with the current Standards (contact opening at least 3 mm), with suitable cut-off power and differential protection on the basis of the electric data table shown below, installed as near as possible to the appliance.
- To make an effective earth connection. The manufacturer cannot be considered responsible for any damage caused by the lack of or ineffective appliance earth connection.
- For units with three-phase power supply, check the correct connection of the phases.

ATTENTION

- All the electrical operations must be carried out by personnel in possession of the necessary qualifications by law, suitably trained and informed on the risks related to these operations.
- The characteristics of the electrical lines and of the related components must be determined by staff qualified to design electrical systems, in compliance with the international and national regulations of the place of installation of the unit and in compliance with the regulations in force at the moment of installation
- For the installation requirements refer only to the wiring diagram supplied with the unit. - The wiring diagram along with the manuals must be kept in good condition and always available for any future servicing on the unit.
- IT ISmandatory to verify that the machine is watertight before making the electrical connections and it must only be powered up after the hydraulic and electrical works have been completed.

ELECTRICAL DATA

The cable section shown in the table are recommended for maximum lengths of 50m. For longer lengths or different cable laying,
it is up to the PLANNER to calculate the appropriate line switch, the power supply line as well as the connection to the earth wire and connection cables depending on:

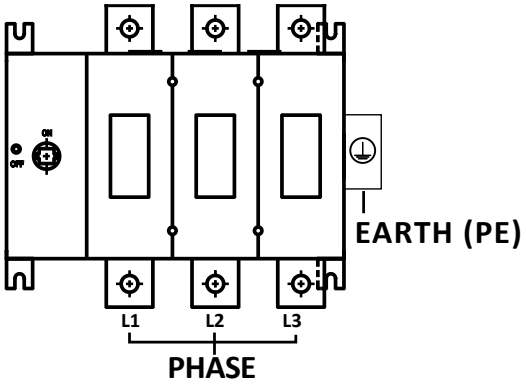
- The length
- The type of cable
- The absorption of the unit and the physical location, and the ambient temperature.

ELECTRICAL DATA VERSION ° / L WITHOUT PUMPING GROUP

Size NXP	Power supply	Compressors	TOTAL INPUT		Recommended cable cross section						
					Power cables				Control and safeties connection	Earth	IL
			F.L.A.	L.R.A.	Phases	Cables per phases	Cross section	Total cables	Cross section	Cross section	
		(n°)	(A)	(A)	(n°)	(n°)	(mm²)	(n°)	(mm²)	(mm²)	(A)
0500	400V/3/50Hz	3	71.4	214.5	3	1	16	3	1,5	16	100
0550	400V/3/50Hz	3	76.6	219.7	3	1	16	3	1,5	16	100
0600	400V/3/50Hz	4	91.3	163.7	3	1	25	3	1,5	16	125
0650	400V/3/50Hz	4	101.7	190.9	3	1	25	3	1,5	16	125
0700	400V/3/50Hz	4	123.7	235.8	3	1	35	3	1,5	16	160
0750	400V/3/50Hz	4	134.7	286.8	3	1	50	3	1,5	25	160
0800	400V/3/50Hz	4	162.9	291.5	3	1	70	3	1,5	35	200
0900	400V/3/50Hz	4	178.9	299.5	3	1	70	3	1,5	35	200
1000	400V/3/50Hz	4	194.9	307.4	3	1	70	3	1,5	35	250
1250	400V/3/50Hz	4	207.8	375.9	3	1	95	3	1,5	50	250
1400	400V/3/50Hz	4	237.1	428.6	3	1	95	3	1,5	50	250
1500	400V/3/50Hz	4	266.1	443.1	3	1	120	3	1,5	70	320
1650	400V/3/50Hz	4	295.1	555.6	3	1	120	3	1,5	70	320

F.L.A. Maximum current from unit
L.R.A. Peak current from unit
Earth Earth wire to connect to unit
IL Master switch

Power Supply:



ELECTRICAL DATA VERSION WITH PUMPING GROUP (MN / UV)

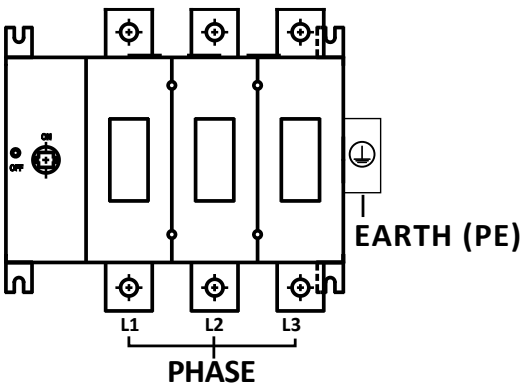
Size NXP	Power supply	Compressors	TOTAL INPUT		Recommended cable cross section						
					Power cables				Control and safeties connection	Earth	IL
			F.L.A.	L.R.A.	Phases	Cables per phases	Cross section	Total cables	Cross section	Cross section	
		(n°)	(A)	(A)	(n°)	(n°)	(mm²)	(n°)	(mm²)	(mm²)	(A)
0500	400V/3/50Hz	3	76.5	219.6	3	1	16	3	1,5	16	100
0550	400V/3/50Hz	3	82.9	226.0	3	1	25	3	1,5	16	100
0600	400V/3/50Hz	4	97.7	170.0	3	1	25	3	1,5	16	125
0650	400V/3/50Hz	4	111.6	200.8	3	1	35	3	1,5	16	125
0700	400V/3/50Hz	4	133.6	245.7	3	1	50	3	1,5	25	160
0750	400V/3/50Hz	4	149.9	302.0	3	1	50	3	1,5	25	160
0800	400V/3/50Hz	4	174.9	303.5	3	1	70	3	1,5	35	200
0900	400V/3/50Hz	4	194.0	314.6	3	1	70	3	1,5	35	200
1000	400V/3/50Hz	4	210.0	322.6	3	1	95	3	1,5	50	250
1250	400V/3/50Hz	4	228.7	396.8	3	1	95	3	1,5	50	250
1400	400V/3/50Hz	4	258.1	449.5	3	1	95	3	1,5	50	250
1500	400V/3/50Hz	4	294.8	471.8	3	1	120	3	1,5	70	320
1650	400V/3/50Hz	4	329.3	589.8	3	1	120	3	1,5	70	320

ELECTRICAL DATA VERSION WITH PUMPING GROUP (OP / WZ)

Size NXP	Power supply	Compressors	TOTAL INPUT		Recommended cable cross section						
					Power cables				Control and safeties connection	Earth	IL
			F.L.A.	L.R.A.	Phases	Cables per phases	Cross section	Total cables	Cross section	Cross section	
		(n°)	(A)	(A)	(n°)	(n°)	(mm²)	(n°)	(mm²)	(mm²)	(A)
0500	400V/3/50Hz	3	81.3	224.4	3	1	16	3	1,5	16	100
0550	400V/3/50Hz	3	86.5	229.6	3	1	25	3	1,5	16	100
0600	400V/3/50Hz	4	103.6	175.9	3	1	25	3	1,5	16	125
0650	400V/3/50Hz	4	114.0	203.1	3	1	35	3	1,5	16	125
0700	400V/3/50Hz	4	138.9	251.0	3	1	50	3	1,5	25	160
0750	400V/3/50Hz	4	155.6	307.7	3	1	50	3	1,5	25	160
0800	400V/3/50Hz	4	178.1	306.7	3	1	70	3	1,5	35	200
0900	400V/3/50Hz	4	207.6	328.1	3	1	70	3	1,5	35	200
1000	400V/3/50Hz	4	223.6	336.1	3	1	95	3	1,5	50	250
1250	400V/3/50Hz	4	236.5	404.6	3	1	95	3	1,5	50	250
1400	400V/3/50Hz	4	271.3	462.8	3	1	95	3	1,5	50	250
1500	400V/3/50Hz	4	300.3	477.3	3	1	120	3	1,5	70	320
1650	400V/3/50Hz	4	335.2	595.6	3	1	120	3	1,5	70	320

F.L.A. Maximum current from unit
L.R.A. Peak current from unit
Earth Earth wire to connect to unit
IL Master switch

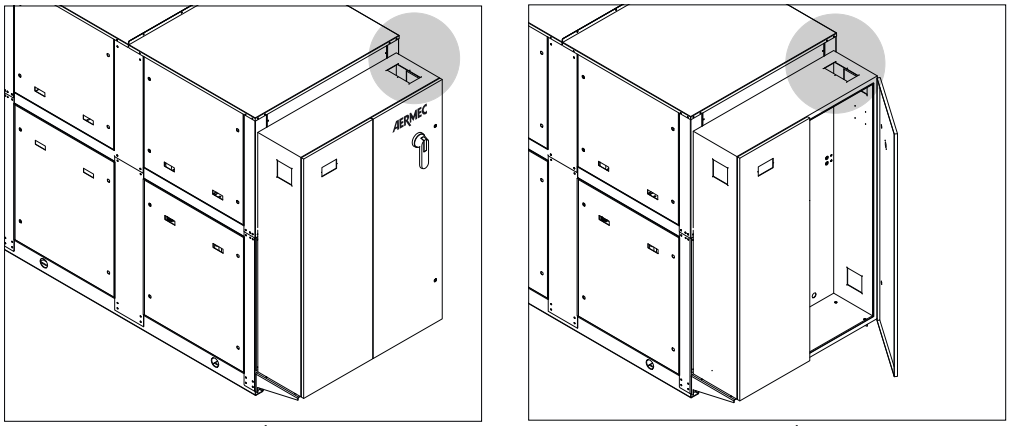
Power Supply:



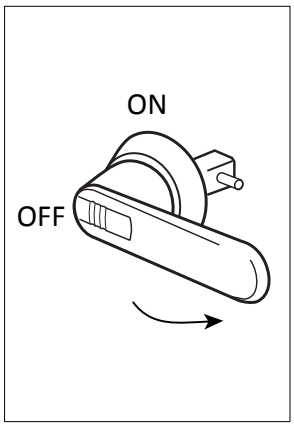
ELECTRIC POWER CONNECTION TO THE ELECTRICAL MAINS

- Open the external covering panels (if present)
- Make sure that the switch is at "OFF" before opening the electric control board for the connection of the unit to the power supply.
- Use the plates/holes to pass the main electric power supply cable and the cables of the other external connections under the responsibility of the installer.
- It is prohibited to access positions not specifically envisioned in this manual with electric cables.
- Avoid direct contact with non-insulated copper piping and with the compressor.
- Identify the clamps for the electric connection and always refer exclusively to the wiring diagram supplied with the unit.
- Remove any protections from the cable fixing points..
- For the functional connection of the unit, take the power supply cable to the electric control board inside the unit and connect it to clamps. L1-L2-L3, N (if present), and PE respecting the polarities L1-L2-L3 and N as phases, and PE as grounding
- Ensure that all protections removed for the electric connection have been restored before powering the unit electrically.
- Close all the opened panels.
- Turn the switch at "ON" position.
- Position the system master switch (outside the appliance) at "ON".

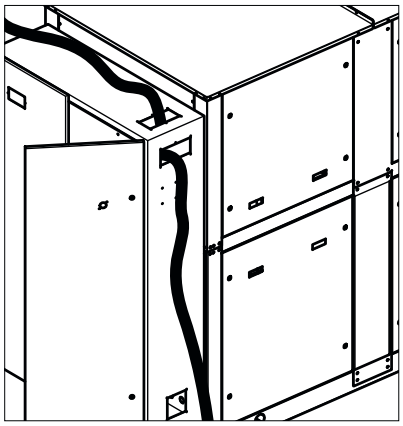
For auxiliary connection please refer to the wiring diagrams supplied with the unit,



Holes for passage of electric cables



Master Switch ON/OFF



Restoring the protection degree of the electrical box by the installer

ELECTRONIC CONTROL MULTIPURPOSE UNIT

START-UP CIRCULATING PUMP

Turn the unit on (ON)
Start Pump
Control water flow rate (20 seconds):
Flow switch or pressure switch (if provided)
Whenever alarms do not occur, the compressor starts.

ANTI-FREEZE ALARM

Reference parameters:

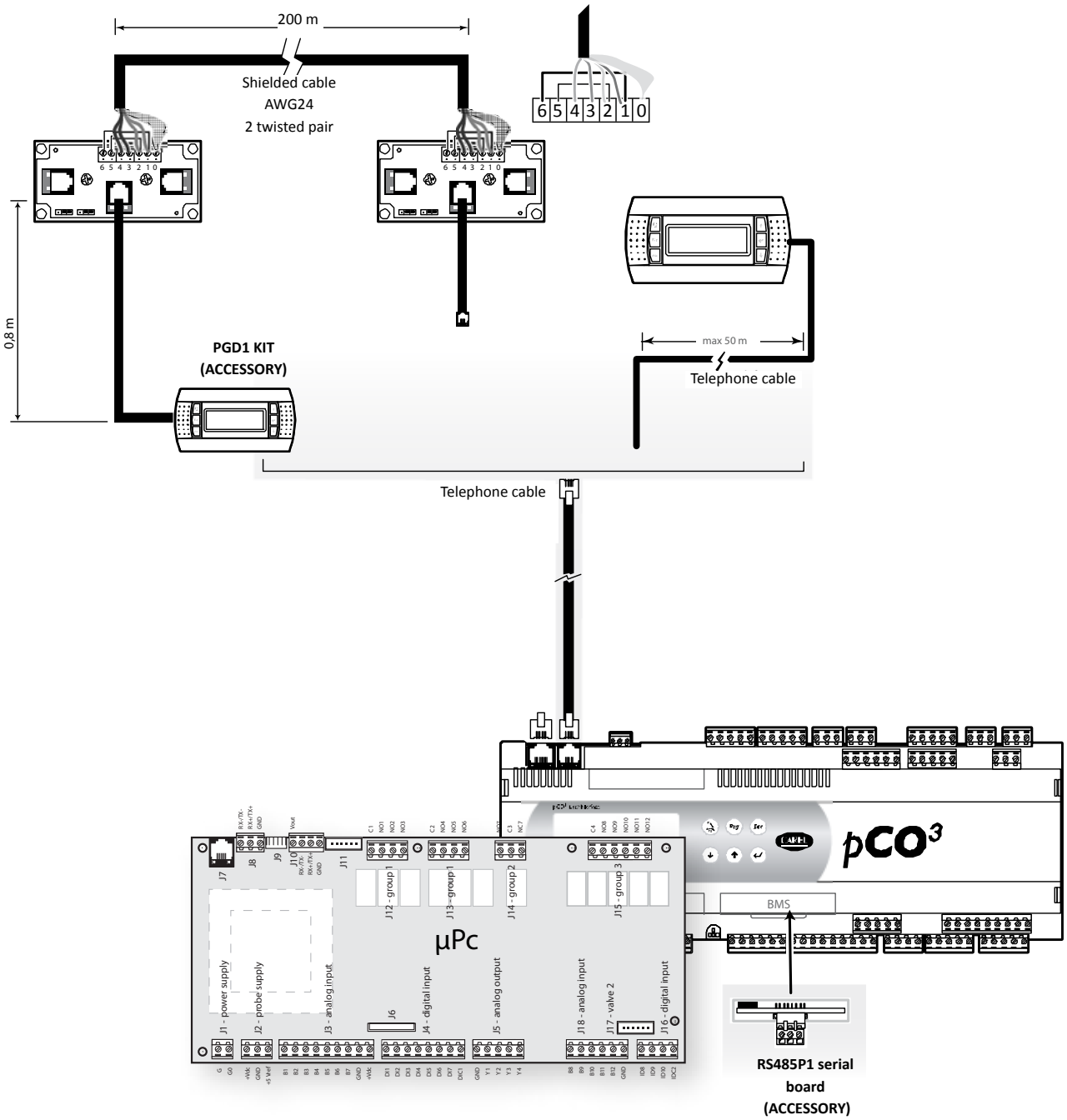
Compressor	**Block - Off**	**On**
Temperature	3°C <	> 3°C
Max operations	n° 2	-
Cod. Anti-freeze alarm	See User Manual	
Restart Manual		
Electical Heater	**Off**	**On**
Temperature	> 5°C	4°C <
Circulating Pump	**Off**	**On**
Temperature	> 5°C	4°C <
Only for pure water (not added with glycol)		

WATER FLOW ALARM

If the water flow rate is not sufficient, this safety stops the compressors and the pump

Water Pump	**BLOCCO - OFF**	**ON**
	Flow Switch or Pressure Switch (if provided)	
Water flow rate is not sufficient	>20 seconds	-
	Compressor not work	
Cod. Alarm	**See User Manual**	-
Water flow rate is sufficient	-	>20 seconds
		Start Compressor

AUXILIARY CONNECTIONS (for standard version)



For more information, refer to the wiring diagrams in the selection program or site www.aermec.com

The NRP unit control panel allows quick setting of the machine functioning parameters and their display.

The display is made up from a graphical matrix with 132 x 64 pixel in order to signal the type of functioning, displaying set parameters and any alarms that have intervened.

All default settings and any modifications are memorised in the board.

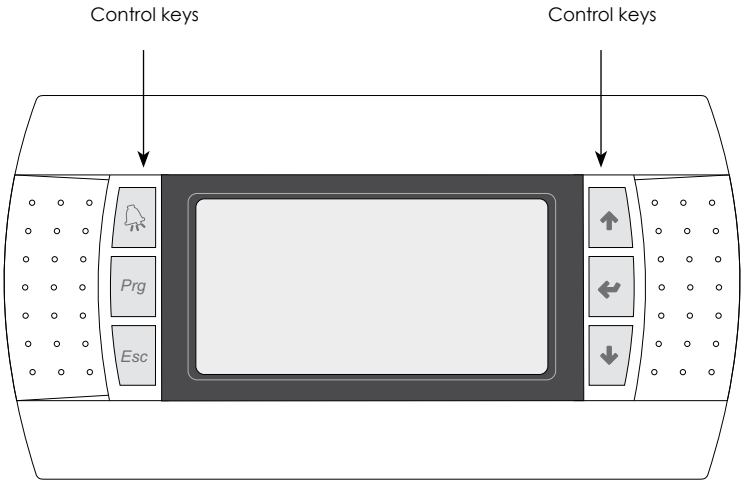
With the installation of the PGD1 remote panel, all of the functions and settings available on the machine can be replicated at a distance.

After a power cut, the unit can re-start automatically keeping the original settings.

The user interface is represented by a graphic display with six keys for navigation.
The displays are organised via a menu hierarchy, which can be activated by pressing the navigation keys. The default for displaying these menus is represented by the main menu.

Navigation between the various parameters takes place using the arrow keys positioned on the right side of the panel. These keys are also used to modify the parameters selected.

INTERFACE CONTROL KEYS



KEY	FUNCTION
	ALARMS KEY Displays the list of alarms and the alarms log;
Prg	**MENU ACTIVATION KEY** • Pressing this key activates navigation among the menus;
Esc	**MENU EXIT KEY** • Pressing this key leads to the display of the previous window;
	NAVIGATION KEY (+) • Pressing this key during navigation through the menus/ parameters, allows to pass to the next menu/parameter; • Pressing this key during parameter modification, increases the value of the parameter modified;
	NAVIGATION KEY (ENTER) • Pressing this key during navigation through the menus, allows to enter the selected menu; • Pressing this key during navigation through the parameters, allows to select the parameter displayed and enter the modification mode; • Pressing this key during parameter modification, confirms the modification to the value of the parameter selected;
	NAVIGATION KEY (-) • Pressing this key during navigation through the menus/ parameters, allows to pass to the previous menu/parameter; • Pressing this key during parameter modification, decreases the value of the parameter modified;

ATTENTION

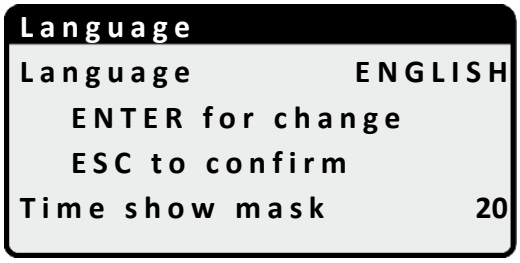
*The **2-pipe** is set up for the production of cooled water, hot water and Domestic Hot Water (D.H.W.).*
- No Anti-legionella Cycle is included

*The **4-pipe** is set up for the production of cooled water and hot water.*

WARNING
Tampering of parameters contained in the assistance and the manufacturer menu can cause unit malfunctioning. It is therefore recommended that these parameters are modified only by authorised staff.

DISPLAYS - SWICHTING UNIT ON

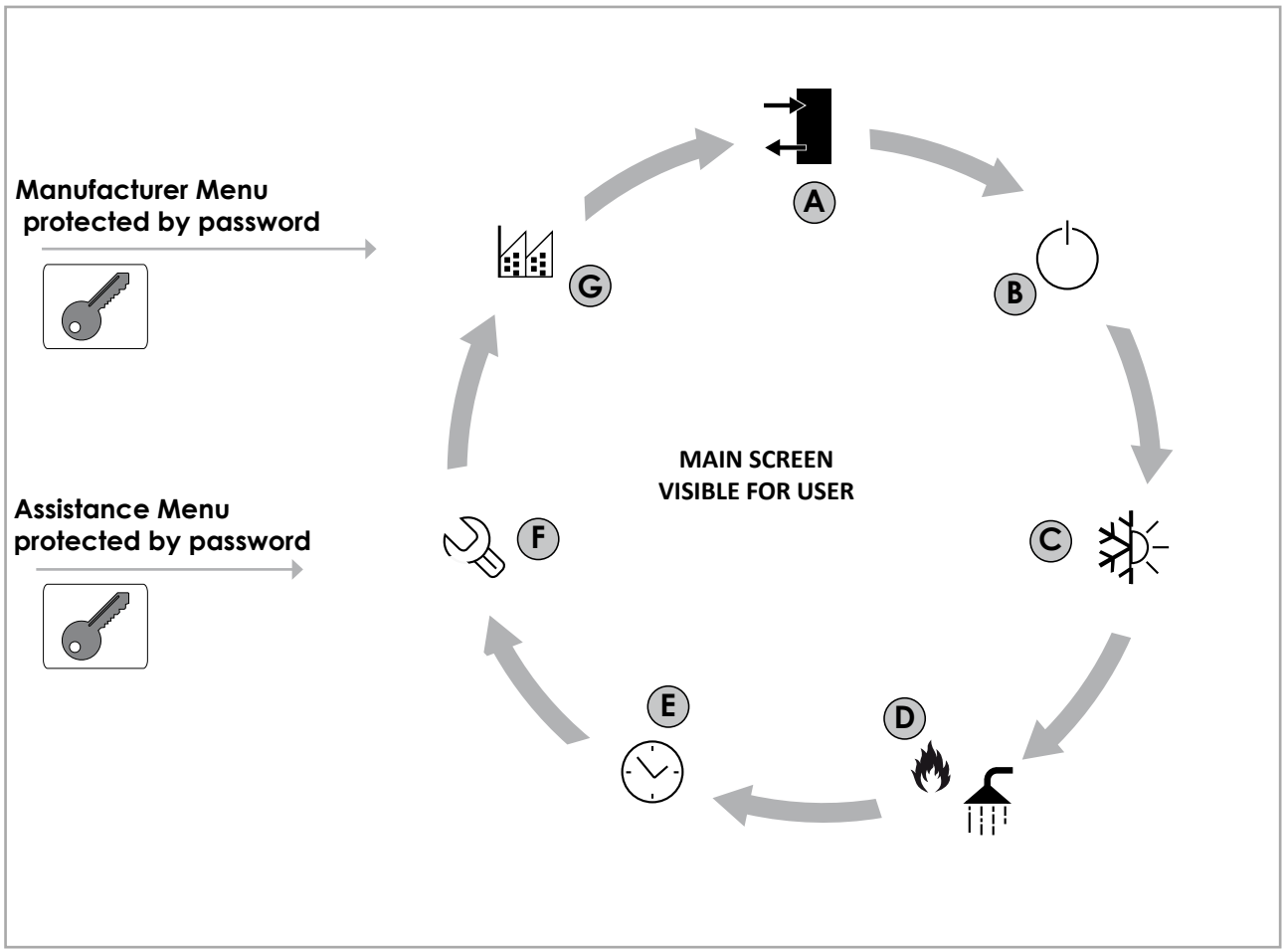
The following table shows the windows visible for the user when the unit is powered.

Displays - Switching Unit on		
Unit display	Index	Display/Parameter
	A	Introductory window, visible 30 seconds after unit is switched on. The seconds remaining before passing on to the language choice menu are indicated at the bottom right.
	B	Indicates the possibility of choosing the desired language. The seconds remaining before passing on to the main screen are indicated at the bottom right. After 20 seconds have elapsed, it will no longer be possible to modify the language until the next time the board is restarted. ⚠ **The language can be modified by qualified personnel alone, using the ASSISTANCE MENU.**

WARNING
tampering of parameters contained in the assistance and the manufacturer menu can cause unit malfunctioning. It is therefore recommended that these parameters are modified only by authorised staff.

Menu display is organised by rotation of the icons representing them.
Having selected the desired icon, you enter the chosen menu, allowing you to view or modify the parameters making it up.
The procedure for navigating the menus or modifying the parameters is explained in detail in the chapter "Use operational procedures". See it for further information.

User Menu



MAIN SCREEN VISIBLE FOR USER

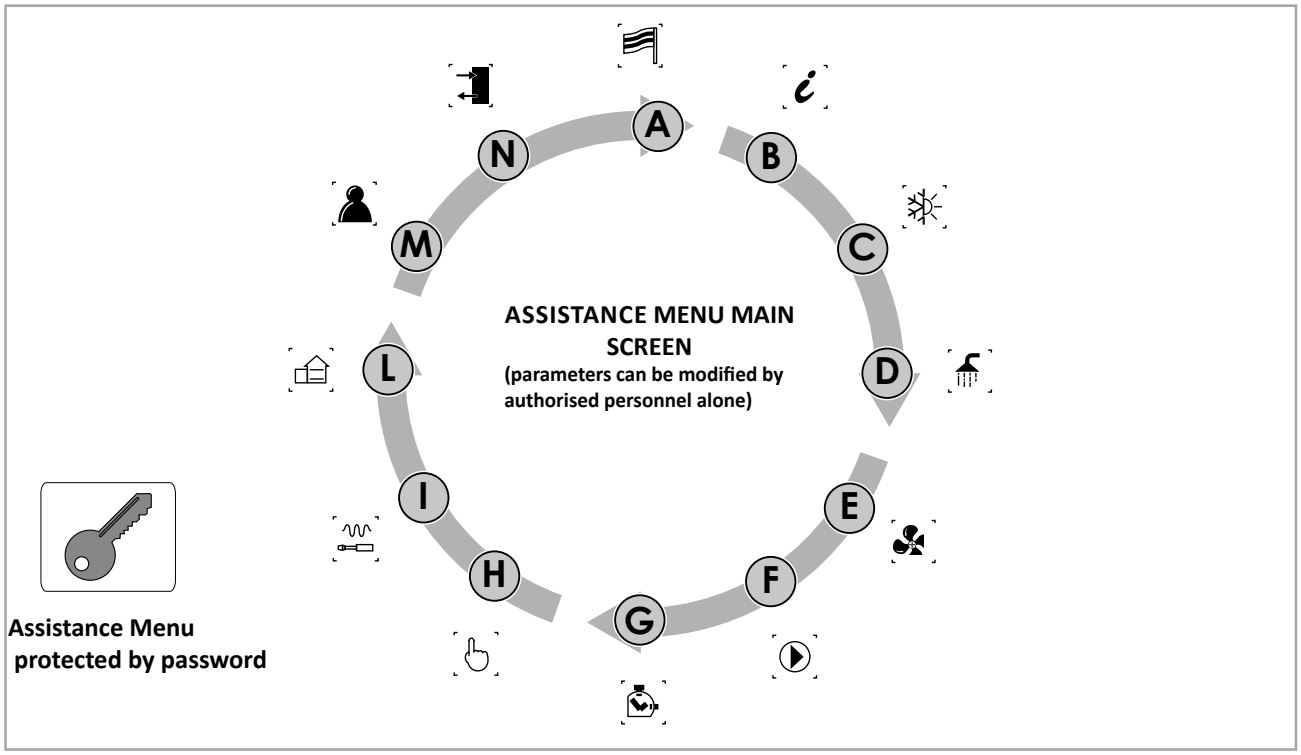
Index	Icon	Menu	Menu function
A		IN/OUT	Contains the information (temperature, pressure, etc.) of the system components.
B		ON/OFF	Switches the unit on and off and sets its functioning mode (summer/winter) and eventual time periods.

2-PIPE VERSION			
C		SYSTEM	Management of the chiller parameters, standard/energy saving work set-point.
D		RECOVERY	DHW management parameters(set-point, consent, temperature, time periods, etc...).

4-PIPE VERSION			
C		COLD	Management of the chiller parameters, standard/energy saving work set-point when functioning in cooling mode.
D		HOT	Management of the chiller parameters, standard/energy saving work set-point when functioning in heating mode.

Index	Icon	Menu	Menu function
E		CLOCK	Manages all parameters linked to the system time (hour, date, etc....).
F		AFTER-SALES ASSISTANCE	Protects the after-sales assistance menu with password request.
G		MANUFACTURER	Protects the manufacturer menu with password request.

ASSISTANCE MENU (PROTECTED BY PASSWORD)



ASSISTANCE MENU MAIN SCREEN
(parameters can be modified by authorised personnel alone)

Index	Icon	Menu		Menu function
A		LANGUAGE		Selecting the user interface language
B		INFO		Information regarding the software
C		**2 PIPES** CHILLER		Assistance parameters for the chiller
		4 PIPES COLD		Assistance parameters in cooling mode
D		**2 PIPES** RECOVERY		Assistance parameters for the DHW
		4 PIPES HOT		Assistance parameters in heating mode
E		NRP	FANS	Ventilation assistance parameters
		NXP	SOURCE SIDE	Pump assistance parameters
F		PUMPS		Pumps assistance parameters
G		TIMER		Devices working hours timer
H		MANUAL		Manual controls forcing
I		ACCESSORIES		Enabling of accessories modules
L		C.SYSTEM		Definition of system features
M		VARIOUS		Setting assistance parameters
N		IN/OUT		Input and output states

To manage or modify the NRP unit operational parameters, the control board interface on the machine must be used. The fundamental operations that the user must be able to perform for correct use of the unit are:

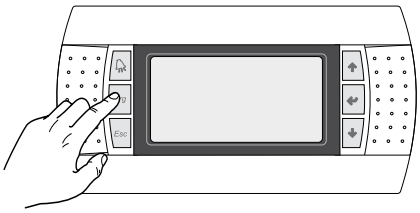
(1) To pass from one menu to another;

(2) To select and modify a parameter;

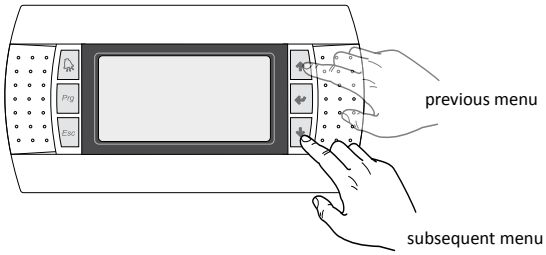
1

To pass from one menu to another

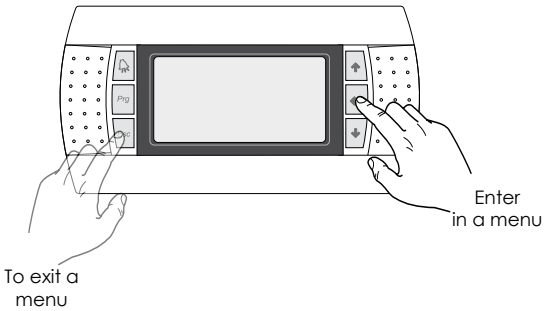
(a) In order to scroll the various menus (the order with which the menus are displayed is represented in the previous page) it is first necessary to enter the menu selection mode, pressing the (Prg) key;



(b) Once the menu selection mode has been entered, these can be scrolled using the arrow keys: the (↑) key to pass to the previous menu and the (↓) key to pass to the next menu;



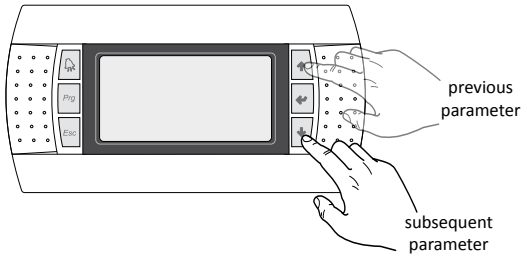
(c) When the desired menu is displayed, press the (↵) key to enter the menu. To exit the menu and go back to menu selection mode, press the (Esc) key;



2

To select and modify a parameter

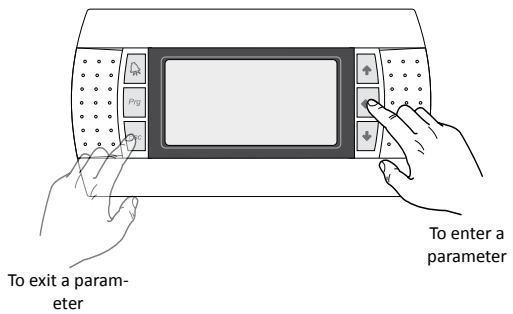
(a) Once the selected menu has been entered (following the procedure (1)) it is possible to scroll the windows that make it up, using the arrow keys, using the (↑) key to pass to the previous parameter and the(↓) key to pass to the next parameter;



(c) When the desired parameter is displayed, press the (↵) key to enter the parameter. To exit the parameter and go back to parameters selection mode, press the
(Esc) key;

ATTENTION:
Once a parameter has been selected, press the (↵) key to automatically enter the modification mode of that parameter. From this mode it is possible to set the desired values for the parameters, following the procedure below:
(1) by pressing the (↵) key, a flashing cursor will appear near the first modifiable field of the parameter (if fields that can be modified do not appear, no cursor will appear);
(2) by pressing the (↑) key or the (↓)key the value in the field will be increased or decreased;
(3) by pressing the (↵) key, the modifications to the field value will be confirmed, saving in the memory;

On the basis of the type of the type of parameter selected, the number of fields that can be modified could vary;



⚠ ATTENTION
*To adjust **display contrast**, press **Alarm + Prg** simultaneously and use the ↑ ↓ keys to increase or decrease contrast.*

COMMISSIONING - WARNINGS

Please note that, on request by the Aermec customer or the legitimate owner of the machine, the units in this series can be started up by the AERMEC After-Sales Service in your area (valid only on ITALIAN territory). The start of operation must be scheduled in advance based on the time frame for the completion of works for the system. Prior to the intervention, all other works (electrical and hydraulic hook-ups, priming and bleeding of air from the system) must have been completed.

START-UP

OPERATIONS TO BE PERFORMED WITH NO VOLTAGE PRESENT

ATTENTION
the unit is not working:

Check:
- All safety conditions have been respected
- The unit is correctly fixed to the support surface
- The minimum technical spaces have been respected
- That the main power supply cables have appropriate cross-section, which can support the total consumption of the unit. (see electric data sections) and that the unit has been duly connected to the ground.
- That all the electrical connections have been made correctly and all the terminals adequately tightened.

OPERATIONS TO BE PERFORMED WITH THE UNIT LIVE

ATTENTION
the unit is still not working:

- Supply power to the unit by turning the master switch to the ON position.
- Use a tester to verify that the value of the power supply voltage to the phases is equal to 400V ± 10%; also verify that the unbalance between phases is no greater than 3%.
- Check that the connections made by the installer are in compliance with the documentation.
- Verify that the resistor of the compressor sump is working by measuring the increase in temperature of the oil pan. The resistance/s must function for at least 12 hours before start-up of the compressor and in any event, the temperature of the oil pan must be 10-15°C higher than room temperature.

HYDRAULIC CIRCUIT CONTROLS
- Check that all hydraulic connections are made correctly, that the plate indications are complied with and that a mechanical filter has been installed in each inlet heat exchanger. **(Mandatory component for warranty to be valid).**
- Make sure that the circulation pump/s is operating and that the water flow rate is sufficient to close the contact of the flow switch, if installed.
- Check the water flow rate, measuring the pressure difference between inlet and outlet of the evaporator and calculate the flow rate using the evaporator pressure drop tables present in this manual.
- Check the correct functioning of the flow meters if installed. Closing the cut-off valve at the output of the heat exchanger; the unit control panel must show the block. Finally re-open the valve and rearm the block

COMMISSIONING
- Once all the aforementioned checks have been carried out, the unit can be commissioned
- Close the door of the electrical panel.
- Set the unit main switch to ON, the unit will start after a few minutes

OPERATIONS TO BE PERFORMED WITH MACHINE ON

ATTENTION
the unit is working:

Check:
- That the compressor input current is lower than the maximum indicated in the electrical data table.
- Before starting the unit, check that the compressor rotates in the correct direction through a three-phase protection. The spiral compressors compress in one direction of rotation only. Therefore, it is essential for the phase of the three-phase spiral compressors to be correctly connected (the correct direction of rotation can be controlled when the pressure on the intake side decreases and that on the flow side increases with the compressor in operation). If the connection is incorrect, the direction of rotation is reversed: this causes a loud noise and the reduction of current consumption. In this case, the protection system inside the compressor activated turning off the unit. To solve the problem, disconnect and swap the wires between two of the phases, then connect the three-phases again.
- That the voltage value lies within the pre-fixed limits and that unbalance between the three phases (three-phase power supply) is not above 3%.
- If having to take measurements and perform checks that require the machine to run, you must:
- make sure that any remote control systems are disconnected; however, keep in mind that the PLC on the machine controls its functions and can enable and disable the components creating hazardous situations (e.g. power and rotate the fans and their mechanical drive systems).
- Operate with the electrical board open the shortest time possible
- Close the electrical board as soon as the single measurement or control is performed

ATTENTION
The anti-freeze set temperature can only be varied by an authorised after-sales centre and only after having checked that there is a suitable % of anti-freeze solution in the water circuit.
Whenever this alarm intervenes, call the nearest authorised after-sales service immediately

- Control of the water flow rate alarm, the unit provides for the management of a flow rate alarm controlled by a differential pressure switch or flow switch if provided. This type of safety device intervenes after the first 30 seconds of pump functioning, if the water flow rate is not sufficient. The intervention stops the compressor and the pump itself.

MAINTENANCE

ATTENTION
Any cleaning, inspection, control, routine and extraordinary maintenance must be performed by experienced, authorised personnel and qualified to perform the above tasks. These tasks must be performed to perfection as prescribed by M.D. 37/2008.

During the execution of
- Risks of electric discharges;
- Risk of injuries due to the presence of rotating parts;
- Risk of injuries due to the presence of sharp edges and heavy weights;
- Risks of injuries due to the presence of components containing high pressure gas;
- Risks of injuries due to high or low temperature components.
- Noise-related risks of the machine functioning;
- Risks related to the presence of harmful substances in hydronic circuits.

These tasks must be performed using the appropriate personal protective equipment, see figure below

Maintenance operations are essential to maintain the refrigerant unit efficient, from a purely functional point of view and with regard to energy and safety.

In the absence of specific regulations regarding HFO refrigerants, the manufacturer prescribes the application of and compliance with that indicated in the:
- Regulation (EC) No.842/2006- art.3 concerning the "leakage containment"
- Regulation (EC) No.1516/2007 concerning the "standard leakage checking requirements" and related national laws implementing the above European regulations.

ATTENTION
For the unit, the user must provide a system booklet which he must ensure, or its designee authorised to service the machine, will contain all required records in order to have a historical documentation of the unit functioning. The absence of records in the booklet may count as evidence of lack of maintenance..

PRECAUTIONS TO BE OBSERVED DURING MAINTENANCE

ATTENTION
Maintenance operations can only be performed by authorised technicians

PRECAUTIONS AGAINST RESIDUAL RISKS
MECHANICAL RISKS
- Before opening a machine panel, ascertain whether it is or not firmly connected to it by hinges;
- In case a piece is disassembled, make sure it is correctly reassembled before restarting the unit;
- Louvers of the heat exchangers, edges of the components and panels, screws can generate cuts;
- Do not remove the protections from mobile elements while the unit is running;
- Make sure that the protections of mobile elements are correctly in place before restarting the unit;
- It is not permitted to walk or place other bodies on the machine;
- Fans, motors and belt drives may be in motion, always wait for them to stop and take appropriate precautions to prevent their activation before accessing them;
- Isolate the unit from the mains by means of the external isolator provided for the insertion of padlocks (up to 3) for blocking in "open" position.
- Place a sign reading "Do not turn on - maintenance in progress" on the open isolator
- Equip yourself with the appropriate personal protective equipment (helmet, insulated gloves, protective goggles, accident-prevention shoes, etc.)
- Equip yourself with tools in good condition and make sure to have fully understood the instructions before using them
- For outdoor units, do not perform interventions in dangerous weather conditions such as rain, snow, fog, etc.
- The cooling circuit contains under pressure refrigerant gas: any operation must be performed by competent personnel in possession of the authorisations and qualifications required by current laws

ATTENTION
it is forbidden to LOAD the cooling circuit with a refrigerant gas different from that indicated. Using different refrigerant gas can severely damage the unit

- never disperse the fluid contained in the cooling circuit in the environment
- never keep the cooling circuit open, because the oil absorbs humidity and degrades
- during venting protect yourself against any leakage of fluids at dangerous temperatures and/or pressures
- always use appropriate equipment (extractor, antistatic bracelet, etc.) when replacing electronic boards
- if replacing a motor, compressor, evaporator, condensing coils or any other heavy element, make sure that the lifting devices are compatible with the weight to be handled
- in air units with independent compressor compartment, do not access the fan compartment without having first disconnected the machine through the isolator on the board and having placed a sign reading "Do not turn on - maintenance in progress"
- contact the company if changes must be made to the refrigerant, hydraulic or electric diagram of the unit, as well as its control logic

PREVENTION OF CHEMICAL / FIRE / ENVIRONMENTAL RISKS
- Any intervention on the machine must be performed with "NO SMOKING";
- The water circuit may contain harmful substances. Prevent the contents coming into contact with skin, eyes and clothing. Use the prescribed personal protective equipment. (chemical risk);
- If there is a need to perform a braze-welding, so with the use of special torch with naked flame, the same flame must only be activated if in the absence of

freon gas in the environment and on the cooling circuit pipes. Inside piping must be “washed” and contain nitrogen type inert gas. The presence of flame and freon gas decomposes the same, forming lethal and carcinogenic compounds.
- Hot works require the availability of a Carbon Dioxide (CO_2) fire extinguisher. DO NOT USE WATER, leachates could be hazardous for the discharges; if using water, provide a containment tank.

PREVENTION AGAINST RESIDUAL RISKS DUE TO PRESSURE OR HIGH/LOW TEMPERATURE
- The unit contains under pressure gas: no operation must be performed on under pressure equipment except during maintenance that must be carried out by competent and authorised personnel;
- Perform brazing or welding only on empty pipes and clear of any lubricating oil residues; do not near flames or other heat sources to the pipes containing under pressure fluids;
- Do not work with naked flames near the unit;
- Do not bend or hit pipes containing under pressure fluids;
- The unit is equipped with overpressure release devices (safety valve): if these devices intervene, the refrigerant gas is released at high temperature and speed;
- The machine and the pipes have very hot or very cold surfaces that lead to risk of burns by contact;
- Do not use your hands to control any refrigerant leaks;
- Before removing elements along the under pressure hydronic circuits, shut-off the pipe section involved and gradually drain the fluid until its pressure and that of the atmosphere are balanced.

PREVENTION AGAINST RESIDUAL ELECTRICAL RISKS
- Before opening the electrical panel, disconnect the unit from the mains by means of the external isolator;
- Wait the time indicated on the machine plate from when the power supply was disconnected from the unit before accessing inside the electrical panel;
- If the unit is equipped with integrated inverter type compressors, disconnect the power supply and wait at least 5 minutes before accessing for maintenance: the internal components remain live for this time, generating the risk of electrocution.
- If the power supply cable is damaged, it must be replaced by the manufacturer, After Sales Service or by another similarly qualified person, to avoid dangerous situations.

CLEANING THE MACHINE
The machine must be turned off and electrically disconnected when being cleaned.

INSPECTION AND CONTROL
The machine must be turned off and electrically disconnected during its inspection and leak check.

ROUTINE AND EXTRAORDINARY MAINTENANCE
The machine must be turned off and electrically disconnected during its maintenance (with possible replacement of components). In particular:
- Before any intervention, isolate the unit from the mains by means of the external isolator provided for the insertion of padlocks (up to 3) for blocking in ‘‘open’’ position;
- Place a sign reading ‘‘Do not turn on – maintenance in progress’’ on the open isolator;
- Equip yourself with tools in good condition and make sure to have fully understood the instructions before using them;
- Equip yourself with the appropriate personal protective equipment as indicated in paragraph 1 of this report;
- For outdoor units, do not perform interventions in dangerous weather conditions such as rain, snow, fog, thunderstorms, etc;
- The cooling circuit components must be replaced after draining the refrigerant gas contained in the circuit;
- During venting protect yourself against any leakage of fluids at dangerous temperatures and/or pressures;
- Always use appropriate equipment (extractor, antistatic bracelet etc) when replacing electronic boards;
- If replacing a motor, compressor, evaporator, condensing coil or any other heavy element, make sure that the lifting devices are compatible with the weight to be handled;
- In air units with independent compressor compartment, do not access the fan compartment without having first disconnected the machine through the isolator on the board and having placed a sign reading ‘‘Do not turn on – maintenance in progress’’;
- Always and only use original spare parts purchased directly from Aermec or from official dealers. Contact Aermec should it be necessary to move the unit one year after its positioning on-site or it must be dismantled;
- It is not permitted to change the refrigerant, hydraulic or electric layout of the unit, or its control logic unless expressly authorised by Aermec;
- The machine must be loaded with the refrigerant in the feature label and in the required quantity;
- Make sure to have removed all tools, electrical cables or other loose object and having perfectly connected the machine to the system before closing it and starting it;
- The inspections and measurements necessary to establish the correct functioning of the machine to be run with the machine in operation, must be performed with the machine closed (framework fixed on the machine), reading the measurements collected by the control board and viewable in the control panel of the same. In the case of machines with cooling circuit compartment open, stand in front of the control panel of the electrical panel remaining distant and not exposed to the under pressure parts of the cooling circuit

ATTENTION
When having to take measurements with the machine on and the electrical panel and cooling circuit open, be careful since the machine is live, the cooling circuit contains high pressure gas, the pipes may be hot or cold, some parts may be in motion.

Any absorption measurements of the compressors, compressor casings, pumps and fans as well as the power supply measurements, must be taken as follows:
- With machine off, access its panel;
- Connect the measuring instruments such as current clamps (to measure the current) and multimeters (to measure the voltage). These instruments must be fitted with appropriate terminals/clamps that allow to remotely control the measurement;
- Access the machine and read the measurements made by the instruments, keeping AWAY from live electrical parts;
- As soon as the measurements are taken, turn off the machine, remove the instruments and close the electrical panel.

The measurements of the compressor inlet and outlet temperature and pressure to determine the overheating and subcooling of the machine, must be carried out as follows:

- With machine off, access its cooling circuit;
- Connect the necessary instruments,
  • Pressure gauges connected through appropriate extensions to the compressor inlet and outlet pressure plugs;
  • Thermometers connected to thermocouple probes that are fixed to the compressor inlet and outlet pipes. Avoid using metratast that require the operator to near the machine cooling circuit;
- Access the machines **and acquire the measurements, keeping AWAY from the under pressure parts of the cooling circuit;**
- As soon as the measurements are taken, turn off the machine, remove the instruments and close the cooling circuit compartment.

The high/low pressure switch, where present must be tested with the machine “closed”, reading the high pressure circuit pressure on the machine control panel.
In case of machines with the cooling circuit compartment not closed by framework, the high/low pressure switch must be tested by standing in front of the machine panel where the control panel is located, remaining distant and not exposed to the under pressure parts of the cooling circuit.

MAINTENANCE - LIST OF THE RECOMMENDED PERIODIC INTERVENTIONS

RECOMMENDED PERIODIC MAINTENANCE INTERVENTIONS						
DESCRIPTION		FREQUENCY				
		3/4 months	6 months	12 months	24 months	functioning hours
GENERAL INTERVENTIONS						
Check of any refrigerant leaks (this must be done respecting the deadlines recommended by the current European regulations)		•				
Check of the unit power supply voltage		•				
Check of the compressors' power supply voltage		•				
Check of the fan power supply voltage		•				
Check of the solenoid valves		•				
Functioning and calibration check of the pressure switches, if and where present		•				
Replacement of the safety valve					•	
Check and reading of the pressure/temperature probes		•				
Check and possible replacement of the dehydrating fans				•		
Check of compressors contactors		•				
Check of fans contactors, where present				•		
Exchanger coils cleaning			•			
Check and cleaning of shell and tube heat exchangers if necessary where present	(1)			•		
Check of electric resistances of the heat exchangers			•			
Check for rust and corrosion in components, paying particular attention to under pressure containers. In this case replace them of intervene with specific products				•		
General cleaning of the unit				•		
Bleed the hydraulic circuit and the heat exchangers, the simultaneous presence of air and water reduces yield and can benefit the arising of rust						
INTERVENTIONS TO COOLING CIRCUIT Functioning at full load						
Overheating temperature measurement			•			
Subcooling temperature measurement			•			
Exhaust gas temperature measurement			•			
Fans absorption measurement			•			
Compressors absorption measurement			•			
COMPRESSOR CHECKS						
Check oil level		•				
Check oil acidity				•		
Check the proper functioning of the casing resistance			•			
Check oil level sensor, if any			•			
CHECKS ON HYDRAULIC CIRCUIT						
Pumps absorption measurement			•			
Check the pump rotor gasket		•				
Check the flexible joints		•				
Check the seal of the shell and tube heat exchanger heads, where present			•			
Check the proper functioning and calibration of the flow switch, where present		•				
Check the proper functioning of the differential pressure switch, where present		•				
Check the concentration of glycol solution, if provided		3 months*				
Cleaning the water filter		•				

**** To replace the glycol, refer to the documentation provided by the supplier.***

The frequency of the operations described herein is a guideline one and they may vary depending on how the unit is used and the type of system where it is installed. However, if the unit is installed in harsh environments, we recommend reducing the time of intervention

1 we do not recommend swabbing as it can ruin the inner lining of the pipes, we recommend using appropriate chemicals

MAINTENANCE - LIST OF THE RECOMMENDED PERIODIC INTERVENTIONS

RECOMMENDED PERIODIC MAINTENANCE INTERVENTIONS TO UNITS WITH CENTRIFUGAL COMPRESSORS				
DESCRIPTION		FREQUENCY		
		6 months	12 months	other
GENERAL CHECKS				
Check that the compressor is not damaged		•		
Check that there are no excessive vibrations induced by other operating components		•		
CHECKS ON ELECTRICAL PARTS				
Check the power supply voltage		•		
Check the proper fastening of the compressor power supply cables			•	
Check the good condition of the electrical cables		•		
Check that the electric current value (A) is that specified in the technical plate		•		
Check the voltage value (A) on the storage tank capacitors		•		
Replace the storage tank condensers				every 5 years
Check the correct functioning of the safety system (alarms)			•	
CHECKS ON ELECTRONIC PARTS				
Check that all communication cables between the compressor and its components are firmly fastened		•		
Check that all electronic devices are firmly in their seat		•		
Visually check that the electronic boards are have no burns or are damaged			•	
Check that the reading of the pressure/temperature sensors is correct				
CHECKS ON THE COOLING CIRCUIT PARTS				
Check the proper functioning of the thermostatic valve			•	
Check the charge of refrigerant gas	(1)	•		
Check the proper functioning of the solenoid valves		•		

DECOMMISSIONING AND DISPOSAL OF THE MACHINE COMPONENTS

ATTENTION
The unit contains greenhouse effect fluoride gases covered by the Kyoto Protocol. The law prohibits its dispersion in the environment and requires its recovery and delivery to the dealer or collection centre.

When components are removed to be replaced or when the entire unit reaches the end of its life and it must be removed from the installation, in order to minimise the environmental impact, respect the following disposal requirements:

- The refrigerant gas must be fully recovered in special containers and brought to collection centres by specialised personnel having the necessary qualification;
- The lubricating oil in the compressors and cooling circuit must be recovered and brought to collection centres;
- The structure, electric and electronic equipment and components must be separated according to their type and construction material and brought to collection centres;
- If the water circuit contains mixtures with anti-freeze, the content must be collected and brought to collection centres;
- Observe the current national laws

This marking indicates that this product should not be disposed with other household wastes throughout the EU.
To prevent possible harm to the environment or human health from uncontrolled disposal of Waste Electrical and Electronic Equipment (WEEE), please return the device using appropriate collection systems, or contact the retailer where the product was purchased.
Please contact your local authority for further details.
Illegal dumping of the product by the user entails the application of administrative sanctions provided by law.

AERMEC S.p.A.
Via Roma, 996
37040 Bevilacqua (VR) - Italia
Tel. + 39 0442 633111
Fax +39 0442 93577
marketing@aermec.com
www.aermec.com

carta riciclata
recycled paper
papier recyclé
recycled Papier