AERMEC

air conditioning

R410A | scroll | axial | cooling heat | | DPU GR3

CHILLERS AND AIR WATER HEAT PUMPS - INSTALLATION MAINTENANCE MANUAL

COOLER AIR | WATER

- INDOOR UNIT STANDARD EFFICIENT
- FOR OUTDOOR INSTALLATIONS
- STANDARD VERSIONS RUNNING LOWNOISE

NRL 280-700
standard

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

EUROVENT CERTIFIED PERFORMANCE www.eurovent-certification.com

CE

EN

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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 CE mark guarantees that our appliances fully comply with the requirements of the European Machinery Directive in terms of safety. We constantly monitor the quality level of our products, and as a result AERMEC products are synonymous with Safety, Quality, and Reliability.

Product data may be subject to modifications deemed necessary for improving the product without the obligation to give prior notice.

Thank you again.
AERMEC S.p.A

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For the installation of the appliance, please comply with the safety rules and regulations contained in these instructions


Moving parts hazard


High temperature hazard


Voltage hazard


Danger: Disconnect voltage


Generic danger


Useful information and notices

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NRL

SERIAL NUMBER	

EC DECLARATION OF CONFORMITY We, the undersigned, hereby declare under our own responsibility that the assembly in question, defined as follows:

NAME **NRL**

TYPE **AIR/WATER HEAT PUMPCHILLER**

MODEL

To which this declaration refers, complies with the following harmonised standards:

CEI EN 60335-2-40	Safety standard regarding electrical heat pumps, air conditioners and dehumidifiers
CEI EN 61000-6-1 **CEI EN 61000-6-3**	Immunity and electromagnetic emissions for residential environments
CEI EN 61000-6-2 **CEI EN 61000-6-4**	Immunity and electromagnetic emissions for industrial environments
EN378	Refrigerating systems and heat pumps - Safety and environmental requirements
UNI EN 12735	Seamless, round copper tubes for air conditioning and refrigeration
UNI EN 14276	Pressure equipment for cooling systems and heat pumps

Therefore complying with the essential requirements of the following directives:

- LVD Directive: 2006/95/CE
- Electromagnetic compatibility Directive2004/108/CE
- Machinery Directive 98/37/CE
- PED Directive regarding pressurised devices 97/23/CE

The product, in agreement with Directive 97/23/CE, satisfies the Total quality Guarantee procedure (form H) with certificate n.06/270-QT3664 Rev.3 issued by the notified body n.1131 CEC via Pisacane 46 Legnano (MI) - Italy

Bevilacqua 15/01/2008

Marketing Manager
Signature

1. NOTES REGARDING THE DOCUMENTATION

1.1. USE IN COMPLIANCE WITH DESTINATION

AERMEC units are constructed according to the recognised technical standards and safety regulations. These appliances are designed and built for heating and hot water production and also for cooling and must be used in compatibility with their technical features. In spite of this, dangers to the user or third parties may arise, as well as damage to the appliance and other objects, in the event of improper use and use that is not in compliance with that envisioned.

Any use not expressly indicated in this manual is not permitted. **Consequently AERMEC will not assume any responsibility for damage that may occur due to failure to comply with these instructions.**

1.2. PRESERVATION OF THE DOCUMENTATION

The installation instructions, along with all the related documentation, must be given to the user of the system, who assumes the responsibility of keeping the instructions so that they are always at hand in case of need.

READ THIS DOCUMENT CAREFULLY, the appliance must be installed by qualified and suitably prepared staff in compliance with the national legislation effective in the country of destination.

The appliance must be installed so that maintenance and/or repairs can be carried out. The appliance warranty does not cover the costs for ladders, scaffolding, or other elevation systems that may become necessary for carrying out servicing under warranty.

The validity of the warranty shall be void in the event of failure to comply with the above-mentioned indications.

2. FUNDAMENTAL SAFETY REGULATIONS

We remind you that the use of products that employ electrical energy and water requires that a number of essential safety rules be followed, such as:

- This appliance is not suitable for use by persons (including children) with limited physical, sensory, or mental capacities or those lacking experience or know-how, unless they are supervised or instructed regarding the use of the appliance by a person who is responsible for their safety. Children must always be supervised to ensure they do not play with the appliance.
- It is prohibited to carry out any technical or maintenance operation before the unit has been disconnected from the electrical mains by switching off the master switch of the system and the main power switch on the control panel.
- It is prohibited to modify the safety or adjustment devices without the manufacturer's authorisation and precise instructions
- It is prohibited to pull, disconnect, or twist the electrical cables coming from the unit even if disconnected from the electrical mains.
- It is prohibited to leave containers and flammable substances near to the unit.
- It is prohibited to touch the appliance when you are barefoot and with parts of the body that are wet or damp.
- It is prohibited to open the access hatches to the internal parts of the appliance without first having switched off the system master switch.
- It is prohibited to disperse or abandon the packing materials and they must be kept out of the reach of children, as they are a potential source of danger.

3. PRODUCT IDENTIFICATION

NRL can be identified by means of:

- **Packing label**

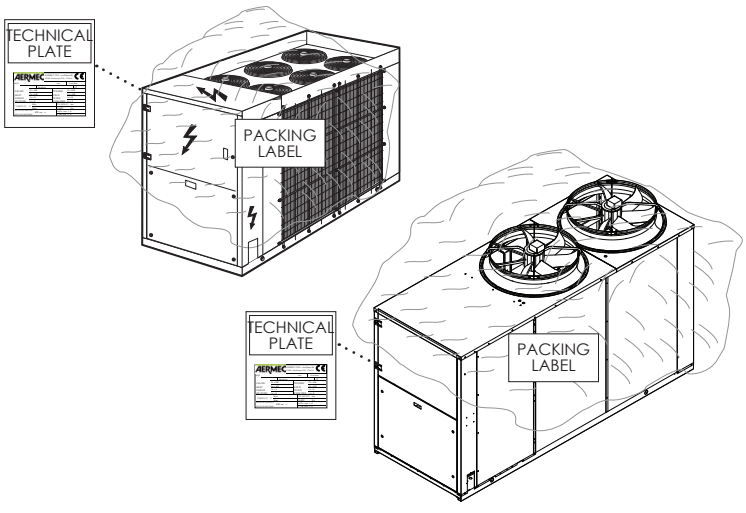
that reports the identification data of the product.

- **Technical plate**

positioned on the lateral cross-member of the electric box.

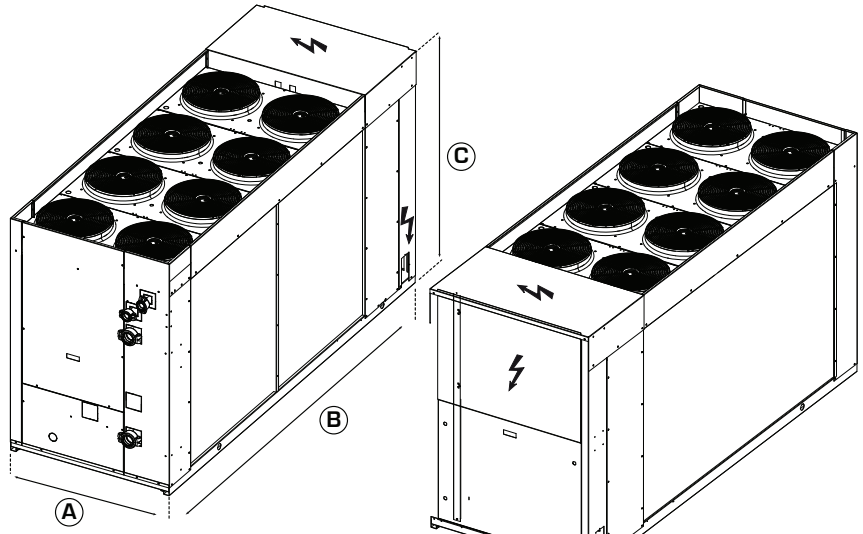
NOTE:

Tampering, removal, lack of the identification plate or other does not allow safe identification of the product and will make any installation or maintenance operation to be performed difficult.



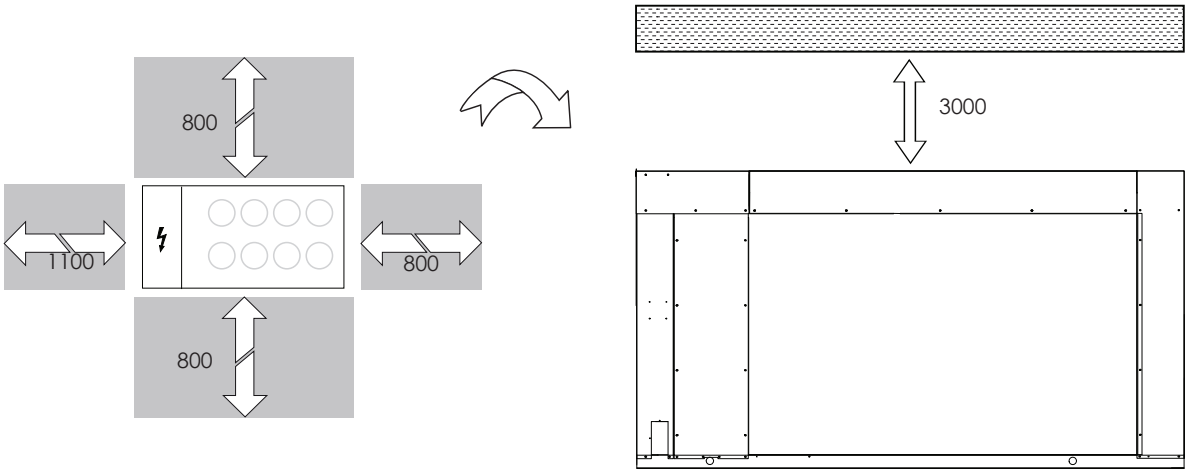
4. DIMENSIONS

4.1. NRL 0280 - 0300 - 0330 - 0350 VERSIONS L - HL

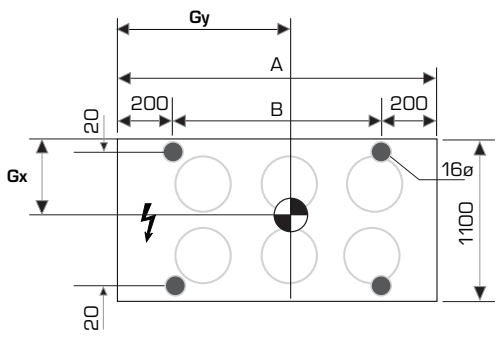


MOD.	VERSION	A (mm)	B (mm)	C (mm)
0280	L - HL	1100	2450	1606
0300	L - HL	1100	2450	1606
0330	L - HL	1100	2450	1606
0350	L - HL	1100	2450	1606

4.2. MINIMUM TECHNICAL SPACES

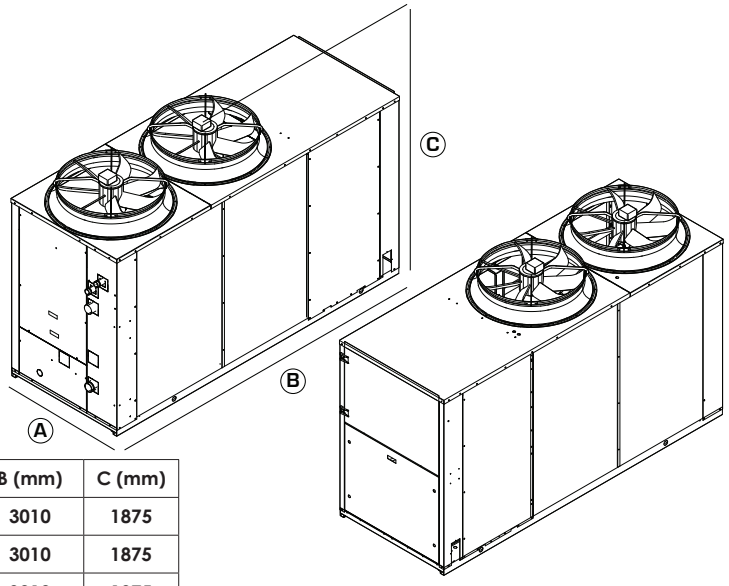


4.3. ANTI-VIBRATION MOUNTS POSITION



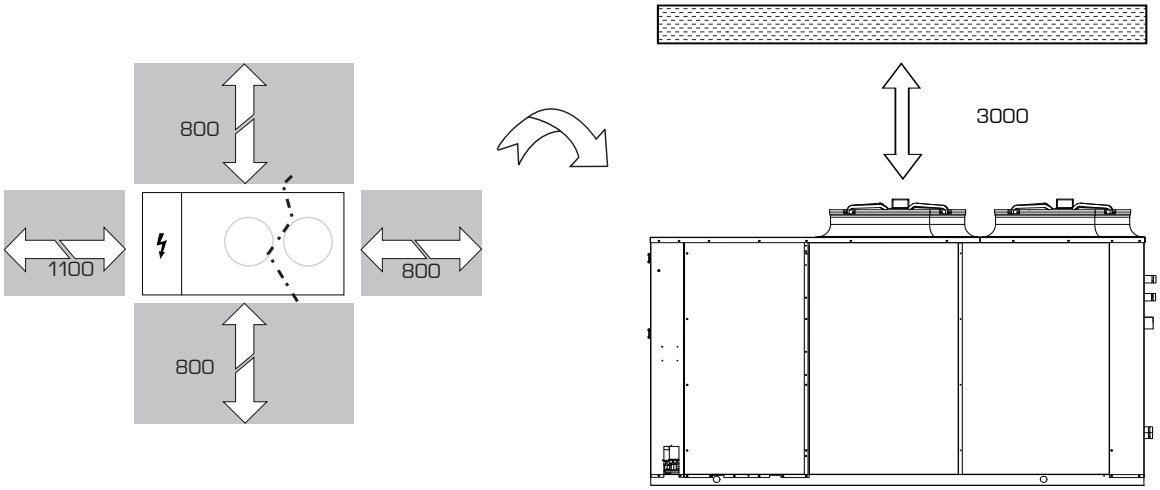
MOD.	VERSION	A (mm)	B (mm)
0280	L - HL	2450	2050
0300	L - HL	2450	2050
0330	L - HL	2450	2050
0350	L - HL	2450	2050

4.4. NRL 0500 - 0550 - 0600 - 0650 - 0700 VERSIONS ° - L - H - HL

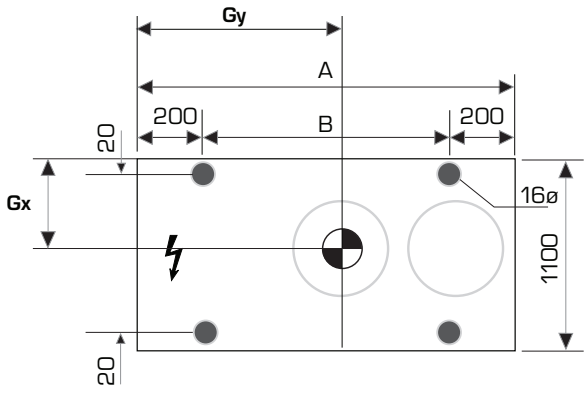


MOD.	VERSION	A (mm)	B (mm)	C (mm)
0500	° - L - H - HL	1100	3010	1875
0550	° - L - H - HL	1100	3010	1875
0600	° - L - H - HL	1100	3010	1875
0650	° - L - H - HL	1100	3010	1875
0700	° - L - H - HL	1100	3010	1875

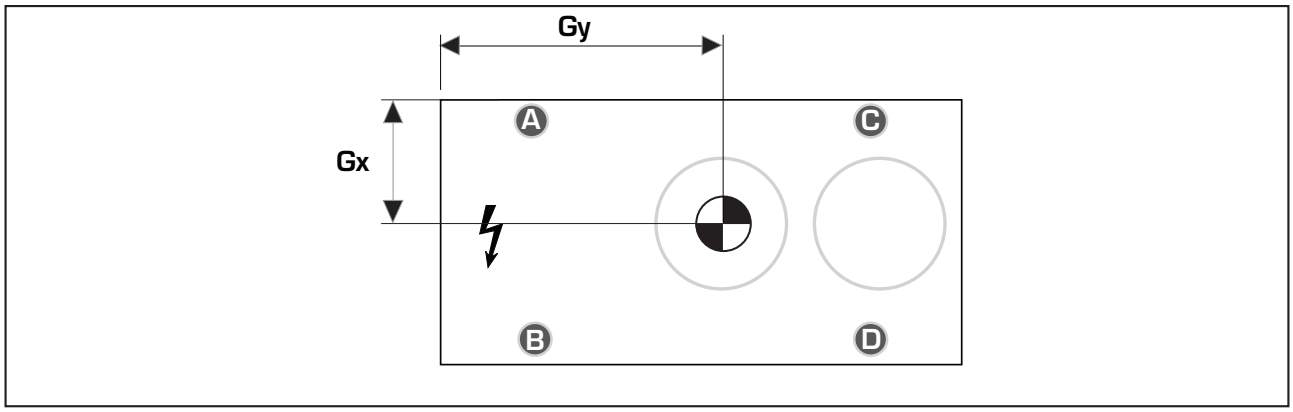
4.5. MINIMUM TECHNICAL SPACES



4.6. ANTI-VIBRATION MOUNTS POSITION



Mod.	version	A (mm)	B (mm)
0500	**° - L - H - HL**	3010	2612
0550	**° - L - H - HL**	3010	2612
0600	**° - L - H - HL**	3010	2612
0650	**° - L - H - HL**	3010	2612
0700	**° - L - H - HL**	3010	2612



4.7. PERCENTAGE OF WIEGHT DISTRIBUTION ON SUPPORTS (EMPTY WEIGHT) VERSION (L - HL)

NRL	TYPE	WEIGHT	BARYCENTRE		PERCENTAGE OF WEIGHT DISTRIBUTION ON SUPPORTS (%)				KIT VT
			Gx	Gy	A	B	C	D	
NRL0280L	00	675	558	1.022	23,8%	26,4%	23,6%	26,2%	17
NRL0280L	02 - 04	820	557	1.136	21,2%	23,4%	26,3%	29,1%	13
NRL0280L	01 - 03	805	557	1.117	21,6%	23,9%	25,9%	28,6%	13
NRL0280L	P2 - P4	705	558	1.070	22,7%	25,2%	24,7%	27,5%	17
NRL0280L	P1 - P3	690	558	1.046	23,2%	25,8%	24,2%	26,9%	17
NRL0300L	00	684	558	1.017	23,9%	26,5%	23,5%	26,1%	17
NRL0300L	02 - 04	829	557	1.130	21,3%	23,6%	26,2%	29,0%	13
NRL0300L	01 - 03	814	557	1.112	21,7%	24,0%	25,7%	28,5%	13
NRL0300L	P2 - P4	714	558	1.064	22,8%	25,3%	24,6%	27,3%	17
NRL0300L	P1 - P3	699	558	1.041	23,3%	25,9%	24,1%	26,7%	17
NRL0330L	00	688	558	1.012	24,0%	26,7%	23,4%	26,0%	17
NRL0330L	02 - 04	833	557	1.126	21,4%	23,7%	26,1%	28,9%	13
NRL0330L	01 - 03	818	557	1.107	21,8%	24,2%	25,6%	28,4%	13
NRL0330L	P2 - P4	718	558	1.060	22,9%	25,4%	24,5%	27,2%	17
NRL0330L	P1 - P3	703	558	1.037	23,4%	26,0%	23,9%	26,6%	17
NRL0350L	00	704	559	1.013	23,9%	26,7%	23,4%	26,0%	17
NRL0350L	02 - 04	849	557	1.124	21,4%	23,7%	26,0%	28,8%	13
NRL0350L	01 - 03	834	557	1.106	21,8%	24,2%	25,6%	28,4%	13
NRL0350L	P2 - P4	734	558	1.059	22,9%	25,4%	24,5%	27,2%	17
NRL0350L	P1 - P3	719	558	1.037	23,4%	26,0%	23,9%	26,6%	17
NRL0280HL	00	713	558	1.004	24,2%	26,8%	23,2%	25,8%	17
NRL0280HL	02 - 04	858	556	1.116	21,7%	23,9%	25,9%	28,6%	13
NRL0280HL	01 - 03	843	556	1.098	22,1%	24,4%	25,4%	28,1%	13
NRL0280HL	P2 - P4	743	557	1.050	23,1%	25,6%	24,3%	26,9%	17
NRL0280HL	P1 - P3	728	557	1.028	23,6%	26,2%	23,8%	26,4%	17
NRL0300HL	00	724	558	1.006	24,1%	26,8%	23,3%	25,8%	17
NRL0300HL	02 - 04	869	556	1.116	21,6%	23,9%	25,9%	28,6%	13
NRL0300HL	01 - 03	854	557	1.098	22,1%	24,4%	25,4%	28,1%	13
NRL0300HL	P2 - P4	754	557	1.052	23,1%	25,6%	24,3%	27,0%	17
NRL0300HL	P1 - P3	742	555	1.025	23,8%	26,2%	23,8%	26,2%	17
NRL0330HL	00	731	558	1.003	24,2%	26,9%	23,2%	25,8%	17
NRL0330HL	02 - 04	876	557	1.113	21,7%	24,0%	25,8%	28,5%	13
NRL0330HL	01 - 03	861	557	1.095	22,1%	24,5%	25,4%	28,0%	13
NRL0330HL	P2 - P4	761	558	1.048	23,2%	25,7%	24,2%	26,9%	17
NRL0330HL	P1 - P3	746	558	1.026	23,7%	26,3%	23,7%	26,3%	17
NRL0350HL	00	740	558	996	24,3%	27,1%	23,0%	25,6%	17
NRL0350HL	02 - 04	885	557	1.106	21,9%	24,2%	25,6%	28,3%	13
NRL0350HL	01 - 03	870	557	1.088	22,3%	24,7%	25,2%	27,9%	13
NRL0350HL	P2 - P4	770	558	1.041	23,3%	25,9%	24,1%	26,7%	17
NRL0350HL	P1 - P3	755	558	1.019	23,8%	26,5%	23,5%	26,2%	17

4.8. PERCENTAGE OF WEIGHT DISTRIBUTION ON SUPPORTS (MACHINE WORKING) VERSION (L - HL)

NRL	TYPE	WEIGHT	BARYCENTRE		PERCENTAGE OF WEIGHT DISTRIBUTION ON SUPPORTS (%)				KIT VT
			Gx	Gy	A	B	C	D	
NRL0280L	00	688	550	1.030	23,9%	25,8%	24,2%	26,1%	17
NRL0280L	02 - 04	1133	550	1.246	18,9%	20,3%	29,2%	31,5%	13
NRL0280L	01 - 03	1118	550	1.234	19,1%	20,7%	29,0%	31,2%	13
NRL0280L	P2 - P4	718	550	1.076	22,8%	24,7%	25,3%	27,3%	17
NRL0280L	P1 - P3	703	550	1.053	23,4%	25,2%	24,7%	26,7%	17
NRL0300L	00	699	550	1.024	24,0%	26,0%	24,0%	26,0%	17
NRL0300L	02 - 04	1144	550	1.241	19,0%	20,5%	29,1%	31,4%	13
NRL0300L	01 - 03	1129	550	1.229	19,3%	20,8%	28,8%	31,1%	13
NRL0300L	P2 - P4	729	550	1.071	23,0%	24,8%	25,1%	27,1%	17
NRL0300L	P1 - P3	714	550	1.048	23,5%	25,4%	24,6%	26,5%	17
NRL0330L	00	703	551	1.020	24,1%	26,1%	23,9%	25,9%	17
NRL0330L	02 - 04	1148	550	1.237	19,1%	20,6%	29,0%	31,3%	13
NRL0330L	01 - 03	1133	550	1.225	19,3%	20,9%	28,7%	31,0%	13
NRL0330L	P2 - P4	733	551	1.066	23,1%	24,9%	25,0%	27,0%	17
NRL0330L	P1 - P3	718	551	1.044	23,6%	25,5%	24,5%	26,4%	17
NRL0350L	00	719	551	1.020	24,1%	26,1%	23,9%	25,9%	17
NRL0350L	02 - 04	1164	551	1.234	19,1%	20,7%	28,9%	31,3%	13
NRL0350L	01 - 03	1149	551	1.222	19,4%	21,0%	28,7%	31,0%	13
NRL0350L	P2 - P4	749	551	1.065	23,1%	25,0%	24,9%	27,0%	17
NRL0350L	P1 - P3	734	551	1.043	23,6%	25,5%	24,4%	26,5%	17
NRL0280HL	00	726	550	1.012	24,4%	26,3%	23,7%	25,6%	17
NRL0280HL	02 - 04	1171	550	1.228	19,3%	20,8%	28,8%	31,1%	13
NRL0280HL	01 - 03	1156	550	1.216	19,6%	21,1%	28,5%	30,8%	13
NRL0280HL	P2 - P4	756	550	1.057	23,3%	25,1%	24,8%	26,8%	17
NRL0280HL	P1 - P3	741	550	1.035	23,8%	25,7%	24,3%	26,2%	17
NRL0300HL	00	739	550	1.014	24,3%	26,3%	23,8%	25,7%	17
NRL0300HL	02 - 04	1184	550	1.227	19,3%	20,8%	28,8%	31,1%	13
NRL0300HL	01 - 03	1169	550	1.215	19,6%	21,1%	28,5%	30,8%	13
NRL0300HL	P2 - P4	769	550	1.058	23,3%	25,1%	24,8%	26,8%	17
NRL0300HL	P1 - P3	754	550	1.036	23,8%	25,7%	24,3%	26,2%	17
NRL0330HL	00	746	551	1.010	24,4%	26,3%	23,7%	25,6%	17
NRL0330HL	02 - 04	1191	550	1.224	19,4%	20,9%	28,7%	31,0%	13
NRL0330HL	01 - 03	1176	550	1.212	19,7%	21,2%	28,4%	30,7%	13
NRL0330HL	P2 - P4	776	551	1.054	23,3%	25,2%	24,7%	26,7%	17
NRL0330HL	P1 - P3	761	551	1.033	23,8%	25,8%	24,2%	26,2%	17
NRL0350HL	00	755	551	1.003	24,5%	26,6%	23,5%	25,4%	17
NRL0350HL	02 - 04	1200	551	1.217	19,5%	21,1%	28,5%	30,8%	13
NRL0350HL	01 - 03	1185	551	1.205	19,8%	21,4%	28,3%	30,5%	13
NRL0350HL	P2 - P4	785	551	1.047	23,5%	25,4%	24,5%	26,5%	17
NRL0350HL	P1 - P3	770	551	1.025	24,0%	26,0%	24,0%	26,0%	17

4.9. PERCENTAGE OF WIEGHT DISTRIBUTION ON SUPPORTS (EMPTY WEIGHT) VERSION (◦)

NRL	TYPE	WEIGHT	BARYCENTRE		PERCENTAGE OF WEIGHT DISTRIBUTION ON SUPPORTS (%)				KIT VT
			Gx	Gy	A	B	C	D	
NRL0500	00	868	516	1.238	30,8%	27,2%	22,3%	19,7%	13
NRL0500	02 - 04	1032	521	1.379	28,0%	25,2%	24,6%	22,2%	10
NRL0500	01 - 03	1015	521	1.355	28,5%	25,6%	24,2%	21,7%	10
NRL0500	P2 - P4	902	517	1.298	29,7%	26,3%	23,3%	20,7%	13
NRL0500	P1 - P3	885	516	1.269	30,2%	26,8%	22,8%	20,2%	13
NRL0550	00	872	515	1.234	31,0%	27,2%	22,3%	19,6%	13
NRL0550	02 - 04	1036	520	1.375	28,1%	25,2%	24,6%	22,1%	10
NRL0550	01 - 03	1019	520	1.351	28,6%	25,6%	24,2%	21,6%	10
NRL0550	P2 - P4	906	516	1.294	29,8%	26,3%	23,3%	20,6%	13
NRL0550	P1 - P3	889	515	1.264	30,4%	26,8%	22,8%	20,1%	13
NRL0600	00	968	553	1.211	29,3%	29,6%	20,4%	20,7%	13
NRL0600	02 - 04	1134	553	1.347	27,0%	27,3%	22,7%	22,9%	10
NRL0600	01 - 03	1116	553	1.323	27,4%	27,7%	22,3%	22,5%	10
NRL0600	P2 - P4	1004	553	1.269	28,3%	28,7%	21,4%	21,6%	13
NRL0600	P1 - P3	986	553	1.241	28,8%	29,1%	20,9%	21,2%	13
NRL0650	00	983	553	1.203	29,4%	29,8%	20,3%	20,5%	13
NRL0650	02 - 04	1149	553	1.338	27,2%	27,5%	22,6%	22,8%	10
NRL0650	01 - 03	1131	553	1.314	27,6%	27,9%	22,2%	22,4%	10
NRL0650	P2 - P4	1019	553	1.260	28,5%	28,8%	21,2%	21,5%	13
NRL0650	P1 - P3	1001	553	1.232	28,9%	29,3%	20,8%	21,0%	13
NRL0700	00	1091	553	1.264	28,4%	28,7%	21,3%	21,5%	13
NRL0700	02 - 04	1257	553	1.379	26,5%	26,8%	23,3%	23,5%	10
NRL0700	01 - 03	1239	553	1.358	26,8%	27,1%	22,9%	23,1%	10
NRL0700	P2 - P4	1127	553	1.314	27,6%	27,9%	22,1%	22,4%	13
NRL0700	P1 - P3	1109	553	1.289	28,0%	28,3%	21,7%	22,0%	13

4.10. PERCENTAGE OF WEIGHT DISTRIBUTION ON SUPPORTS (MACHINE WORKING) VERSION (◦)

NRL	TYPE	WEIGHT	BARYCENTRE		PERCENTAGE OF WEIGHT DISTRIBUTION ON SUPPORTS (%)				KIT VT
			Gx	Gy	A	B	C	D	
NRL0500	00	887	509	1.249	31,0%	26,7%	22,7%	19,6%	13
NRL0500	02 - 04	1551	526	1.566	24,5%	22,5%	27,7%	25,4%	10
NRL0500	01 - 03	1534	526	1.552	24,7%	22,7%	27,4%	25,2%	10
NRL0500	P2 - P4	921	510	1.307	29,9%	25,8%	23,7%	20,6%	13
NRL0500	P1 - P3	904	510	1.278	30,4%	26,3%	23,3%	20,1%	13
NRL0550	00	891	508	1.245	31,1%	26,7%	22,7%	19,5%	13
NRL0550	02 - 04	1555	526	1.563	24,5%	22,5%	27,7%	25,3%	10
NRL0550	01 - 03	1538	526	1.549	24,8%	22,7%	27,4%	25,1%	10
NRL0550	P2 - P4	925	509	1.303	30,0%	25,9%	23,7%	20,4%	13
NRL0550	P1 - P3	908	509	1.274	30,5%	26,3%	23,2%	20,0%	13
NRL0600	00	989	546	1.221	29,5%	29,1%	20,8%	20,6%	13
NRL0600	02 - 04	1655	548	1.531	24,1%	23,9%	26,1%	25,9%	10
NRL0600	01 - 03	1637	548	1.517	24,4%	24,2%	25,8%	25,6%	10
NRL0600	P2 - P4	1025	546	1.277	28,5%	28,2%	21,8%	21,5%	13
NRL0600	P1 - P3	1007	546	1.250	29,0%	28,6%	21,3%	21,0%	13
NRL0650	00	1007	547	1.212	29,6%	29,3%	20,7%	20,4%	13
NRL0650	02 - 04	1673	548	1.523	24,3%	24,1%	25,9%	25,7%	10
NRL0650	01 - 03	1655	548	1.509	24,5%	24,3%	25,7%	25,5%	10
NRL0650	P2 - P4	1043	547	1.268	28,7%	28,3%	21,6%	21,4%	13
NRL0650	P1 - P3	1025	547	1.241	29,2%	28,8%	21,2%	20,9%	13
NRL0700	00	1115	547	1.271	28,6%	28,3%	21,7%	21,4%	13
NRL0700	02 - 04	1781	548	1.541	24,0%	23,8%	26,2%	26,0%	10
NRL0700	01 - 03	1763	548	1.528	24,2%	24,0%	26,0%	25,8%	10
NRL0700	P2 - P4	1151	547	1.320	27,8%	27,5%	22,5%	22,3%	13
NRL0700	P1 - P3	1133	547	1.296	28,2%	27,9%	22,1%	21,8%	13

4.11. PERCENTAGE OF WIEGHT DISTRIBUTION ON SUPPORTS (EMPTY WEIGHT) VERSION (H)

NRL	TYPE	WEIGHT	BARYCENTRE		PERCENTAGE OF WEIGHT DISTRIBUTION ON SUPPORTS (%)				KIT VT
			Gx	Gy	A	B	C	D	
NRL0500H	00	913	518	1.210	31,2%	27,8%	21,7%	19,3%	13
NRL0500H	02 - 04	1077	522	1.349	28,5%	25,8%	24,0%	21,7%	10
NRL0500H	01 - 03	1060	522	1.326	28,9%	26,1%	23,6%	21,3%	10
NRL0500H	P2 - P4	947	519	1.268	30,1%	26,9%	22,7%	20,3%	13
NRL0500H	P1 - P3	930	518	1.239	30,7%	27,3%	22,2%	19,8%	13
NRL0550H	00	917	516	1.206	31,4%	27,8%	21,7%	19,2%	13
NRL0550H	02 - 04	1081	522	1.346	28,6%	25,8%	24,0%	21,6%	10
NRL0550H	01 - 03	1064	521	1.322	29,0%	26,1%	23,6%	21,2%	10
NRL0550H	P2 - P4	951	518	1.264	30,3%	26,9%	22,7%	20,2%	13
NRL0550H	P1 - P3	934	517	1.235	30,8%	27,3%	22,2%	19,7%	13
NRL0600H	00	1016	553	1.188	29,7%	30,0%	20,0%	20,2%	13
NRL0600H	02 - 04	1182	553	1.321	27,5%	27,7%	22,3%	22,5%	10
NRL0600H	01 - 03	1164	553	1.298	27,9%	28,1%	21,9%	22,1%	10
NRL0600H	P2 - P4	1052	553	1.244	28,8%	29,1%	21,0%	21,2%	13
NRL0600H	P1 - P3	1034	553	1.216	29,2%	29,6%	20,5%	20,7%	13
NRL0650H	00	1130	553	1.251	28,6%	28,9%	21,1%	21,3%	13
NRL0650H	02 - 04	1296	553	1.365	26,7%	27,0%	23,0%	23,2%	10
NRL0650H	01 - 03	1278	553	1.344	27,1%	27,3%	22,7%	22,9%	10
NRL0650H	P2 - P4	1166	553	1.300	27,8%	28,1%	21,9%	22,1%	13
NRL0650H	P1 - P3	1148	553	1.276	28,2%	28,5%	21,5%	21,7%	13
NRL0700H	00	1142	553	1.242	28,8%	29,1%	20,9%	21,2%	13
NRL0700H	02 - 04	1308	553	1.355	26,9%	27,2%	22,9%	23,1%	10
NRL0700H	01 - 03	1290	553	1.334	27,2%	27,5%	22,5%	22,7%	10
NRL0700H	P2 - P4	1178	553	1.290	28,0%	28,3%	21,7%	22,0%	13
NRL0700H	P1 - P3	1160	553	1.266	28,4%	28,7%	21,3%	21,6%	13

4.12. PERCENTAGE OF WEIGHT DISTRIBUTION ON SUPPORTS (MACHINE WORKING) VERSION (H)

NRL	TYPE	WEIGHT	BARYCENTRE		PERCENTAGE OF WEIGHT DISTRIBUTION ON SUPPORTS (%)				KIT VT
			Gx	Gy	A	B	C	D	
NRL0500H	00	932	511	1.220	31,4%	27,2%	22,2%	19,2%	13
NRL0500H	02 - 04	1596	527	1.540	24,9%	22,9%	27,2%	25,0%	10
NRL0500H	01 - 03	1579	527	1.527	25,1%	23,1%	27,0%	24,8%	10
NRL0500H	P2 - P4	966	512	1.277	30,3%	26,4%	23,1%	20,2%	13
NRL0500H	P1 - P3	949	512	1.249	30,8%	26,8%	22,6%	19,7%	13
NRL0550H	00	936	510	1.216	31,5%	27,2%	22,1%	19,1%	13
NRL0550H	02 - 04	1600	527	1.537	25,0%	22,9%	27,2%	24,9%	10
NRL0550H	01 - 03	1583	526	1.524	25,2%	23,1%	26,9%	24,7%	10
NRL0550H	P2 - P4	970	511	1.273	30,4%	26,4%	23,1%	20,1%	13
NRL0550H	P1 - P3	953	511	1.245	31,0%	26,8%	22,6%	19,6%	13
NRL0600H	00	1037	547	1.198	29,9%	29,5%	20,4%	20,2%	13
NRL0600H	02 - 04	1703	548	1.508	24,5%	24,3%	25,7%	25,5%	10
NRL0600H	01 - 03	1685	548	1.494	24,8%	24,6%	25,4%	25,2%	10
NRL0600H	P2 - P4	1073	547	1.252	29,0%	28,6%	21,4%	21,1%	13
NRL0600H	P1 - P3	1055	547	1.225	29,4%	29,1%	20,9%	20,6%	13
NRL0650H	00	1154	547	1.258	28,8%	28,5%	21,4%	21,2%	13
NRL0650H	02 - 04	1820	548	1.527	24,2%	24,0%	26,0%	25,8%	10
NRL0650H	01 - 03	1802	548	1.514	24,4%	24,3%	25,8%	25,6%	10
NRL0650H	P2 - P4	1190	547	1.306	28,0%	27,7%	22,3%	22,0%	13
NRL0650H	P1 - P3	1172	547	1.283	28,4%	28,1%	21,9%	21,6%	13
NRL0700H	00	1166	547	1.249	29,0%	28,7%	21,3%	21,1%	13
NRL0700H	02 - 04	1832	548	1.519	24,3%	24,2%	25,8%	25,7%	10
NRL0700H	01 - 03	1814	548	1.506	24,6%	24,4%	25,6%	25,4%	10
NRL0700H	P2 - P4	1202	547	1.296	28,2%	27,9%	22,1%	21,9%	13
NRL0700H	P1 - P3	1184	547	1.273	28,6%	28,3%	21,7%	21,5%	13

5. SAFETY WARNINGS AND INSTALLATION REGULATIONS

Safety warnings
The unit 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.
Before starting any operation READ THE INSTRUCTIONS CAREFULLY AND PERFORM SAFETY CONTROLS IN ORDER TO REDUCE ANY DANGER TO A MINIMUM. All staff involved must have thorough knowledge of the operations and any dangers that may arise at the time in which the installation operations are carried out.

Danger!
The refrigerant circuit is pressurised. Moreover, very high temperatures can be reached. The appliance may only be opened by an after-sales service technician or by a qualified technician. Interventions on the cooling circuit may only be carried out by a qualified refrigeration technician.

410A GAS
The unit comes supplied with a sufficient quantity of 410A refrigerant fluid.
This is a chlorine-free refrigerant and does not damage the ozone layer. 410A is not flammable. However, all maintenance operations must be carried out exclusively by a specialised technician using suitable protective equipment.
Danger of electric shock!
Before opening the unit, disconnect the appliance completely from the mains power supply.

6. RECEIVING THE PRODUCT

6.1. HANDLING

Before beginning installation agree on the place of positioning with client and pay attention to the following points:

- The support surface must be able to support the weight of the unit.
- The selected place must have enough space to permit laying of the necessary pipes.
- Remember that whilst operational the chiller can cause vibrations; therefore anti-vibration mounts (VT accessories) are recommended. Fix them to the holes on the base, following the assembly layout.
- It is mandatory to provide the necessary technical spaces in order to allow ROUTINE AND EXTRAORDINARY MAINTENANCE interventions.

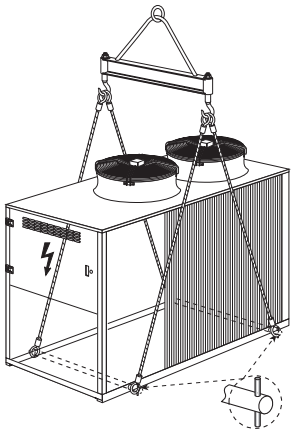
6.2. POSITIONING

The unit is sent from the factory wrapped in estincoil placed on a pallet.
Before handling the unit, verify the lifting capacity of the machinery used.
On removal of the packaging, handling must be carried out by qualified staff, which is suitably equipped.
To handle the machine:
"IN THE CASE OF LIFTING"
Insert pipes (NOT SUPPLIED) in holes on the base with length such to allow positioning of the belts used for lifting.
To prevent the unit structure being damaged by the belts place protections between the latter and the machine.
It is prohibited to stop under the unit.

NOTE:
The appliance warranty does not cover the costs for ladders, scaffolding, or other elevation systems that may become necessary for carrying out servicing under warranty.

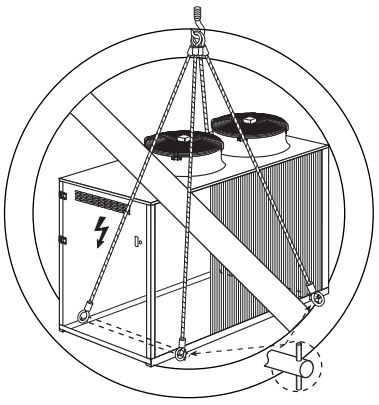
6.3. HANDLING EXAMPLE

- Correct handling



- The internal diameter of the flange's lifting holes is 40 mm.

- Incorrect handling

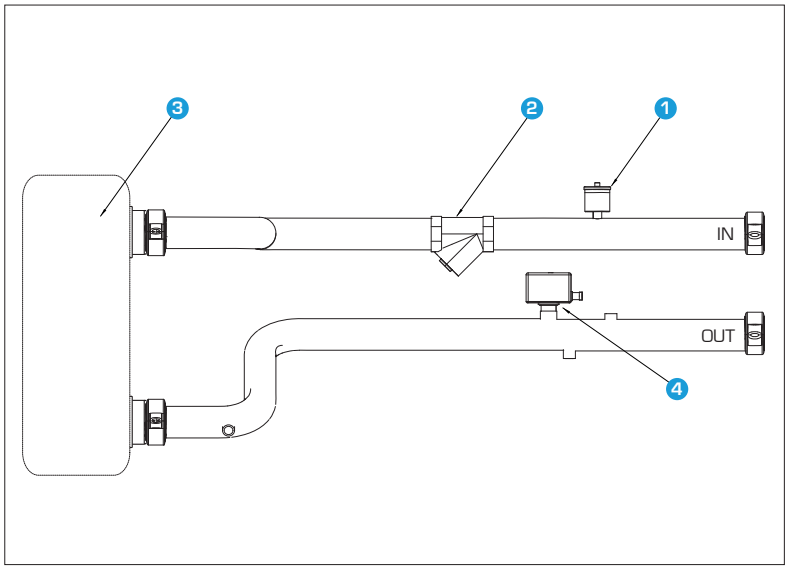


7. HYDRAULIC CIRCUITS

7.1. HYDRAULIC CIRCUIT INSIDE NRL "00"

(without storage tank and without pump)
The hydraulic circuit is made up from:

- Plate heat exchanger
- Mounted filter
- Flow switch
- Water inlet/outlet probes (SIW- SUW).
- Vent valve

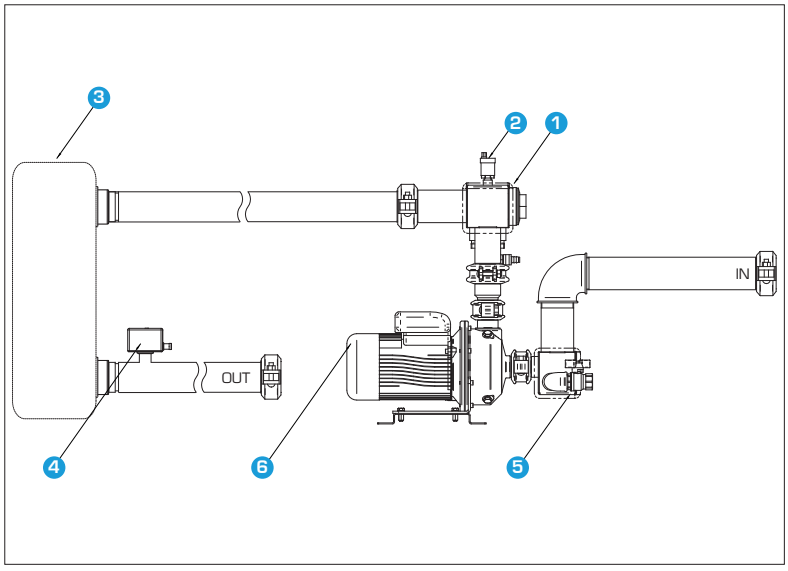


Key	
1	Vent valve
2	Filter
3	Plate heat exchanger
4	Flow switch

7.2. HYDRAULIC CIRCUIT INSIDE NRL"P1-P2-P3-P4"

The hydraulic circuit is made up from:

- Vent valve
- Safety valve
- Pump
- Plate heat exchanger
- Mounted filter
- Filter drain
- Drain
- Flow switch
- Water inlet/outlet probes (SIW- SUW).

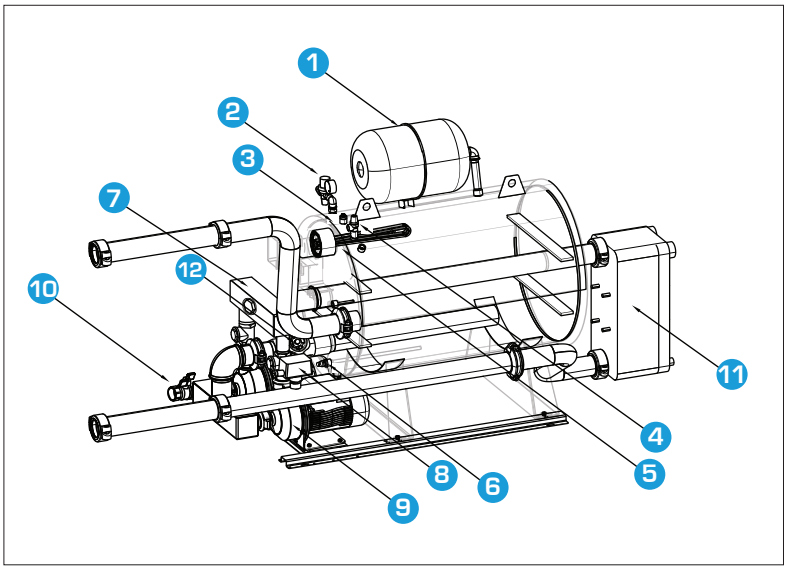


Key	
1	Filter
2	Vent valve
3	Plate heat exchanger
4	Flow switch
5	Drain cock
6	Pump

7.3. HYDRAULIC CIRCUIT INSIDE NRL "01-02-03-04-05-06-07-08"

–The hydraulic circuit is made up from:

–
- Storage tank
- Loading unit
- Vent valve
- Safety valve
- Expansion vessel
- Pump
- Plate heat exchanger
- Mounted filter
- Filter drain
- Storage tank draining
- Flow switch
- Water inlet/outlet probes (SIW- SUW).
- Resistance only for versions "05-06-07-08"

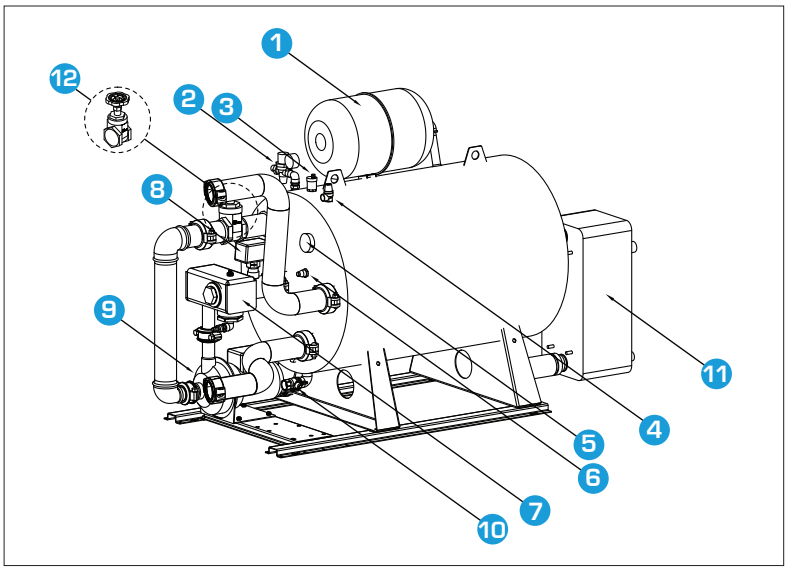


Key			
1	Expansion vessel	7	Filter
2	Loading unit	8	Flow switch
3	Vent valve	9	Pump
4	Safety valve (6 bar)	10	Storage tank draining
5	Resistance	11	Plate heat exchanger
6	Probe	12	Shut-off valve

7.4. HYDRAULIC CIRCUIT INSIDE NRL "09-10"

–The hydraulic circuit is made up from:

- Storage tank
- Loading unit
- Vent valve
- Safety valve
- Expansion vessel
- Pump
- Plate heat exchanger
- Mounted filter
- Filter drain
- Storage tank draining
- Flow switch
- Water inlet/outlet probes (SIW- SUW).
- Resistance only for versions "10"



Key			
1	Expansion vessel	7	Filter
2	Loading unit	8	Flow switch
3	Vent valve	9	Pump
4	Safety valve (6 bar)	10	Storage tank draining
5	Resistance	11	Plate heat exchanger
6	Probe	12	Shut-off valve

NOTES:
The presence of a filter is mandatory; REMOVAL VOIDS THE GUARANTEE. It should be kept clean and therefore must be checked after installation of the unit and its status must be checked frequently.

The installation of the manual shut-off valves between the unit and the rest of the system is mandatory in all NRL models (with and without storage tank) and for all hydraulic circuits that affect the chiller itself (desuperheaters, total recovery): FAILURE TO COMPLY VOIDS THE WARRANTY.
IT IS mandatory to calibrate the flow switch on to the flow rate values requested by the system, OTHERWISE THE WARRANTY WILL BECOME VOID.

RECOMMENDED EXTERNAL HYDRAULIC CIRCUIT
The choice and the installation of components outside the NRL is up to the installer, who must operate according to the rules of good practice and in compliance with the regulations in force in the country of destination.
Installation of the following is recommended:

- Filling/air vent unit.
- Anti-vibration joints.
- Pump (if not supplied with the machine).
- Expansion vessel (if not supplied with the machine).
- Shut-off cocks.
- Flow switch
- Safety valve (if not supplied with the machine).
- Manometers.

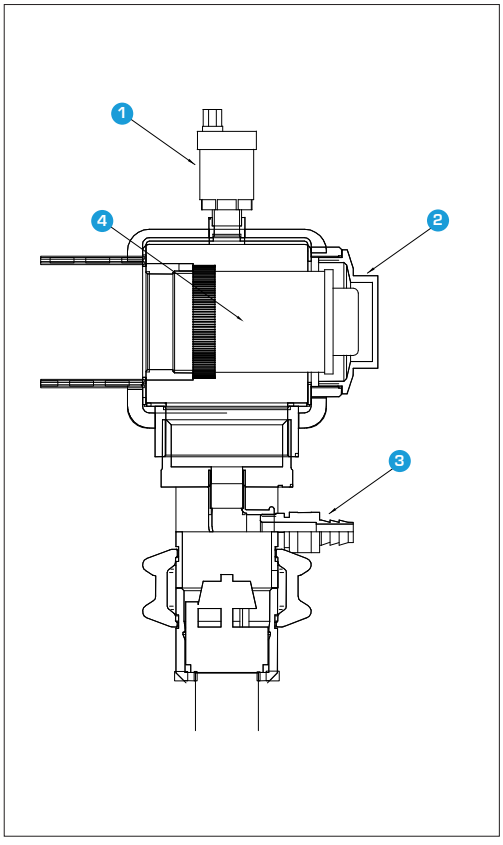
NOTE
The hydraulic pipes for connection to the machine must be suitably dimensioned for the effective water flow rate requested by the system when functioning. The water flow rate to the heat exchanger must always be constant.

8. FILTER MAINTENANCE

8.1. PROCEDURE TO BE PERFORMED TO CLEAN THE FILTER

(Type of filter mounted only in the version with storage tank and pump).

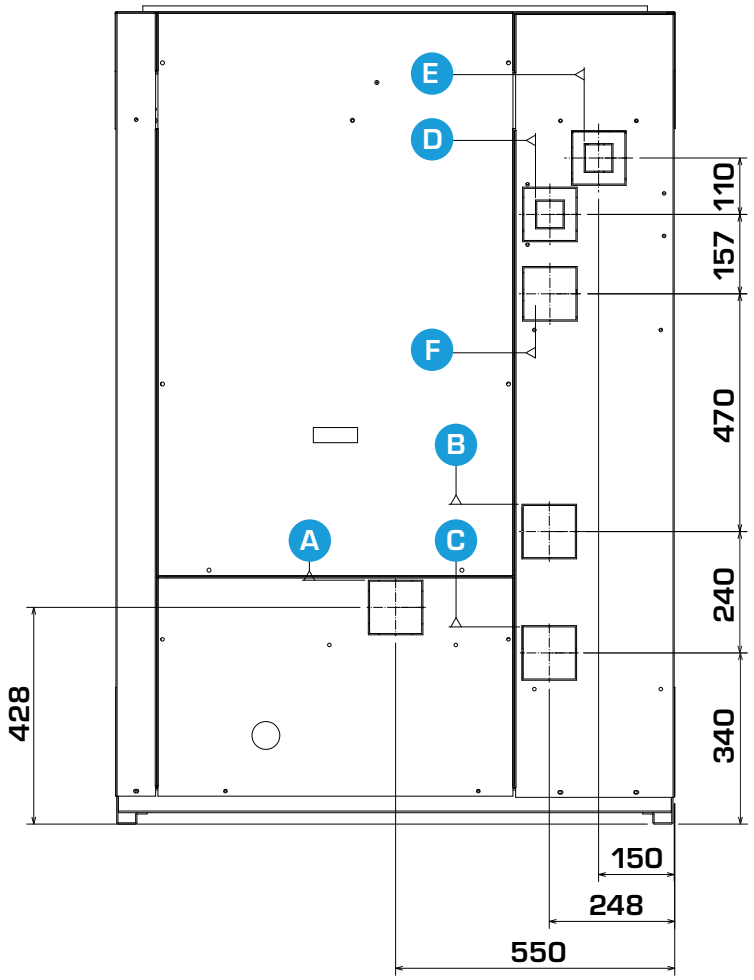
- Stop the machine.
- Open the drain cock of the filter.
- loosen the hexagonal nut positioned on the head of the filter, extract the metal ring nut and clean.
- Re-position the ring nut inside the housing in the filter, tighten the hexagonal nut.



Key	
1	Vent valve
2	Hexagonal nut
3	Filter drain cock
4	Metal ring nut housing

9. POSITION OF HYDRAULIC CONNECTIONS

NRL 0280 - 0300 - 0330 - 0350 - 0500 - 0550 - 0600 - 0650 - 0700

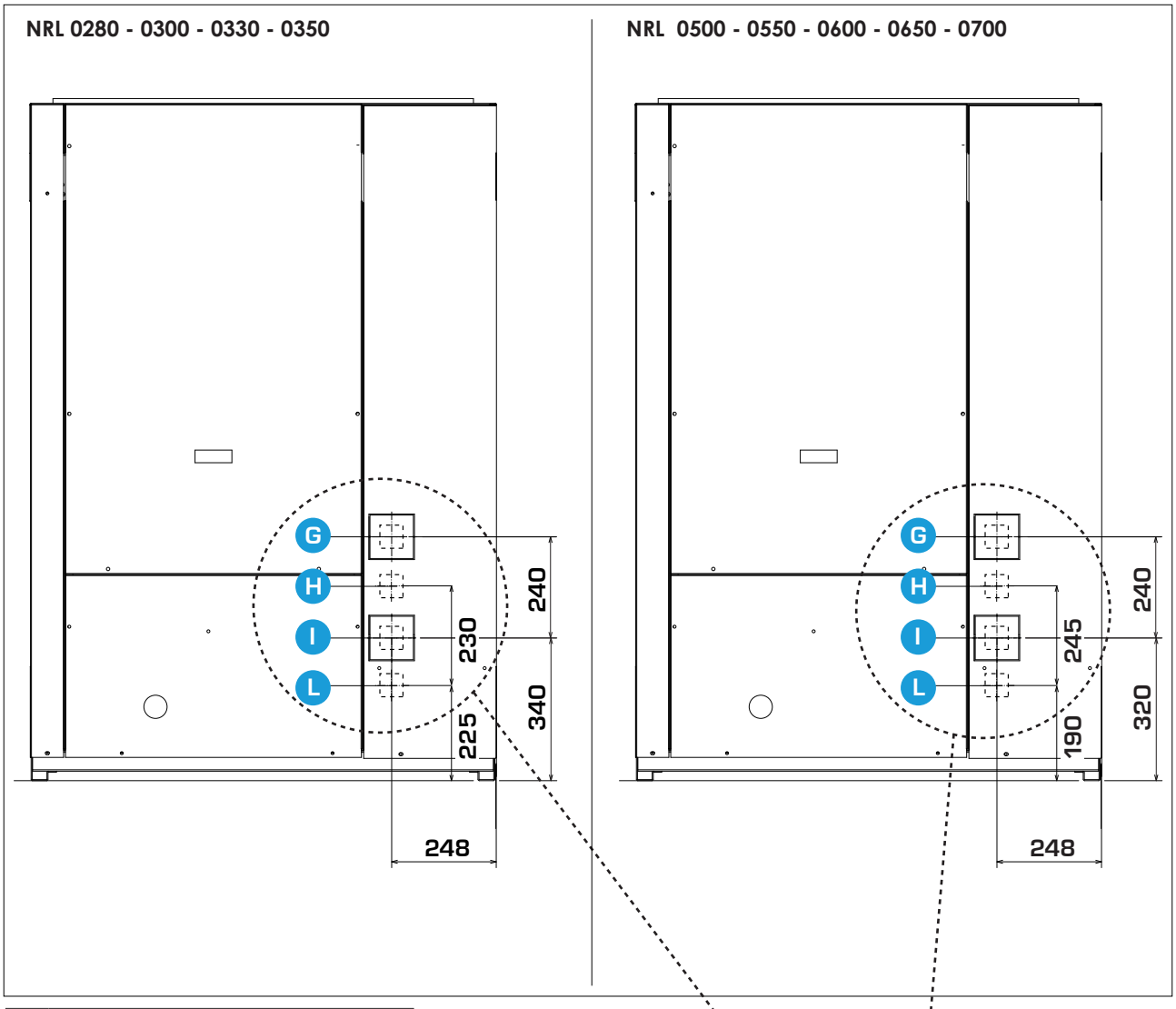


Key:	
A	Return system versions with pump
B	Basic return system versions
C	At the storage tank and basic system versions
D	Desuperheater inlet (Ø 1"1/2)
	Heat recovery inlet (Ø 2")
E	Desuperheater outlet (Ø 1"1/2)
	Heat recovery outlet (Ø 2")
F	Return system versions with storage tank

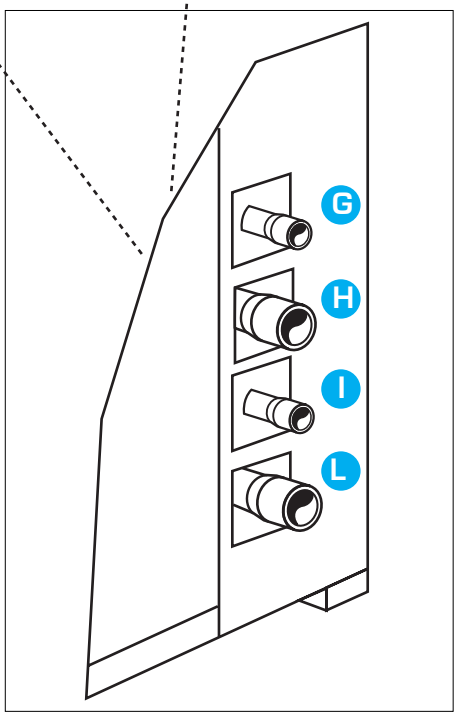
ATTENTION:
Wash the system well, before connecting the unit. This cleaning will eliminate any residues such as welding drips, scale, rust, or other impurities from the piping. These substances can also deposit inside and cause machine malfunctioning.

The connection piping must be adequately supported so that its weight is not borne by the appliance.

9.1. POSITION OF HYDRAULIC CONNECTIONS MOTORCONDENSING VERSION



Key:	
G	Liquid line (C1)
H	Gas line (C1)
I	Liquid line (C2)
L	Gas line (C2)



Key:
C1: Cooling circuit (1)
C2: Cooling circuit (2)

ATTENTION:
Wash the system well, 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 machine malfunctioning. The connection piping must be adequately supported so that its weight is not borne by the appliance.

10. ELECTRICAL CONNECTIONS

All the electrical operations must be carried out by STAFF IN POSSESSION OF THE NECESSARY QUALIFICATIONS BY LAW suitably trained and informed regarding the risks related to these operations.	The features of the electrical lines and of the related components must be determined by STAFF QUALIFIED TO DESIGN ELECTRIC 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 appliance. The wiring diagram along with the manuals must be kept in good condition and ALWAYS AVAILABLE FOR ANY FUTURE SERVICING ON THE UNIT.	It is mandatory to verify that the machine's watertight integrity before making the electrical connections, and it must only be powered after the hydraulic and electrical works have been completed.

The units are completely wired in the factory and only require connection to the electric power supply mains. Please verify that the characteristics of your electrical mains are suitable for the absorption values indicated in the table of electrical data, taking into consideration any other machines operating at the same time.

10.1. UNIT ELECTRIC LINES AND DATA

NOTE

The connection cables are not supplied.

The cable sections shown in Table 25.2 are recommended for a maximum length of 50 m. For longer lengths, the PLANT ENGINEER is responsible for the power supply line sizing and the earth connection, according to:

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

10.2. ELECTRICAL DATA

MODEL	VERSION	SEC A mm^2	Earth (sez PE) mm^2	IL A
0280	L - HL	16	16	63
0300	L - HL	16	16	63
0330	L - HL	25	16	80
0350	L - HL	25	16	80
0500	° - L - H - HL	50	25	125
0550	° - L - H - HL	50	25	125
0600	° - L - H - HL	50	25	125
0650	° - L - H - HL	70	35	160
0700	° - L - H - HL	70	35	160

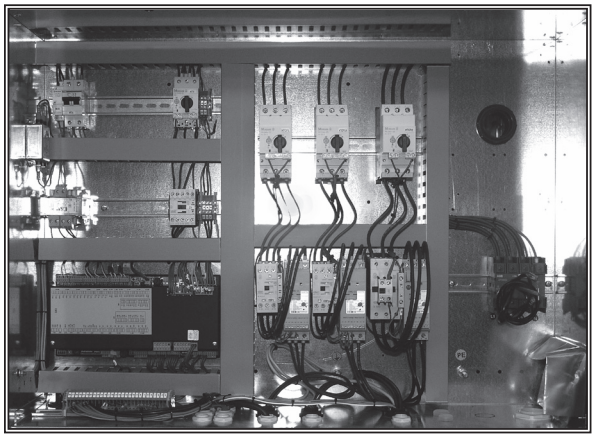
NOTE:

Check the tightness of all power conductor clamps on commissioning and after 30 days from the start of service. Subsequently, check tightness of all the power clamps every six months.

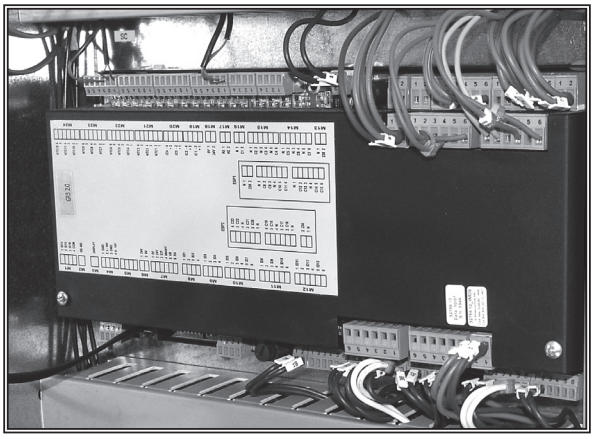
Loose terminals can cause overheating of the cables and components.

Key	
Sec A	Power supply **400V-3N-50Hz**
Earth	Earth wire to connect to unit
IL	Master switch

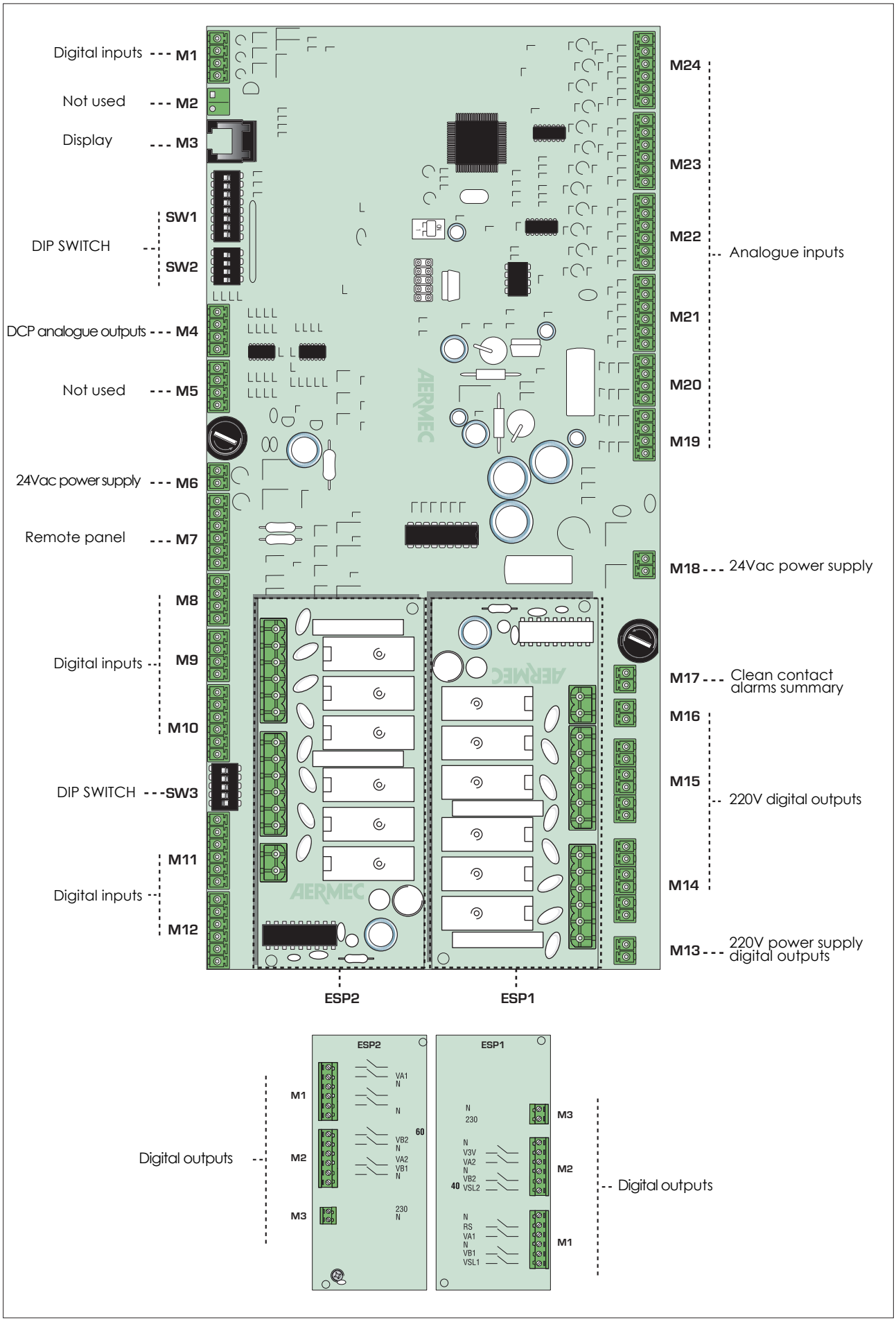
Electric Control Board



GR3



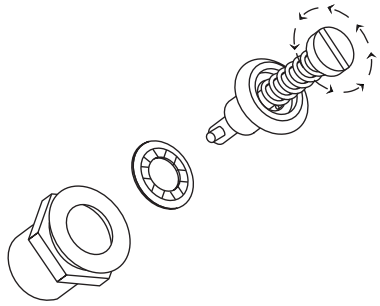
10.3. "GR3" CONTROL BOARD



10.4. CONNECTION TO THE ELECTRIC POWER SUPPLY MAINS

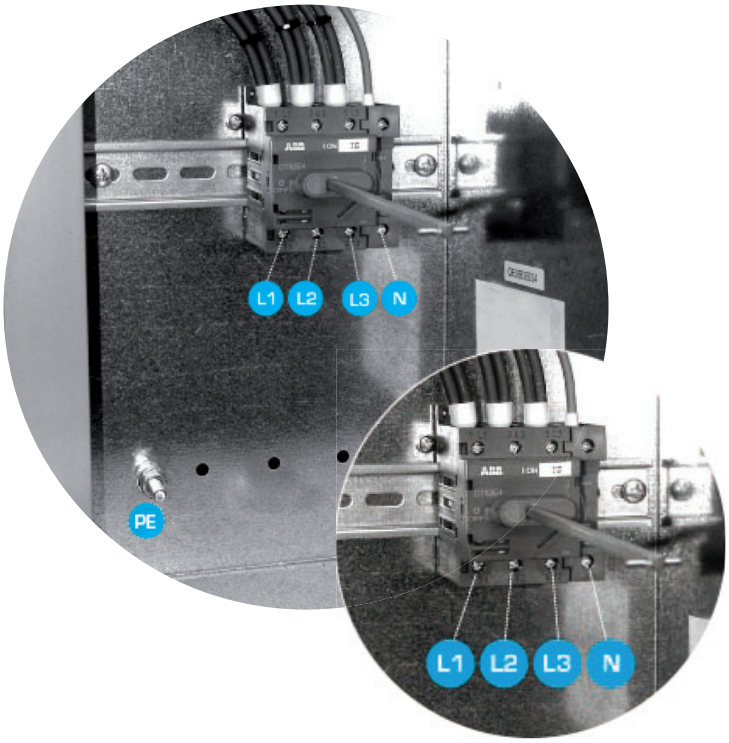
- Make sure that the electric line to which you are making the connection is not live.

- **To access the electric box:**
- **1** Move the screw by ¼ of a turn anti-clockwise

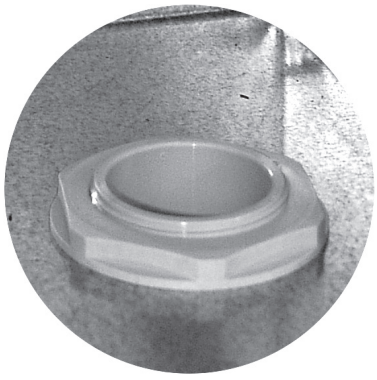


- **2** Turn the door-lock isolating switch to OFF, padlocked and with warning sign.

The figures below show the various parts used to make panel opening easy and the various line connections.



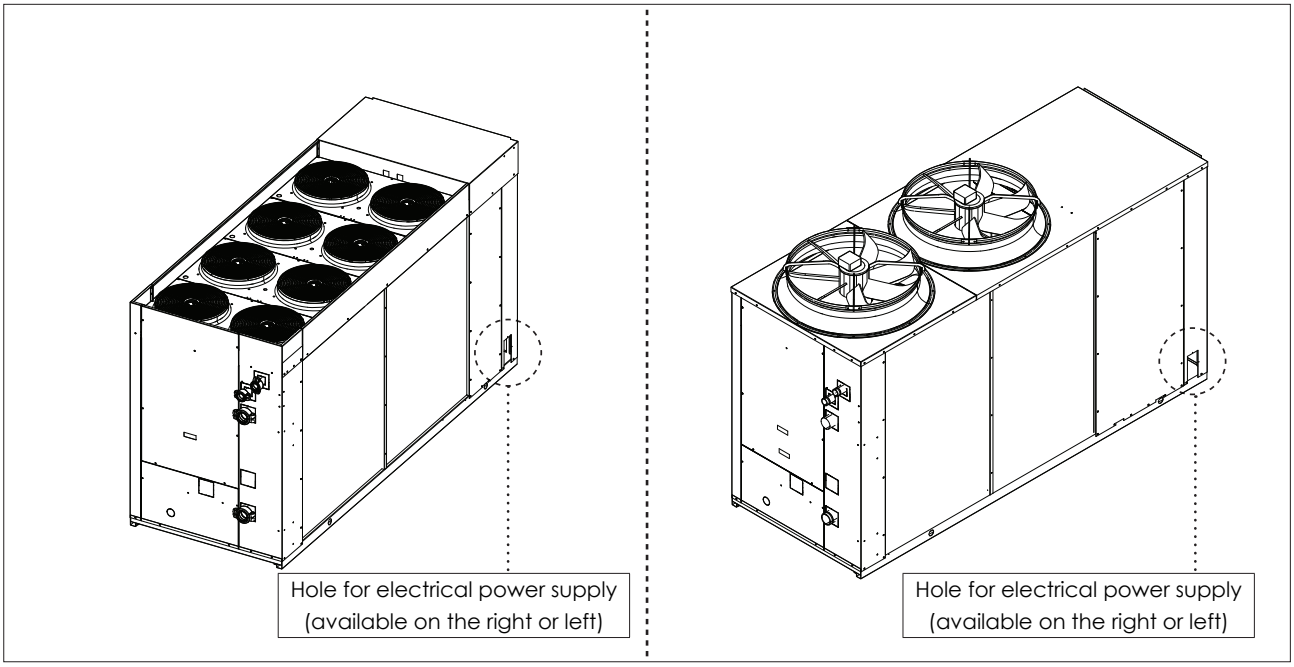
Key			
L1	Line 1	**N**	Neutral
L2	Line 2	**PE**	Earth
L3	Line 3		



Electric cable passage hole

PE: Earth Connection

10.5. ELECTRIC CONNECTIONS



11. COMMISSIONING

11.1. PRELIMINARY OPERATIONS

ATTENTION
Before carrying out the controls indicated below, make sure that the unit is disconnected from the power mains.
Make sure that the master switch is in the OFF position and locked and a warning sign is applied. Before starting any operations check there is no voltage present using a voltmeter of a phase indicator.

11.1.1. Electric controls

- Check that the main power cables are suitably sized, able to support the overall absorption of the unit (see electric data) and that the unit has been appropriately earthed.
- Check that all the electrical connections have been made correctly and all the terminals adequately tightened. The following operations are to be carried out when the unit is not live.
- Supply power to the unit by turning the master switch to the ON position. The display will switch on a few seconds after voltage has been supplied; check that the operating status is at OFF (OFF BY KEYB on lower side of the display).
- Use a tester to verify that the value of the power supply voltage at the RST phases is equal to 400V ±10%; also verify that the unbalance between phases does not exceed 3%.
- Check that the connections made by the installer are in compliance with the data given.
- Verify that the compressor sump resistance/s is working properly by measuring the increase in temperature of the oil pan. The resistance/s must function for at least 24 hours before compressor start-up and the oil pan temperature must be 10 - 15°C above the environmental temperature.

ATTENTION
Power must be supplied to the unit at least 24 hours before it is started-up (or at the end of any prolonged stand-still period) in a way to allow the compressor sump heating resistances to make any refrigerant present in the oil evaporate. Failure to comply with this precaution can cause serious damage to the compressor and will void the warranty.

11.1.2. Hydraulic circuit controls

- Check that all the hydraulic connections have been made correctly and that the indications on the rating plates have been followed.
- Check that the hydraulic system is filled and under pressure and also make sure that no air is present; bleed if necessary.
- Verify that any shut-off valves present in the system are correctly opened.
- Make sure that the circulation pump/s is operating and that the flow rate of the water is sufficient to close the contact of the flow switch.
- Check correct flow switch functioning. By closing the shut-off valve at the outlet of the heat exchanger the unit must display the block. Finally, re-open the valve and rearm the block.

11.2. COMMISSIONING

ATTENTION

Remember that free commissioning is envisioned by the local AERMEC after-sales service for the units in this series if requested by the Aermec customer or legitimate owner, (VALID ONLY IN ITALY).
The commissioning must be scheduled in advance based on the timeframe for the completion of works for the system. Prior to the work to be carried out by the AERMEC after-sales service, all other works (electrical and hydraulic connections, filling and bleeding of air from the system) must have been completed.
Before carrying out the controls indicated below, make sure that the unit is disconnected from the electric mains, using the appropriate instruments.

11.2.1. Cooling circuit controls

- Check for any leaks of refrigerant gas, particularly in correspondence with the manometer pressure points, pressure transducers, and pressure switches (vibrations during transport may have loosened the fittings).
- After a brief functioning period, check the oil level in the compressor and the absence of bubbles in the liquid indicator window. The continuous passage of steam bubbles can mean that the refrigerant load is insufficient and that the thermostatic valve is not correctly adjusted. The presence of steam during functioning in cooling mode for brief periods are however possible.

11.2.2. Superheating

Verify the superheating by comparing the temperature measured with a contact thermometer situated on the compressor intake with the temperature shown on the manometer (saturation temperature corresponding to the evaporation pressure).
The difference between these two temperatures gives the value of superheating. Optimal values are between 4 and 8°C.

11.2.3. Subcooling

Verify the subcooling by comparing the temperature measured with a contact thermometer situated on the pipe at the outlet of the condenser with the temperature shown on the high pressure manometer (saturation temperature corresponding to the condensation pressure).
The difference between these two temperatures gives the subcooling value. The optimal values are included between 4 and 5°C in cooling functioning mode, between 1 and 3°C in heating functioning mode.

11.2.4. Pressing line temperature

If the subcooling and overheating values are regular, the temperature measured in the pressing line pipe
at the compressor outlet must be 30/40°C above the condensation temperature.

11.3. SYSTEM LOADING UNLOADING

During the winter period, in the event of a system pause, the water present in the exchanger can freeze, causing irreparable damage to the exchanger, the complete discharge of the cooling circuits and, at times, damage to the compressors.

To prevent the danger of freezing, the following solutions are possible:

- Complete draining of the water from the heat exchanger at the end of the season and filling at the start of the next season using the vent valve on the storage tank in the versions with storage tank and/or pump.
- Functioning with glycoled water, with a percentage of glycol chosen based on the minimum outdoor temperature expected. In this case you must take into account the different outputs and absorption of the chiller, the sizing of the pumps and the output of the terminals.
- Use of heat exchanger heating resistances (as per standard on all appliances). In this case the resistances must always be live for the entire period of possible freezing (machine in stand-by)

12. MAINTENANCE

NOTE
All routine and special maintenance operations must be carried out exclusively by qualified staff.
Before starting any servicing operation or cleaning, be sure to disconnect the power supply to the unit.

All appliances are subject to inevitable wear and tear over time.

Maintenance makes it possible to:

- Maintain the efficiency of the unit
- Reduce the speed of deterioration
- Collect information and data and understand the status of efficiency of the unit in order to prevent possible breakdowns.

IT IS therefore fundamental to envision periodical controls::

- **YEARLY**
- **SPECIAL CASES**

Keep a maintenance log on the machine (not supplied with the unit, the user's responsibility) that enables you to keep track of the servicing carried out on the unit. This makes it easy to organise the work appropriately and facilitates troubleshooting on the machine.
In the log, record the date, type of work carried out (routine maintenance, inspection, or repair), a description of the work, any measures taken, and so on…

- **Yearly checks**

Cooling circuit

- Verify the watertight integrity of the cooling circuit and that the pipes have not been damaged.
- Perform an acidity test on the oil of the cooling circuit.
- Verify the operation of the high and low pressure pressure switches; in the event of poor operation, replacement is recommended.
- Check the status of furring on the dehydrator filter; replace the filter if necessary.
-

- **Electric controls**

- Check the condition of the electrical wires and their insulation.
- Verify the functioning of the resistance of the evaporator and of the compressor sump.

- **Mechanical checks**

Check the tightness of the screws on the fan grids and on the fan bodies, the compressors and the electric box, as well as the exterior panelling of the unit. Incorrect fastening can lead to anomalous noise and vibrations.
Check the condition of the structure.
If there are any oxidised parts, treat with paint suitable to eliminate or reduce oxidation.

- **Hydraulic controls**

- Clean the water filter
- Bleed the air from the circuit.
- Verify that the water flow rate to the evaporator is always constant.
- Verify the status of the thermal insulation of the hydraulic piping
- Where envisioned, check the percentage of glycol.

13. DISPOSAL

13.1. DISCONNECTING THE UNIT

The unit must be disconnected by a qualified technician.
Before disconnecting the unit, the following must be recovered, if present:
• The refrigerant gas: the gas must be extracted using suction devices operating in a closed circuit to ensure there are no gas leaks into the environment.
• The glycol must not be dispersed in the environment when removed, but stored in suitable containers.

NOTE
The disposal of the gas refrigerant, the glycoled water mixture where present and the recovery of any other material or substance must be carried out by qualified staff in compliance with the specific regulations in force on the subject to prevent injury to persons or damage to objects as well as the pollution of the surrounding area.

While waiting for disposal, the unit can be stored outdoors, as harsh weather conditions or extreme temperature changes do not cause damaging effects on the environment provided that the electrical, cooling, and hydraulic circuits are intact and closed.

13.2. DISMANTLING AND DISPOSAL

In the dismantling stage, the fan, the motor and the coil, if operational, can be recovered by specialised recycling centres.

NOTE
For dismantling/disposal, all the materials must be taken to the authorised facilities in compliance with the national regulations in force on this subject. For further information on disposal, contact the manufacturer.

14. IMPROPER USE

The appliance is designed and constructed to guarantee the maximum safety in its immediate vicinity (IP24), as well as to resist atmospheric agents.
The fans are protected from involuntary intrusion by means of protective grids.
Accidental opening of the electric control board with the machine running is prevented by the door-block isolating switch.
Avoid laying tools or heavy objects directly on the lateral heat exchanger coils, in order not to damage the louvers.

NOTE
Do not insert or drop objects through the grids of the fan motors. Do not lean against the heat exchange coils "Sharp surfaces".

14.1. IMPORTANT SAFETY INFORMATION

The machine must not exceed the pressure and temperature limits indicated in the table shown in the section "Functioning limits" paragraph of the technical manual.
Correct functioning of the unit is not guaranteed following a fire; before restarting the machine, have it checked by an authorised after-sales service centre.
The machine is equipped with safety valves which, in the event of excessive pressure, can discharge the high temperature gas into the atmosphere.
Wind, earthquakes, and other natural phenomena of exceptional intensity have not been considered.
been considered.
If the unit is used in an aggressive atmosphere or with aggressive water, please contact the head offices.

ATTENTION
Following extraordinary maintenance work on the cooling circuit involving the replacement of components, before restarting the machine, carry out the following operations:

- Pay the maximum attention in restoring the load of refrigerant indicated on the machine plate (inside the electric control board).
- Open all the cocks present in the cooling circuit.
- Connect the electric power supply and earth correctly.
- Check the hydraulic connections
- Check that the water pump is working correctly.
- Clean the water filters.
- Check that the condenser coils are not soiled or blocked.
- Verify the correct rotation of the fan unit.

15. R410A REFRIGERANT GAS

CHEMICAL NAME	CONCENTRATION [%]
Difluoromethane (R32)	50 %
Pentafluoromethane (R125)	50 %

PHYSICAL AND CHEMICAL PROPERTIES	
Physical form	Liquefied gas
Colour	Colourlessq
Odour	Ether
pH	at (25°C) neutral
Boiling point/interval	-52.8°C (-63°F)
Flashpoint	not inflammable
Vapour pressure	11 740 hPa at 25 °C
Vapour pressure	21 860 hPa at 50 °C
Relative density	1.08 g/cm3
Solubility	Water: 0.15 g/100 ml.

IDENTIFICATION OF DANGER
Skin contact with evaporating liquids can cause freezing of the tissues. Strong concentrations of vapours can cause headache, dizziness, sleepiness, nausea, as well as lipothymia. Irregular heart beat (arrhythmia).

FIRST AID MEASURES	
General information	In the event of unconsciousness, place the person on one side in a stable position and call a doctor. Do not administer anything to an unconscious person. In case of irregular breathing or respiratory arrest, practice artificial respiration. If the symptoms persist, call a doctor.
Inhalation	In case of inhalation breathe fresh air. In case of respiratory difficulty, apply oxygen mask. In case of respiratory arrest, practice artificial respiration. Contact a doctor.
Contact with the skin	Skin contact with evaporating liquids can cause freezing of the tissues. In case of direct contact with the liquid, warm frozen parts with water and call a doctor. Remove all contaminated clothing and shoes. Wash clothing before re-use.
Contact with the eyes	Wash eyes with running water for at least 15 minutes, keeping eye lids open. If irritation persists, call a doctor.
Note for the doctor	Do not administer adrenalin or similar substances.

Toxicological information	**Inhalation:** Irregular heart beat (arrhythmia). **Ingestion:** No specific risk. **Skin contact:** Skin contact with evaporating liquids can cause freezing of the tissues. Slight irritation for the skin. **Contact with the eyes:** Slight irritation for the eye.

FIRE-FIGHTING MEASURES	
Fire-fighting equipment	Not inflammable ASTM D-56-82; ASTM E-681. In case of fire, use fire hose, foam, dry chemical products or CO2.
Particular risks of exposure	Possibility of dangerous reactions of during a fire due to the presence of units. F and/or Cl. Fire or overheating causes increase of pressure that can cause explosion of unit. Use fire hose to keep units exposed to fire cool. This product is not inflammable at room temperature and atmospheric pressure. However it can catch on fire if mixes with pressurized air and exposed to a strong source of ignition.

MEASURES TO TAKE IN CASE OF ACCIDENTAL RELEASE	
Environmental precautions	Block the leak if there is no risk present. Leakages can evaporate quickly.
Method of cleaning	Evaporates

HANDLING AND STORAGE	
Manipulations	Open carefully in order to allow the release of any internal pressure. Keep and use away from heat sources, sparks, naked flames or other ignition sources. Pressurised container. Protect from sun rays and do not expose to temperatures higher than 50°C. Do not puncture or burn after use. Foresee adequate ventilation. Wash thoroughly after handling the product.
Precautions for safe use	• Make sure there is a sufficient exchange of air and/or exhaust system in the work places. For salvage and maintenance works, dismantling and disposal, use an autonomous respiratory device. The vapours are heavier than air and can cause suffocation by reducing the oxygen available for respiration. • Protect your hands with gloves that insulate from heat. • Protect your eyes with safety goggles. • Manipulate following good practice regarding industrial hygiene and safety.

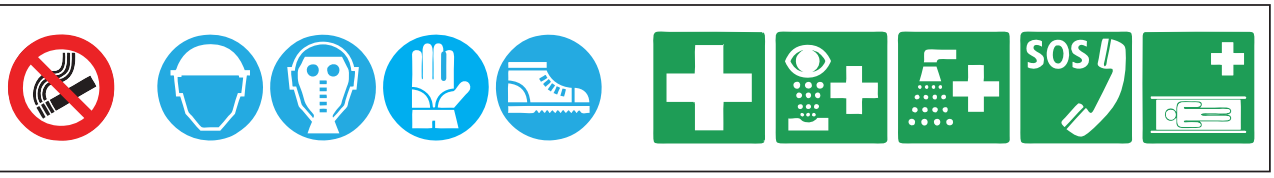
ECOLOGICAL INFORMATION	
Substance	FORANE 32
In the water	Not easily biodegradable: 5% after 28d (OCDE 107 guideline)
In the air	Degradation for OH radicals: t½ life= 1472d Potential for destroying the ozone layer: ODP (R-11) = 0 Potential greenhouse effect of the halogenated hydrocarbons: HGWP (R-11=1) = 0.13
Bioaccumulation	Practically not biaccumable: log Pow = 0.21 OCDE 107 guideline

INFORMATION REGARDING THE STANDARD	
EEC Directive **Safety card**	D.91/155/EEC modified by D. 93/112/EEC and D.2001/58/CE: Substances and dangerous preparations
Dangerous preparations	D.199/45/CE modified by D.2001/60/CE **Not classified as dangerous**

CONSIDERATIONS REGARDING DISPOSAL	
DISPOSAL METHODS	Dispose of access and non-recyclable products via the use of authorized disposal company. Refer to manufacturer/seller information regarding collection/recycling.

PERSONAL PROTECTION

SIMBOLOGIA



GB

Contains fluorinated greenhouse gases covered by the Kyoto Protocol

R410A (Global warming potential 1980)

ES

Contiene gases fluorados de efecto invernadero regulados por el Protocolo de Kioto

R410A (Potencial de calentamiento atmosférico 1980)

DE

Enthält vom Kyoto-Protokoll erfasste fluorierte Treibhausgase

R410A (Treibhauspotenzial 1980)

FR

Contient des gaz à effet de serre fluorés relevant du protocole de Kyoto

R410A (Potentiel de réchauffement planétaire 1980)

IT

Contiene gas fluorurati ad effetto serra disciplinati dal protocollo di Kyoto

R410A (Potenziale di riscaldamento globale 1980)

PT

Contém gases fluorados com efeito de estufa abrangidos pelo Protocolo de Quioto

R410A (Potencial de aquecimento global 1980)

GR

Περιέχει φθοριούχα αέρια θερμοκηπίου καλυπτόμενα από το πρωτόκολλο του Κιότο

R410A (Δυναμικό θέρμανσης του πλανήτη 1980)

PL

Zawiera fluorowane gazy cieplarniane objęte Protokołem z Kioto

R410A (Współczynnik ocieplenia globalnego 1980)

SE

Innehåller sådana fluorerade växthusgaser som omfattas av Kyotoprotokollet

R410A (Faktor för global uppvärmningspotential 1980)

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