



REVERSIBLE HEAT PUMPS - Installation Maintenance Manual

HEAT PUMP WATER/WATER

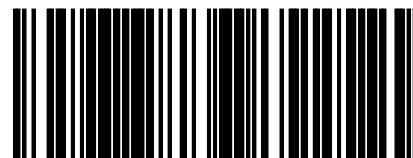
- INDOOR UNITS
- HIGH EFFICIENCY
- PRODUCTION OF HOT WATER UP TO 60 °
- FOR GEOTHERMAL APPLICATION

WRL-H 025/160

EN



Aermec
participate in the EUROVENT
program: LCP
the products are present on the site
www.eurovent-certification.com



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 they 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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WRL-H

EC DECLARATION OF CONFORMITY

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

NAME

WRL-H

TYPE

WATER-COOLED REVERSIBLE HEAT PUMP

MODEL

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

IEC EN 60335-2-40

Safety standard regarding electrical heat pumps, air conditioners and dehumidifiers

IEC EN 61000-6-1
IEC EN 61000-6-3

Immunity and electromagnetic emissions for residential environments

IEC EN 61000-6-2
IEC EN 61000-6-4

Immunity and electromagnetic emissions for industrial environments

EN378

Refrigerating systems and heat pumps - Safety and environmental requirements

UNI EN 12735
UNI EN 14276

Seamless, round copper tubes for air conditioning and refrigeration
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 Directive 2004/108/CE
- Machinery Directive 2006/42/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.6 issued by the notified body n.1131 CEC via Pisacane 46 Legnano (MI) - Italy

La persona autorizzata a costituire il fascicolo tecnico è: / The person authorised to compile the technical file is: / La personne autorisée à constituer le dossier technique est: / Die Person berechtigt, die technischen Unterlagen zusammenzustellen:

Alberto Foroni

Bevilacqua

15/04/2010

Marketing Manager
Signature



Standards and Directives respected on designing and constructing the unit:

Safety:

Machinery Directive

2006/42/CE

Low Voltage Directive

LVD 2006/95/CE

Electromagnetic compatibility directive

EMC 2004/108/CE

Pressure Equipment Directive

PED 97/23/CE EN 378,

UNI EN 14276

Electric part:

EN 60204-1

Acoustic part:

SOUND POWER

(EN ISO 9614-2)

SOUND PRESSURE

(EN ISO 3744)

Certifications:

Eurovent

Refrigerant GAS:

This unit contains fluoride gases with greenhouse effect covered by the Kyoto Protocol. Maintenance and disposal must only be performed by qualified staff.

1. GENERAL WARNINGS

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

1.1. PRESERVATION OF THE DOCUMENTATION

The instructions along with all the related documentation must be given to the user of the system, who assumes the responsibility to conserve the instructions so that they are always at hand in case of need. Read this sheet carefully; the execution of all works must be performed by qualified staff, according to Standards in force in this subject in different countries. (Ministerial Decree 329/2004). It must be installed in a way to make maintenance and/or repair operations possible. The appliance warranty does not cover the costs for ladder trucks, scaffolding, or other elevation systems that may become necessary for carrying out servicing under warranty. Do not modify or tamper with the chiller as dangerous situations can be

created and the manufacturer will not be liable for any damage caused. The validity of the warranty shall be void in the event of failure to comply with the above-mentioned indications.

1.2. WARNINGS REGARDING SAFETY AND INSTALLATION STANDARDS

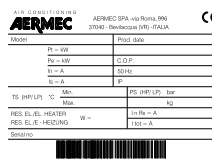
- The cooler must be installed by a qualified and suitably trained technician, in compliance with the national legislation in force in the country of destination (Ministerial Decree 329/2004). **AERMEC will not assume any responsibility for damage due to failure to follow these instructions.**
- Before beginning any operation, READ THESE INSTRUCTIONS CAREFULLY AND CARRY OUT THE SAFETY CHECKS TO AVOID ALL RISKS. All the staff involved must have thorough knowledge of the operations and any dangers that may arise at the moment in which the installation operations are carried out.

2. PRODUCT IDENTIFICATION

The WRL-H appliances can be identified through:

- **PACKING LABEL** which shows the product identification data
- **TECHNICAL PLATE** (see position cap. 2.1.).

2.1. TECHNICAL PLATE POSITION

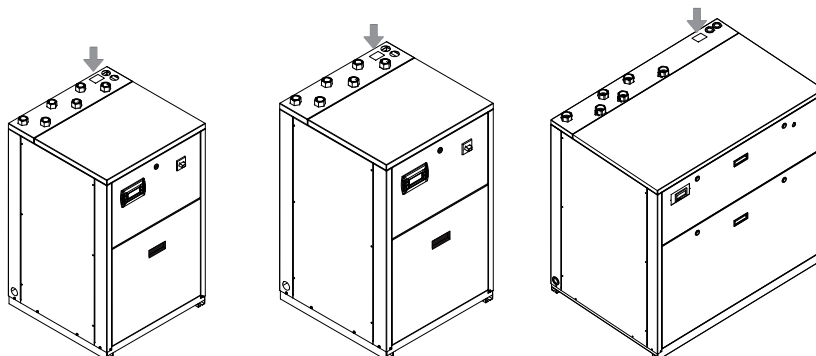


example: Technical plate



ATTENZIONE

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



3. PRESENTATION

AERMEC presents **the new WRL-H units, OPTIMISED HEAT PUMPS FOR GEOTHERMIC SYSTEMS** water-cooled and functioning with R410A refrigerant.

They are **INDOOR UNITS** with hermetic scroll compressors that respond perfectly to the requirements of the residential market.

High performance

These units have been designed optimising functioning in heat pump mode, allowing to reach high efficiencies.

Easy installation

The electric and hydraulic connections are all positioned in the upper part of the unit facilitating the installation

and maintenance operations. This also allows to reduce the technical spaces and their positioning in as smaller space possible.

Silence

The WRL-H units are distinguished for its working silence.
Careful soundproofing of the unit with suitable sound-absorbent material confer all units with noise limits such to consent the use of the WRL-H also in homes and not necessarily in dedicated technical rooms.

Dynamic set point

The electronic regulation, via the aid of **AN EXTERNAL AIR TEMPERATURE PROBE (ACCESSORY)** and on the basis of the external conditions automatically modify the set point of the system water temperature , improving the

energy efficiency of the system.

Optimized for:

1. GEOTHERMIC SYSTEMS

For the production of water for heating systems with FAN COILS, RADIANT PANELS or LOW TEMPERATURE RADIATORS, up to 60° C.

2. PRIORITY TO THE PRODUCTION OF DOMESTIC HOT WATER (DHW).

The production of hot water with priority logic is guaranteed in both summer and winter.

4. SYSTEM EXAMPLE



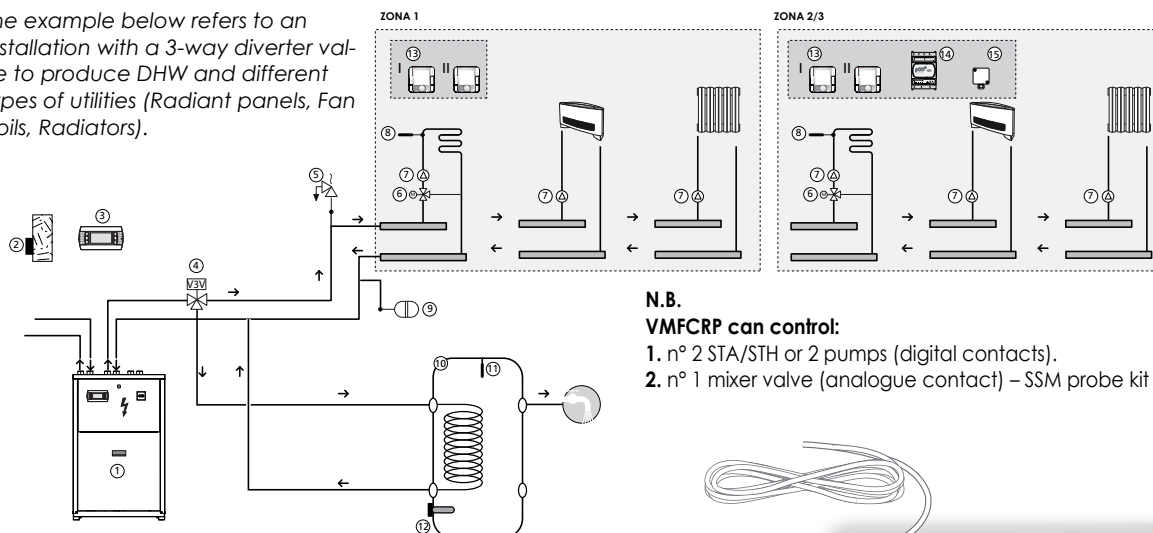
The WRL-H heat pump can manage up to a maximum of 3 ZONES

ZONE 1: Managed as standard by using the latest in electronic adjustment. The "SSM" bracelet probe should ideally be fitted (accessory) to control the delivery temperature. (The unit is shipped equipped with 1 temperature probe in case a domestic hot water tank is used)

ZONE 2 and ZONE 3 managed with VMFCRP + SSM accessories for each zone.

EG: The heat pump is connected directly to the utilities circuit (SYSTEM), and directly manages the production of domestic hot water (DHW) through a three-way valve connected to an accumulation tank. The production of domestic hot water has priority over the production of the system.

The example below refers to an installation with a 3-way diverter valve to produce DHW and different types of utilities (Radiant panels, Fan coils, Radiators).



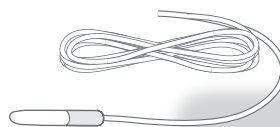
KEY:

1. WRL-H
2. External air temperature probe (not supplied)
3. Remote control panel
4. Three-way valve
5. Safety valve
6. Mixing valve Zone 1
7. Pump (**ATTENTION: Zone 2 and 3 pumps are not managed, installer's responsibility**)
8. Water temperature probe
9. Additional expansion vessel (if necessary)
10. Domestic hot water storage tank "DHW" (not supplied)
11. Storage tank probe
12. Integrative electric resistance (not supplied)
13. STA - STH "Zone control panel" (accessory)
14. VMFCRP (accessory, **necessary to control Zones 2 and 3**)
15. SSM (accessory, **necessary to control Zones 2 and 3**)

N.B.

VMFCRP can control:

1. n° 2 STA/STH or 2 pumps (digital contacts).
2. n° 1 mixer valve (analogue contact) – SSM probe kit required.



WARNING

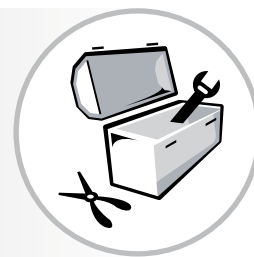
The units are shipped equipped with 1 TEMPERATURE PROBE IN CASE AN ACCUMULATION TANK IS USED.



WARNING

In the version with Total Recovery the refrigerant charge must be made only with TOTAL RECOVERY OFF.

FOR THE INSTALLER



5. RECEIPT OF THE PRODUCT AND INSTALLATION

5.2.1. Receipt and handling

The machine is sent from the factory wrapped with estincoil placed on a loading pallet

Before handling the unit, verify the lifting capacity of the machines used.

Handling must be performed by qualified, suitably equipped staff.

Handling the machine:

- Whenever it is envisioned to lift the machine with belts, so as not to damage the structure, place protections between the belts and the framework. It is prohibited to stop below the unit during

lifting.

- **The machine must always be kept in a vertical position;**
- **The instructions found on the machine on an integral part of the same. It is recommended to read them and keep them with care.**
- **WARNING: The units CANNOT be stacked.**

5.2.2. Selection and place of installation

The WRL-H water/water INDOOR heat pump with gas side inversion (R410A) is sent from the factory already inspected and only requires electric and hydraulic connections in the place of installation.

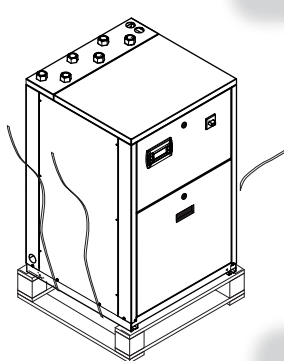
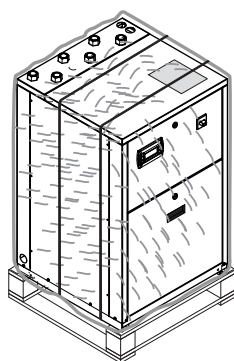
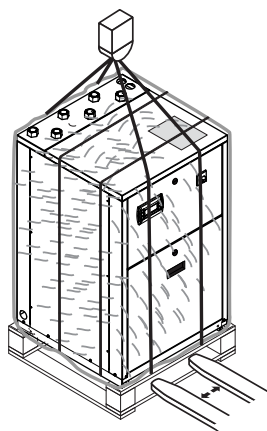
Before beginning installation consent with client and pay attention to the following recommendations:

- The support surface must be capable of

supporting the unit weight.

- The safety distances between the units and other appliances or structures must be scrupulously respected.
- The unit must be installed by a skilled technician in compliance with the national law in force in the country of destination.
- It is mandatory to foresee to the necessary technical space in order to allow ROUTINE AND EXTRAORDINARY MAINTENANCE interventions.
- Remember that whilst operational the chiller can cause vibrations; therefore "VT" anti-vibration mounts (accessories) are recommended, fixed on the base according to the assembly layout.
- Fix the unit, checking that it is level.

► HANDLING

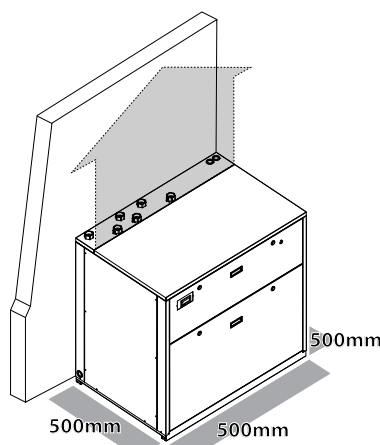
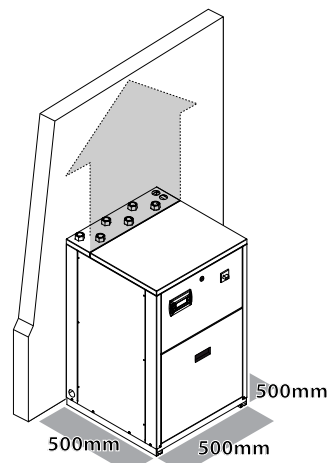
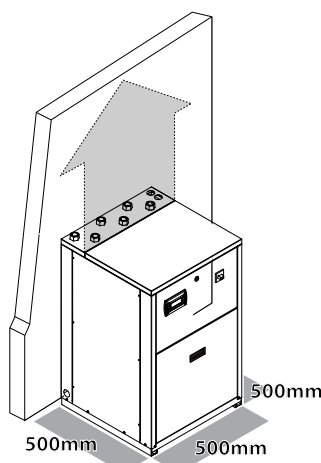


The unit has to be installed in technical rooms, or rooms which have at least a drain on the floor.



ATTENTION:
THE DRAWINGS ARE ONLY
EXAMPLES.

► MINIMUM TECHNICAL SPACES

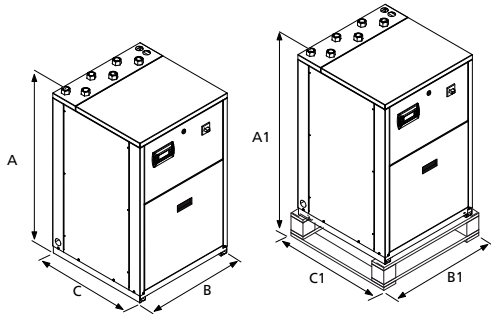


ATTENTION:
You must comply with the stipulated minimum clearances and height and the back should be sized according to the type of facility and location.

6. WRL-H DIMENSIONAL TABLES

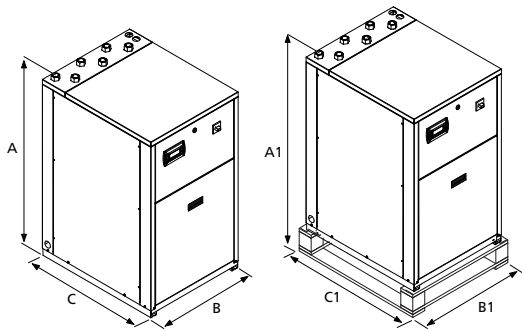
► DIMENSIONS

WRL-H 025 - 040

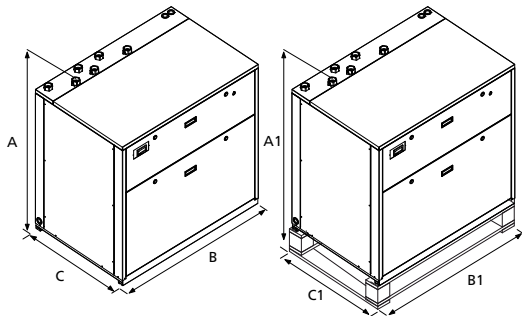


WRL-H	DIMENSIONS WITHOUT BASE (mm)			DIMENSIONS WITH BASE FOR TRANSPORT (mm)		
	Sizes	A	B	C	A1	B1
025	950	600	600	965	640	640
030	950	600	600	965	640	640
040	950	600	600	965	640	640
050	1100	600	770	1115	640	810
070	1100	600	770	1115	640	810
080	1100	600	770	1115	640	810
100	1100	1150	770	1115	1200	810
140	1100	1150	770	1115	1200	810
160	1100	1150	770	1115	1200	810

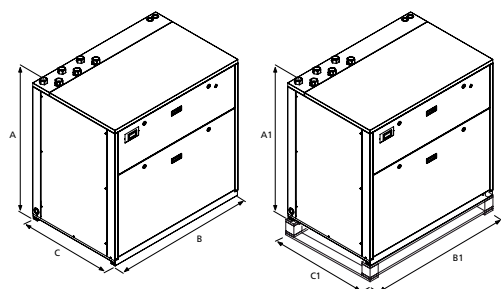
WRL-H 050 - 080



WRL-H 100 - 160

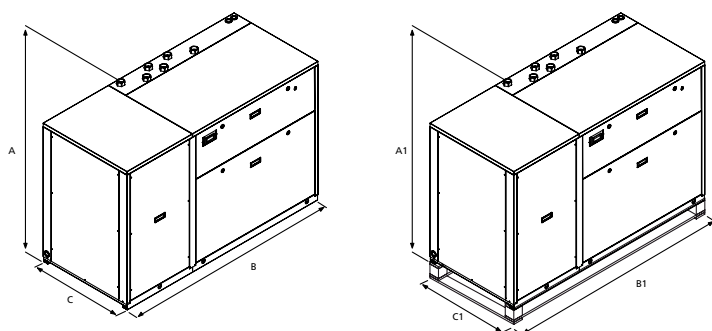


WRL-HA 025-080

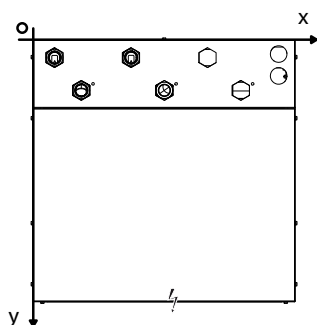


WRL-HA	DIMENSIONS WITHOUT BASE (mm)			DIMENSIONS WITH BASE FOR TRANSPORT (mm)			
	Sizes	A	B	C	A1	B1	C1
	025	1126	1157	798	1141	1197	838
	030	1126	1157	798	1141	1197	838
	040	1126	1157	798	1141	1197	838
	050	1126	1157	798	1141	1197	838
	070	1126	1157	798	1141	1197	838
	080	1126	1157	798	1141	1197	838
	100	1126	1757	798	1141	1807	838
	140	1126	1757	798	1141	1807	838
	160	1126	1757	798	1141	1807	838

WRL-HA 100-160



► BARYCENTRES



ATTENTION:
THE DRAWINGS ARE ONLY
EXAMPLES.

WRL-H	BARYCENTRE 2 EXCHANGERS	
Sizes	y (mm)	x (mm)
025	400	280
030	400	280
040	400	280
050	520	210
070	520	210
080	520	210
100	380	620
140	380	620
160	380	620

WRL-H	BARYCENTRE 3 EXCHANGERS	
Sizes	y (mm)	x (mm)
025	390	280
030	390	280
040	390	280
050	500	210
070	500	210
080	500	210
100	380	610
140	380	610
160	380	610

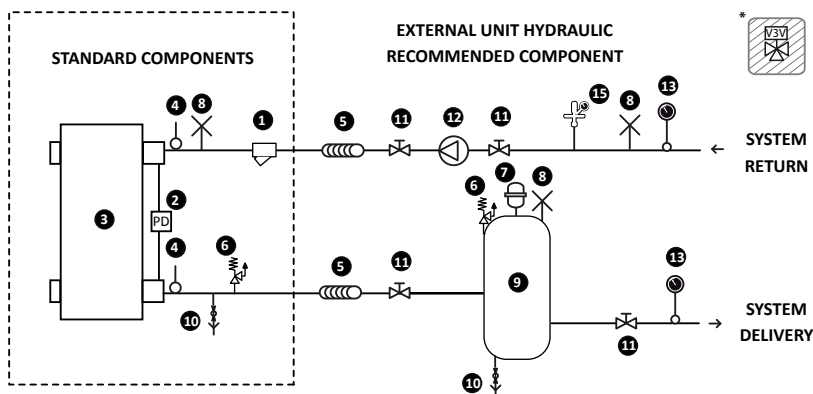
WRL-HA	BARYCENTRE 2 EXCHANGERS	
Sizes	y (mm)	x (mm)
025	480	360
030	480	360
040	470	380
050	420	460
070	420	460
080	420	460
100	990	375
140	990	375
160	990	375

WRL-HA	BARYCENTRE 3 EXCHANGERS	
Sizes	y (mm)	x (mm)
025	-	-
030	-	-
040	-	-
050	-	-
070	-	-
080	-	-
100	-	-
140	-	-
160	-	-

7. MAIN HYDRAULIC CIRCUITS WRL-H

7.1. INTERNAL AND EXTERNAL HYDRAULIC CIRCUIT TO WRL-H / STANDARD

SYSTEM SIDE HYDRAULIC CIRCUIT



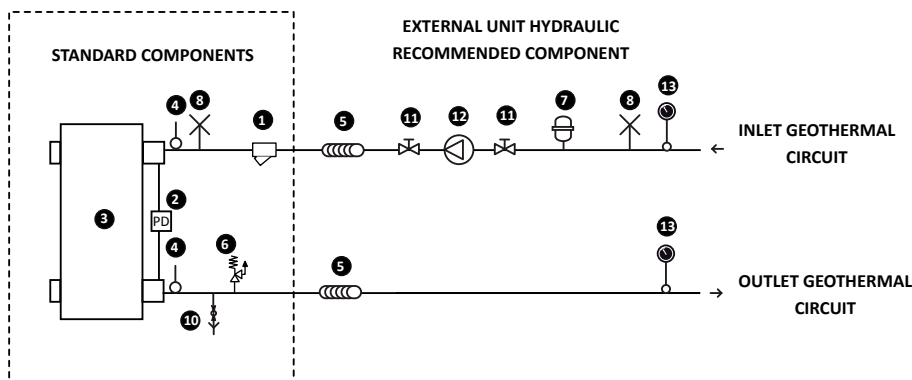
STANDARD COMPONENT
1 Water filter
2 Differential pressure switch
3 Plate exchanger
4 Water temperature probes
6 Safety valve
8 Air vent valve
10 Ball stop drain

ATTENZIONE:

* Without total recovery "T" provide a three-way valve for the DHW production.

RECOMMENDED COMPONENTS NOT SUPPLIED FOR WHICH INSTALLER IS RESPONSIBLE
5 Anti-vibration joints
6 Safety valve
7 Expansion tank
8 Air vent valve
9 Storage tank
10 Ball stop drain
11 Cut-off valve
12 Pump
13 Manometer
15 Charging unit

GEOTHERMAL SIDE HYDRAULIC CIRCUIT



STANDARD COMPONENT
1 Water filter
2 Differential pressure switch
3 Plate exchanger
4 Water temperature probes
6 Safety valve
8 Air vent valve
10 Ball stop drain

RECOMMENDED COMPONENTS NOT SUPPLIED FOR WHICH INSTALLER IS RESPONSIBLE
5 Anti-vibration joints
7 Expansion tank
8 Air vent valve
11 Cut-off valve
12 Pump
13 Manometer

ATTENTION

The choice and installation of components outside the unit is the installer's responsibility, who must operate according to the code of practice and in compliance with the Standard in force in the country of destination.

ATTENTION

The hydraulic connection pipes to the appliance 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 operation will eliminate any residues such as welding drips, scale, rust, or other impurities from the piping. These substances can also deposit inside and cause appliance malfunctioning. The connection piping must be adequately supported so that its weight is not borne by the appliance.

ATTENTION SYSTEM DRAINING

If the system should stop during the winter period, the water present in the exchanger may freeze, causing irreparable damage to the exchanger itself.

There are three solutions possible for the prevention of freezing:

1. Drain the water from the appliance completely.
2. Operation with glycolated water, with a percentage of glycol selected on the basis of the minimum external temperature envisioned.
3. Use of resistances. In this case, the resistances must be live for the entire period that freezing may occur (machine in stand-by).

ATTENTION

The drawings shown don't represent real system examples, but they are only indication about the standard equipment of the unit and those recommended components to the installer.

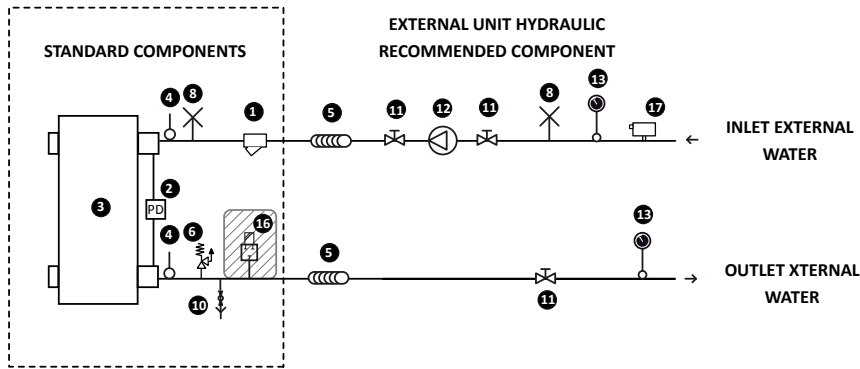
ATTENTION

The sizing of DHW storage tank exchanger concerns the installer. The DHW storage tank sizing must be done according to the heating capacity of the unit.

WATER FEATURES

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

WELL SIDE HYDRAULIC CIRCUIT



STANDARD COMPONENT	
1	Water filter
2	Differential pressure switch
3	Plate exchanger
4	Water temperature probes
6	Safety valve
8	Air vent valve
10	Ball stop drain

RECOMMENDED COMPONENTS NOT SUPPLIED FOR WHICH INSTALLER IS RESPONSIBLE	
5	Anti-vibration joints
8	Air vent valve
11	Cut-off valve
12	Pump
13	Manometer
16	2-way modulating valve (selected from configurator)
17	Flow switch

⚠ ATTENTION

The choice and installation of components outside the unit is the installer's responsibility, who must operate according to the code of practice and in compliance with the Standard in force in the country of destination.

⚠ ATTENTION

The hydraulic connection pipes to the appliance 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 operation will eliminate any residues such as welding drips, scale, rust, or other impurities from the piping. These substances can also deposit inside and cause appliance malfunctioning. The connection piping must be adequately supported so that its weight is not borne by the appliance.

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2. Operation with glycolated water, with a percentage of glycol selected on the basis of the minimum external temperature envisioned.
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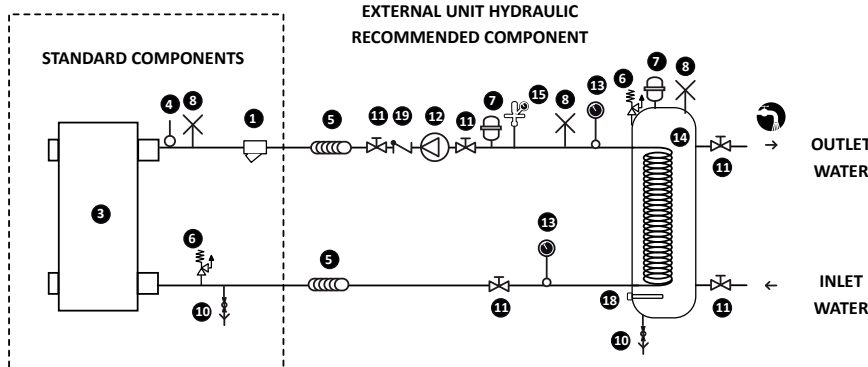
⚠ ATTENTION

The drawings shown don't represent real system examples, but they are only indication about the standard equipment of the unit and those recommended components to the installer.

⚠ ATTENTION

The sizing of DHW storage tank exchanger concerns the installer. The DHW storage tank sizing must be done according to the heating capacity of the unit.

DHW HYDRAULIC CIRCUIT



STANDARD COMPONENT	
1	Water filter
3	Plate exchanger (TOTAL RECOVERY)
4	Water temperature probes
6	Safety valve
8	Air vent valve
10	Ball stop drain

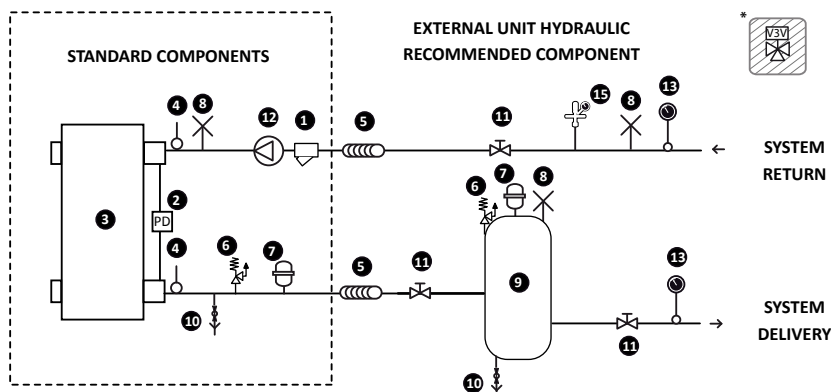
RECOMMENDED COMPONENTS NOT SUPPLIED FOR WHICH INSTALLER IS RESPONSIBLE	
5	Anti-vibration joints
6	Safety valve
7	Expansion tank
8	Air vent valve
10	Ball stop drain
11	Cut-off valve
12	Pump
13	Manometer
14	Storage tank (DHW)
15	Charging unit
18	Electrical resistance
19	One way valve

WATER FEATURES

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

7.2. HYDRAULIC CIRCUIT WRL-H / PUMPS

SYSTEM SIDE HYDRAULIC CIRCUIT



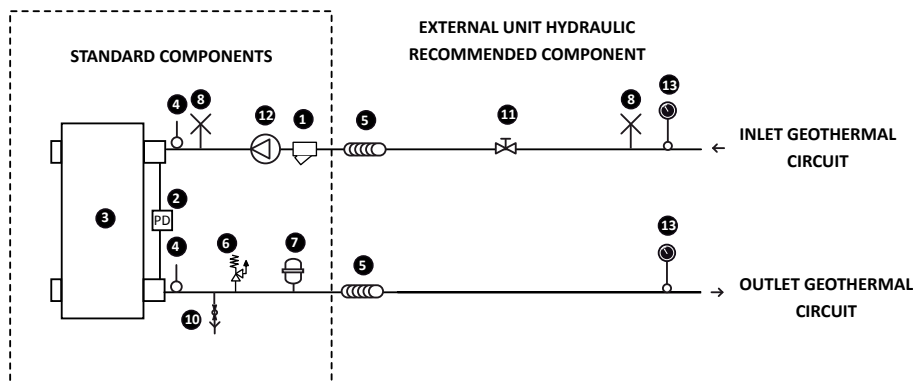
STANDARD COMPONENT
1 Water filter
2 Differential pressure switch
3 Plate exchanger
4 Water temperature probes
6 Safety valve
7 Expansion tank
8 Air vent valve
10 Ball stop drain
12 Pump

RECOMMENDED COMPONENTS NOT SUPPLIED FOR WHICH INSTALLER IS RESPONSIBLE
5 Anti-vibration joints
6 Safety valve
7 Expansion tank
8 Air vent valve
9 Storage tank
10 Ball stop drain
11 Cut-off valve
13 Manometer
15 Charging unit

ATTENZIONE:

* Without total recovery "T" provide a three-way valve for the DHW production.

GEOHERMAL SIDE HYDRAULIC CIRCUIT



STANDARD COMPONENT
1 Water filter
2 Differential pressure switch
3 Plate exchanger
4 Water temperature probes
6 Safety valve
7 Expansion tank
8 Air vent valve
10 Ball stop drain
12 Pump

RECOMMENDED COMPONENTS NOT SUPPLIED FOR WHICH INSTALLER IS RESPONSIBLE
5 Anti-vibration joints
8 Air vent valve
11 Cut-off valve
13 Manometer

ATTENTION

The choice and installation of components outside the unit is the installer's responsibility, who must operate according to the code of practice and in compliance with the Standard in force in the country of destination.

ATTENTION

The hydraulic connection pipes to the appliance 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 operation will eliminate any residues such as welding drips, scale, rust, or other impurities from the piping. These substances can also deposit inside and cause appliance malfunctioning. The connection piping must be adequately supported so that its weight is not borne by the appliance.

ATTENTION SYSTEM DRAINING

If the system should stop during the winter period, the water present in the exchanger may freeze, causing irreparable damage to the exchanger itself.

There are three solutions possible for the prevention of freezing:

1. Drain the water from the appliance completely.
2. Operation with glycolated water, with a percentage of glycol selected on the basis of the minimum external temperature envisioned.
3. Use of resistances. In this case, the resistances must be live for the entire period that freezing may occur (machine in stand-by).

ATTENTION

The drawings shown don't represent real system examples, but they are only indication about the standard equipment of the unit and those recommended components to the installer.

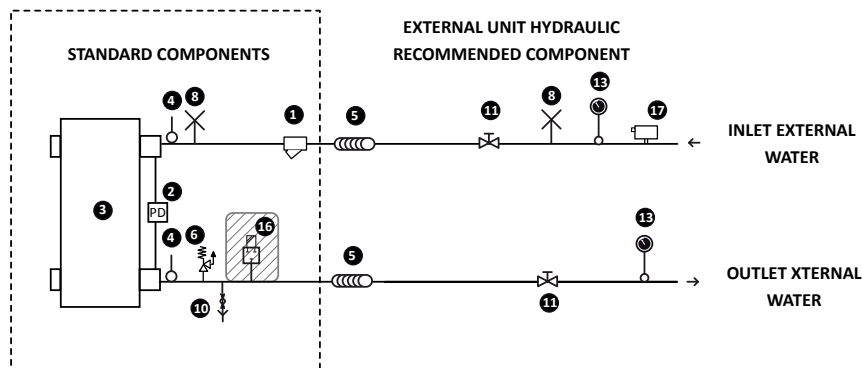
ATTENTION

The sizing of DHW storage tank exchanger concerns the installer. The DHW storage tank sizing must be done according to the heating capacity of the unit.

WATER FEATURES

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

WELL SIDE HYDRAULIC CIRCUIT



STANDARD COMPONENT	
1	Water filter
2	Differential pressure switch
3	Plate exchanger
4	Water temperature probes
6	Safety valve
8	Air vent valve
10	Ball stop drain

RECOMMENDED COMPONENTS NOT SUPPLIED FOR WHICH INSTALLER IS RESPONSIBLE	
5	Anti-vibration joints
8	Air vent valve
11	Cut-off valve
13	Manometer
16	2-way modulating valve (selected from configurator)
17	Flow switch

⚠ ATTENTION

The choice and installation of components outside the unit is the installer's responsibility, who must operate according to the code of practice and in compliance with the Standard in force in the country of destination.

⚠ ATTENTION

The hydraulic connection pipes to the appliance 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 operation will eliminate any residues such as welding drips, scale, rust, or other impurities from the piping. These substances can also deposit inside and cause appliance malfunctioning. The connection piping must be adequately supported so that its weight is not borne by the appliance.

⚠ ATTENTION SYSTEM DRAINING

If the system should stop during the winter period, the water present in the exchanger may freeze, causing irreparable damage to the exchanger itself.

There are three solutions possible for the prevention of freezing:

1. Drain the water from the appliance completely.
2. Operation with glycolated water, with a percentage of glycol selected on the basis of the minimum external temperature envisioned.
3. Use of resistances. In this case, the resistances must be live for the entire period that freezing may occur (machine in stand-by).

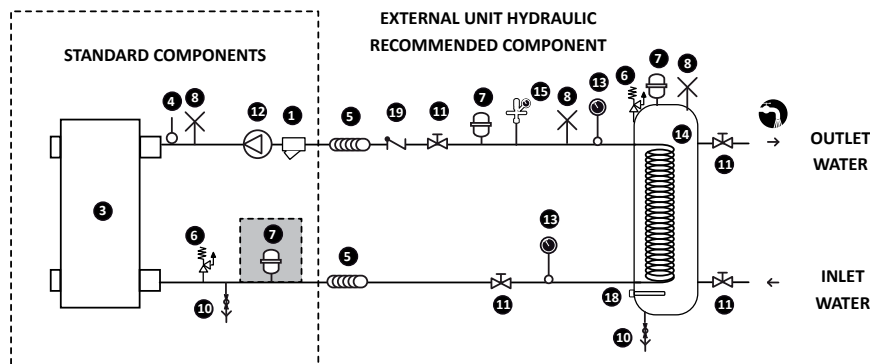
⚠ ATTENTION

The drawings shown don't represent real system examples, but they are only indication about the standard equipment of the unit and those recommended components to the installer.

⚠ ATTENTION

The sizing of DHW storage tank exchanger concerns the installer. The DHW storage tank sizing must be done according to the heating capacity of the unit.

DHW HYDRAULIC CIRCUIT



STANDARD COMPONENT	
1	Water filter
3	Differential pressure switch (TOTAL RECOVERY)
4	Water temperature probes
6	Safety valve
7	Expansion tank (standard supply on size 025-080)
8	Air vent valve
10	Ball stop drain
12	Pump

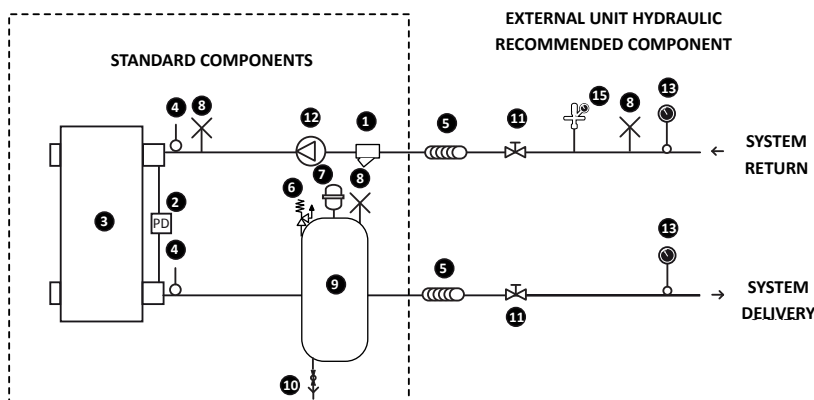
RECOMMENDED COMPONENTS NOT SUPPLIED FOR WHICH INSTALLER IS RESPONSIBLE	
5	Anti-vibration joints
6	Safety valve
7	Expansion tank
8	Air vent valve
10	Ball stop drain
11	Cut-off valve
13	Manometer
14	Storage tank (DHW)
15	Charging unit
18	Electrical resistance
19	One way valve

WATER FEATURES

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

7.3. HYDRAULIC CIRCUIT WRL-HA / STORAGE TANK AND PUMP

SYSTEM SIDE HYDRAULIC CIRCUIT

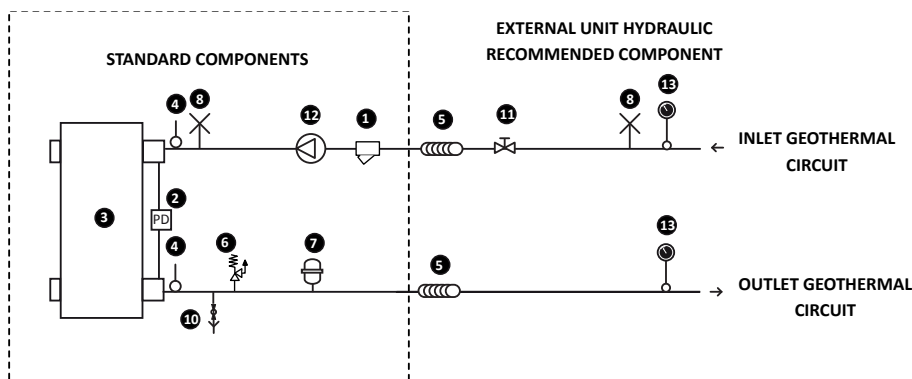


	STANDARD COMPONENT
1	Water filter
2	Differential pressure switch
3	Plate exchanger
4	Water temperature probes
6	Safety valve
7	Expansion tank
8	Air vent valve
9	Storage tank
10	Ball stop drain
12	Pump

	RECOMMENDED COMPONENTS NOT SUPPLIED FOR WHICH INSTALLER IS RESPONSIBLE
5	Anti-vibration joints
8	Air vent valve
11	Cut-off valve
13	Manometer
15	Charging unit

ATTENTION:
The DHW production is not possible in version WRL-HA, but is possible with "T" version selectable from configurator.

GEOTHERMAL SIDE HYDRAULIC CIRCUIT



	STANDARD COMPONENT
1	Water filter
2	Differential pressure switch
3	Plate exchanger
4	Water temperature probes
6	Safety valve
7	Expansion tank
8	Air vent valve
10	Ball stop drain
12	Pump

	RECOMMENDED COMPONENTS NOT SUPPLIED FOR WHICH INSTALLER IS RESPONSIBLE
5	Anti-vibration joints
8	Air vent valve
11	Cut-off valve
13	Manometer

ATTENTION

The choice and installation of components outside the unit is the installer's responsibility, who must operate according to the code of practice and in compliance with the Standard in force in the country of destination.

ATTENTION

The hydraulic connection pipes to the appliance 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 operation will eliminate any residues such as welding drips, scale, rust, or other impurities from the piping. These substances can also deposit inside and cause appliance malfunctioning. The connection piping must be adequately supported so that its weight is not borne by the appliance.

ATTENTION SYSTEM DRAINING

If the system should stop during the winter period, the water present in the exchanger may freeze, causing irreparable damage to the exchanger itself.

There are three solutions possible for the prevention of freezing:

1. Drain the water from the appliance completely.
2. Operation with glycolated water, with a percentage of glycol selected on the basis of the minimum external temperature envisioned.
3. Use of resistances. In this case, the resistances must be live for the entire period that freezing may occur (machine in stand-by).

ATTENTION

The drawings shown don't represent real system examples, but they are only indication about the standard equipment of the unit and those recommended components to the installer.

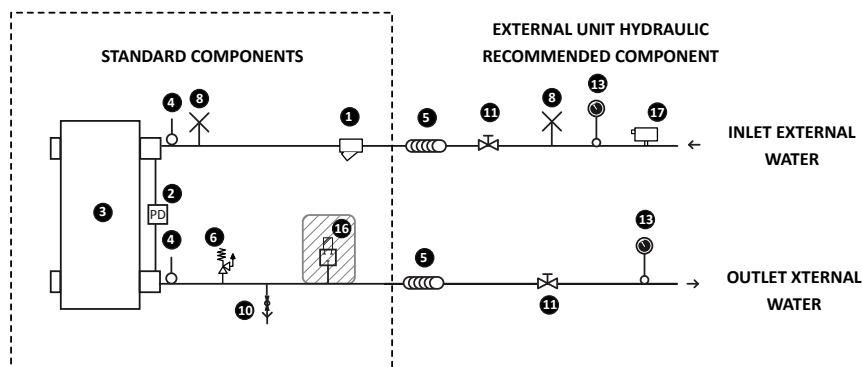
ATTENTION

The sizing of DHW storage tank exchanger concerns the installer. The DHW storage tank sizing must be done according to the heating capacity of the unit.

WATER FEATURES

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

WELL SIDE HYDRAULIC CIRCUIT



STANDARD COMPONENT	
1	Water filter
2	Differential pressure switch
3	Plate exchanger
4	Water temperature probes
6	Safety valve
8	Air vent valve
10	Ball stop drain

RECOMMENDED COMPONENTS NOT SUPPLIED FOR WHICH INSTALLER IS RESPONSIBLE	
5	Anti-vibration joints
8	Air vent valve
11	Cut-off valve
13	Manometer
16	2-way modulating valve (selected from configurator)
17	Flow switch

⚠ ATTENTION

The choice and installation of components outside the unit is the installer's responsibility, who must operate according to the code of practice and in compliance with the Standard in force in the country of destination.

⚠ ATTENTION

The hydraulic connection pipes to the appliance 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 operation will eliminate any residues such as welding drips, scale, rust, or other impurities from the piping. These substances can also deposit inside and cause appliance malfunctioning. The connection piping must be adequately supported so that its weight is not borne by the appliance.

⚠ ATTENTION SYSTEM DRAINING

If the system should stop during the winter period, the water present in the exchanger may freeze, causing irreparable damage to the exchanger itself.

There are three solutions possible for the prevention of freezing:

1. Drain the water from the appliance completely.
2. Operation with glycolated water, with a percentage of glycol selected on the basis of the minimum external temperature envisioned.
3. Use of resistances. In this case, the resistances must be live for the entire period that freezing may occur (machine in stand-by).

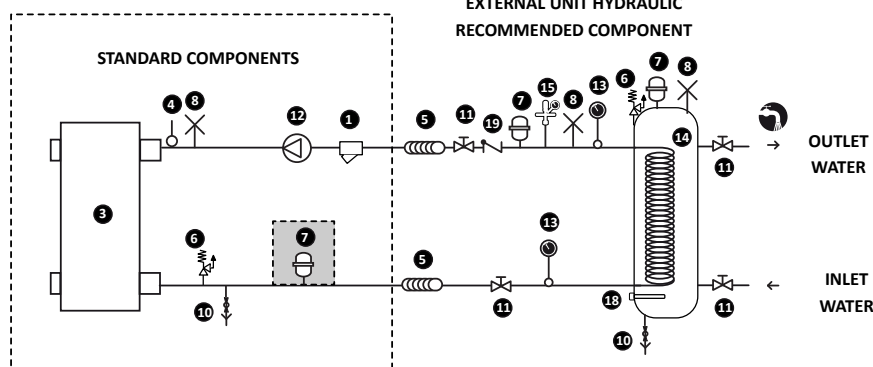
⚠ ATTENTION

The drawings shown don't represent real system examples, but they are only indication about the standard equipment of the unit and those recommended components to the installer.

⚠ ATTENTION

The sizing of DHW storage tank exchanger concerns the installer. The DHW storage tank sizing must be done according to the heating capacity of the unit.

DHW HYDRAULIC CIRCUIT



STANDARD COMPONENT	
1	Water filter
3	Plate exchanger (TOTAL RECOVERY)
4	Water temperature probes
6	Safety valve
7	Expansion tank (standard supply on size 025-080)
8	Air vent valve
10	Ball stop drain
12	Pump

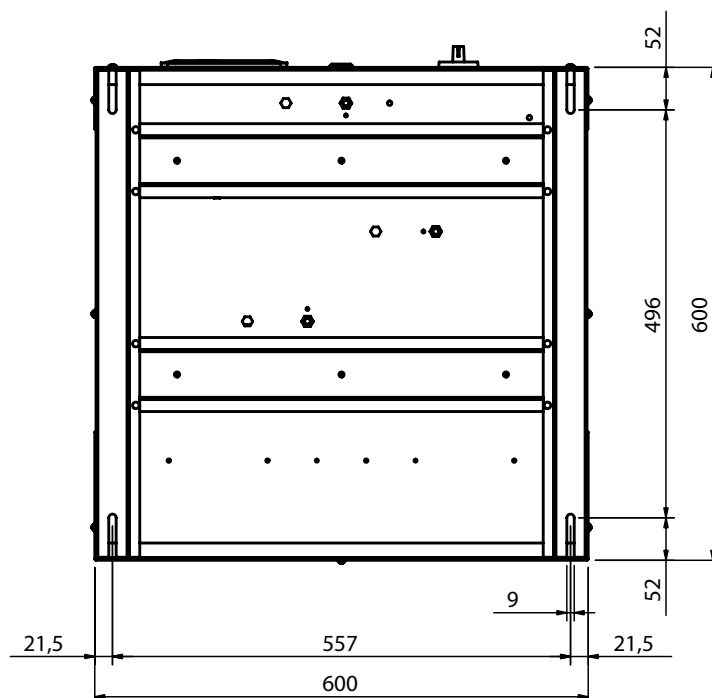
RECOMMENDED COMPONENTS NOT SUPPLIED FOR WHICH INSTALLER IS RESPONSIBLE	
5	Anti-vibration joints
6	Safety valve
7	Expansion tank
8	Air vent valve
10	Ball stop drain
11	Cut-off valve
13	Manometer
14	Storage tank (DHW)
15	Charging unit
18	Electrical resistance
19	One way valve

WATER FEATURES

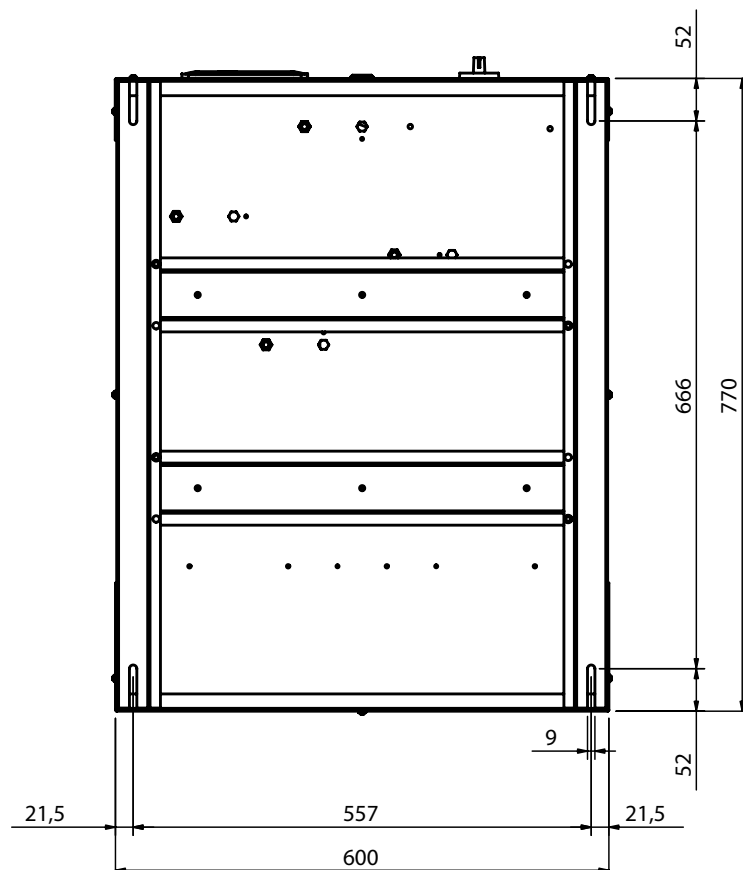
PH	6-8
Electric conductivity	less than 200 mV/cm (25°C)
Chloride ions	less than 50 ppm
Sulphuric acid ions	less than 50 ppm
Total iron	less than 0.3 ppm
Alkalinity M	less than 50 ppm
Total hardness	less than 50 ppm
Sulphur ions	none
Ammonia ions	none
Silicone ions	less than 30 ppm

8. POSITION ANTIVIBRATION WRL-H / WRL-HA

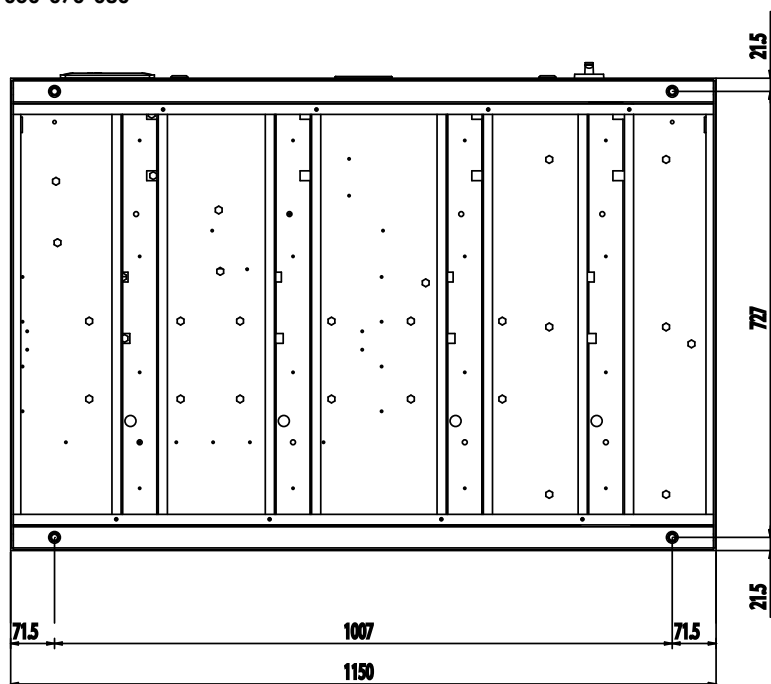
► WRL-H 025-030-040



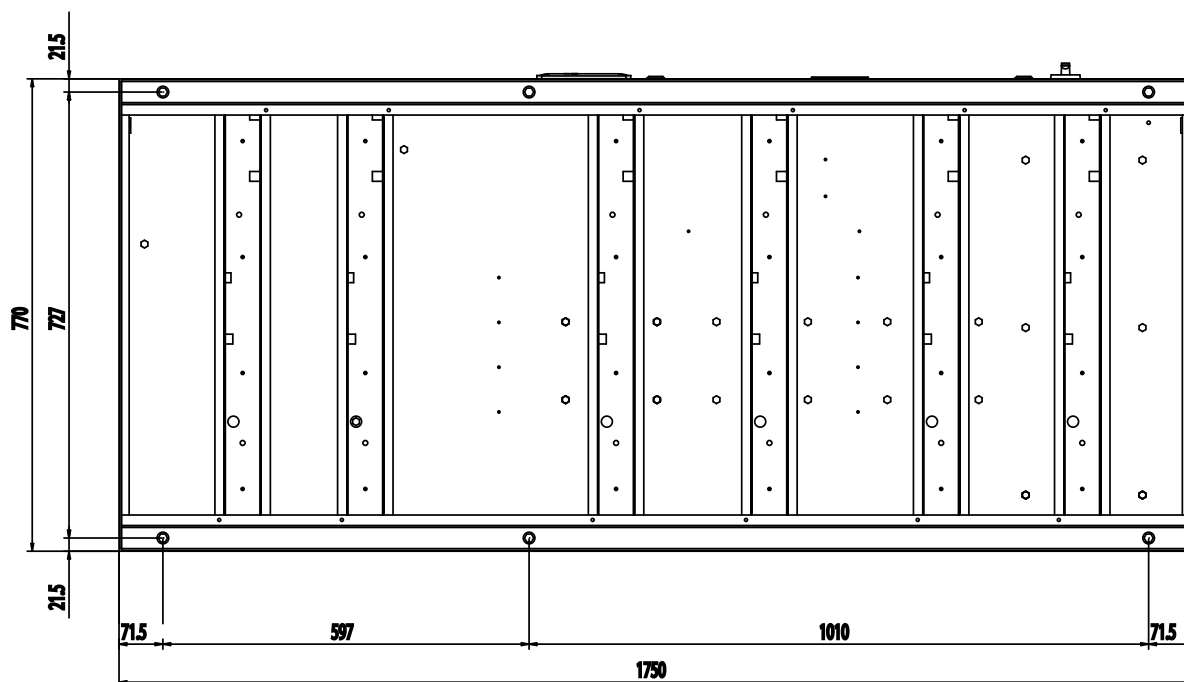
► WRL-H 050-070-080



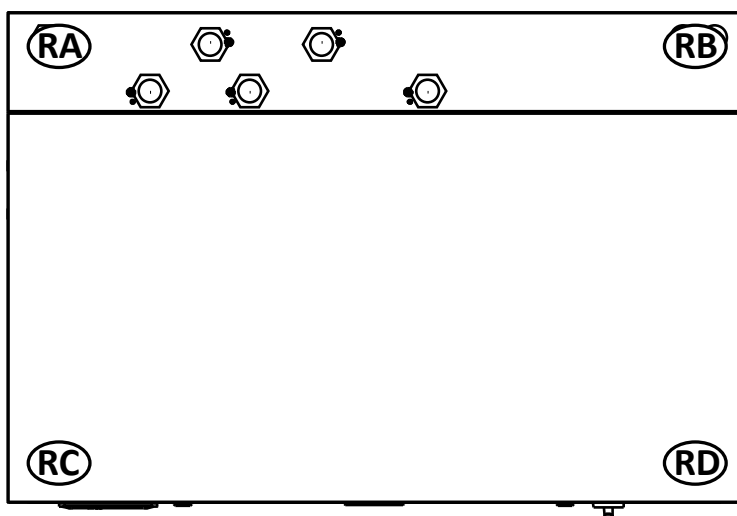
- WRL-H 100-140-160
- WRL-HA 025-030-040-050-070-080



- WRL-HA 100-140-160



9. WEIGHT DISTRIBUTION

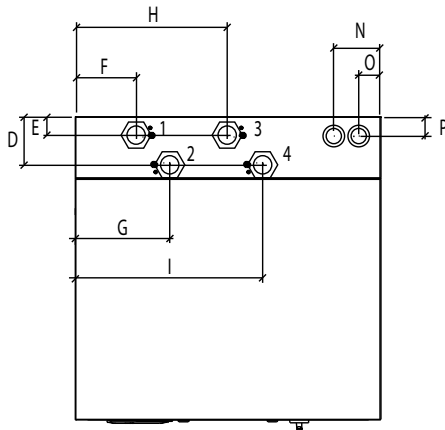


WRL-H	RA [kg]	RB [kg]	RC [kg]	RD [kg]	WEIGHT [kg]
025	22,4	19,6	41,6	36,4	120
030	23,3	20,4	43,3	37,9	125
040	24,3	21,2	45,1	39,4	130
050	34,2	18,4	63,3	34,1	150
070	38,7	20,9	71,8	38,6	170
080	41,0	22,1	76,0	40,9	180
100	61,8	69,9	60,3	68,1	260
140	64,2	72,5	62,6	70,7	270
160	66,6	75,2	64,9	73,3	280

WRL-HA	RA [kg]	RB [kg]	RC [kg]	RD [kg]	WEIGHT [kg]
025	60,4	43,3	50,3	36,0	190
030	63,6	45,5	53,0	37,9	200
040	67,7	46,8	56,4	39,0	210
050	60,7	34,9	85,3	49,1	230
070	66,0	37,9	92,7	53,4	250
080	68,6	39,5	96,5	55,5	260
100	76,2	100,4	70,5	92,9	340
140	78,4	103,4	72,6	95,6	350
160	80,7	106,3	74,6	98,4	360

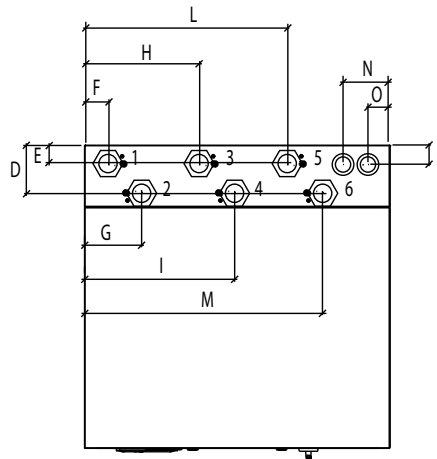
10. WRL-H HYDRAULIC CONNECTIONS POSITION

WRL-H 025 - 030 - 040 (2 EXCHANGER)



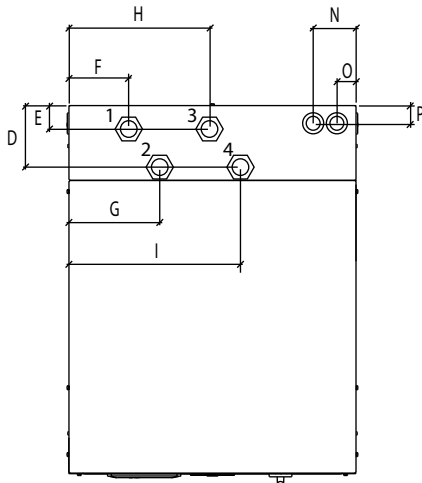
WRL-H 025-030-040 ATTACHMENTS POSITION (mm) 2 EXCHANGER										
D	E	F	G	H	I	L	M	N	O	P
95	35	119	185	299	370	-	-	90	40	37

WRL-H 025 - 030 - 040 (3 EXCHANGER)



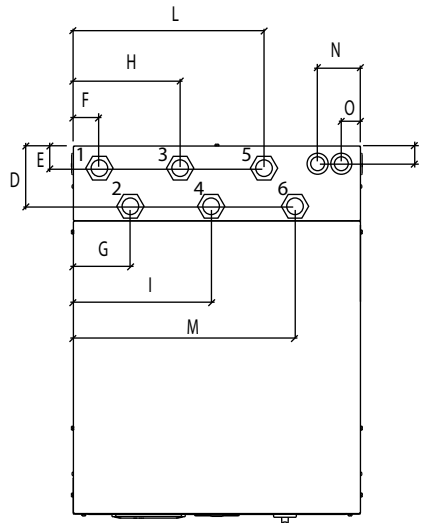
WRL-H 025-030-040 ATTACHMENTS POSITION (mm) 3 EXCHANGER										
D	E	F	G	H	I	L	M	N	O	P
95	35	46	112	226	297	401	472	90	40	37

WRL-H 050 - 070 - 080 (2 EXCHANGER)



WRL-H 050-070-080 ATTACHMENTS POSITION (mm) 2 EXCHANGER										
D	E	F	G	H	I	L	M	N	O	P
127	47	125	190	295	360	-	-	90	40	37

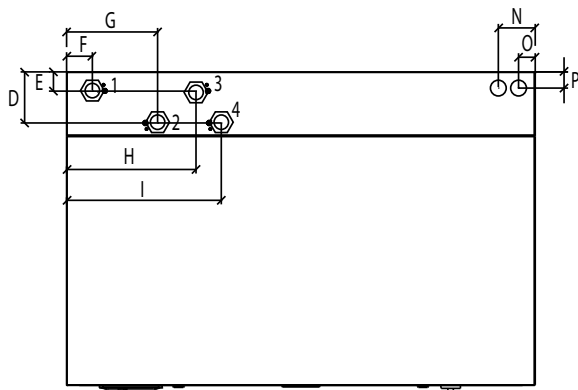
WRL-H 050 - 070 - 080 (3 EXCHANGER)



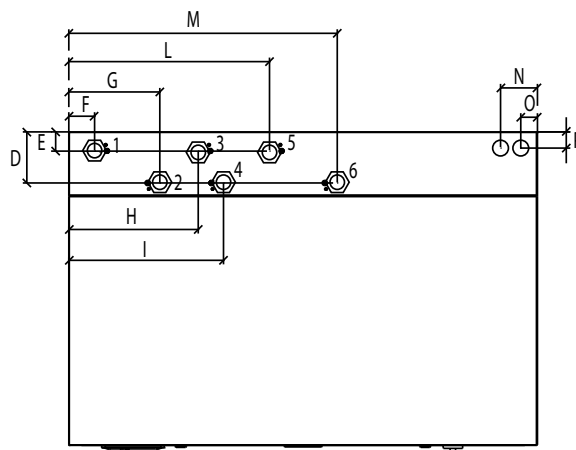
WRL-H 050-070-080 ATTACHMENTS POSITION (mm) 3 EXCHANGER										
D	E	F	G	H	I	L	M	N	O	P
127	47	55	120	225	290	400	465	90	40	37

WRL-H	IN - OUT					
Sizes	1	2	3	4	5	6
	GEOTHERMAL SIDE		SYSTEM SIDE		DHW SIDE (if present)	
025	OUT F 1 ¹ / ₄	IN F 1 ¹ / ₄	OUT F 1 ¹ / ₄	IN F 1 ¹ / ₄	OUT F 1 ¹ / ₄	IN F 1 ¹ / ₄
030	OUT F 1 ¹ / ₄	IN F 1 ¹ / ₄	OUT F 1 ¹ / ₄	IN F 1 ¹ / ₄	OUT F 1 ¹ / ₄	IN F 1 ¹ / ₄
040	OUT F 1 ¹ / ₄	IN F 1 ¹ / ₄	OUT F 1 ¹ / ₄	IN F 1 ¹ / ₄	OUT F 1 ¹ / ₄	IN F 1 ¹ / ₄
050	OUT F 1 ¹ / ₄	IN F 1 ¹ / ₄	OUT F 1 ¹ / ₄	IN F 1 ¹ / ₄	OUT F 1 ¹ / ₄	IN F 1 ¹ / ₄
070	OUT F 1 ¹ / ₄	IN F 1 ¹ / ₄	OUT F 1 ¹ / ₄	IN F 1 ¹ / ₄	OUT F 1 ¹ / ₄	IN F 1 ¹ / ₄
080	OUT F 1 ¹ / ₄	IN F 1 ¹ / ₄	OUT F 1 ¹ / ₄	IN F 1 ¹ / ₄	OUT F 1 ¹ / ₄	IN F 1 ¹ / ₄

WRL-H 100 - 140 - 160 (2 EXCHANGER)



WRL-H 100 - 140 - 160 (3 EXCHANGER)



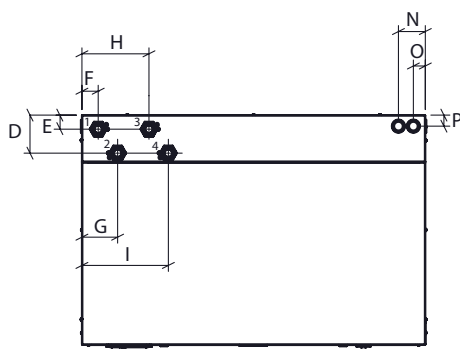
WRL-H	WRL-H 100-140-160 ATTACHMENTS POSITION (mm) 2 EXCHANGER										
/	D	E	F	G	H	I	L	M	N	O	P
100	125,7	47	64	223,5	317,5	380,1	-	-	90	40	40
140	125,7	47	64	223,5	317,5	380,1	-	-	90	40	40
160	125,7	47	64	223,5	317,5	380,1	-	-	90	40	40

WRL-H	WRL-H 100-140-160 ATTACHMENTS POSITION (mm) 3 EXCHANGER										
/	D	E	F	G	H	I	L	M	N	O	P
100	125,7	47	64	223,5	317,5	380,1	492,5	658,6	90	40	40
140	125,7	47	64	223,5	317,5	380,1	492,5	658,6	90	40	40
160	125,7	47	64	223,5	317,5	380,1	492,5	658,6	90	40	40

WRL-H	IN - OUT					
Sizes	1	2	3	4	5	6
	GEOTHERMAL SIDE		SYSTEM SIDE		DHW SIDE (if present)	
100	OUT F 1"¼	IN F 1"¼	OUT F 1"¼	IN F 1"¼	OUT F 1"¼	IN F 1"¼
140	OUT F 1"¼	IN F 1"¼	OUT F 1"¼	IN F 1"¼	OUT F 1"¼	IN F 1"¼
160	OUT F 1"¼	IN F 1"¼	OUT F 1"¼	IN F 1"¼	OUT F 1"¼	IN F 1"¼

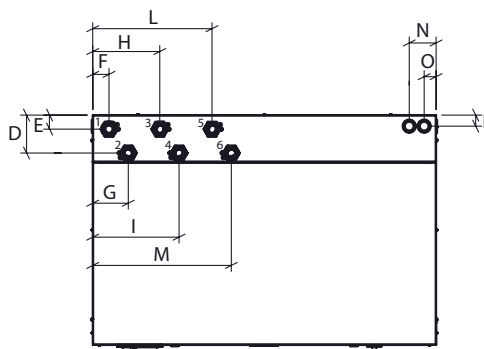
11. WRL-HA HYDRAULIC CONNECTIONS POSITION

WRL-HA 025 - 030 - 040 (2 EXCHANGER)



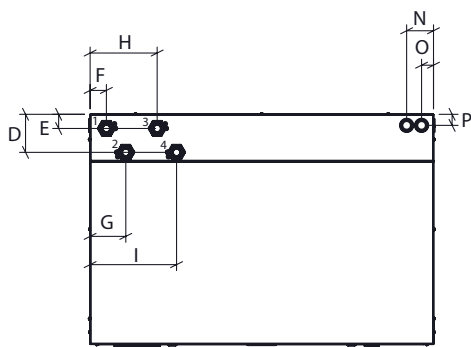
WRL-HA 025-030-040 ATTACHMENTS POSITION (mm) 2 EXCHANGER											
D	E	F	G	H	I	L	M	N	O	P	
127	47	55	120	225	290	-	-	90	40	37	

WRL-HA 025 - 030 - 040 (3 EXCHANGER)



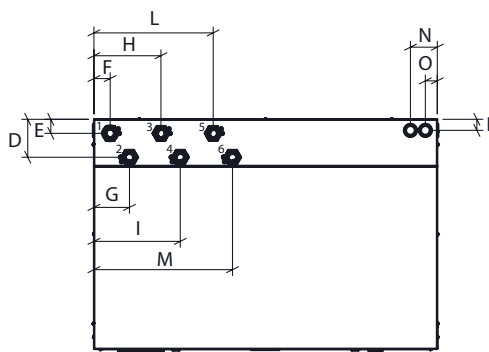
WRL-HA 025-030-040 ATTACHMENTS POSITION (mm) 3 EXCHANGER											
D	E	F	G	H	I	L	M	N	O	P	
127	47	55	120	225	290	400	490	90	40	37	

WRL-HA 050 - 070 - 080 (2 EXCHANGER)



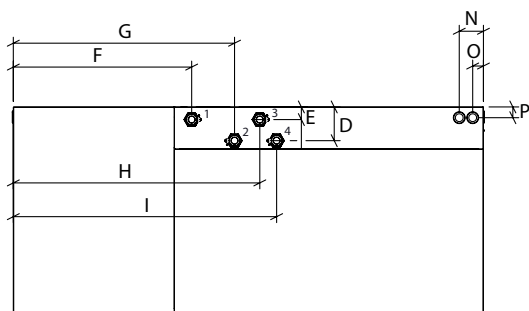
WRL-HA 050-070-080 ATTACHMENTS POSITION (mm) 2 EXCHANGER										
D	E	F	G	H	I	L	M	N	O	P
127	47	55	120	225	290	-	-	90	40	37

WRL-HA 050 - 070 - 080 (3 EXCHANGER)



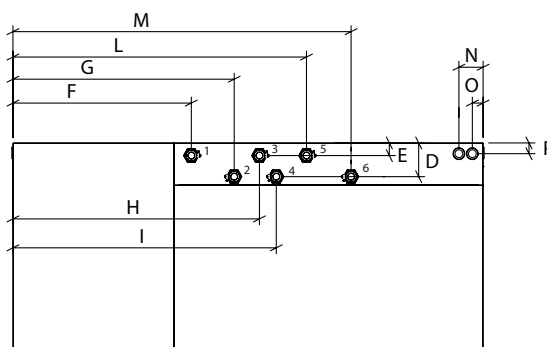
WRL-HA 050-070-080 ATTACHMENTS POSITION (mm) 3 EXCHANGER										
D	E	F	G	H	I	L	M	N	O	P
127	47	55	120	225	290	400	490	90	40	37

WRL-HA 100-140-160 (2 EXCHANGER)



WRL-HA 100-140-160 ATTACHMENTS POSITION (mm) 2 EXCHANGER										
D	E	F	G	H	I	L	M	N	O	P
126	47	664	824	918	980	-	-	90	40	40

WRL-HA 100-140-160 (3 EXCHANGER)



WRL-HA 100-140-160 ATTACHMENTS POSITION (mm) 3 EXCHANGER										
D	E	F	G	H	I	L	M	N	O	P
126	47	664	824	918	980	1093	1259	90	40	40

WRL-HA	IN - OUT					
Sizes	1	2	3	4	5	6
	GEOTHERMAL SIDE		SYSTEM SIDE		DHW SIDE (if present)	
025	OUT F 1"¼	IN F 1"¼	OUT F 1"¼	IN F 1"¼	OUT F 1"¼	IN F 1"¼
030	OUT F 1"¼	IN F 1"¼	OUT F 1"¼	IN F 1"¼	OUT F 1"¼	IN F 1"¼
040	OUT F 1"¼	IN F 1"¼	OUT F 1"¼	IN F 1"¼	OUT F 1"¼	IN F 1"¼
050	OUT F 1"¼	IN F 1"¼	OUT F 1"¼	IN F 1"¼	OUT F 1"¼	IN F 1"¼
070	OUT F 1"¼	IN F 1"¼	OUT F 1"¼	IN F 1"¼	OUT F 1"¼	IN F 1"¼
080	OUT F 1"¼	IN F 1"¼	OUT F 1"¼	IN F 1"¼	OUT F 1"¼	IN F 1"¼
100	OUT F 1"¼	IN F 1"¼	OUT F 1"¼	IN F 1"¼	OUT F 1"¼	IN F 1"¼
140	OUT F 1"¼	IN F 1"¼	OUT F 1"¼	IN F 1"¼	OUT F 1"¼	IN F 1"¼
160	OUT F 1"¼	IN F 1"¼	OUT F 1"¼	IN F 1"¼	OUT F 1"¼	IN F 1"¼

12. SEASON CHANGEOVER

- For every season change, check that the functioning limits lie within the limits.
- Check that the compressor input current is lower than the maximum indicated in the technical data table.
- Check, that in models with three-phase power supply, that the compressor noise level is not abnormal. If this is the case, invert a phase.

- Make sure 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%.

12.3.1. Season changeover from panel on machine

How to activate season changeover: Under the On- Off branch it is possible change the functioning mode of the machine. In the second selection

line (can ONLY be edited if OFF was selected in the first line) it is possible to select the seasonal state of the heat pump (SUMMER, WINTER, DHW ONLY). Clearly according to the machine configured and according to the accessories installed.

NOTE:

ALWAYS REFER TO THE PROCEDURE ILLUSTRATED IN THE USE MANUAL.

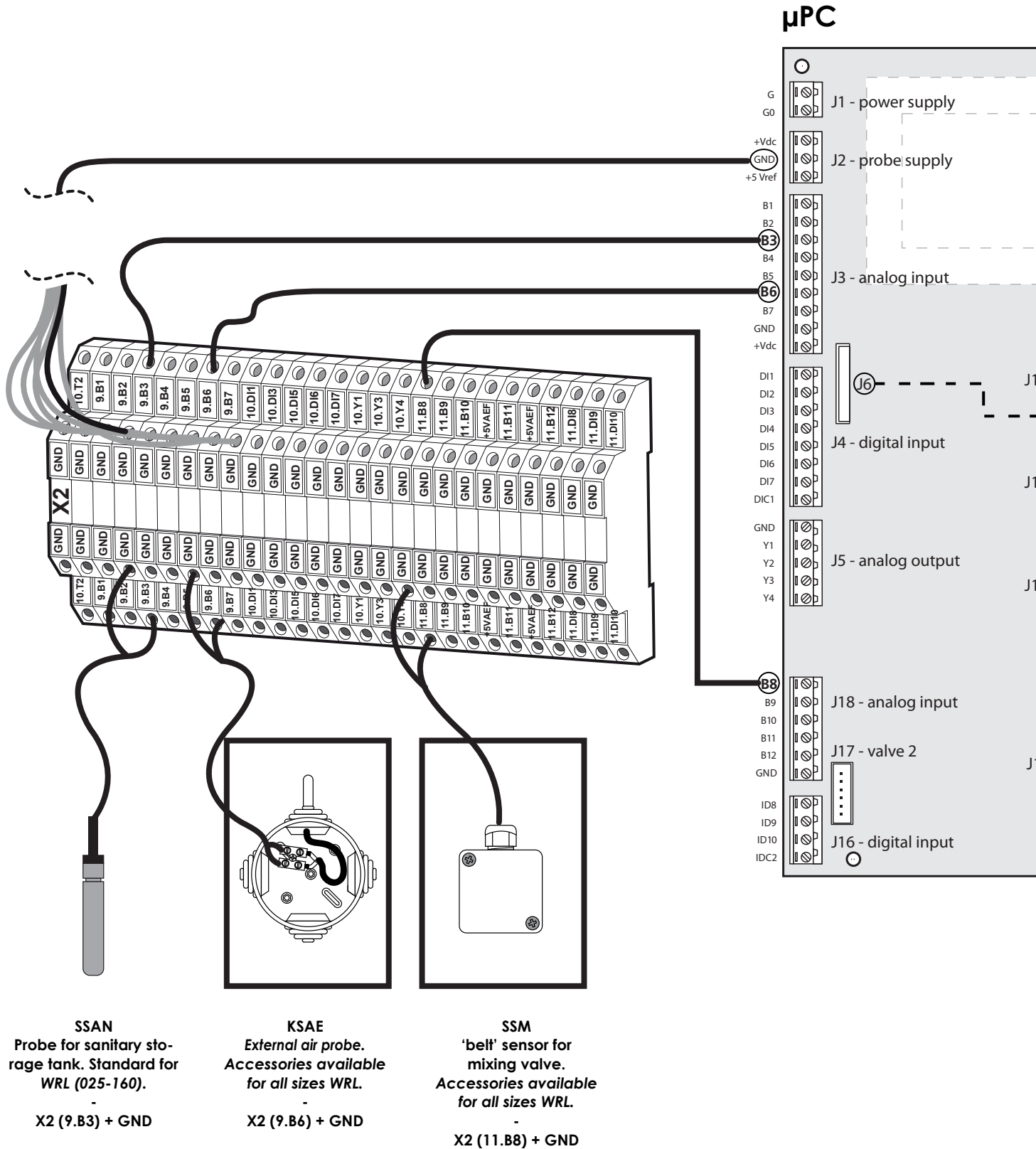


12.1. ► ELECTRICAL DATA

WRL-H	ALIMENTATION	Max Current A	Cable	Main switch
025	230V-1-50Hz	20	3G2,5	25A
	400V-3N-50Hz	9,5	5G1,5	16A
030	230V-1-50Hz	23	3G2,5	25A
	400V-3N-50Hz	10	5G1,5	16A
040	230V-1-50Hz	20,9	3G2,5	25A
	400V-3N-50Hz	10,4	5G1,5	16A
050	400V-3N-50Hz	15,3	5G2,5	20A
	230-3-50Hz	25	4G4	32A
070	400V-3N-50Hz	17	5G2,5	20A
	230-3-50Hz	30	4G6	32A
080	400V-3N-50Hz	18,3	5G2,5	20A
	230-3-50Hz	33	4G6	40A
100	400V-3N-50Hz	24,7	5G4	32A
	230-3-50Hz	48	4G10	50A
140	400V-3N-50Hz	32,1	5G6	40A
	230-3-50Hz	66	4G16	80A
160	400V-3N-50Hz	34,7	5G6	40A
	230-3-50Hz	72	4G25	80A

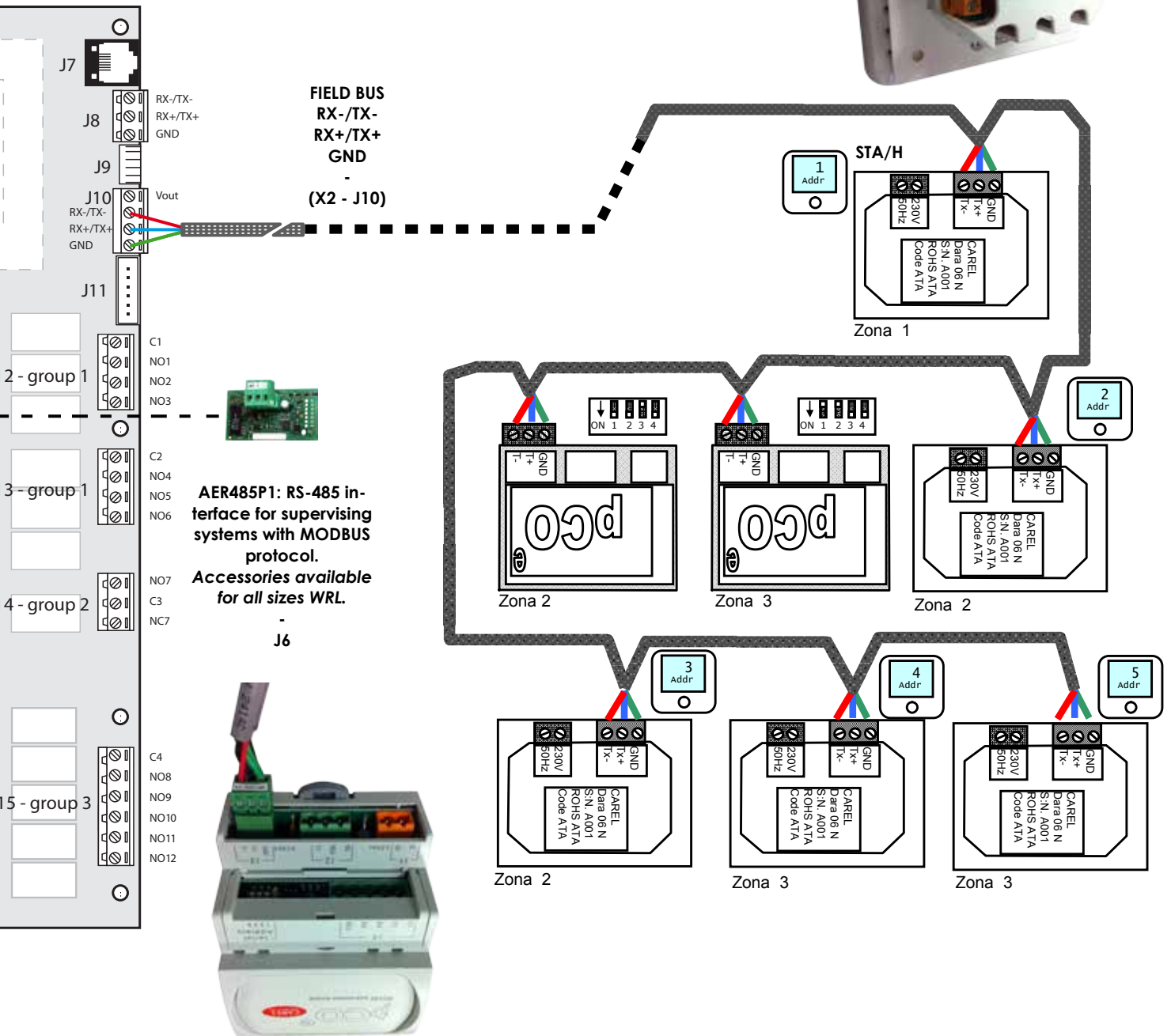
- Recommended cable: FG7(OR) 0,6/1kV
- Maximum length of line: 20m

13. WIRING DIAGRAM



14. MODBUS ELECTRICAL CONNECTION

Through the door named "Field Bus" application, WRL is able to monitor several Modbus slave. Remember to add at the end of a line resistance of 120 ohms between Tx + and Tx-.



ALWAYS REFER TO WIRING ON UNIT (INCLUDED).



ATTENTION:
To change the Modbus address (STA / H) press + FAN POWER for 3 seconds. Enter the password 22 and change the parameter "Addr".

ATTENTION:
The first number listed on the labels of the terminal block X2 identifies the reference page of the wiring diagram. THE NUMBER CAN 'BE UPDATES OR CHANGES.

15. EXTRAORDINARY MAINTENANCE

The WRL-H heat pumps are loaded with R410A gas and factory inspected. Under normal conditions they do not require Technical Assistance related to control of refrigerant gas. Through time gas leakage may be generated from the from the joints, causing refrigerant to escape and discharge the circuit, causing appliance malfunctioning. In these cases the leakage points are to be discovered, repaired and the Gas circuit is to be replenished, respecting the December 28 1993 n°549 law.

15.1.1. Load procedure

The load procedure is the following:

- Empty and dry the entire cooling circuit using a vacuum pump connected to the low and high pressure socket until 10 Pa is read on the vacuum meter. Wait a few minutes and check that this value does not rise above 50 Pa.
- Connect the refrigerant gas cylinder

or a load cylinder to the socket on the low pressure line.

- Load the amount of refrigerant gas indicated on the appliance features plate.
- After a few hours of functioning, check that the liquid indicator indicates the dry circuit (dry-green). In the case of partial loss, the circuit must be emptied completely before being re-loaded.
- The R410A refrigerant must only be loaded in the liquid state.
- Functioning conditions that are different to the nominal conditions can give rise to values that are greatly different.
- The sealing test or the search for leaks must only be performed using R410A refrigerant gas, checking using a suitable leak detector.
- In the cooling circuit it is prohibited to use oxygen or acetylene or other inflammable or poisonous gases because they are a cause of explosions or intoxication.

WARNING

Inspection, maintenance and eventual repair work must be carried out only by a legally qualified technician.

Lack of control/maintenance can cause damage to persons or things.

For appliances installed near to the sea, the maintenance intervals must be halved.

16. ROUTINE MAINTENANCE

All cleaning is prohibited until the unit has been disconnected from the electric power supply mains.

Make sure there is no voltage present before operating.

Periodic maintenance is fundamental to keep the unit perfectly efficient under a functional and energetic point of view. It is therefore essential to carry out periodic yearly controls for the:

16.1.1. Hydraulic circuit

CHECK:

- Refilling of water circuit
- Cleaning the water filter
- Control of flow switch
- No air from the circuit (bleed)
- That the water flow rate to the evaporator is constant
- The thermal insulation of the hydraulic piping
- The percentage of glycol where necessary
- Please provide, in the periodical operations of ordinary maintenance, also the control and the tightening of hydraulic connections.

16.1.2. Electrical circuit

CHECK:

- Safety efficiency
- Electric supply pressure
- Electrical Input
- Connection tightness
- Functioning of the compressor guard resistance

16.1.3. Cooling circuit

CHECK:

- State of compressor
- Efficiency of the plate heat exchanger resistance
- Work pressure
- Leak test for watertightness control of the cooling circuit
- Functioning of high and low pressure pressure switches
- Carry out the appropriate checks on the filter dryer to check efficiency

16.1.4. Mechanical checks

CHECK:

- The tightening of the screws the compressors and the electrical box, as well as the exterior panelling of the unit. Insufficient fastening can lead to undesired noise and vibrations.
- The condition of the structure. If there are any oxidised parts, treat with paint suitable to eliminate or reduce oxidation.

We recommend to envision a machine book (not supplied, but the user's responsibility), which allows to keep track of the interventions performed on the unit. In this way it will be easy to suitably organise the interventions making research and the prevention of any machine breakdowns easier. Use the date to record date, type of intervention made (routine maintenance, inspection or repairs), description of the intervention, measures actuated...

IT IS forbidden to RELOAD the circuit with a refrigerant gas different to the one indicated. Using a different refrigerant gas can cause serious damage to the compressor.

DISPOSAL

Envisions that disposal of the unit is carried out in conformity with the Standards in force in the different countries.

TROUBLESHOOTING

ANOMALY	CAUSE	REMEDY
The unit does not start	No electric voltage	- Check the presence of voltage - Check the safety systems upstream from the appliance
	- Master switch at OFF - Remote switch at OFF (if present) - Control panel at OFF - Main switch at OFF - Compressor magnet circuit breaker at OFF	Position at ON
	Power supply voltage too low	Check power supply line
	- Remote control switch coil broken - Circuit board broken - Peak condenser broken - Compressor broken	Replace the component
Insufficient yield	- No refrigerant - Appliance dimensioning - Operation outside of operational limits	Verificare
Noisy compressor	- Liquid return to the compressor - Inadequate fixing	Check
	Inverted phase	Invert a phase (400V/3N/50Hz)
Noise and vibrations	Loose screws	Tighten the screws
The compressor stops due to intervention of the protections	- Excessive flow pressure - Low intake pressure - Low power supply voltage - Electric connections fastened badly - Operation outside of operational limits	Check the operational limits using the graphics
	Pressure switch malfunctioning	Replace the component
	Circuit breaker protection intervention	- Check power supply voltage and calibration - Check electric isolation of the windings



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