



HBI_C



HBI_E



HBI_WT / WTS



Installation manual

HBI

080 - 100 - 120 - 140 - 160

AIR-WATER CHILLER/HEAT PUMP



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EN



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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1. GENERAL WARNINGS

⚠ The AERMEC HBI heat pump is manufactured according to the acknowledged technical standards and safety regulations. Designed for air conditioning and the production of domestic hot water (DHW), it must be destined to this use compatibly with the 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.

⚠ The instructions along with all the related documentation must be given to the user of the system, who assumes the responsibility to keep 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 on this subject in different countries. (Ministerial Decree 329/2004).

The appliance must be installed in such a way as to enable maintenance and/or repairs to 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.

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.

⚠ Ensure periodic cleaning and maintenance of the unit after normal functioning in order to guarantee a longer useful life and more reliable operativeness.

⚠ 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 (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.

⚠ The HBI units are manufactured with attention to the individual components in a way to protect both the user and the installer from any accidents.

⚠ After every intervention on the product, qualified staff are advised to pay particular attention to electric connections, especially regarding the stripped part of the wires, which must not exit from the terminal board in any way, thus preventing the possible contact with live parts of the wire itself.

⚠ This instruction manual, along with the user manual, is an integral part of the product: make sure that it always accompanies the appliance, even if transferred to other owners or user or is transferred to another system.

⚠ It is recommended that the installer instructs the user regarding appliance functioning and fundamental Safety Regulations.

⚠ The HBI heat pump must be intended for the use for which it has been expressly manufactured.

THE manufacturer is exempt from any liability, contractual and extracontractual, for injury/damage caused to persons/

animals and objects, due to installation, adjustment and maintenance errors and improper use.

⚠ After the packaging has been removed, check the integrity and completeness of the contents.

If this does not comply, contact the dealer where the appliance was purchased.

⚠ Aermec is not liable for any flooding caused by the intervention of the safety valves.

⚠ Dispose of packaging materials in the appropriate containers at the relevant collection centres.

The waste must be disposed of without hazards for health and without using procedures or methods that could damage the environment.



⚠ During installation, the user must be informed that:

- he must periodically check the working pressure of the hydraulic plant is between 1 and 2 bar, and however not over 3 bar.

-if necessary, have Technical After-sales Centre professionally qualified staff intervene

⚠ EARTH: the unit must be connected to earth reliably!

⚠ If the smell of burning is detected, remove the electric current immediately and contact the after-sales centre.

If the anomaly persists, the unit could be damaged and could cause electric shocks or fires.

⚠ Once installation has been performed, voltage can be applied to the unit only if no problem occurs during the control. For safety reasons, remember that:

⚠ THE HBI heat pump must not be used by children or unassisted disabled persons.

⚠ IT IS dangerous to activate electric devices or appliances such as switches, household appliances etc., if the smell of fuel or burning can be detected.

⚠ Do not touch the HBI heat pump when you are barefoot or when parts of the body are wet or humid.

⚠ Before performing maintenance, disconnect the heat pump from the mains electricity, positioning the system bi-polar switch at off

⚠ It is prohibited to modify the safety or regulation devices without authorisation or indications from the manufacturer

⚠ do not pull, disconnect, twist the electric cables leaving the heat pump even if these are disconnected from the mains power supply

⚠ do not leave containers and inflammable substances in the room where the appliance is installed

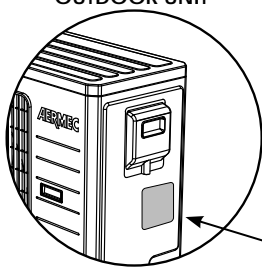
⚠ It is prohibited to disperse and leave packaging material within the reach of children as it can be a potential source of danger.

⚠ It is prohibited to plug the condensate drain.

⚠ Do not **climb onto the unit or place anything on it.**

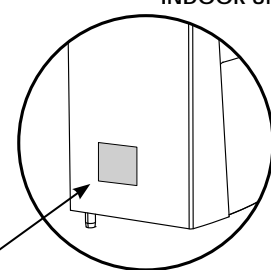
⚠ Do not use multiple sockets or mobile terminal blocks for connection of electric cables


OUTDOOR UNIT



Technical plate

INDOOR UNIT








ATTENTION

Before installation, control that the electric power used is in compliance with that stated on the identification plate and check safety of the current.


Mode ON/OFF


=


Display in stand-by

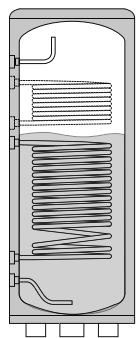
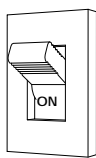


High voltage



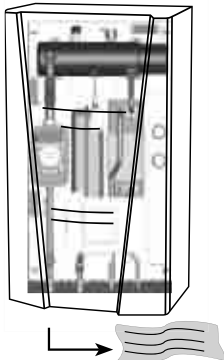
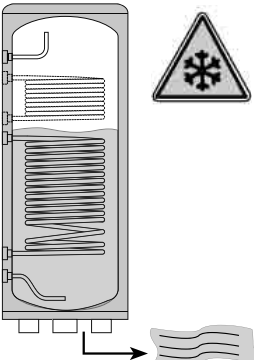

Switch to OFF to cut power supply to the machine

The On/off indications refer to switch-on and switch-off of the printed circuits by the users, while cutting the power supply off means removing the power supply current to the unit







Water tank full water with unit in functioning

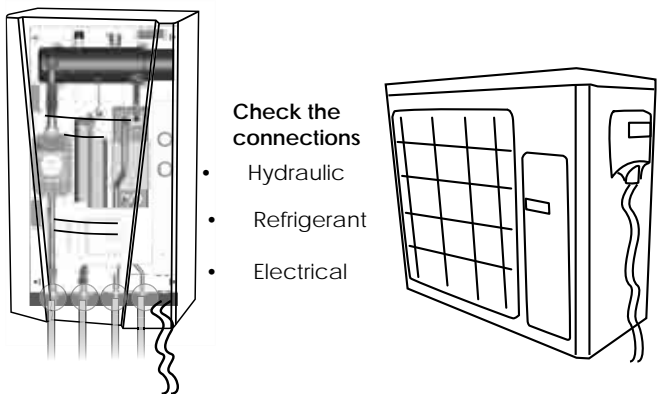
Do not use the unit if there is no water in the tank.

The water in the unit and pipes must be drained if the unit is not used, to prevent the tank, pipes and water pump from breaking due to the formation of ice.

Do not expose the unit directly to a corrosive environment, with water or humidity.



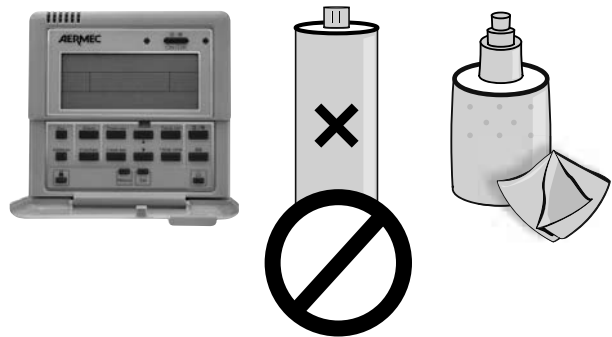
Check the connections

- Hydraulic
- Refrigerant
- Electrical

Before using the unit, control and confirm that the electric cables and water pipes are connected correctly to prevent water leaks, electric shocks, fires etc.



Never press the button using sharp objects



Do not clean the manual control device with benzene, thinners or chemical cloths in order to prevent surface discoloration and damage to the components. Clean the unit using a cloth soaked in neutral detergent. Delicately clean the display screen and the connection parts to prevent discoloration.



Do not climb onto the unit or place anything on it.

If in doubt, contact the local dealer, the authorised after-sales centre, the branches or our company directly.

2. IDENTIFICATION OF THE PRODUCT

HBI can be identified by:

- PACKING LABEL
which shows the product identification data
- TECHNICAL PLATE
Positioned on the right lateral side-member of the outdoor unit and on the left side of the indoor unit casing

⚠ WARNING

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

The HBI air-water heat pump with **Inverter technology**, is made up from an outdoor condensing unit, indoor evaporating unit (function inverted in heat pump) and HBI WT/WTS storage tank (available as accessory). The **functions** are the following

- Test
- Low noise
- Emergency control
- Instant hot water (for DHW use)
- Anti-freeze
- Antilegionella

Indoor unit supplied (hydraulic side) with:

- technical water filter
 - plate exchanger
 - expansion vessel (10 litres)
 - 2 step electric resistances (3kW+3kW) can be activated/deactivated
 - air vent
 - safety valve (3 bar)
 - flow switch
 - manometer
 - **Length of the cooling lines** up to 30m, maximum level difference between outdoor unit and indoor unit 15m
 - **Outdoor unit** supplied with Electric Resistance Kit
- Base to prevent the formation of ice during heat pump functioning mode
- **Indoor unit set-up for the management of accessory (not available as an accessory):**
 - 2-way valve
 - 3-way valve
 - Environmental thermostat
 - **Room Temperature Probe (supplied)**, can be installed in the wall in a rectangular 3-module recess box (type 503)
 - Weekly Timer
 - Auto-Restart Function
 - **Operational limits:**
 - **Cooling**
Outdoor air temperature +10, 48C
 - **Heating**
Outdoor air temperature -20, 35C
 - **Domestic Hot Water Production**
Outdoor air temperature -20, 45C

3.1. OPERATIONAL MODE

Cooling: in this mode, the indoor unit supplies cooled water (to the system, to the fan coils) in a way to allow heat exchange, cooling the room temperature

Heating: in this mode, the indoor unit supplies system hot water to the fan coils in a way to allow heat exchange, heating the room temperature

Heating of DHW: it is the specific mode for the production of DHW.

⚠ ATTENTION: *the indoor HBI unit does not produce DHW directly, but just hot water for heating the content of the HBI WT/WTS storage tank.*

Cooling or heating + heating of DHW:

The cooling or heating modes can be combined with the production of domestic hot water; naturally, if these combined modes are used, the system will assign a priority to the system/domestic requests, on the basis of which the system will satisfy first one and then the other.

⚠ ATTENTION: *the default settings envision that the priority is assigned to the COOLING or HEATING mode, with respect to the production of domestic hot water. Therefore, if the system receives two simultaneous requests, the first to be satisfied will be for cooling or heating.*

⚠ ATTENTION: *refer to the user manual in order to modify the default settings*

3.2. OPERATIONAL FUNCTIONS

Every functioning mode allows to set different specific functions (as well as switch-on/off of the unit and setting the work set-points); these functions are:

A Unit TEST function (installer use only):
Allows to check the correct functioning of the system components; this function is for installer use only.

B Low noise function:
This function regulates unit functioning in a way to allow to lower the noise level produced when the machine is running.

C Emergency heating function:
If the unit has been stopped by an alarm or malfunctioning, this function allows to reach the hot water production set-point (both system and for production of DHW) only using the electric resistances present in the system (HBI indoor unit, HBI WT/WTS).

D Instant hot water function (for DHW use):

This function allows to reduce DHW production times using the hot water produced by the indoor HBI unit and the electric resistance inside the HBI WT/WTS storage tank (ATTENTION: the use of this function increases the absorption of current in the system)

E Anti-freeze function:

This function allows to maintain the room temperature parameter (room air sensor mandatory) within a determined safety threshold in order to prevent the room temperature from dropping too low.

F Anti-legionella function:

This function allows to perform the anti-legionella cycle for the water contained in the HBI WT/WTS storage tank; this cycle will be performed once a week (on the day and time set by the user).

G TIMER functions:

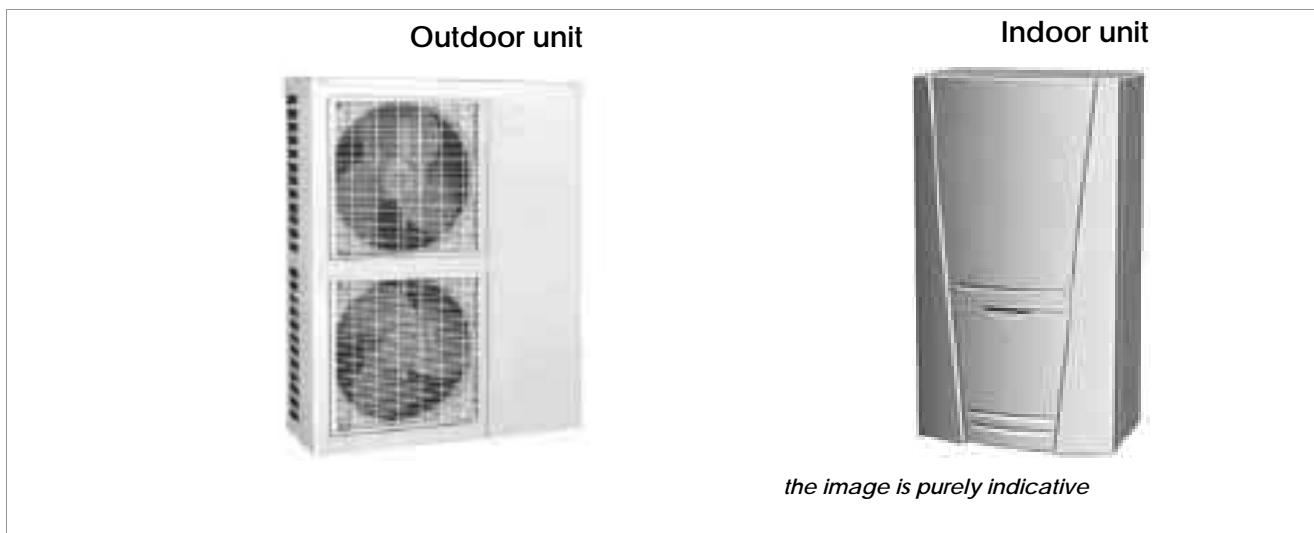
The unit is supplied with a timer via which it is possible to perform different operations linked to hourly programming; these functions are:

- Daily timer;
- Timer with countdown;
- Weekly timer;
- Holiday timer;

H Automatic heating function:

This function allows the unit (on the basis of the user settings) to automatically calculate the temperature to apply to the room; this function bases its functioning on the room air temperature and it is therefore necessary to use the room air sensor in order to operate this function. The table below gives the compatibility between functioning mode and the functions previously listed:

4. DEFAULT SETTINGS



⚠ ATTENTION: The HBI unit is set by default on cooling or heating priority

⚠ WARNING: To set the priority on **production of DHW**, refer to the user manual (**Setting LEVEL 1 OPERATIONAL PARAMETERS CHAPTER**).

⚠ Domestic hot water priority: set the parameters with index **08 - 09** on **value 1** (as indicated in the table below).

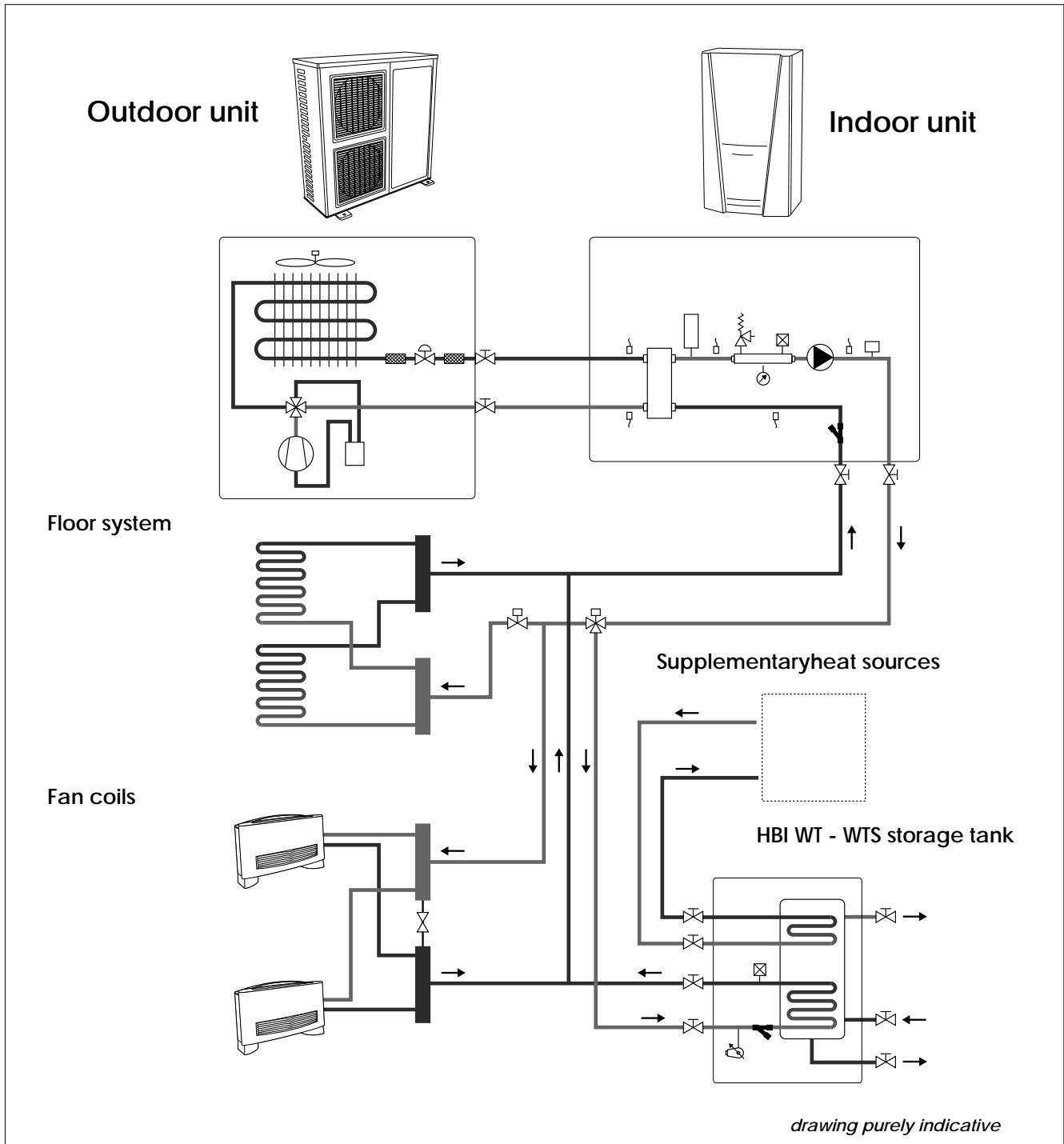
⚠ Anti-legionella Cycle: function can be set via Control Panel on the HBI_E indoor unit

INDEX	MODE:	VALUE	PRIORITY
08	cold	0	cooling request
		1	domestic hot water production mode
09	hot	0	heating request
		1	domestic hot water production mode




















refer to the user manual for further information

Function	HEATING Mode	COOLING Mode	DHW Mode	HEAT. +DHW Mode	COOL. +DHW Mode
A	✓	✓	✓	✓	✓
B	✓	✓	✓	✓	✓
C	✓		✓	✓	
D			✓		
E	✓				
F			✓		
G	✓	✓	✓	✓	✓
H	✓				

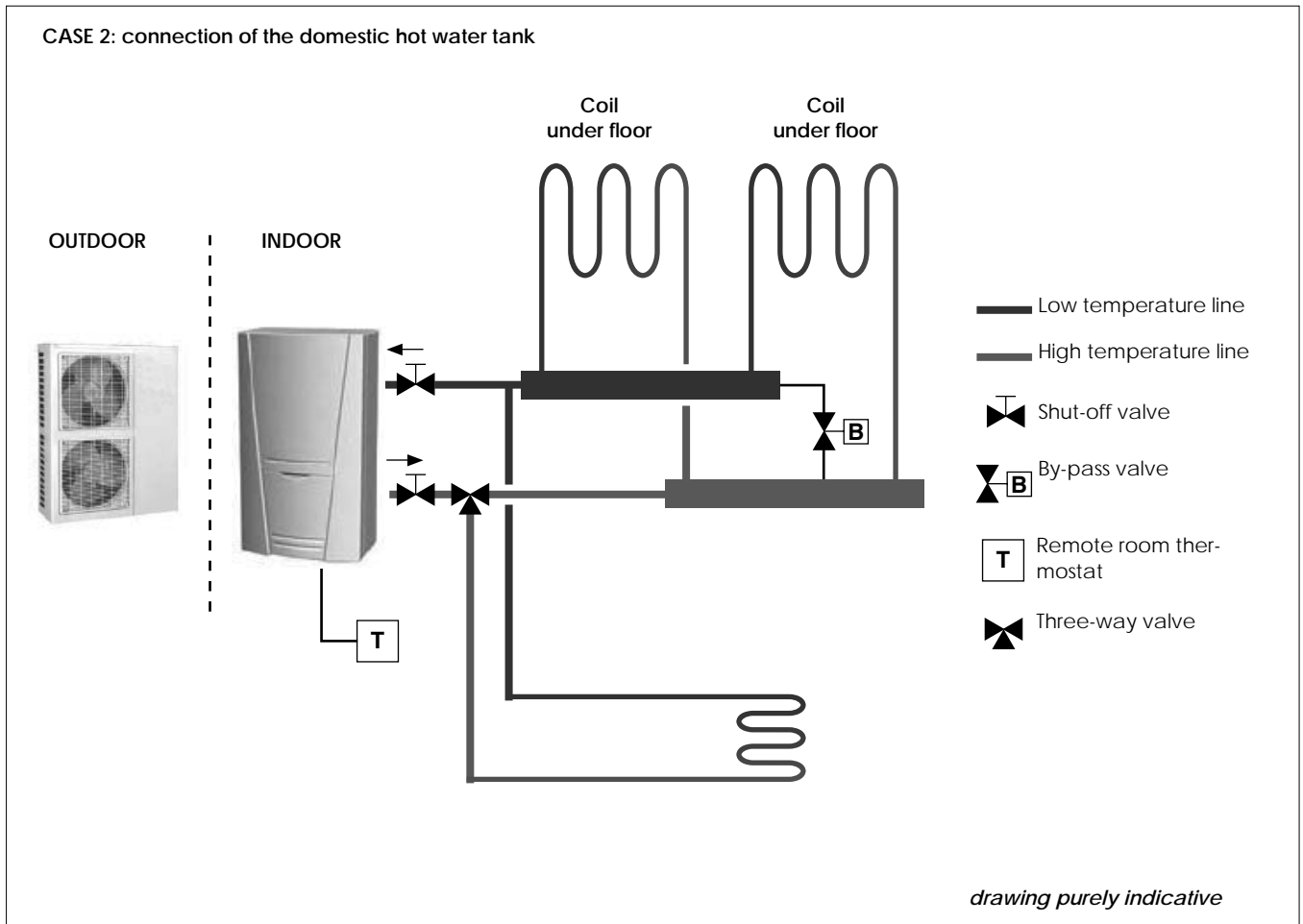
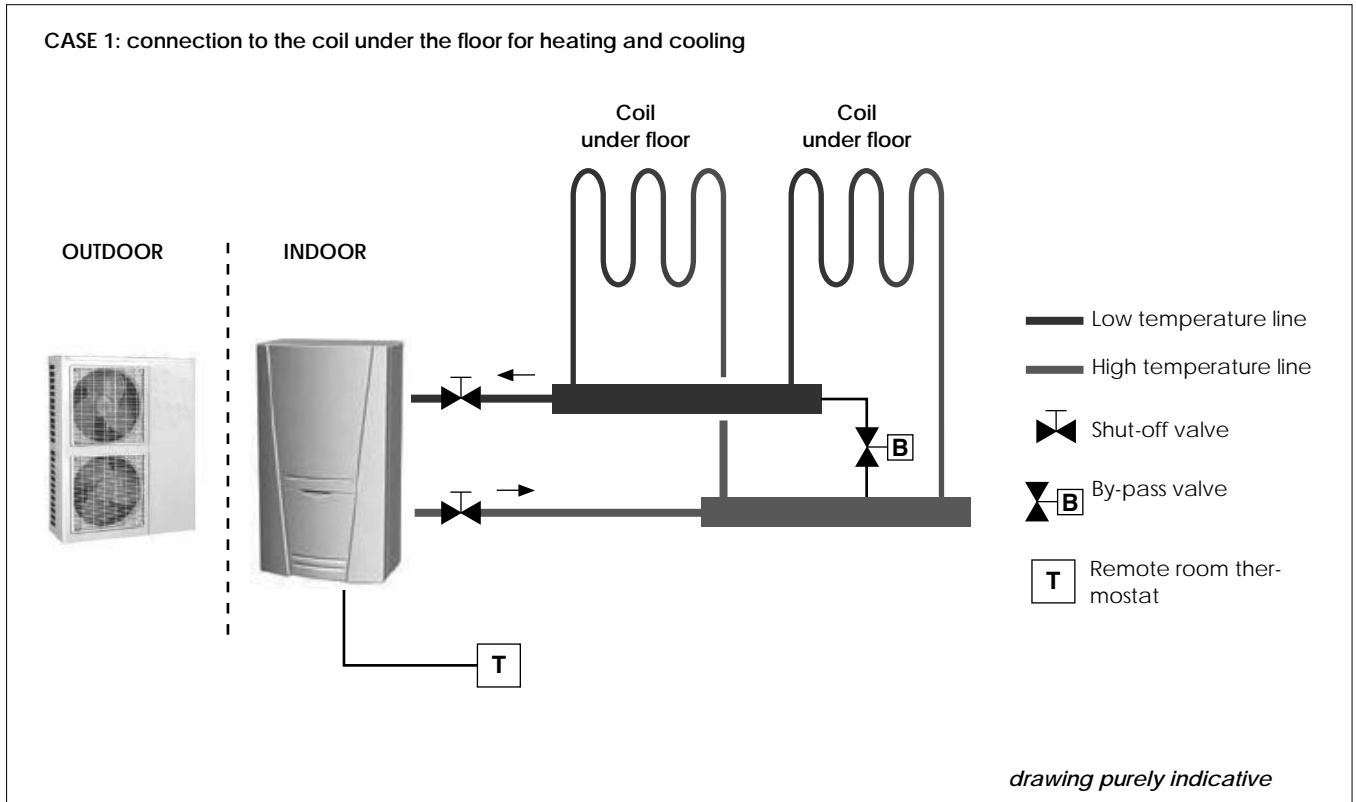
5. OPERATIONAL PRINCIPLE LAYOUT



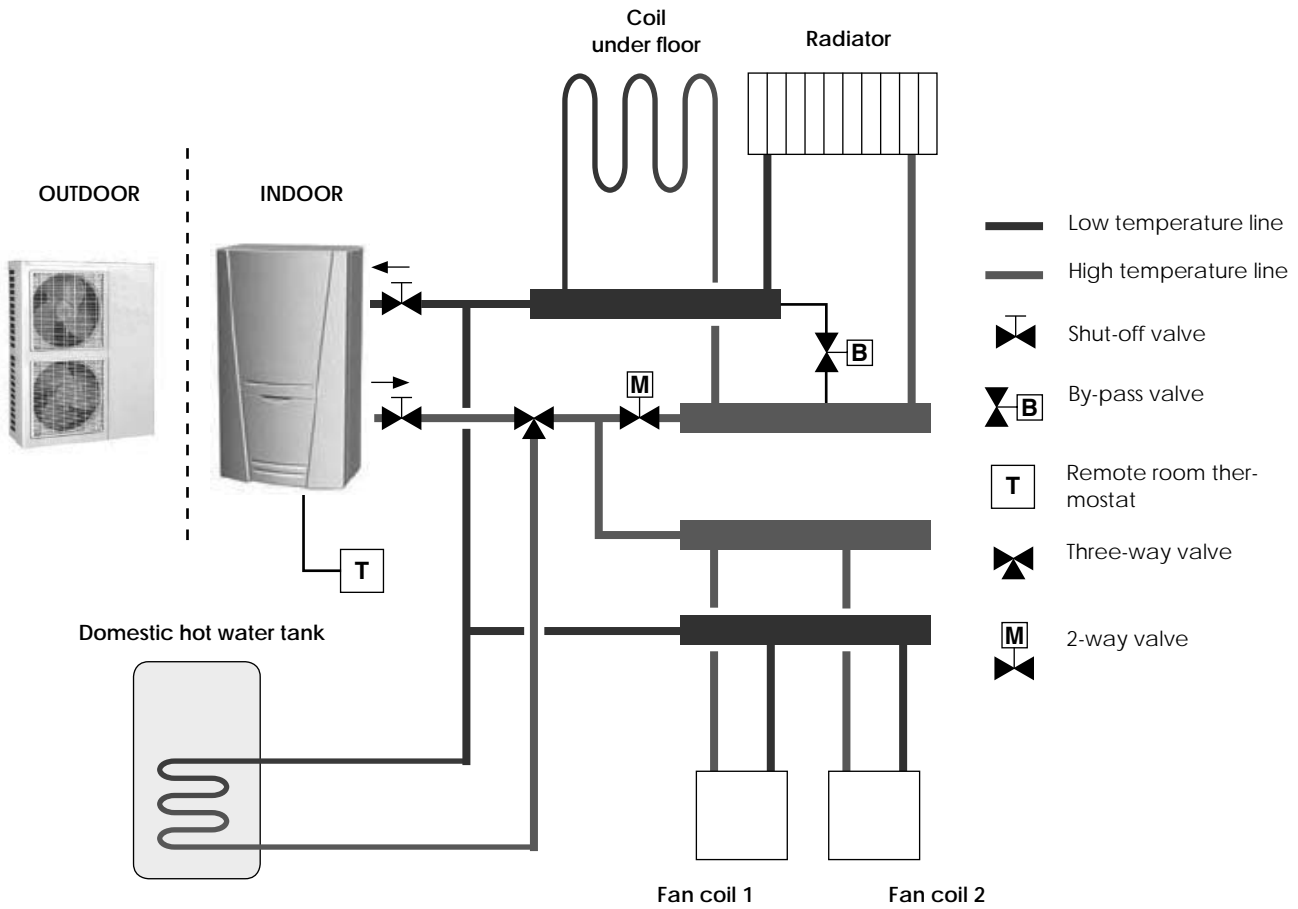
Key

	1 - compressor		10 - electric resistance		R1T plate outlet temperature probe
	2 - 4-way valve		11 - flow meter		R1T plate outlet temperature probe
	3 - finned heat exchanger		12 - three-way valve		R2T liquid line temperature probe
	4 - fan motor		13 - 2-way valve		R3T gas line temperature probe
	5 - dehydrator filter		14 - by-pass valve		R4T return water temperature probe
	6 - electronic expansion valve		19 - expansion vessel		R5T outlet water temperature probe
	7 - plate heat exchanger		20 - safety valve		R6T water tank temperature probe 1
	8 - pump		9 - air vent valve		R7T water tank temperature probe 2
	9 - liquid separator		System loading		

6. EXAMPLE OF INSTALLATION




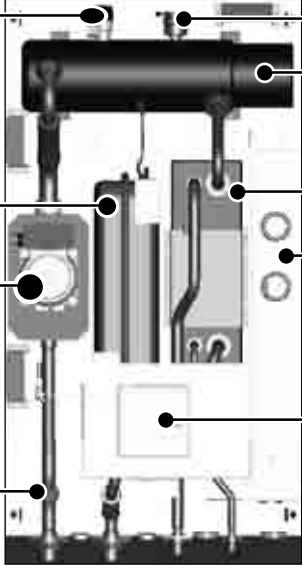
CASE 3: connection of the domestic hot water tank and heat emitters for heating and cooling

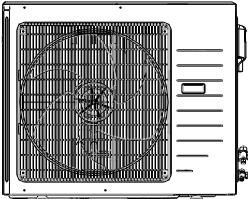
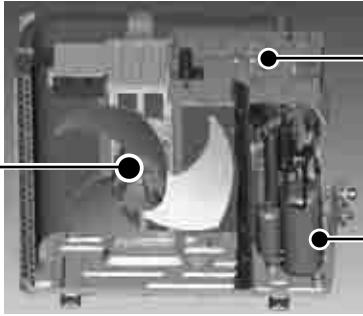
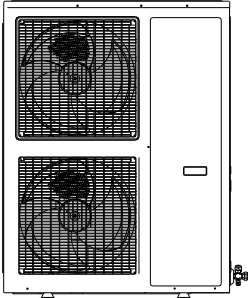
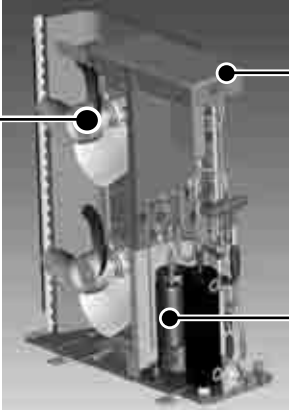


The 2-way valve is very important for preventing the condensation of dew on the floor and on the radiator in cooling mode.

drawing purely indicative

7. MAIN COMPONENTS

Indoor units		
Model	External view	Internal view
<ul style="list-style-type: none"> • HBI080E • HBI100E • HBI120E • HBI140E • HBI160E 		 <p> Safety valve Expansion vessel Water pump Flow switch Air vent Electrical heater Plate heat exchanger. Control box Control panel </p> <p><i>the image is purely indicative</i></p>

Indoor units		
Model	External view	Internal view
<ul style="list-style-type: none"> • HBI080C • HBI100C 		 <p> DC fan motor Control box Compressor </p>
<ul style="list-style-type: none"> • HBI120C • HBI140C • HBI160C 		 <p> DC fan motor Control box Compressor </p> <p><i>the image is purely indicative</i></p>

8. GUIDE LINES FOR INSTALLATION OF THE OUTDOOR UNIT

Unit installation must be in compliance with local and national safety codes.

Do not install the unit alone. Contact your dealer after the machine has been purchased.

Professional installers will perform installa-

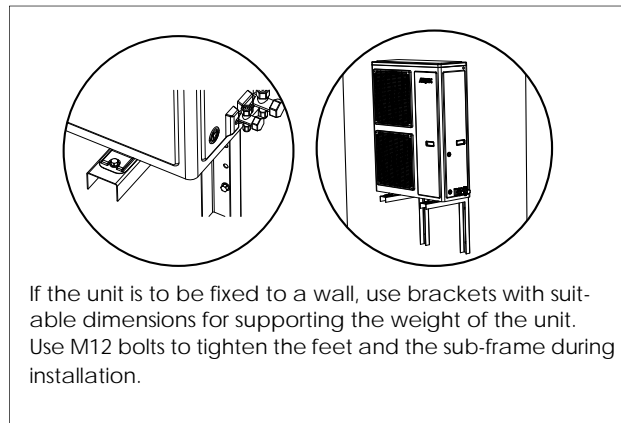
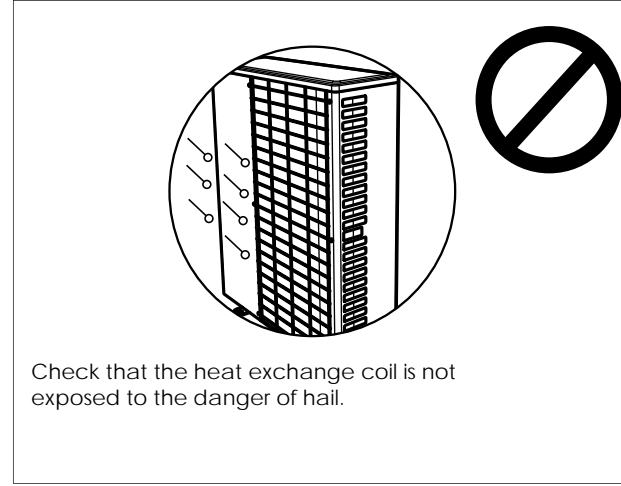
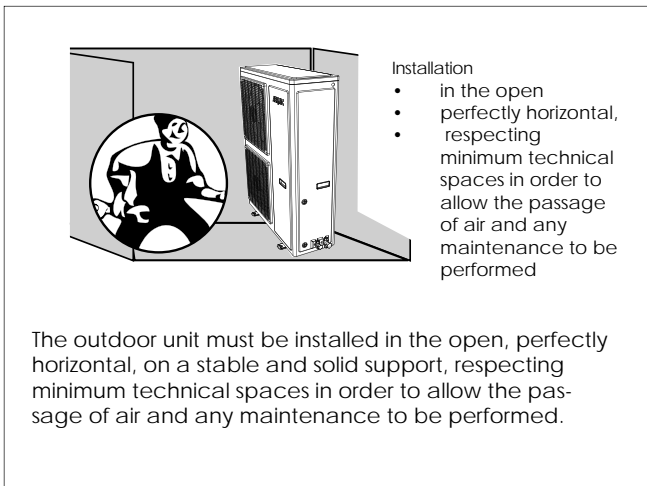
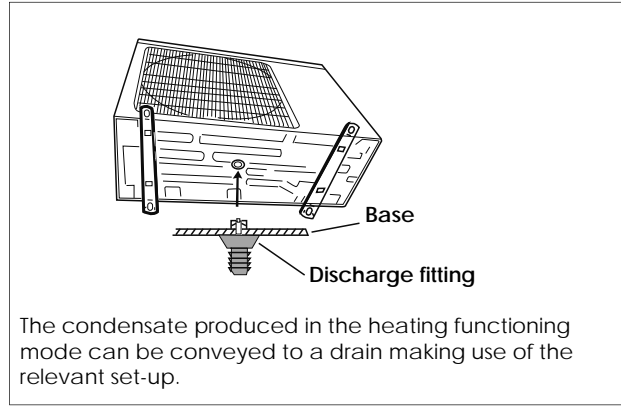
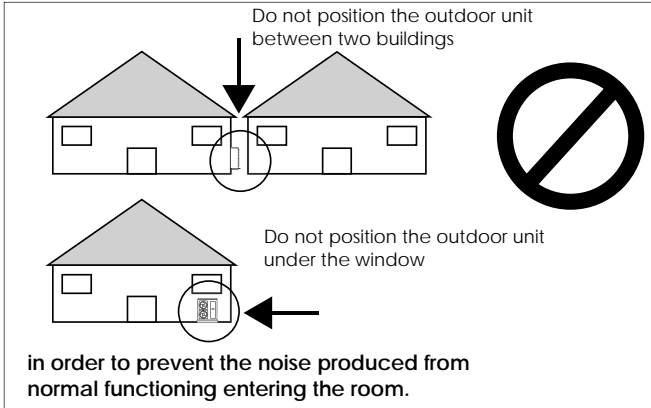
tion and insertion in compliance with that stated in the installation manual.

Do not connect electric plugs until the installation jobs have been completed.

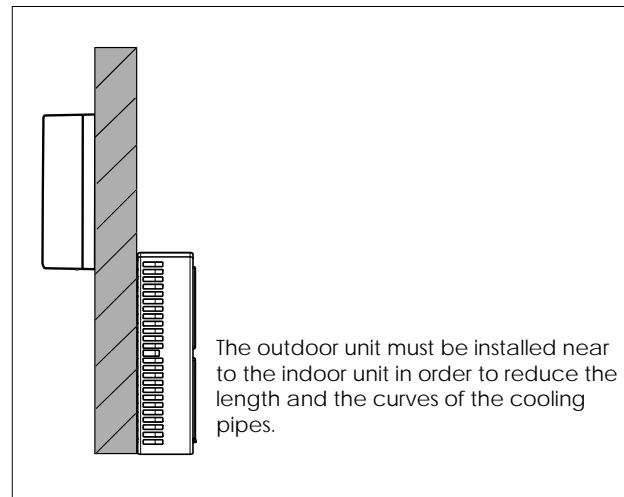
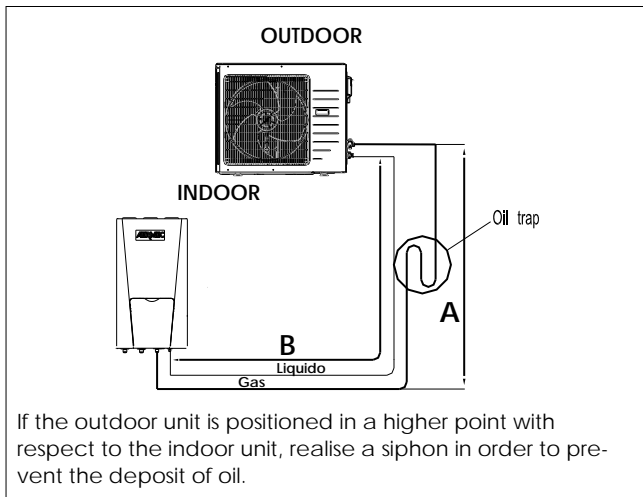
Follow the wiring diagrams supplied with the equipment and shown in this docu-

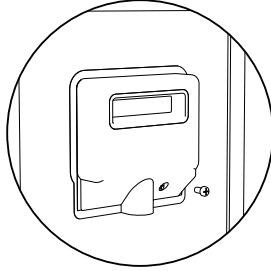
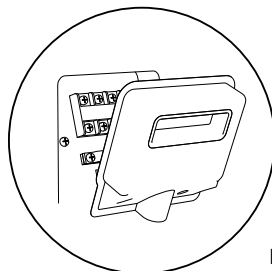
ment when making the connections.

The unit is built with materials treated to resist weather and therefore does not have to be particularly protected.



the image is purely indicative



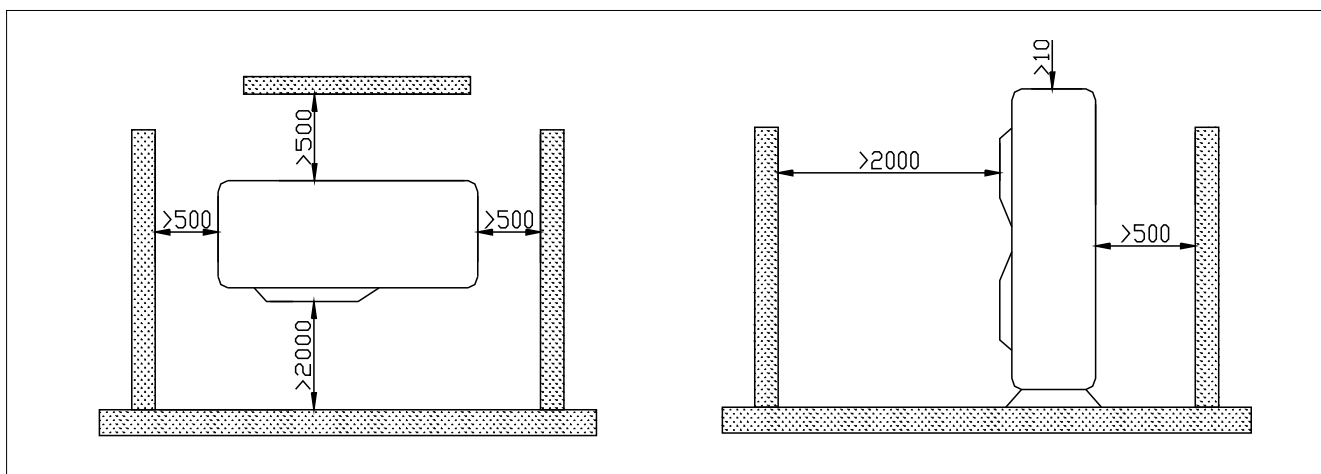
INPUT CABLES

ELECTRIC CONNECTIONS TO THE OUTDOOR UNIT

- Remove the terminal board cover panel.
- Connect the cables to the unit clamps as indicated in the wiring diagrams. Pay attention that every cable is connected correctly to the terminal boards of the two units.
- Re-position the terminal board cover panel.

*drawing referred to the unit HBI080C - HBI100C
the image is purely indicative*

9. SPACE REQUISITES FOR INSTALLATION OF THE OUTDOOR UNIT



Precautions for installation of the outdoor unit:

- Use M12 bolts to tighten the feet and the sub-frame during installation.
- The outdoor unit must be installed on a solid base measuring 10 cm in

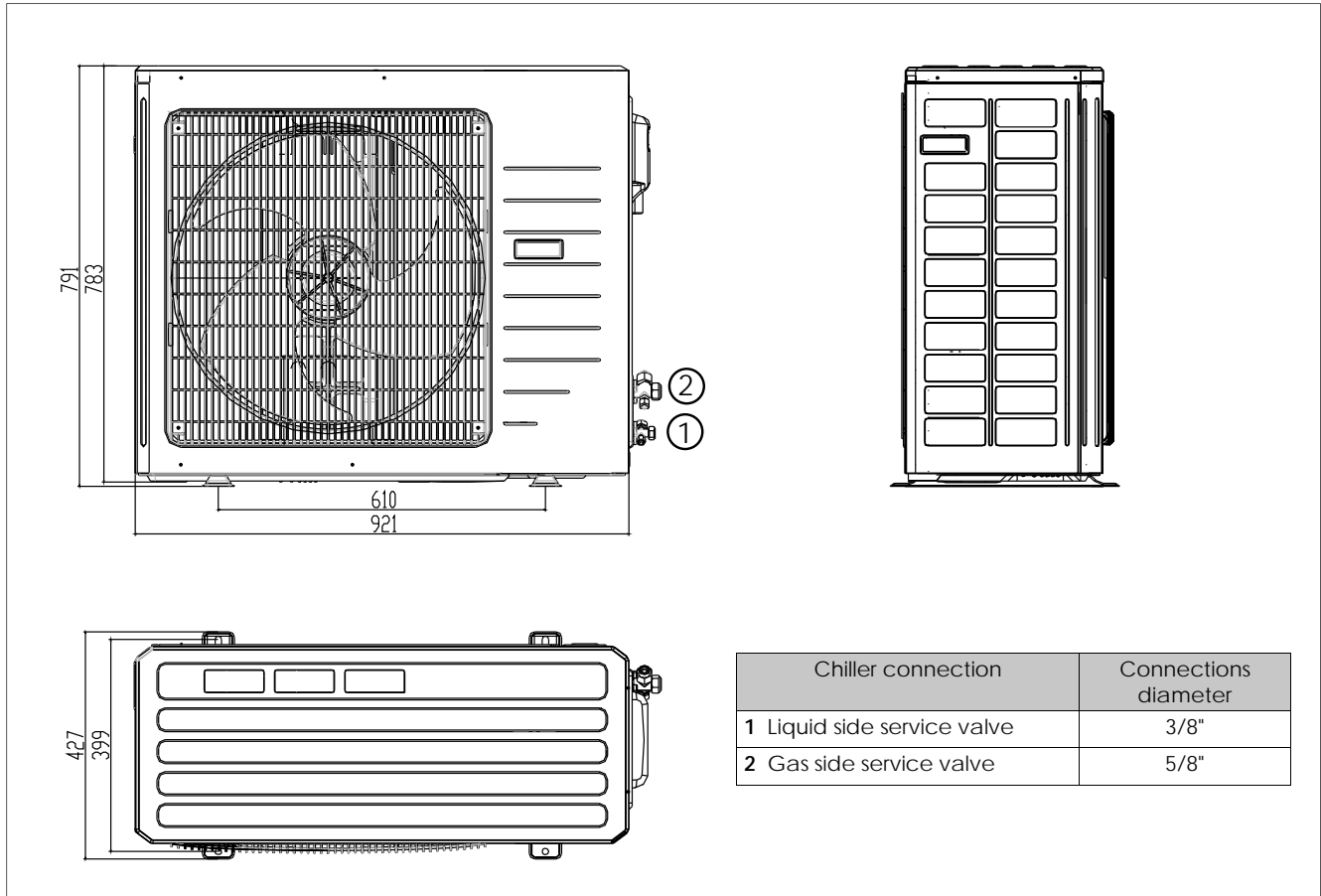
height

- The requisites for the installation clearance of the unit body are demonstrated in the following layout.
- The outdoor unit must be lifted acting on the relevant hole.

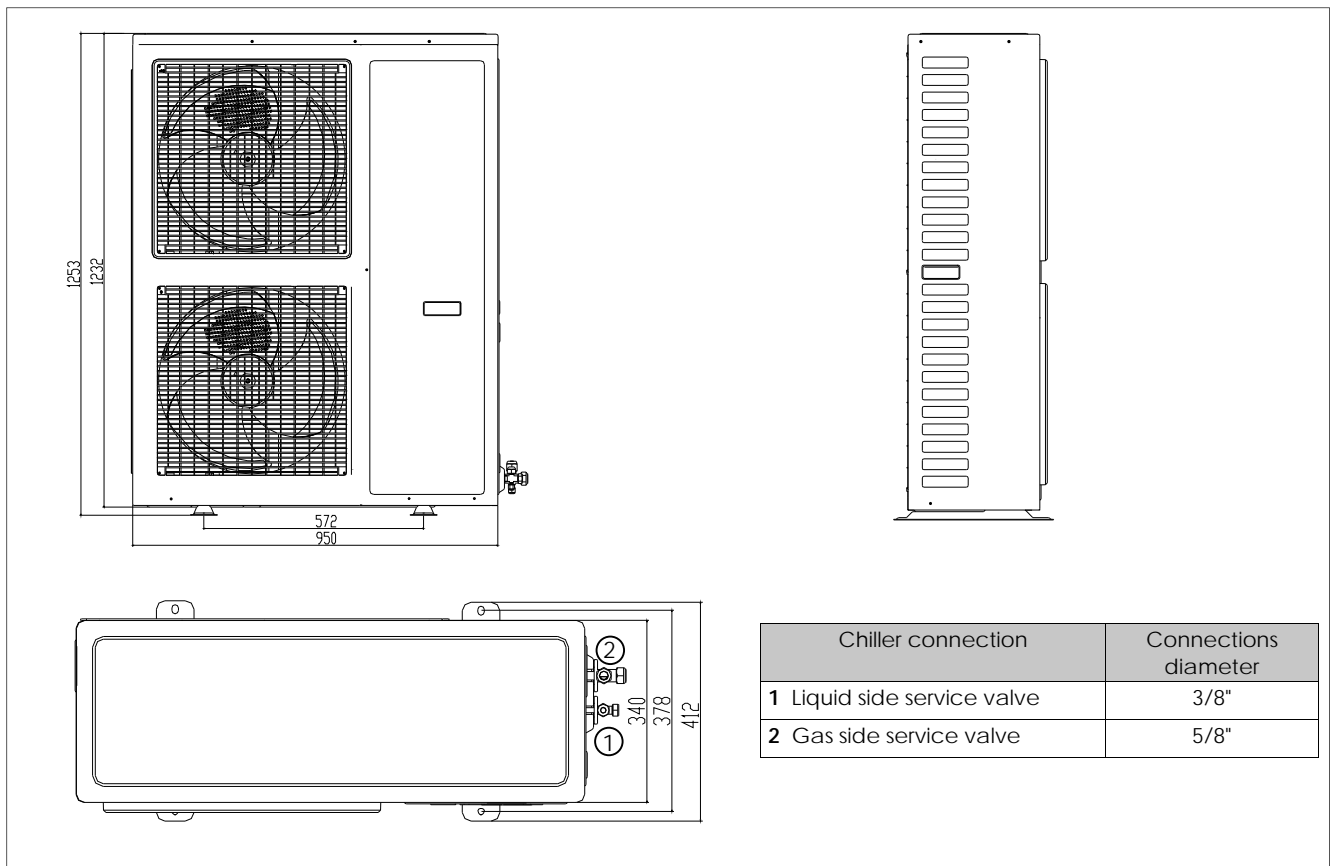
Protect the unit during lifting. Do not strike metal parts, to prevent the formation of rust.

10. OUTDOOR UNIT DIMENSIONS

10.1. OUTDOOR UNIT CLEARANCE (HBI080C - HBI100C)

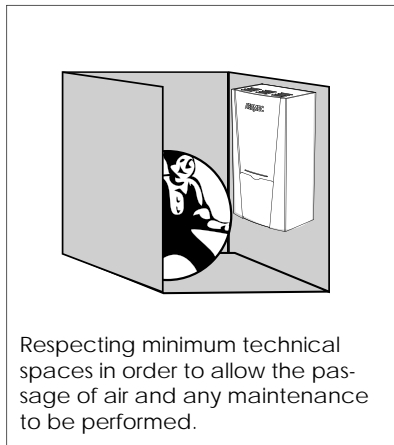


10.2. OUTDOOR UNIT CLEARANCE (HBI120C - HBI140C - HBI160C)

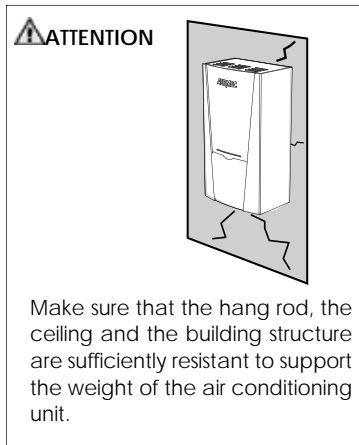


11. GUIDE LINES FOR INSTALLATION OF THE INDOOR UNIT

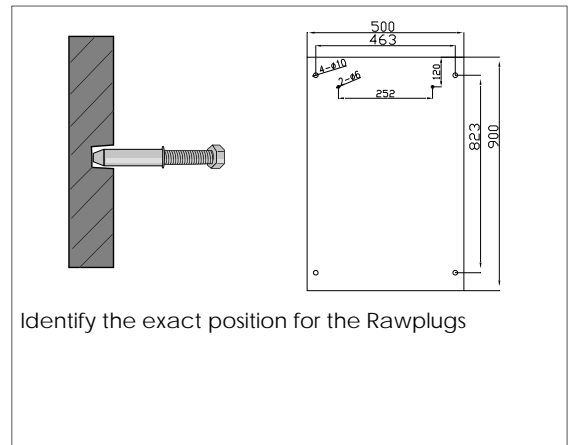
Select the position where the unit is to be installed depending on the layout of the room, any architectonic limits and customer requirements.



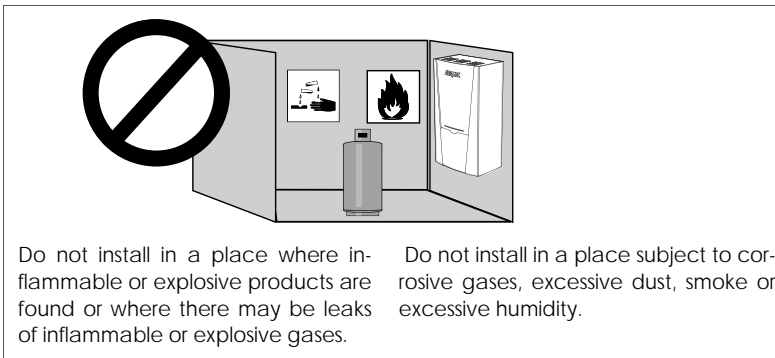
Respecting minimum technical spaces in order to allow the passage of air and any maintenance to be performed.



ATTENTION
Make sure that the hang rod, the ceiling and the building structure are sufficiently resistant to support the weight of the air conditioning unit.

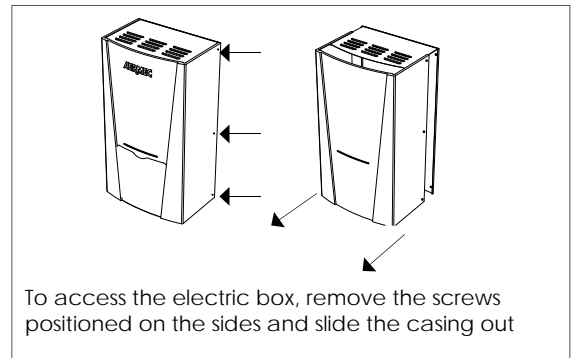


Identify the exact position for the Rawplugs

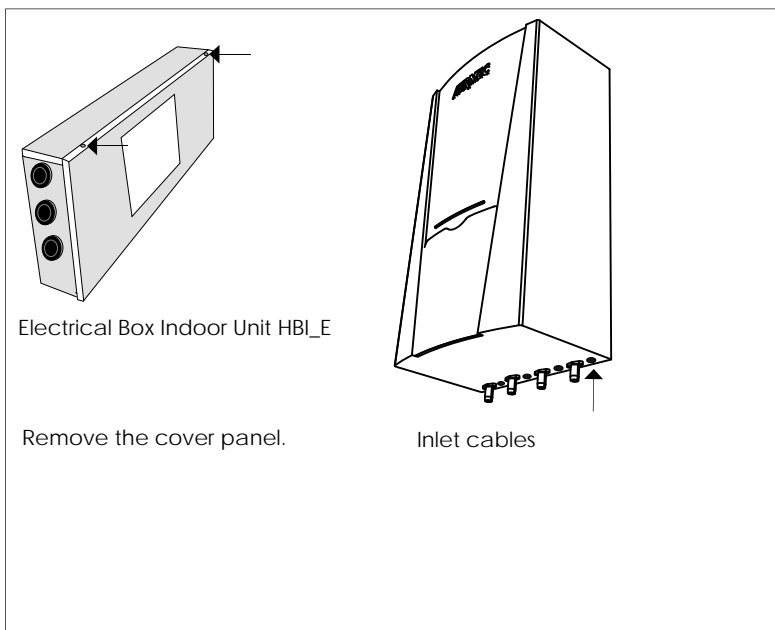


Do not install in a place where inflammable or explosive products are found or where there may be leaks of inflammable or explosive gases.

Do not install in a place subject to corrosive gases, excessive dust, smoke or excessive humidity.



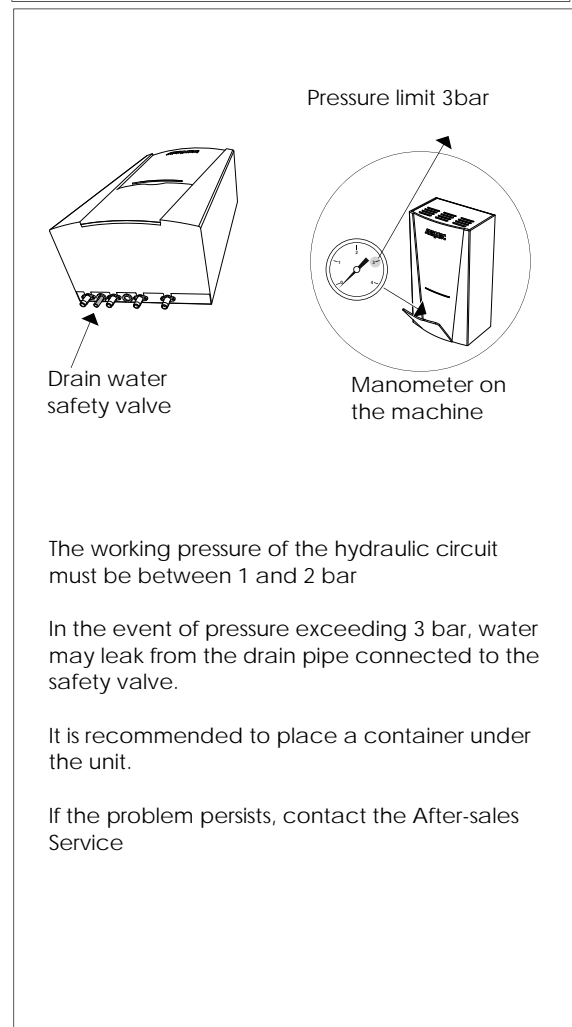
To access the electric box, remove the screws positioned on the sides and slide the casing out



Electrical Box Indoor Unit HBI_E

Remove the cover panel.

Inlet cables



Pressure limit 3bar

Drain water safety valve

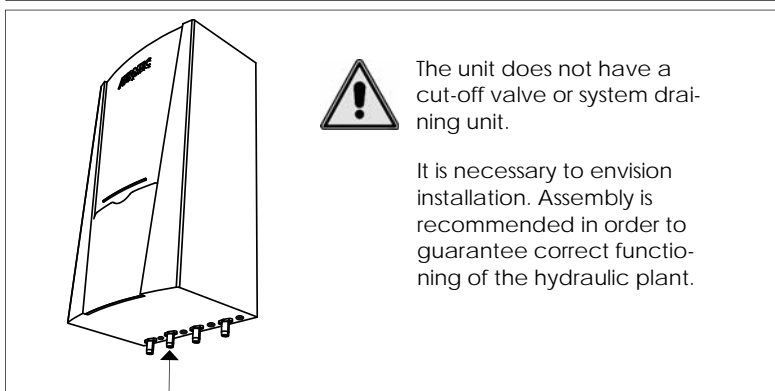
Manometer on the machine

The working pressure of the hydraulic circuit must be between 1 and 2 bar

In the event of pressure exceeding 3 bar, water may leak from the drain pipe connected to the safety valve.

It is recommended to place a container under the unit.

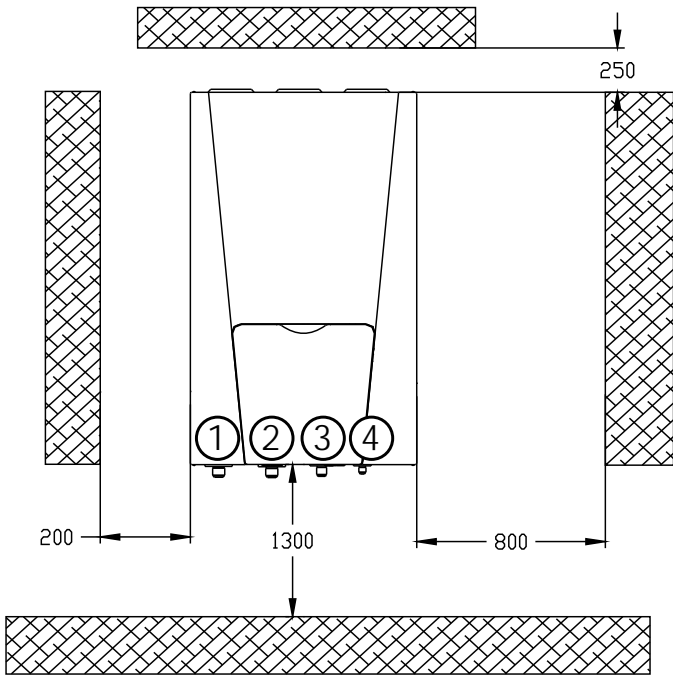
If the problem persists, contact the After-sales Service



The unit does not have a cut-off valve or system draining unit.

It is necessary to envision installation. Assembly is recommended in order to guarantee correct functioning of the hydraulic plant.

12. SPACE REQUISITES FOR INSTALLATION OF THE INDOOR UNIT



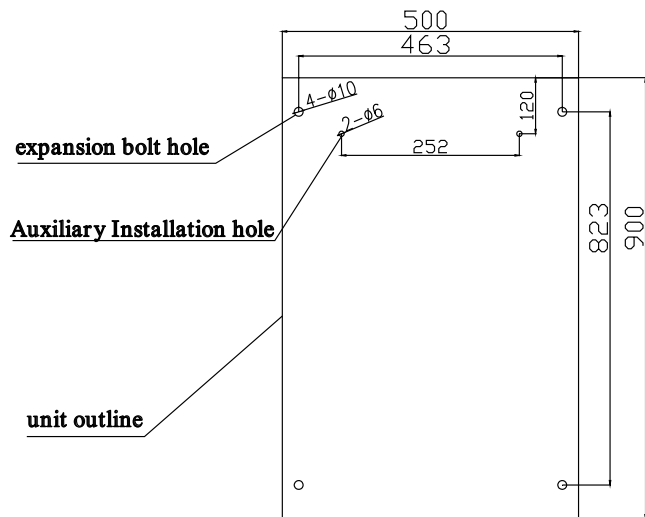
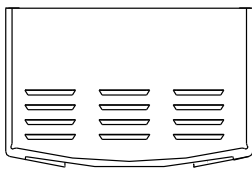
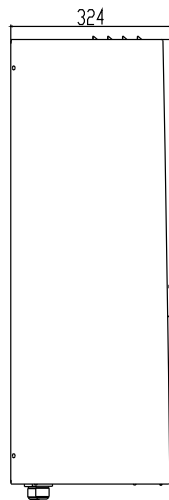
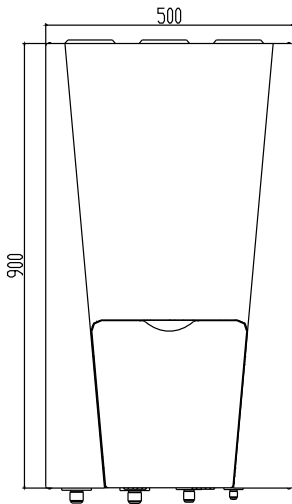
⚠ PRECAUTIONS FOR INSTALLATION OF THE INDOOR UNIT:

- The indoor unit must be mounted vertically on the wall of the room with the aid of Rawplugs.
- Keep the indoor unit as far away from heat sources as possible, e.g. heat sinks and similar present in the room.
- Keep the indoor unit as near as possible to the outdoor unit. The level distance between the connection pipes cannot exceed 30 m (8.0~16KW), while the vertical distance cannot exceed 15 m (8.0~16KW).

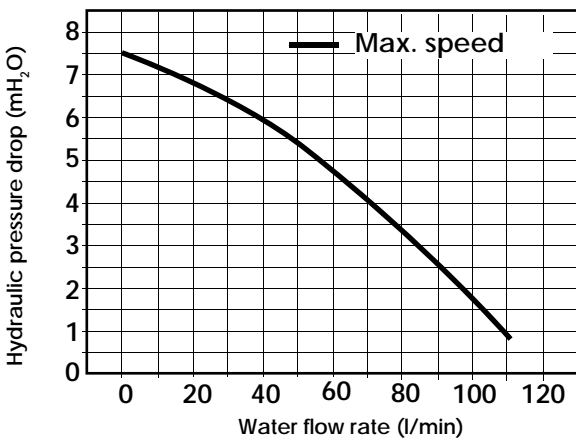
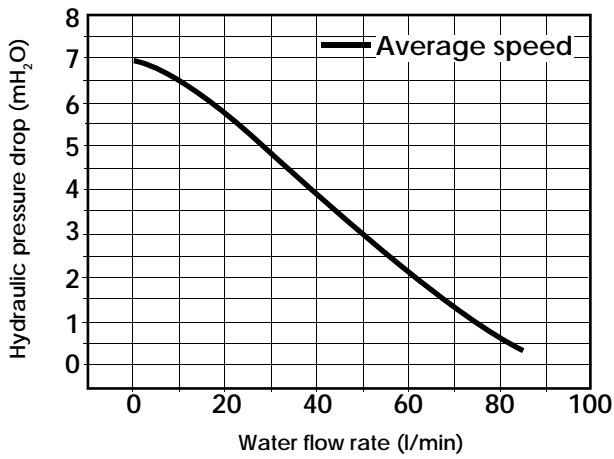
Name	Connection diameters
1 Outlet water pipe	BSP 1" male red.
2 Return water pipe	BSP 1" male red.
3 Gas side pipe	3/8"
4 Liquid side pipe	5/8"

13. INDOOR UNIT DIMENSIONS

13.1. INDOOR UNIT CLEARANCE (HBI080E - HBI100E - HBI120E - HBI140E - HBI160E):

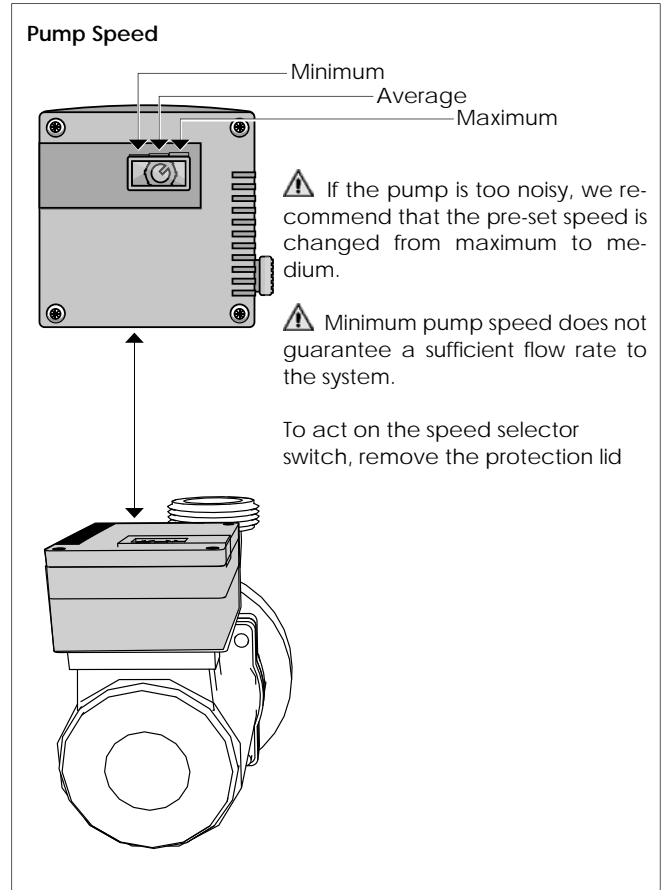


14. VOLUME OF THE WATER AND PUMP DISPLACEMENT

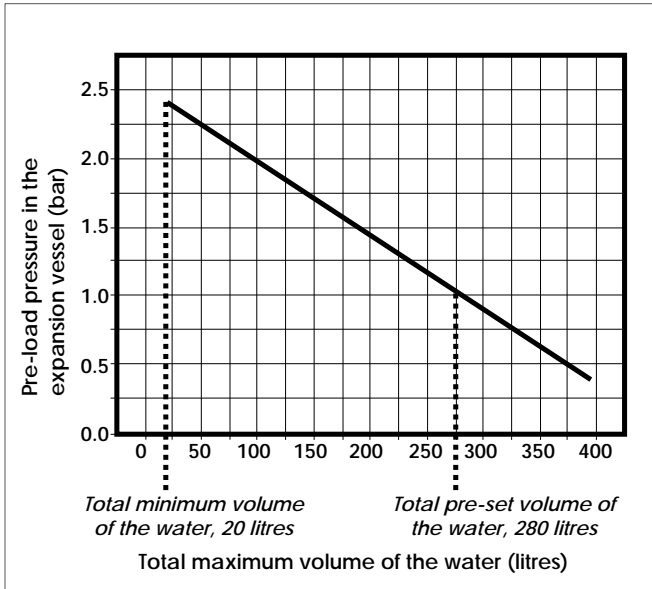


⚠ ATTENTION

- The pump has three adjustable speeds (maximum/average/minimum). In most cases, maximum speed is recommended.
- If pump noise is not acceptable, we recommend changing the pre-set speed from maximum to medium, but in order to guarantee a sufficient flow rate, do not set the water speed at minimum ("Min"), because it could cause a sudden flow rate error ("EC").



15. VOLUME OF THE WATER AND EXPANSION VESSEL PRESSURE



Notes:

The expansion vessel contains 10 litres and has a pre-load pressure of 1 bar.

The total volume of the water of 280 litres is pre-set. If it must be changed due to the installation conditions, the pre-load pressure must be regulated to guarantee suitable functioning.

If the indoor unit is positioned in the highest point, no regulation is necessary.

The minimum total volume of the water is 20 litres.

Use nitrogen gas to regulate the pre-load pressure, contact a certified installer.

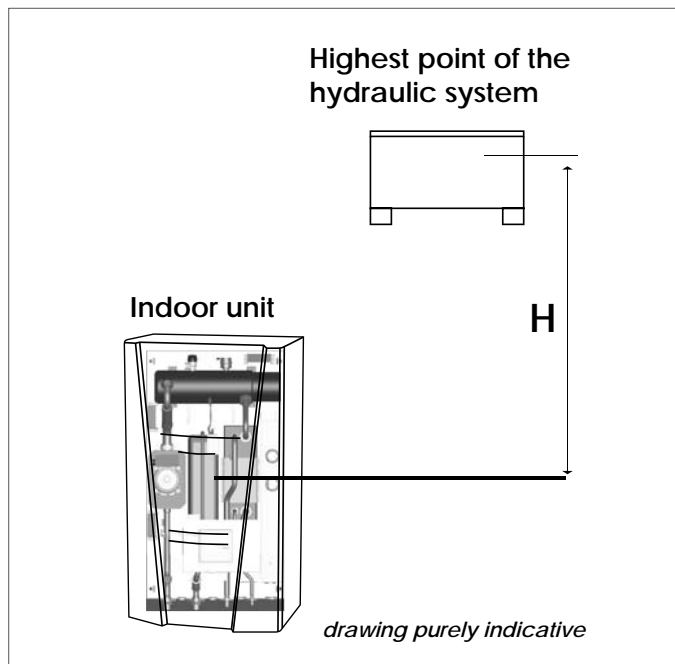
The calculation method for the pressure of the expansion vessel necessary for regulation is the following:

If the volume of the water system changes during installation, check whether the pre-load pressure of the expansion vessel must be regulated by applying the following formula:

$$P_g = (H/10+0.3) \text{ bar}$$

H = the difference between the place of installation of the indoor unit and the highest point of the hydraulic system.

Make sure that the volume of the hydraulic system is lower than the maximum requested in the figure shown. If this is not the case, the expansion vessel does not satisfy the installation requisites.



Difference in height of installation ¹	Volume of the water (see drawing above)	
	<280L	>280L
H < 7m	Regulation is not necessary	<ul style="list-style-type: none"> The pre-set pressure must be regulated using the formula above. Check whether the volume of the water is below the maximum. (With the aid of the figure above).
H > 7m	<ul style="list-style-type: none"> The pre-set pressure must be regulated on the basis of the formula above. Control whether the volume of the water is below the maximum. (With the aid of the figure above). 	The expansion vessel is too small and regulation cannot be performed.

¹⁾ **NOTE:** The difference in installation height is the difference between the place of installation of the indoor unit and the highest point of the hydraulic system. If the indoor unit is positioned in the highest point, the difference will be considered 0 m.

Example 1: The indoor unit is installed 5 m below the outdoor unit and the total volume of the hydraulic system is 100 l. With reference to the figure above, it is not necessary to regulate the pressure of the expansion vessel.

Example 2: The indoor unit is installed in the highest point of the hydraulic system and the total volume of the water is 350 l.

1. As the volume of the hydraulic system is 280 l, the expansion pressure vessel must be regulated, which must be lower.

2. The formula used to calculate the pressure is the following:
 $P_g = (H/10+0.3) \text{ bar} = (0/10+0.3) = 0.3\text{bar}$

3. The maximum volume of the hydraulic system is about 410 l. As the effective volume of the hydraulic system is 350 l, the expansion vessel satisfies installation requisites.

4. Regulate the pre-load pressure of the expansion vessel from 1.0 bar to 0.3 bar.

SELECTING THE EXPANSION VESSEL:

Formula:

$$V = \frac{c \cdot e}{1 - \frac{1+p_1}{1+p_2}}$$

V = Volume of the expansion vessel

c = Total volume of the water

p₁ = Expansion vessel pre-load pressure

p₂ = Maximum pressure during system functioning (i.e. safety valve activation pressure).

e = Water expansion factor (the difference between the original water temperature expansion factor and that of the highest water temperature).

WATER EXPANSION FACTOR AT DIFFERENT TEMPERATURES	
Temperature (°C)	Expansion factor (e)
0	0.00013
4	0
10	0.00027
20	0.00177
30	0.00435
40	0.00782
45	0.0099
50	0.0121
55	0.0145
60	0.0171
65	0.0198
70	0.0227
75	0.0258
80	0.029
85	0.0324
90	0.0359
95	0.0396
100	0.0434

16. PROCEDURES FOR THE REALISATION OF THE COOLING LINES

Procedure for the preparation of the flared fittings:

The cooling lines and the HBI unit are realised using flared connections

Flared connections: used in the tracts connected directly to the refrigerant connections (gas and liquid lines) of the outdoor or indoor units;

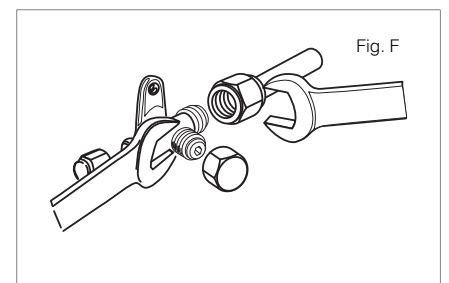
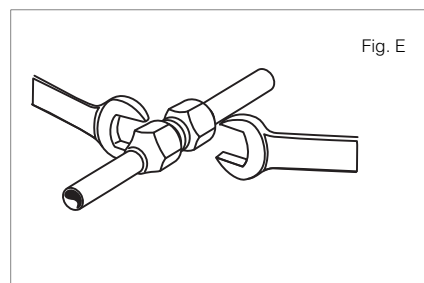
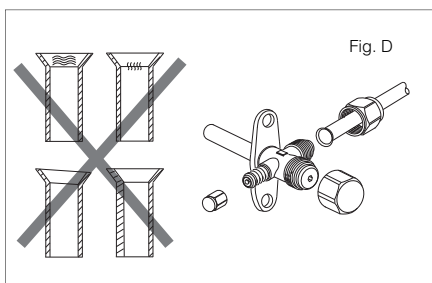
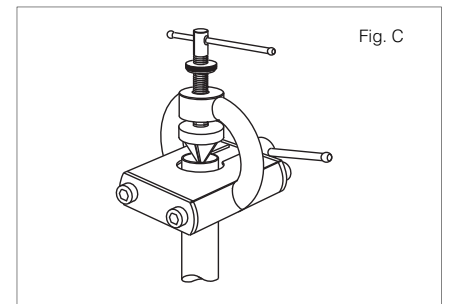
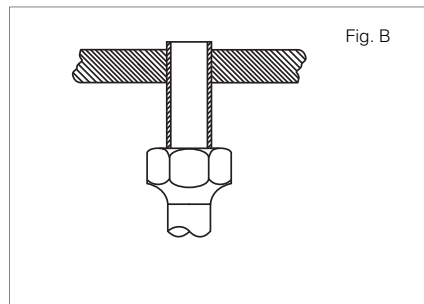
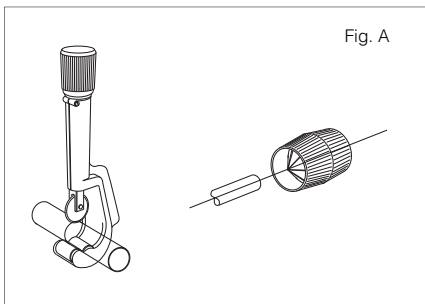
The procedure for the realisation of a flared connection is as follows:

- cut the copper pipes to measurement using the pipe-cutter and smooth the ends using a pipe deburrer (Fig. A);
- isolate the pipes and insert the tapered nuts before flaring (Fig. B);

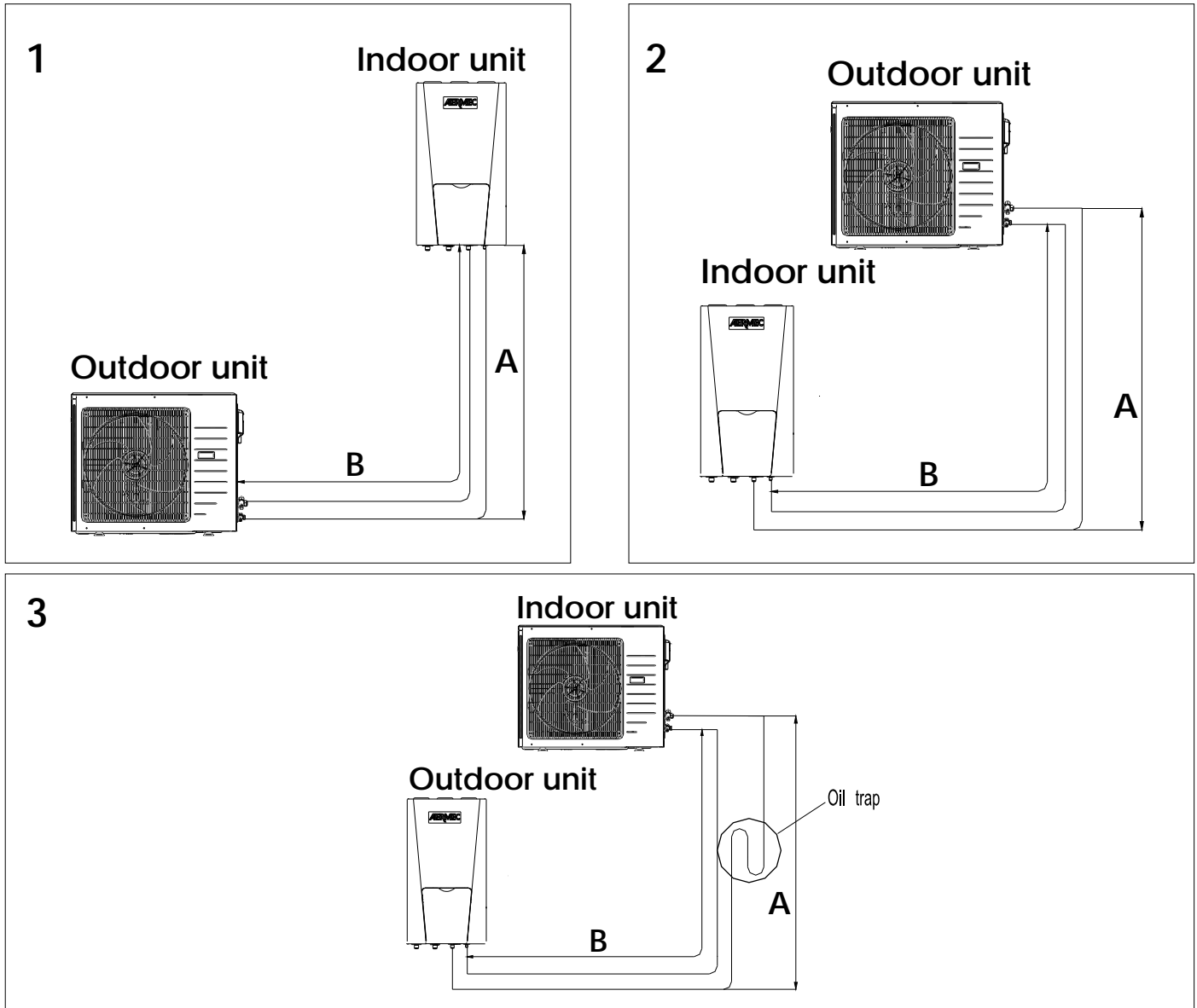
- for flaring use a tapered flaring tool (Fig. C);

- check that the tapered surface is in axis with the pipe, smooth, without cracks and even thickness (Fig. D).

- connect the lines with the flared connections



17. COOLING LINES CONNECTION LAYOUT



Model	Pipe dimension (ø)		Length B		Height A		Additional refrigerant
	Gas	Liquid	Standard	Max	Standard	Max	
HBI080	5/8"	3/8"	7.5m	30m	0m	15m	50g/m
HBI100	5/8"	3/8"	7.5m	30m	0m	15m	50g/m
HBI120	5/8"	3/8"	7.5m	30m	0m	15m	50g/m
HBI140	5/8"	3/8"	7.5m	30m	0m	15m	50g/m
HBI160	5/8"	3/8"	7.5m	30m	0m	15m	50g/m

NOTES:

1. Refrigerant does not have to be added when the length of the pipe is less than 10 m. If this is not the case, add refrigerant according to that stated in the table.

Example: if the 16kw model is installed at a distance of 25 m, 750 g of refrigerant must be added,

according to the following calculation $(25-10) \times 50 = 750$.

2. The nominal capacity is based on standard pipe length, while the maximum length allowed is based on the reliability of the product functioning.

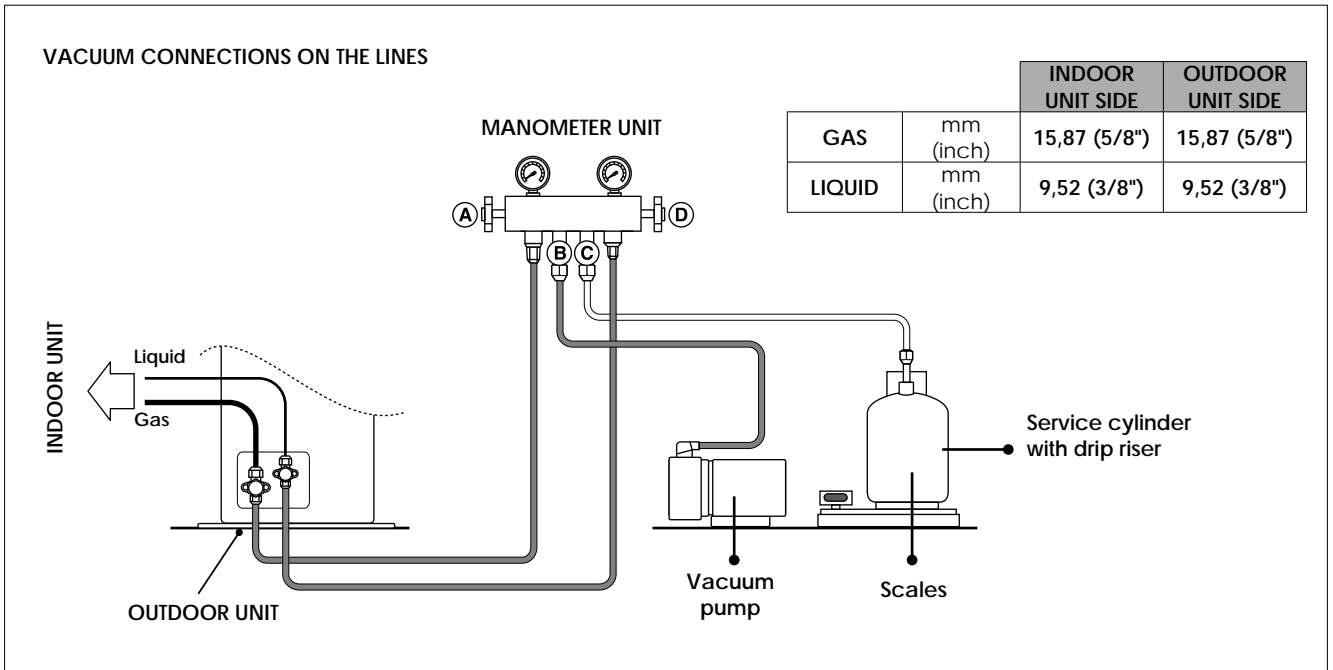
3. The oil separator must be installed every 5-7m,

when the position of the outdoor unit is higher than the indoor unit.

18. NOTES FOR EMPTYING THE LINES

Proceed as follows to empty the lines:

- 1) Connect the rods between the pump, the manometer unit, the machine and the cylinder as indicated in the layouts.
- 2) Check that all cocks on the manometer unit are closed.
- 3) Open cocks A-B-D.
- 4) Switch the pump on.
- 5) Wait for the necessary time.
- 6) Close cocks A-B-C-D.
- 7) Switch the pump off.
- 8) Leave the machine in vacuum and check the low pressure manometer (it must be in full scale position -1) and check if the air conditioner keeps the vacuum state.



19. NOTES FOR LOADING THE SYSTEM

Proceed as follows to load the system:

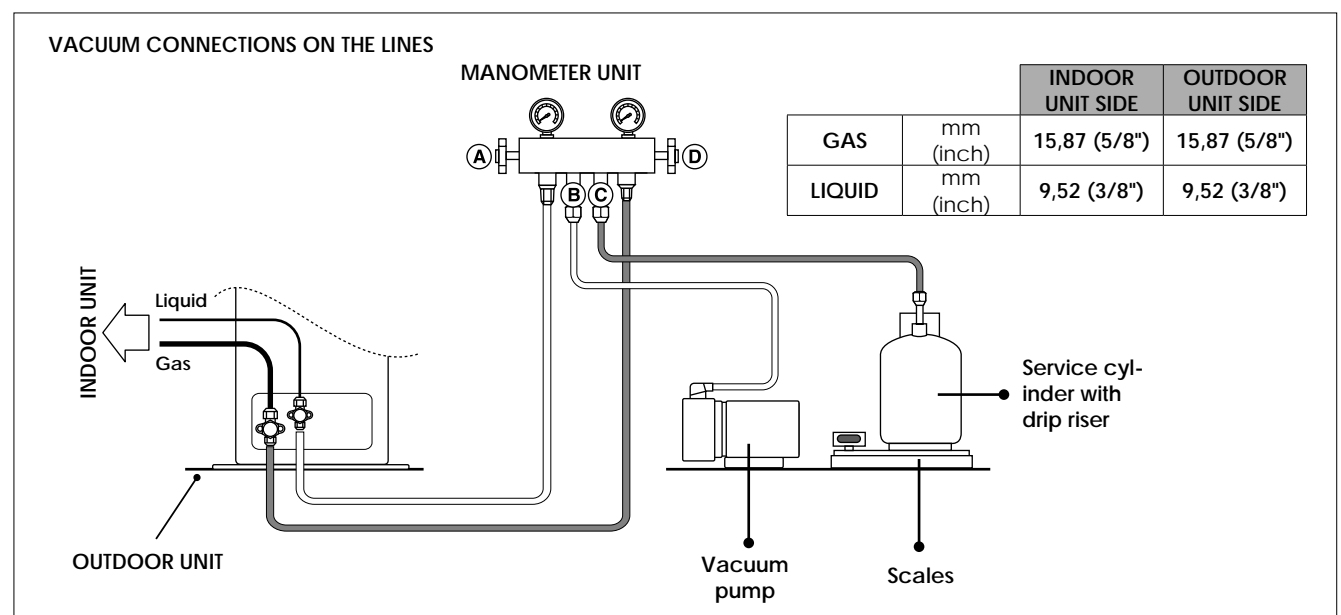
- (1) Zero the scales.
- (2) Open the cylinder and loosen the fitting near to the cock C.
- (3) Open cocks A-C.
- (4) Read how much Freon has been introduced into the air conditioner from the scales.
- (5) When loading has been completed, close the cocks and the cylinder.
- (6) Open cocks on the conditioner.
- (7) Switch the air conditioner on.

Once the lack of leaks from the system has been ascertained, when the compressor is not active, load the specified quantity of R410A liquid into the unit through the filling opening of the outdoor unit liquid pipe valve.

added in gaseous form, it could cause a change in its composition, thus obstructing normal functioning.

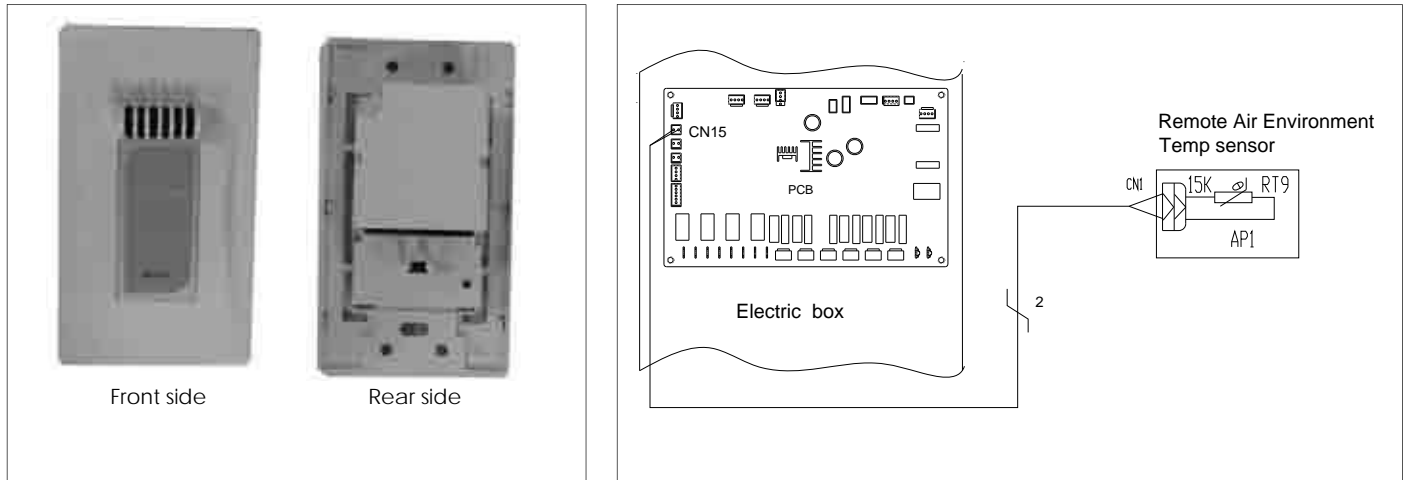
Before loading, check whether the refrigerant cylinder is equipped with a siphon.

Make sure to load the specified amount of liquid refrigerant in the liquid pipe. As this refrigerant is the mixed type, if it is



20. ACCESSORY

20.1. ROOM TEMPERATURE REMOTE PROBE (SUPPLIED)



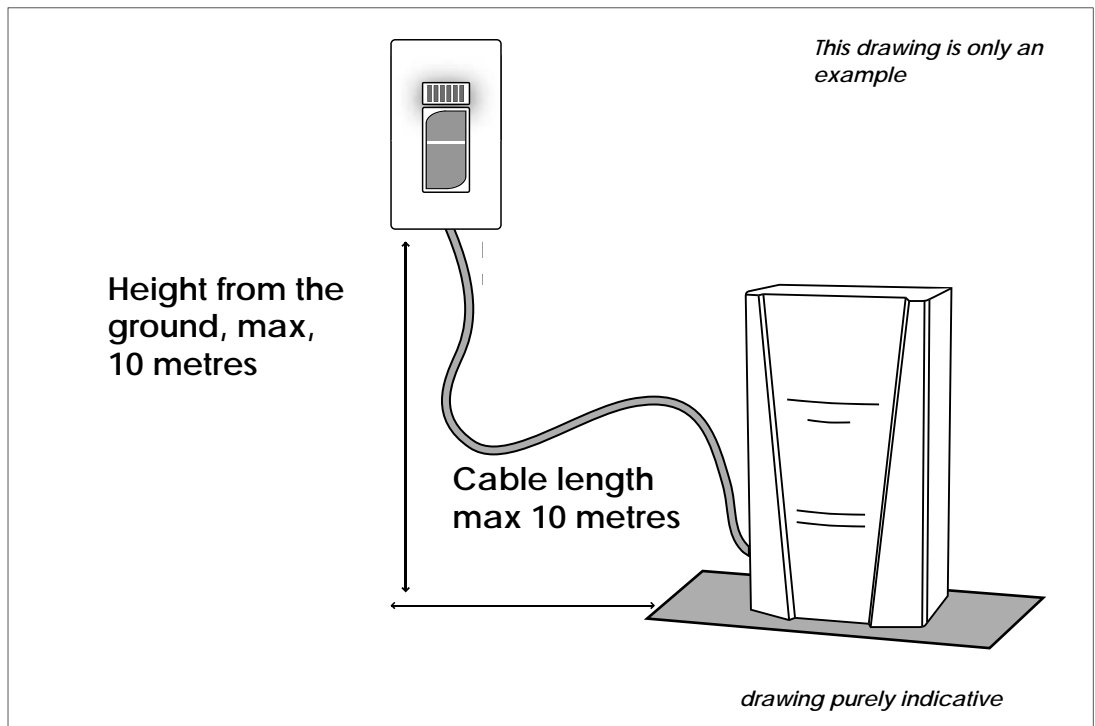
⚠ ATTENTION

1. The distance between the indoor unit and the remote room temperature probe must be **less than 10 m**
2. The height from the floor must be **about 1.5**.
3. The room temperature remote probe cannot be positioned in areas that are covered when the door is open.

4. The room temperature remote probe cannot be positioned in areas affected by outdoor heat.
5. The room temperature remote probe must be installed in areas where room heating is mainly used.

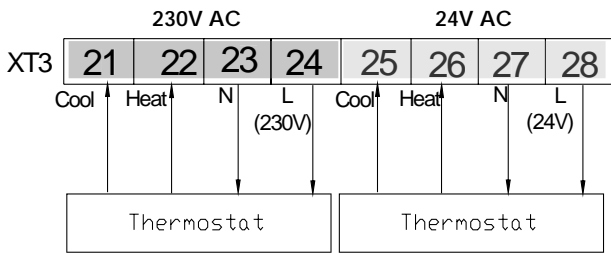
6. . To activate the room temperature remote probe control, once installed, act on the control panel on the machine by setting the parameters as indicated in the table below.

Set the value at 1 to activate the control of the room temperature remote probe			
Index	Description	Value	Settings
04	This parameter indicates the presence of a dedicated air thermostat	0	NON INSTALLED
		1	INSTALLED

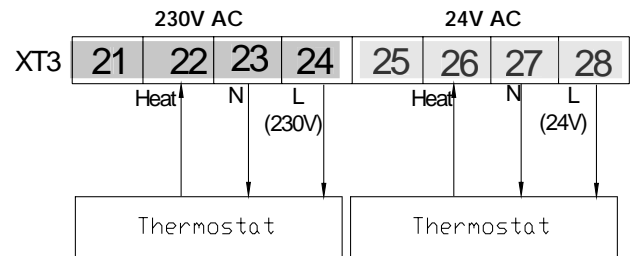


20.2. THERMOSTAT (NOT SUPPLIED)

Heating/cooling thermostat



Heating thermostat only



How to connect the thermostat:

Remove the indoor unit casing and open the control box

Identify the thermostat electric specifications, if 230V, find the terminal board

⚠ WARNING:

1. NEVER USE THE 230V AC thermostat and the 24V AC thermostat at the same time, otherwise a short circuit will be caused and the life-saving device will cut the electric

power supply off.

2. The thermostat temperature setting (heating or cooling) must be selected from the temperature range set for the product.

3. For other restrictions, consult the previous page relative to the remote air temperature probe.

4. Do not connect external electric loads, the (L) and (N) cables must be used only for the electric type thermostat.

5. Do not connect external electric loads, such as valves, fan coil units etc. If connected, the indoor unit printed circuits could be seriously damaged.

20.3. 2-WAY VALVE (NOT SUPPLIED)

The 2-way valve is necessary to control the flow of water during cooling. Its task is to cut-off the flow of water in the floor circuit in cooling mode when the fan coil is set-up for cooling.

TYPE	POWER	OPERATIONAL MODE	SUPPORTED
Normally open - 2 cables	230V 50Hz _AC	Closure of the flow of water	YES
		Opening of the flow of water	YES
Normally closed - 2 cables	230V 50Hz _AC	Closure of the flow of water	YES
		Opening of the flow of water	YES

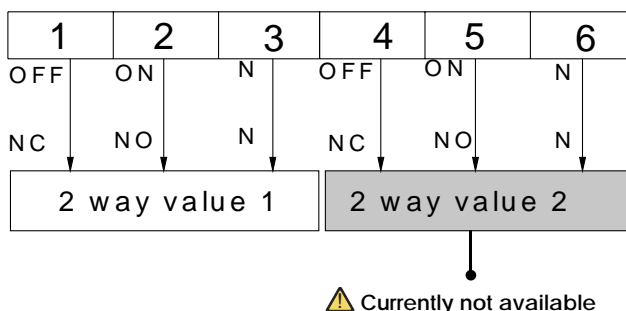
(1) : Normally open type: when the electric current is NOT fed, the valve is open. (When the electric current is fed, the valve is closed).

(2) : Normally closed type: when the electric current is NOT fed, the valve is closed. (When the electric current is fed, the valve is open).

How to connect the 2-way valve: follow the procedures given below (Phase 1 ~ Phase 2).

Phase 1. Remove the front lid of the indoor unit and open the control box.

Phase 2. Find the terminal board and connect the cable as indicated below.



⚠ WARNING:

The normally open type must be connected to the cable (NO) and cable (N) so that the valve closes in cooling mode.

The normally closed type must be connected to the cable (NC) and cable (N) so that the valve closes in cooling mode.

(NO) : Line signal (for normally open type) from the printed circuit to the 2-way valve.

(NC) : Line signal (for normally closed type) from the printed circuit to the 2-way valve.

(N) : Neutral signal from the printed circuit to the 2-way valve.

20.4. THREE-WAY VALVE (NOT SUPPLIED)

The 3-way valve is necessary to use the DHW tank. Its task is to divert the flow between the floor heating circuit and the heating circuit of the water tank.

Type	Power	Operational mode	Supported
SPDT with 3 cables	230V 50Hz ~AC	Select "Flow A" between "Flow A" and "Flow B"	YES
		Select "Flow B" between "Flow B" and "Flow A"	YES

(1) : SPDT =Single pole, double contact. The three cables are made up from Live 1 (to select Flow B) and Neutral (for the common).

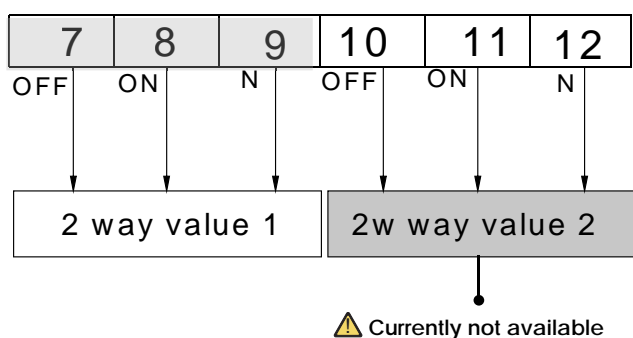
(2) : Flow A indicates the 'flow of water from the indoor unit to the floor hydraulic circuit'.

(3) : Flow B indicates the 'flow of water from the indoor unit to the DHW tank'.

How to connect the 3-way valve: follow the procedures below (Phase 1 - Phase 2).

Phase 1. Remove the front lid of the indoor unit and open the control box.

Fase 2. Connect the 3-way valve cable as indicated below.



⚠ WARNING:

The 3-way valve must select the water tank circuit when the electric current is fed to the cable (OFF) and to cable (N).

The 3-way valve must select the floor circuit when the electric current is fed to the cable (ON) and to cable (N).

(OFF) : Line signal (water tank heating) from the printed circuit to the 3-way valve.

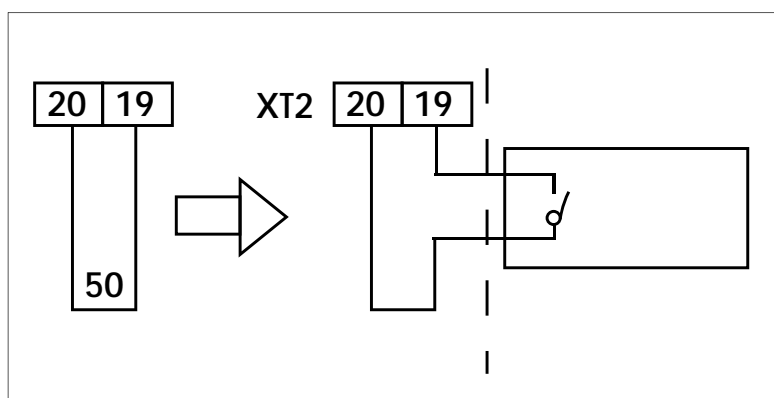
(ON) : Line signal (floor heating) from the printed circuit to the 3-way valve.

(N) : Neutral signal from the printed circuit to the 3-way valve.

20.5. INSTALLATION OF AUXILIARY DEVICE (GATE CONTROLLER) - (NOT SUPPLIED)

Operations to be performed in order to install an auxiliary control device on the XT2 board:

1. Remove the cable (jumper) n° 50 from clamps n° 19 - 20
2. Connect the auxiliary device in your possession (following the instructions supplied) to the clamps n° 19 - 20.



If the door control function is present, extract the main cable 50 on the board for XT2 terminals between 19 and 20 and then connect the door control device according to installation guide.

21. INSTALLATION OF THE ISOLATED WATER TANK (AVAILABLE AS AN ACCESSORY)

INSTALLATION MEASURES

The water tank must be installed and kept at a horizontal distance of 5 m and vertical distance of 3 m from the indoor unit. It can be installed in the room.

The upright water tank must be installed vertically with the base on the ground, never suspended.

The place of installation must be sufficiently stable and the tank must be fixed to the wall using bolts in order to prevent vibrations, as shown in the following figure.

The minimum distance between the water tank and heat source surfaces must be 500 mm.

A water pipe must be present along with a joint for hot water and a run-off in the floor, near to the tank in order to favour filling with water, supply of hot water and emptying of the water tank.

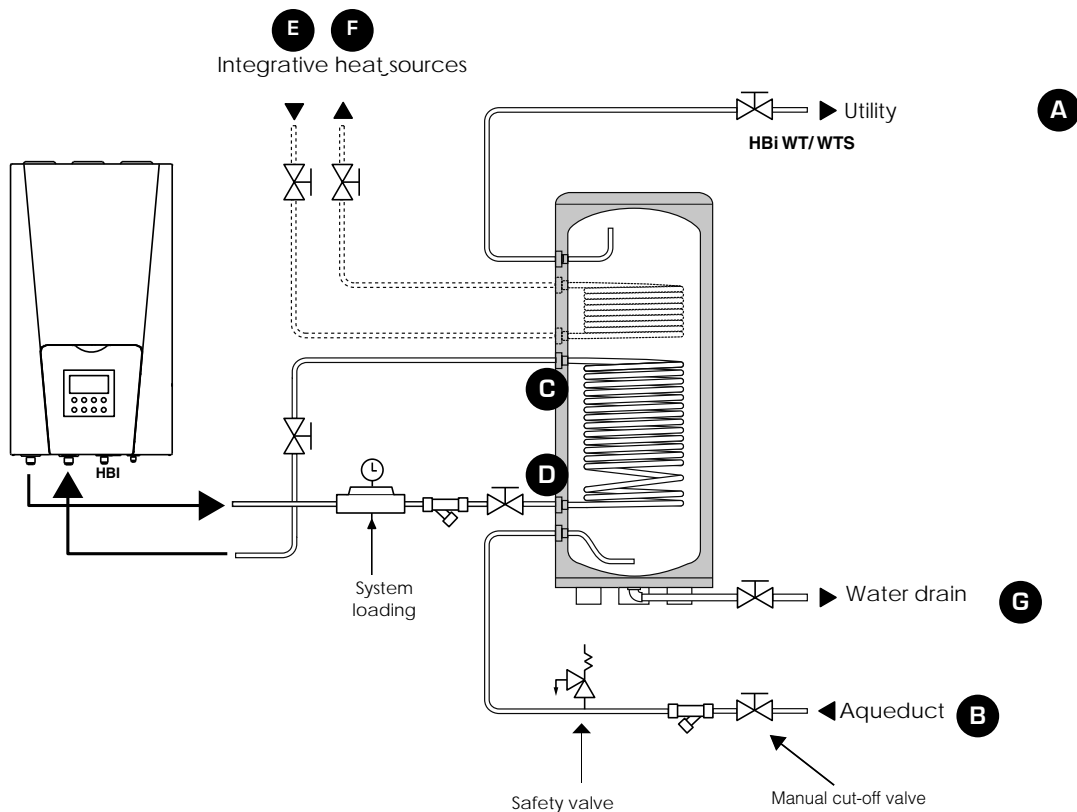
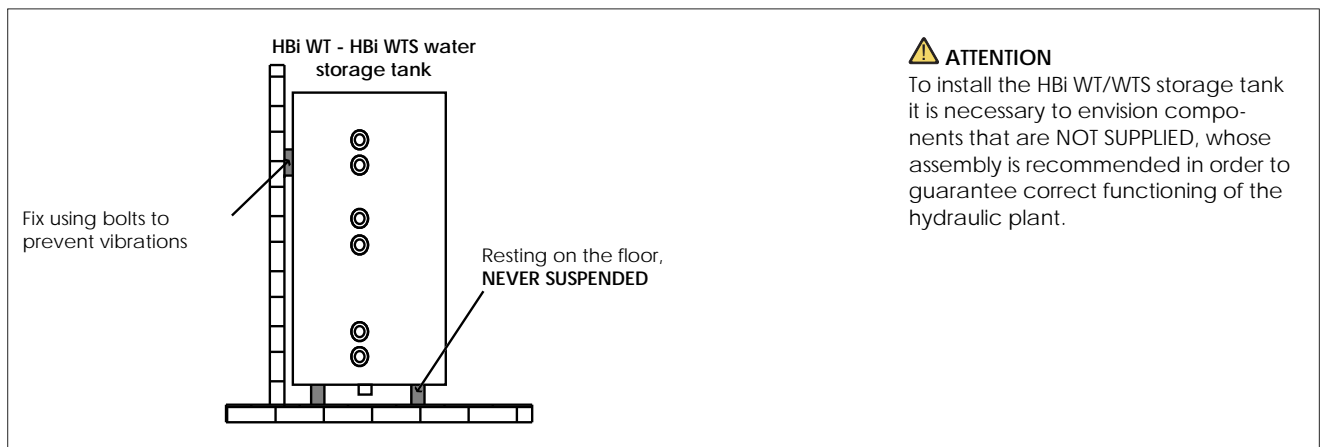
To make the hydraulic connections use PPR pipes and wrap them with tape for insulation

⚠ ATTENTION:

For safe use of the water, the inlet/outlet of the water of the relative tank must be connected with the PPR pipe of a certain length, $L \geq 70 \times R^2$ cm R is the internal radius of the pipe.

Moreover, heat insulation must be performed and metal pipes must not be used.

Before use, the water tank must be full before activating the electric power supply.



Line	Description	HBI lines diameters			
		200WT	200WTS	300WT	300WTS
A	Domestic hot water use	G 1/2"	G 1/2"	G 1/2"	G 1/2"
B	Water network	G 1/2"	G 1/2"	G 1/2"	G 1/2"
C	Water inlet (main coil)	G 3/4"	G 3/4"	G 3/4"	G 3/4"
D	Water outlet (main coil)	G 3/4"	G 3/4"	G 3/4"	G 3/4"
E	Water inlet (integrative coil)	---	G 3/4"	---	G 3/4"
F	Water outlet (integrative coil)	---	G 3/4"	---	G 3/4"
G	Storage discharge	G 3/4"	G 3/4"	G 3/4"	G 3/4"

If the connection between the water tank and the indoor unit must pass through a wall, **make a 70 hole** for the passage of the circulation water pipe.

A PPR pipe is recommended with nominal external diameter of dn25 and S2.5 as per standard (thickness of the wall 4.2 mm).

A PPR pipe is recommended with nominal external diameter of dn20 and S2.5 as per standard (thickness of the wall 3.4mm).

ATTENTION:

A water tank is recommended on the lower unit and main on the highest side.

Prepare the materials according to the dimensions of the joints stated above.

If the stop cock is installed outside the room, the use of a PPR pipe is recommended in order to prevent damage due to freezing.

The hydraulic piping cannot be installed until the water heater unit is fixed.

If other insulated pipes are used, consult the dimensions given above for the external diameters and thickness of the walls.

At least one stop cock is necessary for the water outlet pipe.

Installation of the recirculation pipe at the bottom of the water tank: connect a piece of the PPR pipe with the run-off outlet of the floor drain. A stop cock must be installed at the centre of the run-off pipe and in the point in which the users can activate it easily.

Do not allow dust and other materials to enter the piping system during installation of connection pipes.

After connection of all hydraulic piping, first carry out a leaks control test. After which, apply heat insulation of the hydraulic system. Pay attention to the valves and the pipe joints.

After connection of all hydraulic piping, first carry out a leaks control test (see unit debug).

After which, wrap the water pipes, the water temperature probe and the cables using the tape included with the unit.

Guarantee a sufficient thickness of the insulating cotton. If necessary, install a heating device to prevent the pipes from freezing.

The hot water fed from the isolated water pipe depends on the cock water pressure, which must always be fed.

During use, the cooling water inlet stop cock must be kept normally open.

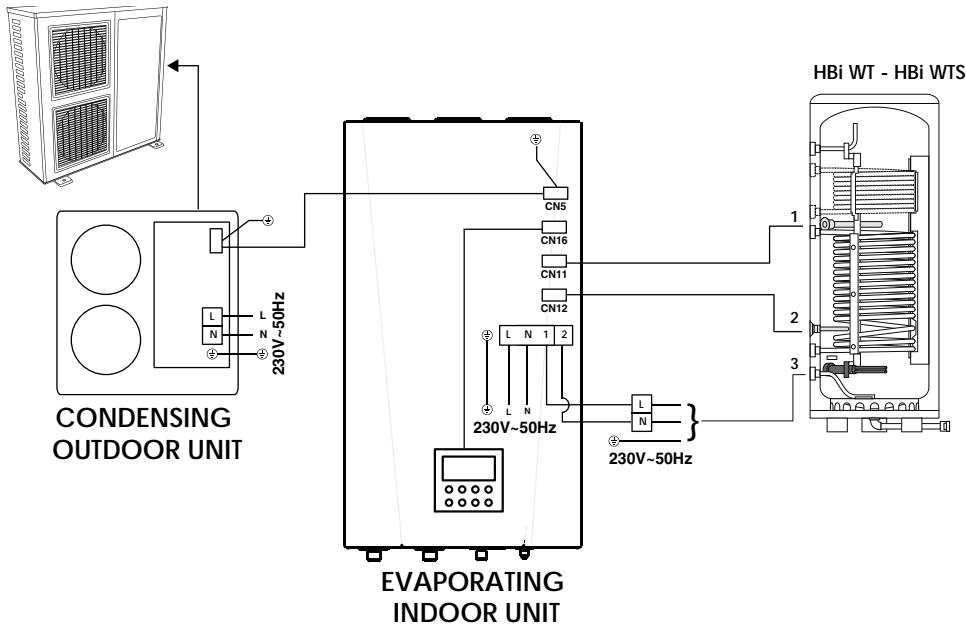


The metal pipes do not guarantee preservation of heat in the tank; do not use metal pipes.

To install the HBI WT/WTS storage tank it is necessary to envision components that are NOT SUPPLIED, whose assembly is recommended in order to guarantee correct functioning of the hydraulic plant. The recommended components are indicated in the table below;

Icon	Recommended components
1	Manual cut-off valve (not supplied)
2	Water filter (not supplied)
3	Loading unit with manometer (not supplied)
4	Safety valve (calibrated at 7 bar)/non-return supplied with the HBI WT/WTS storage tank

22. HBI WT/WTS ELECTRIC CONNECTIONS:



Icon	Connection to be made between HBI and HBi WT/WTS
1	Connection of temperature probe 1 This probe is already inserted into the HBi WT/WTS storage tank, therefore it must be simply connected to the HB hydronic module board (the clamp to which this probe must be connected is identified by the code CN11)
2	Connection of temperature probe 2 This probe is supplied with the HBI hydronic module, therefore it must be simply connected to the HBi WT/WTS, using the cable block supplied and inserting the probe in the sump marked with "SENSOR 2"
3	Connection of the 3 kW integrative resistance power supply

⚠ ATTENTION: before carrying out any intervention, make sure that the mains electric power supply has been disconnected.

The appliance must be installed in compliance with national regulations on this subject.

The electric connections, installation of the system and their accessories must only be performed by subjects with the technical-professional requisites for installation, transformation, extension and maintenance of the systems and able to check the same for safety and functionality purposes.

Install a device, master switch or electric plug that allows to completely interrupt the appliance's electric power supply.

Only use copper wires.

Electric connections

All cables must be enclosed in a pipe or cable trough.

The cables at the outlet of the pipe or cable trough must be positioned in a way so as not to undergo traction or twisting stress and however protected from external agents.

Always make the earth connection.

The electric resistance power supply cable is supplied with the storage tank, the features of the cable are: 3G 1.5mm² (length 6m);

23. ELECTRIC WIRING

Main principles

The electric cables, equipment and connectors supplied for use on site must be in compliance with the provisions of the Standards and design requisites.

Only qualified electricians can connect the cables on site.

Cut the electric power supply off before making the connection.

The installer is liable for any damage caused by an improper connection of the outdoor unit circuit.

 Attention --- copper electric cables MUST be used.

Connection of the electric cable to the unit electric cabinet

The electric cables must be positioned through the relevant hole, pipe or cable trough.

ATTENTION:

The electric cables have a copper core and copper connectors must be used for the connection of the electric cable.

The differential switch is necessary for further installations.

Model	Electric power supply	differential switch:	Minimum section of the earth cable	Minimum section of the power supply cable
		(A)	(mm ²)	(mm ²)
HBI080E	230V50Hz	50	10	3 x 10
HBI100E		50	10	3 x 10
HBI120E		50	10	3 x 10
HBI140E		50	10	3 x 10
HBI160E		50	10	3 x 10
HBI080C		32	6	3 x 6
HBI100C		32	6	3 x 6
HBI120C		40	10	3 x 10
HBI140C		40	10	3 x 10
HBI160C		40	10	3 x 10

The electric cables to connect in the electric cabinet must be protected with rubber or plastic in order to prevent scratches with the edge of the metal plate.

The electric cables near to the electric unit must be fixed in a stable manner in order to release the electric terminal of the cabinet from an external force.

The electric cable must be connected to earth correctly and safely.

If life-saving devices are used with differential protection, the reaction time must be less than 0.1 seconds, the differential circuit must be 30mA.

The diameters of the electric cables selected above are established assuming a distance from the distribution cabinet to the unit that is less than 75 m.

Specifications of the electric power supply cable and the differential switch

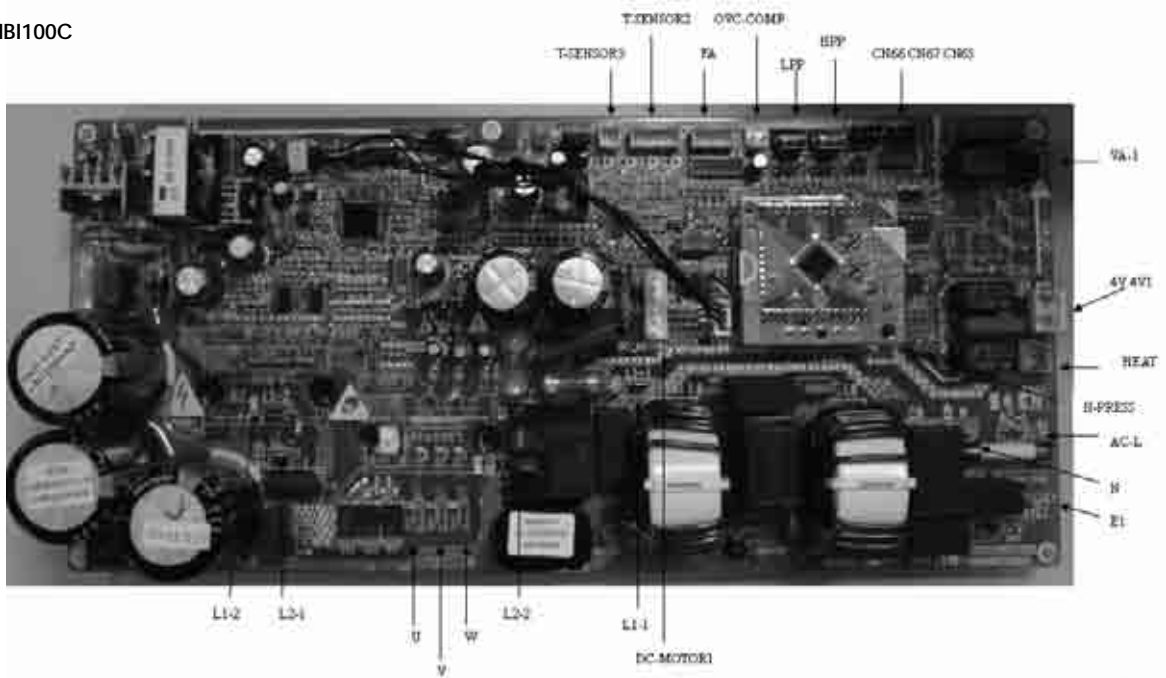
To make the selection, we recommend observing the electric cable specifications and of the types of differential switches stated in the following table.

If the cables are placed at a distance between 75 m and 150 m, the diameter of the electric cable must be increased to the next level.

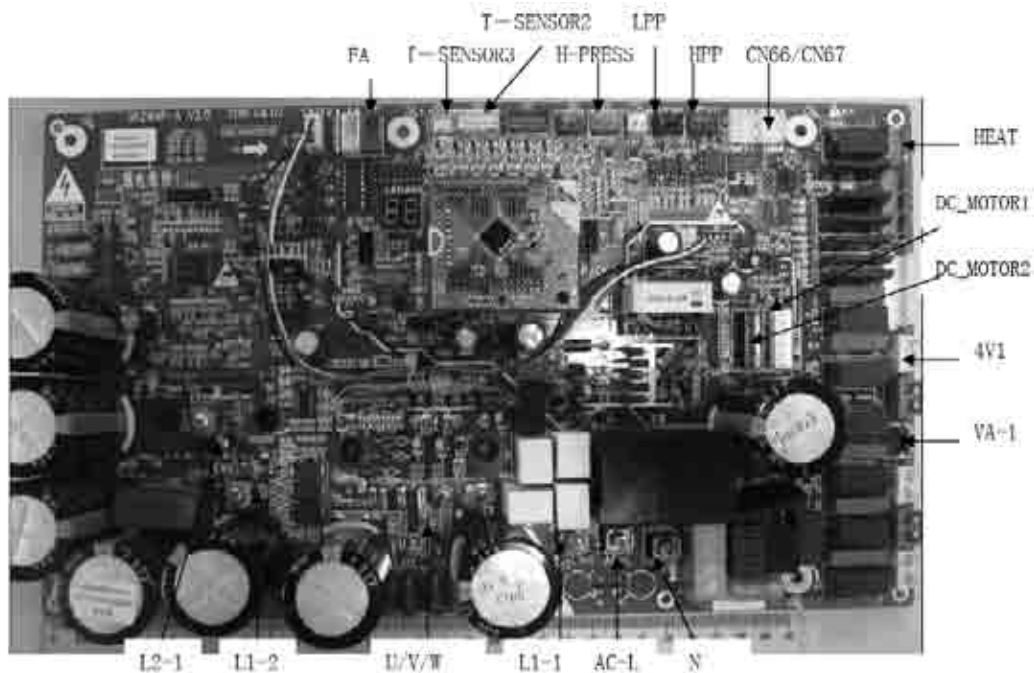
The internal/external power supply cable must be H05RN-F or over.

24. WIRING DIAGRAM

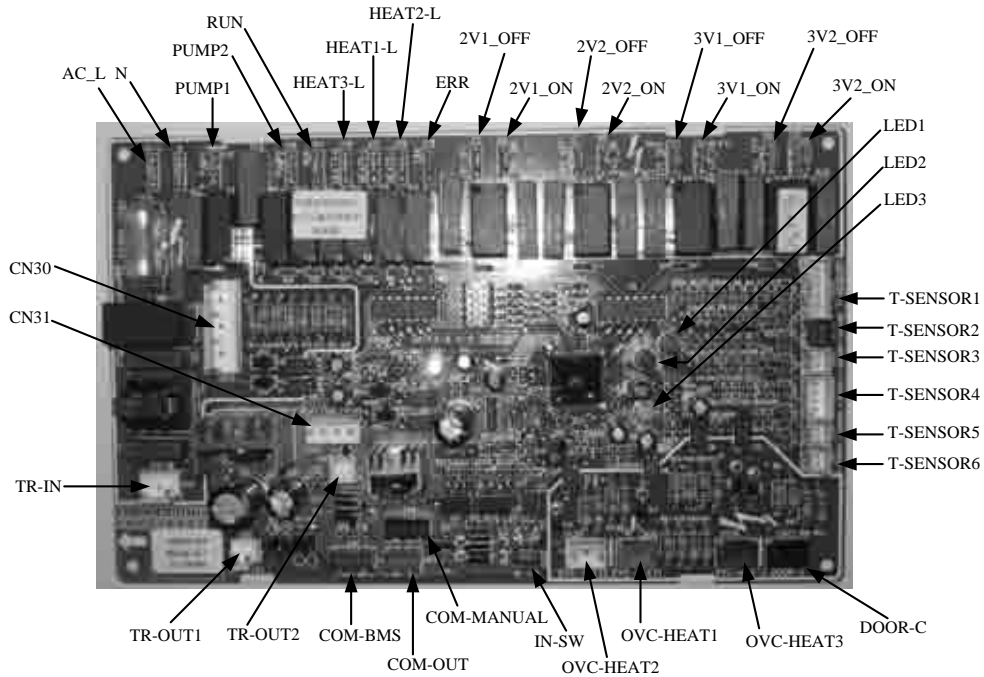
HBI080C - HBI100C



COMPONENTS	SPECIFICATIONS
AC-L	live wire input of power supply, red
N	zero wire input of power supply, white
E1	ground wire, yellow green
L2-2	PFC blue inductive wire
L1-1	PFC brown inductive wire
L2-1	PFC yellow inductive wire
L1-2	PFC white inductive wire
U	U-phase of compressor
V	V-phase of compressor
W	W-phase of compressor
DC_MOTOR1	DC fan
4V 4V1	1 pin: strong power supply 3 pin fan GND 4 pin+15V 5 pin control signal 6 pin feedback signal;
HEAT	4-way valve
VA-1	electric heating tape
HPP	e-heater of chassis
LPP	high pressure switch
OVC-COMP	low pressure switch
T-SENSOR2	overload protection of compressor
TSENSOR3	1, 2 hole pipe temperature 3, 4 hole environment 5, 6 hole exhaust
CN66 CN67	1 hole: +3.3V 2 hole: detection ; suction temperature sensor
CN65	communication cable 2 pin B 3pinA
FA	communication cable: 1 pin earthed 2 pin B 3 pin A 4 pin+12power supply; It can not be used for communication between outdoor unit and indoor unit;
H-PRESS	pipe electric expansion valve 1-4 pin driving impulse output 5 pin +12V
	signal input of pressure sensor 1 pin GND 2 pin signal input 3 pin +5V



COMPONENTS	SPECIFICATIONS
AC-L	live wire input of power supply, red
N	Neutral line input of power supply PFC blue inductive wire blue
L1-1	PFC brown inductive wire
L2-1	PFC yellow inductive wire
L1-2	PFC white inductive wire
U	U-phase of compressor
V	V-phase of compressor
W	W-phase of compressor
DC_MOTOR1	DC fan 1 pin strong power supply 3 pin fan GND 4 pin +15V 5 pin control signal 6 pin feedback signal
DC_MOTOR2	DC fan 1 pin strong power supply 3 pin fan GND 4 pin +15V 5 pin control signal 6 pin feedback signal
4V1	4-way valve
HEAT	electric heating tape
VA-1	e-heater of chassis
HPP	high pressure switch
LPP	low pressure switch
T-SENSOR2	1, 2hole pipe temperature 3, 4hole environment 5, 6hole exhaust
T SENSOR3	1 hole:+3.3V sensor 2 hole: detection: suction temperature
CN66 CN67	communication cable 2 pin B 3 pin A
CN65	communication cable 1 pin earthed 2 pin B 3 pin A 4 pin+12 power supply It can not be used for communication between outdoor unit and indoor unit.
FA	pipe electric expansion valve 1-4 pin driving impulse output 5 pin +12V
H-PRESS	signal input of pressure sensor 1 pin GND 2 pin signal input 3 pin +5V



Components	Position	Specifications
AC-L	-	live wire of power supply
N	-	Neutral wire of power supply
PUMP1	X13	live wire of indoor water pump
PUMP2	X14	live wire of solar water pump
RUN	X15	running indicator
HEAT3-L	X16	e-heater of water tank
HEAT1-L	X17	e-heater of indoor unit 1
HEAT2-L	X18	e-heater of indoor unit 2
ERR	X19	error indicator
2V1_OFF	X5	Electric magnetic 2-way valve1 is normally closed.
2V1_ON	X6	Electric magnetic 2-way valve1 is normally open.
2V2_OFF	X7	Electric magnetic 2-way valve2 is normally closed.
2V2_ON	X8	Electric magnetic 2-way valve2 is normally open.
3V1_OFF	X9	Electric magnetic 3-way valve1 is normally closed.
3V1_ON	X10	Electric magnetic 3-way valve1 is normally open.
3V2_OFF	X11	Electric magnetic 3-way valve2 is normally closed.
3V2_ON	X12	Electric magnetic 3-way valve2 is normally open.
T-SENSOR1	CN10	terminal of temperature sensor1
T-SENSOR2	CN11	terminal of temperature sensor2
T-SENSOR3	CN12	terminal of temperature sensor3
T-SENSOR4	CN13	terminal of temperature sensor4
T-SENSOR5	CN14	terminal of temperature sensor5
T-SENSOR6	CN15	terminal of temperature sensor6
DOOR-C	CN23	Door detection input
OVC-HEAT3	CN28	e-heater of water tank adhesion-proof protection detector
OVC-HEAT1	CN26	e-heater of indoor unit1 adhesion-proof protection detector
OVC-HEAT2	CN27	e-heater of indoor unit2 adhesion-proof protection detector
IN-SW	CN25	detection input of water flow switch
COM-MANUAL	CN6	connect the wired controller
COM-OUT	CN5	connect to outdoor unit
COM-BMS	CN7	connect to remote controller
TR-OUT1	CN2	transformer output 1
TR-OUT2	CN3	transformer output 2
TR-IN	CN1	220V in put of transformer
CN30	CN30	heavy-current interface of end controller
CN31	CN31	heavy-current interface of end controller

ELECTRIC WIRING

Main principles

The electric cables, equipment and connectors supplied for use on site must be in compliance with the provisions of the Standards and design requisites.

⚠ ATTENTION

Copper electric wires MUST be used. Connection of the electric cable to the unit electric cabinet

The electric cables near to the electric unit must be fixed in a stable manner in order to release the electric terminal of the cabinet from an external force.

Only qualified electricians can connect the cables on site.

The electric cables must be positioned through the relevant hole, pipe or cable trough.

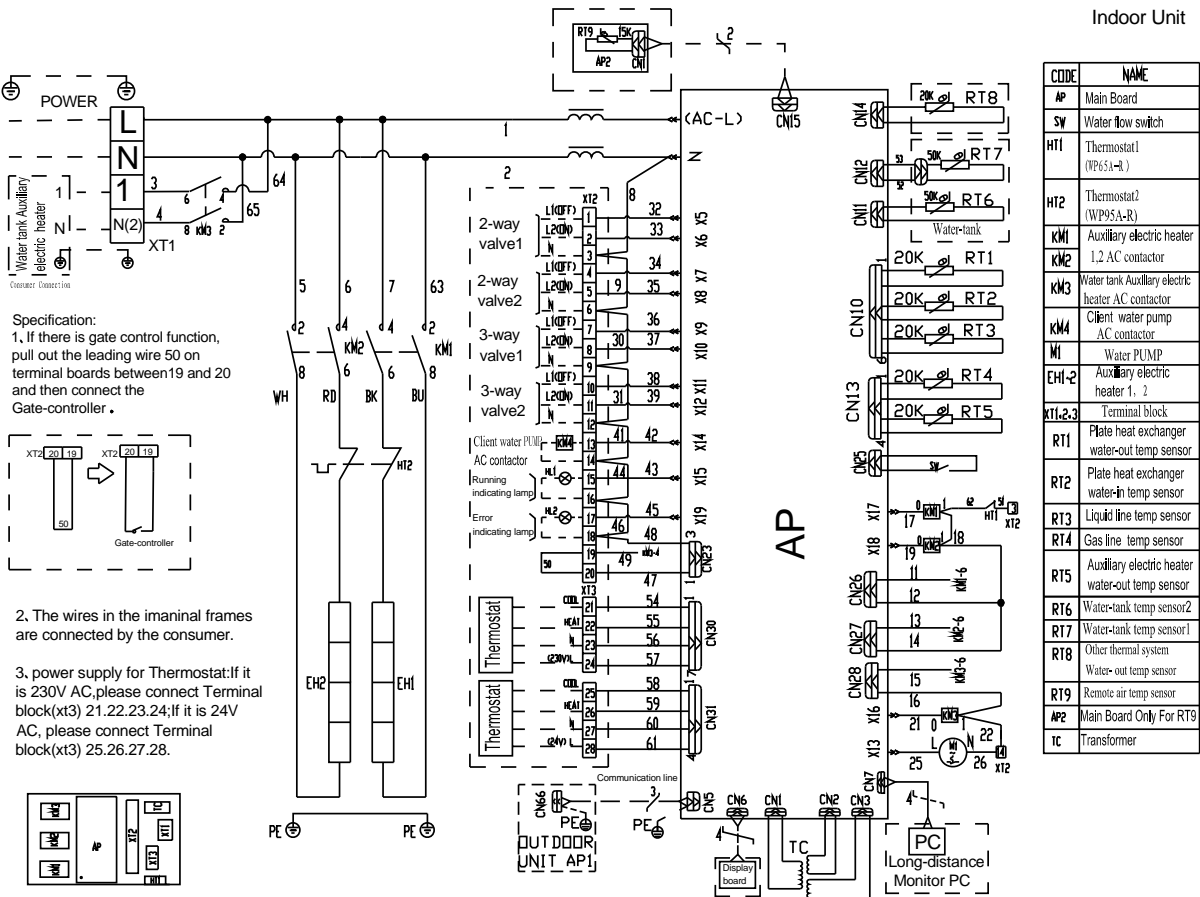
The electric cable must be connected to earth correctly and safely.

Cut the electric power supply off before making the connection. The installer is liable for any damage caused by an improper connection of the outdoor unit circuit.

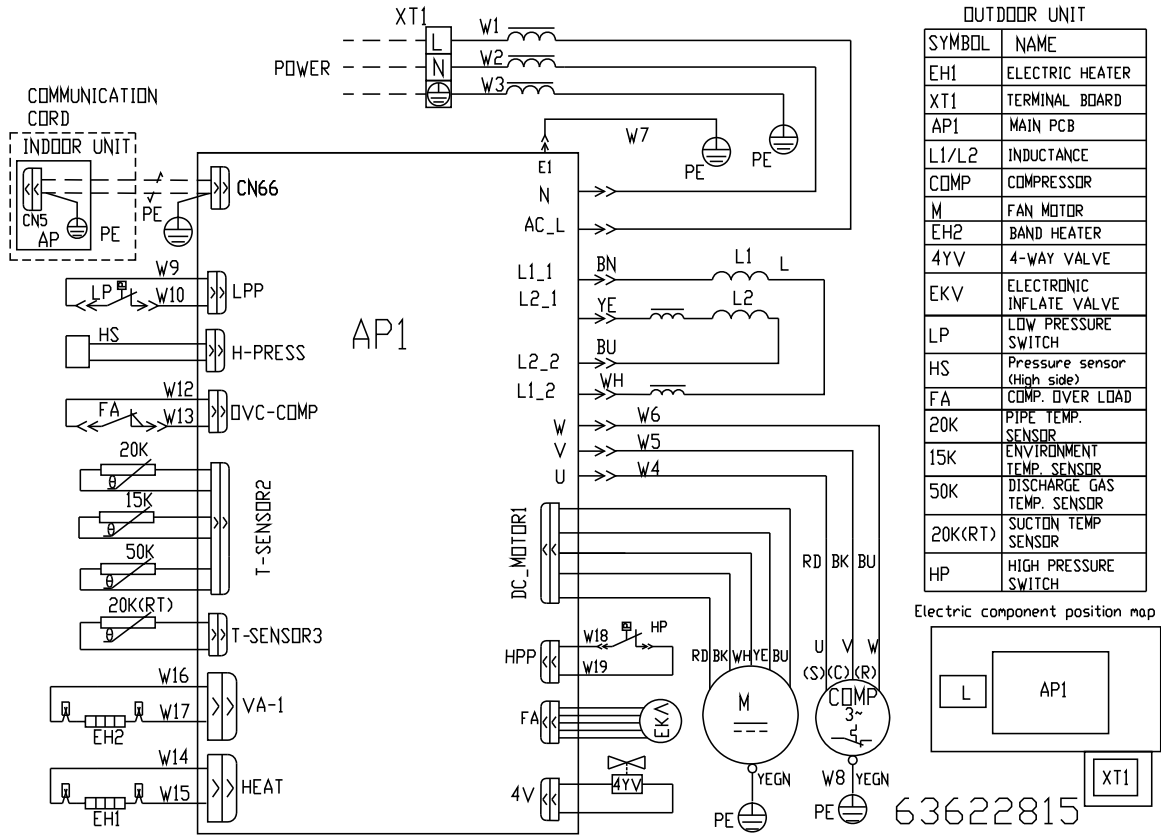
The electric cables to connect in the electric cabinet must be protected with rubber or plastic in order to prevent scratches with the edge of the metal plate.

25. WIRING DIAGRAM

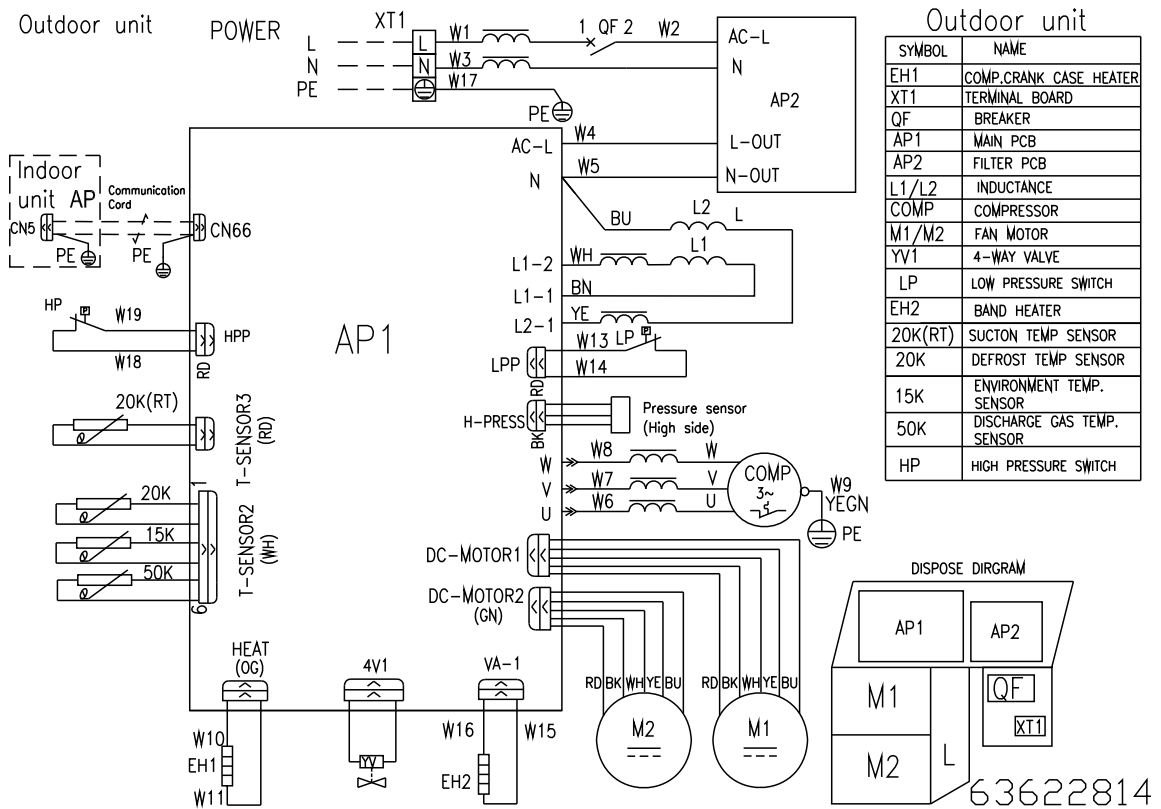
HBI080E - HBI100E - HBI120E - HBI140E - HBI160E



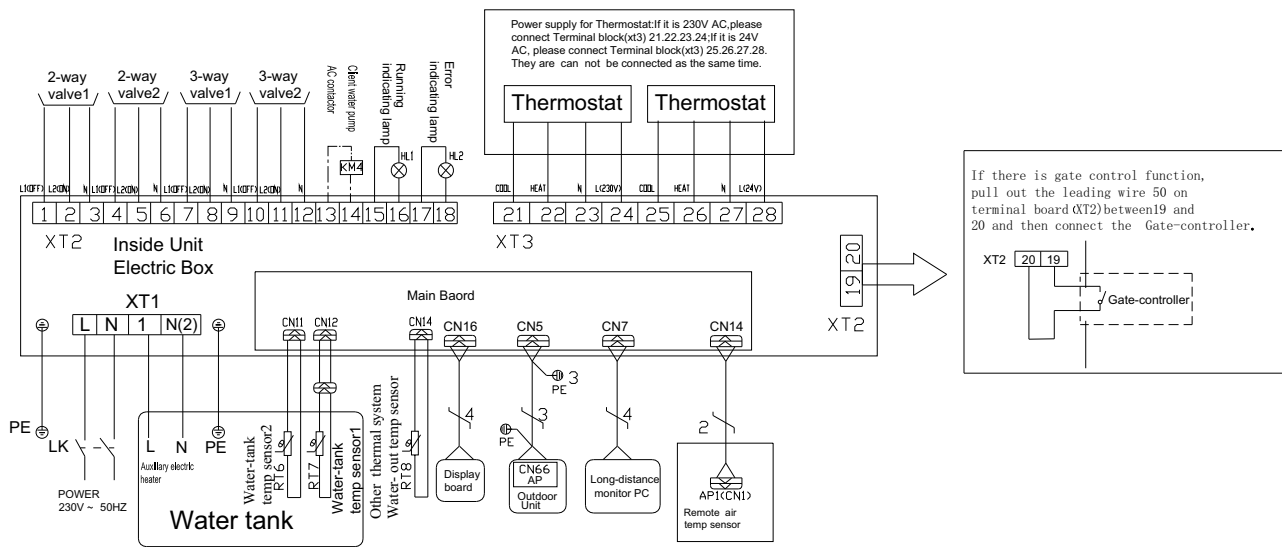
HBI080C - HBI100C



HBI120C - HBI140C - HBI160C



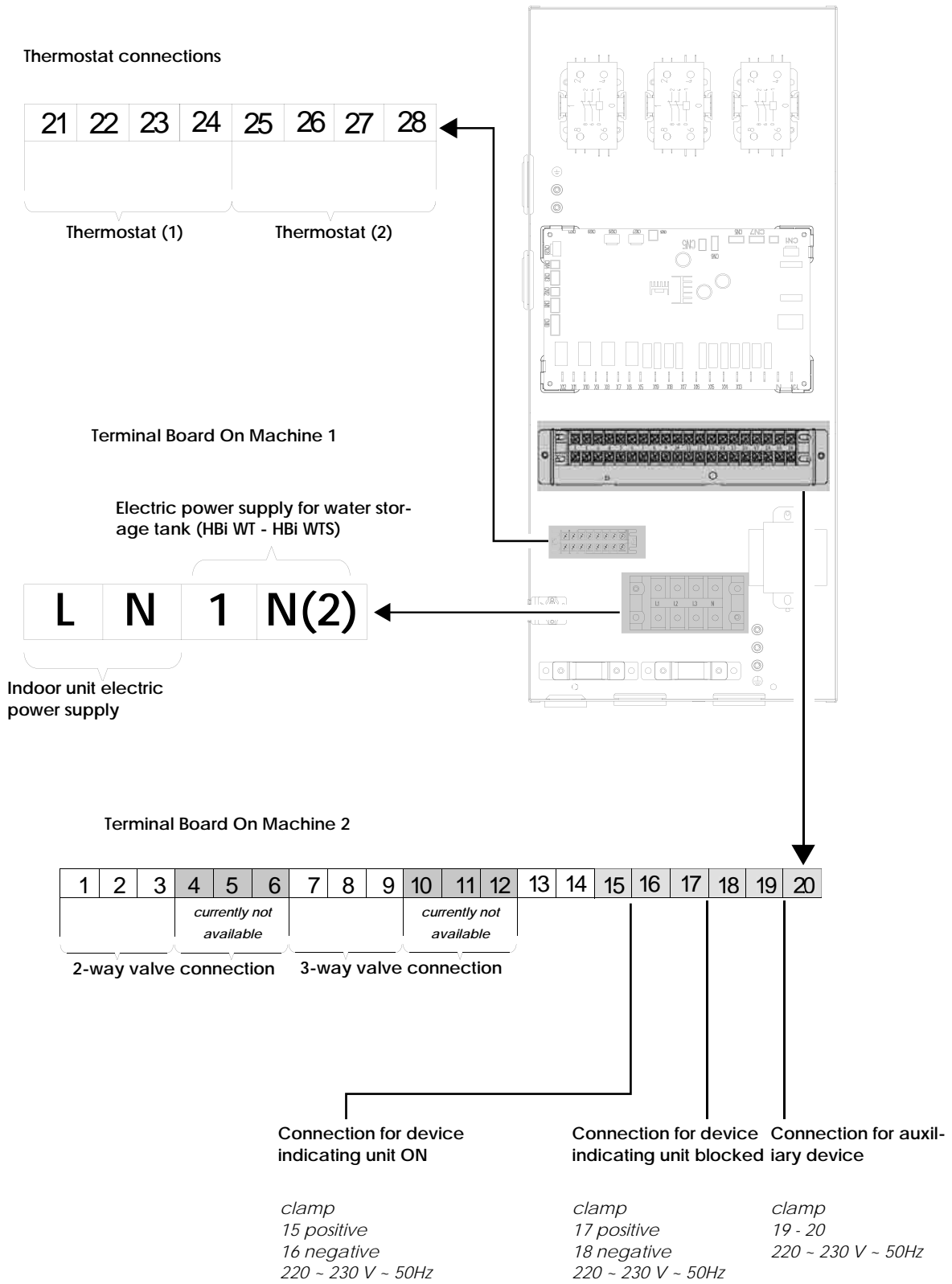
Wiring diagram: Indoor and outdoor unit (including wiring on site)



Specification:

- 1- The functioning LED (HL1) and the error LED (HL2) are connected or not connected on customer request.
- 2- Contactor AC water pump reviews (KM4) will be a standby pump in the future so it should not be connected.
- 3- The differential switch (LK) is necessary for further installations.

26. INFORMATION REGARDING TERMINAL BOARDS



27. UNIT DEBUG

Check before start-up

For the safety of the users and the unit, the same must be started for a control before the debug, according to the following procedures.

THE FOLLOWING ACTIVITIES MUST BE PERFORMED BY QUALIFIED STAFF ASSIGNED TO REPAIRS		
Confirmation execution has taken place or is to be completed with the following items by sales technicians, dealer, installation contractor and customers		
N.	Installation confirmation	4
1	The content of the installation request for this unit by the installer is true. Otherwise the debug will be refused.	
2	There is a written note in which the modification program is shown to the installer relative to unqualified installation.	
3	The request for unit installation by the installer and the list of debugs are archived together.	
N.	Preliminary check	4
1	The aspect of the unit and the piping system is OK during transmission, transport and installation.	
2	Check the quantity, packaging etc. of the accessories included with the unit.	
3	Make sure that the wiring diagrams, controls, drawing of piping etc. are present.	
4	Check that the installation of the unit is stable enough and that there is sufficient space for the use and repair operations.	
5	Complete the refrigerant pressure test on each unit and identify leaks in the unit.	
6	Check whether the water tank is installed in a stable manner and if the support is firm and the tank is full.	
7	Check that the heat insulation measurements for the water tank, the inlet/outlet pipes and the water filling pipe are correct.	
8	Check that the electric power supply is in compliance with that stated on the identification plate and if the electric cable model satisfies the applicable requisites.	
9	Check that the electric power supply and the control wiring are connected correctly, according to the wiring diagram, the earth is safe and each terminal stable.	
10	Check that the connection pipe, the water pump, the manometer, the thermometer, the valve etc. are installed correctly.	
11	Check that each system valve is open or closed according to requisites.	
12	The installation verification table has been completed. Ask for the installation contractor's signature for consent.	
Attention: if there are items with x, inform the contractor. The items stated above are those recommended.		
Items confirmed after the preliminary check	General evaluation: Debug () Amendment ()	
	Judge the following items (if there are no archives, the qualification will be considered).	
	a: Electric power supply and electric control system b: Calculation of the load	
	c: Problems with unit heating d: Problems with noise	
	e: Problems with piping f: Other	
	The normal debug operation cannot be carried out if all of the items are not qualified. Any problems must be solved immediately. All expenses for debug delays or re-debugging due to problems that have not been solved immediately, will be charged to the installer.	
	Present the amendment report program to the installer.	
The installer is supplied with the reports of the amendment to be carried out after the communication. Yes () No ()		

Inspection

The inspection checks that the unit can function normally via pre-functioning. If the unit cannot function normally, find and solve the design problem or of the unit until the inspection is satisfied. Every inspection must respect the requisites before execution of the inspection. The inspection must follow the content and the phases of the table stated below:

THE FOLLOWING PROCEDURE MUST BE PERFORMED BY EXPERT, QUALIFIED STAFF.	
N.	Start the pre-test procedure
1	Make sure that the unit compressor is pre-heated for 8 hours.
Attention: heat the lubricant oil 8 hours in advance in order to prevent the refrigerant mixing with the lubricant oil and causing damage to the compressor on unit start-up.	
2	Check whether the temperature of the compressor oil is higher than the external outdoor temperature.
3	Check whether the sequence of the main power supply phases is correct. Otherwise, correct the sequence on the basis of the specification.
Re-control the sequence of the phases before start-up to prevent the inversion of the compressor with consequent damage to the unit.	
4	Applicare il metro elettrico universale per misurare la resistenza di isolamento tra ciascuna fase esterna e tra le fasi.
Attention: A faulty earth connection can cause electric shocks.	
N.	Ready for start-up
1	Cut the electric power supply off, restore all protections and control the electricity for the last time. Verificare l'alimentazione e la tensione del circuito di controllo; _V deve essere $\pm 10\%$ nel range di potenza operativa nominale.
N.	Start the unit
1	Check all of the conditions necessary for unit start-up: temperature of the oil, mode, requested load etc.
2	Start the unit and observe compressor func. electric expansion valve, fan motor, water pump etc. NB: the unit will be damaged if functioning in an anomalous way. Do not activate the unit in the event of high pressure and high current.
Additional information:	
Items for acceptance after the debug	Evaluation or suggestions regarding the general functioning situation: good, modify
	Identify the potential problem (if nothing is written it means that the installation and debug are in compliance with requisites).
	a. power supply and electric control system problem
	b. load calculation problem
	c. external refrigerant system
	d. problem with noise
	e. indoor piping and indoor system problem
h. other problems	
Loading is necessary during functioning in order to perform maintenance due to problems of low quality, such as installation and improper maintenance.	
Situation for acceptance:	
Is the user trained on the basis of the specifications? Sign. Yes () No ()	

28. FUNCTIONING AND DAILY MAINTENANCE

To prevent damage to the unit, all unit protection devices have been set before delivery, in a way that the user must never have to regulate or remove them.

When starting up the unit for the first or second time after prolonged standstill (more than 1 day) with the interruption of the current supply, electrify the unit in advance to pre-heat it for more than 8 hours.

Never rest any objects on the unit and on the accessories. Keep the space around the unit dry, clean and ventilated. Immediately remove all dust accumulated on the condenser fins in order to ensure maximum performance of the unit and do not stop it as a protective measure.

To prevent damage to the unit caused by the hydraulic system block, clean the system filter and frequently control the water filling device.

To guarantee anti-freeze protection, do not interrupt the electric current if the room temp. drops below zero in winter.

To prevent cracks in the unit owing to freezing, empty the water from the unit and the piping system, which are not used for a long period of time. Moreover, open the water tank closing cap for emptying.

Ensure a frequent control of the functioning conditions of each part to see if there are oil stains on the piping joints and load the valve to prevent refrigerant leaks.

If machine malfunctioning lies outside the user's control, contact the authorised after-sales centre immediately.

⚠ WARNING: The water manometer is installed in the indoor unit return water line. Regulate the hydraulic system pressure on the basis of the successive item:

If the pressure is lower than 0.5 bar, re-load the water immediately;

When re-loading, the pressure of the hydraulic system must not exceed 2.5 bar.

TROUBLESHOOTING

BREAKDOWNS	CAUSES	SOLUTION
The compressor does not start-up	A - Problems with the electric power supply B - The connection cable has loosened C - Malfunctioning of the main panel D - Compressor malfunctioning	<ul style="list-style-type: none"> The phases sequence is inverted Check and re-phase Find the cause and repair. Replace the compressor
The fan makes a lot of noise	A - The fan fixing bolt has loosened B - The fan blade touches the casing or the grid C - Fan functioning is unreliable	<ul style="list-style-type: none"> Fasten the fan fixing bolt Find the cause and regulate. Replace the fan
The compressor makes a lot of noise	A - Clogging of the liquid occurs when the liquid refrigerant enters the compressor B - The parts inside the compressor are broken	<ul style="list-style-type: none"> Check whether the expansion valve is faulty and the temperature probe is loose. In this case, repair. Replace the compressor
The water pump does not function or functions anomalously	A - Malfunz. dell' alimentazione elett. o del terminale B - Relay malfunctioning. C - Presence of air in the water pipe	<ul style="list-style-type: none"> Find the cause and repair Replace the relay Evacuate the air
The compressor starts and stops frequently	A - Little or excess refrigerant B - Poor circulation in the hydraulic system C - Low load	<ul style="list-style-type: none"> Drain or add refrigerant Hydraulic system blocked or containing air. Check the water pump, the valve and the piping. Clean the water filter or bleed the air. Regulate the load or add storage tanks.
The unit does not heat even if the compressor is running	A - Refrigerant leak B - Compressor malfunctioning	<ul style="list-style-type: none"> Repair the leaks and add refrigerant Replace the compressor
Poor hot water eating efficiency	A - Poor heat isolation of the hydraulic system B - Poor evaporator heat exchange C - Little refrigerant in the unit D - Heat exchanger block on water side	<ul style="list-style-type: none"> Improve heat insulation efficiency Control whether the air inside or outside the unit is normal and clean the unit evaporator Control whether the unit refrigerant escapes Clean and replace the heat exchanger.

ERROR CODE	DESCRIPTION OF THE ERROR
F4	Malfunctioning of the outdoor environment temperature probe
F6	Malfunctioning of the thawing temperature probe
F7	Malfunctioning of the draining temperature probe
F5	Malfunctioning of the intake temperature probe
EF	Outdoor fan malfunctioning
E5	Compressor overload or driver malfunctioning protection
E1	Compressor high pressure protection
E3	Compressor low pressure protection
E4	Draining high temperature protection
C5	Internal capacity switch malfunctioning
E6	Communication fault between the main indoor and outdoor panels Communication fault between the main outdoor panel and the wired controller
E3	Malfunctioning of the refrigerant
Fc	High pressure probe malfunctioning
F9	Malfunctioning of the output temperature probe
dH	Malfunctioning of the backup output temperature probe
F1	Malfunctioning of the refrigerant inside the liquid pipe temperature probe
F8	Malfunctioning of the input temperature probe
FE	Malfunctioning of the second temperature probe of the DHW tank
FL	Malfunctioning of the first temperature probe of the DHW tank
F3	Malfunctioning of the refrigerant inside the gas pipe temperature probe
dF	Malfunctioning of the solar output temperature probe
F0	Malfunctioning of the remote room temperature probe
Ec	Malfunzionamento dell'interruttore dell'acqua
E2	Internal anti-freeze protection
No shielding	Overheating of the domestic hot water tank
Ed	Overheating of the output temperature (no shielding)
No shielding	Overheating of the solar output temperature
EH	Malfunctioning of the indoor electric heater Malfunctioning of the first connection of the indoor electric heater Malfunctioning of the second connection of the indoor electric heater Malfunctioning of the DHW tank electric heater connection
dU	Extraction of the door controller

29. TECHNICAL DATA

	U.M.	HBI080C	HBI100C	HBI120C	HBI140C	HBI160C	
Cooling capacity ¹ (nominal)	kW	9.05	10.5	14	15	15.5	
Input power ¹ (nominal)	kW	2.50	3.14	3.68	4.29	4.63	
EER ¹		3.62	3.34	3.8	3.5	3.35	
Cooling capacity ² (nominal)	kW	6.5	8.0	10	11	11.5	
Input power ² (nominal)	kW	2.50	3.08	3.45	3.93	4.6	
EER ²		2.6	2.6	2.9	2.80	2.5	
Heating capacity ¹ (nominal)	kW	8.5	10	12	13.5	16	
Input power ¹ (nominal)	kW	2.10	2.50	2.79	3.21	3.95	
COP ¹		4.00	4.00	4.3	4.2	4.00	
Heating capacity ² (nominal)	kW	8.0	9.0	11.5	12.5	14	
Input power ² (nominal)	kW	2.54	2.90	3.38	3.73	4.59	
COP ²		3.15	3.1	3.4	3.35	3.05	
Rated Input Cooling (without electric resistances)	kW	5	5	6.6	6.6	7	
Rated Input Heating (without electric resistances)	kW	4.6	4.6	5.5	5.5	6	
OUTDOOR UNIT							
Electric Power Supply		230V - 50Hz					
Air flow rate	m ³ /h	/	/	6398	6398	6398	
n°fans	n°	1	1	2	2	2	
R410A Refrigerant Load	kg	2	2	3,3	3,3	3,3	
♪ Sound pressure	dB(A)	57	57	57	57	60	
♪ Sound pressure	dB(A)	59	59	59	59	62	
Cooling connections	Liquid	Ø	9,52(3/8")	9,52(3/8")	9,52(3/8")	9,52(3/8")	9,52(3/8")
	Gas	Ø	15,9(5/8")	15,9(5/8")	15,9(5/8")	15,9(5/8")	15,9(5/8")
	Type	Ø	flare				
INDOOR UNIT							
Input Power Indoor Unit*	W	245	245	245	245	245	
Pump	Input Power Max	W	205	205	205	205	205
	Speed	n°	3	3	3	3	3
Electric resistances power **	kW	3+3	3+3	3+3	3+3	3+3	
Total Input Power with Electric resistances	W	6245	6245	6245	6245	6245	
Hydraulic connections (In/Out) - (Male)	Ø	G1"	G1"	G1"	G1"	G1"	
Expansion Vessel capacity	l	10					
Electric Power Supply		230V - 50Hz					
Outlet water temperature ¹	°C	18 ÷ 25					
Outlet water temperature ²	°C	7 ÷ 25					
Outlet water temperature ¹	°C	25 ~ 45					
Outlet water temperature ²	°C	25 ~ 55					
♪♪ Sound pressure	dB(A)	31					
Cooling connections	Liquid	Ø	9,52(3/8")	9,52(3/8")	9,52(3/8")	9,52(3/8")	9,52(3/8")
	Gas	Ø	15,9(5/8")	15,9(5/8")	15,9(5/8")	15,9(5/8")	15,9(5/8")
	Type	Ø	flare				

□ DHW outlet temperature

* Pump - Input Power Max + Auxiliary

** Electric resistances 2 step ON/OFF control panel

*** With electric resistances/without electric resistances 40 ÷ 50°C

1- Floor system

□ Cooling:

- Inlet/outlet water temperature 23°C / 18°C
- External air temperature 35°C D.B. / 24°C W.B.

1- Floor system

□ Heating (without electric resistances):

- Inlet/outlet water temperature 30°C / 35°C
- External air temperature 7°C D.B. / 6°C W.B.

2- Fancoil

□ Cooling:

- Inlet/outlet water temperature 12°C / 7°C
- External air temperature 35°C D.B. / 24°C W.B.

2- Fancoil

□ Heating (without electric resistances):

- Inlet/outlet water temperature 40°C / 45°C
- External air temperature 7°C D.B. / 6°C W.B.

♪ measured at 1m in semianechoic chamber

♪♪ measured at 1,4m in semianechoic chamber

Domestic Hot Water storage tank	U.M.	HBI200WT	HBI200WTS	HBI300WT	HBI300WTS
Capacity	l	200	200	300	300
DHW outlet temperature	°C	40 ± 80 ***			
Electric Resistances Power	kW	3	3	3	3
Electric resistance Input Power	A	13	13	13	13
Electric Power Supply	230V ~ 50Hz				
Utility hydraulic connections (In/Out) - (Female)	Ø	G1/2"	G1/2"	G1/2"	G1/2"
Main coil hydraulic connections (In/Out) - (Female)	Ø	G3/4"	G3/4"	G3/4"	G3/4"
Integrative coil hydraulic connections (In/Out) - (Female)	Ø	-	G3/4"	-	G3/4"
Integrative coil	L	m	-	10	-
	Ø x s	mm	-	22 x 0,8	-

DHW outlet temperature

♪ measured at 1m in semianechoic chamber

♪♪ measured at 1,4m in semianechoic chamber

* Pump - Input Power Max + Auxiliary

** Electric resistances 2 step ON/OFF control panel

*** With electric resistances/without electric resistances 40 ± 50°C

1-Floor system

Cooling:

- Inlet/outlet water temperature 23°C / 18°C
 - External air temperature 35°C D.B. / 24°C W.B.

1-Floor system

Heating (without electric resistances):

- Inlet/outlet water temperature 30°C / 35°C
 - External air temperature 7°C D.B. / 6°C W.B.

2- Fancoil

Cooling:

- Inlet/outlet water temperature 12°C / 7°C
 - External air temperature 35°C D.B. / 24°C W.B.

2- Fancoil

Heating (without electric resistances):

- Inlet/outlet water temperature 40°C / 45°C
 - External air temperature 7°C D.B. / 6°C W.B.



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The technical data given on the following documentation is not binding. Aermec reserves the right to apply at any time all the modifications deemed necessary for improving the product.