

Installer manual

EN



innova

STØNE

Indoor unit H1

First of all, we would like to thank you for having chosen a device of our production.

We are sure you will be happy with it because it represents the state of the art in the technology of home air conditioning.

By following the suggestions contained in this manual, the product that you have purchased will operate without problems giving you optimum room temperatures with minimum energy costs.

INNOVA S.r.l.

Conformity

This unit complies with the European directives:

- EN 60335-2-40 Household and similar electrical appliances - Safety Part 2-40: Particular requirements for electrical heat pumps, air-conditioners and dehumidifiers
- Low Voltage Directive 2014/35/UE
- EMC Directive 2014/30/EU on Electromagnetic Compatibility
- RoHS2 Directive 2011/65/EU2 on the restriction of the use of hazardous substances in electrical and electronic equipment
- Directive 2012/96/EC (WEEE) on waste electrical and electronic equipment
- ErP Directive 2009/125/EC and Regulation 2012/206/EC
- F-Gas Regulation 2014/517/EU on fluorinated greenhouse gases
- Directive 2014/68/EU PED on pressure equipment And subsequent amendments.

Markings



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GENERAL INFORMATION

1.1 About the manual

This manual was written to provide all the explanations for the correct management of the appliance.

- ⚠ This instruction manual forms an integral part of the device and therefore must be carefully preserved and must ALWAYS travel with it, even if you transfer the device to another owner or relocate it to other premises. If the manual gets damaged or lost, download a copy from the website.

- ⚠ Read this manual carefully before proceeding with any operation and follow the instructions in the individual chapters.

- ⚠ The manufacturer is not responsible for damages to persons or property caused by failure to follow the instructions in this manual.

- ⚠ This document is restricted in use to the terms of the law and may not be copied or transferred to third parties without the express authorization of the manufacturer.

Editorial pictograms

The pictograms in the next chapter provide the necessary information for correct, safe use of the machine in a rapid, unmistakable way.

Related to security

⚠ High risk warning (bold text)

- The operation described above presents a risk of serious physical injury, fatality, major damage to the appliance and/or to the environment if not carried out in compliance with safety regulations.

⚠ Low risk warning (plain text)

- The operation described above presents a risk of minor physical injury or minor damage to the appliance and/or to the environment if not carried out in compliance with safety regulations.

⊘ Prohibition (plain text)

- Refers to prohibited actions.

ⓘ Important information (bold text)

- This indicates important information that must be taken into account during the operations.

In the texts

- Actions required

Expected responses following an action

- Lists

In the figures

1 The numbers indicate the individual components.

A The capital letters indicate component assemblies.

① The white numbers in black marks indicate a series of actions to be carried out in sequence.

Ⓐ The black letter in white identifies an image when there are several images in the same figure.

- The concerned personnel is informed to the presence of electricity and the risk of suffering an electric shock.

Pictograms on the product

Symbols are used in some parts of the appliance:

Related to security

⚠ **Caution: electrical danger**

Recipients

User

Non-expert person capable of operating the product in safe conditions for people, for the product itself and the environment, interpreting an elementary diagnostic of faults and abnormal operating conditions, carrying out simple adjustment, checking and maintenance operations.

Installer

Expert person qualified to position and connect (hydraulically, electrically, etc.) the unit to the plant; this person is responsible for handling and correct installation according to the instructions provided in this manual and the national standards currently in force.

To work on the refrigeration circuit, the installer must comply with the provisions of Regulation 303/2008/EC which

defines, in accordance with Directive 842/2006/EC, the requirements for companies and personnel with regard to fixed refrigeration, air conditioning and heat pump equipment containing certain fluorinated greenhouse gases (F-gas licence).

Service

Expert and qualified person authorised directly by the manufacturer to carry out all routine and supplementary maintenance operations, as well as every adjustment, check, repair and replacement of parts necessary during the life of the unit itself.

Service personnel must comply with the provisions of Regulation 303/2008/EC which defines, in accordance with Directive 842/2006/EC, the requirements for companies and

personnel with regard to fixed refrigeration, air condition-

ing and heat pump equipment containing certain fluorinated greenhouse gases (F-gas licence).

Manual organisation

The manual is divided into sections each dedicated to one or more target groups.

General information

It addresses all recipients.

It contains general information and important warnings that should be known before installing and using the appliance.

Installation

It is addressed exclusively to the installer.

It contains specific warnings and all the information necessary for positioning, mounting and connecting the appliance.

Commissioning, maintenance and troubleshooting

They are addressed exclusively to the Technical Assistance Centre.

It contains specific warnings useful information for the most common commissioning and routine maintenance.

Configuration accessories

It is addressed to the installer and the Technical Assistance Centre.

It contains specific warnings and all detailed information on configuration accessories.

Technical information

It addresses all recipients.

It contains detailed technical information about the appliance.

1.2 General warnings

- ⚠ Specific warnings are given in each chapter of the document and must be read before starting operations.
- ⚠ All personnel involved must be aware of the operations and dangers that may arise when beginning all unit installation operations.
- ⚠ Installation performed outside the warnings provided in this manual and use of the appliance outside the prescribed temperature limits will invalidate the warranty.
- ⚠ The installation and maintenance of climate control equipment could be dangerous because there is pressurised refrigerant gas and live electrical components inside the appliances. The installation, initial start-up and subsequent maintenance phases must be carried out exclusively by authorised and qualified personnel (see first start-up request form enclosed with the appliance).
- ⚠ Any contractual or extra-contractual liability for damage caused to persons, animals or property, due to installation, adjustment and maintenance errors or improper use is excluded. All uses not expressly indicated in this manual are not permitted.
- ⚠ Only qualified installer companies are authorised to install the device. After having completed installation, the installer will issue a declaration of conformity to the plant manager, as required by the applicable standards and the guidelines provided by contractor's instruction manual supplied with the device.
- ⚠ First start-up and repair or maintenance operations must be carried out by the Technical Assistance Centre or by qualified personnel following the provisions of this manual.
- ⚠ Do not modify or tamper with the appliance as this can lead to dangerous situations.
- ⚠ Use suitable accident-prevention clothing and equipment during installation and/or maintenance operations. The manufacturer is not liable for the non-observance of the current safety and accident prevention regulations.
- ⚠ In the event of liquid or oil leaks, set the master switch of the plant to "off" and close the water taps. Call the authorised Technical Assistance Centre or professionally qualified personnel as soon as possible and do not work on the appliance yourself.
- ⚠ In case of replacement of parts, use only original parts.
- ⚠ The manufacturer reserves the right to make changes to its models at any time to improve its product, without prejudice to the essential characteristics described in this manual. The manufacturer is not obliged to add such modifications to machines previously manufactured, already delivered or under construction.

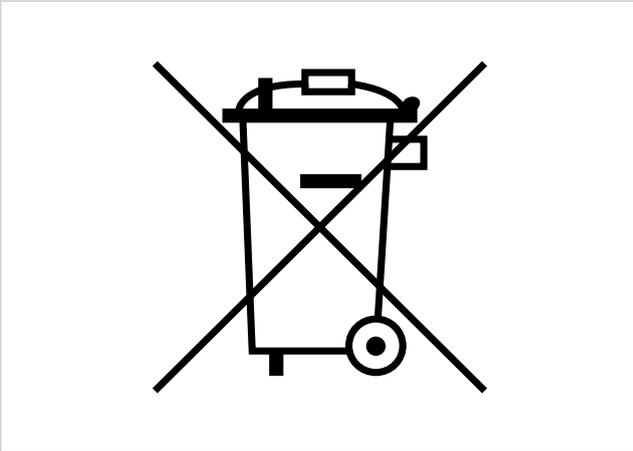
1.3 Basic rules of security

Please keep in mind that the use of products powered by electricity and water call for operators to comply with certain essential safety rules:

- ⊖ The use of the appliance to children and unassisted disabled persons is prohibited.
- ⊖ It is forbidden to touch the device with wet or damp body parts.
- ⊖ It is forbidden to carry out any operation before disconnecting the appliance from the power supply by setting the plant master switch to "off".
- ⊖ It is forbidden to modify the safety or adjustment devices or adjust without authorization and indications of the manufacturer.
- ⊖ It is forbidden to pull, unplug or twist the device's electric cables, even if it is disconnected from the mains.

- ⊖ It is forbidden to introduce objects and substances through the air inlet and outlet grilles.
- ⊖ It is forbidden to open the access doors of the device's internal parts without first having set main switch of the system to " off".
- ⊖ It is forbidden to dispose of, or leave in the reach of children, the packaging materials which could become a source of danger.

1.4 Disposal



The symbol on the product or its packaging indicates that the product must not be treated as normal household waste, but must be taken to the appropriate collection point for the recycling of electrical and electronic equipment.

Proper disposal of this product avoids harm to humans and the environment and promotes the reuse of valuable raw materials.

For more detailed information about the recycling of this product, contact your local city office, your household waste disposal service or the shop where you purchased the product.

Illegal disposal of the product by the user involves the application of the administrative sanctions provided for by the regulations in force.

This provision is only valid in the EU Member States.

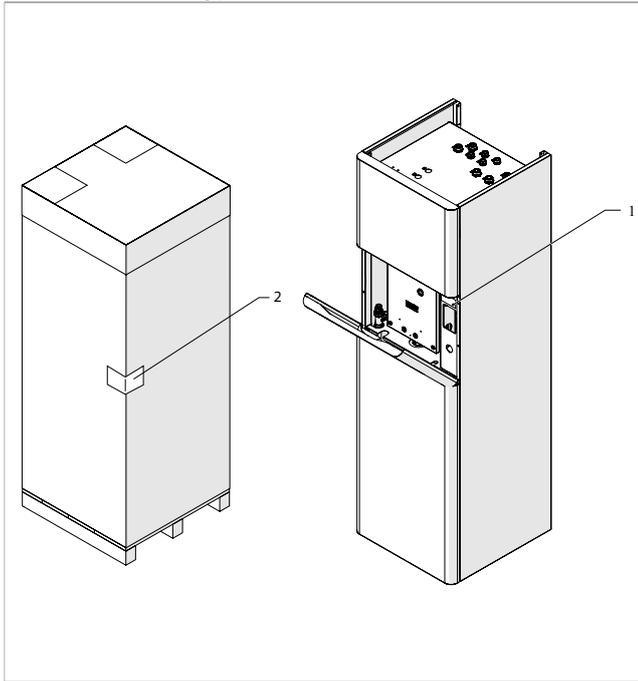
- ⚠ Avoid disassembling the unit yourself.
- ⚠ This unit contains fluorinated greenhouse gases covered by the Kyoto Protocol. Maintenance and disposal operations must be carried out by qualified personnel only.
- ⚠ **Contact an authorised Technical Assistance Centre to disassemble the appliance.**

PRODUCT PRESENTATION

2.1 Identification

The appliance can be identified by the rating plate:

1. Packaging plate
2. Technical rating plate



Packaging plate

Shows the identification data of the device.

Technical rating plate

This shows the technical and performance specifications of the appliance.

- ⚠ According to EU Regulation No. 517/2014 concerning certain fluorinated greenhouse gases, it is mandatory to indicate the total amount of refrigerant present in the installed system. This information can be found on the rating plate of the combined outdoor unit.
- ⚠ Tampering with, removal of, or lack of identification plates will not allow for the safe identification of the product by its serial number and therefore invalidates the warranty.

2.2 Destination of use

These appliances are designed for air-conditioning/heating and/or domestic hot water (DHW) production and must

be intended for this use compatibly with their performance characteristics.

2.3 Description of the appliance

The indoor units in the **STØNE** range, **H1** version, are designed for indoor installation, on the floor and work in combination with the **STØNE M1** outdoor units.

The units are complete with 200 L tank for DHW instantaneous exchanger, 24 L expansion tank, diverter valve for DHW, connection for auxiliary boiler, safety valves.

The units are manufactured in different sizes, distinguished by performance and type of power supply:

Single-phase models 5M - 7M - 9M - 11M - 13M - 15M

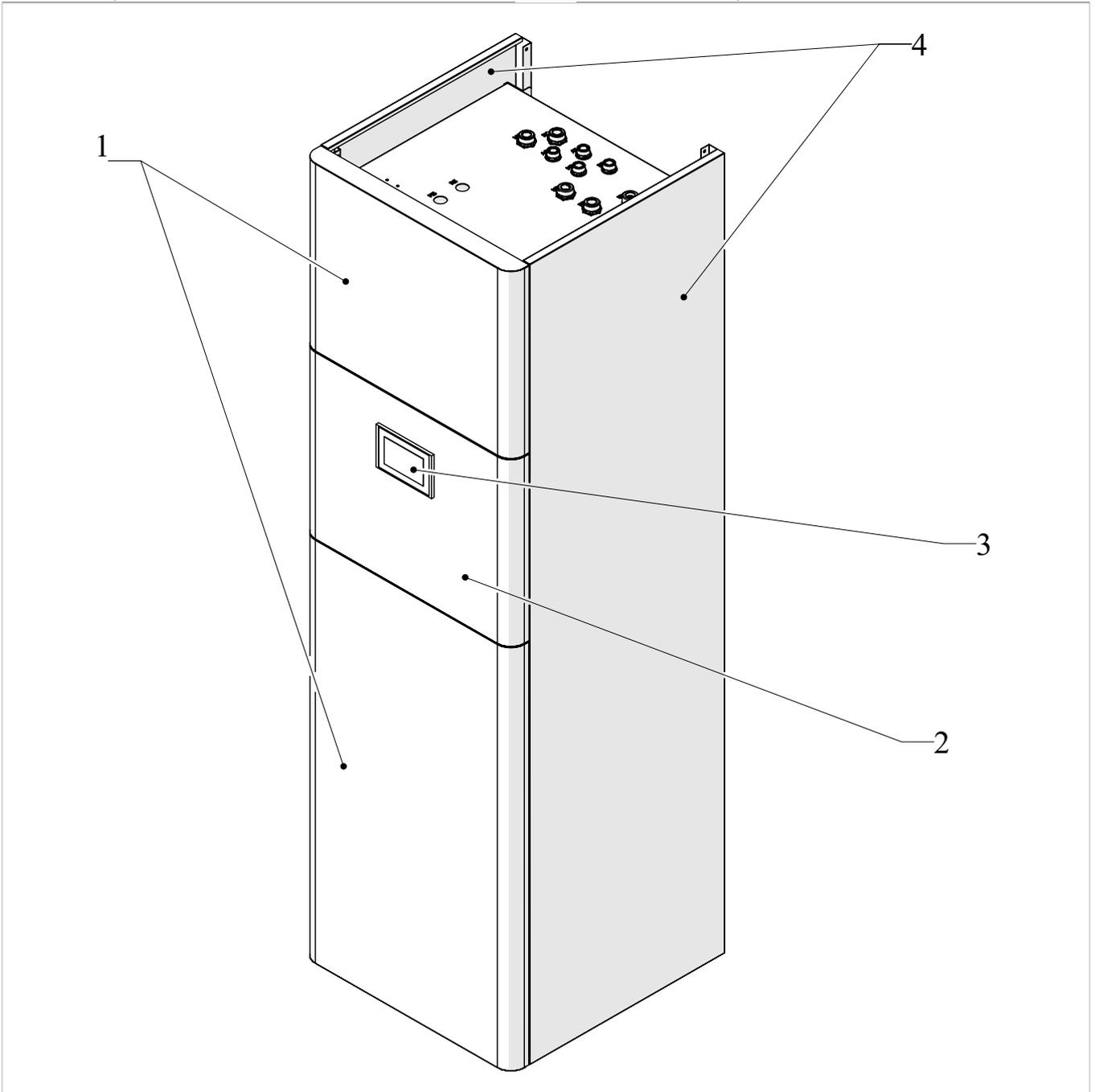
Three-phase 13T - 15T models

2.4 List of external components

Indoor unit

- 1. Cosmetic front panel
- 2. Access panel

- 3. Control Panel
- 4. Cosmetic side panel

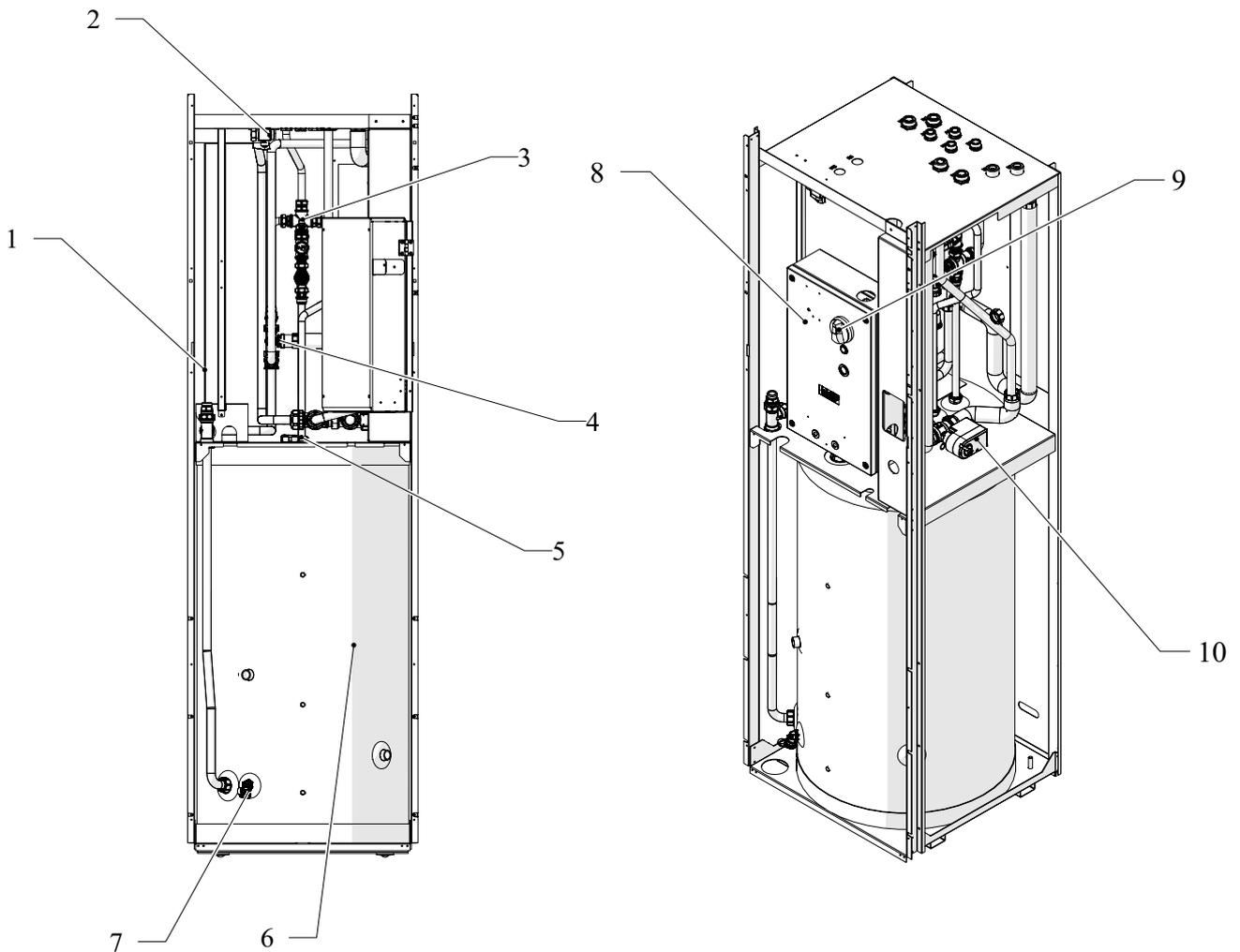


2.5 List of internal components

Indoor unit

- 1. Expansion vessel
- 2. Filling cock
- 3. 3-way valve
- 4. Net filter
- 5. Breather valve

- 6. tank
- 7. Drain cock
- 8. Electrical panel
- 9. Disconnect switch
- 10. System/sanitary deviator valve



2.6 Compatible accessories

	Accessory description	Combinable products	Code
Configuration accessories			
Control			
	BUTLER: codes, accessories and price list in relevant section	All	
tank			
	Integrated inertial tank 20 L	All	GB1016II (1) (2)
Secondary separator kit			
	Secondary separator kit - Secondary hydraulic unit: hydraulic separator, system pump (DC Inverter class A) and fittings	5M 7M	GB0683II (1) (3)
	Oversized secondary separator kit - Secondary hydraulic unit: hydraulic separator, system pump (DC Inverter class A) and fittings	All	GB1020II (1) (3)
Heated towel rail kit			
	Hydraulic unit and circulation pump for high temperature Heated towel rail feeding	All	GB0736II (1)
Solar heating kit			
	Solar unit: control unit, pump, safety valve, 24 litre expansion tank, loading unit	All	GB0685II (1)

1. Accessories can be installed and tested at the factory
2. The 20 litre inertial tank kit can be supplied if the solar kit is not present / installed on the system flow
3. The separator kit is mandatory unless it is already present in the system.

⚠ For detailed information on accessories please refer to the "Configuration accessories" p. 43 section.

INSTALLATION

3.1 Preliminary warnings

- ⚠ **For detailed information on the products, refer to chapter "Technical information" p. 47.**
- ⚠ **For detailed information on accessories please refer to the "Configuration accessories" p. 43 section.**
- ⚠ The installation must be carried out by the installer. There is a risk of water leakage, electric shock or fire if the installation is not performed correctly.
- ⚠ During the installation, it is necessary to observe the precautions mentioned in this manual, and on the labels placed inside the equipment, as well as to adopt any precaution suggested by common sense and by the Safety Regulations in force in the place of installation.
- ⚠ Be sure to use the supplied or specified installation parts. Use of other parts may cause the unit to come to lose, water leakage, electrical shock, or fire.
- ⚠ Failure to apply the indicated rules may cause malfunctions of the appliances and relieves the manufacturer from any warranty and from any damage caused to persons, animals or property.

3.2 Reception

Preliminary warnings

- ⚠ Upon receipt of the package check that it is not damaged, otherwise accept the goods with reserve, producing photographic evidence of any damage.
- ⚠ In the event of damage, notify the shipper within 3 days of receipt of any damage by registered mail with return receipt, submitting photographic evidence. Similar information should be sent by fax to the manufacturer (jurisdiction will be at the Court Trento for any dispute).
- ⚠ No notice of damage will be accepted after 3 days from delivery.

Package description

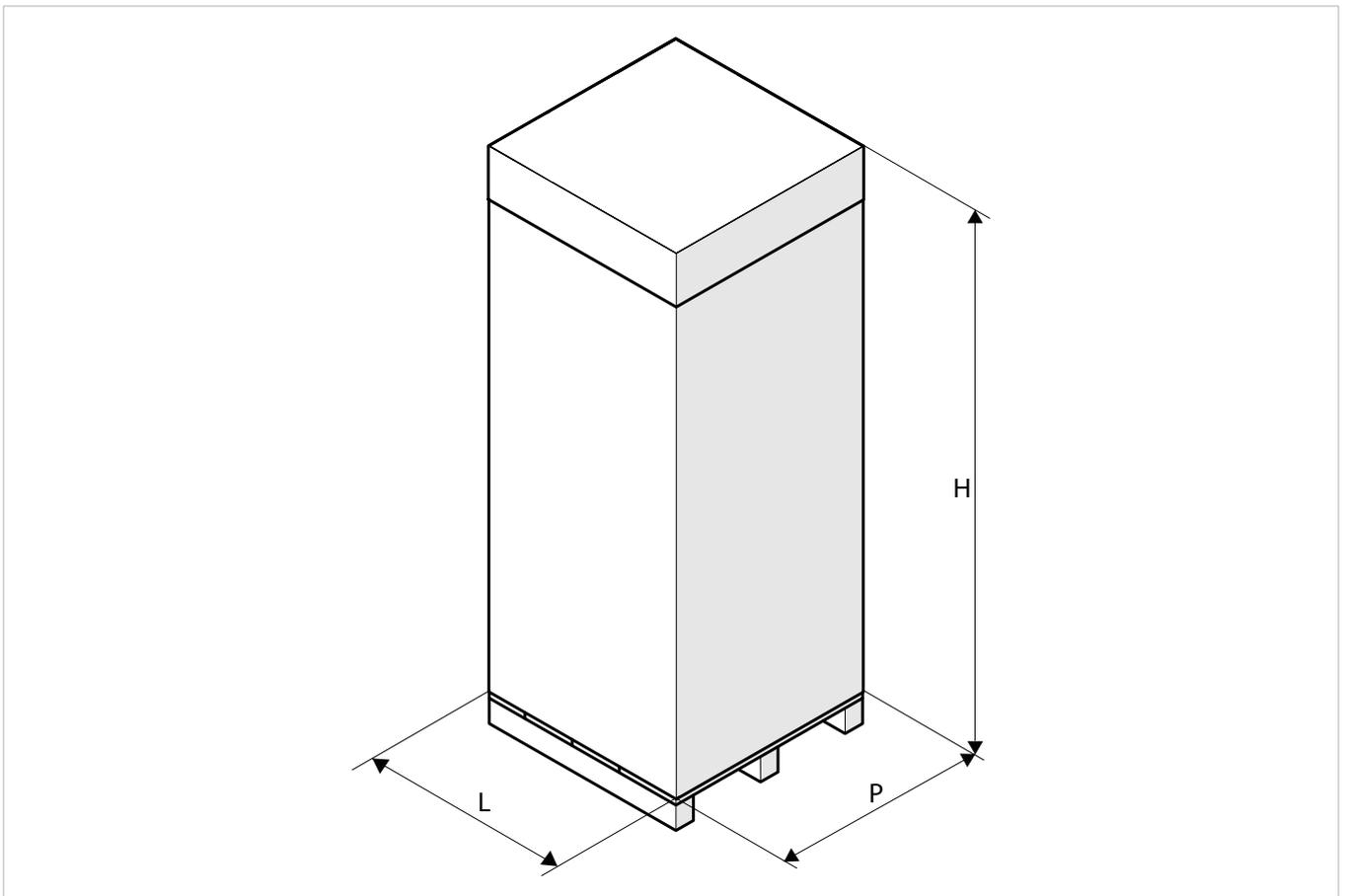
The packaging is made of suitable material and carried out by experienced personnel.

The appliance is shipped in standard packaging consisting of a cardboard sleeve and a set of expanded polystyrene protectors.

There is a pallet underneath the packaging of the unit to facilitate transport and moving.

Units are delivered complete and in perfect condition.

3.3 Dimensions and weights with packaging



Indoor unit

Models	m.u.	05	07	09	11	13	15
Total width	mm	720	720	720	720	720	720
Total height	mm	2120	2120	2120	2120	2120	2120
Total depth	mm	720	720	720	720	720	720
Weight	kg	179,0	179,0	179,0	179,0	179,0	179,0

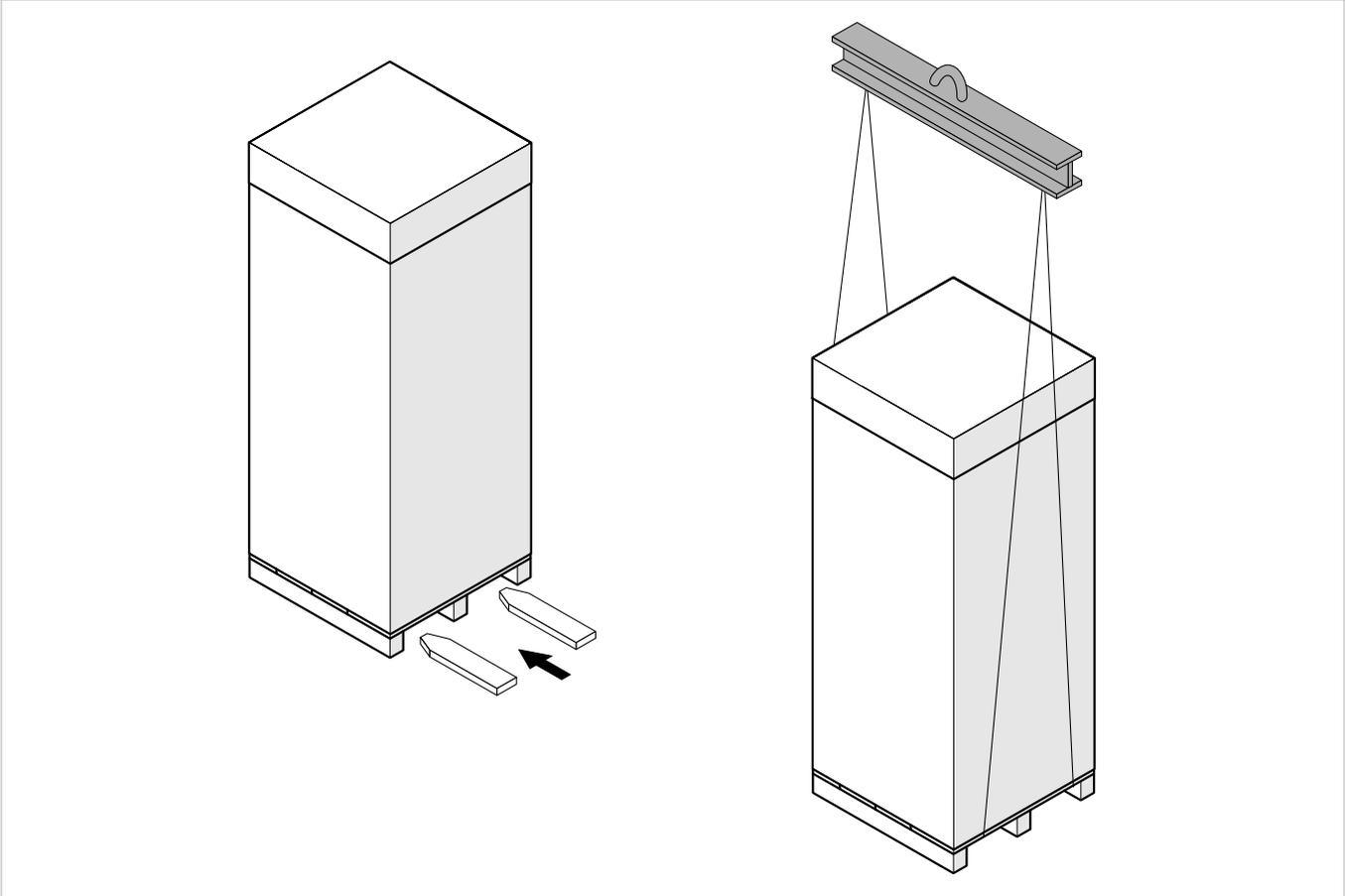
3.4 Handling with packaging

Preliminary warnings

- ⚠ The appliance must be handled only by qualified personnel, adequately equipped and with equipment suitable for the weight and dimensions of the appliance.
- ⚠ Before moving the unit, check the lifting capacity of the machinery used following the instructions on the packaging.
- ⚠ Stay clear of the area below and around it when the load is lifted off the ground.
- ⚠ If a forklift truck is used, put the base in the appropriate openings.
- ⚠ Avoid dangerous situations when using a hoist to lift the appliance.

⚠ Move the unit to an upright position.

Movement methods



The product can be handled as follows:

- using a hoist or a crane
- using a fork lift or a transpallet which can bear its weight

⚠ Use a small balance to prevent the pressure of the belts damages the unit.

3.5 Storage

Preliminary warnings

⚠ Stored in accordance with the applicable national regulations.

Appliance with packaging

Store the package:

- in a dry and clean place
- in a closed environment protected from atmospheric elements

- insulated from the ground by crossbars or pallets

Appliance without packaging

The following procedures are recommended in the case of medium to long term storage:

- check that no water is present in the hydraulic systems
- do not remove plastic protective films
- check that the electrical panels are closed

3.6 Unpacking

Preliminary warnings

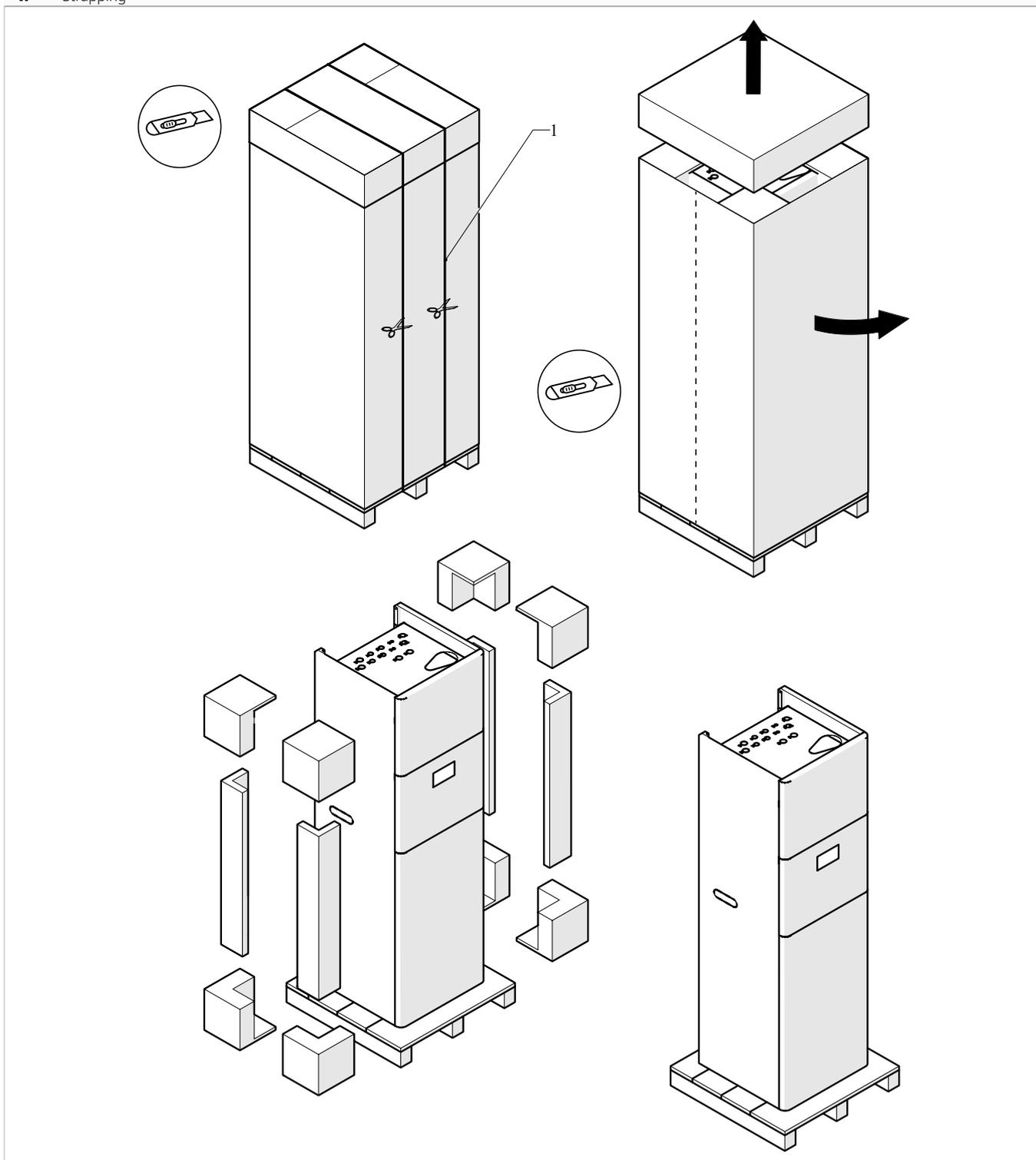
⚠ Check that no components were damaged during transport.

⚠ Dispose of the packaging components following the applicable waste disposal regulations. Check for disposal arrangements with your municipality.

⊖ The packing material (cardboard, staples, plastic bags, etc.) must not be dispersed or abandoned in the surrounding environment and must be kept out of children reach, as it can be dangerous.

Remove the package

1. Strapping



Remove the packing:

- cut the strapping
- remove the upper cover
- use a cutter
- cut vertically
- remove the packing
- remove the polystyrene elements

⚠ All aesthetic panels must be removed before removing the appliance from the pallet.

Accompanying material

They are included with the appliance, inside the packaging:

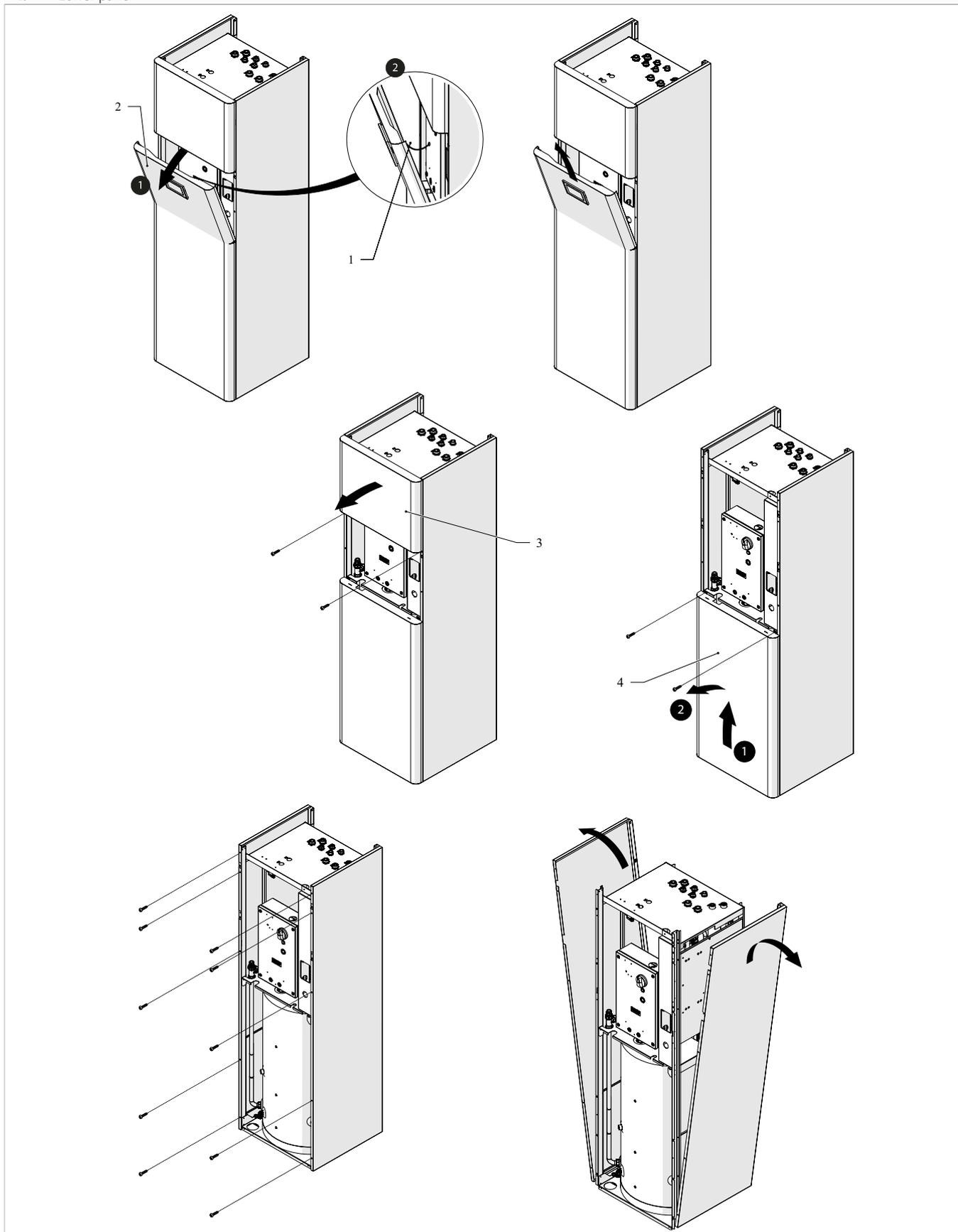
⚠ Check the presence of the individual components.

Indoor unit

- 1 installer manual of the unit
- 1 user and installer manual for the Control Panel
- 1 first start-up form
- One Energy efficiency label

3.7 Removal of aesthetic panels

1. Connectors
2. Access panel
3. Top panel
4. Lower panel



The control panel, fixed to the front panel, is connected with a connector to the electrical board in the unit. The control panel must be disconnected to avoid damaging the electronic components.

- open the access panel by turning it downwards
- disconnect the control panel
- remove the access panel
- Unscrew the fixing screws of the top panel
- remove the upper panel
- Unscrew the fixing screws of the bottom panel

- lift the bottom panel
- remove the panel
- Unscrew the side panel fixing screws
- lift and remove the panel

⊖ Removing the side panels without completely removing the fixing screws is forbidden.

⚠ Do not install the cosmetic panels until all connections have been established.

3.8 Handling without packaging

Preliminary warnings

⚠ The appliance must be handled only by qualified personnel, adequately equipped and with equipment suitable for the weight and dimensions of the appliance.

⚠ Move the unit to an upright position.

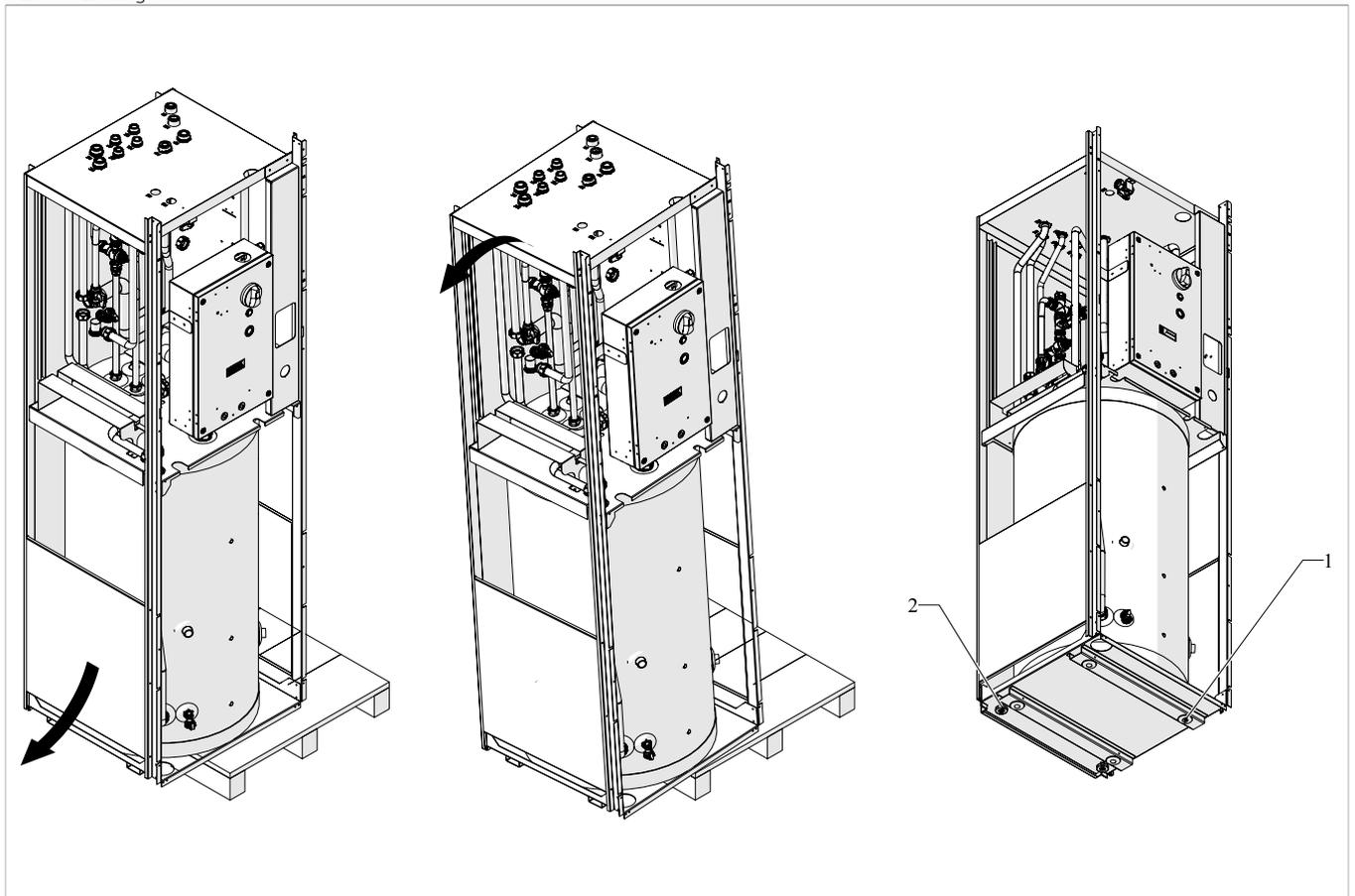
⚠ The unit is provided with four ball wheels to facilitating handling.

⚠ The use of protective gloves is mandatory.

⚠ The use of protective shoes is mandatory.

Movement methods

1. Ball wheels for movement
2. Locking feet



To handle:

- slide the appliance slowly
- turn the appliance to rest it on the ground
- slide the pallet out completely
- move the unit by pushing it

⚠ The machine must be handled with the utmost care to prevent the unit from tipping over.

3.9 Installation site

The location of the appliance must be determined by the plant engineer or a competent person and must take into account both purely technical requirements and any national/local legislation in force.
The appliance is intended to be installed indoors.

Preliminary warnings

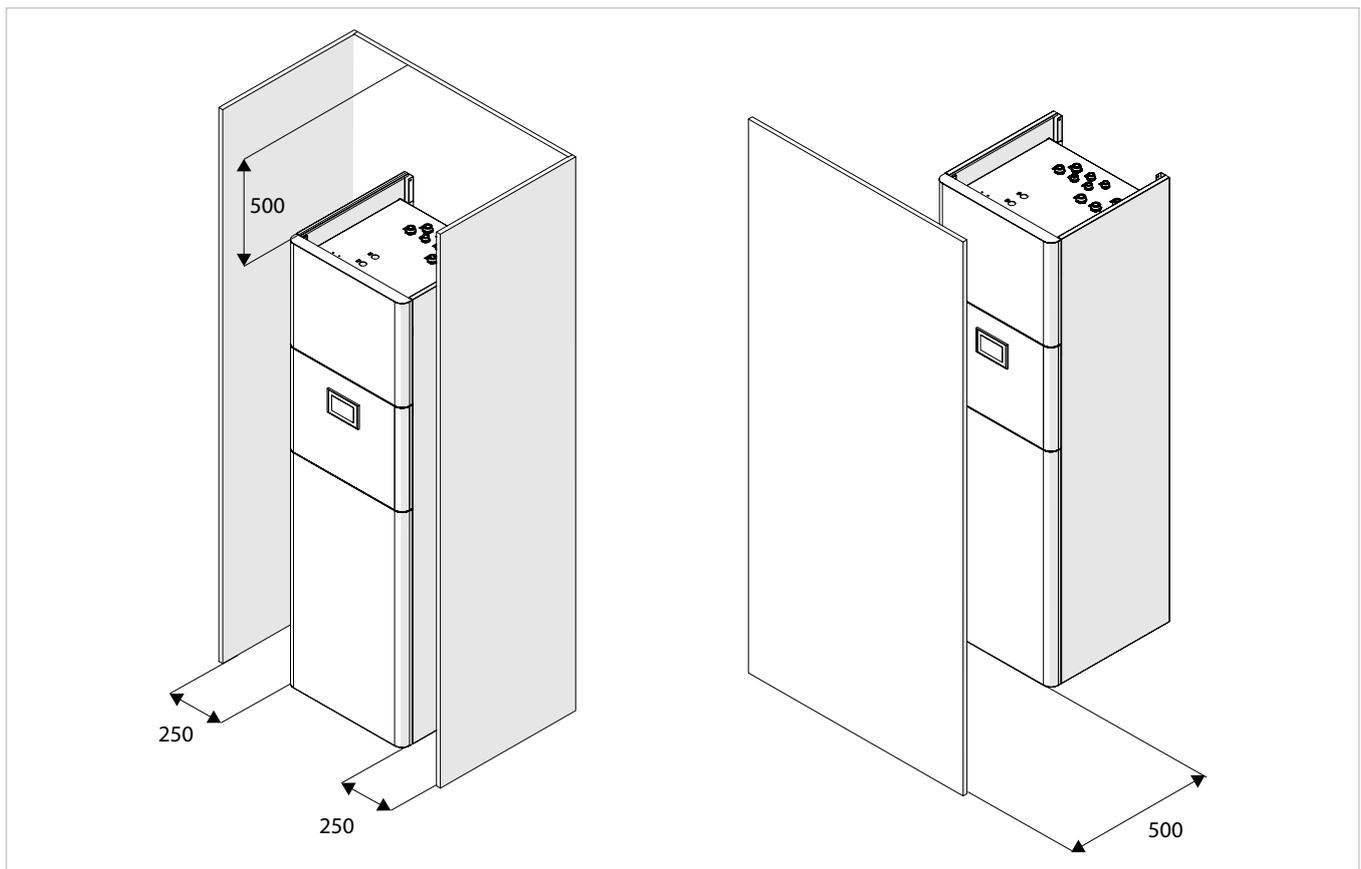
- ⚠ Avoid installing the unit near:
 - narrow places where the sound level of the appliance can be enhanced by reverberations or resonances
 - environments with the presence of flammable or explosive gases
 - very humid environments (laundries, greenhouses, etc.)
 - environments with aggressive atmospheres
 - solar radiation and proximity to heat sources

- ⚠ Avoid placing the unit within 1 metre of radio and video equipment.
- ⚠ Make sure that:
 - the installation site of the unit must be chosen with the utmost care to guarantee adequate protection from shocks and consequent damage
 - the floor is able to support the weight of the appliance.
 - the floor is not crossed by pipelines, load-bearing construction elements or power lines
 - the appliance must be installed in a position where it can be easily serviced
- ⚠ Provide the following:
 - a drain and a water supply nearby
 - a compliant power supply nearby

3.10 Installation minimum distances

The clearance zones for the installation and maintenance of the appliance are shown in the figure. Established spaces are necessary to allow for normal cleaning and maintenance.

- ⚠ Make sure that there is sufficient space to allow the panels to be removed for routine and supplementary maintenance operations.



3.11 Positioning

Exposed units can be positioned on the floor.

Preliminary warnings

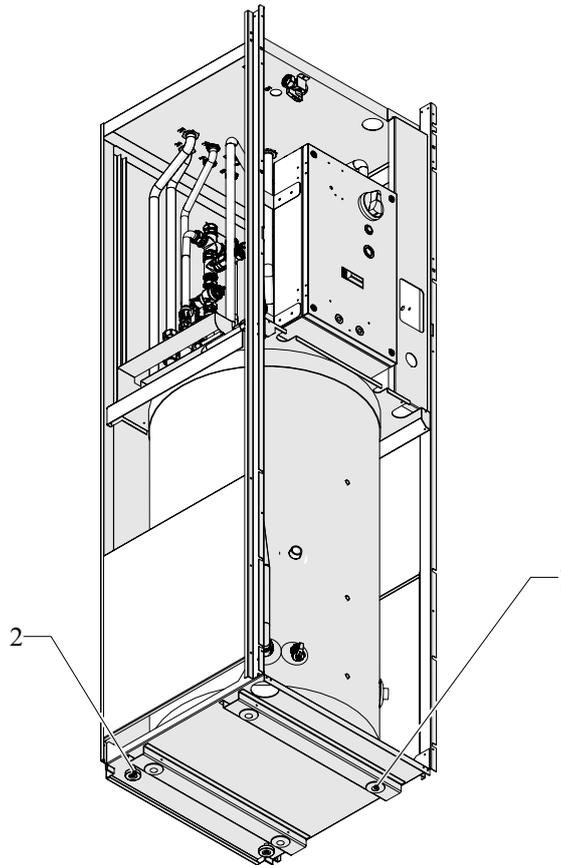
- ⚠ Make sure that:
- the floor supports the weight of the appliance

- the floor is not crossed by pipelines, load-bearing construction elements or power lines

- ⚠ The unit is provided with four ball wheels to facilitating handling.
- ⚠ The unit is provided with two locking and adjustment feet.

Positioning

1. Ball wheels for movement
2. Locking feet



⚠ For dimensional information, refer to chapter "Technical information" *p. 47.*

- ⚠ The appliances are fitted with four ball wheels at the base to facilitate handling.
- position the appliance
 - Adjust the two locking feet

Make sure that:

- it is levelled
- easy access is allowed to the hydraulic and electrical parts

3.12 Hydraulic connections

Preliminary warnings

- ⚠ **In addition to the system, the appliance must be connected to the outdoor unit STØNE M1.**
- ⚠ The engineer is responsible for choosing the right water lines and their size, in accordance with good installation practices and the applicable law.
- ⚠ The hydraulic system is made by the installer and must be carried out with reference to the diagrams in this manual or on the website.
- ⚠ The hydraulic pipes connecting to the appliance must be suitably sized for the actual water flow rate required by the plant during operation. The water flow rate to the heat exchanger must always be constant.
- ⚠ The maximum permissible pressure drops must be compared with the data shown in chapter "Technical information" [p. 47](#). If higher heads are required due to high pressure drops in the plant, an external pump with respective buffer vessel must be used.

- ⚠ Make sure that the quantity of water in the primary circuit is greater than the minimum volume indicated in chapter "Plant water content and minimum flow rate" [p. 20](#), to prevent the risk of ice formation during defrosting operations or continuous modulation of the compressor frequency
- ⚠ It is important to note that the heat pump Control Panel manages all the adjustments of the primary circuit (plant and domestic hot water set-point, circulation pump, dynamic set control and auxiliary heater management).
- ⚠ Any regulation that foresees the management of the plant with a control unit or a boiler conflicting with these regulations must be submitted to the manufacturer's technical office in advance for approval otherwise the warranty will be invalidated.
- ⚠ If the appliance is connected in parallel with a boiler, make sure that the temperature of the water circulating in the heat pump does not exceed 60 °C during operation.

Hydraulic plant

- ⚠ **In addition to the system, the appliance must be connected to the outdoor unit STØNE M1.**

- ⚠ Refer to the outdoor unit manual for hydraulics information.

Plant water content and minimum flow rate

Water content

A minimum volume of water in the primary circuit of the plant must be guaranteed for the correct operation of the appliance.

- ⚠ The minimum volume is necessary to prevent risks of ice formation during defrosting operations or continuous modulation of the compressor frequency.

It also allows the following advantages:

- less wear and tear on the appliance

- increased system performance
- improved temperature stability and accuracy

The minimum volume is indicated in the table below:

- ⚠ If the minimum volume is not reached, a suitably sized storage tank must be provided.

- ⚠ The minimum volume must be guaranteed in all operating modes and under all conditions.

Models	m.u.	5-M	7-M	9-M	11-M	11-T	13-M	13-T	15-M	15-T
Minimum system water content	L	20	25	30	35	35	40	40	50	50

Minimum flow rate

To prevent the differential pressure switch from tripping, a minimum water flow rate must be guaranteed to the appliance.

The minimum flow rate must be guaranteed in all operating modes and under all conditions, if necessary by adding a by-pass valve.

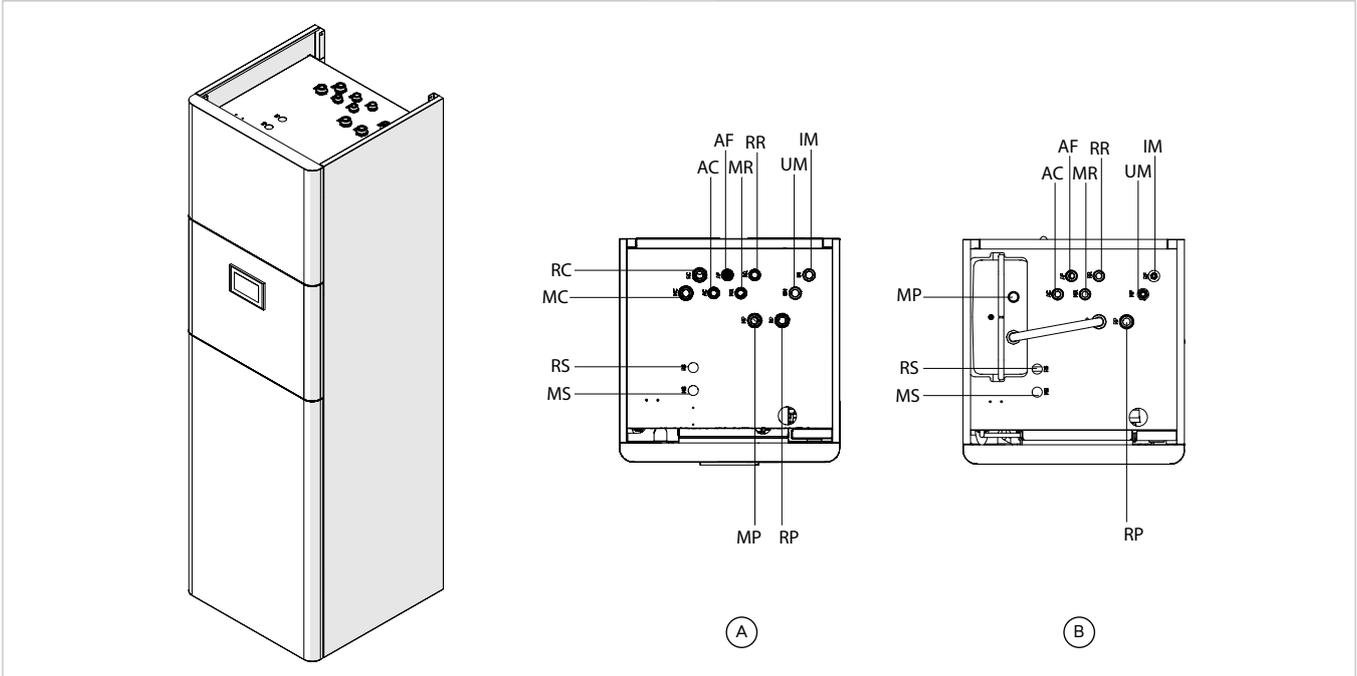
A hydraulic separator must be provided if the plant requires a higher head than that available from the pump of the unit.

Models	m.u.	5-M	7-M	9-M	11-M	11-T	13-M	13-T	15-M	15-T
Minimum water flow rate	m ³ /h	0,6	0,9	1,1	1,2	1,2	1,4	1,4	1,7	1,7

Position and dimensions

A	Standard units
B	Unit with integrated inertial tank 20 L (cod. GB1016)
MC	Boiler flow
RC	Boiler return
AC	Domestic hot water
AF	Domestic hot water supply
MR	High temperature utilities flow (radiator)

RR	High temperature utilities (radiator) return
IM	Outdoor unit input
UM	Outdoor unit output
MP	Plant delivery
RP	System return
MS	Solar flow
RS	Solar return



Models	m.u.	5-M	7-M	9-M	11-M	11-T	13-M	13-T	15-M	15-T
Hydraulic connections										
Boiler flow	" GAS	1	1	1	1	1	1	1	1	1
Boiler return	" GAS	1	1	1	1	1	1	1	1	1
Domestic hot water	" GAS	3/4	3/4	3/4	3/4	3/4	3/4	3/4	3/4	3/4
Hot water feed	" GAS	3/4	3/4	3/4	3/4	3/4	3/4	3/4	3/4	3/4
High temperature utilities flow	" GAS	3/4	3/4	3/4	3/4	3/4	3/4	3/4	3/4	3/4
High temperature utilities return	" GAS	3/4	3/4	3/4	3/4	3/4	3/4	3/4	3/4	3/4
Outdoor unit flow	" GAS	1	1	1	1	1	1	1	1	1
Outdoor unit return	" GAS	1	1	1	1	1	1	1	1	1
Plant return	" GAS	1	1	1	1	1	1	1	1	1
Plant delivery	" GAS	1	1	1	1	1	1	1	1	1

⚠ Some of the connections shown are only present if the respective accessories have been installed. For detailed information on accessories please refer to the "Configuration accessories" [p. 43](#) section.

⚠ **For dimensional information, refer to chapter "Technical information" [p. 47](#)**

If cosmetic panels are mounted:

- remove as indicated in the chapter "Removal of aesthetic panels" [p. 16](#)

Connection to the system

Preliminary warnings

⚠ To allow maintenance or repair operations, each hydraulic connection must be equipped with the respective manual shut-off valves.

⚠ It is advisable to create a by-pass in the plant to be able to wash the plate exchanger without having to disconnect the appliance.

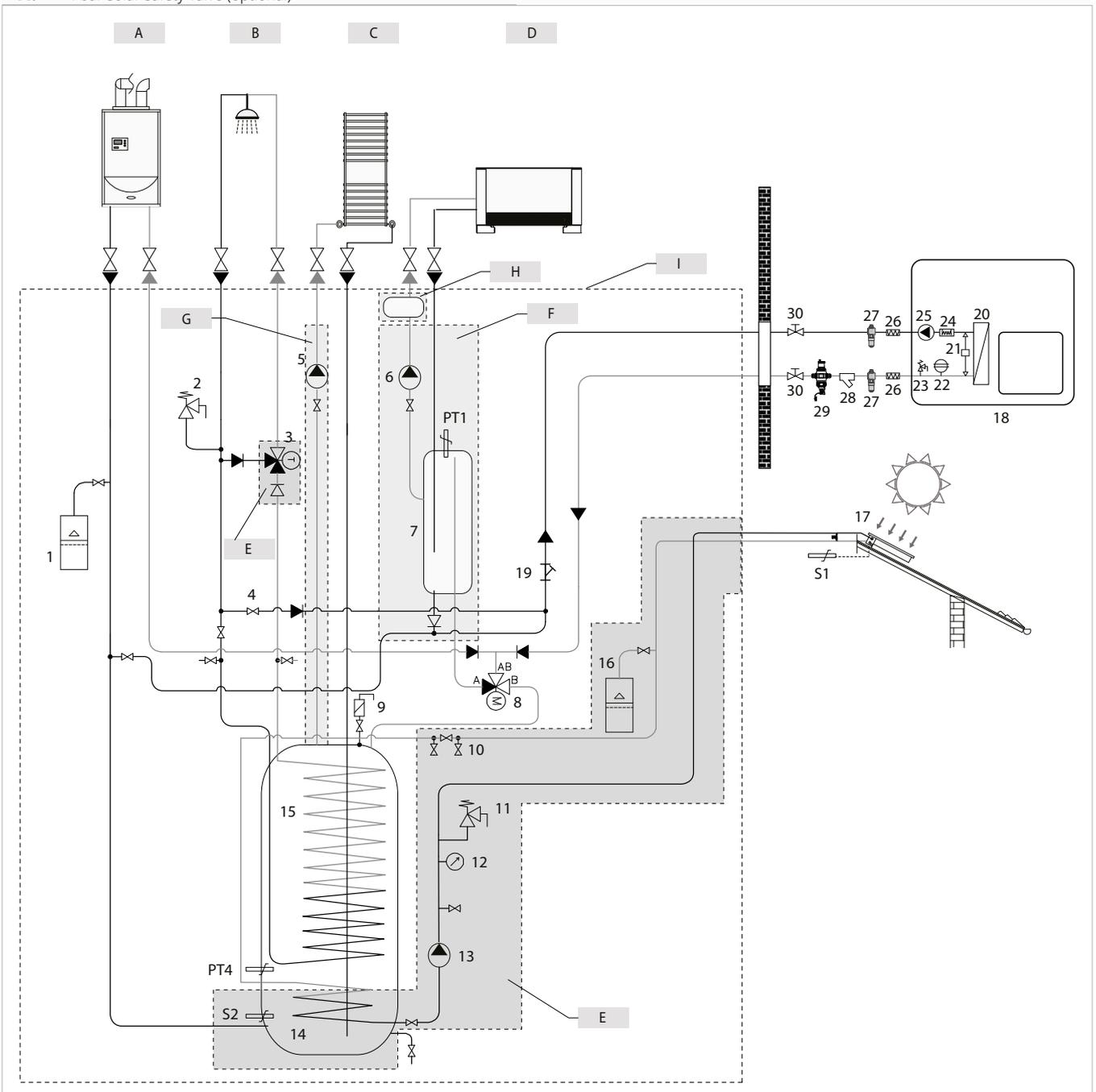
⚠ Before connecting the piping, make sure that it do not contain stones, sand, rust or foreign matter that could damage the plant.

- ⚠ **The minimum nominal diameter of the connecting pipes must be as indicated in the table. Keep in mind that undersized pipelines lead to poor system operation and/or a loss of thermal and cooling performance.**
- ⚠ The connection piping must be suitably supported so as not to bear on the appliance with its weight.
- ⚠ Plants filled with antifreeze or special legal provisions require the use of hydraulic disconnectors.
- ⚠ Flush the plant thoroughly before connecting the unit. This cleaning process removes any residue, such as welding drops, slag, rust or other fouling from the pipes. These substances may otherwise settle inside and cause the appliance to malfunction.
- ⚠ Hydraulic lines and joints must be thermally insulated. Insulate the water distribution piping with polyethylene foam or similar materials with a minimum thickness of 13 mm. Shut-off valves, elbows and various fittings must also be adequately insulated.
- ⚠ Avoid partial insulation of the pipes.
- ⚠ Avoid over-tightening the pipes to avoid damage to the insulation.
- ⚠ Carefully check that the insulation is tight, in order to prevent the making and dripping of condensate.
- ⊘ Operating the unit without the water filter installed and clean is forbidden.

Basic hydraulic scheme

- A** Boiler
- B** Domestic hot water consumers
- C** High temperature (radiator) utilities
- D** System utilities
- E** Solar heating kit (optional)
- F** Secondary separator kit (optional)
- G** Heated towel rail kit (optional)
- H** tank (optional)
- I** Indoor unit H1
- 1.** 24 litre system expansion vessel
- 2.** 7-bar safety valve
- 3.** Thermostatic mixing valve (supplied with the solar kit)
- 4.** Filling cock
- 5.** High-temperature circulation pump
- 6.** Secondary circulation pump PP3
- 7.** Hydraulic separator
- 8.** 3-way on/off valve PV1
- 9.** Boiler relief valve
- 10.** Solar filling cock
- 11.** 4 bar solar safety valve (optional)

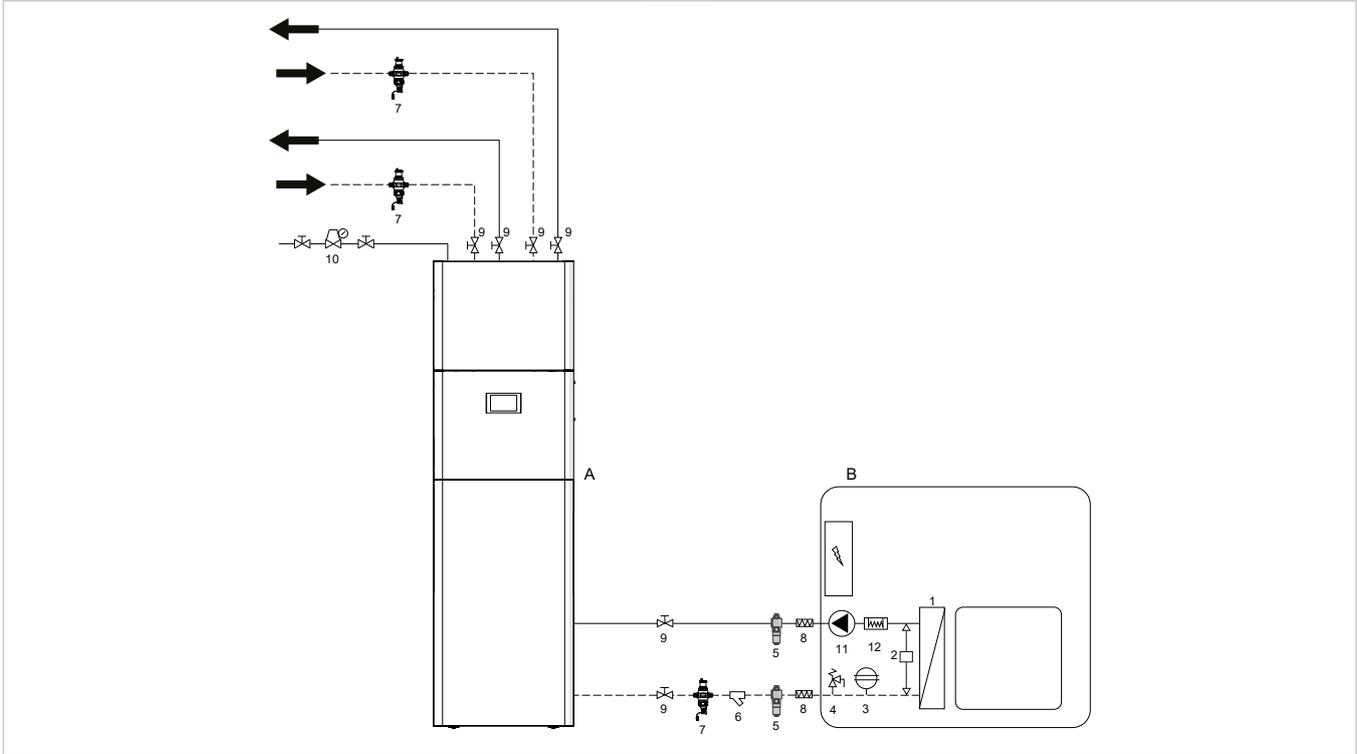
- 12.** Pressure gauge
- 13.** Solar circuit pump
- 14.** Solar serpentine
- 15.** 200 litre tank for DHW
- 16.** 24 L solar expansion vessel
- 17.** Solar panel
- 18.** Outdoor unit
- 19.** Net filter
- 20.** Plate exchanger
- 21.** Flow switch (differential pressure switch)
- 22.** Expansion vessel
- 23.** 3-bar safety valve
- 24.** Electric heating element (accessory)
- 25.** PP1 primary circulation pump
- 26.** Flexible connections
- 27.** Antifreeze valve
- 28.** Network water filter
- 29.** Dirt separator
- 30.** Shut-off valves



Connection diagram

A	Indoor unit
B	Outdoor unit
1.	Plate exchanger
2.	Flow switch (differential pressure switch)
3.	Expansion vessel
4.	3-bar safety valve
5.	Antifreeze valve

6.	Network water filter
7.	Dirt separator
8.	Flexible connections
9.	Shut-off valves
10.	Automatic plant filling assembly
11.	PP1 primary circulation pump
12.	Electric heating element (accessory)



Connection

To make the connections:

- hydraulic lines positioning
- use the "wrench against wrench" method
- tighten the connections
- check for leaks
- coat the connections with insulating material

The hydraulic connections must be completed by installing:

- air release valves at the highest points of the piping
- flexible elastic joints
- shut-off valves
- a suitably sized storage tank for plant water
- the secondary separator kit is available as accessory

⚠ The separator kit is compulsory unless it is already present in the system.

Filtration system

⚠ It is necessary to install a filtration system at the inlet of the appliance in an area accessible for maintenance, in order to protect the appliance from impurities in the water.

⚠ The recommended filtration system is through a dirt separator. Alternatively, a net filter can be used.

Safety valve

The outlet of the installed safety valve must be connected to a suitable collection and evacuation system to prevent

any water spillage from coming into contact with the electrical parts of the appliance.

⚠ The manufacturer of the appliance is not responsible for any flooding caused by the intervention of the safety valves.

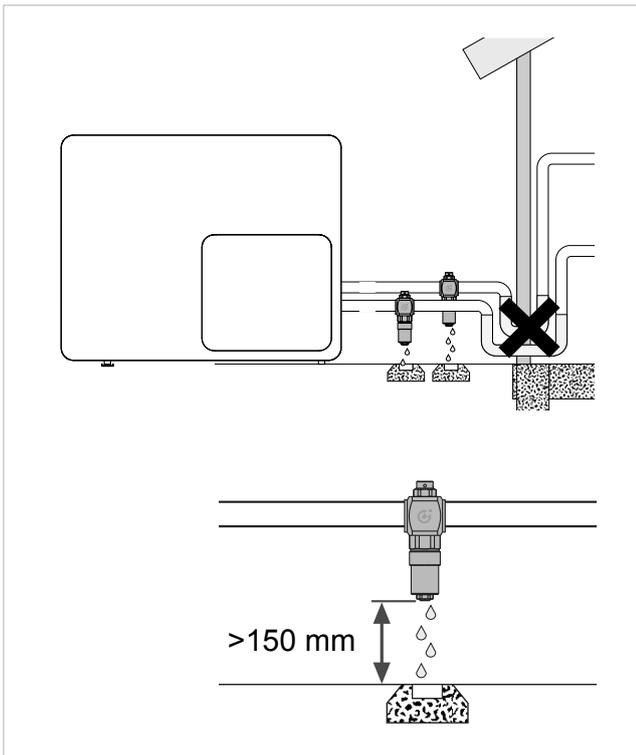
⚠ Provide a pressure reducer if the mains pressure exceeds 3 bar.

Coil vent

To avoid air pockets inside the circuit, place automatic or manual venting devices at all points (higher piping, siphons, etc.) where air can accumulate.

Antifreeze valve

The antifreeze safety device prevents the formation of ice in the hydraulic circuit avoiding possible damage to the machine and piping.



The antifreeze valves must:

- be installed outdoors
 - be installed in the coldest part of the plant
 - be positioned away from heat sources that may alter the correct operation
- ⚠ The device should only be installed in a vertical position so that the drained water can flow properly and freely downwards.
 - ⚠ Install two antifreeze valves, one per pipe.
 - ⚠ Keep a distance of at least 150 mm from the ground to prevent the formation of any column of ice in the area underneath preventing water from escaping from the valve.
 - ⚠ Avoid siphon connections.
 - ⊖ Installing the valves inside buildings is forbidden.

3.13 Filling the plant

The plant must be filled once the hydraulic connections have been completed. The appliance is fitted with a tap to divert the domestic water supply and fill the system circuit.

- ⚠ After the system has been loaded, the tap must be returned to its original position.

Preliminary warnings

- ⚠ All operations must be carried out with the machine stopped and disconnected from the power supply.
- ⚠ If an external auxiliary pump is used, it must be switched off.
- ⚠ The operating pressure of the plant must not exceed 1.5 bar with the pump off. To check for leaks in the plant during testing, it is advisable to raise the test pressure and then discharge it later to reach the correct working pressure. If the pressure exceeds 3 bar, the safety valve opens and discharges the excess water outside.

Water quality requirements

The quality of the water used must comply with the requirements set out in the following table; otherwise, a treatment system must be provided.

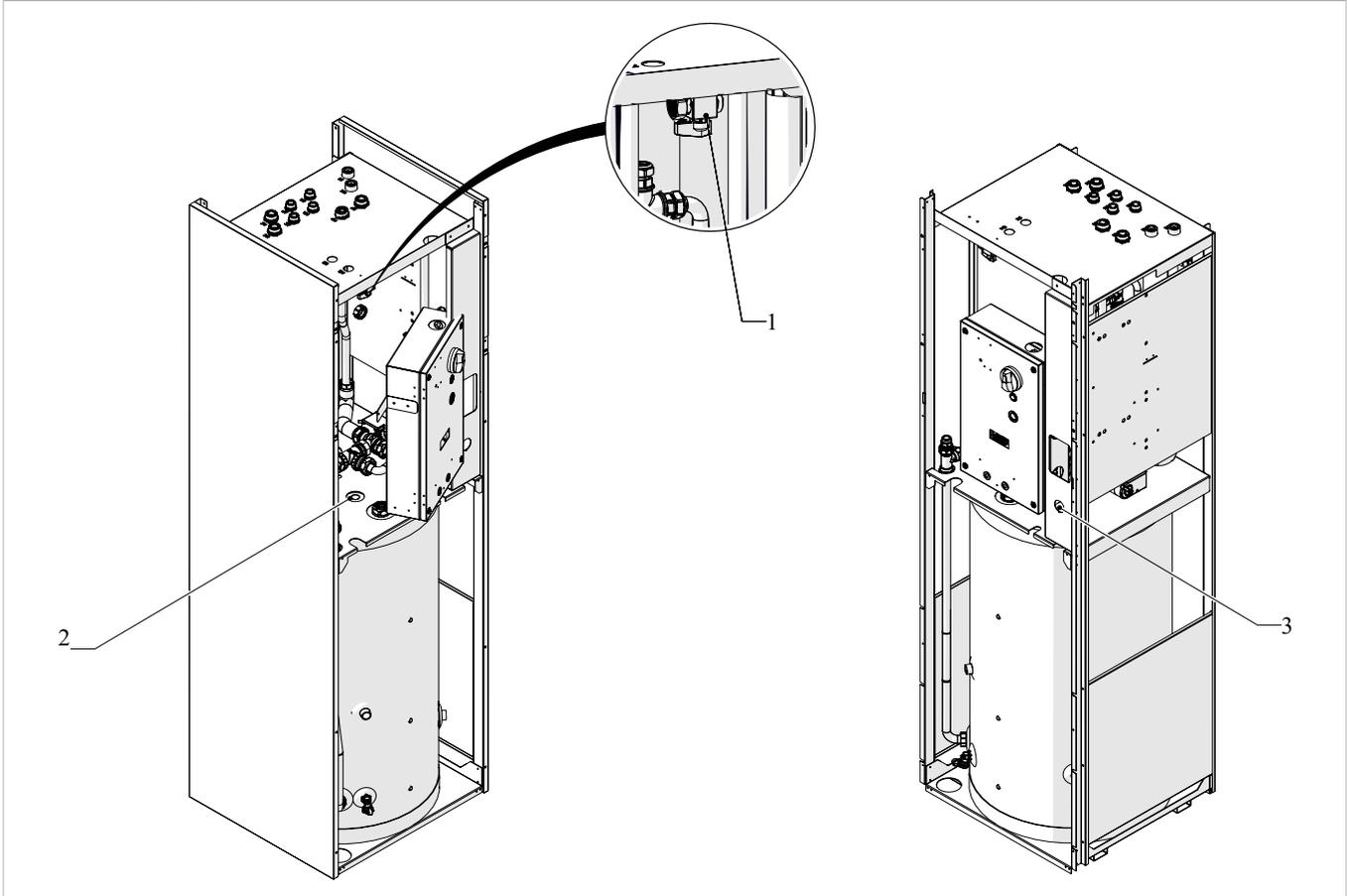
Chlorides	ppm	< 250
Sulphur ions		none
Ammonia ions		none

- ⚠ Well or groundwater not coming from an aqueduct should always be carefully analysed and, if necessary, conditioned with appropriate treatment systems.
- ⚠ A water softening plant must be used if the initial water hardness exceeds the value indicated in the table.
- ⚠ An excessive water softening (total hardness < 1.5 mmol/l) could generate corrosive phenomena in contact with metallic elements (piping or parts of the boiler). Also keep the conductivity value within 600 µS/cm.
- ⚠ Check the chloride concentration at the outlet after resin regeneration.
- ⊖ Introducing acids into the washing circuit is forbidden.
- ⊖ Constantly or frequently topping up the plant is forbidden because this can damage the heat exchanger of the appliance.

Plant water reference values		
pH		6,5 ÷ 7,8
Electrical conductivity	µS/cm	250 ÷ 800
Total hardness	°F	5 ÷ 15
Total Iron	ppm	0,2
Manganese	ppm	< 0,05

Filling

- 1. Plant filling cock
- 2. Manual air vent valve
- 3. Pressure gauge



Before starting the filling operation:

- set the plant master switch in the OFF position.
- check that the plant drain cock is closed
- open all the air valves of the plant and its terminals
- open all the system's shut-off devices

To fill the system:

- start filling by slowly opening the plant water filling cock

When water starts coming out of the terminal vent valves:

- close the breather valves

- continue filling up to the pressure value required by the plant
- check that the expected nominal pressure has been reached
- close the water tap
- check the tightness of the gaskets

- ⚠ It is recommended to repeat this operation after the device has been running for a few hours.
- ⚠ Regularly check the system's pressure.
- ⚠ Keep the system bleed during operation, penalty, loss of performance and energy consumption.

3.14 Electric connections

The appliance leaves the factory fully wired and only needs to be connected to the power supply, external unit and any accessories.

Preliminary warnings

- ⚠ All operations of an electrical nature must be carried out by qualified personnel having the necessary legal requirements, trained and informed about the risks related to such operations.
- ⚠ All connections must be made following the regulations in force in the country of installation.

- ⚠ Before carrying out any work, make sure that the power supply is switched off.
- ⚠ The unit must only be powered after all plumbing and electrical work has been completed.
- ⚠ References:
 - refer to the wiring diagrams in this manual for the electrical connections, especially the part concerning the power supply terminal block
 - refer to the technical rating plate located on the appliance for the power supply voltage
- ⚠ Make sure that:

- the characteristics of the electric network are adapted to the absorption of the apparatus, considering also any other devices in parallel operation
- the power supply voltage and system frequency match to the values indicated on the device's plate data
- the cables must be appropriate for the type of installation in accordance with the applicable IEC standards
- the cable terminals are provided with pin terminals of a cross-section proportionate to the connecting cables before inserting them into the terminal block
- the power supply is provide with protection against overload and/or short-circuit

- ⚠ It is required:
- connect the device an efficient ground connection
 - for units with three-phase power supply, check that the phases are connected correctly
 - install a dedicated switch-disconnector equipped with delayed fuses or an omnipolar magneto-thermal circuit breaker complying with CEI-EN standards, suited to the draw of the equipment, with a differential relay with a maximum setting equal to that prescribed by the individual electrical standards

- ⚠ Ensure that an earth connection is established. Do not connect the appliance to earth using distribution piping, surge arresters or to the telephone plant earth. Improper earthing can result in electric shock. Momentary high-voltage surges caused by lightning or other causes could damage the heat pump.

- ⚠ It is recommended to install a residual-current device. Failure to install this device may result in electric shock.

- ⚠ Electrical connections must be made following the instructions in this manual and with the standards or practices governing the connection of electrical equipment throughout the country. Insufficient capacity or incomplete electrical connections may result in electric shock or fire.

- ⚠ The power supply line must be adequately sized to avoid voltage drops or overheating of cables or other devices placed on the line itself.

- ⚠ Use a dedicated power circuit. Never use a power supply to which another appliance is also connected because of the risk of overheating, electric shock or fire.

- ⚠ For the electrical connection, use a cable that is long enough to cover the entire distance without any connection. Do not use extension cables. Do not apply other loads on the power supply.

- ⚠ After connecting the interconnection and power cables, make sure that the cables are routed so that they do not apply excessive forces on the covers or electrical panels. Fit the covers on the cables. Incomplete connection of the covers may result in overheating of the terminals, electric shock or fire.

- ⚠ If you need to replace the power cable, contact only qualified staff and in compliance with the applicable national laws.

- ⚠ The manufacturer is not liable for any damage caused by the lack of earthing or failure to comply with the specifications in the respective diagrams.

- ⚠ The device is equipped with suppression filter as laid down by the applicable laws and standards. Use selective circuit breakers to compensate for the micro-dispersion on the ground of this device.

- ⊖ It is forbidden the use of gas and water pipes for grounding the appliance.

Power line dimensioning

Use the tables below for the sizing of the power supply line and its protection device. These are not average draw or transient peaks, but values to be considered for the correct sizing of the plant and the request of the contractual power (excluding loads due to the normal operation of the building).

- ⚠ Maximum power is reached only in exceptional cases. Therefore, the indicated trip current is suggested to guarantee a balance between machine absorption and incidence in the general system.

- ⚠ The indicated minimum cable cross-section area must be verified according to the actual conditions of the installation: length of the cable, characteristics of the electrical supply, etc.

Models	m.u.	5-M	7-M	9-M	11-M	11-T	13-M	13-T	15-M	15-T
Electrical data										
Power Supply	V/F/Hz	230/1/50	230/1/50	230/1/50	230/1/50	400/3/50	230/1/50	400/3/50	230/1/50	400/3/50
Maximum power consumption	kW	2,90	3,80	4,50	5,30	5,30	5,90	5,90	7,30	7,30
Maximum current consumption	A	14,00	18,00	21,30	25,00	8,50	28,00	9,30	34,50	11,50
Protection tripping current	A	16	16	16	16	16	16	16	16	16
Minimum wire cross-section area	mm ²	4,0	4,0	6,0	6,0	6,0	6,0	6,0	6,0	6,0

- ⚠ For units equipped with electrical heating elements, the draw values of the units must be added to those of the heating elements shown in the following tables.

- ⚠ The heating elements are on board the outdoor unit.

Heating elements

⚠ The heating elements are on board the outdoor unit.
Below is the data if the kit is installed.

Single-phase power supply

Connection		Stage 1	Stage 2
Power draw	kW	2,00	4,00
Current draw	A	8,70	17,39

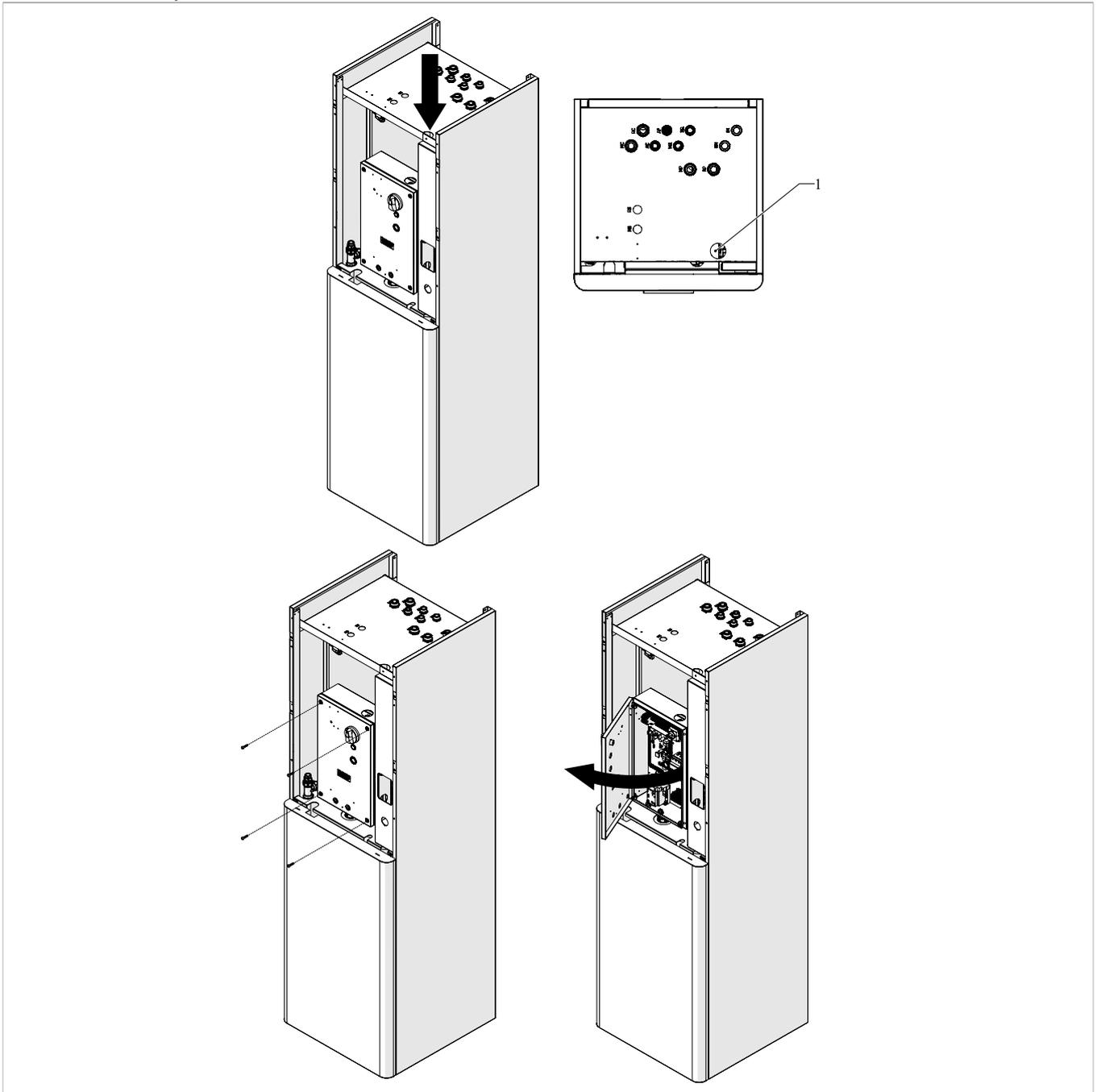
Three-phase power supply

Connection		Stage 1	Stage 2	Stage 3
Power draw	kW	2,00	4,00	6,00
Current draw	A	8,70	8,70	8,70

Models	m.u.	05-M	07-M	09-M	11-M	11-T	13-M	13-T	15-M	15-T
Electrical data										
Protection tripping current with electrical heating elements	A	50	50	50	50	50	50	50	50	50
Minimum wire cross-section area with electrical heating elements	mm ²	16,0	16,0	16,0	16,0	16,0	16,0	16,0	16,0	16,0

Access to the electrical panel

1. Connection entry



⚠ Access to the electrical panel is only permitted to qualified personnel.

⚠ Before doing any work, make sure that the supply power is disconnected.

To access:

- remove the cosmetic panels (if fitted)
- see chapter "Disassembly and assembly of cosmetic panels after installation" [p. 33](#)

To access the connections:

- undo the screws of the closing panel of the electric panel
- remove the panel

Connection

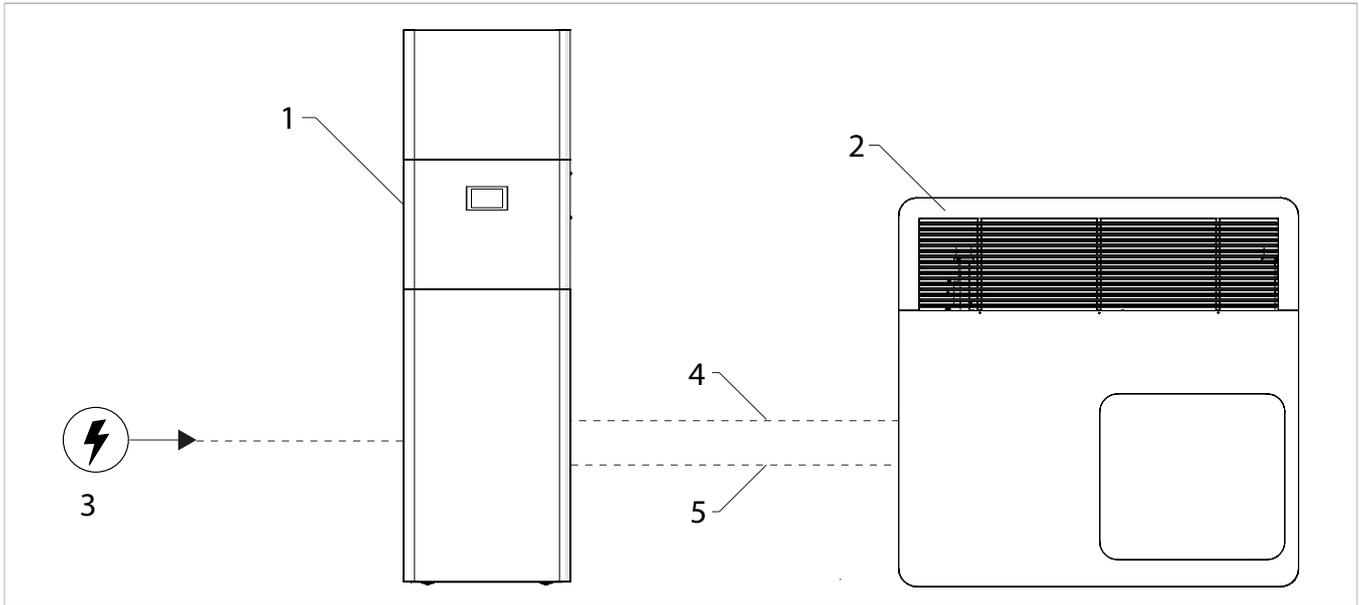
Before connecting the unit to the mains power supply, make sure that the disconnecter is open. The power supply of the unit (single-phase or three-phase) must be connected to the appropriate terminals, subject to the action of the disconnecter.

⚠ Use properly sized cables to avoid voltage drops or overheating.

⚠ Before connecting to the terminals, read this manual carefully.

Connection diagram

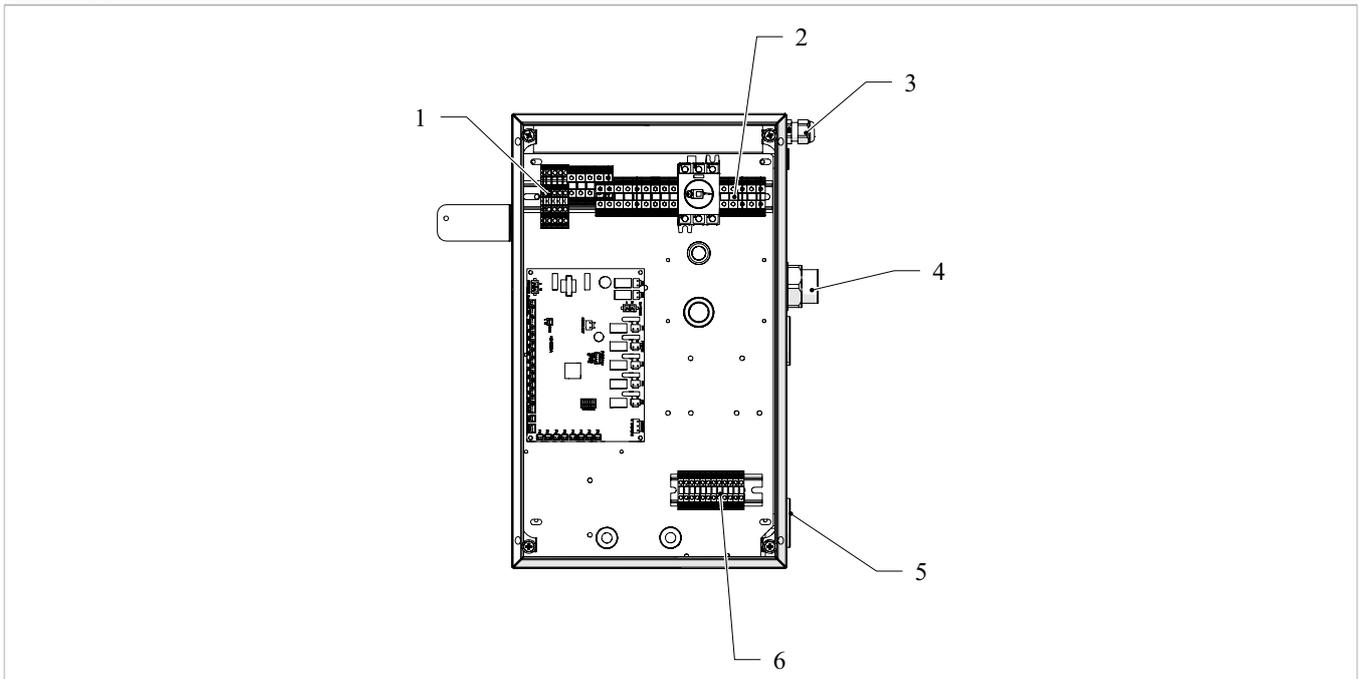
- 1. Indoor unit
- 2. Outdoor unit
- 3. Unit power supply 230/1/50 0 400/3/50 depending on model
- 4. Communication cable; shielded two-core cable for RS485 serial connection, minimum cross section 0.35 mm², maximum length 100 m
- 5. Power cable



Electrical panel aboard the unit

Power connection terminal blocks

- 1. XP2
- 2. XP1
- 3. Cable entry
- 4. Power cable entry
- 5. Probe cable entry and earthing
- 6. XP3



To make the connection:

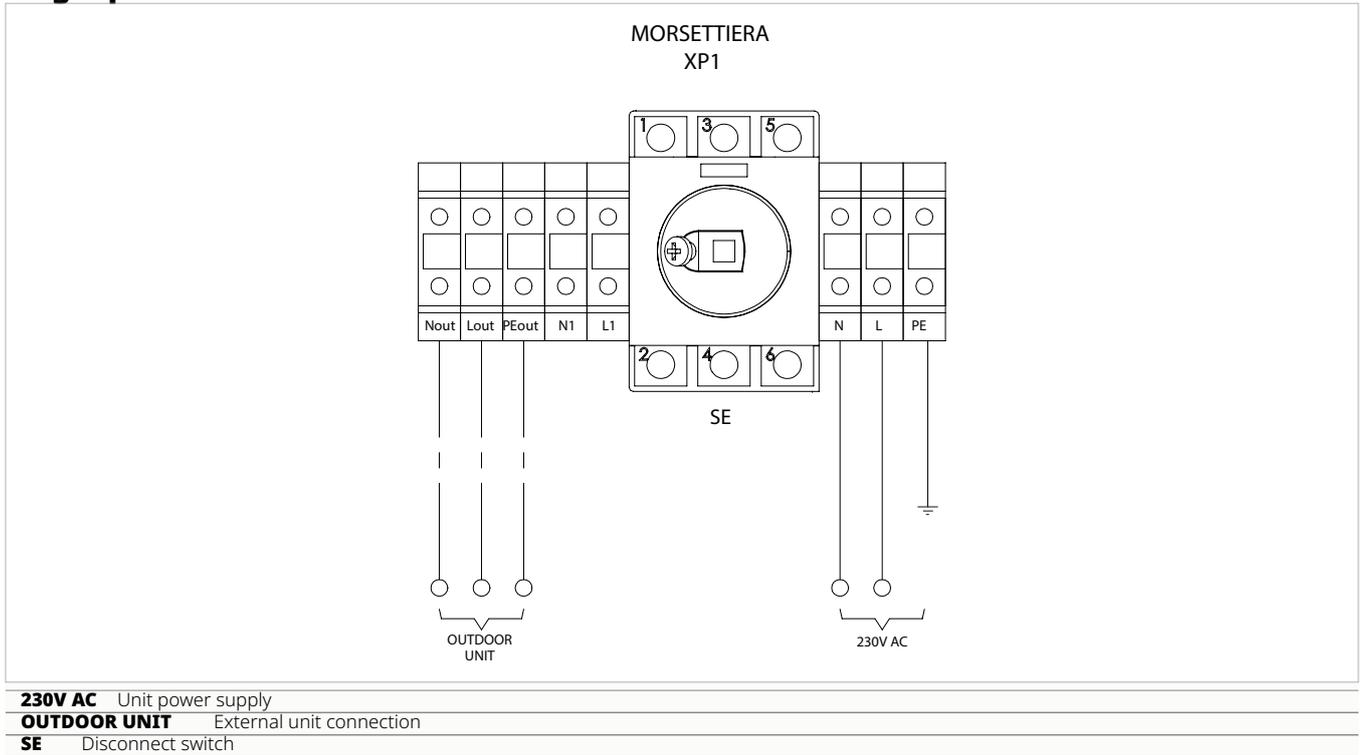
- bring the power cord to the terminal block
- making the connections

- refer to the information in the wiring diagram of the unit you are installing

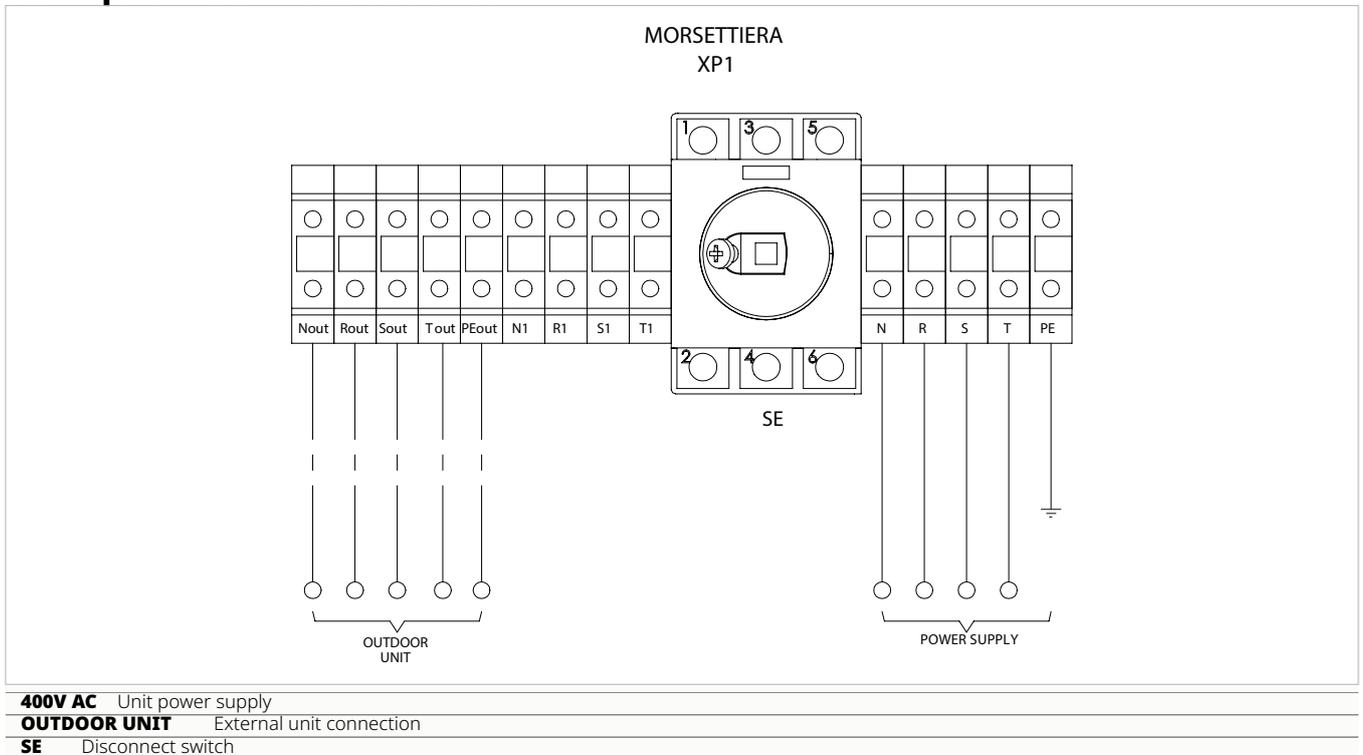
⚠ The power cable must be sized according to this manual.

⚠ Use a double-insulated multi-core cable mod. H07RNF for outdoor applications in cable duct, or mod. H05VVF for indoor applications.

Single-phase unit terminal block



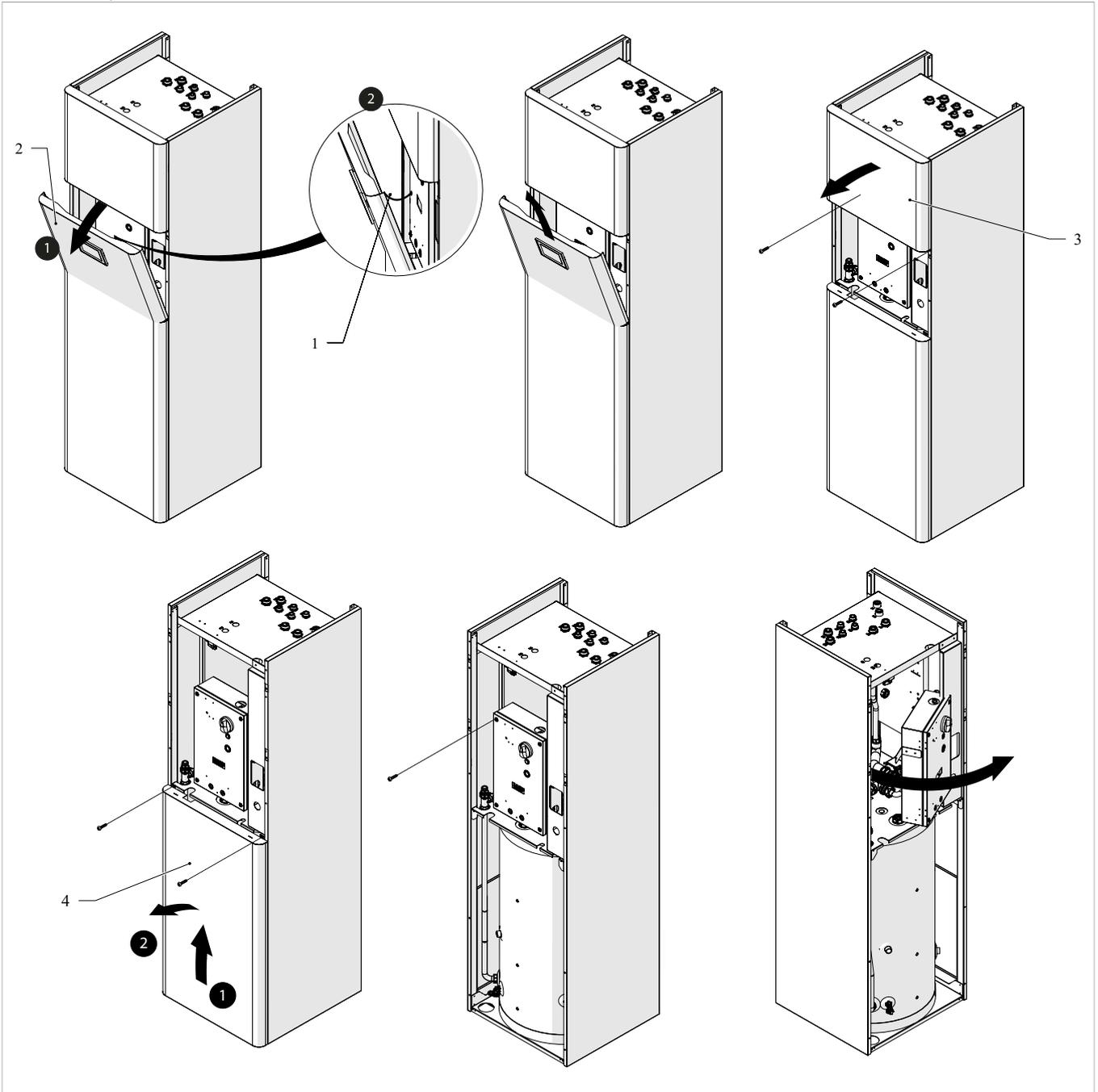
Three-phase unit terminal block



3.15 Disassembly and assembly of cosmetic panels after installation

Removing covering elements

1. Connectors
2. Access panel
3. Top panel
4. Lower panel



Removing panels

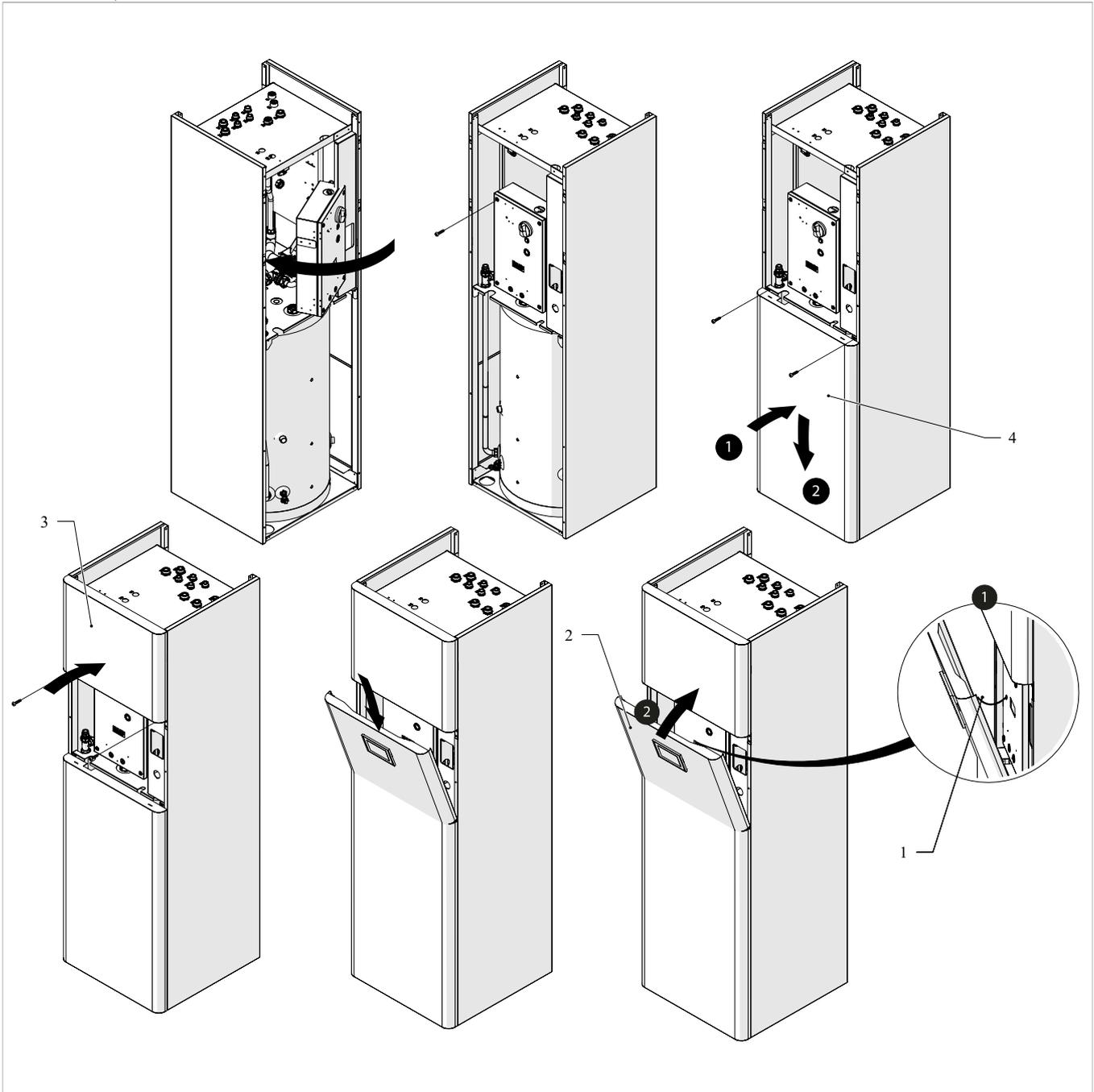
- open the access panel by turning it downwards
- disconnect the control panel
- remove the access panel
- Unscrew the fixing screws of the top panel
- remove the upper panel
- Unscrew the fixing screws of the bottom panel
- lift the bottom panel
- remove the panel

Access to internal components

- unscrew the fixing screw
- rotate the electrical panel

Fitting of covering elements

1. Connectors
2. Lower panel
3. Top panel
4. Access panel



Access to internal components

- close the electrical cabinet
- screw in the fixing screws

- hook the lower part
- connect the control panel
- close the access panel

Mounting panels

- bring the bottom panel closer
- hook the lower part
- close the panel
- screw in the fixing screws
- bring the top panel closer
- close the panel
- screw in the fixing screws
- bring the access panel closer

PUTTING IT INTO SERVICE

4.1 Preliminary warnings

- ⚠ **The initial start-up of the heat pump must be carried out by the Service Centre.**
- ⚠ **For detailed information on accessories please refer to the "Configuration accessories" p. 43 section.**
- ⚠ The customer must be present when the appliance is tested and informed of the contents of the manual and procedures. After commissioning, the manual and the warranty certificate must be handed over to the customer.
- ⚠ Before start-up, all work (electrical and plumbing connections, filling and venting of air from the plant) must be completed.

4.2 First start-up

Preliminary checks

Before proceeding with start-up, check that:

Functional

- all safety conditions have been met
- the unit has been properly secured to the supporting surface or wall
- the minimum technical clearances have been respected

Hydraulics

- the hydraulic connections have been made according to the instructions in the manual
- the hydraulic plant has been filled and vented
- the loading tap is closed
- the shut-off valves of the hydraulic circuit are open
- the mesh filter is installed and clean

- ⊖ Operating the unit without the water filter installed and clean is forbidden.

Electrics

- the cross-section of the power supply cables is suitable for the absorption of the appliance and the length of the connection made
- the earthing was performed correctly
- the electrical connections have been established correctly
- all electrical connections are properly secured and all terminals properly tightened
- the voltage is within a tolerance of 10% of the rated voltage of the unit
- the power supply of the three-phase models has a maximum unbalance between phases of 3%
- all control wires are connected and all electrical connections are firmly in place
- the control panel has been installed and connected correctly

Water quality checks

The technician must measure the reference values of the water in the system with special test kits.

- ⚠ Take the necessary steps to achieve the indicated limits if the total hardness is greater than 15 °F or some top-up water reference values are not within the limits indicated.
- ⚠ Water from wells or groundwater that is not from an aqueduct should always be carefully analysed. If necessary, condition with appropriate treatment systems.
- ⚠ If a softener is installed, in addition to following the manufacturer's instructions, adjust the outlet water hardness to not less than 5 °F (by performing pH and salinity tests) and check the outlet chloride concentration after adjusting the resins.

Powering up

- ⚠ **Power up the unit for at least 12 hours before starting.**

- ⚠ Make sure that the control panel is switched off.

Start the unit:

- set the main switch to ON

The display will light up a few seconds after power-up, check that the operating status is OFF. Otherwise, press the  button to put it in Standby.

- ⚠ **Refer to the Control Panel Manual for operation.**

Start-up

Once all checks have been made, the unit can be started up.

To activate the device

- press the key 

The symbol  or  lights up

Functional checks:

- verify the different modes of operation
- check that the appliance performs a shutdown and subsequent restart
- switch the appliance off and on again and check that it restarts correctly

- ⚠ Carry out the measurements indicated on the Test Sheet for the first start-up.

- ⚠ Refer to the Control Panel Manual to carry out the operations.
- ⚠ During start-up, the primary pump must be operated in fixed speed mode set at maximum speed (factory setting).
- ⚠ The first start-up must be carried out with standard settings. Only after the test has been completed, change the operating set point values.

Intervention ALRM 017

If the alarm ALRM 017 appears after the start-up of the circulation pump, check that

- the plant valves are open
- there is at least one consumer with an open circuit
- the sieve filter is not clogged
- there are no air bubbles inside the circuit
- the water pressure of the plant is correct

If necessary, rearm the alarm.

Checks with the machine switched on

After starting up, check that

Functional

- the appliance operates within the recommended operating conditions (see technical specifications table)

Electrics

- the current draw of the compressor is lower than the maximum indicated in the technical specifications table
- the supply voltage value is within the set limits and does not fall below the nominal value during compressor operation -10 %
- in models with three-phase power supply, the compressor noise level is not abnormal
- the three-phase supply has a maximum unbalance between phases of 3%

Hydraulics

- the hydraulic circuit is completely deaerated

Thermal gradient

The temperature difference must be verified with:

- 100% compressor capacity
- all distribution valves open
- all consumers on
- any secondary pumps in operation switched on and calibrated, see chapter "Circulation pumps optional kits"

Check that the thermal gradient between the plant delivery and return is between 4-7°C by querying parameters PT5-S and PT6-S.

If the temperature difference is less than 4 °C, set a lower circulator speed, see chapter "PP1 primary circulation pump" .

If the thermal gradient is greater than 7 °C check that all the valves on the plant are open and if necessary add an external pump to increase the water flow rate.

If the mains pressure exceeds 3 bar, install a pressure reducer on the filling line.

Presence of air

Check that no air pockets are still present once the electrical connections have been established and the circulation pump has been switched on.

In the presence of air pockets:

- stop the pump several times
- vent again

⚠ To avoid dangerous cavitation that could damage the pump and make the entire appliance less efficient, the suction pressure, with the pump on, measured by the pressure gauge on the appliance, must not be less than 0.6 bar.

4.3 Adjustments

Setting the head value

The maximum head value must be set with:

- 100% compressor capacity
- all distribution valves open

- all consumers on
- any secondary pumps in operation switched on and calibrated, see chapter "Circulation pumps optional kits"

4.4 PP1 primary circulation pump

⚠ Refer to the outdoor unit manual for information on how to operate the accessory.

4.5 Circulation pumps optional kits

⚠ For the regulation of the circulation pumps of the optional kits refer to chapter "Configuration accessories" [p. 43](#).

4.6 Plant delivery

Once all the checks and controls on the correct operation of the plant have been completed, the installer must explain the following to the user:

- the basic functional characteristics of the appliance
- the instructions for use
- the routine maintenance

4.7 Long period shut-down

The following operations must be carried out if the air-to-water heat pump is not used for a long time:

- disable the device
- turn the master switch of the appliance to position 0-, OFF.

After switching off the appliance:

- switch off the indoor terminal units by setting the switch of each appliance to the "off" position
- set the main system switch to "Off"
- close the water taps

⚠ Contact the Technical Service Centre.

⚠ If the outside temperature may fall below zero degrees centigrade, with the likelihood of frost, the hydraulic plant must be drained or antifreeze liquid (e.g. ethylene glycol) must be added in the doses recommended by the manufacturer.

To restart the heat pump after it has been out of operation for a long time, contact the Service Centre.

4.8 Draining the plant

The units are provided with a drain cock.

Preliminary warnings

⚠ All operations must be carried out with the machine stopped and disconnected from the power supply.

Draining

Before starting the emptying operation:

- set the main system switch to "Off"
- check that the plant water filling/top-up cock is closed

To drain the plant:

- open the water drain tap in the bottom left of the hot water tank
- Open the manual vent on the top of the hot water tank

⚠ If the system is fitted with antifreeze, the liquid must not be discharged freely because it is polluting.

MAINTENANCE

Routine maintenance is essential to keep the device always efficient, safe and reliable over time.

5.1 Preliminary warnings

⚠ For detailed information on accessories please refer to the "Configuration accessories" [p. 43](#) section.

⚠ This unit contains fluorinated greenhouse gases covered by the Kyoto Protocol. Maintenance and disposal operations must be carried out by qualified personnel only.

Before each cleaning and maintenance intervention:

- disconnect the device from the power mains by turning the system master switch to "OFF"
- wait for the components to cool down in order to avoid any burns

⊖ Carrying out any technical or cleaning work before disconnecting the unit from the power supply is forbidden.

⚠ Make sure that there is no voltage before operating.

⚠ After completing the maintenance work, must be restored the original condition.

5.2 Once-a-year operations

The once-a-year maintenance plan includes the following operations and checks and must be carried out by the Technical Service Centre or by qualified personnel.

Routine maintenance of the unit

Hydraulic circuit

Check:

- water circuit filling
- filter cleanliness
- pressure switch and flowmeter control
- absence of air in the circuit (venting)
- that the water flow rate is always constant at the evaporator
- the status of thermal insulation of the hydraulic piping
- the glycol percentage, if any

Electric circuit

Check:

- electrical supply voltage
- electric draw
- tightness of connections
- that there is no damage or excessive wear on the electrical cables

- the seals and sealing materials have not deteriorated to such an extent that they are no longer suitable for preventing the development of flammable atmospheres inside
- correct fixing of the cable clamps
- safety devices

Mechanical checks

Check:

- the tightness of the screws, the compressors and the electrical box, the external panelling of the unit
- the conditions of the structure

⚠ Poor fastenings cause abnormal noises and vibrations.

⚠ Treat any rusty parts with paints suitable to eliminate or reduce the rust.

Cleaning

- clean cosmetic covering elements

Cleaning the net filter

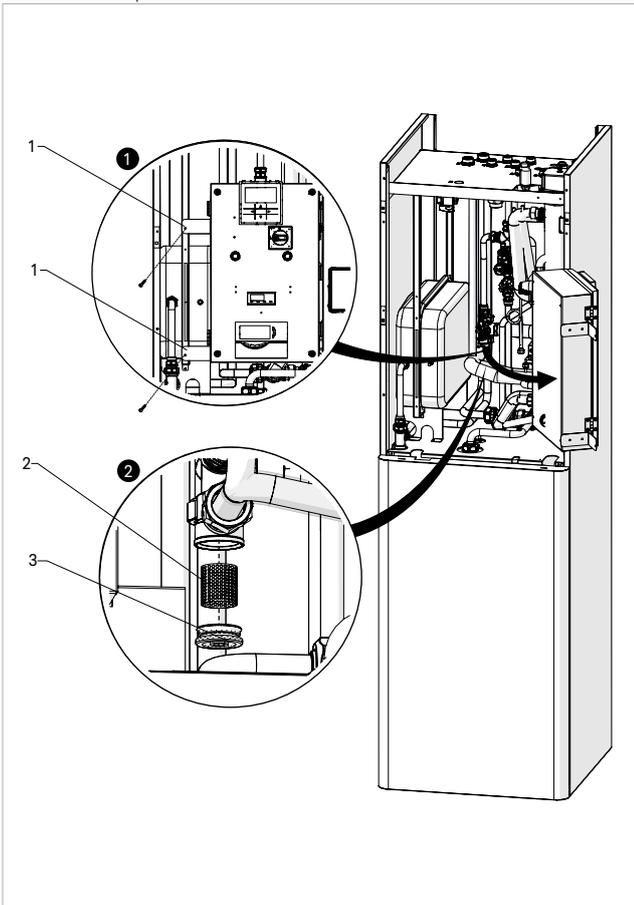
To access:

- remove aesthetic panels
- see chapter "Removal of aesthetic panels" [p. 16](#)
- remove the fixing screws
- rotate the electrical panel
- remove the insulator from the pipe

To extract:

- use an Allen key
- unscrew the end cap
- remove the filter

1. Fixing screws
2. Filter
3. End cap



To clean:

- remove the dust from the filter with a cloth
- wash the filter with running water, without using detergents or solvents
- allow it dry

To reassemble:

- proceed in reverse order

TROUBLESHOOTING

6.1 Preliminary warnings

⚠ For detailed information on accessories please refer to the "Configuration accessories" [p. 43](#) section.

Should you encounter any of the anomalies below:

- the ventilation does not start even if the water circuit is filled with hot or cold water
- the device is losing water in heating mode
- the device is losing water in cooling mode
- the device generates excessive noise
- there is dew on the front panel

Follow the instructions below:

- disconnect the device from power supply immediately
- close the water taps
- contact an authorised Technical Assistance Centre or professionally qualified personnel

⚠ The interventions must be carried out by a qualified installer or by a specialized support center.

⊘ Do not intervene personally.

6.2 Functional aspects not to be interpreted as faults

- The following functional aspects may occur during the operation of the appliance, these behaviours of the appliance are correct and should not be interpreted as a fault.
- The compressor does not start again until 3 minutes after being shut off.
- During operation in heating mode of systems with heat pump, heat is produced a few minutes after the compressor starts.
- Periodic defrosting cycles occur during heating operation.
- When switching from domestic hot water production to cooling and vice versa, the external heat pump is kept off for one minute to avoid mixing hot and cold water.

6.3 Faults reported by the Control Panel

Faults are indicated on the display of the Control Panel.

⚠ For reading, refer to the Control Panel Manual.

Manual reset of alarms

Repeating a fault several times will put the appliance in safety and the alarm must be reset manually.

To restore:

- press and hold  for a few seconds
- the padlock disappears from the symbol 
- then the symbol  disappears

6.4 Troubleshooting Table

Alarm	Description	Correlated variables	Correlated parameters	Activation conditions	Restoration conditions	Cause
ALRM 001	Temperature probe malfunction	PT1, PT4, PT5, PT6, MT1-6	-	Probe disconnected, faulty or abnormal value		
ALRM 002	Low-pressure switch tripped	MI2	-	Open pressure switch opening contact		<ul style="list-style-type: none"> Insufficient refrigerant charge Excessive amount of antifreeze Insufficient air flow to air cooler
ALRM 003	High-pressure switch tripped	MI1	-	Open pressure switch opening contact		<ul style="list-style-type: none"> Excessive refrigerant charge Presence of non-condensable gases (air) Insufficient air flow to air cooler Set point setting too high Air temperature outside operating limits
ALRM 004	Inverter driver high temperature	-	-	Driver temperature > 100 °C	Driver temperature < 90 °C	<ul style="list-style-type: none"> Heat sink obstruction
ALRM 006	Inverter driver error	-	-	Driver active alarm		<ul style="list-style-type: none"> Faulty driver card
ALRM 007	Compressor suction low temperature	MT1	PM24, PM25	MT1 < PM24	MT1 > PM24 + PM25	<ul style="list-style-type: none"> Insufficient refrigerant charge Excessive amount of antifreeze Insufficient air flow to air cooler
ALRM 008	Compressor discharge high temperature	MT2	PM23	MT2 > PM23	MT2 < PM23 - 10 °C	<ul style="list-style-type: none"> Incorrect refrigerant charge Presence of non-condensable gases (air)
ALRM 009	Outdoor unit communication error	-	-	Serial connection fault between indoor and outdoor units terminals H+ L-		<ul style="list-style-type: none"> Cable interrupted or disconnected
ALRM 010	Evaporator liquid refrigerant low temperature	MT4 (cooling), MT5 (heating)	PM102, PM1	t < PM102	t > PM102 + PM1	Heating: <ul style="list-style-type: none"> insufficient air flow to air cooler Cooling: <ul style="list-style-type: none"> insufficient water flow rate excessive amount of antifreeze
ALRM 012	Fan malfunction	-	-	No feedback from fan		<ul style="list-style-type: none"> Faulty fan motor
ALRM 017	Plant flowmeter tripped	PI1, PP1	-	PP1 active but PI1 open (with delay)	PP1 active and PI1 closed (with delay)	Check that: <ul style="list-style-type: none"> the check valves are open the 3-way valve for hot-cold diversion (if present) is in the correct position there are no air bubbles inside the circuit at least one of the consumers has an open circuit or is equipped with a 3-way valve the external sieve filter is not clogged the plant water pressure is correct the circulation pump is working properly (unlock it if necessary)
ALRM 022	High water temperature during domestic hot water production	The maximum value between PT5, PT6, PT4	PF28, PM1	t > PF28	t < PF28 - PM1	<ul style="list-style-type: none"> Set point setting too high Incorrect type of domestic hot water storage tank Domestic hot water temperature probe PT4 not positioned correctly
ALRM 023	High water temperature during heating operation	The maximum value between PT5, PT6, PT1 if enabled	PF27, PM1	t > PF27	t < PF27 - PM1	<ul style="list-style-type: none"> Set point setting too high Minimum water flow rate

Alarm	Description	Correlated variables	Correlated parameters	Activation conditions	Restoration conditions	Cause
ALRM 025	Plant exchanger antifreeze cooling operation	The minimum value between PT5 and PT6	PF23	$t < PF23$	$t > PF23 + PM1$	Check that: <ul style="list-style-type: none"> nothing is preventing the good water circulation in the plant (air, partially closed valves, clogged sieve filter, etc.) the thermal gradient between the delivery and return is between 4-7 °C. Query the t1 and t3 parameters Set a lower circulation pump speed if the thermal gradient is less than 4 °C. If the thermal gradient is greater than 7 °C, check that all the valves on the plant are open and if necessary add an external pump to increase the water flow rate or insert a hydraulic separator.
ALRM 027	Domestic hot water storage antifreeze during cooling operation	PT4	PF23	$t < PF23$	$t > PF23 + PM1$	
ALRM 028	Plant exchanger and tank antifreeze during cooling operation	The minimum value between PT5, PT6, PT1 if enabled	PF23	$t < PF23$	$t > PF23 + PM1$	

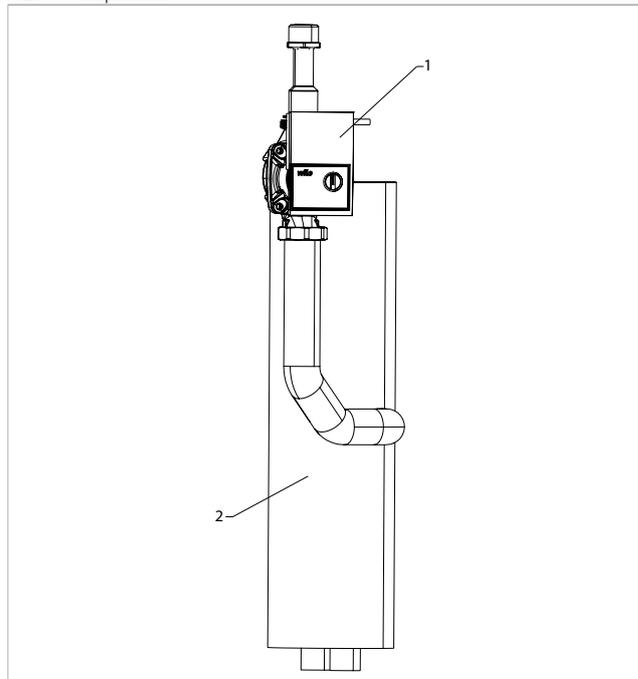
- Note:**
- In general, alarm resetting is automatic when the activation condition is established again.
- The activation or reset conditions must remain for a preset time (e.g. 30 s) before the alarm is activated or deactivated on the display. The duration of the preset time depends on the alarm type.
- If the alarm trips multiple times in a given time (e.g. 3 times in 1 hour), it must be reset manually by the Technical Service Centre.

CONFIGURATION ACCESSORIES

7.1 Secondary separator kit

Secondary hydraulic unit complete with hydraulic separator, system pump (DC Inverter class A) and fittings.

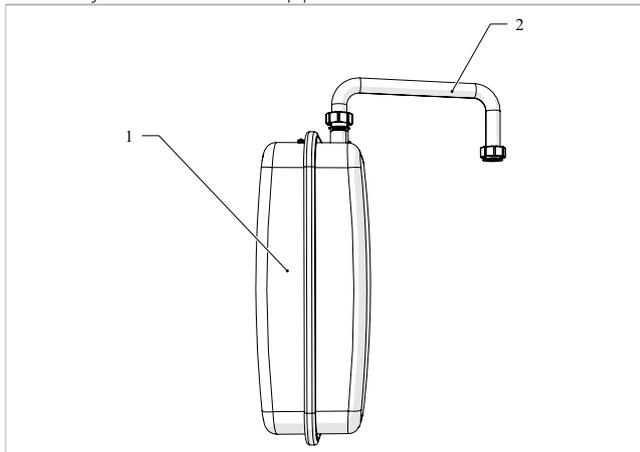
- 1. Circulation pump
- 2. Separator



7.2 Integrated inertial tank kit 20 L

Integrated inertial tank 20 L.

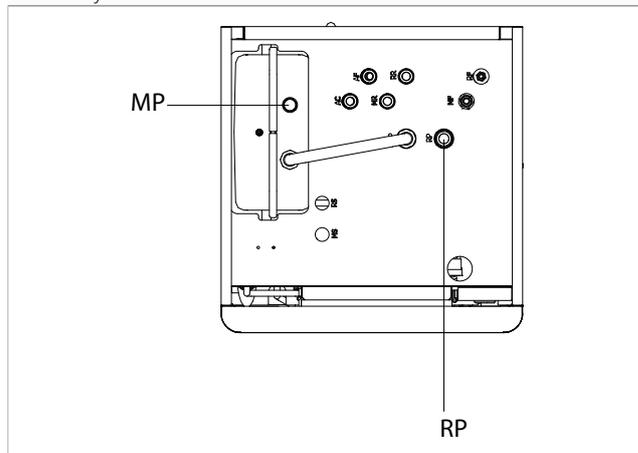
- 1. Buffer tank
- 2. System flow connection pipe



Hydraulic connections

Position and dimensions

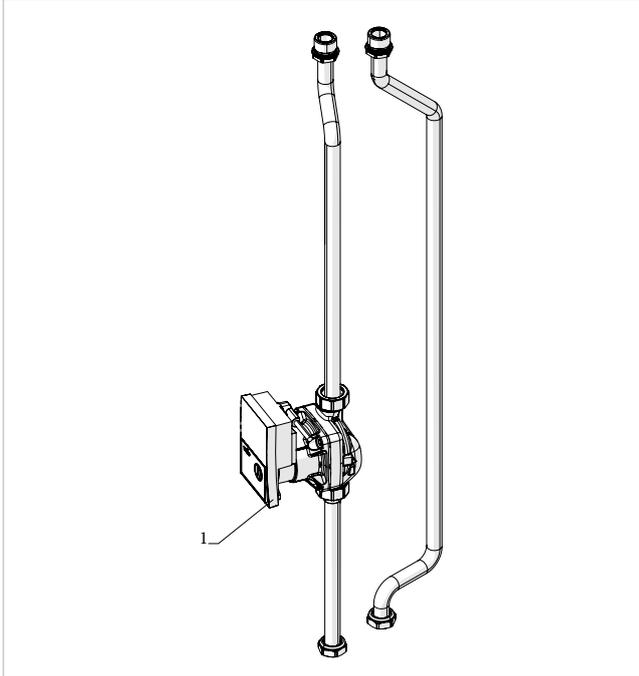
- MP Plant delivery
- RP System return



7.3 Heated towel rail kit

Hydraulic unit and circulation pump for high temperature Heated towel rail feeding.

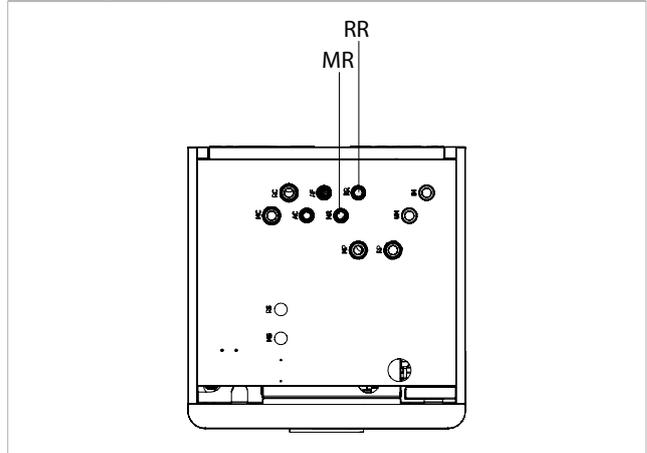
1. Circulation pump for water heater supply



Hydraulic connections

Position and dimensions

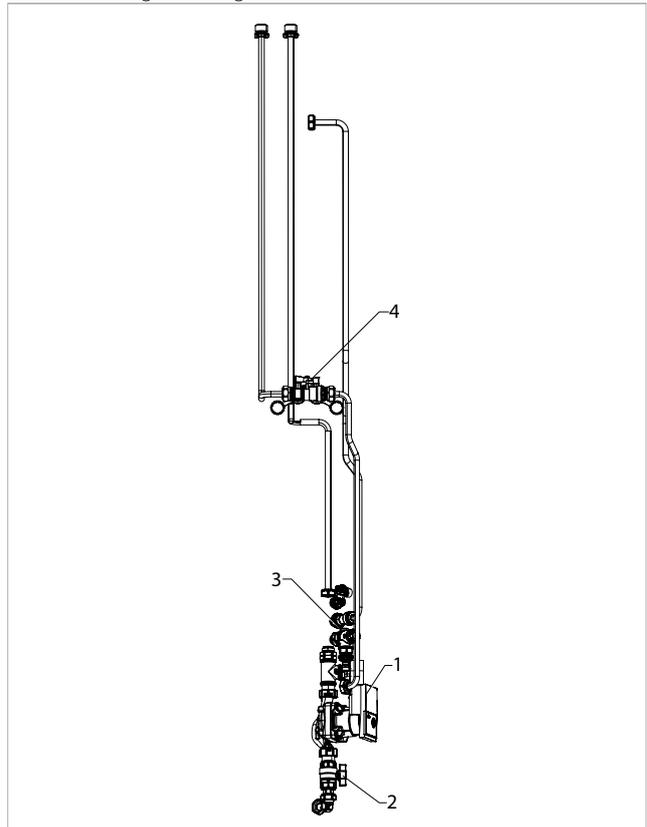
- MR** High temperature utilities flow (radiator)
- RR** High temperature utilities (radiator) return



7.4 Solar heating kit

Solar unit complete with control unit, pump, safety valve, 24 litre expansion tank, loading unit.

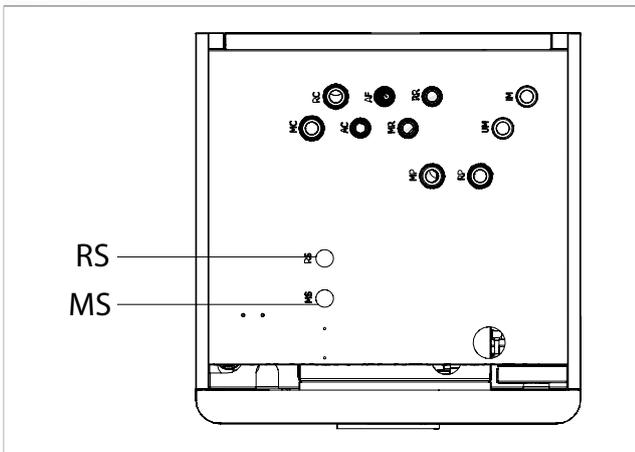
- 1. Circulation pump
- 2. Solar kit cock
- 3. 3-bar safety valve
- 4. Loading/unloading cock



Hydraulic connections

Position and dimensions

RS	Solar return
MS	Solar flow



7.5 Circulation pumps optional kits

Some optional kits require the use of circulation pumps. The control electronics allow selection of constant or variable head operating modes to allow automatic adaptation of performance to changing operating conditions of the hydraulic system.

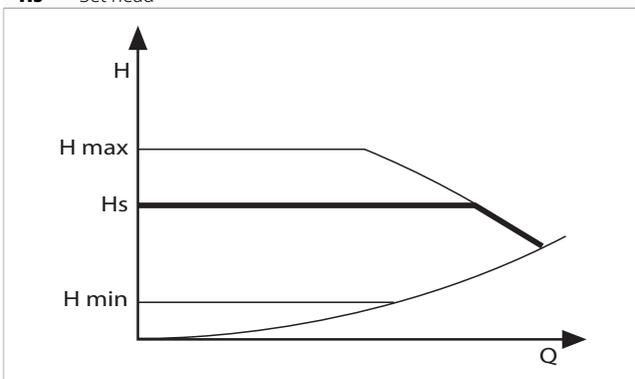
On the front of the pump body there is a regulator for selecting the following operating modes:

Constant pressure mode

In this mode (factory-set) the head generated by the pump is kept constant at the set value throughout the permitted flow rate range. This mode is indicated for systems with constant pressure drop, consumers in parallel and 2-way valves.

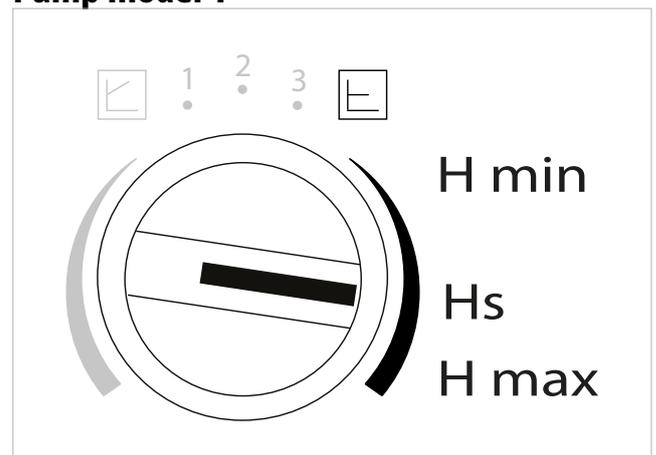
Constant pressure

H	Head
Q	Flow rate
H max	Maximum head
H min	Minimum head
Hs	Set head



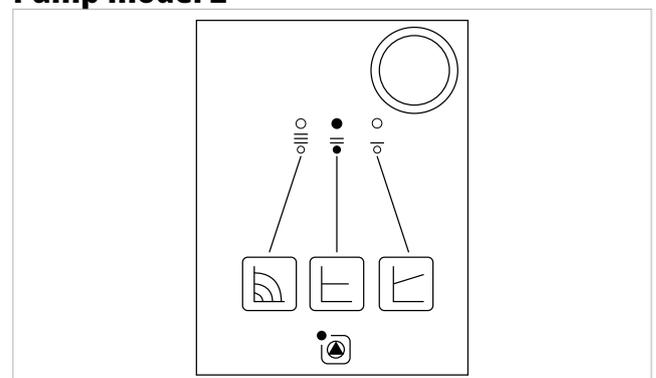
There are two different control modes according to the installed pump model:

Pump model 1



To adjust the speed:
 - act on the knob
 - select the desired function

Pump model 2



To adjust the speed with constant head:
 - press the selection button in sequence until the LEDs light up

 Constant head mode

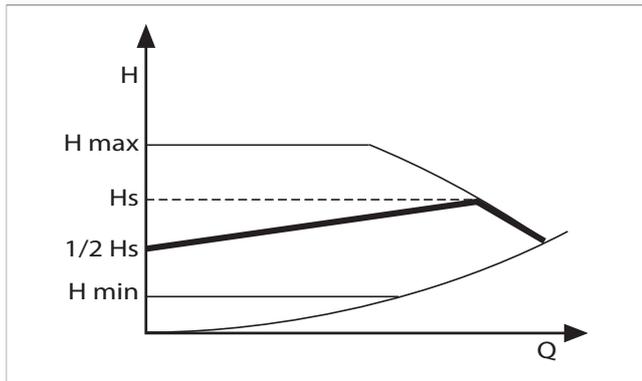
-  Medium speed
- press the button in sequence until the LED lights up at the desired speed

Variable pressure mode

In this mode, the electronic system varies the head developed by the pump between the set value and half of the same as the water flow rate varies. This mode is particularly suitable for plants with constant pressure drop and 3-way valves.

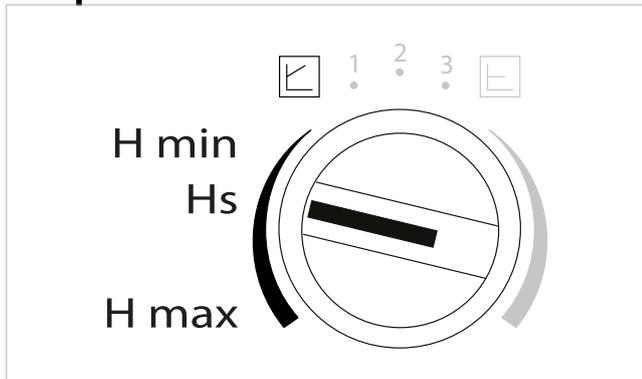
Variable pressure

H	Head
Q	Flow rate
H max	Maximum head
H min	Minimum head
Hs	Set head



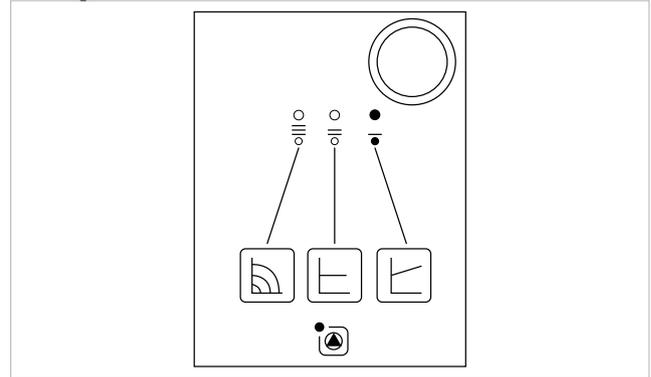
There are two different control modes according to the installed pump model:

Pump model 1



- To adjust the speed:
- act on the knob
 - select the desired function

Pump model 2



- To adjust the speed with constant head:
- press the selection button in sequence until the LEDs light up

 Variable head mode

-  Minimum speed
- press the button in sequence until the LED lights up at the desired speed

TECHNICAL INFORMATION

8.1 Technical data

Models	m.u.	5-M	7-M	9-M	11-M	11-T	13-M	13-T	15-M	15-T	
Heating performances (A 7 °C BS; W 35 °C)											
Maximum heat output	(1)	kW	7,54	10,75	11,45	13,53	13,53	15,20	15,20	19,05	19,05
Nominal heat power	(1)	kW	5,51	7,46	9,12	10,63	10,63	12,48	12,48	15,15	15,15
Total absorbed power	(1)	kW	1,16	1,62	1,83	2,37	2,37	2,62	2,62	3,23	3,23
COP	(1)		4,74	4,43	4,67	4,48	4,48	4,76	4,76	4,70	4,70
SCOP	(1)		4,55	4,22	4,52	4,18	4,18	4,64	4,64	4,53	4,53
Energy efficiency class	(2)		A+++	A++	A+++	A++	A++	A+++	A+++	A+++	A+++
Heating performances (A-7 °C BS; W 35 °C)											
Maximum heat output	(3)	kW	4,85	6,45	7,05	7,88	7,88	9,05	9,05	11,42	11,42
Total absorbed power	(3)	kW	1,62	2,26	2,38	2,91	2,91	2,87	2,87	3,91	3,91
COP	(3)		2,98	2,85	2,95	2,70	2,70	3,15	3,15	2,92	2,92
Cooling performances (A35 °C; W 18 °C)											
Maximum cooling capacity	(4)	kW	9,20	11,55	13,05	14,35	14,35	16,90	16,90	20,50	20,50
Nominal cooling power	(4)	kW	6,90	9,50	10,50	12,15	12,15	13,05	13,05	17,45	17,45
Total absorbed power	(4)	kW	1,59	2,25	2,44	2,87	2,87	2,96	2,96	4,04	4,04
EER	(4)		4,33	4,23	4,31	4,23	4,23	4,41	4,41	4,32	4,32
Cooling performances (A35 °C; W 7 °C)											
Maximum cooling capacity	(5)	kW	6,70	8,85	9,50	11,15	11,15	12,45	12,45	15,90	15,90
Nominal cooling power	(5)	kW	4,19	6,44	7,78	8,78	8,78	9,98	9,98	12,04	12,04
Total absorbed power	(5)	kW	1,22	2,00	2,33	2,65	2,65	2,99	2,99	3,71	3,71
EER	(5)		3,43	3,22	3,34	3,31	3,31	3,34	3,34	3,24	3,24
Hydraulic data											
Nominal flow rate for heating		L/min	15,9	21,5	26,3	30,6	30,6	35,9	35,9	43,6	43,6
Nominal flow rate for cooling		L/min	11,7	18,6	22,4	25,3	25,3	28,9	28,9	34,9	34,9
available pressure primary circuit		kPa	71,0	60,0	54,0	70,0	70,0	60,0	60,0	58,0	58,0
expansion vessel capacity		L	24	24	24	24	24	24	24	24	24
Minimum system water content		L	20	25	30	35	35	40	40	50	50
Hydraulic connections											
Boiler flow		" GAS	1	1	1	1	1	1	1	1	1
Boiler return		" GAS	1	1	1	1	1	1	1	1	1
Domestic hot water		" GAS	3/4	3/4	3/4	3/4	3/4	3/4	3/4	3/4	3/4
Hot water feed		" GAS	3/4	3/4	3/4	3/4	3/4	3/4	3/4	3/4	3/4
High temperature utilities flow		" GAS	3/4	3/4	3/4	3/4	3/4	3/4	3/4	3/4	3/4
1. Water temperature in/out 30/35 °C; outdoor air temperature 7 °C; U.R. 85% 2. Seasonal efficiency according to UNI EN 14825. Energy Efficiency Class referred to the Average climate profile for flow temperature of 35 °C in compliance with Regulation 811/2013 3. Water temperature in/out 30/35 °C; outdoor air temperature -7 °C 4. Water temperature in/out 23/18 °C; outdoor air temperature 35 °C 5. Water temperature out 12/7 °C; outdoor air temperature 35 °C											

Models	m.u.	5-M	7-M	9-M	11-M	11-T	13-M	13-T	15-M	15-T
High temperature utilities return	" GAS	3/4	3/4	3/4	3/4	3/4	3/4	3/4	3/4	3/4
Outdoor unit flow	" GAS	1	1	1	1	1	1	1	1	1
Outdoor unit return	" GAS	1	1	1	1	1	1	1	1	1
Plant return	" GAS	1	1	1	1	1	1	1	1	1
Plant delivery	" GAS	1	1	1	1	1	1	1	1	1

Electrical data

Power Supply	V/F/Hz	230/1/50	230/1/50	230/1/50	230/1/50	400/3/50	230/1/50	400/3/50	230/1/50	400/3/50
Maximum current consumption	A	14,00	18,00	21,30	25,00	8,50	28,00	9,30	34,50	11,50
Maximum power consumption	kW	2,90	3,80	4,50	5,30	5,30	5,90	5,90	7,30	7,30

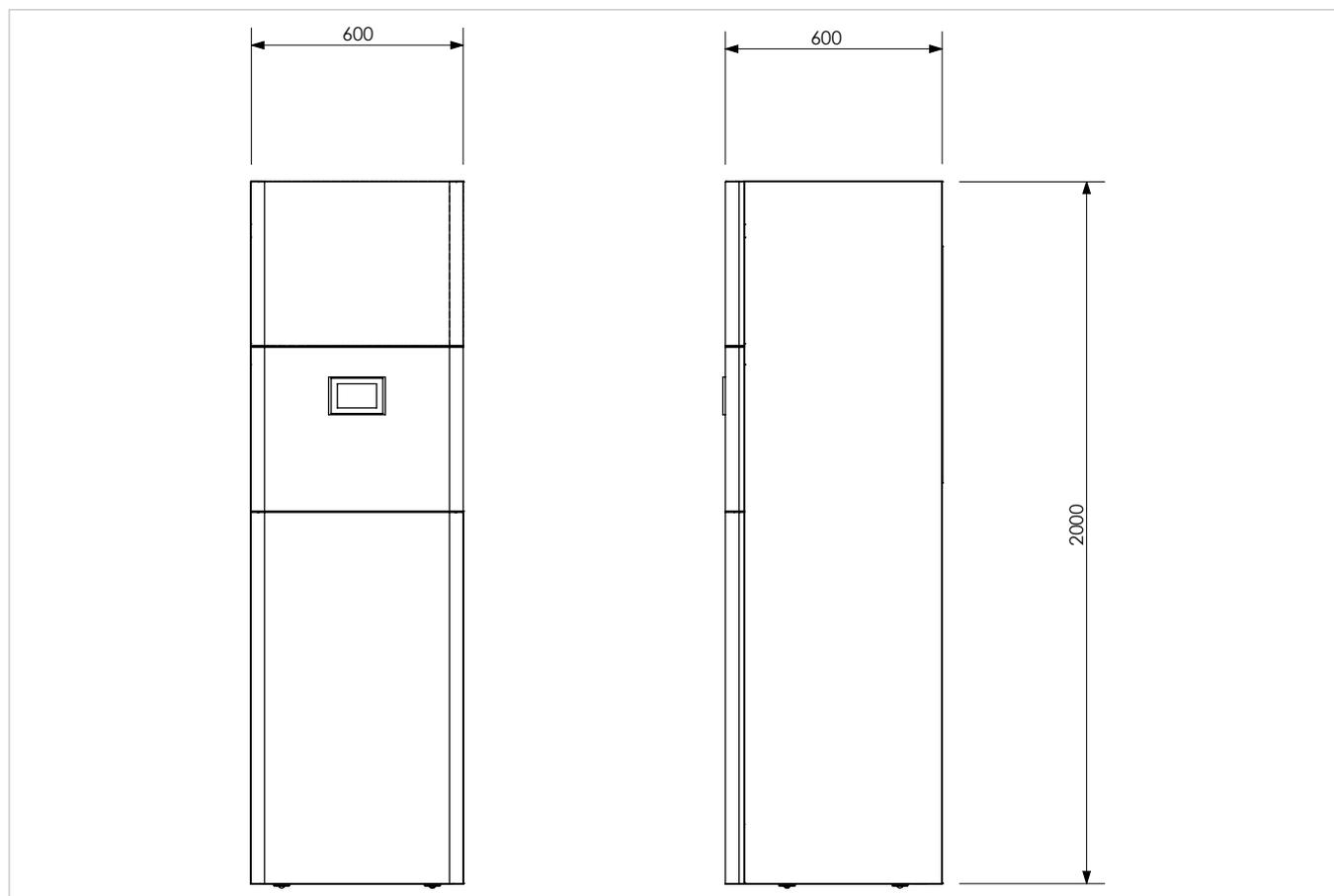
1. Water temperature in/out 30/35 °C; outdoor air temperature 7 °C; U.R. 85%
2. Seasonal efficiency according to UNI EN 14825. Energy Efficiency Class referred to the Average climate profile for flow temperature of 35 °C in compliance with Regulation 811/2013
3. Water temperature in/out 30/35 °C; outdoor air temperature -7 °C
4. Water temperature in/out 23/18 °C; outdoor air temperature 35 °C
5. Water temperature out 12/7 °C; outdoor air temperature 35 °C

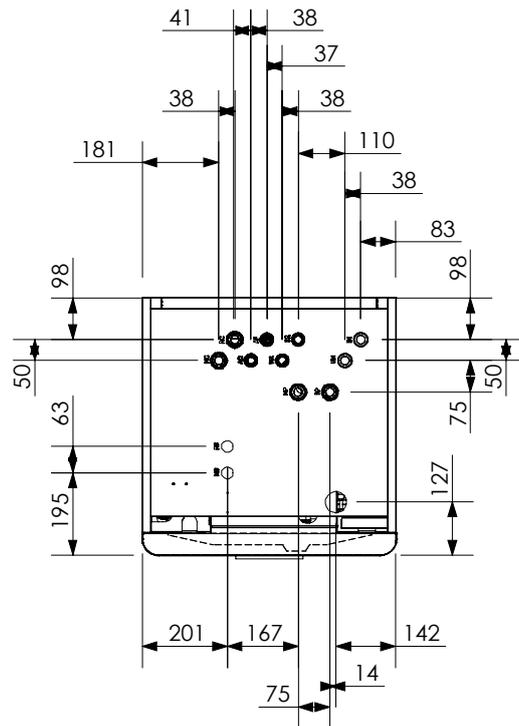
⚠ Refer to the manual of the outdoor unit for data about the refrigerating circuit.

8.2 Dimensions

Indoor unit

Model 5 - 7 - 11 - 13 - 15





Weight

Models	m.u.	5	7	9	11	13	15
Product dimensions and weight							
Empty weight	kg	152,0	152,0	152,0	152,0	152,0	152,0



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N420388A - Rev. 00