



innova

3in1 Built-in
5M - 7M - 9M - 12M - 15M
12T - 15 T

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.

⚠ For declarations of conformity, certificates and other certification details please consult the website.

Markings



TABLE OF CONTENTS

1	General information	<u>p. 5</u>
1.1	About the manual	<u>p. 5</u>
1.2	General warnings	<u>p. 6</u>
1.3	Basic rules of security	<u>p. 6</u>
1.4	Disposal	<u>p. 7</u>
2	Product presentation	<u>p. 8</u>
2.1	Identification	<u>p. 8</u>
2.2	Destination of use	<u>p. 8</u>
2.3	Description of the appliance	<u>p. 8</u>
2.4	List of external components	<u>p. 9</u>
2.5	List of internal components	<u>p. 10</u>
2.6	Compatible accessories	<u>p. 12</u>
3	Installation	<u>p. 15</u>
3.1	Preliminary warnings	<u>p. 15</u>
3.2	Reception	<u>p. 15</u>
3.3	Dimensions and weights with packaging	<u>p. 16</u>
3.4	Handling with packaging	<u>p. 17</u>
3.5	Storage	<u>p. 17</u>
3.6	Unpacking	<u>p. 18</u>
3.7	Handling without packaging	<u>p. 18</u>
3.8	Installation site	<u>p. 18</u>
3.9	Installation minimum distances	<u>p. 19</u>
3.10	Positioning	<u>p. 19</u>
3.11	Installation of internal components	<u>p. 20</u>
3.12	Hydraulic connections	<u>p. 32</u>
3.13	Filling the plant	<u>p. 37</u>
3.14	Refrigeration connections	<u>p. 39</u>
3.15	Electric connections	<u>p. 41</u>
4	Putting it into service	<u>p. 48</u>
4.1	Preliminary warnings	<u>p. 48</u>
4.2	First start-up	<u>p. 48</u>
4.3	Adjustments	<u>p. 50</u>
4.4	Primary circulation pump P1	<u>p. 50</u>
4.5	Circulation pumps optional kits	<u>p. 50</u>
4.6	Plant delivery	<u>p. 50</u>
4.7	Long period shut-down	<u>p. 51</u>
4.8	Draining the plant	<u>p. 51</u>
5	Use	<u>p. 52</u>
5.1	Interface	<u>p. 52</u>

5.2	Controller settings	<u>p. 53</u>
5.3	Basic function	<u>p. 54</u>
5.4	External unit control panel	<u>p. 55</u>
6	Maintenance	<u>p. 57</u>
6.1	Preliminary warnings	<u>p. 57</u>
6.2	Once-a-year operations.	<u>p. 57</u>
7	Troubleshooting	<u>p. 59</u>
7.1	Preliminary warnings	<u>p. 59</u>
7.2	Functional aspects not to be interpreted as faults.	<u>p. 59</u>
7.3	Troubleshooting Table	<u>p. 60</u>
8	Configuration accessories	<u>p. 62</u>
8.1	heater kit	<u>p. 62</u>
8.2	Circulation pumps optional kits	<u>p. 64</u>
8.3	Digital regulator kit	<u>p. 66</u>
8.4	Solar heating kit	<u>p. 68</u>
9	Technical information.	<u>p. 72</u>
9.1	Technical data	<u>p. 72</u>
9.2	Operating limits	<u>p. 74</u>
9.3	Dimensions.	<u>p. 75</u>
9.4	P1 primary circulation pump graphs	<u>p. 76</u>
9.5	Secondary circuit pump graphic.	<u>p. 77</u>
9.6	Mixed circuit pump graphic	<u>p. 77</u>

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.

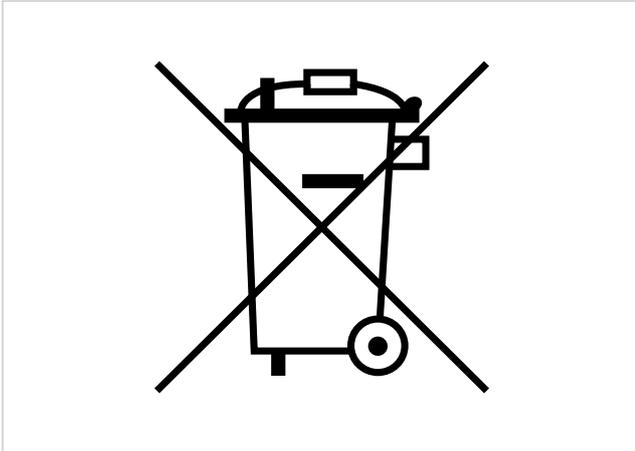
1.3 Basic rules of security

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

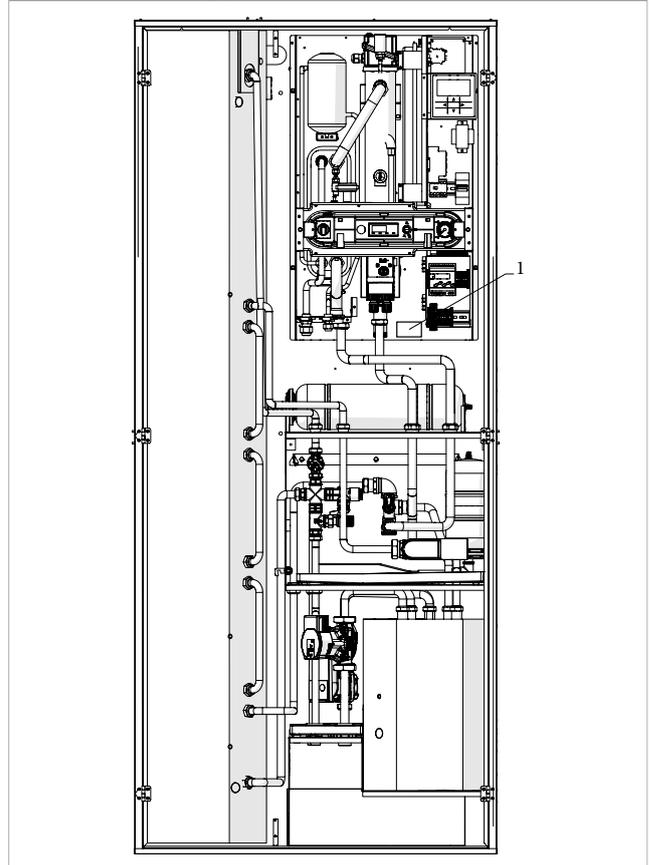
The appliance can be identified by the rating plate.

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.

1. Technical rating plate



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 range **3in1 Incasso** are designed to provide domestic hot water in combination with a central heating and cooling system. They are designed for outdoor built-in installation.

The units are provided with a 170 litre domestic hot water cylinder, solar coil, hydraulic unit complete with diverter valve for domestic hot water, 8 litre expansion vessel, safety valves and circulation pump.

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

Single-phase models 5M - 7M - 9M - 12M - 15M

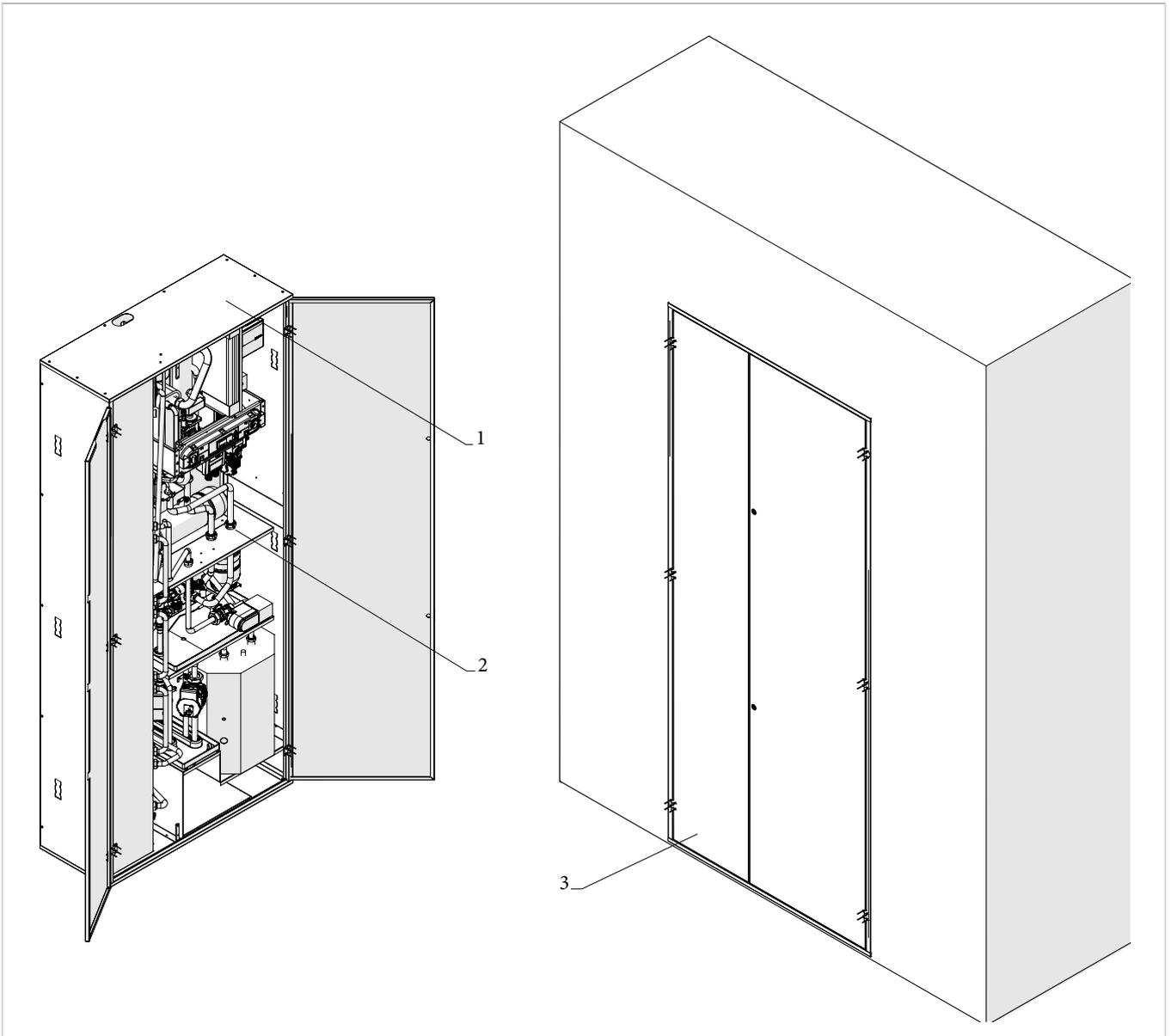
Three-phase 12T - 15T models

- ⚠ The internal components of the unit are supplied in separate packages.

2.4 List of external components

Indoor unit

1. Built-in cabinet kit (obligatory)
2. Internal components
3. Doors



⚠ The built-in cabinet kit is supplied separately. Refer to the instruction sheet of the built-in cabinet kit for installation.

2.5 List of internal components

Hydronic unit components

A Hydronic module

B Hydraulic unit

1. Domestic hot water storage

2. Hydronic module support bracket

3. Pipe N600145A

4. Expansion vessel 5l

5. Filling cock

6. Expansion vessel 3l

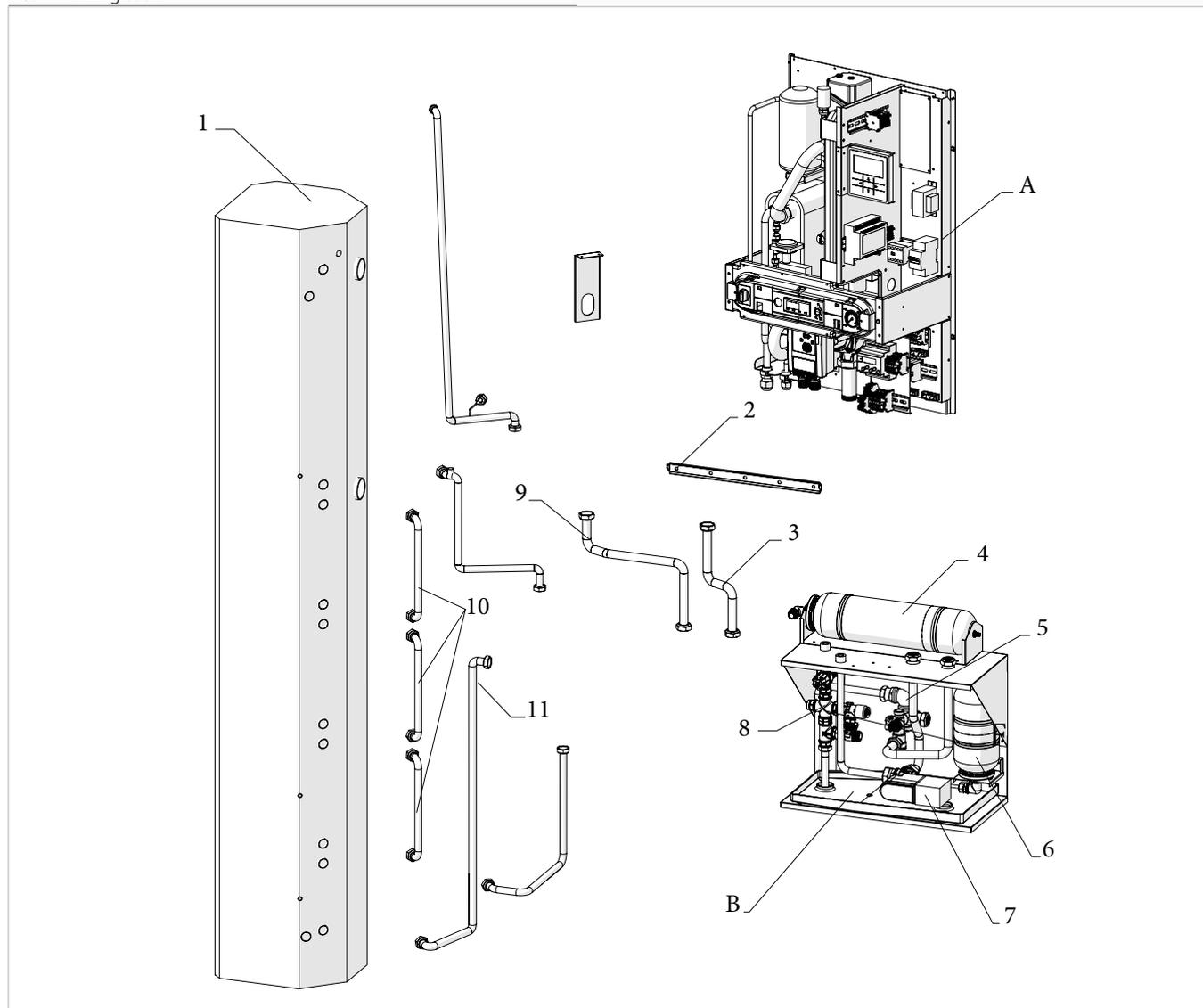
7. 3-way valve + servomotor

8. Mixing module

9. Pipe N600450A

10. Pipe N600147B

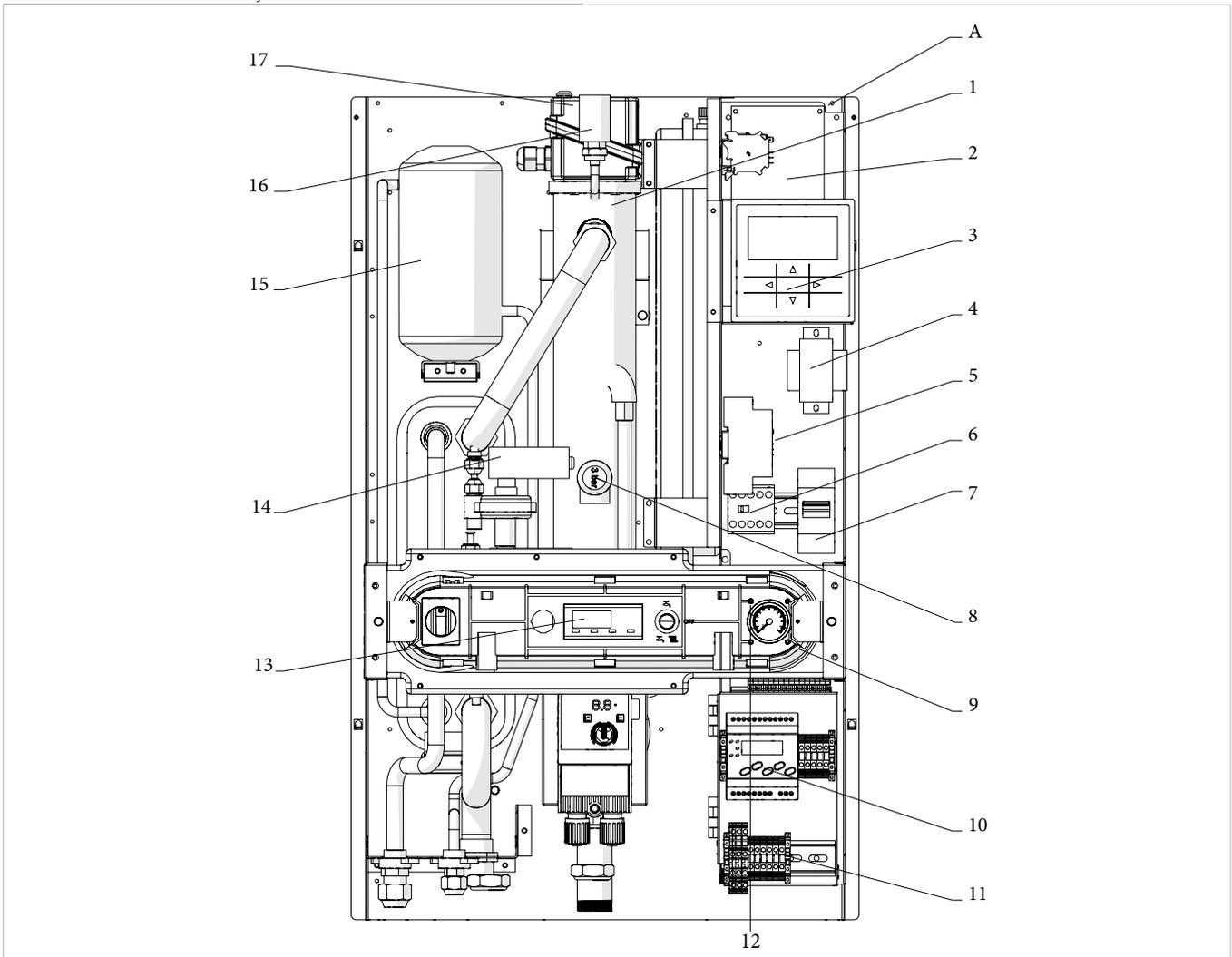
11. Upper mixer tank pipe



Hydronic module internal components

- A** Hydronic module
- 1.** Collector
- 2.** External unit control board
- 3.** External unit control panel
- 4.** Electronic board transformer
- 5.** INN-RDC-02 control unit
- 6.** K1 relay
- 7.** Thermal-magnetic circuit breaker Q2 (only for version with heaters)
- 8.** Water circuit 3-bar safety valve

- 9.** Control Panel
- 10.** Digital regulator kit (code GB1110II)
- 11.** Terminal block N576023A
- 12.** Pressure gauge
- 13.** Controller
- 14.** Flow switch (differential pressure switch)
- 15.** Refrigerant receiver
- 16.** Breather valve
- 17.** Heating element



2.6 Compatible accessories

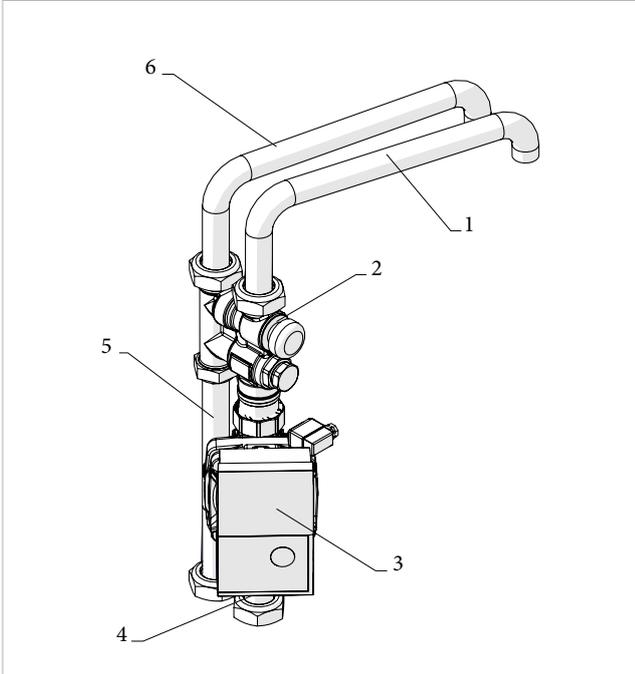
	Accessory description	Combinable products	Code
Network controls			
Butler			
	BUTLER: codes, accessories and price list in relevant section	All	
Pre-installation accessories			
FRAMEWORK			
	Casing complete with template for hydraulic connections and closing doors	All	L01056II
Accessories supplied separately.			
Buffer tank			
	Inertial storage tank 30 litres per system	All	GB1057II
hydraulic separator kit			
	Buffer storage / Hydraulic separator with electronic control for management of up to 2 secondary circuits	All	GB1058II
Secondary circuit kit			
	Secondary circuit pump	All	GB1059II (1)
	Secondary circuit pump and mixing valve kit. CONTROLLER NOT INCLUDED	All	GB1060II (1)
	Digital regulator kit for secondary circuit pump and mixing valve kit. To be positioned outside the unit.	All	GB1110II
Solar heating kit			
	Solar system unit: control unit, pump, safety valve, charging unit	All	GB1063II
heater kit			
	Heating elements 6 kW (3 steps of 2 kW). Limitation to 2 kW for single-phase heat pumps	All	GB1064II

1. A "Secondary circuit pump kit" and a "Secondary circuit pump and mixing valve kit" can be installed at the same time. It is not possible to install two kits of the same type.

⚠ For detailed information on accessories please refer to the "Configuration accessories" [p. 62](#) section.

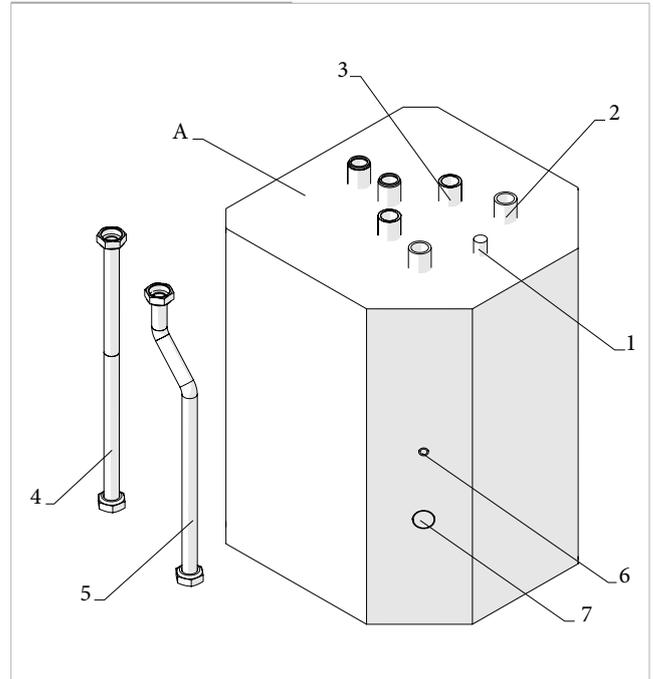
Secondary circuit pump and mixing valve kit

- 1. Pipe N600155B
- 2. Mixing module
- 3. Circulator
- 4. Pipe N600151B
- 5. Pipe N600152B
- 6. Pipe N600156B



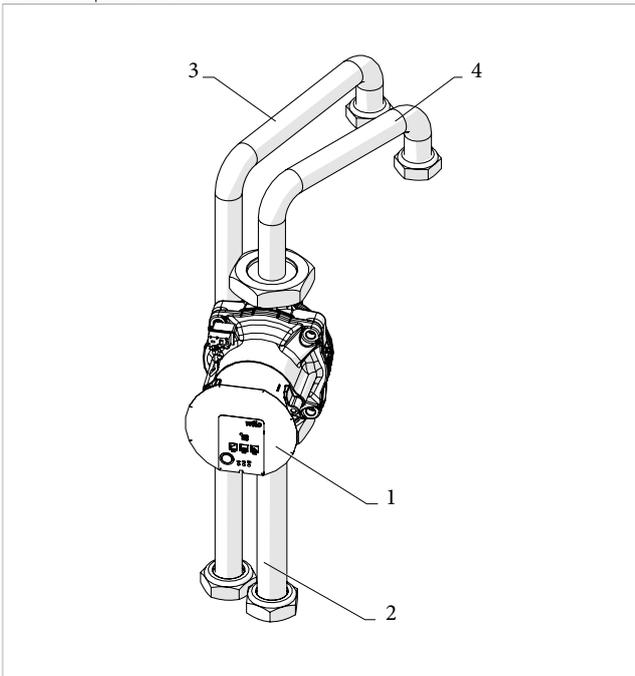
hydraulic separator kit

- | | | | |
|-----------|--------------------------|-----------|---------------|
| A | Hydraulic separator | 4. | Pipe N600150B |
| 1. | Breather valve | 5. | Pipe N600443A |
| 2. | Pipe connection N600157B | 6. | Probe sump |
| 3. | Pipe connection N600160B | 7. | Drain valve |
| | | 8. | Pipe N600444A |



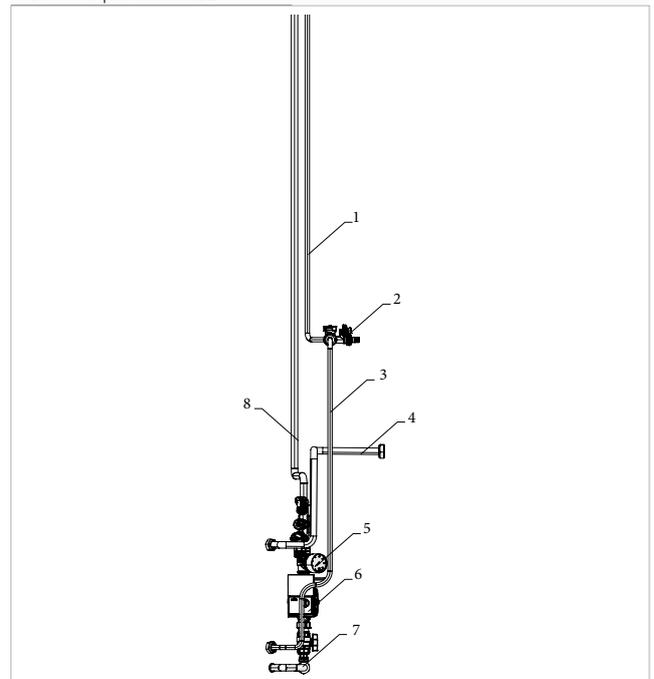
Secondary circuit pump

- 1. Circulator
- 2. Pipe N600459A
- 3. Pipe N600444A
- 4. Pipe N600458A



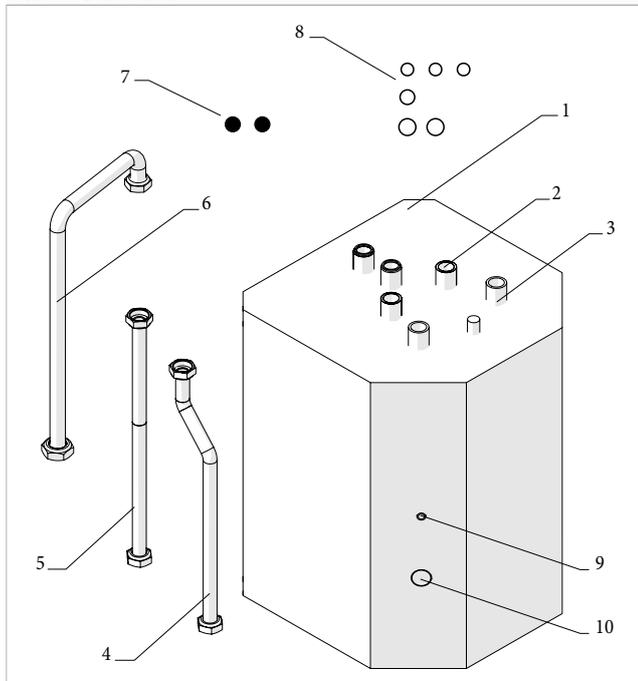
Solar heating kit

- | | | | |
|-----------|-----------------------------|-----------|------------------|
| 1. | Pipe N600457A | 5. | Pressure gauge |
| 2. | Solar circuit charging unit | 6. | Solar pump group |
| 3. | Pipe N600456B | 7. | Pipe N600454A |
| 4. | Pipe N600452B | 8. | Pipe N600455A |



Buffer vessel kit

1. Buffer tank
2. Pipe connection N600160B
3. Pipe connection N600157B
4. Pipe N600443A
5. Pipe N600150B
6. Pipe N600444A
7. 3/4" brass cap
8. Set of rubber flat gaskets
9. Probe sump
10. Drain valve



⚠ The secondary circuit pump kit and secondary circuit pump and mixing valve cannot be fitted with the buffer vessel kit.

INSTALLATION

3.1 Preliminary warnings

- ⚠ **For detailed information on the products, refer to chapter "Description of the appliance" p. 8.**
- ⚠ **For detailed information on accessories please refer to the "Configuration accessories" p. 62 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.

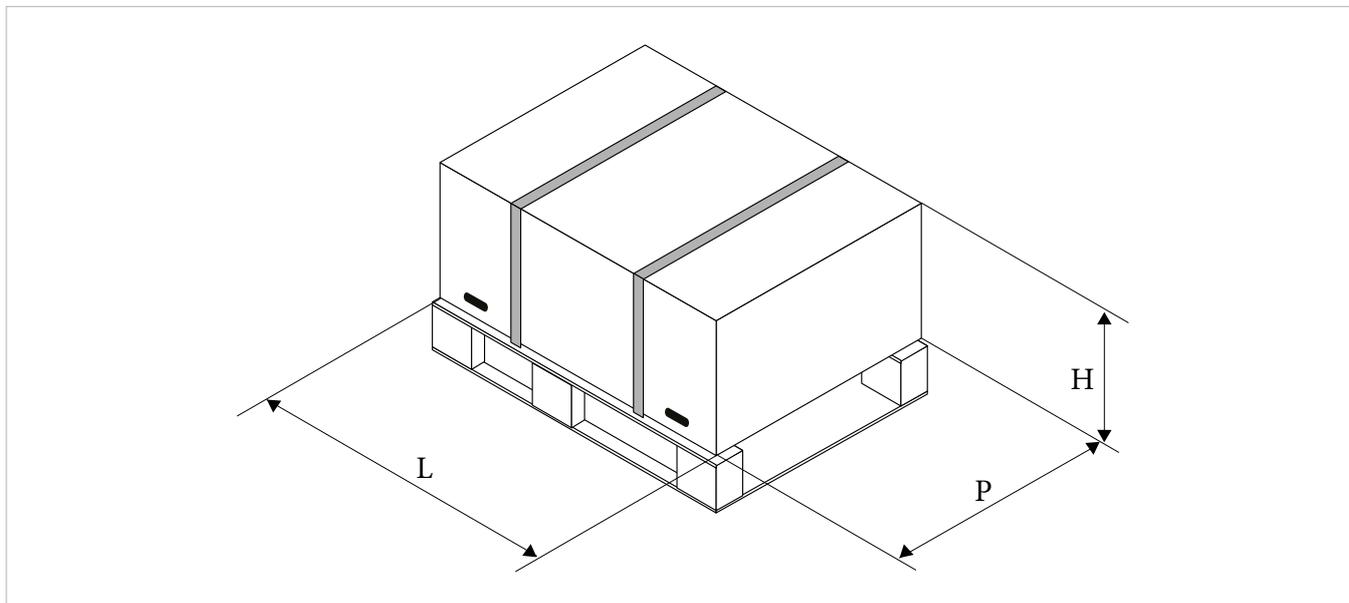
Package description

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

The equipment is shipped in several separate packages, placed in cardboard boxes, placed on wooden pallets and covered with polyethylene film.

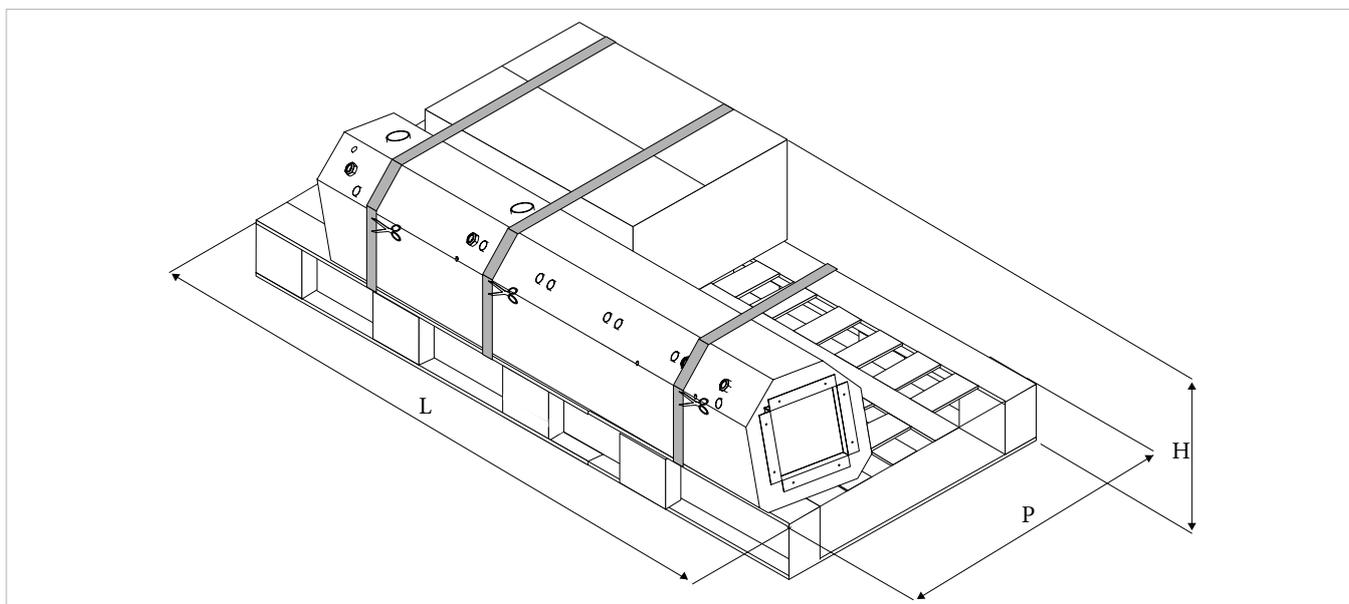
3.3 Dimensions and weights with packaging

Hydronic module



Models	m.u.	5-M	7-M	9-M	11-M	11-T	13-M	13-T	15-M	15-T
Total width	mm	980	980	980	980	980	980	980	980	980
Total height	mm	340	340	340	340	340	340	340	340	340
Total depth	mm	580	580	580	580	580	580	580	580	580
Weight	kg	43,0	43,0	43,0	45,0	48,0	45,0	48,0	45,0	48,0

Domestic hot water storage and hydraulic unit



Models	m.u.	5 - 7 - 9 - 11 - 13 - 15
Total width	mm	2200
Total height	mm	400
Total depth	mm	1000

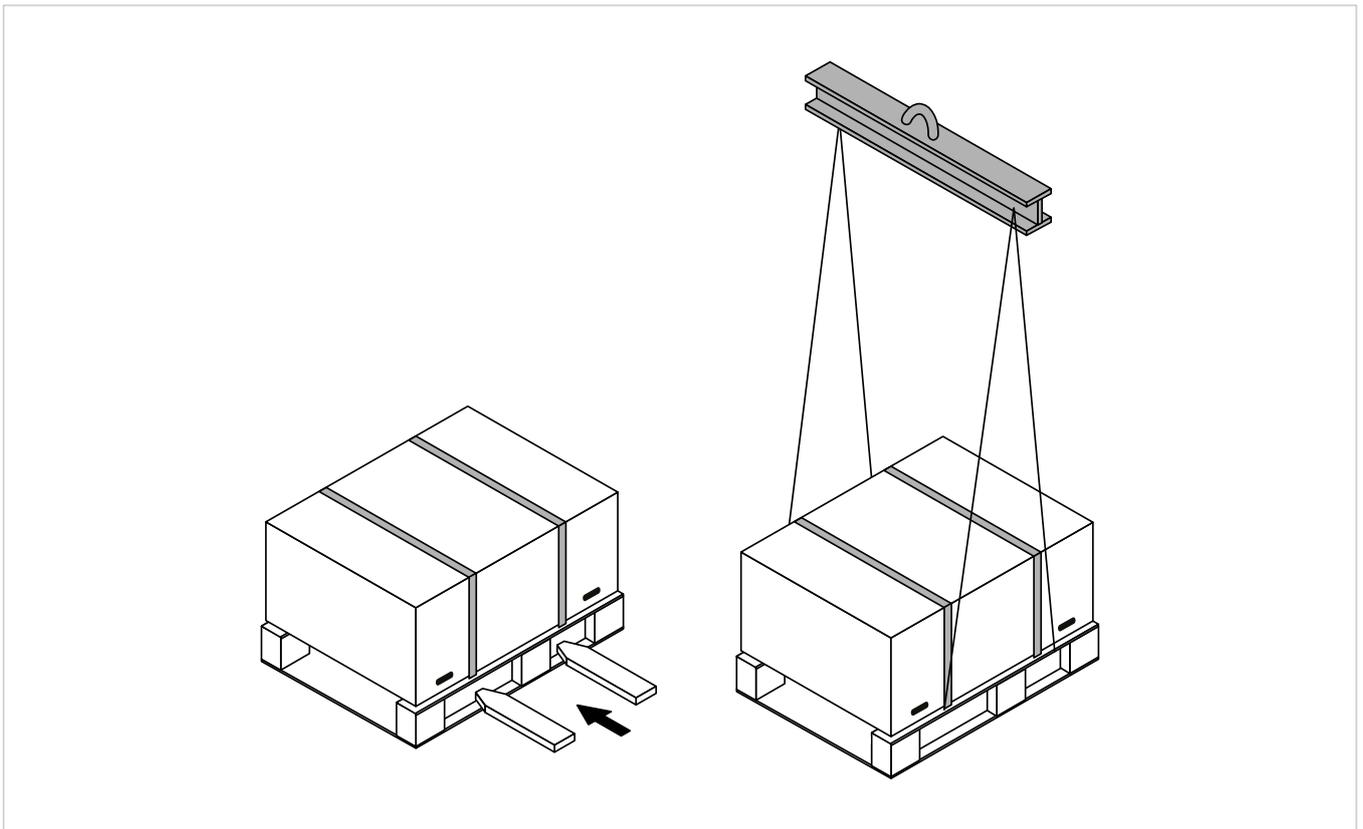
3.4 Handling with packaging

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.

Movement methods



The product can be handled as follows:

- 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.

- ⚠ Only in exceptional cases can the unit be moved manually for short distances using the handles provided on the packaging. In this case, the weight of the unit must be carefully checked.

3.5 Storage

Preliminary warnings

- ⚠ Stored in accordance with the applicable national regulations.
- ⚠ Do not turn the packaging upside down.
- ⚠ Do not stack the appliances.
- ⚠ Only place the appliance in a vertical position.

- in a closed environment protected from atmospheric elements
- insulated from the ground by crossbars or pallets

Appliance with packaging

- Store the package:
- in a dry and clean place

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

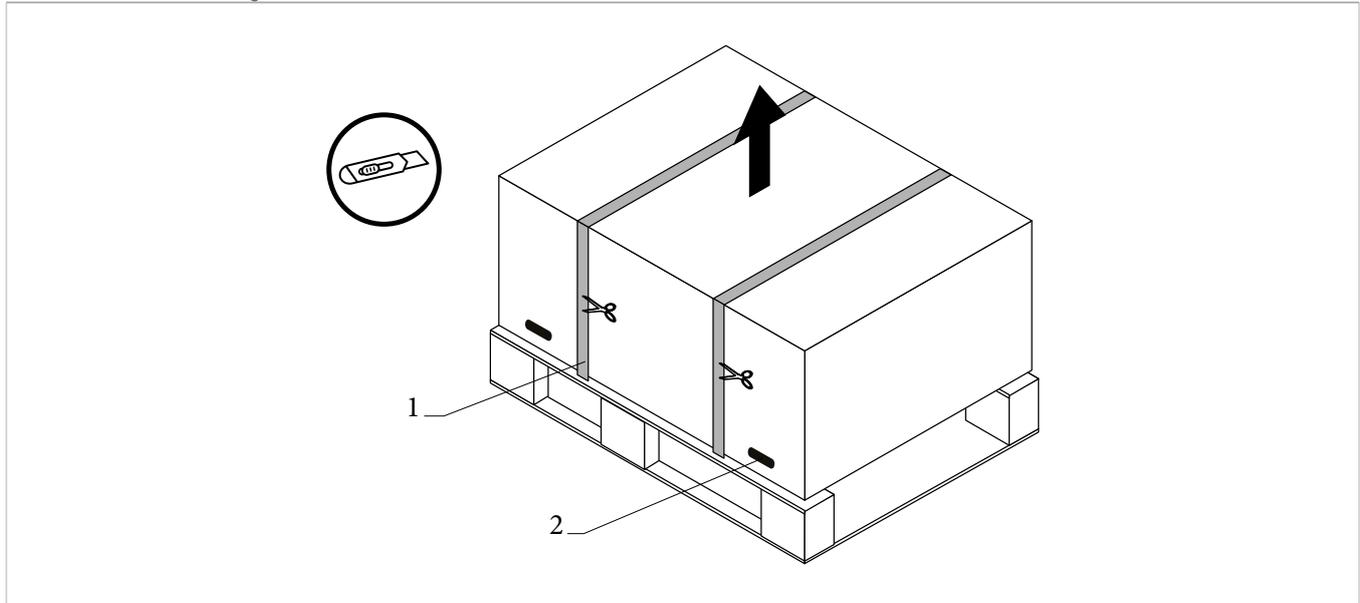
Preliminary warnings

- ⚠ 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
2. Handles for handling



Remove the packing:

- transport the appliance to the installation area
- cut the strapping
- remove the packing

- ⚠ Check the presence of the individual components.

Accompanying material

They are included with the appliance, inside the packaging:

Hydronic module

- 1 installer manual of the unit
- 1 manual external unit
- 1 Wall mounting bracket
- 1 first start-up form

3.7 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.

- lift from the base of the packaging

- ⚠ The unit can be moved manually for short distances. In this case it is necessary to check carefully that the weight of the unit does not exceed the regulations in relation to the number of people used.

Movement methods

To handle:

- ⚠ Use means suitable for the weight of the appliance and how it is to be handled.

3.8 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 for outdoor installation.

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 wall is able to support the weight of the appliance
- the section of floor or wall does not involve load-bearing construction elements, piping or electrical lines
- the appliance must be installed in a position where it can be easily serviced

⚠ If the appliance is installed incompletely or on an inappropriate wall, it could cause damage to persons or property if it should detach.

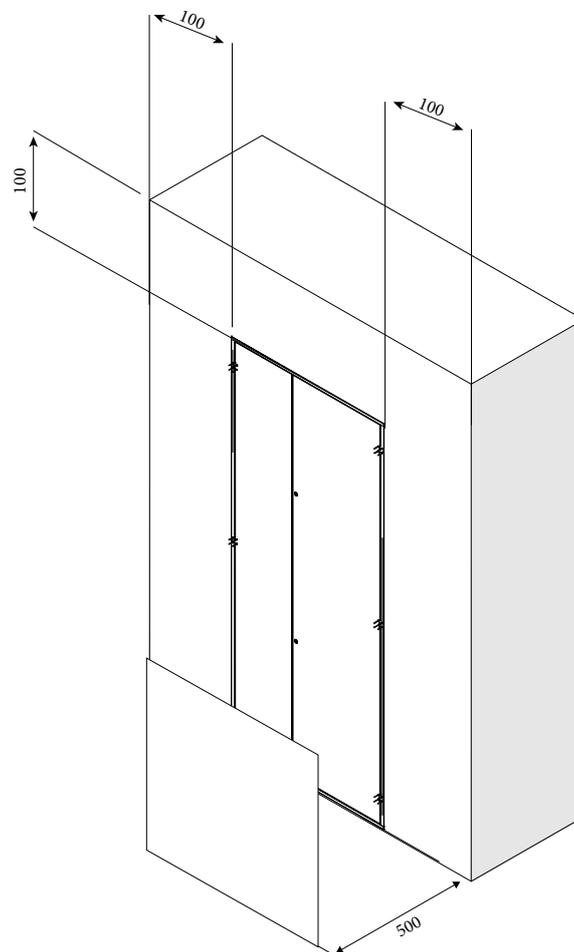
⚠ Provide the following:

- a drain and a water supply nearby
- a compliant power supply nearby

3.9 Installation minimum distances

The clearance zones for the installation and maintenance of the appliance are shown in the instruction sheet of the built-in cabinet kit. 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.



3.10 Positioning

The components must be positioned inside the built-in cabinet.

⚠ The internal components of the unit are supplied in separate packages.

⚠ The built-in cabinet kit is supplied separately. Check the installation instruction sheet.

⚠ Do not remove pipe labels.

⚠ Follow the assembly sequence indicated in the following paragraphs.

⚠ Open one kit at a time.

Installation arrangement

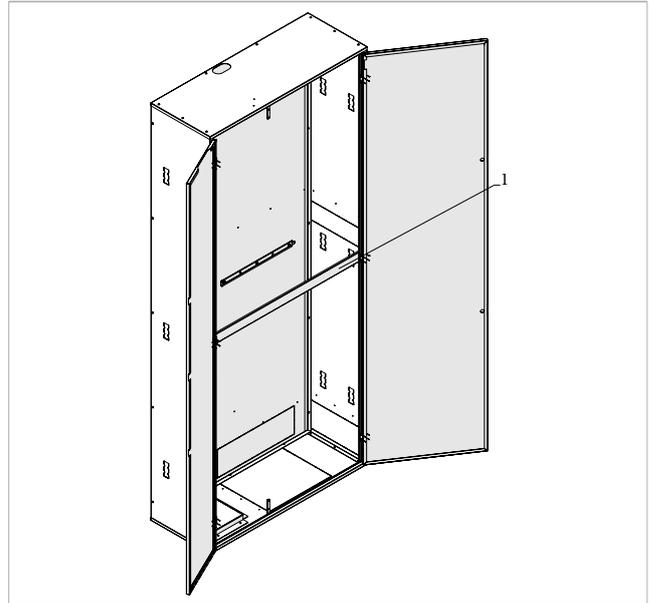
Before installing the internal components:

- use the key provided
- opening the built-in cabinet
- remove the horizontal reinforcement bracket from the built-in cabinet

⚠ Refer to the instruction sheet of the kit for all information on the built-in cabinet.

⚠ The tools are supplied with the built-in kit.

1. Horizontal reinforcement bracket

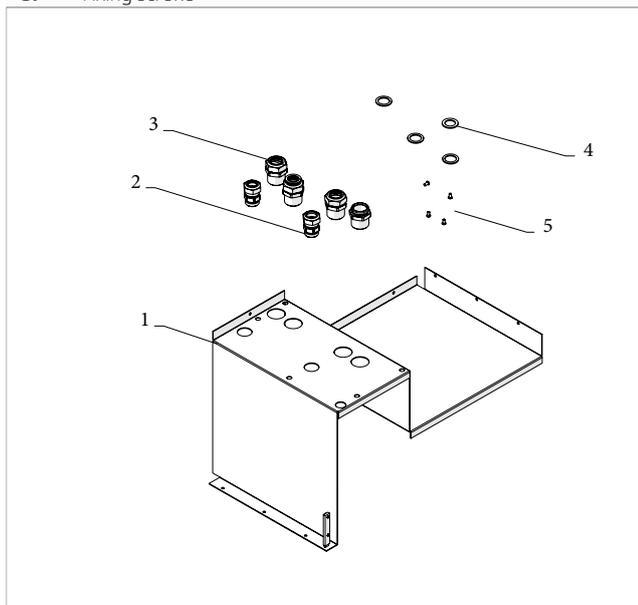


3.11 Installation of internal components

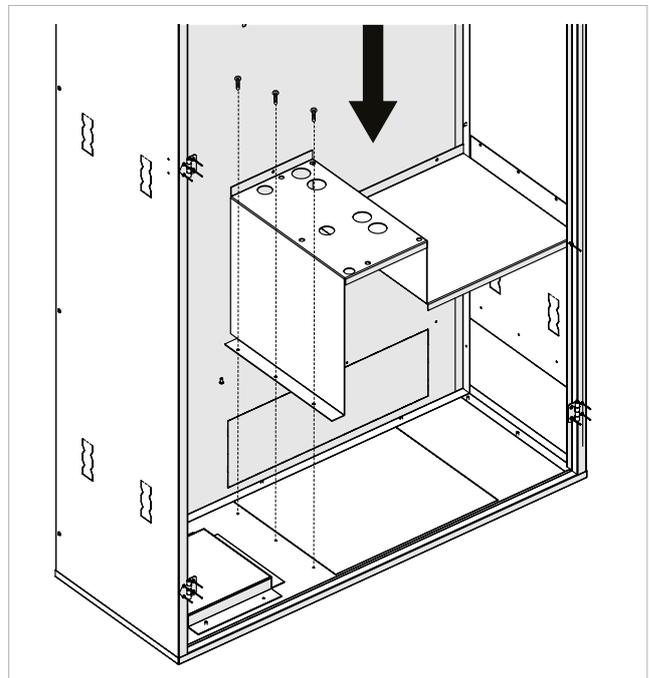
Hydraulic separator support bracket

Composition of the kit

- | | |
|----|-------------------------------------|
| 1. | Hydraulic separator support bracket |
| 2. | 3/4" nipples (2 pieces) |
| 3. | 1" nipples (4 pieces) |
| 4. | Rubber flat gaskets |
| 5. | Fixing screws |

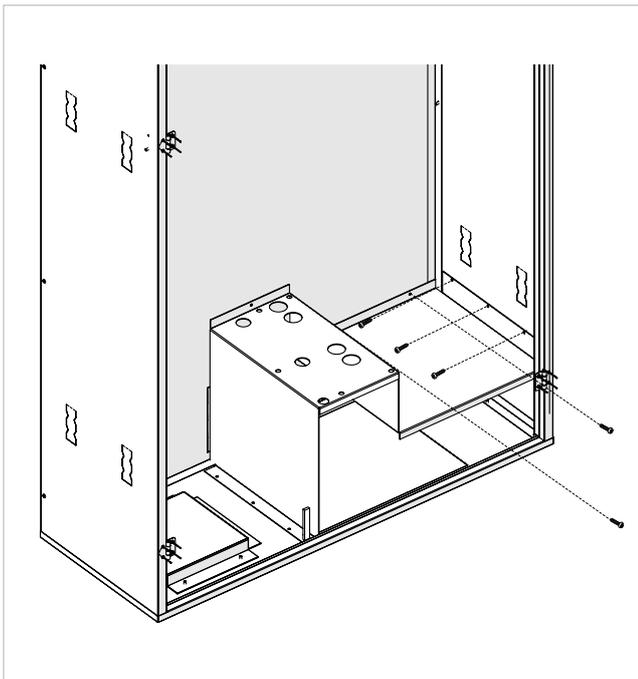


Assembly

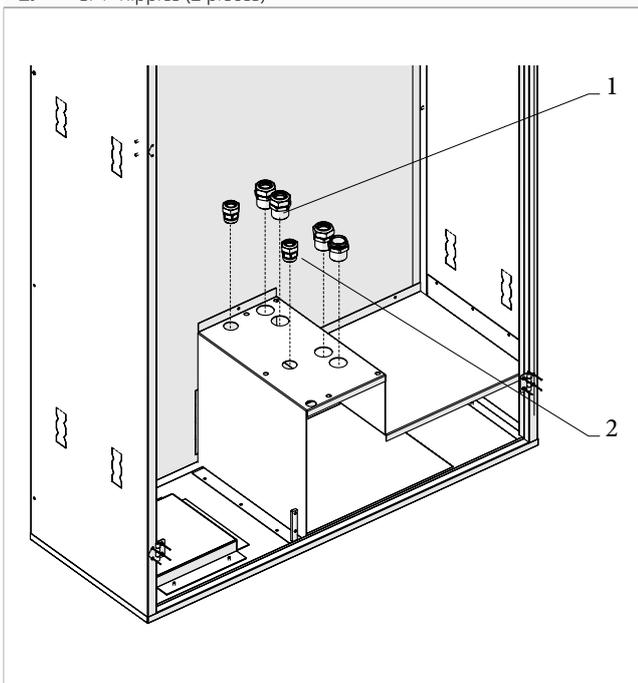


- fix the separator support bracket to the formwork using the fixing screws

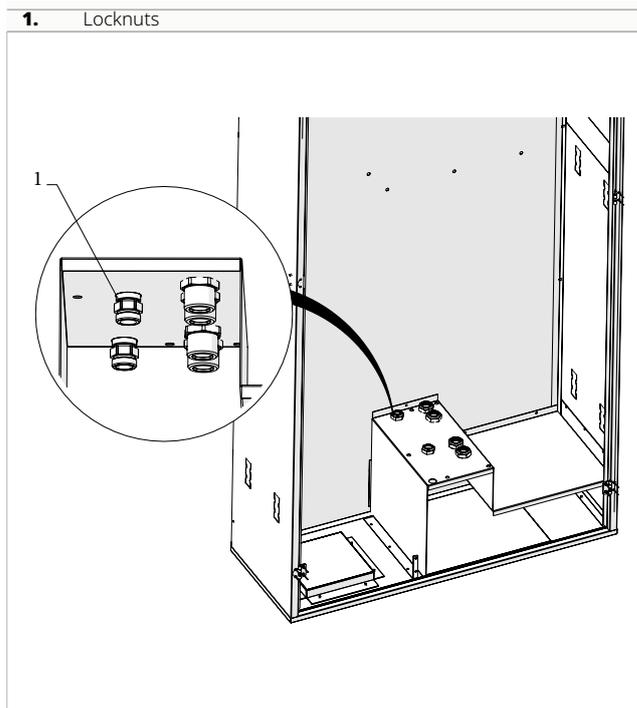
⚠ The material is supplied with the hydraulic unit kit.



- 1. 1" nipples (4 pieces)
- 2. 3/4" nipples (2 pieces)

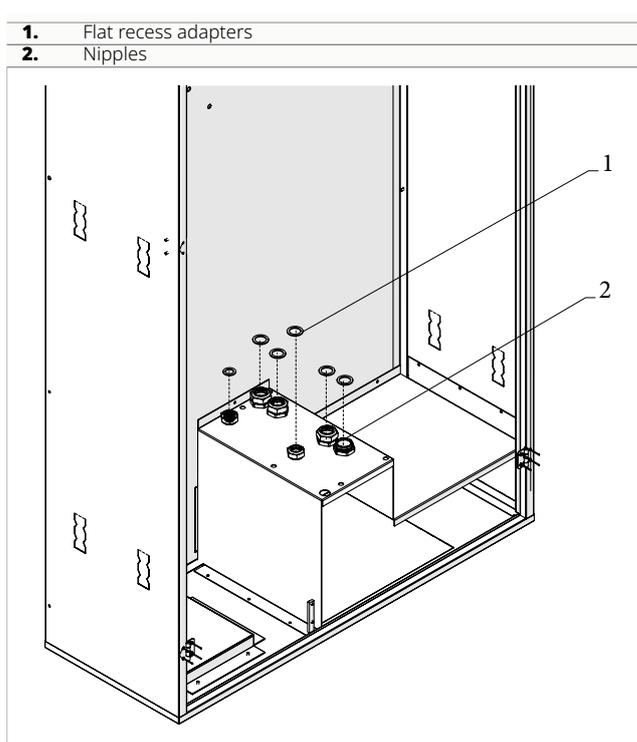


- insert the nipples into the holes provided on the separator support bracket



- 1. Locknuts

- lock them using the locknuts



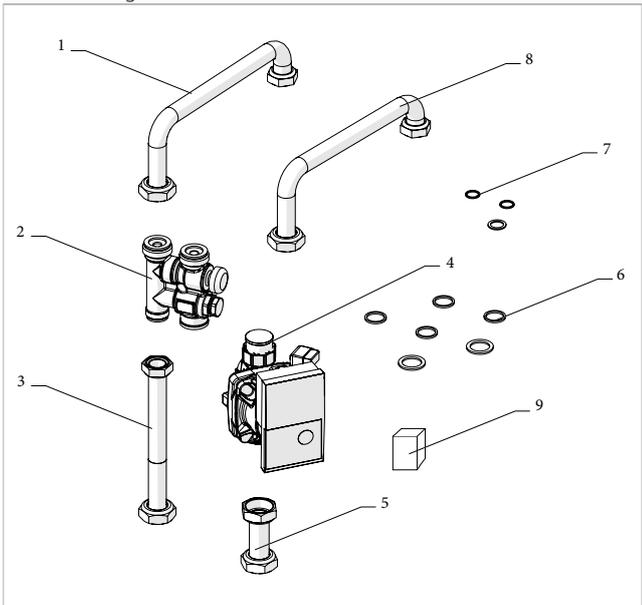
- 1. Flat recess adapters
- 2. Nipples

- insert the flat recess adapters

Secondary circuit pump and mixing valve kit (cod. GB1060)

Composition of the kit

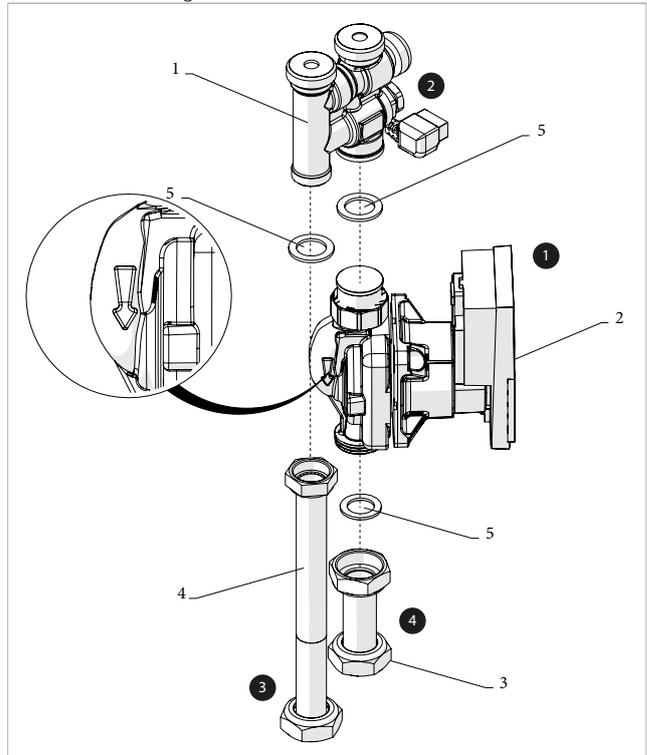
- 1. Pipe N600156B
 - 2. Mixing valve
 - 3. Pipe N600152B
 - 4. Circulation pump
 - 5. Pipe N600151B
 - 6. Set of rubber flat gaskets
 - 7. Flat recess adapters
 - 8. Pipe N600155B
 - 9. Servomotor
- Not present in the image:**
- 10. Insulation shell for circulation pump
 - 11. Circulation pump connection cable
 - 12. Mixing valve head



- ⚠ Additional kit to be ordered separately.
- ⚠ The kit does not include the digital regulator for the mixing valve. The regulator is available as an accessory (code GB1110) be ordered separately.

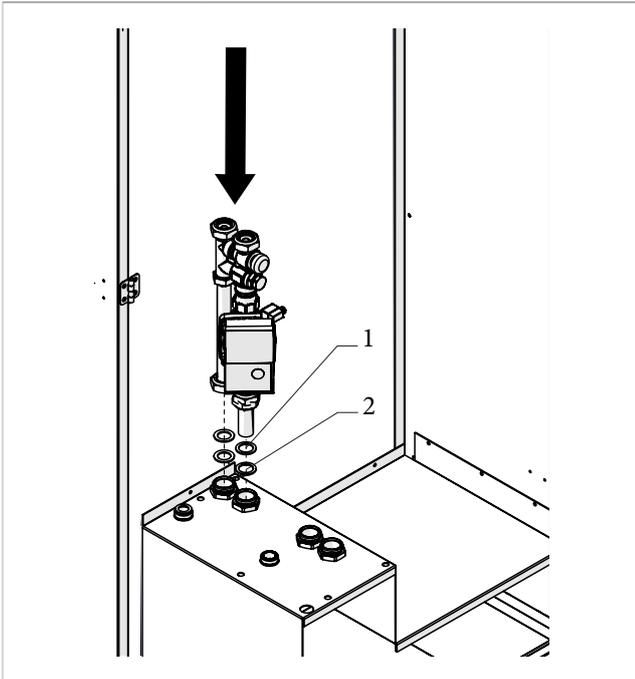
Assembly

- 1. Mixing valve
- 2. Circulation pump
- 3. Pipe N600151B
- 4. Pipe N600152B
- 5. Rubber flat gaskets

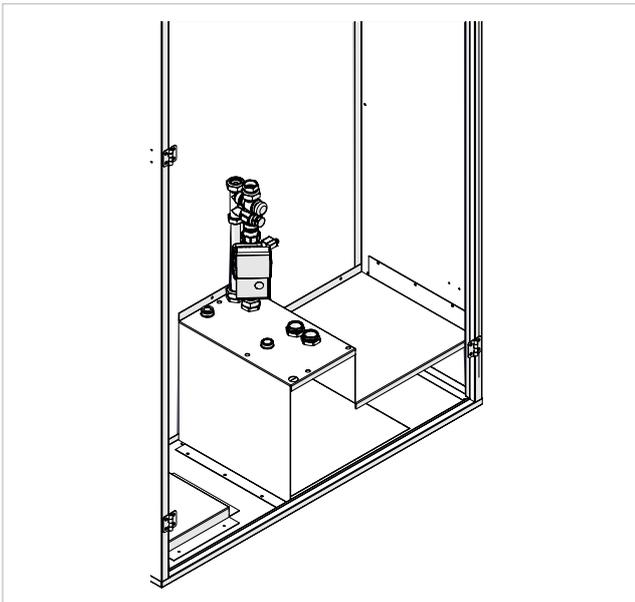


- ensure that the circulation pump has the arrow pointing downwards
 - assemble the mixing valve on the circulation pump
 - position the insulation shell for circulation pump
 - assemble pipe N600152B on the mixing valve
 - assemble pipe N600151B on the circulation pump
 - assemble the head on the mixing valve
 - connect the connection cable of the circulation pump
- ⚠ The shell insulation must be fixed by removing the double-sided adhesive strips.

1. Rubber flat gaskets
2. Flat recess adapters



- insert the flat recess adapters and the flat rubber gaskets
- connect the kit to the 1" nipples on the separator support bracket



⚠ For connecting pipes N600156B and N600155B, see paragraph "Completion of secondary circuit pump and mixing valve kit" [p. 24](#).

Assembly completed:

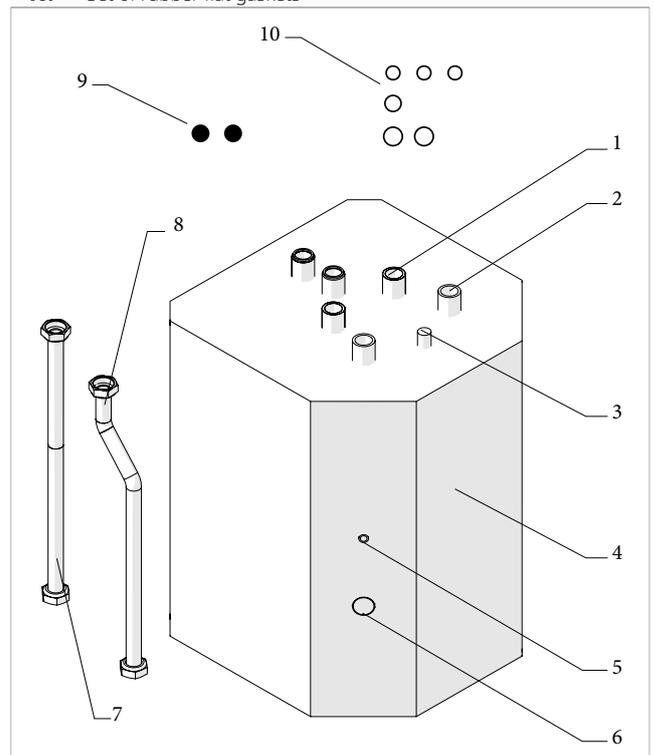
- plug the power cable connector into the connector provided on the pump

⚠ The installer is responsible for the power supply and management of the secondary circuit pump and mixing valve kit.

Hydraulic separator kit (cod. GB1058)

Composition of the kit

1. Pipe connector N600160B (separator inlet)
2. Pipe connector N600157B (separator outlet)
3. Breather valve
4. Hydraulic separator
5. Probe sump
6. Drain valve
7. Pipe N600150B
8. Pipe N600443A
9. Brass caps 3/4"
10. Set of rubber flat gaskets

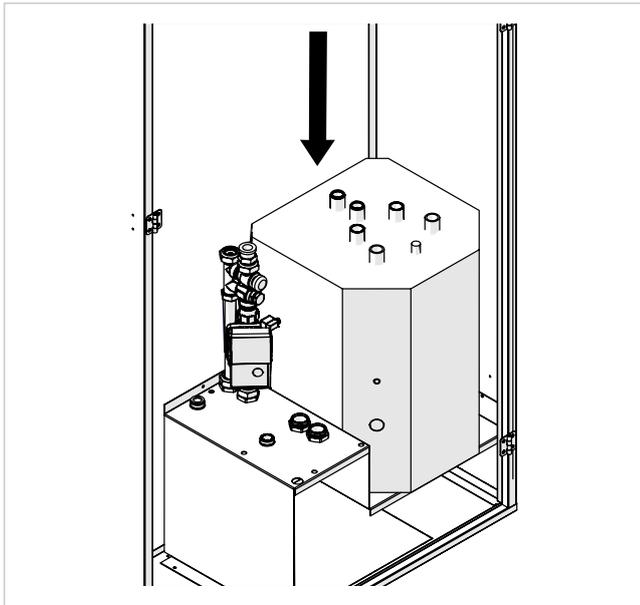


Assembly

Before positioning the hydraulic separator in the built-in cabinet:

- remove the protective caps from the connectors
- mount the breather valve
- fit the exhaust valve
- close the unused connections with 3/4" brass caps and flat rubber gaskets

⚠ Use Teflon tape to secure the connectors.

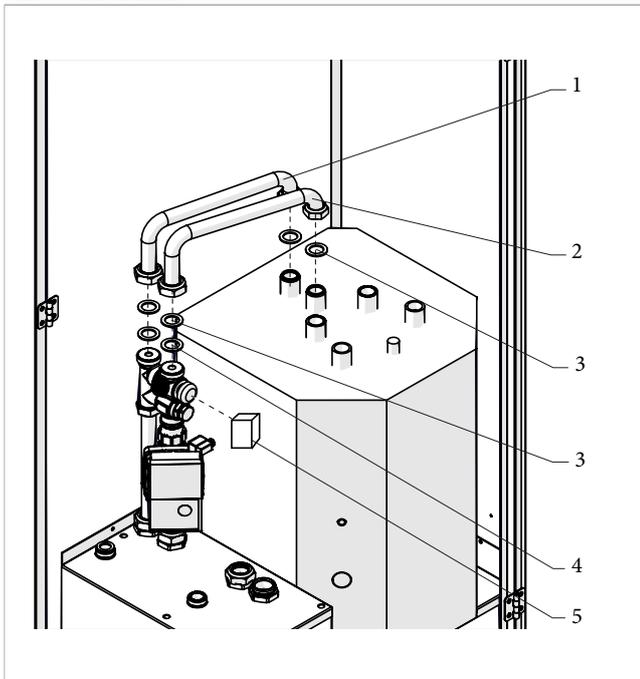


- position the hydraulic separator on the support bracket

⚠ For connecting pipes N600150B and N600443A, see paragraph "Completion of hydraulic separator kit" *p. 26.*

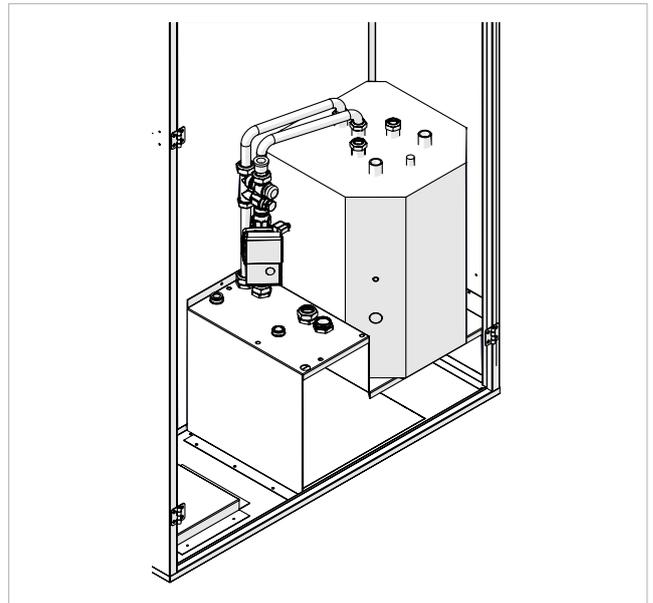
Completion of secondary circuit pump and mixing valve kit

1. Pipe N600156B
2. Pipe N600155B
3. Rubber flat gaskets
4. Flat recess adapters
5. Servomotor



- insert the flat recess adapters and the flat rubber gaskets
 - connect pipes N600156B and N600155B
 - connect the servomotor to the mixing valve connector

⚠ The pipes N600156B and N600155B, the flat recess adapters, the rubber flat gaskets and the servomotor are located inside the pump and secondary circuit mixer kit.



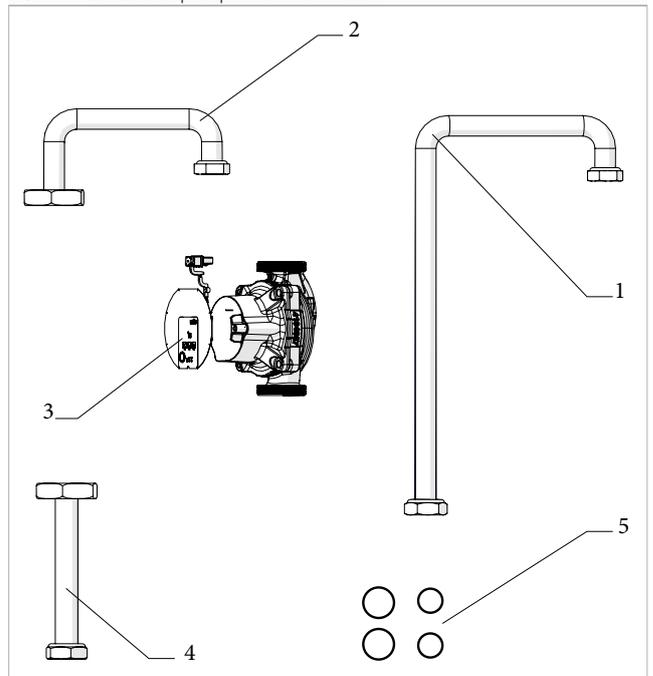
Secondary circuit pump kit (cod. GB1059)

Composition of the kit

1. Pipe N600444A
2. Pipe N600458A
3. Circulation pump
4. Pipe N600459A
5. Set of rubber flat gaskets

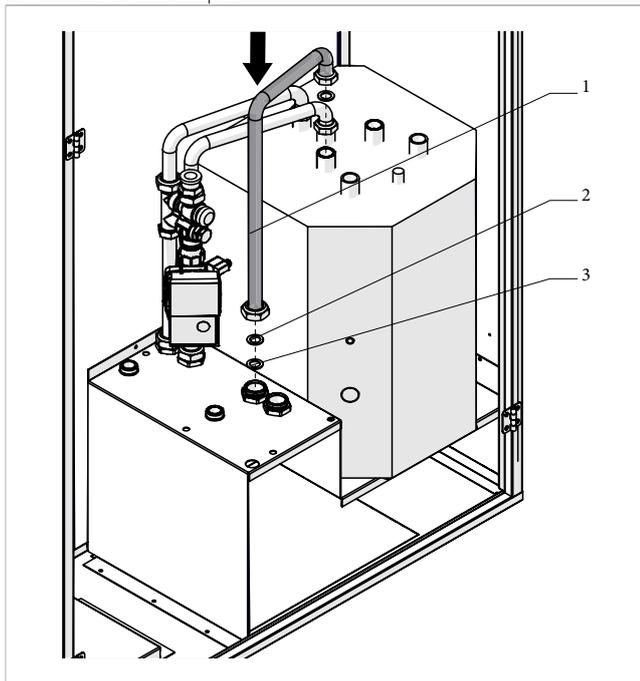
Not present in the image:

6. Insulation shell for circulation pump
7. Circulation pump connection cable



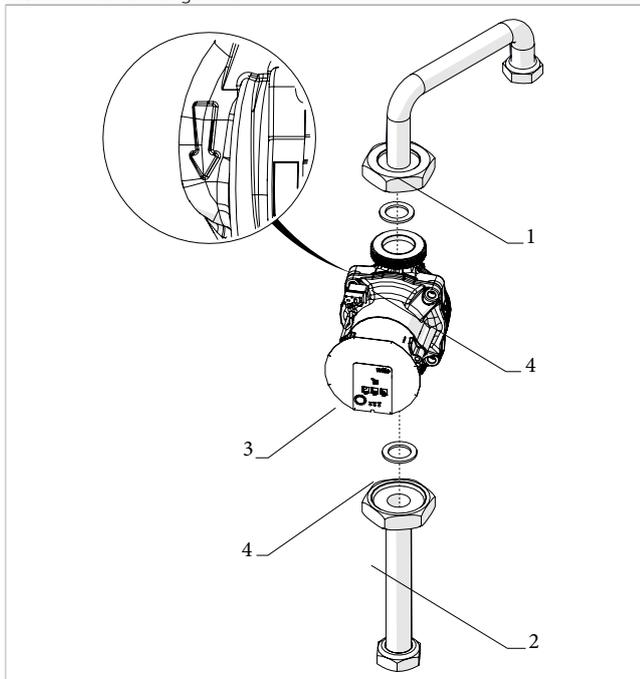
Assembly

1. Pipe N600444A
2. Rubber flat gaskets
3. Flat recess adapter



- insert the flat recess adapter and the flat rubber gaskets
- connect pipe N600444A

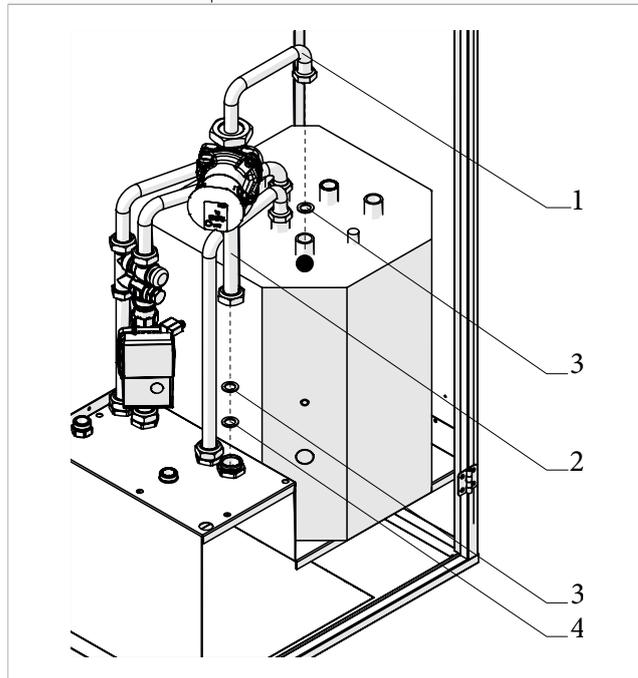
1. Pipe N600458A
2. Pipe N600459A
3. Circulation pump
4. Rubber flat gaskets



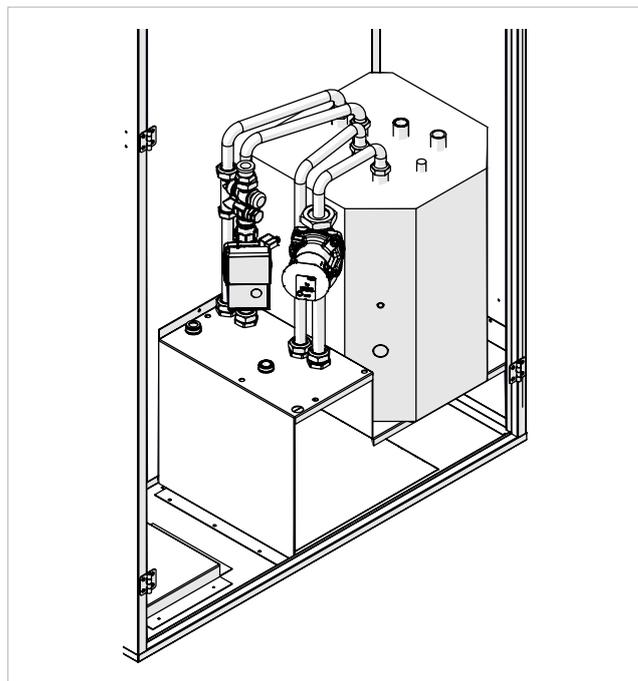
- ensure that the circulation pump has the arrow pointing downwards
- assemble pipes N600458A and N600459A on the circulation pump
- position the insulation shell for circulation pump

⚠ The shell insulation is fixed by removing the double-sided adhesive strips.

1. Pipe N600458A
2. Pipe N600459A
3. Rubber flat gaskets
4. Flat recess adapters



- insert the flat recess adapters and the flat rubber gaskets
- connect the secondary circuit pump kit



Assembly completed:

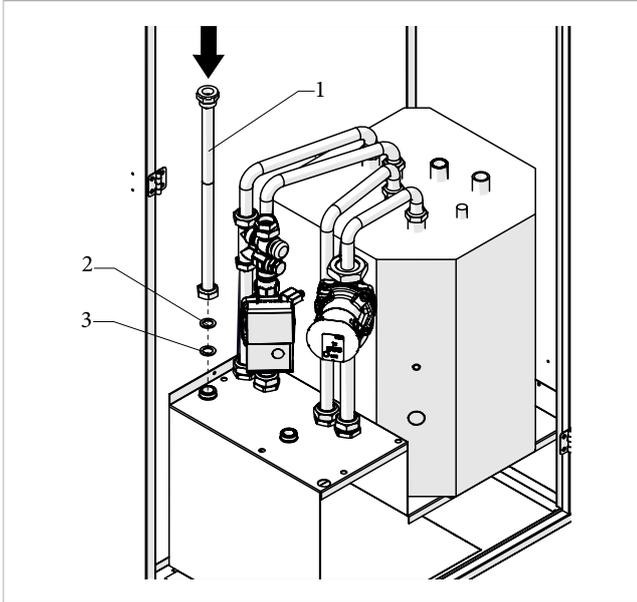
- plug the power cable connector into the connector provided on the pump

⚠ The installer is responsible for the power supply and management of the secondary circuit pump kit.

Completion of hydraulic separator kit

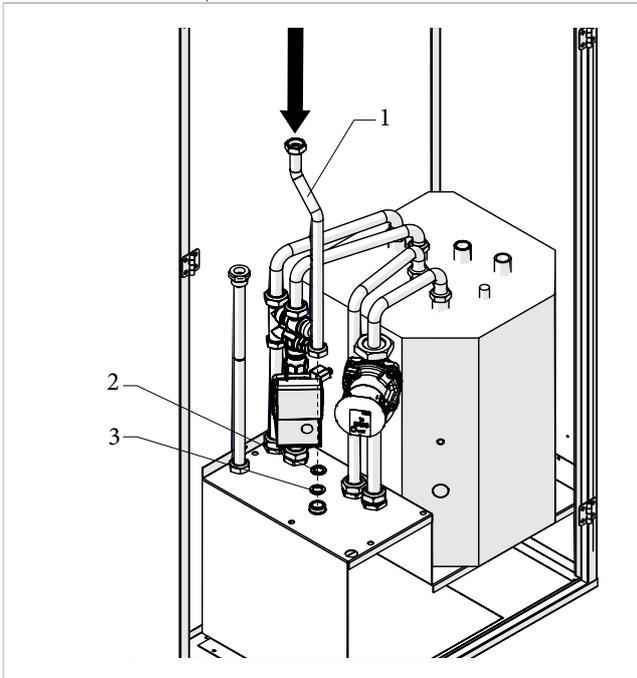
Assembly

1. Pipe N600150B
2. Rubber flat gaskets
3. Flat recess adapters



- insert the flat recess adapter and the flat rubber gaskets
- connect the N600150B pipe to the 3/4" nipple on the separator support bracket

1. Pipe N600443A
2. Rubber flat gaskets
3. Flat recess adapters



- insert the flat recess adapter and the flat rubber gaskets
- connect the N600443A pipe to the 3/4" nipple on the separator support bracket

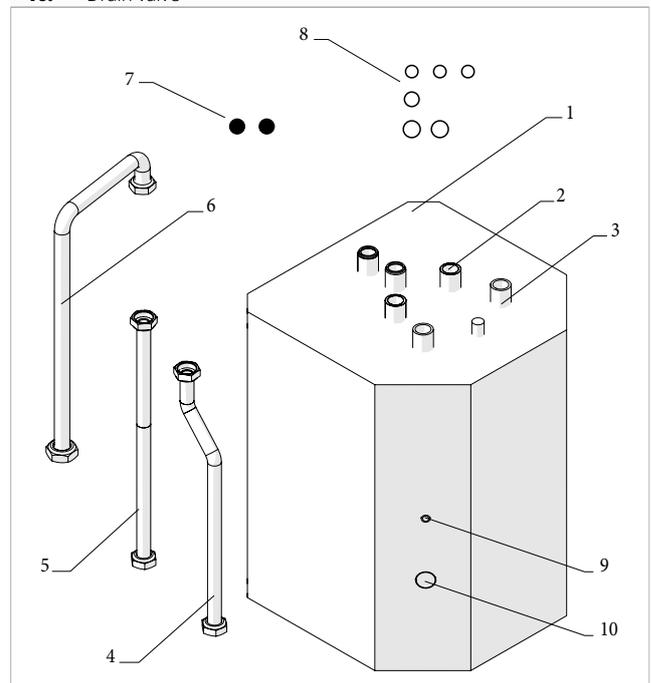
⚠ Pipes N600150B and N60443A, flat recess adapters and rubber flat gaskets are located inside the hydraulic separator kit.

Inertial tank kit GB1057

⚠ The secondary circuit pump kit and secondary circuit pump and mixing valve cannot be fitted with the buffer vessel kit.

Composition of the kit

1. Buffer tank
2. Pipe connection N600160B
3. Pipe connection N600157B
4. Pipe N600443A
5. Pipe N600150B
6. Pipe N600444A
7. 3/4" brass cap
8. Set of rubber flat gaskets
9. Probe sump
10. Drain valve



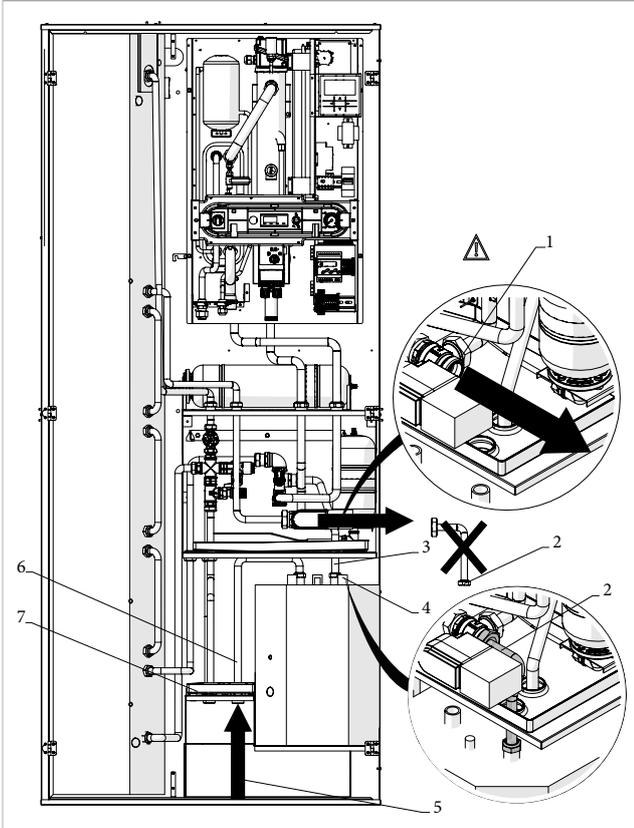
Before placing the hydraulic tank inside the built-in cabinet:

- remove the protective caps from the connectors
- mount the breather valve
- fit the exhaust valve
- close the unused connections with 3/4" brass caps and flat rubber gaskets

⚠ Use Teflon tape to seal the connectors.

Assembly with storage on the return line

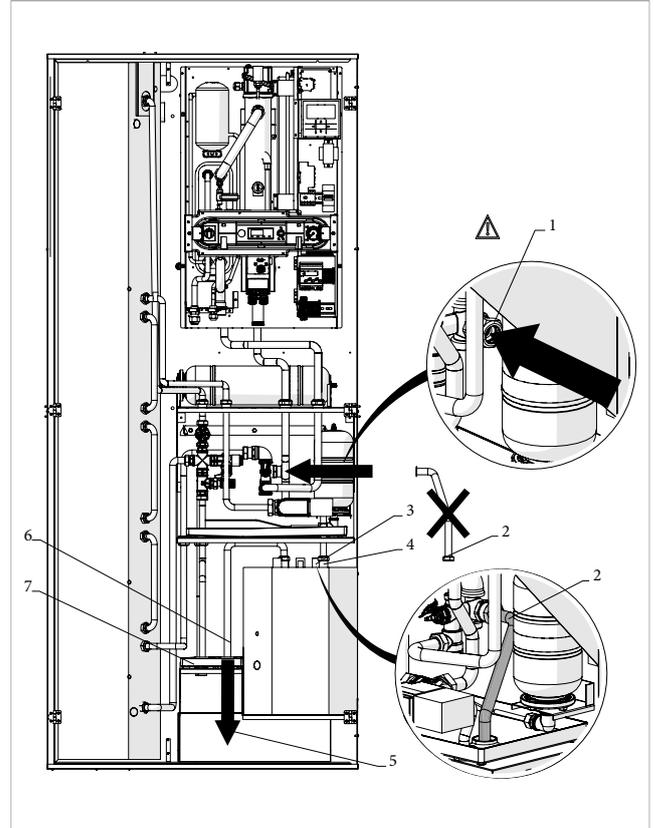
1. Outlet
2. Tube N600157B (to be removed)
3. Pipe N600160B
4. Pipe connection N600157B
5. Return
6. Pipe N600444A (return)
7. Buffer vessel support bracket



- ⚠ Connect the outlet with a flexible duct (not supplied) to the buffer vessel support bracket.
 - insert the flat recess adapter and the flat rubber gaskets
 - connect pipe N600444A
 - disconnect and remove pipe N600157B from the hydraulic unit
- ⚠ Close the pipe connector N600157B with the 3/4" brass cap with flat gasket.

Assembly with storage on the outlet side

1. Return
2. Pipe N600160B (to be removed)
3. Pipe connection N600160B
4. Pipe N600157B
5. Outlet
6. Pipe N600444A (delivery)
7. Buffer vessel support bracket

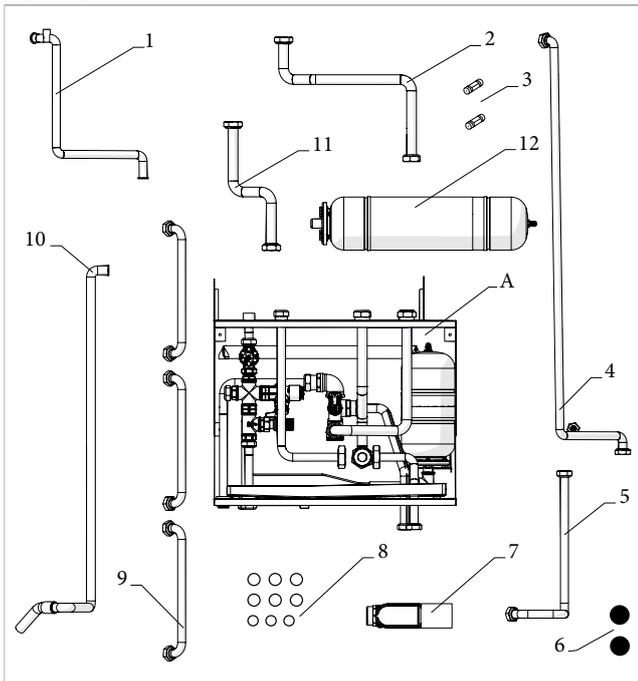


- ⚠ Connect the return with a flexible duct (not supplied) to the buffer vessel support bracket.
 - insert the flat recess adapter and the flat rubber gaskets
 - connect pipe N600444A
 - Disconnect and remove pipe N600160B from the hydraulic unit
- ⚠ Close the pipe connector N600160B with the 3/4" brass cap with flat gasket.

Hydraulic unit

Composition of the kit

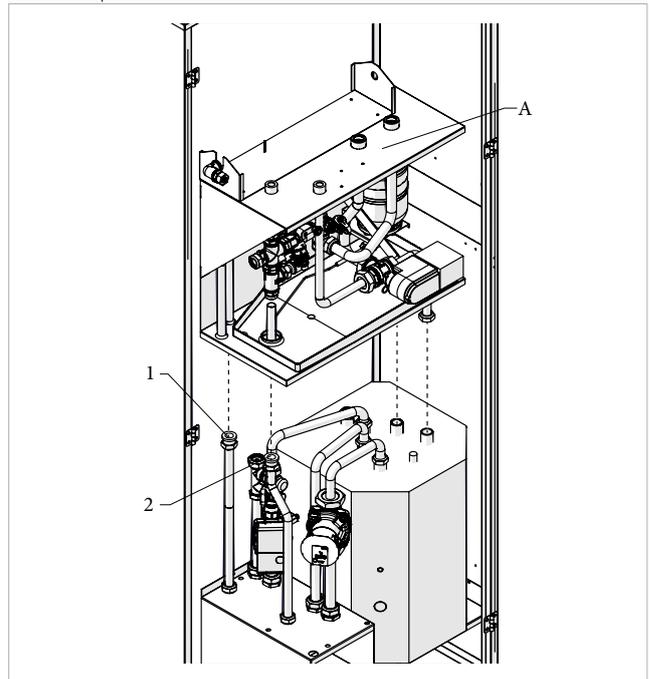
- A** Hydraulic unit
- 1.** Pipe N600145B
- 2.** Pipe N600450A
- 3.** Breather valves
- 4.** Pipe N600146B
- 5.** Pipe N600148B
- 6.** 2" brass caps
- 7.** 3-way valve motor
- 8.** Set of rubber flat gaskets
- 9.** Pipes N600147B
- 10.** Pipe N600149B
- 11.** Pipe N600451A
- 12.** Expansion vessel 5L
- Not present in the image:**
- 13.** Drain cock



Assembly

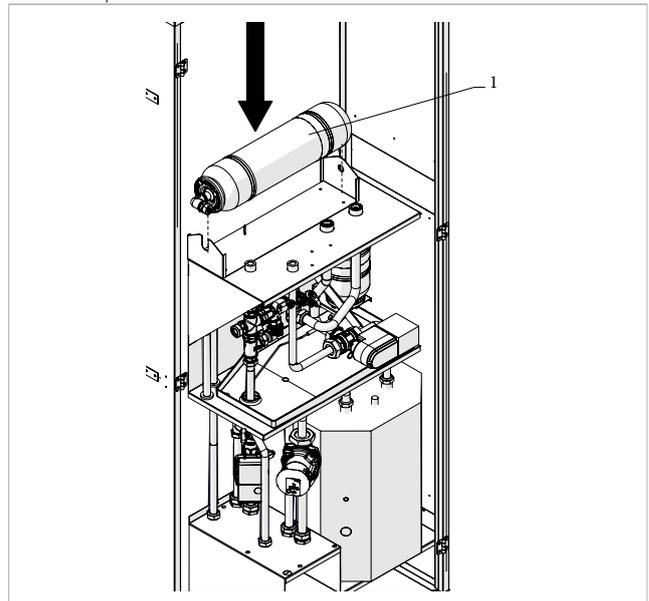
⚠ If the solar kit is present, consult the "Configuration accessories" p. 62 section before proceeding with the following operations.

- A** Hydraulic unit
- 1.** Pipe N600150B
- 2.** Pipe N600443A



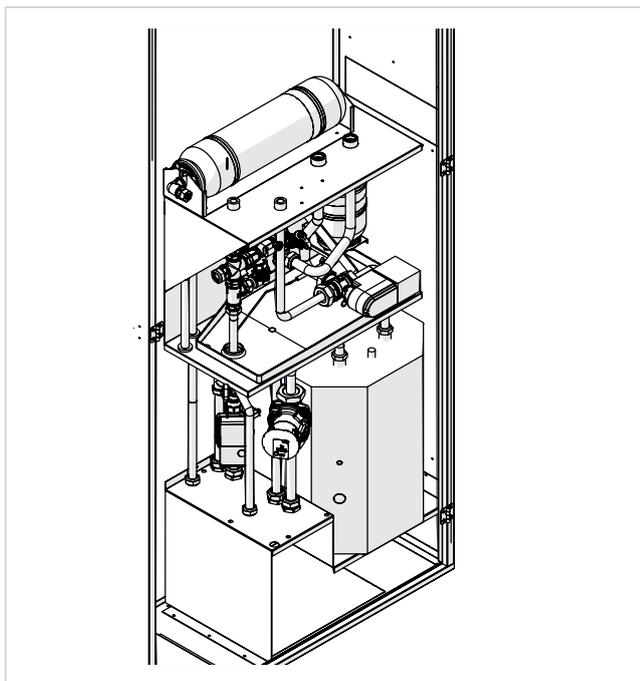
- position and secure the pre-assembled hydraulic unit on the support bracket inside the built-in cabinet
- insert the flat rubber gaskets on the pipes N600150B and N600443A
- connect the hydraulic unit

- 1.** Expansion vessel 5 L



- insert and secure the 5 L expansion tank on the hydraulic unit

⚠ The support bracket is already installed in the built-in cabinet.

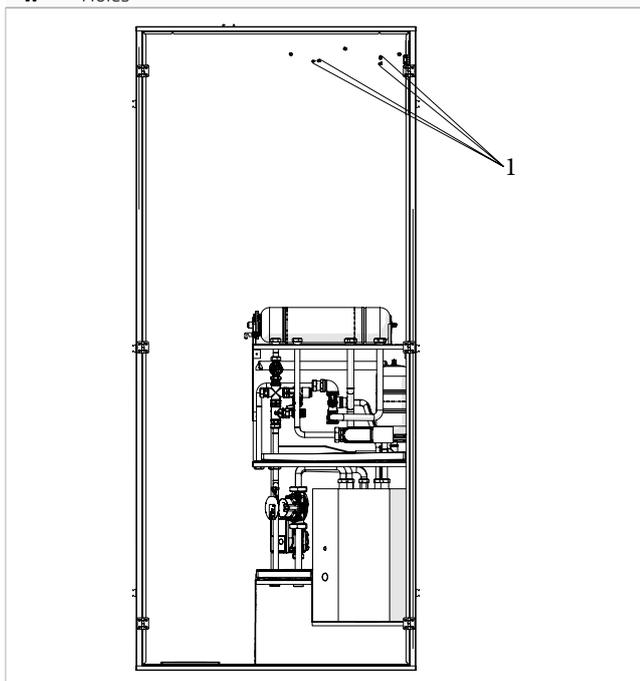


- ⚠ For connecting the capillary to the expansion vessel, see chapter "Domestic hot water storage tank (cod. GB1057)" *p. 30*.
- ⚠ For connecting pipes N660146B, N660147B and N600149B, see chapter "Domestic hot water storage tank (cod. GB1057)" *p. 30*.
- ⚠ For connecting pipes N600606A and N600605A, see chapter "Hydronic module" *p. 29*.

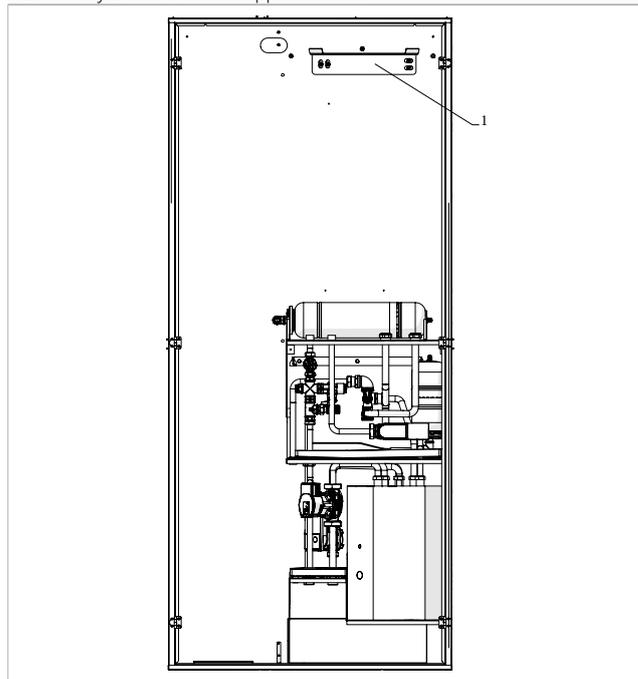
Hydronic module support bracket

Assembly

1. Holes



1. Hydronic module support bracket

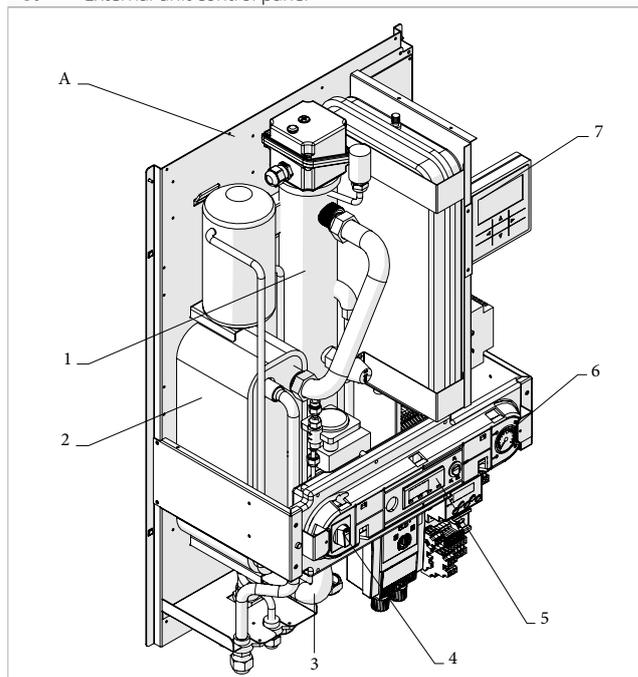


- fix the hydronic module support bracket to the built-in cabinet
- use a spirit level to check that the bracket is correctly positioned

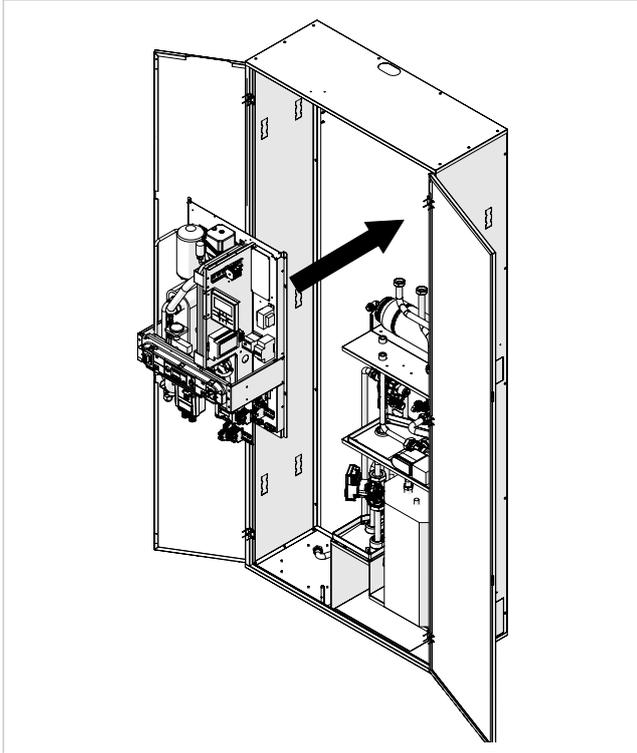
Hydronic module

Composition of the kit

- | | |
|-----------|-----------------------------|
| A | Hydronic module |
| 1. | Collector |
| 2. | Plate exchanger |
| 3. | Water inlet pipe |
| 4. | Disconnect switch |
| 5. | Controller |
| 6. | Pressure gauge |
| 7. | External unit control panel |



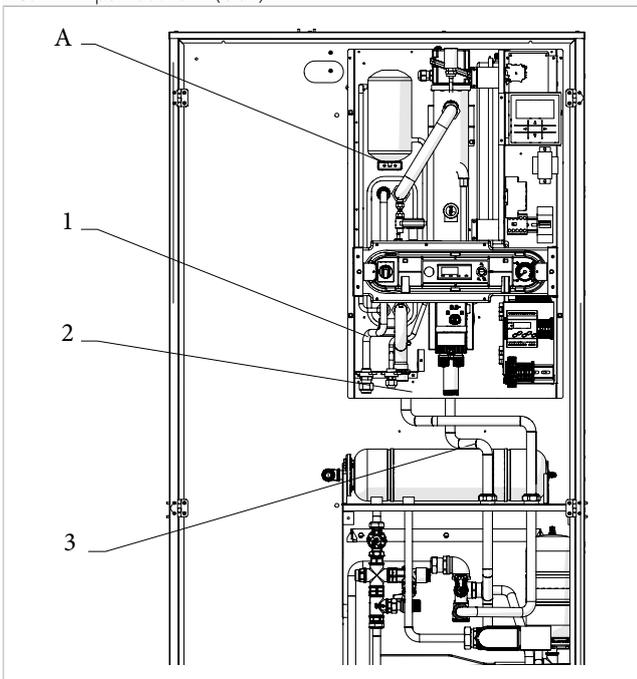
Assembly



- attach the hydronic module to the support bracket

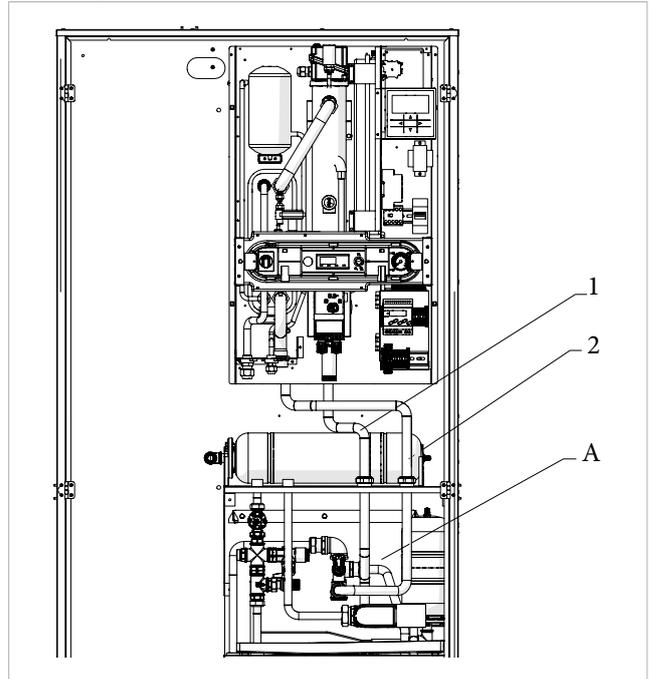
⚠ Ensure that the unit is properly engaged in both slots.

- A** Hydronic module
- 1.** Water return
- 2.** Pipe N600450A (IN)
- 3.** Pipe N600451A (OUT)



- connect pipe N600187B (IN) from the hydraulic unit
 - connect pipe N600188B (OUT) from the hydraulic unit

- A** Hydraulic unit
- 1.** Pipe N600451A
- 2.** Pipe N600450A



Domestic hot water storage tank (cod. GB1057)

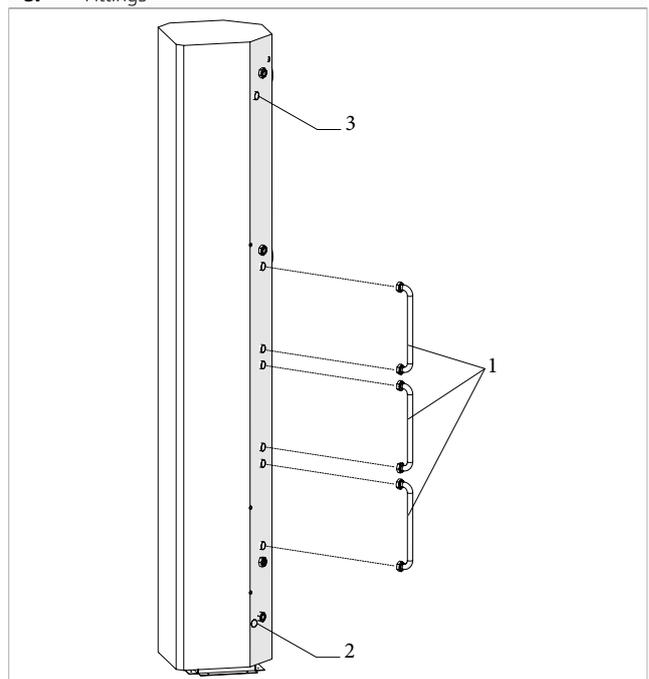
⚠ If the solar kit is present, consult the "Configuration accessories" *p. 62* section before proceeding with the following operations.

Assembly

- 1.** Pipes N600147B
- 2.** Drain cock
- 3.** Breather valve

Not present in the image:

- 4.** Caps
- 5.** Fittings



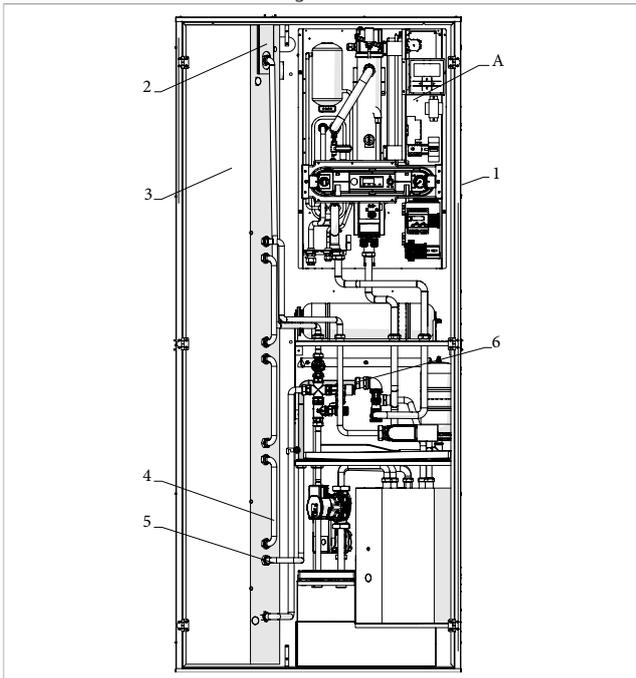
⚠ The pipes N600147B are located inside the hydraulic unit packaging.

- remove the caps from the domestic hot water tank
- fit the connectors on the domestic hot water tank
- fit the exhaust valve at the top of the domestic hot water tank
- fit the drain valve at the top of the domestic hot water tank
- fit 2" brass caps with gasket

⚠ If solar thermal unit is used, do not install the last connector at the bottom.

⚠ Insert gaskets on each connector.

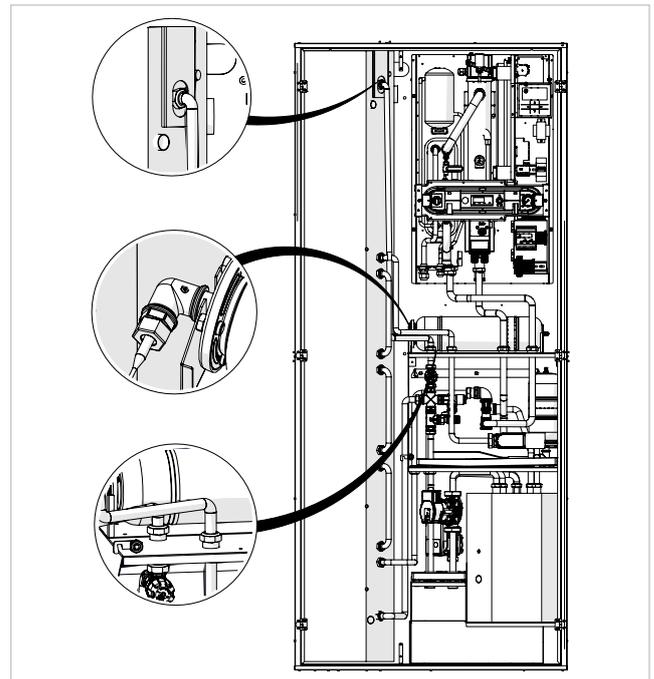
- | | |
|-----------|----------------------------|
| A | Hydronic module |
| 1. | Built-in cabinet |
| 2. | Fall protection bracket |
| 3. | Domestic hot water storage |



- remove the fall prevention bracket from the built-in cabinet
- insert the domestic hot water tank in the built-in cabinet
- adjust the domestic hot water tank with the 2" outlets orientated towards the hydronic module
- fix the domestic hot water tank using the fall prevention bracket

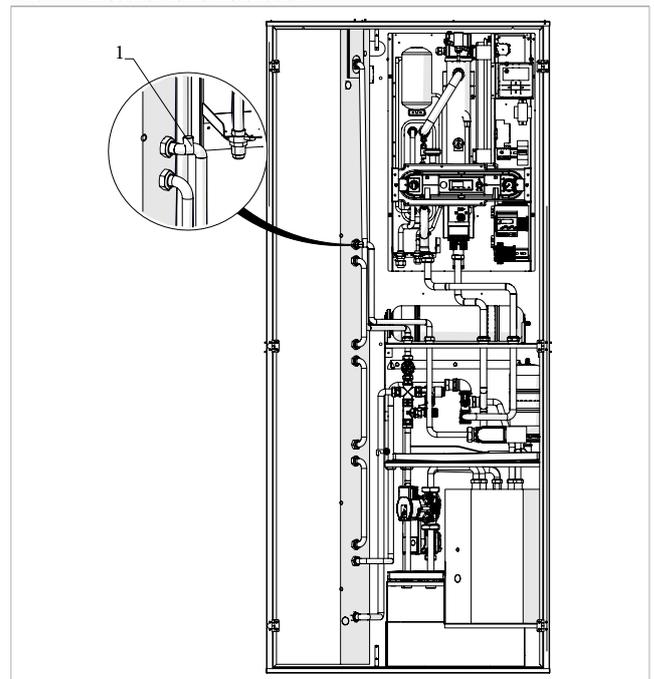
Completion of the hydraulic unit

Assembly



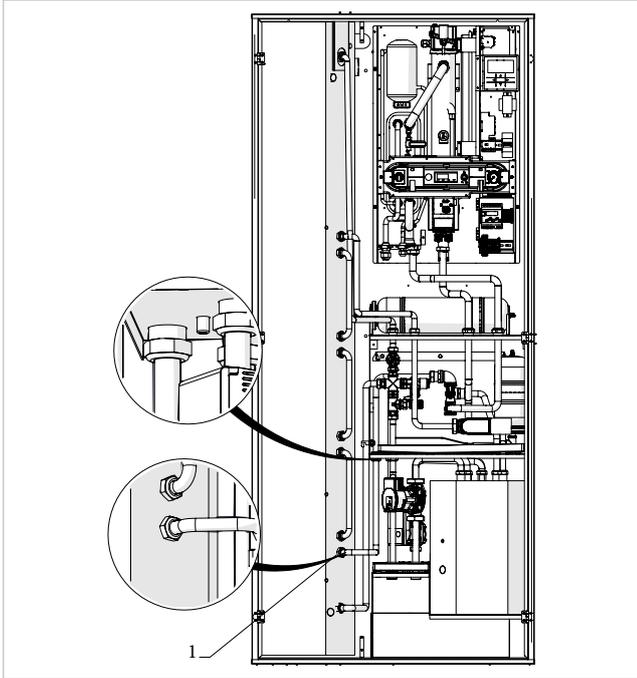
- connect pipe N600146B to the upper connector on the tank
- connect the other end to the hydraulic unit at the mixer outlet
- connect the capillary on pipe N600146B to the 5L expansion vessel

1. Breather valve installation



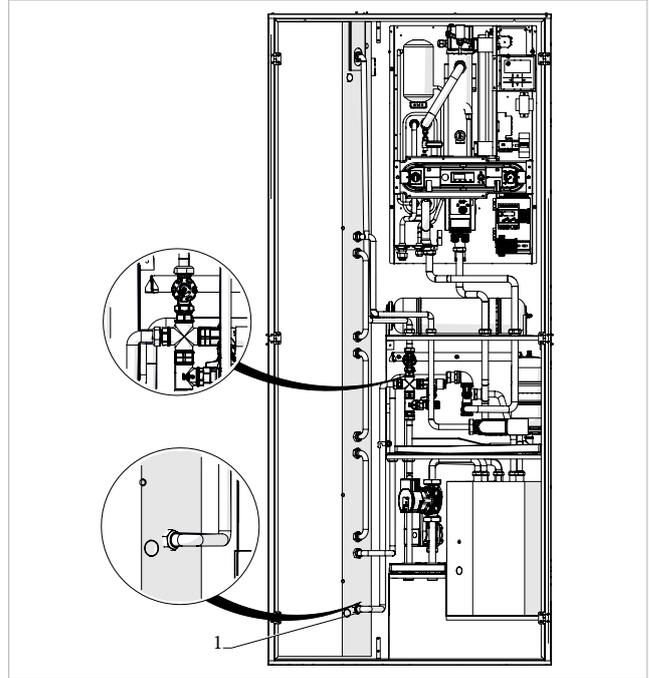
- mount the breather valve on pipe N600145B

1. Pipe N600148B



- connect pipe N600148B to the outlet of the domestic hot water storage tank exchanger
- connect the other end to the heat pump return pipe

1. Pipe N600149B



- position and block one end of the pipe N600149B at the lowest connection of the domestic hot water cylinder
- connect the other end of pipe N600149B to the hydraulic unit mixer

3.12 Hydraulic connections

Preliminary warnings

- ⚠ 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 paragraph "Technical information" *p. 72*. 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. 37*, 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 controller 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

Heat pumps require plants that guarantee a constant flow of fluid to the appliance, within the minimum and maximum values and with sufficient volumes to avoid imbalances in the refrigeration circuits and to guarantee the correct level of comfort.

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.

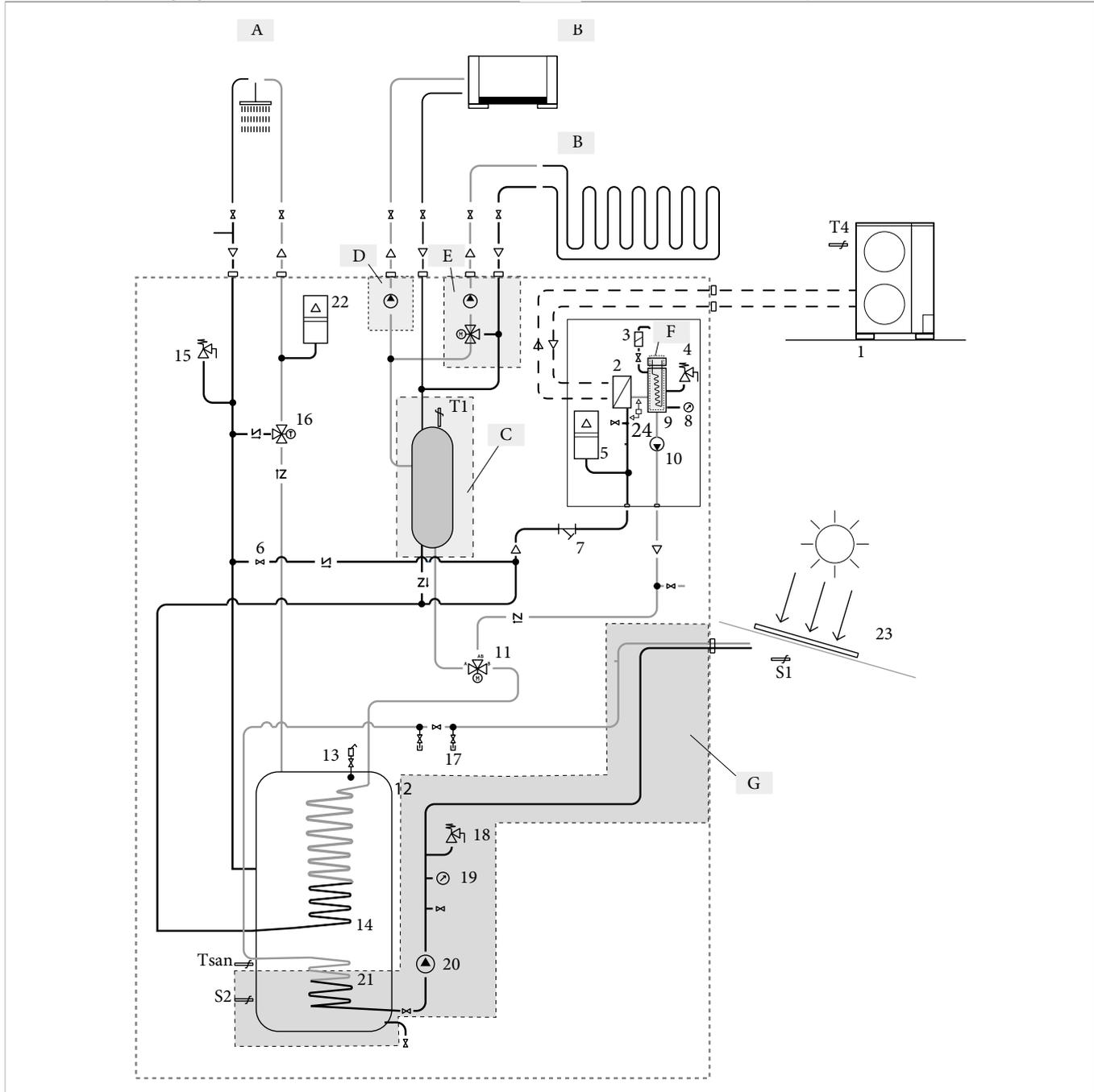
- ⚠ Before connecting the piping, make sure that it do not contain stones, sand, rust or foreign matter that could damage the plant.
- ⚠ **The minimum nominal diameter of the connecting pipes must be 1". Keep in mind that under-sized piping determines malfunctions and/or loss of heating and cooling performance.**
- ⚠ 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.

Connection

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

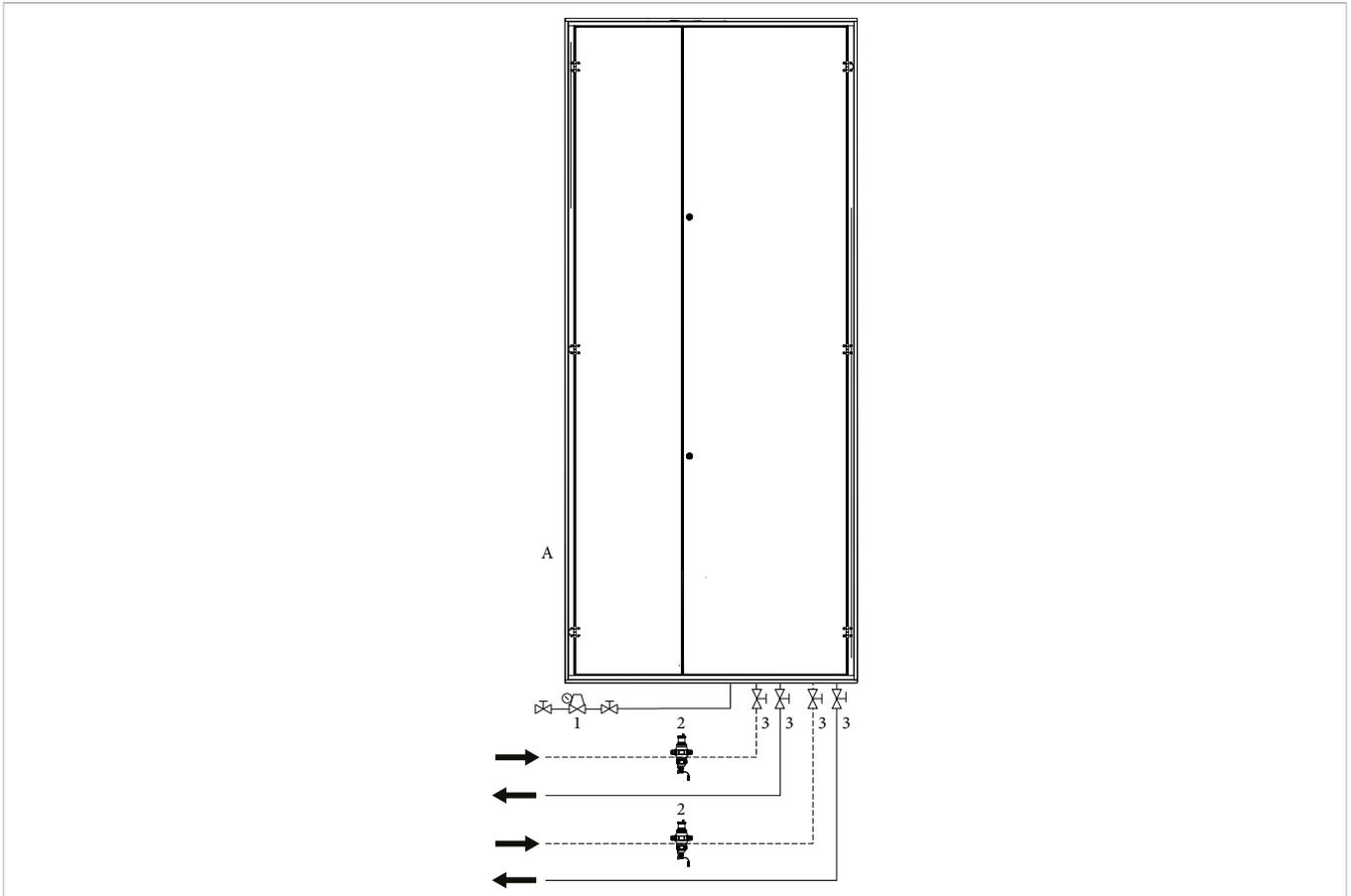
Basic hydraulic scheme

A	Domestic hot water consumers	9.	Collector with heating element
B	System utilities	10.	PP1 Primary circuit pump
C	Secondary separator kit (optional)	11.	3-way valve for domestic hot water system
D	PP5 secondary circuit pump kit (optional)	12.	170 litre domestic hot water storage tank
E	PP6 secondary circuit pump kit and secondary circuit mixing valve (optional)	13.	Boiler relief valve
F	heater kit	14.	Stainless steel coil
G	Solar heating kit	15.	7-bar safety valve
1.	Outdoor unit	16.	Thermostatic mixing valve
2.	Plate exchanger	17.	Solar filling cock
3.	Automatic relief valve	18.	3 bar solar safety valve
4.	3-bar safety valve	19.	Solar circuit pressure gauge
5.	8 litre system expansion vessel	20.	Solar circuit pump PP7
6.	Filling assembly	21.	Solar serpentine
7.	Net filter	22.	Expansion vessel 8 litres domestic hot water
8.	Plant pressure gauge	23.	Solar panel
		24.	Flow switch (differential pressure switch)



Connection diagram

- | | |
|-----------|----------------------------------|
| A | Indoor unit |
| 1. | Automatic plant filling assembly |
| 2. | Dirt separator |
| 3. | Shut-off valves |



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

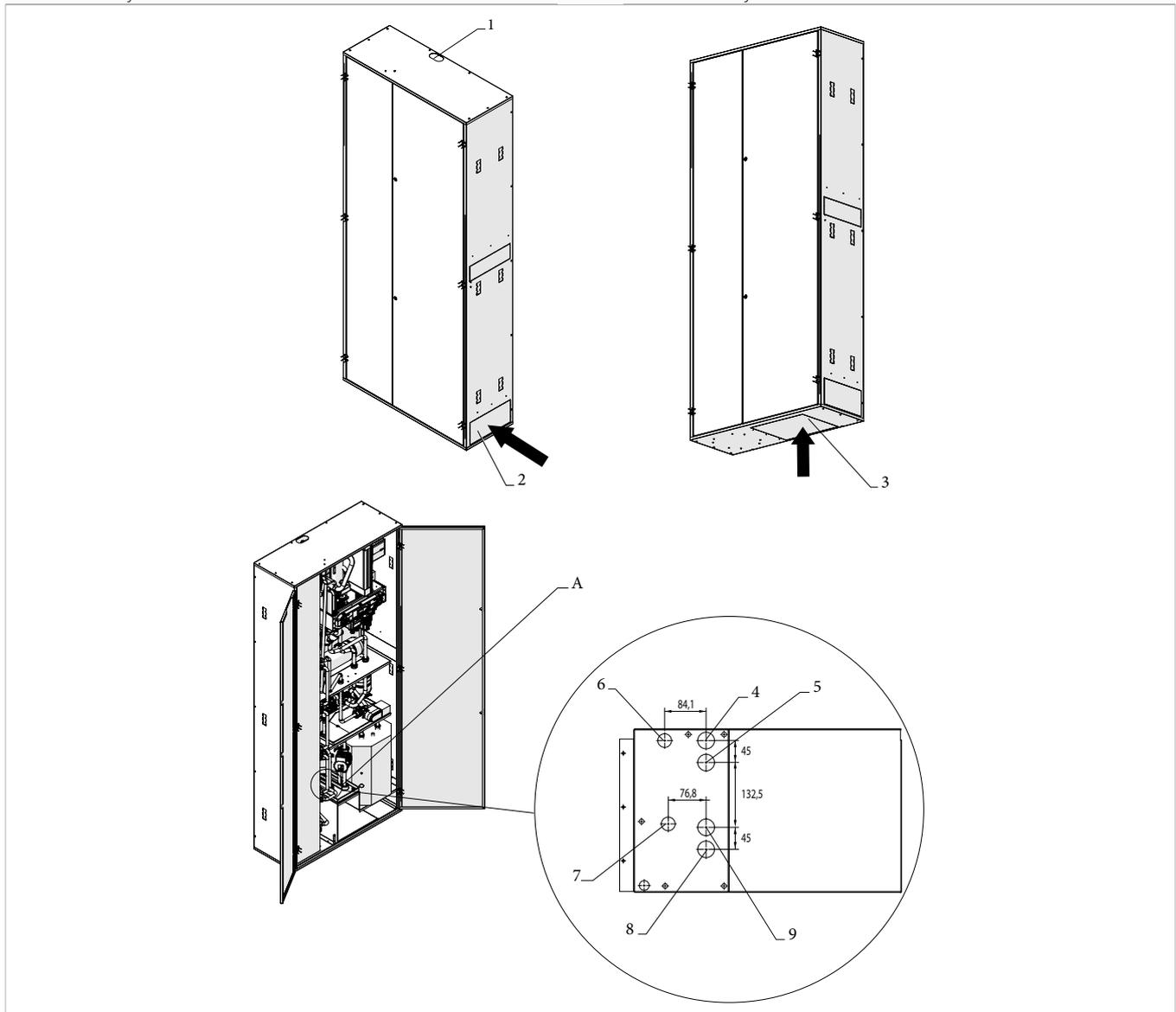
The hydraulic connections must be completed by installing:

- 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
- a mains water filter at the appliance inlet

Position and dimensions

- A** Hydraulic connection bracket
- 1.** Solar kit pipe entry slot
- 2.** Pre-cutting for hydraulic connections on the right side
- 3.** Pre-cutting for hydraulic connections from below
- 4.** Mixed system return

- 5.** Mixed system outlet
- 6.** Domestic hot water outlet
- 7.** Domestic hot water inlet
- 8.** Direct system delivery
- 9.** Direct system return



Models	m.u.	5-M	7-M	9-M	11-M	11-T	13-M	13-T	15-M	15-T
Hydraulic connections										
Domestic hot water inlet	"GAS					3/4"				
Domestic hot water outlet	"GAS					3/4"				
Solar flow	mm	12	12	12	12	12	12	12	12	12
Solar return	mm	12	12	12	12	12	12	12	12	12
Direct system delivery	"GAS					1"				
Direct system return	"GAS					1"				
Mixed system outlet	"GAS					1"				
Mixed system return	"GAS					1"				

⚠ Some of the connections shown are only present if the respective accessories have been installed.

⚠ For dimensional information, refer to chapter "Dimensions" p. 75.

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	12-M	12-T	15-M	15-T
Minimum system water content	L	20	30	40	50	50	65	65

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.

⊖ Using plants with pumps in series is forbidden.

Models	m.u.	5-M	7-M	9-M	12-M	12-T	15-M	15-T
Minimum water flow rate	L/min	0,6	0,9	1,1	1,4	1,4	1,7	1,7

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.

The appliance is shipped from the factory with the tray connectors connected to a single connector.

To connect:

- insert a drainage pipe
- direct it to a suitable place for dropping
- maintain a minimum gradient of 3%

⚠ Make sure all joints are sealed to prevent leakage of water.

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.

By-pass valve installation

The by-pass valve is used to guarantee the minimum flow rate to the heat pump if there is a sudden increase in the pressure drop in the circuit. The valve must be calibrated according to the system. The valve can be installed in any position, inside the module or on the manifold, as long as the direction of flow indicated by the arrow on the valve body is respected.

Condensate drain

The appliance is complete with two trays for collecting the condensate that is produced during winter operation and which must be conveyed to a suitable draining place.

3.13 Filling the plant

The plant must be filled once the hydraulic connections have been completed.

Preliminary warnings

- ⚠ A filling system external to the unit must be provided.
- ⚠ 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.

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
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 polyphosphate dosing system must be used if the feeding water hardness exceeds the value of 15° F. If it exceeds 25° F, a softening system must be provided.
- ⚠ 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.

Filling

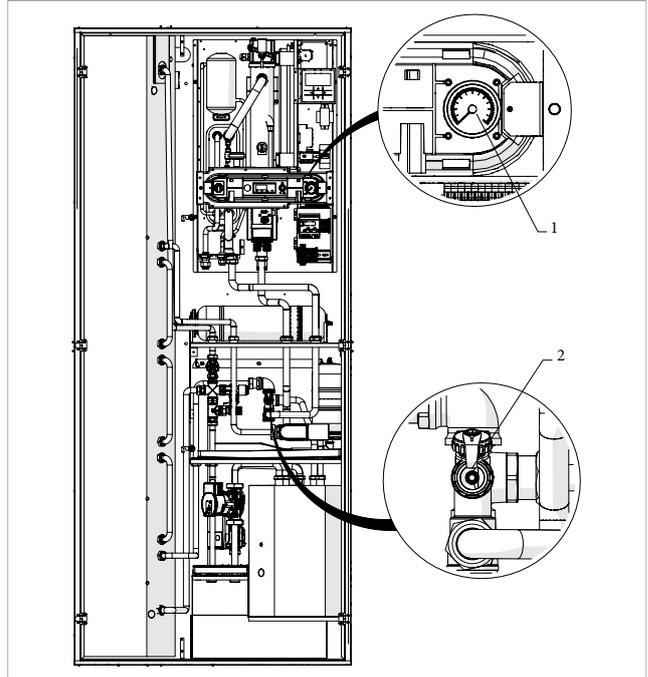
Before starting the filling operation:

- 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 on the outside of the appliance

1. Pressure gauge
2. 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 Refrigeration connections

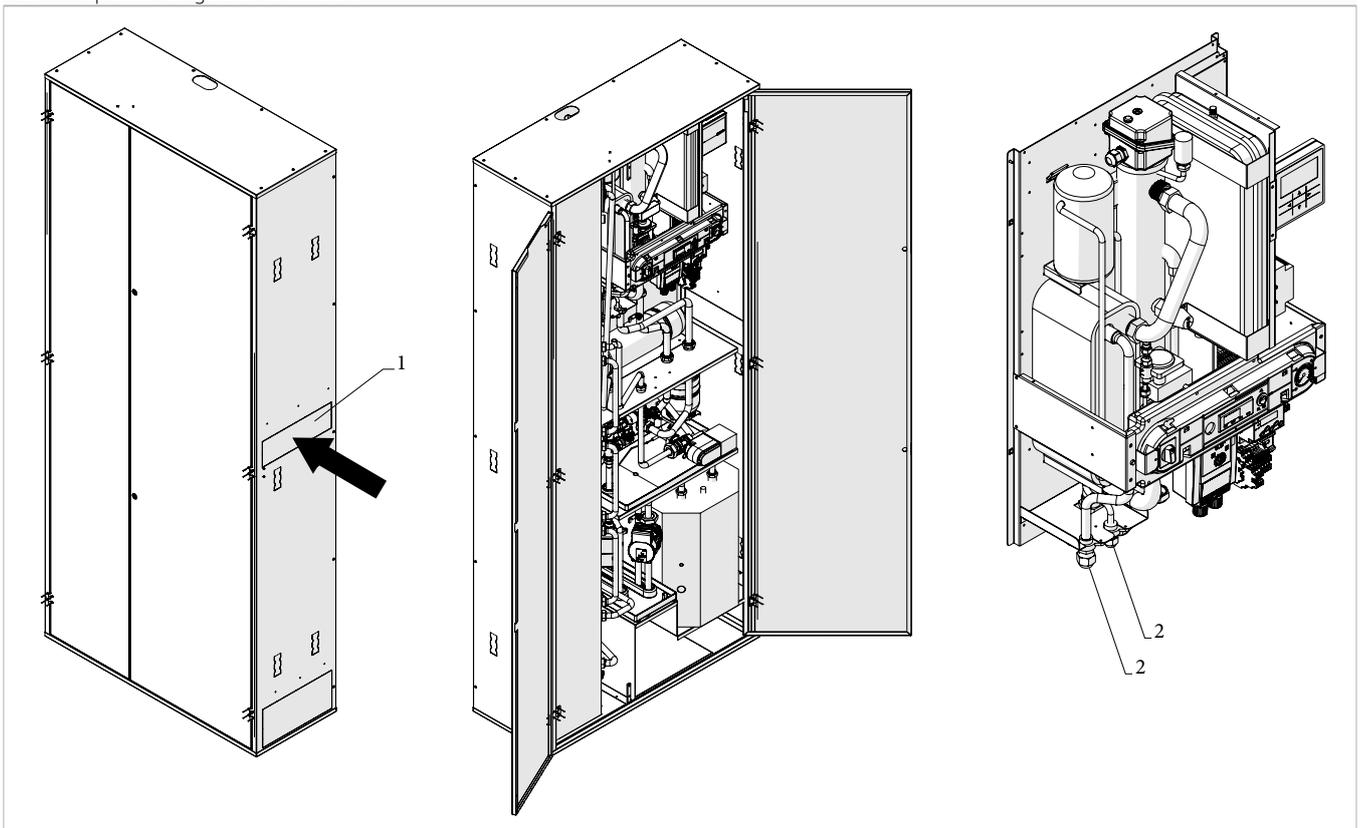
Preliminary warnings

- ⚠ **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.**
- ⚠ **For dimensional information, refer to chapter "Technical information" p. 72.**
- ⚠ Use equipment suited for the refrigerant in the system.
- ⚠ Plan the route of the pipeline so as to reduce the length and number of bends as much as possible for best performance of the system.
- ⚠ The refrigeration lines must be as straight as possible and the radius of any bends must be greater than 40 mm.

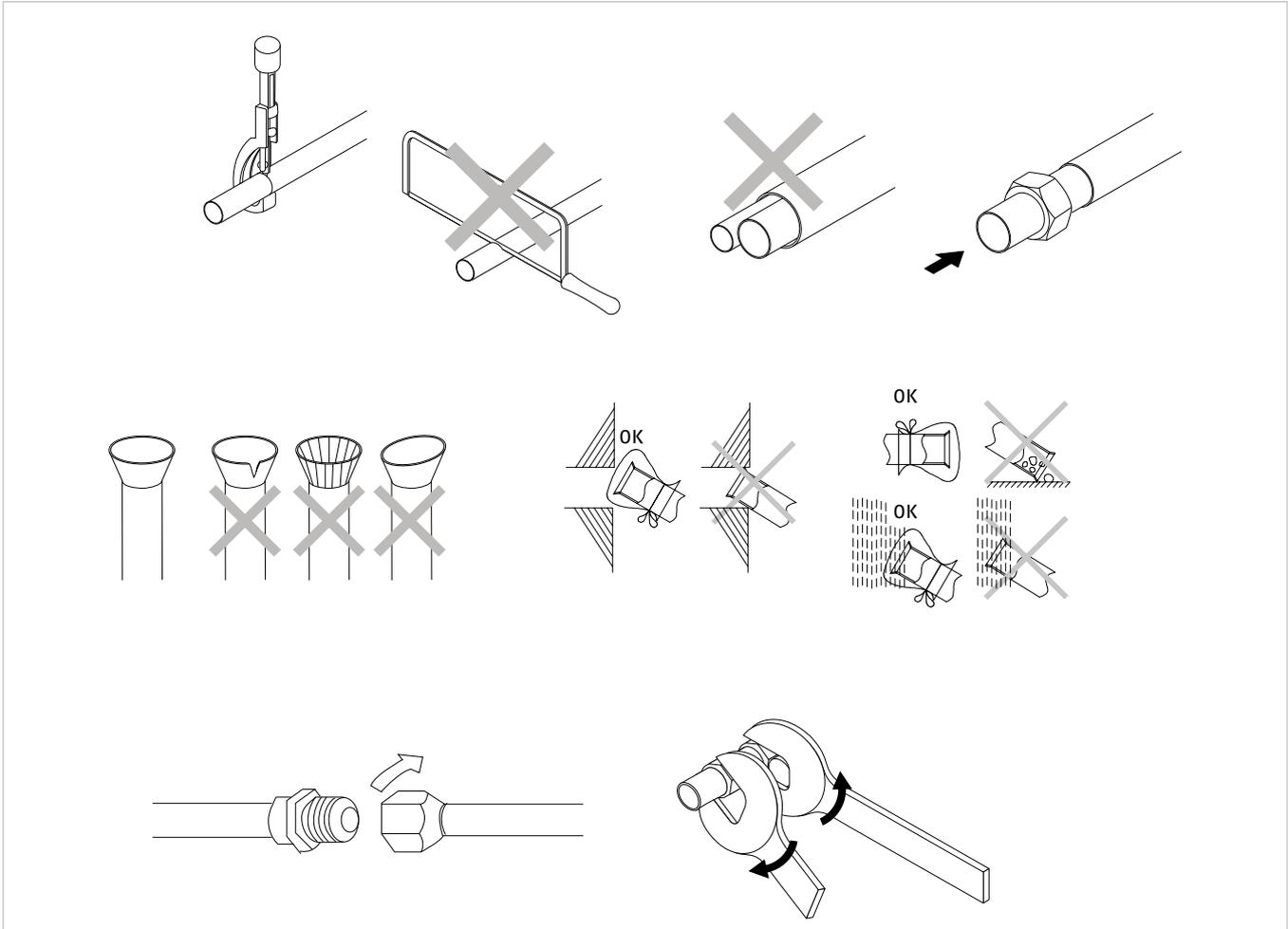
- ⚠ Use only special copper pipes for cooling.
- ⚠ The pipes must be supplied clean and sealed at the ends. Pre-insulated copper refrigeration pipes can be used.
- ⚠ The pipes must not contain residues of shavings, dirt or water which could damage the components of the unit and impair its correct operation.
- ⊖ Using pipes with diameters other than that indicated in the technical data table is forbidden.
- ⊖ Employing used refrigeration lines is prohibited because the tightness of the flare fitting cannot be guaranteed.
- ⊖ Making connections using the normal plumbing system is forbidden.
- ⊖ Welding in the presence of refrigerant in the refrigerant circuit is forbidden. If necessary, the refrigerant must be recovered and the circuit cleaned with oxygen-free nitrogen.

Connection diagram

1. Refrigeration connections
2. Pipes for refrigerator connection



Connection of piping



Preliminary warnings

- ⚠ Fasten a cable raceway to the wall (possibly with internal partitioning) of suitable size for the pipes and electrical wires to pass through.
- ⚠ The refrigeration fittings, equipped with shut-off valves, are ready for flared fittings.
- ⚠ Cut the sections of pipe leaving an extra 3-4 cm on the ends.
- ⚠ Immediately after cutting and deburring the pipes, seal the ends with insulating tape.
- ⚠ Remove possible burrs with the special tool.
- ⚠ Use a wheel pipe cutter only to cut the pipes clamping it in short lengths so as not to crush the pipe.
- ⚠ **NEVER USE A NORMAL HANDSAW, scraps could fall inside the pipe and ente the circuitry of the system, damaging the parts severely.**
- ⚠ Avoid introducing non-condensable gases (air) into the circuit. Otherwise, high pressures could be generated during operation with the risk of breakage.

Connection

Before connecting:

- insert the fixing nut into the pipe
- flare the pipe ends using the special tool

- Lubricate the connecting thread with oil for coolant
- ⚠ Do not use any other type of lubricant.
- ⚠ The flared fitting must be free of cracks, crazing or flaking.
- ⚠ Avoid using refrigerant oil on the outside of the countersink.
- To connect:**
 - positioning the refrigeration lines
 - screw the pipe nut manually on the connecting thread
 - hold the threaded part of the fitting still with a spanner
 - use a torque wrench on the nut to tighten it definitively
- ⚠ Keep the leak detector switched on near the unit to signal any refrigerant leaks while connecting.

Pipeline Ø		Tightening torque
mm	inches	Nm
6,35	1/4	18
9,52	3/8	42
12,70	1/2	55
15,88	5/8	60

⚠ For the next operations refer to the manual of the paired outdoor unit.

3.15 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.
- ⚠ 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.

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).

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.

Heating elements

Single-phase power supply

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

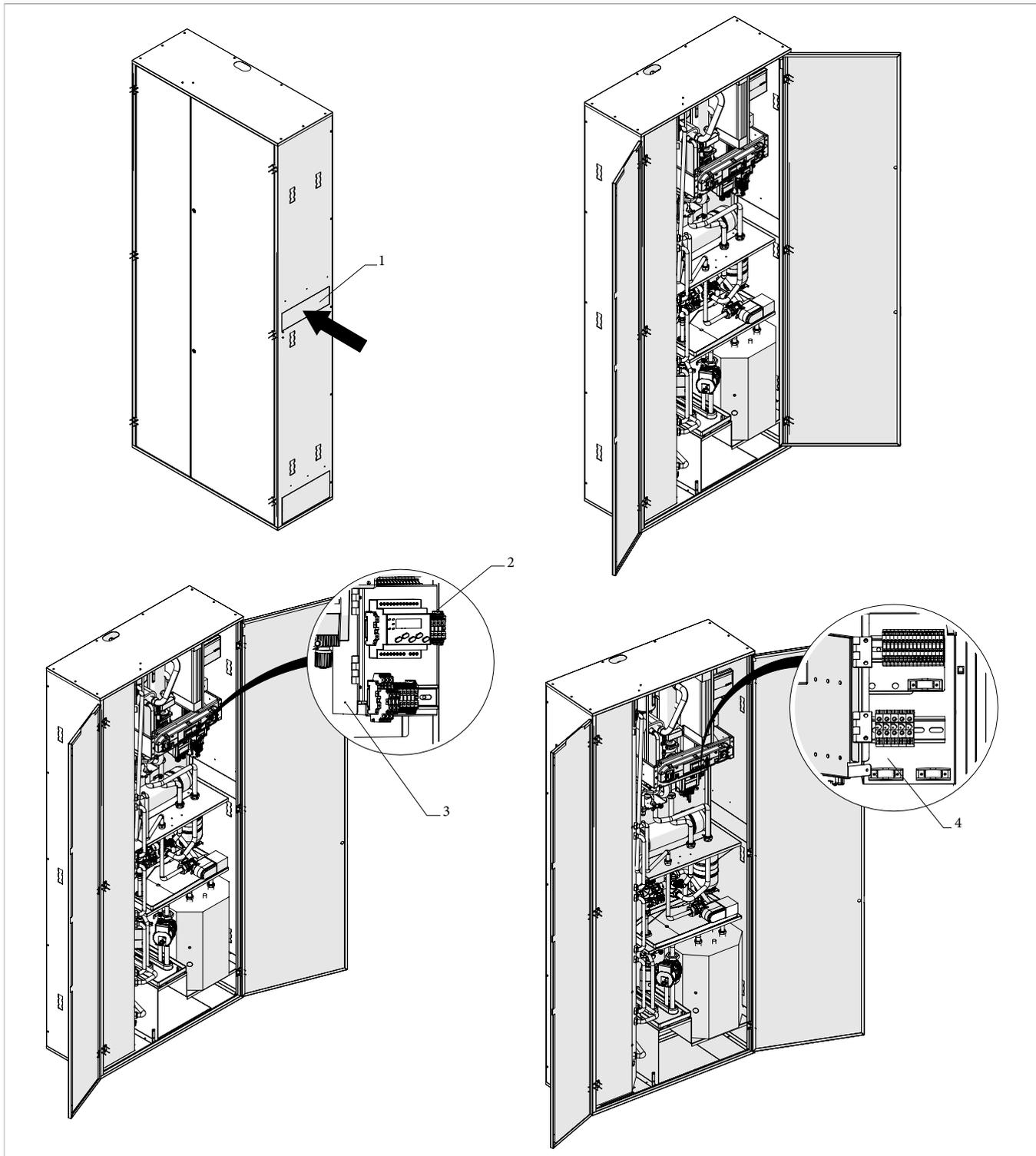
Three-phase power supply

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.	5-M	7-M	9-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. Electric connections
2. Terminal box N576023A (optional kit)
3. Terminal block fixing screw N576023A
4. XP1 and XP2 connections



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

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

To access the connections:

- open the doors of the built-in cabinet kit

Connection

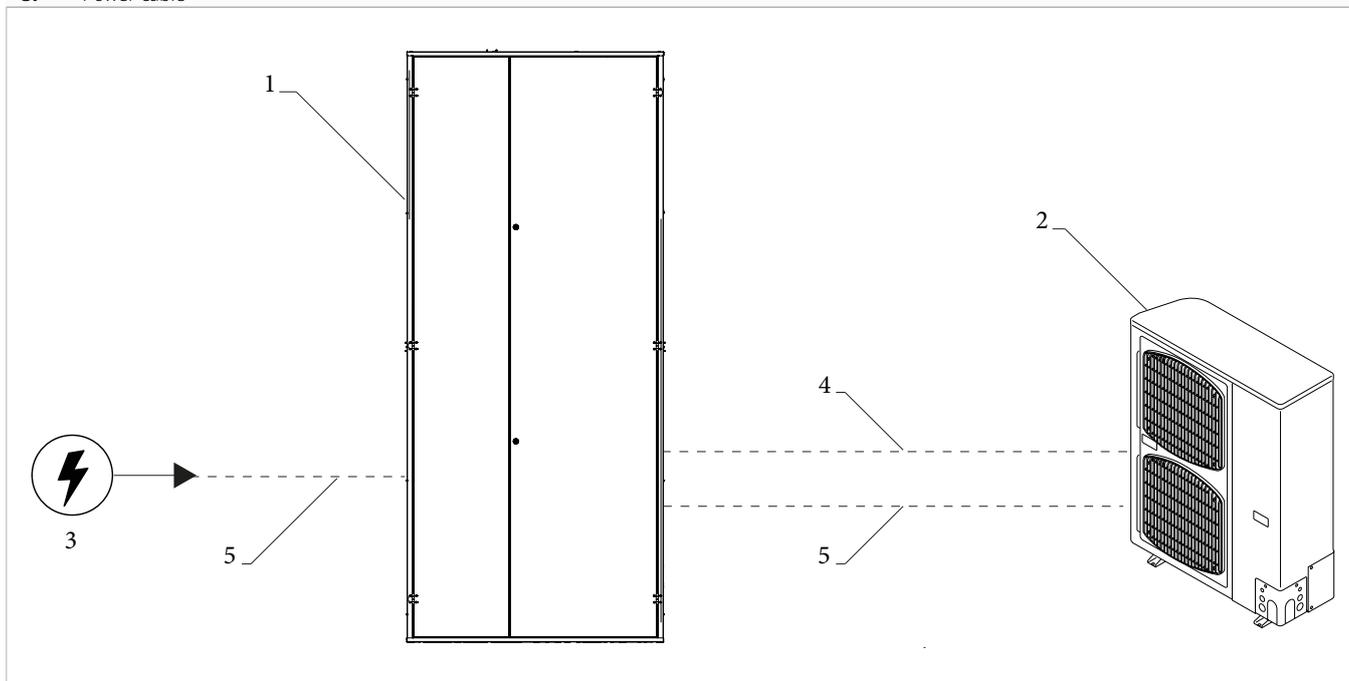
Before connecting the unit to the mains power supply, make sure that the disconnector is open. The power supply of the unit (single-phase or three-phase) must be connected to the appropriate terminals, subject to the action of the disconnector.

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

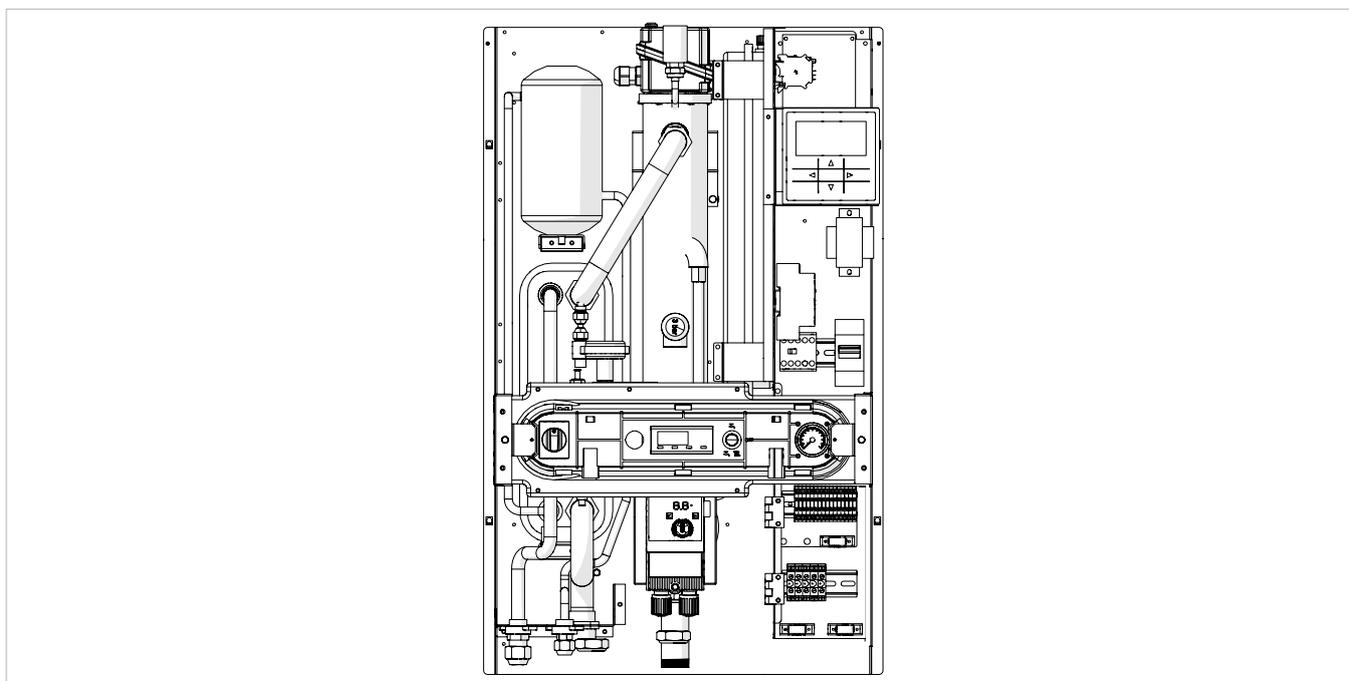
⚠ Before connecting to the terminals, read this manual carefully.

Connection diagram

- 1. Indoor unit
- 2. Outdoor unit
- 3. Unit power supply 230V AC/1/50 Hz or 400V AC/3/50 Hz according to the 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

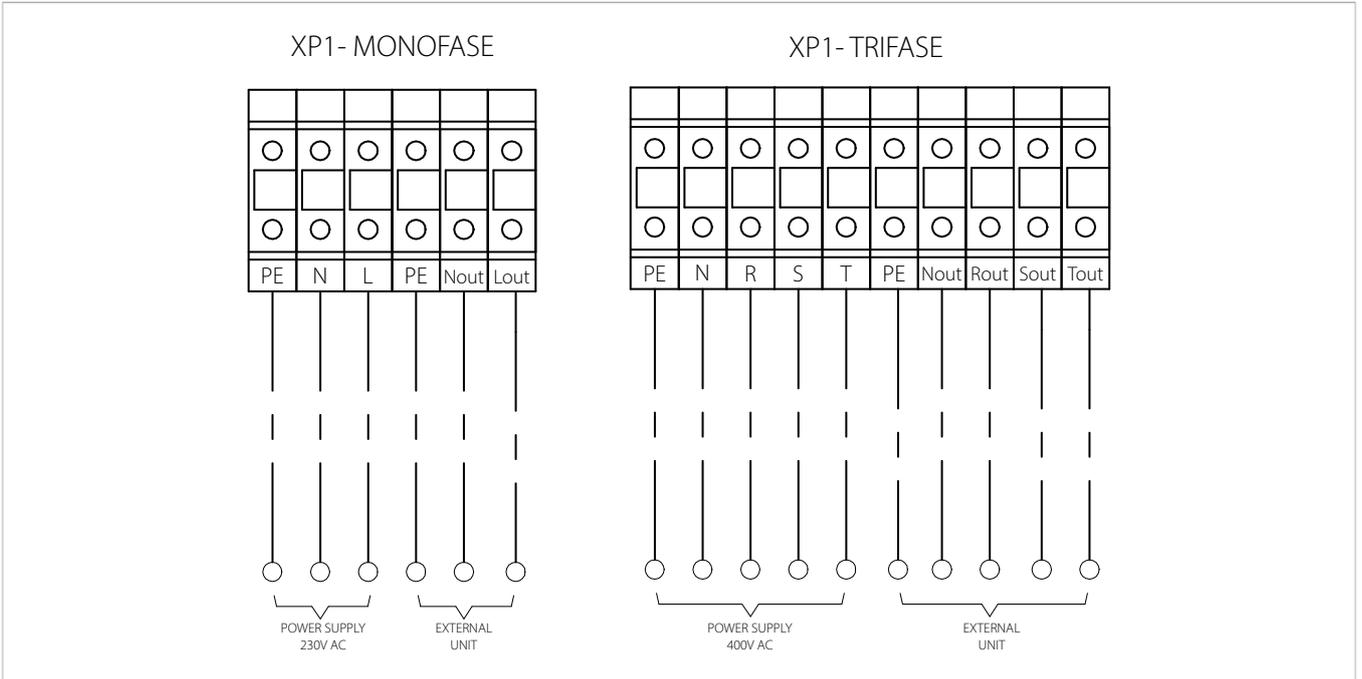


Electrical panel aboard the unit



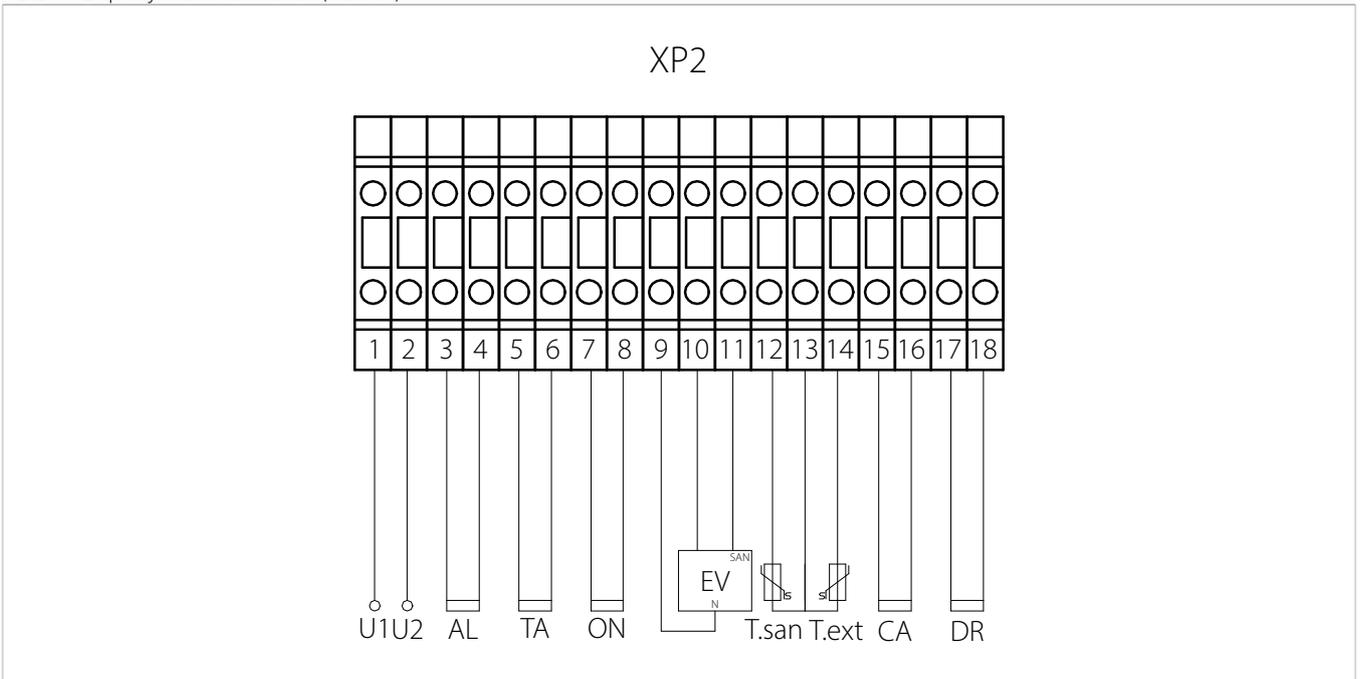
Power connection terminal blocks

POWER SUPPLY 230V AC	Unit power supply
POWER SUPPLY 400V AC	Unit power supply
EXTERNAL UNIT	External unit connection



Auxiliary contact connection terminal block

U1 U2	Outdoor unit serial connection
AL	Anti-legionella function contact
TA	Room thermostat call heating/cooling
ON	Remote ON/OFF contact (or SAN ON/OFF)
EV	Domestic hot water/plant solenoid valve (max.3A)
T.san	Domestic hot water temperature probe (max. 50m)
T.ext	External air sensor temperature (max. 50 m)
CA	Auxiliary heater consent (max. 2A)
DR	Drip tray heater connection (max. 1A)



Description of auxiliary contacts

Terminals for serial connection of external unit

1 - 2: Serial connection of outdoor unit terminals U1 and U2 (by the installer)

- the connection is not polarised
- use a shielded double-core wire with minimum cross-section of 0.35 mm² for the connection.

⚠ Keeping the cable separate from power supply cables.

Terminals for configuration input for activation of anti-legionella function

- 3 - 4:** Configurable for:
- the anti-legionella function
 - for the cooling/heating selection

By activating the Antilegionella function, the regulator can conduct the thermal disinfection procedures autonomously on hot water systems equipped with recirculation, considerably reducing the risk of the presence and proliferation of the bacteria causing Legionella.

⚠ for activation of the anti-legionella function (to purchase separately, together with a timer, and to be connected by the installer)

⚠ The variables in the systems in which our products may be installed do not allow the total exclusion of the risk. Activation of the disinfection function can be performed by connecting a timer to the inlet that has a default value set for 2 a.m. the night between Sunday and Monday; as statistically this is a time with a low probability of employment on behalf of the users.

The length of the action depends by the features of the installation.

Legionella bacteria react differently depending upon the maximum temperature reached within the circuit and, with the increase of temperature, the duration time decreases.

⚠ The anti-legionella function is only possible with the electric heater kit.

Terminals for connection for CT section "DHW only" by external volt-free contact

- 5 - 6:** TA consent from room thermostat or general voltage-free contact
- Closed contact: the unit is switched on for heating or cooling the plant water.
 - Open contact: the unit is switched off for heating or cooling the plant water.

⚠ If the domestic hot water function is active, this function has priority even when the contact is open.

⚠ The terminals are supplied jumped (contact closed). Remove the jumper to connect the TA consent.

Contact terminals for ON/OFF selection

- 7 - 8:** ON/OFF contact for remote device activation/deactivation. This puts the device in standby, deactivating all the settings and is shown on the display by OFF.

Domestic hot water/plant solenoid valve terminals

- 9 - 10 - 11:** 230V power supply (max.3A) for the system/domestic hot water 2- or 3-point diverter valve.

⚠ If a 2-point valve is used, connect terminals 9 and 11.

Domestic hot water temperature probe terminals

- 12 - 13:** Domestic hot water temperature detection probe input to be positioned in a cylinder sump of appropriate diameter and depth, taking care to fix it properly and apply conductive paste to avoid errors due to conduction on the tank shell (max. distance 50 m).

⚠ To be connected electronically by the installer (max. distance 50 m).

Terminals for auxiliary heater consent

- 15-16:** Auxiliary heater consent (max. 2A)

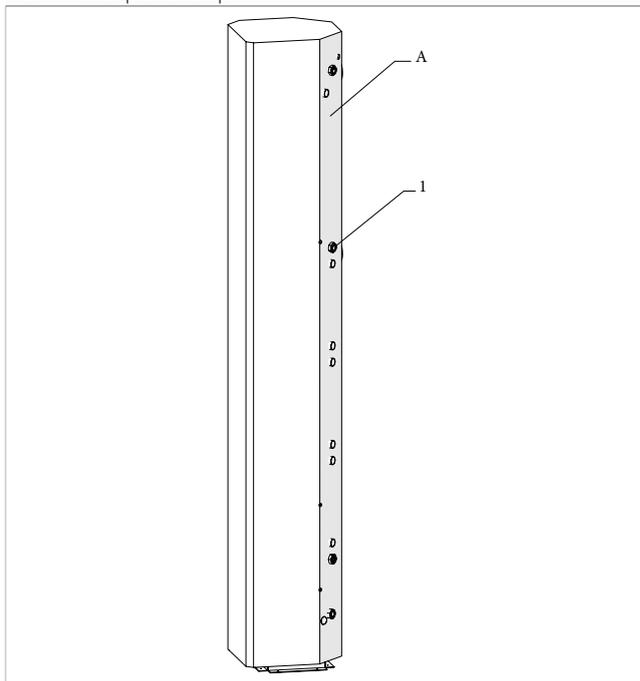
Terminals for connection to resistor pan kit DR0656

- 17 - 18:** 230V power (max. 1 A) for connecting thermostat and resistor included in the heated condensation collection bowl kit LB0656.

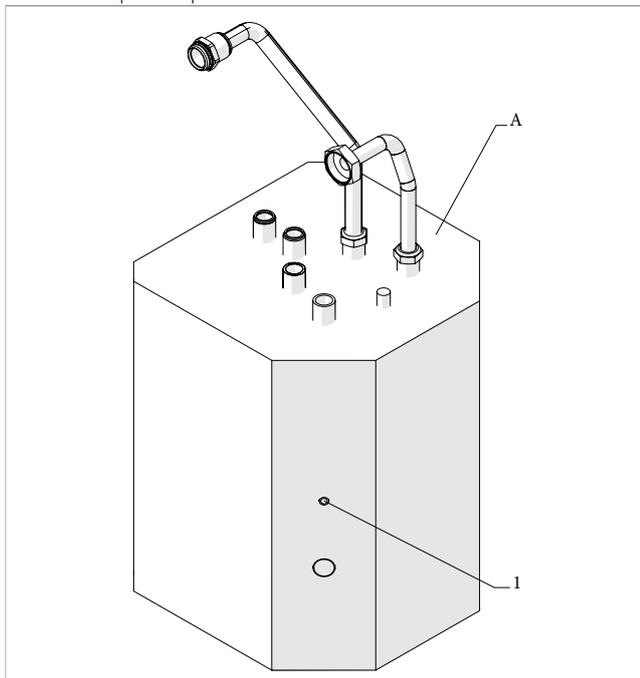
Probe positioning

Assembly

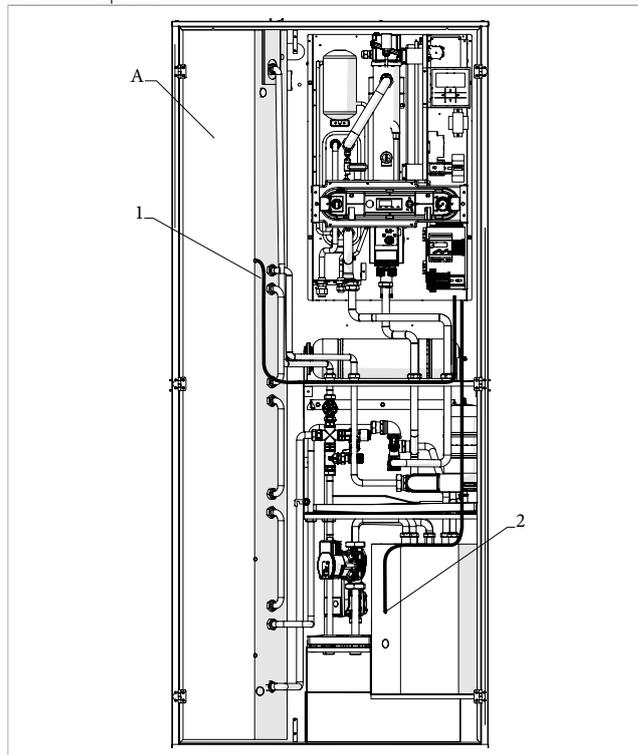
- A** Domestic hot water storage
- 1.** T san probe sump



- A** Hydraulic separator
- 1.** Sump for T1 probe



- A** Domestic hot water storage
- 1.** T san probe
- 2.** T1 probe



⚠ The probes are supplied connected to the terminal board of the unit.

To position the probes:

- insert the probes into the cable gland
- insert the T1 probe into the probe sump on the hydraulic separator
- insert the T san probe into the probe sump located on the domestic hot water tank in the middle

- ⚠** Use cable ties to fix the probe wire.
- ⚠** Use conductive paste inside the sump to ensure heat transmission.
- ⚠** Use a probe clamp to keep the probe in the correct position in the sump.

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. 62 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.

Leak detection

- ⊖** The use of combustion fluid detectors, e.g. a halide torch or other detection system using an open flame, is forbidden.

- ⚠** Follow the instructions below for leak detection:
 - use electronic detectors to detect flammable refrigerants
 - check that the detectors are properly calibrated before use
 - calibration operations must be carried out in an area free from refrigerant
 - make sure that the detector is not a potential source of combustion and that it is suitable for the refrigerant used
 - all open flames must be removed if a leak is suspected
 - in the event of a leak requiring brazing, it is mandatory to recover all the refrigerant from the system or isolate it (by means of shut-off valves) in a part of the system away from the leak
- ⚠** The use of silicone sealant may affect the effectiveness of some types of leak detectors.

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 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

Refrigeration

- the refrigerant connections have been made according to the instructions in the manual
- the hydraulic circuit interception valves are open

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.

To 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 to carry out the operations.

Start-up

Once all checks have been performed, the unit can be started:

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 alarm ALRM 017 appears during the first start-up, after the circulator starts, 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)
- the 3-way sanitary/plant diverter valve is functioning correctly
- the T san probe is correctly positioned inside the domestic hot water tank
- the temperature shown on the display is consistent with the actual water temperature (use a thermometer)

Electrics

- the current draw of the compressor is lower than the maximum indicated in the technical specifications table
- the power 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 "Primary circulation pump P1" .

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

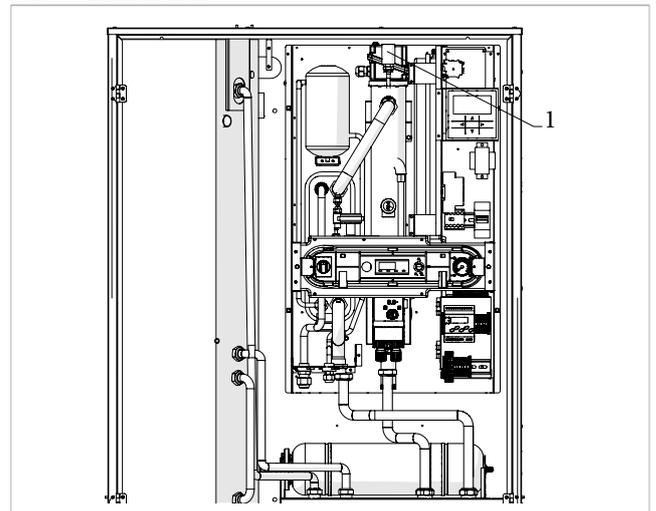
Check that no air pockets are still present once the electrical connections have been established and the circulation pump has been switched on.

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.

1. Breather valve



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" [p. 64](#)

4.4 Primary circulation pump P1

The appliance uses a high-efficiency wet circulation pump, suitable for all heating and air-conditioning plants.

On the front of the pump body there is a regulator for select operating mode at fixed or variable speed:

⚠ Fixed speed mode must be used for the primary pump.

Fixed speed mode

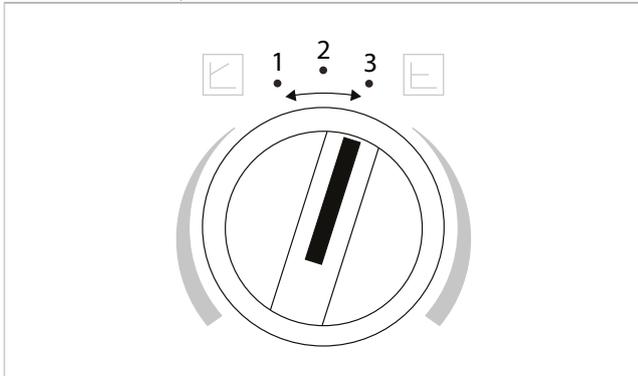
In this mode, the circulation pump operates at fixed speeds that are not subject to regulation. For operating curves (available at maximum speed) see chapter "P1 primary circulation pump graphs" [p. 76](#).

⚠ The unit is supplied with the selector set to maximum speed.

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

Pump model 1

1. Minimum speed
2. Medium speed
3. Maximum speed

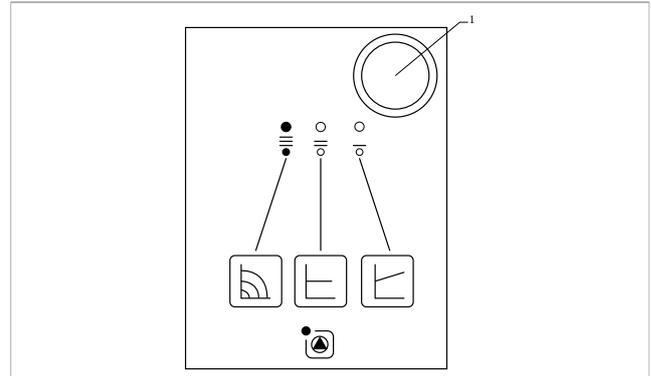


To select maximum speed:

- act on the knob
- set to 3

Pump model 2

1. Selection button



To select maximum speed:

- press the selection button in sequence until the LEDs light up



Fixed speed selection



Maximum speed

4.5 Circulation pumps optional kits

⚠ Refer to the "Configuration accessories" [p. 62](#) section to set the circulation pumps of the optional kit.

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

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 appliances are not equipped with a drain cock, it is necessary to provide one on a pipe connecting to the plant at a point near and below the appliance.

Preliminary warnings

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

Draining

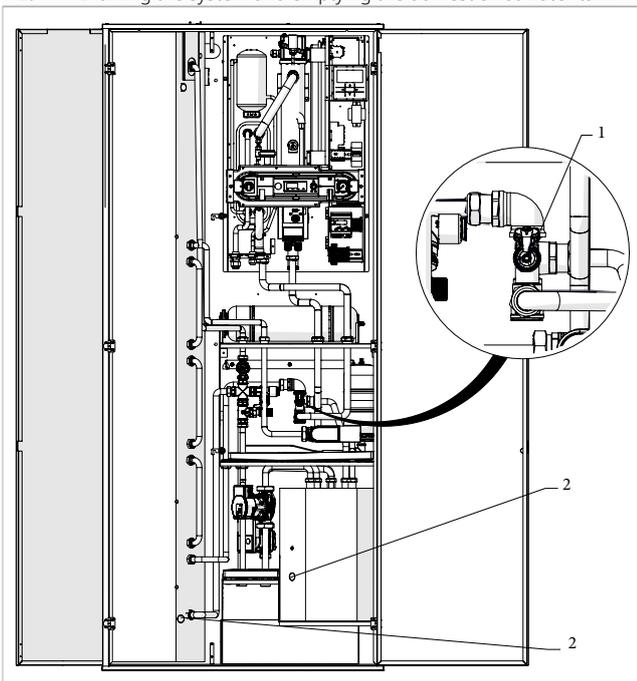
Before starting the emptying operation:

- check that the plant water filling/top-up cock is closed

To drain the plant:

- open the drain cock on the outside of the appliance
- open all the air valves of the plant and its terminals

1. Filter
2. Draining the system and emptying the domestic hot water tank



USE

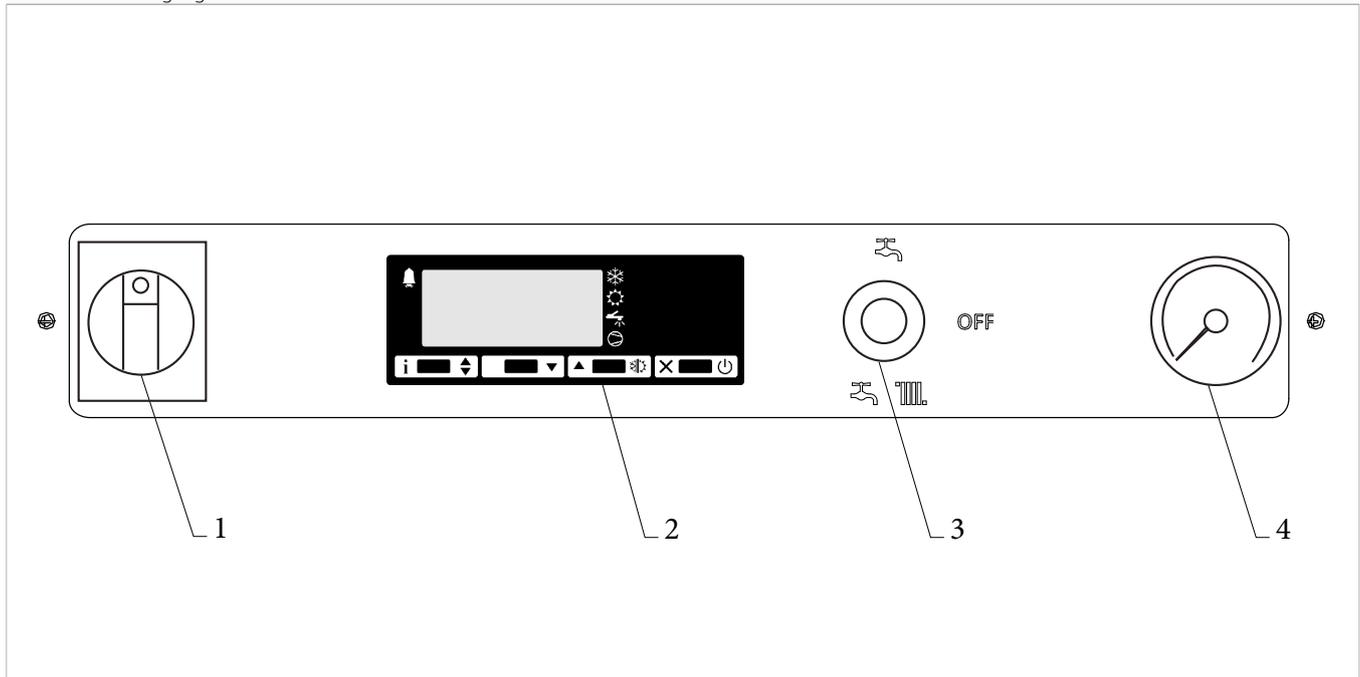
5.1 Interface

Description

The system consists of a metallic structure that encloses all the operational parts.

The panel includes the following devices:

1. Disconnect switch
2. Controller
3. Switch
4. Pressure gauge



Disconnect switch

The main appliance disconnect switch Q1 that cuts power to the internal and external units.

Controller

The controller adjusts and coordinates all the main functions of the unit.

It allows:

- cooling/heating selection
- heat adjustment
- the control all the machine's main functions
- display and clearing of alarms.

During normal operation the water temperature detected by probe T3 positioned inside the sanitary boiler is indicated on the display. If domestic functioning is disabled the controller automatically read the probe T1.

Switch

The domestic hot water + heating or cooling/stand-by/domestic hot water only switch for setting the modes:

- Normal: where the controller performs all available functions

- Domestic hot water only: where summer or winter regulation is inhibited, leaving only domestic hot water production active
- Stand-by: the instrument performs an antifreeze function, based on the ALo threshold and the reading of probes T2 and T3, the intervention of which is indicated on the display by the alternating OFF and ALo messages.

Put the regulator in stand-by mode when the unit is not in use.

Pressure gauge

The pressure gauge displays the system water pressure. It allows:

- to check the correct water pressure in the circuit.

The values must be between 1 and 2 bar.

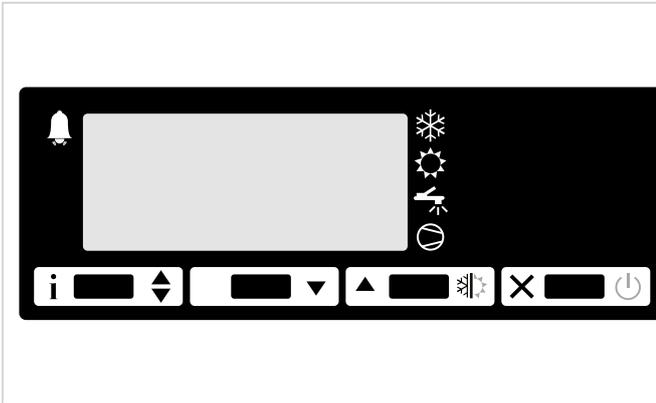
5.2 Controller settings

User interface

The interface normally displays the temperature of the water in the domestic hot water cylinder and allows all operations linked to the use of the instrument to be carried out, and in particular to:

- Select the cooling/heating operation mode
- Display and rearm the alarm situations
- check the status of resources (setpoints, temperatures, hours, operation of outdoor unit and auxiliary heater).

Display



Led area

	Winter control led on
	Summer control led on
	Domestic hot water production LED (flashing with anti-legionella function active)
	ON/OFF output LED active (flashing with support heater active)
	Alarm signals

Keys area

	Info/Setpoint key/keypad lock
	Decrement value button / ALR alarm reset (5 seconds)
	Increment button / Heating or cooling selection (2 seconds)
	Menu exit key

⚠ In case of alarm the buzzer can be silenced by pressing any key.

Equipped with a three-digit display for viewing temperatures or parameters and any alarms.

6 led for:

- the indication of the comma
- summer/winter status
- External unit consent
- alarm signalling

Based on the reading:

- plant temperature probe (T1)
- the hot water sensor (T3) displayed by default sensors
- setpoint
- the external temperature measured by sensor T4
- input status

The electronic board performs all the thermostatic adjustments needed to meet the heating, cooling or domestic hot water production requirements by acting on the available relays and through a PLL logic, on the regulation signal of the external condensing unit.

The production of domestic hot water, which has priority over the other settings, forces the heat pump operation of the outdoor unit up to the desired setpoint (factory-set at 45 °C and adjustable between 30 and 53 °C) and at the same time activates the 3-way valve to hydraulically divert the hot water produced in the domestic hot water cylinder. This adjustment is indicated by the specific LED .

The function can be deactivated by the Technical Service Department and in this case the display will automatically show the system return probe (t1) and the domestic hot water probe (t3) will be ignored.

The cooling function

is enabled:

- by the closing of the ON/OFF
- of the thermostatic contact TA
- to select press the button

The button sets the production of cold water to make the most of the inverter modulation by means of a PLL logic that acts according to the actual difference between the

temperature detected by the probe on the water return from the system and the SET setpoint set at 12°C (adjustable from 10°C to 20°C), .

This adjustment is indicated by the LED .

The heating function

is enabled:

- by the specific switch on the control panel
- by the closing of the ON/OFF
- of the thermostatic contact TA
- to select press the button

The button sets a double PLL logic that takes into account both the actual difference between the temperature detected by the probe on the water return from the system, the SET setpoint set at 40°C (adjustable from 20 to 45°C) and the external air temperature (dynamic regulation), to make the outdoor unit work in heat pump mode exploiting the modulation algorithm and activating the auxiliary heater according to the required regulations, if necessary.

This adjustment is indicated by the specific LED .

The external condensing unit is enabled whenever there is a thermostatic request according to the integration or switching settings, it is disabled in the event of an alarm.

The deactivation is indicated by the LED .

⚠ The setting remains stored even if the power supply fails.

5.3 Basic function

Access to user menu, displaying and modifying information

- Press and immediately release the $\left[\text{Info} \right]$ key
- With the buttons $\left[\text{Left} \right]$ or $\left[\text{Right} \right]$ select the data to be displayed from the INFO MENU table;
- Press the $\left[\text{Info} \right]$ key to view the value;
- To change the setpoint of the SEt active function or the SAn domestic hot water function, press and hold down $\left[\text{Info} \right]$ and use the buttons $\left[\text{Left} \right]$ or $\left[\text{Right} \right]$ to set the desired value (within the minimum SL and maximum SH limits);
- When releasing the button $\left[\text{Info} \right]$ the new value is stored and the next parameter is displayed.
- To exit the menu, press the $\left[\text{Exit} \right]$ key or wait 10 sec.

Menu info

- to access the available information, press the button sequentially $\left[\text{Info} \right]$

The information available in the INFO menu is:

- t1 Plant return probe temperature
- SEt Setpoint active function (summer or winter calculated by dynamic control)
- t2 Plant delivery temperature probe
- SAn Domestic hot water function setpoint
- t3 Hot water sensor temperature (default view)
- t4 External air sensor temperature
- Mhr Heater thousands of operating hours
- Phr Heater operating hours
- MhC Heat pump thousands of operating hours
- PhC Heat pump operation hours
- Loc *Keypad state (locked)

*Select YES to lock keypad or NO to unlock it

Stand-by

or the stand-by status can be set on the touchscreen interface or by opening the ON/OFF selection contact, connected to terminals 7-8.

The display shows OFF, deactivating all settings.

⚠ While in stand-by, the device runs an antifreeze cycle which activates the circulation pump based on the ALO threshold and on the readings of sensors T2 and T3.

Operation is signalled on the display by the alternating OFF and ALO signs.

Keyboard lock

Locking the keys prevents undesired and potentially damaging operations which may occur whenever the regulator is operating in a public environment.

To activate this function:

- set Loc=YES in the INFO menu

To return to normal functionality:

- set Loc=no

While the keypad is locked it is possible to change the setpoints, but it is not possible:

- put the device in standby
- reset the manual reset alarms
- make the cooling/heating selection
- access the configuration menu

Visualizations

In normal operation, the display shows the water temperature detected by the T3 probe positioned in the domestic hot water tank or the following indications:

- FL Intervention of the flow meter connected to DI1
- Lo Low temperature (5°C) alarm originated by the T2 sensor with the controller on.
- ALo Low temperature alarm (5°C) detected by sensors T2 or T3 with controller in standby
- PdC External condenser alarm
- E1 T1 probe failure
- E2 T2 probe failure
- E3 T3 probe failure
- E4 T4 probe failure
- ALr One-hour tripping of one of the alarms for > ASM
- LEG Anti-Legionella cycle ended incorrectly (signalling only)
- oFF Stand-by controller
- hi High temperature alarm (80°C) detected by probes T2 or T3 (the latter generates only one signal)
- CAL Exclusive operation of auxiliary heater with circulation pump off.

Alarms

Any alarm signal is accompanied:

- from the output block
- by the lighting of the LED and the sounding of the buzzer
- is subject to the maximum time frequency check (three alarms per hour)

Below this value the alarm will be automatically reset.

While, if the set value is exceeded, rearming will be manual (in this case, the alarms specific sign shall alternate with the ALr sign that means that the device is locked).

⚠ To silence the buzzer, simply press any key on the controller.

LED  turns off when the cause of the alarm stops.

- press the $\left[\text{Info} \right]$ key for 5 seconds, to reset the alarm

Opening input DI1, to which the differential pressure switch performing the flow switch function is connected, causes the outputs to switch off immediately.

After one minute, during which the pump is kept on to further verify the closure of the flow switch, a manual reset alarm signal ALr altered to FL and the final shutdown of the pump

The low temperature (5°C antifreeze signalled on the display by the Lo prompt) and high temperature (80 °C hi on the display) alarms are managed by means of the heat exchanger output temperature sensor T2 positioned at the plate heat exchanger outlet and the hot water tank sensor T3.

The low temperature alarm is monitored also when the controller is in standby, and triggers the oFF and ALo prompts alternatively and the starting of the circulation pump.

The alarm is reset when the water temperature goes up again to above the 5°C + 3°C hysteresis threshold.

Alarm PDC appears on the display in case of malfunctioning of the external condenser.

If the anti-Legionella cycle ends because the timeout has expired, only the LEG prompt is displayed.

Indications E1, E2, E3 and E4 may appear in case of failure or incorrect measurement of the three temperature sensors.

External unit control panel

First start-up

- turn the system master switch to "on"
- turn the master switch Q1 of the device on the electric panel to the I-ON position
- check the touch screen interface is off
- check that OFF appears on the emergency interface, otherwise press the Standby icon

Within few minutes the prompt ASSIGNING will appear and flash on the control panel of the external unit.

This signal will cease within a maximum time of 4-5 minutes once the panel has correctly communicated with the external unit.

- ⚠ On three-phase 12 and 15 versions, reverse the two power phases if alarm P05 appears on the external unit control panel.

Automatic address setting

If during the SETTING procedure symbol ⚠ appears accompanied by the prompt R.C.1 switch off the device.

- ⚠ Check that the power supply connections and the serial line to terminals 1 and 2 to the outdoor unit are correct. Then switch on the power supply voltage and check that the SETTING procedure automatically restarts and finishes within a few minutes.

- ⚠ If the SETTING process does not restart automatically or remains in the display symbol ⚠ accompanied by the prompt R.C.1. call the Technical Service Centre.

Meaning of the warning lights on the external unit electronic board

Meaning	LED 1	LED 1
Upon power-up	○	○
1. no communication with the indoor unit	●	○
2. established communication with the indoor unit	●	●
3. normal communication OK (validating power and quantity)	●	●
4. automatic address setting in progress	☀	☀

○ on
● off

☀ alternative flashing

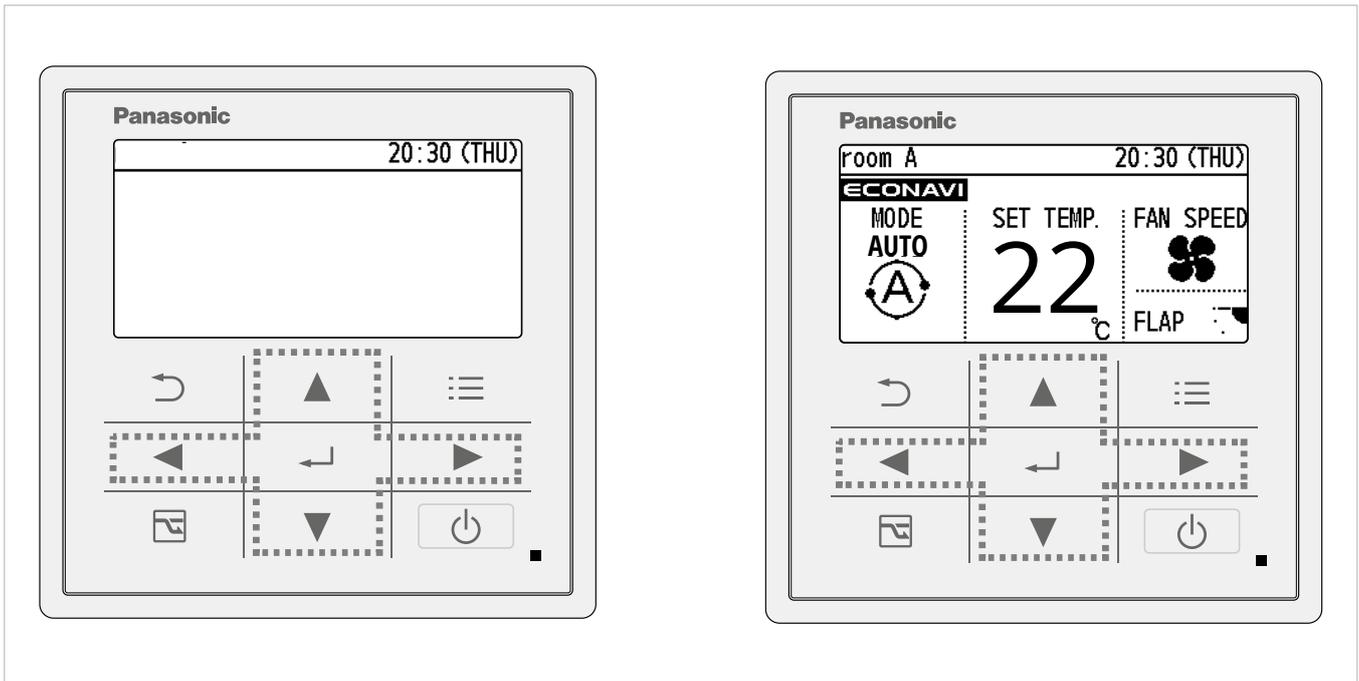
External unit control panel first switch-on

The display shows the stand-by screen.

- wait a minute and press the power button  on the control panel
- press the key  to modify the setting, MODE
- press the enter key 
- press the keys  until you reach auto mode
- press the enter key 

The compressor start symbol appears on the display  after a few seconds

- turn the master switch of the appliance to position 0-OFF
 - after a few seconds, re-energize the appliance
- Check that the display does not change.*



Checks during and after the first start-up

After starting up, check that

- the current consumption of the appliance is lower than the maximum current indicated in the manual of the indoor unit
- ⚠ During compressor operation, the power supply voltage does not fall below the nominal value -10 %.
- the three-phase supply has a maximum unbalance between phases of 3%
 - the appliance operates within the recommended operating conditions
 - the hydraulic circuit is completely deaerated
 - the hydrometer pressure is between 1 and 2 bar
 - the air-to-water heat pump performs a shutdown and subsequent restart
 - the thermal gradient between the delivery and return is between $4 \div 7$ °C
- ⚠ Set a lower circulator speed if the thermal gradient is lower 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.
- disconnect and reconnect power to the device and check correct operation

MAINTENANCE

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

6.1 Preliminary warnings

⚠ For detailed information on accessories please refer to the "Configuration accessories" p. 62 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.

6.2 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 gaskets 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 grommets
- safety devices

Mechanical checks

Check:

- check the tightness of the screws, the compressors and the electrical box, the external panelling of the unit
- check 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.

Refrigeration checks

Check:

- the amount of charge complies with the size of the room in which the parts containing the refrigerant are installed (Minimum floor area reference table)
- ventilation equipment and vents functioning properly and not obstructed
- the marking on the equipment must remain visible and legible. Illegible markings and graphics must be corrected
- the refrigerant pipes and components are installed in a position in which they are unlikely to be exposed to corrosive substances unless the components are made of inherently corrosion-resistant materials or adequately protected against corrosion
- the thermodynamic values are within the normal parameters

Under the provisions of Directive 517/2014/EU, plants containing more than 5 equivalent tonnes of CO₂ (7.41 kg of R32 gas or 2.39 kg of R410a gas) must be checked for leaks once a year, using either direct or indirect methods, by personnel certified under EU Regulation 2015/2067.

The company responsible for maintenance must keep a logbook in which the following information is recorded:

- the technician who performed the maintenance or repair,
- the dates and results of the checks,
- the quantity and type of fluorinated gas used,
- any quantities added or recovered during servicing, repair or final disposal.

⚠ Filling the refrigeration circuit with a refrigerant other than the one indicated is forbidden. Using a different refrigerant gas can cause serious damage to the unit.

TROUBLESHOOTING

7.1 Preliminary warnings

⚠ For detailed information on accessories please refer to the "Configuration accessories" [p. 62](#) 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.

7.2 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.

7.3 Troubleshooting Table

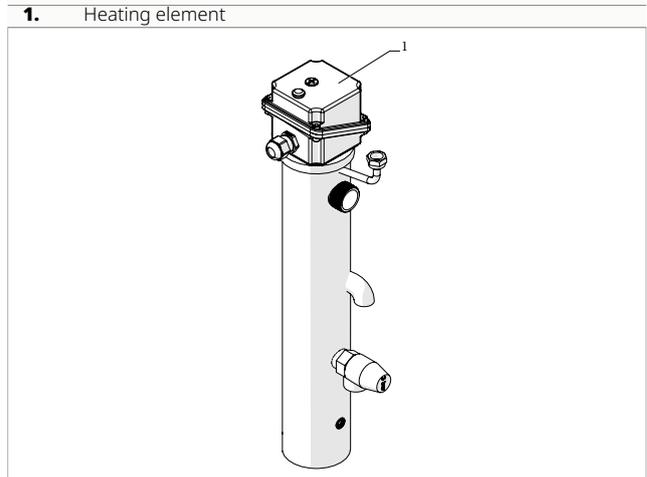
Effect	Cause	Solution
After the general switch-on, the alarm FL will appear on the display of the controller.	The water circulation in the plant is not good.	Check that: <ul style="list-style-type: none"> the check valves are open, the 3-way valve for hot-cold diversion (if present) is in the correct 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).
Noise and turbulence is coming from the hydraulic circuit.	There is air inside the circuit.	Vent the air via the external devices and the vent on the buffer tank of the machine. Bring the circuit to the correct filling pressure. Check that the suction pressure (hydraulic circuit return) with the pump on is higher than 0.6 bar.
Alarm Lo appears (first intervention rearms automatically; then manually thereafter)	The minimum frost protection temperature alarm has triggered. The water temperature at the T2 heat exchanger outlet is less than 5 °C.	Check that nothing is preventing the good water circulation in the plant (air, partially closed valves, clogged sieve filter, etc.).
		Check that the thermal gradient between the delivery and return is between 4-7°C. Query the t1 and t3 parameters. Set a lower circulator 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.
Alarm E1 appears (automatic reset)	The inlet water temperature probe is faulty or not correctly connected.	Check the connection and if necessary replace the probe
Alarm E2 appears (automatic reset)	The outlet water/antifreeze temperature measuring sensor is faulty or not connected correctly.	Check the connection and if necessary replace the probe
Alarm E3 appears (automatic reset)	The probe that measures the temperature positioned within the sanitary boiler (to be connected to clamps 12-13) is faulty or is not connected correctly.	Check the connection and if necessary replace the probe
Alarm E4 appears (automatic reset)	The external temperature measuring sensor (to be connected to terminals 13-14) is faulty or not connected correctly.	Check the connection and if necessary replace the probe
hi alarm appears (automatic reset)	The inlet water temperature detected by T2, or the hot water tank, detected by T3, has exceeded 80°C.	If a solar collector is present in the system, T3 in the hot water tank detects a high temperature but this does not prevent the production of hot or cold water for the system.
The heat pump is not working.	No communication with the external unit. Symbol  appears on the control unit display of the control panel accompanied by blinking R.C.1 prompt. The controller display is off. OFF is shown on the controller display	Repeat the automatic address setting procedure described in the respective section. Check that the master switch Q1 on the control panel is set to the I-ON position.
		Check that the power supply is present. If not, restore it. The SANITARY + HEATING OR COOLING / STAND-BY / SANITARY ONLY switch on the control panel is in the central position. Move it to one of the other two possible positions.
The heat pump does not operate in heating or domestic hot water mode.	The LED next to the controller ON/OFF output symbol will flash	The auxiliary heater output has been activated but the heating element or boiler is not active. Check that the boiler is powered.
	Cal. is shown on the controller display.	The specific Cal function has been activated that determines the exclusive operation of a boiler with the shutdown of the heat pump. Check with the installer that the boiler is correctly activated.
	The defrosting of the outdoor unit does not work and ice has formed on the battery.	Check the minimum installation distances and remove any obstacles.

Effect	Cause	Solution
Unsatisfactory cooling or heating.	The setpoint set on the controller is too low (heating mode) or too high (cooling mode).	Reset according to needs.
	The room thermostat is set too high for cooling (or too low for heating). Open doors and/or windows	Adjust the temperature to a suitable value. Close them to prevent air from entering.
The LEG alarm appears (view only)	The anti-Legionella cycle ended in-correctly after 5 hours instead of holding 60°C for 2 hours.	The auxiliary heater (HEATER OR SUPPORT BOILER) is not available or does not have sufficient capacity to perform the function correctly. Contact the installer.

CONFIGURATION ACCESSORIES

8.1 heater kit

Heaters maximum 6 kW (3 steps of 2 kW). Limitation to 2 kW for single phase heat pumps.



Electric connections

The accessory is supplied installed and tested at the factory. No electrical connections are required.

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.	5-M	7-M	9-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

Checks with the machine switched on

i This check should only be carried out if the unit is equipped with an electrical heating element.

After starting up, check that

- the heating element operation indicator light is on

Failures of the heating element

Failure of the electrical resistance is indicated by the operating light going out.
The fault may be due to:

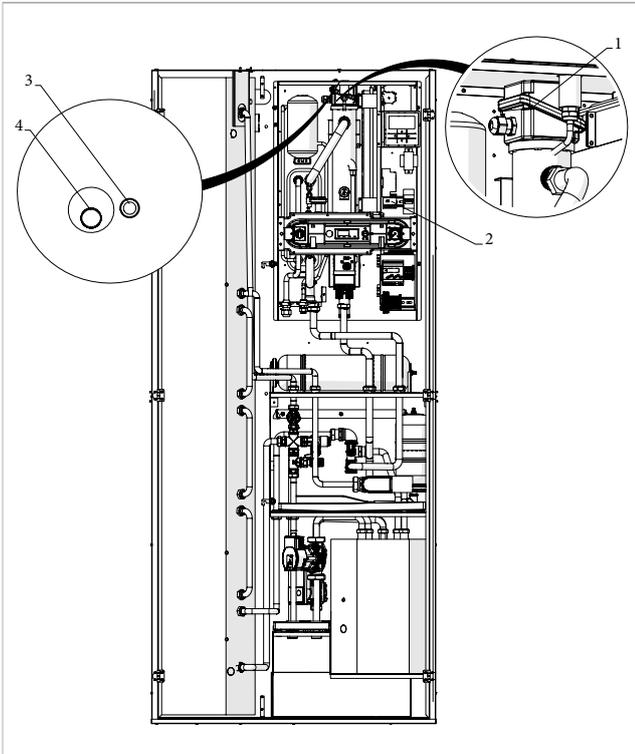
- intervention of the resistor safety thermostat
- resistor protection switch intervention

To restore:

- undo the protective cap
- press the reset button

⚠ If the fault occurs several times in a given period of time (e.g. 3 times in 1 hour), contact the Technical Service Centre.

- | | |
|----|-----------------|
| 1. | Heating element |
| 2. | Switch |
| 3. | Led |
| 4. | Reset button |



8.2 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.

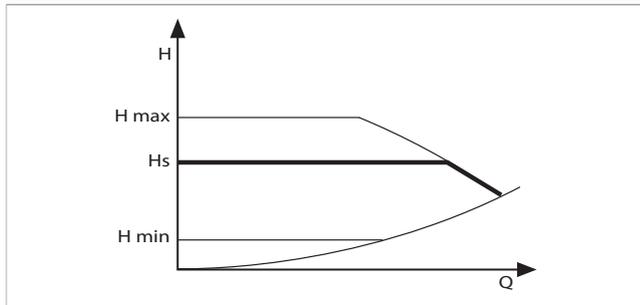
On the front of the pump body there is a regulator for selecting the following operating modes:

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.

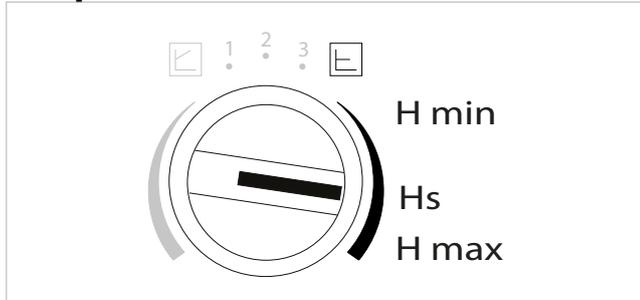
Constant pressure

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



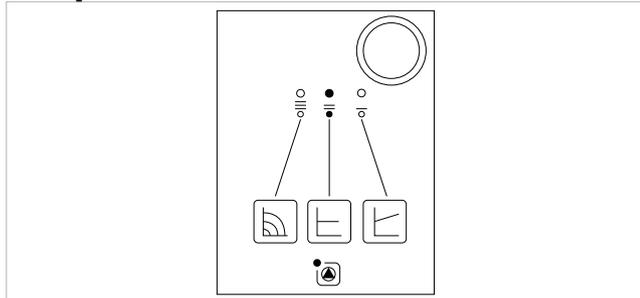
There are two different control modes according to the installed pump model:

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

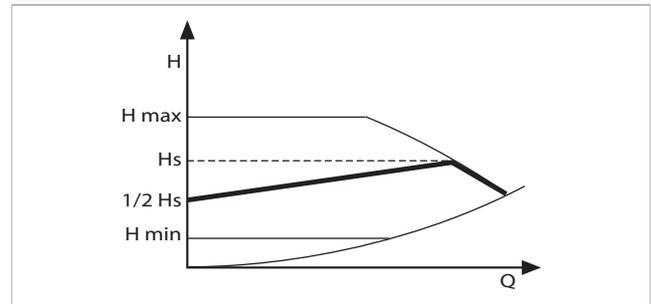
Medium speed

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.

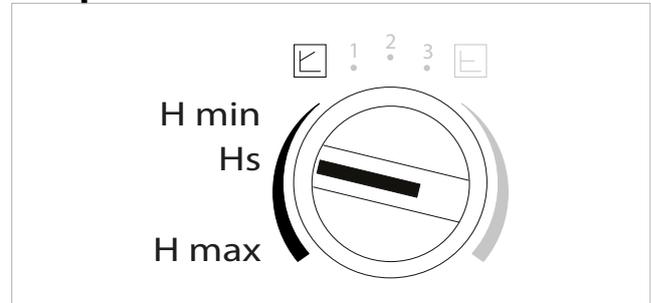
Variable pressure

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



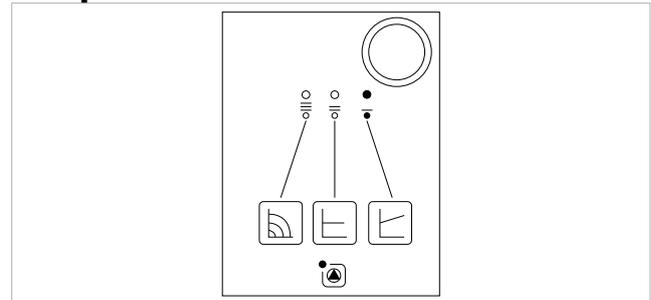
There are two different control modes according to the installed pump model:

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

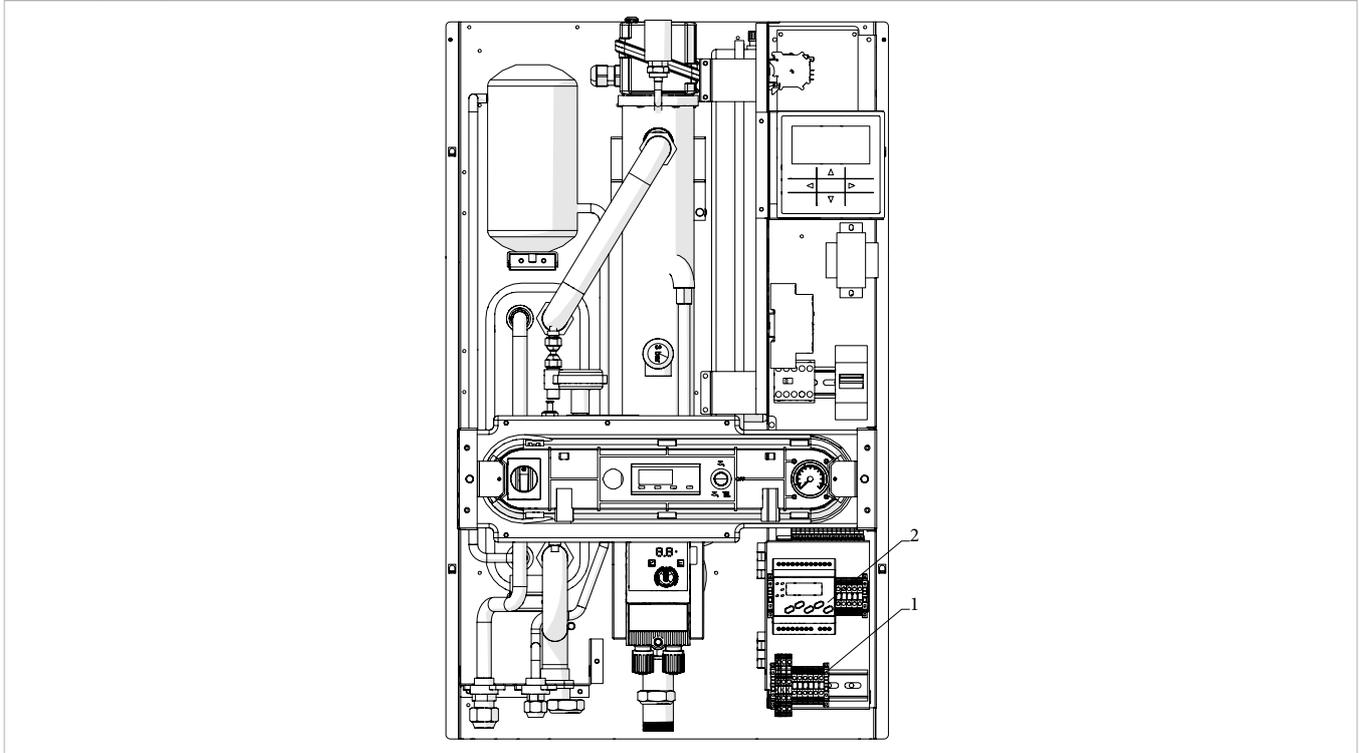
8.3 Digital regulator kit

Digital regulator kit for secondary circuit pump and mixing valve kit.

Electric connections

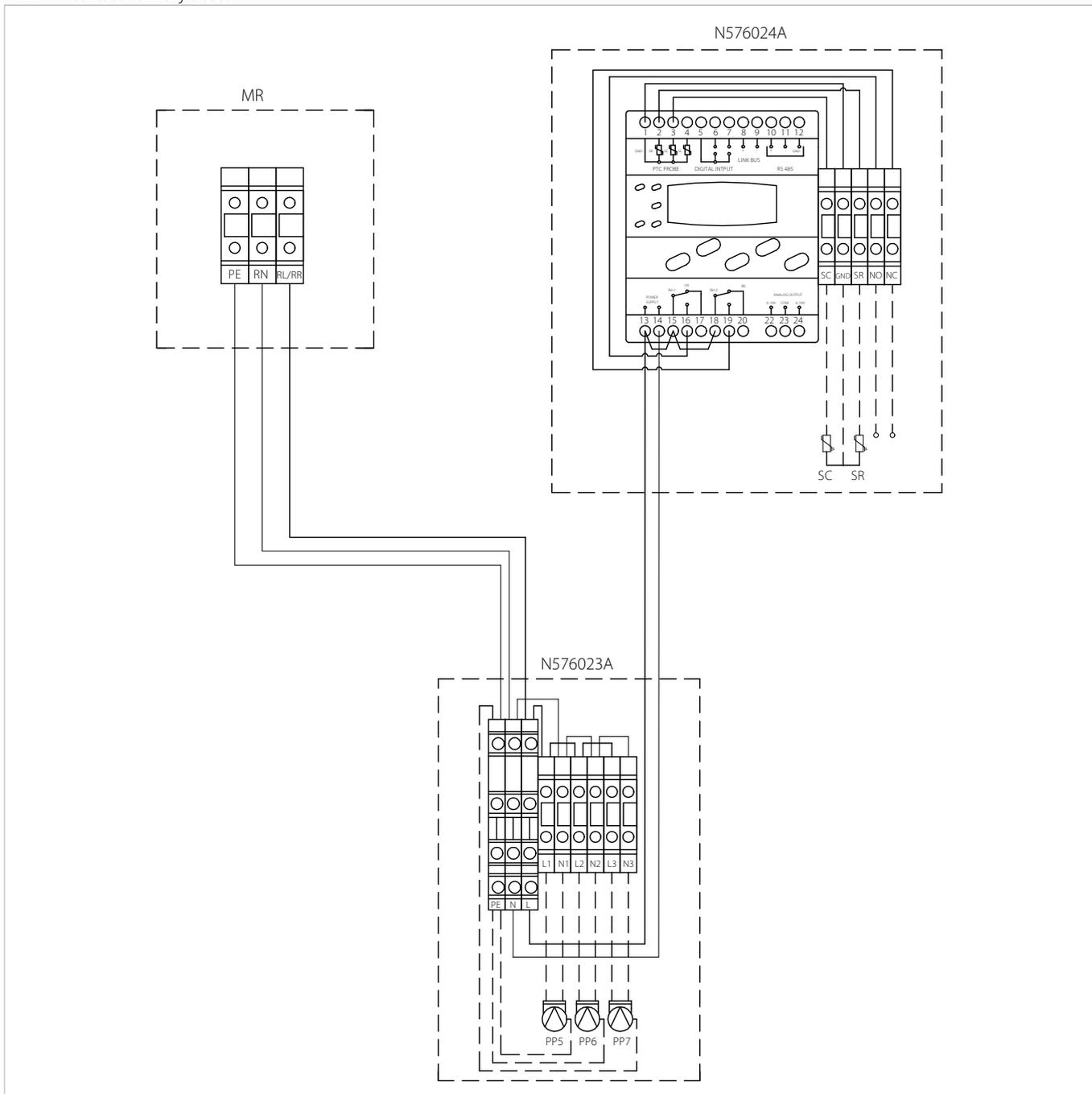
Electrical panel aboard unit N576023A

1. N576023A
2. Digital regulator kit (code GB1110II)



Wiring diagram for terminals N576023A

MR	Terminal block for version with heating elements
N576024A	Digital regulator kit (Connections by installer)
N576023A	Terminal block
PP5	Direct delivery pump
PP6	Mixer delivery pump
PP7	Solar pump
SC	Compensation probe
SR	Regulation probe
NO	Contact normally open
NR	Contact normally closed



8.4 Solar heating kit

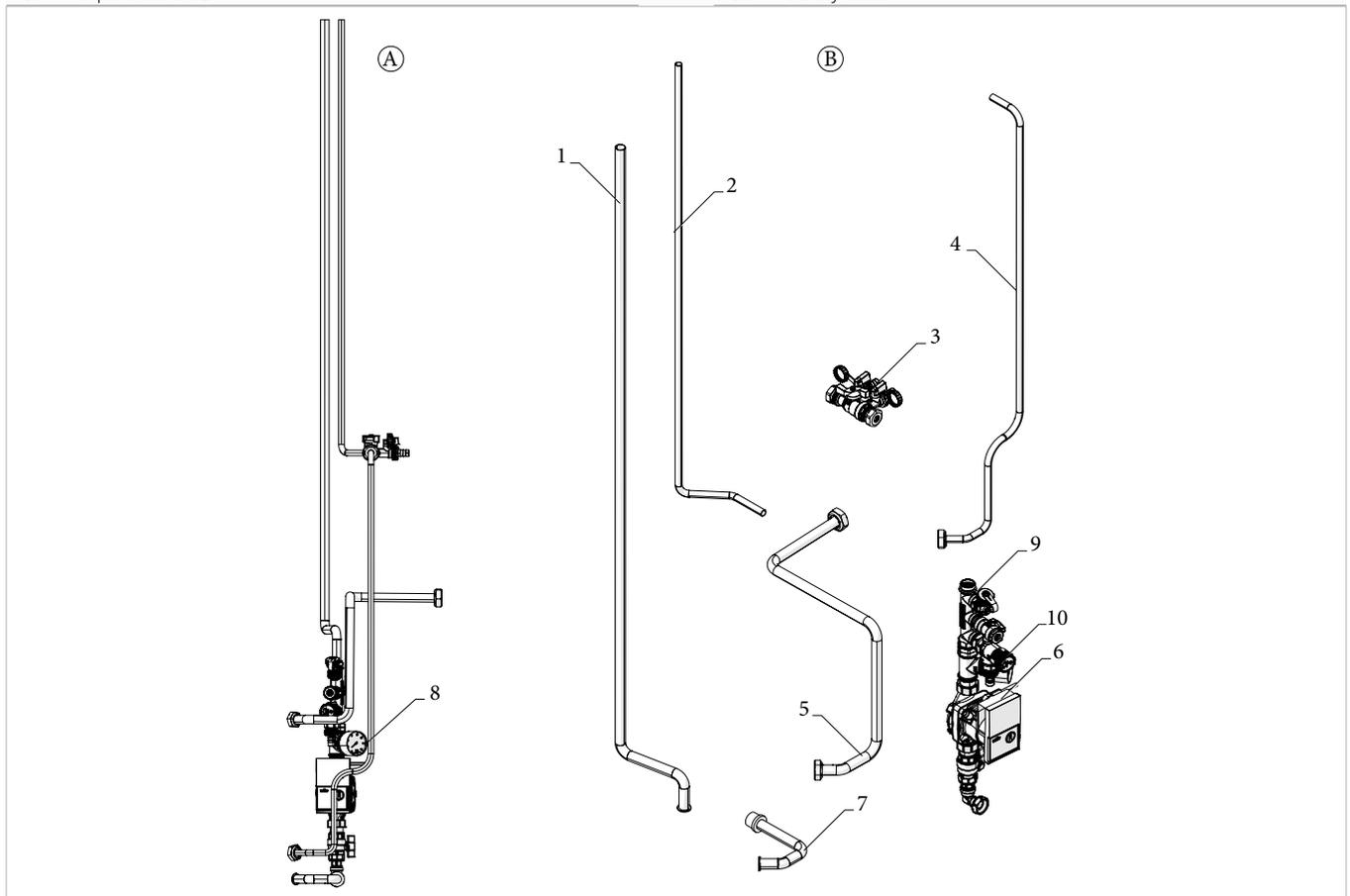
⚠ The solar kit arrives unassembled, to be assembled during installation.

GB1063II - Solar system unit: pump, safety valve, charging unit

Standard supply

A	Solar kit assembled
B	Solar kit components
1.	Pipe N600455A
2.	Pipe N600457A
3.	Solar circuit charging unit
4.	Pipe N600456B

5.	Pipe N600452B
6.	Solar pump group
7.	Pipe N600454A
8.	Pressure gauge
9.	Drain cock
10.	Safety valve



Component assembly

⚠ The solar kit arrives unassembled, to be assembled during installation.

Predisposition

⚠ Before installing the solar kit.

On the domestic hot water storage tank:

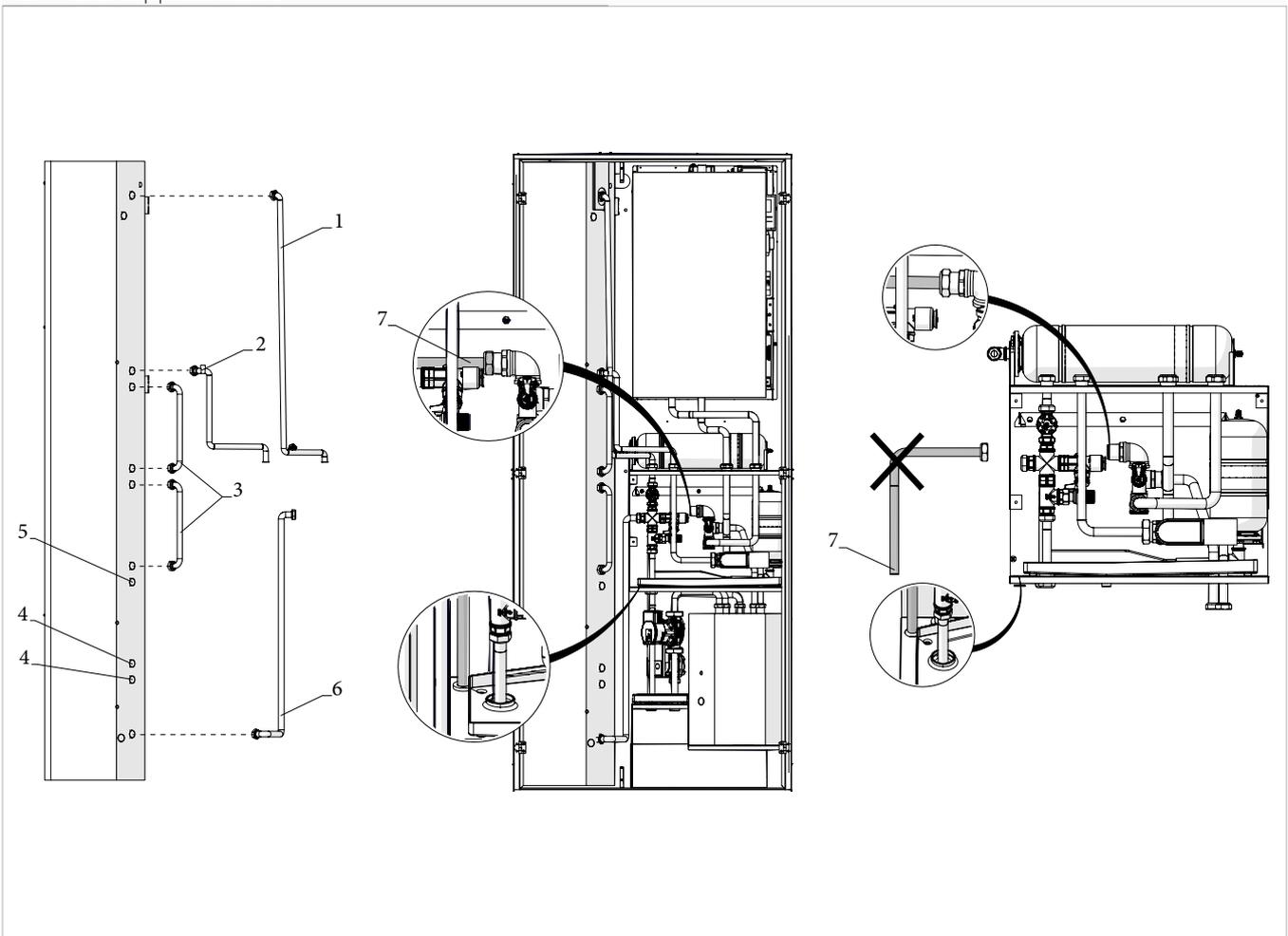
- Mount pipes N600146B, N600145B, N600147B, N600149B
- leave the solar kit connections free

On the hydraulic unit:

- remove pipe N600162B

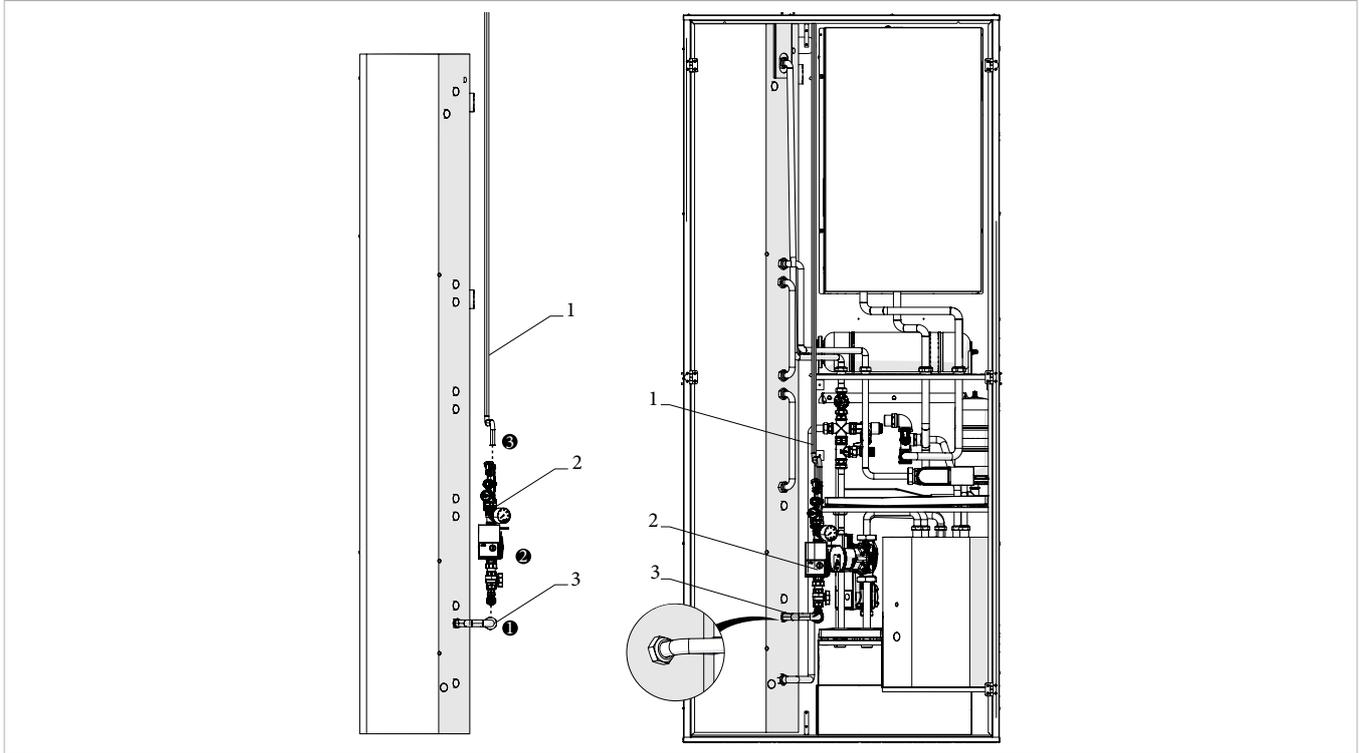
- 1. Pipe N600146B
- 2. Pipe N600145B
- 3. Pipe N600147B
- 4. Solar kit pipe connections

- 5. Serpentine return
- 6. Pipe N600149B
- 7. Pipe N600162B



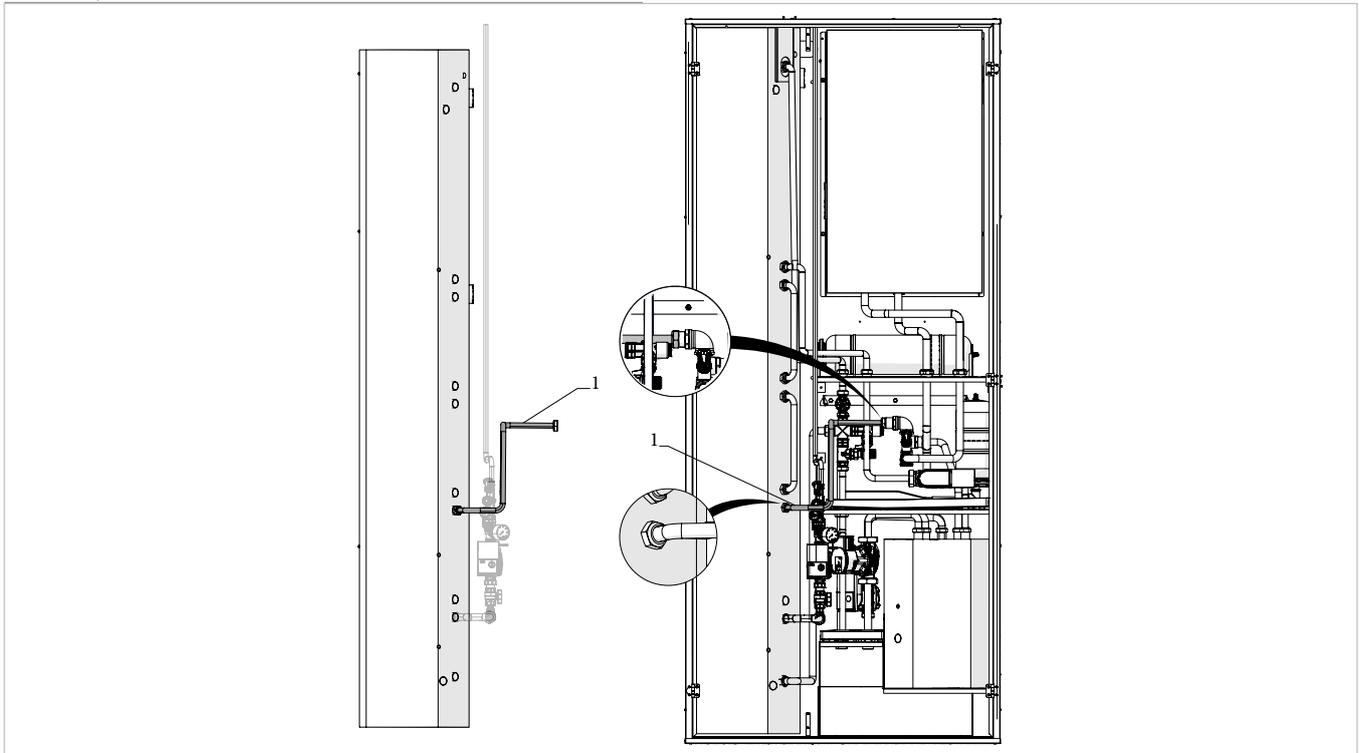
Component assembly

- 1. Pipe N600455A
- 2. Solar pump group
- 3. Pipe N600454A



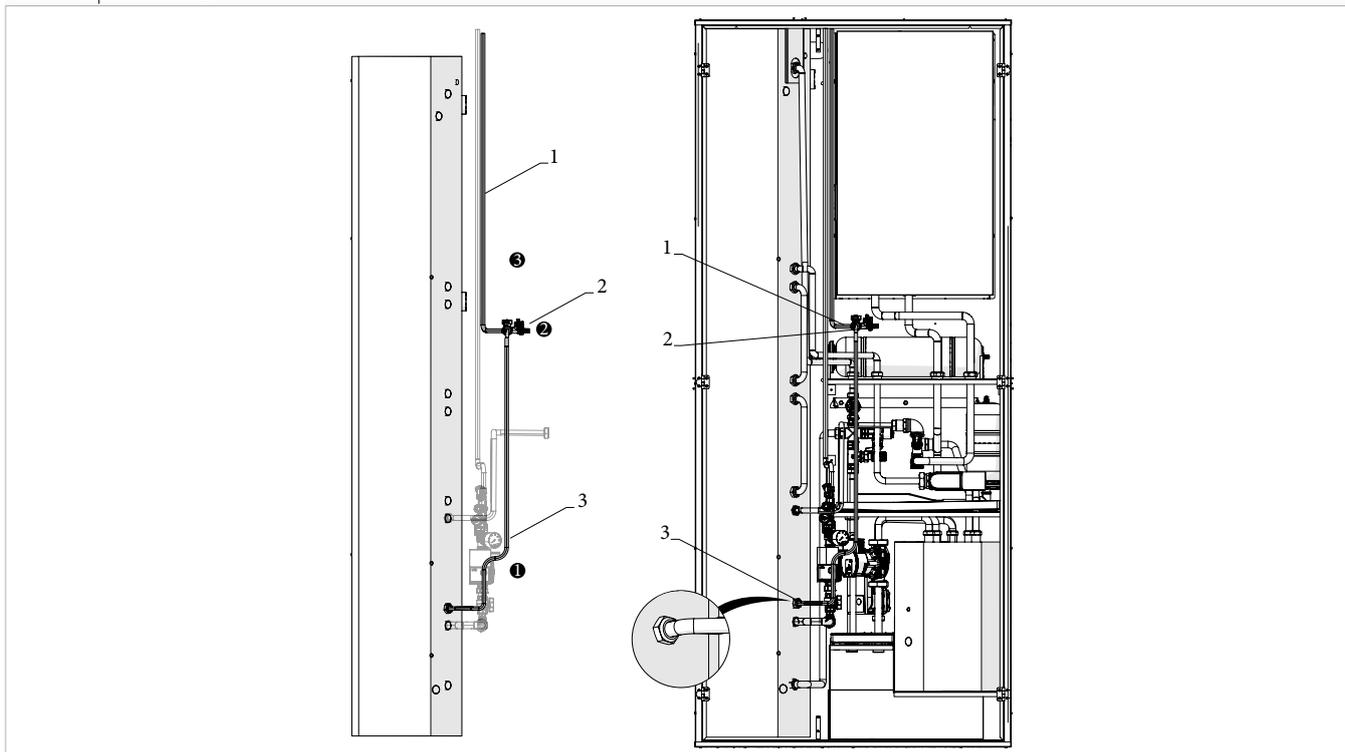
- connect the pipes in the order shown

- 1. Pipe N600452B



- connect pipe N600452B

1. Pipe N600457B
2. Solar circuit charging unit
3. Pipe N600456B



- connect the pipes in the order shown

Solar pump PSO

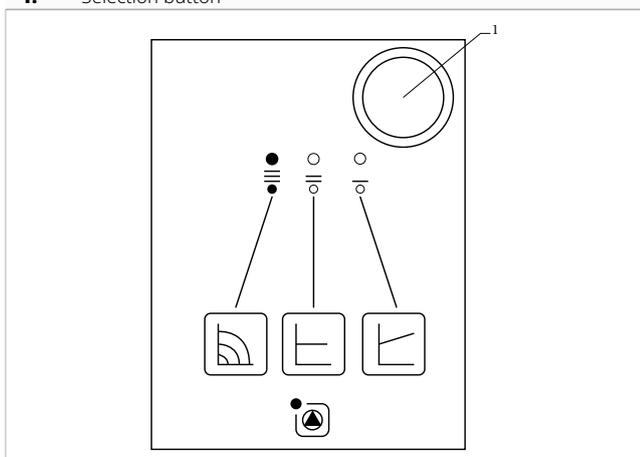
On the front part of the pump body there is a regulator that allows to select the head according to the actual solar system requirement.

The setting of the head value of the solar pump PSO must be carried out with:

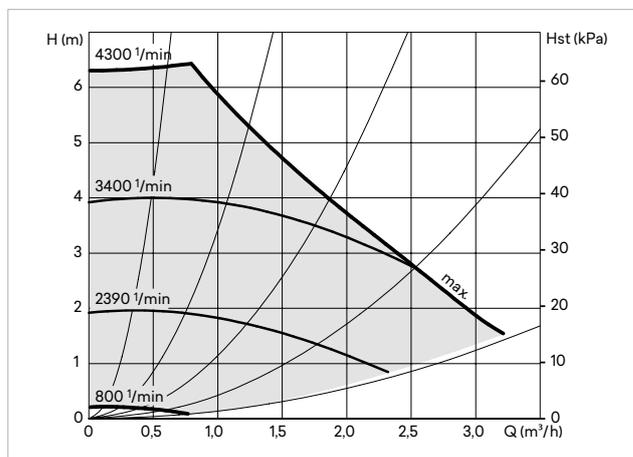
- the solar system working
- all distribution valves open
- utilities on

⚠ Verify that the temperature difference is congruent with the project.

1. Selection button



Flow chart / head of solar circuit pump PSO



TECHNICAL INFORMATION

9.1 Technical data

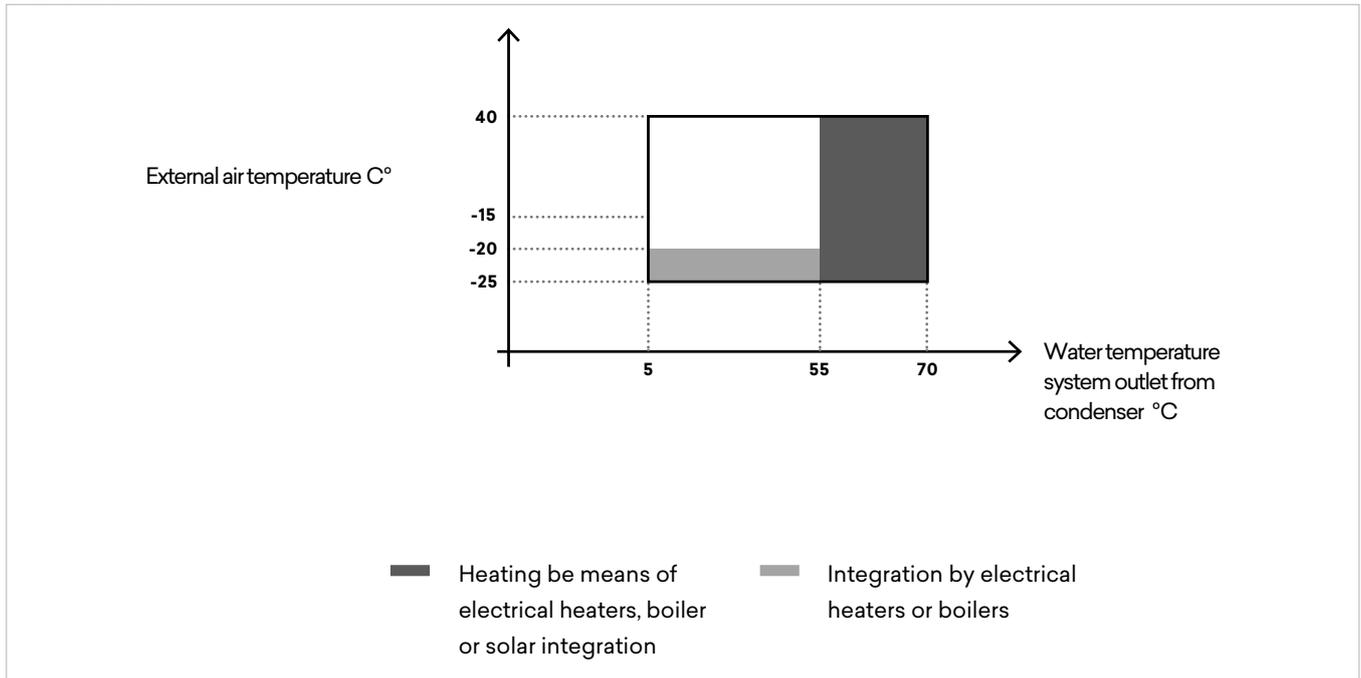
Models	m.u.	5-M	7-M	9-M	12-M	12-T	15-M	15-T	
Heating performances (A 7 °C BS; W 35 °C)									
Maximum heat output	(1)	kW	6,80	8,50	13,07	18,32	18,32	22,80	22,80
Nominal heat power	(1)	kW	4,80	7,10	8,10	12,80	12,80	14,60	14,60
Total absorbed power	(1)	kW	1,20	1,60	1,80	2,90	2,90	3,20	3,20
COP	(1)		4,11	4,33	4,53	4,44	4,44	4,58	4,58
SCOP	(1)		4,10	3,96	4,26	4,50	4,55	4,55	4,55
Energy efficiency									
Energy efficiency class	(2)		A++	A++	A+++	A+++	A+++	A+++	A+++
Heating performances (A-7 °C BS; W 35 °C)									
Maximum heat output	(3)	kW	4,59	7,72	8,73	11,70	11,70	14,74	14,74
Total absorbed power	(3)	kW	1,79	3,48	3,50	4,46	4,46	5,80	5,80
COP	(3)		2,56	2,22	2,49	2,62	2,62	2,54	2,54
Cooling performances (A35 °C; W 18 °C)									
Maximum cooling capacity	(4)	kW	6,00	11,01	11,27	16,74	16,74	18,56	18,56
Nominal cooling power	(4)	kW	5,14	7,39	8,71	12,30	12,30	15,60	15,60
Total absorbed power	(4)	kW	1,50	1,84	2,07	3,01	3,01	3,90	3,90
EER	(4)		3,66	4,02	4,21	4,09	4,09	4,00	4,00
SEER	(5)		6,80	7,30	6,90	7,05	7,05	6,62	6,62
Cooling performances (A35 °C; W 7°C)									
Maximum cooling capacity	(6)	kW	4,11	7,56	8,11	11,79	11,79	13,34	13,34
Nominal cooling power	(6)	kW	3,52	5,30	6,27	8,89	8,89	11,24	11,24
Total absorbed power	(6)	kW	1,42	1,75	1,97	2,76	2,76	3,51	3,51
EER	(6)		2,48	3,03	3,18	3,22	3,22	3,20	3,20
SEER	(7)		5,78	5,80	5,45	5,50	5,50	5,12	5,12
Hydraulic data									
Nominal flow rate for heating		L/min	13,7	20,3	23,2	36,5	36,5	41,9	41,9
Nominal flow rate for cooling		L/min	10,1	15,2	18,0	25,5	25,5	32,2	32,2
available pressure primary circuit		kPa	34,0	31,0	29,0	22,0	22,0	17,0	17,0
Diameter of hydraulic fittings		"GAS	1"						
expansion vessel capacity		L	24	24	24	24	24	24	24
Minimum system water content		L	20	30	40	50	50	65	65
tank capacity		L	170	170	170	170	170	170	170

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. (radiant application)
6. Water temperature out 12/7 °C; outdoor air temperature 35 °C
7. (fancoil application)

Models	m.u.	5-M	7-M	9-M	12-M	12-T	15-M	15-T
Sound data								
Sound pressure		dB(A)	30,0	30,0	30,0	31,0	31,0	31,0
Sound pressure external Cooling/Heating unit		dB(A)	48/50	48/50	48/50	52/52	52/52	53/53
Refrigerant gas data								
Refrigerant charge		kg	1,65	2,00	2,35	3,40	3,40	3,40
Refrigerant			R410a					
Suction		"SAE	5/8					
Liquid		"SAE	3/8					
Electrical data								
Power Supply		V/F/Hz	230-1-50	230-1-50	230-1-50	230-1-50	400-3-50	400-3-50
Indoor unit protection degree			IPX2					
Degree of protection outdoor unit			IPX4					
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. (radiant application) 6. Water temperature out 12/7 °C; outdoor air temperature 35 °C 7. (fancoil application)								

9.2 Operating limits

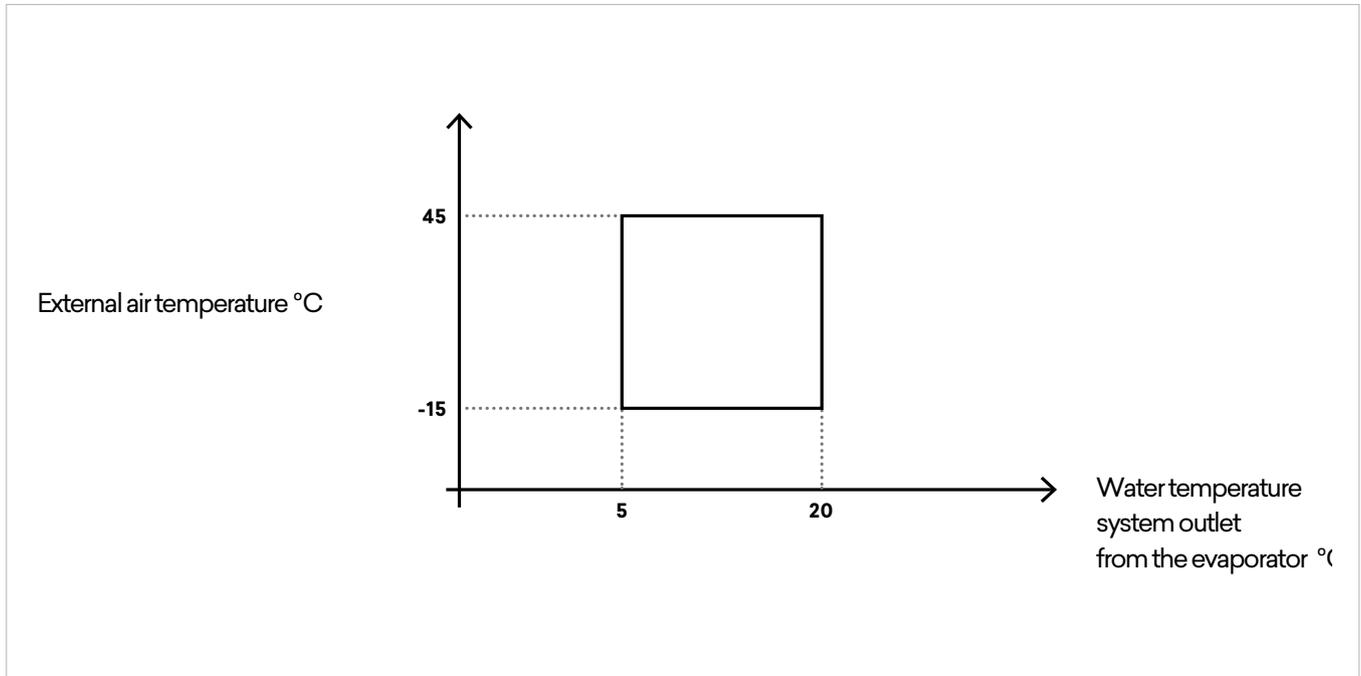
HEATING



⚠ The areas represented by the graph marked by backup heater are simplified. They could be more advantageous (greater contribution of the heat pump) in relation to the operating conditions and internal operating parameters.

⚠ The unit may reduce the conditioner outlet water temperature of the condenser at external air temperatures below -15°C.

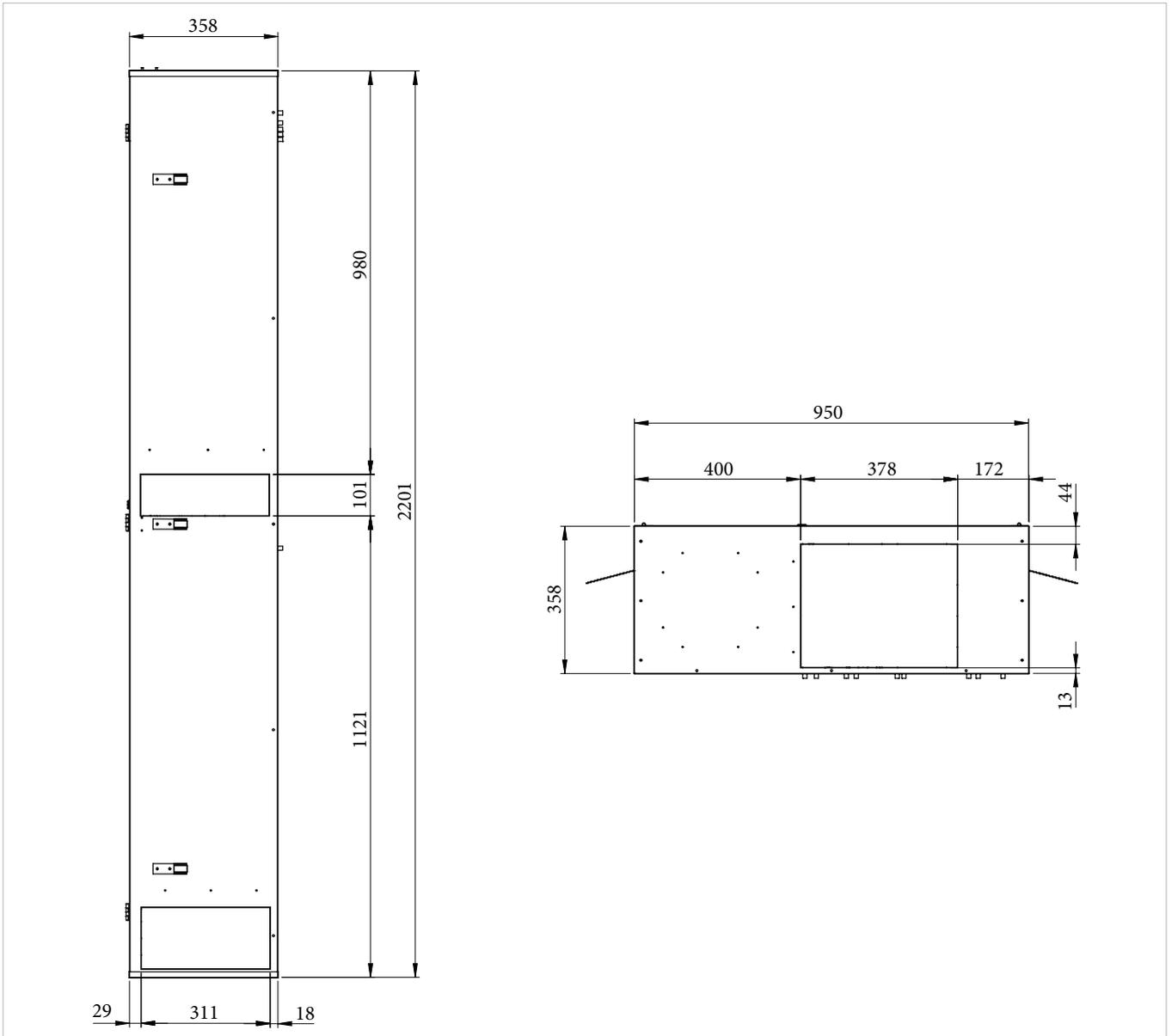
COOLING



⚠ The area represented by the graph is simplified. It may be more advantageous depending of outdoor and working conditions.

9.3 Dimensions

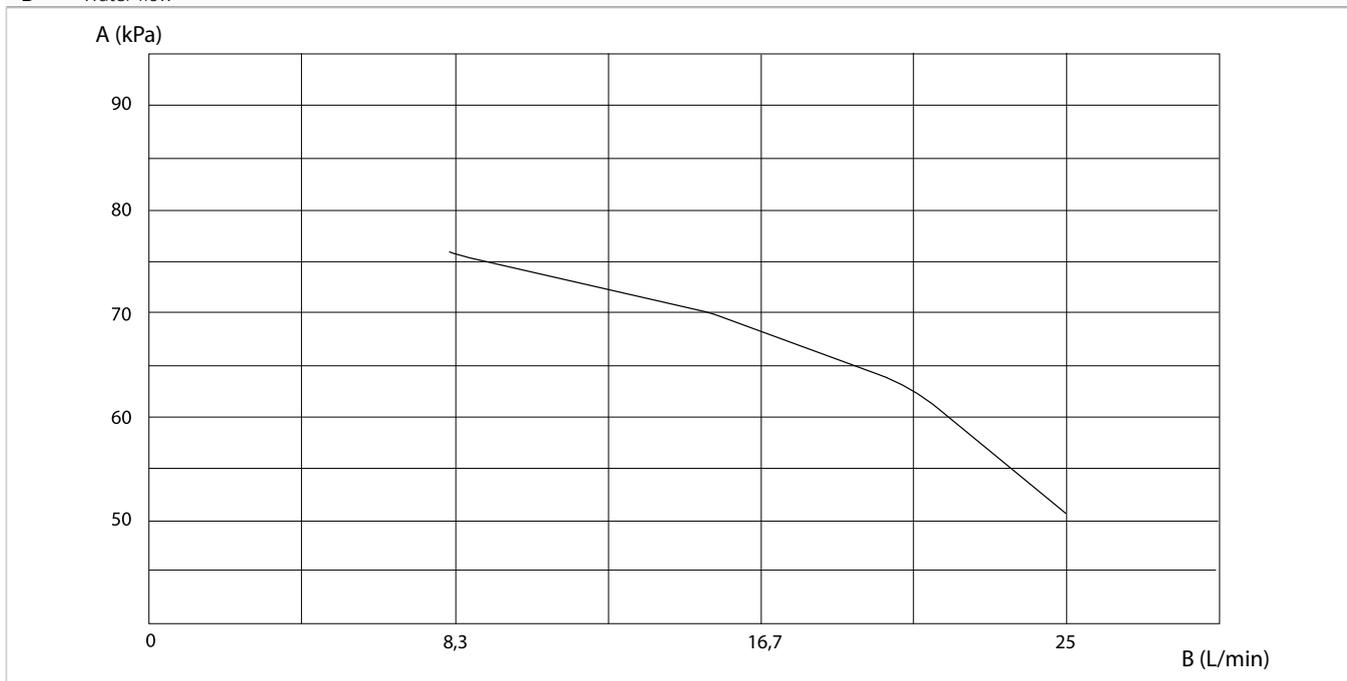
FRAMEWORK



9.4 P1 primary circulation pump graphs

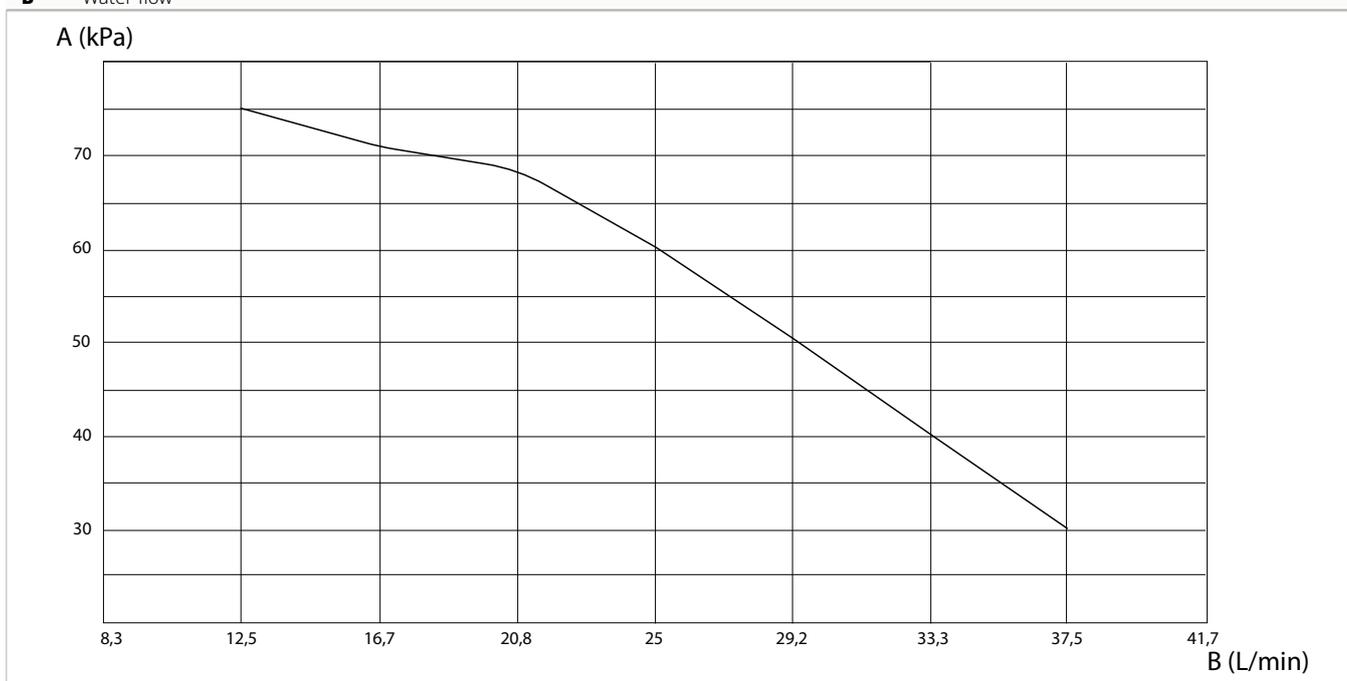
Model 5 - 7

- A** Static pressure available
- B** Water flow

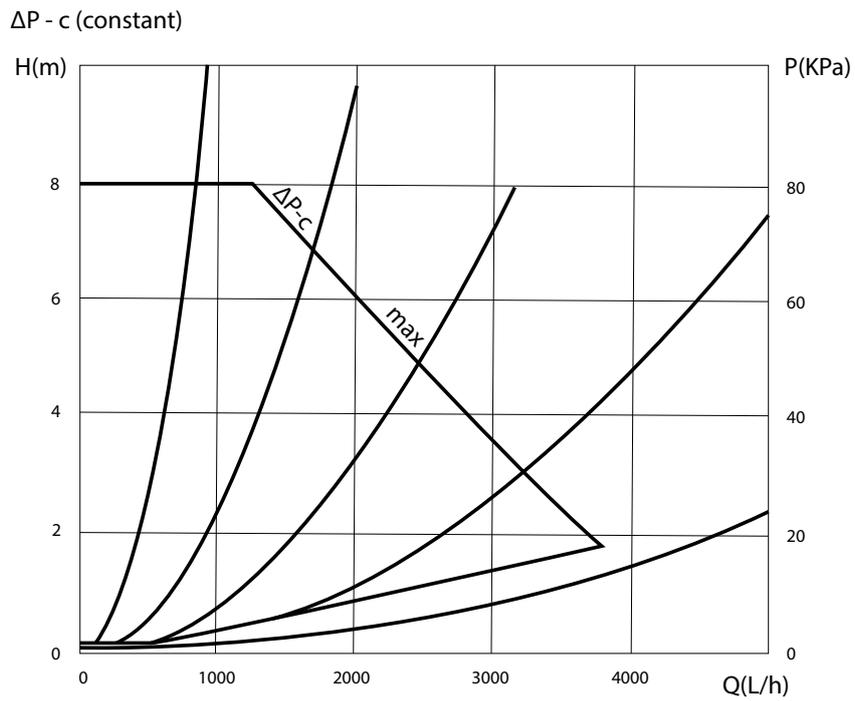


Model 9 - 11 - 13 - 15

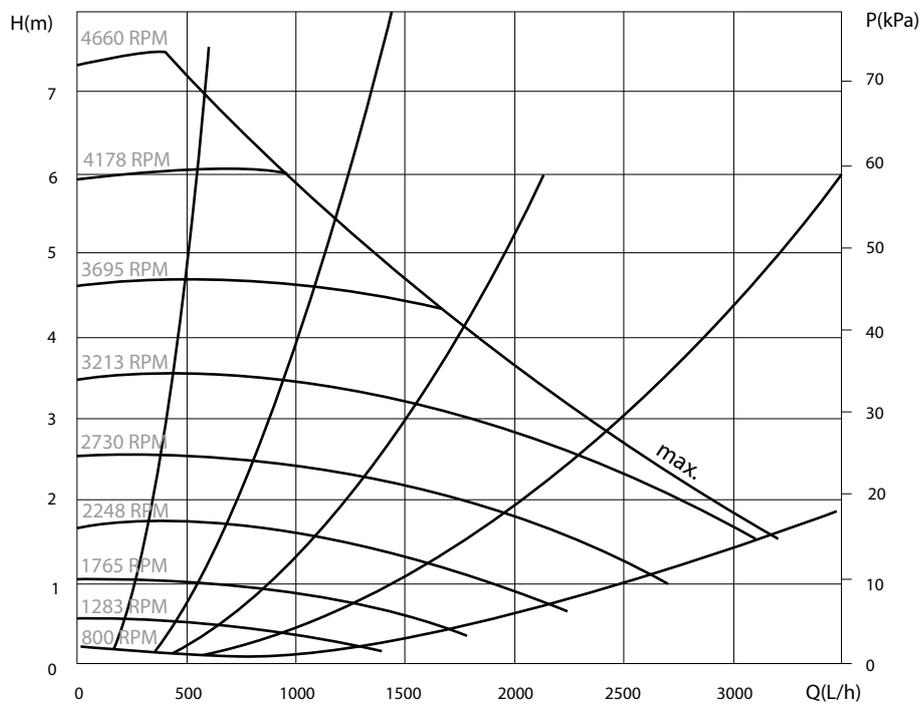
- A** Static pressure available
- B** Water flow



9.5 Secondary circuit pump graphic



9.6 Mixed circuit pump graphic





innova

INNOVA S.r.l.
Via I Maggio 8 - 38089 Storo (TN) - ITALY
tel. +39.0465.670104 - fax +39.0465.674965
info@innovaenergie.com

N420394A - Rev. 01