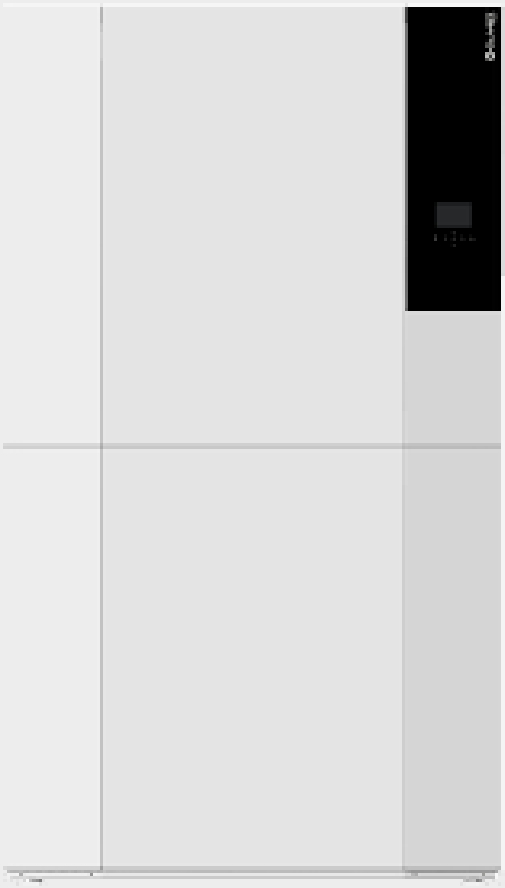
FULLNESS

CiSDN-M EP 1 MR 3.1



Installation and maintenance manual

en

R-454c

16127160006493-B INST
09-2026

Valid from - 2025 (revision B/2026)

Keep this manual together with the wiring diagram in an accessible place for the operator for future reference.

Dear Customer,

We congratulate you on choosing this product.

Clivet has been working for years to offer systems able to assure the maximum comfort for a long time with highly-reliable, efficient, high-quality and safe solutions.

The target of the company is to offer advanced systems, that assure the best comfort and reduce energy consumption as well as the installation and maintenance costs for the entire life-cycle of the system.

With this manual, we want to give you information that is useful for all phases: from reception, installation and use to disposal - so that such an advanced system can provide the best performances during installation and use.

Best regards and have a good read.

CLIVET Spa

The original instructions are written in Italian.

All other languages are translations of the original instructions.

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1. General

1.1 About the manual

- The manual ensures proper installation, use and maintenance of the unit
- this manual is an integral and essential part of the product
- keep this manual together with the wiring diagram in an accessible place for the operator. It should always accompany the product, even if it is transferred to another owner or user
- recipients of the instructions in the manual are indicated in the “Recipients” chapter
- the recipient is indicated at the beginning of each section of the manual
- recipients, to the extent of their responsibility, are required to read the instructions and warnings in this manual as they provide important information on safe installation, use and maintenance.

Remember that:

- the manufacturer accepts no liability for damage to persons or property resulting from failure to observe the rules in this manual
- failure to observe the instructions in this manual will result in forfeiture of the warranty
- the manufacturer reserves the right to make changes or improvements to this documentary material and to the units without prior notice
- visit the manufacturer’s website for up-to-date details
- this manual contains proprietary information, all rights reserved, it may not be reproduced or photocopied, either in whole or in part, without the prior written consent of manufacturer.

1.1.1 Symbols

The symbols in the following chapter can be found in the manual and on the product, and provide quick and clear information for correct and safe use.

1.1.1.1 Safety symbols

Danger

This symbol indicates warnings, failure to comply may result in serious harm to health and fatal injuries.

Warning

This symbol indicates warnings, failure to comply may result in irreparable damage to the product or harm to the environment.

Prohibition

This symbol indicates operations that must never be carried out.

Note

This symbol indicates important information.

1.1.1.2 Editorial symbols

In the texts

Purpose of the action: indicates the purpose of a sequence of actions.
(it is identified by bold text followed by :)

► this symbol indicates actions that are required

○ this symbol indicates the expected result after an action

• this symbol indicates the lists

In the images

1 uniquely indicates a component

Ⓐ indicates a group of components

❶ indicates a sequence of actions

In the images, dimensions are expressed in millimetres unless otherwise indicated.

1.1.1.3 Symbols on the unit

The following symbols are used in some parts of the product:

Caution flammable material:

The refrigerant gas is flammable and odourless. Do not place it near continuously operating ignition sources (naked flames, gas appliances, electric stoves, lit cigarettes, etc.).

Instructions for the User

Read the User Manual carefully before using the product.

Instructions for the User

Read the Installer Manual carefully before installing the product.

Instructions for the Technical Support Service

Read the Technical Support Service Manual carefully before carrying out any operation on the product.

1.1.2 Recipients

1.1.2.1 User

Inexperienced person who is capable of:

- operating the product safely for people, for the product and for the environment
- interpreting elementary diagnostics of faults and abnormal operating conditions
- carrying out simple adjustment, test and maintenance operations.

1.1.2.2 Installer

Experienced and qualified person able to:

- to put the product in a safe operating condition for people, for the product and for the environment
- to comply with the regulations in force in the country of destination
- to provide the user with basic information on safe use and maintenance in accordance with this manual and current national regulations
- comply with the regulations in force in the country of destination.

1.1.2.3 Technical support service

Experienced person, qualified and authorised directly by the manufacturer to:

- carry out a diagnosis of product faults and abnormal operation, possibly using information provided by the user
- rectify faults, carrying out the necessary repairs, replacements and adjustments that will restore the product's ability to function correctly and safely for the people, for the product and for the environment
- comply with the regulations in force in the country of destination.

1.1.3 Document organisation

- The manual is divided into sections, each dedicated to one or more recipients
- the recipient is indicated at the beginning of each section of the manual.

1.2 General safety warnings

⚠ Read the "About the manual" chapter carefully before proceeding with any operation.

⚠ Each chapter contains specific warnings for the operations given therein. These warnings should be read before starting any activities.

⚠ For every operation, always comply with current national regulations.

⚠ All personnel must be aware of the operations and of the hazardous situations that may arise when starting any operations on the unit.

⚠ Any contractual and non-contractual liability for damage caused to persons, animals or property by installation, adjustment or maintenance errors or improper use is excluded.

⚠ Any uses not expressly indicated in this manual are not permitted.

⚠ Do not change or tamper with the device as this can lead to hazardous situations.

⚠ Use appropriate safety clothing and equipment.

⚠ The manufacturer accepts no liability for failure to comply with current safety and accident prevention regulations.

⚠ The manufacturer reserves the right to make changes to its models at any time to improve its product, subject to the essential characteristics described in this manual.

⚠ The manufacturer is not obliged to add these changes to units previously manufactured, already delivered or being built.

⚠ The unit is suitable for use by children aged 8 years and over and by persons with reduced physical, sensory or mental capabilities or lack of experience or knowledge if they are properly supervised or have received instructions on the safe use of the device and have understood the associated hazardous

situations. Children must not play with the device. Cleaning and maintenance operations must not be carried out by children without supervision.

- It is forbidden to touch the device with wet or damp parts of the body.
- It is forbidden to carry out any operation before disconnecting the device from the mains power supply by turning the system's main switch to "off".
- It is forbidden to change the safety or control devices without the device manufacturer's authorisation and instructions.
- It is forbidden to pull, unplug or twist the electrical cables coming out of the device, even if it is disconnected from the mains power supply.
- It is forbidden to introduce objects and substances through the air intake and supply grills.
- It is forbidden to open the access doors to internal parts of the unit without first turning the system's main switch to "off"

2. Information on refrigerant gas

This section contains specific safety information and warnings on the use of R-454C refrigerant.

⚠ For more comprehensive information, read the safety data sheet for the refrigerant used

⚠ The refrigerant used inside this unit is highly flammable. A refrigerant leak that is exposed to an external ignition source can create fire risks.

The refrigerant quantity is indicated on the unit plate

Quantity of refrigerant charged at the factory and tons of equivalent CO_2:

	Refrigerant (kg)	**Equivalent CO_2 tons**
Air module	0,85	0,124
Option Water module	1,0	0,148

Physical characteristics of the R-454C refrigerant		
Safety class (ISO 817)	A2L	
GWP (Global Warming Potential)	148	
LFL Low flammability limit	0,289	kg/m^3 @ 60°C
BV Burning velocity	1,8	cm/s
Normal boiling point	-46,5	°C
GWP-AR5	148	100 yr ITH
GWP-AR5	146	ARS 100 yr ITH
Self-ignition temperature	414 (±10)	°C
Lubricant compatibility	POE (Polyol Ester)	

⚠ The values are below the maximum critical value specified in EN 60335-2-40 m1 (1.7Kg).

ⓘ If the total refrigerant charge in the system is ≤1.7 kg, there are no minimum surface requirements.

ⓘ According to this standard, there are no minimum space requirements for installation

2.1 Warnings for the installer and the Technical Support Service

ⓘ The use of flammable refrigerants entails specific safety warnings for certain operations during installation and maintenance.

2.2 General warnings

⚠ The refrigerant used inside this unit is highly flammable. A refrigerant leak that is exposed to an external ignition source can create fire risks.

⚠ Before starting work on systems containing flammable refrigerants, safety checks must be carried out to ensure that the risk of combustion is minimised.

⚠ Installation and maintenance personnel and other people working in the area should be informed about the nature of the work to be done.

⚠ Do not pierce or burn.

⚠ The unit must be protected from accidental impacts so as to prevent mechanical damage that would cause a refrigerant leak.

⚠ Ensure that there are no continuously operating ignition sources (naked flames, gas appliances, electric stoves, lit cigarettes, etc.).

⚠ Do not place flammable objects (spray cans) within 1 metre of the exhaust air.

⚠ Do not use products to accelerate the defrosting process or to clean, other than those recommended by the manufacturer.

⚠ Auxiliary devices that can be a potential source of ignition must not be installed in air ducts. Examples of such potential sources of ignition are hot surfaces with temperatures above 700 °C and electrical switching devices.

⚠ Supply and return air ducts must be routed directly into the space to be conditioned. Open areas such as false ceilings must not be used as return air ducts.

⚠ Only auxiliary devices approved by the unit manufacturer or declared compatible with the refrigerant must be installed in the connection ducts.

2.3 Safety checks and procedures

Before starting an intervention, carry out appropriate safety checks to ensure that the risk of ignition is minimal.

Follow these precautions before starting an intervention:

2.3.1 Checks in the area

Perform the following checks:

- carry out safety checks to ensure that the risk of combustion is minimised
- avoid working in tight spaces
- mark the area around the work space
- ensure safe working conditions around the area and check that there is no flammable material.

2.3.2 Work procedures

- Interventions must be carried out according to a controlled procedure in order to minimise the risk of flammable gases or vapours being present during the work.

2.3.3 Checking the presence of refrigerant

Perform the following checks:

- the area must be checked using an appropriate refrigerant detector before and during the intervention so that the technician is aware of potentially flammable atmospheres
- check that the leak detector is suitable for use with flammable refrigerants (it does not generate sparks and is adequately sealed or intrinsically safe)
- check that it is placed in a suitable space to promptly check for leaks linked to the maintenance activity carried out

⛔ It is forbidden to use leak detectors with halogen lamps.

⚠ Remember that R-454C refrigerant is heavier than air.

2.3.4 Presence of fire extinguishers

When performing hot operations on refrigeration equipment or associated components:

- keep a suitable extinguisher at hand
- keep a dry-powder or CO_2 extinguisher near the work area.

2.3.5 Absence of ignition sources

When operations to be carried out on a refrigeration system involve exposing piping containing or having contained a flammable refrigerant.

Perform the following checks:

- all possible ignition sources, including cigarette smoke, should be kept at a sufficient distance from the installation, fixing, disassembly and disposal site, as flammable refrigerant may escape into the surrounding space during these operations.
- before starting the intervention, the area around the unit must be inspected to check that it does not present ignition or flammability hazards.

⛔ It is forbidden to use any ignition source that could generate a risk of fire or explosion.

⛔ It is forbidden to smoke near the unit. “NO SMOKING” signs must be affixed.

⛔ It is forbidden to use a mobile phone near the unit.

2.3.6 Area ventilation

Before working on the system or performing hot operations.

Perform the following checks:

- the area must either be open or adequately ventilated
- ventilation must be constant throughout the entire operation and be capable of safely dispersing all refrigerant released and preferably expelling it outside into the atmosphere.

2.3.7 Checks on the refrigeration system

Perform the following checks:

- if an electrical component is replaced, the new one must be suitable for the intended use and in accordance with the correct specifications
- follow the manufacturer’s maintenance and service instructions in all circumstances
- when in doubt, consult the manufacturer’s technical department
- the charge volume must be suitable for the room volume and the intended use in which the components containing the refrigerant are installed, see the electrical installation requirements in EN 378
- ventilation devices and openings must open properly and not be obstructed
- if an indirect refrigerant circuit is used, the presence of refrigerant in the secondary circuits must be checked
- equipment markings must remain visible and legible
- markings and indications that become illegible must be corrected
- pipes or other components of the refrigerant circuit must be installed in locations where exposure to potentially corrosive substances is unlikely for components containing the refrigerant, unless they are made of materials inherently resistant to corrosion or adequately protected against the risk of corrosion.

2.3.8 Checks on electrical devices

Remember that:

- the fixing and maintenance procedures for electrical components must include initial safety checks and component inspection procedures
- if a defect is found that may generate safety risks, the power supply to the circuit must be interrupted until the problem is satisfactorily resolved
- if the problem cannot be solved immediately, but it is necessary to keep the system in operation, an appropriate temporary solution must be adopted
- the situation should be communicated to the owner of the unit so that all persons concerned can be duly informed

Carry out the following checks:

- check that the capacitors are discharged: this procedure must be performed safely to avoid the possibility of sparks
- check that there are no live components or wires exposed while charging, resetting or venting the system
- check for ground fault interruptions
- check that the unit is not powered and if necessary disconnect the power supply before proceeding with the next steps

2.3.9 Fixing sealed components

Remember that:

- all electrical users must be disconnected from the equipment before removing the seal covers, etc.
- if it is absolutely necessary to have a power supply during the intervention, a permanent leak detection method must be set up at the most critical point to signal any potentially dangerous situations
- the use of silicone sealants may make some types of leak detection equipment less effective.

Ensure that:

- the casing must not be altered to such an extent that the required level of protection is compromised, including damage to cables, excessive number of connections, use of terminals

that do not conform to the original specifications, damage to seals, incorrect assembly of glands, etc.
- the device must be installed safely.
- seals or sealing materials have not deteriorated to such an extent that they no longer ensure a perfect seal keeping flammable atmospheres from entering
- spare parts must comply with the manufacturer's specifications.

2.3.10 Fixing intrinsically safe components

Remember that:

- before applying capacitance or permanent inductance loads to the circuit, check that this operation does not result in the permissible voltage and current values for the equipment in use being exceeded
- intrinsically safe components are the only types of components that can be operated under voltage in the presence of a flammable atmosphere
- the test device must have the correct nominal characteristics
- only use parts specified by the manufacturer to replace components
- other components can cause ignition of the refrigerant released into the atmosphere.

2.3.11 Wiring

Check that:

- the wiring must not be exposed to wear, corrosion, excessive pressure, vibration, sharp edges or other adverse environmental influences.

ⓘ The check should also take into account the effects of ageing or continuous vibration from compressors, fans or other similar sources.

2.3.12 Detection of flammable refrigerants

⛔ The use of potential ignition sources for the search or detection of refrigerant leaks is prohibited under any circumstances.

⛔ The use of halogen torches or other naked flame detection systems is not permitted.

2.3.13 Leak detection methods

Remember that:

- electronic leak detectors can be used to detect flammable refrigerants, but their sensitivity may not be adequate or require recalibration
- detection equipment must be calibrated in a refrigerant-free area
- the detector is not a potential ignition source and is suitable for the refrigerant
- leak detection equipment must be configured at a percentage of the lower flammability limit (LFL) of the refrigerant and be calibrated for the refrigerant used with confirmation of the appropriate gas percentage (max. 25%)
- leak detection fluids are suitable for use with most refrigerants but the use of detergents containing chlorine should be avoided, as chlorine can react with the refrigerant and corrode copper piping.

If there is a refrigerant leak:

- remove or extinguish all naked flames
- if brazing is required, all of the refrigerant must be removed from the system, or isolated (by means of shut-off valves) in a part of the system away from the leak
- purge the system with oxygen-free nitrogen (OFN) both before and during brazing.

2.3.14 Removal and evacuation

Follow the procedure below:

► remove the refrigerant
► purge the circuit with inert gas
► evacuate
► purge again with inert gas
► open the circuit by cutting or brazing

Remember that:

- the refrigerant charge can be recovered in the appropriate cylinders
- the system must be purged with oxygen-free nitrogen to make the unit safe
- it may be necessary to repeat this procedure several times
- compressed air or oxygen must not be used for this operation
- purging can be performed by introducing oxygen-free nitrogen into the vacuum circuit in the system and continuing to fill until the operating pressure is reached, then venting into the atmosphere and recreating the vacuum
- this procedure must be repeated until the refrigerant is completely exhausted from the system.

When the last charge of OFN is added:

- the system must be vented to barometric pressure to allow the work to be performed

ⓘ This operation is absolutely essential if brazing operations are to be carried out on the piping.

- check that the vacuum pump outlet is not closed for any ignition source and that good ventilation is

available.

2.3.15 Charging operations

Remember that:

- when using charging equipment, avoid contamination with different refrigerants
- cylinders must be kept upright
- before the refrigerant is charged into the system, ensure that it is properly earthed
- the system must be labelled after charging (if the label is not already present)
- extreme care must be taken to avoid overfilling or underfilling the system
- before recharging the system, the pressure must be tested using oxygen-free nitrogen
- after charging, but before start-up, the system should not leak
- an additional check for leaks must be carried out before leaving the site.

2.3.16 Decommissioning

Remember that:

- before performing this procedure, it is essential that the technician is fully familiar with the equipment and all of its components
- all refrigerants must be recovered following safe procedures
- an oil and refrigerant sample must be taken before proceeding
- before reusing the recovered refrigerant, it should be analysed
- before starting the procedure, it is essential to check that the power supply is available
- electrically isolate the system.

Before proceeding, check that:

- mechanical equipment for handling refrigerant cylinders is available, if necessary
- the necessary personal protective equipment is available and is used
- the recovery process is carried out under the constant supervision of a competent person
- the recovery equipment and cylinders comply with the regulations in force.

To recover:

- if possible, transfer the refrigerant to the unit using a “pump-down” procedure
- if it is not possible to create a vacuum, use a manifold that allows the refrigerant to be exhausted from various parts of the system
- place the cylinder on the scale
- start the recovery device and use it according to the manufacturer’s instructions
- do not fill the cylinders excessively. (Do not exceed 80% of the liquid volume)
- do not exceed the maximum working pressure of the cylinder, even temporarily
- after filling the cylinders correctly and completing the procedure, transfer the cylinders and equipment from the site as soon as possible and close all shut-off valves on the equipment.
- before charging the recovered refrigerant into another refrigeration system, it must be cleaned and checked.

2.3.17 Labelling

Remember that:

- the device must be labelled to indicate that it has been decommissioned and emptied of refrigerant
- the label must be dated and signed
- check that labels indicating the content of flammable refrigerant are affixed to the device.

2.3.18 Recovery

When discharging refrigerant from a system for maintenance or decommissioning reasons.

Check that:

- the refrigerant is removed safely
- only cylinders suitable for refrigerant recovery are used
- the number of cylinders required to hold the entire system charge is available
- all cylinders to be used are designed for the refrigerant recovered and labelled for that refrigerant (special refrigerant recovery cylinders)
- the cylinders are equipped with a pressure relief valve and well-functioning shut-off valves
- empty recovery cylinders are evacuated and, if possible, cooled before recovery
- the recovery equipment is in good working order, accompanied by a set of instructions at hand, and suitable for the recovery of flammable refrigerants
- a set of well-functioning calibrated scales is provided
- the pipes are complete with decoupling fittings that are leak-free and in good condition
- the recovery equipment is in good working order, has been properly maintained and the associated electrical components are sealed to prevent a risk of ignition in the event of refrigerant leakage. If in doubt, consult the manufacturer.
- the refrigerant is returned to the supplier in the correct recovery cylinders, accompanied by the relevant waste identification form
- different types of refrigerant are not mixed in the

recovery units, especially in the cylinders
- if compressors or compressor oils are decommissioned, evacuate them to an acceptable level to prevent flammable refrigerant from remaining inside the lubricant
- the evacuation procedure is carried out before returning the compressor to the suppliers
- only the electric heating on the compressor body is used to accelerate this process
- when oil is extracted from the system, it is drained using a safe procedure.

2.3.19 Transportation, marking, storage and disposal of units

- comply with current national regulations.

2.4 Receipt and handling

On receipt of the unit:

- check if there is refrigerant inside the packaging using an electronic leak detector suitable for the system refrigerant
- if there is, it is likely that the refrigerant circuit is damaged
- In this case, the unit must not be installed and the Technical Support Service must be called.

3. Presentation of the product

3.1 Identification

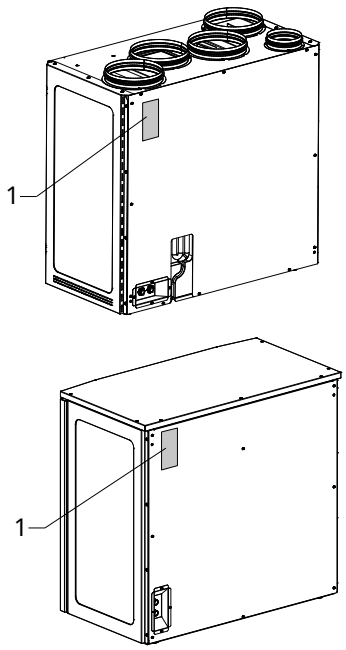
The serial number label is positioned on the unit and allows to identify all the unit features.

The matriculation plate shows the indications foreseen by the standards, in particular:

- unit type
- serial number
- year of manufacture
- wiring diagram number
- electrical data
- type of refrigerant
- refrigerant charge
- manufacturer logo and address

ⓘ The serial number uniquely identifies each unit and enables specific parts to be identified.

⚠ Tampering, removal, missing identification labels or anything else that does not allow the product to be safely identified, makes installation and maintenance operations difficult.



1 Serial number label

3.2 Regulatory framework

The relevant regulatory framework can be found in the declaration of conformity enclosed with this document.

3.3 Intended use

The unit is designed for:

- indoor installation
- air treatment
- the production of domestic hot water
- operation within the limits and with their performance characteristics set out in this document.

3.4 Description

Use the unit for air conditioning, air renewal and domestic hot water production (if the dedicated DHW module is present).

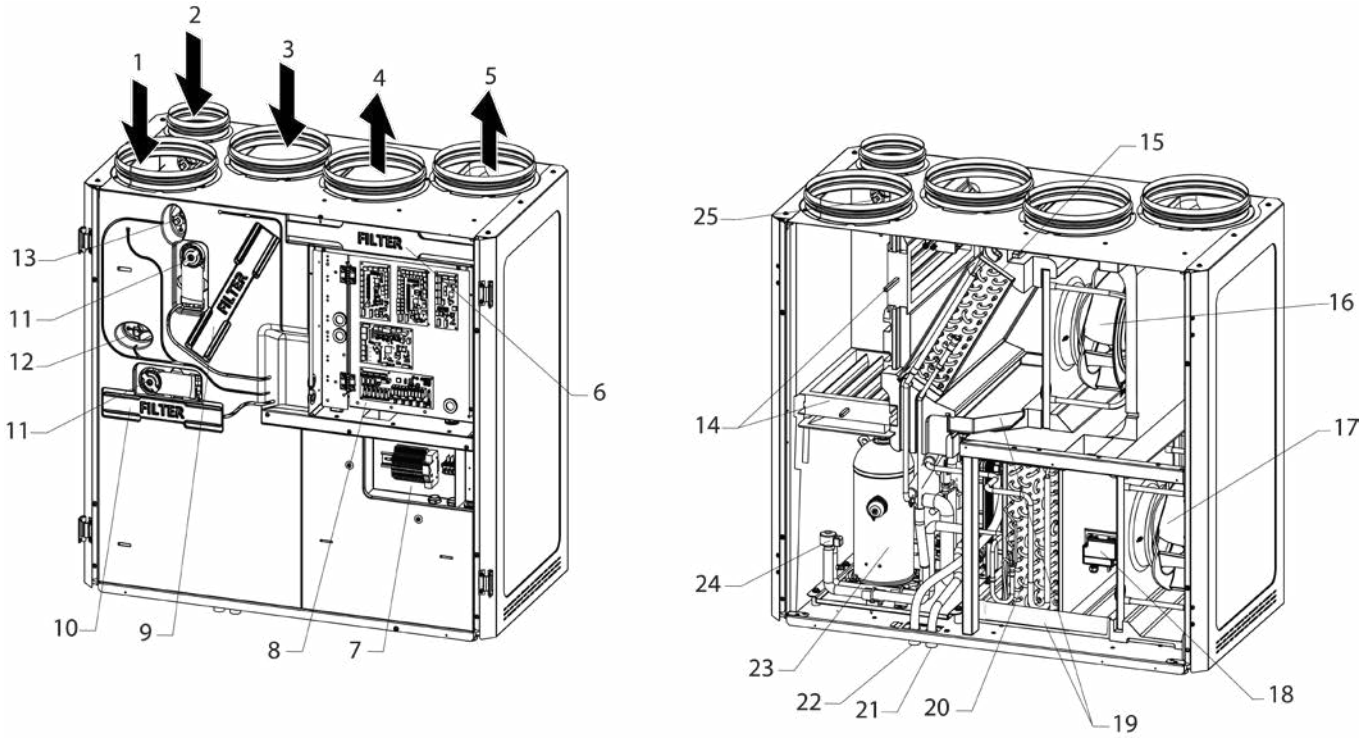
keep to the limits foreseen in the technical schedule and in this manual

The manufacturer accepts no responsibility if the equipment is used for any purpose other than the intended use.

Do not treat air containing:

- high concentrations of dust
- aggressive substances
- industrial processing residues

3.5 Main components



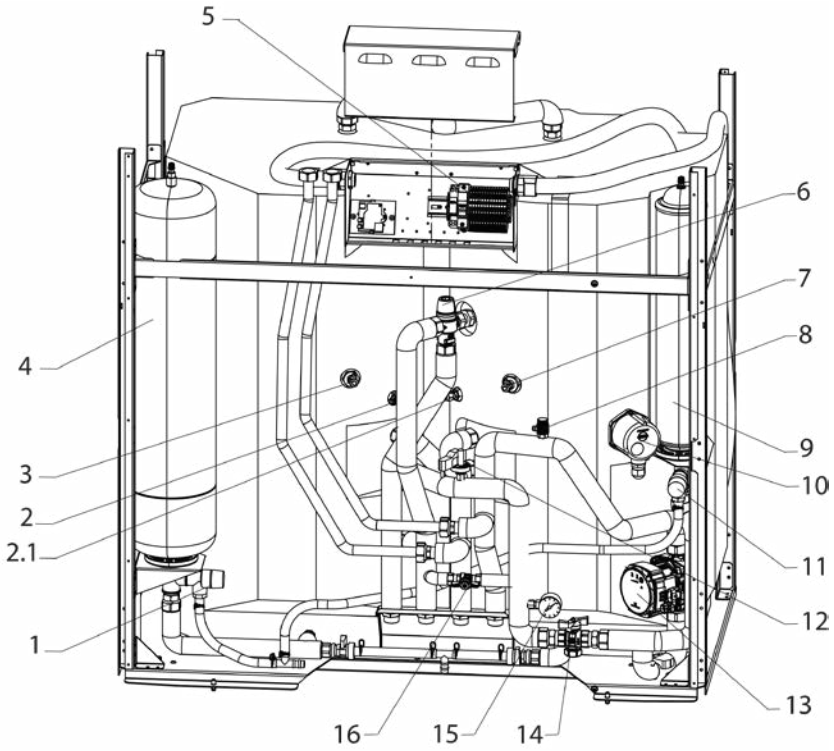
No.	Component	No.	Component
1	Outdoor air intake	14	Air damper
2	Extraction of stale air	15	Treatment coil
3	Return in ambient	16	Treatment fan
4	Supply in ambient	17	Source fan
5	Exhaust outdoors	18	Exhaust air compound flow meter
6	Supply air filter	19	Condensation collection basin
7	Terminal block for customer connections	20	Source coil
8	Electrical panel	21	Water inlet from module (option)
9	Return air filter	22	Water outlet to module (option)
10	Outdoor air filter	23	Compressor
11	Damper actuator	24	Electronic expansion valve
12	Outdoor humidity probe Option	25	Anemometer
13	Anemometer		

ⓘ The images are provided for illustrative purposes only.

3.6 Hydraulic module

Option

Main components



No.	Component	No.	Component
1	DHW pressure relief valve	9	System expansion tank
2	T5L tank temperature probe	10	Electric heater
2.1	T5H tank temperature probe	11	System pressure relief valve
3	Electronic anode	12	System load pressure switch
4	DHW expansion tank	13	Circulator
5	Terminal block for customer connections	14	Shut-off valve with filter
6	DHW mixing valve	15	System pressure gauge
7	Electronic anode	16	System filling tap
8	System vent valve		

ⓘ The images are provided for illustrative purposes only.

3.7 Components supplied with the unit

The following components can be found in the package:

Description	Quantity
Installation and maintenance manual	1
User interface manual	1
Air module lifting brackets	4

3.8 Compatible accessories

The list of accessories can be found in the technical bulletin.

4. Before installation

4.1 Prerequisites

⚠ This section is intended exclusively for the Installer.

⚠ Refer to the Technical data chapter for details.

⚠ Follow the safety instructions in the “About the refrigerant” chapter.

⚠ When handling the unit, use equipment appropriate to the weight of the unit.

⚠ Check that all handling equipment complies with local safety regulations (crane, forklifts, ropes, hooks, etc.).

⚠ During manual operations, it is mandatory to comply with the maximum weight per person as required by current legislation.

⚠ Provide personnel with personal protective equipment appropriate for the situation, such as hard hat, gloves, safety shoes, etc.

⚠ Observe all safety procedures in order to guarantee the safety of the personnel present and the material.

⚠ Keep the unit packed during handling.

⚠ Remove the packaging when you have reached the point of installation.

4.2 Reception

Before accepting the delivery, check:

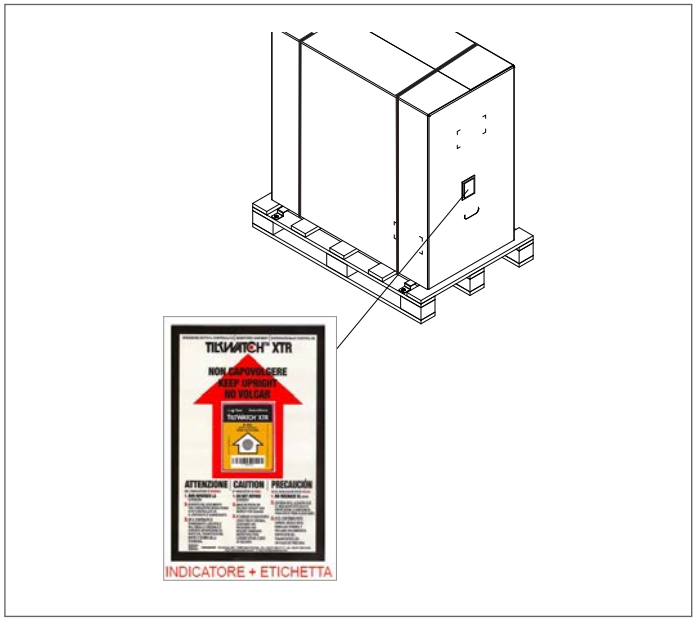
- that the unit has not been damaged during transport
- that the materials delivered match those indicated on the transport document, comparing the data with the serial number label on the packaging.

In case of damage or anomaly:

- immediately write down the damage found on the transport document and quote this sentence: “Accepted with reservation due to evident shortages/damages during transport”
- contest by fax and registered mail with proof of receipt to the supplier and carrier.

ⓘ Any disputes must be made within 8 days from the date of the delivery. Complaints after this period are invalid .

Unit’s slope indicator



4.3 Storage

Respect the indications on the outside of the pack.

In particolar:

- minimum environment temperature -10 °C (possible damage to components)
- maximum environment temperature +50°C
- maximum relative humidity 95% (possible damages to electrical components).

⚠ Exceeding these limits can cause irreversible damage to the unit.

4.4 Handling

⚠ Check that all handling equipment complies with local safety regulations (crane, forklifts, ropes, hooks, etc.).

⚠ Provide personnel with personal protective equipment appropriate for the situation, such as hard hat, gloves, safety shoes, etc.

⚠ Observe all safety procedures in order to guarantee the safety of the personnel present and the material.

⚠ Verify unit weight and handling equipment lifting capacity.

⚠ Do not leave packages loose during transport

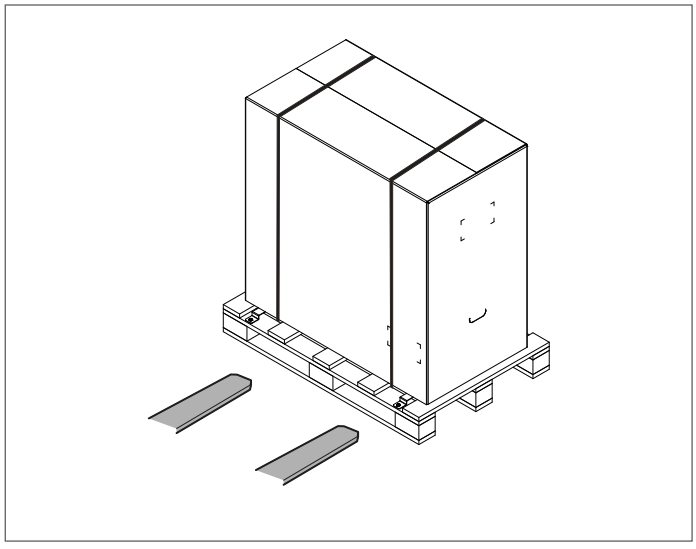
1 Identify critical points during handling (interrupted routes, flights of stairs, steps, doors);
2 Protect the unit adequately to avoid damage;
3 Lift and keep it balanced;

The unit can be handled:

- with a forklift truck or pallet truck.

The following examples are guidelines; the choice of means and handling modes will depend on the actual installation situation.

Lifting with a forklift truck



⚠ When the load is lifted off the ground, stay clear of the area below and around it.

⚠ Identify critical points during handling (disconnected routes, flights, steps, doors).

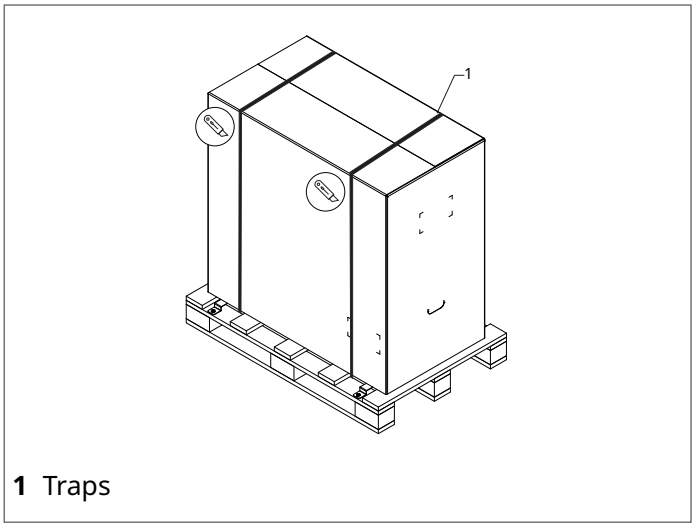
⚠ Before starting the handling, make sure that the unit is stable.

4.5 Removal of the packaging

On reaching the installation site.

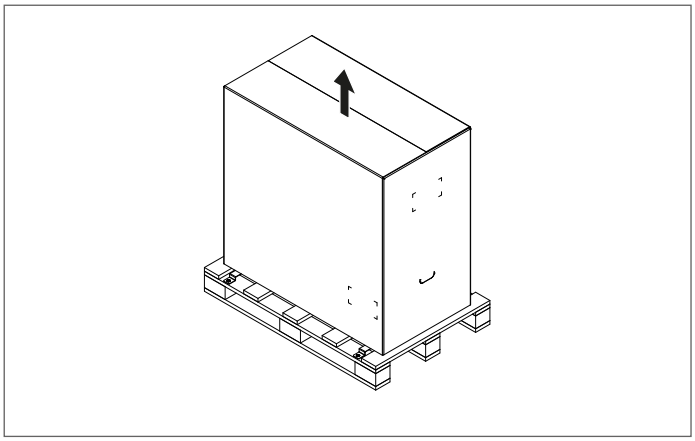
Carry out the following procedure:

► cut the straps



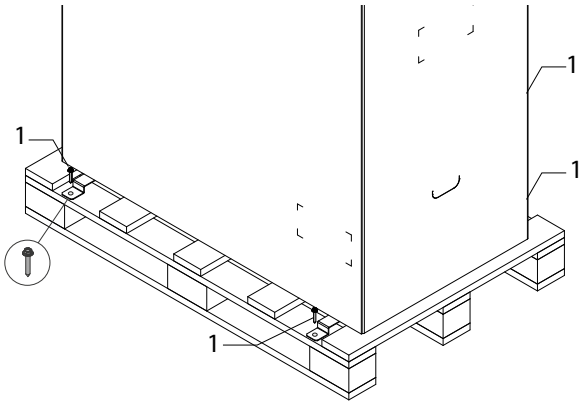
1 Traps

► lift and remove the packaging



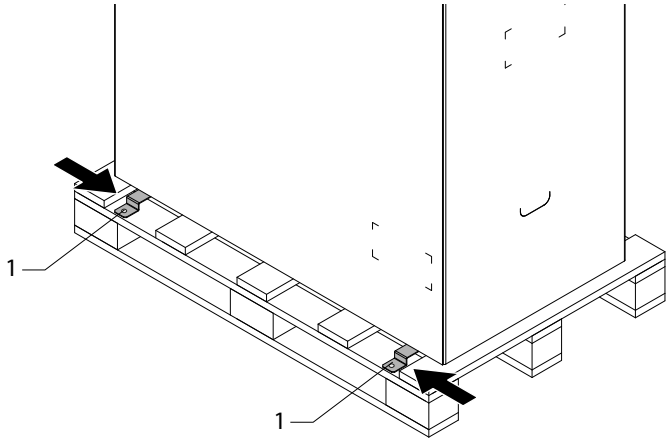
► remove the protection elements
► remove the components supplied

► remove the fixing screws from the pallet



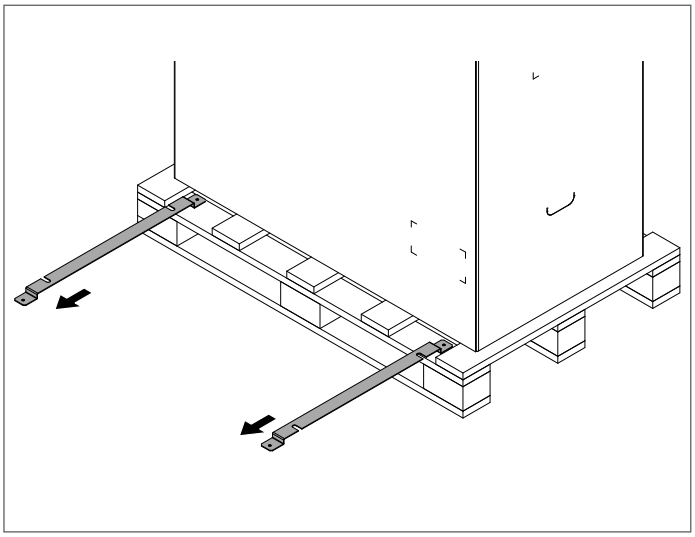
1 Fixing screws

► move the brackets



1 Brackets

► rimove the brackets
► remove the unit with suitable means



⚠ Be careful not to damage the unit.

⚠ Keep the packaging material out of children's reach as it may be dangerous.

⚠ Recycle and dispose of the packaging material in conformity with local regulations.

5. Installation

5.1 Prerequisites

⚠ This section is intended exclusively for the Installer.

⚠ Refer to the Technical data chapter for details.

⚠ Follow the safety instructions in the “About the refrigerant” chapter.

⚠ The electrical system and its components must be designed by a qualified technician who must work according to the rules of good practice and national regulations.

⚠ Installation must be in accordance with local regulations. If they do not exist, follow EN60335-1.

⚠ The maximum altitude allowed for installation is 2000 m a.s.l. Reference to EN60335-2-40.

Ensure that:

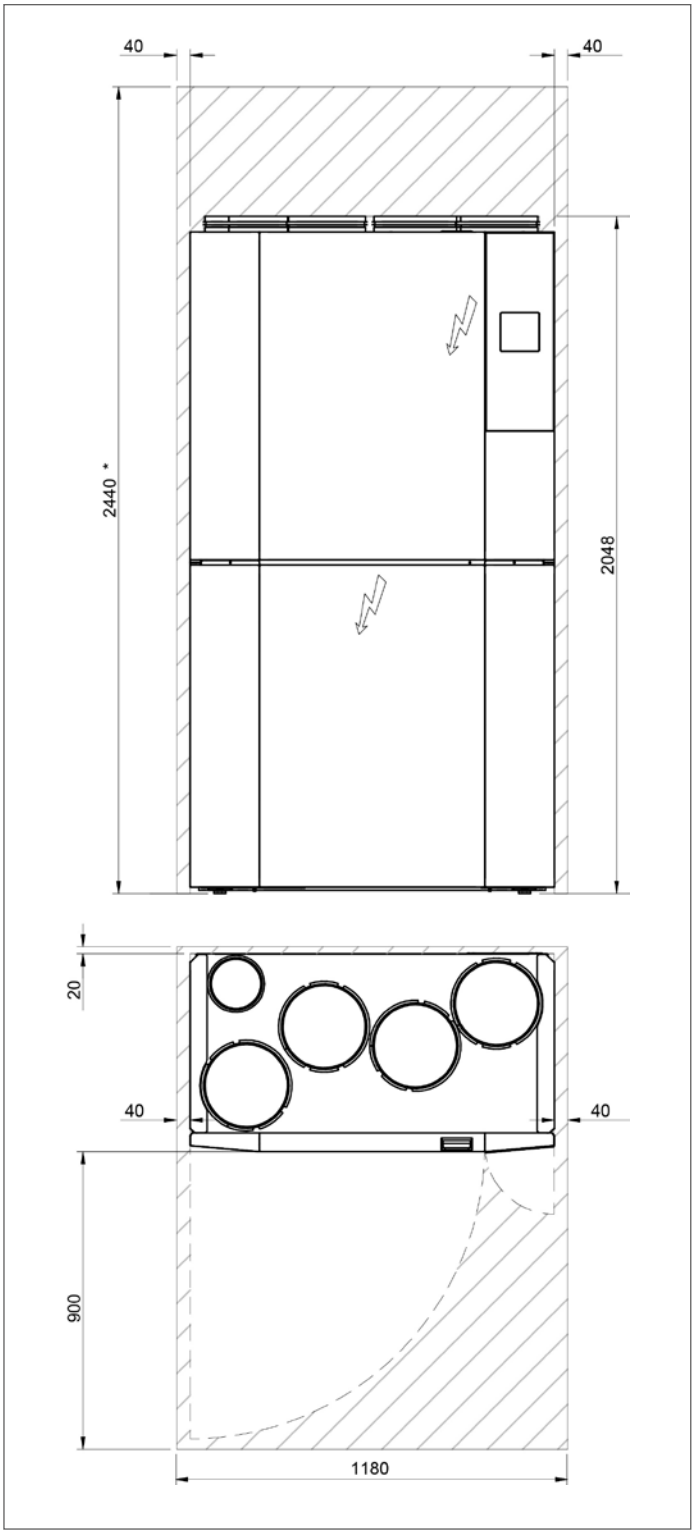
- the location can be accessed safely
- the clearances are ensured
- a suitable place for condensate water discharge is available nearby
- the ducting spaces are adequate
- the air inlet and outlet must be free from obstacles and exposure to strong winds
- the base should be able to bear the weight of the unit and be suitable for its installation without additional noise or vibrations
- the operating noise and exhaust air flow must not disturb neighbours
- the area around the unit is free from obstacles
- the unit must be placed in an area not exposed to freezing temperatures
- the location of the unit does not disturb neighbours
- the support surface or the wall can withstand the weight of the unit
- the floor or wall section does not interfere with power lines or water piping and no load-bearing elements of the construction are compromised.

⚠ **Avoid therefore:**

- avoid places that may be subject to flooding and humidity (e.g. laundries)
- heat or pollution sources close to the unit (chimneys, extractors, etc.)
- places near the sea where the air is salty
- thermal areas where there are corrosive gases
- industries where voltage strongly fluctuates

5.2 Clearances

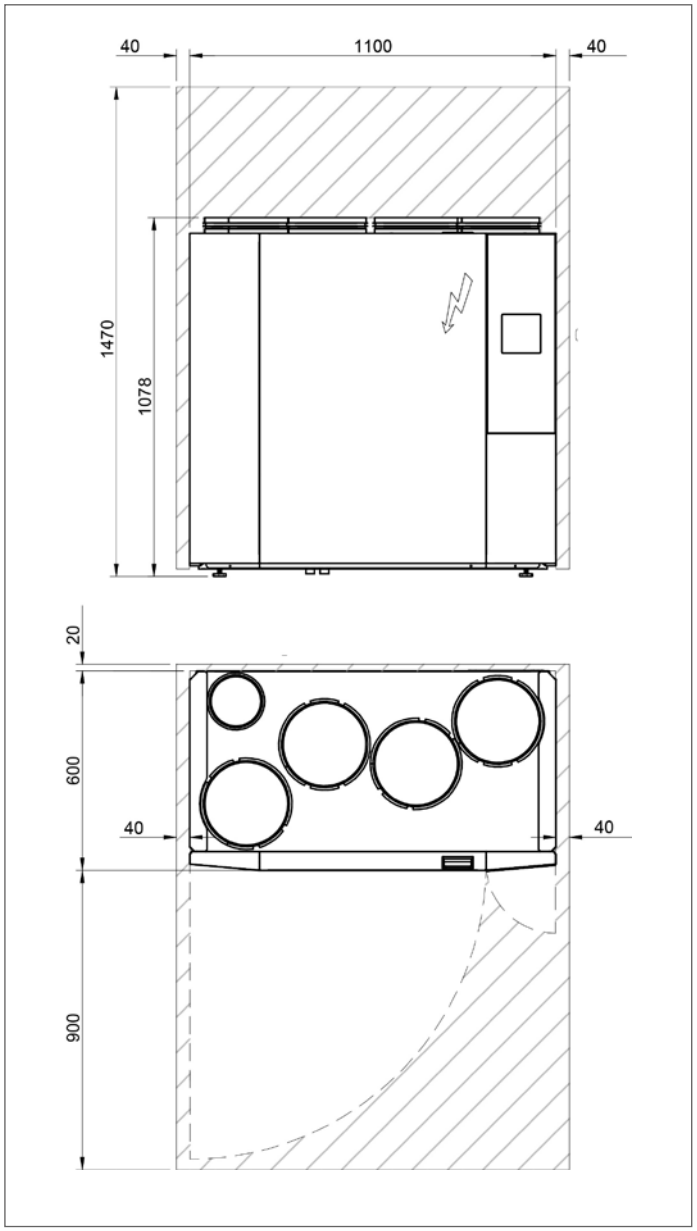
The clearances for installation and maintenance of the unit are shown in the figure.



* Also consider the space required for ducting

⚠ Respect all functional spaces.

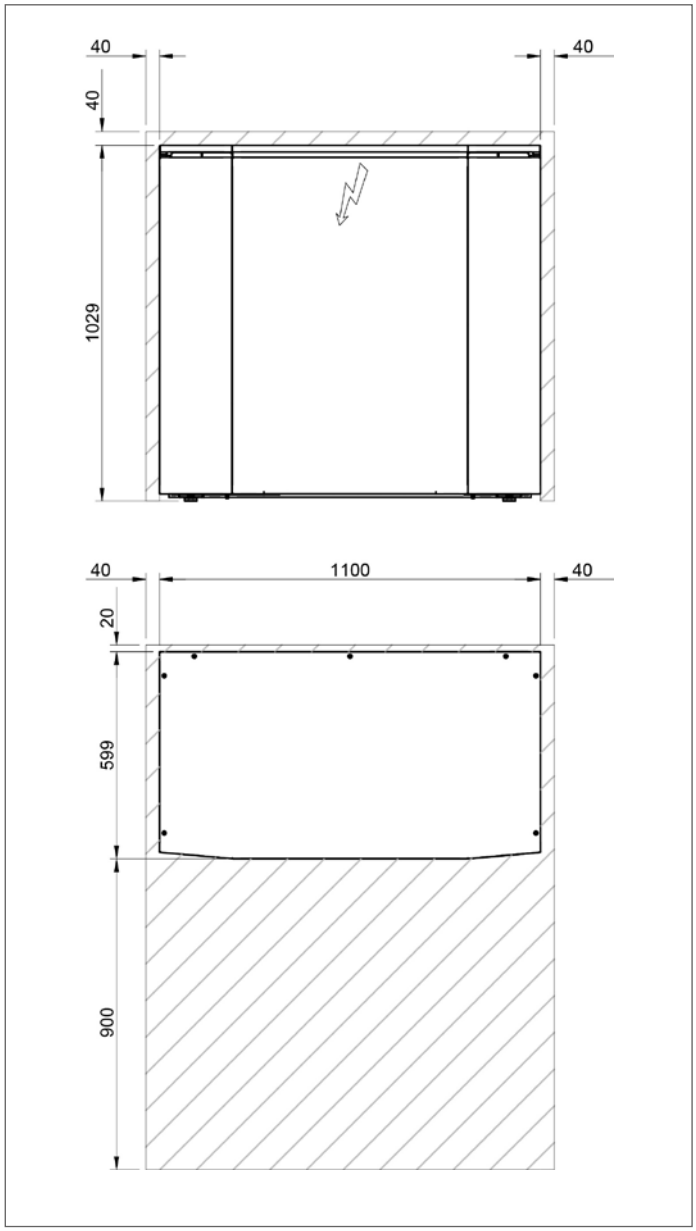
5.2.1 Air Module



* Also consider the space required for ducting

⚠ Respect all functional spaces.

5.2.2 Water Module



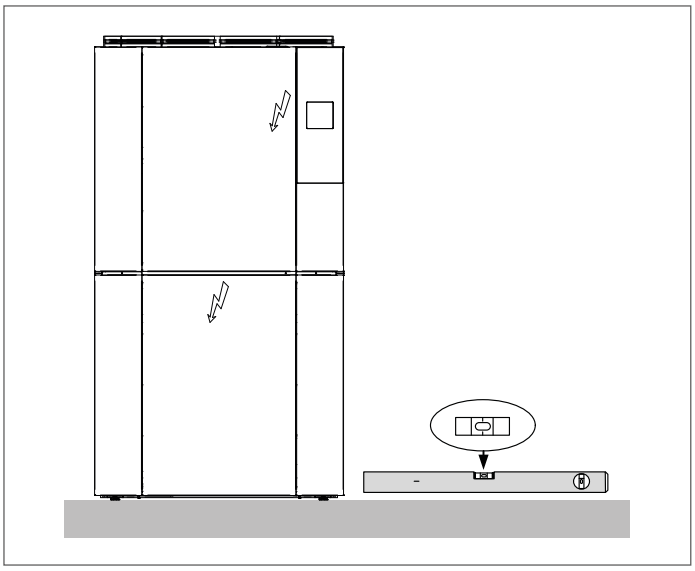
⚠ Respect all functional spaces.

5.3 Air module unit plus Water module unit



⚠ Check that the floor can support the unit's 510 kg weight when in operation

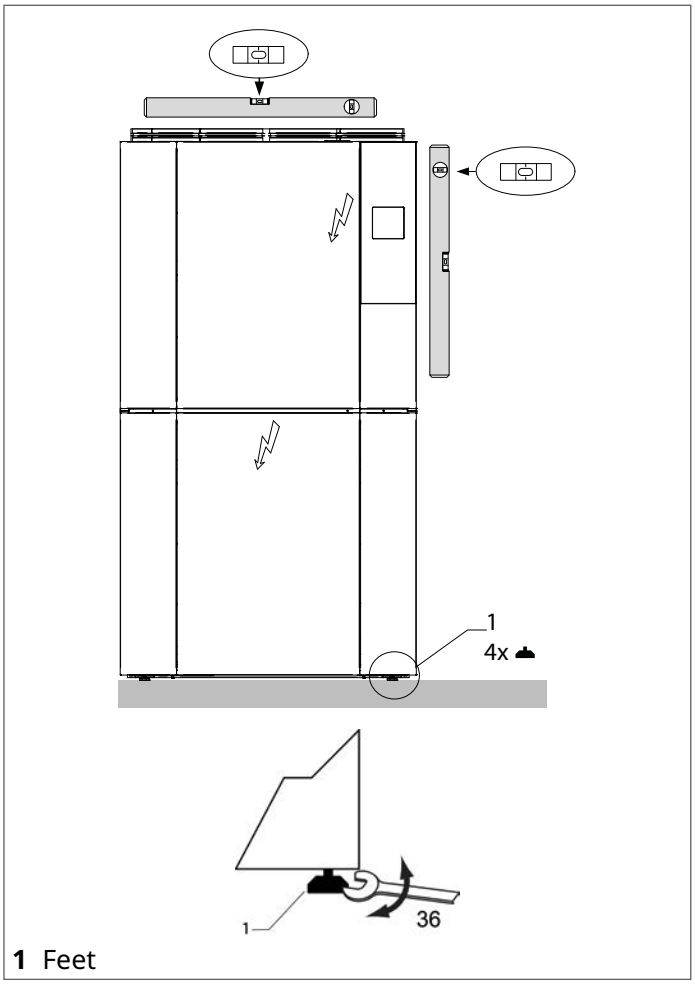
Positioning



► position the unit on a flat surface
► place the back against a wall (respect functional spaces)

Levelling

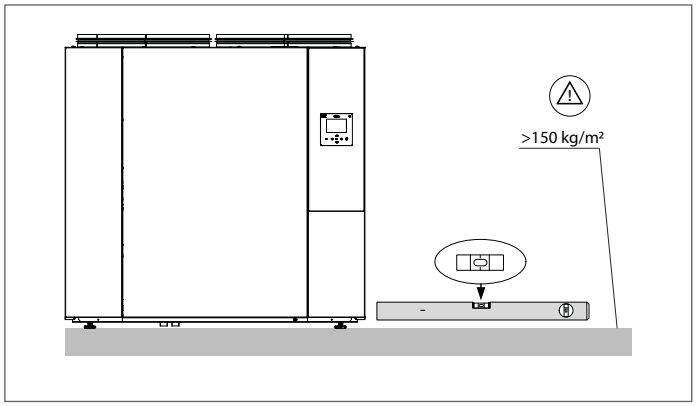
► adjust the support feet



1 Feet

5.4 Air Module

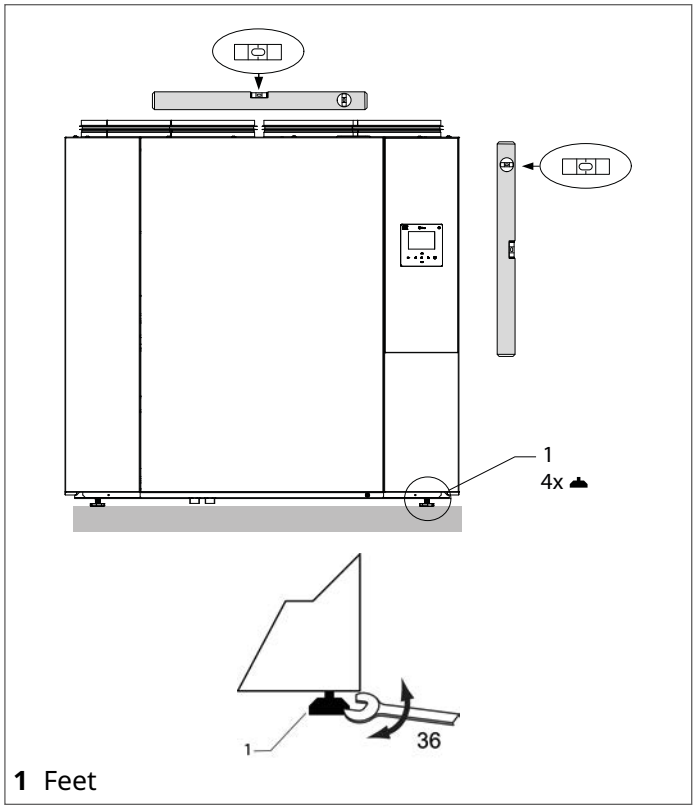
Positioning



► position the unit on a flat surface
► place the back against a wall (respect functional spaces)

Levelling

► adjust the support feet

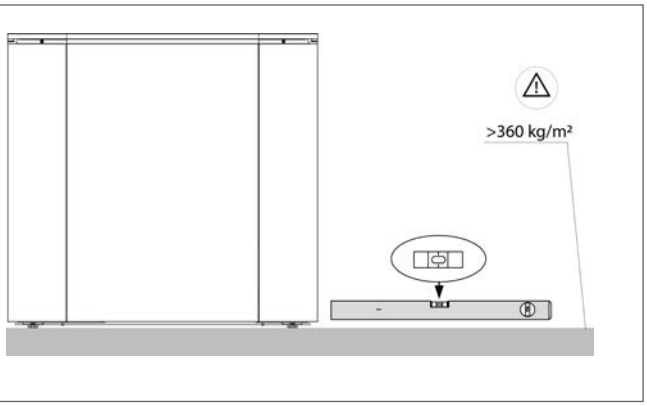


1 Feet

⚠ Check that the floor can support the unit's 150 kg weight when in operation

5.5 Water Module - option

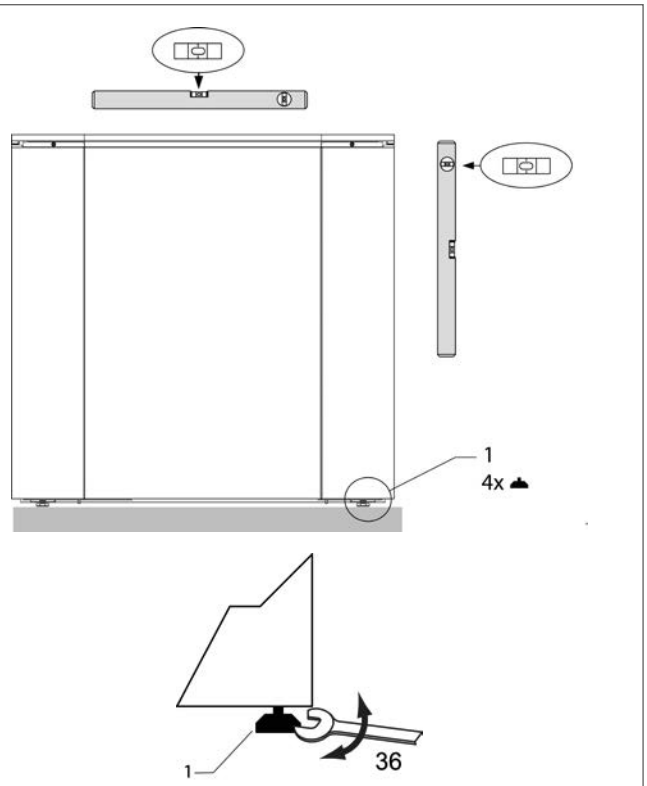
Positioning



► position the unit on a flat surface
► place the back against a wall (respect functional spaces)

Levelling

► adjust the support feet



1 Feet

⚠ Check that the floor can support the unit's 360 kg weight when in operation

5.6 Access to internal parts

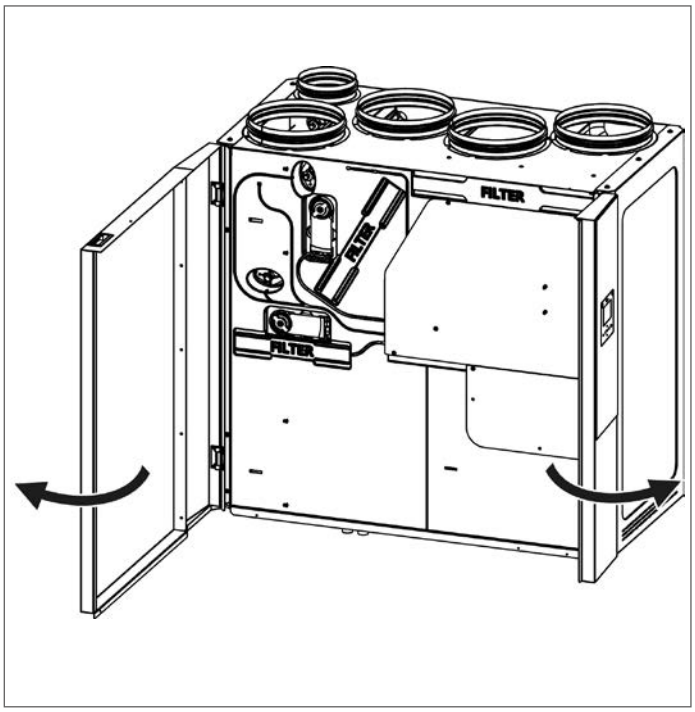
Air Module

The unit has openable access panels.

► unscrew the fixing screws

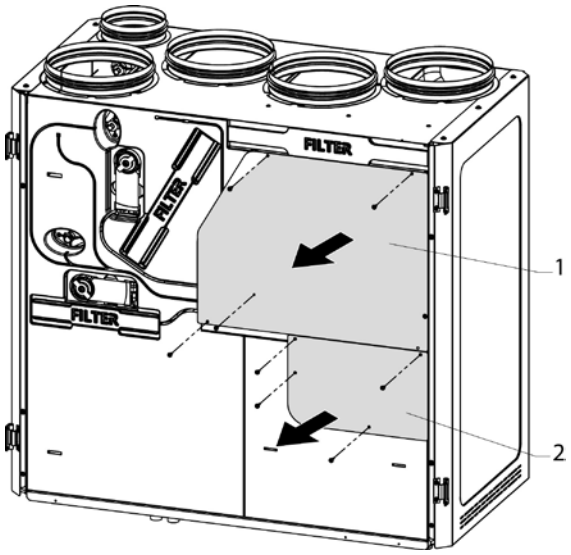


1 Fixing screws



Access to the electrical panel

► unscrew the fixing screws
► remove the access panels

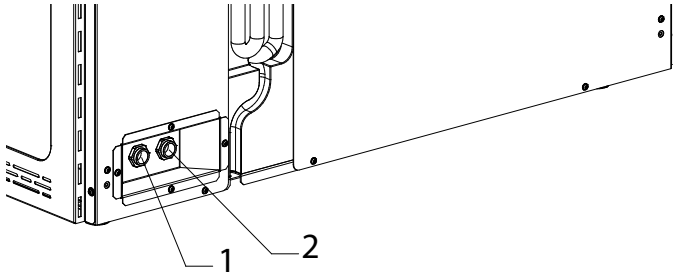


1 Electrical panel access panel
2 Access panel to customer's terminal block

To refit:

► repeat the operations in reverse order

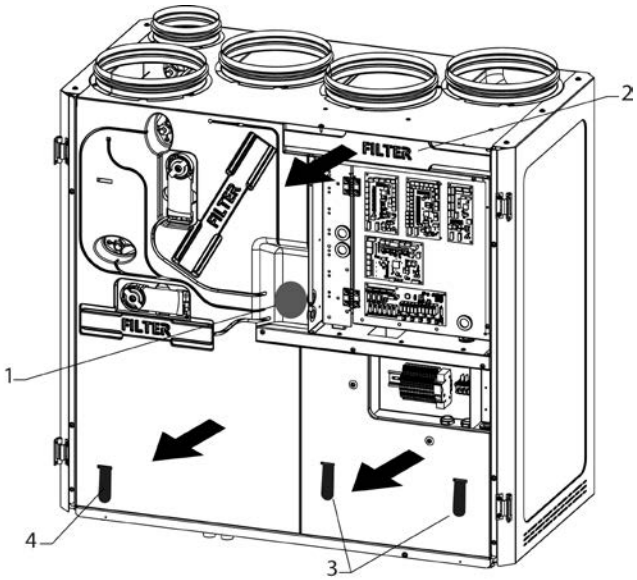
Cable inlet:



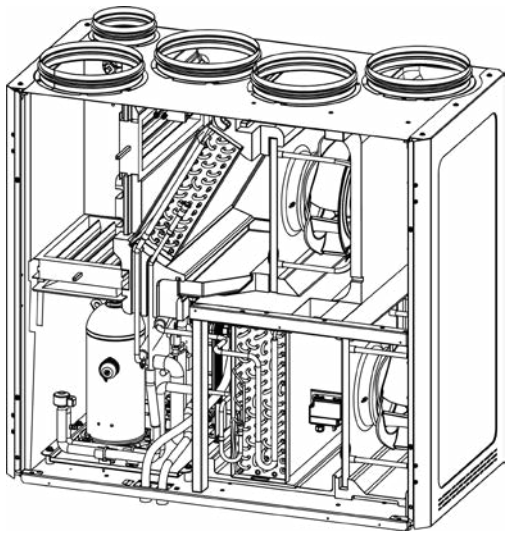
1 Power cable inlet
2 signal cables inlet

To access the components behind the electrical panel:

► disconnect the connector
► remove the filter closure
► pull the panel out using the straps
► pull the panel out using the strap



1 Connector
2 Filter closure
3 Straps
4 Strap



To refit:

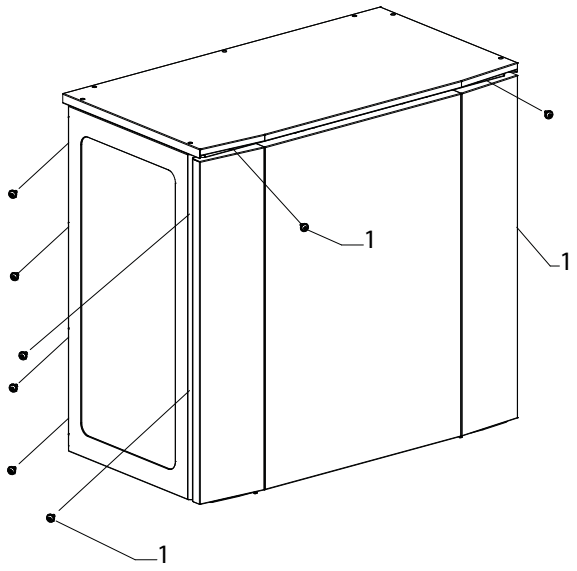
► repeat the operations in reverse order

5.7 Access to internal parts of the Water module

Option

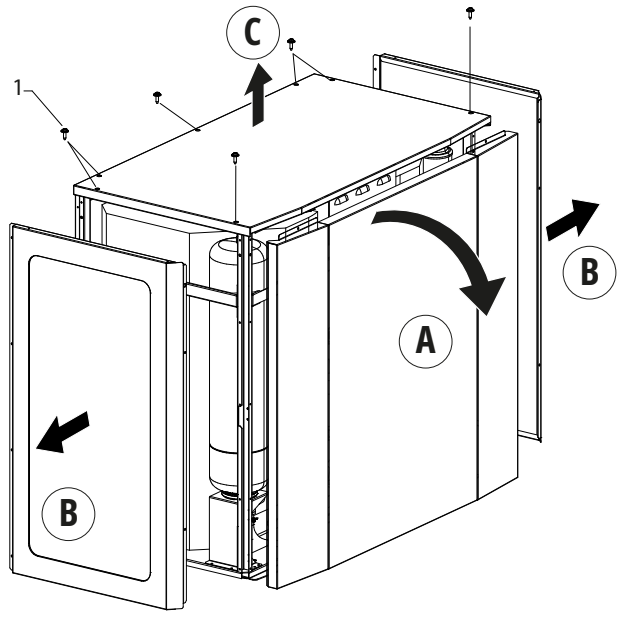
The unit has access panels.

► unscrew the fixing screws



1 Fixing screws

► remove the access panels

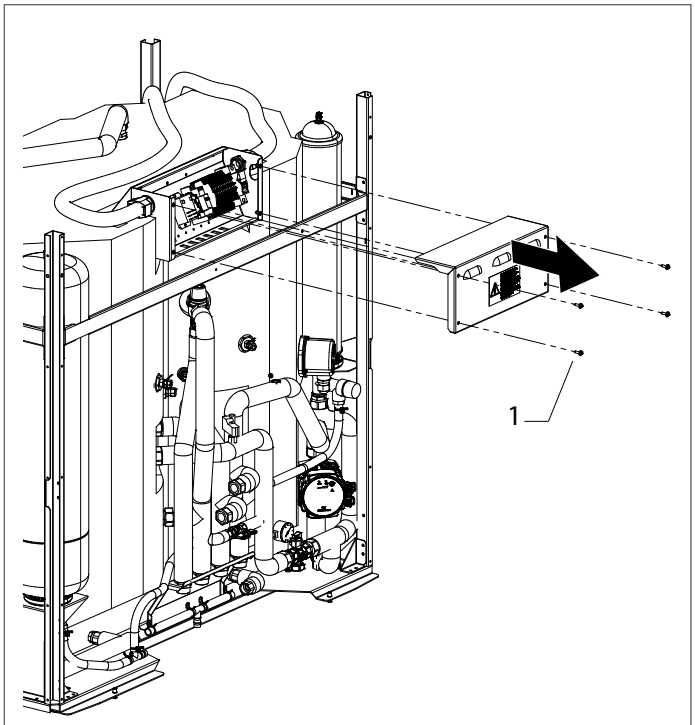


1 Fixing screws

To access the electrical panel:

► unscrew the fixing screws

► remove the protection panel



1 Fixing screws

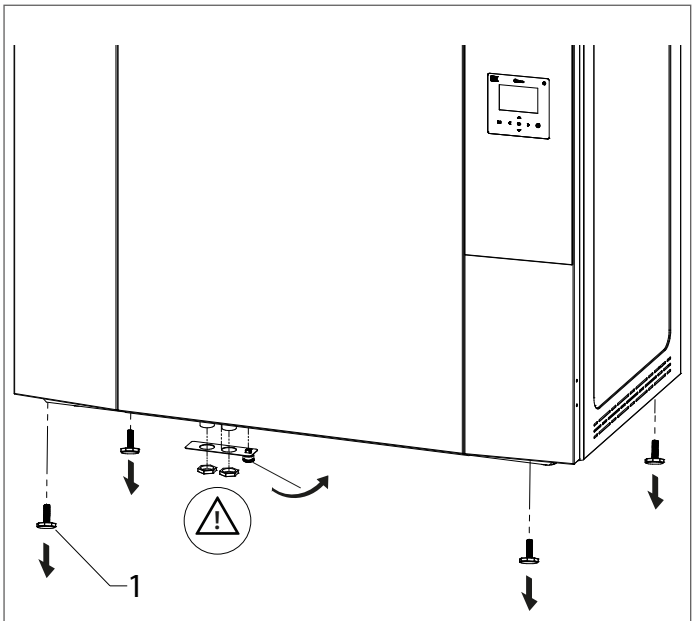
To refit:

► repeat the operations in reverse order

6. Installation of air module on top of water module

ⓘ Use hemp, Teflon, liquid sealants, etc. to make threaded connections watertight.

► remove pipe protection
► remove the feet

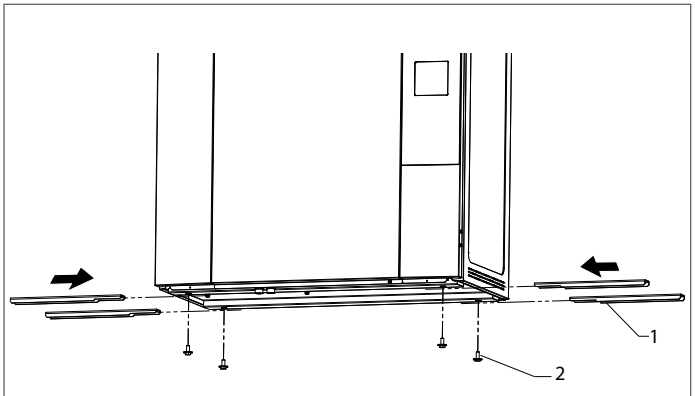


1 Feet

⚠ Pipe protection

Installation of lifting brackets

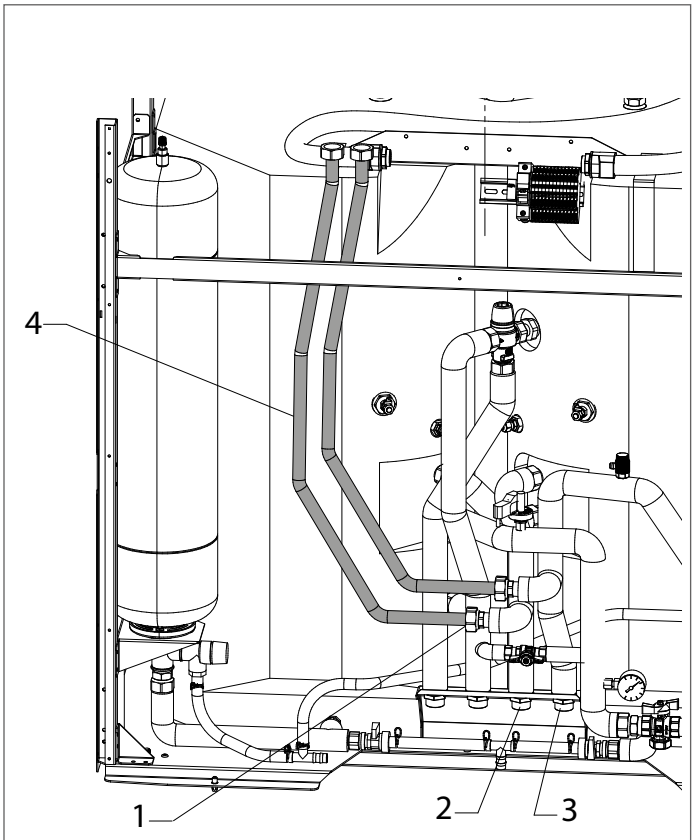
► insert the lifting brackets
► secure with screws



1 Lifting brackets
2 Fixing screws

Installation of piping

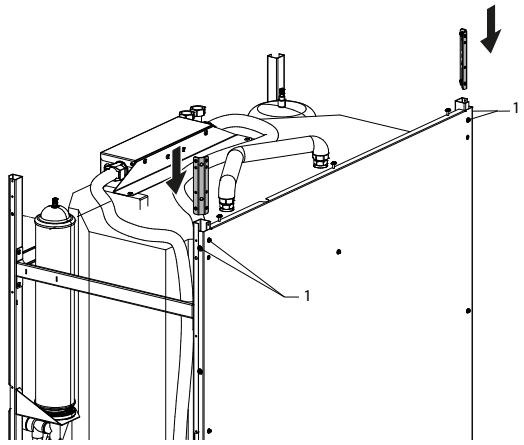
► remove the access panels
► remove the caps
► install the pipes supplied separately
► use the removed caps to close the supply and return



1 Caps
2 Return to the air module
3 Supply from the air module
4 Pipes supplied separately

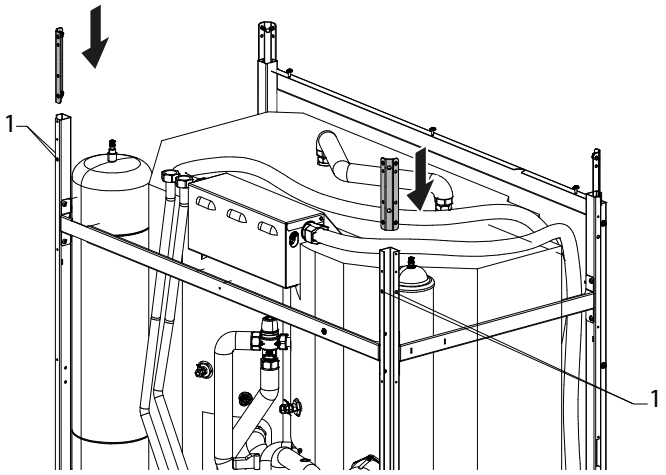
Installation of mounting brackets

► unscrew the fixing screws
► install the mounting brackets
► replace the screws removed earlier



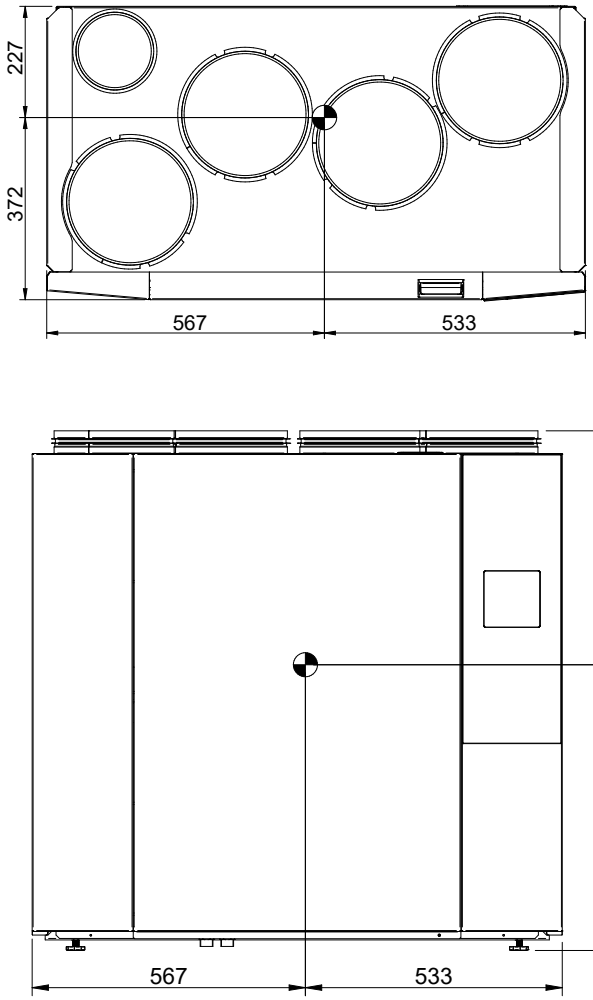
1 Fixing screws

► install the mounting brackets

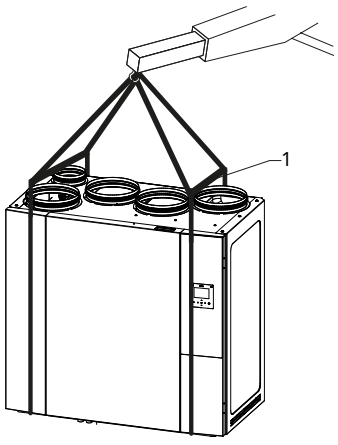


1 Fixing screws

Position of the centre of gravity



Example of lifting



1 Spacers

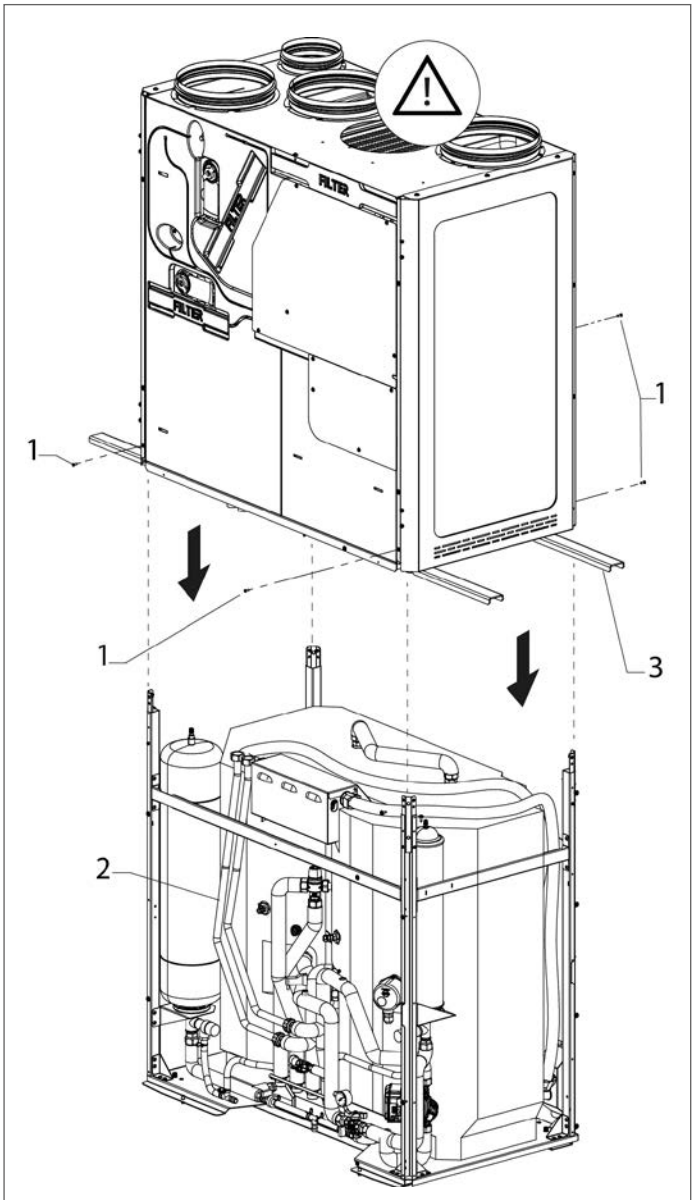
⚠ The choice of means and handling modes will depend on the actual installation situation.

⚠ Before starting the handling, make sure that

the unit is stable.

Assembly sequence:

► lift using the brackets
► install the air module
► fix the air module with the screws
► screw in the hydraulic connections



1 Fixing screws
2 Hydraulic piping
3 Lifting brackets

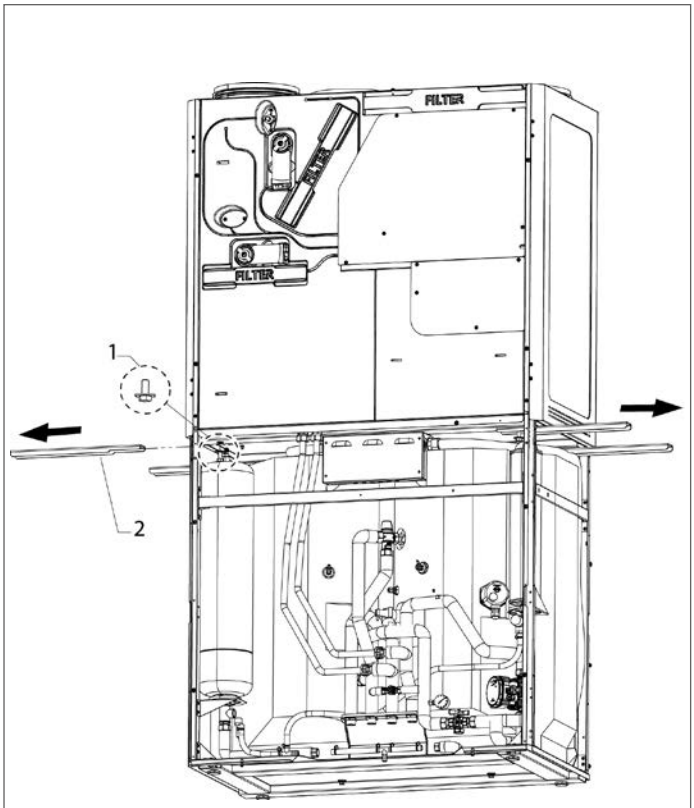
Connection of piping

► connect the hydraulic piping to the air module

⚠ The air module weighs about 150 kg

Bracket removal

► unscrew the fixing screws
► rimove the brackets



1 Fixing screws
2 Lifting brackets

7. Water connections

7.1 Prerequisites

⚠ This section is intended exclusively for the Installer.

⚠ Refer to the Technical data chapter for details.

⚠ Follow the safety instructions in the “About the refrigerant” chapter.

⚠ The hydraulic system and its components must be designed by a qualified technician who must work according to the rules of good practice and national regulations.

Check that:

- the maximum water pressure and temperature are compatible with the operating limits of the unit
- drain taps are installed at the lowest points of the system so that the circuit can be completely drained during maintenance

7.2 Water characteristics

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

Water component for corrosion limit on Copper	
PH (25°C)	7,5 ÷ 9,0
SO_4^{--}	< 100
HCO_3^- / SO_4^{--}	> 1
Total Hardness	8 ÷ 15 °f (4.5-8.5 dH)
Cl-	< 50 ppm
PO_4^{3-}	< 2,0 ppm
NH_3	< 0,5 ppm
Free Chlorine	< 0,5 ppm
Fe_3^+	< 0,5 ppm
Mn^{++}	< 0,05 ppm
CO_2	< 50 ppm
H_2S	< 50 ppm
Temperature	< 70 °C
Oxygen content	< 0,1 ppm
Sand	10 mg /L 0,1 to 0,7 mm max diameter
Ferrite hydroxide Fe3O4 (black)	Dose < 7,5 mg/L 50% of mass with diameter < 10 µm
Iron oxide Fe2O3 (red)	Dose < 7,5 mg/L - Diameter < 1 µm

7.3 Cleaning

Before connecting the unit to the system:

- clean the system thoroughly with specific products to remove residues or impurities that could affect operation.

⚠ The warranty does not cover damage caused by limescale build-up, deposits and impurities in the water and/or failure of the hydraulic circuit cleaning system.

Existing systems

If a new unit is installed in an existing system:

- the system must be flushed thoroughly to eliminate any particles, sludge and waste.

⚠ The system must be cleaned before installing the new unit.

⚠ Dirt can be removed only with a suitable water flow rate.

⚠ Each section must be cleaned separately.

⚠ Pay particular attention to “blind spots”, where a lot of dirt can accumulate due to the reduced flow-rate.

⚠ If necessary, install an additional filter sized according to the type of pollutant to be removed.

7.4 Hydraulic connection

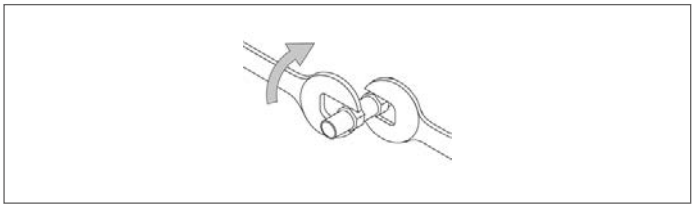
Water Module - Option

ⓘ Below are the operations to follow when the water module is present.

Ensure that:

- clean piping with no moisture, air, dirt or dust is used
- the end of the pipe is kept downwards when removing burrs
- the end of the pipe is covered when passing it through a wall to prevent dust and dirt from entering
- thread sealant is used to seal the connections that must withstand the pressures and temperatures of the circuit
- the two types of materials are isolated from each other to prevent galvanic corrosion when using non-copper metal piping
- do not deform the piping using excessive force or unsuitable tools during connection: this could cause the unit to malfunction.

⚠ Always use the wrench and counter wrench method in tightening operations.



7.5 Water filter

Provided by the customer

⚠ Installation of the filter is mandatory.

⚠ Operation without a filter can cause irreversible damage to the unit.

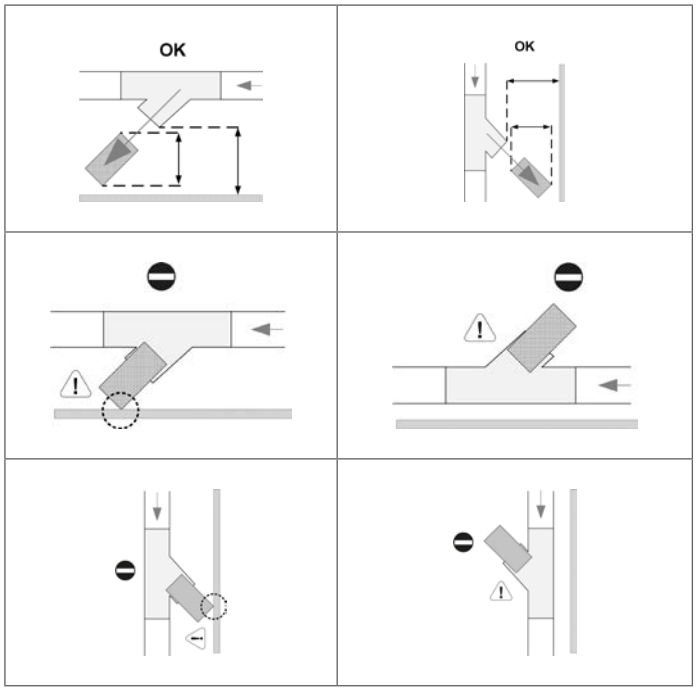
⚠ Operation without a filter will void the warranty.

Remember that the filter must be:

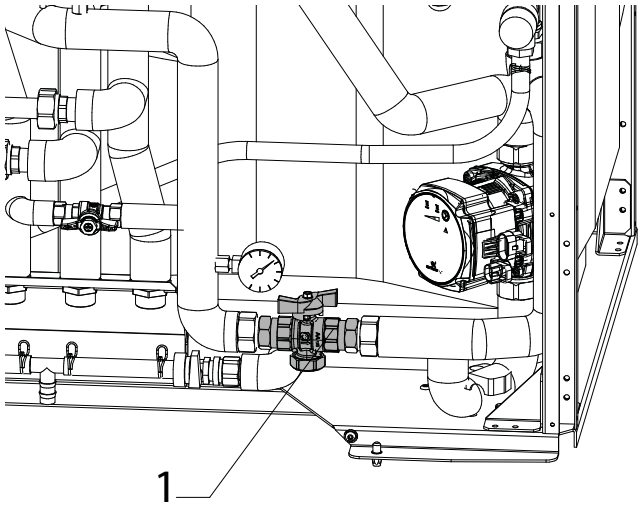
- installed immediately at inlet to the water supply system
- easily accessible for maintenance work

⚠ Periodically check for clogging.

⛔ The filter should never be removed.



7.6 System filter



1 Shut-off valve with filter

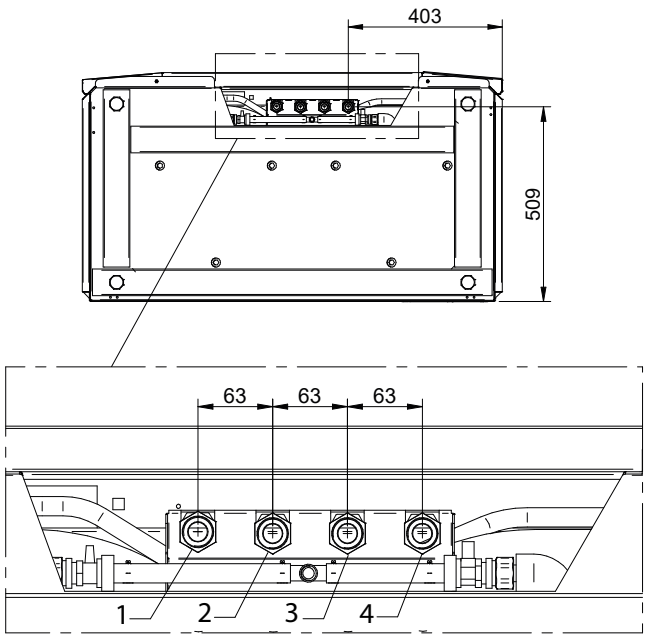
⚠ Operation without a filter can cause irreversible damage to the unit.

⚠ Operation without a filter will void the warranty.

⚠ Periodically check for clogging.

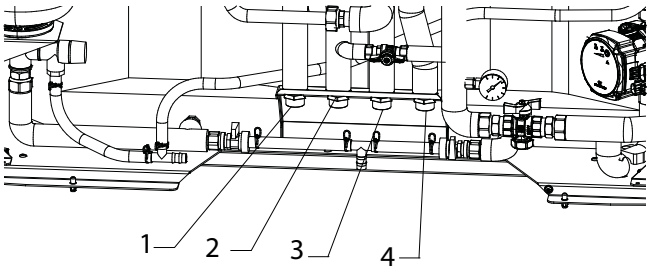
⛔ The filter should never be removed.

7.7 Position of connections



1 Domestic hot water outlet Ø 3/4”
2 Water supply system inlet Ø 3/4”
3 Return from Ø 3/4” air module
4 Supply to the Ø 3/4” air module

Front view

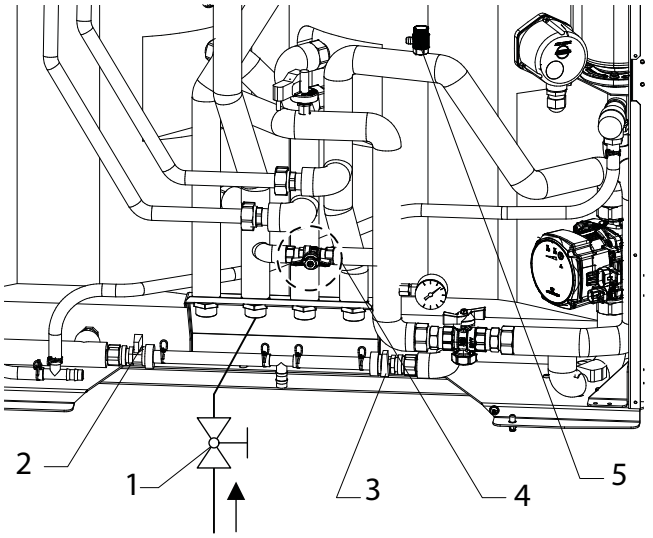


1 Domestic hot water outlet Ø 3/4”
2 Water supply system inlet Ø 3/4”
3 Return from Ø 3/4” air module
4 Supply to the Ø 3/4” air module

7.8 DHW tank filling

⚠ Fill the water tank (DHW) only during unit start-up. If the home is not immediately lived in or the unit is turned off for long periods, empty the water tank to avoid water stagnation, or with temperatures close to 0°C the risk of frost.

Once the hydraulic connections between the two modules have been completed, the DHW tank can be filled.



1 Water supply system inlet tap
2 DHW left tank drain tap
3 DHW right tank drain tap
4 System filling tap
5 Relief valve

DHW tank filling:

- ► system's main switch OFF
- ► check that the DHW tank drain taps are closed
- ► open the hot water taps (bathroom and kitchen)
- ► start filling, slowly opening the water supply system inlet tap

When water starts coming out of the taps:

- ► close the user taps
- ► open the system filling tap to fill the system with technical water
- ► open the relief valve
- ► close the valve when water starts coming out
- ► continue filling up to the system pressure value of 1.5 Bar
- ► close the system filling tap
- ► check the hydraulic seal of the joints
- ► power on the unit and set it to DHW-only operation
- ► during the first start-up phase of the pump, the water pressure may drop
- ► open the system filling tap to restore the system pressure

⚠ If necessary, repeat the operation until the pressure remains stable

⚠ Maximum DHW system pressure 6 bar

⚠ DHW saftey valve setting 6 bar

⚠ Check the system pressure periodically.

7.9 Mixing valve calibration

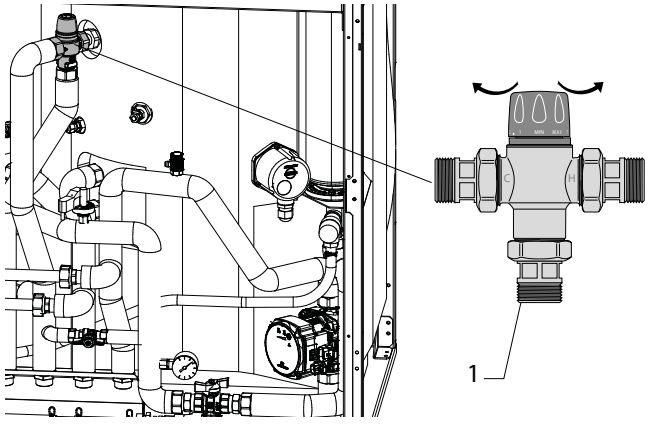
Factory calibration of the valve: 48 °C

Valve temperature control:

Position	Min	1	2	3	4
°C	45	48	51	53	55

Position	5	6	7	Max
°C	58	60	63	65

- ► turn the graduated control knob to the desired value, aligning it with the reference point



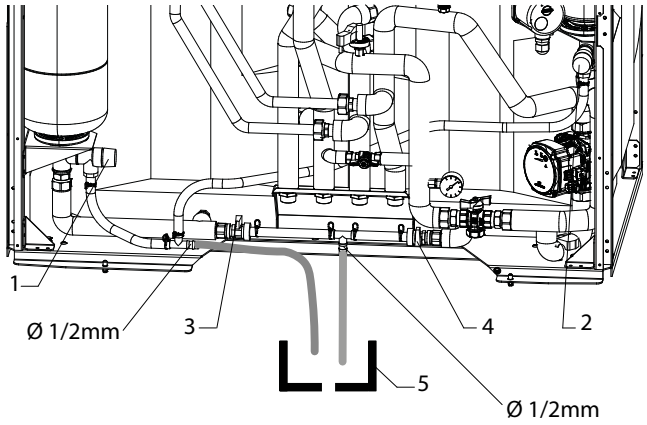
1 Mixing valve

7.10 DHW safety valve

⚠ Inside the unit there is one pressure relief valve on the system circuit, calibrated to 3 bar, and one pressure relief valve on the DHW circuit, calibrated to 6 bar, which must be connected to a suitable drain, otherwise, if the valves activate and flood the rooms, the heat pump manufacturer will not be held liable.

Drain pipe:

► direct the drain pipe towards a suitable drain



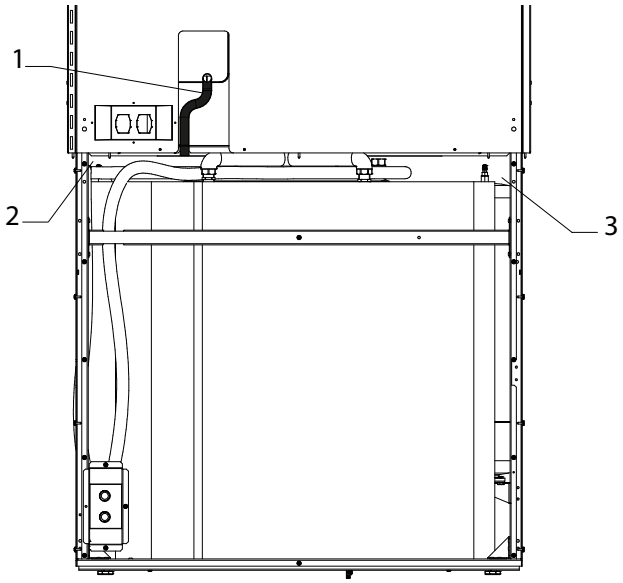
1 DHW pressure relief valve
2 System pressure relief valve
3 DHW tank drain tap
4 System drain tap
5 Discharge / drainage collection

7.11 Condensate drain

ⓘ The connection is for the Air module

The unit is fitted with a standard drain pump.

The condensate must be disposed in order to avoid damages to people and things.

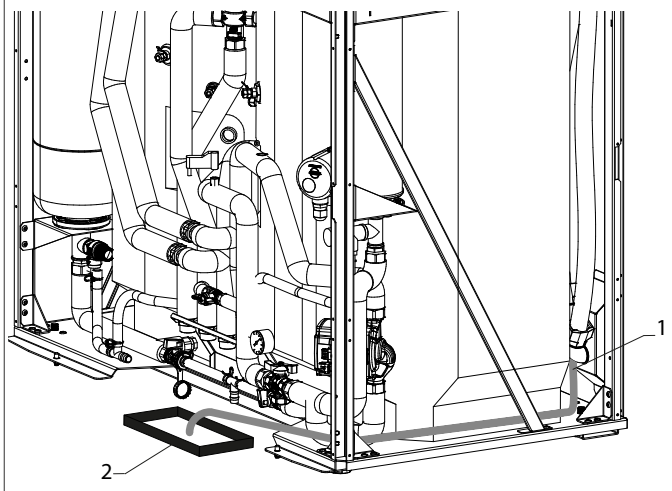


1 Condensation drain pipe ID 16 (1.5m long)
2 Drain pipe passage to the left
3 Drain pipe passage to the right

ⓘ Alternatively, the condensation drain pipe can run underneath the unit with outlet to the right or left.

Drain pan discharge pipe:

► direct the exhaust pipe towards a suitable drain



1 Condensation drain pipe
2 Discharge / drainage collection

⚠ Check that the slope is in the direction of the condensate drain

8. Aeraulic connections

⚠ This section is intended exclusively for the Installer.

⚠ Follow the safety instructions in the “About the refrigerant” chapter.

⚠ The aeraulic system and its components must be designed by a qualified technician who shall work according to the rules of good practice and national regulations.

⚠ Operate in compliance with safety regulations in force.

⚠ The sizing and correct execution of the aeraulic connections are essential to ensure smooth operation of the unit and an adequate level of silence in the room.

⚠ When designing and manufacturing the channels, consider PRESSURE DROPS, AIR FLOWRATE AND SPEED that must be consistent with the characteristics of the unit.

⚠ Particularly consider that pressure drops higher than the unit’s available pressure lead to a reduction in the flowrate with consequent unit shutdowns.

Check that:

- the weight of the channels must not burden on the connection flanges
- place anti-vibration joints between channels and unit
- connection to the flanges and between the various sections of the channels must guarantee air seal, avoiding dispersions penalising the overall efficiency of the system
- pressure drops are limited by optimising the circuit, type and number of bends and branches
- large radius bends are used and consider fitting them with deflectors (especially with fast air speed or small radius bends)
- if the exhaust air and outdoor return air ducts pass through the bedrooms, it is advisable to provide additional sound insulation around them
- thermally insulate the duct on the supply line to prevent heat loss and condensation

8.1 Air distribution/exhaust system

⚠ The outlets of the outdoor return/exhaust air ducts, if located outside on a roof, must terminate with special roof caps (not supplied by Clivet) in order to prevent water inlet. During the design stage, they must have characteristics that limit pressure drops so as not to compromise correct operation of the unit.

⚠ The inner surface of the channel must be smooth, allow it to be washed and must not contaminate the air.

⚠ Thermally insulate the channels, flanges, silencers, etc. to avoid energy losses and condensation.

⚠ To attenuate the noise level, it is advisable to use insulated channels.

DIFFUSERS INLETS GRILLS

Proper air diffusion in the room is decisive for the comfort level and correct operation of the unit.

When choosing and positioning the grills, inlets and diffusers, avoid:

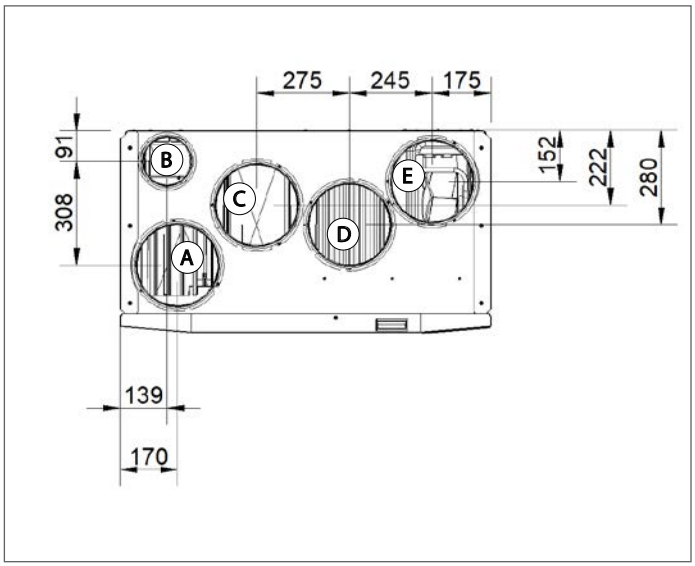
- excessive air speed
- forming of stagnant and stratification areas
- cold air delivery in room
- forming of localised currents (also due to uneven distribution of air)
- excessive room temperature variations, vertically and horizontally
- short circuits of the supply air towards the return air

For sound comfort, consider that:

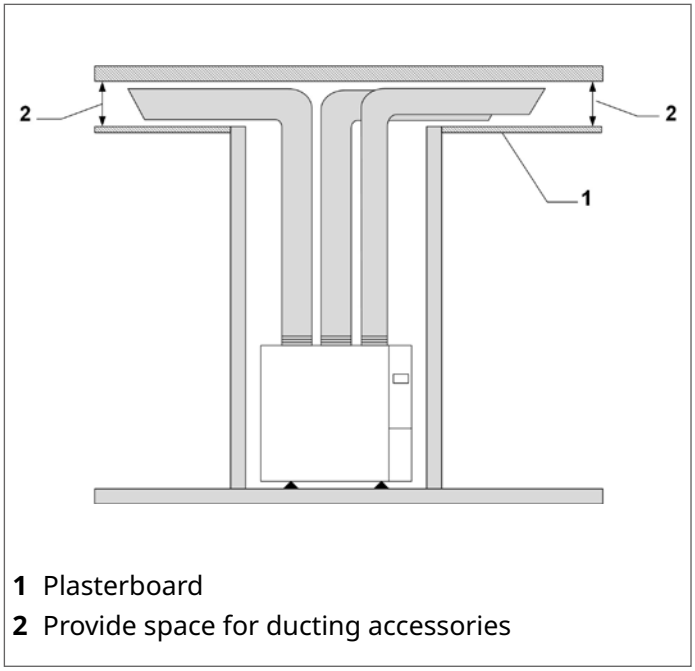
- the air diffusers must be chosen verifying the sound power generated at nominal flow rate conditions
- the cut-off to diffusers must be carried out with flexible elements
- the return grills must be widely dimensioned

⛔ It is forbidden to cover the grills with objects (furniture, cupboards, etc.) that prevent normal air circulation in the rooms.

8.2 Position of connections



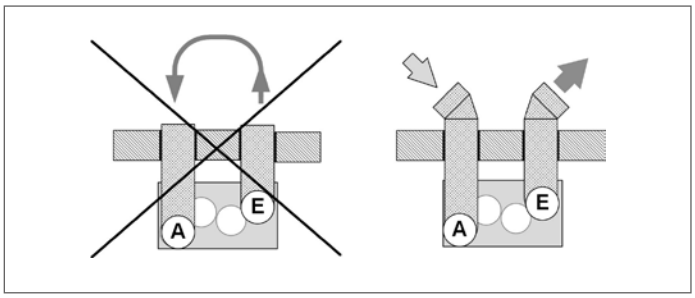
A	Outdoor air intake	DN250
B	Extraction of stale air	DN150
C	Return in ambient	DN250
D	Supply in ambient	DN250
E	Exhaust outdoors	DN250



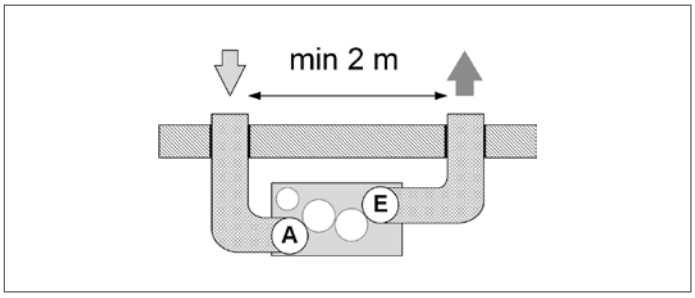
1 Plasterboard
2 Provide space for ducting accessories

Avoid recirculation of exhaust/return air

Provide 90° bends directed downwards



Minimum exhaust/return distance



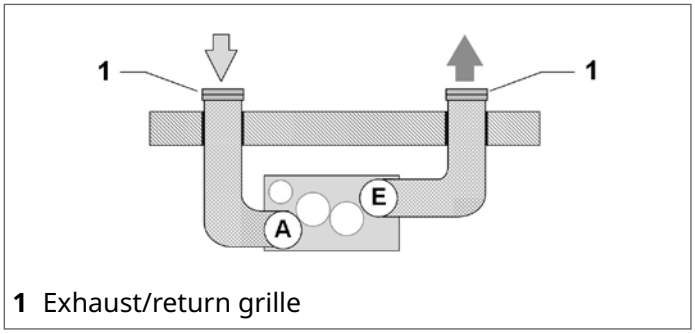
Exhaust/return grille

Outdoor air return

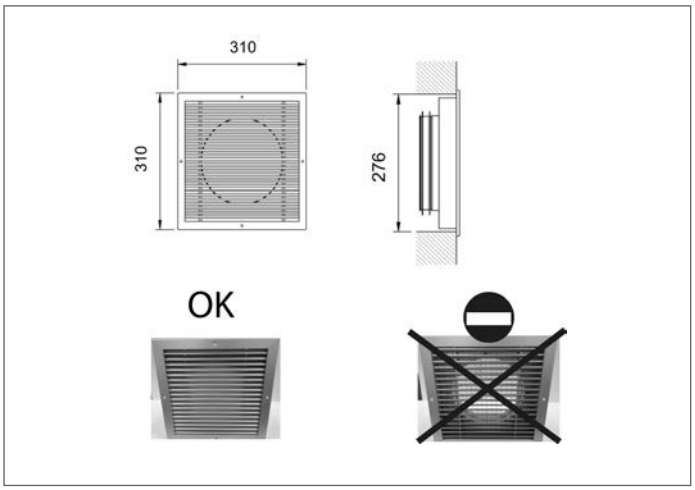
- position in an area with a low concentration of impurities (dust, odours, exhaust gases, etc.).

Exhaust outlet

- away from terraces, balconies, neighbouring properties
- avoid upwind areas

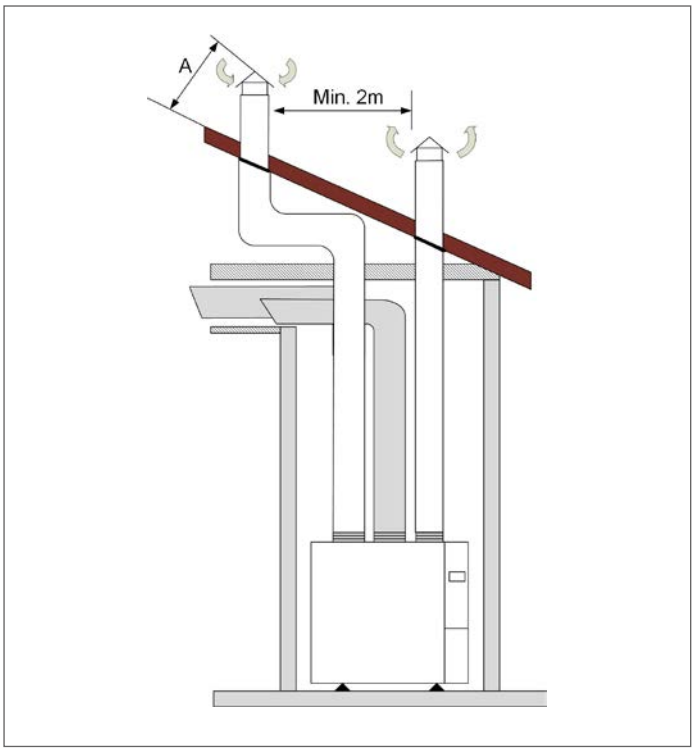


1 Exhaust/return grille



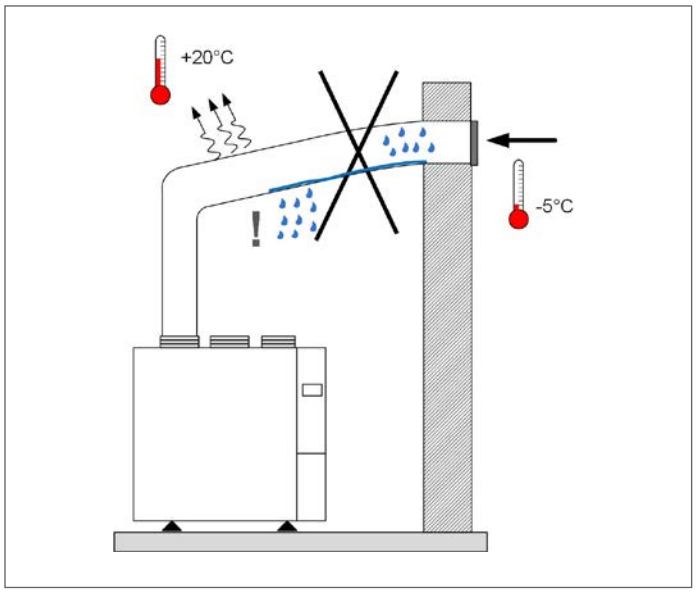
Rooftop exhaust/return

Unit installed on the top floor, there is not enough space for return/exhaust through the wall. It is possible to exit onto the roof, taking care to install pipes and roof caps (not supplied by Clivet).

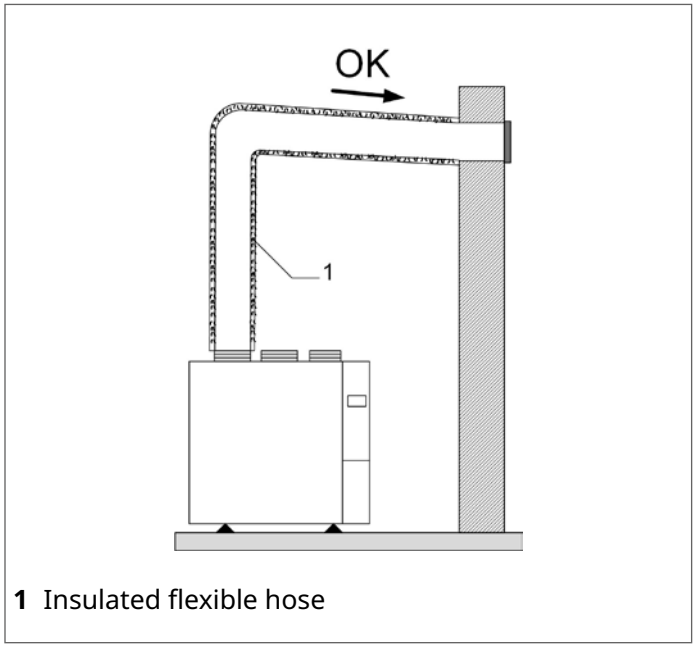


A ≥ **500 mm** Increase in areas with abundant snowfalls.

Insulated flexible hose

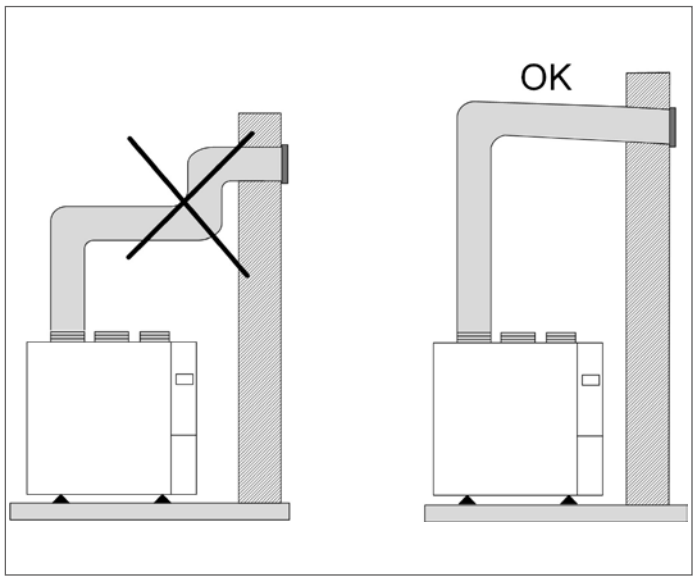


⚠ The ducts must not be sloping down to the unit to prevent condensation or water from returning.



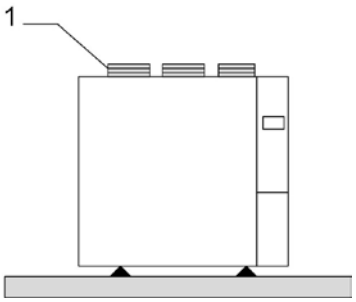
1 Insulated flexible hose

The flexible hose supplied by Clivet allows 180° bends to be made without crushing and with reduced pressure drops.



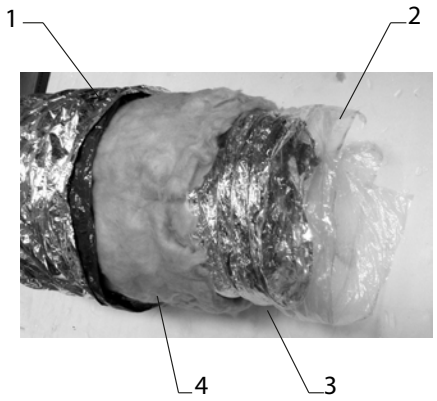
⛔ Avoid crushing and tight bends to avoid pressure drops

8.3 Installation of flexible hose



1 Flexible hose fixing

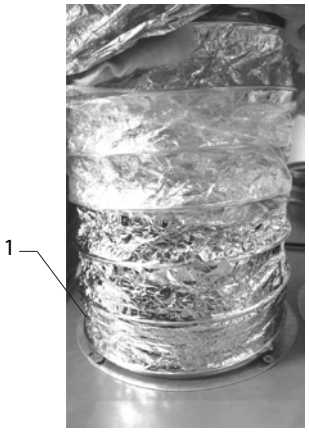
Flexible hose layers



1 Sheath
2 Polyester film
3 Perforated aluminium
4 Insulation

To fix the hose:

► insert the perforated aluminium part



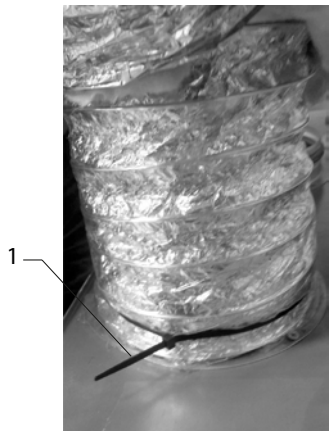
1 Perforated aluminium

► pull the polyester (plastic) part down



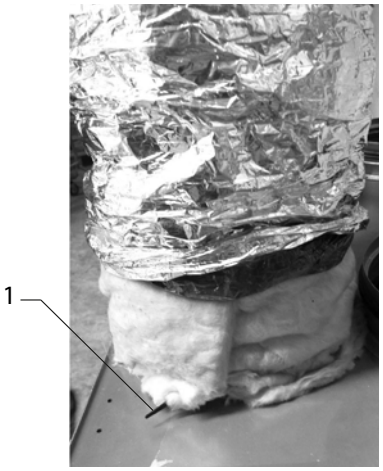
1 Polyester film

► tighten properly with the hose clamp



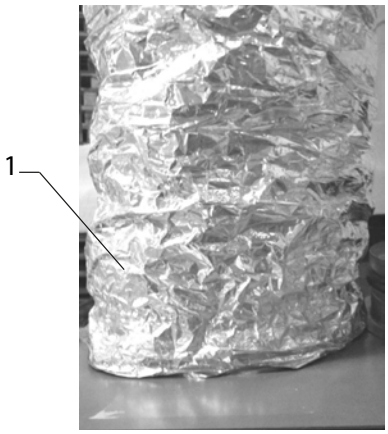
1 Hose clamp

► pull the insulation down properly
► tighten properly with the hose clamp



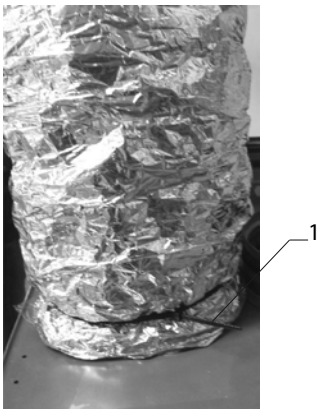
1 Hose clamp

► pull the sheath down



1 Sheath

► tighten properly with the hose clamp

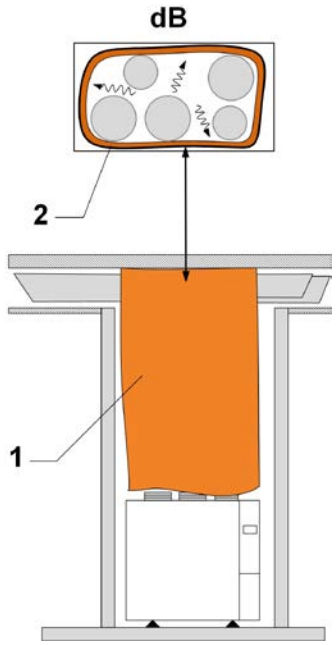


1 Hose clamp

Sound insulation of top of unit

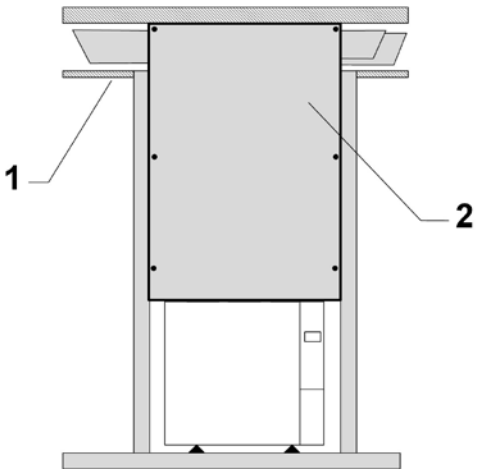
Provided by the customer

To reduce noise emissions from the top of the unit, it is advisable to wrap the outlet ducts well with sound-absorbing and sound-impeding material up to the inlet on the false ceiling (low-density polyester fibre + mass recommended).



1 Sound insulation
2 Internal fibre

The sound insulation of the top of the unit can be further improved by installing a plasterboard cover (removable/inspectable for extraordinary maintenance operations).

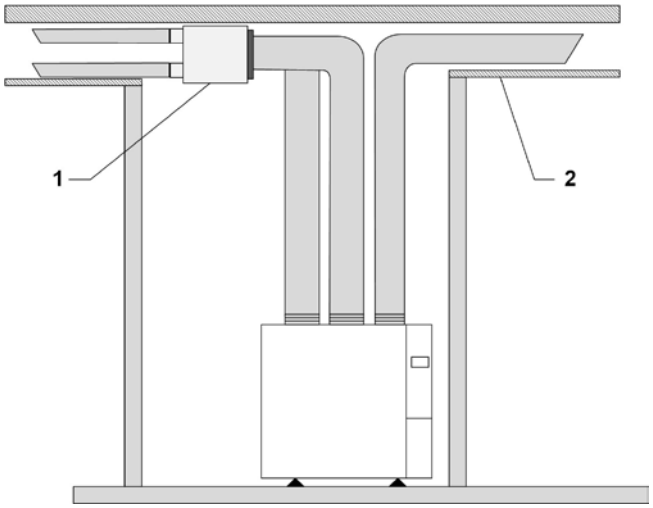


1 Plasterboard
2 Plasterboard closure

Air distribution box (inspectable)

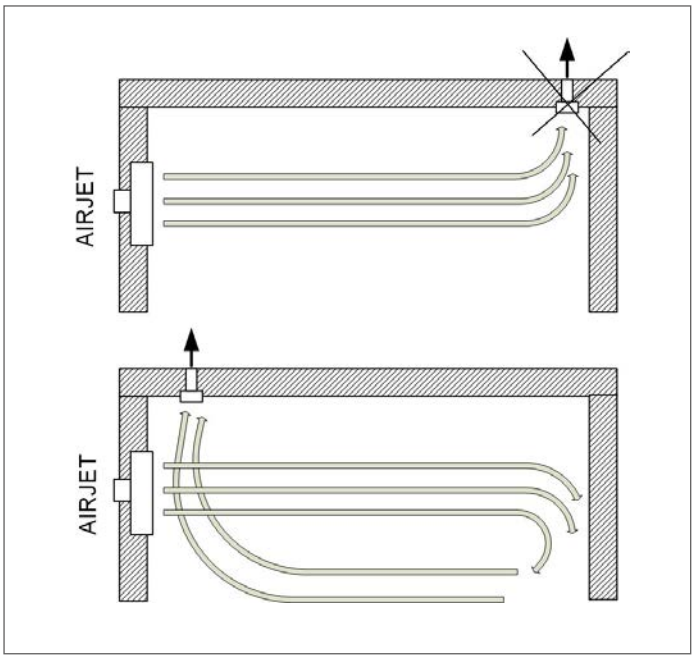
If there is sufficient space between the false ceiling, sound absorption can be further improved by adding additional cladding to the air distribution box.

Use soundproofing (low-density polyester fibre recommended).



1 Box
2 Plasterboard

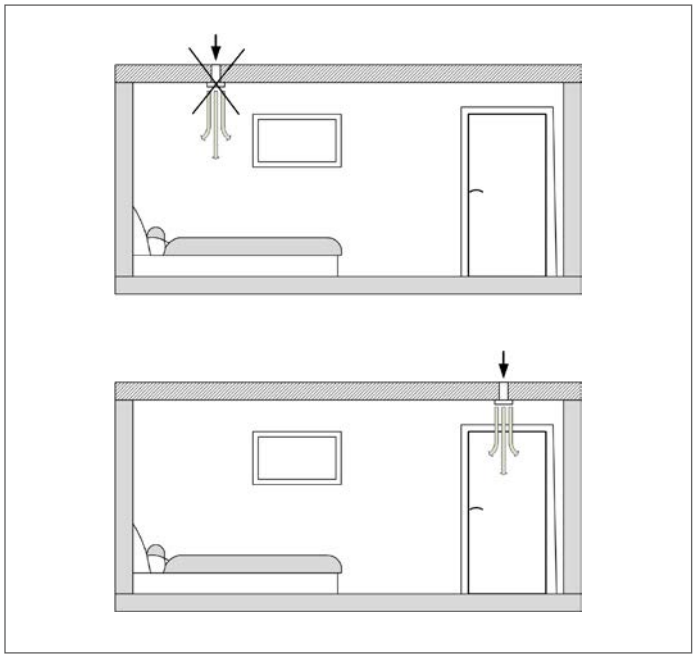
AIRJET supply diffuser + extraction valve



⛔ The extraction valve must not be positioned on the side opposite the supply.

Air inlet valve (VIEX)

Adjust the valve so that it does not exceed 30m3/h of supply air.



⛔ The air inlet valve should not be positioned: e.g. above the bed.

During installation, carefully close all open points in the aeraulic system and the intake/exhaust grilles to prevent dust and construction debris from entering the pipes.

⚠ This prevents the unit from clogging up at first start-up and avoids additional costs for cleaning the aeraulic system and the unit.

8.4 Aeraulic system

Before installing the aeraulic system, check the project for the passage of pipes and location of accessories.

Unit location:

- central in order to minimise duct length and ventilation consumption
- in a suitable room (where the temperature does not fall below 10°C and the ambient return air temperature does not fall below 15°C), away from bedrooms, check the available height with the unit's height and current local regulatory restrictions

Locate the position of the renewal fresh air intake:

- check local regulations
- minimum distance of the unit
- install an anti-intrusion grill for small animals or leaves (accessory supplied separately)
- prevent water infiltrations
- avoid proximity to windows, balconies, etc.
- avoid proximity to boiler flues, extractors, etc.
- avoid vehicle parking areas
- avoid bypass with stale air exhaust
- avoid excessive proximity to the ground (odour/radon inlet)

Locate the position of the exhaust outlet:

- see previous point
- avoid proximity to windows, balconies, etc.
- avoid upwind areas
- avoid pedestrian passages
- avoid garages, basements, unventilated attics

Supply and return box:

- if possible, install in a barycentric position so that the air ducts are of similar length

Locate rooms with inlet: in dedicated rooms

Locate the position of inlets: on the ceiling, wall or floor

Locate rooms with air extraction:

- from dedicated rooms
- avoid intake from the kitchen extractor hood (it is too close to the hob), minimum horizontal distance from the hob ~ 1m

Locate the extraction outlets:

- always high up, a position that facilitates moisture extraction
- adjustable, to allow flow-rate balancing

Check air transit between rooms (gaps under the door about 1 cm) to allow air circulation

9. Electrical connections

9.1 Prerequisites

⚠ This section is intended exclusively for the Installer.

⚠ Follow the safety instructions in the “About the refrigerant” chapter.

⚠ The electrical system and its components must be designed by a qualified technician who shall work according to the rules of good practice and national regulations.

⚠ All electrical operations should be performed by trained personnel having the necessary requirements by the regulations in force and being informed about the risks relevant to these activities.

⚠ Operate in compliance with safety regulations in force.

⚠ The power cables and the protection cable section must be defined in accordance with the characteristics of the protections adopted.

⚠ The protection devices of the unit power line must be able to stop the presumed short circuit current, whose value must be determined in function of system features.

⚠ Refer to the unit electrical diagram (the number of the diagram is shown on the serial number label).

⚠ verify that the network has characteristics conforming to the data shown on the serial number label.

⚠ Before starting work, verify that the sectioning device at the start of the unit power line is open, blocked and equipped with cartel warning.

⚠ The supply line must be disconnectable from the rest of the building’s power mains with an all-pole magnetothermic circuit breaker with separation of contacts on all poles, to be implemented in accordance with current laws and regulations.

⚠ The protection must be sized in accordance with the electrical data declared by the manufacturer.

⚠ Disconnect the power supply before making any connection.

⚠ Do not crush cable bundles and prevent them from coming into contact with piping and any sharp edges.

⚠ Primarily you have to realize the earthing connection.

⚠ Incorrect grounding may cause electric shocks.

⚠ All external high voltage loads, if connected to a metal fitting or grounding clip, must be earthed.

⚠ The current required for each external load must be less than 0.5 A. If the current required for a single load is greater than 0.5 A, insert a contactor for control.

⚠ Failure to observe this precaution may result in electric shocks.

⚠ Power and signal cables should be routed as separately as possible to avoid any interference.

⚠ Keep the unit’s controller wiring as far away from hot surfaces as possible. It is advisable to use cables with cross-linked polyvinyl chloride sheath.

⚠ For the electrical connection, use a cable of sufficient length to cover the entire distance without any connection work. Do not use extension cords. Do not apply other loads on the power supply.

⚠ If the power cable is damaged, it must be replaced by qualified personnel and in accordance with current national regulations.

⚠ The manufacturer is not liable for any damage caused by failure to install a grounding system or failure to comply with the diagrams.

⚠ Check the voltage values which must be within the limits: 220-240V.

⚠ Before power the unit, make sure that all the protections that were removed during the electrical connection work have been restored.

⚠ Prevent dust, insects or rodents from entering the electrical panel as they can damage components and cables.

⚠ Do not drill holes in the electrical panel.

⛔ It is forbidden to connect the earth wire to gas or water pipes, lightning rods or telephone ground.

Remember that:

- the unit must be earthed
- all external high voltage loads, if connected to a metal fitting or grounding port, must be earthed

9.2 Electrical data

The serial number label reports the unit specific electrical data, included any electrical accessories.

The electrical data indicated in the technical bulletin and in the manual refer to the standard unit, accessories excluded.

The matriculation plate shows the indications foreseen by the standards, in particular:

- Voltage
- F.L.A.: full load ampere, absorbed current at maximum admitted conditions
- F.L.I.: full load input, full load power input at max. admissible condition
- Electrical wiring diagram Nr

ⓘ Refer to the unit electrical diagram (the number of the diagram is shown on the serial number label).

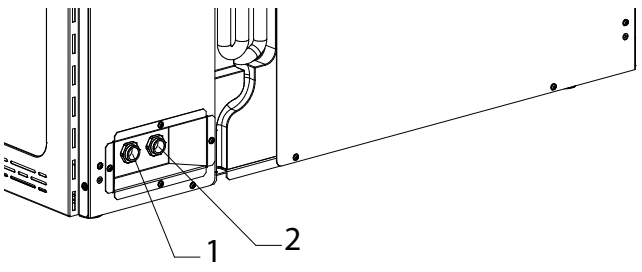
9.3 Cable inlet

ⓘ The electrical connection between the two modules is made by routing the cables through an external corrugated conduit.

Air module

To access the panel, see the “Access to internal parts” section

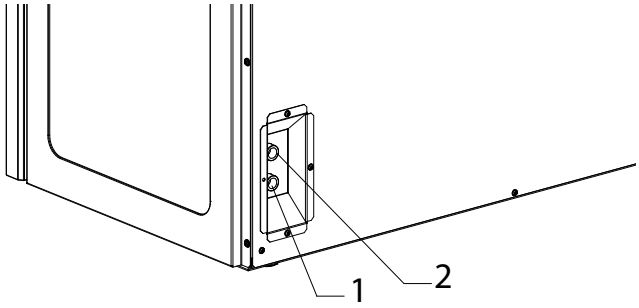
⚠ Before removing the panel from the electrical panel, disconnect the power supply to the two units and to all the other electrically powered components.



1 Power cable inlet
2 signal cables inlet

Water Module

Option



1 Power cable inlet
2 signal cables inlet

⚠ After turning off the power, wait at least 5 minutes before accessing to the electrical panel or any other electrical component.

⚠ Before accessing, check with a multimeter that there is no residual voltage.

⚠ Connect as shown in the wiring diagrams.

9.4 Connecting the power supply

⚠ **Ensure that:**

- no cables of different cross-sections are connected to the same power supply terminal block (loosening of the power supply wires could cause overheating)
- terminal block screws are not over-tightened
- connect an RCD (residual current device) with a trip current not exceeding 30mA and a circuit breaker of adequate capacity to the power supply line. Each module (air and DHW) must have its own RCD + circuit breaker line

9.4.1 Electric cable sizes

ⓘ The maximum external diameters of the power and multi-core interface cables must be 20 mm.

Unit	Air module	Water module
Rated voltage range (V)	220-240	
Rated frequency (Hz)	50	
FLA (A)	13,3	8,7
FLI (W)	3080	2088
Cable cross-section (mm^2)	(2+PE) x 4	(2+PE) x 2,5

Connection between modules

Wires	mm^2	Max length
12	0,5	15m

Pf3 connection

Wires	mm^2
3	0,5

Humidifier connection

Wires	mm^2
2	0,5

Fuses

Air module

Type	Voltage	Fuse
gG	500V ca	20A

Water module

Type	Voltage	Fuse
gG	500V ca	16A

Tightening torques

	Tightening torque (N•m)
M4 (power terminal, electric control board terminal)	from 2.8 to 3.0
M6 (earthing)	from 1.2 to 1.5

ⓘ The values given are maximum values. Refer to the electrical data for the exact values.

ⓘ For the sizing values of the external protections, refer to the rated electrical data (bulletin, labels).

⚠ The earth leakage breaker must be a 30 mA (<0.1 s) fast tripping type.

Connection procedure:

- ► connect the cables to the appropriate terminals as shown in the diagram
- ► secure the cables with cable clamps.

9.5 Remote controls

Refer to the unit electrical diagram (the number of the diagram is shown on the serial number label).

On - Off

Switches the unit on/off from a remote control.

Silent

Reduces the fan speed and limits compressor frequency.

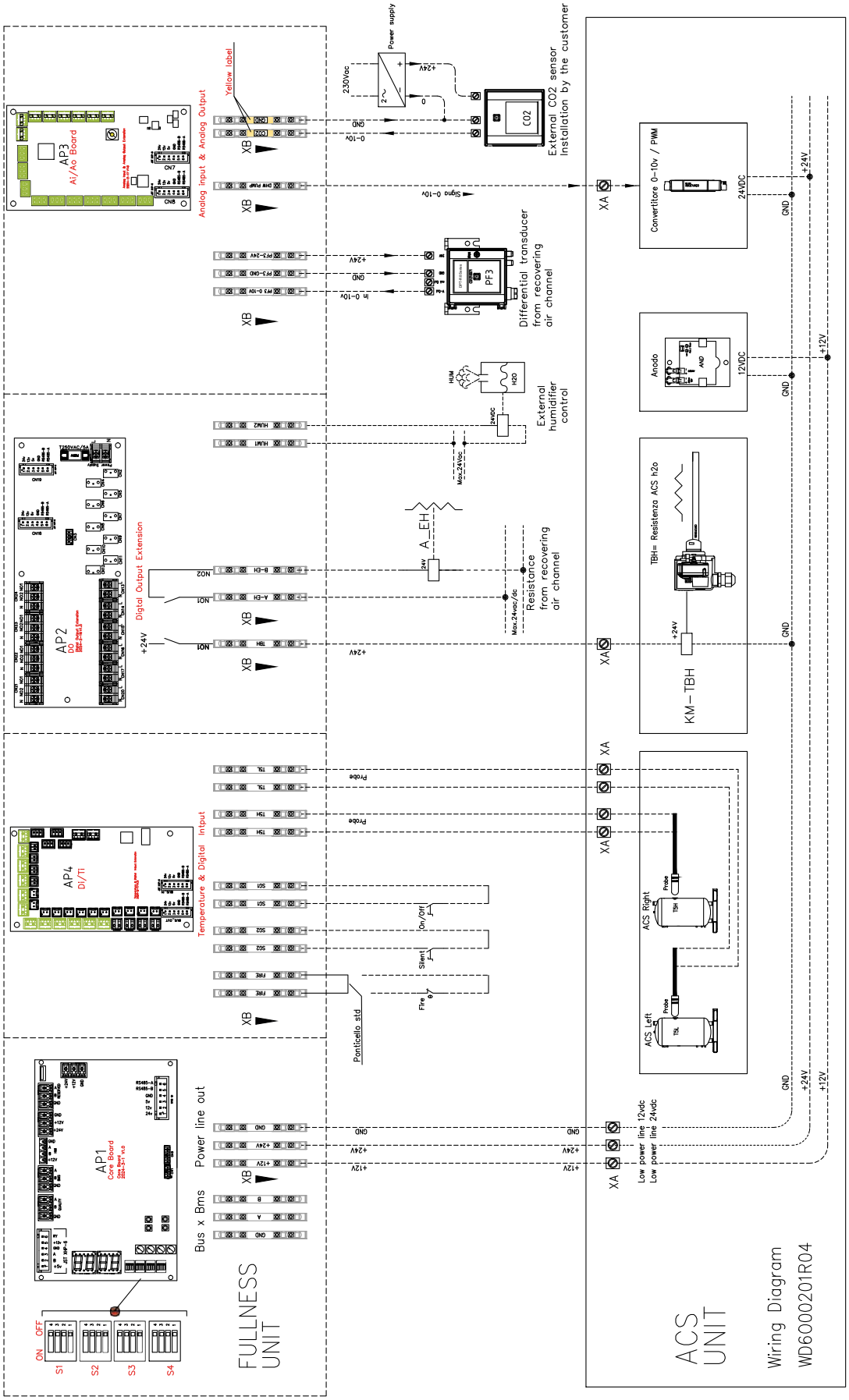
Fire alarm

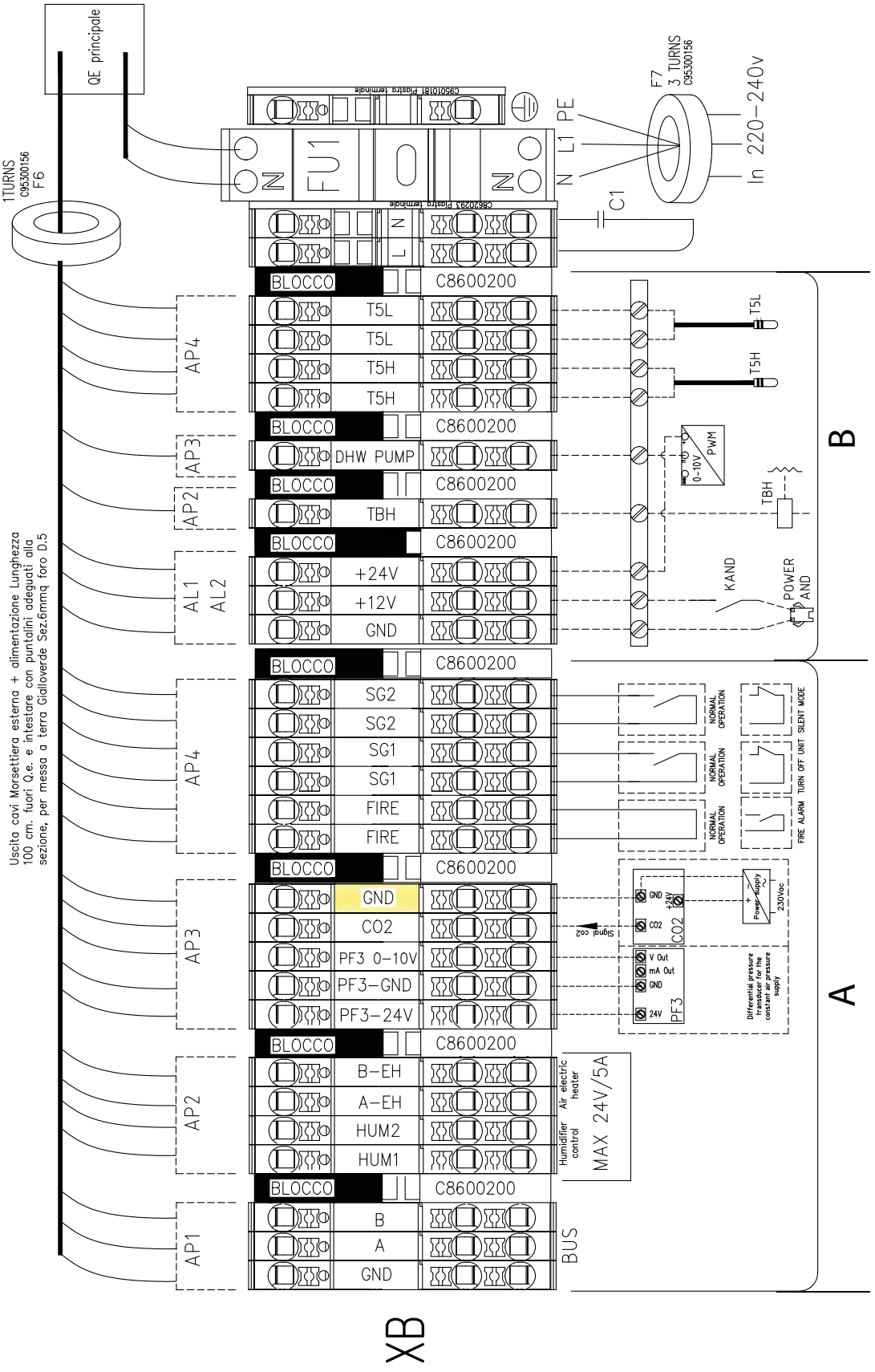
Provided by the customer

The control is jumpered as standard.

Remove the jumper to connect a smoke or fire detector.

9.6 Connections to be provided by customer



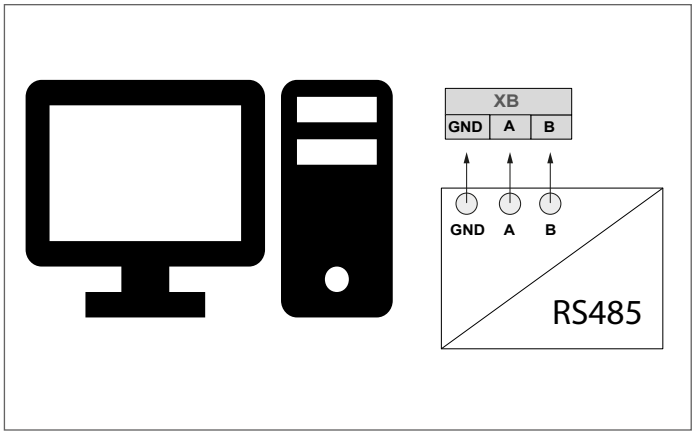


A Connections to be provided by customer

B Connections to Water module

9.7 Modbus communication

The unit can be connected to an external supervision system.



Cable type
2-wire shielded cable 0.75 - 1.25 mm² (AWG18-AWG16)

Setting

Address: 1

Baud rate: speed adjusts automatically

Parity: 0

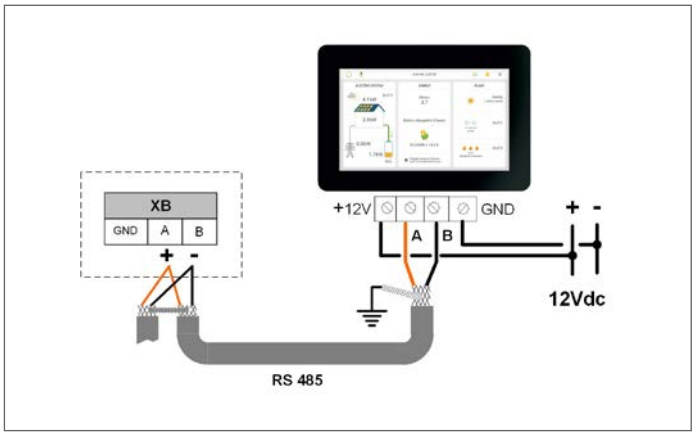
Stop bit: 1

ⓘ For the Modbus list, see the keypad manual.

9.8 Control4 NGR

Option

ⓘ For details, see Control4 NRG instruction manual.



Default settings (cannot be changed)

Modbus connection

Baud rate = 9600

Length = 8

Parity = none

Stop bit = 1

10. **Starting up the system**

⚠ This section is intended only for the Technical Support Service.

⚠ Follow the safety instructions in the “About the refrigerant” chapter.

⚠ The electrical and hydraulic connections and other works typical of the system are the responsibility of the Installer.

⚠ Operate in compliance with safety regulations in force.

⚠ Upon request, the service centres performing the start-up.

⚠ Agree upon in advance the star-up data with the service centre.

⚠ When installing or servicing, never leave the unit unattended after removing the service panels.

Check that:

- the unit should be installed properly and in compliance with this manual
- the electrical power supply line should be isolated at the beginning
- the unit isolator is open, locked and equipped with the suitable warning
- make sure no voltage is present

Remember that:

- during installation, unit settings and parameters should be configured by the Installer according to the installation configuration, climatic conditions, and end-user preferences
- related settings are accessible and programmable through the user interface

ⓘ Refer to the user interface manual for operation.

10.1 Preliminary checks

ⓘ For details refer to the different manual sections.

The indicated operations should be done by qualified technician with specific training on the product.

Upon request, the service centres performing the start-up.

The electrical, water connections and the other system works are by the installer.

Agree upon in advance the star-up data with the service centre.

Before checking, please verify the following:

- the unit should be installed properly and in conformity with this manual
- the electrical power supply line should be isolated at the beginning
- the unit isolator is open, locked and equipped with the suitable warning
- make sure no voltage is present

⚠ After turning off the power, wait at least 5 minutes before accessing to the electrical panel or any other electrical component.

⚠ Before accessing check with a multimeter that there are no residual voltage.

⚠ Before starting the unit, ensure that there is no dust or debris in the ambient and the ducting is free from obstructions.

The following check list is a brief reminder of the points to be checked and the operations to start the unit.

For details on the points mentioned, refer to the various chapters in the manual.

	Preliminary checks - Unit power supply OFF	✓
1*	The floor underneath the unit should be able to bear the weight of the unit filled with water (> 470 kg)	
2	The functional spaces of the unit are respected	
3	Structure integrity	
4	The unit is level	
5	Aeraulic system completed (piping installation + accessories)	
6	The anti-intrusion grille for small animals and leaves is installed (option)	
7	Exhaust grille to outdoors present	
8	Inlet to bedrooms, living room, etc.	
9	Ambient air circulation	
10	Air flow between different open spaces (under door gaps, grilles, etc.)	
11*	Inlet water filter from water supply system present and accessible for maintenance	
12*	Hydraulic system charged, pressurised and vented	
13*	Expansion vessel checked/charged with nitrogen	
14	Condensate drain	
15*	Pressure relief valve drain	

16	Air flow: correct intake and supply (no bypass)	
17	Refrigerant circuit visual check	
18	The supply channel in the room and the air exhaust channel are insulated	
19	The vibration damping joints between the channel and the unit are installed (e.g. fabric channels)	
20	Connections performed by customer	
21	Grounding connection	
22	An overload protection fuse and a differential circuit-breaker have been installed	
23	Power cables separated from signal cables	

* If the hydro module is present

10.2 SYSTEM CONFIGURATION

ⓘ For system configuration, of advanced features, refer to the user interface manual.

10.3 Start-up sequence

During the initial start-up procedure, refer to the Setup wizard in the Keypad manual.

Doors and windows fitted.

External doors and windows closed.

Start-up sequence		✓
1	Start-up sequence	
2	Unit powered	
3	Switch on the unit	
4	Check for abnormal vibrations or noise with compressor and fans switched on	
5	Check that outlets in the room and any dampers in the channels are open	
6	Check fan operation	
7	With the compressor switched on, check that the unit's power supply voltage ranges between 220-240 V	
8	Check for abnormal vibrations	
9	Instruct the user on how to switch on, switch off, change set-points and clean filters	
10	Collect the machine documentation and hand it over to the customer with the completed and signed commissioning report	

If the unit is configured in "constant pressure" mode (EnMultisensor parameter=1).

Carry out the following checks after switching on the unit:

- ► ensure that all duct dampers are open
- ► set the P_set parameter=100 Pa
- ► check that the supply flow-rate value is the same as the design value
- ► adjust the value of the P_set parameter, increasing or decreasing it until the supply flow-rate is the same as the design flow-rate

For renewal flow-rates of less than 130 m^3/h, follow this procedure:

- ► ensure that all external doors and windows are closed
- ► power up and switch on the unit, ensuring that the desired flow-rate has already been set
- ► if the unit is operating in winter mode, increase the set-point temperature to the maximum setting
- ► if the unit is operating in summer mode, decrease it to the minimum setting
- ► wait for the unit to reach operating speed
- ► set the desired renewal flow-rate
- ► increase the pressure drops of the exhaust air branch until the BQ2 value reaches the desired value

10.4 Start-up report

Identifying the operating objective conditions is useful to control the unit over time.

With the unit at steady state, i.e. in stable and close to working conditions, collect the following data:

- total voltages and absorptions with unit at full load
- absorptions of the different electric loads (compressors, fans, pumps etc)
- temperatures and flows of the different fluids (water, air) both in input and in output from the unit
- temperature and pressures on the characteristic points of the refrigerating circuit (compressor discharge, liquid, intake)

The measurements must be kept and made available during maintenance interventions.

10.5 2014/68/UE PED directive

DIRECTIVE 2014/68/UE PED gives instructions for installers, users and maintenance technicians as well.

Refer to local implementing regulations; briefly and for information only.

Compulsory verification of the first installation:

- only for units assembled on the installer's building site (for ex. Condensing circuit + direct expansion unit)
- Certification of setting in service:
- for all the units

Periodical verifications:

- to be executed with the frequency indicated by the Manufacturer (see the "maintenance inspections" paragraph)

11. **Maintenance**

11.1 **Prerequisites**

⚠ This section is intended only for the Technical Support Service.

⚠ Follow the safety instructions in the “About the refrigerant” chapter.

⚠ All operations must be carried out by personnel who meet the requirements of current regulations and are trained in the risks related to such operations.

⚠ Operate in compliance with safety regulations in force.

The maintenance allows to:

- maintaining the unit efficient
- reduce the deterioration speed all the equipment is subject to over time
- collect information and data to understand the efficiency state of the unit and prevent possible faults

Check that:

- the electrical power supply line should be isolated at the beginning
- the unit isolator is open, locked and equipped with the suitable warning
- make sure no voltage is present

⚠ After turning off the power, wait at least 5 minutes before accessing to the electrical panel or any other electrical component.

⚠ Before accessing check with a multimeter that there are no residual voltage.

⚠ When installing or servicing, never leave the unit unattended after removing the service panels.

11.2 Maintenance check list

⚠ Turn the unit off before any operation.

Intervention frequency (months)		1	6	12
1	presence of corrosions			X
2	panel fixing			X
3	outflow test		X	
4	air filters cleaning / inspection	X		
5	anemometers			X
6	air flow rate measurement			X
7	channelling: anti-vibration devices and fastenings check			X
8	check of the fixing and the insulation of the power lead			X
9	check of the earthing cable			X
10	electric panel cleaning			X
11	clamp closure, cable isolation integrity			X
12	power voltage and phase unbalancing (no load and under load)			X
13	absorptions of the single electrical loads		X	
14	checking for leaks *		X	
15	cooling circuit work parameter detection			*
16	control system test: setpoint, capacity steps, airflow variations		X	
17	control device test: alarm signal, probes, etc.		X	

ⓘ *Refer to the local regulations. Companies and technicians that carry out installation, maintenance/fixing, leak control and recovery interventions must be CERTIFIED as required by local regulations.

11.3 Unit booklet

It's advisable to create a unit booklet to take notes of the unit interventions.

In this way it will be easier to adequately note the various interventions and aid any troubleshooting.

Report on the booklet:

- date
- intervention description
- carried out measures etc.

11.4 Standby mode

In case of a long period of inactivity:

► turn off the power

► avoid the risk of frost (use glycol or empty the system)

11.5 Emptying the system

The units are not fitted with a drain valve, so one must be provided on a pipe connecting to the system near to the device and below it.

⚠ All operations must be carried out with the unit shut down and disconnected from the mains power supply.

Before emptying:

- check that the system water filling/refilling valve is closed

To drain the system:

- open the drain valve on the outside of the device

► open all of the system and terminal relief valves

11.6 Cleanliness of the structure

To clean:

► wash at least once or twice a year depending on exposure (pollution, salt deposits, dirt)

► clean with neutral detergent and cold or warm water (max 30°C)

⚠ Do not use solvents or acid, alkaline, abrasive products.

⚠ Check the condition of the parts making up the structure.

⚠ Paint so as to eliminate or reduce oxidation at the points in the unit where this problem may occur

⚠ Check the fastening of the external paneling of the unit. Poor fastening may give rise to malfunctions and abnormal noise and vibration,

11.7 Water pressure

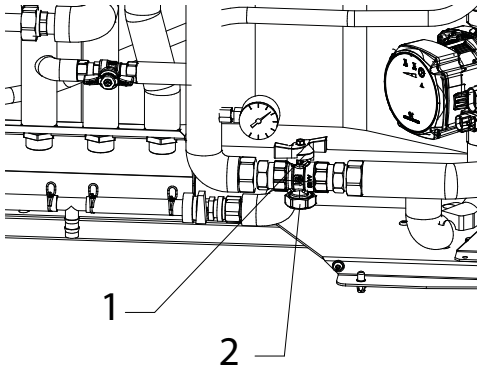
► check that the water pressure is greater than 1 bar

If necessary:

► add water up to 1.5-1.8 bar

11.8 Water filter

► check and clean the water filter



1 Shut-off valve with filter
2 Filter cap

In case of obstruction:

► close the shut-off valve with the filter
► unscrew the cap
► pull the filter out
► clean

11.9 Expansion vessel

► check the expansion vessel charge
► check at least once a year

If you necessary load with nitrogen, take care that the pressure does not exceed the value indicated on the label.

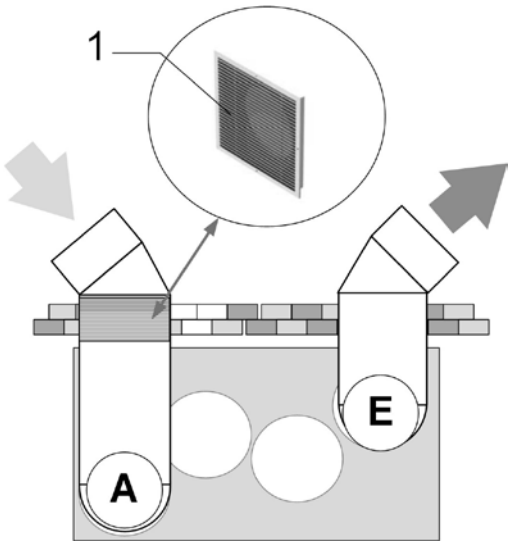
11.10 Safety valve

► check the safety valve for leakage
► check that the pressure relief valve pipe is correctly positioned for draining the water
► check that the safety valve pipe is free from obstruction

11.11 Unit electrical panel

► visually inspect the electrical panel
► check the tightness of the connections
► check the cleanliness of the electrical panel.

11.12 Outdoor air outlet



1 Return grille

Periodically check that it is not obstructed.

11.13 Air filter

It is very important that the air handling coil can offer maximum heat exchange: the unit must therefore always operate with a filter installed and clean.

For hygiene reasons, it is extremely important to clean and replace the filter.

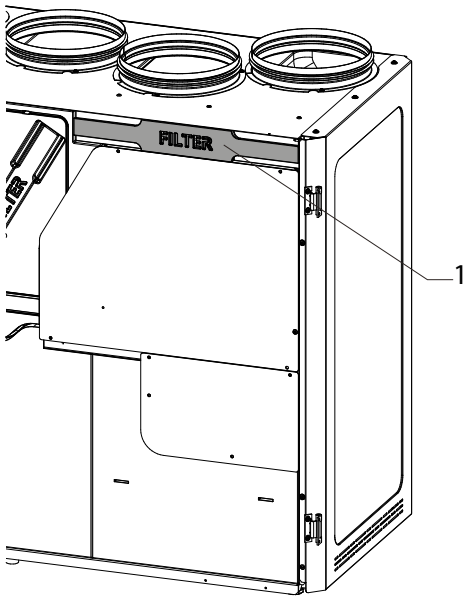
Operation with a clogged filter leads to a reduction in the air flow-rate with malfunctions and blockages, and even possible breaks in the unit.

The frequency with which the filter must be checked depends on the outdoor air quality, the operating hours of the unit, and the dustiness and crowded areas of the rooms.

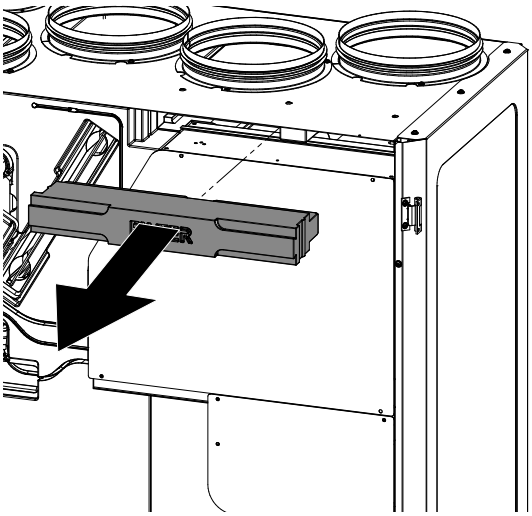
Frequency can indicatively vary from WEEKLY to MONTHLY. It is advised to start with frequent checks, subsequently adjusting frequency to degree of detected dirt.

⛔ Do not wash the filter, washing can impair its functionality.

⚠ The old filter must be disposed of according to current regulations.



1 M5 filter cover



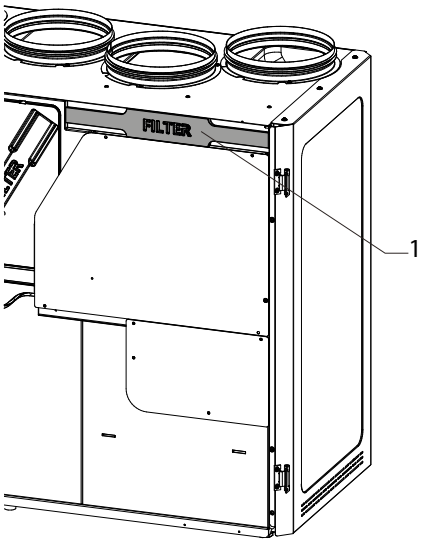
To access:

- ► open the access panel
- ► remove the filter cover
- ► gently remove the filter so as not to dirty the area below
- ► check the condition, replace if necessary
- ► refit the filter cover

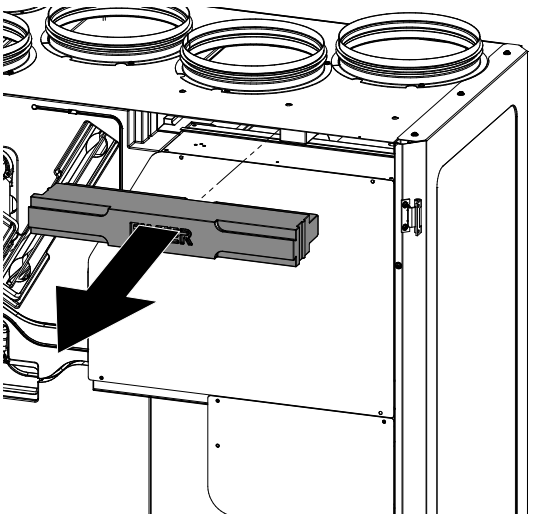
11.14 **iFD filter**

Option

Impurities can cause a decrease in filtration efficiency and also an increase in the load losses of the component which increase the power consumption of the supply fan. For this reason it is mandatory to clean the filter.



1 iFD filter cover



To access:

- ► open the access panel
- ► remove the filter cover
- ► gently remove the filter so as not to dirty the area below

⚠ Do not use water hotter than 50°C to clean the filters.

⚠ Do not use air hotter than 50°C to dry the filters.

Below is the sequence to follow:

1. Remove the iFd filter cell from the aluminum frame
2. First use a soft brush or vacuum cleaner to clean the floating dust on the surface of the filter; then clean the module with water (you can directly put the module on the faucet for washing)
3. Then spray the kitchen cleanser evenly on the IFD filter and ensure that the front and back sides and the holes are sprayed with cleanser (But, strong acid and strong alkaline type cleanser is strictly prohibited)
4. Wait for 5~10 mins
5. Then, use a soft brush to remove the dust on the surface of the filter (be careful not to damage the module)
6. Lastly, wash the filter with clean water (if part of the filter is not clean, repeat steps 2-5 above)
7. It is recommended to dry the filter cell in an open or dry place.

2



3



4



5



⚠ Closed and / or humid places can prevent the filter from completely drying. The entire cell must dry completely before restoring the electrical connections on the machine. Make sure the filter cell electrical connectors are completely dry before making the connections. A connector that is still wet / damp can cause irreversible damage to the entire filter cell.

⚠ Operate in compliance with safety regulations in force.

⚠ Upon request, the service centres performing the start-up.

11.15 **Air prefilters**

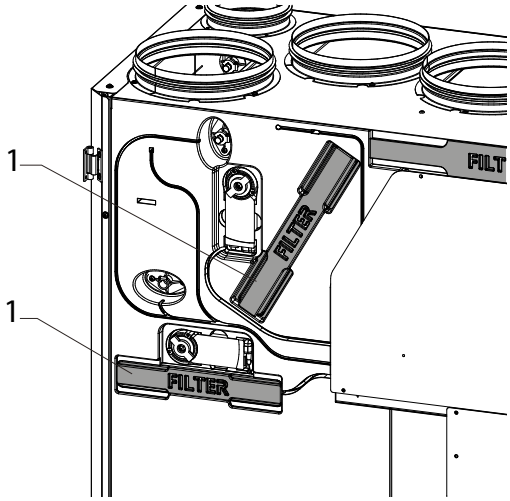
It is advised to start with frequent checks, subsequently adjusting the frequency to the degree of dirtying.

⚠ For hygiene reasons, it is extremely important to clean and replace the filters.

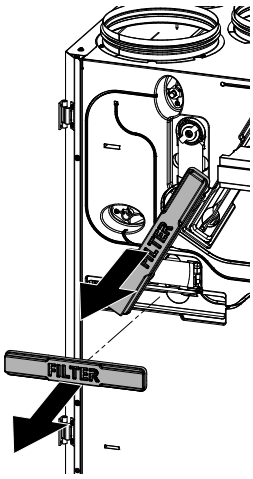
⚠ Operation with clogged filters leads to a reduction in the air flow rate with malfunctionings and block, up to possible breaks in the unit.

⚠ The frequency with which the filters must be checked depends on the quality of the air, the unit operation hours, the dustiness and crowding of rooms.

⚠ Frequency can indicatively vary from WEEKLY to MONTHLY.



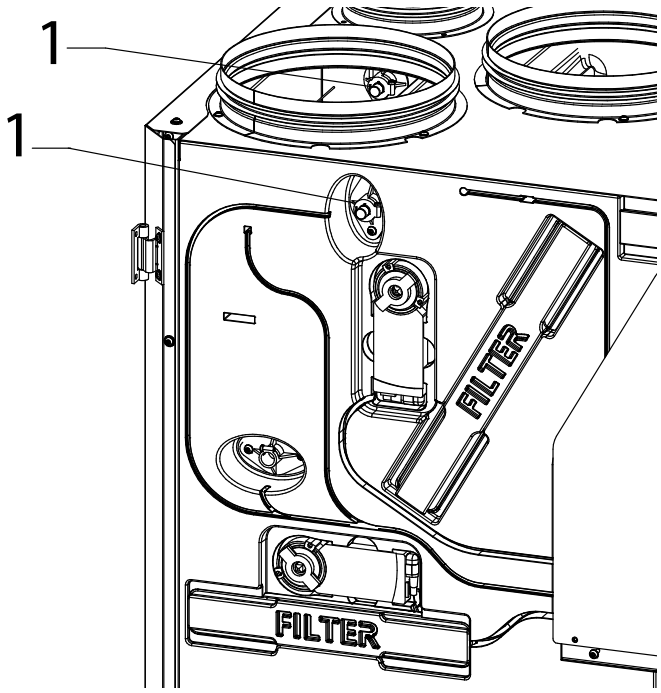
1 Filter cover



To clean:

- ► open the access panel
- ► remove the filter covers
- ► delicately remove the filter avoiding dirtying the area below
- ► vacuum the dust from the filter with a hoover
- ► insert it back in its seat
- ► refit the filter covers

11.16 **Anemometers**



1 Anemometer

If the sensor's sensitive element is dirty.

To clean:

- ► remove the anemometer
- ► wash the sensitive element in isopropyl alcohol, preferably using an ultrasonic cleaner
- ► alternatively, gently shake the probe for a few minutes in a container filled with isolpropyl alcohol and leave it to dry

⚠ Periodically check the cleanliness of the two anemometers.

⛔ Do not touch or rub the sensor.

⛔ Do not clean it with any mechanical tools.

11.17 **Cleaning openings and filters**

Filters and openings must be cleaned to ensure the system works properly.

Visually check for clogging.

⚠ Frequent visual inspection and cleaning at least every 6 months is recommended.

Filter cleaning

Check the filter, replace if very dirty or wash in water.

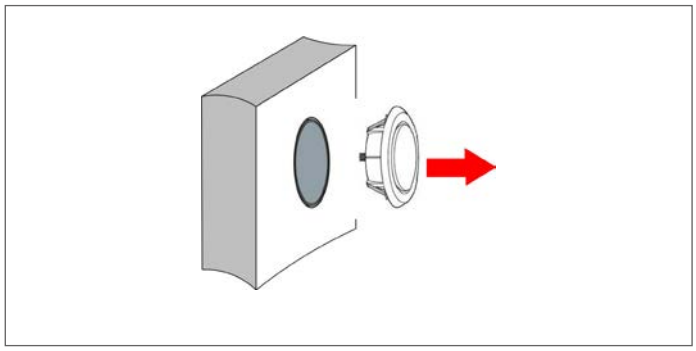
To clean:

- ► wash in warm water with common detergent
- ► rinse thoroughly under running water, avoiding spillage into the ambient
- ► dry

Alternatively:

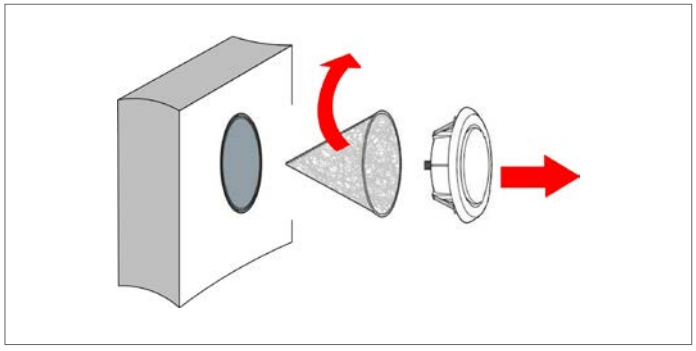
- ► use blowing or suction

Inlet



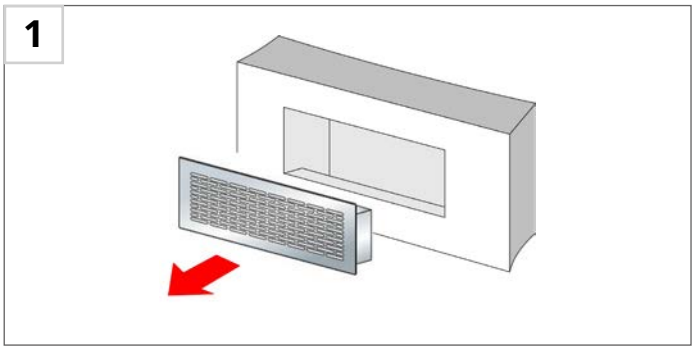
Extraction opening filter replacement

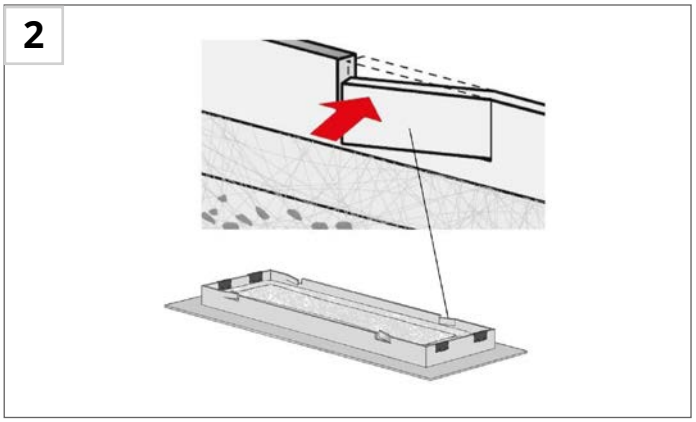
(VIEX)

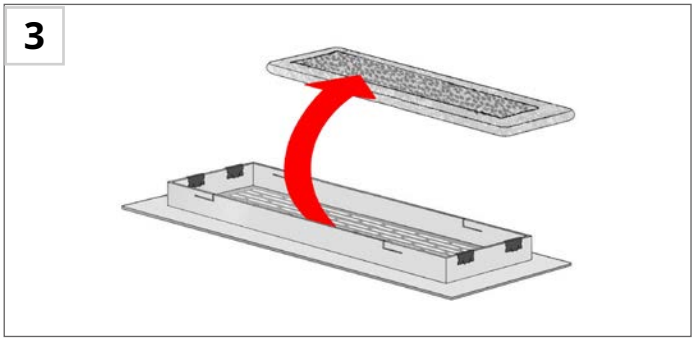


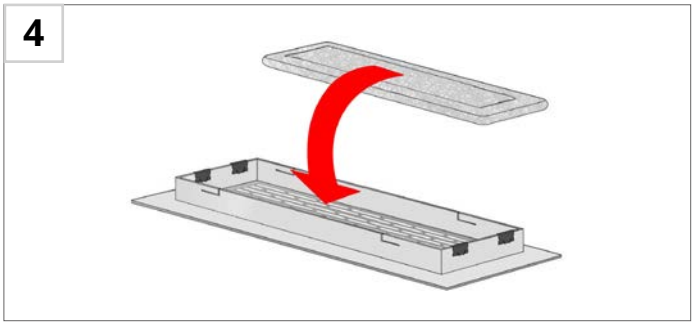
Rectangular grille filter replacement

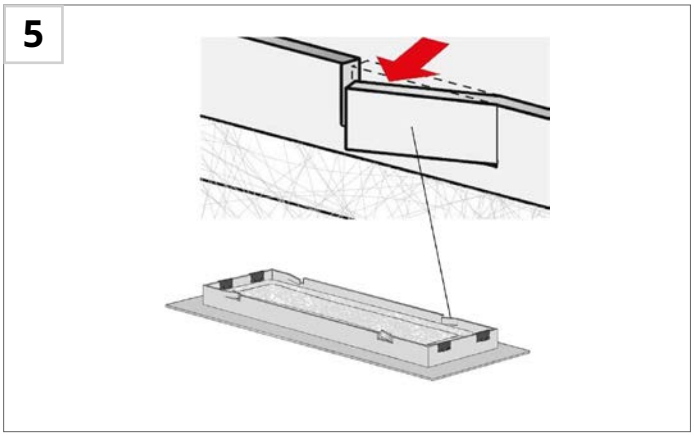
(GINOX-GIVEX)



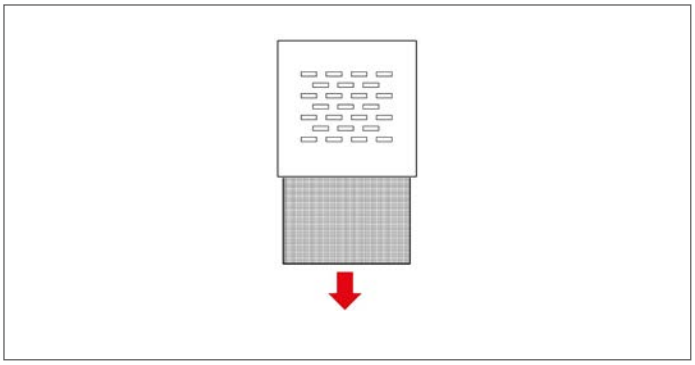




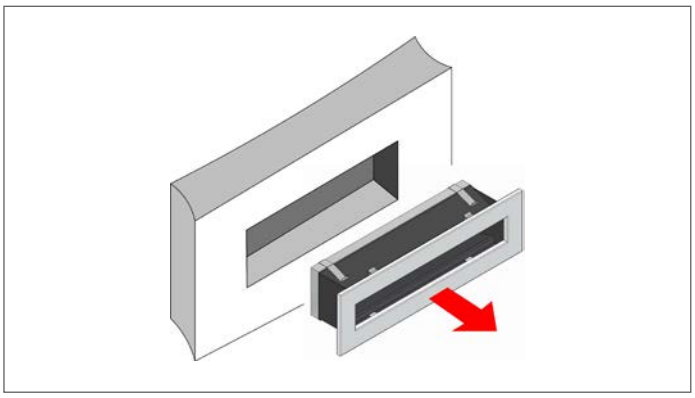


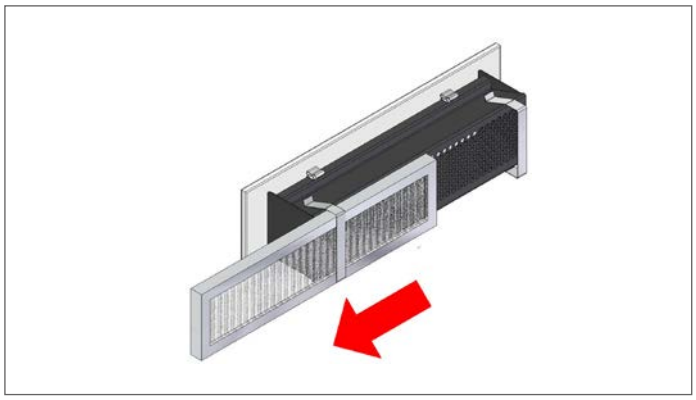


Square grille metal filter
(GQIEX)



Intake grille regenerable filter
(GAIR50/80X)





⚠ Check that air filters are fitted to the air outlets/intake grilles before switching on the unit, otherwise the entire air distribution system could become dirty in a short space of time.

11.18 Aeraulic system cleaning/ sanitisation

ⓘ The aeraulic system must be cleaned by a specialised technician trained in the field of aeraulic hygiene (in accordance with technical regulations and current national/local regulations).

⚠ The aeraulic system must be inspected periodically to check the condition of the ducts.

If there is a build-up of dirt, contact a specialised technician for cleaning.

Cleaning is carried out using suitable tools (rotary brushes fitted on a flexible cable, vacuum dirt exhauster, etc.), and is done on the supply and return channels.

The channels prone to dust build-ups are the room extraction channels, whereas the room supply channels are less prone to dirtying because there is always air filtration.

11.19 Periodic maintenance

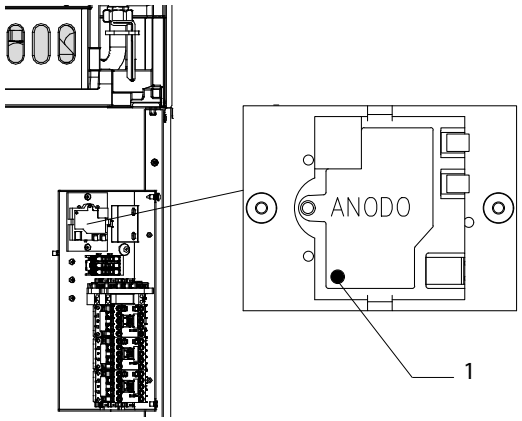
⚠ Only qualified personnel can operate on the unit, as required by the regulation in force

11.20 Electronic anode

The unit is equiped with a dynamic system for the tank active protection from corrosion.

The anode is in active titanium.

Periodical substitutions are not foreseen.



1 Bicolor LED electronic anode

Diagnostics

3 Rapid red flashes	3 Rapid red flashes = entry in the signalling function
1 Red flash + Number of read flashes	Number of read flashes shows number of months
1 Green flash + Number of green flashes	Number of green flashes showns numbers of years
3 Rapid green flashes	3 Rapid green flashes = exit of the signalling function

Note: to check the working time during normal operation simply disconnect and recconect the power supply of the device. This is locked and not manageable.

Power supply alarm signals

1 Red flash every 1 second	1 Red flash every 1 second - Insufficient power supply (<11V)
2 Red flashes every 1 second	2 Red flashes every 1 second - Overvoltage from power supply (>14V)
No signal	No signal - Device off - No power supply

Power supply alarm signals

Green flash then one long red, alternate	Green flash then one long red, alternate - Anode disconnected 3 Red flashes every 1 second - Short circuit on output
2 Red flashes every 1 second	2 Red flashes every 1 second - Overvoltage from power supply (>14V)

Working siganls

1 Green flash every 1 second, repeat	1 Green flash every 1 second, repeat - Protection OK (*)
1 Green flash + 1 red, repeat	1 Green flash + 1 red, repeat - Protection low (*)
1 Green flash + 2 red, repeat	1 Green flash + 2 red, repeat - No protection (*)
1 Green flash + 3 red, repeat	1 Green flash + 3 red, repeat - Over Protection (*)

(*) At first use, it may be possible to have all these signals at the same time as the wall potential could be close to the protection limit.

Signal priority - In case of simultaneous signals

Hight priority	Power supply alarms
Medium priority	Wiring alarms
Low priority	Working alarms

12. **Decommissioning**

12.1 **Disconnection**

⚠ Before performing any work, carefully read: SAFETY WARNINGS FOR OPERATIONS ON UNITS CONTAINING R-454C

⚠ Avoid leak or spills into the environment.

⚠ Before disconnecting the unit, the following must be recovered, if present:

- refrigerant gas
- Anti-freeze solutions in the hydraulic circuit

⚠ Awaiting decommissioning and disposal, the unit can also be stored outdoors, as bad weather and rapid changes in temperature do not harm the environment provided that the electric, cooling and hydraulic circuits of the unit are intact and closed.

12.2 **WEEE INFORMATION**

The manufacturer is registered on the EEE National Register, in compliance with implementation of Directive 2012/19/EU and relevant national regulations on waste electrical and electronic equipment.

This Directive requires electrical and electronic equipment to be disposed of properly.

Equipment bearing the crossed-out wheelie bin mark must be disposed of separately at the end of its life cycle to prevent damage to human health and to the environment.

Electrical and electronic equipment must be disposed of together with all of its parts.

To dispose of “household” electrical and electronic equipment, the manufacturer recommends you contact an authorised dealer or an authorised ecological area.

“Professional” electrical and electronic equipment must be disposed of by authorised personnel through established waste disposal authorities around the country.

In this regard, here is the definition of household WEEE and professional WEEE:

WEEE from private households: WEEE originating from private households and WEEE which comes from commercial, industrial, institutional and other sources which, because of its nature and quantity, is similar to that from private households. Subject to the nature and quantity, where the waste from EEE was likely to have been by both a private household and users of other than private households, it will be classed as private household WEEE;

Professional WEEE: all WEEE which comes from users other than private households.

This equipment may contain:

- refrigerant gas, the entire contents of which must be recovered in suitable containers by specialised personnel with the necessary qualifications;
- lubrication oil contained in compressors and in the cooling circuit to be collected;
- mixtures with antifreeze in the water circuit, the contents of which are to be collected;
- mechanical and electrical parts to be separated and disposed of as authorised.

When machine components to be replaced for maintenance purposes are removed or when the entire unit reaches the end of its life and needs to be removed from the installation, waste should be separated by its nature and disposed of by authorised personnel at existing collection centres.



12.3 **WEEE Disposal Procedure (Italian Market)**

12.4 **WEEE Disposal Procedure (German Market)**

12.5 WEEE Disposal Procedure (Croatian Market)



13. **Residual risks**

13.1 General

In this section the most common situations are indicated,as these cannot be controlled by the manufacturer and could be a source of risk situations for people or things.

13.2 Danger zone

- This is an area in which only an authorised operator may work.
- The danger zone is the area inside the unit which is accessible only with the deliberate removal of protections or parts thereof.

13.3 Handling

- The handling operations, if implemented without all of the protection necesssary and without due caution, may cause the drop or the tipping of the unit with the consequent damage, even serious, to persons, things or the unit itself.
- Handle the unit following the instructions provided in the present manual regarding the packaging and in compliance with the local regulations in force.
- Should the refrigerant leak please refer to the refrigerant “Safety sheet”.

13.4 Installation

Remember that:

- incorrect installation of the unit can lead to water leaks, condensate accumulation, refrigerant leakage, electric shock, fire, malfunction or damage to the unit itself
- installation of the unit in a place where even infrequent flammable gas leaks are possible and the accumulation of these gases in the area around the unit can cause explosions and fires
- installation of the unit in a place that is not suitable to support its weight and/or provide adequate anchorage may cause it to fall and/or tip over, resulting in damage to property, people or the unit itself

⚠ **Check:**

- the location of the unit carefully
- that the installation is only carried out by qualified technical personnel and the instructions in this manual and current local regulations are followed
- the location of the unit carefully

⚠ Easy access to the unit by children, unauthorised persons or animals may be the source of accidents, some serious.

⚠ Install the unit in areas which are only accessible to authorised person and/or provide protection against intrusion into the danger zone.

13.4.1 General risks

⚠ Smell of burning, smoke or other signals of serious anomalies may indicate a situation which could cause damage to people, things or the unit itself.

In this case:

- electrically disconnect the unit
- contact the authorised service centre to identify and solve the problem causing the anomaly

⚠ Accidental contact with exchange batteries, compressors, air delivery tubes or other components may cause injuries and/or burns.

⚠ Always wear suitable clothing including protective gloves to work inside the danger zone.

⚠ Maintenance and repair operations carried out by non-qualified personnel may cause damage to persons, things or the unit itself.

⚠ Always contact a qualified assistance centre

⚠ Failure to close the unit panels, or to check that all panel fixing screws are properly tightened, can result in damage to property, people or the unit itself

⚠ Periodically check that all the panels are correctly closed and fixed

⚠ If there is a fire the temperature of the refrigerant could reach values that increase the pressure to beyond the safety valve with the consequent possible projection of the refrigerant itself or explosion of the circuit parts that remain isolated by the closure of the

tap.

⚠ Do not remain in the vicinity of the safety valve and never leave the refrigerating system taps closed.

13.4.2 **Electric parts**

⚠ An incomplete attachment line to the electric network or with incorrectly sized cables and/ or unsuitable protective devices can cause electric shocks, intoxication, damage to the unit or fires.

⚠ Carry out all of the work on the electric system referring to the electric layout and the present manual ensuring the use of a system thereto dedicated.

⚠ An incorrect fixing of the electric components cover may lead to the entry of dust, water etc inside and may consequently electric shocks, damage to the unit or fires.

⚠ Always fix the unit cover properly.

⚠ When the metallic mass of the unit is under voltage and is not correctly connected to the earthing system it may be a source of electric shock and electrocution.

⚠ Always pay particular attention to the implementation of the earthing system connections.

⚠ Contact with parts under voltage accessible inside the unit after the removal of the guards can cause electric shocks, burns and electrocution.

⚠ Open and padlock the general isolator prior to removing the guards and signal work in progress with the appropriate sign.

⚠ Contact with parts that could be under voltage due to the start up of the unit may cause electric shocks, burns and electrocution.

⚠ When voltage is unnecessary for the circuit open the isolator on the attachment line of the unit itself, padlock it and display the appropriate warning sign.

13.4.3 **Moving parts**

⚠ Contact with the transmissions or with the fan aspiration can cause injuries.

Remember that:

- before accessing inside the unit, open the disconnector switch on the unit connection line, padlock it and display the appropriate warning sign
- contact with fans can cause injury.
- before removing the protection grills or fans, open the disconnector switch on the unit connection line, padlock it and display the appropriate warning sign.

13.5 **Refrigerant**

⚠ The intervention of the safety valve and the consequent expulsion of the gas refrigerant may cause injuries and intoxication.

⚠ Always wear suitable clothing including protective gloves and eyeglasses for operations inside the danger zone.

⚠ Should the refrigerant leak please refer to the refrigerant “Safety sheet”.

⚠ Contact between open flames or heat sources with the refrigerant or the heating of the gas circuit under pressure (e.g. during welding operations) may cause explosions or fires.

⚠ Do not place any heat source inside the danger zone.

⚠ The maintenance or repair interventions which include welding must be carried out with the system off.

13.6 Hydraulic parts

⚠ Defects in tubing, the attachments or the removal parts may cause a leak or water projection with the consequent damages to people, things or shortcircuit the unit.

14. General technical data

Performance

Size			3.1
Capacity - Efficiency			
Heating capacity (1)		kW	5,21
COP (1)			3,13
Erp energy efficiency class in heating			A
SCOP			2,90
nsh		%	113
Cooling capacity (1)		kW	5
EER (1)			2,46
Erp energy efficiency class in cooling			B
SEER			3,79
nsh		%	148,50
Fan			
Maximum supply airflow in the room		m^3/h	800
renewal air		m^3/h	300
recirculation air		m^3/h	500
Maximum stale air extraction flow-rate		m^3/h	300
Maximum stale air recirculation flow-rate		m^3/h	800
Maximum fresh air intake flow-rate		m^3/h	1200
renewal air		m^3/h	300
Maximum air flow of exhaust air to the outside		m^3/h	1200
exhaust air/stale air		m^3/h	300
Available pressure of the fans		Pa	180
Type of fans			Radial
Filtration			
Supply air filter			ePM_{10} 50%
Outdoor and ambient air prefilter			Coarse 30%
Renewal and recirculation air prefilter			Coarse 30%
Heat pump			
Compressor			Scroll
Refrigerant gas			R-454C
Refrigerant charge (2)		kg	0,85
Total charge		t CO_2-eq	0,126
Sound pressure level at 1 m		dB(A)	45/40
Domestic hot water module			
Capacity		litres	200
Storage tank material			Inox AISI 316
Electric safety heater		kW	
Domestic hot water tank protection anode			Electronic
Circulator			Electronic
DHW expansion vessel		litres	15
Recovery circuit expansion vessel		litres	3
AISI 316 stainless steel braze-welded plate exchanger			
Pressure relief valve - DHW side		bar	6
Pressure relief valve - recovery circuit side		bar	3
Overall dimensions (Operation)			
Dimensions		mm	1.100 x 600 x 2.000
Operation weight - Ventilation Module		kg	150
Shipping weight - Ventilation Module		kg	166
Operation weight - DHW Module		kg	360
Shipping weight - DHW Module		kg	150

1) Data calculated in accordance with EN 14511-2022, with reference to an available pressure of 50 Pa
2) With DHW module, the charge value is 1 kg

Technical characteristics

Size			3.1
Compressor			
Refrigerant		-	R-454C
Compressor type (1)		-	Scroll
No. of Compressors		-	1
Refrigeration circuits		-	1
Control capacity		%	33-100%
Refrigerant charge (2)		kg	0,85
Treatment area fans (supply)			
Type of fans/motor		-	CFG/EC
No. of supply fans		-	1
Nominal supply airflow		m^3/h	800
Maximum supply airflow		m^3/h	800
Installed unit power		kW	0,168
Max. supply static pressure (4)		Pa	180
Exhaust fan			
Type of fan/motor (3)		-	CFG/EC
Number of exhaust fans		-	1
Installed unit power		kW	0,168
Maximum exhaust static pressure		Pa	200
Condensate drain pump			
Maximum head		m c.a	1,2
Connection		mm	16
Water module connections			
Aqueduct inlet		inch	3/4"
Hot water withdrawal		inch	3/4"
Pump supply		inch	3/4"
Pump return		inch	3/4"

1) Scroll = Scroll Compressor
2) Approximate values for standard units with possible variation of +/- 10%. The actual data are indicated on the unit's nameplate.
3) CFG = centrifugal fan EC = Electronic Switching
4) Net pressure available at nominal flow-rate

Fan performance

Size			3.1
Nominal supply airflow		m^3/h	800
Supply fan consumption	1	W	100
Nominal exhaust airflow		m^3/h	1000
Exhaust fan consumption	2	W	75
SFP (Specific fan power) supply fan		$W/(m^3/s)$	460
SFP (Specific fan power) exhaust fan		$W/(m^3/s)$	270

1) Available static supply pressure 50 Pa
2) Available static exhaust pressure 50 Pa

Hydraulic data

Characteristics		
Net boiler capacity	l	190
DHW tank setpoint	°C	51
Water mixed at 40°C (V40)	l	231
Heating time	h:min	02:36
Energy consumption during heating operation	kWh	5,363
Declared load profile	-	XL
nwh	%	56%
Domestic water energy class	-	B

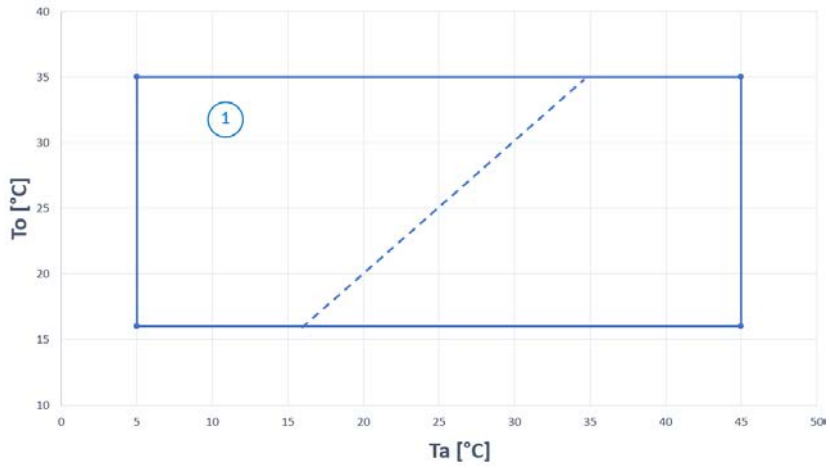
Sound levels

Flow-rate supply	Sound power level								Sound power level	Sound pressure level (1m)
	Octave band (Hz)									
mc/h	63	125	250	500	1000	2000	4000	8000	**dB(A)**	**dB(A)**
800	56,4	62,4	58,9	52,8	46,4	39,2	29,7	23	**55**	**45**
600	54,1	59,4	55,3	48,9	42,7	35,1	24,9	17	**52**	**42**
Silent	52,2	56,6	53,4	51,5	48,4	44,5	39,8	30,7	**50**	**40**

Sound levels refer to a ducted unit with nominal load. Available static pressure 50 Pa
The average sound pressure level, in compliance with UNI-EN ISO 3744, refers to a distance of 1 m from the outer surface of a ducted unit.
Power measurements are taken in accordance with UNI EN ISO 9614-1, with a ducted unit installed near a reflective surface, with a tolerance of 2 dB(A) on the measured sound power level.
The SILENT operating mode (selectable via keypad or dry contact) limits the compressor and fan speed in order to reduce the noise level
If the unit is installed under conditions other than the nominal test conditions (e.g., near walls or obstacles in general), sound levels may vary significantly

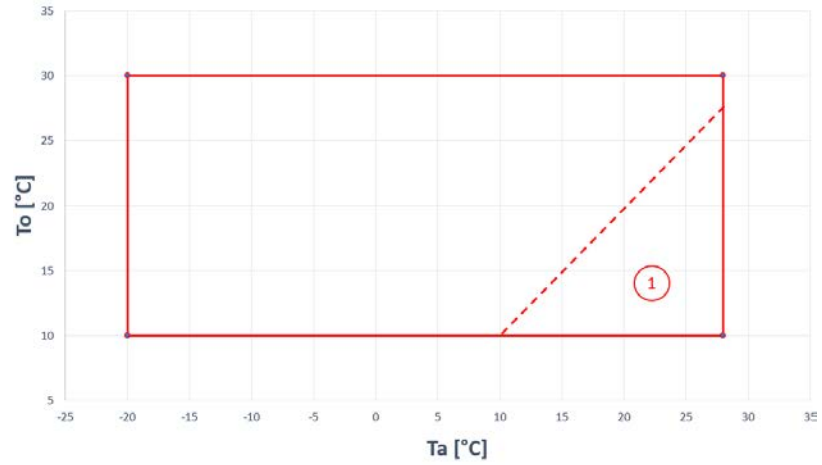
Operating range

Cooling



To = outdoor air temperature
Ta = indoor air temperature
1) Possible Free cooling operation

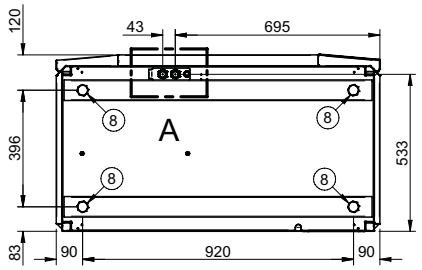
Heating

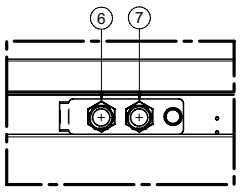


To = outdoor air temperature
Ta = indoor air temperature
1) Possible Free cooling operation

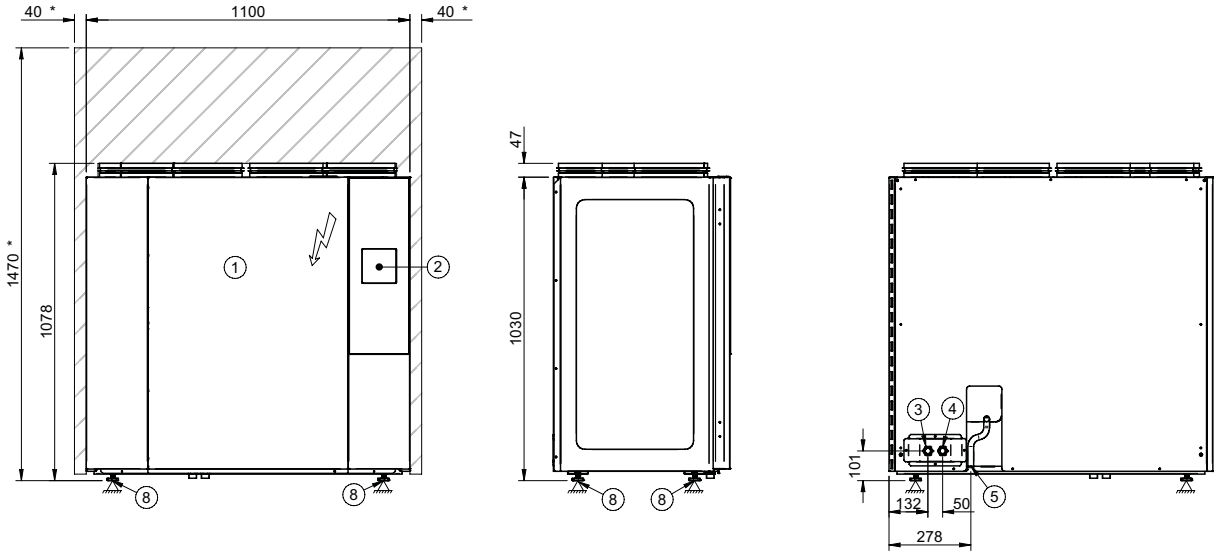
CiSDN-M EP 1 MR 3.1 - Air Unit

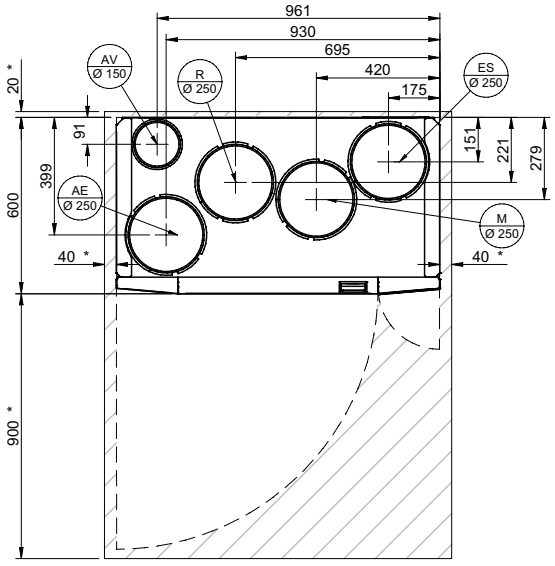
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DETTAGLIO A



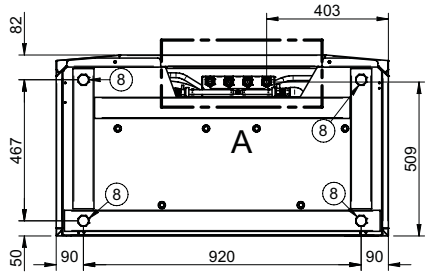


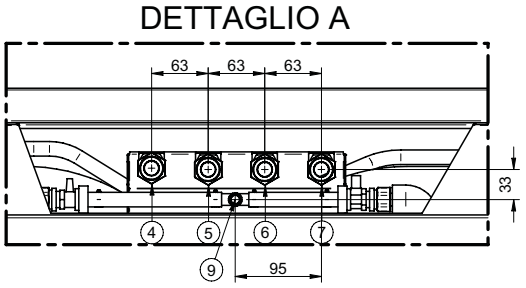
Size		3.1
Operating weight	kg	150
Shipping weight	kg	166

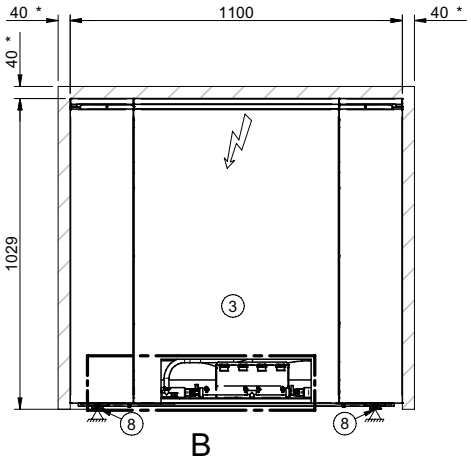
1	Filter and electrical panel inspection
2	Unit control keypad
3	Line inlet
4	Auxiliary cables inlet
5	Condensation drain int.Ø 16 mm
6	Supply to DHW unit (1) M 3/4"
7	Return from DHW unit (2) M 3/4"
8	Supporting feet
R	Air return ø250 mm
M	Air supply ø250 mm
AE	Fresh air intake ø250 mm
ES	Air exhaust ø250 mm
AV	Extraction of stale air ø150 mm
*	Functional spaces

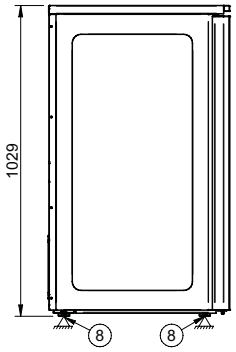
CiSDN-M EP 1 MR 3.1 - DHW Unit

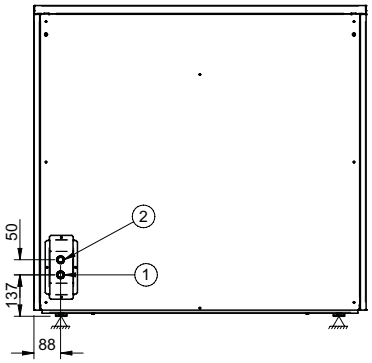
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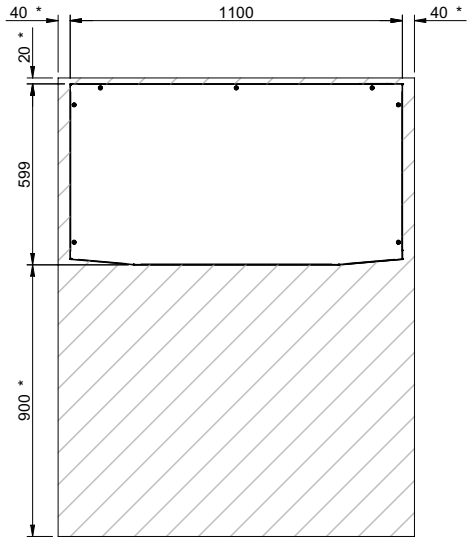


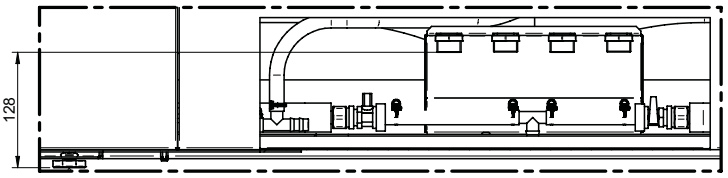












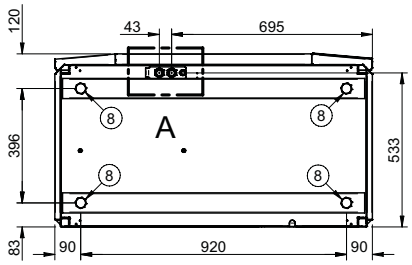
DETTAGLIO B

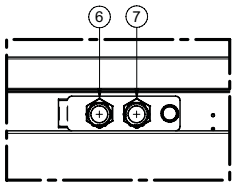
Size		3.1
Operating weight	kg	360
Shipping weight	kg	150

1	Power input
2	Auxiliary cables inlet
3	Inspection of DHW/Technical water circuit components and DHW module electrical panel
4	Water supply system inlet M 3/4”
5	DHW outlet M 3/4”
6	Return from main unit M 3/4”
7	Supply to main unit M 3/4”
8	Supporting feet
*	Functional spaces

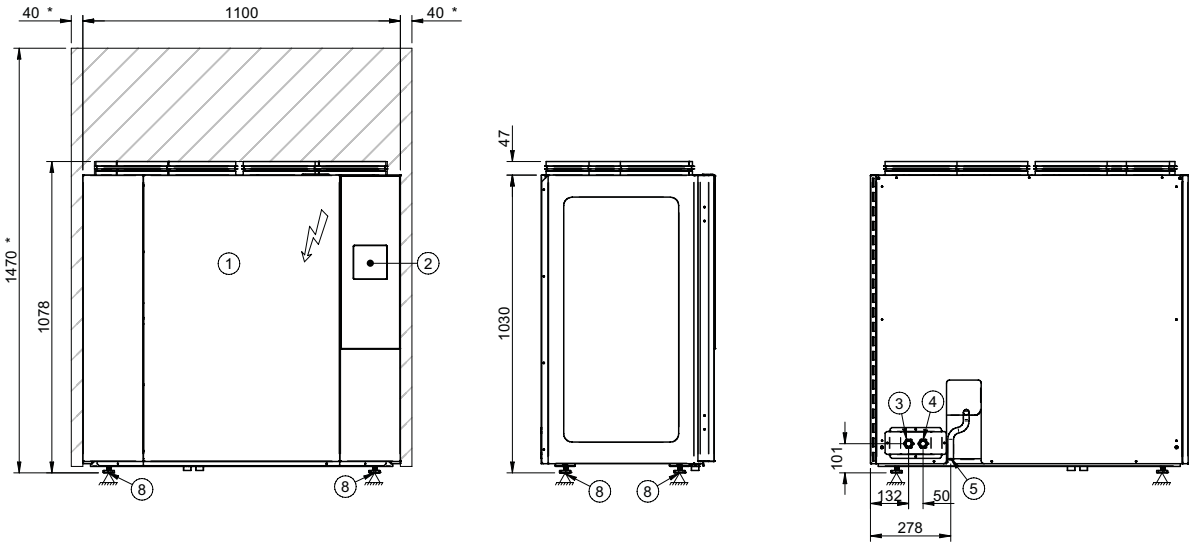
CiSDN-M EP 1 MR 3.1 - Packaged Unit

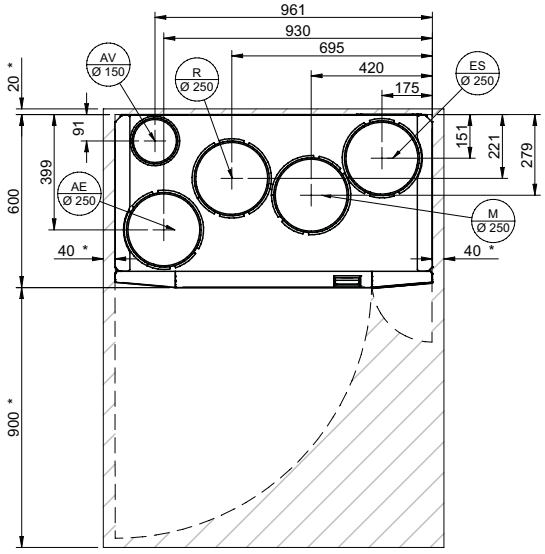
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DETTAGLIO A





Size		3.1
Operating weight	kg	510

1	Air module filter and electrical panel inspection
2	Unit control keypad
3	Power line inlet
4	Auxiliary cables inlet
5	Condensation drain int.Ø 16 mm
6	Inspection of DHW/Technical water circuit components and DHW module electrical panel
7	Water supply system inlet M 3/4”
8	DHW outlet M 3/4”
	Return from main unit M 3/4”
	Supply to main unit M 3/4”
	Supporting feet
R	Air return ø250 mm
M	Air supply ø250 mm
AE	Fresh air intake ø250 mm
ES	Air exhaust ø250 mm
AV	Extraction of stale air ø150 mm
*	Functional spaces

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