USER'S MANUAL

Instructions and warnings **IE**
Installer
Maintenance technician

1.046617ENG

IMMERGAS

AUDAX.DK4

Outdoor unit

Warning this manual contains the exclusive instructions for use for professionally qualified installers, in compliance with the laws in force.
The manufacturer will not be held liable in the case of damage to people, animals or property due to the failure to observe the instructions contained in the manuals supplied.

INDEX

Instructions on how to correctly dispose of the product.
At the end of its life, this appliance must not be disposed of as mixed municipal waste.
It is mandatory to separate this type of waste so that the materials making up the appliance can be recycled and reused. Contact authorised operators for disposal of this type of appliance. Incorrect management of waste and its disposal has potential negative effects on the environment and on human health. The symbol on the appliance represents the prohibition of disposing of the product as mixed municipal waste.

The company **IMMERGAS S.p.A.**, with registered office in via Cisa Ligure 95 42041 Brescello (RE), declares that the design, manufacturing and after-sales assistance processes comply with the requirements of standard **UNI EN ISO 9001:2015**.

For further details on the product CE marking, request a copy of the Declaration of Conformity from the manufacturer, specifying the appliance model and the language of the country.

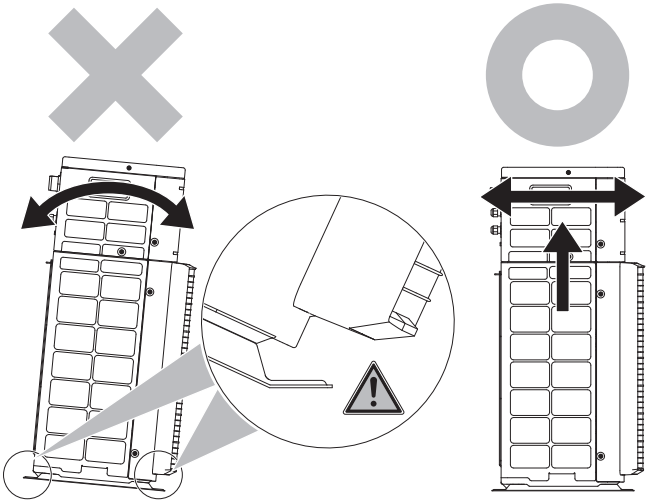
1 CASING-RELATED INFORMATION

1.1 OUTDOOR UNIT

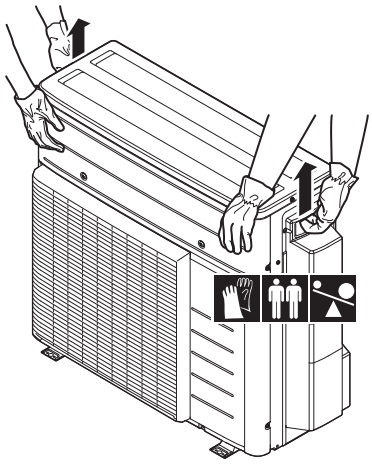
1.1.1 OUTDOOR UNIT HANDLING

ATTENTION
To prevent damage or injuries, DO NOT touch the air inlet nozzle or the aluminium fins of the unit.

NOTE
To prevent damaging the mount feet, NEVER tilt the unit sideways in any way:

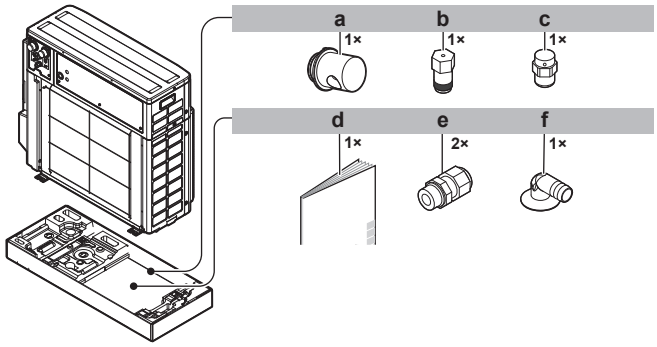


Slowly transport the unit as shown:



1.1.2 REMOVAL OF ACCESSORIES FROM THE OUTDOOR UNIT

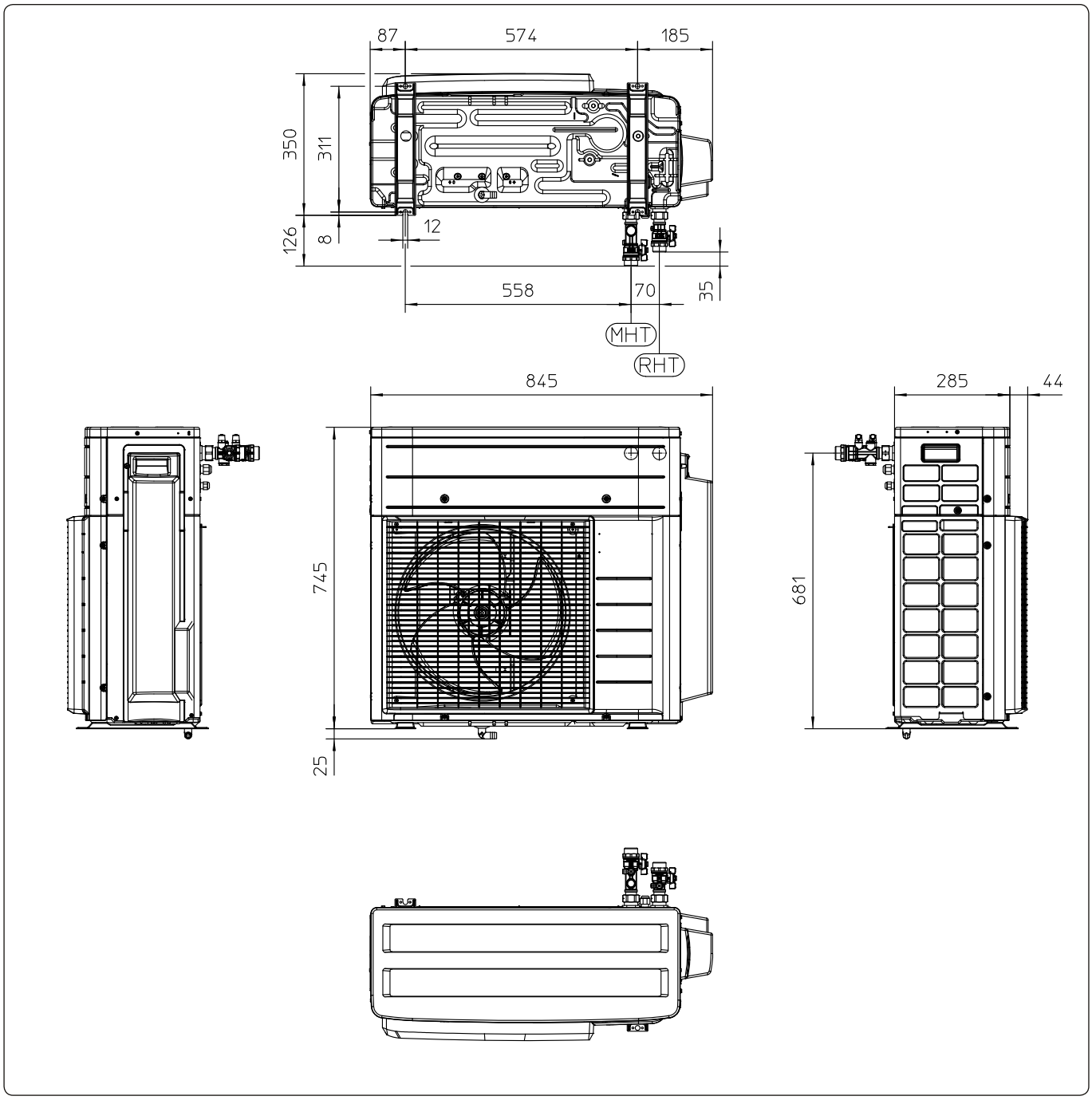
1) Lift the outdoor unit. See "1.1.1, Outdoor unit handling".
2) Remove the accessories at the bottom of the unit.



KEY:
a = Part of the connection (with O-ring) of the antifreeze protection valve inside the outdoor unit
b = Antifreeze protection valve (inside the outdoor unit)
c = Vacuum switch (outside the outdoor unit)
d = Installation manual of the outdoor unit
e = Cable clamp
f = Drain fitting

NOTE
The shut-off valves, the control panel and the vibration-dampening feet are located inside the accessory unit, inside the indoor unit packaging.

1.2 MAIN DIMENSIONS.



KEY:
RHT (G1") = Return to heat pump
MHT (G1") = Flow from heat pump

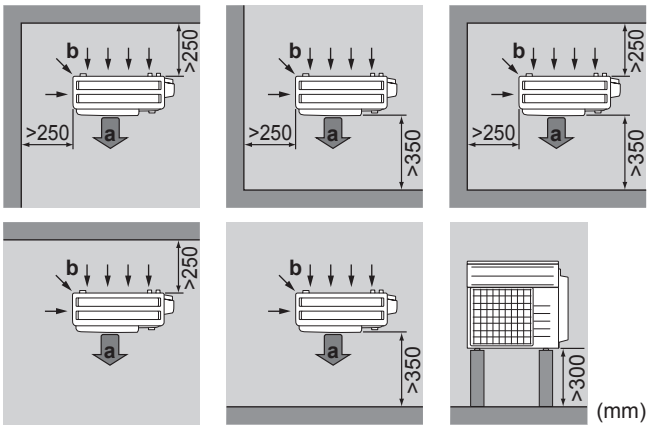
2 PREPARATION

2.1 PREPARING THE INSTALLATION SITE

WARNING
The equipment must be stored in an environment with no ignition sources in continuous operation (e.g.: open flames, gas equipment in operation or electric heaters in operation).

2.1.1 REQUIREMENTS OF THE OUTDOOR UNIT INSTALLATION SITE

Keep the following space guidelines in mind:



KEY:
a = Air outlet
b = Air inlet

NOTE
The height of the wall on the outlet side of the outdoor unit MUST BE ≤1200 mm.

The outdoor unit is only designed for outdoor installation and for the following room temperatures:

Room central heating operation	–15~25°C
Production of Domestic Hot Water	–15~35°C

Special requirements for R32
The outdoor unit contains the internal coolant circuit (R32), but NO local coolant pipe or coolant charging is required.
The total coolant charge in the system is ≤1.842 kg, therefore, the system is NOT subject to any requirement in relation to the installation site. However, keep the following requirements and precautions in mind:

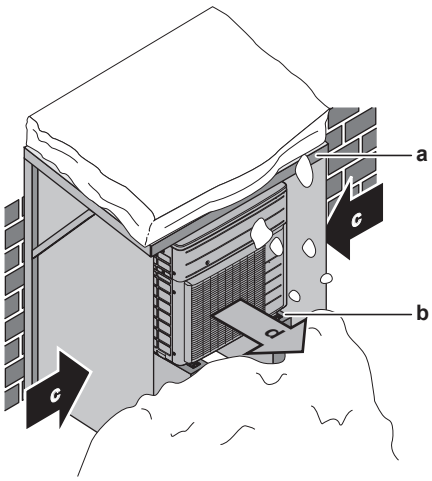
WARNING
- **DO NOT puncture or burn.**
- **DO NOT use tools to accelerate the defrosting process or to clean the equipment, other than those recommended by the manufacturer.**
- **Keep in mind that the R32 coolant is odourless.**

WARNING
The appliance must be stored in such a way as to avoid mechanical damage, in a well ventilated environment and with no ignition sources in continuous operation (for example: open flames, gas appliance in operation or electric heater in operation).

WARNING
Make sure that the installation, maintenance and repair are carried out in compliance with the Immergas instructions and local regulations in force and that they are only performed by authorised personnel.

2.1.2 ADDITIONAL REQUIREMENTS OF THE OUTDOOR UNIT INSTALLATION SITE IN COLD CLIMATES

Protect the outdoor unit from snow falls and make sure that the outdoor unit is NEVER buried under snow.



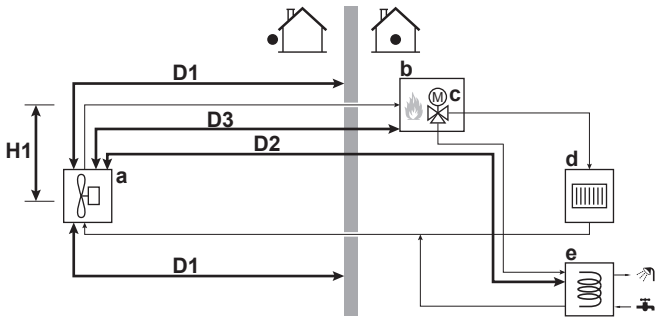
KEY:
a = Snow cover or shelter
b = Pedestal
c = Prevailing wind direction
d = Air outlet

However, provide a space of at least 300 mm under the unit. In addition, make sure that the unit is positioned at least 100 mm above the maximum height that fallen snow is expected to reach. For more information, consult “3.2 Assembling the outdoor unit”.

In areas subject to heavy snowfalls, it is very important to choose an installation site where snow CANNOT reach the unit. If blowing lateral snowfalls are possible, make sure that the heat exchanger coil CANNOT be covered by snow. If necessary, install a snow cover or shelter and a pedestal.

2.2 PREPARING THE HYDRAULIC PIPES

2.2.1 PERMITTED PIPE LENGTH AND HEIGHT DIFFERENCE



KEY:
a = Outdoor unit
b = Indoor unit
c = 3-way valve
d = Room central heating circuit
e = External storage tank unit (if applicable)

Which?		Distance
H1	Maximum height difference between outdoor unit and indoor unit	It depends on the expansion vessel present in the indoor unit
—	Maximum total length of the water pipe (internal section+external section)	To be calculated according to the head available to the system (see Victrix Hybrid and Victrix Hybrid Plus instruction manuals)
D1	Maximum length of the external section of the water pipe (to prevent freezing the water pipe)	30 m (but limited to **D2** when the external storage tank unit is installed)
D2	Maximum distances between the outdoor unit and the external storage tank unit (if applicable)	10 m
D3	Maximum distance between outdoor unit and indoor unit	To be calculated according to the head available to the system (see Victrix Hybrid and Victrix Hybrid Plus instruction manuals)

2.2.2 WATER VOLUME AND FLOW RATE - MINIMUM CONTENTS.

Minimum water volume

Check that the total water volume in the system, EXCLUDING the water volume inside the outdoor unit, is at least 20 litres.

Minimum flow rate

Ensure minimum flow rate, so that the outdoor unit does not go into high pressure error (1021). For the flow rate guidelines, see the tables in "2.2.1 Permitted pipe length and height difference".

2.3 PREPARING THE WIRING

2.3.1 ELECTRICAL CONNECTIONS FOR EXTERNAL AND INTERNAL ACTUATORS

NOTE
The cables used for the electrical connections inside the connection compartment must be able to withstand a maximum temperature of 90°C.

Outdoor unit connections:

Item	Description	Wires	Maximum operating current
Power supply			
1	Outdoor unit power supply	2+GND	(a)
Control panel			
2	Control panel	2	(b)
Optional equipment			
3	Anti-freeze resistance kit	2	(c)

(a) See the information plate on the outdoor unit.
(b) Cable section from 0.75 mm² to 1.25 mm² ; maximum length: 200 m.
(c) See kit instructions

NOTE
Other technical specifications of the various connections can be found inside the outdoor unit.

Indoor unit connections.

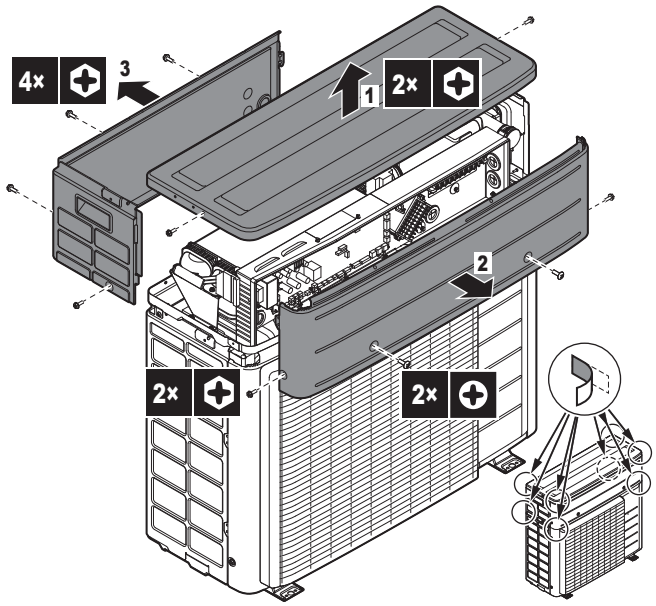
NOTE
Other technical specifications of the various connections can be found inside the instruction manual of the hybrid heat pump.

3 INSTALLATION

3.1 OPENING THE OUTDOOR UNIT

DANGER: RISK OF ELECTRIC SHOCK

DANGER: RISK OF BURNS



1) Open the upper panel.
2) Open the front plate.
3) If necessary, remove the rear plate. For example, this is necessary in the following cases:

- When the antifreeze protection valve is installed inside the outdoor unit.
- When the anti-freeze resistance kit is installed.

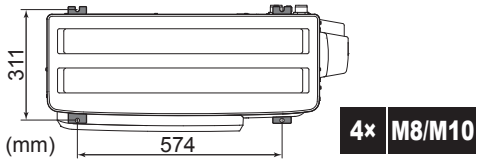
3.2 ASSEMBLING THE OUTDOOR UNIT

3.2.1 INSTALLATION STRUCTURE

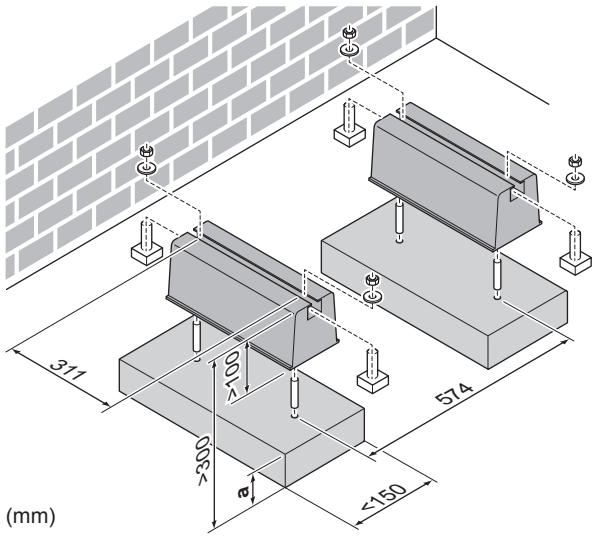
This section shows different installation structures. For all, use 4 series of M8 or M10 anchor bolts, nuts and washers. However, provide a space of at least 300 mm from the ground. In addition, make sure that the unit is positioned at least 100 mm above the maximum height that fallen snow is expected to reach.

INFORMATION
The maximum height of the top protruding part of the bolts is 15 mm.

Anchor points

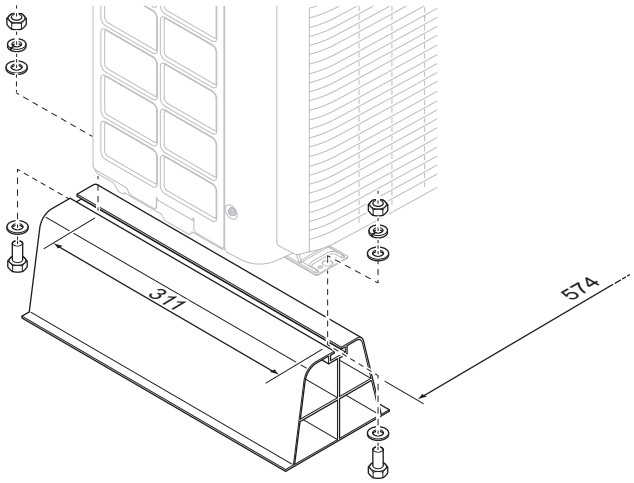


Option 1: on assembly feet "flexible with strut"

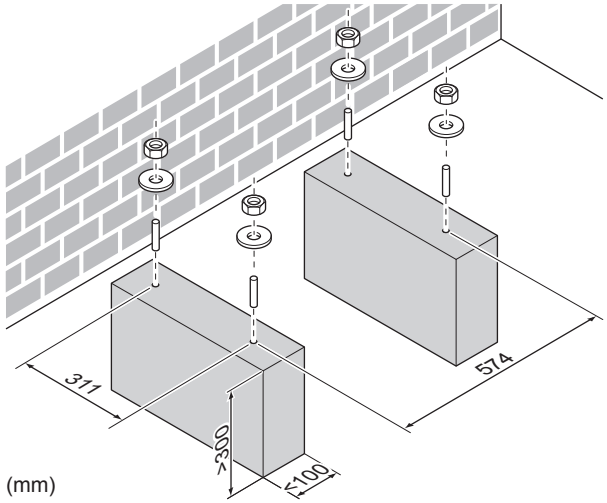


KEY:
a = Maximum height reached by the fallen snow

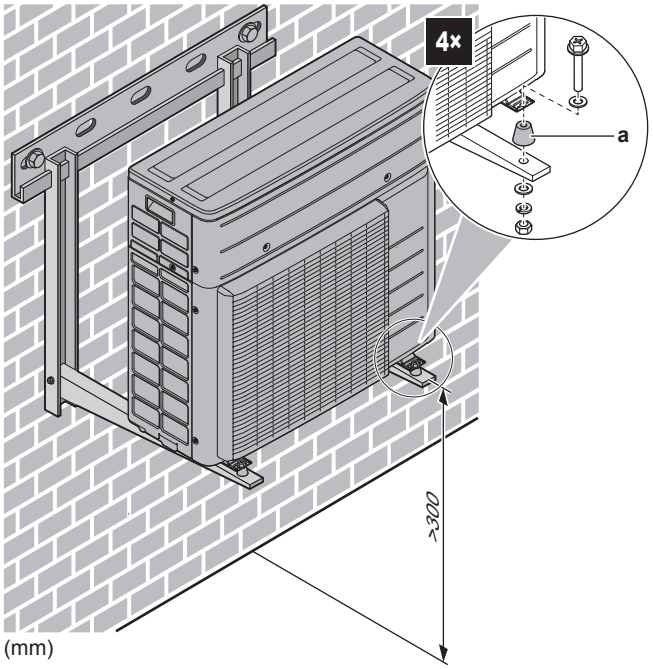
Option 2: on plastic assembly feet



Option 3: on a pedestal (insert the vibration-dampening feet present in the indoor unit packaging)

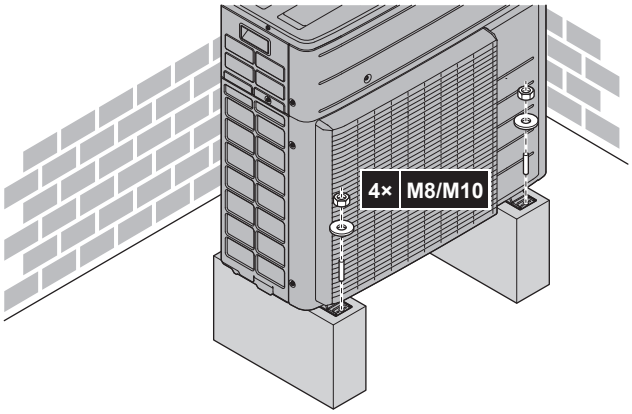


Option 4: on wall brackets (optional)



KEY:
a = Vibration-dampening rubber (supplied inside the kit)

3.2.2 INSTALLING THE OUTDOOR UNIT



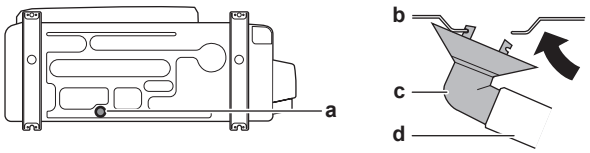
3.2.3 CONDENSATE DRAIN

Make sure that the condensate water can be properly evacuated.

NOTE
If the unit is installed in cold climates:
- **Take adequate countermeasures so that the evacuated condensate CANNOT freeze.**
- **DO NOT USE the drain fitting and the drain hose in the outdoor unit, since the water drain may freeze, decreasing the central heating capacity.**

NOTE
Provide a space of at least 300 mm under the unit. In addition, make sure that the unit is positioned at least 100 mm above the height that fallen snow is expected to reach.

Use the drain plug and the drain hose for drainage, except in cold climates.

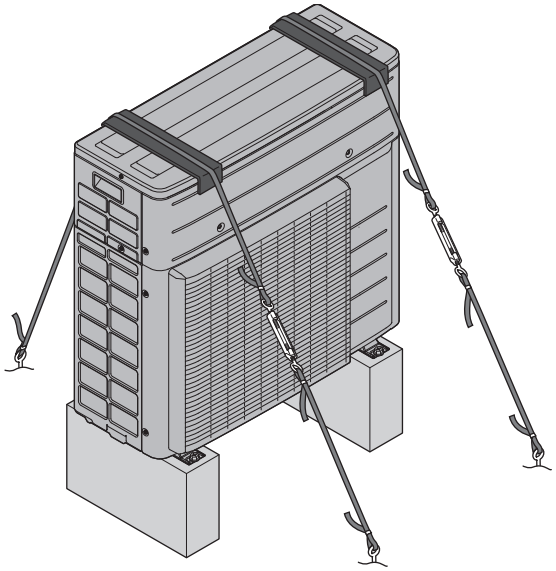


KEY:
a = Drain hole
b = Lower frame
c = Drain fitting (supplied as standard)
d = Flexible hose (obtain locally)

3.2.4 FALL PREVENTION OF THE OUTDOOR UNIT

Take the following measures should the unit be installed in places where strong wind could tilt it:

1) Prepare 2 cables as indicated in the following illustration (obtain locally).
2) Arrange the 2 cables above the outdoor unit.
3) Insert a rubber sheet between the cables and the outdoor unit to prevent the cables scratching the paint (obtain locally).
4) Fix the ends of the cable and tighten them.



3.3 CONNECTING THE WATER PIPE

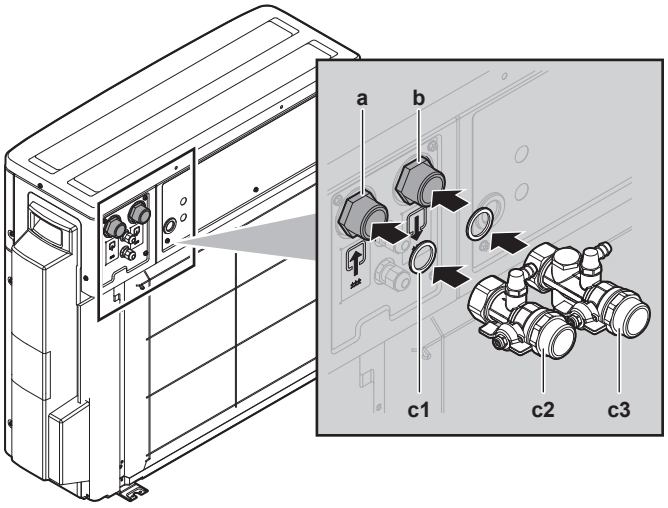
3.3.1 WATER PIPE CONNECTIONS

NOTE

DO NOT use excessive force to connect the pipes. Deforming the pipes can cause defects in the unit. Make sure that the tightening torque DOES NOT exceed 30 N•m.

NOTE

Shut-off valve with integrated vent. It is recommended to connect the shut-off valves present inside the accessory unit in the indoor unit packaging, to facilitate assistance and maintenance. When shut-off valves are not installed, it is necessary to install valves with integrated air vent on the flow from heat pump (MHT) and on the return to heat pump (RHT).



KEY:
a = RHT (G1") Return to heat pump
b = MHT (G1") Flow from heat pump
c1 = Flat gaskets
c2 = Shut-off valve
c3 = Shut-off valve with integrated connection of the vacuum switch (if applicable).

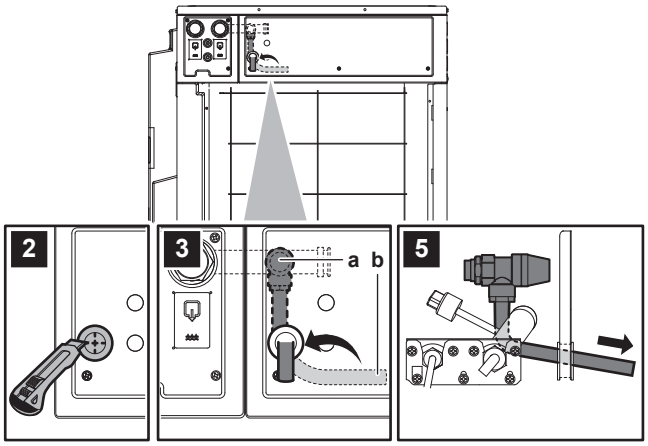
1) Connect the shut-off valves by inserting flat gaskets and position them with the vent facing up.
2) Connect the site pipes on the shut-off valves.

3.3.2 SAFETY VALVE DRAIN

NOTE

In the event of overpressure, the system will release part of the liquid through the safety valve. The safety valve of the outdoor unit is designed to open at 3 bar. The safety valve drain must always be duly conveyed to a draining funnel. Consequently, in the event of valve intervention, the discharged liquid will end up in the sewer system.
If fluid containing glycol was added to the system circuit, make sure it is recovered and disposed of in accordance with standard EN 1717.

However, check that the flexible hose of the safety valve is ALWAYS free to discharge the pressure.



KEY:
a = Pressure discharge valve
b = Flexible hose (discharge)(obtain locally)

1) Open the upper plate, the front plate and the rear plate. See "3.1. Opening the outdoor unit".
2) Make a cross cut in the rubber gasket on the rear plate.
3) Route the flexible hose through the gasket.
4) Close the rear plate.
5) Pull the flexible hose gently so that it is tilted downwards. This prevents the water from stagnating and/or freezing inside the flexible hose.
6) Close the front plate and the upper plate.

3.3.3 SYSTEM FILLING

INFORMATION
Air vent valves.
- **Manual air vent valves on the shut-off valves.**
- **Air vent valve inside the indoor unit.**
- **Manual or automatic air vent valves to be obtained locally.**
- **When using glycol, automatic air purge valves are NOT allowed.**

The indoor unit MUST BE installed before filling the system. For the instructions on filling, refer to the manual of the hybrid heat pump.

3.4 WIRING CONNECTION

DANGER: RISK OF ELECTRIC SHOCK

WARNING
For the power supply cables, ALWAYS use multi-strand cables.

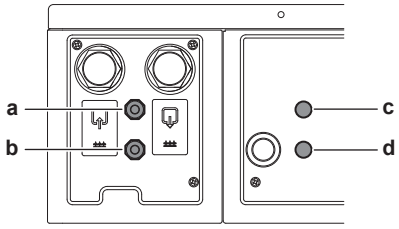
WARNING
Prevent risks due to the accidental resetting of the heat manifold: the current to this appliance MUST NOT be supplied through an external switching device, such as a timer, nor should the appliance be connected to a circuit that is regularly turned ON and OFF by the system.

Connecting the electrical cables to the outdoor unit

NOTE
The distance between the 230 VAC power supply cable and the low voltage signal cables must be at least 50 mm.

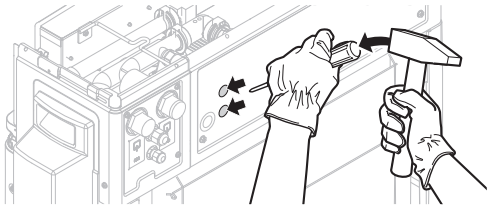
ATTENTION
DO NOT push or position excessively long cables in the unit.

1) Open the upper plate and the front plate. See "4.1. Opening the outdoor unit".
2) Insert the wiring on the back of the unit:

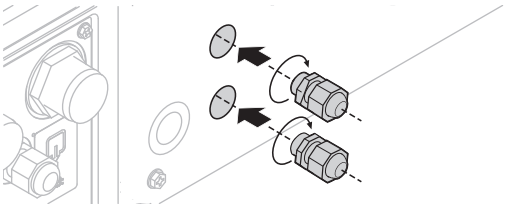


KEY:
a~d = See below

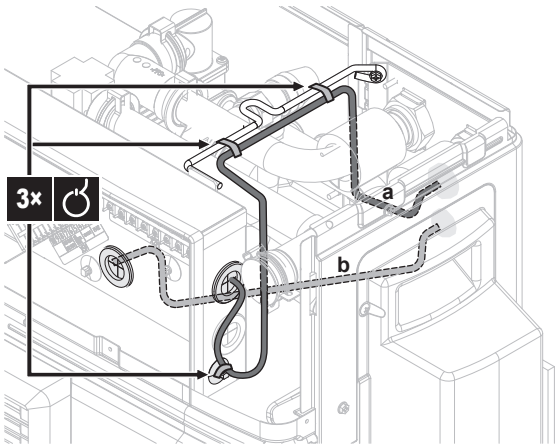
3) If cables are inserted through the blind holes c and d:
- Open the blind holes using a hammer and screwdriver.



- Insert the cable glands (supplied as accessories).



4) Position the cables inside the unit, towards the electrical panel as follows:



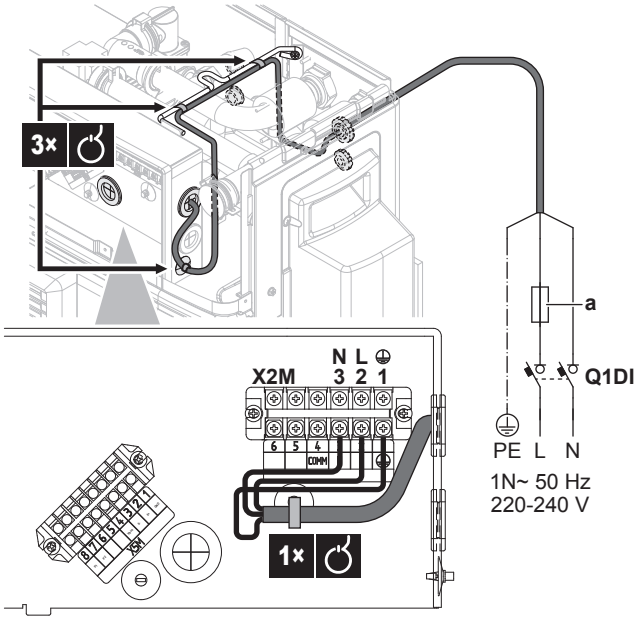
KEY:
a = Main power supply
b = Control panel

5) Connect the cables inside the electrical panel to the corresponding terminals.
6) After having connected all the cables, close the front plate and upper plate.

INFORMATION
Anti-freeze resistance kit. For the cable path, see the installation manual of the anti-freeze resistance kit.

Connecting the main power supply

1) Connect the main power supply to the appropriate terminals, as shown in the following figure.

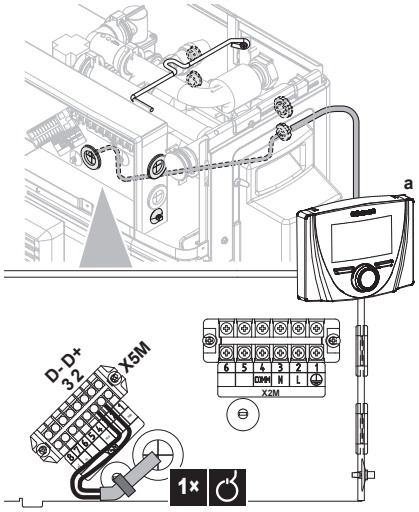


KEY:
a = Recommended local fuse: 20 A
Q1DI = Differential switch

2) Fix the cable to the appropriate supports using the clamps.

Control panel connection

Connect the cable from the control panel to the outdoor unit.
Fix the cable to the appropriate supports using the clamps.



4 ANTIFREEZE PROTECTION

4.1 HYDRAULIC CIRCUIT PROTECTION FROM FREEZING - GLYCOL AND ANTI-FREEZE PROTECTION VALVES

Freezing may damage the system. To prevent freezing of the hydraulic components, the software is equipped with special antifreeze protection functions, which include the activation of the pump of the indoor unit in case of low temperatures.
However, if the conditions specified in the antifreeze protection paragraph in the hybrid pump manual are missing (such as, for example, power supply failure), these functions cannot ensure protection.
Perform one of the following actions to protect the hydraulic circuit from freezing:

- Add glycol to water. The glycol lowers the freezing point of water. For the indoor unit, consult the operating range contained in the technical data table included in the instruction manual of the hybrid heat pump and the relative antifreeze protection paragraph.
- Install the standard supplied antifreeze protection valves. The antifreeze protection valves drain the water from the system before it freezes. For the indoor unit, consult the operating range contained in the technical data table included in the instruction manual of the hybrid heat pump and the relative antifreeze protection paragraph.

NOTE

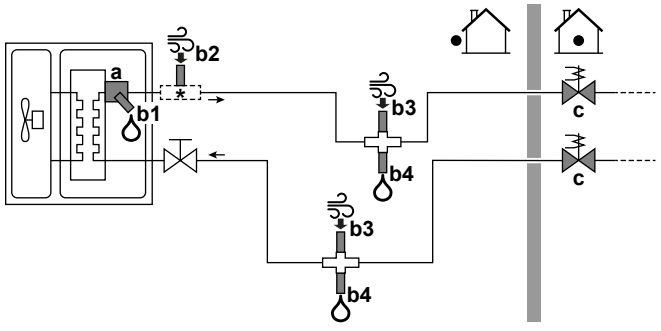
DO NOT install the antifreeze protection valves when adding glycol to water. Possible consequence: Glycol leakage from the antifreeze protection valves.

Anti-freeze protection with glycol

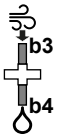
For the antifreeze protection with glycol, please refer to the hybrid heat pump manual.

Antifreeze protection with antifreeze protection valves

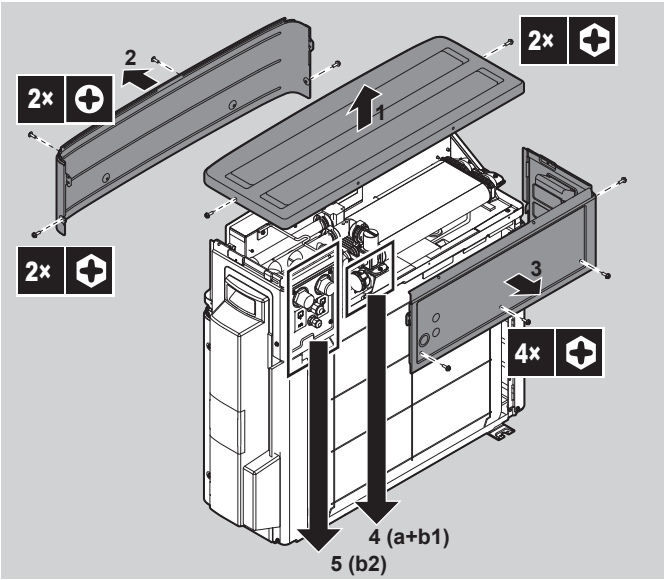
If no glycol was added to water, antifreeze protection valves can be used to drain the water from the system before it freezes. To do this, install the following parts:



KEY:
a+b1+b2 = Outdoor unit protection (*: there are 2 ways of connecting **b2**; see below).
b3+b4 = Local pipe protection
c = Water isolation inside the home in the event of a power failure.

Part	Description
a+b1+b2	(Mandatory – supplied as standard). **a** Part of the connection for **b1**. **b1** Antifreeze protection valve (for water drainage). **b2** Vacuum switch (facing up for air supply). These components are necessary to protect the indoor pipe to the outdoor unit from freezing. **Note:** These components DO NOT protect the local pipes from freezing.
b3+b4	(Obtain locally). The installer is responsible for protecting the local pipes from freezing. One solution is to install the antifreeze protection valves in all the lowest points of the local pipes. By doing this, the antifreeze protection valves must always be installed in pairs:  **b3** antifreeze protection valve (facing up for water supply) **b4** Antifreeze protection valve (facing up for water drainage).
c	**c** Normally closed valves (Recommended - obtain locally). The normally closed valves prevent all water coming from the system from being drained when the antifreeze protection valves are opened. - **In the event of a power failure:** the normally closed valves close and isolate the water inside the home. If the antifreeze protection valves open, only the water outside the home is drained. - **In other circumstances** (for example if a pump breaks): the normally closed valves remain open. If the antifreeze protection valves open, the water inside the home is also drained.

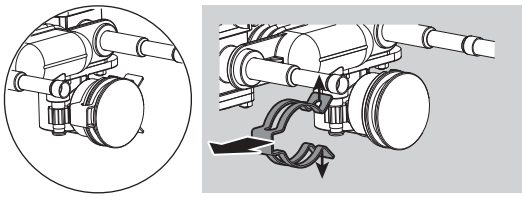
To connect a+b1+b2



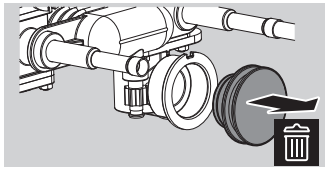
KEY:
a = Part of the connection for **b1**
b1 = Antifreeze protection valve (for water drainage)
b2 = Vacuum switch (facing up for air supply)

1) Open the upper panel.
2) Open the front plate.
3) Open the rear plate.
4) Connect **a+b1** as follows:

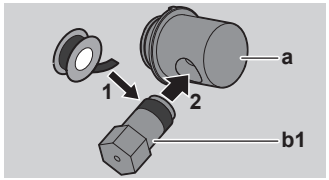
- Remove the clip.



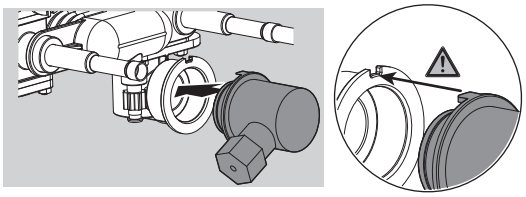
- Remove and throw away the plug with the gasket.



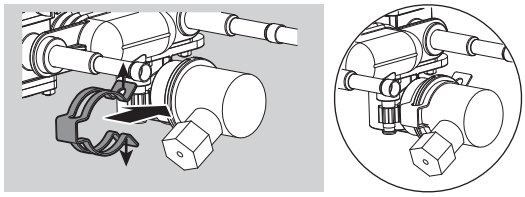
- Mount the antifreeze protection valve (**b1**) to the connection part (**a**) with a thread sealant.



- Mount the connection part to the outdoor unit.



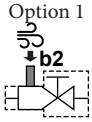
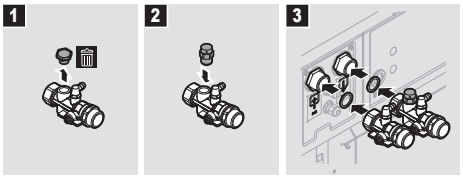
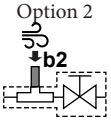
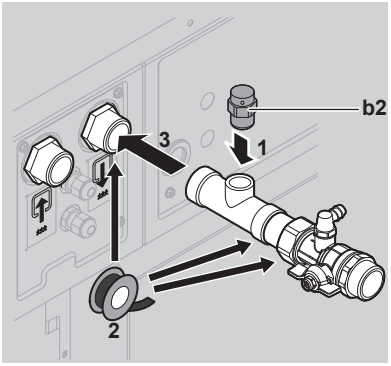
- Mount the clip.



- Close the rear plate, the front plate and the upper plate.

5) To connect b2, proceed as follows (2 possibilities):

NOTE
Vacuum switch (b2). To perform proper drainage through the antifreeze protection valve inside the outdoor unit, the Vacuum switch must be installed correctly:
- **Directly on the water outlet of the unit, without any valve or local pipe in between.**
- **Facing up to suck the air.**

Option 1 	Use the shut-off valves with integrated connection for switch (supplied as standard). 
Option 2 	With the T-joint (obtain locally) + shut-off valve (obtain locally). 

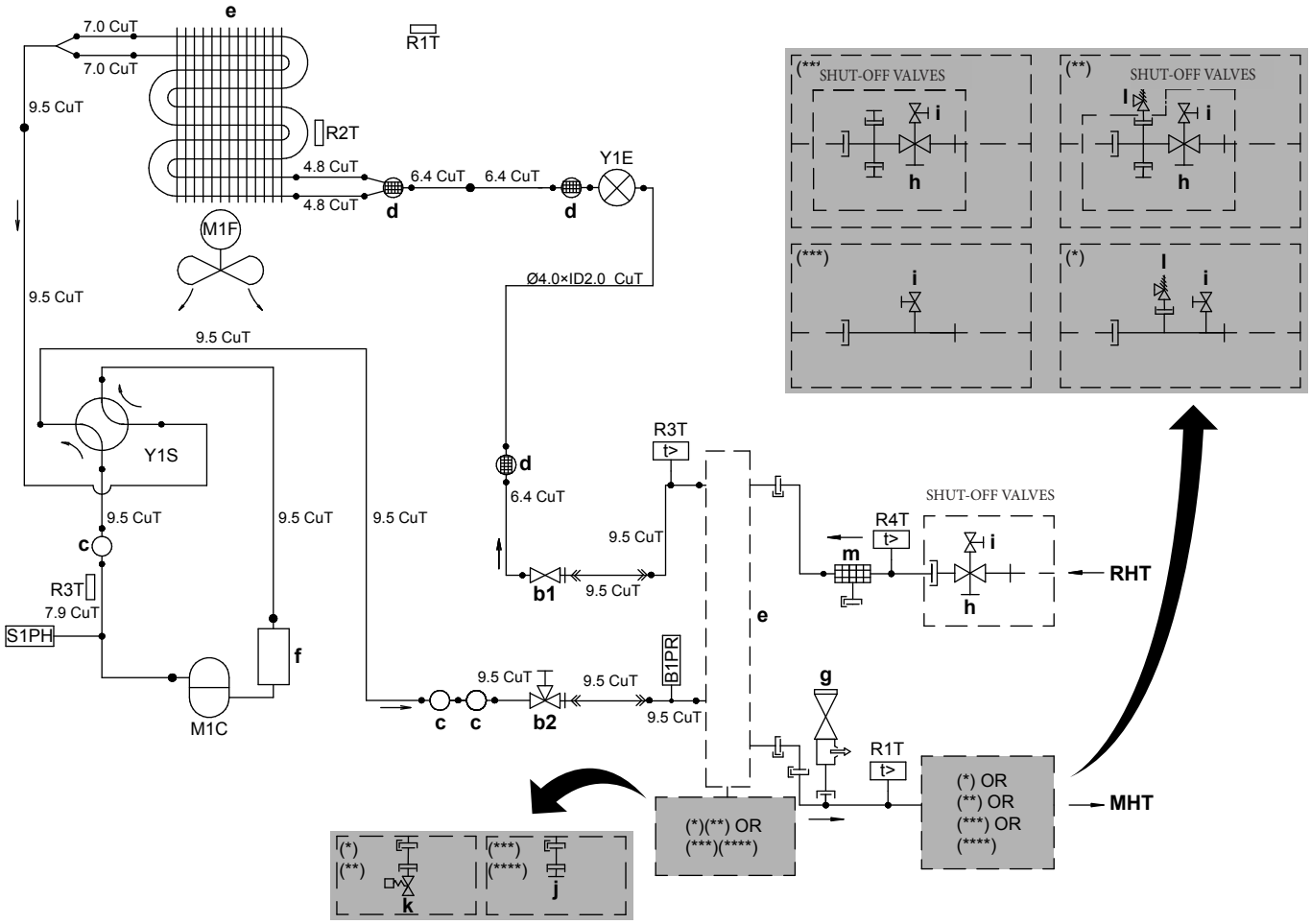
4.2 ANTI-FREEZE RESISTANCE KIT (OPTIONAL)

The optional anti-freeze resistance kit can be installed to prevent freezing of the bottom plate. It may be necessary in some circumstances.

Anti-freeze resistance kit
- It prevents freezing of the bottom plate.
- It is necessary in areas with room temperature <–5°C and high relative humidity for at least 3 consecutive days.
- For the installation instructions, see the installation manual of the anti-freeze resistance kit.

5 OPERATING DIAGRAMS.

5.1 FUNCTIONAL LAYOUT

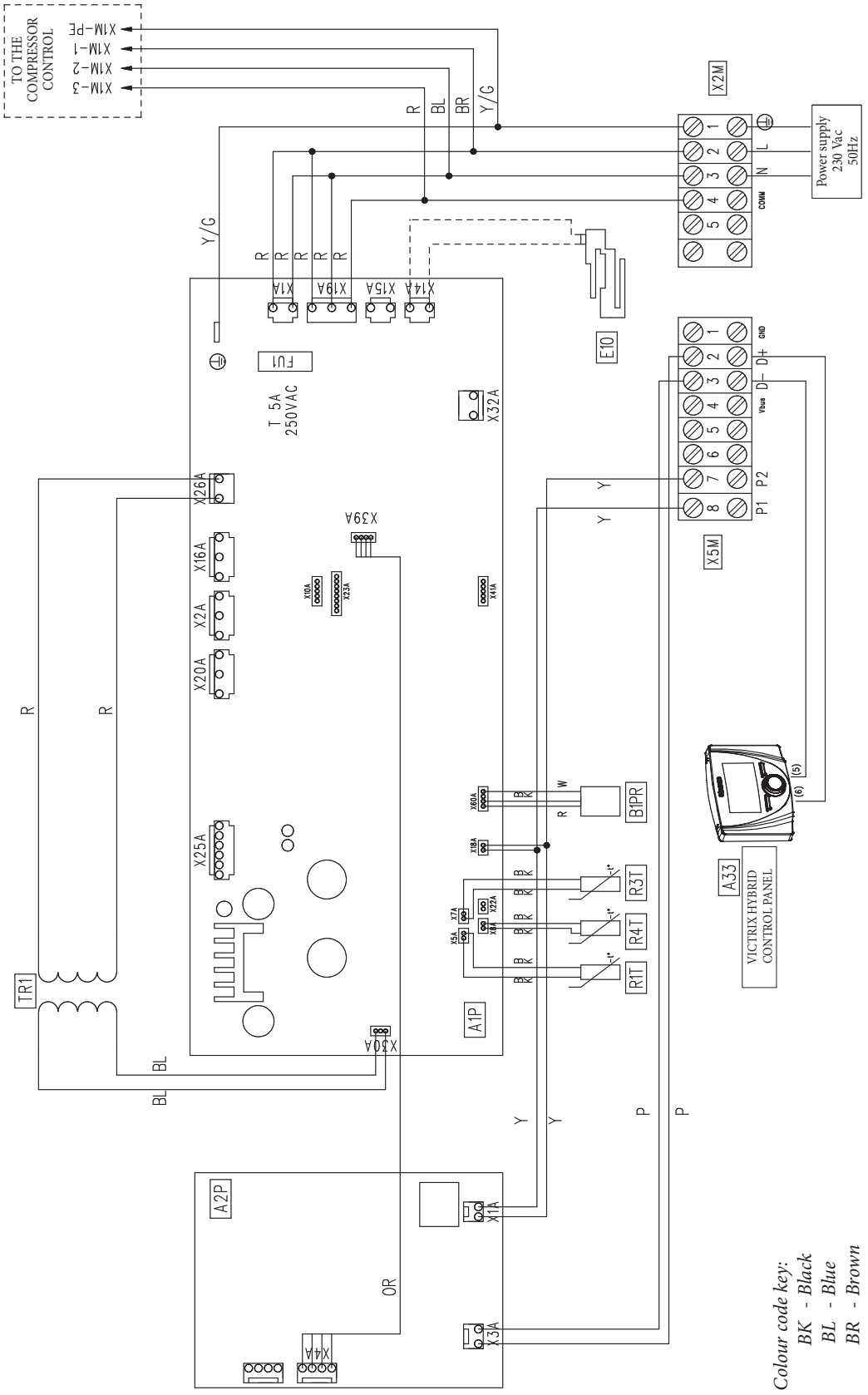


Key:

- *(*) - In the event of glycol-free water (without standard supplied shut-off valves)*
- *(**) - In the event of glycol-free water + standard supplied shut-off valves*
- *(***) - In the event of water with glycol (without standard supplied shut-off valves)*
- *(****) - In the event of water with glycol + standard supplied shut-off valves*
- *RHT - Return to heat pump*
- *MHT - Flow from heat pump*
- *b1 - Stop valve (cooling liquid)*
- *b2 - Stop valve with service opening (coolant gas)*
- *c - Silencer*
- *d - Silencer with filter*
- *e - Heat exchanger*
- *f - Storage tank*
- *g - Safety valve*
- *h - Cut-off valve*
- *i - Air purge*
- *j - Cap*
- *k - Antifreeze protection valve*
- *l - Vacuum switch*
- *m - Filter*

B1PR - Coolant pressure sensor
Shut-off valve - Standard supplied shut-off valves
M1C - Compressor motor
M1F - Fan motor
R1T - External probe
R1T (t>) - Water outlet probe
R2T - Evaporator probe
R3T - Compressor outlet probe
R3T (t>) - Liquid phase probe
R4T (t>) - Water inlet probe
S1PH - High pressure switch
Y1E - Electronic expansion valve
Y1S - Four way reversal
- Screw connection
- Flared connection
- Quick release connector
- Brazed connection

5.2 WIRING DIAGRAMS



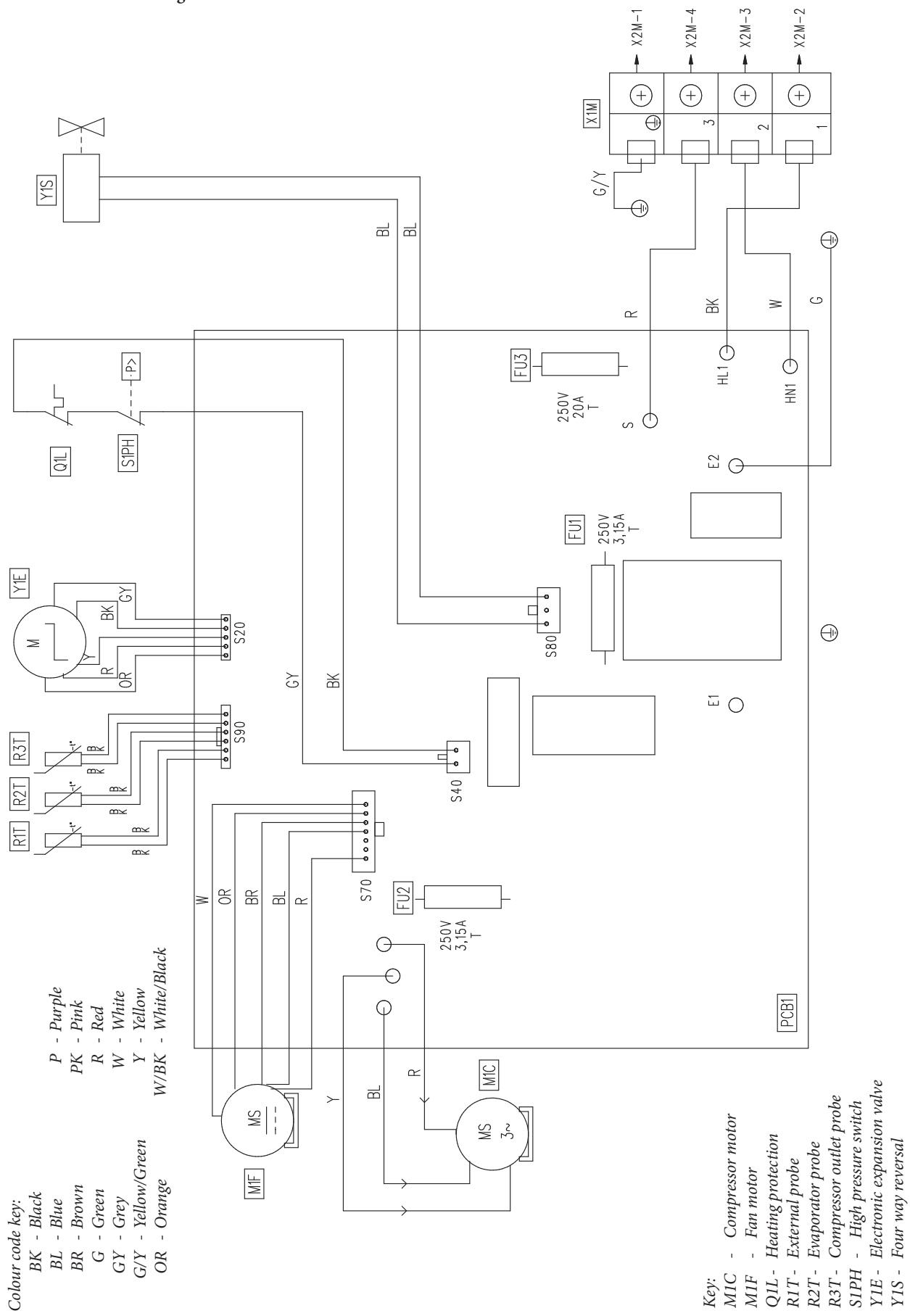
Colour code key:

BK	*Black*
BL	*Blue*
BR	*Brown*
G	*Green*
GY	*Grey*
G/Y	*Yellow/Green*
OR	*Orange*
P	*Purple*
PK	*Pink*
R	*Red*
W	*White*
Y	*Yellow*
W/BK	*White/Black*

Key:

A1P	*Hydro main P.C.B.*
A2P	*ModBus P.C.B.*
A33	*Victrix Hybrid control panel*
B1PR	*Coolant pressure sensor*
E10	*Adhesive heating resistance (antifreeze)*
R1T (t>)	*Water outlet probe*
R3T (t>)	*Liquid phase probe*
R4T	*Water inlet probe*
TR1	*Transformer*

Inverter connection diagram



Colour code key:

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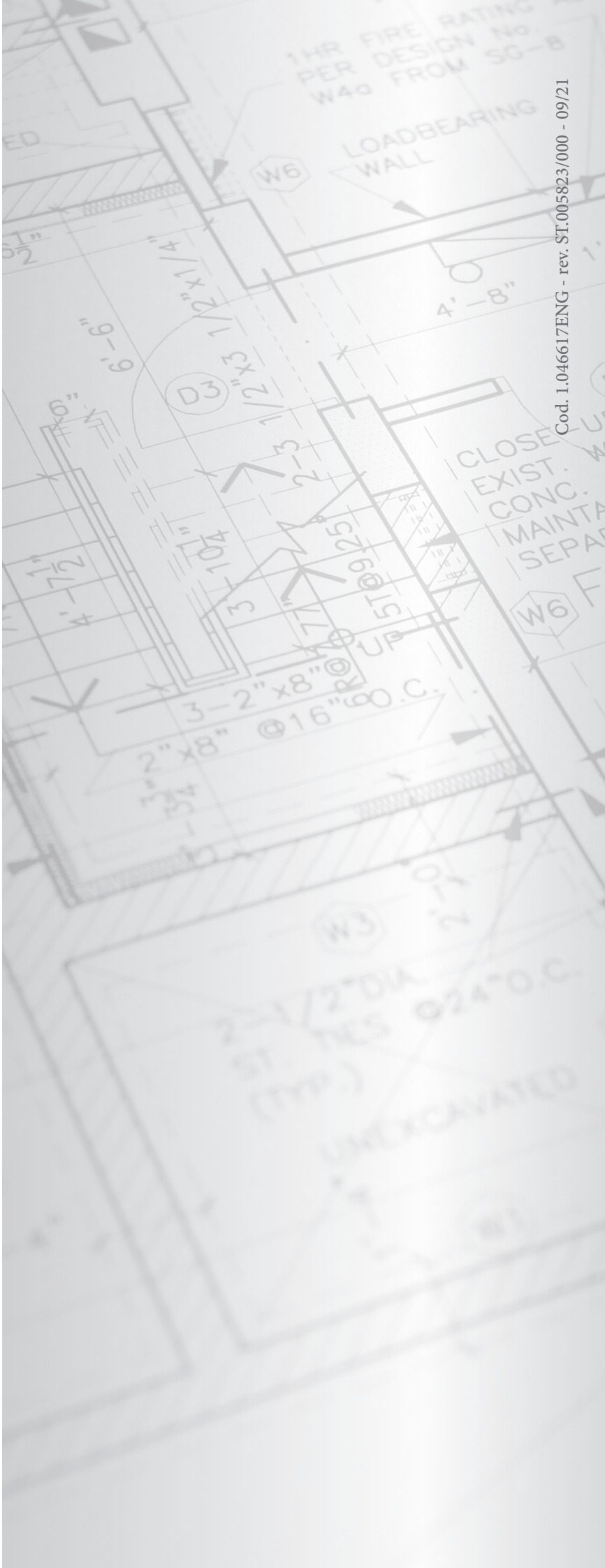
P	*Purple*
PK	*Pink*
R	*Red*
W	*White*
Y	*Yellow*
W/BK	*White/Black*

Key:

M1C	*Compressor motor*
M1F	*Fan motor*
Q1L	*Heating protection*
R1T	*External probe*
R2T	*Evaporator probe*
R3T	*Compressor outlet probe*
S1PH	*High pressure switch*
Y1E	*Electronic expansion valve*
Y1S	*Four way reversal*

This instruction booklet
is made of ecological paper



Cod. 1.046617ENG - rev. ST.005823/000 - 09/21

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Design, manufacture and post-sale assistance of gas boilers, gas water heaters and related accessories