

# BEST W R290

Wall-mounted packaged unit for cold rooms



78

EN

Instruction manual | v. 00

Instructions translated from the original



**PERICOLO!** Chiunque usi questa macchina è obbligato a leggere queste istruzioni, ne va della sua sicurezza.

**DANGER!** Anyone who uses this machine is obliged to read these instructions for their own safety.

**DANGER!** Quiconque utilise cette machine est obligé de lire ces instructions, il en va de sa sécurité.

**PELIGRO!** Todo el personal que use esta máquina está obligado a leer estas instrucciones, de ello depende su seguridad.

**GEFAHR!** Jeder Benutzer dieser Maschine ist aus Sicherheitsgründen verpflichtet, diese Anleitung zu lesen.

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## Warranty and assistance

### Warranty terms

RIVACOLD srl guarantees the product against any material or manufacturing defects for **one year from the registration date of the packaged unit** (see "Register the packaged unit using the QR code" on page 115 or "Register the packaged unit using the numeric code" on page 116). **If it is not registered, the date of issue of the sales invoice will apply.**

If defects in materials or workmanship are noted during this period, RIVACOLD srl will repair or replace the defective components under the terms and conditions set out below, with no charge for labor or spare parts. The expenses to ship the packaged unit to the Customer Assistance Service are charged to the Customer.

Compensation will not be acknowledged for damage, of any kind, which the customer should be required to pay third parties for.

*Note: the warranty is only valid if the defects are claimed within the indicated time frames.*

### Warranty exclusions

The following are excluded from the warranty:

- periodic maintenance operations
- damage resulting from improper use, including but not limited to:
  - incorrect power supply
  - using the product for purposes other than those intended
  - repairs carried out by unauthorized personnel or by the Customer himself
- defects resulting from modifications, adaptations or repairs made to the product by the Customer or by unauthorized personnel
- fortuitous and accidental events, such as falls and infiltration of liquids
- natural events and malicious or negligent actions

### Post-warranty assistance

After the warranty time frames have elapsed, assistance will be provided by RIVACOLD srl with a charge for the replaced parts and labor and transport expenses in force at the time.

### Warranty invalidation

The warranty is immediately invalidated if the model or serial number indicated on the product has been modified, deleted, removed or anyhow made illegible.

### Assistance

*Note: for information on warranty terms, contact RIVACOLD srl.*

In case of a malfunction or fault or to find out about the terms of the warranty, the exclusions, the forfeiture of the warranty and how to apply the warranty and request assistance, contact Rivacold srl or the dealer in the relevant zone.

## Conformity

### 4.0.1 Declaration of conformity

Conformity **CE**

Directives List of Directives for which the product is declared to be conforming:

- 2014/68/EU (Pressure Equipment Directive)
- 2014/35/EU (Low Voltage Directive)
- EMC 2014/30/EU (Electromagnetic Compatibility Directive)
- 2006/42/EC (Machinery Directive)
- RED 2014/53/EU (Radio Equipment Directive)

*Note: the original declaration of conformity accompanies the machine.*

# 1. Introduction

This section includes the following topics:

|  |    |
|--|----|
| 1.1 Identification data .....                      | 05 |
| 1.2 Information about the instruction manual ..... | 06 |

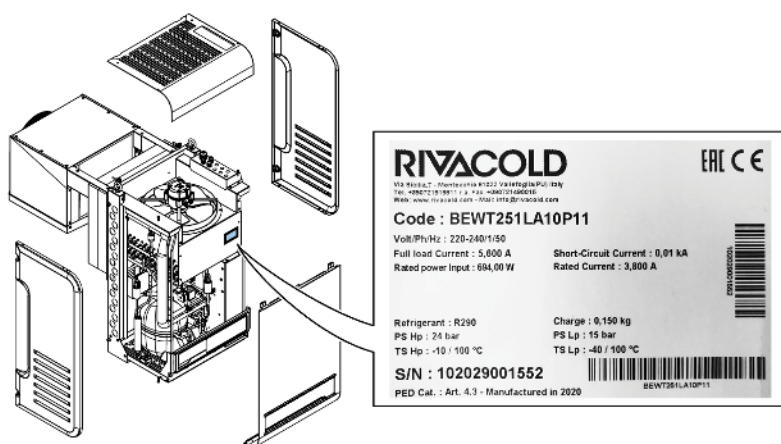
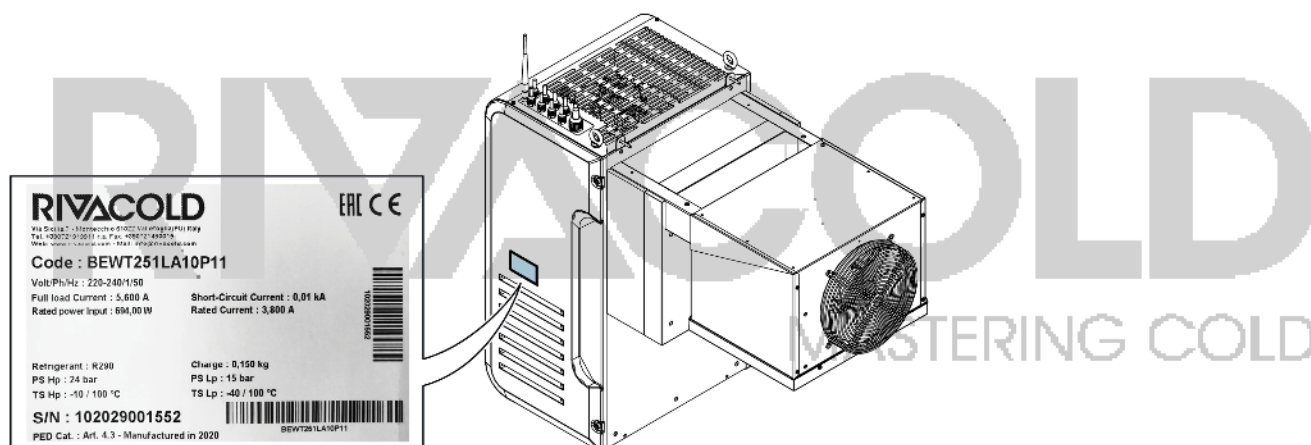
## 1.1 Identification data

### 1.1.1 Manufacturer's contacts

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61022 Vallefoglia (PU)  
Italy  
Tel: +39 0721 919911  
Fax: +39 0721 490015  
e-mail: info@rivacold.com

### 1.1.2 Identification

The information on the identification plates is important for requesting assistance, maintenance or spare parts.



### 1.1.3 Code legend

|            |   |
|------------|---|
| BE         | Range. <b>BE</b> : BEST   |
| WT/ WS     | <b>WT</b> (trough wall): with plug-in insulating panel fitted or removed<br><b>WS</b> : wall saddle   |
| 25/ 30/ 35 | Housing/frame dimensions. <b>25</b> : for condensing unit fan with a 254 diameter, <b>30</b> : for condensing unit fan with a 300 diameter, <b>35</b> : for condensing unit fan with a 350 diameter |
| 1/ 2       | Number of compressors   |
| M/ L       | Application. <b>M</b> : medium temperature, <b>L</b> : low temperature  |
| A/ W/ L    | Type of condensation. <b>A</b> : air  |
| 10 - 80    | Progressive number that identifies the different power outputs  |
| P          | Refrigerant gas. <b>P</b> : R290  |
| 1          | Laminating part. <b>1</b> : mechanical thermostatic   |
| 1/ 2       | Voltage. <b>1</b> : one-phase, <b>2</b> : three-phase   |

## 1.2 Information about the instruction manual

### 1.2.1 Objectives of the instruction manual

These instructions guide the personnel in charge of installing, using and servicing the packaged unit safely.

### 1.2.2 Obligations with respect to this instruction manual

**NOTICE:** *This instruction manual is an integral part of the packaged unit and must be kept for its entire life cycle.*

*It must be stored in a clean place and kept in good condition to be accessible to the operators. If the manual is lost or damaged, contact RIVACOLD srl. If the packaged unit is sold, always attach the instruction manual.*

### 1.2.3 Data of the instruction manual

Packaged unit: BEST W R290

Title: Instruction manual

Code: 9600-0033

Month and year of publication: 12-2020

Type of manual: translation of original instructions

### 1.2.4 Safety messages

Below are the warnings related to user safety and damage to the machine provided in this document:



**DANGER!** indicates a hazardous situation which, if not avoided, will result in death or serious injury.



**WARNING!** indicates a hazardous situation which, if not avoided, can result in death or serious injury.



**CAUTION!** indicates a hazardous situation which, if not avoided, can result in slight injury.

**NOTICE:** *indicates obligations which, if not complied with, can damage the device.*

### 1.2.5 Other messages

**Note:** *neutral and positive information that emphasizes or adds information to the main text. It provides information that can only be applied in special cases.*

### 1.2.6 Figures and illustrations

The figures and illustrations in this instruction manual are only used for reference and may differ in detail and proportions from the actual product.

### 1.2.7 Updates of the instruction manual

| Publication date | Code      | Updates           |
|------------------|-----------|-------------------|
| 12-2020          | 9600-0033 | First publication |

### 1.2.8 Documentation provided

| Manual                           | Recipients  | Code                | Date    |
|----------------------------------|---|---------------------|---------|
| Instruction manual (this manual) | The personnel indicated in "Personnel skills" on page 84. | 9600-0033 - 12-2020 | 12-2020 |

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# 2. Safety

This section includes the following topics:

|                                   |    |
|-----------------------------------|----|
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| 2.2 Personnel skills .....        | 09 |
| 2.3 Residual risks .....          | 09 |
| 2.4 Safety labels .....           | 11 |
| 2.5 Fixed guards .....            | 12 |
| 2.6 Noise .....                   | 13 |

## 2.1 General safety warnings

### 2.1.1 Obligations for the employer

The employer must select, train and appoint authorized personnel to carry out their duties.

It is the employer's responsibility to instruct the personnel in charge and to enforce the safety regulations for every specific task. The employer must also define the operating procedures and ensure that they comply with the instruction manual provided by the manufacturer. See "Personnel skills" on the next page for more information.

### 2.1.2 Obligations for the recipients of the instruction manual



**NOTICE:** anyone who uses this packaged unit is obliged to read this instruction manual for their own safety.

### 2.1.3 Recipients of this instruction manual

This instruction manual is intended for personnel authorized by the employer to install, use and service the packaged unit.

### 2.1.4 Clothing



Do not wear loose clothing, ties, chains and watches that can get caught in the moving parts of the packaged unit.

### 2.1.5 Personal protective equipment

| Equipment | Stage                                 |
|-----------|---------------------------------------|
|           | During lifting and transport          |
|           | During installation and commissioning |
|           | During use                            |
|           | During maintenance or dismantling     |



## 2.2 Personnel skills






### 2.2.1 Preamble

Every section of this instruction manual is preceded by the skills that the personnel in question must have. Not having these skills can:

- endanger the safety of personnel
- invalidate the warranty

*Note: the operator's tasks are defined by the complexity of the operations and their level of experience and skill. Operators must collaborate with the technicians to receive operating instructions or to request adjustment operations.*

### 2.2.2 List of skills

| Symbol  | Operations allowed  | Skills   |
|---|---|--|
| <br>COMPANY<br><b>Manufacturer's personnel</b> | All operations  | Technical personnel employed or authorized by the manufacturer.  |
| <br><b>Mechanical maintenance engineer</b>    | <ul style="list-style-type: none"> <li>• Installation and decommissioning of the packaged unit</li> <li>• Maintenance excluding works on the electrical system</li> <li>• Solving problems that cause blockages</li> </ul>  | Has the Italian Refrigeration Technician License.<br>Has extensive technical knowledge in the mechanical and pneumatic fields.<br>Understands the technical drawings and the refrigerating diagram.                                      |
| <br><b>Electrical maintenance engineer</b>   | <ul style="list-style-type: none"> <li>• Electrical connections during installation and decommissioning of the packaged unit</li> <li>• Solving problems that cause faults in the electrical system</li> </ul>  | Has extensive technical knowledge in the electrical field. Understands the wiring diagrams and works inside electrical boxes, junction boxes and control equipment in the presence of voltage.<br>Understands the refrigerating diagram. |
| <br><b>Operator</b>                          | <ul style="list-style-type: none"> <li>• Operate using the commands</li> <li>• Clean the packaged unit</li> <li>• Adjust the equipment after receiving the relevant instructions</li> <li>• Change certain parameters but only after receiving the relevant instructions</li> </ul> | Has general technical knowledge and experience in managing the packaged unit.  |
| <br><b>Driver</b>                            | Lifting and handling  | Authorized to use means to lift and handle materials and equipment according to the laws in force in the country of installation.  |

## 2.3 Residual risks

### 2.3.1 Definition

A danger zone is any area inside or outside the packaged unit where a person is exposed to the risk of serious or minor injuries.

Every procedure described in this instruction manual indicates the possible risks. Always follow the instructions in the instruction manual to avoid damage or injury.

- Follow the warnings given in this instruction manual concerning installation.
- Follow the instructions for adjustment, cleaning and maintenance given in this instruction manual.

### 2.3.2 Preamble

The packaged unit has been designed and built to function, be adjusted and subjected to maintenance without these operations exposing the personnel in charge to risks if carried out according to the instructions given in this instruction manual. The adopted measures minimize the risk of accidents throughout the life cycle of the packaged unit, both in the context of the intended use and of reasonably foreseeable misuse.

### 2.3.3 Mechanical residual risks

| Risk                                | When it occurs  | How to avoid it   |
|-------------------------------------|---|---|
| Bruising and superficial abrasion   | During installation, cleaning, maintenance and dismantling.   | Wear the personal protective equipment.   |
| Crushing                            | During transportation, lifting, installation and dismantling. | <ul style="list-style-type: none"> <li>• Always use lifting equipment and accessories of adequate capacity for the load to be lifted.</li> <li>• Prevent UNAUTHORIZED people from accessing the area near the packaged unit.</li> <li>• Follow the warnings given in this instruction manual concerning lifting.</li> <li>• Check that the wall where the packaged unit is installed is suitable for supporting the packaged unit.</li> </ul> |
| Falling from above                  | During installation, maintenance at a height and dismantling. | Always use adequate means and accessories.  |
| Impact                              | During installation, cleaning and maintenance.                | Wear the personal protective equipment.   |
| High pressure fluid ejection        | During maintenance and dismantling.                           | Maintenance on pressurized circuits must only be performed by the mechanical maintenance engineer.  |
| Contact with moving and sharp parts | During maintenance.   | <ul style="list-style-type: none"> <li>• Wear the personal protective equipment.</li> <li>• Isolate the packaged unit from the power supply.</li> </ul>   |

### 2.3.4 Electrical residual risks

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| Risk          | When it occurs  | How to avoid it   |
|---------------|---|---|
| Electrocution | During installation, connection, maintenance and dismantling. | <ul style="list-style-type: none"> <li>• The electrical connection and disconnection must only be carried out by the electrical maintenance engineer.</li> <li>• Wear the personal protective equipment.</li> </ul> |

### 2.3.5 Thermal residual risks

| Risk             | When it occurs                      | How to avoid it   |
|------------------|-------------------------------------|---|
| Low temperatures | During maintenance in the coldroom. | <ul style="list-style-type: none"> <li>• Wear the personal protective equipment.</li> <li>• Follow the instructions for adjustment, cleaning and maintenance given in this instruction manual.</li> <li>• Take work breaks to prevent long exposure to excessively low temperatures.</li> </ul> |
| Burns            | During and immediately after use.   | Wear the personal protective equipment.   |

### 2.3.6 Chemical residual risks

| Risk               | When it occurs   | How to avoid it   |
|--------------------|--|---|
| Explosion and fire | During transport and handling, installation, cleaning and maintenance. | Follow the regulations in force and the warnings on adjustments and maintenance given in this instruction manual. |
| Burns              | During transport and handling, installation, cleaning and maintenance. | Follow the regulations in force and the warnings on adjustments and maintenance given in this instruction manual. |

## 2.4 Safety labels

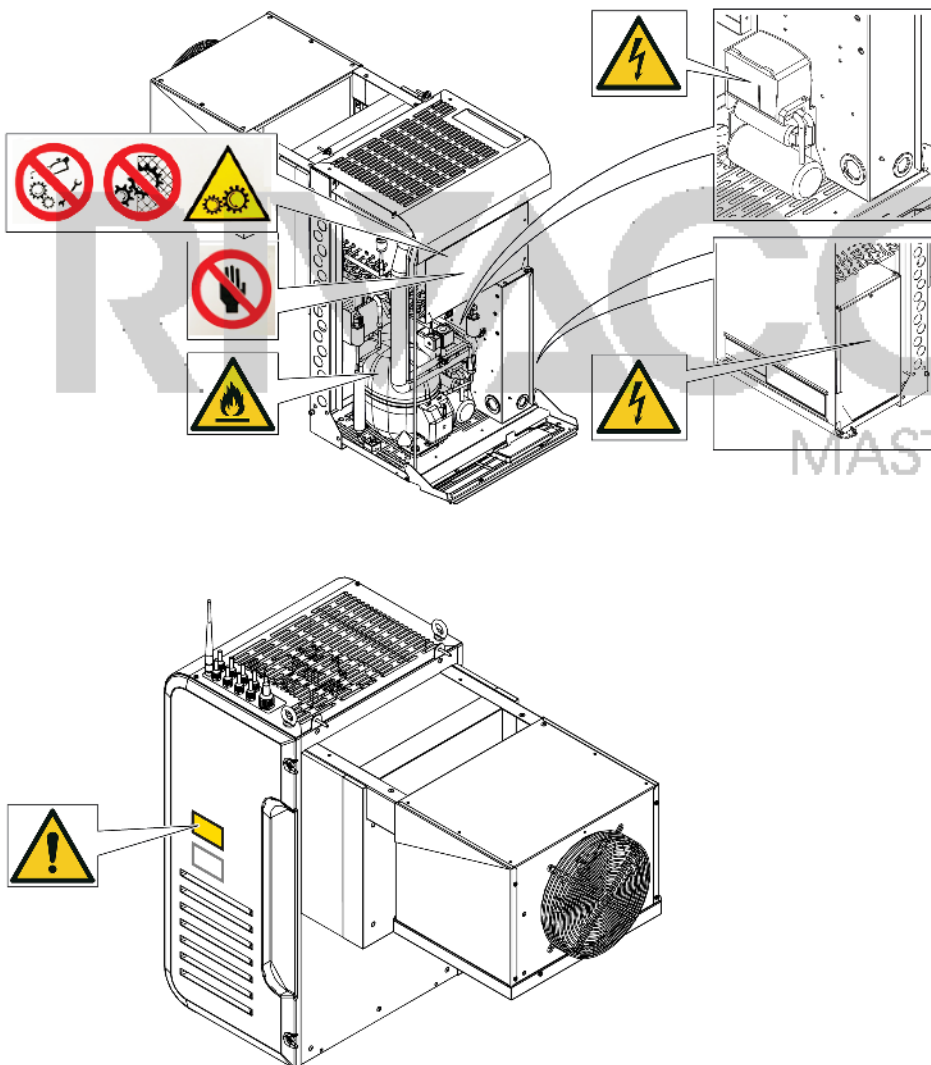
### 2.4.1 General warnings








Clean the labels if dirty and replace them if detached or damaged.

DO NOT apply other labels or notes that can hide the indications affixed by the manufacturer or make them partially illegible.

### 2.4.2 Position of the safety stickers

The position of the stickers is as follows:

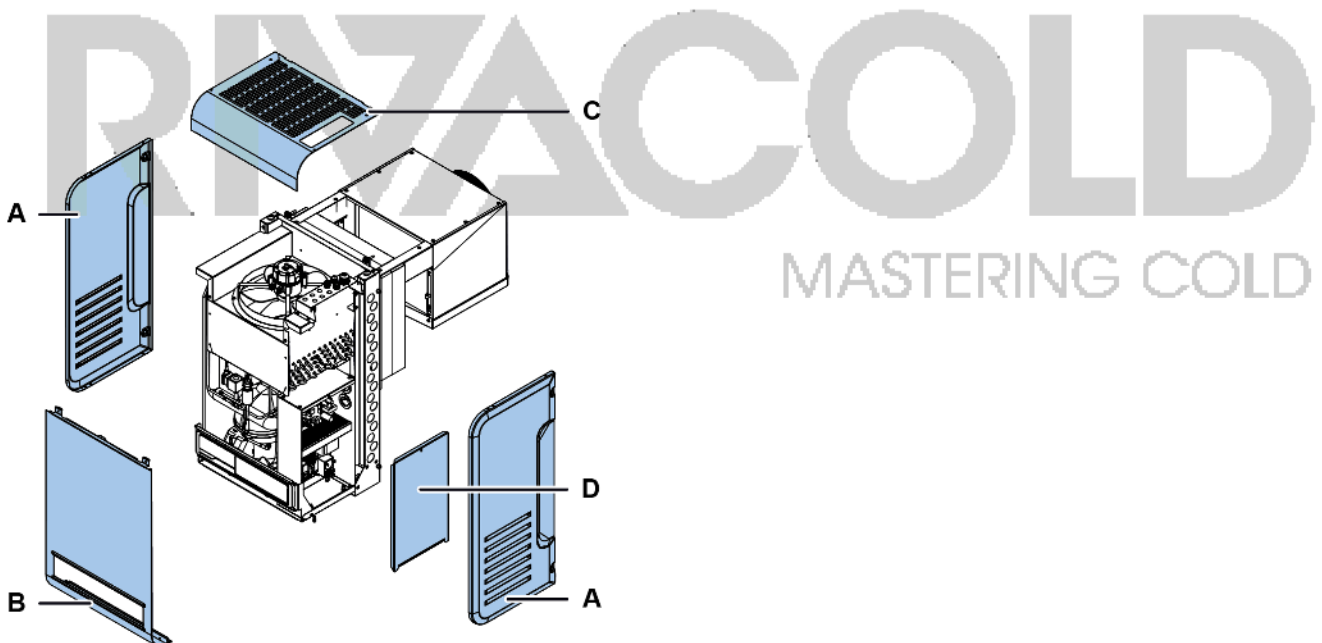


| Symbol  | Description  |
|---|--|
|  | Do not repair moving parts                                 |
|  | Do not remove safety devices                               |
|  | Moving parts   |
|  | Do not use your hands to clean the condenser               |
|  | Flammable gas  |
|  | Electrocution  |
|  | Disconnect the power supply before performing maintenance. |

## 2.5 Fixed guards

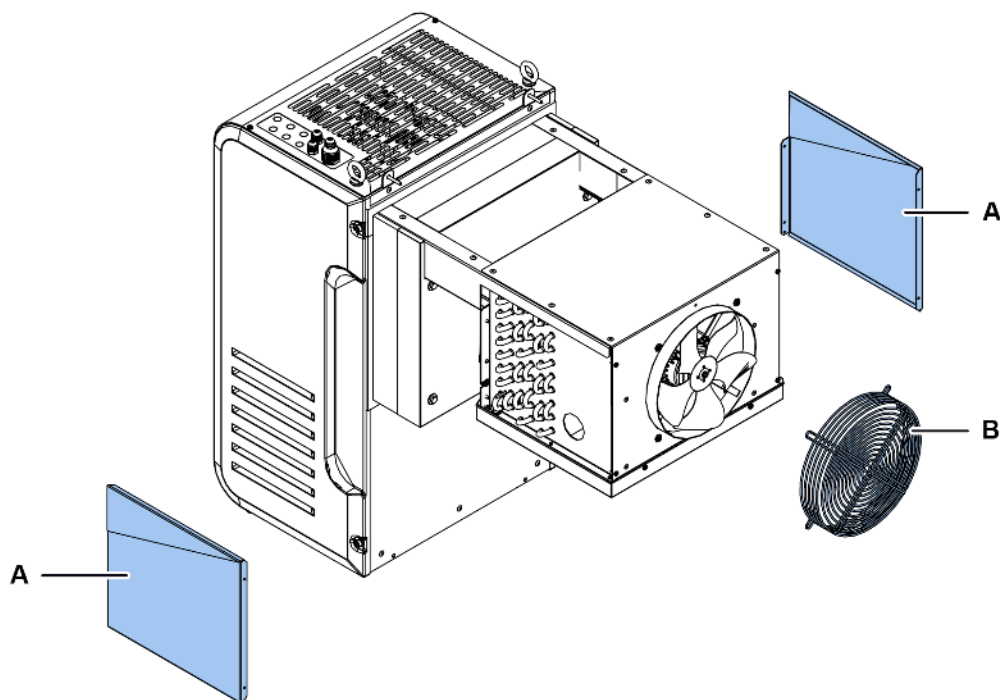
### 2.5.1 Fixed guards of the condensing unit

The fixed guards of the condensing unit consist of the side panels **[A]**, the front panel **[B]**, the top panel **[C]** and, internally, the electrical box panel **[D]**.



## 2.5.2 Fixed guards of the evaporating part

The fixed guards of the evaporating part consist of the side panels [A] and the grid [B].



## 2.6 Noise

### 2.6.1 Sound pressure level

The sound pressure measured while the packaged unit is running is less than 70 dB(A) LEX and/or 135 dB(C) Lpeak.

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# 3. Learning about the packaged unit for coldrooms

This section includes the following topics:

|  |    |
|--|----|
| 3.1 Limits of use .....                    | 14 |
| 3.2 Overview .....                         | 14 |
| 3.3 Description of the packaged unit ..... | 15 |
| 3.4 Packaged unit operation .....          | 21 |

## 3.1 Limits of use

### 3.1.1 Intended use

BEST W R290 is a packaged unit for small-sized coldrooms with electronic fan-motors and a water, air or Water Loop condenser.

### 3.1.2 Unintended use

This packaged unit has been designed for all the uses declared in "Intended use" above.

In particular, with this packaged unit it is NOT possible to:

- Install the packaged unit on a sloping or horizontal wall
- Install the packaged unit on a wall with different structural characteristics than those intended
- Install the packaged unit on a ceiling or floor
- Install the packaged unit on a refrigeration coldroom with different characteristics from those intended
- Use a different refrigerant gas than that intended
- Use the packaged unit without the protections
- Apply labels or notes that can hide the indications provided with the packaged unit or make them partially illegible
- Tamper with the electrical equipment and/or safety devices
- Set the packaged unit with different values than those indicated by the manufacturer
- Climb on or cling to the packaged unit

### 3.1.3 Work environment

The packaged unit CANNOT be used in the following conditions:

- Environments with a potentially explosive atmosphere (ATEX)
- Environments with vapors deriving from chemical processes
- Environments with the presence of radiation (ionizing and non)
- Environments with temperatures outside of the +5°C to +43°C range
- Environments subject to potential fire hazards (see the local standards and regulations applied at national level)
- Environments with poor ventilation
- Outdoors (installation), exposed to the atmospheric agents

## 3.2 Overview

### 3.2.1 Packaged unit configurations

The packaged unit is available in different configurations. The variants are:

- type of installation: saddle, with plug-in insulating panel removed and with plug-in insulating panel fitted
- refrigeration temperature range:
  - NT (normal temperature):  $-5\text{ °C} \leq T_{\text{coldroom}} \leq +10\text{ °C}$
  - LT (low temperature):  $-25\text{ °C} \leq T_{\text{coldroom}} \leq -15\text{ °C}$

### 3.2.2 Circuits of the packaged unit

Depending on the model, the packaged unit can be single-circuit or dual-circuit. The circuits are totally independent of each other. Every circuit is a compact and hermetically sealed system in accordance with the definitions set forth in UNI EN 378-1. The amount of refrigerant for every circuit is  $\leq 150$  g to allow installation to take place anywhere without restrictions, as required by the reference standard.

**Note:** Rivacold cannot be held liable for any restrictions due to national or regional regulations or laws.

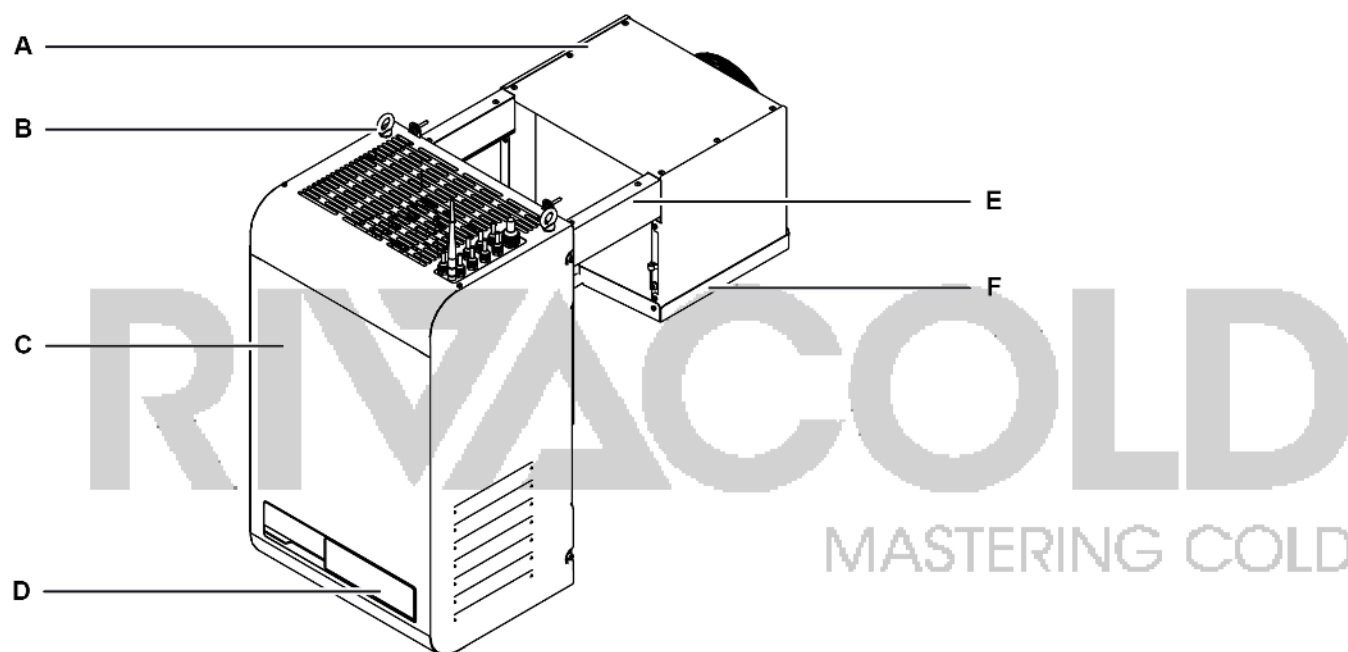
### 3.2.3 Optional extras

The packaged unit options are as follows:

- control panel with remote interface
- IoT connection

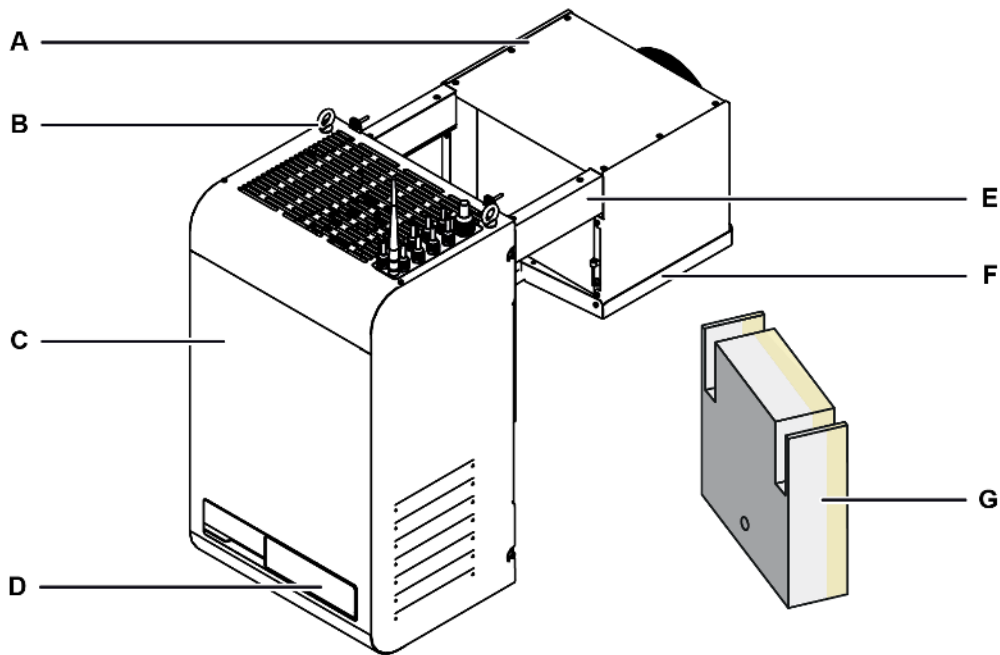
## 3.3 Description of the packaged unit

### 3.3.1 BEST WS components for saddle installation



| Part | Description      |
|------|------------------|
| A    | Evaporating part |
| B    | Eyebolts         |
| C    | Condensing unit  |
| D    | Control panel    |
| E    | Brackets         |
| F    | Evaporator tray  |

### 3.3.2 BEST W components for installation with plug-in insulating panel removed

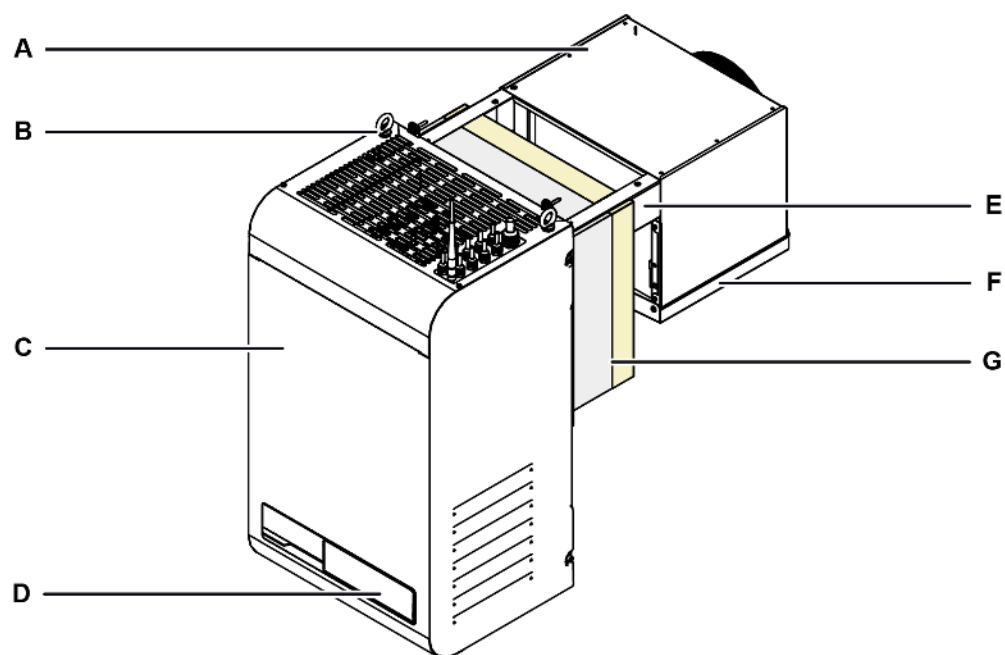


| Part | Description              |
|------|--------------------------|
| A    | Evaporating part         |
| B    | Eyebolts                 |
| C    | Condensing unit          |
| D    | Control panel            |
| E    | Brackets                 |
| F    | Evaporator tray          |
| G    | Plug-in insulating panel |

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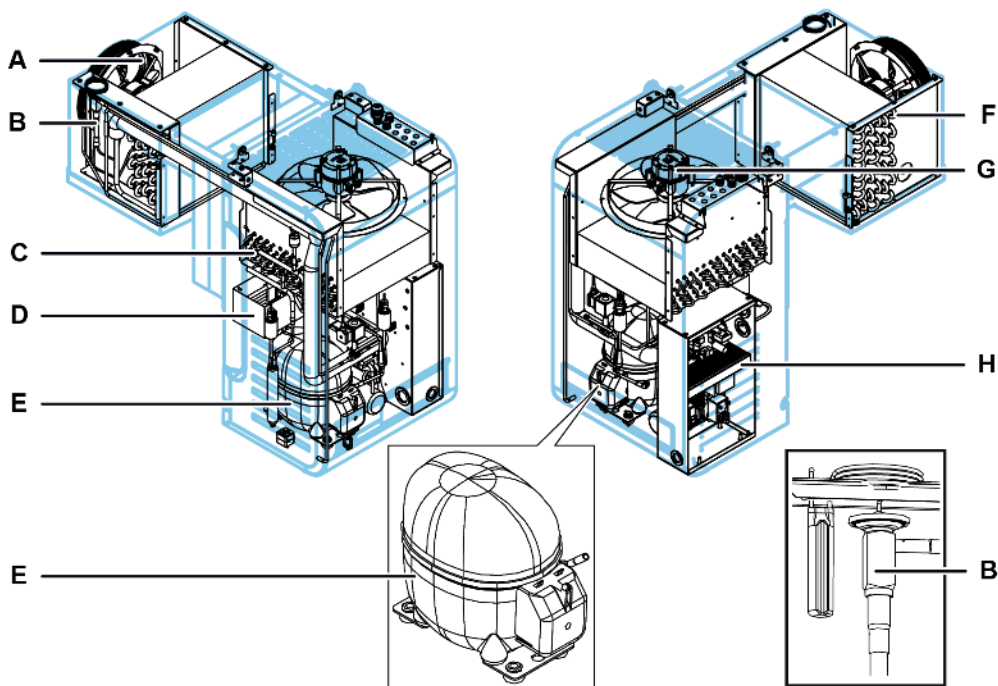
### 3.3.3 BEST WT components for installation with the plug-in fitted



| Part | Description              |
|------|--------------------------|
| A    | Evaporating part         |
| B    | Eyebolts                 |
| C    | Condensing unit          |
| D    | Control panel            |
| E    | Brackets                 |
| F    | Evaporator tray          |
| G    | Plug-in insulating panel |

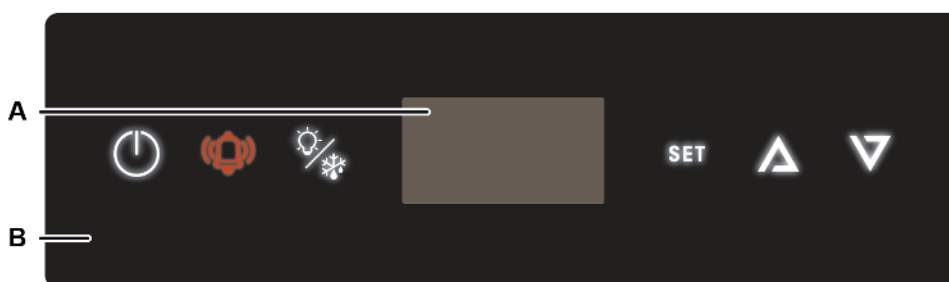
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### 3.3.4 Internal components



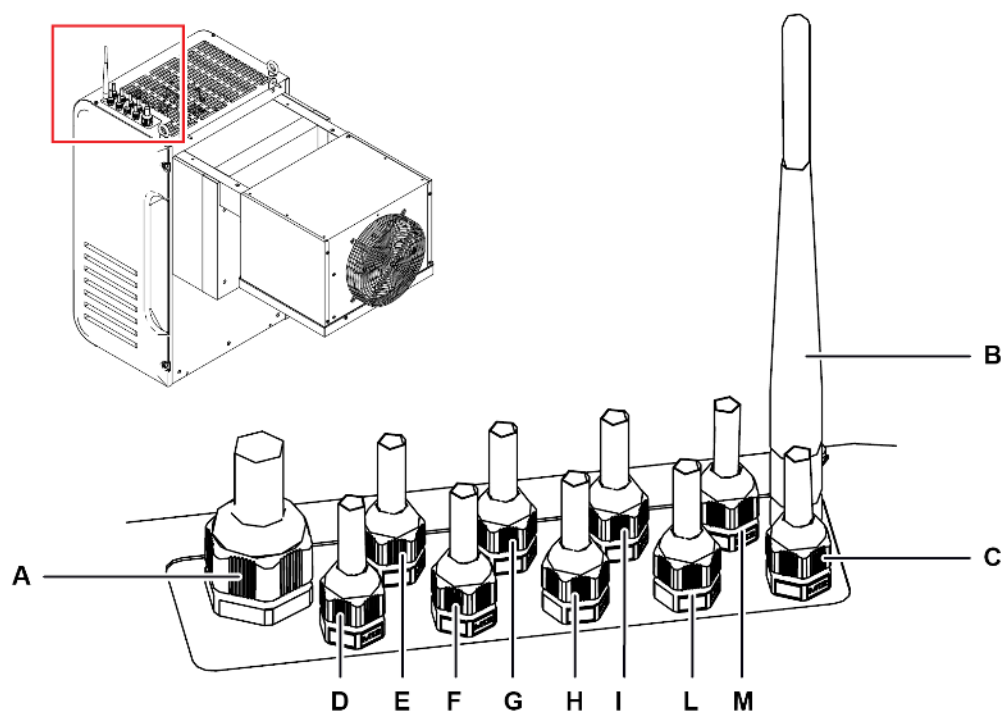
| Part | Description                              |
|------|--|
| A    | Ventilation unit of the evaporating part |
| B    | Thermostatic valve                       |
| C    | Condenser                                |
| D    | Condensate drain tray                    |
| E    | Compressor                               |
| F    | Evaporator                               |
| G    | Condensing unit ventilation unit         |
| H    | Electrical box                           |

### 3.3.5 Components of the control panel



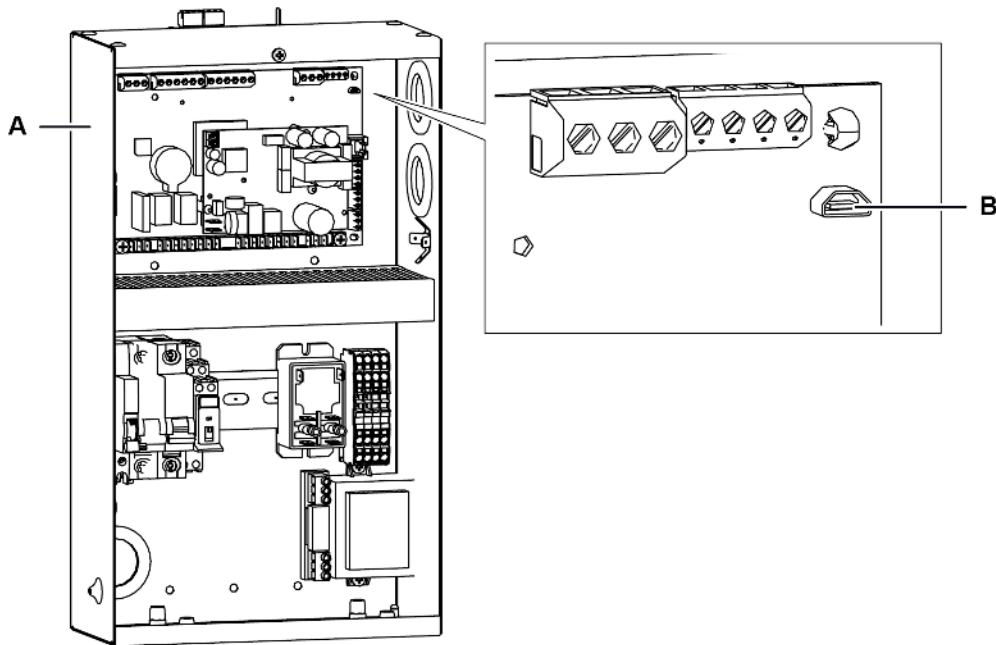
| Part | Description              |
|------|--------------------------|
| A    | Display                  |
| B    | Interface on the machine |

### 3.3.6 Connections



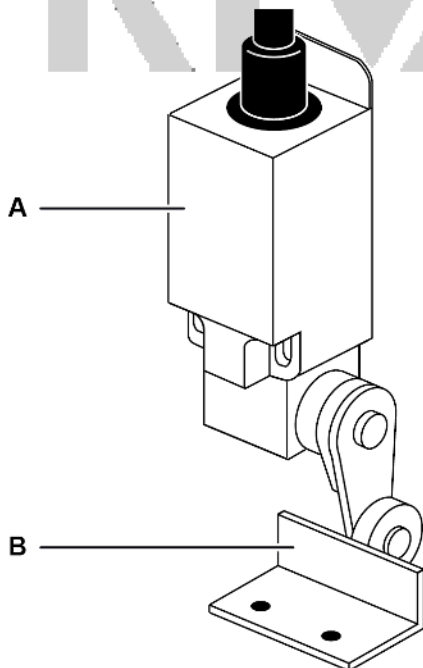
| Part | Description                            |
|------|--|
| A    | Power supply                           |
| B    | IoT gateway antenna                    |
| C    | BMS (Building Management System)       |
| D    | Refrigeration coldroom light           |
| E    | Alarm                                  |
| F    | Door heater (only for low temperature) |
| G    | Free position                          |
| H    | Free position                          |
| I    | Master & slave                         |
| L    | Remote control panel                   |
| M    | Door switch                            |

### 3.3.7 USB port connection



| Part | Description    |
|------|----------------|
| A    | Electrical box |
| B    | USB micro port |

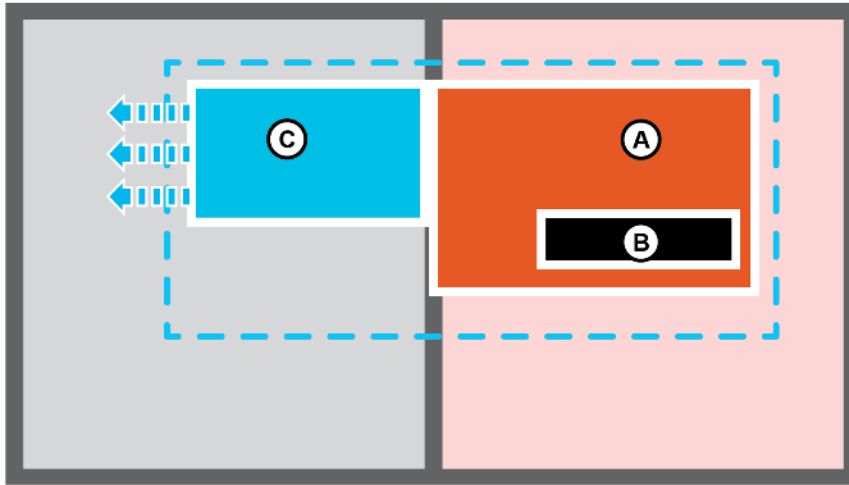
### 3.3.8 Door switch components



| Part | Description |
|------|-------------|
| A    | Door switch |
| B    | Retainer    |

## 3.4 Packaged unit operation

### 3.4.1 General operation



The packaged unit is a refrigeration unit consisting of a condensing unit **[A]** and a controller **[B]** outside the refrigeration coldroom and an evaporating part **[C]** placed inside. The controller manages the refrigeration and defrost cycles.

The refrigeration cycle is the compression type and the refrigerant gas is condensed and evaporated cyclically.

Defrosting is the hot gas type and takes place automatically with cyclic frequency that can be changed by the user or fully automatically using the Smart Defrost function, which can also be activated manually.

### 3.4.2 Operation of the MY I.D. App

Within the App you can access the following sections:

- **News:** to know the news and events of the Rivacold world.
- **Select:** to know all the Rivacold products.
- **Documents:** to download the sales and technical documentation relating to Rivacold products.
- **My Vision:** to have access to the cloud through which it is possible to monitor and control the operation of every packaged unit. The IOT service must be purchased to have access to this area.
- **Smart Control:** to control and command the packaged unit using the mobile device connected via Bluetooth, instead of the interface on the machine.
- **Contacts:** to know and find the closest Rivacold sales contact person.

# 4. Transport and handling

This section includes the following topics:

|                                  |    |
|----------------------------------|----|
| 4.1 Handling warnings .....      | 22 |
| 4.2 Transport and handling ..... | 23 |


## 4.1 Handling warnings


### 4.1.1 Required skills

|   |        |
|---|--------|
|  | Driver |
|---|--------|

### 4.1.2 Safety



 **DANGER!** Explosion/Burn. Presence of flammable gas. During transport and handling, adopt all the precautions required by the legislation in force.

 **WARNING!** Crushing. Always use lifting equipment and accessories of adequate capacity for the load to be lifted. Use the personal protective equipment. Follow the warnings given in this instruction manual concerning lifting.

*NOTICE: there is oil in the machine. Always handle in an upright position.*

### 4.1.3 Choosing lifting equipment and accessories

The following general indications apply to load lifting operations and also concern the use of lifting accessories not supplied with the packaged unit. Choose lifting equipment and accessories according to the dimensions, weight and shape of the load to be lifted.

### 4.1.4 Preliminary checks

- Check that the lifting accessories are intact.
- Check that there are no people or objects in the maneuvering area.
- Check the stability and correct balancing of the load by slowly lifting it slightly.

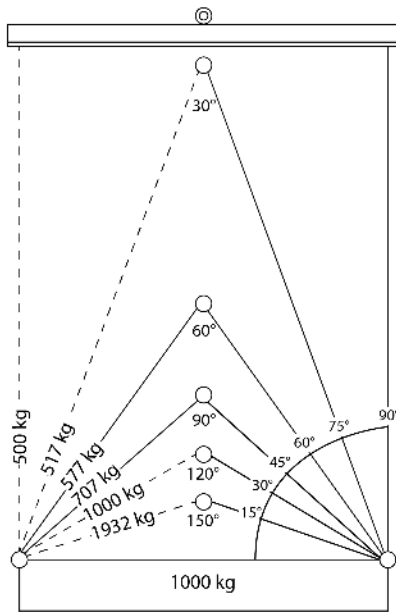
### 4.1.5 General warnings

- Due to the presence of oil in the compressor, move the packaged unit while still maintaining the upright position. NEVER overturn the packaged unit.
- Choose the harnessing points so that the load is balanced correctly, considering its center of gravity.
- Monitor the lifting movement from a safe distance. NEVER stand under the load.
- Only guide the load with ropes and hooks.
- If you need to accompany the load with your hands, pull the load. DO NOT push it.
- Lift the load continuously, without jerking or sudden movements.
- After placing the load on the ground, slacken the tension on the tie rods before removing the lifting accessories.

*Note: the center of gravity is indicated on the packaged unit packaging.*

### 4.1.6 Lifting angle

The angle between the tie rods changes the applied load according to the following diagram:



**Note:** we recommend using angles less than 60°.

## 4.2 Transport and handling

### 4.2.1 Transport conditions

The packaged unit is secured and packed in such a way as to prevent movement, impact and damage during transport.

### 4.2.2 Packaging content

The packaged unit is placed in a single package, complete with all electrical connections. The contents of the packaging are as follows:

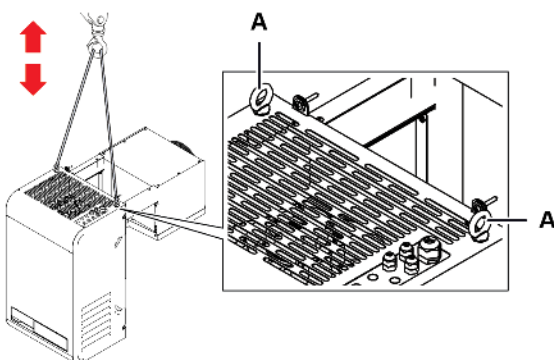
- packaged unit
- door switch with retainer
- fastening kit
- template to be used for installation
- coldroom light

### 4.2.3 Storage

The packed packaged unit must be stored indoors or covered to avoid exposure to atmospheric agents.

### 4.2.4 Lifting the packaged unit

The center of gravity is indicated on the packaged unit packaging. Use the lifting eyebolts **[A]** on the frame.



# 5. Installation

This section includes the following topics:

|  |    |
|--|----|
| 5.1 Installation warnings .....  | 24 |
| 5.2 Setting the packaged unit in place .....                                 | 25 |
| 5.3 Installation requirements .....  | 26 |
| 5.4 Install the BEST WS (saddle) .....                                       | 26 |
| 5.5 Install the BEST W (with plug-in insulating panel) .....                 | 28 |
| 5.6 Install the BEST WT (with the pre-fitted plug-in insulating panel) ..... | 31 |
| 5.7 Secure the door switch .....   | 32 |
| 5.8 Connect the packaged unit to the electrical mains .....                  | 33 |
| 5.9 Work area and operational tasks .....                                    | 33 |

## 5.1 Installation warnings

### 5.1.1 Preamble


Always refer to the information provided when ordering the packaged unit. Contact Rivacold technical assistance to receive specific information for the installation.

### 5.1.2 Required skills

|   |                                 |
|---|---------------------------------|
|  | Manufacturer's personnel        |
| COMPANY   |                                 |
|  | Mechanical maintenance engineer |
|  | Driver                          |

### 5.1.3 Safety



-  **DANGER!** Explosion/Burn. Presence of flammable gas. The place of installation must have good air circulation and must be far from heat sources, such as naked flames or hot surfaces and from electrical components or flammable materials. During installation, adopt all the precautions required by legislation in force.
- Crushing.** Always use lifting equipment and accessories of adequate capacity for the load to be lifted and follow the lifting warnings given in this instruction manual.
- Falling from above.** Always use adequate means and accessories. Provide safe access to the installation area. Follow the warnings given in this instruction manual.
- Electrocution.** Always use adequate means and accessories. Follow the warnings given in this instruction manual.



## 5.2 Setting the packaged unit in place

### 5.2.1 Characteristics of the placement area

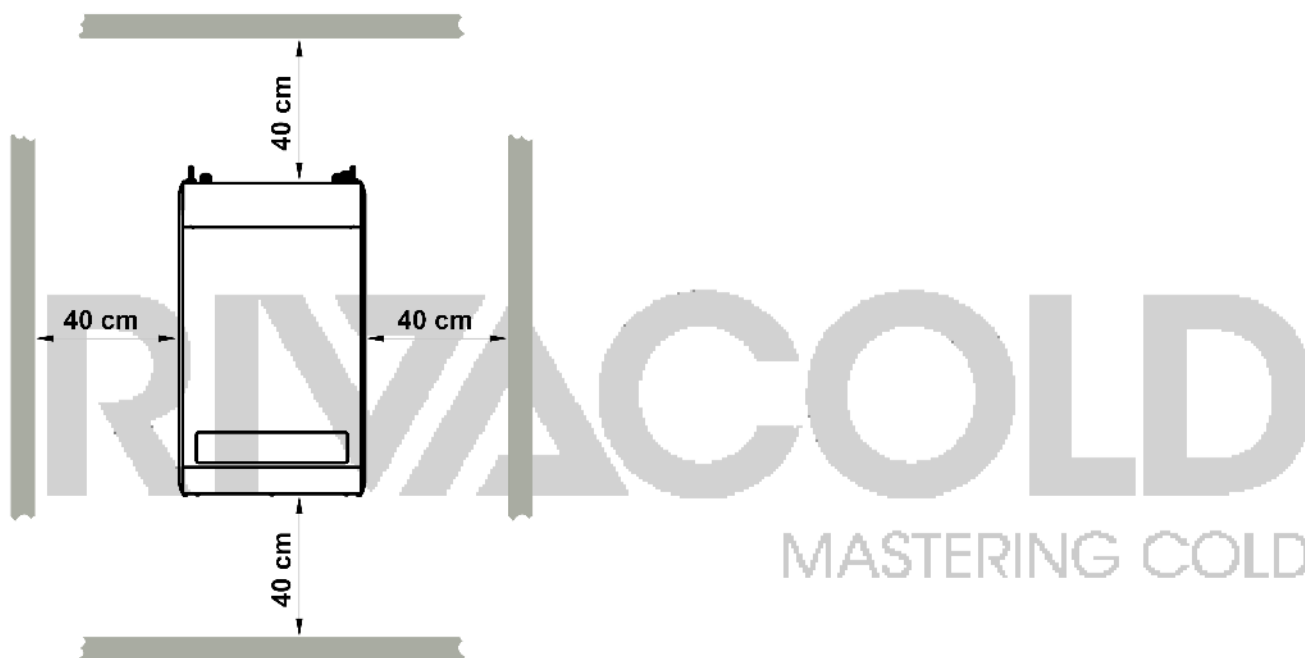
**NOTICE:** The packaged unit must only be installed inside rooms that fully shelter it.

The placement area must have the following characteristics:

- The place of installation must have good air circulation and must be far from heat sources (e.g. naked flames or hot surfaces) and from electrical components or flammable materials
- the wall must be vertical with an adequate surface to support the weight of the packaged unit, even, well leveled and free from vibrations
- the walls of the coldrooms must not be thicker than 200 mm. A 100 mm plug-in insulating panel is supplied as standard for NT units, whereas the standard plug-in insulating panel is 150 mm for LT units.
- the place of installation must have a temperature indicated in "Technical features" on page 146.

### 5.2.2 Minimum distances of the placement area

The packaged unit must be positioned in a placement area with minimum distances to allow proper air circulation and facilitate maintenance.



### 5.2.3 Removing the packaging

**NOTICE:** Environmental contamination. Follow the regulations in force regarding the disposal of polluting materials.

Remove all packaging and fastening elements used during transport.

### 5.2.4 Inspections and checks on the packaged unit

Visually inspect the packaged unit to look for any damage caused during transport that could compromise normal operation. Transport damage must be attributed to the carrier and immediately reported to RIVACOLD srl.

### 5.2.5 Storage

If the packaged unit must be stored for long periods, for example waiting to be relocated, follow the instructions below.

- Isolate the packaged unit from energy sources.
- Clean the packaged unit and all its components.

- Position the packaged unit so that there is sufficient space to pick it up, lift it and move it safely.
- Place the packaged unit indoors and covered with sheets so as to avoid exposure to atmospheric agents.
- Place the packaged unit on a stable, solid supporting surface with characteristics so as to withstand the weight of the packaged unit and the equipment involved
- Place the packaged unit in an environment with specific temperature and humidity conditions

See "Technical features" on page 146 for more information.

## 5.3 Installation requirements

### 5.3.1 Stability requirements

Check that the wall where the packaged unit is to be installed is suitable for supporting it.

### 5.3.2 Requirements for the connection to the electrical mains

The packaged unit is supplied with a power lead and plug.

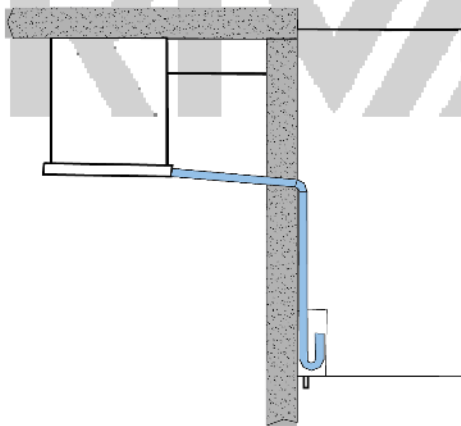
Comply with the following requirements:

- The voltage and frequency supplied must correspond to those indicated on the identification plate
- Insert a differential circuit breaker (RCD) between the power line and the packaged unit, adequately sized for the application and the laws in force in the country of installation. The switch must be near the packaged unit.

See "Technical features" on page 146.

## 5.4 Install the BEST WS (saddle)

### 5.4.1 Result of the installation

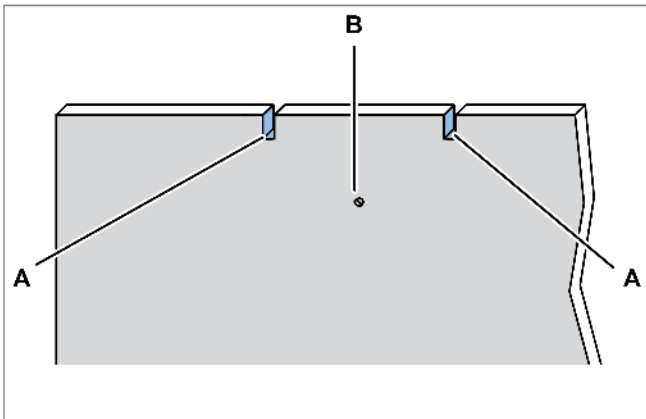


### 5.4.2 Dimensions of the grooves to be made in the wall

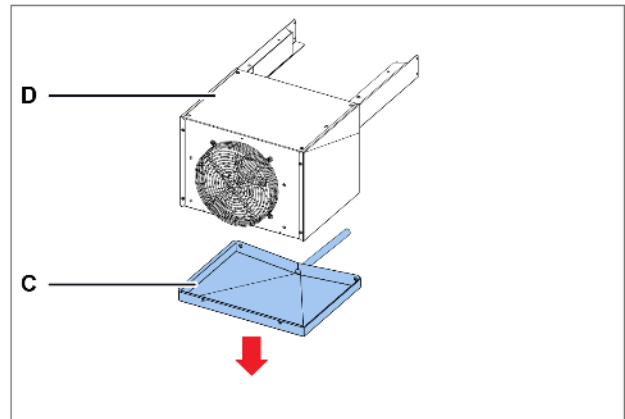
Depending on the dimensions of the packaged unit, make two grooves on the upper end of the coldroom wall. Use the packaging template to proceed more quickly.

| BEWS25 Codes | BEWS30 Codes | BEWS35 Codes |
|--------------|--------------|--------------|
|              |              |              |

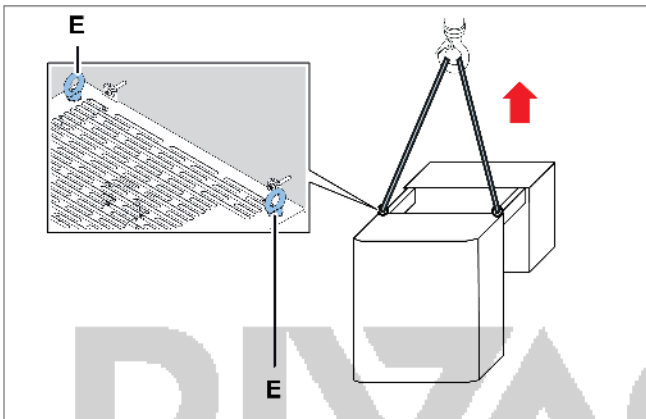
### 5.4.3 Procedure



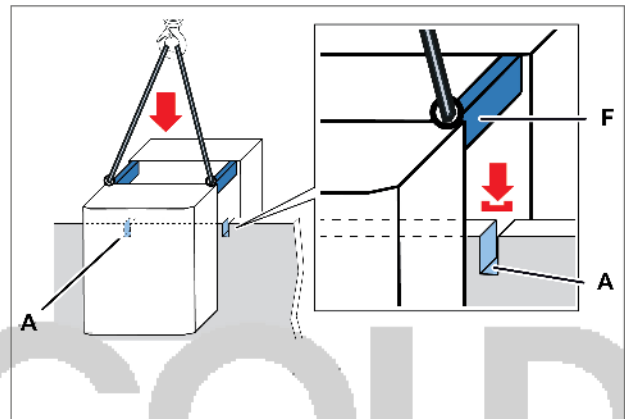
1. Make the grooves [A] and a hole [B] in the wall to drain water, using the packaging template.



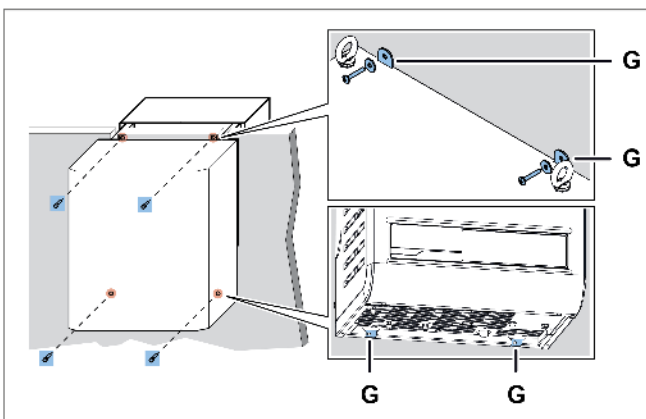
2. Undo the screws of the tray [C] and remove it from the evaporating part [D].



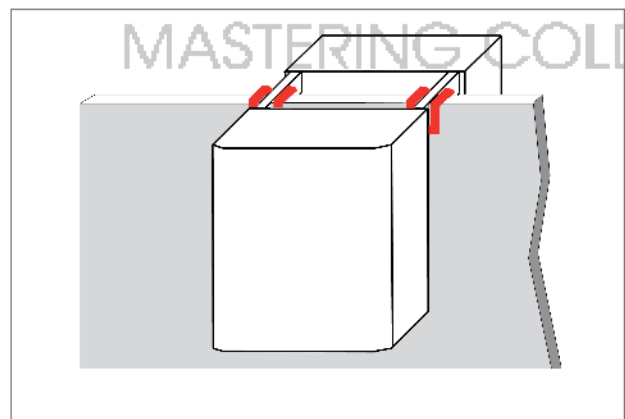
3. Lift the packaged unit using the eyebolts [E].



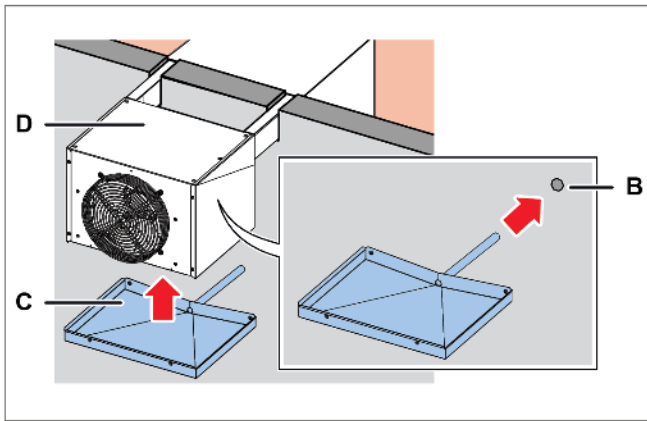
4. Set the packaged unit in place, inserting the brackets [F] into the grooves [A] of the wall.



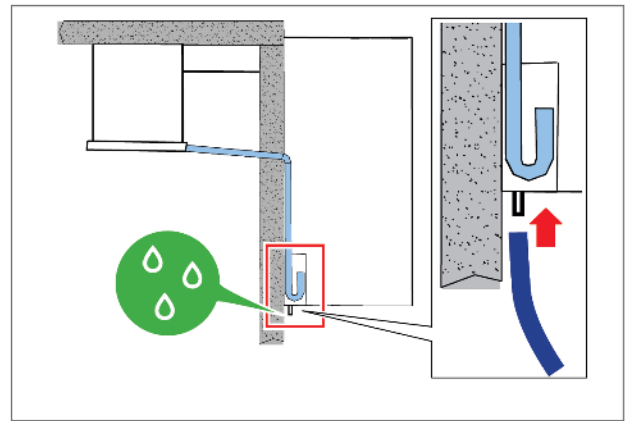
5. Secure the packaged unit to the wall by inserting the screws in the holes [G].



6. Seal the grooves in contact with the packaged unit and the brackets with silicone.

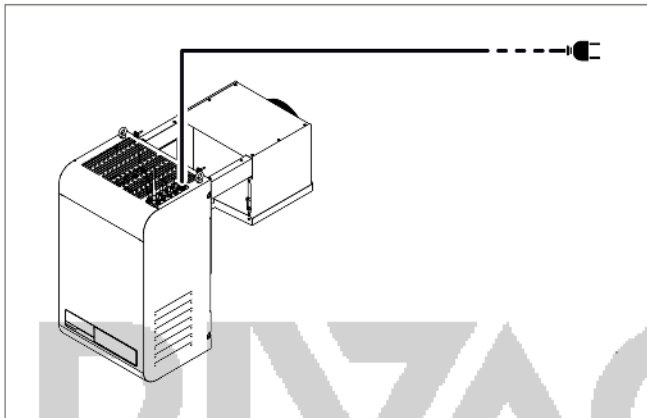


7. Secure the tray [C] to the evaporating part [D] by inserting the tube in the hole [B] of the wall.



8. Connect the overflow tube to drain the condensate.

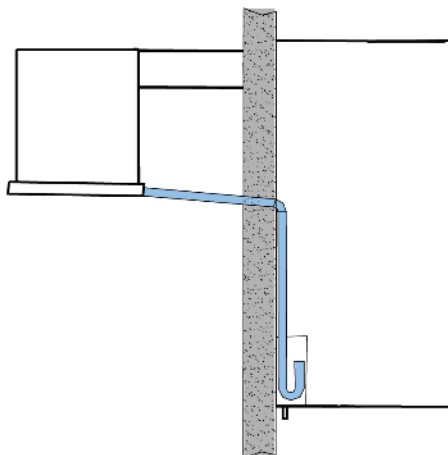
9. Install the door switch (see "Secure the door switch" on page 107).



10. Connect electricity and turn on (see "Control panel operations" on page 112).

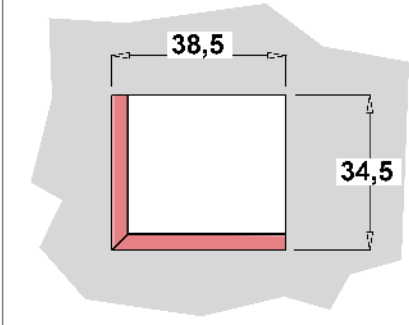
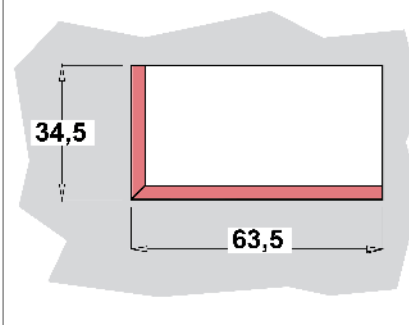
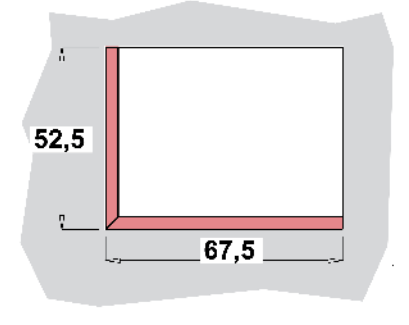
## 5.5 Install the BEST W (with plug-in insulating panel)

### 5.5.1 Result of the installation

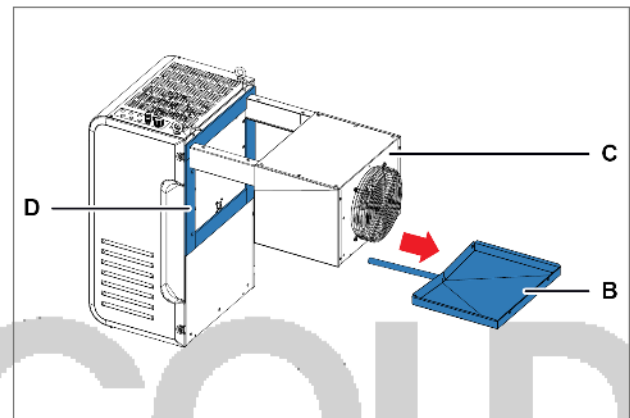
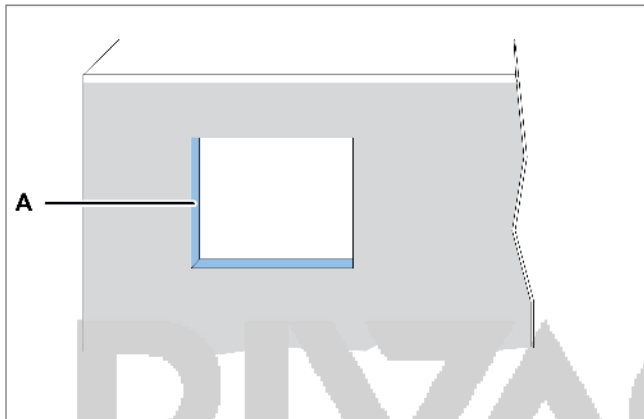


### 5.5.2 Dimensions of the window to be made in the wall

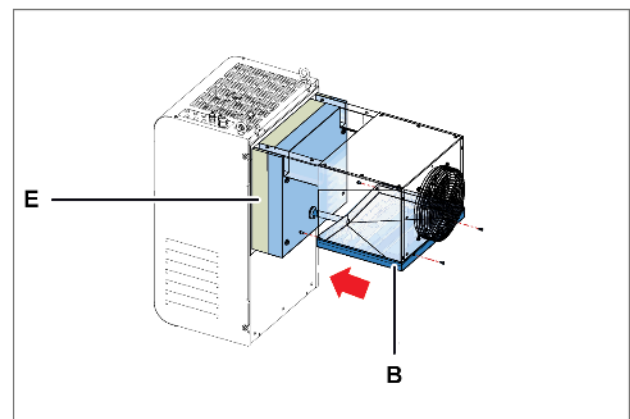
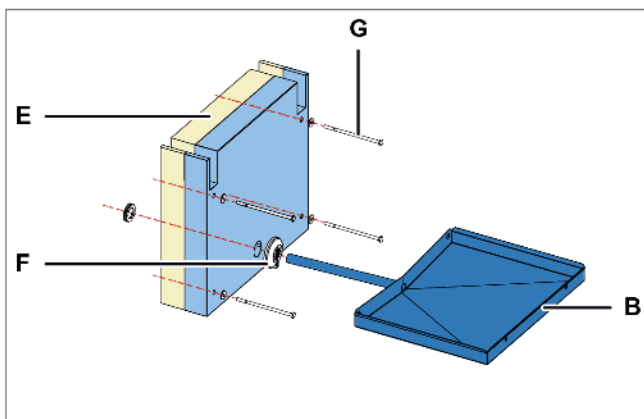
Depending on the dimensions of the packaged unit, cut a window with the following dimensions in the coldroom wall. Use the packaging template to proceed more quickly.

| BEW25 Codes   | BEW30 Codes   | BEW35 Codes   |
|---|---|---|
|  |  |  |

### 5.5.3 Procedure

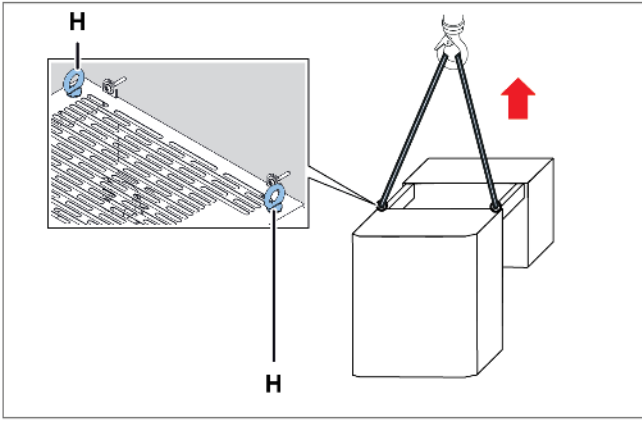


1. On the wall of the refrigeration coldroom, make a window [A] using the template in the packaging.
2. Unscrew the tray screws [B] and remove it from the evaporating part [C], paying attention to the drain heater.
3. Apply the gaskets [D] supplied with the plug-in insulating panel kit.

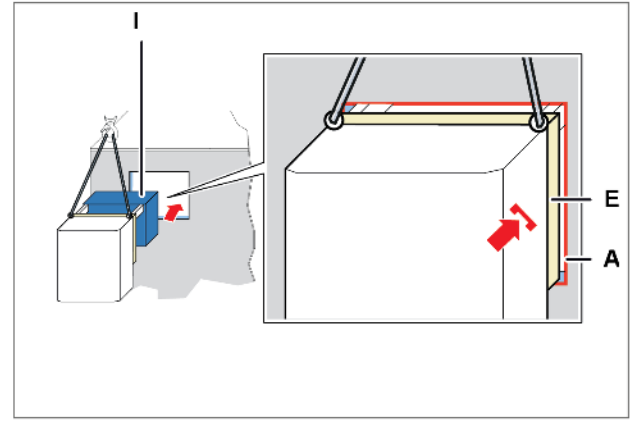


4. Place the plug-in insulating panel [E] between the brackets of the packaged unit.
5. Insert the tube of the tray [B] with the gasket [F] together with the screws [G] into the plug-in insulating panel.
6. Secure the plug-in insulating panel [E] and the tray [B] to the packaged unit.

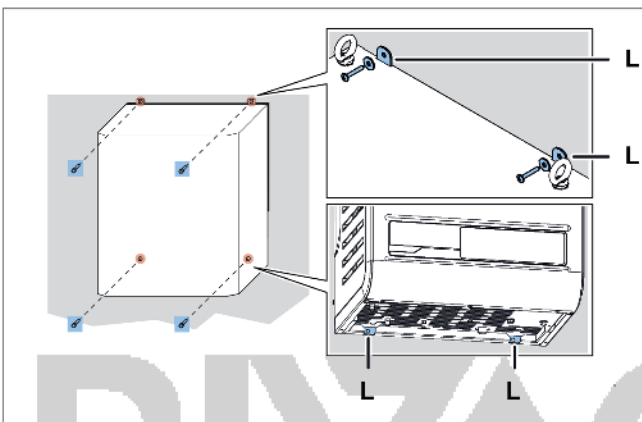
**NOTICE:** pay attention to the correct positioning of the drain heater.



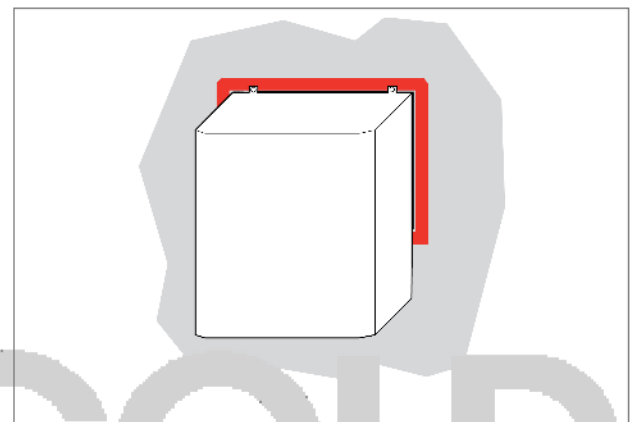
7. Lift the packaged unit using the eyebolts [H].



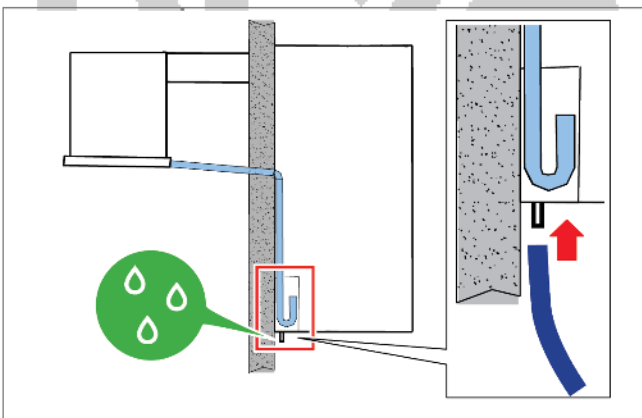
8. Insert the evaporating part [I] and recess the plug-in insulating panel [E] in the window [A] of the wall.



9. Secure the packaged unit to the wall by inserting the screws in the holes [L].

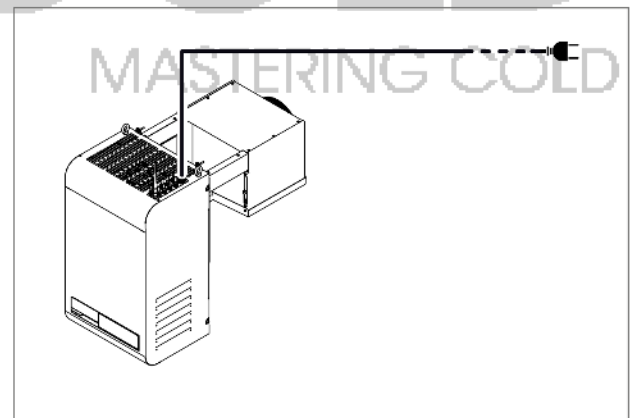


10. Seal the parts of the packaged unit in contact with the edges of the window with silicone.



11. Connect the overflow tube to drain the condensate.

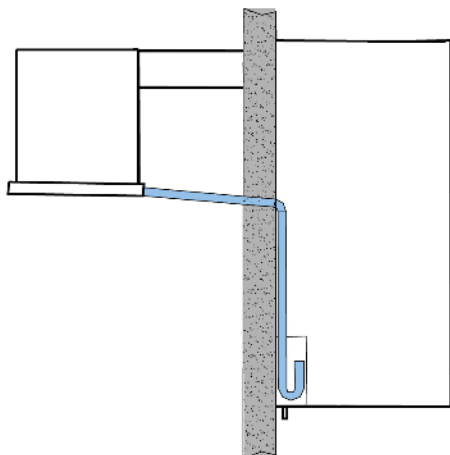
12. Install the door switch (see "Secure the door switch" on page 107).



13. Connect electricity and turn on (see "Control panel operations" on page 112).

## 5.6 Install the BEST WT (with the pre-fitted plug-in insulating panel)

### 5.6.1 Result

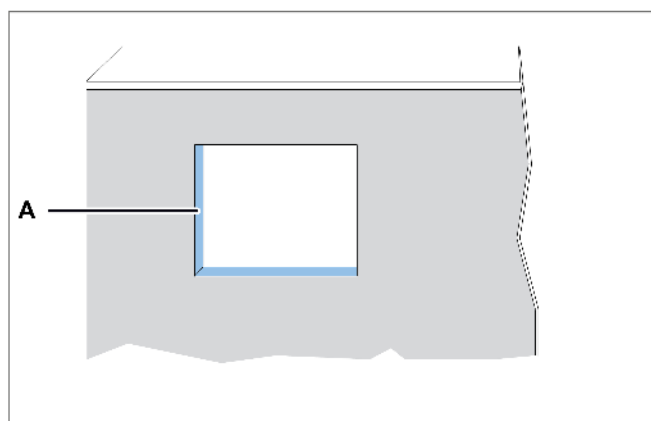


### 5.6.2 Dimensions of the window to be made in the wall

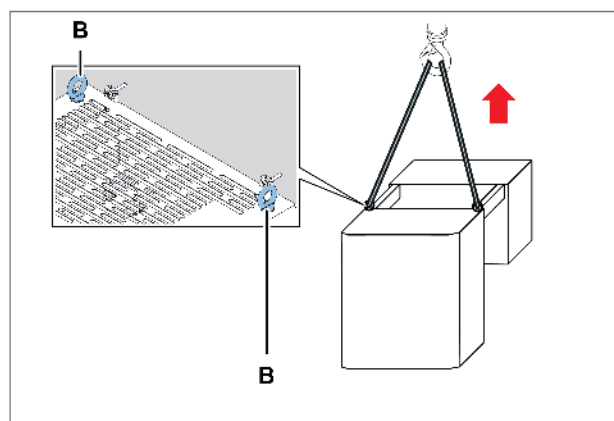
For this type of installation, depending on the dimensions of the packaged unit, a window with the following dimensions in centimeters (cm) must be made in the coldroom wall chosen for installation:

| BEWT25 Codes | BEWT30 Codes | BEWT35 Codes |
|--------------|--------------|--------------|
|              |              |              |

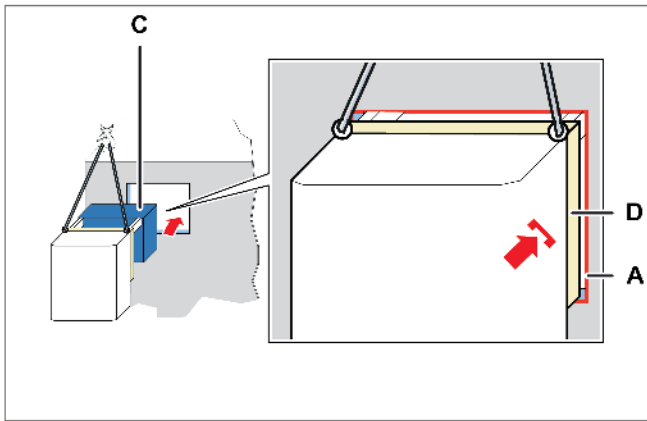
### 5.6.3 Procedure



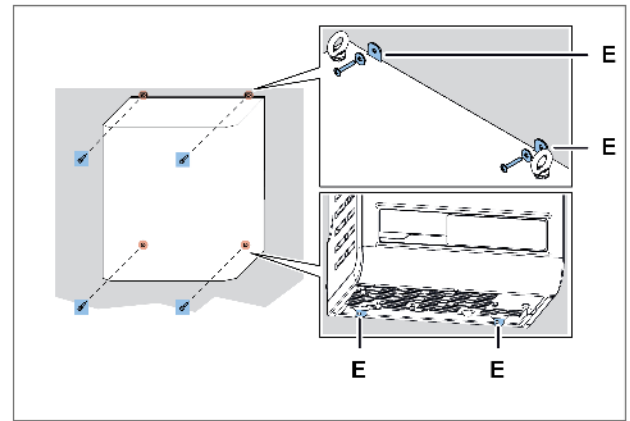
1. On the wall of the refrigeration coldroom, make a window [A] using the template in the packaging.



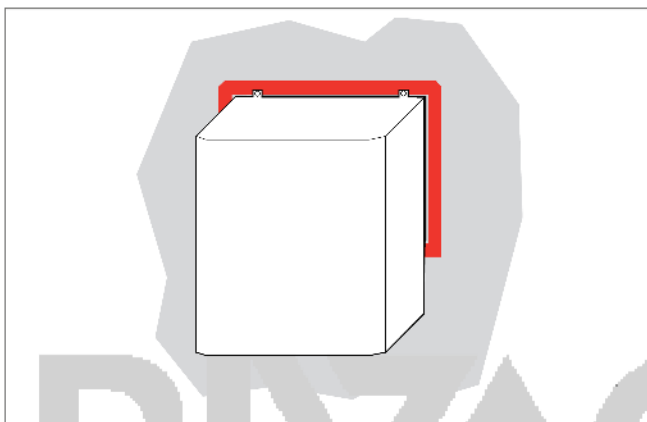
2. Lift the packaged unit using the eyebolts [B].



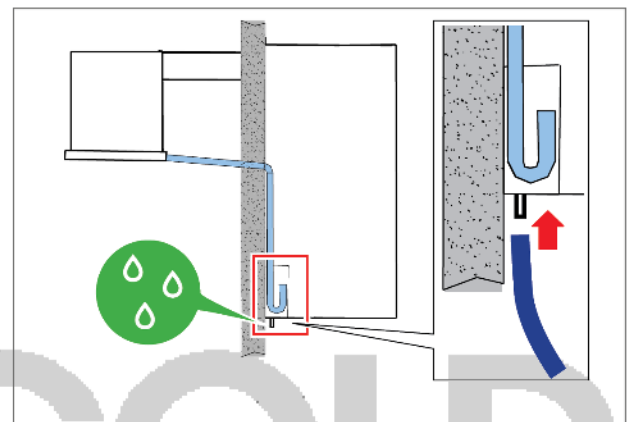
3. Insert the evaporating part [C] and recess the plug-in insulating panel [D] in the window [A] of the wall.



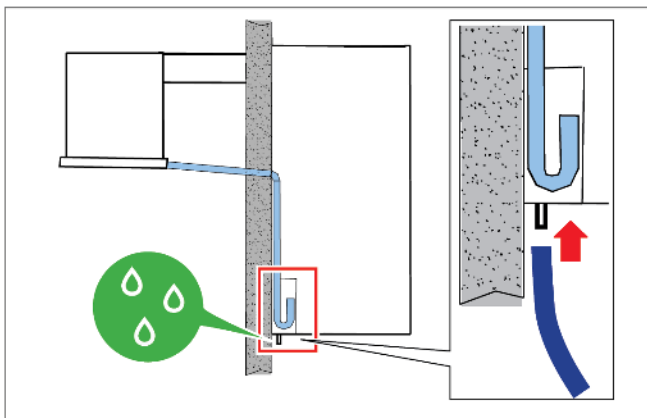
4. Secure the packaged unit with the screws [E].



5. Seal the parts of the packaged unit in contact with the window with silicone.



6. Connect the overflow tube to drain the condensate.  
7. Install the door switch (see "Secure the door switch" below).



8. Connect electricity and turn on (see "Control panel operations" on page 112).

## 5.7 Secure the door switch

### 5.7.1 Safety



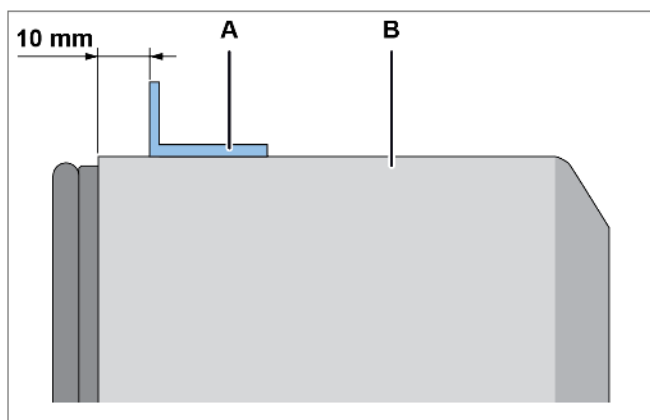
**CAUTION!** to avoid signal interference, the door switch cable must pass far away from the electric current cables.



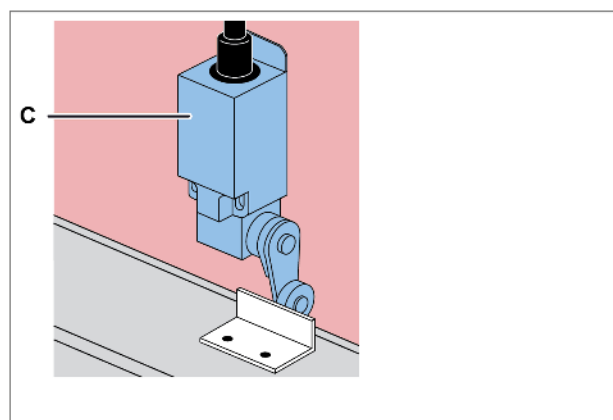


**CAUTION!** the installation of electrical components inside the refrigeration coldroom falls entirely under the responsibility of the end user. Only use suitable materials for the types of risks, in compliance with the laws in force.

### 5.7.2 Procedure



1. Secure the retainer **[A]** on the door of the refrigeration coldroom **[B]**, positioning it about 10 mm from the leaf and checking the correct positioning during the installation stage.



2. Secure the door switch **[C]**.

*Note: according to the type of refrigeration coldroom, choose the best installation position and method.*

## 5.8 Connect the packaged unit to the electrical mains

### 5.8.1 Safety



**DANGER!** Electrocution. Always use adequate equipment and accessories and follow the connection warnings given in this instruction manual.

### 5.8.2 Connect the packaged unit

1. See "Requirements for the connection to the electrical mains" on page 101.
2. Once connected, the display lights up.

### 5.8.3 Connect the coldroom light

Wire the coldroom light by connecting it with the preset cable for connection to the packaged unit.

## 5.9 Work area and operational tasks

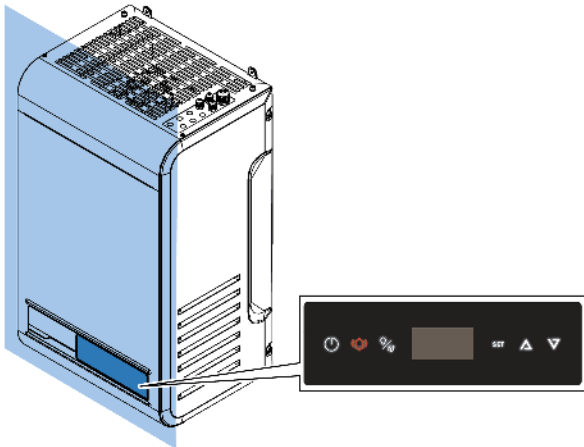
### 5.9.1 Required skills



Operator

### 5.9.2 Work area

The work area for the operator is that in front of the control panel.



### 5.9.3 Operating tasks

The operator sets the packaged unit and checks that it functions correctly.

The operator periodically cleans the packaged unit (see "Maintenance and cleaning performed by the operators" on page 120).

**RIVACOLD**  
MASTERING COLD

## 6. Start-up

This section includes the following topics:

|                                     |    |
|-------------------------------------|----|
| 6.1 Control panel .....             | 35 |
| 6.2 Control panel operations .....  | 37 |
| 6.3 Setting the date and time ..... | 38 |
| 6.4 Using the MY I.D. App .....     | 39 |
| 6.5 The passwords .....             | 42 |





### 6.1 Control panel




#### 6.1.1 Control elements supplied with the packaged unit

It is possible to control the packaged unit via the control panel or via mobile devices connected to the packaged unit via Bluetooth.

#### 6.1.2 Description of the buttons on the control panel













| Button  | Function   | Steady on                                    | Flashing on                  |
|---|--|--|------------------------------|
|  | Press briefly: returns to the previous menu level.<br>Long press (3 seconds): turns the packaged unit on and off.  | Menu navigation in progress.                 | Switch-on or off in progress |
|  | Press briefly: displays the list of activity alarms.<br>Long press (3 seconds): resets the manually reset alarms.  | Alarm canceled and entered in the alarm log. | Packaged unit in alarm state |
|  | Press briefly (3 seconds): turns the light on and off.<br>Long press (6 seconds): manually controls defrost.   | -  | -                            |
| <b>SET</b>  | Press briefly: confirms the displayed value.<br>Long press (3 seconds): accesses the setpoint menu.<br>Pressing <b>SET</b> and  simultaneously (3 seconds): accesses the parameters menu. | Setpoint or active parameters menu           | -                            |

| Button  | Function   | Steady on | Flashing on                        |
|---|--|-----------|------------------------------------|
|  | Press briefly: scrolls through the menu items or increases the displayed value.<br>Pressing <b>SET</b> and  simultaneously (3 seconds): accesses the parameters menu. | -         | Setpoint or active parameters menu |
|  | Press briefly: scrolls through the menu items or decreases the displayed value.<br>Long press (3 seconds): accesses the Quick Menu.  | -         | Setpoint or active parameters menu |


### 6.1.3 Description of the display





| Pilot light   | Steady on  | Flashing on                                    |
|---|--|--|
|    | View: <ul style="list-style-type: none"> <li>parameters</li> <li>set values</li> <li>measured values</li> </ul> <p><i>Note: the unit of measurement is not displayed and is factory-set, but can be changed from parameter <b>UM1</b>.</i></p> | -  |
|  | Heating output active  | -  |
|  | One or more clock functions active: <ul style="list-style-type: none"> <li>Defrost with hourly programming</li> <li>Energy saving with hourly programming</li> </ul>   | -  |
|  | Defrost active   | Dripping stage active; defrost request pending |
|  | One or more ECO functions active: <ul style="list-style-type: none"> <li>Smart Defrost active</li> <li>Floating condensation active</li> <li>Energy Saving active</li> </ul>   | -  |
|  | HACCP alarm triggered: <ul style="list-style-type: none"> <li>High temperature alarm</li> <li>High temperature alarm following blackout</li> <li>Faulty probe alarm</li> </ul>   | -  |
|  | One or more auxiliary outputs active: <ul style="list-style-type: none"> <li>Discharge heater function active</li> <li>Humidity regulation active</li> <li>General functions active</li> </ul>   | -  |
|  | Light on   | Door closed and delayed light switch-off       |

| Pilot light   | Steady on                      | Flashing on   |
|---|--------------------------------|---|
|  | Evaporator-fan active          | -   |
|  | One or more compressors active | Compressor not enabled at start-up due to: <ul style="list-style-type: none"> <li>• Safety device times</li> <li>• Open door</li> <li>• Start-up delay</li> </ul> |

## 6.2 Control panel operations



 **IMPORTANT:** these operations are also possible from the App and do not correspond to the parameters.

### 6.2.1 Turn the packaged unit on and off



- Turn on: press and hold the  button for 3 seconds. The value of the quantity set in parameter /t1 appears on the display. Refer to the complete manual on the MY I.D. App.
- Turn off: and press and hold the  button for 3 seconds. **OFF** and the value of the variable set in parameter /t1 alternate on the display. Refer to the complete manual on the MY I.D. App.

*Note: the ambient temperature must be below 32°C to be able to carry out the first start-up.*


### 6.2.2 Switch the coldroom light on and off

- Switch on: press and hold the  button for 3 seconds and release. The coldroom pilot light lights up on the display.
- Switch off: press and hold the  button for 3 seconds and release. The coldroom pilot light on the display goes off.


### 6.2.3 Set the temperature setpoint value





- Press and hold the **SET** button for 3 seconds and release. **SEt** and the temperature setpoint value alternate on the display.
- Briefly press the **SET** button to be able to modify the temperature setpoint value. The display shows the current temperature setpoint value.
- Press the  and  buttons to select the desired temperature setpoint value.
- Briefly press the **SET** button to save the new temperature setpoint value. The value of the quantity set in parameter /t1 appears on the display. Refer to the complete manual on the MY I.D. App.

### 6.2.4 Controlling the manual defrost cycle


- Press and hold the  button for 6 seconds. The defrost pilot light lights up on the display. If the defrost is with hot gas, the compressor pilot light also lights up.

### 6.2.5 View and reset the active alarms

Flashing text  indicates the presence of triggered alarms.

- Press the  button briefly. The display shows the code of the last triggered alarm.
- Press the  and  buttons to view the codes of the triggered alarms.
- Press and hold the  button for 3 seconds and release to reset the triggered alarms that require a manual reset. **no aLr** appears on the display.

#### Exiting from a menu


- Briefly press the  button at least once to return to the desired position.









## 6.3 Setting the date and time




### 6.3.1 Access the parameters menu

To access the parameters menu, see Enter the password.



### 6.3.2 Changing the date and time

 StG > rtC

| Step | Button | Action  | Result   |
|------|--------|---|--|
| 1    | SET    | From the RTCparameter display, press SET.   |    |
| 2    | ▽      | TZ appears alternating with a digit indicating the time zone currently set. Press DOWN to skip.                                 |    |
|      | SET    | Press SET to change the time zone.<br><i>Note: See "Time zones table" on page 149.</i>  |    |
| 3    | △ ▽    | The value of the current time zone set appears fixed. Press UP/DOWN to select the desired value.                                |    |
|      | SET    | Press SET to confirm and switch to the next value.  |  |
| 4    | △ ▽    | The letter <b>d</b> (day) appears, followed by two digits indicating the number of the day. Press UP/DOWN to set the day.       |  |
|      | SET    | Press SET to confirm and switch to the next value.  |  |
| 5    | △ ▽    | The letter <b>m</b> (month) appears, followed by two digits indicating the number of the month. Press UP/DOWN to set the month. |  |
|      | SET    | Press SET to confirm and switch to the next value.  |  |
| 6    | △ ▽    | The letter <b>y</b> (year) appears, followed by two digits indicating the number of the year. Press UP/DOWN to set the year.    |  |
|      | SET    | Press SET to confirm and switch to the next value.  |  |
| 7    | △ ▽    | The letter <b>h</b> (hour) appears, followed by two digits indicating the time. Press UP/DOWN to set the time.                  |  |
|      | SET    | Press SET to confirm and switch to the next value.  |  |

| Step | Button  | Action   | Result  |
|------|---|--|---|
| 8    |  | The letter <b>m</b> (minute) appears, followed by two digits indicating the minutes.<br>Press <b>UP/DOWN</b> to set the minutes. |                                   |
|      | <b>SET</b>  | Press <b>SET</b> to confirm and conclude the settings.   | <br>"rtC" appears on the display. |

### 6.3.3 Exit the menu

| Step | Button  | Action                                 | Result   |
|------|---|--|--|
| 1    |  | Press briefly as many times as needed. | <br>The value of the quantity set in parameter <b>/t1</b> appears on the display.<br>See configuration parameters. |

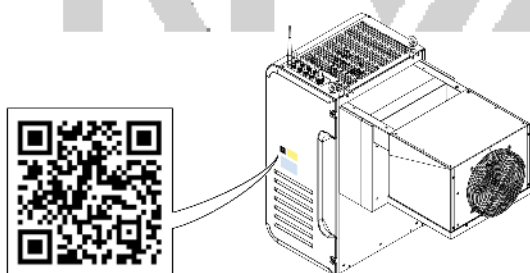
## 6.4 Using the MY I.D. App

### 6.4.1 Using the App for the first time

After switching the packaged unit on, proceed as follows:

1. Download the free MY I.D. App from the Apple App Store or the Google Play Store.
2. Create your Rivacold account.
3. Pair the App with the packaged unit, see "Register the packaged unit using the QR code" on the facing page or "Register the packaged unit using the numeric code" on page 116

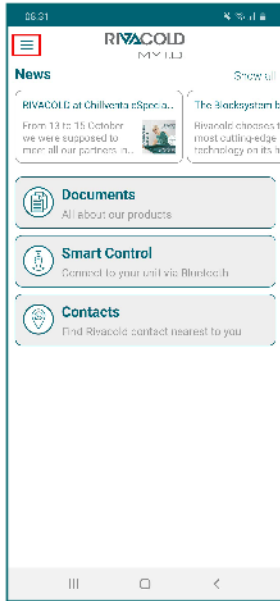
### 6.4.2 Position the QR code



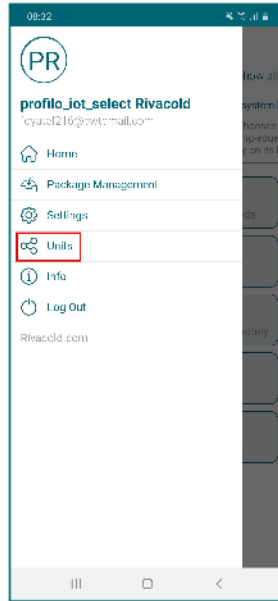
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### 6.4.3 Register the packaged unit using the QR code

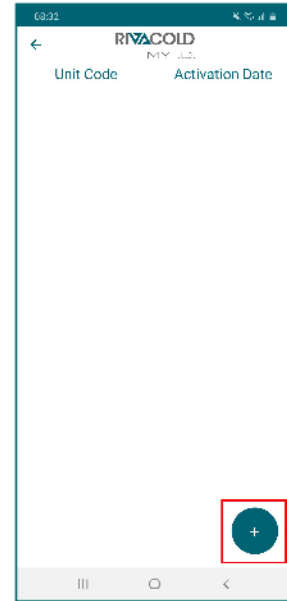
1. Select the ☰ menu.



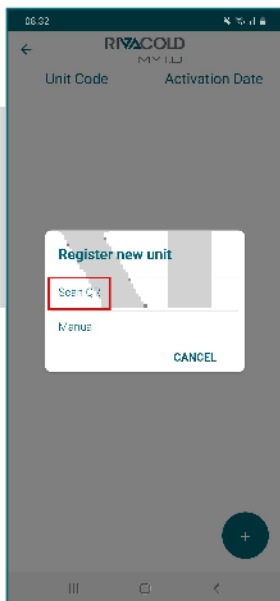
2. Select Units.



3. Select +.



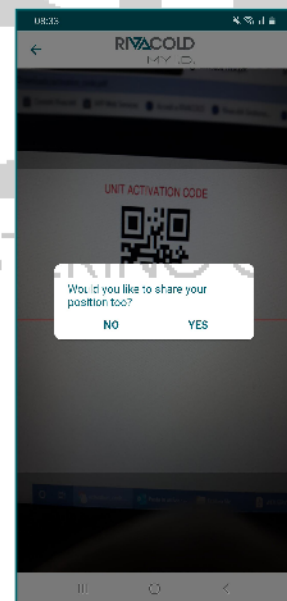
4. Select Scan QR.



5. Scan the QR code next to the identification plate.



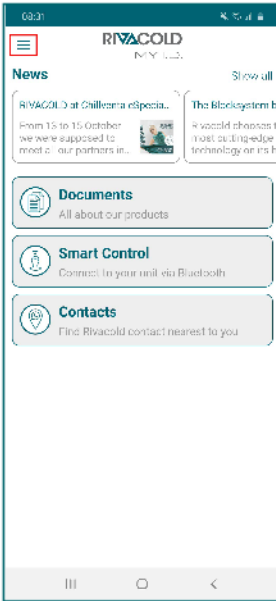
6. Choose the option to share the position. From here on, the packaged unit appears in the list of controlled devices.



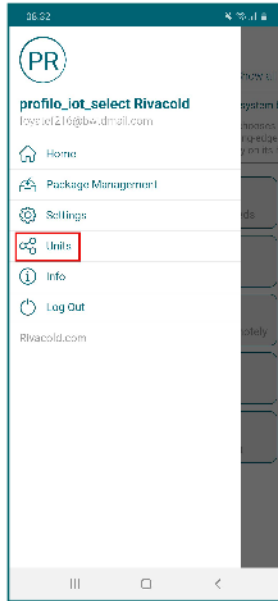


## 6.4.4 Register the packaged unit using the numeric code

1. Select the menu ☰



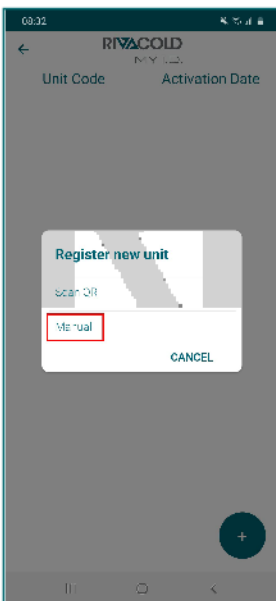
2. Select Units.



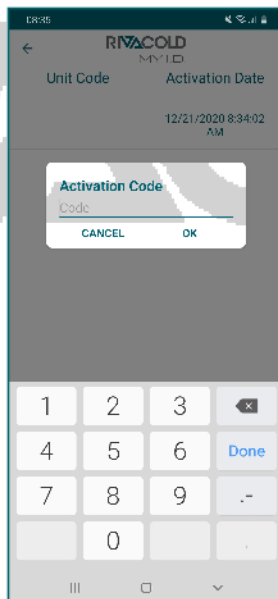
3. Select +



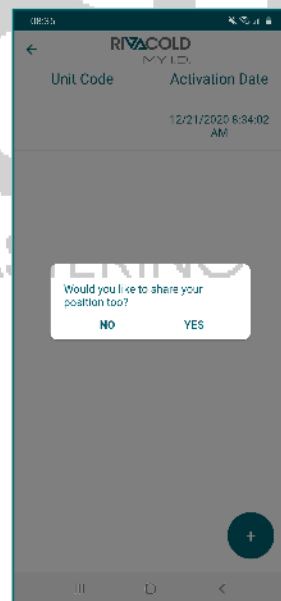
4. Select Manual.



5. Enter the packaged unit code next to the identification plate and select OK.

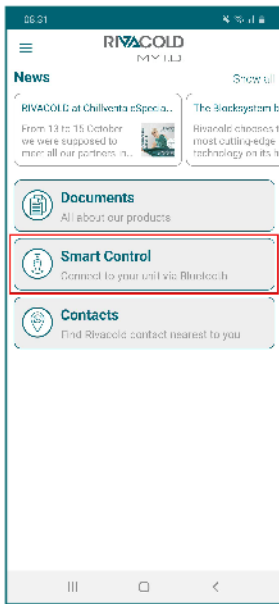


6. Choose the option to share the position. From here on, the packaged unit appears in the list of controlled devices.



## 6.4.5 Access the packaged unit via Bluetooth

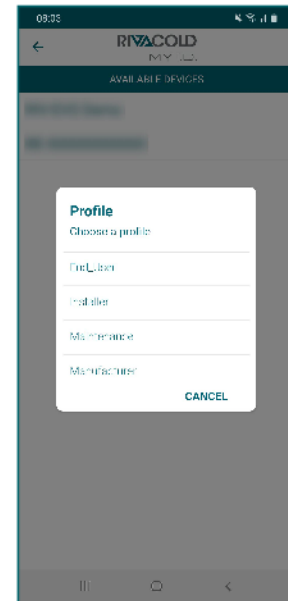
1. Select **Smart Control**.



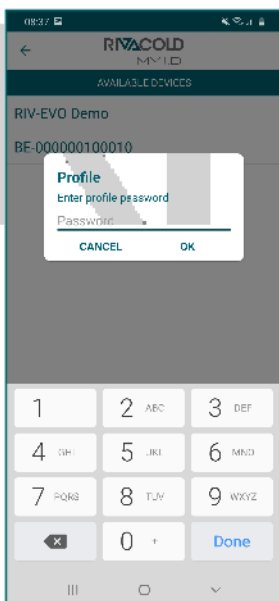
2. Select the packaged unit to be controlled.



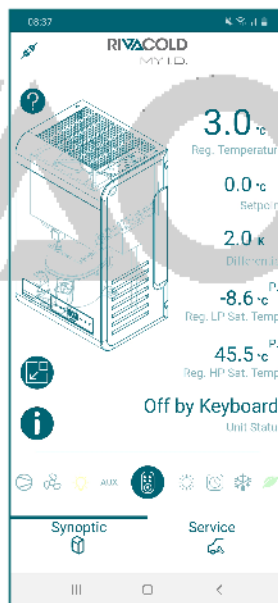
3. Select the profile you want to log in with.



4. Enter the control panel login password, see "The passwords" below.



5. Select the desired action.



## 6.5 The passwords

### 6.5.1 Levels of access to the parameters

Access to the parameters menu and control of the packaged unit from the App are password protected. There are two levels of access: one for the installer and one for the end user.

After a few minutes of inactivity, the authorization to modify the parameters expires and the controller returns to the initial screen.

### 6.5.2 Default password

Below are the preset passwords to access the parameters and the packaged unit via the App. The installer can change both passwords, whereas the end user can only change their own. Refer to the complete manual on the MY I.D. App.

| Profile   | MY I.D. Profile | Password |
|-----------|-----------------|----------|
| End user  | End_User        | 2201     |
| Installer | Installer       | 2300     |

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# 7. Maintenance

This section includes the following topics:

|   |    |
|---|----|
| 7.1 Maintenance warnings .....                                | 44 |
| 7.2 Maintenance and cleaning performed by the operators ..... | 45 |
| 7.3 Periodic maintenance .....                                | 46 |
| 7.4 Corrective maintenance .....                              | 47 |
| 7.5 Remove the front panel .....                              | 47 |
| 7.6 Checking or replacing condensing unit components .....    | 48 |
| 7.7 Checking or replacing evaporating part components .....   | 51 |
| 7.8 Check or replace components of the electrical box .....   | 52 |

## 7.1 Maintenance warnings

### 7.1.1 Required skills

|  |                                 |
|--|---------------------------------|
|   | Mechanical maintenance engineer |
|  | Electrical maintenance engineer |

### 7.1.2 Safety



**⚠ DANGER!** Explosion/Burn. Presence of flammable gas. During maintenance, adopt all the precautions required by legislation in force and the warnings for adjustments and maintenance indicated in this instruction manual.

Low temperatures. During maintenance in the coldroom, take breaks to avoid long exposure to low temperatures.

- Only perform the maintenance described in this instruction manual and observe the indicated maintenance frequency.
- Before carrying out any type of operation, it is necessary to check for propane leaks (R290) with a special gas detector.
- The machines have a factory-sealed refrigerant circuit. At the end of any type of operation that involves the removal/replacement of the gas, it is necessary to seal the circuit hermetically, restoring the factory conditions.
- Failure to reposition the guards at the end of maintenance can cause serious damage. Always refit the guards at the end of maintenance.
- At the end of maintenance, check that there are no tools or components left inside the packaged unit.
- Do not release the products used during maintenance into the environment. Follow the regulations in force regarding the disposal of dangerous and/or polluting fluids.

### 7.1.3 Isolation from energy sources

Before performing maintenance, disconnect the power plug.

### 7.1.4 Maintenance on equipment components


Perform maintenance by following the instructions, frequencies and all indications in the manuals and in the attached documentation. If necessary, contact RIVACOLD srl assistance.

## 7.2 Maintenance and cleaning performed by the operators

### 7.2.1 Required skills

|   |          |
|---|----------|
|  | Operator |
|---|----------|

### 7.2.2 Safety

|   |  |
|---|--|
|  | Always wear helmets, footwear and protective gloves. |
|---|--|

**⚠ DANGER!** Explosion/Burn. Presence of flammable gas. During maintenance, adopt all the precautions required by legislation in force and the warnings for adjustments and maintenance indicated in this instruction manual.

**CAUTION!** Low temperatures. During maintenance and cleaning in the coldroom, take breaks to avoid long exposure to low temperatures.

Only perform the maintenance and cleaning described in this instruction manual and observe the indicated maintenance frequency.

### 7.2.3 Daily operations



| Task     | Component                            | Procedure  | Indicative time [min] |
|----------|--------------------------------------|--|-----------------------|
| Check    | Packaged unit                        | Check that the packaged unit is in good condition. | 5                     |
| Cleaning | Evaporating part and condensing unit | Clean as needed.                                   | 30                    |

### 7.2.4 Weekly operations



| Task    | Component  | Procedure   | Indicative time [min] |
|---------|------------|---|-----------------------|
| Defrost | Evaporator | If there is ice on the evaporating part:<br>1. Perform the manual defrost cycle (see "Control panel operations" on page 112).<br>2. Repeat the procedure until completely defrosted.<br>3. Check again after 12 hours | -                     |

## 7.3 Periodic maintenance

### 7.3.1 Required skills

|   |                                 |
|---|---------------------------------|
|  | Mechanical maintenance engineer |
|  | Electrical maintenance engineer |

### 7.3.2 Safety warnings

|   |  |
|---|--|
|  | Always wear helmets, footwear and protective gloves. |
|  | Always wear the mask and protective goggles.         |

### 7.3.3 Monthly operations



| Task     | Component                | Procedure   | Indicative time [min] |
|----------|--------------------------|---|-----------------------|
| Check    | Joinery                  | <ul style="list-style-type: none"> <li>Check that all metal surfaces are in good condition</li> <li>Check that the screws are tightened correctly</li> </ul>  | 10                    |
|          | Electrical cables        | Check that the electrical cables are intact. If any cuts or cracks are found, immediately replace the power cable with a new one.   | 15                    |
|          | Refrigeration circuit    | Check that the refrigeration circuit is in good condition and that there are NO refrigerant gas leaks. Usually, the presence of lubricating oil indicates leaking refrigerant from the circuit. If in doubt, before carrying out any operation, contact RIVACOLD srl. | 30                    |
| Cleaning | Evaporator and condenser | Clean as follows: <ul style="list-style-type: none"> <li>as needed</li> <li>if dust or grease is noted</li> </ul>   | 15                    |

### 7.3.4 Operations every four months

| Task                 | Component      | Procedure  |
|----------------------|----------------|--|
| Checks, replacements | Electrical box | Check the contactors and replace them if they show signs of deterioration. |
|                      | Compressor     | Check the noise (see "Check the compressor noise" on page 124)             |
| Cleaning             | Electrical box | Clean the fixed and mobile contacts of all the contactors.                 |



## 7.4 Corrective maintenance

### 7.4.1 Required skills

|   |                                 |
|---|---------------------------------|
|  | Mechanical maintenance engineer |
|  | Electrical maintenance engineer |

### 7.4.2 Safety

If in doubt, before carrying out any operation, contact RIVACOLD srl.

|   |  |
|---|--|
|  | Always wear helmets, footwear and protective gloves. |
|  | Always wear the mask and protective goggles.         |

### 7.4.3 What to do

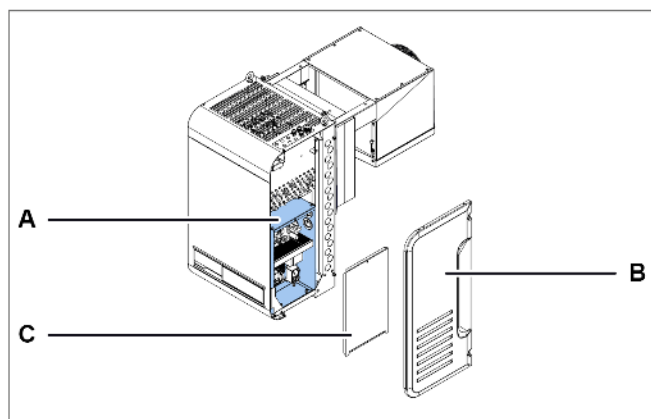
In case of damage or a malfunction, consult "Installation and operation troubleshooting" on page 129 or Rivacold srl

## 7.5 Remove the front panel

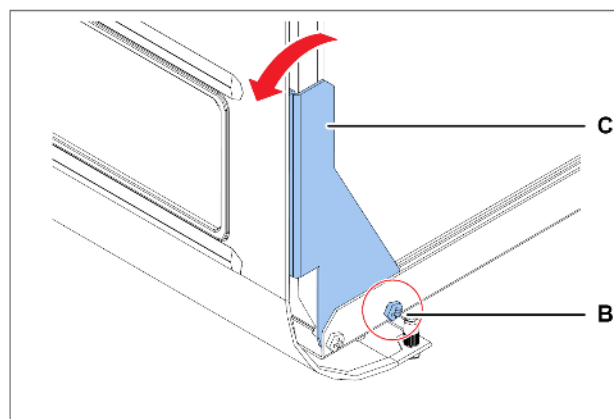
### 7.5.1 Required skills

|   |                                 |
|---|---------------------------------|
|  | Mechanical maintenance engineer |
|---|---------------------------------|

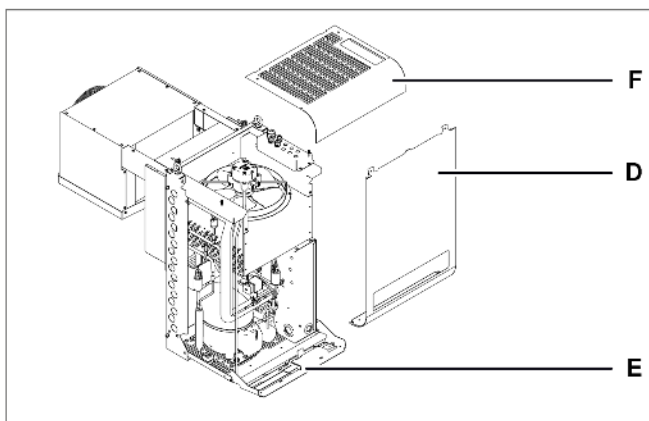
### 7.5.2 Procedure



1. Access the electrical box **[A]** by removing the right side panel **[B]** and the electrical box panel **[C]**.



2. On both sides, undo the screws **[B]** and slightly rotate the bracket **[C]**.



3. Remove the front panel [D].
4. If necessary, lower the controller panel [E].
5. If necessary, remove the top panel [E].

## 7.6 Checking or replacing condensing unit components

### 7.6.1 Required skills



Mechanical maintenance engineer

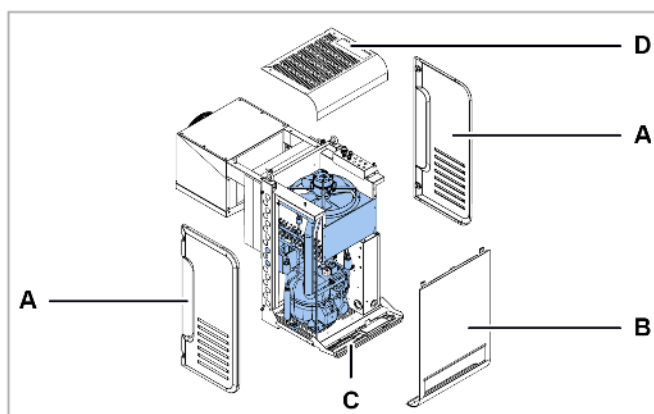
### 7.6.2 When to check or replace

Perform this procedure when problems are found on the condensing unit components (see "Installation and operation troubleshooting" on page 129).

### 7.6.3 Warning

Check or replace the components following the instructions, frequency and all indications in this manual and in the attached documentation. If necessary, contact RIVACOLD srl assistance.

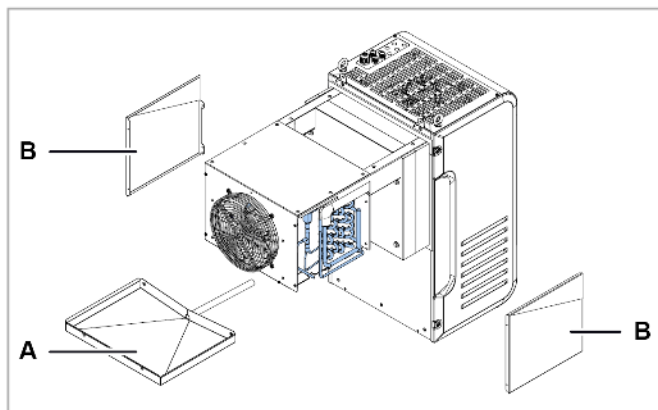
### 7.6.4 Checking or replacing internal components of the condensing unit



1. Remove the side panels [A].
2. Remove the front panel [B] and lower the controller panel [C] and if necessary, remove the top panel [D] (see "Remove the front panel" on the previous page).
3. Check or replace the internal components of the condensing unit.
4. Set all the panels in place again.

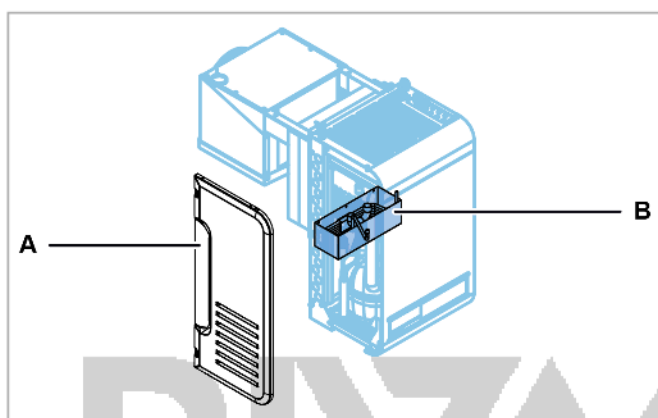


### 7.6.5 Checking or replacing the condensing fan unit



1. Remove the top panel **[A]**.
2. Check or replace the fan unit of the evaporating part **[B]**.
3. If you need to replace the unit, replace and rewire the wiring cable because once removed from the motor, the IP rating is NO longer guaranteed.
4. Set the panel back in place.

### 7.6.6 Check the condensate drain tray

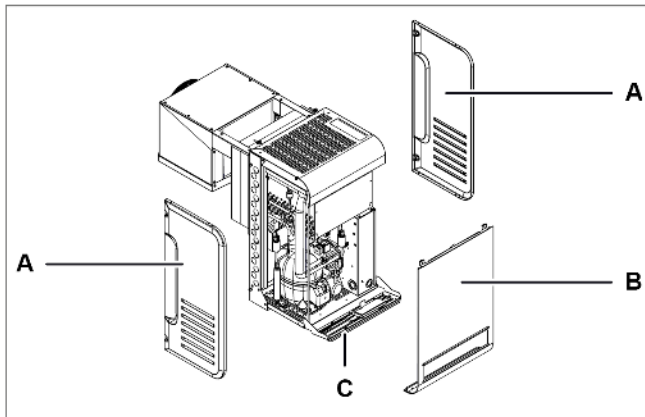


1. Remove the left side panel **[A]**
2. Check the condensate drain tray **[B]**.
3. Set the panel back in place.

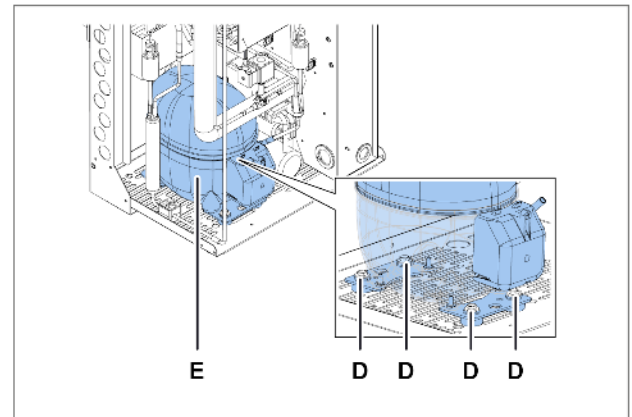
### 7.6.7 Check the compressor noise

1. Turn the packaged unit on.
2. Verify that the compressor does NOT generate vibrations or clicking sounds, that is, sounds generated by short, close, sharp and frequent blows.
3. If the compressor emits or generates vibrations or clicking sounds, it can be broken and must be replaced (see "Replace the compressor" on the facing page), or there is mechanical clearance between the parts that must be fixed.

### 7.6.8 Replace the compressor

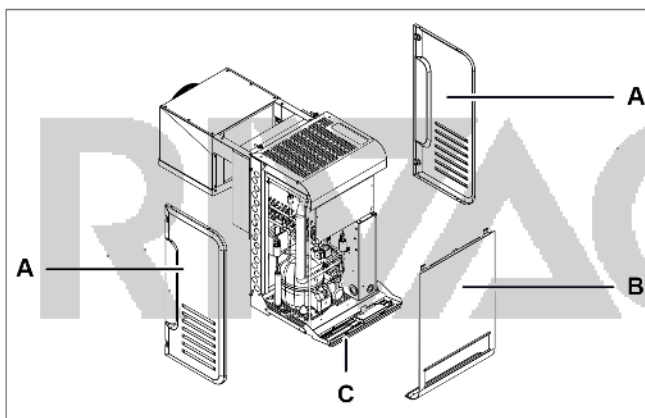


1. Remove the side panels **[A]**.
2. Remove the front panel **[B]** (see "Remove the front panel" on page 122).
3. Lower or if necessary, remove the controller panel **[C]**.

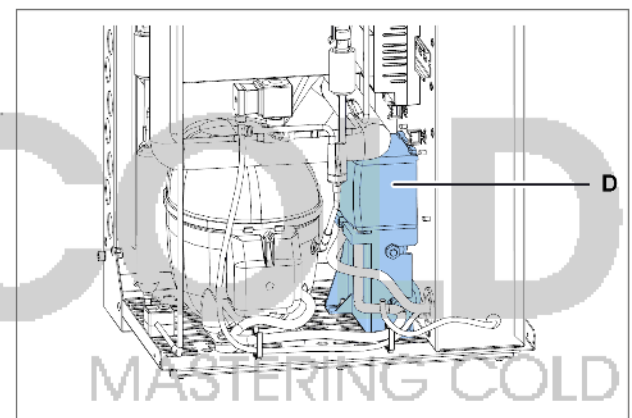


4. Undo the screws **[D]** and remove the compressor **[E]**, removing all the components that prevent its removal.
5. Insert the new compressor, securing it with the screws and put all the other components back in place.
6. Set all the panels in place again.

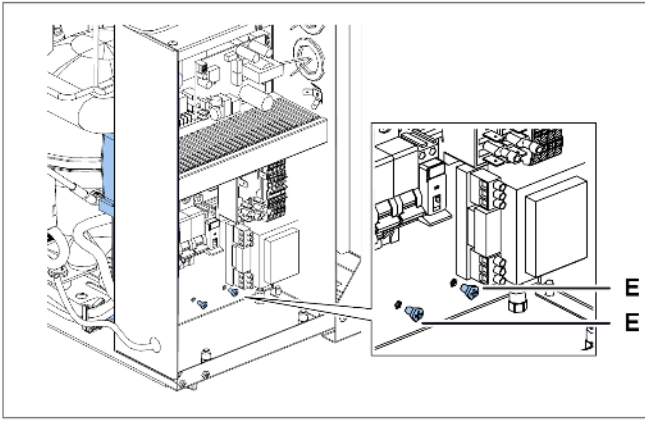
### 7.6.9 Put the compressor box back in place



1. Remove the side panels **[A]**.
2. Remove the front panel **[B]** (see "Remove the front panel" on page 122).
3. Lower or if necessary, remove the controller panel **[C]**.



4. Remove the compressor box **[D]**, removing all the components that prevent its removal.



5. For packaged unit size 1 x 250, remove the electrical box cover (see "Check or replace components of the electrical box" on the facing page) and remove the screws [E].

## 7.7 Checking or replacing evaporating part components

### 7.7.1 Required skills



Mechanical maintenance engineer

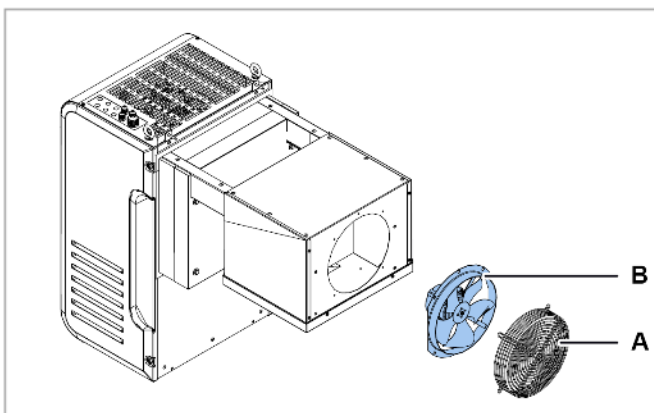
### 7.7.2 When to check or replace

Perform this procedure when problems are found on the evaporating part components (see "Installation and operation troubleshooting" on page 129).

### 7.7.3 Warning

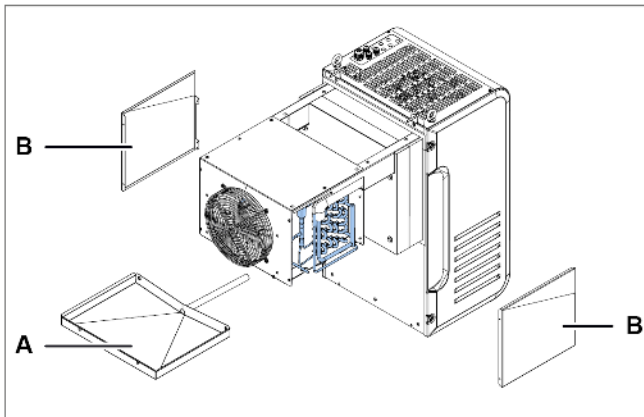
Check or replace the components following the instructions, frequency and all indications in this manual and in the attached documentation. If necessary, contact RIVACOLD srl assistance.

### 7.7.4 Checking or replacing the fan unit

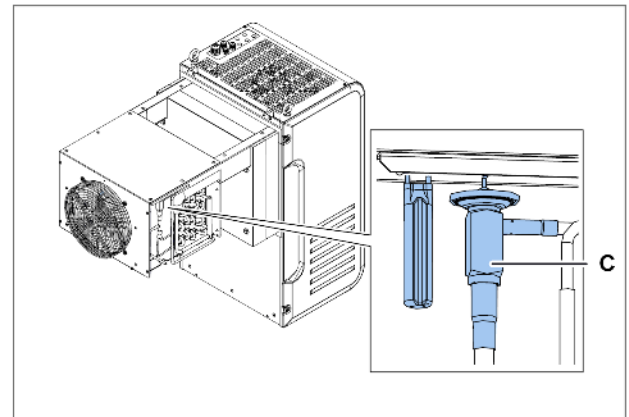


1. Remove the la grid [A].
2. Check or replace the fan unit of the evaporating part [B].
3. If you need to replace the unit, replace and rewire the wiring cable because once removed from the motor, the IP rating is NO longer guaranteed.
4. Put the condenser-fan motor and grid back in place.

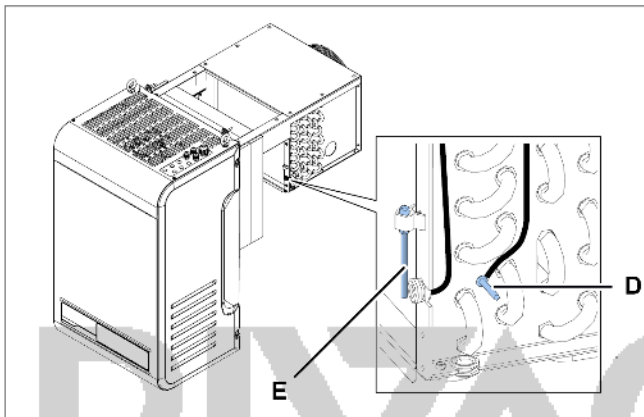
### 7.7.5 Checking or replacing components



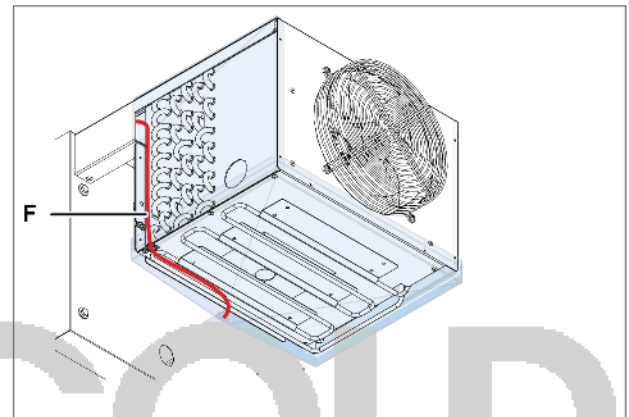
1. If the evaporator tray [A] must be replaced, remove it with the side panels [B].



2. Check or replace the thermostatic valve [C].



3. Check or replace the fin coil temperature probe [D] and the coldroom temperature probe [E].



4. Check or replace the drain heater [F].

## 7.8 Check or replace components of the electrical box

### 7.8.1 Required skills



Electrical maintenance engineer

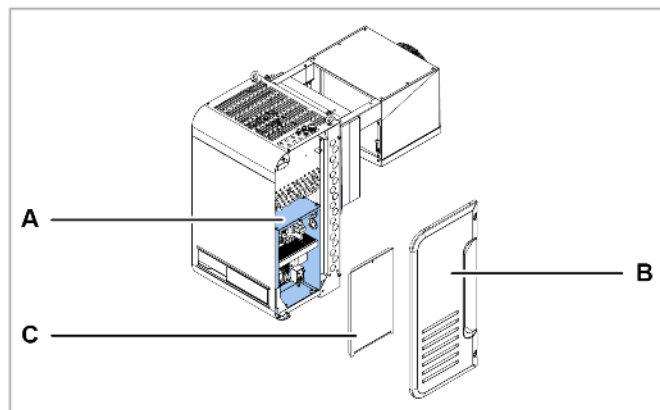
### 7.8.2 When to check or replace

Perform this procedure when problems are found on the electrical box components (see "Installation and operation troubleshooting" on page 129).

### 7.8.3 Warning

Check or replace the components following the instructions, frequency and all indications in this manual and in the attached documentation. If necessary, contact RIVACOLD srl assistance.

### 7.8.4 Access the electrical box



1. Access the electrical box components **[A]** by removing the right side panel **[B]** and the electrical box panel **[C]**.
2. Check or replace the component.

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# 8. Diagnostics

This section includes the following topics:

|  |    |
|--|----|
| 8.1 Installation and operation troubleshooting ..... | 54 |
| 8.2 Errors indicated by the controller .....         | 56 |




## 8.1 Installation and operation troubleshooting

### 8.1.1 Skills

|   |                                 |
|---|---------------------------------|
|    | Manufacturer's personnel        |
| COMPANY   |                                 |
|    | Mechanical maintenance engineer |
|   | Electrical maintenance engineer |
|  | Operator                        |




### 8.1.2 Safety warnings




If maintenance is required, follow the instructions and all indications in this manual and in the attachments. If necessary, contact RIVACOLD srl assistance.

|   |   |
|---|---|
|    | In case of maintenance, wear helmets, footwear and protective gloves. |
|---|---|



### 8.1.3 Causes and solutions

The packaged unit does not start-up






| Cause   | Solution  | Personnel   |
|---|---|---|
| Power failure                                   | <ul style="list-style-type: none"> <li>• Check the connection to the mains</li> <li>• Check that there is voltage on the electrical mains and that it conforms to the rated data</li> <li>• Check the state of the circuit breakers on the machine</li> </ul> |  |
| The compressor's thermal protection has tripped | Check the integrity and activation state of the compressor circuit breaker on the machine and, if present, the thermal protection on the compressor   |  |
| The start capacitor is faulty                   | Replace the start capacitor.  |  |

| Cause  | Solution   | Personnel   |
|--|--|---|
| No controller consent to the compressor                                | <ul style="list-style-type: none"> <li>Check the Setpoint (<b>Set</b>) and the differential (<b>diF</b>).</li> <li>Load the default setting of the unit.</li> </ul>  |  |
| Controller consent is present but the compressor is off ( <b>OFF</b> ) | <ul style="list-style-type: none"> <li>Check the wiring of the compressor relay on the circuit board and its activation state. If the relay is NOT active, replace the circuit board</li> <li>Check the wiring of the compressor power relay on the electrical box and its activation state. If the relay is NOT active, replace it</li> </ul> |  |
| The electric motor has an interrupted or short-circuited winding       | Replace the compressor.  |  |


#### The compressor is running without consent

| Cause   | Solution                           | Personnel  |
|---|------------------------------------|--|
| The compressor relay is stuck to the circuit board        | Replace the circuit board          |   |
| The compressor power relay is stuck to the electrical box | Replace the compressor power relay |  |





#### The packaged unit runs continuously or for long periods

| Cause  | Solution  | Personnel   |
|--|---|---|
| The packaged unit does NOT reach the <b>Setpoint</b> temperature and the evaporator fans DO NOT work | <ul style="list-style-type: none"> <li>If there is NO controller consent, check the evaporator fan parameters and, if necessary, load the default setting.</li> <li>If there is controller consent, then, check the wiring of the fans and the relay on the circuit board and its activation state.</li> <li>If the relay is NOT active, replace the circuit board</li> </ul> | <br>  |
| The packaged unit does NOT reach the <b>Setpoint</b> temperature                                     | <ul style="list-style-type: none"> <li>If the evaporator is blocked with ice, then manually activate the defrost several times (see "Control panel operations" on page 112) until it is completely cleaned</li> <li>If the condenser is dirty, clean it</li> <li>Check that the unit is sized correctly for the required thermal load</li> </ul>                              | <br><br><br><small>COMPANY</small> |

#### The condensation water CANNOT evaporate

| Cause                                 | Solution  | Personnel   |
|---------------------------------------|---|---|
| The condensing temperature is too low | Activate the limitation of the minimum condensing temperature, modify the <b>CoM</b> parameter, bringing it to 2, i.e. air condensing management with On/Off to prevent the condensation from dropping too much |  |

### The suction pipe and the compressor are frosted

| Cause  | Solution  | Personnel  |
|--|---|--|
| There is a liquid return and the evaporator fans are NOT working | <ul style="list-style-type: none"> <li>If there is NO controller consent, check the evaporator fan parameters and, if necessary, load the default setting.</li> <li>If there is controller consent, then, check the wiring of the fans and the relay on the circuit board together with its activation state.</li> <li>If the relay is NOT active, replace the circuit board</li> </ul> | <br> |
| Liquid return  | Check the overheating value in the evaporator inside the coldroom. If the value is less than 2K, then the thermostatic valve does NOT work and is blocked in the open position and, therefore, must be replaced.  | <br> |

## 8.2 Errors indicated by the controller

### 8.2.1 Skills

|   |                                 |
|---|---------------------------------|
|   | Manufacturer's personnel        |
| COMPANY   |                                 |
|  | Electrical maintenance engineer |

### 8.2.2 Errors

| ID  | Description                        | Cause  | Impact                                  | Resolution  | Reset (*) | Relay |
|-----|------------------------------------|--|---|---|-----------|-------|
| Err | HMI communication error            | Connection error between the circuit board and HMI                           | User interface not usable               | Check the electrical connections or replace the interface, if necessary | A         | No    |
| 0   | Retain memory writing number error | Fault in the memory of the electronic control                                | Machine stop due to circuit board fault | Replace the circuit board   | M         | No    |
| 1   | Retain memory writing error        | Fault in the memory of the electronic control                                | Machine stop due to circuit board fault | Replace the circuit board   | M         | No    |
| 2   | Coldroom temperature probe alarm   | Value measured outside the operating ranges<br>Faulty or disconnected sensor | Visual indication only                  | Check wiring and integrity of the probe and replace it if necessary     | A         | No    |



| ID | Description                               | Cause  | Impact   | Resolution  | Reset (*) | Relay |
|----|---|--|--|---|-----------|-------|
| 3  | Evaporator temperature probe alarm        | Value measured outside the operating ranges<br>Faulty or disconnected sensor | Visual indication only   | Check wiring and integrity of the probe and replace it if necessary | A         | No    |
| 4  | Coldroom 2 temperature probe alarm        | Value measured outside the operating ranges<br>Faulty or disconnected sensor | Visual indication only, evaporator defrost carried out due to Time-out                                     | Check wiring and integrity of the probe and replace it if necessary | A         | No    |
| 5  | Evaporator 2 temperature probe alarm      | Value measured outside the operating ranges<br>Faulty or disconnected sensor | Visual indication only, evaporator 2 defrost carried out due to Time-out                                   | Check wiring and integrity of the probe and replace it if necessary | A         | No    |
| 6  | Circuit 1 Suction pressure probe alarm    | Value measured outside the operating ranges<br>Faulty or disconnected sensor | If the Leak Function is active, it causes circuit 1 to stop, otherwise only a visual indication is given   | Check wiring and integrity of the probe and replace it if necessary | A         | Yes   |
| 7  | Circuit 1 condensing pressure probe alarm | Value measured outside the operating ranges<br>Faulty or disconnected sensor | Visual indication only   | Check wiring and integrity of the probe and replace it if necessary | A         | No    |
| 8  | Ambient temperature probe alarm           | Value measured outside the operating ranges<br>Faulty or disconnected sensor | Visual indication only. If the Floating Condensing function is enabled, parameter EFC=1, this is disabled. | Check wiring and integrity of the probe and replace it if necessary | A         | No    |
| 9  | Suction temperature probe alarm           | Value measured outside the operating ranges<br>Faulty or disconnected sensor | Visual indication only   | Check wiring and integrity of the probe and replace it if necessary | A         | No    |
| 10 | Discharge temperature probe alarm         | Value measured outside the operating ranges<br>Faulty or disconnected sensor | Visual indication only   | Check wiring and integrity of the probe and replace it if necessary | A         | No    |
| 11 | Liquid temperature probe alarm            | Value measured outside the operating ranges<br>Faulty or disconnected sensor | Visual indication only   | Check wiring and integrity of the probe and replace it if necessary | A         | No    |

| ID | Description                         | Cause   | Impact  | Resolution   | Reset (*) | Relay |
|----|-------------------------------------|---|---|--|-----------|-------|
| 12 | Evaporation temperature probe alarm | Value measured outside the operating ranges<br>Faulty or disconnected sensor  | Visual indication only  | Check wiring and integrity of the probe and replace it if necessary  | A         | No    |
| 13 | Evaporator pressure probe alarm     | Value measured outside the operating ranges<br>Faulty or disconnected sensor  | Visual indication only  | Check wiring and integrity of the probe and replace it if necessary  | A         | No    |
| 14 | HACCP temperature probe alarm       | Value measured outside the operating ranges<br>Faulty or disconnected sensor  | Visual indication only  | Check wiring and integrity of the probe and replace it if necessary  | A         | No    |
| 15 | General probe 1 alarm               | Value measured outside the operating ranges<br>Faulty or disconnected sensor  | Visual indication only  | Check wiring and integrity of the probe and replace it if necessary  | A         | No    |
| 16 | General probe 2 alarm               | Value measured outside the operating ranges<br>Faulty or disconnected sensor  | Visual indication only  | Check wiring and integrity of the probe and replace it if necessary  | A         | No    |
| 17 | Humidity probe alarm                | Value measured outside the operating ranges<br>Faulty or disconnected sensor  | Visual indication only  | Check wiring and integrity of the probe and replace it if necessary  | A         | No    |
| 18 | High pressure switch alarm          | High Pressure Switch alarm triggered, possible causes:<br>Ambient temperature very high<br>Condenser fans not functioning<br>Condenser very dirty | Stopped machine with manual reset if trips are higher than the <b>PEN</b> parameter in a time interval less than the <b>PEI</b> parameter, otherwise automatic reset. | Check the ambient temperature of the place of installation<br>Clean the condenser<br>Check the operation of the condenser fan motor  | S         | Yes   |
| 19 | Low pressure switch alarm           | Low pressure switch alarm triggered, possible causes:<br>Refrigerant leak<br>Ice formation in the evaporating coil<br>Broken evaporator fans      | Stopped machine   | Check that the evaporator fans function properly<br>Check for ice in the evaporator coil<br>Check the refrigerant charge of the unit | A         | Yes   |

| ID | Description                            | Cause   | Impact   | Resolution  | Reset (*) | Relay |
|----|--|---|--|---|-----------|-------|
| 20 | Compressor 1 alarm                     | Compressor 1 alarm triggered, possible causes:<br>circuit breaker or dedicated thermal protector tripped<br>Compressor overheating or short circuit | Circuit 1 block  | Check the condition of the compressor   | A         | Yes   |
| 21 | Compressor 2 alarm                     | Compressor 2 alarm triggered, possible causes:<br>circuit breaker or dedicated thermal protector tripped<br>Compressor overheating or short circuit | Circuit 2 block  | Check the condition of compressor 2   | A         | Yes   |
| 22 | External alarm                         | External alarm triggered  | Stopped machine  | Check the digital input configured with this alarm and the relative activating contact. | A         | Yes   |
| 23 | High discharge temperature alarm       | High discharge temperature alarm triggered, possible causes: high overheating, high condensing temperature  | Stopped machine  | Check the condensing and overheating of the unit (gas charge)                           | A         | Yes   |
| 24 | High ambient temperature alarm         | Ambient temperature above threshold <b>A07</b>  | Visual indication only   | Check that the detected temperature matches that displayed                              | A         | Yes   |
| 25 | Low ambient temperature alarm          | Ambient temperature below threshold <b>A11</b>  | Visual indication only   | Check that the detected temperature matches that displayed                              | A         | No    |
| 26 | Generic digital input 1 alarm          | Connected device tripped  | Visual indication only   | Check the condition of the configured Digital input                                     | A         | No    |
| 27 | Generic digital input 1 alarm          | Connected device tripped  | Visual indication only   | Check the condition of the configured Digital input                                     | A         | No    |
| 28 | Open door timeout alarm                | Door open for longer than parameter <b>d0d</b>  | Machine restart according to user programming  | Close the coldroom door or check the door switch connection                             | A         | No    |
| 29 | Circuit 2 Suction pressure probe alarm | Value measured outside the operating ranges<br>Faulty or disconnected sensor  | If the Leak Function is active, it causes circuit 2 to stop, otherwise only a visual indication is given | Check wiring and integrity of the probe and replace it if necessary                     | A         | No    |

| ID | Description                               | Cause   | Impact  | Resolution   | Reset (*) | Relay |
|----|---|---|---|--|-----------|-------|
| 30 | Circuit 2 condensing pressure probe alarm | Value measured outside the operating ranges<br>Faulty or disconnected sensor  | Visual indication only  | Check wiring and integrity of the probe and replace it if necessary  | A         | No    |
| 31 | Circuit 3 Suction pressure probe alarm    | Value measured outside the operating ranges<br>Faulty or disconnected sensor  | If the leak function is active, it causes circuit 3 to stop, otherwise only a visual indication is given  | Check wiring and integrity of the probe and replace it if necessary  | A         | No    |
| 32 | Circuit 3 condensing pressure probe alarm | Value measured outside the operating ranges<br>Faulty or disconnected sensor  | Visual indication only  | Check wiring and integrity of the probe and replace it if necessary  | A         | No    |
| 33 | Compressor 3 alarm                        | Compressor 3 alarm triggered, possible causes:<br>circuit breaker or dedicated thermal protector tripped<br>Compressor overheating or short circuit | Circuit 3 block   | Check the condition of compressor 3  | A         | Yes   |
| 34 | Defrost not performed alarm               | Evaporator temperature higher than the defrost end value  | Defrost not performed, visual indication for 5 seconds and unit proceeds with its standard operating cycle  | Check parameter <b>dT1</b> or <b>dT2</b>   | A         | No    |
| 35 | Blackout alarm                            | Power failure for more than 1 minute  | Visual indication, if blackout lasts longer than parameter <b>tbO</b> forced defrost starts   | Check power source or electrical connections   | M         | No    |
| 36 | Low overheating protection                | Overheating too low, below threshold <b>P7</b> for longer than <b>P9</b>  | The valve closing intensity is increased: the more the overheating drops below the threshold, the greater the valve closing intensity will be. The LowSH threshold must be less than or equal to the overheating setpoint. The low overheating integral time indicates the intensity of the reaction: the lower it is, the greater the intensity of the reaction. | Check that the compressor, the thermostatic valve and the low pressure and suction temperature transducers function properly. Check parameters <b>P7</b> , <b>P8</b> , <b>P9</b> . | A         | No    |

| ID | Description                                  | Cause   | Impact   | Resolution   | Reset (*) | Relay |
|----|--|---|--|--|-----------|-------|
| 37 | Evaporation temperature low protection       | Evaporating temperature too low, below threshold <b>PL1</b> for longer than <b>PL3</b>                    | The valve opening intensity is increased. The further the temperature drops below the threshold, the greater the valve opening intensity will be. The integral time indicates the intensity of the action: the lower it is, the greater the intensity.   | Check that the thermostatic valve and evaporator fans function properly. Check for ice on the evaporator coil. Check parameters <b>PL1, PL2, PL3</b> | A         | No    |
| 38 | High evaporation temperature protection      | Evaporating temperature too high, above threshold <b>PM1</b> for longer than <b>PM3</b>                   | Closing of the electronic valve in a controlled manner, which implies abandoning the overheating regulation, and its increase. The protection will therefore have a moderate reaction that tends to limit the increase in evaporation temperature, keeping it below the operating threshold, trying to increase the overheating as little as possible. | Cooling demand too high or check that the compressor and thermostatic valve function properly. Check parameters <b>PM1, PM2, PM3</b>                 | A         | No    |
| 39 | High condensing temperature protection       | Condensing temperature too high   | Moderate closure of the valve and relative increase in overheating   | Check that the condenser-fan functions<br>Clean the condensing coil  | A         | No    |
| 40 | Low intake temperature alarm                 | Low suction temperature   | Visual indication only   |  | A         | No    |
| 41 | EEV motor error                              | Faulty valve motor or no connection   | EEV valve regulation interrupted   | Check the connections and the condition of the motor. Switch the circuit board off and back on   | A         | No    |
| 42 | Ineffective adaptive control                 | Valve tuning failed   | Visual indication only   | Check the setting of parameter <b>PrE</b>  | A         | No    |
| 43 | EEV emergency closure alarm                  | Power failure and valve closed in emergency due to power supply from an external source (Ultracap or UPS) | EEV valve regulation interrupted   | Check the power supply of the circuit board  | A         | No    |
| 44 | Error in the EEV range of parameters         | Error in EEV Driver parameterization  | Visual indication only   | Check the parameters of the EEV unit   | A         | No    |
| 45 | Error in the EEV service position percentage | Manual forcing value outside the 0-100% range   | Interruption of manual valve forcing   | Check the value of parameter <b>PMu</b>  | A         | No    |

| ID | Description                           | Cause   | Impact  | Resolution  | Reset (*) | Relay |
|----|---------------------------------------|---|---|---|-----------|-------|
| 46 | EEV valve ID error                    | Error in EEV Driver parameterization  | Visual indication only  | Check parameters <b>PVt</b> and <b>PVM</b>  | A         | No    |
| 47 | Circuit 1 gas leak alarm              | Probable refrigerant leak in circuitry 1  | Circuit 1 block   | Check the circuitry and verify whether there is a refrigerant leak  | M         | Yes   |
| 48 | Circuit 2 gas leak alarm              | Probable refrigerant leak in circuitry 2  | Circuit 2 block   | Check the circuitry and verify whether there is a refrigerant leak  | M         | Yes   |
| 49 | Circuit 3 gas leak alarm              | Probable refrigerant leak in circuitry 2  | Circuit 3 block   | Check the circuitry and verify whether there is a refrigerant leak  | M         | Yes   |
| 50 | HACCP alarm after blackout            | After a blackout lasting more than one minute, the measured HACCP Temperature is above threshold <b>HC5</b>   | Visual indication, event saved in the relative HACCP LOG and in the HACCP alarm log | Check the operating condition of the unit, whether the door is open or modify the tripping thresholds                                   | A         | No    |
| 51 | HACCP alarm                           | HACCP temperature above the set threshold, parameter <b>HC3</b> if <b>HC1=0</b> or alarm <b>53</b> if <b>HC1=1</b> , for longer than <b>HC2</b>   | Visual indication, event saved in the relative HACCP LOG and in the HACCP alarm log | Check the operating condition of the unit, whether the door is open or modify the tripping thresholds                                   | A         | No    |
| 52 | High regulation temperature alarm     | Regulation Temperature above the set threshold, parameter <b>A58</b> if <b>A56=2</b> or <b>SET+A58</b> if <b>A56=1</b> .  | Visual indication only  | Check whether the regulation temperature is consistent with that measured and if necessary, modify tripping threshold <b>A58</b>        | A         | Yes   |
| 53 | Low regulation temperature alarm      | Regulation Temperature above the set threshold, parameter <b>A62</b> if <b>A56=2</b> or <b>SET+A62</b> if <b>A56=1</b> .  | Visual indication only  | Check whether the regulation temperature is consistent with that measured and if necessary, modify tripping threshold <b>A62</b>        | A         | Yes   |
| 54 | Pump-down stop alarm for maximum time | The compressor has made more than 5 pump-down stops in a time shorter than that given by the sum of parameters <b>Cit - dOF - toP</b> multiplied by 5, like the number of stops considered for the alarm. | Stopped machine   | Check the pump-down stop threshold <b>tPd</b> and the relative differential <b>dPd</b> . Check for any liquid leak in the suction line. | A         | Yes   |
| 55 | Compressor general alarm              | All the compressors in the unit are in alarm state  | Stopped machine   | Check the condition of the compressors in the unit  | A         | Yes   |

| ID | Description                                | Cause  | Impact  | Resolution  | Reset (*) | Relay |
|----|--|--|---|---|-----------|-------|
| 56 | General gas leak alarm                     | Probable refrigerant leak in the unit circuitry or evaporator blocked with ice | Stopped machine   | Check the circuitry and whether there is a leak or check the condition of the evaporator, probably blocked with ice               | M         | Yes   |
| 57 | Regulation temperature probe alarm         | Probe(s) used for regulation in alarm state                                    | Stopped machine, emergency cycle starts if activated  | Check probe alarms and verify their state and connections   | A         | Yes   |
| 58 | Regulation suction pressure probe alarm    | Probe(s) used for regulation in alarm state                                    | Visual indication only, if the Leak function or parameter <b>A63=1</b> is enabled, the machine is stopped                 | Check probe alarms and verify their state and connections   | A         | Yes   |
| 59 | Regulation condensing pressure probe alarm | Probe(s) used for regulation in alarm state                                    | Condenser fans forcing at 100%. Visual indication only, if parameter <b>A67=1</b> and <b>A71=1</b> the machine is stopped | Check probe alarms and verify their state and connections   | A         | Yes   |
| 60 | Evaporator fan regulation probe alarm      | Probe(s) used for regulation in alarm state                                    | Visual indication only, evaporator fans run continuously  | Check probe alarms and verify their state and connections   | A         | No    |
| 61 | Evaporator 2 fan regulation probe alarm    | Probe(s) used for regulation in alarm state                                    | Visual indication only, evaporator 2 fans run continuously  | Check probe alarms and verify their state and connections   | A         | No    |
| 62 | Regulation low suction pressure alarm      | Suction Pressure below the threshold set in parameter <b>A65</b>               | If parameter <b>A63=1</b> the machine is stopped, otherwise, visual indication only                                       | Check whether the pressure in the circuit is consistent with that measured and if necessary, modify tripping threshold <b>A65</b> | A         | Yes   |
| 63 | Regulation condensing high pressure alarm  | Condensing pressure above the threshold set in parameter <b>A69</b>            | Condenser fans forcing at 100%. If parameter <b>A67=1</b> the machine is stopped, otherwise, visual indication only       | Check whether the pressure in the circuit is consistent with that measured and if necessary, modify tripping threshold <b>A69</b> | A         | Yes   |
| 64 | Regulation condensing low pressure alarm   | Condensing pressure below the threshold set in parameter <b>A73</b>            | If parameter <b>A71=1</b> the machine is stopped, otherwise, visual indication only                                       | Check whether the pressure in the circuit is consistent with that measured and if necessary, modify tripping threshold <b>A73</b> | A         | No    |
| 65 | Safety defrost probe alarm                 | Probe(s) used for the safety defrost function in alarm state                   | Deactivation of the safety defrost function   | Check probe alarms and verify their state and connections   | A         | No    |
| 66 | General alarm probe 1 alarm                | Probe(s) used for the generic function in alarm state                          | Deactivation of the generic function  | Check probe alarms and verify their state and connections   | A         | No    |

| ID | Description                          | Cause   | Impact   | Resolution  | Reset (*) | Relay |
|----|--------------------------------------|---|--|---|-----------|-------|
| 67 | General alarm probe 2 alarm          | Probe(s) used for the generic function in alarm state | Deactivation of the generic function   | Check probe alarms and verify their state and connections           | A         | No    |
| 68 | General analog output probe alarm    | Probe(s) used for the generic function in alarm state | Deactivation of the generic function   | Check probe alarms and verify their state and connections           | A         | No    |
| 69 | General digital output probe 1 alarm | Probe(s) used for the generic function in alarm state | Deactivation of the generic function   | Check probe alarms and verify their state and connections           | A         | No    |
| 70 | General digital output probe 2 alarm | Probe(s) used for the generic function in alarm state | Deactivation of the generic function   | Check probe alarms and verify their state and connections           | A         | No    |
| 71 | Alarm on slave unit 1                | Serious alarm in progress in slave unit 1             | Slave unit in alarm state not considered by the master in the master/slave functions | Check the slave unit in alarm state and check the alarm in progress | A         | Yes   |
| 72 | Alarm on slave unit 2                | Serious alarm in progress in slave unit 2             | Slave unit in alarm state not considered by the master in the master/slave functions | Check the slave unit in alarm state and check the alarm in progress | A         | Yes   |
| 73 | Alarm on slave unit 3                | Serious alarm in progress in slave unit 3             | Slave unit in alarm state not considered by the master in the master/slave functions | Check the slave unit in alarm state and check the alarm in progress | A         | Yes   |
| 74 | Alarm on slave unit 4                | Serious alarm in progress in slave unit 4             | Slave unit in alarm state not considered by the master in the master/slave functions | Check the slave unit in alarm state and check the alarm in progress | A         | Yes   |
| 75 | Alarm on slave unit 5                | Serious alarm in progress in slave unit 5             | Slave unit in alarm state not considered by the master in the master/slave functions | Check the slave unit in alarm state and check the alarm in progress | A         | Yes   |
| 76 | Alarm on slave unit 6                | Serious alarm in progress in slave unit 6             | Slave unit in alarm state not considered by the master in the master/slave functions | Check the slave unit in alarm state and check the alarm in progress | A         | Yes   |
| 77 | Alarm on slave unit 7                | Serious alarm in progress in slave unit 7             | Slave unit in alarm state not considered by the master in the master/slave functions | Check the slave unit in alarm state and check the alarm in progress | A         | Yes   |
| 78 | Alarm on slave unit 8                | Serious alarm in progress in slave unit 8             | Slave unit in alarm state not considered by the master in the master/slave functions | Check the slave unit in alarm state and check the alarm in progress | A         | Yes   |



| ID | Description           | Cause   | Impact   | Resolution   | Reset (*) | Relay |
|----|-----------------------|---|--|--|-----------|-------|
| 79 | Alarm on slave unit 9 | Serious alarm in progress in slave unit 9                               | Slave unit in alarm state not considered by the master in the master/slave functions | Check the slave unit in alarm state and check the alarm in progress                    | A         | No    |
| 80 | Slave unit 1 offline  | Probable incorrect connection or disconnection of the master/slave line | Slave unit in alarm state not considered by the master in the master/slave functions | Check the connection of the master/slave line or the parameters of the <b>NET</b> unit | A         | No    |
| 81 | Slave unit 2 offline  | Probable incorrect connection or disconnection of the master/slave line | Slave unit in alarm state not considered by the master in the master/slave functions | Check the connection of the master/slave line or the parameters of the <b>NET</b> unit | A         | No    |
| 82 | Slave unit 3 offline  | Probable incorrect connection or disconnection of the master/slave line | Slave unit in alarm state not considered by the master in the master/slave functions | Check the connection of the master/slave line or the parameters of the <b>NET</b> unit | A         | No    |
| 83 | Slave unit 4 offline  | Probable incorrect connection or disconnection of the master/slave line | Slave unit in alarm state not considered by the master in the master/slave functions | Check the connection of the master/slave line or the parameters of the <b>NET</b> unit | A         | No    |
| 84 | Slave unit 5 offline  | Probable incorrect connection or disconnection of the master/slave line | Slave unit in alarm state not considered by the master in the master/slave functions | Check the connection of the master/slave line or the parameters of the <b>NET</b> unit | A         | No    |
| 85 | Slave unit 6 offline  | Probable incorrect connection or disconnection of the master/slave line | Slave unit in alarm state not considered by the master in the master/slave functions | Check the connection of the master/slave line or the parameters of the <b>NET</b> unit | A         | No    |
| 86 | Slave unit 7 offline  | Probable incorrect connection or disconnection of the master/slave line | Slave unit in alarm state not considered by the master in the master/slave functions | Check the connection of the master/slave line or the parameters of the <b>NET</b> unit | A         | No    |
| 87 | Slave unit 8 offline  | Probable incorrect connection or disconnection of the master/slave line | Slave unit in alarm state not considered by the master in the master/slave functions | Check the connection of the master/slave line or the parameters of the <b>NET</b> unit | A         | No    |
| 88 | Slave unit 9 offline  | Probable incorrect connection or disconnection of the master/slave line | Slave unit in alarm state not considered by the master in the master/slave functions | Check the connection of the master/slave line or the parameters of the <b>NET</b> unit | A         | No    |

| ID | Description                                 | Cause  | Impact   | Resolution   | Reset (*) | Relay |
|----|---|--|--|--|-----------|-------|
| 89 | Slave alarm offline                         | Probable incorrect connection or disconnection of the master/slave line  | Slave unit in alarm state not considered by the master in the master/slave functions       | Check the connection of the master/slave line or the parameters of the <b>NET</b> unit | A         | No    |
| 90 | Alarm from master                           | Serious alarm in progress in master unit   | The master unit is blocked, the slave devices work independently with their own parameters | Check the master unit and check the alarm in progress                                  | A         | No    |
| 91 | Evaporator defrost timeout alarm            | Evaporator defrost ended due to maximum time and not due to temperature  | Visual indication only   | Check the defrost end value <b>dt1</b> or the maximum duration value <b>ds1</b>        | A         | No    |
| 92 | Evaporator 2 defrost timeout alarm          | Evaporator defrost ended due to maximum time and not due to temperature  | Visual indication only   | Check the defrost end value <b>dt2</b> or the maximum duration value <b>ds2</b>        | A         | No    |
| 93 | Sequential defrost skipped on slave 1 alarm | Defrost cycle skipped on slave 1 during the sequential defrost stage due to missing conditions for longer than <b>dt1 + tdc + dt + 1</b> minute (parameters of the master) | Defrost not performed, only visual indication  | Check the conditions of the unit and if necessary, check parameter <b>dt1</b>          | A         | No    |
| 94 | Sequential defrost skipped on slave 2 alarm | Defrost cycle skipped on slave 2 during the sequential defrost stage due to missing conditions for longer than <b>dt1 + tdc + dt + 1</b> minute (parameters of the master) | Defrost not performed, only visual indication  | Check the conditions of the unit and if necessary, check parameter <b>dt1</b>          | A         | No    |
| 95 | Sequential defrost skipped on slave 3 alarm | Defrost cycle skipped on slave 3 during the sequential defrost stage due to missing conditions for longer than <b>dt1 + tdc + dt + 1</b> minute (parameters of the master) | Defrost not performed, only visual indication  | Check the conditions of the unit and if necessary, check parameter <b>dt1</b>          | A         | No    |
| 96 | Sequential defrost skipped on slave 4 alarm | Defrost cycle skipped on slave 4 during the sequential defrost stage due to missing conditions for longer than <b>dt1 + tdc + dt + 1</b> minute (parameters of the master) | Defrost not performed, only visual indication  | Check the conditions of the unit and if necessary, check parameter <b>dt1</b>          | A         | No    |

| ID  | Description                                 | Cause   | Impact  | Resolution   | Reset (*) | Relay |
|-----|---|---|---|--|-----------|-------|
| 97  | Sequential defrost skipped on slave 5 alarm | Defrost cycle skipped on slave 5 during the sequential defrost stage due to missing conditions for longer than $dT1 + tdc + dt + 1$ minute (parameters of the master) | Defrost not performed, only visual indication | Check the conditions of the unit and if necessary, check parameter <b>dT1</b>  | A         | No    |
| 98  | Sequential defrost skipped on slave 6 alarm | Defrost cycle skipped on slave 6 during the sequential defrost stage due to missing conditions for longer than $dT1 + tdc + dt + 1$ minute (parameters of the master) | Defrost not performed, only visual indication | Check the conditions of the unit and if necessary, check parameter <b>dT1</b>  | A         | No    |
| 99  | Sequential defrost skipped on slave 7 alarm | Defrost cycle skipped on slave 7 during the sequential defrost stage due to missing conditions for longer than $dT1 + tdc + dt + 1$ minute (parameters of the master) | Defrost not performed, only visual indication | Check the conditions of the unit and if necessary, check parameter <b>dT1</b>  | A         | No    |
| 100 | Sequential defrost skipped on slave 8 alarm | Defrost cycle skipped on slave 8 during the sequential defrost stage due to missing conditions for longer than $dT1 + tdc + dt + 1$ minute (parameters of the master) | Defrost not performed, only visual indication | Check the conditions of the unit and if necessary, check parameter <b>dT1</b>  | A         | No    |
| 101 | Sequential defrost skipped on slave 9 alarm | Defrost cycle skipped on slave 9 during the sequential defrost stage due to missing conditions for longer than $dT1 + tdc + dt + 1$ minute (parameters of the master) | Defrost not performed, only visual indication | Check the conditions of the unit and if necessary, check parameter <b>dT1</b>  | A         | No    |
| 102 | Synchronized defrost alarm skipped          | Synchronized defrost skipped due to missing conditions of all the slave devices for longer than $dT1 + tdc + dt + 1$ minute (parameters of the master)                | Defrost not performed, only visual indication | Check the conditions of the units and if necessary, check parameter <b>dT1</b> | A         | No    |

| ID  | Description  | Cause  | Impact                              | Resolution  | Reset (*) | Relay |
|-----|--|--|-------------------------------------|---|-----------|-------|
| 103 | General alarm 1  | Alarm from alarm 1 general function  | Visual indication only              | Check the configuration parameters in the <b>GEF - ALF</b> group  | A         | No    |
| 104 | General alarm 2  | Alarm from alarm 2 general function  | Visual indication only              | Check the configuration parameters in the <b>GEF - ALF</b> group  | A         | No    |
| 105 | Slave unit general offline                             | At least one slave unit is offline   | Visual indication only              | Check the connection of the master/slave line or the parameters of the <b>NET</b> unit  | A         | No    |
| 106 | General alarm on slave unit                            | At least one slave unit has a serious alarm  | Visual indication only              | Check the slave unit in alarm state and check the alarm in progress   | A         | No    |
| 107 | Sequential defrost skipped on slave unit general alarm | At least one slave unit has skipped the sequential defrost   | Visual indication only              | Check the conditions of the unit and if necessary, check parameter <b>dT1</b>   | A         | No    |
| 108 | Smart Defrost Error Alarm                              | Smart Defrost was unable to complete the sampling stage for a consecutive number of times equal to the parameters $2 \times 3Sd + Sd6$ or the safety defrost occurred for a number higher than $Sd3$ in a time less than $Sd2$ | Visual indication only for 24 hours | Check: <ul style="list-style-type: none"> <li>the state of the coldroom and the positioning of the end defrost probe</li> <li>the Smart Defrost function parameters</li> </ul> To re-enable the Smart Defrost function, the electronic control must be restarted. | A         | No    |

**Note (\*)**: A = automatic; M = manual; S = semi-automatic.




# 9. Appendix

This section includes the following topics:


|                              |    |
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## 9.1 Decommissioning

### 9.1.1 Required skills

|  |                                 |
|--|---------------------------------|
|   | Mechanical maintenance engineer |
|   | Electrical maintenance engineer |
|  | Driver                          |

### 9.1.2 Safety

|   |   |
|---|---|
|  | <p>Always wear protective goggles, footwear, protective gloves and tight-fitting clothes.</p> |
|---|---|

- ⚠ DANGER!** Explosion/Burn. Presence of flammable gas. During installation, adopt all the precautions required by legislation in force.
- Crushing.** Always use lifting equipment and accessories of adequate capacity for the load to be lifted and follow the lifting warnings given in this instruction manual.
- Falling from above.** Always use adequate means and accessories. Provide safe access to the installation area. Follow the warnings given in this instruction manual.
- Electrocution.** Always use adequate means and accessories. Follow the warnings given in this instruction manual.
- Cut or abrasion. Wear the personal protective equipment.

### 9.1.3 Warnings

Environmental contamination. Follow the regulations in force regarding the disposal of polluting materials.

### 9.1.4 Dismantling the machine

If the machine is to be relocated or has reached the end of its technical and operational life cycle, it must be dismantled. Dismantling procedure

1. Disconnect the energy sources.
2. Disassemble the various components.

3. If necessary, transport and temporarily store the machine in a suitable place.

### 9.1.5 Scrapping the machine

If the machine has reached the end of its technical and operational life cycle, it must be scrapped. Correct recycling will help prevent potentially adverse consequences for the environment and people.

Scrap the machine by disassembling the various components, separating them according to the material they are made of and take them to the collection facilities indicated by the government or local public bodies.



## 9.2 Technical features

### 9.2.1 Dimensions

The dimensions vary with the power and are identified with the dimensions of the condensing fan unit (see "Code legend" on page 81).

### 9.2.2 Technical data applications in medium temperature

| Size  | BE-Wx251MA10Pxx<br>1x250 | BE-Wx251MA20Pxx<br>1x250 | BE-Wx301MA30Pxx | BE-Wx301MA40Pxx<br>1x300 | BE-Wx302MA50Pxx               | BE-Wx352MA60Pxx<br>1x350 | BE-Wx352MA70Pxx<br>1x350 | BE-Wx352MA80Pxx<br>1x350 |
|---|--------------------------|--------------------------|-----------------|--------------------------|-------------------------------|--------------------------|--------------------------|--------------------------|
| Coldroom Temperature                              | -                        | -                        | -               | -                        | from -5 to 10                 | -                        | -                        | -                        |
| Dispersed Thermal Power *                         | °C                       | 1448                     | 1959            | 2542                     | 3166                          | 3861                     | 4806                     | 5140                     |
| Absorption **                                     | W                        | 540                      | 780             | 990                      | 1200                          | 1490                     | 1870                     | 2000                     |
|   | A                        | 2.9                      | 4.3             | 5.4                      | 6.5                           | 8.1                      | 10.2                     | 10.9                     |
| Working Ambient Temperature                       | °C                       | -                        | -               | -                        | from +5 to +43                | -                        | -                        | -                        |
| Storage Temperature                               | °C                       | -                        | -               | -                        | from -25 to +55               | -                        | -                        | -                        |
| Refrigerant                                       | -                        | -                        | -               | -                        | R290                          | -                        | -                        | -                        |
| Refrigerant Charge                                | kg                       | -                        | -               | -                        | ≤ 0.150 per circuit           | -                        | -                        | -                        |
| GWP   | -                        | -                        | -               | -                        | 3                             | -                        | -                        | -                        |
| Equivalent CO <sub>2</sub>                        | t CO <sub>2</sub>        | ≤ 0.45                   | -               | -                        | -                             | -                        | ≤ 0.9                    | -                        |
| PS Hp   | bar (g)                  | -                        | -               | -                        | 24                            | -                        | -                        | -                        |
| PS Lp   | bar (g)                  | -                        | -               | -                        | 14.6                          | -                        | -                        | -                        |
| PED Category                                      | -                        | -                        | -               | -                        | Article 4.3                   | -                        | -                        | -                        |
| Refrigeration circuit                             | -                        | -                        | -               | -                        | Sealed hermetically           | -                        | -                        | -                        |
| Expansion unit                                    | -                        | -                        | -               | -                        | Mechanical thermostatic valve | -                        | -                        | -                        |
| Defrost Type                                      | -                        | -                        | -               | -                        | Hot Gas                       | -                        | -                        | -                        |
| Compressor Type                                   | -                        | -                        | -               | -                        | Hermetic                      | -                        | -                        | -                        |
| Compressor Displacement                           | cm <sup>3</sup>          | 12.1                     | 16.8            | 22.4                     | 27.8                          | 2 x 16.8                 | 2 x 20.4                 | 2 x 22.4                 |
| Power supply                                      | V/-/Hz                   | -                        | -               | 230/1/50                 | -                             | -                        | 230/1/50 or 400/3/50     | -                        |
| External protection circuit breaker (curve D) *** | A                        | -                        | -               | 10                       | -                             | 16                       | -                        | 20                       |
| Protection Rating                                 | -                        | -                        | -               | -                        | IP 2X                         | -                        | -                        | -                        |
| Power cable length                                | m                        | -                        | -               | -                        | 2.5                           | -                        | -                        | -                        |
| Coldroom light cable length                       | m                        | -                        | -               | -                        | 5                             | -                        | -                        | -                        |
| Door switch cable length                          | m                        | -                        | -               | -                        | 2.5                           | -                        | -                        | -                        |
| Door heater cable length                          | m                        | -                        | -               | -                        | 2.5                           | -                        | -                        | -                        |
| BMS cable length                                  | m                        | -                        | -               | -                        | 5                             | -                        | -                        | -                        |
| Noise *   | dB(A)                    | 31.6                     | 31.4            | 35.5                     | 36.5                          | 34.3                     | 42.7                     | 42.5                     |
|   |                          |                          |                 |                          |                               |                          |                          | 43.0                     |

|                                    | BE-Wx251MA10Pxx   | BE-Wx251MA20Pxx | BE-Wx301MA30Pxx | BE-Wx301MA40Pxx | BE-Wx302MA50Pxx | BE-Wx352MA60Pxx | BE-Wx352MA70Pxx | BE-Wx352MA80Pxx1 |
|------------------------------------|-------------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|------------------|
| Condenser-fan number and diameter  | -                 | 1x254           |                 | 1x300           |                 | 1x350           |                 |                  |
| Condenser air flow rate            | m <sup>3</sup> /h | 600             |                 | 1200            |                 | 2540            |                 |                  |
| Evaporator-fan number and diameter | -                 | 1x200           |                 | 2x200           |                 | 1x350           |                 |                  |
| Evaporator air flow rate           | m <sup>3</sup> /h | 500             |                 | 1000            |                 | 2740            |                 |                  |
| Evaporator air throw               | m                 |                 | 6.5             |                 |                 | 8               |                 |                  |
| Machine dimensions (LxWxH)         | mm                | 421x876x728     |                 | 671x976x828     |                 | 711x1255x828    |                 |                  |
| Total weight WT                    | kg                | 58              | 88              | 89              | 105             | 134             | 134             | 135              |
| Total weight WT without packaging  | kg                | 46              | 66              | 67              | 83              | 105             | 105             | 106              |
| Total weight WS                    | kg                | 56              | 86              | 86              | 103             | 131             | 131             | 132              |
| Total weight WS without packaging  | kg                | 45              | 64              | 64              | 81              | 102             | 102             | 103              |

**Note (\*)**: values measured at ambient temperature = 30 °C and coldroom temperature NT = 0 °C LT = -20 °C.

**Note (\*\*)**: values measured at condensing temperature = 50 °C and evaporating temperature NT = -10 °C LT = -30 °C.

**Note (\*\*\*)**: the sound pressure levels derive from the sound power level. Conjecturing a hemispherical measuring surface, in free field, without effects of detectable reflections and taking the omnidirectional source into account. The machine to be measured is considered to be placed on the ground with the floor as the only reflective surface.

### 9.2.3 Technical data applications in low temperature

|                             | BE-Wx251LA10Pxx   | BE-Wx251LA20Pxx | BE-Wx301LA30Pxx | BE-Wx301LA40Pxx               | BE-Wx302LA50Pxx | BE-Wx352LA60Pxx | BE-Wx352LA70Pxx2 |
|-----------------------------|-------------------|-----------------|-----------------|-------------------------------|-----------------|-----------------|------------------|
| Size                        | -                 | 1x250           |                 | 1x300                         |                 | 1x350           |                  |
| Coldroom Temperature        | °C                |                 |                 | from -25 to -15               |                 |                 |                  |
| Dispersed Thermal Power *   | W                 | 1215            | 1893            | 2342                          | 2726            | 3842            | 4747             |
| Absorption **               | W                 | 690             | 940             | 1180                          | 1300            | 1800            | 2300             |
|                             | A                 | 3.8             | 5.1             | 5.1                           | 10.8            | 14.3            | 8.9              |
| Working Ambient Temperature | °C                |                 |                 | from +5 to +43                |                 |                 |                  |
| Storage Temperature         | °C                |                 |                 | from -25 to +55               |                 |                 |                  |
| Refrigerant                 | -                 |                 |                 | R290                          |                 |                 |                  |
| Refrigerant Charge          | kg                |                 |                 | ≤ 0.150 per circuit           |                 |                 |                  |
| GWP                         | -                 |                 |                 | 3                             |                 |                 |                  |
| Equivalent CO <sub>2</sub>  | t CO <sub>2</sub> |                 | ≤ 0.45          |                               |                 | ≤ 0.9           |                  |
| PS Hp                       | bar (g)           |                 |                 | 24                            |                 |                 |                  |
| PS Lp                       | bar (g)           | 146             |                 | 11.4                          |                 | 14.6            | 11.4             |
| PED Category                | -                 | Article 4.3     |                 | 1                             |                 | Article 4.3     | 1                |
| Refrigeration circuit       | -                 |                 |                 | Sealed hermetically           |                 |                 |                  |
| Expansion unit              | -                 |                 |                 | Mechanical thermostatic valve |                 |                 |                  |
| Defrost Type                | -                 |                 |                 | Hot Gas                       |                 |                 |                  |



|   | BE-Wx251LA10Pxx   | BE-Wx251LA20Pxx | BE-Wx301LA30Pxx | BE-Wx301LA40Pxx | BE-Wx302LA50Pxx      | BE-Wx352LA60Pxx | BE-Wx352LA70Pxx2 |
|---|-------------------|-----------------|-----------------|-----------------|----------------------|-----------------|------------------|
| Compressor Type                                   | -                 |                 |                 | Hermetic        |                      |                 |                  |
| Compressor Displacement                           | cm3               | 27.8            | 27.8            | 38              | 2 x 22.4             | 2 x 27.8        | 2 x 38           |
| Power supply                                      | V/-/Hz            | 230/1/50        | 230/1/50        | 400/3/50        | 230/1/50 or 400/3/50 |                 | 400/3/50         |
| External protection circuit breaker (curve D) *** | A                 | 10              | 16              | 10              | 16                   | 20              | 16               |
| Protection Rating                                 | -                 |                 |                 | IP 2X           |                      |                 |                  |
| Power cable length                                | m                 |                 |                 | 2.5             |                      |                 |                  |
| Coldroom light cable length                       | m                 |                 |                 | 5               |                      |                 |                  |
| Door switch cable length                          | m                 |                 |                 | 2.5             |                      |                 |                  |
| Door heater cable length                          | m                 |                 |                 | 2.5             |                      |                 |                  |
| BMS cable length                                  | m                 |                 |                 | 5               |                      |                 |                  |
| Noise *   | dB(A)             | 31.3            | 32.8            | 35.5            | 35.3                 | 42.3            | 42.5             |
| Condenser-fan number and diameter                 | -                 | 1x254           |                 | 1x300           |                      | 1x350           |                  |
| Condenser air flow rate                           | m <sup>3</sup> /h | 600             |                 | 1200            |                      | 2540            |                  |
| Evaporator-fan number and diameter                | -                 | 1x200           |                 | 2x200           |                      | 1x350           |                  |
| Evaporator air flow rate                          | m <sup>3</sup> /h | 500             |                 | 1000            |                      | 2740            |                  |
| Evaporator air throw                              | m                 |                 | 6.5             |                 |                      | 8               |                  |
| Machine dimensions (LxWxH)                        | mm                | 421x876x728     |                 | 671x976x828     |                      | 711x1255x828    |                  |
| Total weight WT                                   | kg                | 60              | 89              | 93              | 118                  | 134             | 143              |
| Total weight WT without packaging                 | kg                | 48              | 67              | 71              | 96                   | 105             | 114              |
| Total weight WS                                   | kg                | 58              | 86              | 90              | 115                  | 130             | 139              |
| Total weight WS without packaging                 | kg                | 46              | 64              | 68              | 93                   | 101             | 110              |

**Note (\*)**: values measured at ambient temperature = 30 °C and coldroom temperature NT = 0 °C LT = -20 °C.

**Note (\*\*)**: values measured at condensing temperature = 50 °C and evaporating temperature NT = -10 °C LT = -30 °C.

**Note (\*\*\*)**: the sound pressure levels derive from the sound power level. Conjecturing a hemispherical measuring surface, in free field, without effects of detectable reflections and taking the omnidirectional source into account. The machine to be measured is considered to be placed on the ground with the floor as the only reflective surface.

## 9.3 Attachments

### 9.3.1 Documents attached to the manual

- Declaration of conformity
- Wiring diagram of the packaged unit
- Refrigerating diagram

## 9.4 Time zones

### 9.4.1 Time zones table

| Time zone  | Territory  |
|------------|--|
| UTC -12:00 | Baker Island, Howland Island   |
| UTC -11:00 | Jarvis Island, Midway Atoll, Niue, Palmyra, American Samoa, Kingman Reef   |
| UTC -10:00 | Johnston Atoll, Cook Islands, French Polynesia (Society Islands including Tahiti Islands, Tuamotu Islands, Tubuai Islands), United States of America (Hawaii), United States of America (Aleutian Islands of Alaska)*  |
| UTC -9:00  | French Polynesia (Gambier Islands), United States of America (Alaska*)   |
| UTC -8:00  | Clipperton, Canada (British Columbia*, Yukon*), Mexico (Baja California State*), Pitcairn Islands, United States of America (California*, Idaho (northern)*, Nevada* (excluding West Wendover), Oregon (excluding Malheur County)*, Washington State*)   |
| UTC -7:00  | Canada (Alberta*, Northwest Territories*, Nunavut (mountains)*), Mexico (Baja California Sur, Chihuahua, Nayarit, Sinaloa, Sonora*), United States of America (Arizona (Navajo state follows the daylight saving time), Colorado*, Idaho (southern)*, Montana*, Nebraska (west)*, Nevada (West Wendover), New Mexico*, North Dakota (west)*, Oregon (Malheur County)*, South Dakota (west)*, Texas* (west), Utah*, Wyoming*)   |
| UTC -6:00  | Mexico (Mexico City, Cancún, Yucatán, Chiapas and other states not mentioned)*, Belize, Canada (Manitoba*, Nunavut (Southampton Island), Nunavut (central)*, Ontario (west)*, Saskatchewan), Costa Rica, Ecuador (Galapagos Islands), El Salvador, Guatemala, Honduras, Nicaragua, United States of America (Alabama*, Arkansas*, Illinois*, Indiana*, Iowa*, Florida (west)*, Kansas*, Kentucky (west)*, Louisiana*, Minnesota*, Mississippi*, Missouri*, Nebraska (east)*, North Dakota*, Oklahoma*, South Dakota (east)*, Tennessee (central and west)*, Texas* (central and east), Wisconsin*) |
| UTC -5:00  | Bahamas, Canada (East Nunavut*, Ontario*, Quebec*), Chile (Easter Island), Colombia, Cuba*, Ecuador, Jamaica, Haiti, Cayman Islands, Turks and Caicos Islands*, Panama, Peru, United States of America (Connecticut*, Delaware*, District of Columbia*, Florida (east and central)*, Georgia*, Indiana (most of the state), Kentucky (east and central)*, Maine*, Maryland*, Massachusetts*, Michigan*, New Hampshire*, New Jersey*, New York*, North Carolina*, Ohio*, Pennsylvania*, Rhode Island*, South Carolina*, Tennessee (east)*, Vermont*, Virginia*, West Virginia*)                     |
| UTC -4:00  | Anguilla, Antigua and Barbuda, Bermuda, Bolivia, Brazil (Amazonas, Mato Grosso*, Mato Grosso do Sul*, Pará (western), Rondônia, Roraima), Dutch Caribbean, Chile (except Easter Island and Magellan and Chilean Antarctica), Canada (Labrador*, New Brunswick*, Nova Scotia*, Prince Edward Island*), Dominica, Grenada, Guadeloupe, Guyana, Virgin Islands, Martinique, Montserrat, Paraguay*, Puerto Rico, Dominican Republic, Saint Kitts and Nevis, Saint Vincent and the Grenadines, Saint Lucia, Trinidad and Tobago, Venezuela  |
| UTC -3:00  | Argentina, Brazil (Alagoas, Amapá, Bahia*, Ceará, Distrito Federal*, Espírito Santo*, Goiás*, Maranhão, Minas Gerais*, Pará, Paraíba, Paraná*, Pernambuco, Piauí, Rio de Janeiro*, Rio Grande do Norte, Rio Grande do Sul*, Santa Catarina*, São Paulo*, Sergipe, Tocantins*), Chile (Region of Magellan and Chilean Antarctica), Falkland Islands, Greenland, French Guiana*, Saint-Pierre and Miquelon*, Suriname, Uruguay   |
| UTC -2:00  | Brazil (Fernando de Noronha), United Kingdom (South Georgia)   |
| UTC -1:00  | Cape Verde, Azores*  |

| Time zone                                      | Territory  |
|--|--|
| <b>UTC +0:00</b><br>Universal time coordinated | Burkina Faso, Canary Islands* (Spain), Ivory Coast, Gambia, Ghana, Guinea, Guinea-Bissau, Ireland*, Iceland, Faroe Islands*, Liberia, Mali, Mauritania, North Pole, Portugal*, United Kingdom*, Sant'Elena, São Tomé and Príncipe, Senegal, Sierra Leone, Togo   |
| <b>UTC +1:00</b>                               | Albania*, Andorra*, Angola, Austria*, Belgium*, Benin, Bosnia and Herzegovina*, Cameroon, Chad, Vatican City*, Croatia*, Denmark*, France*, Gabon, Germany*, Gibraltar*, Equatorial Guinea, Italy*, Svalbard and Jan Mayen Islands*, Libya, Liechtenstein*, Luxembourg*, North Macedonia*, Malta*, Morocco, Principality of Monaco*, Montenegro*, Niger, Nigeria, Norway*, Netherlands*, Poland*, Czech Republic*, Central African Republic, Republic of Congo, Democratic Republic of Congo (Kinshasa, Bandundu, Central Congo Province, Equator Province), San Marino*, Serbia*, Slovakia*, Slovenia*, Spain*, Sweden*, Switzerland*, Tunisia*, Hungary* |
| <b>UTC +2:00</b>                               | Botswana, Bulgaria*, Burundi, Cyprus* (including Northern Cyprus), Egypt*, Estonia*, Finland*, Jordan*, Greece*, Israel*, Latvia*, Lesotho, Lebanon*, Lithuania*, Malawi, Moldova*, Mozambique, Namibia, Palestine*, Democratic Republic of Congo (Western Kasai, Eastern Kasai, Katanga, North Kivu, South Kivu, Maniema, Eastern Province), Romania*, Russia (Zone 1*, including Kaliningrad), Rwanda, Syria*, South Africa, Sudan, Swaziland, Ukraine*, Zambia, Zimbabwe  |
| <b>UTC +3:00</b>                               | Saudi Arabia, Bahrain, Belarus*, Comoros, Eritrea, Ethiopia, Djibouti, Iraq*, Kenya, Kuwait, Madagascar, Mayotte, Qatar, Russia (Zone 2*, includes Moscow and St. Petersburg; this time zone also applies to all Russia railways), Somalia, South Sudan, Tanzania, Turkey*, Uganda, Yemen  |
| <b>UTC +4:00</b>                               | Armenia, Azerbaijan, United Arab Emirates, Georgia, Mauritius*, Oman, Reunion, Russia (Zone 3*), Seychelles  |
| <b>UTC +5:00</b>                               | Kazakhstan (West)*, Maldives, Pakistan, Russia (Zone 4*, includes Ekaterinburg and Perm'), Tajikistan, Turkmenistan, Uzbekistan  |
| <b>UTC +6:00</b>                               | Bangladesh, Bhutan, (eastern) Kazakhstan, Kyrgyzstan, Russia (Zone 5*, includes Omsk)  |
| <b>UTC +7:00</b>                               | Cambodia, Indonesia (western), Christmas Island (Australia), Laos, Russia (Zone 6*, includes Novosibirsk, Kemerovo, Krasnoyarsk, Kyzyl), Thailand, Vietnam   |
| <b>UTC +8:00</b>                               | Australia (Western Australia), Brunei, China (mainland), Philippines, Hong Kong, Indonesia (central), Macao, Malaysia, Mongolia, Russia (Zone 7*), Singapore, Taiwan<br>Please note that all of China has the same time, which makes this time zone exceptionally wide. At the western end of China the sun reaches its zenith at 3pm, at the eastern end at 11 am.  |
| <b>UTC +9:00</b>                               | South Korea (KST – Korean Standard Time), North Korea (NKST – North Korean Standard Time), Japan (JST – Japanese Standard Time), Indonesia (eastern), Palau, Russia (Zone 8*, includes Yakutsk), Timor East  |
| <b>UTC +10:00</b>                              | The United States has officially designated this time zone as Chamorro Standard Time., Australia (Australian Capital Territory*, New South Wales* (except Broken Hill), Queensland, Victoria*, Tasmania*), Guam, Northern Mariana Islands, Papua New Guinea, Russia (Zone 9*, includes Vladivostok), Federated States of Micronesia (Yap and Chuuk)  |
| <b>UTC +11:00</b>                              | Solomon Islands, New Caledonia, Russia (Zone 10*), Federated States of Micronesia (Kosrae and Pohnpei), Vanuatu  |
| <b>UTC +12:00</b>                              | Fiji*, Wake Island, Marshall Islands, Nauru, New Zealand (Aotearoa)*, Antarctica, Russia (Zone 11), Tuvalu, Wallis and Futuna  |
| <b>UTC +13:00</b>                              | Fiji*, Wake Island, Marshall Islands, Nauru, New Zealand (Aotearoa)*, Antarctica, Russia (Zone 11), Tuvalu, Wallis and Futuna  |
| <b>UTC +14:00</b>                              | Kiribati (Line Islands or Southern Sporades)   |

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