

SE PRU-R290

Blocksystem SE with electronic control

Operating instructions | v. 01

Instructions translated from the original



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

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Conformity

Declaration of conformity

Conformity 

Standard	UL 60335-1	• Safety of Household and Similar Appliances, Part 1: Generic Requirements, Edition 6, Issue Date 2016-10-31 • CAN/CSA-C22.2 No. 60335-1:16, Second Edition, Issue Date 2016-10-31
	UL 60335-2-89	• Household and Similar Electrical Appliances – Safety – Part 2-89: Particular Requirements for Commercial Refrigerating Appliances and Ice-Makers with an Incorporated or Remote Refrigerant Unit or Motor-Compressor, Edition 2, Issue Date 2021-10-27 • CAN/CSA-C22.2 No. 60335-2-89:21, Second Edition, Issue Date 2021-10-15

Note: the original declaration of conformity accompanies the refrigeration unit.

1. Introduction

This section includes the following topics:

- 1.1 Identification data 4
- 1.2 Information about the instruction manual .. 4

1.1 Identification data

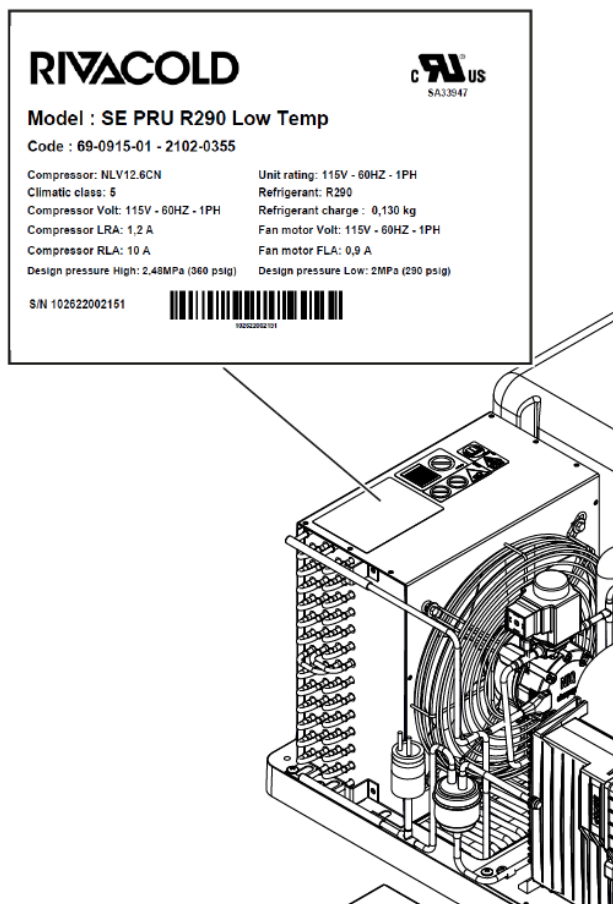
1.1.1 Manufacturer's contacts

RIVACOLD srl
Fraz. Montecchio - via Sicilia, 7
61022 Vallefoglia (PU)
Italy
Tel: +39 0721 919911
Fax: +39 0721 490015
e-mail: info@rivacold.com

1.1.2 Identification

The identification plate contains the model and serial number of the refrigeration unit, the product certifications and the technical specifications shown in the table below.

If you have to contact assistance, please Rivacold communicate the model code and the product code shown on the plate.



Model	Refrigeration unit model
Code	Code
Compressor	Compressor model
Climatic Class	Climate class
Compressor Volt	Compressor power supply
Compressor LRA	Locked-rotor compressor current
Compressor RLA	Nominal compressor current
Design pressure High	High pressure side design pressure
Unit rating	General power supply of the refrigeration unit
Refrigerant	Refrigerant type
Refrigerant charge	Refrigerant charge
Fan motor Volt	Fan motor power supply
Fan motor FLA	Fan full load current
Design pressure Low	Low pressure side design pressure
S/N	Production serial number

1.1.3 Serial number

S/N 102622002151

1	0	2	6	2	2	0	0	2	1	5	1
				A B C				D			

A	Production plant
B	Year of production
C	Week of production
D	Progressive production number

1.2 Information about the instruction manual

1.2.1 Objectives of the instruction manual

This instruction manual has the following purposes:

- make operators and technicians aware of safe behavior
- instruct technicians on how to install, safely maintain and dismantle the refrigeration unit
- know the refrigeration unit and its limits of use

- understand the principles of operation of the refrigeration unit

1.2.2 Obligations with respect to this instruction manual



NOTICE: This instruction manual is an integral part of the refrigeration unit and must be kept for its entire life cycle. The instruction manual must be attached to the refrigeration unit if transferred to third parties.

Consult the manual for all situations related to the life cycle of the refrigeration unit from the moment of its receipt until it is decommissioned.

Store the manual in a clean place and accessible to the operators.

If the manual is lost or unusable, the customer can request a copy from Rivacold srl.

1.2.3 Data of the instruction manual

Title: Operating instructions

Product: SE PRU-R290

Code: 9600-0227

Month and year of printing: 06-2026

Type of manual: instructions translated from the original

1.2.4 Provided documentation

- This instruction manual
- Wiring diagram of the refrigeration unit
- Trigger box list of parameters

1.2.5 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 minor injury.

1.2.6 Other messages

NOTICE

Indicates obligations which, if not complied with, can damage the device.

Note: Neutral and positive information that emphasize or add information to the main text. They provide information that can only be applied in special cases.

1.2.7 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.

1.2.8 Instruction manual updates

Code	Publication date	Updates
9600-0227	06-2026	First publication

1.2.9 Provided documentation

Manual	Intended users	Code	Date
Operating instructions (this manual)	The personnel indicated in "Personnel skills" on page 7.	9600-0227	06-2026
Wiring diagrams of the refrigeration unit and its components.			

2. Safety

This section includes the following topics:

2.1 General safety warnings	6
2.2 Limits of use	6
2.3 Personnel skills	7
2.4 Residual risks	8
2.5 Safety labels	10
2.6 Fixed guards	11
2.7 Noise	11

2.1 General safety warnings

2.1.1 Introduction

The refrigeration unit is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities or lacking experience and knowledge, unless they are supervised or instructed in the use of the unit by a person responsible for their safety.

Keep children away from the refrigeration unit.

2.1.2 Employer obligations

The employer must recruit, train and assign personnel authorized to perform their tasks.

The employer must train assigned personnel and have them follow the safety regulations for each specific task. The employer must also define work procedures and ensure that the instruction manual provided by the manufacturer is followed. See "Personnel skills" on the next page for more information.

2.1.3 Obligations for the recipients of the instruction manual



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

2.1.4 Recipients of this instruction manual

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

2.1.5 Clothing



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

2.1.6 Personal protective equipment

During lifting and transport



During installation and commissioning



During use



During maintenance or dismantling



Warnings for safe use

For safe use of the refrigeration unit, always check the following conditions:

- Presence of powder fire extinguishers in the vicinity of the refrigeration unit.
- Clean and dry installation area.
- Cleaning the refrigeration unit of oils, solvents, plastic residues, paper and rags.
- Absence of objects and liquid containers in contact with the refrigeration unit.

2.2 Limits of use

2.2.1 Intended use

SE PRU-R290 is a refrigeration unit that is installed on refrigerated cabinets for commercial refrigeration.

The refrigeration unit is designed to operate only with the refrigerants indicated on the identification plate.

NOTICE: To use different fluids, contact Rivacold srl.

NOTICE: To use in different applications, contact Rivacold srl.

The refrigeration unit must be protected from atmospheric agents and is intended to be installed in a suitable environment.

2.2.2 Unintended use

Any use other than that specified in "Intended use" on the previous page is prohibited.

In particular, it is NOT possible to install the refrigeration unit in the following conditions:

- sloping or vertical surface
- surface with characteristics other than those specified
- room not aerated or ventilated
- potentially explosive atmosphere (ATEX) and/or fire risk according to current legislation and local regulations
- presence of vapors coming from chemical processes
- temperatures outside the range 41°F to 89.6°F

It is also forbidden to:

- use a refrigerant gas other than the one specified
- remove the guards and safety devices
- modify the electrical equipment and safety devices
- place objects or containers of liquids on top of the refrigeration unit
- install the refrigeration unit in public corridors, lobbies, waiting rooms.

2.3 Personnel skills

2.3.1 Introduction

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.

2.3.2 List of skills

Symbol	Operations allowed	Skills
 Man- ufacturer's per- sonnel	All operations	Technical personnel employed or authorised by the manufacturer.
	Assembler	Has adequate knowledge in both the mechanical and electrical fields. Understands the technical drawings and wiring diagrams. Knows the refrigeration unit and the risks deriving from its operation in all modes. Knows the engineering / administrative / personal protection control measures and the procedures for reducing the risks deriving from the assembly and testing of the refrigeration unit.
 Mechanical maintenance engineer	• Installation and decommissioning • Maintenance excluding works on the electrical system • Solving prob-	Has extensive technical knowledge in the mechanical and pneumatic fields. Understands

Symbol	Operations allowed	Skills
	lems that cause blockages	the technical drawings and the refrigerating diagram.
 Electrical maintenance engineer	- Electrical connections during installation and decommissioning - Solving problems that cause faults in the electrical system	Has extensive technical knowledge in the electrical field. Understands the wiring diagrams and works inside live electrical boxes, junction boxes and control equipment. Understands the refrigerating diagram.
 Operator	- Operate using the controls - Adjust the equipment after receiving the relevant instructions - Change certain parameters but only after receiving the relevant instructions	Has generic technical knowledge and experience in managing the refrigeration unit.
 Driver	Lifting and handling	Authorised to use means to lift and handle materials and equipment according to the laws in force in the country of installation.

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

2.4.2 Introduction

The refrigeration unit has been designed and built to operate, be adjusted and undergo maintenance without exposing the personnel in charge to risks. This is provided that the instructions given in this manual are followed. The adopted safety measures minimize the risk of injury throughout the life cycle of the refrigeration unit, both in the intended use and in reasonably foreseeable misuse.

2.4.3 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.
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.

2.4 Residual risks

2.4.1 Definition

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

Risk	When it occurs	How to avoid it
High pressure fluid ejection	During transport, handling, installation, maintenance, and dismantling.	- Follow the warnings on transport, handling and installation given in this instruction manual. - Wear the personal protective equipment. - Maintenance on pressurized circuits must only be performed by the mechanical maintenance engineer and the welder. - Observe the permissible temperature limits during transport.
Contact with moving and sharp parts	During maintenance and dismantling.	- Wear the personal protective equipment. - Isolate the refrigeration unit from the power supply.

2.4.4 Electrical residual risks

Risk	When it occurs	How to avoid it
Electrocution	During installation, connection, maintenance and dismantling.	- The electrical connection and disconnection must only be carried out by the electrical maintenance engineer. - Wear the personal protective equipment. - Before starting to work, interrupt power supply to the refrigeration unit and wait 5 minutes for residual energy to discharge.

2.4.5 Thermal residual risks

Risk	When it occurs	How to avoid it
Burns	During any operation.	Wear the personal protective equipment.

2.4.6 Chemical residual risks

Risk	When it occurs	How to avoid it
Explosion and fire	During transport and handling, installation, cleaning, maintenance, and dismantling.	- Follow the regulations in force and the warnings on adjustments and maintenance given in this instruction manual. - See "A3 refrigerant residual risks" on the next page - See "A3 refrigerant residual risks" on the next page
Burns	During transport and handling, installation, cleaning, maintenance, and dismantling.	Follow the regulations in force and the warnings on adjustments and maintenance given in this instruction manual.
Intoxication	During cleaning and maintenance.	Perform the installation in accordance with ANSI/ASHRAE 15 and local regulations in force. Ensure adequate ventilation and install refrigerant detectors when required.
Environmental risk	During transport and handling, installation, cleaning and maintenance.	Collect any leaked fluids with suitable devices, in accordance with local regulations.

A3 refrigerant residual risks

DANGER!

Accumulation of flammable gas inside the refrigeration unit. Explosion and fire. Always perform the following checks to prevent the gas concentration from reaching dangerous levels:

- In case of long system downtime, check for any gas leaks before supplying power to the refrigeration unit again.
- Ensure ventilation openings are not obstructed.
- DO NOT open the refrigeration circuit for maintenance work.

2.4.7 Fire risk

The following measures mitigate the residual risk of fire associated with the refrigeration unit:

- The employer is responsible for the assessment of the fire risk of the installation area, including the determination of the fire load.
- Install, when required by current regulations, fire-fighting systems suitable for extinguishing on electrical equipment.

2.4.8 Noise risk

The noise risk must be reassessed by the final assembler of the refrigeration unit and refrigerated cabinet system. For values relating to the refrigeration unit only see "Noise" on the next page

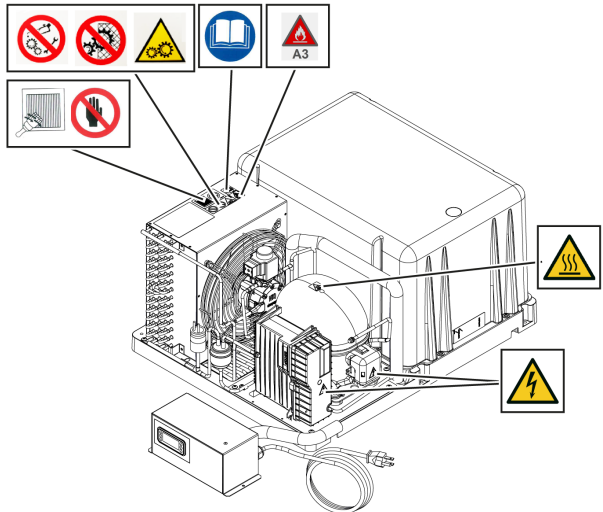
2.5 Safety labels

2.5.1 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.

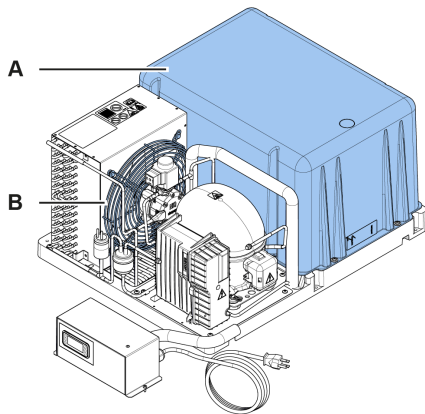
2.5.2 Position of the safety stickers



Symbol	Description
	Obligation to read the instruction manual
	Do not repair moving parts
	Do not remove the safety devices
	Moving parts
	Do not clean by hand. Clean the refrigeration unit with suitable tools
	
	Electrocution
	Hot surfaces
	Presence of refrigerant A3

2.6 Fixed guards

2.6.1 Position



Part	Description
A	Evaporator insulation end-winding cover
B	Condenser fan-motor protection grid

2.7 Noise

2.7.1 Sound pressure level

The sound pressure levels measured while the refrigeration unit is in operation are reported in "Technical data" on page 32

3. Learn about the refrigeration unit

This section includes the following topics:

3.1 Overview	11
3.2 Description of the refrigeration unit	11
3.3 Operation of the refrigeration unit	12

3.1 Overview

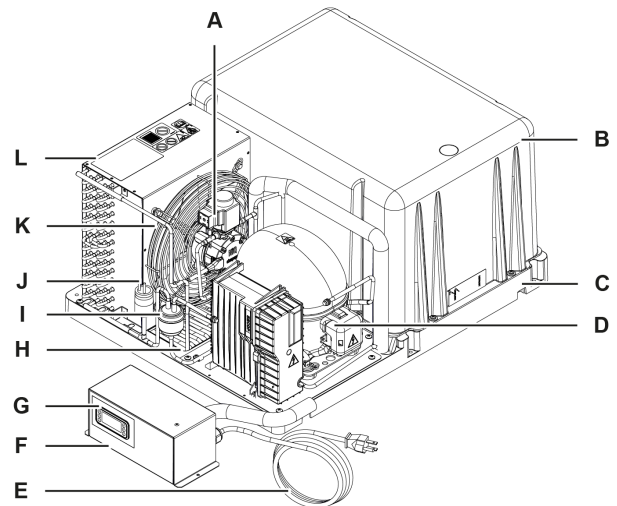
3.1.1 Product description

The refrigeration unit consists of a condenser and an evaporator and is equipped with a hot gas defrosting system.

The refrigeration circuit transfers heat from the inside of the refrigerated cabinet to the outside, and ventilation introduces refrigerated air into the cabinet.

3.2 Description of the refrigeration unit

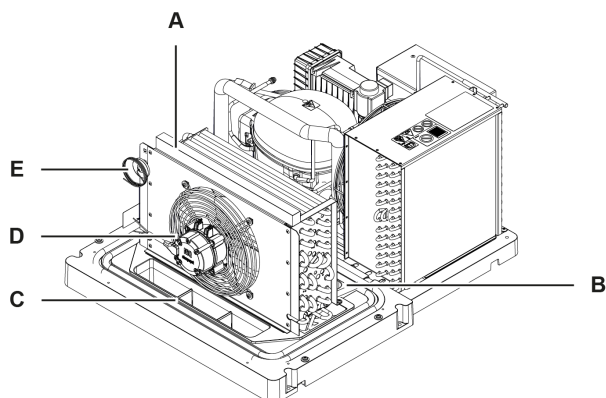
3.2.1 Main components



Part	Description
A	Solenoid valve
B	Evaporator insulation end-winding cover
C	Base
D	Compressor
E	Power cable
F	Control unit

Part	Description
G	Trigger box
H	Dissipation coil
I	Dehydrator filter
J	Safety pressure switch
K	Condenser fan-motor
L	Condenser

3.2.2 Internal components of the evaporator



Part	Description
A	Evaporator
B	Hot air inlet opening
C	Cooled air outlet opening
D	Evaporator fan-motor
E	Expansion valve

3.3 Operation of the refrigeration unit

3.3.1 General operation

1. The evaporator fan-motor sucks the hot air from the refrigerated cabinet.
2. If the temperature probe detects a temperature higher than the set maximum, the air cooling process is activated.
3. The hot air passes through the evaporator coil and cools down.
4. The cool, liquid refrigerant in the evaporator coil absorbs heat from the air, evaporates, and goes into the gaseous state.
5. The cooled air returns to the refrigerated cabinet.
6. The compressor sucks the refrigerant in the gaseous state, compresses it, overheats it and puts it into the condenser coil.
7. The condenser fan-motor pushes the ambient air outwards: the refrigerant cools and returns to the liquid state.

8. The liquid refrigerant passes through the expansion valve, which reduces its pressure, then re-enters the evaporator coil to start a new air cooling cycle.
9. The defrost system opens the solenoid valve according to the set time intervals and diverts a part of the hot refrigerant to the evaporator: the solenoid valve closes when the temperature reaches the set point set for the end of defrosting.
10. The ice that has formed on the evaporator melts and the residual water falls into the drain tray: the dissipation coil of the drain tray evaporates the water.
11. If the pressure in the compressor rises above the limit level, the safety pressure switch stops the refrigeration unit.

4. Transport and handling

This section includes the following topics:

- 4.1 Warnings for transport and handling 13
- 4.2 Transport and handling 14
- 4.3 Refrigeration unit receipt and storage 14

4.1 Warnings for transport and handling

4.1.1 Required skills



4.1.2 Safety



! DANGER!

Explosion/Burns. 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 generic indications apply to load lifting operations and also concern the use of lifting accessories not supplied with the refrigeration unit.

Choose lifting equipment and accessories according to the dimensions, weight and shape of the load to be lifted.

4.1.4 Preliminary checks

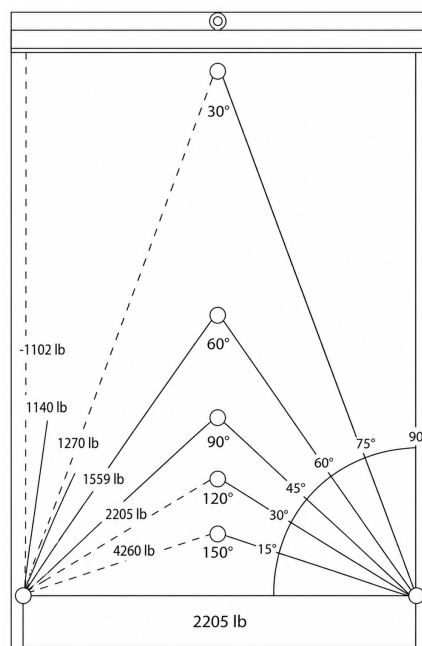
- Check that the lifting accessories are intact.
- Check that there are no people or objects in the manoeuvring area.
- Check the stability and correct balancing of the load by slowly lifting it slightly.

4.1.5 General warnings

- Due to the presence of oil in the compressor, handle the refrigeration unit while still maintaining the upright position. NEVER turn the refrigeration unit upside down.
- Choose the harnessing points so that the load is balanced correctly, considering its centre 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.

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 refrigeration unit is supplied on wooden pallets.

4.2.2 Storage

The packaged refrigeration unit must be stored in an environment protected from atmospheric agents.

it up and move it safely.

- Protect the refrigeration unit from exposure to atmospheric agents.

See "Technical data" on page 32 for more information.

4.3 Refrigeration unit receipt and storage

4.3.1 Removing the packaging

NOTICE

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

Remove the external packaging elements and fasteners used during transport.

Note: Do not remove the protective sheet between the evaporator insulation end-winding cover and the condenser. See "Install the refrigeration unit" on page 17.

4.3.2 Checking the refrigeration unit

Check that the refrigeration unit is in good condition: if there are signs of damage, immediately report them to Rivacold srl.

4.3.3 Storage

NOTICE

Damage to the device. Consult Rivacold srl and check the warranty conditions if the refrigeration unit must be kept inactive for long periods. Protect from moisture and shock. Store in a dry environment. Avoid exposures to temperatures less than -13°F and greater than +131°F and humidity less than 30% and greater than 80%.

If the refrigeration unit must be stored for long periods, follow the instructions below.

- Isolate the refrigeration unit from energy sources.
- Clean the refrigeration unit and all its components.
- Position the refrigeration unit in closed, non-dusty environments, in sufficient space to pick

5. Installation

This section includes the following topics:

5.1 Installation warnings	15
5.2 Installation requirements	16
5.3 Power supply requirements	16
5.4 Install the refrigeration unit	17

5.1 Installation warnings

Introduction

Perform the installation in accordance with ANSI/ASHRAE 15 and local regulations in force. See "Installation requirements" on the next page.

Always refer to the information provided in this instruction manual. If necessary, contact Rivacold assistance.

Required skills



Safety



DANGER!

Presence of flammable gas. Explosion/Fire. 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 and regulations in force. See "A3 refrigerant residual risks" on page 10.

DANGER!

Accumulation of flammable gas inside the refrigeration unit. Explosion and fire.

Always perform the following checks:

- Install the refrigeration unit away from heat sources and / or open flames.
- Check that there are no flammable materials in the installation environment.
- In case of long system downtime, check for any refrigerant leaks before supplying power to the refrigeration unit again.
- Check that all electrical components comply with category 3 for explosion hazard
- Protect the pipes of the electrical connections with suitable rigid sheaths or cable ducts.

DANGER!

Explosion / Intoxication / Cold Burns. Pressurized fluid.

Always keep the refrigeration unit in an upright position and avoid collisions.

DANGER!

Electrocution.

- Always use adequate means and accessories.
- Follow the warnings given in this instruction manual.
- Connect the refrigeration unit to a grounded system.
- Check that there are no liquids and heat sources near the electrical connection.

WARNING

Accumulation of toxic substances. Ensure adequate ventilation and, when required, install refrigerant detectors.

WARNING

Pressurized fluid ejection. Do not bend or hit pipes containing pressurized fluids.

⚠ CAUTION

Falling from above. Always follow the instructions below during the operations:

- Always use adequate means and accessories.
- Provide safe access to the maintenance area.
- Follow the warnings given in this instruction manual.

5.2 Installation requirements

5.2.1 General requirements

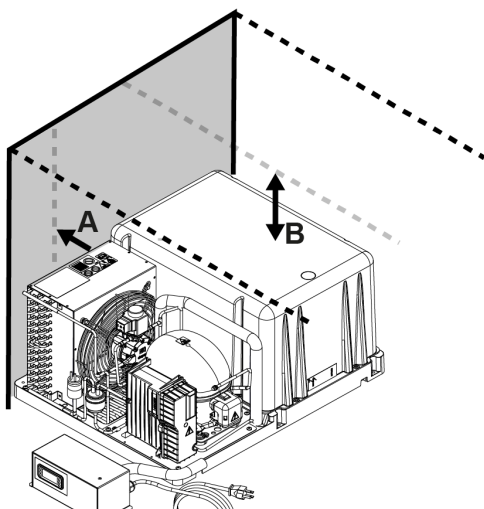
- Install the refrigeration unit on an even horizontal surface.
- Ensure adequate and protected openings on the ceiling of the refrigerated cabinet according to the instructions in this manual.
- Make sure that the intake air temperature on the condenser is equal to the ambient temperature: in the event of hot air recirculation, plug the openings.

5.2.2 Spaces to be observed

Install the refrigeration unit observing the following minimum spaces:

- distance of at least 2 in from the wall or other obstacle on the condenser side **[A]**.
 - distance of at least 5.9 in between the insulation end-winding cover and the ceiling or other obstacle above the refrigeration unit **[B]**.
- (*)

Note (): in order to remove the evaporator insulation end-winding cover, keep a distance of at least 12.2 in.*



5.3 Power supply requirements

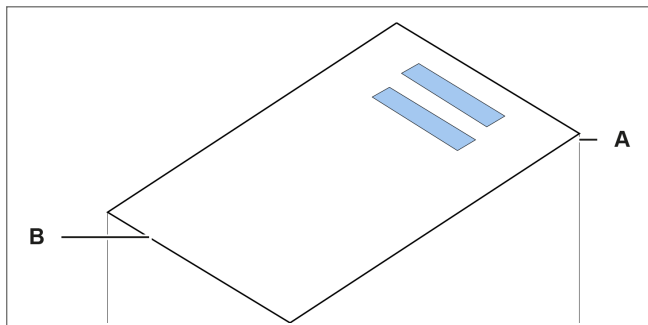
5.3.1 Electrical connection requirements

The electrical connection of the refrigeration unit must comply with the following requirements:

- The components and connections must be carried out in accordance with current legislation, the wiring diagrams of the refrigeration unit, the data shown on the identification plate and in "Electrical data" on page 32.
- The connections must comply with what is shown on the design wiring diagrams of the system in which the refrigeration unit is integrated.
- The power cable must be intact, of a section adequate for the power absorbed by the refrigeration unit, taut and protected from shocks and / or tampering.
- The system must be equipped with a differential circuit breaker between the power line and the refrigeration unit.

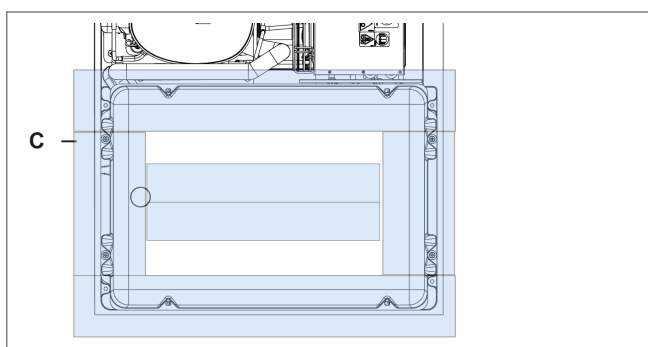
5.4 Install the refrigeration unit

5.4.1 Procedure



1. Create two openings next to the openings at the base of the refrigeration unit on the ceiling of the refrigerated cabinet from the side opposite **[A]** to the door **[B]**. See "Construction features" on page 30.

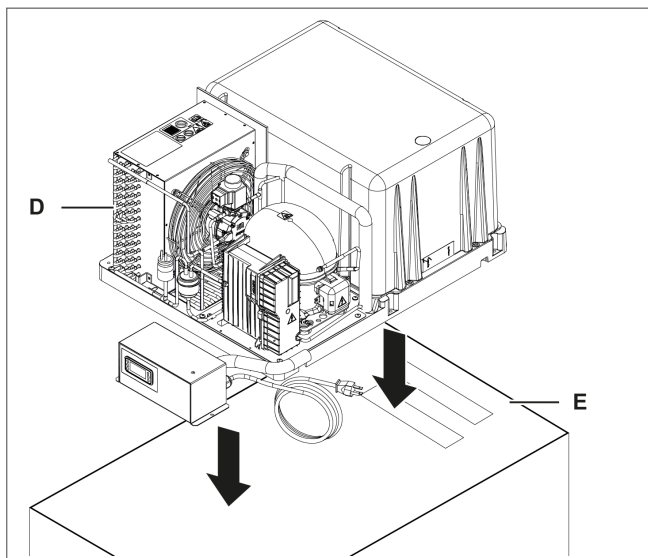
NOTICE: Carefully seal the inner edges of the openings to preserve the integrity of the insulation contained in the ceiling of the refrigerated cabinet.



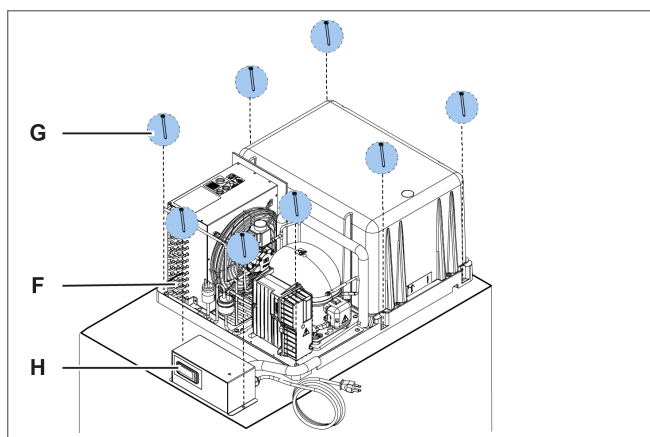
2. Create a thorough seal at the openings on the cabinet, **[C]** between the base of the refrigeration unit and the roof of the cabinet that protrudes from the base at least 0.20 in, with a gasket having the following characteristics:

- minimum seal profile thickness of 0.20 in
- minimum thermal conductivity of 0.039 W/m K.

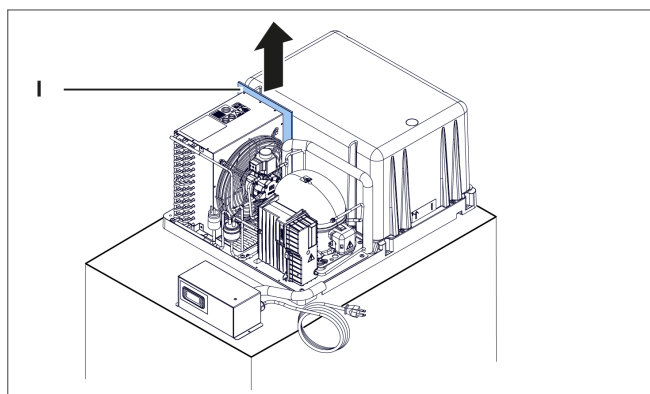
NOTICE: If there are inserts or other elements that can create thicknesses between the base of the refrigeration unit and the roof of the cabinet, check the sealing seal and if necessary adapt the seal profile.



3. Position the refrigeration unit **[D]** on the ceiling of the refrigerated cabinet **[E]** in the planned position. See "Installation requirements" on the previous page.



4. Secure the refrigeration unit **[F]** to the ceiling of the refrigerated cabinet with the supplied screws, if any, or 0.25 x 2.75 in self-tapping screws **[G]**.
6. Secure the trigger box **[H]** with the supplied screws, if any, or with suitable self-tapping screws.



7. Remove the protective sheet **[I]** between the evaporator insulation end-winding cover and the condenser.

6. Use

This section includes the following topics:

6.1 Warnings for use	19
6.2 Use the refrigeration unit	19

6.1 Warnings for use

Required skills



6.1.1 Use of the refrigeration unit

Operation of the refrigeration unit is commanded and controlled by the already preset trigger box. The trigger box manual is enclosed with this manual.

6.2 Use the refrigeration unit

6.2.1 Checks at first start-up

Check that the unit has been installed correctly. See "Install the refrigeration unit" on page 17.

6.2.2 Start the refrigeration unit

1. Connect the power cable to the electrical installation of the installation room: the refrigeration unit starts.
2. Check the parameters set and modify them if necessary. See the trigger box manual.

6.2.3 Stop the refrigeration unit

1. Switch off the refrigeration unit
2. If the refrigeration unit is to be switched off for a long time:
 1. Disconnect the power cable of the trigger box.
 2. Clean the refrigeration unit.
 3. Cover the refrigeration unit with a sheet.

7. Maintenance

This section includes the following topics:

7.1 Maintenance warnings	20
7.2 Periodic maintenance	21
7.3 Corrective maintenance	21

7.1 Maintenance warnings

Introduction

Always refer to the information provided in this instruction manual. If necessary, contact Rivacold assistance.

7.1.1 Required skills



7.1.2 Safety



DANGER!

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

DANGER!

Presence of flammable gas. Explosion/Fire. See "A3 refrigerant residual risks" on page 10.

DANGER!

Electrocution.

- Always use adequate means and accessories.
- Follow the warnings given in this instruction manual.
- Disconnect the power supply before carrying out maintenance procedures.

CAUTION

Burns.

Hot surfaces.

Stop the refrigeration unit and wait at least 10 minutes before any maintenance work.

CAUTION

Falling from above. Always follow the instructions below during the operations:

- Always use adequate means and accessories.
 - Provide safe access to the maintenance area.
 - Follow the warnings given in this instruction manual.
-
- Before each maintenance operation check the following conditions:
 - no refrigerant gas leaks
 - ambient air temperature below the maximum permitted limits
 - adequate ventilation
 - absence of flammable materials and sources of ignition in the work area
 - presence of adequate fire-fighting tools (fire extinguishers)
 - presence of signs notifying maintenance work in progress
 - Only perform the maintenance described in this instruction manual and observe the indicated maintenance frequency.
 - Reposition the guards at the end of any maintenance operation.
 - Check the correct operation and cleaning of the refrigeration unit at the end of any maintenance operation.
 - Do not release the products used into the environment. Follow the regulations in force regarding the disposal of dangerous and/or polluting fluids.

7.2 Periodic maintenance

7.2.1 Required skills



Deadline	Procedure
At least once a month	Check for moisture or frost on the base of the evaporator insulation end-winding cover: if necessary, check the seal of the gasket and replace it. See "Check or replace the gasket of the evaporator insulation end-winding cover" on the next page.
	Clean the condenser with an air jet from the inside out.
	Check the condition of the refrigeration circuit: if you notice leaks or traces of oil, contact Rivacold.
Every 4 months	Check the compressor noise. If necessary, contact Rivacold.

7.3 Corrective maintenance

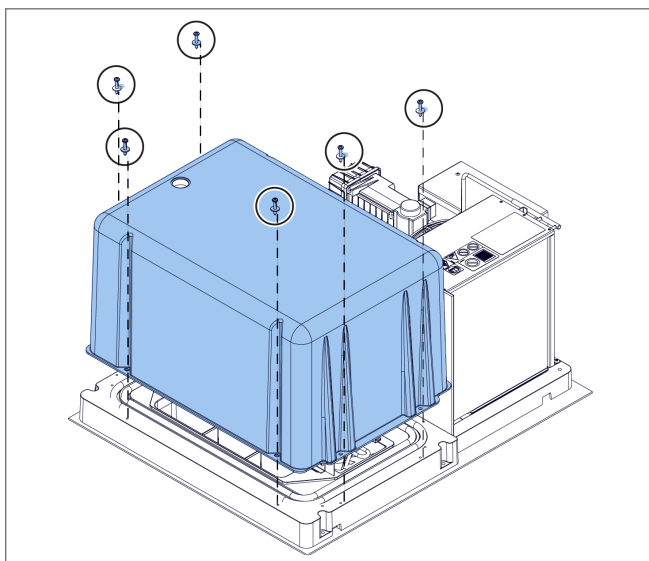
7.3.1 Required skills



7.3.2 Safety

If it is necessary to carry out a corrective maintenance procedure, always contact RIVACOLD srl.

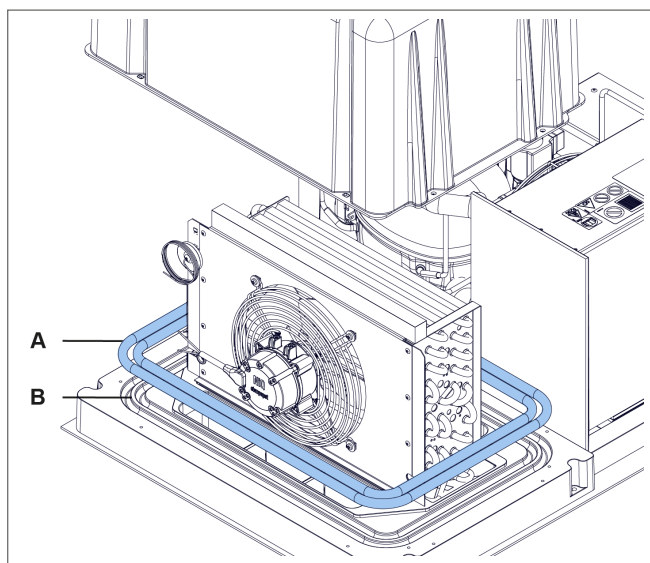
7.3.3 Remove the evaporator insulation end-winding cover



NOTICE: Remove the end-winding cover only in the cases specified in this instruction manual. For other needs, please contact RIVACOLD srl.

7.3.4 Check or replace the gasket of the evaporator insulation end-winding cover

NOTICE: Perform this procedure in all cases where the end-winding cover is removed.

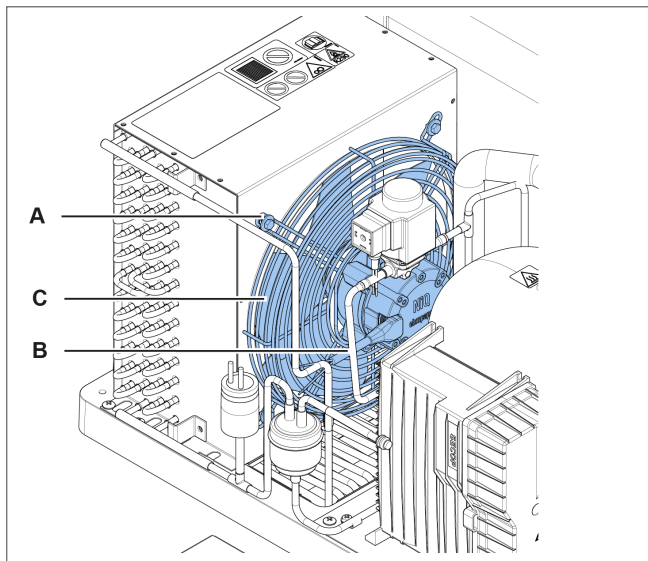


1. "Remove the evaporator insulation end-winding cover" above
2. Remove the gasket **[A]**.
3. Check the state of the gasket: if necessary, replace it with an original spare part.
4. Check and clean the gasket seat **[B]**.
5. Wash the gasket with water.
6. Reposition the gasket.

NOTICE: Always check that the joints are sealed. If necessary, use suitable plastic sealant to ensure the seal.

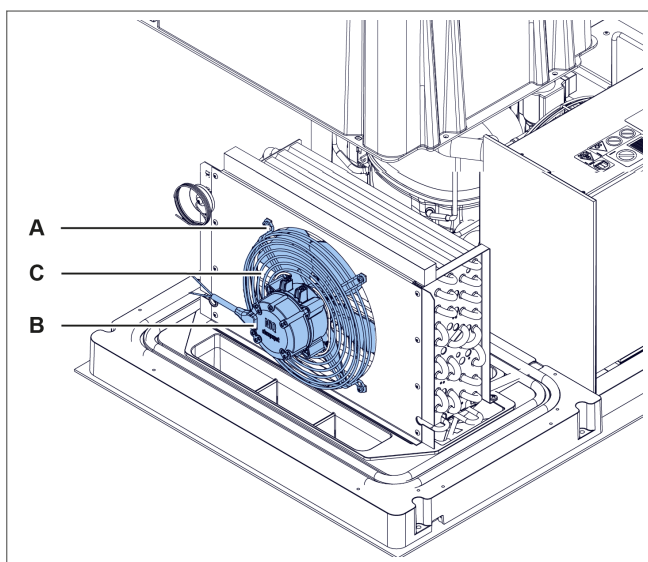
7. Reposition the end-winding cover.

7.3.5 Replace the condenser fan-motor



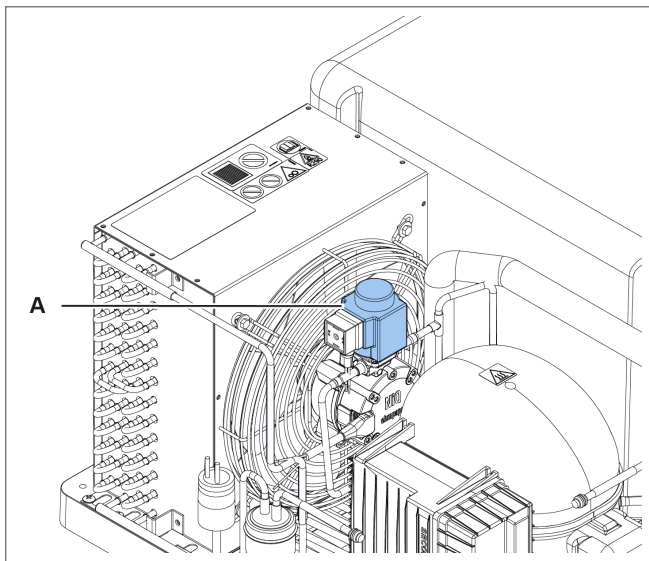
1. Loosen the fixing screws of the protection grid **[A]**.
2. Disconnect the fan-motor wiring **[B]** from the control panel.
3. Remove the fan-motor block and protection grid **[C]**.
4. Replace the condenser fan-motor with an original spare part and follow the enclosed instructions.
5. Tighten the fixing screws of the protection grid.

7.3.6 Replace the evaporator fan-motor



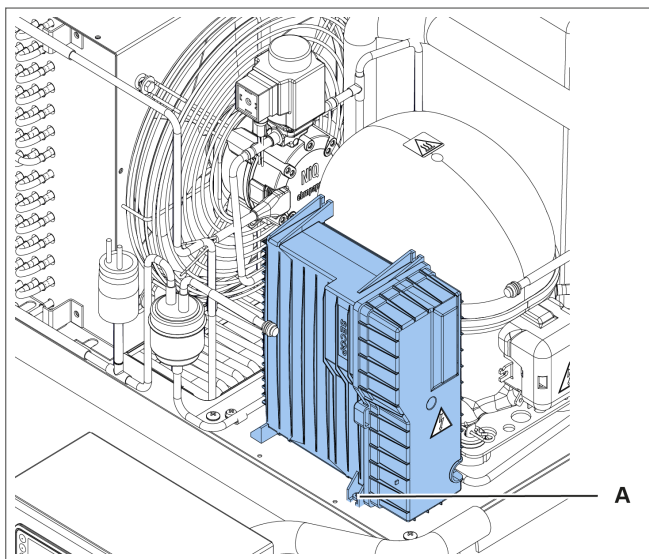
1. "Remove the evaporator insulation end-winding cover" on the previous page
2. Loosen the fixing screws of the protection grid **[A]**.
3. Disconnect the fan-motor wiring **[B]** from the control panel.
4. Remove the fan-motor block and protection grid **[C]**.
5. Replace the evaporator fan-motor with an original spare part and follow the enclosed instructions.
6. Tighten the fixing screws of the protection grid.

7.3.7 Replace the solenoid valve coil



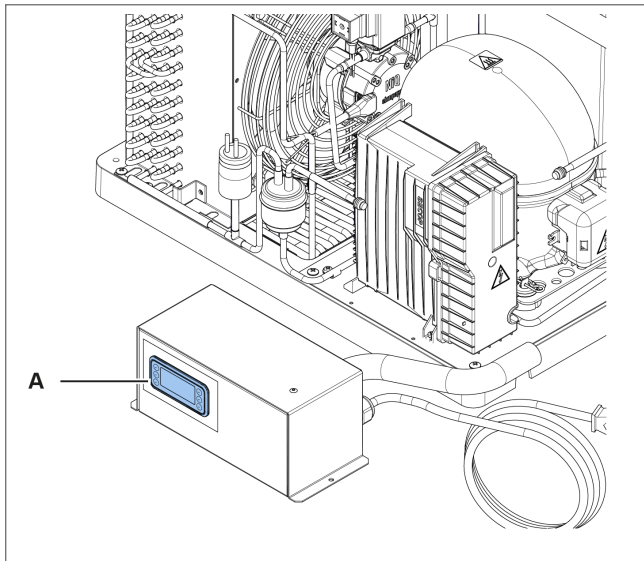
1. Release the solenoid valve coil **[A]**.
2. Remove the coil from the valve core.
3. Replace the solenoid valve coil with an original spare part and follow the enclosed instructions.

7.3.8 Replace compressor inverter



1. Remove the compressor inverter fixing screws **[A]**.
2. Disconnect the inverter wiring from the compressor and control panel.
3. Replace the compressor inverter with an original spare part and follow the enclosed instructions.
4. Reposition and tighten the fixing screws.

7.3.9 Replace the trigger box



1. Press the trigger box display blocks **[A]** and remove the trigger box from the control unit.
2. Disconnect the wiring from the rear terminal block of the trigger box.
3. Replace the trigger box with an original spare part and follow the enclosed instructions.

8. Diagnostics

This section includes the following topics:

8.1 Faults and alarms	26
8.2 Installation and operation troubleshooting	26

8.1 Faults and alarms

8.1.1 Display and management of the alarms

If fault and alarm signals are displayed on the trigger box display, refer to the specific manual.

8.2 Installation and operation troubleshooting

8.2.1 Skills



Manufacturer's personnel

8.2.2 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.

See "Installation requirements" on page 16.



8.2.3 Causes and solutions

Problem encountered	Possible cause	Check	Solution
The compressor does not start and no noise is heard.	No voltage	Check the line.	-
	Overheated compressor	Check the compressor.	Wait for the compressor to cool down.
	Loose electrical connections or incorrect connections	Check the electrical connections and the other connections	• Tighten the connections. • Make the correct connections.
	Low-voltage	Check the voltage on the compressor line.	-
	Motor winding interrupted or short-circuited	Replace the compressor.	-
The compressor's thermal protection trips	Low compressor voltage	Check the voltage.	-

Problem encountered	Possible cause	Check	Solution
	Excessive discharge pressure	- Check the ventilation. - Check for bottlenecks or obstructions.	- Eliminate bottlenecks and obstructions. - Clean the condenser.
	High suction pressure	Check for hot products in the refrigerated cabinet.	Remove hot products.
	Overheated compressor or hot return gas	- Check the temperature on the suction hose. - Check for leaks.	Restore the refrigerant gas level.
	Short-circuited compressor motor winding	-	Replace the compressor.
Compressor cycles are short	The compressor's thermal protection has tripped.	See "The compressor's thermal protection trips" on the previous page	-
	Reduced operating temperature differential.	-	Adjust the parameters on the trigger box.
	The high pressure switch has tripped.	Check that the fan-motor is operating properly. Check the condition of the condenser.	If necessary "Replace the condenser fan-motor" on page 23
The compressor does not stop or the cycles are too long	Low refrigerant charge	Check the refrigerant charge. Look for any leaks	Repair the leaks if present. Recharge the refrigerant in the circuit.
	Defective thermostat	-	Replace the thermostat.
	Undersized system	-	Replace the system.
	Load to be cooled excessive	-	Reduce the load to be cooled.
	Insufficient insulation	-	Increase insulation.
	There is ice on the evaporator.	-	Defrost. NOTICE: DO NOT use mechanical tools to remove ice.
	Bottleneck in the circuit	-	Remove the bottleneck.
	Condenser dirty	-	Clean the condenser.
Temperature in refrigerated cabinet too high	Operating temperature too high	-	Adjust the operating parameters.
	Expansion valve faulty	Check the expansion valve.	Replace the expansion valve.
	Expansion valve blocked when opening		- Clean the expansion valve. - Replace the expansion valve.
	Insufficient air circulation.	Check the air circulation volumes.	Increase the air circulation volumes.
There is frost on the suction pipes	Expansion valve oversized or with excessive gas	-	Adjust the expansion valve.

Problem encountered	Possible cause	Check	Solution
	passage		• Replace the expansion valve
	Expansion valve blocked when opening		• Clean the expansion valve • If necessary, replace the expansion valve
	Evaporator fan-motor not operating	Check the fan-motor	If necessary, replace the fan-motor.

9. Appendix

This section includes the following topics:

9.1 Decommissioning	29
9.2 Construction features	30
9.3 Assembly dimensions	31
9.4 Technical data	32

9.1 Decommissioning

9.1.1 Required skills



9.1.2 Safety



DANGER!

Presence of flammable gas. Explosion/Fire. See "A3 refrigerant residual risks" on page 10.

DANGER!

Electrocution. Always use adequate means and accessories. Follow the warnings given in this instruction manual.

WARNING

Pressurized fluid ejection. Always use the personal protective equipment. See "Residual risks" on page 8.

CAUTION

Falling from above. Always use adequate means and accessories. Provide safe access to the installation area. Follow the warnings given in this instruction manual.

CAUTION

Cuts or abrasions. Wear the personal protective equipment.

NOTICE

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

9.1.3 Dismantle the refrigeration unit

If it is necessary to dismantle the system, proceed following the installation procedure in reverse order and, if necessary, move the refrigeration unit to a suitable place and repair it at the end of the operations. See "Install the refrigeration unit" on page 17, "Transport and handling" on page 14, "Storage" on page 14.

9.1.4 Scrap the refrigeration unit

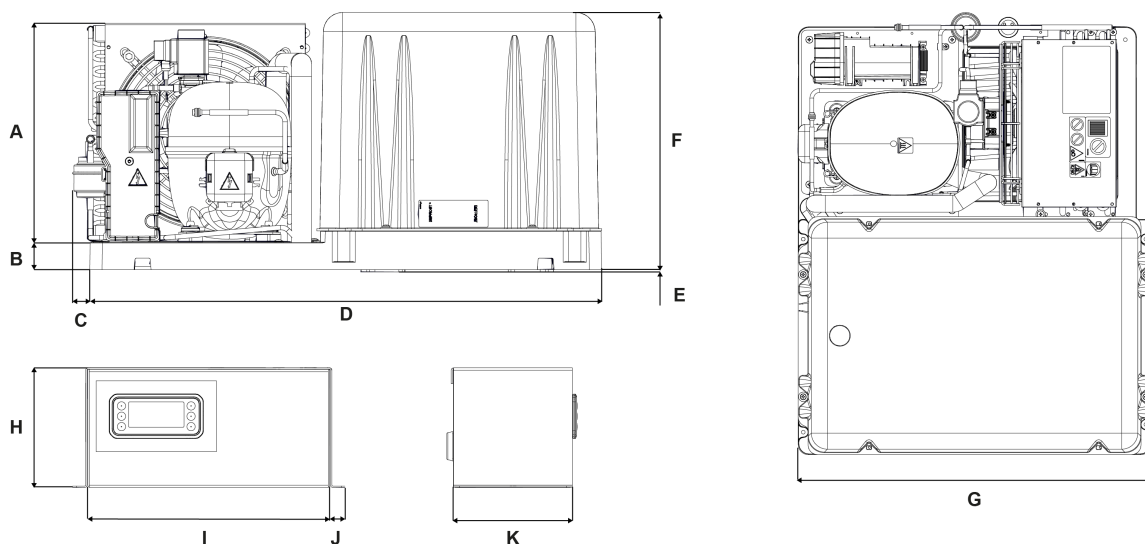
If the refrigeration unit has reached the end of its technical and operational life cycle, it must be scrapped. Correct recycling will help prevent potentially adverse consequences for the environment and people.

Scrap the the refrigeration unit 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.

At the end of the scrapping operations, make the identification plate of the refrigeration unit and the documentation unusable: contact Rivacold for their destruction if necessary.

9.2 Construction features

9.2.1 Refrigeration unit dimensions



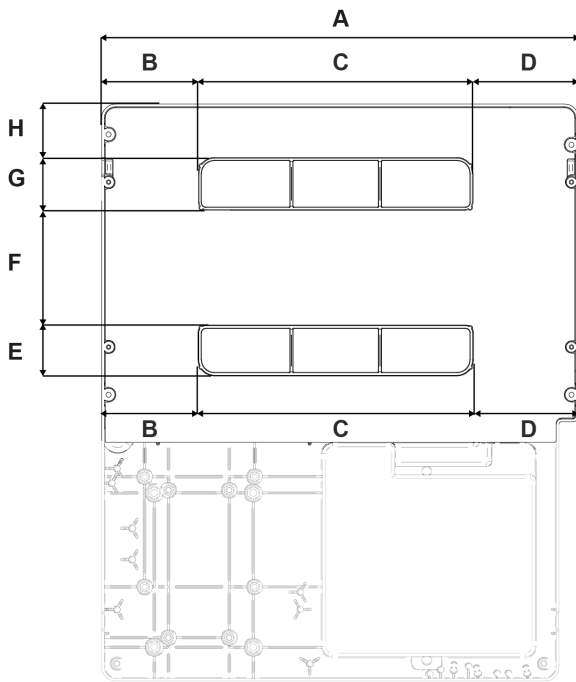
Dimension	Value (in)
A	•PRU-R290 - Low Temp: 284 •PRU-R290 - Medium Temp: 257
B	1.38
C	0.79
D	26.18
E	0.12
F	13.23
G	21.65
H	3.98
I	9.05
J	0.98

9.2.2 Weight

Model	Value (lbs)
PRU-R290 - Low Temp	66.14
PRU-R290 - Medium Temp	63.93

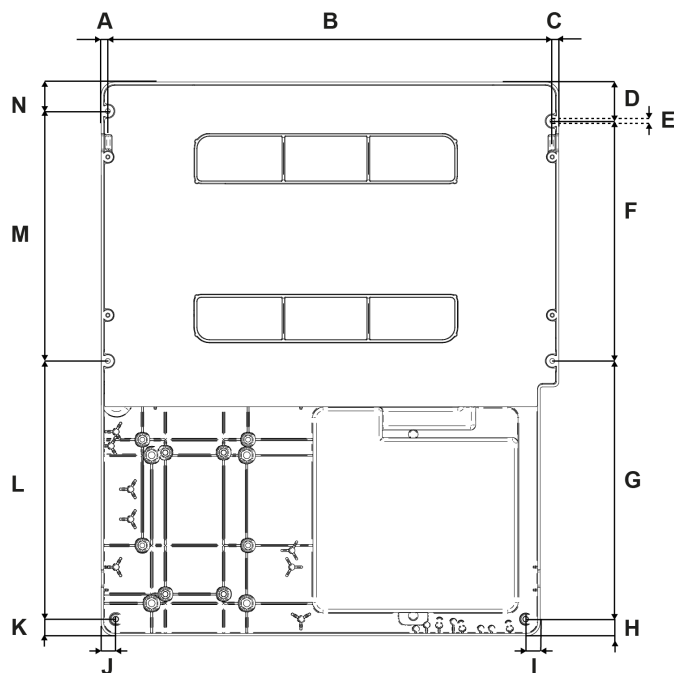
9.3 Assembly dimensions

9.3.1 Dimensions of the base openings



Dimension	Value (in)
A	21.65
B	4.41
C	12.48
D	4.80
E	2.28
F	5.24
G	2.40
H	2.44

9.3.2 Fixing dimensions of the base



Dimension	Value (in)
A	0.31
B	21.02
C	0.31
D	1.85
E (*)	0.24
F	11.34
G	12.20
H	0.79
I	0.69
J	0.69
K	0.79
L	12.20
M	11.81
N	1.38

Note (*): diameter of the 4 holes.

9.4 Technical data

9.4.1 Electrical data

	PRU-R290 - Low Temp	PRU-R290 - Medium Temp
Compressor power supply	115 V 1ph 60 Hz	
Power plug (NEMA)	5-15P	
Power consumption	351 W	330 W

	PRU-R290 - Low Temp	PRU-R290 - Medium Temp
Absorbed current	3.82 A	3.59 A
Maximum current	11.36 A	

9.4.2 Refrigeration circuit data

Refrigerant	R290
Refrigerant charge	≤ 5.29 oz
Refrigeration circuit	Sealed hermetically
Expansion unit	Electronic thermostatic valve
Defrost	Hot gas

9.4.3 Noise

	PRU-R290 - Low Temp	PRU-R290 - Medium Temp
Sound power (dBA)	57.9	58.2
Sound pressure at 3.3 ft (dBA)	49.9	50.2
Sound pressure at 32.8 ft (dBA)	29.9	30.2

9.4.4 Other data

	PRU-R290 - Low Temp	PRU-R290 - Medium Temp
Cold room temperature	-5.8°F	35.6°F
Working ambient temperature	41°F to 89.6°F	
Storage temperature	-13°F to 131°F	
Climate class	5	
Sound pressure	29.9 dBA	30.2 dBA

