CELLTHERM
Cold-storage cells ■ Coldrooms

Operating Instructions

Chiller and
Freezer Coldroom
and Accessories

CELLTHERM Isolierung GmbH
Am Buddenbrook 78
D-48599 Gronau-Epe

Identification data

Tool/Machine/System	
Model designation:	Chiller Coldroom and Freezer Coldroom and Accessories
Year of manufacture:	2019
Manufacturer's Address:	
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Operating instructions download link	www.celltherm.de/en/downloads/documentation/operating instructions.pdf
Operating Instructions:	
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1 Preface

1.1 Introduction

Thank you for choosing a CELLTHERM coldroom. You can be reassured that your CELLTHERM coldroom has been manufactured to the highest standards utilising the best design and technology currently abailable. To ensure that your investment stays in good condition during its long working life, please pay attention to the following notes.

The following operating instructions include all the information needed to operate the coldroom safely, properly and trouble-free. Your care and attention will help to avoid hazards, decrease repair costs and downtime and increase the reliability and service life of the coldroom.

The operating instructions must be continuously available and be read and applied by every person who carries out work on or with the coldroom.

Included here are, among other things

- operation and removal of faults in operation,
- service (care, maintenance, service),
- transport.

1.2 Author and protection rights

- Make these operating instructions accessible to authorised persons only.

The operating instructions are protected as specified by copyright law.

The forwarding and copying of documents, also excerpt-related, as well as any utilisation and communication of their content, are not permitted insofar as permission is not granted explicitly in writing.

Contraventions are liable to penalty and oblige to damage restitution. All rights related to the practice of industrial property rights are reserved to Celltherm Isolierung GmbH.

1.3 Information for the operator

The operating instructions are a significant component part of the coldroom.

- Ensure that all persons who work with or on the coldroom take note of these operating instructions.
- Spare parts must correspond to the stipulated technical requirements of Celltherm Isolierung GmbH. This is always guaranteed in the case of original spare parts.

2 Safety

The coldroom is developed and built according to the state of the art of the technology and the recognised safety-technical regulations.

During operation, hazards may arise for persons who work with the coldroom, or impairments of the coldroom or real properties occur, when it

– is not operated by trained or instructed personnel,
– is not used according to specification and/or
– is maintained improperly.

2.1 Notes on signs and symbols

In the operating instructions, the following designations, characters and symbols are used for particularly important specifications:

- With the bullet point, work and/or operating steps are identified. Carry out the steps in sequence.

– Enumerations are identified with a stroke.

DANGER

This is a warning of a direct threat that could lead to death or to very severe injuries to persons if the designated instruction is not followed in exact sequence.

WARNING

Draws attention to a possibly dangerous situation that could lead to very severe injuries to persons or to death if the designated instruction is not followed in exact sequence.

CAUTION

This is a warning of a possible danger situation, which could result in medium or slight injuries if the designated instruction is not followed exactly.

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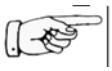
NOTE

This is a warning of a possible danger situation, which could result in material damage if the designated instruction is not followed exactly.



This is an indication of useful information on safe and proper handling.

- Note the warning identification plates, actuation signs or component part identification codes attached to the coldroom. They may not be removed - the operator is responsible for this.
- Always keep these notes and symbols in a completely legible status.

2.2 Utilisation according to specification

The coldroom is determined to keep the embedded products at a certain temperature.

- Consider the specifications in Chapter 3, Section *Technical data*. It is absolutely necessary to adhere to these specifications.

Included in utilisation according to specification is adherence to the notes

– on safety,
– on operation and control,
– on service and maintenance,

which are described in these operating instructions.

Any other use or additional use is considered as not according to specification. The operator alone is liable for damage resulting from this. This applies also for arbitrary changes to the coldroom.

2.3 Reasonably foreseeable faulty application

The following procedures, designated as examples, are considered as not according to specification:

– The utilisation and/or processing of explosive materials.
– Operation of the coldroom in explosion-hazardous atmosphere.
– Operation of the coldroom without safety devices completely attached.
– Use by private user without specialist instruction and training.
– The storage of explosive or easily inflammable materials in the environment of the coldroom.
– The installation of the coldroom in unprotected rooms or halls exposed to weather.

2.4 Residual risk

Also in case of observation of all safety regulations, a residual risk remains with regards to the operation of the coldroom as described below.

- As company / operator, ensure that all persons who work with the coldroom know the residual risks.
- Follow the instructions to ensure that residual risks do not result in accidents or damage.

With the set-up and equipping work, it can be necessary to dismantle protective devices on structural ground. Therefore different residual risks and danger potentials arise, which every operator must be aware of:

DANGER

Danger to life through electric shock

An electric shock can result in fatal injuries.

- **Before all repair, set-up and maintenance work, disconnect the coldroom from the mains electricity supply by turning off the circuit breaker or isolator.**
- **Secure the coldroom against unintentional switching on.**
- **Lock the isolator and set up warning signs.**
- **In addition, activate an Emergency Stop button.**

WARNING

Frostbite possible!

Spending time in the freezer coldroom with operation below 0°C may cause frostbite to the hands, feet and head.

- **The freezer coldroom may be entered only with cold-protection clothing, as well as closed shoes with anti-slip soles.**
- **There may be no skin contact with cold metal surfaces.**
- **The freezer coldroom must be closed and locked only when it has been checked that no persons are present in the freezer coldroom.**

If the refrigeration unit is supplied with the delivery (option):

WARNING

Incorrect handling of the refrigerant can lead to serious injuries to health!

Vapours are heavier than air and can lead to suffocation through displacement of the oxygen in the air.

Rapid evaporation of the liquid can cause frostbite.

Misuse or deliberate inhalation can be fatal due to effects on the heart, without any warning symptoms.

It can cause heart rhythm disturbances.

- **Consider the safety data sheet of the refrigerant.**
- **It is absolutely necessary to follow the notes on safety included in this.**

2.5 Safety concept

The safety concept provides for movable or fixed protection equipment. Basically, the following applies:

– Separating protective safety devices can only be removed by tools.
– Mobile protective safety devices must be secured in order to stay in shutdown mode.
– Fastening agents must be captive-connected with the protective safety devices.

The fastening agents are selected in a way, that it is not possible to remove switches or actuation agents for locked protective devices with tools such as:

– Objects in daily use, such as keys, adhesive tape, string or wire,
– Replacement panels or key for interlocking equipment with key transfer systems,
– Tools which are easy available, but required for machines / facilities, such as screwdriver and wrench, hexagonal wrench and pliers.

This is to prevent to bypass the protective safety device.

The following safety measures apply particularly in case of freezer coldrooms with an operating temperature below 0°C.

Access Doors

Access doors are usually manually-operated; they are not power-operated. The installation is implemented according to the manufacturer's specifications.

Power-operated sliding doors

These doors are purchased as a complete system at a third party manufacturer, including switch-off strip and control.

The installation is implemented in accordance with the manufacturer's specifications.

Opening of doors

In order for the coldroom to be left at any time, the access door can be opened from inside and outside. Escape and access paths must always be kept free and not be closed off under any circumstances.

Emergency switch or emergency signal

In coldrooms with more than 10 m² floor area, the following devices are required:

– Signalling equipment with independent power supply **or**

– Markers of long, light-persistent material.

In freezer coldrooms with more than 20 m² floor area, the following devices are required in addition:

- Emergency call equipment in door proximity, which activates an acoustic and visual signal. The signals are activated at a location where the presence of a person is ensured during period of use. The alarm signals can be switched off only by intervention at the triggering location. The emergency call equipment is identified and provided with a tripping device which extends to the ground.

If the floor area is larger than 20 m² and smaller than 50 m² and the room temperature is lower than -10°C :

- Emergency call equipment is not required if a minimum of two doors lead from the freezer coldroom into a secure area.

If the floor area of a freezer coldroom is larger than 100 m² it must be ensured that the exit can be found by independent emergency lighting **and** markers of long, light-persistent material, even in case of switched-off or failed lighting.

2.6 Identifications and signs on the coldroom

The manufacturer attaches the following signs:

Sign	Meaning	Attachment location
	Rating plate with the specifications: – Name and complete address of the manufacturer – Type / Designation: – Order No.: – Year of manufacture: – CE mark - if the refrigeration unit is supplied	Easily legible on the coldroom
	**Admissible rack loading**	On the rack
The operator attaches the following signs:		
	Use hand protection	On the access door to the chiller and freezer coldroom.
	Use protective clothing	
	Admission prohibited to unauthorised persons	On the access door to the coldroom.
	Warning of low temperature/frost	On the access door and in the freezer coldroom – to be attached by the operator
	Description of the emergency unlocking (from the supplier of the door)	Emergency unlocking explained in a suitable way on the inside (e.g. graphic symbol)
	Emergency call equipment	Emergency call equipment is suitably identified as such
The installer of the electrics attaches the following signs:		
	Warning of dangerous, electrical voltage	Signs on all terminal boxes, switch boxes and switchgear cabinets for low voltage.

Sign	Meaning	Attachment location
	Connecting point identification of the outside protective ground conductor	Protective ground conductor connection terminal
	Protective ground terminal	Adjacent to the grounding screws
	**Warning!** **Even in case of switched off mains disconnection unit, voltage is present at the marked locations!!** (in the language of the user country)	In the switchgear cabinet

2.7 Notes on safety for the operating personnel

Every person who is instructed to work on or with the coldroom must have read these operating instructions completely and must have understood them.

- Use the coldroom only in technically trouble-free status and according to specification, with awareness of safety and hazards, subject to observation of these operating instructions.

No liability is assumed for damage and accidents which arise from non-observance of the operating instructions.

- Eliminate all faults immediately.
- Keep the operating instructions continuously available. Download at: www.celltherm.de/en/downloads/documentation/instruction manual.pdf
- Wear the personal protective equipment, which consists especially of safety shoes, protective goggles and protective gloves.
- Tie back and secure long hair, loose clothing or jewellery. The hazard of catching, pulling in or impact exists near moving parts.
- If you make safety-relevant changes to the coldroom, shut the coldroom down immediately and secure it.
- Report the procedure to the responsible agency / person.
- Only reliable, trained and tested personnel may work on or with the coldroom. Personnel must have the legally admissible minimum age according to the health and safety regulations for minors.
- Untrained or uninstructed personnel is only allowed to work on or with a coldroom under the continuous supervision of an experienced and well-trained person.

2.8 Notes on safety for maintenance personnel

2.8.1 Preparation of the maintenance work

For the implementation of maintenance work, workshop equipment appropriate for the task is required.

- Carry out equipping, maintenance and service work, as well as fault searches, only with coldroom switched off.
- Secure the maintenance area as far as necessary with a red-white barrier tape and a warning sign.
- In particular, clean connections and screw fittings from contamination or cleaning agents before beginning the maintenance, repair and care work.

2.8.2 Implementation of the maintenance work

- Never remain below suspended loads.
- Fix and secure individual parts and large assemblies carefully on the lifting gear during replacement, so that any hazard is minimised. Use only suitable and technically trouble-free lifting gear and load-carrying support with sufficient load-bearing capacity.
- Always tighten loosened screw fastenings in case of maintenance and service work, possibly with a torque wrench according to specification.
- Ensure secure and environmentally-protective waste disposal of operating, auxiliary materials and replaceable items as described in Chapter 7.

2.9 Notes on special danger types

2.9.1 Electrics

Work on the electrical equipment of the coldroom may be carried out only by an electrical specialist or by instructed personnel under the supervision of an electrical specialist, in accordance with the electrotechnical regulations.

- Before opening the switchgear cabinet, switch off the coldroom at the mains isolator.
- Secure the coldroom against restart with a safety lock.
- Switch free of voltage electrical component parts, on which inspection, maintenance and repair work is to be implemented.
- Use only original fuse protections with prescribed amperage.
- Secure the operating equipment, which have been isolated, against unintentional or automatic restart (i.e.keep screw-in fuses inaccessible, block disconnecting switches etc.).
- If you test the voltage-free status in the case of isolated electrical component parts, first insulate adjacent component parts under voltage.
- In case of repairs, take care that construction-related features are not changed with safety-reducing effect (e.g. do not reduce creepage distances and air clearances, as well as separation distances, by insulation).

When working on live component parts (only in exceptional situations!), the following is required:

- Use an additional person who can activate the Emergency Stop button or the mains disconnection unit in an emergency.
- Use only voltage-insulated tools.

Trouble-free grounding of the electrical system must be guaranteed by means of protective ground conductor systems. In case of a leakage current to ground (PE) >3.5 mA, a fixed installation is required.

- Check cables regularly for damage.

- Exchange defective cables immediately.

For further information, see also Chapter 6.2.4 Safe maintenance of electrical devices.

2.9.2 Coldrooms

- You may not close or lock the coldroom until you have determined that nobody is in the room.

Persons who are occupied in the coldroom must wear clothing which offers sufficient protection against the cold. If necessary, the operator makes special cold protective clothing available.

- Select the clothing according to temperatures, dwell times and the occupation type. With temperatures above -5°C, normal working clothing with warm underclothing can be sufficient. With lower temperatures, special cold protective clothing is also required for face, hands and feet.
- Do not carry out any work where fire or sparks can arise.

The operator

– stipulates stay duration and times for the operators in workplace-related hazard assessments

– ensures that persons who are exposed to the hazard of undercooling are monitored at regular intervals.

– ensures that persons in rooms with temperatures below -25°C remain no longer than two hours without a break. After that, persons must remain a minimum of 15 minutes for warming up outside of a freezer coldroom.

- In the case of impairment to the effectiveness of the cold protective clothing with special work, (e.g. repairs), remain a shorter time inside the coldroom.
- Select shorter dwell times in this case, even with higher temperatures, in order to avoid any health-endangering influence through cold.

2.9.3 Raw materials, solvents, oils, greases and other chemical substances

- With the handling of raw materials, solvents, oils, greases and other chemical substances, note the specifications applicable and the safety data sheets of the manufacturers of these materials concerning storage, handling, employment and waste disposal, and adhere to these.
- All work with corrosive cleaning agents and substances can cause serious corrosive effects and eye injuries!

- Therefore wear personal protective equipment in case of all work with chemical substances:
  - Protective goggles,
  - Protection gloves,
  - Protective clothing resistant against these substances,
  - Safety shoes.
- In case of eye or skin contact, flush the spot affected immediately with a lot of water. Suitable facilities (eye-wash bottles, washbasins, showers) must be in workplace proximity when handling the above-designated substances!
- After washing, care for the stressed skin area using cleaning and disinfection agents. By the preventive application of skin protection agents and suitable skin care, skin damage can be avoided.
- Select the applicable cleaning agent depending on the contamination level and the individual quality of the skin. Grease-content cleaning agents come into consideration.
- Do not eat, drink or smoke and never keep food in rooms in which chemicals are present!

2.9.4 Noise

The A-rated equivalent continuous sound pressure level at the operator workplaces with normal operation of the coldroom must stay below 70 dB(A).

- As an operator, equip the operating personnel with adequate protective equipment if a higher acoustic pressure level cannot be avoided in the proximity of the coldroom.

2.9.5 Vibration

The vibration total value to which the upper body limbs are exposed must not be above 2.5 m/s^2.

3 Product description (Example for PUR 80 mm)

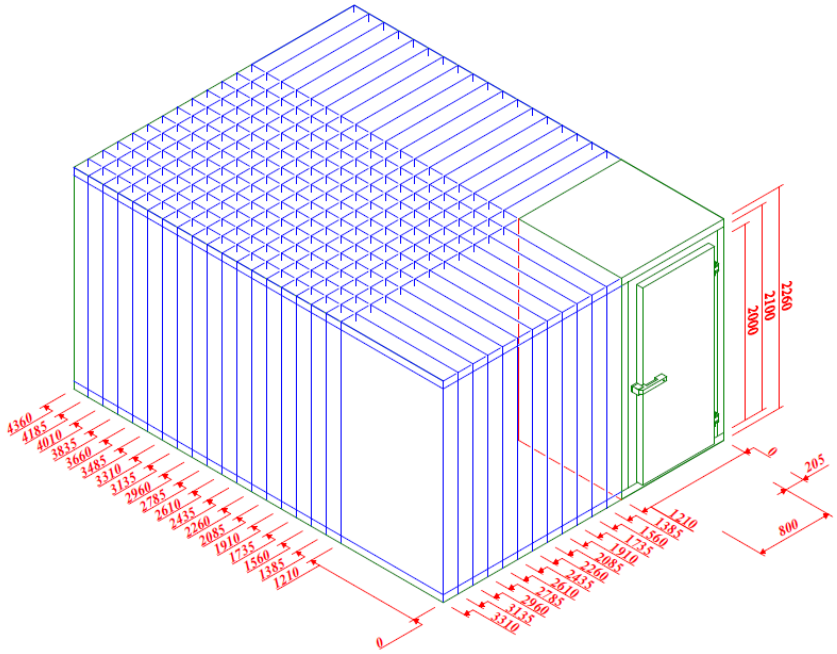


Illustration 1 Chiller Coldroom

The coldroom is cooled to the required temperature with a refrigeration unit specially tailored to it.

The products to be cooled are brought into and taken out the coldroom manually by the operator via the access doors

.

Consider admitted loads in kg, as specified by the employers' liability insurance association:

	Frequency of lifting and carrying			
	Sometimes		More frequently	
Age	Women	Men	Women	Men
15 to 18 years	15	35	10	20
19 to 45 years	15	55	10	30
Older than 45 years	15	45	10	25

Floors provided by the operator or existing floors are implemented slip-proof and suitable for the climatic conditions in the coldroom.

Components of the refrigeration unit attached outside must be sufficiently ventilated.

The coldroom consists of:

- Insulating panels, different dimensions and insulation thicknesses
  - Floor panels (optional, occasionally structural ground)
  - Wall panels
  - Ceiling panels
  - Door frames
- Possible access elements (optional)
  - Revolving door, manual
  - Hatches, manual
  - Sliding door, manual or power-driven
  - Swing door
  - Sectional gate, manual
  - Rolling gate manual,
- Refrigeration unit (third party supplier)
- Lighting (optional)
- Emergency lighting (optional)
- Alarm switch (optional)
- Partition walls (optional)
- Shelving system (optional)
- Temperature monitor / data logger (optional)

3.1 Modules of the Coldroom

Detailed specifications of the individual modules and accessories of the coldroom can be found in the product documentation under www.celltherm.de/en/downloads/documentation

3.1.1 Shelving system (optional)

The shelving system is adapted to the dimensions of CELLTHERM coldrooms.

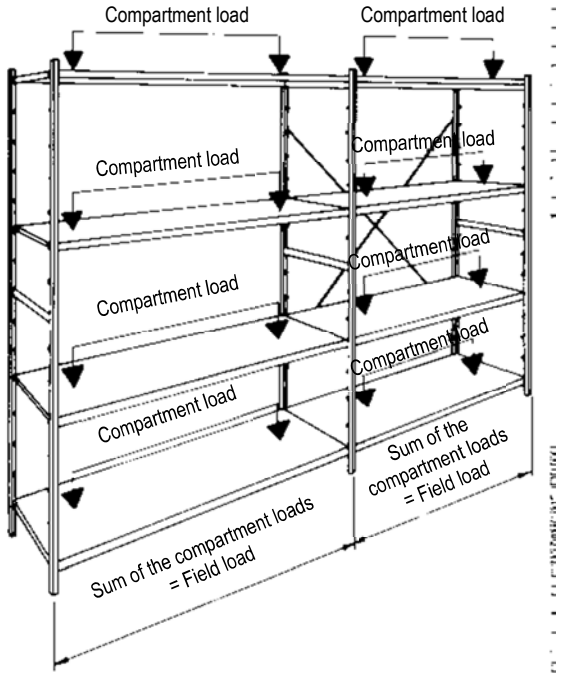


Illustration 2 Shelving system (example)

The load bearing capacity at load uniformly distributed:

Grated shelf supports:

600 - 1200 mm wide	150 kg
1250 - 1500 mm wide	100 kg

Solid shelf supports:

600 - 1000 mm wide	150 kg
1200 - 1500 mm wide	100 kg

3.1.2 Refrigeration Unit (option)

Coldrooms can be supplied with a refrigeration unit on request. The refrigeration unit is purchased as a complete unit (ready-to-plug in). The components attached to the outside of the coldroom must be ventilated sufficiently. For the installation, dismantling and maintenance of the refrigeration unit, read these notes.

DANGER

Danger to life through electric shock

The refrigeration unit is an electrical device. An electric shock, e.g. through incorrect connection, can cause fatal injuries.

- **Have the refrigeration unit connected by a specialist only.**
- **Before all repair, set-up and maintenance work, disconnect the unit from the mains supply.**
- **Secure refrigeration unit against unintentional switching on.**
- **Lock the mains isolator and set up warning signs.**
- **In addition, activate an Emergency Stop button.**

WARNING

Incorrect handling of the refrigerant can lead to serious injuries to health!

Vapours are heavier than air and can lead to suffocation through displacement of the oxygen in the air.

Rapid evaporation of the liquid can cause frostbite.

Misuse or deliberate inhalation can be fatal due to effects on the heart, without any alerting symptoms.

It can cause heart rhythm disturbances.

- **Consider the safety data sheet of the refrigerant.**
- **It is absolutely necessary to follow the notes on safety included in this.**

3.2 Electrics

The coldroom is connected to the electrical utility energy supply. With a mains circuit breaker, the coldroom can be disconnected from the electrical utility energy supply.

3.3 Technical data

Please find the technical data in the order documentation.

4 Transport and installation

4.1 Transport

This coldroom was manufactured by Celltherm Isolierung GmbH. The delivery is implemented on pallets on which the panels of the coldroom are stacked separately.

WARNING

Life-threatening bruises may arise in case of unprofessional handling of the pallets

As a result of inappropriate lifting and transporting of the pallets, the pallets can tilt over and fall down.

- **Lift and transport the pallets only with a suitable floor conveyance vehicle or crane! The admissible support load of the floor conveyance vehicle or crane may not be exceeded.**
- **Never remain below suspended loads.**
- **Use only anchoring means which are technically trouble-free.**

4.1.1 Transport with the floor conveyance vehicle

DANGER

Life-threatening bruises may arise while transporting the panels of the coldroom

As a result of inappropriate lifting and transporting of the panels, the components can tilt over and fall down.

- **Lash the panels of the coldroom to the floor conveyance vehicle in order to avoid the hazard of falling over.**
- **Never remain below suspended loads.**

For the transport of the coldroom panels, the following floor conveyance vehicles are admissible:

– Roller pallets,
– Forklift and
– Pallet truck.

- Prevent contact of the components of the coldroom with the lift frame of the floor conveyance vehicle.
- For this purpose, place spacer wood pieces between the components and the lift frame.
- Avoid hard impacts when setting down the coldroom.

4.2 Installation

DANGER

Life-threatening injuries possible.

As a result of inappropriate installation, persons can suffer an electric shock, chemicals can discharge, hoses can burst and persons can be burned or scalded.

- **As operator, have installation work implemented only by specialist personnel trained for that.**
- **Make sure the floor quality in the work and traffic area is appropriate.**
- **Floor level must be evenly accessible, conduits laid deep and covered, trip-up locations marked in yellow.**

- During installation, keep to the following access separation distances:
  - minimum 600 mm, better 800 mm
  - in case of passages with traffic of more than one person, minimum 1000 mm
  - Exception for short distance minimum 500 mm
- Consider the minimum penetration passage height for the transport route, to ensure sufficient headroom
  - ≥ 2100 mm
  - Exceptions on fixed ceiling joists in the building ≤ 1900 mm
- Pad and mark the head-impact spot
- As operator, possibly make available hoisting aids
- Insulate steam and condensate lines

The supply with electric current and cooling/process water must be ensured by the operator.

- Check the scope of delivery based on the pack item lists enclosed to the coldroom.
- Make a complaint about possibly missing parts, giving precise information in accordance with the pack item list.
- Set up the coldroom (see 4.2.2).
- Consider the operating voltage.

You can take the operating voltage and the fuse protection of the supply line from the electrical plan and the rating plate on the switchgear cabinet.

You can find the cross-section of the required electric lines in the schematic, as well as the electrical plans.

- Implement the electrical installation according to the specifications valid locally.

- Check all couplings, switch-off equipment, etc.
- Avoid reflections and dazzle on the visual display units at the installation locations.

4.2.1 Safety systems

- Secure the discharge openings of the removal lines so that no hazards can arise for persons and goods.
- Keep to the valid official safety directive in any case.

4.2.2 Preparations

- Check by means of the delivered coldroom plan whether all items were delivered. Every individual panel is numbered ex-works according to the following code:

Designation	Meaning
W =	Wall panel
WE =	Wall-corner panel
WEE =	Wall-corner-corner panel
WO =	Wall panel for coldroom without floor
BK =	Floor panel complete
BM =	Middle floor panel
BE =	Floor panel end/start
BEO =	Floor panel above/end/start
BEM =	Floor panel middle/end/start
BEU =	Floor panel below/end/start
BMO =	Floor panel middle/above/below
BMM =	Floor panel middle/middle
DK =	Ceiling panel complete
DM =	Ceiling panel middle
DE =	Ceiling panel end/start
DEO =	Ceiling panel above/end/start

Designation	Meaning
DEM =	Ceiling panel middle/end/start
DEU =	Ceiling panel below/end/start
DMO =	Ceiling panel middle/above/below
DMM =	Ceiling panel middle-middle

Additionally indicated in this code is the panel-specific number, with specification of the insulation thickness and panel width/height.

4.2.3 Installation process flow

- Basically assemble from inside to outside. The corner panels are an exception, which can also be mounted from outside to inside.
- Connect the foamed-in, eccentric fasteners firmly with each other using the supplied 8 mm hexagonal wrench, where light hammer blows on the hexagonal wrench facilitate the bedding of the key.

Check first whether the coldroom fits into the structural room as planned (also consider the inside height!) and whether all coldroom parts are complete.

In case the coldroom is mounted inside a building, an open space around the coldroom of min. 80 mm is recommended by Celltherm Isolierung GmbHas wall distance between coldroom and brickwork.

- Make sure that in this open space the air does not stand still, rather that it circulates in order to remove any occurring moisture.

4.2.4 Structure

- Always begin with the installation of the floor panels.
- In case of coldrooms without floor, first fix the U-profile on the structural ground.

4.2.5 Cells without floor panels

Floors provided by the operator or existing floors must be implemented slip-proof and suitable for the climatic conditions in the coldroom.

The supplied U-profile receives the wall panels.

- Check the evenness of the ground with spirit level.
- In case of irregularities, determine the highest point.
- Begin the compensation work from here. The U-profile must be absolutely even in order to prevent problems during the installation of the coldroom.
- First fix the U-profile flat on the structural ground.
- Bring the individual panels to complete flatness by under-filling as necessary.
- Ensure that all angles meet at 90° and that the U-profile is anchored with the structural ground every 30 to 40 cm.

4.2.6 Coldrooms with floor panels

4.2.6.1 Installation instruction for coldrooms with under-ventilation rings

Preparation for installation

With delivery of the coldrooms, the under-ventilation rings are enclosed loosely. They are made of plastic with an outside diameter of 210 mm and a bore in the middle with diameter 5 mm.

- With the installation, ensure the bead on the upper side of the rings is the placement surface for the coldroom floor. The structural surface the coldroom is mounted on must be completely flat and free from excess materials.

- Record the corners of the coldroom on the planned mounting surface.
- Level out the relevant structural ground, the coldroom is mounted on, before installation, and identify the highest point.

Mount the plastic rings at the highest point as follows:

- Place the plastic ring at the highest point.
- Drill a hole into the structural ground through the clearance hole with suitable drill of 5 mm.
- Slide a suitable dowel (S5) into the bore into the structural ground through the clearance hole of the plastic ring.
- Fix the plastic ring with a nail or with a countersunk screw.
- Align the remaining plastic rings according to the plastic ring at the highest point.
- Mount them as described before.
- Compensate for differences by placing shims or similar suitable material.

- Lay out the plastic rings in accordance with the following drawing. The maximum separation distance ring to ring (outside diameter) may not exceed 600 mm in this case.
- Place the coldroom floor onto the aligned plastic rings, and mount the coldroom in accordance to the installation instruction.

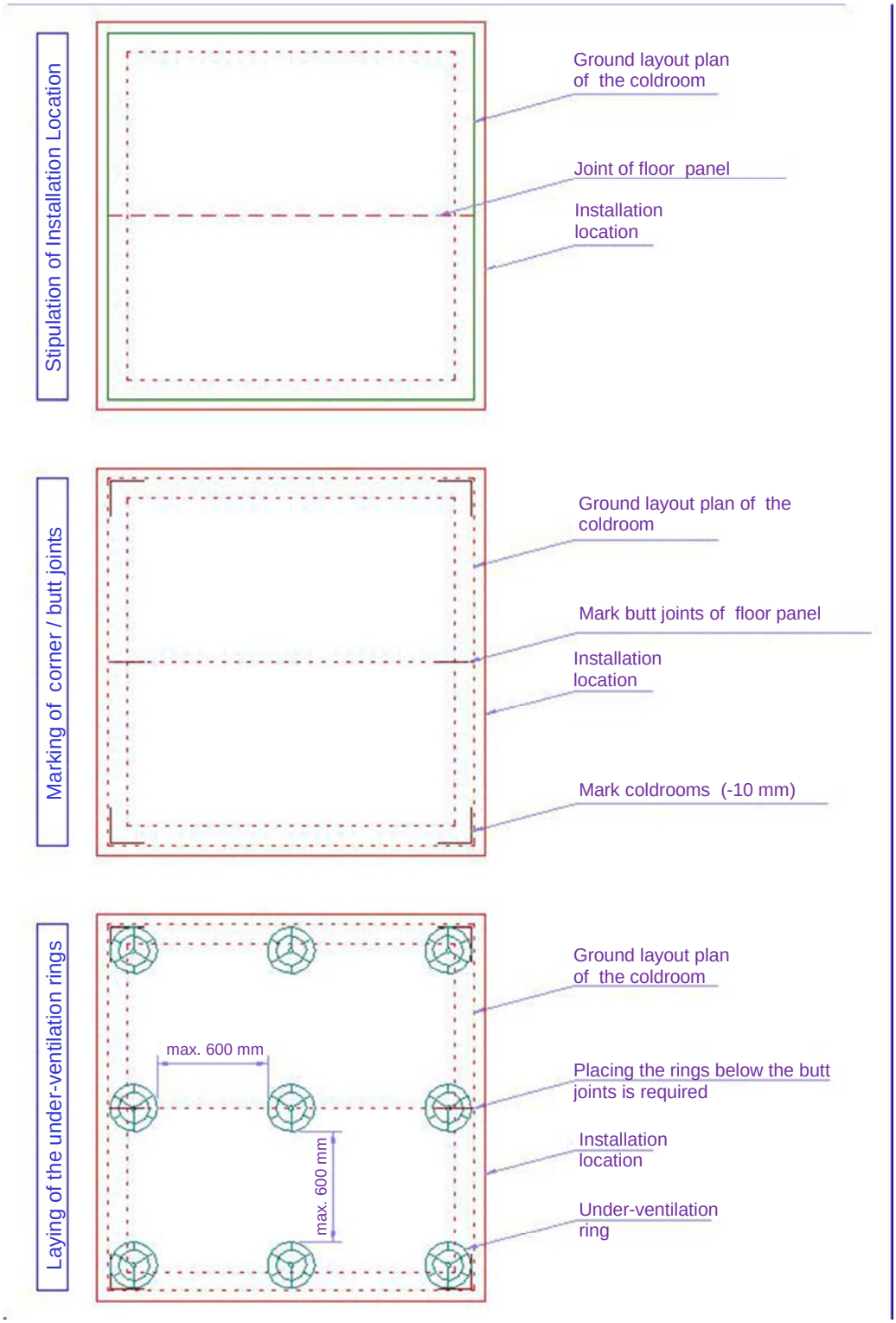


Illustration 3

4.2.6.2 Installation instruction for coldrooms without under-ventilation rings

Celltherm Isolierung GmbH basically recommends the under-ventilation of the coldroom by means of under-ventilation rings.

Consider the following instructions for the installation of coldrooms without under-ventilation rings:

- Mark the contour of the coldroom with felt-tipped pen or chalk on the structural ground of the installation location.
- Consider the separation distance of the wall panels to the brickwork of the installation room (min. 80 mm all around).
- Ensure that the structural floor is load-bearing, completely flat and levelled.
- It is absolutely necessary to smooth out irregularities in the structural ground.
- Begin the installation of the floor panels with the front side of the coldroom (viewed from the access side). After that, the installation of the floor panels follows according to the coldroom layout plan.
- Tighten the camlocks clockwise to the stop by means of the supplied 8-mm hexagonal wrench.
- As soon as the floor panels are assembled, check their horizontal position with the spirit level again. Possibly place wedges.
- First set the partition wall, after that that, the side wall panels.

4.2.6.3 Installation of the wall panels

- Mount exactly according to coldroom layout plan!
- Always proceed from inside to outside. Celltherm Isolierung GmbHrecommends to begin with the left front corner and to work to the right in sequence: left wall - back wall - right wall.
- In case of the corner panels, tighten the outside camlocks clockwise.
- As soon as these walls are standing, continue with the installation of the left front side and the door.
- Pay attention to uniform, continuous joint pattern between the panels.

In case of coldrooms with inside height of greater than 330 cm, two or more panels are placed one above the other. The lower panel ring must have been mounted completely before the second ring of wall panels can be added.

If outside dimensions of the coldroom are close to the dimensions of the building's room, basically pre-assemble the two rear corners first, and slide these backwards as a completely finished corner!

Important, as the corner connections consist of two camlocks which only can be locked from outside.

4.2.6.4 Installation of the ceiling panels

Ceiling without ceiling support

- Consider the sequence of the panels; see coldroom layout plan.

Coldrooms with ceiling support (outside ceiling carrier)

- Mount the ceiling panels according to coldroom layout plan.
- Set the console on the coldroom ceiling according to plan.
- Insert the ceiling carrier into the console,
- Test for secure seating.
- Fix the ceiling panels to the ceiling carrier with the fastening material according to plan.
- Consider minimum separation distances to the panel seams of 100 mm.

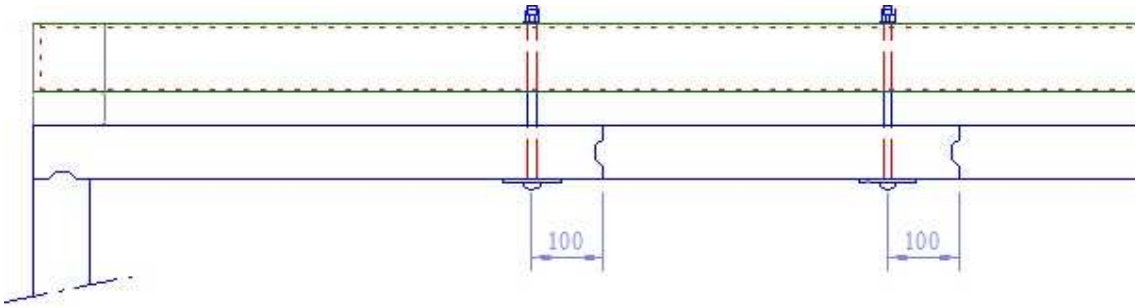


Illustration 4 Example: Outside ceiling carrier

Coldrooms with ceiling support (inside ceiling carrier)

- Set the console on the wall panels according to coldroom layout plan.
- Rivet the consoles with the wall panels (pre-drill 3.5 mm diameter).

The minimum separation distance between the fastening holes and the vertical joints must be 40 mm.

- Insert the ceiling carrier into the consoles and check for secure seating.
- Mount the ceiling panels over the ceiling carrier according to plan.

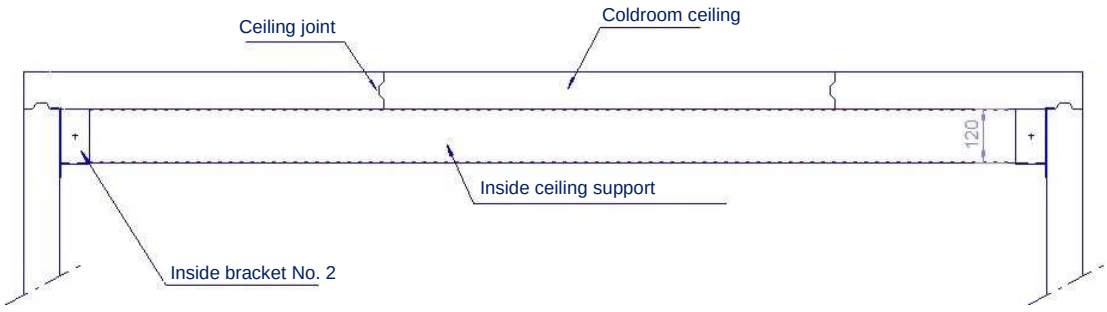


Illustration 5 Example: Inside ceiling carrier

Coldrooms with ceiling support (ceiling suspension)

- Check the load-bearing capacity of the structural roof before the coldroom installation!
- Check further whether the delivered fastening material is fit for the material of the structural roof on site (e.g. strike anchor for concrete pavement).
- Mount the ceiling panels according to coldroom plan.
- Place the mounting rail on the coldroom ceiling according to plan and fix it.
- Then mount the individual parts of the ceiling suspension acc. to Illustration 6
- Connect these with the mounting rail.

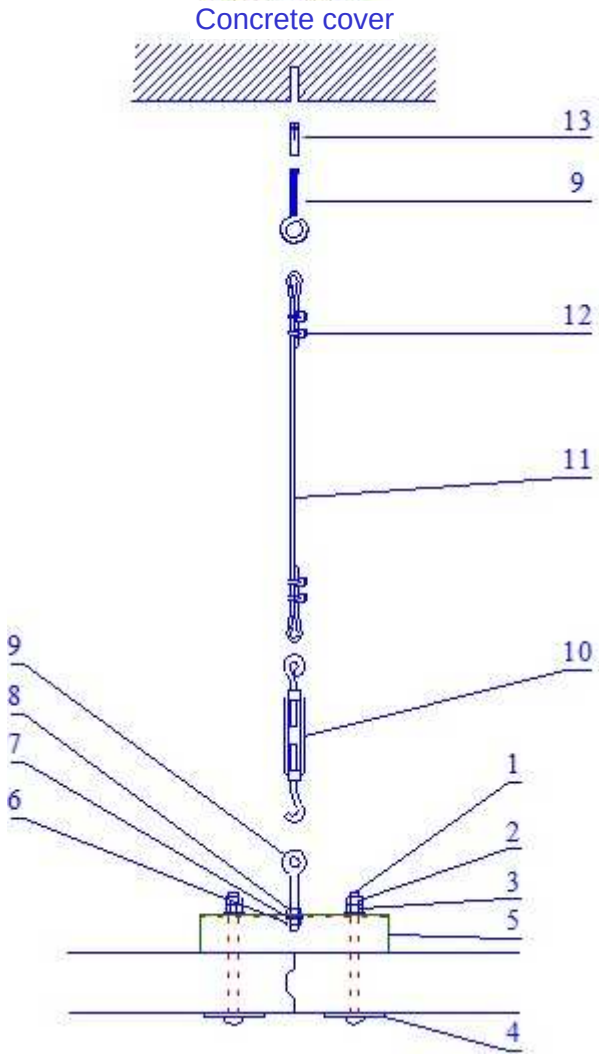


Illustration 6 Example: Schematic ceiling suspension in concrete cover

Item	Quantity	Designation
1	2	Nylon bolts
2	2	Counter nut

Item	Quantity	Designation
3	2	Hexagon nut
4	2	Square taper washer
5	1	Mounting rail
6	1	Hexagon nut
7	1	Square taper washer
8	1	Hexagon nut
9	2	Eye bolt
10	1	Clamping part
11	1	Steel cable
12	4	Steel cable clamp
13	1	UPAT strike anchor

Special accessory

Separate installation information is supplied for roll and sectional gates, for sliding doors, glass doors, swing doors or doors with special dimensions.

Remarks

- Avoid scratches, remove the protective foil only immediately before operational start-up of the coldroom.
- If unpacked meat is stored in the coldroom, as operator you must point the joints with silicon caoutchouc.
- Do not forget the pressure relief valve for freezer coldrooms (attention, electrical connection)!
- Use the delivered close-off plugs, white for walls and ceilings, grey for stainless steel and reinforced plastic coated floors.

4.2.6.5 Installation instruction for coldrooms with heavy-duty, load-bearing floors

Proceed with great care on installing this floor design. After the coldroom has been mounted including the floor panels, the upper cladding of the coldroom floor must be laid. Basically the pressure distribution plate, already foamed to the panel in the factory, may not be soiled. CELLTHERM recommends to cover the floor panels with a suitable material during further coldroom installation.

For the final installation, the floor must be clean, dry and dust-free.

Always install the stainless steel-plates according to the delivered layout plan. Basically begin at the back wall and work in rows to the door (similar as in case of a laminate floor).

- It is absolutely necessary to consider a gap of 3.0 mm between the stainless steel floor cladding and the surrounding coldroom walls. The pressure distribution plates must be completely dry when being laid.

Below are the sequences of the activities:

- Clean the pressure distributor plate, and remove dry contamination and dust.
- Clean the stainless steel plate on the bottom side with **cleaner Sika 205** which is part of the delivery.
- Have the stainless steel plate de-aerated.
- Begin with the first stainless steel plate at the back wall of the coldroom according to layout plan (consider 3.0 mm gap to the coldroom walls).
- Apply the delivered **adhesive Sika 228** over the full surface of the stainless steel cladding with a grooved trowel.
- Bring the plate up to the planned position. Only in the freshly laid status can the plate still be aligned.
- Place the individual stainless steel plates to each other in a jointless way.
- Install all the other plates until the row is done.
- Before installation of the next row, you must additionally screw the stainless steel plates, which have already been laid, through the adhesive. The holes are predrilled in the stainless steel plates, and the wood screws are part of the delivery.
- Ensure the screws are installed straight in order to avoid protrusions.
- Strip off emergent adhesive between the plates and after installation post-clean with **cleaner Sika 205.**
- Install further rows to the door as described, and fix them.
- Likewise install the door sill last in the area of the door frame, and fix it as described.
- Finally seal the surrounding gap between stainless steel plate and coldroom walls with **sealant Sika 221 grey.**

4.2.7 Outside installation of a CELLTHERM coldroom

In case of an out-door installation, it must be ensured by local construction measures (roofing and side wall) that the coldroom is not exposed to climatic influences (snow and wind loads). The ground floor must be suitable and sufficiently load-bearing.

It is absolutely necessary to consider the following special features for the installation:

Before installation, please remove foil from both sides of the panels.

Apply **sealant Sika 221 white** on the panels' joints before assembling the panels.

Pull the panels together.

Pull surplus sealing material off on both sides.

Seal the coldroom with silicone on the inside and with **sealant Sika 221 white** on the outside.

This applies for all panel joints.

Installation work in the outside area can basically be carried out in dry weather only.

5 Operation

Every person involved in the operation, maintenance and repair of a coldroom must have read thoroughly and understood this Chapter 5 "Operation".

5.1 Safe operation

Work on the chiller coldroom may only be implemented by trained and/or instructed personnel. In case of use not complying to specification, hazards can arise to life and limb.

The chiller coldroom may only be operated by authorised, suitable specialist persons.

A person is a suitable specialist and consequently able to meet the required personal prerequisites for the activity when this person is able to assess and implement the work transferred and to identify possible hazards independantly on the basis of specialist training, knowledge and occupational experience, as well as knowledge of the accident prevention and occupational health and safety specifications.

- Use the coldroom only for the objective that is determined for by the manufacturer or that is usual.
- Always operate the coldroom in technically trouble-free status in order to avoid accidents.
- Do not use any external parts on the coldroom, since otherwise compliance with the required safety level is not guaranteed.
- Refrain from every operating mode which impairs safety of the coldroom.
- Report occurred changes to the coldroom (that impair safety) immediately to the responsible supervisor.
- Shut the coldroom down immediately in case of a fault impairing safety. Do not put the coldroom into operation again until the fault has been eliminated.
- Do not dismantle or manipulate any safety systems. Do not take safety systems out of operation.
- Do not remove any coverings before any moving parts have come to rest. Attach coverings properly again before restarting the operation.

5.1.1 Notes for the operator

- As operator, ensure that the function test of the safety systems of the coldroom is implemented by instructed personnel, both in case of the operational commissioning and before every further new operational start-up.
- As operator, ensure that the required Personal Protection Equipment (PPE) is made available to the operating personnel and that it is used correctly.

5.2 Check Panels

Please find information about the check panels of temperature devices, data loggers, refrigeration units in the respective documentations and in the product documentation under www.celltherm.de/en/downloads/documentation.

5.3 Operational start-up

- Carry out a function test before the operational start-up.
- Record the tests.
- Ensure that free passage is guaranteed on the escape and access paths in front of all doors and gates.

5.4 Switching On and Off

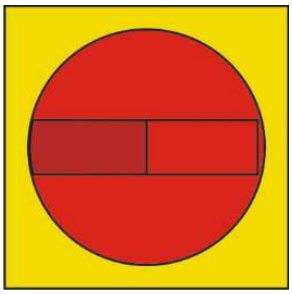


Illustration 7 Mains isolator

5.4.1 Switching on

- Switch the coldroom ON with the mains isolator.

5.4.2 Switching Off

- Switch the coldroom OFF with the mains isolator.

5.5 Operation

WARNING

Frostbite possible!

Spending time in the freezer coldroom with operation below 0°C may cause frostbite to the hands, feet and head.

- **The freezer coldroom may be entered only with cold-protection clothing, as well as closed shoes with anti-slip soles.**
- **There may be no skin contact with cold metal surfaces.**
- **The freezer coldroom must be closed and locked only when it has been checked that no persons are present in the freezer coldroom.**

Consider the notes on safety in Chapter 2.9.2 Coldrooms and in the documentation of the components under:
www.celltherm.de/en/downloads/documentation

5.6 Faults

Some of the operational failures listed here can be eliminated with the aid of the operating instructions.

Only when the system is out of operation, housings may be opened in order to eliminate a possible fault.

Contact the manufacturer in case of faults which cannot be eliminated.

Work on the electrical system may be implemented by electrical specialists only.

6 Service

The chapter *Service* is subdivided into the areas of care, maintenance and service. This should facilitate you in planning the service work required in each case.

The instructions described in this chapter are to be understood as minimum requirements. According to operating conditions, further instructions can be required in order to keep the coldroom at optimum status. The indicated time periods refer to one-shift operation. You can find notes on maintenance for certain parts under:

www.celltherm.de/en/downloads/documentation.

The maintenance and service work described in this chapter may be implemented only by specially trained repair personnel.

Only trained specialists are allowed to carry out maintenance and service work in specialist fields.

With regards to repairs and spare parts orders, we refer to the drawings included in the documentation under and parts lists under:

www.celltherm.de/en/downloads/documentation.

This also applies to parts purchased by Celltherm Isolierung GmbHat third party suppliers.

In particular, no liability is assumed for defects which are based on the following causes: inappropriate maintenance, utilisation of non-original spare parts, alterations without written approval of the vendor, improper repairs carried out by the purchaser, or normal wear.

The spare parts used must correspond to the technical requirements stipulated by CELLTHERM. This is always guaranteed in case of original spare parts.

- Concerning storage, handling, employment and waste disposal of gases, greases, oils and other chemical substances, read the applicable specifications and safety data sheets of the manufacturer, as well as the valid directions and the operating instructions of the operator. It is absolutely necessary to safeguard these specifications and instructions.
- Ensure the secure and environmentally-protective waste disposal of the operating materials, as well as the exchange parts.
- Consider the notes on safety on the following pages.

6.1 Care/Cleaning

Plastic coated RAL 9002	Wash with lukewarm water
	Addition of slightly alkaline cleaning agents admitted (no abrasive agents, pH value 6-10)
	Do not use high-pressure cleaning devices
Aluminium	Wash with lukewarm water
	Addition of slightly alkaline cleaning agents admitted (no abrasive agents, pH value 6-10)
	Do not use high-pressure cleaning devices
V2A / V4A (stainless steel)	Clean with lukewarm to hot water or steam
	The addition of alkaline cleaning agents is admitted
	High-pressure and steam cleaning devices are conditionally admitted
Reinforced plastic coated floor surfaces	Wash with lukewarm water
	Addition of slightly alkaline cleaning agents admitted (no abrasive agents, pH value 6-10)
	Do not use high-pressure cleaning devices
CElastik (PUR coated floor surface)	Wash with lukewarm water
	Addition of slightly alkaline cleaning agents admitted (no abrasive agents, pH value 6-10)
	High-pressure and steam cleaning devices are conditionally admitted

After cleaning and before operational start-up, the room must be dryed out again.

6.2 Maintenance

6.2.1 General maintenance instructions

A high availability of the coldroom is impacted positively by keeping to the proposed care and maintenance intervals.

- Check the coldroom regularly and inform the party responsible if repair and maintenance work is necessary.

WARNING

Warning of serious physical injuries

With incorrect behaviour, the hazard of serious physical injuries exists, such as danger of crushing or tearing off of limbs through uncontrolled movements of individual coldroom panels.

- **Have repair and maintenance work implemented only by trained, authorised and skilled personnel, who are aware of and observe the notes on safety and the applicable accident-prevention specifications.**
- **Implement equipping, maintenance and service work, as well as fault searches, at or in the freezer coldroom only with the coldroom switched off.**

6.2.2 Preparation of repair and maintenance work

- When working use only proper tools and replace worn parts, such as bolts or nuts, only by original spare parts.
- Identify component parts and piping systems carefully prior to dismantling.

WARNING

Injuries because of poor visibility possible

With poor visibility, you cannot identify possible places of risk properly.

- **Implement repair and maintenance work at or in the coldroom only with sufficient lighting.**

- Shut off all pipelines and secure them against unintentional opening.
- Depressurise all system parts under pressure, as well as pipelines. Check with a pressure gauge whether the systems (water, washing agent, steam, compressed air, coolant etc.) are pressure-free.

6.2.3 Test of safety systems

Test all safety equipment in accordance with the maintenance plan (Chapter 6.3).

Document this test in an inspection log.

If additional test items or shorter test intervals are to be considered as a result of existing operating conditions or other specifications, these must be additionally recorded in the safety check list by a safety inspector.

If defects are determined, the coldroom may not be put into operation again after corresponding service and admission by a responsible person of the operator has been given.

Also after replacement and/or repair of electrical and/or electronic component parts, a safety check is to be implemented by which the adjustment is to be checked according to the delivered datasheets.

6.2.4 Safe maintenance of electrical devices

Work on the electrical supply may be implemented by an electrical specialist only.

DANGER

Danger to life through electric shock

An electric shock can result in fatal injuries.

- **Disconnect the coldroom from the mains supply at the isolator before all repair, set-up and maintenance work.**
- **Secure the coldroom against unintentional switching on.**
- **Lock the mains isolator and set warning signs.**
- **In addition, activate an emergency-stop button.**

- As operator, stipulate type and scope of required tests.
- Stipulate the intervals for the recurring tests, so that the coldroom can be used safely until the next stipulated test.

A well-proven interval for recurring tests for electric and refrigeration devices (stationary) is usually every 4 years. Tests must be implemented according to the applicable regulations. Further, a reduction of the testing period to 1x per annum is required for all refrigeration devices.

- Eliminate loose connections and damaged cables immediately.

- Basically never work under voltage. This is only admitted in exceptional cases, in presence of compelling reasons.
- As operator, record these compelling reasons in writing before beginning any work under voltage.

- Carry out work on live parts only according to national requirements and processes.

The work may be implemented only by electrical specialists or electro-technically instructed persons, who dispose of corresponding special training.

6.3 Maintenance plan

- Implement the maintenance work at the intervals indicated below. This work ensures consistent, trouble-free functioning of the coldroom.
- In the maintenance plan it is indicated which work at the designated locations must be implemented weekly, monthly or every six months.

Interval	Work to be implemented	Responsible personnel
Daily	● Test safety and protection devices. ● Test monitoring systems. ● Check display panels.	Operating personnel
Monthly	● Clean all components of the system. ● Check components for wear.	Maintenance personnel
Every 6 Months	● Check all protective devices, where the following must be tested in detail: – Status – Secure fixtures and fittings – Function of the safety equipment ● All Emergency Stop buttons with latching function on: – Status – Function ● Safety switches, Limit switches, Signal lights: – Status – Fastening – Function	Maintenance personnel
Every 12 Months	● Test function of the entire system.	Service personnel

6.3.1 Maintenance of components delivered to CELLTHERM by third party

- Consider the maintenance instructions in the documentation of the respective system components.

6.4 Upkeep

WARNING

Frostbite possible!

Spending time in the freezer coldroom with operation below 0°C, may cause frostbite to the hands, feet and head.

- **The freezer coldroom may be entered only with cold-protection clothing, as well as closed shoes with anti-slip soles.**
- **There may be no skin contact with cold metal surfaces.**
- **The freezer coldroom may be closed off and locked only when it has been checked that no persons are in the freezer coldroom.**
- **Let the freezer coldroom warm up to ambient temperature for repair work.**

Repair work on the coldroom may be implemented only by trained and authorised specialists of the operator. The instructions in this chapter are limited to important general information and notes, which must be followed during service work.

In case of all attachment and deconstruction work, the following basically applies:

- Identify how parts belong together.
- Designate the location of these parts and keep this data.
- After the re-attachment, tighten all mechanical connections securely again.
- Check the safety systems as described in Chapter 6.2.3 Test of safety systems.

7 Waste disposal

7.1 Environmental protection

NOTE

Environmental pollution by water-endangering materials

Water-endangering materials can contaminate the ground and the ground water or reach the sewage system.

- **Keep to the legal obligations related to waste avoidance and proper utilisation/removal with all work at and in the coldroom.**
- **In case of waste disposal of worn-out or replacement material during maintenance or in case of an operational shutdown of the coldroom, follow the respective legal stipulations.**
- **Note that, in particular in case of installation, repair and maintenance work, water-endangering materials such as lubricants, grease and oil, emulsions and benzene-containing liquids may not contaminate the ground or reach the sewage system.**
- **Note that these materials must be kept, transported, collected and disposed of in suitable containers.**

7.2 Oil and oil-content waste, lubricants

Oil and oil-content waste, as well as lubricants, represent a high danger potential for the environment. Therefore their waste disposal must carried out by expert companies.

- Bring this waste to the company-internal waste disposal which forwards it to authorized companies.

7.3 Plastics

- Sort out the used/processed plastics as far as possible.
- Dispose of plastics in accordance with the legal requirements.

7.4 Metals

- Separate the used/processed metals as far as possible.
- Have metals disposed of by an authorised company.

7.5 Electrical and electronic scrap

Electrical and electronic scrap

Devices with this logo on the packaging or on the device must be disposed of separately. These devices may not be disposed of through normal domestic waste.

You are responsible for ensuring that every electrical or electronic waste item is disposed of through authorized companies.

7.6 Scrapping

- Check which materials can be provided for recycling and subsequently initiate all necessary measures.

Please find detailed descriptions of the individual system components in the respective operating instructions.

8 Appendix

8.1 Declaration of Conformity