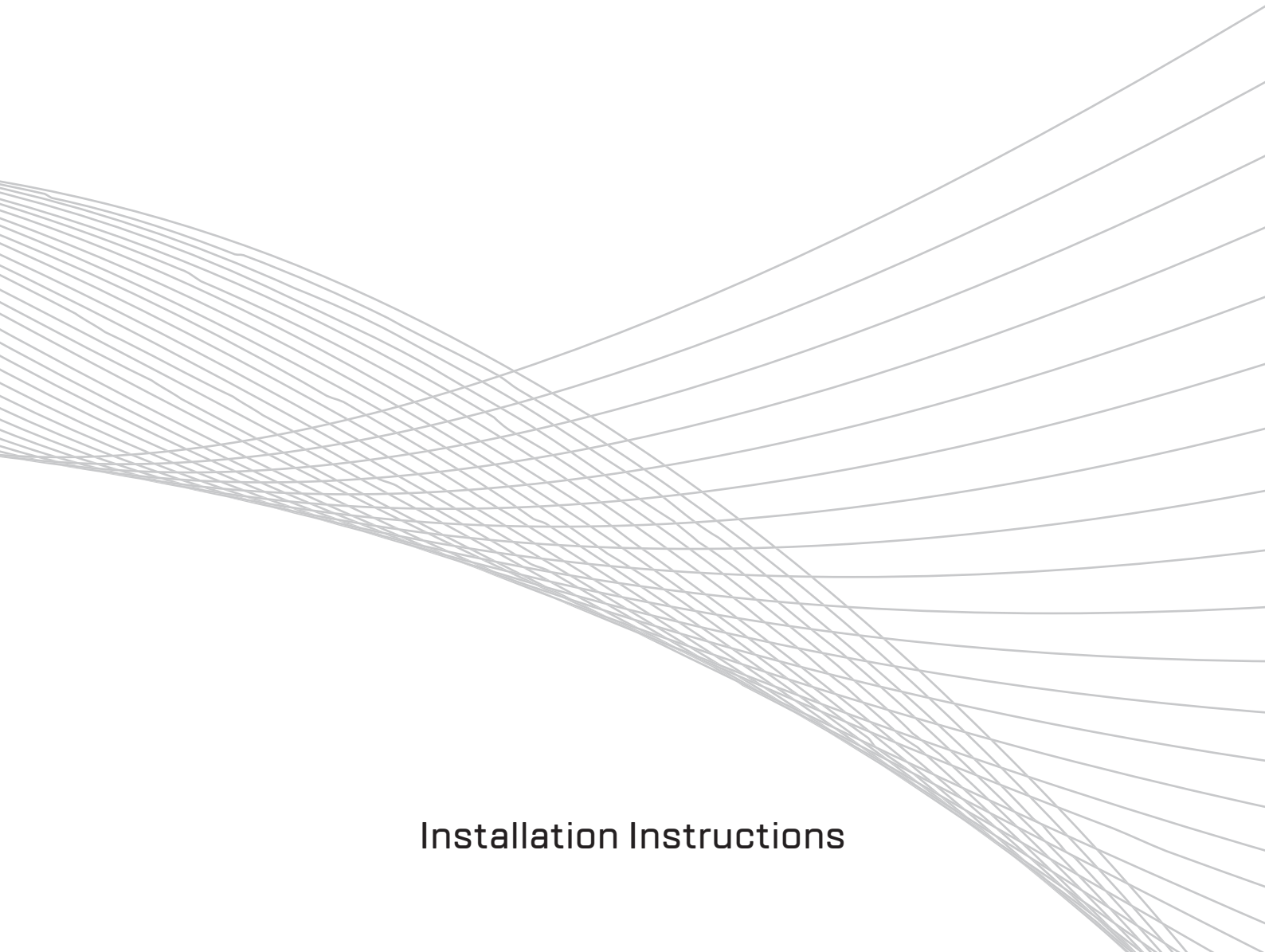
PROFHOLOD

Energy Safe Technologies

COLD ROOMS



Installation Instructions

THANK YOU FOR CHOOSING PH INSULATION!

FOR YOUR SAFETY READ THE INSTRUCTIONS CAREFULLY BEFORE INSTALLATION.

CAUTION!

ALWAYS WEAR SAFETY GLASSES, MASK AND GLOVES WHEN INSTALLING.

ENGLISH
Important information
Read carefully
Keep this information for further reference

WARNING

Serious or fatal injuries can occur if packs of insulated panels or doors tip over. To prevent the panels or doors from falling, do not move the products alone or leave the products in an upright position unattended. The door kit includes fasteners. Please note that different wall materials require different door installation hardware.

FRAMELESS STRUCTURES WITH SANDWICH PANELS

GENERAL INFORMATION

Self-supporting PIR Premier and PUR Classic sandwich panels by PH Insulation and metal elements are used to assemble frameless cold rooms and freezers.
These structures can be both modular and conventional and maintain a required temperature in a closed space.

Prefabricated cold rooms that are intended to be moved to another location after some period of usage are made with sandwich panels equipped with tightening cam lock systems. They can be easily assembled almost everywhere and quickly dismounted and moved if necessary.

Figure 1.
A conventional cold room made with sandwich panels

The cold room is assembled from wall, floor and ceiling panels, and metal elements of the same type and color as panel faces. The floor panels should be enhanced with plywood sheets and aluminum checker plates, because sandwich panels are not strong enough for constant walking and movement of forklifts and carts.

On request, prefabricated cold rooms are supplied with expendable materials, such as screws for metal elements, anchor bolts, silicone sealants, and construction foams.

STRUCTURE AND ASSEMBLY OF COLD ROOMS

Cold rooms are assembled from sandwich panels with 0.5 mm zinc-covered faces and metal elements. These self-supporting structures, if installed properly, provide thermal insulation and significantly reduce refrigeration costs. These types of cold and deep-freeze chambers meet sanitary requirements for food storage.

Figure 2 shows the three main parts of the structure.

A set of panels and metal elements to assemble a cold room is supplied with a detailed assembly diagram and a packing list.

Figure 2.
A diagram of a cold chamber

I. Joint of floor and wall sandwich panels
II. Joint of wall panels
III. Joint of ceiling and wall panels

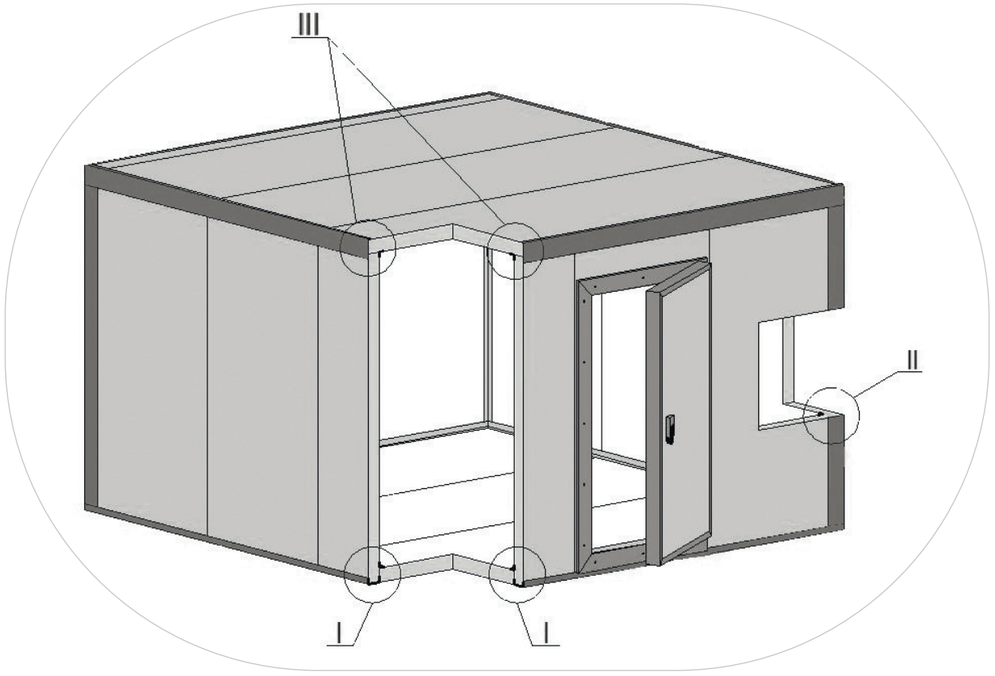
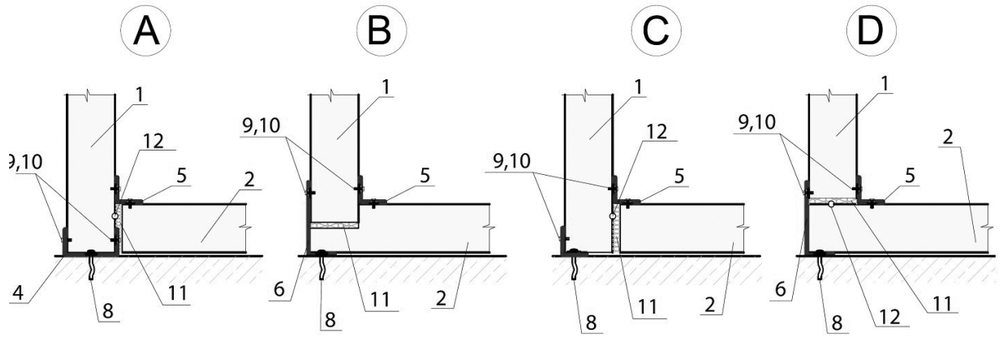


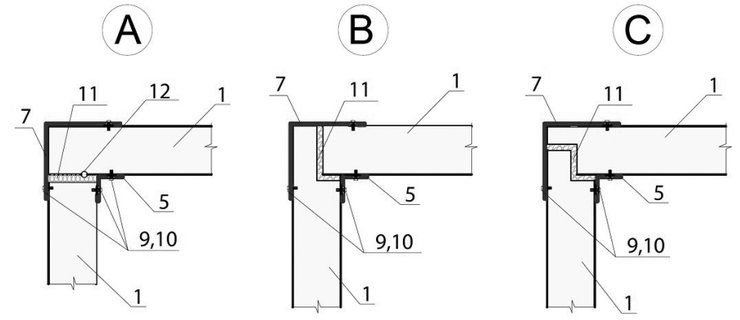
Figure 3.
Main joints of sandwich panels in a cold room

1. Wall panel
2. Floor panel
3. Ceiling panel
4. Channel for wall panels
5. Inner angle, 40–40 mm
6. Unequal external angle
7. Equal external angle
8. Wedge bolt (450 mm span)
9. Screws for metal elements (200–300 mm span)
10. All-purpose sealant
11. Construction foam
12. Cut in metal face to prevent thermal bridges

I. Types of fastening of wall and floor panels



II. Types of fastening of wall panels in the corners of a cold room



III. Types of fastening of wall and ceiling panels

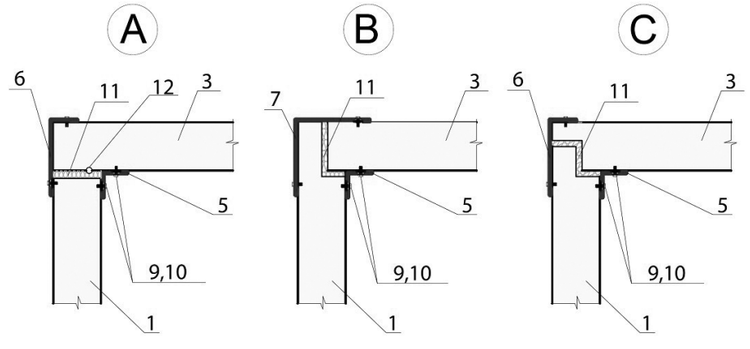
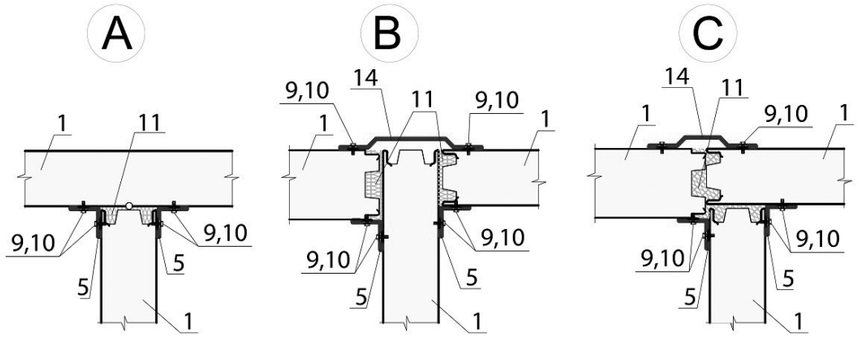


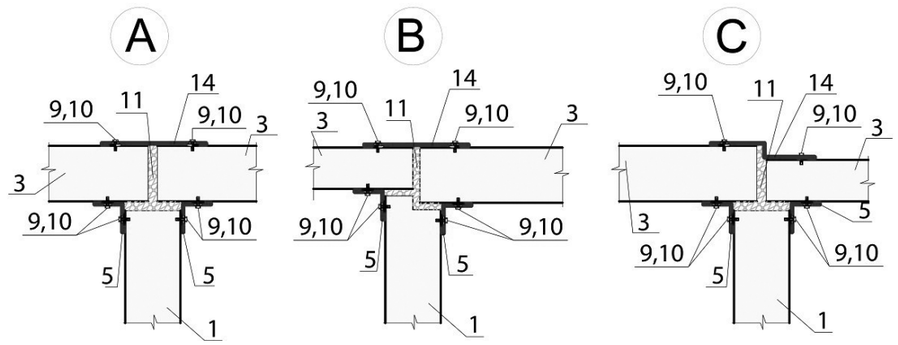
Figure 4.
Main joints of sandwich panels in a cold room (continued)

1. Wall panel
2. Floor panel
3. Ceiling panel
4. Channel for wall panels
5. Inner angle, 40–40 mm
6. Unequal external angle
7. Equal external angle
8. Wedge bolt (450 mm span)
9. Screws for metal elements (200–300 mm span)
10. All-purpose sealant
11. Construction foam
12. Cut in metal face to prevent thermal bridges
13. Partition wall panel
14. Cover strip

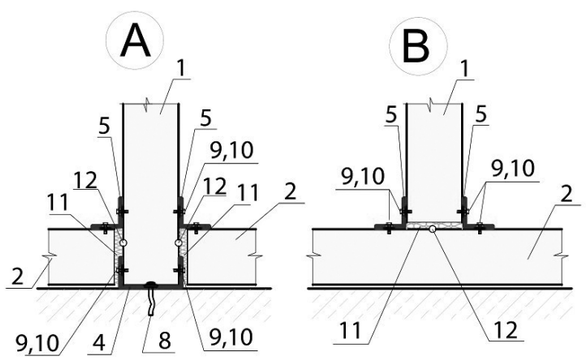
IV. Types of fastening of wall panels and partition wall panels



V. Types of fastening of partition wall panels and ceiling panels



VI. Types of fastening of partition wall panels and floor panels



First, check if all panels and other elements are present and prepare the construction site.

Channels for wall panels are bolted to the previously flattened floor along the perimeter of the assembled cold room.

There are several options to connect the floor and wall panels to concrete.

Option I (B, C, D) is better for small structures; these connections naturally prevent thermal bridges, whereas the use of metal channels requires a special installation method.

To break a thermal bridge, the internal metal face of a wall panel is cut. If floor panels are used, it is recommended to make the cut somewhat higher than the channel, but not higher than the surface of floor panels. After that, the cold room is assembled according to the procedure starting from any corner or, if applicable, from the panel with a door opening.

Types of corner joints of wall panels are shown on Figures 3 and 4.

Option II (A-C). Tongues of wall panels are placed in the direction of assembly. Some construction foam is applied on the groove of the next panel, and the panel is placed in the channel and pressed into the previously installed panel.

The panels are then tightened and screwed to the channel. Make sure that all wall panels are vertical. After the cold chamber is ready, close all joints with a sanitary silicone sealant.

Panels are cut with a jigsaw or a circular saw with a special cutting blade. Door openings are cut with a jigsaw and framed with a U-shaped element made from two metal angles and a plastic profile.

Figure 5.
Profile for framing a light opening

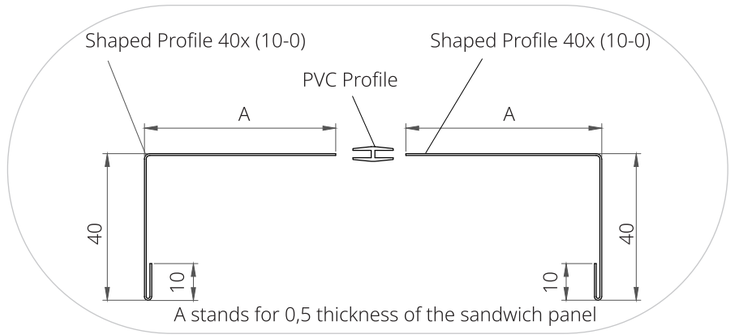


Figure 6.
Profile for framing a light opening

The length or width of the floor and ceiling panels should precisely fit the external or internal dimensions of the cold room. The type of installation is specified in the assembly diagram.

The vertical angles of the cold room are covered with metal elements; their color usually corresponds to that of external faces or wall panels.

The wings of external angles are 40 mm thicker than wall panels, which allows masking of the open edge of a panel in any type of installation. The angles are fastened to panels with thread-cutting screws or rivets. The ceiling panels are joined to the wall panels with horizontal angles.

The cold room may include several sections separated by partition walls. To reduce construction costs, panels of different thickness may be used (for example, 100 mm panels for a low-temperature room, and 80 mm panels for an adjacent middle-temperature room). However, this may lead to some inconveniences during installation, and either external or internal height should be prioritized.

All internal angles of the cold chamber are covered with 40-40 mm metal angles according to the diagram.

The floor panels should be strengthened with 1.5–4 mm plywood sheets and aluminum checker plates.

DO NOT use floor panels without this enhancement!

The dimensions of a frameless cold room are limited by the bearing strength of wall and ceiling or roof panels and by the location of the cold chamber.

PH Insulation strongly recommends making a metal framework for cold rooms with length and width dimensions of more than 6,000 mm and height over 4,000 mm.

Figure 7.
Aluminum checker plate for floor enhancement

If a cold room is assembled indoors, the following requirements should be met:

- The room should be dry and well-ventilated.
- The ratio of room volumes should be at least 1:3.5, or the room should be equipped with a balanced ventilation system. Otherwise, refrigeration may be disturbed, and energy costs may increase.
- The cold room should be located at least 0.1 m from the walls and 0.6 m from the ceiling of the room. The passage to the refrigerator should be at least 0.7 m wide. The cold room should be protected from direct sunlight and placed at least 1.5 m from heat sources.
- The floor in the room should be horizontal with a maximum 1% slope. Surface roughness should not exceed 2 mm.

Failure to meet these requirements may lead to shifts in the relative position of panels, which in turn leads to unsealing and increased energy costs.
Cold rooms installed outdoors under a cover should be placed on a flat concrete or asphalt-concrete surface; the roughness and slope of the floor should not exceed 3 mm and 1.5%, respectively.

Wind and snow load in the region of installation should be taken into account, as well as possible deflection due to temperature differences across panels. If an outdoor cold room is assembled using ceiling panels, these panels should be fully covered with waterproof materials. Although ceiling panels as such cannot substitute a roof, reliable waterproofing will make them suitable for this function.