



**ENERGY SAFE TECHNOLOGIES**

# **REFRIGERATION CHAMBERS**

**OPERATION MANUAL**

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# INTRODUCTION

This Manual is intended for familiarization with, and the rules of operation for, heat-insulating refrigeration chambers. The installation, commissioning and maintenance of the chambers is to be carried out by specialized contractors.

This manual includes technical data.

## 1. PRODUCT OVERVIEW

### 1.1. USE OF THE PRODUCT

Heat-insulating refrigerating chambers of the medium-temperature and low-temperature types (hereinafter – chambers) are intended for the short-term storage of chilled or frozen food products in heated and unheated rooms at temperature from  $-30^{\circ}\text{C}$  to  $+40^{\circ}\text{C}$  with a relative humidity not higher than 80%.

### 1.2. SPECIFICATIONS

The main parameters and technical characteristics of the refrigeration chambers, supplied as a set of panels, are as follows:

1. The overall dimensions of the chamber is determined as per the supply contract.
2. The recommended internal temperature:
  - medium temperature - from  $-5$  to  $+5^{\circ}\text{C}$ ;
  - low temperature - no higher than  $-18^{\circ}\text{C}$
3. The coefficient of thermal conductivity is  $0.025 \pm 0.005 \text{ W/mK}$ .
4. The thickness of the insulation is 60, 80, 100, 120 and 150 mm.
5. Specific floor load can be no more than  $15000 \text{ N / m}^2$  ( $1500 \text{ kgf / m}^2$ ) when storing products on racks and no more than  $1.107 \text{ N / m}^2$  ( $1 \text{ kgf / cm}^2$ ) when storing in containers or transport trolleys.

### 1.3. PRODUCT DESIGN

The refrigerating chamber consists of a set of panels: sides, ceiling, floor, doorway, door, corner components and racks. The door is equipped with a handle and a fixed lock, which can be locked with a key from the outside and opened without a key from the inside of the chamber. The door is hinged with a torsion closer that ensures spontaneous door closing. To cool the internal space of the chamber, it is recommended to use a removable monoblock refrigeration unit, mounted in one of the side panels.

# 2. TECHNICAL INFORMATION

## 2.1 SHIPMENT DETAILS

The delivery set includes a chamber (in the form of a set of panels), operating documents, removable parts and assembly units (table 2).

Table 2 - the set of the chambers according to Document ... dated ....

Name	Quantity, pieces. (m, kg)	Name	Quantity, pieces. (m, kg)
Manual			
Panels:			
Outside corner			
Inside corner			
Channel			
Door			

\* - Filled depending on the volume of the chamber

## 2.2. CERTIFICATE OF ACCEPTANCE

Chamber type with serial number \_\_\_\_\_ corresponds to the ProfHolod technical specifications TU 5151-003-77983254-2009 and is recognized as fit for operation.

Release date \_\_\_\_\_

Responsible for acceptance \_\_\_\_\_ (signature)

Stamp

## 2.3. MANUFACTURER'S WARRANTY

The manufacturer guarantees that the chamber complies with the requirements of the technical specifications of ProfHolod TU 5151-003-77983254-2009, subject to the conditions of transportation, storage, installation and operation, specified above in the Operation Manual.

The warranty period of the refrigeration chamber is 12 months from the date of commissioning, but not more than 18 months from the date of manufacture.

The guaranteed shelf life of the refrigeration chamber is 6 months from the day of production.

Warranties are valid subject to the following documents:

Operation manuals;

- commission certificate (sample in Appendix A);
- technical condition certificate (sample in Appendix B);
- maintenance contracts with a specialized organization.

The warranty cannot be guaranteed if:

- all rules of transportation, storage, assembly and operation (specified in the Operation Manual) were not fully followed;
- commissioned works, regular maintenance of the refrigeration chamber were performed by an organization that is not officially authorized to perform these works;
- the product has been subjected to design changes without a written consent of the manufacturer.

# 3. INTENDED USE

## 3.1. GENERAL INSTRUCTIONS

The operating instructions provide all the information required for the correct operation and maintenance of the chamber during its direct use.

The durability of the chamber and its safety when in use depends on whether the rules of operation have been adhered to.

## 3.2. SECURITY MEASURES

The electrical safety of the chamber is ensured by fulfilling the requirements of grounding the refrigeration machine installed into the chamber, as well as adhering to any additional electrical safety requirements of the refrigeration machine.

If these requirements are not met, the manufacturer does not bear responsibility for electrical safety.

## 3.3. CHAMBER REQUIREMENTS

When installing the chamber indoors, the following requirements must be met:

- the room the chamber is installed into must be dry and well ventilated;
- the recommended ratio of the chamber volume and room volume should not be less than 1m<sup>3</sup>: 3.5 m<sup>3</sup>.

In the case of a smaller ratio of volumes, the room must be equipped with a supply and exhaust ventilation system. Failure to comply with this condition will lead to a violation of the cooling function and, therefore, to an increase in power consumption.

- The chamber should be installed at a distance of at least 0.1 m from walls and 0.6 m from the ceiling. The width of the passage to the refrigeration machine should be at least 0.7 m. The chamber should not be exposed to direct sunlight and should be located at a distance of less than 1.5 m from the heat source.

- the floor of the room should be leveled horizontally, the roughness should be no more than 2 mm. The slope gradient of the floor should not be more than 1%.

The unevenness and slope of the floor during the installation of the chamber contributes to the relative displacement of the panels and, accordingly, the depressurization of the chamber, which will lead to an increase in energy consumption.

Attention! When installed under a canopy outside, the chamber should be installed on a flat concrete or asphalt surface. The permissible unevenness of the surface should be no more than 3 mm, and the slope gradient of the floor in any direction should be no more than 1.5%.

## 3.4. ASSEMBLY PREPARATION AND ASSEMBLY

The panels should be assembled at an ambient temperature of at least 12°C which should remain consistent for at least 24 hours (the optimum temperature for assembly is 23 ± 2°C).

The assembly of the chamber must be carried out according to the assembly instructions.

## 3.5. OPERATING PROCEDURE

Before putting the chamber into operation, you should:

- remove the protective film from the external and internal surfaces of the panel;
- rinse the inner and outer surfaces of the chamber with warm water and neutral agents, and then dry.

Only load the chamber with food when the set temperature is reached.

For normal operation of the chamber and to maintain the set temperature inside the chamber, the following should be adhered to:

- load the chamber with products chilled or frozen at the same temperature;
- when loading and unloading products, open the chamber doors for as short a time as possible.

Food storage rules:

- produce should be placed with space around it, in order to avoid the disruption of air circulation in the refrigerated space (on racks, shelves, movable hooks or in containers);
- products that emit odours should be stored in sealed containers or wrapped in plastic wrap or another material that reduces permeation.

If you encounter any problems during the operation of the chamber, contact the Equipment Service Center.

## 3.6. STORAGE RULES

The chamber should be stored in the manufacturer's shipping packaging indoors or under a canopy at an ambient temperature of at least -35°C and a relative humidity of no higher than 80%.

Shelf life – no more than 6 months.

### 3.7. TRANSPORTATION

The packed chamber can be transported by all means of transport.

During transportation,

- the shipping containers should be protected from mechanical damage,
- the packaged goods should be secured in stable positioning.

DO NOT TILT THE PACKAGES

## 4. MAINTENANCE

### 4.1 GENERAL INFORMATION

There are two types of maintenance for the product – while in use and regulatory.

Maintenance while using the chamber includes monitoring the temperature in the refrigerated space, its correct loading and installation of the internal equipment.

The chamber must be kept clean during use. When sanitizing, avoid the use of abrasive and corrosive detergents.

Regulatory maintenance is carried out according to an annual schedule, which is planned and organized by the company which provides technical services, ahead of time each year.

Regulatory maintenance requires a complex set of works, at least once every 2 months, regardless of the condition of the chamber at the time of the start of the maintenance.

# APPENDIX A

## Act for beginning operation

This act was drawn up on "\_\_\_" \_\_\_\_\_ 20  
by the owner of a heat-insulating chamber

\_\_\_\_\_  
(name and address of the organization, position, full name)  
and by a representative of a center for technical servicing

\_\_\_\_\_  
(name of organization)

\_\_\_\_\_  
(position, full name)

stating that a chamber of type \_\_\_\_\_ volume \_\_\_\_\_ m3  
serial number \_\_\_\_\_  
produced on "\_\_\_" \_\_\_\_\_ 20 г.,  
signed off as operating on "\_\_\_" \_\_\_\_\_ 20 by certified electrician

\_\_\_\_\_  
(name of organization,

\_\_\_\_\_  
full name)

with certificate for the right to install and maintain a commercial refrigeration  
equipment N\_\_\_\_, issued on "\_\_\_" \_\_\_\_\_.

\_\_\_\_\_  
(name of organization)

accepted for service by \_\_\_\_\_  
(name of organization)

\_\_\_\_\_  
full name)

certificate for the right to install and maintain a commercial refrigeration  
equipment N\_\_\_\_, issued on "\_\_\_" \_\_\_\_\_.

\_\_\_\_\_  
(name of organization)

Owner

(signature) Full name.

Centre representative

(signature) Full name.

Stamp

# APPENDIX B

[Template]

City (place) of acceptance of the product \_\_\_\_\_

Name of the recipient (organization, enterprise) of the product \_\_\_\_\_

Recipient address and shipping details \_\_\_\_\_  
" \_\_\_\_ " \_\_\_\_\_ 20

## ACT OF TECHNICAL CONDITION

This act was drawn up by \_\_\_\_\_

(recipient representative, surname, position)

in collaboration with representatives \_\_\_\_\_

(name and position of the representative of the manufacturer or representative of the interested organization, date and number of the document of authorization)

(The correspondence to call the manufacturer's representative was sent to \_\_\_\_ for N\_\_ on " \_\_\_\_ " \_\_\_\_\_ 20)

to confirm the technical checking of the product \_\_\_\_\_ produced by  
(product name)

\_\_\_\_\_ (manufacturer name and address)

with serial number \_\_\_\_\_ and has revealed the following:

1. Conditions of the storage of the product at the recipient's warehouse:

\_\_\_\_\_ (indicate the conditions in which the product is stored)

2. Condition of containers and packing

\_\_\_\_\_ (indicate the condition of the external marking, the date of the opening of the container, the quantity of missing components, their cost, packaging and packaging deficiencies)

3. Conditions of product installation

\_\_\_\_\_ (indicate in what conditions the product has been installed)

4. Product installation

\_\_\_\_\_ (indicate when and by whom the installation was carried out, quality of installation)

5. Condition of the product and its delivery set

\_\_\_\_\_ (indicate the technical condition of the product, electrical equipment, their condition protection, etc., serial numbers, date of manufacture)

6. List of deviations (defects):

7. To restore the product, you must:

\_\_\_\_\_ The act was drawn up on " \_\_\_\_ " \_\_\_\_\_ 200

Signatures:

\_\_\_\_\_ The act must be signed by all persons involved in the verification quality and product configuration.