



ENERGY SAFE TECHNOLOGIES

Hinged Single-Leaf Doors (HSLD)

OPERATION MANUAL

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After having installed the door, it is important to adjust the leaf for and check it for easy and smooth operation.

1. GENERAL INFORMATION

This manual outlines information pertaining to ProfHolod refrigeration doors: main uses, information about the doors, technical specifications and installation instructions.

ProfHolod doors are manufactured in full accordance with the drawings and documentation provided by ProfHolod LLC.

All comments and suggestions should be sent to: Russian Federation 141000, Moscow Region, Shchelkovo, st. Zavodskaya, 2. Tel: +7 (495) 240-83-24 E-mail: info@profholod.com

2. PURPOSE AND USE

Doors manufactured by ProfHolod are designed for the thermal insulation of doorways for medium and low temperature refrigeration chambers, refrigerated warehouses and premises requiring sustained high temperatures.

The doors are used

- at the temperature range -45 °C (113 °F) to +55 °C (131 °F)
- humidity below 80%
- in heated and unheated rooms
- under a roof or outdoors

3. SPECIFICATIONS

Type of door	Width of opening (mm)	Clearance height (mm)	Thickness of door leaf (mm)	External material of the door leaf	Internal material of the door leaf	Threshold height (0, 60 or 80 mm)	Temperature range (L or M)	Positioning (R - Right, L - Left)
HSLD	XXXX	XXXX	XXX	XXX-XXX	XXX-XXX	X	X	XX

Materials from which the door is made:

Material code	Description
RAL-0,5	Metal sheet, thickness 0.5 mm, with a RAL polymer coating
Zn-0,5	Galvanized metal sheet, thickness 0.5 mm
AISI 304-0,5	304 food grade stainless steel, thickness 0.5 mm
AISI 430-0,5	430 all-purpose stainless steel, thickness 0.5 mm

Table 1 shows the range of sizes for doors on HSLDs produced by ProfHolod.

Table 1: Range of HSLD door sizes (multiples of 10 mm)

Width of opening	Clearance height	Thickness of leaf
800...1400	1800...2400	80; 100; 120; 150

HSLD refrigeration doors are equipped with Fermod hardware (see Figure 1)



Figure 1.
HSLD hardware by Fermod:

- 1- lift-type hinge with 3-dimensional adjustments;
- 2 - inner handle for emergency opening;
- 3 - outer handle with built-in lock.

The keys for the door locks are provided by the manufacturer of the locks, ProfHolod cannot be held responsible for the number of unique keys and locks in each order.

4. TECHNICAL SPECIFICATIONS

The door leaf, including the edges, is made from 0.5 mm thick steel sheet, which protects the door leaf from impact. Dow Chemical rigid polyurethane foam from is used as a filler.

The foam density is 45-50 kg/m³, the thermal conductivity is 0.022 W/m·K.

The door leaves are installed with an overlapping door frame. A rubber seal is used to seal the refrigeration door.

For the low-temperature option, the door frames are supplied with an electric heating wire to prevent the sealing profile from freezing. All elements of the door leaf are made without cold bridges to reduce cold leakage.

Table 2: Specifications of the heating wire

Specifications of the heating wire	Unit	Measurement
Voltage	V	220
Frequency	Hz	50
Diameter	mm	less than 8
Power output	W/m	30 ~ 40

The door leaf is protected from minor damage by a special self-adhesive polyethylene film, which is removed after installation. It is highly recommended to remove the film no more than three months after the door was manufactured.

5. HINGED DOOR WITH ATTACHABLE DOOR FRAME

The standard door frame is manufactured from 2 mm cold rolled sheet steel and painted with powder enamel paint in RAL 9003 or any other colour from the RAL catalogue. The frame could be made from stainless steel AISI 304 or AISI 430. The frame is mounted on one side of the opening using a mounting kit (optional) and can be mounted in the following ways:

- On a wall made of sandwich panels;
- On a opening in a load-bearing wall, made of concrete or brick;
- On metalwork.

The overall dimensions of the metal door frame depend on the dimensions of the opening:

- Frame width = width of the opening + 212 mm;
- Frame height = Clearance height + 80 mm + threshold height.

Figure 2.
Metal overlapping frame for HSLD doors. On the left - without a threshold, on the right - with a threshold

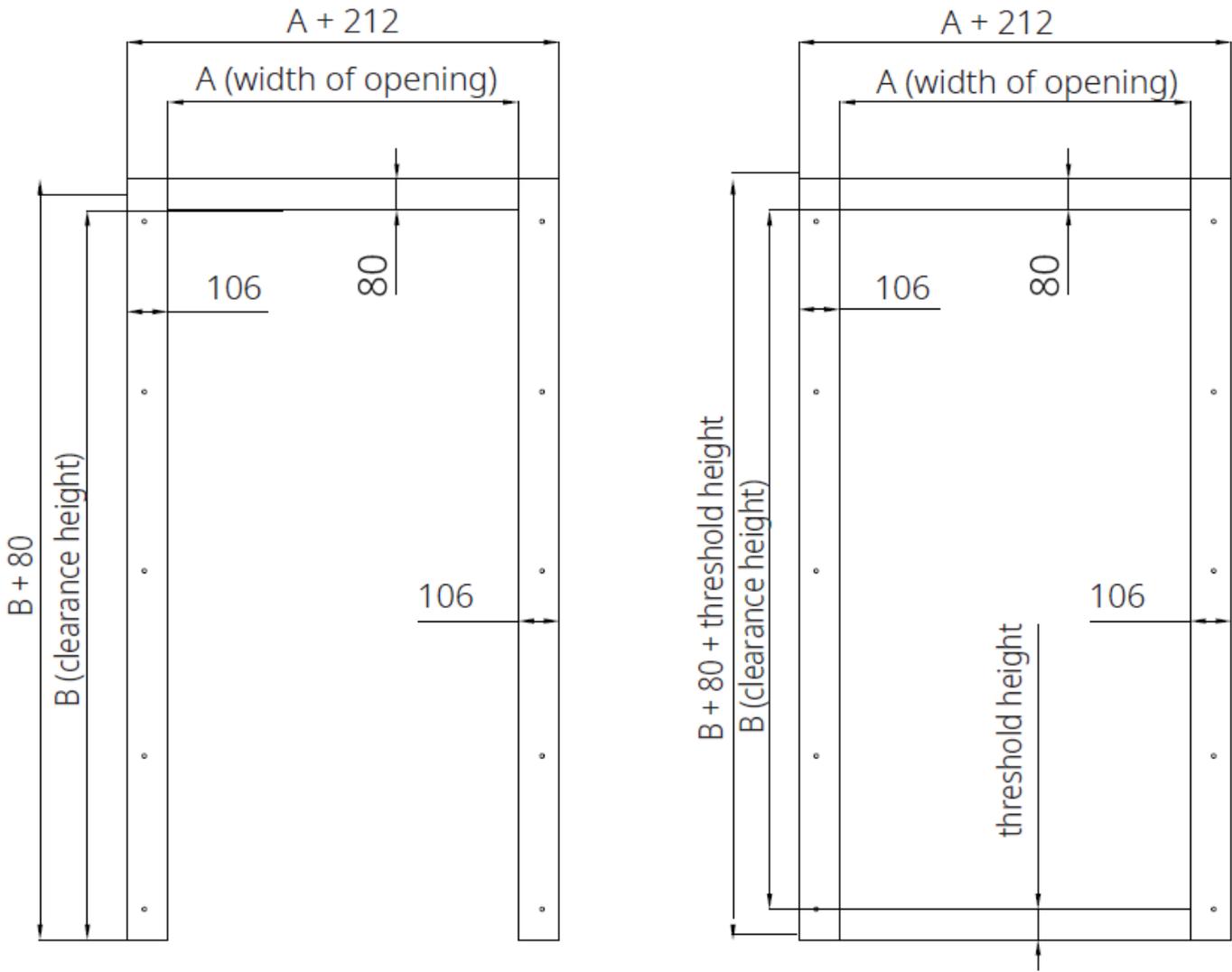


Figure 3.
HSLD with an overlapping metal frame. On the left - without a threshold, on the right - with a threshold

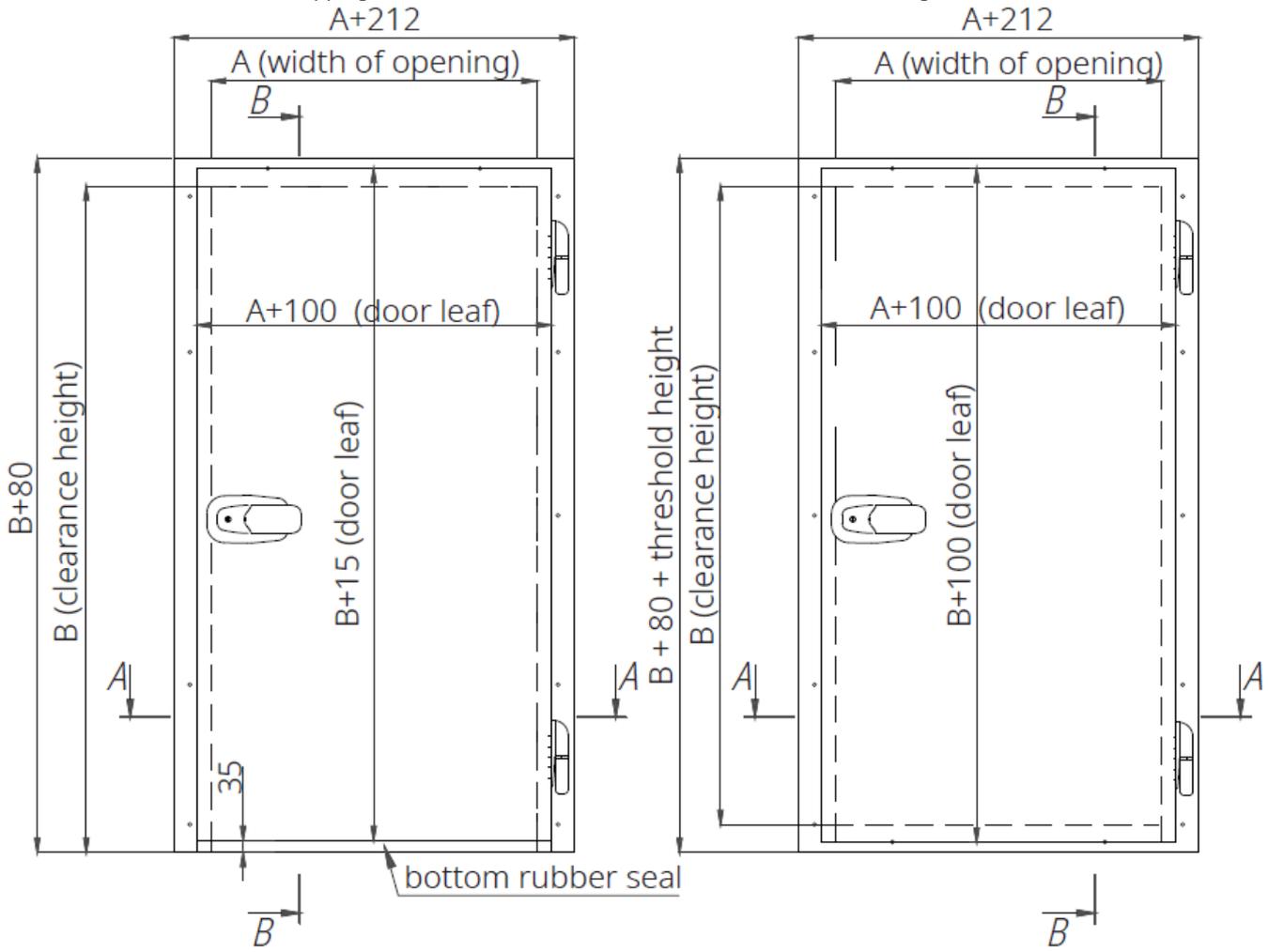


Figure 4.
Cross-section A-A.

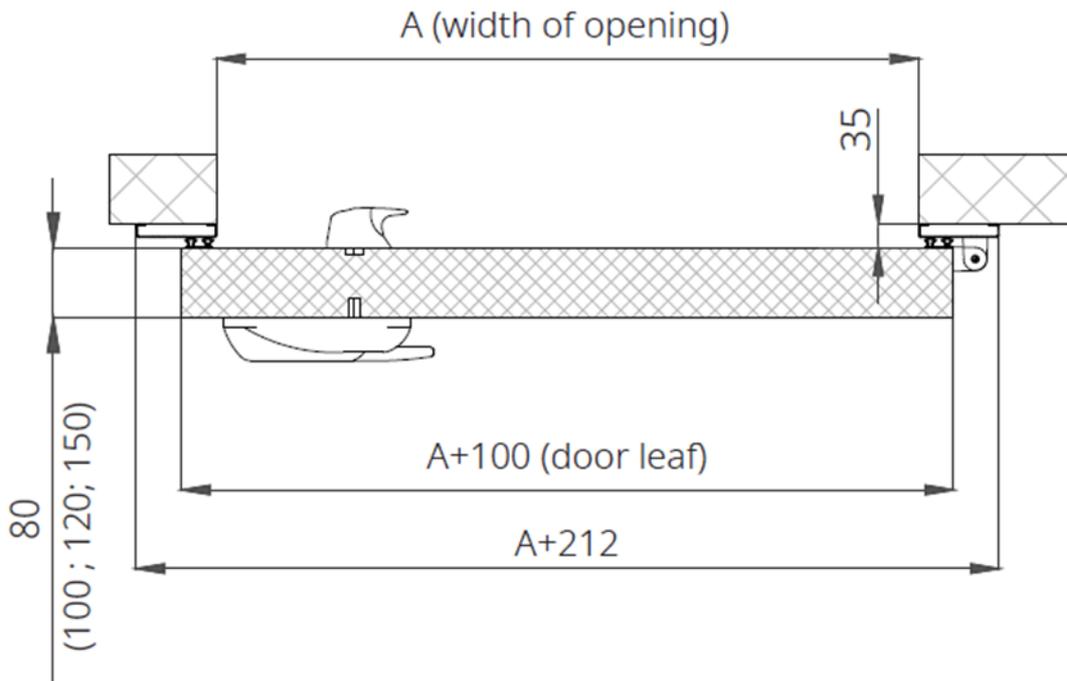
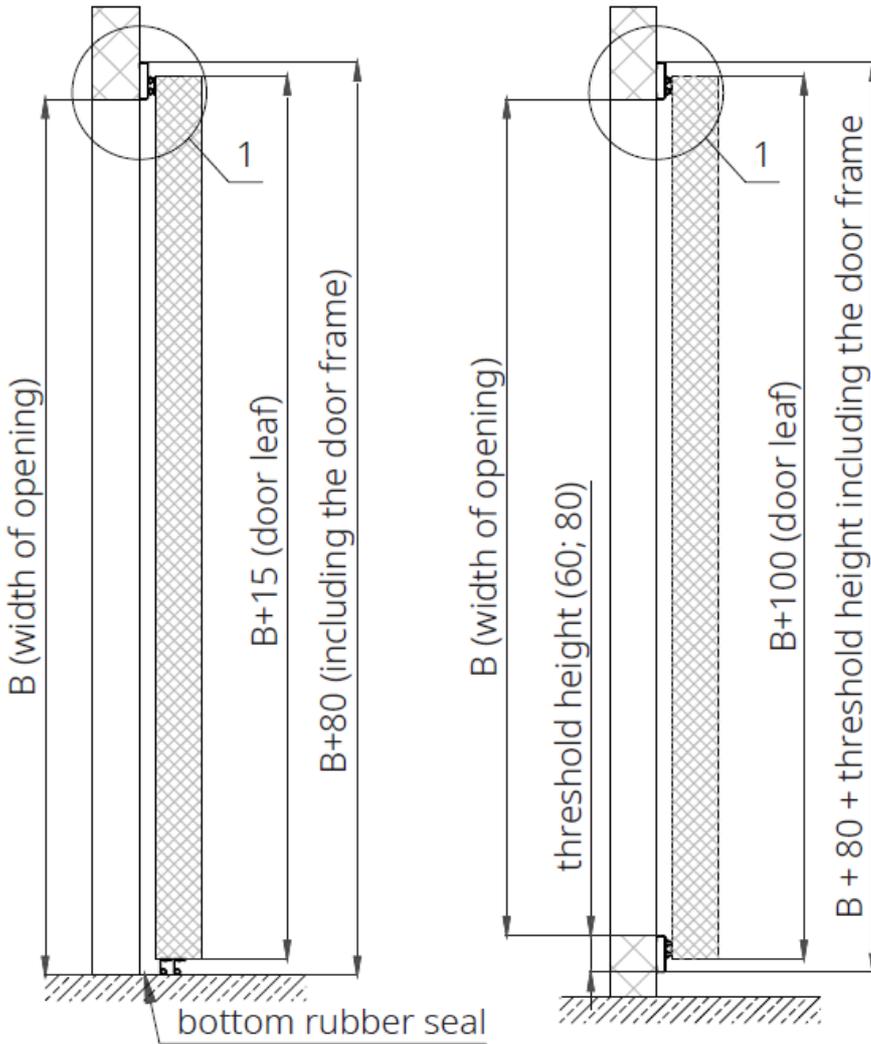


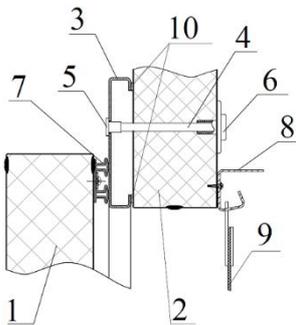
Figure 5.
Cross-section B-B. On the left - without a threshold, on the right - with a threshold



6. INSTALLATION KIT

The metal frame and the door leaf are attached to the wall using a mounting kit (optional).
HSLD installation:

Figure 6.
Assembly unit 1 (cross-section B-B). Fastening the metal overlapping door frame to a sandwich panel.



- 1 - HSLD door leaf
- 2 - Wall sandwich panel
- 3 - Metal frame
- 4 - Threaded rod M8
- 5 - Erickson nut
- 6 - PVC thermal washer with PVC thermal nut
- 7 - Seal
- 8 - Comb for hanging PVC tapes
- 9 - PVC tapes
- 10 - Tape PPE 3x10 to break the cold bridge

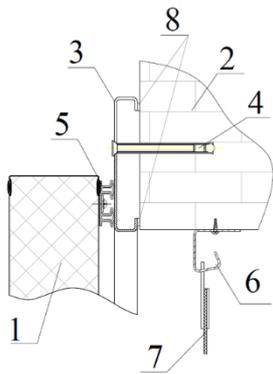


Figure 7.
 Assembly unit 2 (cross-section B-B) - Fastening the metal overlapping door frame to a brick wall.

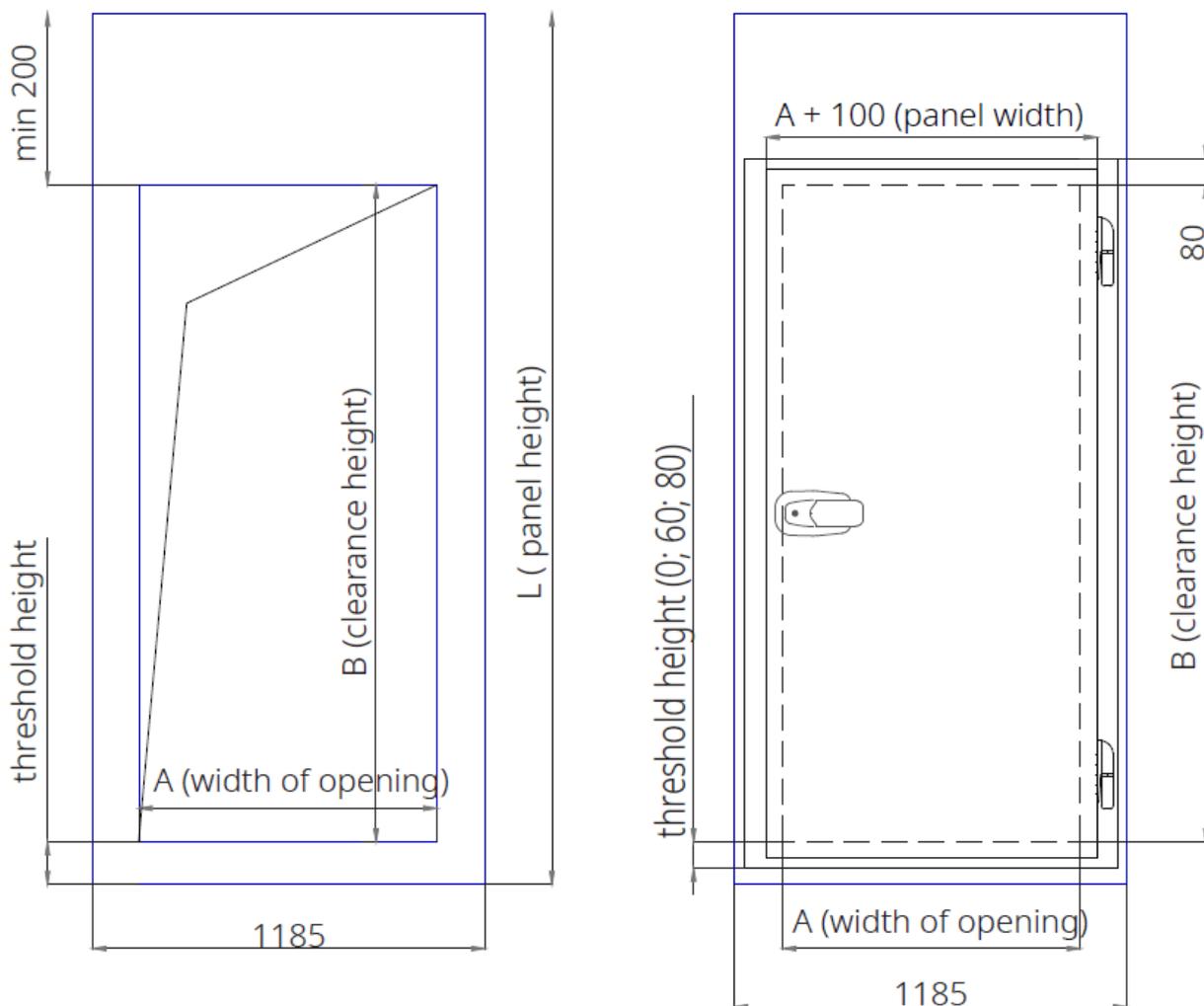
- 1 - HSLD door leaf
- 2 - Concrete or brick wall
- 3 - Metal frame
- 4 - Anchor bolt 10x92
- 5 - Seal
- 6 - Comb for hanging PVC tapes
- 7 - PVC tapes
- 8 - Tape PPE 3x10 to break the cold bridge

7. HSLD ON A SANDWICH PANEL WITH A PRE-FRAMED OPENING

If the width of the opening is 800 mm or 900 mm and the height of the opening is not more than 2200 mm, the door leaf can be supplied complete with a wall sandwich panel and a wall pre-framed casing.

In this case, the length of the wall panel is determined by the height of the refrigeration chamber. The opening is framed with a U-shaped molding to break a cold bridge. If you are using the low-temperature version, the door kit includes a wire for the seal, which is attached using adhesive foil onto the inner side of the frame, where the rubber seal sits.

Figure 8.
 Sandwich panel wall with a pre-framed opening



LLC ProfHold does not guarantee the compatibility of the door set which comes installed inside the ProfHold's insulated panel with panels of third-party manufacturers due to differences in the docking locks of the insulated panels.

8. INSTALLATION OF HSLD DOORS ONTO AN OVERLAPPING DOOR FRAME

The door leaf can only be installed on a prepared pre-framed opening. Openings made in sandwich panel walls or brick walls must have a door casing installed prior to installation of the door.

- Before installing the doors, make sure that the leaves were not damaged during transportation. Check all parts are accounted for.
- Check the dimensions of the opening against the dimensions indicated in the door specification. Any deviation of the dimensions of the width and height of the opening, diagonal deviation cannot exceed ± 3 mm.
- Remove the door from the hinges.
- Install the frame into the opening and check both levels: the posts vertically and the cross-beam horizontally.
- Mark the frame mounting holes on the wall.
- Using a drill with a 9 mm drill bit, drill holes into the wall of the sandwich panels where the markings are. It is important to ensure the perpendicularity of the holes to the surface of the sandwich panel wall. If fastening the frame to a brick wall, drill holes with a 10 mm drill bit to a depth of 80-100 mm.
- On the reverse side of the leaf, drill a hole of diameter 19-24 mm using a drill or "hole saw".
- Around the perimeter of the frame, glue the PPE 3x10 sealing tape for thermal break. The edge of the tape should line up with the inner edge of the frame.
- If necessary, on the reverse side of the frame, at the point where the rubber seal is fitted, install the heating wire using adhesive foil.
- Secure the frame to the opening using the appropriate mounting kit.
- Before the final tightening of the fastening nuts, check the level of the frame on both the vertical and horizontal planes
- Hang the leaf on the hinges and tighten the fastening elements.
- Install the door hardware according to the manual provided by the manufacturer.
- Adjust the pressure of the seal and the position of the leaf relative to the opening.
- Check the operation of the lock, the tightness of the door leaf to the frame, and the ease of opening and closing the door. If it does not have a threshold, make sure that there is no gap between the edge of the leaf and the floor.
- Connect the wire to the 220V electrical connection point (Figure 10).

9. INSTALLATION AND CONNECTION OF THE ELECTRIC HEATING WIRE

It is compulsory to install a wire on doors in low-temperature chambers in order to prevent the door leaf sticking to the gasket. ProfHolod recommends to install a wire to prevent the formation of condensation on the doors of medium-temperature rooms if:

- The environment inside or outside the doors has regular high humidity (rooms with increased sanitation, basements, mushroom growing chamber, etc.);
- An air conditioning unit is/will be located near the doors;
- The room is not ventilated;
- The doors are installed in a loading dock. The wire heating is always required in case of high humidity.

The door unit uses two electric heating wires:

1. On the inside of the door frame;
2. At the threshold of the doorway.

The preparation and connecting of the 40 W/m metal braid wire should be carried out in the following sequence:

- Cut the braid wire at the required length (no more than 300 mm);
- Pull the cable out of the sheath and twist it into a bundle;
- Remove the rubber insulation;
- Cut off the visible section of the nichrome thread;
- Insulate the cable with PVC tape or heat shrinking tubing at the end of the rubber insulation;
- Strip the ends of the power supply wires.

Figure 9.
Preparation of a wire segment for connection



- Mount the electrical connection box to the wall for the wire. The power supply point for doors with a threshold should be mounted on the upper corner of the door frame on the side with the hinges. For doors without a threshold, it should be mounted on the lower corner on the side with the lock.

Figure 10.

Layout of the wire in the overlapping frame.

On the left — installation in a frame without a threshold; on the right — with a threshold

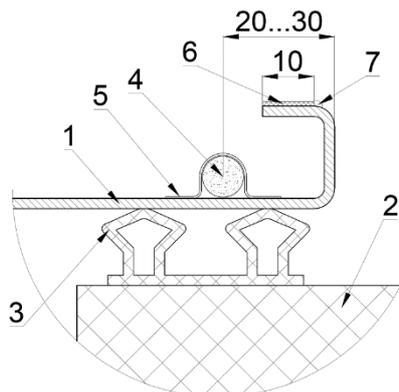
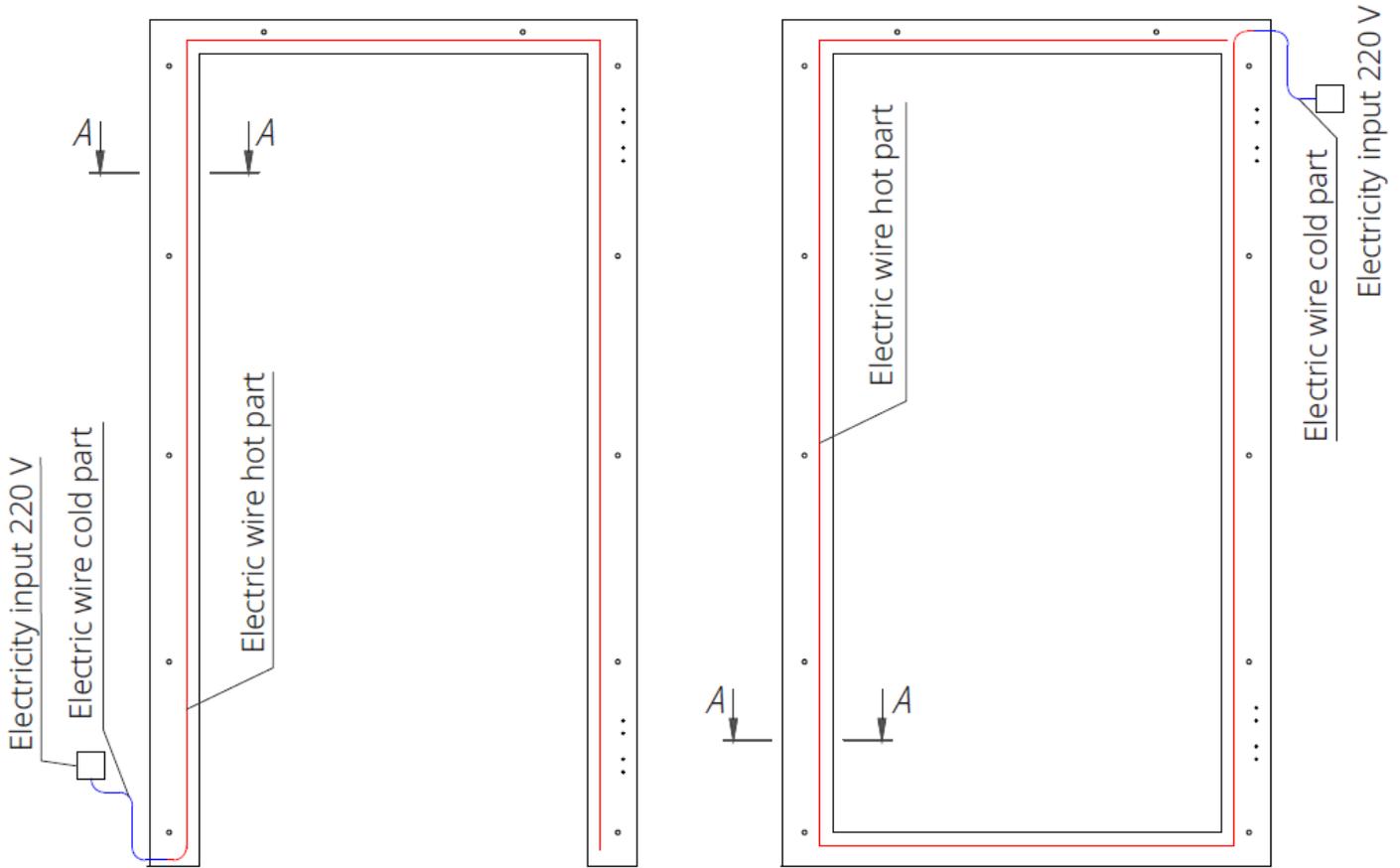


Figure 11.

Assembly unit 3. Wire installation

- 1 - The metal frame
- 2 - Door leaf
- 3 - Double rubber seal (Fermod 67)
- 4 - Wire, metal braid, of constant power 40 W/m
- 5 - Adhesive foil tape
- 6 - PEE 3x10 tape to break the cold bridge
- 7 - Silicone sealant

The connection is made using a connector block with an AE or VA circuit breaker, with a fuse up to 6 A. Protect the connection point from moisture and dust.

ATTENTION!

The heating element must be wired by a professional electrician.

10. ADJUSTING THE DOOR HARDWARE

HSLD WITH FERMOD HARDWARE

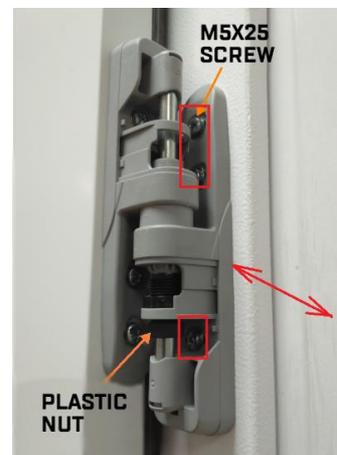
Adjusting the position of the side hinges should be carried out in the following order:

1. Remove the covers from the half hinges;
2. Mark, with a pencil, the position of the half loop on the leaf;
3. Remove the sheeting from the hinges;
4. Loosen the 4 screws securing the half-loop onto the leaf;
5. Move the half loop in the desired direction;
6. Tighten the screws;
7. Hang the door leaf, check the pressure of the seal;
8. Replace the half-hinge covers.



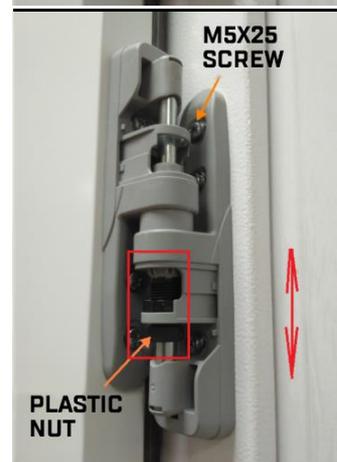
Adjusting the position of the leaf relative to the opening should be carried out in the following order:

1. Remove the covers from the half hinges;
2. Mark, with a pencil, the position of the half loop on the leaf;
3. Remove the sheeting from the hinges;
4. Loosen the 4 screws securing the half-loop onto the leaf;
5. Move the half loop in the desired direction;
6. Tighten the screws;
7. Hang the door leaf, check the position of the leaf relative to the opening;
8. Replace the half-hinge covers.



Adjusting the pressure of the lower seal for doors without a threshold should be carried out in the following order:

1. Remove the covers from the half hinges;
2. Remove the sheeting from the hinges;
3. Screw the plastic nut clockwise all the way;
4. Hang the door leaf;
5. Unscrew the plastic nut counterclockwise until there is no gap between the lower seal and the floor. To avoid the door hinge being in the way, it is recommended to carry out the adjustment with the door leaf removed or raised;
6. Replace the half-hinge covers.





Adjusting the seal pressure from the lock side should be carried out in the following order:

1. Remove the latch cover to be able to unscrew the two M5x25 screws;
2. Loosen the bolt securing the latch;
3. Move the latch in the desired direction;
4. Tighten the latch bolts;
5. Check the amount of pressure of the seal from the lock side, if necessary, make the adjustment again, see paragraphs 2-4;
6. Replace and secure the latch cover.

11. OPERATION AND MAINTENANCE INSTRUCTIONS

The effective operation and service life of hinged doors is largely dependent on the quality and regularity of maintenance. For a trouble-free and long-term operation of the fittings, it is recommended to schedule an inspection of the fittings, to tighten the fasteners and lubricate the surfaces that experience friction at least once every two weeks. The frequency of maintenance may vary depending on the frequency of the door opening-closing cycles. The door seal must be lubricated with silicone grease. Careful operation and timely replacement of damaged elements will guarantee a long-term and trouble-free life cycle.

It is **compulsory** to install a canopy to protect from the sun, snow and rain if the door is installed outside. Do not store, install or operate doors under direct sunlight.

12. POSSIBLE ISSUES AND SOLUTIONS

Possible malfunction	Likely cause	Recommended course of action
Noise when in use: squeaks or other sounds	Lack of lubrication	Lubricate the support bearings of the hinges, the hinges themselves and/or the door locks.
Failure of locks, handles or latches	Some elements are broken	Replace damaged items

13. SAFETY MEASURES

Before starting work, it is important to inspect the general condition of the doors. Do not use the doors if there are any issues or malfunction of parts.

Carry out regular maintenance and inspections, including regular inspections of the power supply to the door block.

14. STORAGE AND TRANSPORTATION

To ensure the protection of the doors from any damage the doors should be transported in their original factory packaging. During transportation the door sets must be securely fastened in a stable position, any shifting or movement can result in damage to the door leaves or frames. The doors can be shipped by any means of transport, provided they can be securely fastened inside the truck or container. Protect surfaces of the door leaves during unloading and/or moving around the construction site from any shock or impact.

The door blocks should not be exposed to direct sunlight. Storage and operation of doors in direct sunlight is also prohibited.

Doors should be stored in spaces protected from precipitation and in a position that does not add any load stress onto the fittings.

No more than six doors, with foam pads, are allowed to be stored horizontally.

Packaged products can get more heavy over time: they can absorb moisture, condensation, etc.

15. DISPOSAL

Disposal of heat-insulating material or polyurethane foam by incineration is STRICTLY FORBIDDEN. Consult ProfHolod for the appropriate ways of disposal.

16. DELIVERY SET

1. Door frame
2. Door leaf
3. Door hardware packed in a separate box

The standard delivery set of the door includes:

1. Door leaf, sized to the dimensions of the opening, made of 0.5 mm thick galvanized metal, with RAL polymer coating. (see Table 1);
2. Metal door frame made of 2 mm thick cold-rolled sheet steel, painted with RAL powder enamel paint.

Possible additions or adjustments:

1. Door leaf can be made from AISI 304 or AISI 430 stainless steel;
2. Metal frame can be made from 2 mm thick AISI 304 or AISI 430 stainless steel;
3. Wire to heat the seal on the metal frame;
4. A set of fixing elements, so you can install the frame to a sandwich panel, metal structure or brick wall;
5. Cover caps.

If the door leaf is supplied on a sandwich panel with a pre-framed opening, the product is delivered assembled and not equipped with additional options. This door block will be part of the wall of the refrigeration (freezing) chamber, assembled from sandwich panels manufactured by LLC ProfHolod.

LLC ProfHolod does not guarantee the compatibility of the door set which comes installed inside the ProfHolod's insulated panel with panels of third-party manufacturers due to differences in the docking locks of the insulated panels.

17. WARRANTY

ProfHolod LLC guarantees that the door set will meet the design specifications and operational functionality outlined in the documentation, provided that the consumer observes the recommended rules for transportation, storage, installation and operation.

The warranty period for the door set is 1 year from the date of shipment.

During the warranty period, claims will not be accepted if:

- Instructions for installing or adjusting the door block are violated;
- Parts or assembly units are damaged as a result of errors during installation and operation.

The warranty does not cover

- the seals.
- on parts that wear quickly.

The manufacturer reserves the right to make minor design changes to the product that are not reflected in this document.

Detailed instructions for loading and unloading, transportation, storage, installation and operation, as well as technical documentation for products manufactured by ProfHolod LLC are available on the website www.profhod.com.

Certificate of receipt

Door kit, model _____

corresponds to the documentation and is recognized as serviceable.

The door kit serial number is located at the side of the door leaf in the right corner.

Production date:

_____20_____

Head of quality control department

Stamp

Date of installation _____20_____

