

M²DERN EXPO

REFRIGERATED COUNTER QUADROS

OPERATING MANUAL

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1. Introduction

This operating manual for Quadros counters contains the operating and maintenance conditions for the above-mentioned refrigeration equipment. This document is intended for the service personnel during the installation and operation of the counter and should be kept near the product at all times.

Installation, launching, maintenance and repair of counter may be carried out only by specially trained specialists. All personnel authorized to work with the counter are obliged to get acquainted with this operating manual and comply with all conditions of operation and maintenance of the equipment. The equipment is supplied complete with other necessary documents in accordance with the requirements of applicable standards.

Take care to keep this manual properly stored for the entire service period of the equipment. The document must be treated with care and protected from damage. This document must be stored in a place protected from moisture and high temperatures.

The operating instructions must be kept for the entire service period of the equipment and, if the equipment is transferred to another owner, must be transferred with it.

WARNING! The manufacturer is not responsible for:



- losses incurred by the equipment as a result of breakdowns, accidents or failures that occurred as a result of non-compliance with the instructions given in this manual (Section 12);
- the consequences of unauthorized modification of existing or installation of new equipment components not provided by the manufacturer;
- use of the counter for other purposes;
- incorrect installation and connection of the counter;
- violation of the rules and terms of maintenance;
- partial or complete violation of the rules of this manual;
- power outages.

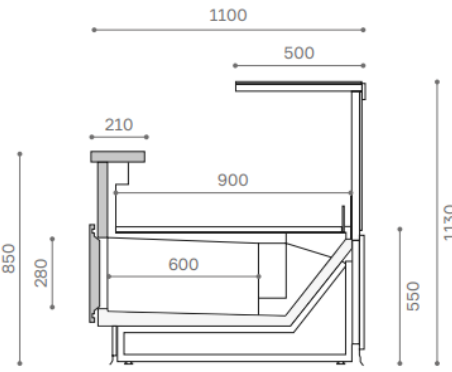
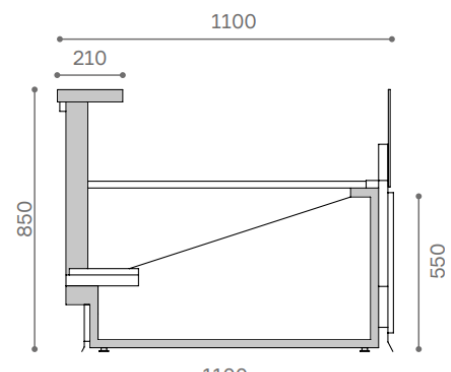
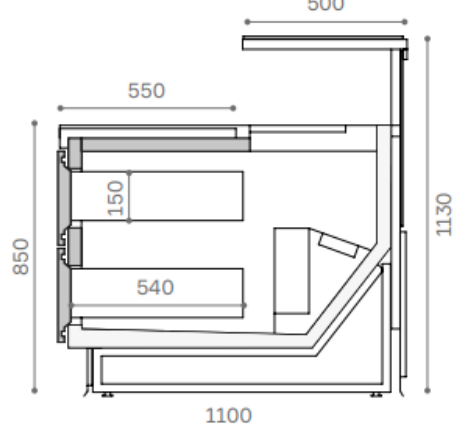
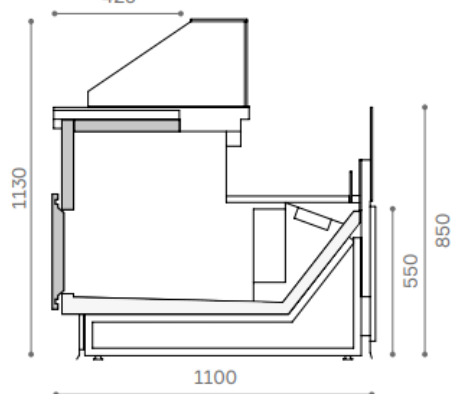
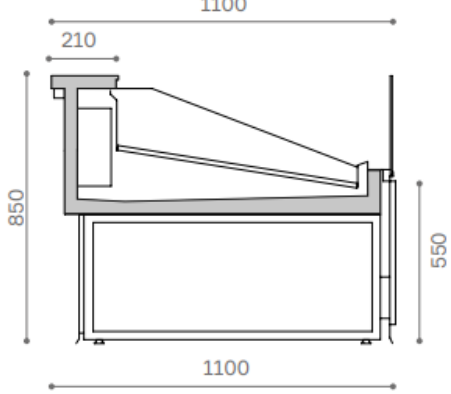
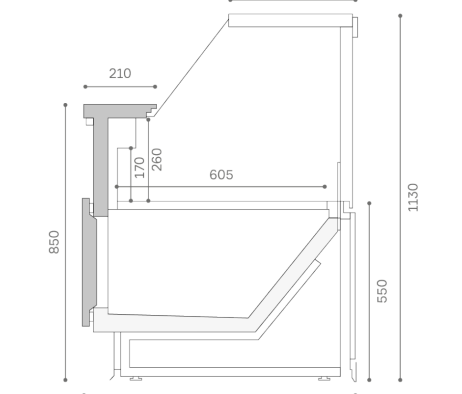
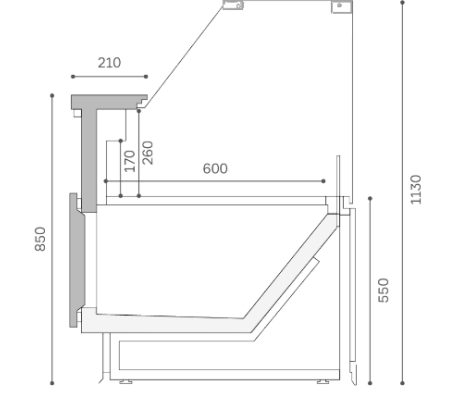
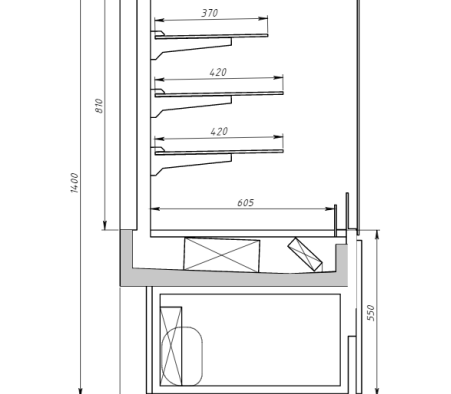
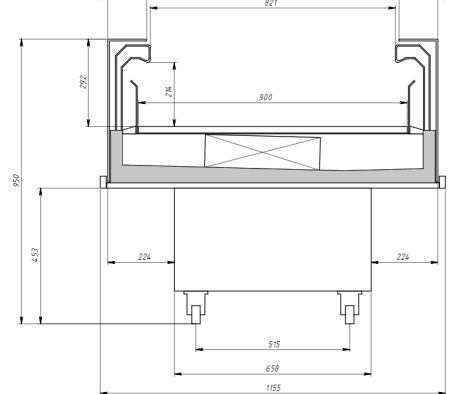
RECOMENDATIONS:



1. Install voltage protective relays or voltage stabilizers.
2. All routine operations (maintenance, commissioning, repairs) shall be recorded in this manual (Section 14) or on the portal (Section 11).
3. The person appointed by the head of the company-user of the counter is responsible for the organization of operation, carrying out of scheduled maintenance and repair works. Since the operating instructions are designed for service personnel with the appropriate level of training and experience in working with refrigeration equipment, they do not include the principles of operation of the refrigerator and automation devices.
4. For equipment that has to work with such products as raw fish, salted fish, or prepared products containing vinegar, it is necessary to use cabinets with internal elements made of AISI 304 stainless steel and evaporators with epoxy coating to extend the service life of the equipment (Section 3).

The manufacturer reserves the right to change the brand of components and accessories without notice, provided that the performance characteristics are maintained.

2. Model line of counters

		
Quadros H-1130 W-1100	Quadros self-service H-850 W-1100	Quadros Pizza H-1130 W-1100
		
Quadros Combi H-1130 W-1100	Quadros Fish H-850 W-1100	Quadros Slim H-1100 W-800
		
Quadros Slim Solid H-1100 W-800	Quadros SlimConfi H-1400 W-793	Promos open H-950 W-1155
		
Promos with sliding doors H-1030 W-1155		

3. Prohibitions and regulations of use

During the operation of the counter, it is recommended to constantly monitor the temperature in the cabinet according to the screen of the control unit (Fig. 3). In case of failure to ensure the specified mode, it is necessary to call a service center specialist, taking measures to avoid product spoilage, namely by moving them from the counter to another storage.

The product must be delivered to the installation place in compliance with all rigging rules, carefully, avoiding shocks and jolts. **The product must be prepared and put into operation only by specialists of the organization who have a certificate for the right to install and maintain refrigeration equipment.**

If the local regulations of the consumer's country (for EU countries - REGULATION (EU) 2024/573) requires a registration or license for the use of a working refrigerant and reporting on its use, this must be ensured by the service organization that installs and charges the counter with refrigerant in accordance with the requirements of the relevant regulations.

Before connecting the counter to the mains, make sure that the supply voltage is in accordance with the one indicated on the product's rating plate. Make the correct connection according to the power of the counter, selecting the cable cross-section and circuit breaker. **The counter must be grounded.**

Disconnect the counter from the power supply before performing maintenance, repair or cleaning.

Recommendations for the care of refrigerated counter, accessories or their structural elements made of stainless steel:

- wash and wipe the equipment dry immediately after use, avoiding the drying of dirt and food residues. When water residues dry naturally, yellowish scale may appear on stainless steel surfaces, which can be removed with special detergents;
- to clean the equipment, use specialized detergents for the care of stainless steel. Do not use cleaning and disinfecting agents that contain chlorine, hard abrasives, acids and soda;
- do not use hard, fine-grained substances, hard sponges, brushes or other objects that can scratch the surface;
- soft wipes, pieces of cloth, and specialized neutral detergents for the care of stainless steel products are recommended;
- it is recommended to soak old and hardened dirt first. Grease can be easily removed with warm water and a special solution;
- it is forbidden to store and transport stainless steel products near chemicals.

NOTE! In case of violation of the requirements for the operation and care of stainless steel products and elements, the manufacturer is not responsible for maintaining the appearance of the products, their quality and properties necessary for full operation.

If any signs of malfunctioning appear, as well as if faults are detected in the electrical system or if refrigerant leakage is detected, immediately disconnect the counter from the power supply and notify the service department. No unauthorized persons should be allowed to access the product until the service technician arrives.

3.1. For the counter

Regulations for use:

- refrigeration equipment **maintains the temperature of the goods, but does not reduce it;**
- the use of refrigeration equipment is **allowed only indoors;**
- refrigeration equipment is intended for storage and display of fresh, freshly frozen and frozen products (according to the class of the counter);
- all parts/components of the refrigeration equipment must be installed and all fasteners must be fixed in accordance with this operating manual. We are not responsible for incorrect operation of the refrigeration equipment in case of non-compliance with the above requirements;
- be sure that the power supply is turned off before performing any work related to the maintenance of the equipment;
- carefully perform all work operations (loading/unloading of goods, washing and maintenance, service at the counter, etc.) Wear appropriate protective equipment when performing these operations;
- to ensure the correct and proper operation of the equipment, all preventive maintenance operations must be carried out with special care and regularity.

PROHIBITIONS:



- do not remove the protection from moving parts of the refrigeration equipment without first disconnecting the product from the power supply;
- do not touch the counter with wet or damp hands;
- do not touch the counter while barefoot;
- do not remove frost from the evaporator surface mechanically with sharp objects;
- do not operate the counter with damaged elements and sharp edges;
- persons with physical or mental disabilities, as well as children, are prohibited from operating the equipment. Persons with insufficient experience and knowledge must work under the supervision of experienced professionals or in accordance with the operating instructions provided;
- it is forbidden to operate the counter in a broken condition;
- it is forbidden to operate the counter with a damaged power cable;
- do not operate the counter with unstable mains voltage;
- it is forbidden to install two counters with sidewalls next to each other.

3.2. For the product

Regulations of use:

- the refrigerated counter (main and additional volume) is designed to maintain the required temperature of the products laid out. Accordingly, only food products of the appropriate temperature can be loaded products of the appropriate temperature (Table 1);

Table 1. Recommended storage and loading temperatures for products depending on the class of counter

Cabinet class	Temperature range of products in the cabinet	Product temperature range required at loading	Temperature range in the working volumes of the cabinet	Set value for the corresponding counter class
3M1	-1/+5	0/+2	0/+2	+1
3M2	-1/+7	+2/+4	+2/+4	+2
3H1	+1/+10	+4/+6	+4/+6	+4

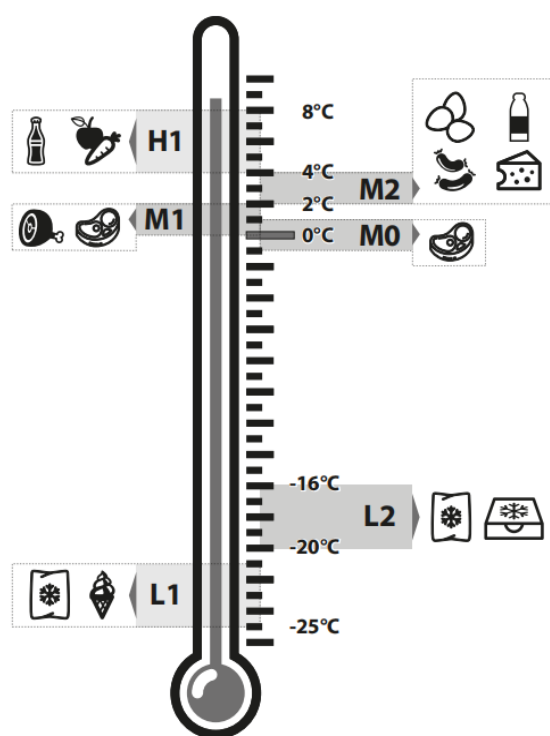


Fig. 1. Controlling the operating temperature of the cabinet

- storage of dairy products or products of high acidity (pickles, fish, etc.), without packaging or in opened form, can lead to corrosion on certain elements of the equipment and significantly reduce its service period;
- it is necessary to load the counter in accordance with the limit level located on the counter (clause 7 of the manual);
- to store the goods and avoid leakage into the cabinet, it is necessary to use appropriate containers;
- it is necessary to always (in accordance with the established schedule) control the level of water (in containers) formed as a result of defrosting (release drains, clean, check siphons, etc.);
- it is necessary to regularly monitor the operating temperature of the counter to avoid malfunctions and further spoilage to the goods.

PROHIBITIONS:



- do not load hot, warm or frozen products into the counter if its temperature class does not allow it (Table 1). If the appropriate conditions are not met, condensation may form under the products in the main and additional volumes;
- it is forbidden to store explosive substances and items with flammable mixtures inside the counter;
- it is forbidden to load the counter above the level of the limiting marks (Fig. 2);
- it is forbidden to load more than 11 kg/m² on the glass shelf of the counter
- it is forbidden to load the goods by covering the air circulation grilles in the volume.



Fig. 2. The level of limiting marks

3.3. For operating

Regulations of use:

- the temperature and moisture values in the room where the equipment is installed must not exceed the limit values indicated on the technical labeling of the product (clause 5.2). An excessive moisture level (including that caused by weather conditions) may cause fogging of the glass elements of the equipment and/or condensation on some parts of it;
- to avoid problems with condensation in retail outlets, it is necessary to always maintain a stable climatic background in the place of installation, using climate systems, heating and ventilation;
- in case of an unusually large amount of condensation, not related to the above situations (excessive ambient humidity, non-compliance with the temperature regime of products during display and storage) – contact a refrigeration specialist.

4. Configuration, structure, and operation of the counter

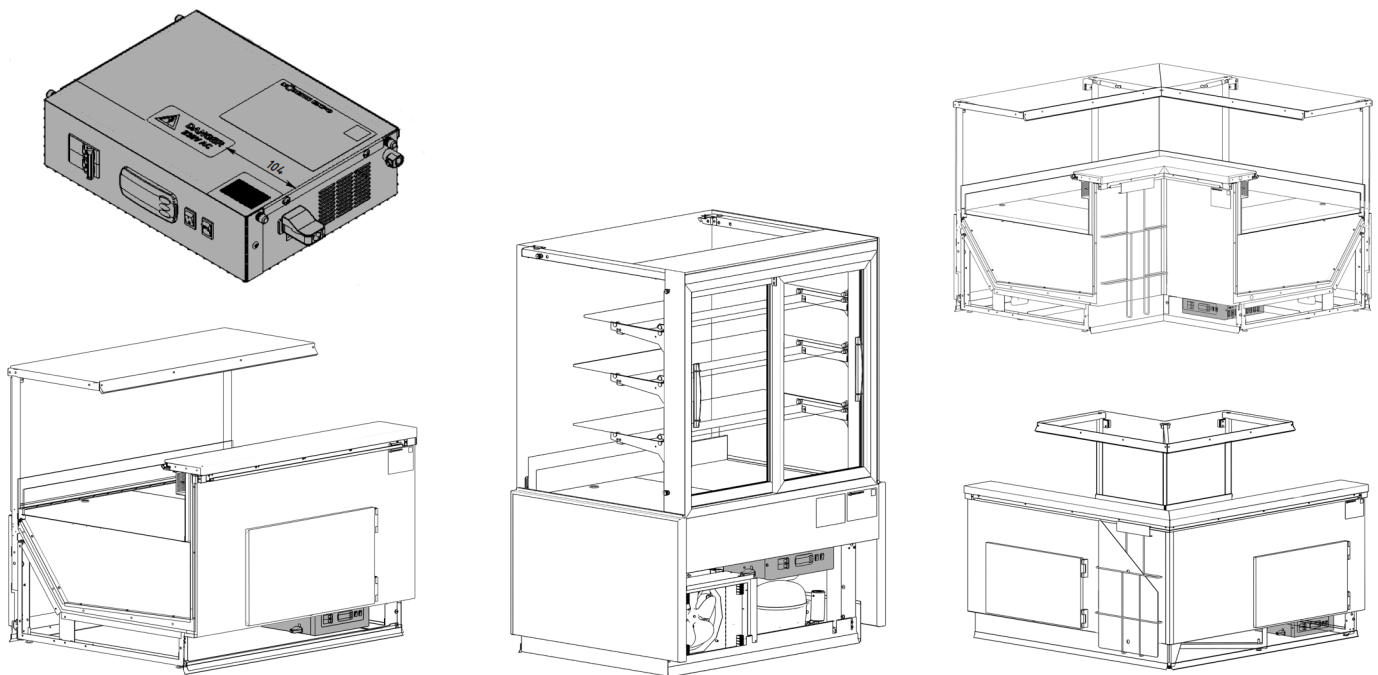


Fig. 3. Location of the control unit
(control unit is grayed out)

4.1. Configuration, structure, and operation of the counter

Refrigerated counters of the Quadros type are a horizontal counter with a heat-insulated case (Fig. 4), on which an air intake 12, pallets of the basic layout 8, a back wall with perforations 7 and glass elements on the stands (for counters for the sale of products with the help of a seller) or low front glass (for self-service sales) are installed.

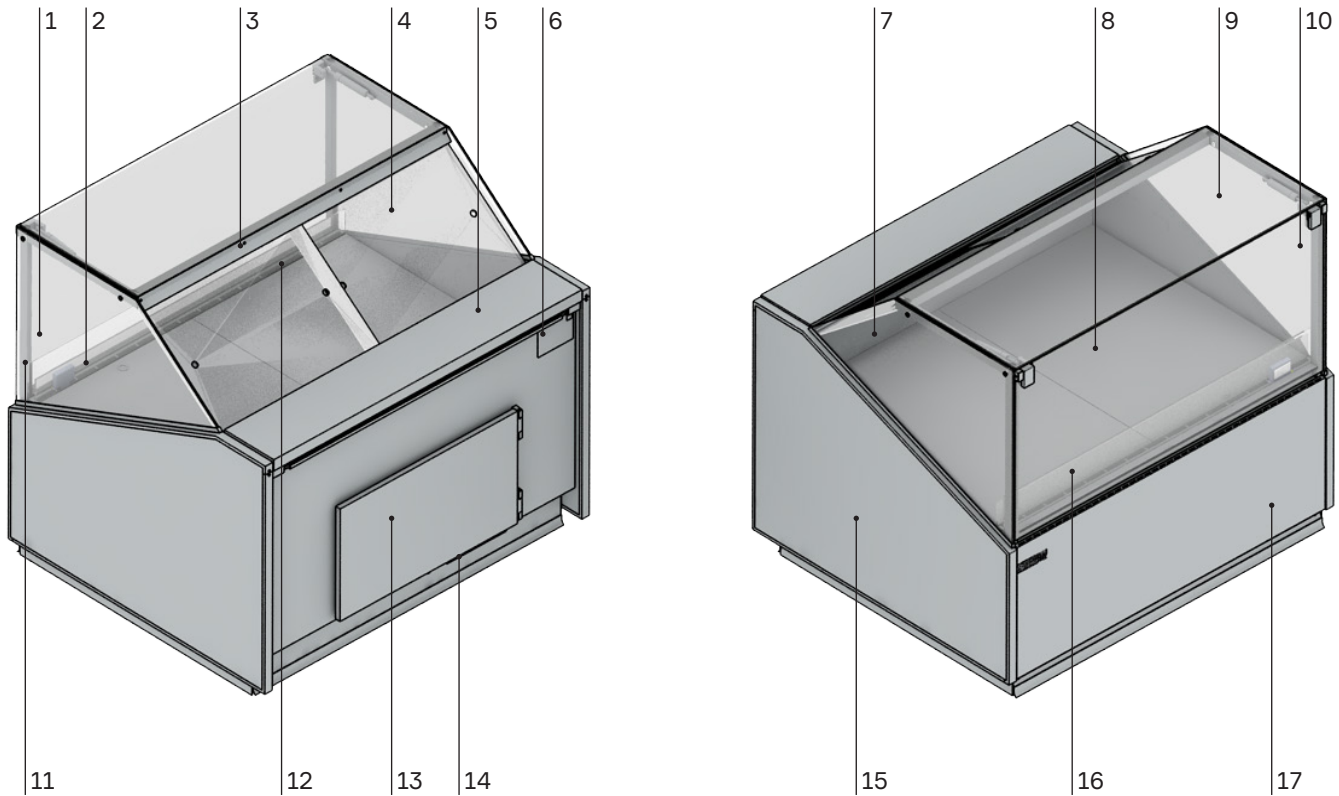


Fig. 4. Counter Quadros

1 – sidewall glass; 2 – thermometer; 3 – rails for acrylic curtains and main lighting plafond; 4 – acrylic curtains; 5 – tabletop; 6 – labeling plate; 7 – rear wall; 8 – pallets of the display plates; 9 – upper glass; 10 – front glass; 11 – stand; 12 – air intake; 13 – additional volume door; 14 – control unit; 15 – sidewall; 16 – acrylic bumper; 17 – decorative pannels.

The Quadros counters have a vertical heat exchanger, under the pallets of the display plates. The upper glass 9 and the front glass 10 are attached to the stands 11. On the front side, at the bottom of the counter, there is a decorative panel 17.

The sides of the counter are bounded by sidewalls 15. The design of the counters allows them to be assembled in a line. In this case, the sidewalls are installed only on the edge counters on the right and left, and dividers are installed between the counters, if necessary. The left or right sidewall is considered to be from the buyer's side.

For a better view of the goods, LED lighting is installed in the upper part under the stands 3. The control unit of the cooling system 14 and the light switch of the counter are installed under the rear wall.

Maintaining the required temperature inside the counter used for exposure and storage of products is ensured by circulating of cooled air (Fig. 5).

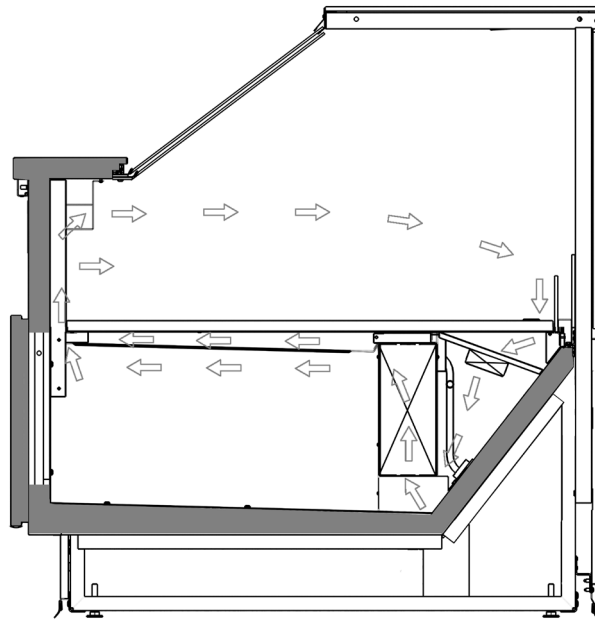


Fig. 5. Air circulation scheme in Quadros refrigerated counters

In Quadros counters, the evaporator is located under the pallets of the display panel, the air is taken through the air intake from the display volume, then it is pumped by fans through the evaporator, where it is cooled (Fig. 3). The cooled air is forced through the perforated wall into the exposure volume. Then the cycle is repeated.

In the case of counters powered by a centralized refrigeration system, the operation of the counter is controlled by a Danfoss EKC202D1 (or similar) electronic unit, via a temperature sensor. The temperature sensor is installed in front of the evaporator and monitors the temperature of the air supplied to the evaporator. When the lower value of the temperature range is reached, the control unit sends a command to close the solenoid valve, thereby stopping the refrigerant supply to the evaporator. When the upper value of the temperature range is reached, the control unit sends a command to open the solenoid valve, which restores the evaporator operation.

In the counters with a built-in compressor-condenser unit, the cooling system is a compression-type refrigeration machine. The compressor-condenser unit of this type of counters is located in the lower part of the equipment behind the front panel. The operation of the counter is controlled by an electronic unit Danfoss EKC202D1 (or similar), via a temperature sensor. When the lower value of the temperature range is reached, the control unit sends a command to stop the compressor, thereby stopping the refrigerant supply to the evaporator. When the upper value of the temperature range is reached, the control unit sends a command to start the compressor, which resumes system operation.

Since the refrigerant boils in the evaporator at sub-zero temperatures, a “snow coat” forms on the walls and fins of the evaporator tubes, which requires periodic defrosting. The frequency of the defrosting procedure is set on the control unit of the counter, set by the manufacturer and can be adjusted by the service personnel during operation. The beginning of the defrosting process is set by the time parameter, and the end of the defrosting process is determined by the evaporator surface temperature, which is controlled by a temperature sensor.

4.2. Configuration, structure, and operation of counter Quadros Pizza

Refrigerated counters of the Quadros Pizza type are a horizontal counter with a heat-insulated case (Fig. 6), in which drawers 9 are installed, in the countertop 3 there is a place for the location of gastronorms 5, a place for mounting a granite countertop 2 and glass elements on the stands (for the sale of products with the help of a seller).

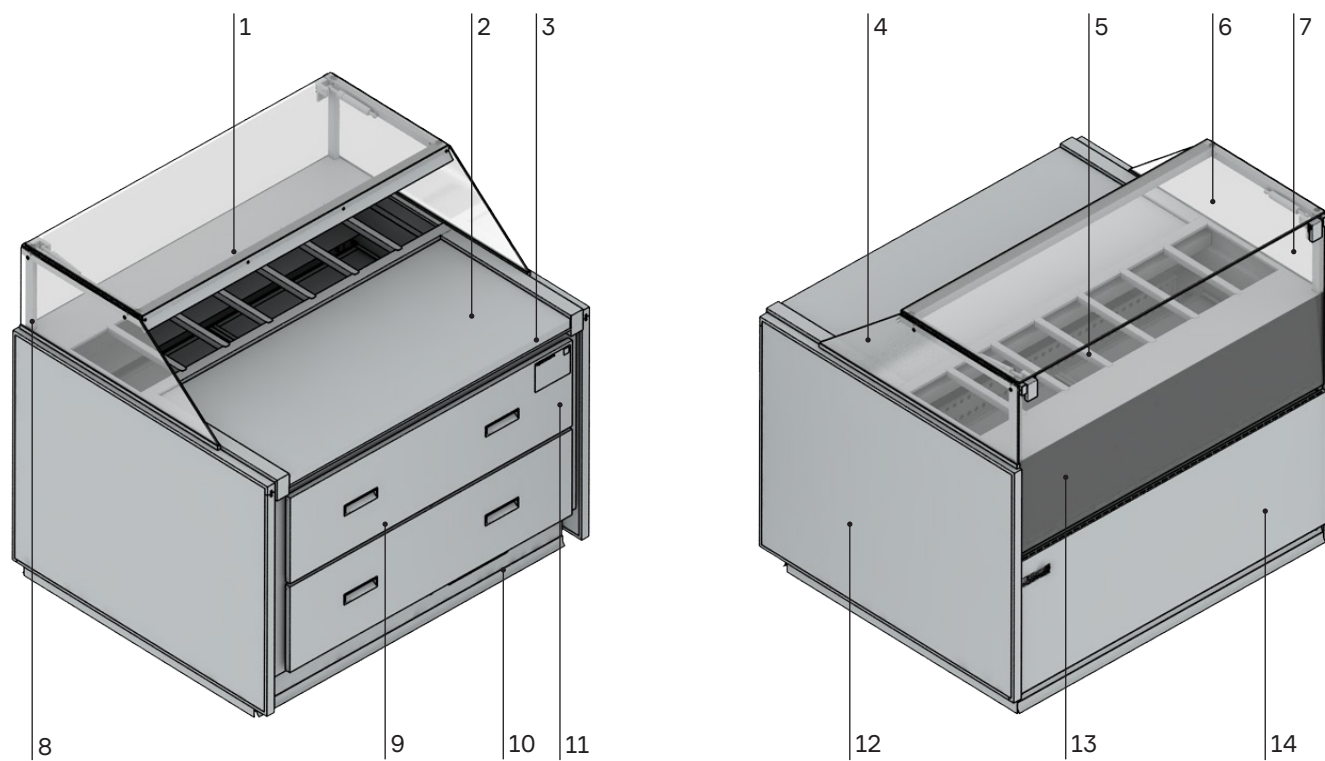


Fig. 6. Counter of Quadros Pizza

1 – main lighting plafond; 2 – place of installation of a granite countertop; 3 – working tabletop; 4 – sidewall glass; 5 – place for gastronorms; 6 – upper glass; 7 – front glass; 8 – stand; 9 – drawers; 10 – control unit; 11 – labeling plate; 12 – sidewall; 13 – place of pasting the decorative banner; 14 – decorative panel.

The Quadros counters have a vertical arrangement of the heat exchanger in the refrigerated volume. The upper glass 6 and the front glass 7 are attached to the stand 8. On the front side, at the bottom of the case, decorative panels 14 are attached.

On the sides, the counters are bounded by sidewalls 12. The design of the cabinets allows you to assemble them in a line. In this case, the sidewalls are installed only on the edge counters on the right and left, and between the Pizza counters, if necessary, dividers are installed, in case of docking with other counters, the dividers are MANDATORY. The left or right side is considered to be on the buyer's side. Installation schemes are shown in Appendix B.

For a better overview of the product processing, LED lighting 1 is installed in the upper part under the stands. The control unit of the cooling system 10 and the switch of the display counter lighting are installed under the rear wall.

Maintaining the required temperature inside the volume used for storing products in drawers and gastronorms installed in the designated place is ensured by the circulation of cooled air (Fig. 6).

In the Quadros Pizza cabinets, the evaporator is located in a closed refrigerated volume under the volume for gastronorms, the air passes through the evaporator, where it is cooled, is pumped into the volume of the drawers, passes by the gastronorms cooling them (Fig. 7). Then the cycle repeats.

The operation of the counter, including defrosting, is similar to that described in paragraph 2.1.

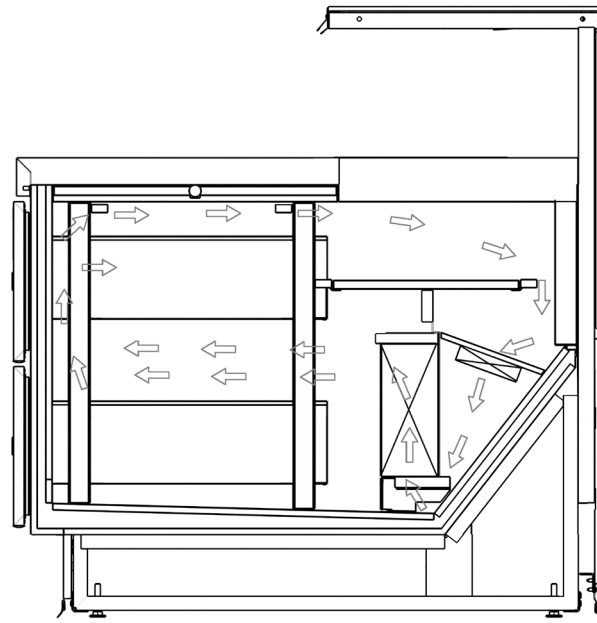


Fig. 7. Air circulation scheme in refrigerated counters Quadros Pizza

4.3. Configuration, structure, and operation of counter Quadros Combi

Refrigerated counters of the Quadros Pizza Combi type are a horizontal counter with a heat-insulated case (Fig. 8), on which air intake 1, pallets of the basic layout 7, back wall with perforations 8, working surface 6 with a place for mounting a granite countertop 4 and gastronorms 3, low front glass 13 (for self-service sales) are installed.

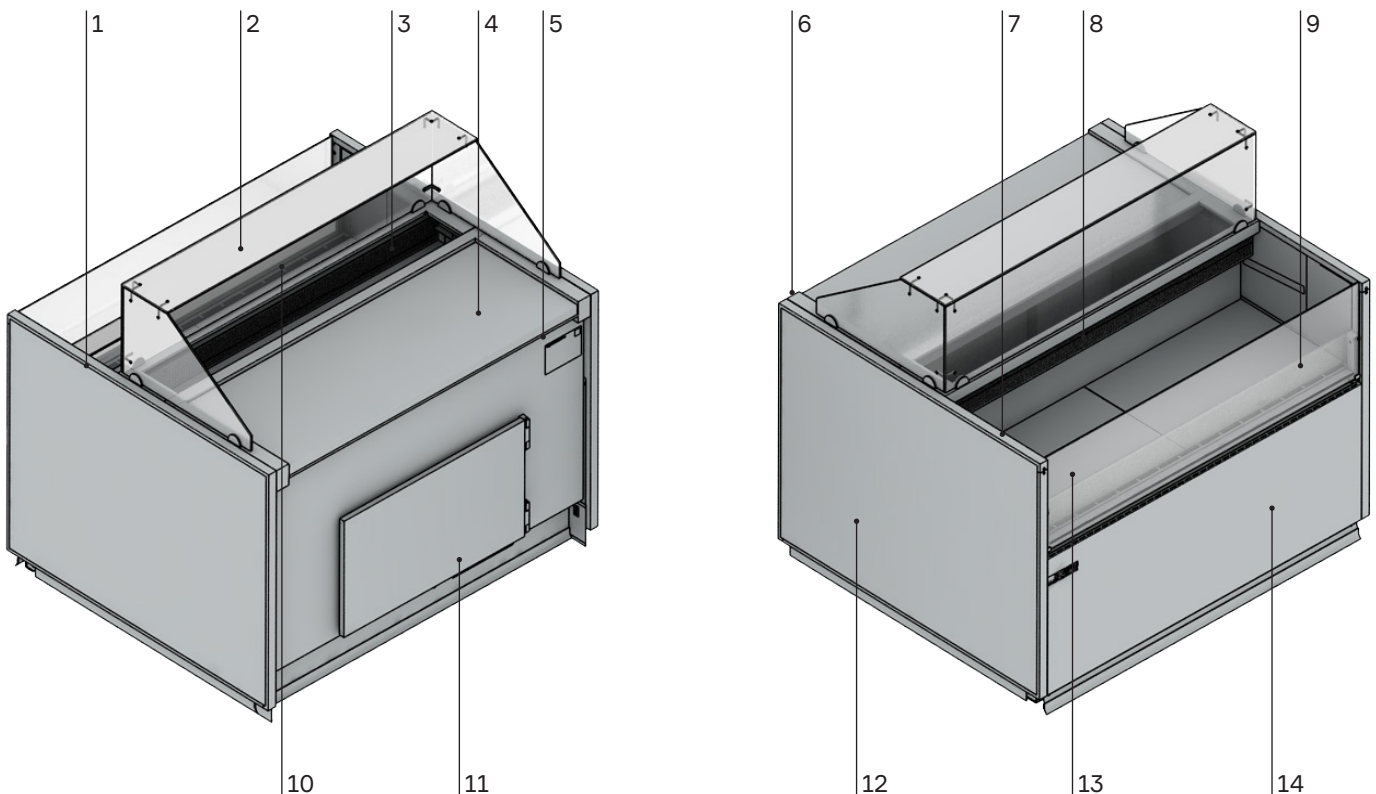


Fig. 8. Counter Quadros Combi

- 1 – air intake; 2 – upper glass superstructure; 3 – place for gastronomics;
 4 – place for granite countertop installation; 5 – marking plate; 6 – countertop;
 7 – pallets of the basic layout; 8 – rear wall with perforations; 9 – thermometer;
 10 – door of additional volume; 11 – control unit; 12 – sidewall; 13 – front glass;
 14 – decorative cladding.

The Quadros Pizza counters have a vertical arrangement of the heat exchanger in the refrigerated volume. Upper glass superstructure 2 and low front glass 13. On the front side, at the bottom of the case, decorative cladding 14 is attached.

The sides of the counter are bounded by sidewalls 12. The design of the cabinets allows to assemble them in a line. At the same time, the sidewalls are installed only on the edge counters on the right and left, and partitions are installed between the counters, if necessary, in case of docking with other counters, the partition is MANDATORY. The left or right side is considered to be on the buyer's side.

The control unit of the cooling system 11 is installed under the rear wall. Maintenance of the required temperature inside the volume used for display and storage of products is ensured by circulation of cooled air.

In the Quadros Combi counters, the evaporator is located under the pallets of the basic layout, the air is taken through the air intake from the exposition volume, then it is pumped by fans through the evaporator, where it is cooled (Fig. 9). The cooled air is pumped into the additional volume of the counter and continues to move past the gastronomics, through the perforated wall into the display volume. Then the cycle is repeated.

The operation of the counter, including defrosting, is similar to that described in paragraph 2.1.

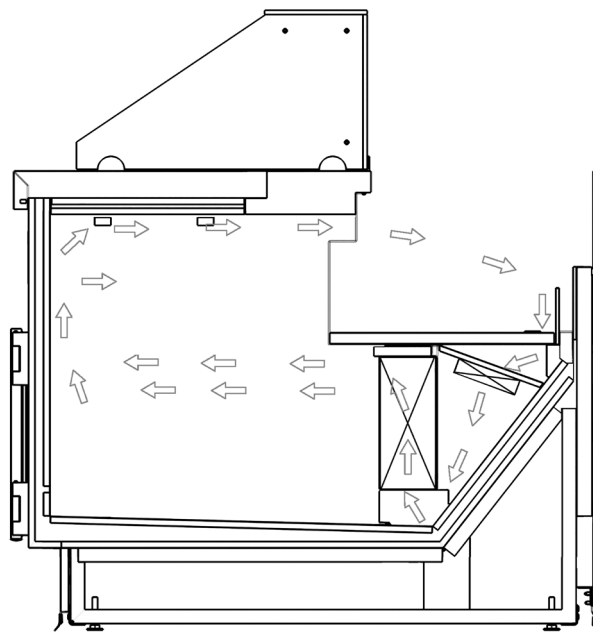


Fig. 9. Air circulation scheme in the Quadros Combi refrigerated counters

4.4. Configuration, structure, and operation of counter Quadros Fish

Refrigerated counters of the Quadros Fish type are a horizontal counter with a heat-insulated case (Fig. 10), on which an air intake 7, pallets of the basic layout 8, a back wall with perforations 2 and glass elements on the stands (for serve over counters) or low front glass (for self-service sales) are installed.

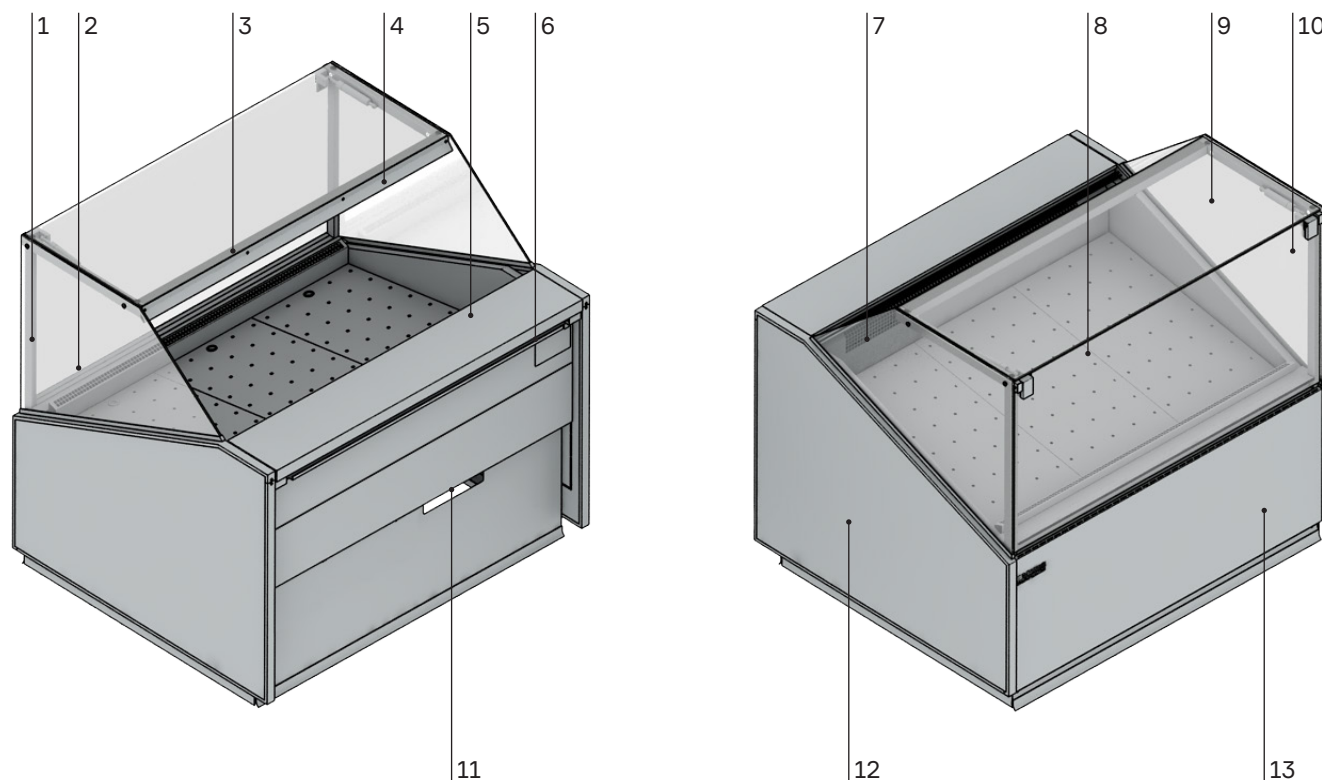


Fig. 10. Counter Quadros Fish

1 – stand; 2 – blower grill; 3 – main lighting plafond; 4 – guides for acrylic curtains; 5 – tabletop; 6 – marking plate; 7 – rear air intake; 8 – pallets of the display plates; 9 – upper glass; 10 – front glass; 11 – control unit; 12 – sidewall; 13 – decorative panel

The Quadros Fish counters have a vertical heat exchanger behind the rear perforated wall 2 and the front glass 10 is attached to the stands 1. On the front side, at the bottom of the cabinet, decorative panels 13 are attached.

The sides of the counter are bounded by sidewalls 12. The design of the counters allows to assemble them in a line. At the same time, the sidewalls are installed only on the edge counters on the right and left, and dividers are installed between the counters, if necessary, in case of docking with other counters, the dividers are MANDATORY. The left or right side is considered to be from the buyer's side. Installation diagrams are shown in Appendix B. For better visibility of the goods, LED lighting is installed in the upper part under the stands 3. The control unit of the cooling system 11 and the counter lighting switch are installed under the back wall.

Maintenance of the required temperature inside the volume used for exposition and storage of products is ensured by circulation of cooled air (Fig. 11).

In the Quadros Fish cabinets, the heat exchanger is vertically located behind the rear perforated wall, the air goes down into the bath, passes under the pallets, enters the exposition volume through the discharge grille, then through the air intake grille the air is pumped to the evaporator, where it is cooled (Fig. 11). The cooled air is forced through the discharge grille into the exposure volume. Then the cycle is repeated. The air circulates due to natural convection.

The operation of the counter, including defrosting, is similar to that described in paragraph 4.1.

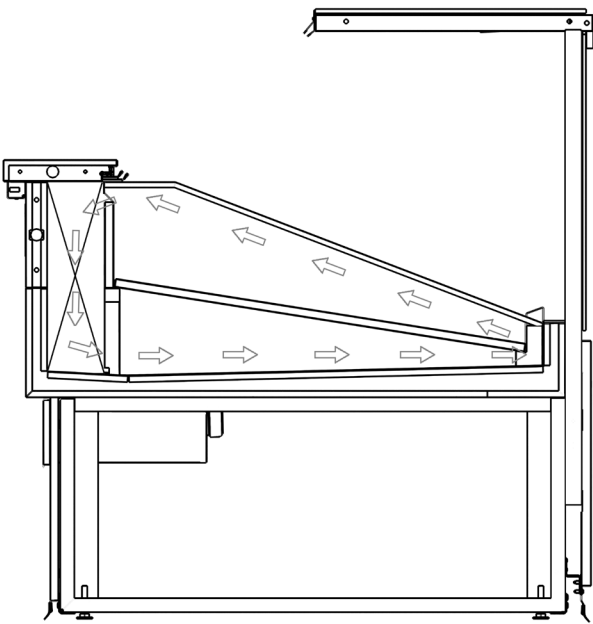


Fig. 11. Air circulation scheme in the refrigerated counters Quadros Fish

4.5. Configuration, structure, and operation of counter Quadros Slim

Refrigerated counters of the Quadros Slim type are a horizontal counter with a heat-insulated case (Fig. 12), on which an air intake 12, pallets of the basic layout 8, a back wall with perforations 7 and glass elements on the stands (for serve over counter) or low front glass (for self-service sales) are installed.

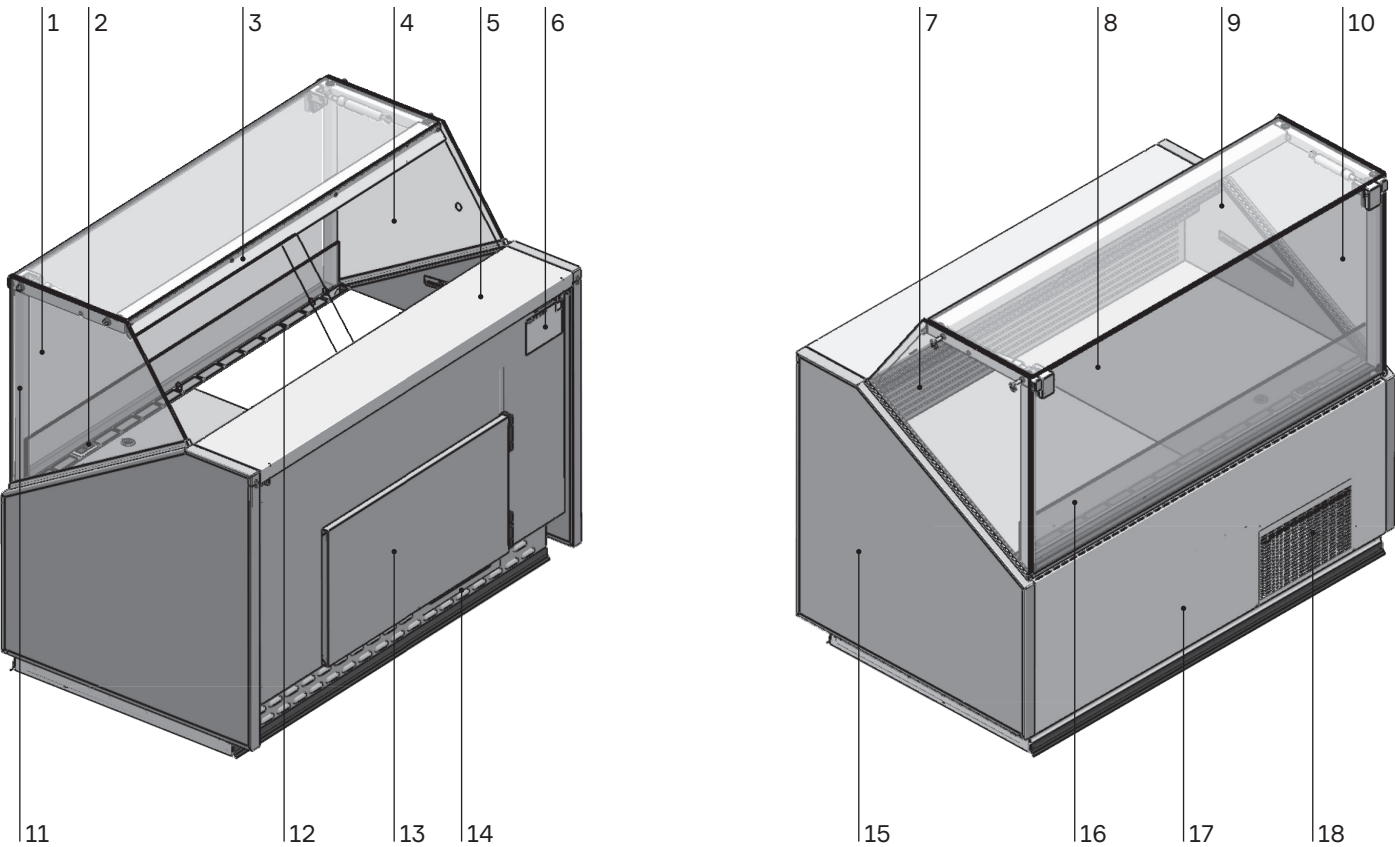


Fig. 12. Counter Quadros Slim

- 1 – sidewall glass; 2 – thermometer; 3 – guides for acrylic curtains and main lighting shade;
 4 – acrylic curtains; 5 – tabletop; 6 – labeling plate; 7 – rear wall;
 8 – pallets of the display plates; 9 – top glass; 10 – front glass; 11 – stand;
 12 – air intake; 13 – additional volume door; 14 – control unit; 15 – sidewall;
 16 – glass fender; 17 – decorative panel; 18 – perforation for the condenser.

The Quadros Slim counters have a vertical location of the heat exchanger, under the pallets of the display plates. The upper glass 9 and the front glass 10 are attached to the stands 11. On the front side, at the bottom of the cabinet, the decorative cladding 17 is attached.

The sides of the cabinet are bounded by sidewalls 15. The design of the cabinets allows you to assemble them in a line. In this case, the sidewalls are installed only on the edge counters on the right and left, and partitions are installed between the counters, if necessary. The left or right sidewall is considered to be from the buyer's side. Installation schemes are given in Appendix B.

For a better view of the goods, LED lighting is installed in the upper part under the stands 3. The control unit of the cooling system 14 and the light switch of the counter are installed under the back wall.

Maintaining the required temperature inside the volume used for displaying and storing products is ensured by circulating cooled air (Fig. 13).

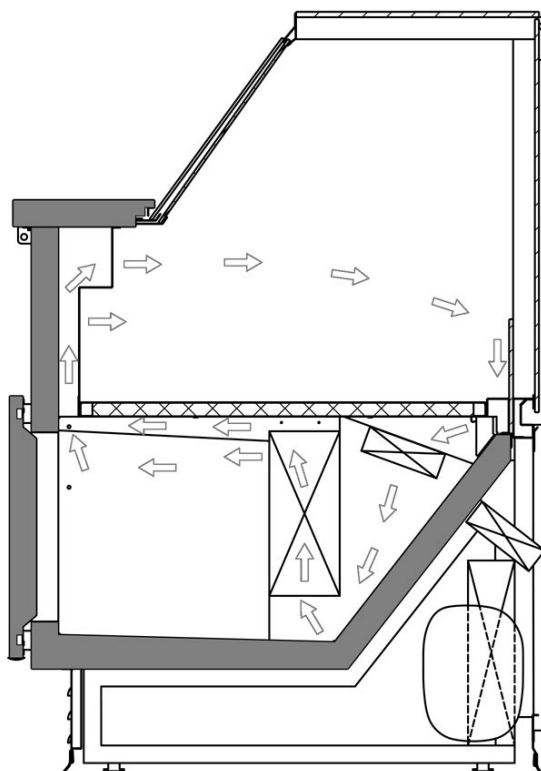


Fig. 13. Air circulation scheme in the refrigerated counters Quadros Slim

In the Quadros Slim counters, the evaporator is located under the pallets of the display plates, the air is taken through the air intake from the display volume, then it is pumped by fans through the evaporator, where it is cooled (Fig. 13). The cooled air is forced through the perforated wall into the exposure volume. Then the cycle is repeated.

For counters that operate from a centralized refrigeration system, the operation of the counter is controlled by the Danfoss EKC202D1 electronic unit (or similar), via a temperature sensor.

The temperature sensor is installed in front of the evaporator and monitors the temperature of the air supplied to the evaporator. When the lower value of the temperature range is reached, the control unit sends a command to close the solenoid valve, thereby stopping the refrigerant supply to the evaporator. When the upper value of the temperature range is reached, the control unit sends a command to open the solenoid valve, which restores the evaporator operation.

For counters with a built-in compressor-condenser unit, the cooling system is a compression-type refrigeration machine. The compressor-condenser unit of this type of counters is located in the lower part of the equipment behind the front panel. The operation of the counter is controlled by an electronic unit Danfoss EKC202D1 (or similar), via a temperature sensor. When the lower value of the temperature range is reached, the control unit sends a command to stop the compressor, thereby stopping the refrigerant supply to the evaporator. When the upper value of the temperature range is reached, the control unit sends a command to start the compressor, which resumes system operation.

Since the refrigerant boils in the evaporator at sub-zero temperatures, a “snow coat” forms on the walls and fins of the evaporator tubes, which requires periodic defrosting. The frequency of the defrosting procedure is set on the control unit of the counter, set by the manufacturer and can be adjusted by the service personnel during operation. The beginning of the defrosting process is set by the time parameter, and the end of the defrosting process is determined by the evaporator surface temperature, which is controlled by a temperature sensor.

4.6. Configuration, structure, and operation of counter Quadros SlimSolid

Refrigerated counters of the Quadros SlimSolid type are a horizontal counter with a heat-insulated case (Fig. 14), on which an air intake 13, pallets of the basic layout 7, a back wall with perforations 4 and glass elements for the sale of products with the help of a seller are installed.

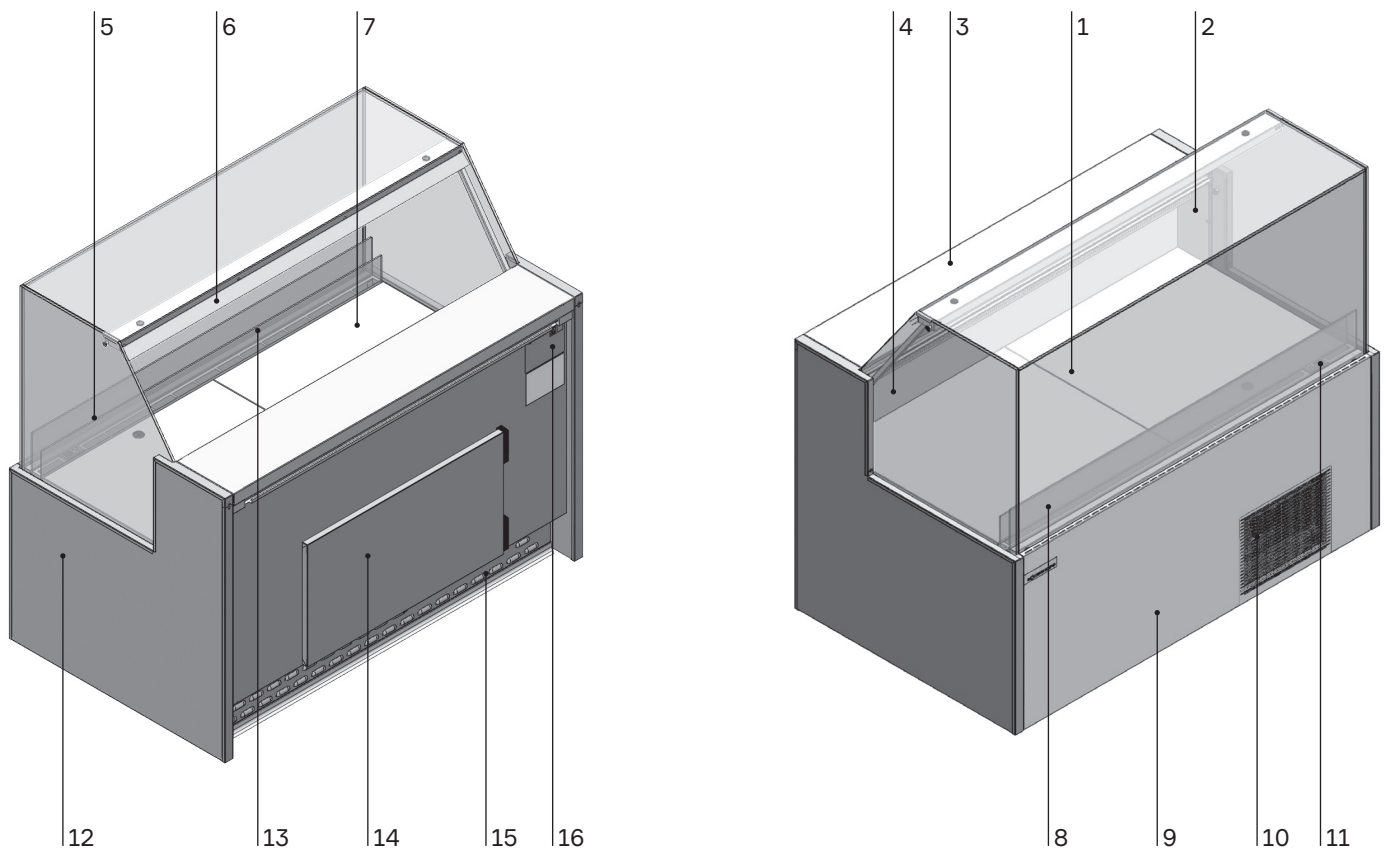


Fig. 14. Counter Quadros SlimSolid

- 1 – front glass; 2 – upper glass; 3 – table top; 4 – rear wall; 5 – sidewall glass;
 6 – guides for acrylic curtains and main lighting plafond; 7 – pallets for display plates;
 8 – glass breaker; 9 – decorative cladding; 10 – perforation for condenser;
 11 – thermometer; 12 – sidewall; 13 – air intake; 14 – additional volume door;
 15 – control unit; 16 – labeling plate.

The Quadros SlimSolid counters have a vertical heat exchanger under the pallets of the display plates. The upper glass 2 and the front glass 1, on the front side, at the bottom of the case, are attached with decorative cladding 9.

On the sides, the counter is bounded by sidewalls 12. Sidewalls are an integral part of the counter.

For a better view of the goods, LED lighting 6 is installed in the upper part of the counter. The control unit of the cooling system 15 and the light switch of the counter are installed under the rear wall.

Maintaining the required temperature inside the volume used for displaying and storing products is ensured by the circulation of cooled air (Fig. 15).

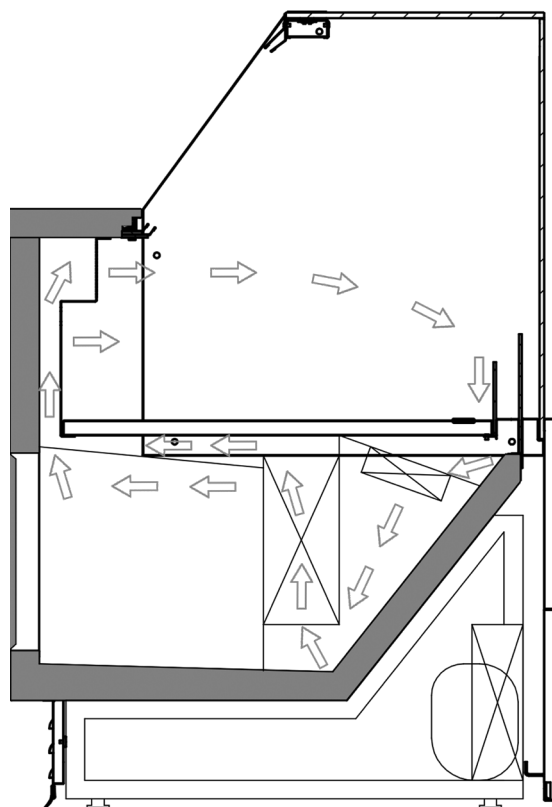


Рис. 15. Air circulation scheme in refrigerated counters Quadros SlimSolid

In Quadros SlimSolid counters, the evaporator is located under the pallets of the display plates, air is taken through the air intake from the display volume, then it is pumped by fans through the evaporator, where it is cooled (Fig. 15). The cooled air is forced through the perforated wall into the exposure volume. Then the cycle is repeated.

For cabinets with a built-in compressor-condenser unit, the cooling system is a compression-type refrigeration machine. The compressor-condenser unit of this type of counters is located in the lower part of the equipment behind the front panel. The operation of the counter is controlled by an electronic unit Danfoss EKC202D1 (or similar), via a temperature sensor. When the lower value of the temperature range is reached, the control unit sends a command to stop the compressor, thereby stopping the refrigerant supply to the evaporator. When the upper

value of the temperature range is reached, the control unit sends a command to start the compressor, which resumes system operation.

Since the refrigerant boils in the evaporator at sub-zero temperatures, a “snow coat” forms on the walls and fins of the evaporator tubes, which requires periodic defrosting. The frequency of the defrosting procedure is set on the control unit of the counter, set by the manufacturer and can be adjusted by the service personnel during operation. The beginning of the defrosting process is set by the time parameter, and the end of the defrosting process is determined by the evaporator surface temperature, which is controlled by a temperature sensor.

4.7. Configuration, structure, and operation of counter Quadros SlimConfi

Refrigerated counters of the Quadros SlimConfi type are semi-vertical counters with a heat-insulated case (Fig. 16), on which an air intake 14, pallets of the basic layout 13, a perforated rear grill for cold air supply 12 and glass elements are installed: frontal 16, upper glass 2, and internal glass shelves 8.

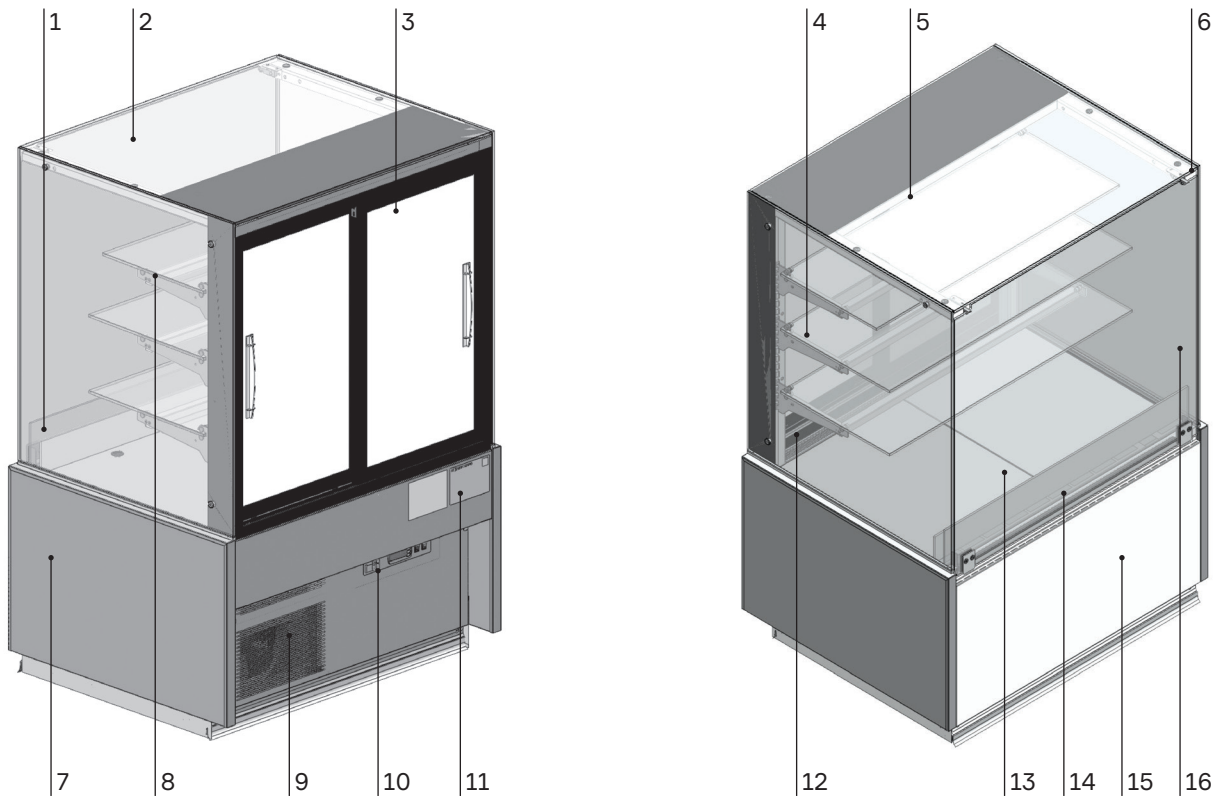


Рис. 16. Counter Quadros SlimConfi

- 1 – air deflector; 2 – upper glass; 3 – sliding door; 4 – sidewall glass;
 5 – main lighting plafond; 6 – front glass fixing element; 7 – sidewall;
 8 – internal glass shelf; 9 – perforation for condenser; 10 – control unit;
 11 – labeling plate; 12 – perforated rear grill; 13 – display plates pallets; 14 – air intake;
 15 – decorative cladding; 16 – front glass

The Quadros SlimConfi counters have a horizontal heat exchanger under the pallets of the display plates. On the front side, at the bottom of the counter, decorative panels 15 are attached.

On the sides, the counter is bounded by sidewalls 7. The design of the cabinets allows you to assemble them in a line. In this case, the sidewalls are installed only on the edge counters on the right and left, and partitions are installed between the counters, if necessary. The left or right sidewall is considered to be on the buyer's side.

For a better view of the goods, LED lighting 5 is installed in the upper part under the stands and under each shelf. The control unit of the cooling system 10 and the light switch of the counter are installed under the back wall.

Maintaining the required temperature inside the volume used for displaying and storing products is ensured by circulating cooled air (Fig. 17).

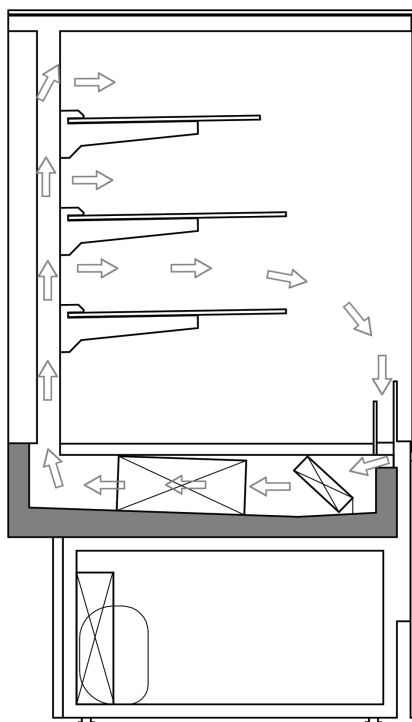


Fig. 17. Air circulation scheme in Quadros SlimConfI refrigerated counters

In Quadros SlimConfI counters, the evaporator is located under the pallets of the display plates, the air is taken through the air intake from the display volume, then it is pumped by fans through the evaporator, where it is cooled (Fig. 17). The cooled air is forced through the perforated rear grille into the exposure volume. Then the cycle is repeated.

For the counters that operate from a centralized refrigeration system, the operation of the counter is controlled by the Danfoss EKC202D1 electronic unit (or similar), via a temperature sensor. The temperature sensor is installed in front of the evaporator and monitors the temperature of the air supplied to the evaporator. When the lower value of the temperature range is reached, the control unit sends a command to close the solenoid valve, thereby stopping the refrigerant supply to the evaporator. When the upper value of the temperature range is reached, the control unit sends a command to open the solenoid valve, which restores the evaporator operation.

For the counters with a built-in compressor-condenser unit, the cooling system is a compression-type refrigeration machine. The compressor-condenser unit of this type of counters is located in the lower part of the equipment behind the front panel. The operation of the counter is controlled by an electronic unit Danfoss EKC202D1 (or similar), via a temperature sensor. When the lower value of the temperature range is reached, the control unit sends a command to stop the compressor, thereby stopping the refrigerant supply to the evaporator. When the upper value of the temperature range is reached, the control unit sends a command to start the compressor, which resumes system operation.

Since the refrigerant boils in the evaporator at sub-zero temperatures, a “snow coat” forms on the walls and fins of the evaporator tubes, which requires periodic defrosting. The frequency of the defrosting procedure is set on the control unit of the counter, set by the manufacturer and can be adjusted by the service personnel during operation. The beginning of the defrosting process is set by the time parameter, and the end of the defrosting process is determined by the evaporator surface temperature, which is controlled by the temperature sensor.

4.8. Configuration, structure, and operation of counter Quadros Promos open

Refrigerated counters Quadros Promos are promotional counters, which are a horizontal counter with a heat-insulated case and the most convenient viewing volume for displaying goods (Fig. 18), on which air intake 10, pallets of the display plates 8, air baffle 1 and glass sides for self-service sales are installed.

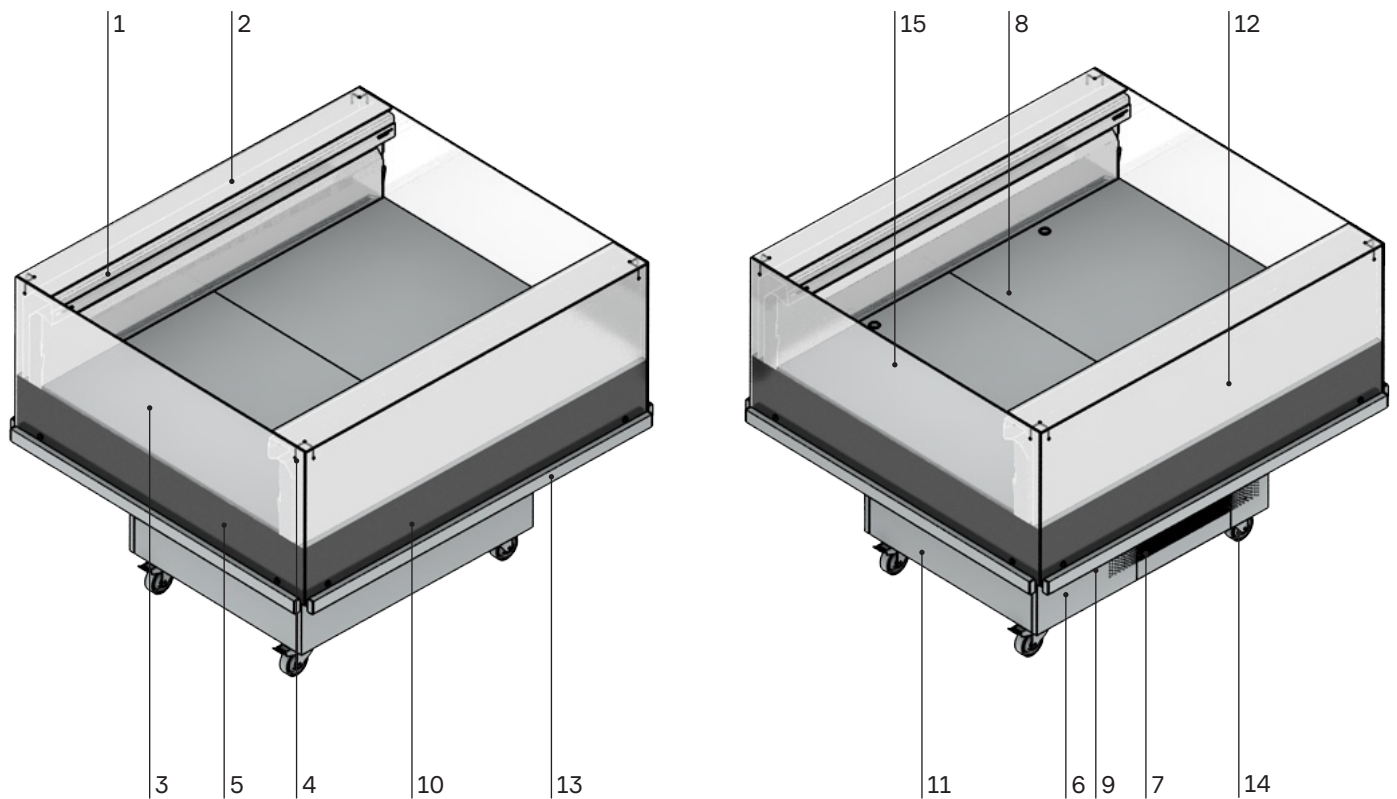


Fig. 18. Counter Quadros Promos open

- 1 – air deflector; 2 – upper glass; 3 – sidewall glass;
 4 – fixing element for the front glass and sidewall; 5 – sidewall with a bumper;
 6 – control unit; 7 – perforation for the condenser; 8 – pallets of the display plates with a grille; 9 – labeling plate; 10 – air intake; 11 – decorative panel; 12 – front glass;
 13 – bumper; 14 – lockable swivel wheels; 15 – acrylic sidewall bumper

The Quadros Promos counters have a horizontal arrangement of the heat exchanger in the refrigerated volume. Low front L-shaped glass 2, 12 is protected by metal bumpers 13.

The sides of the counter are bounded by glass sidewalls 5, which are also protected from damage by metal bumpers. The design of the cabinets allows them to be assembled in a line. At the same time, the sidewalls are installed only on the edge counters on the right and left, and partitions are installed between the counters, if necessary.

The control unit of the cooling system – 6 is installed under the case behind the decorative panel on the same side as the condenser – 7. Maintaining the required temperature inside the volume used for displaying and storing products is ensured by the circulation of cooled air (Fig. 19).

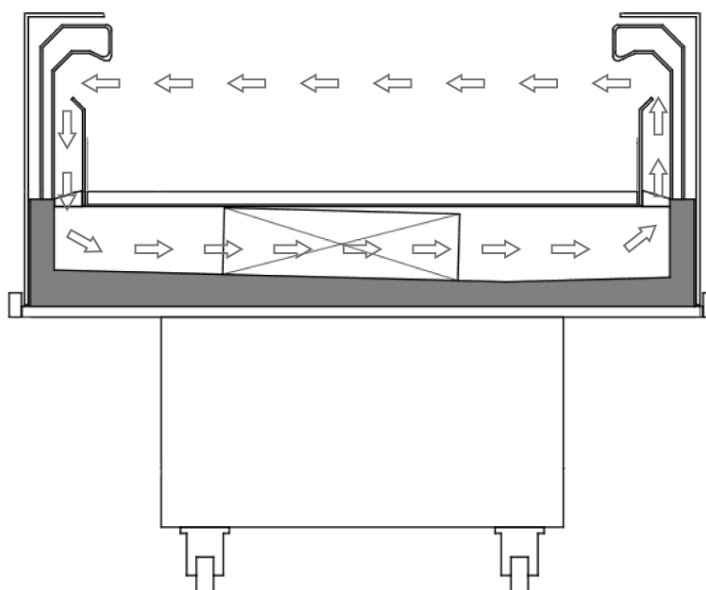


Fig. 19. Air circulation scheme
in the refrigerated counters Quadros Promos open

The evaporator in the Quadros Promos counters is located under the pallets of the basic layout, the air is taken through the air intake from the display volume, then it is pumped by fans through the evaporator, where it is cooled (Fig. 19). Then the cycle is repeated.

4.9 Configuration, structure, and operation of counter Quadros Promos with Sliding Doors

Quadros Promos refrigerated showcases with sliding doors are promotional showcases that represent a horizontal counter with a thermally insulated body and a maximally convenient viewing volume for product display (Fig. 20).

The design includes sliding doors 2, which ensure cold retention, reduced energy consumption, and convenient access to products. The showcase is equipped with an air intake 10, base display trays 8, an air deflector 1, and glass sidewalls 3, making it ideal for self-service operation.

If necessary, partitions can be installed for space zoning.

The cooling system control unit 6 is located under the body behind the decorative panel 7 on the same side as the condenser. The required temperature inside the display volume is maintained by circulating cooled air (Fig 21).

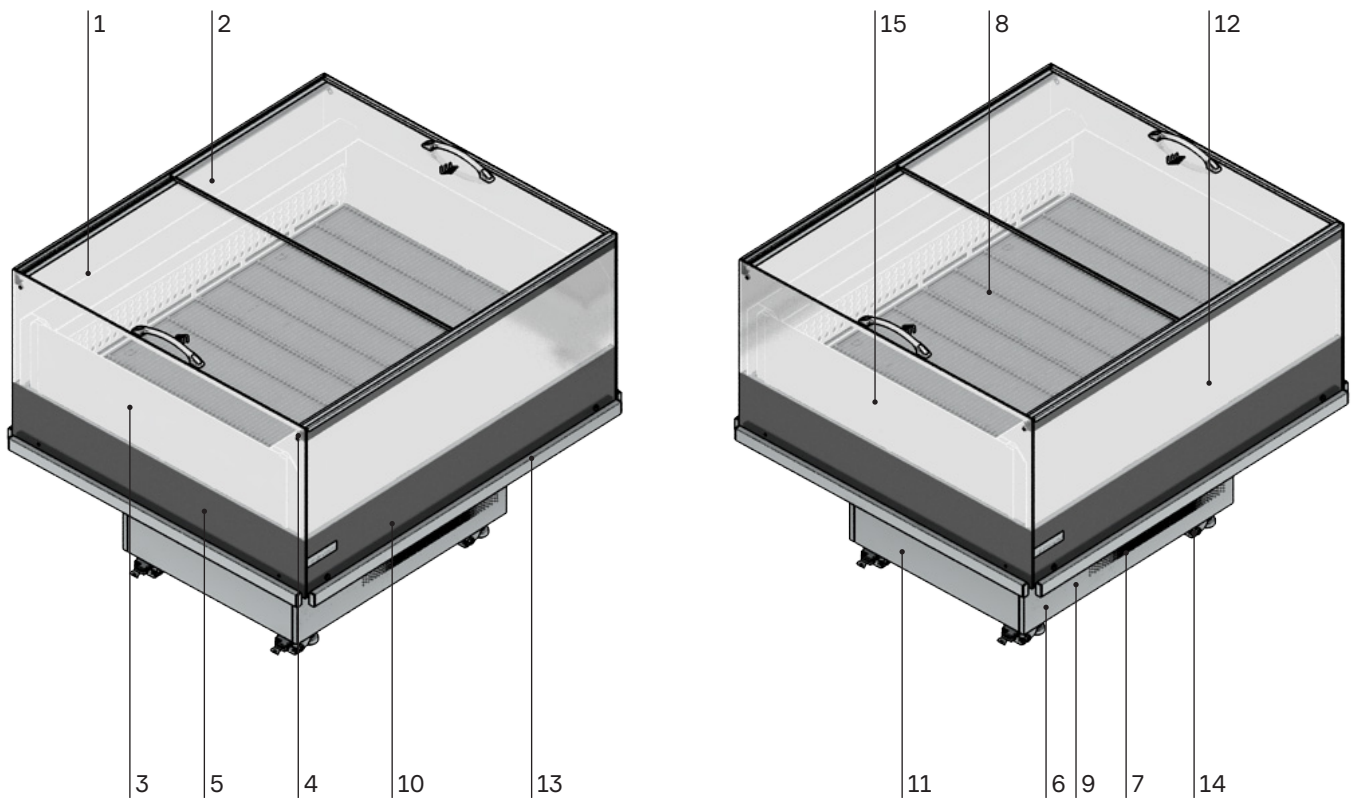


Fig. 20. Counter Quadros Promos open

1 – air deflector; 2 – sliding doors; 3 – sidewall glass;
 4 – door and sidewall fixation point; 5 – sidewall with a bumper;
 6 – control unit; 7 – perforation for the condenser; 8 – pallets of the display plates with a grille; 9 – labeling plate; 10 – air intake; 11 – decorative panel; 12 – front glass;
 13 – bumper; 14 – lockable swivel wheels; 15 – acrylic sidewall bumper

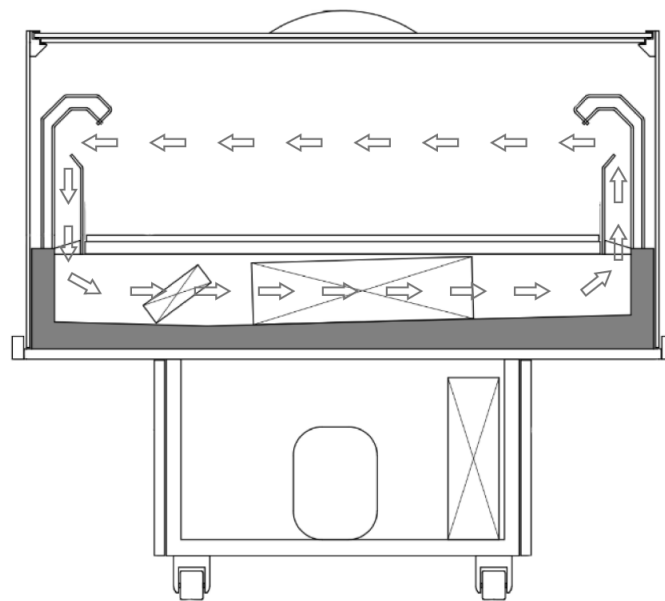


Fig. 21. Air Circulation Diagram in Quadros Promos Refrigerated Showcases with Sliding Doors

The evaporator in Quadros Promos showcases with sliding doors is located under the base display trays 8. Air is drawn in through the air intake from the display volume, then forced by fans through the evaporator, where it is cooled. Thanks to the sliding doors, this process is more efficient as cold loss is minimized. The cycle then repeats, ensuring a stable temperature regime and optimal conditions for product storage.

5. Intended use

The equipment must be used in strict accordance with the requirements and recommendations described in this manual, so you must carefully read the instructions for its installation, connection and dismantling (when moving to another place of operation). Compliance with the relevant standards and requirements will ensure the safety and functioning of the product during transportation and operation.

The product should be delivered to the installation site in compliance with all rigging rules, carefully, avoiding shocks and jolts. The product should be prepared and launched into operation only by the organization's specialists.

Installation, assembly, commissioning, operation, maintenance and repair of the multideck must be carried out in accordance with the requirements of this operating manual and the relevant regulatory documents.



A refrigerated multideck contains refrigerant, which is a flammable substance. When receiving the product, make sure that none of the elements of the cooling circuit are damaged. In the event of a refrigerant leak, avoid exposing the display cabinet to open flames or other sources of ignition.

If you notice any signs of malfunctioning of the multideck, as well as if you detect any malfunctions in the electrical system or if you detect a refrigerant leak, immediately disconnect the multideck cabinet from the power supply and notify the service department. No unauthorized persons should be allowed to access the product until the service technician arrives. Move the product from the equipment to a place of permanent storage, cooling chamber, or other equipment.

5.1. Purpose

Quadros refrigerated counters are universal equipment for short-term storage, display and sale of food products pre-cooled to storage temperature at trade and catering enterprises. The counters are designed to operate from a centralized refrigeration system or on a built-in unit.

Quadros refrigerated counters are horizontal counters with dynamic or static cooling system, which differ in length, width, height and functional purpose.

The refrigerated counter is designed for indoor use at a temperature not exceeding +25°C and humidity not exceeding 60%. Optimal functioning of the product is not guaranteed if the actual environmental conditions deviate from the specified values. In order to maintain optimal climatic conditions in the room, air conditioning should be provided.

5.2. Labeling

Each counter has a labeling plate (Fig. 20), which contains the following information:

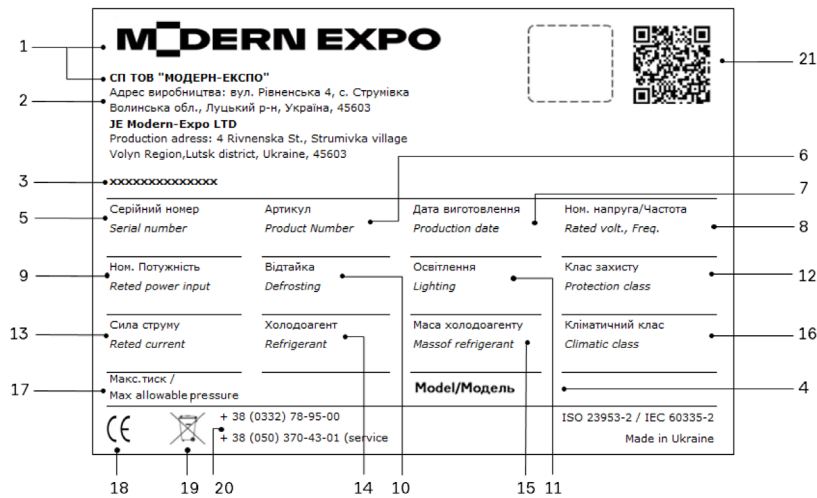


Fig. 22 Technical labeling

1. Name, trademark of the manufacturer;
2. Manufacturer's address;
3. Name of the product;
4. Model;
5. Serial number;
6. Product number;
7. Date of manufacture in month/year format;
8. Rated voltage and frequency;
9. Rated power in cooling mode;
10. Rated power consumption in defrost mode;
11. Rated total power of the lighting lamps;
12. Equipment protection class according to DSTU EN 60529;
13. Rated amperage in cooling mode;
14. Type of refrigerant;
15. Refrigerant mass;
16. Climatic class of the site;
17. Maximum allowable pressure;
18. A special mark indicating that the product meets the basic requirements of EU directives and European Union standards;
19. The WEEE sign;
20. Telephone numbers of the manufacturer and customer service;
21. Service QR code.

During the installation of the equipment. After refueling with gas. It is necessary to indicate the amount of fills refrigerator the label.

Functioning relies upon fluorinated greenhouse gases

Refrigerant for charging - R404; GWP - 3922

Amount of refrigerant charged at the manufacturing	Amount of refrigerant charged during installation	Total amount of refrigerant agent
0 g for transport charged with Nitrogen -N2, pres. 1 bar	g (to be filled in by the installation organization after charging the equipment)	g (to be filled in by the installation organization after charging the equipment)

Contains fluorinated greenhouse gases

(after charging of refrigerant and commissioning equipment)

Fluorinated greenhouse gases are contained in hermetically sealed equipment.

(Refrigerants must be charged in accordance with EU 2024/573)

The electrical switchgear has a tested leakage rate of less than 0,1 % per year

From 1 January 2030 'Prohibited to be operated unless required by safety requirements that have to be applied at the site of operation', according to points 5(c) of Annex IV to Regulation (EU) 2024/573

6. Installation of the counter



The packaged counter can be transported by all types of transport, except for air, in accordance with the rules of cargo transportation applicable to this type of transport.

Before being sent for storage, the counter must be cleaned, washed and dried. During storage, the counter must be powered off, protected from dust and solar radiation. The temperature in the room where the counter is stored should be no lower than -35° and no higher than +40°, relative humidity - no more than 70%. Vibration of the floor and the rack where the counter is stored is unacceptable.

7. Installation of the counter

After delivery of the counter to the installation site, it is necessary to carry out its technical inspection. The inspection is carried out for completeness and absence of damage that may have occurred due to careless transportation.

Before installing the counter, you need to:

- check the integrity of the package (Fig. 23);

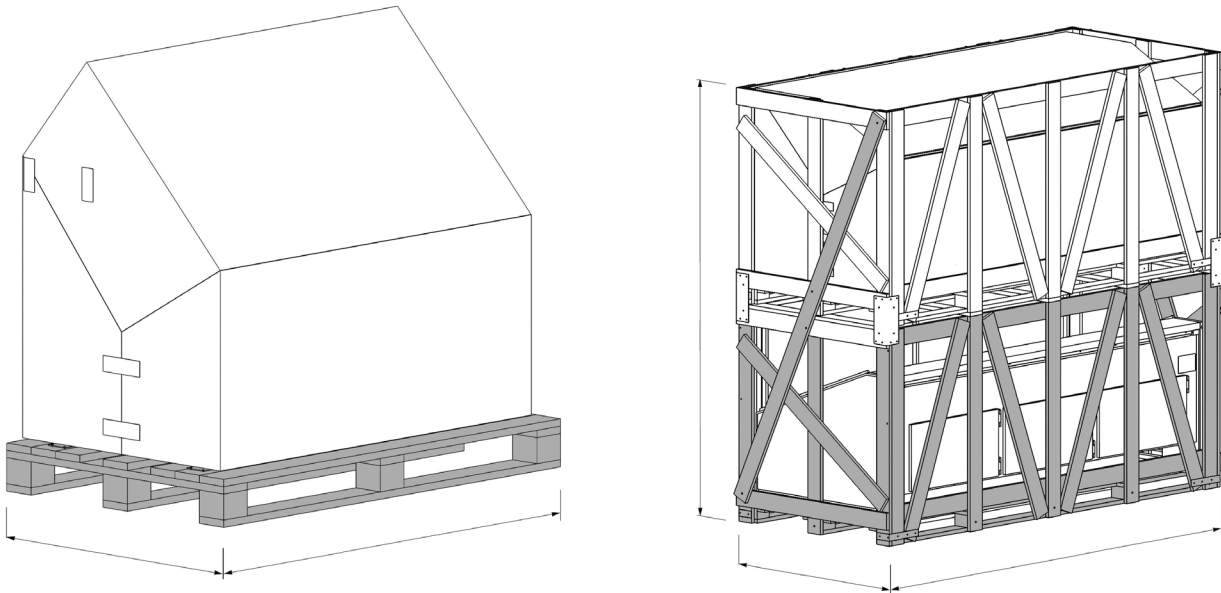


Fig. 23. Package, wooden frame

- remove the packaging film;
- remove the components out of the counter.

When installing counter at the place of operation, the following requirements must be met:

- refrigerated counters Quadros do not provide for placement of the display in a niche and require free access to the control unit of the counter for maintenance.
- the counter must be placed horizontally relative to the floor;
- do not install the counter near the door or in places where the speed of air flow exceeds 0.2 m/s (outlets of air conditioning and ventilation systems);
- the counter should be protected from solar radiation, and the distance to the nearest heat sources should be at least 2 m;
- do not install the counter in fire and explosion hazardous areas;
- protect the counter from possible impacts by washing machines and cargo trolleys;
- do not use drainage pipes as a support for refrigerant lines.

When assembling several counters into one module (line), it is necessary to observe the order of arrangement of the individual elements of the module in accordance with the project. Before connecting the counters, make sure that each counter has connecting elements and ensure that the cabinets fit tightly together. Before installing sidewalls (fig. 24, 25), airtight partitions (fig. 26) or joining in line, a sealant must be glued on both sides of the counter.

FORBIDDEN! Install two counters with sidewalls next to each other.

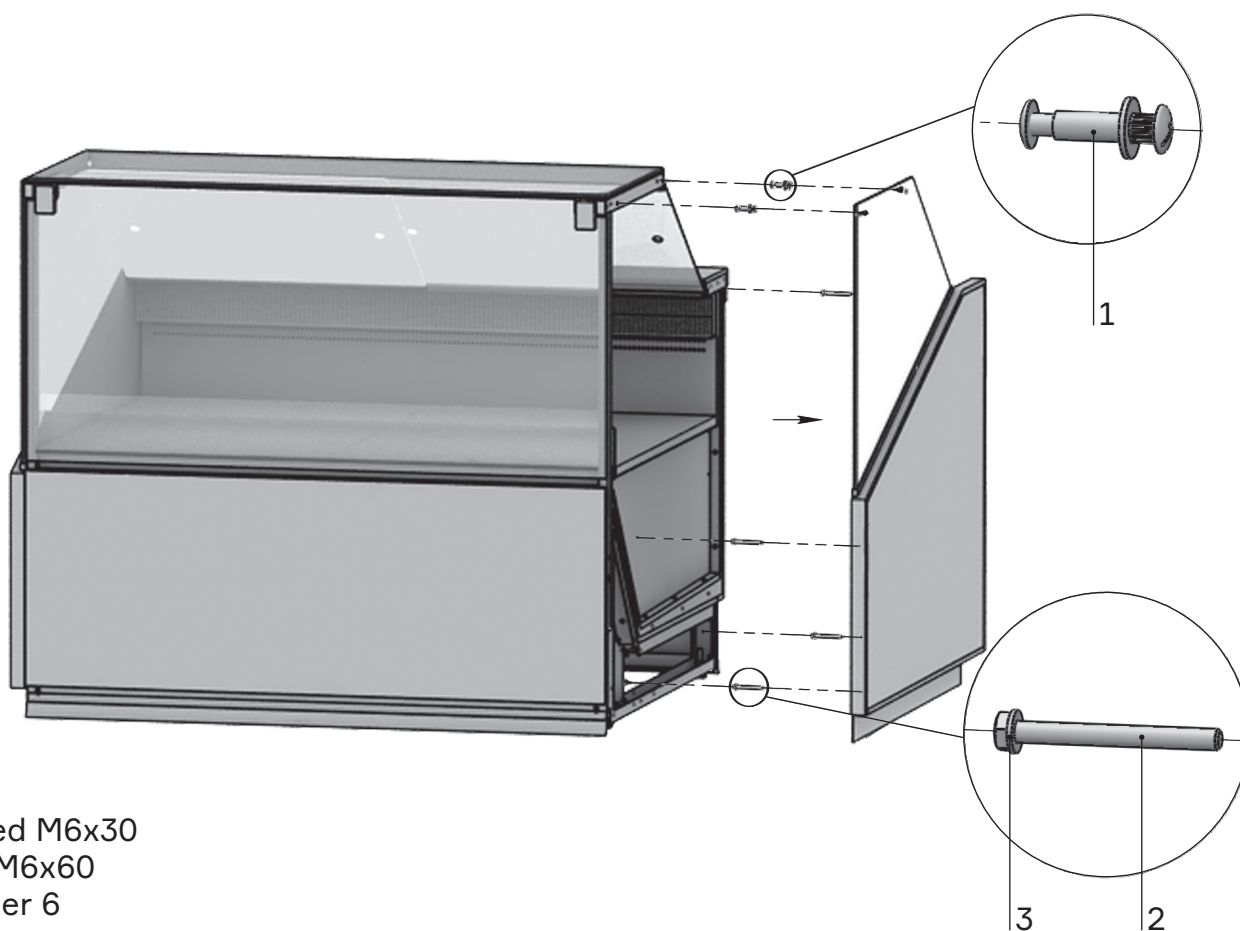


Fig. 24. Glass sidewall for Quadros installation scheme

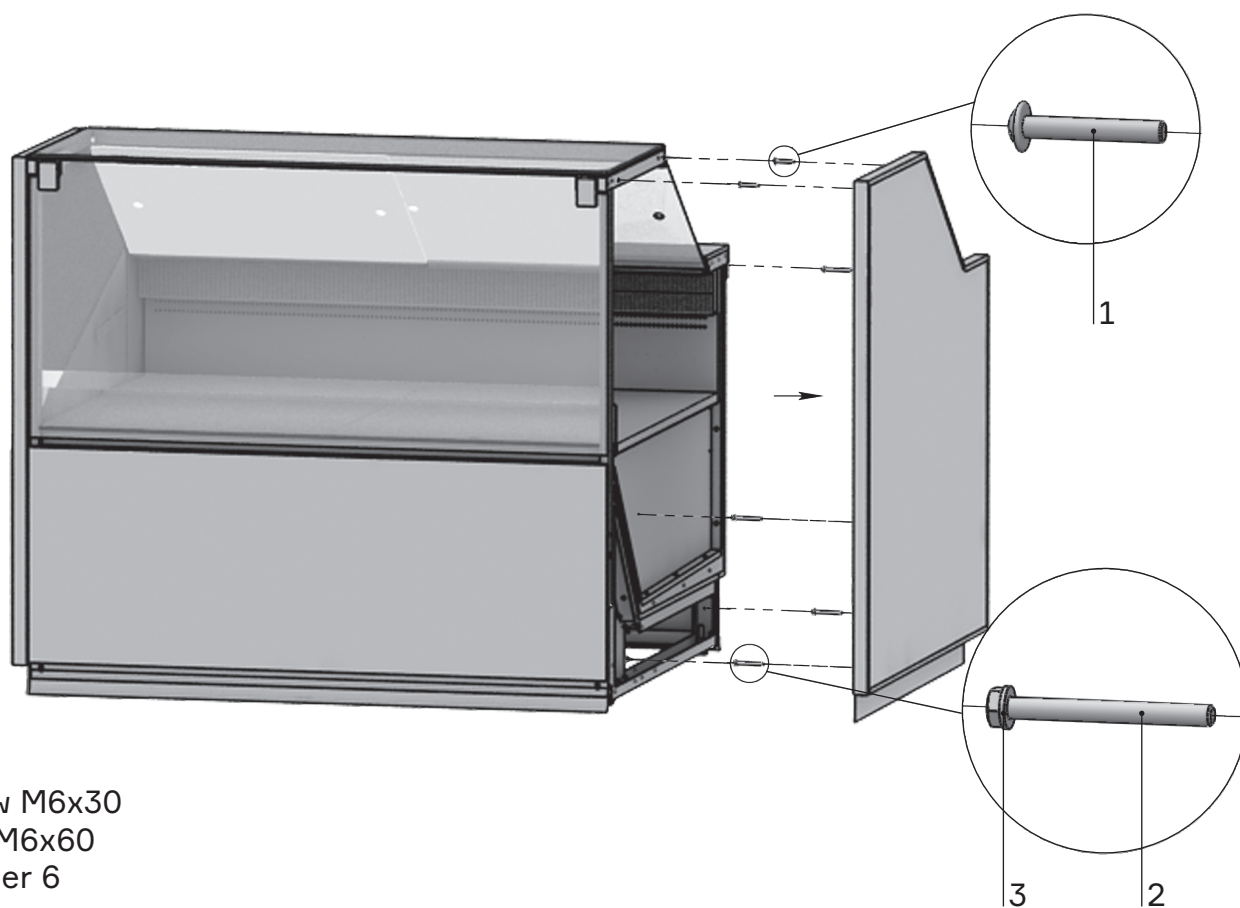


Fig. 25. Mirror/Blind sidewall for Quadros installation scheme

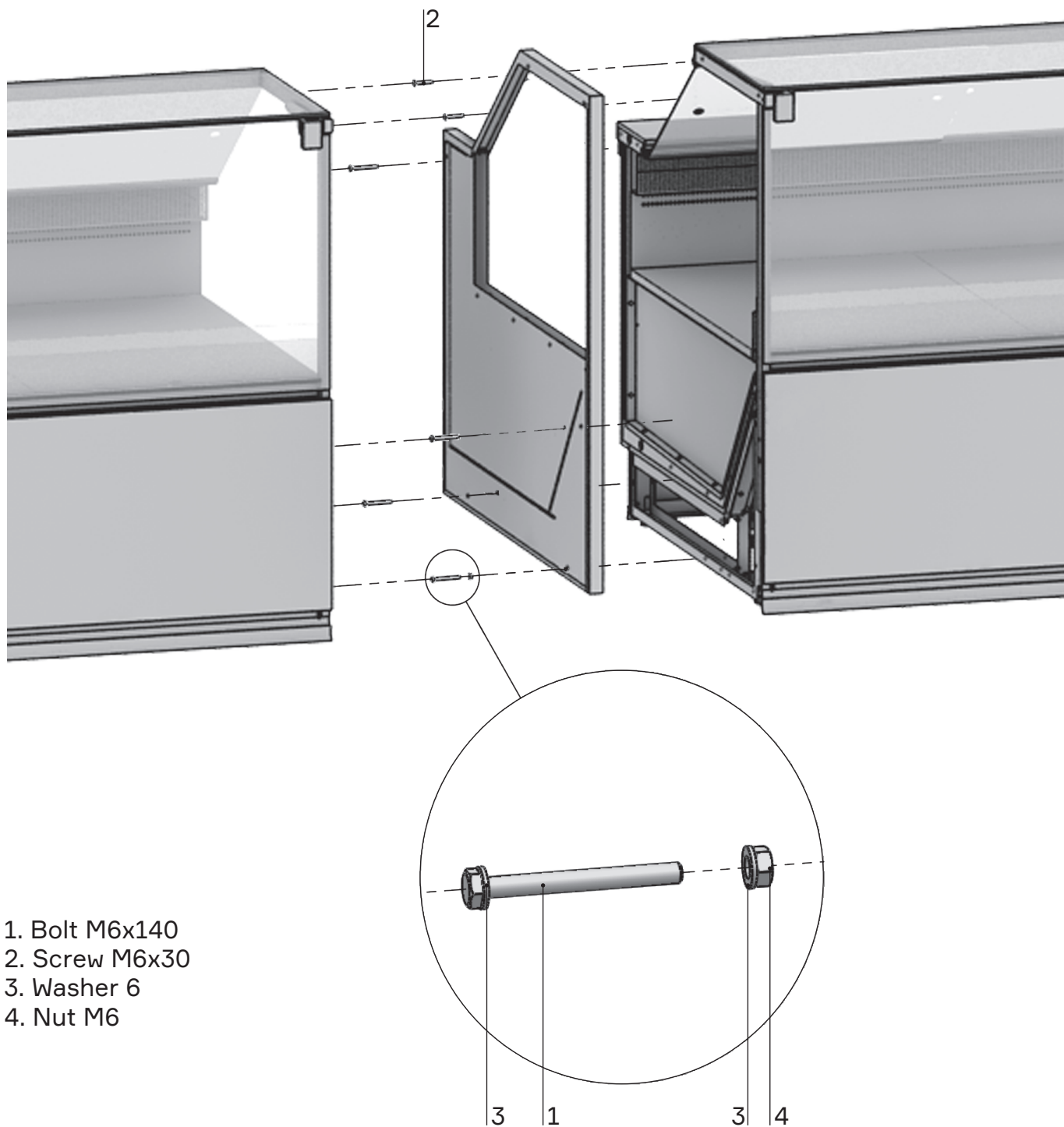


Fig. 26. The scheme of connecting counters through the Quadros hermetic divider

When connecting counters to the refrigeration system (when soldering pipelines), it is necessary to protect the counter from the open flame of the burner. The system must meet the requirements of testing for tightness and strength in accordance with the properties of refrigerants.

The counter must be connected to the power supply network according to the scheme on the control unit. An automatic switch is installed in the counter, which provides protection against overload and short circuits. The conductors of the L, N, PE circuits are laid together and connected according to the electrical scheme of the refrigerated counter.

The counter should be connected to the power supply only with proper grounding.

8. Adjusting the operation of the counter

Such counter parameters as the duration of thaws and their number are based on the results of laboratory studies and operational experience. If necessary, adjustment the temperature support level of the counter must be carried out by the engineering and technical personnel responsible for the operation of the counter, or by specialists of the installation organization. The temperature control valve settings are made by the manufacturer. If necessary, the adjustment of the temperature control valve should be performed by a specialist in such a way as to ensure the appropriate filling of the evaporator of the counter with refrigerant.

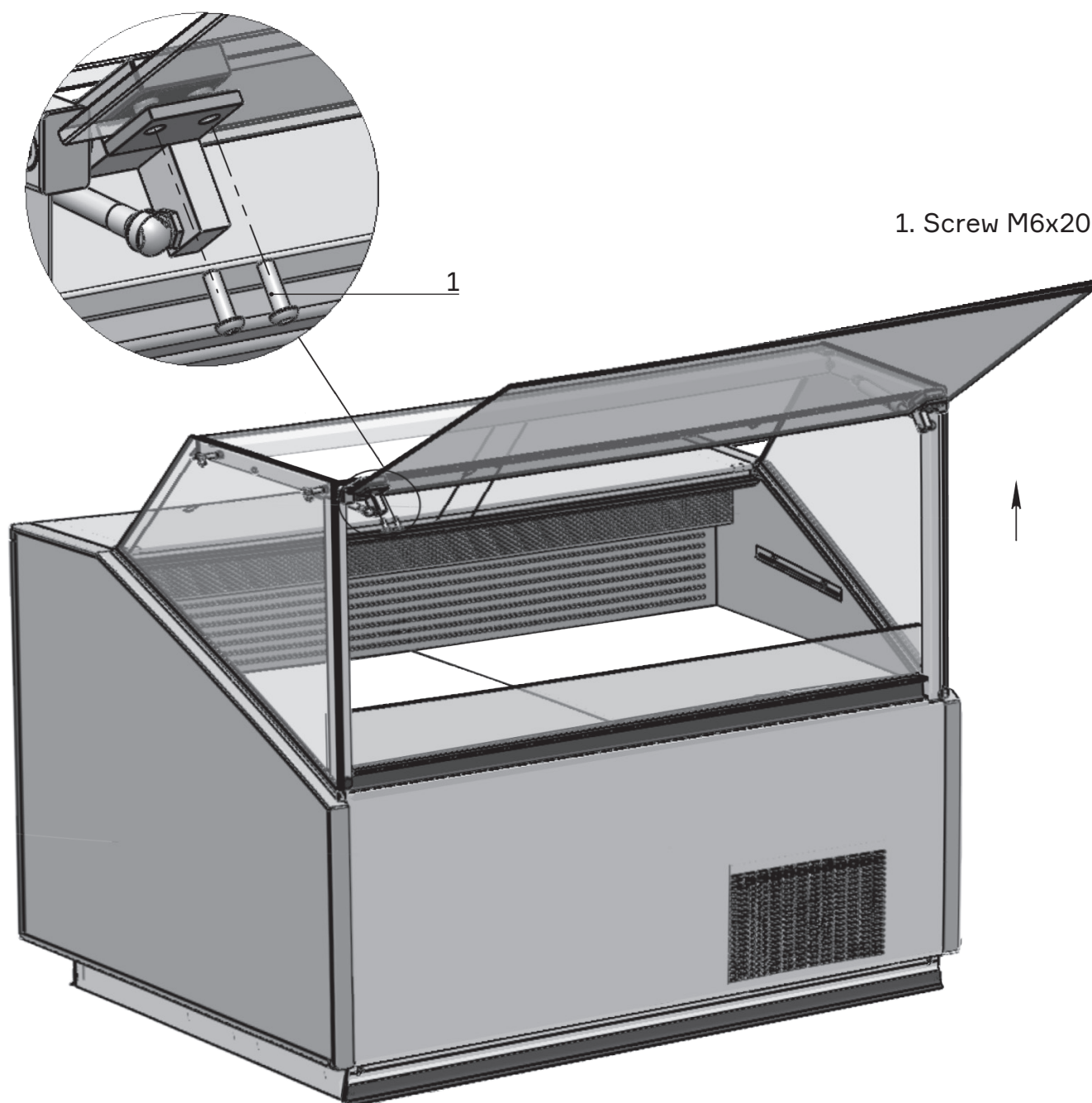


Fig. 27. Quadros front glass adjustment scheme (pneumatic lift)

The essence of the adjustment is that you need to loosen the screws that fasten this glass. Then place it so that the gap between the glass and the two side walls is the same. That is, you need to adjust horizontally and vertically.

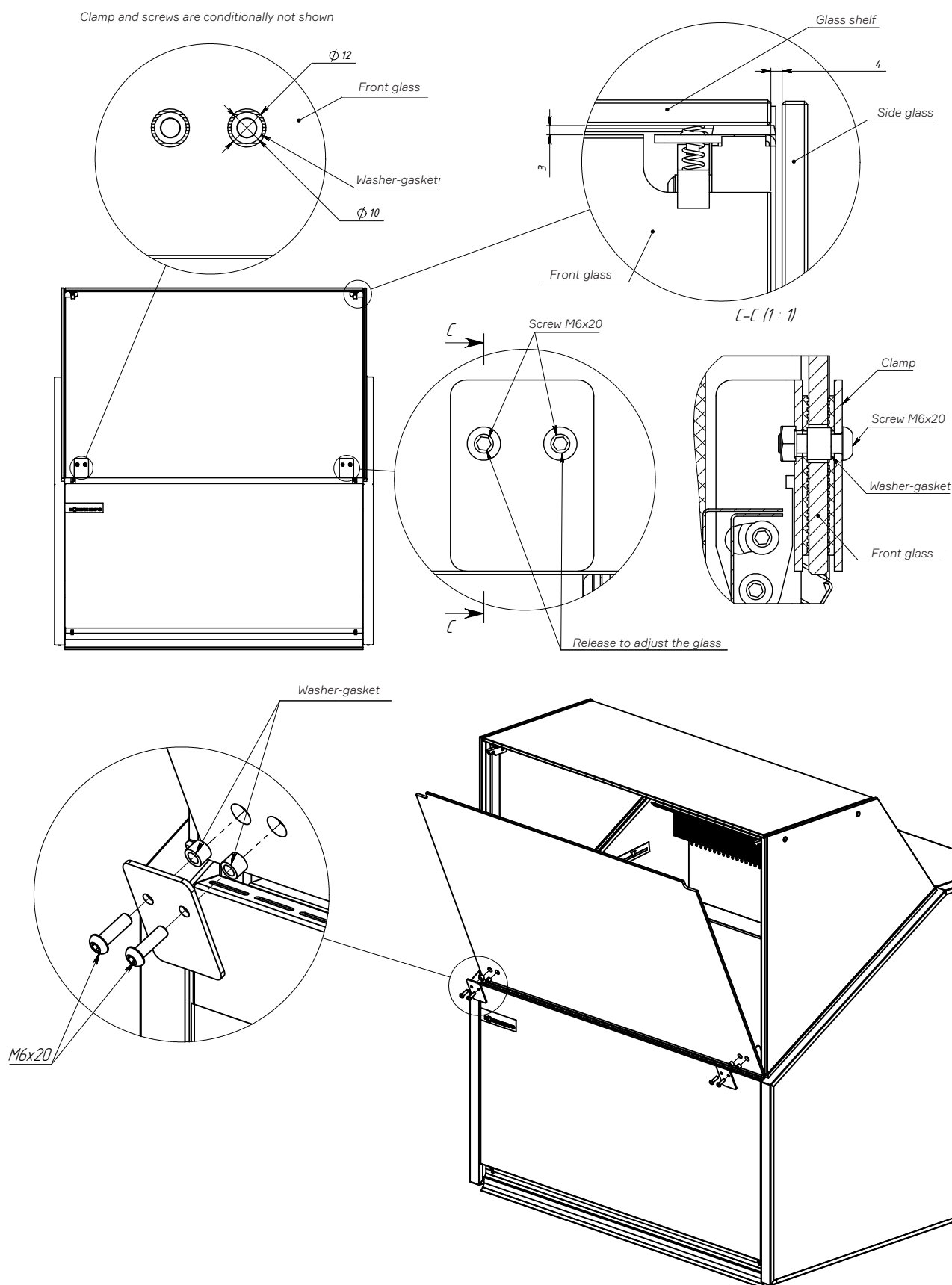
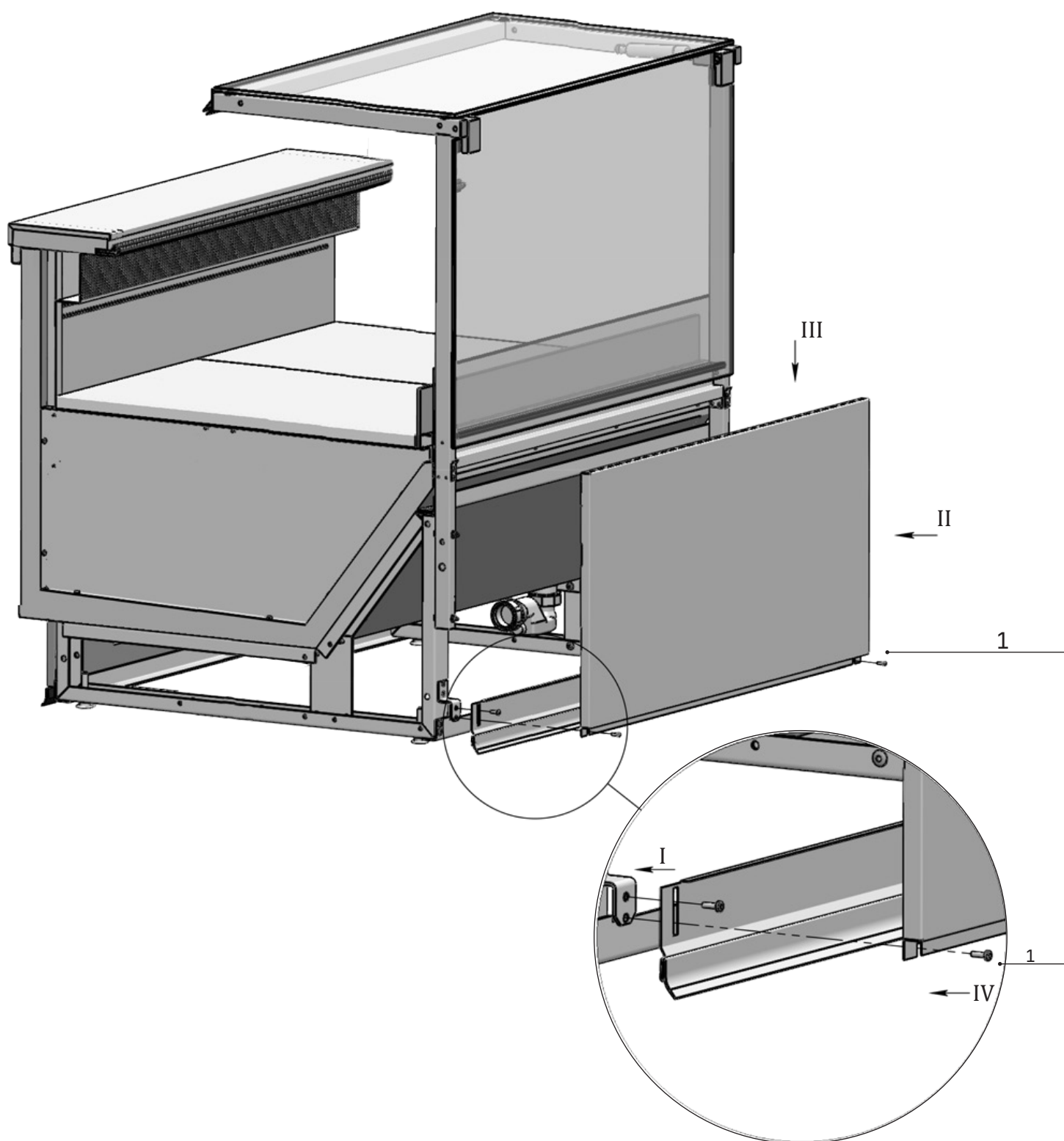


Рис. 28. Quadros front glass adjustment scheme



1. Screw M4x14

Fig. 29. Scheme of installation of front panel Quadros

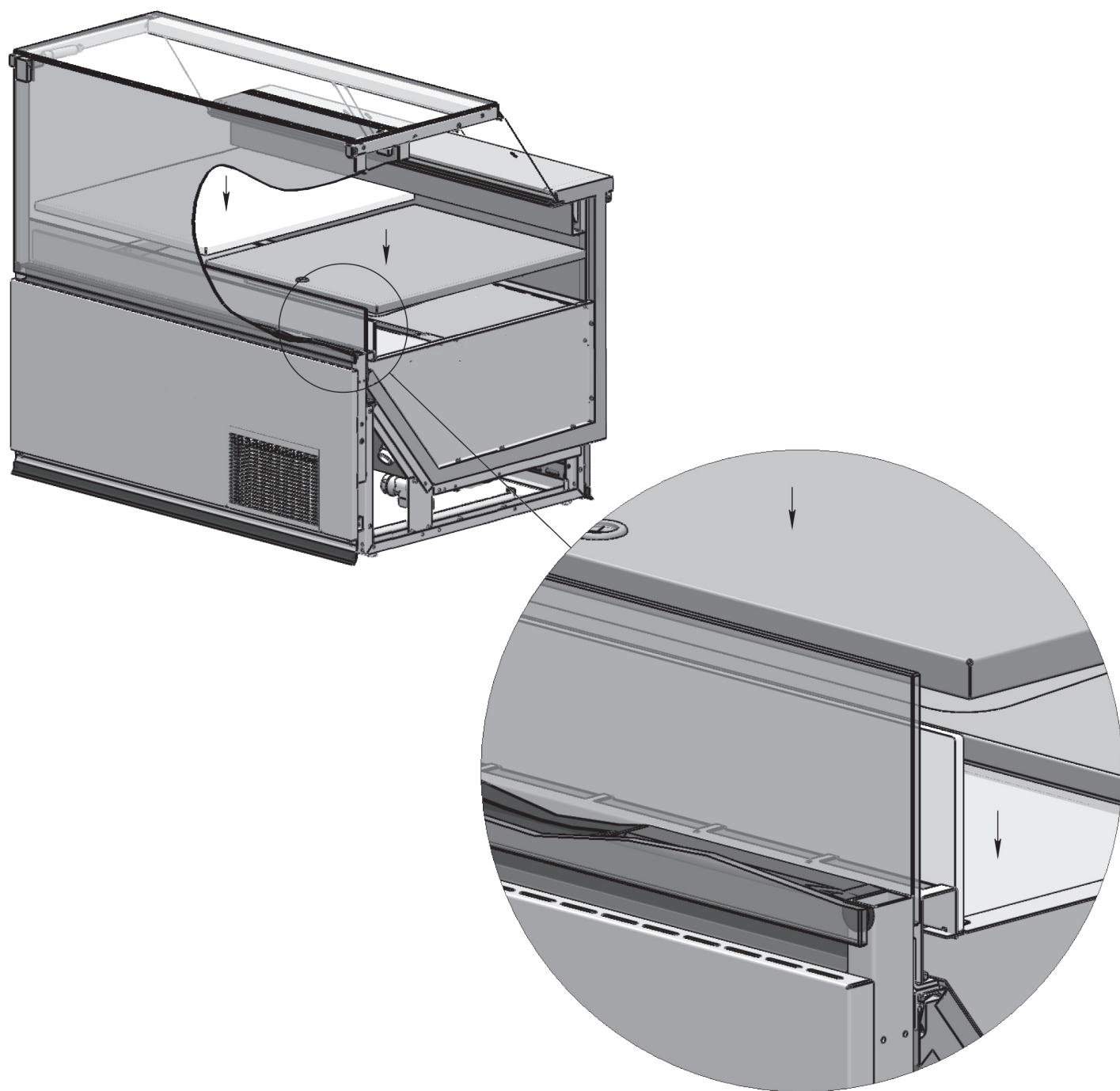
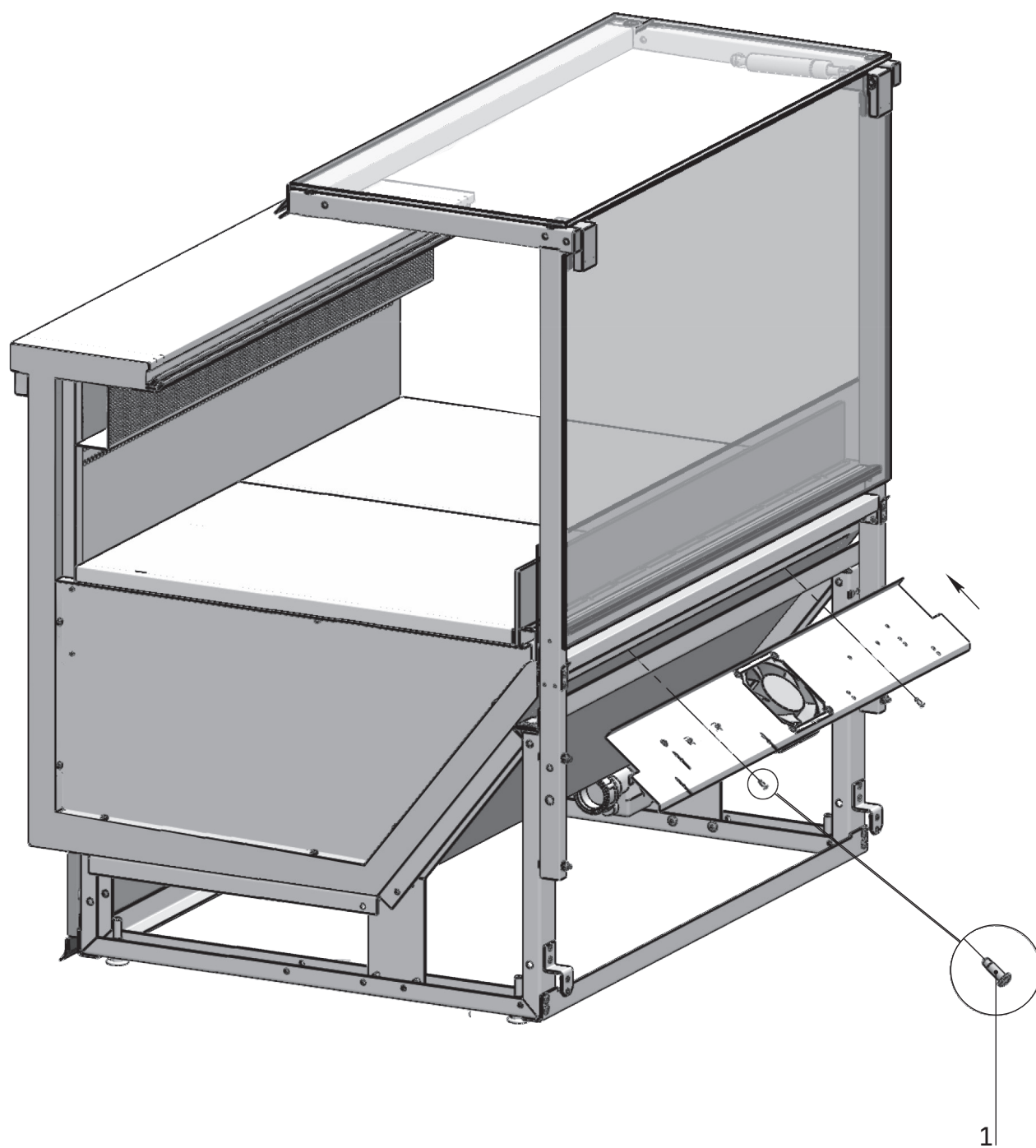


Fig. 30. Scheme of installation of a display plates on a Quadros counter



1. Self-tapping screw 3,9x13

Fig. 31. Installation scheme of the Quadros front glass blowing system

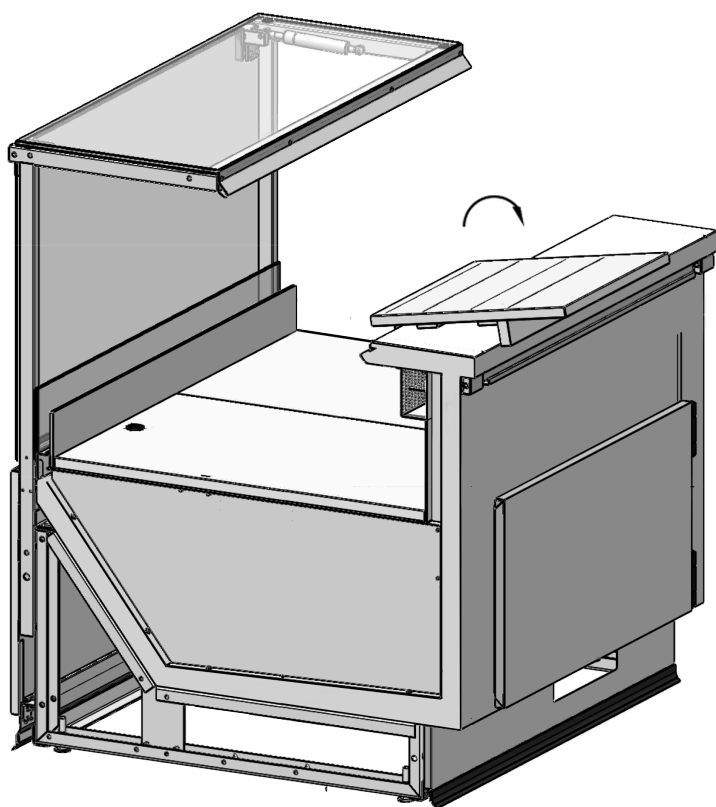


Fig. 32. Installation scheme of a weight stand/cutting board

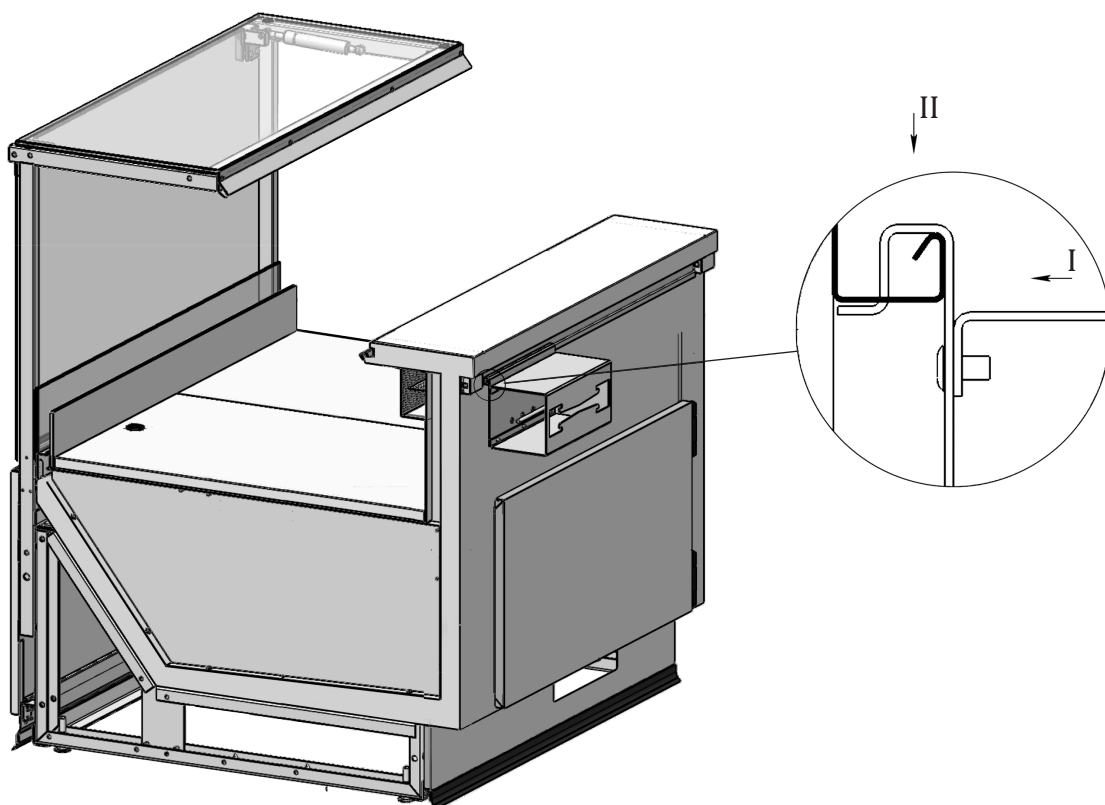


Fig. 33. Installation scheme of bag holder and knife holder

After finishing of instalation, the organization that carried out the installation draws up the «Act of launching the product into operation».

9. The order of loading the counter with products

Перед використанням холодильника ознайомитись з посібником з експлуатації • Read the operating instructions before using the refrigerator • Przed rozpoczęciem użytkowania chłodziarki należy zapoznać się z instrukcjami obsługi



Відтайка, нормальна робота ХО.
Зачекати 30 хв • Defrost, normal operation.
Wait 30 minutes • Rozmrażanie, normalna praca.
Odczekać 30 minut



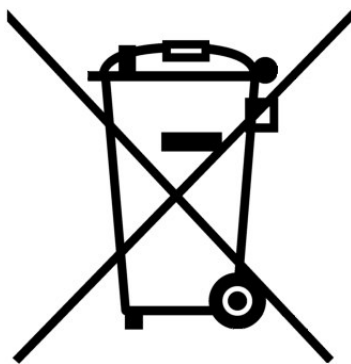
Fig. 34. Requirements for installing the multideck

When loading the counter with products, the following requirements must be met:

- during the first loading, to ensure normal air circulation, the distance between the products should be at least 30 mm;
- it is forbidden to block the air intake and exit points with products;
- it is prohibited to load the counter with products that have a temperature higher than the temperature in the counter;
- loading with products should be carried out in such a way as to ensure the correct rotation of the product;
- it is forbidden to place the product above the loading line (Fig. 2);
- maximum permissible load on the shelf is 11 kg/m²;
- it is prohibited to place boxes, packages and other items on top of the counter.

10. Disposal

If the equipment is unsuitable for its intended use, it must be disposed of.



Do not dispose of it with household waste. In order to prevent adverse effects on the environment and human health resulting from improper disposal of the product, as well as to save natural resources and encourage the reuse of materials, the product must be recycled separately from other types of waste.

Components and materials such as lamps, glass, plastic, seals, panels, polyurethane foam, electrical controls and any other electrical parts must be collected and disposed of at specially authorized sites and/or by an official waste disposal center. Refrigerant and oil must be collected in special containers. Do not discharge into the sewer system. Waste must be disposed of in accordance with the laws of the country in which the equipment was installed.

Corporate users should contact the supplier for disposal of the product and check the terms and conditions of the supply contract.

For disposal, contact the nearest official waste disposal and recycling center.

11. The act of launching a counter into operation

It is necessary to fill out an operating certificate or activate the equipment on the portal.

ACT OF COMMISSIONING OF EQUIPMENT

Representative of the installation organization

(Position, full name, contact phone number)

Installation address



QR-cod to the service portal

Checking the correct installation of equipment:

BASIC REQUIREMENTS	YES	NO
1. The equipment is leveled according to these operating instructions		
2. Mains voltage is checked		
3. Equipment performance is checked		
4. A separate circuit breaker is installed near the equipment		
5. Checking the tightness of the system		

Notes:

- 1. The user receives a warranty for the equipment only after commissioning by the service center and activation of the equipment on the service portal.
- 2. The user of the equipment is responsible for the operation of the equipment until the arrival of the service center engineer.

Acquainted:

User (Full name, signature)

When contacting the manufacturer, you need to provide:

1. Photo of the exterior of the equipment (loaded with goods)
2. Photo of the technical marking of the refrigerator (clause 5.2)
3. Photo of the controller display signal (temperature)
4. Availability of service equipment (which organization serves?) (clause 14)
5. Contact person at the facility (full name, phone number)
6. Name of the retail outlet (gas station, shop, market, cafe)
7. Document certifying the purchase of goods (check, invoice)
8. Equipment passport with the date of commissioning (clause 11), if not active on portal
9. Which organization carried out the installation?
10. Description of the failure, problems of equipment operation (high temperature, leakage, electrical problems, etc.)

12. Equipment warranty

Warranty obligations:

1. The user receives a warranty for the equipment only after filling out the Commissioning Certificate or after activating the equipment on the portal (clause 11);
2. The equipment must be serviced by a specialized, certified specialist
3. Provide on time and high-qualified maintenance of the equipment (once every 2 months) (clause 14);
4. All the details of the refrigeration equipment warranty are specified in the contract.

The warranty does not cover:

1. On glass elements;
2. Consequences of unauthorized modification of existing or installation of new equipment components not provided by the manufacturer;
3. Use of the refrigerated counter for other purposes;
4. Incorrect installation and connection of the counter;
5. Violation of the rules and terms of maintenance (clause 14);
6. Interruptions in the power supply;
7. In case of violation of the rules of operation of the equipment prescribed in this manual;
8. Repair and development of the counter during the warranty period;
9. In case of damage or improper transportation;
10. In case of violation of the requirements for the operation and maintenance of stainless steel products and elements.

Acquainted:

User _____
(Full name, signature)

13. Examples of simple faults and sequence of actions

The display case does not turn on

1.	Check whether the display case is connected to the power supply.
2.	Check whether the display case is turned on at the circuit breaker.
3.	Check whether the power cable is fixed in the control unit connector.
4.	Check whether the controller is lit and there are no errors on the display.

The evaporator fans do not rotate

1.	Check whether the fans are connected to the terminal block
2.	Check whether power is supplied to the fan.
3.	Check whether the fan impeller is not mechanically blocked.
4.	Check the resistance of the fan, the integrity of the motor windings.

The display case is leaking

1.	Check whether the siphon is installed and whether there are gaskets on the connections.
2.	Check whether the siphon is directed into the evaporator tray and there is a slope.
3.	Check whether the coarse cleaning drainage grid is turned up.
4.	Check whether the tightness of the showcase is broken.

The showcase does not cool

1.	Check whether the showcase control controller is lit, turn it on with the button.
2.	Examine the display of the compressor on signal on the controller display.
3.	Check whether the compressor turns on.
4.	Check whether the condenser fan (external radiator) is working.
5.	Check whether the pipe, which is insulated at the compressor inlet, is cooling.
6.	Check whether the external radiator is heating.
7.	Check whether the fans in the showcase are spinning.

8.	Check whether air is circulating in the showcase through the evaporator (internal radiator).
9.	Check if the air conditioner or draft in the room is blowing into the display case.
10.	Check if foreign objects have fallen on the condenser from the outside.

Extraneous sound is present during equipment operation

1.	Check if the compressor is fixed to the platform.
2.	Check if there is mechanical friction of the condenser fan impeller in the aggregate part against pipes, cables, other objects.
3.	Identify the source of the sound and eliminate it if it is a mechanical obstacle.
4.	If there is extraneous sound from the compressor, notify the service organization
5.	If there is extraneous sound from the condenser fan, replacement is required, notify the service organization.
6.	Check if the pipes of the aggregate part are not touching the display case body.

Error on the controller

1.	Record the controller error in the photo.
2.	Identify the error, view the decoding in the instructions
3.	Follow further recommendations for decoding errors.
4.	Contact the manufacturer.

High temperature in the display case

1.	Measure the temperature in the room, the temperature should not exceed +25 °C.
2.	Check if the compressor turns on.
3.	Check if all fans in the display case are working.
4.	Check for refrigerant in the system.
5.	Check if the display case is not frozen.

The product is freezing on the lower shelf, the upper shelves are warm

1.	Check the temperature on the controller, the setting.
2.	Check if the compressor turns off when the controller is turned off from the controller power button.
3.	Check if the evaporator fans are working.
4.	Check if the air circulation grille is not clogged with goods or covered with a price tag.
5.	Check if the condenser is clean and if the fan on it is working.

The lighting does not work

1.	Check if there is power in the display case.
2.	Check if the backlight button is lit, if necessary, turn it on.
3.	Check if the indicator on the lighting power supply is lit.
4.	Check if the connector to the lamp is connected correctly.

If the above tips did not help to fix the malfunction, or the necessary problem is not described, then you need to contact the Modern-Expo service department contact details: e-mail service@modern-expo.com

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