PHARM ENGINEERING

ENGINEERING CONSTRUCTION
FULL SERVICE COMPANY

www.ph-e.ru

Modern Enclosing Structures for clean premises

PROJECT TO FINISHED ASSET

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PHARM ENGINEERING

The Pharmaceutical Engineering Group of Companies is a full–cycle manufacturing and construction company that has been successfully operating since 2012 in the field of clean premises with a controlled environment used in laboratories, pharmaceutical enterprises, microelectronic manufacturing, medicine, food production and industry. Thanks to the high qualifications and extensive experience of the company's employees, we are ready to implement projects of any complexity and purity class according to ISO and GMP standards. We carry out both the entire technological chain of creating clean rooms "turnkey" (design, production of structures, installation work, certification and service), and each stage separately.

The company consists of: own design department, shop for the production of enclosing structures, finished goods warehouse, logistics and installation and construction departments.

All products of the Pharmaceutical Engineering company are made from Russian raw materials and at its own production facilities in Noginsk, Moscow region. The production is equipped with the latest complex of high-precision metalworking equipment of European production, and the quality of the products meets all international industry standards.

SCOPE

- MEDICINE
- PHARMACEUTICAL PRODUCTION
- MICROELECTRONIC PRODUCTION
- LABORATORIES
- SPACE INDUSTRY
- PRECISION INSTRUMENTATION
- MANUFACTURE OF MEDICAL DEVICES
- FOOD PRODUCTION

Innovative cleanroom technologies, focus on quality and compliance with standards are our main values!

COMPREHENSIVE EQUIPMENT OF CLEAN ROOMS

1 **FACING PANELS:**
- Gypsum metal wall panels (GML FS)
- Gypsum metal wall panels (GML ER)

2 **PARTITIONS:**
- Self-supporting sandwich panels
- Sandwich panels with cable channels
- Frame sandwich panels
- Fire barrier EI60

3 **CEILINGS:**
- CLIP-IN ceiling system
- Serviced ceiling (walkable ceiling)
- Fire-resistant suspended ceiling

4 **DOORS:**
- Swing doors
- Sliding doors (single, double-leaf)
- Fire doors
- X-ray protection doors

5 **WINDOW BLOCKS:**
- Fixed frame
- Swing
- Fire fighting
- Optional:

it is possible to complete with built-in blinds, tinted, mirrored glass, with electronic transparency adjustment

6 **TRANSFER BOXES:**
- Passive transfer gateway STD
- Active transfer gateway STD-A
- Transfer gateway connected to ventilation STD-V

7 **AIRLOCK FOR PERSONNEL**
Prevents the ingress of polluting particles when personnel transfer between rooms

8 **FRAMING ELEMENTS**
- R55 rounding profile system
- R70 rounding profile system
- A system with a linoleum plant on the wall

9 **FLOORING**
- Conductive linoleum
- Antistatic linoleum
- False floors
- Self-leveling floors

10 **VENTILATION**
- ER type wall air intake panels
- Static pressure chambers (air distributors)
- Air distributors with air flow valve
- Laminar ceilings
- HEPA filters
- ULPA filters

11 **LAMPS**
- Ultra-thin CLIP-IN LED lights

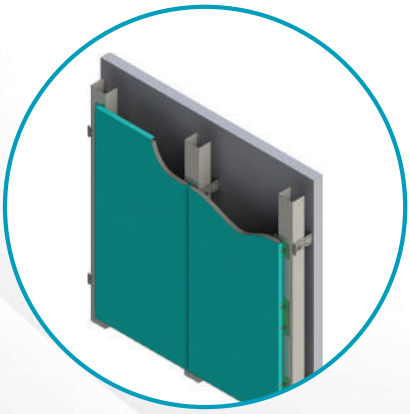
12 **PVM**
Filter Ventilation Module

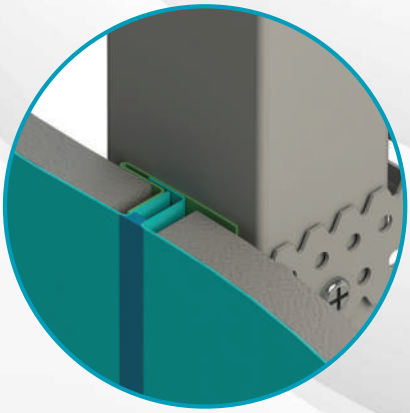
13 **AIR INTAKE PANEL**

14 **SEPARATE LAMINAR ZONE**

15 **HVAC SYSTEM**
The system of maintaining a controlled environment in the room (temperature, humidity, air purity, pressure)

GYPSUM METAL WALL PANELS (GML FS)





DESCRIPTION:

Gypsum-metal panels WT1200FS (GML FS) – are designed for cladding existing walls of a building and the construction of partitions, including fire-fighting ones. The panels consist of a metal sheet with a polymer coating and moisture-resistant drywall. The layers are mated using high-quality glue, which ensures the integrity and solidity of the entire product. To increase the geometric parameters of the panels, our production is equipped with a rolling roll forming line, which eliminates the risks of exposure to manual labor, and also allows the production of seamless panels with a height of more than 3 meters. Additionally, revision wall hatches can be integrated.

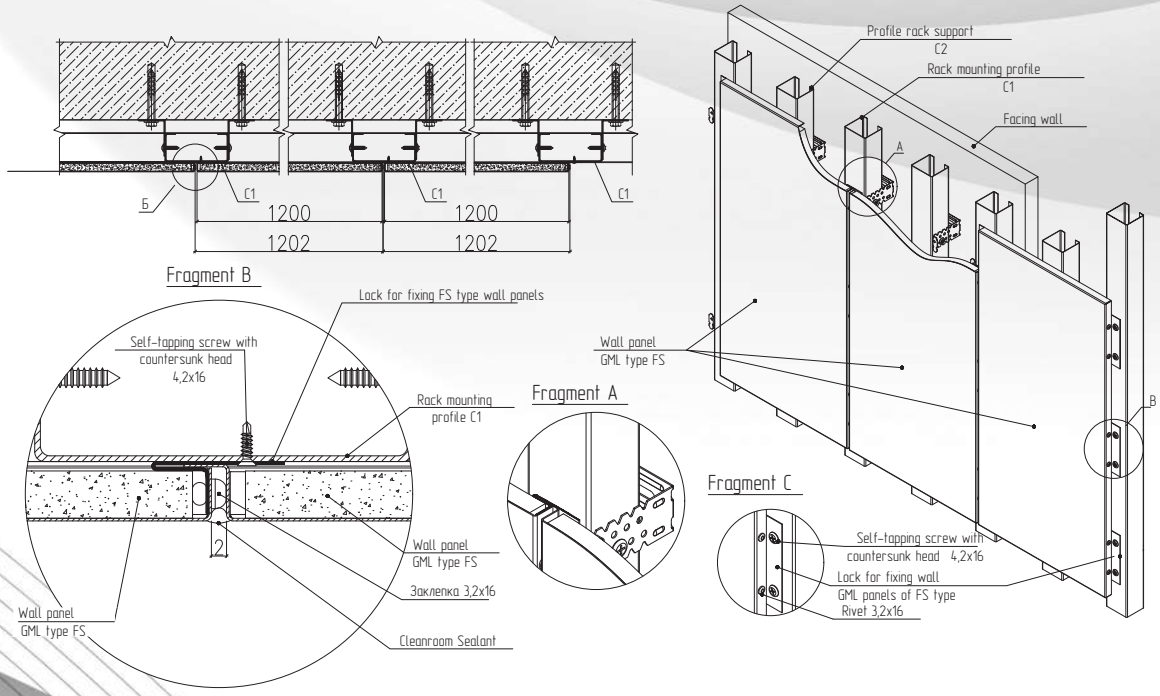
Installation is carried out on a reinforced frame made of galvanized steel with a thickness of 1 mm, which allows you to integrate all the necessary engineering communications. GML panels are connected to each other by means of special hidden locks and mechanical fasteners (screws and rivets).

Sealing of the inter-panel joint is made by a special silicone sealant for clean rooms.

Purpose

Wall panels of the typeGML FS are recommended for use in clean production areas where regular disinfection of work surfaces will be carried out, such as pharmaceutical production, food processing, production of precision instruments and electronic components.

INSTALLATION SCHEME:



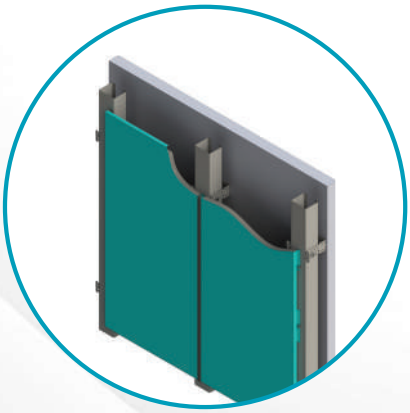
Purpose

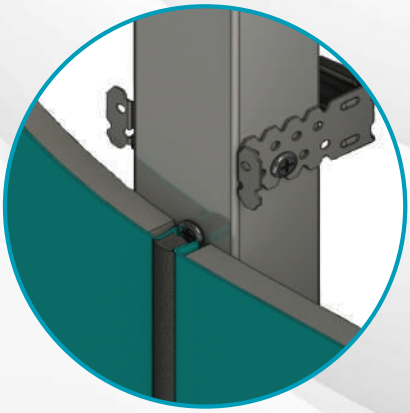
Wall panels of the GML RZ type are recommended for use in clean production areas where regular disinfection of work surfaces will be carried out such as pharmaceutical production, food production, production of precision instruments and electronic components.

SPECIFICATION:

Technical parameters of the panel	
Height	up to 4,500 mm (without panel joint)
Width	1,200 mm
Thickness	13.5 mm
Weight	14 kg/m^2
Front part (optional)	Galvanized steel 0.5mm / 0.7mm
Filler	Moisture-resistant drywall 12.5 mm
Coating	Polymer coating with a thickness of 25 microns
Standard panel colors	RAL 9002, RAL 9003
Panel colors (optional)	Any color according to the RAL table
Anchoring	Special hidden locks
Compactor	Silicone sealant for clean rooms
Panel Fire Resistance Parameters	
Flammability	According to GOST 30244-94: G1 (slightly combustible)
Flammability	According to GOST 30402-96: B1 (hardly flammable)
Toxicity	According to GOST 12.1.044-89: T1 (low-hazard)
Smoke-forming ability	According to GOST 12.1.044-89: T1 (low-hazard)

GYPSUM METAL WALL PANELS (GML ER)





DESCRIPTION:

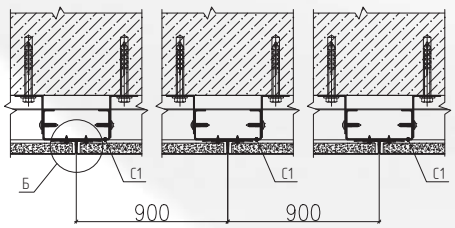
Gypsum-metal panels WT900ER (GML ER) – are designed for facing existing walls of a building and the construction of partitions, including fire-fighting ones. The panels consist of a metal sheet and moisture-resistant drywall. The surface has a powder epoxy-polyester coating that provides high resistance to the harmful effects of UV rays, detergents and disinfecting solutions equivalent to 6% hydrogen peroxide solution. The layers are mated using high-quality glue, which ensures the integrity and solidity of the entire product.

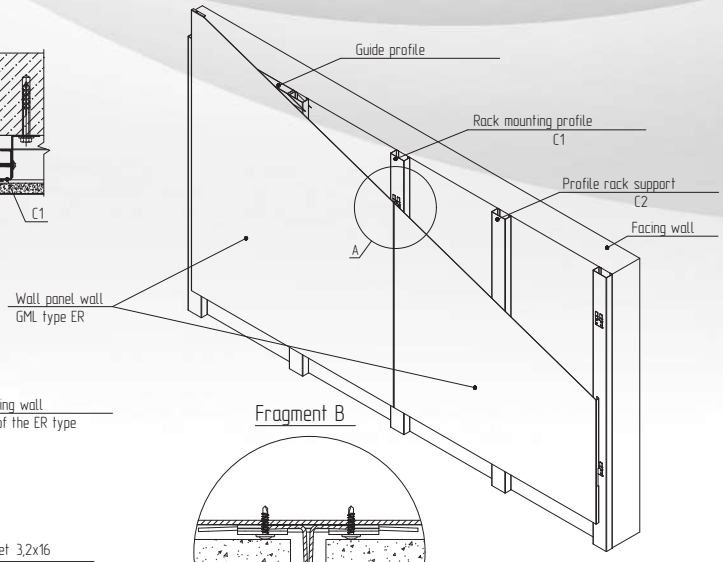
This design of GML panels allows for independent dismantling of individual wall panels, without resorting to forced dismantling of adjacent panels or sections of the wall.

Installation is carried out on a reinforced frame made of galvanized steel with a thickness of 1 mm, which allows you to integrate all the necessary engineering communications. Fastening of panels is carried out on special hidden locks and hooks for fastening of the ER type.

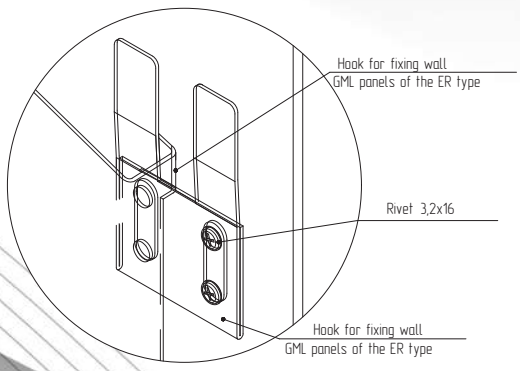
Sealing of the inter-panel joint is made by a special silicone sealant for clean rooms.

INSTALLATION SCHEME:

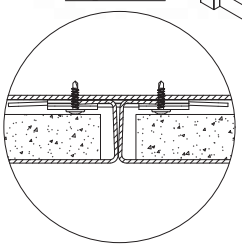




Fragment A



Fragment B



Optional:
Additionally, revision wall hatches can be integrated, if necessary, a 30 mm thick profile or a flexible inter-panel insert made of medical silicone can be installed instead of silicone sealant.

It is possible to use an antibacterial coating that prevents the growth of bacteria, microbes, fungi and mold.

Purpose:
GML ER type wall panels for clean rooms are resistant to aggressive detergents, disinfectants and ultraviolet irradiation, high wear resistance, including resistance to mechanical shock loads and minimal separation of aerosol and other particles from the front surface.

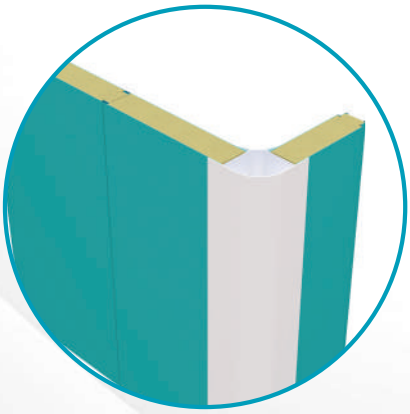
They are recommended for use in medical and preventive institutions, in sterile production sites and microbiological laboratories, as well as clean rooms and associated controlled environments in industrial and industrial enterprises.

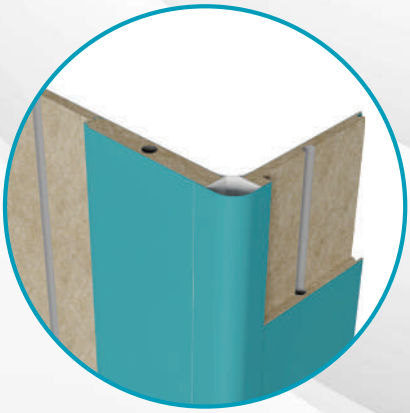
SPECIFICATION:

Technical parameters of the panel	
Height	up to 3,000 mm
Width	up to 1,100 mm
Thickness	13.5 mm
Weight	18 kg/m^2
Front part (optional)	Galvanized steel 0.7mm / 0.9mm
Filler	Moisture-resistant drywall 12.5 mm
Coating (optional)	Powder epoxy-polyester coating up to 130 microns thick
Standard panel colors	RAL 9002, RAL 9003, RAL 6019, Antibacterial coating of RAL 9003 color
Panel colors (optional)	Any color according to the RAL table
Anchoring	Special hidden locks (hooks)
Compactor	Silicone sealant for clean rooms
Panel Fire Resistance Parameters	
Flammability	According to GOST 30244-94: G1 (slightly combustible)
Flammability	According to GOST 30402-96: B1 (hardly flammable)
Toxicity	According to GOST 12.1.044-89: T1 (low-hazard)
Smoke-forming ability	According to GOST 12.1.044-89: D1 (small)

WALL SANDWICH PANELS

SANDWICH PANELS WITH CABLE CHANNELS (SELF-SUPPORTING)





DESCRIPTION:

Wall sandwich panels for clean rooms are self-supporting structures and do not require the construction of an additional power frame, designed for zoning space and the construction of partitions.

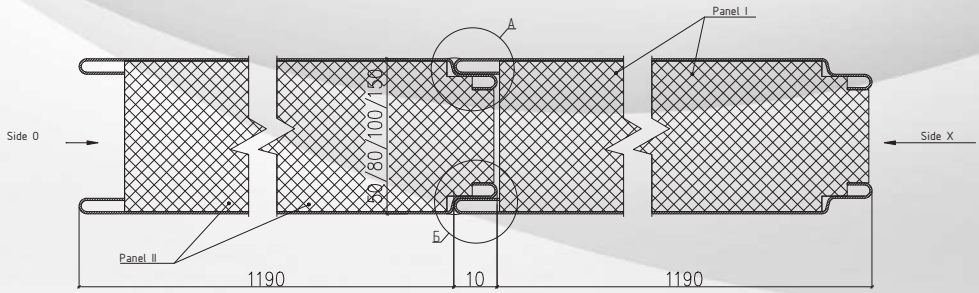
Structurally, they are smooth sheets of painted galvanized steel, between which there is a heat-insulating material (mineral wool with a density of at least 110 kg/m^3). For sandwich panels with cable channels, PVC pipes are added to the structure, the diameter varies from the thickness of the panels.

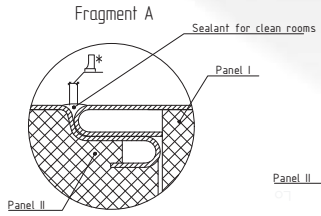
The layers are mated using high-quality glue, which ensures the integrity and solidity of the entire product.

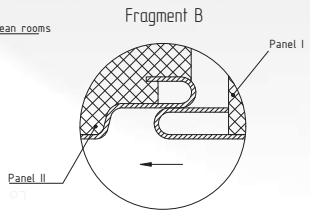
The main the features of wall sandwich panels are thermal insulation, noise insulation, hermetic and hygienic properties, coplanarity, as well as high fire resistance (from 30 to 100 min. depending on the thickness of the panels).

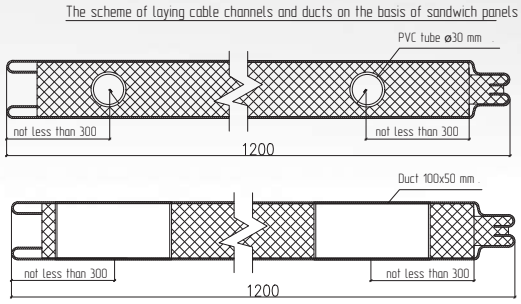
The joint is sealed with a special silicone sealant.

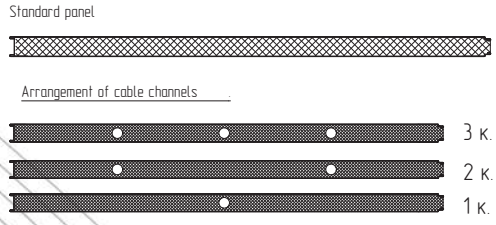
INSTALLATION SCHEME:

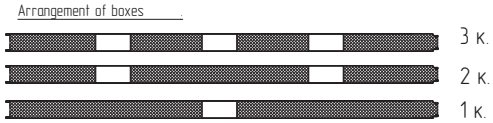












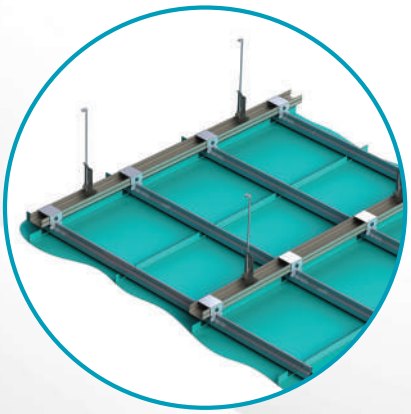
FRAME WALL SANDWICH PANELS

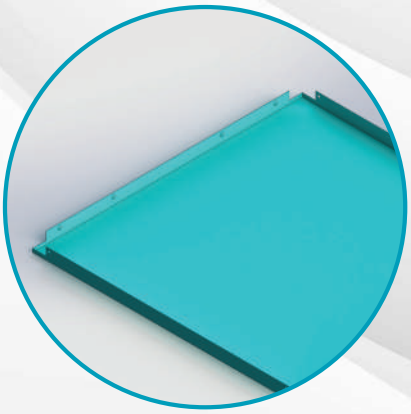
It is also possible to manufacture frame sandwich panels completely covered with metal from all sides and from the end and from the edge. This sealed structure is more resistant to structural loads and has a higher resistance to fire and general fire-fighting properties.

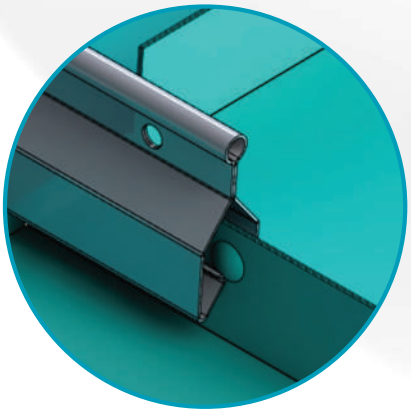
SPECIFICATION:

Technical parameters of the panel	
Height	до 6000 мм
Width	1200 мм
Thickness (optional)	50 мм, 60 мм, 80 мм, 100 мм, 150 мм
Weight (The panel weight is calculated taking into account the 0.5mm thick faceplates, for a thickness of 0.7mm = + 3.5 kg/m²)	1) thickness of 50 mm – 14.0 kg/m², 2) thickness 60 mm–15.0 kg/m², 3) thickness 80 mm – 17.0 kg/m² 4) thickness 100 mm – 19.0 kg/m² 5) thickness 150 mm – 25.0 kg/m².
Front part (optional)	Galvanized steel: 0.5mm / 0.7mm
Filler	Mineral wool with a density of at least 110 kg/m³
Coating (optional)	Polymer coating with a thickness of 25 microns, Powder epoxy-polyester coating up to 130 microns thick
Standard panel colors	RAL 9002, RAL 9003
Panel colors (optional)	Any color according to the RAL table
Anchoring	Standard groove-comb (Dad-Mom)
Compactor	Silicone sealant for clean rooms
Panel Fire Resistance Parameters	
1) thickness 50 mm – EI 30, 2) thickness 60 mm – EI 45, 3) thickness 80 mm – EI 60 4) thickness 100 mm – EI 80, 5) thickness 150 mm – EI 100	
E — loss of structural integrity according to GOST 53307-2009	
I — loss of thermal insulation capacity of the structure according to GOST 53307-2009	
Numbers "30", "45", "60", "80"- the panel's ability to withstand fire for "X" minutes	

CLIP-IN CEILING SYSTEM







DESCRIPTION:

The CLIP-IN ceiling system is designed to solve the problems of installing ceilings in clean rooms in order to ensure the tightness of the contour of enclosing structures with a smooth and smooth surface, treatment with detergents and disinfectants. It is recommended for use in clean rooms and associated controlled environments in pharmaceutical, medical, microelectronic, food, microbiological, cosmetic industries and medical and preventive institutions

Constructively

The panels are made of galvanized steel and are coated at the request of the customer with either a polymer coating or a powder epoxy-polyester coating. It is possible to use an antibacterial coating that prevents the growth of bacteria, microbes, fungi and mold.

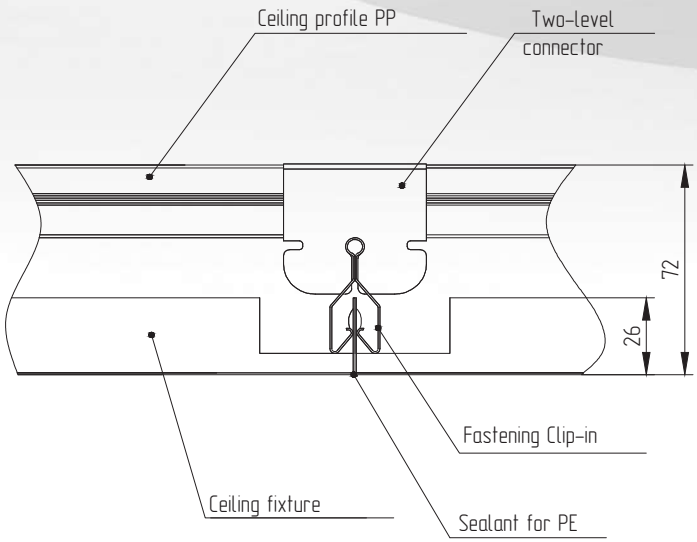
Installation

The cassette is mounted from below on a hidden power frame by snapping the profile edge into the comb profile without additional fasteners.

Dismantling of any cassette can be done by vacuum gripping, without affecting the entire ceiling system as a whole.

Sealing of the inter-panel joint is made by a special medical silicone sealant for clean rooms.

CLIP-IN MOUNTING

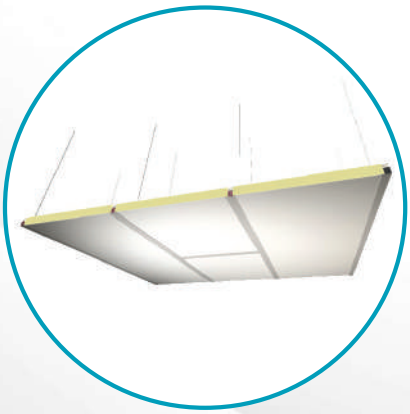


SPECIFICATION:

Technical parameters of the panel	
Panel size (optional)	300x600; 600x600; 300x1,200; 600x1,200mm
Front part (optional)	Galvanized steel 0.5mm / 0.7mm
Coating (optional)	Polymer coating with a thickness of 25 microns, Powder epoxy-polyester coating up to 130 microns thick
Filler	None
Resistance to overpressure	Up to 40 Pa
Light reflection	≤ 30%
Standard panel color	RAL 9002, RAL 9003, RAL 6019, Antibacterial coating color RAL 9003
Panel colors (optional)	Any color according to the RAL table
Anchoring	Special hidden locks of the CLIP-IN system
Compactor	Silicone sealant for clean rooms

Panel Fire Resistance Parameters	
Flammability	According to GOST 30244-94: G1 (slightly combustible)
Flammability	According to GOST 30402-96: B1 (hardly flammable)
Toxicity	According to GOST 12.1.044-89: T1 (low-hazard)
Smoke-forming ability	According to GOST 12.1.044-89: D1 (small)

SERVICED CEILING SYSTEM (WALKING CEILING)



DESCRIPTION:

The serviced ceiling system is a walkable ceiling for clean rooms (ISO 5-8 purity class and higher), allows regular maintenance of elements of engineering systems and technological equipment located in the ceiling space, without resorting to dismantling ceiling enclosing structures.

Structurally, it is a sealed ceiling structure with a load-bearing capacity of up to 130 kg/m². The ceiling frame consists of aluminum T-profiles rigidly interconnected by means of threaded connections.

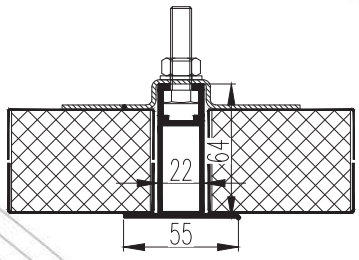
Installation
The cassettes are mounted in the ceiling frame from above from the ceiling space. The tightness of the cassettes to the frame is provided by the pressure plate.

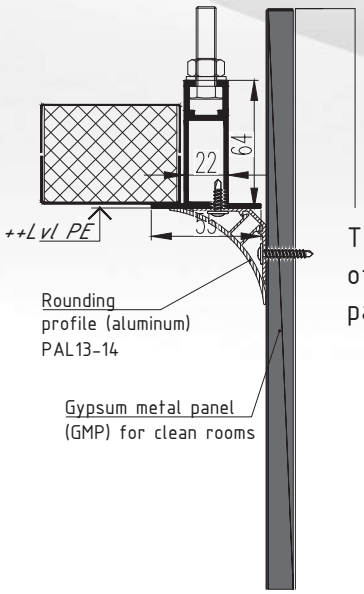
The joint is sealed with a special silicone sealant.

Integration
The ceiling system allows you to integrate any engineering devices, such as mortise, built-in, overhead, various terminal ventilation devices, general-purpose lamps and other equipment.

INSTALLATION SCHEME:

Ceiling mounting design with pressure plate





The design of the interface of the ceiling from sandwich panels and partitions from GML

SPECIFICATION:

Technical parameters of the panel	
Panel width (optional)	600 mm, 1,200 mm
Panel height (optional)	600 mm, 1,200 mm, 1,800 mm, 2,400 mm, 3,000 mm
Thickness (optional)	50 mm, 80 mm, 100 mm
Front part (optional)	Galvanized steel 0.5mm / 0.7mm
Coating (optional)	Polymer coating with a thickness of 25 microns, Powder epoxy-polyester coating up to 130 microns thick
Filler	Mineral wool with a density of 110 kg/m^3;
Bearing capacity	Up to 130 kg/m^2
Light reflection	≤ 30%
Standard panel color	RAL 9002, RAL 9003, RAL 6019, Antibacterial coating color RAL 9003
Panel colors (optional)	Any color according to the RAL table
Anchoring	Cassette ceiling system
Compactor	Silicone sealant for clean rooms
Panel Fire Resistance Parameters	
Flammability	According to GOST 30244-94: G1 (slightly combustible)
Flammability	According to GOST 30402-96: B1 (hardly flammable)
Toxicity	According to GOST 12.1.044-89: T1 (low-hazard)
Smoke-forming ability	According to GOST 12.1.044-89: D1 (small)

ARRANGEMENT:

Standard	Additionally
Ceiling panels with protective film	Silicone sealant for clean rooms
Load-bearing frame with suspensions	Perimeter rounding profile
Pressure plates	
Sealing tape	
Suspended ceiling elements	

SWING DOORS

DESCRIPTION:

Swing doors Pharmaceutical engineering for clean rooms are simple and convenient to operate, meet all modern requirements, such as increased hygienic and operational requirements, tightness of locking, resistance to various disinfectants and cleaning solutions, ultraviolet irradiation, as well as resistance to mechanical and shock loads.

The design of the swing door blocks is a rigid frame frame made of aluminum profile with powder or anodized coating, which allows the use of various types of locking mechanisms and closers, both mechanical and automatic. Mineral wool and 0.9 mm thick galvanized steel sheets with powder coating are used as blind filling elements.

To meet the requirements of the frequency of rooms in the door block, a drop-down threshold with a seal is used. Self-regulation of the tape part of the device ensures a uniform and tight fit to the floor when closed.

The configuration of the web filling can be blind, combined or with solid glazing.

Purpose
Sealed doors for clean rooms are necessary to ensure minimal contamination of the room from the external environment. This is very important, for example, in laboratories.

ARRANGEMENT:

Standard	Additionally
Threshold-free box with platband	Rectangular glazing
European fittings	Frosted glazing
Automatic drop-down threshold	Built-in blinds
Two sealing circuits	Inertial lattices
Reinforced adjustable hinges	Sliding door closer
Anti-hook handles	Mounting plate of the door closer
	Door lock in the open position (FOP)
	Soca-SL 100a electric lock
	GEZE automatic drive (Germany)
	GEZE automatic opening system
	Elbow buttons
	Safety curtain
	Alarm system, door lock and ACS

SPECIFICATION:

Technical parameters of doors	
Height	up to 2,400 mm (per box)
Width (optional)	for 1-leaf: 600÷1,300 mm (according to the box) for 2-fold: 1,300÷2,000 mm (according to the box)
Box size (width)	63 mm
Thickness	50mm
Door weight	for 1-leaf: 32 kg/m^2 for 2-leaf: 37 kg/m^2
Front panel (optional)	Blind metal panel, partial glazing, glazing
Front panel material (optional)	Aluminum, Stainless steel, Glass
Coating	Powder epoxy-polyester coating up to 130 microns thick
Standard panel color	RAL 9002, RAL 9003
Colors (optional)	Any color according to the RAL table
Glazing (optional)	Window glass, stalanite (tempered glass), one-way mirror, tinted glass.
Handle type (optional)	Push button; type "P"; type "G"; type "C"
Lock type (optional)	With a drum or with a latch
Threshold (optional)	With threshold, without threshold, with drop-down threshold
Door closer (optional)	With door closer, without door closer, with automatic drive
Positioning the door in the box	Right, left, with symmetrical sashes for a double-leaf door
Box Type	End plate with platband
Edging of the jamb with a PC 32 profile	BRS (without edging), ZRS (on three sides)

Panel Fire Resistance Parameters	
Flammability	According to GOST 30244-94: G1 (slightly combustible)
Flammability	According to GOST 30402-96: B1 (hardly flammable)
Toxicity	According to GOST 12.1.044-89: T1 (low-hazard)
Smoke-forming ability	According to GOST 12.1.044-89: D1 (small)

SLIDING DOORS

WITH AUTOMATIC DRIVE

DESCRIPTION:

Sliding doors

The use of sliding doors in clean rooms for various purposes is due to the technical necessity of transporting bulky cargo, medical gurneys, equipment or the complexity of installing swing doors due to the architectural feature of the premises.

The design of the sliding doors is a rigid frame frame made of aluminum profile with powder or anodized coating. Mineral wool and 0.9 mm thick galvanized steel sheets with powder coating are used as blind filling elements.

To meet the requirements of the frequency of rooms in the door block, a drop-down threshold with a seal is used.

The web filling configuration can be blind, combined or with solid glazing, with one or two opening doors, with automatic or mechanical door opening drive. Automatic doors are additionally equipped with elbow buttons, sensitive sensors or radars.

Purpose

Sliding doors are used in rooms of purity class ISO 6 and below, due to the complexity / lack of tightness of the door flaps. In rooms of the ISO 5 purity class and above, only swing doors and transition gateways are used.

WITH MECHANICAL DRIVE

SPECIFICATION:

Technical parameters of doors	
Height (optional)	up to 2,400 mm (per box)
Width (optional)	for 1-leaf: 700÷3,000 mm (according to the width of the opening) for 2-fold: 900÷3,000 mm (according to the width of the opening)
Thickness	50mm
Door weight	35 kg/m^2
Front panel (optional)	Blind metal panel, partial glazing
Front panel material (optional)	Aluminum, Stainless steel, Glass
Glazing (optional)	Window glass, stalanite (tempered glass), one-way mirror, tinted glass
Coating	Powder epoxy-polyester coating up to 130 microns thick
Standard panel color	RAL 9002, RAL 9003
Colors (optional)	Any color according to the RAL table

Panel Fire Resistance Parameters	
Flammability	According to GOST 30244-94: G1 (slightly combustible)
Flammability	According to GOST 30402-96: B1 (hardly flammable)
Toxicity	According to GOST 12.1.044-89: T1 (low-hazard)
Smoke-forming ability	According to GOST 12.1.044-89: D1 (small)

ARRANGEMENT:

Standard	Additionally
C-shaped handle	Rectangular glazing
End porch with seal	Frosted glazing
GEZE automatic drive	Built-in blinds
Elbow buttons and safety shutters	Electric lock
	GEZE automatic drive
	Drop-down threshold

WINDOW BLOCKS

DESCRIPTION:

Windows for clean rooms

THE DESIGN of window blocks for clean rooms is a rigid frame frame made of aluminum profile with powder or anodized coating. The glazed elements are made of tempered injury-proof glass with a thickness of 6 mm.

The configuration of the window block can be blind, hinged or combined.

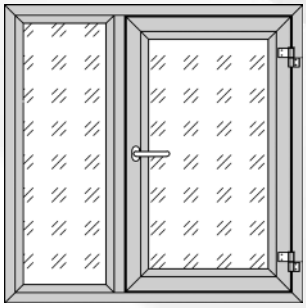
It is also possible to manufacture fire-fighting windows or windows with variable transparency.

The joint is sealed with a special medical silicone sealant for clean rooms.

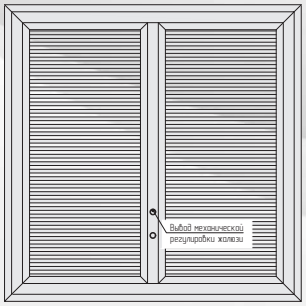
Purpose

For enclosing structures of clean rooms and associated controlled environments in the pharmaceutical, medical, electronic, food, microbiological, cosmetic industries and medical institutions.

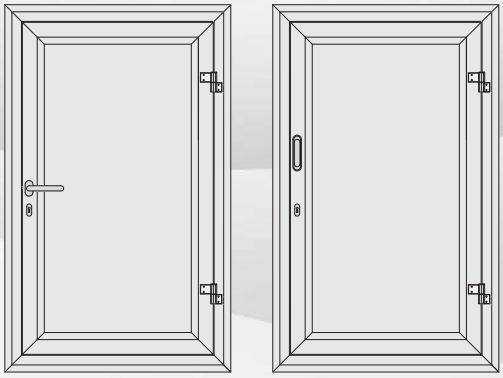
Window block double-leaf hinged for clean rooms



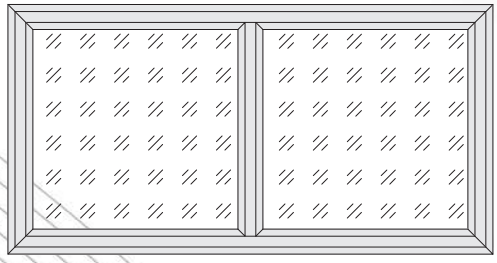
Window unit with integrated blinds for clean rooms



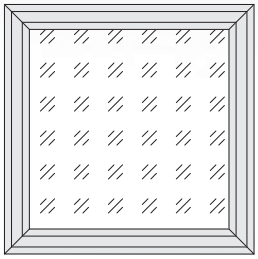
Wall Breaker Revision Hatch



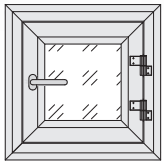
Double-sided window viewing block for clean rooms



Single-floor window inspection block for clean rooms



Single-floor hinged window unit for clean rooms



SPECIFICATION:

Technical parameters of the panel	
Height	up to 2,000 mm (per box)
Width	for 1-leaf: 425÷1,190 mm (per box), for 2-leaf: 765÷2,295 mm (per box) minimum width of 1 leaf is 380 mm
Thickness	50mm
Frame width	63 mm
Weight	35 kg/m^2
Standard window frame color	White color
Colors (optional)	Any color according to the RAL table

ARRANGEMENT:

Standard	Additionally (optional
End-type frame with platband	Frosted glazing
Red-hot glass	Built-in blinds
Two sealing circuits	Windows with variable transparency (electronic adjustment allows you to transfer the glass from the frosted to the transparent state and back from the remote control)
European fittings	
Anti-hook handles	

TRANSFER BOXES

Transfer boxes, also known as transfer gateways for clean rooms, are designed for use in clean areas and rapid movement of production facilities between rooms of various purity classes from ISO 8 and higher (GOST 14644-1-2017). Also to protect the premises from contamination when moving objects between zones and maintaining the set parameters of positive/negative pressure in rooms with a controlled environment.

The Pharmaceutical Engineering company produces 3 types of transfer boxes:

! The table shows the standard sizes of transfer boxes, optionally it is possible to manufacture a box of any size according to an individual project, depending on the needs of the customer.

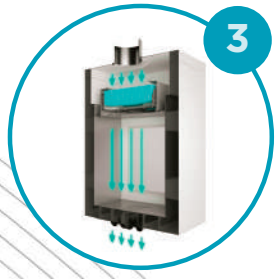
TYPES OF TRANSFER BOXES

Gateway transfer passive STD

This is a static chamber with two or three doors equipped with an inspection window, and optionally can be equipped with a lock to lock the simultaneous opening of doors. Also, a UV lamp can be installed inside the box.

Active transfer gateway STD-A

The box is equipped with a recirculating filter ventilation unit for air purification, and may have an additional UV lamp installation for bactericidal cleaning of objects transmitted from pathogenic zones of clean rooms of medical laboratories. The function of blowing the camera and the transmitted object with sterile air prevents the direct penetration of various aerosol contaminants into the clean zone.



Transfer gateway connected to ventilation STD-V

This is an active transfer box connected to an external filter ventilation unit. It is recommended for use in clean rooms of pharmaceutical and microelectronic production with a controlled indoor environment.

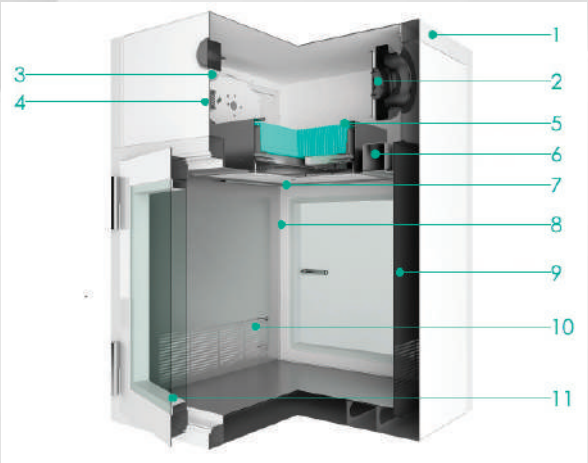
Optionally, it is possible to manufacture active transfer boxes with the maintenance of positive/negative pressure in relation to the surrounding premises.

ACTIVE TRANSFER BOX

The active STD-A transfer gateway is structurally a rigid frame chamber equipped with a filter ventilation unit with a HEPA filter, a UV lamp and a door indication and locking system. The chamber provides recirculation of air passing through the filter and optionally UV treatment of the interior space. The cycle of blowing and disinfection by UV radiation is adjusted to the necessary time parameters.

THE MAIN NODES OF THE ACTIVE TRANSFER BOX

1. External housing
2. Fan motor
3. Controller
4. Control panel
5. HEPA filter
6. Module of additional bactericidal cleaning
7. Nozzle diffuser
8. Electromechanical locking
9. Internal camera
10. Air intake grille
11. Sealed docking

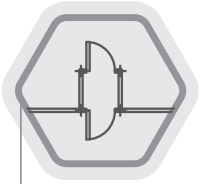


TECHNICAL PARAMETERS FOR THE ACTIVE TRANSFER BOX

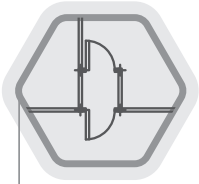
Parameters	Equipment	Specification
General	Overall dimensions (W:H:D)	800 x 1,100 x 700 mm
	Working dimensions of the camera (W:H:D)	600 x 600 x 600 mm
	Total weight	88 Kg
Power supply parameters	Type of electrical connection	L-N-PE, 220V, 50 Hz
	Power Input	270 W
Parameters of UV irradiators	Lamp Type	Mercury, gas discharge T5/G5
	Power	1 x 15 W
	Wavelength	254 n.m. UVC
	UV radiation power	2.1 W
	Effective service life	8,000 Working Hours
	Setting the irradiation time	from 1 to 999 min
Parameters of the filter and ventilation module	Air Flow Volume	130 cubic meters./ recirculation hour 100%
	Filter Parameters (W:H:D)	530x530x78, H14, filtration 0.3 microns, 99.995%
	Initial filter resistance	140Pa
Materials used	External housing	Carbon steel 08PS 1.2mm coated with 80 microns
	Internal camera	AISI304 stainless steel 1.5mm polished

PASSIVE TRANSFER BOX

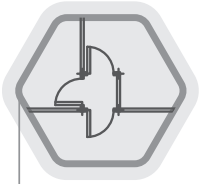
Passive transfer gateway STD – structurally is a rigid frame frame made of metal profile with powder or anodized coating. Blind structural elements are made of galvanized steel with a thickness of 0.9 mm, glazed elements are made of injury—proof tempered glass with a thickness of 6 mm. The inner surface of the lock is made of polished AISI 304 stainless steel.



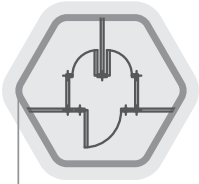
Transfer window-airlock in the partition



Transfer window-airlock at the crosshairs of the partitions



Transfer window-airlock linking three separate rooms



A group of transfer windows-airlock connecting three separate rooms

TECHNICAL PARAMETERS FOR PASSIVE TRANSFER BOX

Parameters	Specification
Overall dimensions of the housing (W:H:D)	from 600x600x600mm to 1,000x1,000x1,000 mm
Loading space dimensions (W:H:D)	from 474x474x500 mm to 874x874x900 mm
Weight	50 - 150 kg
Number of cells (optional)	single-section / two-section
Variants of execution (optional)	1) Box / column 2) straight/ angular 3) T-shaped (3 sashes)

OPTIONAL FOR PASSIVE AND ACTIVE BOXES:

ADDITIONAL DISINFECTION MODULE

UV - module for bactericidal purification with a mercury ultraviolet emitter with a wavelength of 254 nm.

UV air purifiers have a lot of advantages:

- Easy to operate equipment.
- Cheapness in service.
- It does not have replaceable filters, so it does not need regular and expensive maintenance.
- Small size and light weight due to the absence of complex mechanisms.
- Effective air purification from organic pollutants.
- Low power consumption.

ARRANGEMENT:

Standard	Optional (additionally)
Electronic lock for opening/closing doors.	The system of indication and blocking of simultaneous opening of two doors of the box
Direct airlock with two doors	UV lamp
Adjustable hinges	
Two sealing circuits	
European fittings	
Anti-hook handles	
Viewing windows (rectangular glazing of doors)	


ПОЖАР
ВЫХОД

FRAMING ELEMENTS

DESCRIPTION:

Rounding profiles for clean rooms are rounded framing elements of external and internal corners, joints and joints of enclosing structures designed for efficient and convenient maintenance: cleaning and disinfection of clean areas. In addition, the framing elements minimize the formation of areas with stagnant air (areas of dust and dirt accumulation) and the appearance of turbulent flows in clean rooms.

The rounding profiles manufactured by Pharmingineering are made of high-quality materials - aluminum, with a reliable, durable powder epoxy-polyester coating up to 130 microns thick, which provides high resistance to UV radiation and resistance to cleaning with special detergents and disinfectants.

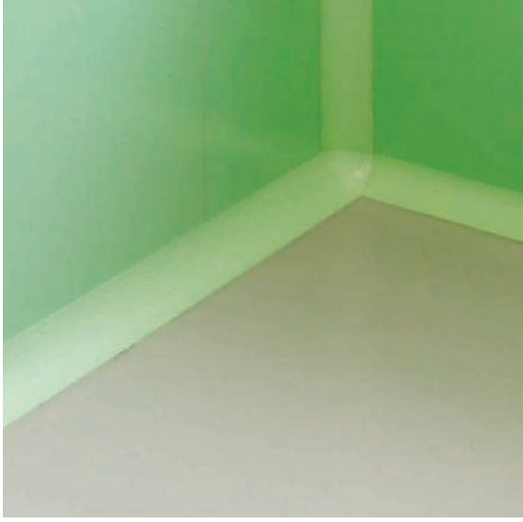
TYPES OF PRODUCED ROUNDING ALUMINUM PROFILES:

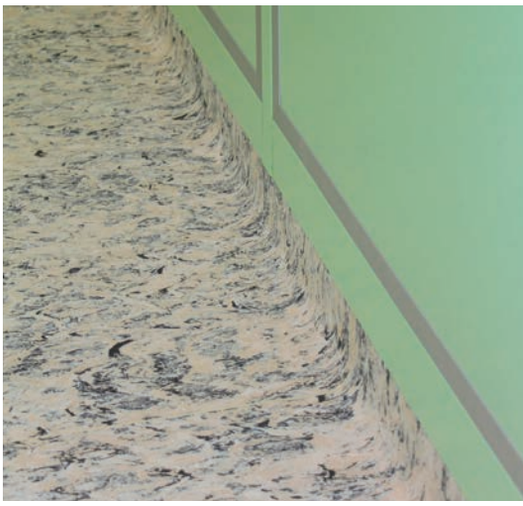
System of rounding aluminum profiles with a linoleum plant on the wall, has a radius of rounding of the inner corners of 70 mm, is used with gypsum metal panels with a thickness of 13.5 mm, with the possibility of installing linoleum on the wall to a height of 125 mm, according to SanPiN 2.1.3.2630-10. The aluminum profile minimizes sharp and right angles in clean rooms, is supplied without special coating (painting), because it is covered with linoleum, which is laid on top of the profile.

System of rounding aluminum profiles without linoleum plant on the wall, suitable for use with gypsum metal or sandwich panels and any type of flooring. According to the radius of rounding of the inner corners, the framing profile in this system is available in 2 versions:

Profile R55 - has a radius of rounding of the inner corners of 55 mm.

Profile R70 - has a radius of rounding of the inner corners of 70 mm.





The configuration of the profile system for clean rooms Pharmengineering can consist of various framing elements depending on the project, application, flooring and type of enclosing structures.

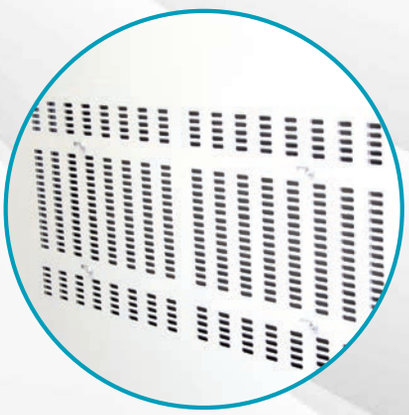
Tightness:

Sealing of all joints of profiles is carried out with a special medical silicone sealant, thanks to this a sealed contour is created that excludes the ingress of dust and polluting particles into clean rooms.

Purpose

Framing elements for enclosing structures of clean rooms are suitable for pharmaceutical, food, microelectronic industries, space and cosmetic industries, medical institutions and laboratories.

ER TYPE WALL AIR INTAKE PANELS



DESCRIPTION:

Wall air intake panels of the ER type are made with integrated air ducts, which are designed for air intake in the upper and lower areas of the room, without resorting to the device of lowering individual air ducts in specially fenced niches. Connection of the panel to the exhaust ventilation system is made in the ceiling space.

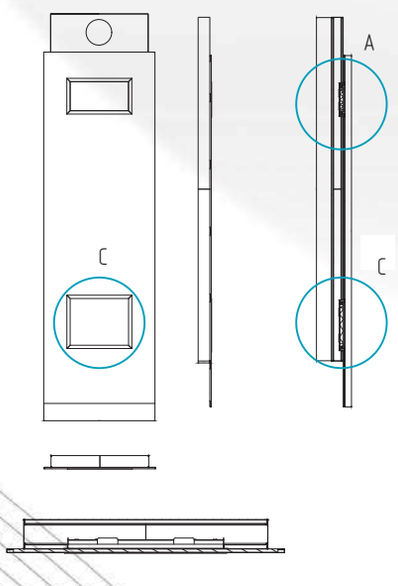
Structurally, wall air intake panels are made individually for each customer: height, depth, size, location of grilles and throughput, all this is selected based on the purpose and size of the room.

The lattices can be equipped with air flow regulators and filters.

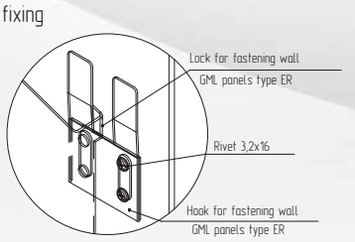
Installation

The wall air intake panel is built into the system of facing panels GML flush. In the upper part of the panel there is a tap with a diameter of Ø160-250 mm, located in the ceiling space. It is possible to manufacture a tap on the front and back wall of the panel.

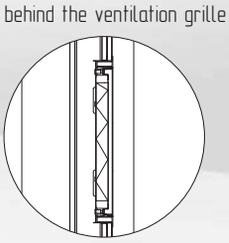
INSTALLATION SCHEME:



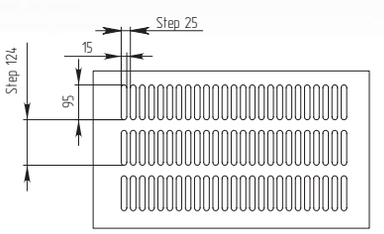
Fragment A – Panel fixing

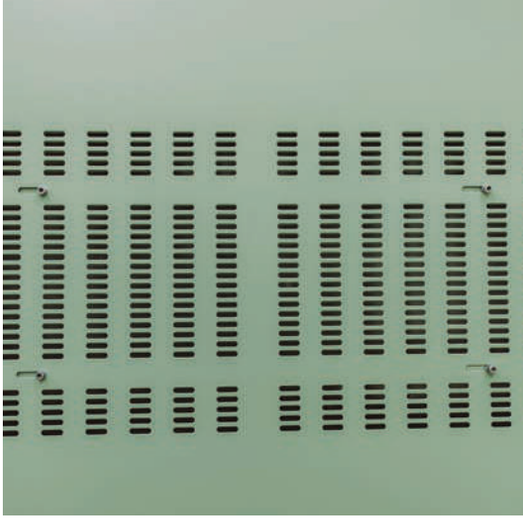


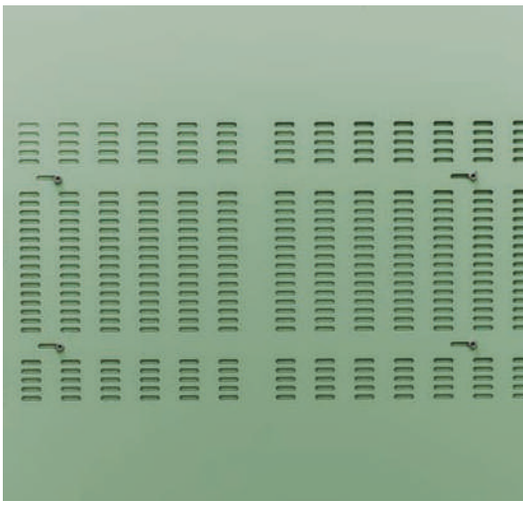
Fragment B – HEPA filter installed behind the ventilation grille



Fragment C – Ventilation grille







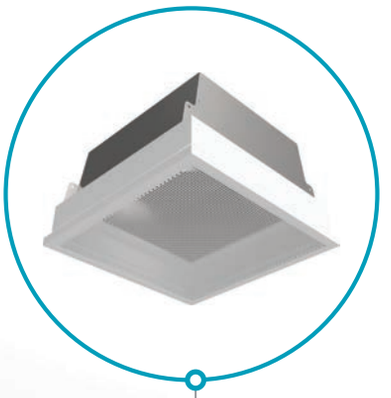
SPECIFICATION:

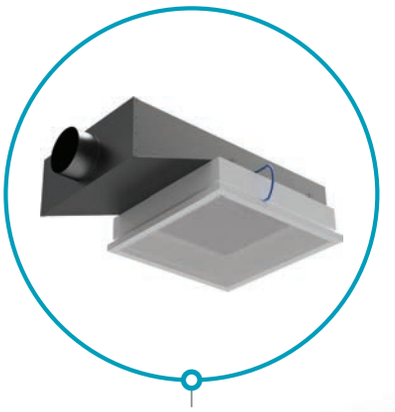
Technical parameters of the panel	
Height	up to 3,000 mm
Width	900 mm
Duct thickness	from 50 to 100 mm
Front part (optional)	Galvanized steel 0.7 mm
Performance (optional)	from 350 to 950 m^3/h, depending on the size
Tap diameter (optional)	160 mm, 200 mm, 250 mm
Coating	Powder epoxy-polyester coating up to 130 microns thick
Standard panel colors	RAL 9002, RAL 9003, RAL 6019, Antibacterial coating
Panel colors (optional)	Any color according to the RAL table
Anchoring	Special hidden locks (hooks)
Compactor	Silicone sealant for clean rooms

Panel Fire Resistance Parameters	
Flammability	According to GOST 30244-94: G1 (slightly combustible)
Flammability	According to GOST 30402-96: B1 (hardly flammable)
Toxicity	According to GOST 12.1.044-89: T1 (low-hazard)
Smoke-forming ability	According to GOST 12.1.044-89: D1 (small)

STATIC PRESSURE CHAMBER

(CEILING AIR DISTRIBUTOR)

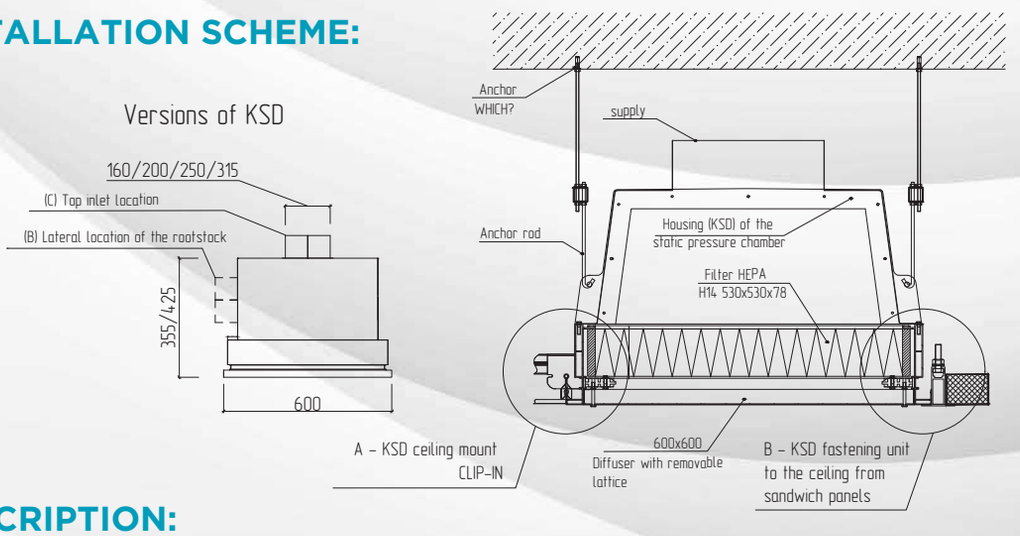




STANDARD DESIGN

INDIVIDUAL PROJECT

INSTALLATION SCHEME:



DESCRIPTION:

The static pressure chamber is an air distribution ceiling device with or without a HEPA filter, and is the terminal element of the supply and exhaust ventilation systems.

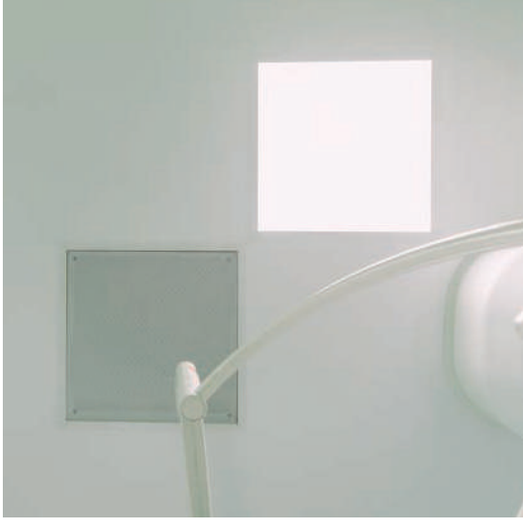
By design, the air distributor housing is designed specifically for installation in a CLIP-IN suspended ceiling system, made of galvanized steel or stainless steel with a powder epoxy-polyester coating that provides resistance to UV radiation and the effects of detergents and disinfectants.

Optional

It is possible to equip the static pressure chamber with an air flow valve (mechanical or with a drive) and fittings for connecting differential pressure and temperature sensors.

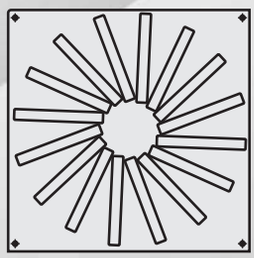
Tightness

When mounted, it ensures the tightness of the internal contour of the ceiling enclosing structures and creates a smooth and smooth surface that allows easy cleaning and disinfection.

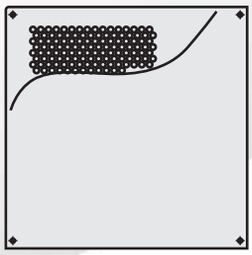


Diffusers

The air distributor uses 2 types of external overhead lettices, diffusers:



Vortex lattice – forms a swirling air flow

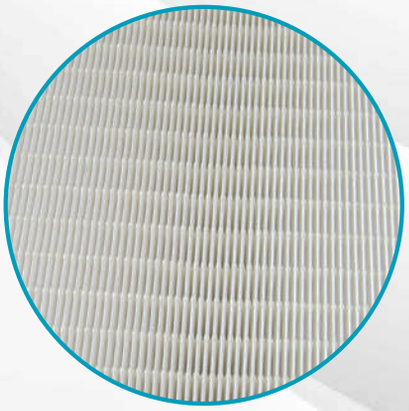


Perforated lattice – forms a relatively unidirectional air flow

SPECIFICATION:

Technical Parameters	
Overall dimensions (L:W:H)	600 x 600 x (355/425) mm, 1200 x 600 x 425 mm
Diffusers (outer cover)	Vortex, perforated
Location and type of branch pipe (outlet)	Side, upper of round shape
Tap diameter (optional)	160 mm, 200 mm, 250 mm
Air velocity	0,45 m/s
Performance	Size: 600x600 - 410 m^3/hour Size: 1200x600 - 800m^3/hour
Filter class	H10 - H14
Filter Size	530 x 530 x 78 mm, 1,130 x 530 x 78 mm
Standard colors	RAL 9003
Colors (optional)	Any color according to the RAL table

HEPA FILTERS



DESCRIPTION:

The HEPA filter is a highly efficient air filter for the absorption of solid and aerosol particles, designed for final air purification in medical institutions, pharmaceutical, food and other industries.

Constructively

The filter housing is made of aluminum profile or galvanized steel, which gives it increased rigidity and accuracy of the seat in static pressure chambers. The filter material is made of fiberglass paper.

Classification

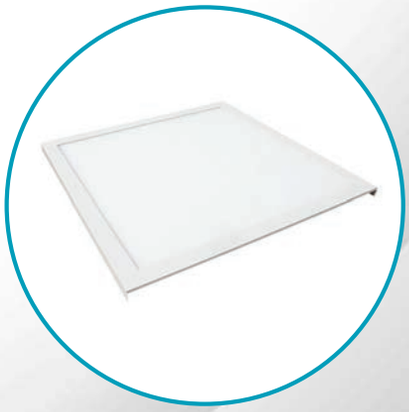
HEPA filters are distinguished depending on their ability to trap particles of a certain size. A fine air purification device can be labeled with designations from H10 to H14 – the higher the figure, the more likely the filter is to retain particles, from 85% for H10 to 99.99% for devices labeled H14.

HEPA technology allows you to purify the air from most known allergens, such as plant pollen, fungal spores, wool, fluff and animal dandruff. In addition, the HEPA filter is able to detain viruses – which is especially important for operating and biotechnological production facilities.

SPECIFICATION:

Technical Parameters	
Overall dimensions (L:W:H)	530 x 530 x 78 mm, 1,130 x 530 x 78 mm
Cleaning class	H10, H11, H12, H13, H14
Filter material	Fiberglass paper
Body	Aluminum, galvanized steel
Initial resistance	from 150 Pa
Final resistance	500 Pa
Working temperature	up to 70˚ C
Guarantee	1 year

ULTRA-THIN CLIP-IN LED LIGHTS



DESCRIPTION:

Ultra-thin CLIP-IN LED lamps meet all modern requirements of clean rooms of the highest class of cleanliness, and have a good degree of protection from moisture and dust and high hygienic characteristics.

The light canvas has a uniform illumination over the entire area of an opal (matte) multilayer diffuser made of PMMA and transparent polycarbonate.

By design, LED lamps for clean rooms have a lightweight metal body made of anodized aluminum profile with powder epoxy-polyester coating, which snaps into the comb of the hidden CLIP-IN ceiling system without additional fastening.

When mounted, it ensures the tightness of the contour of the enclosing structures and creates a smooth, even (coplanar) surface that is resistant to treatment with special detergents, disinfection and UV radiation.

This system allows for emergency dismantling of the lamp without affecting the entire ceiling system as a whole.

Optional

It is possible to supply lamps with emergency power supply units for 1 or 3 hours of autonomous operation.

Purpose

Designed for pharmaceutical companies, food and electronics industries, medical institutions, laboratories and the space industry.

SPECIFICATION:

Technical parameters of LED panels	
Overall dimensions (L:W:H)	600 x 600 x 9 mm
Type	Ultra-thin LED lights
Mounting type	CLIP-IN
Power	34 W
Luminous flux	3,400 Lm (at 4,000K)
Color rendering index	Ra80
Glow temperature	4,000K, 5,000K, 6,500K
Protection class	IP54
Standard colors	RAL 9003
Compactor	Silicone sealant for clean rooms

PLACE ON ONE LANE

All elements of the enclosing structures can be painted in any color according to the RAL color table, covering a palette of more than a hundred shades of colors with varying degrees of surface mattness. This allows you to achieve a combination of functionality and aesthetics of clean rooms.

We use modern equipment that allows us to apply a high-quality powder epoxy-polyester coating that is UV-resistant and resistant to detergents and disinfectants.

Full-color printing on glazing elements is also possible. Due to the fact that the seal is applied to the back of the glass, the drawing will not be erased and will not burn out during cleaning with disinfectant solutions.

QUALITY ASSURANCE

PharmEngineering renders aftersales warranty services, which go far beyond the traditional boundaries and gives valuable benefits to our clients. The range of our services is pretty wide, from professional consultations to warranties on the structures we delivered. Our Warranty Repair Department will deliver and replace defective items with new ones as soon as possible. You will only need to call your manager by phone

+7 495 215-00-51 or write a letter to the e-mail address service@ph-e.ru

PharmEngineering's products are manufactured in accordance with the following standards and regulations:

- ISO 14644 Family of Standards (GOST R ISO 14644). Cleanrooms and Associated Controlled Environments. The Main International Standard for Cleanrooms.
- MP EC. Good Manufacturing Practice for the Producing Medicines in the European Union. Russian translation.
- Regulation for Producing and Controlling Quality of Medicines (GMP). National Standard of the Russian Federation GOST R 52249-2009.
- SanPiN 2.1.3.2630-10 "Sanitary Requirements for Organizations Involved in Medical Activities."

PROPERTIES OF ENCLOSING STRUCTURES

RESISTANCE TO IMPACT

The manufactured products have powder epoxy-polyester coating or polymer coating. This solution provides a high resistance of the surface to the harmful effects of UV rays and cleaning disinfectant solutions.

FREE INTEGRATION

All parts of the structures are designed taking into account the characteristics of each individual element and its adjacency to other parts of the enclosing structures, which greatly simplifies the task of assembling clean rooms. The design of the products allows you to integrate all communications necessary for laying engineering systems, gateways and viewing windows.

TIGHTNESS OF THE PREMISES

The tightness of enclosing structures is a key point for clean rooms.

All products are designed to minimize joints and are subject to final sealing after assembly at the facility.

Sealing of the inter-panel joint is made by a special medical silicone sealant for clean rooms. Two sealing circuits and a drop-down automatic threshold made of a special elastic material can guarantee the tightness of swing doors.

RELEVANCE OF DESIGNS

Enclosing designs of pharmaceutical engineering meeting the modern requirements of clean rooms of the highest class of cleanliness. The surface of the structures and the rounding elements ensure the efficiency of cleaning and disinfection of surfaces.

ANTI-GLARE SURFACE

The designs have a smooth surface with a matte shade to reduce the reflectivity of the surface, this allows you to eliminate glare in bright lighting, which is of fundamental importance for working in clean rooms.

ANTISTATICS

In order for the room to be really clean, we carry out the removal of static electricity by grounding the structures of the enclosing elements, which allows us not to attract electrified dust particles.

AUTOMATION

Automation is an important component of designs in clean rooms. We use equipment of the highest quality and reliability: control and automation systems for opening/closing doors, indication and locking systems for simultaneous opening of two doors of the transfer box and the gateway, a system for maintaining positive/negative pressure of the environment relative to the surrounding premises.

PHARM ENGINEERING

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