

QAS - quickly assembled shelters

ON THE BASIS OF PNEUMATIC FRAME MODULES

Purpose

The quickly assembled shelters (QAS / ББИ) are mainly used during elimination of consequences of natural disasters, accidents, catastrophes, for arranging in field conditions:

- headquarters, control centers;
- hospitals;
- sanitary-amenity facilities (e.g., shower rooms);
- temporary lodging, etc.

Technical specifications

Ambient air temperature	- 45...+50°C
Relative humidity	up to 98% @ 25°C
Material	Rubberized fabric (CBM heavy-duty fabric or nylon)
Atmospheric pressure, corresponding to altitude above sea level	up to 3000 m
Average set-up time	2...5 min.

- Volume in folded state is almost 140 times smaller than volume in operating (inflated) state
- One square meter of dwelling space weighs approx. 5 kg
- Packed module occupies floor space 1 m²
- Even in case of extremely low ambient temperature, it is warm inside the compartment. Time for reaching normal room temperature inside the module: approx. 5 minutes for ambient outdoor temperature minus 15°C
- Broad range of auxiliary equipment (power supply systems, pressurization device, heating-ventilation block, air conditioner, differential air pressure regulator in the pneumatic frame of the module, lighting fixtures, tables, chairs, etc.)
- The product is certified pursuant to GOST R

Short description of the module

The quickly assembled shelters consist of one or several pneumatic frame modules (table 1). The modules may be connected in various combinations limited only by the customer's fantasy. The pneumatic frame module is an inflatable construction filled by air using pressurization device. The backbone of the module is the pneumatic frame covered from the outside by waterproof fabric (nylon or heavy-duty fire retardant fabric – at customer's choice), and with inner lining made of nylon or heavy-duty fire retardant fabric. To prevent incidental breakage of pneumatic frame because of excess pressure, the module is equipped with emergency air release valve. Air space between the outer and inner shell of the pneumatic frame module allows maintaining optimum indoor temperature even if ambient temperature is extremely low. To enhance wind load resistance, the quickly assembled shelters are equipped with anchor lines and pegs. Electric network includes sockets for appliances and lighting wiring with a switch. Electric network is installed at the stage of QAS manufacturing and is not dismantled during folding or deployment of the compartment. Lighting fixtures are installed at the stage of QAS deployment and are connected to the electric network using special connectors.

QAS may be supplied together with a set of auxiliary equipment (table 2) intended for power supply, lighting, heating, ventilation, automatic pressurization of pneumatic frame, etc.

Pneumatic frame

consists of arches (rubberized fabric) connected into a single structure.

The pneumatic frame is covered from the outside with rubberized waterproof fabric (nylon or heavy-duty fire retardant fabric – at customer's choice). Inner lining is made of nylon or heavy-duty fire retardant fabric (at customer's choice)

Warm floor*

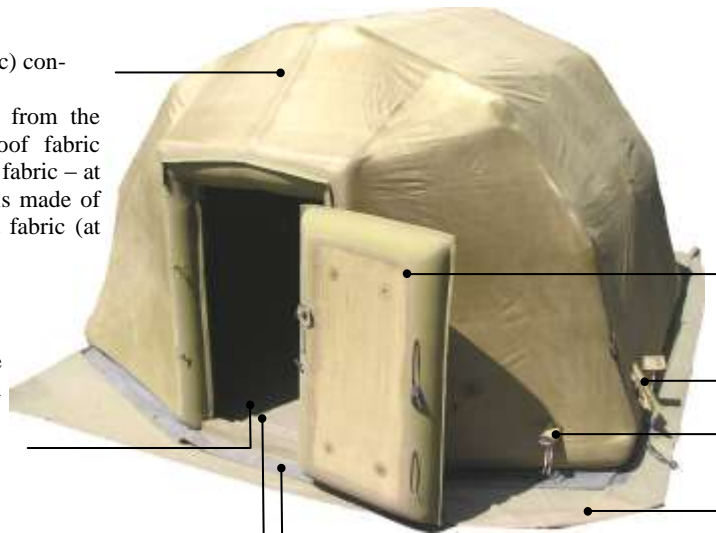
is laid upon glued floor; it is made of foamed polymer covered with rubberized waterproof fabric.

Glued floor

is made of rubberized waterproof fabric.

Apron

has handles for carrying the module and holes for fixing to the ground by pegs.



Pneumatic doors

Are designed similar to pneumatic frame, made of similar material

Holes

for supply of warm air and ventilation

Holes

for inlet of electric cables

Rubberized underlay*

made of waterproof fabric. Is laid under the module for protecting the floor against dirt

Accessories (kit): warm floor, rubberized underlay, pegs with anchor lines, repair kit









* – included in the accessories kit

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Table 1 Pneumatic frame modules and their characteristics*

Code name of the module / possibility of connection (docking) with other modules	Schematic drawing of the module / notes	Overall dimensions in operable (inflated) state LxWxH, mm	Overall dimensions in packed state LxWxH, mm / Weight, kg
		Module internal (usable) space, m ³ / Floor space occupied by the module in operable state, m ² / Indoor floor space, m ²	<i>of the module</i> <i>of accessories</i> (kit: warm floor, underlay, pegs with anchor lines, repair kit)
«Y» <i>unified</i> / dockable from two sides	 1 pneumatic door, 1 curtain**, vestibule at the entrance	<u>9260x4760x2750mm</u> 70,7m ³ / 44,1m ² / 34,5m ²	<u>1400x700x500mm / 175kg</u> 1400x700x350mm / 60kg
«YM» <i>unified small</i> / dockable from two sides	 1 pneumatic door, 1 curtain**	<u>6260x4760x2750mm</u> 47,0m ³ / 29,8m ² / 23,2m ²	<u>1400x700x350mm / 110kg</u> 1400x700x250mm / 45kg
«K» <i>combined</i> / dockable from one side	 1 pneumatic door, 1 curtain**	<u>8740x4760x2750mm</u> 64,4m ³ / 41,6m ² / 31,8m ²	<u>1400x700x500mm / 160kg</u> 1400x700x350mm / 60kg
«KO» <i>combined, with windows</i> / dockable from one side	 1 pneumatic door, 1 curtain**, 5 windows at each side	<u>8740x4760x2750mm</u> 64,4m ³ / 41,6m ² / 31,8m ²	<u>1400x700x500mm / 160kg</u> 1400x700x350mm / 60kg
«III» <i>air-lock***</i> / dockable from one side	 1 pneumatic door, without rear wall	<u>2740x4760x2750mm</u> 18,4m ³ / 13,0m ² / 9,1m ²	<u>1400x700x250mm / 55kg</u> 1400x700x150mm / 15kg
«II» <i>transit***</i> / dockable from 4 sides	 no pneumatic doors, 4 open walls	<u>5600x5600x3500mm</u> 71,0m ³ / 31,3m ² / 27,5m ²	<u>1400x700x350mm / 85kg</u> 1400x700x250mm / 20kg
«III» <i>pavilion</i> / non-dockable	 2 pneumatic doors	<u>5220x4760x2750mm</u> 36,8m ³ / 24,8m ² / 18,1m ²	<u>1400x700x350mm / 100kg</u> 1400x700x250mm / 30kg
«IIIY» <i>extended pavilion</i> / non-dockable	 2 pneumatic doors	<u>6680x4760x2750mm</u> 48,6m ³ / 31,8m ² / 24,2m ²	<u>1400x700x350mm / 135kg</u> 1400x700x250mm / 30kg

* – on request, modules of non-standard configuration may be manufactured: up to 24m long; for operation at ambient air temperature as low as -55°; 2500mm high (weight reduction by 10%); without glued floor; without inner lining; with outer shell rubberized on both sides; module inner space may be equipped with partitions of any shape and made of any materials.

** – pneumatic door is mounted at one side of the module, roll-up double-layer curtain – at the other side. If second pneumatic door must be mounted instead of the curtain, «d» suffix shall be added to the module name (e.g. - «Vd»). If blind pneumatic frame wall must be installed instead of the curtain, «c» suffix shall be added (e.g. - «Vc»).

*** – IIII (air lock) and II (transit) module types are inflated from the docked modules. Air supply is through special connection hoses included in the delivery set.









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Additional equipment

Brief characteristics of commonly used additional equipment are given in table 2. Detailed information about design options and complete technical characteristics of the equipment may be found in the booklets for each product.

Table 2 Additional equipment

<p>Lighting fixtures are intended for lighting of the interior of the compartment. Special lightweight suspended impact-proof lighting fixtures with energy-saving lamps are used. Usage of such lamps allows to reduce energy consumption almost 5-fold, maintaining the required light intensity. Connection to the module's electric network is done through special connectors.</p> <p>Light flux of the lamp 1160 lm Consumed power 20 W</p> 	<p>Power supply system based on portable electric stations is used as the main or standby source of electricity, if centralized power supply is unavailable. The electric stations feature mobility, simple design and simplicity of operation. A wide range of petrol engines or diesel engines of various capacities are available depending on customer's requirements. Various design options of electric stations (low-pitched noise silencer, increased tank, wheeled frame, electric starter).</p> 
<p>Pressurization device YH-1300 (TY 3468-008-45416838-2005) is intended for inflating the module's pneumatic frame in manual or automatic mode (in combination with ППД differential pressure regulator). Connection to power source using common 'euro' plug.</p> <p>Capacity 3,5 m³/min Supply voltage 220 V, 50 Hz Power consumption 1,3 KW Weight, not over 5,5 kg Overall dimensions 528x301x211 Operating temperature -45...+50°C Protection class rating IP 22</p> 	<p>Distributing board ИП-16А for electric network ~220V 50Hz of the pneumatic module. Is intended for protection of electric network supplying outlet sockets and lighting fixtures against excess currents and against direct or indirect touch of humans.</p> <p><i>Note:</i> if ППД-1 version of differential pressure regulator is purchased with the module, there is no need to purchase ИП-16А board (because ППД-1 device performs its functions as well).</p> 
<p>Differential pressure regulator ППД (TY 3428-007-45416838-2005) is intended for automatic control of YH-1300 pressurization device for the purpose of maintaining the required air pressure in the module's pneumatic frame. ППД-1 design version of the regulator also performs the functions of electric network distributing board.</p> <p>Maintained excess pressure in automatic mode 9-11 KPa Supply voltage 220 V, 50 Hz Weight, not over 6,5 kg Overall dimensions, mm 550x330x150 Operating temperature -45...+50°C Protection category IP 65</p> 	<p>Central distribution switchboard with automatic load transfer ИП-АВР-2/4 is intended for distribution of power supplied from 2 inlets of external supply sources among 4 electric energy consumers (~220V, 50Hz). The first inlet also protects the consumer's electric equipment against operation at reduced or increased voltage due to external network failures; if the voltage is out of permitted range or is missing, automatic switchover to standby inlet is performed.</p> 
<p>Heating-ventilating plant OBA-11 (TY 4938-009-45416838-2005) is intended for heating and ventilation of module interior space. Connection to power source using common 'euro' plug.</p> <p>Heating power 11,05 KW Fan capacity 5,83 m³/min Fuel diesel fuel Fuel consumption 1,6 l/h Power consumption 132 W Supply voltage ~220 V, 50 Hz Weight, not over 50 kg Overall dimensions, mm 748x471x642 Operating temperature -45...+50°C Protection category IP 13</p> 	<p>Mobile air conditioner is intended for regulating temperature, humidity and ventilation inside the pneumatic frame module. Usually is used during hot season. The design is smaller as compared with other air conditioners of similar cooling capacity.</p> <p>Cooling capacity 2,5 KW Heating 1,5 KW Supply voltage 220 V, 50 Hz Output flow 250 m³/h Weight, not over 50 kg</p> 

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External lighting system is intended for lighting of an outdoor area. The device consists of a halogen lamp on top of a fabric cylinder, a fan and electric station (the option with supply from external power source is available).

Supply voltage	~220 V, 50Hz
Light flux	480000-90000 lm
Size in packed state	400x450x500 mm
with integrated electric station	560x460x800 mm
Height in operating state	3-5m; 5-7m
Weight	up to 26 kg
with integrated electric station	up to 70 kg
Inflation time	up to 60 sec
Protection category	IP 65/44



Folding furniture is intended for use inside the shelters as well as outdoors. Feet of tables and chairs are made of steel tube and are designed as movable frames without sharp edges, preventing damage of the floor when the furniture is used inside the pneumatic frame modules. Metal parts of the furniture are painted by powder spraying method. Folding furniture is lightweight and very compact in folded state.



Plastic underlay. Is laid under the bottom of the pneumatic frame module for enhancing floor rigidity and for water removal from under the module. May be used also for arranging outdoor footpaths and decks. The cover is assembled from perforated sections having size 33x33 cm. The sections are joined by fixing elements located along perimeter of the section, below outer surface, allowing creation of flat joint surface.

Operating temperature from -50°C to +70°C

Weight per 1m² 3,42 kg



Transportation containers are intended for transportation and storage of equipment. The containers are made of aluminum sheet and hence are robust, lightweight, corrosion resistant. The containers are equipped with convenient carrying handles. Two container sizes are available – small and large.

Weight

small 16 kg

large 27,5 kg

Size LxWxH, mm

small 600x600x600

large 1200x600x600



Code designation structure for order placement

Quickly assembled shelters

ББП (HO , BO) П – К М – ...

Outer shell material– rubberized fabric:

- K – nylon (the cheapest option of the shell)
- C –CBM heavy-duty fire-retardant fabric

Inner shell material:

- K – nylon (the cheapest option of the shell)
- C – CBM heavy-duty fire-retardant fabric

Warm floor availability*:

- T – warm floor is not supplied.
- if the warm floor is required, leave the field blank

The number of modules of the type specified below

Module designation (according to table 1)

* – warm floor is included in standard delivery set, but it is not required if the shelters are used in warm climate. To reduce cost, QAS may be ordered without the warm floor.

Example of order designation: Quickly assembled shelters ББП (C, C) – 7Y – 6IIIJ – 2П

The specified QAS configuration is shown at the drawing. Outer and inner shell for all modules is made of CBM heavy-duty fire-retardant fabric. Warm floor is included. Electric network arranged in each QAS module. Electric network has a special connector for connection to ПИД-1 differential pressure regulator (or to ИИР-16А distributing board), wiring with a switch and with connectors for lighting fixtures, outlet sockets.

