

ООО «KALANCHA»

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ISO 9001:2015

Powder fire-extinguishing module

«BiZone» MPP (N)-8-KD-1-BSG-U2

Specs (TC) 4854-007-18215408-2003

Technical Data Sheet
PS 4854-007-18215408-2003 version 4

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Explosion proof mark 1ExdsIIBT4X



City of Sergiyev Posad

2017

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The present manual is intended to study the design, operation principles, installation, technical maintenance and repair, storage, transportation and disposal of the powder fire-extinguishing module. **MPP(N)-8-KD-1-BSG-U2 TC 4854-007-18215408-2003** (further referred to as the **Module**). Qualified staff trained in design, operation principles and technical maintenance rules OR trained according to “Industrial safety rules for hazardous production facilities with pressurized equipment” is allowed to work with the module.

The staff dealing with electric equipment should be additionally allowed to work with electric installations of up to 1000W and follow the requirements of the existing Wiring regulation, Safety regulations for the operation of consumers' power plants, User Safety Rules for Operating Electrical Equipment.

1. APPLICATION

1.1. The module is applied for total flooding fire extinguishing of fire **classes**:

- **A** (combustion of solids);
- **B** (combustion of liquids);
- **C** (combustion of gaseous substances);
- **E** (live electrical equipment).

The module ensures total flooding fire extinguishing of the fire classes A, B, C and live electric equipment in the premises of the following volume:

$V = 60\text{m}^3$ for class B fires,

$V = 90\text{m}^3$ for class A fires.

1.2. The fire extinguishing powder supply from the module can be carried through the pipes of no more than 12m length with maximum 3 possible 90° turns. The piping must be made of the steel water/gas pipes 20 × 2.8 GOST 3262-75 and comply with the requirements of the Fire safety rules SP 5.13130.2009 (paragraphs 9.2.10, 9.2.11). It is necessary to reinforce the piping with the support brackets before each turn and spray nozzle.

1.3. The module MPP(N)-8-KD-1-BSG-U2 meets the requirements of the Customs Union technical regulation TP TC 012/2011 on the "Safety of equipment intended for use in explosive atmospheres" and is to be applied in Class 1 explosive zones, in explosion proof shell and in explosive mixture of IIB category, group T4 with special explosion proof type "s" and meets the drawing requirements **КЛЧ.МПП8-00.000.00**.

Explosion proof marking– **1ExdsIIBT4X**;

1.4. The common industrial version of the module MPP(N)-8-KD-1-BSG-U2 meets the drawing requirements **КЛЧ.МПП8-00.000.00-01**.

1.5. The module is not designed to extinguish the burning substances that can be incinerated without air access and to extinguish metals, alloys and organometallic compounds.

1.6. The module is the primary element for automatic powder fire extinguishing systems.

1.7. In design, engineering and technological documentation as well as in the purchase orders the modules are indicated as:

MPP(N)-8-KD-1-BSG-U2 TC 4854-007-18215408-2003

2.

TECHNICAL PARAMETERS

2.1. Basic technical parameters of the modules are indicated in Table 1.

Table 1.

Parameter	Value
1. Protected volume, m ³ class B class A	60 90
2. The maximum rank of fire area class B	34B
2. Cylinder capacity, L	8±0,2
4. Amount of powder "Phoenix ABC-70" Specs (TU) 2149-005-18215408-00, kg	7,6±0,2
5. Mass of used working gas: Carbon dioxide GOST Standard 8050-85 with nitrogen (dehumidified air), max, kg	3,47
6. Total weight of the module, kg, max	35,0
7. Nominated fire-extinguishing concentration of the fire-extinguishing agent for class B, kg/m ³	0,22
8. Operating temperature range, °C	from -50°C till +50°C
9. Working pressure in cylinders with powder, MPa	1,4 - 1,6
10. Duration of powder discharge, s, max	15
11. Response time, s, max	1
12. Mass of powder residue after actuation of the module, %, max	15
13. Parameters of the constant electrical current required to trigger the module (cartridge actuated device): - electric current, A - voltage, V - electrical resistance, Ω - pulsing time, max, s	0,5 9-27 1,5-4,5 0,02
14. Safe current circuit control, A - checking time of no more than 5 minutes. - Check without time limit	0,05 0,005
15. Dimensions, mm: width height width	205±2 770±5 305±2
16. Degree of protection according to GOST Standard 14254-96	IP54
17. Climatic modification according to GOST Standard 15150	Y2
18. Storage group GOST Standard 15150	5
19. Service life, years	10
20. Dispersion irregularity coefficient of the fire-extinguishing agent K₁	1,0
21. Safety factor taking into account the shading zones of the ignition, K₂	1,0

3. DESIGN AND OPERATION

3.1. The module (Fig. 1) consists of a storage cabinet 1 concealing the cylinder with the fire-extinguishing powder 2 and the cylinder with the fire-extinguishing gas 3 that are connected with each other with the piping 4. The cylinder with the fire-extinguishing powder is fitted with a slot nozzle - 5, and the cylinder with the fire-extinguishing gas is fitted with a triggering device 10. The triggering device is activated by the electric launching unit UP-3M connected to the electric releasing circuit of the automatic fire-extinguishing system control device. The cylinder with powder is also fitted with membrane node and safety valve 8.

3.2. In case of fire, the electric launching unit in the triggering device of the gas cylinder receives the signal from the system control device. After the launching device is activated, the membrane opens and the fire-extinguishing gas from the cylinder enters the cylinder with powder. When the pressure increases up to 1.6MPa in powder cylinders, the membrane tears and the fire-extinguishing mixture enters the protected volume.

3.3. The cylinder with powder is fitted with a safety valve to ensure safety when the pressure in the cylinder increases above the working value (Fig. 4).

3.4. The main operation mode of the module is automatic when the electrical signal is fired from the fire extinguishing system control device installed in the facility.

4. DELIVERY PACKAGE AND SPTA

4.1 Module delivery package is listed below in Table 2.

Table 2.

Marking	Description	Quantity
MPP(N)-8-KD-1-BSG-U2	Module	1
	Container	1
PC-4854-007-18215408-2003	Technical Data Sheet	1

Note: piping for fire-extinguishing agent supply is purchased separately.

The packaging must ensure module safety during storage and transportation. Packaging scheme is shown in Annex 1.

4.2 The modules are not suitable for preservation.

5. SAFETY MEASURES

5.1. All the manipulations with the module must comply with the safety requirements and the existing Wiring regulation as well as the “Industrial safety rules for hazardous production facilities with pressurized equipment”.

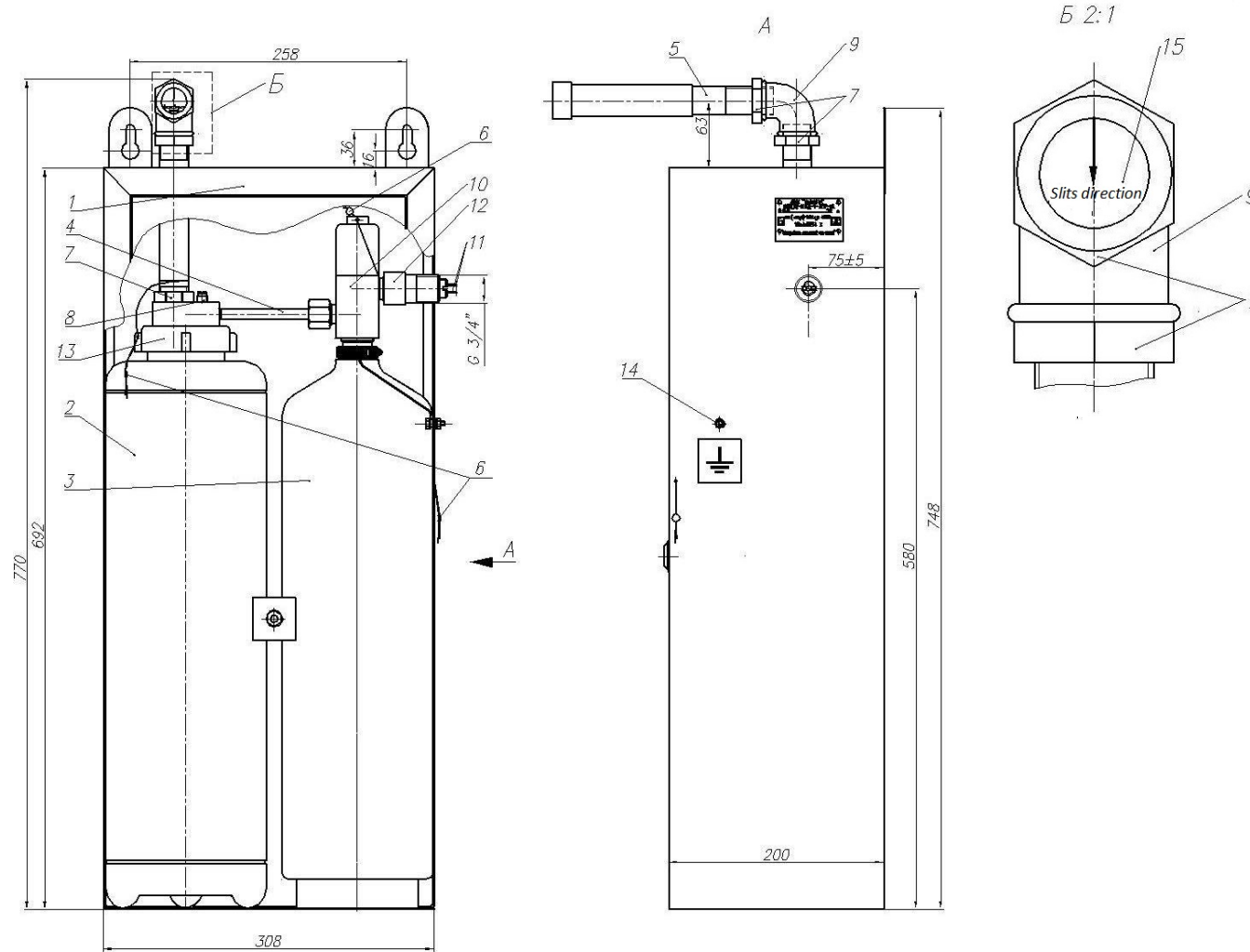
5.2. Only people over the age of 18 are allowed to operate the module after studying its design, operation principles, technical data sheet and completing the special training in safety measures and rules in accordance with the current position and function.

5.3. All the work related to installation, dismantlement and technical maintenance of the modules must be fulfilled by at least 2 people.

Fig 1. Module structure

1 – storage cabinet; 2 – cylinder with powder; 3 – cylinder with fire-extinguishing gas; 4 – supply piping; 5 – slot nozzle;

6 – seal; 7 – lock nut; 8 – safety valve; 9 – elbow 90° - 20; 10 – triggering device; 11 – wires of the electric launching unit UP-3M; 12 – connector adapter for the launching unit; 13 – union nut; 14 – grounding fasteners, 15 – nameplate #8 «Slits direction» next to the nozzle.



5.4. According to the paragraph 1.7.53. of the Wiring regulation "In case of indirect contact if the voltage in the electric installation is over 50V AC and 120 V DC the protection must be ensured all the time." Taking into account the fact that voltage in fire detection systems is never higher than the indicated values the safety measures including the electrical grounding of the common industrial versions of fire-extinguishing modules are not required. Explosion proof module version located in the explosion risk zones must be electrically grounded.

5.5. During the maintenance checks the module must be disconnected from the startup/launching system.

5.6. It is not permitted to drop or hit the module.

5.7. Based on the ways of personal protection from electrocution the modules are referred to Class 1 according to GOST Standard 12.2.007.0-75.

5.8. After the module is activated it is possible to enter the facility after the powder completely accumulates. Cleaning is done in the following order:

- most of the powder is removed by sweeping;
- the remaining powder is removed by the vacuum cleaner;
- at the final stage of powder removal it is possible to do wet cleaning (with slightly wet cloth), excluding live electrical equipment.

5.9. When cleaning it is necessary to use the Personal Protective Equipment:

- for respiratory system – respirators;
- for hand skin – rubber gloves;
- for eyesight – protective glasses.

5.10. When completing the design, maintenance and operation of the fire-extinguishing system (or module) it is always necessary to take into account the possible negative physical influence of the fire-extinguishing substance jets on people.

5.11. IT IS PROHIBITED TO:

- **USE THE MODULE WITHOUT TECHNICAL MAINTENANCE;**
- **OPERATE THE MODULE AFTER SERVICE LIFE EXPIRATION OF THE WORKING GAS CYLINDER;**
- **FULFILL TECHNICAL MAINTENANCE OF THE MODULE IF THE AUTOMATIC STARTUP SYSTEM IS TURNED ON;**
- **BREAK OFF THE SEAL, DISASSEMBLE THE MEMBRANE NODE;**
- **DISASSEMBLE THE ELECTRIC LAUNCHING UNIT UP-3M;**
- **DISASSEMBLE THE SAFETY VALVE.**
- **OPERATE THE MODULES WITH MECHANICAL DAMAGE;**
- **CONDUCT ANY FIRE TESTS WITHOUT THE CONSENT OR PRESENCE OF THE MANUFACTURER'S REPRESENTATIVE.**

Attention!

- **Force parameter during the powder fire-extinguishing agent discharge from the spray nozzle is 60 kgf.**
- **Depending on the outdoor temperature the jet speed at the nozzle outlet is 60 – 70 m/s.**
- **During the module operation the jet length of the Powder fire-extinguishing agent is over 6 m.**

6. MODULE EXPLOSION PROTECTION

6.1 Description of explosion protection means **1ExdsIIBT4X** for the module MPP(N)-8-KD-1-BSG-U2.

Explosion protection of the module meets the following requirements:

- the Customs Union technical regulation TP TC 012/2011 on the "Safety of equipment intended for use in explosive atmospheres".
- GOST R Standard MEK 60050-426-2011 International electrotechnical vocabulary. Part 426. Equipment for explosive atmospheres.
- GOST Standard 31610.0-2014. Explosive atmospheres. Part 0. Equipment. General requirements.
- GOST Standard IEC 60079-1-2013 Explosive atmospheres. Part 1. Equipment protection by flameproof enclosures «d».
- GOST Standard IEC 60079-14-2013 Explosive atmospheres. Part 14. Electrical installations design, selection and erection
- GOST Standard 31610.33- 2014 (IEC 60079- 33:2012) Explosive atmospheres. Part 33. Equipment protection by special protection "s".
- GOST Standard 22782.3 Explosion proof equipment with special protection.

The module explosion protection is ensured by the closure-triggering device (CTD) and the explosion proof switching device. CTD is in the form of a cylinder with the punch inside for opening the membrane in the CO₂ cylinder. The punch movement is ensured by the gunpowder gases when the electric launching unit UP-3M installed in the closure triggering device (CTD) body is launched.

When the electric launching unit UP-3M is launched the max. temperature of the CTD outer surfaces in the hottest points is not over +135°C.

The launching unit body is tested at the manufacturing factory under the hydraulic pressure of 16mPa.

6.2 CTD (fig. 1) has the following explosion protection:

- explosion proof enclosure, protection "d";
 - special protection "s";
- Free volume of the enclosure (A compartment):
- assembled - 1,54cm³;
 - when launched the punch is in an end position – 2,34cm³.

6.3 CTD explosion protection type - flameproof enclosures «d»

There are the following requirements to the explosion proof enclosure:

- the max. value for thread roughness - Ra 3.2;

The explosion protection is ensured by:

- a) the flat cylinder-shape surface with the max. width of the radial slot including the coating — 0,2mm and the max. radial slot length - 6 mm.
- б) the threaded explosion proof connections:
 - thread with 1,5mm pitch and the min. length of 7,5mm;
 - thread with 1 mm pitch and the min. length of 6 mm;
 - the max number of full undamaged and continuous thread turns is 5;
 - size 6H/6g.
- в) explosion proof cable input (2 cords) is carried out by the rubber gasket
 - the rubber gasket is pressed on by the clamp. The number of full undamaged and continuous thread turns is 7. Cord diameter - 1,3mm.
 - The coating of the steel punch Ref.2 - И9xp. Anti-corrosion surface lubricant Ø 16H8/e9 — grease oil CIATIM-221 or CIATIM-201 GOST Standard 9433-80.

6.4 The sign X in the marking means:

- the connection of the launching unit UP-3M that is a part of the fire-extinguishing modules is only via the explosion proof switching device connected with the electric launching circuit from the fire-extinguishing system control device.
- CTD together with the electric launching unit UP-3M are installed at the CO₂ cylinder at the manufacturing factory and delivered to the Buyer assembled.

6.5. The explosion protection of the type “s” electric devices are ensured by the following means.

6.5.1. The hermetic shell of the closure-triggering device body withstands a pressure of 20MPa.

6.5.2. The max. heating temperature of the electric equipment is not over 5 according to GOST Standard 30852.0-2002(MEK60079-0:1998) for T4 temperature class and cannot be over the max temperature of the materials used for the electric technical equipment.

6.6. When installing all the grounding spots must have the electrical connections.

6.6 Explosion protection of the electric circuit in order to launch the module is carried out by the explosion proof switching box ReliON *KKB-A-T*, Technical conditions SPEC.425002.232TC with 2 inputs and explosion proof marking 1ExdIICT5/T6.

It is possible to use the switching boxes and cable inputs from other manufacturers with level 1 explosion protection subgroup IIB, the temperature class T4 and the valid certificate of conformity meeting the requirements of TP TC 012/2011.

Cable inputs (nozzle with G $\frac{1}{2}$ thread and the rubber gasket) ensure the explosion protection of the switching box according to the requirements to the explosion protection type - flameproof enclosures «d».

The module must be “explosion proof” of the subgroup IIB, temperature class T4 (135⁰C) according to GOST Standard 30852.0-2002, ensured by types «flameproof enclosures» и «special».

IT IS PROHIBITED to open the switching device box or make any connections, tests or circuit disconnections without cutting the power off the discharge lines.

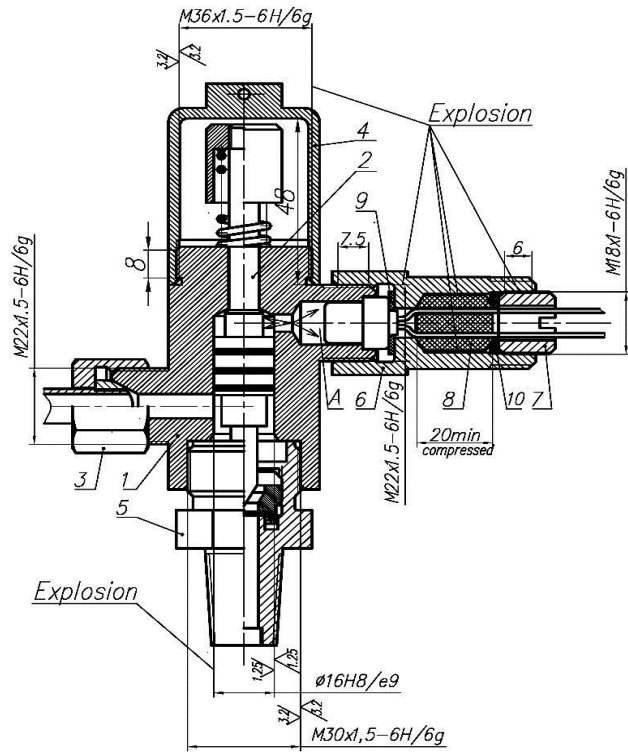
6.7 The sign «X» in the module explosion proof marking means that it is required to follow the Special safety operation rules:

- when operating in the explosive atmospheres it is prohibited to mop and clean the surfaces using the dry cleaning agents;
- the module refilling is prohibited in the explosive atmospheres.

7. Markings

on the modules include the following information:

- Trade mark or the name of the manufacturer;
- Type of equipment;
- Serial number and the year of manufacture;
- Outdoor working temperature range -50⁰C÷ +50⁰C;
- Name or logo of the certification body and the certificate number, e.g. EAC
- For explosion proof module modifications there is a plate #4 with explosion proof marking - **1ExdsIIBT4X** and the warning **«UNPLUG BEFORE OPENING»**.



Ref.	Part Number	Part Name
1	KLCH.MPP8-00.061.01	Starting Device Body
2	KLCH.MPP8-00.060.04	Punch
3	KLCH.MPP8-00-080-05	Union Nut
4	KLCH.MPP8-00.061.02	Cap
5	KLCH.MPP-8-00-040-01	Siphon Body
6	KLCH.MPP-8-00-020-03	Adapter
7	KLCH.EPM(y)-00.00.005	Clamp M18x1
8	KLCH.MPP-8-00-020-05	Rubber Gasket
9	KLCH.MPP-8-00-020-01	Sealing Washer
10		Washer 8.02.019 GOST 11371-78

8. BEFORE OPERATION. MODULE INSTALLATION

8.1. General rules.

8.1.1. The module installation and maintenance in the facility must meet the GOST 12.4.009-83 requirements «Fire equipment for protection. Basic types, location and maintenance».

8.1.2. The module installation should be done in accordance with project for the facility fire protection system designed by the specialized company.

8.1.3. The cylinder refilling with CO₂ and powder as well as the re-examination of the high pressure vessels is to be done by the authorized companies only.

8.2. Getting the module ready for installation.

8.2.1. Unpack the module. Break the seal and open the cabinet. Check the seals on the cylinder and the safety valve.

8.2.2. Remove the nozzle with the square Position 3 Annex 1 from the cabinet and unscrew the square from the nozzle.

8.2.3. Remove the round plug ref. 1 Annex 1 from the fire extinguishing agent supply pipes ref. 6 and elbow 90° -1C-20.

8.2.4. Mark orientation of the elbow 90°-1C-20 according to the arrow point on top of the cabinet.

8.2.5. Screw the nozzle in the elbow to the stop. In doing so the arrow on the end face of the nozzle should be directed downwards according to the Fig 1, view B. Then fix the elbow on the pipes and the nozzle in the elbow with the lock nuts.

8.3. It is advisable to install the modules according to the Annex 4. The threaded connections of the pipes should be sealed with the fluoroplastic tape or polymeric sealing banding.

8.4. The max. length of the fire extinguishing agent supply pipes is 12 m. The max. turns – 3. The max. distance between the clamps – 2 m.

8.5. The propulsive force at the fire extinguishing agent spray nozzle during operation is 60 kgf.

8.6. When installing the module on the wall the fastening support bracket must hold the static load 5 times more than the full weight of the module. It is advisable to use the anchor bolts HNM 8x65 or similar.

Mark the fastening location on the wall, drill the holes, insert the anchor bolts with the diam. 8 mm and hang the module screwing the anchor bolt nuts.

8.7. Installation of the module with the bottom piping (Annex 4, Fig. A 4.6).

8.7.1. Remove the round plug ref. 1 from the fire extinguishing agent supply pipes ref. 6 and elbow 90° -1C-20 ref. 8 on the piping orienting the elbow along the long side of the cabinet and screw the lock nut ref. 7.

8.7.3. In the side wall of the cabinet make the hole Ø6.5 mm (see. Detail B, horizontal size 45±0,5mm, vertical size 330±0,7mm (view A).

8.7.3. Screw the tap ref. 5 in the elbow ref. 8.

8.7.4. Attach the support bracket to the cabinet (view I) with the M6 bolt, washer and nut.

8.7.5. Lock the piping on the support bracket with the safety rod ref. 3, washers and nuts.

8.7.6. Lock the tap in the elbow ref. 8 with the lock nut ref. 7.

8.7.7. Screw the lock nut with the elbow ref. 16 on the tap. Attach the nozzle to the tap and fix it in the necessary direction by screwing the elbow to the stop. The arrow on the end face of the nozzle must be directed upwards. Then lock the square on the piping and the nozzle in the square using the lock nuts.

8.8. Check the electric circuit of the launching unit UP-3M.

ATTENTION!

FULFILL THE CHECKS USING THE DEVICE WITH MAX. NON-FIRING CURRENT OF 0.05A FOR MAXIMUM 5 MIN. RESISTANCE OF THE LAUNCHING UNIT UP-3M IS 1.5-4.5 OHM

Check the isolation resistance for each launching unit cable via the upper contacts of the relay socket in the switching unit and using the ESD bonding point. Fulfill the checks using the device with max. non-firing current of 0.05 A for maximum 5 minutes.

8.9. Connect the launching unit circuit to the control device of the fire-extinguishing system. Fig. 3 shows the connection scheme of the module to the automatic launching unit «C2000-KPB».

ATTENTION! When connecting the module the starting circuit cable must be powered down. Connection of the starting circuit line to the fire detection devices must be done after all the installation.

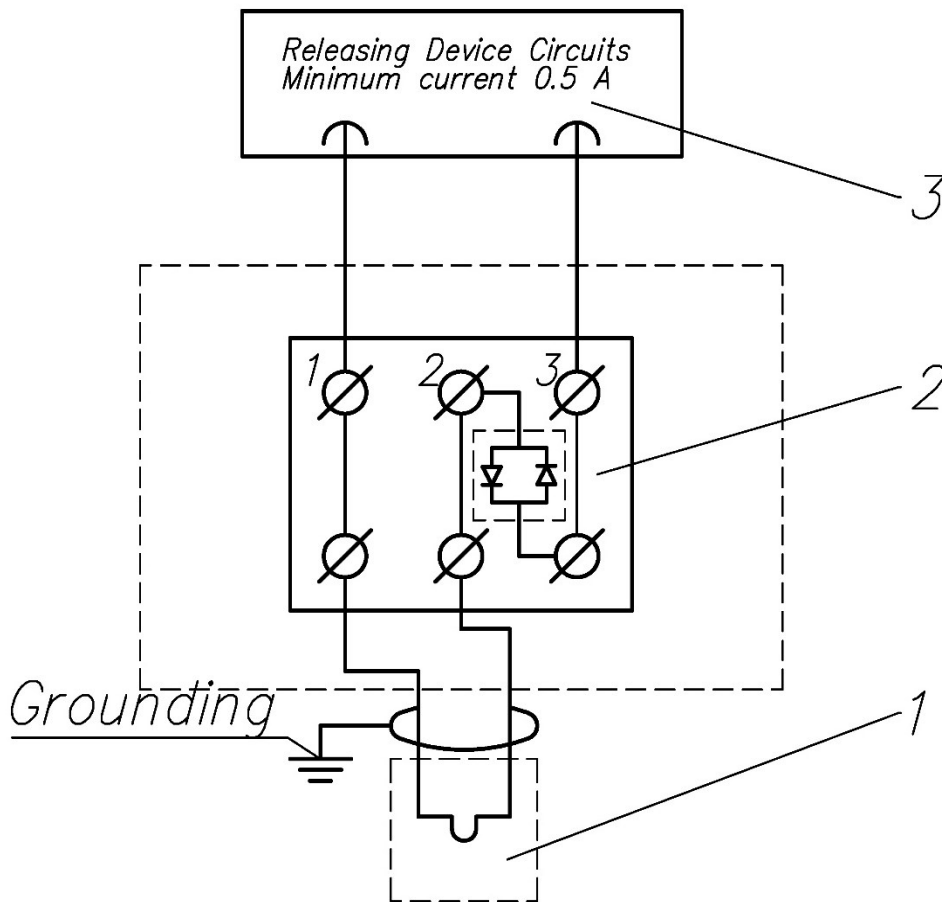


Fig 3. Module connection scheme.

1 –electric launching unit UP-3M; 2 – relay socket of the switching box; 3 – detecting and launching unit; 4 – control device for the launching circuit continuity.

9. EXPLOSION PROTECTION REQUIREMENTS FOR MODULE INSTALLATION, OPERATION AND MAINTENANCE.

9.1. The installation of the electrical system of the module must meet the requirements of paragraph 7.3 edition 7 of the Wiring Regulation.

9.2 The module connection to the launching circuit is carried out through the switching box with 2 inputs.

9.3. During the module operation the staff responsible for its record maintaining, storage and exploitation must weekly check the integrity of the seals on the module.

9.4. If the seal is broken the module examination is required. During the technical maintenance the module must be disconnected from the fire-extinguishing system before starting any repair work..

10. PARAMETERS OF THE LIMITING STATE

10.1 The nominated service life of the module is over or the module has been installed at the facility for over 10 years.

10.2 During the transportation or installation the module was dropped on any surface from over 0,5 m height.

10.3 There is corrosion on the fire extinguishing gas/ powder cylinder.

10.4 The safety valve is not working properly during the checks.

When reaching the limiting state parameters the module must be disposed of or sent to the manufacturer.

11. CRITICAL FAILURE LIST

- During the start the module wasn't launched (the electrical launching device UP-3M didn't work).
- Disable the starting circuit cable.
- Check the installation quality of the starting circuit of the module.
- Check the integrity of the electrical launching (**paragraph 8.4**).
- The electrical launching device set off but the fire-extinguishing agent doesn't escape.
- Disable the starting circuit cable.
- Weigh the module. The weigh of the module must be the same as indicated in Section 16 of the technical data sheet.

12. Measures for equipment failure

12.1 The seal is broken on the module cabinet.

- Disconnect the module;
- Call the service center specialist;
- Check the module integrity inside the cabinet;
- If the module is not damaged close the cabinet and seal the door..
- Connect the module to the starting circuit.

12.2 The electric launching unit UP-3M cable is damaged.

- Disconnect the module;
- Call the service center specialist;
- Disconnect the cables of the launching unit UP-3M and fulfill the technical maintenance according to paragraph 8.8 of the present technical data sheet;

- If the launching unit UP-3M cable is damaged replace it or send the module to the manufacturer for the repair service..

13. TECHNICAL MAINTENANCE OF THE MODULE

ATTENTION!

TECHNICAL MAINTENANCE OF THE MODULE, FILLING THE CYLINDER WITH CARBON DIOXIDE AND POWDER, ASSEMBLING AND DISASSEMBLING OF THE MODULE MUST BE ONLY CARRIED OUT BY THE AUTHORIZED COMPANIES THAT ARE QUALIFIED BY THE MANUFACTURER AND HAVE THE ACTIVITY LICENSE, CORRESPONDING EQUIPMENT AND TRAINED STUFF. IT IS NECESSARY TO USE THE EXTINGUISHING POWDER AND MODULE PARTS RECOMMENDED BY THE MANUFACTURER

The addresses of OOO "Kalancha" service centers are indicated in Annex 6.

13.1. General rules.

13.1.1. In order to maintain the module efficiency during operation the following technical maintenance (TM) is required:

TM-1 – weekly – inspection of the seals on the module cabinet;

TM-2 – once per 2 years – checking the gas quantity in the cylinder by weighing the module and comparing its weight with the weigh indicated in the label. It is possible to weigh the module and compare its weight with the information indicated in Section 16 of the Technical Data Sheet.

TM-3 – once per 2 years – inspection of the electrical launching unit installation quality of the module;

TM-4 – **inspection of the CO2 cylinder according the Rostecnadzor requirements.**

Powder quality inspection once every 10 years.

TM-2, TM-3, TM-4 are fulfilled by the authorized service center.

13.2. Visual inspection of the seals on the cabinet.

13.3. Gas quantity is checked by weighing as the difference between the weight of the filled cylinder with the siphon and the weight of the empty cylinder indicated on one of the sided of the siphon or in the cylinder label.

It is possible to weigh the full module. The full module weight is indicated in the Technical Data Sheet section 16. The weighing is done on the average accuracy scales with at least 60 kg weight limit.

13.4. In order to check the safety valve it is necessary to turn the valve out of the powder cylinder and inspect it and its calibration (if necessary) according to section 11 of the present Technical Data Sheet. The safety valve is inspected once every 5 years from the moment of module installation at the facility.

14. DISPOSAL

14.1. The information on ferrous metals and alloys contained in the module is indicated in Annex 1.

14.2. **The damaged or failed electrical launching unit UP-3M** is to be returned to the manufacturer.

The disposal of the powder residue is done in accordance with the set of rules “**Disposal and regeneration of the fire-extinguishing powder**”, edition 1988, pp.25 and “**Fire safety rules SP 9.13190.2009**», section 4.6, paragraphs 4.6.5, 4.6.6.

The disposal of the module without the powder and gas cylinder is fulfilled according to the requirements of the Consumer or sent to the manufacturer for further disposal.

15. SAFETY VALVE OPERATION INSTRUCTIONS

15.1. Safety valve application.

The safety valve is used to relieve the pressure from the powder cylinder when it is above the working pressure.

The safety valve is set on the cover of the powder cylinder.

15.2. Design and operation principle.

15.2.1. The design of the safety valve is shown in Fig.4.

.When overworking pressure in the powder cylinder is reached, the rod 2 rises up, overcoming the force of spring 3, and the gas goes into the atmosphere through the holes in the screw 4.

15.3. Test and calibration of the valve

15.3.1. Install the cover with the valve on the test-bench. Bring pressure to the valve from the cavity side A.

Adjust the valve according to the stand pressure-gauge from the pressure conditions from 2.2 MPa to 2.24 MPa (from 22 kg/cm² to 22.4 kg/cm²) spinning or unscrewing the adjusting screw 4.

15.3.2. When the valve is adjusted correctly depressurize the test-bench.

15.3.3. Remove the cover with the valve from the test-bench.

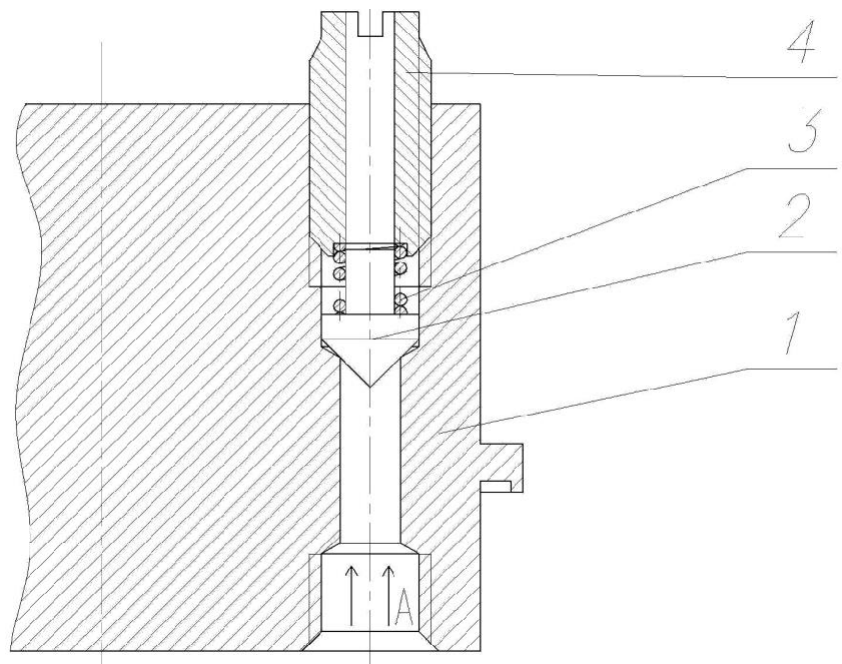
15.4. Safety measures.

15.4.1. The valve test and calibration shall be carried out by the stuff trained in special safety on test bench maintenance and valve calibration.

15.4.2. It is not permitted to turn the valve from the stand when it is under pressure.

Fig. 4. Safety valve scheme

1- lid of the powder cylinder, 2 - rod, 3 – spring, 4- adjustment screw



16. MODULE CHARGE CERTIFICATE

Powder fire-extinguishing module “BiZone” (MPP(N)-8-KD-1-BSG-U2)

Factory serial number # _____ batch # _____

Charged with fire-extinguishing powder

"Phoenix ABC-70" Specs (TU) 2149-005-18215408-00 version 2 in accordance.

Launching device type - UP-3M

Full weight of the module _ kg.

Charge date _____

L.S.

Signatures of stuff responsible for charging

17. CERTIFICATE OF ACCEPTANCE AND PACKAGING

Powder fire-extinguishing module “BiZone” (MPP(N)-8-KD-1-BSG-U2)

Factory serial number # _____ batch # _____

Meets the technical conditions TC 4854-007-18215408-2003 and is packaged according to TC requirements.

Manufacturing date _____

QCD specialist _____

L.S.

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18. MODULE REFILLING INFORMATION

Factory serial # _____

#	Refill date	CO2 mass	Mass of fire-extinguishing powder and its marking	Signature of the specialist responsible for refilling	Seal of refilling organization
1.					
2.					
3.					
4.					
5.					
6.					
7.					
8.					
9.					
10.					

19. WARRANTY

The manufacturer guarantees that the system complies with the requirements of the technical documentation as long as the User observes the operation, transportation, storage, installation and operation terms.

The modules are delivered in the Manufacturer's package. The modules can be delivered by any transport mode and for any distance in accordance with the Rules for carriage of Goods by the corresponding transport mode.

Air transportation of the module is only possible in the pressurized compartments of the aircraft. Transportation and storage conditions must ensure the module safety from any mechanical damage, heating, precipitation, moisture and hostile environments.

The modules are stored in covered warehouses with the temperature -50°C ... +50°C.

The module warranty retention period -- **2 years** from the date of module acceptance by the Manufacturer's QCD.

The module service life is **10 years**.

The maximum number of refilling for a module – 10.

ANNEX 1

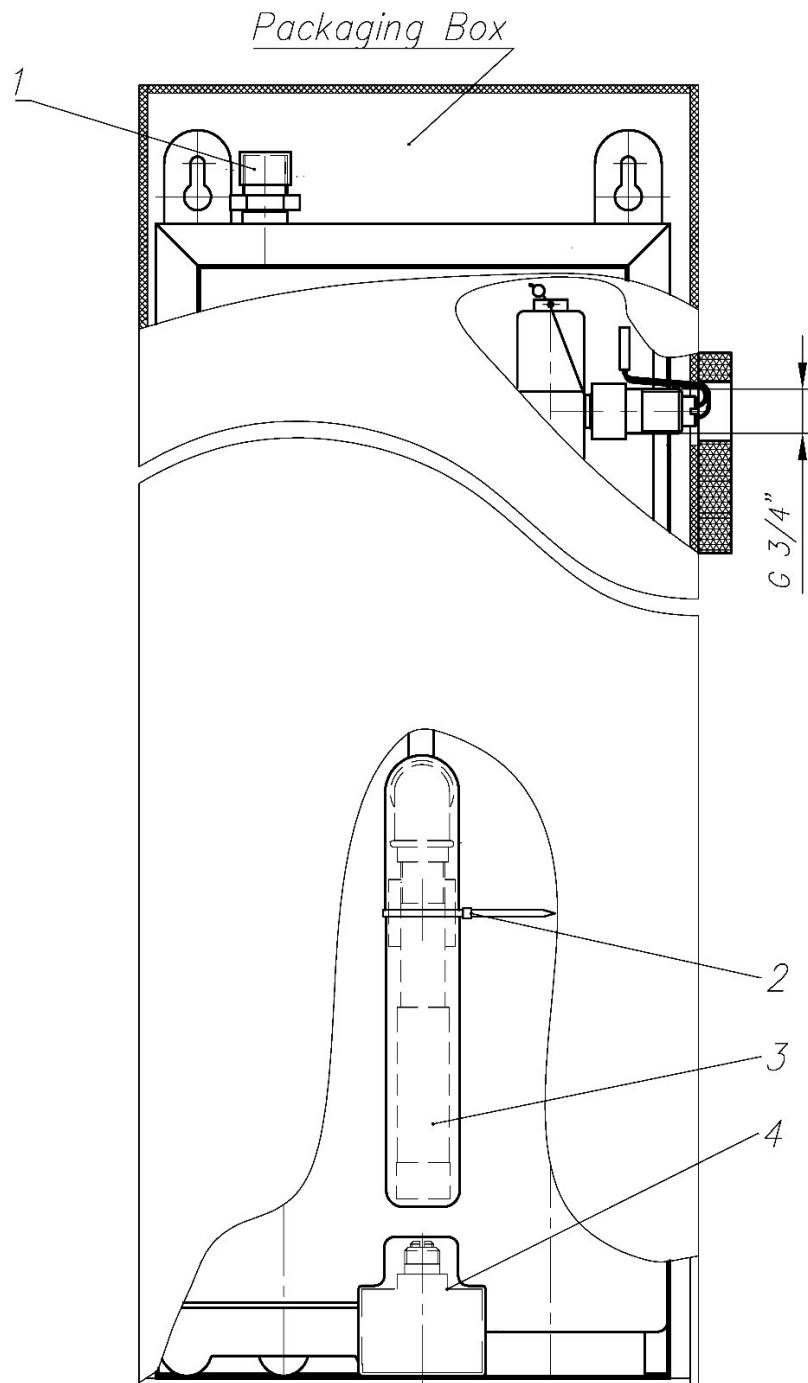


Fig A.1 Module packing scheme.

1. Round peg with nominal diameter $20 \times \frac{3}{4}$ " for the fire-extinguishing agent supply piping;
2. Plastic clamp for fastening the spray nozzle to the cylinder clip;
3. Nozzle with a square;
4. Switched spur of the module. **Purchased separately.**

ANNEX 2

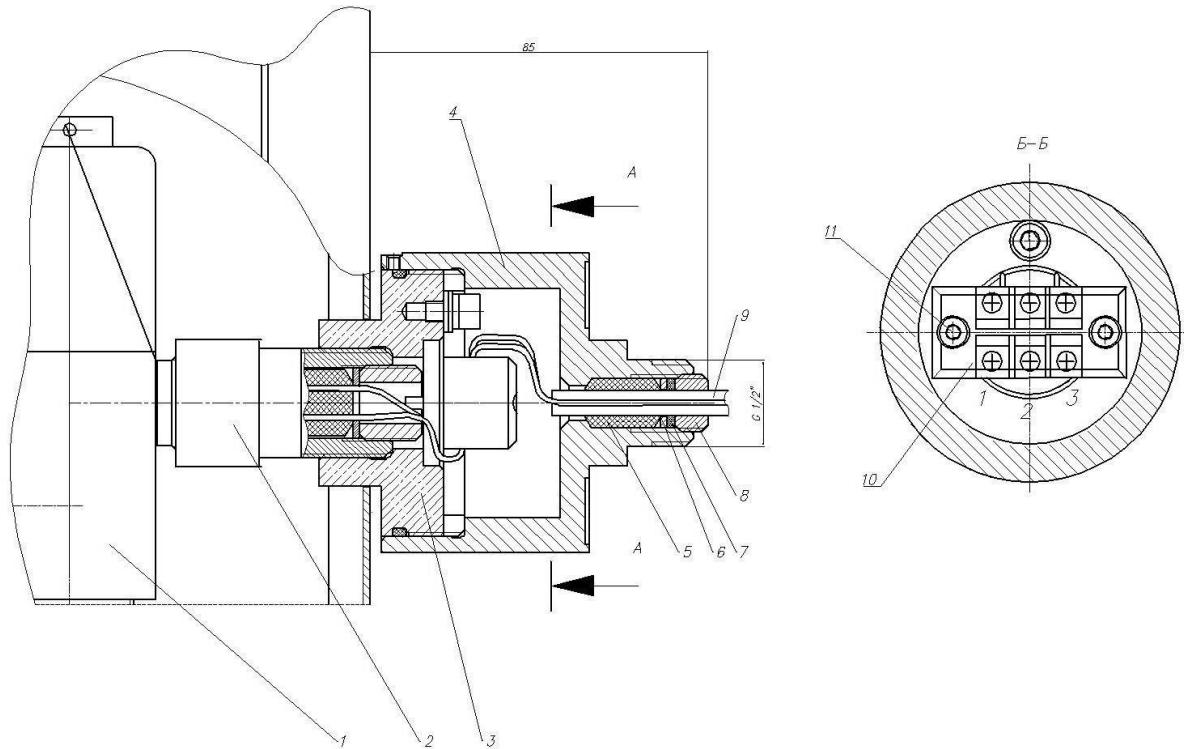
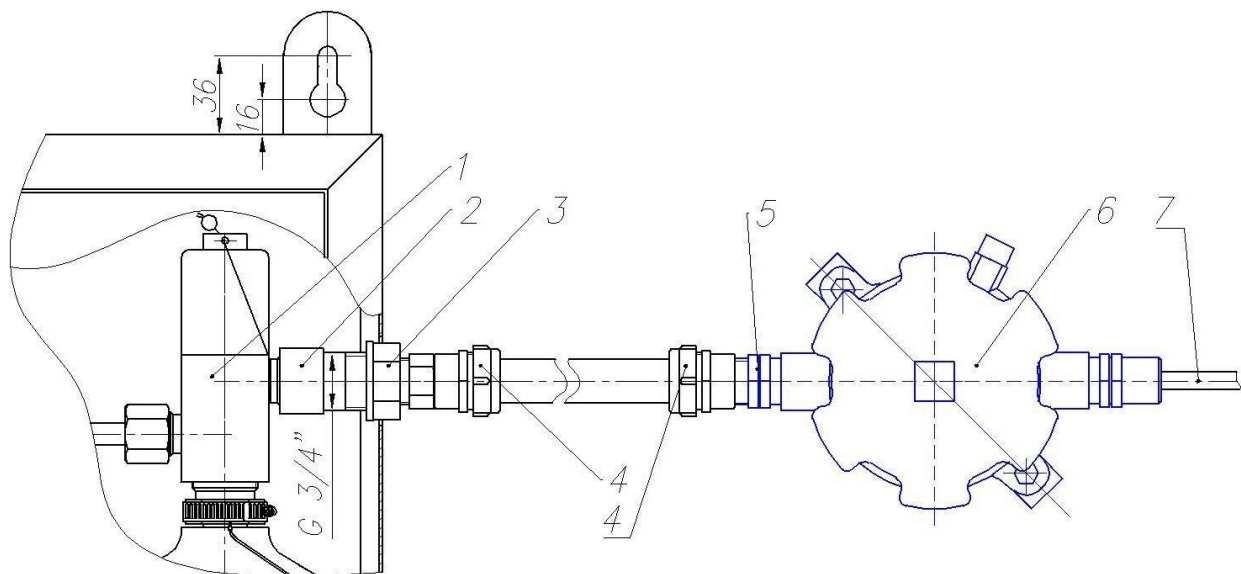


Fig A.2.1 Module connection via the switched spur inside the module.
 1. Closure triggering device; 2. Adapter for the electric launching device UP- 3M; 3. Body; 4. Lid; 5- Rubber gasket; 6. Steel washer; 7. Rubberized asbestos fabric gasket; 8. Clamp; 9. Cable for the control system; 10. Terminal TB-1503L; 11. Screw. **Switched spur is purchased separately.**

Fig A.2.2 Module connection via explosion proof switched spur.
 1. Closure-triggering device; 2. Adapter for the electric launching device UP-3M;
 3. Adapter 3/4"x1/2" inner. -outer; 4. Threaded fastener RKv-20;
 5. Switching input; 6. Switched spur; 7. Cable for the control system.

Parts position 3-7 are purchased separately.



ANNEX 3

Module discharge scheme for the total flooding fire-extinguishing

When designing the automatic powder fire-extinguishing installations it is important to use the Set of Rules CII.13130.2009 «Automatic fire-extinguishing installations and detection systems. Design rules and regulations.» Annex II. General provisions for design of powder fire-extinguishing systems of module type.

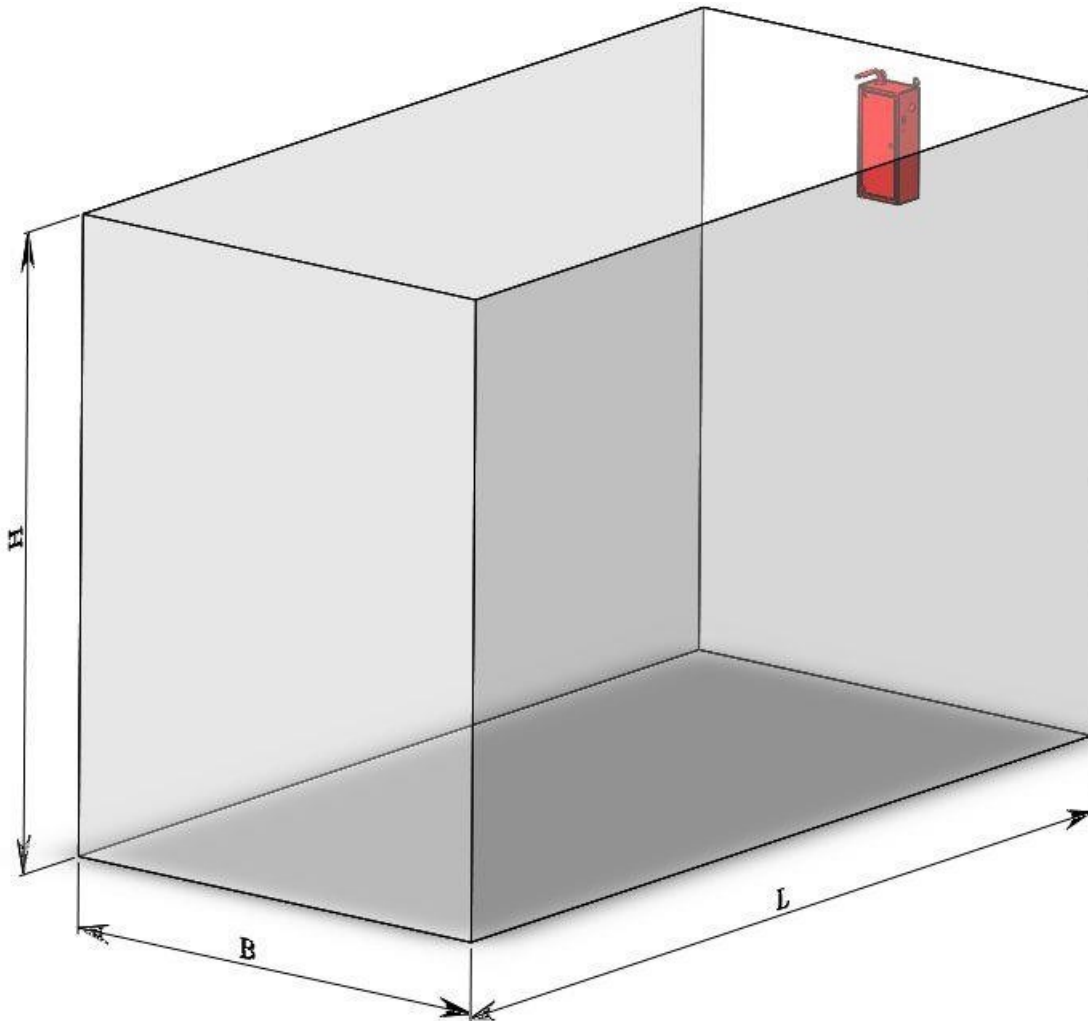
The powder fire-extinguishing module MPP(N)-8-KD-1-BSG-U2 is the total flooding fire-extinguishing means and protects the volume with the dimensions indicated below.

During the total flooding fire-extinguishing the Powder fire-extinguishing agent is sprayed to the front semi-sphere.

$$V=B*L*H; 1m<H<4m, \text{ratio } B/L = \text{from } 1/1 \text{ till } 1/2,2; L<6m$$

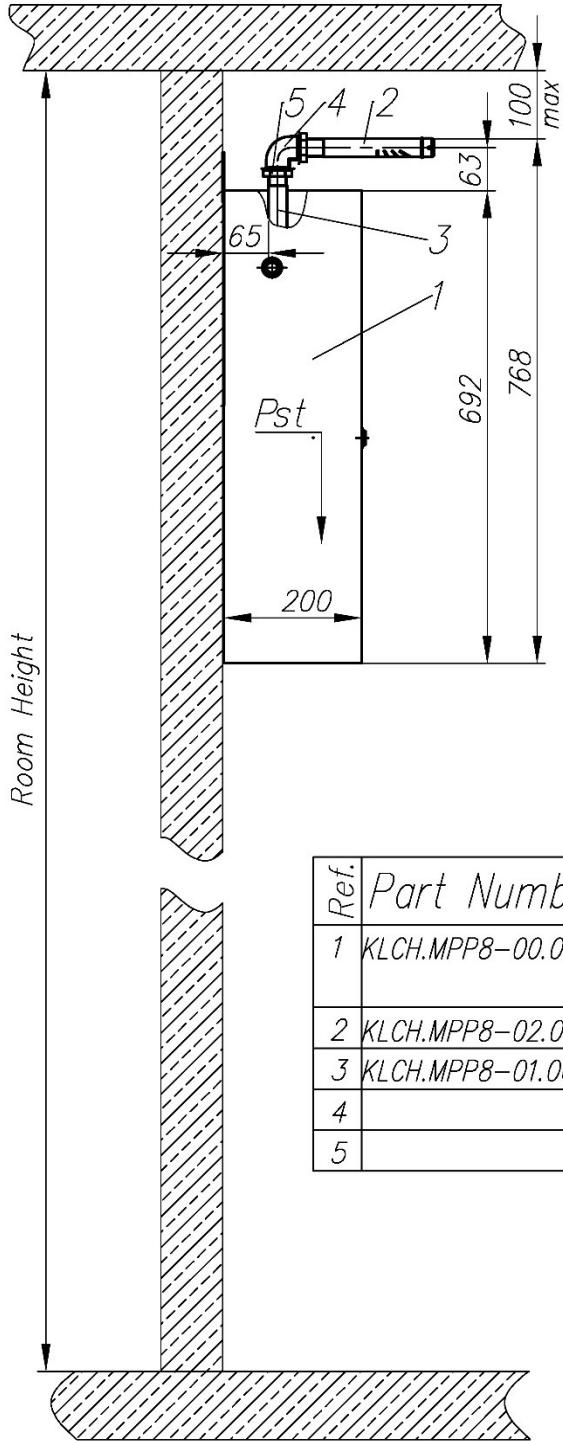
Module spray geometry

	Class A $V_{max.}=90m^3$	Class B $V_{max.}=60m^3$
Basic geometry, m	H=3,5; L=7,3; B=3,5	H=3,5; L=6; B=2,8
Max. values, m	$H_{max.}=4,0; B_{max.}=5,0$ For volume $90m^3$	$H_{max.}=4,0; B_{max.}=5,0$ For volume $60m^3$



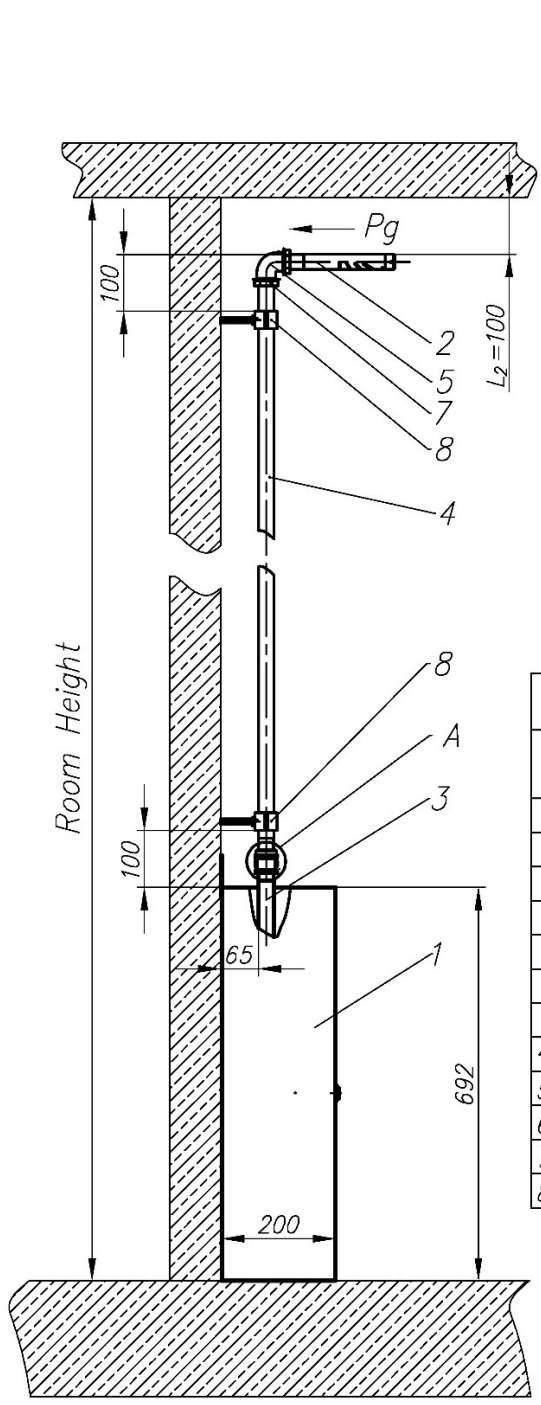
ANNEX 4

Module installation scheme

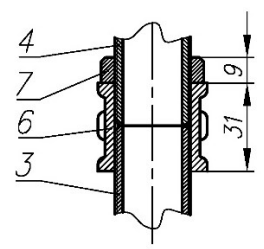


Ref.	Part Number	Part Name	Qty	Note
1	KLCH.MPP8-00.000.00	Gas-Powder Fire Extinguishing Module "BiZone"	1	m=36.5kg
2	KLCH.MPP8-02.011.00	Slot Nozzle	1	
3	KLCH.MPP8-01.000.01	Pipe 1	1	
4		Elbow 90°-1-C20 GOST 8946-75	1	
5		Locknut C-20 GOST 8961-75	1	

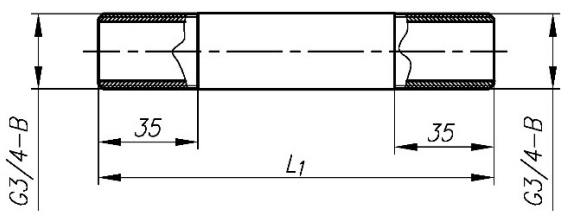
Fig A.4.1



A (1:2)



Extension pipe 1 ref.4 (M 1:2),
Length L_1 is set during the installation



Ref.	Part Number	Part Name	Qty	Note
1	KLCH.MPP8-00.000.00	Gas-Powder Fire Extinguition Module "BiZone"	1	m=36.5kg
2	KLCH.MPP8-02.011.00	Slot Nozzle	1	
3	KLCH.MPP8-01.000.01	Pipe 1	1	
5		Elbow 90°-1-C20 GOST 8946-75	1	
7		Locknut C-20 GOST 8961-75	1	
* The parts are purchased separately				
4*		Extension Pipe 1	**	**according to the project
5*		Elbow 90°-1-C20 GOST 8946-75	**	**according to the project
6*		Coupling C-20 GOST 8954-75	**	**according to the project
7*		Locknut C-20 GOST 8961-75	**	**according to the project
8*		Wall Mount Pipe Clamp	**	**according to the project

Fig A.4.2

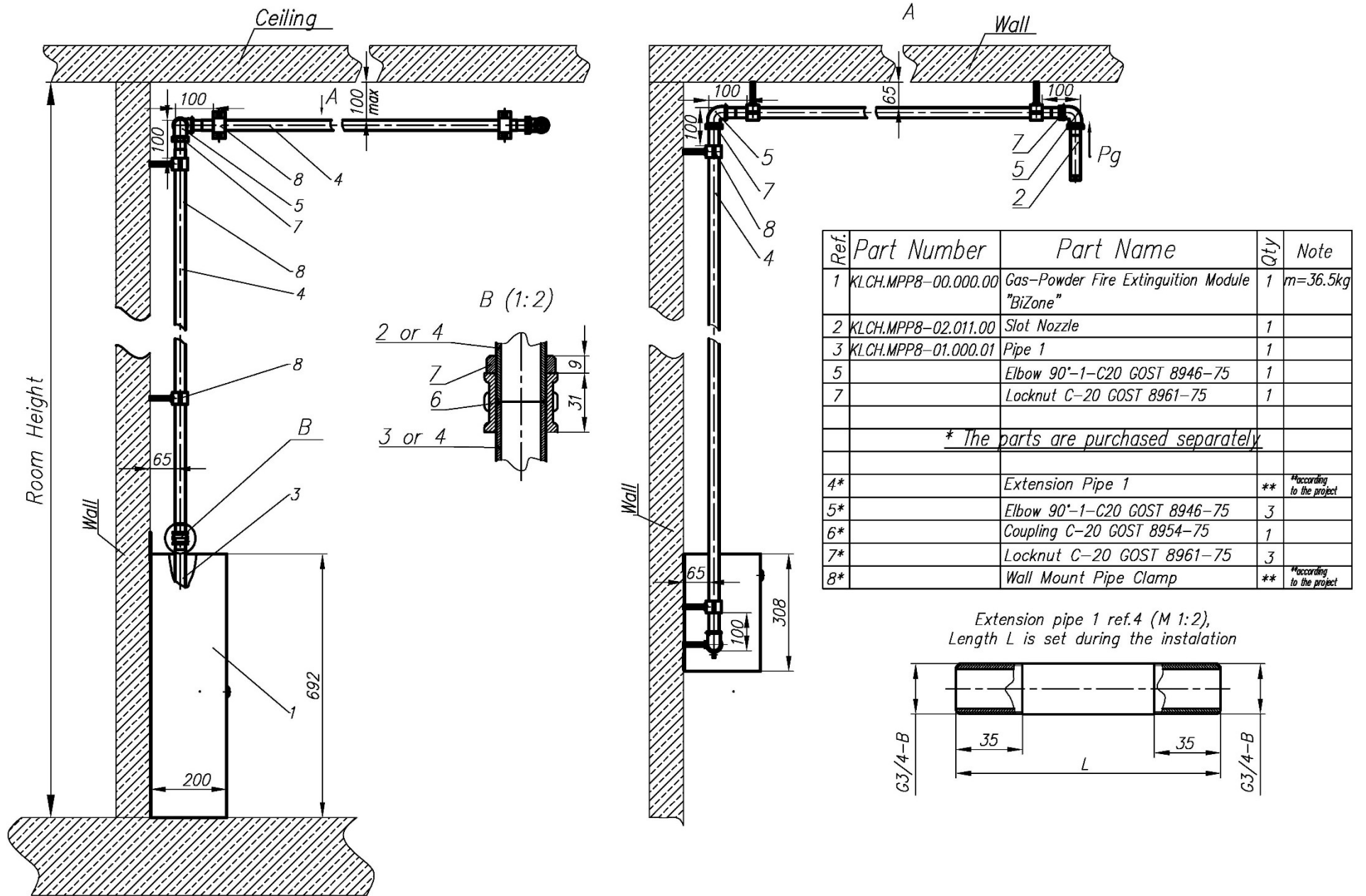


Fig. A.4.3

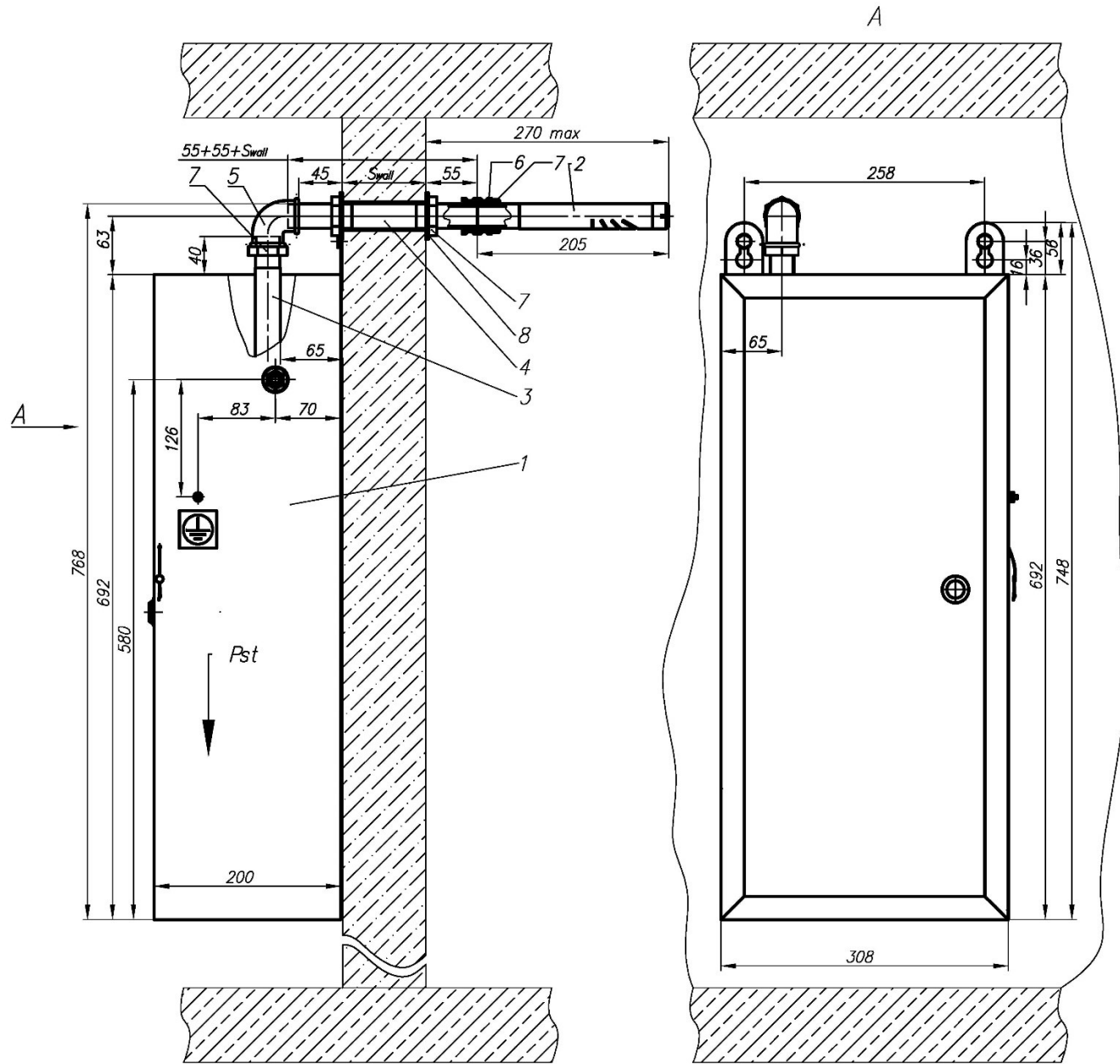
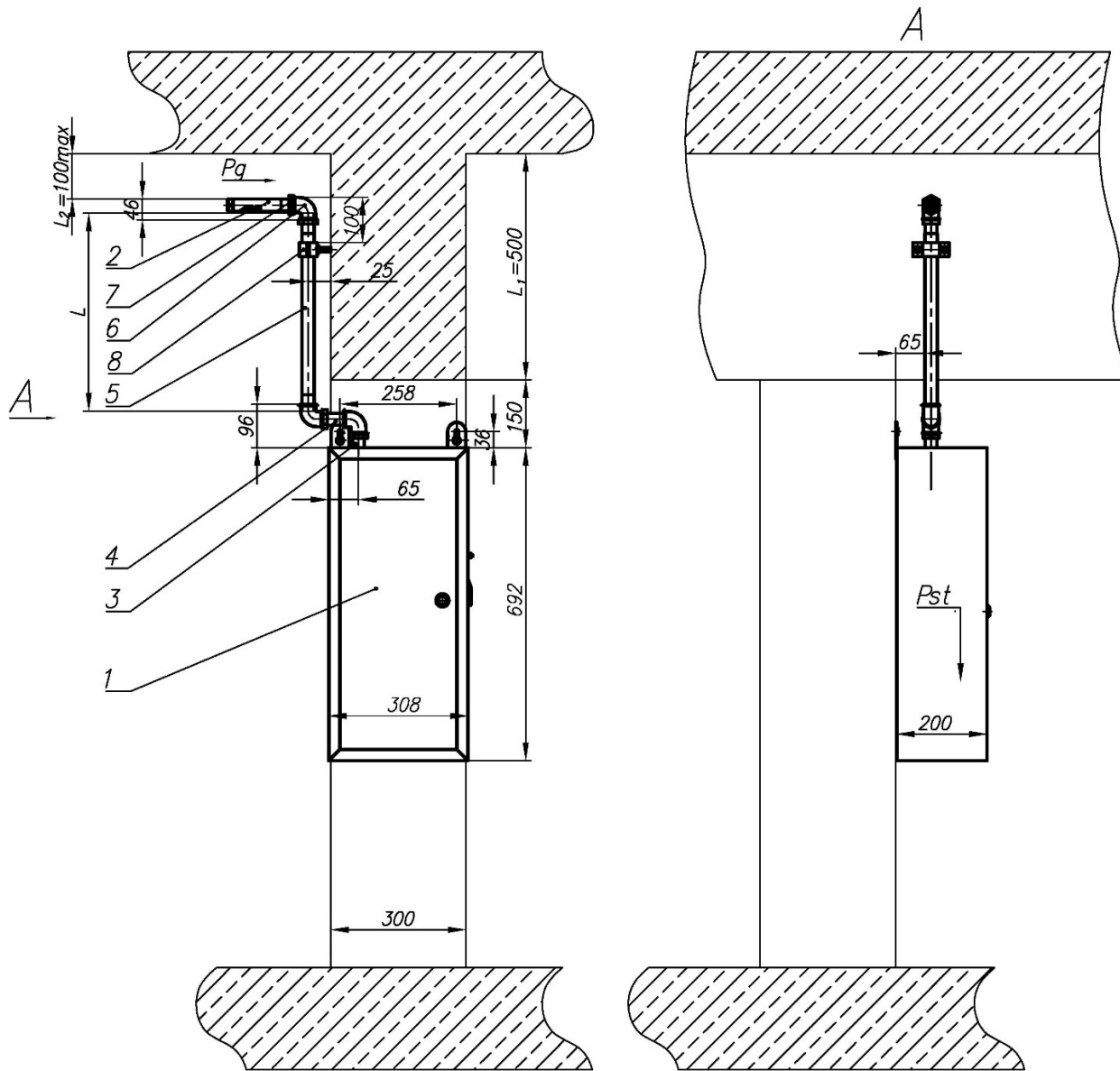


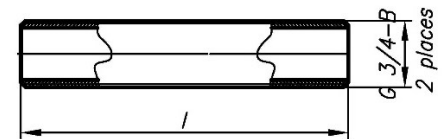
Fig. A.4.4

Ref	Part Number	Part Name	Qty	Note
1	KLCH.MPP8-00.000.00	Gas-Powder Fire Extinguisher Module "BiZone"	1	m=36.5kg
2	KLCH.MPP8-02.011.00	Slot Nozzle	1	
3	KLCH.MPP8-01.000.01	Pipe 1	1	
5		Elbow 90°-1-C20 GOST 8946-75	1	
7		Locknut C-20 GOST 8961-75	1	
* The parts are purchased separately.				
4*		Pipe 2, L=55+55+Scm	1	
6*		Coupling C-20 GOST 8954-75	1	
7*		Locknut C-20 GOST 8961-75	3	
8*		Washer A27.01.06.kp.019 GOST 6958-78	1	



Ref.	Part Number	Part Name	Qty	Note
1	KLCH.MPP8-00.000.00	Gas-Powder Fire Extinguisher Module "BiZone"	1	m=36.5kg
2	KLCH.MPP8-02.011.00	Slot Nozzle	1	
3	KLCH.MPP8-01.000.01	Pipe 1	1	
6		Elbow 90°-1-C20 GOST 8946-75	1	
7		Locknut C-20 GOST 8961-75	1	
* The parts are purchased separately.				
4*		Pipe 2	1	
5*	KLCH.MPP8-01.000.03	Extension Pipe	1	
6*		Elbow 90°-1-C20 GOST 8946-75	2	
7*		Locknut C-20 GOST 8961-75	3	
8*		Wall Mount Pipe Clamp	1	

Pipe 2 ref.4 l=50mm



Calculation of Extension Pipe Length
 $L = L_1 + 150 - 96 - L_2 - 46 + (15 \times 2)$

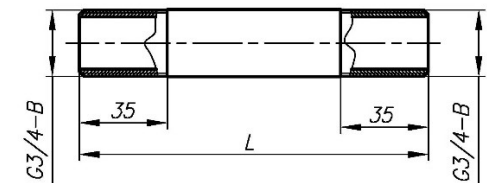


Fig. A.4.5

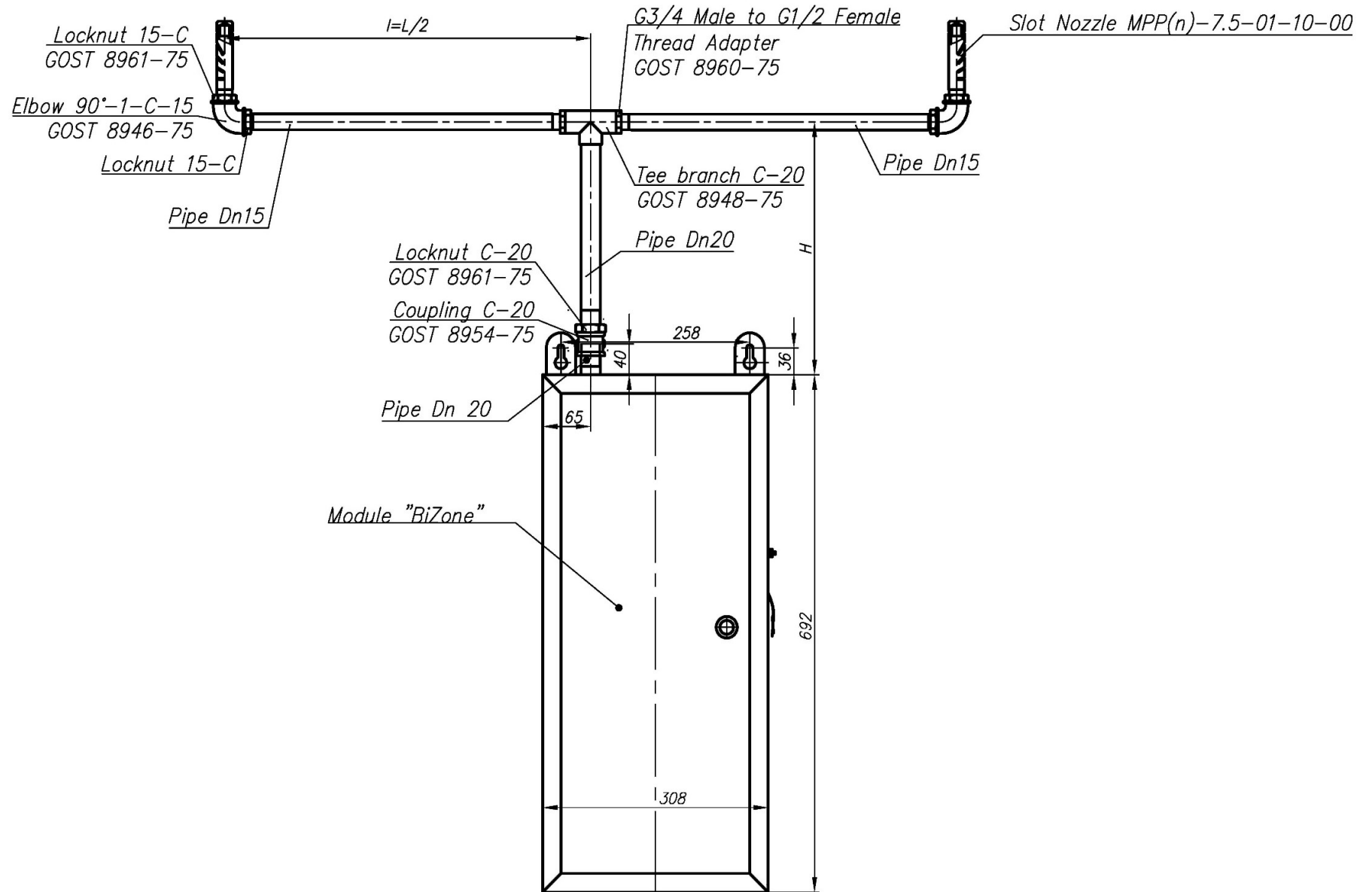
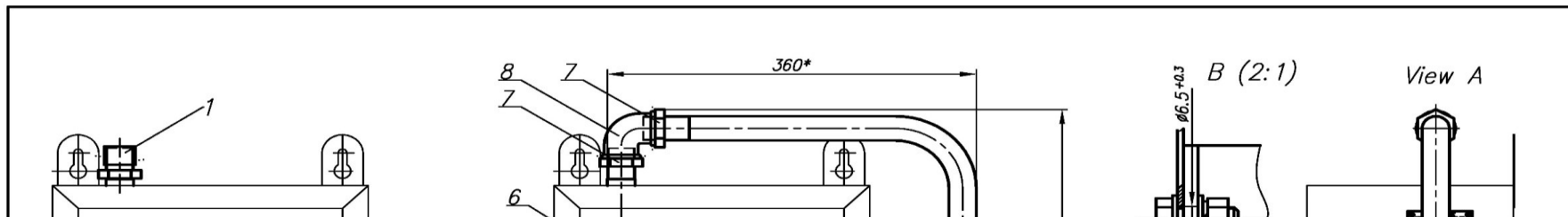


Fig. A.4.6. Module with 2 slot nozzles, Dn15.



12. Washer 6; 13. Nut M8; 14. Washer 8 g; 15. Washer 8.

ANNEX 5

INFORMATION ON NONFERROUS METALS AND ALLOYS
CONTAINED IN THE MODULE.

Mark and/or gauge nonferrous metal or Alloy	Mass, kg	Location of Parts of a module that contain nonferrous metals
Aluminium and aluminium alloys		
AK-9 GOST1583-93	0.112	A nut on the cover of a tank with powder.
Copper and copper basis alloys		
Sheet M3 GOST 1173-2006	0.006	Siphon (washer)
Pipe L63 GOST 494-90	0.433	Siphon (tube)
Bar L63 GOST 2060-2006	0.017	Safety valve (rod)
Bar LS 59-1 GOST 2060-2006	0.027	Siphon (nut)
Ribbon Br OF-6.5-0.15 GOST 1761-2016	0.006	Siphon (membrane)

ANNEX 6

Service centers

<u>OOO "Vector-Service"</u> Phone/Fax 636018 4, 1/1, Trudovaja st., Seversk, Tomskaja oblast	+7(3823) 54-65-25
<u>TF OOO "Pozhpromkomplekt"</u> phone/Fax 300012 4, Smidovich st., Tula	+7(4872) 355-222
<u>OOO PKP "Rubezh SV"</u> phone/Fax 300013 47, Boldina st., Tula	+7(4872) 24-50-03
<u>OOO "Svjaz'strojkomplekt"</u> phone/Fax 390000 59, Radischeva st., Ryazan	+7(4912) 24-51-71
<u>Voronezh Oblast Office "BDPO"</u> phone/Fax 394026 228, 45th Strelkovej Divizii st., Voronezh	+7(4732) 41-22-43, 41-22-39
<u>OOO "Kamchatflotservis"</u> phone/Fax 683000 11, Ozernovskaja st., Petropavlovsk- Kamchatskij	+7(4152) 413-009, 413-007
<u>OOO 'Firma Rosavtomatik'</u> phone/Fax 44064 68/2, Vavilova st., Rostov-on-Don	+7(863) 277-81-78, 277-82-80
<u>TOO "Batys-Energon"</u> phone/Fax 090003 103, Abulhairkhana prospekt, Uralsk, Republic of Kazakhstan	+7(7112) 210-661
<u>OOO "Prom Torg"</u> phone/Fax 160000 47, Mayakovskogo st., Vologda	+7 (8172) 21-69-59
<u>OOO "SEVERAVTOMATIKA"</u> phone/Fax 628408 12, Inzhenernaya st., Surgut, Khanty-Mansiysk Autonomous Okrug	+ 7 (3462) 72-32-73
<u>OOO "Baltijskaya Pozharnaya Kompaniya"</u> phone/Fax 196084 "MEGA-Park" business center, 7, Zastavskaya st., St. Petersburg 304 Office	+7(812)327-97-65 +7(821)331-20-26
<u>Tatarstan Republican VDPO Office</u> ph	+7(843)278-74-36 278-74-66

one

420054, 12, 2-ya Tikhoretskaya st., Kazan

