

Module of powder fire extinguishing
MPFE(d)-7-ST-1-GE-U2
TU 4854-002-69229785-2010



SureFIRE
EXTINGUISHER

“Буран[®]-7КДТ”

TECHNICAL PASPORT & OPERATION
MANUAL
Buran-7STT

MPFE(d)-7-00.00.000REЭ



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1. DESIGNATION

1.1. Module of powder fire extinguishing “Buran-7STT” (further – “module”) is intended for localization and extinguishing of fires and ignitions of the following Classes:

- A — fires of solid materials;
- B — fires of highly inflammable and combustible liquids;
- C — fires of gasses;
- And also fires in electrical facilities under tension of up to 1000 V.

Modules are not intended for extinguishing fires of alkali and alkali-earth metals and other materials that can combust without air admission.

1.2. Climatic regime of the module is UHL 2.1 due to GOST 15150 for the ambient temperature in the standby mode from minus 50°C up to plus 95°C.

1.3. The predominant application sphere for modules is mobile complete plants of version group M26 and M31 due to GOST 30631 (engine and luggage compartments of heavy haulers and road building machines, diesel and diesel-electric engine compartments of railway locomotives as well as other transport means and trailers). Modules can also be used for fire protection of various stationary objects (workrooms, store houses, industrial buildings etc.).

1.4. Module is considered to be the main element of fire extinguishing systems.

1.5. Module belongs to the class of stationary fire-extinguishers not containing ozone depletion substances.

2. BASIC TECHNICAL CHARACTERISTICS

Table 1

Parameters, units	Value
1. Canister capacity, l	7,0 ± 0,3
2. Mass of fire extinguishing dry chemical powder VEKSON-ABC70 TU 2149-238-10968286-2011, kg	6,0 ± 0,2
3. Overall dimensions of the canister, mm	Picture1
4. Module fire extinguishing capability of A & B Classes fires*:	
• protected area, m ² , not less, than	6
• protected volume, m ³ , not less, than	12
5. Maximal rank of seat of fire, Class B	21B
6. Electrical parameters of the module starting device circuit**:	
• activation current, A	Table 2
• maximum activation current, A	
• circuit resistance the module starting device, Ohm	
• guaranteed non-activation current during 5 minutes, A	
7. Module mass with fire extinguishing powder, kg	12,4 ± 0,5
8. Service life, years, not less, than	10
9. Periodicity of quality tests for fire-extinguishing powder:	
• for modules used on transport means	5 years
• for modules installed on stationary objects	Not required

12. Maximal length of pipeline, m	4
13. Maximal number of the pipeline turns on-the-miter of 90°	3
14. Maximal number of exhaust sprayers	4

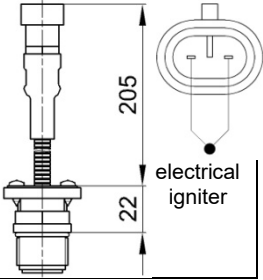
Notes:

*) Data for the module's installation at a height of 1.5...2.5m;

**) Voltage at the output terminals of the starting device should be not more than 28.5 V.

Table 2

Designation of electrical igniter	Activation current, A	Maximal activation current, A	Circuit resistance, Ohm	Guaranteed non-activation current during 5 minutes, A	Type of electrical connector	Figure	Line coupling		
EU-0,4-2	0,4	1,0	3,0 - 6,5	not more than 0,05	2RM14		electrical igniter		
EU-0,7-2	0,7	10	2,0 - 4,0	not more than 0,17			with pins of serial number 6,3 due to OST 37.003.032-88, with block 1/20605 and additional protection of wires		
EU-0,7-6							with pins of serial number 6,3 due to OST 37.003.032-88, with block 1/20605 and additional protection of wires and protecting cover		
EU-0,7-7									

EU-0,7-8					with double-pin plug AMP of family "Superseal 1,5"	
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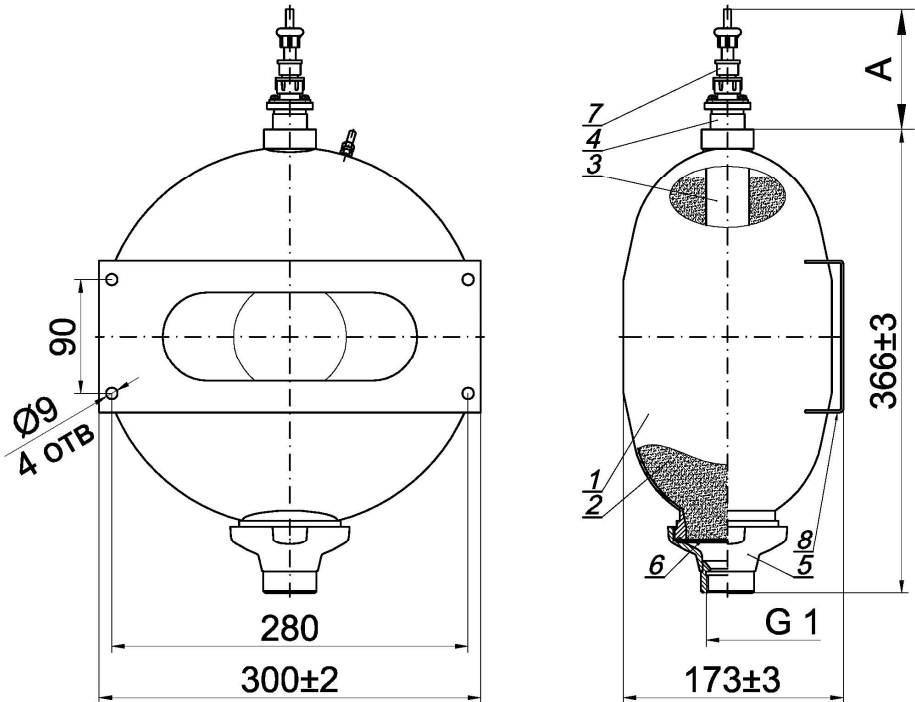
3. DELIVERY SET

3.1. The delivery set includes:

- module - 1 pc;
- sprayer 15 G1 * - 1pc;
- electrical activator – 1pc;
- cable part of connector – 1pc;
- pipe tubes and additional sprayers (according to the buyer's order);
- technical passport and operation manual - 1 pc.

Note: * The set can include sprayers of other types.

4. DESIGN and PRINCIPLE of OPERATION



Electrical igniter	A, mm
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EU-0,4-2	94
EU -0,7-2	
EU -0,7-6	222
EU -0,7-7	
EU -0,7-8	227

Fig1. Design of «Buran-7STT».

4.1. Module (fig. 1) represents a hermetic construction consisting of a steal welded casing **1**, filled with fire extinguishing powder **2**, a gas generating element **3**, an electrical igniter **4**, a release nozzle **5** and a destructible membrane **6** with grooves. The destructible membrane is tightly pressed to the casing by the release nozzle. The electrical igniter is equipped with an electrical connector **7**.

The outlet hole of the release nozzle has G 1 thread for connection with the pipeline that has an internal diameter of $d_y = 25$ mm. Sprayers (fig. 2) are mounted on the pipes.

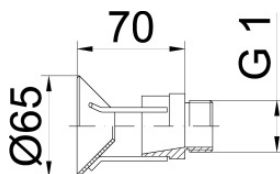


Fig 2. Sprayer 15 G1.

For the module installation on the wall of the protected objects there is a fixing bracket **8** on the side face of the casing. The dimension of the fixing bracket and seats are shown on fig.1.

4.2. The module installed on an object has no excess pressure in the standby mode. The actuation of the module occurs at feeding the circuit of the electrical igniter with an electrical signal from a starting device of a fire extinguishing system.

4.3. At feeding the electrical igniter with an electrical signal the gas generating element starts operating and an intensive gassing occurs. That leads to the increase of the pressure inside the module casing, destruction of the membrane along the grooves and discharge of fire extinguishing powder through the pipes into the protected space.

5. SAFETY MEASURES

5.1. The personnel admitted to operate the module should learn this manual, instructive inscriptions on the module casing and observe them.

5.2. It is prohibited to:

- Cut the module in any power supply till it is normally mounted on the object.
- Conduct any works with the module connected to functional but not de-energized starting circuit.
- Subject the module to impacts leading to the casing deformation or its depressurization.
- Operate a module with damages of a casing and membrane.
- Place screening objects between the module and the protected area.
- Conduct any tests of modules without the concurrence of the manufacturer.

5.3. The plug-in of the module with control panels of the starting system should be done after the module has been impacted on an object and all balancing and commissioning have been finished.

5.4. During cleaning of powder after normal or casual module operation one should observe safety precautions, prevent ingress of powder into eyes and respiratory organs. In the capacity of personal protection equipment one should use dust masks (GOST 12.4.028),

safety glasses of G type (GOST 12.4.013), rubber gloves and protective clothing. It is recommended to collect the removed powder into plastic bags or some other waterproof tanks. Further utilization of the collected powder should be made by operating or specialized companies according to regulations "Utilization and regeneration of fire extinguishing powders" issued by VNIPO in 1998.

In case of the powder particles ingress into eyes, it is necessary to immediately wash eyes by a large quantity of water.

5.5. The discharged fire extinguishing powder doesn't produce detrimental effects on men clothes and property and is easily removed by a vacuum cleaner.

5.6. The disassembling, repair and recharge of modules is allowed to be conducted by persons acquainted with the module construction and principle of operation and admitted for unassisted work at specialized plants licensed for work with such a type of equipment.

6. INSTALLATION

6.1. The module can be placed straight inside the protected object and also out of it and is fixed on walls or vertical parts of construction. The fixing elements should withstand a static load in vertical direction of not less than 60 kg and a dynamic load during operation of not less than $95 \text{ kgm}^2\text{sek}^{-2}$. The axis of the module shouldn't deviate from the vertical line in not more than 10° .

6.2. Placement and fastening of modules in the compartments of transport means should be fulfilled with the concurrence of the development center or enterprise operating this type of transport means.

6.3. The scale icon of the powder scattering configuration where fire extinguishing has stable results is shown in fig. 3.

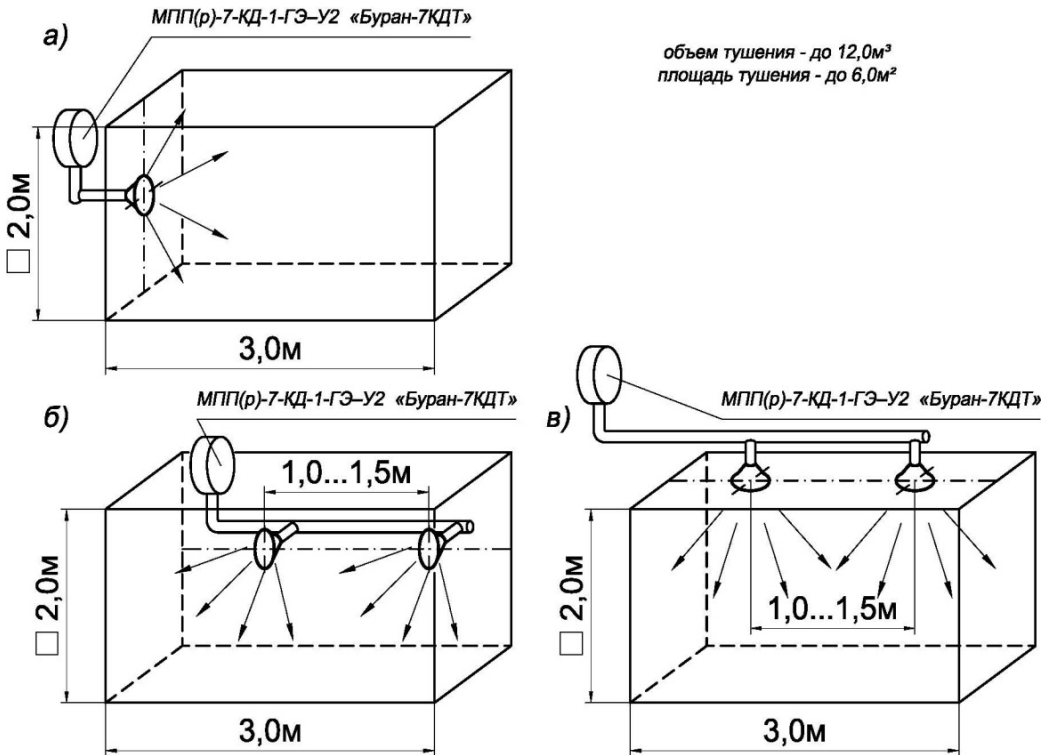


Fig. 3. Scale icon of the powder scattering configuration of «Buran-7STT» on Class A & B fires

- a) by one sprayer 15 G1;
 б) & в) by two sprayers 15 G1.

7. PREPARATION for WORK

7.1. Take the module out of the package and check it visually to be proved in absence of defects of casing, membrane, nozzle-sprayer as well as in integrity of lead seals. Check the delivery set.

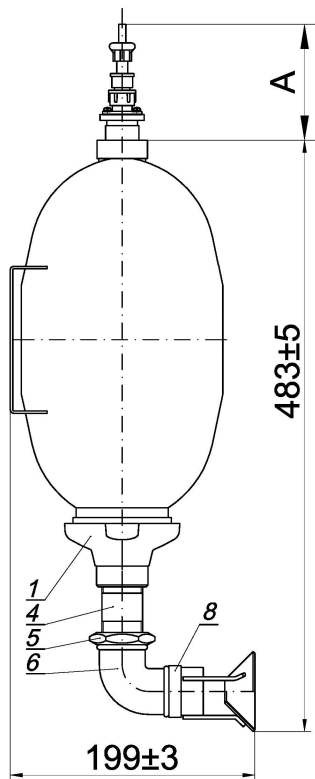
7.2. Put the module on the place intended for it and fix it.

7.3. The installation of the pipeline (fig 4) should be done with use of sealing material for threaded assemblies.

7.4. Direct the sprayer into the protected object side and fix it by tightening a lock nut **5**.

Along with drawn steel or rubber-cord pipes it is permitted to use flexible pipes with the following data:

- Material – corrugated pipe from stainless steel with an internal diameter of $d_y = 25$ mm.
- Operational temperature up to plus 100°C.
- Operational pressure - 15Bar.
- Fittings for use should be recommended by the manufacturer of the corrugated pipes.



Electrical activator	A, mm
EU-0,4-2	94
EU-0,7-2	
EU-0,7-6	222
EU-0,7-7	
EU-0,7-8	227

1. Module MPFE(d)-7-ST-1-GE-U2 «Buran-7STT».
2. Tube 25 GOST 3262.
3. Tube 25 GOST 3262.
4. Cap screw 25 GOST 8969 (L=80mm).
5. Nut-lock 25 GOST 8968.
6. Elbow fitting 25 GOST 8946.
7. Tee fitting 25 GOST 8948.
8. Sprayer 15 G1

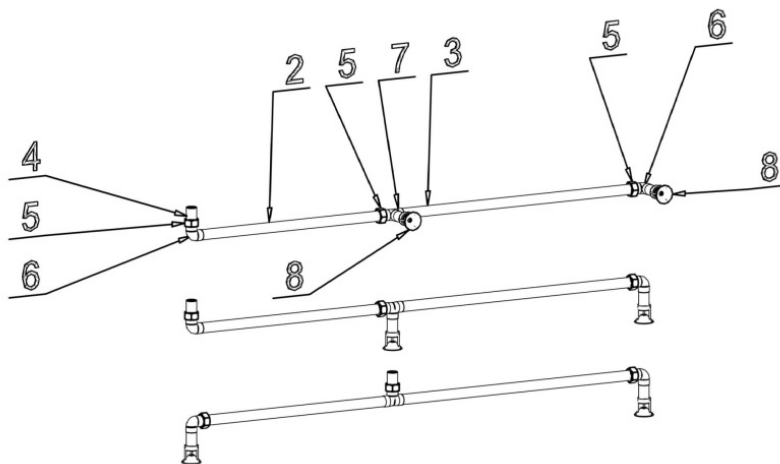


Fig. 4. Examples of "Buran-7STT" pipes mounting.

7.4. The connection of the module to the electric circuit of the starting up system is implemented after its hard fixation on an object and finish of the balancing and commissioning of the whole fire control system. The scheme of the connection is shown in table 2.

Order of “Buran-7STT” with the triggering circuit:

- Take the transport cap out of the thread hole for an electrical actuator and screw the electrical actuator into the hole tightening it to home (tightening torque 8 H·m).
- Lock in the connector cable part of the triggering circuit with the module electrical connector.
- Check the integrity of the entire circuit with the help of the control panel or by means of the resistance measurement with the help of a multimeter.

Attention! Safe test current should be not more than:

- **0,05 A – for modules with electrical activator EU-0,4-2;**
- **0,17A – for modules with electrical activators EU-0,7-2, EU-0,7-6, EU-0,7-7, EU-0,7-8.**

7.5. During the designing of the electrical starting up lines one should foresee measures for exclusion of extraneous currents induction that can provoke the modules' false operation.

8. MAINTENANCE

8.1. The module does not need special maintenance. Once per a month the module mounted on a protected object is subject to a visual check. One should check the absence of apparent external damages (cracks, through holes and dimples on the module's canister and membrane) as well as the absence of the triggering circuit wires breaks, external damages of isolation and junctions. Also one should check the module fixation reliability and in case of necessity the tightening of attaching bolts should be done.

8.2. Once per year the module mounted on a protected object is subject to demounting, overturning and shaking manually 5-10 times for the purpose of the elimination of possible powder caking. If during overturning and shaking one can't hear the powder shift inside the module such a module should be overcharged.

8.3. The canister of the module should be cleaned periodically from dust and dirt by moistened cloth with paying a special attention to the cleanness of the nozzle-sprayer.

8.4. Once per five years the quality of the fire extinguishing powder should be checked by means of conducting the so called “cold” tests of modules. The check shall be conducted by organizations having permission for such works from the manufacturer. It is permitted to check modules for their further operation by means of a random inspection of operability of not less than three modules from one batch. The tests are conducted in accordance with the methods contained in the technical requirements for modules. The tests validation gives the right to prolong lifetime for next 5 years if the results are positive. If the results are negative then the module should be changed.

9. STORAGE and TRANSPORTATION

9.1. The climatic conditions of storage and transportation for modules should be in accordance to GOST 15150-69.

9.2. Modules should be stored and transported in the manufacturer package with assuring conditions preventing modules from mechanical damages, direct sunbeams, moisture and hostile environment.

9.3. Modules can be transported by any transport means at various distances. The transportation of packed modules by air should be carried out in hermetic compartments of aircraft with observing the requirements of Class 9 dangerous goods transportation, packing instruction 962.

9.4. It is allowed to store the modules in covered, not heated storage rooms at temperature from - 50°C up to + 50°C.

10. WARRANTY

10.1. The manufacturer guarantees the correspondence of the module characteristics to the technical requirements on condition that the users strictly observe the regulations for the transportation, storage and operation according to this manual.

10.2. The warranty period – 2 year from the module’s production date.

10.3. Service life – 10 years.

10.4. In case of the destruction of the seal on the module’s body the manufacturer does not except claims on the warranty obligations.

11. NOTICE of ACCEPTANCE

Module of powder fire extinguishing «Buran-7STT», serial number № _____
Is equipped with electrical activator

EU-0,4-2

EU-0,7-2

EU-0,7-6

EU-0,7-7

EU-0,7-8

corresponds to the technical specifications TU 4854-002-69229785-2010 and is available for operation.

Date of issuing

Stamp

Signature

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