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POWDER FIRE EXTINGUISHING MODULE
MPP (N-Exp)-0.65-I-GE-U2
Passport
Manual instructions

1 PURPOSE

1.1 Powder fire extinguishing module MPP(N-Exp)-0.65-I-GE-U2 (hereinafter referred to as the MPP) is intended for automatic smothering fire, Class A (solids), B (liquids), C (gases) and E (electric equipment under voltage regardless of the breakdown voltage of fire extinguishing powder).

1.2 The MPP is made as explosion-proof with the explosion protection type "spark-safe circuit "i", GOST P 51330.10-99 (IEC 60079-11-99), and «special» type of explosion protection, GOST 22782.3-77.

The field of application of the explosion-proof MPP are explosion-hazard areas, Class 2, GOST P 51330.9-99 (IEC 60079-10-95), where explosion-hazard mixtures, Category IIB, Group T3, GOST P51330.19-99 (IEC 60079-20-96) can be formed.

The MPP has explosion-proof marking 2ExsiaIIBT3 X and protection class from external actions, GOST 14254-96, IP43 for inlet box and not below than IP67 for the MPP case.

1.3 The MPP is not designed to extinguish the ignition of substances that can burn without air access.

1.4 The MPP is intended to extinguish both the local and volume fire in the room.

1.5 The MPP can be made in normal version at operating temperatures of minus 50°C to plus 50°C or in special version at operating temperatures of minus 60°C to plus 90°C. The MPP is allowed to operate at relative humidity 95%.

1.6 The MPP is a reused-product.

1.7 The fire extinguishing powder is ejected by the gas generated with a cold gas source CGS-0.65(M)-01 SIAB 066614.020.000 TU.

1.8 Examples of the MPP marking (model) records when ordered:

- MPP (N-Exp)-0.65-I-GE-U2 TU 4854-011-54572789-06 in normal version at temperatures of minus 50°C to plus 50°C;

- MPP (N-Exp-T)-0.65-I-GE-U2 TU 4854-011-54572789-06 in special version at temperatures of minus 60°C to plus 90°C.

2 TECHNICAL CHARACTERISTICS

2.1 Technical characteristics of the MPP are given in Table 1.
Table 1

Name	Value
1 Explosion protection marking	2ExsiaIIBT3 X
2 Protection class from external actions	IP43 for inlet box and not below than IP67 for the MPP case
3 Electrical product Class of the staff protection from electrical shock	III
4 Case capacity, lit	0.65 ^{+0.07}
5 Dimension, mm, not more than: - height - length	188 230
6 Total weight of the MPP, kg, not more than	3
7 Fire extinguishing powder ISTO-1 weight, TU 2149-001-54572789-00, kg	0.49 ^{+0.05}
8 MPP fast action (time from the moment of sending impulse to a triggering element of the MPP to the moment of ejecting extinguishing powder out of the module, s)	of 3 to 8
9 Operating time (time of ejecting extinguishing powder), s, not more than	1
10 Pressure of membrane rupture, MPa	2.0...2.4
11 ^{*)} The MPP fire extinguishing ability: 11.1 Surface to be protected (S), Class A, m ² 11.2 Volume to be protected (V), Class A, m ³ 11.3 Surface to be protected (S), Class B, m ² 11.4 Volume to be protected (V), Class B, m ³	1.2 2.4 1.2 1.2
12 Maximum rank of the model fire site, Class B, when extinguishing at an open area from the height (H) up to 3m	8B ^{**)}

10 CERTIFICATE OF ACCEPTANCE AND SALE

The fire extinguishing module

MPP(N)-0.65-I-GE-U2 MPP(N-T)-0.65-I-GE-U2
(tick off the necessary)

corresponds to the requirements of TU 4854-011-54572789-06 and is considered to be fit for use.

Batch No _____

Manufacturing date _____
(month, year)

Signature and Inspector stamp _____

Sold _____
(name of the Seller)

Sale date _____

Shop stamp

4 DESIGN AND PRINCIPLE OF OPERATION

4.1 The MPP design

4.1.1 The MPP (see Figure 1) consists of a case **1** where fire extinguishing powder (OP) **2** and cold gas source (CGS) **3** are placed. In the front part of the case there is a nozzle-sprayer **4**, the output hole of it is closed by membrane **5**.

Connecting wires of the electric triggering element of the CGS are put into a box **6** via sealed unit in the MPP case providing the necessary protection, Class (not below IP67), from external actions. The outside wire ends of electric triggering unit (while assembling under section **6** of the present Passport) are connected to the screw contact clamp **7** placed in the box **6**. Electric gaps and ways of leaking between uninsulated current-carrying parts (of contact clamps and conductors) are 3mm. Assembly cable through cable input **8** enters the box **6** and connects to screw contact clamp **7**.

The MPP case side is fitted with support **9** to fasten to the bearing surface (wall, ceiling, floor, etc.).

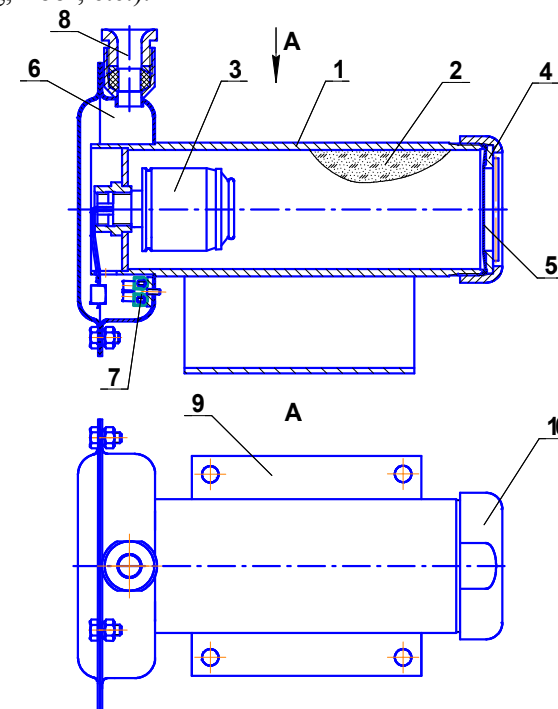


Figure 1

4.1.2 The MPP actuates with the help of current impulse that can be generated by:

- receiving/control, fire alarm, and safeguard devices;
- manual start button;
- self-contained triggering devices (for example, signaling/triggering device USP-101 TU 4371-004-21326303-96).

4.2 Operation

4.2.1 After sending electric pulse to the output of triggering unit **4**, the CGS **3** generates gas which makes OP **2** loose and creates pressure inside the MPP case to rupture membrane **6** and eject through nozzle-sprayer **5** the jet of OP into the zone of burning.

The MPP can be started automatically from the triggering unit or manually.

5 SAFETY MEASURES

5.1 Explosion-proofness

5.1.1 The MPP has explosionproof version, marking 2ExsiaIIBT3 X.

5.1.2 The MPP explosion-proofness is achieved due to:

- electric triggering unit power supply along spark-proof circuit from power supply unit with parameters corresponding to input and internal parameters stated in item 14, Table 1;
 - sealing the input place of connecting wires of the electric triggering unit into the MPP case;
 - limitation of heating external parts of the MPP up to a temperature not more than 200°C;
 - use of construction materials insensitive to friction sparking, friction and collision;
 - prevention from self-unfastening all parts providing explosion-proofness of the MPP and grounding clamps with spring washers;
 - the MPP commutation with automatic devices with the explosion-proofness marking not below than 2ExsiaIIBT3 X;
 - reduction in the igniting ability of the gas generating device as a source of explosion initiation by reducing the temperature of combustion products;
 - reduction in the igniting ability of the CGS as supposed explosion source due to using fire extinguishing powder having inhibiting properties;
 - provision of the module strength in accordance with the requirements PB 67-98 and GOST P 51330.0-99 (IEC 60079-0-98);
 - grounding clamp available to provide energy sink;

8 STORAGE AND TRANSPORTATION

8.1 The MPP transportation and storage conditions should meet the requirements of OG-4 GOST 15150-69.

8.2 The MPP transportation in the factory packing at temperatures of minus 50°C to plus 50°C is allowed by all kinds of transport according to the rules of transporting the goods by this kind of transport and taking into account transport conditions – harsh environment (G), GOST 23170-78.

8.3 When stored and transported the MPP, conditions preventing them from mechanical damage, direct sunlight, rainfalls and aggressive media should be provided.

9 WARRANTY

9.1 The factory-manufacturer guarantees the correspondence of the MPP to the requirements of technical conditions if the Customer observes operation, transportation and storage conditions.

9.2 Service life is stated to be 10 years for MPP(N-Exp)-0.65-I-GE-U2, 5 years for MPP(N-Exp-T)-0.65-I-GE-U2 and is estimated from the date of accepting the MPP by Quality Department of the factory-manufacturer.

9.3 Guaranteed MPP service life is stated from the date of the MPP sale is 2 years for the MPP(N-Exp)-0.65-I-GE-U2 and 1 year for the MPP(N-Exp-T)-0.65-I-GE-U2.

9.4 The factory-manufacturer is not responsible for:

- misoperation if the owner does not observe operation rules;
- negligent storage and transportation of the MPP;
- passport loss;
- after performing certification, reloading the MPP under item 7.3 if they were not carried out at the factory-manufacturer;
- expiration of the service life stated from the date of accepting the MPP by Quality Department of the factory-manufacturer.

6.4 Calculate the necessary number of modules in the volumes protected in accordance with Section 8 NPB 88-2001.

6.5 While protecting separate surface parts, i.e. at local protection in rooms or under shelter at the height of installation (H) to 3 m, the local surface area equals 0.25m^2 and is a circle 0.56 m in diameter.

6.6 The configuration of powder spraying and the area image, where smothering is achieved, are given in Figure 4 and in Table 2.

Table 2

Parameters	Class A	Class B	
S, m ²	1.2	1.2	-
V, m ³	2.4	1.2	1.2
a, m	2.0	2.0	1.0
B, m	0.6	0.6	0.6
h, m	2.0	1.0	2.0

7 MAINTENANCE

7.1 Special technical maintenance within the stated service life is not required. Examine the integrity of the disk (membrane) closing the MPP nozzle-sprayer once a quarter. If the disk (membrane) is not intact (damage, holes of puncture, cracks), replace the module.

7.2 Reloading after operating the MPP should be carried out by the MPP factory-manufacturer or at special stations for reloading powder fire extinguishers.

7.3 On reloading and assembling the MPP after its operation, it is necessary to replace the CGS (pos. 3, Figure 1) CGS-0.65(M)-01 CIAB 066614.020.000 TU and place the disk (membrane) (pos. 6, Figure 1) made according to the drawing (Figure 5), Sheet AM_цH2-0.5 GOST 21631-76. After placing the membrane, tighten the nut under load (150 ± 10) N·m.

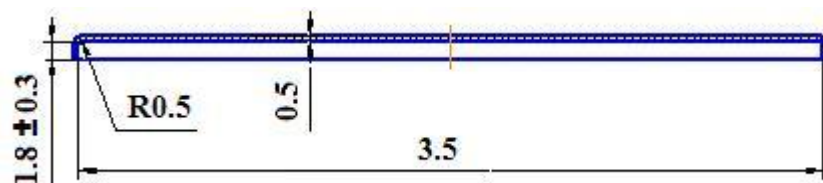


Figure 5

7.4 Record the tests and reloading made in the Passport for MPP (See Annex A).

- cable laying in explosion-proof area in accordance with the requirements of Section 7.3 «Rules of Electric Plant Layout».

5.1.3 **Sign X** following the explosion-proofness marking means that the following (special conditions) requirements should be obeyed when using the article:

- the explosion-proof MPP version is allowed only in explosion-hazard areas, Class 2, GOST P 51330.9-99, where explosion-hazard mixtures, Category IIB, group T3, GOST P 51330.19-99, can be formed;

- only the staff responsible for this work, trained, certified, studied this Passport and Manual instructions are allowed to work with the module;

- prevent the module from shocking and dropping. If dropped from the height more than 1.5 m on any base, the module should be disposed in accordance with Item 5.6 of the present Passport;

- do not use the MPP with damaged case or membrane (dents, cracks, through holes);

- do not perform welding or other flame work near the MPP at a distance less than 2 m;

- do not keep and install the MPP near heat sources at a distance less than 2 m;

- storage, transport, installation and use of the MPP should be carried out in accordance with the rules of safety, emergency and fire prevention;

- the MPP igniter is energized from external device (power supply unit), explosion-proofness of output circuit should be provided by explosion-proof "spark-safe circuit "i", GOST P 51330.10-99 (IEC 60079-11-99) with parameters corresponding to the input and internal parameters stated in item 14, Table 1, and allowed for using in explosion-hazard areas, Class 2, GOST P 51330.9-99 (IEC 60079-10-95), where explosion-hazard mixtures, Category IIB, group T3, GOST P 51330.19-99 (IEC 60079-20-96), can be formed. The cable for sending electric pulse from power supply unit, placed beyond explosion-hazard area, should be intended for using in explosion hazard areas;

- technical maintenance of modules, including routine repair, fault troubleshooting, provision of explosion protection of the module after maintenance should be performed by specialized enterprise having license for performing the given working activity.

5.2 To assemble the module, the output ends of the triggering unit should be closed by twisting not less than twice and sealed. Removing the seal and separating the output ends is made while assembling the inlet box. After removing the seal and separating the output ends inspect the circuit continuity by safe direct current ($0.03_{-0.005}$) A. The outputs of the triggering unit of the normal version MPP should be placed separately into fluoroplastic tubes with inner diameter $2 \dots 5$ mm.

5.3 The MPP case should be grounded.

5.4 The MPP triggering line should be connected the last. The connection line should be deenergized. Before connecting the module to control devices the triggering line should be closed.

5.5 Loading, reloading, certification and technical maintenance should be carried out in the rooms specially equipped and designed for it at the MPP factory-manufacturer or stations of maintenance having the license of the State fire fighting service.

5.6 After detecting the module defects (dents, cracks, through holes) during the operation or after its service life, the module should be sent to the factory-manufacturer for utilization.

5.7 Fire extinguishing powder has no harmful effect on the body and clothes of people, does not cause damage to property and is easy-to-remove. Extinguishing powder waste utilization should be made according to the instruction: Utilization and Regeneration of Fire Extinguishing Powders M:VNIPO, 1988.

5.8 The bearing construction, the MPP is fastened to, should sustain the impulse load from the module kick at the moment of OP ejecting equal to 1800N.

6 PREPARATION OF THE MPP TO OPERATION, LAYOUT AND MOUNTING

6.1 Unpack the MPP, and examine the integrity of case and membrane.

6.2 Assemble the inlet box of the MPP (see Figure 2).

6.2.1 Remove cover 1 by undoing nuts 3 of three bolts 2.

6.2.2 Cut some piece of cable corresponding to the part length from the MPP to connection box plus 400 mm for cable-end splitting.

6.2.3 Unscrew with wrench screw 4. Remove washer 5 and rubber ring 6 from the inlet unit. Drill in the ring a central hole with diameter $d = 0.6(d_1 + 2)$, where d_1 is the outside diameter of cable.

6.2.4 Remove the cable sheath 200mm long from one end of the cable. Remove insulation 10mm long from the ends of two cable cores and 20mm from the third core.

6.2.5 Put the sheath of the split cable end on screw 4, washer 5 and rubber ring 6 in series. The distance from the rubber ring to the cable sheath cut should be 10 mm.

6.2.6 Enter the split cable end into the inlet hole 7 of case 8.

6.2.7 Put the rubber ring 6 and washer 5 into the socket of the inlet hole 7 and screw together screw 4.

6.2.8 Connect the cable core with bared end 20 mm long to the ground-

ing clamp 9. The bared ends of the two cores remained fasten in the contact screw clamp 10. Place the cable cores left inside the case 8.

6.2.9 Remove the seal from wires of the triggering unit of the CGS, fasten the bared ends in the contact screw clamp 10.

6.2.10 Place the cover 1 onto the case 8 and fasten it with nuts.

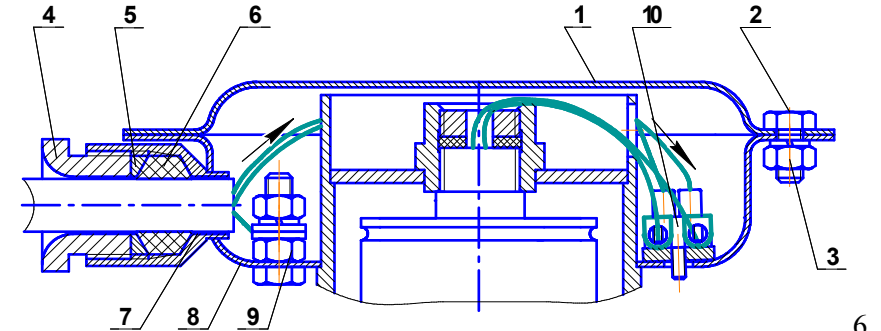


Figure 2

6.3 Fasten the MPP on the bearing surface (wall, ceiling, and floor) in any place of the volume to be protected. The MPP orientation in the volume protected can be quite different: from the horizontal position to vertical one with nozzle-sprayer down. The holes locations to fasten the MPP are shown in Figure 3.

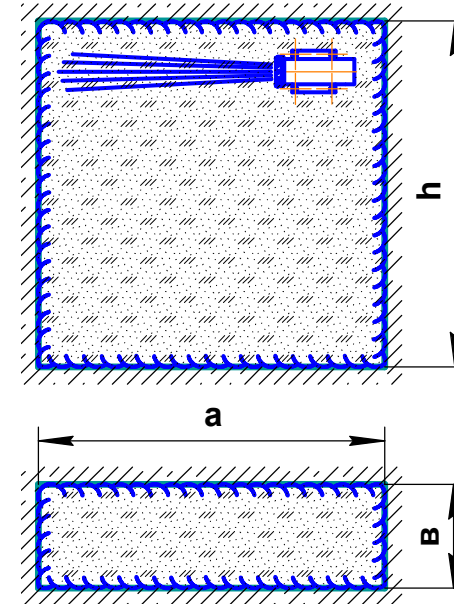


Figure 3

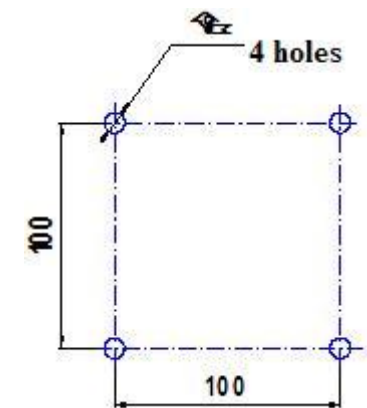


Figure 4