

1 PURPOSE

1.1 Powder fire extinguishing module MPP(N)-6-I-GE-U2 in two versions, ceiling (c)- and wall (w)-mounted, (hereinafter referred to as the MPP) is intended for automatic smothering fires, Class A (solids), B (liquids), C (gases) and E (electrical equipment under tension without taking into account the value of firefighting powder discharge voltage).

The MPP model differs in bracket designs intended to fasten the module to the bearing construction.

MPP can be equipped with electronic activation device during the usage of which a module obtains a function of self-activation and can be used as an autonomous powder fire-extinguishing mean.

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

1.3 The MPP is intended to extinguish both the local seats of fire and fires on square and in volume in the room.

1.4 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% under the temperature of 25°C.

1.5 The MPP is a reused-product.

1.6 The fire extinguishing powder is ejected by the gas generated with a cold gas source CGS-6(M) SIAV 066614.025.000-04 TU.

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

MPP(N)-6(c)-I-GE-U2, TU 4854-010-54572789-05 (ceiling-mounted) in normal version at temperatures of minus 50°C to plus 50°C;

MPP(N)-6(w)-I-GE-U2, TU 4854-010-54572789-05 (wall-mounted) in normal version at temperatures of minus 50 °C to plus 50°C;

MPP(N-T)-6(c)-I-GE-U2, TU 4854-010-54572789-05 (ceiling-mounted) in special version at temperatures of minus 60°C to plus 90°C;

MPP(N-T)-6(w)-I-GE-U2, TU 4854-010-54572789-05 (wall-mounted) in special version at temperatures of minus 60°C to plus 90°C;

10 WARRANTY

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

10.2 Service life is stated to be:

- not more than 10 years for MPP(N)-6(c)-I-GE-U2,
MPP(N)-6(w)-I-GE-U2;
- not more than 5 years for MPP(N-T)-6(c)-I-GE-U2,
MPP(N-T)-6(w)-I-GE-U2.

and is estimated from the date of accepting the MPP by Quality Department of the factory-manufacturer.

10.3 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 7.2 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.

11 CERTIFICATE OF ACCEPTANCE AND SALE

The fire extinguishing module

- | | |
|--|--|
| <input type="checkbox"/> MPP(N)-6(c)-I-GE-U2 | <input type="checkbox"/> MPP(N)-6(w)-I-GE-U2 |
| <input type="checkbox"/> MPP(N-T)-6(c)-I-GE-U2 | <input type="checkbox"/> MPP(N-T)-6(w)-I-GE-U2 |

(tick off the necessary)

corresponds to the requirements of TU 4854-010-54572789-05 and is considered to be fit for use.

Batch No _____

Manufacturing date _____
(month, year)

Inspector signature and stamp _____

Sold _____
(name of the Seller)

Sale date _____

Shop stamp

- fire-extinguishing powder ISTO-1 TU 2149-001-54572789-00 (see item 2 on Figure 1) – 6.0 kg;
- membrane of SIAV 634233.006.003 drawing (see item 6 on Figure 1) – 1 item.

7.4 After MPP checking and reloading notes are made on MPP case (with a label or ticket fastening) and in MPP manual (See Annex A).

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 MPP UTILIZATION AFTER FIXED SERVICE LIFE EXPIRATION

9.1 Utilization works should be made by MPP factory-manufacturer or in organizations having a license for this kind of activity.

9.2 Disassemble MPP.

9.3 MPP frame utilization is made by means of taking to scrap metal.

9.4 Firefighting powder utilization is made according to paragraph 5.7 requirements.

9.5 CGS utilization should be made according to the following instructions.

9.5.1 Actuate CGS in premises equipped with supply-and-exhaust ventilation. For this purpose CGS is placed in a clamp, connected to a direct current power source, which is correspondent to p. 12 or p. 13 of Table 1. The launch is made distantly without any people inside.

9.5.2 After launching make sure that the premises are ventilated till safe concentration or enter using isolating protective breath means, draw CGS from the clamp using thermo protective gloves, and then utilize according to the requirements of p. 5.8.

2 TECHNICAL CHARACTERISTICS

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

Table 1

Name	Value		
1 Case capacity, lit	6.5±0.32		
2 Dimension, mm, not more than:			
- diameter	286		
- height (with installation bracket)	233		
Table 1 to be continued			
3 Total weight of the MPP, kg, not more than	10		
4 Fire extinguishing powder ISTO-1 weight, TU 2149-001-54572789-00, kg	6.0+0.3		
5 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 1 to 10		
6 Operating time (time of ejecting extinguishing powder), s, not more than	not more than 1		
7 Pressure of membrane rupture, MPa	2.3...2.4		
8 Firefighting ability of ceiling-mounted MPP			
8.1*) Protected square (S, m ²) and volume (V, m ³) in the room for fires class A in case of fire-extinguishing from the height (H, m)	H	S	V
	2	50	150
	4	50	150
8.2*) Protected square (S, m ²) and volume (V, m ³) in the room for fires class B in case of fire-extinguishing from the height (H, m)	9	35	88
	H	S	V
	2	27	40
8.3) 3 Protected square (S, m ²) and volume (V, m ³) into the open area fenced with the shields, for fires class A in case of fire-extinguishing from the height (H, m)	4	27	40
	6	18	-
	8	14	-
8.4*) Protected square (S, m ²) into the open area fenced with the shields, for fires class B in case of fire-extinguishing from the height (H, m)	H	S	V
	2	35	88
	9	35	88
	H	S	
	2	16	
	6	16	
	9	12.5	

Table 1 to be continued

Name	Value		
9 Firefighting ability of wall-mounted MPP from the height of 1 to 4 m.			
9.1 Protected square (S, m ²) and volume (V, m ³) in the room for fires class A, B	Cl.	S	V
	A	50	150
	B	27	40
9.2 Protected square (S, m ²) and volume (V, m ³) into the open area fenced with the shields, for fires class A, B	Cl.	S	V
	A	35	88
	B	14	-
10 Maximum rank of the model fire site, class B, when extinguishing at an open area from the height (H) 7 m.	233B ^{**})		
11 Circuit characteristics of electric triggering unit: - safe current of testing circuit, A, not more than - operating current, A, not less than: a) normal version of the MPP b) special version of the MPP - electric resistance, Ohm	0.03		
	0.15		
	0.2		
	8...16		
12 Irregularity coefficient of spraying powder K ₁ (SP 5.13130.2009)	1.0		
NOTES: *) Firefighting ability of ceiling-mounted MPP for fire-extinguishing from height H calculated according to the formula: - for fires class A in premises from the height of 4 to 9 m: S = 50-3·(H-4), V = 150-12.4·(H-4); - for fires class B in premises from the height of 4 to 6 m: S = 25-4.5·(H-4), and of 6 to 8 m: S = 18-2·(H-6); - for fires class B into the open area from the height of 4 to 8 m: S = 16-1.75·(H-6). **) According to GOST R 53286-2009 model site, rank 233B is the surface of burning petrol (benzine) as a circle with diameter 3.05m and surface area (S) 7.32 m ² .			

3 COMPLETENESS OF SET

3.1 The MPP set to be supplied consists of:

- The module MPP TU 4854-010-54572789-05 – 1 item;
- Passport and Manual instructions - 1 copy.
- MPP package – 1 item.

Table 3

Ceiling-mounted MPP fire-extinguishing parameters into the open area

Parameters	Fires class A	Fires class B	
H, m	2; 9	2; 6	8
S, m ²	35	16	12.5
V, m ³	88	-	-
a, m	5.83	4	3.54
b, m	6.0	4	3.54
h, m	2.5	-	-

Table 4

Wall-mounted MPP fire-extinguishing parameters from the height of 1 to 3 m.

Parameters	Into the open air		In premises			
	Class A	Class B	Class A	Class B		
S, m ²	35	14	50	27	-	-
V, m ³	88	-	150	-	40	
a, m	5.7	3.5	6.2	4.5	4,47	3.16
b, m	6.1	4.0	8.06	6.0	4,47	3.16
h, m	2.5	-	3.0	-	2.0	4

7 MAINTENANCE

7.1 Special technical maintenance is not required. Examine the integrity of the disk (membrane) closing the MPP nozzle-sprayer and the MPP grounding available **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.

7.3 The delivery set for MPP reloading:

- CGS-6 (M)-01 SIAV 066614.025.000 TU for MPP of normal version or CGS-6 (M)-02 SIAV 066614.025.000 TU for MPP of special version (see item 3 on Figure 1) – 1 item;
- rubber ring 020-026-36 GOST 9833-73 (see item 10 on Figure 1) – 1 item;

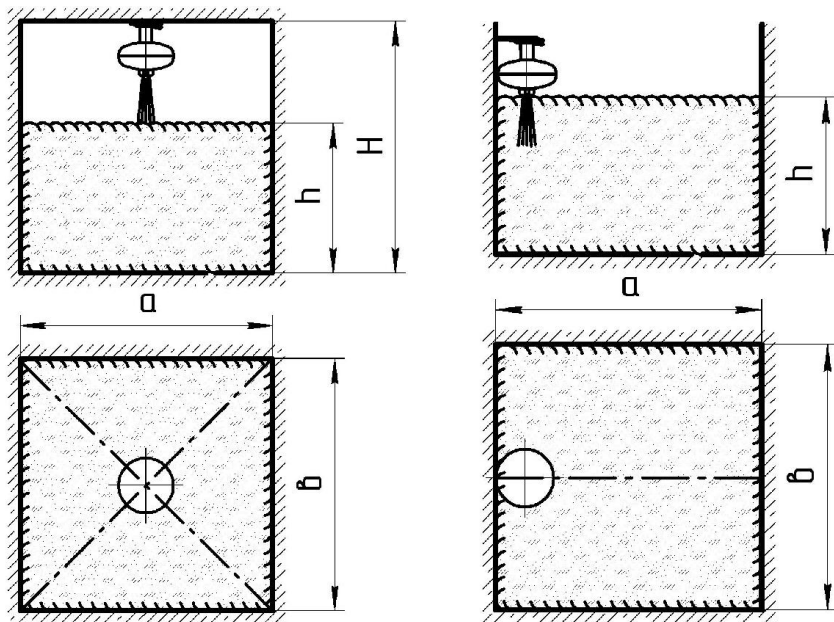


Figure 4

Figure 5

Table 2

Ceiling-mounted MPP fire-extinguishing parameters in the room

Parameters	Fires class A		Fires class B				
	2; 4	9	2; 4	6	8	2	4
H, m	2; 4	9	2; 4	6	8	2	4
S, m²	50	35	27	18	14	-	-
V, m³	150	88	-	-	-	40	40
a, m	7.07	5.83	5.2	4.24	3.74	4.47	3.16
b, m	7.07	6.0	5.2	4.24	3.74	4.47	3.16
h, m	3.0	2.5	-	-	-	2.0	4.0

4 DESIGN AND OPERATION PRINCIPLE

4.1 The MPP design

4.1.1 The MPP (See Figure 1 and 2) consists of a case 1 where fire extinguishing powder (OP) 2 and cold gas source (CGS) 3 with electro-triggering element 4 are placed. In the lower part of the case there is a nozzle-sprayer 5, the output hole of it is closed by membrane 6. The module has grounding clamp 7. In the upper part the MPP case is fitted with bracket 8 to fasten to the ceiling (Figure) or bracket 9 to fasten to the wall (Figure 2).

4.1.2 The MPP actuates by means of current impulse that can be generated by:

- receiving/control, fire alarm, and safeguard devices;
- manual start button;
- autonomous signaling-and-triggering devices (for example, automatic and autonomous signaling-and-triggering device USPAA-1 TU 4371-032-00226827-99, signaling-and-triggering device USP-101 TU 4371-004-21326303-96); detecting-and-triggering device "Pulsar-31" TU 4371-025-26289848-07.

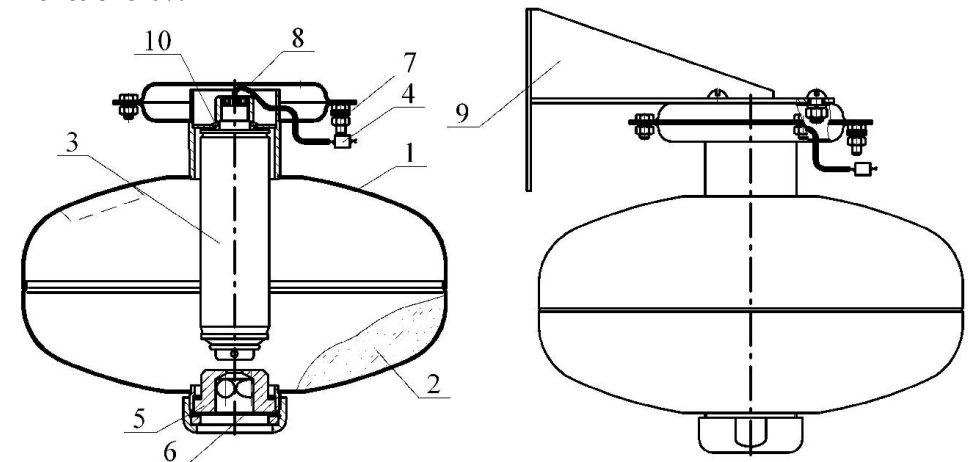


Figure 1

Figure 2

4.2 Operation

4.2.1 After sending electric pulse to the outputs of the 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 a burning area.

5 SAFETY MEASURES

5.1 The staff who was allowed to operate the MPP should study this Passport and observe its requirements.

5.2 It is not allowed:

- keep the MPP near heat sources;
- effecting of rainfalls, direct sunlight, aggressive media, moisture;
- shocking the case and CGS;
- dropping from the height more than 2 m;
- dismantling the MPP, except maintenance work according to Section 7 of the present Passport;
- use of the MPP with damaged case (dents, cracks, through holes);
- performing of any fire tests without experimental works program concordance or in case of absence of company-manufacturer representative.

5.3 Before switching ON the module, the output ends of the triggering unit should be closed by twisting not less than twice and sealed. Connect the MPP only after grounding. Electric safety while assembling the MPP should be provided by observing the requirements PUE, PTE, PTB, and PZSE.

5.4 Loading, reloading, certification and technical maintenance of modules should be performed in the rooms specially equipped and designed for these purposes at the factory-manufacturer of the MPP or in organizations having a license for such kind of activity.

5.5 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 or utilized according to p. 9.

5.6 When using the module is fire- and explosion proof.

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. After MPP actuation to remove the combustion products and fire extinguishing powder in the air it is necessary to use general ventilation. It is allowed to apply mobile ventilations sets for this purpose. The powder fell is removed by vacuum cleaner, dry rag followed by wet cleaning. Extinguishing powder waste utilization should be made according to the instruction: "Utilization and Regeneration of Fire Extinguishing Powders", Moscow: VNIPO, 1988.

5.8 CGS utilization after actuation should be made by means of device taking to scrap metal.

5.9 The bearing construction, the MPP is fastened to, should sustain the impulse load from the module kickback at the moment of OP ejecting.

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 Fasten the bracket 8 (See Figure 1) on the ceiling or the bracket 9 (See Figure 2) on the wall. Coordinates of holes in the bracket to fasten the MPP on the ceiling are shown in Figures 3a and to fasten the MPP on the wall are shown in Figures 3b.

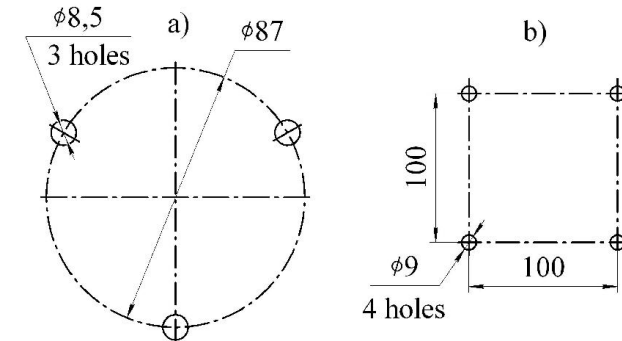


Figure 3

6.3 Connect the MPP with the bracket, fasten the connection with nuts.

6.4 The calculation of the necessary number of modules in the rooms protected should be made in accordance with Section 9 SP 5.13130.2009.

6.5 While protecting separate surface parts, i.e. during local protection in rooms or under a shelter with the installation height (H) up to 7 m, the local protection surface (S) equals to 7.32 m² and is a circle.

6.6 The configuration of powder spraying and the area image, where smothering is achieved, are given in Figure 4 and in Tables 2, 3 for the ceiling-mounted MPP and in Figure 5 and in Table 4 for wall-mounted MPP.