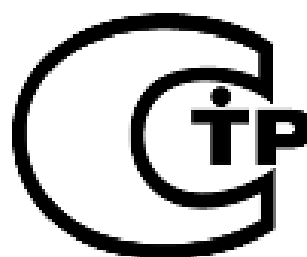


TUNGUS®



**“Istochnik Plus”, CJSC
1 Socialisticheskaya St., Biysk,
659322, Altay Kray, Russia
Tel. (3854) 30-70-40, 30-58-59**

www.antifire.org
antifire@inbox.ru



**AEROSOL FIRE EXTINGUISHING GENERATOR
GOA-II-0.35-020-020**



**Passport
and Manual Instructions
GOA-II-0.35-020-020 PS**

1 PURPOSE

1.1 Aerosol fire extinguishing generators GOA-II-0.35-020-020 (hereinafter referred to as the GOA or generators) is intended for volumetric extinguishing of fires A2 subclass, B and E (electrical equipment under tension) classes, and also for fires class A1 localization.

1.2 GOA is not purposed for fire extinguishing of:

- Fibrous, friable, porous and other combustible materials inclined to self-ignition and smoldering inside the volume of substance (wooden sawdust, cotton, grass flour etc.);

- Substances which can burn without air access.

1.3 GOA can be made in normal version with temperature range of operation from minus 50 to plus 50°C, in special temperature range of operation from minus 60 to plus 90°C, or in wide temperature range of operation from minus 60 to plus 125°C. GOA operation is allowed under relative humidity not more than 95% when temperature is 25°C.

1.4 Besides the usage on stationary objects, GOA devices have modifications allowing their application for fire protection of electro technical, motor, hydraulic, pump and luggage compartments of vehicles of different purpose (automotive, railway, water etc.).

1.5 Firefighting aerosol creating during GOA operation does not have an ozone-depleting potential.

1.6 Examples of GOA designation when ordering:

GOA-II-0.35-020-020 TU 4854-023-54572789-15 – in normal version with temperature range of operation from minus 50 to plus 50°C;

GOA(T)-II-0.35-020-020 TU 4854-023-54572789-15 – in special temperature range of operation from minus 60 to plus 90°C;

GOA(T1)-II-0.35-020-020 TU 4854-023-54572789-15 – in wide temperature range of operation from minus 60 to plus 125°C;

GOA-II-0.35-020-020(A) TU 4854-023-54572789-15 – in normal version with temperature range of operation from minus 50 to plus 50°C, purposed for application on transport vehicles;

GOA(T)-II-0.35-020-020(A) TU 4854-023-54572789-15 – in special temperature range of operation from minus 60 to plus 90°C, purposed for application on transport vehicles;

GOA(T1)-II-0.35-020-020(A) TU 4854-023-54572789-15 – in wide temperature range of operation from minus 60 to plus 125°C, purposed for application on transport vehicles.

2 TECHNICAL CHARACTERISTICS

2.1 Main technical characteristics of GOA are given in Table 1.

Table 1

Name	Value
1 Dimensions of GOA, purposed for operation on stationary objects, mm, not more than: - height - length - width	 123 317 103
2 Dimensions of GOA, purposed for operation on transport vehicles, mm, not more than: - height - length - width	 114 317 140
3 GOA full mass, kg, not more than: - purposed for operation on stationary objects - purposed for operation on transport vehicles	 2.2 2.4
4 Firefighting aerosol-forming compound mass, kg, not less than:	0.35
5 GOA fast action (time from the moment of sending impulse to a triggering element of GOA to the moment of extinguishing powder ejecting out of the module), sec., not more than	1
6 Time of firefighting aerosol emission, sec.	20±2
7 Dimensions of zones, m, forming when GOA operating, with temperature more: 75°C 200°C 400°C	 0.95 0.2 absent
8 Maximal temperature of GOA frame in process of its operation and after it, °C, not more than	280
9 Dimensions of fire hazard zones for combustibile substances A and B classes, m: - from firefighting aerosol jet - from generator frame	 0.17 absent
10 GOA firefighting ability for suppression of fires A, B, E classes, kg/m ³	0.020
11 Maximal volume protected of conditional hermetic premises with parameter of non-hermeticity not more than 0.001 m ⁻¹ , m ³	17.5
12 GOA electrical triggering element circuit characteristics	
12.1 In normal and special versions: - safe current of testing circuit, A, not more than - operating current, A, not less than: - current impulse duration, sec., not less than - electric resistance, Ohm	 0.03 0.2 0.1 8...16

Table 1 to be continued

12.2 In wide temperature range of operation: - safe current of testing circuit, A, not more than - operating current, A, not less than: - current impulse duration, sec., not less than - electric resistance, Ohm	0.2 0.6 0.1 2...5
13 Electrical resistance between GOA frame and clamps for launching circuit connection under normal climatic conditions according to GOST15150-69, MOhm, not less	1.0
14 Mechanical impact: - overload, g; - frequency, Hz; - amplitude, mm; - running time, hours	5 46 0.6 16
15 Height, falling from which on firm basement (concrete, steel) GOA remains its integrity and workability and doesn't trigger, m, not more than	3.0
16 Heat quantity emitting during GOA operation, kJ, not more than	900
17 Firefighting intensity of aerosol supply, kg/(m ³ ·sec.)	0.001

2.2 Firefighting aerosol components structure, forming when GOA operating, is given in Table 2.

Table 2

Gaseous Phase		Condensed Phase	
Component	Concentration, g/m ³	Component	Content, % of mass
N ₂	3.977	K ₂ CO ₃ + KHCO ₃	90.9
CO	0.17	Substances non soluble into water and hydrochloric acid	9.1
H ₂	0.0014		
H ₂ O	1.37		
CO ₂	9.97		

3 COMPLETENESS OF SET

3.1 The GOA set to be supplied consists of:

- a) Generator TU 4854-023-54572789-15 – 1 pc.;
- b) Passport and Manual instructions – 1 copy;
- c) GOA packing – 1 pc.

4 DESIGN AND PRINCIPLE OF OPERATION

4.1 GOA design purposed for operation on stationary objects

4.1.1 GOA (see figure 1) consists of frame **1**, in which aerosol-forming charge **2** with electrical-triggering element **3**, and ejector **4** are placed. Aerosol-forming charge **2** is separated from frame **1** with heat-shielding covering **5**. In disk **6** there are nozzle apertures purposed for firefighting aerosol going out inside ejector **4**. Nozzle apertures are plugged with self-adhesive PVC film **7**. Generator has grounding clamp **8**. From

lateral part of frame 1 GOA is equipped with support 9, purposed for generator installation to any bearing surface (wall, ceiling, floor, etc.). To connect wires of electrical-triggering element 3 with launching circuit of fire extinguishing set, a contact screw clamp 10 is fixed to support 9.

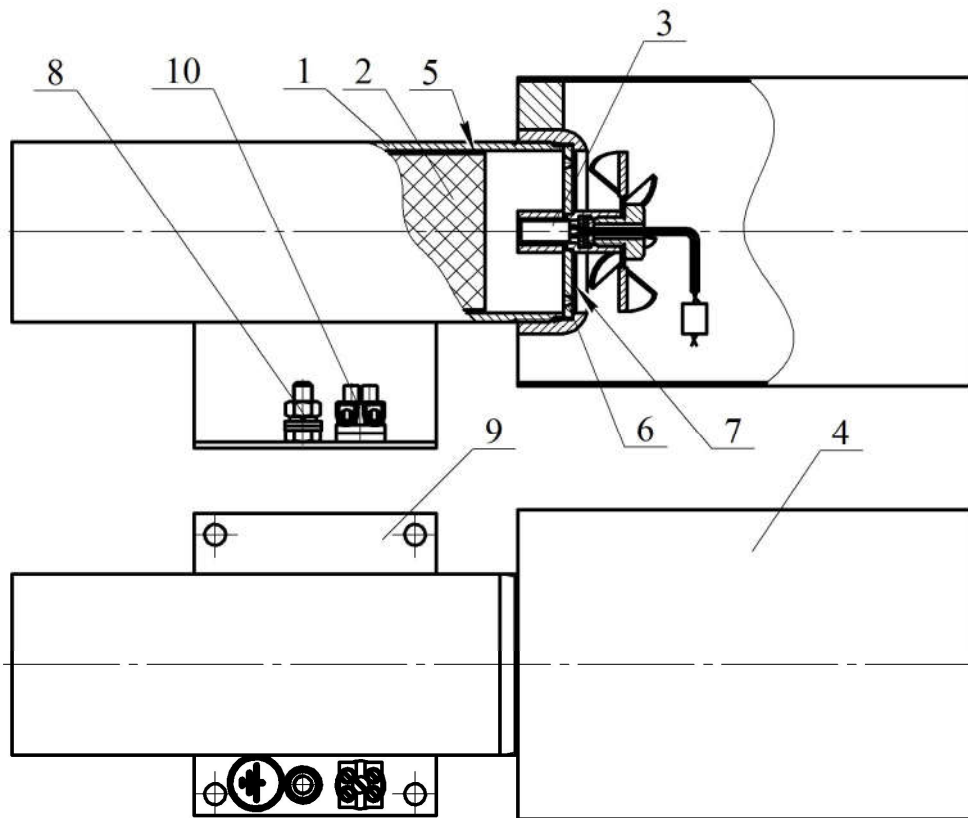


Figure 1

4.2 GOA design purposed for operation on transport vehicles

4.2.1 GOA 1 (see figure 2) constructively and practically does not differ from the generator according to figure 1 excluding a bracket for its mounting to a bearing surface. This GOA instead of support 9 shown in figure 1, is supplied with bracket 2, to which a generator frame is pressed by means of 2 clamps. A grounding clamp is absent. To compensate a vibration influence on generator frame and ejector, the contact surfaces between the GOA and the bracket 2 are equipped with rubber gaskets.

4.3 GOA is activated from an electrical impulse which can be generated by:

- Receiving/control, fire alarm, and safeguard devices;
- Manual start button;
- Self-contained signaling-and-triggering devices (for example, automatic signaling-and-triggering device for firefighting sets USPAA-1 TU 4371-032-00226827-99, signaling-and-triggering device USP-101 TU 4371-004-21326303-96).

4.4 Operation principle

4.4.1 After electrical impulse supply to electrical triggering element 3 (see figure 1) an aerosol-forming charge 2 is initiated. A firefighting aerosol enters into a burning zone through disk nozzle apertures 6 and ejector 4, where, owing to a little particles' size, it stays in air-weighted condition for a long time, saving its firefighting and phlegmatizing ability.

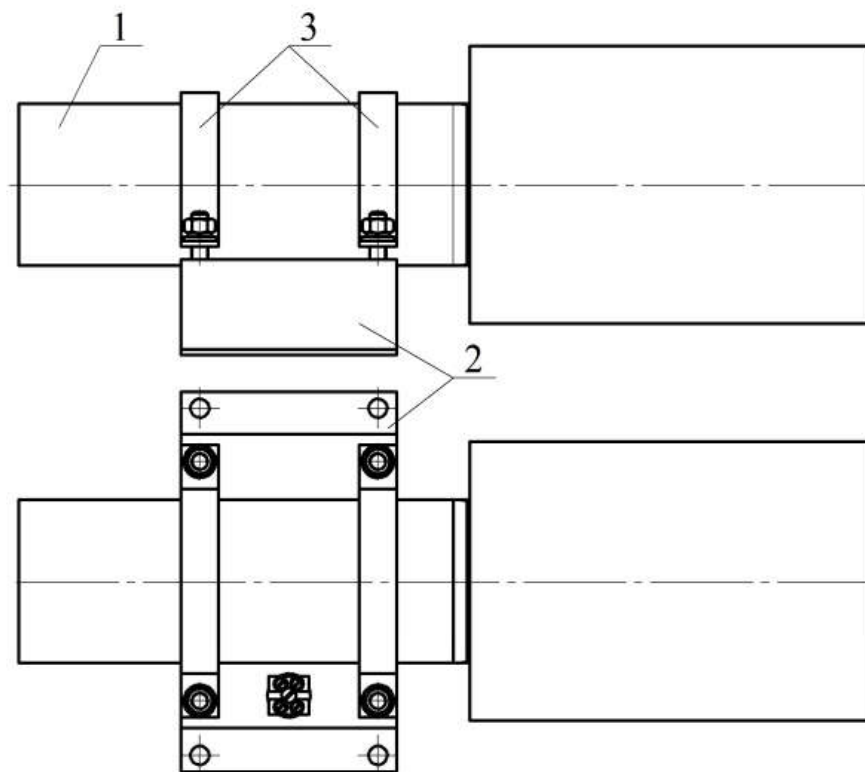


Figure 2

5 SAFETY MEASURES

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

5.2 The output ends of the electrical-triggering unit of GOA should be closed by twisting not less than twice and sealed. Seal removing and wire ends disconnection should be made right before a generator connection to a control system. Check the circuit integrity according to p. 12, Table 1 after seal removing and wire ends disconnection.

5.3 After detecting the generator defects during the operation or after its service life, the GOA should be sent to the factory-manufacturer or utilized according to p. 9.

5.4 It is not allowed:

- Keeping GOA near heat sources;
- Effecting rainfalls, direct sunlight, aggressive media, and moisture;
- Shocking GOA case;
- Dropping from the height more than 3 m;
- Dismantling GOA, alteration of its construction, usage in not-intended way;
- Operating GOA with damaged case (dents, cracks, through holes);
- Aiming GOA output aperture towards a man when operating with GOA.

5.5 It is allowed entering into premises protected after firefighting aerosol emission and fire suppression till the moment of ventilation finishing in respiratory organs isolating safety means only.

5.6 In case of signs appearance of GOA activation it is necessary to leave the premises. In case of impossibility to leave premises one should come out of high temperature zone (more than 75°C) and protect respiratory organs from aerosol particles influence with gauze or fabric bandage.

5.7 It is necessary to take into account that during GOA operation the temperature of gas-and-aerosol flow can reach 200°C within 0.2 m distance from ejector edge, and up to 75°C at a distance 0.95 m.

5.8 Fire extinguishing aerosol particles have no harmful effect on the body and clothes of people, do not cause damage to property and are easy-to-remove. After GOA actuation to remove the combustion products and fire extinguishing aerosol particles in the air it is necessary to use general ventilation. It is allowed to apply mobile ventilation sets for this purpose. The aerosol fell is removed by vacuum cleaner, dry rag by wet cleaning.

5.9 Firefighting aerosol components refer to substances III and IV class of hazard. Firefighting aerosol refers to a moderately hazard substance in terms of influence on human's health.

5.10 GOA utilization after actuation should be made by means of device details taking to scrap metal.

6 PREPARATION OF GOA TO OPERATION, LAYOUT AND MOUNTING

6.1 Insert GOA from packing; observe the integrity of a case.

6.2 Fix the generator through support 9 (see figure 1) or bracket 2 (see figure 2) on a wall, ceiling, floor or other bearing surface placed under any angle relative to floor surface. Coordinates of apertures for mounting of GOA, purposed for operation on stationary objects, are shown on Figure 3; for mounting of GOA, purposed for operation on transport vehicles, are shown on Figure 4.

6.3 GOA, purposed for operation on transport vehicles, should be placed on a bracket 2 (see figure 2) and fixed with clamps 3 using bolt-nut connections.

6.4 Calculation of necessary GOA amount in volumes protected and determination their fields of application should be made in accordance with requirements of Set of rules SP 5.13130.2009.

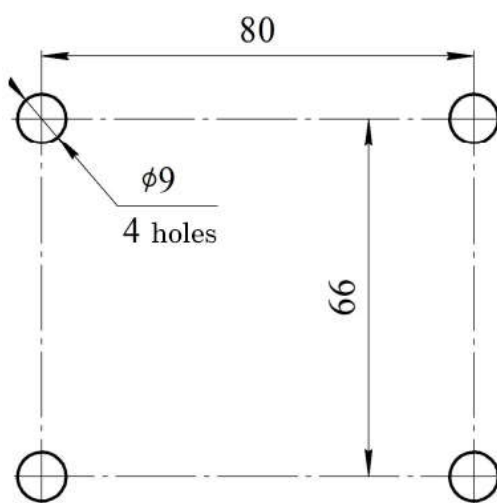


Figure 3

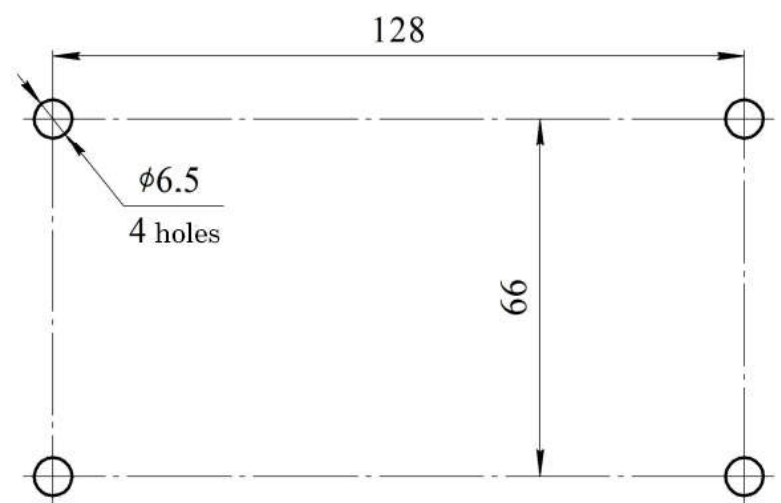


Figure 4

6.5 When installing it is not recommended to aim GOA nozzle sprayer towards places of depressurization of shield of volume protected (transom windows, jalousie, fissures, etc.)

6.6 Generators should be installed in such a way as to provide fast and uniform filling of volume protected with firefighting aerosol.

6.7 GOA should be placed evenly on square of premises if possible. Aiming to fast creation of firefighting concentration into the whole volume one should provide generators' placement in several tiers if necessary depending on the premises height and equipment layout.

6.8 Place of generator installation and nozzle apertures directions are necessary to be chosen providing the freest spreading of aerosol flow from ejector.

6.9 A possibility of access to generators installed to perform control and prophylactic works should be provided.

6.10 A simultaneous launch of all generators installed on volume protected should be provided.

7 MAINTENANCE

7.1 Special technical maintenance within the fixed service life is not required. Once a quarter examine GOA grounding, absence of visible external damages, mechanical destructions, safety of mounting, self-adhesive PVC film covering of GOA output aperture, absence of breaks and external damages of electrical triggering element circuit.

8 STORAGE AND TRANSPORTATION

8.1 GOA refers to hazardous cargoes of 9 class, 9.1 subclass, category 913; classification number is 9133 according to GOST 19433-88; UN number is 3363.

8.2 GOA transportation and storage conditions should meet the requirements of OZh-4 GOST 15150-69.

8.3 GOA 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 (Zh), GOST 23170-78.

8.4 When GOA stored and transported, conditions preventing them from mechanical damage, heating, direct sunlight, rainfalls and aggressive media should be provided.

9 GOA UTILIZATION AFTER FIXED SERVICE LIFE EXPIRATION

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

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

9.3 After launching make sure that the premises are ventilated till safe concentration or enter using isolating protective breath means, draw GOA from the clamp using thermo protective gloves, and then utilize by means of taking to scrap metal.

10 WARRANTY OF THE MANUFACTURER

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

9.2 Service life is stated and estimated from the date of GOA accepting by Quality Department of the factory-manufacturer as following:

- Not more than 12 years for GOA-II-0.35-020-020;
- Not more than 5 years for GOA-II-0.35-020-020(A), GOA(T)-II-0.35-020-020, GOA(T)-II-0.35-020-020(A);
- Not more than 4 years for GOA(T1)-II-0.35-020-020, GOA(T1)-II-0.35-020-020(A).

9.3 The factory-manufacturer is not responsible for:

- Misoperation if the owner does not observe operation rules;
- Negligent storage and transportation of GOA;
- Passport loss;
- Expiration of the service life stated from the date of GOA accepting by Quality Department of the factory-manufacturer.

11 CERTIFICATE OF ACCEPTANCE AND SALE

Firefighting aerosol generator:

- GOA-II-0.35-020-020 GOA(T)-II-0.35-020-020 GOA(T1)-II-0.35-020-020
 GOA-II-0.35-020-020(A) GOA(T)-II-0.35-020-020(A)
 GOA(T1)-II-0.35-020-020(A)

(Tick off the necessary)

Corresponds to the requirements of TU 4854-023-54572789-15 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