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Общество с ограниченной ответственностью
Системы Пожаротушения

Generator of fire extinguishing aerosol

SureFIRE EXTINGUISHER

«Doping 1A60SS»
«Doping 2A100SS» ☐
«Doping 2A200SS» ☐
«Doping 4A300SS» ☐
«Doping 4A500SS» ☐
«Doping 5A1000SS» ☐

PASSPORT & OPERATION MANUAL

ПБ04

St. Petersburg

1. DESIGNATION

1.1. Generator of fire extinguishing aerosol: Doping 1A60SS/ Doping 2A100SS/ Doping 2A200SS/ Doping 4A300SS/ Doping 4A500SS/ Doping 5A1000SS, (hereinafter referred to as «generator") with axial aerosol discharge has been designed for extinguishment of fires in enclosed area. The generators can be used as a part of fixed aerosol fire suppression systems and are suitable for the following classes of fires.

- Class A – flammable solids (extinguishment for non-smouldering fires and suppression for smouldering fires);
- Class B – flammable liquids;
- Class C- flammable Gas;
- Class E – electrical fires under voltage up to 140kV

1.2. Generators are suitable for applications in ambient air temperature range from -60°C to +95°C with the upper temperature limit no exceeding +115°C.

1.3. Main applications – engine and luggage compartments of transport vehicles (automotive, rail, marine and others), electrical enclosures, storage compartments and other enclosed spaces.

1.4. Extinguishing aerosol produced upon activation of the generator does NOT contain any ozone-depleting substances.

2. TECHNICAL PARAMETERS

Parameter, units of measure	Value					
	1A 60SS	**2A 100SS**	**2A 200SS**	**4A 300SS**	**4A 500SS**	**5A 1000SS**
1. Mass of aerosol-generating compound inside generator, kg	0,60 ±0,003	0,100 ±0,005	0,200 ±0,005	0,300 ±0,005	0,500 ±0,010	1,000 ±0,020
2. Extinguishing efficiency, kg/m^3 (GOST R53284) ,not more than: - class B fires; - class A non-smouldering fires	0,050 0,045					
3. Max protected volume of enclosed space (m^3), - class B fires - class A non-smouldering fires	1,2 1,33	2,0 2,22	4,0 4,44	6,0 6,67	10,0 11,11	20,0 22,22
4. Activation time, s, not more than	3,0					

7. MAINTENANCE

7.1. Visual observation is conducted once a month for any visual signs of damage, mechanical impacts, loose mounting fixtures, external changes, missing parts and etc.

7.2. Generators with any sign of damaged shall be checked by the manufacturer's authorised representative or returned to the manufacturer.

8. STORAGE & TRANSPORTATION

8.1. Generators should be stored within the temperature range from – 60 to +60C.

8.2. Generators can be transported by all transport means in accordance with the standard requirements to Dangerous Goods of class 4.1.

9. WARRANTY

9.1. The manufacturer guarantees the product compliance to its specification provided the conditions of transportation, storage and use as specified in the Product Manual are complied with.

9.2. Generators Service Life is 10 years.

9.3. Warranty is 2 years from the dispatch date.

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10. PRODUCT CHANGES

Due to ongoing technology development and product improvement, the manufacturer has a right to introduce changes that are not specified in this Manual, provided the changes do not reduce the product effectiveness and performance.

11. ACCEPTANCE

Generator of extinguishing aerosol
Doping _____
Batch No:_____
Manufacture Date:_____

has undergone Quality Control and been accepted as compliant to its Specification.

Signature
Date

5.2. Operation principle

5.2.1. Generator operates when voltage is applied to the electrical activator 9.

5.3.2. When voltage is applied to electrical activator 9, the aerosol-generating compound inside the generator's body undergoes a combustion reaction.

5.3.3. The products of combustion reaction are gases and micron-sized solids, which form a gas-like dispersion called "aerosol". Aerosol propels itself through a coolant 5 and discharge outlet 3 into a protected volume. Aerosol is the actual extinguishing medium.

6. SAFETY MEASURES

6.1. The personnel installing or servicing the generators shall read the current Passport and Operation Manual as well as instruction signs on the generators' body and comply with their requirements.

6.2. No personnel shall be present inside the protected enclosure during generator's operation. Entry is allowed only after the protected enclosure has been thoroughly ventilated.

6.3. Should emergency work needs to be carried out before area is ventilated, individual respiratory protective means shall be used by service personnel.

6.4 Extinguishing aerosol at the nominated design concentration presents low danger to personnel. During accidental human exposure can cause irritation to eyes and mucus membranes. Does not present any hazard to environment.

6.5. Composition of the main combustion products of the aerosol-generating compound during generator's operation.

6.5.1. Gaseous fraction in vol %. Gaseous fraction forms 45.8% from the mass of the aerosol-generating compound:

- H_2 – 0,264; - CO_2 – 15,95; - H_2O – 36,09; - CH_4 – 5,22; - N_2 - 42,46; - CO – 0,00049.

6.5.2. Solid fraction in mass %. Solid fraction forms 54.2% from the mass of the aerosol-generating compound:

- Fe_3O_4 – 0,10; - K_2CO_3 – 48,11; - C – 5,98.

6.6. Solid particles of unused aerosol that have deposited onto the open surfaces following the generator's discharge shall be removed by vacuuming, by brushing off, by using a wet rug or by washing off immediately after discharge. Personnel respiratory protective means (dust mask, respirator or similar) shall be used. If aerosol comes in contact with eyes, the eyes shall be rinsed with large amount of water.

6.7. The following is not permitted:

6.7.1. Installing generators in close proximity to heating appliances (with temperatures exceeding 100ºC);

6.7.2. Smoking or any hot work within less than 2.5 m from the generators.

5. Aerosol discharge time within the operation temperature range, s	8±2	4±1	10±2	12±2	20±3	17±3
6. Aerosol delivery rate during generator operation, kg/m^3-s						
- class B fires	0,0075	0,0150	0,0060	0,0050	0,0030	0,0035
- class A non-smouldering fires	0,0056	0,0112	0,0045	0,0037	0,0022	0,0026
7. Generator Dimensions & Mounting Dimensions (as per Fig.2) , mm, not more than						
- generator length L	150	138	195	175	250	295
- generator diameter D	45	75	75	102	102	113
- mounting dimension A	45	72	72	80	80	100
- mounting dimension B	82	123	123	130	130	150
- mounting dimension H	68	100	100	130	130	140
8. Mass of generator, kg	0,5 ±0,01	1,9 ±0,1	2,3 ±0,12	3,2 ±0,2	3,7 ±0,3	5,4 ±0,5
9. Fire safety clearance, mm, not less than						
- from generator's body;	5					
- from generator's discharge outlets	50					
10. Heat release during generator's operation, kJ, not more than	12,6	21	42	63	105	210
11. Min thermal clearance from the discharge outlets, m, not more than						
400 °C	0,08	0,05	0,15	0,2	0,3	0,3
200 °C	0,3	0,12	0,22	0,7	0,8	0,8
75 °C	0,6	0,55	0,65	1,5	2,1	2,1
12. Electrical activation parameters						
- activation current, Amp, not less than	0,4					
- electrical resistance, Ohm	3,0÷6,5					
- electrical impulse duration, ms	5÷20					
- activation voltage, V, not more than	22, 5÷28,5					
- safe monitoring current (guaranteed non-activation current), Amp, not more than	0,05					

3. DELIVERY SET

3.1. The delivery set includes (Fig 1):

- generator without electrical activator (with transportation cap…….……1;
- electrical activator……..……....1;
- assembled mounting bracket……..…….2;

● packaging..... 1;

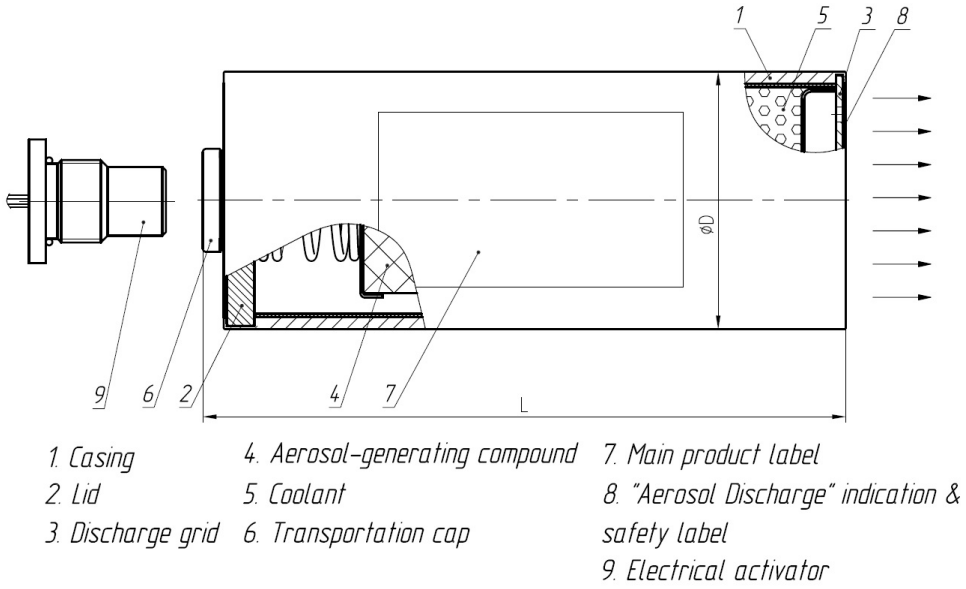

Fig.1 Generator of extinguishing aerosol – construction schematic

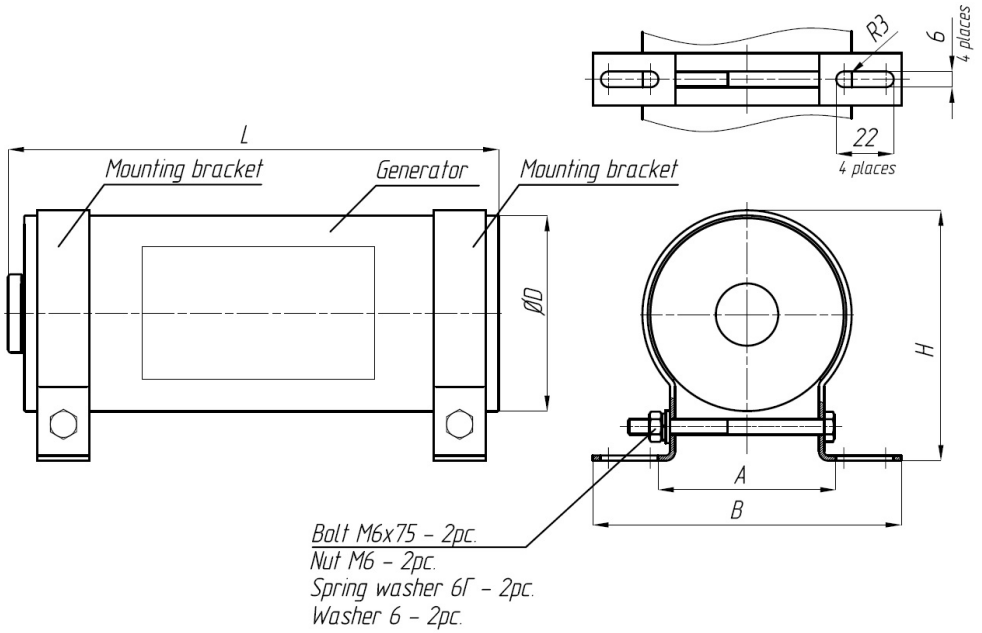

Fig. 2 Generator of extinguishing aerosol – mounting schematic

4. INSTALLATION

4.1. Generator is installed inside the protected enclosure (such as cabinet, premises, vehicle etc) on the wall or vertical mounting structure. The generator is mounted with a help of mounting brackets (Fig.2). Min thermal clearances from the discharge end-plate to the protected equipment as per clause 11 in section 2 shall be observed, however the distance should not exceed 3m. The dimensions of the mounting holes are shown in Fig 2. Mounting bolts, nuts and washers are not part of the supply and shall be provided by installer.

4.2.Generator is intended for use in total flooding application (protection of an entire enclosure volume), however to ensure the fastest achievement of the design concentration, the generator's discharge outlet can be directed towards the most likely fire zone.

4.3. During installation of the generator the min fire safety clearances shall be observed, which for flammable liquids and solids are not less than 50mm from the generator's discharge end-plate outlet and not less than 5mm from the generator's body.

5. CONSTRUCTION & OPERATION PRINCIPLE

5.1. Construction of the generator is shown in Fig.1

5.1.1. The generator consists of a metal cylindrical body 1 with two end-plates. One end-plate of the generator is equipped with a discharge outlet 3 covered by "aerosol discharge" indication label 8 (**ATTENTION! DO not REMOVE THIS LABEL).** Another end-plate is equipped with a lid 2 with a thread for inserting an electrical activator 9. During transportation a thread is covered by a transportation cap 6. Aerosol-generating compound 4 and a coolant 5 are contained inside the generator's body.

5.1.2. During installation of the generator the transportation cap 6 shall be removed and replaced with an electrical activator 9. A rubber ring (part of electrical activator supply) shall be in place to ensure a hermetic connection between the electrical activator and the generator.

5.1.3. Generator is mounted to the ceiling or the wall inside the protected enclosure with the help of mounting brackets 2.