

Obschestvo s ogranichennoj otvetstvennost' u

KALANCHA



APPROVED

4854-018-13393076-2008 UM – LU

dd July, 8, 2020

ISO 9001:2015

Module of powder fire extinguishing BiZone

MPP (N) -7,5-KD-1-3-U2

TC 4854-018-13393076-2008

USER MANUAL

4854-018-13393076-2020 UM

Certificate of Conformity No. C-RU.IIB97.B.00721

Valid until 09.05.2022.



EAC

Before starting installation work on the product, please read and retain this operating manual.

Sergiev Posad

2020

Content

1. APPLICATION	4
2. TECHNICAL PARAMETERS	5
3. STRUCTURE OF THE MODULE.....	6
4. DESIGN AND OPERATION	6
5. SAFETY MEASURES	7
6. PREPARATION OF THE MODULE FOR INSTALLATION	8
7. INSTALLATION OF THE MODULE.....	9
8. MAINTENANCE OF THE MODULE.....	10
9. WARRANTY OBLIGATIONS.....	11
10. MARKING	11
11. DISPOSAL	12
12. DISMANTLING THE MODULE.....	12
Appendix A (mandatory). Information on the procedure for calculating the number of modules	13
Appendix B (mandatory). Information about non-ferrous metals and alloys contained in the module	16
Appendix C (reference). Recommendations for using the module to protect vehicles.....	17

This user manual (UM) is intended to study the device, the principle of operation, installation, maintenance, routine repair, storage, transportation and disposal of the powder fire extinguishing module of general industrial design MPP(N)-7.5-KD-1-3-U2 TC 4854-018-13393076-2008 (hereinafter referred to as **the module**).

Qualified staff trained in design, operation principles and technical maintenance rules OR trained according to “Industrial safety rules for hazardous production facilities with pressurized equipment” is allowed to work with the module.

The staff dealing with the electrical equipment should be additionally allowed to work with the electrical installations of up to 1000W and follow the requirements of the existing Wiring regulation, Safety regulations for the operation of consumers' power plants, User Safety Rules for Operating Electrical Equipment.

Any questions regarding the information provided in this manual should be addressed to:

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1. APPLICATION

1.1 The module is designed for volumetric extinguishing, local extinguishing by volume and extinguishing by area when protecting premises and outdoor installations.

The module is used in modular and centralized automatic fire extinguishing installations.

1.2 The module is applied for the extinguishing fires of classes:

- **A** – combustion of solids;
- **B** – combustion of liquids;
- **C** – combustion of gaseous substances;
- live electrical equipment.

The module ensures the total flooding fire extinguishing of the fire classes A, B, C and live electrical equipment in the premises of the following volume:

$V = 60 \text{ m}^3$ for class A fires;

$V = 45 \text{ m}^3$ for class B fires.

1.3 The fire-extinguishing powder should be supplied from the module through a pipeline with an inner diameter of $16 \pm 1 \text{ mm}$ and a length of no more than 12 m with a maximum number of turns under 900 - 3 (three). The piping must be secured with brackets before every turn and spray. The cross-section of the pipeline may vary by no more than $\pm 10\%$ throughout.

1.4 The pipeline can be made of steel pipes in accordance with GOST 8732-78, GOST 8734-75, high-pressure metal hoses GOST R 55019-2012, GOST 21744-83, high-pressure hoses GOST 25452-2017, GOST 6286-2017 and copper pipelines and meet the requirements of the joint venture 5.13130.2009 (clauses 9.2.10, 9.2.11).

1.5 The module is not intended to extinguish the burning substances that can be incinerated without air access and to extinguish metals, alloys and organometallic compounds.

1.6 In design, engineering and technological documentation as well as in the purchase orders the modules are indicated as:

MPP (N)-7.5-KD-1-3-U2 TC 4854-018-13393076-2008.

2. TECHNICAL PARAMETERS

2.1 Basic technical parameters of the modules are indicated in Table 1.

Table 1. Technical parameters

#	Parameter	Value
1	Protected volume, m ³ class A class B	60 45
2	Powder tank capacity, l	7,5
3	Weight of charged cylinder with CTD, kg	25±1,0
4	Amount of powder "Phoenix ABC-70" Specs (TC) 2149-005- 18215408-00, kg	6,2±0,2
5	Mass of used working gas - liquid Carbon dioxide GOST 8050-85, kg, min	2,35±0,1
6	Dry air mass (nitrogen), kg	0,18±0,02
7	Range of operating temperatures, °C	from – 50 to + 50
8	Working pressure in the cylinder at a temperature of 21 °C, MPa (kgf / cm ²)	10 (100)
9	Duration of powder discharge, s, not over	5
10	Response time, s, max	1
11	Mass of powder residue after the module activation, %, max	15
12	Parameters of the constant electrical current required to trigger the module (cartridge actuated device): - operating current, A - voltage, V - electrical resistance, Ω - pulsing time, max, s	0,5 1,4 – 4,5 0,02
13	Safe current circuit control, A - checking time for max. 5 minutes. - check without any time limit	0,05 0,005
14	Dimensions, mm: width height without nozzle length	180 830 180
15	Degree of protection according to GOST Standard 14254-96	IP54
16	Climatic modification according to GOST Standard 15150	U2
17	Storage Condition Group	5
18	Service lifetime, years	20
19	Fog variation factor, K₁	1,0
20	Safety factor taking into account the shading zones of the ignition, K₂	1,0
21	Weight of the module on the bracket, kg	26±1,3
22	Module weight in the cabinet, kg	35±1,75
23	Mass of the bracket MPP (N) -7.5-01-50-00, kg	2,4±0,3
24	Weight of the cabinet MPP (N) -7.5-01-60-00, kg	11,0±0,75

3. STRUCTURE OF THE MODULE

- 3.1 The powder fire extinguishing module (Figure 1) consists of the following main components: 1 - a cylinder with extinguishing powder; 2 – closure-trigger device (hereinafter – CTD); 3 - pipeline for supplying fire extinguishing powder; 4 - nozzle.

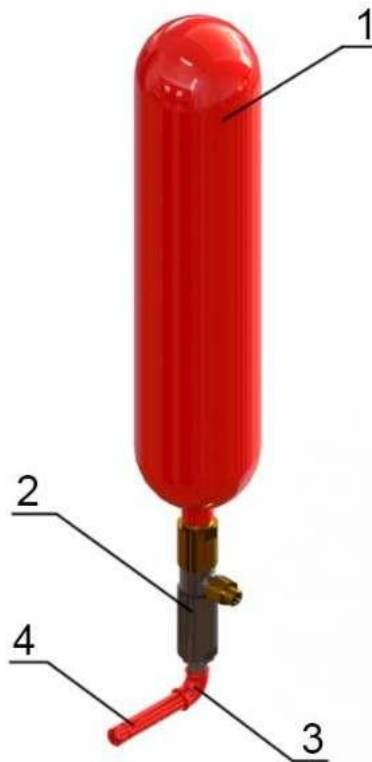


Figure 1 - Module MPP (N)-7.5-KD-1-3-U2

- 3.2 The module uses two types of nozzles for spraying fire extinguishing powder:
- nozzle, drawing MPP (n) –7.5–01–10–00 for volumetric extinguishing, Figure A.4;
 - nozzle, drawing FNPR.NSD.15-01.000 for tunnels Figure A.5.

4. DESIGN AND OPERATION

4.1 In the event of a fire, the signal from the control and starting device goes to the UP-3M electric start device. When the electric start device is triggered, the punch installed inside the CTD, under the action of the gases formed when the UP-3M is triggered, breaks the membrane in the siphon body. The fire extinguishing powder (hereinafter referred to as the agent) from the cylinder through the CTD, the agent supply line and the nozzle enters the protected area.

4.2 The high pressure cylinder for a working pressure of at least 19.6 MPa is made of alloy steel. The cylinders are manufactured in accordance with TR CU 032/2013 "On the safety of equipment operating under excess pressure" Each cylinder has a shock-applied technical information indicating the working pressure, volume and weight of the cylinder.

4.3 The module uses the Phoenix ABC-70 fire-extinguishing powder, which is under pressure of carbon dioxide and dried air.

4.4 CTD of general industrial design is intended for production of agent. CTD (Figure 2) consists of the following main units: 1 - siphon; 2 - locking device, consisting of a body, a membrane and sealing rings; 3 - a starting device consisting of a body, a punch, a spring, a trap and an adapter; 4 - electric start device, consisting of a body, UP-3M, a rubber seal and a clamp.

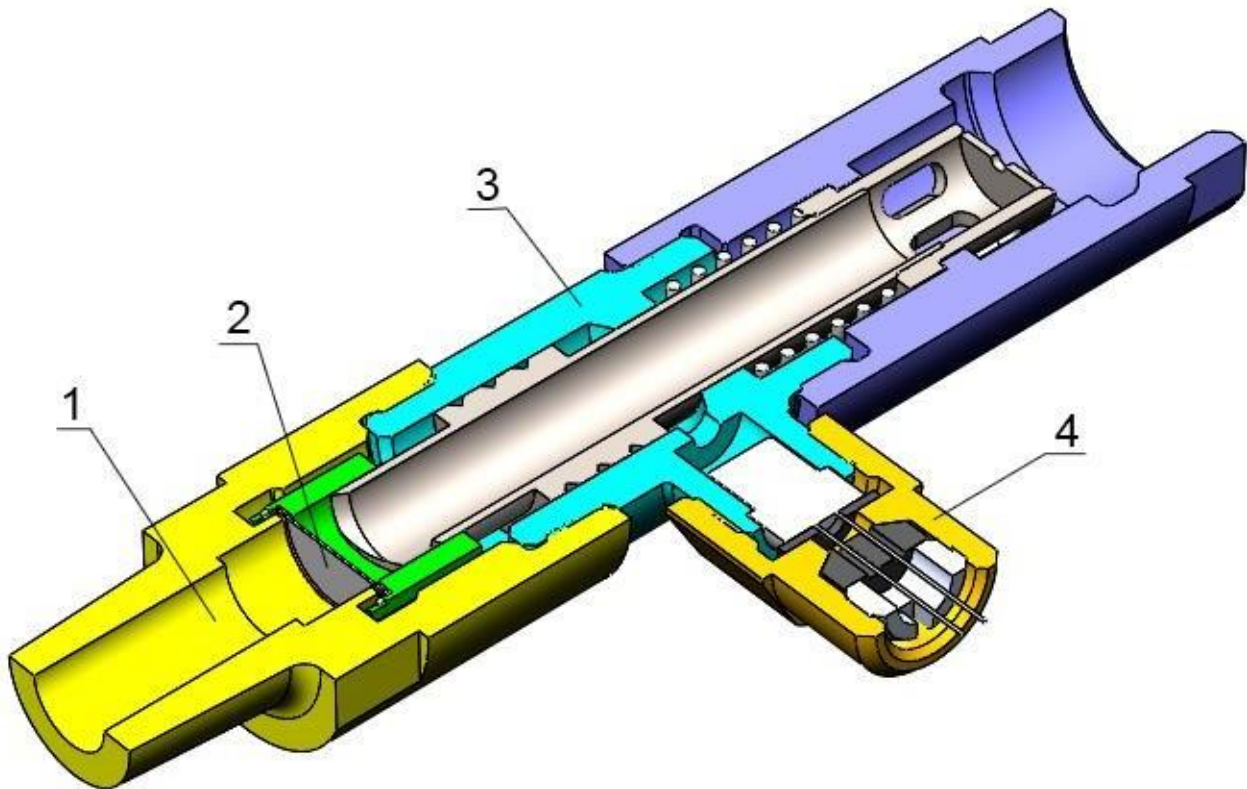


Figure 2 - Closure and trigger device for general industrial purposes.

45 The module is installed using the MPP (n) -7.5-01-50-00 bracket or the MPP (n)-7.5-01-60-00 module cabinet.

46 The agent is supplied to the protected area using a fire extinguishing powder spray nozzle.

5. SAFETY MEASURES

5.1 All work with the module must be carried out in compliance with safety requirements, the current “Electrical Installation Code” (EIC), as well as the “Rules for Design and Safe Operation of Pressure Vessels” (Federal Norms and Rules in the Field of Industrial Safety, “Regulations of industrial safety for hazardous facilities using equipment working under excess pressure”).

5.2 Persons who are at least 18 years old, who have studied the device, the principle of operation and the user manual, who have undergone special instruction and training in safe working methods, tested knowledge of safety rules in accordance with their position and with respect to the work performed, should carry out work with the module.

5.3 All work related to the installation, dismantling and maintenance of the modules must be carried out by at least two persons.

5.4 The module must be disconnected from the startup system during routine maintenance.

5.5 The module is not allowed to fall and hit.

5.6 The modules belong to class 1 according to GOST 12.2.007.0-75 by the method of protecting a person from electric shock.

5.7 After the module has been triggered, you can enter the room after the powder has completely settled. The room is cleaned as follows:

- the bulk of the powder is removed by dry cleaning (sweeping with a brush);
- the remaining powder is removed with a vacuum cleaner;
- at the final stage of powder removal, wet cleaning (with a slightly dampened cloth) can be used, excluding electrical equipment under voltage.

5.8 Personal protective equipment must be used when cleaning powder:

- respirators for respiratory organs;
- rubber gloves for the skin of the hands;
- safety glasses for the organs of vision.

5.9 When designing, maintaining and operating a fire extinguishing system (module), it is always necessary to take into account the possibility of a dangerous physical influence on a person from the agent jets coming out of the sprayer.

Attention!

- **The thrust force when the agent flows out of the spray nozzle is 80 kgf.**
- **The speed of the jet at the nozzle exit, depending on the ambient temperature, is 70 - 80 m / s.**
- **When the module is in operation, the length of the agent stream exceeds 6 m.**

5.10 **IT IS FORBIDDEN:**

- **OPERATE THE MODULE WITHOUT CARRYING OUT MAINTENANCE;**
- **OPERATE THE MODULE AFTER THE PERIOD OF CYLINDER REVISION EXPIRED;**
- **CARRY OUT MAINTENANCE OF THE MODULE WITH THE AUTOMATIC START SYSTEM ON;**
- **DISASSEMBLE THE MEMBRANE ASSEMBLY;**
- **DISASSEMBLY START-UP DEVICE;**
- **DISASSEMBLY ELECTRIC START UP-3M DEVICE;**
- **OPERATE THE MODULES WITH MECHANICAL DAMAGE;**
- **PERFORM ANY FIRE TESTS WITHOUT THE AGREEMENT OR PRESENCE OF A REPRESENTATIVE OF THE MANUFACTURER.**

6. PREPARATION OF THE MODULE FOR INSTALLATION

6.1 Placement and maintenance of the module at the facility should be carried out in accordance with the requirements of **GOST 12.4.009-83 “Occupational safety standards system. Fire-fighting equipment for protection of units. Basic types. Location and maintenance”**.

6.2 Installation of the module and the location of the nozzle, if necessary, with the supply pipe to the extinguishing object, electrical docking of the module should be carried out in accordance with the project for the automatic installation of fire extinguishing the object, developed by a specialized organization.

6.3 It is allowed to use pipes with an internal diameter of 16 ± 1 mm and a length of no more than 12 m as pipelines with a maximum number of 90° bends - 3 (three). The cross-section of the pipeline can vary by no more than $\pm 10\%$ throughout. The pipeline can be made of steel pipes according to GOST 8732-78, 8734-75, high-pressure metal hoses GOST R 55019-2012, GOST 21744-83, high-pressure hoses GOST 25452-2017, GOST 6286-2017 and copper pipelines and comply with the requirements of SP 5.13130.2009 (cl. 9.2.10, 9.2.11).

6.4 The module is transported to the installation site in accordance with the rules for the carriage of goods in force for this type of transport.

6.5 Storage and transportation conditions must correspond to storage conditions group 5 according to GOST 15150-69 (sheds or rooms where fluctuations in temperature and humidity do not significantly differ from fluctuations in the open air). Outdoor storage is prohibited.

6.6 The module can be placed:

- in a protected room;
- in the next room;
- outside the premises in accordance with the design

6.7 Install the module in places that exclude the possibility of mechanical damage, as well as at a distance of at least **1.5 m** (in the absence of thermal insulation) from heating devices.

6.8 Take the module out of the package, make a visual inspection. The presence of dents, traces of blows, etc. is not allowed.

6.9 Before installation on site, it is necessary to weigh the charged CTD cylinder. Record the mass of the charged cylinder with the CTD in table 2 of the passport 4854-018-13393076-2008 PS. When the mass of a charged cylinder with a CTD is reduced by 0.12 kg in comparison with that indicated in the section "Certificate of Acceptance", it must be sent for recharge. Weighing should be performed on a balance of medium accuracy with a weighing limit of up to 60 kg.

7. INSTALLATION OF THE MODULE

7.1 Loosen the clamp bolts and remove the charged cylinder from the CTD.

7.2 Fasten the cylinder mounting bracket / module cabinet body to the wall using M8x65 anchor bolts.

The module is installed vertically. Tilting or installing horizontally is not allowed.

7.3 Install the module back into the bracket / cabinet. Tighten the clamp bolts.

7.4 Connect a 90 ° elbow to the CTD, then, in accordance with the design documentation, the fire extinguishing powder spray nozzles (for volumetric extinguishing or extinguishing the tunnel) or the fire extinguishing powder supply pipeline. If a pipeline is used, connect the nozzles for spraying fire extinguishing powder to its end. Set the location of the nozzle slots in accordance with the project documentation and the inscription on the nameplate. "The direction of the slots."

7.5 The minimum distance between the spray nozzle and the ceiling of the room is at least 100 mm.

7.6 When lengthening the fire extinguishing powder supply pipeline, fasten the nozzle and the pipeline with clamps to the wall of the room. Place the clamps at intervals of no more than 2 m. In this case, it is necessary to fasten the pipeline with brackets before each turn and the nozzle.

7.7 Check the resistance of the UP-3M electric starter circuit in the terminal block of the switching box. The resistance of the circuit should be between 1.4 and 4.5 ohms. Check the starting circuit for a short to the module case. The check should be carried out with a device that provides a check current of no more than 0.05 A for no more than 5 minutes.

7.8 Connect the wires of the starting circuit to the terminal block of the switching box in accordance with Figure 3.

Attention! When connecting the module, the starting circuit cable must be de-energized. The connection of the starting circuit line to the fire detection equipment must be made after all installation work has been completed.

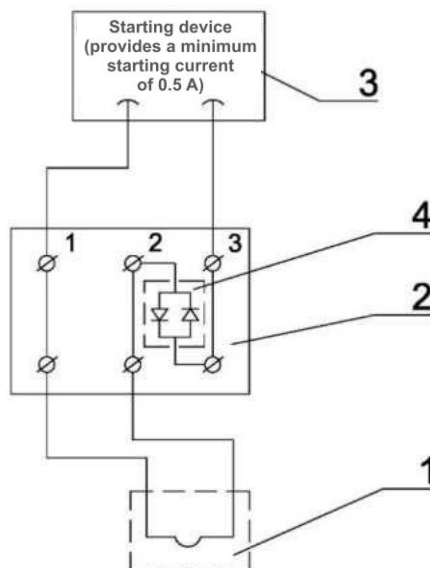


Figure 3 - Recommended connection diagram of the starting circuit.

1 - electric starting device UP-3M; 2 - terminal block of the switching box; 3 - starting automation unit; 4 - starting circuit integrity monitoring device (MPN)

7.9 For the module in the cabinet, attach the cover to the cabinet body.

7.10 Install the module on vehicles in accordance with Appendix B.

8. MAINTENANCE OF THE MODULE.

ATTENTION!

MAINTENANCE OF THE MODULES, RECHARGING OF THE CYLINDER WITH CARBON DIOXIDE AND POWDER, ASSEMBLY AND DISASSEMBLY OF THE MODULE, ARE CARRIED OUT BY ORGANIZATIONS THAT HAVE THE PERMISSION OF THE MODULE MANUFACTURER AND THE LICENSE OF THE MINISTRY OF EMERGENCY SITUATIONS OF RUSSIA FOR THIS TYPE OF ACTIVITY, APPROPRIATE EQUIPMENT AND TRAINED PERSONNEL, WHILE USING PARTS AND FIRE EXTINGUISHING POWDER RECOMMENDED BY THE MANUFACTURER MODULE.

8.1 Scheduled maintenance.

8.1.1 To maintain the functionality of the module after putting it into operation, the following types of maintenance (M) are provided:

- M-1, once a month;
- M-2, once a quarter;
- M-3, once a year;
- M-4, every 5 years.

8.1.2 8.1.2 Maintenance work should be carried out in full and on time, in accordance with the technical documentation for the module and fire detection equipment. Record all performed routine maintenance in the maintenance log, with a mandatory mark of the identified deficiencies, the work performed, the date of the work, the signature of the person who carried out the work.

8.1.3 8.1.3 The scope of maintenance is shown in Table 2.

8.1.4 When carrying out routine maintenance according to items 1 and 2 of Table 2 and detecting mechanical damage, notify the service organization.

8.1.5 If damage is found to the paintwork, clean and touch up the damaged areas.

8.1.6 Routine work according to clause 3 of Table 2 is carried out by the service organization.

8.1.7 To carry out work according to clause 4 of Table 2, the service organization dismantles the module, which has served for 5 years, and sends it to the manufacturer or an organization that has the right to recharge and repair the modules. Install a new module in place of the dismantled module.

Table 2 - Scope of work during maintenance

#	Name of works	M-1	M-2	M-3	M-4
1	Visual inspection of the module for damage to the elements of the module, paintwork and fixing the module with anchor bolts	+	+	+	+
2	Visual inspection of the pipeline (if any) for damage to pipeline elements, paintwork and pipeline fasteners	-	+	+	+
3	Checking the performance of fire detection equipment	-	+	+	+
4	Refilling and inspection of the cylinder	-	-	-	+

9. WARRANTY OBLIGATIONS

9.1 The manufacturer guarantees the compliance of the module with the requirements of the technical specifications, subject to the conditions of storage, transportation, installation and operation.

9.2 The warranty period of the module is 2 years from the date of acceptance of the module by the technical control department of the manufacturer.

9.3 The service life of the module is 20 years.

9.4 The maximum number of module recharges without replacing the CTD is 5 times. With the replacement of the CTD is not limited.

9.5 If the maximum storage and operating temperature (determined by the thermal indicator label) is exceeded and / or the seal marks are violated, the warranty will expire.

9.6 The manufacturer reserves the right to make changes in the design of the module that do not impair the technical and consumer characteristics of the module.

10. MARKING

The markings applied to the modules include the following data:

- trademark or name of the manufacturer;
- designation of the module according to clause 1.6 of this OM;
- pictograms indicating fire classes in accordance with GOST 27331-87;
- warning "Protect from heating and direct sunlight";
- range of values of ambient temperatures during operation: $-50^{\circ}\text{C} \div + 50^{\circ}\text{C}$;
- frequency of checks;
- weight and grade of extinguishing powder;
- total mass of the MPP;
- factory number;
- month and year of manufacture.

11. DISPOSAL

- 11.1 The module is disposed of in accordance with the requirements established by the consumer.
- 11.2 During disposal, disassemble the module.
- 11.3 The UP-3M electric starter device, after operation, is disposed of in accordance with the requirements established by the consumer.
- 11.4 The UP-3M electric starter device, which has received damage or has failed, must be returned to the manufacturer.
- 11.5 Disposal of waste fire extinguishing powder is carried out in accordance with the instructions "Utilization and regeneration of fire extinguishing powders" M; VNIPO, 1988, 25 p. and "Code of fire safety rules SP 9.13190.2009", section 4.6, p. 4.6.5, 4.6.6.
- 11.6 A cylinder for carbon dioxide must be disposed of after meeting the requirements of paragraph 506 "Industrial Safety Rules for Hazardous Production Facilities Using Overpressure Equipment".
- 11.7 Before disposal, carbon dioxide must be removed from the cylinder and the siphon dismantled, then the cylinder is rendered unusable by notching the neck thread, cutting the body or drilling a hole in the body.

12. DISMANTLING THE MODULE

- 12.1 Fired modules and modules that have been in service for 5 years are dismantled for maintenance.
- 12.2 Dismantle the module in the following sequence:
 - 12.2.1 De-energize the starting circuit cable of the control unit of the automatic fire extinguishing system.
 - 12.2.2 Disconnect the cable of the starting circuit of the control unit of the automatic fire extinguishing system from the module.
 - 12.2.3 Disconnect the powder feed line or spray nozzles from the module.
 - 12.2.4 Remove the module from the installation site and send it to the manufacturer's factory or an organization authorized to recharge and repair modules.

Appendix A (mandatory). Information on the procedure for calculating the number of modules

When designing automatic powder fire extinguishing installations, one should be guided by the Code of Rules SP 5.13130.2009 “Automatic fire alarm and fire extinguishing installations. Norms and design rules ”Appendix I. General provisions for the calculation of modular-type powder fire extinguishing installations.

A.1 Geometric parameters of the volume protected by one module.

A.1.1 The powder fire extinguishing module is a volumetric fire extinguishing agent and protects the volume shown in Figures A.1, A.2 and A.3.

A.1.2 When the length of the pipeline from the module to the spray nozzle is less than 12 m, the geometric parameters of the protected volume are selected according to Tables A.1 and A.2.

Extinguishing volume $V = B * L * H$.

Table A.1. Spray geometry of the room extinguishing module.

	Class A	Class B
Maximum extinguishing volume V_{max} , m ³	60	45
Maximum values at V_{max} , m		
H_{max}	4.0	4.0
L_{max}	7.3	6.0
B_{max}	5.0	5.0

A.1.3 To extinguish the premises, use the slotted nozzle MPP (n) –7.5–01–10–00 (Figure A.4).

Table A.2. Spray geometry of the tunnel extinguishing module.

	Class A	Class B
Maximum extinguishing volume V_{max} , m ³	45	30
Maximum values at V_{max} , m		
H_{max}	2.8	2.5
L_{max}	10.0	9.0
B_{max}	2.4	2.0

A.1.4 To extinguish the tunnel, use the nozzle for tunnels FNPR.NSD.15-01.000 (Figure A.5).

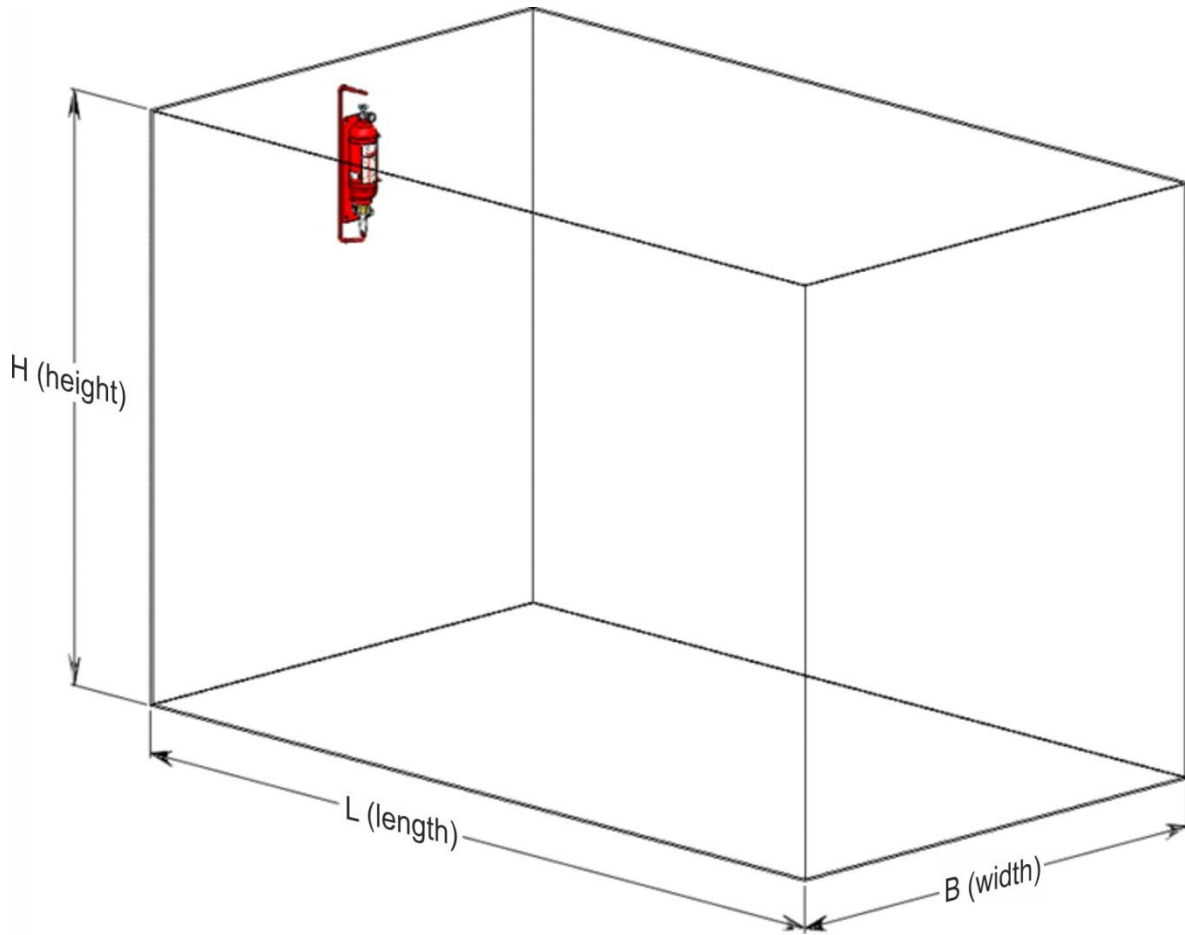


Figure A.1 - Scheme of spraying agent for volumetric fire extinguishing

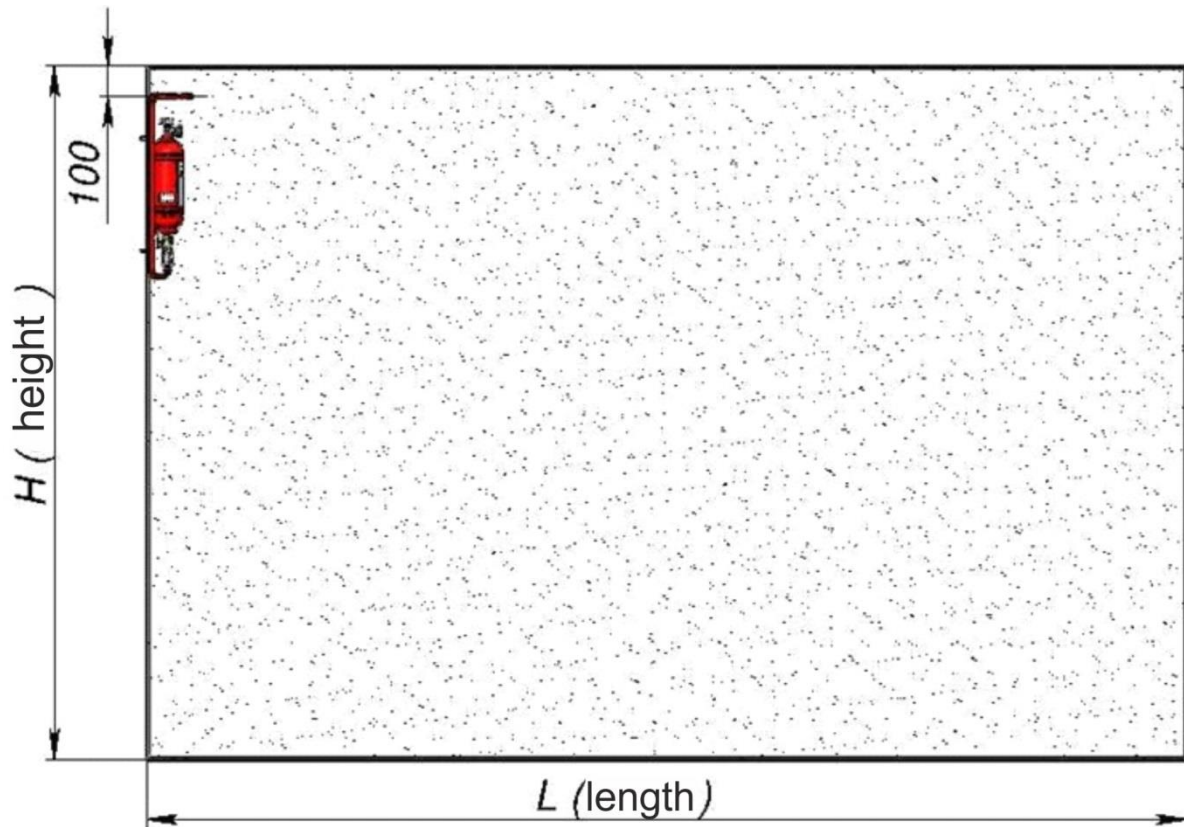
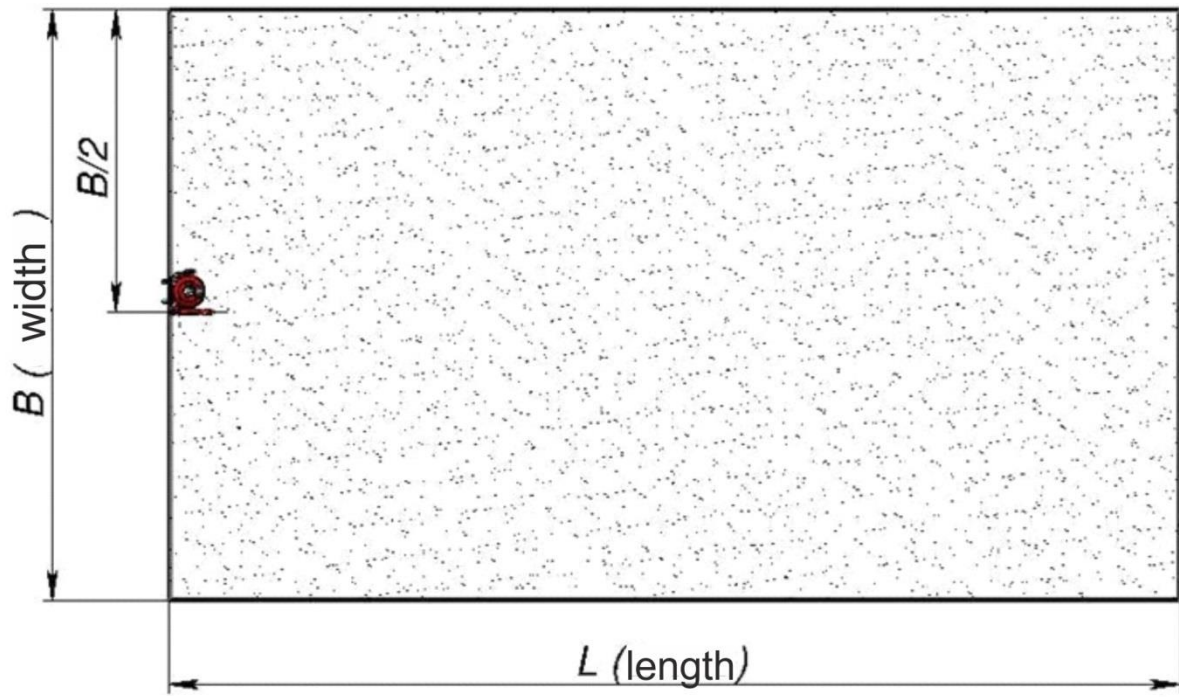


Figure A.2 - Scheme of spraying an agent during volumetric fire extinguishing. Side view.



Figure

A.3 - Scheme of spraying an agent during volumetric fire extinguishing. View from above.

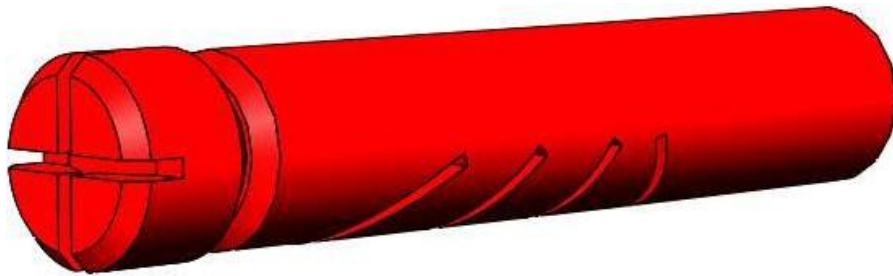


Figure A.4 - Slotted nozzle MPP (n) -7.5-01-10-00.

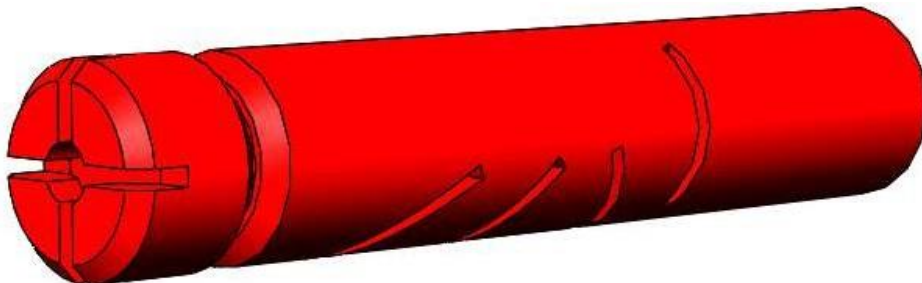


Figure A.5 - Nozzles for tunnels FNPR.NSD.15-01.000.

Appendix B (mandatory). Information about non-ferrous metals and alloys contained in the module.

Grade and (or) assortment of non-ferrous metal or alloy	Weight, kg	Location of components parts of the module containing non-ferrous metals
Aluminum and aluminum alloys		
Alloy AK9M2 GOST 1583-93	0.14	Launcher housing (CTD)
Copper and copper-based alloys		
Sheet M3 GOST 1173-2006	0.006	Gasket (valve)
Sheet M3 GOST 1173-2006	0.005	Gasket (valve)
Sheet M3 GOST 1173-2006	0.005	Washer (CTD)
Bar LS 59-1 GOST 2060-2006	0.09	Nut (CTD)
Bar LS 59-1 GOST 2060-2006	0.52	Siphon body (CTD)
Tape BROF 6,5-0,15 GOST 1761-2016	0.005	Membrane (CTD)

Appendix C (reference). Recommendations for using the module to protect vehicles.

C.1 General information

C.1.1 The module is recommended to be used to protect the engine compartment and vehicle wheels. (Figure C.1)

C.1.2 The module operates in manual mode.

C.1.3 The information specified in this application is for informational purposes only. The solution for the protection of vehicles is developed individually, taking into account the design features of the car model and after agreeing on the technical specifications with the customer.

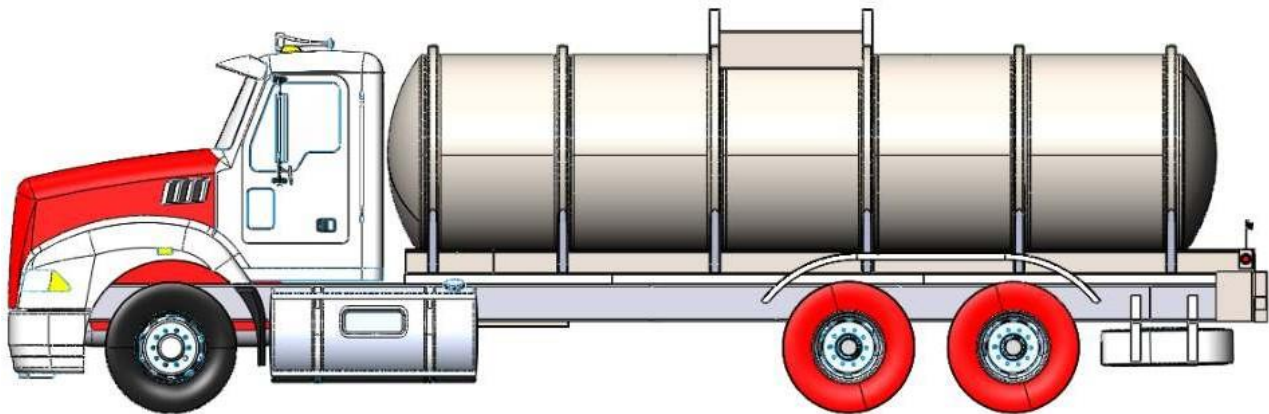


Figure C.1 Extinguishing areas.

C.2 Engine compartment fire extinguishing system.

C.2.1 Equipment:

1	Fire extinguishing module in the cabinet	1 pc
2	Nozzle MPP (n) - 7.5 - 01 - 10 - 00	1 pc
3	Flexible pipe for supply of extinguishing agent *	1 pc
4	Starting device	1 pc
5	Socket for cable	1 pc

Note: * The length depends on the vehicle model and the installation location of the module.

C.2.2 The module can be mounted on the rear side of the cab, the choice of location and mounting method is individual for each car model. **The module is installed vertically. Tilting or installing horizontally is not allowed.**

C.2.3 Connect a flexible pipeline for supplying fire extinguishing powder to the CTD. Next, connect the spray nozzle to the pipeline. Set the location of the slots to the side of the protected space according to the inscription on the nameplate "Direction of the slots". The piping and the spray nozzle are secured with hose clamps, and the pipeline must be secured before each turn and the spray nozzle.

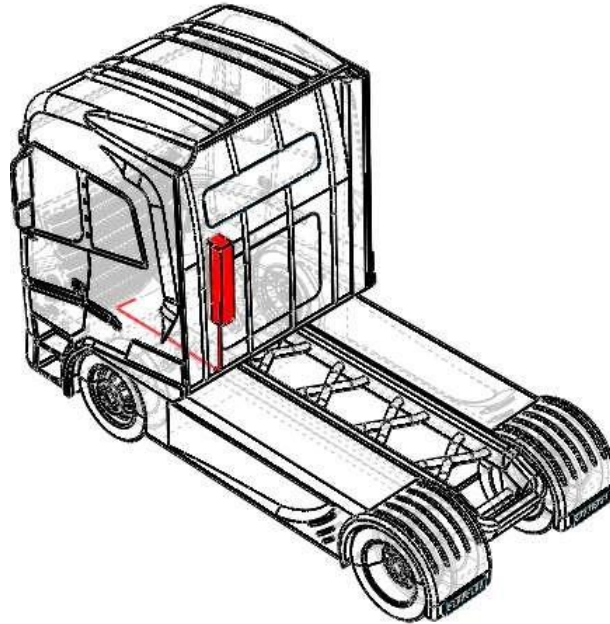


Figure C.2 - Installation diagram of the system to protect the engine compartment.

C.2.4 Mount the starter on the dashboard of the car; the choice of location is individual for each car model. Connect the module to the vehicle on-board network through the connector according to Figures C.3 and C.4 and Table C.1.

Attention! When connecting the module, the starting circuit cable must be de-energized. The starting circuit line must be connected after all installation work has been completed.

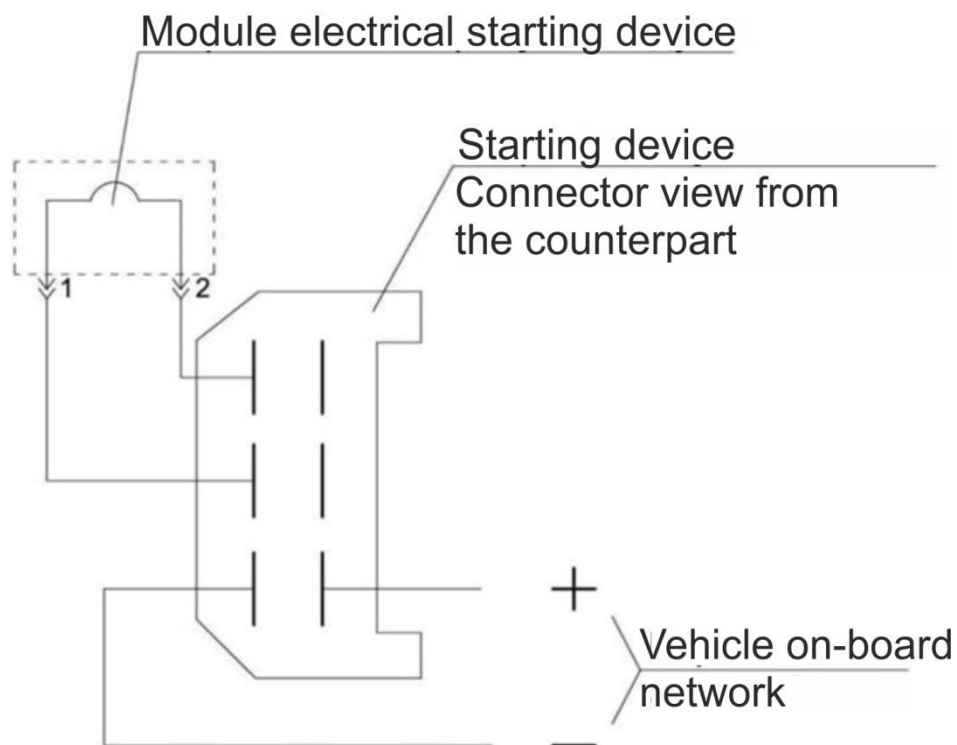


Figure C.3 - Recommended module wiring diagram.

Table C.1 - Connection table

Connection socket, pin number	Starting circuit
1	Nutrition
2	Nutrition
3	Not connected
4	Not connected

Connection wire - flexible, cross-section not less than 1 sq. mm, insulation - fire resistant.

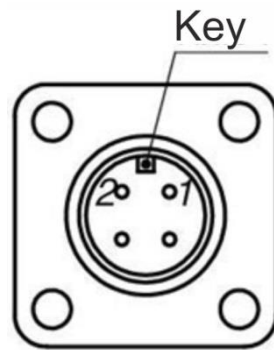


Figure C.4 - View of the module connection connector (plug).

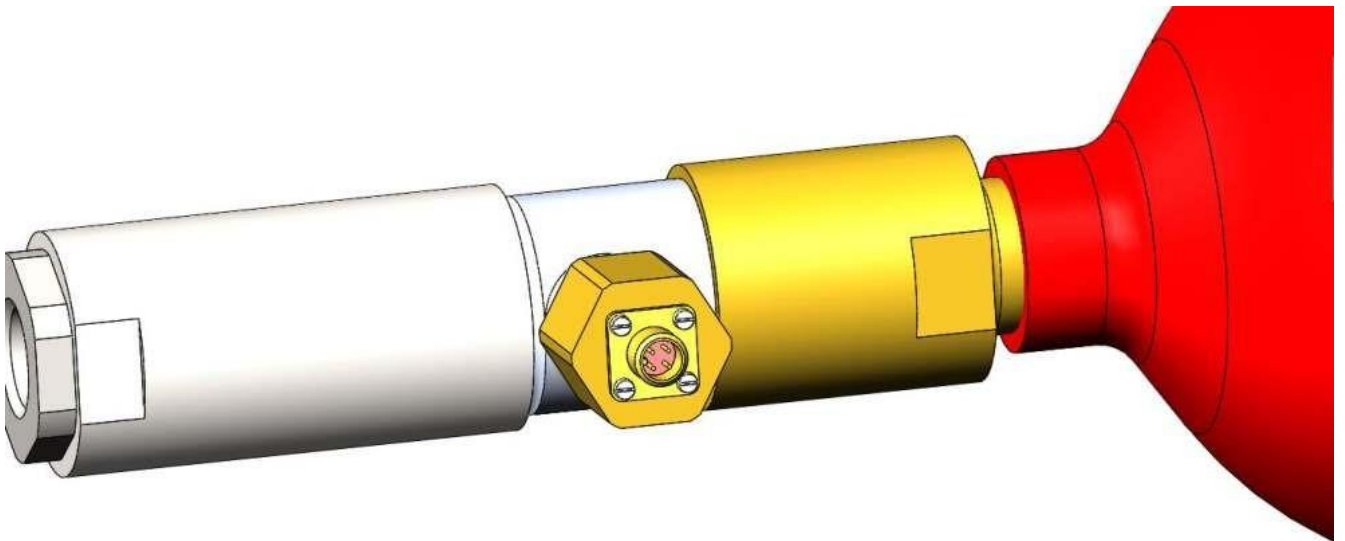


Figure C.5 - External view of the module connection unit for vehicles.

C.3 Wheel extinguishing system

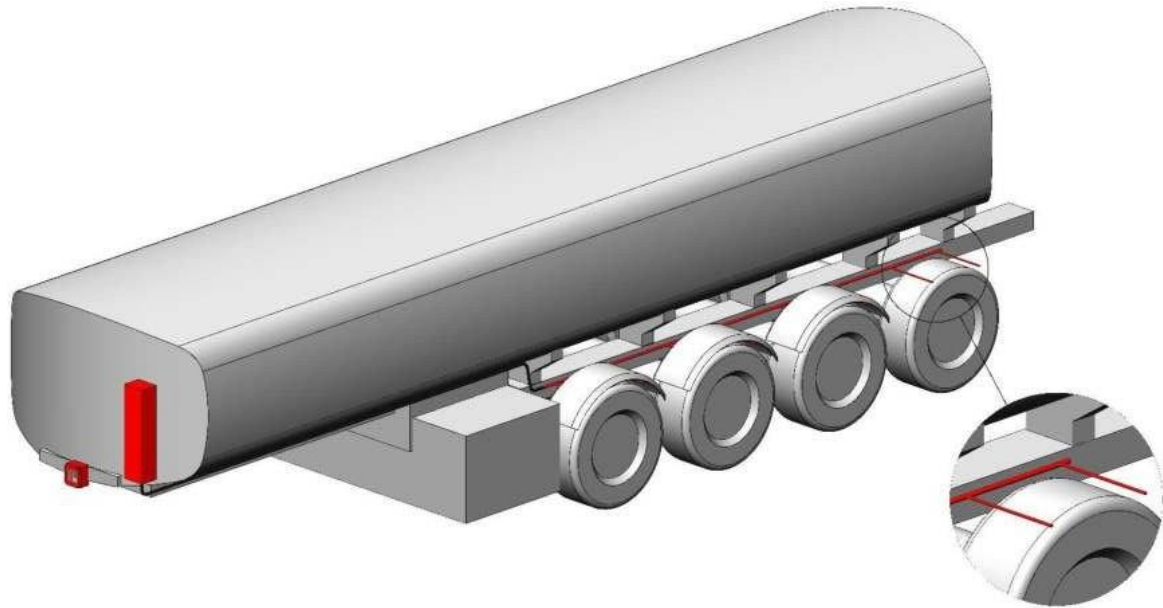


Figure C.4 - Installation diagram for vehicle wheel protection

C.3.1 Equipment:

1	Fire extinguishing module in the cabinet	2 pcs
2	Pipeline with spray nozzles, welded *	2 pcs
3	Hose RVD20 - 2SN BSP3 / 4 *	2 pcs
4	Starting device	2 pcs
5	Socket for cable	2 pcs
6	Hinged block	1 pc

Note: * Configuration and length depend on the vehicle model and the location of the modules.

C.3.2 One module is designed to protect from 3 to 4 wheels on one side of the trailer. The module can be mounted on a surface that can withstand a load of 5 times the mass of the module. The choice of location and method of attachment is individual for each model of the trailer. **Install the module vertically. Tilting or installing horizontally is not allowed.**

C.3.3 Install the piping with spray nozzles above the protected wheels (Figure C.5). There should be 2 nozzles above each wheel (Figures C.5 and C.6). The method of attaching the piping and spray nozzles is individual for each trailer model.

C.3.4 Connect the CTD and the agent supply pipeline using RVD20 (high pressure hose Dn20).

C.3.5 Mount the starter in the hinged block. Connect the module to the vehicle on-board network through the connector according to Figures C.3 and C.4 and Table C.1. The installation location of the hinged unit is individual for each car model and is selected taking into account quick access in case of fire.

Attention! When connecting the module, the starting circuit cable must be de-energized. The starting circuit line must be connected after all installation work has been completed.

C.4 Maintenance.

C.4.1 Carry out scheduled maintenance of the module in accordance with clause 8 of this Manual..

C.4.2 Before each ride, after connecting the power, make sure that the green LED on the starter is on. This indicates the serviceability of the module's electrical starter and the connecting lines of the launch. If the continuity of the circuit is violated, the green LED goes out and the red LED turns on, warning of a malfunction in the fire extinguishing system. If a malfunction is found, contact the service organization.

C.5 Actions of the driver of vehicles in the event of a fire.

C.5.1 In the event of a fire in the protected area, the driver determines the presence of fire by external signs (black smoke). The driver must completely stop the vehicle, apply the brake and turn off the engine.

C.5.2 If a fire occurs in the engine compartment, the driver pulls out the safety ring, presses the button for manual start of the system and leaves the car.

C.5.3 In the event of a wheel fire, the driver leaves the vehicle cab, breaks the protective glass of the hinged block installed on the trailer, pulls out the safety ring and presses the system start button on the combustion side.

C.5.4 After activating the fire extinguishing system, the driver moves to a safe distance.