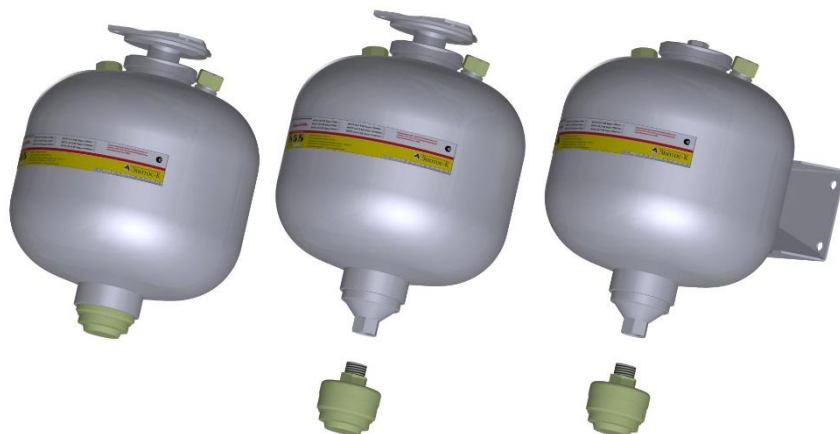


# ***Non-pressurized water mist fire extinguishing module***

**WMFEM-13,6-G3-VD  
TR 4854-001-73591144-2014**



## **«Buran – 15TRV»**

**Modifications:**

- «Buran–15TRV4»**
- «Buran - 15TRV6»**
- «Buran - 15TRVT4»**
- «Buran - 15TRVT6»**
- «Buran - 15TRVTN4»**
- «Buran - 15TRVTN6»**

***TECHNICAL PASSPORT & OPERATION  
MANUAL***

**PTKL.33.15.01.00.000PS**

## 1. DESIGNATION

1.1. Non-pressurized water mist fire extinguishing modules WMFEM-13,6-G3-VDTR 4854-001-73591144-2014 «Buran-15TRV» of the different modifications, hereinafter referred to as "modules", have been designed for use in automatic water mist fire suppression systems against fires of classes A, B as well as fires of electrical equipment under 1000 Volts.

Separately, modules with remote-controlled start-up devices can be used as autonomous plants for extinguishing local fires in small areas.

1.2. Modules are not suitable for suppression of fires involving alkali and alkali earth metals, magnesium and its alloys, as well as other materials that combust without admission of air or explosively react with water.

1.3. Modules have been assigned acclimate category "U" (GOST 15150, placement 2) with storage ambient air temperature range from minus 40C to plus 50C and with operation/service ambient air temperature range from -40° C to +95C.

1.4. Module represents a main element of a fire suppression system.

1.5. Module is a stationary fire extinguisher and does not contain any ozone-depleting substances.

1.6. Module's fire extinguishing agent (OTV) – aqueous solution of Potassium Acetate.

1.7. Modules "Buran-15TRV" are produced in six main modifications which mean:

- "Buran-15TRV4" - ceiling mounted module with a sprayer, which allows the module to be used at heights of 2-3.5 m;

- "Buran-15TRV6" - ceiling mounted module with a sprayer, which allows the module to be used at heights of 3.5-5.5 m;

- "Buran-15TRVT4" - ceiling mounted module with a sprayer and a device for direct feeding of OTV, allowing the module to be used at heights of 2-3.5 m;

- "Buran-15TRVT6" - ceiling mounted module with a sprayer and a device for direct feeding of OTV, allowing the module to be used at heights of 3.5-5.5 m;

- "Buran-15TRVTN4" - module for wall mounted with a sprayer and a device for direct feeding of OTV, allowing the module to be used at heights of 2-3.5 m;

- "Buran-15TRVTN6" - wall mounted module with a sprayer and a device for directing the OTV, allowing the module to be used at heights of 3.5-5.5 m;

## 2. MAIN TECHNICAL PARAMETERS

Table 1

Characteristics, unit of measurement	Value
1. Capacity of module, L	15.1
2. Volume of extinguishing solution, L	13.6±0.1
3. Mass of extinguishing compound, kg	16.6±0.12
4. Dimensions of module, mm	Fig.1
5. Mass of charged module, kg	25.0±0.5
6. Mass of uncharged module, kg	8.4±0.5
7. Activation time, s not more than	3
8. Pressure inside the module during discharge, MPa	Up to 3.5
9. Rupture pressure for a safety membrane, MPa	4.0...4.5
10. Duration of discharge, s, not more than	3
11. Protected are during extinguishment	Fig.3, Table 2
12. Electrical activator parameters:	
• Activation current, Amp, not less than	0.5
• Activation time, milliseconds, not more than	5
• Resistance, Ohm	From 3.2 to 5.0
• Monitoring current, Amp, not more than	0.1
13. Operation/service ambient air temperature range, °C	from - 40°C to

	+95°C
14. Service life, years	10
15. Fail-free operation probability coefficient, not less than	0.95

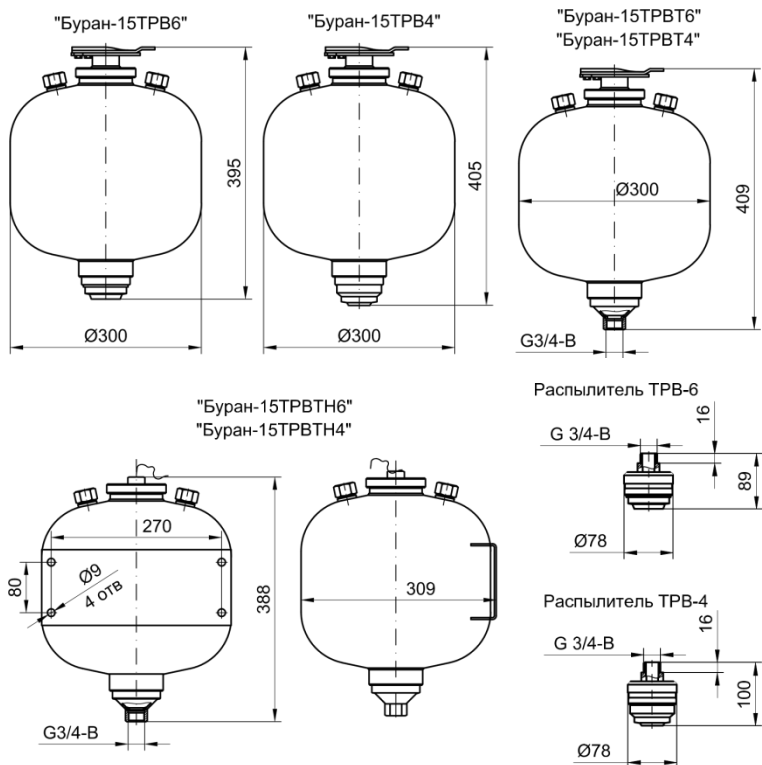


Fig.1 Dimensions of modules modifications "Buran-15TRV".

2.1.If required, the modules with piping "Buran-15TRV4", "Buran-15TRV6", "Buran-15TRVTN4" and "Buran-15TRVTN6" can be supplied with an additional OTV directional discharge device as shown in Fig.2 for installation of the discharge sprayers/nozzles at various angle to a vertical axe.

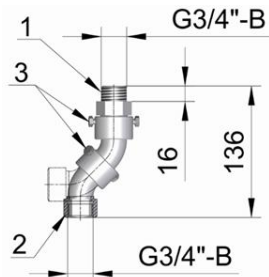


Fig.2 OTV Directional Discharge Device

- 1 – fitting for connection to the module.
- 2 – nut for connecting to the sprayer/nozzle.
- 3 – tightening bolts

OTV Directional Discharge Device allows to direct OTV ant to eliminate blind spots during suppression of fires in premises containing shelves and/or other bulky or odd shaped equipment.

2.2. Extinguishment areas by “Buran-15TRV” for fires of classes A and B is determined by a discharged pattern versus module’s installation height as shown in Fig.3.

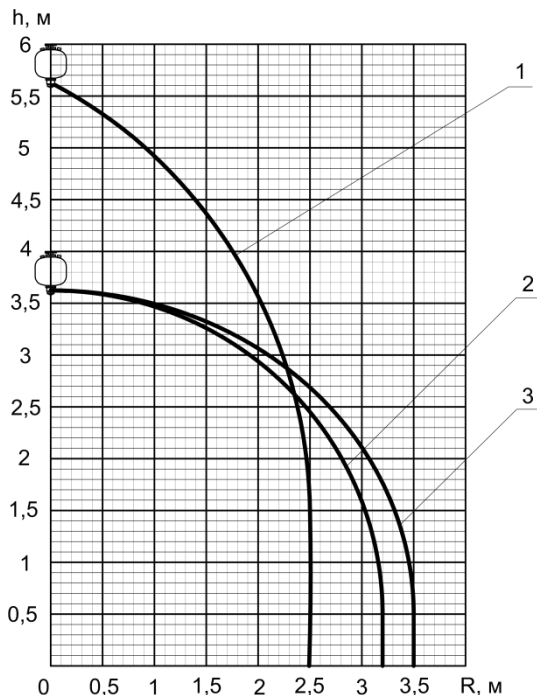


Fig.3 Discharge Patterns

- 1 -for“Buran-15TRV6”, “Buran-15TRVT6”, “Buran-15TRVTN6” for A and B class fires;
  - 2 - for“Buran-15TRV4”, “Buran-15TRVT4”, “Buran-15TRVTN4” for A class fires;
  - 3 - for“Buran-15TRV4”, “Buran-15TRVT4”, “Buran-15TRVTN4” for B class fires;
- Where “h” - module’s installation height; ‘R” - radius of the protected area

2.3. Area of extinguishing to GOSTP 53288 is determined as area of a square inserted into a circular discharge pattern. The actual extinguishment areas protected by “Buran-15TRV” are listed in Table 2.

Table 2

Modification	Installation height, m • module height for modules without piping; • sprayer/nozzle height for modules with piping	Area of extinguishing, m <sup>2</sup>	
		Class A fires	Class B fires
Buran-15TRV4	from 2.5 to 4.0	21	18
Buran-15TRV6	from 4.0 to 6.0	12.5	12.5

Buran-15TRVT4	from 2.5 to 4.0	21	18
Buran-15TRVT6	from 3.5 to 5.5	12.5	12.5
Buran-15TRVTN4	from 2.5 to 4.0	21	18
Buran-15TRVTN6	from 3.5 to 5.5	12.5	12.5

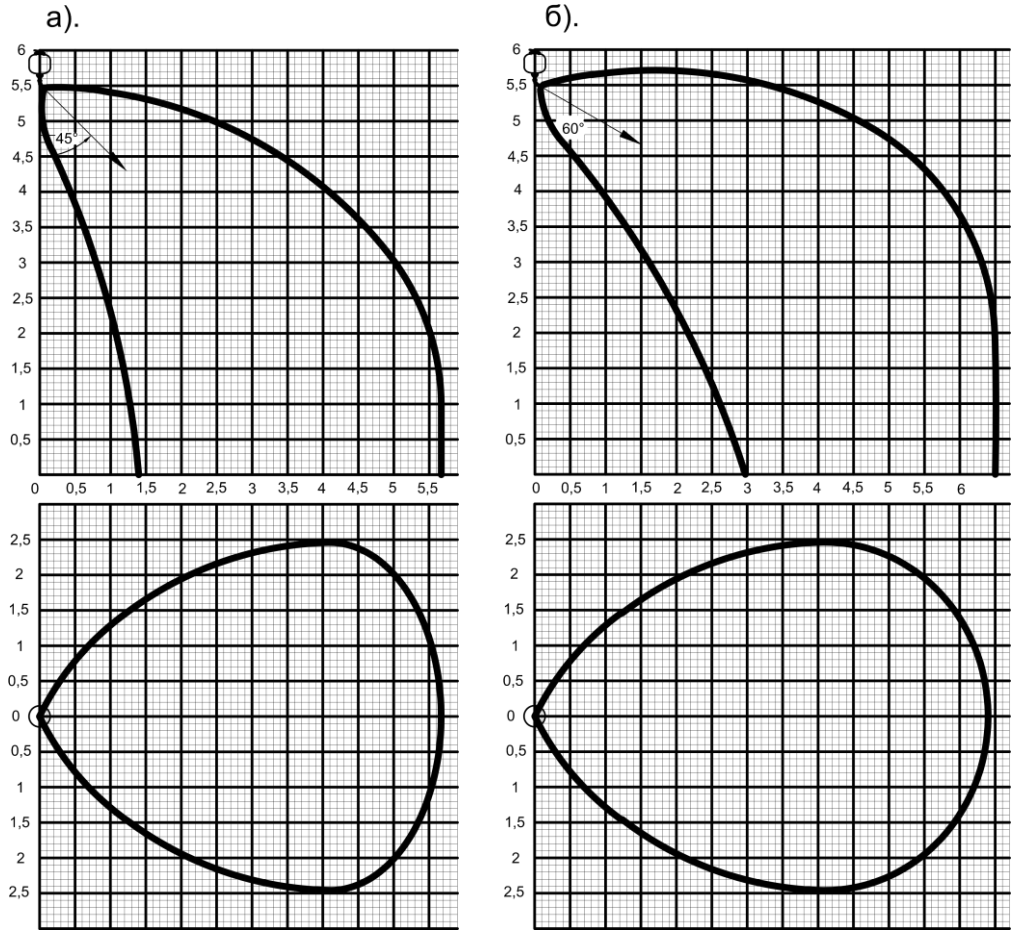
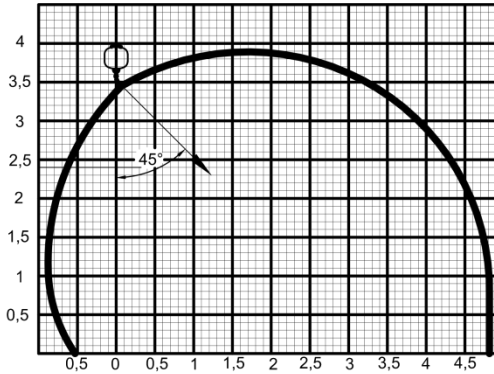


Fig. 4 Discharge pattern for “Buran-15TRV6”, “Buran-15TRVT6”, “Buran-15TRVTN6” with OTV Directional Discharge Device with discharge sprayer/nozzle installed at the angle) 45°, б) 60°.

a).



б).

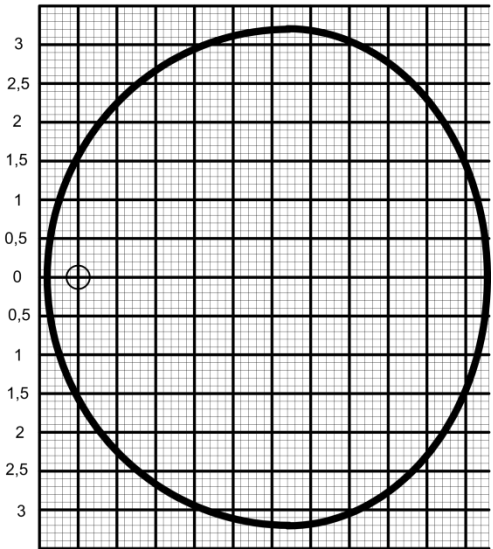
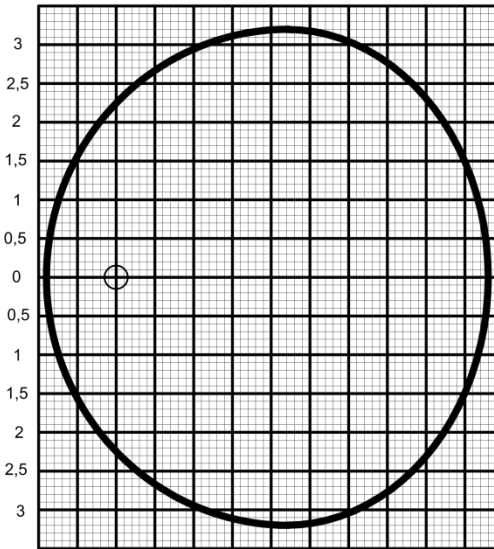
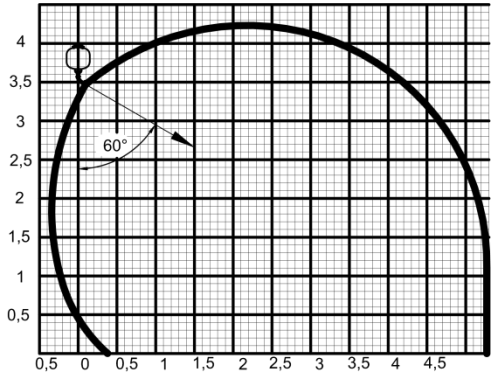


Fig.5 Discharge pattern for "Buran-15TRV4", "Buran-15TRVT4", "Buran-15TRVTN4" with OTV Directional Discharge Device with discharge sprayer/nozzle installed at the angle) 45°, б) 60°.

### 3. DELIVERY SET

3.1. A set of module supply consists of

- Module – 1 unit;
- Potassium Acetate– 7.15 kg;
- Passport -1;
- Mounting plate (for modifications for “Buran-15TRV4”, “Buran-15TRV6”, “Buran-15TRVT4”, “Buran-15TRVT6” – 1unit;
- Sprayer/Nozzle TRV-4 (for modifications“Buran-15TRVT4”, “Buran-15TRVTN4”) -1 unit;
- Sprayer/Nozzle TRV-6 (for modifications“Buran-15TRVT6”, “Buran-15TRVTN6”) -1 unit;
- OTV Directional Discharge Device (formodifications“Buran-15TRVT4”, “Buran-15TRVTN4”, “Buran-15TRVT6”, “Buran-15TRVTN6”) – optional, ordered separately – 1 unit.

### 4. CONSTRUCTION and OPERATION PRINCIPLE

4.1. The Module as shown in Fig.6 represents a hermetic device consisting of:

- 1- Steel casing;
- 2- Extinguishing agent (OTV);
- 3- Gas generator;
- 4- Electrical activator;
- 5- Discharge sprayer/nozzle;
- 6- Rupture membrane;
- 7- Safety valve membrane;
- 8- Mounting holder;
- 9- Mesh filter;
- 10- Pouring inlet;
- 11- Earth pin;
- 12, 13 - Mounting bracket with bolts (for ceiling mounted module modifications);
- 14- Bolt for securing mounting holder and mounting bracket

The rupture membrane is firmly attached to the casing by either discharge sprayer/nozzle or by piping outlet. A mesh filter is installed on the inner side of the sprayer/nozzle or piping outlet.

In module modifications with piping the sprayers/nozzles (TRV-4, TRV-6) are mounted either on the end of the piping or via OTV Directional Discharge Device as shown in Fig. 7

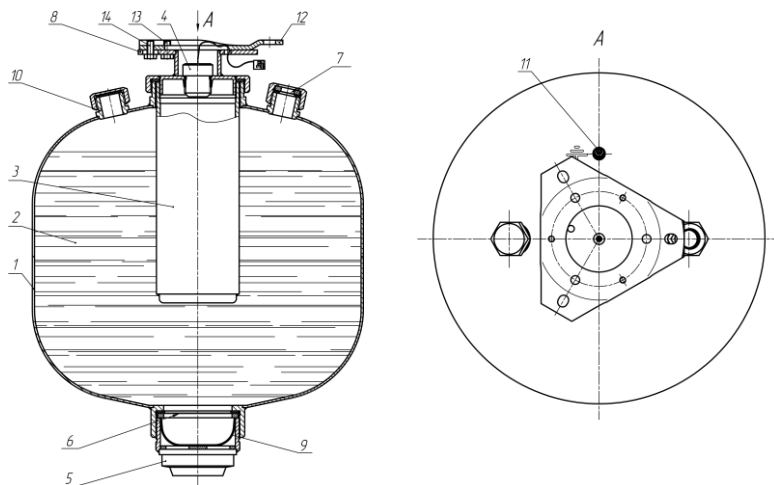


Fig.6 Construction of "Buran-15TRV" non-pressurised water mist module

4.2. The operation sequence of the module is as follows.

When electrical current is applied to the module's electrical activator, the gas generator is operated releasing gases which results in a pressure built-up inside the module's casing. The rupture membrane opens up along its pre-cut scores in a petal type pattern. Extinguishing medium is released through either the discharge sprayer/nozzle alone or through the piping and then discharge sprayer/nozzle (for the modules with piping) into the protected space.

4.3 The module is non-pressurised (no excess pressure inside the casing) in its stationary state prior to operation. Electrical operation of the module in a fire suppression system is via a fire panel.

## 5. SAFETY MEASURES

5.1. The personnel installing or servicing the modules shall read the current technical passport & operation manual as well as instruction signs on the module's casing and comply with their requirements.

5.2. The following is NOT permitted.

- Connecting module to any power source prior to a completion of its installation.
- Conducting any service or maintenance work with module while it is connected to live wiring.
- Subjecting module to mechanical impacts that may result in its deformation and loss of integrity.
- Installing module with damages to its casing and/or membrane.
- Placing any screening objects between the module and protected area.
- Conducting any tests with modules without the manufacturer's content.

5.3. Module can be connected to the detection and activation components of a fire system only after the module has been securely mounted to its installation location and all the installation and commissioning procedures have been completed.

5.4. In case of module's discharge (intended or accidental) the safety measures shall be observed to prevent eye and skin contact with extinguishing medium. Individuals after measures such as protective goggles (type G, GOST 12.4.013), rubber gloves and protective clothes should be used.



In case of eye contact with extinguishing medium the eyes shall be immediately rinsed with large amount of water.

5.5. The discharged extinguishing medium has no adverse effect on personnel clothing and equipment and is easily washed away with water.

5.6. Disassembly, repair and recharge of the module can only be conducted by personnel familiar with the module and its operation principle and duly trained and accredited by the manufacturer or its representative.

## **6. INSTALLATION**

6.1. The module shall be unpacked and a visual inspection for any signs of damage of casing, safety membrane, sprayer/nozzle as well as for labels integrity shall be conducted. A completion of the product supply shall be checked.

6.2. In case the supply specifies the uncharged module it shall be filled with extinguishing solution. The extinguishing solution is prepared by dissolving 7.15kg of supplied Potassium Acetate in 9.5L of water in a container of not less than 15L capacity. The solution is then filtered. The total volume of the final solution shall be  $13.6 \pm 0.1$ L. The pouring outlet is unscrewed, the solution is poured into the casing and the outlet is tightened with a wrench until a full stop.

6.3. Installation of ceiling mounted module modifications ("Buran-15TRV4", "Buran-15TRV6", "Buran-15TRVT4", "Buran-15TRVT6").

Module is installed inside the actual protected zone (premises) and mounted onto a horizontal structure. The mounting fixtures shall withstand a static load in vertical direction of not less than 140kg. Dimensions of the mounting fixtures are shown in Fig.1.

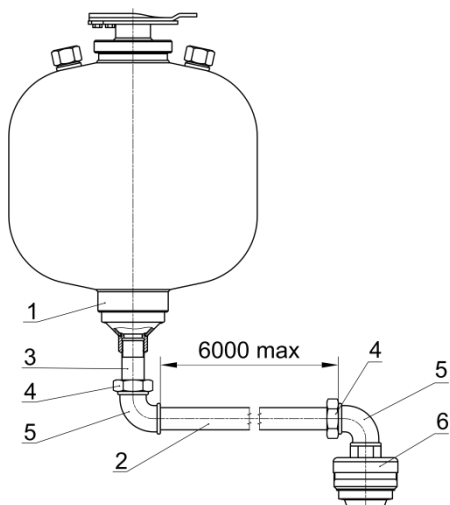
Mounting holder 8 is connected to the mounting bracket 12 so that the bolts 13 are slid into the wider section of the holder. The module is then turned until a full stop with the bolts 13 being now slid into the narrow section of the mounting holder thus fixing the module's mounting position. The bolts 14 and 13 shall be tightened.

6.4. Installation of wall mounted module modifications ("Buran-15TRVTN4", "Buran-15TRVTN6").

Module is installed inside the actual protected zone (premises) and mounted onto a wall or a vertical structure. The mounting fixtures shall withstand a static load in vertical direction of not less than 140kg. Dimensions of the mounting fixtures are shown in Fig.1.

6.5. Installed modules shall be earthed.

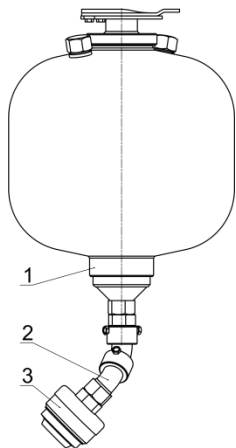
6.6. Installation of the directional piping (Fig.7) shall be done using belting FUM YU 6-05-1388-86 or equivalent. Discharge sprayer/nozzle shall be oriented towards the protected area and its position fixed by tightening a piping's lock nut 4. The length of any horizontal section of the piping shall not exceed 6m.



1. Module "Buran-15TRVT4", "Buran-15TRVTN4", "Buran-15TRVT6", "Buran-15TRVTN6".
2. Piping 20 GOST 3262.
3. Pipe sleeve 20 GOST 8969.
4. Lock Nut 20 GOST 8968.
5. Elbow 20 GOST 8946.
6. Discharge sprayer/nozzle TRV-4 or TRV-6.

Рис.7. Installation schematic for the directional piping for module modifications with piping ("Buran-15TRVT4", "Buran-15TRVTN4", "Buran-15TRVT6", "Buran-15TRVTN6").

6.7. Installation of the OTV Directional Discharge Device (Fig.8) shall be done using belting FUM YU 6-05-1388-86 or equivalent. Discharge sprayer/nozzle shall be oriented towards the protected area and its position fixed by tightening the relevant bolts.



1. Module "Buran-15TRVT4", "Buran-15TRVTN4", "Buran-15TRVT6", "Buran-15TRVTN6".
2. OTV Directional Discharge Device.
3. Discharge sprayer/nozzle TRV-4 or TRV-6.

Рис. 8. Installation scheme with OTV Directional Discharge Device for the directional piping for module modifications with piping ("Buran-15TRVT4", "Buran-15TRVTN4", "Buran-15TRVT6", "Buran-15TRVTN6").

## **7. MAINTENANCE**

7.1. Once a month the installed module shall be subjected to a visual observation. There shall be no visual internal mechanical damages and changes as well as no loss to the mechanical integrity of the wiring, insulation and connection points.

7.2. The replacement of a gas generator inside the module can only be done by the manufacturer or companies licensed to do such replacement.

## **8. STORAGE AND TRANSPORTATION**

8.1. The module shall be stored and transported in its original packaging. The conditions shall be provided to prevent the module from being subjected to mechanical impacts, direct sunlight, moisture and aggressive environments.

8.2. The module can be transported by all transport means in accordance with the relevant regulations existing for the selected transport mode. If transported by air the modules can only be carried in the hermetic compartments of the aircraft in compliance with the requirements for the transportation of dangerous goods of class 9.

8.3. The modules are stored in covered non-heated warehouse premises within a storage temperature range from from - 40°C up to + 50°C.

## **9. WARRANTY**

9.1. Warranty period for the module in its original manufacturer's packaging is 1 year from QC acceptance.

9.2. Warranty period for the installed module – 2 years from the sale date.

9.3. Service life period for the module is 10 years.

## 10. ACCEPTANCE

Non-pressurised extinguishing water mist module

«Buran-15TRV4»

«Buran-15TRV6»

«Buran-15TRVT4»

«Buran-15TRVT6»

«Buran-15TRVTN4»

«Buran-15TRVTN6»

Serial Number.....

Complies with the Technical Requirements TU 4854-001-73591144-2014 and is accepted for use.

Manufacture Date      QC

## 11. REPLACEMENT AND REPAIR

Date	Type of repair	Repairer (company, name)	Signature of stamp of repairer

MANUFACTURER:  
"Epotos-K" Pty Ltd  
29, Rudnizky street, Kirovo-Chepezk

Exclusively for  
"Techno" Pty Ltd  
"Poztech" Pty Ltd  
"Pojtehexport" Pty Ltd  
"NPP "EPOTOS" Ltd

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