USER MANUAL

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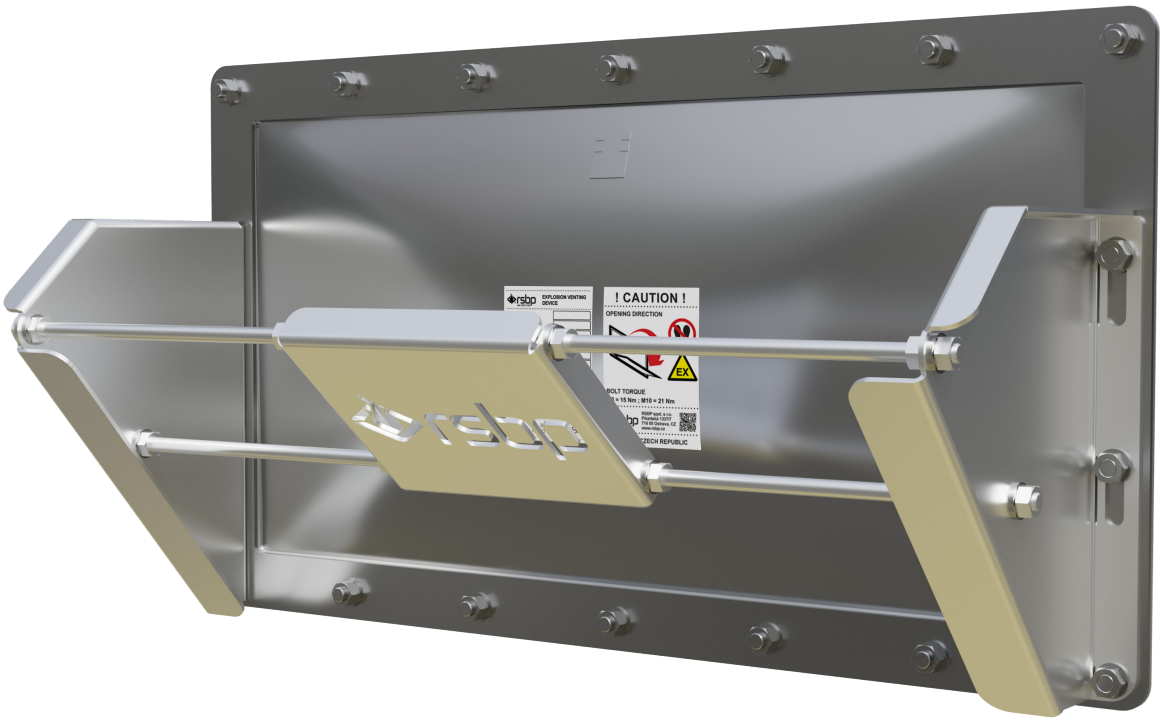
DIVEX
FLAME DEFLECTOR



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CONTENTS

1. General information 5
1.1. Warranty conditions 5
1.2. Nomenclature 7
2. Product description 8
2.1. Product line 8
2.2. Basic part of DivEx 10
2.3. Material design 11
2.4. Safe use parameters 11
3. DivEx installation 13
3.1. DivEx assembly after delivery 14
3.2. DivEx installation on VENT PRO F 16
3.3. DivEx installation on VENT PRO D 17
3.4. DivEx installation on VENT PRO T 18
3.5. DivEx installation on VENT PRO S or VENT PRO H 19
4. Operation, maintenance 20
5. Service 21
5.1. Entry in the operational log 21

PICTURE LIST

Fig. 1 - Dimensional diagram DivEx 8
Fig. 2 - Basic DivEx parts 10
Fig. 3 - Explosion venting without DivEx and with DivEx 11
Fig. 4 - Opening direction of VENT PRO 13
Fig. 5 - Installing DivEx on VENT PRO F 16
Fig. 6 - Installing DivEx on VENT PRO D 17
Fig. 7 - Installing DivEx on VENT PRO T 18
Fig. 8 -Installing DivEx on VENT PRO S or VENT PRO H 19
Fig. 9 - Operational log 21

TABLE LIST

Tab. 1 - Dimensions of the basic product line 9
Tab. 2 - Safe use parameters of DivEx 11
Tab. 3 - Spanner size and bolt torque 15

1. GENERAL INFORMATION

This User Manual (hereinafter UM) has been prepared for DivEx accessories (hereinafter DivEx). The original user manual for operation and maintenance is available in the Czech language, other language versions are a translation of the original. In case of any ambiguity, the original Czech version shall prevail.

This user manual shall be kept for the duration of using the DivEx and shall be readily available to all operator personnel who may come into contact with the DivEx in their work. If it becomes lost, it can be ordered again from the manufacturer or supplier.

References and extracts from the following standards and regulations are used in the manual:

- EN 14797 – Explosion venting devices
- 2014/34/EU

The following documents are supplied together with the UM after installation of VENT PRO with DivEx:

- delivery note
- EU Declaration of Conformity according to 2014/34/EU

SYMBOLS USED

identifying DivEx parts, e.g. threaded rod, sidewalls etc.


identifying warnings (e.g. particularly important information that may affect operator safety)

1.1. WARRANTY CONDITIONS

State-of-the-art high-quality materials were used in the manufacture of the DivEx. A thorough inspection of DivEx is carried out before shipment to the customer. If a defect in the DivEx appears during the warranty period for which the manufacturer is liable and the operator wants to make a complaint for this defect, it is obliged to do so without undue delay. The manufacturer will replace damaged or missing parts of the DivEx as soon as possible.

The manufacturer grants a warranty on the product for a period of two years that begins at the moment the product is handed over to the operator and, in the absence of such handover, the moment the product was made ready for handover, but the transfer did not take place for reasons on the part of the operator.

The warranty cannot be applied in the following cases:

- The operator has not reviewed this UM in detail nor the UM for explosion venting device.
- The product was not used in accordance with this UM.
- Insufficient or incorrect maintenance was performed.
- Service by the manufacturer or an authorized representative has not been performed (at least once a year). There must be a record of this service in the operational log.
- Inappropriate spare parts have been used despite the manufacturer pointing out that only original spare parts can be used.
- Immediately after delivery, the presence of the supplied accessories and the integrity of the original packaging were not checked despite the manufacturer pointing out that in the event of a breach of this obligation by the operator, no later complaints would be taken into account.
- Damage has been caused by poor or improper handling.

A complaint about a defect during the warranty period is properly made by sending the damaged part of the product to the manufacturer, including a written specification of the defect. A complaint thus properly made will be assessed by the manufacturer, and the manufacturer will use this assessment to decide whether the complaint is justified or unjustified.

If any part of this manual is not clearly understood by the operator's personnel who come into contact with the DivEx explosion venting equipment in the course of their work, the operator shall contact the manufacturer or authorized representative with its concerns. The manufacturer is not liable for any damage or injury caused by a lack of understanding of the contents of this manual.

1.2. NOMENCLATURE

VENT PRO	explosion venting devices.
Dust explosion constant K_{st}	the maximum value of the rate of increase of explosion pressure $(dp/dt)_{max}$ during the explosion of a dust-laden atmosphere, in a closed container under specified test conditions, converted into a container with a volume of 1 m^3.
Explosive atmosphere	flammable substances in the form of gases, fumes, mist or dust mixed with air under atmospheric conditions, which burn spontaneously after ignition and spread to the entire unburned mixture.
Maximum reduced explosion pressure $p_{red,max}$	the maximum overpressure arising from the explosion of the explosive atmosphere in a container at the optimal fuel concentration, after effective explosion venting, or explosion suppression.
Venting efficiency E_f	a dimensionless number used to define the efficiency of explosion venting devices.
Manufacturer	RSBP spol. s r.o.
Supplier	the natural or legal person who supplied the DivEx accessory.
Authorized representative	a natural or legal person who has been authorized in writing by the manufacturer to act on his behalf in the performance of specific tasks.
Operator	the natural or legal person who operates the DivEx accessory.
Trained person	a person who is thoroughly familiar with this manual.
Operational log	a document supplied with the VENT PRO, or other suitable operator document used to record operations carried out on the DivEx.

2. PRODUCT DESCRIPTION

DivEx is an accessory to the explosion venting device VENT PRO. Limits the opening angle of the VENT PRO device and directs the explosion pressure wave and flame to the desired safe area. Reduces the danger zone around the explosion venting device and increases the usable operating space.

DivEx can be installed on the VENT PRO explosion venting device supplied by RSBP.

2.1. PRODUCT LINE

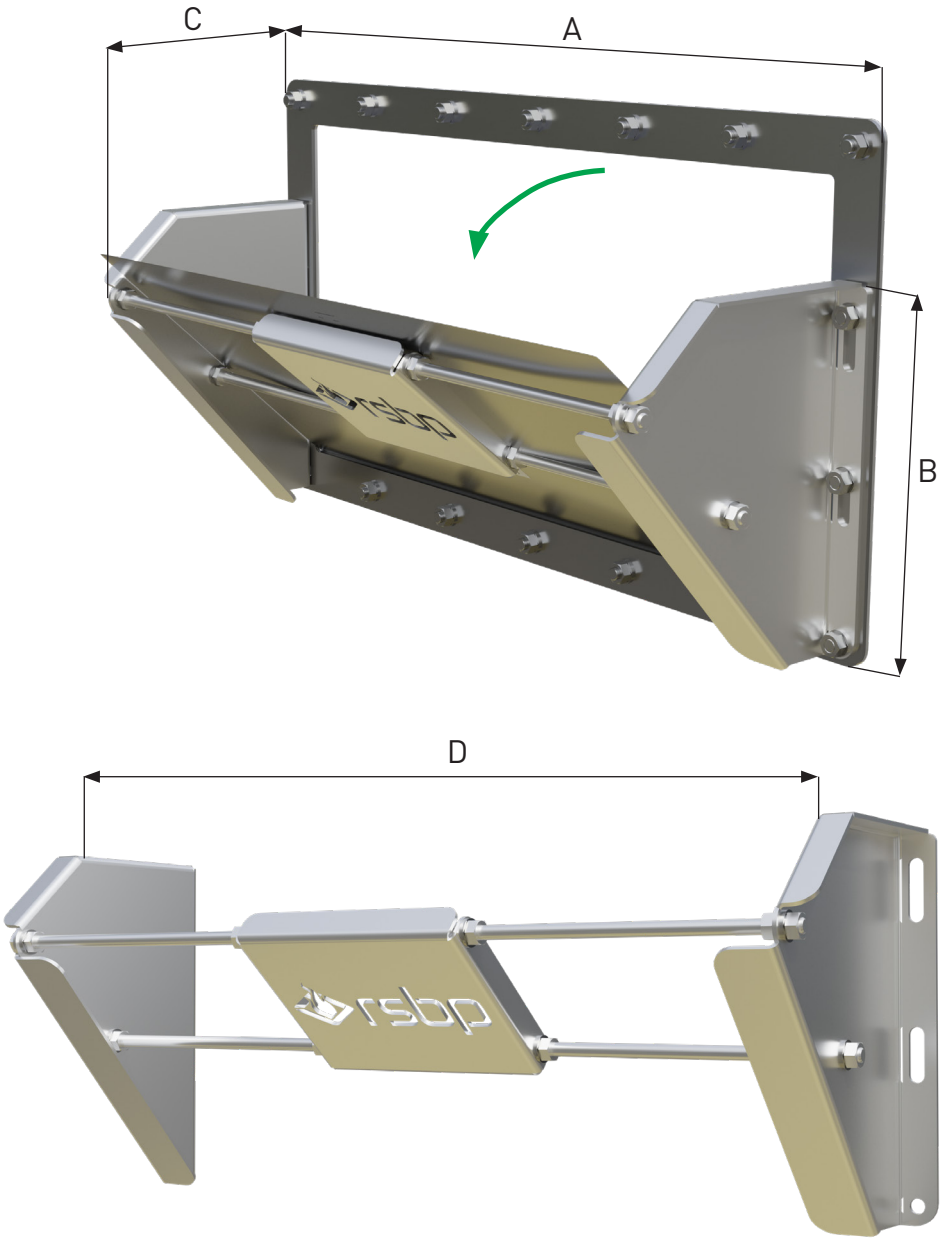


Fig. 1 - Dimensional diagram DivEx

Variant DivEx	Explosion venting devices VENT PRO	A [mm]	B [mm]	C [mm]	D [mm]	Weight [kg]
DivEx var. 1	170x470	550	229	164	488	4.0
	150x600	670			612	
	220x540	620			556	
DivEx var. 2	270x458	536	277	218	476	5.1
	610x290	688			628	
	241x762	840			780	
	630x310	702			640	
DivEx var. 3	305x457	535	323	218	475	5.2
	340x440	502			442	
	300x500	578			518	
DivEx var. 5	490x590	656	488	428	596	15.0
	610x610	686			626	
	450x800	876			816	
	578x851	925			865	
DivEx var. 6	586x920	996	467	413	936	14.7
	685x1100	1173			1114	
DivEx var. 7	870x910	990	552	596	930	25.0
	851x1162	1242			1182	
DivEx var. 8	920x920	996	677	642	936	28.3
	1020x1020	1096			1036	
	915x1118	1195			1134	

Tab. 1 - Dimensions of the basic product line

2.2. BASIC PART OF DIVEX

DivEx faceplate connects and strengthens the threaded rods
DivEx threaded rod connecting rod of two sidewalls to the front panel
DivEx sidewalls DivEx left and right sidewall
Fasteners nuts and washers for assembly

1	DivEx sidewalls	1 left + 1 right
2	DivEx faceplate with threaded rods	1 pcs
3	Washers	8 pcs
4	Nuts	8 pcs

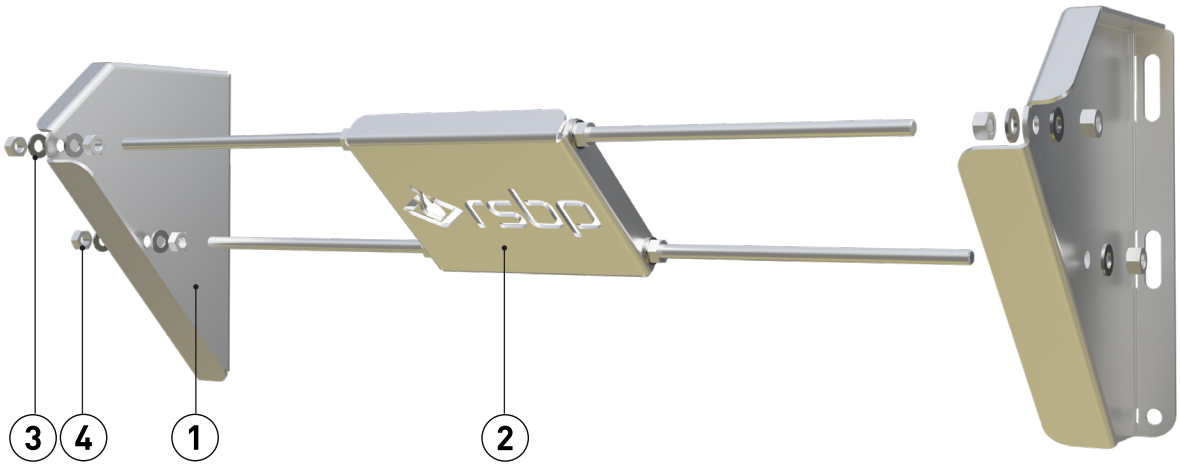


Fig. 2 - Basic DivEx parts

2.3. MATERIAL DESIGN

DivEx including fasteners is produced in stainless steel as the standard.

2.4. SAFE USE PARAMETERS

The following table lists the parameters for the safe use of DivEx accessories.

$K_{st,max}$	≤ 320 bar.m/s
$P_{ped,max}$	≤ 1 bar
E_f	≤ 80 %

Tab. 2 - Safe use parameters of DivEx

In the case of explosion venting without DivEx, it is necessary to maintain the safe distance stipulated by EN 14491. The cone of flame, pressure and fumes can generally be up to tens of meters long. Explosion venting with DivEx significantly reduces the safety zone.

Fig. 3 - Explosion venting without DivEx and with DivEx

Variant DivEx	A [m]
1 – 3	1
4 – 6	2
7 – 8	3

V [m³]	B [m]
to 1	5
1 – 10	10
10 – 30	15
30 – 70	20
70 +	25

3. DIVEX INSTALLATION

The VENT PRO position is important when installing DivEx. **The direction of opening of VENT PRO must be according to fig. 4.**

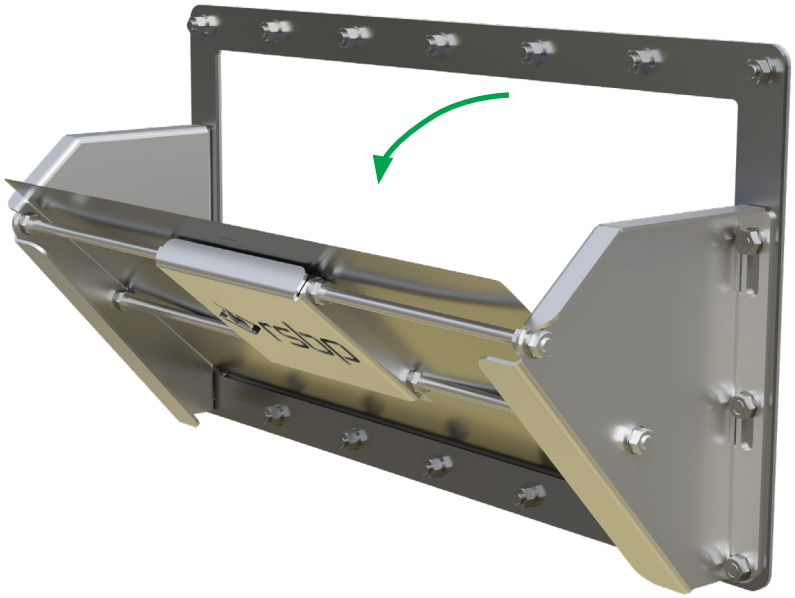


Fig. 4 - Opening direction of VENT PRO

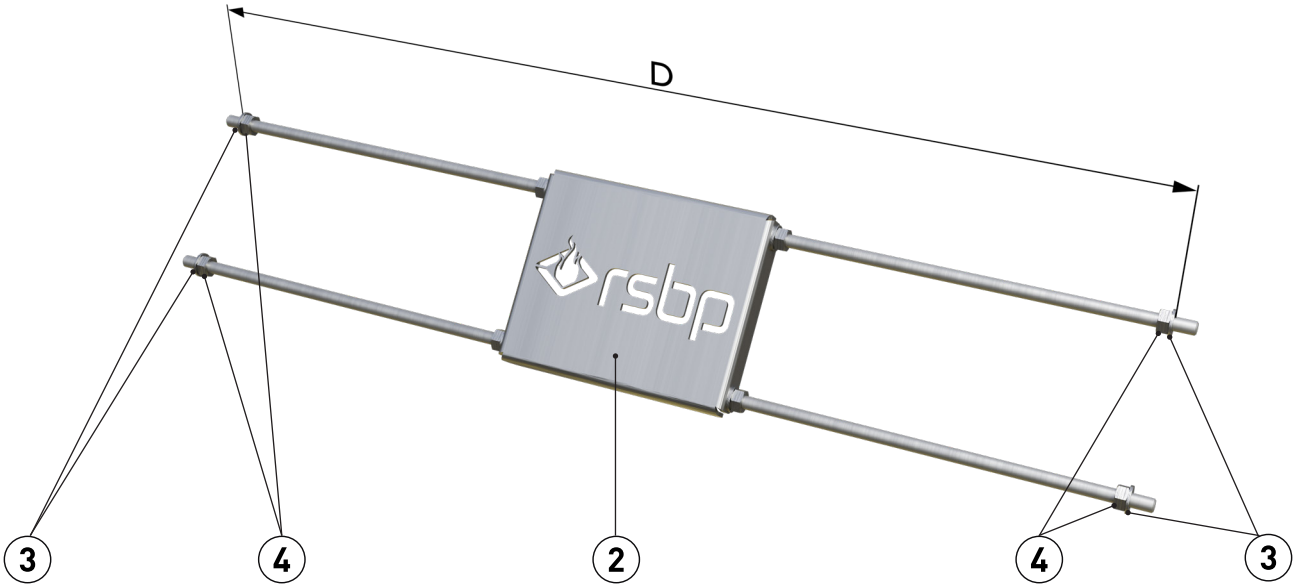
In the event DiveEx is installed incorrectly (reverse position) on VENT PRO, the explosion will not be directed in the correct direction and the safety function of the VENT PRO may be significantly reduced!

A written record of the installation of each DivEx on VENT PRO must be made in the operational log or other appropriate document so that the history of this work can be checked at any time.

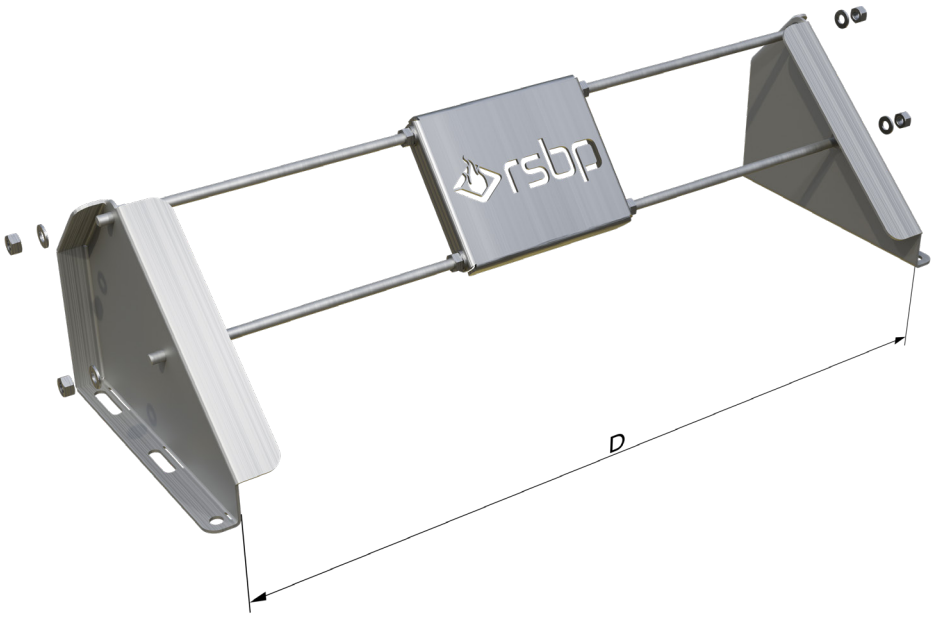
3.1. DIVEX ASSEMBLY AFTER DELIVERY

DivEx is delivered disassembled and must be assembled before installing it on VENT PRO. The procedure is as follows:

1 The nuts (4) are screwed onto the faceplate with the threaded rods (2) and the washers (3) (4 in total) are slipped on so that they are equal in distance from the center of the faceplate and the external spacing between them corresponds to dimension D from table 1 in chapter 2.1.



2 One sidewall of DivEx (1) is fitted onto the threaded rods that are part of the faceplate (2) (the hem with the screw holes must be facing outwards) and slid up to the stop formed by the nuts (4) and washers (3) from section 1. The sidewalls are lightly secured with two washers (3) and nuts (4). Repeat the procedure with the other DivEx sidewall.



3 Now check the spacing between the DivEx sidewalls (1) (dimension D, see section 1) by measuring it. The nuts (4) securing the sidewalls are then tightened. For spanner size and bolt torque see tab. 3. This makes DivEx ready for installation on VENT PRO.

DivEx var. 1 - 3	16 mm, 20 Nm
DivEx var. 4 - 6	24 mm, 70 Nm
DivEx var. 7 - 8	30 mm, 100 Nm

Tab. 3 - Spanner size and bolt torque

3.2. DIVEX INSTALLATION ON VENT PRO F

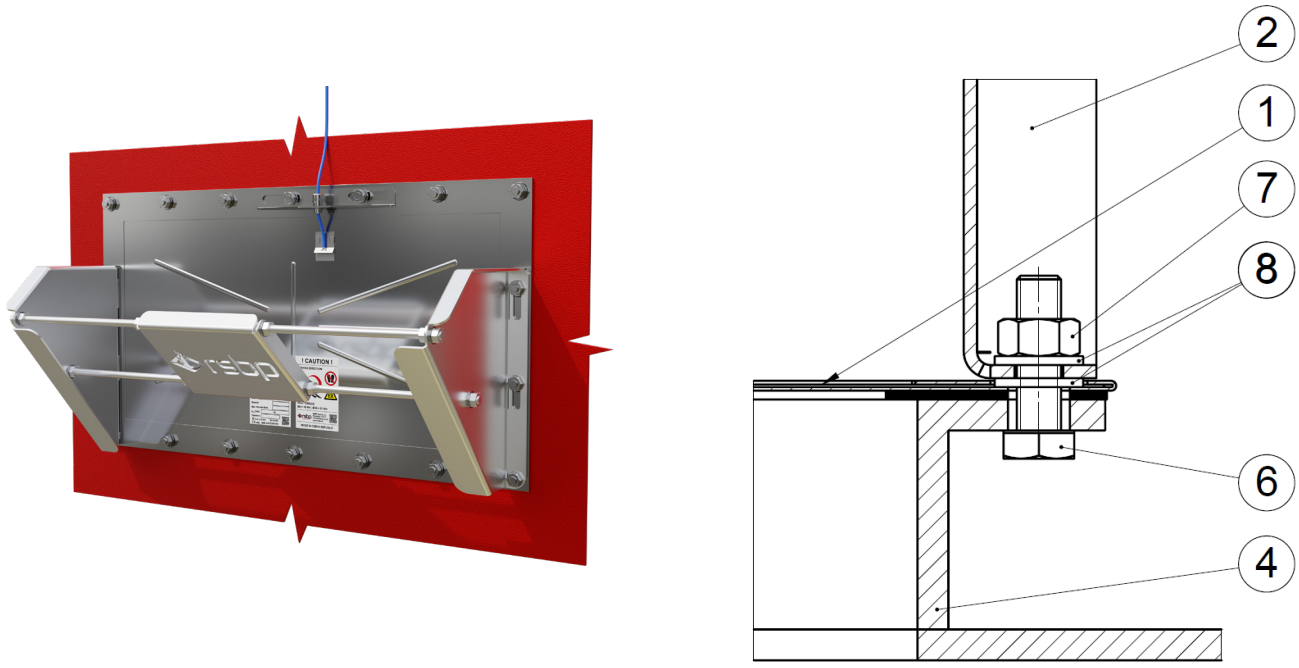


Fig. 5 - Installing DivEx on VENT PRO F

Position	Components	Number of pcs
1	VENT PRO F	1
2	DivEx	1
4	Protected equipment [1]	1
6	Screw [2]	see [3]
7	Nuts [2]	see [3]
8	Washer [2]	see [3]

[1] For the installation of VENT PRO F, the flange of the protected equipment must meet the requirements of standard EN ISO 13920-BE and must be sufficiently rigid. In case of mounting on insufficiently rigid equipment, it is necessary to provide the flange with additional reinforcement. The diameters of the holes in the flange of the protected device for M10 screws are Ø12 mm (EN 20273).

[2] Fasteners galvanized (strength 8.8) or stainless steel (strength A2-70).

[3] Number according to table 5 in the VENT PRO UM, chapter 4.1.1.

3.3. DIVEX INSTALLATION ON VENT PRO D

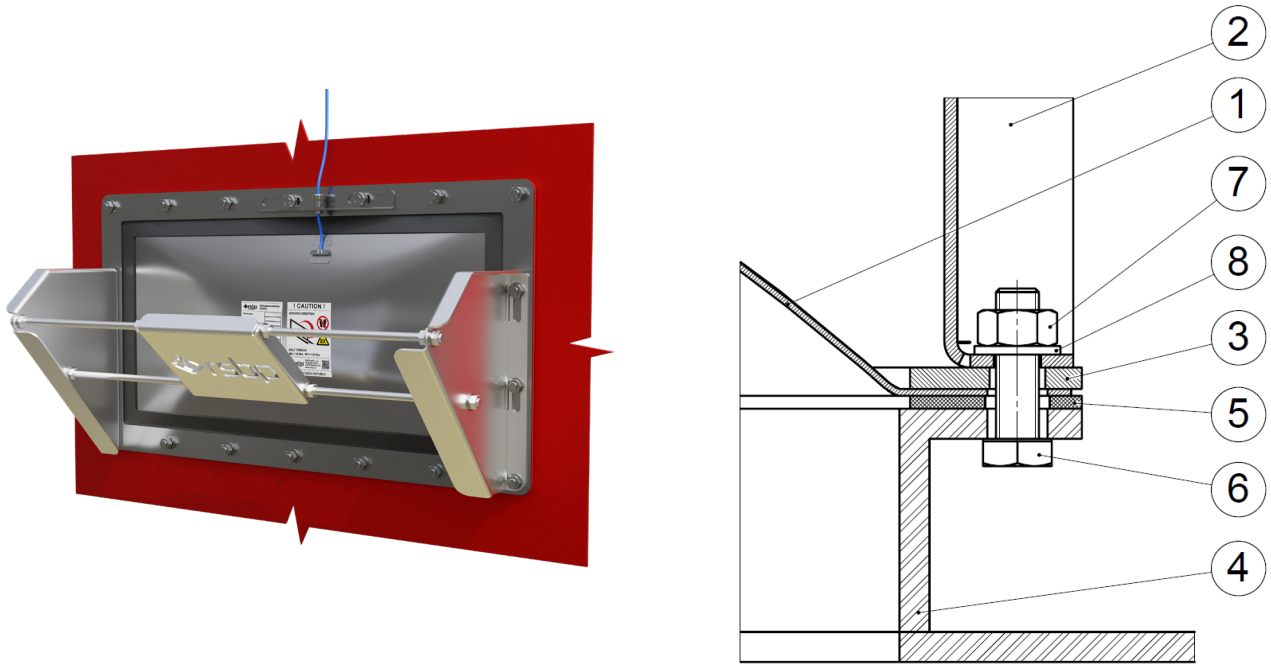


Fig. 6 - Installing DivEx on VENT PRO D

Position	Components	Number of pcs
1	VENT PRO D	1
2	DivEx	1
3	Upper frame	1
4	Protected equipment [1]	1
5	Flange gasket	1
6	Screw [2]	see [3]
7	Nuts [2]	see [3]
8	Washer [2]	see [3]

[1] For the installation of VENT PRO D, the flange of the protected equipment must meet the requirements of standard EN ISO 13920-BE and must be sufficiently rigid. In case of mounting on insufficiently rigid equipment, it is necessary to provide the flange with additional reinforcement. The diameters of the holes in the flange of the protected device for M10 screws are Ø12 mm (EN 20273).

[2] Fasteners galvanized (strength 8.8) or stainless steel (strength A2-70).

[3] Number according to table 6 in the VENT PRO UM, chapter 4.2.1.

3.4. DIVEX INSTALLATION ON VENT PRO T

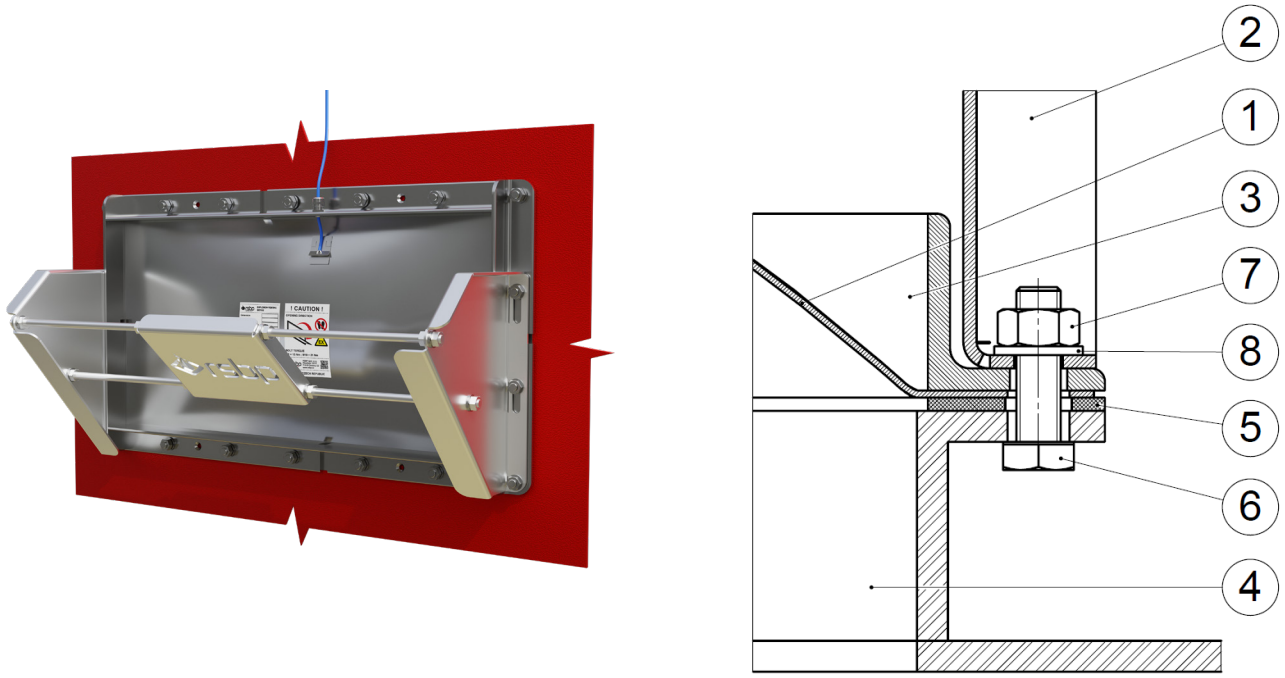


Fig. 7 - Installing DivEx on VENT PRO T

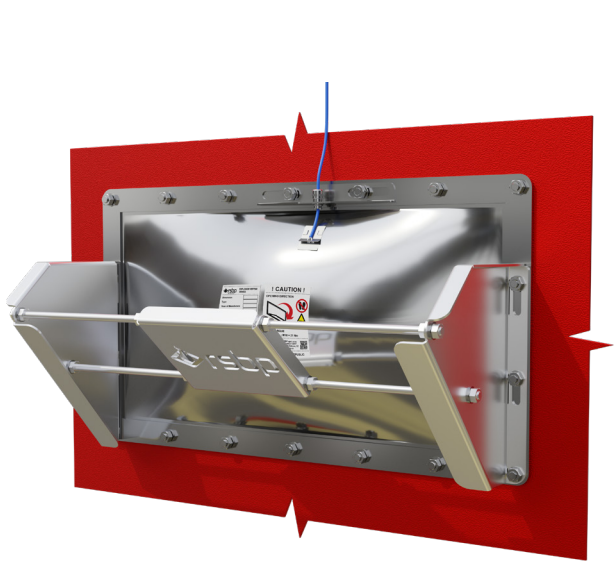
Position	Components	Number of pcs
1	VENT PRO T	1
2	DivEx	1
3	Upper frame	1
4	Protected equipment [1]	1
5	Flange gasket	1
6	Screw [2]	see [3]
7	Nuts [2]	see [3]
8	Washer [2]	see [3]

[1] For the installation of VENT PRO T, the flange of the protected equipment must meet the requirements of standard EN ISO 13920-BE and must be sufficiently rigid. In case of mounting on insufficiently rigid equipment, it is necessary to provide the flange with additional reinforcement. The diameters of the holes in the flange of the protected device for M10 screws are Ø12 mm (EN 20273).

[2] Fasteners galvanized (strength 8.8) or stainless steel (strength A2-70).

[3] Number according to table 8 in the VENT PRO UM, chapter 4.3.1.

3.5. DIVEX INSTALLATION ON VENT PRO S OR VENT PRO H



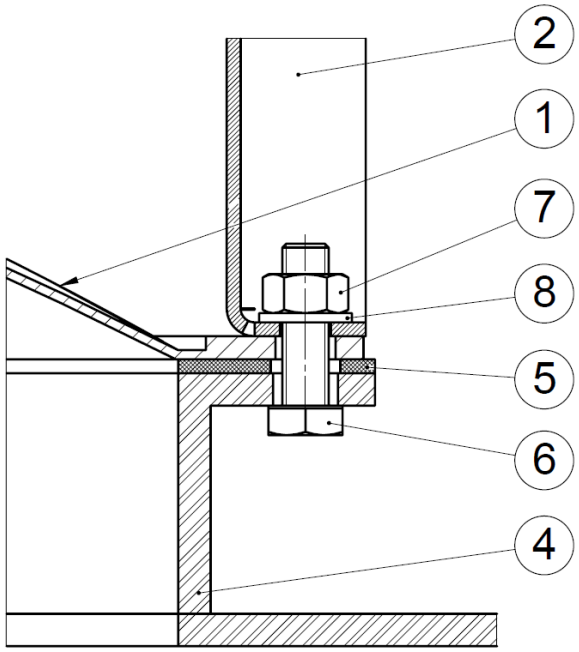


Fig. 8 -Installing DivEx on VENT PRO S or VENT PRO H

Position	Components	Number of pcs
(1)	VENT PRO S or VENT PRO H	1
(2)	DivEx	1
(4)	Protected equipment [1]	1
(5)	Flange gasket	1
(6)	Screw [2]	see [3]
(7)	Nuts [2]	see [3]
(8)	Washer [2]	see [3]

[1] For the installation of VENT PRO S or VENT PRO H, the flange of the protected equipment must meet the requirements of standard EN ISO 13920-BE and must be sufficiently rigid. In case of mounting on insufficiently rigid equipment, it is necessary to provide the flange with additional reinforcement. The diameters of the holes in the flange of the protected device for M10 screws are Ø12 mm (EN 20273).

[2] Fasteners galvanized (strength 8.8) or stainless steel (strength A2-70).

[3] Number according to table 9 for VENT PRO S or table 10 for VENT PRO H in the VENT PRO UM, chapter 4.4.1. or 4.5.1.

4. OPERATION, MAINTENANCE

DivEX is an accessory of VENT PRO and is activated automatically. Maintenance of the DivEx may only be performed by a trained person who is physically and mentally qualified.

When inspecting and maintaining in the close proximity of the protected technology, make sure that the technology is switched off and there is no risk of explosion.

VENT PRO are devices that can be life-threatening if these safety instructions are not followed. In addition to equipment damage and defects, VENT PRO can cause injuries with permanent consequences or death. There is a danger especially in the event of an explosion and the subsequent release of the explosion into the space in front of VENT PRO. This danger must be eliminated.

The operator is obliged to incorporate the instructions provided in this chapter into their operational safety rules.

Maintenance is carried out in accordance with the instructions in the VENT PRO user manual, chapter "Operation, maintenance and training" and must be recorded in the operational log (chapter 5.1.).

5. SERVICE

All servicing of DivEx accessories should be done at the same time as the servicing done on VENT PRO according to the VENT PRO user manual, see chapter "Service".

All operations carried out on DivEx accessories must be recorded in the operational log so that the history of such work can be checked at any time.

The operational log is supplied with the VENT PRO explosion venting device on request.

5.1. ENTRY IN THE OPERATIONAL LOG

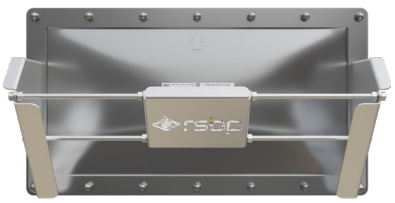
Make checks / changes with initials at the beginning of the operational log (operator name, address, contacts to contact person, etc.). Fill in this information for a new operational log.

Record the activities carried out (e.g. installation, maintenance, service) in the operational log. For these activities, fill in the date, name of the person who carried out the activity and have them sign it. Also add the reason for the activity (e.g. regular maintenance).

Fig. 9 - Operational log

Notes:

Fire and explosion protection



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