

Fire and explosion protection

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# EXPLOSION PROTECTION

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WE PROTECT YOUR INDUSTRY TOO



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# Fire and explosion protection



*Proudly made in the Czech Republic*

All our products and equipment are tested and comply with legislation. We design and comprehensively address the safety of operations and individual technologies in terms of fire and explosion prevention, risk analysis, engineering, and documentation according to applicable legislation 99/92/EC - ATEX 153. We perform engineering with regard to safety standards, regulations, decrees, and directives valid in the Czech Republic and abroad - we comply with the ATEX directive, VDI, NFPA.

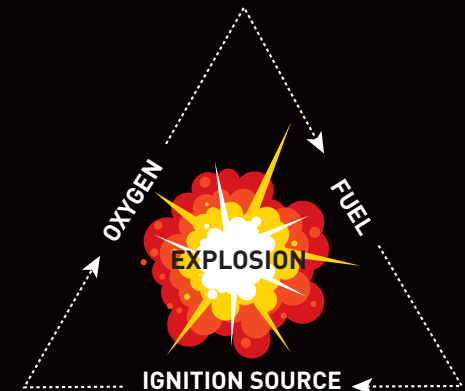


## WE CAN FIND A SOLUTION FOR YOU!

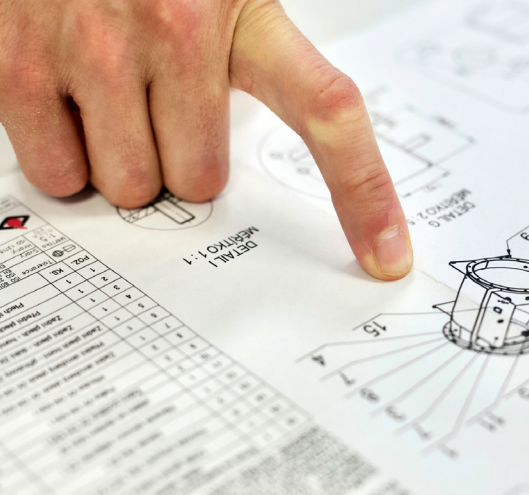
At RSBP, we are ready to offer a complete solution through our services in fire and explosion protection and thus eliminate the consequences of fire or explosion. By professional assessment of the technological process, we can determine the degree of risk of explosion, as well as by proposing suitable measures to ensure its minimization or complete elimination. We will reduce the risk of damage to your operation.

The risk of the explosion becomes a real threat if the following conditions are met at the given place and at the same time:

- substances that create explosive atmospheres
- sufficient amount oxygen or another oxidizing agent
- effective ignition source



By using suitable explosion protection, the negative effects of possible accidents in industrial plants can be significantly reduced and considerable financial resources, as well as the health and lives of operating personnel, can be protected. Proper application is based on the correct assumptions of designing protection systems and requires a comprehensive approach to this issue.



# SERVICING AND MAINTENANCE

Our service department is available on the phone 24/7 and is ready to help with your current request at any time.

- we offer regular service according to legislation
- we provide repairs, supply of spare parts
- we provide a completely new installation of protection equipment in cases of expansion of the production line
- we provide maintenance for all equipment installed by our company



## PROPOSED SOLUTIONS IN THE FIELD OF "ATEX"

- design proposals for the protection of technological equipment against explosion
- software simulations of pressure resistance of existing technology
- practical measurements of pressure resistance of machinery (filters, silos, ...)
- comprehensive proposals for organizational and technical measures to reduce or minimize the risk of explosion hazard
- implementation and service activities in the field of fire and explosion protection
- by professional assessment of the technological process, we are able to determine the degree of risk of explosion, as well as its minimalization or complete elimination by proposing suitable protection, and thus reduce the risk of damage in your operation

## PROCESSING OF ENTRY REQUIREMENTS - SOLUTION OF "ATEX" ISSUES

- elaboration of fire technical and explosion characteristics of substances
- measurement of dust and concentration of gases and vapors
- consultation over a draft protocol on the determination of external influences
- identification of sources of risk and investigation of the causes of explosions in practice

## ANALYSIS AND EVALUATION OF THE CURRENT SITUATION IN ACCORDANCE WITH "ATEX"

- elaboration of explosion protection documentation (EPD) including its regular updating
- discussion of explosion protection documentation with public authorities
- elaboration of expert opinions from the point of view of the explosion of combustible dust
- inspection and designation of zones in the project documentation for existing operations

## PROFESSIONAL SEMINARS OF FIRE AND EXPLOSION PROTECTION

We organize professional seminars and training on various topics related to fire and explosion protection in industrial plants. More information including current dates can be found on our website.

### Suitable for:

- for personnel from the ranks of employees and external experts of companies whose operations this issue concerns
- for manufacturers of technological equipment
- for experts in the field such as professionally qualified personnel, or civil engineers, firefighters, insurance companies, etc.



# EXPLOSION VENTING DEVICES – EXPLOSION VENTING

Explosion venting devices are the economical solution for safety in the industries with a risk of explosion, which arises not only when handling dust, but also gas, steam, and hybrid mixtures.

Under normal operating conditions, the venting hole is covered by a panel. When the operating level of the pressure inside the device is exceeded, the panel on its casing opens and thus the pressure and the flame are released. The pressure in the protected technology is lower than its pressure resistance level and therefore it will not be destroyed.

## ADVANTAGES:

- high efficiency and reliability
- long service life
- resistance against abrasion, mechanical particle impacts, and weather conditions
- **simple installation, exchange, and easy availability of spare parts**
- variability static activation pressure

VMP devices are primarily suitable for protection of filters, reservoirs, mills, crushers, cyclones and other equipment with dust explosion danger.



## VMP SU – RECTANGULAR DOMED VENTING DEVICES

- triple-layer construction with PTFE insulation
- **with high vacuum resistance**
- for devices with operating temperatures up to 240 °C
- also suitable for devices with pressure shocks
- stainless steel



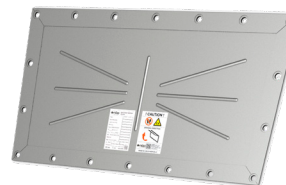
## VMP D – RECTANGULAR DOMED VENTING DEVICES

- domed single-layer construction with operating temperature to 100 °C
- **also suitable for devices with pressure shocks**
- stainless steel

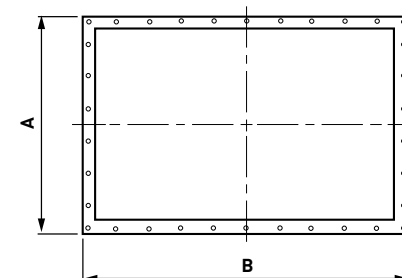


## VMP F – RECTANGULAR FLAT VENTING DEVICES

- flat single-layer construction
- suitable for low operating pressure
- for devices with operating temperatures up to 100 °C
- installation without upper flange
- **curved: radius on request**
- stainless steel



## VMP – DIMENSIONAL DIAGRAM



## TECHNICAL DATA:

Dimension	Type			Vent area (m <sup>2</sup> )			A – outer dimension (mm)			B – outer dimension (mm)		
	F	D	SU	SU	D	F	SU	D	F	SU	D	F
229 x 229	✓	✓	✓	0,04	0,05	0,05	309	309	309	309	309	309
229 x 305	✓					0,06			309			385
260 x 260	✓	✓	✓	0,05	0,06	0,07	340	340	337	340	340	337
150 x 600		✓				0,08		220			670	
170 x 470	✓					0,08			250			550
220 x 540	✓	✓	✓	0,10	0,11	0,12	300	300	308	620	620	628
270 x 458	✓					0,12			350			538
305 x 457	✓	✓	✓	0,11	0,12	0,14	375	375	390	527	527	542
300 x 500	✓					0,15			382			589
410 x 410	✓					0,17			490			490
610 x 290		✓	✓	0,14	0,16		685	685		365	365	
241 x 762	✓					0,18			331			852
630 x 310	✓	✓	✓	0,16	0,18	0,19	705	705	705	385	385	385
580 x 410	✓					0,24			500			670
490 x 590	✓	✓	✓	0,24	0,27	0,28	565	565	573	665	665	673
610 x 470	✓					0,29			550			690
2x 610 x 290		✓	✓	0,28	0,32		385	385		1385	1385	
600 x 600	✓					0,35			656			656
450 x 800	✓	✓	✓	0,32	0,34	0,36	530	530	550	880	880	900
2x 630 x 310		✓	✓	0,35	0,35		385	385		1405	1385	
610 x 610	✓					0,37			690			690
500 x 750	✓					0,38			580			830
457 x 890	✓					0,39			537			970
586 x 920	✓	✓	✓	0,48	0,51	0,53	661	661	671	995	995	1005
588 x 908	✓					0,53			680			1000
800 x 800	✓					0,62			853			853
685 x 1100	✓					0,75			765			1178
870 x 910	✓					0,79			960			1000
920 x 920	✓	✓	✓	0,78	0,81	0,83	995	995	1005	995	995	1005
915 x 1118	✓	✓	✓	0,95	0,98	1,02	990	990	1000	1193	1193	1203
1020 x 1020	✓	✓	✓	0,96	1,00	1,03	1095	1095	1106	1095	1095	1106
1118 x 1118	✓					1,25			1202			1202
1130 x 1130	✓					1,28			1220			1220
1000 x 2000	✓					2,00			1090			2090

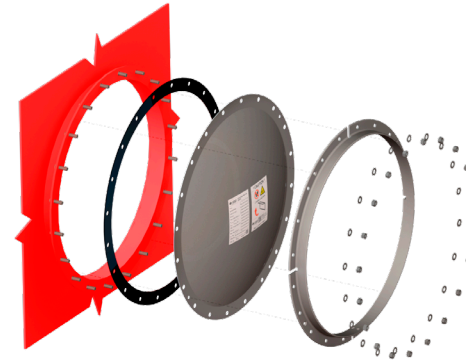
\* explosion venting devices are sorted by the vent area from the smallest to the largest

\*\* other dimensions on request

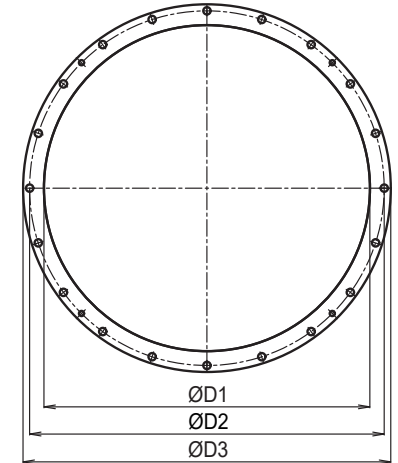
## VMP SU – ROUNDED DOMED VENTING DEVICES

- triple-layer construction with PTFE insulation
- **with high vacuum resistance**
- for devices with operating temperatures up to 240 °C
- also suitable for devices with pressure shocks
- stainless steel

VMP SU explosion venting devices are especially suitable for the protection of technological equipment where pressure shocks, high temperatures, or vacuum may occur.



venting device installation scheme



### TECHNICAL DATA:

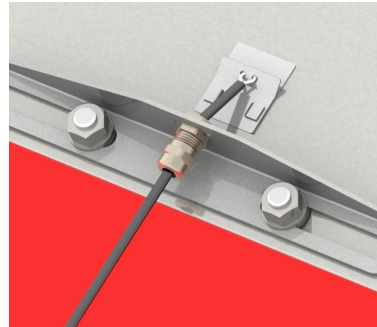
Dimension	Vent area [m <sup>2</sup> ]	Ø D1 internal camber dimension (mm)	Ø D2 pitch circle dimension (mm)	Ø D3 flange outer dimension (mm)
DN 250	0,05	270	320	350
DN 300	0,06	320	350	380
DN 350	0,07	345	387	425
DN 400	0,10	400	443	480
DN 450	0,13	450	486	530
DN 510	0,16	510	550	590
DN 600	0,24	600	646	680
DN 630	0,27	630	680	710
DN 750	0,41	770	817	850
DN 800	0,47	820	860	900
DN 880	0,53	880	920	960
DN 900	0,57	900	955	1000
DN 1000	0,72	1000	1060	1100
DN 1100	0,87	1100	1160	1200

\* explosion venting devices are sorted by the vent area from the smallest to the largest

\*\* other dimensions on request



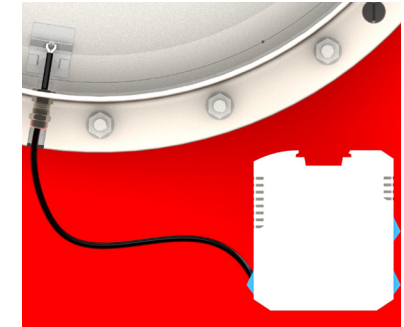
**OPTIONAL ACCESSORIES FOR VMP F, D, SU**



G1 - opening indicator



thermal insulation

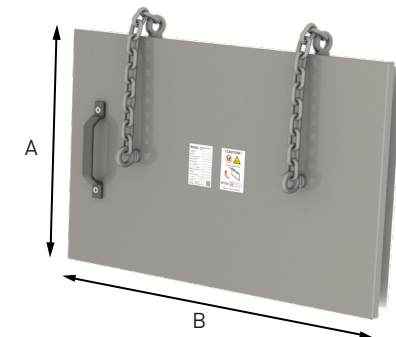


intrinsically safe relay with VMP opening indicator

- opening indicator
  - G1 - cable
  - G2 - magnetic
  - G3 - additional (installation possible on all types of VMP)
- thermal insulation
- intrinsically safe relay
- frame for VMP Type D and SU
- EPDM or silicone frame seal for VMP Type D and SU

**EX DOOR – EXPLOSION DOORS**

- magnetic construction
- suitable for technologies with low operating pressure and without pressure shocks
- possibility of repeated use
- suitable for technologies with very low-pressure resistance
- carbon steel with anti-corrosion surface treatment



**TECHNICAL DATA:**

Dimension	Vent area [m <sup>2</sup> ]	A – outer dimension (mm)	B – outer dimension (mm)
450 x 800	0,36	590	940

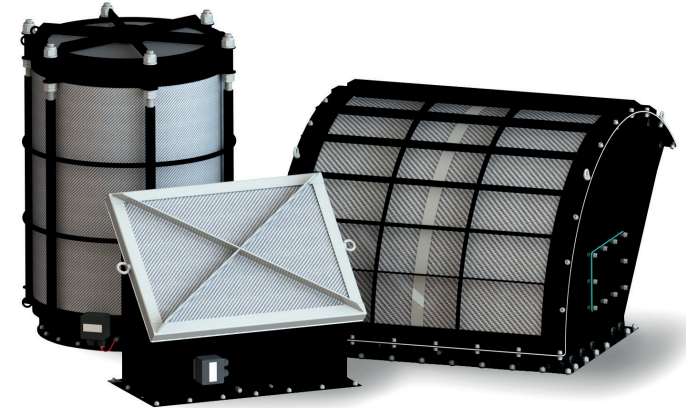
# FLEX – FLAMELESS EXPLOSION VENTING

FLEX guarantees explosion venting in enclosed or internal spaces without propagation of flame, dangerous pressure and heat to near surroundings, therefore the equipment and technologies that are located in hard to access spaces can be protected by the flameless explosion venting without increased costs for building modifications that are usually related to installation of conventional explosion venting devices.

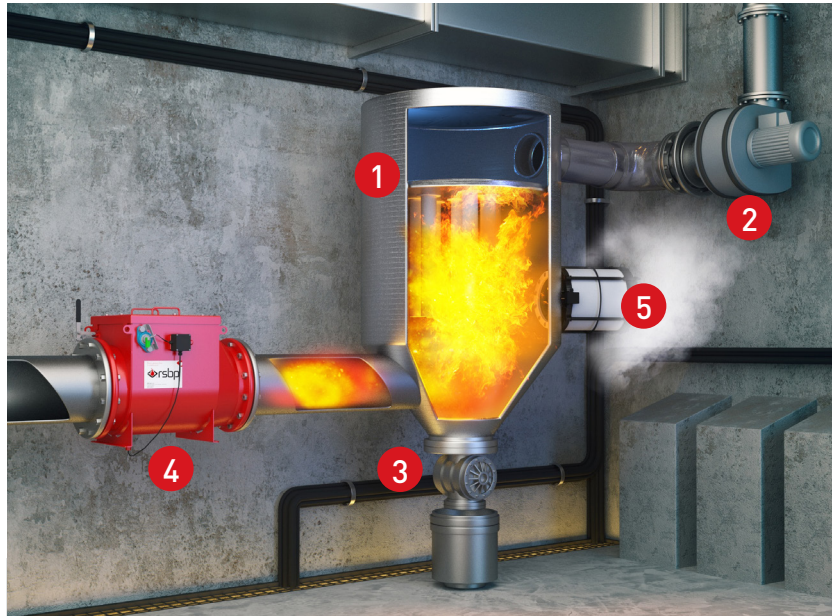
## ADVANTAGES:

- effective arrest of flame and dangerous temperature
- securing a safe zone for technology and construction and the safe movement of personnel
- **effective dust retention - no environmental pollution**
- suitable for the food and pharmaceutical industries
- easy installation and maintenance-free operation
- elimination of building modification costs
- **also suitable for technologies working with melting, coarse and light metal dust**
- meets the strictest requirements legislation for flameless explosion venting

Protection of your technology by the FLEX flameless explosion venting device is suitable in cases, where the explosion venting is not possible to a safety zone or there is not enough space for installation of conventional explosion venting device.



## DIAGRAM OF FLEX DEVICE INSTALLATION ON THE FILTER

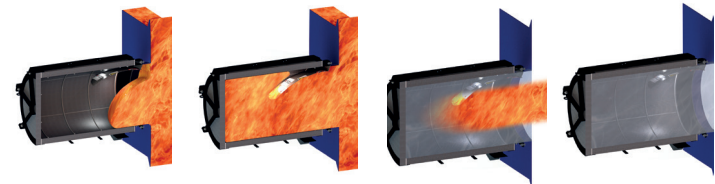


1. filter
2. fan
3. rotary valve
4. back pressure flap B-FLAP I
5. flameless explosion venting device FLEX C

The explosion venting device opens due to fast increasing pressure and the FLEX absorbs flame, burning dust, and gases. As opposed to an explosion venting, the FLEX device is capable to absorb these undesirable effects thanks to its construction.

The explosion venting can achieve temperatures up to 1 500 °C, with light metals such as aluminum and magnesium the temperature being around 3 000 °C.

During explosion venting with the FLEX flameless equipment, the temperature is lowered to a safe level that is not dangerous for surrounding equipment and for work and movement of personnel.



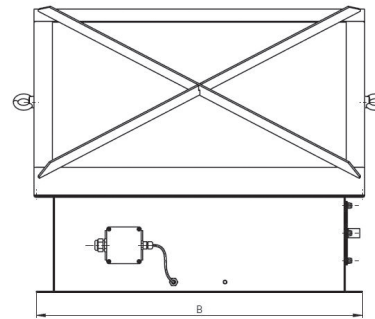
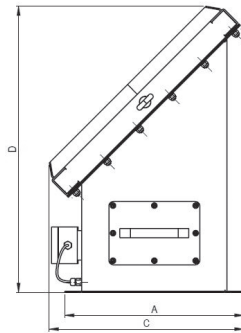




**TECHNICAL DATA:**

Type	A (mm)	B (mm)	C (mm)	D (mm)	Weight (kg)	VMP dimension*
FLEX F1 PRO	225	675	265	465	24	150 x 600
FLEX F2 PRO	305	625	335	530	28	220 x 540
FLEX F3 PRO	390	710	420	620	35	630 x 310

\* FLEX is standardly equipped with a VMP of a given dimension.



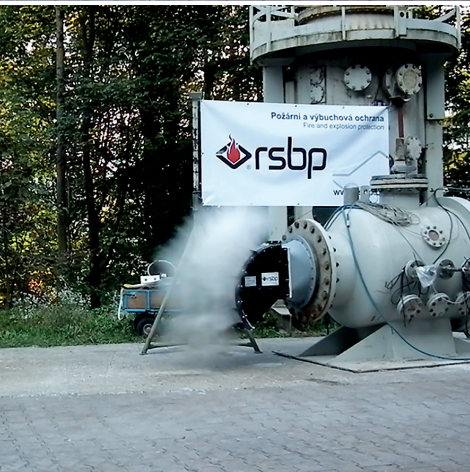
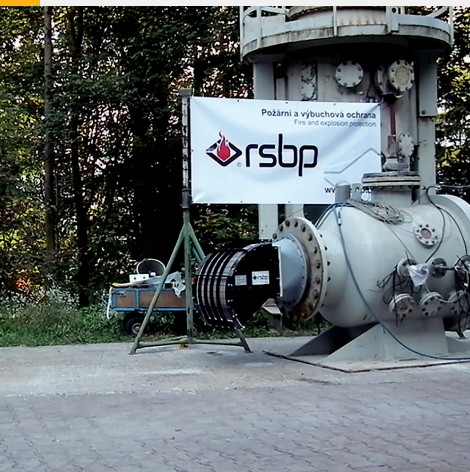
**APPLICATION:**

Dust type	FLEX F application
Organic dust	✓
Melt and coarse dust	✓

**OPTIONAL ACCESSORIES:**

- sanitary bag
- intrinsically safe relay

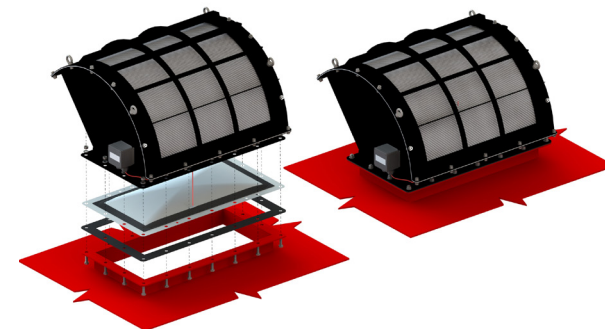
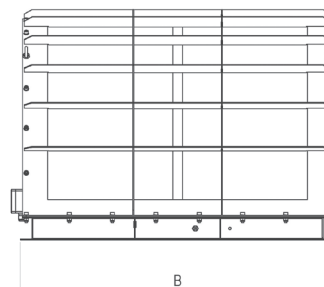
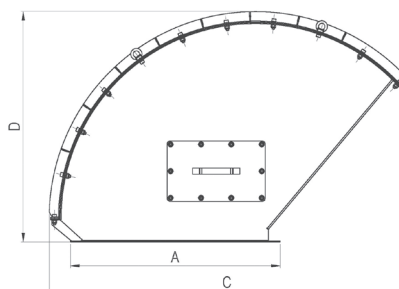




## TECHNICAL DATA:

Type	A (mm)	B (mm)	C (mm)	D (mm)	Weight (kg)	VMP dimension*
FLEX R1 PRO	390	710	635	410	40	630 x 310
FLEX R2 PRO	540	890	900	580	74	450 x 800
FLEX R3 PRO	666	1000	1130	735	109	586 x 920
FLEX R4 PRO	996	1198	1660	1070	215	915 x 1118

\* FLEX is standardly equipped with a VMP of a given dimension.



## APPLICATION:

Dust type	FLEX R application
Organic dust	✓
Melt and coarse dust	✓

## OPTIONAL ACCESSORIES:

- sanitary bag
- intrinsically safe relay

