REMBE®, INC.

Q-FlapCompact II
Q-FlapCompact II Plus

Certified according to EN 16447

Explosion Isolation of Dedusting and Aspiration Lines with Inlet Isolation Device

Numerous processes can cause explosive dust/air mixtures within industrial systems (dust collectors, mixingmachines, fluid bed granulators, mills, and the like). If ignition sources cannot be eliminated due to process conditions, these systems are often equipped with explosion protection measures like venting or suppression. This way, connected ductwork is decoupled or isolated from protected enclosures and flames and explosion pressure will not be conveyed into other areas.

With the Q-FlapCompact II Inlet Isolation Device series, explosions in nearly all industrial sectors can effectively be isolated. The Q-Flap is certified as a protective system according to EU guideline 94/9/EG (ATEX 114) and approved according to EN 16447 for decoupling explosions of organic and inorganic dusts.

The Q-FlapCompact II is applicable for a maximum K_{St}-value of 4,351 psi x m/s (300 bar x m/s) and for reduced pressure (P_{red}) up to 10.15 psi (0.7 bar).

Features

- **A fully approved ATEX protection system for decoupling of dust explosions involving organic and inorganic dusts**
- **A cost effective passive explosion protection system without actuation sensors**
- **Integrated fail-safe locking device for St2 dusts (damping system for St1 dusts) IAW DIN EN 16447**
- **Quick and easy maintenance via unique service opening without removing from ductwork**
- **Monitoring kit for supervised protection processes and extended maintenance intervals***

* *option*

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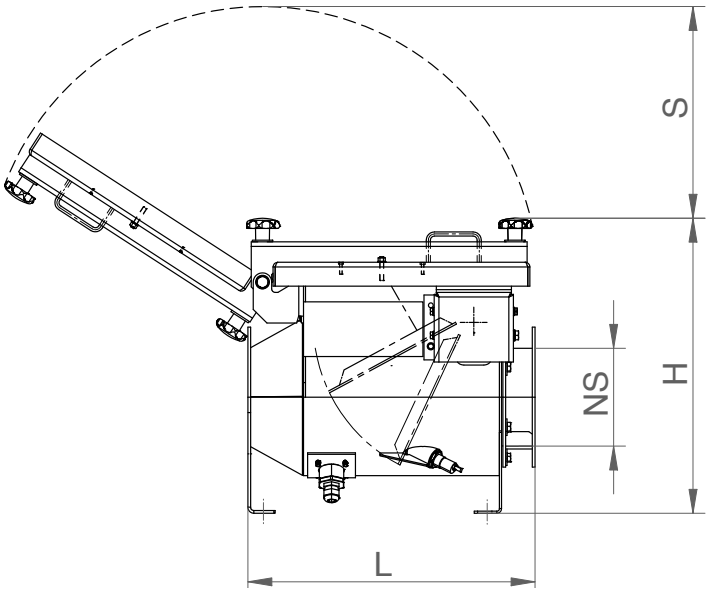
Technical Data

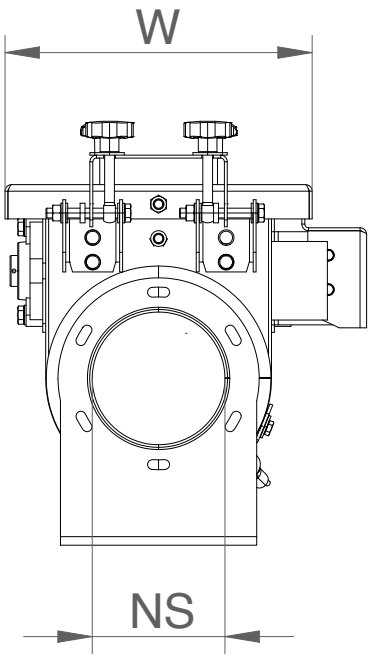
Q-FlapCompact II

Type			140	160	200	250	280	315	355	400
Nominal size		NS (NW)	5.51	6.30	7.87	9.84	11.02	12.40	13.98	15.75
Dimensions [mm]	Length L	[in]	16.54	19.29	20.87	23.23	24.80	26.38	29.53	29.53
		[mm]	420	490	530	590	630	670	750	750
	Width W	[in]	14.96	17.91	19.29	21.26	22.44	23.23	24.01	26.38
		[mm]	380	455	490	540	570	590	610	670
	Height H	[in]	16.93	18.19	19.88	20.87	21.73	23.23	25.28	27.36
		[mm]	430	462	505	530	552	590	642	695
	S	[in]	15.35	16.54	16.54	18.11	18.90	20.47	23.23	25.39
		[mm]	390	420	460	480	520	540	590	645
Weight		lbs	59.52	68.34	83.77	101.41	110.23	119.05	180.78	202.82
Pressure loss at 20 m/s		Pa	approx. 400	approx. 400	approx. 400	approx. 320	approx. 330	approx. 340	approx. 370	approx. 400
Maximum opening angle flap blade			68 °F [20 °C]						86 °F [30 °C]	
Possible dust explosion class			St1 and St2						St1	
Max. K_{St}-value		psi x m/s	4351.13						2900.75	
		[bar x m/s]	[300]						[200]	
Maximum reduced pressure (p_{red} max) in the filter (vessel)[1)]		psi	10.15						7.25	
		[bar]	[0.7]						[0.5]	
Pressure resistance of the back pressure flap[1)]		psi	21.76	13.78					8.70	
		[bar]	[1.5]	[0.95]					[0.6]	
Minimum mounting distance (St1)		in	102.36	78.74					102.36	
		[m]	[2.6]	[2]					[2.6]	
Minimum mounting distance (St2)		in	141.73	137.80					not allowed	
		[m]	[3.6]	[3.5]						
Maximum mounting distance (St1)		in	259.84	295.28					259.84	
		[m]	[6.6]	[7.5]					[6.6]	
Maximum mounting distance (St2)		in	275.59	10.15					not allowed	
		[m]	[7]	[0.7]						
[1)] excess pressure										

Type			450	500	560	630	710	800	900	1000
Nominal size		NS (NW)	17.71	19.69	22.05	24.80	27.95	31.50	35.43	39.37
Dimensions [mm]	Length L	[in]	32.28	34.25	36.61	42.91	46.85	51.97	57.87	63.98
		[mm]	820	870	930	1090	1190	1320	1470	1625
	Width W	[in]	28.74	31.50	33.07	41.34	45.28	48.43	53.54	57.09
		[mm]	730	800	840	1050	1150	1230	1360	1450
	Height H	[in]	28.74	31.30	33.31	38.19	41.73	46.85	50.98	55.12
		[mm]	730	795	846	970	1060	1190	1295	1400
	S	[in]	27.56	29.92	32.28	34.66	37.40	41.73	46.85	51.58
		[mm]	700	760	820	880	950	1060	1190	1310
Weight		lbs	218.25	260.14	335.10	485.01	573.19	672.40	793.65	925.92
Pressure loss at 20 m/s		Pa	approx. 430	approx. 450	approx. 450	approx. 500	approx. 500	approx. 500	approx. 500	approx. 500
Maximum opening angle flap blade			86 °F [30 °C]							
Possible dust explosion class			St1							
Max. K_{St}-value		psi x m/s	2900.75							
		[bar x m/s]	[200]							
Maximum reduced pressure (p_{red} max) in the filter (vessel)[1)]		psi	7.25							
		[bar]	[0.5]							
Pressure resistance of the back pressure flap[1)]		psi	8.70							
		[bar]	[0.6]							
Minimum mounting distance (St1)		in	102.36			118.11				
		[m]	[2.6]			[3]				
Minimum mounting distance (St2)		in	not allowed							
		[m]								
Maximum mounting distance (St1)		in	259.84			275.59				
		[m]	[6.6]			[7]				
Maximum mounting distance (St2)		in	not allowed							
		[m]								
[1)] excess pressure										

Class	II 3D T 60 °C [122 °F] (for Q-FlapCompact II-St1 only, suitable for zone 22)
Mounting position	horizontally, pull-flow application (fan behind Q-FlapCompact II)
Air flow velocity	49 - 98 ft / sec. [15 - 30 m / sec.]
Temperatures	14 °F up to 140 °F / -10 °C up to +60 °C
Material	Housing: S235JRG2 / flap blade: stainless steel
Paint finish	RAL 3000 blazing red (other colours optional)

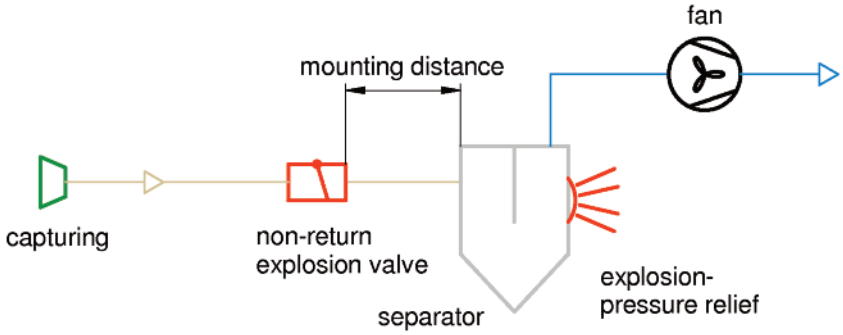




Technical data see page 2

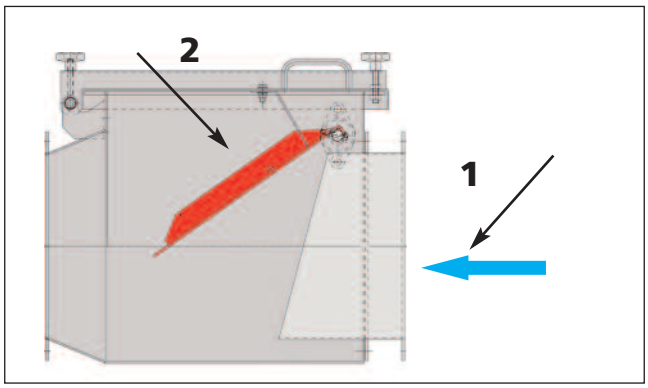
The Inlet Isolation Device can be opened completely, that means quick maintenance without dismantling the device.

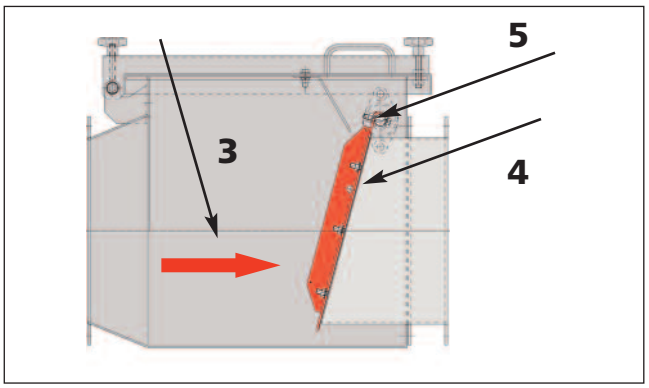
The following application example of an exhaust system equipped with an explosion pressure relief vent shows the operating principle of a Q-FlapCompact II Inlet Isolation Device:



Applications

- **Explosion decoupling of dry dust separators**
  - when grinding glass-fiber reinforced components
  - in the chemical and pharmaceutical industries
  - in the wood-processing industry
  - for varnish dusts, etc.
  - for blasting plants
- **Special Applications, e.g. air intake of mills**
- **The system is also suitable for dust concentrations beyond the lower explosion limits.**





Standard Operation

1. Direction of air flow
2. Inlet isolation device remains open by means of process flow.

During operation, the inlet isolation device remains in the open position by means of the process air flow. At standstill, the inlet isolation device closes due to its own weight. When the system is started, opening of the inlet isolation device is "slowed" by an integrated fail-safe locking device (St2 dust) or by a damping system (St1 dust).

Explosion Event

3. Explosion shock wave
4. Inlet isolation device is closed by explosion
5. The integrated fail-safe locking mechanism used in St2 dust applications prevents the inlet isolation device from reopening until the system is reset. The damping sensor does the same for St1 dust applications.

In the event of an explosion within a protected system the Q-FlapCompact II closes due to the pressure front spreading within the ductwork. Due to resultant low pressures, there is a perceived risk of the explosion flame front and pressure wave proceeding further downstream, endangering plant and personnel. The integrated fail-safe locking device used in St2 dust applications negates this risk in accordance with EN 16447. The damping system will negate this risk for St1 dusts.

Option: Monitoring with Q-FlapCompact II Plus

With the Q-FlapCompact II Plus protection system, maintenance intervals are extended. The wear-and tear sensor monitors potential abrasion on the stainless steel flap. The additionally integrated clogging sensor alerts to any type of product accumulation in the inlet isolation device area ensuring safe closing of the inlet isolation device.

Quality and Certifications

All REMBE® protection systems and devices are certified IAW EU directive 94/9/EG (ATEX 114) and meets NFPA guidelines. Each individual batch (lot) is manufactured and tested in compliance with the requirements of EN 16447.

REMBE® provide support in simulating explosion events, in calculating the required venting areas and in selecting the correct product for any given installation/location.

Your benefits

- **Certified to the more stringent standard EN 16447 (Released Sept 2012)**
- **Significant system reassurance and reduced cost of ownership for end users by ease of maintenance and relaxed maintenance frequency**
- **Available in sizes from DN140 through to DN1000 Special sizes on request (ie DN100)**