

Protective solutions

Applications

The YV-KK overpressure blast valve is used as air outlet valve in Civil Defence and military shelters to block out the destructive effects of explosions and to maintain the specified overpressure in the shelter for preventing the entry of toxic agents through the air outlet openings.

Specification

Manufacturer of YV-KK overpressure blast valve is Temet, Helsinki Finland.

The YV-KK overpressure blast valve block comprises three closing elements supported by a lever mechanism. Under normal ventilation conditions the lever allows the valve to open when the internal overpressure exceeds 50 Pa. In case of positive or negative blast load from the outside, the closing elements are instantly pushed against the valve seats thus closing the valve. The valve blocks are mounted in structural steel wall frames that can house 1 to 10 blocks. The wall frames are of flush design leaving no parts to extent beyond the concrete wall surface. The valve is completely corrosion resistant. The special aluminum alloy closing elements are epoxy powder coated, all springs are made of stainless steel, and the valve body and wall frame made of structural steel are hot dip galvanized.

Design Criteria

The YV-KK overpressure blast valve is made in accordance with specific provisions issued by the Finnish Ministry of Interior. The YV-KK overpressure blast valve also meets the requirement of Swiss Federal Office of Civil Defence. The YV-KK is tested for blast resistance and attenuation by the Technical Research Centre of Finland / VTT Building Technology, an Independent Testing Authority mandated to perform type inspection for shelter equipment and systems by the Finnish Ministry of Interior. Test reports as well as additional test data are available upon request.

Test and performance data

The valve is designed and tested to withstand multiple long duration (positive phase duration ≥ 70 ms) blast loads having peak reflected overpressure of 10 bar while retaining its full functional ability. Pass through (leakage) pressure and impulse of the valve do not exceed the values of 0.60 bar and 0.65 bar ms respectively as measured on the average tributary wall area occupied by the valve. The valve is shock tested with a mechanical shock of the installation base having a maximum acceleration of 30 g and velocity of 1.5 m/s.

The valve is designed to function within the operating temperature range of -20 ...+200°C.

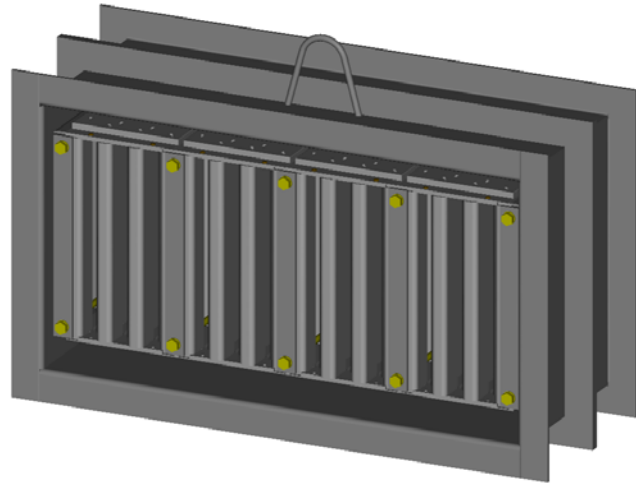
Test reports

VTT type test report and additional test data is available upon request.

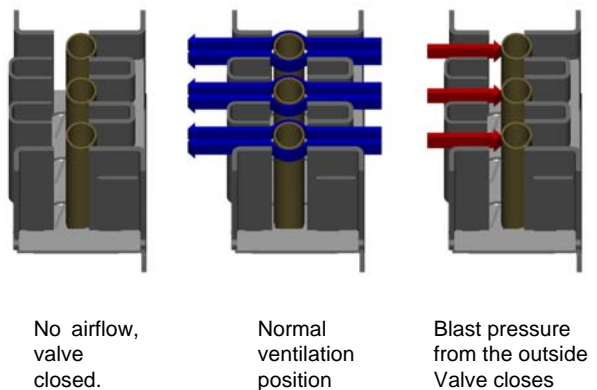
Other documents related to YV-KK Overpressure Blast Valve

Installation Instructions

Operation & Maintenance Instructions



Overpressure Blast Valve YV-KK-4



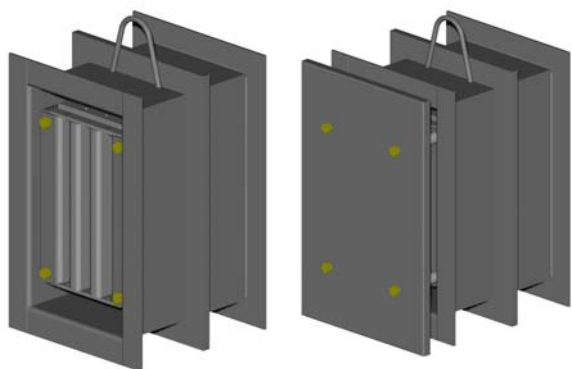
No airflow, valve closed.

Normal ventilation position

Blast pressure from the outside Valve closes

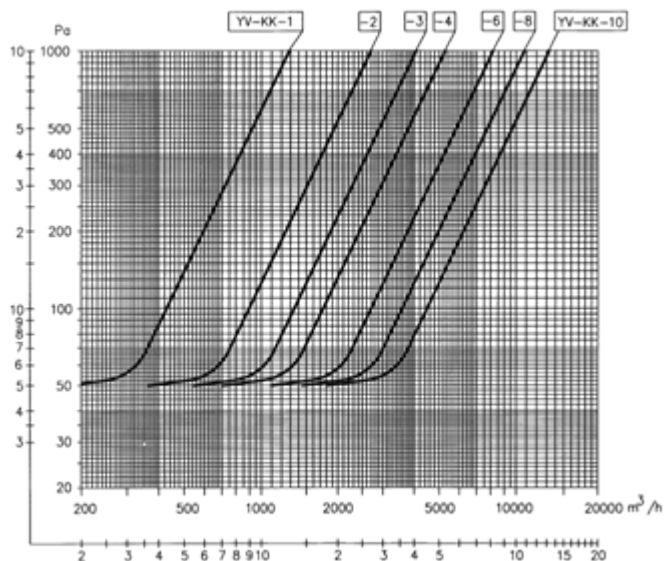
YV-KK Overpressure Blast Valve Operation Principle

Typical installations



YV-KK-1

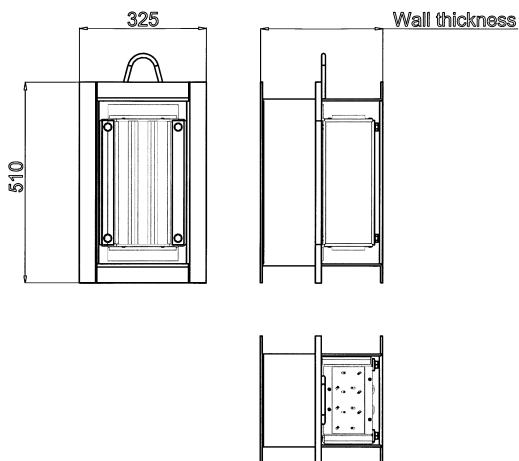
YV-KK-1 with Splinter Plate



Air flow characteristics measured at 20 °C corresponding to air density of 1.2 kg/m³.

Maximum pass through pressure & impulse, 0.60 bar and 0.65 bar ms.

The standard YV-KK wall frame can incorporate 1 to 10 valve blocks. The overall height of the frame is always 510 mm and the height of the opening is 410 mm. The total width and the width of the opening are dependent on the number of valve blocks as indicated in the table below.



YV-KK Overpressure Blast Valve dimensions

Valve	Space Reservation height x width (mm)	Opening height x width (mm)	Min. wall thickness (mm)	Min. Packing Volume (m ³)	Weight of valve blocks (kg)	Weight of wall frame (kg)	Total weight (kg)	Air Flow at 100 Pa (m ³ /h)	Air Flow at 200 Pa (m ³ /h)	Air Flow at 300 Pa (m ³ /h)
YV-KK-1	510x325	410x225	300	0,05	11	35	46	430	620	760
YV-KK-2	510x505	410x405	300	0,08	22	45	67	860	1240	1520
YV-KK-3	510x685	410x585	300	0,12	33	55	88	1290	1860	2280
YV-KK-4	510x865	410x765	300	0,15	44	65	109	1720	2480	3040
YV-KK-5	510x1045	410x945	300	0,18	55	75	130	2150	3100	3800
YV-KK-6	510x1225	410x1125	300	0,21	66	85	151	2580	3720	4560
YV-KK-7	510x1405	410x1305	300	0,24	77	95	172	3010	4340	5320
YV-KK-8	510x1585	410x1485	300	0,27	88	105	193	3440	4960	6080
YV-KK-9	510x1765	410x1665	300	0,30	99	115	214	3870	5580	6840
YV-KK-10	510x1945	410x1845	300	0,33	110	125	235	4300	6200	7600

Design - Production – Installation – Maintenance - Consultation