Protective solutions

Applications

The PV-KK blast valve is used as air intake and outlet valve in Civil Defence and military shelters and blast protected industrial facilities. The valve is particularly suitable for low pressure applications within the oil refining industry.

Specification

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

The PV-KK blast valve block comprises three spring balanced closing elements moving in a slot and closing the air passage against the valve seats in response to both positive and negative (suction) phase of the blast. The valve blocks are mounted in structural steel wall frames to be cast in concrete wall. The wall frames are of flush design leaving no parts to extent beyond the concrete wall surface.The valve is completely corrosion resistant. The valve closing elements are made of special non-corroding aluminum alloy, all springs are made of stainless steel, and the valve body and wall frame made of structural steel are hot dip galvanized. The valve can be installed in upright or horizontal position in a wall or ceiling/floor.

Design Criteria

The PV-KK blast valve is made in accordance with specific provisions issued by the Finnish Ministry of Interior. The PV-KK blast valve also meets the requirements of the Swiss Federal Office of Civil Defence. The PV-KK is type tested and approved for use 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 Ministry of Interior. Type 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 (peak duration > 70 ms) blast loads having peak reflected overpressure of 1100 kPa (11 bar) and short duration (positive phase duration < 5.0 ms) blast loads having peak reflected overpressure of 1500 kPa (15 bar) while retaining its full functional ability.
Pass through (leakage) pressure and impulse of the valve do not exceed the values of 80 kPa (0.8 bar) and 35 Pa s (0.35 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.

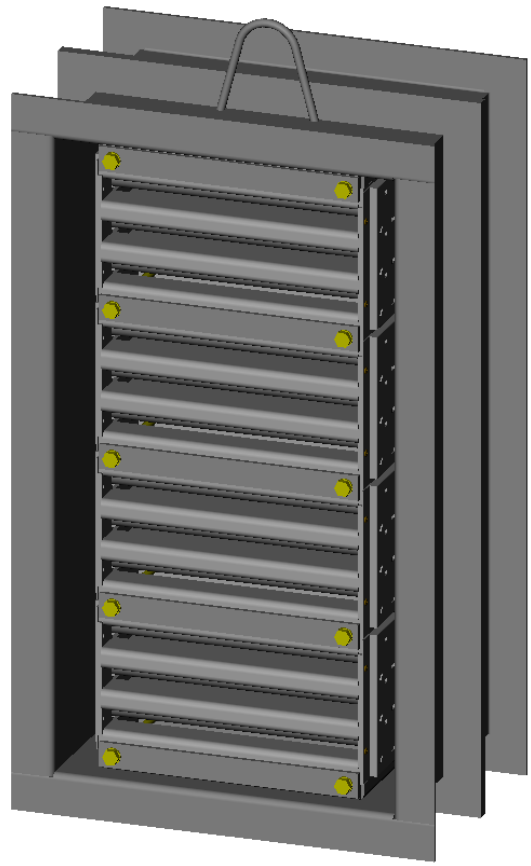
The valve is designed to function within the operating temperature range of -20 …+200ºC.

Type Test Report

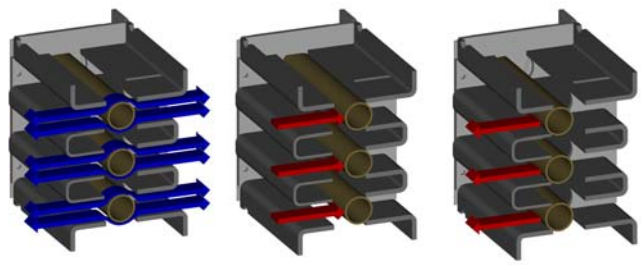
VTT type test report and additional test data is available upon request.

Other documents related to PV-KK Blast Valve:

Installation Instructions,
Operation & Maintenance Instructions



Blast Valve PV-KK-4



Normal ventilation position

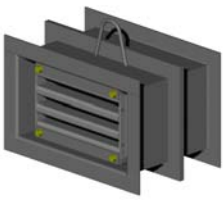
Blast pressure from the outside
Valve closes

Negative pressure from the outside
Valve closes

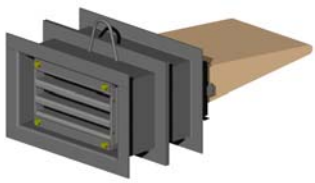
PV-KK Blast Valve Operation Principle

TEMET BLAST VALVE PV-KK

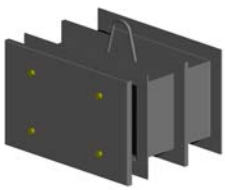
PV-KK BLAST VALVE AND ACCESSORIES



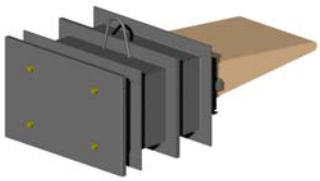
PV-KK-1



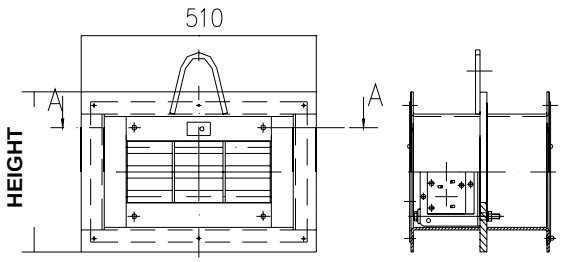
PV-KK-1 with Pre-Filter

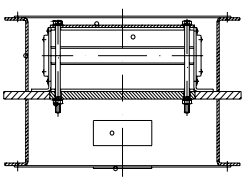


PV-KK-1 with Splinter plate



PV-KK-1 with Splinter Plate and Pre-Filter

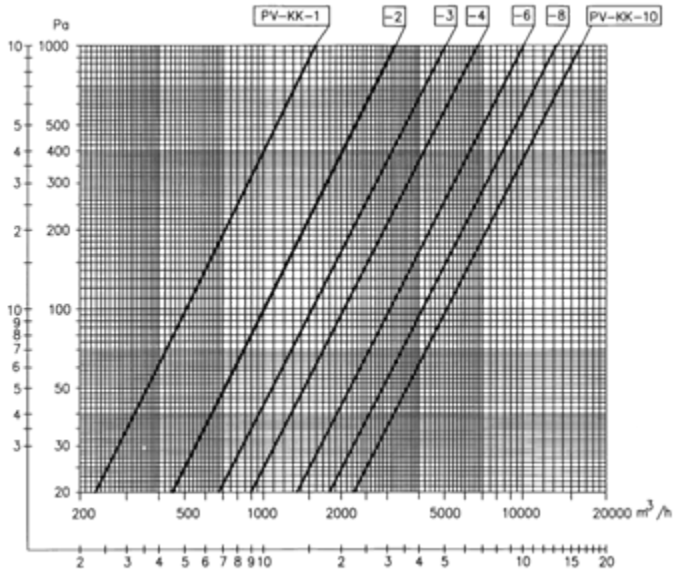




BLAST SIDE

A-A

PROTECTED SIDE



Air flow characteristics measured at 20 °C corresponding to air density of 1.2 kg/m³. The valve has the same airflow characteristics for intake and exhaust air flow direction. Maximum pass through pressure & impulse, 80 kPa (0.8 bar) and 35 Pa s (0.35 bar ms).

For pre-filter application, add 20 Pa, 40 Pa and 60 Pa to the pressure drop corresponding to nominal flow rates 500 m³/h, 720 m³/h and 900 m³/h per valve block.

PV-KK Blast Valve dimensions

The standard PV-KK wall frame can incorporate 1 to 10 valve blocks. The overall width of the frame is always 510 mm and the width of the opening is 410 mm. The total height and the height of the opening are dependent on the number of valve blocks as indicated in the table below.
Valves for other flow capacities, section sizes and installations are described in separate documents.

Valve	Space Reservation width x height (mm)	Opening width x height (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)
PV-KK-1	510x325	410x225	300	0,05	11	35	46	500	720	900
PV-KK-2	510x505	410x405	300	0,08	22	45	67	1000	1440	1800
PV-KK-3	510x685	410x585	300	0,12	33	55	88	1500	2160	2700
PV-KK-4	510x865	410x765	300	0,15	44	65	109	2000	2880	3600
PV-KK-5	510x1045	410x945	300	0,18	55	75	130	2500	3600	4500
PV-KK-6	510x1225	410x1125	300	0,21	66	85	151	3000	4320	5400
PV-KK-7	510x1405	410x1305	300	0,24	77	95	172	3500	5040	6300
PV-KK-8	510x1585	410x1485	300	0,27	88	105	193	4000	5760	7200
PV-KK-9	510x1765	410x1665	300	0,30	99	115	214	4500	6480	8100
PV-KK-10	510x1945	410x1845	300	0,33	110	125	235	5000	7200	9000

Design - Production – Installation – Maintenance - Consultation

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