Applications

The blast valve PV-KK-SM/-SMX is an application of the PV-KK blast valve for mounting on blast resistant wall surface. It is specifically designed for installation in existing buildings where casting of the valve frame in concrete is not possible. The valve is also applicable to industrial applications with risk of chemical and dust explosions.

The PV-KK-SM/-SMX blast valve is available in 2-column and 3-column standard frames. Single-column versions are described in a separate document. Contact the manufacturer for the availability of frames with custom dimensions.

The number of blocks in valve depends on the air flow requirement at desired pressure drop. When the valve dimensions do not match the opening to be covered, custom made adaptors are available.

Specification

Manufacturer of PV-KK-SM and PV-KK-SMX blast valves is Temet Oy, Helsinki Finland.
The PV-KK-SM/-SMX 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 frames.

PV-KK-SM

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 frame made of structural steel are hot dip galvanized.

PV-KK-SMX

All the components of the valve are made of acid-proof steel. The version is especially designed for off-shore and other marine applications

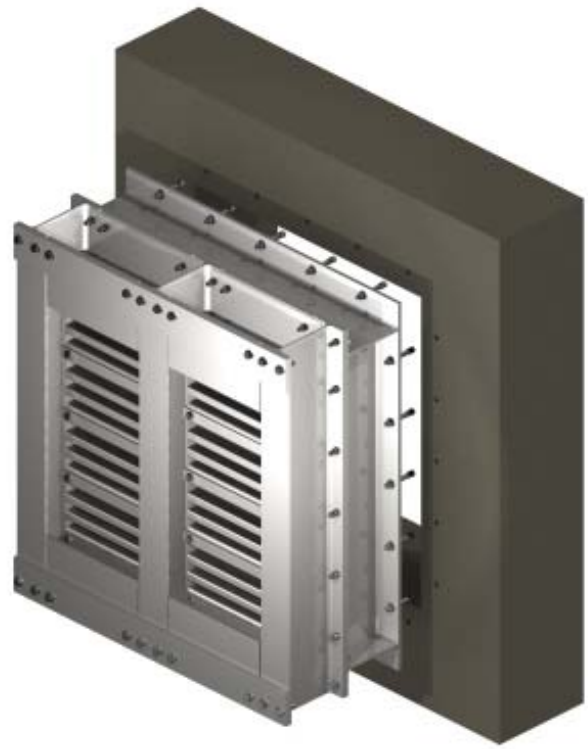
Design Criteria

The PV-KK-SM/-SMX blast valve is designed for a maximum long duration blast load with 100 kPa (1.0 bar) reflected peak pressure. The valve is tested with pressure waves having a finite rise time thus simulating hydrocarbon or dust explosions.

Test and Performance Data

The valve is verified by tests to effectively attenuate slowly rising (rise time = 10…100 ms) long duration (peak duration > 1000 ms) pressure wave loads within the load range up to 100 kPa (1.0bar).

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



Test Reports

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

Installation Alternatives

The valve is designed to be installed onto the blast side of the blast resistant wall. The valve can be in upright or horizontal position or on ceiling/floor.
The valve is installed on a concrete wall by means of anchor bolts of type HILTI HSA M12 x 100. On a steel wall the valve can be installed by welding or bolting using M12 machine bolts.

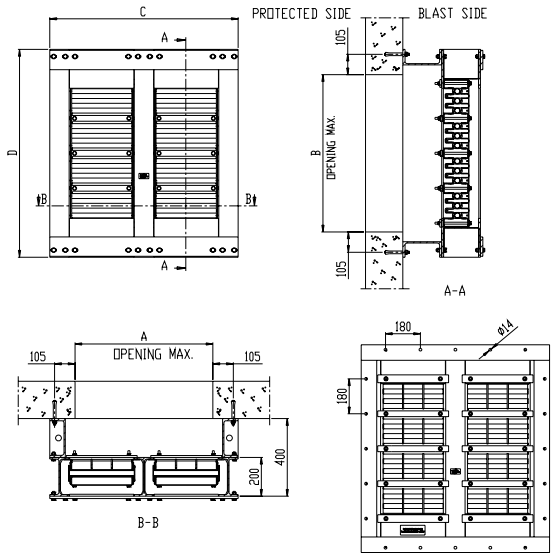
Product Coding

The material, size and form of the multi-column valves are indicated in the product code as follows.

PV-KK-SM-number (columns x rows) for hot dip galvanized steel
PV-KK-SMX-number (columns x rows) for acid-proof steel

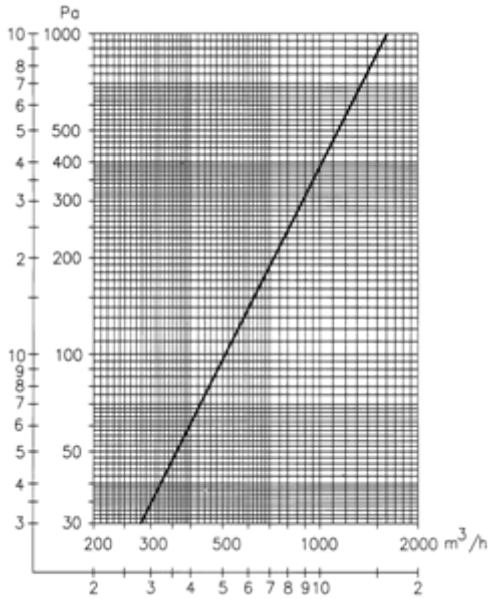
where
number = total number of valve blocks
columns = number of valve block vertical columns
rows = number of valve block horizontal rows,
when blocks are in horizontal position as illustrated in the picture.

TEMET MULTICOLUMN BLAST VALVE PV-KK-SM AND PV-KK-SMX



Dimensions of Standard Multi-column Valves

Key characteristics of the valves are given below relating to legends in the drawings (concrete wall installation as example). The same figures apply to the PV-KK-SMX versions. Note that the size of opening to be covered depend on wall material due to the safety margin in bolting.



Air Flow Characteristics

Air flow characteristics of one PV-KK-SM/-SMX blast valve block are given in the above chart. The flow curve is measured at 20 °C corresponding to air density of 1.2 kg/m³. The required number of valve blocks in a specific application is determined by dividing the total air flow by the air flow capacity of one valve block at desired pressure drop.

VALVE TYPE CODE	Concrete wall (mm)		Steel wall (mm)		C (mm)	D (mm)	Air flow at 100 Pa (m³/h)	Air flow at 200 Pa (m³/h)	Air flow at 300 Pa (m³/h)	Total weight (kg)
	A max	B max	A max	B max						
PV-KK-SM-4 (2x2)	710	450	810	550	970	710	2000	2880	3600	280
PV-KK-SM-6 (2x3)	710	630	810	730	970	890	3000	4320	5400	325
PV-KK-SM-8 (2x4)	710	810	810	910	970	1070	4000	5760	7200	370
PV-KK-SM-10 (2x5)	710	990	810	1090	970	1250	5000	7200	9000	410
PV-KK-SM-12 (2x6)	710	1170	810	1270	970	1430	6000	8640	10800	465
PV-KK-SM-14 (2x7)	710	1350	810	1450	970	1610	7000	10080	12600	510
PV-KK-SM-16 (2x8)	710	1530	810	1630	970	1790	8000	11520	14400	560
PV-KK-SM-18 (2x9)	710	1710	810	1810	970	1970	9000	12960	16200	610
PV-KK-SM-20 (2x10)	710	1890	810	1990	970	2150	10000	14400	18000	655
PV-KK-SM-22 (2x11)	710	2070	810	2170	970	2330	11000	15840	19800	710
PV-KK-SM-24 (2x12)	710	2250	810	2350	970	2510	12000	17280	21600	750
PV-KK-SM-26 (2x13)	710	2430	810	2530	970	2690	13000	18720	23400	800
PV-KK-SM-28 (2x14)	710	2610	810	2710	970	2870	14000	20160	25200	850
PV-KK-SM-6 (3x2)	1145	450	1245	550	1405	710	3000	4320	5400	420
PV-KK-SM-9 (3x3)	1145	630	1245	730	1405	890	4500	6480	8100	488
PV-KK-SM-15 (3x5)	1145	990	1245	1090	1405	1250	7500	10800	13500	555
PV-KK-SM-18 (3x6)	1145	1170	1245	1270	1405	1430	9000	12960	16200	615
PV-KK-SM-21 (3x7)	1145	1350	1245	1450	1405	1610	10500	15120	18900	698
PV-KK-SM-24 (3x8)	1145	1530	1245	1630	1405	1790	12000	17280	21600	765

Design - Production – Installation – Maintenance - Consultation

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