

Rectangular Blast Resistant Valves – BVR Range

Introduction

EEP's Modular Rectangular Blast Resistant Valves are specifically designed for applications requiring high airflow capacity. Suitable for both supply (inlet) and extract (exhaust) systems, these valves are engineered to withstand extreme blast pressures of up to **20 bar (2 MPa)** from either direction. Their robust construction ensures reliable protection in critical environments where pressure surges or explosive events may occur. These blast valves can with-stand temperatures of up to 90°C.

EEP manufacture 2 versions with different lengths:

BVR 400S - 400mm length - 20 Bar (2 Mpa)

BVR 400H - 400mm length - 10 Bar (1 Mpa)

BVR 600S - 600mm length - 20 Bar (2 Mpa)

BVR 600H - 600mm length - 10 Bar (1 Mpa)



The rectangular BVR blast valves are available in standard sizes of 400 mm and 600 mm.

These modular units are designed to be stacked or combined, allowing for flexible configurations to accommodate a wide range of airflow and spatial requirements. This adaptability makes them suitable for various applications, from small enclosures to large-scale ventilation systems.

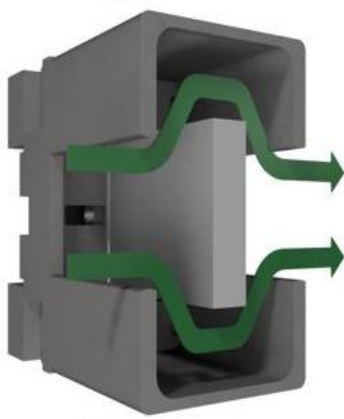
For bespoke dimensions or project-specific needs, please contact EEP directly. Our engineering team will be happy to discuss tailored solutions to meet your exact specifications.

Design & Materials

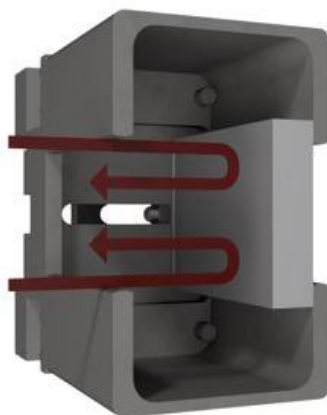
The rectangular blast valve consists of stackable modules fitted into wall frames. These can be mounted both vertically or horizontally. The Blast Valve closes upon impact of the blast and during the reverse pressure phase. When the blast has passed, the valve returns to its open position.

The frames and valves are made from galvanized steel and aluminum. The frames are designed for casting into concrete. If required they can also be supplied for bolting onto, or welding into, steel walls.

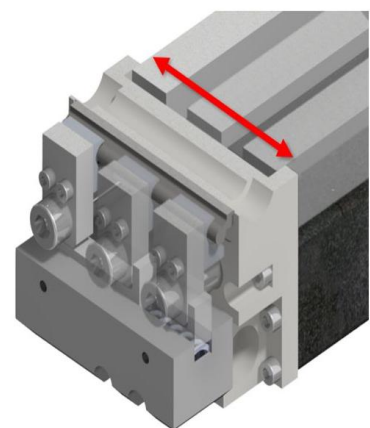
Blast Valve Open (Air Flow)



Blast Valve Closed (Air Flow)



Blast Valve Operation

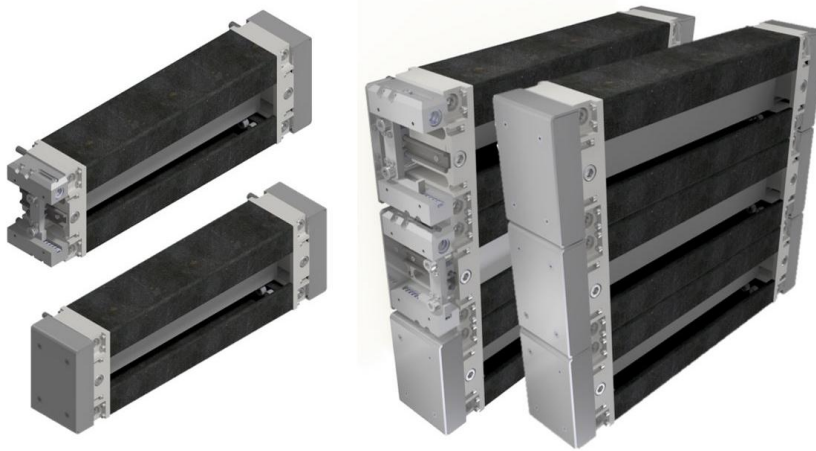


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Blast Valve Surface Treatment

The rectangular modular blast valves are constructed from robust steel to ensure structural integrity and long-term durability.

Each valve is finished with a high-performance coating, providing excellent resistance to corrosion, wear, and harsh environmental conditions. This protective finish ensures the valves maintain their performance and reliability even in demanding applications such as military, industrial, or critical infrastructure environments.



Air Flow Capacity

The air volume at the required pressure drop will determine the total number of valves required. The airflow/pressure drop is the same for both inlets and outlets.

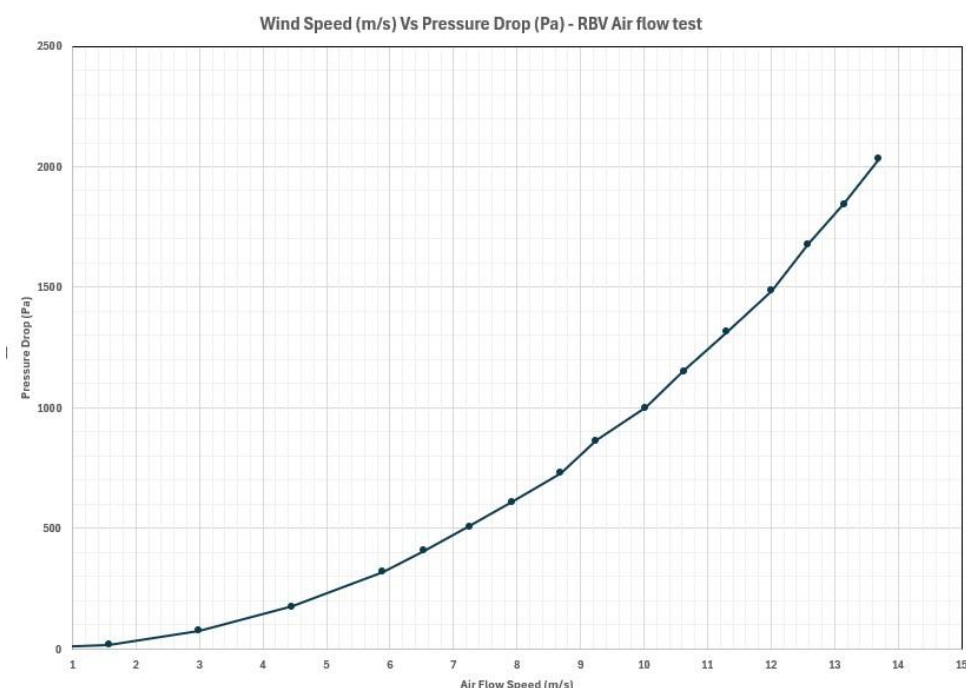
Air Flow Performance

The graph below illustrates the results of performance testing carried out on the Rectangular Blast Valve (RBV), specifically examining the relationship between airflow speed (m/s) and the corresponding pressure drop (Pa).

The test confirms a clear non-linear relationship between airflow velocity and pressure drop. As airspeed increases, pressure drop rises progressively, reflecting the aerodynamic characteristics of the valve under operational conditions. At lower airflow speeds (e.g., 1–5 m/s), the pressure drop remains relatively low, indicating minimal resistance to ventilation. However, beyond approximately 9 m/s, the curve steepens significantly, with pressure drop exceeding 2000 Pa at peak flow rates (~13.5 m/s).

This performance profile demonstrates the valve's ability to support high airflow while maintaining structural integrity and blast resilience. The data is especially relevant for system designers evaluating ventilation performance under dynamic air movement or overpressure scenarios.

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RBV	
Air Speed (m/s)	Pressure Drop (Pa) [+/-10]
1	10
2	30
3	80
4	150
5	230

Blast Rating

The valves are engineered and independently tested to withstand blast loads of up to 2.0 MPa (20 bar), ensuring reliable performance under extreme pressure conditions.

Accessories

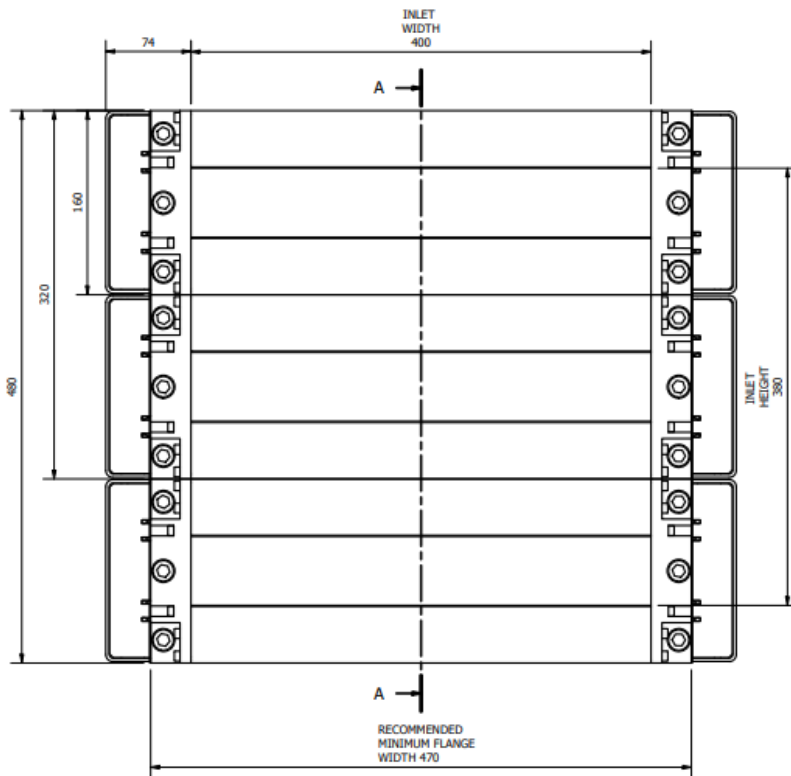
Wall frames can be equipped with optional particle filters and protective shields to guard against environmental exposure and shrapnel impact.

Additionally, adapter boxes are available to enable seamless integration with both rectangular and square ductwork configurations, ensuring installation flexibility across a range of ventilation systems.

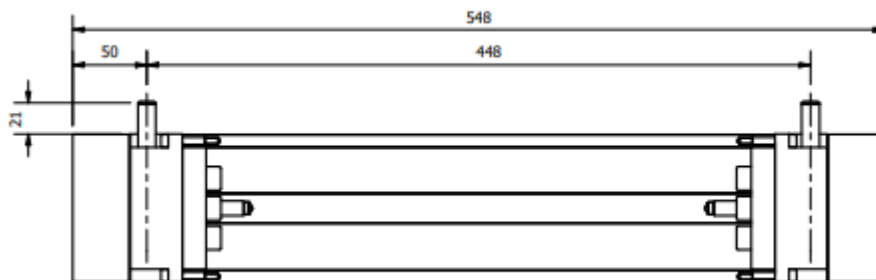
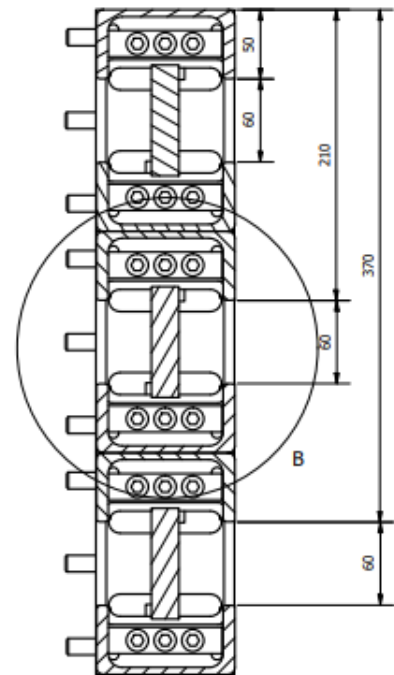
Other Specifications

Peak Incident pressure durability	2.0 MPa (20 bar)
Peak Reflected pressure durability	2.0 MPa (20 bar)
Working temperature	-40 to + 180°C

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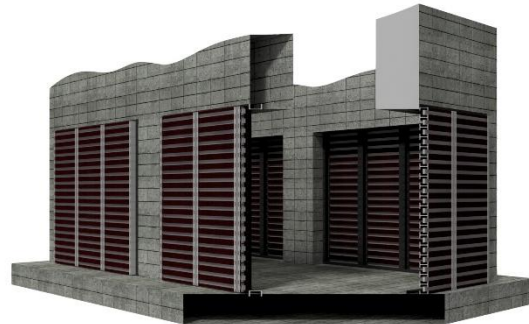
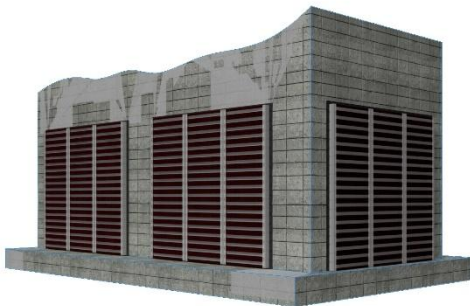
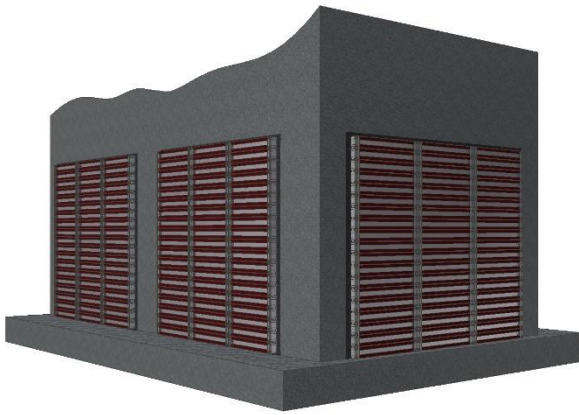
SECTION A-A



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These blast valves are designed with a modular architecture, enabling multiple units to be assembled side-by-side or stacked vertically to accommodate larger airflow requirements.

This flexible configuration allows the system to be tailored to suit both inlet and outlet applications, making it ideal for projects with varying airflow demands or space constraints. The modular design also simplifies installation, maintenance, and future scalability, offering a practical solution for both new builds and retrofit projects.



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European EMC Products

Technical Datasheet