

Pressure Relief Damper, Type KL-EM



Safety by Pressure Relief

Pressure Relief Damper, Type KL-EM

In a great variety of different applications within HVAC systems Pressure Relief Dampers manufactured by Krantz are used to limit the pressure and control it, respectively. Typical applications include the protection of ductwork from inadmissible high loading caused by positive pressure or negative pressure, positive pressure ventilation of staircases, or setting a defined pressure drop between adjacent rooms.

Quality and safety features

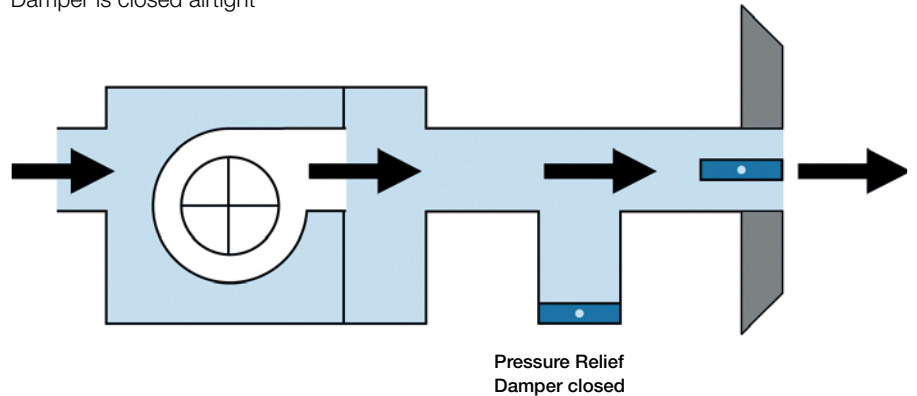
Regardless of the practical case of application, Pressure Relief Dampers made by Krantz feature the following performance characteristics:

- Automatic, merely mechanical operation without additional auxiliary energy
- High tightness in closed position
- Very large range of volumetric air flow
- Suitable for operation in systems at negative pressure and positive pressure, respectively
- Extremely short response time
- Adjustable opening pressure
- Low weight
- Easy mounting
- Low costs
- Patent protected

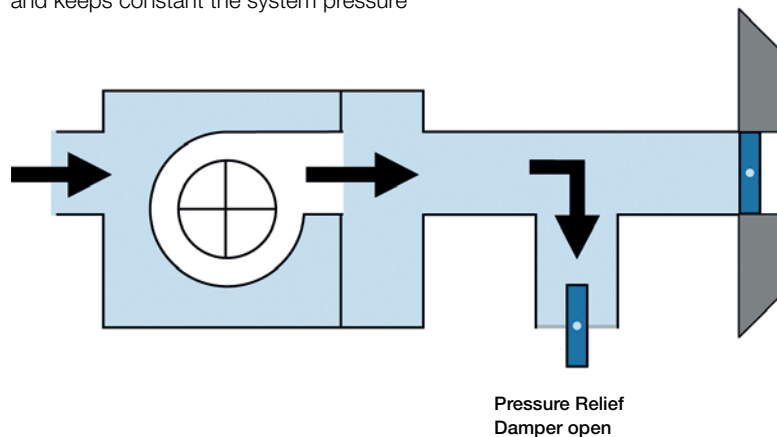
Pressure Relief Dampers, Type KL-E are high-quality components which can protect or control your HVAC systems.

Example of positive pressure limitation

During normal operation the Pressure Relief Damper is closed airtight



Before the admissible maximum is reached, the Pressure Relief Damper opens and keeps constant the system pressure



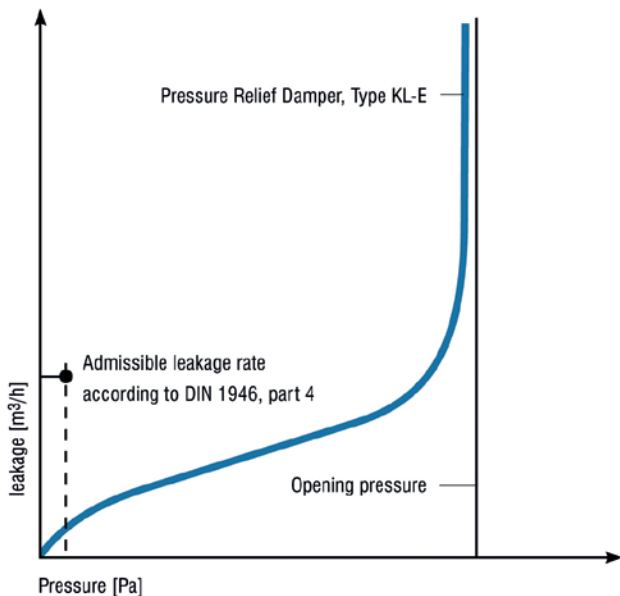
Pressure Relief Dampers for high opening pressures

In the ductwork of HVAC systems the pressure level is subject to minor variations under condition of faultless operation. However, under fault conditions such as closing of a fire protection damper or shut off damper the pressure in the fan chamber and in the ductwork may rise abruptly on the fan's pressurized side and fall abruptly on the fan's suction side, respectively. If during that process the limits of loading of the HVAC system are exceeded, the HVAC-unit or the ductwork affected might be destroyed. To avoid this damage, Pressure Relief Damper Type KL-E or Type KL-EM has to be installed. Under condition of faultless operation of the HVAC-system, they fulfil the function of airtight shut off dampers according to the German standard DIN 1946-4. If the system pressure is in excess of an adjustable opening pressure, the damper opens automatically and prevents the pressure from rising further.

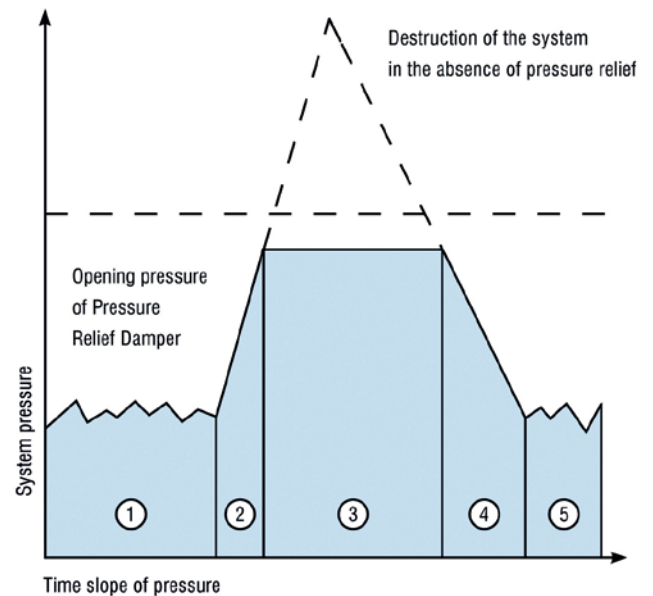
The function of the Pressure Relief Dampers Type KL-EM has been qualified by TÜV Bayern (Technical Inspection agency) following prototype testing.

Pressure Relief Damper, Type KL-EM with switching function

The Pressure Relief Damper Type KL-EM features a switching function. Independent of the range of volume flow of the outlet flow the damper blade gets fully opened when the opening pressure is exceeded. When the pressure in the ductwork falls below the opening pressure after the malfunction has been remedied, the damper normally remains open. In this state of operation the damper Type KL-EM must be closed manually, whereas it closes automatically when the flow is interrupted, e.g. by disabling of the fan. Despite its smaller outside dimensions Type KL-EM is capable of removing flows at higher range of volume flow as compared with Type KL-E.

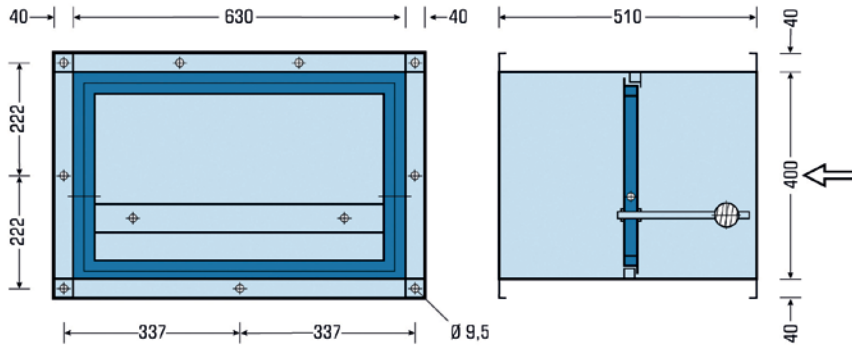


Leakage characteristic of Pressure Relief Damper

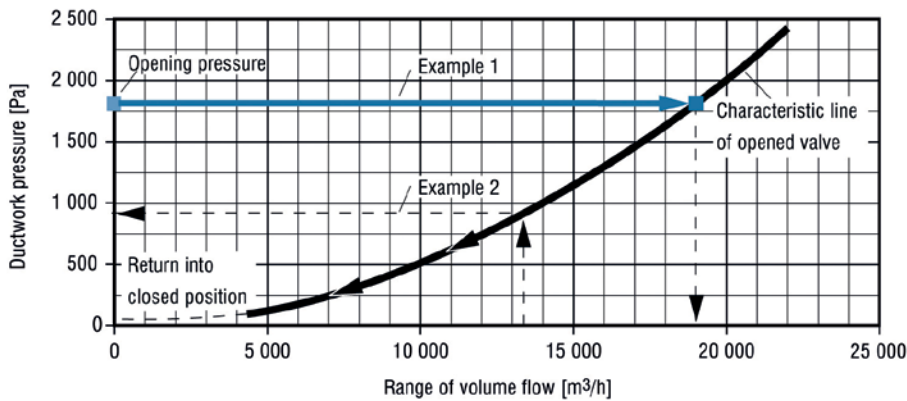


Destruction of the system in the absence of pressure relief

Dimensions and weights



Dimensional sketch of Pressure Relief Damper, Type KL-EM



Characteristic lines of differential pressures of pressure Relief Damper, Type KL-EM (results of measurements made at 20 °C air temperature)

Example 1:

Searched: max. range of volume flow to be relieved
 Given: opening pressure
 $\Delta p_{open} = 1\,800\text{ Pa}$
 $\dot{V}_{max} = 19\,090\text{ m}^3/\text{h}$
 $\Delta p_{open} = \Delta p_{relieved}$

Example 2:

Searched: pressure in ductwork after opening of damper
 Given: range of volume flow to be relieved
 $\Delta p_{open} = 1\,800\text{ Pa}$
 $\dot{V}_{balanced} = 13\,500\text{ m}^3/\text{h}$
 $\Delta p_{balanced} = 900\text{ Pa}$

Text for tender

Pressure Relief Damper, Type KL-EM

Automatic, dead-weight Pressure Relief Damper made of galvanized sheet (different material on request) steel with single damper blade on horizontal bearing.

Features

- Airtight according to DIN 1946-4 in closed position
- Opens fully when opening pressure set is attained (switching function)
- Closes automatically upon interruption of flow
- Setting of opening pressure by variation of lever arm
- Closing of damper after exceeding of opening pressure by hand

Technical data

Fabrikate:	Krantz
Type:	KL-EM
Dimensions W x H x D:	630 x 400 x 510 mm
Weight:	23 kg
Range of volume flow ¹⁾ :	
$\dot{V}_{\min. =}$	5 000 m ³ /h
$\dot{V}_{\max. =}$	$450 \sqrt{\text{Öffnungsdruck [Pa]}}$ m ³ /h
Opening pressure, adjustable:	700 – 2 400 Pa
Opening pressure chosen, factory set: Pa

1) Higher range of volume flow achievable by
parallel connection of several dampers

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The logo for Krantz GmbH, featuring the word "Krantz" in a stylized, blue, cursive script font.