EICHELBERGER

Product catalog 2022 / 2023

PRESSURE DIFFERENTIAL SYSTEM

Technical advice and planning support

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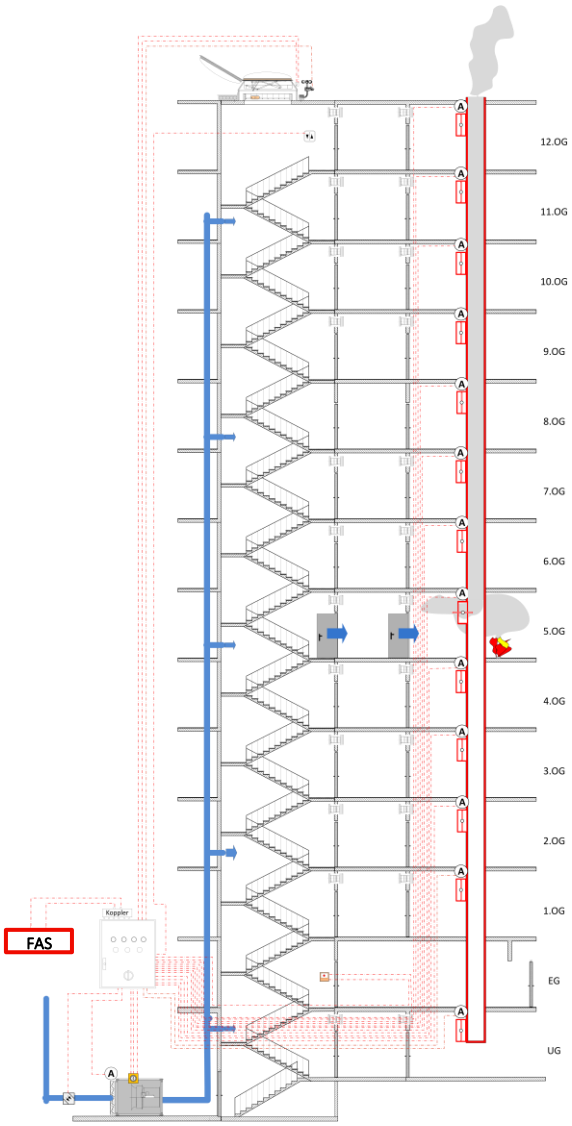
Pressure differential systems

Pressure differential systems are active systems of preventive fire protection that have a decisive influence on the safety of people in buildings. The effectiveness of the system is only ensured if the components are coordinated with each other.
We offer you complete system solutions including the essential ventilation-related components and the control system with its field devices. We support you from the planning stage through installation and commissioning to maintenance and servicing of the system.

RDA – Functional diagram



Planning support

- Recommendation for the design of an RDA system, considering construction law and normative requirements.
- Development of dimensioning-related recommendations for the airflow rate of the supply air, air distribution, pressure regulation airflow rate.
- Evaluation of relevant influencing quantities such as leakage air quantity, the pressure losses associated with the stairwell, thermal influences (uplift force), door forces, etc.
- Simulation summer/winter operation
- Selection of important components

Components included in delivery

- smoke protection supply air devices with accessories
- Pressure regulation devices for installation on roofs or walls, or as bypass arrangement in the supply air device
- Overflow elements for anteroom purging
- Switchgear combinations and control systems
- Field devices (optical smoke switch; manual release button; fire brigade control section, ventilation button, wind-rain sensor, duct smoke detector, pressure and temperature sensors, position switch)

Commissioning

- Electrical commissioning and checking of all switching functions
- ventilation-related commissioning and adjustment of the system
- Creation of all necessary measurement logs
- Participation in the expert acceptance and training of the operating personnel

Maintenance

- Annual maintenance of all components as well as extensive function control and logging of all system functions

Self-regulating pressure differential systems

The Eichelberger pressure differential systems are based on an automatic regulation. The component parts are always one (or more) smoke protection supply air device(s) and one (or more) automatic, spring-operated pressure regulation damper(s). This ensures the fastest possible pressure control when doors open / close, which corresponds to the time requirements of the MVV TB (Model Administrative Provisions – Technical Building Rules) and DIN EN 12101-6. Here, 3 seconds are required as the maximum reaction time in each case.
The pressure regulation damper regulates the overpressure in the stairwell completely automatically without auxiliary energy by means of a spring system. The control pressure can be set individually; pressure differences of 30 Pa to 50 Pa are usually preset.

The closing torque of the damper system is adjusted to opening aerodynamic force torques. The damper remains closed until the preset control pressure is reached. In case of a further increase in pressure, the pressure regulation damper opens just enough so that the preset value as the control pressure is created as a pressure loss and thus as an overpressure in the stairwell during the perfusion.
In the case of self-opening doors and the resultant drop in pressure, the regulation damper closes immediately, and the airflow rate of the supply (minus the leakage air quantity) becomes available for the perfusion of the open door. The closing of the door immediately results in the opening of the pressure regulation damper; the maximum permissible overpressure is never exceeded.
The system reacts automatically. Measurement transducers, pressure regulators, actuators, clamping, and transfer points are not required for pressure regulation. This translates into minimization of potential failure components. In the pressure differential system type RDA, the pressure regulation dampers are integrated in the supply air device in a bypass arrangement.

Hybrid pressure differential systems

Hybrid pressure regulation systems represent a combination of automatic regulation with active, pressure sensor-guided pressure regulation.
Hybrid pressure regulation combines the advantages of the two regulation systems:
The reaction to abrupt pressure changes as a result of opening or closing doors is fast and reliable thanks to an immediately reacting spring-loaded pressure regulation damper.
The pressure difference effective in the fire floor is recorded via additional pressure sensors and, in the event of a setpoint deviation, adjusted to the intended value, if necessary, by varying the airflow rate of the supply air (e.g. fans operated via frequency converters).

Proofs of suitability

The Eichelberger pressure regulation dampers type DEK as well as the pressure differential system type RDA2 were successfully subjected to a suitability test.
Operational reliability and compliance with the control time requirements (3 seconds) in accordance with DIN EN 12101-6 have been proven and certified by the Institute for Industrial Aerodynamics (I.F.I.) in Aachen by means of functional checks, stability and resonance tests after 10,000 load cycles.

Smoke protection for evacuation and escape routes

Pressure differential systems have the task of keeping escape and rescue routes (stairwells, firefighting lifts, escape tunnels, etc.) free of smoke. Pressure ventilation systems are required by building regulations if necessary, stairwells represent the only escape and rescue route (safety stairwells). They are also required in firefighting elevator shafts and their lobbies. In Germany, requirements for pressure differential systems are described in the Model High-Rise Building Guideline and in the Model Administrative Regulation on Technical Building Regulations (MVV TB).

Mode of operation of pressure differential systems

Pressure differential systems create a controlled overpressure in the area to be protected compared to the adjacent rooms in which a fire could occur.
The overpressure effects a flow through leakage areas (e.g. around doors) from the protected area into the possibly smoky area. A flow of smoke or smoky air into the overpressure area is thus prevented.
For closed doors, EN 12101-13 requires a minimum pressure difference between the protected area and the fire floor of 30 Pa; at the same time, it must be ensured that the pressure difference does not become too great so that doors that are to be operated in the direction of the overpressure can still be opened.
The maximum permissible door operating force is 100 N. The door opening force at the doorknob depends on the effective pressure difference, the respective door geometry and the closing force of the door closer. Door sizes and closing torques of the door closers must be coordinated with the planned overpressure.
Usually, a maximum overpressure of 50 Pa is planned; for large doors, it may also be necessary to limit the pressure difference to a lower amount.
If the doors between the fire room and the protected area are opened in the fire floor, a flow through the door in the direction of the fire floor must take place so that no smoke continues to enter the protected area. According to the Model High-rise Building Guideline and in the MVV TB, the following average velocities must be demonstrated in the floor affected by the fire:

- at least 2 m/s in open doors between the safety stairwell and the floor affected by the fire
- at least 0.75 m/s in the open door of the firefighting lift anteroom on the fire floor

Physically, the amount of velocity required depends on the temperature difference at the door under consideration. The higher the temperature difference, the greater the average flow velocity must be to ensure that smoke is kept out even when the door is open. This is considered in EN 12101-13 by defining two different requirement classes.

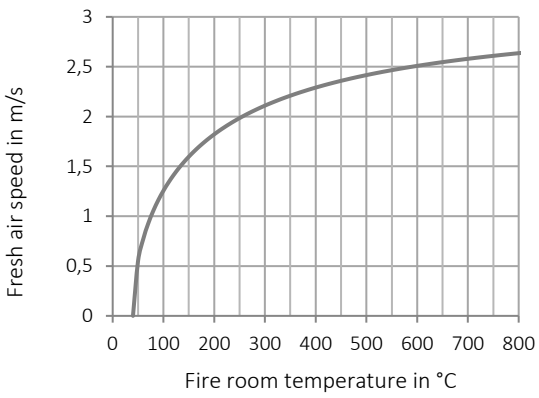


Figure 1: Fresh airflow rate through a 2m high and 0.9m wide door as a function of fire room temperature; John, R.

According to EN 12101-13, the following minimum speeds must be applied:

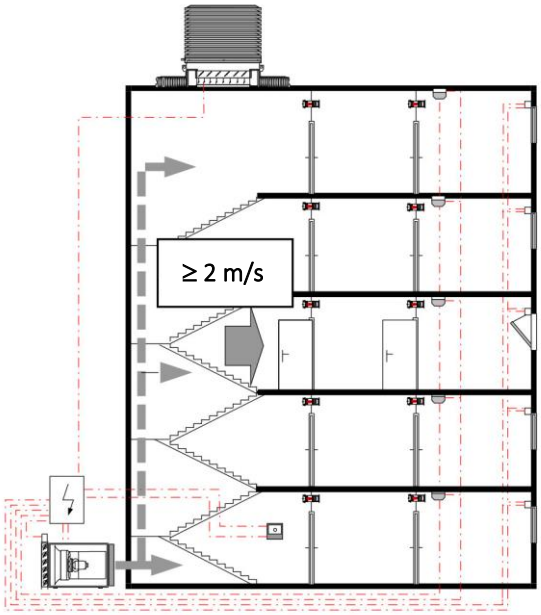
Minimum speed	
Class 1: - Buildings with fire sprinkler systems - Residential building with anteroom and hallway and self-closing doors to the apartment	1 m/s
Class 2: - In high-rise buildings without fire sprinkler protection	2 m/s

Automatically opening flow-off paths required

To ensure the flow of air through the opening doors, it is necessary to have outflow paths from the downstream rooms and to open them automatically on the fire floor. This can be achieved, for example, by a vertical fire protection shaft with smoke control dampers arranged in a floor-wise manner or by motorized windows. If windows are used for discharging, the wind-independent effectiveness of the flow-off path must be guaranteed (if possible, assembly on 2 façade sides). The flow-off areas must be dimensioned in a manner which ensures that the pressure drop does not exceed the magnitude of the planned overpressure in the stairwell.

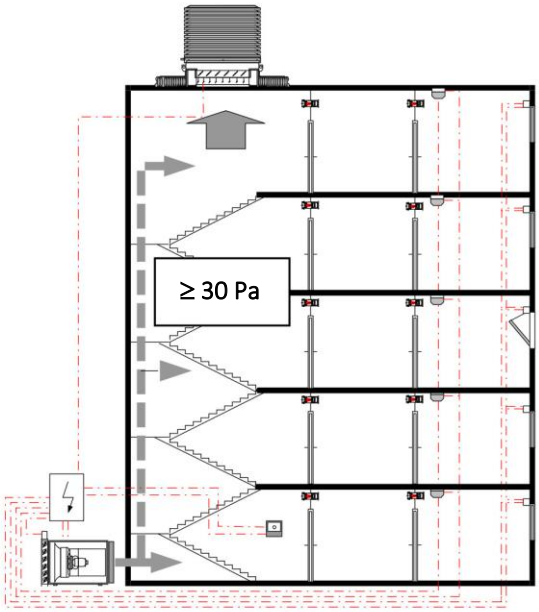
Pressure regulation: permissible regulation time 3

The air flow rate required for the velocity criterion with an open fire door is usually significantly higher than that required for pressure build-up with closed doors. Accordingly, the pressure ventilation system must include a suitable pressure relief device (e.g., automatic pressure regulation damper) that can react to these conditions.
According to MVV TB, it must be possible to prove the flow criterion for opening doors after 3 seconds and, for re-closing doors, the pressure difference must be reached or fallen below again, producing a door opening force of 100 N.



Airflow criterion

If both anteroom doors on the fire floor are open, the air must flow through the doors at the minimum speed specified in the concept (usually 2m/s). In this phase, the pressure regulation damper at the top of the stairwell closes so that the airflow rate of the supply is available for flowing through the open door. The flow-off flaps on the floor where the fire has broken out are opened, in order to secure the perfusion.



Pressure criterion

If all doors in the stairwell are closed, a controlled overpressure of at least 30 Pa should be built up in the stairwell. The door opening force may not exceed 100 N at any door. In this phase, the pressure regulation damper is open and allows the excess air to escape. This causes a drop in pressure equal to the planned overpressure at the top of the staircase (e.g. 40 Pa).

Design

Stairwell leackage

Along with the airflow rate for the perfusion of open doors, the system must also cover leakage losses. Leakage areas are present at all doors, windows, lift shaft doors, fissures and cracks in walls. Openings that have been created on purpose in order to facilitate continuous purging are also to be taken into consideration. Calculation methods can be found in the informative annex of EN 12101-13.

Calculation of the airflow rate for the supply air

The minimum required supply airflow rate is the sum of the air flow rate resulting from the required flow velocity in the fire floor and the air flow rate exiting through leakage areas. If verification of the velocity criterion with the exit door open at the same time is required, the airflow rate that flows out through the exit door with the over-pressure required for the velocity build-up in the fire floor must be considered in the design.
The pressure regulation damper is dimensioned for the variable portion of the supply airflow rate.

The higher the buildings are planned, the more important parameters such as stairwell pressure losses and uplift pressures caused by temperature differences between inside and outside become in the design. We are happy to provide planning support for the individual design of such buildings.

Planning information for pressure differential systems

Door forces

The maximum permissible door operating forces is 100N. As a rule, an overpressure of maximum 50 Pa is planned. Along with the pressure difference, the door operating force depends upon the door geometry and the existing door closer.

- In case of doors that open towards the stairwell, the door closer must be designed in a manner which ensures that the planned overpressure does not exceed 100 N.
- In the case of doors that open away from the stairwell (e.g. exit door leading to the outside), the door closer must be designed in such a manner which ensures that the door closes securely even against the overpressure. If applicable, it may be necessary to use an additional free-swing door closer that is only activated when the pressure system is in operation.

Door perfusion speeds

In order to ensure that smoke cannot enter the stairwell even when the door is open, a perfusion that is directed towards the burning storey must be facilitated in the open-door cross-section. (Average perfusion speeds are usually part of the fire protection concept.))

In this regard, sufficiently dimensioned flow-off paths are necessary. The required geometry is determined by the available overpressure in the stairwell. The drop in pressure via the flow-off path may not exceed the overpressure that is provided in the stairwell (with regard to the pressure pattern within the stairwell). When dimensioning the components for the flow from the storey that is on fire, we recommend that a pressure loss of 30 Pa not be exceeded.

If the concept is based on the requirement for speed build-up at the doors of the burning storey with an open door to the outside at the same time, the flow-off pressure drop should be reduced further in order to minimise the amount of air lost through the exit door.

The flow-off areas (windows or dampers) must be opened automatically on the fire storey and should remain closed on all other storeys.

Triggering of the system

Pressure differential systems must be activated automatically (via smoke detectors).

As a rule, this takes place via a comprehensive on-site fire detection system.

- The fire alarm system (FAS) must provide a potential-free contact for the RDA switchgear combination for each scenario.
- We recommend the arrangement of fire alarm couplers in the installation space of the control cabinet.

If no fire alarm system is available, it is mandatory to position smoke detectors at least at each access door that leads to the protected area.

Outside air intake

The outside air intake must be positioned in a manner that prevents smoke from being sucked in. It should be positioned in the lower section of the building beneath building openings such as windows. According to MVV TB, the outside air intake must be at least 2.5 m away from windows, other external wall openings and external walls with combustible building materials as well as external wall cladding.

In principle, it is recommended that the location of the intake opening(s) as well as any required smoke detectors in the intake duct be agreed upon as part of the building permit procedure.

Requirements for fire resistance

If the outside or supply air line crosses areas to be separated from the stairwell in terms of fire protection, the duct routing must be in fire resistance class L90.

Installation of the control cabinet and requirements for functional maintenance

The control cabinet must be installed in a separate F90 demarcated electrical operating room without any other fire loading. Deviations from this must be agreed with the fire protection assessor and the testing expert.
As a rule, a temperature range of 0° - 25° C must be ensured in the installation room.

The electrical wiring systems for pressure differential systems must be designed or separated by components in such a way that the systems remain functional for a sufficiently long time in the case of a fire (function maintenance). If a duct is laid in an area separated by fire-resistant components and protected from the respective fire event, the requirement for functional maintenance is also deemed to be fulfilled.
This functional maintenance must be guaranteed in the case of possible interaction with other systems or their parts. The duration of the functional maintenance must be at least 90 minutes in high-rise buildings as well as for special buildings for which such installations are required in individual cases. In all other cases, the duration of the functional maintenance must be at least 30 minutes.

Energy supply

Pressure differential systems must have a secure power supply. As a minimum, a separate pipe routing is required directly behind the main meter (sprinkler pump circuit). In building law, safety power supplies in accordance with VDE 0108 are required for special buildings and high-rise buildings. The form of energy supply required in a specific case can be found in the building permit or the fire protection concept.

Number of pressure relief and supply air points

Depending on the geometry and number of storeys, the stairwell represents a resistance for the air flowing through, which can lead to a pressure drop from the bottom to the top. It is therefore advisable to introduce the supply air at several levels; EN 12101-13 provides for supply air points every three storeys. In tall buildings, it may also be useful to have a second regulation damper that can discharge excess air to atmosphere if the pressure build-up in the lower part of the stairwell is too high. It must be ensured that the supply air does not have a negative influence on the room flow near doors. We recommend not exceeding a maximum supply air velocity of 3 m/s.

Redundancy

Within the fire protection concept, individual requirements can be placed on the redundancy of single system parts (e.g. fans).
We recommend a concrete agreement with the approval authority/fire protection concept designer on redundant components.

Doors and windows

All doors belonging to the stairwell and lobby doors must be self-closing. It must not be possible to open any windows manually. In case of opening via actuator, the actuators shall be integrated into the circuit of the pressure differential system; when triggered, the windows shall be closed automatically.

Acoustic requirements

According to MVV TB, the sound pressure level generated by the pressure differential system in the stairwell must not exceed 85 dB(A) from a distance of 5m from the air outlet; inside the firefighter lifts, a maximum sound pressure level of 80 dB(A) applies according to DIN EN 81-72.
If necessary, appropriate silencers must be provided in the supply air duct.

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Purging systems with pressure maintenance

Purging systems or purging systems with controlled pressure maintenance may be required in accordance with a fire protection concept.

In contrast to the pressure differential system for safety stairwells, there is no automated opening of flow-off paths on the fire floor in the case of purging systems with pressure maintenance. For the verification of the perfusion speed in open doors, flow-off paths may be opened manually.

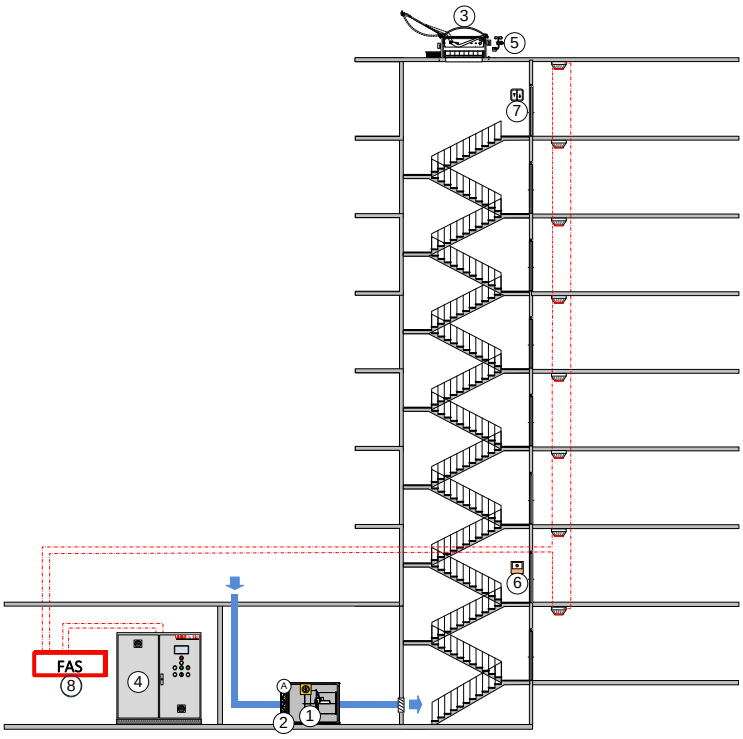
Purging systems with pressure maintenance come into question when due to a low number of people in the usage units only short phases of open doors are to be expected and automatically opening flow-off paths cannot be realised or can only be realised with a disproportionately high effort.

Smoke entry cannot be ruled out during the period of open doors; a purging of the stairwell from bottom to top with at least 10.000 m³/h serves as compensation.

Typical applications are existing residential buildings below the high-rise limit, in which the second escape route via the fire brigade's rescue equipment is only available to a limited extent, but the requirements for the classic safety stairwell cannot be implemented.

- The stairwell must have a flow rate of at least 10,000 m³/h from bottom to top.
- With the doors closed, the system shall generate a controlled overpressure between the stairwell and all units of use, which, with the doors closed, shall be at least 15 Pa on all floors.
- The force needed to open the door - measured at the doorknob - must not exceed 100 N.
- The mean flow velocity in the open-door cross-section with manually created flow-off possibility in the fire storey must be at least 1 m/s.

Requirements according to VDMA 24188 - system type 3



① Smoke protection supply air device
Type RDS
alternative: Type RDV
② Louver damper with actuator
③ Pressure regulation device
Type DEKA-V-LK6
④ Switchgear combinations
⑤ Wind-rain sensor
⑥ Manual release button
⑦ Ventilation button
⑧ Fire alarm system with smoke detectors in all corridors
alternatively: smoke switch
(scope of delivery Eichelberger)

System design

The system essentially consists of an air supply fan or device, a pressure regulation device in the head of the stairwell, a control device and the smoke switches and manual control devices required for triggering.

The fan conveys the outside air via a possibly fire-resistant channel line from the outside air intake point to the lower area of the stairwell. The aspiration point must be positioned in such a way that no smoke escaping from the building can be aspirated. The air supply to the stairwell must not be blown in near doors, or suitable devices must be used to ensure that only low flow velocities occur in the vicinity of the doors.

A pressure regulation device (e.g., type DEKA-V-LK6 or DEKA-V-LH5) is placed in the head of the stairwell. This automatically regulates the overpressure via a spring-loaded pressure regulation damper. To prevent the entry of cold air, either a light dome, a dark flap or an insulated louver damper is arranged above the mechanical pressure regulation damper, depending on the design of the pressure regulation device. Optionally, the pressure regulation device can be used for day-to-day ventilation or also for smoke discharge.

The system is triggered automatically via the potential free contact of an on-site fire alarm system or optionally via smoke switches in the Eichelberger scope of delivery.

Smoke detectors are usually placed outside the protected area in the necessary corridors. If flats are directly adjacent to the stairwell, it should be agreed with the fire protection concept designer and the approval authority whether the smoke detectors can be installed directly in the stairwell in order to avoid frequent false alarms and to improve the maintainability of the system. In addition to automatic triggering, the system can be switched on manually via a manual release button and optionally via a fire brigade control panel. The system status "Ready for operation" = green signal light, "Triggered" = red signal light and "Fault" = yellow signal light is displayed at both points.

The switchgear combination forms the control centre of the smoke protection pressure system and should be installed in a separate fire-protection-separated area (if approved, also together with the fan).

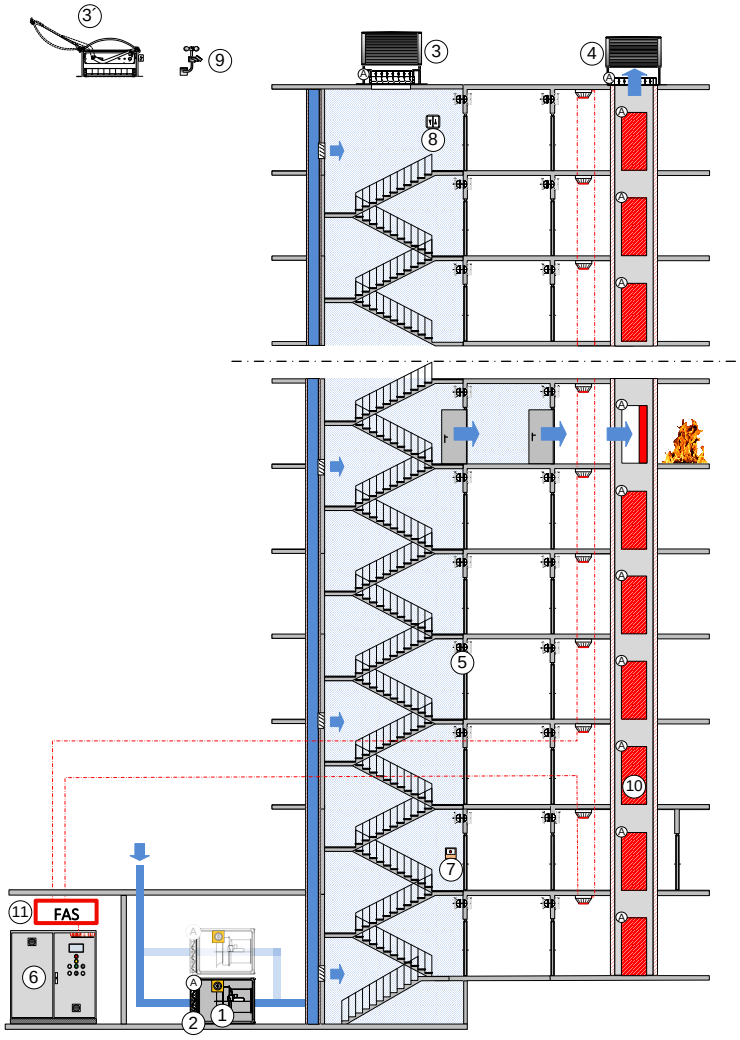
After the system has been triggered, the outside air damper and the light dome (or dark flap or louver damper) above the pressure regulation damper are activated first. After feedback from the position switches within these dampers confirming the opening, the fan is switched on and pressure builds up in the stairwell. When the preset control pressure is reached at the pressure regulation damper, it opens automatically and controls the pressure difference with simultaneous flushing of the stairwell. If a door opens and an air release is possible in the fire floor due to broken or manually opened windows, the pressure control damper closes immediately, and the air flows through the door in the direction of the floor.

Pressure differential systems for safety stairwells

Safety stairwells must be designed in such a way that fire and smoke cannot penetrate. In the case of interior safety stairwells, this is ensured not only by the structural design but also with the help of the pressure differential system.

Requirements according to the Model Administrative Regulation on Technical Building Regulations (MVV TB)

- When doors are open between the stairwell and the floor affected by the fire, an airflow must be created against the direction of escape. The average flow velocity in the open-door cross-section must be at least 2 m/s. The required air release areas must open automatically on the fire floor.
- With the doors closed, the system should create a controlled positive pressure between the stairwell and the fire floor. According to EN 12101-13, the pressure difference with closed doors should be at least 30 Pa.
- The force required to open the door - measured at the doorknob - must not exceed 100 N.
- After opening or closing a door, it must take a maximum of three seconds for the required criteria for flow velocities and permissible door opening forces to stabilize.
- If there is only one interior safety stairwell, in the event of failure of the equipment required to maintain the overpressure, operational substitute equipment must take over its function.



① Smoke protection supply air device Type RDS
alternative: Type RDV redundant if necessary
② Louver damper with actuator
③ Pressure regulation device Type DEKA-V-LH5
③' optional Type DEKA-V-LK6
④ Flow-off unit Type ASE-JK-LH5
⑤ Overflow element Type UE-RK3
⑥ Switchgear combinations
⑦ Manual release button
⑧ Ventilation button
⑨ Wind-rain sensor
⑩ Smoke control damper
⑪ Fire alarm system with smoke detectors in at least all corridors

System design

The system essentially consists of smoke protection supply air device, pressure regulation device in the head of the stairwell, automatic devices that allow air release from the fire floor as well as the central switchgear combination.

The fan conveys the outside air via a possibly fire-resistant channel line from the outside air intake point to the stairwell. In order to achieve the most balanced pressure distribution possible, the supply air in higher buildings is

first conveyed into a air supply shaft and flows into the stairwell at several levels via grilles with a volume adjustment device.
The suction point must be positioned in such a way that no smoke escaping from the building can be aspirated. The supply air to the stairwell must not be blown in near doors, or suitable devices must be used to ensure that only low flow velocities occur in the area of the doors.
A pressure regulation unit (e.g., type DEKA-V-LK6 or DEKA-V-LH5) is placed in the head of the stairwell. This automatically regulates the overpressure via a spring-loaded pressure regulation damper. To prevent cold air from entering, either a light dome, a dark flap or an isolated louver damper is arranged above the mechanical pressure regulation damper, depending on the design of the pressure regulation device. Optionally, the pressure regulation device can be used for daily ventilation or also for smoke discharge.

In order to ensure that a perfusion can take place when doors are open on the fire floor, sufficiently large air release paths must be provided in the usage units of the floors. The air can be released either via the façade (automatically opening windows) or via a vertical fire-resistant shaft to which the fire floor is connected via a smoke control damper. The corresponding opening is only made in the floor affected by the fire. Smoke control damper on other floors connected to the shaft and windows on these floors remain closed. Air release via windows is only to be provided if no significant influence by wind is to be expected, for example by opening windows on two sides of the façade.
In order to ensure that the door perfusion in the fire storey can take place with the required volume flow, the pressure loss via the air release path must not be higher than the overpressure provided in the stairwell. We recommend dimensioning flaps, windows, shaft surfaces and installations so that a total pressure loss of 30 Pa is not exceeded.
The system is triggered automatically by smoke detectors, which are usually part of an on-site fire alarm system, or optionally by smoke switches included in the Eichelberger scope of delivery.
The smoke detectors must monitor at least the necessary corridors adjacent to the protected area or the fire alarm system is designed in category 1 full protection (area-wide monitoring of all rooms).
For each storey or for each fire compartment with a separate air release path, the fire alarm system needs to provide one potential-free contact for the control of the pressure aeration.
In addition to automatic triggering, the system can be switched on manually via a manual release button and optionally via a fire brigade control panel. The system status "Ready for operation" = green signal light, "Triggered" = red signal light and "Fault" = yellow signal light is displayed at both points. When triggered manually, the system only starts in pressure/purging operation.
The switchgear combination forms the control centre of the smoke protection pressure system and should be installed in a separate fire-protection-separated area (if approved, also together with the fan).

After the automatic system triggering, the outside air damper, the light dome (or dark flap or louver damper) above the pressure regulation damper as well as the flow-off flaps of the triggering storey are actuated.
After feedback from the position switches of the pressure regulation device and the outside air damper, the fan is switched on and the pressure builds up in the stairwell.
When the control pressure set on the pressure regulation damper is reached, it opens automatically and regulates the pressure difference with simultaneous flushing of the stairwell. If both anteroom doors are opened at the same time on the fire floor, the pressure regulation damper closes immediately and the air flows through the doors in the direction of the floor.

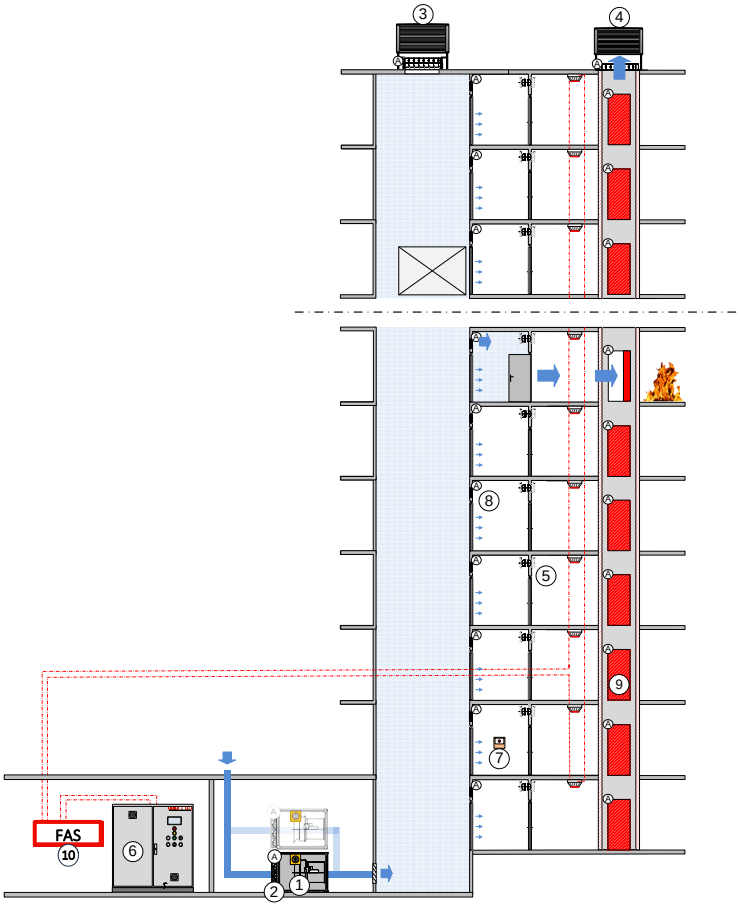
Pressure differential systems for firefighting lifts

High-rise buildings must be equipped with firefighting lifts with stops and lobbies on each floor in accordance with the Model High-Rise Building Guideline.

The lift shaft and the lobbies must be designed in such a way that fire and smoke cannot enter. Pressure differential systems are required for smoke control and must meet the following requirements:

Requirements according to the Model Administrative Regulation on Technical Building Regulations (MVV TB)

- With the lobby door open on the floor affected by the fire, an airflow must be caused from the lift lobby towards the usage unit. The average flow velocity in the open-door cross-section must be at least 0,75 m/s. The required air release areas must open automatically on the fire floor.
- With the doors closed, the system should create a controlled positive pressure between the stairwell and the fire floor. According to EN 12101-13, the pressure difference with closed doors should be at least 30Pa.
- The force required to open the door - measured at the doorknob - must not exceed 100 N.
- After opening or closing a door, it must take a maximum of three seconds for the required criteria for flow velocities and permissible door opening forces to stabilize.



① Smoke protection supply air device Type RDS
alternative: Type RDV redundant if necessary
② Louver damper with actuator
③ Pressure regulation device Type DEKA-V-LH5
④ Flow-off unit Type ASE-JK-LH5
⑤ Overflow element Type UE-RK3
⑥ Switchgear combinations
⑦ Manual release button
⑧ Overflow louver damper
⑨ Smoke control damper
⑩ Fire alarm system with smoke detectors in at least all corridors

System design

The system essentially consists of a smoke protection supply air device, a pressure regulation device in the head of the firefighting lift shaft, automatic devices that allow overflow into the lobby and air release from the fire floor, as well as the central switchgear combination.

The fan conveys the outside air via a possibly fire-resistant channel line from the outside air intake point to the firefighters' lift shaft. The supply air point in the shaft must be positioned and dimensioned in such a way that the flow does not have a negative effect on the installed lift technology (e.g. the hoisting ropes).

A pressure regulation device (e.g. type DEKA-V-LH5) is placed in the head of the lift shaft. This automatically regulates the overpressure via a spring-loaded pressure regulation damper. To prevent the entry of cold air, an insulated louver damper is arranged above the mechanical pressure regulation damper; the flow-off is independent of the wind direction via a circumferentially open lamellar hood.

Overflow dampers with actuators are installed in the walls between the lift shaft and the lobby. According to MVV TB (2019), no requirements are placed on the fire resistance of the overflow damper. A geometric free space of at least 0.5 m² per 2 m² door area is recommended. In the storey affected by the fire, the overflow damper is opened, and the overpressure expands into the area of the anteroom.

In order to ensure that air can flow through the lobby door on the fire floor when it is open, sufficiently large air release paths must be provided in the usage units of the floors. As in the case of the safety stairwell, the air can be released either via the façade (automatically opening windows) or via a vertical fire-resistant shaft to which the fire floor is connected via a smoke control damper. The corresponding opening is only made in the floor affected by the fire. Smoke control damper on other floors connected to the shaft and windows on these floors remain closed. Air release via windows is only to be provided if no significant influence by wind is to be expected, for example by opening windows on two sides of the façade.

In order to ensure that the door perfusion in the fire storey can take place with the required volume flow, the pressure loss via the overflow path and the air release path must not be higher than the overpressure provided in the stairwell. We recommend dimensioning flaps, windows, shaft surfaces and installations so that a total pressure loss of 30 Pa is not exceeded.

The air release paths, which may already be provided for the safety stairwell, can also be used for the flow criterion of the firefighters' lift pressure aeration.

The system is triggered automatically by smoke detectors, which are usually part of an on-site fire alarm system, or optionally by smoke switches included in the Eichelberger scope of delivery.

The smoke detectors must monitor at least the necessary corridors adjacent to the protected area or the fire alarm system is designed in category 1 full protection (area-wide monitoring of all rooms).

For each storey or for each fire compartment with a separate air release path, the fire alarm system needs to provide one potential-free contact for the control of the pressure aeration.

In addition to automatic triggering, the system can be switched on manually via a manual release button and optionally via a fire brigade control panel. The system status "Ready for operation" = green signal light, "Triggered" = red signal light and "Fault" = yellow signal light is displayed at both points. When triggered manually, the system only starts in pressure/purging operation.

The switchgear combination forms the control centre of the smoke protection pressure system and should be installed in a separate fire-protection-separated area (if approved, also together with the fan).

After the automatic system triggering, the outside air damper, the louver damper above the pressure regulation damper and the overflow dampers and flow-off flaps of the triggering storey are actuated.

After feedback from the position switches of the pressure regulation device and the outside air damper, the fan is switched on and the pressure builds up in the lift shaft and expands to the area of the lobby via the open overflow damper. Even on the floors not affected by the fire, the leakage areas of the lift landing doors cause the overpressure to expand into the lobby.

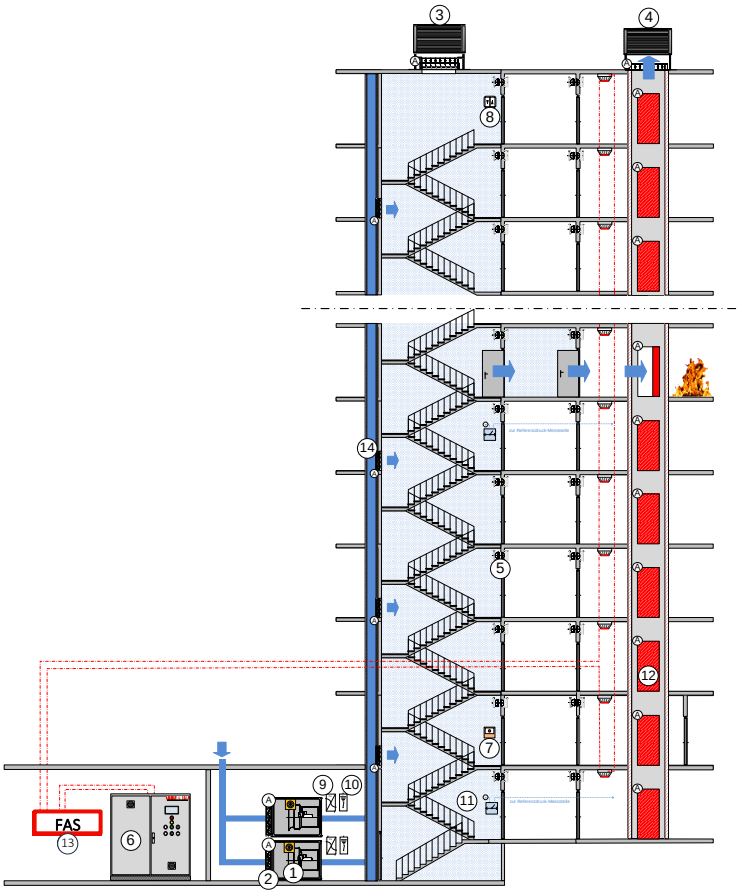
When the control pressure set at the pressure control damper is reached, it opens automatically and controls the pressure difference. If the anteroom door on the fire floor is opened, the pressure regulation damper closes immediately and the air flows through the door in the direction of the floor.

Hybrid pressure differential systems

The Eichelberger hybrid pressure regulation consists of the combination of a passive (self-acting) and an active, pressure sensor-guided pressure regulation by means of speed-controlled fans. The hybrid pressure regulation combines the advantages of both control systems:

Fast control processes are carried out quickly and with operational reliability by means of an immediately reacting, spring-loaded pressure regulation damper.
This regulates the pressure difference compared to the reference pressure of the outside atmosphere in the roof area - automatically, without auxiliary energy and without a pressure sensor.

Since pressure differences deviating from this can occur, especially in tall buildings, as a result of pressure losses in the stairwell, thermal or wind-related influences in the floor that has been triggered, these are detected by the active pressure regulation system and the airflow rate of supply is continuously adjusted via speed regulation of the fan by means of a frequency inverter.



1. Smoke protection supply air device Type RDS
   alternative: Type RDV redundant if necessary
2. Louver damper with actuator
3. Pressure regulation device Type DEKA-V-LH5
4. Flow-off unit Type ASE-JK-LH5
5. Overflow element Type UE-RK3
6. Switchgear combinations
7. Manual release button
8. Ventilation button
9. Frequency inverter
10. Brake resistance
11. Differential pressure sensor
12. Smoke control damper
13. Fire alarm system with smoke detectors in at least all corridors
14. Supply air grille, optionally with louver damper

When the doors close, the automatic regulation damper reacts first and opens to its operating position. Due to the immediate reaction of the pressure regulation damper, pressure surges are largely avoided even when the door is closed quickly.

If a higher-pressure difference than the setpoint pressure difference is measured by the activated pressure sensor in this phase, the control system reduces the frequency of the air supply fan and thus the supply airflow rate until the setpoint value is reached.

When the lobby doors on the fire floor open, the pressure in the stairwell drops and the automatic regulation damper closes by spring force. Subsequently, the frequency of the fan is increased until either the parameterised setpoint pressure difference or the maximum air flow rate is reached again.

Automatic pressure regulation

The automatic pressure regulation is effected by means of spring-loaded pressure regulation dampers. These are placed at the head of the stairwell (or lift shaft). This ensures the fastest possible pressure control when doors open / close, which corresponds to the time requirements of the Model Administrative Provisions – Technical Building Rules (MVV TB) and EN 12101-6.

The reliability of the pressure regulation damper and compliance with the regulation time requirements (3 seconds) have been proven and certified by the Institute for Industrial Aerodynamics (I.F.I.) in Aachen by means of functional checks, stability and resonance tests after 10,000 load cycles.

The initial response pressure of the pressure regulation damper can be set at the factory between 30 Pa and 70 Pa via the spring deflection. The closing torque of the damper system is adapted to opening aerodynamic force torques. The damper remains closed until the initial response pressure is reached. If the pressure continues to rise, the pressure control damper opens just enough so that when the flow passes through, the preset value is created as a pressure loss and thus as overpressure in the pressure-ventilated space. This allows the pressure difference in the upper area of the stairwell or lift shaft compared to the atmospheric pressure to be limited to the set value.

Additional active regulation

The active pressure regulation causes a continuous measurement of pressure differences at selected points and a change of the supply airflow rate in case of a setpoint deviation.

The regulating variable is the differential pressure between the protected area (e.g. a level within the stairwell) and a reference point that is representative of the pressure level in the room of the unit of use in which the air release takes place. Depending on the building structure, one or more differential pressure measurements can be provided with one pressure sensor each, which are then selectively chosen by the control system according to the location of triggering.

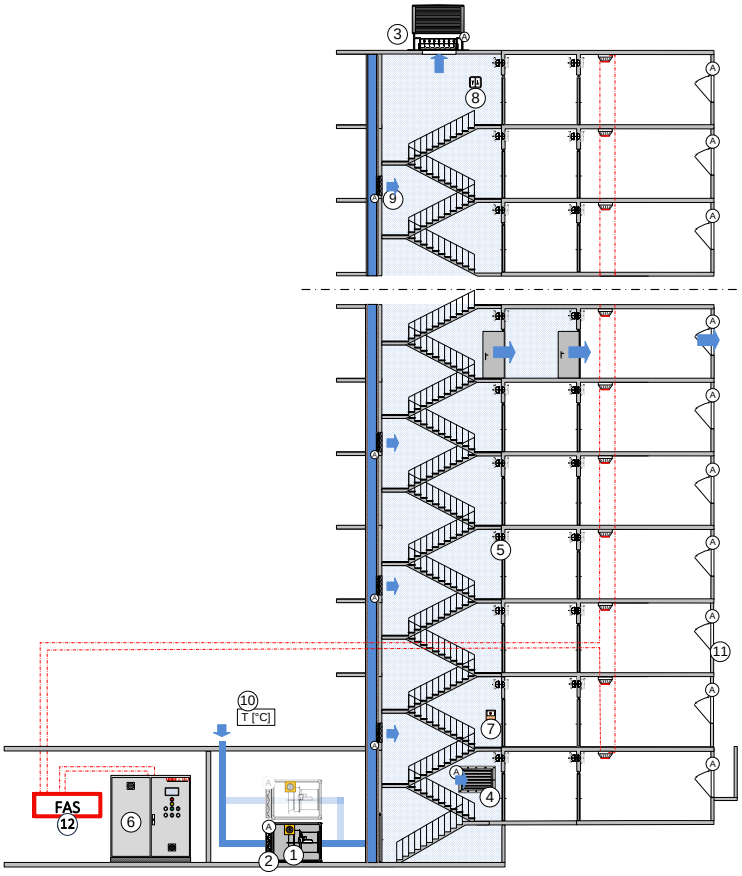
The connection line to the second pressure measuring point must be made via a non-flammable line (e.g. 6 mm Cu-line). Suitable covers for the pressure recording points (hemispherical shells made of stainless steel) are included in the scope of delivery.

The control element is a frequency inverter that adjusts the fan speed and thus the supply air flow rate depending on the setpoint deviation. A braking resistance enables the fan speed to be reduced quickly if the setpoint is exceeded and converts the rotational energy into heat.

A high-quality programmable logic controller, Siemens Simatic S7, is used as the central regulation and control unit; the operation and display of the operating states is carried out via a touchscreen display.

Pressure differential systems with thermal compensation

As the height of the building increases, physical parameters such as thermal and staircase pressure losses become increasingly important. Thermals are caused by different internal and external temperatures, which result in a buoyancy effect occurring inside a high (stairwell) shaft in winter when internal temperatures are higher (similar to inside a chimney), while in summer a similar effect can occur with a negative sign and smaller amount.



1. Smoke protection supply air device Type RDS
   alternative: Type RDV redundant if necessary
2. Louver damper with actuator
3. upper Pressure regulation device Type DEKA-V-LH5
4. lower Pressure regulation device Type DEKA-H-WBS
5. Overflow element Type UE-RK3
6. Switchgear combinations
7. Manual release button
8. Ventilation button
9. Supply air louver damper with actuator
10. Outside air temperature sensors for Supply air control
11. Electrically operated windows on 2 Facade sides
12. Fire alarm system with smoke detectors in at least all corridors

If an air release via the façade is planned within a pressure differential concept, the principle of thermal compensation can be applied. The influence of the thermal lift is compensated by the pressure loss during the perfusion of the stairwell.

In practice, frequently occurring stairwell geometries cause a pressure loss when perfusing with volume flows of a typical design, which is of a similar order of magnitude per height unit as the buoyancy pressure caused by the density difference in winter.

To implement this concept, pressure regulating dampers are arranged both in the head and in the lower area of the stairwell. Accordingly, the perfusion the stairwell is no longer necessarily only from bottom to top, but is also possible from top to bottom if necessary.

The pressure regulation is exclusively automatic.

On isothermal days, the air flows out equally via both pressure regulation dampers, so that the staircase pressure losses are minimised by reducing the partial volume flows. If, on the other hand, in winter the overpressure in the lower area threatens to drop as a result of buoyancy, this is compensated by the successive closing of the pressure regulation damper and a then higher proportion of air flowing upwards.

Temperature-controlled supply air distribution

Additional adjusting screws are provided if the supply air openings into the stairwell are designed with motorised louver dampers.
For this purpose, we offer control modules that control the supply airflow rate and the air distribution depending on the outside temperature and/or the fire floor position. For example, on cold days the supply airflow rate can be increased in the lower section in order to achieve a higher pressure drop for thermal compensation.
Pressure regulation in response to opening and closing doors is still automatic, fast and reliable.

Observe wind influence

Air release via the façade should always be evaluated with regard to possible wind effects that could lead to an impairment of the air release. According to MVV TB, the air release must always take place via at least two opposite sides of the façade.

Devices

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Pressure regulation device

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Type DEK-V-DK6
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Type DEK-V-LH5
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Type DEK-H-WBS3-LF
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Type DEK-H-JK-WBS
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Type DEK-H-WG
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Flow-off units

Type ASE-LK6
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Type ASE-DK6
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Type ASE-LH5
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More components

Type UE-RK3
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Type SGK-SR and SGK-SPS
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Smoke protection supply air device

TYPE RDS

Air-handling unit with integrated axial fan, with steplessly adjustable rotor blades and guide wheel as well as characteristic curve stabiliser. The stabiliser causes an expansion of the stable part of the characteristic curve of the axial fan.

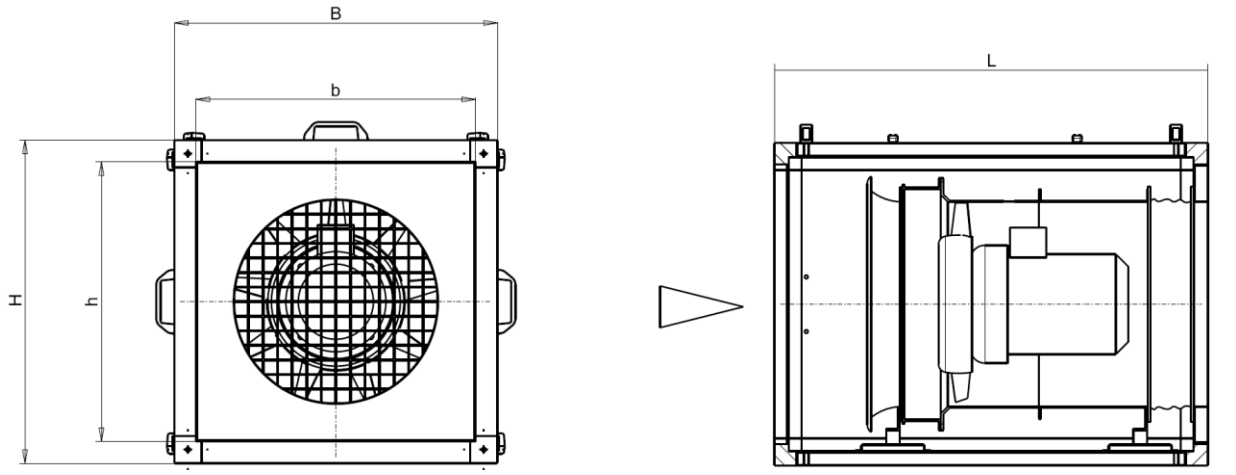
A weather-proof model can also be delivered for external installation. An insulated louver damper with a spring return motor can also be integrated.

Selection table

Type	Airflow rate [m³/h]	Total pressure [Pa]	Static pressure – freely-blowing [Pa]	Motor output [kW]	Nominal current [A]	Speed [1/min]	Weight incl. motor [kg]
RDS 400/2/3	7.500	790	> 550	3,00	5,7	3.000	137
RDS 500/4/1,5	7.500	310	> 220	1,50	3,5	1.500	161
RDS 500/4/1,5	10.000	290	> 140	1,50	3,5	1.500	161
RDS 450/2/4	10.000	900	> 620	4,00	7,5	3.000	157
RDS 630/4/2,2	12.500	370	> 260	2,20	4,7	1.500	256
RDS 500/2/5,5	12.500	900	> 640	5,50	10,1	3.000	193
RDS 630/4/4	15.000	520	> 370	4,00	8,2	1.500	269
RDS 500/2/7,5	15.000	1170	> 790	7,50	13,8	3.000	234
RDS 630/4/4	17.500	500	> 300	4,00	8,2	1.500	269
RDS 710/4/7,5	17.500	660	> 520	7,50	14,6	1.500	396
RDS 630/4/4	20.000	450	> 160	4,00	8,2	1.500	263
RDS 630/4/5,5	20.000	510	> 240	5,50	11,1	1.500	269
RDS 710/4/7,5	20.000	680	> 500	7,50	14,6	1.500	396
RDS 710/4/7,5	25.000	670	> 400	7,50	14,6	1.500	396
RDS 800/4/11	25.000	840	> 660	11,00	21,2	1.500	512
RDS 800/4/11	30.000	820	> 560	11,00	21,2	1.500	512
RDS 800/4/15	30.000	870	> 610	15,00	28,7	1.500	540

Type	Airflow rate [m³/h]	Total pressure [Pa]	Static pressure – freely-blowing [Pa]	Motor output [kW]	Nominal current [A]	Speed [1/min]	Weight incl. motor [kg]
RDS 800/4/11	35.000	770	> 420	11,00	21,2	1.500	512
RDS 800/4/15	35.000	880	> 540	15,00	28,7	1.500	540
RDS 900/4/15	40.000	900	> 600	15,00	28,7	1.500	783
RDS 900/4/18,5	40.000	1020	> 720	18,50	34,3	1.500	834

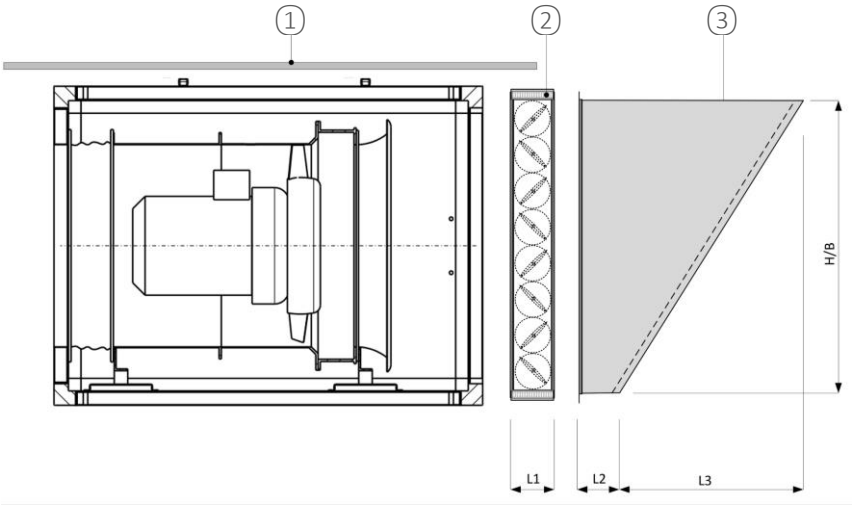
Main dimension



	B [mm]	H [mm]	L [mm]	b x h * [mm]
RDS 400/../..	650	650	925	590 x 590
RDS 450/../..	710	710	953	650 x 650
RDS 500/../..	780	780	1024	720 x 720
RDS 560/../..	860	860	1082	800 x 800
RDS 630/../..	970	970	1240	910 x 910
RDS 710/../..	1090	1090	1308	1030 x 1030
RDS 800/../..	1200	1200	1422	1140 x 1140
RDS 900/../..	1340	1340	1505	1280 x 1280
RDS 1000/../..	1470	1470	1620	1410 x 1410

* Channel interface EP 30

Accessories



①

Rain shield

②

Insulated louver damper with spring return motor, 24 V, opens without electricity, mounted on the suction-side

③

Aspiration ports made of galvanised sheet steel with integrated bird protection grid

	L1 [mm]	L2 [mm]	L3 [mm]	B x H [mm]
RDS 400/../..	120	150	340	590 x 590
RDS 450/../..	120	150	375	650 x 650
RDS 500/../..	120	150	415	720 x 720
RDS 560/../..	120	150	465	800 x 800
RDS 630/../..	120	150	525	910 x 910
RDS 710/../..	120	150	595	1030 x 1030
RDS 800/../..	120	150	660	1140 x 1140
RDS 900/../..	120	150	740	1280 x 1280
RDS 1000/../..	120	150	815	1410 x 1410

Tender text smoke protection supply air device Type RDS

for controlled maintenance of overpressure in evacuation and escape routes.
Secure mode of operation through characteristic-stabilised axial fan with guide wheel and adjustable rotor blades for adjustment of airflow rate.

Casing featuring a stable frame structure made of hot-dip galvanised sheet steel profile.
Double-layered cladding panels, wall thickness 30 mm, screwed into the frame structure.
Inner and outer shells made of hot-dip galvanised sheet steel, in a sealed design featuring intermediate, non-inflammable insulation corresponding to DIN 4102.
Large inspection cover with handles and rotating fasteners, removable on two sides, with all-round seal.
Axial fan with guide wheel and characteristic curve stabiliser, made of welded steel.
Axial running wheel with rotor blades that can be adjusted when the system is at a standstill, mounted directly on the drive motor, dynamically balanced as per DIN ISO 1940-1, quality class G = 6.3.
DS - drive motor in B5 - design according to DIN IEC 34, IP 54 and ISO class F, with extended cable for the repair switch (external, on the air-handling unit)
Impact sound-decoupled assembly of the axial fan vis-à-vis the box frame via rubber oscillation damper; on the pressure-side, via elastic connecting pieces that establish a connection with the device casing.
Suction- and pressure-side contact protection grids.
Suction and pressure side pre-drilled for rectangular channel interface frame EP30.
Optional: round spigot pre-mounted on the pressure side

Accessories (included in the price):

- Repair switch, wired with motor, on the exterior of the RDS device

Technical data, based on air density 1,2 kg/m³

Airflow rate	m³/h	:
Overall rise in pressure	Pa	:
External rise in pressure	Pa	:
Speed	1/min	:
Motor output	KW	:
Voltage	V	: 400
Frequency	Hz	: 50
Nominal current	A	:
Activation type	d/s-d	:
Dimensions		:
Brand		: Eichelberger
Type		: RDS .../../..

Accessories (optional):

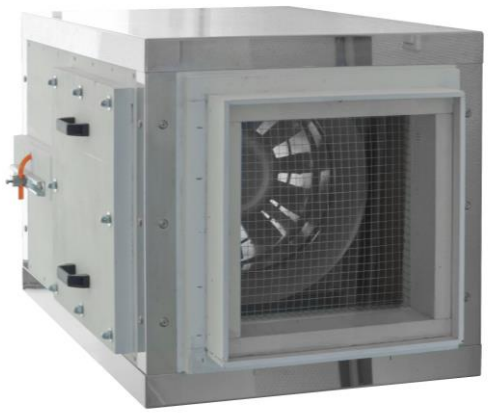
- Rain shield for outdoor installation
- Sealed, insulated louver damper with spring return motor, 24 V, opens without electricity, mounted on the suction side
- Aspiration ports

Smoke protection supply air device

TYPE RDS-L90

Fire-resistant unit for the supply air of a pressure differential system, consisting of a bolted calcium silicate casing with integrated axial fan with guide wheel and characteristic curve stabiliser, fixed within the unit in a vibration-decoupled manner. The connection is made to a fire-resistant ventilation duct up to L90 via a standard sleeve joint in accordance with Promat construction 476.

- Suitable for installation in rooms with fire loads
- Functional integrity and fire resistance over 90 minutes proven by fire test and certified by a publicly appointed and sworn expert
- A project-related type approval (vBG) is required for use

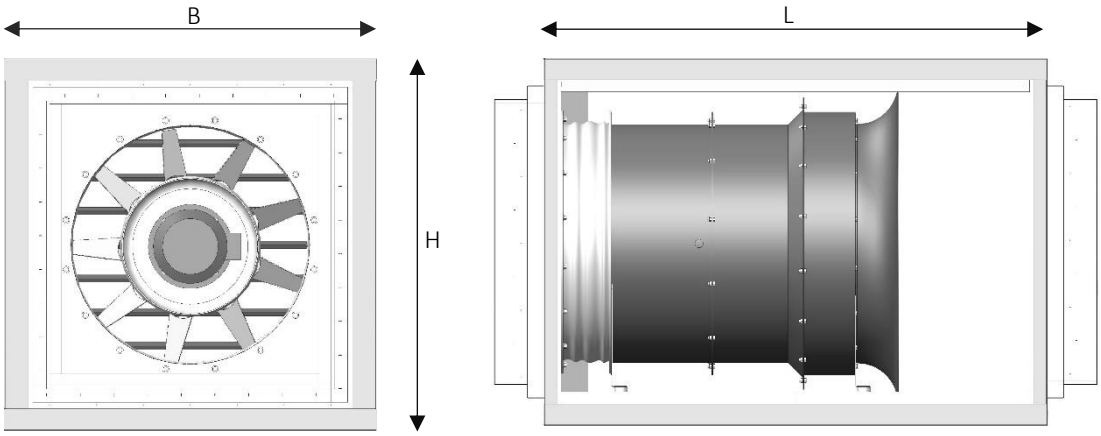


Selection table

Type	Airflow rate [m³/h]	Total pressure [Pa]	Static pressure – freely blowing [Pa]	Motor output [kW]	Nominal current [A]	Speed [1/min]
RDS-L90 400/2/3	7.500	790	> 550	3,00	5,7	3.000
RDS-L90 500/4/1,5	7.500	310	> 220	1,50	3,5	1.500
RDS-L90 500/4/1,5	10.000	290	> 140	1,50	3,5	1.500
RDS-L90 450/2/4	10.000	900	> 620	4,00	7,5	3.000
RDS-L90 630/4/2,2	12.500	370	> 260	2,20	4,7	1.500
RDS-L90 500/2/5,5	12.500	900	> 640	5,50	10,1	3.000
RDS-L90 630/4/4	15.000	520	> 370	4,00	8,2	1.500
RDS-L90 500/2/7,5	15.000	1170	> 790	7,50	13,8	3.000
RDS-L90 630/4/4	17.500	500	> 300	4,00	8,2	1.500
RDS-L90 710/4/7,5	17.500	660	> 520	7,50	14,6	1.500
RDS-L90 630/4/4	20.000	450	> 160	4,00	8,2	1.500
RDS-L90 630/4/5,5	20.000	510	> 240	5,50	11,1	1.500
RDS-L90 710/4/7,5	20.000	680	> 500	7,50	14,6	1.500
RDS-L90 710/4/7,5	25.000	670	> 400	7,50	14,6	1.500
RDS-L90 800/4/11	25.000	840	> 660	11,00	21,2	1.500

RDS-L90 800/4/11	30.000	820	> 560	11,00	21,2	1.500
RDS-L90 800/4/15	30.000	870	> 610	15,00	28,7	1.500
RDS-L90 800/4/11	35.000	770	> 420	11,00	21,2	1.500
RDS-L90 800/4/15	35.000	880	> 540	15,00	28,7	1.500

Main dimension



	B [mm]	H [mm]	L [mm]	Max. Total weight [kg]
RDS-L90 400/../..	700	700	1100	201
RDS-L90 450/../..	750	750	1150	224
RDS-L90 500/../..	800	800	1200	302
RDS-L90 560/../..	900	900	1300	356
RDS-L90 630/../..	1000	1000	1450	442
RDS-L90 710/../..	1100	1100	1500	582
RDS-L90 800/../..	1200	1200	1650	747

Tender text smoke protection supply air device Type RDS-L90

for the supply air of a pressure differential system, consisting of a screwed calcium silicate casing with integrated axial fan, suitable for installation in rooms with fire loads.
Functional integrity over 90 minutes, fire resistance EI90 (h_o i←o).
Secure mode of operation through characteristic-stabilised axial fan with guide wheel and adjustable rotor blades for adjustment of airflow rate.

Casing made of self-supporting cement-bonded fire protection panels based on calcium silicate, non-combustible A1 (DIN 4102).
The fire protection panels are joined together to form a casing by means of bolted connections and can be disassembled into segments for initial assembly and reassembled.
large inspection covers with handles can be removed via metric bolted connections.
Axial fan with guide wheel and characteristic curve stabiliser, made of welded steel.
Axial running wheel with rotor blades that can be adjusted when the system is at a standstill, mounted directly on the drive motor, dynamically balanced as per DIN ISO 1940-1, quality class G = 6.3.
DS - drive motor in B5 - design according to DIN IEC 34, IP 54 and ISO class F, with internal wiring to the junction box inside the unit, designed with ceramic clamps.

Vibration-decoupled mounting of the axial fan with the device casing via rubber oscillation dampers, on the pressure side via temperature-resistant connecting pieces.
As standard, 100 mm long channel interfaces made of Promatect LS35 are provided on the suction and pressure sides for connection to an on-site fire-resistant ventilation duct up to L90 via a standard sleeve joint in accordance with Promat construction 476.

Functional integrity and fire resistance over 90 minutes including the cable entry point have been proven by means of a fire test and certified by a publicly appointed and sworn expert.
A project-related type approval is required for use..

Technical data, based on air density 1,2 kg/m³

Airflow rate	m³/h	:
Overall rise in pressure	Pa	:
External rise in pressure	Pa	:
Speed	1/min	:
Motor output	KW	:
Voltage	V	: 400
Frequency	Hz	: 50
Nominal current	A	:
Activation type	d/s-d	:
Dimensions		:
Brand		: Eichelberger
Type		: RDS-L90 /.../...

Smoke protection pressure fan

TYPE RDV

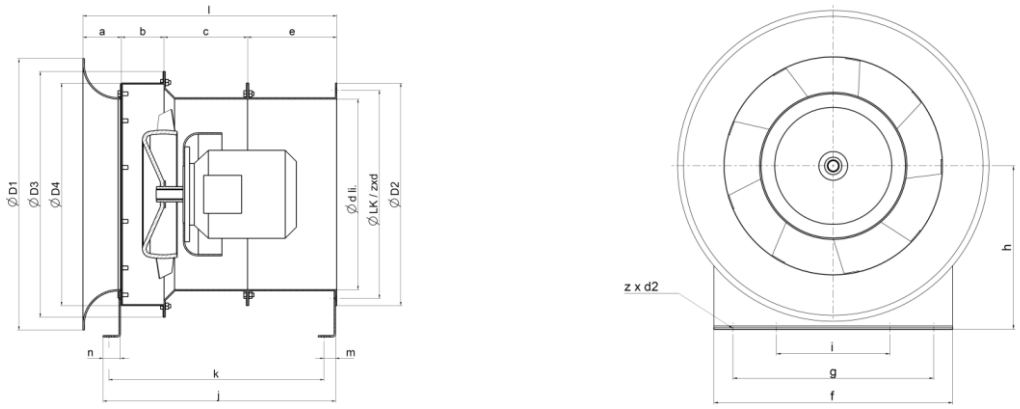
Axial fan with steplessy adjustable rotor blades and guide wheel as well as optional characteristic curve stabiliser. The stabiliser causes an expansion of the stable part of the characteristic curve of the axial fan.

Selection table

Type	Airflow rate [m³/h]	Total pressure [Pa]	Static pressure - freely blowing [Pa]	Motor output [kW]	Nominal current [A]	Speed [1/min]	Weight incl. motor [kg]
RDV 400/2/3	7.500	790	> 550	3,00	5,7	3.000	61
RDV 500/4/1,5	7.500	310	> 220	1,50	3,5	1.500	80
RDV 500/4/1,5	10.000	290	> 140	1,50	3,5	1.500	80
RDV 450/2/4	10.000	900	> 620	4,00	7,5	3.000	77
RDV 630/4/2,2	12.500	370	> 260	2,20	4,7	1.500	127
RDV 500/2/5,5	12.500	900	> 640	5,50	10,1	3.000	101
RDV 630/4/4	15.000	520	> 370	4,00	8,2	1.500	130
RDV 500/2/7,5	15.000	1170	> 790	7,50	13,8	3.000	134
RDV 630/4/4	17.500	500	> 300	4,00	8,2	1.500	130
RDV 710/4/7,5	17.500	660	> 520	7,50	14,6	1.500	185
RDV 630/4/4	20.000	450	> 160	4,00	8,2	1.500	130
RDV 630/4/5,5	20.000	510	> 240	5,50	11,1	1.500	142
RDV 710/4/7,5	20.000	680	> 500	7,50	14,6	1.500	185
RDV 710/4/7,5	25.000	670	> 400	7,50	14,6	1.500	185
RDV 800/4/11	25.000	840	> 660	11,00	21,2	1.500	262
RDV 800/4/11	30.000	820	> 560	11,00	21,2	1.500	262
RDV 800/4/15	30.000	870	> 610	15,00	28,7	1.500	284

RDV 800/4/11	35.000	770	> 420	11,00	21,2	1.500	262
RDV 800/4/15	35.000	880	> 540	15,00	28,7	1.500	284
RDV 900/4/15	40.000	900	> 600	15,00	28,7	1.500	310
RDV 900/4/18,5	40.000	1020	> 720	18,50	34,3	1.500	361

Main dimension



	a	b	c	e	l	D1	D2	LK	d li.	f	h
RDV 400/../..	81	90	176	188	535	500	468	438	401	370	300
RDV 450/../..	90	101	180	200	571	560	517	487	450	410	335
RDV 500/../..	95	110	206	225	636	630	571	541	504	460	375
RDV 560/../..	115	124	216	242	697	710	643	605	565	510	420
RDV 630/../..	113	137	258	286	794	800	712	674	634	550	470
RDV 710/../..	130	153	275	305	863	900	789	751	711	620	525
RDV 800/../..	138	172	319	350	979	1000	875	837	797	730	585
RDV 900/../..	155	195	333	373	1056	1120	972	934	894	730	655
RDV 1000/../..	166	217	372	415	1170	1250	1081	1043	1003	830	730

	z x d	g	i	j	k	m	n	z x d2	D3	D4
RDV 400/../..	12x9,5	300	150	490,5	454	21,5	36,5	5x11,5	517,0	461,0
RDV 450/../..	12x9,5	330	165	517,5	481	21,5	36,5	5x11,5	571,0	517,0
RDV 500/../..	12x9,5	380	190	577,5	541	21,5	36,5	5x11,5	643,0	576,0
RDV 560/../..	16x11,5	430	215	626,5	582	24,5	44,5	5x11,5	712,0	643,0
RDV 630/../..	16x11,5	470	235	725,5	681	24,5	44,5	5x11,5	789,0	718,5
RDV 710/../..	16x11,5	530	265	777,5	733	24,5	44,5	5x11,5	887,5	812,0
RDV 800/../..	24x11,5	640	320	885,5	841	24,5	44,5	5x14,0	992,0	917,0
RDV 900/../..	24x11,5	640	320	945,5	901	24,5	44,5	5x14,0	1106,0	1031,0
RDV 1000/../..	24x11,5	740	370	1060,5	1004	33,5	56,5	5x14,0	1233,0	1149,0

Smoke protection pressure device

TYPE RDA2

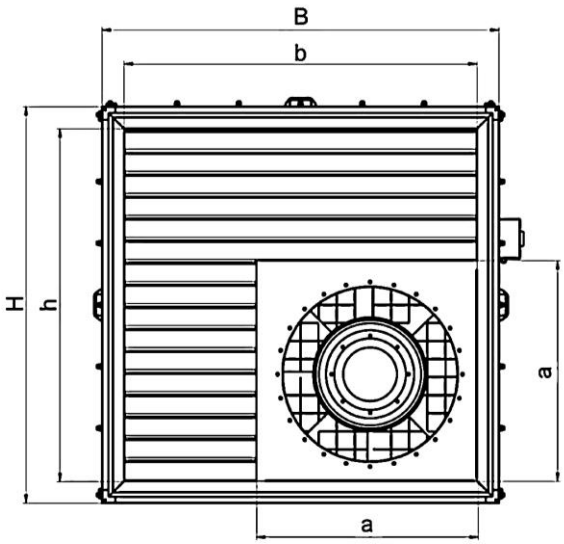
The smoke protection pressure device type RDA2 is both a supply air device and a pressure regulation device in one unit. The pressure is regulated automatically by means of a spring-loaded pressure regulation damper, which is arranged in a bypass circuit parallel to the supply air fan. This damper opens automatically when (with the doors closed) the overpressure exceeds the desired value and allows backflow inside the unit. When the overpressure drops due to opening doors, the spring system causes an immediate closing movement of the damper and the entire fan volume flow is available as supply air in the stairwell for flowing through the open door.

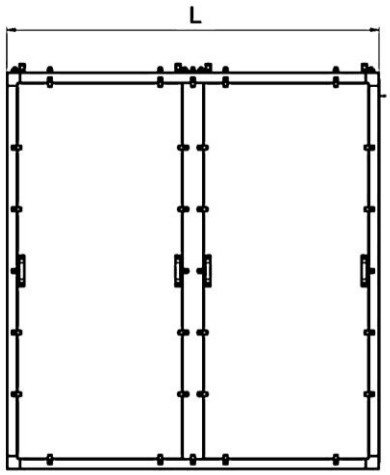
Selection table

Design Size	Max. Airflow rate supply air [m³/h]	Max. Airflow rate* pressure release at 50Pa [m³/h]	Motor output [kW]	Nominal current [A]
RDA2 500/4/0,75	7.000	10.000	0,75	2,0
RDA2 500/4/1,1	8.000	10.000	1,1	2,6
RDA2 500/4/1,5	10.000	10.000	1,5	3,5
RDA2 560/4/1,5	11.000	15.000	1,5	3,5
RDA2 560/4/2,2	14.000	15.000	2,2	4,8
RDA2 560/4/3,0	15.000	15.000	3,0	6,6
RDA2 630/4/3,0	16.000	20.000	3,0	6,6
RDA2 630/4/4,0	20.000	20.000	4,0	8,8
RDA2 630/4/5,5	21.000	20.000	5,5	11,5
RDA2 710/4/4,0	22.000	27.000	4,0	8,8
RDA2 710/4/5,5	26.000	27.000	5,5	11,5
RDA2 710/4/7,5	30.000	27.000	7,5	15,5
RDA2 800/4/4,0	27.000	30.000	4,0	8,8
RDA2 800/4/7,5	32.000	30.000	7,5	15,5
RDA2 800/4/11,0	35.000	30.000	11,0	22,0

* The maximum pressure release airflow rate applies to a direct connection with the pressure chamber at a maximum underpressure on the suction side of 50 Pa. It may vary with the individual installation conditions.

Main dimension

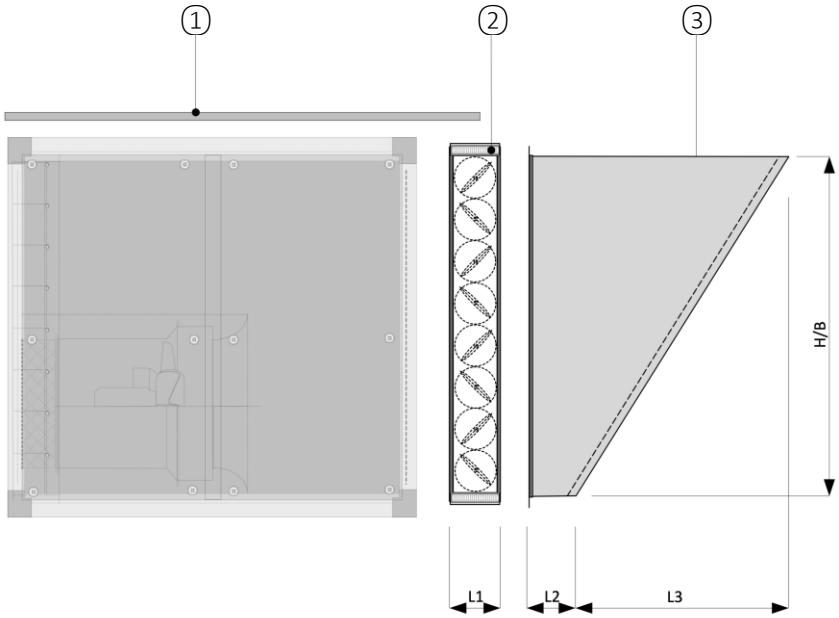




Design size	B x H [mm]	b x h [mm]	L [mm]	a [mm]	Weight [kg]	Connection dimension* [mm]
RDA2 500/../..	1200 x 1200	1000 x 1000	1160	600	300	1140 x 1140
RDA2 560/../..	1400 x 1400	1200 x 1200	1240	700	320	1340 x 1340
RDA2 630/../..	1500 x 1500	1300 x 1300	1420	800	510	1440 x 1440
RDA2 710/../..	1700 x 1700	1500 x 1500	1510	900	560	1640 x 1640
RDA2 800/../..	1800 x 1800	1600 x 1600	1640	1000	690	1740 x 1740

* Channel interface EP 30

Accessories



①

Rain shield

②

Insulated louver damper with spring return motor, 24 V, opens without electricity, mounted on the suction-side

③

Aspiration ports made of galvanised sheet steel with integrated bird protection grid

	L1 [mm]	L2 [mm]	L3 [mm]	B x H [mm]
RDA2 500/../..	120	150	660	1140 x 1140
RDA2 560/../..	120	150	775	1340 x 1340
RDA2 630/../..	120	150	830	1440 x 1440
RDA2 710/../..	180	150	950	1640 x 1640
RDA2 800/../..	180	150	1005	1740 x 1740

Tender text Smoke protection pressure device Type RDA2

for controlled maintenance of overpressure in escape and evacuation routes.
The operational reliability and the compliance with the control time requirements (3 seconds according to EN 12101-6) have been verified and tested through a functional test, a stability test and a resonance test after 10,000 load cycles at the Institute for Industrial Aerodynamics (IFI Aachen).

Overpressure air-handling unit featuring a stable frame construction made of hot-dip galvanised sheet steel profile.
Double layer cladding panels, wall thickness 30 mm, screwed into the frame structure.
Inner and outer shells made of hot-dip galvanised sheet steel, in sealed design featuring intermediate non-inflammable insulation in accordance with DIN 4102.
Large inspection covers with handles and rotating fasteners, removable on two sides, with all-round seal.
Pressure relief damper system integrated in the device in bypass circuit.

– Closing torques via tension spring systems in adaptation to opening aerodynamic torques.
– The initial response pressure difference can be adjusted by varying the spring pre-load length, preset to 50 Pa at delivery

Axial fan with guide wheel made of welded steel.
Axial running wheel with rotor blades that can be adjusted when the system is at a standstill, mounted directly on the drive motor, dynamically balanced as per DIN ISO 1940-1, quality class G = 6.3.
DS drive motor in B5 format as per DIN I EC 34, IP 54 and ISO class F, with extended cable for the repair switch (external, on the air-handling unit).
Impact sound decoupled assembly of the axial fan vis-a-vis the box frame via rubber oscillation damper, on the pressure side via elastic connecting pieces with the device casing.
Maximum permissible external air pressure loss 50 Pa.

Technical data, based on air density 1,2 kg/m³

Supply airflow rate	m³/h	:
Overall rise in pressure	Pa	:
External rise in pressure	Pa	: 50 + 50
Speed	1/min	:
Motor output	KW	:
Voltage	V	: 400
Frequency	Hz	: 50
Nominal current	A	:
Activation type	d/s-d	:
Dimensions		:
Brand		: Eichelberger
Type		: RDA 2.../../..

Accessories (included in scope of delivery):

- Repair switch, wired with motor, on the exterior of the RDA device

Accessories (optional):

- Rain shield for outdoor installation
- Sealed, insulated louver damper with spring return motor, 24 V, opens without electricity, mounted on the suction side of the device
- Aspiration ports with bird protection grid

Pressure regulating unit for roof arrangement with light dome

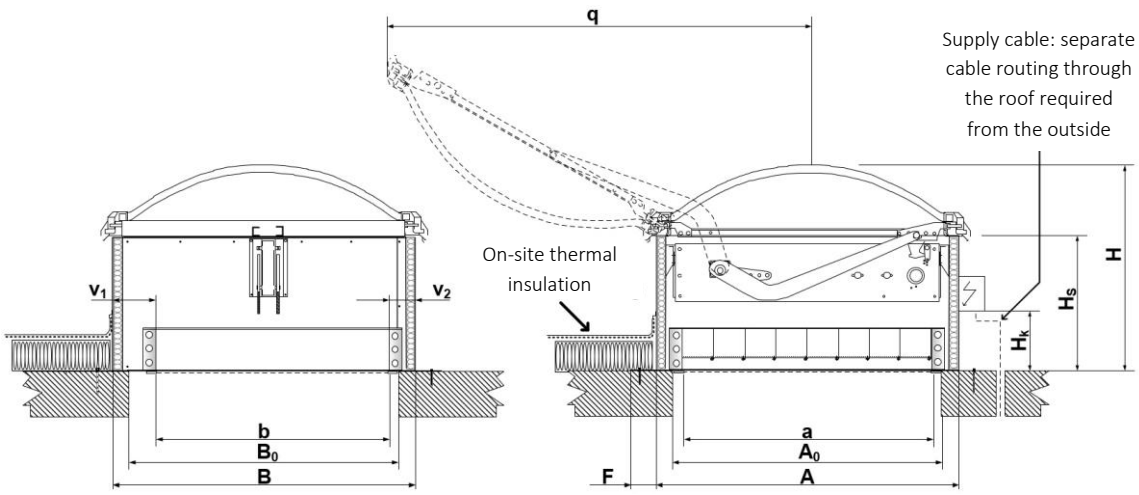
TYPE DEK-V-LK6

The pressure regulation device consists of an insulated roof frame, the integrated pressure regulation damper and a light dome. This damper regulates the overpressure in the stairwell completely automatically without auxiliary energy with the help of a spring system. The roof frame is made of galvanised sheet steel and is insulated on the inside with non-inflammable mineral wool.
The air release occurs via a light dome, which is equipped with a flash-over drive system, which in turn ensures that an opening angle of ca. 160° can be attained, in order to facilitate a large degree of independence from the wind.
The electrical connection is made via the terminal box mounted on the outside of the roof frame.
In case of the DEKA-V-LK6 version, an additional spring return motor is mounted on the pressure regulating damper, which can open the damper in a motor-driven manner. This allows light to enter the stairwell during operational standby and the unit can be used to ventilate the stairwell by opening the light dome.

Mode of operation

When the system is triggered, the control unit opens the light dome. After reaching the opening position (position switch), the supply air fan can be started. The pressure is regulated via the spring-loaded pressure regulating damper.
In case of the DEKA-V-LK6 variant, the pressure regulating damper can be kept open with the additional actuator during operational readiness. This allows light to enter the stairwell and the unit can be used to ventilate the stairwell by opening the light dome.
In the event of a fire, these comfort functions are overridden: the light dome is fully opened and the actuator moves to the position that enables the automatic function of the control damper.
This means that, if required, requirements for smoke dissipation surfaces can also be implemented. This function can be triggered automatically in the event of a malfunction or, if necessary, switched off manually, for example from the fire brigade control panel.

Main dimension



Design size	A x B [mm]	a x b [mm]	q [mm]	Weight [kg]	Opening** A_D x B_D [mm]
DEK-V 900/800-LK6 1200/1200	1150 x 1150	900 x 800	1800	185	950 x 950
DEK-V 900/900-LK6 1200/1200 *	1150 x 1150	900 x 900	1800	185	950 x 950
DEK-V 900/1100-LK6 1200/1500	1150 x 1450	900 x 1100	1800	205	1150 x 1150
DEK-V 1200/1100-LK6 1500/1500	1450 x 1450	1200 x 1100	2300	225	1250 x 1250
DEK-V 1200/1400-LK6 1500/1800	1450 x 1750	1200 x 1400	2300	265	1450 x 1450
DEK-V 1500/1400-LK6 1800/1800	1750 x 1750	1500 x 1400	2700	300	1550 x 1550

The flange width F is 150 mm all round. The offset V1 = 225mm, V2 = 125 mm.

* Size is only available in the DEK version (without drive) and not as DEKA. The drive system of the light dome must be completely dismantled for revision.

** The minimum size in the final construction must correspond to the dimension a x b.
A square opening is recommended in order to be flexible in the alignment of the unit, if necessary.
We recommend making the opening approx. 50 mm larger to allow for subsequent drywall finishing if necessary.

Roof frame height

To accommodate your individual requirements for insulation heights, bonding, etc., the roof frame height can be adjusted.

Roof frame height	H_K [mm]	H_S [mm]	H [mm]	Price bracket
So550	300	550	840	Without surcharge
So650	400	650	940	
So750	500	750	1040	
So850	600	850	1140	With surcharge
So950	700	950	1240	

Selection table

Design Size	Max. regulable volume flow**			Free area
	at 30Pa [m³/h]	at 40Pa [m³/h]	at 50Pa [m³/h]	[m²]
DEK-V 900/800-LK6 1200/1200	9.800	12.200	14.000	0,55
DEK-V 900/900-LK6 1200/1200 *	11.100	13.700	16.000	-
DEK-V 900/1100-LK6 1200/1500	13.500	16.800	19.500	0,76
DEK-V 1200/1100-LK6 1500/1500	18.100	22.300	26.000	1,02
DEK-V 1200/1400-LK6 1500/1800	23.000	28.400	33.000	1,29
DEK-V 1500/1400-LK6 1800/1800	28.000	35.500	41.000	1,62

* Size is only available in the DEK version (without drive) and not as DEKA. The drive system of the light dome must be completely dismantled for revision.

** The maximum regulable volume flow depends on the setting of the pressure regulating damper.

Accessories

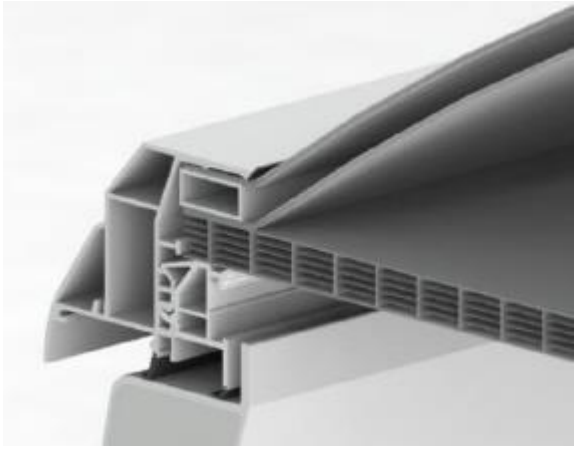
Option DEKA

Motorised version of the pressure regulating damper for the realisation of light incidence, ventilation or smoke dissipation function (A)

The pressure regulating damper is equipped with an actuating drive (FR 24 V), which can keep the damper open when the system is at a standstill (operating state). When the pressure aeration process is triggered, the actuating drive should be switched over to a position that facilitates the automatic control function of the dampers (operating position for pressure regulation). In the event of a malfunction or interruption of the power supply in the triggered state, the actuator can open the dampers completely (operating position for smoke discharge).

Option WD-plus

An additional insulation layer improves the U-value of the light dome to 1.3 W/m² K.



Tender text pressure regulating device Type DEK-V-LK6

To be installed on the roof at the top of a stairwell, for the maintenance of a controlled overpressure in the pressure chamber. Immediate response to seif-opening or self-closing doors, through an automatic pressure regulating damper that does not require any auxiliary force.
Compliance with the requirements associated with the control time (3 seconds), as per EN 12101-6

Consists of:
Roof frame made of galvanised sheet steel, with internal thermal insulation cladding of mineral wool, Euroclass A1, non-combustible according to EN 13501.
Screwed-in cross-piece for accommodation of the drive system; can be dismounted for inspections.
Circumferential adhesive flange for roof sealing. The height of the roof frame can, with respect to the height of the thermal insulation, be increased by up to 200 mm in a cost neutral manner.
Automatic pressure regulating damper that facilitates steady control and which features multiple lamellas, for horizontal or vertical perfusion.
The operational reliability and the compliance with the control time requirements (3 seconds according to EN 12101-6) have been verified and tested through a functional test, a stability test and a resonance test after 10,000 load cycles at the Institute for Industrial Aerodynamics (IFI Aachen).
Axles and connecting rods made of high-grade steel; frames and damper blades made of aluminium. Damper system opens and closes along the same direction via a bar connection; low-friction mounting of the damper axles.
The closing torque is, with respect to the aerodynamic force torque that produces the opening action, generated via a tension spring system. Consequently, the set overpressure is controlled in a manner that is independent of the quantity of air, and this control is maintained up to the nominal airflow rate (steady type of control).
The pressure difference of the pressure control damper can be adjusted to differential pressures of 25 - 75 Pa by varying the spring pretension length and the closing lever arms, usually preset to 50 Pa at delivery. The maximum pressure control volume flow depends on the preset control pressure.

Dome light (double-layered) consisting of 2 acrylic glass shells, linked through a dust-proof connection, including snow-proof and rain-proof seal with circumferential border frame made of PVC profiles. Ready-for-use dome light mounted on the upper part of the roof frame.
Flash-over drive system for attainment of an opening angle of 165°, which guarantees that the pressure release process is largely independent of the wind.
Drive with open-close function, rated voltage 24V, current consumption 7.5A, protection class IP54.
Integrated position switch for signaling the 'open' position.
Pressure regulating device completely connected to the external terminal box, protection class I P65.

Please note:
The system must be operated in a manner which ensures that the supply air is only switched on when the dome light above the pressure regulating damper has been activated (position switch). Otherwise, the required pressure discharge operation cannot be guaranteed.

Technical data, based on air density 1,2 kg/m³

Max. pressure regulation airflow rate	m³/h	:
Preset regulation pressure	Pa	:
Nominal size DEK	mm	:
Nominal size- dome light	mm	:
Type		: DEK-V-LK6
Brand		: Eichelberger

Tender text pressure regulating device with additional options for light incidence, ventilation and smoke discharge Type DEKA-V-LK6

To be installed on the roof at the top of a stairwell, for the maintenance of a controlled overpressure in the pressure chamber. Immediate response to seif-opening or self-closing doors, through an automatic pressure regulating damper that does not require any auxiliaryforce.
Compliance with the requirements associated with the control time (3 seconds), as per EN 12101-6

Consists of:
Roof frame made of galvanised sheet steel, with internal thermal insulation cladding of mineral wool, Euroclass A1, non-combustible according to EN 13501.
Screwed-in cross-piece for accommodation of the drive system; can be dismounted for inspections.
Circumferential adhesive flange for roof sealing. The height of the roof frame can, with respect to the height of the thermal insulation, be increased by up to 200 mm in a cost neutral manner.
Automatic pressure regulating damper that facilitates steady control and which features multiple lamellas, for horizontal orvertical perfusion.
The operational reliability and the compliance with the control time requirements (3 seconds according to EN 12101-6) have been verified and tested through a functional test, a stability test and a resonance test after 10,000 load cycles at the Institute for Industrial Aerodynamics (IFI Aachen).
Axles and connecting rods made of high-grade steel; frames and damper blades made of aluminium. Damper system opens and closes along the same direction via a bar connection; low-friction mounting of the damper axles.
The closing torque is, with respect to the aerodynamic force torque that produces the opening action, generated via a tension spring system. Consequently, the set overpressure is controlled in a manner that is independent of the quantity of air, and this control is maintained up to the nominal airflow rate (steady type of control).
The pressure difference of the pressure control damper can be adjusted to differential pressures of 25 - 75 Pa by varying the spring pretension length and the closing lever arms, usually preset to 50 Pa at delivery. The maximum pressure control volume flow depends on the preset control pressure.

Motor-driven version of the pressure regulating damper for optional functions of light incidence, ventilation and smoke discharge. The pressure regulating damper is equipped with a fire protection actuator (FR 24V), which can hold the damper open when the system is at a standstill (ready position).
When the pressure aeration process is triggered, the actuating drive should be switched over to a position that facilitates the automatic control function of the dampers (operating position for pressure regulation). In case of a defect associated with the triggered status, the drive mechanism can actuate the control butterfly valve (operating position for smoke discharge).

Dome light (double-layered) consisting of 2 acrylic glass shells, linked through a dust-proof connection, including snow-proof and rain-proof seal with circumferential border frame made of PVC profiles. Ready-for-use dome light mounted on the upper part of the roof frame.
Flash-over drive system for attainment of an opening angle of 165°, which guarantees that the pressure release process is largely independent of the wind.
Drive with open-close function, rated voltage 24V, current consumption 7.5A, protection class IP54.
Integrated position switch for signaling the 'open' position.
Pressure regulating device completely connected to the external terminal box, protection class I P65.

Please note:
The system must be operated in a manner which ensures that the supply air is only switched on when the dome light above the pressure regulating damper has been activated (position switch). Otherwise, the required pressure discharge operation cannot be guaranteed.

Technical data, based on air density 1,2 kg/m³

Max. pressure regulation airflow ratem³/h		:
Preset regulation pressure	Pa	:
Nominal size DEK	mm	:
Nominal size- dome light	mm	:
Geometric opening area	m²	:
Type		: DEKA-V-LK6
Brand		: Eichelberger

Pressure regulating device for roof-mounting with dark flap

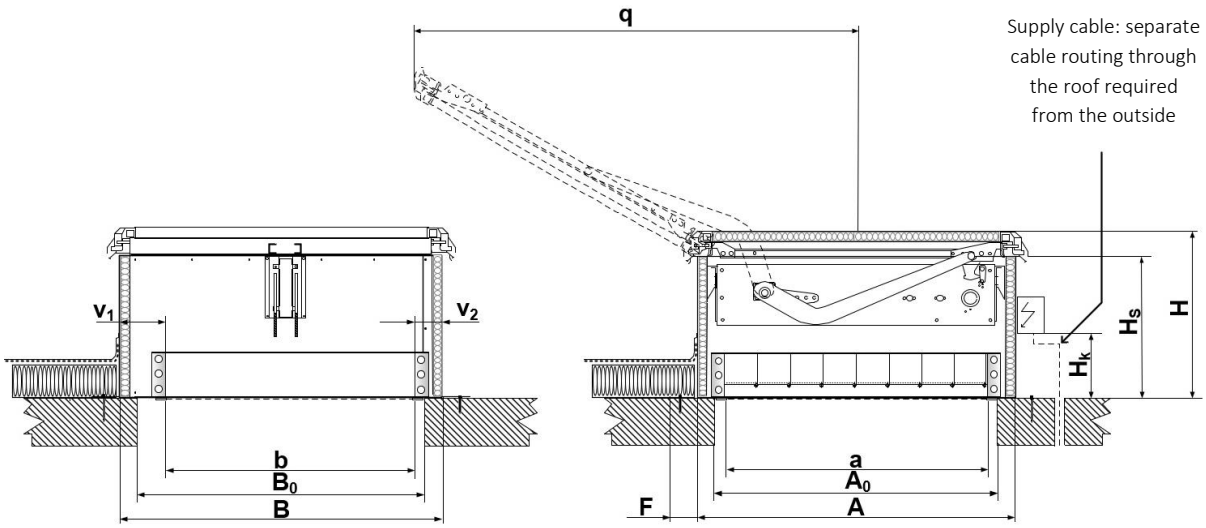
TYPE DEK-V-DK6

The pressure regulation device consists of an insulated roof frame, the integrated pressure regulation damper and a dark flap. This damper regulates the overpressure in the stairwell completely automatically without auxiliary energy with the help of a spring system. The roof frame is made of galvanised sheet steel and is insulated on the inside with non-inflammable mineral wool.
The air release occurs via a dark flap, which is equipped with a flash-over drive system, which in turn ensures that an opening angle of ca. 160° can be attained, in order to facilitate a large degree of independence from the wind.
The electrical connection is made via the terminal box mounted on the outside of the roof frame.
In case of the DEKA-V-DK6 version, an additional spring return motor is mounted on the pressure regulating damper, which can open the damper in a motor-driven manner. This means that the unit can be used to ventilate the stairwell when it is ready for operation by opening the dark flap.

Mode of operation

When the system is triggered, the control unit opens the dark flap. After reaching the opening position (position switch), the supply air fan can be started. The pressure is regulated via the spring-loaded pressure regulating damper.
In case of the DEKA-V-DK6 variant, the pressure regulating damper can be kept open with the additional actuator during operational readiness. This allows the unit to be used to ventilate the stairwell by opening the dark flap.
In the event of a fire, these comfort functions are overridden: the dark flap is fully opened and the actuator moves to the position that enables the automatic function of the control damper.
This means that, if required, requirements for smoke dissipation surfaces can also be implemented. This function can be triggered automatically in the event of a malfunction or, if necessary, switched off manually, for example from the fire brigade control panel.

Main dimension



Design size	A x B [mm]	a x b [mm]	q [mm]	Weight [kg]	Opening** AD x BD [mm]
DEK-V 900/800-DK6 1200/1200	1150 x 1150	900 x 800	1800	185	950 x 950
DEK-V 900/900-DK6 1200/1200 *	1150 x 1150	900 x 900	1800	185	950 x 950
DEK-V 900/1100-DK6 1200/1500	1150 x 1450	900 x 1100	1800	205	1150 x 1150
DEK-V 1200/1100-DK6 1500/1500	1450 x 1450	1200 x 1100	2300	225	1250 x 1250
DEK-V 1200/1400-DK6 1500/1800	1450 x 1750	1200 x 1400	2300	265	1450 x 1450

The flange width F is 150 mm all round. The offset V1 = 225mm, V2 = 125 mm.

* Size is only available in the DEK version (without drive) and not as DEKA. The drive system of the dark flap must be completely dismantled for revision.

** The minimum size in the final construction must correspond to the dimension a x b.
A square opening is recommended in order to be flexible in the alignment of the unit, if necessary.
We recommend making the opening approx. 50 mm larger to allow for subsequent drywall finishing if necessary.

Roof frame height

To accommodate your individual requirements for insulation heights, bonding, etc., the roof frame height can be adjusted.

Roof frame height	H_K [mm]	H_S [mm]	H [mm]	Price bracket
So550	300	550	640	Without surcharge
So650	400	650	740	
So750	500	750	840	
So850	600	850	940	With surcharge
So950	700	950	1040	

Selection table

Design Size	Max. regulable volume flow**			Free area
	at 30Pa [m³/h]	at 40Pa [m³/h]	at 50Pa [m³/h]	[m²]
DEK-V 900/800-DK6 1200/1200	9.800	12.200	14.000	0,55
DEK-V 900/900-DK6 1200/1200 *	11.100	13.700	16.000	-
DEK-V 900/1100-DK6 1200/1500	13.500	16.800	19.500	0,76
DEK-V 1200/1100-DK6 1500/1500	18.100	22.300	26.000	1,02
DEK-V 1200/1400-DK6 1500/1800	23.000	28.400	33.000	1,29

* Size is only available in the DEK version (without drive) and not as DEKA. The drive system of the dark flap must be completely dismantled for revision.

** The maximum regulable volume flow depends on the setting of the pressure regulating damper.

Accessories

Option DEKA

Motorised version of the pressure regulating damper for the realisation of light incidence, ventilation or smoke dissipation function (A)

The pressure regulating damper is equipped with an actuating drive (FR 24 V), which can keep the damper open when the system is at a standstill (operating state). When the pressure aeration process is triggered, the actuating drive should be switched over to a position that facilitates the automatic control function of the dampers (operating position for pressure regulation). In the event of a malfunction or interruption of the power supply in the triggered state, the actuator can open the dampers completely (operating position for smoke discharge).

Tender text pressure regulating device Type DEK-V-DK6

To be installed on the roof at the top of a stairwell, for the maintenance of a controlled overpressure in the pressure chamber. Immediate response to seif-opening or self-closing doors, through an automatic pressure regulating damper that does not require any auxiliary force.
Compliance with the requirements associated with the control time (3 seconds), as per EN 12101-6

Consists of:
Roof frame made of galvanised sheet steel, with internal thermal insulation cladding of mineral wool, Euroclass A1, non-combustible according to EN 13501.
Screwed-in cross-piece for accommodation of the drive system; can be dismounted for inspections.
Circumferential adhesive flange for roof sealing. The height of the roof frame can, with respect to the height of the thermal insulation, be increased by up to 200 mm in a cost neutral manner.
Automatic pressure regulating damper that facilitates steady control and which features multiple lamellas, for horizontal or vertical perfusion.
The operational reliability and the compliance with the control time requirements (3 seconds according to EN 12101-6) have been verified and tested through a functional test, a stability test and a resonance test after 10,000 load cycles at the Institute for Industrial Aerodynamics (IFI Aachen).
Axles and connecting rods made of high-grade steel; frames and damper blades made of aluminium. Damper system opens and closes along the same direction via a bar connection; low-friction mounting of the damper axles.
The closing torque is, with respect to the aerodynamic force torque that produces the opening action, generated via a tension spring system. Consequently, the set overpressure is controlled in a manner that is independent of the quantity of air, and this control is maintained up to the nominal airflow rate (steady type of control).
The pressure difference of the pressure control damper can be adjusted to differential pressures of 25 - 75 Pa by varying the spring pretension length and the closing lever arms, usually preset to 50 Pa at delivery. The maximum pressure control volume flow depends on the preset control pressure.

Thermally insulated composite dark flap made of plastic in sandwich construction with internal thermal insulation.
Circumferential double sealing system between the border frame and the roof frame consisting of sealing lamellas.
Ready-for-use dark flap mounted on the upper part of the roof frame.
Flash-over drive system for attainment of an opening angle of 165°, which guarantees that the pressure release process is largely independent of the wind.
Drive with open-close function, rated voltage 24V, current consumption 7.5A, protection class IP54.
Integrated position switch for signaling the 'open' position.
Pressure regulating device completely connected to the external terminal box, protection class I P65.

Please note:
The system must be operated in a manner which ensures that the supply air is only switched on when the dome light above the pressure regulating damper has been activated (position switch). Otherwise, the required pressure discharge operation cannot be guaranteed.

Technical data, based on air density 1,2 kg/m³

Max. pressure regulation airflow rate	m³/h	:
Preset regulation pressure	Pa	:
Nominal size DEK	mm	:
Nominal size- dome light	mm	:
U-value	W/m²K	: 0,95
Type		: DEK-V-DK6
Brand		: Eichelberger

Tender text pressure regulating device with additional options for ventilation and smoke discharge Type DEKA-V-DK6

To be installed on the roof at the top of a stairwell, for the maintenance of a controlled overpressure in the pressure chamber. Immediate response to seif-opening or self-closing doors, through an automatic pressure regulating damper that does not require any auxiliary force.
Compliance with the requirements associated with the control time (3 seconds), as per EN 12101-6

Consists of:
Roof frame made of galvanised sheet steel, with internal thermal insulation cladding of mineral wool, Euroclass A1, non-combustible according to EN 13501.
Screwed-in cross-piece for accommodation of the drive system; can be dismounted for inspections.
Circumferential adhesive flange for roof sealing. The height of the roof frame can, with respect to the height of the thermal insulation, be increased by up to 200 mm in a cost neutral manner.
Automatic pressure regulating damper that facilitates steady control and which features multiple lamellas, for horizontal or vertical perfusion.
The operational reliability and the compliance with the control time requirements (3 seconds according to EN 12101-6) have been verified and tested through a functional test, a stability test and a resonance test after 10,000 load cycles at the Institute for Industrial Aerodynamics (IFI Aachen).
Axles and connecting rods made of high-grade steel; frames and damper blades made of aluminium. Damper system opens and closes along the same direction via a bar connection; low-friction mounting of the damper axles.
The closing torque is, with respect to the aerodynamic force torque that produces the opening action, generated via a tension spring system. Consequently, the set overpressure is controlled in a manner that is independent of the quantity of air, and this control is maintained up to the nominal airflow rate (steady type of control).
The pressure difference of the pressure control damper can be adjusted to differential pressures of 25 - 75 Pa by varying the spring pretension length and the closing lever arms, usually preset to 50 Pa at delivery. The maximum pressure control volume flow depends on the preset control pressure.

Motorised version of the pressure regulating damper for optional ventilation and smoke discharge functions.
The pressure regulating damper is equipped with a fire protection actuator (FR 24V), which can hold the damper open when the system is at a standstill (ready position).
When the pressure aeration process is triggered, the actuating drive should be switched over to a position that facilitates the automatic control function of the dampers (operating position for pressure regulation). In case of a defect associated with the triggered status, the drive mechanism can actuate the control butterfly valve (operating position for smoke discharge).

Thermally insulated composite dark flap made of plastic in sandwich construction with internal thermal insulation.
Circumferential double sealing system between the border frame and the roof frame consisting of sealing lamellas. Ready-for-use dark flap mounted on the upper part of the roof frame.
Flash-over drive system for attainment of an opening angle of 165°, which guarantees that the pressure release process is largely independent of the wind.
Drive with open-close function, rated voltage 24V, current consumption 7.5A, protection class IP54.
Integrated position switch for signaling the 'open' position.
Pressure regulating device completely connected to the external terminal box, protection class I P65.

Please note:
The system must be operated in a manner which ensures that the supply air is only switched on when the dome light above the pressure regulating damper has been activated (position switch). Otherwise, the required pressure discharge operation cannot be guaranteed.

Technical data, based on air density 1,2 kg/m³

Max. pressure regulation airflow rate	m³/h	:
Preset regulation pressure	Pa	:
Nominal size DEK	mm	:
Nominal size- dome light	mm	:
Geometric opening area	m²	:
U-value	W/m²K	: 0,95
Type		: DEKA-V-DK6
Brand		: Eichelberger

Pressure regulating device for roof-mounting with lamellar hood

TYPE DEK-V-LH5

The pressure regulating device consists of an insulated roof frame, the integrated pressure regulating damper with downstream louver damper and a lamellar hood. This damper regulates the overpressure in the stairwell completely automatically without auxiliary energy with the help of a spring system. A special spring return motor is used as the actuator, which is usually used in fire dampers.

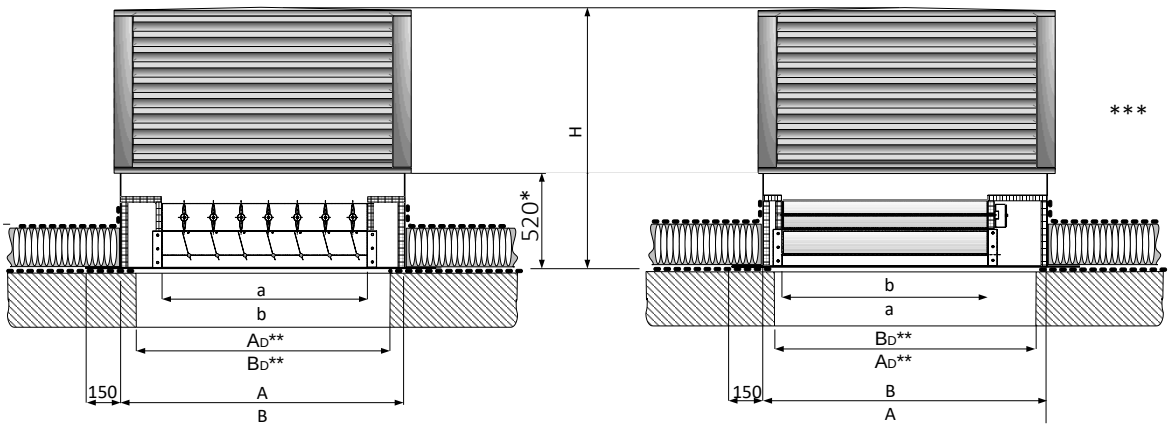
The electrical connection is made via the terminal box mounted on the outside of the roof frame.
The roof frame is made of galvanised sheet steel and is insulated on the inside with non-inflammable mineral wool. The four lateral segments of the lamellar hood can be dismantled individually for revision of the pressure regulating damper and the actuator of the louver damper.

The air release is independent of the wind direction via a four-sided open aluminium lamellar hood.

Mode of operation

When the system is triggered, the control device de-energises the spring return motor of the louver damper which is integrated in the unit, thus opening the damper. After the opening position (limit switch) has been attained, the supply air fan can become operational. The pressure is not controlled via the actuator, but exclusively via the spring-loaded pressure regulating damper.

Main dimension



Design size	A x B [mm]	a x b [mm]	q [mm]	Weight [kg]	Opening** A_D x B_D [mm]
DEK-V 900/800-LH5 1200/1200	1200 x 1200	900 x 800	1175	230	950 x 950
DEK-V 900/1100-LH5 1200/1500	1200 x 1500	900 x 1100	1250	260	1150 x 1150
DEK-V 1200/1100-LH5 1500/1500	1500 x 1500	1200 x 1100	1400	310	1250 x 1250
DEK-V 1200/1400-LH5 1500/1800	1500 x 1800	1200 x 1400	1475	350	1450 x 1450
DEK-V 1500/1400-LH5 1800/1800	1800 x 1800	1500 x 1400	1625	400	1550 x 1550
DEK-V 1500/1500-LH5 1900/1900	1900 x 1900	1500 x 1500	1700	435	1550 x 1550

* The height of the base can be adjusted to the thickness of the on-site thermal insulation.

** The minimum size in the final construction must correspond to the dimension a x b.
A square opening is recommended in order to be flexible in the alignment of the unit, if necessary.
We recommend making the opening approx. 50 mm larger to allow for subsequent drywall finishing if necessary.

*** For inspection purposes, at least 1 m of circumferential space should be maintained for accessibility to the unit.

Selection table

Design Size	Max. regulable volume flow*		
	at 30Pa	at 40Pa	at 50Pa
	[m³/h]	[m³/h]	[m³/h]
DEK-V 900/800-LH5 1200/1200	8.200	10.800	12.900
DEK-V 900/1100-LH5 1200/1500	11.400	14.900	17.800
DEK-V 1200/1100-LH5 1500/1500	15.200	19.900	23.700
DEK-V 1200/1400-LH5 1500/1800	19.300	25.400	30.200
DEK-V 1500/1400-LH5 1800/1800	24.100	31.700	37.800
DEK-V 1500/1500-LH5 1900/1900	25.900	34.000	40.500

* The maximum regulable volume flow depends on the setting of the pressure regulating damper.

Accessoiries

Option DEKA

Motorised version of the pressure regulating damper for the realisation of ventilation or smoke dissipation function (A)

The pressure regulating damper is equipped with an actuating drive (FR 24 V), which can keep the damper open when the system is at a standstill (operating state). When the pressure aeration process is triggered, the actuating drive should be switched over to a position that facilitates the automatic control function of the dampers (operating position for pressure regulation). In the event of a malfunction or interruption of the power supply in the triggered state, the actuator can open the dampers completely (operating position for smoke discharge).

Tender text pressure regulating device Type DEK-V-LH5

To be installed on the roof at the top of a stairwell, for the maintenance of a controlled overpressure in the pressure chamber. Immediate response to seif-opening or self-closing doors, through an automatic pressure regulating damper that does not require any auxiliary force.
Compliance with the requirements associated with the control time (3 seconds), as per EN 12101-6

Consists of:
Roof frame made of galvanised sheet steel in thermal insulated design, with circumferential adhesive flange. The height of the roof frame can, with respect to the height of the thermal insulation, be increased by up to 200 mm in a cost neutral manner.

Automatic pressure regulating damper that facilitates steady control and which features multiple lamellas, for vertical perfusion.
The operational reliability and the compliance with the control time requirements (3 seconds according to EN 12101-6) have been verified and tested through a functional test, a stability test and a resonance test after 10,000 load cycles at the Institute for Industrial Aerodynamics (IFI Aachen).
Axles and connecting rods made of high-grade steel; frames and damper blades made of aluminium. Damper system opens and closes along the same direction via a bar connection; low-friction mounting of the damper axles.
The closing torque is, with respect to the aerodynamic force torque that produces the opening action, generated via a tension spring system. Consequently, the set overpressure is controlled in a manner that is independent of the quantity of air, and this control is maintained up to the nominal airflow rate (steady type of control).
The pressure difference of the pressure control damper can be adjusted to differential pressures of 25 - 75 Pa by varying the spring pretension length and the closing lever arms, usually preset to 50 Pa at delivery. The maximum pressure control volume flow depends on the preset control pressure.

Louver damper, airtight according to DIN 1946-4, for avoidance of condensation and the entry of cold air. Contrary coupling of the lamellas via gear wheels. Armaflex is used to provide the lamellas with a thermal insulation coating on one side. The lamellas are also provided with metal cladding. Aluminium lamellas.
Fire protection actuating drive with spring return motor, opens without electricity, limit switch.

Lamellar hood made of untreated aluminium with four-sided flow-off option to ensure largely wind-independent pressure relief. Bird protection grid.
Terminal box is mounted on the outside of the roof frame for the connection of the damper-related actuating drive. Above the roof frame, a rain outlet integrated in the lamellar hood for any moisture that may penetrate the system.

Please note:
The system must be operated in a manner that ensures that the supply air is only switched on when the louver damper above the pressure regulating damper has been opened (limit switch). Otherwise the required pressure discharge operation cannot be guaranteed.

Technical data, based on air density 1,2 kg/m³

Max. pressure regulation airflow rate	m³/h	:
Preset regulation pressure	Pa	:
Type		: DEK-V-LH5
Brand		: Eichelberger

Tender text pressure regulating device Type DEKA-V-LH5

To be installed on the roof at the top of a stairwell, for the maintenance of a controlled overpressure in the pressure chamber. Immediate response to seif-opening or self-closing doors, through an automatic pressure regulating damper that does not require any auxiliary force.
Compliance with the requirements associated with the control time (3 seconds), as per EN 12101-6

Consists of:
Roof frame made of galvanised sheet steel in thermal insulated design, with circumferential adhesive flange. The height of the roof frame can, with respect to the height of the thermal insulation, be increased by up to 200 mm in a cost neutral manner.

Automatic pressure regulating damper that facilitates steady control and which features multiple lamellas, for vertical perfusion.
The operational reliability and the compliance with the control time requirements (3 seconds according to EN 12101-6) have been verified and tested through a functional test, a stability test and a resonance test after 10,000 load cycles at the Institute for Industrial Aerodynamics (IFI Aachen).
Axles and connecting rods made of high-grade steel; frames and damper blades made of aluminium. Damper system opens and closes along the same direction via a bar connection; low-friction mounting of the damper axles.
The closing torque is, with respect to the aerodynamic force torque that produces the opening action, generated via a tension spring system. Consequently, the set overpressure is controlled in a manner that is independent of the quantity of air, and this control is maintained up to the nominal airflow rate (steady type of control).
The pressure difference of the pressure control damper can be adjusted to differential pressures of 25 - 75 Pa by varying the spring pretension length and the closing lever arms, usually preset to 50 Pa at delivery. The maximum pressure control volume flow depends on the preset control pressure.

Motorised version of the pressure regulating damper for optional ventilation and smoke discharge functions.
The pressure regulating damper is equipped with a fire protection actuator (FR 24V), which can hold the damper open when the system is at a standstill (ready position).
When the pressure aeration process is triggered, the actuating drive should be switched over to a position that facilitates the automatic control function of the dampers (operating position for pressure regulation). In case of a defect associated with the triggered status, the drive mechanism can actuate the control butterfly valve (operating position for smoke discharge).

Louver damper, airtight according to DIN 1946-4, for avoidance of condensation and the entry of cold air. Contrary coupling of the lamellas via gear wheels. Armaflex is used to provide the lamellas with a thermal insulation coating on one side. The lamellas are also provided with metal cladding. Aluminium lamellas.
Fire protection actuating drive with spring return motor, opens without electricity, limit switch.

Lamellar hood made of untreated aluminium with four-sided flow-off option to ensure largely wind-independent pressure relief. Bird protection grid.
Terminal box is mounted on the outside of the roof frame for the connection of the damper-related actuating drive. Above the roof frame, a rain outlet integrated in the lamellar hood for any moisture that may penetrate the system.

Please note:
The system must be operated in a manner that ensures that the supply air is only switched on when the louver damper above the pressure regulating damper has been opened (limit switch). Otherwise the required pressure discharge operation cannot be guaranteed.

Technical data, based on air density 1,2 kg/m³

Max. pressure regulation airflow rate	m³/h	:
Preset regulation pressure	Pa	:
Type		: DEKA-V-LH5
Brand		: Eichelberger

Pressure regulating device for wall-mounting with lamellar window

TYPE DEK-H-WBS3-LF

The pressure regulating unit consists of a wall frame on which the pressure regulating damper is screwed, a lamellar window and a cover housing.

This damper regulates the overpressure in the stairwell completely automatically without auxiliary energy with the help of a spring system.

The lamellar window is used to avoid the entry of cold air and the condensation and to protect the pressure regulating damper from dirt and the effects of the weather.

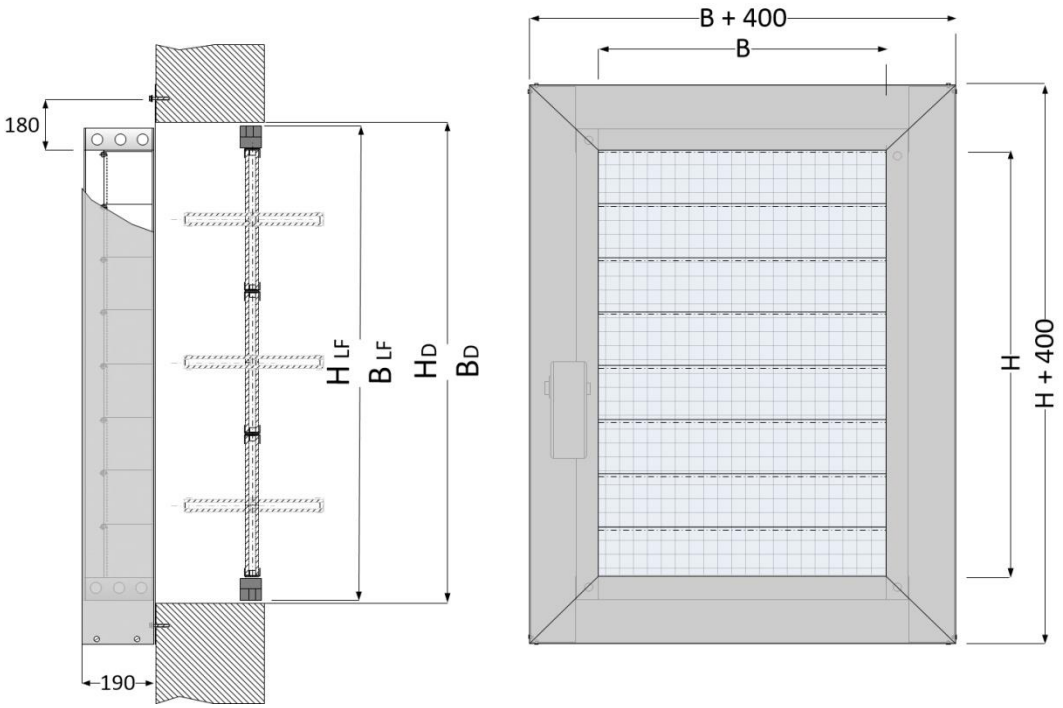
Wall frame, pressure regulating damper are concealed by an aluminium cover housing. The housing consists of four individual segments that can be dismantled separately; this provides easy revision accessibility. The pressure regulating damper is protected by a stable corrugated wire mesh. The lamellar window is installed by means of mortaring or integration into an existing mullion-transom system.

Mode of operation

When the system is triggered, the control unit activates the drive of the lamellar window and opens the window. After reaching the open position (limit switch), the supply air fan can be put into operation. The pressure is not regulated via the actuator, but exclusively via the spring-loaded pressure regulating damper.

Please note:
When using pressure regulating dampers on façades, it must be ensured that the pressure regulation cannot be impaired by wind influences.

Main dimension



Minimum Width	B = 500 mm
Maximum Width	B = 1500 mm
Minimum Height	H = 500 mm
Maximum Height	H = 1500 mm
Depth	190 mm

Minimum Width of the opening	$B_D = B_{LF} + 20$
Maximum Width of the opening	$B_D = B + 200$
Minimum Height of the opening	$H_D = H_{LF} + 20$
Maximum Height of the opening	$H_D = H + 200$

Height lamellar window	$H_{LF} \geq H + 100$
Width lamellar window	$B_{LF} \geq B + 100$

The dimensions of the opening must be 10 mm larger than the dimension of the lamellar window.

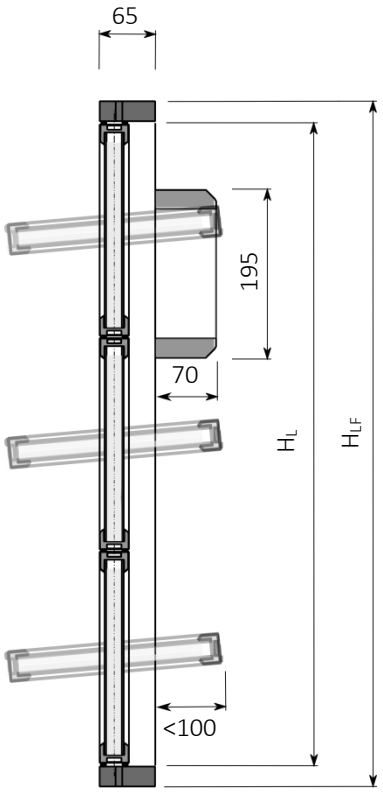
Accessoiries

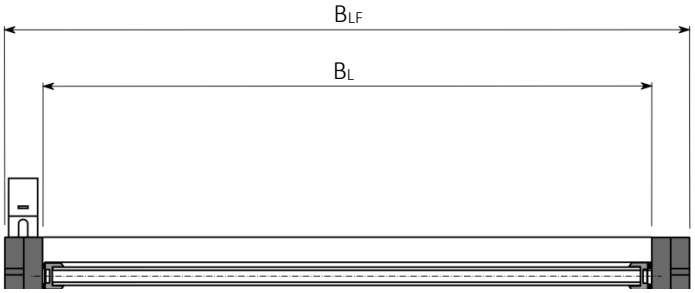
Option DEKA

Motorised version of the pressure regulating damper for the realisation of light incidence, ventilation or smoke dissipation function (A)

The pressure regulating damper is equipped with an actuating drive (FR 24 V), which can keep the damper open when the system is at a standstill (operating state). When the pressure aeration process is triggered, the actuating drive should be switched over to a position that facilitates the automatic control function of the dampers (operating position for pressure regulation). In the event of a malfunction or interruption of the power supply in the triggered state, the actuator can open the dampers completely (operating position for smoke discharge).

Main dimension LF





Width	B_{LF} = 600 - 1600 mm	
Height	H_{LF} = 600 - 1600 mm	
Clear height	H_L = H - 40 mm	
Clear width	B_L = B - 80 mm	
Glass thickness	d = 24 mm	
Number of lamellar n depending on the height H	H = 600 mm	n = 2
	H = 700 - 900 mm	n = 3
	H = 1000 - 1100 mm	n = 4
	H = 1200 - 1400 mm	n = 5
	H = 1500 - 1600mm	n = 6

Selection table

DEK-H-WBS3-LF

Max regulable volume flow* at **50Pa** control pressure

Nominal dimension of the pressure regulating damper in mm (H x B), volume flow in m³/h

h \ b	500	600	700	800	900	1000	1100	1200	1300	1400	1500
500	4.500	5.400	6.300	7.200	8.100	9.000	9.900	10.800	11.700	12.600	13.500
600	5.400	6.500	7.600	8.600	9.700	10.800	11.900	13.000	14.000	15.100	16.200
700	6.300	7.600	8.800	10.100	11.300	12.600	13.900	15.100	16.400	17.600	18.900
800	7.200	8.600	10.100	11.500	13.000	14.400	15.800	17.300	18.700	20.200	21.600
900	8.100	9.700	11.300	13.000	14.600	16.200	17.800	19.400	21.100	22.700	24.300
1000	9.000	10.800	12.600	14.400	16.200	18.000	19.800	21.600	23.400	25.200	27.000
1100	9.900	11.900	13.900	15.800	17.800	19.800	21.800	23.800	25.700	27.700	29.700
1200	10.800	13.000	15.100	17.300	19.400	21.600	23.800	25.900	28.100	30.200	32.400
1300	11.700	14.000	16.400	18.700	21.100	23.400	25.700	28.100	30.400	32.800	35.100
1400	12.600	15.100	17.600	20.200	22.700	25.200	27.700	30.200	32.800	35.300	37.800
1500	13.500	16.200	18.900	21.600	24.300	27.000	29.700	32.400	35.100	37.800	40.500

* The air flow rates specified in the table consider the pressure drop of the pressure regulating damper and the lamellar window behind it. Downstream elements (such as sheets, weather protection grids, etc.) can significantly reduce the maximum airflow rate, and are to be taken into consideration during the dimensioning process. If weather protection grids are used, the opening should be larger than the nominal size of the DEK (pressure regulating damper).

Tender text pressure regulating device for interior wall mounting Type DEK-H-WBS3-LF

for the maintenance of a controlled overpressure in the pressure chamber. Immediate response to seif-opening or self-closing doors, through an automatic pressure regulating damper that does not require any auxiliary force. Compliance with the requirements associated with the control time (3 seconds), as per EN 12101-6.
Consists of:

Automatic pressure regulating damper Type DEK

Automatic pressure regulating damper that facilitates steady control and which features multiple lamellas, for horizontal perfusion.
The operational reliability and the compliance with the control time requirements (3 seconds according to EN 12101-6) have been verified and tested through a functional test, a stability test and a resonance test after 10,000 load cycles at the Institute for Industrial Aerodynamics (IFI Aachen).
Axles and connecting rods made of high-grade steel; frames and damper blades made of aluminium. Damper system opens and closes along the same direction via a bar connection; low-friction mounting of the damper axles.
The closing torque is, with respect to the aerodynamic force torque that produces the opening action, generated via a tension spring system. Consequently, the set overpressure is controlled in a manner that is independent of the quantity of air, and this control is maintained up to the nominal airflow rate (steady type of control).
The pressure difference of the pressure control damper can be adjusted to differential pressures of 25 - 75 Pa by varying the spring pretension length and the closing lever arms, usually preset to 50 Pa at delivery. The maximum pressure control volume flow depends on the preset control pressure.

Glass lamellar window (LF)

For installation in façade - With several horizontal glass lamella segments. With regard to the exterior, the lamellas are flush with the frame. Thermal insulation glazing (U-value 1.1) thermally separated aluminium profiles. Surface anodised.

Wall mounting set WBS 3

Internal wall mounting kit for mounting a pressure regulating damper type DEK or DEKA on internal walls consisting of a stable wall frame made of galvanised sheet steel, mounting profiles as well as a cover housing made of aluminium with integrated corrugated wire protection mesh consisting of four separately detachable segments. The terminal box for connecting the DEK actuator is integrated inside the housing.

External dimensions: B x H x T (mm):
(Nominal width of the DEK + 400) x (Nominal height of the DEK + 400) x 190

Please note: The height and width of the wall opening must not be more than 200 mm greater than the nominal height and nominal width of the pressure control damper.

Please note:

The system must be operated in a manner that ensures that the supply air is only switched on when the shut-off damper above the pressure regulating damper has been opened (limit switch). Otherwise the required pressure discharge operation cannot be guaranteed.

Technical data, based on air density 1,2 kg/m³

Max. pressure regulation airflow rate	m³/h	:
Preset regulation pressure	Pa	: 50
Internal dimensions B x H	mm	:
External dimensions B x H x L	mm	:

Optional accessories:

Motorised version of the pressure regulating damper for the realisation of light incidence, ventilation or smoke dissipation function (DEKA)

The pressure regulating damper is equipped with an actuating drive (FR 24 V), which can keep the damper open when the system is at a standstill (operating state). When the pressure aeration process is triggered, the actuating drive should be switched over to a position that facilitates the automatic control function of the dampers (operating position for pressure regulation). In the event of a malfunction or interruption of the power supply in the triggered state, the actuator can open the dampers completely (operating position for smoke discharge).

Pressure regulating device for wall arrangement with louver damper

TYPE DEK-H-JK-WBS

The pressure regulating unit consists of a wall frame on which an insulated louver damper and the pressure regulating damper are screwed, and a cover housing.

This damper regulates the overpressure in the stairwell completely automatically without auxiliary energy with the help of a spring system.

The louver damper is used to avoid the entry of cold air and the condensation and to protect the pressure regulating damper from dirt and the effects of the weather.

Wall frame, pressure regulating damper and louver damper are concealed by an aluminium cover housing. The housing consists of four individual segments that can be dismantled separately; this provides easy revision accessibility. The pressure regulating damper is protected by a stable corrugated wire mesh. The electrical connection is made via the terminal box mounted on the outside of the roof frame.

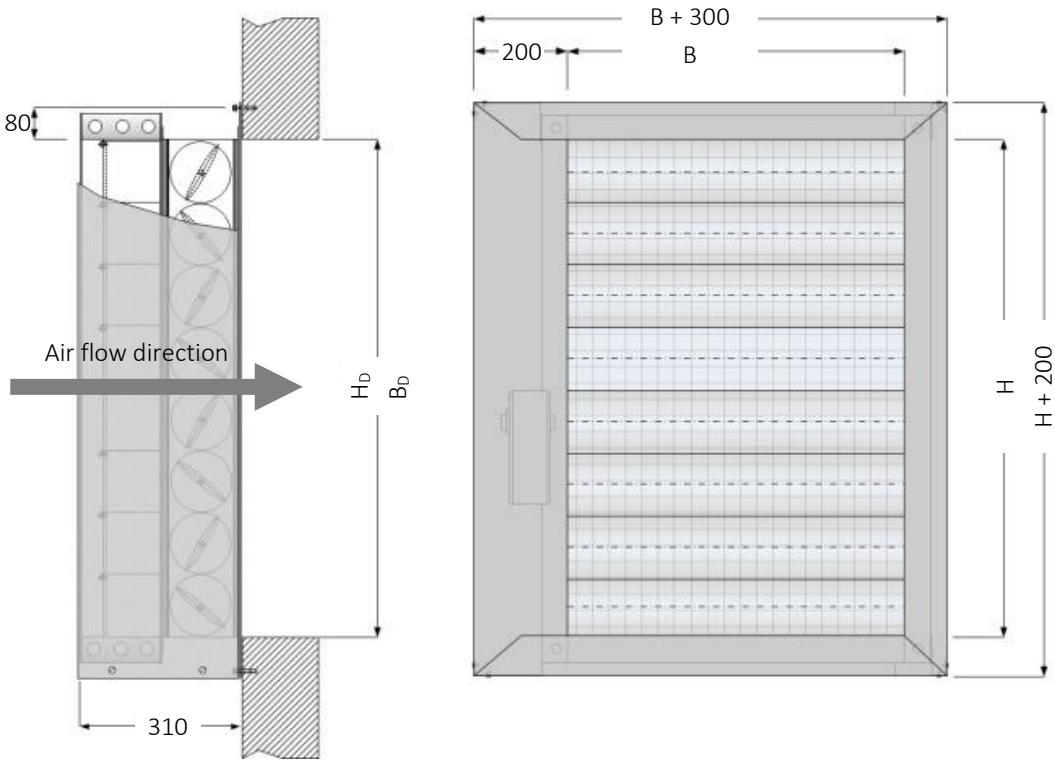
There are two housing variants to choose from. For the variant WBS4, the opening must correspond to the nominal dimension of the control butterfly valve. For the WBS5 variant, the opening may be a maximum of 200mm larger in width and height than the nominal dimension of the control butterfly valve.

Mode of operation

When the system is triggered, the spring return motor of the louver damper integrated in the unit is de-energised by the control device and the damper is thus opened. After reaching the open position (limit switch), the supply air fan can be put into operation. The pressure is not regulated via the actuator, but exclusively via the spring-loaded pressure regulating damper.

Please note:
When using pressure regulating dampers on façades, it must be ensured that the pressure regulation cannot be impaired by wind influences.

Main dimension DEK-H-JK-WBS4

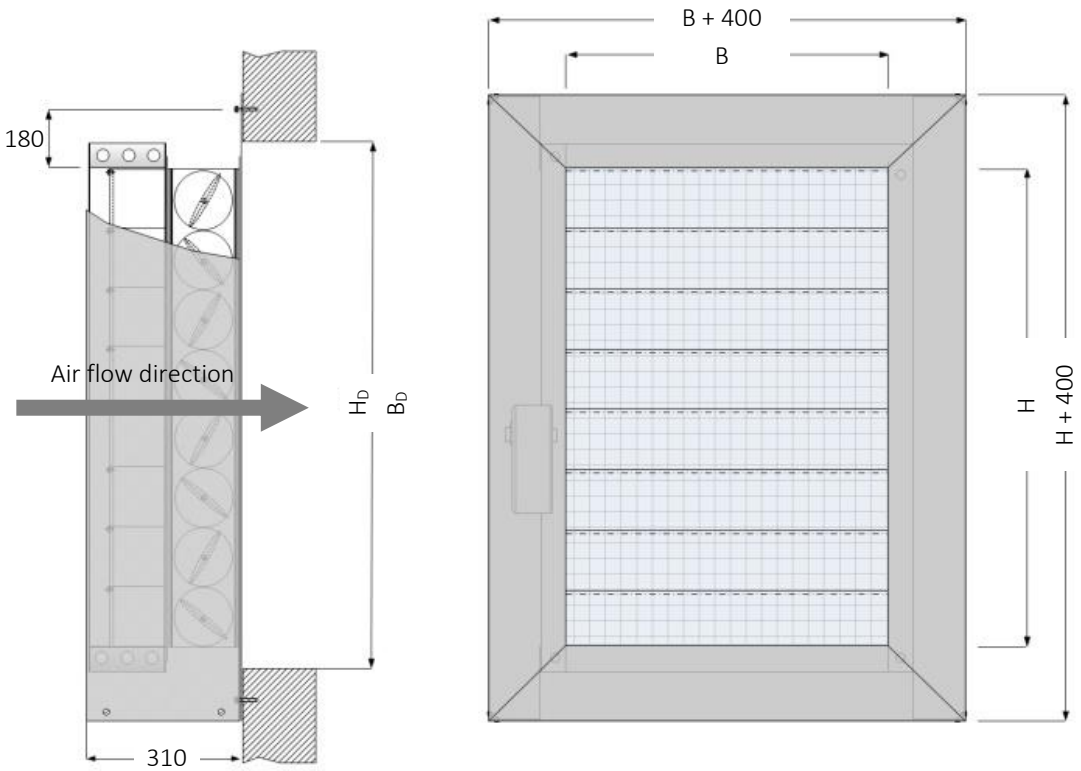


Width	B = 500 … 1500 mm
Height	H = 500 … 1500 mm
Depth	310 mm

Width of the opening	B_D = B
Height of the opening	H_D = H

When using a WBS4, the dimension of the wall opening must correspond to the nominal dimension of the pressure control damper.

Main dimension DEK-H-JK-WBS5



Width	B = 500 … 1500 mm
Height	H = 500 … 1500 mm
Depth	310 mm

Minimum Width of the opening	$B_D = B$
Maximum Width of the opening	$B_D = B + 200$
Minimum Height of the opening	$H_D = H$
Maximum Height of the opening	$H_D = H + 200$

When using a WBS5, the dimension of the wall opening may be 200 mm wider or 200 mm higher than the nominal dimension of the pressure regulating damper.

Selection table

DEK-H-JK-WBS

Max regulable volume flow* at **50Pa** control pressure

Nominal dimension of the pressure regulating damper in mm (H x B), volume flow in m³/h

h \ b	500	600	700	800	900	1000	1100	1200	1300	1400	1500
500	4.500	5.400	6.300	7.200	8.100	9.000	9.900	10.800	11.700	12.600	13.500
600	5.400	6.500	7.600	8.600	9.700	10.800	11.900	13.000	14.000	15.100	16.200
700	6.300	7.600	8.800	10.100	11.300	12.600	13.900	15.100	16.400	17.600	18.900
800	7.200	8.600	10.100	11.500	13.000	14.400	15.800	17.300	18.700	20.200	21.600
900	8.100	9.700	11.300	13.000	14.600	16.200	17.800	19.400	21.100	22.700	24.300
1000	9.000	10.800	12.600	14.400	16.200	18.000	19.800	21.600	23.400	25.200	27.000
1100	9.900	11.900	13.900	15.800	17.800	19.800	21.800	23.800	25.700	27.700	29.700
1200	10.800	13.000	15.100	17.300	19.400	21.600	23.800	25.900	28.100	30.200	32.400
1300	11.700	14.000	16.400	18.700	21.100	23.400	25.700	28.100	30.400	32.800	35.100
1400	12.600	15.100	17.600	20.200	22.700	25.200	27.700	30.200	32.800	35.300	37.800
1500	13.500	16.200	18.900	21.600	24.300	27.000	29.700	32.400	35.100	37.800	40.500

* The air flow rates specified in the table consider the pressure drop of the pressure regulating damper and the louver damper behind it. Downstream elements (such as sheets, weather protection grids, etc.) can significantly reduce the maximum airflow rate, and are to be taken into consideration during the dimensioning process. If weather protection grids are used, the opening should be larger than the nominal size of the DEK (pressure regulating damper).

DEK-H-JK-WBS-WH (accessories)

Max regulable volume flow** at **50Pa** control pressure

Nominal dimension of the pressure regulating damper in mm (H x B), volume flow in m³/h

h \ b	500	600	700	800	900	1000	1100	1200	1300	1400	1500
500	4.000	4.800	5.600	6.400	7.200	8.100	8.900	9.700	10.500	11.300	12.100
600	4.800	5.800	6.800	7.700	8.700	9.700	10.600	11.600	12.600	13.600	14.500
700	5.600	6.800	7.900	9.000	10.200	11.300	12.400	13.600	14.700	15.800	17.000
800	6.400	7.700	9.000	10.300	11.000	12.200	13.400	14.600	15.900	17.100	18.300
900	7.200	8.700	10.200	11.000	12.300	13.700	15.100	16.500	17.900	19.200	20.600
1000	8.100	9.100	10.700	12.200	13.700	15.300	16.800	18.300	19.800		
1100	8.400	10.000	11.700	13.400							
1200	9.100	11.000	12.800				On request				
1300	9.900	11.900									

** The air flow rates specified in the table only consider the pressure loss of the pressure regulating damper and the resistances of the louver damper and the wind protection cover located behind it.

Accessoiries

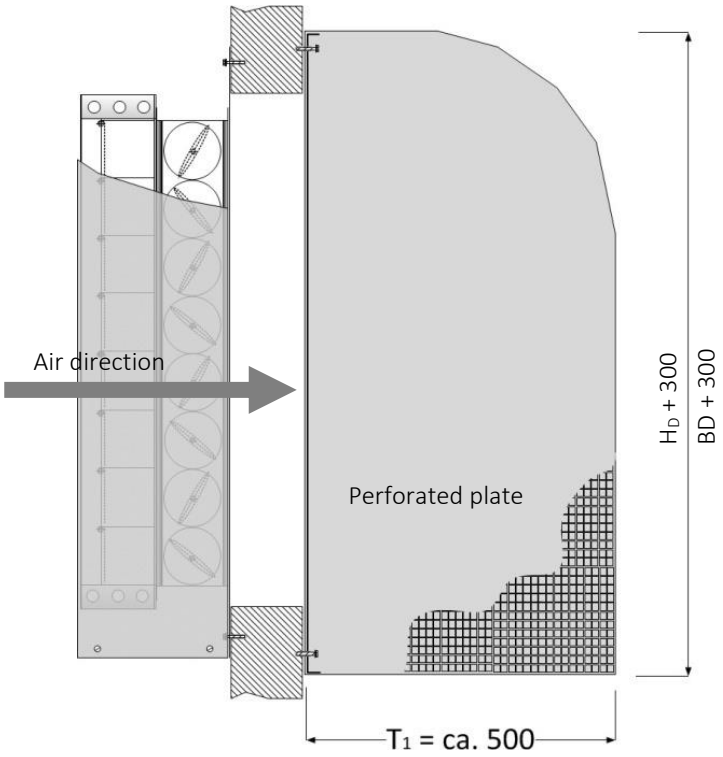
Option DEKA

Motorised version of the pressure regulating damper for the realisation of light incidence, ventilation or smoke dissipation function (A)

The pressure regulating damper is equipped with an actuating drive (FR 24 V), which can keep the damper open when the system is at a standstill (operating state). When the pressure aeration process is triggered, the actuating drive should be switched over to a position that facilitates the automatic control function of the dampers (operating position for pressure regulation). In the event of a malfunction or interruption of the power supply in the triggered state, the actuator can open the dampers completely (operating position for smoke discharge).

Option WH

Wind protection hood made of galvanised sheet steel, open at the bottom and to the side and equipped with a protection grid. To protect the pressure regulating damper from direct wind influences.



Width	B_D = 500 ... 15000 mm *
Height	H_D = 500 ... 1300 mm *
Depth	$T_1 \geq 500$ mm

* The maximum dimensions depend on the proportion H_D to B_D (see selection table). The area highlighted in grey in the selection table may be available with an enlarged overall depth T_1 on request.

Tender text pressure regulating device for interior wall mounting Type DEK-H-JK-WBS4

for the maintenance of a controlled overpressure in the pressure chamber. Immediate response to seif-opening or self-closing doors, through an automatic pressure regulating damper that does not require any auxiliary force. Compliance with the requirements associated with the control time (3 seconds), as per EN 12101-6.
Consists of:

Automatic pressure regulating damper Type DEK
Automatic pressure regulating damper that facilitates steady control and which features multiple lamellas, for horizontal perfusion. The operational reliability and the compliance with the control time requirements (3 seconds according to EN 12101-6) have been verified and tested through a functional test, a stability test and a resonance test after 10,000 load cycles at the Institute for Industrial Aerodynamics (IFI Aachen).
Axles and connecting rods made of high-grade steel; frames and damper blades made of aluminium. Damper system opens and closes along the same direction via a bar connection; low-friction mounting of the damper axles.
The closing torque is, with respect to the aerodynamic force torque that produces the opening action, generated via a tension spring system. Consequently, the set overpressure is controlled in a manner that is independent of the quantity of air, and this control is maintained up to the nominal airflow rate (steady type of control).
The pressure difference of the pressure control damper can be adjusted to differential pressures of 25 - 75 Pa by varying the spring pretension length and the closing lever arms, usually preset to 50 Pa at delivery. The maximum pressure control volume flow depends on the preset control pressure.

Louver damper JK
Louver damper, airtight according to DIN 1946-4, for avoidance of condensation and the entry of cold air. Contrary coupling of the lamellas via gear wheels. Armaflex is used to provide the lamellas with a thermal insulation coating on one side. The lamellas are also provided with metal cladding. Aluminium lamellas.
Fire protection actuating drive with spring return motor, opens without electricity, limit switch.

Wall mounting set WBS 4
Internal wall mounting kit for mounting a pressure regulating damper type DEK or DEKA, as well as a downstream louvered damper on internal walls consisting of a stable wall frame made of galvanised sheet steel, mounting profiles as well as a cover housing made of aluminium with integrated corrugated wire protection mesh consisting of four separately detachable segments. The terminal box for connecting the actuator of the louver damper and, if necessary, of the DEK is integrated inside the housing.

External dimensions: B x H x T (mm):
(Nominal width of the DEK + 300) x (Nominal height of the DEK + 300) x 310

Please note: The dimension of the wall opening must correspond to the nominal dimension of the pressure regulating damper.

Please note:
Components that are downstream of the pressure regulating damper (pipe components, weather protection grids, etc.) should be rated in a manner that the total pressure loss (including damper) does not exceed a maximum of 50 Pa (or the planned overpressure). An Agreement must be reached with the manufacturer regarding the installation circumstances!
The system must be operated in such a manner which ensures that the supply air is only switched on when the shut-off damper behind the pressure regulating damper has been opened completely (limit switch). Otherwise the required pressure discharge operation cannot be guaranteed.

Technical data, based on air density 1,2 kg/m³

Max. pressure regulation airflow rate	m³/h	:
Total pressure loss	Pa	:
Preset regulation pressure	Pa	:
Internal dimensions B x H	mm	:
External dimensions B x H x L	mm	:

Optionales Zubehör:

Wind protection hood – Up to …. m² (WH)
Flow-optimised wind protection hood made of galvanised sheet steel for installation on external wall, equipped with protective grids open at the bottom and sides, in order to minimise the influence of wind on the control mode of the pressure differential system. For opening sizes up to …. m².

Motorised version of the pressure regulating damper for the realisation of light incidence, ventilation or smoke dissipation function (DEKA)

The pressure regulating damper is equipped with an actuating drive (FR 24 V), which can keep the damper open when the system is at a standstill (operating state). When the pressure aeration process is triggered, the actuating drive should be switched over to a position that facilitates the automatic control function of the dampers (operating position for pressure regulation). In the event of a malfunction or interruption of the power supply in the triggered state, the actuator can open the dampers completely (operating position for smoke discharge).

Tender text pressure regulating device for wall mounting Type DEK-H-JK-WBS5

for the maintenance of a controlled overpressure in the pressure chamber. Immediate response to seif-opening or self-closing doors, through an automatic pressure regulating damper that does not require any auxiliary force. Compliance with the requirements associated with the control time (3 seconds), as per EN 12101-6.
Consists of:

Automatic pressure regulating damper Type DEK
Automatic pressure regulating damper that facilitates steady control and which features multiple lamellas, for horizontal perfusion. The operational reliability and the compliance with the control time requirements (3 seconds according to EN 12101-6) have been verified and tested through a functional test, a stability test and a resonance test after 10,000 load cycles at the Institute for Industrial Aerodynamics (IFI Aachen).
Axles and connecting rods made of high-grade steel; frames and damper blades made of aluminium. Damper system opens and closes along the same direction via a bar connection; low-friction mounting of the damper axles.
The closing torque is, with respect to the aerodynamic force torque that produces the opening action, generated via a tension spring system. Consequently, the set overpressure is controlled in a manner that is independent of the quantity of air, and this control is maintained up to the nominal airflow rate (steady type of control).
The pressure difference of the pressure control damper can be adjusted to differential pressures of 25 - 75 Pa by varying the spring pretension length and the closing lever arms, usually preset to 50 Pa at delivery. The maximum pressure control volume flow depends on the preset control pressure.

Louver damper JK
Louver damper, airtight according to DIN 1946-4, for avoidance of condensation and the entry of cold air. Contrary coupling of the lamellas via gear wheels. Armaflex is used to provide the lamellas with a thermal insulation coating on one side. The lamellas are also provided with metal cladding. Aluminium lamellas.
Fire protection actuating drive with spring return motor, opens without electricity, limit switch.

Wall mounting set WBS 5
Internal wall mounting kit for mounting a pressure regulating damper type DEK or DEKA, as well as a downstream louvered damper on internal walls consisting of a stable wall frame made of galvanised sheet steel, mounting profiles as well as a cover housing made of aluminium with integrated corrugated wire protection mesh consisting of four separately detachable segments. The terminal box for connecting the actuator of the louver damper and, if necessary, of the DEK is integrated inside the housing.

External dimensions: B x H x T (mm):
(Nominal width of the DEK + 400) x (Nominal height of the DEK + 400) x 310

Please note: The height and width of the wall opening must not be more than 200 mm greater than the nominal height and nominal width of the pressure regulating damper.

Please note:
Components that are downstream of the pressure regulating damper (pipe components, weather protection grids, etc.) should be rated in a manner that the total pressure loss (including damper) does not exceed a maximum of 50 Pa (or the planned overpressure). An Agreement must be reached with the manufacturer regarding the installation circumstances!
The system must be operated in such a manner which ensures that the supply air is only switched on when the shut-off damper behind the pressure regulating damper has been opened completely (limit switch). Otherwise the required pressure discharge operation cannot be guaranteed.

Technical data, based on air density 1,2 kg/m³

Max. pressure regulation airflow rate	m³/h	:
Total pressure loss	Pa	:
Preset regulation pressure	Pa	:
Internal dimensions B x H	mm	:
External dimensions B x H x L	mm	:

Optionales Zubehör:

Wind protection hood up to …. m² (WH)
Flow-optimised wind protection hood made of galvanised sheet steel for installation on external wall, equipped with protective grids open at the bottom and sides, in order to minimise the influence of wind on the control mode of the pressure differential system. For opening sizes up to …. m².

Motorised version of the pressure regulating damper for the realisation of light incidence, ventilation or smoke dissipation function (DEKA)

The pressure regulating damper is equipped with an actuating drive (FR 24 V), which can keep the damper open when the system is at a standstill (operating state). When the pressure aeration process is triggered, the actuating drive should be switched over to a position that facilitates the automatic control function of the dampers (operating position for pressure regulation). In the event of a malfunction or interruption of the power supply in the triggered state, the actuator can open the dampers completely (operating position for smoke discharge).

Pressure regulating device for external wall assembly with louver damper

TYPE DEK-H-WG

The pressure regulating unit for external wall mounting consists of a wall frame on which an insulated louver damper and the pressure regulating damper are screwed, an insulation housing and a wind protection housing.

The insulation housing thermally insulates the louver damper and pressure regulating damper up to the wall frame.

This damper regulates the overpressure in the stairwell completely automatically without auxiliary energy with the help of a spring system.

The louver damper is used to avoid the entry of cold air and the condensation and to protect the pressure regulating damper from dirt and the effects of the weather.

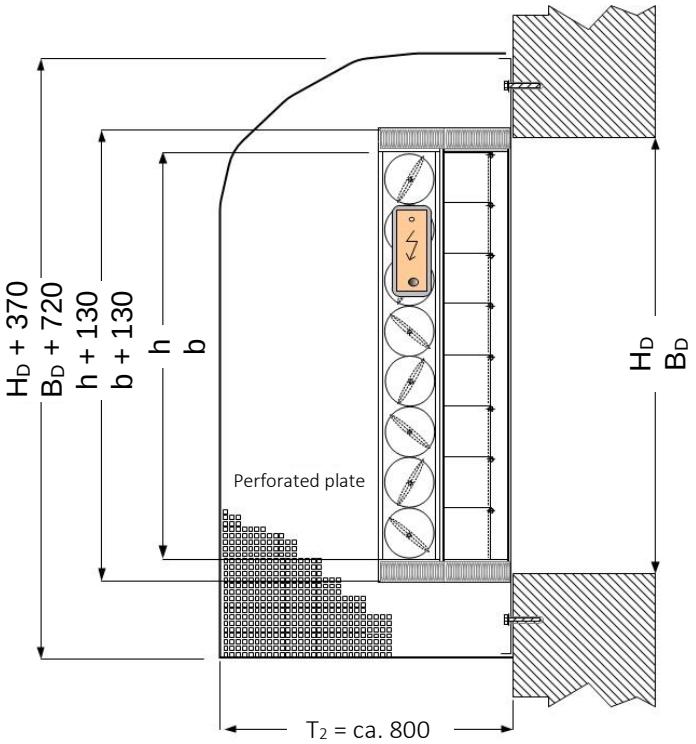
Wall frame, pressure regulating damper and louver damper are concealed by a cover housing. The wind protection hood made of galvanised sheet steel is open at the bottom and to the side and is equipped with a protection grid. It is used to protect the pressure regulating damper from direct wind influences.

The pressure regulating damper is protected by a stable corrugated wire mesh. The electrical connection is made via the terminal box mounted on the outside of the roof frame.

Mode of operation

When the system is triggered, the spring return motor of the louver damper integrated in the unit is de-energised by the control device and the damper is thus opened. After reaching the open position (limit switch), the supply air fan can be put into operation. The pressure is not regulated via the actuator, but exclusively via the spring-loaded pressure regulating damper.

Main dimension



Width	B_D = 500 ... 15000 mm *
Height	H_D = 500 ... 1300 mm *
Depth	T_2 ≥ 800 mm
Width of the opening	B_D ≥ b
Height of the opening	H_D ≥ h

* The maximum dimensions depend on the proportion H_D to B_D (see selection table). The area highlighted in grey in the selection table may be available with an enlarged overall depth T_2 on request.

Selection table

DEK-H-WG

Max regulable volume flow* at **50Pa** control pressure

Nominal dimension of the pressure regulating damper in mm (H x B), volume flow in m³/h

h \ b	500	600	700	800	900	1000	1100	1200	1300	1400	1500
500	4.000	4.800	5.600	6.400	7.200	8.100	8.900	9.700	10.500	11.300	12.100
600	4.800	5.800	6.800	7.700	8.700	9.700	10.600	11.600	12.600	13.600	14.500
700	5.600	6.800	7.900	9.000	10.200	11.300	12.400	13.600	14.700	15.800	17.000
800	6.400	7.700	9.000	10.300	11.000	12.200	13.400	14.600	15.900	17.100	18.300
900	7.200	8.700	10.200	11.000	12.300	13.700	15.100	16.500	17.900	19.200	20.600
1000	8.100	9.100	10.700	12.200	13.700	15.300	16.800	18.300	19.800		
1100	8.400	10.000	11.700	13.400							
1200	9.100	11.000	12.800				On request				
1300	9.900	11.900									

Accessoiries

Option DEKA

Motorised version of the pressure regulating damper for the realisation of light incidence, ventilation or smoke dissipation function (A)

The pressure regulating damper is equipped with an actuating drive (FR 24 V), which can keep the damper open when the system is at a standstill (operating state). When the pressure aeration process is triggered, the actuating drive should be switched over to a position that facilitates the automatic control function of the dampers (operating position for pressure regulation). In the event of a malfunction or interruption of the power supply in the triggered state, the actuator can open the dampers completely (operating position for smoke discharge).

Tender text pressure regulating device for external wall mounting Type DEK-H-WG

for the maintenance of a controlled overpressure in the pressure chamber. Immediate response to seif-opening or self-closing doors, through an automatic pressure regulating damper that does not require any auxiliary force. Compliance with the requirements associated with the control time (3 seconds), as per EN 12101-6.
Consists of:

Automatic pressure regulating damper Type DEK
Automatic pressure regulating damper that facilitates steady control and which features multiple lamellas, for horizontal perfusion.
The operational reliability and the compliance with the control time requirements (3 seconds according to EN 12101-6) have been verified and tested through a functional test, a stability test and a resonance test after 10,000 load cycles at the Institute for Industrial Aerodynamics (IFI Aachen).
Axles and connecting rods made of high-grade steel; frames and damper blades made of aluminium. Damper system opens and closes along the same direction via a bar connection; low-friction mounting of the damper axles.
The closing torque is, with respect to the aerodynamic force torque that produces the opening action, generated via a tension spring system. Consequently, the set overpressure is controlled in a manner that is independent of the quantity of air, and this control is maintained up to the nominal airflow rate (steady type of control).
The pressure difference of the pressure control damper can be adjusted to differential pressures of 25 - 75 Pa by varying the spring pretension length and the closing lever arms, usually preset to 50 Pa at delivery. The maximum pressure control volume flow depends on the preset control pressure.

Louver damper JK
Louver damper, airtight according to DIN 1946-4, for avoidance of condensation and the entry of cold air. Contrary coupling of the lamellas via gear wheels. Armaflex is used to provide the lamellas with a thermal insulation coating on one side. The lamellas are also provided with metal cladding. Aluminium lamellas.
Fire protection actuating drive with spring return motor, opens without electricity, limit switch.

Wall frames for openings up to …. m² (R)
Stable wall or ceiling frame made of galvanised sheet steel for mounting on the internal or external wall - for accommodating the pressure regulating device. Outer dimensions of the frame adapted to the opening dimensions provided by the customer for opening sizes up to …. m².
Pressure regulating damper and, if necessary, louver damper pre-mounted on wall frame.

Insulated casing for damper cross-sections up to …. m²
Insulated casing made of galvanised sheet steel with thermal insulation for insulating the pressure regulating damper and the louver damper for damper cross-sections up to ... m².

Wind protection casing up to …. m² (WG)
Wind-proof and rain-proof casing for pressure regulating devices on external walls. Shaped in an aerodynamically efficient manner, made of galvanised sheet steel, equipped with protective grids, open at the bottom and sides if necessary, to minimise the influence of wind on the control mode of the pressure differential system.
For opening sizes up to …. m².

Please note:
Components that are downstream of the pressure regulating damper (pipe components, weather protection grids, etc.) should be rated in a manner that the total pressure loss (including damper) does not exceed a maximum of 50 Pa (or the planned overpressure). An Agreement must be reached with the manufacturer regarding the installation circumstances!
The system must be operated in such a manner which ensures that the supply air is only switched on when the shut-off damper behind the pressure regulating damper has been opened completely (limit switch). Otherwise, the required pressure discharge operation cannot be guaranteed.

Technical data, based on air density 1,2 kg/m³		
Max. pressure regulation airflow rate	m³/h	:
Total pressure loss	Pa	:
Preset regulation pressure	Pa	:
Internal dimensions B x H	mm	:
External dimensions B x H x L	mm	:

Optional accessories:

Motorised version of the pressure regulating damper for the realisation of light incidence, ventilation or smoke dissipation function (DEKA)
The pressure regulating damper is equipped with an actuating drive (FR 24 V), which can keep the damper open when the system is at a standstill (operating state). When the pressure aeration process is triggered, the actuating drive should be switched over to a position that facilitates the automatic control function of the dampers (operating position for pressure regulation). In the event of a malfunction or interruption of the power supply in the triggered state, the actuator can open the dampers completely (operating position for smoke discharge).

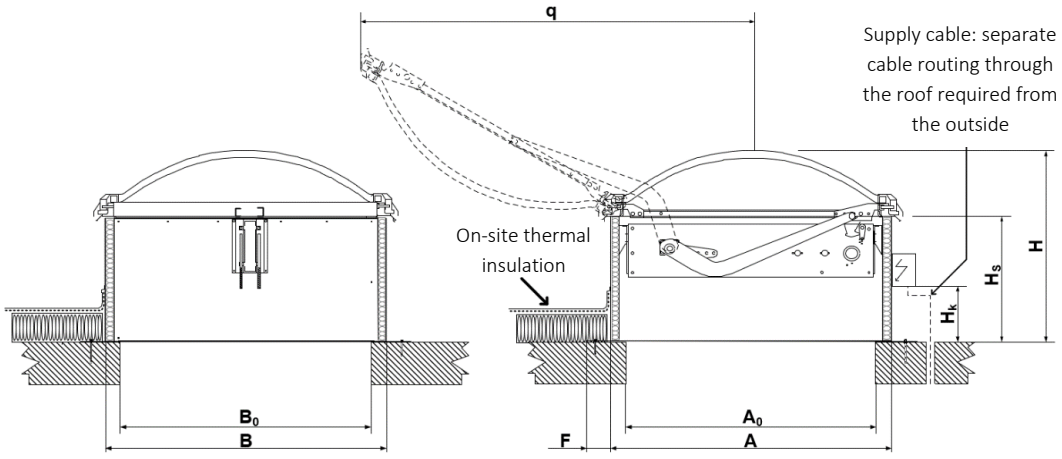
Flow-off unit

TYPE ASE-LK6

Flow-off units are used within pressure differential systems to close off vertical flow-off shafts.

The ASE-LK6 flow-off unit consists of an insulated roof base with a closing lightdome. The lightdome is equipped with a flash-over drive system with which opening angles of approx. 160° can be realised in order to ensure a large degree of wind independence.
The electrical connection is made via the terminal box mounted on the outside of the roof frame.

Main dimension



Design size	A x B [mm]	q [mm]	Weight [kg]	Opening* A_D x B_D [mm]
ASE-LK6 1200/1200	1150 x 1150	1800	150	1000 x 1000
ASE-LK6 1200/1500	1150 x 1450	1800	165	1000 x 1300
ASE-LK6 1200/1800	1150 x 1750	1800	175	1000 x 1600
ASE-LK6 1200/2400	1150 x 2350	1800	225	1000 x 2200
ASE-LK6 1500/1500	1450 x 1450	2300	180	1300 x 1300
ASE-LK6 1500/1800	1450 x 1750	2300	215	1300 x 1600
ASE-LK6 1800/1800	1750 x 1750	2700	245	1600 x 1600

The flange width F is 150 mm all round.
* Maximum size of the opening / shaft head; corresponds to the size of the protective grid in the base plate

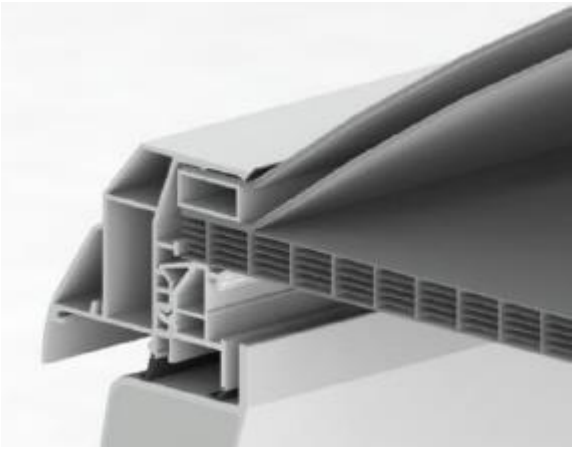
Roof frame height

To accommodate your individual requirements for insulation heights, bonding, etc., the roof frame height can be adjusted.

Roof frame height	H_K [mm]	H_S [mm]	H [mm]	Price bracket
So550	300	550	840	Without surcharge
So650	400	650	940	
So750	500	750	1040	
So850	600	850	1140	With surcharge
So950	700	950	1240	

Accessories

Option WD-plus
An additional insulation layer improves the U-value of the light dome to 1.3 W/m² K.



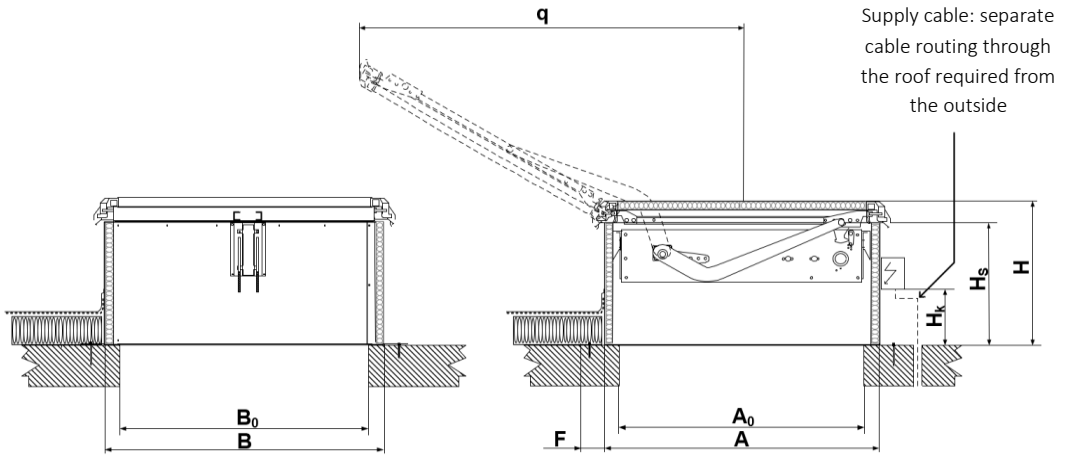
Flow-off unit

TYPE ASE-DK6

Flow-off units are used within pressure differential systems to close off vertical flow-off shafts.

The ASE-DK6 flow-off unit consists of an insulated roof base with a closing darkflap. The darkflap is equipped with a flash-over drive system with which opening angles of approx. 160° can be realised in order to ensure a large degree of wind independence.
The electrical connection is made via the terminal box mounted on the outside of the roof frame.

Main dimension



Design size	A x B [mm]	q [mm]	Weight [kg]	Opening* A_D x B_D [mm]
ASE-DK6 1200/1200	1150 x 1150	1800	150	1000 x 1000
ASE-DK6 1200/1500	1150 x 1450	1800	165	1000 x 1300
ASE-DK6 1200/1800	1150 x 1750	1800	175	1000 x 1600
ASE-DK6 1200/2400	1150 x 2350	1800	225	1000 x 2200
ASE-DK6 1500/1500	1450 x 1450	2300	180	1300 x 1300
ASE-DK6 1500/1800	1450 x 1750	2300	215	1300 x 1600

The flange width F is 150 mm all round.
* Maximum size of the opening / shaft head; corresponds to the size of the protective grid in the base plate

Roof frame height

To accommodate your individual requirements for insulation heights, bonding, etc., the roof frame height can be adjusted.

Roof frame height	H_K [mm]	H_S [mm]	H [mm]	Price bracket
So550	300	550	640	Without surcharge
So650	400	650	740	
So750	500	750	840	
So850	600	850	940	With surcharge
So950	700	950	1040	

Flow-off unit

TYPE ASE-LH5

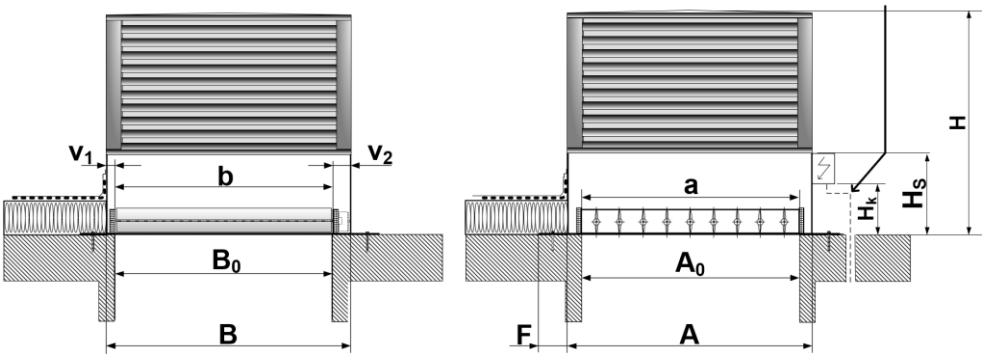
Flow-off units are used within pressure differential systems to close off vertical flow-off shafts.

The flow-off unit type ASE-JK-LH5 consists of a roof frame made of galvanised sheet steel, into which a louvre damper is integrated, as well as a four-sided open lamellarhood made of aluminium, via which flow-off can take place irrespective of the direction of the wind.
A special spring return motor is used as the actuator for the louver damper, which locks securely in the open position. The four lateral segments of the lamellarhood can be dismantled individually for the revision of the actuator of the louver damper.

The electrical connection of the flow-off unit is made via the terminal box mounted on the outside of the roof frame.

Main dimension

Supply cable: separate cable routing through the roof required from the outside



a x b	≥ A_0 x B_0 In order to minimise pressure losses, the dimension of the louver damper (a x b) should be at least the size of the shaft dimensions A_0 x B_0.		
A x B	see table 1		
F	150 mm		
H*	see table 2	H	see table roof frame height
V1	225 mm	V2	125 mm

Type description

ASE-JK a/b LH5 A/B

e.g. ASE-JK 1160/1400 LH5 1600/2000

Table 1: Dimension lamellarhood A x B [mm]

A x B [mm]		a Clear width of the louvre damper [mm]												
		500	665	830	995	1160	1325	1490	1655	1820	1985	2150	2315	2480
b Clear length of the louvre damper [mm]	500				1400 900	1600 900	1700 900	1900 900	2100 900	2300 900	2400 900	2600 900	2800 900	2900 900
	600			1300 1000	1400 1000	1600 1000	1700 1000	1900 1000	2100 1000	2300 1000	2400 1000	2600 1000	2800 1000	2900 1000
	700			1300 1100	1400 1100	1600 1100	1700 1100	1900 1100	2100 1100	2300 1100	2400 1100	2600 1100	2800 1100	2900 1100
	800		1100 1200	1300 1200	1400 1200	1600 1200	1700 1200	1900 1200	2100 1200	2300 1200	2400 1200	2600 1200	2800 1200	2900 1200
	900		1100 1300	1300 1300	1400 1300	1600 1300	1700 1300	1900 1300	2100 1300	2300 1300	2400 1300	2600 1300	2800 1300	2900 1300
	1000	900 1400	1100 1400	1300 1400	1400 1400	1600 1400	1700 1400	1900 1400	2100 1400	2300 1400	2400 1400	2600 1400	2800 1400	2900 1400
	1100	900 1500	1100 1500	1300 1500	1400 1500	1600 1500	1700 1500	1900 1500	2100 1500	2300 1500	2400 1500	2600 1500	2800 1500	2900 1500
	1200	900 1600	1100 1600	1300 1600	1400 1600	1600 1600	1700 1600	1900 1600	2100 1600	2300 1600	2400 1600	2600 1600	2800 1600	2900 1600
	1300	900 1700	1100 1700	1300 1700	1400 1700	1600 1700	1700 1700	1900 1700	2100 1700	2300 1700	2400 1700	2600 1700	2800 1700	
	1400	900 1800	1100 1800	1300 1800	1400 1800	1600 1800	1700 1800	1900 1800	2100 1800	2300 1800	2400 1800	2600 1800		
	1500	900 1900	1100 1900	1300 1900	1400 1900	1600 1900	1700 1900	1900 1900	2100 1900	2300 1900	2400 1900			
	1600	900 2000	1100 2000	1300 2000	1400 2000	1600 2000	1700 2000	1900 2000	2100 2000	2300 2000				

Table 2: Standard height of the flow-off unit H* [mm]

H* [mm]		a Clear width of the louvre damper [mm]												
		500	665	830	995	1160	1325	1490	1655	1820	1985	2150	2315	2480
b Clear length of the louvre damper [mm]	500				1110	1190	1190	1260	1260	1260	1340	1340	1340	1340
	600			1110	1190	1260	1260	1340	1340	1340	1410	1410	1410	1410
	700			1190	1260	1340	1340	1410	1410	1410	1490	1490	1560	1560
	800		1190	1260	1340	1340	1410	1490	1490	1490	1560	1560	1640	1640
	900		1190	1260	1340	1410	1490	1490	1560	1560	1640	1640	1640	1640
	1000	1100	1260	1340	1410	1490	1560	1560	1640	1640	1640	1640	1640	1640
	1100	1100	1260	1340	1410	1490	1640	1640	1640	1640	1640	1640	1640	1640
	1200	1190	1260	1410	1490	1560	1640	1640	1640	1640	1640	1640	1640	1640
	1300	1190	1340	1410	1490	1560	1640	1640	1640	1640	1640	1640	1640	
	1400	1190	1340	1490	1560	1640	1640	1640	1640	1640	1640	1640		
	1500	1190	1340	1490	1560	1640	1640	1640	1640	1640	1640			
	1600	1260	1410	1490	1640	1640	1640	1640	1640	1640				

Roof frame height

To accommodate your individual requirements for insulation heights, bonding, etc., the roof frame height can be adjusted.

Roof frame height	H_K [mm]	H_S [mm]	H [mm]	Price bracket
So550**	300	550	H*	Without surcharge
So650	400	650	H* + 100	
So750	500	750	H* + 200	
So850	600	850	H* + 300	With surcharge
So950	700	950	H* + 400	

The flange width F is 150 mm all round. The offset V_1 = 225mm, V_2 = 125 mm. The roof opening must have the same dimensions as the flow-off shafts. For inspection purposes, at least 1 m of circumferential space should be maintained for accessibility to the unit.

H* The height of the roof frame is queried with the separate document: Checklist "CL_ASE-LH5" and can be adjusted to the thickness of the on-site thermal insulation.

** Standard roof frame dimensions, without specification in the order, this frame will be manufactured.

Overflow element

TYPE UE-RK3

UE-RK3 overflow elements represent defined overflows within a pressurised differential system.

They can be arranged in the walls between the stairwell and the lobby or between the lobby and the necessary corridor in order to achieve a defined purging of the lobby.

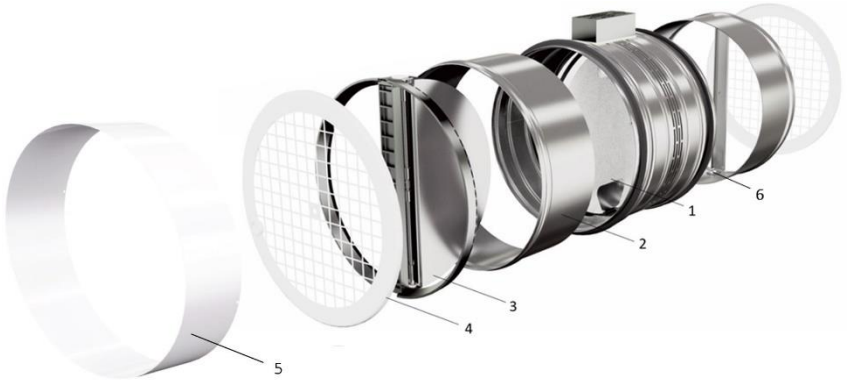
They essentially consist of a fire damper in accordance with EN 15650 with a thermal release device, a non-return flap and a double-sided protective grid cover.

Components

Overflow elements are delivered as pre-assembled kits including accessories. The assembly depends on the wall thickness.

The kits each consist of:

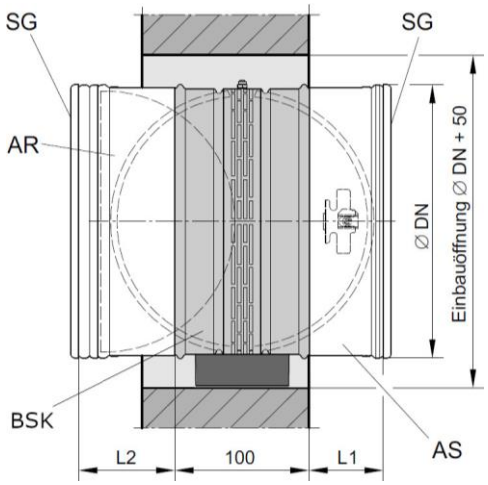
- 1 Fire damper (1)
- 1 upstream connection pieces (2) with non-return flap (3) and protection grid (4)
- 1 downstream connection pieces with traverse (6) and protection grid (4)
- For small wall thicknesses, 2 pipe covers (5) to cover the connection pieces protruding from the wall



Selection table

	UE-RK3 160	UE-RK3 200
Airflow rate (50 Pa) in m³/h	250	460
Airflow rate (25 Pa) in m³/h	110	270
Nominal diameter in mm	160	200

Main dimension



Design size	Nominal size	Required core drilling [mm]	Wall thickness [mm]	L1 [mm]	L2 [mm]	System length [mm]
UE-RK3-160 / 100-205	160	210	100 – 205	55	55	210
UE-RK3-160 / 206-250	160	210	206 – 250	100	55	255
UE-RK3-160 / 235-X	160	210	235 – X	180	55	X
UE-RK3-200 / 100-245	200	250	100 – 245	75	75	250
UE-RK3-200 / 246-270	200	250	246 – 270	100	75	275
UE-RK3-200 / 255-X	200	250	255 – X	180	75	X

Tender text Overflow element UE-RK3

Fire protection shut-off device with non-return flap to create a directional overflow between stairwell and lobby or lobby and necessary corridor.
Shut-off device with housing, installation spigot, single-leaf shut-off damper with bearing shaft and thermal tripping device (fusible link).
For installation with mortar in solid internal walls made of masonry, concrete or aerated concrete and in lightweight partition walls made of gypsum plaster fire protection boards or non-inflammable building boards (building material class DIN 4102-A), in each case at least fire resistance class F90, F60 or F30.
Upstream automatic non-return flap.
Two-sided protective grid cover; colour scheme: white

Technical data, based on air density 1,2 kg/m³

Airflow rate	(50 Pa)	m³/h	:
Airflow rate	(25 Pa)	m³/h	:
Nominal diameter		mm	:

Type : UE-RK3

ATTENTION: The usability must be agreed with the building approval authority.

Switchgear combinations for pressure differential systems

TYPE SGK-SR and SGK-SPS

The switchgear combination is the control center of the pressure differential system. All relevant control functions are carried out by the central RDA control unit.

The switchgear combination is designed on an object-specific basis. This enables the integration of all common actuators and individual scenarios.

Depending on the complexity of the required control functions, the switchgear combination can be designed as a pure hardware solution with tried-and-tested contactor/relay technology (type SGK-SR) or in combination with a memory-programmable control system (type SGK-SPS).

If a pressure differential system with hybrid control, frequency converter and pressure sensors is planned, the PLC is generally used.

Technical Data

Design	Stand switchgear combination
Assembly	Installation on plinth
Installation site	Inside
Cable inlet	From above
Material housing	Sheet steel
Colour shade	RAL 7035
Protection class without fixtures	IP55 according to IEC 60529
Protection class with door open	IP20
Admissible ambient temperature	-5°C … 35°C
Door latch	Two-way key bit 3mm
Opening angle of the doors	Ca. 120°
Lighting	Yes, inside
Work plug socket	RCBO IN=16 A, IΔ=30 mA
Applied standards	DIN EN 61439 DIN EN 60204-1 VDE 0660-600 VDE 0113-1

Main circuit

All main circuits are separately secured. The protective devices used for this purpose are equipped with auxiliary and monitoring contacts. All used power supplies and transformers provide a diagnostic output. The used auxiliary contacts and diagnostic outputs are integrated in the fault evaluation via the aforementioned devices.

Control circuit

Unless otherwise agreed, control circuits are designed as safety extra-low voltage (SELV). The supply lines of all equipment connected to the switchgear combination are protected separately by line fuses or equipment circuit breakers. This reduces any faults that may occur, e.g. short circuit and the associated effect (damage influence) on other equipment inside and outside the switchgear combination to a minimum.

In order to detect line interruptions, line monitors are carried in the lines of external equipment.

All protective and monitoring measures are integrated in the fault evaluation. This means that malfunctions that endanger the proper operation of the pressurised ventilation system are reported at an early stage.

The available position messages of external equipment are recorded and issued as a status message in the switchgear combination. This facilitates and speeds up regular checks as well as commissioning and maintenance of the switchgear combination.

The required clamp connections are designed as maintenance-free push-in clamps.

UPS:

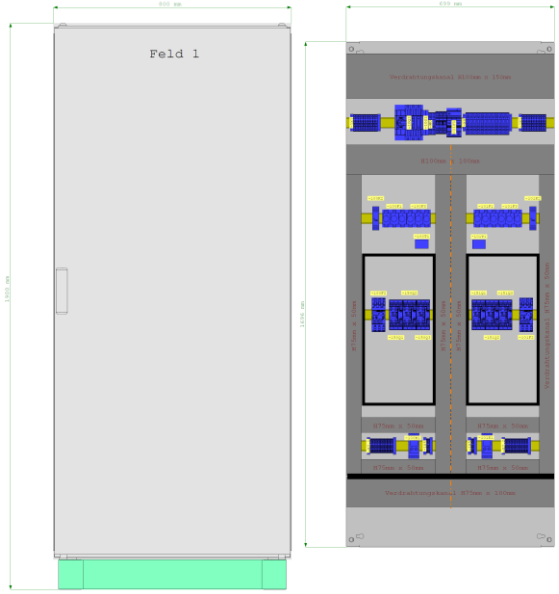
An uninterruptible power supply is integrated within the switchgear combination to maintain the control voltage in the event of short-term power failures. This also enables the power supply to be switched over to standby power supply systems without loss of the plant condition.

Fan control

To ensure the maximum possible operating time of the fan in the event of an alarm, the motors are not operated with an automatically disconnecting device (e.g. motor protection circuit breaker). The power path of the fan motor is equipped with an overcurrent protection device. A current monitor, a thermal overload relay and a phase monitor are used for control. In the event of a malfunction, the fan operation is maintained as a last resort. A malfunction in test operation always leads to the fan being switched off, thus preventing a defect in the operating equipment.

The switching status is evaluated by auxiliary contacts within the repair switch on the fan. If frequency inverters are used, the monitoring devices are part of the frequency inverter.

Redundancy setup



If two redundant fans are operated, in case of failure of the primary fan, its power supply is interrupted and the secondary fan is activated. With motorised shut-off dampers, the motorised louvre damper associated with the primary fan is closed and the louvre damper associated with the secondary fan is opened.

For the control of the redundant fans, the required power contactors, current and voltage monitoring devices as well as motor fuses are designed redundantly and are accommodated within a control cabinet housing. In the case of fans with frequency inverter operation, the frequency inverters are also designed redundantly.

To avoid short-circuit or fault arcs, the engine component groups are mechanically and electrically decoupled from each other by means of earthed sheet steel dividing plates.

In this system, the active conductors are short-circuit and earth-fault protected in the version NSGAFÖU 3 kV special rubber hose cable at U0 / U = 1.8/3 kV in switchgear and distribution systems. The cable routing within the construction is carried out separately before and after the motor starter combination.

Operation

For operating the pressure differential system, the following control elements are available on the front of the control cabinet:

Control element	function
Key switch	Switch positions: - Test - Automatic
Reset switch	Reset the system from alarm mode and to lamp check existing LED messages.
With the variant SGK-SPS: HMI touch screen display	- Manual operation level for test operation incl. triggering option for all control scenarios - Shows the position of all controlled flaps, windows, lightdomes and doors as plain text display - Fan operation display - Fault indications of all monitoring functions - Display of the triggered scenario

Messages

LED lamps are installed in the front of the control cabinet for visual indication of the operating status. The basic equipment includes the following LED lamps:

LED colour	Message
Green	Ready for operation
Yellow	General disturbance
Red	Alarm / Triggered
White	Fan in operation

In addition to the visual display, potential-free contacts on the blade disconnect terminal are available for each of the above-mentioned operating messages. These can be used to forward the operational messages to external places.

In the standard version (without touchscreen display), LED status displays are installed within the switchgear combination, which can be used to read the statuses of connected actuators and sensors as well as differentiated fault messages.

Extensions

In addition to the standard assemblies for controlling a pressure differential system, the following assemblies are possible as extensions:

Control cabinet extension Light/ventilation function	Connection of a blind switch (optional wind/rain sensor), Alarm operation overrides the light/ventilation function.
Control cabinet extension Smoke discharge function	Fault evaluation of the pressure differential system, control of the pressure regulating damper. Note: If behind the pressure regulating damper an atmosphere shutter with an electric motor is arranged, which does not open without electricity, an on-site safety power supply or alternatively an uninterruptible power supply (separate accessory from the manufacturer) must be provided to ensure the smoke discharge function in the event of a power failure.
Uninterruptible power supply	For maintaining the alarm contacts and controlling the flowoff in the event of a power failure.
Triggering scenarios	A potential-free contact of the fire alarm system is required for each scenario. 24 V DC approx. 65 mA
Window, door or lightdome actuator control 24 V DC	Connection for motor voltage supply, situation reports and line monitoring. each 1x control circuit and pole reversal module 24 V DC, max. 8 A, off time: 2 Sek., max. on time: 180 Sek
Control damper actuator 24 V AC	Connection for motor voltage supply, situation reports and line monitoring.
Control damper actuator 230 V AC	Connection for motor voltage supply, situation reports and line monitoring.
Fire brigade control panel	Connection of a fire brigade control panel. Provided control inputs for the operating modes "On", "Off" and "Automatic". Ready signal outputs for the system states "Ready for operation", "Fault", "Alarm" and "Fan operation".
With the variant SGK-SPS: Pressure regulating module AE-S-HYB Module summer/winter control	 Regulating module for hybrid pressure regulation with inputs for up to two pressure sensors Regulating module for the temperature-dependent control of actuators with evaluation of three temperature sensors

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