

# Fire Safety Products



**Fire and smoke dampers**  
**Smoke Extract fans**



# Fire and Smoke dampers



## PK-I Fire dampers

Systemair Fire dampers are manufactured and certified to latest European Standards EN1366-2. With wide product range and sizes for 60, 90 and 120 minute resistance for round and 90 and 60 minute resistance for rectangular ducting.

- Round fire damper PK-I-R are available in Sizes: Diam 100 mm to diam 1000 mm.
- Square fire damper PK-I-S are available in Sizes: 200 x 200 mm to 1600 x 1000 mm

PK-I fire damper units are designed to be imbedded into the fire partition walls. All units as standard are available with manual rearmament lever or Actuator driven with optional accessories such as micro-switches, Electromagnets and communication controller units.

## DKI-I Smoke dampers

Smoke damper type DKI-I is manufactured and designed for single zone areas. Tested and certified to EN 1366-9 for Horizontal or vertical installations.

Constructed to maintain the integrity for 600°C for 120 minutes and classified according to Systemair Smoke dampers have the classification of E<sub>600</sub>S 120 SINGLE ve-ho 500AA i °C<sub>10 000</sub> in accordance to EN- 13501-4.

All smoke dampers are equipped as standard with actuators for Automatic Activation and tested for the 10'000 cycles as required.

Available in sizes 200x200 to 1500x800mm.





## PVM Partition fire dampers

Partition fire dampers type PVM are designed for non-ducted applications where two fire zones are adjacent to each other..

These fire dampers are as standard imbedded into the fire partition wall and they incorporate protection grill on each side of the unit.

Available as standard with manual operated reset lever and fusible link system or actuator driven with electro-thermal cut off switch.

Partition Fire dampers are tested a in accordance to EN1634-1 and classified as per EN 13501-2 for 60, 90 or 120 minute resistance.

Available in sizes from 200x220 to 600x820 mm.



## ORV Pressure relief dampers

Pressure relief dampers designed to maintain and open in case of Under-or-Over pressure Suitable for installation according to EN 12101-6

Pressurization of evacuation corridor, in an event of fire to maintain a smoke free zone such as staircases.

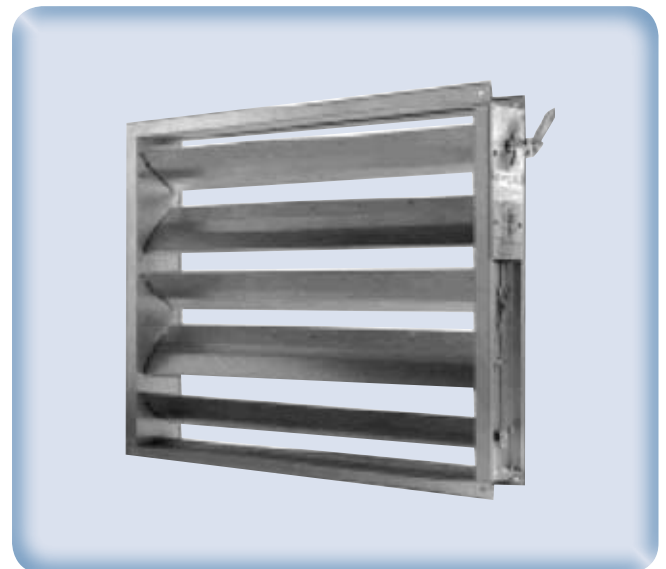
Standard opening pressures ranges are 0, 20, 30, 40, 45, 50 Pa suitable for temperature range of  $-20^{\circ}$  to  $+80^{\circ}$ C.

Made from combination of aluminium and steel with Epoxy-polyester powder coating RAL 7032.

Available in sizes from 200x200 to 710x1000mm.

## Smoke Extraction Dampers

Dampers are designed for smoke exhaust at  $400^{\circ}$  C during 2 h. Main features are solid frame, opposed blades mounted in bronze bearings, drive shaft and support plate for actuator. Dampers include stainless steel foil between blades and frame to comply with air tightness class 1 according to EN1751. Class 3 can be achieved with additional silicone gasket between blades. Normal operating temperature from  $-20^{\circ}$  to  $+100^{\circ}$  C, emergency temperature  $400^{\circ}$  C/2 h and  $600^{\circ}$  C/1 h certified by tests carried at CTICM (No 98-E-468). Dampers withstand up to 3 000 Pa pressure. Dimensions H x L 1500 x 2100 mm max in a single piece. Larger dimensions by combination of several dampers. Dampers are available in galvanised steel or stainless steel. Actuator can be protected with a thermal jacket..





# Axial and Jet Fans



## ACX (B) Smoke Extract axial fans

The Systemair AXC (B) range of long cased smoke extract axial fans is available in sizes from 315 up to 1600mm impeller diameter. The adjustable pitch angle setting offers a wide performance and maximum flexibility to match precisely individual airflow requirements. The AXC(B) axial fans have been performance tested in accordance with DIN ISO 5801, DIN 24163 and AMCA 210-99 on the Systemair fan test rig. High temperature testing at Technical University Munich, Germany. Three years warranty make it a safe choice.

### High efficiency impellers

The die cast aerofoil aluminium impellers can be offered with full or fractional solidities, maximum efficiencies can be obtained.

## HA (F) Smoke Extract axial fans

The Systemair HA (F) range of long cased smoke extract axial fans is available in sizes from 315 up to 1600 mm impeller diameter. The HA (F) axial fans have been performance tested in accordance with DIN ISO 5801, DIN 24163 and AMCA 210-99 on the Systemair fan test rig. High temperature testing at Technical University Munich, Germany, Three years warranty make it a safe choice.

### Fully tailored impellers

Fully welded steel impellers tailored to match precisely individual air flow and pressure requirements.





## Multi stage fans

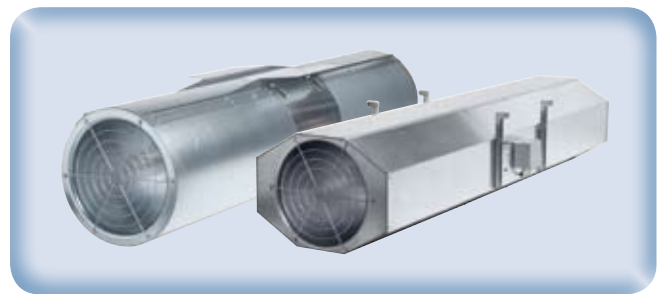
For higher pressure drops two stage fans are offered. Two fans in series increase the available static pressure drop.

## Jet fan systems for Car park ventilation

**AJR and AJB for safe daily ventilation and smoke extraction (300°C/2h) in accordance with EN 12101-3.** Systemair jet fans AJR and AJB offer highest system performance at low installation and running costs. They are available in impeller diameter 315, 355 and 400 mm. The system provides day-by-day ventilation as well as smoke extraction. For straight airflow the silencers have integrated inlet cones and guide vanes. The sound attenuating material is non-inflammable according to DIN4102, corresponding with EU guideline 97/69. As accessory deflectors on the outlet side are available.

### Safety first

The dual purpose fans guarantee rapid smoke extraction, smoke cooling and limit smoke spread in the event of fire. This means better smoke control compared to conventional systems. Systemair jet fans have been tested in accordance with EN 12101-3 and are CE-certified.



### Cost-effective solution

Jet fan systems do not require expensive and complex duct systems. Thus additional savings are gained in exhaust air fans due to reduced system resistance. The “on demand” ventilation due to CO detectors allows an energy-saving operation.

### CFD Analysis

Systemair offers an accurate CFD simulation to every project. A fee is charged and reimbursed when ordering. The simulation is needed to confirm the optimum performance of the system.

## Available fan ranges

Fan range	Application	Impeller diameter (mm)	-20 - +55°C	200° C	300°C 120 min	400°C 120 min	600°C 120 min	CarParkJet	Tunnel Jet	Explosive atmosphere
AXC	supply/exhaust	315 - 2 000	●							
AXC(B)	exhaust	15 - 1 600	●		●					
AXCBF	bifurcated motor out of airstream	250 - 800		●						
HA(F)	exhaust	315 - 1 600				●				
HABV	exhaust	450 - 1 800	●				●			
AJR / AJB	impulse ventilation	315 - 400	●					●		
AJR(B) / AJB(B)	impulse ventilation	315 - 400			●			●		
AXCEX	exhaust/supply	315 - 1 600	●							●
AXCBF-EX	exhaust	250 - 800	●							●
AJ	impulse ventilation reversible	500 - 1 600	●						●	
AJ(T) <sup>1)</sup>	impulse ventilation reversible	500 - 1 600 710 - 1 400			●	●			●	
...-P	wall mounting	315 - 1 000	●		●	●	●			
...-D	roof mounting	315 - 1 800	●		●	●	●			
...-G	high pressure	315 - 2 000	●		●	●				

<sup>1)</sup> EN 12102-3 certification in progress.



# Roof Fans



## DVV Roof Fans

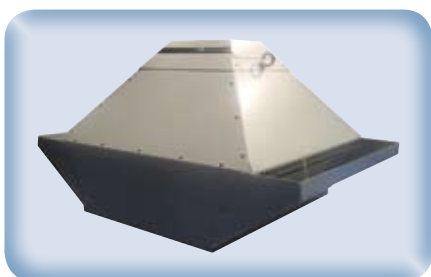
The DVV smoke exhaust fans are used in case of fire to extract smoke gases from rooms, and are also used for normal ventilation working conditions. All fans are with backward curved impellers with the motor out side of the air stream. Certified according to EN 12101-3

- Roof smoke exhaust fan
- 400°C/120 min (F400) and 600°C/120 min (F600)
- For air volumes of 2 800 to 52 500 m<sup>3</sup>/h
- Octagonal casing in Aluminum with vertical outlet.

## KBT/KBR Smoke Extract Fans

KBT with impeller manufactured from galvanised sheet steel with forward-curved blades. KBR with impeller manufactured from aluminium with backward-curved blades.

Casing is manufactured from double-skinned galvanised steel, insulated with 50 mm mineral wool. Swing-out door for easy inspection and service. Max. temperature of transported air 120° C. Max. airflow 7 100 m<sup>3</sup>/h.



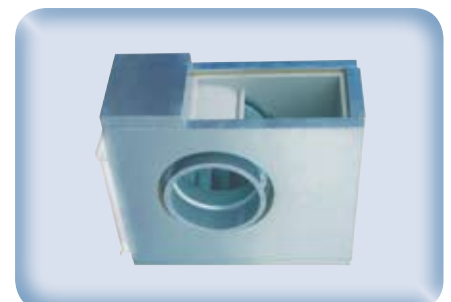
## DVG Smoke and heat extract fans

The DVG smoke and heat extract fans are used in case of fire to extract smoke gases from rooms, and also during normal working conditions for standard ventilation. Smoke free escape ways increase the chances to rescue people and goods in case of fire. Extracting poisonous and hot gases also make fire extinguishing easier and reduce the damage on the object. Available with horizontal or vertical air outlet.

- Smoke exhaust unit
- 400°C/120 min (F400)
- Casing made from aluminium with backward curved impeller made from galvanized steel with motor outside air stream
- Option: thermal contact built-in or PTC
- CE-certified according to EN 12101-3
- Available in 7 sizes for air volumes up to 20.000 m<sup>3</sup>/h

## RSV Direct driven Smoke Extract Fans

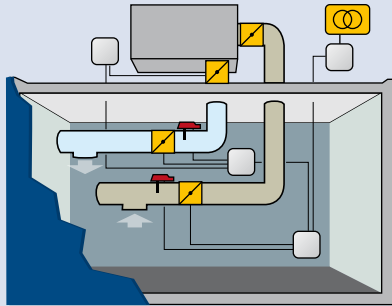
- 6 different sizes; 400, 450, 560, 630, 800 and 1000
- Air volumes from 2 200 m<sup>3</sup>/h to 50 000 m<sup>3</sup>/h, max. pressure 1900 Pa
- For installation outside fire zone inside building (outside weather protected)
- Available in 2 categories: EN 12101-3 and F<sub>400</sub> (2 hours/400°C)
- Insulated mineral wool casing from steel sheet, painted in RAL7032
- 2 & 4 pole electric motors varies per size. IP54 with insulation class F.
- Electric motors in Dahlander connection or separated windings.





# Application and building description

**Smoke Extraction using natural ventilation**

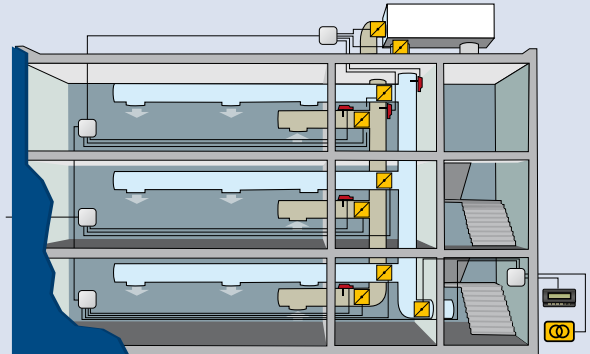


In small to medium size buildings, natural convection or better known as chimney effect is commonly used.

Using natural ventilation, smoke dampers and trap doors are installed at dedicated ducts for smoke evacuation, such would be a simple and effective solution for smoke exhaust. In such installations smoke detectors and controllers would be used to command such system.

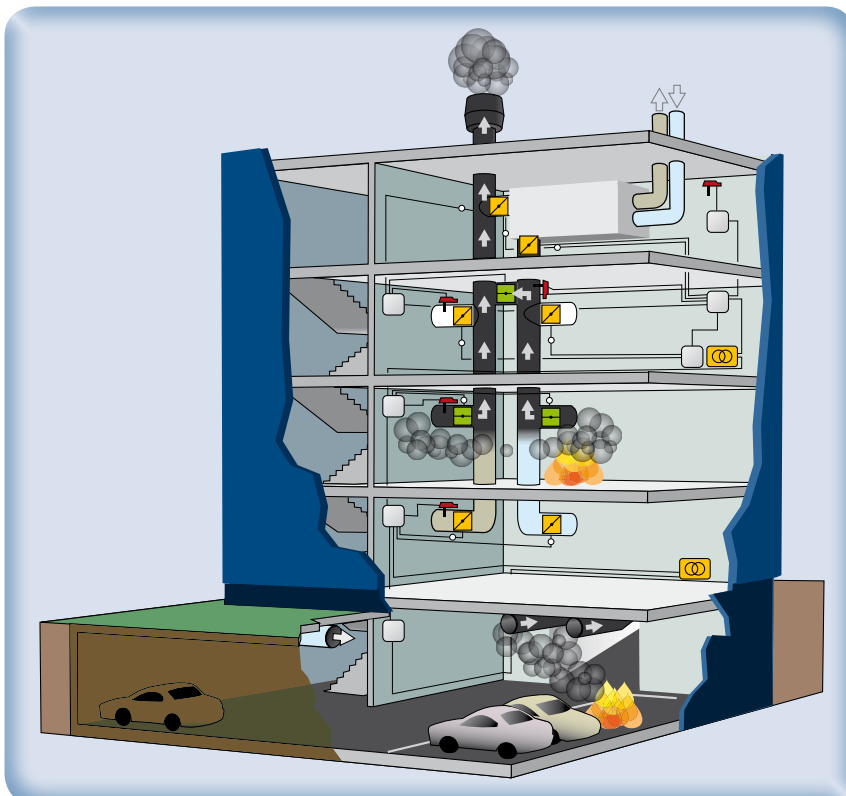
However, once the building construction begins to be more complex such as in the number of habitants, proper positioning of the chimney and the layout of the building, natural ventilation no longer can satisfy the safety needs of such installation.

**Smoke Extraction using forced ventilation**



In such cases building designers tend to incline to forced ventilation solutions. Where Smoke detectors not only guide the Smoke and fire dampers, but also the staircase forced ventilation or the roof extract fans or in combination of both depending on the size of the building and number of needed evacuees.

As the fire safety system gets larger and more complex, they are guided with dedicated fire safety controllers and control board. Systemair offers various fire safety packages for small, medium to large building application



Systemair offers solutions for larger installations as well as small and medium size buildings.

However the approach and solution will vary due to the need of such complex buildings.

In general once the building becomes more and more complex in use and construction, the building then is broken into Zones and thus the fire safety is more simplified.

Systemair being provider of global solution for the fire safety, complies with latest European standards and certifications process to assure the uniform and proper product offering throughout the markets.

From Carpark Jet-fans, Smoke and Fire dampers to roof extract fans, all products are offered as package solutions with controllers to simplify the installation and assure the correct functionality.

On demand CFD simulations can be executed to simplify the installation of complex building layouts.

Consult your local Systemair office for further information on product line and application.



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