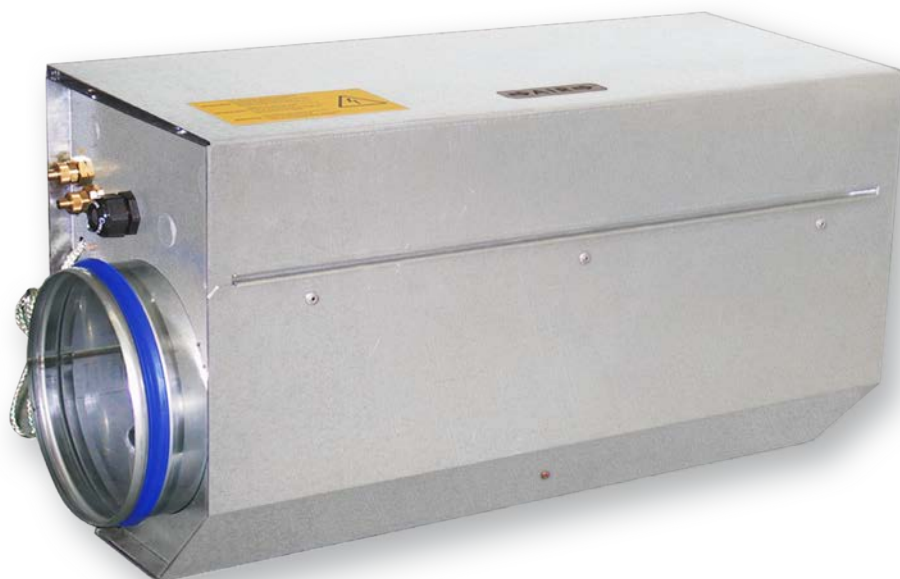


# Shut-off dampers

## Type AK-Ex



### For low-leakage shut-off of volume flows in potentially explosive atmospheres (ATEX)

Circular shut-off dampers for shutting off ducts, approved and certified for potentially explosive atmospheres (ATEX)

- ATEX-compliant construction and parts
- Approved for all gases, mists and vapours in zones 1 and 2, with electric actuator additionally for dusts in zones 21 and 22
- Suitable for supply air and extract air
- Electric or pneumatic actuator
- Any installation orientation
- Closed blade air leakage to EN 1751, up to class 4
- Casing air leakage to EN 1751, class C

Optional equipment and accessories

- Spring return actuator
- Auxiliary switch with adjustable switching points for capturing the end positions



ATEX-compliant parts and units



ATEX-Zertifizierung

| Type  |                                    | Page       |
|-------|------------------------------------|------------|
| AK-Ex | General information                | AK-Ex – 2  |
|       | Function                           | AK-Ex – 3  |
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### Application

#### Application

- Circular EXCONTROL shut-off dampers Type AK-Ex for shutting off or restricting the airflow in ventilation ducts of air conditioning systems
- For use in potentially explosive atmospheres (ATEX)
- Input signal to control shut-off damper blade is to be provided by others

#### Special features

- ATEX mark and certification
- ATEX equipment group II, approved for use in zones 1 and 2; electric actuator also for zones 21 and 22

#### Classification

- Electronic control: Equipment group II
- Zones 1 and 2 (atmosphere: gases): II 2 G c II T5/T6
  - Zones 21 and 22 (atmosphere: dusts): II 2 D c II 80 °C
- Pneumatic control: Equipment group II
- Zones 1 and 2 (atmosphere: gases): II 2 G c II T5/T6

#### Nominal sizes

- 125, 160, 200, 250, 315, 400

### Description

#### Construction

- Galvanised sheet steel
- P1: Inner duct powder-coated, silver grey (RAL 7001)
- A2: Inner duct in stainless steel

#### Parts and characteristics

- Ready-to-install shut-off damper
- Damper blade with blade mechanism
- Connection for equipotential bonding
- Cable bushings suitable for use in potentially explosive atmospheres
- ATEX-compliant actuator is factory assembled and wired

#### Attachments

- Electronic actuator:
- Auxiliary switch for capturing the end positions
- Pneumatic actuator

#### Construction features

- Circular casing
- Construction and materials comply with the EU directive for use in potentially explosive atmospheres (ATEX)
- Spigot with lip seal, for circular connecting ducts to EN 1506 or EN 13180

#### Materials and surfaces

- Casing and damper blade made of galvanised sheet steel
- Blade seal made of TPE plastic
- Plain bearings made of polyurethane
- Electric actuator made of die cast aluminium
- Pneumatic actuator made of plastic
- Inner tube either made of stainless steel 1.4301 (A2) or powder-coated (P1)

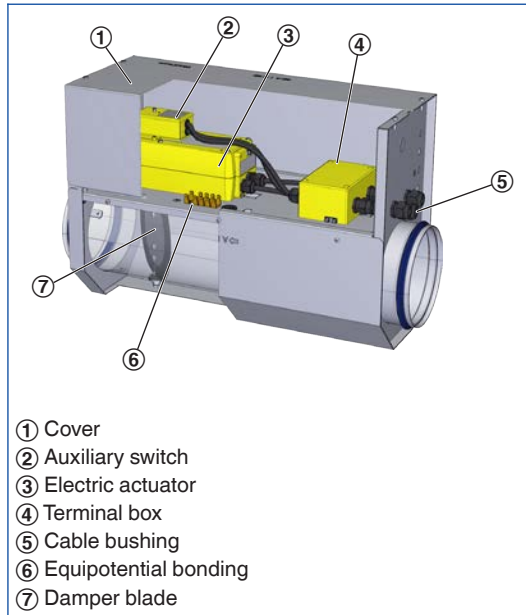
#### Standards and guidelines

- Directive 94/9/EC: Equipment and protective systems intended for use in potentially explosive atmospheres
- Closed blade air leakage to EN 1751, class 4 (nominal sizes 100 and 160, class 3)
- Nominal sizes 125 and 160 meet the general requirements, nominal sizes 200 – 400 meet the increased requirements of DIN 1946, part 4, with regard to the acceptable closed blade air leakage
- Casing air leakage to EN 1751, class C

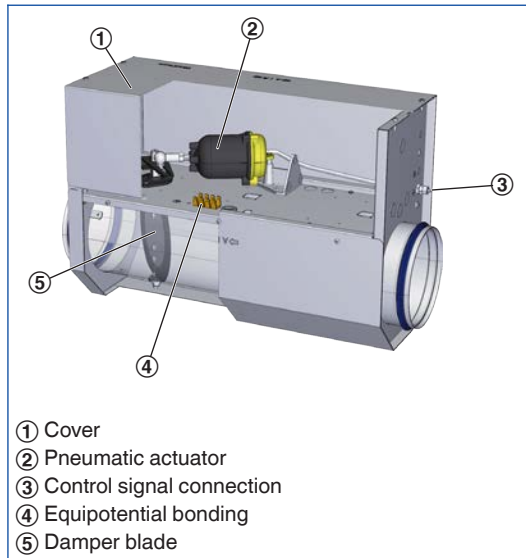
#### Maintenance

- Maintenance-free as construction and materials are not subject to wear

**Schematic illustration of the AK-Ex with  
electronic control**



**Schematic illustration of the AK-Ex with  
pneumatic control**



|   |              |
|---|--------------|
| Nominal sizes                           | 125 – 400 mm |
| Acceptable static differential pressure | 1500 Pa      |
| Operating temperature                   | 10 – 50 °C   |

#### Electronic

|                      |  |
|----------------------|--|
| Supply voltage       | 24 – 230 V AC ± 10 %, 50/60 Hz                                   |
| Power rating         | 120 VA max.  |
| IEC protection class | I (protective earth)   |
| Protection level     | IP 42  |
| EC conformity        | ATEX to 2014/34/EU, EMC to 2014/30/EU, low voltage to 2014/35/EU |

#### Pneumatic

|                                |  |
|--------------------------------|--|
| Control pressure               | 0 – 1.2 bar  |
| Maximum pressure               | 1.5 bar  |
| Compressed air                 | Compressed air for instruments, free of oil, water and dust                |
| Protection level               | IP 42  |
| Air consumption (100 % stroke) | 0.3 l/n (nominal sizes 125 – 250) to 0.5 l/n max. (nominal size 315 – 400) |
| EC conformity                  | ATEX to 2014/34/EU   |

Quick sizing tables provide a good overview of the room sound pressure levels that can be expected. Approximate intermediate values can be interpolated. Precise intermediate values and spectral data can be calculated with our Easy Product Finder design programme.

**Quick sizing: Static differential pressure and sound pressure levels with open damper blade**

| Nominal size | $\dot{V}$ | $\dot{V}$         | Differential pressure | Air-regenerated noise |
|--------------|-----------|-------------------|-----------------------|-----------------------|
|              |           |                   | $\Delta p_{st}$       | $L_{PA}$              |
|              | l/s       | m <sup>3</sup> /h | Pa                    | dB(A)                 |
| 125          | 49        | 177               | 5                     | 20                    |
|              | 74        | 265               | 12                    | 28                    |
|              | 98        | 353               | 21                    | 34                    |
|              | 147       | 530               | 46                    | 45                    |
| 160          | 80        | 290               | 4                     | 18                    |
|              | 121       | 434               | 10                    | 26                    |
|              | 161       | 579               | 17                    | 32                    |
|              | 241       | 869               | 39                    | 40                    |
| 200          | 126       | 452               | 4                     | 17                    |
|              | 188       | 679               | 8                     | 24                    |
|              | 251       | 905               | 14                    | 29                    |
|              | 377       | 1357              | 32                    | 37                    |
| 250          | 196       | 707               | 3                     | 16                    |
|              | 295       | 1060              | 6                     | 22                    |
|              | 393       | 1414              | 11                    | 28                    |
|              | 589       | 2121              | 25                    | 37                    |
| 315          | 312       | 1122              | 2                     | 16                    |
|              | 468       | 1683              | 4                     | 24                    |
|              | 623       | 2244              | 8                     | 30                    |
|              | 935       | 3367              | 18                    | 41                    |
| 400          | 503       | 1810              | 1                     | 26                    |
|              | 754       | 2714              | 3                     | 37                    |
|              | 1005      | 3619              | 5                     | 45                    |
|              | 1508      | 5429              | 10                    | 58                    |

This specification text describes the general properties of the product. Texts for variants can be generated with our Easy Product Finder design programme.

Circular shut-off dampers for shutting off or restricting the airflow in potentially explosive atmospheres, for supply air or extract air, available in 6 nominal sizes.

Suitable for duct pressures up to 1500 Pa.

Ready-to-install unit consists of the casing with damper blade, and parts for equipotential bonding and for use in potentially explosive atmospheres.

Spigot with lip seal, for circular connecting ducts to EN 1506 or EN 13180.

Closed blade air leakage to EN 1751, class 4 (nominal sizes 125 and 160, class 3).

Casing air leakage to EN 1751, class C.

### Special features

- ATEX mark and certification
- ATEX equipment group II, approved for use in zones 1 and 2; electric actuator also for zones 21 and 22

### Materials and surfaces

- Casing and damper blade made of galvanised sheet steel

- Blade seal made of TPE plastic
- Plain bearings made of polyurethane
- Electric actuator made of die cast aluminium
- Pneumatic actuator made of plastic
- Inner tube either made of stainless steel 1.4301 (A2) or powder-coated (P1)

### Construction

- Galvanised sheet steel
- P1: Inner duct powder-coated, silver grey (RAL 7001)
- A2: Inner duct in stainless steel

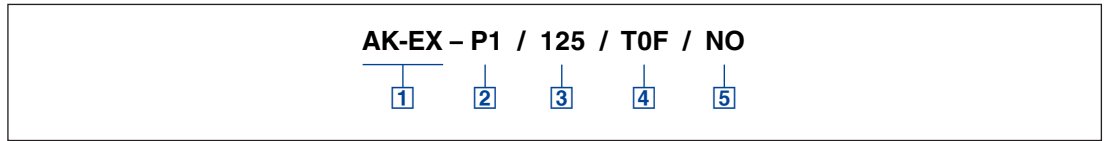
### Technical data

- Nominal sizes: 125 – 400 mm
- Acceptable static differential pressure: 1500 Pa

### Sizing data

- $\dot{V}$  \_\_\_\_\_  
[m<sup>3</sup>/h]
- Air-regenerated noise
- $L_{PA}$  \_\_\_\_\_  
[dB(A)]

AK-Ex



**1** Type

**AK-EX** Shut-off damper for potentially explosive atmospheres

**2** Material

- No entry: galvanised sheet steel
- P1** Inner duct powder-coated, silver grey (RAL 7001)
- A2** Inner duct in stainless steel

**3** Nominal size [mm]

- 125
- 160
- 200
- 250
- 315
- 400

**Order example: AK-EX/125/T0S**

|                     |                        |
|---------------------|------------------------|
| <b>Material</b>     | Galvanised sheet steel |
| <b>Nominal size</b> | 125 mm                 |
| <b>Actuator</b>     | Electric actuator      |

**Order example: AK-EX/200/P50/NO**

|                              |                        |
|------------------------------|------------------------|
| <b>Material</b>              | Galvanised sheet steel |
| <b>Nominal size</b>          | 200 mm                 |
| <b>Actuator</b>              | Pneumatic actuator     |
| <b>Damper blade position</b> | Pressure off to OPEN   |

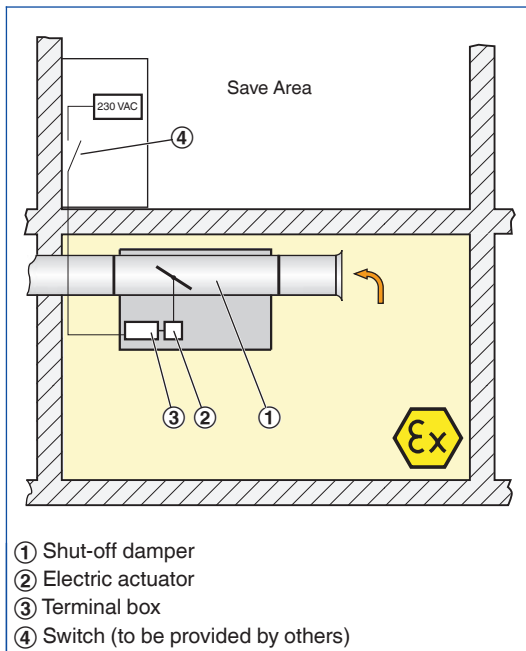
**4** Actuator

- Electronic
- T0S** Actuator
- T0F** Spring return actuator
- T0X** Actuator with auxiliary switch
- T0Y** Spring return actuator with auxiliary switch
- Pneumatic
- P50** Actuator

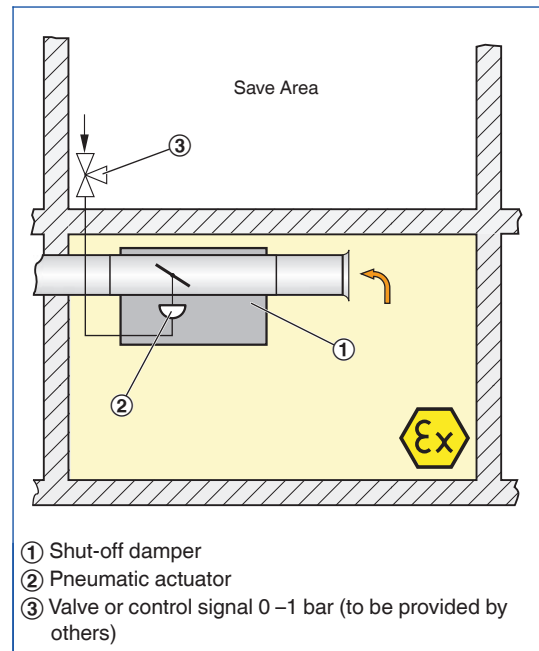
**5** Damper blade position

- Only for spring return actuators and pneumatic actuators
- NO** Pressure off/power off to OPEN
- NC** Power off/Pressure off to close

Schematic illustration of the AK-Ex with electronic control



Schematic illustration of the AK-Ex with pneumatic control





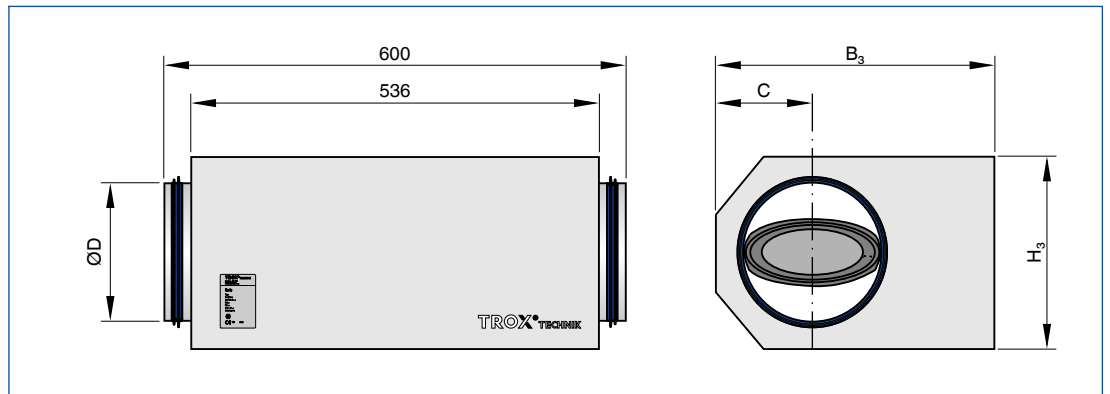
AK-Ex, electric actuators

| Order code detail    | Actuator               | Supply voltage   | Auxiliary switch |
|----------------------|------------------------|------------------|------------------|
| Open/Close actuators |                        |                  |                  |
| T0S                  | Actuator               | 24 – 240 V AC/DC | –                |
| T0F                  | Spring return actuator |                  | –                |
| T0X                  | Actuator               |                  | 2                |
| T0Y                  | Spring return actuator |                  | 2                |

**AK-Ex, pneumatic actuators**

| Order code detail   | Actuator           | Control pressure | Auxiliary switch |
|---------------------|--------------------|------------------|------------------|
| Pneumatic actuators |                    |                  |                  |
| P50                 | Pneumatic actuator | 0.2 – 1.2 bar    | –                |

AK-Ex



AK-Ex

| Nominal size | $\varnothing D$ | $B_3$ | $H_3$ | $C$ |
|--------------|-----------------|-------|-------|-----|
|              | mm              | mm    | mm    | mm  |
| 125          | 124             | 372   | 221   | 129 |
| 160          | 159             | 372   | 221   | 111 |
| 200          | 199             | 463   | 311   | 182 |
| 250          | 249             | 463   | 311   | 157 |
| 315          | 314             | 627   | 461   | 289 |
| 400          | 399             | 627   | 461   | 246 |

AK-Ex

| Nominal size | AK-Ex/.../T0* |  | AK-Ex/.../P.. |  |
|--------------|---------------|--|---------------|--|
|              | m             |  |               |  |
|              | kg            |  | kg            |  |
| 125          | 16.5          |  | 15.0          |  |
| 160          | 16.5          |  | 15.0          |  |
| 200          | 18.0          |  | 16.5          |  |
| 250          | 18.0          |  | 16.5          |  |
| 315          | 22.0          |  | 20.5          |  |
| 400          | 22.0          |  | 20.5          |  |

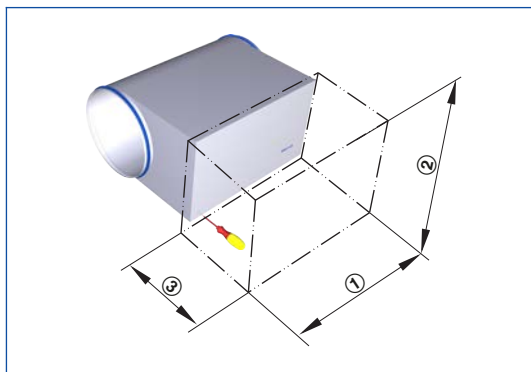
### Installation and commissioning

- Connections for equipotential bonding: Suitable cables must be connected by others
- Any installation orientation

### Space required for commissioning and maintenance

Sufficient space must be kept clear near any attachments to allow for commissioning and maintenance. It may be necessary to provide sufficiently sized inspection access openings.

### Access to attachments



### Space required

| Nominal size | ①   | ②   | ③   |
|--------------|-----|-----|-----|
|              | mm  |     |     |
| 125          | 600 | 220 | 300 |
| 160          | 600 | 220 | 300 |
| 200          | 600 | 310 | 300 |
| 250          | 600 | 310 | 300 |
| 315          | 600 | 460 | 300 |
| 400          | 600 | 460 | 300 |

**Principal dimensions**

**ØD [mm]**

Shut-off and flow adjustment dampers made of stainless steel: Outer diameter of the connecting spigot

Shut-off dampers made of plastic: Inside diameter of the connecting spigot

**ØD<sub>1</sub> [mm]**

Pitch circle diameter of flanges

**ØD<sub>2</sub> [mm]**

Outer diameter of flanges

**ØD<sub>4</sub> [mm]**

Inside diameter of the screw holes of flanges

**L [mm]**

Length of unit including connecting spigot

**L<sub>1</sub> [mm]**

Length of casing or acoustic cladding

**n [ ]**

Number of flange screw holes

**T [mm]**

Flange thickness

**m [kg]**

Unit weight including the minimum required attachments

**Acoustic data**

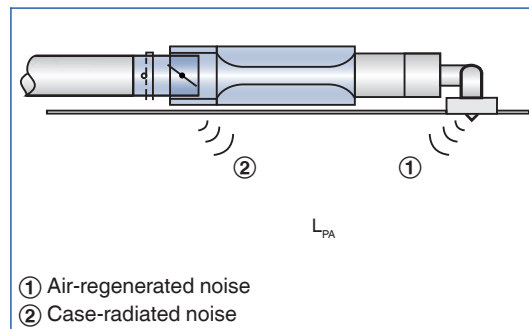
**L<sub>PA</sub> [dB(A)]**

A-weighted sound pressure level of air-regenerated noise of the shut-off or flow

adjustment damper, system attenuation taken into account

All sound pressure levels are based on 20 µPa.

**Definition of noise**



**Volume flow rates**

**$\dot{V}$  [m<sup>3</sup>/h] and [l/s]**

Volume flow rate

**Differential pressure**

**$\Delta p_{st}$  [Pa]**

**Static differential pressure**

Static differential pressure

