

SHUT-OFF DAMPER
TYPE AK-EX



ATEX-ZERTIFIZIERUNG

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

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

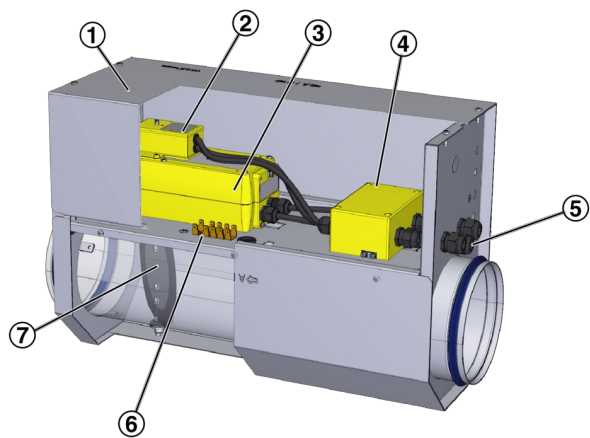
- Maintenance-free as construction and materials are not subject to wear

TECHNICAL INFORMATION

Function, Technical data, Quick sizing, Specification text, Order code

Schematic illustration of the AK Ex with electronic control

Schematic illustration of the AK-Ex with electronic control



- ① Cover
- ② Auxiliary switch
- ③ Electric actuator
- ④ Terminal box
- ⑤ Cable bushing
- ⑥ Equipotential bonding
- ⑦ Damper blade

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

Electronic

Supply voltage	24 – 230 V AC \pm 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	V		Differential pressure	Air-regenerated noise
	V		Δp_{st}	L _{PA}
	l/s	m ³ /h	Pa	dB(A)
125	49	177	5	20
	74	265	12	28
125	98	353	21	34
	147	530	46	45
160	80	290	4	18
	121	434	10	26
160	161	579	17	32
	241	869	39	40
200	126	452	4	17
	188	679	8	24
200	251	905	14	29
	377	1357	32	37
250	196	707	3	16
	295	1060	6	22
250	393	1414	11	28
	589	2121	25	37
315	312	1122	2	16
	468	1683	4	24
315	623	2244	8	30
	935	3367	18	41
400	503	1810	1	26
	754	2714	3	37
400	1005	3619	5	45
	1508	5429	10	58

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

- V _____ [m³/h]

Air-regenerated noise

- L_{PA} _____ [dB(A)]

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

Order example: AK-EX/125/T0S

Material	Galvanised sheet steel
Nominal size	125 mm
Actuator	Electric actuator

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

Material	Galvanised sheet steel
Nominal size	200 mm
Actuator	Pneumatic actuator
Damper blade position	Pressure off to OPEN

AK-Ex – P1 / 125 / T0F / NO



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

4 Actuator

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

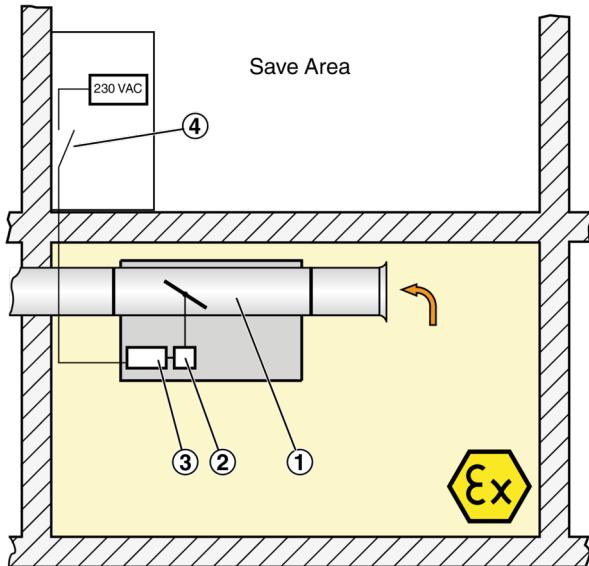
5 Damper blade position

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

Variants, Attachments, Dimensions and weight



Schematic illustration of the AK-Ex with electronic control



- ① Shut-off damper
- ② Electric actuator
- ③ Terminal box
- ④ Switch (to be provided by others)

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	24 – 240 V AC/DC	2
T0X	Actuator	24 – 240 V AC/DC	–
T0Y	Spring return actuator	24 – 240 V AC/DC	2

AK-Ex, pneumatic actuators

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

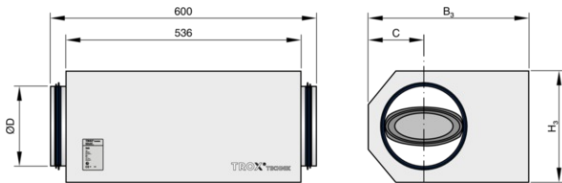
AK-Ex

Nominal size	ØD mm	B ₃ mm	H ₃ mm	C 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* m kg	AK-Ex/.../P.. m 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

AK-Ex



Installation details, Basic information and nomenclature



Installation and commissioning

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

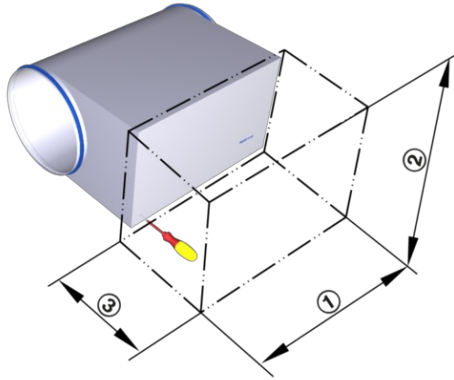
Space required for commissioning and maintenance

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.

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

Access to attachments



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

ØD₁ [mm]

Pitch circle diameter of flanges

ØD₂ [mm]

Outer diameter of flanges

ØD₄ [mm]

Inside diameter of the screw holes of flanges

L [mm]

Length of unit including connecting spigot

L₁ [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_{PA} [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 μ Pa.

Volume flow rates

V [m³/h] and [l/s]

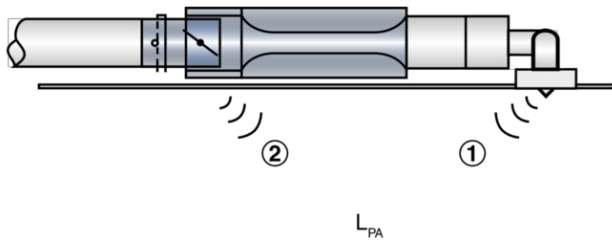
Volume flow rate

Differential pressure

Δp_{st} [Pa]

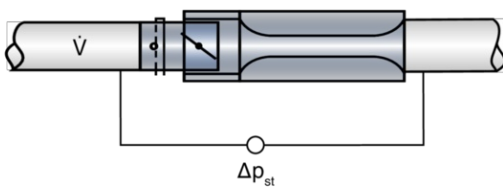
Static differential pressure

Definition of noise



- ① Air-regenerated noise
- ② Case-radiated noise

Static differential pressure



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