FKRS-EU with fusible link for 72 °C or 95 °C

CE compliant according to European regulations

With TROXNETCOM as an option

ATEX certification

Conforms to VDI 6022

Fire dampers

FKRS-EU

Compact dimensions – ideal for restricted spaces

Small circular fire damper for shutting off air ducts between 2 fire compartments, available in 10 nominal sizes

- Nominal sizes: 100 – 315 mm
- Low differential pressure and sound power level
- Explosion-proof construction (ATEX) as an option
- Optional use as upstream shutter of an air transfer unit
- Optional use as air transfer damper
- Optional stainless steel casing or powder-coated casing for increased corrosion protection
- Integration into the central BMS with TROXNETCOM
- Universal installation options

Optional equipment and accessories

- Electric actuator 24 V/230 V
- Release temperature 72/95 °C

Useful additions

- Duct smoke detectors

General information

Application

- Fire dampers of Type FKRS-EU, with CE marking and declaration of performance, for the isolation of duct penetrations between fire compartments in the event of a fire
- To prevent the propagation of fire and smoke through ductwork to adjacent designated fire compartments

Special features

- Declaration of Performance according to the European Construction Products Regulation
- Classification according to EN 13501-3, up to EI 120 (v_e, h_o i ↔ o) S
- Certified mortar-based installation with reduced distances of 40 mm to load-bearing components or at least 10 mm between 2 fire dampers
- Surrounding gap dimensions in the mortar-based installation with mortar up to 225 mm permitted
- Meets the requirements of European product standard EN 15650
- Tested for fire resistance properties in accordance with EN 1366-2 (300 Pa and 500 Pa negative pressure)
- Meets the hygienic requirements according to VDI 6022-1, VDI 3803-1, DIN 1946-4, DIN EN 16798-3 as well as Ö-Norm H 6020 and H 6021 and SWKI
- Corrosion protection according to EN 15650 in connection with EN 60068-2-52
- Closed blade air leakage acc. to EN 1751, class 3
- Casing air leakage acc. to EN 1751, class C
- Low differential pressure and sound power level
- Any airflow direction
- Integration into the central BMS with TROXNETCOM
- Integration into the central building management system with the international standard fire damper system according to IEC 62026-2 with AS interface is possible

Classification

- Class of performance up to EI 120 (v_e, h_o, i ↔ o) S according to EN 13501-3

Nominal sizes

- 100, 125, 150, 160, 180, 200, 224, 250, 280, 315
- L: 400 mm

Variants

- With fusible link
- With spring return actuator
- With spring return actuator for use in potentially explosive atmospheres
- With cover grille on both sides as an upstream shutter for the air transfer unit
- With spring return actuator, duct smoke detector and cover grille on both sides as air transfer damper according to general building inspectorate licence Z-6.50-2516

For installation in Germany, please note: If a fire damper with only a mechanical shut-off element is to be used as an air transfer unit, the local building regulations apply. Such air transfer units are usually used in pressure differential systems only.

Parts and characteristics

- Release temperature 72 °C or 95 °C (for use in warm air ventilation systems)
- Single-handed operation
- Installation orientations from 0° - 360
- Explosion-proof constructions for zones 1, 2, 21, 22

Attachments

- Limit switch for damper blade position indication
- Spring return actuator with 24 V AC/DC or 230 V AC supply voltage
- Spring return actuator for 24 – 230 V supply voltage, for use in potentially explosive atmospheres
- Network module for the integration with AS-i or LON networks
- Spring return actuator and pre-wired duct smoke detector with 230 V AC, 50/60 Hz or 24 V DC supply voltage for use as air transfer damper
- All attachments can also be retrofitted

Accessories
- Installation block ER for dry mortarless installation in solid walls and ceilings
- Installation kit TQ2 for dry mortarless installation in solid walls, in lightweight walls/fire walls with metal support structure and cladding on both sides, in shaft walls with and without metal stud frame, in timber stud, timber frame and solid timber walls as well as in solid timber ceilings, wood-beamed ceilings, and in combination with lightweight ceilings (ADK Modulraum system)
- Installation kit WA2 for dry mortarless installation in solid walls as well as in single-sided shaft walls with and without metal stud framing
- Installation kit WE2 for dry mortarless installation away from solid walls and ceilings as well as away from lightweight walls with metal stud frame cladding on both sides
- Installation kit GL2 for installation in lightweight partition walls/fire walls with flexible ceiling joint and for dry mortarless installation in lightweight partition walls with metal stud frame and cladding on both sides during wall construction
- Cover grilles
- Flexible connectors
- Extension piece

Useful additions
- Duct smoke detector RM-O-3-D
- Duct smoke detector with airflow monitor RM-O-VS-D

Construction features
- Rigid circular casing suitable for push fitting into cut circular holes without additional drilling and chiselling being required
- Spigot connections with lip seal on both ends, suitable for ventilation ducts according to EN 1506 and EN 13180 plus non-standard but commercial nominal sizes 180, 224 and 280
- Suitable for the connection of ducts, cover grilles or flexible connectors
- The release mechanism is accessible and can be tested from the outside
- One inspection access panel
- Remote control with spring return actuator

Standards and guidelines
- Construction Products Regulation
- EN 15650 Ventilation for buildings – Fire dampers
- EN 1366-2 Fire resistance tests for service installations – Fire dampers
- EN 13501-3 Fire classification of construction products and building elements
- EN 1751 Ventilation for buildings – Air terminal devices
- 2006/42/EC – Machinery Directive
- 2014/34/EU – ATEX Directive

Materials and surfaces
Casing:
- Galvanised sheet steel
- Galvanised sheet steel, powder-coated RAL 7001
- Stainless steel 1.4301

Damper blade:
- Special insulation material
- Special insulation material with impregnation
- Replaceable damper blade (from NS 180 mm)

Other components:
- Damper blade shaft made of galvanised steel or stainless steel
- Plastic plain bearings
- Elastomer seals

The design variants made of stainless steel or with powder-coated casings meet increased requirements for corrosion protection. Detailed resistance lists upon request.

Supply package
If attachments and accessories are factory-mounted on the fire dampers, they are already included in the order code. Depending on the installation situation, additional materials such as mortar, screws or mineral wool may be required for correct installation. Such materials are not usually included in the supply package (unless stated otherwise). Attachments and accessories have to be selected by people in charge of the building project. These people also have to select and provide any additionally required installation or fixing materials and make sure that the required classifications are met.

Maintenance
- The functional reliability of the fire damper must be tested at least every six months; this has to be arranged by the owner of the ventilation system; functional tests must be carried out in compliance with the basic maintenance principles stated in EN 13306 and DIN 31051. If two consecutive tests, one 6 months after the other, are successful, the next test can be conducted one year later.
- A functional test involves closing the damper blade and opening it again; with a spring return actuator this can be done via remote control
- Fire dampers must be included in the regular cleaning schedule for the ventilation system.
- For details on functional tests, maintenance and inspection refer to the installation and operating manual

Technical data
- Nominal sizes: 100 to 315 mm
- Casing length: 400 mm
- Volume flow rate range: up to 770 l/s (2770 m³/h)
- Differential pressure range: up to 1500 Pa
- Temperature range: -20 - 50 °C *
- Upstream velocity **: Standard version ≤ 8 m/s, version with spring return actuator ≤ 10 m/s, version with Ex actuator ExMax/RedMax-15-BF TR ≤ 10 m/s

* For FKRS-EU in Ex version, see supplementary operating instructions

** Data apply to uniform upstream and downstream conditions of the fire dampers

Correct use

- The fire damper is used as an automatic shut-off device to prevent fire and smoke from spreading through ducting.
- The fire damper is suitable for supply and extract air in HVAC systems.
- The fire damper may be used in areas with potentially explosive atmospheres if suitable special accessories are used with it and if the product bears the CE conformity marking according to Directive 2014/34/EU. Fire dampers for use in areas with potentially explosive atmospheres are marked for the zones for which they have been approved.
- Operation of fire dampers is allowed only in compliance with installation regulations and the technical data in the installation and operating manual.
- Modifying the fire damper or using replacement parts that have not been approved by TROX is not permitted.

Incorrect use:

- without specially approved attachments in areas with potentially explosive atmospheres
- as a smoke control damper
- outdoors without sufficient protection against the effects of weather
- in atmospheres where chemical reactions, whether planned or unplanned, may cause damage to the fire damper or lead to corrosion

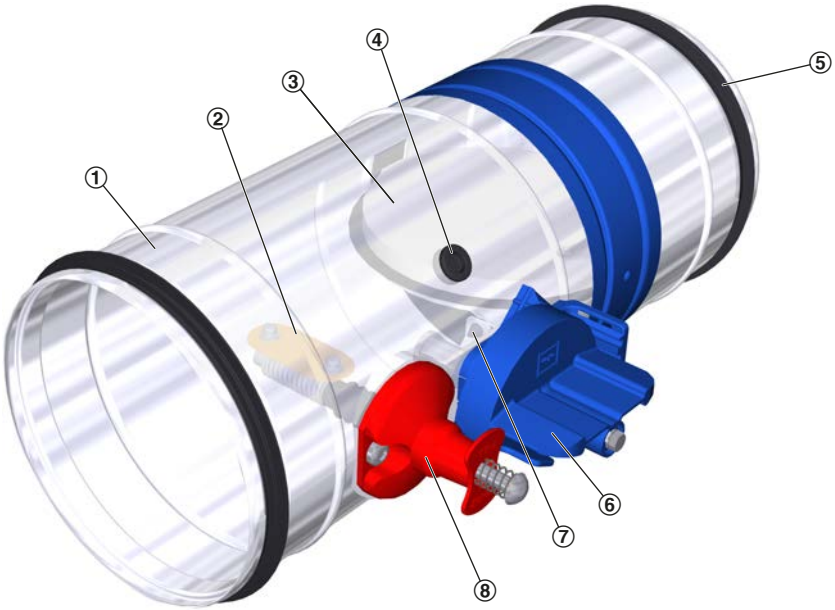
For installation in Germany please note:

- Do not use it in extract air systems in commercial kitchens
- Do not use it as an air transfer damper
- Do not use it with a combined penetration seal
- Single installation in a sandwich panel wall is considered correct use. Do not combine it with cable penetrations
- Air transfer units may require a building inspectorate licence. This has to be determined and applied for on a case to case basis (by others).
- Flame-resistant building materials that form no dripping droplets (elastomer foams) have to be at least of fire rating class C - s2, d0 according to the German MVV TB (2019/1) guideline. The current national building regulations apply.

Function

Funktionsbeschreibung

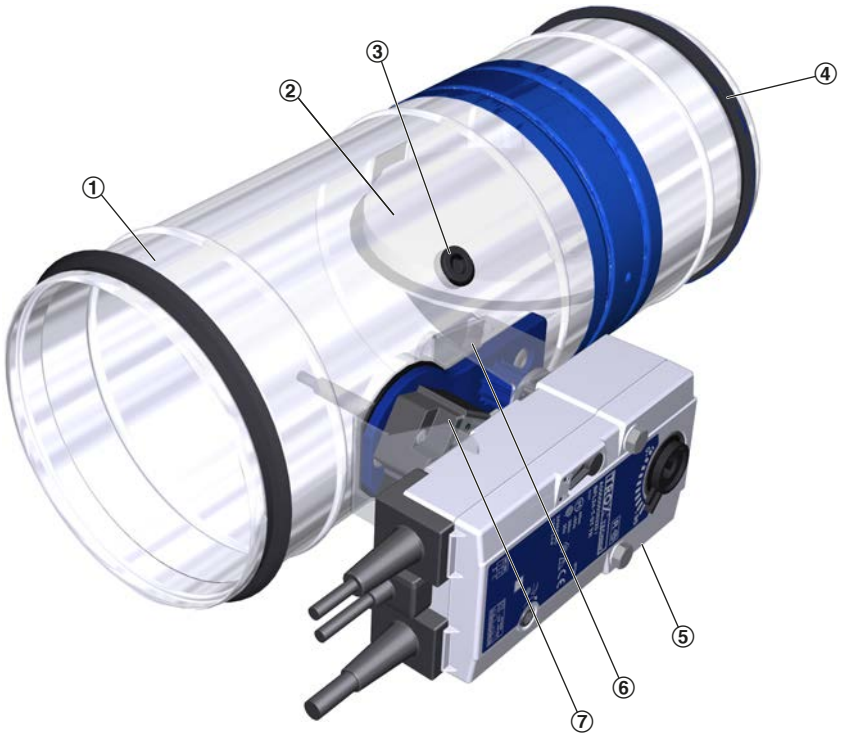
Construction with fusible link



1. Casing
2. Fusible link
3. Damper blade with sealing ring
4. Inspection access (12 mm)
5. Lip seal
6. Handle and damper blade position indicator
7. Travel stop for CLOSED position
8. Thermal release mechanism

In the event of a fire, fire dampers shut automatically to prevent the propagation of fire and smoke through ductwork to adjacent designated fire compartments. In the event of a fire, the damper is triggered at 72 °C or at 95 °C (use in warm air ventilation systems) by a fusible link. The release mechanism is accessible and can be tested from the outside
One or two limit switches (optional attachment) can be used to indicate the damper blade position.

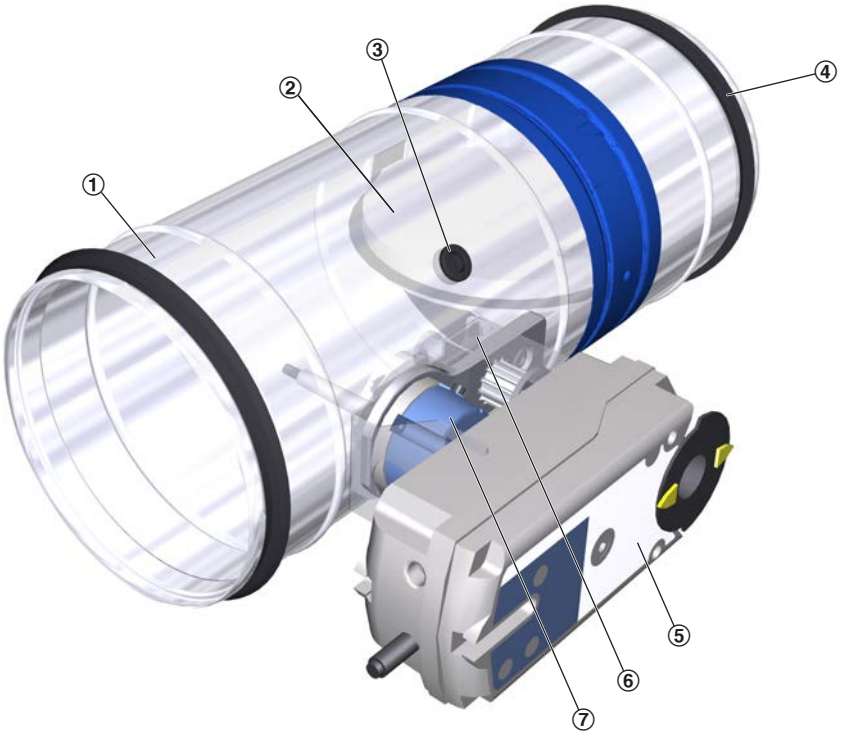
Construction with Belimo spring return actuator



1. Casing
2. Damper blade with sealing ring
3. Inspection access (12 mm)
4. Lip seal
5. Spring return actuator
6. Travel stop for CLOSED position
7. Thermoelectric release mechanism with temperature sensor

The spring return actuator enables the motorised opening and closing of the damper blade; it can be activated by the central BMS. In the event of a fire, the damper is triggered thermoelectrically at 72 °C or 95 °C (use in warm air ventilation systems). As long as power is supplied to the actuator, the damper blade remains open. Interruption of the supply voltage causes the damper to close (closed current principle).
Motorised fire dampers can be used to shut off ducts.
The torque of each actuator is sufficient to open and close the damper blade even while the fan is running.
The spring return actuator is fitted with limit switches that can be used as indicators for the damper blade position.

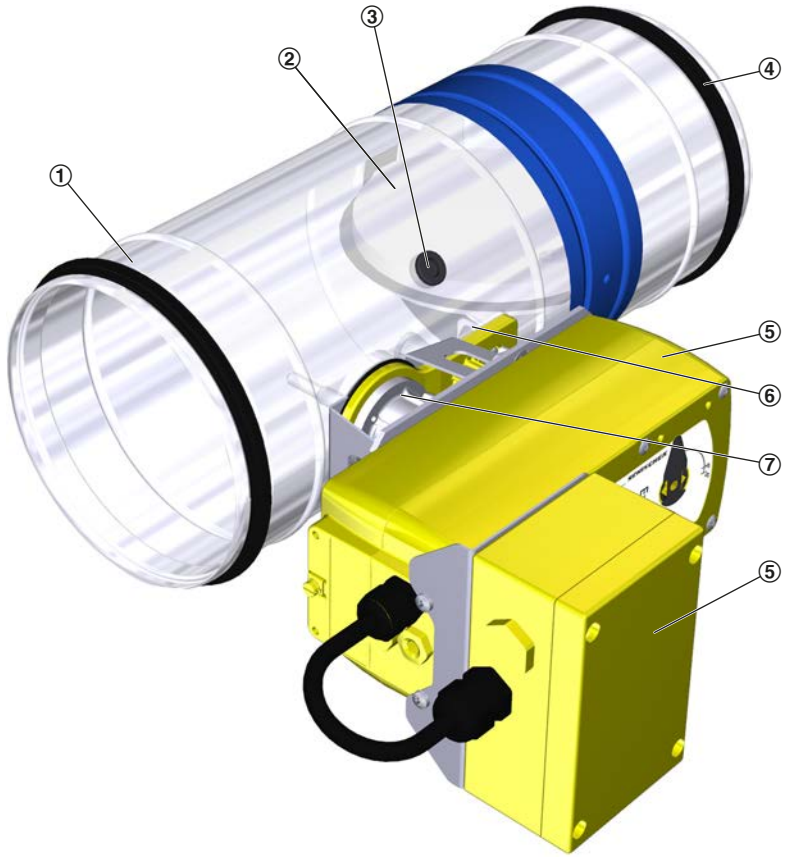
Construction with Siemens spring return actuator



1. Casing
2. Damper blade with sealing ring
3. Inspection access (12 mm)
4. Lip seal
5. Spring return actuator
6. Travel stop for CLOSED position
7. Thermoelectric release mechanism with temperature sensor

The spring return actuator enables the motorised opening and closing of the damper blade; it can be activated by the central BMS. In the event of a fire, the damper is triggered thermoelectrically at 72 °C or 95 °C (use in warm air ventilation systems). As long as power is supplied to the actuator, the damper blade remains open. Interruption of the supply voltage causes the damper to close (closed current principle). Motorised fire dampers can be used to shut off ducts. The torque of each actuator is sufficient to open and close the damper blade even while the fan is running. The spring return actuator is fitted with limit switches that can be used as indicators for the damper blade position.

Construction with spring return actuator, explosion-proof



1. Casing
2. Damper blade with sealing ring
3. Inspection access (12 mm)
4. Lip seal
5. ExMax or RedMax spring return actuator with ExBox terminal box
6. Travel stop for CLOSED position
7. Thermoelectric release device ExPro-TT with temperature sensor

The fire damper is used as a shut-off device to prevent fire and smoke from spreading through ducting in areas with potentially explosive atmospheres.
The fire damper is suitable for supply air and extract air systems in potentially explosive atmospheres. For details on the operation of the fire damper, please refer to the operating and installation manual and the technical data in the supplementary operating manual 'Explosion-proof fire dampers Type FKRS-EU'.

Use in areas with potentially explosive atmospheres (ATEX)

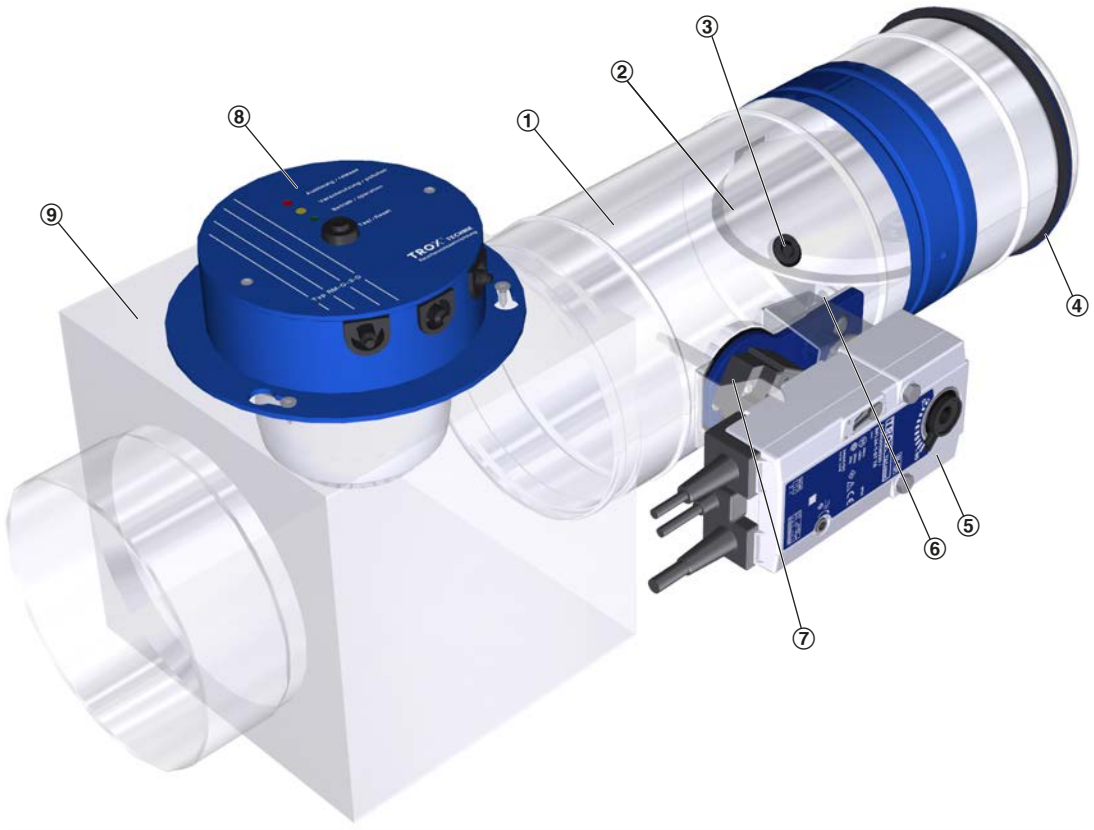
According to declaration of conformity EPS 21 ATEX 2 142 X, the fire damper may be used in the following areas with potentially explosive atmospheres.
The ambient temperatures and the types of release and actuation specified in the technical data are binding.
ExMax:

- Zones 1, 2: Gases, mists and vapours
- Zones 21, 22: Dusts

RedMax:

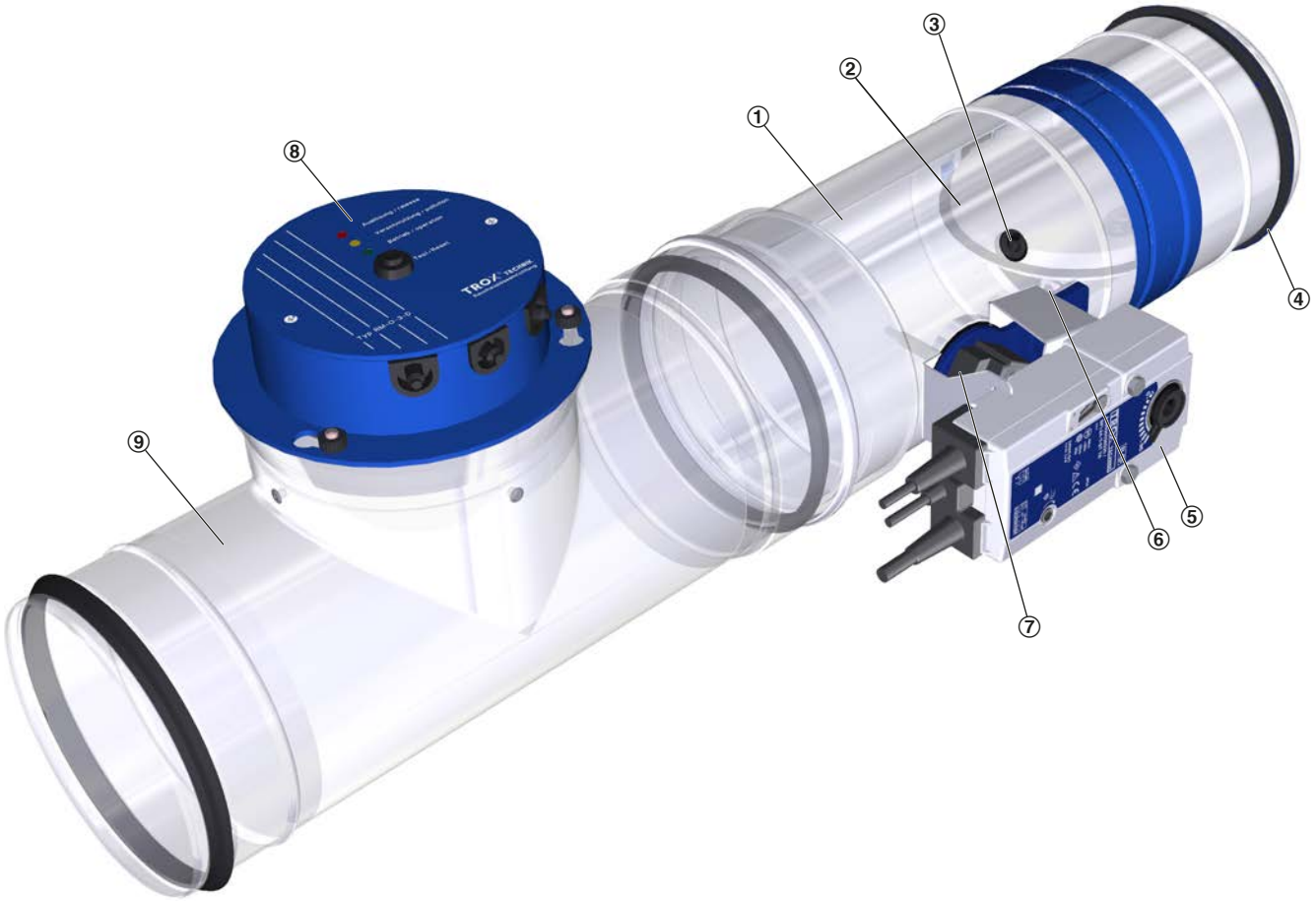
- Zone 2: Gases, mists and vapours
- Zone 22: Dusts

Version with spring return actuator and duct smoke release device in an angular air duct



1. Casing
2. Damper blade with sealing ring
3. Inspection access (12 mm)
4. Lip seal
5. Spring return actuator
6. Travel stop for CLOSED position
7. Thermoelectric release mechanism with temperature sensor
8. Smoke detector RM-O-3-D (fastening in the angular air duct, on-site)
9. Angular air duct, to be supplied by client

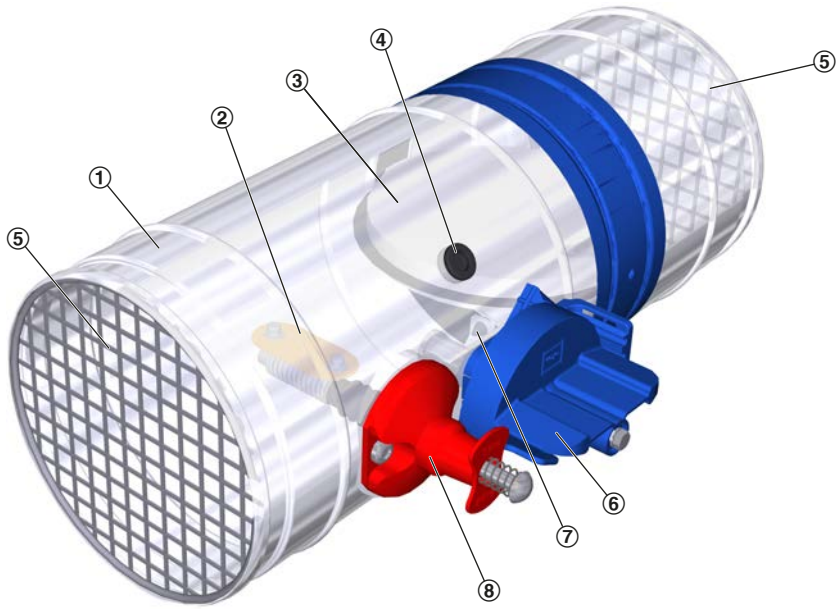
Design with spring return actuator and duct smoke release device in a round air duct



1. Casing
2. Damper blade with sealing ring
3. Inspection access (12 mm)
4. Lip seal
5. Spring return actuator
6. Travel stop for CLOSED position
7. Thermoelectric release mechanism with temperature sensor
8. Smoke detector RM-O-3-D (fastening in the angular air duct, on-site)
9. T-piece or saddle connector, on site

The spring return actuator enables the motorised closing of the damper blade. In the event of a fire, the damper is triggered thermoelectrically at 72 °C. Using the damper together with a suitable duct smoke detector, e.g. RM-O-3-D, prevents smoke from being transferred via ductwork into adjacent fire compartments even before it reaches a temperature that would trigger the thermoelectric release mechanism. The duct smoke detector must be installed on site in an angular duct. Alternatively, the installation can be carried out on site in a circular duct, in a T-piece. The duct smoke detector must always be positioned at the top. Different positioning is possible, as long as you comply with the general building inspectorate licence/ general type certification for the duct smoke detector. As long as power is supplied to the actuator and as long as no smoke is detected, the fire damper remains open. Interruption of the supply voltage, smoke detection, and exceeding the release temperature cause the fire damper to close (closed current principle). Motorised fire dampers can be used to shut off ducts. The torque of each actuator is sufficient to open and close the damper blade even while the fan is running. The spring return actuator is fitted with limit switches that can be used as indicators for the damper blade position. The control input signal can also come from the central BMS.

Construction with fusible link and cover grille as an air transfer damper

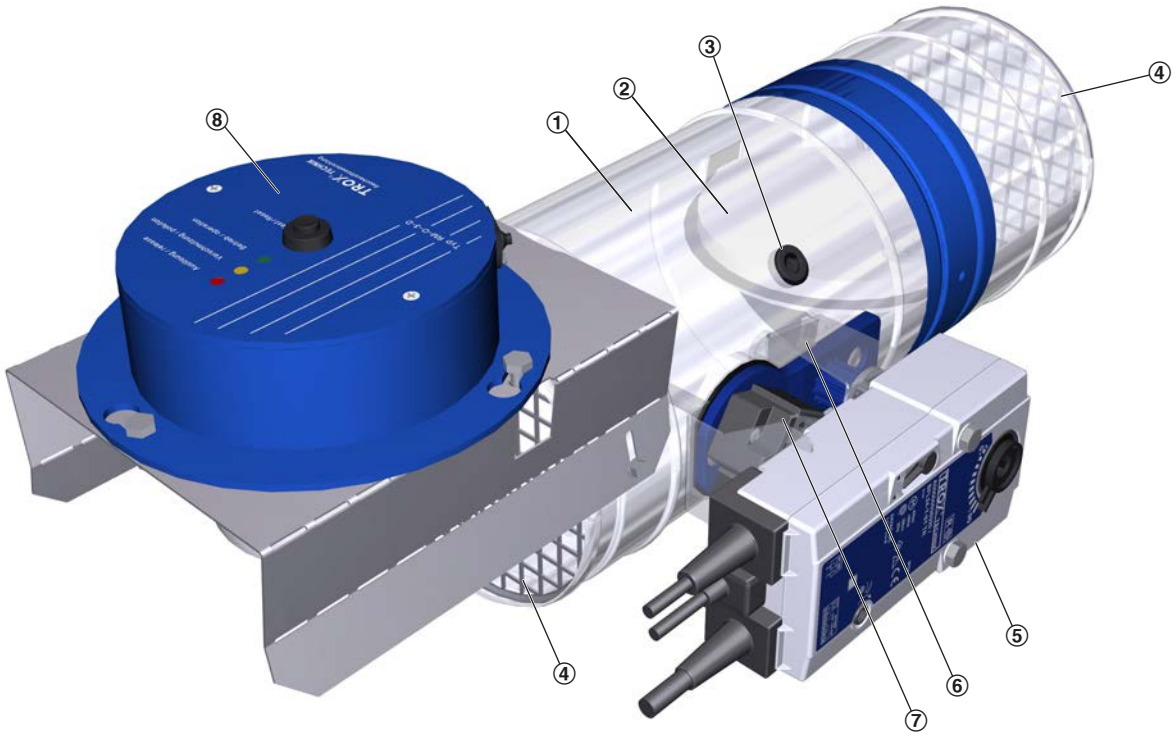


1. Casing
2. Fusible link
3. Damper blade with sealing ring
4. Inspection access (12 mm)
5. Cover grille
6. Handle and damper blade position indicator
7. Travel stop for CLOSED position
8. Thermal release mechanism

Air transfer units prevent fire and smoke from spreading in buildings. The thermal release mechanism closes the air transfer unit when the release temperature (72 °C) is reached. Smoke can, however, spread below this temperature.
The air transfer unit consists of the FKRS-EU fire damper with thermal release mechanism 72 °C and cover grilles on both sides; it does not include a duct smoke detector.

For installation in Germany, please note:
If a fire damper with only a mechanical shut-off element is to be used as an air transfer unit, the local building regulations apply. Such air transfer units are usually used in pressure differential systems only.

Version with spring return actuator and duct smoke detector, as air transfer damper



1. Casing
2. Damper blade with sealing ring
3. Inspection access (12 mm)
4. Cover grille
5. Spring return actuator
6. Travel stop for CLOSED position
7. Thermoelectric release mechanism with temperature sensor
8. Duct smoke detector RM-O-3-D (fixed with bracket)

Air transfer dampers are designed to shut off openings for air transfer in fire-resistant internal walls and ceiling slabs. To prevent smoke from spreading in buildings, it is important that the smoke is detected at an early stage. Duct smoke detector Type RM-O-3-D is required to control and trigger the air transfer damper. The duct smoke detector operates on scattered light principle, and detects smoke regardless of its temperature so that air transfer dampers will close even before the release temperature is reached. The thermoelectric release mechanism of the spring return actuator also triggers the closure of the damper blade. When the release temperature (72 °C) is reached, the temperature sensor in the airflow interrupts the supply voltage to the spring return actuator.
The smoke detector type RM-O-3-D is to be positioned at the top of a console on the drive side (different positioning on request). The spring return actuator now causes the air transfer damper to close (closed current principle). A second temperature sensor monitors the ambient temperature. If the supply voltage fails, the air transfer damper also closes. The air transfer dampers with general building inspectorate licence Z-6.50.2016 consist of: one FK2-EU fire damper, one RM-O-3-D duct smoke detector (with general building inspectorate licence Z-78.6-125), one spring return actuator (24 V AC/DC or 230 V AC) with two integrated limit switches, and cover grilles on both ends.

Technical data

Nominal sizes	100 – 315 mm
Casing length	400 mm
Volume flow rate range	Up to 770 l/s / up to 2770 m³/h
Differential pressure range	Up to 1500 Pa
Temperature range [1, 3, 4]	-20 to 50 °C
Release temperature	72 °C or 95 °C (for warm air ventilation systems)
Upstream velocity [2]	≤ 8 m/s with standard version; ≤ 10 m/s version with spring return actuator

[1] Temperatures may differ for units with attachments. Details for other applications are available on request.

** Data apply to uniform upstream and downstream conditions of the fire dampers

* For FKRS-EU in Ex version, see supplementary operating instructions

[3] Non-condensing operation and without moisture entry via the outdoor air intake.

Free cross sections and Zeta values

	NS									
	100	125	150	160	180	200	224	250	280	315
A [m²]	0.005	0.009	0.014	0.016	0.021	0.027	0.033	0.042	0.053	0.069
ζ	1.71	1.08	0.76	0.67	0.54	0.44	0.56	0.45	0.36	0.28

Quick sizing

Quick sizing tables provide a good overview of the possible volume flow rates at certain different sound power levels, at a differential pressure of up to 35 Pa. Approximate intermediate values can be interpolated. Precise intermediate values can be calculated with our Easy Product Finder design program. The Easy Product Finder can be found on our website: www.trox.de/mytrox/auslegungsprogramm-easy-poduct-finder-182e16348fac3d33

Volume flow rate qv for differential pressure Δpst < 35 Pa

L_{WA} [dB(A)]	NS									
	100	125	150	160	180	200	224	250	280	315
25 [l/s]	22	40	70	80	105	140	170	215	280	360
35 [l/s]	35	65	105	125	165	210	245	315	405	525
45 [l/s]	43	87	150	180	235	295	345	445	570	735
25 [m³/h]	79	144	252	288	388	504	612	774	1008	1296
35 [m³/h]	126	234	378	450	587	756	882	1134	1458	1890
45 [m³/h]	157	315	540	648	847	1062	1242	1602	2052	2646

Sizing example

Given data
Volume flow rate: 500 m³/h
Sound power level: ≤ 35 dB(A)

Quick sizing
FKRS-EU/180

Specification text

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

Specification text

Circular fire damper that meets the requirements of the European product standard EN 15650. Tested for fire resistance properties to EN 1366-2 (negative pressure of 300 Pa and 500 Pa), with CE marking.
With the Declaration of Performance (DoP), the fire damper manufacturer provides evidence of the respective installation conditions, such as in, on and away from walls or ceilings, with the essential features such as size, supporting structure, type of construction and installation and the respective associated performance classes according to classification standard DIN EN 13501-3.
The ready-to-use unit contains a release device and a replaceable, fire-resistant damper blade that can be arranged with installation position 0 - 360 degrees depending on the use.
Classification (depending on application):
EI 30 (ve, ho i ↔ o) S to EI 120 (ve, ho i ↔ o) S.

Geeignet zum:

Mortar-based installation

- In solid walls, also with partial mortar lining, as well as in walls made of gypsum wallboards
- In non-load-bearing solid walls with flexible ceiling joint
- In lightweight walls, fire walls, safety partition walls and radiation protection walls with metal studs or steel substructure and cladding on both sides
- In timber stud walls and timber frame walls as well as in solid wood and cross laminated timber walls
- In shaft walls with metal support structure and cladding on one side
- In solid ceilings and in concrete bases on solid ceilings
- In hollow core slabs, hollow concrete block ceilings, composite ceilings and ribbed ceilings
- In combination with wooden beam ceilings, solid wood ceilings and lightweight ceilings (Cadolto and ADK Modulraum systems)
- In solid wood ceilings, wooden beam ceilings and historic wooden beam ceilings
- Combined installation with FK2-EU in solid walls and ceilings, lightweight walls, shaft walls as well as timber stud walls and timber frame walls (up to 1.2 m² total fire damper area)
- Multiple occupancy up to 1.2m² total fire damper area in solid walls and ceilings, lightweight walls as well as shaft walls

Dry mortarless installation

- In solid walls and ceiling slabs with installation block ER
- In solid walls, lightweight walls, fire walls, safety partition walls and radiation protection walls with metal stud frame or steel substructure and cladding on both sides, with installation kit TQ2
- Dry mortarless installation without installation kit in lightweight partition walls with metal support structure and cladding on both sides
- With installation kit GL2, In lightweight partition walls with metal support structure and cladding on both sides, during wall construction
- In lightweight partition walls and compartment walls with metal support structure, cladding on both sides and flexible ceiling joint, with installation kit GL2
- In timber stud walls and half-timbered constructions with cladding on both sides, also in solid wood walls, with installation kit TQ2
- In shaft walls with or without metal support structure and cladding on one side, with installation kit TQ2
- On solid walls as well as on shaft walls with and without metal studs and planking on one side, with installation kit WA2
- In solid wood and wooden beam ceilings as well as lightweight ceilings (ADK Modulraum system), with installation kit TQ2
- Remote from solid walls and ceiling slabs (horizontal duct) and remote from lightweight partition walls with metal support structure and cladding on both sides, with installation kit WE2
- Away from solid walls, lightweight walls with metal studs and cladding on both sides, as well as timber stud and timber frame walls and solid wood walls with mineral wool insulation

Coated board system installation

- In solid walls and ceilings with coated board system, also multiple occupancy
- In lightweight walls, fire walls, safety partition walls and radiation protection walls with metal studs or steel substructure and cladding on both sides, also multiple occupancy, as well as in shaft walls with metal studs with coated board system
- In timber stud and timber frame walls and cladding on both sides, also multiple occupancy, as well as solid timber walls with coated board system

Other (in Germany: buidling approval required)
- In solid walls, lightweight walls with metal and wooden studs, solid wood walls and sandwich panels with HILTI fire protection blocks CFS-BL (stone bulkhead)
- Mixed installation with cable and pipe penetrations (combined penetration seal) in solid walls, lightweight walls with metal and wooden studs and solid wood walls
- Mixed installation with cable penetrations in HILTI fire stop blocks CFS-BL (stone bulkhead) in solid walls, lightweight walls with metal and wooden studs, solid wood walls and sandwich panels

Sizes: 100, 125, 150, 160, 180, 200, 224, 250, 280, 315 mm
Optimised low-leakage casing, up to leakage class C to EN 1751 with low differential pressure and low sound power level.
Damper casing made of galvanised sheet steel, optionally galvanised sheet steel with powder coating RAL 7001, or stainless steel 1.4301. Damper blade made of special insulating material, optionally with impregnation. Corrosion protection according to EN 15650 in connection with EN 60068-2-52 Meets the hygienic requirements according to VDI 6022-1, VDI 3803-1, DIN 1946-4, DIN EN 16798-3 as well as the Ö-Norm H 6020 and H 6021 and the SWKI.
Casing length 400 mm, for the connection to ducts made of non-combustible or combustible materials. Thermal release at 72 °C or 95 °C (warm air ventilation systems) with a fusible link or thermoelectrically with a spring return actuator, push button and indicator light (LED). Versions with a brushless spring return actuator for opening and closing the fire damper, also when the ventilation system is running and regardless of the nominal size, are particularly suitable for functional checks or daily shut-offs of duct sections. A spring return actuator can be retrofitted from the outside without modifying the linkage.
Explosion-proof constructions for zones 1, 2, 21 and 22 with spring return actuator.

Special features
- Declaration of Performance according to the European Construction Products Regulation
- Classification according to EN 13501-3, up to EI 120 (v_e, h_o i ↔ o) S
- Complies with the European product standard EN 15650
- Tested for fire resistance properties in accordance with EN 1366-2 (300 Pa and 500 Pa negative pressure)
- Certified wet installation with reduced distances of 40 mm to load-bearing components or 10 mm between 2 fire dampers
- Surrounding gap dimensions in the mortar-based installation with mortar up to 225 mm permitted
- Inspection opening (12 mm)
- Meets the hygienic requirements according to VDI 6022-1, VDI 3803-1, DIN 1946-4, DIN EN 16798-3 as well as Ö-Norm H 6020 and H 6021 and SWKI
- Corrosion protection according to EN 15650 in connection with EN 60068-2-52
- Air leakage with closed damper blade acc. to EN 1751, class 3
- Casing air leakage acc. to EN 1751, class C
- Low differential pressure and sound power level
- Any airflow direction
- Integration into the building management system with the international standard fire damper system according to IEC 62026-2 with AS interface is possible

Technical data
- Nominal sizes: 100 to 315 mm
- Casing length: 400 mm
- Volume flow rate range: up to 770 l/s (2770 m³/h)
- Differential pressure range: up to 1500 Pa
- Temperature range: -20 - 50 °C *
- Upstream velocity **: Standard version ≤ 8 m/s, version with spring return actuator ≤ 10 m/s, version with Ex actuator ExMax/RedMax-15-BF TR ≤ 10 m/s

* For FKRS-EU in Ex version, see supplementary operating instructions
** Data apply to uniform upstream and downstream conditions of the fire dampers

Materials and surfaces
Casing:
- Galvanised sheet steel
- Galvanised sheet steel, powder-coated RAL 7001
- Stainless steel 1.4301

Damper blade:
- Special insulation material
- Special insulation material with impregnation
- Replaceable damper blade (from NS 180 mm)

Other components:
- Damper blade shaft made of galvanised steel or stainless steel
- Plastic plain bearings
- Elastomer seals

The design variants made of stainless steel or with powder-coated casings meet increased requirements for corrosion protection. Detailed resistance lists upon request.

Equivalence criteria

- The Declaration of Performance in accordance with the Construction Products Regulation describes all CE-certified installation types, including the performance class up to EI 120 S in accordance with EN 13501-3 and the essential characteristics of at least the permissible size and supporting structure
- Meets the hygienic requirements according to VDI 6022-1, VDI 3803-1, DIN 1946-4, DIN EN 16798-3 as well as Ö-Norm H 6020 and H 6021 and SWKI
- CE-marked and thus fire tested according to EU regulation 305/2011 and assessed according to Machinery Directive 2006/42/EC and ATEX Directive 2014/34/EU
- CE-certified mortar-based installation at a distance ≥ 10 mm between 2 fire dampers
- Pressure loss < 10 Pa with reference size 315 mm and 6 m/s face velocity
- Sound power < 35 dB (A) with reference size 315 mm and 6 m/s face velocity
- Combined mortar-based installation with fire dampers of the FK2-EU type in solid walls, lightweight walls with cladding on both sides, timber stud and timber frame walls as well as solid ceilings
- Multiple occupancy up to 1.2 m² total fire damper area in solid walls and ceilings

Order code

Order code FKRS-EU

FKRS-EU – 2-7 / DE / 200 / TQ2 / SS / ZL09
1 2 3 4 5 6 7

1 Type
FKRS-EU Fire damper

2 Construction
No entry: standard construction
1 Powder-coated casing, RAL 7001 (silver grey)
2 Stainless steel casing
7 Impregnated damper blade
1-7 powder-coated housing, RAL 7001 (silver-grey) and impregnated damper blade
2-7 Stainless steel casing and impregnated damper blade
W[1] with fusible link 95 °C (only for use in warm air ventilation systems)
B with coated fusible link 72 °C
WB[1] with coated fusible link 95 °C (only for use in warm air ventilation systems)

3 Country of destination
DE Germany
Other destination countries upon request

4 Nominal size [mm]
100, 125, 150, 160, 180, 200, 224, 250, 280, 315

5 Accessories 1
No entry: without accessories
ER Circular installation block
TQ2 Square installation kit
WA2 Wall face frame
WE2 Installation kit for installation away from walls and ceilings
GL2 Installation kit for flexible ceiling joint

6 Accessories 2
No entry: without accessories
A0 – AS

7 Attachment
Z00 – ZEX4

[1] W can be combined with all constructions '2'

Order example: FKRS-EU-2-7/DE/200/TQ2/SS/ZL09

Type	FKRS-EU
Variant	Stainless steel casing and impregnated damper blade
Country of destination	Germany
Nominal size [mm]	200
Accessories 1	Square installation kit
Accessories 2	Flexible connector on operating and installation side
Attachment	Spring return actuator 24 V AC/DC and LON module LON-WA1/B3

Order code for FKRS-EU as an upstream shutter of an air transfer unit

FKRS-EU – 1-7 / DE / 200 / AA / Z03
1 2 3 4 5 6

1 Type
FKRS-EU Fire damper as an upstream shutter of an air transfer unit

2 Construction
No entry: standard construction
1 Powder-coated casing, RAL 7001 (silver grey)
7 impregnated damper blade
1-7 powder-coated casing, RAL 7001 (silver grey), and impregnated damper blade

3 Country of destination
DE Germany
Other destination countries upon request

4 Nominal size [mm]
100, 125, 150, 160, 180, 200, 224, 250, 280, 315

5 Accessories 2
AA Cover grille on operating and installation side

6 Attachment
Z00 – Z03

Order example: FKRS-EU-1-7/DE/200/AA/Z03

Type	FKRS-EU (as an upstream shutter of an air transfer unit)
Variant	powder-coated casing, RAL 7001 (silver grey), and impregnated damper blade
Country of destination	Germany
Nominal size [mm]	200
Accessories 2	Cover grille on operating and installation side
Attachment	Limit switches for damper blade positions CLOSED and OPEN

If the damper is to be used as an air transfer unit in Germany, please note:
If a fire damper with only a mechanical shut-off element is to be used as an air transfer unit, the local building regulations apply. Such applications may require a building inspectorate licence. This must be checked and applied for by the client. Such air transfer units are usually used in pressure differential systems only.

Order code FKRS-EU as air transfer damper

FKRS-EU – 1-7 / DE / 200 / TQ2 / AA / Z43RM
1 2 3 4 5 6 7

1 Type
FKRS-EU Air transfer damper[1]

2 Construction
No entry: standard construction
1 powder-coated casing, RAL 7001 (silver grey)
2 Stainless steel casing
7 Impregnated damper blade
1-7 powder-coated housing, RAL 7001 (silver-grey) and impregnated damper blade
2-7 Stainless steel housing and impregnated damper blade

3 Country of destination
DE Germany
Other destination countries upon request

4 Nominal size [mm]
100, 125, 150, 180, 200, 224, 250, 280, 315

5 Accessories 1
No entry: without accessories
ER circular installation block
TQ2 square installation kit

6 Accessories 2
AA Cover grille on operating and installation side

7 Attachment
Z43RM, Z45RM, ZA12, Z43RMS, Z45RMS

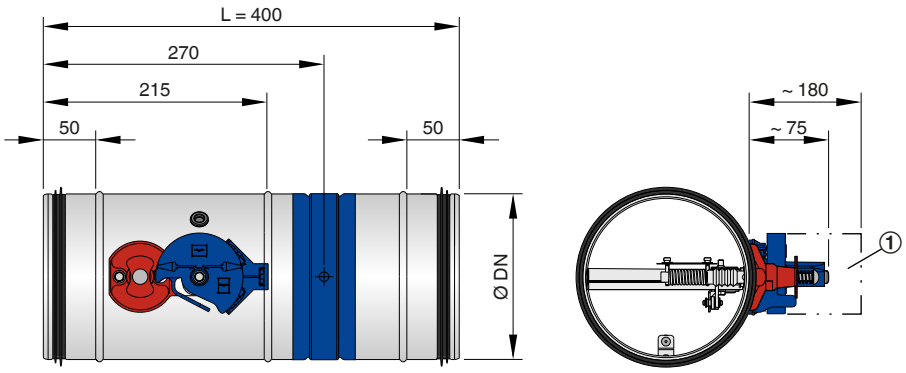
[1] For installation in Germany please note: The use as an air transfer damper has to comply with the general type approval

Order example: FKRS-EU-1-7/DE/200/TQ2/AA/Z43RM

Type	FKRS-EU (as air transfer damper)
Variant	powder-coated casing, RAL 7001 (silver grey), and impregnated damper blade
Country of destination	Germany
Nominal size [mm]	200
Accessories 1	square installation kit
Accessories 2	Cover grille on operating and installation side
Attachment	Spring return actuator 230 V AC with factory mounted and wired duct smoke detector RM-O-3-D as air transfer damper

Dimensions

FKRS-EU with fusible link (FKRS-EU/.../Z0*)



① Keep area free for accessibility of the release mechanism.

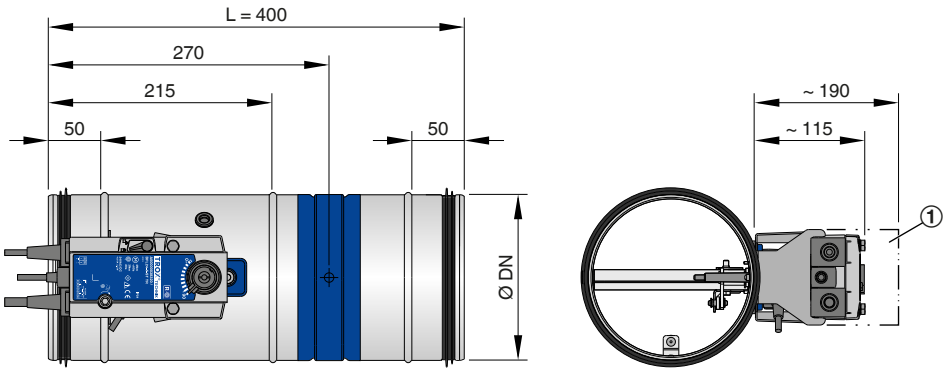
Weight [kg]

	NS									
	100	125	150	160	180	200	224	250	280	315
ØDN [mm]	99	124	149	159	179	199	223	249	279	314
1	1.3	1.6	1.8	2	2.3	2.5	2.7	3.3	3.8	4.4
2	5.7	8.6	7.6	7.3	11	9.8	13.5	12.1	16	15
3	5.4	6.1	7	7.9	8.8	9.7	10.6	12	13.7	15.8
4	4.4	5.2	6.1	6.6	7.4	8.2	9	10.2	11.7	13.6

1 FKRS-EU with fusible link
2 ... and installation block ER
3 ... and installation kit TQ2
4 ... and installation kit WA2, WE2 or GL2

FKRS-EU with Belimo spring return actuator

(FKRS-EU/.../Z4*)

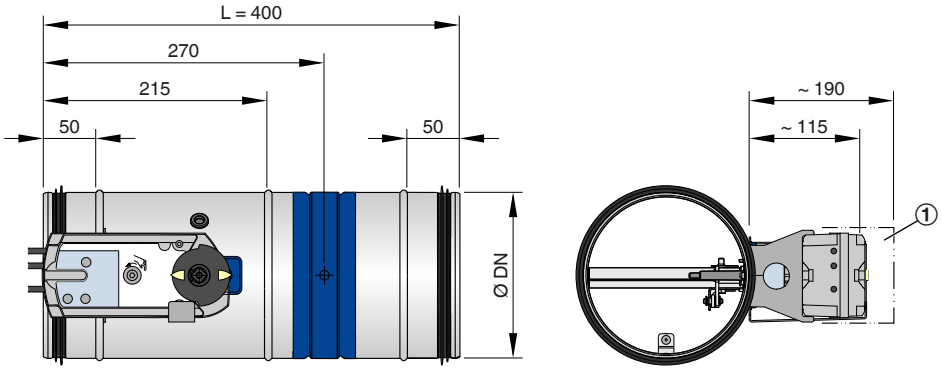


① Keep area free for accessibility of the release mechanism.

Weights FKRS-EU with fusible link + approx. 1 kg, see table Dimensions for FKRS-EU with fusible link.

FKRS-EU with Siemens spring return actuator

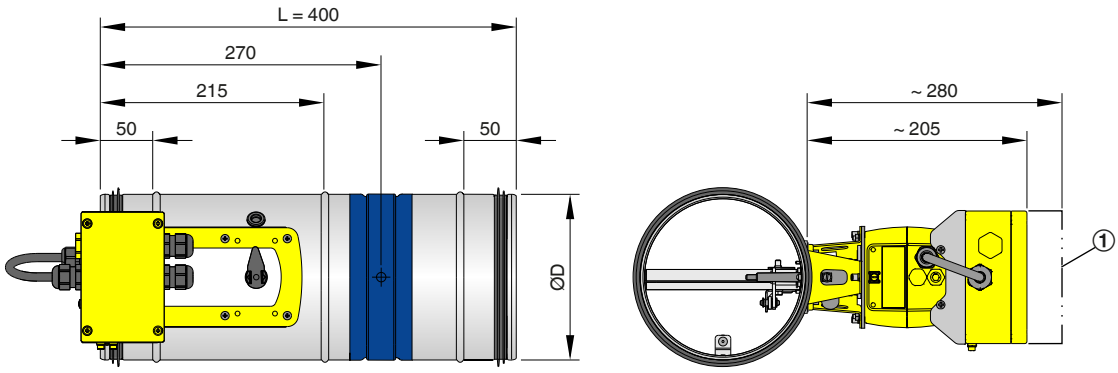
(FKRS-EU/.../Z4*S)



① Keep area free for accessibility of the release mechanism.

Weights FKRS-EU with fusible link + approx. 1 kg, see table Dimensions for FKRS-EU with fusible link.

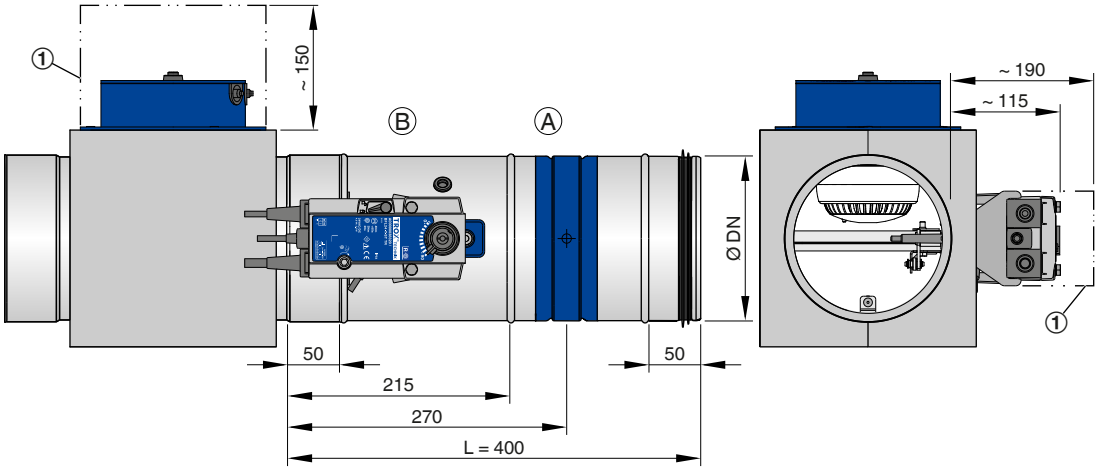
FKRS-EU with spring return actuator in Ex version (FKRS-EU/.../ZEX*)



① Keep area free for accessibility of the release mechanism.

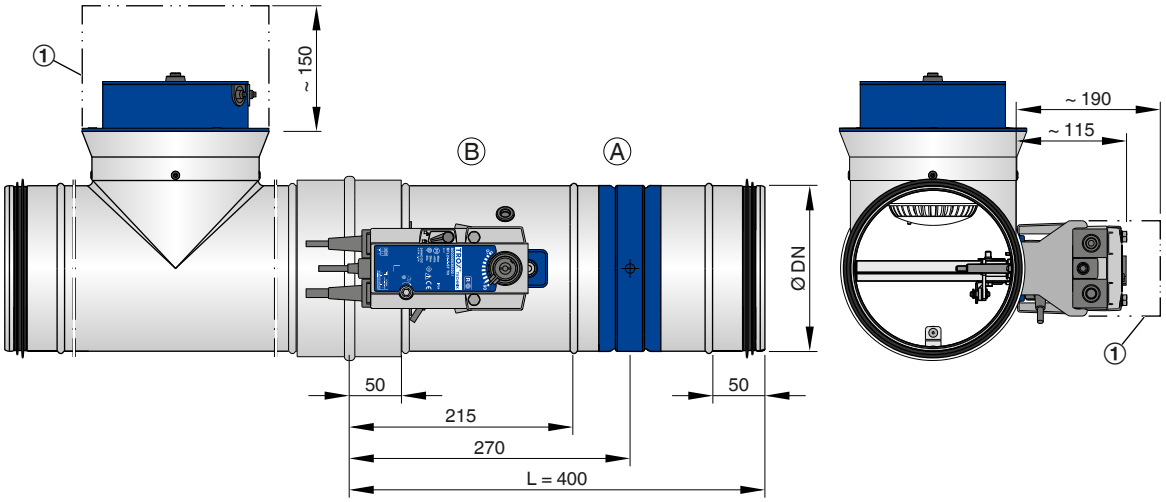
Weights FKRS-EU with fusible link + approx. 3.7 kg, see table Dimensions for FKRS-EU with fusible link, but with spring return actuator in Ex version (FKRS-EU/.../ZEX*).

FKRS-EU with Belimo spring return actuator and duct smoke detector in an angular air duct (FKRS-EU/.../Z4*RM)



① Keep area free for accessibility of the release mechanism.

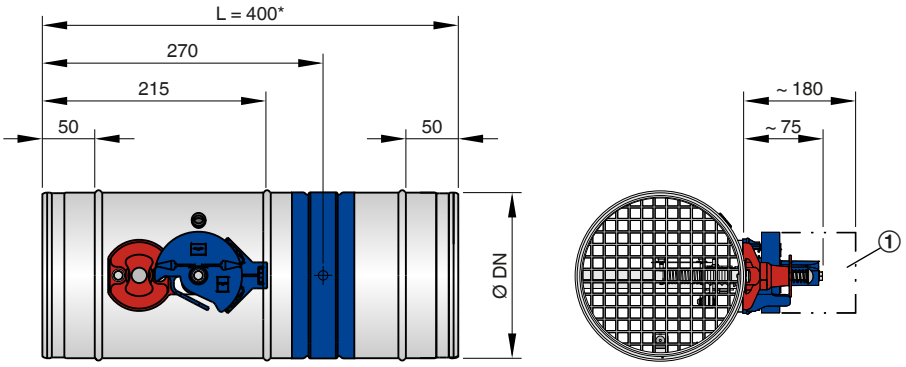
FKRS-EU with Belimo spring return actuator and smoke detector in a round air duct (FKRS-EU/.../Z4*RM)



① Keep area free for accessibility of the release mechanism.

Weights FKRS-EU with fusible link + approx. 1 kg, see table Dimensions for FKRS-EU with fusible link (without angular air duct/T-piece and without RM-O-3-D).

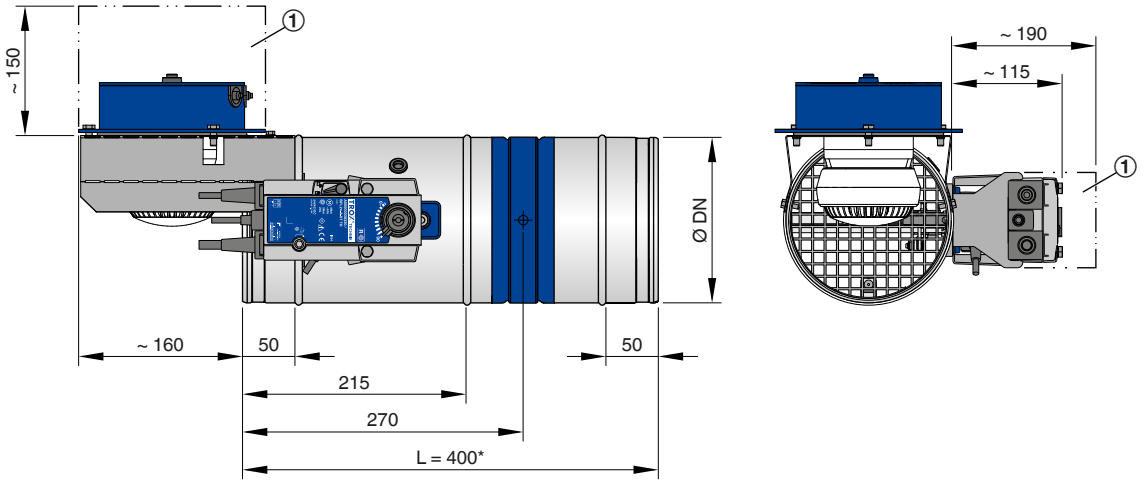
FKRS-EU with fusible link and cover grille (FKRS-EU/.../AA/Z0*) as an upstream shutter of an air transfer unit



① Keep area free for accessibility of the release mechanism.

Weights FKRS-EU with fusible link (without cover grille), see table Dimensions for FKRS-EU with fusible link.

FKRS-EU with Belimo spring return actuator, duct smoke detector and cover grille (FKRS-EU/.../AA/Z4*RM) as air transfer damper



① Keep area free for accessibility of the release mechanism.

Weights FKRS-EU with fusible link (without end grille and extension piece) + approx. 2.5 kg, see table Dimensions for FKRS-EU with fusible link.
* From nominal size 224, an extension part is required on the installation side.

Accessories 1 – installation block ER

Application

- Circular installation block ER for dry mortarless installation into solid walls and ceiling slabs
- Installation openings can be made with commercially available core drills (ØD1)
- The unit is installed without a mortar mix by simply inserting it into the prepared installation opening
- The installation block is factory mounted to the fire damper
- In the event of a fire the intumescent seal closes the remaining gap.
- A cover plate conceals any gaps and is used for screw fixing

Materials and surfaces

- Installation block from sheet steel with special joint sealing compound
- Cover plate and casing of the installation block made of galvanised sheet steel (and powder-coated silver grey, RAL 7001, when used with powder-coated (1) and stainless steel (2) dampers)

Note

For further information relevant to design, in particular information on installation situations, please refer to the operating and installation manual.

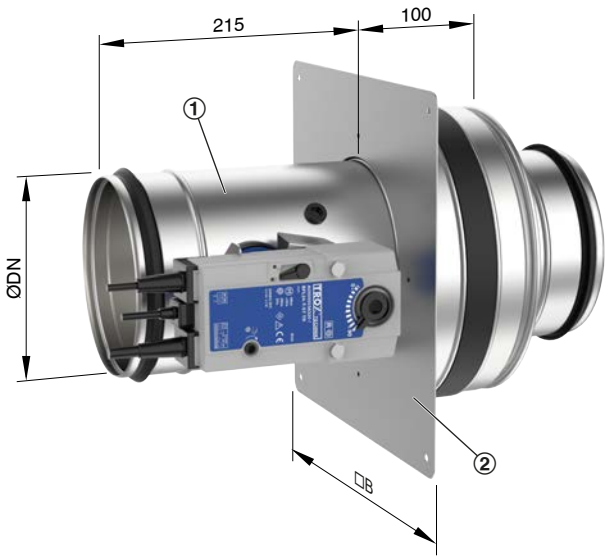
Accessories 1	Order code
Circular installation block	ER

Dimensions of the core hole/cover plate [mm]

	NS									
	100	125	150	160	180	200	224	250	280	315
ØD1 [1]	200	250	250	250	300	300	350	350	400	400
□B	250	300	300	300	350	350	400	400	450	450

[1] Diameter of core drilling in solid walls and ceilings

FKRS-EU with installation block ER



① FKRS-EU
② Installation block ER with cover plate

Weights for FKRS-EU with fusible link and installation block ER, see dimensions/table weights

Accessories 1 – installation kit TQ2

Application

- Square installation kit TQ2 for dry mortarless installation in solid walls, lightweight partition walls, compartment walls and radiation protection walls with metal support structure or steel support structure and cladding on both sides. Also for installation in solid wood ceilings and wooden beam ceilings, as well as in lightweight ceilings (ADK Modulraum system), in wooden stud frame and wooden framework walls with cladding on both sides as well as solid wood walls and in shaft walls with and without metal stud frame with cladding on one side.
- Installation kit TQ2 is supplied separately and has to be installed on site. The installation kit can also be supplied subsequently and attached to the fire damper.
- Installation without mortar by simply sliding it into the prepared installation opening
- In the event of a fire, the intumescent seal closes the remaining gap.
- A cover plate conceals any joints and is used for screw fixing

Materials and surfaces

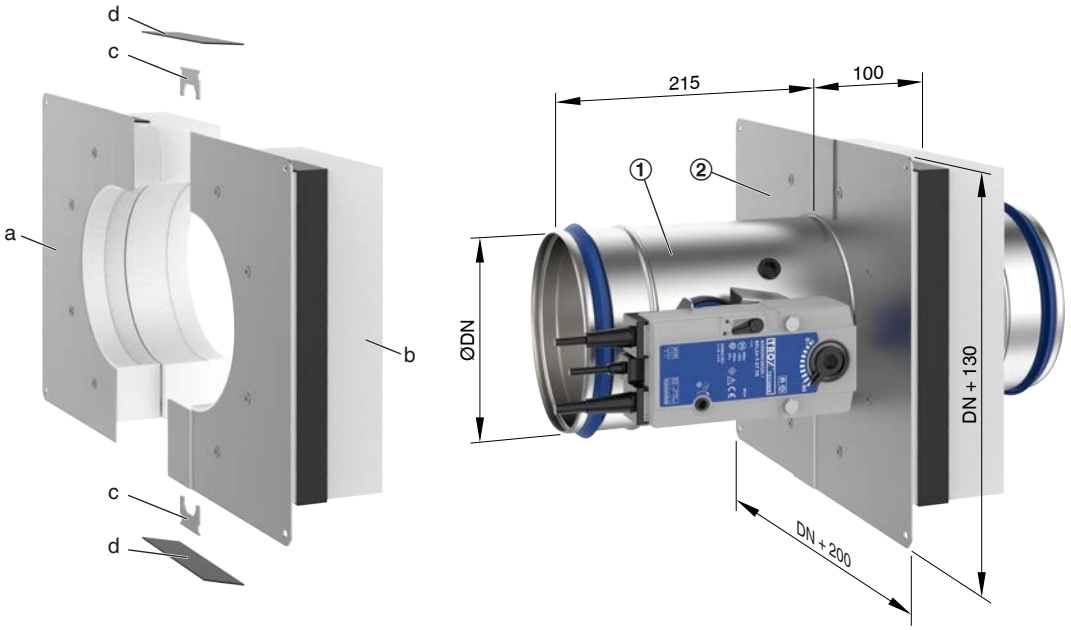
- Installation kit made of calcium silicate
- Cover plate of the installation kit made of galvanised sheet steel (and powder-coated silver grey, RAL 7001, for versions powder-coated (1) and stainless steel (2))

Note

For further important information, in particular for installation situations, please refer to the operating and installation manual.

Accessories 1	Order code
Square installation kit	TQ2

FKRS-EU with installation kit TQ2



① FKRS-EU
② Installation kit TQ2, consisting of:
a Shell Part 1
b Shell Part 2
c Connecting clip (2 ×)
d Intumescent seal (2 strips)

Weights for FKRS-EU with fusible link and installation kit TQ2, see dimensions/table weights

Accessories 1 – installation kit WA2

Application

- For direct installation (dry mortarless installation) on the face of solid walls and shaft walls with and without metal support structure and cladding on one side, fire dampers FKRS-EU with installation kit are required
- The installation kit WA2 is supplied separately and must be installed by the customer. The installation kit can also be supplied subsequently and mounted on the fire damper.
- The unit is installed without mortar

Materials and surfaces

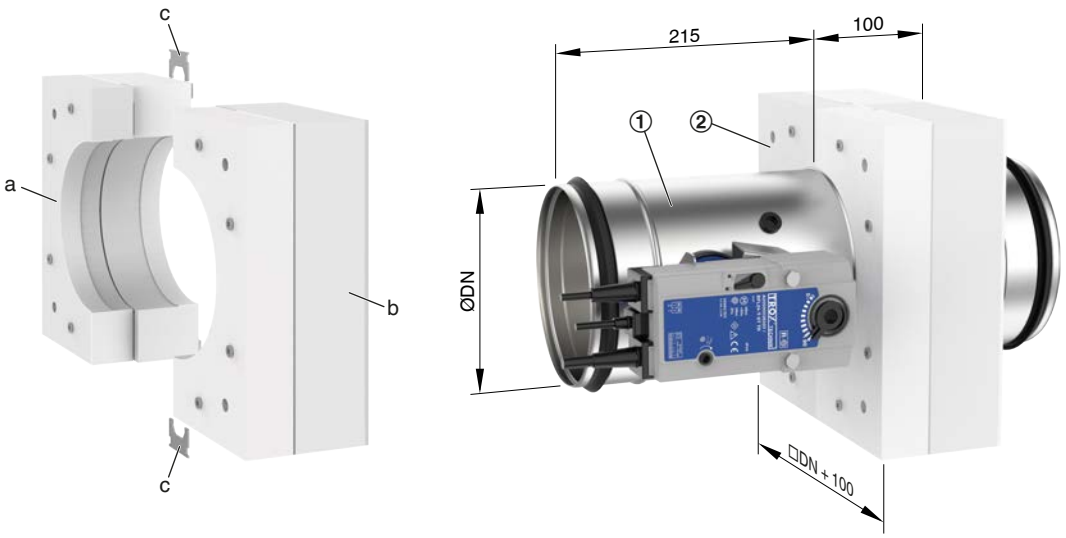
- Installation kit made of calcium silicate

Note

For further information relevant to design, in particular information on installation situations, please refer to the operating and installation manual.

Accessories 1	Order code
Installation kit	WA2

FKRS-EU with installation kit WA2



① FKRS-EU
② Installation kit WA2, consisting of:
a Shell part 1 with Kerafix sealing tape
b Shell part 2 with Kerafix sealing tape
c Connecting clip (2 ×)

Weights for FKRS-EU with fusible link and installation block WA2, see Dimensions/table Weights

Accessories 1 – installation kit WE2

Application

- For installation (dry mortarless installation) remote from solid walls or ceilings (below or above the ceiling with horizontal ducting) and remote from lightweight partition walls with cladding on both sides, an installation kit is required
- The installation kit WE2 is supplied separately and must be installed on site. The installation kit can also be supplied subsequently and attached to the fire damper.
- Assembly and installation on site; required parts to be provided by others
- Fire damper and fire-resistant cladding of the sheet steel duct, the connection to the solid wall or ceiling as well as the duct penetration through solid walls or lightweight walls with cladding on both sides must be installed and fastened in accordance with the installation and operating instructions and supplementary installation instructions WE2.

Materials and surfaces

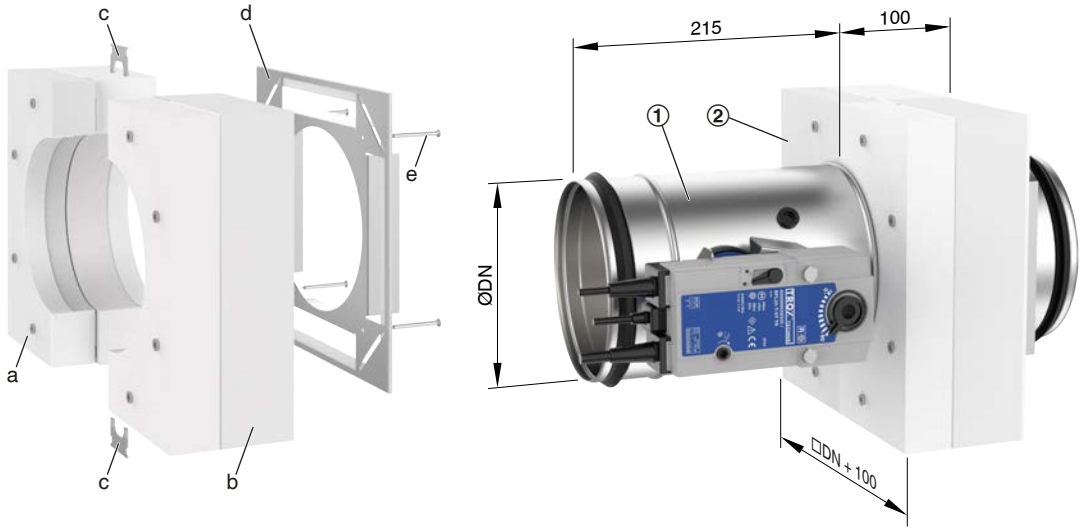
- Installation kit made of calcium silicate with sheet metal cover on the back with Kerafix sealing tape

Note

The installation and operating instructions as well as the supplementary installation instructions WE2 contain further information that is important for planning, in particular for installation situations.

Accessories 1	Order code
Installation kit	WE2

FKRS-EU with installation kit WE2



① FKRS-EU
② Installation kit WE2, consisting of:
a Shell Part 1
b Shell Part 2
c Connecting clip (2 ×)
d Sheet metal cover with Kerafix sealing tape
e Dry wall screw

Weights for FKRS-EU with fusible link and installation block WE2, see Dimensions/table Weights

Accessories 1 – installation kit GL2

Application

- Installation kit required for: dry mortarless installation in lightweight partition walls, compartment walls and safety partition walls with metal support structure, cladding on both sides, and with flexible ceiling joint (dry mortarless installation) directly underneath solid ceiling slabs
- The installation kit provides a flexible connection around the fire damper
- Distance between ceiling and installation kit may be 0 – 180 mm (filler strips to be provided by others)
- The installation kit GL2 is supplied separately and must be installed on site. The installation kit can also be supplied subsequently and attached to the fire damper.
- The installation kit can be adapted to various wall thicknesses using cut-to-size fire-rated plasterboard panels
- The installation kit GL2 can also be used for installation during wall construction, in lightweight walls with metal support structure and cladding on both sides

Materials and surfaces

- Installation kit made of special insulation material
- Fixing brackets made of galvanised sheet steel

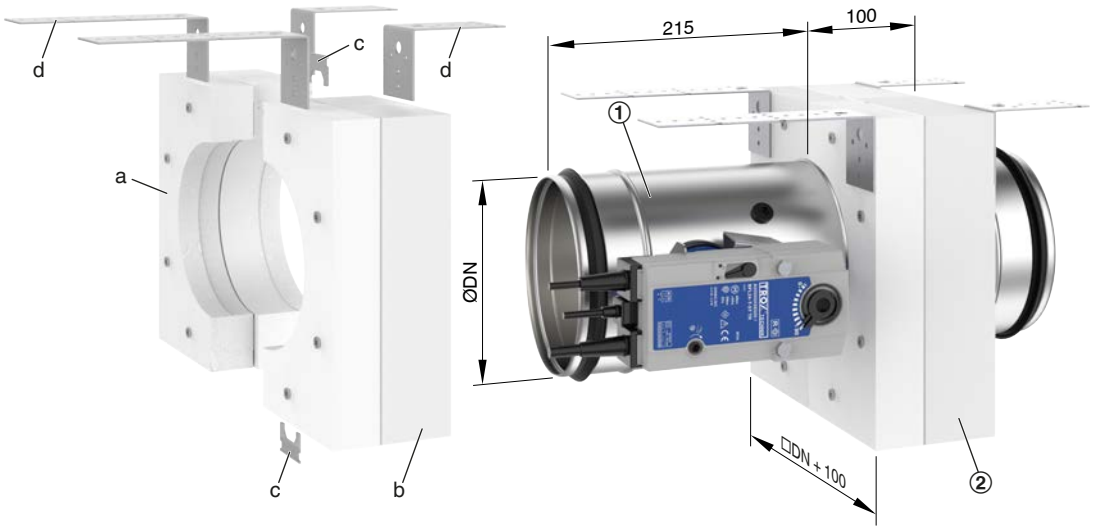
Note

For further important information, in particular information on installation situations, please refer to the operating and installation manual as well as to the supplementary GL2 installation manual.

Accessories 1	Order code	Wall thickness [mm]
Installation kit	GL2	100 – 235 mm [1]

[1] Bauseitige Anpassung des Einbausatzes an die jeweilige Wanddicke

FKRS-EU with installation kit GL2



① FKRS-EU
② Installation kit GL2, consisting of:
a Shell Part 1
b Shell Part 2
c Connecting clip (2 ×)
d Bracket

Weights for FKRS-EU with fusible link and installation block GL2, see dimensions/table weights

Accessories 2 – cover grille

Application
- If only one end is connected to the air duct, the other end must have a cover grille.
- If no air duct is connected (air transfer unit or air transfer damper), cover grilles are required on both sides.

Notes
- When using cover grilles, an extension piece is required on the installation side from a nominal size of 224
- Fire damper, cover grilles and, if applicable, extension piece are factory assembled to form a unit
- The free area of the cover grille is approx. 70%
- Cover grilles are also available separately
- Fire dampers with cover grilles are supplied without lip seal
- When using the FKRS-EU as an upstream shutter for an air transfer unit, cover grilles are required on both ends
- When using the FKRS-EU as an air transfer damper in accordance with general type approval Z-6.50-2516, cover grilles are required on both ends
- For further important information, in particular on installation situations, please refer to the operating and installation manual.

Materials and surfaces
- Cover grilles and extension piece made of galvanised sheet steel (and with powder coating silver-grey (RAL 7001) for variants powder coating (1) and stainless steel (2))
- Mesh aperture 10 mm × 10 mm, wire width 2 mm

For installation in Germany, please note:
- If a fire damper is to be used as an air transfer unit, the local building regulations apply. Such air transfer units are usually only used for pressure differential systems.
- Use as an air transfer damper with cover grilles on both sides, spring return actuator and duct smoke detector according to general type approval Z-6.50-2540

Cover grilles for FKRS-EU

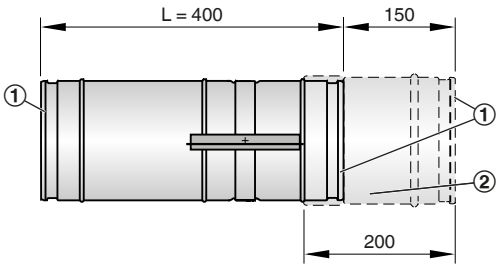
Operating side	Installation side	Order code
Cover grilles	–	A0
–	Cover grilles	0A
Cover grilles	flexible connector	AS
flexible connector	Cover grilles	SA
Cover grilles	Cover grilles	AA *

* AA for FKRS-EU as upstream shutter of an air transfer damper and air transfer damper according to general type approval Z-6.50-2516.

Cover grille

① Cover grille, mesh aperture 10 mm × 10 mm, wire width 2 mm; approx. 1 mm thick
② Extension piece required for nominal size 224 and above

Cover grille



① Cover grille, mesh aperture 10 × 10 mm, wire width 2 mm, approx. 1 mm thick
② Extension piece required for nominal size 224 and above

Accessories 2 – flexible connector

Application

- To limit forces due to line expansion and wall deformation in the event of a fire, we recommend using flexible connectors for the following applications: installation in lightweight partition walls, in lightweight shaft walls, in lightweight compartment walls and in coated board systems

Notes

- Air ducts must be installed in such a way that no significant forces act on the fire damper in the event of a fire. Be sure to comply with the relevant national guidelines and regulations regarding load limits.
- Flexible connectors should be installed in a way that both ends can absorb both tension and compression
- Flexible ducts can be used as an alternative
- When using elastic connecting pieces, an extension piece is required on the installation side from nominal size 224 upwards
- Flexible connectors are supplied separately and can be fixed with hose clamps (on site)
- Flexible connectors are also available separately
- For further important information, in particular on installation situations, please refer to the operating and installation manual.

Materials and surfaces

- Flexible connectors made of fabric-reinforced plastic (fire behaviour according to DIN 4102; B2)

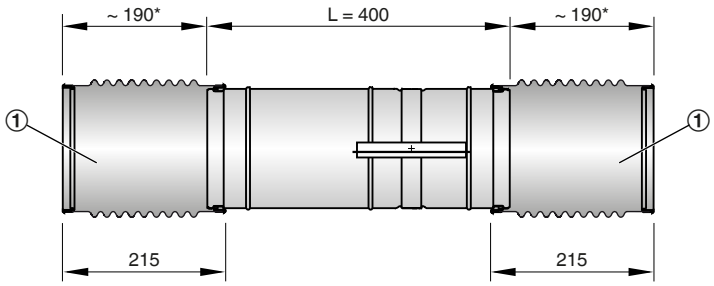
Operating side	Installation side	Order code
flexible connector	–	S0
–	flexible connector	0S
flexible connector	flexible connector	SS
flexible connector	Cover grilles	SA
Cover grilles	flexible connector	AS

Flexible connector

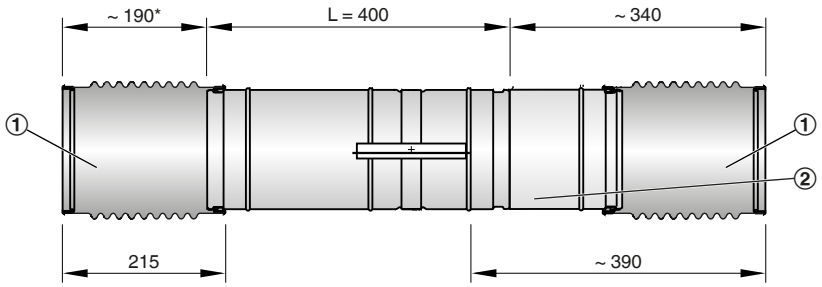
① Flexible connector
② Extension piece required for nominal size 224 and above

Flexible connector

Up to nominal size 200

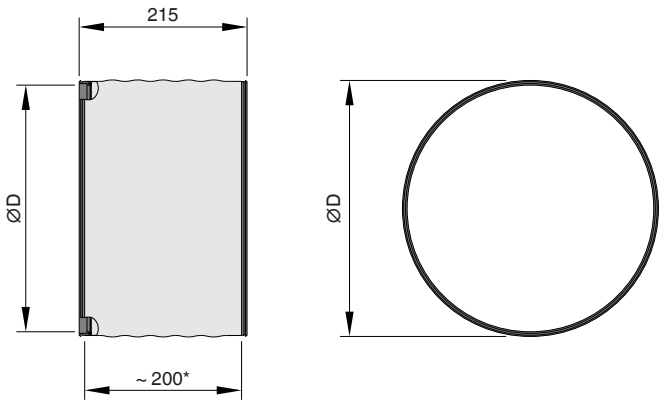


From nominal size 224



① Flexible connector
② Extension piece
* flexible length ≥ 100 mm when installed

Flexible connector



* flexible length ≥ 100 mm when installed

① Flexible connector
② Extension piece required for nominal size 224 and above
* flexible length ≥ 100 mm when installed

Accessories 2 – extension piece

Application

- Due to the design, when using cover grilles, flexible connectors, moulded parts, etc., an extension piece is required on the installation side from a nominal size of 224

Notes

- The movement of the damper blade must not be obstructed. The minimum distance between the open damper blade and the closing grille or the flexible connector should not be less than 50 mm
- Fire dampers with flexible connectors and cover grilles are supplied with an extension piece on the installation side from a nominal size of 224
- Extension pieces are also available separately
- For further important information, in particular on installation situations, please refer to the operating and installation manual.

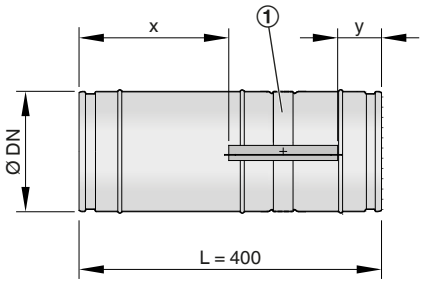
Materials and surfaces

- Extension piece, length 200 mm, made from galvanised sheet steel (additionally with silver grey powder coating (RAL 7001) in variants with powder coating (1) and stainless steel (2))

Extension piece

① Extension piece required for nominal size 224 and above

FKRS-EU Open blade protrusion



① FKRS-EU

Open blade protrusion [mm]

NS	100	125	150	160	180	200	224	250	280	315
x	-220	-208	-195	-190	-180	-170	-158	-145	-130	-113
y	-80	-67.5	-55	-50	-40	-30	-18	-5	10	27.5

① x [mm]
② y [mm]

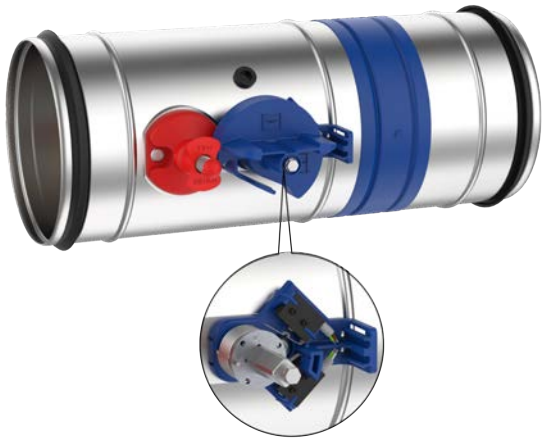
Attachment– limit switch

FKRS-EU (variant with fusible link) with limit switch

- Limit switches with volt-free contacts can indicate the damper blade position
- Up to the maximum switch rating, relays or indicator lights for fire alarm systems can be used
- One limit switch each is required for damper blade positions OPEN and CLOSED
- Fire dampers with a fusible link can be supplied or retrofitted with one or two limit switches (a conversion kit is required for a retrofit).
- For the technical data and wiring examples, see the installation and operating manual for FKRS-EU

Attachment	Order code
Limit switch for damper blade position CLOSED	Z01
Limit switch for damper blade position OPEN	Z02
Limit switches for damper blade positions CLOSED and OPEN	Z03

FKRS-EU (variant with fusible link) with limit switch



Attachment – spring return actuator

FKRS-EU with spring return actuator

- A spring return actuator allows for the remote control of the fire damper and/or release by a suitable duct smoke detector
- If the supply voltage fails, or with thermoelectric release, the damper closes (closed circuit principle)
- Motorised fire dampers can be used to shut off ducts.
- Two integrated limit switches with volt-free contacts can indicate damper blade positions OPEN and CLOSED
- The connecting cables of the 24 V spring return actuator are fitted with plugs. This ensures quick and easy connection to the TROX AS-i bus system. Without automation components, the 24 V connection is made with a safety transformer (provided by others)
- A conversion kit is available for retrofitting an actuator to a fire damper with fusible link
- For technical data and wiring examples, please refer to the FKRS-EU installation and operating manual

Attachment	Order code
Spring return actuator 230 V (Belimo)	Z43
Spring return actuator 24 V (Belimo)	Z45
Spring return actuator 230 V (Siemens)	Z43S
Spring return actuator 24 V (Siemens)	Z45S

FKRS-EU with Belimo spring return actuator

FKRS-EU with Siemens spring return actuator

Attachment – spring return actuator in Ex construction

FKRS-EU with explosion-proof spring return actuator

- A spring return actuator allows for the remote control of the fire damper and/or release by a suitable duct smoke detector
- The fire damper can be used in supply and extract air systems in areas with potentially explosive atmospheres
- If the supply voltage fails, or with thermoelectric release, the damper closes (closed circuit principle)
- Fire dampers with spring return actuators can be used for opening and closing fire dampers
- Two integrated limit switches with volt-free contacts can indicate damper blade positions OPEN and CLOSED
- The electrical connection is made in the explosion-proof terminal box
- Release temperature of the spring return actuator: 72°C
- ATEX declaration of conformity EPS 21 ATEX 2 142 X
- For technical data and wiring examples, please refer to the supplementary operating manual 'Explosion-proof fire dampers, Type FKRS-EU'.

Use in areas with potentially explosive atmospheres (ATEX)

According to declaration of conformity EPS 21 ATEX 2 142 X, the fire damper may be used in the following areas with potentially explosive atmospheres. The ambient temperatures and the types of release and actuation specified in the technical data are binding.

ExMax:

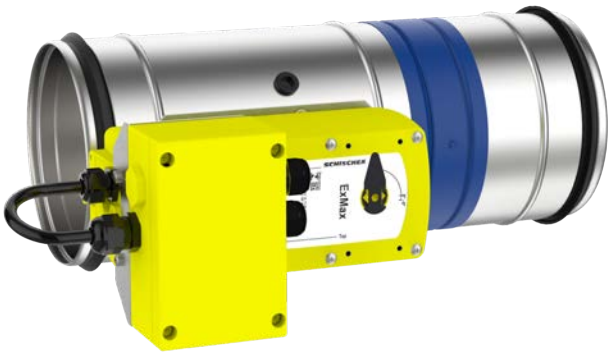
Zones 1, 2: Gases, mists and vapours
Zones 21, 22: Dusts

RedMax:

Zone 2: Gases, mists and vapours
Zone 22: Dusts

Attachment	Order code
ExMax-15-BF TR	ZEX1
RedMax-15-BF TR	ZEX3

FKRS-EU with explosion-proof spring return actuator



Type of actuation	Release mechanism	Labelling	Ambient temperature	Maximum airflow velocity
ExMax-15-BF TR	ExPro-TT *	II 2G Ex h IIC T6 Gb II 2D Ex h IIIC T80°C Db	-40 °C ≤ Ta ≤ +40 °C	10 m/s
ExMax-15-BF TR	ExPro-TT *	II 2G Ex h IIC T5 Gb II 2D Ex h IIIC T95°C Db	-40 °C ≤ Ta ≤ +50 °C	10 m/s
RedMax-15-BF TR	ExPro-TT *	II 3G Ex h IIC T6 Gc II 3D Ex h IIIC T80°C Dc	-40 °C ≤ Ta ≤ +40 °C	10 m/s
RedMax-15-BF TR	ExPro-TT *	II 3G Ex h IIC T5 Gc II 3D Ex h IIIC T95°C Dc	-40 °C ≤ Ta ≤ +50 °C	10 m/s

* Release temperature: 72 °C

Attachment - spring return actuator and RM-O-3-D as air transfer damper

FKRS-EU with spring return actuator, duct smoke detector RM-O-3-D and cover grilles on both sides

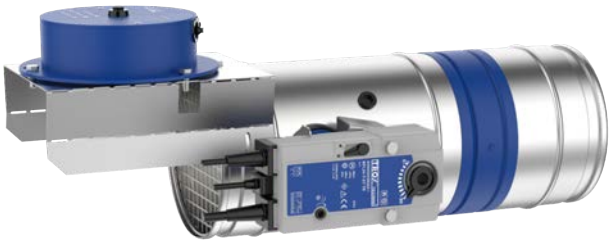
Application

- Operation of the fire damper with a spring return actuator enables remote control and actuation by the duct smoke detector
- If the supply voltage fails, or with thermoelectric release or smoke detection, the damper closes (closed current principle)
- Air transfer dampers can be used to shut off between two fire compartments
- Two integrated limit switches with volt-free contacts can indicate damper blade positions OPEN and CLOSED
- The duct smoke detector type RM-O-3-D is mounted in an adapter plate on the operating side of the FKRS-EU and must be placed on top when installing the fire damper.
- For technical data and wiring examples, see the FKRS-EU installation and operating instructions or the operating and installation instructions for RM-O-3-D duct smoke detector

Attachment	Order code
With spring return actuator 230 V (Belimo) and duct smoke detector type RM-O-3-D	Z43RM[1]
With spring return actuator 24 V (Belimo) and duct smoke detector type RM-O-3-D	Z45RM[1]
With spring return actuator 230 V (Siemens) and duct smoke detector type RM-O-3-D	Z43RMS[1]
With spring return actuator 24 V (Siemens) and duct smoke detector type RM-O-3-D	Z45RMS[1]

[1] If the unit is not connected to ducting, cover grilles are required on both ends. In conjunction with spring return actuator, duct smoke detector type RM-O-3-D and cover grilles on both sides, this is an air transfer damper with general type approval: Z-6.50-2516.

FKRS-EU with spring return actuator, duct smoke detector RM-O-3-D and cover grilles on both sides, as an air transfer damper



Attachment – Spring return actuator and TROXNETCOM

FKRS-EU with spring return actuator and TROXNETCOM

Application

- Fire dampers with a 24 V spring return actuator (Belimo) and the modules described here as attachments form a functional unit ready for automated fire damper control
- The components are factory mounted and wired
- The combination of spring return actuator with TROXNETCOM enables the integration of different components (modules) into a network regardless of their manufacturer.
- The modules control actuators and/or receive signals from sensors

AS-i

- The AS interface is a global standard bus system according to EN 50295 and IEC 62026-2
- The module transmits the control signals between the spring return actuator and the controller unit
- This allows for controlling the actuator and monitoring the actuator run time during functional testing
- The voltage (24 V DC) for the module and the actuator is supplied via the two-wire AS-i flat cable
- Status display: operation, 4 inputs, 2 outputs MODBUS RTU/ BACnet MS/TP (RS485)

MODBUS RTU/BACnet MS/TP (RS485)

- MODBUS RTU and BACnet MS/TP are protocols for RS485 communication systems
- Data transmission is based on uniform protocols
- Only the bus line and the supply voltage remain to be connected by others
- MB-BAC-WA1/2: To provide the control input signal for one or two fire dampers
- WA1/B3-AD: Connection box for connecting the second fire damper with 24 V DC supply voltage to MB-BAC-WA1/2
- WA1/B3-AD230: Connection box with integrated 230/24 V power supply unit for the connection of a second actuator-driven 24 V fire damper to MB-BAC-WA1/2 LON

LON

- LON stands for a standard local operating network system with manufacturer-independent communications
- Data transmission is based on a uniform protocol
- LonMark defines standards to ensure product compatibility
- Only the bus line and the supply voltage remain to be connected by others
- LON-WA1/B3: To provide the control input signal for one or two fire dampers
- WA1/B3-AD: Connection box for connecting the second fire damper with 24 V DC supply voltage to LON-WA1/B3
- WA1/B3-AD230: connection box with integrated power supply unit 230/24 V for the connection of a second actuator-driven 24 V fire damper to the LON-A1/B3 TNC-EASYCONTROL

TNC-EASYCONTROL

- TNC-LINKBOX is a wiring aid for connecting a fire damper and the configurable parallel circuit for the mini control TNC-EASYCONTROL

Attachment	Order code
Spring return actuator 24 V and AS-EM	ZA07
Spring return actuator 24 V, RM-O-3-D and AS-EM	ZA12 [1]
Spring return actuator 24 V and MB-BAC-WA1/2	ZB01
Spring return actuator 24 V and LON-WA1/B3	ZL09
Spring return actuator 24 V and WA1/B3-AD	ZL10
Spring return actuator 24 V and WA1/B3-AD230	ZL11
Spring return actuator 24 V and TNC-Linkbox	ZA14
Spring return actuator 24 V and MB-BAC-WA1/2	ZB01

[1] Zur Verwendung als Überströmklappe mit beidseitigen Abschlussgittern gemäß allgemeiner Bauartgenehmigung Z-6.50-2516.

FKRS-EU with Belimo spring return actuator and TROXNETCOM

Attachment – Explosion-proof spring return actuator and TROXNETCOM

FKRS-EU with spring return actuator (explosion-proof) and TROXNETCOM

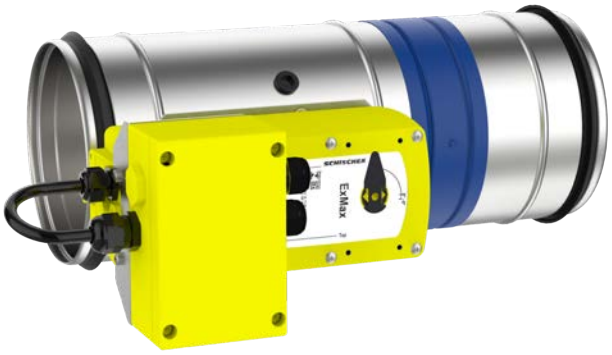
- AS interface is a global standard bus system according to EN 50295 and IEC 62026-2.
- The combination spring return actuator (Ex) with TROXNETCOM enables brand-neutral and cross-sector integration of various components (modules) in one network
- The fire dampers with spring return actuator ExMax/ RedMax-15-BF-TR and module AS-EM/C form a functional unit ready for automatic operation.
- The modules control actuators and/or receive signals from sensors
- The module is to be installed and wired outside of the potentially explosive atmosphere by others

Application

- The module transmits the control signals between the spring return actuator and the controller and power unit
- The control of the actuator and monitoring of run time for functional tests is thus possible
- The voltage (24 V DC) for the module is supplied via the two-wire AS-i flat cable; the voltage for the actuator comes from an external power source
- Function display: operation, 4 inputs, 2 outputs

Attachment	Order code
AS-Interface module and ExMax-15-BF TR	ZEX2
AS-Interface module and RedMax-15-BF TR	ZEX4

FKRS-EU with explosion-proof spring return actuator



Attachment – Duct smoke detectors

General

- To prevent smoke from spreading in buildings, it is extremely important that the smoke is detected at an early stage.
- Duct smoke detectors that operate on the principle of light scattering detect the smoke regardless of its temperature so that the fire dampers can be closed before the release temperature of 72 °C is reached
- If the air contains suspended particles, as is the case with smoke, beams of light are deflected off these. A sensor (photodiode), which does not receive light in clear air, is illuminated by the scattered light.
- The fire damper or smoke protection damper blade is released when the brightness of the scattered light exceeds a certain threshold

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Duct smoke detector RM-O-3-D

- Duct smoke detector for fire dampers and smoke protection dampers
- General building inspectorate licence Z-78.6-125
- For airflow velocities from 1 – 20 m/s
- Independent of the airflow direction
- Supply voltage 230 V AC, 50/60 Hz or 24 V DC with voltage monitoring module (VWM) (upon request)
- Volt-free signal and alarm relays
- Integral signal lamps
- Contamination level indicator
- Automatic adjustment of alarm threshold
- Long service life
- Temperature range 0 – 60 °C

Duct smoke detector RM-O-VS-D

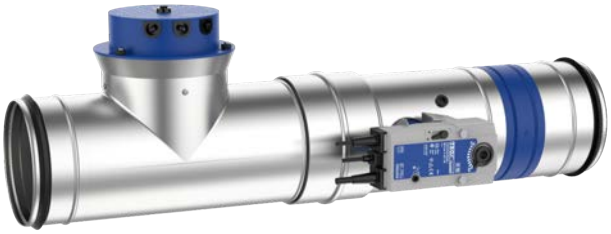
- Duct smoke detector for fire dampers and smoke protection dampers
- General building inspectorate licence Z-78.6-67
- For airflow velocities from 1 – 20 m/s
- Independent of the airflow direction
- Airflow monitoring with warning for lower limit 2 m/s
- Supply voltage 230 V AC, 50/60 Hz
- Volt-free signal and alarm relays
- Integral signal lamps
- Contamination level indicator
- Automatic adjustment of alarm threshold
- Long service life
- Temperature range 0 – 60 °C

Attachment	Order code
Duct smoke detector	RM-O-3-D
	RM-O-VS-D

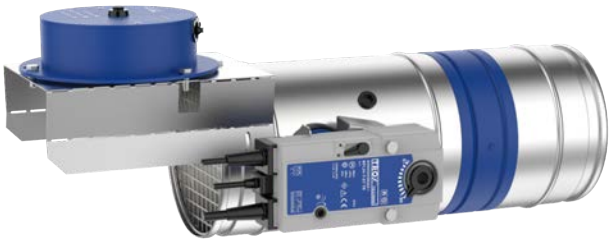
The duct smoke detector must be ordered as a separate attachment and must be installed by others in the duct.
When used as an air transfer damper, the duct smoke detector is mounted on the FKRS-EU and supplied pre-wired.

FKRS-EU with spring return actuator and duct smoke detector RM-O-3-D in angular air duct (to be installed on site)

FKRS-EU with spring return actuator and duct smoke detector RM-O-3-D in round air duct (to be installed on site)



FKRS-EU with spring return actuator, duct smoke detector RM-O-3-D and cover grilles on both sides, as an air transfer damper



Nomenclature

NS [mm]
Nominal size of fire damper

L [mm]
Length of the fire damper

q_v [m³/h]; [l/s]
Volume flow rate

L_{WA} [dB(A)]
A-weighted sound power level of air-regenerated noise for the fire damper

A [m²]
Free area

ζ
Resistance coefficient (fully ducted)

B [mm]
Width of the fire damper

H [mm]
Height of the fire damper

v [m/s]
Airflow velocity based on the upstream cross section (B × H or diameter)

Δp_{st} [Pa]
Static differential pressure

Lengths [mm]; [in]
All lengths are given in millimetres [mm] unless stated otherwise.