Fire dampers

FKRS-EU

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

CE compliant according to
European regulations

With TROXNETCOM as an
option

ATEX certification

Tested to VDI 6022

Compact dimensions – ideal for restricted spaces

Small circular fire damper for the isolation of duct penetrations between two fire
compartments, available in ten nominal sizes

- Nominal sizes: 100 – 315 mm
- Low differential pressure and sound power level
- Optional stainless steel casing or powder-coated casing for increased corrosion
  protection
- Can also be used as an air transfer unit
- Explosion-proof construction (ATEX) as an option
- 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

Classification

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

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 air transfer unit

The following applies to Germany:
If fire dampers with a purely mechanical shut-off element are to be used as an air transfer unit, the local building regulations must be observed. As a rule, the use of such air transfer units is limited to pressure ventilation systems.

Nominal sizes

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

Attachments

- Limit switch for damper blade position indication*
- Spring return actuator for 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*

*All attachments can be retrofitted

Accessories

- Installation block ER for dry mortarless installation into solid walls and ceiling slabs
- Installation kit TQ2 for dry mortarless installation in solid walls, in lightweight partition walls/compartment walls with metal support structure and cladding on both sides, in shaft walls with and without metal support structure, in timber stud walls, half-timbered construction and solid wood walls and in solid wood ceilings and wooden beam ceilings
- Installation kit WA2 for dry mortarless installation in solid walls and in shaft walls with cladding on one side and with or without metal support structure
- Installation kit WE2 for dry mortarless installation remote from solid walls and ceilings and remote from lightweight partition walls with metal support structure and cladding on both sides
- Installation kit GL2 for installation in lightweight partition walls/compartment walls with flexible ceiling joint and for dry mortarless installation in lightweight partition walls with metal support structure and cladding on both sides during wall construction
- Cover grille
- Flexible connectors
- Extension piece

Useful additions

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

Special characteristics
- Declaration of performance according to 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 supporting components or from 10 mm between 2 fire dampers
- Surrounding gap dimensions in the mortar-based installation with mortar up to 225 mm permitted
- Complies with the requirements of EN 15650
- Tested for fire resistance properties in accordance with EN 1366-2 (300 Pa and 500 Pa negative pressure)
- Hygienic requirements are fulfilled in accordance with VDI 6022-1, VDI 3803-1, DIN 1946-4, EN 13779 as well as Önorm H 6020 and H 6021 and SWKI
- Corrosion protection according to EN 15650 in connection with EN 60068-2-52
- Closed blade air leakage to EN 1751, class 3
- Casing air leakage 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 in accordance with IEC 62026-2 with AS interface is possible

Parts and characteristics
- Explosion-proof constructions for zones 1, 2, 21, 22
- Release temperature 72 °C or 95 °C (for use in warm air ventilation systems)
- Approved installation orientation from 0° to 360°
- Single-handed operation

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

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 coating
- Damper blade can be replaced (from NG 180 mm)

Other components:
- Damper blade shaft made of galvanised steel or stainless steel
- Plastic bearings
- Seals of elastomer

The design variants made of stainless steel or with a powder-coated casing fulfil increased requirements in terms of corrosion protection. Listings of the levels of resistance on request.

Installation and commissioning
Installation is to be carried out according to the installation and operating manual.

Mortar-based installation:
- In solid walls, also combined installation and multiple assignment as well as installation with partial mortaring
- In non-load-bearing solid walls with flexible ceiling joint
- In lightweight partition walls and compartment walls with metal support structure and cladding on both sides, also combined installation.
- In timber stud walls / half-timbered constructions and solid wood walls
- In shaft walls with metal support structure and cladding on one side, also combined installation
- In solid ceilings slabs and in concrete base on solid ceilings, and multiple assignment and combined installation in concrete base
- In hollow chamber ceiling, hollow stone ceiling, composite ceiling, ribbed ceiling
- In conjunction with wooden beam ceilings, solid wood ceilings and lightweight ceilings (Cadolto system)
- In solid wood, wooden beam and historical wooden beam ceilings

Dry mortarless installation:
- In solid walls and ceiling slabs with installation block ER
- In solid walls, lightweight partition walls and compartment walls with metal support structure and cladding on both sides with installation kit TQ / TQ2
- On solid walls with installation kit WA2
- Remote from solid walls and ceiling slabs (horizontal duct) as well as remote from lightweight partition walls with metal support structure and cladding on both sides with installation kit WE2
- In solid walls and ceiling slabs with fire batt
- In solid wood and wooden beam ceilings with installation kit TQ / TQ2
- Dry mortarless installation without installation kit in lightweight partition walls with metal support structure and cladding on both sides
- In lightweight partition walls with metal support structure or steel support structure and cladding on both sides with installation kit TQ / TQ2
- In lightweight partition walls with metal support structure and cladding on both sides with installation kit GL2 during the wall construction
- In lightweight partition walls and compartment walls with metal support structure and cladding on both sides and flexible ceiling joint with installation kit GL2
- In lightweight partition walls as well as compartment walls with metal support structure and cladding on both sides with fire batt
- In timber stud walls and half-timbered constructions and cladding on both sides as well as solid wood walls with installation kit TQ / TQ2
- In timber stud walls and half-timbered constructions and cladding on both sides as well as solid wood walls with fire batt
- In shaft walls with or without metal support structure and cladding on one side with installation kit TQ / TQ2
- In shaft walls with or without metal support structure and cladding on one side with installation kit WA2
- In solid walls, lightweight partition walls with metal and wooden studs, solid wood walls and sandwich panels with HILTI fire protection blocks CFS-BL (block bulkhead)

- Mixed installation with cable and pipe penetrations (combined penetration seal) in solid walls, lightweight partition walls with metal and wooden studs and solid wood walls (with building permit in Germany)
- Mixed installation with cable penetrations in HILTI fire protection blocks CFS-BL (block bulkhead) in solid walls, lightweight partition walls with metal and wooden studs, solid wood walls and sandwich panels (with building permit in Germany)
- Remote from solid walls, lightweight partition walls with metal and wooden studs and solid wood walls with mineral wool insulation

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/EG - Machinery Directive

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 EN 31051. If 2 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

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 potentially explosive atmospheres if appropriate special accessories are used with it and if the product bears the CE conformity marking according to Directive 94/9/EC. Fire dampers for use in potentially explosive atmospheres are marked for the zones for which they have been approved.
- Operation of the fire dampers is allowed only in compliance with installation regulations and the technical data in this 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
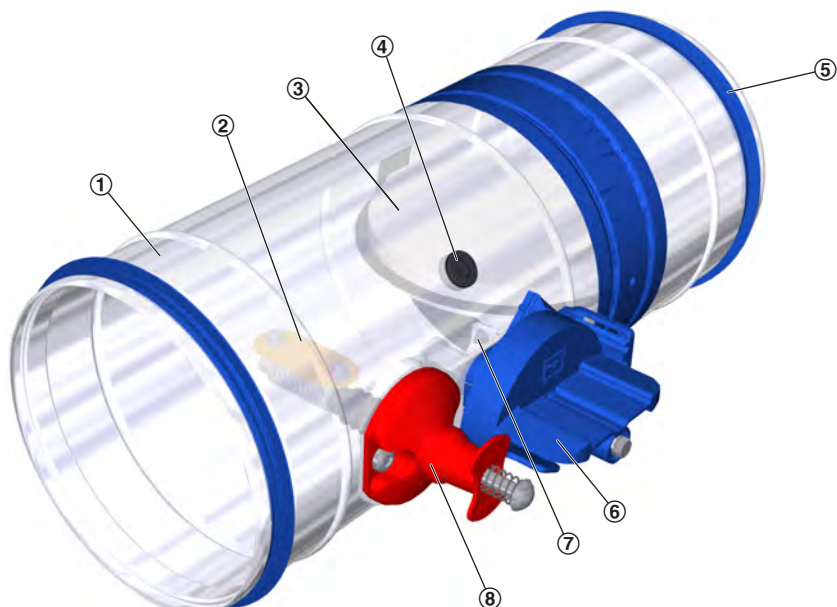
The following applies to Germany:
- Do not use it in extract air systems in commercial kitchens
- Do not use it as an air transfer damper
- Do not use in combined penetration seal
- Individual mounting permitted in sandwich-panel wall. No combination with cable penetrations
- Approvals under building regulations may be required for the use of air transfer units. This must be checked and applied for by others.
- Flame-resistant, non-dripping building materials (elastomer foam) must meet the minimum requirements of fire rating class C - s2, d0 in accordance with the specifications of M-VV TB (2019/1). The applicable national building regulations must be adhered to

Function

Functional description
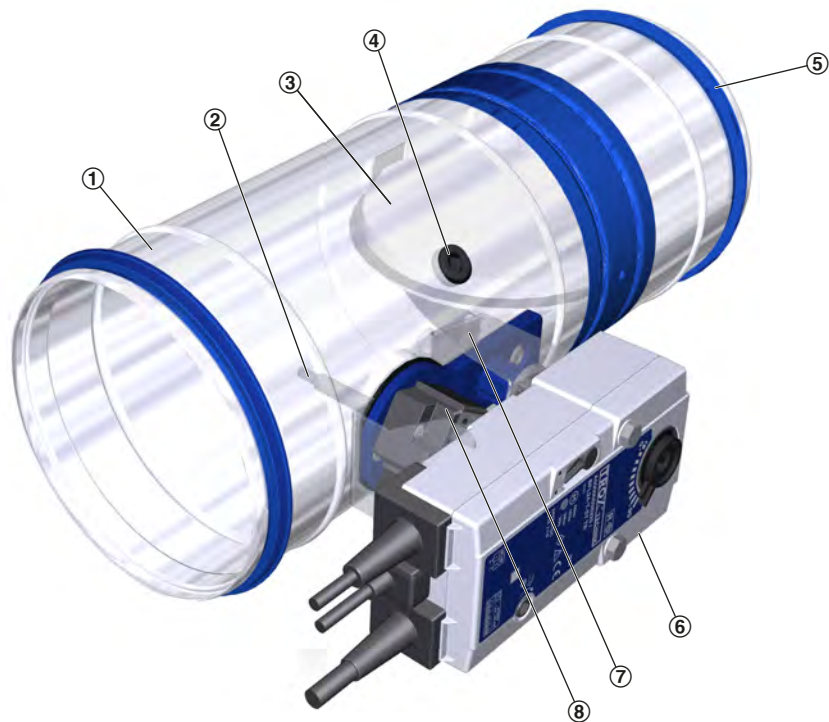
Construction with fusible link

① Casing
② Fusible link
③ Damper blade with seal
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.
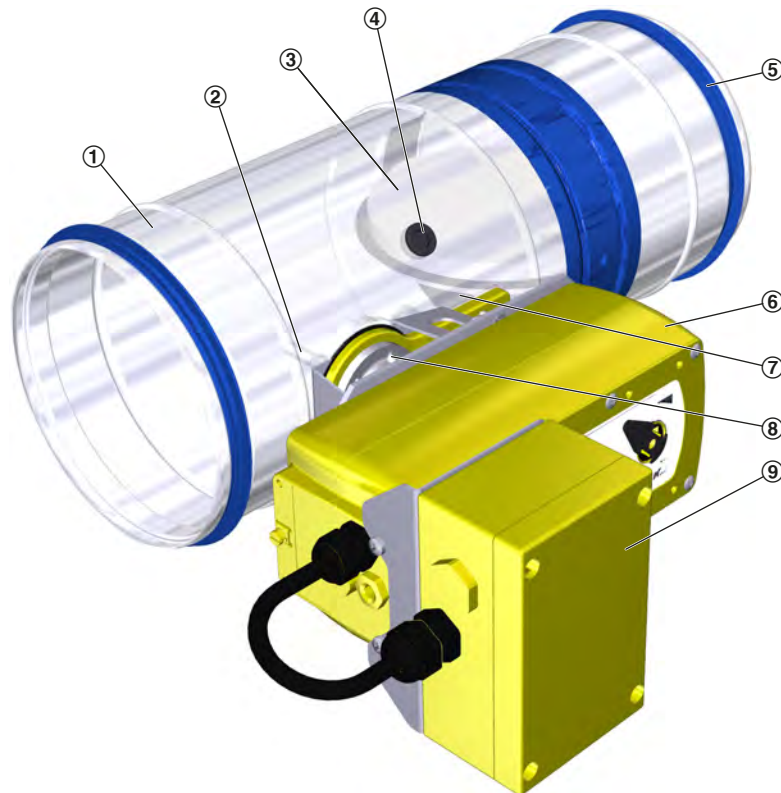
Construction with spring return actuator

① Casing
② Temperature sensor
③ Damper blade with seal
④ Inspection access (12 mm)
⑤ Lip seal
⑥ Spring return actuator
⑦ Travel stop for CLOSED position
⑧ Thermoelectric release mechanism

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. If the supply voltage fails, the damper closes (power off to close).
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 for capturing the damper blade position.

Construction with spring return actuator, explosion-proof

① Casing
② Temperature sensor
③ Damper blade with seal
④ Inspection access (12 mm)
⑤ Lip seal
⑥ Spring return actuator ExMax (example ExMax-15-BF TR)
⑦ Travel stop for CLOSED position
⑧ Thermoelectric release mechanism
⑨ Terminal box ExBox

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.

Use in areas with potentially explosive atmospheres (ATEX)
In accordance with the declaration of conformity TÜV 14 ATEX 140574, the fire damper can be used in the following Ex zones. The ambient temperatures and types of release and actuation specified in the technical data are binding.
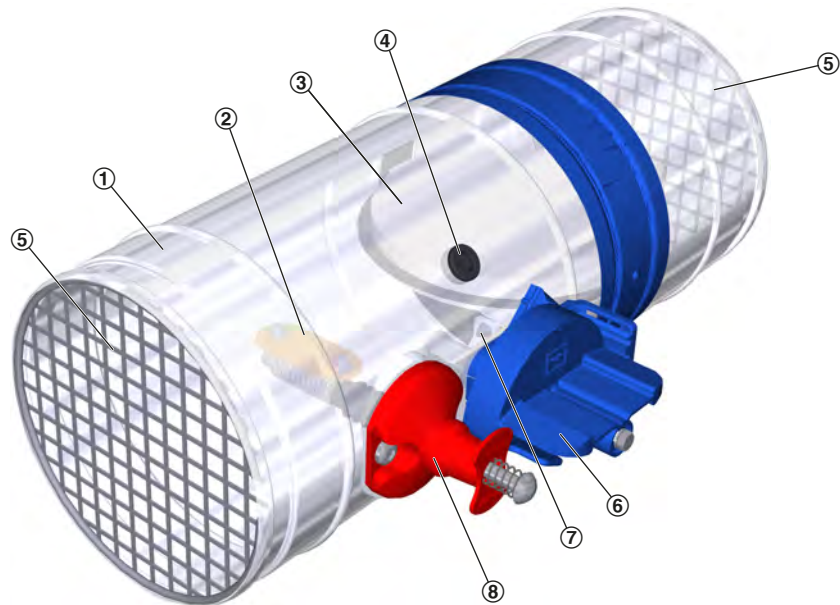
ExMax:
▪ Zones 1, 2: Gases, mists and vapours
▪ Zones 21, 22: Dusts

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

Construction with fusible link and cover grille used as an air transfer unit

① Casing
② Fusible link
③ Damper blade with seal
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 a thermal release mechanism for 72 °C and with cover grilles on both sides, but without a duct smoke detector.

The following applies to Germany:
If fire dampers with a purely mechanical shut-off element are to be used as an air transfer unit, the local building regulations must be observed.

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 construction; ≤ 10 m/s with spring return actuator

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

[2] Data applies to uniform upstream and downstream conditions for the fire damper.

[3] For explosion-proof constructions of the FKRS-EU see the corresponding operating manual

[4] Condensation and the intake of humid fresh air have to be avoided as otherwise operation will be impaired or not be possible.

Free area and resistance coefficient

NS	①	②
100	0,005	1,71
125	0,009	1,08
150	0,014	0,76
160	0,016	0,67
180	0,021	0,54
200	0,027	0,44
224	0,033	0,56
250	0,042	0,45
280	0,053	0,36
315	0,069	0,28

① A [m²]

② ζ

Quick sizing

Quick sizing tables provide a good overview of the volume flow rates with different sound power levels as well as of differential pressures of up to 35 Pa. Approximate intermediate values can be interpolated. Precise intermediate values can be calculated with our Easy Product Finder design program. You will find the Easy Product Finder on our website.

Volume flow rate q_v for differential pressure Δp_{st} < 35 Pa

NS	①	②	③	④	⑤	⑥
100	22	35	43	79	126	157
125	40	65	87	144	234	315
150	70	105	150	252	378	540
160	80	125	180	288	450	648
180	105	165	235	388	587	847
200	140	210	295	504	756	1062
224	170	245	345	612	882	1242
250	215	315	445	774	1134	1602
280	280	405	570	1008	1458	2052
315	360	525	735	1296	1890	2646

① 25 L_{WA} [dB(A)] in l/s

② 35 L_{WA} [dB(A)] in l/s

③ 45 L_{WA} [dB(A)] in l/s

④ 25 L_{WA} [dB(A)] in m³/h

⑤ 35 L_{WA} [dB(A)] in m³/h

⑥ 45 L_{WA} [dB(A)] in m³/h

The Easy Product Finder allows you to size products using your project-specific data. You will find the Easy Product Finder on our website.

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 programme.

Specification text

Fire damper according to the European product standard EN 15650 in circular construction style. Tested for fire resistance properties according to DIN EN 1366-2 (300 Pa and 500 Pa negative pressure), with CE label.
The fire damper manufacturer's declaration of performance (DoP) provides proof of the respective installation conditions.
e.g. inside, in front of, at and remote from walls or ceilings, along with the basic characteristics such as size, support structure, design and installation type and the respective classes of performance in accordance with the classification standard EN 13501-3.
The ready-to-use units contain a release mechanism and an interchangeable, fire-resistant damper blade that can be arranged at a 0 – 360 degree installation orientation depending on the use.
Depending on application, classified from:
EI 30 (v_e, h_o i ↔ o) S to EI 120 (v_e, h_o i ↔ o) S.
Suitable for:
Mortar-based installation
▪ In solid walls, also combined installation and multiple occupancy as well as with partial mortaring
▪ In non-load-bearing solid walls with flexible ceiling joint
▪ In lightweight partition walls and compartment walls with metal support structure and cladding on both sides, also combined installation.
▪ In timber stud walls / half-timbered constructions and solid wood walls
▪ In shaft walls with metal support structure and cladding on one side, also combined installation
▪ In solid ceiling slabs and in concrete base on solid ceiling slabs, also multiple occupancy and combined installation in the concrete base
▪ In hollow chamber ceiling, hollow stone ceiling, composite ceiling, ribbed ceiling
▪ In conjunction with wooden beam ceilings, solid wood ceilings and lightweight ceilings (Cadolto system)
▪ In solid wood, wooden beam and historical wooden beam ceilings
Dry mortarless installation
▪ In solid walls and ceiling slabs with installation block ER
▪ In solid walls, lightweight partition walls and compartment walls with metal support structure and cladding on both sides with installation kit TQ / TQ2
▪ On solid walls with installation kit WA2
▪ Remote from solid walls and ceiling slabs (horizontal duct) as well as remote from lightweight partition walls with metal support structure and cladding on both sides with installation kit WE2
▪ In solid walls and ceiling slabs with fire batt

▪ In solid wood and wooden beam ceilings with installation kit TQ / TQ2
▪ Dry mortarless installation without installation kit in lightweight partition walls with metal support structure and cladding on both sides
▪ In lightweight partition walls with metal support structure or steel support structure and cladding on both sides with installation kit TQ / TQ2
▪ In lightweight partition walls with metal support structure and cladding on both sides with installation kit GL2 during the 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 lightweight partition walls as well as compartment walls with metal support structure and cladding on both sides with fire batt
▪ In timber stud walls and half-timbered constructions and cladding on both sides as well as solid wood walls with installation kit TQ / TQ2
▪ In timber stud walls and half-timbered constructions and cladding on both sides as well as solid wood walls with fire batt
▪ In shaft walls with or without metal support structure and cladding on one side with installation kit TQ / TQ2
▪ In shaft walls with or without metal support structure and cladding on one side with installation kit WA2
▪ In solid walls, lightweight partition walls with metal and wooden studs, solid wood walls and sandwich panels with HILTI fire protection blocks CFS-BL (block bulkhead)
▪ Mixed installation with cable and pipe penetrations (combined penetration seal) in solid walls, lightweight partition walls with metal and wooden studs and solid wood walls (with building permit in Germany)
▪ Mixed installation with cable penetrations in HILTI fire protection blocks CFS-BL (block bulkhead) in solid walls, lightweight partition walls with metal and wooden studs, solid wood walls and sandwich panels (with building permit in Germany)
▪ Remote from solid walls, lightweight partition walls with metal and wooden studs and solid wood walls with mineral wool insulation

Dimensions: 100, 125, 150, 160, 180, 200, 224, 250, 280, 315 mm

Optimised, low-leakage casing, up to tightness class C in accordance with EN 1751 with reduced differential pressure and sound power level.
Fire 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 insulation material, optionally with coating

Corrosion protection according to DIN EN 15650 in connection with DIN EN 60068-2-52.

Casing length 400 mm, for the connection to ducts made of non-combustible or combustible materials. Thermal or thermoelectric triggering for 72 °C or 95 °C (warm air ventilation units) with fusible link or thermoelectrically with spring return actuator, test switch/push button and check LED. The designs with brushless spring return actuators for opening and closing the fire damper – also when the ventilation system is running and independent of the nominal size – are particularly suited for function testing or the daily shut-off of cable sections.

Special characteristics

- Declaration of performance in accordance with European Construction Products Regulation
- Classification according to EN 13501-3, up to EI 120 (v_e, h_o i ↔ o) S
- Complies with the requirements of EN 15650
- Tested for fire resistance properties in accordance with EN 1366-2 (300 Pa and 500 Pa negative pressure)
- Certified mortar-based installation with reduced distances of 40 mm to supporting components or 10 mm between two fire dampers (flange to flange)
- Surrounding gap dimensions in the mortar-based installation with mortar up to 225 mm permitted
- Inspection access (12 mm)
- Hygienic requirements are fulfilled in accordance with VDI 6022-1, VDI 3803-1, DIN 1946-4, EN 13779 as well as Önorm H 6020 and H 6021 and SWKI
- Corrosion protection according to EN 15650 in connection with EN 60068-2-52
- Closed blade air leakage to EN 1751, class 3
- Casing air leakage to EN 1751, class C
- Low differential pressure and sound power level
- Any airflow direction

Order code

Order code FKRS-EU

FKRS-EU **–** 1 / DE / 160 / ER / A0 / Z43

| | | | | | |
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
2 Stainless steel casing
7 coated damper blade
1 – 7 powder-coated casing, RAL 7001, and coated damper blade
2 – 7 Stainless steel casing and coated damper blade
W[1] with fusible link 95 °C (only for warm air ventilation systems)
B with coated fusible link 72 °C
WB[1] with coated fusible link 95 °C (only for 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: none
ER Circular installation block
TQ2 Square installation kit
WA2 Wall face frame
WE2 Installation kit for installation remote from walls and ceilings
GL2 Installation kit for flexible ceiling joint

6 Accessories 2
No entry: none
A0 – AS

7 Attachments
Z00 – ZEX4

[1]W with all constructions2 can be combined, but not with attachments7 ZEX1 – ZEX4

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

Construction variant	Casing made of stainless steel, damper blade coated
Country of destination	Germany
Nominal size	200 mm
Installation kit	Square
Accessories	flexible connector on operating and installation sides
Attachment	Spring return actuator 24 V AC/DC and LON module LON-WA1/B3

Order code FKRS-EU as an air transfer unit

FKRS-EU **–** 1 / DE / 160 / AA / Z01

1   2   3   4   5   6

1 Type
FKRS-EU Fire damper type as air transfer unit

2 Construction
No entry: standard construction
1 powder-coated casing, RAL 7001
7 coated damper blade
1 – 7 powder-coated casing, RAL 7001, and coated damper blade

3 Country of destination
DEGermany
Other destination countries upon request

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

5 Accessories 2
AA

6 Attachments
Z00 – ZEX4

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

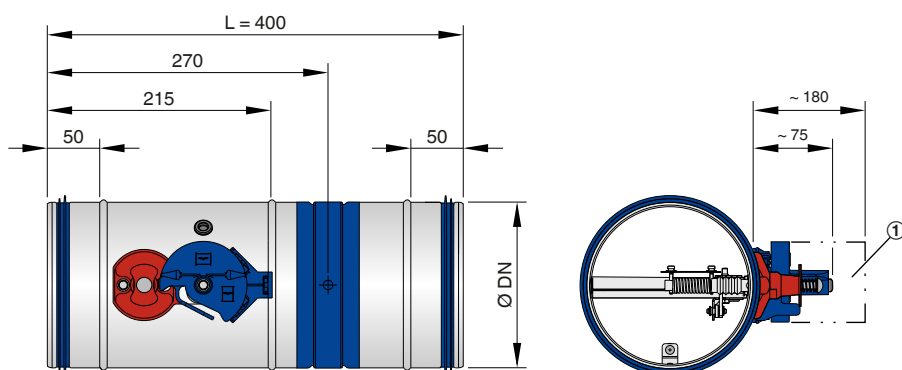|	
Construction variant	Casing powder-coated, RAL 7001, silver grey
Country of destination	Germany
Nominal size	200 mm
Accessories 1	None
Accessories 2	Cover grilles on both ends
Attachment	Limit switches for damper blade positions OPEN and CLOSED

The following applies to Germany:

If fire dampers with a purely mechanical shut-off element are to be used as an air transfer unit, the local building regulations must be observed. As a rule, the use of such air transfer units is limited to pressure ventilation systems.

Dimensions

FKRS-EU with fusible link

① Keep clear to provide access to the release mechanism

Weight [kg]

NS	①	②	③	④	⑤	⑥	⑦
100	99	1,3	5,7	5,4	4,4	4,4	4,4
125	124	1,6	8,6	6,1	5,2	5,2	5,2
150	149	1,8	7,6	7,0	6,1	6,1	6,1
160	159	2,0	7,3	7,9	6,6	6,6	6,6
180	179	2,3	11,0	8,8	7,4	7,4	7,4
200	199	2,5	9,8	9,7	8,2	8,2	8,2
224	223	2,7	13,5	10,6	9,0	9,0	9,0
250	249	3,3	12,1	12,0	10,2	10,2	10,2
280	279	3,8	16,0	13,7	11,7	11,7	11,7
315	314	4,4	15,0	15,8	13,6	13,6	13,6

① ØDN [mm]

② FKRS-EU with fusible link
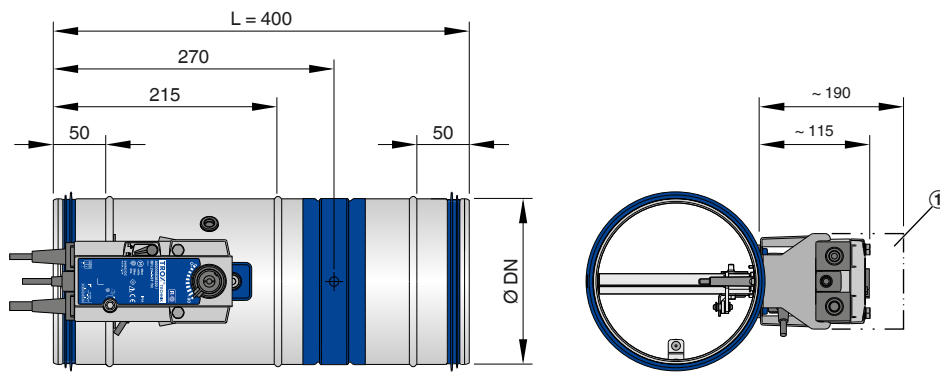
③ ... and installation block ER

④ ... and installation kit TQ / TQ2

⑤ ... and installation kit WA2

⑥ ... and installation kit WE2
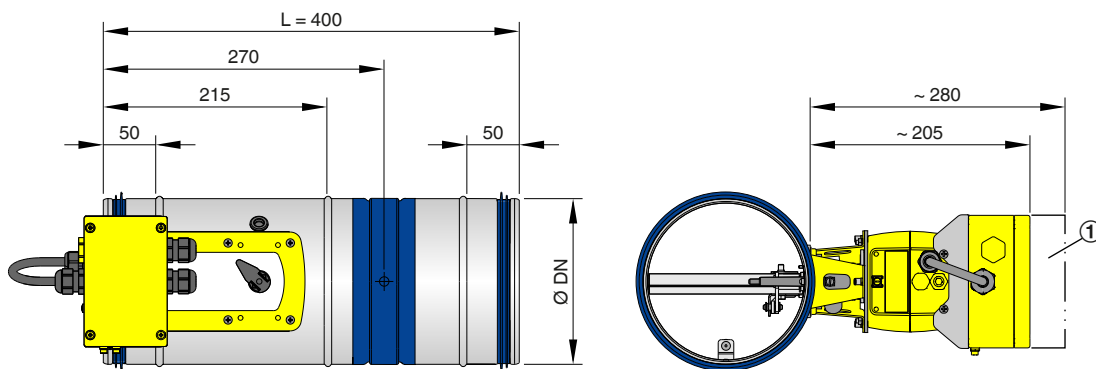
⑦ ... and installation kit GL2

FKRS-EU with spring return actuator

① Keep clear to provide access to the release mechanism

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

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

① Keep clear to provide access to the release mechanism

Weights FKRS-EU with fusible link + approx. 3.7 kg, see table of dimensions for FKRS-EU with fusible link

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.

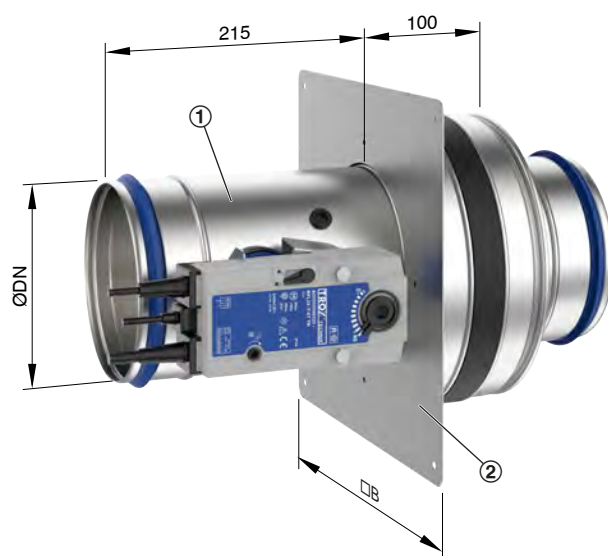| Accessories 1	Order code
Circular installation block	ER

Dimensions of the core hole/cover plate [mm]

NS	①	②
100	200	250
125	250	300
150	250	300
160	250	300
180	300	350
200	300	350
224	350	400
250	350	400
280	400	450
315	400	450

① ØD1: diameter of the core hole in solid walls and ceilings
② □B

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 page 15

Accessories 1 – installation kit TQ / TQ2

Application

- Square installation kit TQ / TQ2 for dry mortarless installation in solid walls, lightweight partition walls and compartment walls with metal support structure or steel support structure with cladding on both sides, in solid wood and wooden beam ceilings, in timber stud walls and half-timbered constructions and cladding on both sides and in solid wood walls and shaft walls with and without metal support structure and cladding on one side
- The installation kit TQ is factory mounted to the fire damper and cannot be retrofitted
- The installation kit TQ2 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 a mortar mix by simply inserting it into the prepared installation opening
- 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
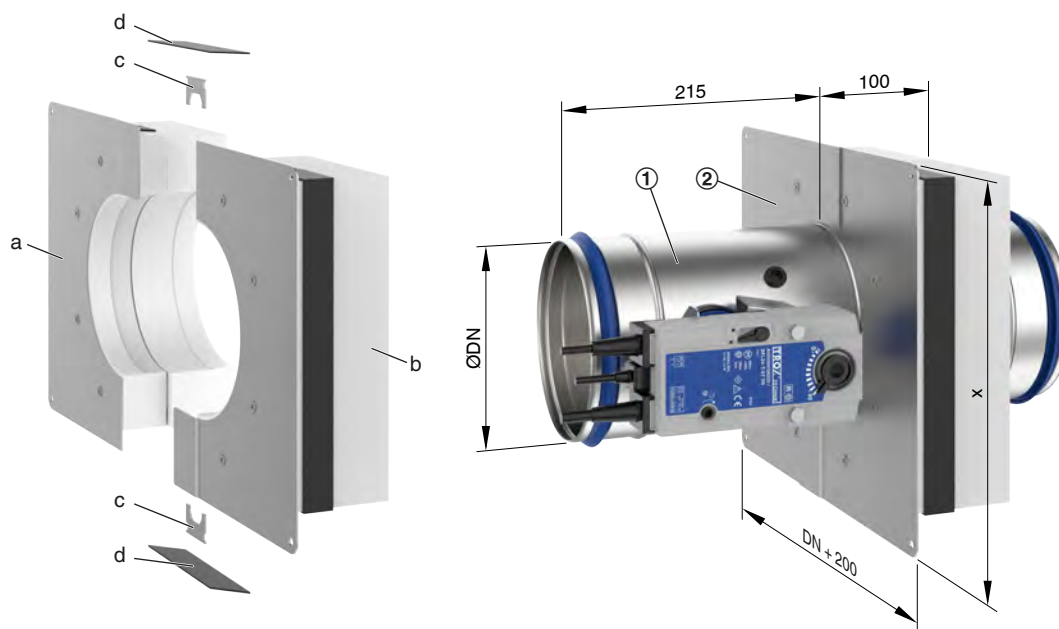
Materials and surfaces

- Installation kit made of calcium silicate
- Cover plate of the installation kit 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
Square installation kit TQ (factory assembled)	TQ
Square installation kit	TQ2

FKRS-EU with installation kit TQ2

① FKRS-EU
② Installation kit TQ2, consisting of:
a Half-shell 1
b Half-shell 2
c Bracket
d Intumescent seal (2 strips)

x corresponds to DN + 200 mm for TQ and DN + 130 mm for TQ2

Weights for FKRS-EU with fusible link and installation kit TQ / TQ2, see page 15

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.
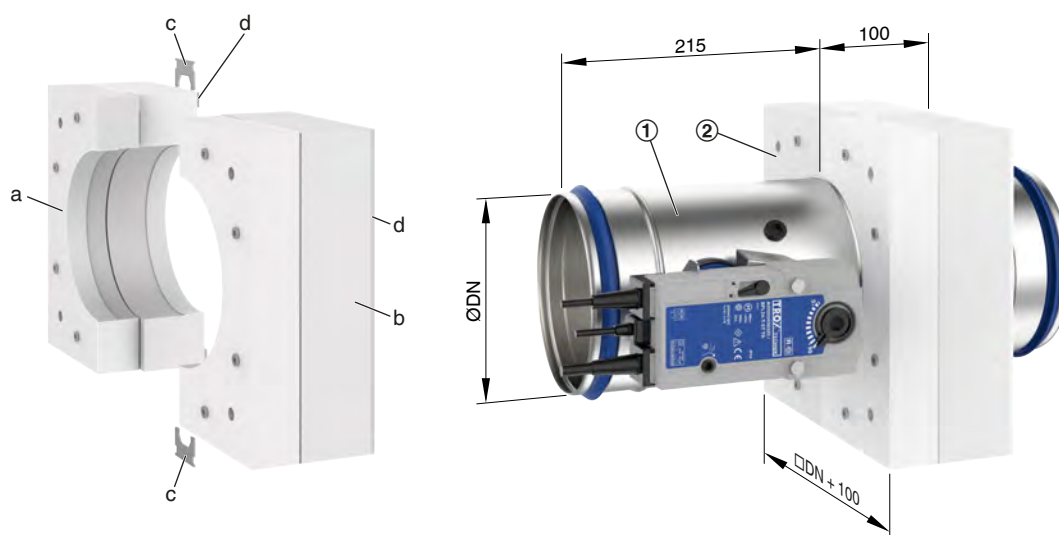- The unit is installed without mortar

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 Half-shell 1
b Half-shell 2
c Bracket
d Kerafix sealing tape (4 strips)

Weights for FKRS-EU with fusible link and installation block WA2, see page 15

Accessories 1 – installation kit WE2

Application

- For installation (dry mortarless installation) remote from solid walls or ceilings (under or over 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 by the customer. The installation kit can also be supplied subsequently and mounted on the fire damper.
- Assembly and installation by others; required parts to be provided by others
- Installation and securing of the fire damper and the fire-resistant cladding of the sheet steel duct, the connection to the solid wall or ceiling slab, and the duct penetration through solid walls or lightweight partition walls with cladding on both sides have to be carried out according to the fire damper operating and installation manual and the WE2 installation manual
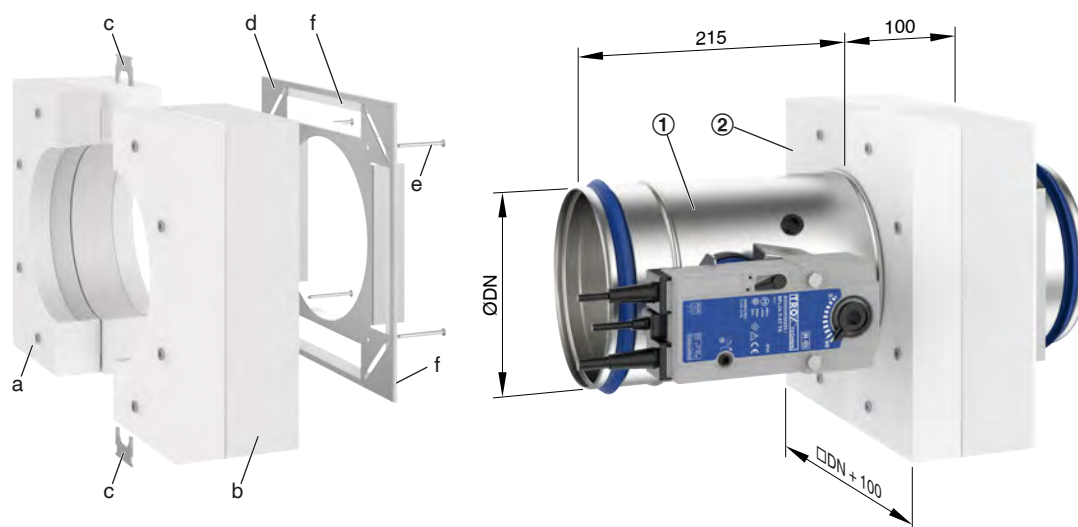
Materials and surfaces

- 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	WE2

FKRS-EU with installation kit WE2

① FKRS-EU
② Installation kit WE2, consisting of:
a Half-shell 1
b Half-shell 2
c Bracket
d Sheet metal cover plate
e Dry wall screw
f Kerafix sealing tape (4 strips)

Weights for FKRS-EU with fusible link and installation block WE2, see page 15

Accessories 1 – installation kit GL2

Application
- 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 directly underneath solid ceiling slabs, requires an installation kit
- The installation kit allows for subsidence of the slab while maintaining sealing integrity 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 by the customer. The installation kit can also be supplied subsequently and mounted on 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 installed in lightweight walls with metal support structure and cladding on both sides during the wall construction

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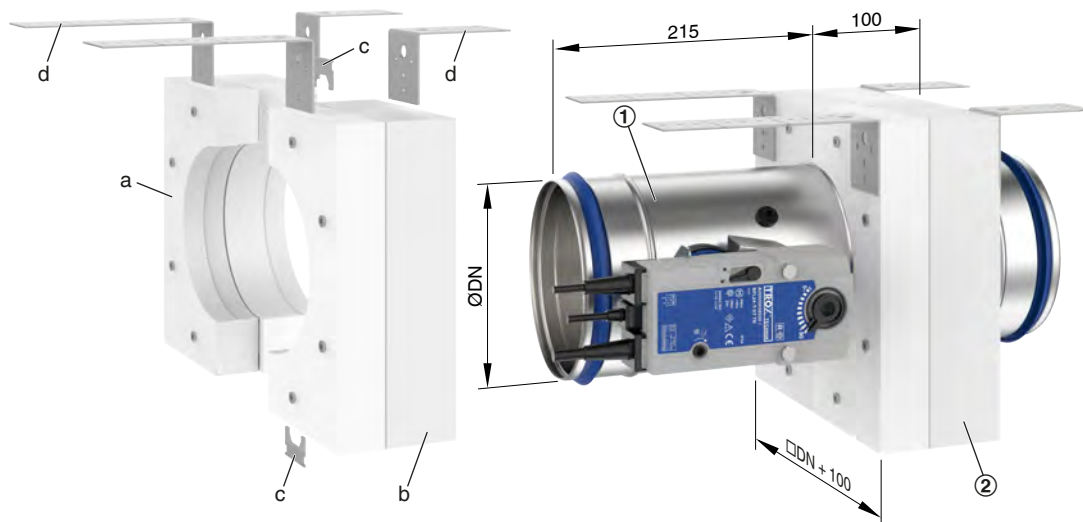- Fixing brackets made of galvanised sheet steel

Note
For further information relevant to design, in particular information on installation situations, please refer to the fire damper operating and installation manual and to the GL/GL2 installation manual.

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

[1] The installation kit can be adapted to the wall thickness (by others)

FKRS-EU with installation kit GL2

① FKRS-EU
② Installation kit GL2, consisting of:
a Half-shell 1
b Half-shell 2
c Bracket
d Bracket

Weights for FKRS-EU with fusible link and installation block GL2, see page 15

Accessories 2 – cover grille

Application
- If a duct is only connected on one side, the other side is equipped with a cover grille
- When using cover grilles, an extension piece is required on the installation side from a nominal size of 224
- Fire damper, cover grille and, if applicable, extension piece are factory assembled to form a unit
- The free area of the cover grille is approx. 70%
- Fire dampers with cover grilles are supplied without a lip seal
- Cover grilles are also available separately
- Mesh aperture 10 mm × 10 mm, wire width 2 mm

The following applies to Germany:
If fire dampers are used as air transfer units, the national building regulations must be observed. Usually the use of such air transfer units is restricted to pressure differential systems.

Materials and surfaces
- Cover grille and extension piece made from galvanised sheet steel (additionally with silver grey powder coating (RAL 7001) in variants with powder coating (1) and stainless steel (2))

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

Cover grille for FKRS-EU

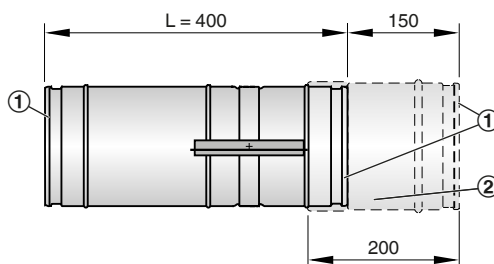| Operating side	Installation side	Order code
Cover grille	-	A0
-	Cover grille	0A
Cover grille	flexible connector	AS
flexible connector	Cover grille	SA
Cover grille	Cover grille	AA

Note: AA for FKRS-EU as air transfer unit

Cover grille

① Cover grille
② Extension piece

Cover grille

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

Accessories 2 – flexible connector

Application
- Ducting must be installed in such a way that it does not impose any significant loads on the fire damper in the event of a fire. Be sure to comply with the relevant national guidelines and regulations.
- As ducts may expand and walls may become deformed in the event of a fire, we recommend using flexible connectors for installation in lightweight partition walls, shaft walls and lightweight compartment walls, as well as fire batt installation.
- Flexible connectors should be installed in such a way that both ends can absorb both tension and compression
- Flexible ducts can be used as an alternative
- When using flexible connectors, an extension connector is required on the installation side from a nominal size of 224
- Flexible connectors are supplied separately and can be fixed with clamps, for example (by others)
- Flexible connectors are also available separately

Materials and surfaces
- Flexible connectors made of fibre-reinforced plastic
- Fire resistance properties to 4102; B2

Note
For further information relevant to design, in particular information on installation situations, please refer to the operating and installation manual.
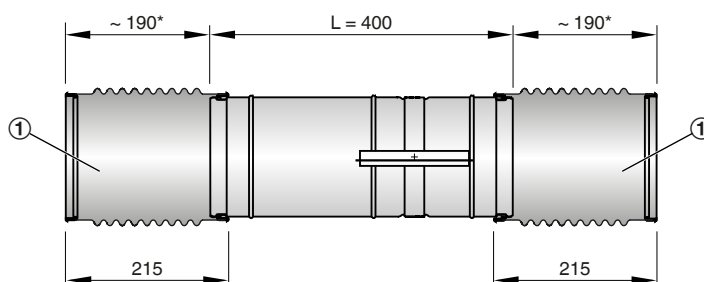
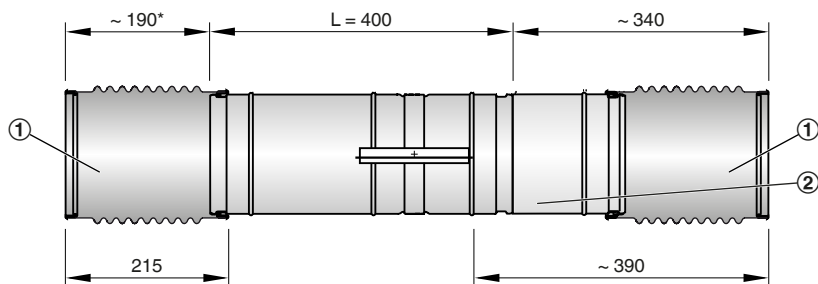| Operating side	Installation side	Order code
flexible connector	-	S0
-	flexible connector	0S
flexible connector	flexible connector	SS
flexible connector	Cover grille	SA
Cover grille	flexible connector	AS

Flexible connector

① Flexible connector
② Extension piece

Up to nominal size 200
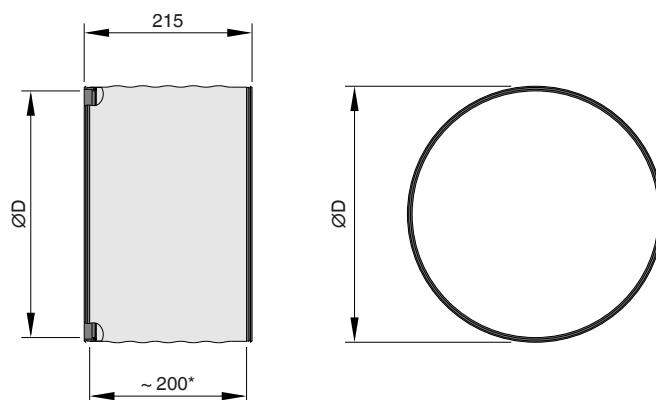

From nominal size 224

① Flexible connector

② Extension piece

* flexible length ≥ 100 mm when installed

Flexible connector

* flexible length ≥ 100 mm when installed

Accessories 2 – extension piece

Application

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

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))

Installation and commissioning

The distance between the open damper blade and the cover grille or circular spigot should be approx. 50 mm

Note

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

Extension piece

① Extension piece

FKRS-EU Open blade protrusion

① FKRS-EU

Open blade protrusion [mm]

NS	①	②
100	-220	-80
125	-208	-67,5
150	-195	-55
160	-190	-50
180	-180	-40
200	-170	-30
224	-158	-18
250	-145	-5
280	-130	10
315	-113	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

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 (power off to close)
- ▪ Motorised fire dampers can be used to shut off ducts.
- ▪ Two integral limit switches with volt-free contacts can indicate the damper blade position (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 via a safety transformer provided by others.
- ▪ A conversion kit is available for retrofitting an actuator to a fire damper with fusible link.
- ▪ For the technical data and wiring examples, see the installation and operating manual for FKRS-EU.

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 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 (power off to close)
▪ Fire dampers with spring return actuators can be functionally checked OPEN/CLOSED/OPEN
▪ Two integral limit switches with volt-free contacts can indicate the damper blade position (OPEN and CLOSED)
▪ The electrical connection is made in the explosion-proof terminal box
▪ Release temperature of the spring return actuator 72 °C
▪ Declaration of conformity: TÜV 11 ATEX 085420 X
▪ Technical data and wiring examples, see additional operating manual "Explosion-protected fire dampers, type FKRS-EU"

Use in areas with potentially explosive atmospheres (ATEX)
In accordance with the declaration of conformity TÜV 11 ATEX 085420, the fire damper can be used in the following Ex zones. The ambient temperatures and the release and operating modes specified in the technical data must be observed.

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 spring return actuator (explosion-proof)

Type of actuation	Release mechanism	Labelling	Ambient temperature	maximum airflow velocity
ExMax-15-BF TR	ExPro-TT *	II 2 D c T80 °C II 2 G c IIC T6	-40 – 40 °C	10 m/s
RedMax-15-BF TR	ExPro-TT *	II 3D c T80 °C II 3G c IIC T6	-40 – 40 °C	10 m/s

* Release temperature: 72 °C

Attachment – 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 automatic operation.
- The components are factory assembled and wired
- The combination spring return actuator with TROXNETCOM enables brand-neutral and cross-sector integration of various components (modules) in one network
- The modules control actuators and/or receive signals from sensors

AS-i
- 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 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 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: for the control of 1 – 2 fire dampers
- WA1/B3-AD: junction box for the 2nd fire damper with 24 V DC supply voltage to the MB-BAC-WA1/2
- WA1/B3-AD230: junction box with integrated power supply unit 230/24 V for connection of a 2nd motor-driven 24 V fire damper to the MB-BAC-WA1/2 LON

LON
- LON indicates 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: for the control of 1 – 2 fire dampers
- WA1/B3-AD: junction box for the 2nd fire damper with 24 V DC supply voltage to the LON-WA1/B3
- WA1/B3-AD230: junction box with integrated power supply unit 230/24 V for the connection of a second motor-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 TNC-EASYCONTROL decentralised operating and monitoring system.

Attachment	Order code
Spring return actuator 24 V and AS-EM	ZA07
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

FKRS-EU with TROXNETCOM module

Attachment – spring return actuator (Ex) 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

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

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.

FKRS-EU with spring return actuator and RM-O-3-D in square duct

FKRS-EU with spring return actuator and RM-O-3-D in round duct

Explanation

NG [mm]
Diameter of the 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)

Δpst [Pa]
Static differential pressure