Fire dampers
Type FKRS-EU

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

CE compliant according to European regulations

With TROXNETCOM as an option

Tested to VDI 6022

Compact dimensions, ideal for restricted spaces

Small circular fire damper for the isolation of duct penetrations# between 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
- Air transfer damper 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
- Duct smoke detector RM-O-3-D

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Variants

Product examples

FKRS-EU with fusible link

FKRS-EU with spring return actuator

Description

FKRS-EU with spring return actuator

For detailed information on attachments see Chapter K4 – 1.2.

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

Variants
- With fusible link
- With spring return actuator
- With cover grilles both ends as air transfer damper with general building inspectorate licence: Z-19.18-2128

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
- Network module for the integration with AS-i or LON networks

Accessories
- Circular installation block ER
- Square installation kit TQ
- Wall face frame WA
- Installation kit GL
- 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 to EN 13501-3, up to EI 120 (v_e, h_o, i ↔ o) S
- Building inspectorate licence Z-56.4212-991 for fire resistance properties
- Complies with the requirements of EN 15650
- Tested to EN 1366-2 for fire resistance properties
- Hygiene complies with VDI 6022 part 1 (07/2011), VDI 3803 (10/2002), DIN 1946 part 4 (12/2008), and EN 13779 (09/2007)
- 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

Parts and characteristics
- Dry mortarless installation into solid walls and ceiling slabs, lightweight partition walls, fire walls, and shaft walls using an installation block
- Installation with wall face frame on the face of solid walls
- Release temperature 72 °C or 95 °C (for use in warm air ventilation systems)
- Approved installation orientation from 0° to 360°

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 flexible connectors or cover grilles
- 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

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

The construction variants with stainless steel or powder-coated casing meet even more critical requirements for corrosion protection. Detailed listing on request.

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Installation and commissioning

Install the fire damper according to the operating and installation manual.

Mortar-based installation:
- In solid walls and ceiling slabs
- In non-load-bearing solid walls with flexible ceiling joint
- In lightweight partition walls and fire walls with metal support structure and cladding on both sides
- In shaft walls with metal support structure and cladding on one side

Dry mortarless installation:
- In solid walls and ceiling slabs with installation block ER
- In solid walls and ceiling slabs using a fire batt
- In lightweight partition walls with metal support structure and cladding on both sides using a fire batt
- On the face of solid walls with wall face frame WA
- In lightweight partition walls with metal support structure, cladding on both sides and flexible ceiling joint: with installation kit GL
- In lightweight partition walls with metal support structure and cladding on both sides with installation kit TQ
- In fire walls with metal support structure and cladding on both sides with installation kit TQ
- In shaft walls with or without metal support structure and cladding on one side with installation kit ES

Standards and guidelines

- Construction Products Regulation
- EN 15650:2010 – Ventilation for buildings – Fire dampers
- EN 1366-2:1999 Fire resistance tests for service installations – Fire dampers
- EN 13501-3:2010 Fire classification of construction products and building elements
- EN 1751:1999 Ventilation for buildings – Air terminal devices

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 of the ventilation system.
- For details on maintenance and inspection, refer to the installation and operating manual

Technical data

Nominal sizes	100 – 315 mm
Casing length	400 mm
Volume flow rate range	Up to 770 l/s or up to 2770 m^3/h
Differential pressure range	Up to 1500 Pa
Operating temperature	At least 0 – 50 °C **
Release temperature	72 °C or 95 °C (for warm air ventilation systems)
Upstream velocity*	≤ 8 m/s with standard construction; ≤ 10 m/s with spring return actuator

*** Data applies to uniform upstream and downstream conditions for the fire damper**
**** Temperatures may differ for units with attachments**

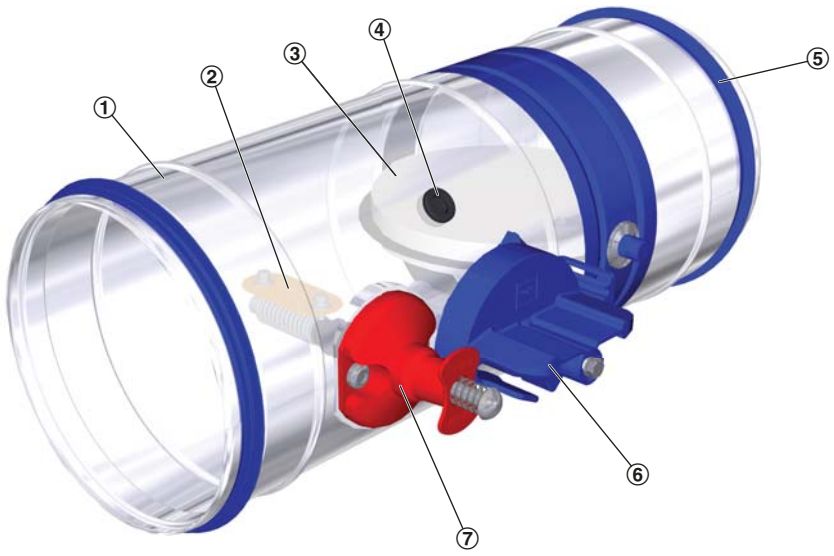
Function

Construction with fusible link

Functional description

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.

Schematic illustration of FKRS-EU with fusible link



① Casing
② Fusible link
③ Damper blade with seal
④ Inspection access (12 mm)
⑤ Lip seal
⑥ Handle with interlock and damper blade position indicator
⑦ Release mechanism

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Function

Construction with spring return actuator

Functional description

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.

Schematic illustration of FKRS-EU 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 Thermoelectric release mechanism

Function

Use as an
air transfer damper

Functional description

Air transfer dampers prevent fire and smoke from spreading in buildings. The thermal release mechanism closes the damper blade when the release temperature (72 °C) is reached. Smoke can, however, spread below this temperature. Air transfer dampers are installed (mortar-based installation) in places where the general building inspectorate sees no risk, for example:

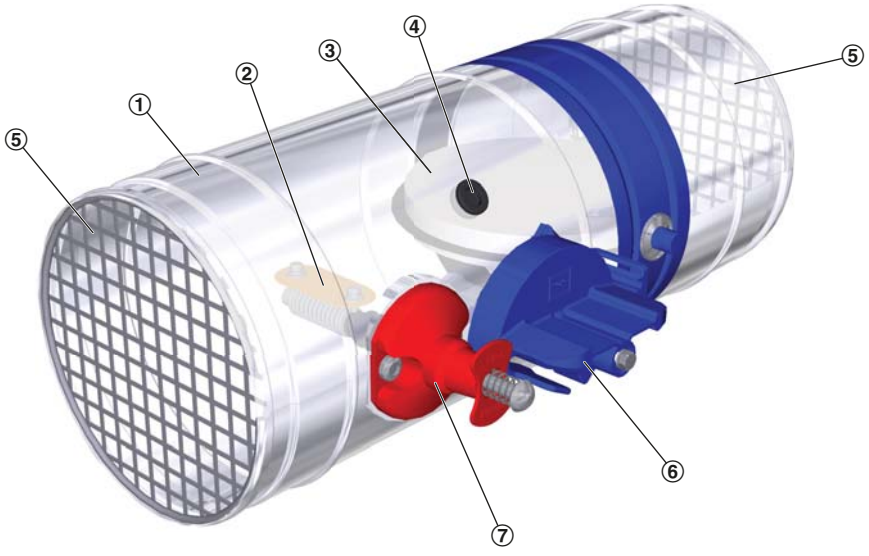
- As an inlet for additional supply air in the walls of required corridors (escape routes) if the dampers are installed near the ground (up to 500 mm above OKFF)
- In installation shafts as long as they have sufficient fire resistance where they penetrate compartment floors
- In installation ducts as long as they have sufficient fire resistance where they penetrate compartment floors or walls (except for necessary corridors or escape routes)

The air transfer damper is an FKRS-EU fire damper with 72 °C thermal release mechanism (construction with fusible link) and cover grilles both ends.

Special characteristics

- General building inspectorate licence Z-19.18-2128
- Air transfer damper without duct smoke detector

Schematic illustration of the FKRS-EU as air transfer damper, with fusible link and cover grille



① Casing
② Fusible link
③ Damper blade with seal
④ Inspection access (12 mm)
⑤ Cover grille
⑥ Handle with interlock and damper blade position indicator
⑦ Release mechanism

1

Design information

- Approved only for use in ventilation and air conditioning sytems
- A class of performance up to EI 120 (v_e, h_o, i ↔ o) S can only be achieved with ducts connected on both ends, or with a duct on one end and a cover grille on the other end.
- If the fire damper is installed in a solid wall, solid ceiling slab, lightweight partition wall or shaft wall with a lower fire resistance class than that of the fire damper, the fire resistance class of the wall or ceiling slab applies also to the FKRS-EU (details upon request)
- Ducting must be installed in such a manner that it does not impose any significant loads on the fire damper in the event of a fire.
- For particular applications it is recommended that flexible connectors are used to connect rigid ducting to the unit.
- Fire dampers must be installed, connected and secured according to the operating and installation manual.

Incorrect use

Never use the fire damper:

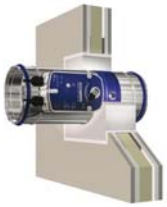
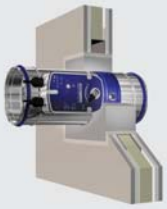
- without specially approved attachments in areas with potentially explosive atmospheres
- as a smoke control damper
- outdoors without sufficient protection against the effects of weather
- in atmospheres where chemical reactions, whether planned or unplanned, may cause damage to the fire damper or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

Correct use in solid walls and ceiling slabs

Installation location		Construction and building material	Minimum thickness	Performance class	Mortar-based installation	Dry mortarless installation
			mm	EI TT (v_e–h_o, i ↔ o) S		
Solid walls		Solid walls, gross density ≥ 500 kg/m³	100	EI 120 S	N	W[1]
		Solid walls, gross density ≥ 500 kg/m³	100	EI 90 S	N	E / W
On the face of solid walls		Solid walls, gross density ≥ 500 kg/m³	100	EI 90 S	–	E
Solid ceiling		Solid ceiling slabs, gross density ≥ 600 kg/m³	150	EI 120 S	N	–
		Solid ceiling slabs, gross density ≥ 600 kg/m³	150	EI 90 S	–	E / W
		Solid ceiling slabs, gross density ≥ 600 kg/m³	150	EI 90 S	N	–

N = Mortar-based installation, E = Installation block/Wall face frame (ER, WA), W = Fire batt
[1] of Ø DN 100 to 200

Correct use in lightweight partition walls and fire walls

Installation location		Construction and building material	Minimum thickness	Performance class	Mortar-based installation	Dry mortarless installation
			mm	EI TT (v_e–h_o, i ↔ o) S		
Lightweight partition walls with metal support structure and cladding on both sides		Lightweight partition walls	100	EI 120 S	N[1]	E[1] / W[1]
		Lightweight partition walls	100	EI 90 S	N	E / W
Lightweight partition walls with metal support structure and cladding on both sides, and with flexible ceiling joint		Lightweight partition walls	100	EI 90 S	–	E
Fire walls with metal support structure and cladding on both sides		Fire walls	115	EI 90 S	N	E
Lightweight partition walls with metal support structure and cladding on both sides		Shaft walls	90	EI 90 S	N	E1

N = Mortar-based installation, E = Installation block (TQ, GL), E1 = E = Installation block (EQ), W = Fire batt
[1] of Ø DN 100 to 200

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
2[1] Stainless steel casing
7 Coated damper blade
1 – 7 Powder-coated casing and coated damper blade
2 – 7[1] Stainless steel casing and coated damper blade
W[2] With 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: none
ER Circular installation block
TQ Square installation kit
WA Wall face frame
GL Installation kit for flexible ceiling joint

6 Accessories 2
No entry: none
S0 – AS

7 Attachments
Z00 – ZL08

[1] Only up to DN 200 when a fire batt system is used
[2] W can be combined with all constructions listed under 2

Order example

FKRS-EU-2-7/DE/200/TQ/SS/ZL06

Construction	Casing made of stainless steel, damper blade coated/with impregnating agent
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/B2

1

Description

/ ER /
5

Order code detail

Application

- Circular installation block ER for dry mortarless installation into solid walls and ceiling slabs
- Installation openings can be created using a commercially available core drill
- 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

- The installation block is sheet steel with a special 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 more information please refer to the installation and operating manual.

Accessories 1	Order code
Circular installation block	ER

Technical data

Weight [kg] of FKRS-EU with fusible link and installation block

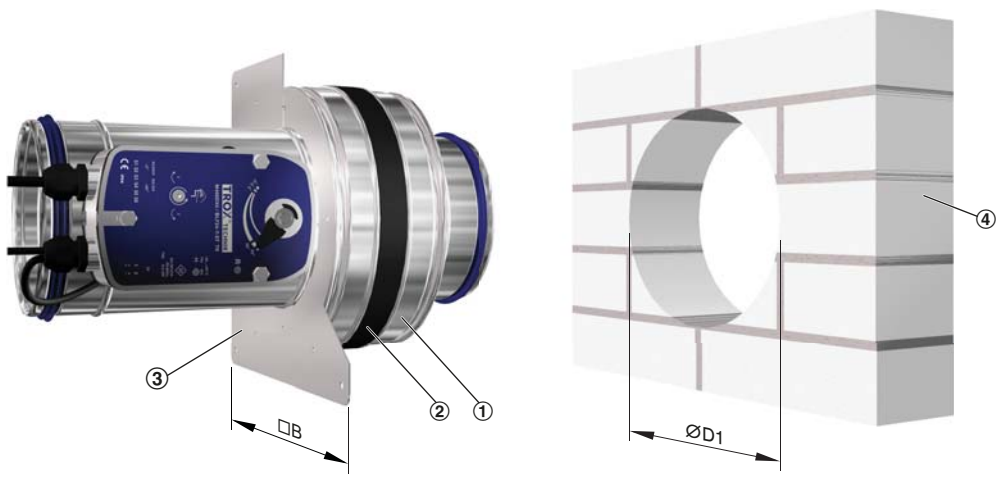
Nominal size	100	125	150	160	180	200	224	250	280	315
Installation block ER	5.7	8.6	7.6	7.3	11	9.8	13.5	12.1	16.0	15.0

FKRS-EU with spring return actuator: weight +1.8 kg.

Installation opening/cover plate dimensions [mm]

Nominal size	100	125	150	160	180	200	224	250	280	315
ØD1	200	250	250	250	300	300	350	350	400	400
□B	250	300	300	300	350	350	400	400	450	450

FKRS-EU with circular installation block ER



① Installation block
② Seal
③ Cover plate
④ Solid wall

Description

/ TQ /
5

Order code detail

Application

- Square dry mortarless installation kit TQ for dry mortarless installation into lightweight partition walls and fire walls with metal support structure and cladding on both sides, and into shaft walls with or without metal support structure
- The installation kit is factory mounted to 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 more information please refer to the installation and operating manual.

Accessories 1	Order code
Square installation kit	TQ

Technical data

Weight [kg] of FKRS-EU with fusible link and installation kit

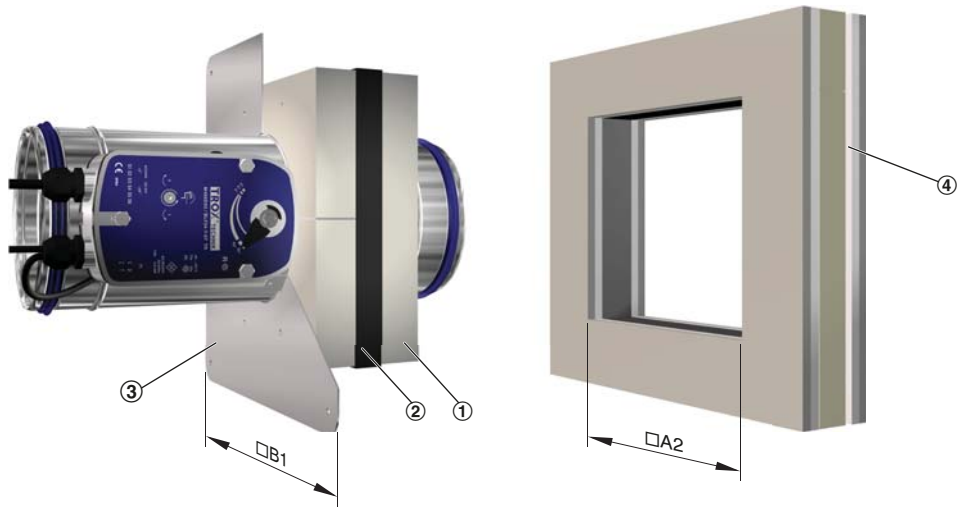
Nominal size	100	125	150	160	180	200	224	250	280	315
Installation kit TQ	5.4	6.1	7.0	7.9	8.8	9.7	10.6	12.0	13.7	15.8

FKRS-EU with spring return actuator: weight +1.8 kg.

Installation opening/cover plate dimensions [mm]

Nominal size	100	125	150	160	180	200	224	250	280	315
□A2	210	235	260	270	290	310	334	360	390	425
□B1	300	325	350	360	380	400	424	450	480	515

FKRS-EU with square installation kit TQ



① Installation kit
② Seal
③ Cover plate
④ Lightweight partition wall or shaft wall

1

Description

/ GL /
5

Order code detail

Application

- Dry mortarless installation in lightweight 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 whilst 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 is factory mounted and can be fixed to the ceiling with the supplied fixing brackets
- The installation kit can be adapted to different wall thicknesses using cut-to-size fire-rated plasterboard panels

Materials and surfaces

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

Note

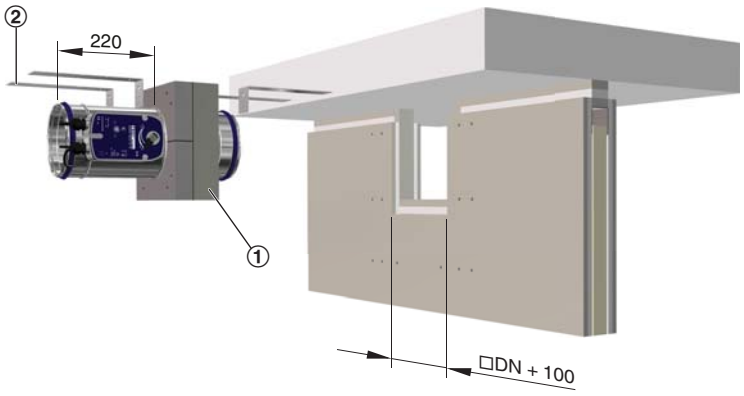
For more information please refer to the installation and operating manual.

Installation kit for lightweight partition walls with flexible ceiling joint

Wall thickness [mm]	Order code
≥ 100[1]	GL

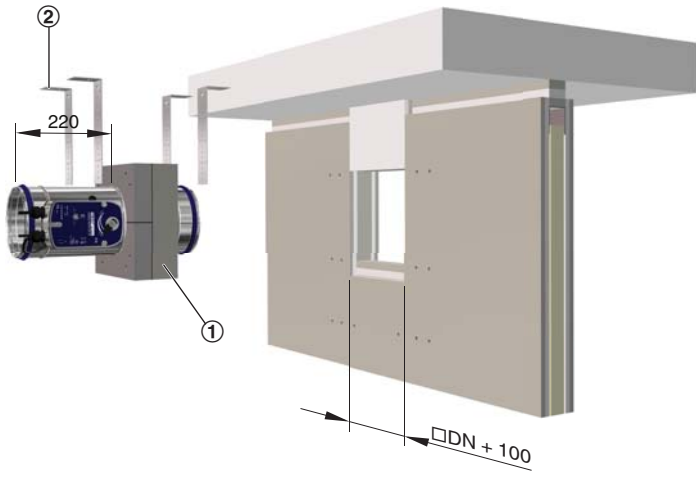
[1]can be adapted to thicker walls (by others)

FKRS-EU with installation kit GL (installation near the ceiling)



Installation kit GL, consisting of:
① Installation subframe
② Fixing bracket

FKRS-EU with installation kit GL (installation near the ceiling, 180 mm max. distance)



Installation kit GL, consisting of:
① Installation subframe
② Fixing bracket

1

Description

/ WA /
5

Order code detail

Application

- Dry mortarless installation of FKRS-EU fire dampers on the face of solid walls requires a wall face frame
- The wall face frame is factory mounted to the fire damper
- The unit is installed without mortar
- The wall face frame is fixed with suitable screws and anchors (with suitability certificate for fire resistance)
- Instead of anchors, threaded rods can be used (push through installation).

Materials and surfaces

- Wall face frame made of calcium silicate

Note

For more information please refer to the installation and operating manual.

Accessories 1	Order code
Wall face frame	WA

Technical data

Weight [kg] of FKRS-EU with fusible link and wall face frame

Nominal size	100	125	150	160	180	200	224	250	280	315
Wall face frame WA	4.4	5.2	6.1	6.6	7.4	8.2	9.0	10.2	11.7	13.6

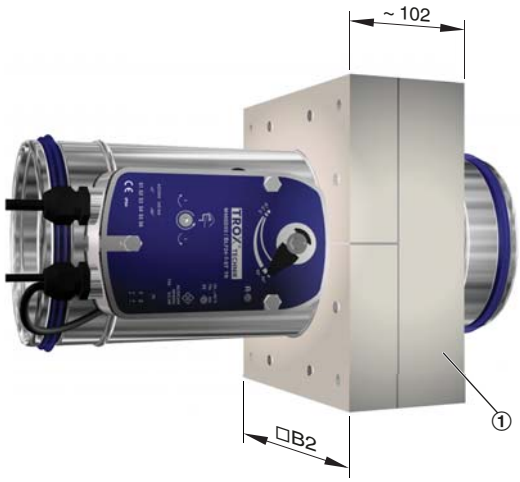
FKRS-EU with spring return actuator: weight +1.8 kg.

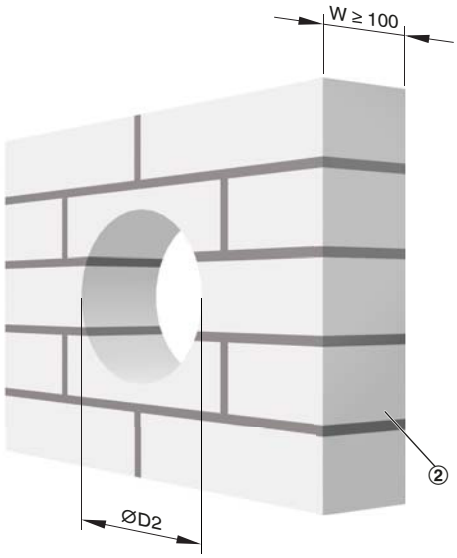
Dimensions [mm] of installation opening/wall face frame

Nominal size	100	125	150	160	180	200	224	250	280	315
ØD2[1]	130	155	180	190	210	230	254	280	310	345
□B2	200	225	250	260	280	300	324	350	380	415

[1] **Tolerance limits: –20 mm/+2 mm**

FKRS-EU with wall face frame WA





① Wall face frame

② Solid wall

Description

Cover grille with extension piece for FKRS-EU

Application

- If only one end is to be ducted on site, the other end must have a cover grille
- To ensure that the open damper blade is contained within the damper casing on the installation side, an extension piece is required for nominal size 224 and above
- 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 or flexible connectors are supplied without lip seals
- Cover grilles are also available separately
- Cover grilles both ends may be used in Germany only for air transfer dampers with general building inspectorate licence, e.g. Z-19.18-2128

Materials and surfaces

- Cover grilles made of galvanised sheet steel (and powder-coated silver grey, RAL 7001, when used with powder-coated (1) and stainless steel (2) dampers)
- Extension piece same as casing

Note

For more information please refer to the installation and operating manual.

/ A0 /
/ 0A /
/ AS /
/ SA /
/ AA /
6

Order code detail

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

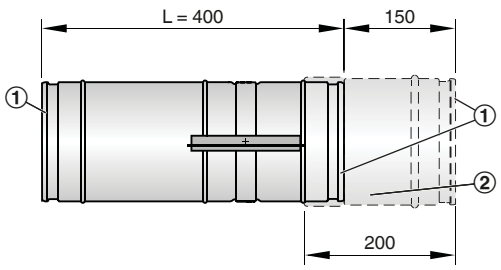
Note: AA for FKRS-EU as air transfer damper

The distance »a« between the open damper blade and the spigot should be 50 mm.

Cover grille

① Cover grille, mesh aperture 10 mm × 10 mm, wire width 2 mm; grille thickness approx. 1 mm
② Extension piece

Cover grille



① Cover grille, mesh aperture 10 mm × 10 mm, wire width 2 mm; grille thickness approx. 1 mm
② Extension piece from nominal size 224

1

Description

Flexible connector for FKRS-EU

Application

- Ducting must be installed in such a manner that it does not impose any significant loads on the fire damper in the event of a fire.
- For information on how to limit such loads please refer to the guideline regarding fire protection requirements on ventilation systems (Lüftungsanlagen-Richtlinie, LüAR)
- As ducts may expand and walls may become deformed in the event of a fire, we recommend for the following applications using flexible connectors when connecting the fire damper to rigid ducts: installation into lightweight partition walls, into lightweight shaft walls, and installation with a fire batt
- Flexible connectors should be installed in such a way that both ends can compensate both tension and compression
- Flexible ducts can be used as an alternative
- To ensure that the open damper blade is contained within the damper casing on the installation side, an extension piece is required for nominal size 224 and above
- 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 more information please refer to the installation and operating manual.

/ S0 /
/ 0S /
/ SS /
/ SA /
/ AS /
6

Order code detail

Flexible connector for FKRS-EU

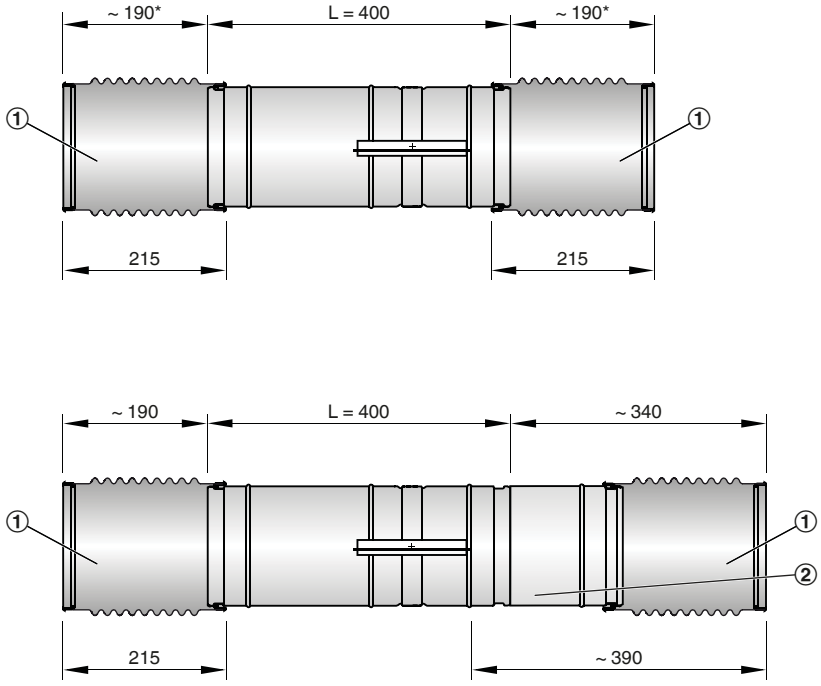
Operating side	Installation side	Order code
Flexible connector	–	S0
–	Flexible connector	0S
Flexible connector	Flexible connector	SS
Flexible connector	Cover grille	SA
Cover grille	Flexible connector	AS

Flexible connector

① Flexible connector
② Extension piece

The distance »a« between the open damper blade and the flexible connector should be 50 mm.

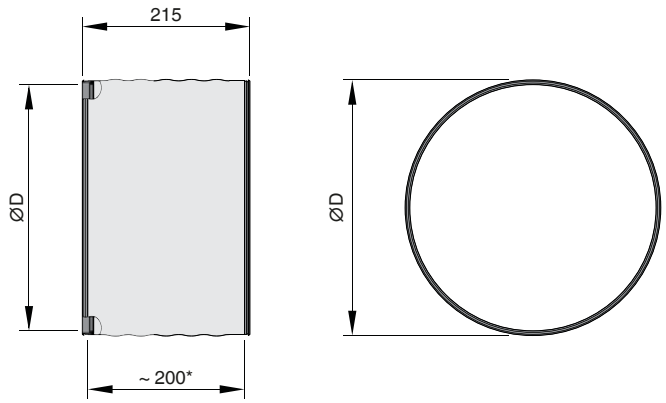
Up to nominal size 200/from nominal size 224



① Flexible connector
② Extension piece

* flexible length ≥ 100 mm when installed

Flexible connector



* flexible length ≥ 100 mm when installed

1

Description

Circular extension piece for FKRS-EU

Application

- Fire dampers from nominal size 224 ordered with flexible connector or cover grille are supplied including extension piece on the installation side
- Extension pieces are also available separately

Materials and surfaces

- Extension pieces made of galvanised sheet steel (and powder-coated silver grey, RAL 7001, when used with powder-coated (1) and stainless steel (2) dampers)

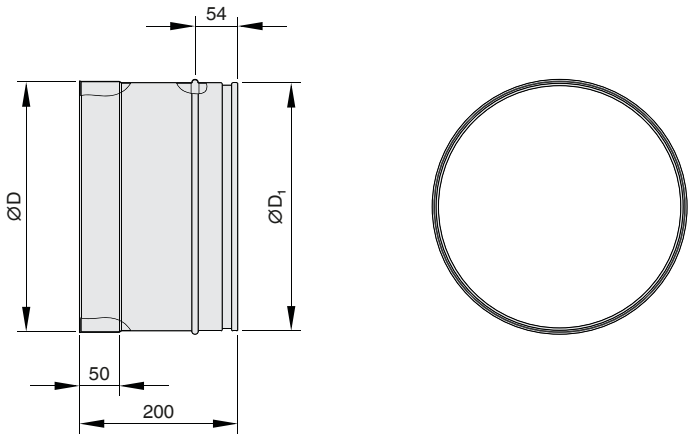
Installation and commissioning

- The distance »a« between the open damper blade and the cover grille or circular spigot should be 50 mm

Note

For more information please refer to the installation and operating manual.

Extension piece



Description

Limit switch

For detailed information on limit switches see Chapter 1.2

FKRS-EU with limit switch

- Limit switches with volt-free contacts enable the damper blade position indication.
- 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 with one or two limit switches; the switches can also be fitted later

Note

For more information please refer to the installation and operating manual.

/ **Z01**
/ **Z02**
/ **Z03**
7

Order code detail

Attachments	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

1

Description

FKRS-EU with spring return actuator

For detailed information on the spring return actuator see Chapter 1.2

FKRS-EU with spring return actuator

- An open/close 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)
- Fire dampers with spring return actuators can be functionally checked OPEN/CLOSED/OPEN
- Ambient temperature of the actuator, normal operation –30 to 50 °C
- Two integral limit switches with volt-free contacts enable the damper blade position indication (OPEN and CLOSED)
- BLF24-T-ST TR: The connecting cables of the spring return actuator are fitted with plugs, which ensure quick and easy connection to the TROX AS-i bus system
- A conversion kit is available for adding an actuator to the standard construction
- In case of conventional wiring (Z45) the voltage must be supplied by a safety transformer

Note

For more information please refer to the installation and operating manual.

/ **Z43**
/ **Z45**
7

Bestellschlüsseldetail

Attachments	Order code
BLF230-T TR	Z43
BLF24-T-ST TR	Z45

Description

FKRS-EU with TROXNETCOM module

For detailed information on TROXNETCOM see Chapter 1.2

FKRS-EU with spring return actuator and TROXNETCOM

- Fire dampers with spring return actuator BLF24-T-ST TR and the modules shown here as attachments form a functional unit ready for automatic operation.
- The components are factory assembled and wired
- It enables the integration of different components (modules) into a network regardless of the manufacturer
- The modules control actuators and/or receive signals from sensors

Application

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/B2: To provide the control input signal for up to two fire dampers
- LON-WA1/B2-AD: Connection box for connecting the second fire damper with 24 V DC supply voltage to LON-WA1/B2-AD
- LON-WA1/B2-AD230: Connection box with integral 230/24 V power supply unit for the connection of a second actuator-driven 24 V fire damper to LON-WA1/B2

AS-i:

- The AS interface is a global standard bus system according to EN 50295 and IEC 62026-2
- The module sends the control signals between the spring return actuator and the controller and power unit
- This allows for controlling the actuator and monitoring of its running 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
- Function display: operation, 4 inputs, 2 outputs

Note

For more information please refer to the installation and operating manual.

/ **ZL06**
/ **ZL07**
/ **ZL08**
/ **ZA07**
7

Order code detail

Attachments	Order code
LON-WA1/B2 and BLF24-T-ST TR	ZL06
LON-WA1/B2-AD and BLF24-T-ST TR	ZL07
LON-WA1/B2-AD230 and BLF24-T-ST TR	ZL08
AS-EM and BLF24-T-ST TR	ZA07

1

Description

Duct smoke detector
RM-O-3-D

Duct smoke detector
RM-O-VS-D

For detailed information on the duct smoke detector see Chapter 1.2

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

Application

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

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

Note

For more information please refer to the installation and operating manual.

Attachments	Order code
Smoke detector	RM-O-3-D
	RM-O-VS-D

Duct smoke detectors are attachments and to be ordered separately.

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

L_{WA} [dB(A)]	25	35	45	25	35	45
Nominal size	$\dot{V}$					
mm	l/s			m^3/h		
100	22	35	50	79	126	180
125	40	65	90	144	234	324
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

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

1

Nominal size	A [m²]	ζ
100	0.005	1.71
125	0.009	1.08
150	0.013	0.76
160	0.016	0.67
200	0.025	0.44
224	0.032	0.56
250	0.040	0.45
280	0.052	0.36
315	0.067	0.28

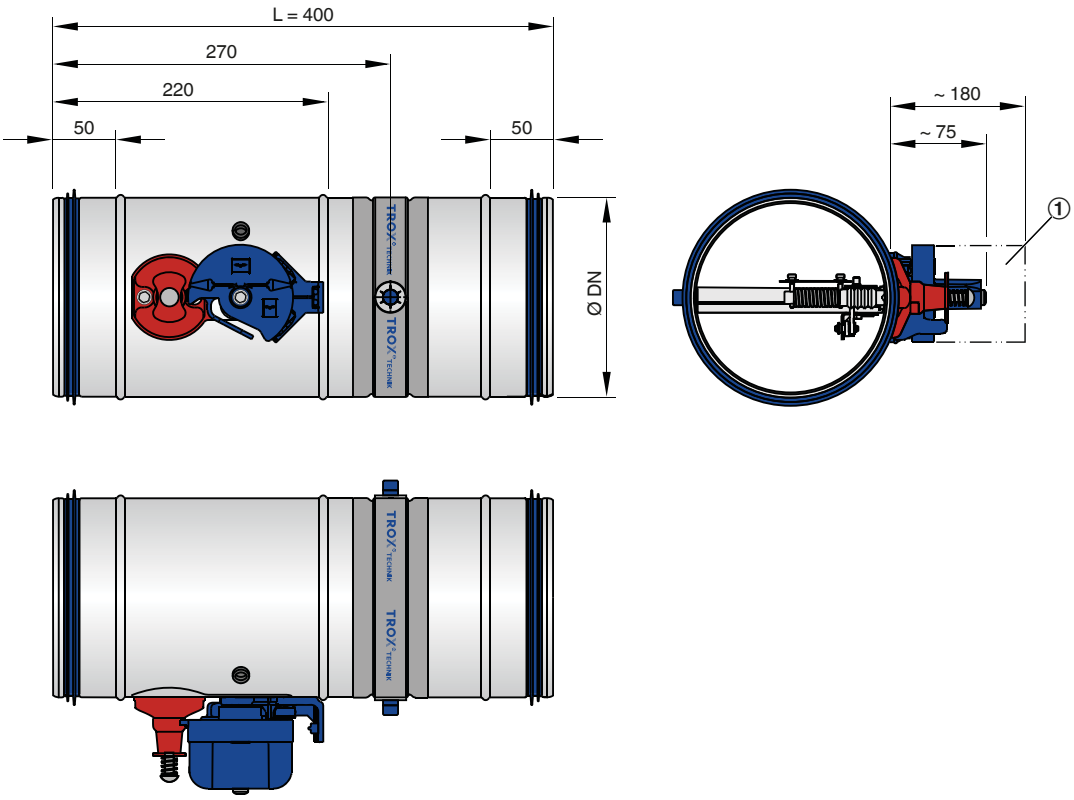
Maximum upstream velocity: ≤ 8 m/s for standard construction, ≤ 10 m/s for construction with spring return actuator.

1

Dimensions

FKRS-EU with fusible link

FKRS-EU with fusible link



① Keep clear to provide access to the release mechanism

Dimensions [mm] / Weight [kg]

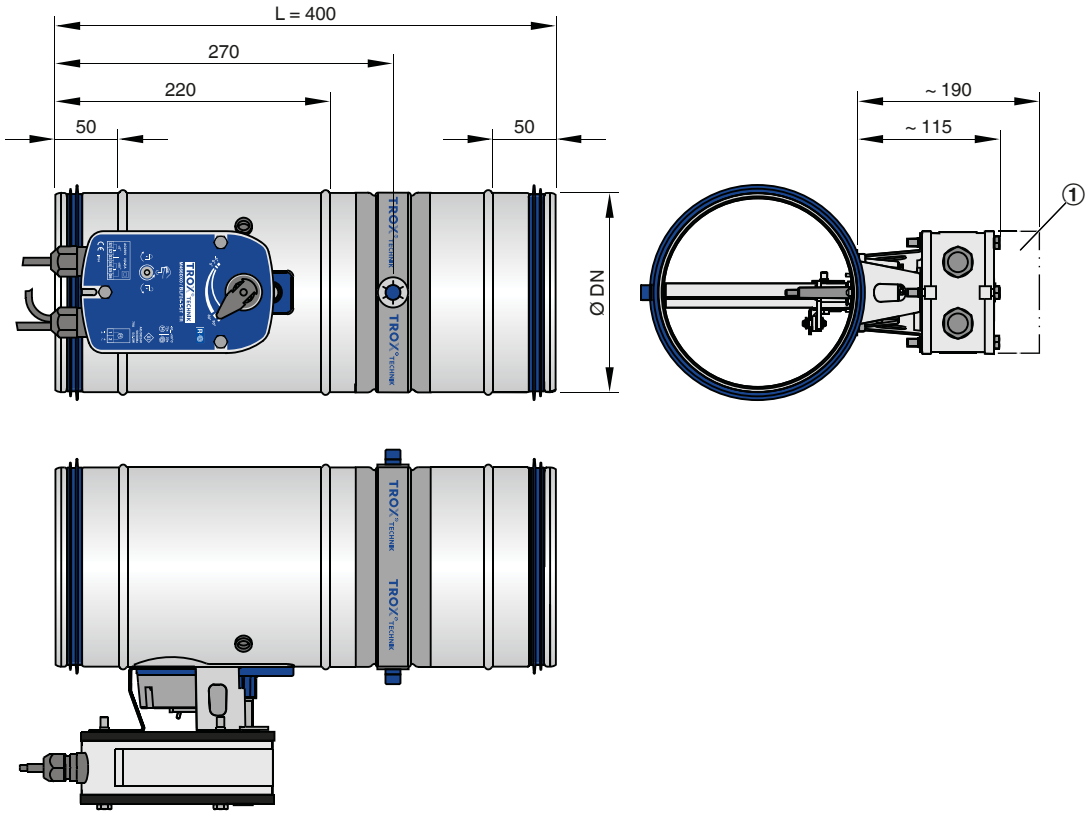
Nominal size	100	125	150	160	180	200	224	250	280	315
ØD	99	124	149	159	179	199	223	249	279	314
Weight	1.3	1.6	1.8	2	2.3	2.5	2.7	3.3	3.8	4.4

1

Dimensions

FKRS-EU with spring return actuator

FKRS-EU with spring return actuator



① Keep clear to provide access to the release mechanism

Dimensions [mm] / Weight [kg]

Nominal size	100	125	150	160	180	200	224	250	280	315
ØD	99	124	149	159	179	199	223	249	279	314
Weight	3.1	3.4	3.6	3.7	4.0	4.2	4.5	5	5.5	6.2

Description

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

Circular fire dampers for the isolation of duct penetrations between fire compartments. Tested for fire resistance properties to EN 1366-2, with CE marking and declaration of performance according to the Construction Products Regulation. Ready-for-operation unit, which includes a fire-resistant damper blade and a release mechanism. For mortar-based installation and dry mortarless installation into solid walls and ceiling slabs, mortar-based installation into non-load-bearing solid walls with flexible ceiling joint, mortar-based and dry mortarless installation into lightweight partition walls with cladding on both sides, lightweight fire walls and lightweight shaft walls, and dry mortarless installation on the face of solid walls. For dry mortarless installation in lightweight partition walls with metal support structure and flexible ceiling joint; for dry mortarless installation in solid walls and ceiling slabs when using a fire batt; in lightweight partition walls with metal support structure and cladding on both sides. Casing length 400 mm, for the connection to ducts made of non-combustible or combustible materials. Thermal or thermoelectric release at 72 °C or 95 °C (warm air ventilation systems). Constructions with spring return actuator for opening and closing the fire damper independent of the nominal size and even while the ventilation system is running, e.g. for a functional test. Simple construction for dry mortarless installation with installation kit: ER, TQ, GL, WA

Special characteristics

- Declaration of performance according to Construction Products Regulation
- Classification to EN 13501-3, up to EI 120 (v_e, h_o, i ↔ o) S
- Building inspectorate licence Z-56.4212-991 for fire resistance properties
- Complies with the requirements of EN 15650
- Tested to EN 1366-2 for fire resistance properties
- Hygiene complies with VDI 6022 part 1 (07/2011), VDI 3803 (10/2002), DIN 1946 part 4 (12/2008), and EN 13779 (09/2007)
- 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

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

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

The construction variants with stainless steel or powder-coated casing meet even more critical requirements for corrosion protection. Detailed listing on request.

Technical data

- Nominal sizes: 100 to 315 mm
- Casing length: 400 mm
- Volume flow rate range: Up to 770 l/s or 2770 m^3/h
- Differential pressure: up to 1500 Pa
- Operating temperature: at least 0 – 50 °C **
- Release temperature 72 °C or 95 °C (for use in warm air ventilation systems)
- Upstream velocity: ≤ 8 m/s with standard construction; ≤ 10 m/s * with spring return actuator

Note:
* Data applies to uniform upstream and downstream conditions for the fire damper
** Temperatures may differ for units with attachments

Sizing data

- $\dot{V}$ _____ [m^3/h]
- Δp_{st} _____ [Pa]
- L_{WA} Air-regenerated noise _____ [dB(A)]

1

Order options

1 Type
FKRS-EU Fire damper

2 Construction
No entry: standard construction
- ☐ **1** Powder-coated casing
- ☐ **2**[1] Stainless steel casing
- ☐ **7** Coated damper blade
- ☐ **1 – 7** Powder-coated casing and coated damper blade
- ☐ **2 – 7**[1] Stainless steel casing and coated damper blade
- ☐ **W**[2] With 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: none
- ☐ **ER** Circular installation block
- ☐ **TQ** Square installation kit
- ☐ **WA** Wall face frame
- ☐ **GL** Installation kit for flexible ceiling joint

6 Accessories 2
No entry: none
- ☐ **S0 – AS**

7 Attachments
- ☐ **Z00 – ZL08**

[1] Only up to DN 200 when a fire batt system is used
[2] W can be combined with all constructions listed under 2

Fire dampers
Basic information and nomenclature

- Product selection
- Principal dimensions
- Nomenclature
- Colour codes according to IEC 60757
- Sizing

1

Product selection
Fire dampers

Usage			Type							
			FK-EU				FKS-EU		FKR-EU	
			Mortar-based installation		Dry mortarless installation		Mortar-based installation	Dry mortarless installation	Mortar-based installation	Dry mortarless installation
Installation location	Construction/ building material	Minimum thickness	perimeter	partially[5]	Fire batt	Installation kit[2]	perimeter	Installation kit[2]	perimeter	Installation kit[2]
		mm	Fire resistance class							
In solid walls	Walls/gross density ≥ 500 kg/m³	100	EI 90 S	EI 90 S	EI 120 S	EI 90 S	EI 120 S	EI 90 S	EI 120 S	–
In solid walls with movement joint	Walls/gross density ≥ 500 kg/m³	100	EI 90 S	–	–	–	–	–	–	–
On the face of solid walls	Walls/gross density ≥ 500 kg/m³	100	–	–	–	EI 90 S	–	–	–	–
Adjacent to solid walls[1]	Walls/gross density ≥ 500 kg/m³	100	–	–	–	EI 90 S	–	–	–	–
Remote from solid walls[1]	Walls/gross density ≥ 500 kg/m³	100	–	–	–	EI 90 S	–	–	–	–
In solid ceiling slabs	Ceiling slabs/gross density ≥ 600 kg/m³	125	EI 90 S	–	–	–	–	–	–	–
	Ceiling slabs/gross density ≥ 600 kg/m³	150	EI 90 S		EI 120 S		EI 120 S	EI 90 S	EI 120 S	–
In solid ceiling slabs, with concrete base	Ceiling slabs/gross density ≥ 600 kg/m³	125	EI 90 S	–	–	–	EI 90 S	–	EI 90 S	–
Lightweight partition walls with metal support structure and cladding on both sides	Lightweight partition walls	100	EI 90 S	–	EI 120 S	EI 90 S	EI 90 S	EI 90 S	EI 90 S	EI 90 S
Lightweight partition walls with metal support structure and cladding on both sides, flexible ceiling joint[1]	Lightweight partition walls	100	–	–	–	EI 90 S	–	–	–	–
Fire walls with metal support structure and cladding on both sides	Fire walls	115	EI 90 S	–	–	EI 90 S	EI 90 S	EI 90 S	EI 90 S	EI 90 S
Lightweight partition walls with metal support structure and cladding on one side	Shaft walls	90	–	–	–	EI 90 S	EI 90 S	EI 90 S	EI 90 S	EI 90 S
Lightweight partition walls without metal support structure but with cladding on one side	Shaft walls	40 or 50[4]	–	–	–	EI 90 S	–	–	EI 90 S	EI 90 S
In self supporting fire-resistant suspended ceilings	Tile ceilings, screw-fixed and primed	–	–	–	–	–	–	–	–	–
	Lay-in ceiling tiles made of panel materials	–	–	–	–	–	–	–	–	–
	Metal ceilings	–	–	–	–	–	–	–	–	–

[1] Not for FK-EU as air transfer damper
[2] Installation kit for the selected installation situation
[3] For ØDN 100 to 200 in lightweight partition wall with metal support structure and mineral wool
[4] 50 only for FKR-EU
[5] Additional mineral wool

Product selection
Fire dampers

Usage			Type						
Installation location	Construction/building material	Minimum thickness	FKRS-EU			FV-EU	KA-EU	FVZ-K30	KU-K30
			Mortar-based installation	Dry mortarless installation		Mortar-based installation			Dry mortarless installation
			perimeter	Fire batt	Installation kit[2]	perimeter	Mortar-based installation	Installation kit	
		mm	Fire resistance class						
In solid walls	Walls/gross density ≥ 500 kg/m³	100	EI 120 S	EI 120 S[3], EI 90 S	EI 90 S	EI 120 S	K90	–	–
In solid walls with movement joint	Walls/gross density ≥ 500 kg/m³	100	–	–	–	–	–	–	–
On the face of solid walls	Walls/gross density ≥ 500 kg/m³	100	EI 90 S	–	EI 90 S	–	–	–	–
Adjacent to solid walls[1]	Walls/gross density ≥ 500 kg/m³	100	–	–	–	–	–	–	–
Remote from solid walls[1]	Walls/gross density ≥ 500 kg/m³	100	–	–	–	–	–	–	–
In solid ceiling slabs	Ceiling slabs/gross density ≥ 600 kg/m³	125	–	–	–	–	–	–	–
	Ceiling slabs/gross density ≥ 600 kg/m³	150	EI 120 S	EI 120 S[3], EI 90 S	EI 90 S	EI 120 S	K90	–	–
In solid ceiling slabs, with concrete base	Ceiling slabs/gross density ≥ 600 kg/m³	125	–	–	–	–	–	–	–
Lightweight partition walls with metal support structure and cladding on both sides	Lightweight partition walls	100	EI 120 S[3], EI 90 S	EI 120 S[3], EI 90 S	EI 120 S[3], EI 90 S	EI 120 S	K90	–	–
Lightweight partition walls with metal support structure and cladding on both sides, flexible ceiling joint[1]	Lightweight partition walls	100	–	–	EI 90 S	–	–	–	–
Fire walls with metal support structure and cladding on both sides	Fire walls	115	EI 90 S	–	EI 90 S	–	K90	–	–
Lightweight partition walls with metal support structure and cladding on one side	Shaft walls	90	EI 90 S	–	EI 90 S	–	–	–	–
Lightweight partition walls without metal support structure but with cladding on one side	Shaft walls	40 or 50[4]	–	–	–	–	–	–	–
In self supporting fire-resistant suspended ceilings	Tile ceilings, screw-fixed and primed	–	–	–	–	–	–	K30-U	K30-U
	Lay-in ceiling tiles made of panel materials	–	–	–	–	–	–	K30-U	K30-U
	Metal ceilings	–	–	–	–	–	–	K30-U	K30-U

[1] Not for FK-EU as air transfer damper
[2] Installation kit for the selected installation situation
[3] For ØDN 100 to 200 in lightweight partition wall with metal support structure and mineral wool
[4] 50 only for FKR-EU
[5] Additional mineral wool

1

Principal dimensions

Rectangular fire dampers

B [mm]
Width of the fire damper

H [mm]
Height of the fire damper

Circular fire dampers

Nominal size [mm]
Diameter of the fire damper

L [mm]
Length of the fire damper

Nomenclature

$\dot{V}$ [m³/h] and [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)

Δp_{st} [Pa]
Static differential pressure

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

K
Correction value

Wiring

Colour codes according to IEC 60757

Code	Colour
BK	black
BN	brown
RD	red
OG	orange
YE	yellow
GN	green
BU	blue

Colour codes according to IEC 60757

Code	Colour
VT	violet
GY	grey
WH	white
PK	pink
TQ	turquoise
GNYE	green-yellow

Sizing with the help of this catalogue

This catalogue provides convenient quick sizing tables for fire dampers. The volume flow rates for all available dimensions and nominal sizes are provided based on a particular differential pressure. Sizing data for other volume flow rates and differential pressures can be determined quickly and precisely using the Easy Product Finder design programme.

Easy Product Finder

The Easy Product Finder allows you to size products using your project-specific data.

You will find the Easy Product Finder on our website.