Fire dampers
Type FKR-EU

FKR-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

For large diameters, with or without a flange

Large circular fire damper for the isolation of duct penetrations between fire compartments, available in nine nominal sizes

- Nominal sizes: 315 – 800 mm
- Low differential pressure and sound power level
- Flanges as an option
- Explosion-proof construction (ATEX) as an option
- Optional stainless steel casing or powder-coated casing for increased corrosion protection
- Integration into the central BMS with TROXNETCOM

Optional equipment and accessories

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

1

Type		Page
FKR-EU	General information	1.1 – 2
	Correct use	1.1 – 8
	Order code	1.1 – 12
	Installation kit TQ	1.1 – 13
	Cover grille	1.1 – 14
	Flexible connector	1.1 – 16
	Extension piece	1.1 – 19
	Limit switch	1.1 – 21
	Spring return actuator	1.1 – 22
	TROXNETCOM	1.1 – 23
	Duct smoke detectors	1.1 – 24
	Quick sizing	1.1 – 25
	Free area and resistance coefficient	1.1 – 26
	Dimensions and weight – FKR-EU	1.1 – 27
	Dimensions and weight – FKR-EU/.../Z4*	1.1 – 28
	Dimensions and weight – FKR-EU/.../ZEX*	1.1 – 29
	Dimensions and weight – FKR-EU-FL	1.1 – 30
	Dimensions and weight – FKR-EU-FL/.../Z4*	1.1 – 31
	Dimensions and weight – FKR-EU-FL/.../ZEX*	1.1 – 32
	Flange holes	1.1 – 33
	Specification text	1.1 – 34
	Basic information and nomenclature	1.3 – 1

Variants

Product examples

FKR-EU with fusible link

FKR-EU-FL with spring return actuator

FKR-EU
with explosion-proof spring return actuator

Description

FKR-EU with spring return actuator type BFN

For detailed information on attachments see Chapter K4 – 1.2.

Application
- Fire dampers of Type FKR-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 fusible link for use in potentially explosive atmospheres
- With spring return actuator
- With spring return actuator for use in potentially explosive atmospheres

Nominal sizes
- 315, 355, 400, 450, 500, 560, 630, 710, 800
- L: 495 mm or 550 mm (depending on casing construction)

Attachments
- Limit switch for damper blade position indication*
- Limit switch for damper blade position indicator for use in potentially explosive atmospheres*
- 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 TQ for dry mortarless installation into lightweight partition walls / fire walls with metal support structure and cladding on both sides, as well as timber stud walls and half-timbered constructions
- 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 (02/2010), 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 4
- 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
- Release temperature 72 °C or 95 °C (for use in warm air ventilation systems)
- Single-handed operation
- Explosion-proof constructions for zones 1, 2, 21 and 22 with limit switch or spring return actuator

Construction features
- Rigid, circular casing with spigot connections suitable for circular ducts. Spigots with lip seal on both ends, suitable for commercially available circular ducts to EN 1506 or EN 13180; alternatively with flanges on both ends. Flanges, to EN 12220
- The release mechanism is accessible and can be tested from the outside
- Suitable for the connection of ducts, flexible connectors or a cover grille
- 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 impregnation

Other components:
- Damper blade shaft in 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.

1

Installation and commissioning

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

Mortar-based installation:
- In solid walls and ceiling slabs
- In lightweight partition walls with metal support structure and cladding on both sides
- In timber stud walls and half-timbered constructions with cladding on both sides
- In fire walls with metal support structure and cladding on both sides
- In shaft walls with or without metal support structure and with cladding on one side
- On wooden beam ceilings
- On modular ceilings (Cadolto system)

Dry mortarless installation:
- In lightweight partition walls with metal support structure or steel support structure and cladding on both sides: with installation kit TQ
- In timber stud walls and half-timbered constructions with cladding on both sides and installation kit TQ
- In fire walls with metal support structure and cladding on both sides with installation kit TQ

Standards and guidelines

- Construction Products Regulation
- EN 15650:2010 Ventilation for buildings – Fire dampers
- EN 1366-2:2015 Fire resistance tests for service installations – Fire dampers
- EN 13501-3:2010 Fire classification of construction products and building elements
- EN 1751:2014 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 functional tests, maintenance and inspection refer to the installation and operating manual

Technical data

Nominal sizes	315 – 800 mm
Casing lengths	495 and 550 mm
Volume flow rate range	Up to 6000 l/s or up to 21600 m^3/h
Differential pressure range	Up to 2000 Pa
Temperature range	–20 – 50 °C **
Release temperature	72 °C or 95 °C (for warm air ventilation systems)
Upstream velocity*	≤ 8 m/s with standard construction; ≤ 12 m/s with spring return actuator

Note: Upstream velocity for the explosion-proof actuator ExMax/RedMax-15-BF TR is ≤ 10 m/s

* Data applies to uniform upstream and downstream conditions for the fire dampers

** Temperatures may differ for units with attachments; details for other applications are available on request. Condensation and the intake of humid fresh air have to be avoided as otherwise operation will be impaired or not possible.

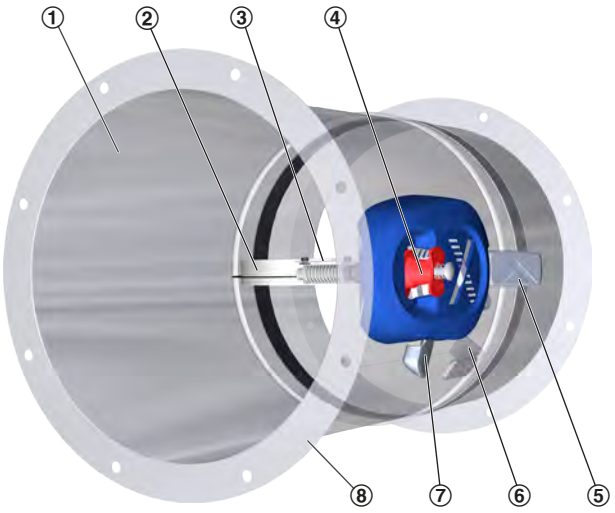
Function

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. Both regular limit switches and explosion-proof limit switches are available for zones 1 and 2 (gases, mists, vapours) and for zones 21 and 22 (dusts) to indicate damper blade positions.

Schematic illustration of FKR-EU-FL with fusible link



① Casing
② Damper blade with seal
③ Fusible link
④ Thermal release mechanism
⑤ Handle
⑥ Travel stop for CLOSED position
⑦ Release tab
⑧ Flange

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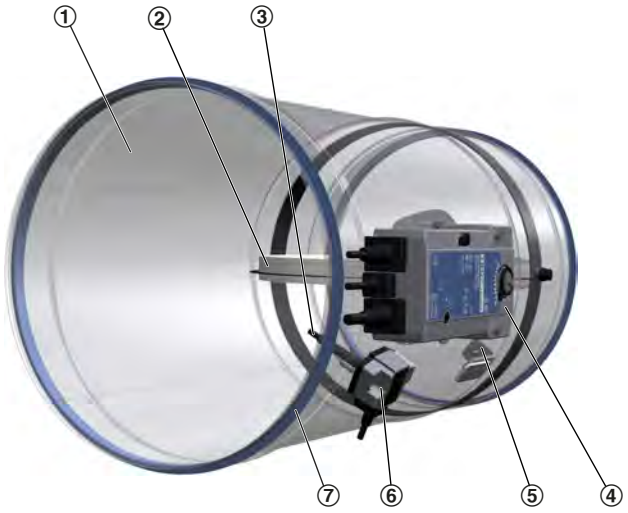
Function

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 FKR-EU with spring return actuator



① Casing
② Damper blade with seal
③ Temperature sensor
④ Spring return actuator BFN / BF
⑤ Travel stop for CLOSED position
⑥ Thermoelectric release mechanism
⑦ Lip seal

Function

Construction
with spring return
actuator, explosion-proof

Functional description

The fire damper is used as a shut-off device to prevent fire and smoke from spreading through ducting in areas with potentially explosive atmospheres. The fire damper is suitable for supply air and extract air systems in potentially explosive atmospheres. For details on the operation of the fire damper refer to the operating and installation manual and to the technical data in the supplementary operating manual (A00000038482).

Use in areas with potentially explosive atmospheres (ATEX)

According to declaration of conformity TÜV 13 ATEX 128437 X, the fire damper may be used in the following areas with potentially explosive atmospheres. The ambient temperatures and types of release and actuation specified in the technical data are binding.

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

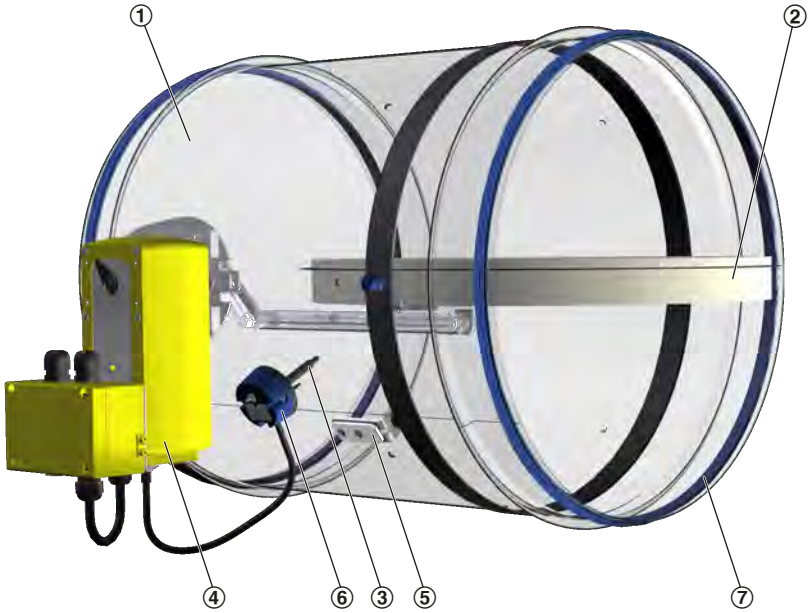
ExMax:
- Zones 1, 2: Gases, mists and vapours
- Zones 21, 22: Dusts

ATEX certification

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

* Release temperature 72 °C

Schematic illustration of FKR-EU with explosion-proof spring return actuator (e.g. ExMax-15-BF TR)



① Casing
② Damper blade with seal
③ Temperature sensor
④ Spring return actuator ExMax/RedMax and terminal box ExBox
⑤ Travel stop for CLOSED position
⑥ Thermoelectric release mechanism
⑦ Lip seal

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Design information

- Approved only for use in ventilation and air conditioning systems
- If the fire damper is installed in solid walls and ceiling slabs, timber stud walls as well as shaft walls 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 FKR-EU
- Loads imposed on the casing may impair the function of the fire damper. Install and connect the damper in such a way that no loads will be imposed on the installed damper.
- For particular applications it is recommended that flexible connectors are used to connect rigid ducting to the unit.
- Inspection accesses are provided for maintenance and cleaning work
- For further information relevant to design, in particular information on installation situations, please refer to the operating and installation manual.

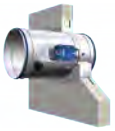
Incorrect use

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

If this fire damper is used in Germany:

- Do not use it as an air transfer damper.
- Do not use it in extract air systems in commercial kitchens.
- 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.

Essential characteristic: fire resistance — size [mm]: Ø 315 to Ø 800				
Supporting construction	**Construction**	**Installation location**	**Installation type**	**Class of performance (EI TT)**
 Solid wall	• d ≥ 100 mm • Distance to load-bearing structural elements ≥ 40 mm • Distance between casings ≥ 40 mm	in the wall	Mortar-based installation	EI 120 (v_e i↔o) S
 Lightweight partition wall	• Metal support structure or steel support structure • Gypsum bonded or cement bonded panel materials, fibre-reinforced gypsum or fire rated calcium silicate boards • d ≥ 98 mm • With or without mineral wool • Distance to load-bearing structural elements ≥ 40 mm • Installation kit TQ	in the wall	Dry mortarless installation	EI 90 (v_e i↔o) S
	• Metal support structure or steel support structure • Gypsum bonded or cement bonded panel materials, fibre-reinforced gypsum or fire rated calcium silicate boards • d ≥ 98 mm • With or without mineral wool • Distance to load-bearing structural elements ≥ 40 mm • Distance between casings ≥ 40 mm	in the wall	Mortar-based installation	EI 90 (v_e i↔o) S

Essential characteristic: fire resistance — size [mm]: Ø 315 to Ø 800				
Supporting construction	**Construction**	**Installation location**	**Installation type**	**Class of performance (EI TT)**
 Lightweight partition wall	• Metal stud wall with sheet steel insert, used as a fire wall, safety partition wall or to provide radiation protection • Gypsum bonded or cement bonded panel materials or fibre-reinforced gypsum • d ≥ 100 mm • With or without mineral wool • Distance to load-bearing structural elements ≥ 40 mm • Distance between casings ≥ 40 mm	in the wall	Mortar-based installation	EI 90 (v_e i↔o) S
	• Metal stud wall with sheet steel insert, used as a fire wall, safety partition wall or to provide radiation protection • Gypsum bonded or cement bonded panel materials or fibre-reinforced gypsum • d ≥ 100 mm • With or without mineral wool • Installation kit TQ	in the wall	Dry mortarless installation	EI 90 (v_e i↔o) S
	• Metal stud wall • Gypsum bonded or cement bonded panel materials, fibre-reinforced gypsum or fire rated calcium silicate boards • d ≥ 75 mm • With or without mineral wool • Wall thickness increased to d ≥ 98 mm	in the wall	Mortar-based installation	EI 30 (v_e i↔o) S
	• Metal stud wall • Gypsum bonded or cement bonded panel materials, fibre-reinforced gypsum or fire rated calcium silicate boards • d ≥ 75 mm • With or without mineral wool • Wall thickness increased to d ≥ 98 mm • Installation kit TQ	in the wall	Dry mortarless installation	EI 30 (v_e i↔o) S
	• Timber stud wall (also timber panel constructions and timber frames) • Gypsum bonded or cement bonded panel materials, fibre-reinforced gypsum or fire rated calcium silicate boards • d ≥ 130 mm • Distance between casings ≥ 40 mm • Distance to load-bearing structural elements ≥ 40 mm	in the wall	Mortar-based installation	EI 90 (v_e i↔o) S
	• Timber stud wall (also timber panel constructions and timber frames) • Gypsum bonded or cement bonded panel materials, fibre-reinforced gypsum or fire rated calcium silicate boards • d ≥ 130 mm • Installation kit TQ	in the wall	Dry mortarless installation	EI 90 (v_e i↔o) S
	• Timber stud wall (also timber panel constructions and timber frames) • Gypsum bonded or cement bonded panel materials, fibre-reinforced gypsum or fire rated calcium silicate boards • d ≥ 105 mm • Wall thickness increased to d ≥ 130 mm • Distance between casings ≥ 40 mm • Distance to load-bearing structural elements ≥ 40 mm	in the wall	Mortar-based installation	EI 30 (v_e i↔o) S
	• Timber stud wall (also timber panel constructions and timber frames) • Gypsum bonded or cement bonded panel materials, fibre-reinforced gypsum or fire rated calcium silicate boards • d ≥ 105 mm • Wall thickness increased to d ≥ 130 mm • Installation kit TQ	in the wall	Dry mortarless installation	EI 30 (v_e i↔o) S

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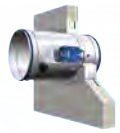
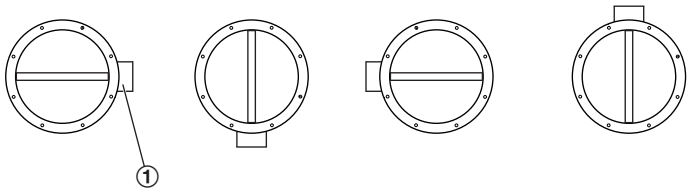
Essential characteristic: fire resistance — size [mm]: Ø 315 to Ø 800				
Supporting construction	**Construction**	**Installation location**	**Installation type**	**Class of performance (EI TT)**
 Lightweight partition wall	• Half-timbered wall • Gypsum bonded or cement bonded panel materials, fibre-reinforced gypsum or fire rated calcium silicate boards • d ≥ 140 mm • Distance between casings ≥ 40 mm • Distance to load-bearing structural elements ≥ 40 mm	in the wall	Mortar-based installation	EI 90 (v_e i↔o) S
	• Half-timbered wall • Gypsum bonded or cement bonded panel materials, fibre-reinforced gypsum or fire rated calcium silicate boards • d ≥ 140 mm • Installation kit TQ	in the wall	Dry mortarless installation	EI 90 (v_e i↔o) S
	• Half-timbered wall • Gypsum bonded or cement bonded panel materials, fibre-reinforced gypsum or fire rated calcium silicate boards • d ≥ 115 mm • Wall thickness increased to d ≥ 140 mm • Distance between casings ≥ 40 mm • Distance to load-bearing structural elements ≥ 40 mm	in the wall	Mortar-based installation	EI 30 (v_e i↔o) S
	• Half-timbered wall • Gypsum bonded or cement bonded panel materials, fibre-reinforced gypsum or fire rated calcium silicate boards • d ≥ 115 mm • Wall thickness increased to d ≥ 140 mm • Installation kit TQ	in the wall	Dry mortarless installation	EI 30 (v_e i↔o) S
 Shaft wall	• Metal support structure or steel support structure • Gypsum bonded or cement bonded panel materials, fibre-reinforced gypsum or fire rated calcium silicate boards • Cladding on one side • d ≥ 90 mm • Distance to load-bearing structural elements ≥ 40 mm	in the wall	Mortar-based installation	EI 90 (v_e i↔o) S
	• Metal support structure • Additional safety board • Gypsum bonded or cement bonded panel materials, fibre-reinforced gypsum or fire rated calcium silicate boards • Cladding on one side • with reinforcing board ≥ 90 mm	in the wall	Mortar-based installation	EI 90 (v_e i↔o) S
	• without metal support structure • Gypsum bonded or cement bonded panel materials, fibre-reinforced gypsum or fire rated calcium silicate boards • Cladding on one side • d ≥ 50 mm • Distance to load-bearing structural elements ≥ 40 mm	in the wall	Mortar-based installation	EI 90 (v_e i↔o) S
 Solid ceiling slab	• d ≥ 100 mm • Distance between casings ≥ 40 mm • Distance to load-bearing structural elements ≥ 40 mm	in the ceiling	Mortar-based installation	EI 120 (h_o i↔o) S
	• d ≥ 100 mm • combined with wooden beam ceilings • Distance between casings ≥ 40 mm • Distance to load-bearing structural elements ≥ 40 mm	in the ceiling	Mortar-based installation	EI 90 (h_o i↔o) S
	• d ≥ 100 mm • Combined with suspended ceiling systems (Cadolto system) • Distance between casings ≥ 40 mm • Distance to load-bearing structural elements ≥ 40 mm	in the ceiling	Mortar-based installation	EI 120 (h_o i↔o) S

Installation orientation

Installation orientation with horizontal ducts (FKR-EU and FKR-EU-FL)



① Release mechanism (mechanical or spring return actuator)

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Order code

FKR-EU

FKR – EU – FL – 1 / DE / 315 / TQ / A0 / Z43
1 2 3 4 5 6 7 8

1 Type
FKR-EU Fire damper

2 Flange
No entry: none (construction with spigots)
FL[2] Flanges on both ends

3 Construction
No entry: none
1 Powder-coated casing, RAL 7001
2 Stainless steel casing
7 Impregnated damper blade
1 – 7 Powder-coated casing RAL 7001 and impregnated damper blade
2 – 7 Stainless steel casing and impregnated damper blade
W[1] With fusible link 95 °C (only for use in warm air ventilation systems)

4 Country of destination
DE Germany
Other destination countries upon request

5 Nominal size [mm]
315
355
400
450
500
560
630
710
800

6 Accessories 1
No entry: none
TQ[2] Installation kit (construction with spigots)

7 Accessories 2
No entry: none
S0 – AS

8 Attachments
Z00 – ZEX4

[1] W can be combined with all constructions 2 and 3, but not with attachments 8 ZEX1 – ZEX4

[2] TQ cannot be combined with FKR-EU-FL

Order example

FKR-EU-1/DE/500/SS/ZL09

Construction variant	Casing (construction with spigots) powder-coated, silver grey (RAL 7001)
Country of destination	Germany
Nominal size	500 mm
Accessories	Flexible connector on operating and installation sides
Attachment	Spring return actuator 24 V AC/DC and LON module LON-WA1/B3

Description

/ TQ /
6

Order code detail

Application

- Square installation kit TQ (for FKR-EU in construction with spigots) for dry mortarless installation into lightweight partition walls with metal support structure or steel substructure and cladding on both sides, fire walls with metal support structure and cladding on both sides as well as into timber stud walls and half-timbered constructions
- 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 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

Technical data

Weight in kg for FKR-EU with fusible link and installation kit TQ

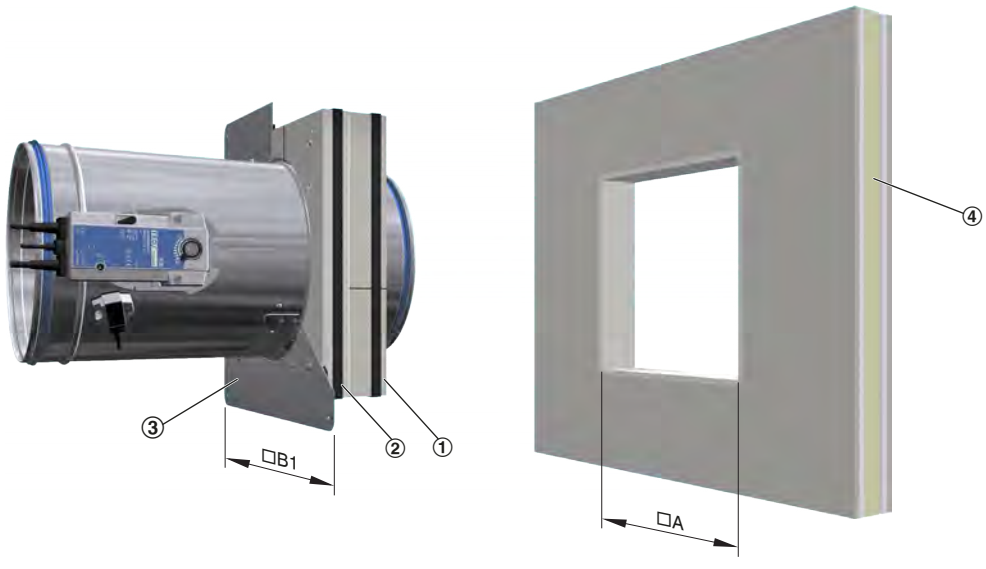
Nominal size	315	355	400	450	500	560	630	710	800
Installation kit TQ	19.5	21.8	25.0	33.1	37.8	42.6	49.7	58.7	67.3

FKR-EU with spring return actuator: Weight + 1.8 kg (with BFN actuator) / + 3.0 kg (BF actuator).

Installation opening/cover plate dimensions [mm]

Nominal size	315	355	400	450	500	560	630	710	800
□A	435	475	520	570	620	680	750	830	920
□B1	515	555	600	650	700	760	830	910	1000

FKR-EU with square installation kit TQ



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

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Description

Cover grille with extension piece FKR-EU

Application

- If only one end is to be ducted on site, the other end must have a cover grille
- For certain nominal sizes extension pieces may be required, see table
- 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%
- The fixing holes in the cover grilles and extension pieces match those in the fire damper flanges (applies only to FKR-EU-FL)
- Cover grilles are also available separately
- Cover grilles both ends are approved in Germany only for Type FK-EU fire dampers used as air transfer dampers, general building inspectorate licence Z-6.50-2031

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)

Note

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

/ **A0** /
/ **0A** /
/ **AS** /
/ **SA** /
7

Order code detail

Cover grille for FKR-EU

Operating side	Installation side	Order code
Cover grille	–	A0
–	**Cover grille**	0A
Cover grille	**Flexible connector**	AS
Flexible connector	**Cover grille**	SA

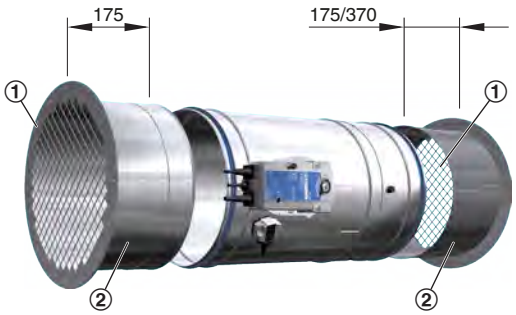
Technical data

Arrangement and length of extension pieces (dimensions in mm)

Nominal size	Operating side	Installation side
Construction variant	**FKR-EU / FKR-EU-FL**	
315	175 / –	175 / 175
355	175 / –	175 / 175
400	175 / –	175 / 175
450	175 / –	175 / 175
500	175 / –	175 / 370
560	175 / –	370 / 370
630	175 / –	370 / 370
710	175 / –	370 / 370
800	175 / 175	370 / 370

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

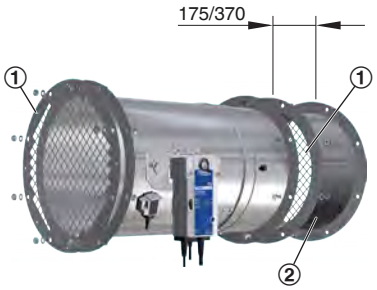
Cover grille for FKR-EU



① Cover grille, mesh aperture 15 mm × 15 mm, wire width 2 mm

② Extension piece

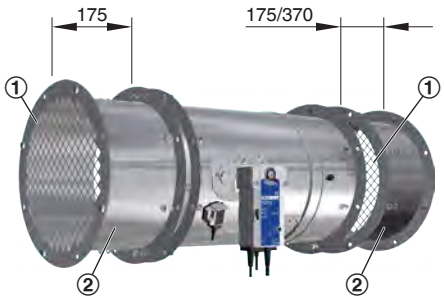
Cover grille for FKR-EU-FL



① Cover grille, mesh aperture 15 mm × 15 mm, wire width 2 mm; grille thickness approx. 1 mm

② Extension piece

Cover grille for FKR-EU-FL with extension pieces



① Cover grille, mesh aperture 15 mm × 15 mm, wire width 2 mm; grille thickness approx. 1 mm

② Extension piece

Extension piece and cover grille are supplied factory assembled.

1

Description

Flexible connector with flange for FKS-EU-FL

Application

- 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 and into lightweight shaft walls
- 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
- For certain nominal sizes extension pieces may be required, see table
- The fixing holes in the flexible connectors and extension pieces match those in the fire damper flanges (applies only to FKR-EU-FL)
- Flexible connectors are supplied separately and can are fixed by others
- Flexible connectors are also available separately

Materials and surfaces

- Flexible connectors made of galvanised steel (FKR-EU-FL only) and fibre-reinforced plastic
- Fire resistance properties to 4102; B2
- Extension piece 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.

/ S0 /
/ 0S /
/ SS /
/ SA /
/ AS /
7

Order code detail

Flexible connector for FKR-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

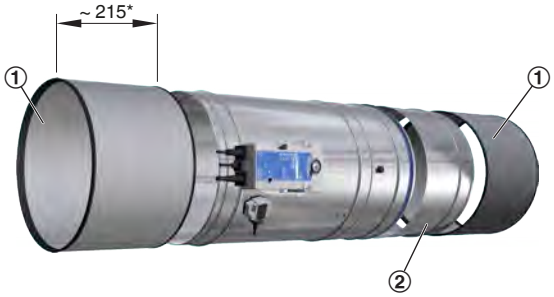
Technical data

Arrangement and length of extension pieces (dimensions in mm)

Nominal size	Operating side	Installation side
Construction variant	FKR-EU / FKR-EU-FL	
315	– / –	175 / 175
355	– / –	175 / 175
400	– / –	175 / 175
450	– / –	175 / 175
500	– / –	175 / 370
560	– / –	370 / 370
630	– / –	370 / 370
710	– / 175	370 / 370
800	175 / 175	370 / 370

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

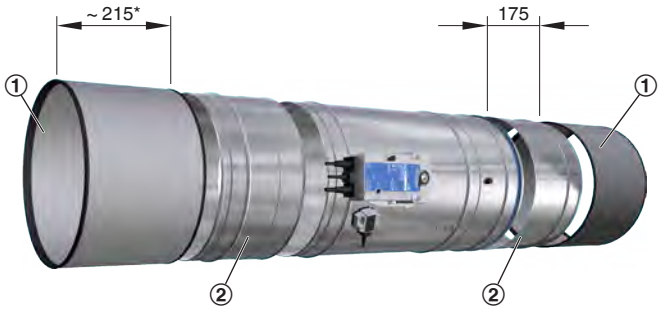
Flexible connector for FKR-EU



① Flexible connector
② Extension piece

* flexible length ≥ 100 mm when installed

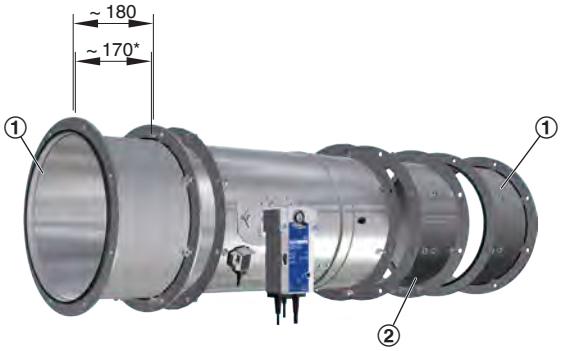
Flexible connector for FKR-EU with extension pieces



① Flexible connector
② Extension piece

* flexible length ≥ 100 mm when installed

Flexible connector for FKR-EU-FL

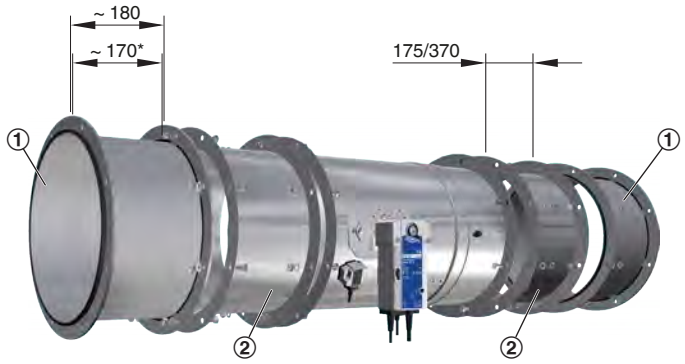


① Flexible connector
② Extension piece

* flexible length ≥ 100 mm when installed

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

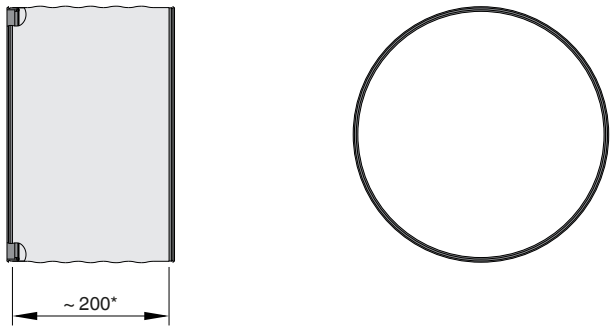
Flexible connector for FKR-EU-FL with extension pieces



① Flexible connector
② Extension piece

* flexible length ≥ 100 mm when installed

Flexible connector for FKR-EU



* flexible length ≥ 100 mm when installed

Flexible connector for FKR-EU-FL

* flexible length ≥ 100 mm when installed

Description

Extension piece
with flange FKR-EU-FL

Application

- Fire dampers ordered with flexible connector or cover grille are supplied including extension piece
- Extension pieces are also available separately

Materials and surfaces

- Extension piece 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.

Technical data

When using cover grilles or flexible connectors extension pieces are required for some nominal sizes.

FKR-EU dimensions [mm]

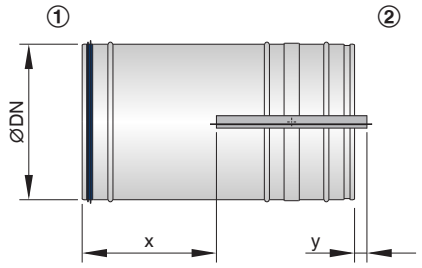
Nominal size	315	355	400	450	500	560	630	710	800
x	–270	–250	–230	–200	–175	–145	–110	–70	–25
y	25	45	70	90	115	145	180	220	265

FKR-EU-FL dimensions [mm]

Nominal size	315	355	400	450	500	560	630	710	800
x	–240	–220	–200	–170	–145	–115	–80	–40	5
y	55	75	100	125	150	180	215	255	300

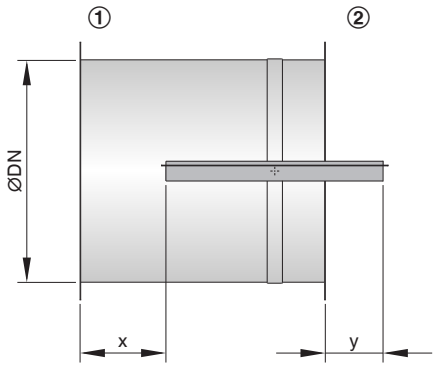
The distance »a« between the open damper blade and the cover grille or circular spigot should be approx. 50 mm.

FKR-EU open blade protrusion



① Operating side ② Installation side

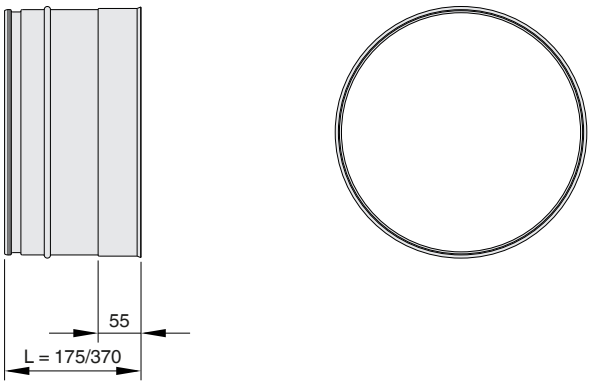
FKR-EU-FL open blade protrusion



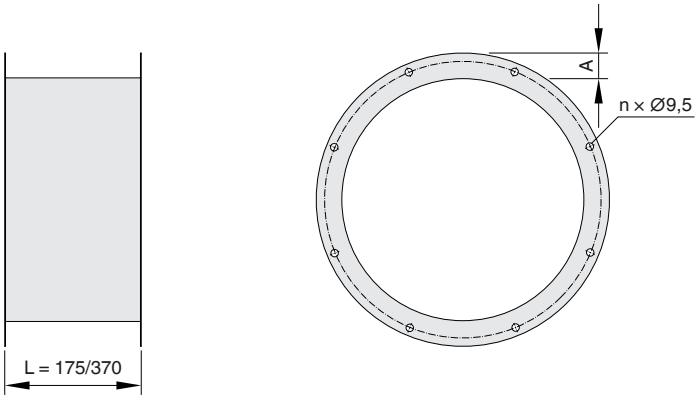
① Operating side ② Installation side

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

Extension piece for FKR-EU



Extension piece for FKR-EU-FL



Description

Limit switch

For detailed information on limit switches see Chapter 1.2

FKR-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
- For technical data and wiring examples refer to the additional technical leaflet 'Attachments for fire dampers'

/ Z01
/ Z02
/ Z03
8

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

Description

Limit switch (explosion-proof)

For detailed information on limit switches see Chapter 1.2

FKR-EU with explosion-proof limit switch

- According to declaration of conformity TÜV 13 ATEX 128437 X explosion-proof 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
- The limit switches must be connected in a separately approved casing with a type of protection according to EN 60079-0
- 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
- For technical data and wiring examples refer to the supplementary technical leaflet "Attachments for fire dampers" and to the supplementary operating manual "Explosion-proof fire dampers, Type FKR-EU"

Z01EX – Z03EX
- Zones 1, 2: Gases, mists and vapours
- Zones 21, 22: Dusts

/ Z01EX
/ Z02EX
/ Z03EX
8

Order code detail

Attachments	Order code
Limit switch (explosion-proof) for damper blade position CLOSED	Z01EX
Limit switch (explosion-proof) for damper blade position OPEN	Z02EX
Limit switches (explosion-proof) for damper blade positions CLOSED and OPEN	Z03EX

ATEX certification

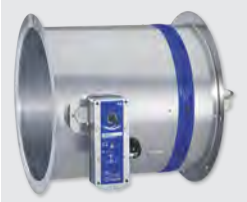
ATEX areas of application for the FKR-EU

Release mechanism	Marker	Ambient temperature	Maximum airflow velocity
Fusible link	II 2D c T80 °C	–40 to 40 °C	8 m/s
Fusible link and limit switch	II 2G c IIC T6	–20 to 40 °C	

1

Description

FKR-EU with spring return actuator type BFN



FKR-EU-FL with spring return actuator BF

For detailed information on the spring return actuator see Chapter 1.2

FKR-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
- Two integral limit switches with volt-free contacts enable the damper blade position indication (OPEN and CLOSED)
- Ambient temperature, normal operation –30 to 50 °C
- BFN24-T-ST TR or BF24-T-ST-2 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 is supplied by a safety transformer
- For technical data and wiring examples refer to the additional technical leaflet 'Attachments for fire dampers'

/ Z43
/ Z45
8

Order code detail

Attachments	Order code
BFN230-T TR / BF230-T-2 TR	Z43
BFN24-T-ST TR / BF24-T-ST-2 TR	Z45

Spring return actuator type BFN for FKR-EU with a nominal size up to 400 mm.
Spring return actuator BF for FKR-EU with a nominal size up to 450 mm.

Description

FKR-EU with explosion-proof spring return actuator

For detailed information on the spring return actuator see Chapter 1.2

FKR-EU with explosion-proof 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
- 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 enable the damper blade position indication (OPEN and CLOSED)
- The electrical connection is made in the explosion-proof terminal box
- Release temperature of the spring return actuator is 72 °C
- Declaration of conformity: TÜV 13 ATEX 128437 X
- For technical data and wiring examples refer to the supplementary technical leaflet "Attachments for fire dampers" and to the supplementary operating manual "Explosion-proof fire dampers, Type FKR-EU"

ZEX1: Zone 1, 2, 21, 22
ZEX3: Zone 2, 22

/ ZEX1
/ ZEX3
8

Order code detail

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

ATEX certification

ATEX areas of application for the FKR-EU

Attachments	Release mechanism	Marker	Ambient temperature
ExMax-15-BF TR	ExPro-TT	II 2 D c T80 °C II 2 G c IIC T6	–40 to 40 °C
RedMax-15-BF TR		II 3D c T80 °C II 3G c IIC T6	

Description

FKR-EU with TROXNETCOM module

For detailed information on TROXNETCOM see Chapter 6

FKR-EU with spring return actuator and TROXNETCOM

- Fire dampers with a 24 V spring return actuator and the modules described 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
- International standards ensure product compatibility
- Only the bus line and the supply voltage remain to be connected by others
- WA1/B3-AD: 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/B3
- WA1/B3-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/B3

AS-i:

- The AS interface is a global standard bus system according to EN 50295 and IEC 62026-2
- The module transmits the control signals between the spring return actuator and the controller and power unit
- This allows for controlling the actuator and monitoring the actuator 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

/ ZL09
/ ZL10
/ ZL11
/ ZA07
8

Order code detail

Attachments	Order code
LON-WA1/B3 and BF(N)24-T-ST(-2) TR	ZL09
WA1/B3-AD and BF(N)24-T-ST(-2) TR	ZL10
WA1/B3-AD230 and BF(N)24-T-ST(-2) TR	ZL11
AS-EM and BF(N)24-T-ST(-2) TR	ZA07

Description

ATEX certification

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

- The AS interface is a global standard bus system according to EN 50295 and IEC 62026-2
- It enables the integration of different components (modules) into a network regardless of the manufacturer
- 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
- This allows for controlling the actuator and monitoring the actuator 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

/ ZEX2
/ ZEX4
8

Order code detail

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

1

Description

Duct smoke detector
RM-O-3-D

Duct smoke detector
RM-O-VS-D

For detailed information on duct smoke detectors see Chapter 3

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

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

Duct smoke detectors are attachments and to be ordered separately.
The duct smoke detector can only be mounted onto an even surface, e.g. a rectangular duct

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

L_{WA} [dB(A)]	35	45	35	45
Nominal size	$\dot{V}$			
mm	l/s		m^3/h	
315	460	670	1660	2400
355	570	820	2040	2940
400	700	1000	2500	3610
450	820	1180	2940	4240
500	980	1410	3530	5080
560	1190	1710	4280	6160
630	1450	2090	5230	7520
710	1780	2560	6400	9210
800	2170	3130	7810	11250

Sizing example

Given data	Quick sizing
Volume flow rate: 3600 m^3/h	FKR-EU / 400
Sound power level: 45 dB(A)	

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
315	0.069	0.44
355	0.089	0.34
400	0.114	0.26
450	0.140	0.21
500	0.175	0.17
560	0.222	0.13
630	0.285	0.10
710	0.365	0.08
800	0.468	0.06

1

Dimensions

FKR-EU with fusible link

FKR-EU with spigot and fusible link

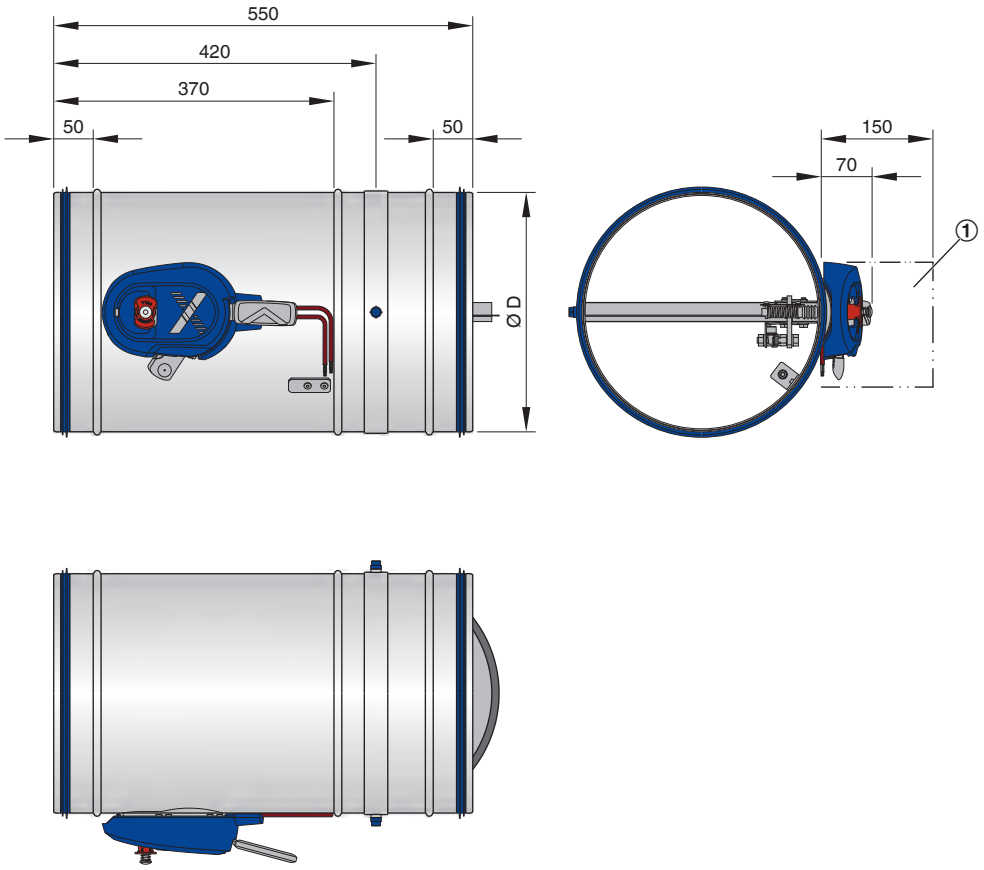


Illustration shows nominal sizes 315 - 400 mm

① Keep clear to provide access to the release mechanism

Dimensions [mm] / Weight [kg]

Nominal size DN	315	355	400	450	500	560	630	710	800
ØD	314	354	399	449	499	559	629	709	799
Weight	6.8	7.3	8.5	14.1	16.4	18	21.3	25.7	28.6

1

Dimensions

FKR-EU
with spring return actuator

FKR-EU with spigot and spring return actuator

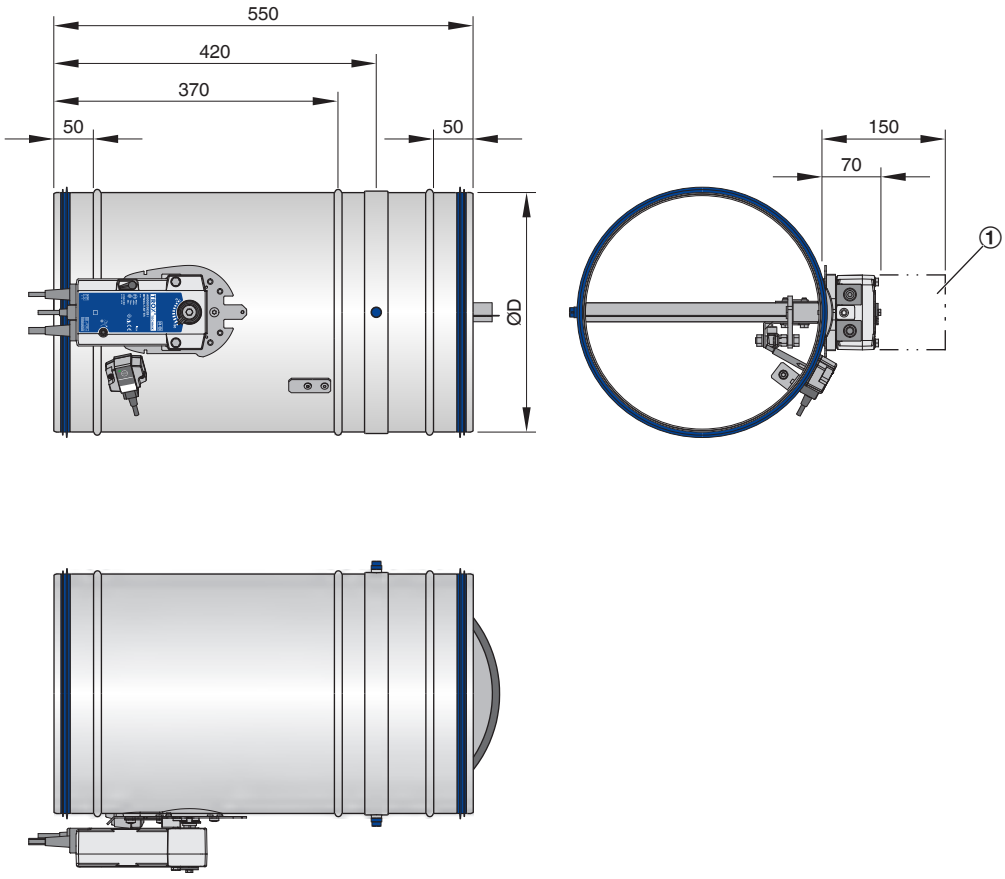


Illustration shows nominal sizes 315 - 400 mm

① Keep clear to provide access to the spring return actuator

Dimensions [mm] / Weight [kg]

Nominal size DN	315	355	400	450	500	560	630	710	800
ØD	314	354	399	449	499	559	629	709	799
Weight	8.2	8.7	9.9	16.7	19	20.6	23.9	28.3	31.3

Dimensions

FKR-EU
with explosion-proof
spring return actuator

FKR-EU with spigot and explosion-proof spring return actuator

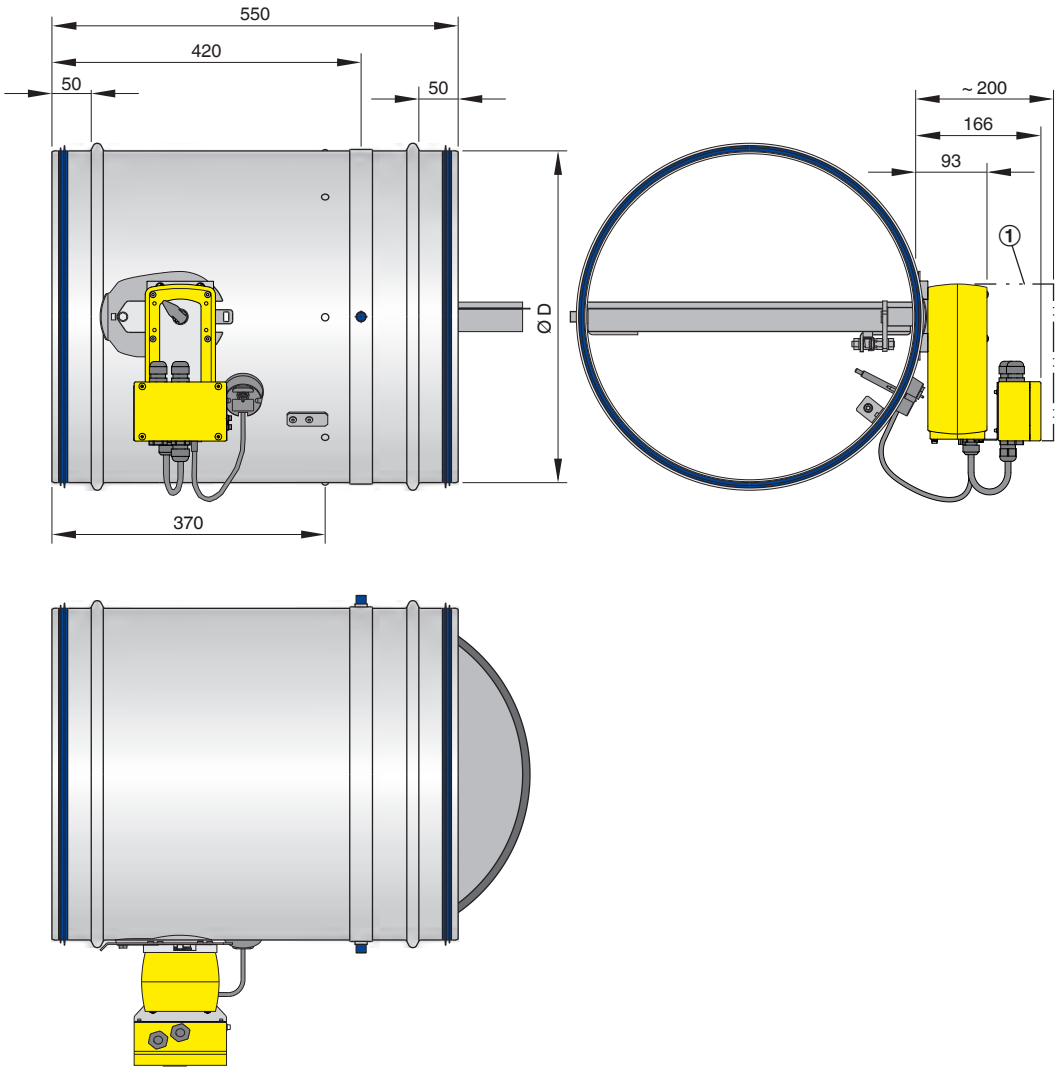


Illustration shows nominal sizes 450 - 800 mm

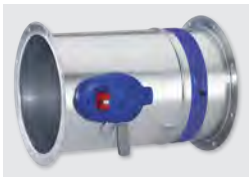
① Keep clear to provide access to the spring return actuator

Dimensions [mm] / Weight [kg]

Nominal size DN	315	355	400	450	500	560	630	710	800
ØD	314	354	399	449	499	559	629	709	799
Weight	12	12	14	19	21	23	26	31	34

1

Dimensions



FKR-EU-FL
with fusible link

FKR-EU with flange and fusible link

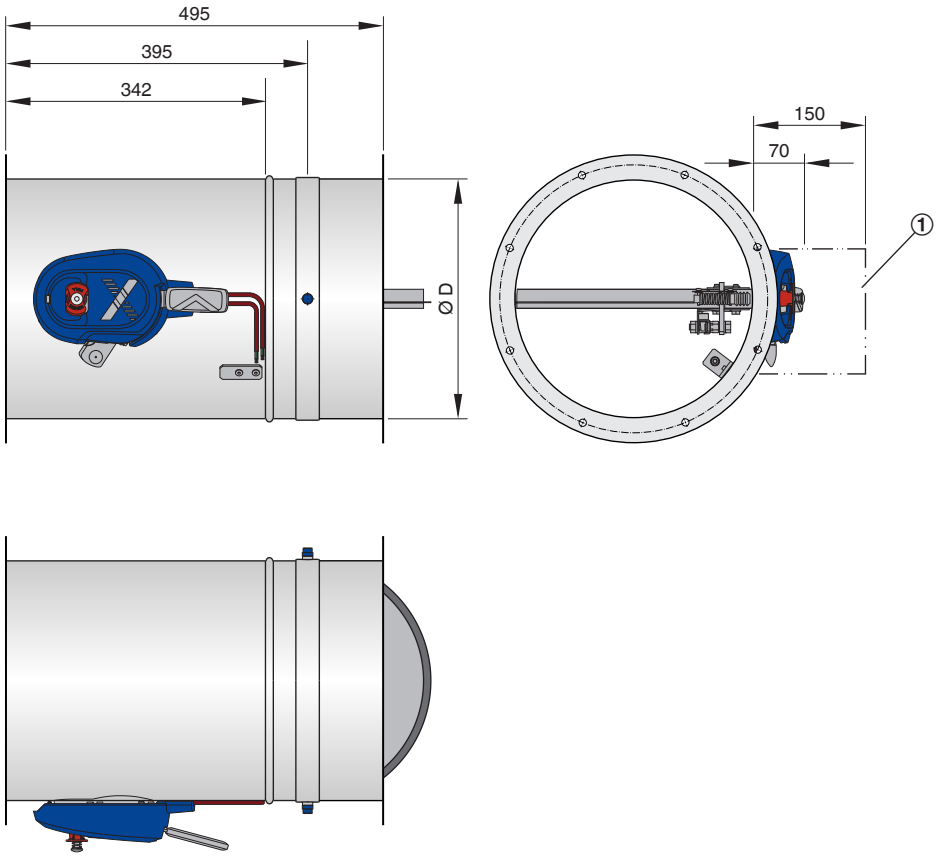


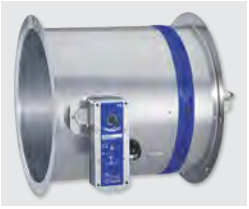
Illustration shows nominal sizes 315 - 400 mm

① Keep clear to provide access to the release mechanism

Dimensions [mm] / Weight [kg]

Nominal size DN	315	355	400	450	500	560	630	710	800
ØD	314	354	399	449	499	559	629	709	799
Weight	6.8	7.3	8.5	14.1	16.4	18	21.3	25.7	28.6

Dimensions



FKR-EU-FL
with spring return actuator

FKR-EU with flange and explosion-proof spring return actuator

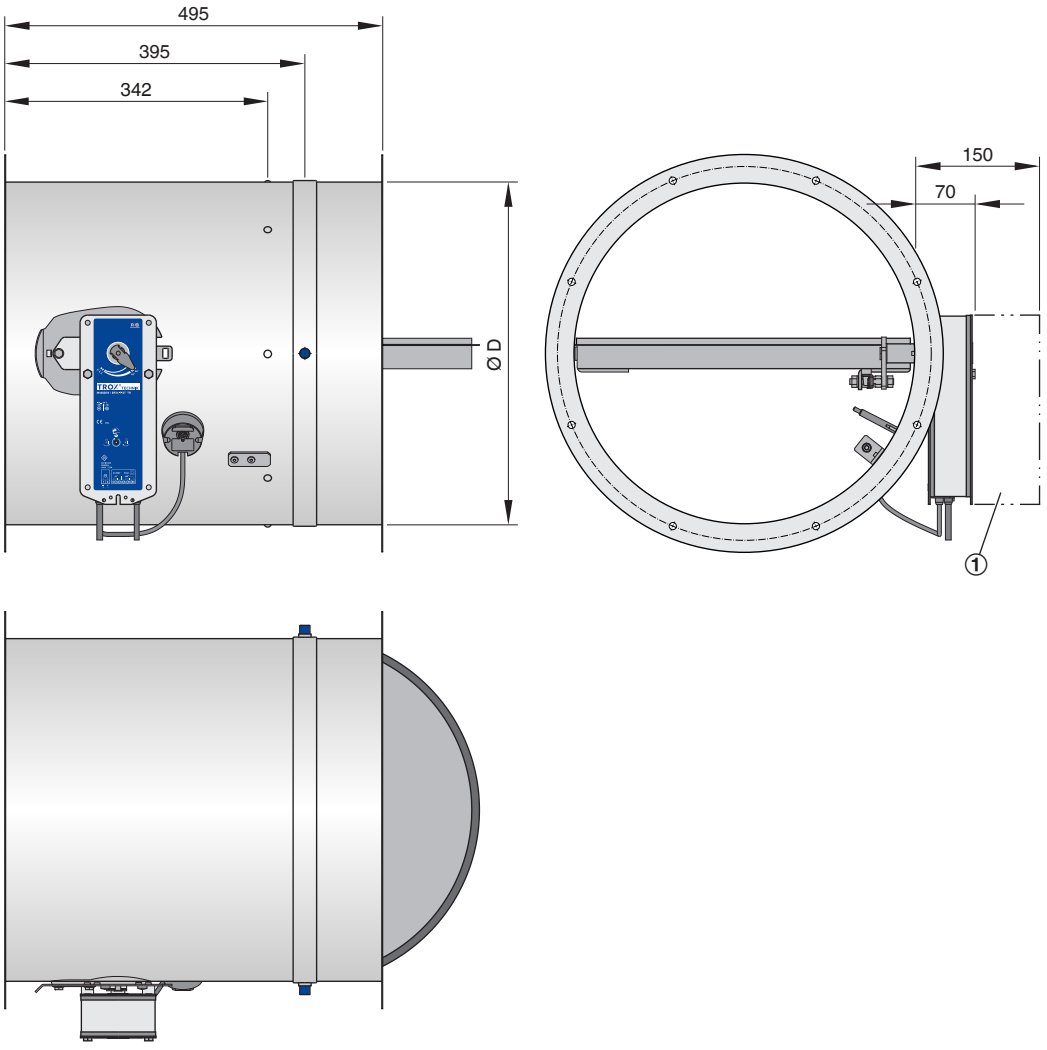


Illustration shows nominal sizes 450 - 800 mm

① Keep clear to provide access to the spring return actuator

Dimensions [mm] / Weight [kg]

Nominal size DN	315	355	400	450	500	560	630	710	800
ØD	314	354	399	449	499	559	629	709	799
Weight	8.2	8.7	9.9	16.7	19	20.6	23.9	28.3	31.3

1

Dimensions

FKR-EU-FL with explosion-proof spring return actuator

FKR-EU with flange and explosion-proof spring return actuator

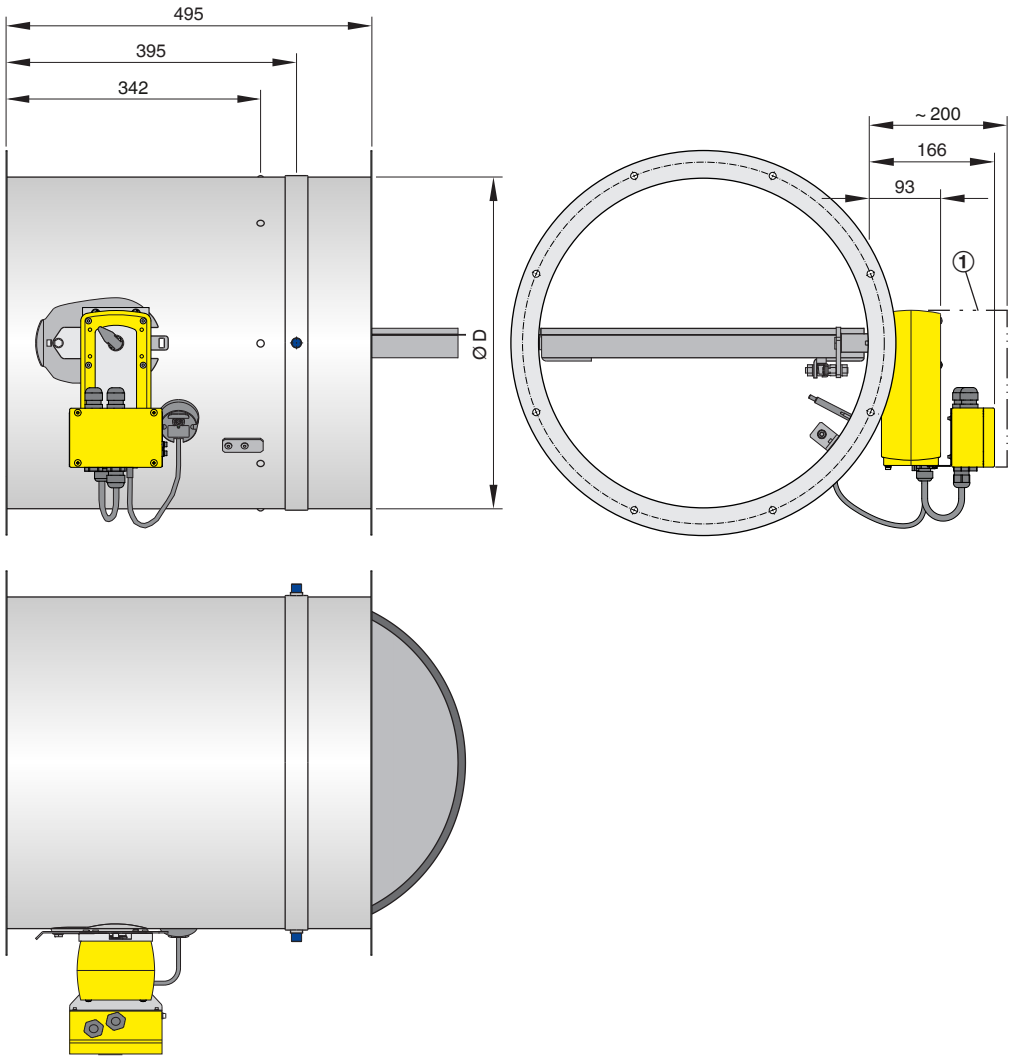


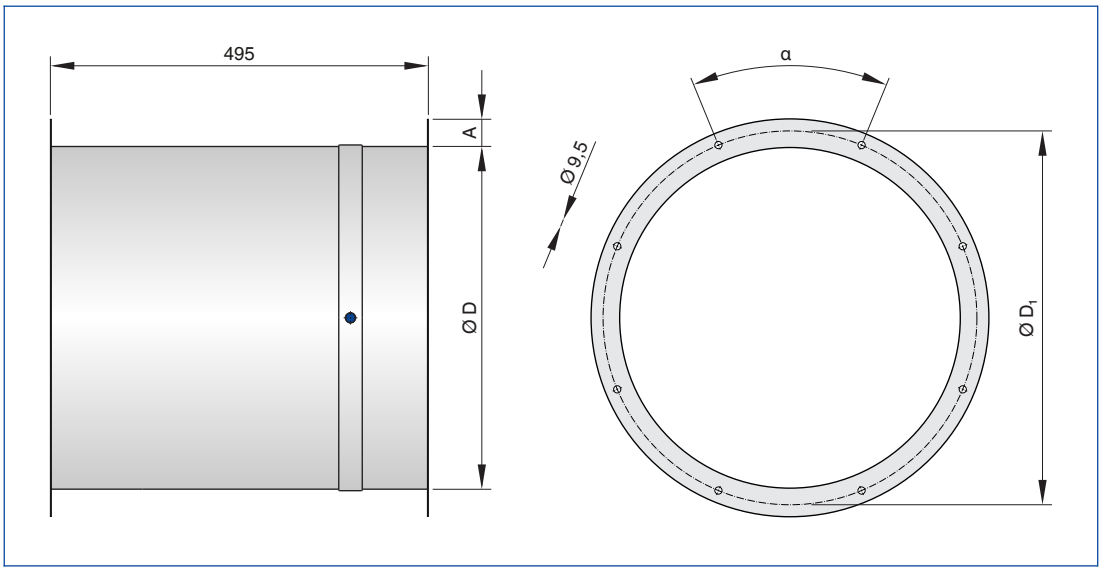
Illustration shows nominal sizes 450 - 800 mm

① Keep clear to provide access to the spring return actuator

Dimensions [mm] / Weight [kg]

Nominal size DN	315	355	400	450	500	560	630	710	800
ØD	314	354	399	449	499	559	629	709	799
Weight	12	12	14	19	21	23	26	31	34

FKR-EU-FL flange holes



Technical data

Dimensions

Nominal size DN	315	355	400	450	500	560	630	710	800
ØD [mm]	314	354	399	449	499	559	629	709	799
$ØD_1$ [mm]	352	392	438	488	538	600	670	750	840
A [mm]	31	31	31	36	36	36	36	36	36
α [°]	45	45	45	45	45	30	30	30	22.5
No. of holes	8	8	8	8	8	12	12	12	16

1

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 damper with or without flanges, 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 into solid walls and ceiling slabs and in combination with wooden beam ceilings and modular ceilings (Cadolto system) as well as into lightweight partition walls with one-sided cladding (shaft walls) with or without metal support structure. For mortar-based installation and dry mortarless installation into lightweight partition, fire walls, safety partition walls and walls to provide radiation protection with metal support structure or steel substructure as well as timber stud walls and half-timbered constructions with cladding on both sides.
Casing length 495 mm or 550 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.
Explosion-proof constructions for zones 1, 2, 21 and 22 with limit switch or spring return actuator.

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 (02/2010), 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 4
- 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 impregnation

Other components:
- Damper blade shaft in 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: 315 to 800 mm
- Casing lengths: 495 and 550 mm
- Volume flow rate range: Up to 6000 l/s or 21600 m^3/h
- Differential pressure: up to 2000 Pa
- Temperature range: –20 – 50 °C
- Release temperature 72 °C or 95 °C (for use in warm air ventilation systems)
- Upstream velocity: ≤ 8 m/s with standard construction; ≤ 12 m/s with spring return actuator

Sizing data

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

Order options

1 Type
FKR-EU Fire damper

2 Flange
No entry: none
(construction with spigots)
☐ **FL**[2] Flanges on both ends

3 Construction
No entry: none
☐ **1** Powder-coated casing, RAL 7001
☐ **2** Stainless steel casing
☐ **7** Impregnated damper blade
☐ **1 – 7** Powder-coated casing RAL 7001 and impregnated damper blade
☐ **2 – 7** Stainless steel casing and impregnated damper blade
☐ **W**[1] With fusible link 95 °C (only for use in warm air ventilation systems)

4 Country of destination
☐ **DE** Germany
Other destination countries upon request

5 Nominal size [mm]
☐ **315**
☐ **355**
☐ **400**
☐ **450**
☐ **500**
☐ **560**
☐ **630**
☐ **710**
☐ **800**

6 Accessories 1
No entry: none
☐ **TQ**[2] Installation kit (construction with spigots)

7 Accessories 2
No entry: none
☐ **S0 – AS**

8 Attachments
☐ **Z00 – ZEX4**

[1] W can be combined with all constructions 2 and 3, but not with attachments 8 ZEX1 – ZEX4

[2] TQ cannot be combined with FKR-EU-FL

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

L [mm]
Length of the fire damper

$\dot{V}$ [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)

Wiring

Colour codes according to IEC 60757

Code	Colour
BK	black
BN	brown
RD	red
Upper floor	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 and a given sound power level (35 or 45 dB(A)).
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.