

**strulik**

## Damper BCF-K90

Test certificate  
Z-41.3-331

Resistance class K90/K30 in  
accordance with DIN 4102-6

### Ordering example:

BCF-K90 (U)/ES/125/MS-C

### Accessories (optional):

- MS-C - electrical limit switch
- ÜG - connecting collar for duct connection
- ZR - inlet air ring
- VMT - disk valve for overflow opening

NW 125/160 or 200 (NW 100 also soon available)

### Mounting frame for installation into:

- ES - brickwork or concrete floor
- VER - as above, however lengthened for overflow opening
- ER-ZX - supplement floor F30/F90
- ER-L - light partition walls

{ For the installation into supplement floors F30/F90. Without specification of the floor thickness; the angle brackets are supplied unpackaged.

### Important features

- The Strulik BCF-K90 damper ideally combines the function of an infinitely variable supply and exhaust air valve with the fully effective properties of a damper having a K90 resistance class.
- The damper is mounted directly into the fire-protected zone. Thus the disk valve itself guarantees the effectiveness of fire protection.
- No special fixing arrangements are required (i.e. saving of time and high economy).
- Strulik dampers may even be mounted subsequently into ventilation systems, in order to meet the effective fire prevention requirements.

### Essential features

#### 1/ Safety classification.

- **Official classification:**  
**Resistance class K90**
- Activation starting at 72 °C
- Maximum sealing between the insulating material (flame tightness)
- Flame stability

#### 2/ Low noise level

- Ideal aerodynamic characteristics
- Maximum insulation
- The damper is fully integrated within the disk valve and therefore does not interfere with the through-flow of air (ideal balancing ratio between air volume and noise level).

#### 3/ Adjustment of air volume

- Infinitely variable control of all required air volumes



### DEUTSCHES INSTITUT FÜR BAUTECHNIK

Anstalt des öffentlichen Rechts

10829 Berlin, 29. April 1999  
Kolonnenstraße 30  
Telefon: (0 30) 7 87 30 - 272  
Telefax: (0 30) 7 87 30 - 320  
GeschZ.: III 13-1.41-3-65/95

#### Allgemeine bauaufsichtliche Zulassung

Zulassungsnummer: Z-41.3-331

Antragsteller: Strulik GmbH  
Neesbacher Straße 13  
65597 Hünfelden-Dauborn

Zulassungsgegenstand: Absperrvorrichtungen gegen Brandübertragung in Lüftungsleitungen der Serie BCF

Der vorstehende Zulassungsgegenstand wird hiermit allgemein bauaufsichtlich zugelassen.

Geltungsdauer bis: 30. April 2001

Diese allgemeine bauaufsichtliche Zulassung umfasst sieben Seiten und siebzehn Anlagen.

### Safety

The Strulik BCF-K90 dampers have been submitted to many test series in Germany and abroad. These test series did not only include the effectiveness of FIRE PROTECTION and FLAME TIGHTNESS, but also the STABILITY OF FLAMES and the correct functioning of the FUSIBLE LINK (see additional test certificate from the "Verband der Sachversicherer" in Cologne).

In Germany the damper has been tested against fire and smoke in accordance with the principles of construction and testing of the "Deutsches Institut für Bautechnik" in Berlin.

The expert opinion for a K90 resistance class has been prepared by the "Institut für Haustechnik" of the Technical University of Munich.

VdS in Cologne has prepared the test report on the release mechanism for an activation temperature of 72 °C in accordance with DIN 4102.

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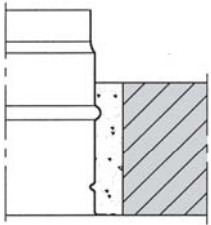
## Damper BCF-K90

Test certificate  
Z-41.3-331

Resistance class K90/K30

For the installation into  
brickwork or a concrete floor

### Installation detail: ES mounting frame



The mounting frame shall be plastered flush with the wall or floor for the installation into brickwork or concrete floors.

### With overflow openings Installation for K90

The mounting frame shall be lengthened by  $1,5 \times d$ .

$125 \text{ } \varnothing \text{ } L = 150 + 185 = 335 \text{ mm}$   
 $160 \text{ } \varnothing \text{ } L = 150 + 240 = 390 \text{ mm}$   
 $200 \text{ } \varnothing \text{ } L = 150 + 300 = 450 \text{ mm}$   
Without extension resistance class K30.

Instead of the duct extension  $1,5 \times d$ , a VMT steel disk valve or metal-mesh grid, mesh size  $\leq 20 \text{ mm}^2$  can be used to achieve the K90 resistance class without ventilation ducts. Please note that the release length is 210 mm!

Lengthened mounting frame for installation as overflow opening

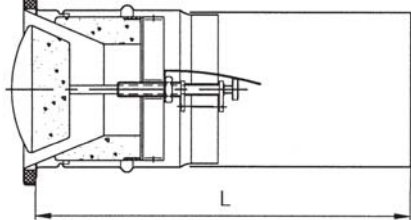
#### Type: VER

Total length of mounting frame

$\varnothing 125 \triangleq L 335 \text{ mm}$

$\varnothing 160 \triangleq L 390 \text{ mm}$

$\varnothing 200 \triangleq L 450 \text{ mm}$



\* Installation into

- floors of concrete (min. 100 mm)
- walls of brickwork (min. 115 mm)
- walls of gas-formed concrete (min. 100 mm)
- wall panels (min. 80 mm)

in accordance with DIN 18163

D = NW 125 mm  
160 mm  
200 mm

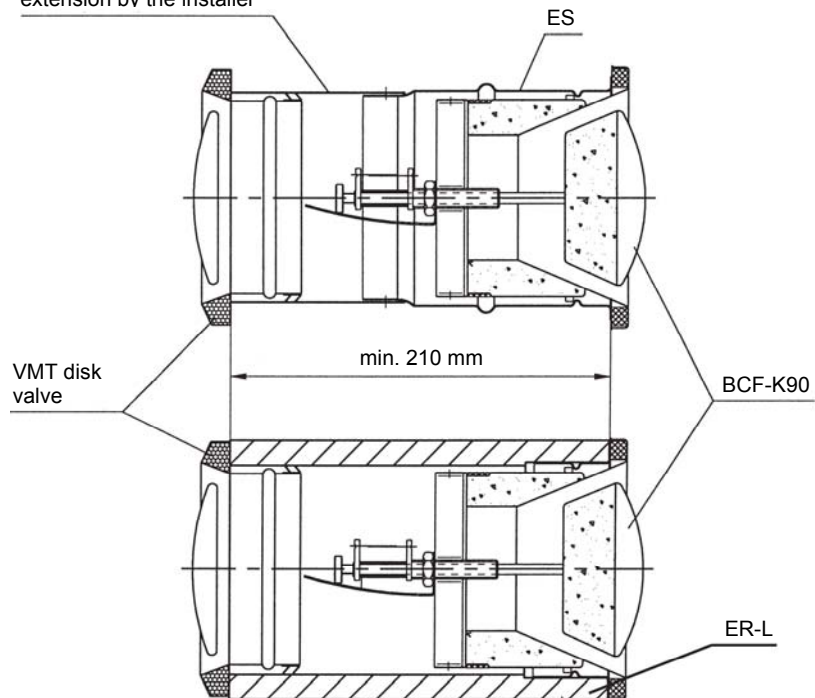
ES mounting frame

Fill surrounding gap with mortar of group II and III, DIN 1053 or with gypsum

The proper mounting of the BCF-K90 damper is performed with a steel mounting frame.

### Installation example: Overflow opening in brickwork (ES) or light partition walls (ER-L) with the VMT disk valve

Spirally wound duct, extension by the installer



Commercial steel disk valves shall not be used, because the spindle, which projects into the mounting frame, would prevent the closing of the damper in the event of a fire.

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**Damper  
BCF-K90**

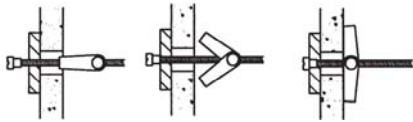
Test certificate  
Z-41.3-331

Resistance class K90/K30

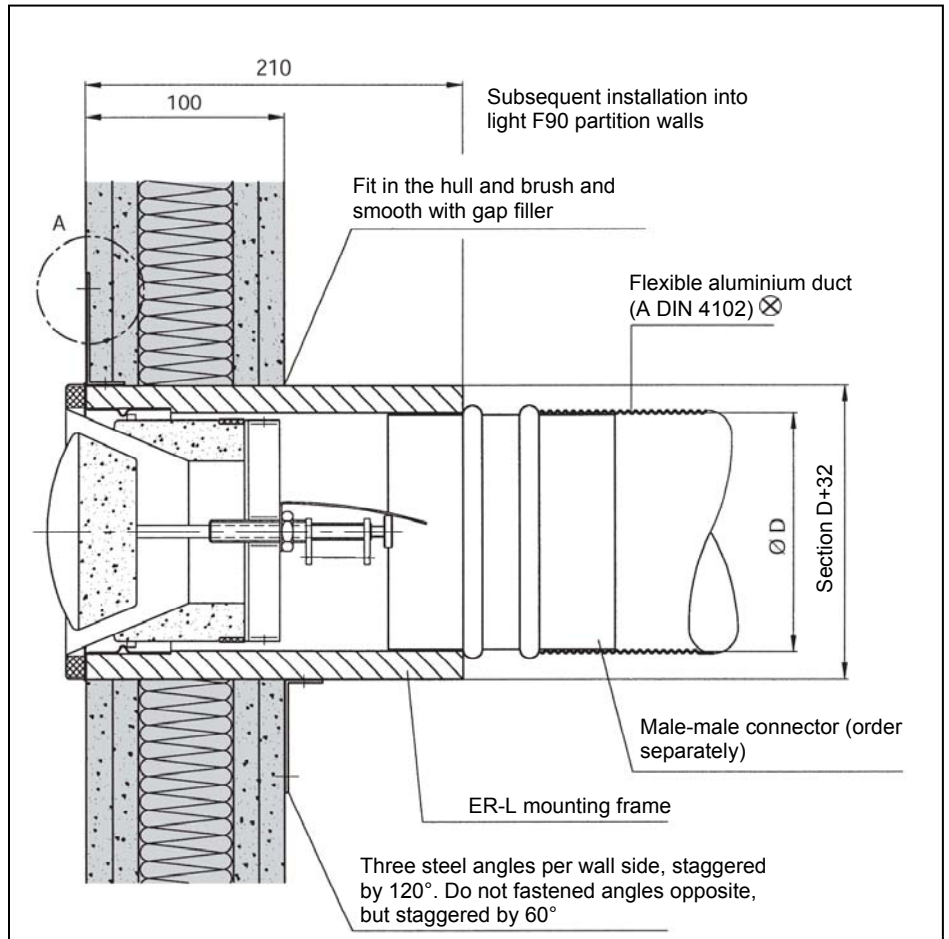
For the subsequent installation  
into light partition walls

**Detail A**

Spring folding dowel



| BCF | Ø D |
|-----|-----|
| 125 | 125 |
| 160 | 160 |
| 200 | 200 |



**Damper  
BCF-K90**

Test certificate  
Z-41.3-331

Resistance class K90/K30

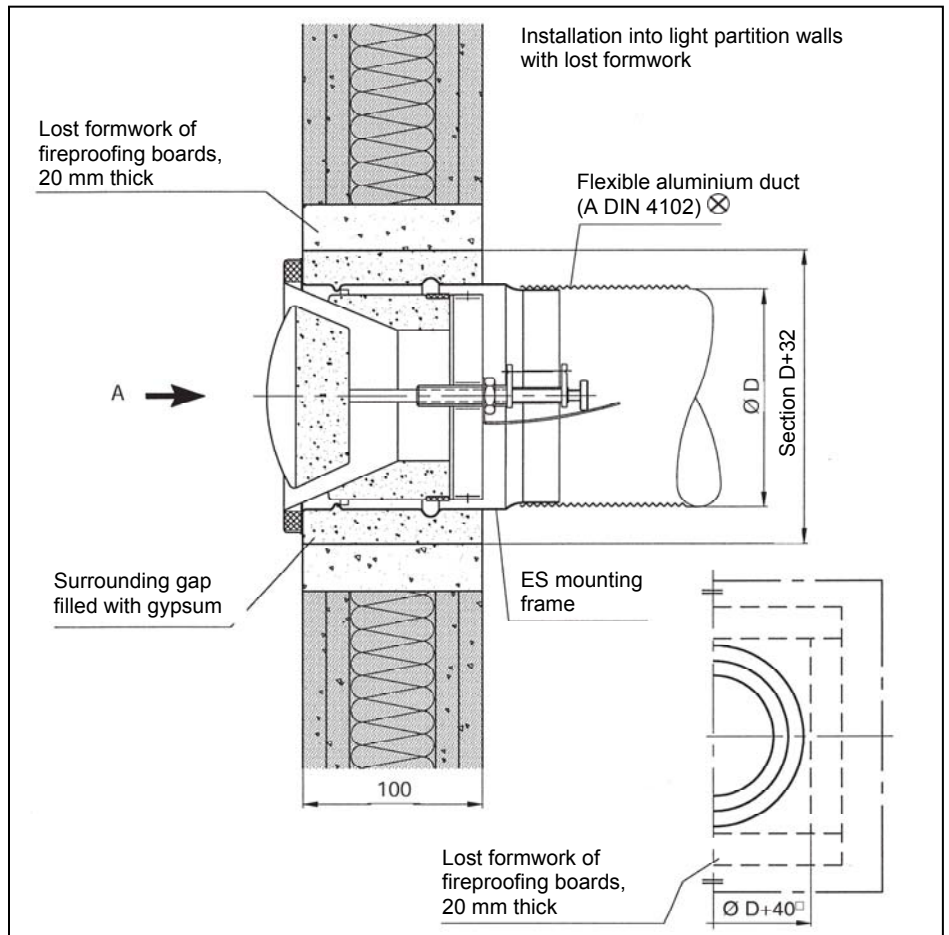
For installation into light  
partition walls with lost  
formwork

**Permissible ducts ⊗**

The dampers shall only be connected to ventilation ducts, which due to their design or laying, will not apply considerable forces to the dampers as a result of warming.

Ventilation ducts may be connected to dampers with a compensator or spigot of flexible aluminium ductwork that is at least 10 cm long (when installed).

This compensator may also be of standard flammable materials (class B2 according to DIN 4102), if it is directly connected to the specified ventilation duct of non-combustible materials.



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**Damper  
BCF-K90**

Test certificate  
Z-41.3-331

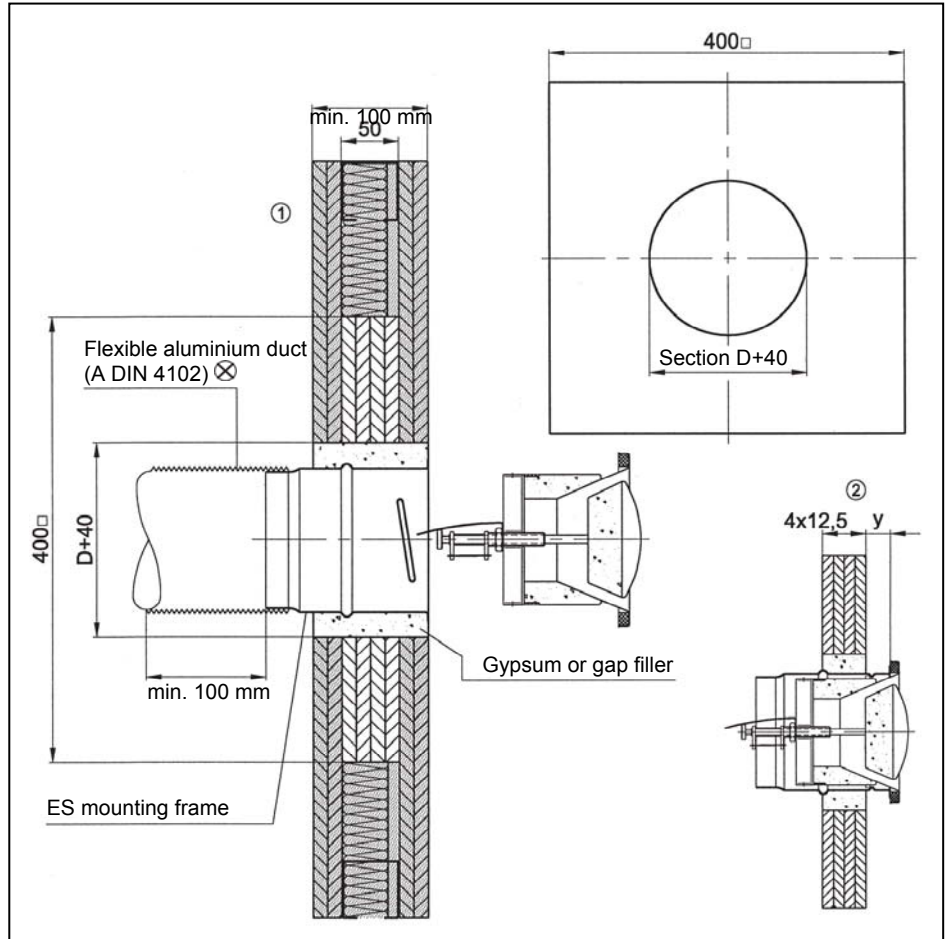
Resistance class K90/K30

For the installation into  
light partition walls with  
prefabricated fastening plate

Installation of BCF-K90 into lightweight walls without ER-L frame, but with ES mounting frame in galvanized steel combined with 4 x 12,5 mm thick gypsum boards, outer diameter 400<sup>□</sup>.

|     |     |     |     |
|-----|-----|-----|-----|
| Ø D | 125 | 160 | 200 |
|-----|-----|-----|-----|

- ① Drawing showing the BCF completely mounted into the lightweight wall
- ② Scope of delivery (mounting frame fitted with gypsum boards)



**Damper  
BCF-K90**

Test certificate  
Z-41.3-331

Resistance class K90/K30

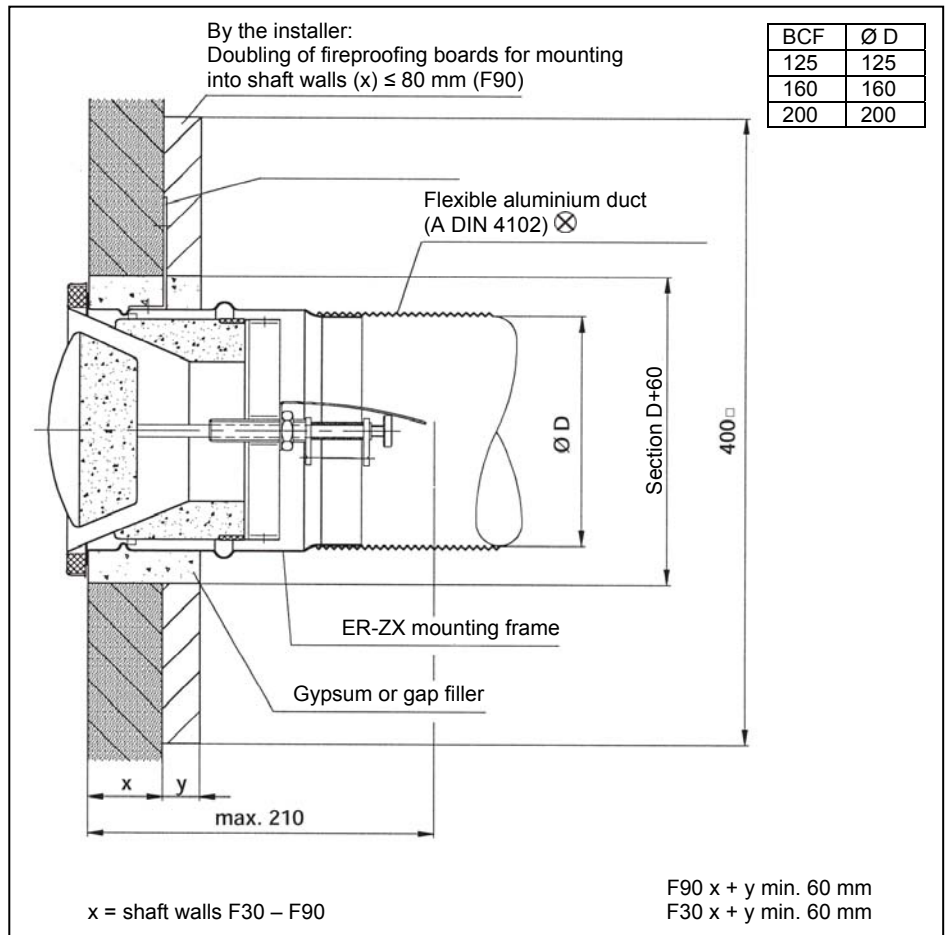
For the installation into  
light partition walls with  
lost formwork

**Permissible ducts** ⊗

The dampers shall only be connected to ventilation ducts, which due to their design or laying, will not apply considerable forces to the dampers as a result of warming.

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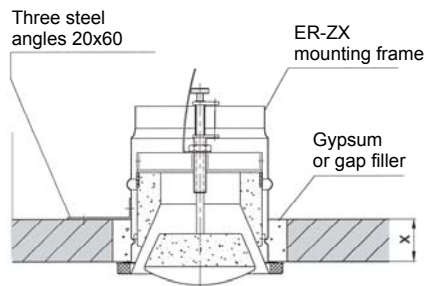
**Damper  
BCF-K90**

Test certificate  
Z-41.3-331

Resistance class K90/K30

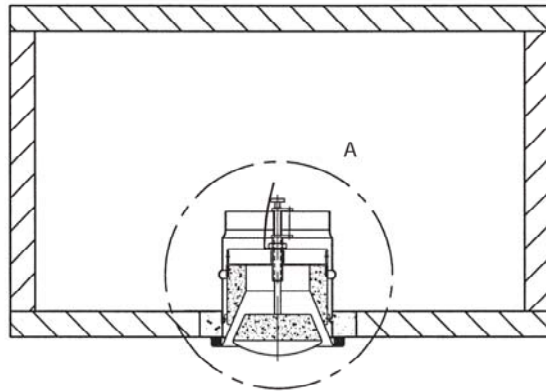
For the installation into  
fire resistant ventilation ducts  
and cable conduits

**Detail A for L30**



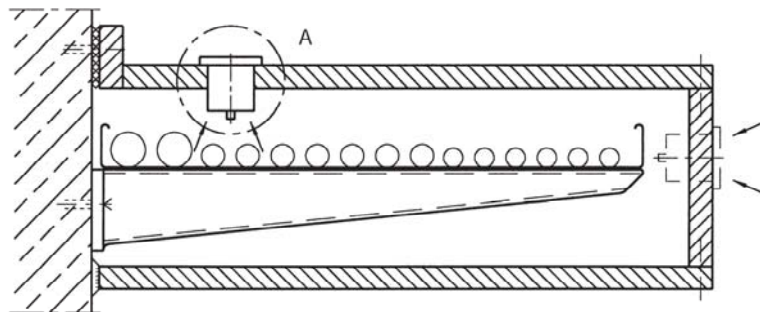
\* depending on the wall thickness x, double the dimension y to min. 40 mm in total.

**Installation into fire resistant L30 – L90 ventilation ducts**



L90 drawing

**Installation into cable conduits**



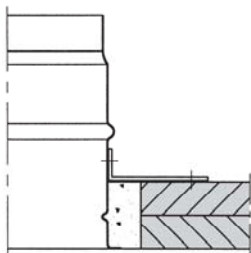
**Damper  
BCF-K90**

Test certificate Z-41.3-331

Resistance class K30U

For the installation into fire  
resistant suspended F30 ceilings,  
smoothed and screwed or as  
laid-in floor

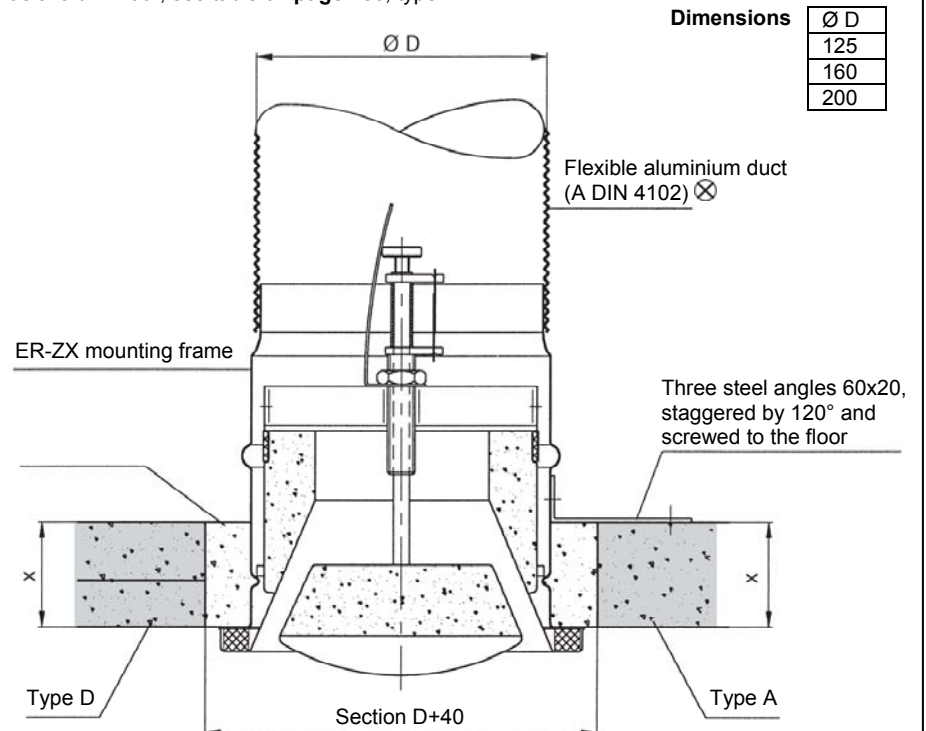
**Installation detail**



For the installation into fire resistant suspended F30 ceilings, as a smoothed and screwed ceiling or laid-in floor. Plaster the mounting frame flush with the floor.

**Installation into fire resistant suspended F30 ceilings**

as a F30 floor, screwed and smoothed, see table on page 186, type D or  
as a laid-in floor, see table on page 186, type A



x = according to the required plate thickness of the floor.  
**Please state when ordering.**

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**Damper  
BCF-K90**

Test certificate  
Z-41.3-331

Resistance class K30U

For the installation into  
fire resistant suspended  
F30 DUO ceilings

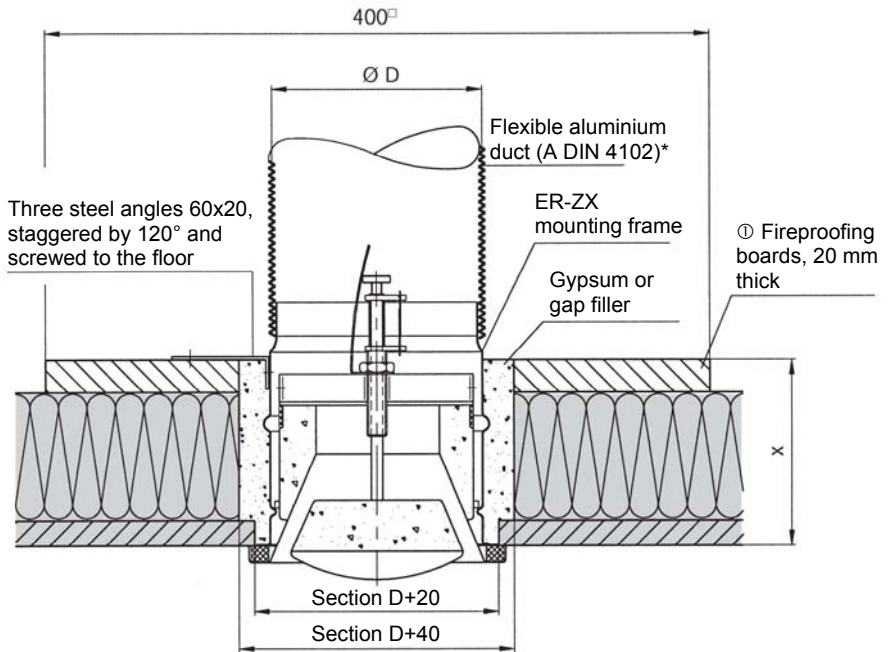
**Dimensions**

|     |
|-----|
| Ø D |
| 125 |
| 160 |
| 200 |

X = according to the required plate thickness of the floor. **Please state when ordering.**

① Scope of delivery from Strulik or by the installer

**Installation of a BCF-K30U into an OWAcoustic F30 DUO floor as a laid-in floor, see table on page 186, type A**



\* not part of the scope of delivery

**Damper  
BCF-K90**

Test certificate Z-41.3-331

Resistance class K30U

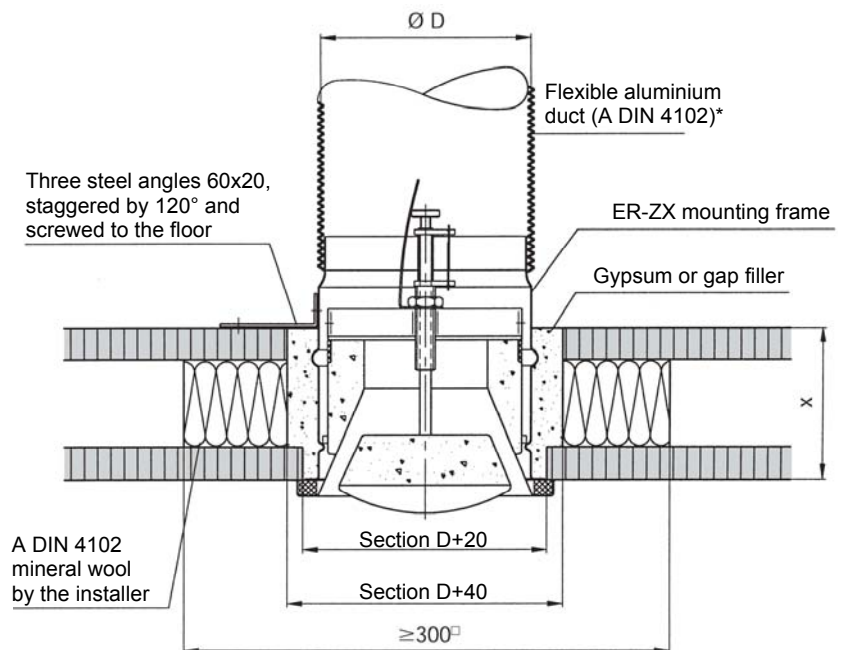
For the installation into  
fire resistant suspended  
F30 ceilings  
Type: BSE30

**Dimensions**

|     |
|-----|
| Ø D |
| 125 |
| 160 |
| 200 |

X = according to the required plate thickness of the floor. **Please state when ordering.**

**Installation of a BCF-K30U into an OWAcoustic BSE30 floor (self-supporting) or equivalent brands**



\* not part of the scope of delivery

**strulik**

**Damper  
BCF-K90**

Test certificate  
Z-41.3-331

Resistance class K30U

For the installation into  
suspended metal F30 ceilings

**Approval of the floors**

in accordance with the test certificates

**Dimensions**

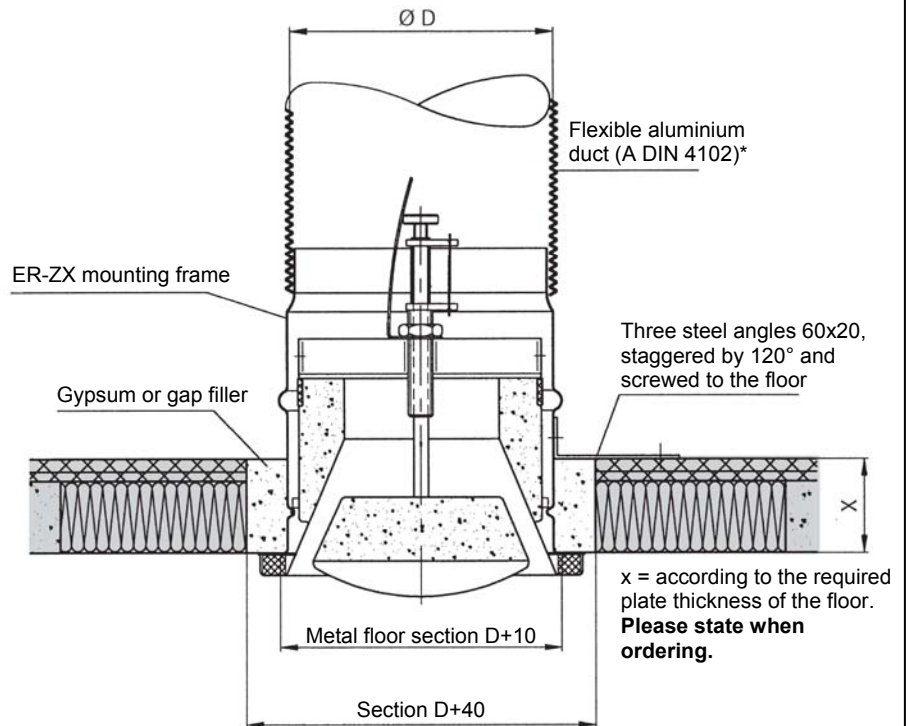
|     |     |     |     |
|-----|-----|-----|-----|
| Ø D | 125 | 160 | 200 |
|-----|-----|-----|-----|

x = according to the required plate thickness of the floor plus doubling. **Please state when ordering.**

① Scope of delivery from Strulik or by the installer

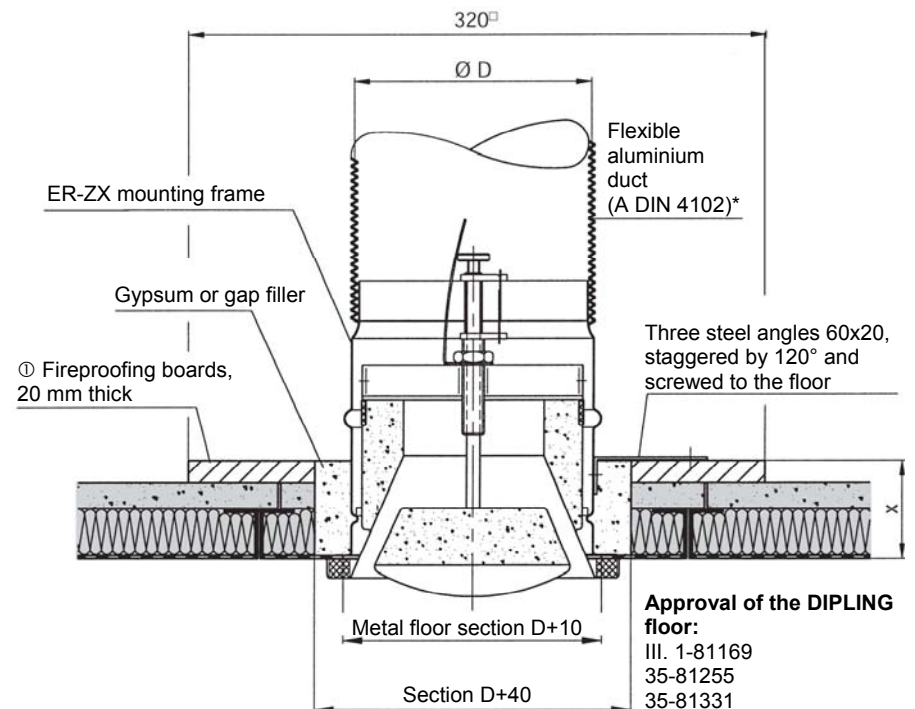
**Note:** For the installation into DIPLING floors with mineral wool slabs 2x40 mm (test certificate no. 35-81255), the fire disk valve shall be suspended separately.

**Installation into fire resistant suspended F30 ceilings as a metal floor**



\* not part of the scope of delivery

**Installation into fire resistant suspended metal DIPLING F30 ceilings**



\* not part of the scope of delivery

**Approval of the DIPLING floor:**  
III. 1-81169  
35-81255  
35-81331  
Tested at the  
FMPA Stuttgart

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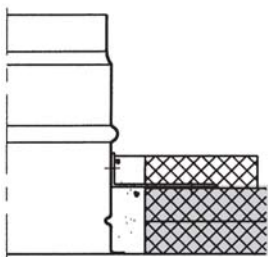
**Damper  
BCF-K90**

Test certificate  
Z-41.3-331

Resistance class K90U

For the installation into  
fire resistant suspended  
F90 ceilings

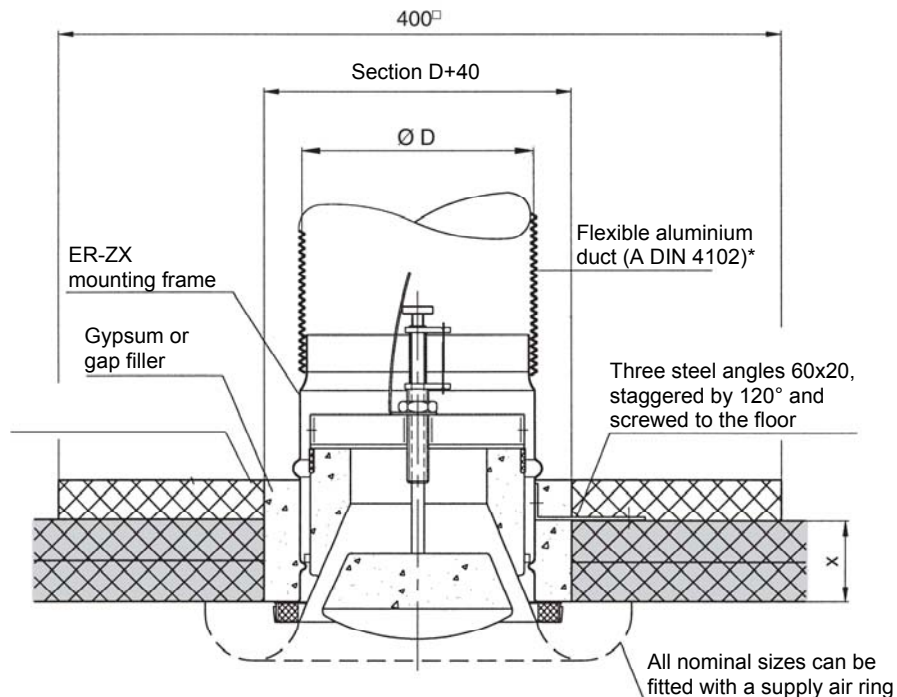
**Installation detail**



For the installation into fire resistant suspended F30 ceilings, as a smoothed and screwed ceiling or laid-in floor. Plaster the mounting frame flush with the floor.

**Installation into fire resistant suspended F90 ceilings**

Screwed and smoothed as a floor, see table 186, type E + F



x = according to the required plate thickness of the floor. **Please state when ordering.**

\* not part of the scope of delivery

Ⓞ Scope of delivery from Strulik or by the installer

**Damper  
BCF-K90**

Test certificate Z-41.3-331

Resistance class K90U

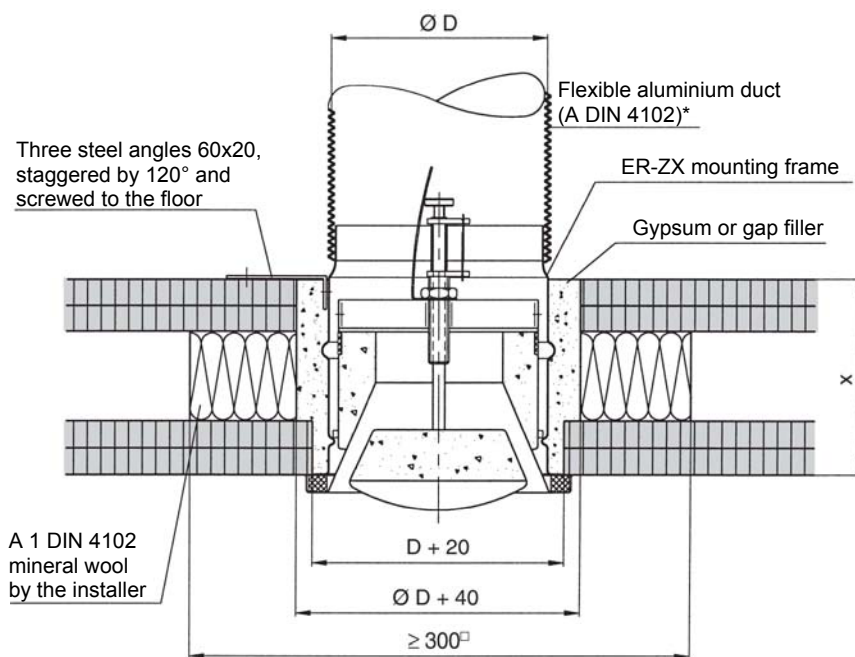
For the installation into  
fire resistant suspended  
F90 ceilings  
Type: BSE 90

**Dimensions**

|     |
|-----|
| Ø D |
| 125 |
| 160 |
| 200 |

X = according to the required plate thickness of the floor. **Please state when ordering.**

**Installation example: BCF-K90U in a OWAcoustic floor  
Type: BSE 90 (self-supporting)**



\* not part of the scope of delivery



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**Damper  
BCF-K90**

Test certificate  
Z-41.3-331

Resistance class K90/K30

Design diagrams

**Pressure drop and noise level  
Exhaust air**

**Adjustment of the air volume**

The Strulik damper allows an infinitely variable control of any required air volume. The adjustment is made in accordance with the adjoining diagram. The valve core is locked with a counter nut in the chosen position.

**Flow rate setting for the  
BCF125/K90 valve**

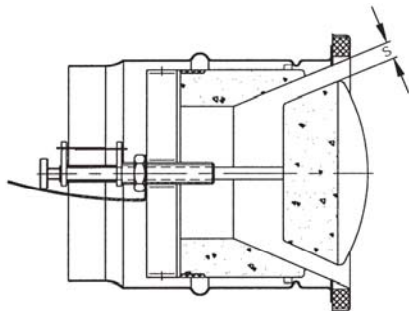
From air outlet conduit into room:

| F (H2)             | Gap width (mm) | 125 | 250 | 500 | 1000 | 2000 | 4000 |
|--------------------|----------------|-----|-----|-----|------|------|------|
| Build-up Elbow 90° | 10             | 23  | 17  | 15  | 11   | 9    | 14   |
| T iron 200/125/200 | 10             | 28  | 25  | 17  | 16   | 15   | 19   |

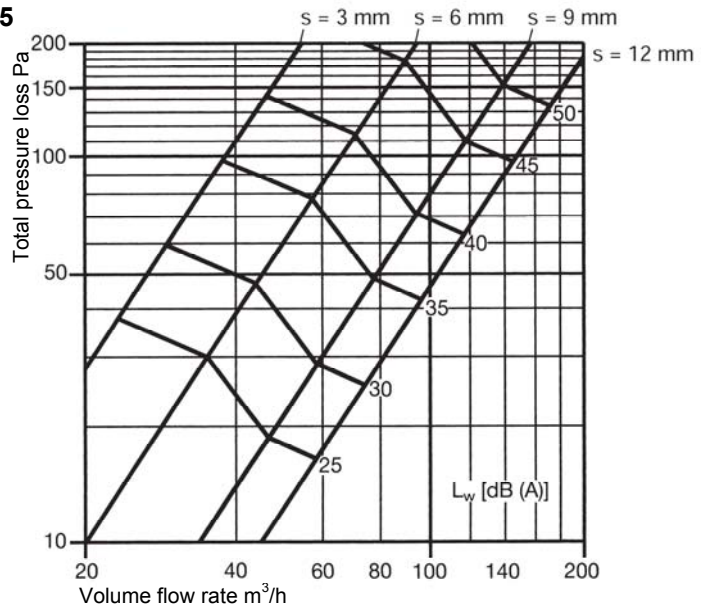
From room into air outlet conduit:

| F (H2)             | Gap width (mm) | 125 | 250 | 500 | 1000 | 2000 | 4000 |
|--------------------|----------------|-----|-----|-----|------|------|------|
| Build-up Elbow 90° | 10             | 18  | 21  | 24  | 27   | 30   | 35   |
| T iron 200/125/200 | 10             | 20  | 29  | 25  | 30   | 44   | 39   |

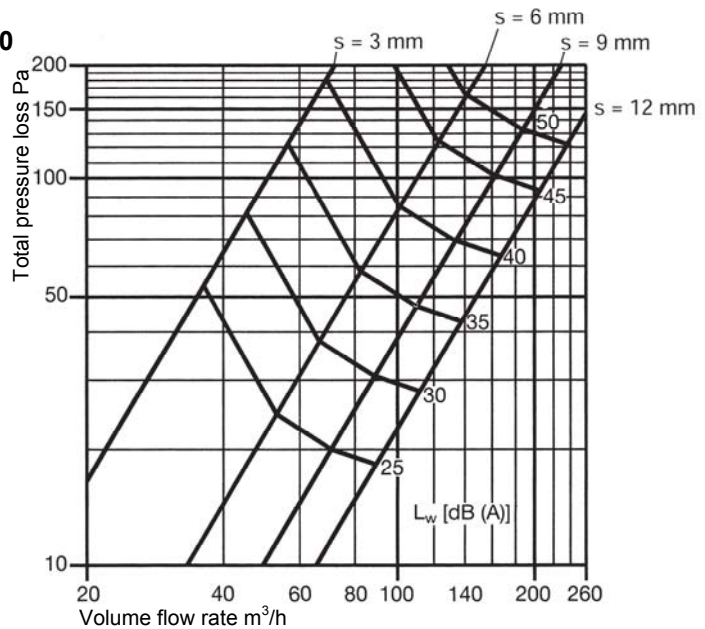
Gap width: s



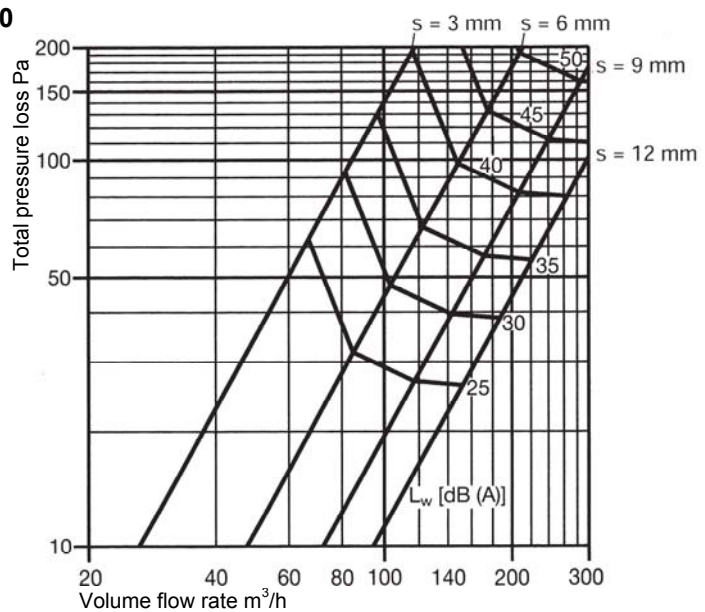
**NW 125**



**NW 160**



**NW 200**



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**Damper  
BCF-K90**

Test certificate  
Z-41.3-331

Resistance class K90/K30

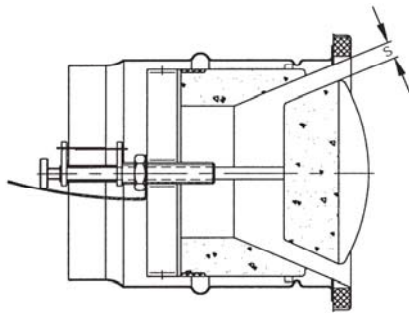
Design diagrams

**Pressure drop and noise level  
Supply air**

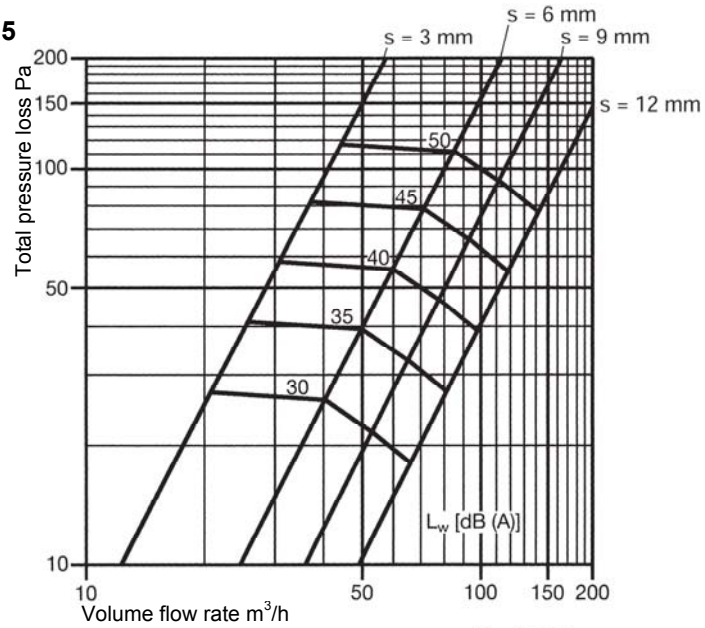
**Adjustment of the air volume**

The Strulik damper allows an infinitely variable control of any required air volume. The adjustment is made in accordance with the adjoining diagram. The valve core is locked with a counter nut in the chosen position.

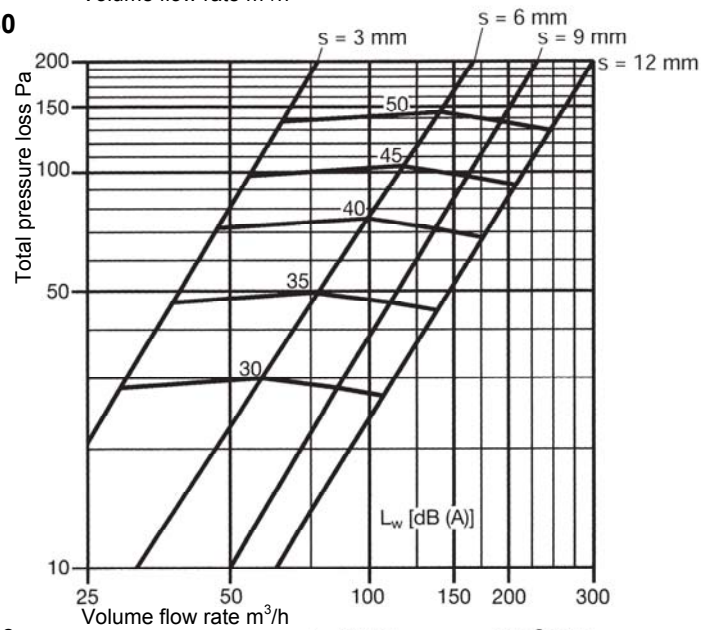
Gap width:  $s$



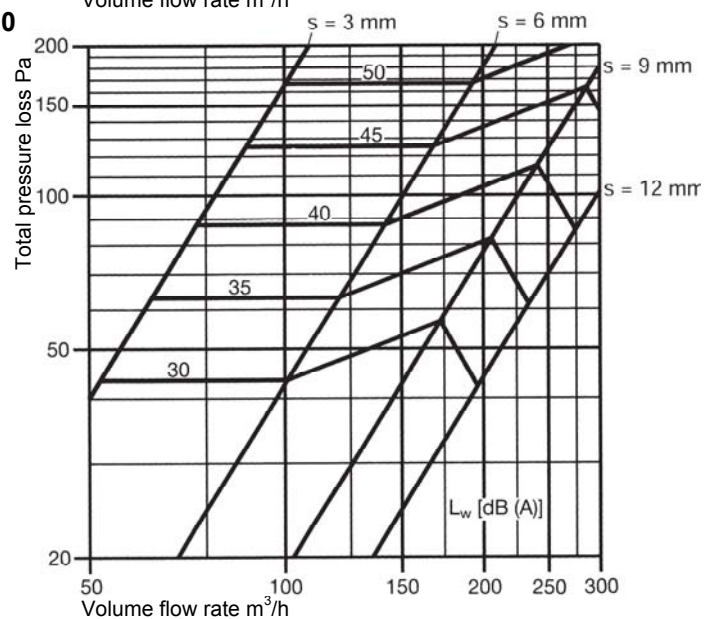
**NW 125**



**NW 160**



**NW 200**



**strulik**

**Damper  
BCF-K90**

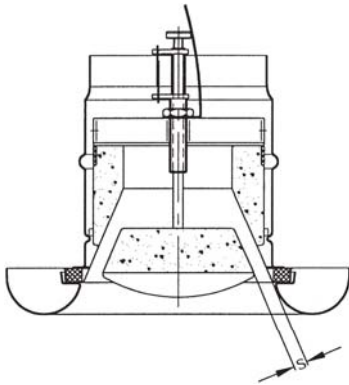
Test certificate  
Z-41.3-331

Resistance class K90/K30

Design diagrams

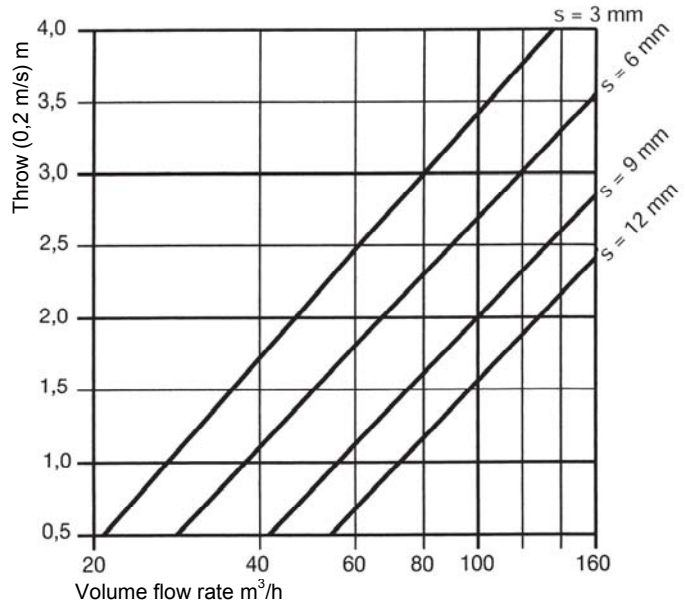
Throw of the BCF-K90 with a  
ZR supply air ring and built into  
floors (isothermal)

Gap width:  $s$

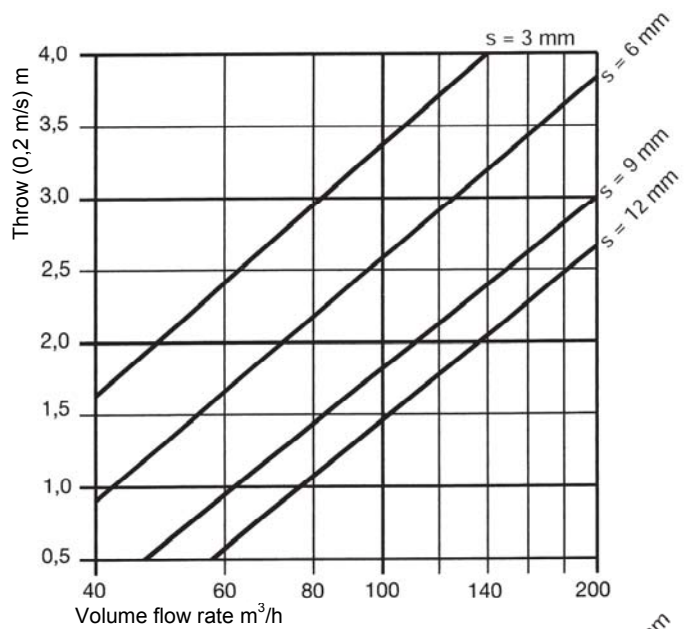


L 0,2 is the distance between BCF-K90 +  
ZR (supply air ring) and the point beneath  
the floor, where  $v_0$  has reduced to 0,2 m/s.  
\* (measured ~ 100 – 150 mm beneath the  
floor)

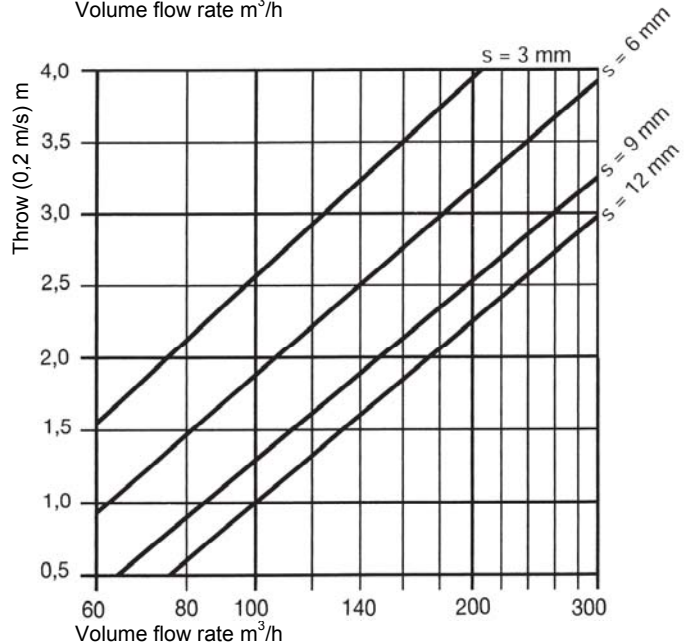
**NW 125**



**NW 160**



**NW 200**



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**Damper  
BCF-K90**

Test certificate  
Z-41.3-331

Resistance class K90/K30

Technical data of the  
mounting frame

Type: ES  
Brickwork/concrete floor,  
wall of gas-formed concrete

Type: ER-L  
Metal stand walls

Type: ER-ZX  
Classified supplement floors/  
fire resistant ventilation ducts/  
shaft partition walls

**Dimensions**

Type: ES and ER-ZX

| Ø D | a   | b   |
|-----|-----|-----|
| 125 | 124 | 128 |
| 160 | 159 | 162 |
| 200 | 199 | 201 |

Type: ER-L

| Ø D | Ø Di | Ø Da |
|-----|------|------|
| 125 | 126  | 156  |
| 160 | 161  | 191  |
| 200 | 201  | 232  |

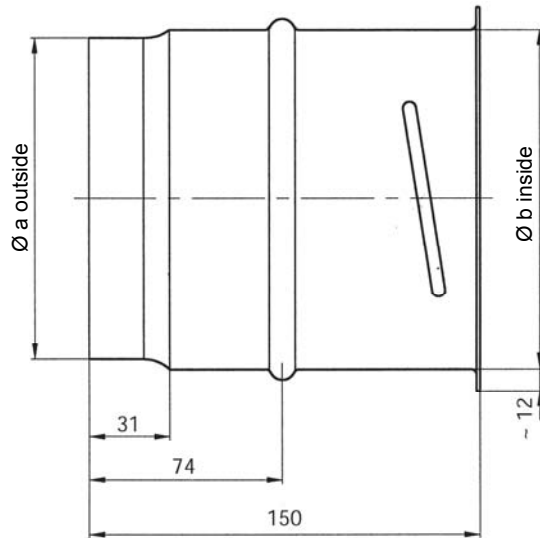
**Lightweight wall**

Six angles staggered by 120°, three steel angles A are mounted by the factory, three steel angles B are supplied unpackaged.

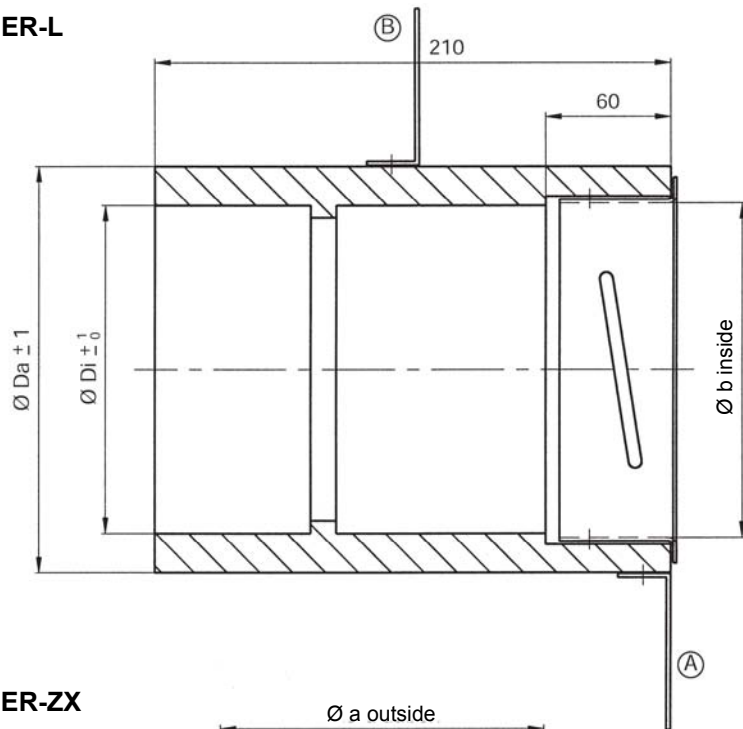
**Supplement floor**

Three steel angles C staggered by 120° are mounted by the factory, if dimension x has been specified, otherwise unpackaged.

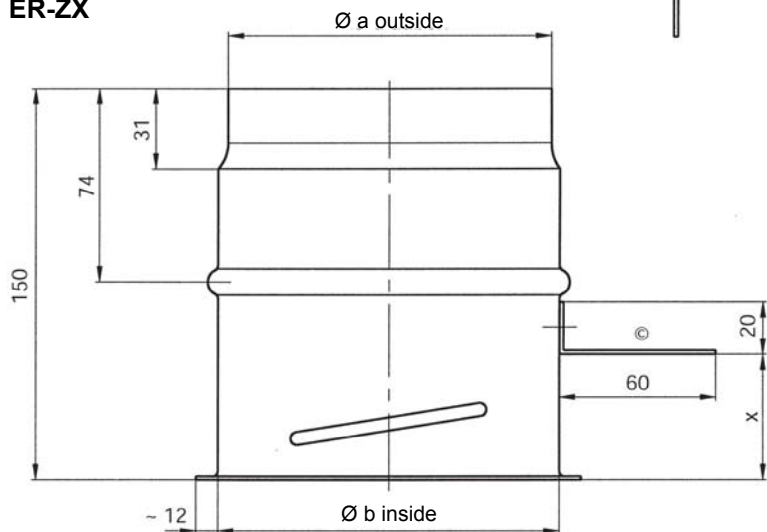
Type: ES



Type: ER-L



Type: ER-ZX



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## Damper BCF-K90

Test certificate  
Z-41.3-331

Resistance class K90/K30

Technical data and  
maintenance

### Technical data

- Outer diameter of the valve core

|    |     |     |     |
|----|-----|-----|-----|
| NW | 125 | 160 | 200 |
| Ø  | 118 | 155 | 195 |

- Maximum diameter of the valve body

|    |     |     |     |
|----|-----|-----|-----|
| NW | 125 | 160 | 200 |
| Ø  | 118 | 155 | 195 |

- Thickness of the valve core: 48 mm

- Valve body and valve disc: Steel and sheet steel design with fireproof casing

- Valve casing: Additional opening to prevent heat bridges

- Sealing at the front: Fire-resistant sealing ring

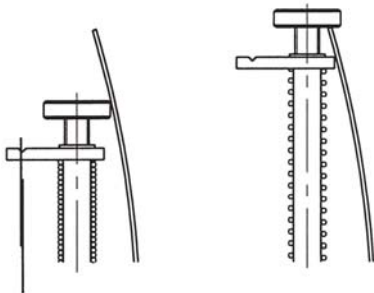
- Fusible link: Release at 72 °C

- Adjustable air volume: Infinitely variable

### Weight in kg

| Type  | BCF + ES (ER-ZX) | BCF + ER-L |
|-------|------------------|------------|
| Ø 125 | ~ 2              | ~ 4,2      |
| 160   | ~ 3,1            | ~ 5,4      |
| 200   | ~ 4,8            | ~ 7,3      |

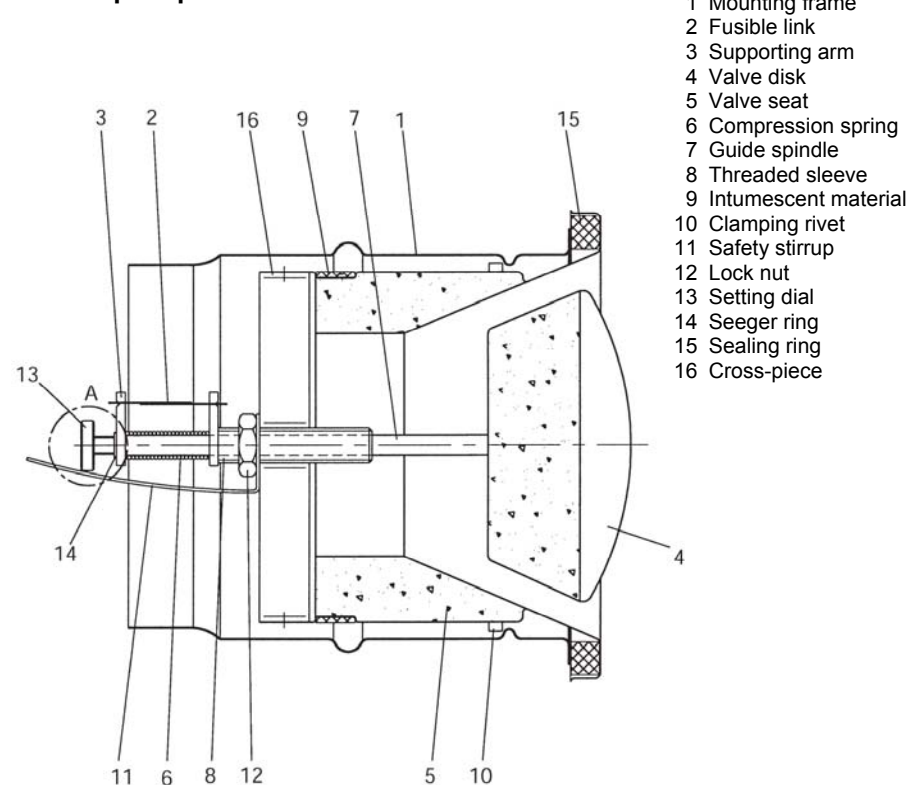
### Detail A



Working condition  
valve open

When released,  
valve closed and  
locked

### List of spare parts



### Installation

The Strulik dampers are supplied with a standard mounting frame that guarantees an easy and timesaving installation with a bayonet lock and allows an adjustment of the exhaust and supply air volume or an exchange of the fusible link at any time. Additional clamping rivets centre and lock the valve body inside the mounting frame.

### Maintenance of the damper

Polluted and humid air can affect the permanent fail-safe functioning. After the commissioning of the ventilation systems, all dampers shall be serviced twice a year. If after two consecutive examinations no malfunctions are detected, then the dampers only have to be serviced once a year. If maintenance contracts are placed for the ventilation systems, then it is recommended that the maintenance of the dampers should also be included in the contract.

### Testing

The BCF-K90 damper can easily be tested by turning be taken out of the wall frame (1). The fusible link (2) is taken out of the supporting arm (3). Then the release spring (6) shall press the valve disc (4) correctly into the valve body (5) (see the above drawing). Then the functioning of the closing device is tested through repeatedly pressing the spring (6) by means of the guide spindle (7). The fusible link (2) shall not show any external damages and shall be inserted again after a thorough examination.

### Clearing of faults

If during maintenance fault have become apparent, then these shall be cleared immediately through a complete exchange. The moving parts of the guide spindle (7) and the threaded sleeve (8) shall only be lubricated if they are not free-moving.

**Attention!** Only use resin-free and acidless oils as lubricant!

**strulik**

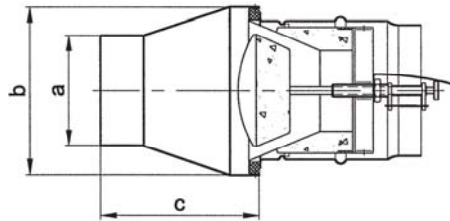
**Accessories  
for BCF-K90**

Electrical limit switch  
Type: MS-C

Supply air ring  
Type: ZR

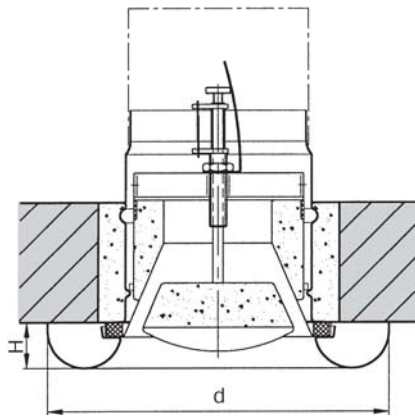
Connecting collar  
Type: ÜG

**Connecting collar for the connection to ducts on both sides**  
Type: ÜG



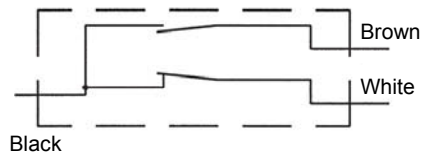
| NW  | b   | a   | c   |
|-----|-----|-----|-----|
| 125 | 157 | 125 | 125 |
| 160 | 189 | 160 | 136 |
| 200 | 237 | 200 | 50  |

**BCF with supply air ring**  
Type: ZR

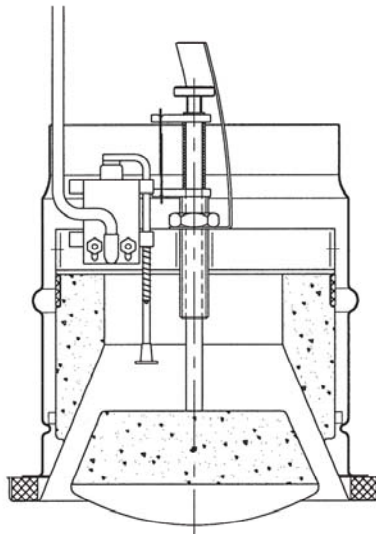


| NW  | d   | H  |
|-----|-----|----|
| 125 | 236 | 33 |
| 160 | 283 | 43 |
| 200 | 334 | 51 |

**Wiring diagram for MS-C**

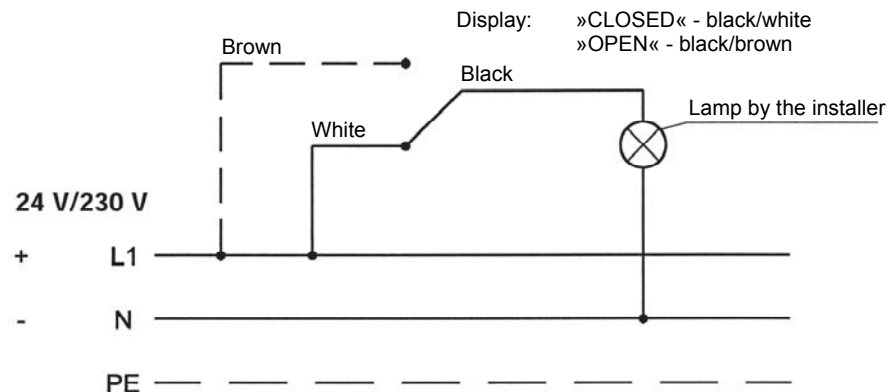
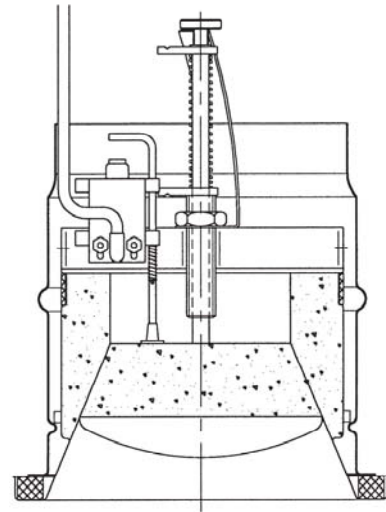


Position »OPEN«



**Please note:** For inspection, leave within the duct at least 500 mm as longitudinal compensation.

Position »CLOSED«



**Technical data**

Single-pole changer  
IP 65

Constant current/nominal insulation current:  
1.9 A/380 V or 3 A/230 V

Short circuit protection:  
Fuse 6A class gI in accordance with  
IEC 269-1, VDE 0660-200

Tested in accordance with IEC 947-5-1 and  
EN 60947-5-1

Cable length: 2 m  
Cross-sectional area: 3 x 0,34 mm<sup>2</sup>

# Tender Text

| Item                                  | Description  | Unit<br>Piece           | Unit price<br>EUR | Total<br>EUR                    |                  |                 |                 |                                       |                 |  |  |  |
|---------------------------------------|--|-------------------------|-------------------|---------------------------------|------------------|-----------------|-----------------|---------------------------------------|-----------------|--|--|--|
|                                       | <p><b>Damper with test certificate Z-41.3-331</b> for a K90 resistance class for the installation into brickwork, concrete floors or light partition walls with lost formwork, as air-bleed valve or air-vent valve with <b>infinitely variable control of the air volume</b>.</p> <p>The housing consists of a slotted steel cylinder with fireproof casing, which is designed as valve seat for the mounting of the conical valve disc.</p> <p>The mounting is performed by turning into the mounting frame of sheet steel. The special sealing guarantees the exclusion of air and firm seat of the valve. Therefore the fusible link can be exchanged very easily.</p> <p><b>Technical data:</b></p> <p>Diameter:     125 mm<br/>                  160 mm<br/>                  200 mm</p> <p>Length:         ca. 150 mm</p> <p>Temperature of activation: 72 °C</p> <p>Air volume:</p> <p>Noise level:</p> <p>Manufacturer: <b>Strulik</b></p> <p>Type:           <b>BCF-K90 + ES</b></p> <p>(including mounting frame)</p> <p><b>Accessories:</b></p> <table style="width: 100%; border: none;"> <tr> <td style="width: 50%;">Electrical limit switch</td> <td>Type: <b>MS-C</b></td> </tr> <tr> <td>Disk valve for overflow opening</td> <td>Type: <b>VMT</b></td> </tr> <tr> <td>Supply air ring</td> <td>Type: <b>ZR</b></td> </tr> <tr> <td>Connecting collar for duct connection</td> <td>Type: <b>ÜG</b></td> </tr> </table> | Electrical limit switch | Type: <b>MS-C</b> | Disk valve for overflow opening | Type: <b>VMT</b> | Supply air ring | Type: <b>ZR</b> | Connecting collar for duct connection | Type: <b>ÜG</b> |  |  |  |
| Electrical limit switch               | Type: <b>MS-C</b>  |                         |                   |                                 |                  |                 |                 |                                       |                 |  |  |  |
| Disk valve for overflow opening       | Type: <b>VMT</b>   |                         |                   |                                 |                  |                 |                 |                                       |                 |  |  |  |
| Supply air ring                       | Type: <b>ZR</b>  |                         |                   |                                 |                  |                 |                 |                                       |                 |  |  |  |
| Connecting collar for duct connection | Type: <b>ÜG</b>  |                         |                   |                                 |                  |                 |                 |                                       |                 |  |  |  |

# Tender Text

| Item | Description  | Unit<br>Piece | Unit price<br>EUR | Total<br>EUR |
|------|--|---------------|-------------------|--------------|
|      | <p><b>Damper with test certificate Z-41.3-331</b> for a K90 resistance class for the installation into light F90 partition walls, as air-bleed valve or air-vent valve with <b>infinitely variable control of the air volume</b>.</p> <p>The housing consists of a slotted steel cylinder with fireproof casing, which is designed as valve seat for the mounting of the conical valve disc.</p> <p>The mounting is performed by screwing into the mounting frame. The mounting frame consists of calcium silicate and an integral steel insert for taking up the clamping rivets and has three steel angles per wall side, which are staggered by 120°; the angles are not fastened opposite, but are staggered by 60°. The special sealing guarantees the exclusion of air and firm seat of the valve. Therefore easy exchange of the fusible link.</p> <p><b>Technical data:</b></p> <p>Diameter:     125 mm<br/>                  160 mm<br/>                  200 mm</p> <p>Length:        ca. 150 mm</p> <p>Temperature of activation: 72 °C</p> <p>Air volume:</p> <p>Noise level:</p> <p>Manufacturer: <b>Strulik</b></p> <p>Type:           <b>BCF-K90 + ER-L</b></p> <p>(including mounting frame)</p> <p><b>Accessories:</b></p> <p>Electrical limit switch                   Type: <b>MS-C</b><br/>           Disk valve for overflow opening       Type: <b>VMT</b><br/>           Male-male connector                   Type: <b>NP</b><br/>           Connecting collar for duct connection   Type: <b>ÜG</b></p> |               |                   |              |