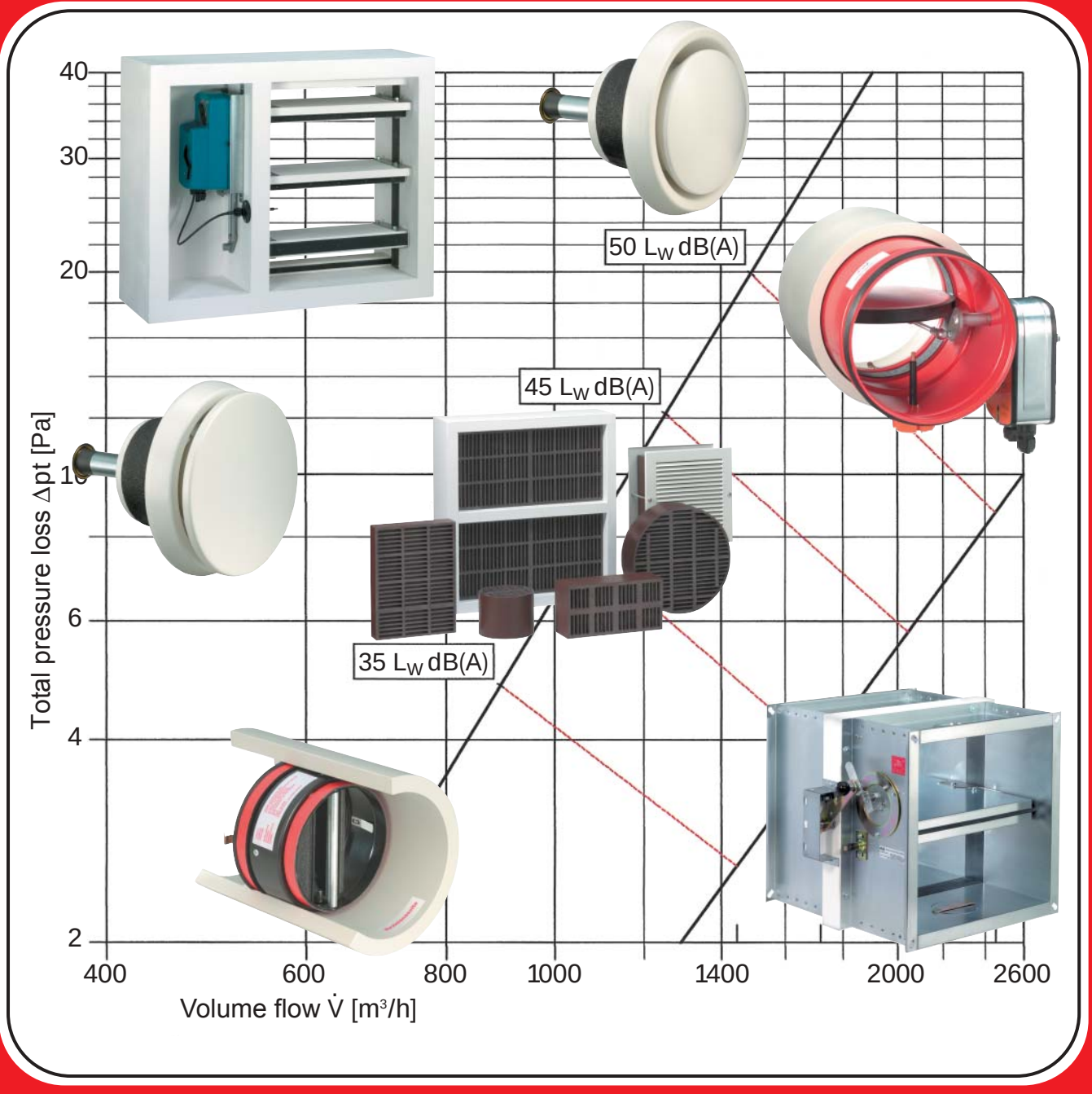
Fire Prevention

K90 and K30 dampers in accordance with DIN 4102-6

Part I – 09/2006



Subject to change without notice.

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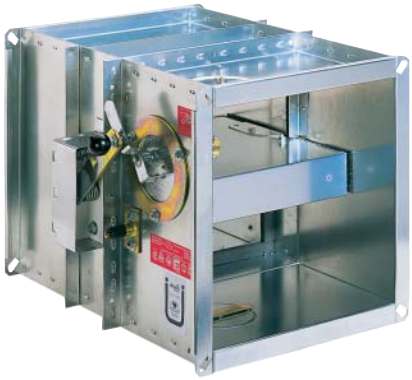
Attention!
If the fire dampers and other dampers shall be used as overflow openings, then the valid provisions for installing shall be checked together with Strulik GmbH (in spite of the illustrations shown here).

Contents illustrated in photos

BK-326-K90/Z-41.3-326



BKU-N-K90/Z-41.3-330

BKU-K90/Z-41.3-329

BKS-2-K90

BCF-W-K90/Z-41.3-595

BCF-K90/Z-41.3-331

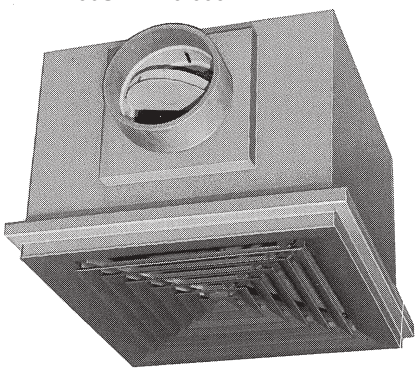
BTZ-2-K90/Z-41.3.549

BCF-2-K90/Z-41.3-647

BEK-K90/Z-41.3-325
BEK-K30/Z-41.3-333

BKR-2000-K90/Z41.3-596

LB-K90U/LB-K30U/Z-41.3-336
BW-K30U/Z-41.3-335



PX-G/Z-19.18-1648

Damper
BKS-2

Test certificate

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

Summary and ordering example

Ordering example:

BKS-2/EE/B=797xH=503xL=500

- Standard damper length; on request, also available in 375 mm
- Dimensions B x H (width x height) in mm, side H is always the operating side
- Accessories: e.g. electrical limit switch, see **page 47**

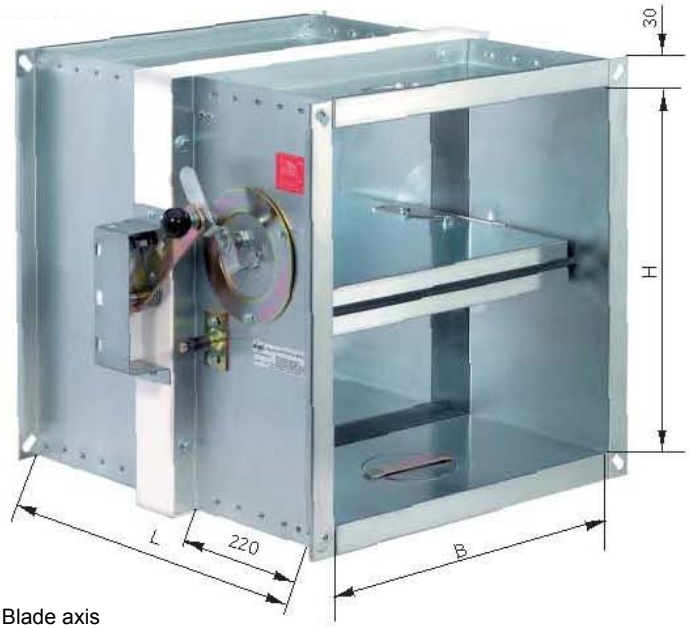
After the ventilation system has been put into operation, **the damper shall be serviced** twice a year. If no malfunctions have been detected after two consecutive examinations, then the dampers only have to be serviced once a year.

Essential advantages of the universal fire damper

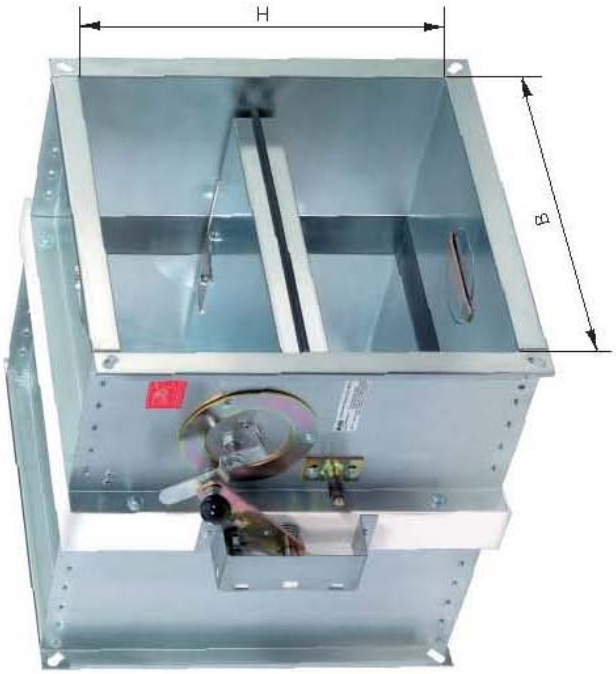
1. It is suitable for the installation inside and outside of walls and floors, in light partitions, in front of walls, standing on floors and hanging beneath floors.
2. It has a K90 fire resistance class, when connected to ducts of non-combustible materials on both sides or when overflow grilles of non-combustible materials are used on both sides, otherwise K30.
3. It has a release mechanism with fusible link, 72 °C (static temperature of activation). For hot-air installations, a fusible link with a static temperature of activation at 90 °C may also be used.
4. The damper's blade of galvanized steel is supported in central position with axes of high-grade steel 1.4301 (V2A), which are mounted in bronze bearings.
5. Housing and blade can be treated with an internal polyurethane coating. It is also possible to manufacture the housing and the blade from high-grade steel 1.4301 (V2A).
6. The standard damper length is 500 mm. On request, lengths of 375 mm are also available.
   Duct connecting profiles with a height of 20, 23 and 30 mm can be used.
7. Additional release mechanisms are available:
   - spring-return motor 24 V/230 V
   - direct-current magnet 24 V
   - in both standard and EX design

   Pneumatic release mechanisms are also available.

BKS-2



Blade axis
mounted horizontally



Blade axis
mounted vertically

Operating side at the bottom

Damper

BKS-2 and BK-326

Test certificate

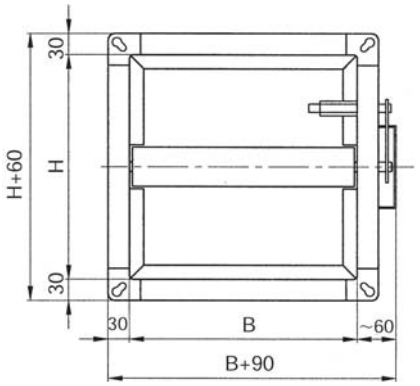
Resistance class K90/K30 in accordance with DIN 4102-6

Installation into walls and floors

Installation provisions

Please note that in the factory the fire damper has been tested for its function. The fire damper has a safety function and shall therefore be kept dry and clean on the construction site. In addition, the fire damper shall be treated with utmost care until the embedding with mortar has taken place. The functioning of the damper shall be tested before and after mounting. The damper must easily open and close when operated manually. The damper shall be put into the open position and the blade must close and lock after operation of the manual release.

Installation details



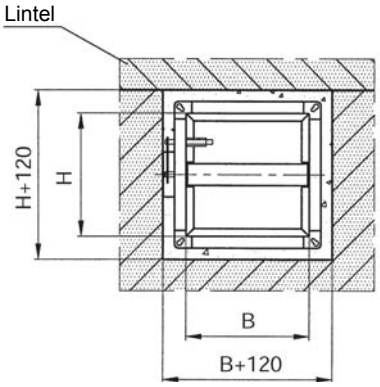
Dimensions
Sizes available

Width		Height	
Nominal size	B	Nominal size	H
200	201	200	201
224	227	224	227
250	252	250	252
280	283	280	283
315	318	315	318
355	357	355	357
400	400	400	400
450	449	450	449
500	503	500	503
560	565	560	565
630	634	630	634
710	711	710	711
800	797	800	797
900	894		
1000	1003		
1120	1125		
1250	1262		
1400	1416		
1500	1500		

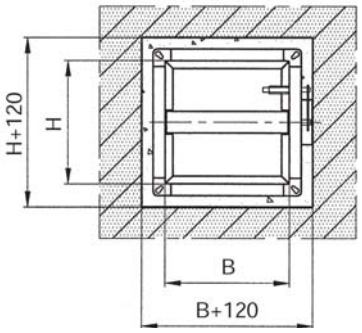
Standard length L = 500 mm

In-between sizes on request

Installation within a wall

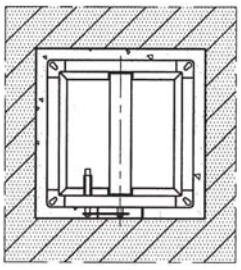


Installation within a floor

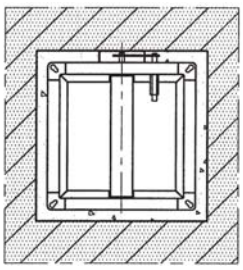


Vertical axis

Operation at the bottom



Operation at the top

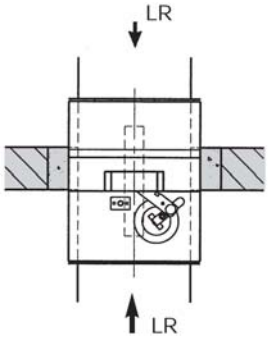


The circumferential gap shall be filled with mortar of group II or III according to DIN 1053.

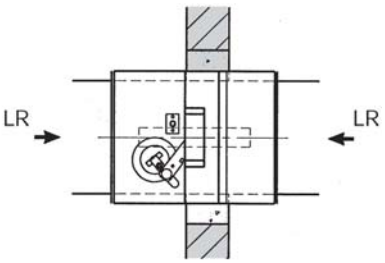
Wall thickness W = min. 80 mm
Floor thickness D = ≥ 100 mm

Hanging or standing

Within floors



Within walls



LR = any direction of airflow

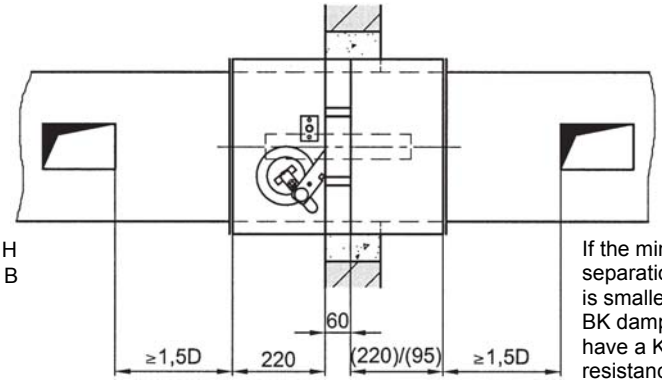
Damper
BKS-2 and BK-326

Test certificate

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

Installation into walls and floors

Minimum separation for openings within the connected ventilation ducts of non-combustible materials.



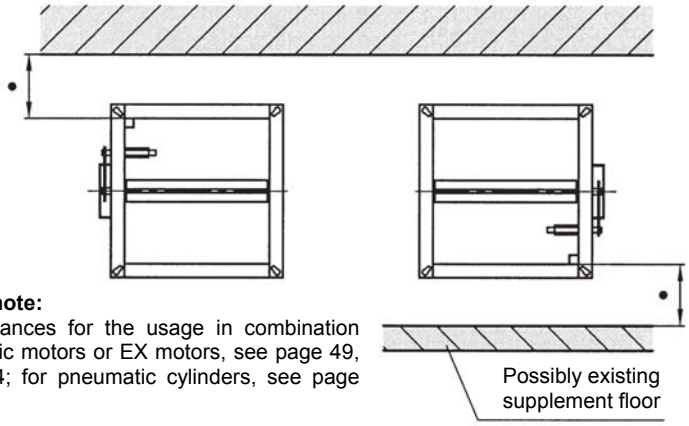
D = B if B ≥ H
D = H if H ≥ B

If the minimum separation »D« is smaller, then the BK dampers only have a K30 resistance class.

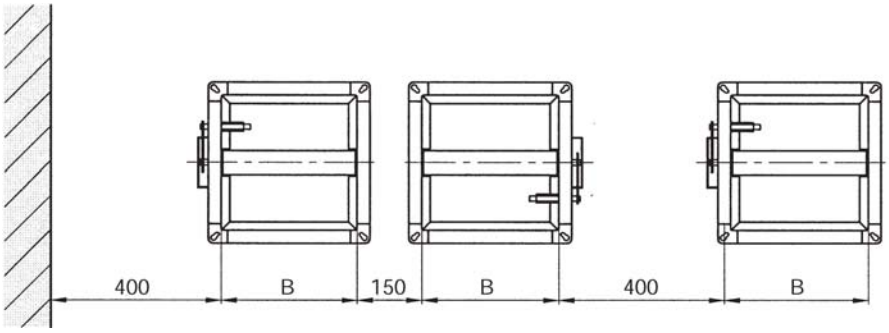
Connection provisions Minimum separations

* Distance 60 mm in case of embedding with mortar by hand and 40 mm in case of mechanical pressing process.

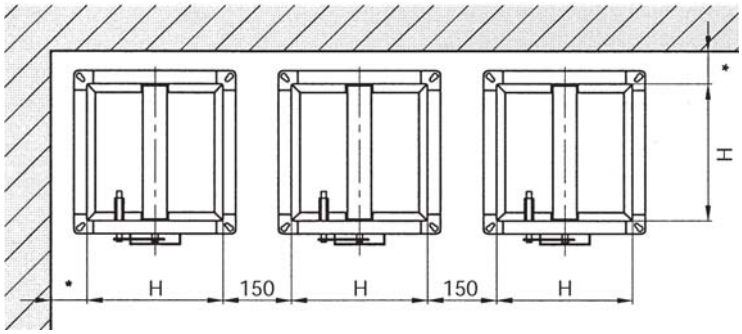
Components, which in full or in part consist of combustible materials, shall be at a distance of min. 5 cm from the outer face of the fire dampers. This especially applies to externally applied facings and insulating layers.



• **Please note:**
Other distances for the usage in combination with electric motors or EX motors, see page 49, 50 and 54; for pneumatic cylinders, see page 55.

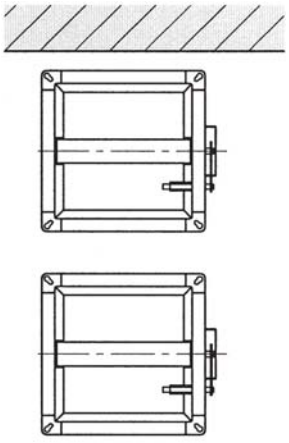


Installation with horizontal axis

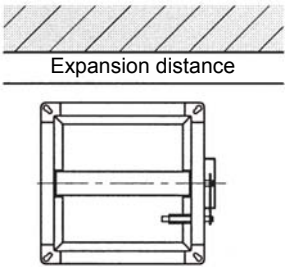


Installation with vertical axis

Floor



Floor and wall with an expansion joint



Damper
BKS-2 and BK-326

Test certificate

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

Installation into walls and floors

Partial plastering

Dampers that are mounted into not easily accessible openings may not be used in walls of brickwork according to DIN 1053 or in walls and floors of concrete with only a partial plastering and a supplementary mineral-wool cladding.

Furthermore, several dampers can be mounted next to each other with mineral-wool slabs between the frames.

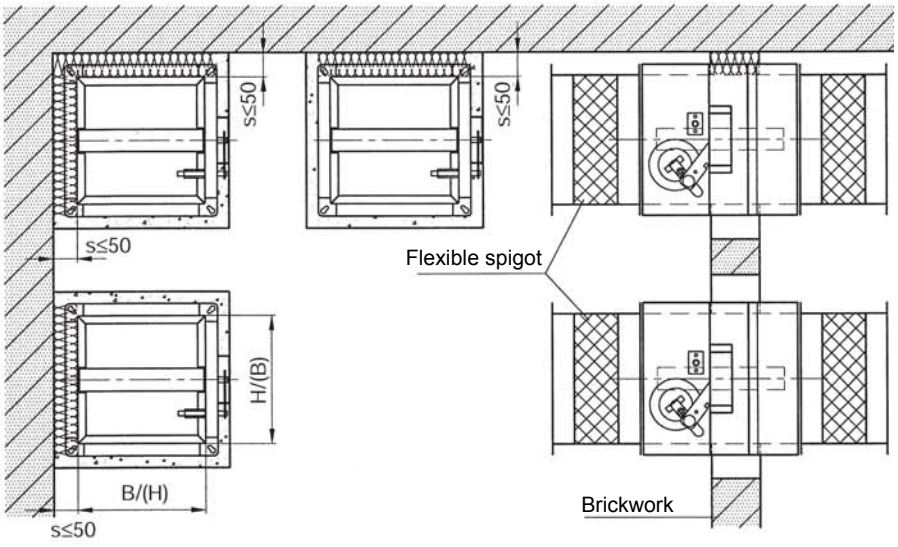
The mineral-wool slabs shall be 10 mm larger than the gap size »s«. Extended non-combustible ventilation ducts of sheet metal shall be connected with flexible spigots on both sides.

If used in floors, then care shall be taken that the load on the dampers is decreased.

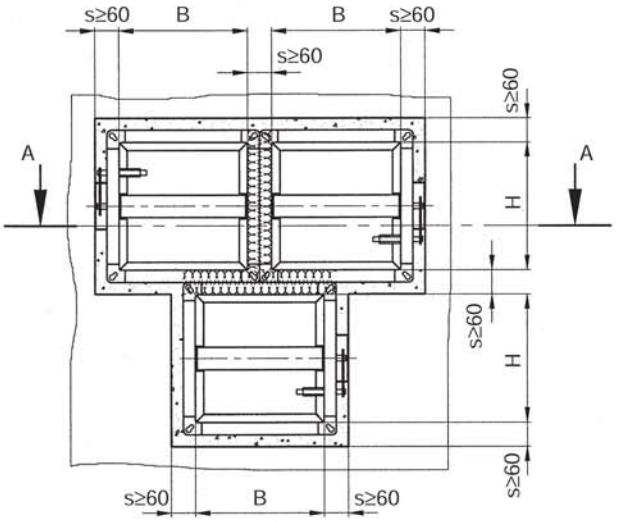
= Mineral-wool slab, non-combustible according to DIN 4102, width ≥ 100 mm, gross density 80 - 100 kg/m³, melting point ≥ 1000 °C (insert before mounting)

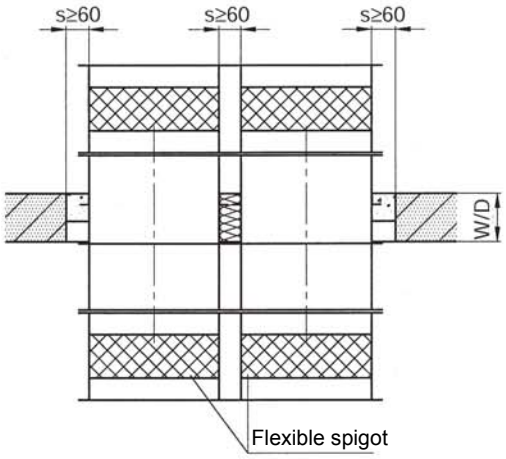
= Mortar of group II or III according to DIN 1053 or concrete

Arrangement within not easily accessible openings



Flange-to-flange arrangement





Damper
BKS-2 and BK-326

Test certificate

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

Installation into walls and floors

Connection provisions

Note:
In order to interrupt the earth connection of sheet-metal ducts for the installation of flexible spigots, a potential compensator type PO is available.

Connection of ventilation ducts and impact forces into walls

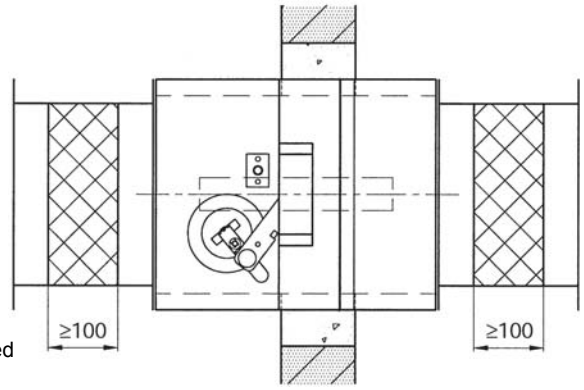
The dampers shall only be connected to such ventilation ducts that due to their design and embedding, as a result of warming up, will not be able to apply considerable forces to the dampers or the walls.

Expansion compensation

For the following applications a flexible spigot of at least standard flammable materials (class B2 according to DIN 4102), min. 10 cm long (when installed), shall be connected on both sides between the damper and the ventilation duct of non-combustible materials:
- within walls that are less than 100 mm thick,
- within light partition walls,
- shaft walls,
- gypsum wall panels,
- in case of partial plastering.

Expansion compensation on one side:
- outside of walls and floors.

Flexible spigot, type SS

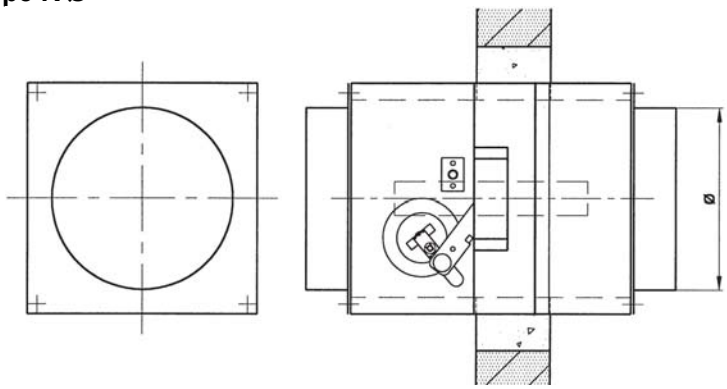


Please note:
The housing needs to be extended from H ≥ 565 mm upwards

Round spigot only up to damper size 503/503

(The housing has to be extended for larger spigot cross-sections Ø)

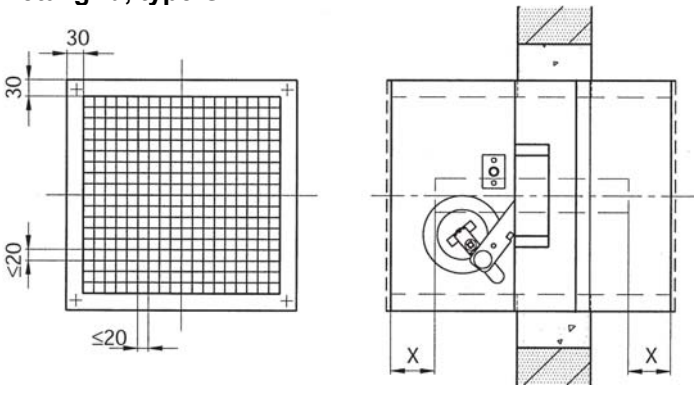
Spigot, type R Ø



With a metal-mesh grid, type GI, on both sides, mesh size ≤ 20 mm, **to achieve a K90 fire resistance class without ventilation ducts.**

Precondition:
X ≥ 50 mm

Mesh-metal grid, type GI



Damper
BKS-2 and BK-326

Test certificate

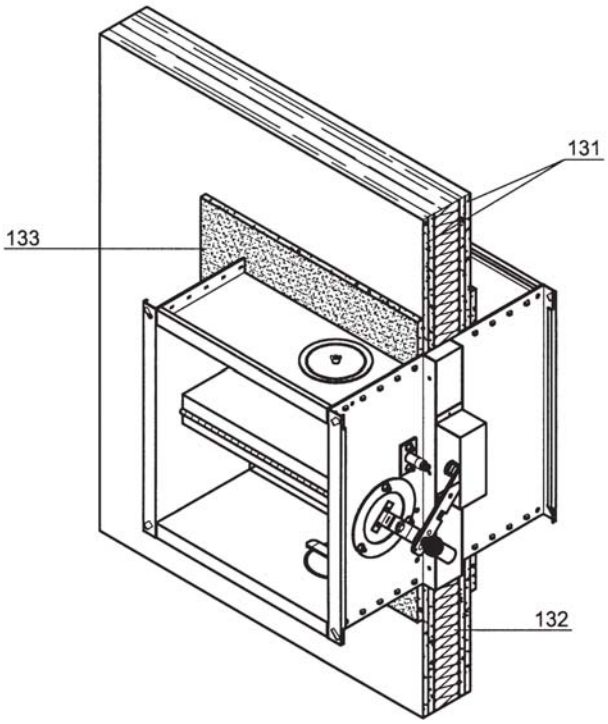
Resistance class K90/K30 in accordance with DIN 4102-6

Installation into light partitions

Legend

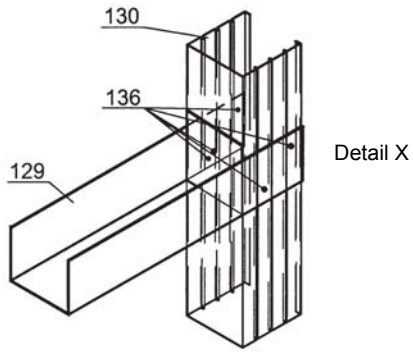
2 **Angle in galvanized steel,** circumferential 25 x 25 x 1,5 mm
129 **Profile in galvanized steel,** type UW 50 (50 x 40 x 0,5 mm)
130 **Profile in galvanized steel,** type CW 50 (50 x 48 x 0,5 mm)
131 **Gypsum cardboard plate,** (GKF, DIN 18180), 2 x 12,5 mm thick
132 **A1 mineral wool,** ca. 100 kg/m^3, 40 mm thick
133 **Gypsum cardboard plate doubling,** circumferential (GKF, DIN 18180) 100 x 12, 5 mm thick
134 **Dry wall screw in galvanized steel**
135 **Mineral wool** (same wool as item 132)
136 **Fixing rivet in galvanized steel**, 3 x 6 mm

Installation also with a vertical damper blade within light partitions with F gypsum cardboard plates according to table 48 of DIN 4102 Part 4 (edition March 1994)

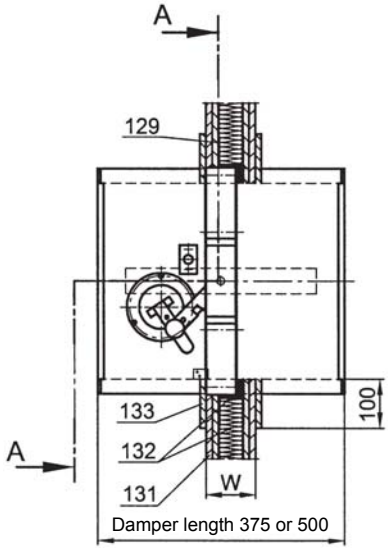


The minimum distance between two fire dampers is 120 mm

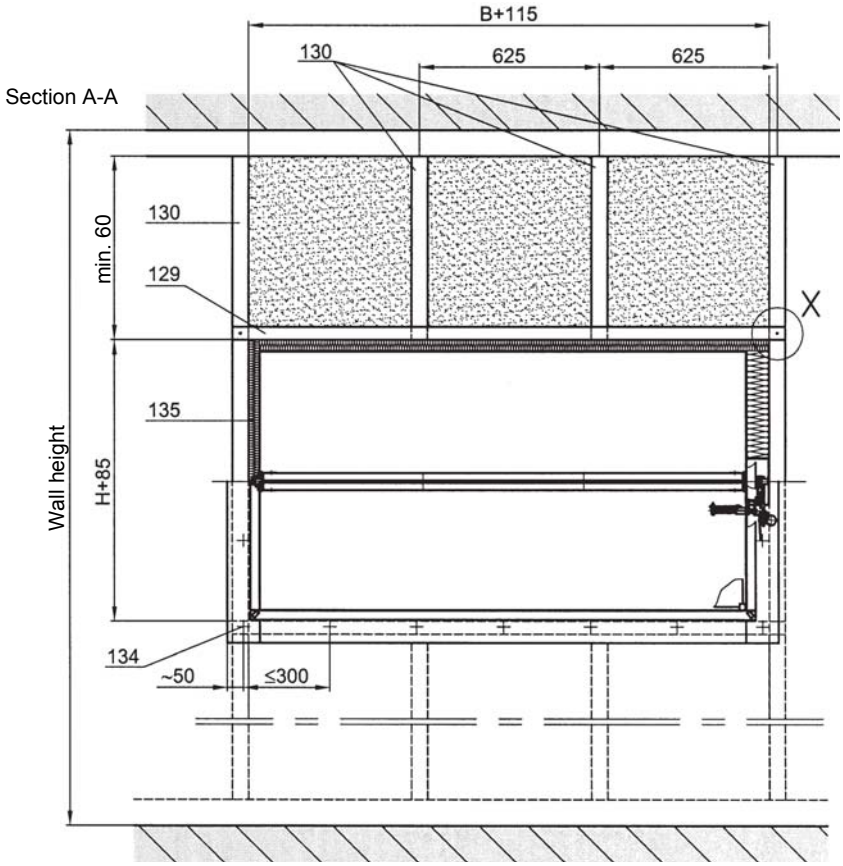
Wall thickness W ≥ 100, wall height according to the test certificate of the wall



Detail X



Framework within a light partition wall



Damper
BKS-2 and BK-326

Test certificate

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

Installation into light partitions

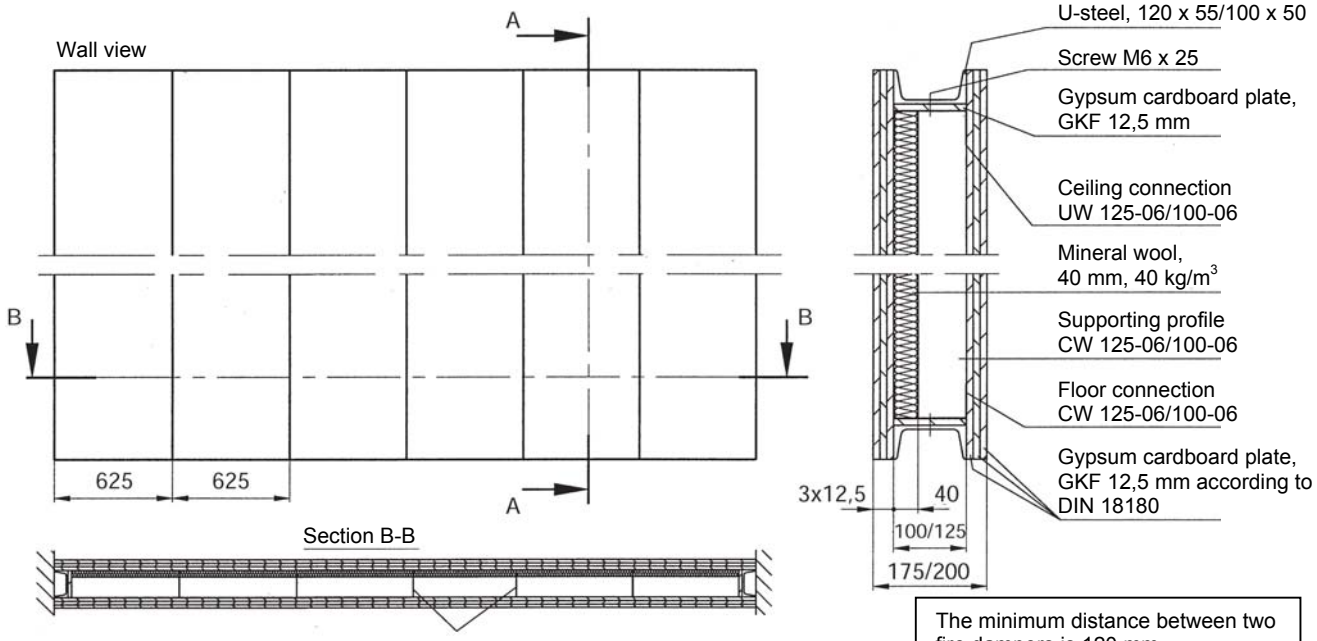
Legend

2	**Angle in galvanized steel,** circumferential 25 x 25 x 1,5 mm
137	**Profile in galvanized steel,** 100-06/125-06
138/139	**Supporting profile,** galvanized sheet steel, 100-06/125-06
140	**Galvanized U-steel,** 100 x 50 mm/120 x 55 mm
141	**Gypsum cardboard plate,** (GKF, DIN 18180) 3 x 12,5 mm thick
142/143	**Mineral wool,** material class A, 40 mm thick, melting point ≥ 1000 °C, density 40 kg/m³
144	**Dry wall screw in galvanized steel,** (distance ca. 200 mm)

Installation also with vertical axis into light partitions. Wall thickness 175 and 200 mm, wall with three layers (RIGIPS system) according to the test certificate no. 831045 of the Technical University Braunschweig. Partition wall of resistance class F90.

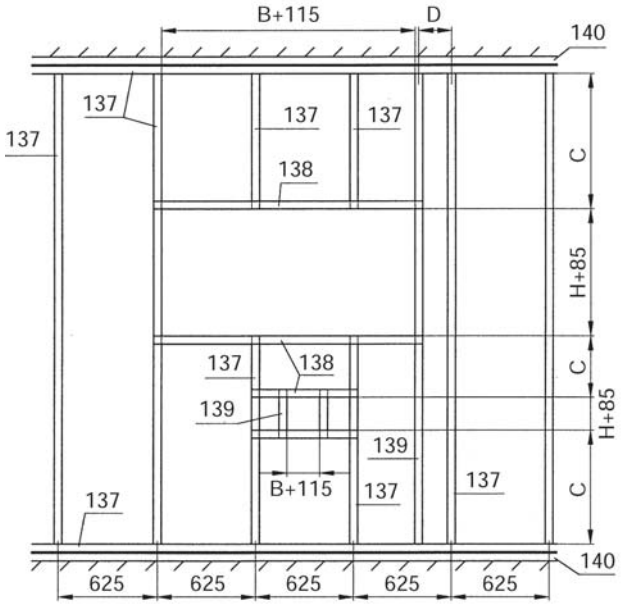
Fastening of the plates

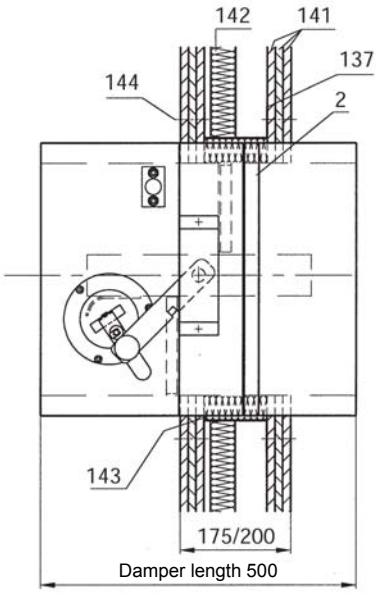
1st and 2nd layer: RIGIPS screws for quick mounting, 25 mm and 35 mm. Distance 750 mm.
3rd layer: RIGIPS dry wall screws 45 mm. Distance 250 mm.
Gaps filled according to DIN 18181. 1st and 2nd layer squeezed out with gap filler



The minimum distance between two fire dampers is 120 mm

The fire damper shall be held by a supporting construction, which is independent of the wall. Therefore, all dimensions C and D are variable and will only be affected by the damper size.





Damper
BKS-2

Test certificate

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

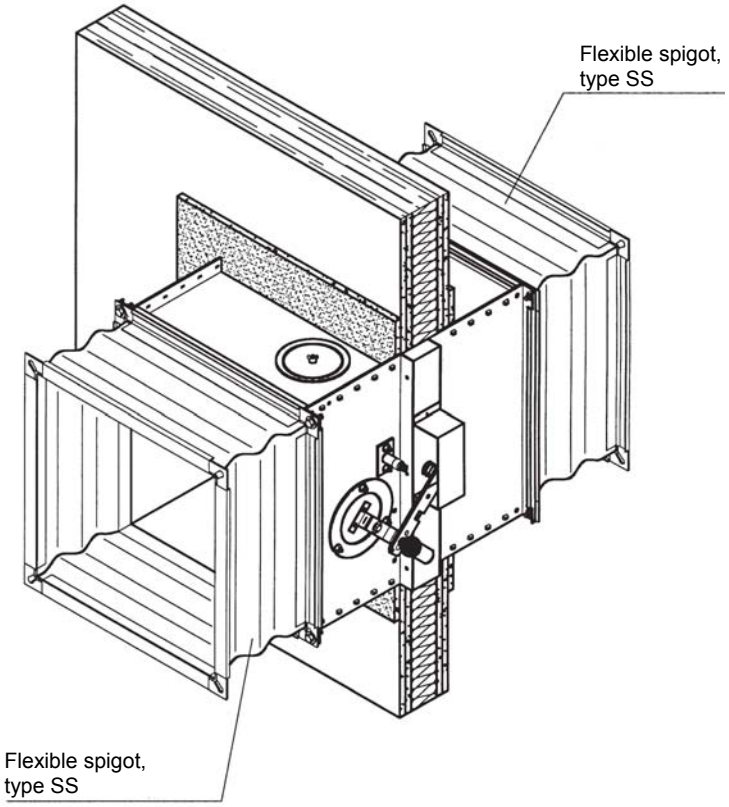
Installation into light partitions

Connection provisions for the installation of dampers into light partition walls

In principle, fire dampers within light partition walls have a flexible connection, if they are on both sides connected to non-combustible ducts.

The flexible spigot of at least standard flammable materials (class B2 according to DIN 4102) and min. 10 cm long (when installed) shall be installed between the damper and the ventilation duct.

Expansion compensation



KNAUF FIREBOARD shaft wall with glass-fibre quilt plates on one side, resistance class F90 A

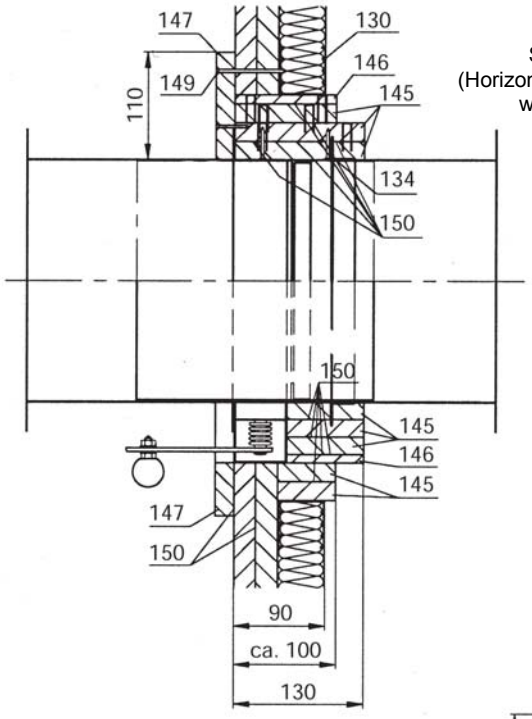
Installation example
KNAUF FIREBOARD shaft wall

Installation also with a vertically aligned damper within KNAUF FIREBOARD shaft walls with glass-fibre quilt plates, material class A1.
Test certificate no. PA-III 4.290.
Test approval no. 2.41/20 842 of the Bundesanstalt für Materialforschung und -prüfung in Berlin.

The minimum distance between two fire dampers is 20 cm.

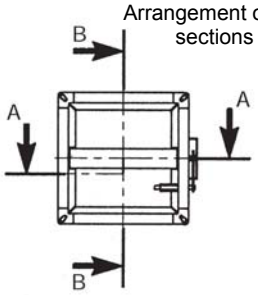
Legend

130 **Profile in galvanized steel,** CW 50 (50 x 48 x 0,6 mm)
134 **Dry wall screw in galvanized steel,** Ø 3,5 x 35 mm long
145 **Insulating material,** PROMATECT-H, 20 mm thick
146 **Insulating material,** PROMATECT-H, 10 mm thick
147 **Connecting flange,** PROMATECT-H, 20 mm thick
148 **Tacks in galvanized steel,** Pneumatically inserted, 1 x 10 x 30 mm, distance ca. 200 mm
149 **Dry wall screw in galvanized steel,** Ø 4 x 75 mm long, distance ca. 150 mm
150 **SBK 2000 adhesive**

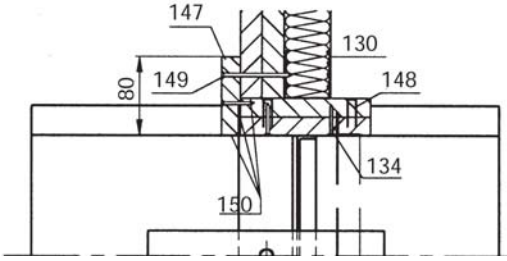


Section A-A
(Horizontal section through wall and floor)

Arrangement of the sections



Section B-B
(Vertical section through wall and floor)

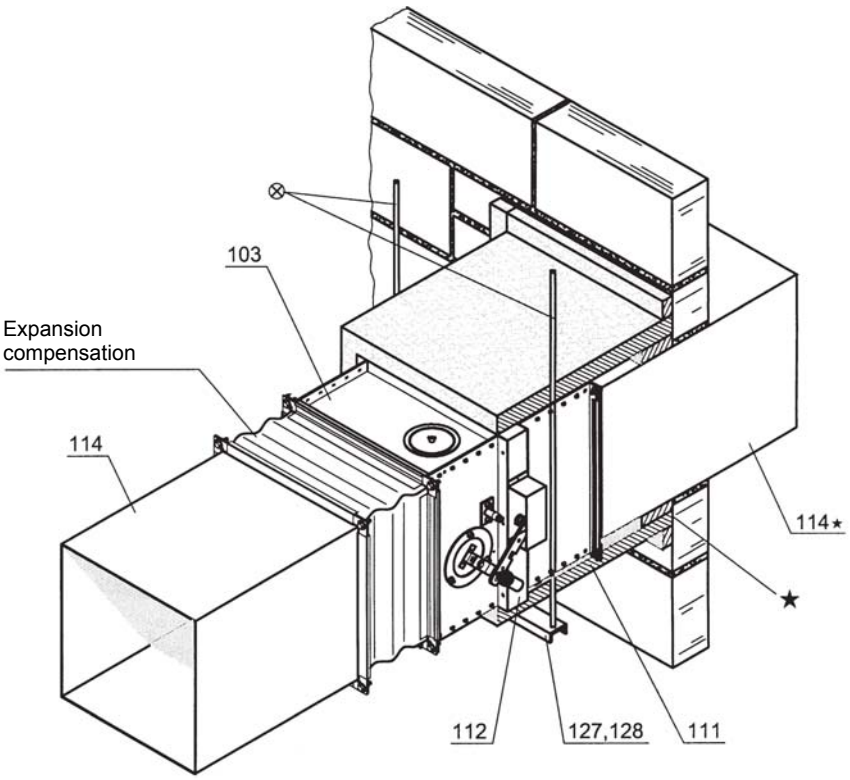


Damper
BKS-2

Test certificate

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

Installation in front of walls with slab lining



Dampers

The dampers can be installed outside of walls or floors, if they are connected to tested ventilation ducts having a L90 resistance class. The distance between damper and wall or floor is variable.

The dampers shall be fitted with expansion compensators, if ventilation ducts (114) shall be connected.

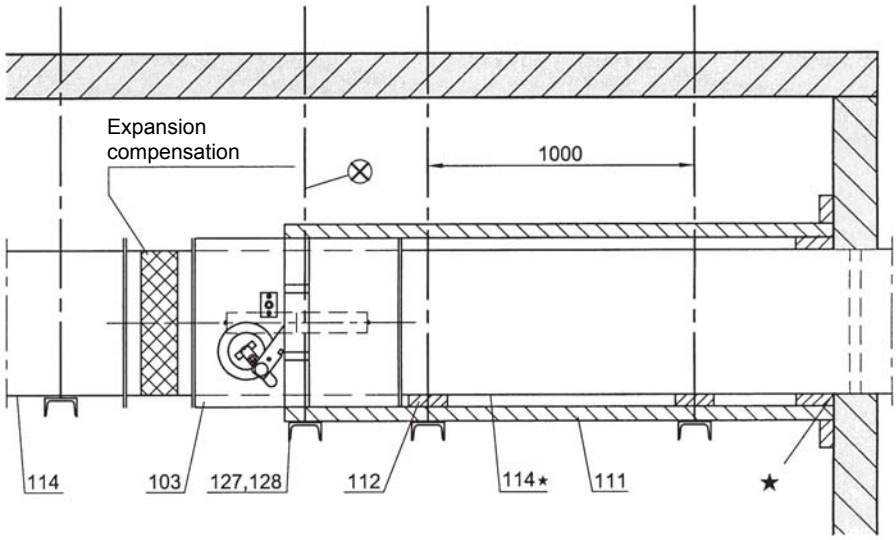
The dampers shall be suspended in a fireproof manner. The suspension shall comply with **page 37 - 43** and be installed accordingly above the floor or with dowels within the floor. The suitability of other suspensions or supports with a fire resistance time of 90 minutes shall be determined statically on an individual basis. For steel, a design stress of 6 N/mm^2 shall be assessed.

The fire resistant ventilation ducts shall be suspended according to the instructions*. The penetration points, where the fire resistant ventilation ducts pass through wall and floors, shall comply with the instructions*.

The fire resistant ventilation ducts shall have no openings between the F90 wall and the damper.

* On request, technical data on suitable **fire resistant ventilation ducts and insulations** can be supplied. The permissible ducts, suspensions and wall or floor penetrations and operating pressures may differ widely depending on the design and manufacturer!

Connecting provisions for the installation outside of walls



103	**Damper**
111	**L90 plate casing**
112	**Lining** (fireproofing plates ≥ 95 mm wide)
114	**Galvanized steel ventilation duct**
114*	**Galvanized steel ventilation duct** (optional)
127/128	**U-traverse U50 or U80** (depending on the dimensioning)
⊗	**Suspension** (threaded rod) according to the dimensioning, see **page 37 - 43**
★	**Wall connection** and opening according to the test certificates of the L90 ventilation ducts

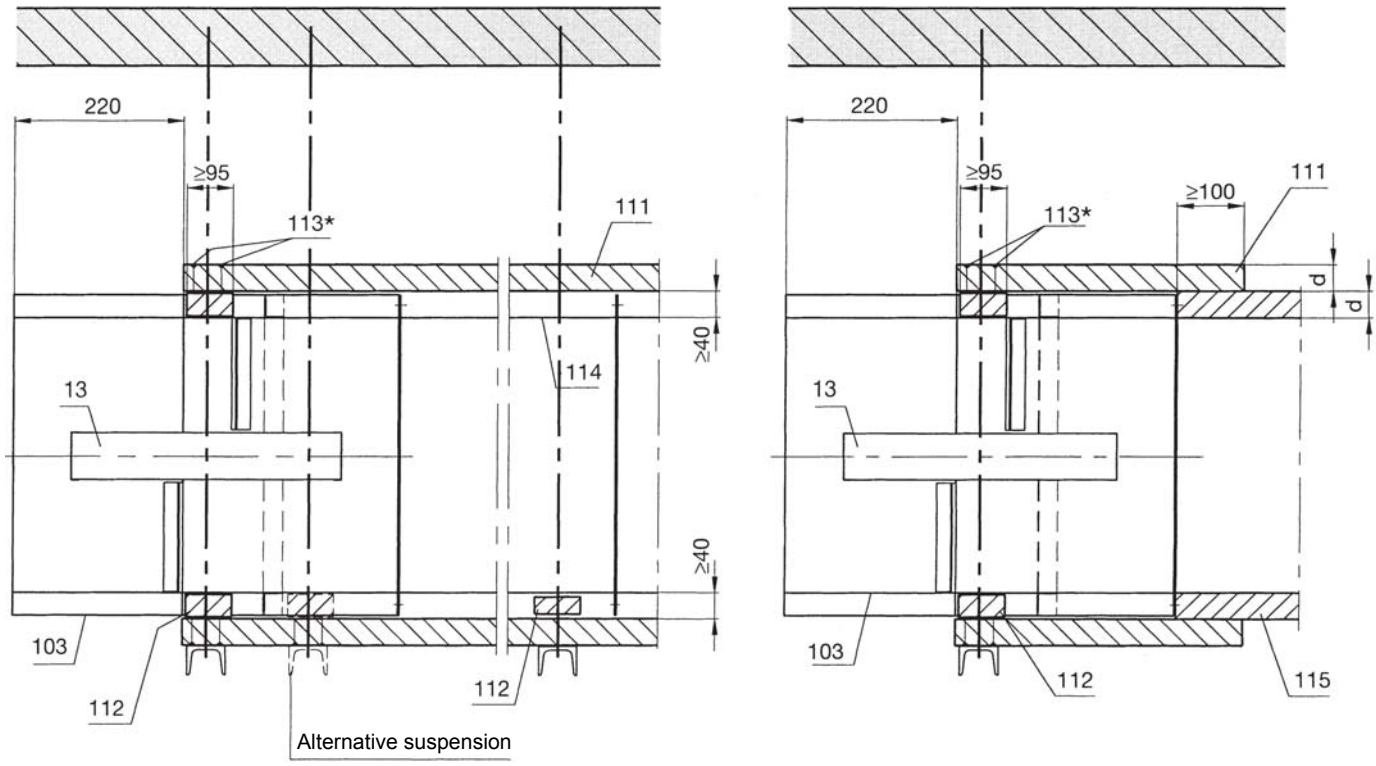
Damper
BKS-2 and BK-326

Test certificate

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

Installation in front of walls with slab lining

Suspension and dimensioning of the threaded rod, see pages 37 - 43



Legend

13 **Damper blade**
103 **Damper** (BKS-2 or BK-326)
111 **Casing of plates** (L30, L60 or L90)
112 **Lining** (fireproof plates ≥ 95 mm wide)
113 **Wing connection**
114 **Existing ventilation duct or without duct**
115 **Plate duct** (L30, L60 or L90)

* The joining technique is used for fastening the lining to the plate casing (plate duct) and the damper.

d = thickness of the plate duct or casing

Application

Plate construction type ventilation ducts with national test certificate.

Damper
BKS-2 and BK-326

Test certificate

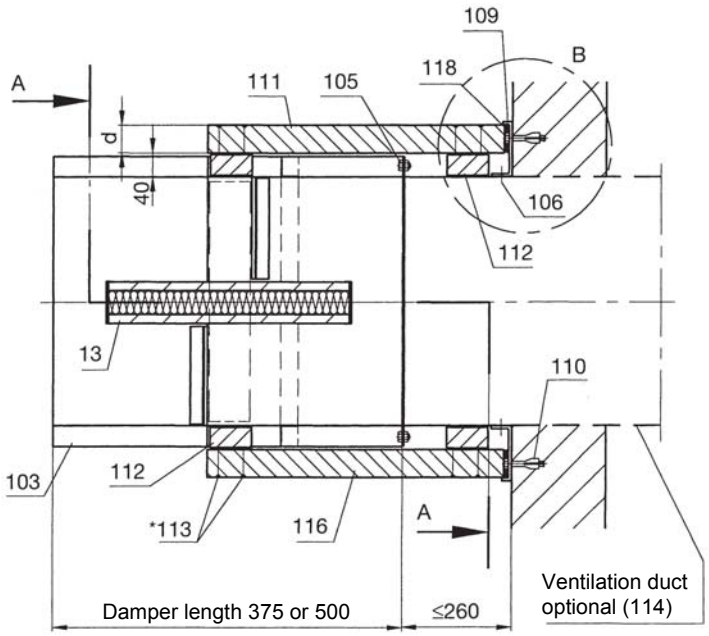
Resistance class K90/K30 in accordance with DIN 4102-6

Installation into walls and floors

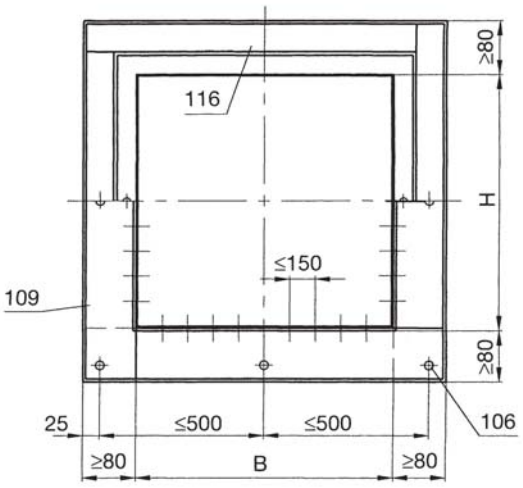
Legend

13 **Damper blade**
103 **Damper**
105 **Hexagon head screw with nut M8**
106 **Solid rivet or self-tapping screw** Ø 4,8 mm or spot welding Ø 5 mm
109 **Connecting frame in galvanized steel** (by the installer), profile ≥ 14 x 80 x 50 mm.
Note: the connecting profile is not required, if the sheet-metal duct (pos. 114) is a fire damper housing.
110 **Metal dowel in galvanized steel** with approval
111 **Plate casing** (L30, L60 or L90)
112 **Lining** (fireproofing plates ≥ 95 mm wide)
113 **Joint**
114 **Existing ventilation duct** (galvanized steel) or existing fire damper that remains after reconstruction (damper blade and stops removed) as a "shaft"
- maximum projection of the ventilation duct or fire damper ≤ **260 mm**
116 **Plate insulation** (L30, L60 or L90)
118 **Mineral fiber plates,** material class A according to DIN 4102, melting point ≥ 1000 °C, density ca. 100 kg/m³

BKS-2 and BK-326 connected directly to ventilation ducts or after reconstruction to the remaining housing of fire dampers **without suspension**. Precondition: duct or housing projection ≤ **260 mm** and the sheet-metal duct or existing damper housing have been embedded with mortar.



Section A-A



Drawing without damper blade and stops

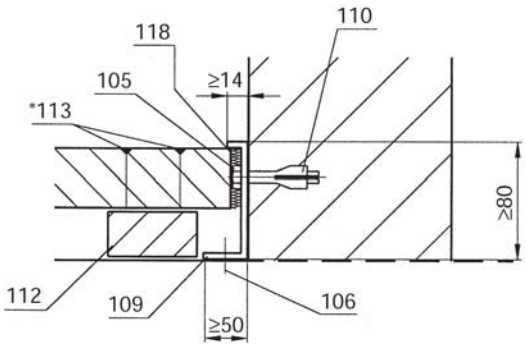
* The duct joining technique is used for fastening the lining to the plate casing (plate duct) and the damper

d = thickness of the plate duct or casing

Usage of the damper directly in front of walls and floors

The dampers can also be used directly in front of concrete walls and standing on concrete floors, if an existing fire damper, which remains after reconstruction (damper blade and stops removed) as a "shaft" between the connecting flange and floor to be protected or a ventilation duct (galvanized steel) exists and the maximum projection of ≤ 260 mm is met. The L90 plate casing shall be as shown in the drawing.

Detail B



Damper

BKS-2 and BK-326

Test certificate

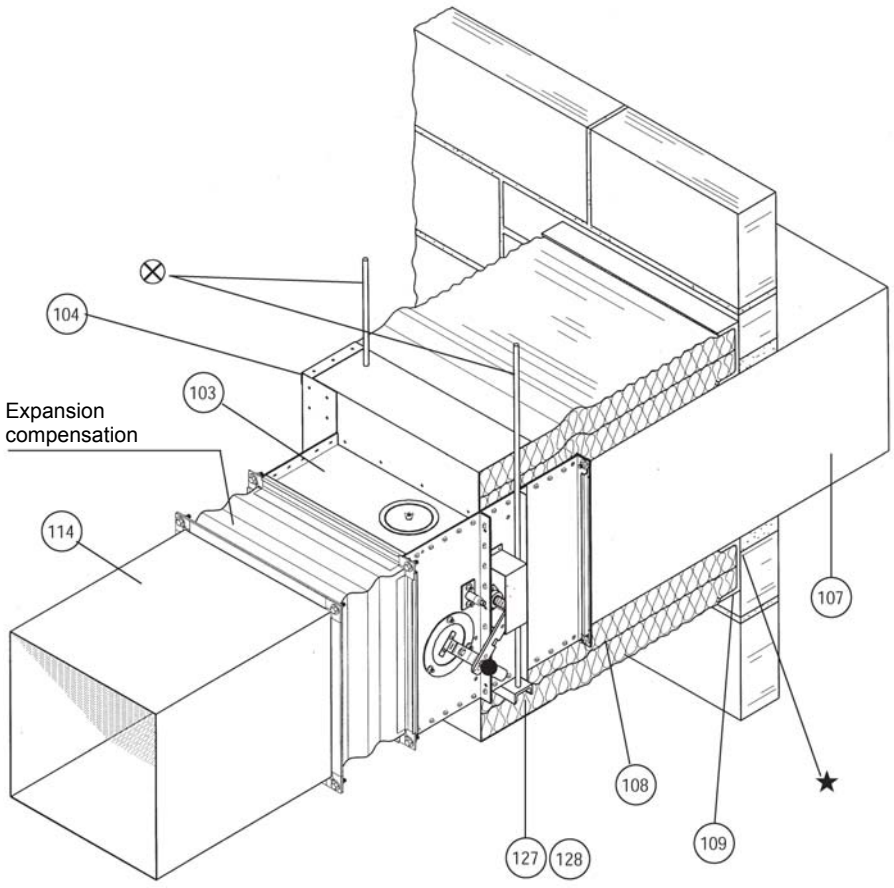
Resistance class K90/K30 in accordance with DIN 4102-6

Installation in front of walls with mineral-wool lining

Suspension, dimensioning and weight of the dampers: page 37 - 43

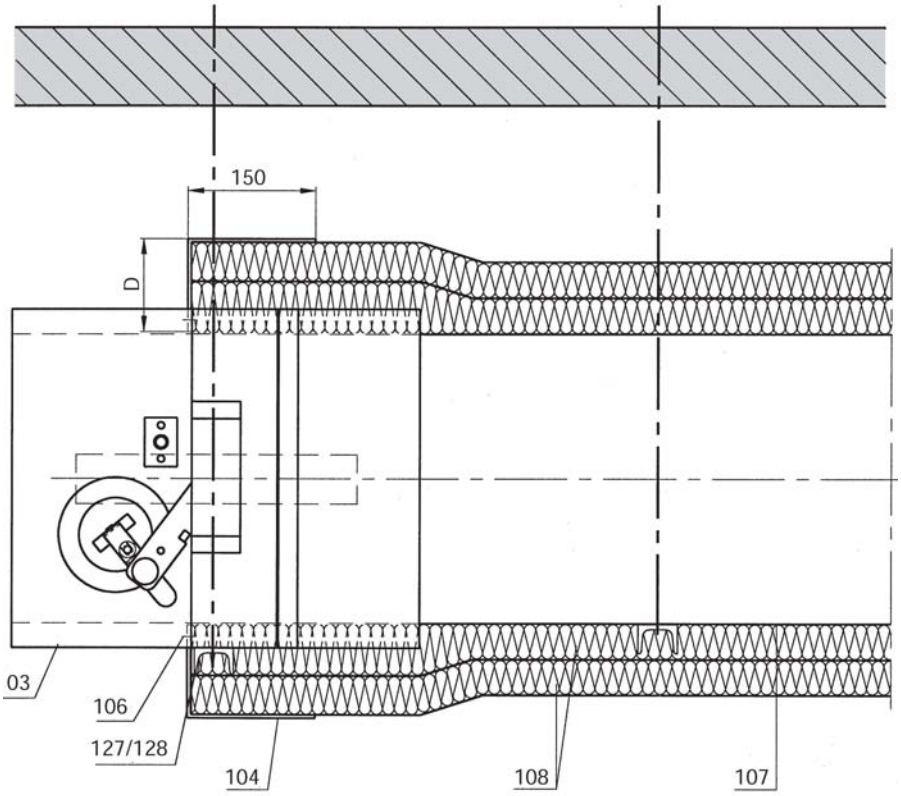
Application

Steel ventilation ducts with an outer insulating layer with test certificate and according to DIN 4102-4



Legend

103	**Damper**
104	**View screen in galvanized steel** (only required for mineral fiber insulation) Please order separately (D = insulation thickness)
106	**Solid steel rivet or self-tapping screw** Ø 4,8 mm **or spot welding** Ø 5 mm
107	**Existing sheet steel ventilation duct**
108	**Mineral fiber insulation** (L30, L60 or L90) Mineral wool thickness according to the test certificates of the mineral wool manufacturer
109	**Connecting frame in galvanized steel** (by the installer) Profile ≥ 14 x 80 x 50 mm Note: the connecting profile is not required, if the sheet-metal duct (pos. 107) is a fire damper housing.
114	**Ventilation duct in galvanized steel**
127/128	**U-traverse U50 or U80** depending on the dimensioning
⊗	Suspension (threaded rod) according to the dimensioning: **pages 37 - 43**.
★	Wall connection and opening according to the test certificates of the mineral wool manufacturer or DIN 4102-4 or as shown.



Damper
BKS-2

Test certificate

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

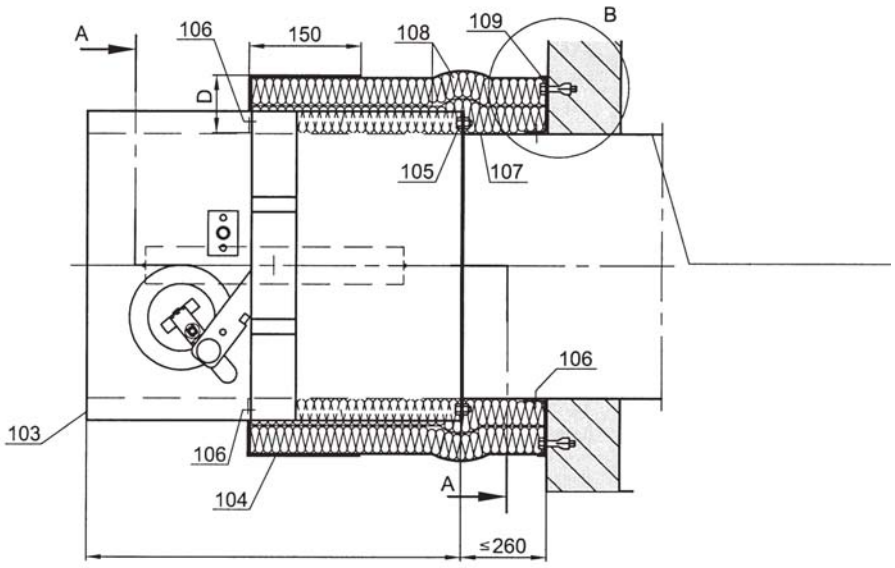
Installation in front of walls and floors with mineral-wool lining

Legend

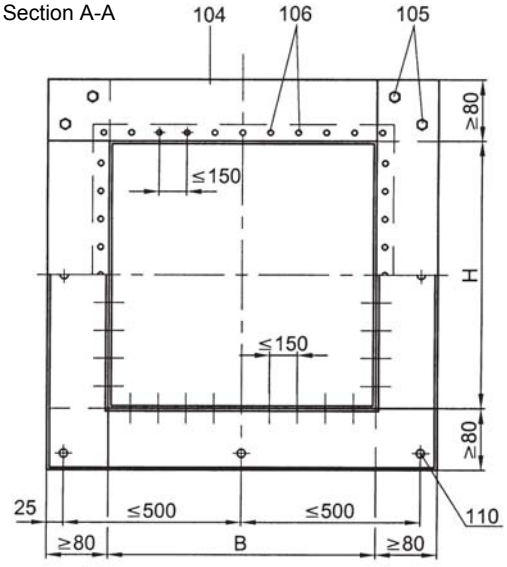
103 Damper
104 View screen in galvanized steel
(Only required for mineral fiber insulation)
Please order separately
(D = insulation thickness)
105 M8 hexagon head screw with nut in galvanized steel
106 Solid steel rivet or self-tapping screw
Ø 4,8 mm
or spot welding Ø 5 mm
107 Existing sheet steel ventilation duct or an old fire damper housing
108 Mineral fiber insulation
(L30, L60 or L90)
Mineral wool thickness according to the test certificates of the mineral wool manufacturer
109 Connecting frame in galvanized steel (by the installer)
Profile ≥ 14 x 80 x 50 mm
Note: the connecting profile is not required, if the sheet-metal duct (pos. 107) is a fire damper housing.
110 Metal dowel in galvanized steel

Usage of the steel ventilation ducts with an outer insulating layer with test certificate and according to DIN 4102-4

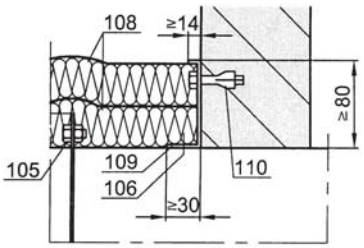
BKS-2 connected directly to ventilation ducts or after reconstruction to the remaining housing of fire dampers **without suspension**. Precondition: duct or housing projection ≤ 260 mm and the sheet-metal duct or existing housing have been embedded with mortar as prescribed.



Section A-A



Detail B



Usage of the damper directly in front of walls and floors

The dampers can also be used directly in front of concrete walls and floors, if an existing fire damper, which remains after reconstruction (damper blade and stops removed) as a "shaft" between the connecting flange and floor to be protected or if a ventilation duct (galvanized steel) exists and the maximum projection of ≤ 260 mm is met. The mineral-wool lining shall be as shown in the drawing.

Damper
BK-326

Test certificate Z-41.3-326

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

Summary and ordering example

Ordering example:

BK-326/EE/B=797xH=503xL=500

- Standard damper length; on request, also available in 375 mm
- Dimensions B x H (width x height) in mm, side H is always the operating side
- Accessories: e.g. electrical limit switch: **page 47**

After the ventilation system has been put into operation, **the damper shall be serviced** twice a year. If no malfunctions have been detected after two consecutive examinations, then the dampers only have to be serviced once a year.

Essential advantages of the universal fire damper

1. It is suitable for the installation inside and outside of walls and floors, in light partitions, in front of walls, standing on floors and hanging beneath floors.
2. It has a K90 fire resistance class, when connected to ducts of non-combustible materials on both sides or when overflow grilles of non-combustible materials are used on both sides, otherwise K30.
3. It has a release mechanism with fusible link, 72 °C (static temperature of activation). For hot-air installations, a fusible link with a static temperature of activation at 90 °C may also be used.
4. The damper's blade of galvanized steel is supported in central position with axes of high-grade steel 1.4301 (V2A), which are mounted in bronze bearings.
5. Housing and blade can be treated with an internal polyurethane coating. It is also possible to manufacture the housing and the blade from high-grade steel 1.4301 (V2A).
6. The standard damper length is 500 mm. On request, lengths of 375 mm are also available.
   Duct connecting profiles with a height of 20, 23 and 30 mm can be used.
7. Additional electric release mechanisms are available:
   - spring-return motor 24 V/230 V
   - direct-current magnet 24 V
   - in both standard and EX design

   Pneumatic release mechanisms are also available.

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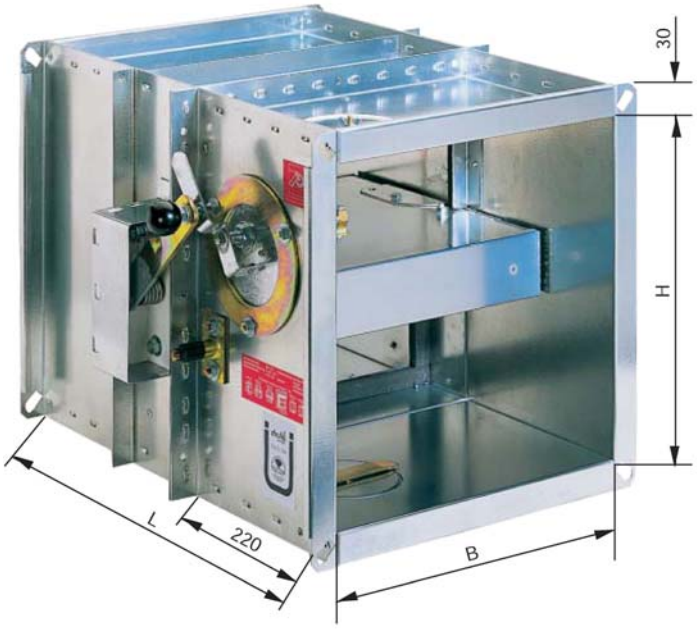
Allgemeine bauaufsichtliche Zulassung



Blade axis
mounted horizontally

Blade axis
mounted vertically

Damper
BK-326

Test certificate Z-41.3-326

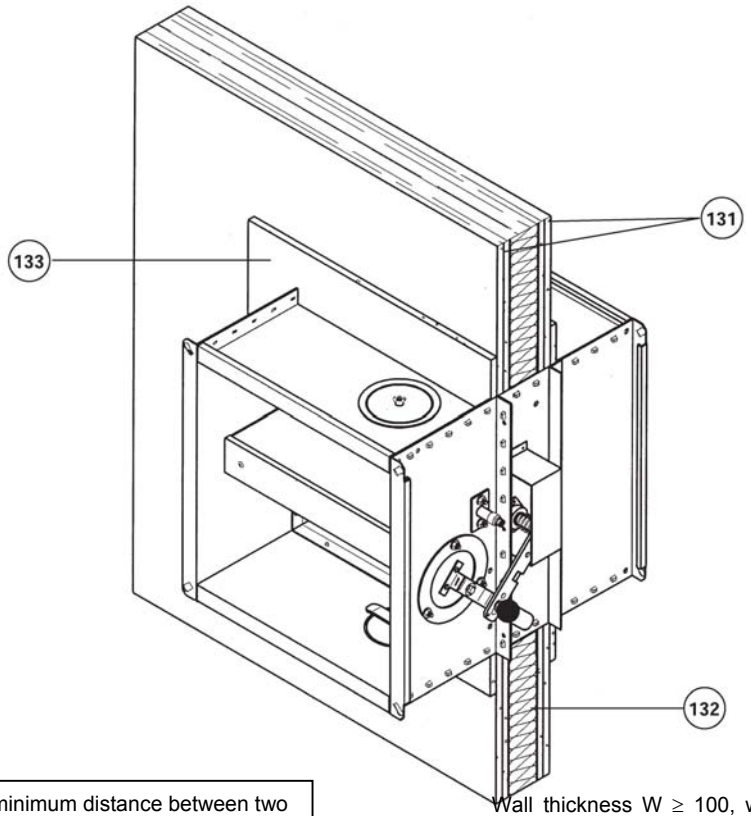
Resistance class K90/K30 in accordance with DIN 4102-6

Installation into light partitions

Legend

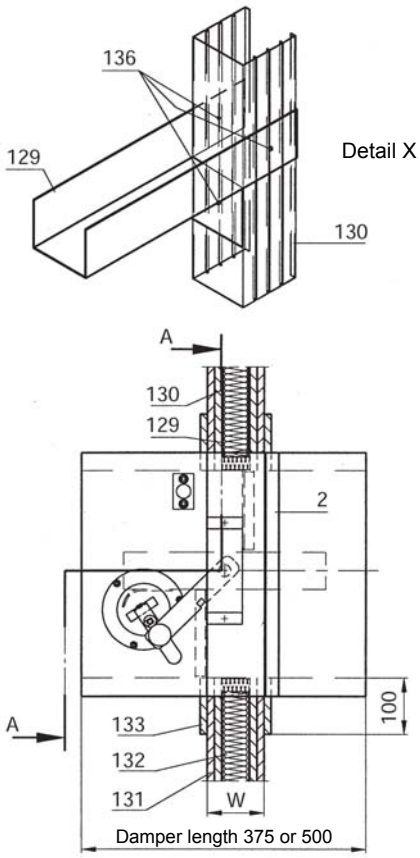
2 **Angle in galvanized steel,** circumferential 25 x 25 x 1,5 mm
129 **Profile in galvanized steel,** type UW 50 (50 x 40 x 0,5 mm)
130 **Profile in galvanized steel,** type CW 50 (50 x 48 x 0,5 mm)
131 **Gypsum cardboard plate,** (GKF, DIN 18180), 2 x 12,5 mm thick
132 **A1 mineral wool,** ca. 100 kg/m^3, 40 mm thick
133 **Gypsum cardboard plate doubling,** circumferential (GKF, DIN 18180) 100 x 12, 5 mm thick
134 **Dry wall screw in galvanized steel**
135 **Mineral wool** (same wool as item 132)
136 **Fixing rivet,** galvanized steel, 3 x 6 mm

Installation also with a vertical damper blade within light partitions with F gypsum cardboard plates according to table 48 of DIN 4102 Part 4 (edition March 1994)

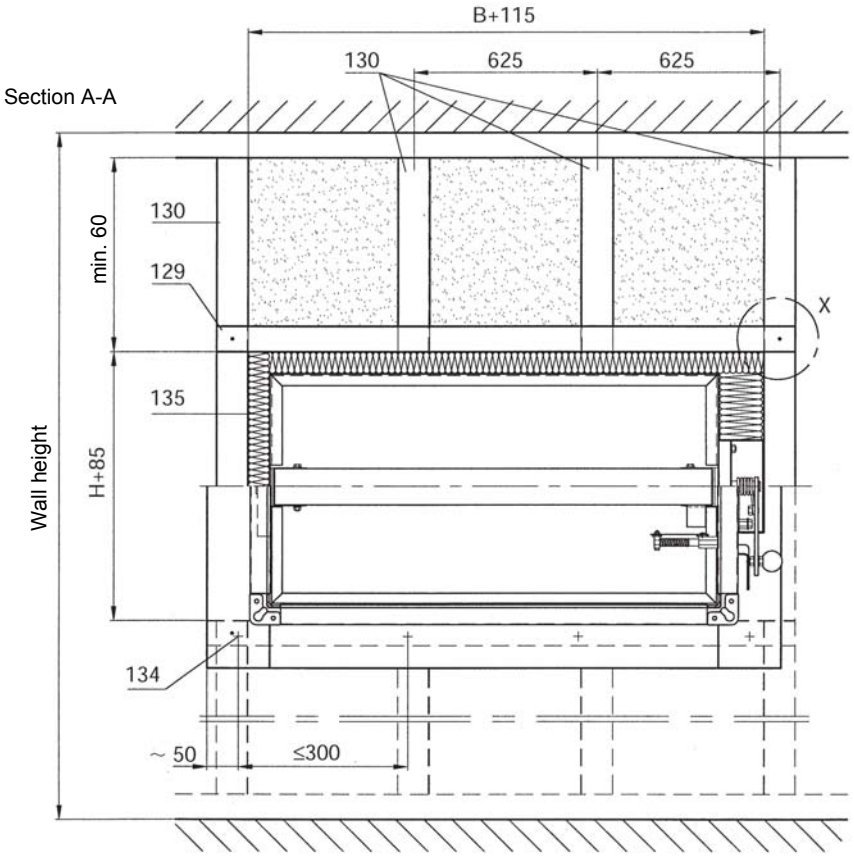


The minimum distance between two fire dampers is 120 mm

Wall thickness W ≥ 100, wall height according to the test certificate of the wall



Framework within a light partition wall



Damper
BK-326

Test certificate Z-41.3-326

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

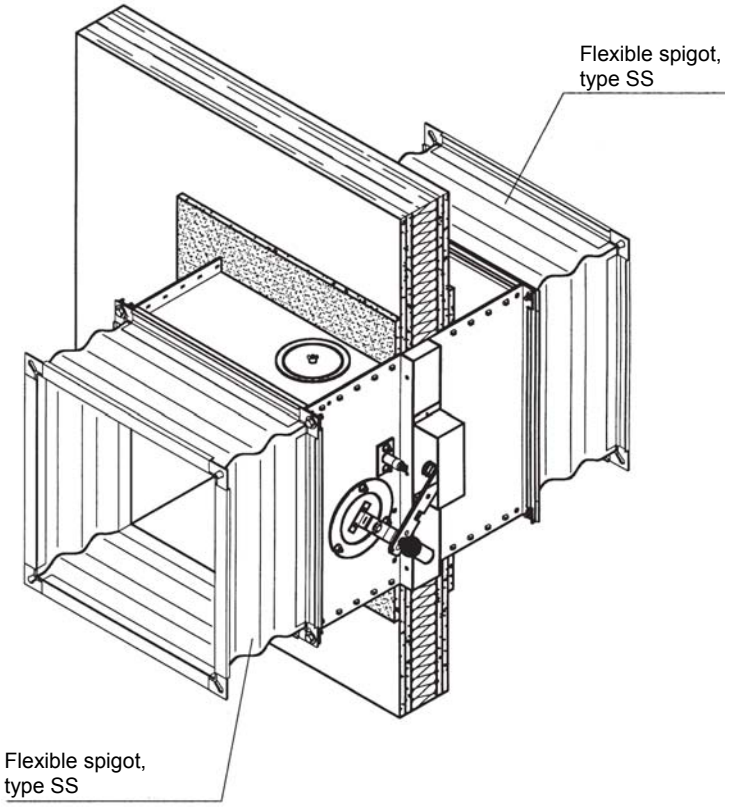
Installation into light partitions

Connection provisions for the installation of dampers into light partition walls

In principle, fire dampers within light partition walls have a flexible connection, if they are on both sides connected to non-combustible ducts.

The flexible spigot of at least standard flammable materials (class B2 according to DIN 4102) and min. 10 cm long (when installed) shall be installed between the damper and the ventilation duct.

Expansion compensation



KNAUF FIREBOARD shaft wall with glass-fibre quilt plates on one side, resistance class F90 A

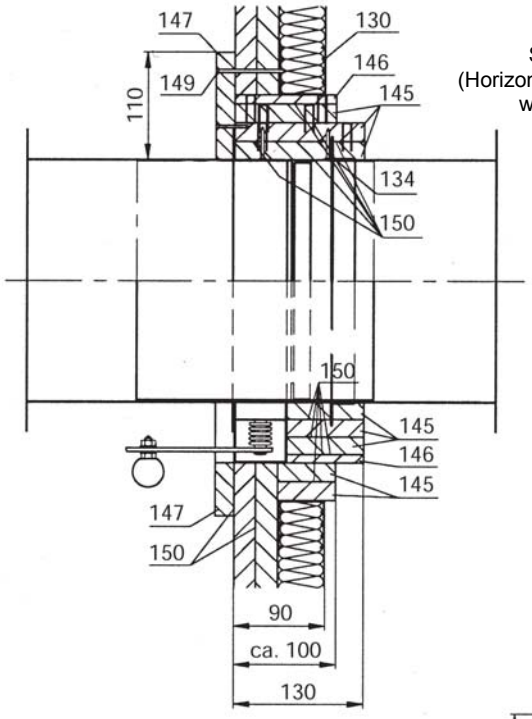
Installation example
KNAUF FIREBOARD shaft wall

Installation also with a vertically aligned damper within KNAUF FIREBOARD shaft walls with glass-fibre quilt plates, material class A1.
Test certificate no. PA-III 4.290.
Test approval no. 2.41/20 842 of the Bundesanstalt für Materialforschung und -prüfung in Berlin.

The minimum distance between two fire dampers is 20 cm.

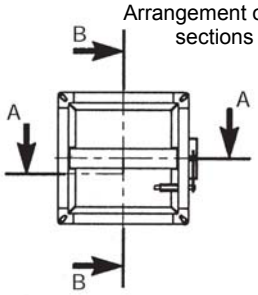
Legend

130 **Profile in galvanized steel,** CW 50 (50 x 48 x 0,6 mm)
134 **Dry wall screw in galvanized steel,** Ø 3,5 x 35 mm long
145 **Insulating material,** PROMATECT-H, 20 mm thick
146 **Insulating material,** PROMATECT-H, 10 mm thick
147 **Connecting flange,** PROMATECT-H, 20 mm thick
148 **Tacks in galvanized steel,** Pneumatically inserted, 1 x 10 x 30 mm, distance ca. 200 mm
149 **Dry wall screw in galvanized steel,** Ø 4 x 75 mm long, distance ca. 150 mm
150 **SBK 2000 adhesive**

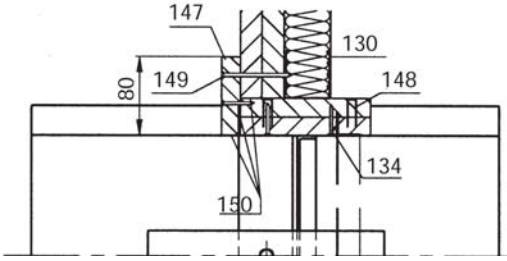


Section A-A
(Horizontal section through wall and floor)

Arrangement of the sections



Section B-B
(Vertical section through wall and floor)



Damper
BK-326

Test certificate Z-41.3-326

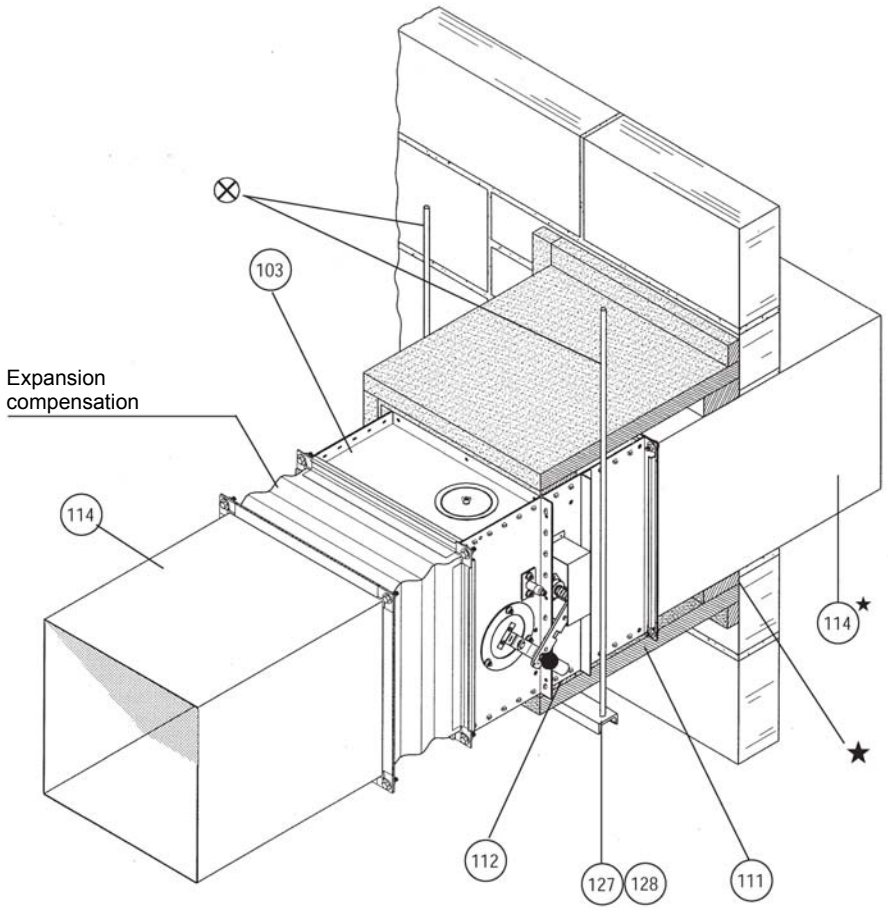
Resistance class K90/K30 in accordance with DIN 4102-6

Installation in front of walls with slab lining

BK-326 dampers

The dampers can be installed outside of walls or floors, if they are connected to tested ventilation ducts having a L90 resistance class. The distance between damper and wall or floor is variable.

For further installation examples, see BKS-2



The dampers shall be fitted with expansion compensators, if ventilation ducts (114) shall be connected.

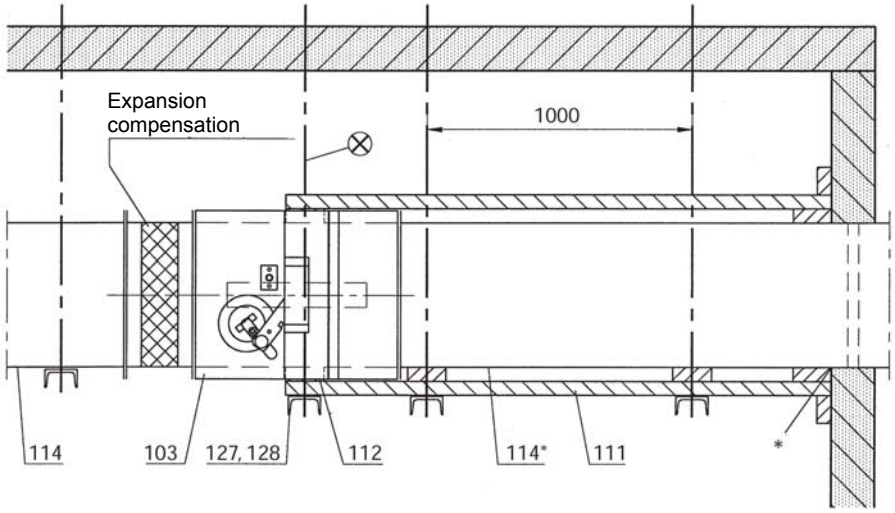
The dampers shall be suspended in a fireproof manner. The suspension shall comply with **page 37 - 43** and be installed accordingly above the floor or with dowels within the floor. The suitability of other suspensions or supports with a fire resistance time of 90 minutes shall be determined statically on an individual basis. For steel, a design stress of 6 N/mm^2 shall be assessed.

The fire resistant ventilation ducts shall be suspended according to the instructions*. The penetration points, where the fire resistant ventilation ducts pass through wall and floors, shall comply with the instructions*.

The fire resistant ventilation ducts shall have no openings between the F90 wall and the damper.

* On request, technical data on suitable **fire resistant ventilation ducts and insulations** can be supplied. The permissible ducts, suspensions and wall or floor penetrations as well as the dimensions and operating pressures may differ widely depending on the design and manufacturer!

Connecting provisions for the installation outside of walls



103	**BK-326 damper**
111	**L90 plate casing**
112	**Lining** (fireproofing plates ≥ 95 mm wide)
114	**Galvanized steel ventilation duct**
114*	**Galvanized steel ventilation duct** (optional)
127/128	**U-traverse U50 or U80** (depending on the dimensioning)
⊗	**Suspension** (threaded rod) according to the dimensioning: **page 37 - 43**
★	**Wall connection** and opening according to the test certificates of the L90 ventilation ducts

Tender Text

Item	Description	Unit Piece	Unit price EUR	Total EUR
	Fire damper with test certificate Z-41.3-326 for a K90/K30 fire resistance class and the connection to non-combustible ducts on both sides or as an overflow opening with mesh-metal grid on both sides. For the universal installation into walls of brickwork according to DIN 1053, into concrete floors and walls, flange to flange in not easily accessible installation openings, into light partition walls, directly in front or outside of walls and floors. Thermal release via fusible link 72 °C. Galvanized steel housing, damper blade and stops. Stainless steel gate bearing supported in bronze sleeves. The inspection opening including hand lever and manual release are arranged at the operating side - this shall be of easy access. In addition, two inspection covers are located at both sides B. Manufacturer: **Strulik** Type: **BK-326** Dimensions: B: _____ mm H: _____ mm L: _____ mm **Accessories:**			

Tender Text

Item	Description	Unit Piece	Unit price EUR	Total EUR
	Fire damper without stops for a K90/K30 fire resistance class and the connection to non-combustible ducts on both sides or as an overflow opening with mesh-metal grid on both sides. For the universal installation into solid walls according to DIN 1053, into light partition walls, into concrete floors and walls, directly in front or outside of walls and floors. Thermal release via fusible link 72 °C. Galvanized steel housing with a frame of asbestos-free fireproofing boards, galvanized steel damper blade. Stainless steel gate bearing gate bearing supported in bronze sleeves. The inspection opening including hand lever and manual release are arranged at the operating side - this shall be of easy access. In addition, two inspection covers are located at the sides B. Manufacturer: **Strulik** Type: **BKS-2-K90** Dimensions: B: _____ mm H: _____ mm L: _____ mm **Accessories:**			

Damper
BKU-N-K90

Test certificate Z-41.3-594

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

Ordering example:

BKU-N-K90/EE/B=797xH=400xL=400

- Standard damper length; on request, special dimensions are available
- Dimensions B x H (width x height) in mm, side H = operating side
- Accessories: e.g. electrical limit switch, see **page 47**
- Fire damper of fireproofing plates

Please note: State any requests separately, e.g. one-sided (operating side BS or wall side MS), two-sided or completely without duct connecting profile.

Please note:

A special documentation has not been prepared for the **BKU-N-K90**, as the fitting positions are the same as for our BKU-K90 damper.

There is a difference in dimensions: The BKU-N-K90 housing and damper blade is 40 mm (BKU-K90: housing = 50 mm, damper blade = 60 mm).

In addition, the BKU-N-K90 is always supplied with an electric motor according to **page 51 - 52**.
Tender text: **page 22**.
Technical data and fitting positions: **page 24 - 31**.
Dimensioning of suspensions according to weight table no. 4 and 5: **page 37 - 43**.
Blade projections: **page 44**.
Design diagrams: **page 57 - 59**.

Corrosion test

The BKU-N has achieved a positive test result during tests with sulfur dioxide SO_2 (high content of damaging gases) according to IEC 68 Part 2-42 and salt spray, cyclic (sodium chloride solution) according to IEC 68 Part 2.52.

[1]) See **page 24 - 31** for technical data, dimensions and installation examples of our BKU-K90 damper.

The thickness of the housing wall differs (BKU-N = 40 mm) and also the damper blade (BKU = 60 mm, BKU-N = 40 mm).

Tender Text

Item	Description	Unit Piece	Unit price EUR	Total EUR
	Fire damper with test certificate Z-41.3-594 for a K90/K30 fire resistance class and the connection to non-combustible ducts on both sides or as an overflow opening with mesh-metal grid on both sides. For the universal installation into walls of brickwork according to DIN 1053, into light partition walls, concrete, directly in front or outside of walls, standing on the floor or hanging beneath the floor, independent of the airflow direction and fitting position. Thermal release via fusible link 72 °C. Housing and damper blade of asbestos-free fireproofing boards (40 mm thick). Stainless steel gate bearing supported in maintenance-free bronze sleeves. Manufacturer: **Strulik** Type: **BK-326** Dimensions: B: _____ mm H: _____ mm L: _____ mm **Accessories:**			

Damper
BKU-K90

Test certificate Z-41.3-594

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

Ordering example:

BKU-K90/EE/B=797xH=503xL=400

- BKU-K90: Fire damper of fireproofing plates
- EE: Accessories: e.g. electrical limit switch: **page 47**
- B=797xH=503: Dimensions B x H (width x height) in mm, side H = operating side
- L=400: Standard damper length; on request, special dimensions are available

Please note: State any requests separately, e.g. one-sided (operating side BS or wall side MS), two-sided or completely without duct connecting profile.

Advantages of a universal fire damper with a calcium silicate (PROMATECT-H) housing

- For all applications inside and outside of walls and floors, within light partition walls, in front of walls, standing on floors and hanging beneath floors.
- The housing remains dimensionally stable up to a continuous temperature of 400 °C.
- After the fire test according to the standard time temperature curve, the housing had no damages.
- No corrosion.
- On request, also available with a stable internal impregnation up to 400 °C.
- On request, a chemical resistance list is available.
- Embedding with mortar no longer required, as the circumferential gap is filled with A1 mineral wool according to DIN 4102.
- For the connection to PVC ducts, also PVC duct connection.
- No special constructions are required for the connection to fire resistant ducts.
- The fire dampers can be installed directly next to or on top of each other without minimum separations.

Asbestos-free insulating housing with damper blade in central position of materials that are unaffected by changes of temperature, stainless steel shafts and bronze bearing bushings.

Note:
Lining of the fusible link possible in case of L90 connections on both sides; please state this when ordering.

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Anstalt des öffentlichen Rechts

Allgemeine bauaufsichtliche Zulassung

Zulassungsnummer: Z-41.3-329

Antragsteller: Strulik GmbH, Neesbacher Straße 13, 65597 Hünfelden-Dauborn

Zulassungsgegenstand: Absperrvorrichtungen gegen Brandübertragung in Lüftungsleitungen, Serie BKU-K90/K90, bzw. BKU-K90/K60 bei Einbau der Absperrvorrichtungen direkt unter Decken hängend

Geltungsdauer bis: 2. Mai 2002

Der obengenannte Zulassungsgegenstand wird hiermit allgemein bauaufsichtlich zugelassen. Diese allgemeine bauaufsichtliche Zulassung umfaßt elf Seiten und 66 Anlagen.

Maintenance of the damper

Polluted and humid air can affect the permanent fail-safe functioning. After commissioning of the ventilation plant, 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 system, then it is recommended that that the maintenance of the dampers should also be included in the contract. The maintenance instructions can be found in the appropriate test certificates.

Damper
BKU-K90

Test certificate Z-41.3-329

Resistance class K90/K90 in accordance with 4102-6

Fitting positions and sizes

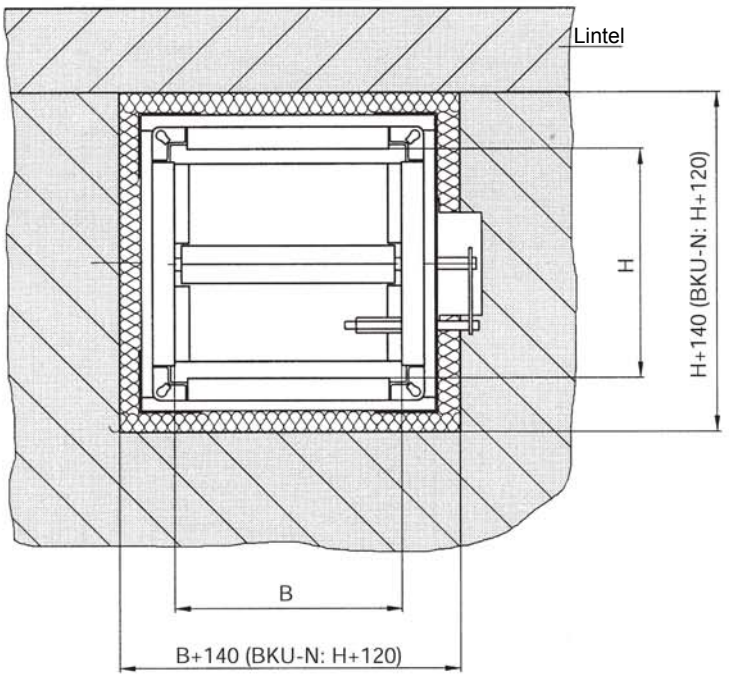
Wall thickness W = min. 40 mm

Wall installation: Fill circumferential gap with mineral wool (A1 DIN 4102).

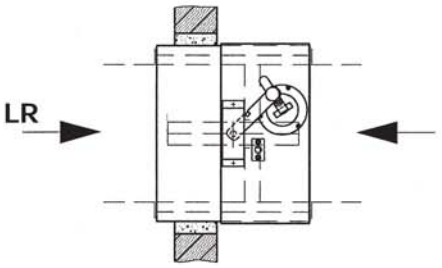
Dimensions
Sizes available

Width		Height	
Nominal size	B	Nominal size	H
200	201	200	201
224	227	224	227
250	252	250	252
280	283	280	283
315	318	315	318
355	357	355	357
400	400	400	400
450	449	450	449
500	503	500	503
560	565	560	565
630	634	630	634
710	711	710	711
800	797	800	797
900	894		
1000	1003		
1120	1125		
1250	1262		
1400	1416		
1500	1500		

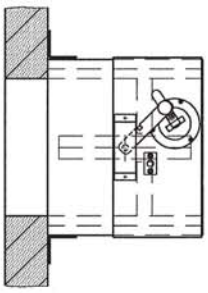
L = 400 mm (without duct connecting profile)



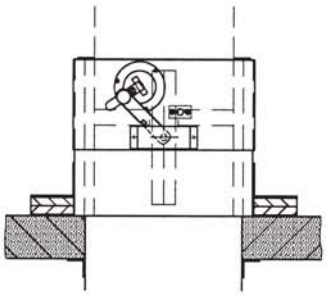
Within walls



Directly in front of the wall

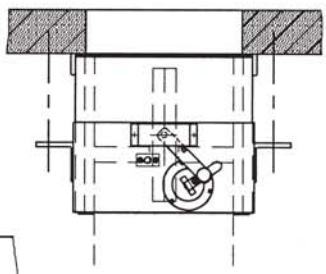


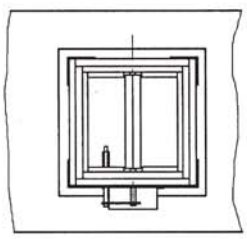
Standing on the floor



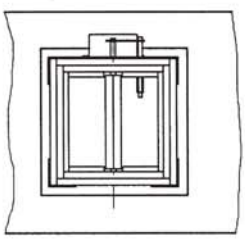
Vertical axis

Hanging beneath the floor





Operation at the bottom



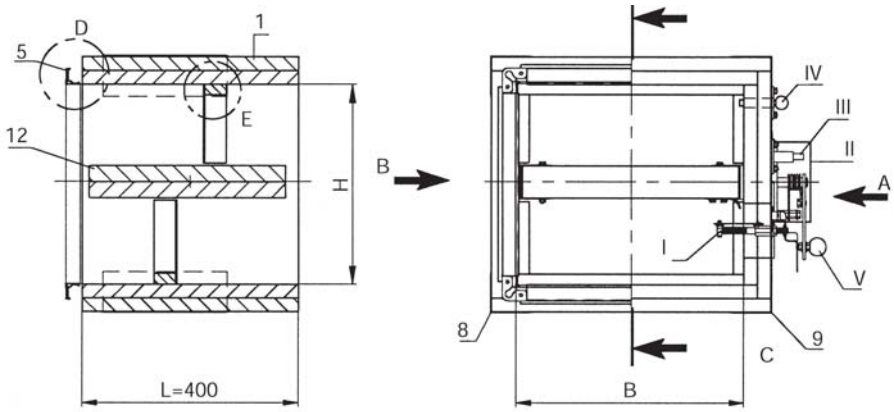
Operation at the top

Damper
BKU-K90

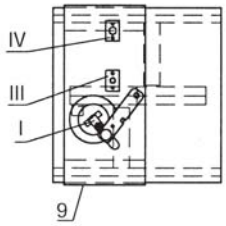
Test certificate Z-41.3-329

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

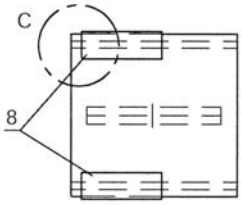
Dimensions



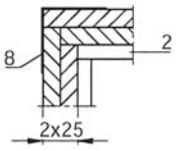
View A
(Drawing without the protective box)



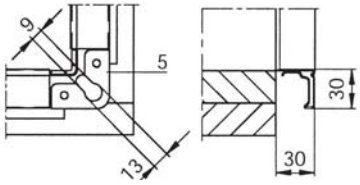
View B



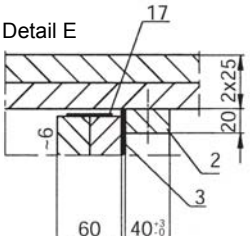
Detail C



Detail D



Detail E



Legend

1	**Housing of fireproofing boards** (50 mm thick)
2	**Stop** (40 x 20 mm)
3	**Sealing of the stop**
5	**Duct connecting profile with keyhole** Possibility to connect to connecting profile 30.23 and 20 mm
8	**Corner in galvanized steel,** 75 x 75 x 1,5 mm thick
9	**Mounting plate in galvanized steel,** 1,5 mm thick
12	**Damper blade of fireproofing boards** (60 mm thick)
17	**Intumescent material,** ca. 40 mm wide
I	**Release mechanism with fusible link 72 °C** (a fusible link with a 90 °C static temperature of activation is available for hot-air installations)
II	**Protective box**
III	**Click-stop device,** up to H ≤ 503 mm
IV	**Click-stop device,** up to H ≥ 565 mm
V	**Hand lever with ball knob**

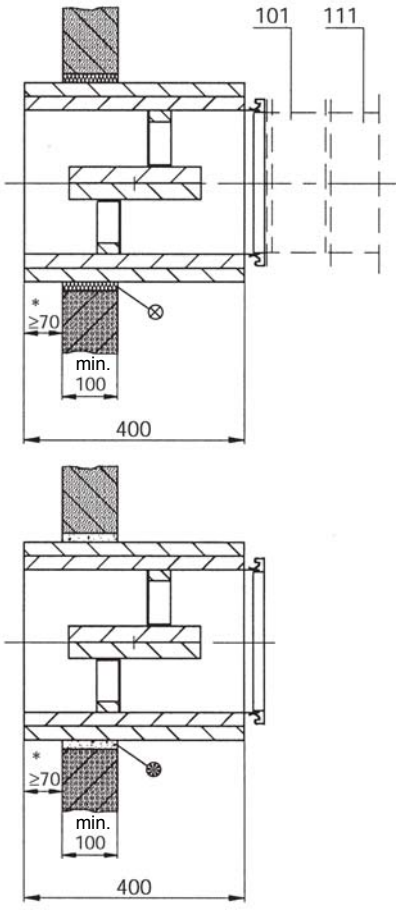
Damper
BKU-K90

Test certificate Z-41.3-329

Resistance class K90/K90 according to DIN 4102-6

Installation into wall of brickwork or concrete without suspension

⊗	Fill gap of approximately 20 mm with mineral wool (A1 DIN 4102)
⊛	Circumferential gap filled with mortar of group II or III according to DIN 1053.
101	Flexible spigot, type SS
111	Ventilation duct of galvanized steel
*	Here a projection of ≥ 70 mm is recommended



Installation provisions

The dampers may also be mounted with a vertical axis of rotation of the damper blade into walls of concrete, brickwork according to DIN 1053, wall panels of concrete, gas concrete, gypsum according to DIN 18 163 and at least 40 mm thick partition walls; this also applies to corresponding shaft walls and the walls of vertical ventilation ducts. The distance between the housing walls of the dampers is ca. 100 mm.

Expansion compensation

Combustible flexible spigots of at least standard-flammable materials (class B2 according to DIN 4102), min. 10 cm long (when installed), shall be arranged between the damper and the ventilation duct in case of the following applications:
- within walls according to Din 1053, which are less than 100 mm thick,
- within light partition walls,
- within shaft walls,
- within gypsum wall panels.

Force transmission within walls

The dampers within walls, outside of walls and directly in front of walls shall only be connected to such ventilation ducts that due to their design or fitting position cannot apply considerable forces to the dampers or walls in case of fire.

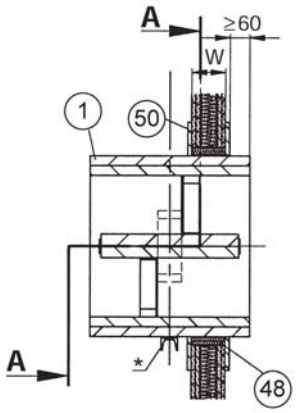
Damper
BKU-K90

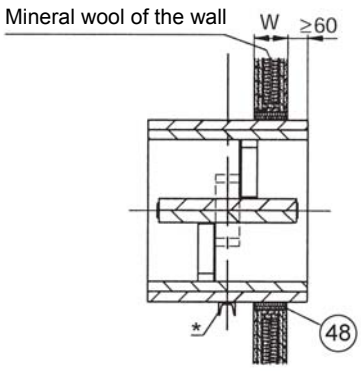
Test certificate Z-41.3-329

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

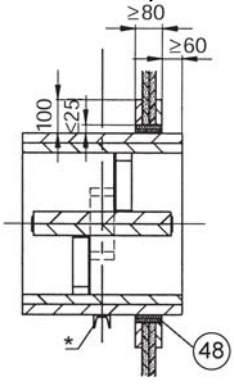
Installation into light partitions

Installation into light partitions (with metal framework)





Installation into light partitions (without metal framework)



Installation into lightweight mounting walls with and without a metal framework (according to the test certificate)

Example:
Fire resistance class
depending on the minimum thickness W (dimensions in mm) of the walls

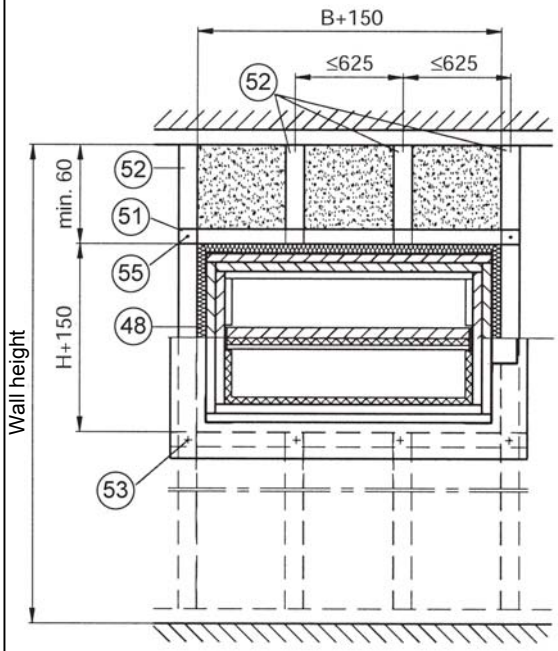
Fire resistance class of the wall Fire resistance class of the fire damper	F30 K30	F90 K90	Permissible wall height up to
Mounting walls with a metal framework and a board covering **Walls with a metal framework and a covering of**			
- gypsum plasterboards	75	100	6 m
- gypsum plasterboards according to the test certificate	- -	200 175	9 m 8 m
- gypsum fleece plasterboards according to the test certificate	- -	200 250	7 m 9 m
- calcium silicate boards according to the test certificate	70	84	6 m
- gypsum boards for residential buildings	90 -	- 110	3,5 m 3,75 m
- fireboard wall according to the test certificate	-	140	9 m
Walls without a metal framework of			
- calcium silicate boards according to the test certificate, if the wall thickness is ≤ 2,2 m	40 40	40 40	3 m 5 m
- vermiculite boards according to the test certificate	-	70	5 m

Legend

1 BKU housing (50 mm thick)
48 A DIN 4102 mineral wool
50 Gypsum plasterboard doubling, 100 x 12,5 mm
51 Wall profile in galvanized steel, type UW 50 (horizontal profile)
52 Wall profile in galvanized steel, type CW 50 (vertical profile)
53 Dry wall screw of zinc-plated steel, 3,5 x 35 mm to fasten the doubling
55 Fastening of zinc-plated steel, 3 x 6 mm

Connection directly beneath a solid wall

Section A-A



The connections shall be the same as for the ducts, when connecting to board ducts.

The minimum distance between two fire dampers is 120 mm.

Wall thickness W ≥ 100 and wall height according to the test certificate of the wall.

* Suspension (dimensioning in accordance with DN 4102-4, see pages 37 to 43)

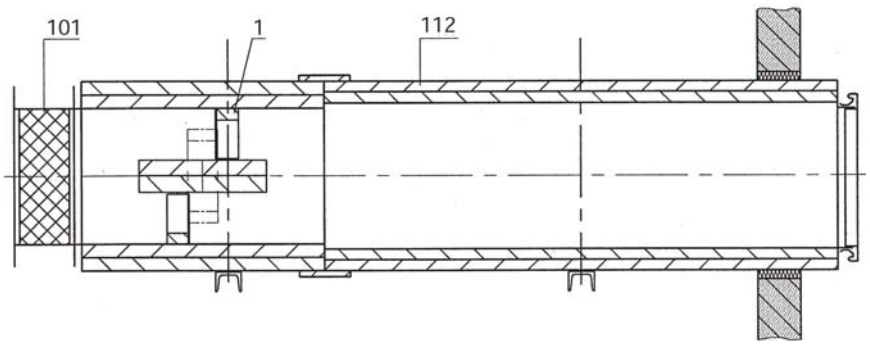
Damper
BKU-K90

Test certificate Z-41.3-329

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

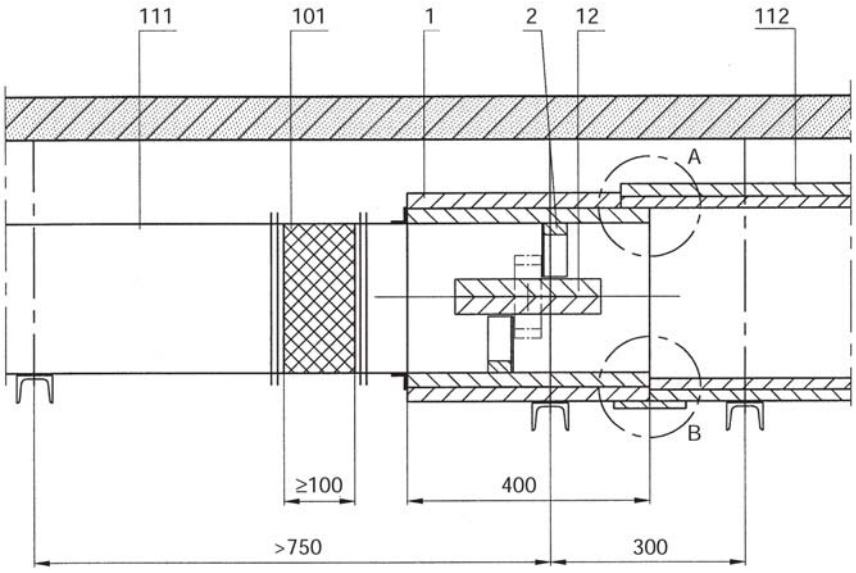
Installation in front of the wall and connected to a L90 duct

Mounted in front of the wall and connected to a L90 duct



BKU-K90 dimensioning and suspension: page 37 to 43

Connection of the BKU to a L90 duct and with a flexible spigot to extended steel ducts

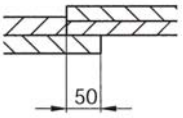


Legend

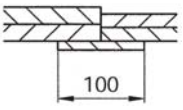
1 **Housing of fireproofing boards** (50 mm thick) (BKU-N = 40 mm)
2 **Stop** (40 x 20 mm)
12 **Damper blade of fireproofing boards** (60 mm thick)
101 **Flexible spigot, type SS**
111 **Ventilation duct of zinc-plated steel**
112 **L90 ventilation duct**

Connection to a L90 duct

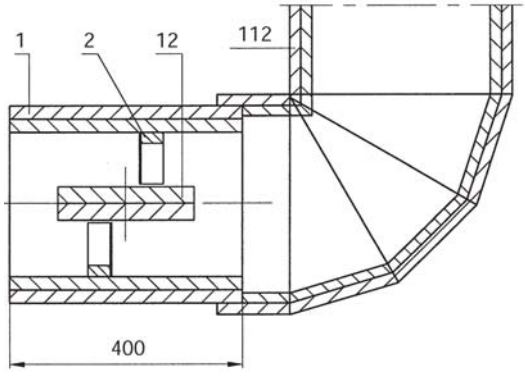
Detail A



Detail B



Connection to shaped L90 parts



Damper
BKU-K90

Test certificate Z-41.3-329

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

Installation directly in front of walls

Reconstruction of old buildings and buildings containing asbestos

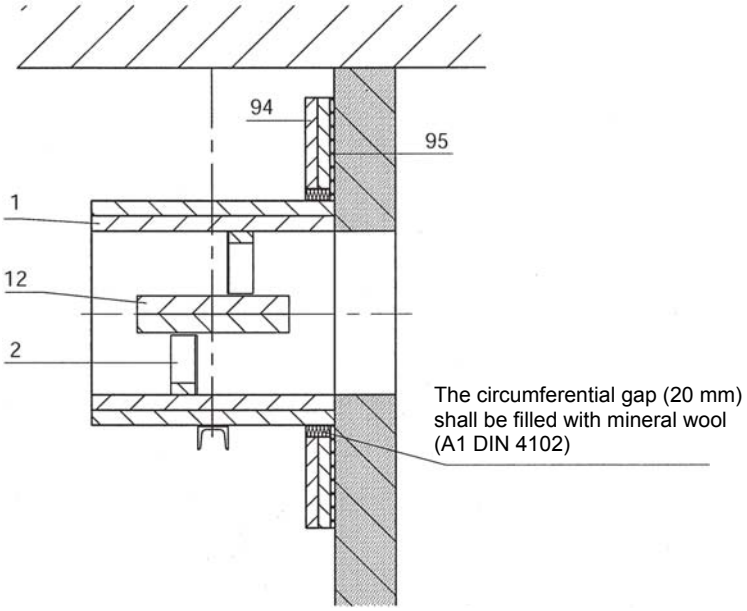
The fire damper is mounted directly in front of the wall.
In both drawings the frames are only used as a means to fasten the BKU. A suspension via traverse is indispensable for the installer.

(For the suspension, see **pages 37 to 43**)

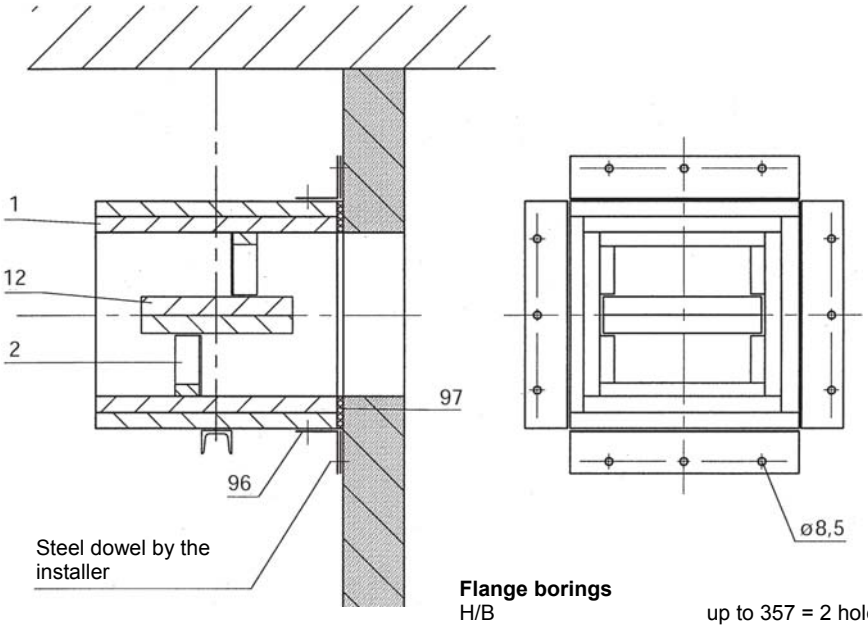
Legend

1 **Housing of fireproofing boards** (50 mm thick) (BKU-N = 40 mm thick)
2 **Stop** (40 x 20 mm)
12 **Damper blade of fireproofing boards** (60 mm thick) (BKU-N = 40 mm thick)
94 **Wall frame, type PR** Dimensions: 150 x 40 mm thick
95 **including CERAPAPER sealing**
96 **Frame profile, type WP** Dimensions: 70 x 70 x 1,5 mm thick
97 **including an intumescent material** 10 mm thick (circumferential)

BKU in front of the wall, in connection with a PROMATECT wall frame, type PR



BKU in front of the wall, in connection with an intumescent material and a zinc-plated frame profile, type WP



Flange borings

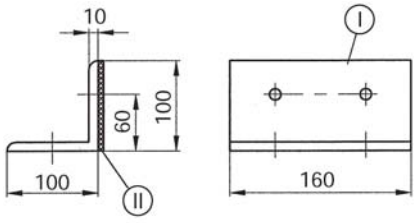
H/B	up to 357 = 2 holes
H/B from	400 up to 634 = 3 holes
H/B from	711 up to 797 = 4 holes
B from	894 up to 1262 = 5 holes
B from	1416 up to 1500 = 6 holes

Damper
BKU-K90

Test certificate Z-41.3-329

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

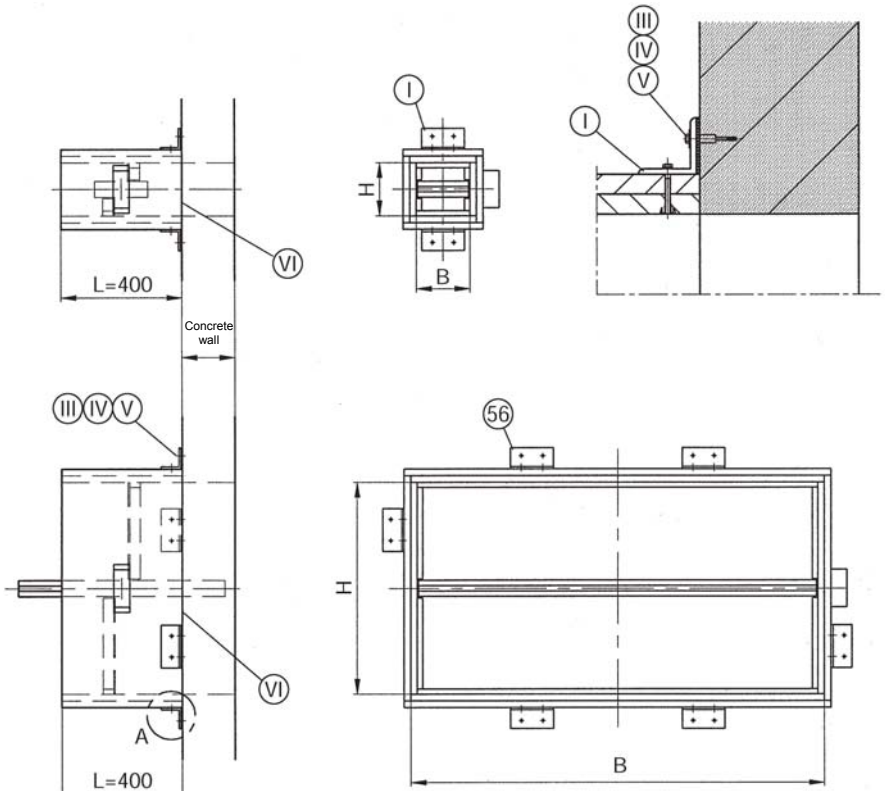
In front of concrete walls



Installation in front of a concrete wall

The damper is shown without a duct connecting profile

Fastening of the WE to a BKU and a concrete wall



Fitting proposal: BKU without suspension in front of a concrete wall

Number and location of support brackets type WE are given in the adjoining table. The brackets are secured to the concrete wall with fire safety dowels type KMU-F10, which are sufficient regarding the number of brackets (this refers to a damper length of 400 to 800 mm).

I Support bracket, type WE
Zinc-plated steel, 80 x 80 x 160 mm long

II CARBOWOOL sealing (glued on)
80 x 160 x 5 mm thick

III Hexagon head screw according to DIN 931, M 10 x 30 mm

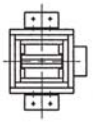
IV DIN 125-A washer

V Fire safety dowel, type KMU-F10

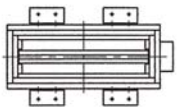
VI Sealing glued onto the BKU
Front side, in direction of the CARBOWOOL wall, 50 x 5 mm thick

Number and location of support brackets type WE

H ≥ 201 up to ≤ 400
H ≥ 201 up to ≤ 503

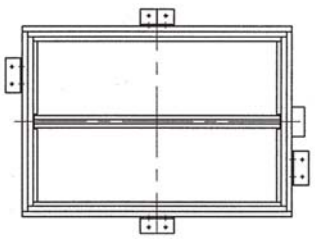


H ≥ 201 up to ≤ 400
H ≥ 565 up to ≤ 1500

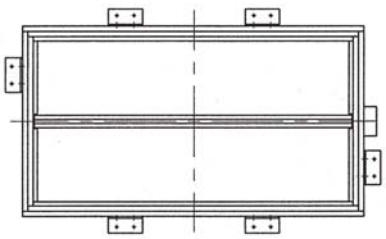


H \ B	201	252	318	357	400	449	503	565	634	711	797	894	1003	1125	1262	1416	1500
201																	
252																	
318																	
357																	
400																	
449																	
503																	
565																	
634																	
711																	
797																	

H ≥ 449 up to ≤ 797
H ≥ 201 up to ≤ 503



H ≥ 449 up to ≤ 797
H ≥ 565 up to ≤ 1500

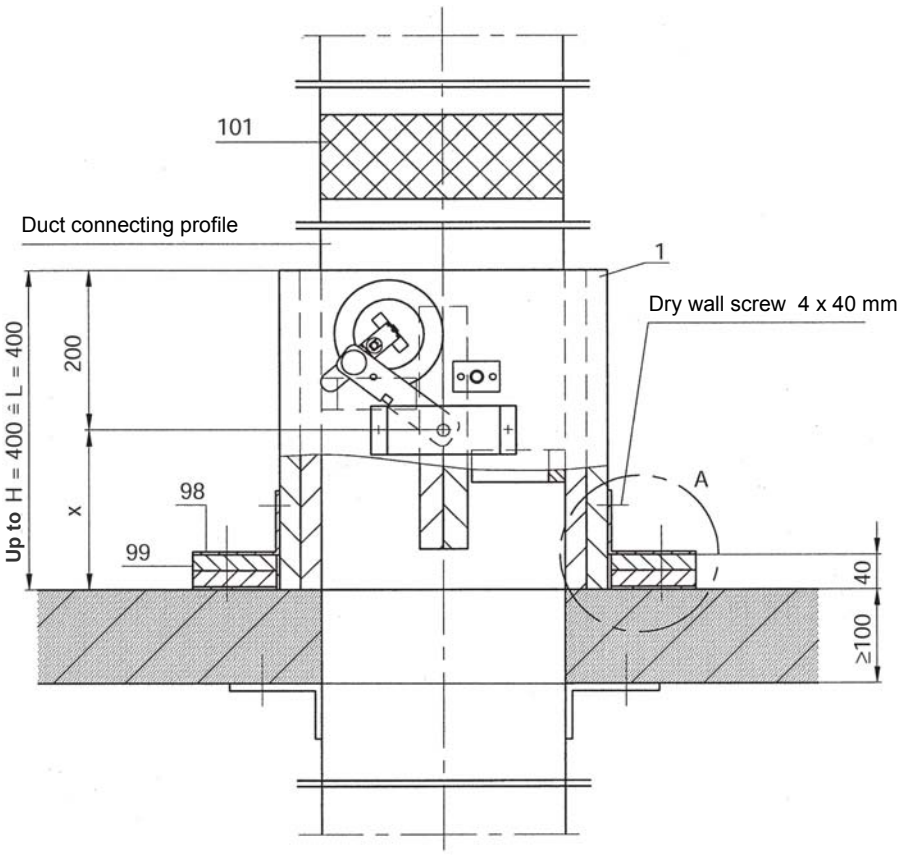


Damper
BKU-K90

Test certificate Z-41.3-329

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

Standing on the floor



Legend

1 **Housing of fireproofing boards** (50 mm thick)

98 **Support bracket** of zinc-plated steel

99 **Floor frame, type DR**

100 **Including CERAPAPER sealing**

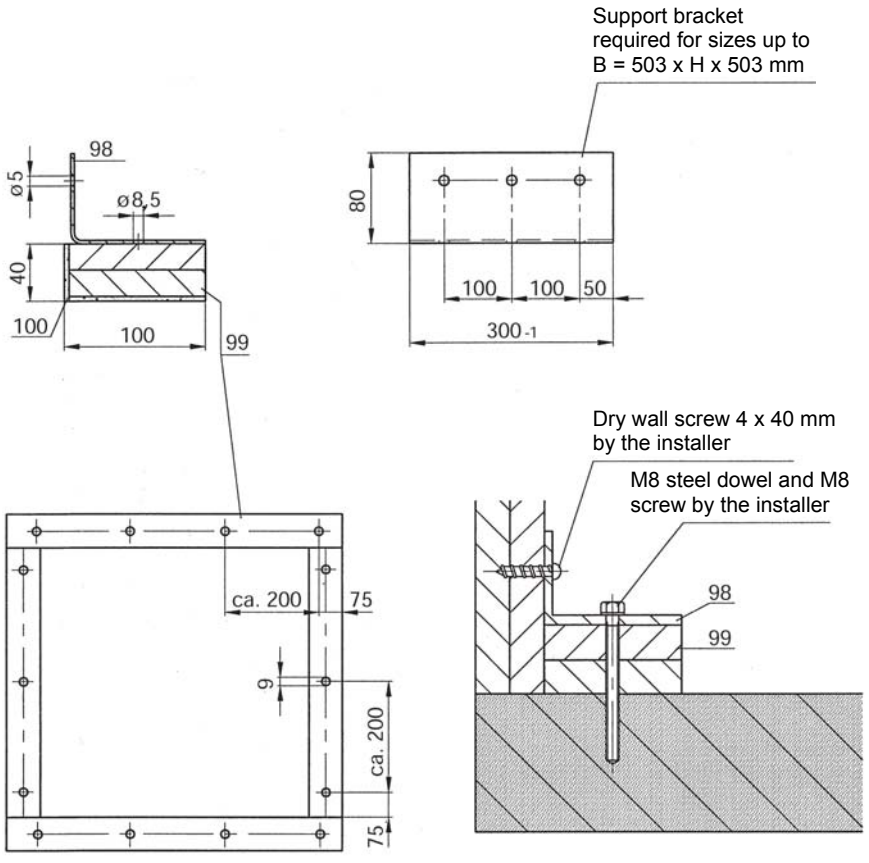
101 **Flexible spigot**

Suspension and damper weight
(see page 37 - 43)

BKU extension for H > 400 mm

H	X
449	225
503	250
565	280
634	315
711	355
797	400

Detail A



Damper
BKU-K90

Test certificate Z-41.3-329

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

Hanging beneath floors

BKU extension for H > 400 mm

H	X
449	225
503	250
565	280
634	315
711	355
797	400

If the BKU dampers are installed hanging beneath the floor, then the dampers have the fire resistance class K90, when connected to ducts of material class A according to DIN 4102 (non-combustible ducts) or with a cover of mesh wire grating (mesh size ≤ 20 mm □).

Legend

1 **Housing of fireproofing boards** (50 mm thick)

101 **Flexible spigot**

102 **Intumescent material, type PX** Dimensions: 50 x 10 mm thick (BKU-N 40 x 10 mm thick) Please order separately

103 **Support bracket, type WE** Dimens.:100 x 100 x 160 mm long Please order separately

104 **M10 driving nut**

105 **Covering frame** 50 x 10 mm

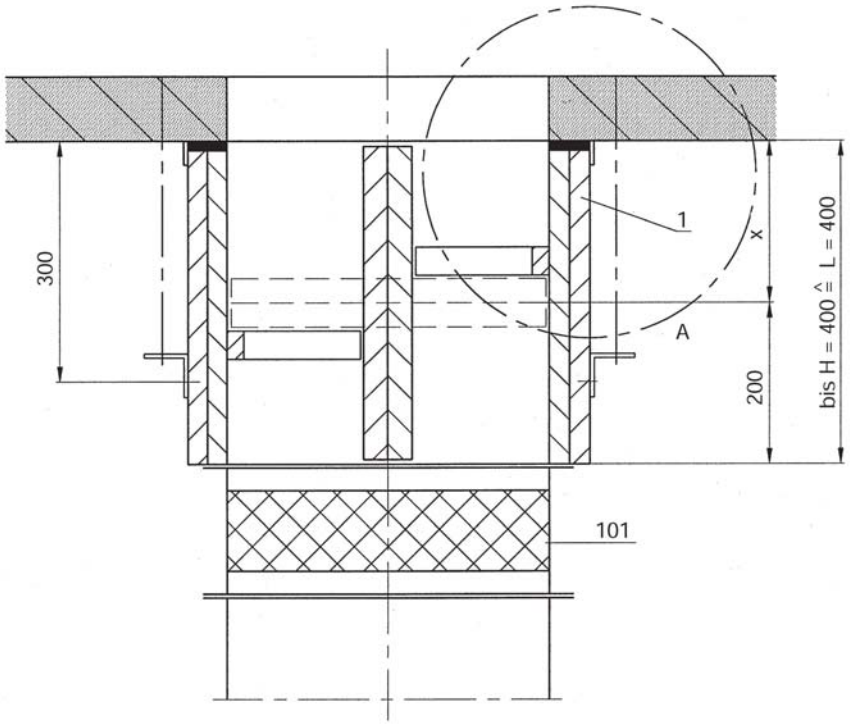
106 **Threaded rod,** depending on the dimensioning M8 to M20 (by the installer)

107 **Nut, M8 to M20** (by the installer)

108 **Washer** (by the installer)

110 **Hexagon head screw** M10 x 50 mm

Please order the PX intumescent material and WE support brackets separately.

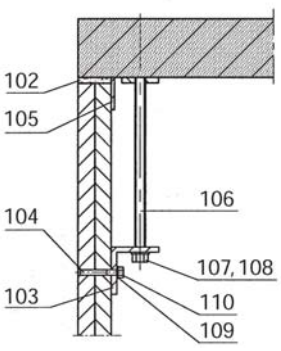


Dimensioning of the threaded rod

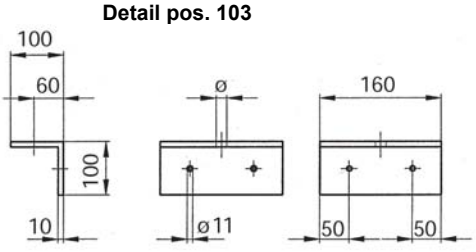
The BKU weight is given in table no. 3, 4 and 5 on page 41.
The dimensioning of the threaded road is given on page 37 - 43.

Weight per support bracket
Type: WE ≙ 2,5 kg

Detail A



Detail pos. 103



Ø depends upon the thread dimensioning

Up to B = 503 / 2 brackets
From B = 565 upwards / 4 brackets

Tender Text

Item	Description	Unit Piece	Unit price EUR	Total EUR
	Fire damper with test certificate Z-41.3-329 for a K90/K90 fire resistance class, without duct connection or connection to non-combustible ducts. For the installation into walls and light partition walls, from a thickness of 40 mm upwards, outside of walls, within floors, standing on the floor or hanging beneath the floor, independent of the airflow direction and fitting position. Thermal release via fusible link 72 °C. Housing of asbestos-free fiber silicate boards (50 mm thick). Damper blade and stops of asbestos-free fiber silicate material. The stainless steel gate bearing is supported in bronze sleeves. The inspection opening including hand lever and manual release is arranged at the operating side - this shall be of easy access. Manufacturer: **Strulik** Type: **BKU-K90** Dimensions: B: _____ mm H: _____ mm L: _____ mm **Accessories:**			

Damper

BKS-K90/K90
BKL-K90/K90
BKV-K90/K90

Test certificate Z-41.3-327

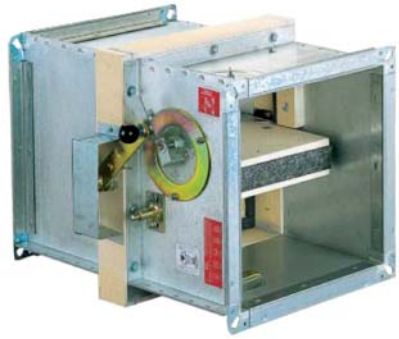
Resistance class K90/K90 in accordance with DIN 4102-6

Summary and ordering example

Ordering example:

BKS-K90EE/B=797xH=503xL=500

- BKS = Installation into walls and floors
  BKL = Installation into light partition walls
  BKV = Installation in front of walls and outside of walls
- Accessories: e.g. electrical limit switch: **page 47**
- Dimensions B x H (width x height) in mm, side H is always the operating side
- Standard damper length; on request, also available in 375 mm

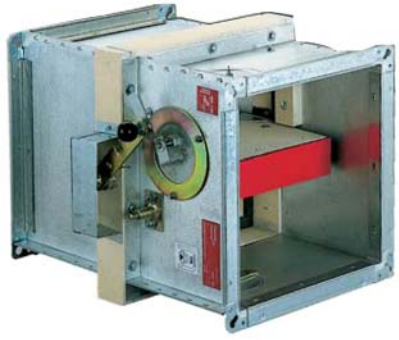


BKS-K90

For the installation into at least 100 mm thick gas-formed concrete walls, at least 95 mm thick light concrete or concrete walls, at least 115 mm thick brickwork according to DIN 1053, at least 84 mm thick gypsum wallboards according to DIN 18163 and into at least 100 mm thick concrete or gas-formed concrete floors.

BKL-K90

For the installation into at least 100 mm thick light partition walls, with metal support construction and into 84 mm thick PROMAT lightweight walls with a boarding of PROMATECT-H boards on both sides according to the examination report of the FMPA no. 42771/1 of 20 August 1980 and according to the MPA Dortmund report no. 230770980 of 29 October 1980.



BKV-K90

For the installation outside of walls and floors, if a fire rated duct without openings and with a proven fire resistance time is arranged between the damper and the wall to be protected. The dampers may also be arranged directly in front of the wall or standing on the floor.

Please note:

No separate documentation has bee prepared for the dampers with test certificate no. **Z-41.3-327 (BKS/BKL/BKV)**. The fitting positions are the same as for the universal damper BK-326-K90/K30 (Z-41.3-326), see **page 2 - 14**.

The main difference is the second rating **(BKS/BKL/BKV-K90/K90)**, i.e. no matter if combustible, non-combustible or without duct connection, the dampers always have the classification **K90 (super damper)**; even a meta mesh grid (mesh size ≤ 20 mm □) is not necessary**.**

In addition, the housing of the dampers is available with PUR coating or in stainless steel, optionally 1.4301 (V2A) or 1.4571 (V4A).

Electric release mechanisms and limit switches: **page 45 - 56**.
Tender text: **page 34 - 36**.
Suspension dimensioning according to weight table no. 1: **page 40**.
Damper blade projections: **page 44**

For examples of application, see type BKS-2.

DEUTSCHES INSTITUT FÜR BAUTECHNIK

Allgemeine bauaufsichtliche Zulassung

Tender Text

Item	Description	Unit Piece	Unit price EUR	Total EUR
	Fire damper with test certificate Z-41.3-327 for a K90/K90 fire resistance class, without duct connection or connection to non-combustible ducts. For the installation into walls and floors, independent of the airflow direction and fitting position. Thermal release via fusible link 72 °C. Housing and attaching parts in galvanized steel with mounting frame. The stainless steel gate bearing is supported in bronze sleeves. The inspection opening including hand lever and manual release is arranged at the operating side - this shall be of easy access -, in addition two inspection covers at both B sides. Manufacturer: **Strulik** Type: **BKS-K90** Dimensions: B: _____ mm H: _____ mm L: _____ mm **Accessories:**			

Tender Text

Item	Description	Unit Piece	Unit price EUR	Total EUR
	Fire damper with test certificate Z-41.3-327 for a K90/K90 fire resistance class, without duct connection or connection to non-combustible ducts. For the installation into walls and floors, light partition walls with gypsum cardboards, wall thickness 105 mm, or PROMATECT boards, 84 mm, independent of the airflow direction and fitting position. Thermal release via fusible link 72 °C. Housing and attaching parts in galvanized steel. The stainless steel gate bearing is supported in bronze sleeves. The inspection opening including hand lever and manual release is arranged at the operating side - this shall be of easy access -, in addition two inspection covers at both B sides. Manufacturer: **Strulik** Type: **BKL-K90** Dimensions: B: _____ mm H: _____ mm L: _____ mm **Accessories:**			

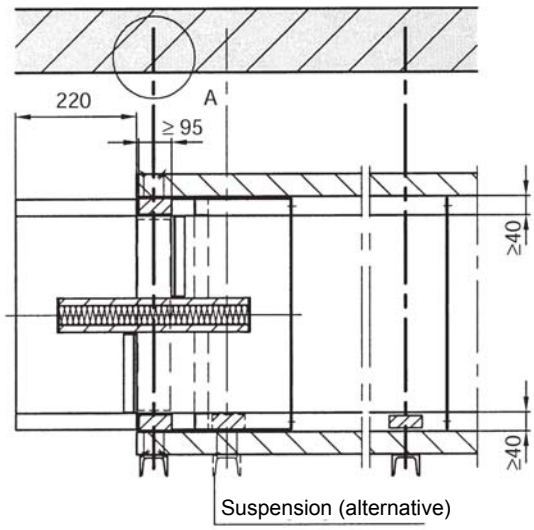
Tender Text

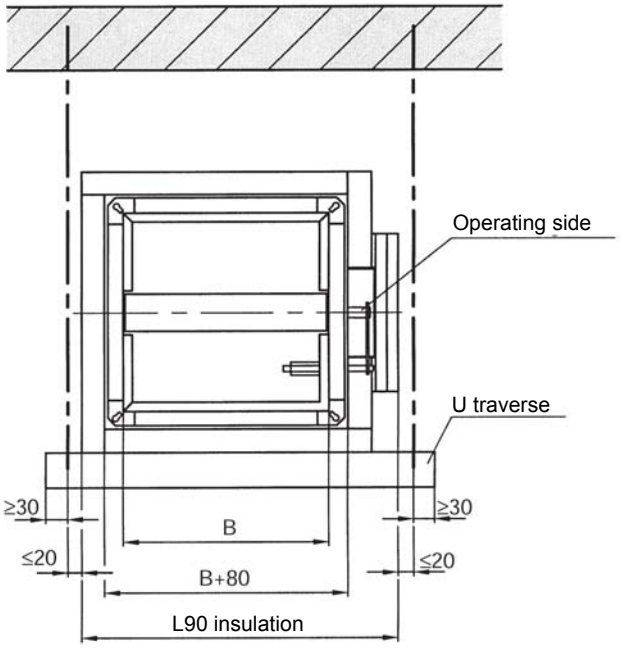
Item	Description	Unit Piece	Unit price EUR	Total EUR
	Fire damper with test certificate Z-41.3-327 for a K90/K90 fire resistance class, without duct connection or connection to non-combustible ducts. For the installation into walls and light partition walls and outside of walls, independent of the airflow direction and fitting position. Thermal release via fusible link 72 °C. Housing and attaching parts in galvanized steel with mounting frame. The stainless steel gate bearing is supported in bronze sleeves. The inspection opening including hand lever and manual release is arranged at the operating side - this shall be of easy access -, in addition two inspection covers at both B sides. Manufacturer: **Strulik** Type: **BKV-K90** Dimensions: B: _____ mm H: _____ mm L: _____ mm **Accessories:**			

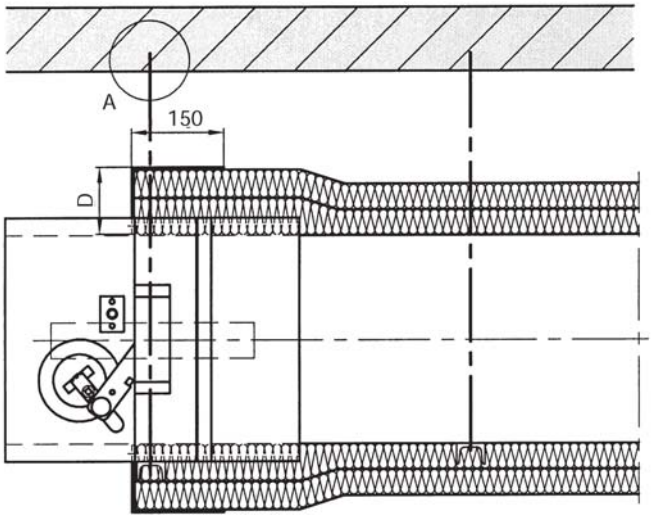
Damper

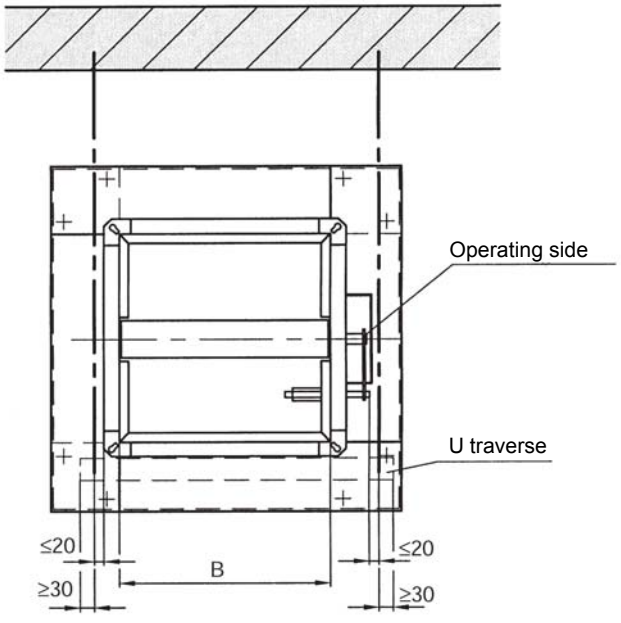
Suspension

Suspension example, location of the traverse and dimensions for: BK-326







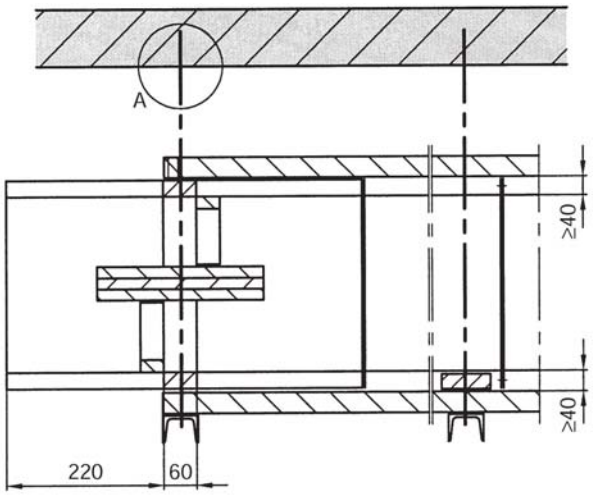


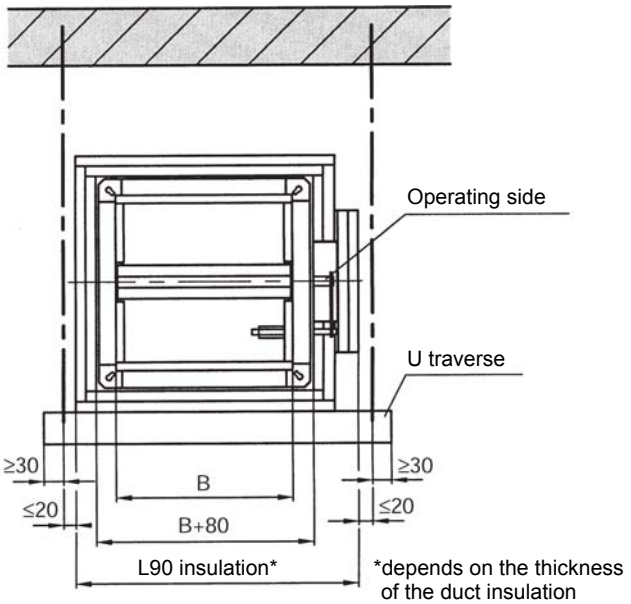
Damper

Suspension

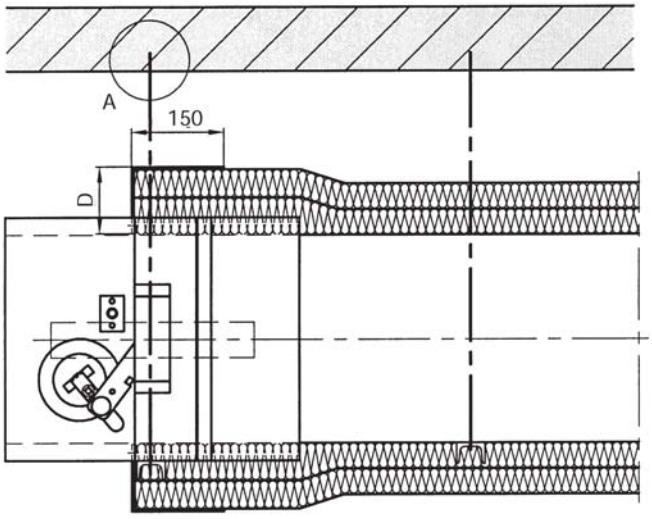
Suspension example, location of the traverse and dimensions for: BKV
BKS-2
BKU
BKU-N

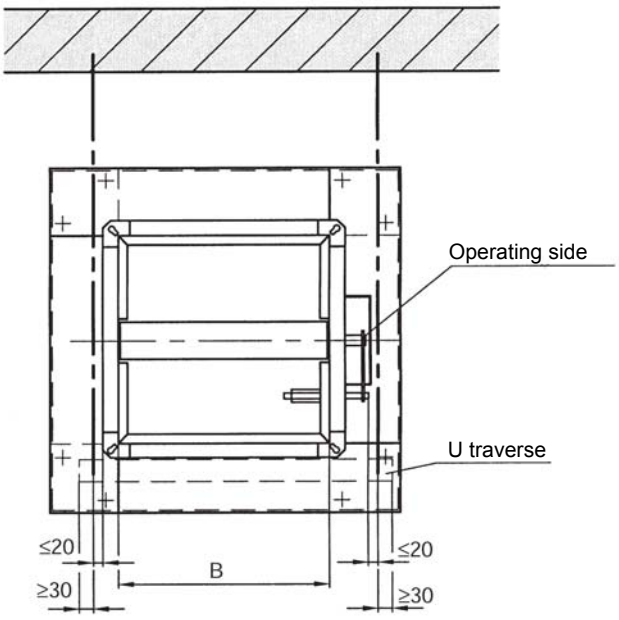
BKV-K90





BKU-K90





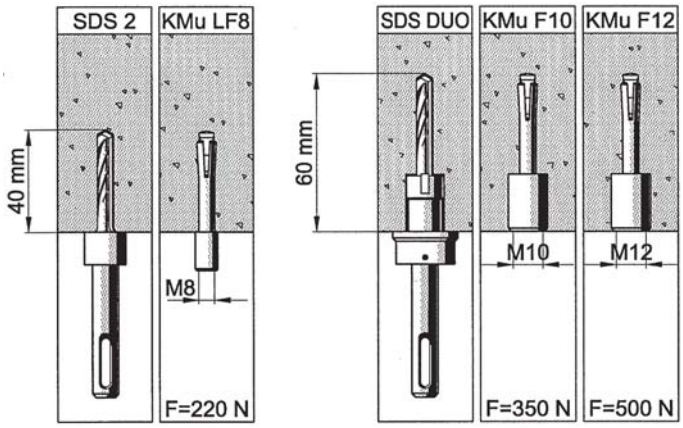
Damper

Suspension

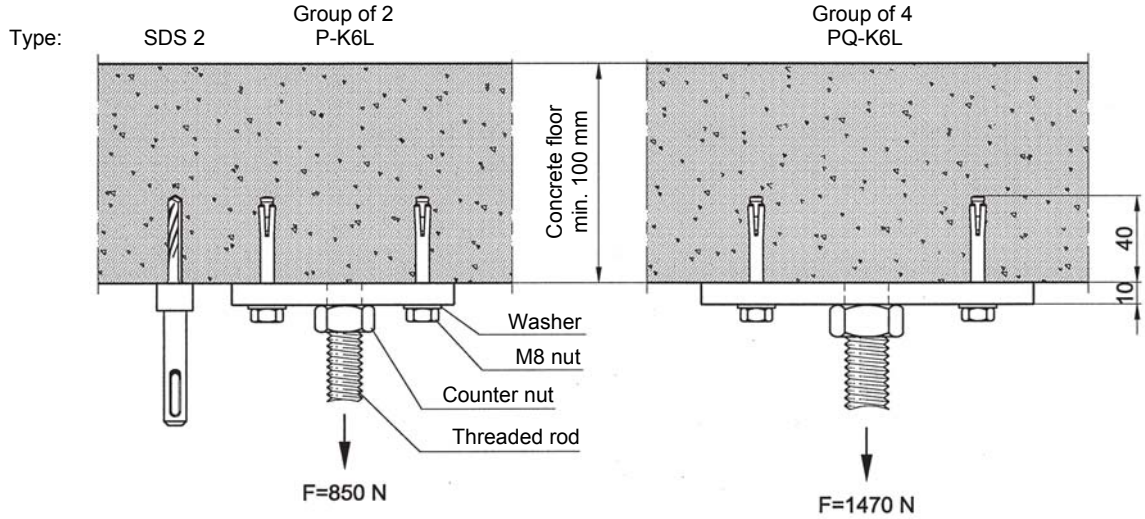
Fire safety dowels for the suspension of fire dampers with test certificate Z-21.1-47

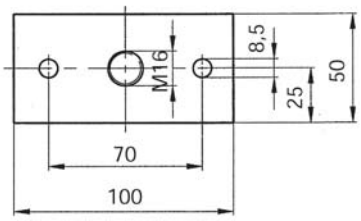
Detail »A«

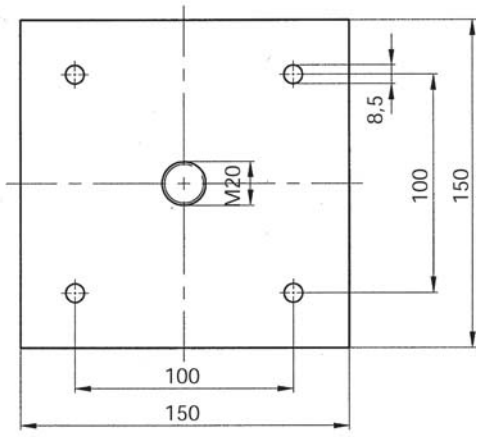
Suspension from M8 to M12



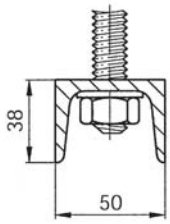
Suspension of M16 and M20





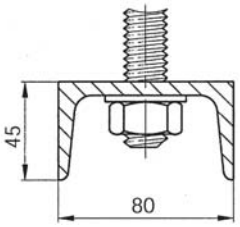


Up to M16



Weight of the U: 5,8 kg/m

For M20



Weight of the U: 8,9 kg/m

Damper

Suspension and weights

BKS-2
BK-326
BKL
BKV
BKU
BKU-N

Information on steel dowels with test certificate

The hangers shall be fastened with straddling steel dowels ≥ M8. The dowels shall conform to the valid test certificate of the "Institut für Bautechnik" and moreover be mounted twice as deep as required by the test certificate, unless the test certificate states otherwise. The calculated tensile load per dowel shall not exceed 500 N. Special dowels with a maximum tensile load of 700 N may also be used.

Suspension of the damper with KUNKEL fire safety dowels

Weights

Dimensioning of the suspension

The damper weights are given in table 1 - 5. The professional suspension of the fire dampers not only requires consideration of the damper weight, but also the weight of the U traverses, the treaded rods and in some cases the covering of the fire dampers.

Weights according to table 1 - 5

Table 1: Weights for BKS-2
Table 2: Weights for BK-326/BKL/BKV (L = 500 m)
Table 3: Weights for BKU-K90 (L = 400 mm)
Table 4: Weights for BKU-K90 für hanging beneath the floor; in some cases with a length of ≥ 400 mm up to 600 mm (no damper blade projection near the floor).
Table 5: Weights for BKU-N-K90 (L = 400 mm)

The undressed threaded rods shall be dimensioned such that the calculated tension of 6 N/mm² is not exceeded (this refers to a maximum length of 1,5 m). The hangers shall be lead in the form of a U around the duct (see DIN 4102 Part 4, Clause 7.3.7.5).

* Stress areas of threaded rods with a metrical ISO thread according to DIN 13 Part 28

Nominal size	Weight of the rod kg/m	* Stress area mm²	Load at 6 N/mm² per threaded rod	
			N	KP
M 6	0,18	20,1	120,6	12,29
M 8	0,32	36,6	219,6	22,38
M 10	0,5	58,0	348,0	35,47
M 12	0,73	84,3	505,8	51,55
M 14	0,97	115,0	690,0	70,33
M 16	1,35	157,0	942,0	96,02
M 20	2,08	245,0	1470,0	149,84
M 24	3,00	353,0	2118,0	215,90
M 30	4,75	561,0	3366,0	343,11

Table 1
Weight of the BKS-2 damper

Height H (mm)	Width B (mm)																	Height H (mm)
	201	252	318	357	400	449	503	565	634	711	797	894	1003	1125	1262	1416	1500	
201	11	12	13	14	15	16	17	19	20	22	23	25	28	30	33	36	38	201
252	12	13	15	15	16	18	19	20	22	23	25	27	30	33	36	39	41	252
318	13	14	16	17	18	19	21	22	24	26	28	30	33	36	39	43	45	318
357	14	15	17	18	19	20	22	23	25	27	29	32	34	37	41	45	47	357
400	15	16	18	19	20	22	23	25	27	29	31	33	36	39	43	47	49	400
449	16	17	19	20	22	23	24	26	28	30	33	35	38	42	46	50	52	449
503	17	19	21	22	23	24	26	28	30	32	35	38	41	44	48	53	55	503
565	19	20	22	23	25	26	28	30	32	34	37	40	43	47	51	56	59	565
634	20	22	24	25	27	28	30	32	34	37	40	43	46	50	55	60	63	634
711	22	23	26	27	29	30	32	34	37	40	43	46	50	54	59	64	67	711
797	23	25	28	29	31	33	35	37	40	43	46	49	54	58	63	69	72	797

Table 2
Weight of the BK-326/BKL/BKV damper in kg (L = 500 mm)

Height H (mm)	Width B (mm)																	Height H (mm)
	201	252	318	357	400	449	503	565	634	711	797	894	1003	1125	1262	1416	1500	
201	11,5	13	15	16	17,5	18,5	20,5	22	24	26,5	29	32	35	38,5	42,5	47	49,5	201
252	13	14,5	17	18	19,5	21	23	24,5	27,5	29,5	32,5	35,5	39	43	47,5	52,5	55	252
318	15	17	19	20,5	22	24	26	28	30,5	33,5	36,5	40	44	48,5	53	59	62	318
357	16	18	20,5	22	23,5	26,5	27,5	29,5	32,5	35,5	39	42,5	47	52	57	63	66,5	357
400	17,5	19,5	22	23,5	25,5	27,5	29,5	33,5	35	38	41,5	45,5	50	55,5	61	67,5	71	400
449	19	21	24	25,5	27,5	29,5	32	35	37,5	41	45	49	54	60	65,5	72	76	449
503	20,5	23	26	27	29,5	32	34,5	37,5	42	44	48,5	53	58	66,5	70,5	77,5	81,5	503
565	22,5	25	28	30	32,5	35	37,5	40,5	44	48	51	57	62,5	69	76	83,5	88	565
634	24,5	27	30,5	33	35	38	40,5	44	47,5	52	56,5	62	68	75	82	90,5	95	634
711	26,5	29,5	33,5	36	38,5	41,5	44,5	48	52	56,5	61,5	67,5	74	81	89	98,5	103,5	711
797	29	32,5	37	39,5	42	45	48,5	52,5	57	62	67,5	73,5	80,5	88	97	107	112,5	797

Table 3
Weight of the BKU-K90 damper in kg (L = 400 mm)

Height H (mm)	Width B (mm)																	Height H (mm)
	201	252	318	357	400	449	503	565	634	711	797	894	1003	1125	1262	1416	1500	
201	24,5	27	30,5	33	35	38	41	45	48	52	57	62	68	74,5	82	90,5	95	201
252	27	30	34	36	38,5	41,5	44,5	48	52	56,5	61	67	73	80	88	96,5	101,5	252
318	31	34	38	40,5	43	46	49	53	57	61,5	67	73	79,5	87	95	104,5	109,5	318
357	33	36	40,5	42,5	45,5	48,5	52	55,5	60	65	70,5	76,5	83	91	99,5	109,5	114,5	357
400	35,5	38,5	43	45,5	48	53,5	55	59	63,5	68,5	74	80,5	87,5	95,5	104,5	114,5	120	400
449	38	41,5	46	48,5	51,5	54,5	58,5	62,5	67	72,5	78	84,5	92	100,5	110	120	126	449
503	41	44,5	49	52	55	58,5	62	68,5	71,5	77	83	89,5	97,5	106	115,5	126,5	132,5	503
565	44,5	48	53	56	59	62,5	66,5	71	76	82	87	95,5	103,5	112,5	122,5	134	140	565
634	48	52	57	60	63,5	67,5	71,5	76	81,5	87,5	94	101,5	110	119,5	130	142	148,5	634
711	52,5	56,5	62	65	68,5	72,5	77	82	87,5	94	100,5	108,5	117,5	127,5	138,5	151,5	158	711
797	57	61,6	67	70,5	74	78,5	83	88,5	94	101	108	116,5	126	136	148	161,5	168,5	797

Table 4
Weight of the BKU-K90 damper in kg (L ≥ = 400 mm up to 600 mm at the most)

Height H (mm)	Width B (mm)																	Height H (mm)
	201	252	318	357	400	449	503	565	634	711	797	894	1003	1125	1262	1416	1500	
201	24,5	27	30,5	33	35	38	41	45	48	52	57	62	68	74,5	82	90,5	95	201
252	27	30	34	36	38,5	41,5	44,5	48	52	56,5	61	67	73	80	88	96,5	101,5	252
318	31	34	38	40,5	43	46	49	53	57	64,5	67	73	79,5	87	95	104,5	109,5	318
357	33	36	40,5	42,5	45,5	48,5	52	55,5	60	65	70,5	76,5	83	91	99,5	109,5	114,5	357
400	35,5	38,5	43	45,5	48	53,5	55	59	63,5	68,5	74	80,5	87,5	95,5	104,5	114,5	120	400
449	40	44	48,5	51,5	54	57,5	61,5	66	70,5	76	82	89	96,5	105	115	125,5	132	449
503	45	48,5	53,5	56,5	59,5	63	67	74	77,5	83	89,5	96,5	105	114	124	136	142	503
565	52	55,5	61	64,5	68	72	76	81	87	93,5	99	108,5	117,5	127,5	138,5	151,5	158	565
634	58,5	63	68,5	72	76	80,5	85	90,5	96,5	130,5	111	119,5	129	140	152	166	173	634
711	67,5	72	78,5	82,5	86,5	91	96,5	102,5	109	116,5	124,5	133,5	144,5	156	169	184,5	192	711
797	78	83	89,5	94	98	103	109	115,5	122,5	131	139,5	150	161	173,5	188	204	213	797

Table 5
Weight of the BKU-N-K90 damper in kg (L = 400 mm)

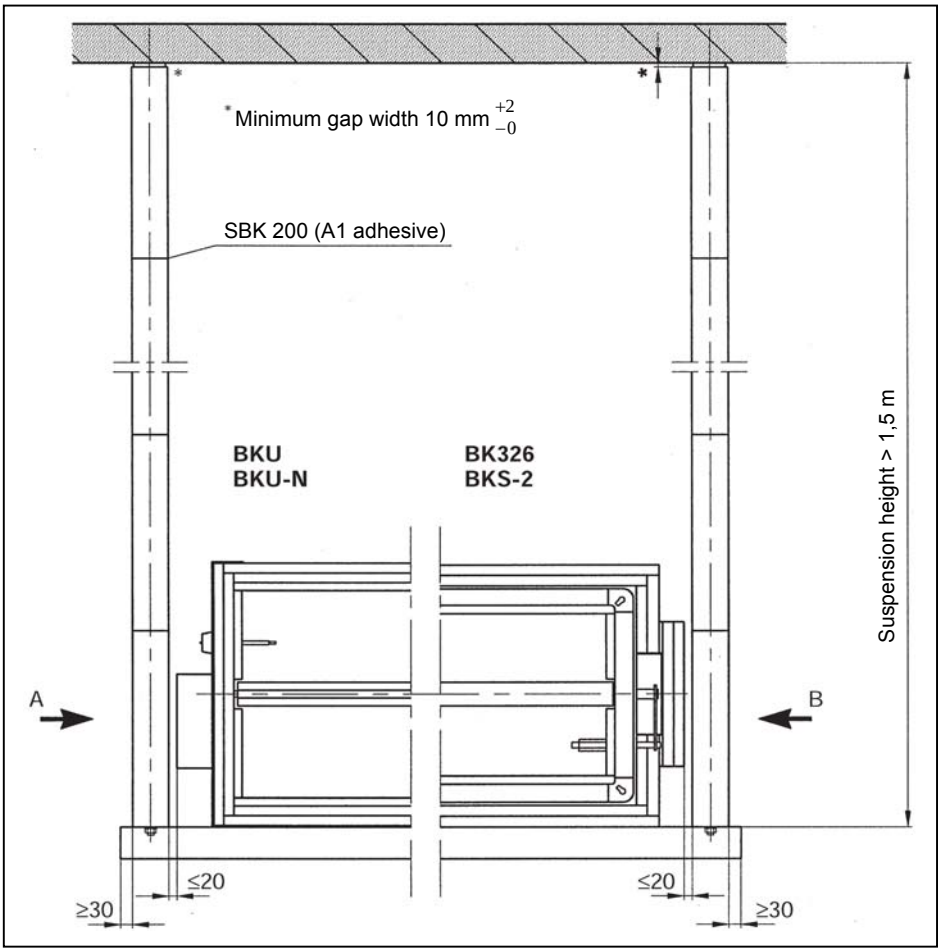
Height H (mm)	Width B (mm)																	Height H (mm)
	201	252	318	357	400	449	503	565	634	711	797	894	1003	1125	1262	1416	1500	
201	20,5	22,5	25,5	27,5	29	31,5	34	37	39,5	42,5	46,5	50,5	55,5	60,5	66,5	73,5	77	201
252	22,5	26	28,5	30	32	34	36,5	39,5	42,5	45,5	49,5	54,5	59	65	71	78	81,5	252
318	25,5	28,5	31	33,5	35	37,5	40	43	46	49,5	54	59	64	70	76	83,5	87,5	318
357	27,5	30	33,5	35	37	39,5	42	45	48,5	52,5	57	61,5	66,5	73	79,5	87,5	91	357
400	29	32	35	37	39	42	45	47,5	51,5	55	59,5	62,5	67	76	83	91	93	400
449	31,5	34	37,5	39,5	41	44	46	48,5	52,5	56,5	60,5	64,5	68,5	74,5	84,5	92	95	449
503	34	36,5	40	41,5	45	47,5	50	52,5	55,5	59	62,5	69,5	72,5	78,5	86	93	96,5	503
565	37	39,5	43	45	47,5	50,5	52	54,5	58	61	65	70	74	81	88	96	100,5	565
634	39,5	42,5	46	48,5	51,5	52	54	56,5	60	64,5	69	73	79	86,5	93	101,5	106	634
711	42,5	45,5	49,5	52,5	54	56,5	58	60	63	67,5	73	77	84	89	97,5	107	112	711
797	46,5	49,5	52	54	55,5	57,5	62	65	69	74	78	83	90,5	97	106	115	120	797

Damper

Covered hangers
Suspension height > 1,5 m, ≤ M12

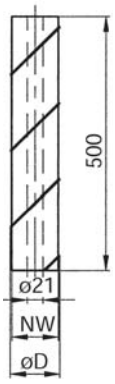
Covered hangers

The undressed threaded rods shall be dimensioned such that the calculated tension of 6 N/mm² is not exceeded (this refers to a maximum length of 1,5 m). The maximum elongation under temperature exposure according to the standard time temperature curve (approximately 1000 °C) for 90 min. is 40 mm related to threaded rods that are 1,5 m long.
Hangers that are more than 1,5 m long shall be treated with a fireproofing covering due to their significant elongation.
Reference: DIN EN 1366-1

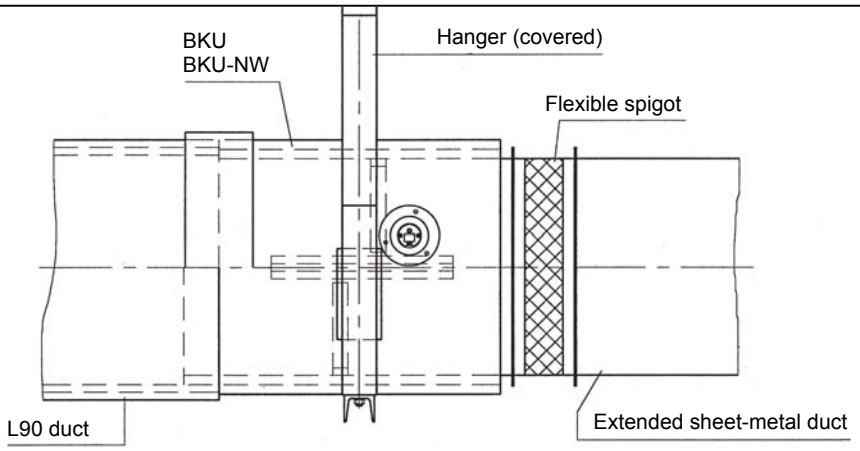


Dimensions of the hanger covering

Nominal size	Outer dimension
Ød	ØD
71	75
80	85
90	95



All dimensions in mm



Field of application

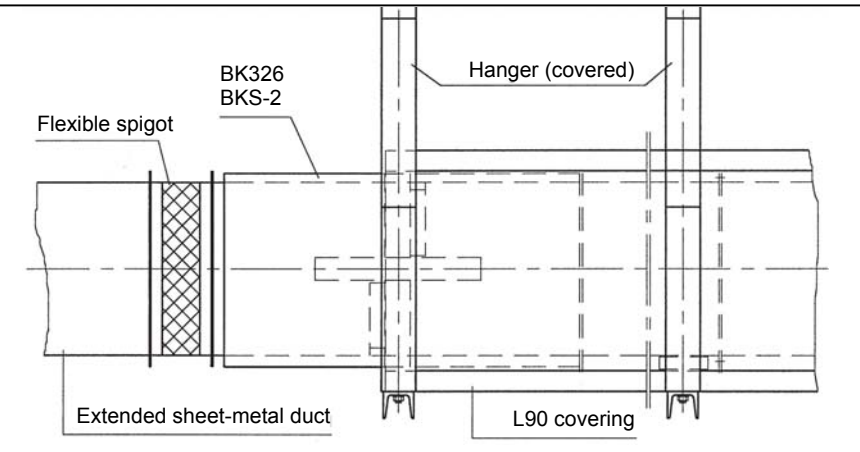
NW 71 = up to max. suspension height 2.5 m
NW 80 = up to max. suspension height 3 m
NW 90 = up to max. suspension height 4 m

Weights of the hanger coverings per 0,5 m

NW 71 = approximately 3,6 kg
NW 80 = approximately 4,9 kg
NW 90 = approximately 5,9 kg

Other lengths are available on request.

Please note: The weights of the hanger covering shall be added to the weights of the fire dampers, traverses and threaded rods.



Damper

Covered hangers
Suspension height > 1,5 m
from M14 to M20

Mounting instructions

The suspension coverings consist of steel ducts with an internal fireproof casing. A borehole of at least 21 mm is in central position to take up the threaded rod. From a M14 suspension upwards the connecting box for two threaded rods cannot be attached near the suspension covering. Therefore, as shown in the accompanying picture, a covering for the connecting box shall be installed.

Dimensioning example

Given: BK-326 in the dimensions
B = 797 mm
H = 400 mm
Suspension height = 4 m

Following weights shall be added:

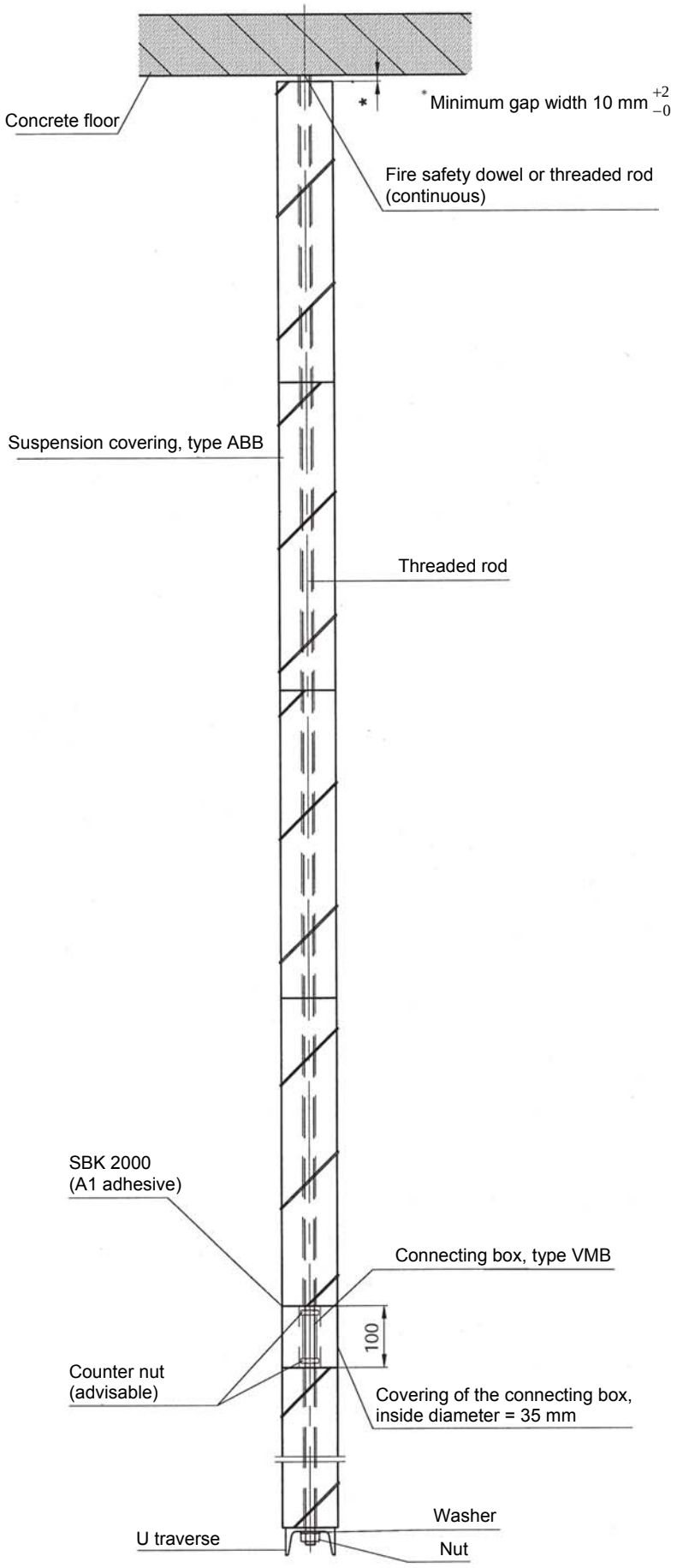
BK-326 according to table 1, page 41	41,5	kg
U traverse (U80), see page 40	12	kg
Threaded rod, M16, 2 x (L = 4 m), see page 41	11	kg
Covering, Ø 90, 16 x 0,5 m	94,5	kg
L90 covering (determined by calculation)	30	kg
	189 kg : 2 =	94,5 kg

△ M16 according to the table on page 41

Ordering example:
(only accessories for the covering)

16 suspension coverings NW 90
L = 0,5 m

2 coverings for connecting box (depends on the dimensions of the threaded rods which the installer uses)



Damper

Damper blade projections

Summary of the fire dampers that have a projecting blade

BK-326
BKS-2
BKL
BKV
BKU
BKU-N

Type: BK-326

L = 500 mm

H = 565	27,5 mm per side
H = 634	62,0 mm per side
H = 711	100,5 mm per side
H = 797	143,5 mm per side

Type: BK-326

L = 375 mm

H = 318	Operating side = —	Back side = 29,0 mm
H = 357	Operating side = —	Back side = 48,5 mm
H = 400	Operating side = —	Back side = 70,0 mm
H = 449	Operating side = —	Back side = 94,5 mm
H = 503	Operating side = —	Back side = 121,5 mm
H = 565	Operating side = 27,5 mm	Back side = 152,5 mm
H = 634	Operating side = 62,0 mm	Back side = 187,0 mm
H = 711	Operating side = 100,5 mm	Back side = 225,5 mm
H = 797	Operating side = 143,5 mm	Back side = 268,5 mm

Type: BKS-2
BKL
BKV

L = 500 mm

H = 565	25,5 mm per side
H = 634	60,0 mm per side
H = 711	98,5 mm per side
H = 797	141,5 mm per side

Type: BKS-2
BKL
BKV

L = 375 mm

H = 318	Operating side = —	Back side = 27,0 mm
H = 357	Operating side = —	Back side = 46,5 mm
H = 400	Operating side = —	Back side = 68,0 mm
H = 449	Operating side = —	Back side = 92,5 mm
H = 503	Operating side = —	Back side = 119,5 mm
H = 565	Operating side = 25,5 mm	Back side = 150,5 mm
H = 634	Operating side = 60,0 mm	Back side = 185,0 mm
H = 711	Operating side = 98,5 mm	Back side = 223,5 mm
H = 797	Operating side = 141,5 mm	Back side = 266,5 mm

Type: BKU
BKU-N

L = 400 mm - on both sides smooth (without duct connecting profile)

H = 449	19,5 mm per side
H = 503	46,5 mm per side
H = 565	77,5 mm per side
H = 634	112,0 mm per side
H = 711	150,5 mm per side
H = 797	193,5 mm per side

Fire dampers in stainless steel

BKS, BKL and BKV are available in stainless steel (material 1.4301 or 1.4571).

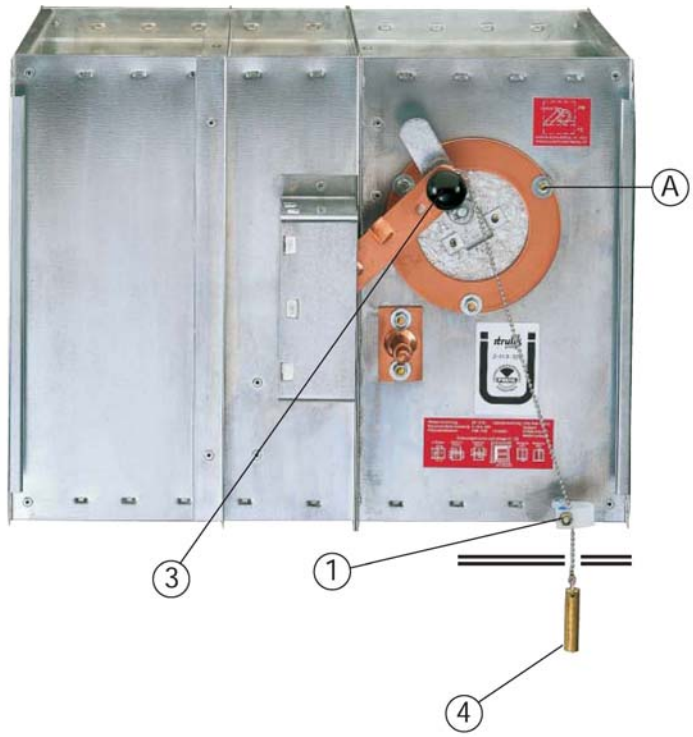
Damper

Accessories

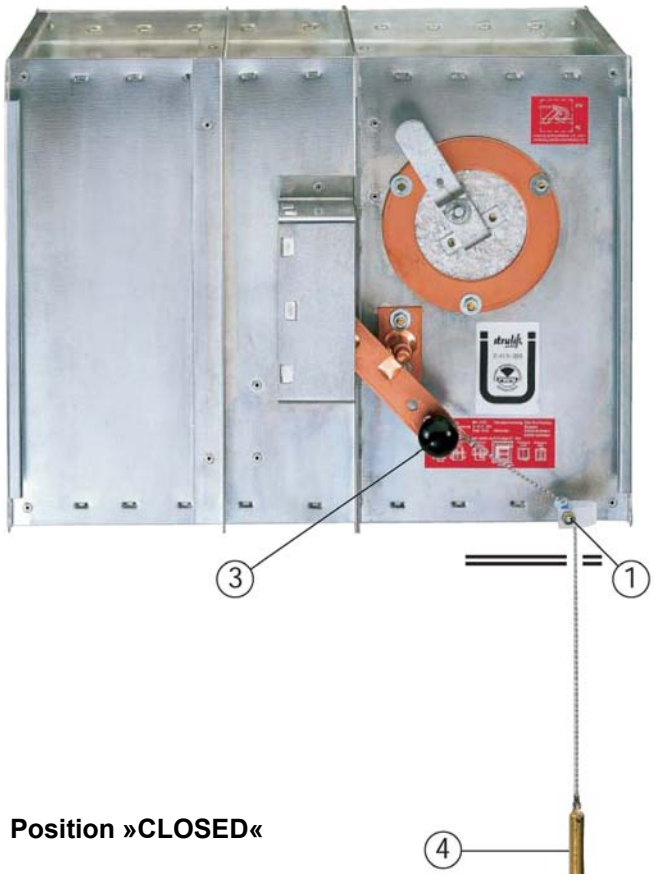
Position indicator for supplement floors
Type: SZ

Field of application for:
BK-326
BKS-2
BKS/BKL/BKV
BKU

Complete release mechanisms on top of mounting plate



Position »OPEN«

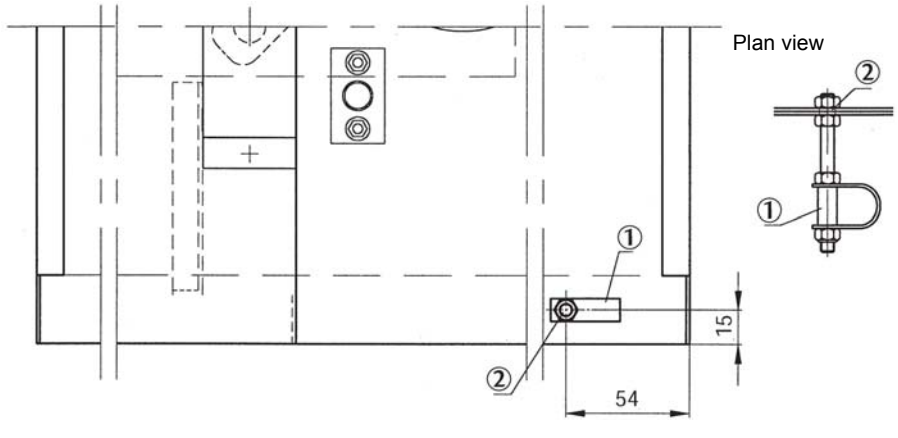


Position »CLOSED«

Installation instructions for the subsequent mounting of position indicators for supplement floors onto fire dampers

Scope of delivery:
Position indicator including indicator chain and weight

Sequence of operations:
Mount the position indicator ① with a M6 screw into the borehole ②. Disassemble ball knob ③, hang in the ring of the indicator chain and attach again to the ball knob (shorten chain length at random). Lead the weight ④ rough the plastic fork of the position indicator.



Damper

Complete modular system release mechanisms
(also for the subsequent modification of existing fire dampers)

Release mechanisms that are available a modular system

① Limit switch mounting plate to signalize the positions **»OPEN«** and **»CLOSED«**
See page 47

② 24 V= direct-current adhesive magnet including thermoelectric release mechanism (photo with electrical limit switch in the OPEN and CLOSED position).
See page 48

③ 230 V or 24 V= spring-return motor including thermoelectric release mechanism (two electrical limit switches are inside the motor).
See page 49 and 51

④ Spring-return motor as in ③, in addition available in two-wire technique.
See page 50 and 52

⑤ EX-protected direct-current adhesive magnet including EX-protected solder fuse (photo with EX limit switch in the OPEN and CLOSED position).
See page 53

- 230 V~ alternating-current lifting magnet or 24 V= direct-current lifting magnet including electrical limit switch in position OPEN (limit switch required).
See page 56

(The exchange and mounting of the release mechanisms is always performed via three M6 lock nuts »A«, which are staggered by 120°.)

Other release mechanisms (not suitable for subsequent mounting)

- EX-protected spring-return motor including EX-protected solder fuse (two electrical limit switches inside the motor)
See page 54

- Pneumatic cylinder (minimum operating pressure 6 bar) including pneumatic solder fuse, optionally with 24 V= solenoid valve.
See page 55

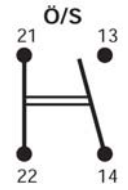
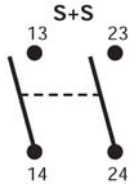
TA* = Thermoelectric release mechanism

Damper

Accessory:
Electrical limit switch, type EE

Technical data

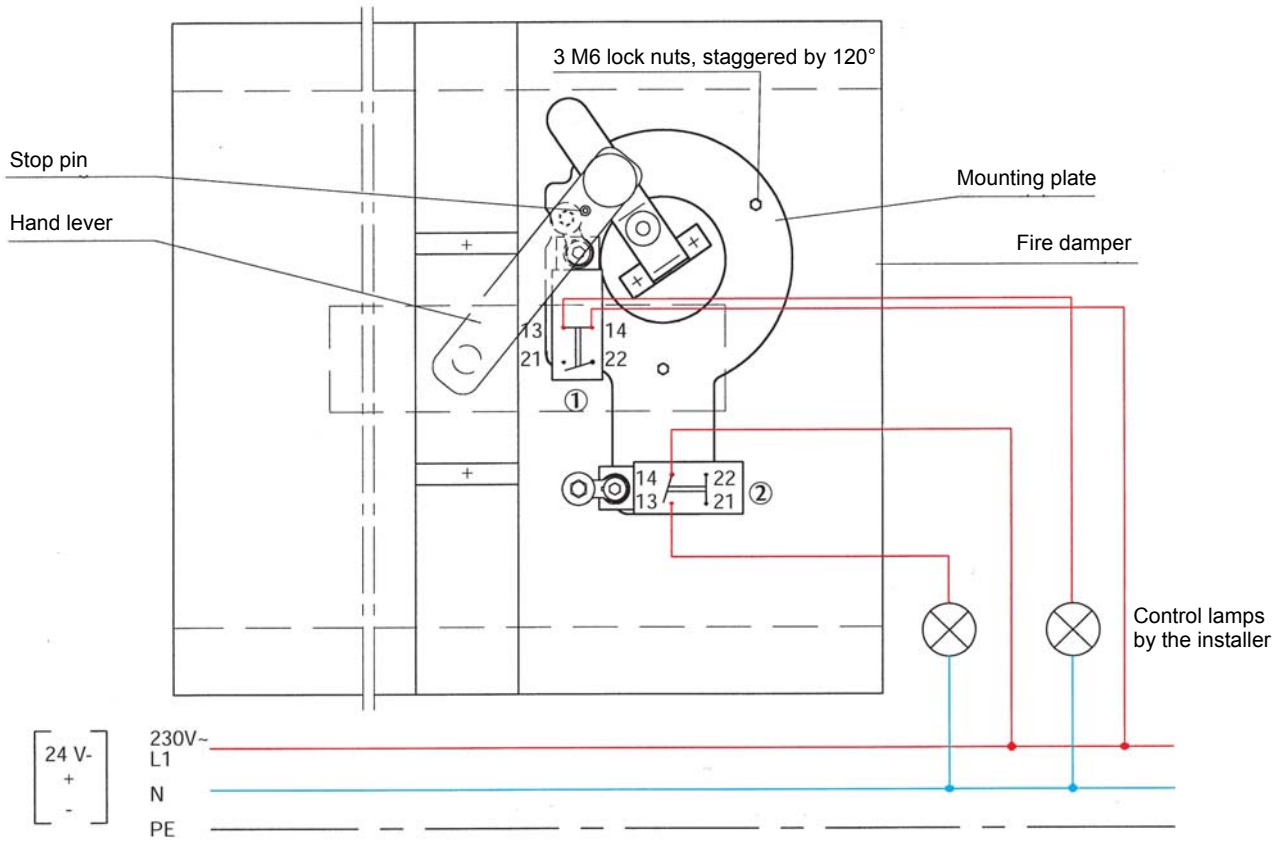
Type of safety:	IP 65
Constant current:	10 A
Nominal insulation current:	500 V

Standard design	On request, without extra charge
	

Field of application for:

BK-326
BKS
BKL
BKV
BKU

Damper in position »OPEN«



Instructions for the subsequent incorporation of electrical limit switches into fire dampers

Scope of delivery:
Mounting plate with fitted electric limit switch(es) and stop pin with M8 nut.

Procedure:
Remove the securing ring (fastened with 3 M6 nuts) from the existing damper.
Attach new mounting plate with complete armaments and affix with previously removed nuts.
For fire dampers delivered before 1990, an 8,5 mm hole shall be bored at a distance of 41 mm (see fig. 1) into the hand lever. Insert the supplied stop pin (fig. 2) from the bottom into the new hole and lock with the nut.
Slowly move the damper into the CLOSED position and adjust the tappet of the limit switch, so that the roll presses against the stop pin and it engages. In the OPEN position, move the lever into the open position and proceed in the same manner.
Electrical connection according to the circuit diagram.

Hand lever with stop pin for the operation of the limit switch

Fig. 1

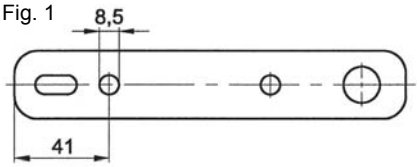
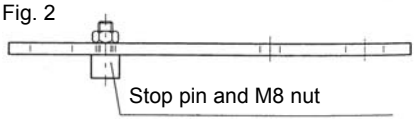


Fig. 2



Damper

Accessory:
Direct-current adhesive magnet, type HG, including thermoelectric release mechanism

Technical data

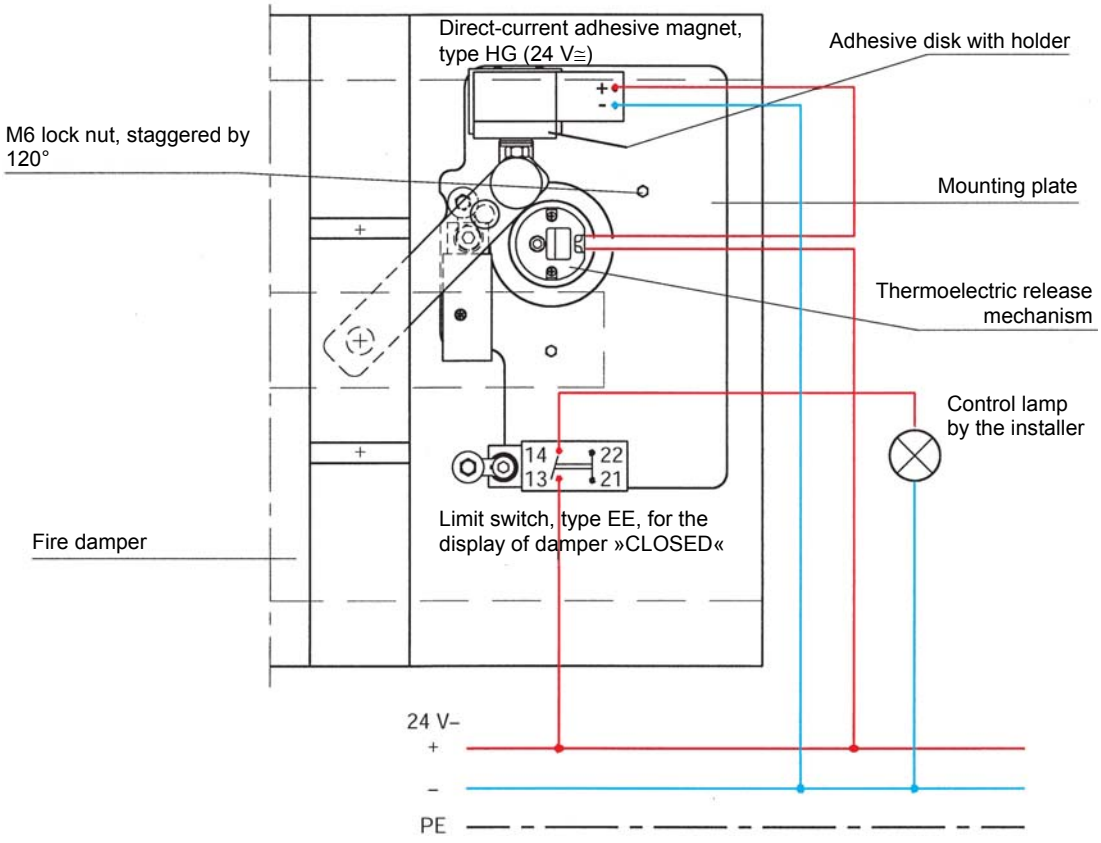
Terminal voltage:	24 V– (+15 % / -10 %)
Wattage:	3 W
Adhesion:	588 N
Duration of connection:	100 %
Type of safety:	IP 40

Field of application for:

BK-326
BKS
BKL
BKV
BKU

Figure including electrical limit switch, type EE (display damper »CLOSED«)

Damper in position »OPEN«



Instructions for the subsequent incorporation of a direct-current adhesive magnet including thermoelectric release mechanism and limit switch

Scope of delivery:
Mounting plate with fitted direct-current adhesive magnet, thermoelectric release mechanism, adhesive disk with holder and limit switch with stop pin.

Procedure:
Remove the securing ring (fastened with 3 M6 nuts) including release mechanism from the existing damper.
Attach new mounting plate with complete armaments and affix with previously removed nuts.
Attach holder with adhesive disk to the bottom side of the hand lever.
Lock the adhesive disk in the exact position and screw the holder onto the hand lever.
Electrical connection according to the circuit diagram.

Detailed information on how to put the electrical limit switch into operation is given on **page 47**.

Damper

Accessory:
Spring-return motor, type MGT, including thermoelectric release mechanism

Technical data

Type	MGT 230	MGT 24
Terminal voltage	230 V~	24 V~
Wattage	6,5 W	5 W
Protection class	IP 42	IP 42
Torque with normal voltage	18 Nm	18 Nm
Torque with spring retraction	12 Nm	12 Nm
Dimensioning	11 VA	10 VA

Field of application for:

BK-326
BKS
BKL
BKV

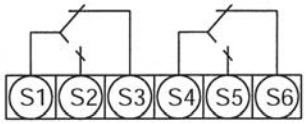
Function according to the principle of closed-circuit current

Damper in position »OPEN«

Limit switches inside the motor

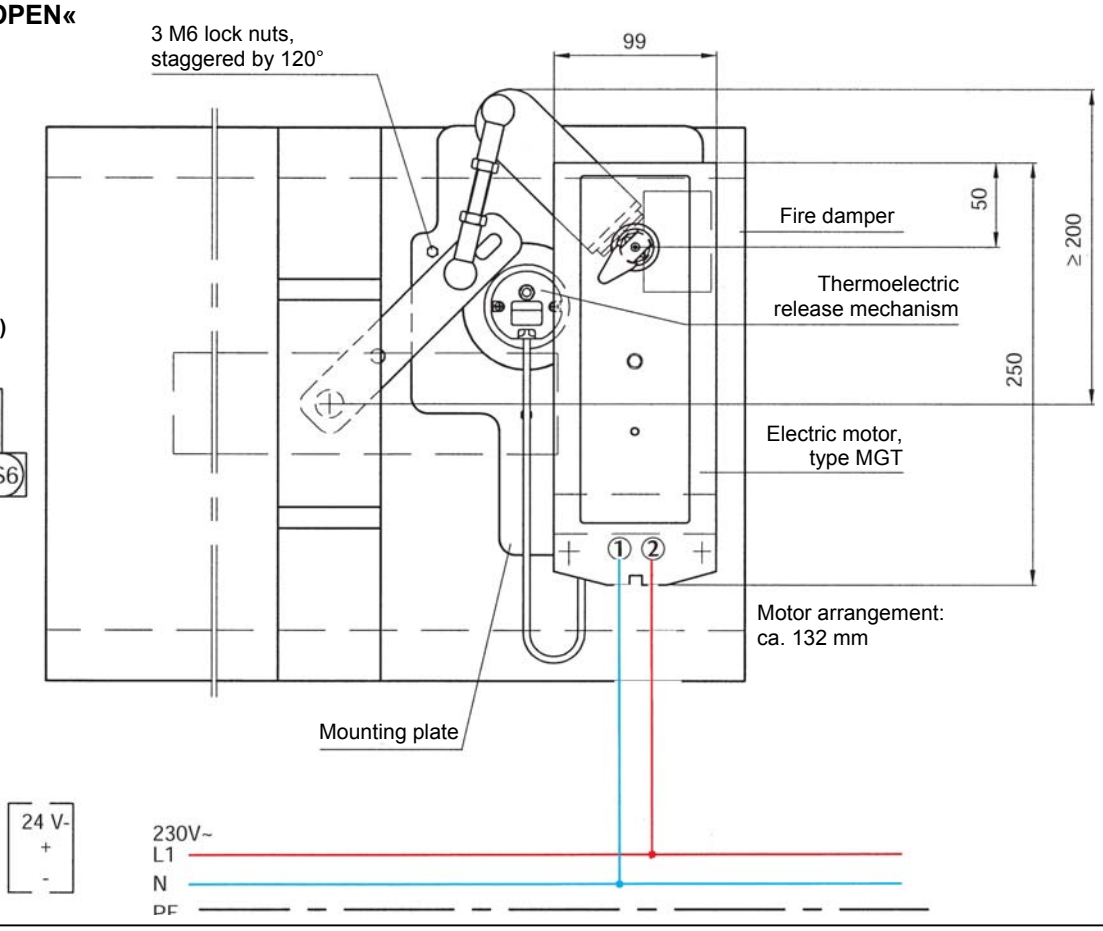
Position of the damper display

2° (CLOSED) 88° (OPEN)



Display CLOSED = S1 + S2

Display OPEN = S4 + S6



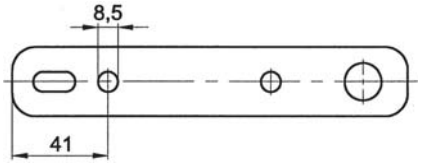
Instructions for the subsequent incorporation of an electric motor including thermoelectric release mechanism

Scope of delivery:
Mounting plate with fitted electric motor, lever system and thermoelectric release mechanism.

Procedure:
Cut through the torsion spring of the fire damper. Up to damper size H ≤ 503 mm, disassemble click-stop device (attached next to the hand lever). From damper size H ≥ 565 mm upwards, completely disassemble click-stop device with ball knob and then close the opening within the sheet with the enclosed plate. Remove securing ring (fastened with 3 M6 nuts) including release mechanism from existing damper. Attach new mounting plate with complete armaments and affix with previously removed nuts. For fire dampers delivered before 1990, an 8,5 mm hole shall be bored at a distance of 41 mm (see fig.1). Move the damper into the CLOSED position. Attach motor lever and ball knob to hand lever and then attach motor lever with mounting flange to motor. If necessary, readjust above threaded rod between the ball-and-socket joints (blade must butt firmly against the damper stops). Electrical connection according to the circuit diagram.

Dimensions of the mounting hole at the hand lever

Fig. 1



Damper

Accessory:
Spring-return motor, type SFL, including thermoelectric release mechanism

Field of application for:
BK-326/BKS/BKL/BKV

Technical data

Type	SFL 1.90T	SFL 2.90T
Working voltage	24 V≅	230 V~
Time of - opening - closing	ca. 90 - 120 s ca. 10 s	
Frequency	50 - 60 Hz	
Dimensioning	18 VA	13 VA
Protection class	IP 54 Cable connection	
Contact rating of the auxiliary switch	3 (1,5) A 230 V	
Maintenance	Maintenance-free	

Technical data for bus-capable drive, type SFL 1.90T SLC
The same technical data as for type SFL 1.90, however "bus-capable", i.e. motor voltage 24 V≅ and signalling of the final positions via two-wire technique.
Suitable means of communication - type SPMa-1 F/R or type SPLM-F MOD - are necessary. Please order separately.

Function according to the principle of closed-circuit current

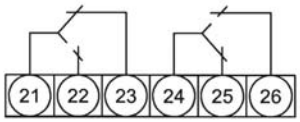
Working condition: damper in position »OPEN«

* Position 0 = release
Position 1 = in operation

Limit switches inside the motor

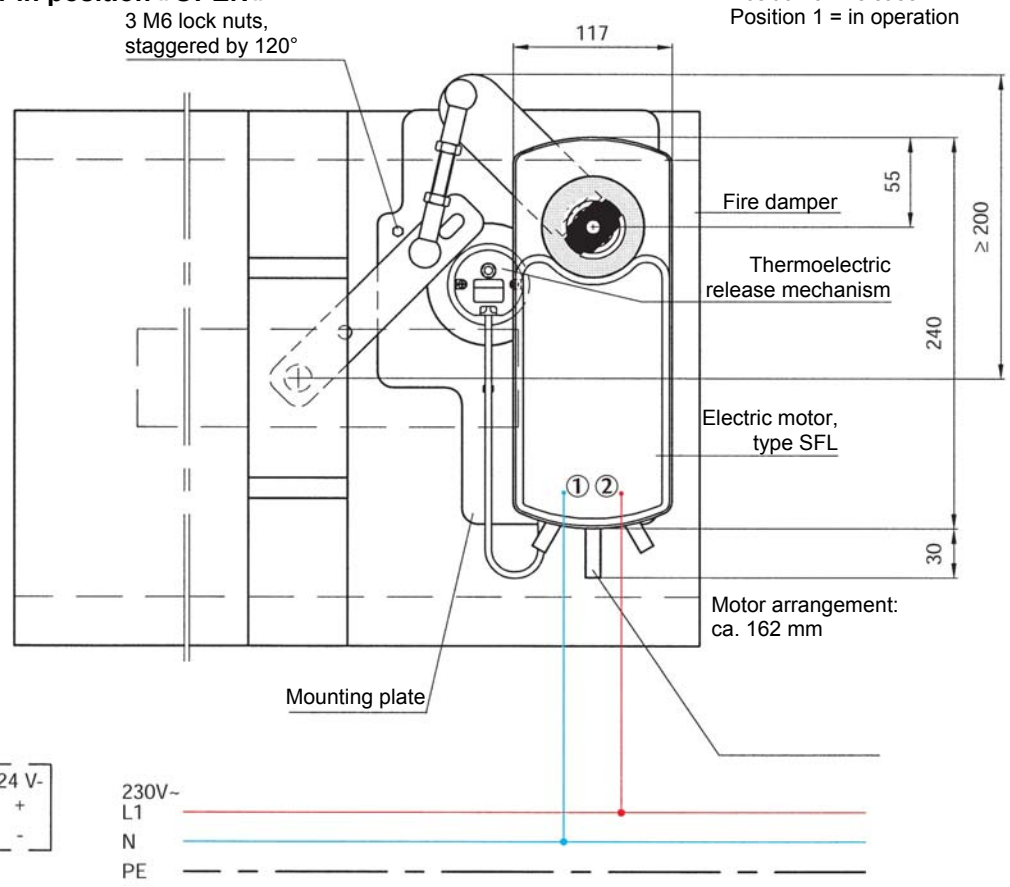
Position of the damper display

2° (CLOSED) 88° (OPEN)



Display CLOSED = (21) + (22)

Display OPEN = (24) + (25)



The thermoelectric release mechanism is connected to the terminals 3 + 4 inside the motor

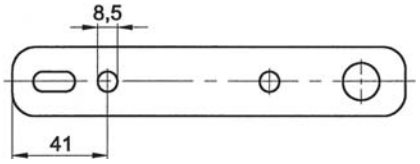
Instructions for the subsequent incorporation of an electric motor including thermoelectric release mechanism

Scope of delivery:
Mounting plate with fitted electric motor, lever system and thermoelectric release mechanism.

Procedure:
Cut through the torsion spring of the fire damper. Up to damper size H ≤ 503 mm, disassemble click-stop device (attached next to the hand lever). From damper size H ≥ 565 mm upwards, completely disassemble click-stop device with ball knob and then close the opening within the sheet with the enclosed plate. Remove securing ring (fastened with 3 M6 nuts) including release mechanism from existing damper. Attach new mounting plate with complete armaments and affix with previously removed nuts. For fire dampers delivered before 1990, an 8,5 mm hole shall be bored at a distance of 41 mm (see fig.1). Move the damper into the CLOSED position. Attach motor lever and ball knob to hand lever and then attach motor lever with mounting flange to motor. If necessary, readjust above threaded rod between the ball-and-socket joints (blade must butt firmly against the damper stops). Electrical connection according to the circuit diagram.

Dimensions of the mounting hole at the hand lever

Fig. 1



Damper

Accessory:
Spring-return motor, type MGT, including thermoelectric release mechanism

Technical data

Type	MGT 230	MGT 24
Terminal voltage	230 V~	24 V~
Wattage	6,5 W	5 W
Protection class	IP 42	IP 42
Torque with normal voltage	18 Nm	18 Nm
Torque with spring retraction	12 Nm	12 Nm
Dimensioning	11 VA	10 VA

Field of application for:
BKU
BKU-N

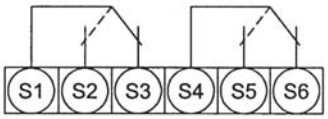
Function according to the principle of closed-circuit current

Working condition: damper in position »OPEN«

Limit switches inside the motor

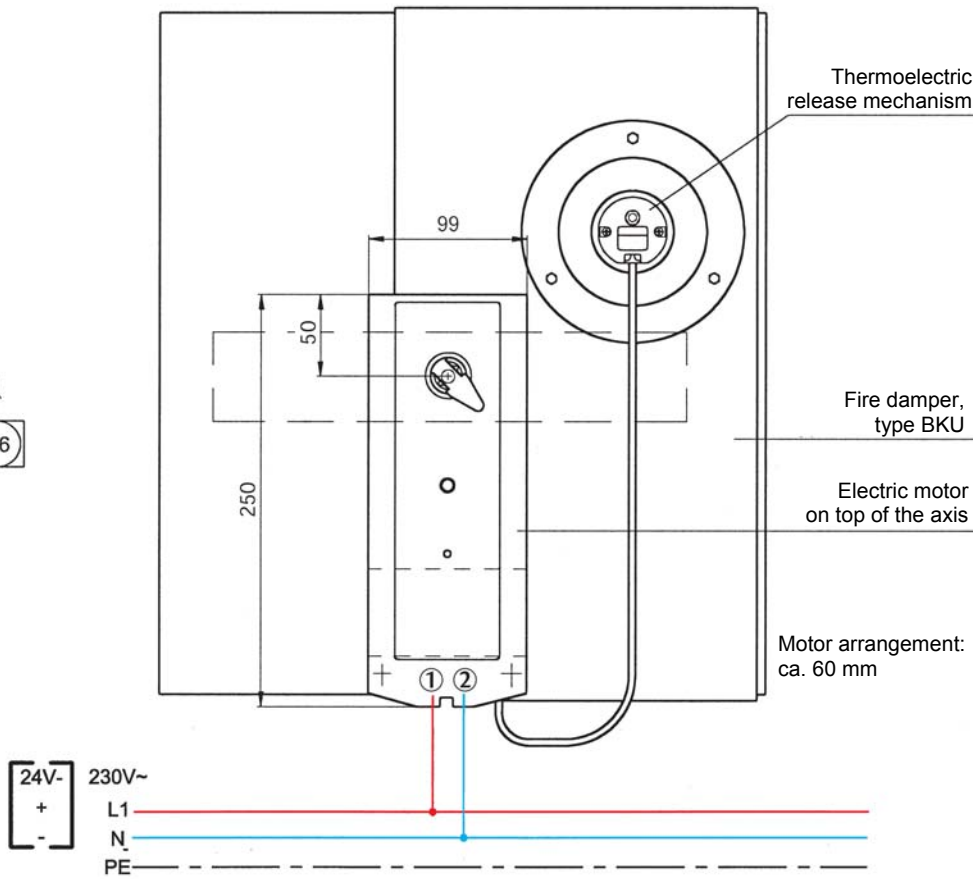
Position of the damper display

2° (CLOSED) **88° (OPEN)**



Display CLOSED = S1 + S2

Display OPEN = S4 + S6



Electric motor type MGT directly on top of the axis for BKU-K90/K90 fire dampers

Function:
The damper blade closes by thermal contact break or power failure (de-energized »CLOSED«

Damper

Accessory:
Spring-return motor, type SFR, including thermoelectric release mechanism

Technical data

Type	SFL 1.90T	SFL 2.90T
Working voltage	24 V≅	230 V~
Time of - opening - closing	ca. 90 - 120 s ca. 10 s	
Frequency	50 - 60 Hz	
Dimensioning	18 VA	13 VA
Protection class	IP 54 Cable connection	
Contact rating of the auxiliary switch	3 (1,5) A 230 V	
Maintenance	Maintenance-free	

Field of application for:
BKU
BKU-N

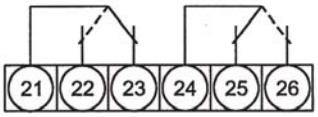
Function according to the principle of closed-circuit current

Working condition: damper in position »OPEN«

Limit switches inside the motor

Position of the damper display

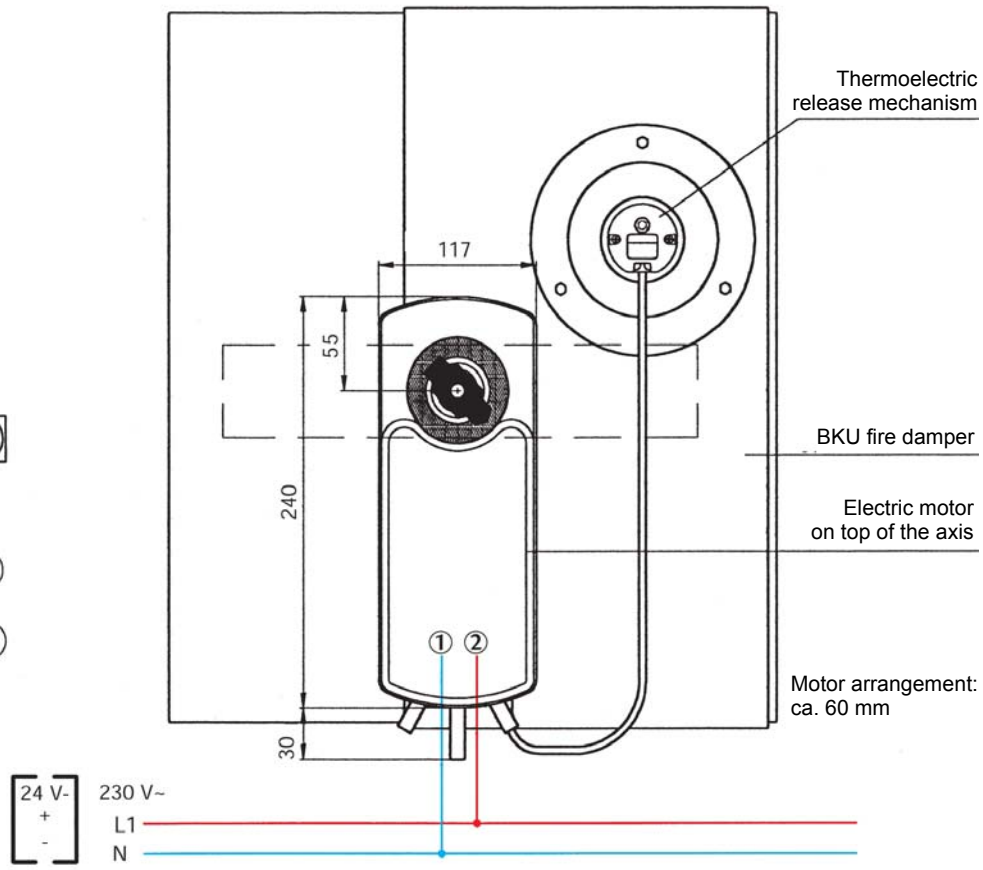
2° (CLOSED) **88° (OPEN)**



Display CLOSED = (21) + (22)

Display OPEN = (24) + (25)

* Position 0 = release
Position 1 = in operation



Mounting of spring-return motor, type SFR, directly onto the axis of the damper

Function:
The damper blade closes in case of thermal contact break or power failure (de-energized »CLOSED«).

Technical data for bus-capable drive, type SFR 1.90T SLC

Technical data as for type SFR 1.90T, however »bus-capable«, i.e. 24 V≅ motor voltage and signaling of the final positions via two-wire technique.
Suitable means of communication (SPMa-1 F/R or SPLM-F MOD) are necessary. Please order separately.

The thermoelectric release mechanism is connected to the terminals 3 and 4 inside the motor

Damper

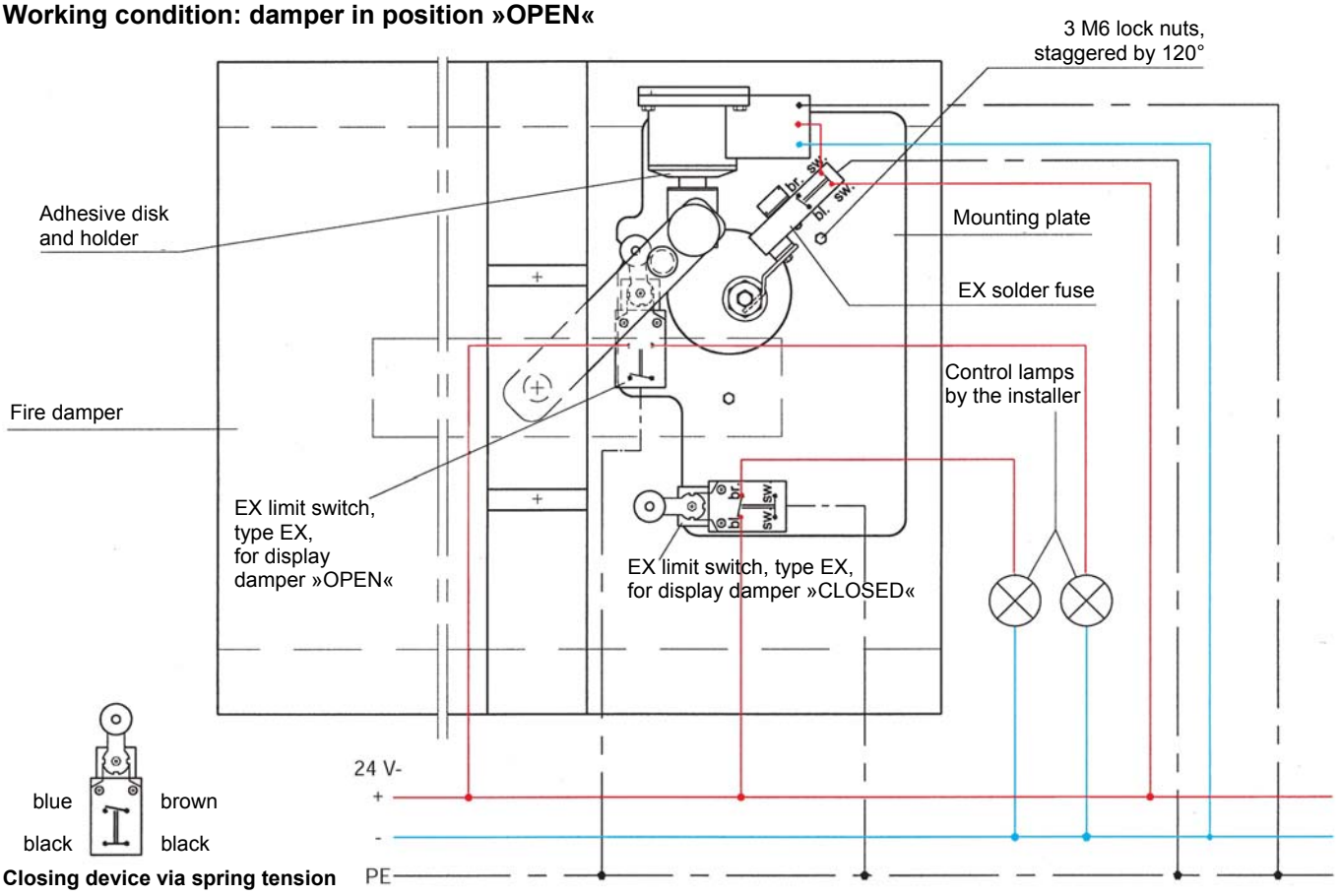
Accessory:
Direct-current adhesive magnet in EX design, type HX, including EX solder fuse
Drawing with electrically EX-protected limit switch, type EX

Function according to the principle of closed-circuit current

Technical data

Type:	HX	EX
Terminal voltage:	24 V≅	max 500 V≅
Wattage:	1 W	< 2 W
Current consumption:	44 mA	max 6 A
Adhesion:	650 N	-
Duration of voltage application:	100 %	-
Test certificate:	PTB no. EX-91.C2095X	L.C.I.E. 81.6089
Safety class:	Eex m II T6	Eex d II CT6
European standard in accordance with CENELEC:	EN 50014/50028	EN 50014/EN 50028
VDE:	0170/0171 Part 1/1.87 0170/0171 Part 9/7.88	0170/0171 Part 1/5.78 0170/0171 Part 5/5.78
Field of application:	Zone 1/2/11	Zone 1/2/11

Working condition: damper in position »OPEN«



Closing device via spring tension

Instructions for the subsequent incorporation of a direct-current adhesive magnet including solder fuse and limit switch in EX design

Scope of delivery:
Mounting plate with fitted direct-current adhesive magnet, EX solder fuse with release mechanism, adhesive disk with holder and EX limit switch for damper CLOSED and/or OPEN.

Procedure:
Remove the securing ring (fastened with three M6 nuts) including release mechanism form the existing damper. Attach new mounting plate with complete armaments and affix with previously removed nuts. Attach holder with adhesive disk to the bottom side of the hand lever. Lock the adhesive disk in the exact position and screw the holder onto the hand lever. For detailed information, see **page 47**.
Electrical connection according to circuit diagram.

Field of application for:

BK-326
BKS
BKS-2
BKL
BKV
BKU
BKU-N

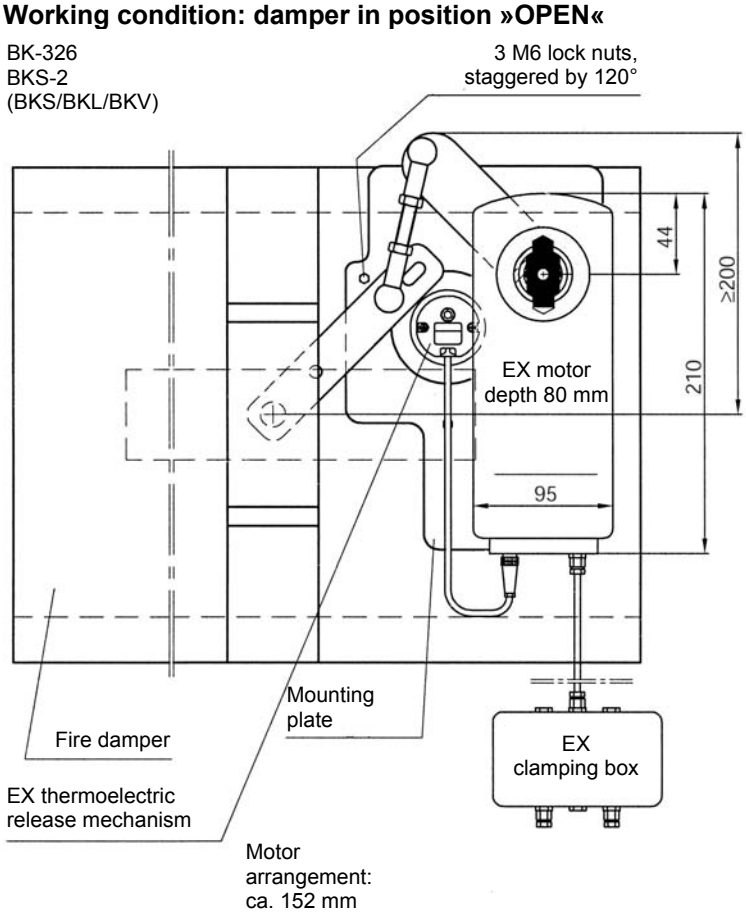
Damper

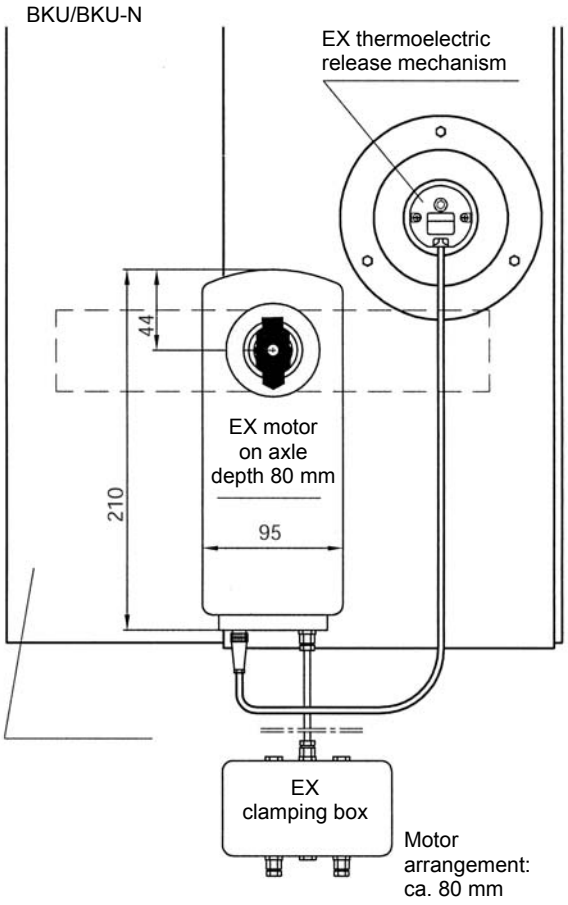
Accessory:
Electric motor in Ex design
Type: MX (24 V– or 230 V~)
including Ex solder fuse

Technical data — MX

Torque, powered:	15 Nm
Torque, spring return (F):	min. 15 Nm
Power supply/frequency:	24 to 230 VAC/DC per +15 %/-20 %, self-adaptive, frequency 50 to 60 Hz +/- 20 %
Power consumption:	Max. starting current, see table below (depending on voltage, I_{start} >> I_{rated}), max. 20 V blockade, ca. 5 - 12 W when heating
Protection class:	Protection class I (earthed)
Angle of rotation and position indication:	95°, including ca. 5° mechanical bias voltage range, position indication can be plugged onto the driving axle
Running time of the motor:	30 s to 90°
Running time of the spring return (F):	ca. 10 s for 90°
Activation:	3-point
EEX-i circuit:	Intrinsically circuit for the connection with EX thermoelectric release mechanism
Integrated auxiliary switches:	Two integrated auxiliary switches for signaling the end position, switching at a 5° and 85° rotation angle
Electrical connection:	Cable, ca. 1 m, cross section 0,5 mm^2 + PE, including EEx-e clamping box
Cable outside diameter:	~ Ø 9,6 mm and ~ Ø 6,2 mm
Heating:	Integral, adjusted heating for the usage of the drives, up to an ambient temperature of max. -40 °C
Housing material:	Aluminium die cast metal housing, stove enameled
Weight:	ca. 3,5 kg
Ambient temperature/density:	Storage temperature -40 to +70 °C, ambient temperature when working -40 to +40 °C at T6 and -40 to +50 °C at T5, density in accordance with EN 60335-1
Maintenance:	Maintenance-free regarding the function, relevant regional instructions for maintenance in accordance with the ATEX directive or works standard specifications are to be followed

Working condition: damper in position »OPEN«



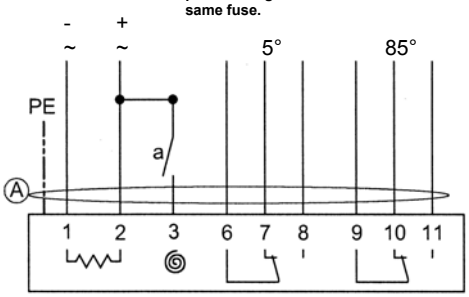


Open/close - 3-point spring return + EEx-i circuit

24…230 VAC/DC

Integrated, preset auxiliary switch, max. 24V/3A, 230V/0,5A starting at 5° and 85°. The voltage at the auxiliary switch shall be identical with the supply voltage and protected against short circuit with the same fuse.

Ex thermoelectric release directly connected with the motor.



Current consumption for dimensioning the supply

		Rated current related to the motor running time
Voltage	**Current**	**30 s**
230 V	I_{rated}	0,15 A
120 V	I_{rated}	0,3 A
48 V	I_{rated}	0,3 A
24 V	I_{rated}	0,52 A

The dimensioning of the supply is depends upon the chosen motor running time and the chosen supply voltage. The starting current is three to five times higher than the rated current ($I_{starting}$>>I_{rated}) with impulse of several »ms«. The rated input in the stopping place is independent from the running time max. 20 W. The heating capacity is according to requirements between 5 and 12 W. The heater is only connected, if the motor is not in operation.

Characteristic values EEx-i circuit

U_0 = 10,6 V
I_0 = 11 mA
P_0 = 30 mW
C_i = 0
L_i = 0

	IIC	IIB	IIA
C_0	830 nF	3,7 µF	4,5 µF
L_0	2 mH	5 mH	10 mH

Damper

Accessory:
Pneumatic cylinder (6 bar) including pneumatic solder fuse
Type: PZ

Technical data

Pneumatic solder fuse connection
22 = Control cable
10 = Air outlet
21 = Pressure line (6 bar)*
Connection by the installer

- the minimum pressure shall be maintained at 6 bar (-0 %/+5 %)

Dimensions of the tubing
Outside Ø 4 mm
Inside Ø 2,5 mm

Field of application for:

BK-326
BKS-2
BKL
BKV
BKU

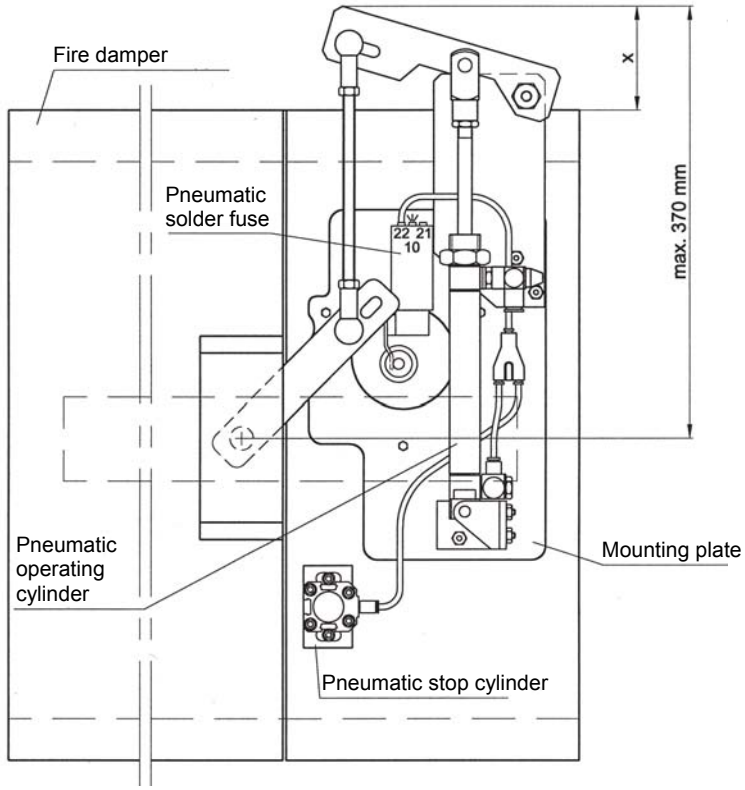
Optionally with 24 V- solenoid valve (to control the pneumatic cylinder via smoke detector)
Type: MV

Projection of the pneumatic cylinder (dimension x in mm) for fire dampers in open position, from the housing overturning in relation to side H.

H	x
201	239,5
252	214
318	181
357	161,5
400	140
449	115,5
503	88,5
565	57,5
634	23
711	Without projection
797	

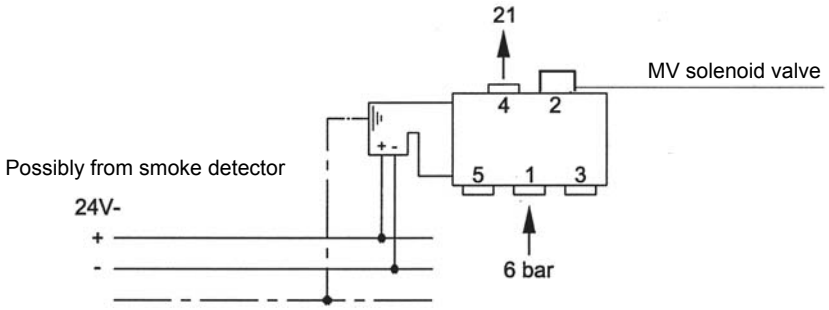
Closing device via spring tension

Working condition:
Damper in position »OPEN«
(6 bar applied)



See page 47 for detailed information on putting the electrical limit switch into operation and **see page 53** for Ex-design.

Note: The MV solenoid valve is required when connecting via smoke detector (e.g. SM-O).



Damper

Accessories:

Alternating current lift magnet (230 V~) including limit switch
Type: HW

Direct current lift magnet (24 V-) including limit switch
Type: HGH

Technical data

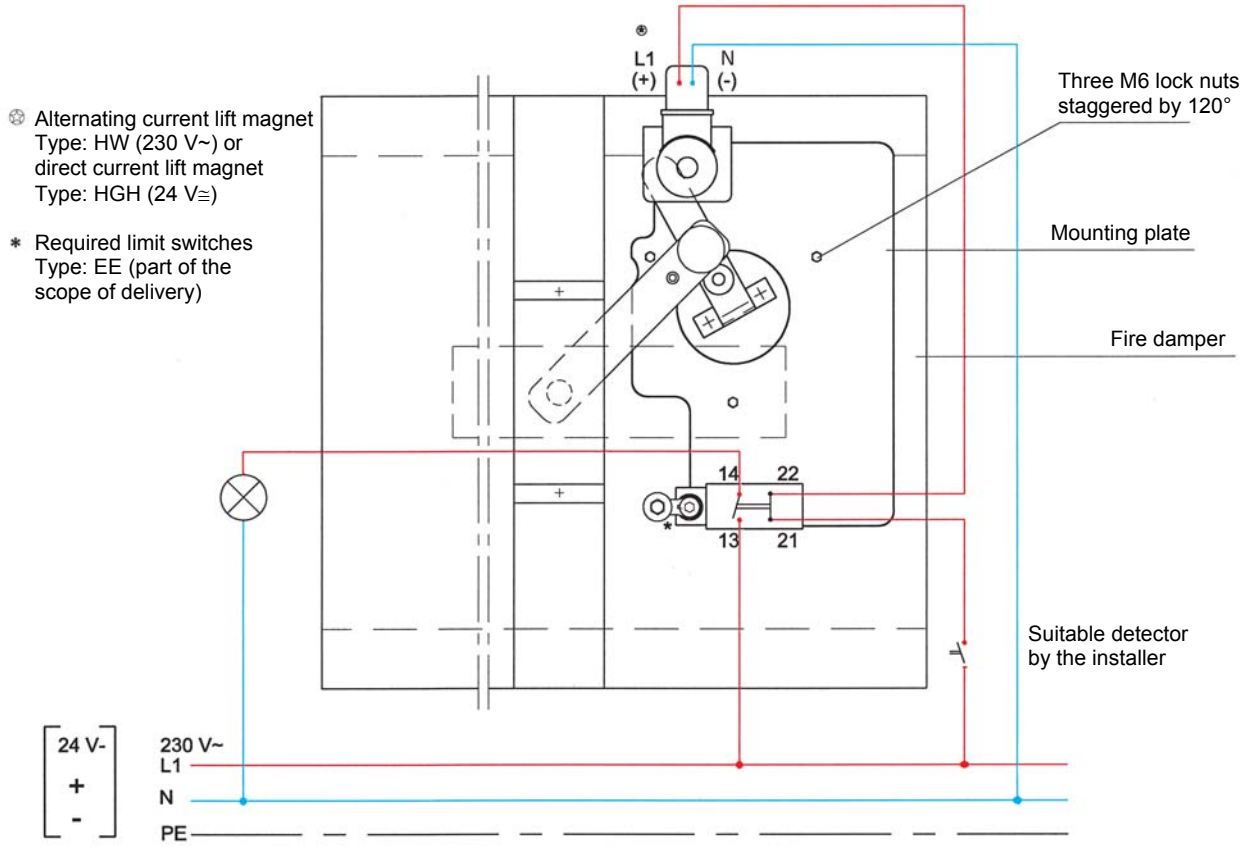
Type:	HW	HGH
Terminal voltage:	230 V-	24 V-
Wattage:	36 W	36 W
Duration of voltage application:	25 % ED	25 % ED
Type of safety:	IP 40	IP 40
Lift:	8 mm	8 mm
Spring tension:	36 N	36 N

Field of application for:

BK-326
BKS-2
BKL
BKV
BKU

Function based on the principle of working current. No lift magnets can be used for smoke-signaling installations according to the VDS rules.

Working condition:
Damper in position »OPEN«



Instructions for the subsequent incorporation of a lift magnet including limit switch

Scope of delivery: Mounting plate with mounted lift magnet and limit switch with stop pin.

Procedure: Remove the securing ring (fastened with three M6 nuts) from the existing damper. Attach the new mounting plate with complete armaments and affix with previously removed nuts. Attach the holder with adhesive disk to the bottom side of the hand lever. Bring the washer of the lift magnet into contact with the release lever and make adjustments, so that it can be pressed until release of the hand lever. The electrical connection shall be in accordance with the diagram.

See page 47 for detailed information on putting the limit switches into operation.

Damper

Design data

Design data for:
BK-326-K90/K30
BKS-K90/K90
BKL-K90/K90
BKV-K90/K90
BKU-K90/K90
BKU-NW-K90/K30

H \ B	201	252	318	357	400	449	503	565	634	711	797	894	1003	1125	1262	1416	1500	
201	0,016	0,021	0,028	0,032	0,036	0,041	0,047	0,053	0,060	0,068	0,076	0,086	0,097	0,110	0,123	0,139	0,147	SE
	1,200	1,090	1,020	0,960	0,900	0,810	0,750	0,700	0,660	0,600	0,560	0,530	0,500	0,480	0,460	0,420	0,400	ζ
	0,040	0,056	0,064	0,072	0,080	0,090	0,101	0,113	0,127	0,142	0,160	0,179	0,201	0,226	0,253	0,284	0,301	SK
252	0,024	0,032	0,042	0,048	0,055	0,062	0,070	0,080	0,090	0,102	0,115	0,130	0,146	0,165	0,186	0,209	0,222	SE
	1,070	0,960	0,800	0,740	0,670	0,650	0,600	0,560	0,540	0,490	0,460	0,430	0,400	0,380	0,360	0,330	0,320	ζ
	0,056	0,063	0,080	0,090	0,100	0,113	0,126	0,142	0,159	0,179	0,200	0,225	0,252	0,283	0,318	0,356	0,378	SK
318	0,035	0,046	0,061	0,069	0,078	0,089	0,101	0,114	0,129	0,146	0,165	0,186	0,210	0,237	0,266	0,300	0,318	SE
	0,890	0,760	0,650	0,600	0,580	0,540	0,490	0,460	0,420	0,400	0,400	0,380	0,330	0,300	0,290	0,260	0,250	ζ
	0,064	0,080	0,101	0,113	0,127	0,142	0,160	0,179	0,201	0,226	0,253	0,284	0,319	0,357	0,401	0,450	0,477	SK
357	0,041	0,054	0,071	0,081	0,093	0,105	0,119	0,135	0,153	0,172	0,195	0,219	0,247	0,279	0,314	0,354	0,375	SE
	0,810	0,700	0,600	0,560	0,510	0,490	0,440	0,410	0,380	0,360	0,330	0,310	0,300	0,270	0,260	0,240	0,220	ζ
	0,072	0,090	0,113	0,127	0,142	0,160	0,179	0,201	0,226	0,253	0,284	0,319	0,357	0,401	0,450	0,505	0,535	SK
400	0,048	0,064	0,083	0,095	0,108	0,123	0,139	0,158	0,178	0,201	0,227	0,256	0,289	0,326	0,367	0,413	0,438	SE
	0,740	0,630	0,530	0,510	0,480	0,420	0,400	0,370	0,350	0,330	0,310	0,290	0,260	0,250	0,240	0,220	0,210	ζ
	0,080	0,100	0,127	0,142	0,160	0,179	0,201	0,226	0,253	0,284	0,318	0,357	0,401	0,450	0,505	0,567	0,600	SK
449	0,056	0,074	0,097	0,111	0,126	0,143	0,162	0,183	0,207	0,234	0,264	0,298	0,336	0,379	0,427	0,480	0,510	SE
	0,670	0,570	0,500	0,460	0,430	0,400	0,380	0,340	0,330	0,300	0,280	0,260	0,250	0,230	0,210	0,190	0,190	ζ
	0,090	0,113	0,142	0,160	0,179	0,201	0,226	0,253	0,284	0,319	0,357	0,401	0,450	0,505	0,567	0,635	0,673	SK
503	0,065	0,085	0,112	0,128	0,145	0,165	0,187	0,212	0,239	0,270	0,305	0,344	0,388	0,437	0,493	0,555	0,588	SE
	0,620	0,540	0,470	0,420	0,380	0,370	0,360	0,320	0,300	0,280	0,260	0,250	0,220	0,210	0,210	0,190	0,180	ζ
	0,101	0,126	0,160	0,179	0,201	0,226	0,253	0,284	0,319	0,357	0,401	0,450	0,505	0,567	0,635	0,712	0,754	SK
565	0,075	0,099	0,129	0,147	0,167	0,190	0,215	0,244	0,276	0,312	0,352	0,397	0,448	0,505	0,568	0,640	0,679	SE
	0,510	0,500	0,420	0,400	0,370	0,340	0,310	0,300	0,280	0,260	0,250	0,220	0,200	0,200	0,190	0,180	0,160	ζ
	0,113	0,142	0,179	0,201	0,226	0,253	0,284	0,319	0,357	0,401	0,450	0,505	0,566	0,635	0,713	0,800	0,847	SK
634	0,086	0,113	0,148	0,169	0,192	0,218	0,247	0,200	0,317	0,358	0,404	0,456	0,514	0,579	0,653	0,735	0,780	SE
	0,530	0,460	0,390	0,350	0,320	0,280	0,270	0,260	0,250	0,230	0,220	0,200	0,190	0,190	0,180	0,160	0,150	ζ
	0,127	0,159	0,201	0,226	0,253	0,284	0,319	0,357	0,401	0,450	0,505	0,566	0,635	0,713	0,800	0,897	0,951	SK
711	0,098	0,130	0,170	0,194	0,220	0,250	0,283	0,321	0,363	0,410	0,463	0,522	0,588	0,663	0,747	0,841	0,892	SE
	0,510	0,430	0,360	0,330	0,300	0,290	0,260	0,250	0,230	0,220	0,200	0,190	0,180	0,160	0,150	0,150	0,140	ζ
	0,142	0,179	0,226	0,253	0,284	0,319	0,357	0,401	0,450	0,505	0,566	0,635	0,713	0,800	0,897	1,006	1,066	SK
797	0,112	0,148	0,194	0,221	0,251	0,285	0,323	0,366	0,414	0,468	0,528	0,595	0,671	0,756	0,852	0,959	1,018	SE
	0,460	0,440	0,340	0,300	0,290	0,270	0,240	0,230	0,220	0,200	0,190	0,160	0,150	0,150	0,150	0,150	0,120	ζ
	0,160	0,200	0,253	0,284	0,319	0,357	0,401	0,450	0,505	0,566	0,635	0,713	0,800	0,897	1,006	1,128	1,195	SK

Explanation

B	[mm]	Width
H	[mm]	Height
S_E	**[m^2]**	**Minimum cross section of flow** inside the damper
S_K	[m^2]	Cross section of the duct connection
qv	[m^3/h]	Volume flow rate
V_E	[m/s]	Air velocity
Δpt	[Pa]	Pressure difference (duct installation)
ξ		Resistance coefficient (duct installation)
L_{WA}	[dB(A)]	Weighted noise level
L_{WO}	[dB]	Acoustic power per octave
Ko	dB	Octave correction factor (See table for measured average)

Correction table for octave evaluation [dB/Oct]

F	63	125	250	500	1000	2000	4000	8000	[Hz]
Ko	-4	-2	0	-1	-4	-9	-15	-21	[dB]

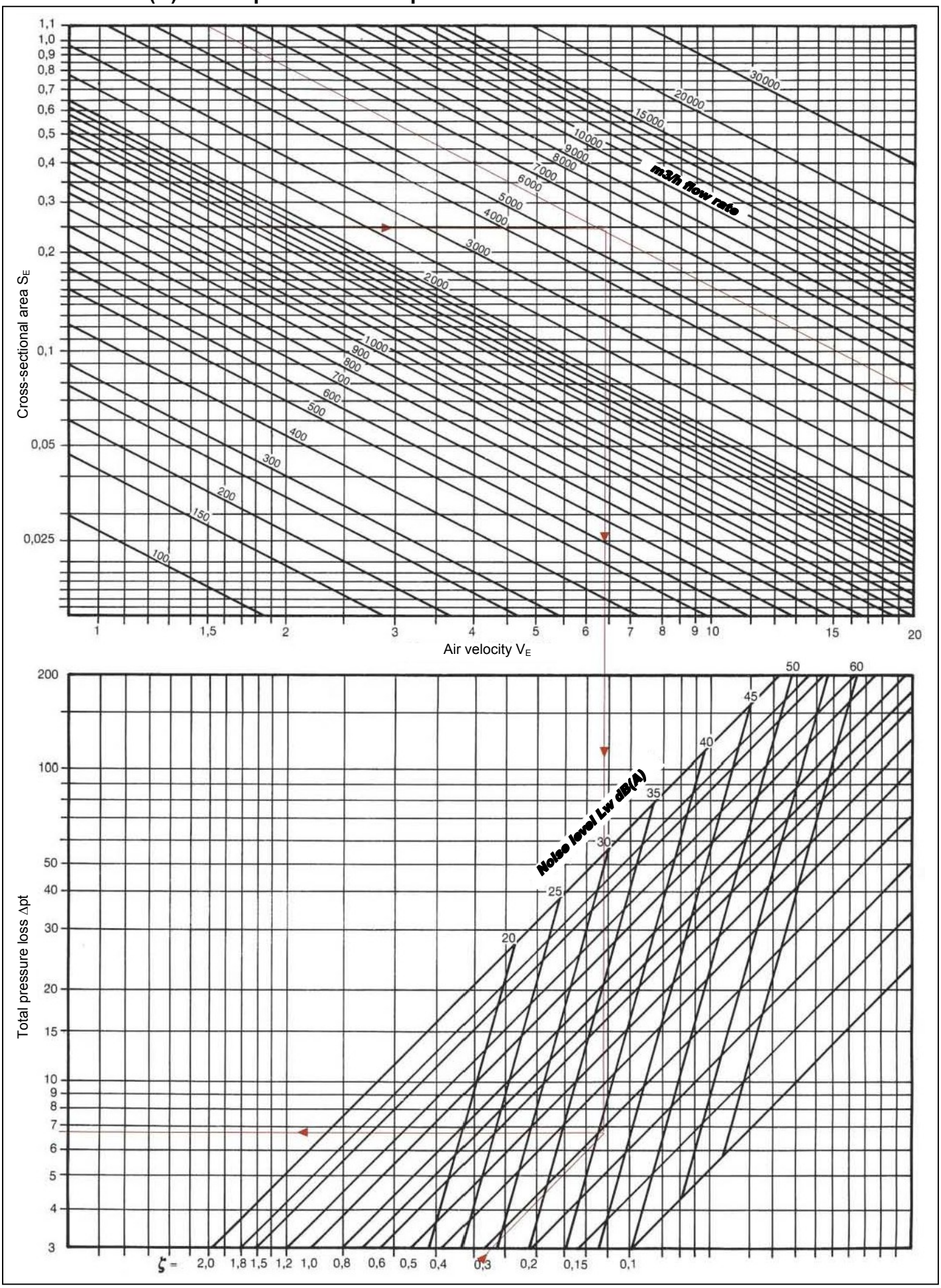
Calculation example for BK-326

Given: B = 894, H = 400, qv = 6000 m^3/h
Searched: Δpt, L_{WA}, L_{WO}
Solution: from the dimensional table S_E = 0,256 m^2
ξ = 0,29
from the diagram V_E = 6,4 m/s
Δpt = 6,8 Pa
L_{WA} = 41 dB(A)

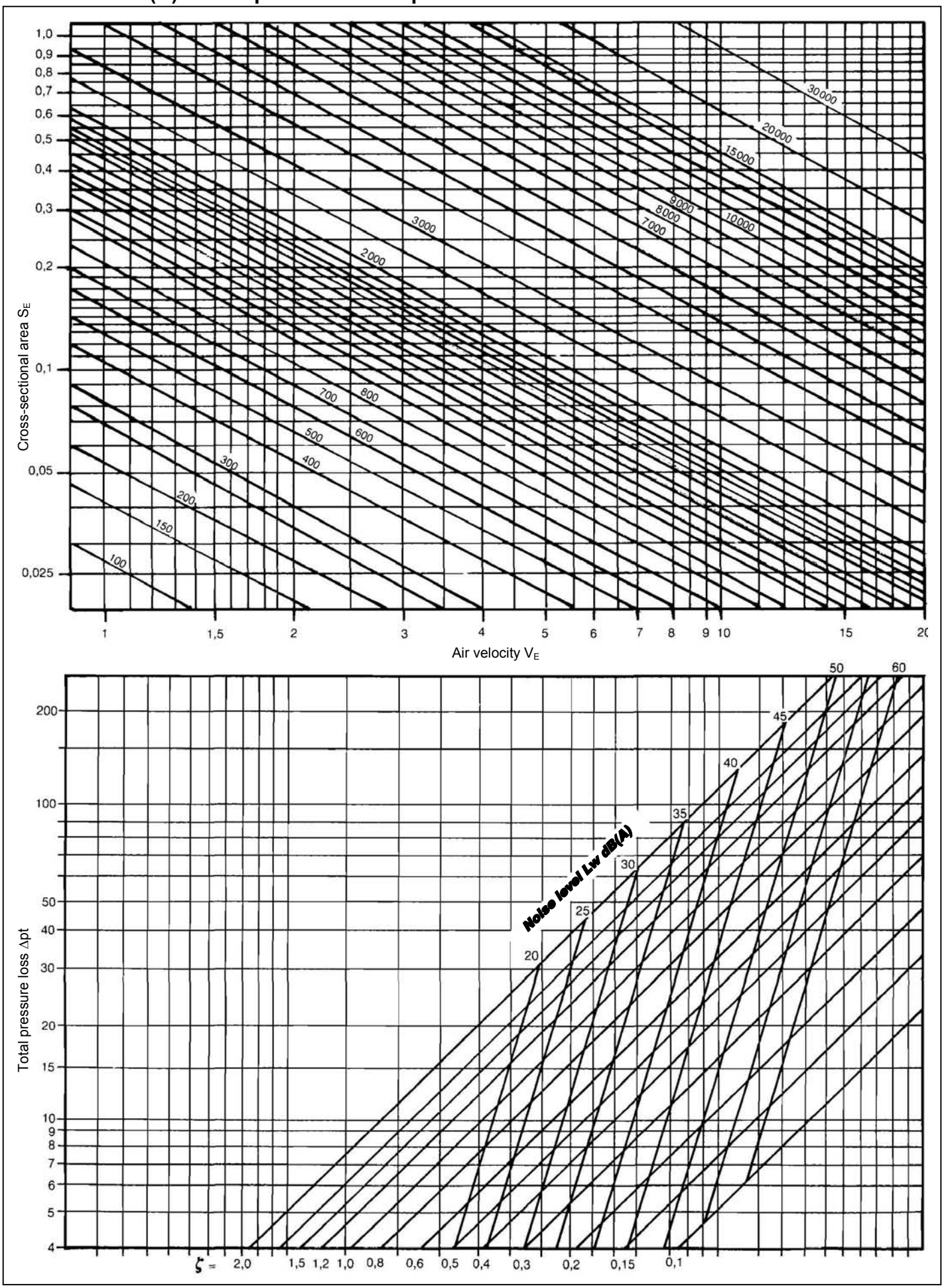
Accoustic power per octave $L_{WO} = L_{WA}$ - Ko

Oct. [Hz]	63	125	250	500	1000	2000	4000	8000
L_{WO} [dB]	37	39	41	40	37	33	26	20

Noise level dB(A) - Total pressure loss Δpt for BEK-326/BKS/BKL/BKV



Noise level dB(A) - Total pressure loss Δpt for BKU and BKU-NW



Damper

Design data

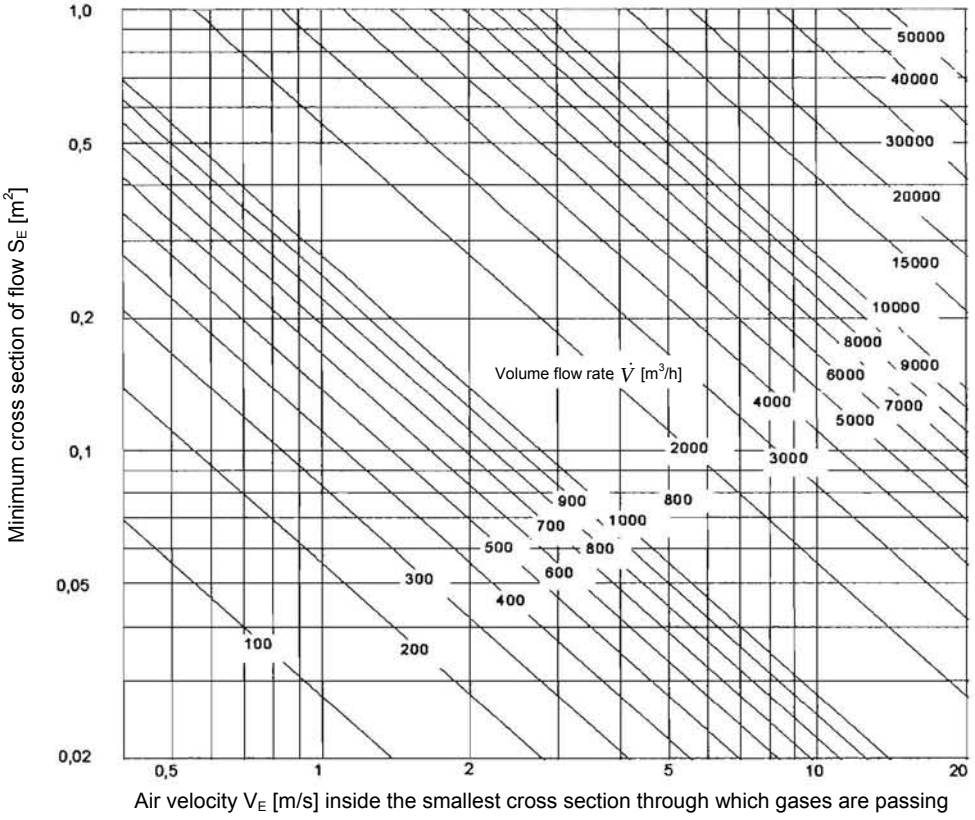
Design data for:
BKS-2-K90

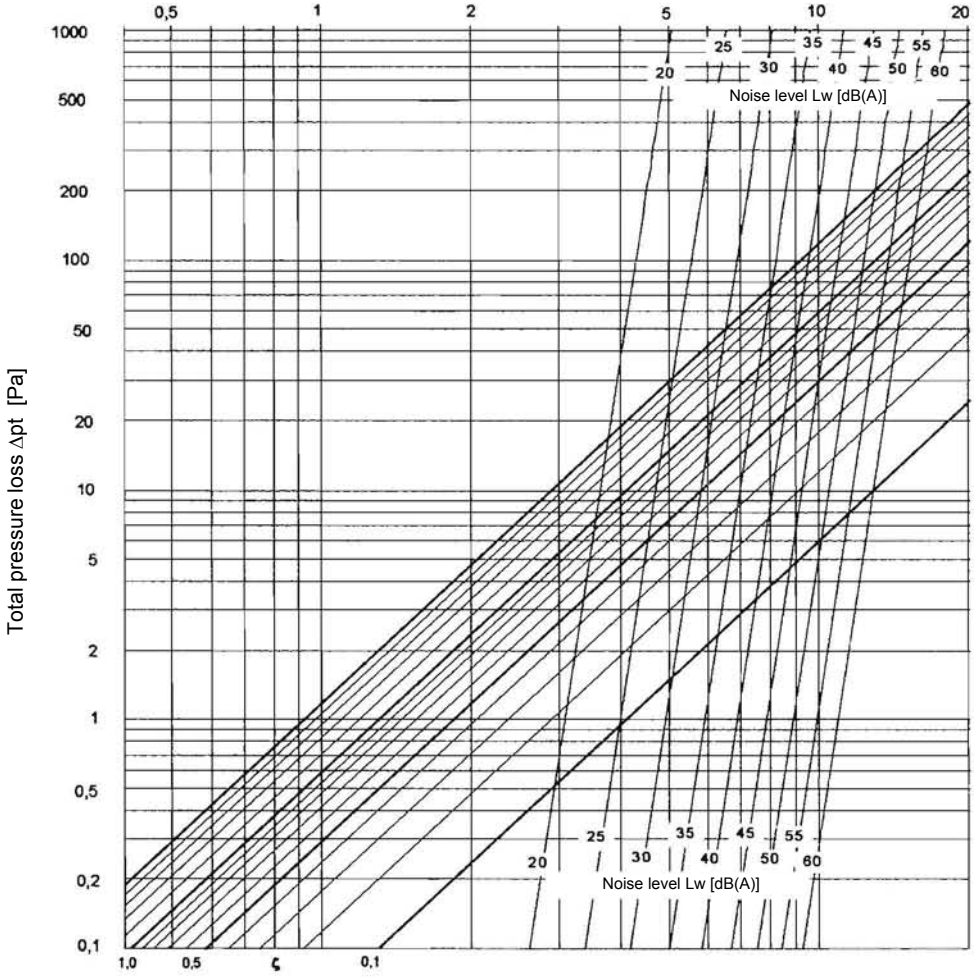
H \ B	201	252	318	357	400	449	503	565	634	711	797	894	1003	1125	1162	1416	1500	
201	0,030	0,040	0,053	0,061	0,070	0,080	0,091	0,103	0,117	0,132	0,150	0,169	0,191	0,216	0,223	0,274	0,291	SE
	0,840	0,713	0,609	0,564	0,524	0,487	0,454	0,423	0,394	0,368	0,344	0,321	0,300	0,281	0,275	0,246	0,238	ζ
	0,040	0,051	0,064	0,072	0,080	0,090	0,101	0,114	0,127	0,143	0,160	0,180	0,202	0,226	0,234	0,285	0,302	SK
252	0,038	0,050	0,067	0,077	0,088	0,100	0,114	0,129	0,147	0,166	0,188	0,212	0,240	0,270	0,280	0,344	0,365	SE
	0,741	0,629	0,537	0,498	0,463	0,430	0,401	0,373	0,348	0,324	0,303	0,283	0,265	0,247	0,243	0,217	0,210	ζ
	0,051	0,064	0,080	0,090	0,101	0,113	0,127	0,142	0,160	0,179	0,201	0,225	0,253	0,284	0,293	0,357	0,378	SK
318	0,047	0,064	0,085	0,097	0,111	0,126	0,143	0,163	0,185	0,210	0,237	0,268	0,302	0,341	0,353	0,434	0,460	SE
	0,651	0,553	0,472	0,437	0,406	0,378	0,352	0,328	0,305	0,285	0,266	0,249	0,233	0,217	0,213	0,190	0,184	ζ
	0,064	0,080	0,101	0,114	0,127	0,143	0,160	0,180	0,202	0,226	0,253	0,284	0,319	0,358	0,370	0,450	0,477	SK
357	0,053	0,071	0,095	0,109	0,124	0,142	0,161	0,183	0,208	0,235	0,266	0,301	0,340	0,383	0,396	0,487	0,517	SE
	0,611	0,519	0,443	0,410	0,381	0,354	0,330	0,307	0,286	0,267	0,250	0,233	0,218	0,204	0,200	0,179	0,173	ζ
	0,072	0,090	0,114	0,127	0,143	0,160	0,180	0,202	0,226	0,254	0,285	0,319	0,358	0,402	0,415	0,506	0,536	SK
400	0,060	0,080	0,106	0,122	0,139	0,159	0,180	0,205	0,233	0,264	0,298	0,337	0,380	0,429	0,444	0,546	0,579	SE
	0,573	0,487	0,415	0,385	0,358	0,333	0,310	0,288	0,269	0,251	0,234	0,219	0,205	0,191	0,188	0,168	0,162	ζ
	0,080	0,101	0,127	0,143	0,160	0,180	0,201	0,226	0,254	0,284	0,319	0,358	0,401	0,450	0,465	0,566	0,600	SK
449	0,067	0,090	0,119	0,137	0,156	0,178	0,202	0,230	0,261	0,296	0,335	0,378	0,427	0,482	0,498	0,612	0,650	SE
	0,538	0,457	0,390	0,361	0,336	0,312	0,291	0,271	0,252	0,235	0,220	0,205	0,192	0,180	0,176	0,157	0,152	ζ
	0,090	0,113	0,143	0,160	0,180	0,202	0,226	0,254	0,285	0,319	0,358	0,401	0,450	0,505	0,522	0,636	0,674	SK
503	0,075	0,101	0,134	0,153	0,175	0,200	0,227	0,258	0,293	0,331	0,375	0,424	0,478	0,540	0,558	0,686	0,728	SE
	0,505	0,429	0,366	0,339	0,315	0,293	0,273	0,254	0,237	0,221	0,206	0,193	0,180	0,169	0,165	0,148	0,143	ζ
	0,101	0,127	0,160	0,180	0,201	0,226	0,253	0,284	0,319	0,358	0,401	0,450	0,505	0,566	0,584	0,712	0,755	SK
565	0,084	0,113	0,150	0,172	0,197	0,224	0,255	0,290	0,329	0,372	0,421	0,476	0,537	0,606	0,627	0,771	0,818	SE
	0,473	0,402	0,343	0,318	0,295	0,275	0,256	0,238	0,222	0,207	0,194	0,181	0,169	0,158	0,155	0,138	0,134	ζ
	0,114	0,142	0,180	0,202	0,226	0,254	0,284	0,319	0,358	0,402	0,450	0,505	0,567	0,636	0,657	0,800	0,848	SK
634	0,094	0,127	0,169	0,193	0,221	0,252	0,286	0,325	0,369	0,418	0,472	0,534	0,603	0,680	0,704	0,865	0,918	SE
	0,444	0,377	0,322	0,298	0,277	0,258	0,240	0,223	0,208	0,194	0,182	0,170	0,159	0,148	0,145	0,130	0,126	ζ
	0,127	0,160	0,202	0,226	0,254	0,285	0,319	0,358	0,402	0,451	0,505	0,567	0,636	0,713	0,737	0,898	0,951	SK
711	0,106	0,142	0,189	0,217	0,247	0,282	0,321	0,365	0,414	0,469	0,530	0,599	0,676	0,763	0,789	0,970	1,030	SE
	0,416	0,354	0,302	0,280	0,260	0,242	0,225	0,210	0,195	0,182	0,170	0,159	0,149	0,139	0,137	0,122	0,118	ζ
	0,143	0,179	0,226	0,254	0,284	0,319	0,358	0,402	0,451	0,506	0,567	0,636	0,713	0,800	0,826	1,007	1,067	SK
797	0,119	0,159	0,212	0,243	0,277	0,316	0,359	0,409	0,464	0,525	0,594	0,671	0,758	0,855	0,885	1,087	1,154	SE
	0,391	0,332	0,283	0,263	0,244	0,227	0,211	0,197	0,183	0,171	0,160	0,149	0,140	0,131	0,128	0,114	0,111	ζ
	0,160	0,201	0,253	0,285	0,319	0,358	0,401	0,450	0,505	0,567	0,635	0,713	0,799	0,897	0,926	1,129	1,196	SK

Explanation

B	[mm]	Width
H	[mm]	Height
S_E	**[m^2]**	**Minimum cross section of flow** inside the damper
S_K	[m^2]	Cross section of the duct connection
qv	[m^3/h]	Volume flow rate
V_E	[m/s]	Air velocity
Δpt	[Pa]	Pressure difference (duct installation)
ζ		Resistance coefficient (duct installation)
L_{WA}	[dB(A)]	Weighted noise level

Noise level dB(A) - Total pressure loss Δpt for BKS-2





Tender Text

Item	Description	Unit Piece	Unit price EUR	Total EUR
	Accessory: **Type:** Electrical limit switch ..... EE Ditto, explosion-proof, connection calbe 2 m long ..... EX Position indicator for supplement floors .....SZ Fusible link, 72 °C or 90 °C activation temperature (extra charge for special temperatures) .....EL Pneumatic cylinder (6 bar) including pneumatic solder fuse.....PZ 24 V- solenoid valve (to control the pneumatic cylinder via smoke detector).....MV Direct current adhesive magnet including thermoelectric release mechanism (additional limit switch for indicating device required).....HG Direct current adhesive magnet, explosion-proof, including EX solder fuse (additional limit switch for indicating device required)..... HX Alternating current lift magnet including limit switch..... HW Direct current lift magnet including limit switch ..... HGH Electric motor, 230 V~, connecting possibility 230 V~, including thermoelectric release mechanism ..... MGT 230 Electric motor, 24 V-, connecting possibility 24 V-, including thermoelectric release mechanism ..... MGT 24 Optical smoke detector .....SM-O Optionally with maintenance unit (cable length ca. 1 m)..... SW Round inlet spigot.....RØ Polyurethane enamel coating for zinc-plated fire dampers .....PUR Internal impregnation for protection against aggressive media, constant temperature stress 400 °C (only for BKU)..... SR Canvas connection, 160 mm, on both sides with 30 mm duct connecting profile ..... SS PROMATECT frame for walls (150 mm wide, 40 mm thick)..... PR PROMATECT frame for floors (100 mm wide, 40 mm thick) ..... DR Zinc-plated wall frame profile with intumescent material (profile 70/70/1,5 mm - intumescent material 50 x 10)..... WP Angle iron to suspend the BKU under the floor..... WE Intumescent material, 50 x 10 mm ..... PX Fire safety dowel M 8, 10 and 12 ..... KMU-L(F) Suspension plate including dowels, F = 850 N ..... P-K 6 L Suspension plate including dowels, F = 1500 N ..... PQ-K 6 L Collar drill for dowel Ø 6 mm (for M 8 suspension).....SDS-2 Collar drill for dowel Ø 6 mm (for M 10 and M 12 suspension).....SDS-DUO Composing tool from size 8 up to size 12 ..... SMU-H PROMATECT boards for duct covering, cut according to your dimensions, 20 mm thick, per m^2 ..... PP			

Damper
BKI-K90/K30

Test certificate Z-41.3-646

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

Ordering example:

BKI-K90/SFR1.90T/B=1000xH=1000xH=1000xL=250

- Standard damper length; special dimensions are available on request
- Dimensions B x H (width x height) in mm, side H = operating side
- **Motor type:** (see page 52)
  SFR1.90T = 24 V AC/DC (including thermoelectric release mechanism)
  SFR2.90T = 230 V AC
  SFR1.90T SLC (2-wire technique) = 24 V AC
  (two limit switches inside the motor)
- **Resistance class** K90/K30
- Fire damper as multi-blade damper

Essential advantages

- The BKI-K90 damper is suitable for the installation into walls of brickwork, concrete, gas concrete and gypsum, into light partition walls and in light partitions, in front of K90 or K30 walls, for which a F90 or F30 fire resistance class is required.
- In principal including spring-return motor and thermoelectric release mechanism.
- Two limit switches (for the positions »open« and »closed«) inside the motor.
- First fire damper as multi-blade damper, especially suitable a flush installation with the wall - standard depth 250 mm.
- Maximum dimensions: B (width) ≤ 1000 mm x H ≤ 1000 mm.
- Standard release beginning at 72 °C (on request, also available beginning at 90 °C).
- Any airflow direction
- Fitting cover grille of galvanized steel (mesh size ≤ 20 mm)
- Housing and blades completely made of calcium silicate
- Housing resistant to deformation up to a temperature of 400 °C
- Internal impregnation on request also unaffected by changes of temperatures up to 400 °C (SR impregnation)
- A chemical resistance list is available on request.
- No corrosion

Note:
Please state special requests, e.g. one-sided (operating side BS or other side MS) or two-sided duct connecting profile separately, when ordering.

Damper
BKI-K90/K30

Test certificate Z-41.3-646

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

Installation into solid walls

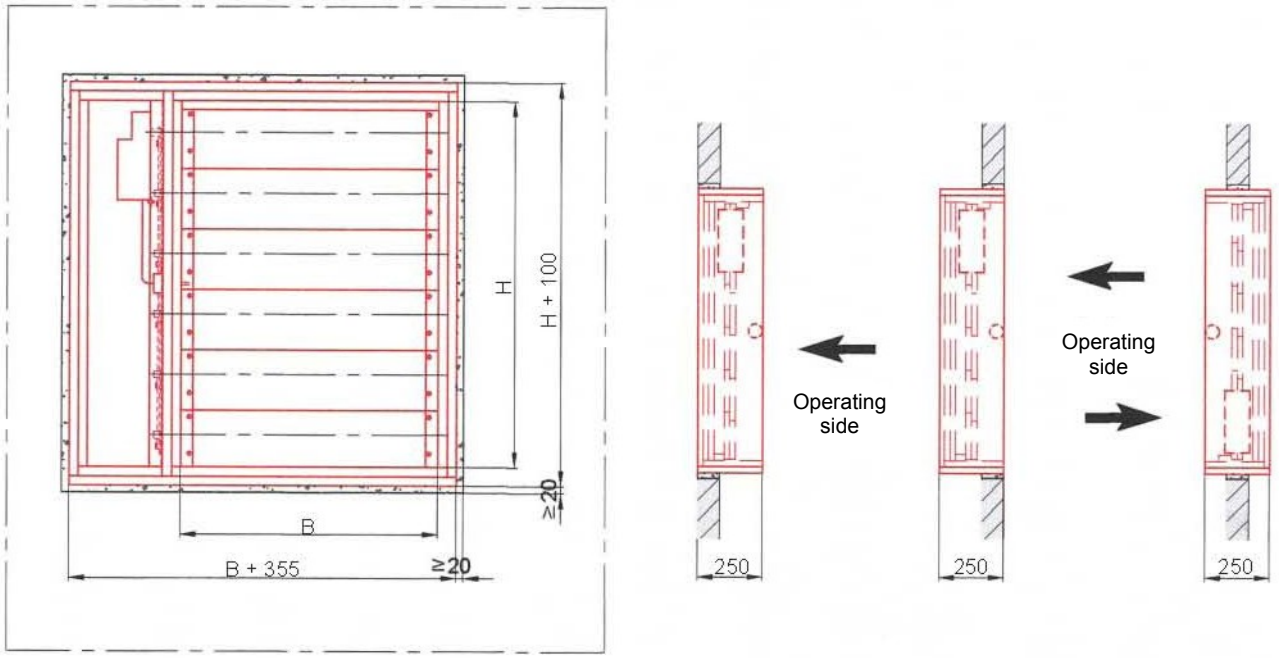
Dimensions

Width B (mm) ≤ 200 up to ≤ 1000

Clear height H (mm)	Number of blades
340	2
505	3
670	4
835	5
1000	6

Installation provisions

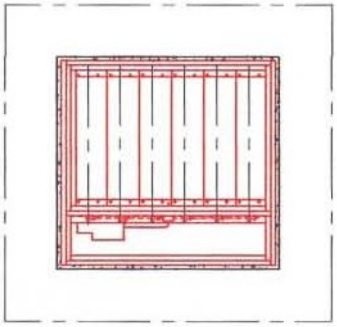
The dampers may also be installed with a vertical axis of rotation into solid walls; this is also applicable to shaft walls and the walls of ventilation ducts.
Due to the construction (housing of fireproofing boards), they are also allowed to be arranged directly next to each other.



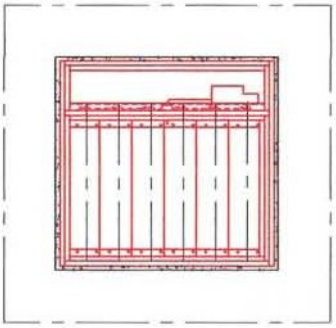
The surrounding gap (at least 20 mm) shall be filled with group II or III mortar in accordance with DIN 1053.

Vertical axis

Operation at the bottom



Operation at the top



Damper

BKI-K90/K30

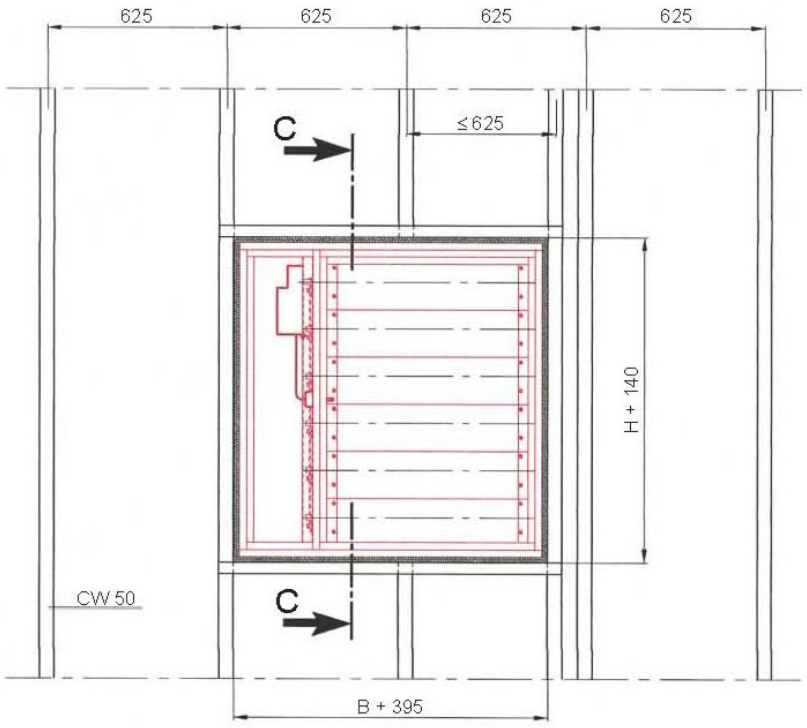
Test certificate Z-41.3-646

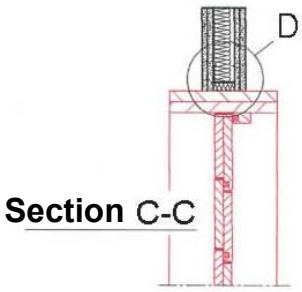
Resistance class K90/K30 in accordance with DIN 4102-6

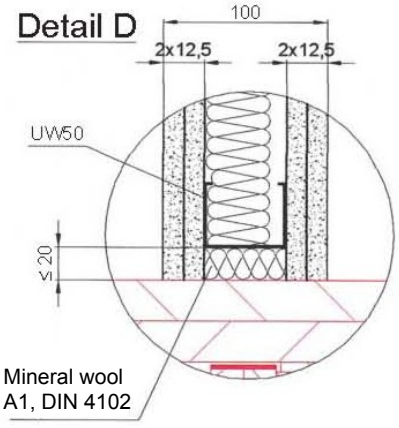
Installation into walls with metal framework

Please note:

If ventilation ducts shall be connected on one or two sides, then flexible spigots of at least standard flammable materials (class B2 and DIN 4102) and at least 10 cm long (when installed) shall be installed between the damper and the ventilation duct of non-combustible materials.







Damper
BKI-K90/K30

Test certificate Z-41.3-646

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

Installation in front of a concrete wall

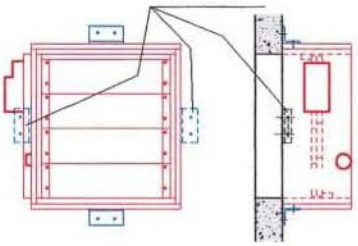
Installation provisions

The BKI-K90 may alternatively also be mounted by means of threaded rods in front of solid walls (the statics of the wall shall be considered).

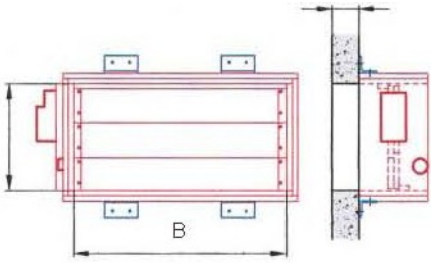
Please note:

If ventilation ducts shall be connected on one or two sides, then flexible spigots of at least standard flammable materials (class B2 and DIN 4102) and at least 10 cm long (when installed) shall be installed between the damper and the ventilation duct of non-combustible materials.

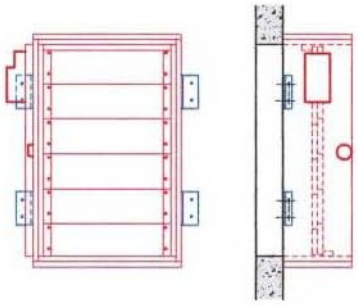
Installation in front of a concrete wall
(Number and arrangement of fastening angles)



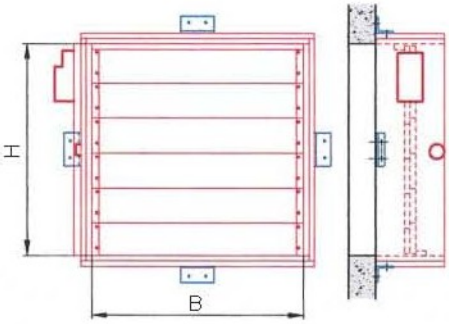
H ≥ 340 up to ≤ 670
B ≥ 200 up to ≤ 600



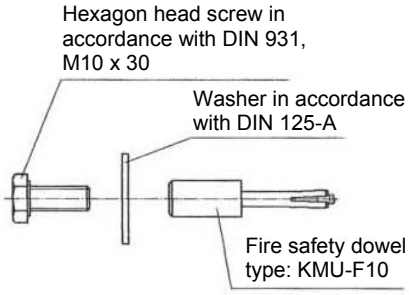
H ≥ 340 up to ≤ 505
B ≥ 700 up to ≤ 1000



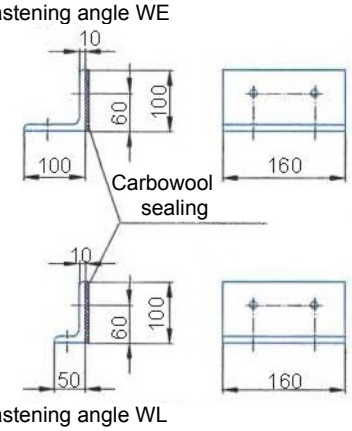
H ≥ 835 up to ≤ 1000
B ≥ 200 up to ≤ 600



H ≥ 670 up to ≤ 1000
B ≥ 700 up to ≤ 1000



Fastening angle WE



Fastening angle WL

Damper
BKI-K90/K30

Test certificate Z-41.3-646

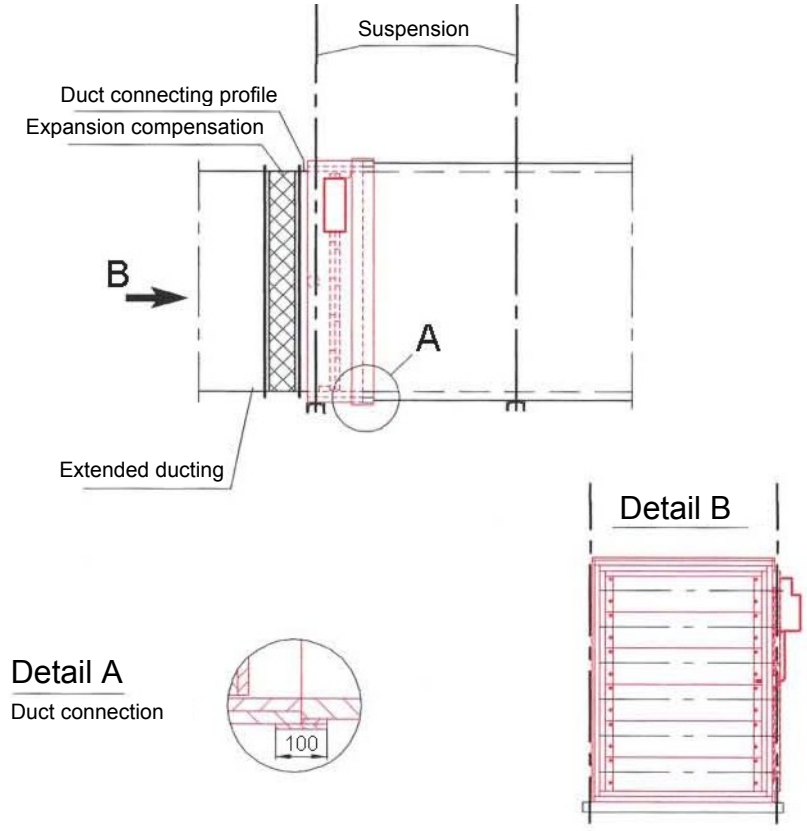
Connection with L90 ducts

As an overflow opening with one- or two-sided covering

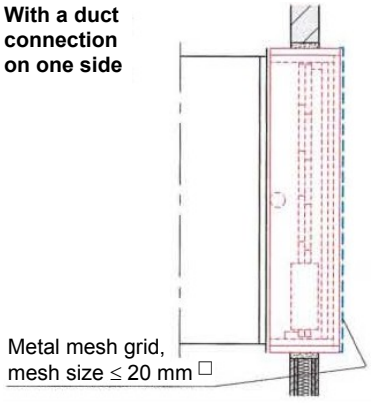
Please note:

If ventilation ducts shall be connected on one or two sides, then flexible spigots of at least standard flammable materials (class B2 and DIN 4102) and at least 10 cm long (when installed) shall be installed between the damper and the ventilation duct of non-combustible materials.

Connection with a L90 duct



With a duct connection on one side



Tender Text

Item	Description	Unit Piece	Unit price EUR	Total EUR
	Fire damper with test certificate Z-41.3-646 as multi-blade damper for a K90/K30 fire resistance class and the connection to non-combustible ducts on both sides or with mesh-metal grids. For the installation into solid walls of brickwork according to DIN 1053, concrete walls or light partition walls. Directly in front of or outside of walls. Thermal release via fusible link 72 °C. Housing (50 mm thick), blades (40 mm thick) and stops of asbestos-free fireproofing boards, stainless steel blade axes supported in bronze sleeves. Control via spring-return motor (24/230 V or 24 V two-wire technique) Manufacturer: **Strulik** Type: **BKI-K90** Dimensions: B: _____ mm H: _____ mm L: _____ mm **Accessories:**			

Damper
BKI-K90/K30

Test certificate Z-41.3-646

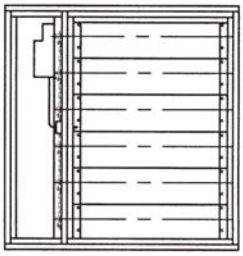
Resistance class K90/K30 in accordance with DIN 4102-6

Technical data and weight

BKI-K90 – Standard design
including back wall and covering

Weight in **kg**

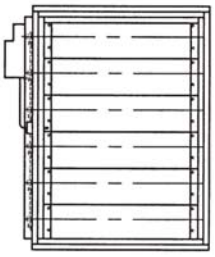
H \ B	200	300	400	500	600	700	800	900	1000
340	35	38	41	44,5	48	51,5	54,5	58	61,5
505	44	48	51,5	55,5	59,5	63	67	71,5	75,5
670	54	58,5	63	67,5	72	76,5	81	85,5	90
835	64	69	74	79	84	89	94,5	99,5	108,5
1000	73,5	79	84,5	90	95,5	101	107	113	123



BKI-K90 (A/V) – Special design
without back wall and covering, for the direct attachment to walls (A) with angles for fastening type WE or in front of walls in connection with L90 ducts (V).

Weight in **kg**

H \ B	200	300	400	500	600	700	800	900	1000
340	22,5	25,5	28,5	32	35,5	39	42	45,5	49
505	28	32	35,5	39,5	43,5	47	51	55,5	59,5
670	34	38,5	43	47,5	52	56,5	61	65,5	70
835	41	46	51	56	61	66	71,5	76,5	85,5
1000	46,5	52	57,5	63	68,5	74	80	86	96



Technical data of the spring-return motor

SFR 2.90T (230 V AC)
SFR 1.90T (24 V AC/DC)
SFR 1.90T SLC (two-wire technique)

See page 52

For installation instructions, maintenance and repair please see our operating manual.

Damper
BKI-K90/K30

Test certificate Z-41.3-646

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

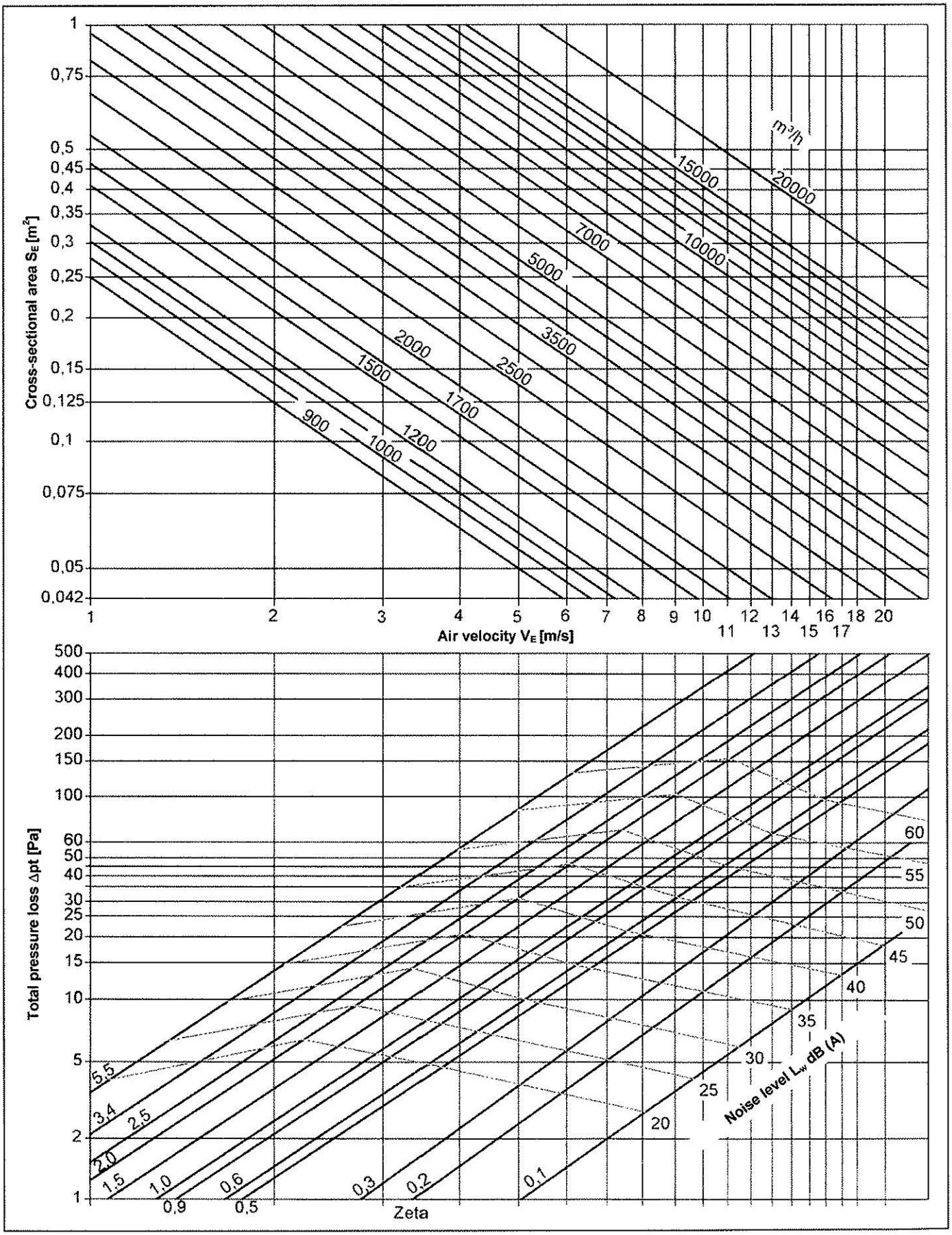
Design data

H \ B	200	300	400	500	600	700	800	900	1000	
340	0,042	0,063	0,084	0,105	0,126	0,147	0,168	0,189	0,21	SE
	0,53	0,54	0,58	0,61	0,62	0,63	0,64	0,64	0,65	ζ
	0,068	0,102	0,136	0,17	0,204	0,238	0,272	0,306	0,34	SK
505	0,067	0,1005	0,134	0,1675	0,201	0,2345	0,268	0,3015	0,335	SE
	0,55	0,59	0,61	0,87	1,1	1,48	1,81	2,2	2,61	ζ
	0,101	0,1515	0,202	0,2525	0,303	0,3535	0,404	0,4545	0,505	SK
670	0,092	0,138	0,184	0,23	0,276	0,322	0,368	0,414	0,46	SE
	0,56	0,88	1,2	1,52	1,86	2,24	2,61	3,05	3,42	ζ
	0,134	0,201	0,268	0,335	0,402	0,469	0,536	0,603	0,67	SK
835	0,117	0,1755	0,234	0,2925	0,351	0,4095	0,468	0,5265	0,585	SE
	0,56	1,02	1,49	2	2,47	3,12	3,74	4,31	4,81	ζ
	0,167	0,2505	0,334	0,4175	0,501	0,5845	0,668	0,7515	0,835	SK
1000	0,142	0,213	0,284	0,355	0,426	0,497	0,568	0,639	0,71	SE
	0,57	1,05	1,92	2,74	3,33	3,91	4,76	5,58	5,92	ζ
	0,2	0,3	0,4	0,5	0,6	0,7	0.8	0.9	1	SK

Legend

B [mm] - Width
H [mm] - Height
SE [m^2] - Smallest cross-section of flow within the fire damper
SK [m^2] - Duct connecting cross-section
ζ - Resistance coefficient (installation of duct)
qv [m^3/h] - Volume flow
V_E [m/s] - Air velocity
Δpt [Pa] - Total pressure loss
Lwa [dB (A)] - Noise level inside the duct

Noise level dB (A) – total pressure loss Δpt for type BKI-K90



RMS-2 smoke detection system

- With test certificate Z-78.6-54
- Approved for all fire dampers and smoke control dampers having a test certificate
- Independent from the manufacturer

The RMS smoke detection system consists of the ST-P-DA smoke detector, the housing with air collecting pipe and the SM controller.

- The SM controller is not required if the RMS smoke detector is directly connected to the local power supply.
- The SM controller is not required if 24 V AC and DC are used.
- In case of a guaranteed power supply (bus technique, two-wire technique) the RMS smoke detector can be controlled by the SPLM, SBKM2 or SPMa-1SdR module.

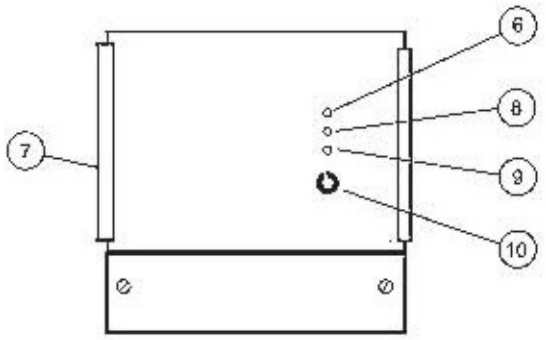
Features

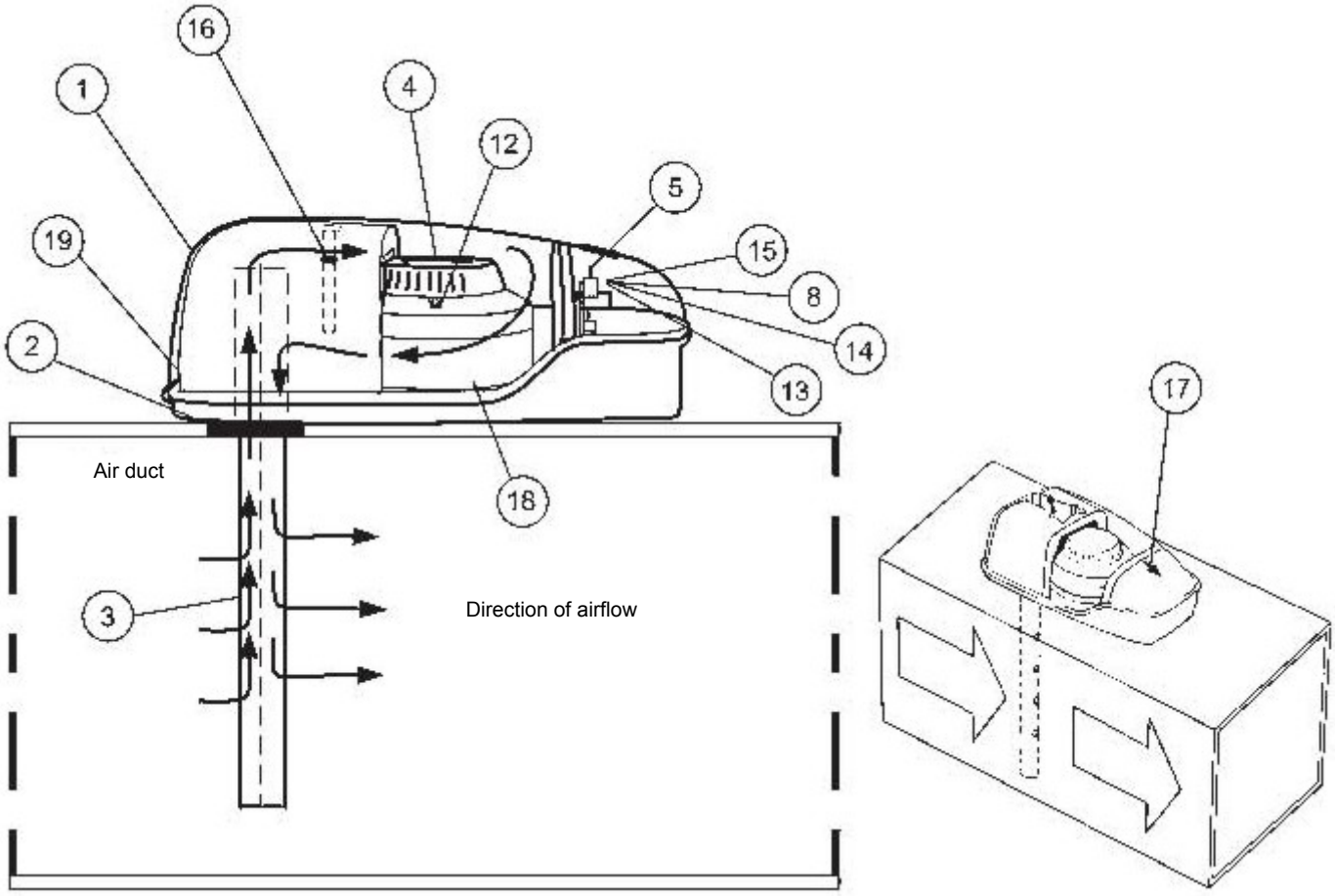
The smoke detection system shall bring the fire damper or smoke control damper including the controller of the ventilator in the following cases into the fire position »closed«:

- In case of smoke detection
- In case of a missing smoke detector, short circuit and cable break
- The fire damper or smoke control damper remains closed in case the power supply returns and previous smoke detection
- If the test button in the smoke detection system has been pushed
- If the fouling factor of 100 % has been exceeded

Note: The smoke detection system returns to the operating condition in case the power supply fails without previous smoke detection.

RMS-2 smoke detection system





1 Housing
2 Sealing ring
3 Air collecting pipe
4 ST-P-DA optical smoke detector
5 TEST/RESET button
6 LED green = on
7 Housing of the SM controller
8 LED red = CLOSED (smoke alarm)
9 LED yellow = fault
10 Hand lever »Automatic/CLOSED«
12 Smoke detector two-colored LED green = fouling
red = smoke alarm
13 LED blinking yellow = missing airflow
14 LED yellow = system failure
15 LED green = in operation
blinking green = fouling message
16 Measuring pill to monitor the airflow
17 Direction of airflow arrow
18 STB-5 DA detector base
19 Interlock screw

RMS-2 smoke detection system

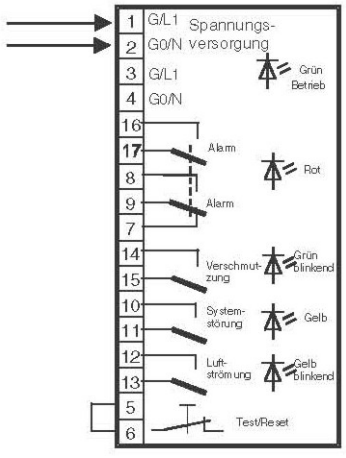
Technical data

- For fire dampers
- For smoke control dampers
- To switch off ventilators
- 230 V AC
- 24 V DC
- 24 V AC
- 24 V-SLC

Type of detector:	Scattered light (Tyndall effect)
Detector:	ST-P-DA
Power supply:	RMS-2-24 V .....24 V AC/DC +10 %/-15 % RMS-2-230 V .....230 V AC/DC +10 %/-15 % RMS-2-SLC .....24 V AC/DC via SLC bus
Power:	ca. 3 VA
Pilot relay:	Smoke alarm .....1 change-over contact 230 V AC/30 V DC, 5 A Smoke alarm .....1 closer 230 V AC/30 V DC, 5 A Fouling alarm.....1 closer 230 V AC/30 V DC, 2 A System failure alarm.....1 closer 230 V AC/30 V DC, 2 A Airflow alarm.....1 closer 230 V AC/30 V DC, 2 A
Operating temperature:	-10 °C to +50 °C
Maximum humidity:	99 % relative humidity, non-condensing
Measuring range of airflow controller:	1,4 to 20 m/s
Differential gap:	0,4 m/s
Type of safety:	IP 54

The smoke detector is constantly tested for fouling in order to avoid false alarms.
If external influences cause a permanent fouling of the detecting section of more than 70 %, then the green LED will blink (15).
The green LED inside the detector appears (12). The relay contact (14 and 15) opens.

RMS.2 terminal plan



Contact in dead condition (alarm or failure)

Operation:	green LED appears
Smoke alarm:	red LED appears
Limit fouling:	green LED flashes
System failure:	yellow and red LED appear
Limit airflow:	yellow LED flashes
Adapter housing:	ABS
Air-collecting pipe:	Aluminium, standard length 600 mm, minimum 165 mm diameter of bore 35 mm

Accessories:

Air-collecting pipe:	length 0,6 m
Mounting console:	VB-UG (for insulated/round ducts)
Waterproof housing:	UG-SH (outdoors), IP 65 (cold environments and the like)

RMS-2 smoke detection system

SM controller

Technical data

Power supply:	230 V, 50 - 60 Hz +10 %/-15 %
Power input:	max. 30 VA
Primary protection:	F1 160 mA delayed action F2 125 mA delayed action
Power output for:	Adhesive magnet..... 24 V DC max. 8 W Motor ..... 24 V DC max. 8 VA (alternative to adhesive magnet) Motor ..... 24 V AC max. 12 VA (alternative to 24 V DC supply)
Contact load:	Failure..... 2 A, 230 V Ventilator ..... 5 A, 230 V
Operating temperature:	-10 °C to +50 °C
Maximum humidity:	99 % relative humidity, non-condensing
Type of safety:	IP 65

Terminal plan

2	3	4	5		6	7	8	9		10	11		12		13		14	15	16				17	18	19	20	21	22

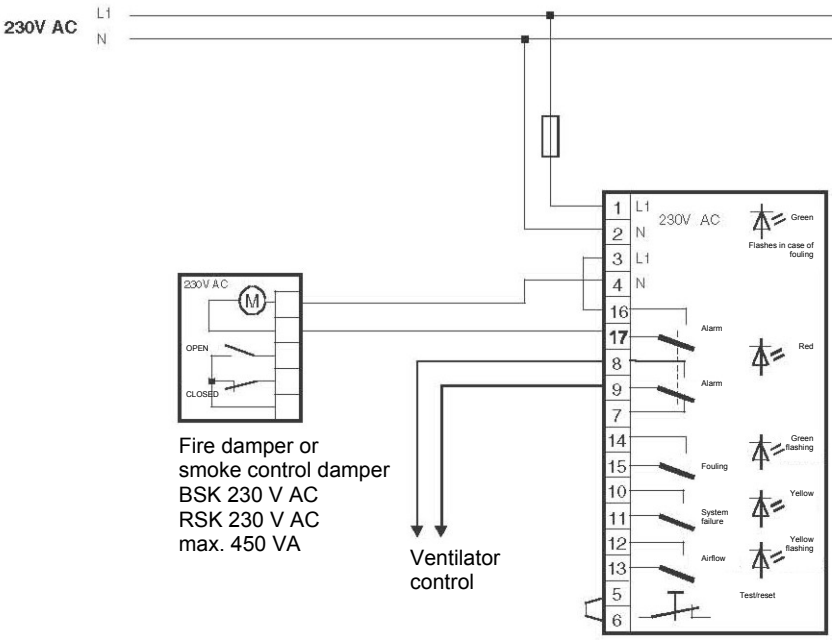
RMS-2 smoke detection system

RMS-2 smoke detector

Control for
fire dampers and smoke control dampers
without SM controller

Wiring diagram for

- Fire dampers
- Smoke control dampers
- Smoke detectors
- 230 V AC



Fire damper or
smoke control damper
BSK 230 V AC
RSK 230 V AC
max. 450 VA

Ventilator
control

RMS-2 smoke detector
Contact load max.
230 V AC/5 A

All 230 V wires shall be provided with a traction relief
(e.g. by means of suitable cable bushings.
The 230 V power supply shall be disconnectible for maintenance jobs.

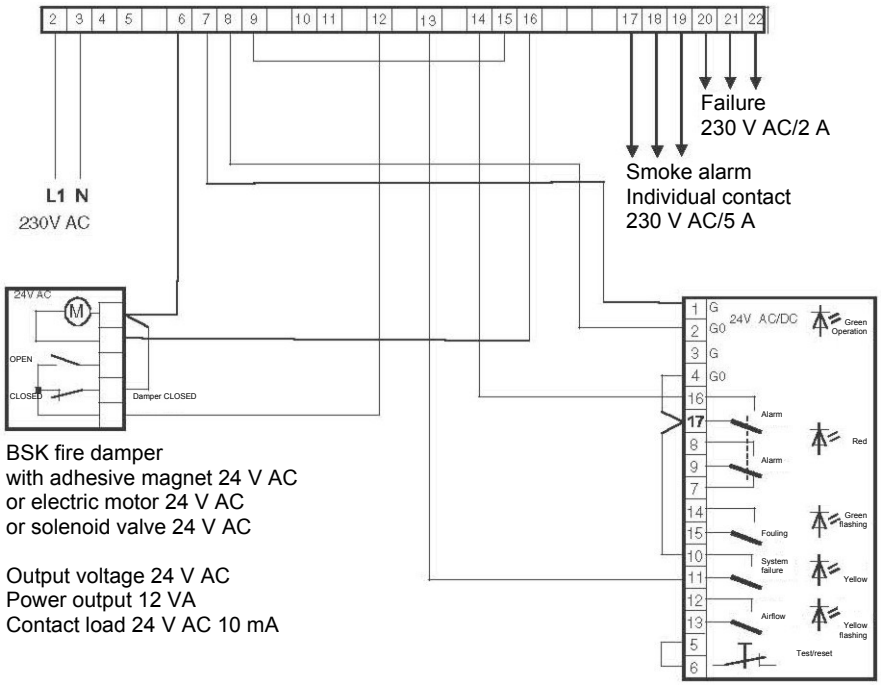
RMS-2 smoke detection system

Wiring diagrams

Wiring diagram for

- Fire dampers
- SM
- Smoke detectors
- 230 V AC

Wiring diagram



BSK fire damper
with adhesive magnet 24 V AC
or electric motor 24 V AC
or solenoid valve 24 V AC

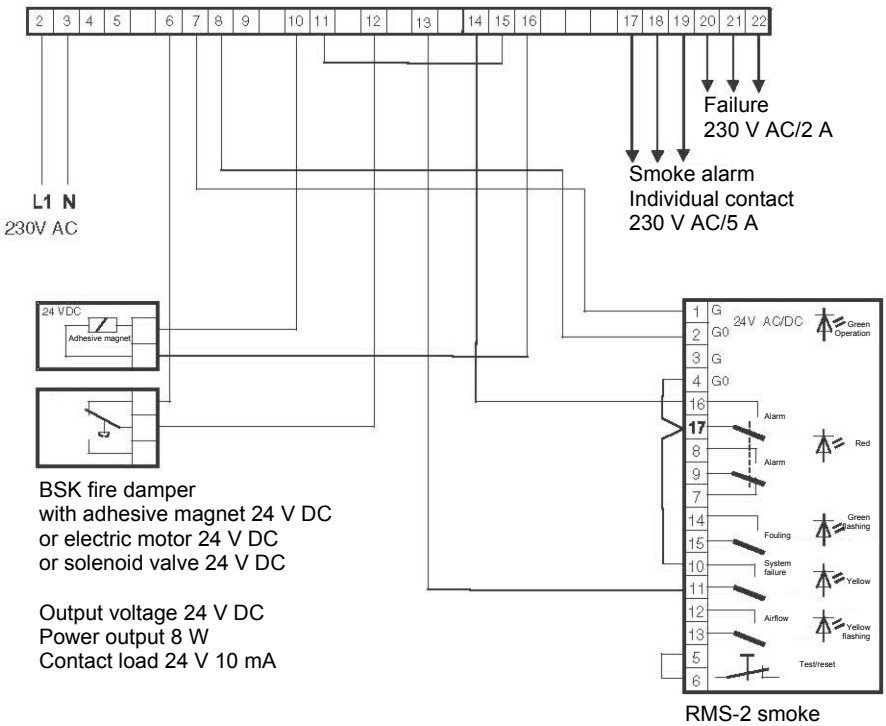
Output voltage 24 V AC
Power output 12 VA
Contact load 24 V AC 10 mA

RMS-2 smoke detector

Wiring diagram for

- Fire dampers
- SM
- Smoke detectors
- 230 V DC

Wiring diagram



BSK fire damper
with adhesive magnet 24 V DC
or electric motor 24 V DC
or solenoid valve 24 V DC

Output voltage 24 V DC
Power output 8 W
Contact load 24 V 10 mA

RMS-2 smoke detector

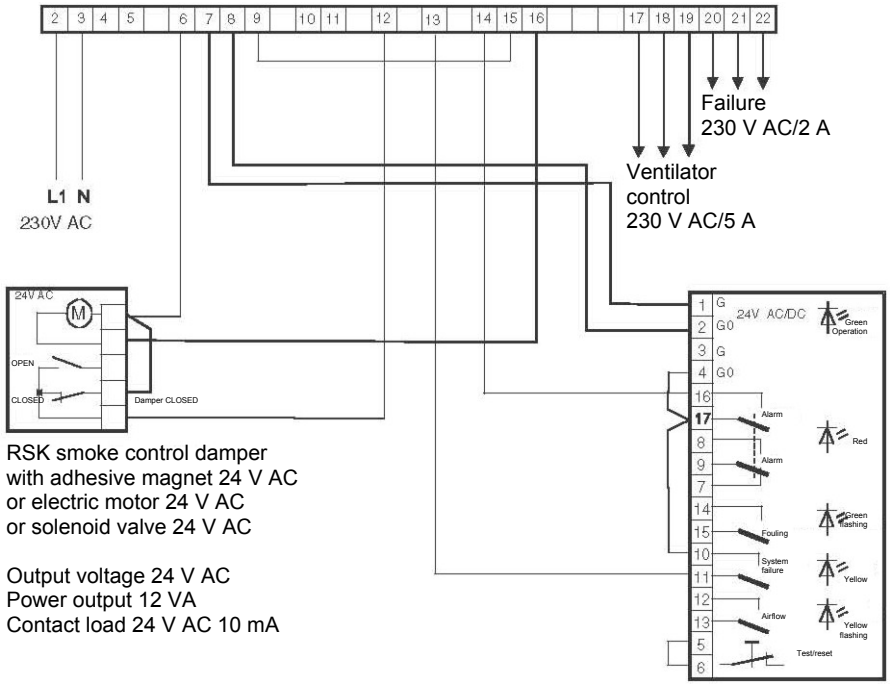
RMS-2 smoke detection system

Wiring diagrams

Wiring diagram for

- Smoke control dampers
- SM
- Smoke detectors
- 24 V AC

Wiring diagram



RSK smoke control damper
with adhesive magnet 24 V AC
or electric motor 24 V AC
or solenoid valve 24 V AC

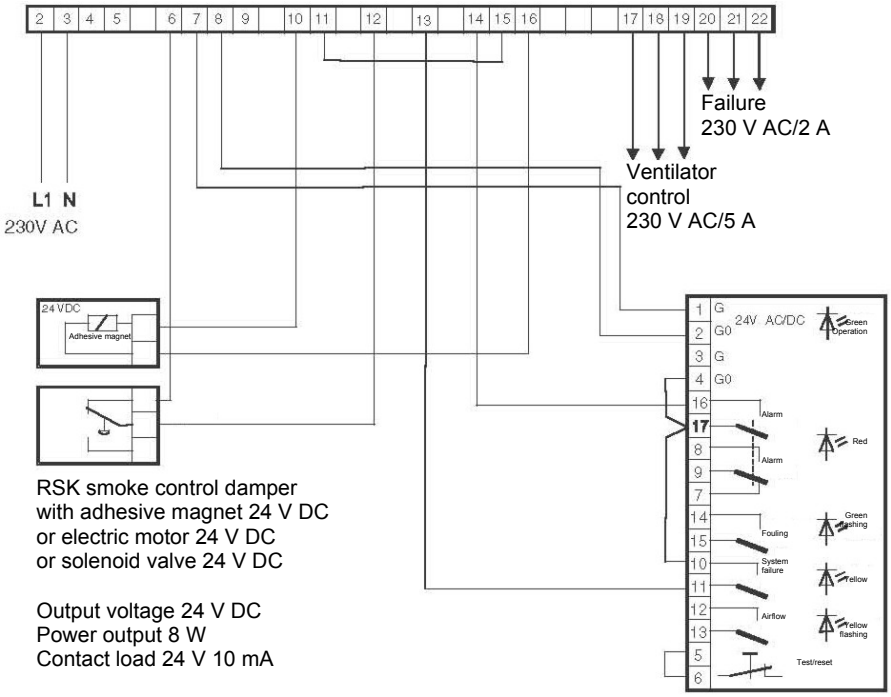
Output voltage 24 V AC
Power output 12 VA
Contact load 24 V AC 10 mA

RMS-2 smoke
detector

Wiring diagram for

- Smoke control dampers
- SM
- Smoke detectors
- 24 V DC

Wiring diagram



RSK smoke control damper
with adhesive magnet 24 V DC
or electric motor 24 V DC
or solenoid valve 24 V DC

Output voltage 24 V DC
Power output 8 W
Contact load 24 V 10 mA

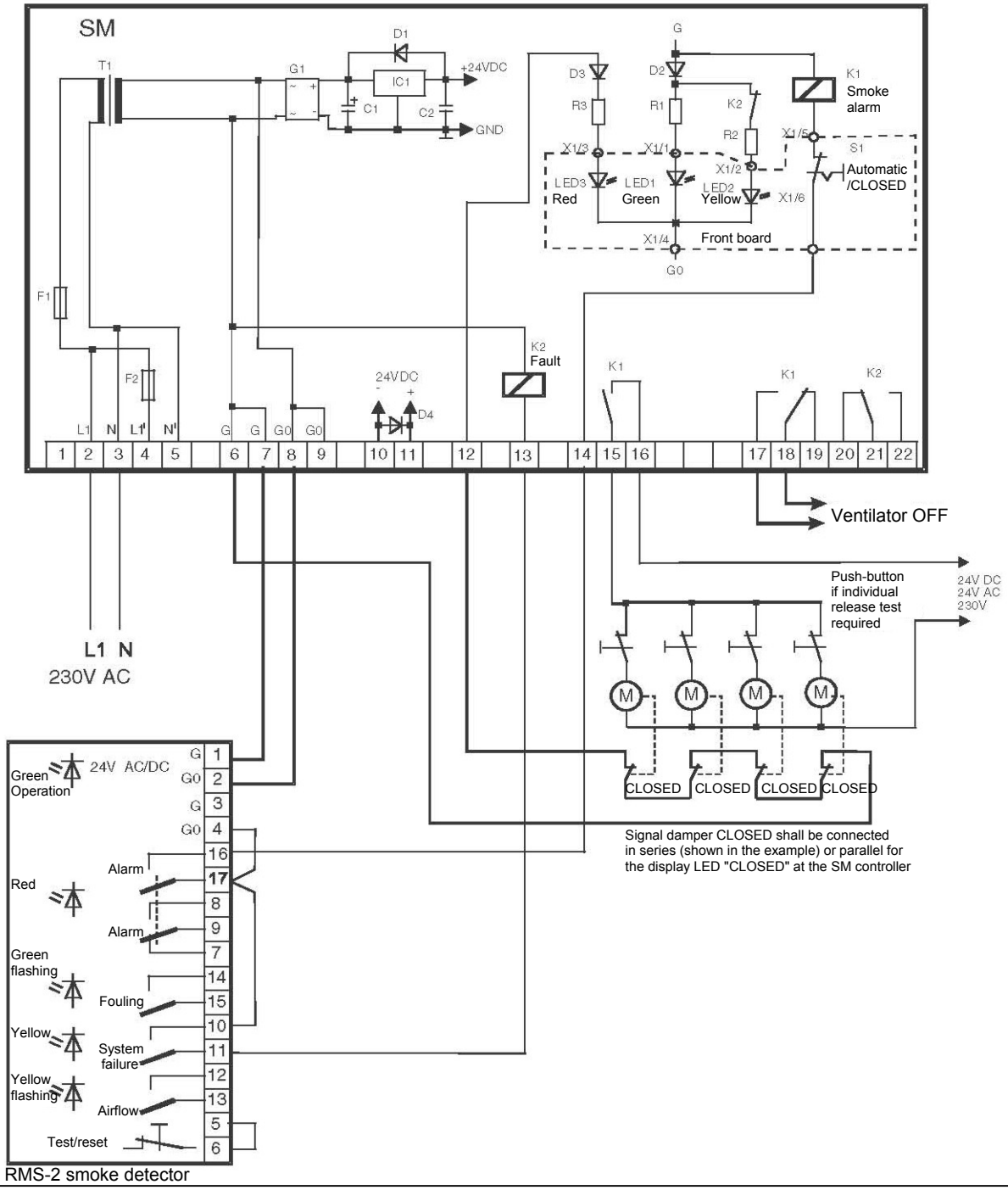
RMS-2 smoke
detector

RMS-2 smoke detection system

RMS-2 smoke detector

Wiring diagram for

- Fire dampers
- SM
- Smoke detectors
- With external voltage 24 V AC, 24 V DC, 230 V AC



RMS-2 smoke detection system

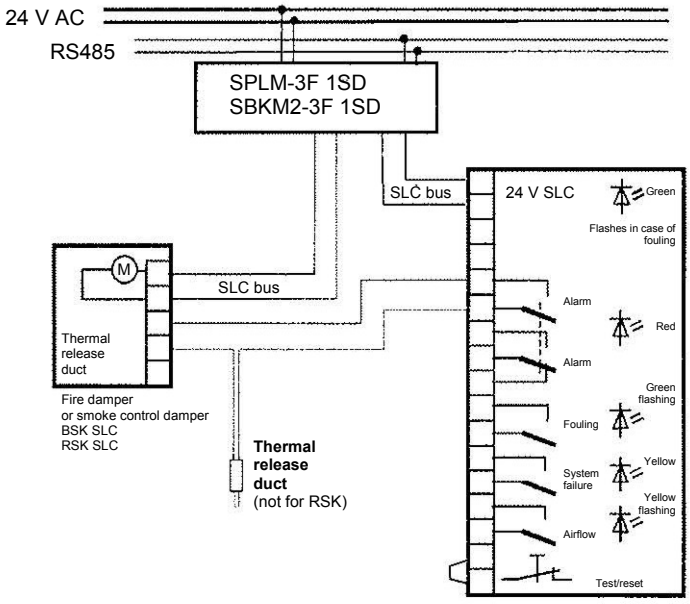
RMS-2-SLC smoke detector

Wiring diagrams

Control for
fire dampers and smoke control dampers
without SM controller with supply via SLC bus

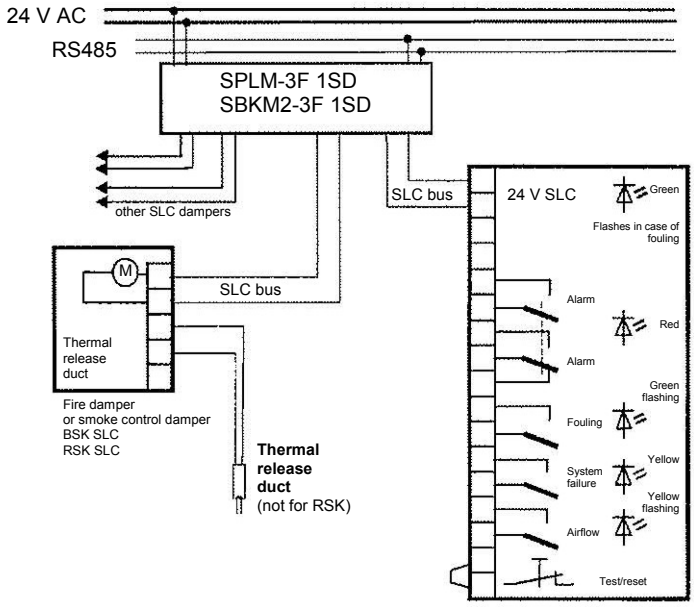
Wiring diagram for

- Fire dampers
- Smoke control dampers
- Smoke detectors with SLC bus



RMS-2-SLC smoke detector
Contact load max. 230 V AC/5 A

- For the direct activation of a damper



RMS-2-SLC smoke detector
Contact load max. 230 V AC/5 A

- For signaling and activation of SLC dampers

RMS-2 smoke detection system

RMS-2-SLC smoke detector

RMS-2-SIC data points and functions using SBKM2/SPLM as an example

(See separate documentation)

Commands and local indications of the RMS-2-SLC smoke detector

Command from building control technology	Status of the smoke detector	Green LED	Yellow LED	Red LED	Messages to the superior control system
Test/RESET	All relays drop out for ca. 5 s	Flashing	Flashing	Flashing	Test/Reset
	Normal condition	On			None
	Smoke detector dirty	Flashing			SD fouling signal
	Fault / air monitoring	On	Flashing		SD fault air monitoring
	Smoke detector system failure	On	On		SD system failure
	SLC communication disrupted	On		Flashing	SD communication to SLC module disrupted
	Smoke alarm	On		On	Smoke alarm

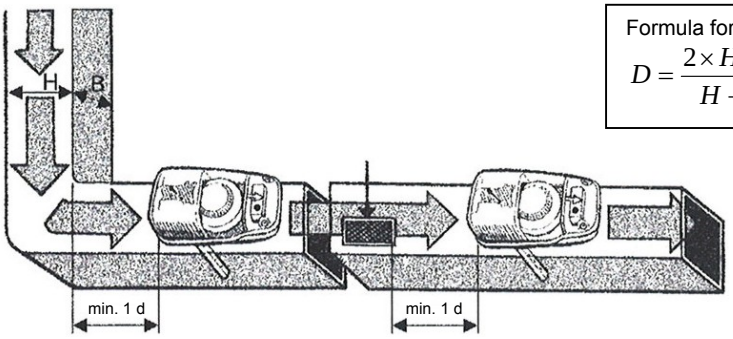
Table 8: SBKM2/SPLM display with smoke detector configuration

Fault indication and acknowledgement at the SBKM2 or SPLM

Type of indication	LED	Acknowledgement: Indication present	Messages to superior control system
Smoke detector smoke alarm	Red on	Until the test/reset button has been pushed or acknowledgement by the building control technology, if released or the test/reset button at the smoke detector is pushed	Is set off
Fouling signal	Green flashing	Until the reason for the fault has been cleared	Is set off
Fault air monitoring	Yellow flashing	Until the reason for the fault has been cleared	Is set off
Smoke detector system failure	Yellow on	Until the reason for the fault has been cleared	Is set off
SLC communication disrupted	Red flashing	Until the reason for the fault has been cleared	Is set off

Table 9: SBKM2/SPLM display with faults

RMS-2 smoke detection system

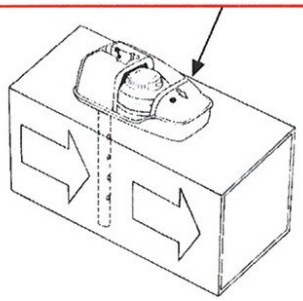


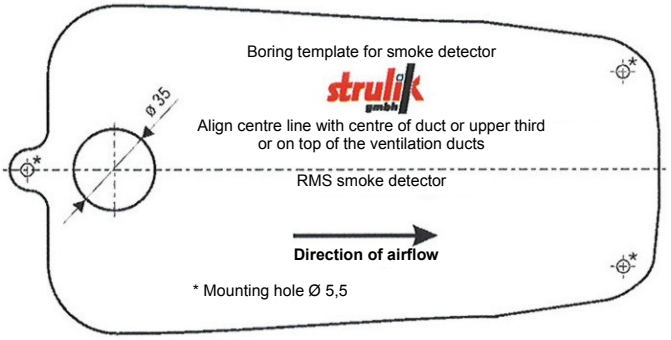
Formula for ducts

$$D = \frac{2 \times H \times B}{H + B}$$

The smoke detector shall be arranged at a distance of not more than 1 m in front or behind the fire damper or smoke control damper.

Important!
The arrow on the RMS smoke detector unit shall point in the same





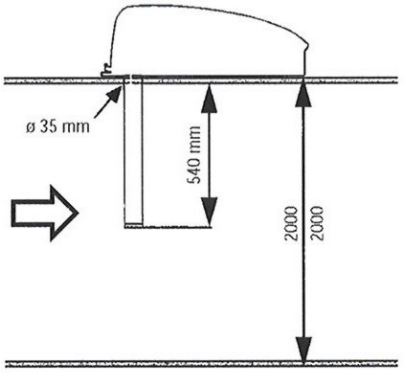
Affix the boring template in direction of airflow and bore holes.
The boring template is delivered together with the smoke detector.

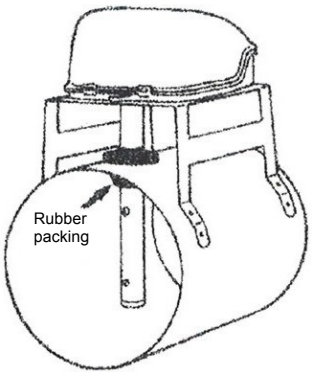
Air measuring tube

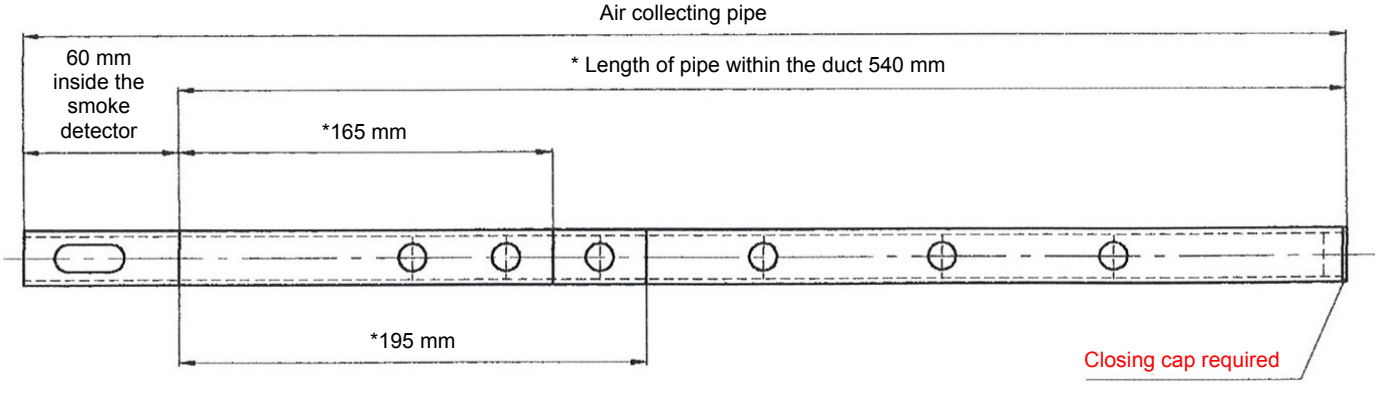
Total length 600 mm
for ducts up to 2000 x 2000 mm

Length can be shortened to 225 mm for ducts up to 600 x 600 mm. A console has to be used for ducts smaller than 160 x 160 mm.

Consoles for mounting to round or square ducts are available on request.

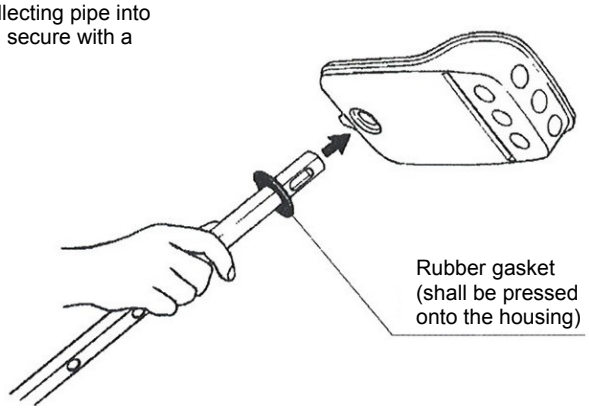




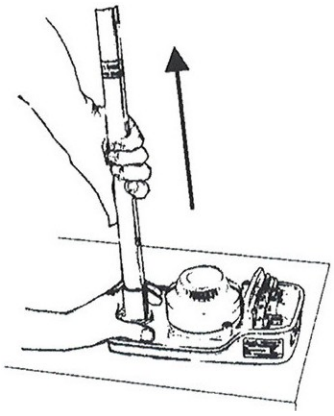


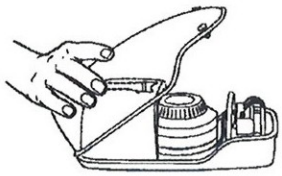
RMS-2 smoke detection system

Insert the air-collecting pipe into the housing and secure with a screw.

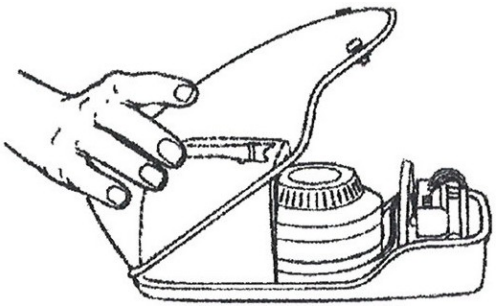


Demounting of the air-collecting pipe without removing the RMS-2 smoke detector from the duct



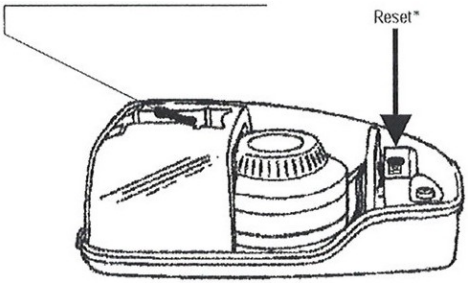


Close housing cover and affix with screws.
Carry out functional test.



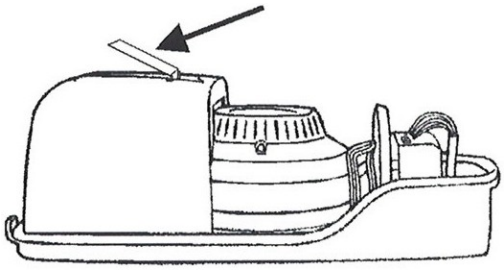
Smoke release / reset

Open cap and blow
smoke aerosol into the unit



* Reset with finger or blunt tool

The protecting cover strip prevents that the smoke detector gets dirty during commissioning (dust deposit etc.). Afterwards, in order to guarantee the functioning of the smoke detector, it has to be removed. Please use this again for cleaning procedures in the future!



RMS-2 smoke detection system

Functional test

After the installation, the detector shall be tested with smoke or a suitable test spray (e.g. RDP-300). Use the test hole in the housing cover for this. Do not forget to close the hole after the test. By pushing the internal or external reset button, for a period of at least 5 s, all relays drop out. Therefore the functioning of fire dampers or smoke control dampers can also be tested by the central building control technology.

Function

Normal operation
In normal use the alarm relay is pulled up and the relay contacts between 16 and 17 as well as 9 and 8 are closed. The LED inside the detector is off; the green LED on the board is on.

Smoke alarm
The alternating LED of the detector is red for ca. 2 s and the relay contacts 16 and 17 open and 9 and 7 close. The green and red LEDs on board are on.

Reset
After an alarm, the reset button has to be pushed in order to bring the detector back into normal operation mode.

Early alarm and maintenance
As fouling progresses, the relay contact 14 and 15 opens. The green LED inside the smoke detector is on and the green LED on board flashes.

Airflow alarm
The airflow sensor measures ca. every 4 minutes the velocity of flow near the detector. The airflow alarm contact 12 and 13 opens if the velocity of flow inside the air duct is less than 1,4 m/s (± 4 m/s tolerance). On the board the green LED is on and the yellow LED flashes.

System failure
The system failure contact 10 and 11 **and** the alarm contacts 16 and 17, 8 and 9 open in case of the following faults:
a) If detector module is removed.
b) If the power supply is interrupted.
c) In case of short circuit on the feeder.

Maintenance

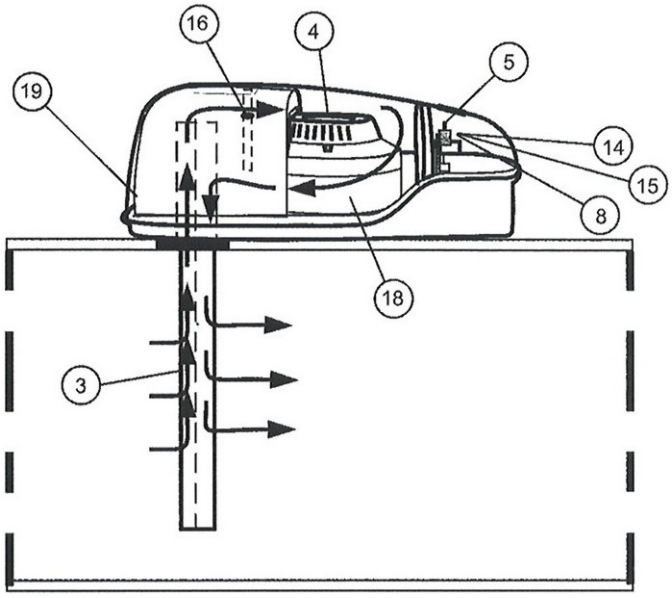
The operator of the ventilation system shall, with due regard to the basic maintenance requirements of E DIN 31051 in connection with DIN EN 13306, that the RMS smoke detection system is at all times ready for operation and maintained in accordance with the instructions of the manufacturer. The RMS smoke detector shall be maintained immediately upon reaction of the detector's fouling control.

The RMS smoke detection system shall be maintained in accordance with the maintenance instructions of the manufacturer and checked for proper functioning and readiness for use, especially the faultless working together of all components of the RMS smoke detection system. In this case the ST-P-DA smoke controller inside the RMS smoke detector shall be checked by simulation (test gas/smoke).

Only a professional company shall perform testing and maintenance.

The operator of the ventilation system shall document the maintenance, which is done to maintain the functioning and readiness for use of the RMS smoke detection system; the operator of the ventilation system shall retain the documents.

RMS-2 smoke detection system



3 Air collecting pipe
4 ST-P-DA optical smoke detector
5 Test/reset button
8 LED red = CLOSED (smoke alarm)
14 LED yellow = system failure
15 LED green = operation
green flashing = fouling signal
16 Measuring pill for airflow control
18 STB-5 DA detector base
19 Interlock screw

1. Remove the lid and take the ST-P-DA optical smoke detector (4) out of the detector base (18) with an anticlockwise quarter-turn.

2. Inspect the ST-P-DA smoke detector (4): If the detector is not so dirty, then it is sufficient to dust it off with compressed air. The ST-P-DA smoke detector (4) has to be exchanged if it is heavily soiled.

3. Clean the inside of the RMS smoke detector, so that the sensor will not get dirty again.

4. Take the air-collecting pipe (3) out of the duct and inspect it. For this, the interlock screw (19) has to be removed. The air-collecting pipe and the boreholes have to be clean **inside** and **outside**. Clean, if necessary.

5. Inspect the measuring pill (16) for airflow control. It has to be clean and mounted vertically.

6. Inspect the sealings. The cover of the smoke detector has to seal off for a proper functioning. Exchange the sealings, if necessary.

7. Functional test:
   - The yellow LED (14) has to signal a system failure if the ST-P-DA smoke detector (4) has been screwed off. The fire damper or smoke control damper has to close; the ventilator switches off (in case of smoke control dampers).
   - Screw in the ST-P-DA smoke detector (4). After a few seconds the yellow LED for system failure goes out.
   - Release - by spraying test aerosol for a short moment into the smoke detector - the smoke alarm. The red LED (8) has to go on. The fire damper or smoke control damper has to close; the ventilator switches off (in case of smoke control dampers).
   - In order to delete the smoke alarm message, push the reset button (5). The fire damper or smoke control damper has to open again (running of the motor).
   - Reassemble the RMS smoke detector.
   - After closing the lid, observe the LED displays for several minutes (5 - 10 minutes). Only the green LED (15), operation at steady light, shall be on.

Attention:
To ensure the safe functioning of the smoke detector, only original spare parts from the manufacturer shall be used!

Item	Description	Unit Piece	Unit price EUR	Total EUR
	RMS-2-24 V smoke detection system Smoke detection system for duct mounting with test certificate Z-78.6-54, approved for the control of all fire dampers and smoke control dampers with test certificate, independent from the manufacturer. The SM controller is necessary for the usage of the RMS-2-24 V AC/DC smoke detector. The smoke detection system consists of the ST-P-DA smoke detector, the housing with the air-collecting pipe and the SM controller. Maintenance and functional test shall be performed once a year. **Technical data:** Power supply: RMS-2-24 V . . . 24 V AC/DC +10 %/-15 % via SM controller Signal contacts: 2 x fire alarm 230 V AC/30 V DC, 5 A 1 x airflow control 230 V AC/30 V DC, 2 A 1 x system failure 230 V AC/30 V DC, 2 A 1 x fouling of smoke detector 230 V AC/30 V DC, 2 A Status indication at the smoke detector by means of LEDs Measuring range of the airflow detector: 1,4 to 20 m/s Type of safety: IP 54 Air-collecting pipe: Length 600 mm for duct dimensions up to 2000 x 2000 mm The pipe can be shortened to a length of 165 mm for ducts that are smaller than 600 x 600 mm. Properties/function: Closing of fire dampers or smoke control dampers and switching off of ventilators in case of: smoke detection, missing smoke detector, short circuit and cable break. Pushing of the test button at the smoke detector, exceeding the fouling factor by 100 %. The damper stay closed when the power supply returns and previous smoke detection. Manufacturer: **Strulik** Type: **RMS-2-24 V AC + SM** **Accessory:** Console to mount the smoke detector onto the circular pipe.			

Tender Text

Item	Description	Unit Piece	Unit price EUR	Total EUR
	RMS-2-230 V smoke detection system Smoke detection system for duct mounting with test certificate Z-78.6-54, approved for the control of all fire dampers and smoke control dampers with test certificate, independent from the manufacturer. The smoke detection system consists of the ST-P-DA smoke detector and the housing with the air-collecting pipe. The SM controller is not necessary for the direct connection of the RMS-2-230 V smoke detector to the local power supply. Maintenance and functional test shall be performed once a year. **Technical data:** Power supply: RMS-2-230 V . . . 230 V AC +10 %/-15 % Signal contacts: 2 x fire alarm 230 V AC/30 V DC, 5 A 1 x airflow control 230 V AC/30 V DC, 2 A 1 x system failure 230 V AC/30 V DC, 2 A 1 x fouling of smoke detector 230 V AC/30 V DC, 2 A Status indication at the smoke detector by means of LEDs Measuring range of the airflow detector: 1,4 to 20 m/s Type of safety: IP 54 Air-collecting pipe: Length 600 mm for duct dimensions up to 2000 x 2000 mm The pipe can be shortened to a length of 165 mm for ducts that are smaller than 600 x 600 mm. Properties/function: Closing of fire dampers or smoke control dampers and switching off of ventilators in case of: smoke detection, missing smoke detector, short circuit and cable break. Pushing of the test button at the smoke detector, exceeding the fouling factor by 100 %. The damper stay closed when the power supply returns and previous smoke detection. Manufacturer: **Strulik** Type: **RMS-2-230 V** **Accessory:** Console to mount the smoke detector onto the circular pipe.			

Tender Text

Item	Description	Unit Piece	Unit price EUR	Total EUR
	RMS-2-SLC smoke detection system Smoke detection system for duct mounting with test certificate Z-78.6-54, approved for the control of all fire dampers and smoke control dampers with test certificate, independent from the manufacturer. The smoke detection system consists of the ST-P-DA smoke detector and the housing with the air-collecting pipe. A SLC SM controller, e.g. SPLM, is necessary for the usage of the RMS-2-SLC smoke detector. All information, in addition to the relays, are digitally transmitted to the controller. Maintenance and functional test shall be performed once a year. **Technical data:** Power supply: RMS-2-SLC . . . 24 V AC/DC via special SLC controller, e.g. SPLM Signal contacts: 2 x fire alarm 230 V AC/30 V DC, 5 A 1 x airflow control 230 V AC/30 V DC, 2 A 1 x system failure 230 V AC/30 V DC, 2 A 1 x fouling of smoke detector 230 V AC/30 V DC, 2 A Status indication at the smoke detector by means of LEDs Measuring range of the airflow detector: 1,4 to 20 m/s Type of safety: IP 54 Air-collecting pipe: Length 600 mm for duct dimensions up to 2000 x 2000 mm The pipe can be shortened to a length of 165 mm for ducts that are smaller than 600 x 600 mm. Properties/function: Closing of fire dampers or smoke control dampers and switching off of ventilators in case of: smoke detection, missing smoke detector, short circuit and cable break. Pushing of the test button at the smoke detector, exceeding the fouling factor by 100 %. The damper stay closed when the power supply returns and previous smoke detection. Manufacturer: **Strulik** Type: **RMS-2-SLC** **Accessory:** Console to mount the smoke detector onto the circular pipe.			

Damper
BCF-W-K90

Test certificate
Z-41.3-595

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

Ordering example:

BCF-W-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.

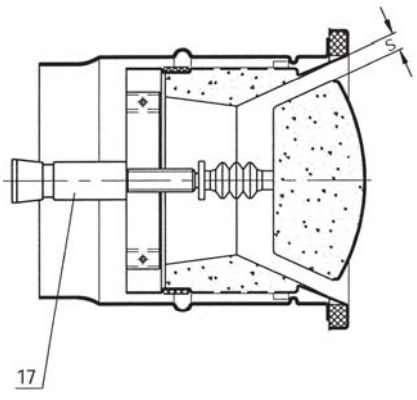
Without maintenance requirements

The dampers shall be installed such that an inspection and cleaning is possible.

In order to guarantee the fire safety function, the dampers shall be inspected at least once a year (difference of actual condition from nominal condition).

Adjustment of air volume

The Strulik damper allows the continuous control of all required air volumes. The required air volume can be set according to the graphs for air supply and air exhaust of the BCF-K90 documentation on **page 93 to 95**.
The valve core is affixed in the chosen position with an adjusting and locking device (17).



S = gap width

Safety

The Strulik BCF-W-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 release mechanism (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.

Please note:

A special documentation has not been prepared for the BCF-W-K90 damper (without maintenance requirements); the fitting positions and technical information correspond to those for the BCF-K90 damper.

For BCF-W-K90 tender text, see **page 90 - 92**.
For technical data and fitting positions, see **page 94 - 100**.
For design diagrams, see **page 101 - 103**.
For mounting frame, weight and electrical limit switch, see **page 104 - 106**.

Tender Text

Item	Description	Unit Piece	Unit price EUR	Total EUR
	Damper with test certificate Z-41.3-595 and with enclosed release mechanism for a K90 fire 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 infinitely variable control of the air volume**. The housing consists of a slotted steel cylinder with fireproof casing, which is designed as valve seat to incorporate the conical valve disc. Mounting by simple screwing into the mounting frame of sheet steel; the special sealing guarantees the exclusion of air and firm set of the valve. The damper can easily be mounted and demounted for adjustment and cleaning purposes. **Technical data:** Diameter: 125 mm 160 mm 200 mm Length: ca. 150 mm Temperature of activation: 72 °C Air volume: Noise level: Manufacturer: **Strulik** Type: **BCF-W-K90 + ES** (including mounting frame) **Accessories:** Electrical limit switch Type: **MS-C** Supply air ring Type: **ZR** Lengthened mounting frame Type: **VER** Disk valve for overflow opening Type: **VMT** Connecting collar for duct connection Type: **ÜG**			

Tender Text

Item	Description	Unit Piece	Unit price EUR	Total EUR
	Damper with test certificate Z-41.3-595 and with enclosed release mechanism for a K90 fire resistance class for the installation into F90 light partition walls as air-bleed valve or air-vent valve **with infinitely variable control of the air volume**. The housing consists of a slotted steel cylinder with fireproof casing, which is designed as valve seat to incorporate the conical valve disc. Mounting by simple screwing into the mounting frame. The mounting frame consists of calcium silicate and an integral insert to take up the three clamping rivets that 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 set of the valve. Therefore the damper can easily be mounted and demounted for adjustment and cleaning purposes. **Technical data:** Diameter: 125 mm 160 mm 200 mm Length: 210 mm Temperature of activation: 72 °C Air volume: Noise level: Manufacturer: **Strulik** Type: **BCF-W-K90 + ER-L** (including mounting frame) **Accessories:** Electrical limit switch Type: **MS-C** Disk valve for overflow opening Type: **VMT** Male-male connector Type: **NP** Connecting collar for duct connection Type: **ÜG**			

Tender Text

Item	Description	Unit Piece	Unit price EUR	Total EUR
	Damper with test certificate Z-41.3-595 and with enclosed release mechanism for a K30 U/K90 U fire resistance class for the installation into F30/F90 supplement floors and a K90 resistance class for the installation into F90 shaft partition walls, fire rated ventilation ducts and cable conduits as air-bleed valve or air-vent valve **with infinitely variable control of the air volume**. The housing consists of a slotted steel cylinder with fireproof casing, which is designed as valve seat to incorporate the conical valve disc. Mounting by simple screwing into the mounting frame. The mounting frame of sheet steel has three mounting angles. The special sealing guarantees the exclusion of air and firm set of the valve. Therefore the damper can easily be mounted and demounted for adjustment and cleaning purposes. **Technical data:** Diameter: 125 mm 160 mm 200 mm Length: ca. 150 mm Temperature of activation: 72 °C Air volume: Noise level: Manufacturer: **Strulik** Type: **BCF-W-K90 + ER-ZX** (including mounting frame) x ……. mm **Accessories:** Electrical limit switch Type: **MS-C** Disk valve for overflow opening Type: **VMT** Supply air ring Type: **ZR** Connecting collar for duct connection Type: **ÜG**			

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

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GeschZ.: III 13-1.41.3-95/95

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

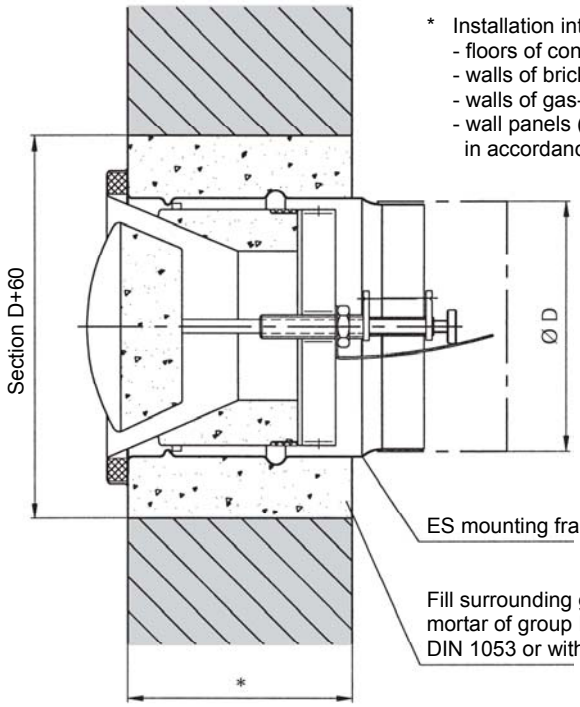
The Strulik BCF-K90 dampers have been submitted to many test series in Germany and abroad. These test series did not only include the effectiveness of FIRE PROTECTION and FLAME TIGHTNESS, but also the STABILITY OF FLAMES and the correct functioning of the FUSIBLE LINK (see additional test certificate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

Damper
BCF-K90

Test certificate
Z-41.3-331

Resistance class K90/K30

For the installation into brickwork or a concrete floor



* 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

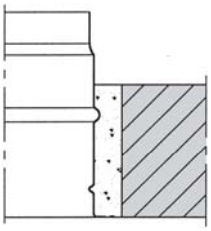
D = NW 125 mm
160 mm
200 mm

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 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 x d.

125 Ø L = 150 + 185 = 335 mm
160 Ø L = 150 + 240 = 390 mm
200 Ø L = 150 + 300 = 450 mm
Without extension resistance class K30.

Instead of the duct extension 1,5 x d, a VMT steel disk valve or metal-mesh grid, mesh size ≤ 20 mm▫ 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

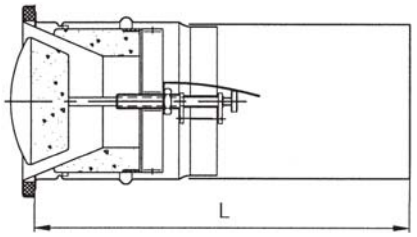
Type: VER

Total length of mounting frame

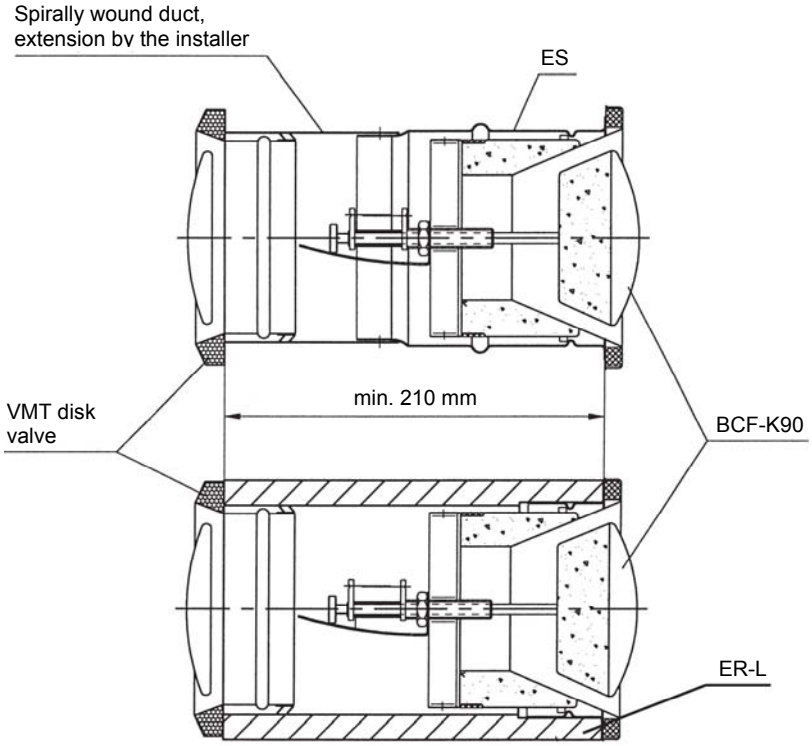
Ø 125 ≙ L 335 mm

Ø 160 ≙ L 390 mm

Ø 200 ≙ L 450 mm



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



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.

Damper
BCF-K90

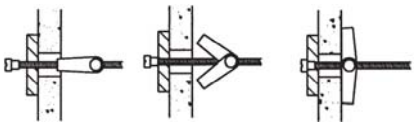
Test certificate
Z-41.3-331

Resistance class K90/K30

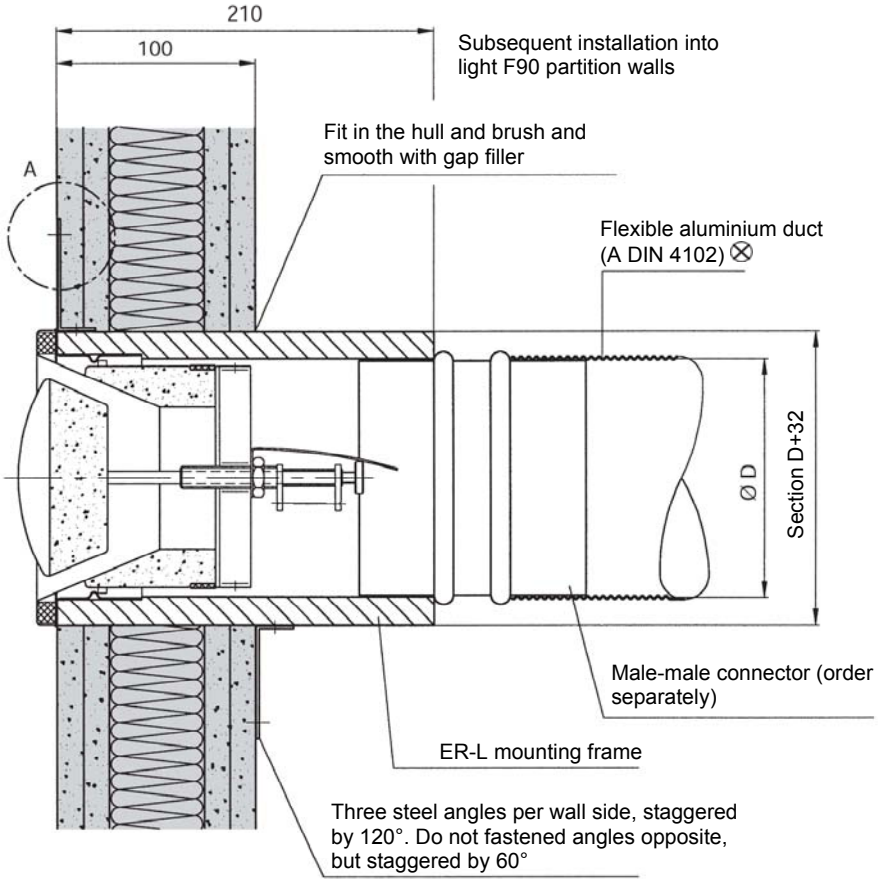
For the subsequent installation into light partition walls

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

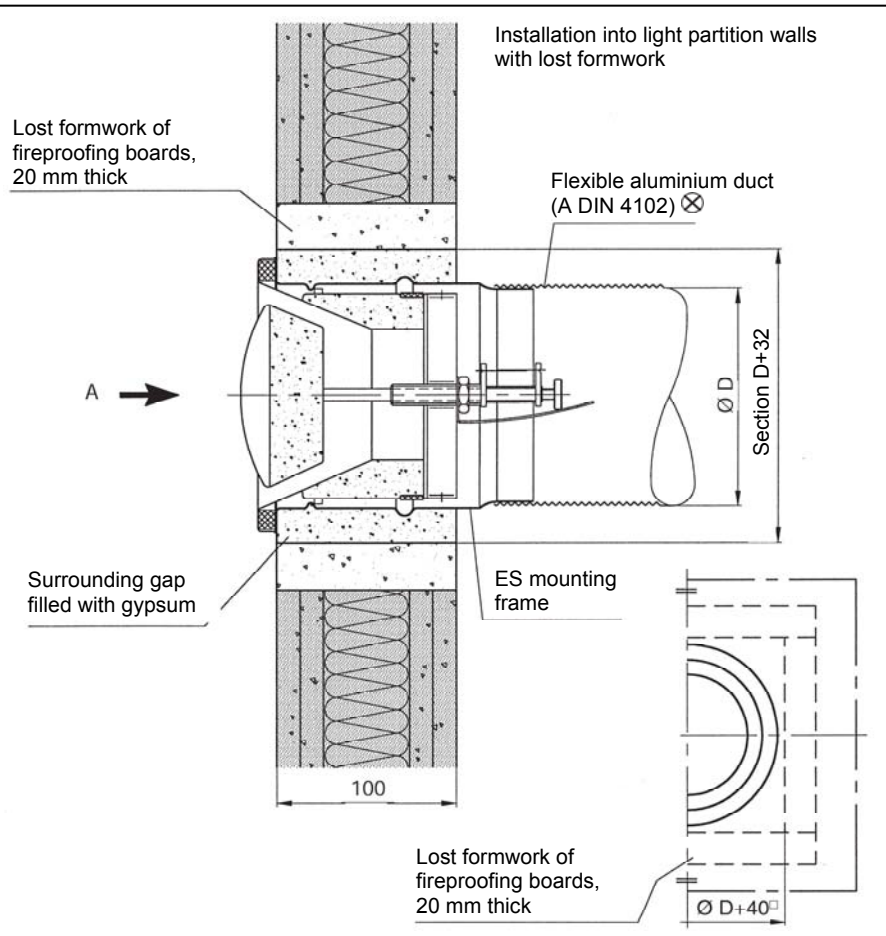
For installation into light partition walls with lost formwork

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.



Damper
BCF-K90

Test certificate
Z-41.3-331

Resistance class K90/K30

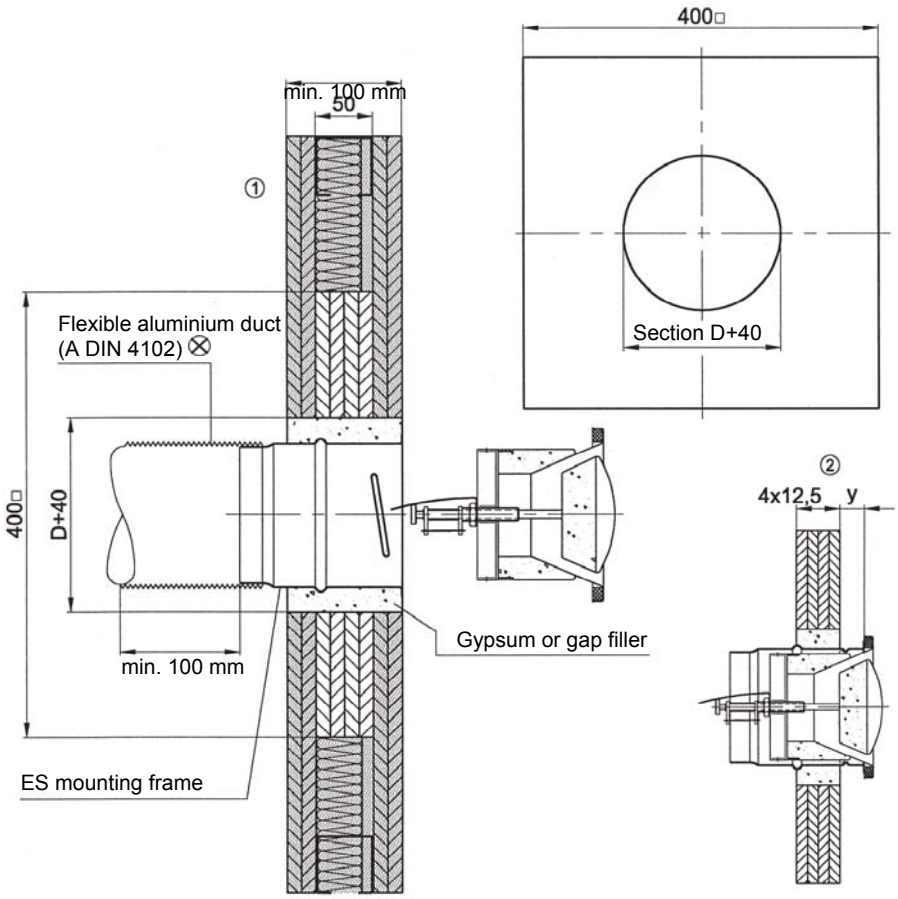
For the installation into light partition walls with prefabricated fastening plate

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□.

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

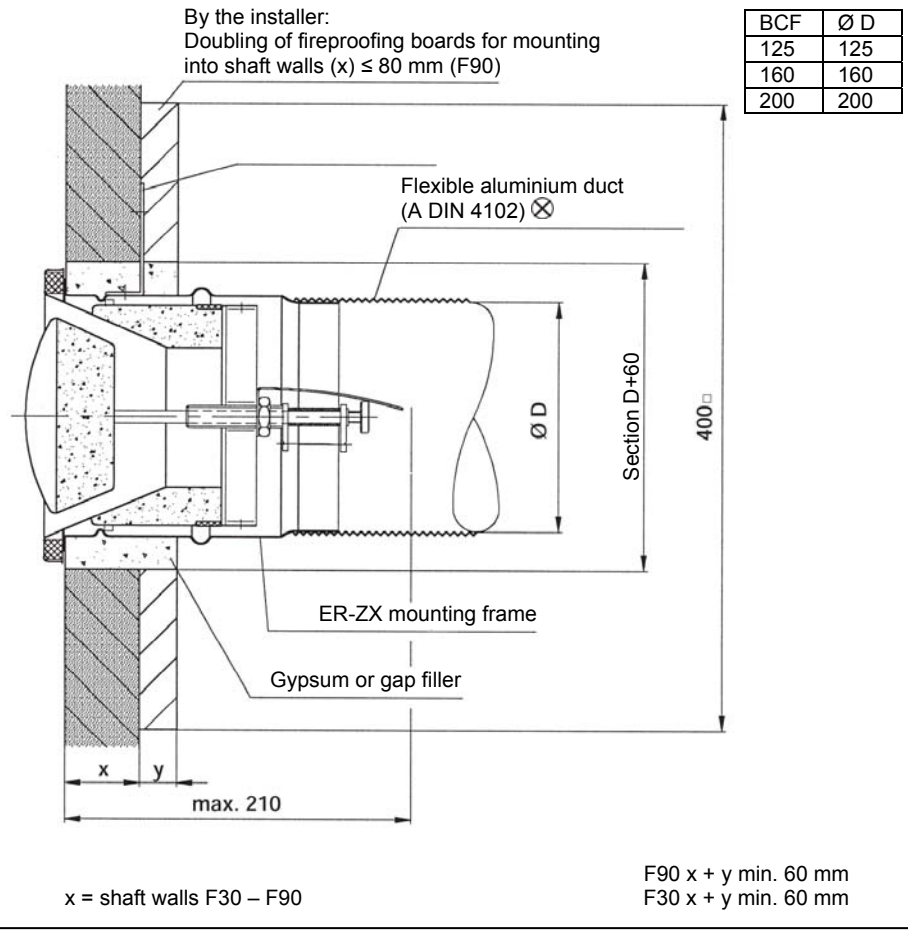
For the installation into light partition walls with lost formwork

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.

Ventilation ducts may be connected to dampers with a compensator or spigot of flexible aluminum 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.



BCF	Ø D
125	125
160	160
200	200

x = shaft walls F30 – F90

F90 x + y min. 60 mm
F30 x + y min. 60 mm

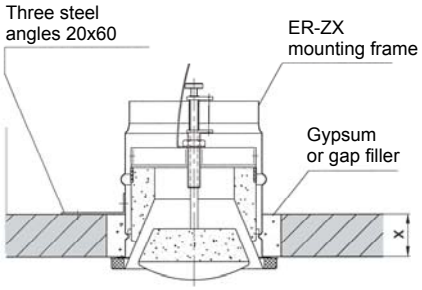
Damper
BCF-K90

Test certificate
Z-41.3-331

Resistance class K90/K30

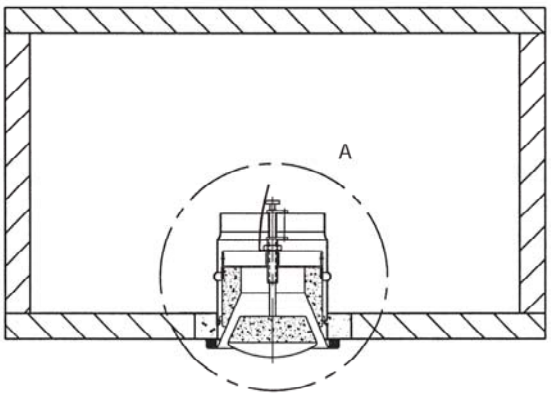
For the installation into fire resistant ventilation ducts and cable conduits

Detail A for L30



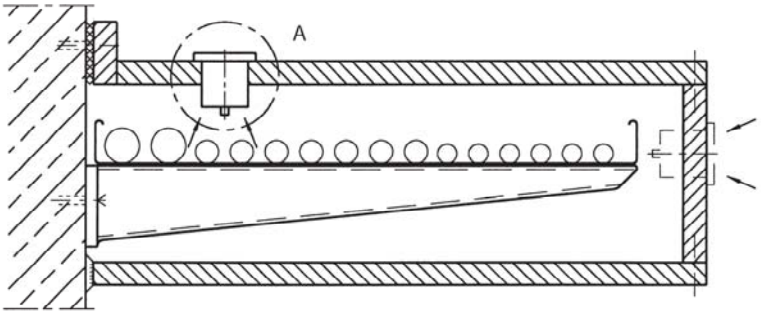
* depending on the wall thickness x, double the dimension y to min. 40 mm in total.

Installation into fire resistant L30 – L90 ventilation ducts



L90 drawing

Installation into cable conduits



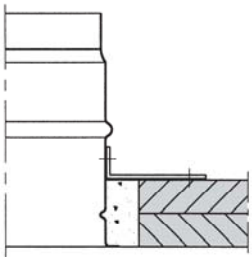
Damper
BCF-K90

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



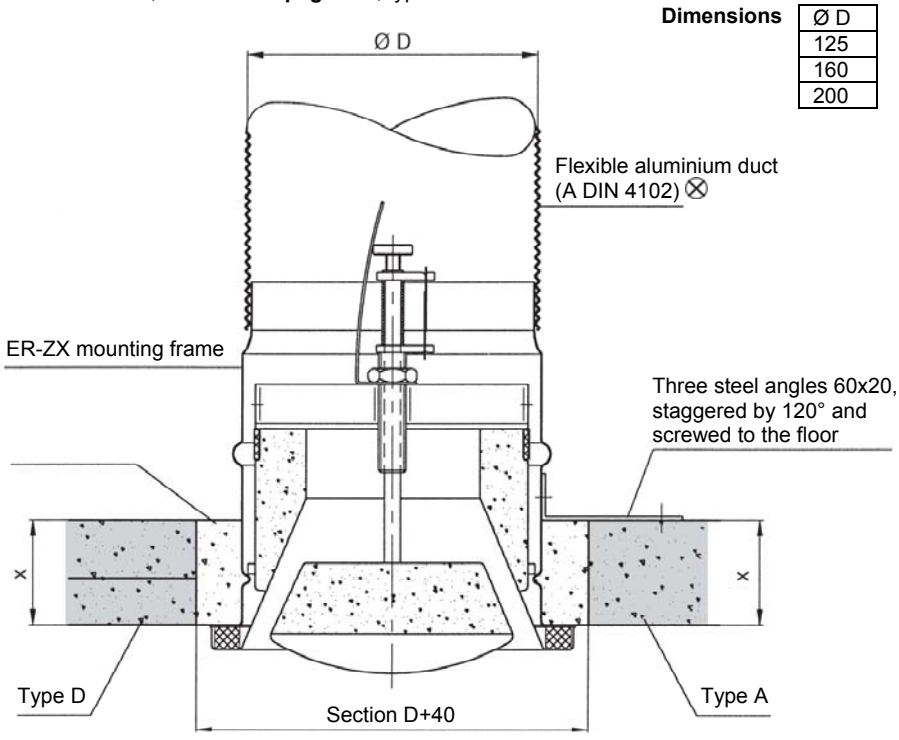
For the installation into fire resistant suspended F30 ceilings, as a smoothed and screwed ceiling or laid-in floor. Plaster the mounting frame flush with the floor.

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

Dimensions

Ø D
125
160
200



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

Damper
BCF-K90

Test certificate
Z-41.3-331

Resistance class K30U

For the installation into fire resistant suspended F30 DUO ceilings

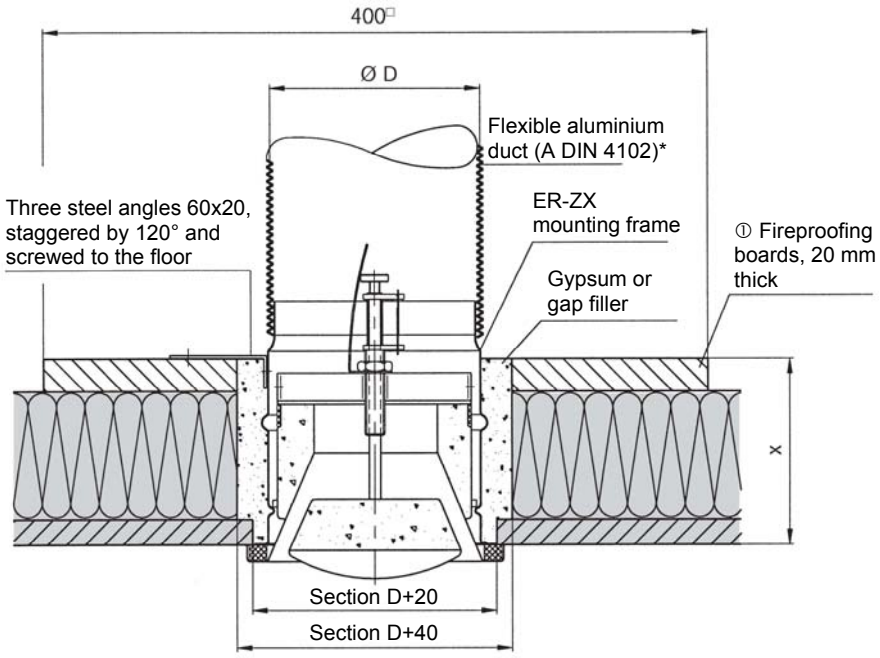
Dimensions

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

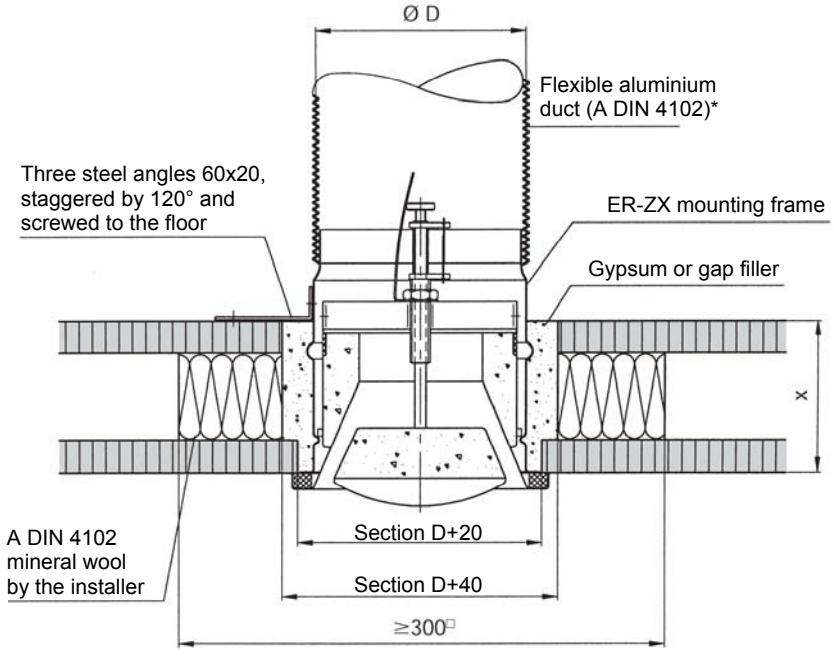
For the installation into fire resistant suspended F30 ceilings Type: BSE30

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

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

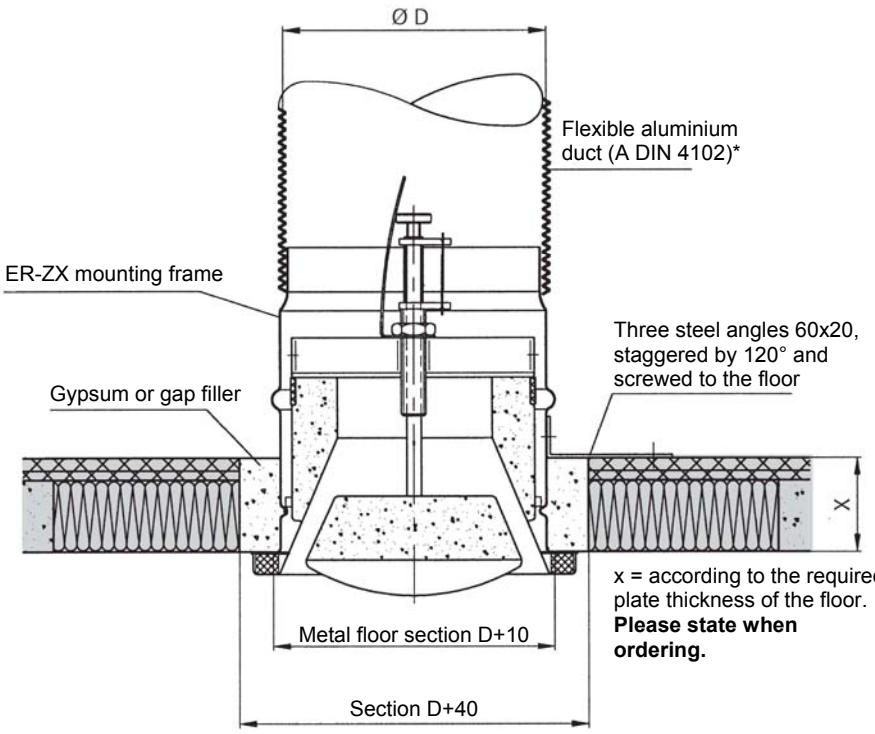
Ø D	125	160	200

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.

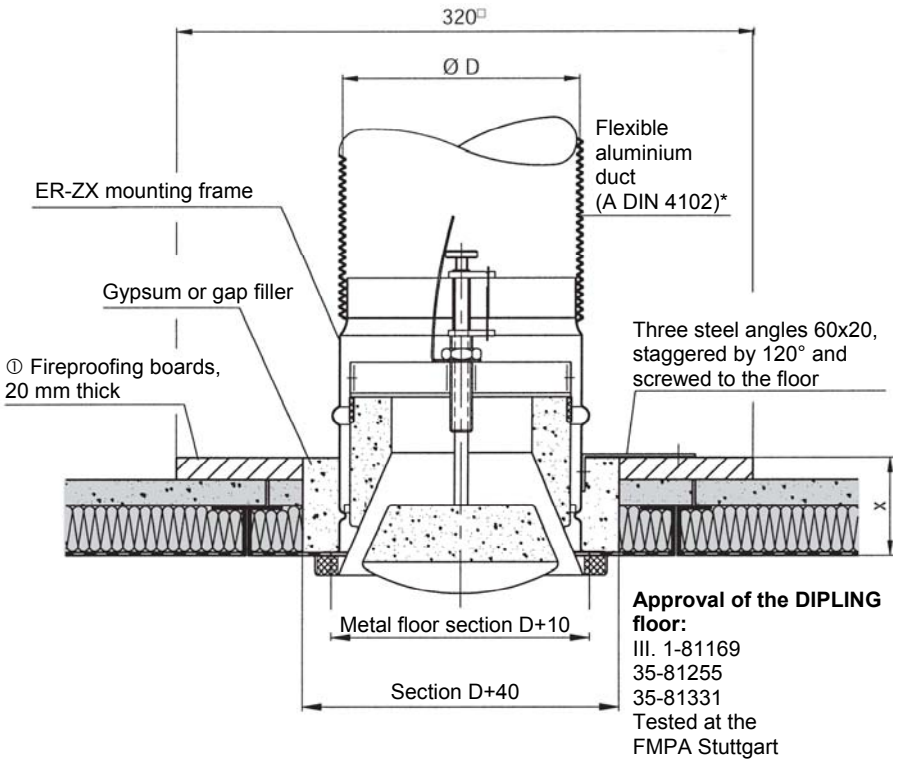
Installation into fire resistant suspended F30 ceilings as a metal floor



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

* not part of the scope of delivery

Installation into fire resistant suspended metal DIPLING F30 ceilings



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

* not part of the scope of delivery

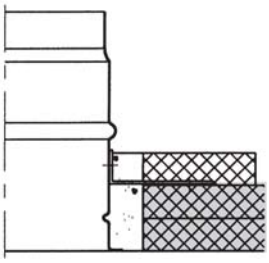
Damper
BCF-K90

Test certificate Z-41.3-331

Resistance class K90U

For the installation into fire resistant suspended F90 ceilings

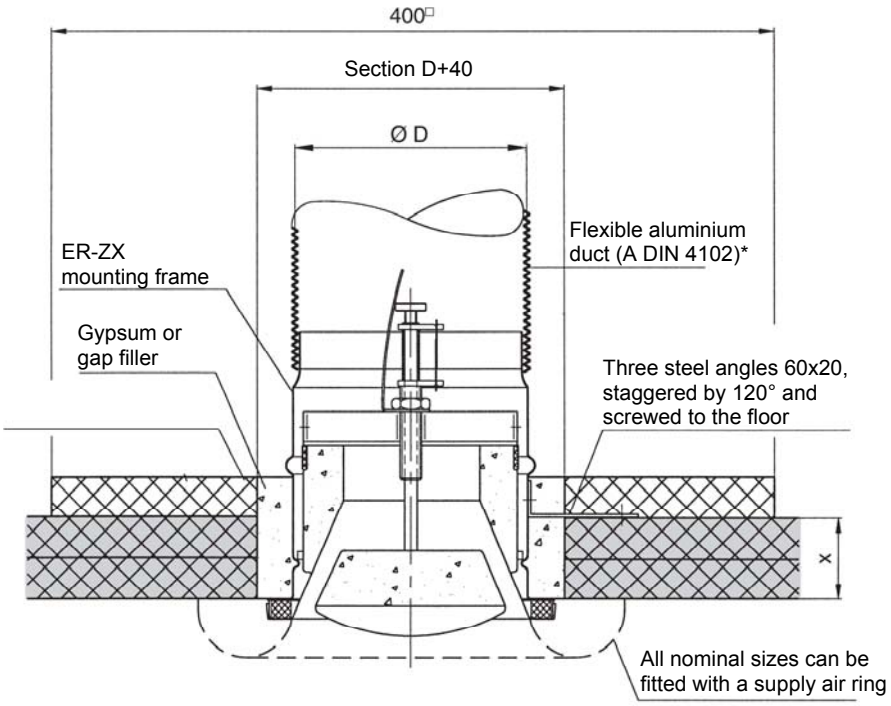
Installation detail



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

① 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

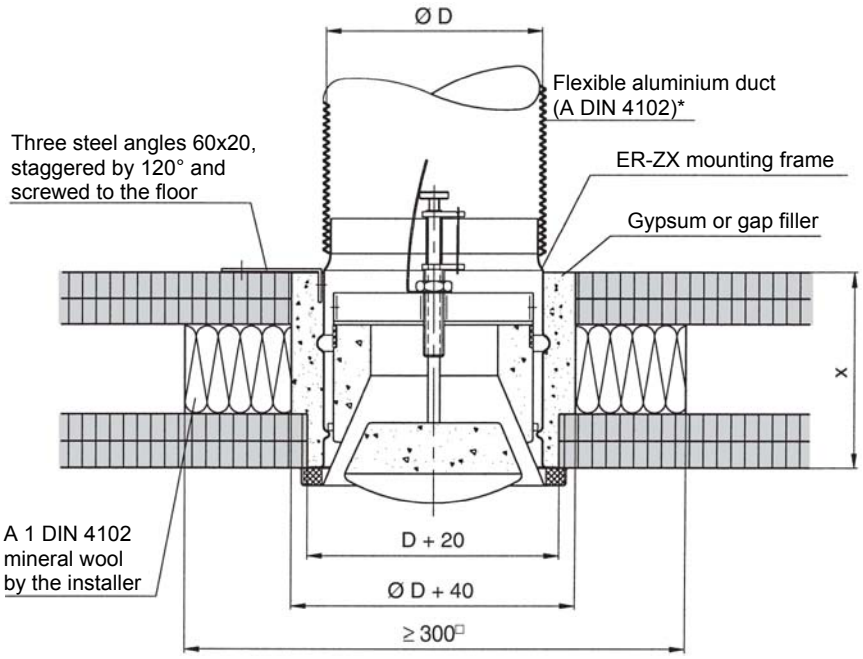
Type: BSE 90

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

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

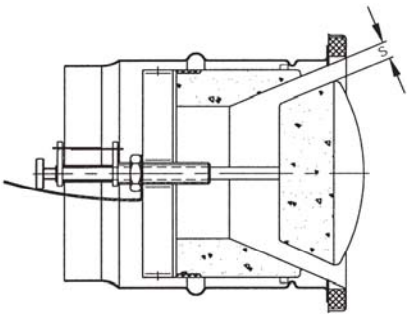
From air outlet conduit into room:

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

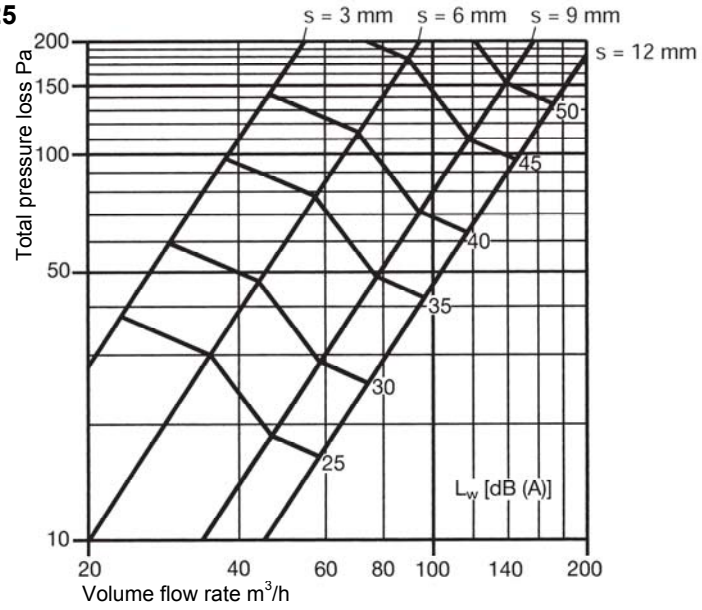
From room into air outlet conduit:

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

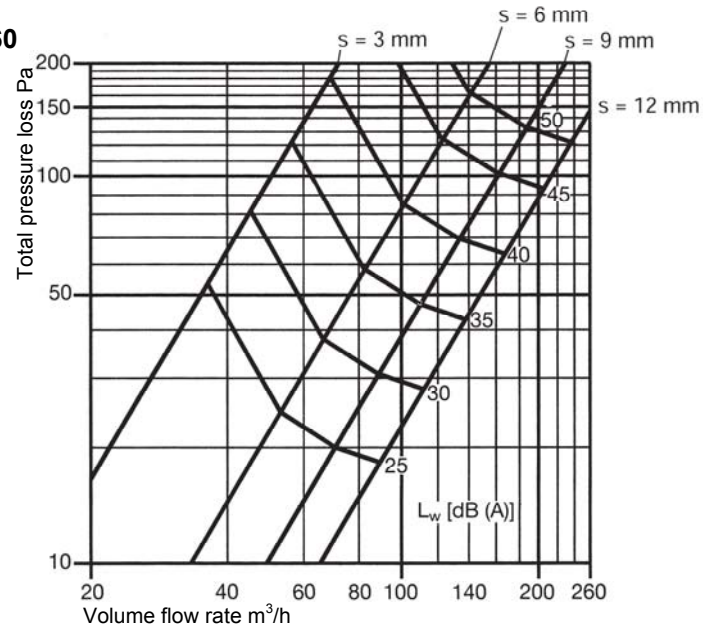
Gap width: s



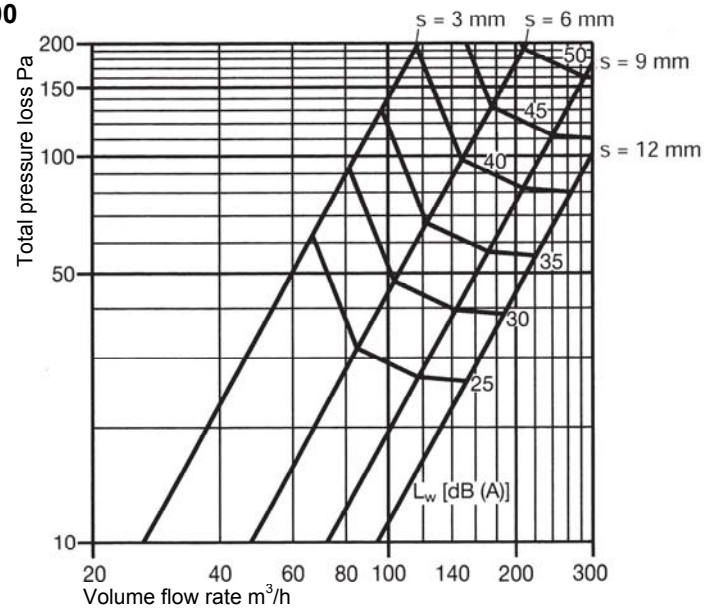
NW 125



NW 160



NW 200



Damper
BCF-K90

Test certificate
Z-41.3-331

Resistance class K90/K30

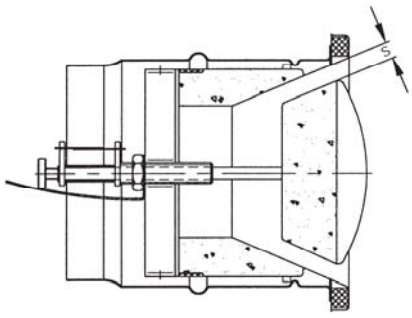
Design diagrams

Pressure drop and noise level
Supply air

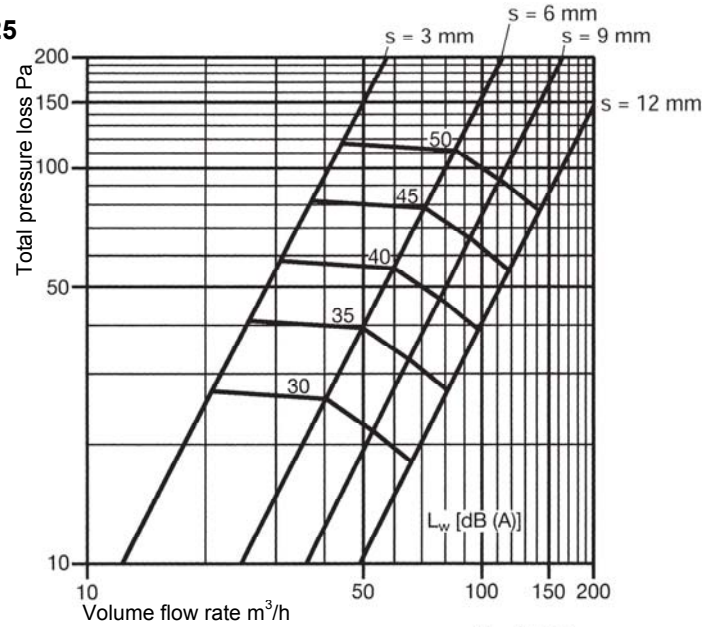
Adjustment of the air volume

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.

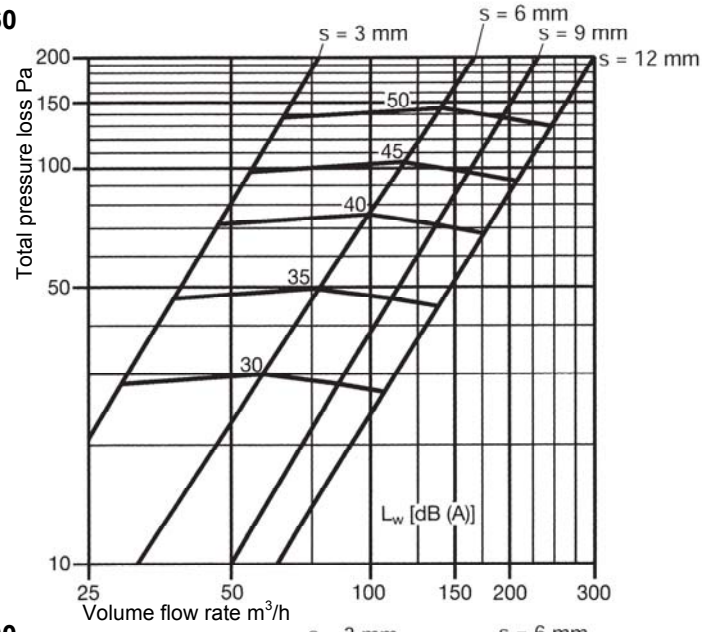
Gap width: s



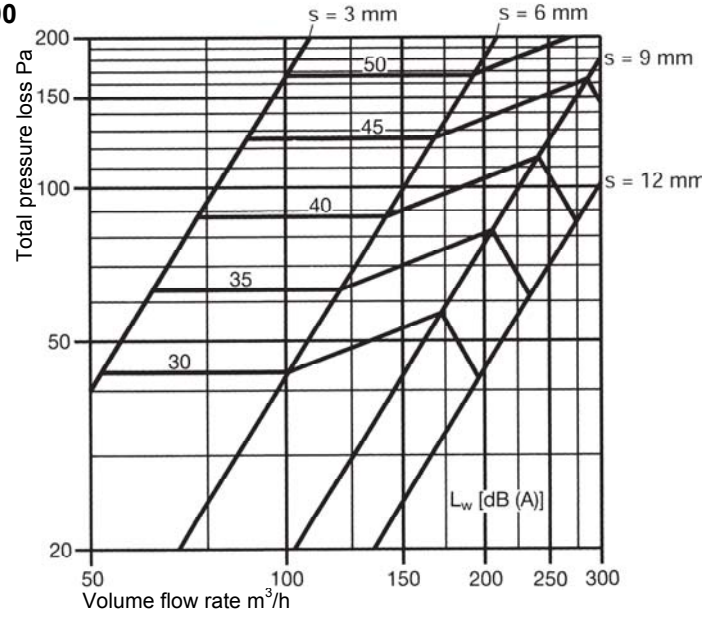
NW 125



NW 160



NW 200



Damper
BCF-K90

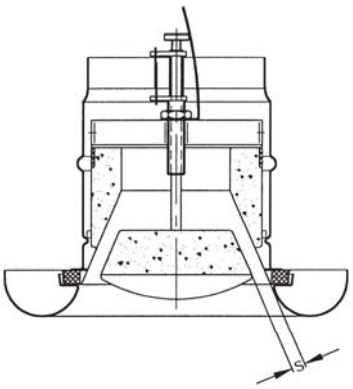
Test certificate
Z-41.3-331

Resistance class K90/K30

Design diagrams

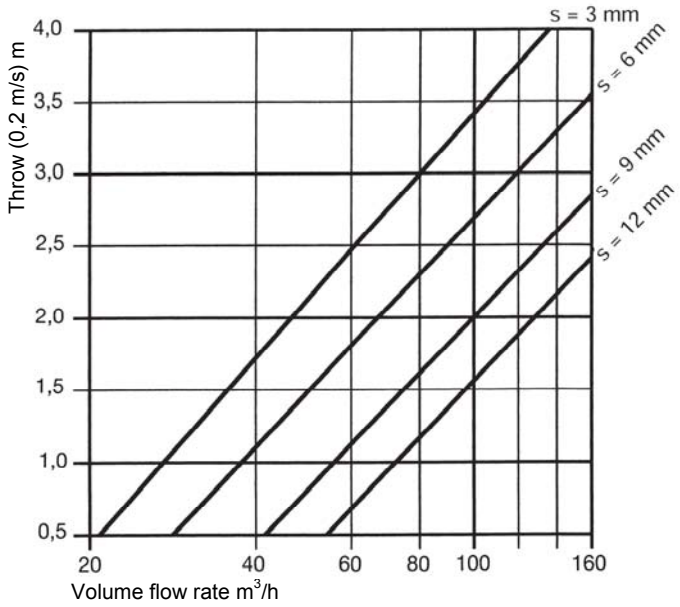
Throw of the BCF-K90 with a ZR supply air ring and built into floors (isothermal)

Gap width: s

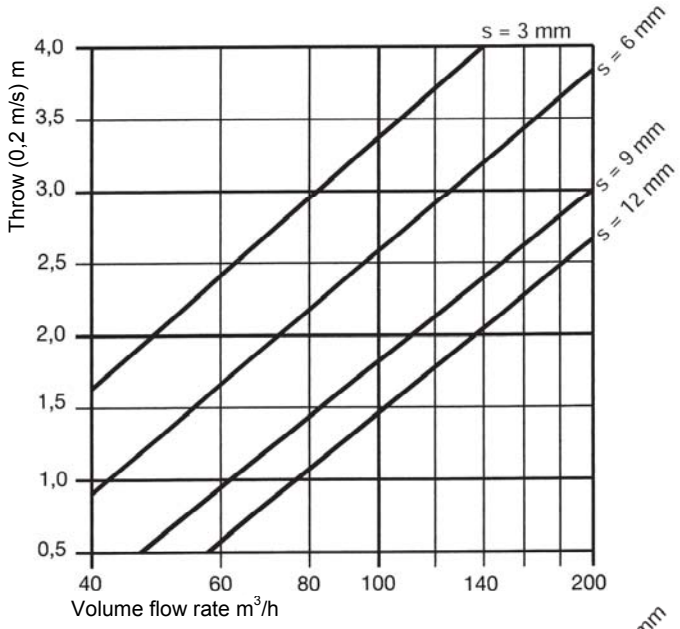


L 0,2 is the distance between BCF-K90 + ZR (supply air ring) and the point beneath the floor, where v_0 has reduced to 0,2 m/s.
* (measured ~ 100 – 150 mm beneath the floor)

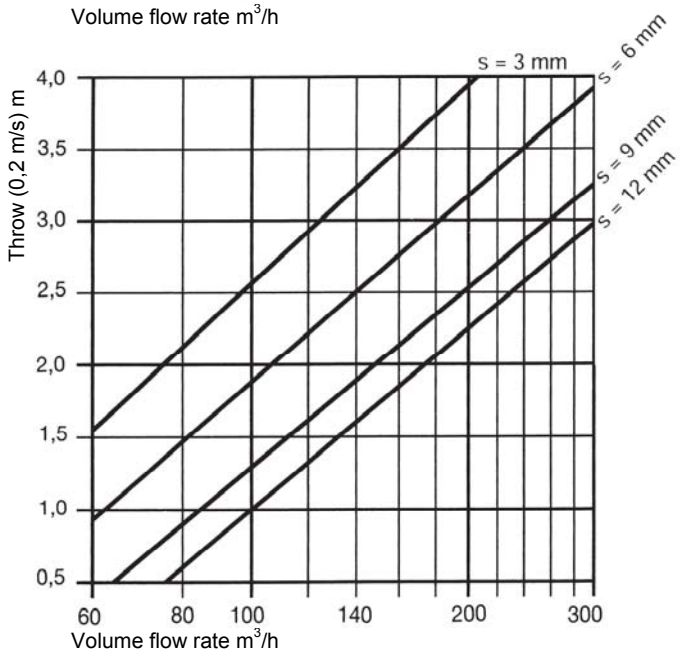
NW 125



NW 160



NW 200



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

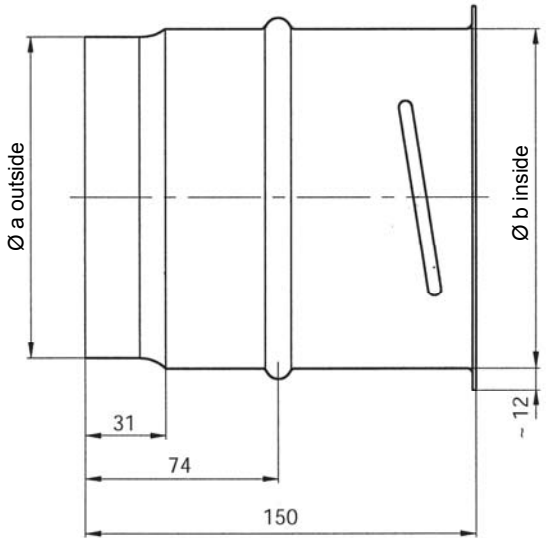
Lightweight wall

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

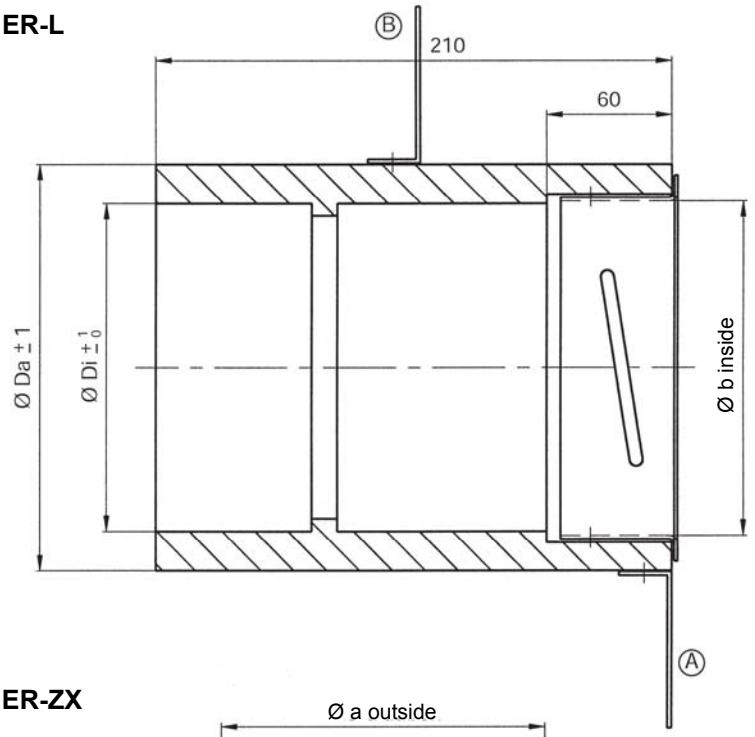
Supplement floor

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

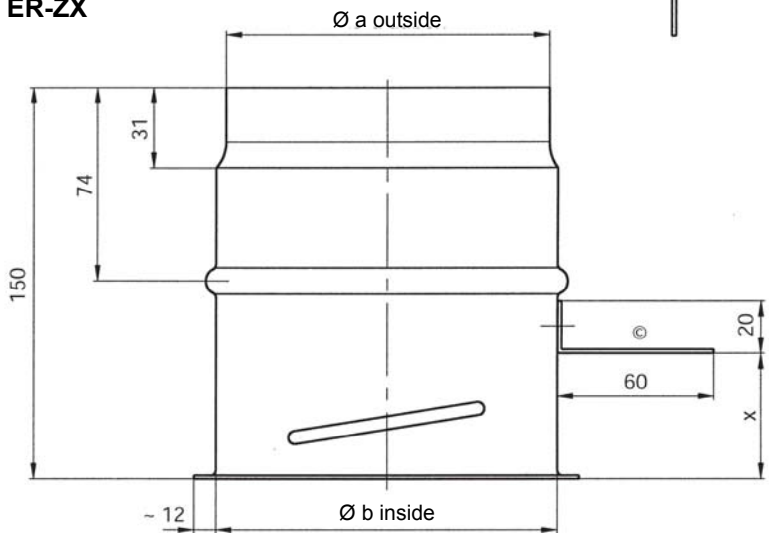
Type: ES



Type: ER-L



Type: ER-ZX



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

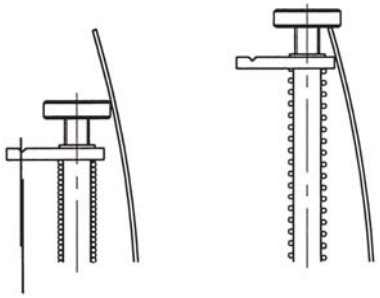
NW	125	160	200
Ø	118	155	195

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

Detail A



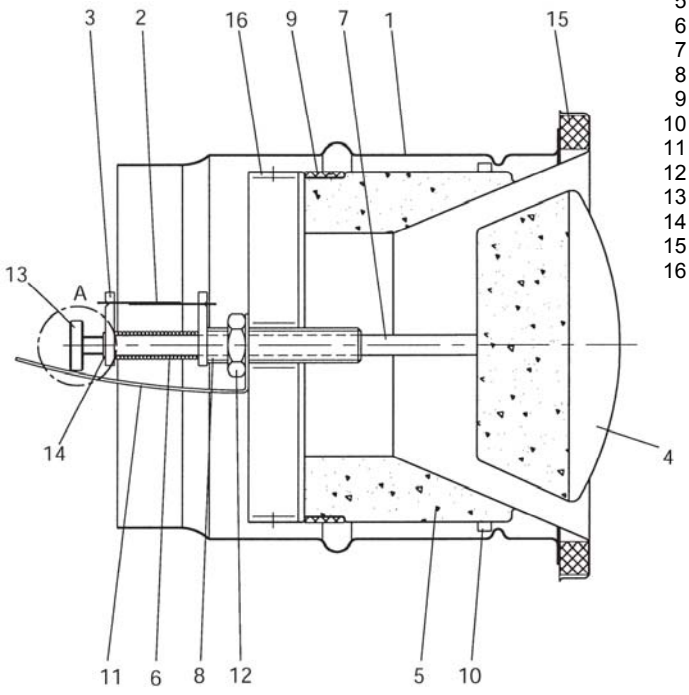
Working condition valve open

When released, valve closed and locked

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.

List of spare parts



1 Mounting frame
2 Fusible link
3 Supporting arm
4 Valve disk
5 Valve seat
6 Compression spring
7 Guide spindle
8 Threaded sleeve
9 Intumescent material
10 Clamping rivet
11 Safety stirrup
12 Lock nut
13 Setting dial
14 Seeger ring
15 Sealing ring
16 Cross-piece

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 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!

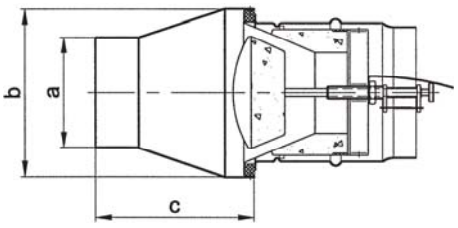
Accessories
for BCF-K90

Electrical limit switch
Type: MS-C

Supply air ring
Type: ZR

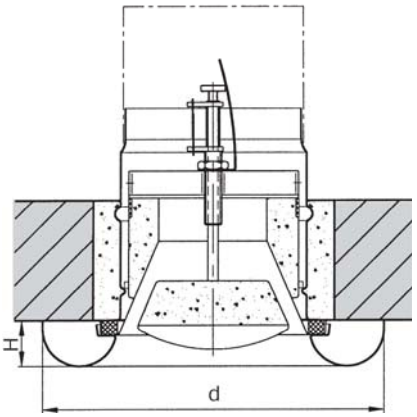
Connecting collar
Type: ÜG

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



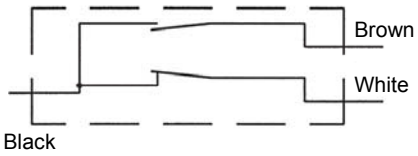
NW	b	a	c
125	157	125	125
160	189	160	136
200	237	200	50

BCF with supply air ring
Type: ZR



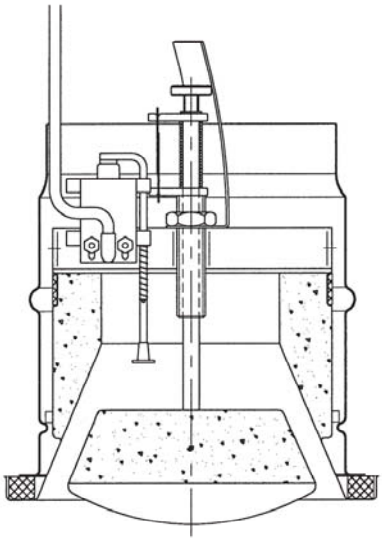
NW	d	H
125	236	33
160	283	43
200	334	51

Wiring diagram for MS-C

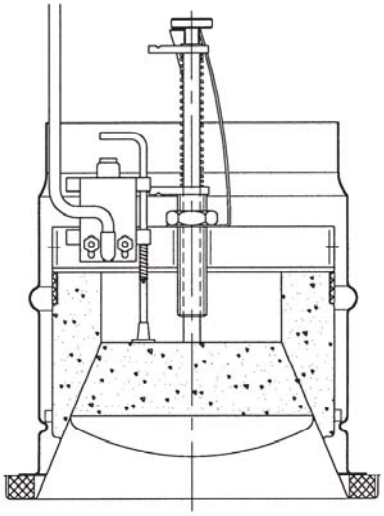


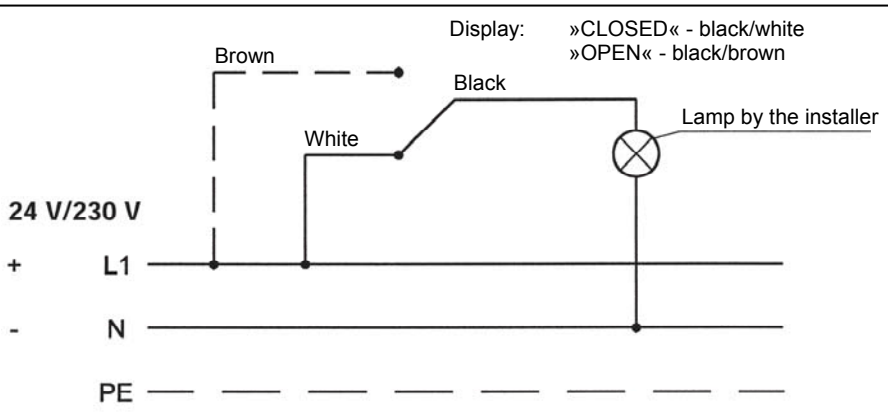
Please note: For inspection, leave within the duct at least 500 mm as longitudinal compensation.

Position »OPEN«



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 gl 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^2

Tender Text

Item	Description	Unit Piece	Unit price EUR	Total EUR
	Damper with test certificate Z-41.3-331 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 **infinitely variable control of the air volume.** 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. 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. **Technical data:** Diameter: 125 mm 160 mm 200 mm Length: ca. 150 mm Temperature of activation: 72 °C Air volume: Noise level: Manufacturer: **Strulik** Type: **BCF-K90 + ES** (including mounting frame) **Accessories:** Electrical limit switch Type: **MS-C** Disk valve for overflow opening Type: **VMT** Supply air ring Type: **ZR** Connecting collar for duct connection Type: **ÜG**			

Tender Text

Item	Description	Unit Piece	Unit price EUR	Total EUR
	Damper with test certificate Z-41.3-331 for a K90 resistance class for the installation into light F90 partition walls, as air-bleed valve or air-vent valve with **infinitely variable control of the air volume.** 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. 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 ate staggered by 60°. The special sealing guarantees the exclusion of air and firm seat of the valve. Therefore easy exchange of the fusible link. **Technical data:** Diameter: 125 mm 160 mm 200 mm Length: ca. 150 mm Temperature of activation: 72 °C Air volume: Noise level: Manufacturer: **Strulik** Type: **BCF-K90 + ER-L** (including mounting frame) **Accessories:** Electrical limit switch Type: **MS-C** Disk valve for overflow opening Type: **VMT** Male-male connector Type: **NP** Connecting collar for duct connection Type: **ÜG**			

Item	Description	Unit Piece	Unit price EUR	Total EUR
	Damper with test certificate Z-41.3-331 for a K30U/K90U resistance class for the installation into F30/F90 supplement floors and for a K90 resistance class for the installation into F90 shaft partition walls, F90 fire resistant ventilation ducts and cable conduits, as air-bleed valve or air-vent valve with **infinitely variable control of the air volume.** 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. The mounting is performed by screwing into the mounting frame. The mounting frame of sheet steel has three mounting angles for fastening. The special sealing guarantees the exclusion of air and firm seat of the valve. Therefore easy exchange of the fusible link. **Technical data:** Diameter: 125 mm 160 mm 200 mm Length: ca. 150 mm Temperature of activation: 72 °C Air volume: Noise level: Manufacturer: **Strulik** Type: **BCF-K90 + ER-ZX** (including mounting frame) **Accessories:** Electrical limit switch Type: **MS-C** Disk valve for overflow opening Type: **VMT** Supply air ring Type: **ZR** Connecting collar for duct connection Type: **ÜG**			

Damper
BTZ-2-K90

Test certificate
Z-41.3-549

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

Important features

- The Strulik BTZ-2-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**
- Maximum sealing

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

Ordering example:

BTZ-2-K90(U)/KKS/100/MS-C

Accessories (optional):

- MS-C - electrical limit switch
- VMT - disk valve for overflow opening

NW 100/125/160 or 200

Mounting frame for installation into:

- KKS - light partitions, brickwork or concrete floors
- KKL - as above, however lengthened, L = 140 mm
- KKL-ZX - F30/F90 supplement floors, shaft walls or classified ducts, L = 140 mm
- KKS-ZX - as above, however in short version for a floor thickness ≤ 30 mm
- ED-2 - solid walls (dry mounting)
- ED-Z2 - massive floors and supplement floors (dry mounting)
- EW-L2 - light partition walls (dry mounting)

For the installation into a F30/F90 supplement floor. If the mounting frame and floor thickness have not been specified, the KKL-ZX will be delivered with loose angles for fastening.

DEUTSCHES INSTITUT FÜR BAUTECHNIK

Anstalt des öffentlichen Rechts

10829 Berlin, 6. März 1998
Kolonnenstraße 30
Telefon: (0 30) 7 87 30 - 344
Telefax: (0 30) 7 87 30 - 320
GeschZ.: III 15-1.41.3-43/96

Allgemeine bauaufsichtliche Zulassung

Zulassungsnummer:	Z-41.3-549
Antragsteller:	Strulik GmbH Neesbacher Straße 13 65597 Hünfelden-Dauborn
Zulassungsgegenstand:	Absperrvorrichtungen gegen Brandübertragung in Lüftungsleitungen Typ: BTZ. Die Absperrvorrichtungen haben verwendungsbedingt die Feuerwiderstandsklasse K90, K30, K90-U oder K30-U
Geltungsdauer bis:	6. März 2003

Der obengenannte Zulassungsgegenstand wird hiermit allgemein bauaufsichtlich zugelassen. Diese allgemeine bauaufsichtliche Zulassung umfaßt acht Seiten und 15 Anlagen.

Safety

The Strulik BTZ-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.

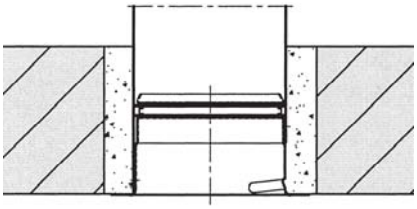
Damper
BTZ-2-K90

Test certificate
Z-41.3-549

Resistance class K90/K30

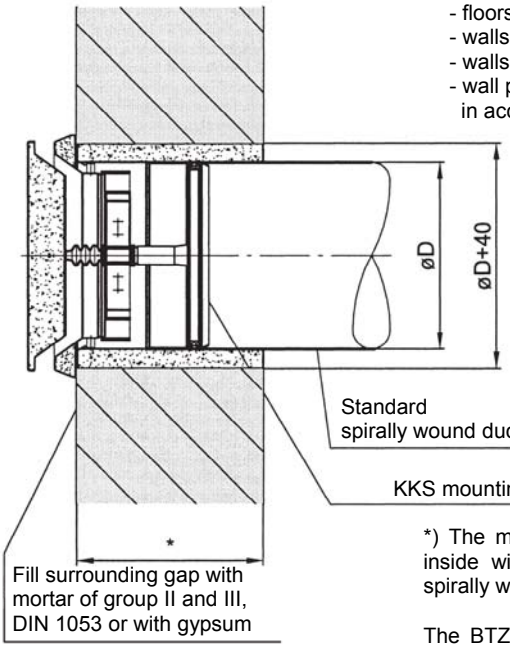
For the installation into brickwork or a concrete floor

Installation detail: KKS mounting frame



WFR plastered flush with the wall or floor

WFR connection at the rear third section



* 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 100 mm
125 mm
160 mm
200 mm

*) The mounting frame shall be riveted from the inside with steel rivets 3x6 within the standard spirally wound duct.

The BTZ-K90 damper shall be properly installed together with the supplied steel mounting frame.

A subsequent installation is also possible, if the installer has mounted a spirally wound duct flush with the wall and with 20 mm mortar or gypsum, the KKS mounting frame of the BTZ-K90 has been inserted into the WFR and riveted with at least three steel rivets 3x6 that are staggered by 120°.

With overflow openings Installation for K90

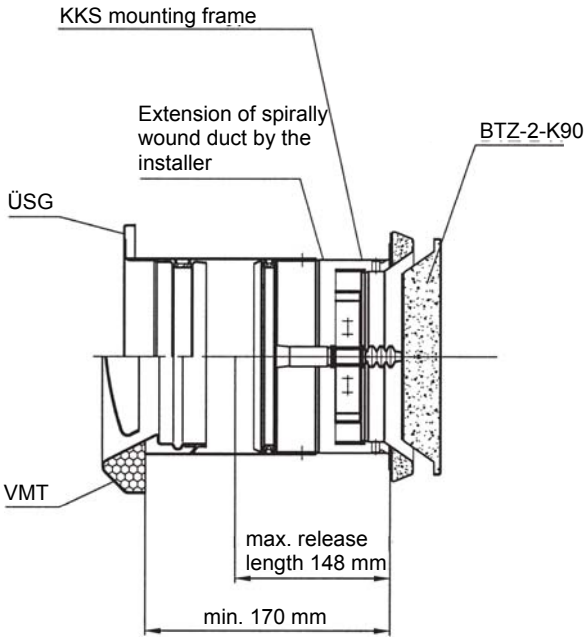
The mounting frame shall be lengthened by 1,5 x d.
100 Ø L = 70 + 150 = 220 mm
125 Ø L = 70 + 185 = 255 mm
160 Ø L = 70 + 240 = 310 mm
200 Ø L = 70 + 300 = 370 mm
Without extension resistance class K30.

Instead of the duct extension 1,5 x d, a VMT steel disk valve or metal-mesh grid, mesh size ≤ 20 mm□ can be used to achieve the K90 resistance class without ventilation ducts. Please note that the release length is ca. 148 mm!

Lengthened mounting frame for installation as overflow opening

Total length of mounting frame
Ø 100 ≙ L 220 mm
Ø 125 ≙ L 255 mm
Ø 160 ≙ L 310 mm
Ø 200 ≙ L 370 mm

Installation example: Overflow opening in brickwork or light partition walls with the VMT disk valve



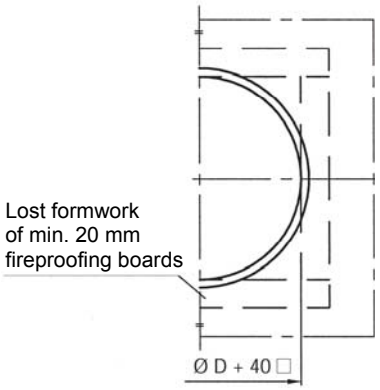
Damper
BTZ-K90

Test certificate
Z-41.3-549

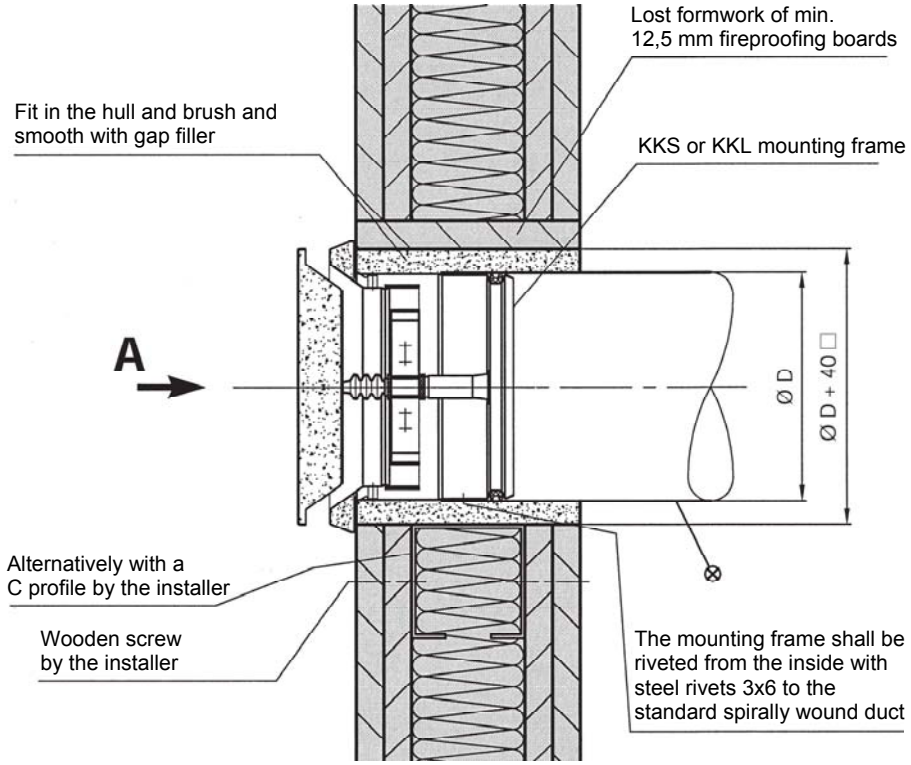
Resistance class K90/K30

For the subsequent installation into light F30-F90 partition walls

Detail A



Installation into light partition walls in accordance with DIN 4102-4



Damper
BTZ-K90

Test certificate
Z-41.3-549

Resistance class K90/K30

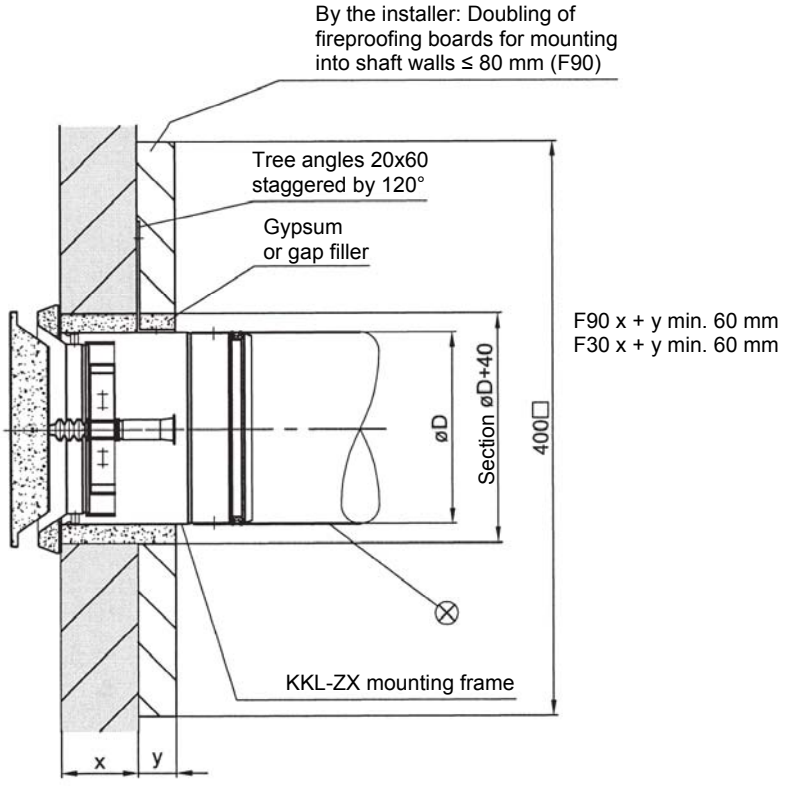
For the installation into F30-F90 shaft walls

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.



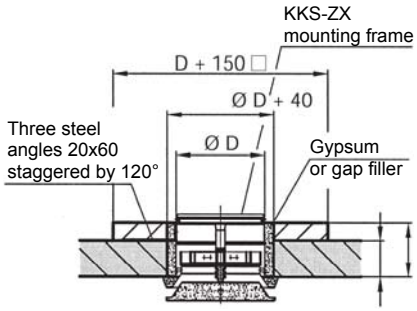
Damper
BTZ-2-K90

Test certificate
Z-41.3-549

Resistance class K90/K30

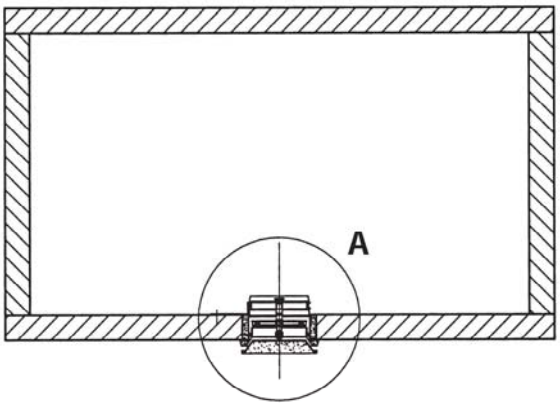
For the installation into fire resistant ventilation ducts and cable conduits

Detail A for L30



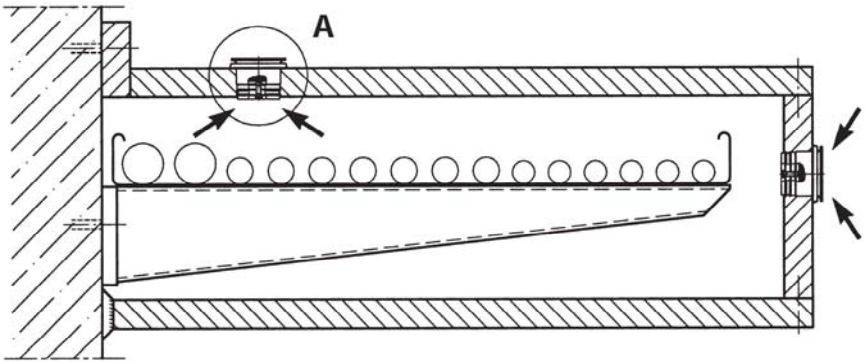
Depending on the wall thickness x, double the dimension y to min. 40 mm in total.

Installation into fire resistant L30 – L90 ventilation ducts



Installation into cable conduits

L90 drawing



Damper
BTZ-2-K90

Test certificate Z-41.3-549

Resistance class K30U

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

Dimensions

Ø D	100	125	160	200

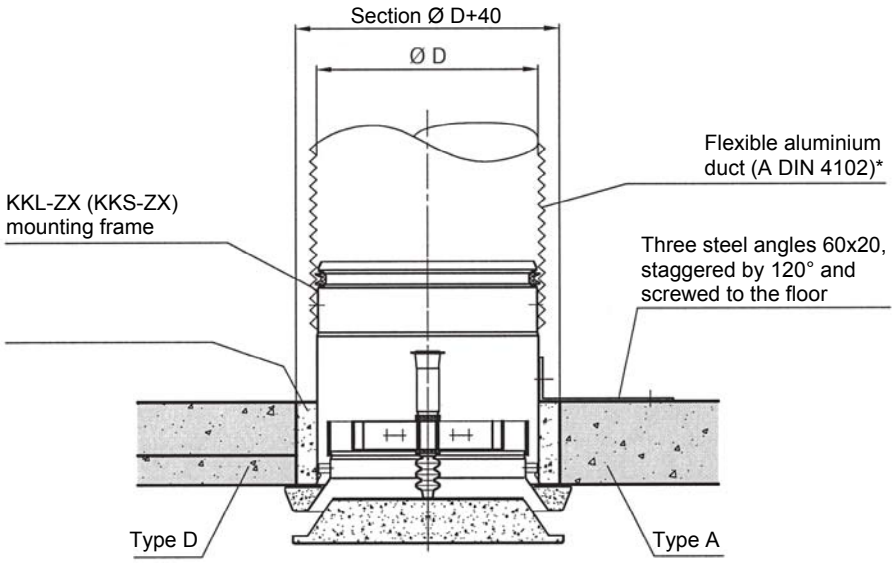
X = according to the required plate thickness of the floor. **Please state when ordering.**

Technical data

Installation into suspended F30 ceilings in accordance with the table on **page 186** for type A + D and suspended metal ceilings in accordance with the test certificate.

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



* not part of the scope of delivery

Damper
BTZ-2-K90

Test certificate
Z-41.3-549

Resistance class K30U

For the installation into fire resistant suspended F30 DUO ceilings as laid-in floor

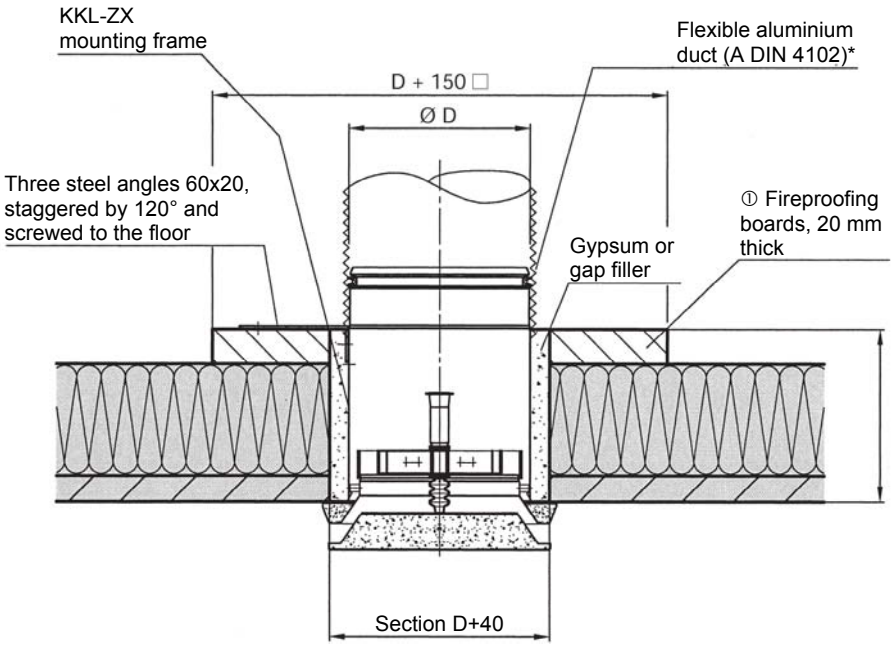
Dimensions

Ø D	100	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 BTZ-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
BTZ-2-K90

Test certificate Z-41.3-549

Resistance class K30U

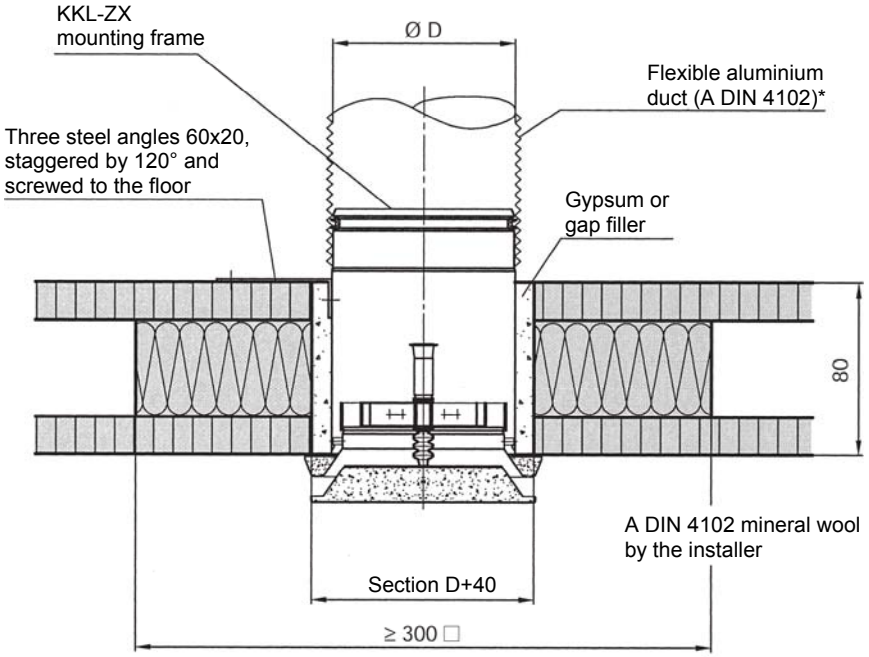
For the installation into fire resistant suspended F30 ceilings Type: BSE30

Dimensions

Ø D	100	125	160	200

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

Installation of a BTZ-K30U into an OWAcoustic BSE30 floor (self-supporting)



* not part of the scope of delivery

Damper
BTZ-2-K90

Test certificate
Z-41.3-549

Resistance class K30U

For the installation into suspended metal F30 ceilings

Approval of the floors
in accordance with the test certificates

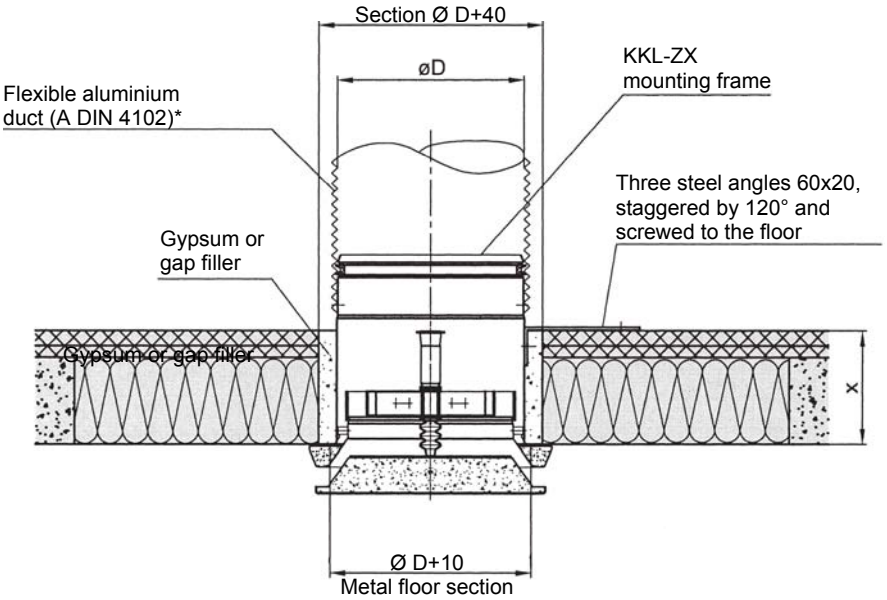
Dimensions

Ø D	125	160	200

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

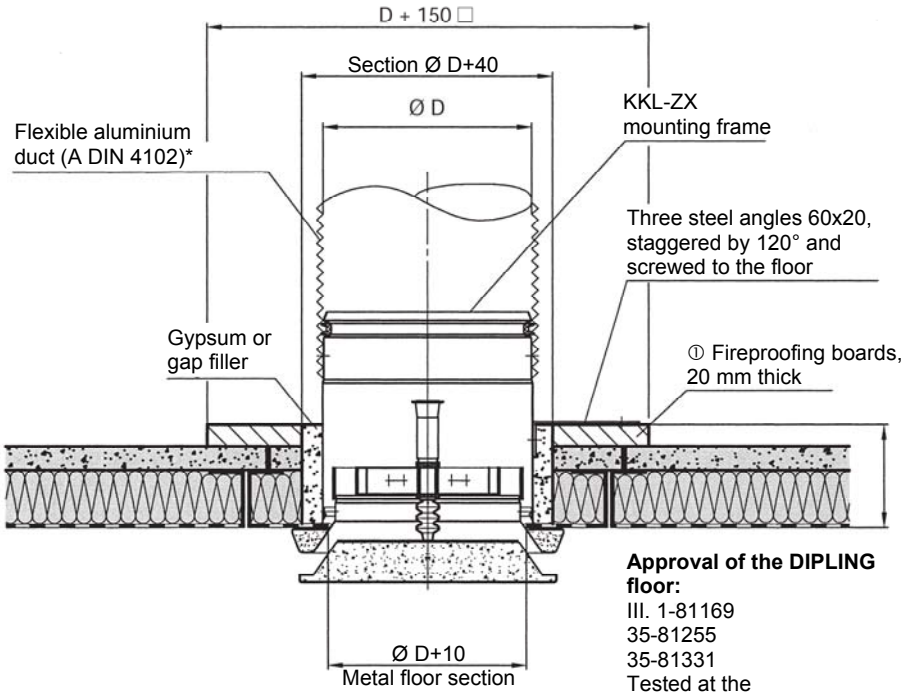
① Scope of delivery from Strulik or by the installer

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



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

* not part of the scope of delivery

Damper
BTZ-2-K90

Test certificate
Z-41.3-549

Resistance class K90U

For the installation into fire resistant suspended F90 ceilings

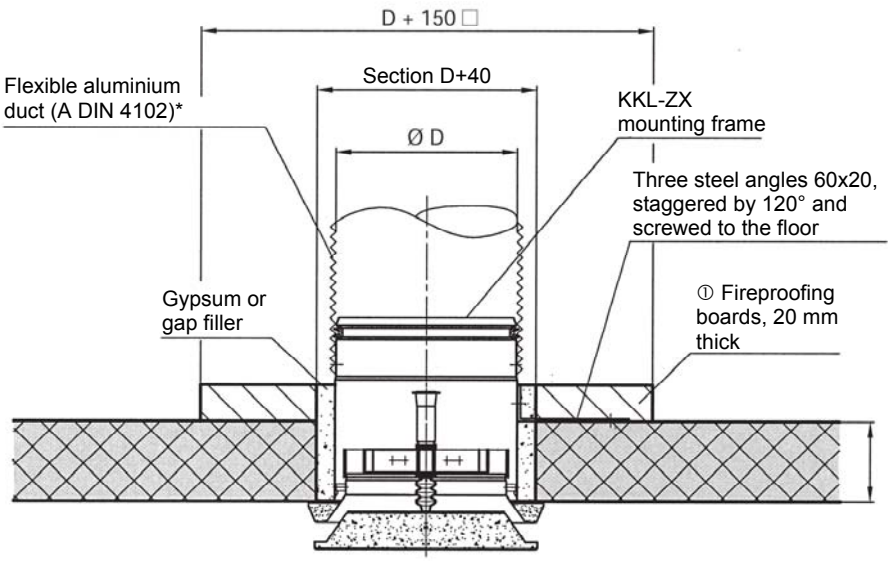
Technical data

The installation into a suspended F90 ceiling is performed according to the table on **page 186**, type E + F

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 into a fire resistant suspended F90 Ceiling as a screwed and smoothed floor, see the table on page 186, type E + F



* not part of the scope of delivery

Damper
BTZ-2-K90

Test certificate Z-41.3-549

Resistance class K90U

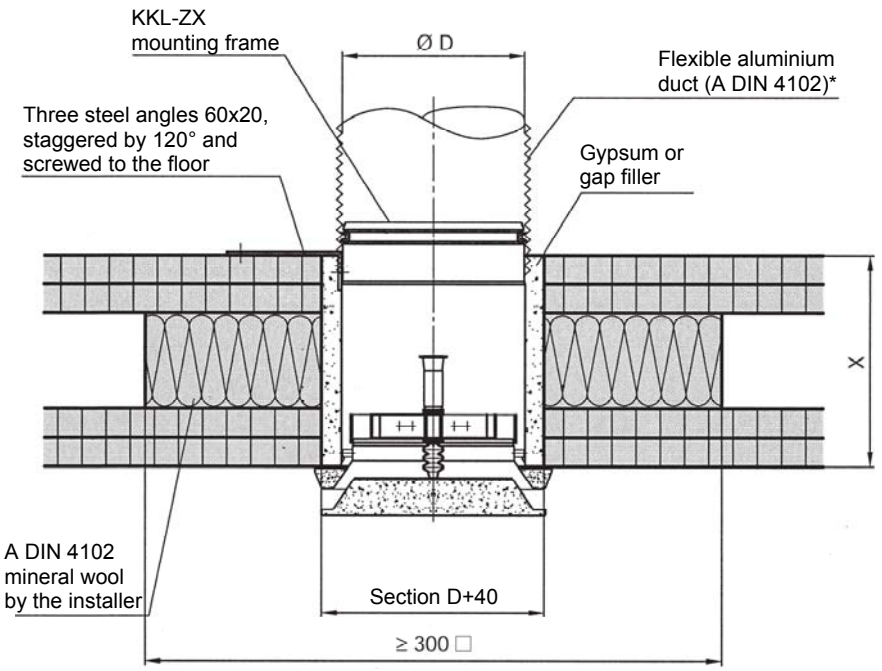
For the installation into fire resistant suspended F90 ceilings
Type: BSE90

Dimensions

Ø D	100	125	160	200

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

Installation of a BTZ-K90U into an OWAcoustic BSE90 floor (self-supporting)



* not part of the scope of delivery

Damper
BTZ-2-K90

Test certificate
Z-41.3-549

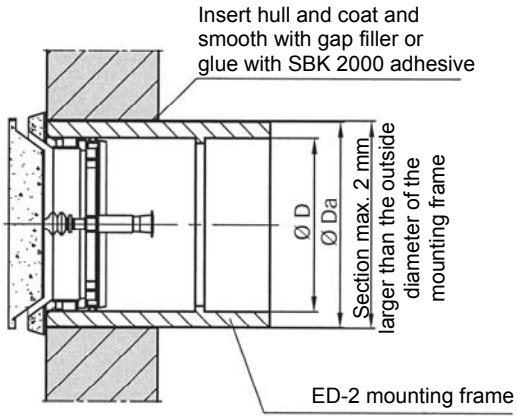
Resistance class K90/K30

For the installation into a solid wall or concrete floor Dry construction

Installation into a solid wall with the ED-2 mounting frame

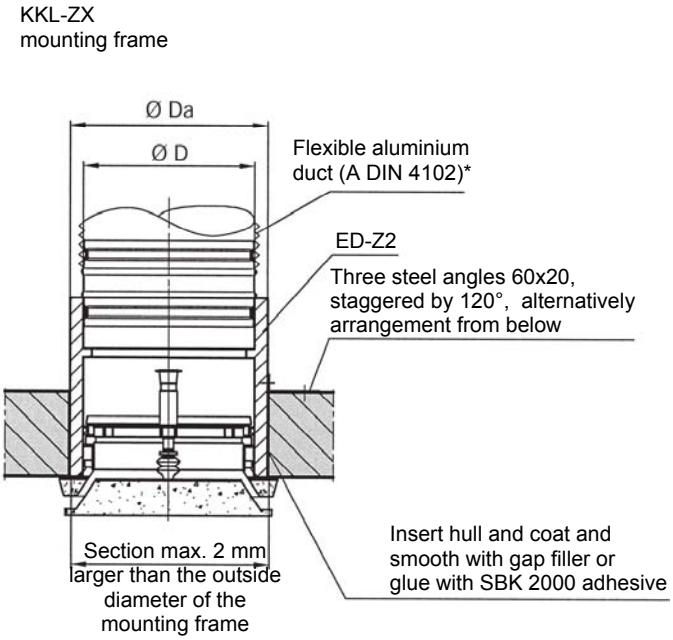
Installation into ceilings with the ED-Z2 mounting frame

Installation into solid walls of brickwork, concrete or gas concrete



ØD	ØDa
100	131
125	156
160	191
200	232

Installation into concrete or gas concrete floors (dry construction)



* not part of the scope of deliver

Damper
BTZ-2-K90

Test certificate Z-41.3-549

Resistance class K90/K30

For the installation into light F30-F90 partition walls

Dry construction

Mounting frame
Type: EW-L2

Mounting frame
Type: ED-2

Permissible ducts

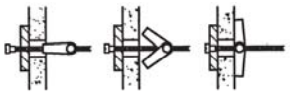
The dampers shall only be connected to ventilation ducts, which due to their design or laying, will not apply considerable forces to the dampers as a result of warming.

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).

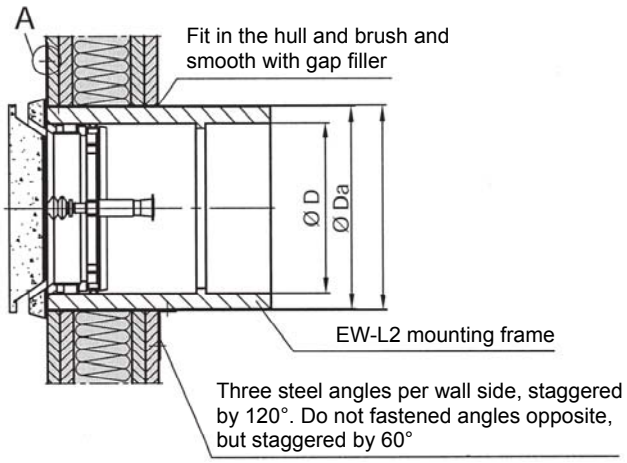
This compensator may also be of standard flammable materials (class B2 according to DIN 4102), if it is directly connected to the specified ventilation duct of non-combustible materials.

Installation into light F90 partition walls

Detail A
Spring folding dowel

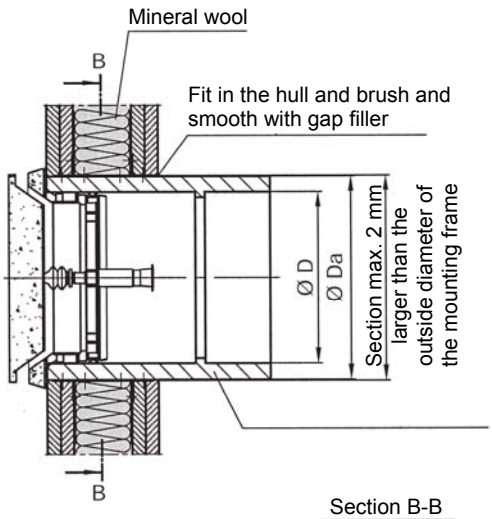


Alternatively instead of spring folding dowels, only fastening with wooden screws 4 x 45 or 4 x 25

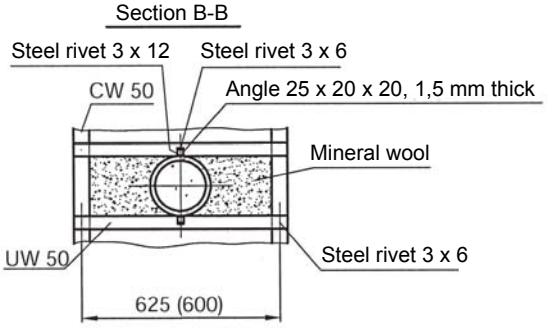


ØD	ØDa
100	131
125	156
160	191
200	232

Installation into light F90 (F30) partition walls



ØD	ØDa
100	131
125	156
160	191
200	232



Damper
BTZ-2-K90

Test certificate
Z-41.3-549

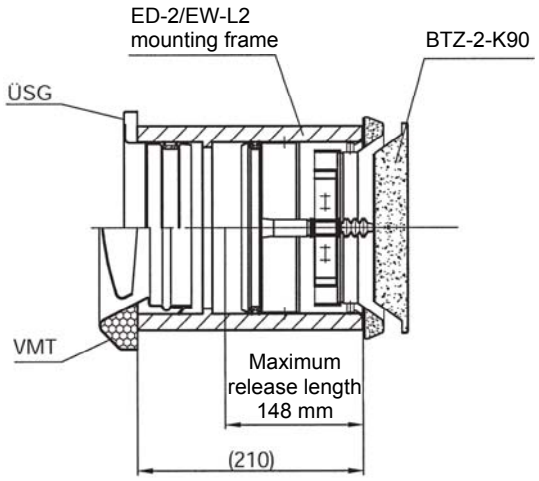
Resistance class K90/K30

Overflow opening

Installation example as a K90 overflow opening

The other side of the BTZ-2 damper shall be covered with a sheet steel VMT disk valve, ÜSG overflow grille or a metal mesh grid, mesh size ≤ 20 mm □.

Installation example: Overflow opening in brickwork or light partition walls together with the VMT disk valve



Damper
BTZ-2-K90

Test certificate Z-41.3-549

Resistance class K30U

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

Dry construction

Dimensions

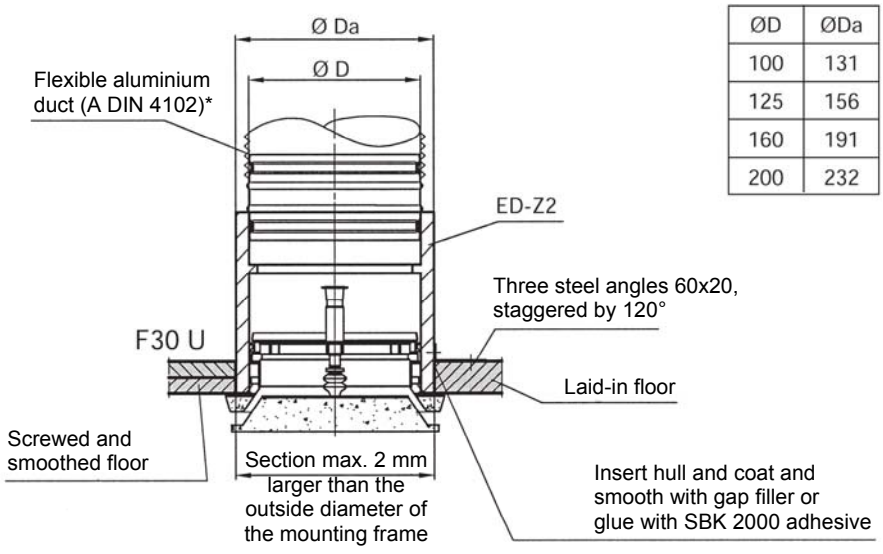
Ø D	100	125	160	200

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

Technical data

Installation into suspended F30 ceilings in accordance with the table on **page 186** for type A + D and suspended metal ceilings in accordance with the test certificate.

Installation into independent, classified F30U supplement floors



ØD	ØDa
100	131
125	156
160	191
200	232

* not part of the scope of delivery

Damper
BTZ-2-K90

Test certificate Z-41.3-549

Resistance class K30U

For the installation into fire resistant suspended F30 DUO ceilings as a laid-in floor

Dry construction

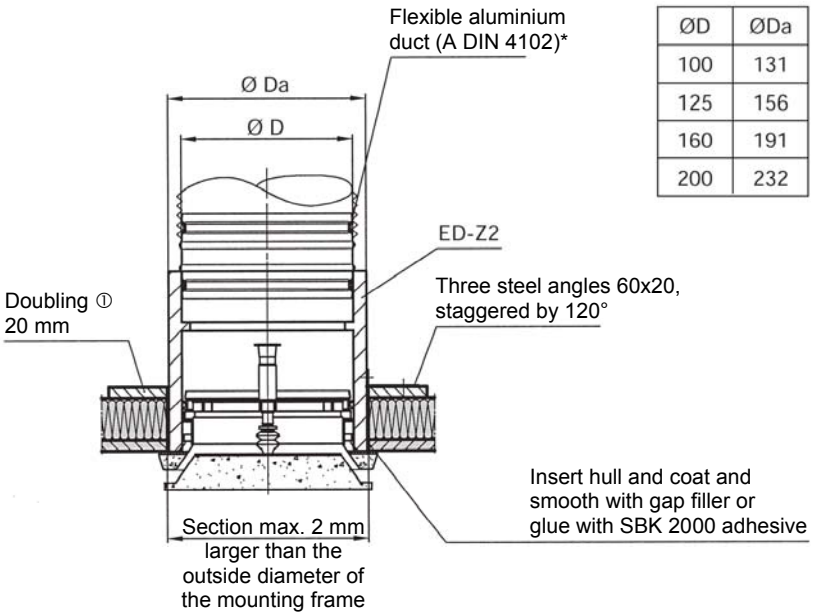
Dimensions

Ø D	100	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 into an OWAcoustic F30 DUO ceiling as a laid-in floor



ØD	ØDa
100	131
125	156
160	191
200	232

* not part of the scope of delivery

Damper
BTZ-2-K90

Test certificate Z-41.3-549

Resistance class K30U

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

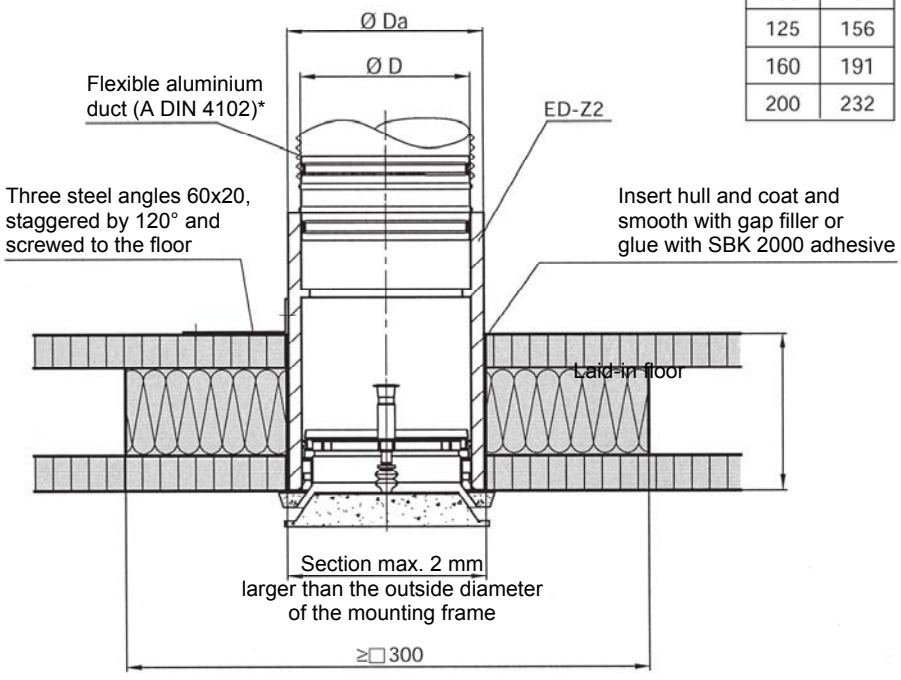
Dry construction

Dimensions

Ø D	100	125	160	200

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

Installation of a BTZ-2-K30U into an OWAcoustic BSE30 ceiling (self-supporting)



ØD	ØDa
100	131
125	156
160	191
200	232

* not part of the scope of delivery

Damper
BTZ-2-K90

Test certificate Z-41.3-549

Resistance class K30U

For the installation into suspended metal F30 ceilings

Dry construction

Approval of the floors
in accordance with the test certificates

Dimensions

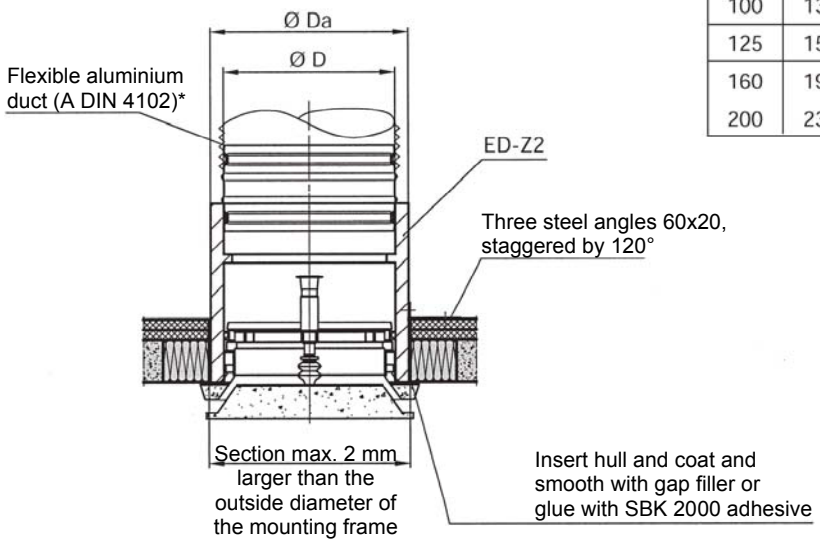
Ø D	100	125	160	200

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 into fire resistant, suspended F30 ceilings as a metal floor

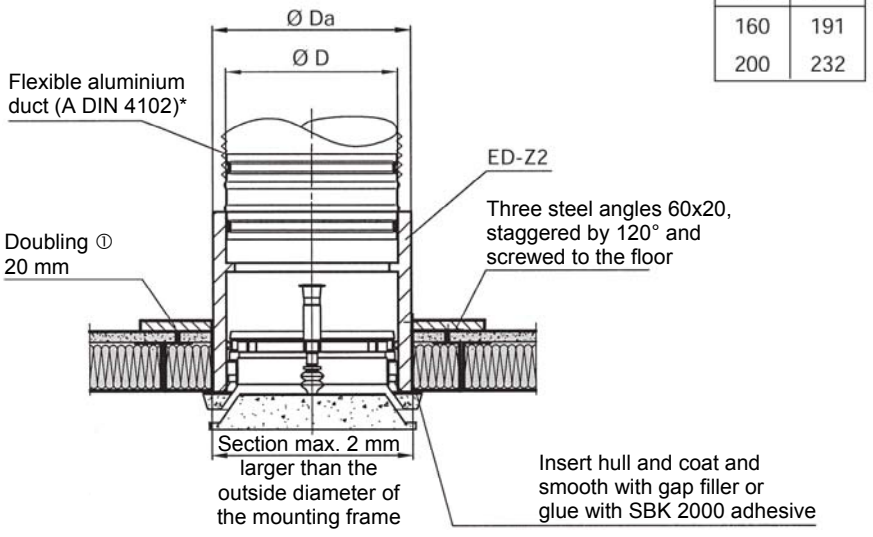
ØD	ØDa
100	131
125	156
160	191
200	232



* not part of the scope of delivery

Installation into fire resistant suspending metal F30 DIPLING ceilings

ØD	ØDa
100	131
125	156
160	191
200	232



* not part of the scope of delivery

Damper
BTZ-2-K90

Test certificate Z-41.3-549

Resistance class K90U

For the installation into fire resistant suspended F90 ceilings

Dry construction

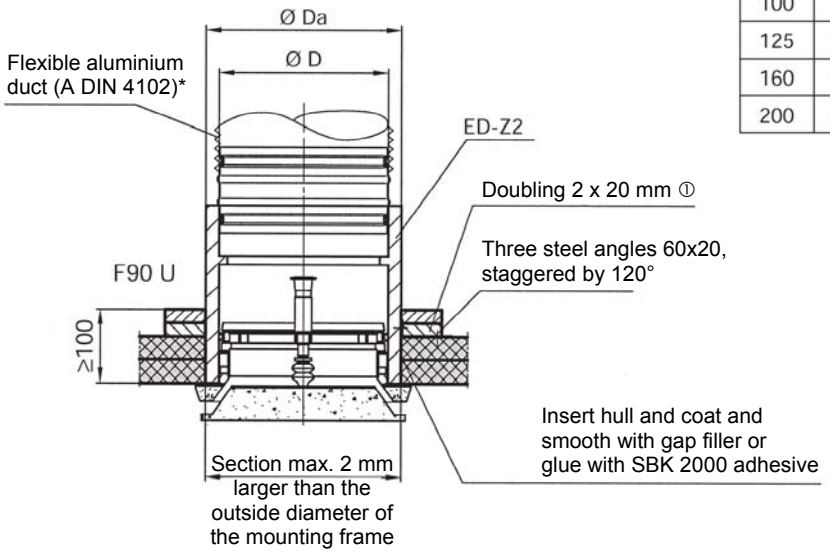
Technical data

Installation into suspended F90 ceilings in accordance with the table on **page 186**, type E + F

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 into independent, classified F90U supplement floors



ØD	ØDa
100	131
125	156
160	191
200	232

* not part of the scope of delivery

Damper
BTZ-2-K90

Test certificate Z-41.3-549

Resistance class K90U

For the installation into fire resistant suspended F90 ceilings
Type: BSE30

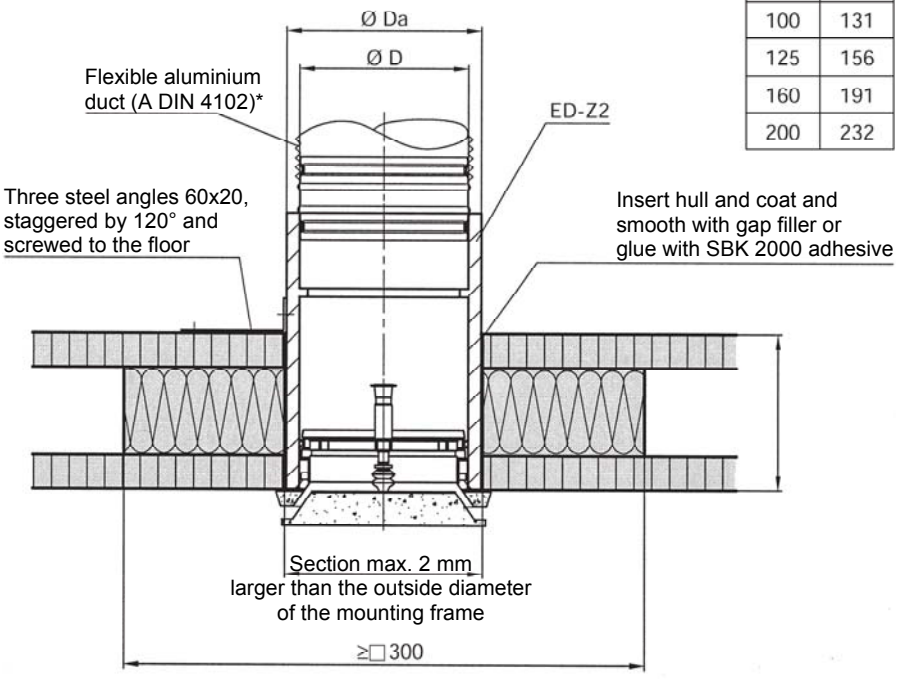
Dry construction

Dimensions

Ø D	100	125	160	200

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

Installation of a BTZ-2-K90U into an OWAcoustic BSE30 ceiling (self-supporting)



ØD	ØDa
100	131
125	156
160	191
200	232

* not part of the scope of delivery

Damper
BTZ-2-K90

Test certificate
Z-41.3-329

Resistance class K90/K30

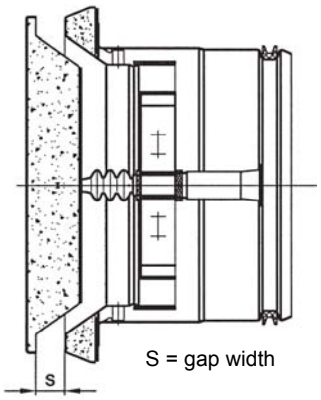
Design diagrams

Pressure drop and noise level

Supply air

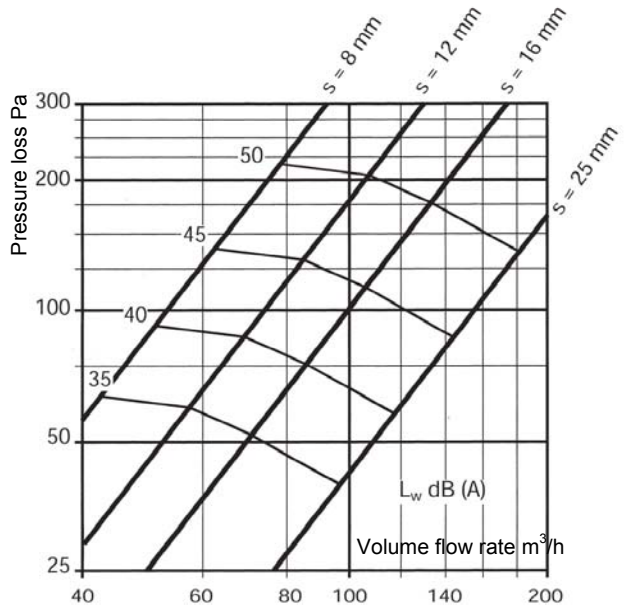
Adjustment of air volume

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

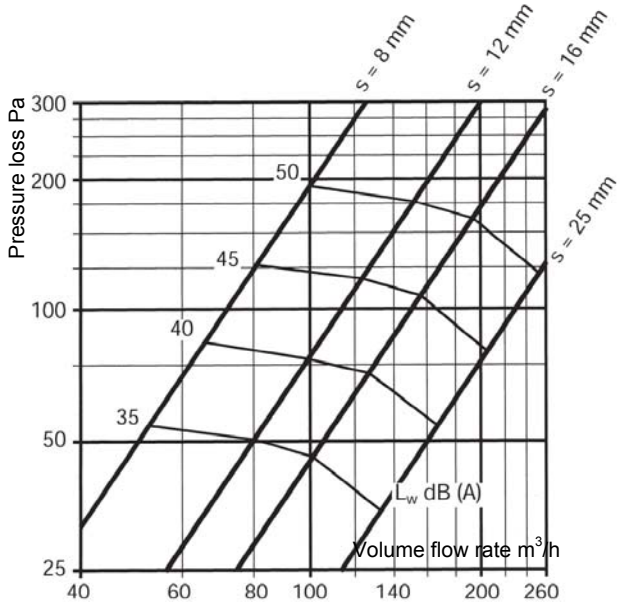


S = gap width

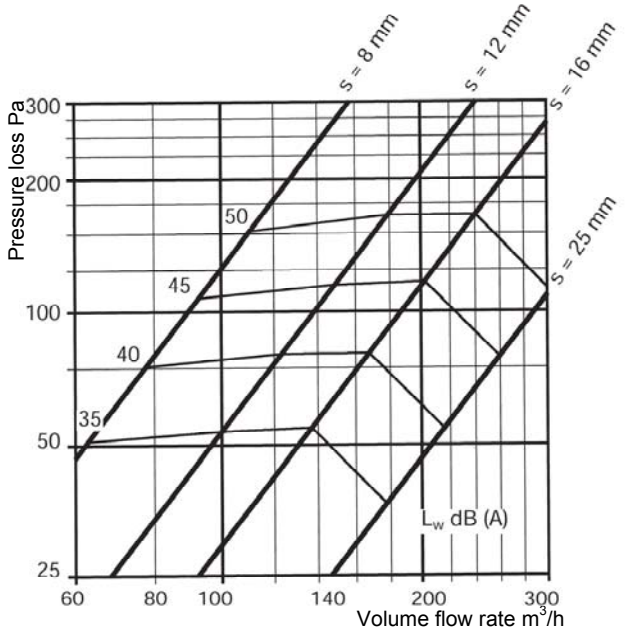
DN 100



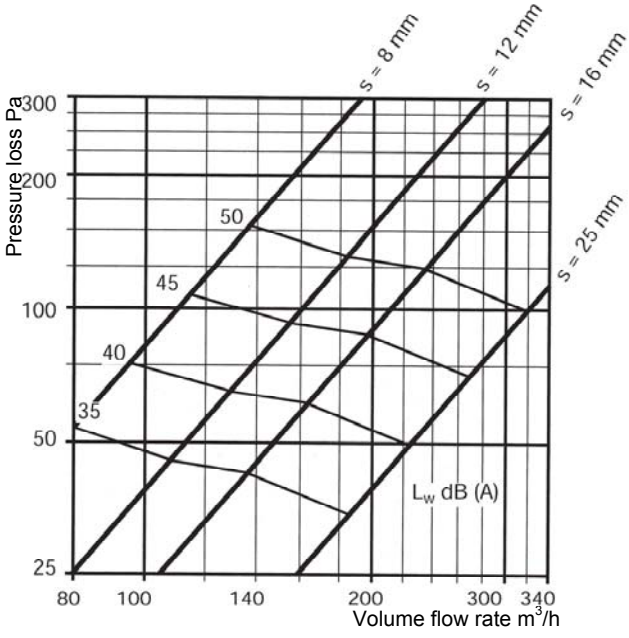
DN 125



DN 160



DN 200



Damper
BTZ-2-K90

Test certificate
Z-41.3-329

Resistance class K90/K30

Technical data of the mounting frame

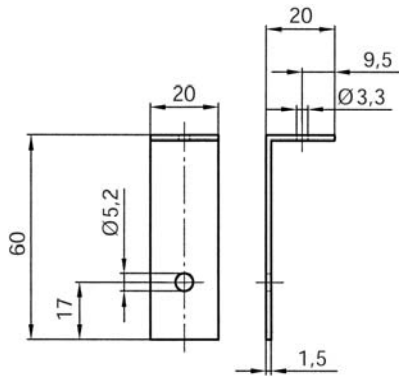
Dimensions mounting frame						
Type			KKS KKS-ZX	KKL KKL-ZX	ED-2 EW-L2 ED-Z2	
NW	A	E	H	H2	Di	Da
100	96	121	62	140	101	131
125	122	154	66		126	156
160	156	187	67		161	191
200	196	222	71		201	231

Mounting of the angle brackets spot welded ex works, if dimension x has been specified; otherwise the angles are delivered loosely. Mounting material (steel rivets 3x6) are enclosed.

Dry construction

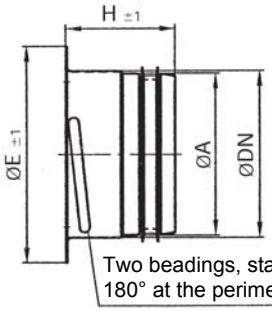
A 310 mm long mounting frame is available for light partition walls that have a wall thickness of ≥ 190 mm.

Detail: angle bracket

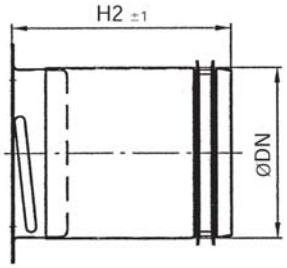


Mounting frame for light partition walls, brickwork or concrete floors

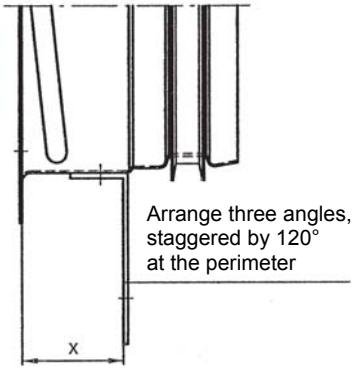
Standard
Type: KKS



Lengthened
Type: KKL



Mounting frame for F30 or F90 supplement floors or shaft walls, dimensions as above, however with three angle brackets

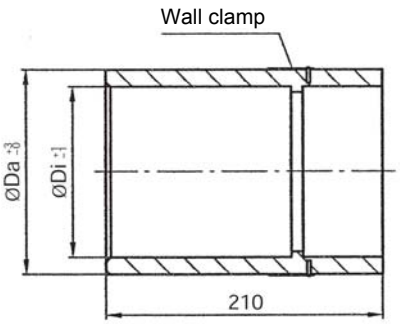


Up to a floor thickness of ≤ 30 mm
Type: KKS-ZX

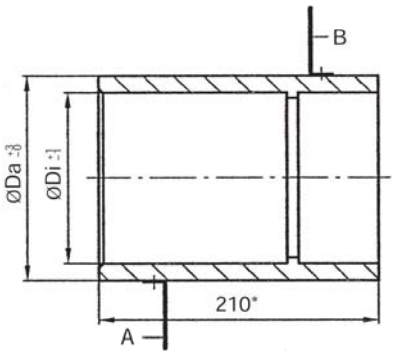
From a floor thickness of > 30 mm to max. 115 mm
Type: KKL-ZX

Please note: If the floor thickness is > 115 mm, then KKS-ZX mounting frame with WFR elongation on both sides and male-male connector for the connection with a flexible aluminium duct.

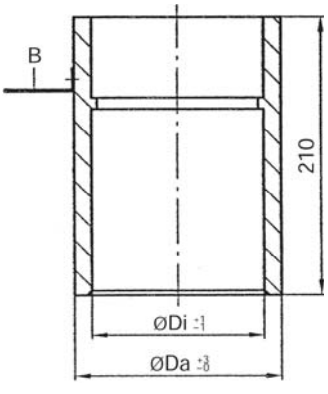
ED-2 mounting frame for solid walls



EW-L2 mounting frame for light partition walls



ED-Z2 mounting frame for classified supplement floors and solid floors in general



Damper
BTZ-2-K90

Test certificate
Z-41.3-549

Resistance class K90/K30

Technical data and maintenance

Technical data

- Outer diameter of the valve core

NW	100	125	160	200
Ø	142	170	202	243

- Maximum diameter of the valve body

NW	100	125	160	200
Ø	153	182	215	257

- Thickness of the valve core: 41 mm
- Valve body and valve disc: Steel and sheet steel design with fireproof casing
- Sealing at the front: Fire-resistant sealing ring
- Fusible link: Release at 72 °C
- Adjustable air volume: Infinitely variable

Weight in kg

Type / NW	BTZ-2	KKS	ED-2
100	~ 1,2	~ 0,14	~ 2
125	~ 1,5	~ 0,16	~ 2,4
160	~ 2,5	~ 0,22	~ 3
200	~ 3,2	~ 0,28	~ 3,7

Detail A

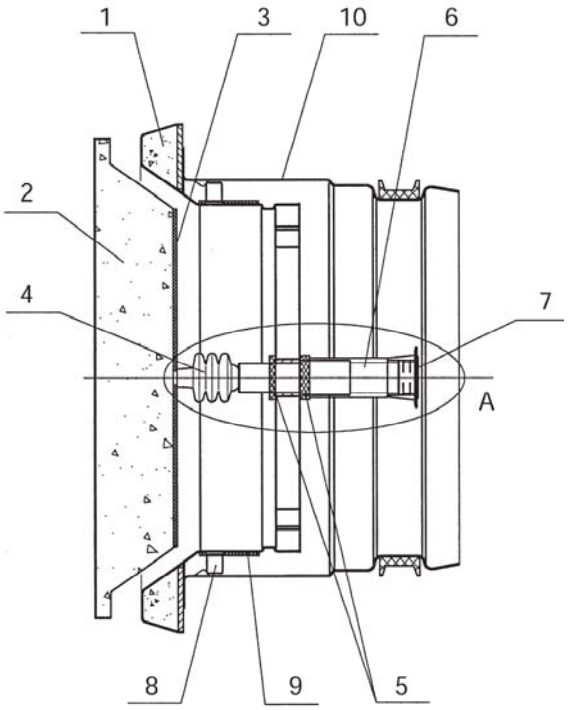
Working condition valve open

When released, valve closed and locked

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 supply and exhaust 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.

List of spare parts



1 Valve body
2 Valve disk
3 Intumescent material
4 Bellows
5 Knurled nut
6 Device for stopping with guide spindle and guide bearing
7 Release device
8 Clamping rivet
9 Intumescent material
10 Mounting frame KKS/KKL, KKS/KKL-ZK
10a ED-EW-L2, ED-Z2

Installation, repair and maintenance

Please ask for our operating manual.

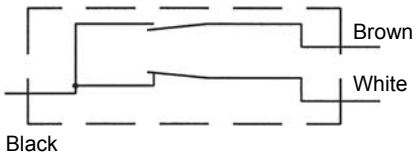
Damper
BTZ-2-K90

Test certificate
Z-41.3-549

Resistance class K90/K30

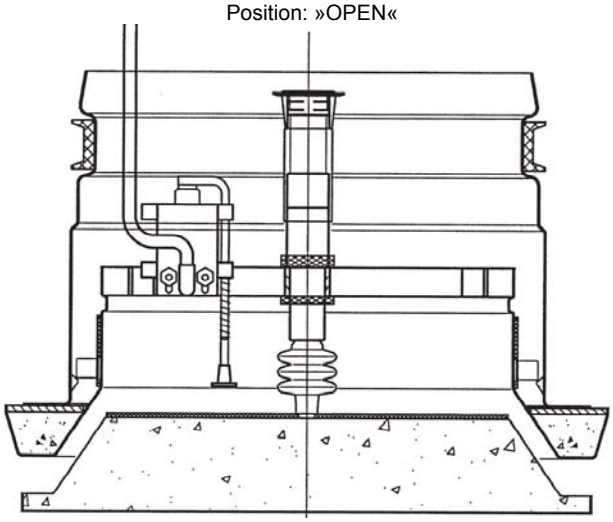
Electrical limit switch
Type: MS-C

Wiring diagram: MS-C

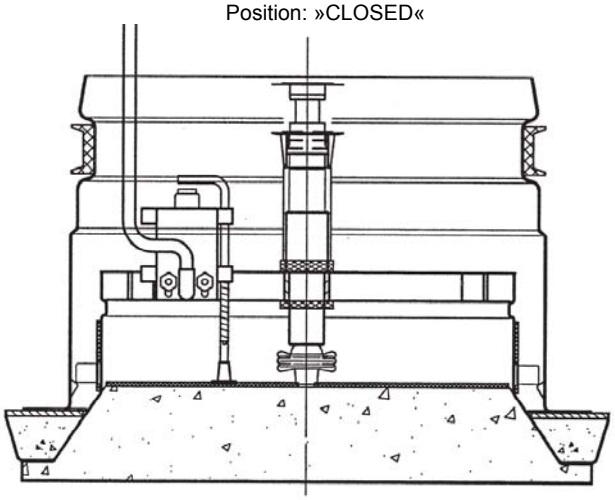


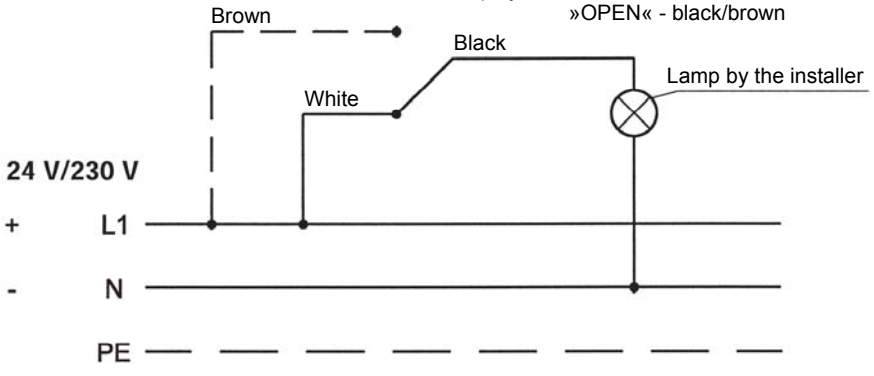
Please note:
For the purpose of inspection, leave min. 500 mm lead as longitudinal compensation within the duct.

Position: »OPEN«



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 gl 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^2

Tender Text

Item	Description	Unit Piece	Unit price EUR	Total EUR
	Damper with test certificate Z-41.3-549 for a K90 resistance class for the installation into light partition walls as a supply and exhaust air valve with **infinitely variable control of the air volume.** The valve body of sheet steel is designed to take up the valve disc with fireproof casing. The mounting is easily performed by screwing into the mounting frame of sheet steel. The special sealing guarantees the exclusion of air and firm seat of the valve. Therefore easy exchange of the fusible link. **The mounting frame can also be subsequently inserted into an existing spirally wound duct, if it has been plastered in accordance with the instructions (surrounding 20 mm mortar or gypsum band).** **Technical data:** Diameter: 100 mm 125 mm 160 mm 200 mm Length when released: ca. 150 mm Temperature of activation: 72 °C Air volume: Noise level: Manufacturer: **Strulik** Type: **BTZ-2-K90-KKS** (including mounting frame) **Accessories:** Lengthened mounting frame Type: **KKL** Electrical limit switch Type: **MS-C** Disk valve for overflow opening Type: **VMT**			

Tender Text

Item	Description	Unit Piece	Unit price EUR	Total EUR
	Damper with test certificate Z-41.3-549 for a K30-U/K90-U resistance class for the installation into F30/F90 supplement floors, for a K30/K90 resistance class for the installation into L30-L90 fire resistant ventilation ducts or for a K30/K90 resistance class for the installation into F30 to F90 shaft walls as a supply and exhaust air valve with **infinitely variable control of the air volume.** The valve body of sheet steel is designed to take up the valve disc with fireproof casing. The mounting is easily performed by screwing into the mounting frame of sheet steel. The special sealing guarantees the exclusion of air and firm seat of the valve. Therefore easy exchange of the fusible link. **Technical data:** Diameter: 100 mm 125 mm 160 mm 200 mm Length when released: ca. 150 mm Temperature of activation: 72 °C Air volume: Noise level: Manufacturer: **Strulik** Type: **BTZ-2-K90-KKL-ZX** (including mounting frame) **Accessories:** Short mounting frame Type: **KKS-ZX** Electrical limit switch Type: **MS-C** Disk valve for overflow opening Type: **VMT**			

Item	Description	Unit Piece	Unit price EUR	Total EUR
	Damper with test certificate Z-41.3-549 for a K90 resistance class for the installation into solid F90 walls (dry construction) as a supply and exhaust air valve with **infinitely variable control of the air volume.** The valve body of sheet steel is designed to take up the valve disc with fireproof casing. The mounting is easily performed by screwing into the mounting frame of calcium silicate. The special sealing guarantees the exclusion of air and firm seat of the valve. Therefore easy exchange of the fusible link. **Technical data:** Diameter: 100 mm 125 mm 160 mm 200 mm Length when released: ca. 150 mm Temperature of activation: 72 °C Air volume: Noise level: Manufacturer: **Strulik** Type: **BTZ-2-K90-ED-2** (including mounting frame) **Accessories:** Electrical limit switch Type: **MS-C** Disk valve for overflow opening Type: **VMT**			

Tender Text

Item	Description	Unit Piece	Unit price EUR	Total EUR
	Damper with test certificate Z-41.3-549 for a K30(U)/K90(U) resistance class for the installation into F30/F90 solid and supplement floors (dry construction), for a K30/K90 resistance class as a supply and exhaust air valve with **infinitely variable control of the air volume.** The valve body of sheet steel is designed to take up the valve disc with fireproof casing. The mounting is easily performed by screwing into the mounting frame of calcium silicate. The special sealing guarantees the exclusion of air and firm seat of the valve. Therefore easy exchange of the fusible link. **Technical data:** Diameter: 100 mm 125 mm 160 mm 200 mm Length when released: ca. 150 mm Temperature of activation: 72 °C Air volume: Noise level: Manufacturer: **Strulik** Type: **BTZ-2-K90-ED-Z2** (including mounting frame) **Accessories:** Electrical limit switch Type: **MS-C** Disk valve for overflow opening Type: **VMT**			

Tender Text

Item	Description	Unit Piece	Unit price EUR	Total EUR
	Damper with test certificate Z-41.3-549 for a K90 resistance class for the installation into F90 light partition walls (dry construction) as a supply and exhaust air valve with **infinitely variable control of the air volume.** The valve body of sheet steel is designed to take up the valve disc with fireproof casing. The mounting is easily performed by screwing into the mounting frame of calcium silicate. The special sealing guarantees the exclusion of air and firm seat of the valve. Therefore easy exchange of the fusible link. **Technical data:** Diameter: 100 mm 125 mm 160 mm 200 mm Length when released: ca. 150 mm Temperature of activation: 72 °C Air volume: Noise level: Manufacturer: **Strulik** Type: **BTZ-2-K90-EW-L2** (including mounting frame) **Accessories:** Electrical limit switch Type: **MS-C** Disk valve for overflow opening Type: **VMT**			

Damper
BCF-2-K90

Test certificate
Z-41.3-647

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

Important features

- The Strulik BCF-2-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**
- Maximum sealing

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

Ordering example:

BCF-2-K90(U)/KKS/100/MS-C

Accessories (optional):

- MS-C - electrical limit switch
- VMT - disk valve for overflow opening

NW 100/125/160 or 200

Mounting frame for installation into:

- KKS - light partitions, brickwork or concrete floors
- KKL - as above, however lengthened, L = 140 mm
- KKL-ZX - F30/F90 supplement floors, shaft walls or classified ducts, L = 140 mm
- KKS-ZX - as above, however in short version for a floor thickness ≤ 30 mm
- ED-2 - solid walls (dry mounting)
- ED-Z2 - massive floors and supplement floors (dry mounting)
- EW-L2 - light partition walls (dry mounting)

For the installation into a F30 supplement floor. If the mounting frame and floor thickness have not been specified, the KKL-ZX will be delivered with loose angles for fastening)

Please note:
For examples of application, see BTZ-2 on page 111 - 115, 117 - 121 and for technical data, see page 124 - 126.

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.

Damper
BCF-2-K90

Test certificate
Z-41.3-647

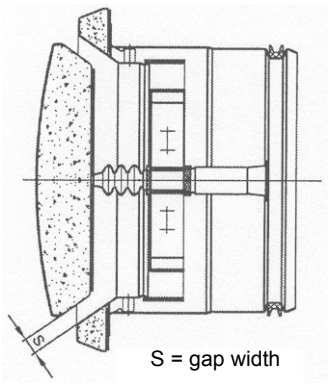
Resistance class K90/K30
in accordance with DIN 4102-6

Pressure drop and noise level

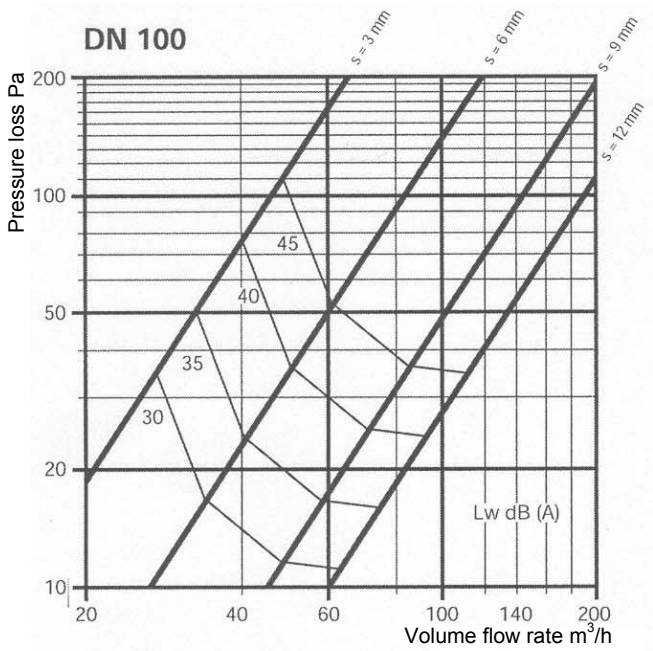
Exhaust air

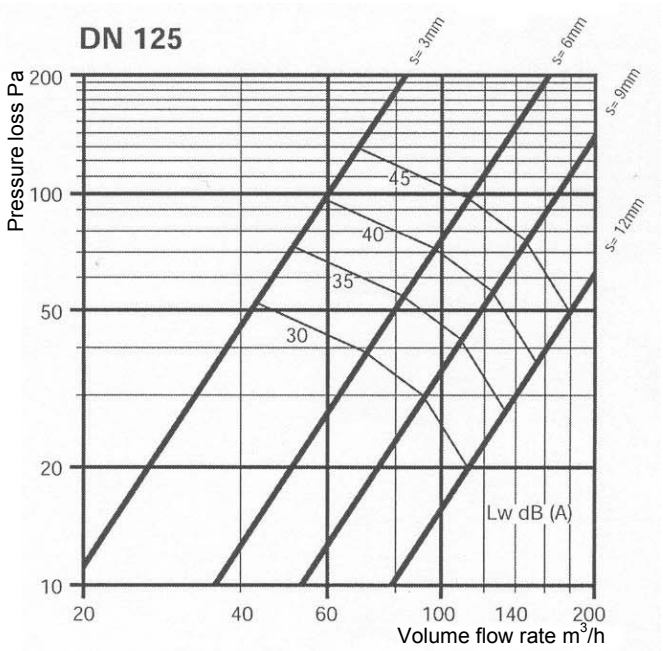
Adjustment of air volume

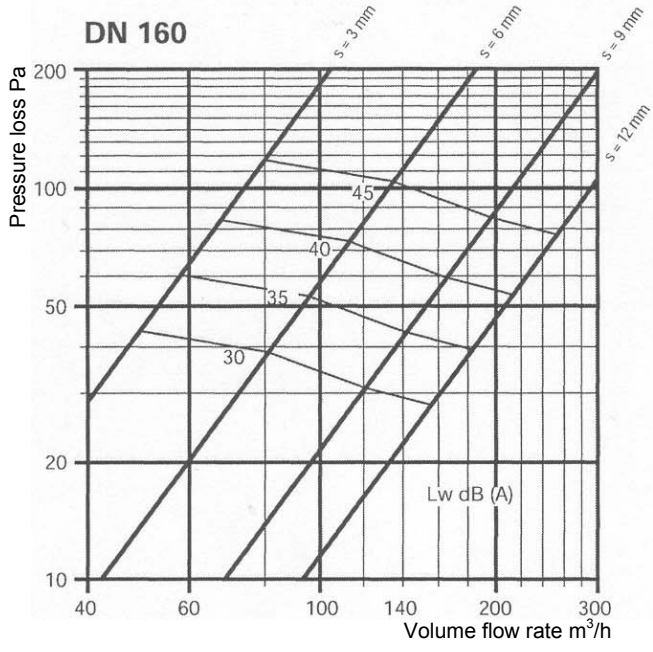
The Strulik damper allows an infinitely variable control of any required air volume. The adjustment is made according to the accompanying diagram. The valve core is locked with a counter nut in the chosen position.

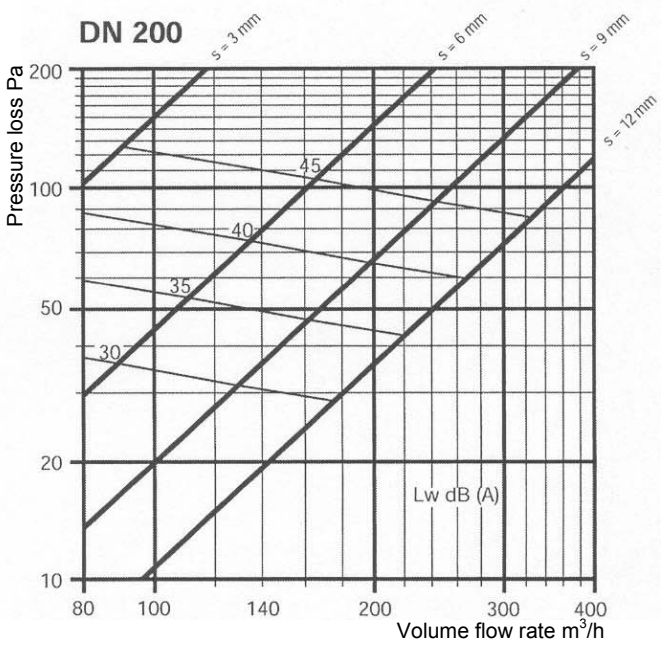


S = gap width









Item	Description	Unit Piece	Unit price EUR	Total EUR
	Damper with test certificate Z-41.3-647 for a K90 resistance class for the installation into F90 light partition walls with lost formwork, brickwork or concrete floors as a supply and exhaust air valve with **infinitely variable control of the air volume.** The valve body of sheet steel is designed to take up the valve disc with fireproof casing. The mounting is easily performed by screwing into the mounting frame of sheet steel. The special sealing guarantees the exclusion of air and firm seat of the valve. Therefore easy exchange of the fusible link. **The mounting frame can also be subsequently inserted into an existing spirally wound duct, if it has been plastered in accordance with the instructions (surrounding 20 mm mortar or gypsum band).** **Technical data:** Diameter: 100 mm 125 mm 160 mm 200 mm Length when released: ca. 150 mm Temperature of activation: 72 °C Air volume: Noise level: Manufacturer: **Strulik** Type: **BCF-2-K90-KKS** (including mounting frame) **Accessories:** Lengthened mounting frame Type: **KKL** Electrical limit switch Type: **MS-C** Disk valve for overflow opening Type: **VMT**			

Item	Description	Unit Piece	Unit price EUR	Total EUR
	Damper with test certificate Z-41.3-647 for a K30-U resistance class for the installation into F30 supplement floors, for a K30/K90 resistance class for the installation into L30-L90 fire resistant ventilation ducts or for a K30/K90 resistance class for the installation into F30 to F90 shaft walls as a supply and exhaust air valve with **infinitely variable control of the air volume.** The valve body of sheet steel is designed to take up the valve disc with fireproof casing. The mounting is easily performed by screwing into the mounting frame of sheet steel. The special sealing guarantees the exclusion of air and firm seat of the valve. Therefore easy exchange of the fusible link. **Technical data:** Diameter: 100 mm 125 mm 160 mm 200 mm Length when released: ca. 150 mm Temperature of activation: 72 °C Air volume: Noise level: Manufacturer: **Strulik** Type: **BCF-2-K90-KKL-ZX** (including mounting frame) **Accessories:** Short mounting frame Type: **KKS-ZX** Electrical limit switch Type: **MS-C** Disk valve for overflow opening Type: **VMT**			

Tender Text

Item	Description	Unit Piece	Unit price EUR	Total EUR
	Damper with test certificate Z-41.3-647 for a K90 resistance class for the installation into solid F90 walls (dry construction) as a supply and exhaust air valve with **infinitely variable control of the air volume.** The valve body of sheet steel is designed to take up the valve disc with fireproof casing. The mounting is easily performed by screwing into the mounting frame of calcium silicate. The special sealing guarantees the exclusion of air and firm seat of the valve. Therefore easy exchange of the fusible link. **Technical data:** Diameter: 100 mm 125 mm 160 mm 200 mm Length when released: ca. 150 mm Temperature of activation: 72 °C Air volume: Noise level: Manufacturer: **Strulik** Type: **BCF-2-K90-ED-2** (including mounting frame) **Accessories:** Electrical limit switch Type: **MS-C** Disk valve for overflow opening Type: **VMT**			

Item	Description	Unit Piece	Unit price EUR	Total EUR
	Damper with test certificate Z-41.3-647 for a K30(U) and K90 resistance class for the installation into solid F90 floors or F30 supplement floors as a supply and exhaust air valve with **infinitely variable control of the air volume.** The valve body of sheet steel is designed to take up the valve disc with fireproof casing. The mounting is easily performed by screwing into the mounting frame of calcium silicate. The special sealing guarantees the exclusion of air and firm seat of the valve. Therefore easy exchange of the fusible link. **Technical data:** Diameter: 100 mm 125 mm 160 mm 200 mm Length when released: ca. 150 mm Temperature of activation: 72 °C Air volume: Noise level: Manufacturer: **Strulik** Type: **BCF-2-K90-ED-Z2** (including mounting frame) **Accessories:** Electrical limit switch Type: **MS-C** Disk valve for overflow opening Type: **VMT**			

Tender Text

Item	Description	Unit Piece	Unit price EUR	Total EUR
	Damper with test certificate Z-41.3-647 for a K90 resistance class for the installation into F90 light partition walls (dry construction) as a supply and exhaust air valve with **infinitely variable control of the air volume.** The valve body of sheet steel is designed to take up the valve disc with fireproof casing. The mounting is easily performed by screwing into the mounting frame of calcium silicate. The special sealing guarantees the exclusion of air and firm seat of the valve. Therefore easy exchange of the fusible link. **Technical data:** Diameter: 100 mm 125 mm 160 mm 200 mm Length when released: ca. 150 mm Temperature of activation: 72 °C Air volume: Noise level: Manufacturer: **Strulik** Type: **BCF-2-K90-EW-L2** (including mounting frame) **Accessories:** Electrical limit switch Type: **MS-C** Disk valve for overflow opening Type: **VMT**			

Damper
BR-K90

Test certificate
Z-41.3-649

Resistance class K90 in accordance with DIN 4102-6

Ordering example:

BR-K90/ED/BLF24-T/100/NP

Accessories (optional):
- NP - male-male connector
- VMT - disk valve for overflow opening
- ÜSG-M - overflow grille (other side)
- ÜSG-F - overflow cover grille (other side)

NW 100/125/160 or 200

Motor type: (see page 10) (including thermoelectric release mechanism)
- BLF 24-T = 24 V AC/DC
- BLF 230-T = 230 V AC
- BLF 24-T-ST = 24 V AC/DC (with plug)

Mounting frame for installation into:
- ED - solid walls or floors
- EW-L - light partition walls, metal stand walls
- EW-L(40) - shaft walls with or without metal stands or duct walls

Resistance class K90

Important features

- The Strulik BR-K90 damper (K90 or K30) is suitable for the installation into walls of brickwork, concrete, gas concrete, gypsum construction slabs, light partition walls and floors of concrete or gas concrete, in which a F90 or F30 fire resistance class is required. Furthermore, they are allowed to be installed into ventilation ducts that have a L90 or L30 fire resistance class.
- A subsequent exchange of existing BEK-K90 and BEK-K30 is possible, as both mounting frames (ED and EW-L) are still the same (i.e. subsequent motorization without a lot of work).
- Always including spring-return motor and thermoelectric release mechanism.
- Two limit switches (for the positions OPEN and CLOSED) inside the motor.
- The sheet metal housing can optionally be treated with a polyurethane enamel coating or be manufactured of stainless steel (1.4301).
- The damper is directly mounted into the fire compartment. The effectiveness of the fire prevention is guaranteed by the damper blade itself.

Essential features

1/ Safety classification.
- **Official classification: Resistance class K90**
- Release temperature from 72 °C upwards (on request, 90 °C available for hot-air installations)
- Maximum tightness between damper body and blade.

2/ Low noise level
- Insignificant reduction of cross-sectional area
- High rate of airflow
- Any direction of airflow

3/ Dimensions available
- NW 100/125/160/200/250 and 315 mm

DEUTSCHES INSTITUT FÜR BAUTECHNIK
Anstalt des öffentlichen Rechts

10829 Berlin, 19. Juli 2004
Kolonnenstraße 30 L
Telefon: 030 78730-272
Telefax: 030 78730-320
GeschZ.: IV 56-1.41.3-4/04

Allgemeine bauaufsichtliche Zulassung

Zulassungsnummer: Z-41.3-649

Antragsteller: Strulik GmbH
Neesbacher Straße 13
65597 Hünfelden-Dauborn

Zulassungsgegenstand: Absperrvorrichtungen gegen Feuer und Rauch in Lüftungsleitungen
Typ BR-K90

Geltungsdauer bis: 20. Februar 2008

Der oben genannte Zulassungsgegenstand wird hiermit allgemein bauaufsichtlich zugelassen.

Diese allgemeine bauaufsichtliche Zulassung umfasst sieben Seiten und fünf Anlagen.

Please note:

The BR-K90 is also allowed to be mounted into our **LB-K90U** or **LBK30U air plenum boxes** in accordance with the national test certificate Z-41.3-336.

Please contact our technical department for the subsequent installation into an existing LB-K90U or LBK-K30U.

The BR-K90 has to be inspected from the outside over the ceiling void. Please take note of the inspection possibilities inside the classified, self-supporting supplement floor.

Damper
BR-K90

Test certificate Z-41.3-649

Resistance class K90 in accordance with DIN 4102-6

Installation into solid walls or concrete floors

Installation into solid walls or concrete floors

The professional mounting of the BR-K90 damper is performed with the ED mounting frame. The surrounding gap is filled with mortar of group II and III in accordance with DIN 1053 or gypsum.
In addition, if the mounting frame has been precisely fitted into the solid wall and the wall opening is not more than 2 mm of the outside dimension of the mounting frame, then the damper is allowed to be coated on its entire surface with material class A1 adhesive (SBK 2000). In this case it is assumed that the damper will exclusively have a flexible connection (see examples).

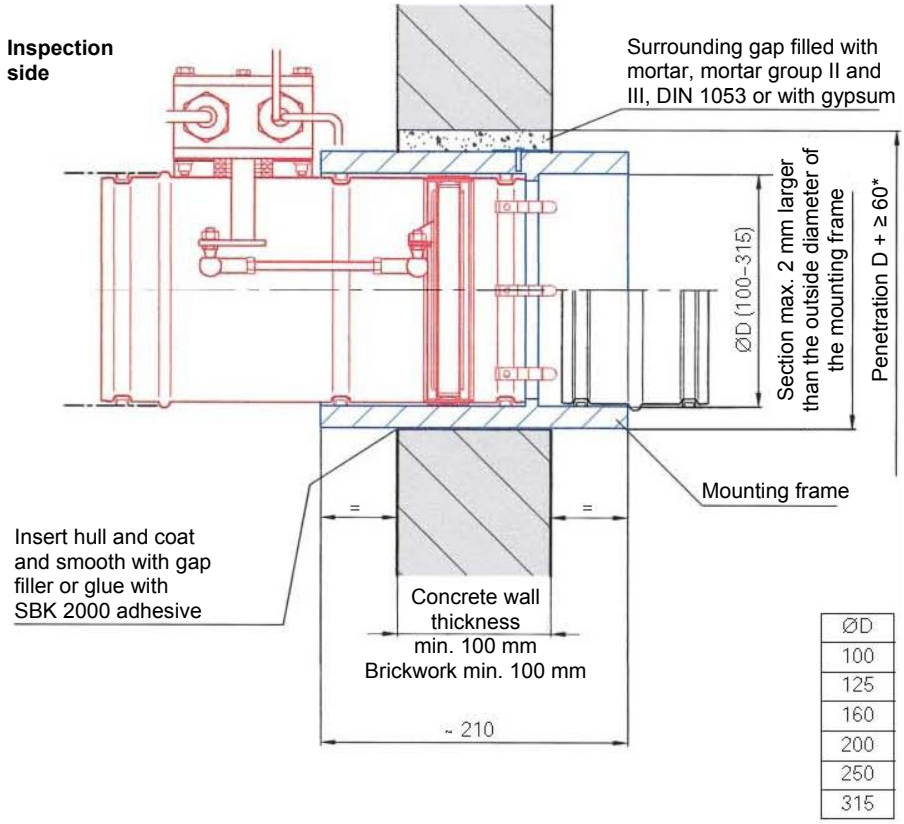
Permissible ventilation ducts and connection with ventilation ducts

According to the national test certificate, the dampers shall only be connected to ventilation ducts, which due to their design or laying, will not apply considerable forces to the dampers or to the wall or floor 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 100 mm 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.
Please note:
At the operating side, due to the facility for inspection, the damper always has to have a flexible connection. **The minimum length is 250 mm.**

Fitting position of the damper

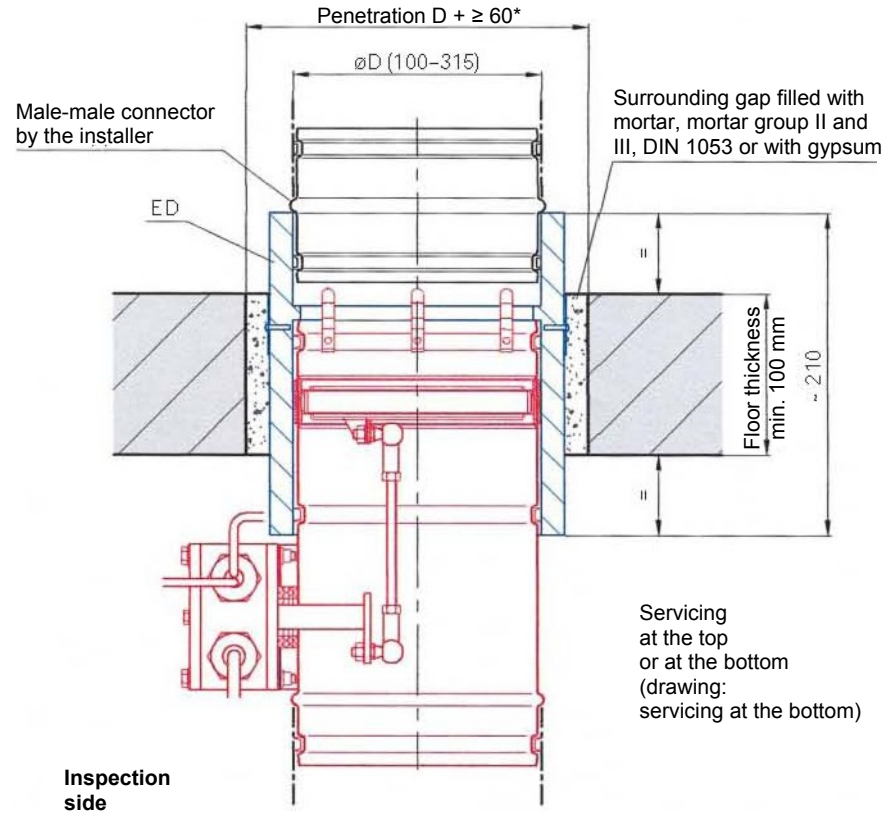
Any motor arrangement, i.e. in case of wall installation the motor can be arranged on the right, on the left, at the top or at the bottom, in case of floor installation hanging beneath the floor or standing on top of the floor.

Installation into solid walls



* For NW 315 = D + ≥ 80 mm

Installation into floors



* For NW 315 = D + ≥ 80 mm

Damper
BR-K90

Test certificate Z-41.3-649

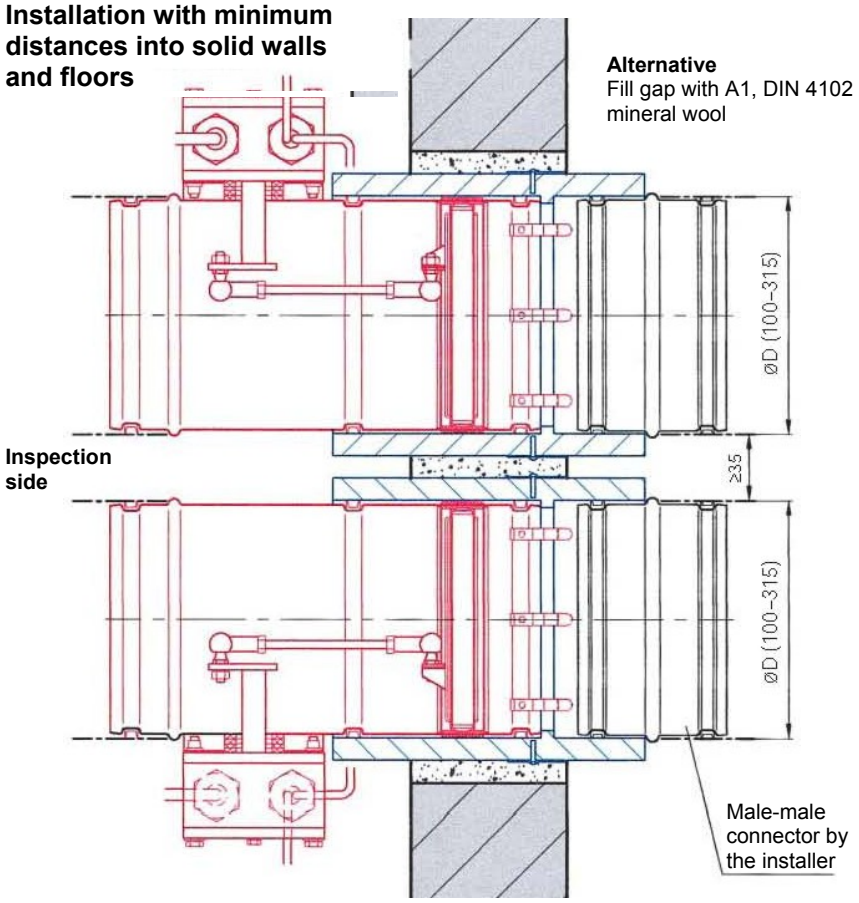
Resistance class K90 in accordance with DIN 4102-6

Installation into solid walls or floors

Minimum distances

In accordance with the accompanying illustration, the dampers are allowed to be installed into walls of brickwork, concrete, gas concrete or gypsum and into floors of concrete or gas concrete with a minimum distance of ≥ 35 mm.

Installation with minimum distances into solid walls and floors

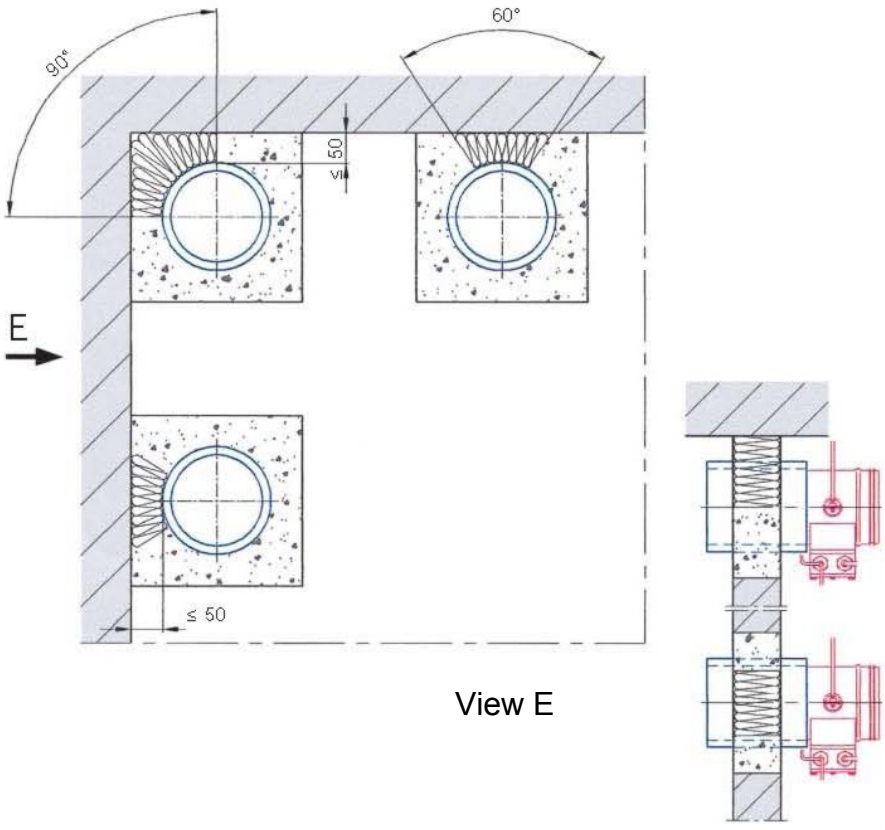


Installation into installation openings, which are difficult to access

In accordance with the accompanying illustration, the dampers are also allowed to be mounted with partial plastering and additional mineral wool stuffing within installation openings, which are difficult to access.
When mounting the BR-K90, the following requirements shall be met:
This only applies to the installation into solid walls (brickwork, gas concrete, concrete or gypsum) and into floors of concrete, if the distance between the mounting frame and wall or floor is less than 50 mm. The part of the wall penetration that is not closed with mineral wool shall be closed with mortar of mortar group II or III in accordance with DIN 1053.
The area filled with mineral wool measures at the most:
- when installed in parallel with the wall ca. 60° of the perimeter,
- when installed in the corner ca. 90° of the perimeter.

The voids are filled with a non-combustible mineral wool (DIN 4102) that has a gross density of 80 to 100 kg/m^3 and a melting point ≥ 1000 °C.
In principle, for this fitting position the BR-K90 must have a flexible connection on both sides (inspection side min. 250 mm and the opposite side min 100 mm).

Installation into installation openings, which are difficult to access



Damper
BR-K90

Test certificate Z-41.3-649

Resistance class K90 in accordance with DIN 4102-6

Installation into light partition walls with metal stand

Provisions for installing

The dampers are allowed to be installed into light partition walls with metal stand having a minimum thickness in accordance with their classification (F90 min. 100 mm thick and F30 min. 75 mm thick), and this with a complete or partial plastering (dry construction).
Light partition walls that are thicker and have the same or a higher density can also be used.
The dampers are mounted into light partition walls on the one side with three angles for fastening (A) (60 x 20 x 1,5 mm) that are staggered by 120°; on the opposite side three angles (B) that have been staggered by 60° to (A).

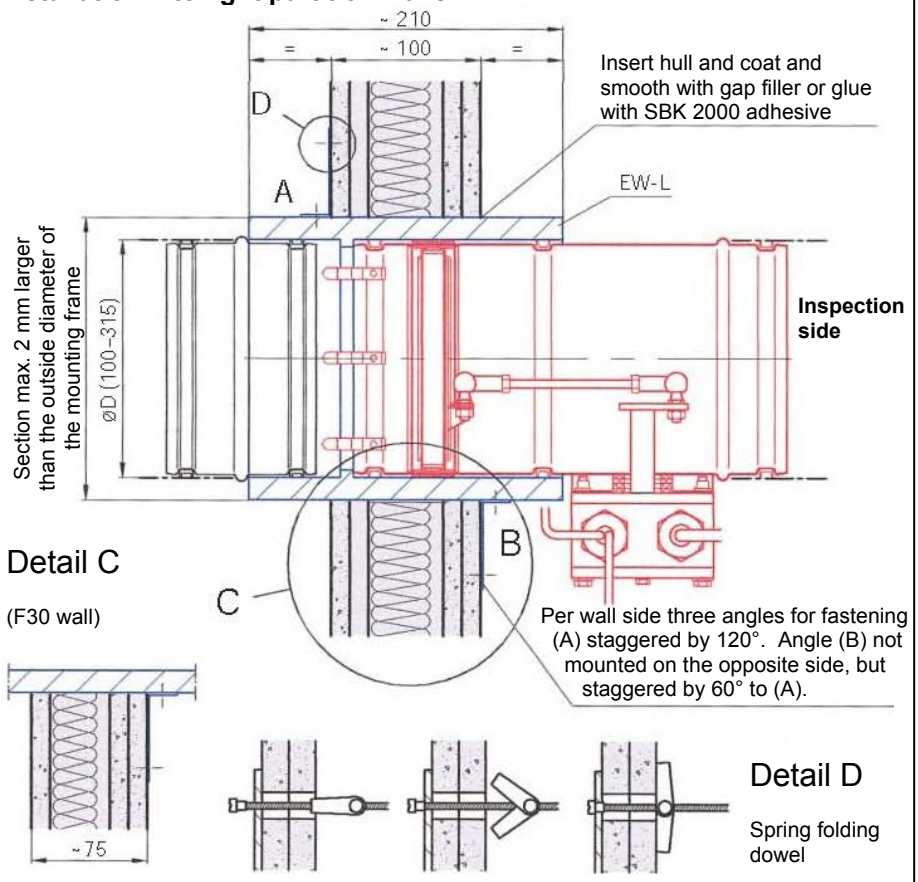
As an alternative, the dampers may also be used with a lost formwork and without angles for fastening.

Furthermore, the dampers may also be fitted with a UW50 profile at the top and at the bottom (fastening by means of four angles 25 x 20 x 1,5 mm) according to the accompanying illustration.

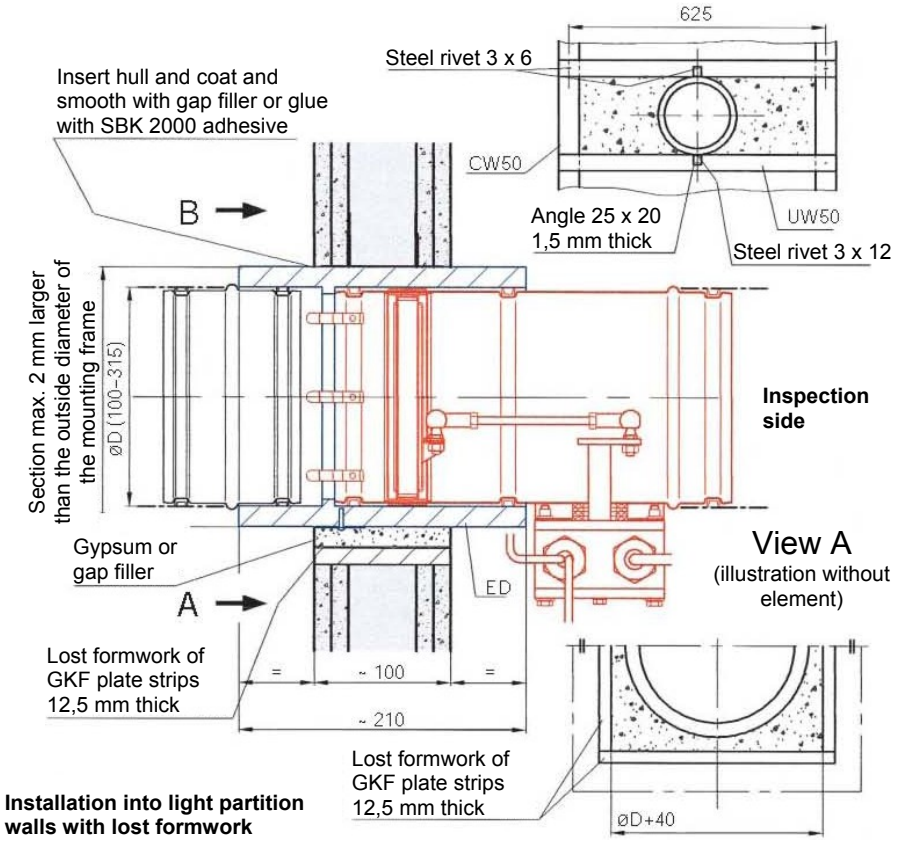
Permissible ducts

If dampers in light partition walls shall be connected to ventilation ducts, then this shall be a flexible connection.
Ventilation ducts may be connected to dampers with a compensator or spigot of flexible aluminium ductwork that is at least 100 mm long (when installed), operating side or inspection side however min. 250 mm.
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.

Installation into light partition walls



Installation into light partition walls



Installation into light partition walls with lost formwork

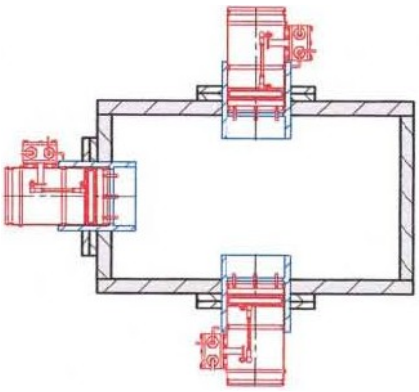
Damper
BR-K90

Test certificate Z-41.3-649

Resistance class K90 in accordance with DIN 4102-6

Installation into light partitions (shaft walls) with or without metal stands and duct walls

Installation into ventilation ducts with a fire resistance time



Provisions for installing into light partition walls with or without metal stands and ventilation ducts with fire resistance time

The dampers are allowed to be installed into light partition walls (shaft walls) with or without metal stands and into ventilation ducts with a fire resistance time and a minimum thickness in accordance with their classification (F90 min. 35 mm thick and F30 min. 25 mm thick) and this with complete or without (dry construction) plastering. These walls or ducts shall be doubled in total to 80 mm of the same material as the wall or duct.
Light partition walls or ducts, which are thicker and have the same or higher density, can also be used.
The dampers are mounted into light partition walls on the one side by means of three angles for fastening (60 x 20 x 1,5 mm), which are staggered by 120° and on the other side three angles shall be arranged, which are staggered by 60° to (A).
For the installation into ducts a doubling on one side (see accompanying illustration) is sufficient. Here the three angles that are staggered by 120° are mounted between the duct and doubling.

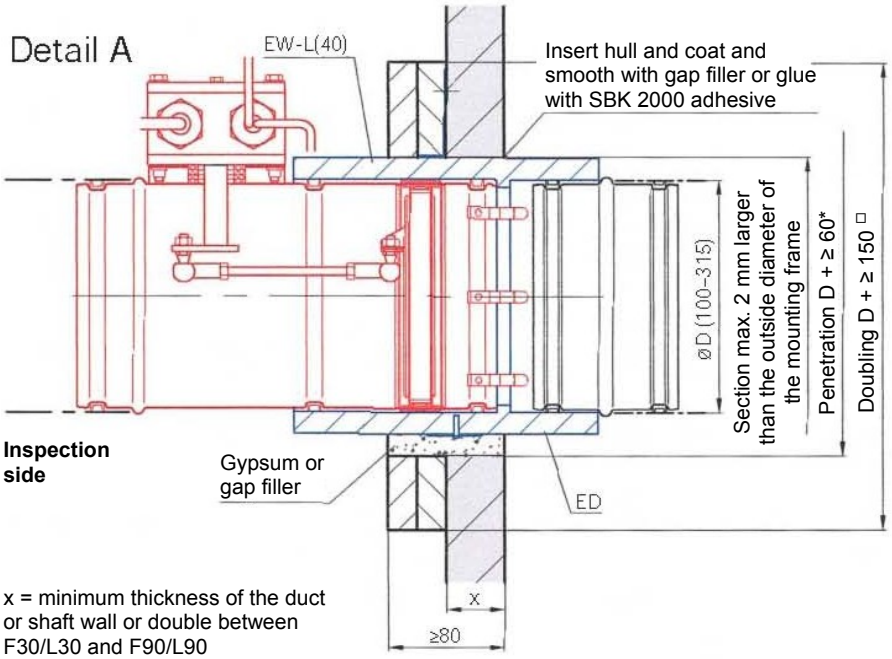
Alternatively the dampers may also be inserted with the surrounding gap filled with mortar (core drilling D + 60 mm). Then the angles for fastening are not used.

Permissible ducts

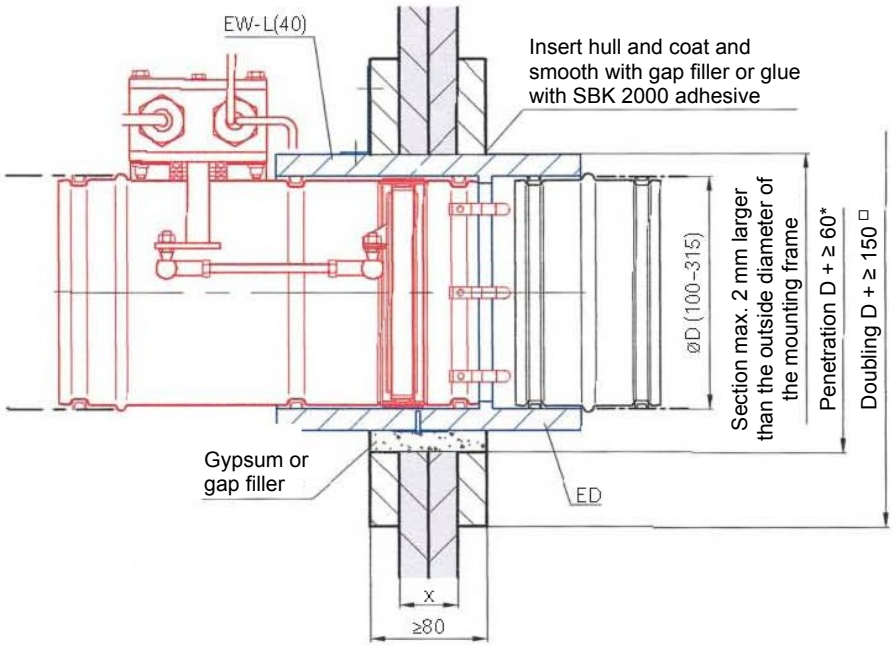
As described on page 6, dampers inside light partition walls shall have a flexible connection on both sides.
Inside ventilation ducts only on one side.

Please note:
At the operating side, due to the facility for inspection, the damper always has to have a flexible connection. **The minimum length is 250 mm.**

Installation into shaft walls and duct walls



x = minimum thickness of the duct or shaft wall or double between F30/L30 and F90/L90



* For NW 315 = D + ≥ 80 mm

Damper
BR-K90

Test certificate Z-41.3-649

Resistance class K90 in accordance with DIN 4102-6

Overflow arrangement and connection with ducts

Overflow openings

To maintain the fire resistance class K90, for the installation as overflow opening, the damper shall be elongated by 1,5 x D with non-combustible materials (e.g. spirally wound ducts) on both sides.

Instead of the duct extension, on the opposite side a sheet steel VMT disk valve or a ÜSG-M overflow grille and on the operating side a ÜSG-F overflow cover grille can be installed.

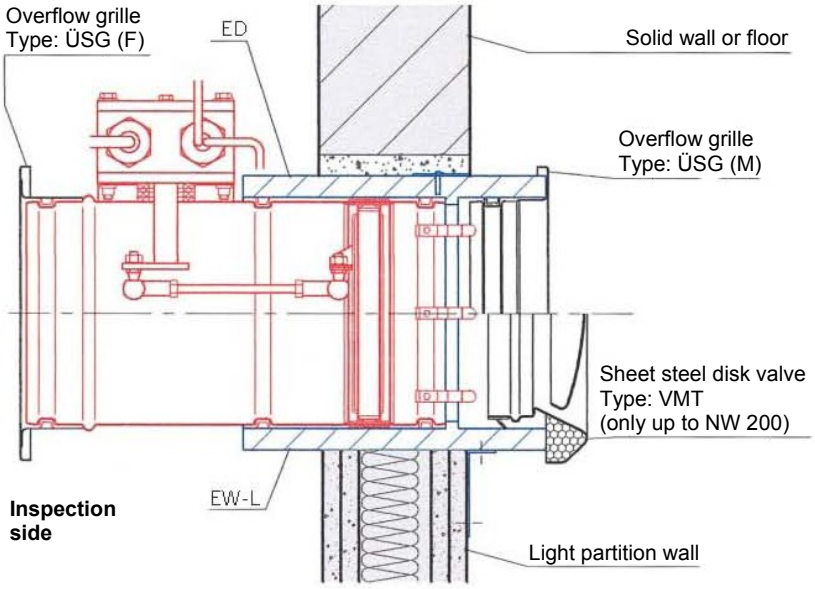
Alternatively, a metal-mesh grid with a mesh size ≤ 20 mm□ can be mounted by the installer.

Connection with ducts

According to the national test certificate, the dampers shall only be connected to ventilation ducts, which due to their design or laying, will not apply considerable forces to the dampers or to the wall or floor 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 100 mm 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.

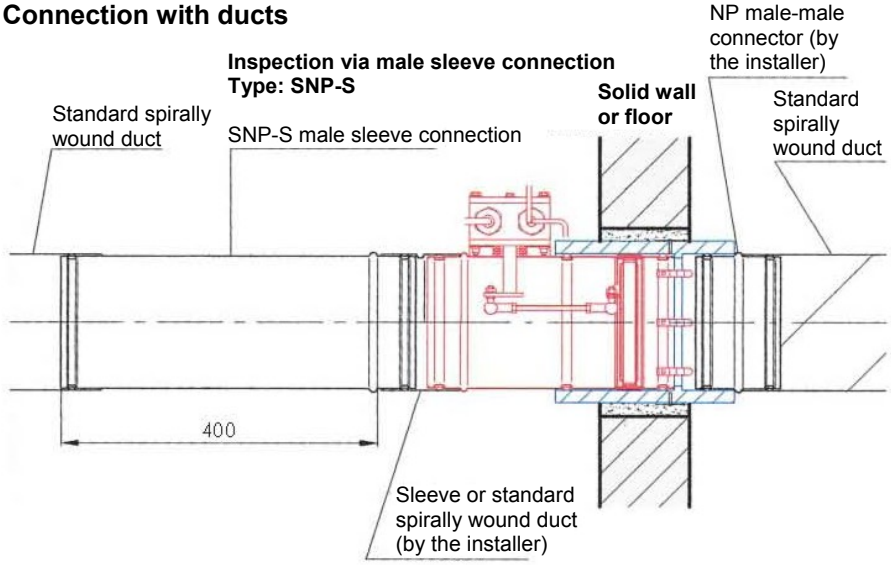
Dampers inside light partition walls shall always have a flexible connection on both sides (see the accompanying illustration)!

Installation as overflow opening into solid walls and floors (ED) or light partition walls (EW-L)

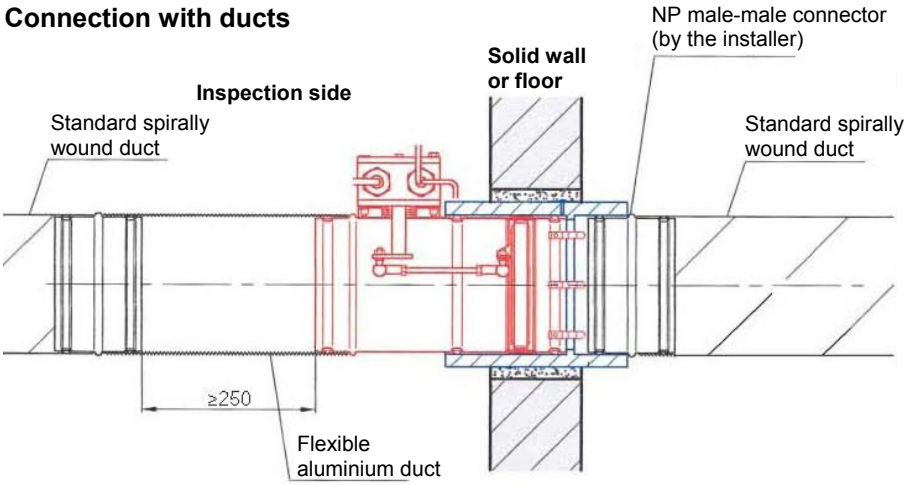


Usual steel disk valves shall not be used, because the spindle that projects into the mounting frame would prevent the closing process of the damper in the event of a fire.

Connection with ducts



Connection with ducts



Damper
BR-K90

Test certificate Z-41.3-649

Resistance class K90 in accordance with DIN 4102-6

Dimensions and weight

Weight

Weight in kg	
NW	BR-K90-ED including electric motor
100	5
125	5,6
160	6,5
200	7,3
250	9
315	12,7

Mounting frames

Type: ED
Mounting frame for solid walls and floors
Scope of delivery: Mounting frame and two wall clamps

Type: EW-L
Mounting frame for light partition walls (metal stand walls)
Scope of delivery: Mounting frame and six angles and six spring folding dowels

Type EW-L(40)
Mounting frame for light partition walls
Scope of delivery: Mounting frame and six angles and six wooden screws 4 x 60 mm

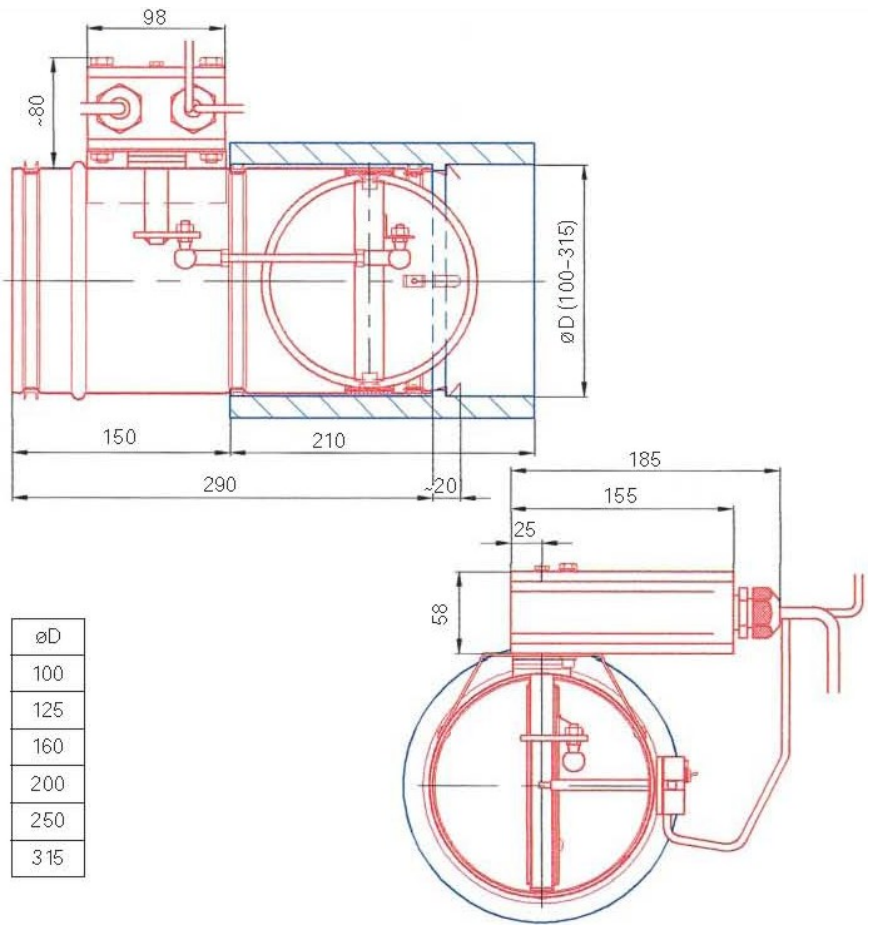
Fastening inside light partitions

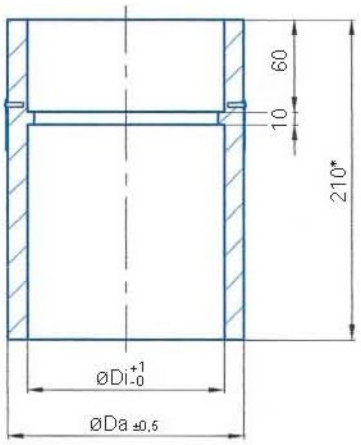
Six angles, three angles A staggered by 120° fitted (if the wall thickness has been stated), three angles B are delivered loosely.

Dimensions

DN	Ø Di	Ø Da
100	101	131
125	126	156
160	161	191
200	201	232
250	251	282
315	316	359

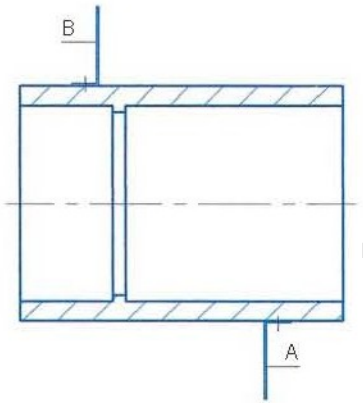
* A 310 mm long mounting frame is available for light partition walls having a wall thickness of > 190 mm.





Mounting frame for solid walls and floors
Type: ED

Inspection side



Inspection side

Mounting frame for light partition walls
Type: EW-L and EW-L(40)

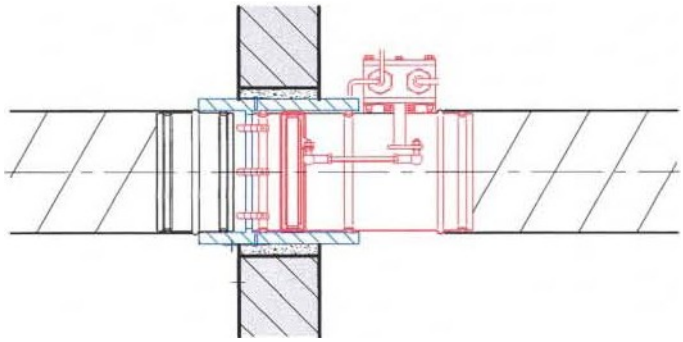
Damper
BR-K90

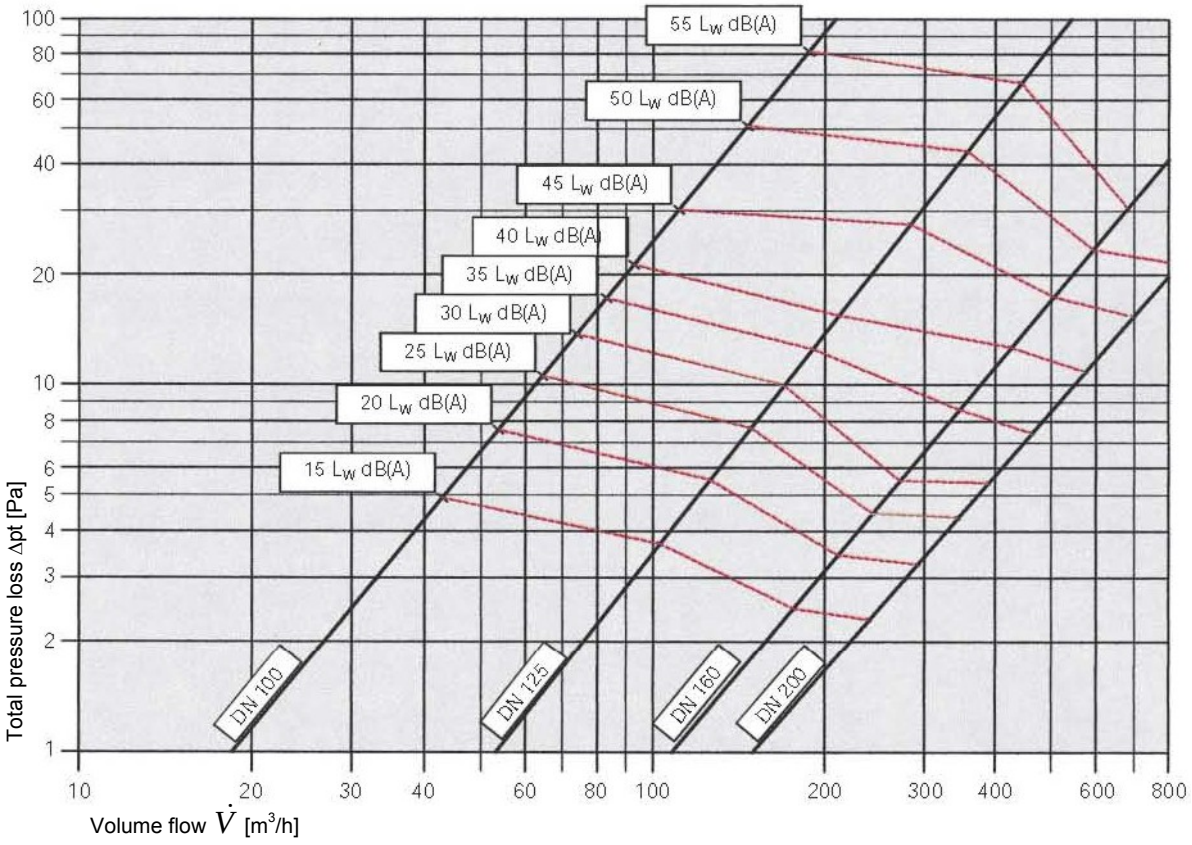
Test certificate Z-41.3-649

Resistance class K90 in accordance with DIN 4102-6

Design diagrams for pressure and noise level

Installation example





The usage of the BR-K90 dampers is independent from the direction of airflow.

NW 100
NW 125
NW 160
NW 200

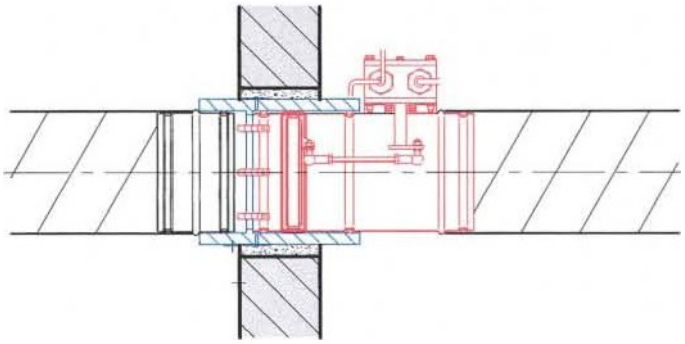
Damper
BR-K90

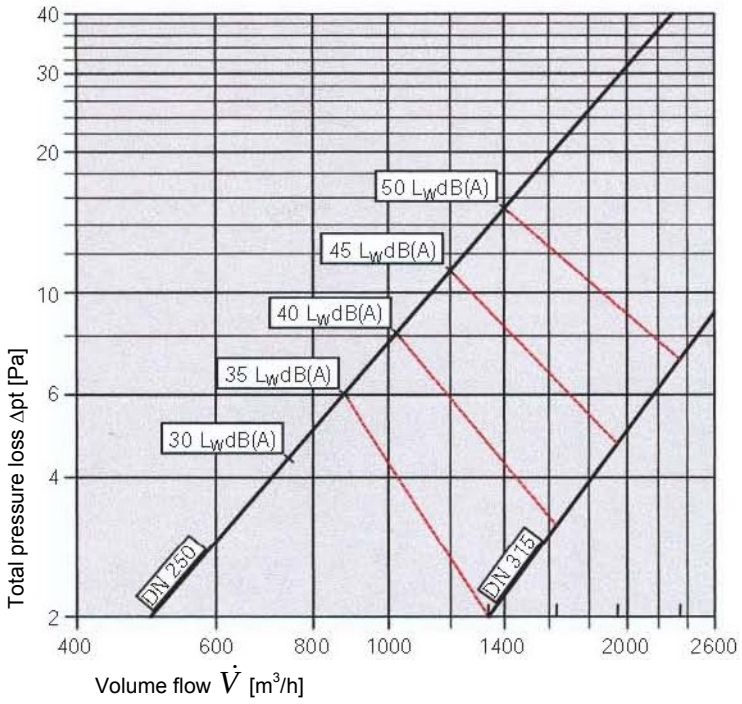
Test certificate Z-41.3-649

Resistance class K90 in accordance with DIN 4102-6

Design diagrams for pressure and noise level

Installation example





The usage of the BR-K90 dampers is independent from the direction of airflow.

NW 250
NW 315

Damper
BR-K90

Test certificate Z-41.3-649

Resistance class K90 in accordance with DIN 4102-6

Technical data of the electric motor

Function of the electric motor

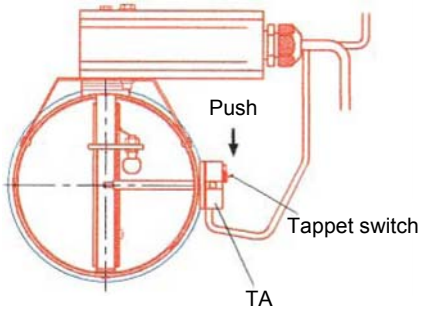
If a voltage is supplied to the electric motor (depending on the motor type 24 or 230 V), then it will move the damper into the open position and at the same time tighten the release spring.
If the power supply is disconnected, then the spring energy (dead »CLOSED«) will move the damper into the closed position (closed-circuit current principle).

Thermoelectric release mechanism (TA)

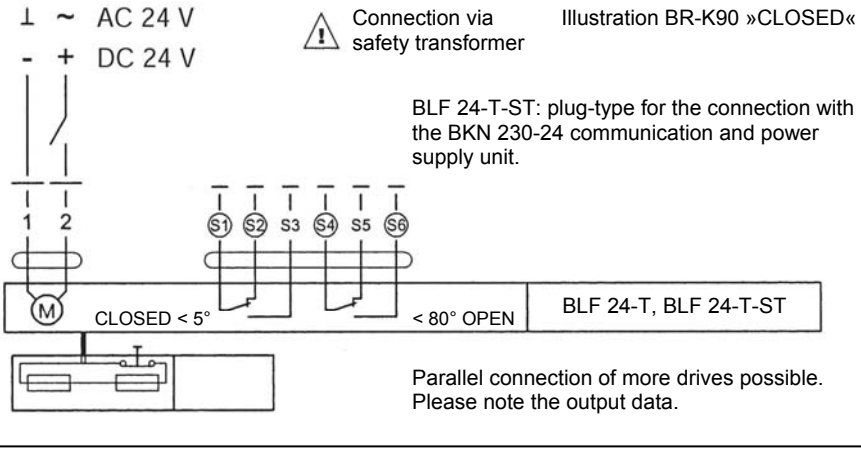
If the ambient temperature exceeds 72 °C, then the thermal fuse of the TA1 (outside) melts.
If the internal temperature of the duct exceeds 72 °C, then the exchangeable thermal fuse of the TA2 (inside) melts.
When the TA (inside or outside) reacts, then the power supply is permanently and irrevocably disconnected.

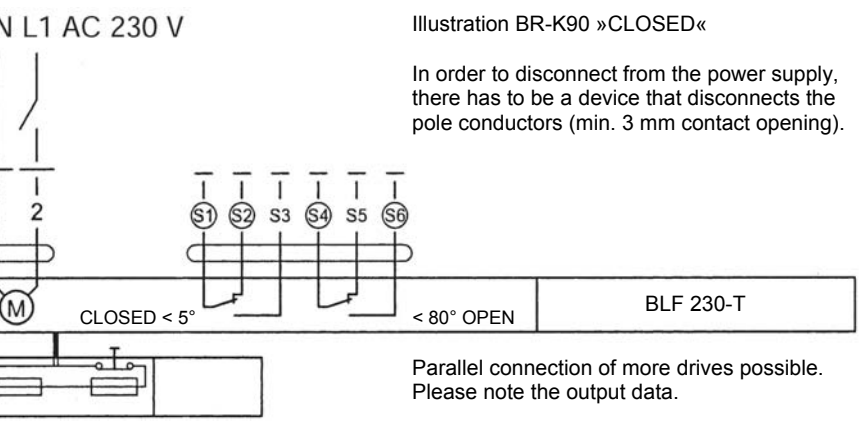
Manual release

For manual release, the tappet switch of the electric release mechanism (TA) has to be pushed till the damper has moved into the closed position (displayed by limit switches). When released, the electric motor automatically moves back into the open position (see the below illustration).



Technical data	BLF 24-T (-ST)	BLF 230-T
Nominal voltage	AC 24 V 50/60 Hz, DC 24 V	AC 230 V 50/60 Hz
Function	AC 19,2…28,8 V, DC 21,6…28,8 V	AC 198…264 V
Static response temperature of the thermal fuse	TA1/TA2 (outside/inside temperature 72 °C	
Power dissipation	5 W during spring tensioning, 2,5 W in the hold position	5 W during spring tensioning, 3 W in the hold position
Dimensioning	7 VA (Imax 5,8 A @ 5 ms)	7 VA (Imax 150 mA @10 ms)
Safety class	III	II
Degree of protection	IP 54	
Auxiliary switch	2 x EPU 6 (1,5) A, AC 250 V F	
Connection - motor - auxiliary switch	Cable 1 m, 2 x 0,75 mm² Cable 1 m, 6 x 0,75 mm²	
Angle of rotation	95° (including 5° spring pre-tensioning)	
Torque		
Run time - motor - spring return	40…75 s (0…4 Nm) ~ 20 s @ -20…+50 °C	
Maintenance	Maintenance free	
Weight	1630 g	1730 g





Damper
BR-K90

Test certificate Z-41.3-649

Resistance class K90 in accordance with DIN 4102-6

Maintenance categories

State regulations, published in the appropriate law and official gazettes, set out the rules for the testing of building installations and systems, to which fire dampers also belong. The tests shall be performed in accordance with the effective state building regulations. These tests do not replace the hereinafter described procedures.

In principle, dampers have to be mounted such that they are accessible.

»Maintenance once/twice a year on site«

Before putting the ventilation systems into operation, all dampers shall be inspected on site. Polluted and humid air can affect the operational reliability.

If the damper is very dirty, then the maintenance intervals shall be shortened.

Therefore, after putting the ventilation systems into operation, all dampers have to be checked twice a year. If two consecutive functional tests show no malfunctions, then the dampers only have to be checked once a year.

If maintenance contracts are made, then it is recommended that the examination of the dampers is included into the maintenance contracts.

Testing

Testing of the integrity of the damper

After removing the connection piece, check if the damper is in a faultless condition. Move the damper blade into the OPEN position (spring return motor energized), push and hold the tappet switch of the thermoelectric release mechanism (TA) for function control; the spring return motor actuates (deenergized CLOSED).

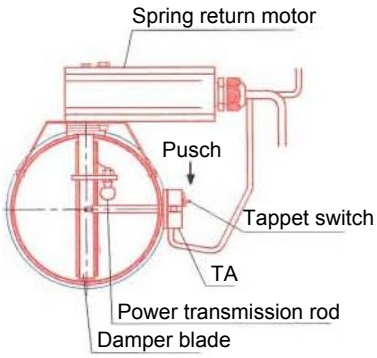
The damper blade closes independently after the voltage drop. The damper blade shall hermetically seal the cross-section of the housing. After releasing the tappet switch, check the open position of the damper

In addition, the free running of the power transmission rods shall be checked.
Install the connection piece.

Clearing of faults

If faults have been detected during the test, these shall be cleared at once.
Only original parts are allowed to be used.

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



»Remote supervision«

Before putting the ventilation systems into operation, all dampers shall be inspected on site. In the first year after putting the ventilation system into operation, the operational reliability test shall be carried out at least twice a year (from the central). If two consecutive tests show no malfunctions, then the functional test only has to be carried out once a year.
Logging is necessary (DIN 13306).

Putting into operation

Testing of the integrity of the damper

After removing the connection piece, check if the damper is in a faultless condition.

Testing

As described above, the dampers shall be checked at intervals for functioning, e.g. from the control panel of the central control system (move the damper blade once into the OPEN and once into the CLOSED position or once into the CLOSED and once into the OPEN position). After the end of an opening or closing process, one of the telltale lights shall clearly indicate OPEN or CLOSED; the maximum running time (see technical data motor) shall not be exceeded. If one of the two end positions of the damper blade is not indicated within the specified time, then an alarm signal is set off on the central panel of the ventilating plant.

The fault shall be cleared at once. In order to carry out the remote-controlled testing of the dampers, the fans of the ventilation system shall be tuned off under any circumstances.

After the central panel has received an error signal and the immediate error detection and correction has been done, then the above functional tests shall be repeated at least three times.

Clearing of faults

Damper malfunctions due to technical or construction faults at the component part itself shall only be rectified with original spare parts.

Electrical connection

The following requirements shall exist inside the control cabinet for the functional supervision:

- Signalling OPEN
- Signalling CLOSED
- Signalling ERROR
- Timing relay (watch the running time)
- Functional test (damper blade moves into the CLOSED position)
- Reset
- Logging (once/twice a year)

Item	Description	Unit Piece	Unit price EUR	Total EUR
	Damper with test certificate Z-41.3-649 for a K90 resistance class for the installation into solid walls and floors. The housing consists of a ca. 290 mm long steel duct with an eccentrically arranged damper blade of calcium silicate and double lip sealing. The locking of the damper is performed via mounting springs, which click into place behind a bar inside the mounting frame. The 210 mm long mounting frame has two wall clamps that are staggered by 180°. 72 °C thermoelectric release mechanism Control via 24 V AC/DC or 230 V AC spring return motor with two integral limit switches to signal the damper blade positions OPEN/CLOSED Manufacturer: **Strulik** Type: **BR-K90-ED** Dimensions: NW 100, 125, 160, 200, 250 and 315 mm Length: ca. 360 mm **Accessories:** Male-male connector Type: **NP** Steel disk valve Type: **VMT** } (Opposite side) Overflow grille Type: **ÜSG-M** } Overflow grille Type: **ÜSG-F** (Operating side)			

Item	Description	Unit Piece	Unit price EUR	Total EUR
	Damper with test certificate Z-41.3-649 for a K90 resistance class for the installation into light partition walls, shaft walls and L90 ducts. The housing consists of a ca. 290 mm long steel duct with an eccentrically arranged damper blade of calcium silicate and double lip sealing. The locking of the damper is performed via mounting springs, which click into place behind a bar inside the mounting frame. The 210 mm long mounting frame is delivered together with six angles for fastening and spring folding dowels; three are mounted in the factory (if the wall thickness has been stated) and three are delivered loosely. 72 °C thermoelectric release mechanism Control via 24 V AC/DC or 230 V AC spring return motor with two integral limit switches to signal the damper blade positions OPEN/CLOSED Manufacturer: **Strulik** Type: **BR-K90-EW-L (EW-L[40])** Dimensions: NW 100, 125, 160, 200, 250 and 315 mm Length: ca. 360 mm **Accessories:** Male-male connector Type: **NP** Steel disk valve Type: **VMT** } (Opposite side) Overflow grille Type: **ÜSG-M** } Overflow grille Type: **ÜSG-F** (Operating side)			

Damper
BKR-2000

Test certificate Z-41.3-596

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

Ordering example:

BKR-2000-SFR 1.90T-125

- NW 100/125/160 and 200
- Motor type (see page 158):
  - SFR 1.90T-24 V≃
  - SFR 2.90T-230 V~
  - SFR 1.90T SLC (two-wire technique)
- Damper with a 100 % free opening including spring return motor

(Please order the mounting material separately)

Essential advantages

- The BKR-2000 has a **round, 100 % free opening**, i.e. for the design of the volumetric flow it can be assumed that the values are the same as those of spirally wound ducts. The BKR-2000 surface finish is smooth and its roughness can be compared with galvanized sheet metal (Σ = 0,1).
- The damper is always delivered with a spring return motor (with an »OPEN« and »CLOSED« end position signalling inside the motor) and a thermoelectric release mechanism.
- The BKR-2000 is mounted in front of walls, standing on floors or hanging beneath floors. Hence the subsequent mounting of the damper in front of the various fire compartments is possible without additional work.
- The mounting outside of walls and floors with connection to fire resistant F30/F90 ventilation ducts is also possible. Please ask for out installation details.

Installation instruction

The BKR-2000 shall only be mounted with a horizontal motor axis.

Before putting the ventilation systems into operation, all dampers shall be inspected on site. In the first year after putting the ventilation system into operation, the operational reliability test shall be carried out at least twice a year (from the central). If two consecutive tests show no malfunctions, then the functional test only has to be carried out once a year.
Logging is necessary (DIN 13306).

Putting into operation

Testing of the integrity of the damper
After removing the connection piece, check if the damper is in a faultless condition.

Testing

As described above, the dampers shall be checked at intervals for functioning, e.g. from the control panel of the central control system (move the damper blade once into the OPEN and once into the CLOSED position or once into the CLOSED and once into the OPEN position). After the end of an opening or closing process, one of the telltale lights shall clearly indicate OPEN or CLOSED; the maximum running time (see technical data motor) shall not be exceeded. If one of the two end positions of the damper blade is not indicated within the specified time, then an alarm signal is set off on the central panel of the ventilating plant.
The fault shall be cleared at once. In order to carry out the remote-controlled testing of the dampers, the fans of the ventilation system shall be tuned off under any circumstances.
After the central panel has received an error signal and the immediate error detection and correction has been done, then the above functional tests shall be repeated at least three times.

Clearing of faults

Damper malfunctions due to technical or construction faults at the component part itself shall only be rectified with original spare parts.

Electrical connection

The following requirements shall exist inside the control cabinet for the functional supervision:

- Signalling OPEN
- Signalling CLOSED
- Signalling ERROR
- Timing relay (watch the running time)
- Functional test (damper blade moves into the CLOSED position)
- Reset
- Logging (once/twice a year)

Damper
BKR-2000

Test certificate Z-41.3-596

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

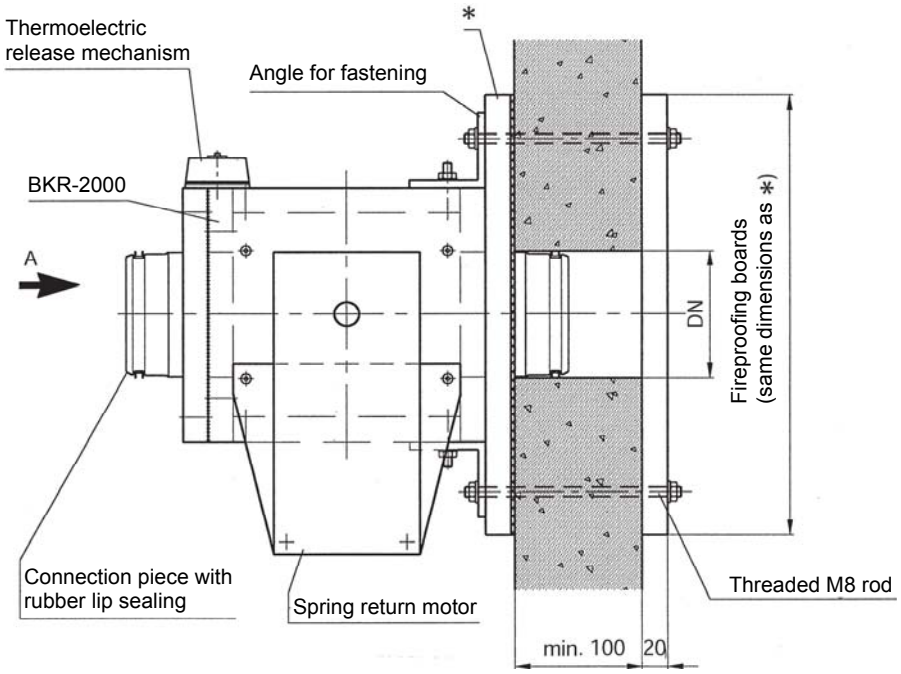
Installation in front of walls of concrete, brickwork, gas concrete and gypsum boards

Dimensions available
Ø D = NW 100/125/160/200

For connecting ventilation ducts to the damper, see **page 156**.

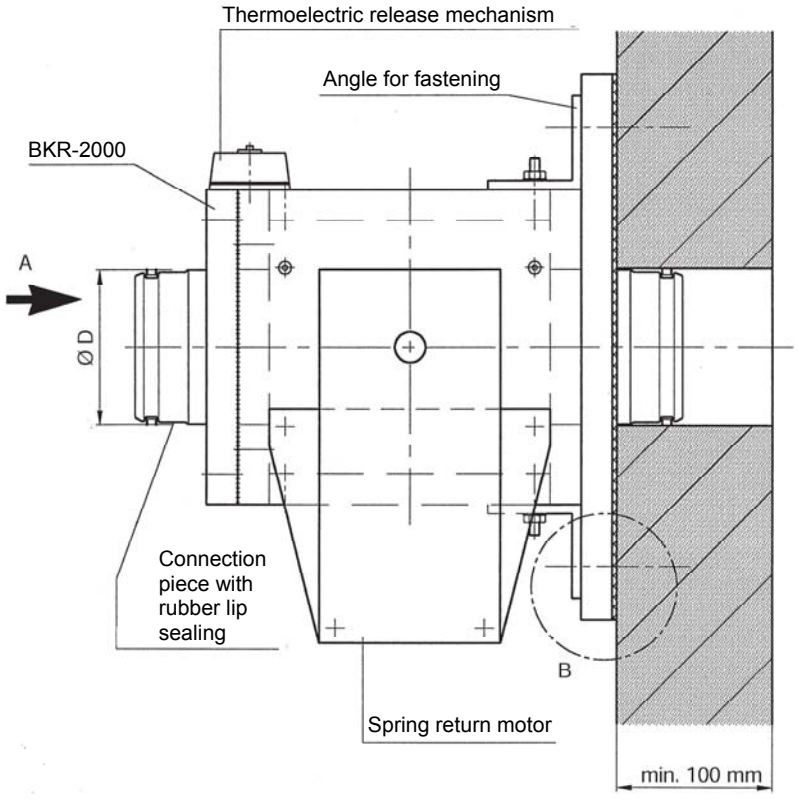
Please note:
The mounting material listed on this page shall be ordered separately.

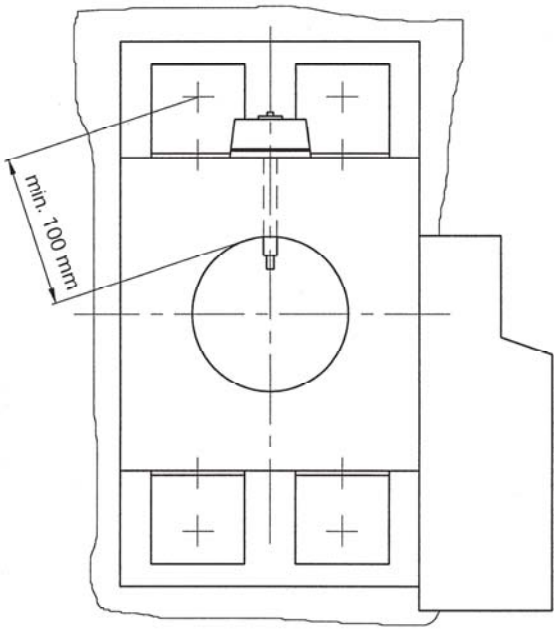
Installation into walls of gypsum boards in accordance with DIN 18163



Please note: Maximum wall loading ≤ 0,4 KN/m^2

Installation into walls of concrete, brickwork and gas concrete





Use dowels that have a fire safety approval or a threaded M8 rod (in one piece) to fasten the damper.

Damper
BKR-2000

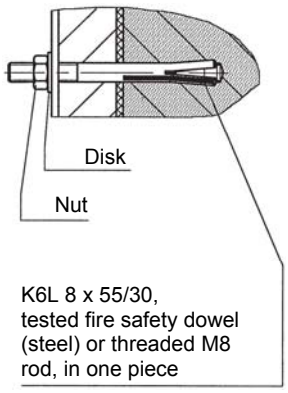
Test certificate Z-41.3-596

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

Installation, when standing on or hanging beneath floors

Methods to attach the damper, when its standing on the floor or hanging beneath the floor

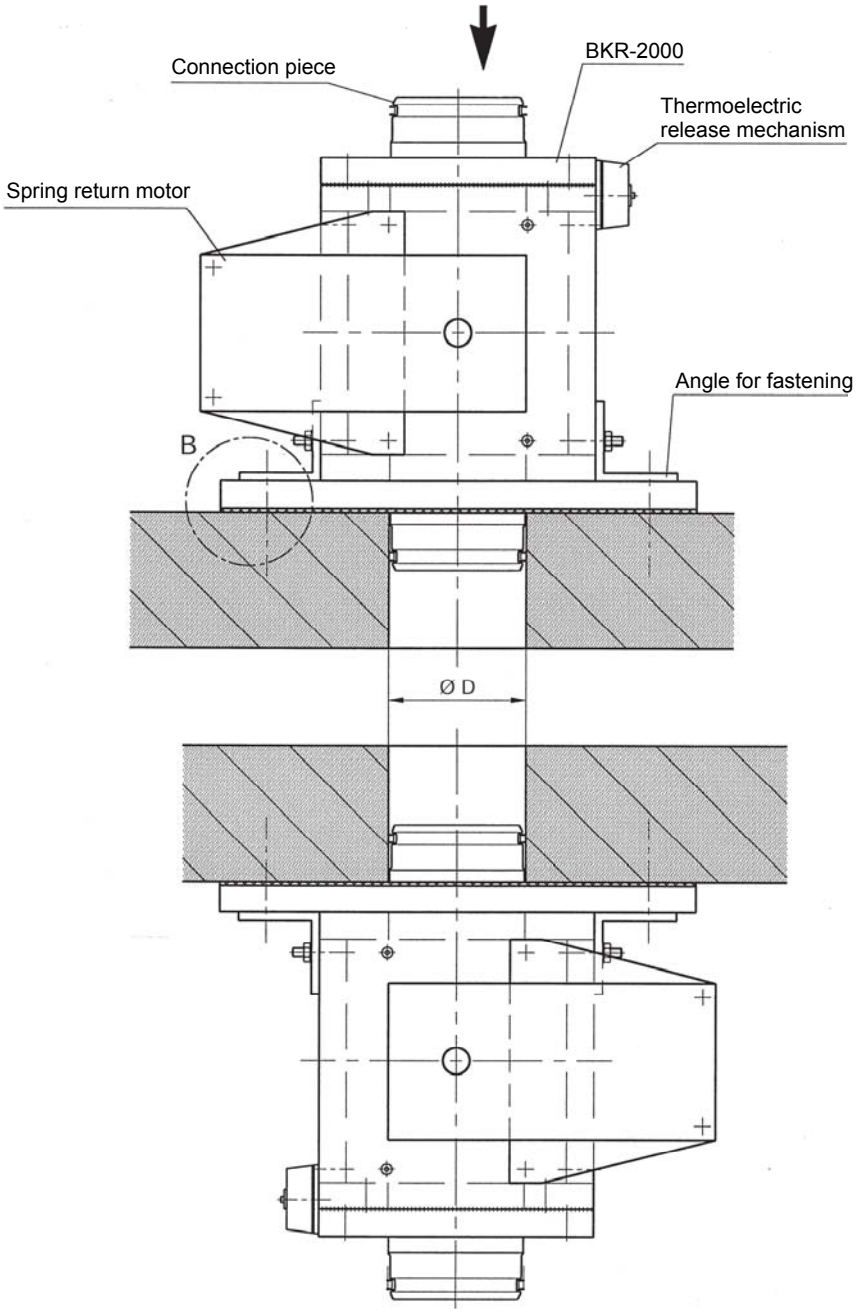
Detail B



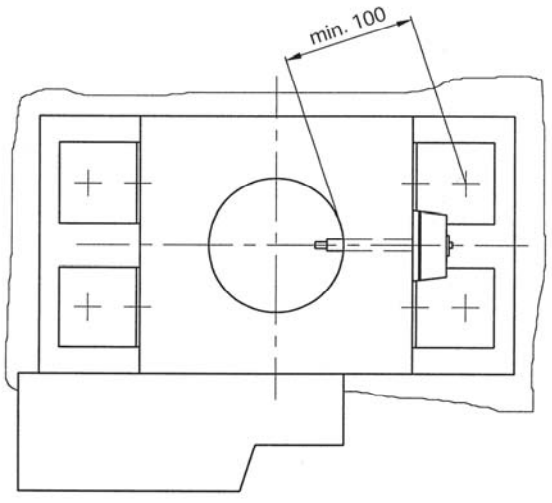
Dimensions available
Ø D = NW 100/125/160/200

For connecting ventilation ducts to the damper, see **page 156**.

Please note:
The mounting material listed on this page shall be ordered separately.



View A



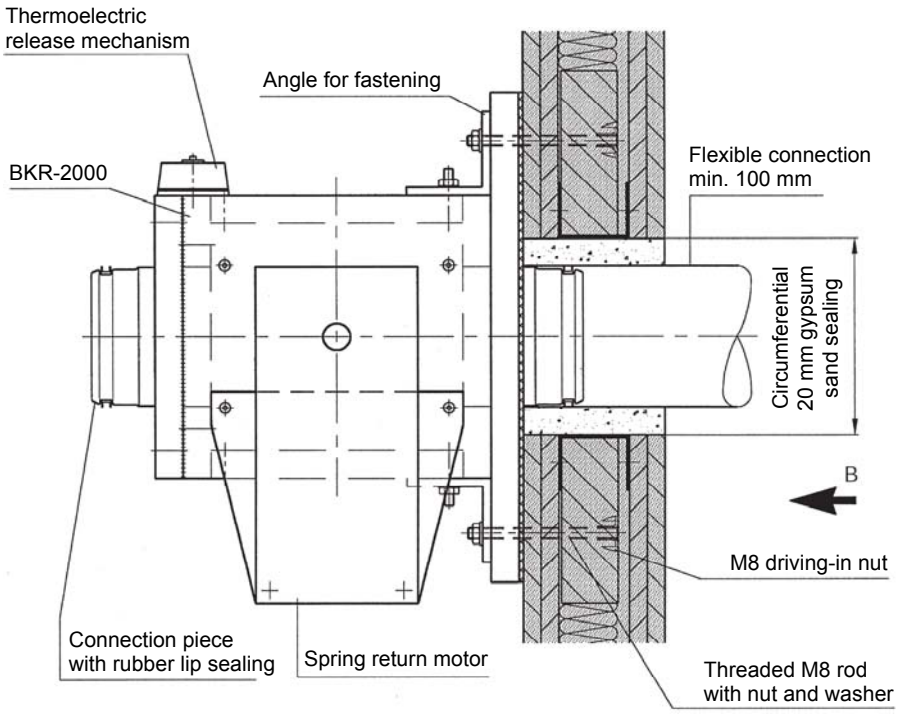
Damper
BKR-2000

Test certificate Z-41.3-596

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

Installation in front of light partition walls

Fastening of the damper by means of a threaded M8 rod and driving nut

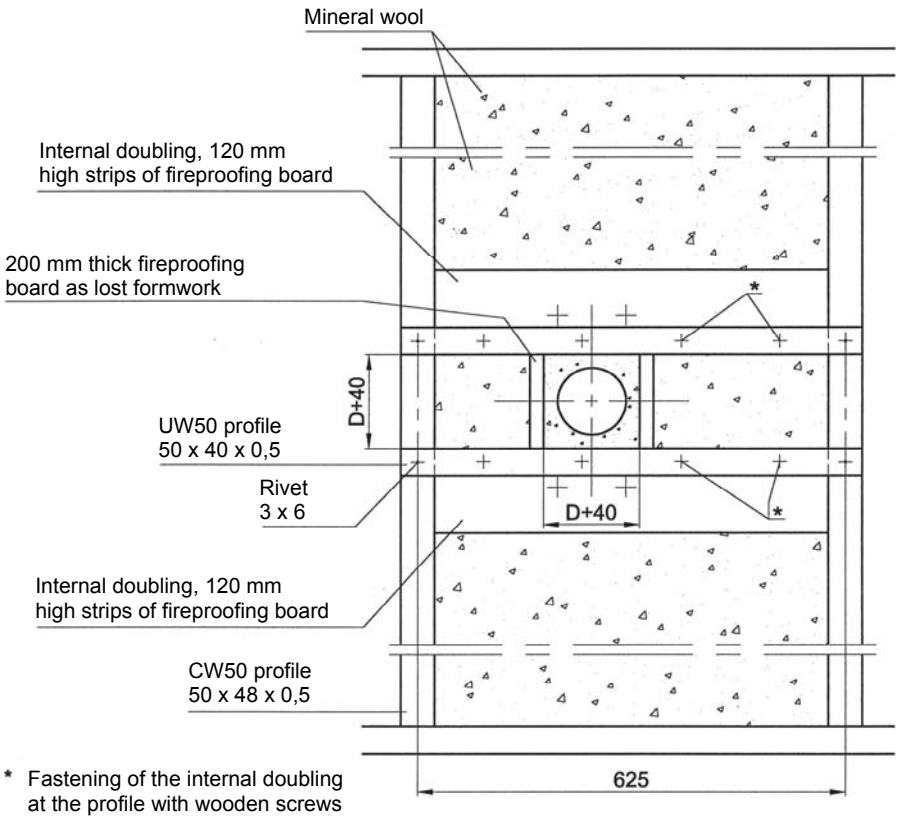


When mounting the dampers in front of light partition walls in accordance with DIN 4102-4, the dampers shall be connected on both sides to combustible ventilation ducts with an elastic spigot of at least normal flammable materials (class B2 according to DIN 4102) having a minimum length of 10 cm (when installed).
Aluminium flexible ducts (ALUFLEX duct, DIN 24146) having a minimum length of 10 cm (when installed) may also be used.

Dimensions available
Ø D = NW 100/125/160/200

Please note:
The mounting material listed on this page shall be ordered separately.

View B (without 12,5 mm gypsum cardboard)



* Fastening of the internal doubling at the profile with wooden screws

Damper
BKR-2000

Test certificate Z-41.3-596

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

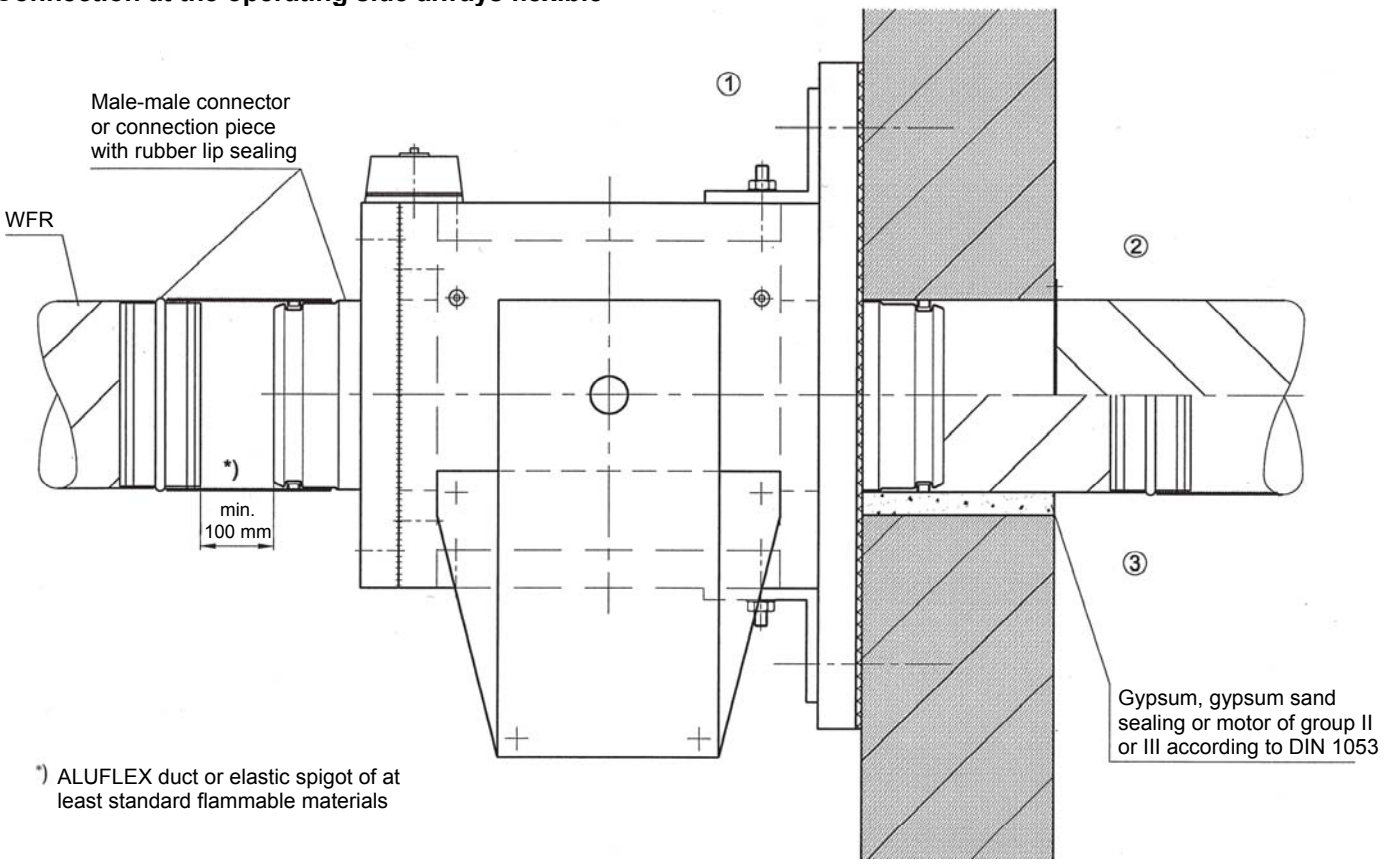
Permissible ventilation ducts

Permissible ventilation ducts

The BKR-2000 dampers can be connected to combustible ventilation ducts, non-combustible ventilation ducts or without ventilation ducts. The dampers always have the K90 classification.

A metal-mesh grid having a mesh size of ≤ 20 mm□ is not required for reasons of fire safety.

Connection at the operating side always flexible



*) ALUFLEX duct or elastic spigot of at least standard flammable materials

① Operating side

The dampers shall be connected by means of elastic spigots consisting of flexible aluminium ducts (ALUFLEX duct, DIN 24146) having a length of at least 10 cm (when installed).
Combustible elastic spigots of at least standard flammable material (B2 according to DIN 4102) having a length of at least 10 cm (when installed) may also be used.

②

In case of flange-mounted ducts of non-combustible materials (A DIN 4102), care shall be taken that due to their elongation at temperatures up to 900 – 1000 °C, forces of more than ≤ 1 KN are not applied to the wall; otherwise use flexible spigots here, as described under ①.

③

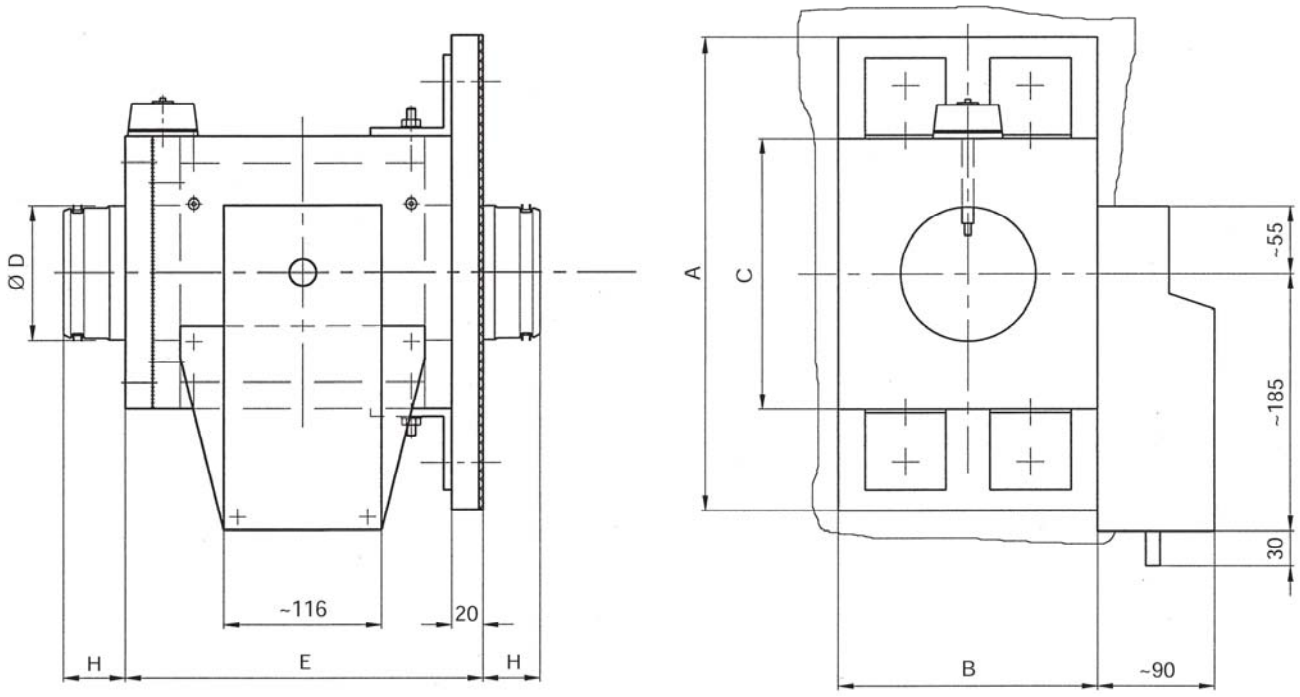
For the connection with ventilation ducts of non-combustible materials (A DIN 4102), which are embedded with mortar or mounted with plaster into the wall, due to the direct elongation when the duct heats up (900 – 1000 °C), the connection shall have a flexible spigot, as described under ①.

Damper
BKR-2000

Test certificate Z-41.3-596

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

Dimensions and weight



Dimensions in mm

NW	Ø D	A	B	C	E	H
100	99	350	192	202	260	~ 40
125	124	370	217	242	300	~ 44
160	159	490	252	292	350	~ 45
200	199	490	292	352	410	~ 50

Weight of the BKR-2000

NW	~ kg
100	22
125	26
160	38
200	44

Damper

Accessory:
SFR spring return motor including thermoelectric release mechanism

Technical data

Type	SFL 1.90T	SFL 2.90T
Working voltage	24 V≅	230 V~
Time of - opening - closing	ca. 90 - 120 s ca. 10 s	
Frequency	50 - 60 Hz	
Dimensioning	18 VA	13 VA
Protection class	IP 54 Cable connection	
Contact rating of the auxiliary switch	3 (1,5) A 230 V	
Maintenance	Maintenance-free	

Field of application for: BKR-2000

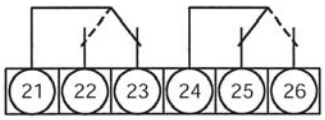
For smoke alarm systems (only 24 V ≅), function according to the principle of closed-circuit current

Working condition: damper in position »OPEN«

Limit switches inside the motor

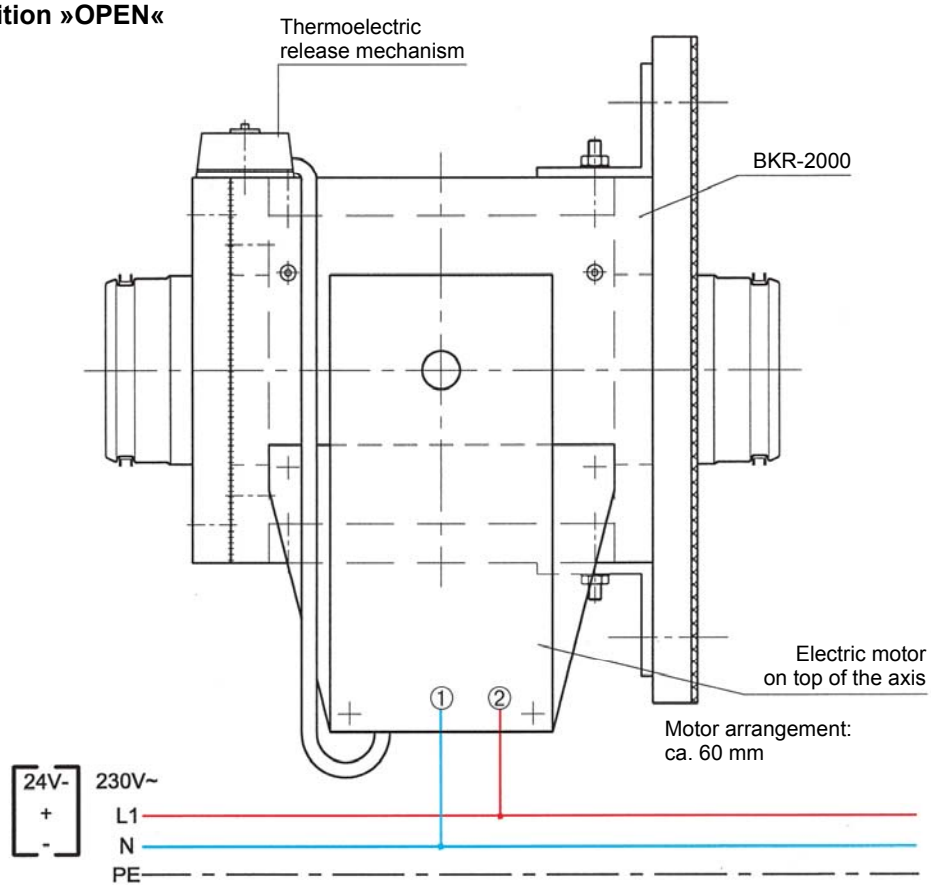
Position of the damper display

2° (CLOSED) **88° (OPEN)**



Display CLOSED = (21) + (22)

Display OPEN = (24) + (25)



Mounting of the SFR spring return motor directly onto the axis of the damper

Function:
The damper blade closes in case of thermal contact break or power failure (de-energized »CLOSED«).

Technical data for bus-capable drive, type SFR 1.90T SLC

Technical data as for type SFR 1.90T, however »bus-capable«, i.e. 24 V≅ motor voltage and signaling of the final positions via two-wire technique.
Suitable means of communication (SPMa-1 F/R or SPLM-F MOD) are necessary. Please order separately.

The thermoelectric release mechanism is connected to the terminals 3 and 4 inside the motor

Tender Text

Item	Description	Unit Piece	Unit price EUR	Total EUR
	Damper without maintenance requirements, with a **round 100 % free opening and test certificate Z-41.3-596** for a K90/K90 resistance class for the connection with combustible ducts on both sides or as an overflow opening. For the installation directly in front or outside of walls and floors of brickwork, concrete, gas concrete, gypsum boards, light partition walls, standing on the floor or hanging beneath the floor, independent of the direction of airflow and fitting position. 70 °C thermoelectric release mechanism. Damper completely made of asbestos-free fireproofing boards, with a round connection piece and rubber sealing on both sides. Stainless steel damper axis supported in maintenance-free bronze bushes. Control via maintenance-free spring return motor (24 V⎓/230 V~ or 24 V– two-wire technique). Manufacturer: **Strulik** Type: **BKR-2000** Dimensions: NW 100, 125, 160 and 200 mm			

Damper

BEK-K90
Test certificate Z-41.3-325
Resistance class K90/K60

BEK-K30
Test certificate Z-41.3-333
Resistance class K30/0

Ordering example:

BEK-K90/ED/100/MS-E

Accessories (optional):
- MS-E - electrical limit switch
- RT - inspection tee
- SNP-S - male sleeve connection
- NP - male-male connector
- VMT - disk valve for overflow opening

NW 100/125/160 and 200

Mounting frame for the installation into:
- ED - brickwork or concrete floor
- EW-L - light partition walls, metal support walls
- EW-L-40 - light partition walls, wall thickness 40 mm

Resistance class
- K30/K0
- K90/K60

Essential advantages

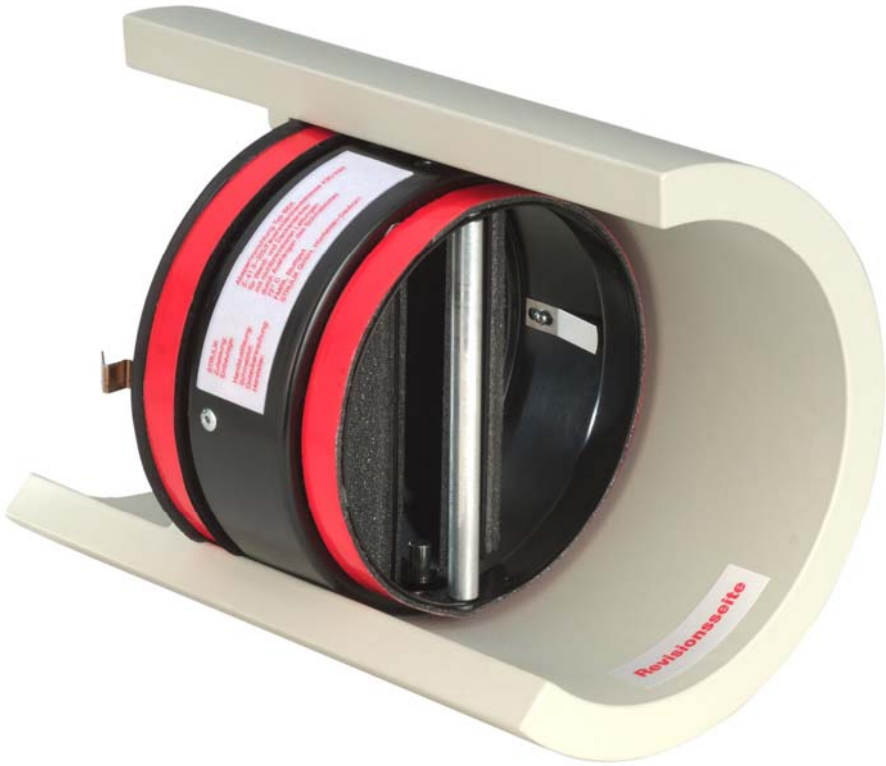
- The BEK-K90 is suitable for the installation into light F90 and F30 partition walls.
- The damper is mounted directly into the fire protected zone. The effectiveness of the fire protection is guaranteed by the butterfly blades.
- The dampers may even be mounted subsequently into ventilation systems in order to meet the effective fire prevention requirements.
- No special fixing arrangements are required (i.e. saving of time and high economy).

Essential features

1/ Safety classification.
- **Official classification: Resistance class K90 and K30**
- Release from 72 °C upwards
- Maximum sealing between the body and the blades
- Flame stability

2/ Low noise level
- Insignificant reduction of cross-sectional area
- High airflow rate
- Any direction of airflow

3/ Sizes available
- NW 100/125/160 and 200



Safety

The Strulik BEK-K90 and K30 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.
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 and K30 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.


DEUTSCHES INSTITUT FÜR BAUTECHNIK
Anstalt des öffentlichen Rechts

Allgemeine bauaufsichtliche Zulassung


DEUTSCHES INSTITUT FÜR BAUTECHNIK
Anstalt des öffentlichen Rechts

Allgemeine bauaufsichtliche Zulassung

Damper

BEK-K90
Test certificate Z-41.3-325
Resistance class K90/K60

BEK-K30
Test certificate Z-41.3-333
Resistance class K30/0

Installation into a brickwork or concrete floor

For the installation into brickwork or concrete floors always together with the ED mounting frame

The correct installation of the BEK-K90 and K30 damper is performed together with a wall frame of ETERDUCT.
The surrounding gap is filled with mortar of group II and III, DIN 1053, or with gypsum (see examples).

Permissible ventilation ducts and connection with ventilation ducts

According to the test certificate, the dampers shall only be connected to such ventilation ducts, which due to their design and embedding – especially when warming up in case of fire – will not be able to apply considerable forces to the dampers or wall and floor.

For overflow openings

BEK-K90 – installation for K90
BEK-K30 – installation for K30
The wall frame shall be lengthened by 1,5 x d (on both sides).
100 Ø L = 210 + 160 = 370 mm
125 Ø L = 210 + 235 = 445 mm
160 Ø L = 210 + 340 = 550 mm
200 Ø L = 210 + 460 = 670 mm

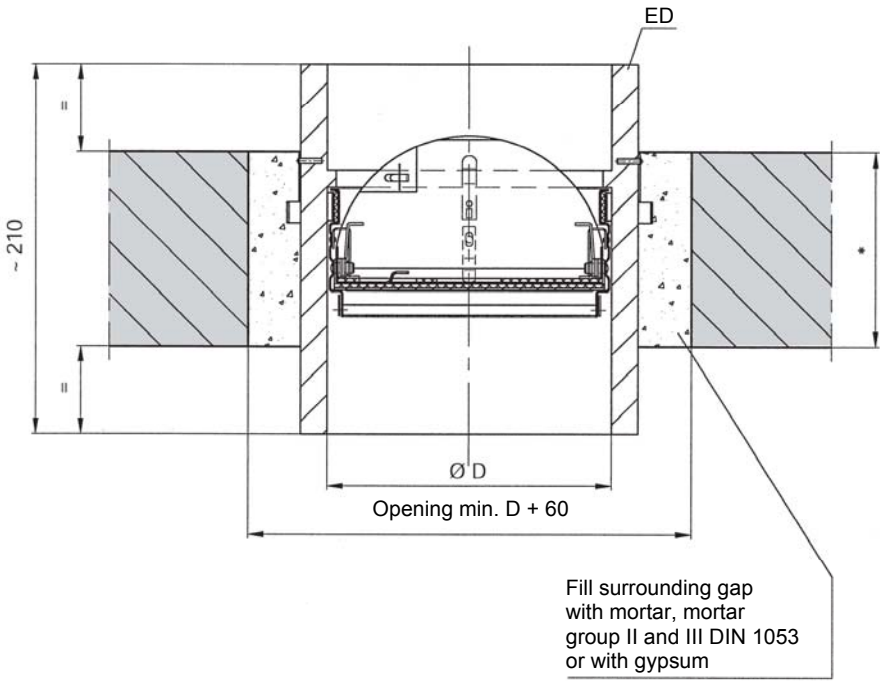
Wall frame with duct connection on one side and blow-off outlet (one-sided extension).
100 Ø L = 210 + 80 = 290 mm
125 Ø L = 210 + 117,5 = 327,5 mm
160 Ø L = 210 + 170 = 380 mm
200 Ø L = 210 + 230 = 440 mm

For overflow openings

BEK-K90 – installation for K90*
BEK-K30 – installation for K30*

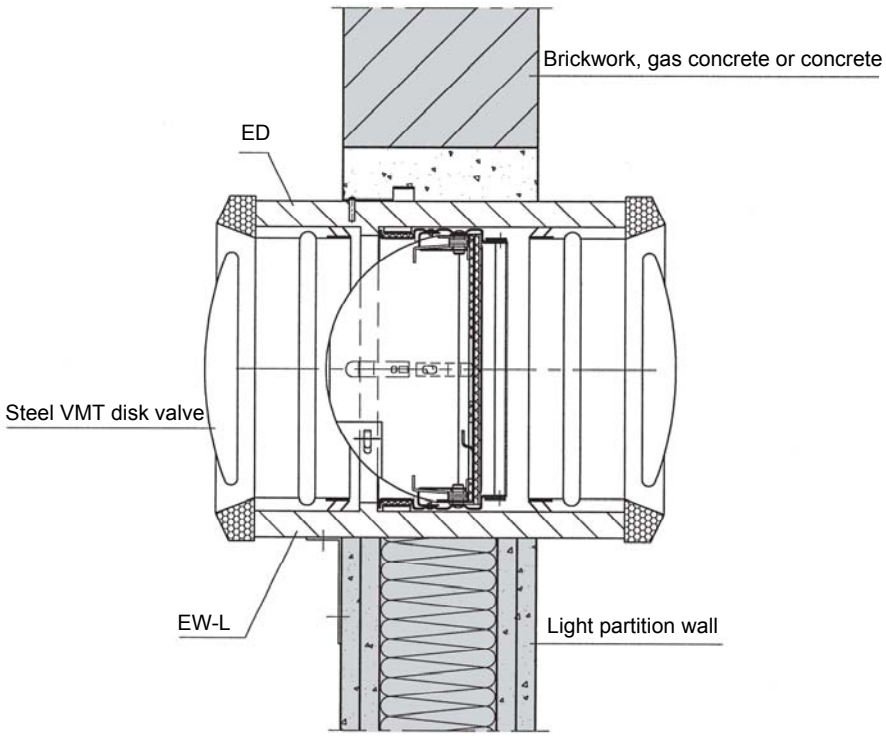
Instead of the duct extension 1,5 x d, two steel VMT disk valves or a metal mesh grid, mesh size ≤ 20 mm□ can be used to achieve the resistance class* without ventilation ducts.

* Installation into brickwork walls, wall thickness min. 115 mm
Installation into gas concrete walls, wall thickness min. 100 mm
Installation into DIN 18163 wall panels, min. 80 mm
Installation into concrete walls and floors, floor thickness min. 100 mm



Ø D = 100, 125, 160 or 200 mm

Installation example: Overflow opening within brickwork (ED) or light partition walls (ER-L) with a VMT disk valve



Commercial steel disk valves shall not be used, as the spindle, which projects into the mounting frame, would hinder the closing of the damper in case of fire.

Damper
BEK-K90

Test certificate Z-41.3-325

Resistance class K90/K60

Installation into solid walls

Installation into solid walls and floors

- Insert spindle, coat and smooth with gap filler or glue with the SBK 2000 adhesive (dry construction).
  When connecting ventilation ducts, the connection has to be flexible.

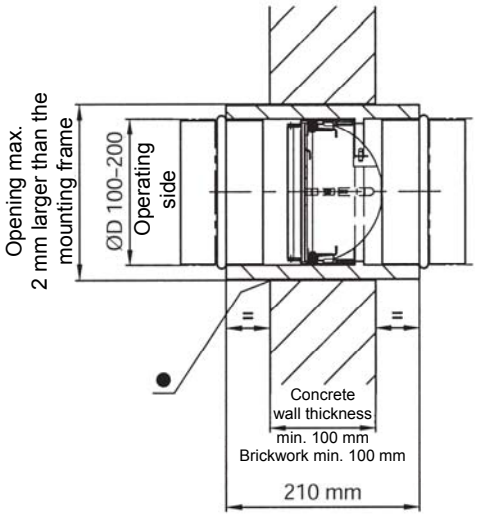
Minimum distances of the dampers for the installation into solid walls and floors

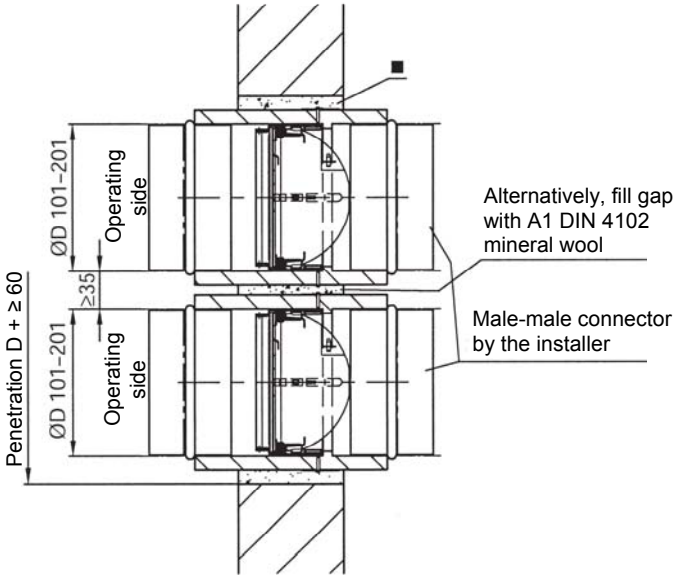
Installation into installation opening that are hard to access

- ■ Surrounding gap filled with mortar, mortar group II or III according to DIN 1053 or with gypsum.

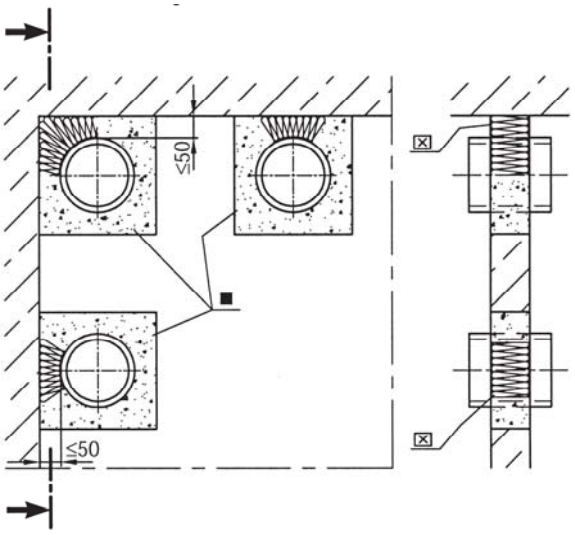
- ☒ A1 DIN 4102 mineral wool with a gross density between 80 and 100 kg/m^3 and a melting point ≥ 1000 °C.
  When connecting ventilation ducts, the connection has to be flexible.

Installation into walls of brickwork, concrete or gas concrete





Installation into installation openings that are hard to access
(drawing without an element)



Damper

BEK-K90
Test certificate Z-41.3-325
Resistance class K90/K60

BEK-K30
Test certificate Z-41.3-333
Resistance class K30/0

Installation into light partition walls

Fastening inside the light partition walls

Six angles, angle A (three) staggered by 120° fastened if the wall thickness has been stated, angle B (three) delivered loosely.

Dimensions

Ø D
100
125
160
200

① L = min. 250 mm for inspection

Permissible ducts ⊗

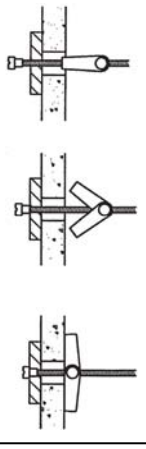
The dampers shall only be connected to ventilation ducts, which due to their design or laying, will not apply considerable forces to the dampers as a result of warming.

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

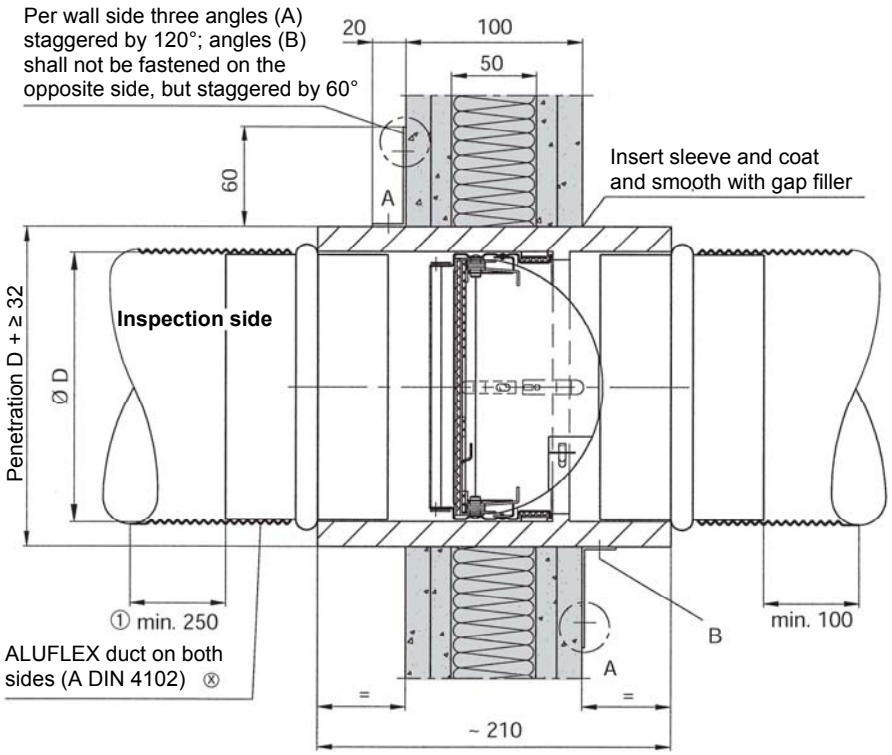
This compensator may also be of standard flammable materials (class B2 according to DIN 4102), if it is directly connected to the specified ventilation duct of non-combustible materials.

Detail »A«

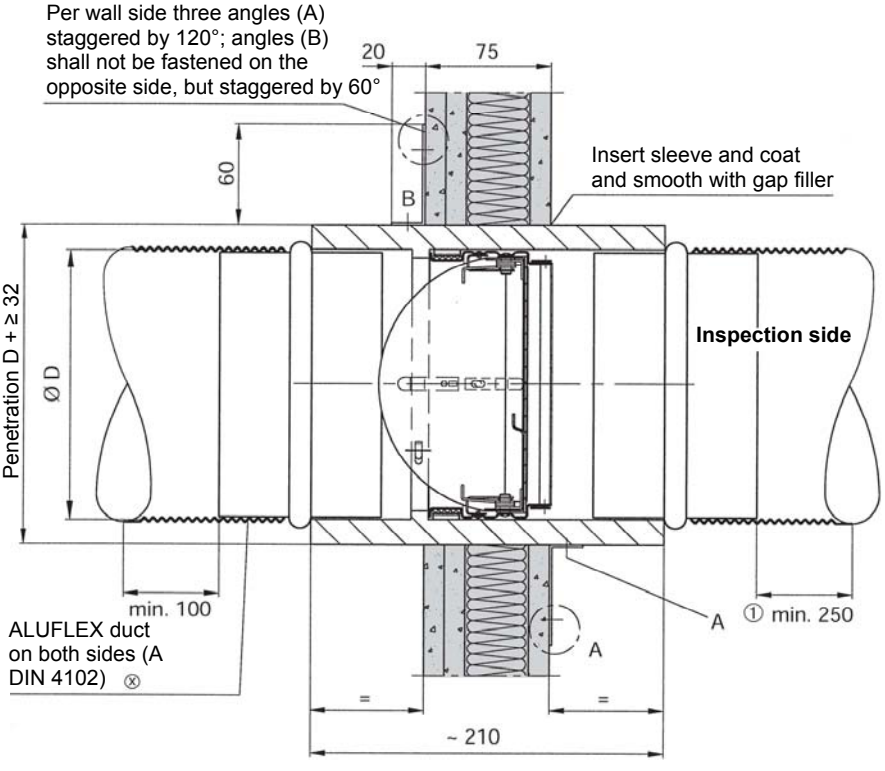
Spring folding dowel



Installation into light F90 partition walls
BEK-K90-EW-L



Installation into light F30 partition walls
BEK-K30-EW-L



Damper

BEK-K90
Test certificate Z-41.3-325
Resistance class K90/K60

BEK-K30
Test certificate Z-41.3-333
Resistance class K30/0

Installation into a 40 mm PROMAT wall

Fastening inside the light partition walls

Six angles, angle A (three) staggered by 120° fastened if the wall thickness has been stated, angle B (three) delivered loosely.

Dimensions

Ø D
100
125
160
200

Permissible ducts ⊗

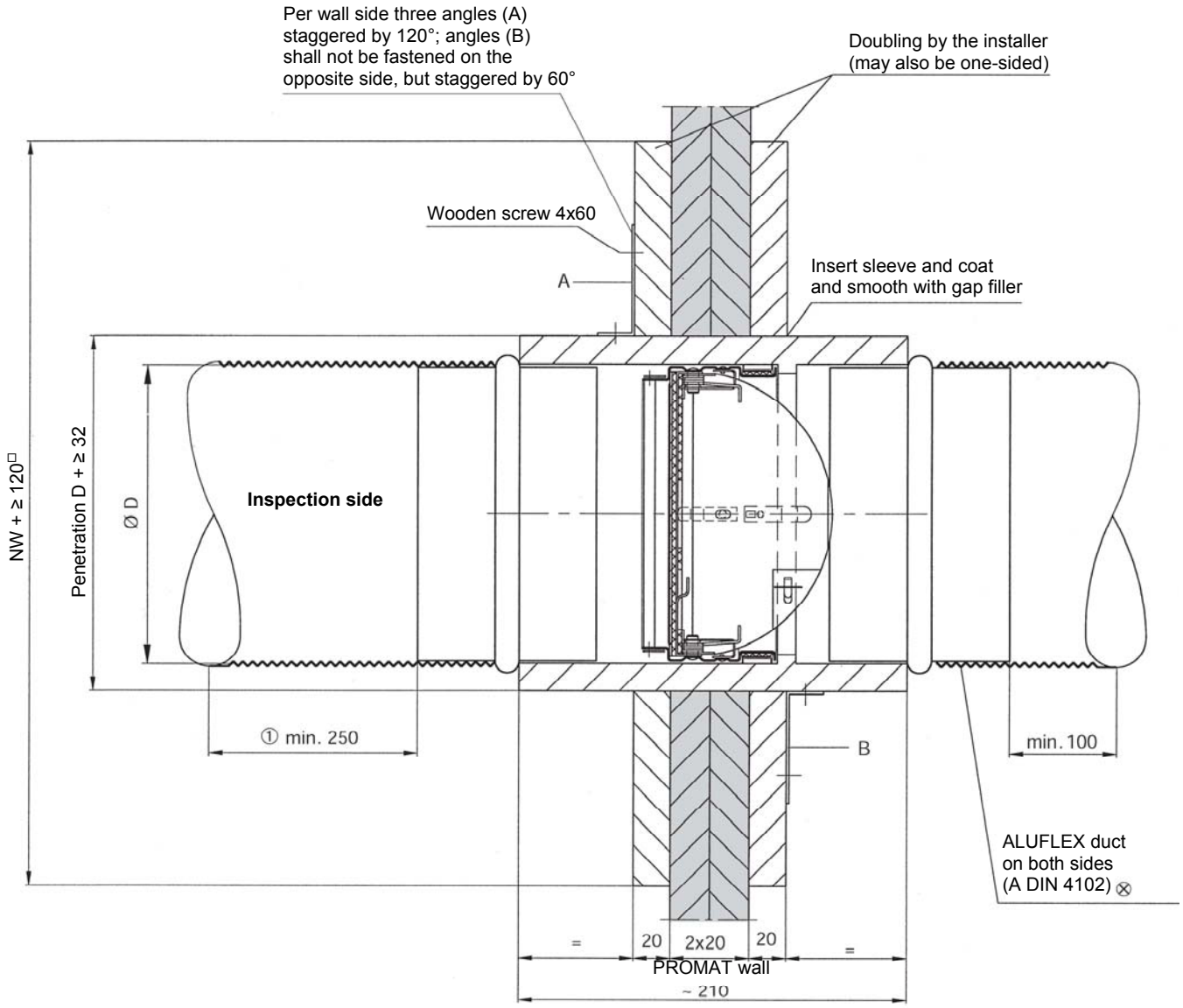
The dampers shall only be connected to ventilation ducts, which due to their design or laying, will not apply considerable forces to the dampers as a result of warming.

Ventilation ducts may be connected to dampers with a compensator or spigot of flexible aluminum 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.

Installation into light partition walls/shaft walls –
F90 ≤ 80 mm
F30 ≤ 60 mm
BEK-K90-EW-L40

Installation into duct walls
F90 ≥ 35 mm
F30 ≥ 24 mm



① L = min. 250 mm for inspection

Damper

BEK-K90
Test certificate Z-41.3-325
Resistance class K90/K60

BEK-K30
Test certificate Z-41.3-333
Resistance class K30/0

Facilities for inspection

Type: RT

Suitable for all purposes, i.e. inspection above and beneath the floor within brickwork or gas concrete walls. Inspection cover and connecting collar exchangeable.

Type: SNP-S

The male sleeve connection is inserted into the spirally wound duct like a telescope, so that the opening is free for inspection.

Type: NP

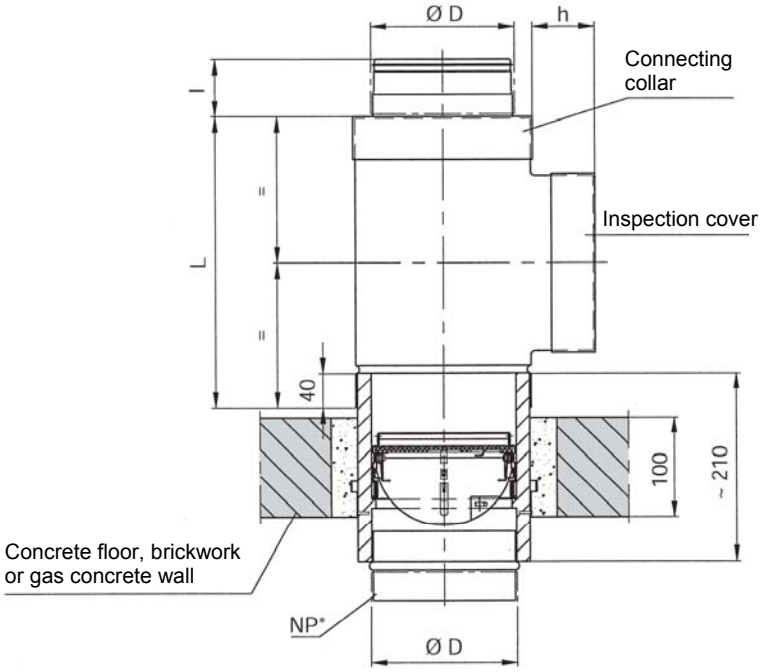
The male-male connector together with the ALUFLEX duct is taken out of the mounting frame for inspection.
Suitable for all fitting positions. For the installation of the BEK into light partition walls, an inspection is only possible via the male-male connector due to the flexible connection on both sides.

* The male- male connector NP is not part of the standard scope of delivery.

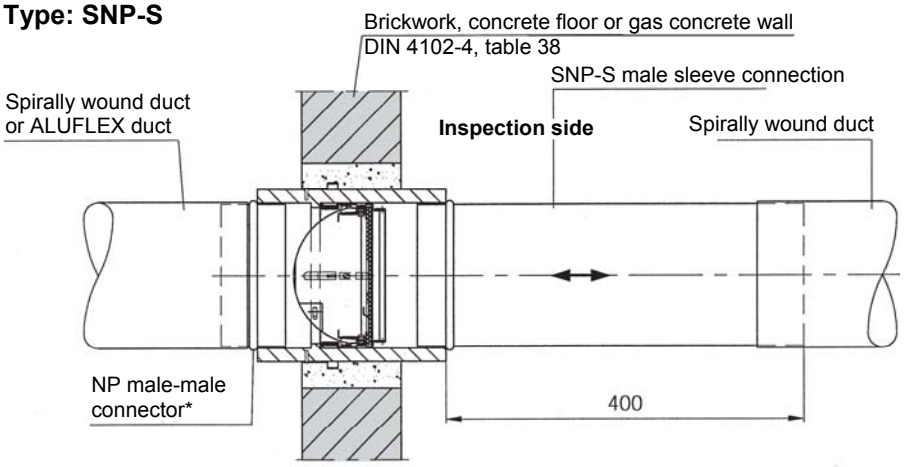
Dimensions

RT	Ø D	L	l	h
100	100	275	65	~65
125	125	300	65	~70
160	160	335	67	~75
200	200	370	68	~80

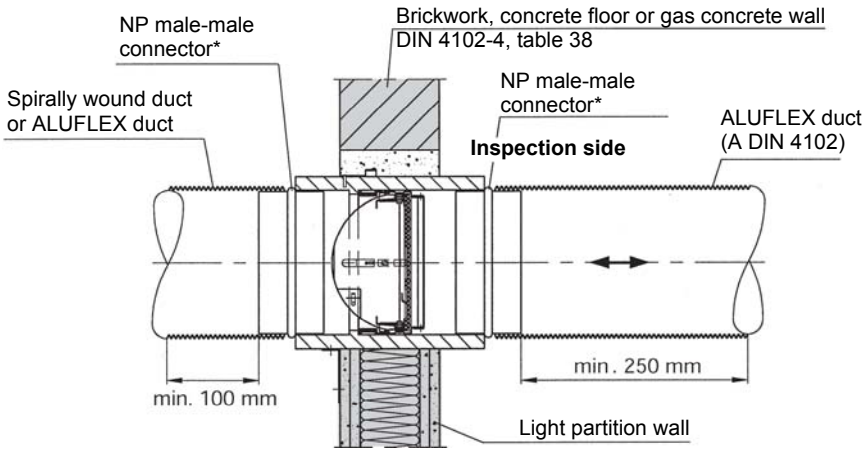
Inspection T iron
Type: RT



Inspection with male sleeve connection
Type: SNP-S



Inspection with male-male connector
Type: NP in combination with ALUFLEX duct



Damper

BEK-K90

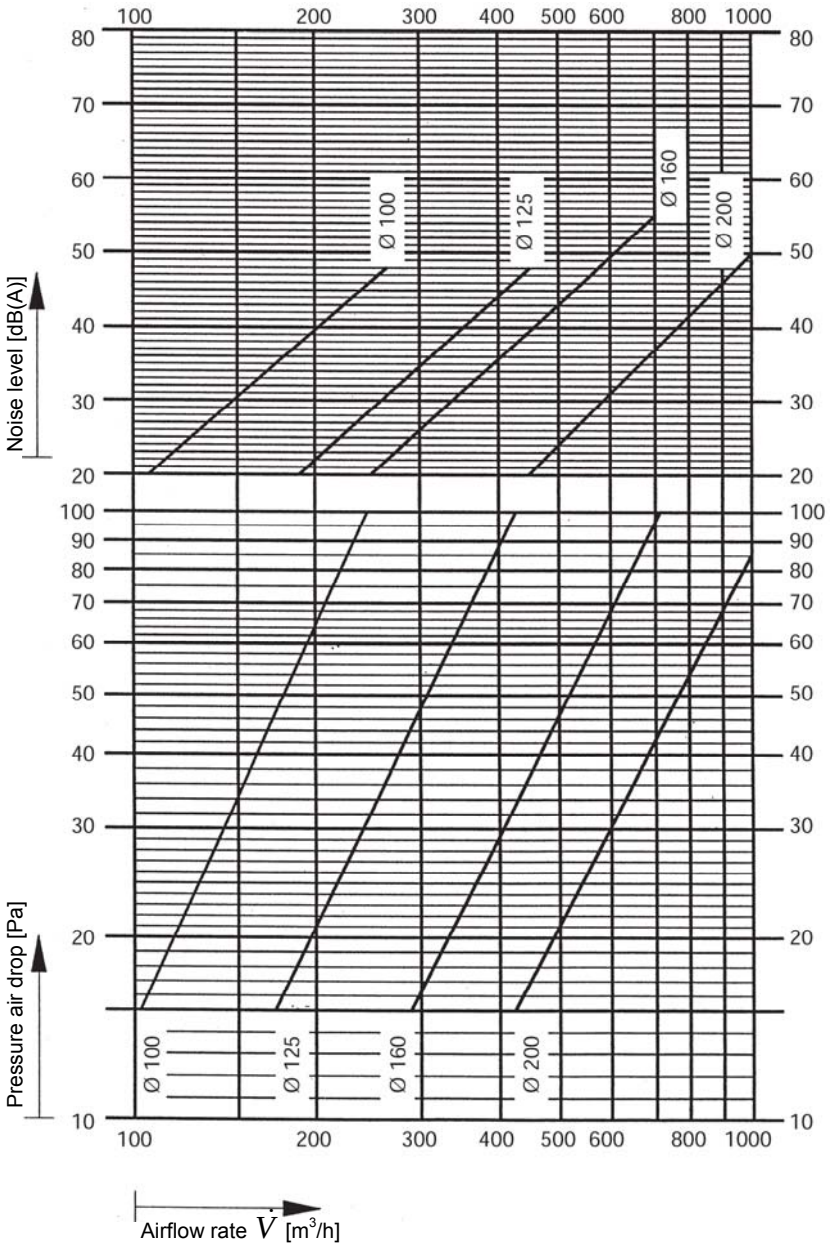
Test certificate Z-41.3-325
Resistance class K90/K60

BEK-K30

Test certificate Z-41.3-333
Resistance class K30/0

Design diagrams

Pressure drop and noise level



Note:

The air velocity of ≤ 8 m/s shall not be exceeded for ventilation reasons.

The BEK-K90 and BEK-K30 can be used independently from the direction of airflow.

Damper

BEK-K90
Test certificate Z-41.3-325
Resistance class K90/K60

BEK-K30
Test certificate Z-41.3-333
Resistance class K30/0

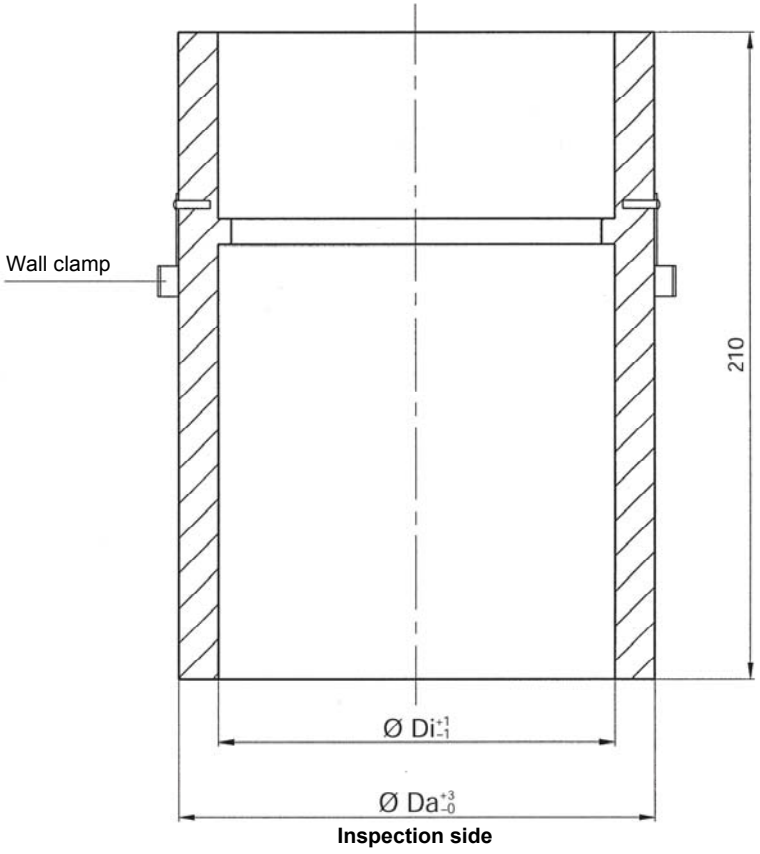
Technical data of the mounting frame

Mounting frame for walls and floors
Type: ED
Scope of delivery: Mounting frame and two wall clamps

Mounting frame for light partition walls
Type: EW-L
Scope of delivery: Mounting frame, six angles and six spring folding dowels

Type: EW-L40
Scope of delivery: Mounting frame, six angles and six wooden screws 4 x 60 mm

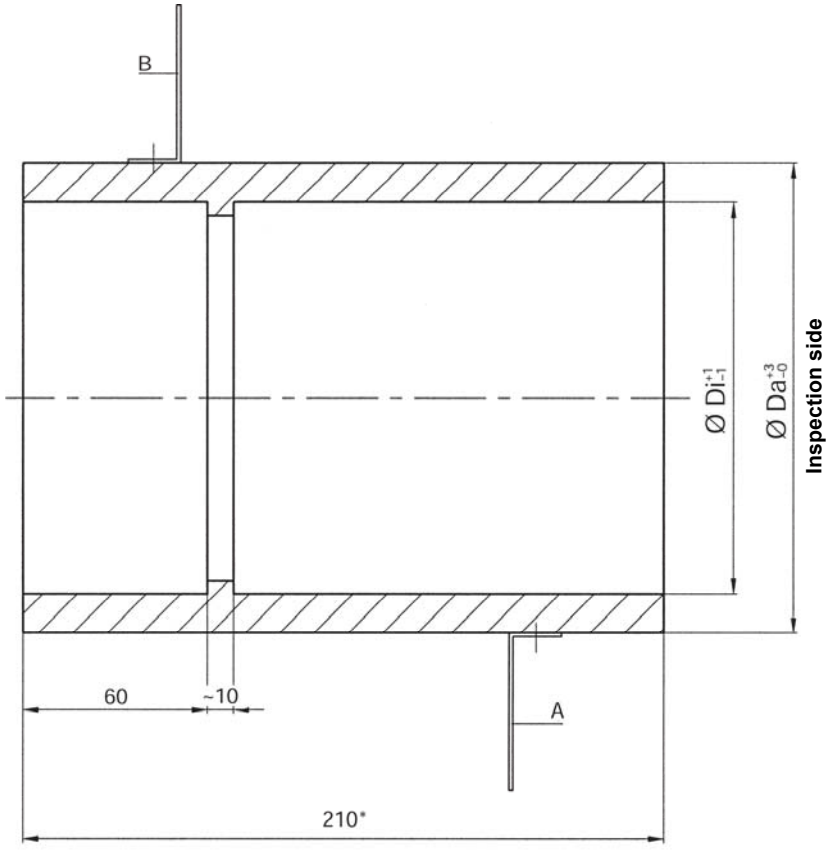
ED mounting frame for walls and floors



Fastening inside light partitions

Six angles, three angles A staggered by 120° fitted (if the wall thickness has been stated), three angles B are delivered loosely.

EW-L and EW-L40 mounting frame for light partition walls



Dimensions

DN	Ø Di	Ø Da
100	101	131
125	126	156
160	161	191
200	201	232

* A 310 mm long mounting frame is available for light partition walls having a wall thickness of > 190 mm.

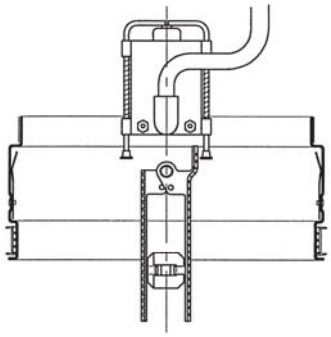
Damper

BEK-K90
Test certificate Z-41.3-325
Resistance class K90/K60

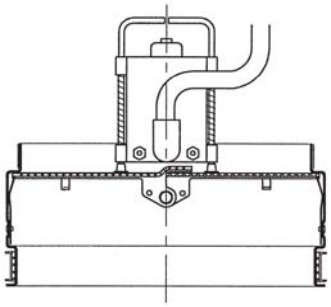
BEK-K30
Test certificate Z-41.3-333
Resistance class K30/0

Accessory: Electrical limit switch MS-E

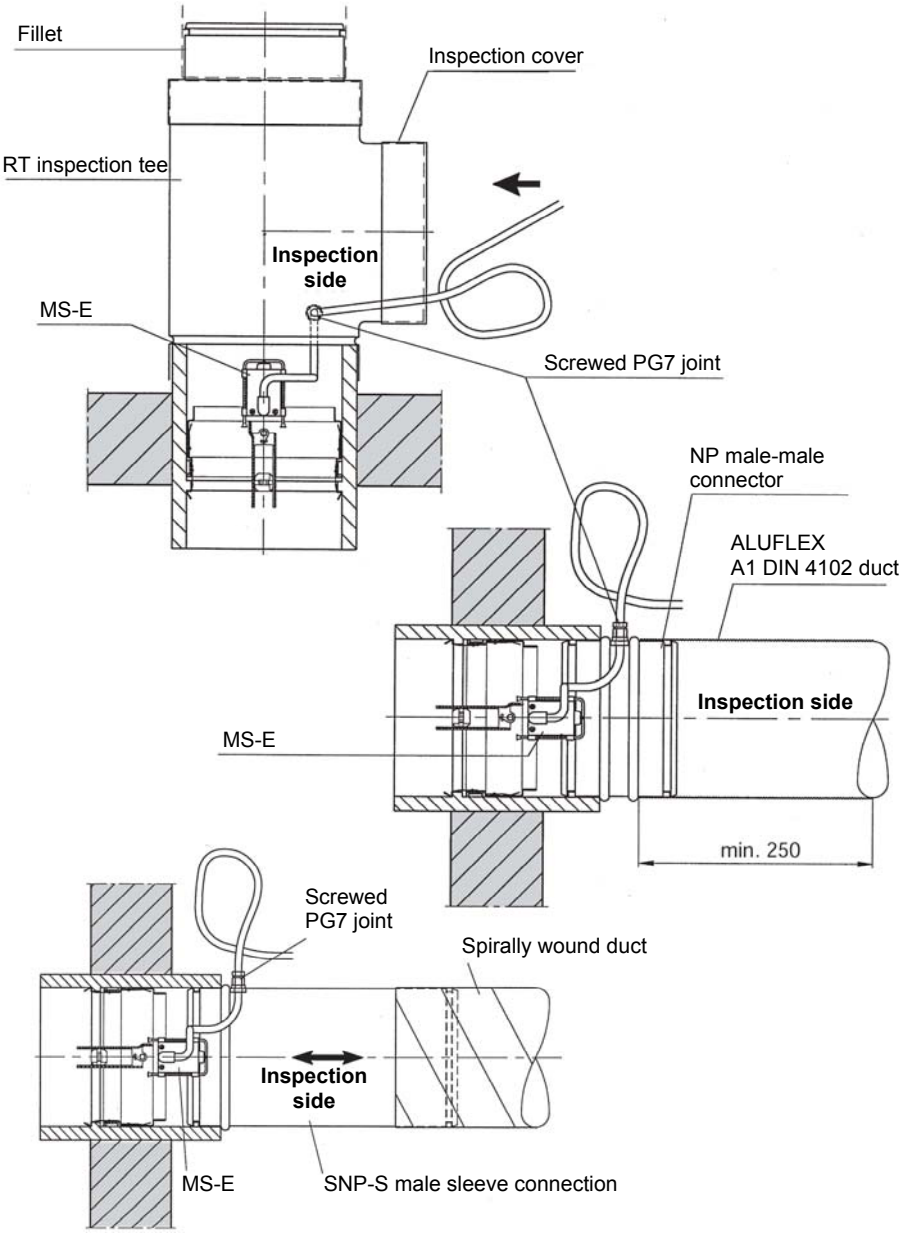
Position »OPEN«



Position »CLOSED«



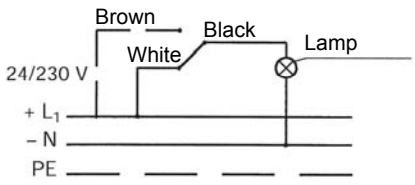
BEK inspection facility with a MS-E electrical limit switch



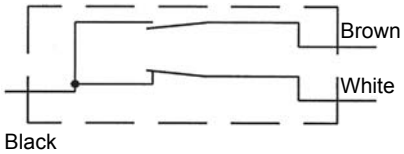
*) Lead the cable of the MS-E electrical limit switch out of the PG screwing (PG7). Leave a ca. 50 cm long loop outside the duct, so that the damper can be taken out for inspection.

Wiring diagram

Display: »CLOSED« - black/white
»OPEN« - black/brown



Wiring diagram: MS-E



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 gl 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^2

Damper

BEK-K90
Test certificate Z-41.3-325
Resistance class K90/K60

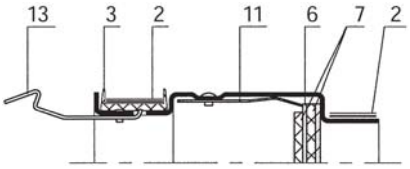
BEK-K30
Test certificate Z-41.3-333
Resistance class K30/0

Technical data of the spare parts

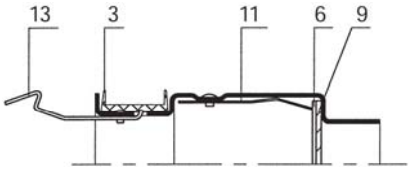
Functioning

Strulik dampers for supply and exhaust air ventilation can be used in those cases, where the safety regulations require a K90 or K30 resistance class for the installation into walls and floors.
In the event of a fire or the like, the integrated fusible link releases the tension path of the release spring at 72 °C and the damper blades close abruptly.
In order to reset the damper after release, simply tighten the locking spring again and insert a new fusible link.

Fusible link, released
BEK-K90

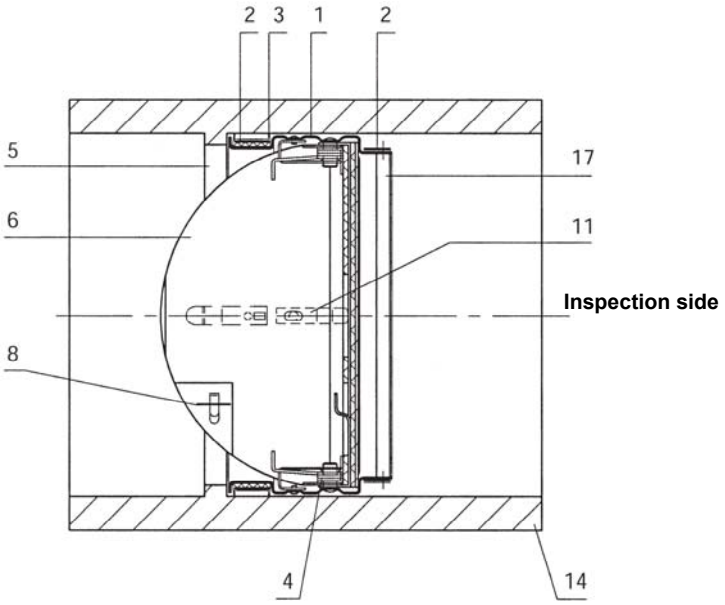


BEK K30

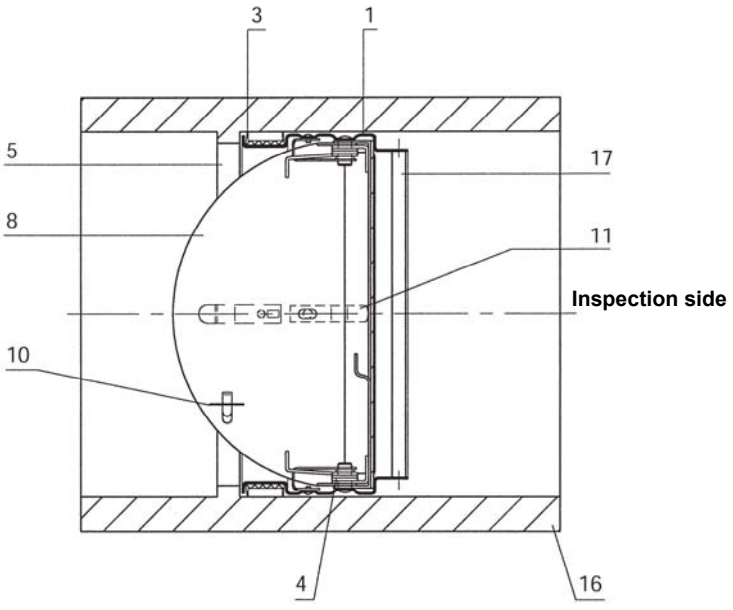


Description: BEK	K90	K30
Housing	1	1
Intumescent material	2	-
Lip sealing	3	3
Locking spring	4	4
Crosspiece	5	5
Damper blade	6	8
Sealing material	7 on both sides	9 on one side
Fusible link	8	10
Locking plate	11	11
Mounting spring	13	13
Mounting frame	14	16
Retaining clip	17	17

BEK-K90



BEK-K30



Damper

BEK-K90
Test certificate Z-41.3-325
Resistance class K90/K60

BEK-K30
Test certificate Z-41.3-333
Resistance class K30/0

Technical data and maintenance

Technical data of the damper BEK-K90/BEK-K30

- Length of the damper 72,5 mm
- Length of the mounting frame 210 mm
- Maximum diameter of the frame
  - 100 = 131 + 3 mm
  - 125 = 156 + 3 mm
  - 160 = 191 + 3 mm
  - 200 = 232 + 3 mm

Weight in kg

NW \ Type	BEK + ED (EW-L)
100	~ 2,5
125	~3
160	~3,8
200	~5,1

Maintenance of the damper

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

Testing

Testing of the integrity of the dampers.
After removing the connection piece, check if the fusible link is in a faultless condition. Take the damper out of the mounting frame (14 or 16), remove the fusible link (8 or 10), close the damper a few times (before opening it again, the locking plates pos. 11 shall be released); the bearing shall be free-moving. Observe the fusible link for faults. If no faults are apparent, then insert the fusible link and put the damper back into the mounting frame (14 or 16). Assemble the connection piece.

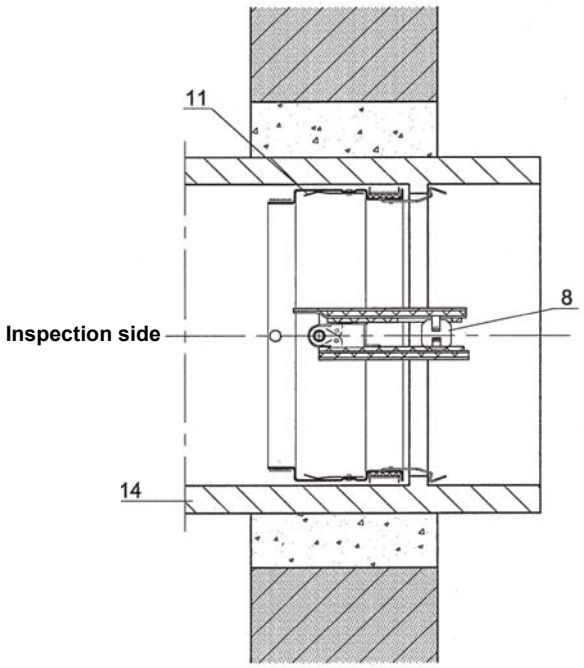
Installation

Strulik dampers are supplied with an ETERDUCT mounting frame.

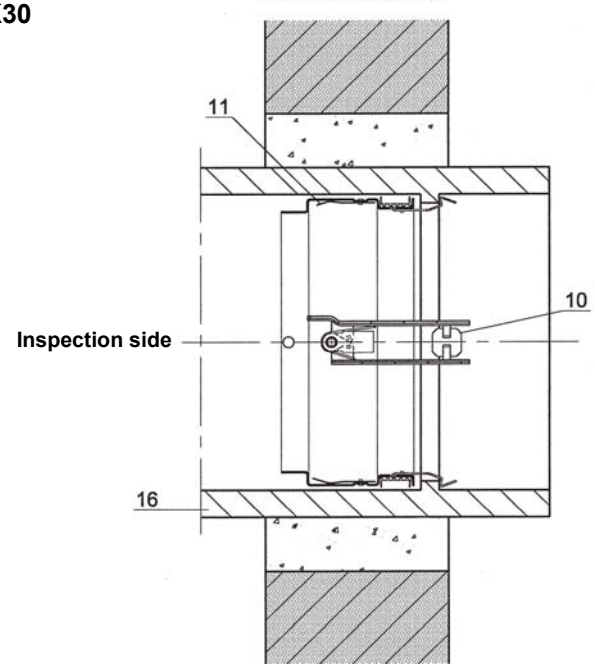
Clearing of faults

If faults have been detected during maintenance, then these shall be cleared immediately. Only original parts shall be used.

BEK-K90



BEK-K30



Tender Text

Item	Description	Unit Piece	Unit price EUR	Total EUR
	Damper with test certificate Z-41.3-325 for a K90 resistance class for the installation into brickwork and concrete floors. The housing consists of a steel cylinder and two eccentrically arranged butterfly blades, which are fitted with ceramic paper. The two foaming gaskets are arranged at the out surround of the steel cylinder. The damper is locked by means of two mounting springs, which are staggered by 180° and click into place behind a crosspiece inside the mounting frame. A special sealing guarantees the exclusion of air. Therefore the fusible link can be exchanged easily. **Technical data:** Diameter: 100 mm 125 mm 160 mm 200 mm Length: 210 mm in total Temperature of activation: 72 °C Air volume: m^3/h Noise level: L_{WA} dB Manufacturer: **Strulik** Type: **BEK-K90-ED** **Accessories:** Electrical limit switch Type: **MS-E** Inspection tee Type: **RT** Inlet spigot Type: **SNP-S** Male-male connector Type: **NP** Disk valve for overflow opening Type: **VMT**			

Tender Text

Item	Description	Unit Piece	Unit price EUR	Total EUR
	Damper with test certificate Z-41.3-325 for a K90 resistance class for the installation into light F90 partition walls. The housing consists of a steel cylinder and two eccentrically arranged butterfly blades, which are fitted with ceramic paper. The two foaming gaskets are arranged at the out surround of the steel cylinder. The damper is locked by means of two mounting springs, which are staggered by 180° and click into place behind a crosspiece inside the mounting frame. In addition, six angles are supplied for fastening with spring folding dowels (three are mounted in the factory and three are supplied loosely). A special sealing guarantees the exclusion of air. Therefore the fusible link can be exchanged easily. **Technical data:** Diameter: 100 mm 125 mm 160 mm 200 mm Length: 210 mm in total Temperature of activation: 72 °C Air volume: m^3/h Noise level: L_{WA} dB Manufacturer: **Strulik** Type: **BEK-K90-EW-L** **Accessories:** Electrical limit switch Type: **MS-E** Male-male connector Type: **NP** Disk valve for overflow opening Type: **VMT**			

Tender Text

Item	Description	Unit Piece	Unit price EUR	Total EUR
	Damper with test certificate Z-41.3-333 for a K30 resistance class for the installation into brickwork and concrete floors. The housing consists of a steel cylinder and two eccentrically arranged butterfly blades, which are fitted with ceramic paper. The two foaming gaskets are arranged at the out surround of the steel cylinder. The damper is locked by means of two mounting springs, which are staggered by 180° and click into place behind a crosspiece inside the mounting frame. A special sealing guarantees the exclusion of air. Therefore the fusible link can be exchanged easily. **Technical data:** Diameter: 100 mm 125 mm 160 mm 200 mm Length: 210 mm in total Temperature of activation: 72 °C Air volume: m^3/h Noise level: L_{WA} dB Manufacturer: **Strulik** Type: **BEK-K30-ED** **Accessories:** Electrical limit switch Type: **MS-E** Inspection tee Type: **RT** Inlet spigot Type: **SNP-S** Male-male connector Type: **NP** Disk valve for overflow opening Type: **VMT**			

Tender Text

Item	Description	Unit Piece	Unit price EUR	Total EUR
	Damper with test certificate Z-41.3-333 for a K30 resistance class for the installation into light F30 partition walls. The housing consists of a steel cylinder and two eccentrically arranged butterfly blades, which are fitted with ceramic paper. The two foaming gaskets are arranged at the out surround of the steel cylinder. The damper is locked by means of two mounting springs, which are staggered by 180° and click into place behind a crosspiece inside the mounting frame. In addition, six angles are supplied for fastening with spring folding dowels (three are mounted in the factory and three are supplied loosely). A special sealing guarantees the exclusion of air. Therefore the fusible link can be exchanged easily. **Technical data:** Diameter: 100 mm 125 mm 160 mm 200 mm Length: 210 mm in total Temperature of activation: 72 °C Air volume: m^3/h Noise level: L_{WA} dB Manufacturer: **Strulik** Type: **BEK-K30-EW-L** **Accessories:** Electrical limit switch Type: **MS-E** Male-male connector Type: **NP** Disk valve for overflow opening Type: **VMT**			

Damper
in front of walls or floors

BEK-V-K30
Test certificate Z-41.3-568

Resistance class K30/K0 in accordance with DIN 4102-6

Ordering example:
BEK-V-K30/100/NP

Accessories (optional):
- MS-E - electrical limit switch
- NP - male-male connector

NW
- 100
- 125
- 160
- 200

Note: Please order the mounting material separately

Essential advantages

- The BEK-V-K90 damper is suitable for the installation in front of walls of brickwork, light partition walls, walls of gas concrete and gypsum deals in accordance with DIN 18163, concrete walls and floors, for which a K30 resistance class is required.
- The damper is mounted directly into the fire protected zone. The effectiveness of the fire protection is guaranteed by the butterfly blades.
- The dampers may even be mounted subsequently into ventilation systems in order to meet the effective fire prevention requirements.
- The dampers are mounted on site with approved steel dowels or threaded rods (i.e. saving of time and high economy).

Essential features

1/ Safety classification.
- **Official classification: Resistance class K30**
- Release from 72 °C upwards
- Maximum sealing between the body and the blades
- Flame stability

2/ Low noise level
- Insignificant reduction of cross-sectional area
- High airflow rate
- Any direction of airflow

3/ Sizes available
- NW 100/125/160 and 200

DEUTSCHES INSTITUT FÜR BAUTECHNIK

Anstalt des öffentlichen Rechts

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Kolonnenstraße 30
Telefon: (0 30) 7 87 30 - 344
Telefax: (0 30) 7 87 30 - 320
GeschZ.: III 15-1.41.3-34/97

Allgemeine bauaufsichtliche Zulassung

Zulassungsnummer: Z-41.3-568

Antragsteller: Strulik GmbH
Niesbacher Straße 13
65597 Hünfelden-Dauborn

Zulassungsgegenstand: Absperrvorrichtungen gegen Brandübertragung in Lüftungsleitungen der Serie BEK-K 30V

Geltungsdauer bis: 30. September 2000

Der obengenannte Zulassungsgegenstand wird hiermit allgemein bauaufsichtlich zugelassen. Diese allgemeine bauaufsichtliche Zulassung umfaßt sieben Seiten und 14 Anlagen.

Safety

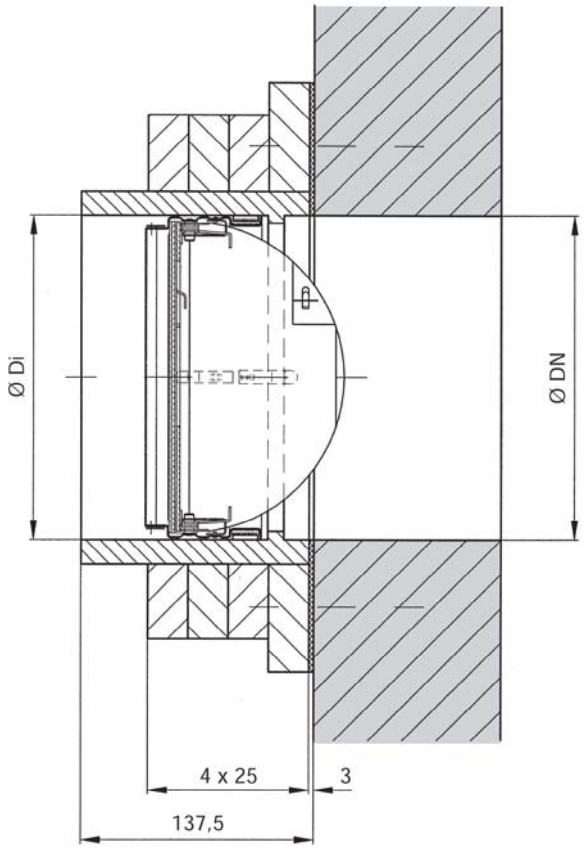
The Strulik BEK series dampers have been submitted to many test series in Germany and abroad. These test series did not only include the effectiveness of FIRE PROTECTION and FLAME TIGHTNESS, but also the STABILITY OF FLAMES and the correct functioning of the FUSIBLE LINK.
In Germany the damper has been 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 and K30 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.

Damper
in front of walls or floors

BEK-V-K30
Test certificate Z-41.3-568
Resistance class K30/K0 in accordance with DIN 4102-6

Installation in front of walls or floors

DN	Di
100	101
125	126
160	161
200	201

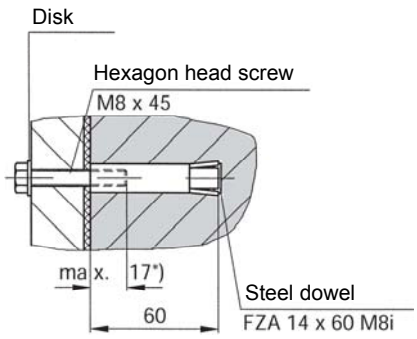


For the connection with ventilation with dampers, see **page 179**.

Note: Please order all mounting materials as listed below separately.

Mounting in front of walls of brickwork – wall thickness min. 100 mm and concrete walls – wall thickness min. 70 mm

- Thread M8 rod in one piece, mounted with nut and disk
- Steel M8 dowel



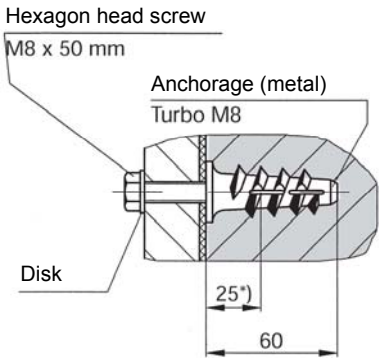
*) = max. reach of screw

- Special cavity dowels may also be used for hollow walls

Mounting in front of walls of gas concrete

Wall thickness min. 75 mm
- Thread M8 rod in one piece, mounted with nut and disk

Wall thickness min. 100 mm
- Thread M8 rod in one piece, mounted with nut and disk
- Anchorage (metal)



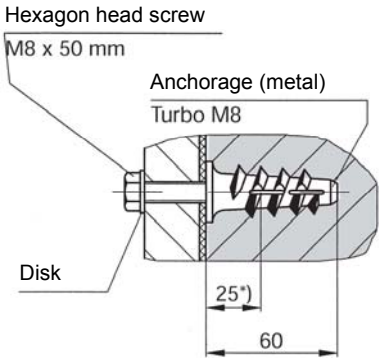
*) = max. reach of screw

- Special cavity dowels may also be used for hollow walls

Mounting in front of walls of gypsum boards in accordance with DIN 18163

Wall thickness min. 60 mm
- Screw for quick mounting, 5 x 80

Wall thickness min. 80 mm
- Screw for quick mounting, 5 x 100
- Anchorage (metal)



*) = max. reach of screw

- Special cavity dowels may also be used for hollow walls

Damper
in front of walls or floors

BEK-V-K30
Test certificate Z-41.3-568
Resistance class K30/K0 in accordance with DIN 4102-6

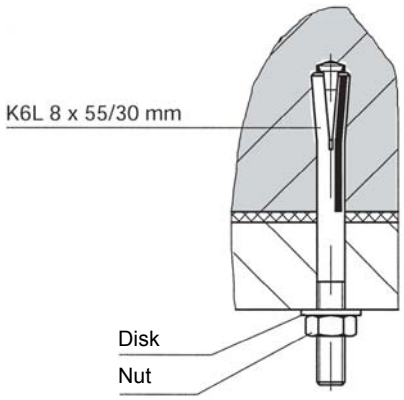
Installation when standing on a concrete floor or hanging beneath a concrete floor

Dimensions

DN	Di
100	101
125	126
160	161
200	201

Mounting when standing on a concrete floor or hanging beneath a concrete floor.

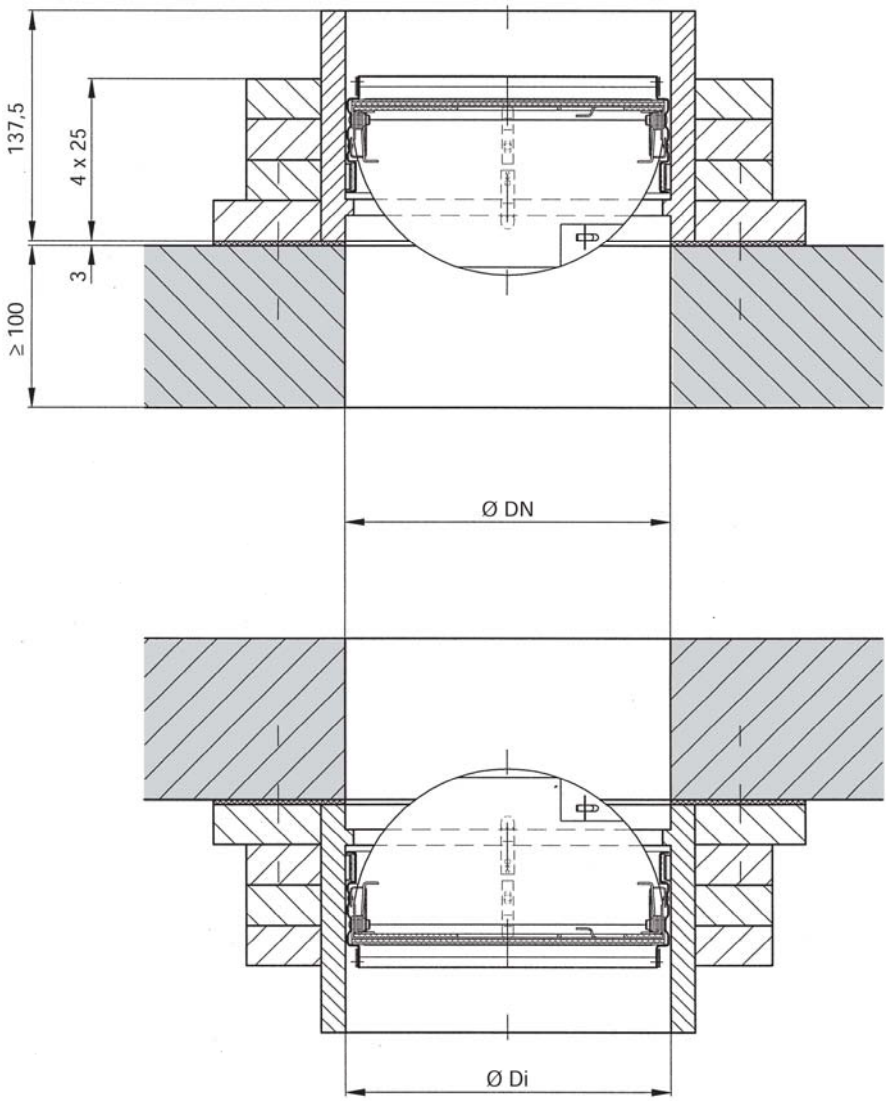
- Threaded M8 rod in one piece, fastened with nut and disk
- Tested M8 fire safety dowel, steel



For the connection of ventilation ducts with dampers, see **page 179**.

Note: Please order the mounting material, e.g. fire safety dowels, separately. By the installer: threaded rod and accessories.

Standing on a concrete floor



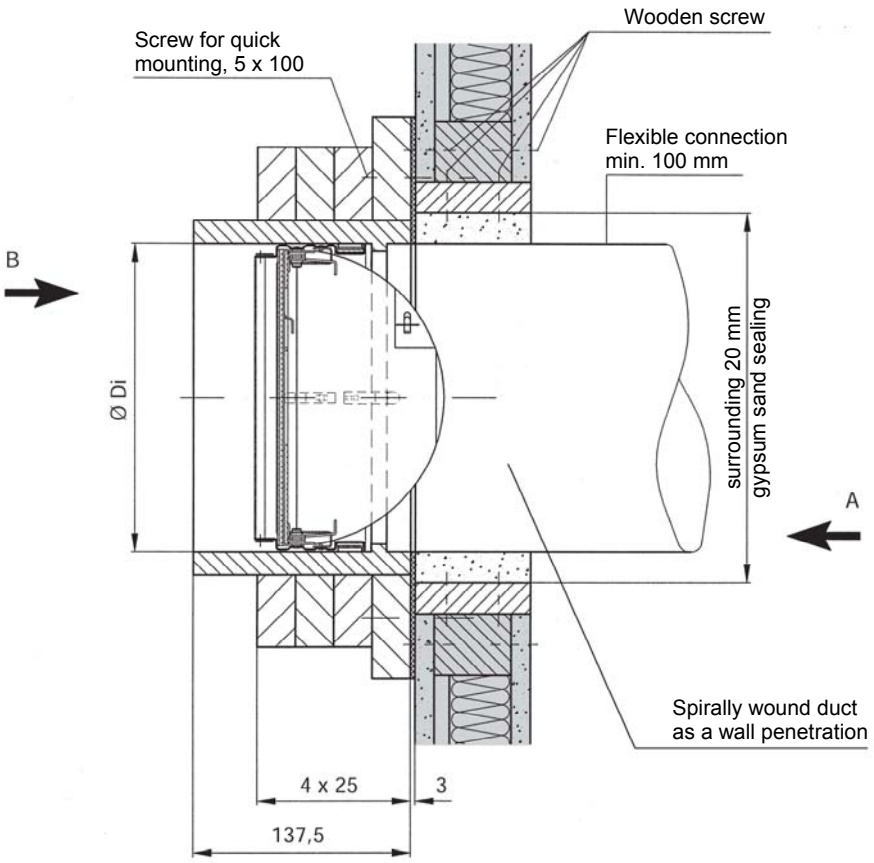
Hanging beneath a concrete floor

Damper
in front of walls or floors

BEK-V-K30
Test certificate Z-41.3-568
Resistance class K30/K0 in accordance with DIN 4102-6

Installation in front of light partition walls in accordance with DIN 4102-4

When mounting the dampers in front of light partition walls in accordance with DIN 4102-4, the dampers shall be connected on both sides to non-combustible ventilation ducts with a spigot of at least normal flammable materials (class B2 according to DIN 4102) having a length of min. 10 cm (when installed). Alternatively, aluminum flexible ductwork (ALUFEX duct, DIN 24146) having a length of min. 10 cm (when installed) may also be used.

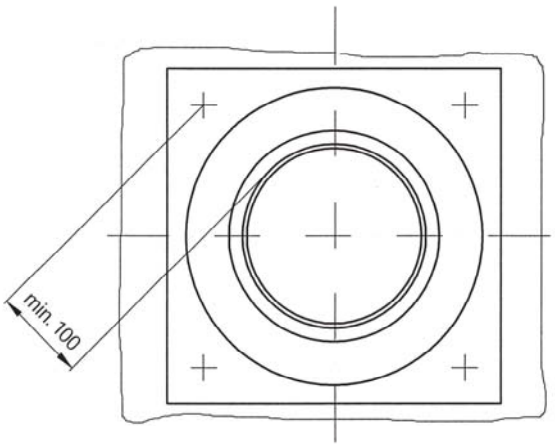


Dimensions

DN	Di	B□
100	101	180
125	126	205
160	161	240
200	201	280

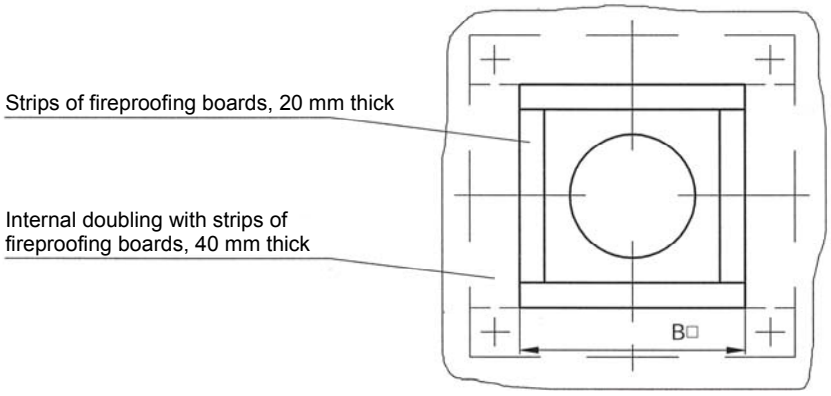
Note: Please order all mounting materials as listed below separately.

View B



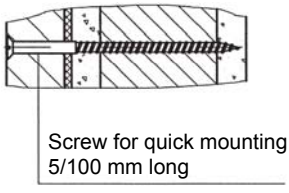
Drawing without a damper

View A



Mounting in front of light partition walls in accordance with DIN 4102-4

Wall thickness min. 75 mm
• Screw for quick mounting



Damper
in front of walls or floors

BEK-V-K30
Test certificate Z-41.3-568

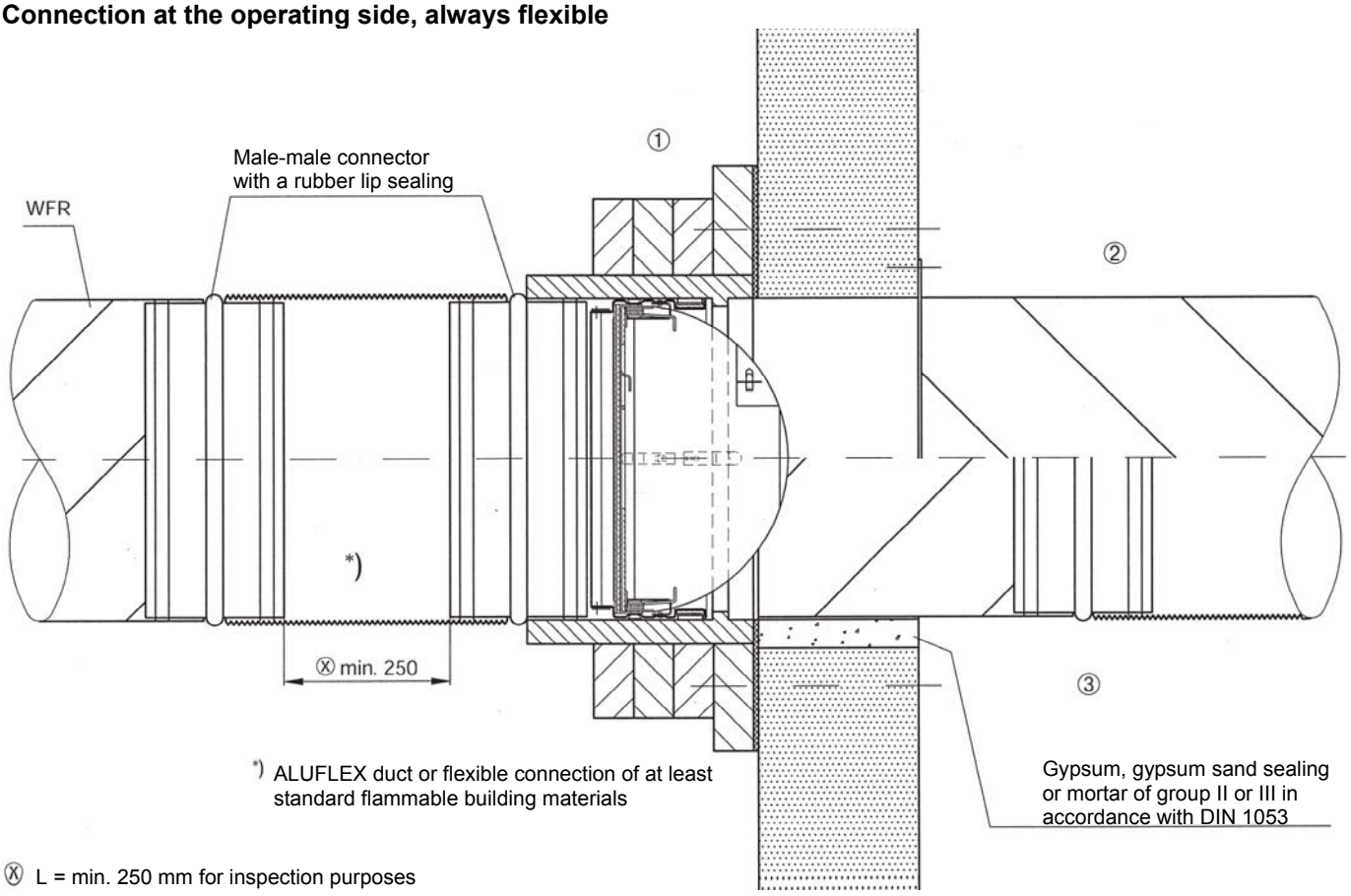
Resistance class K30/K0 in accordance with DIN 4102-6

Permissible ventilation ducts

Permissible ventilation ducts

The dampers of resistance class K30 shall be connected to ventilation ducts of non-combustible materials (building material class A in accordance with DIN 4102) on both sides, where the openings shall be at a distance of at least 1,5 times the inside diameter of the vent cross-section at the damper housing. Instead of the ventilation ducts, also a metal-mesh grid having a mesh size of ≤ 20 mm□ can be attached on both sides.

Connection at the operating side, always flexible



Ⓧ L = min. 250 mm for inspection purposes

① Operating side = inspection side

The dampers shall be connected by means of elastic spigots of aluminum flexible ducts (ALUFLEX duct, DIN 24146) that are min. 10 cm long (when installed). Combustible elastic spigots of at least standard flammable materials (B2 in accordance with DIN 4102 that are min. 10 cm long (when installed) may also be used.

Please note: The elastic spigot shall be min. 250 mm long for inspection reasons.

②

In case of flange-mounted ducts of non-combustible materials (A DIN 4102) care shall be taken that due to their elongation when warming up to temperatures of 900 – 1000 °C, forces of more than ≤ 1 KN are not applied to the wall. Otherwise flexible spigots shall be used here, as described under ①.

③

For the connection by means of ventilation ducts of non-combustible materials (A DIN 4102), which are embedded into the wall with mortar or gypsum, due to the direct elongation, when the ducts heats up (900 – 1000 °C), the connection shall have a flexible spigot, as described under ①.

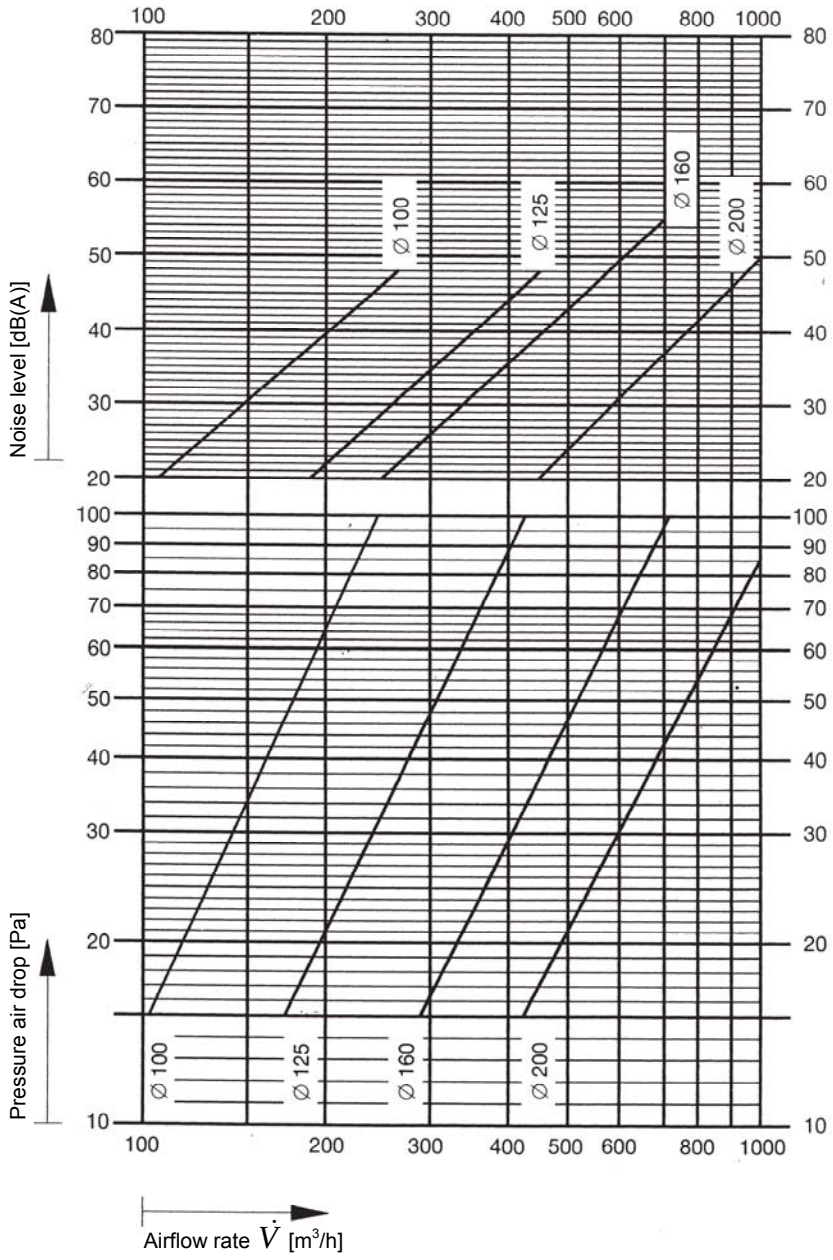
Damper
in front of walls or floors

BEK-V-K30
Test certificate Z-41.3-568

Resistance class K30/K0 in accordance with DIN 4102-6

Design diagrams

Pressure drop and noise level



Note:

The air velocity of ≤ 8 m/s shall not be exceeded for ventilation reasons.

The BEK-V-K30 damper can be used independently from the direction of airflow.

Damper
in front of walls or floors

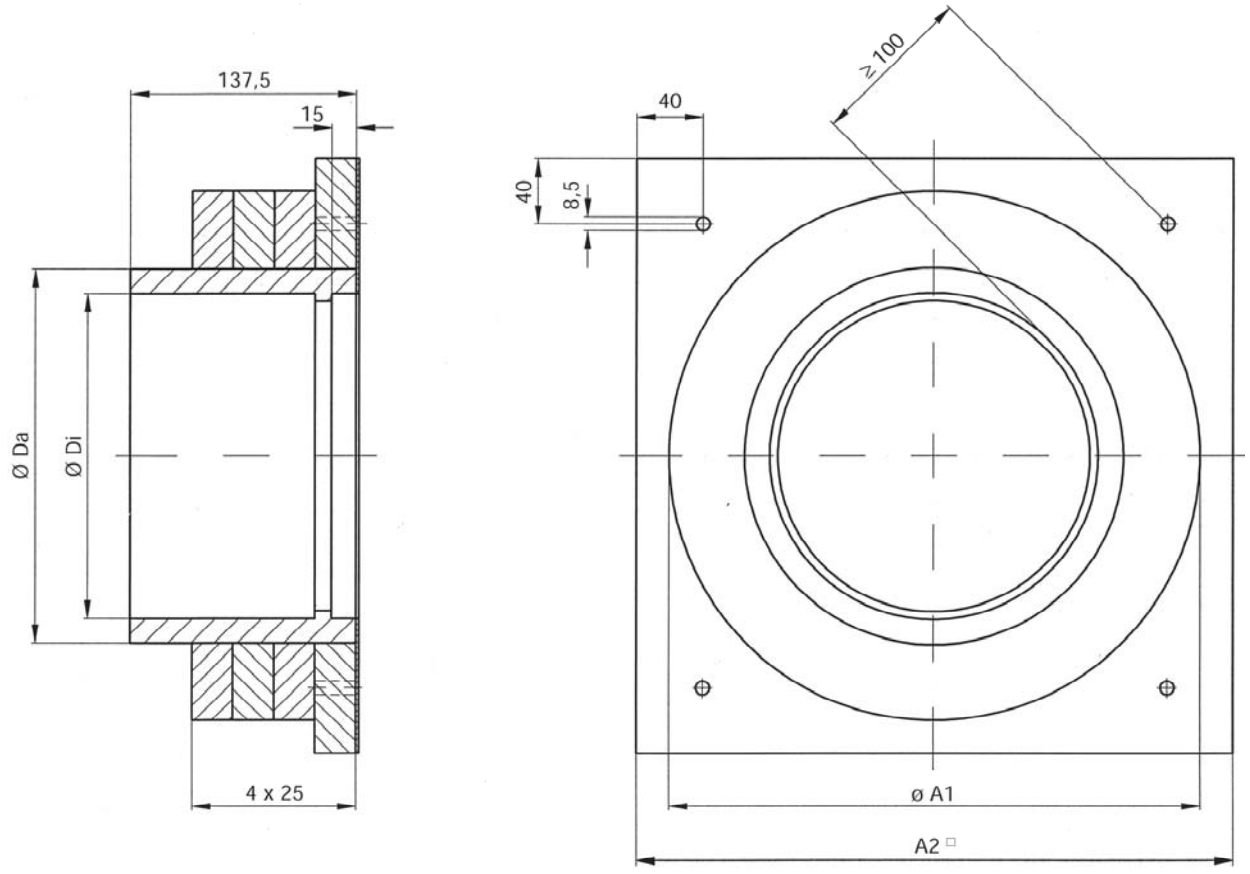
BEK-V-K30
Test certificate Z-41.3-568

Resistance class K30/K0 in accordance with DIN 4102-6

Technical data of the mounting frame

Dimensions

DN	ØDi	ØDa	ØA1	A2□
100	101	131	225	295
125	126	156	250	310
160	161	191	285	335
200	201	232	325	365



Weight in kg
BEK-V-K30 damper including the element

NW	kg
100	~5,5
125	~6,0
160	~7,3
200	~8,7

Damper
in front of walls or floors

BEK-V-K30
Test certificate Z-41.3-568

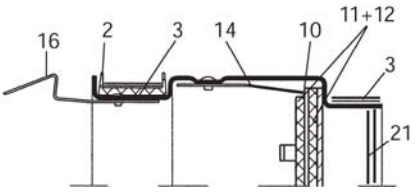
Resistance class K30/K0 in accordance with DIN 4102-6

Maintenance and spare parts

List of spare parts

2	Profile washer
3	Intumescent material
10	Damper blade
11 + 12	Insulating material
13	Fusible link
14	Locking plate
16	Retaining spring
18	Mounting frame
21	Retaining clip

Released fusible link BEK element



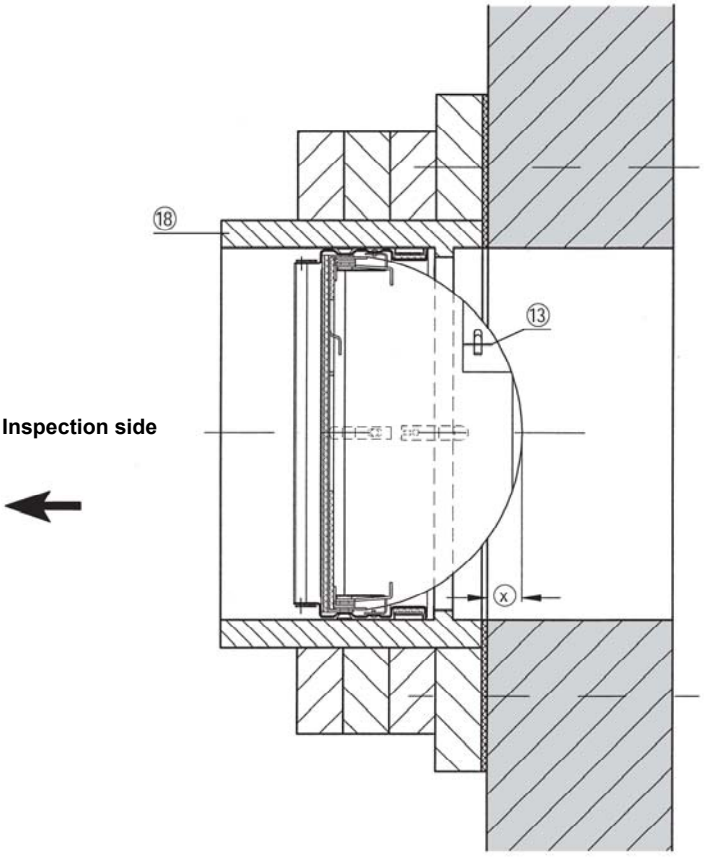
Maintenance of the damper

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

Testing

Testing of the integrity of the damper.
After removing the connection piece, check if the fusible link is in a faultless condition. Take the damper out of the wall frame (18), remove the fusible link (13), close the damper a few times (before opening it again, the locking plates pos. 14 shall be released); the bearing shall be free-moving. Observe the fusible link for faults. If no faults are apparent, then insert the fusible link and put the damper back into the wall frame (18). Assemble the connection piece.

BEK-V-K30



Installation

Strulik dampers are supplied with a mounting frame of calcium silicate.

Clearing of faults

If faults have been detected during maintenance, then these shall be cleared immediately. Only original parts shall be used.

Overhang ⊗ in mm when the damper blade is open

NW	⊗
100	0
125	0
160	5
200	27

Functioning

Strulik dampers for supply and exhaust air ventilation can be used in those cases, where the safety regulations require a K30 resistance class for the installation into walls and floors. In the event of a fire or the like, the integrated fusible link releases the tension path of the release spring at 72 °C and the damper blades close abruptly. Interlock by means of the locking plates (14). In order to reset the damper after release, unlock the locking plates, then simply tighten the locking spring again and insert a new fusible link.

Damper
in front of walls or floors

BEK-V-K30
Test certificate Z-41.3-568

Resistance class K30/K0 in accordance with DIN 4102-6

MS-E electrical limit switch

Technical data

Single-pole changer
IP 65

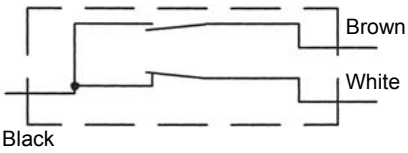
Constant current/nominal insulation current: 1.9 A/380 V or 3 A/230 V

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

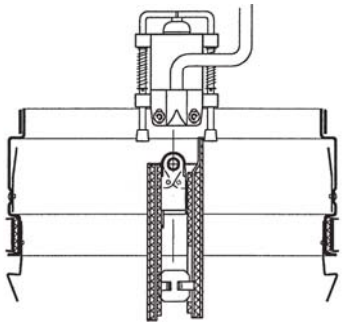
Tested in accordance with IEC 947-5-1 and EN 60947-5-1

Cable length: 2 m
Cross-sectional area: 3 x 0,34 mm^2

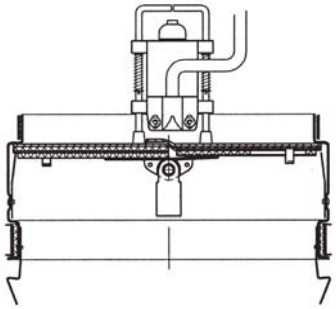
Wiring diagram: MS-E

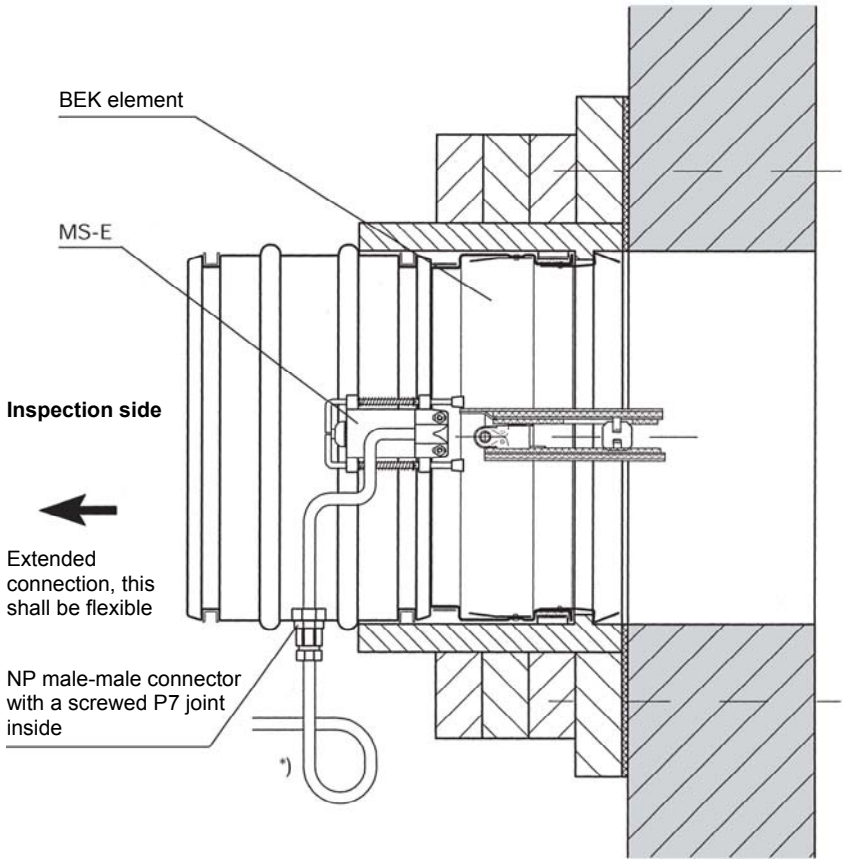


Position »OPEN«



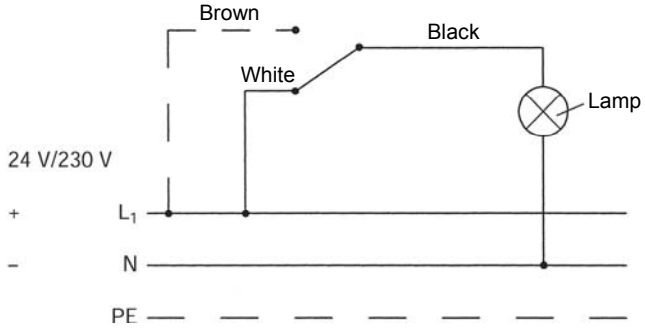
Position »CLOSED«





Wiring diagram

Display: »CLOSED« - black/white
»OPEN« - black/brown



*) Lead the cable of the MS-E electrical limit switch out of the PG screwing (PG7). Leave a ca. 50 cm long loop outside the duct, so that the damper can be taken out for inspection.

Tender Text

Item	Description	Unit Piece	Unit price EUR	Total EUR
	Damper with test certificate no. Z-41.3-325 and a K30 resistance class for the installation into brickwork or concrete, light partition walls gypsum partition walls in accordance with DIN 18163 and stand on concrete floors or hanging in front of concrete floors. The housing has a frame of fireproofing plates with four boreholes for fastening in front of walls or floors. Including an integral mounting frame to take up the damper which consists of a steel cylinder and two eccentrically arranged butterfly blades with a sheet of ceramic paper. The damper is easily mounted by means of threaded rods or special dowels in accordance with the test certificate. A special sealing guarantees the exclusion of air. Therefore the fusible link can be exchanged easily. **Technical data:** Diameter: 100 mm 125 mm 160 mm 200 mm Temperature of activation: 72 °C Air volume: Noise level: Manufacturer: **Strulik** Type: **BEK-V-K30** **Accessories:** Electrical limit switch Type: **MS-E** Male-male connector Type: **NP**			

Damper

within fire resistant F30 - F90 suspended ceilings

Installation into suspended ceilings

Another operational area is a classified suspended ceiling into which outlets shall be incorporated.

In order to make a statement on this matter, we have examined the test methods and test certificates for classified suspended ceilings. We established that air outlets are not allowed to be mounted into classified suspended ceilings (*table 1*).

This table is an excerpt from a test certificate for classified suspended ceilings. Especially clause 6.3.2 shall be considered: The classification of the suspended ceilings according to *DIN 4102* is only valid, if no air-conditioning devices or other components have been incorporated into the suspended ceilings. A built-in lamp according to clause 2.2.1 and the annexes 1 and 3 does not affect the classification. Several discussions with different testing institutes have shown that the opinions about the test arrangement differ. Then there was a new problem (*figure 2*).

The floors have different fire loads, i.e. fire load from above, hence from the floor void, and from below, from the corridor, or fire load from above and below. As a general application for the dampers was searched and it can never be predicted in practice, from which side the fire load will occur, a classified suspended ceiling F30 was chosen for a fire load from above and from below, so that the damper and the air outlet will also be exposed to the fire load from above and from below. The resistance time F30 for the classified suspended ceiling has been chosen, as the interior work mainly requires F30.

6 Special provisions according to clause 8.9 of DIN 4102 Part 2, edition 1977.

6.1 The classification of the suspended ceiling according to DIN 4102 is only valid for self-supporting suspended ceilings that are exposed to fire from the supplement floor and not to a fire load from below. For this purpose the tests according to DIN 4102 Part 2 shall be carried out.

6.2 The classification of the suspended ceiling according to DIN 4102 is only valid, if the uncovered floor and supporting component parts are of at least the same fire resistance class.

6.3 The classification of the suspended ceiling according to DIN 4102 is only valid, if

6.3.1 the suspended ceiling is installed between walls (masonry or concrete) having the same class of fire resistance;

6.3.2 no air-conditioning devices or other components are incorporated into the suspended ceiling - a built-in lamp according to clause 2.2.1 and annexes 1 and 3 does not affect the classification;

6.3.3 the suspended ceiling - even during the exposure to fire - is only loaded by its own weight.

Cables, bundles of cables, cable lines or the like, as well as pipes, ducts and other installations shall be fastened to the load-bearing floor system (uncovered floor) with non-combustible building materials, so that the suspended ceiling is not loaded during the classification period.

Table 1. Excerpt from a test certificate of a classified suspended ceiling

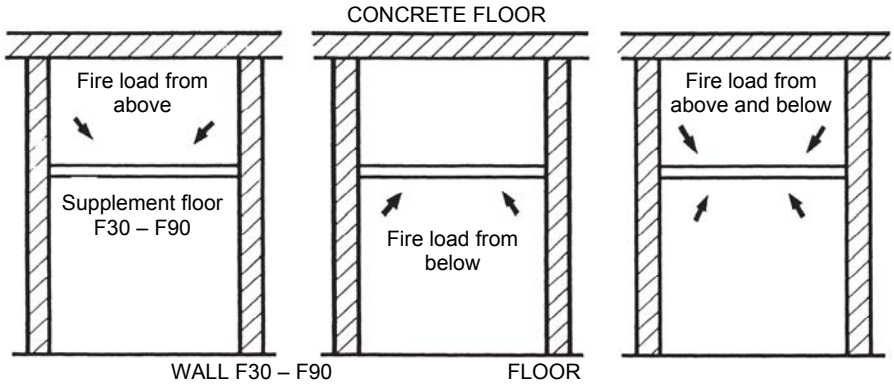


Figure 2. Drawing of the different test requirements

According to the principles of construction and testing, independent suspended ceilings F30-F90, i.e. independently classified suspended ceilings, are referred to as "dampers".
To avoid the testing of all different types of suspended ceilings, test floors according to table 1 have been chosen. This means that the suspended ceilings listed in table 1 cover all similar floor constructions.
Table 1 does not apply to suspended ceilings of metal, because in case of fire they react differently than suspended ceilings of mineral materials. A fire engineered individual attestation shall therefore be made for suspended ceilings of metal.

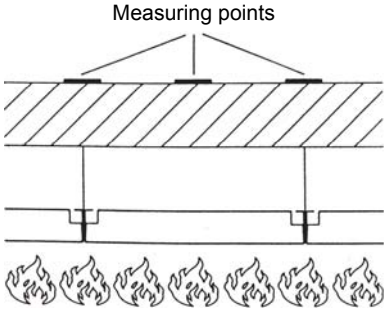
Suspended ceiling	Structure	Fire resistance class	Exposure to fire from
A	Laid-in construction	F30	below/above
B	Laid-in construction	F90	below
C	Laid-in construction	F90	above
D	Screw-fixed/smoothed	F30	below/above
E	Screw-fixed/smoothed	F90	below
F	Screw-fixed/smoothed	F90	above

Table 1

Suspended ceilings that are classified together with an uncovered floor

In this case the suspended ceiling is installed, in order to improve the fire resistance of the load-bearing floor (thus only fulfils together with this floor the required fire resistance time).
Such a suspended ceiling only fulfils its fire engineered function in cases where no considerable fire loads are applied to the supplement floor. Past experience has shown that a fire load of 7 kWh/m^2, which is dispersed as uniformly as possible, can considered as negligible.

Flames at the bottom side of the floor

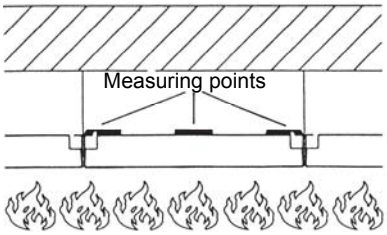


»together with the uncovered floor«

Suspended ceiling that is classified by itself

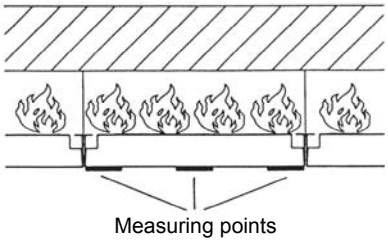
If the supporting floor by itself meets the fire requirement and if »considerable« fire loads (e.g. all kinds of ducts) are situated within the floor void, against which the occupants e.g. within a commonly used corridor that serves as escape route shall be protected, the suspended ceiling shall have an independent fire resistance time from »above« (fire within the floor void) and from »below« (e.g. fire entering the corridor).

Flames at the bottom side of the floor



»from below independent«

Flames from the floor void



»from above independent«

Air plenum box
LB
Test certificate Z-41.3-336

Cubiform damper
BW
Test certificate Z-41.3-335

Summary and ordering example


DEUTSCHES INSTITUT FÜR BAUTECHNIK

Allgemeine bauaufsichtliche Zulassung


DEUTSCHES INSTITUT FÜR BAUTECHNIK

Anstalt des öffentlichen Rechts

10829 Berlin, 20. Juni 1996

Allgemeine bauaufsichtliche Zulassung

Zulassungsnummer: Z-41.3-335

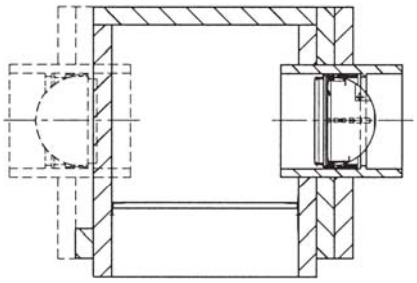
Antragsteller: Strulik GmbH, Neesbacher Straße 13, 65597 Hünfelden-Dauborn

Zulassungsgegenstand: Absperrvorrichtungen gegen Brandübertragung in Lüftungsleitungen der Serie BW-K30 U

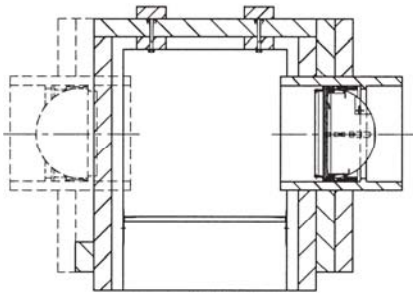
Geltungsdauer bis: 18. Mai 2001

Der obengenannte Zulassungsgegenstand wird hiermit allgemein bauaufsichtlich zugelassen. Diese allgemeine bauaufsichtliche Zulassung umfaßt sieben Seiten und dreizehn Anlagen.

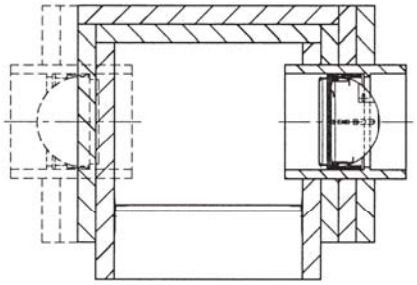
LB-K30U



LB-K30U
with internal sheet covering



LB-K90U



Ordering example:
LB-K30U-B/100/2/X/MS-E

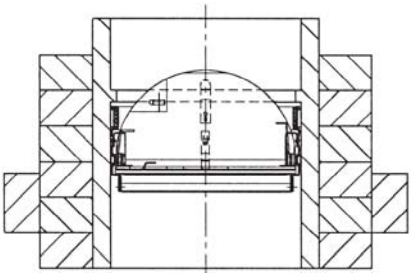
- **Accessories (optional):**
  - MS-E - electrical limit switch
  - NP - male-male connector
- X = thickness and type of roof
- 2 = inlet spigot including damper, opposed or staggered by 90°
- NW 100/125/160 and 200
- B = internal sheet metal covering or e.g. clean room diffuser
- **Resistance class**
  - K30U
  - K90U

See pages 188 to 190

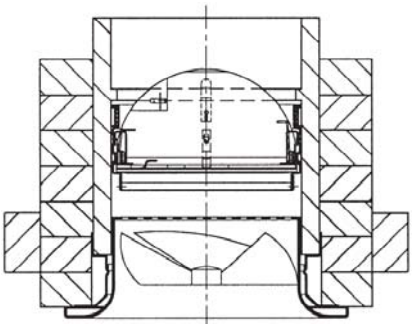
Note:
All LB air plenum boxes can be supplied with one or two inlet spigots including damper. Please state swirl diffuser or ceiling mounted diffuser separately.

Note for the installation of a LB-K30U into metal panel ceilings:
The installation of the LB-K30U has not been tested in this floor. If this should be necessary, a screwed and smoothed moulding of gypsum cardboard plates F30 can be used in this area of the metal floor, which in turn complies with the test certificate no. Z-41.3-336.

BW-K30U



BW-K30U
including swirl diffuser



Ordering example:
BW-K30U/100/X/SD/NP

- **Accessory:**
  - NP – Connector
- SD or DA swirl diffuser in special design
- X = thickness or type of floor
- NW 100/125/160 and 200 mm
- Resistance class K30U

See pages 191 to 194

Air plenum box
LB-K30U

Test certificate Z-41.3-336

Resistance time K30U with BEK-K90 or BR-K90 damper

Installation into fire resistant suspended F30 ceilings

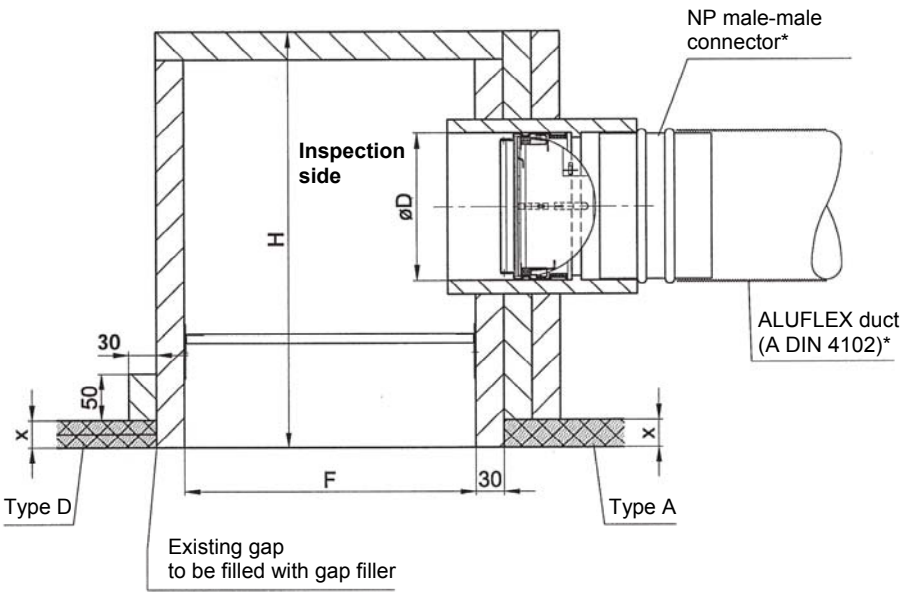
Dimensions

H	Ø D
350	100
	125
450	160
	200

F min. = 0,054 m^2
F max. = 0,354 m^2

All dimensions between
F min. = 0,054 m^2 and
F max. = 0,354 m^2
can be manufactured.

Installation into fire resistant suspended F30 ceilings as a F30 floor, screwed and smoothed, table on page 186, type D or as a laid-in floor, table on page 186, type A



*** not part of the scope of delivery**

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

Damper
LB-K30 with BR-K30
LB-K90 with BR-K90

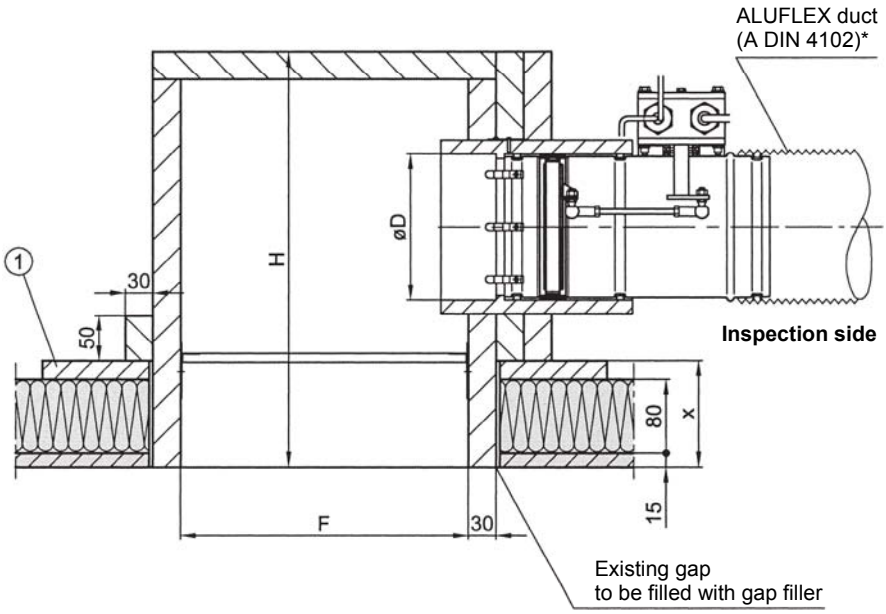
Test certificate Z-41.3-336 / Z-41.3-649

Resistance time K30U / K90U

Note:
The air velocity of ≤ 8 m/s shall not be exceed for ventilation reasons.

Mounting: see page 195
Maintenance: see page 170

LB-K30U installed into a OWAcoustic F30 Duo floor as a laid-in floor, table on page 186, type A



*** not part of the scope of delivery**

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

① surrounding PROMATECT-H frame, 20 mm thick and 120 mm wide. Scope of delivery from Strulik or by the installer.

Air plenum box
LB-K30U
with a sheet metal covering
Test certificate Z-41.3-336

Resistance time K30U with BEK-K90 or BR-K90 damper

Installation into fire resistant suspended F30 ceilings

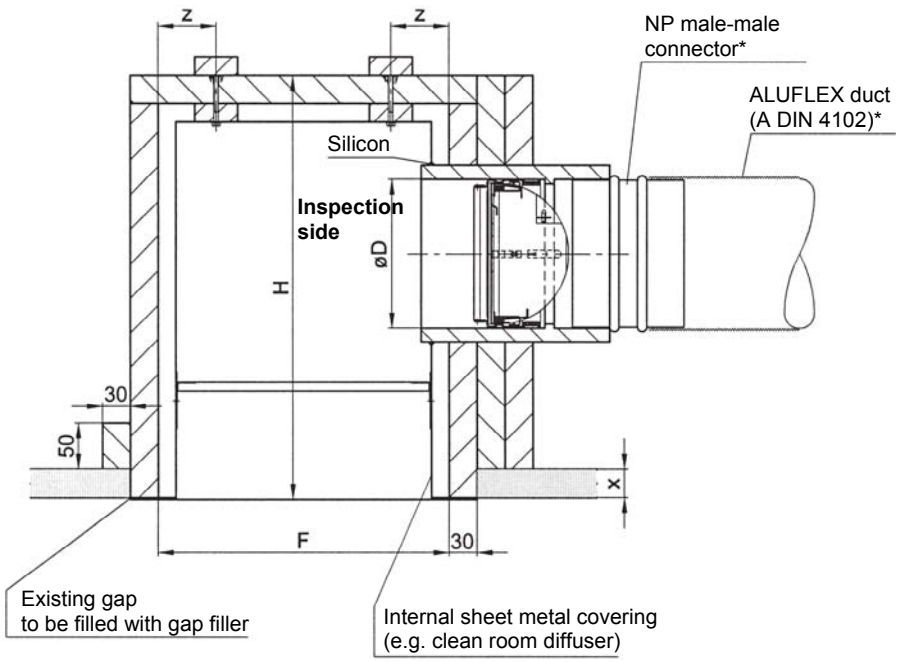
Dimensions

H	Ø D	z
350	100	60
	125	
450	160	100
	200	

F min. = 0,054 m²
F max. = 0,354 m²

All dimensions between
F min. = 0,054 m² and
F max. = 0,354 m²
can be manufactured.

Installation into fire resistant suspended F30 ceilings as a F30 floor, screwed and smoothed, table on page 186, type D



*** not part of the scope of delivery**

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

Air plenum box
LB-K90U
Test certificate Z-41.3-336

Resistance time K90U with BEK-K90 or BR-K90 damper

Installation into fire resistant suspended F90 ceilings

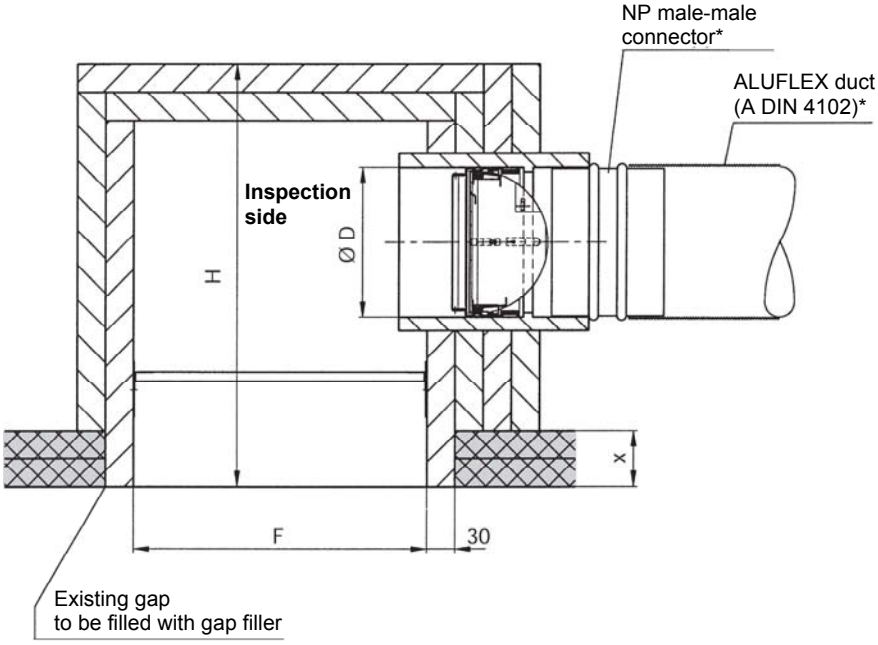
Dimensions

H	Ø D
350	100
	125
450	160
	200

F min. = 0,054 m²
F max. = 0,354 m²

Mounting: see page 195
Maintenance: see page 170

LB-K30U installed into a OWAcoustic F30 Duo floor as a laid-in floor, table on page 186, type A



*** not part of the scope of delivery**

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

Air plenum box

LB-K30U

Test certificate Z-41.3-336

Resistance time K30U with BEK-K90 or BR-K90 damper

Installation into fire resistant suspended metal F30 ceilings from DIPLING

Dimensions

H	Ø D
350	100
	125
450	160
	200

F min. = 0,054 m^2
F max. = 0,354 m^2

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

① Surrounding PROMATECT-H frame 20 mm thick and 120 mm wide (scope of delivery from Strulik or by the installer)

② Slotted bad 20 x 1,5 mm or nonius suspension of the ceiling

③ Angle section 40 x 25 x 0,7 mm by the installer of DIPLING

④ Nonius suspension of the ceiling

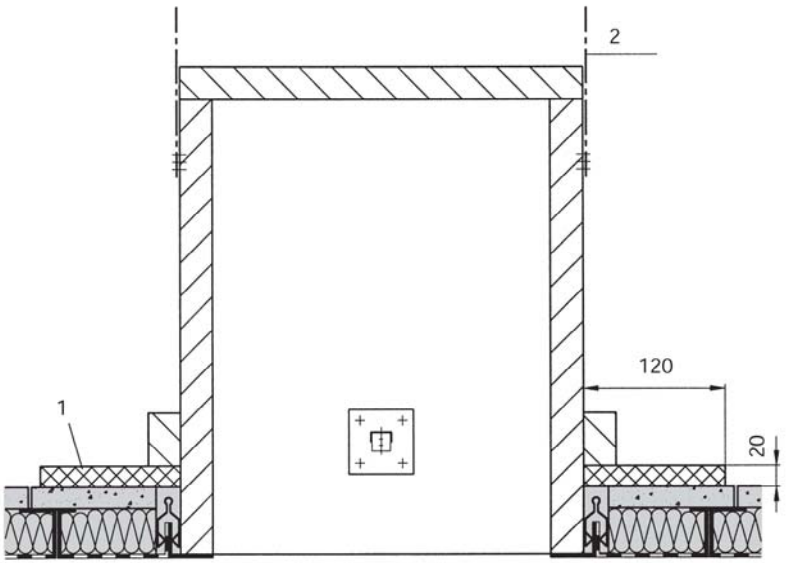
* not part of the scope of delivery

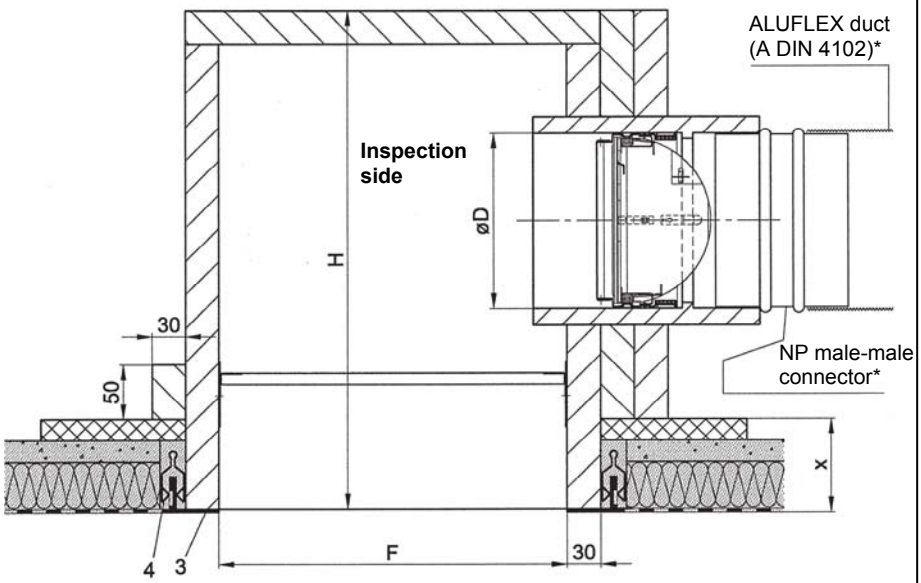
Test certificate of the DIPLING floor

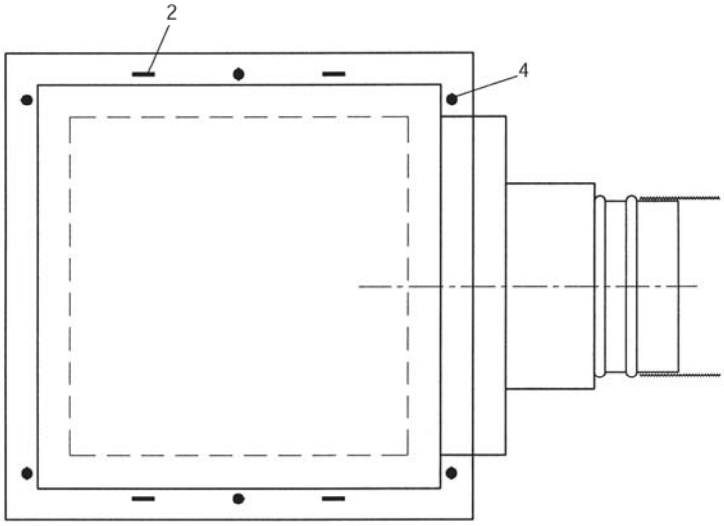
III.1-81169
35-81255
35-81331
Tested at the FMPA in Stuttgart

Mounting: see page 195
Maintenance: see page 170

Installation into fire resistant suspended F30 metal ceilings from DIPLING







Cubiform damper
BW-K30U

Test certificate Z-41.3-335

Resistance time K30U

Installation into fire resistant suspended F30 ceilings

Dimensions BW-K30U

Ø D	Z□	H	h
100	240	ca. 210	6 x 30 = 180
125			
160	320		
200			

Standard dimensions in mm; all further drawings in this style.

Dimensions BW-K30U-SD (DA)

Ø D	Z□	H_1	h_1
100	240	261	7 x 30 = 210
125		273	
160	320	295	8 x 30 = 240
200		320	9 x 30 = 270

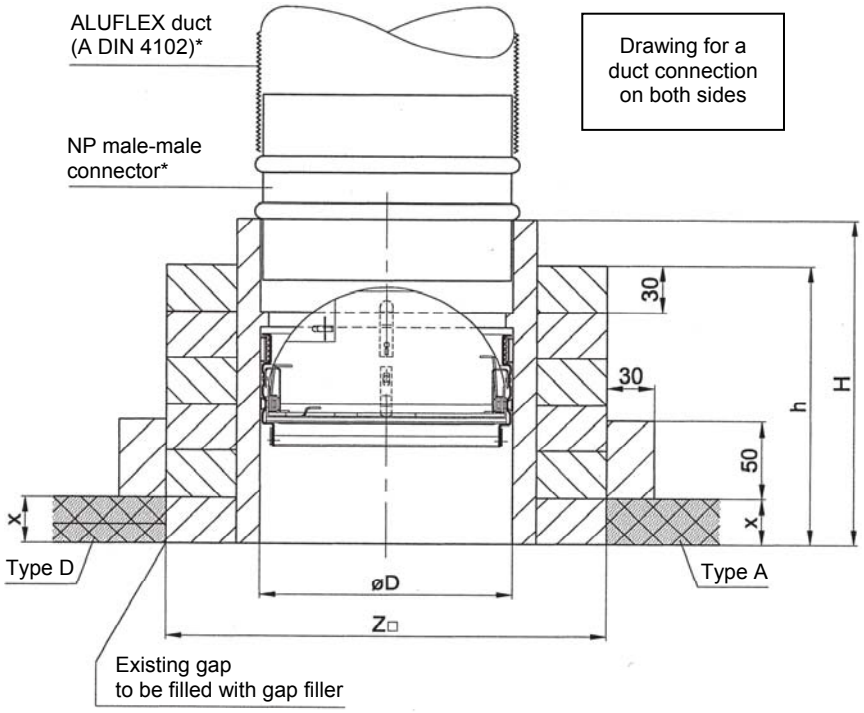
Please state the requested type of swirl diffuser (SD or DA) when ordering.

Note:

The air velocity of ≤ 8 m/s shall not be exceeded for ventilation reasons. If there are duct connections on both sides, then these shall always be flexible by means of ALUFLEX ducts (A DIN 4102).

Mounting: see page 195
Maintenance: see page 170

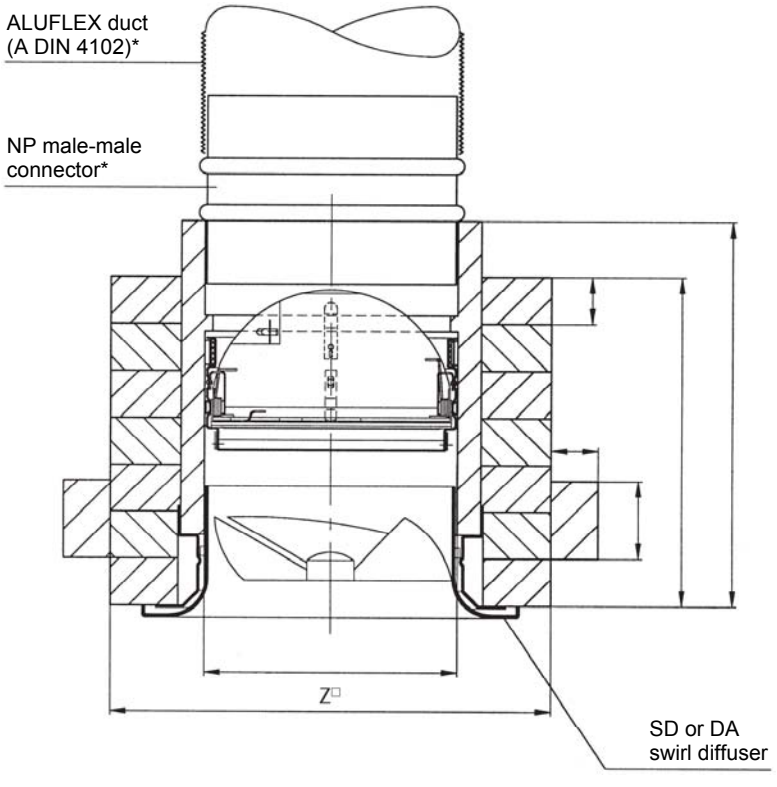
Installation into fire resistant suspended F30 ceilings as a F30 floor, screwed and smoothed, table on page 186, type D or as a laid-in floor, table on page 186, type A



*** not part of the scope of delivery**
X = according to the required board thickness of the floor. **Please state when ordering.**

Example of application: BW-K30U-D

All cubiform dampers are also available together with a swirl diffuser. In this case the dimension h changes into h_1 and H changes into H_1.



Cubiform damper
BW-K30U

Test certificate Z-41.3-335

Resistance time K30U

Installation into fire resistant suspended metal F30 ceilings from DIPLING

Dimensions

Ø D	Z□
100	240
125	
160	320
200	

⊗ minimum section within the metal panel (BW resting on a metal panel)

① Surrounding PROMATECT-H frame 20 mm thick and 120 mm wide (scope of delivery from Strulik or by the installer)

② Slotted bad 20 x 1,5 mm or nonius suspension of the ceiling

③ Angle section 40 x 25 x 0,7 mm by the installer of DIPLING

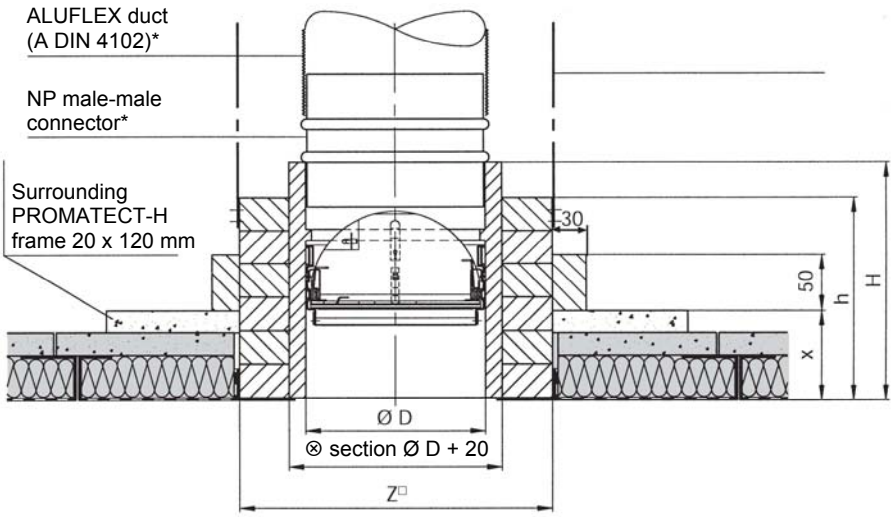
④ Nonius suspension of the ceiling

Note:

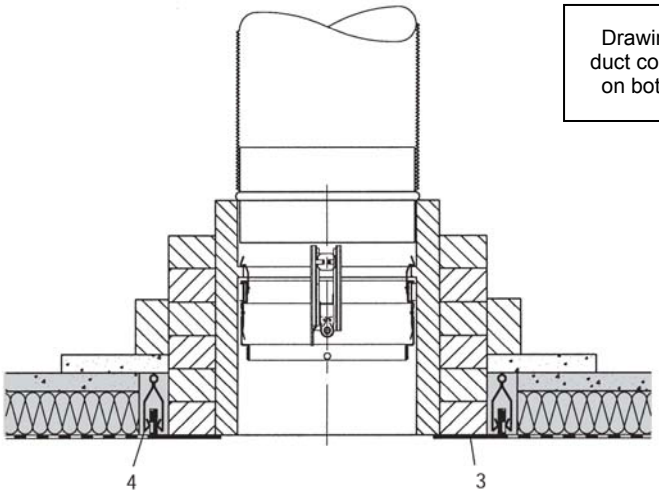
The air velocity of ≤ 8 m/s shall not be exceeded for ventilation reasons. If there are duct connections on both sides, then these shall always be flexible by means of ALUFLEX ducts (A DIN 4102).

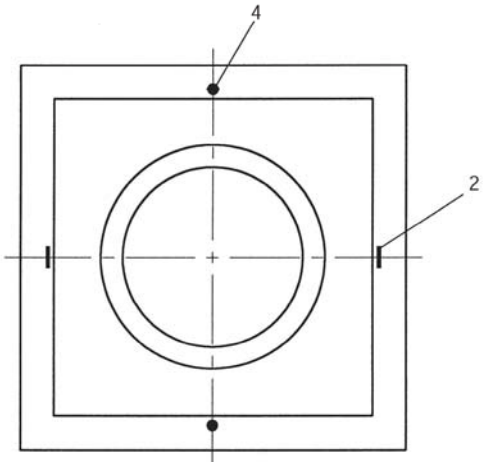
Mounting: see page 195
Maintenance: see page 170

Installation into fire resistant suspended F30 metal ceilings from DIPLING



Drawing for a duct connection on both sides





*** not part of the scope of delivery**

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

Test certificate of the DIPLING floor
III.1-81169:
35-81255
35-81331
Test at the FMPA in Stuttgart

Cubiform damper
BW-K30U

Test certificate Z-41.3-335

Resistance time K30U

Installation into fire resistant suspended metal F30 ceilings

Dimensions

Ø D	Z□
100	240
125	
160	320
200	

⊗ minimum section within the metal panel (BW resting on a metal panel)

Test certificate of the floors

85098	TU Braunschweig
85355	TU Braunschweig
85970	TU Braunschweig
851169	TU Braunschweig
86813	TU Braunschweig
3596/3677	TU Braunschweig
1086/3574	TU Braunschweig
2047/3412	TU Braunschweig
8448/998	TU Braunschweig
8606/2378	TU Braunschweig
8449/1008	TU Braunschweig
3305/2889	TU Braunschweig
3704/5271	TU Braunschweig
3432/3042	TU Braunschweig
3881/4602	TU Braunschweig
3466/3643	TU Braunschweig
3278/4602	TU Braunschweig
III. 1-81169/Wi/Br.	TU Braunschweig
35-81255	TU Braunschweig
35-81331	TU Braunschweig
3633/5071	TU Braunschweig
3823/5340	TU Braunschweig
P-7425/6336	MPA Braunschweig

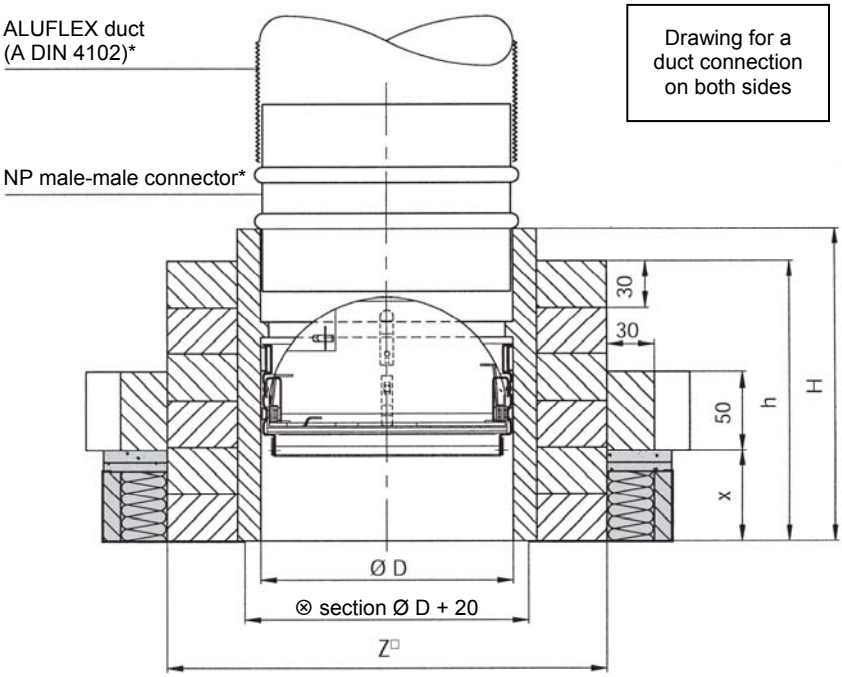
Expert's opinion

263	TU Braunschweig

Certificate

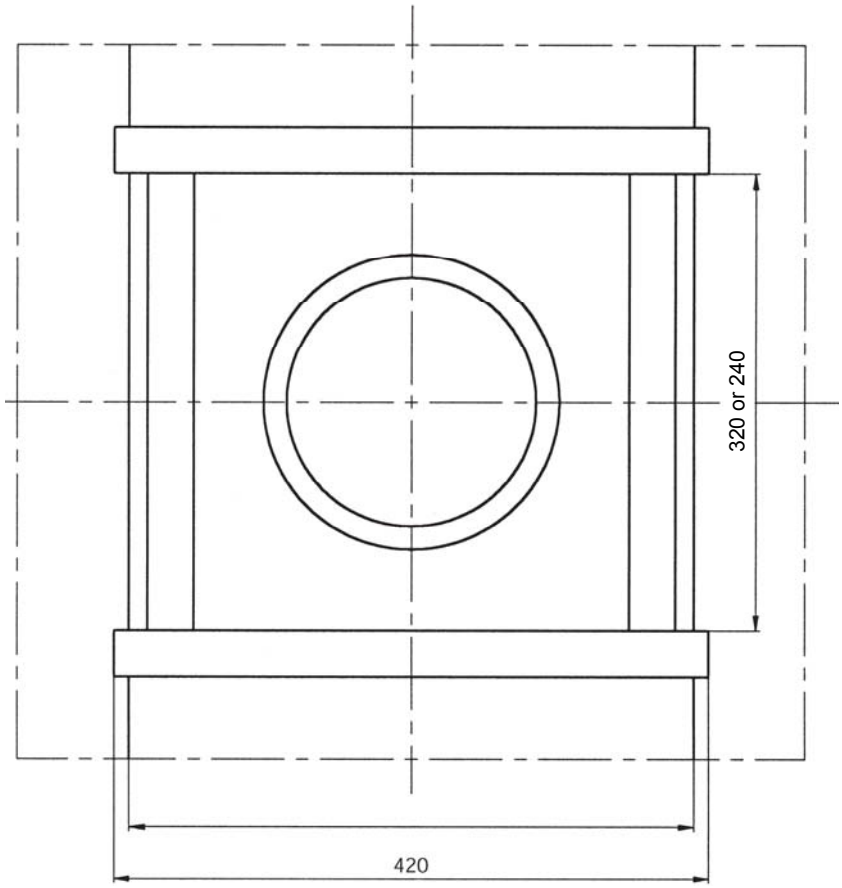
009	TU Braunschweig

Installation into fire resistant suspended F30 metal ceilings from DIPLING



*** not part of the scope of delivery**

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



Cubiform damper
BW-K30U

Test certificate Z-41.3-335

Resistance time K30U

Installation example: OWAcoustic F30 DUO floor and BSE

Dimensions BW-K30U for F30 DUO

Ø D	Z□
100	240
125	
160	320
200	

① Surrounding PROMATECT-H frame 20 mm thick and 120 mm wide (scope of delivery from Strulik or by the installer)

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

Dimensions BW-K30U for BSE30

Ø D	Z□
100	240
125	

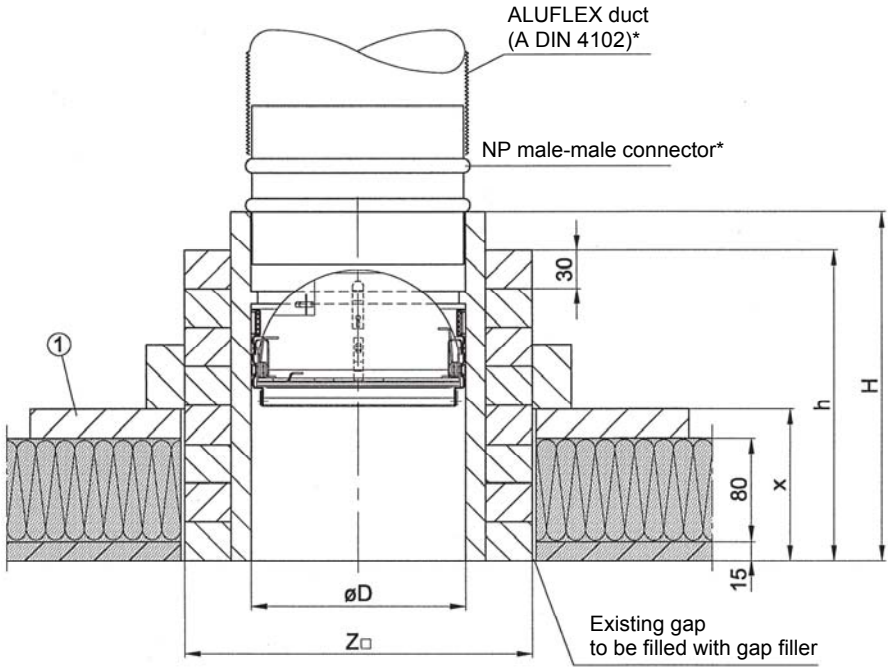
X = according to the required board thickness of the floor. **Please state when ordering.**

Note:

Both drawings are for the connection with ducts on both sides. On request, also available with a SD or DA swirl diffuser.

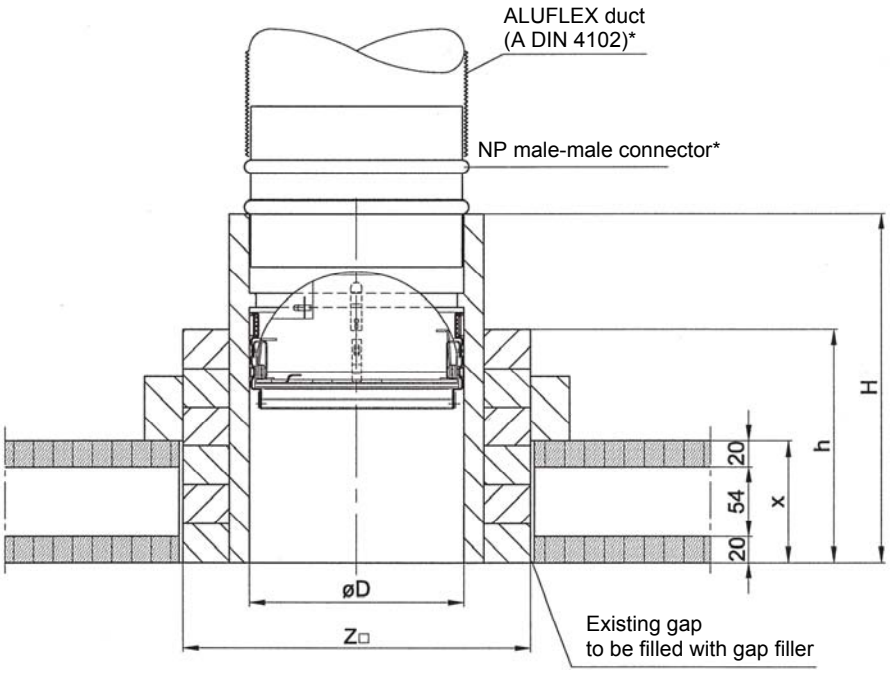
Mounting: see page 195
Maintenance: see page 170

Installation example: BW-K30U within a OWAcoustic F30 DUO floor as a laid-in floor, table on page 186, type A



*** not part of the scope of delivery**

Installation example: BW-K30U within a OWAcoustic floor BSE30 (self-supporting) without suspension of the cubiform damper

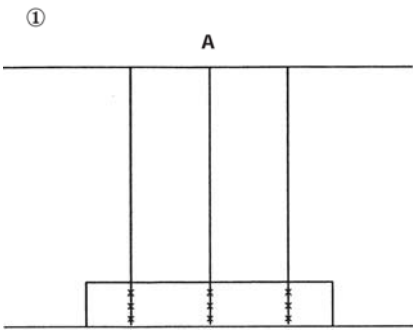


*** not part of the scope of delivery**

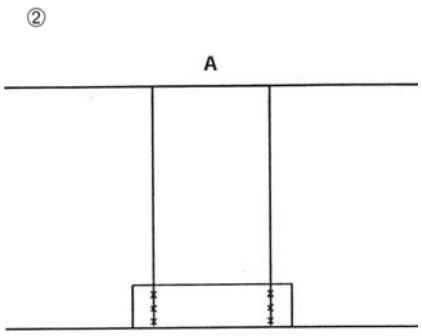
Air plenum box
LB
Test certificate Z-41.3-336

Cubiform damper
BW
Test certificate Z-41.3-335

Suspension and weight



LB



LB

When dimensioning the hangers (slotted band), the load of 6 N/mm^2 shall not be exceeded.

It is recommended to use the same hangers as for a suspended ceiling, e.g.

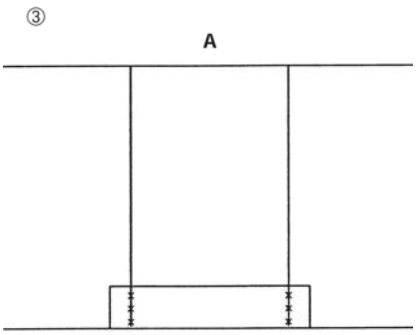
① Air plenum box
1600 x 220 x 450 mm (length x width x height), 6 hangers in each case with 3 screws 4 x 30 for quick mounting

② Air plenum box
1600 x 220 x 350 mm (length x width x height), 4 hangers in each case with 3 screws 4 x 30 for quick mounting

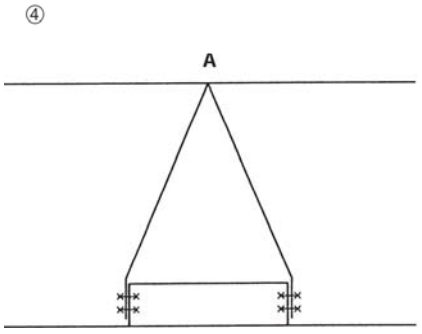
③ Air plenum box
595 x 595 x 450 mm (length x width x height), 4 hangers in each case with 3 screws 4 x 30 for quick mounting

④ Air plenum box
300 x 300 x 350 mm (length x width x height), 2 double hangers in each case with 2 screws 4 x 30 for quick mounting and 1 fixing arrangement for the ceiling

⑤ Cubiform damper
320 x 320 x 240 mm (length x width x height), 1 double hanger in each case with 2 screws 4 x 30 for quick mounting and 1 fixing arrangement for the ceiling



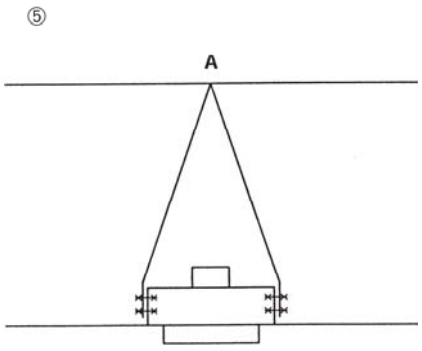
LB



LB

A = Steel dowels = M8 shall be used. They shall be inserted twice as deep as required by the test certificate – at least however 6 cm deep –, if the test certificate does not state otherwise. The calculated tensile load shall not exceed 500 N per dowel; compare DIN 4102 Part 4 (3/1981), clause 7.3 and 7.5.

Note: For the calculation of the hangers and weight of the hangers, add the weight of the LB or BW.



BW

Weight in kg
including swirl diffuser

NW \ Type	BW-K30U
100	~ 8
125	~ 8
160	~ 13
200	~13

Weight of the LB-K30U in kg
without ceiling diffuser

L/B	H	NW	kg
300/300	350	1 x 100 or 125	~ 15
450/450	450	1 x 160 or 200	~ 22
500/500	350	2 x 125	~ 22
595/595	450	2 x 160	~ 30
595/595	450	2 x 200	~ 32

Weight of the LB-K90U in kg
without ceiling diffuser

L/B	H	NW	kg
300/300	350	1 x 100 or 125	~ 26
450/450	450	1 x 160 or 200	~ 41
500/500	350	2 x 125	~ 39
595/595	450	2 x 160	~ 55
595/595	450	2 x 200	~ 57

Item	Description	Unit Piece	Unit price EUR	Total EUR
	Air plenum box with test certificate Z-41.3-336 For the installation into fire resistant and tested suspended F30 ceilings as a laid-in floor, screwed and smoothed as a floor or as a suspended metal ceiling from DIPLING. Flames from above and below. For supply and exhaust air, suitable for a ceiling diffuser, slot diffuser or swirl diffuser. Comprising a calcium silicate housing and a BEK damper, completely mounted with a connecting frame for the fastening to the ceiling. All dimensions between F_{min} = 0,054 m^2 and F_{max} = 0,354 m^2 can be manufactured. **Technical data:** Dimensions: Length = _____ mm (clear) Width = _____ mm (clear) Height = _____ mm Air volume: _____ m^3/h Spigot diameter: _____ mm Temperature of activation: 72 °C Noise level: L_{WA} _____ dB Manufacturer: **Strulik** Type: **LB-K30U** **Accessories:** Electrical limit switch Type: **MS-E** Male-male connector Type: **NP** With an internal plate covering Type: **B**			

Item	Description	Unit Piece	Unit price EUR	Total EUR
	Air plenum box with test certificate Z-41.3-336 For the installation into fire resistant and tested suspended F90 ceilings as a laid-in floor, screwed and smoothed as a floor. Flames from above and below. For supply and exhaust air, suitable for a ceiling diffuser, slot diffuser or swirl diffuser. Comprising a calcium silicate housing and a BEK damper, completely mounted with a connecting frame for the fastening to the ceiling. All dimensions between F_{min} = 0,054 m^2 and F_{max} = 0,354 m^2 can be manufactured. **Technical data:** Dimensions: Length = _____ mm (clear) Width = _____ mm (clear) Height = _____ mm Air volume: _____ m^3/h Spigot diameter: _____ mm Temperature of activation: 72 °C Noise level: L_{WA} _____ dB Manufacturer: **Strulik** Type: **LB-K90U** **Accessories:** Electrical limit switch Type: **MS-E** Male-male connector Type: **NP**			

Tender Text

Item	Description	Unit Piece	Unit price EUR	Total EUR
	Cubiform damper with test certificate Z-41.3-335 For the installation into fire resistant and tested suspended F30 ceilings as a laid-in floor or as a screwed and smoothed floor and as a suspended metal ceiling. Flames from above and below. For supply and exhaust air, suitable for a swirl or ball diffuser. Comprising a calcium silicate housing and a BEK damper, completely mounted with a connecting frame for the fastening to the ceiling. **Technical data:** Diameter / external dimensions ☐ DN 100 / 240□ ☐ DN 125 / 240□ ☐ DN 160 / 320□ ☐ DN 200 / 320□ Temperature of activation: 72 °C Air volume: _____ m^3/h Noise level: L_{WA} _____ dB Manufacturer: **Strulik** Type: **BW-K30U** **Accessories:** Electrical limit switch Type: **MS-E** Swirl diffuser Type: **SD or DA**			

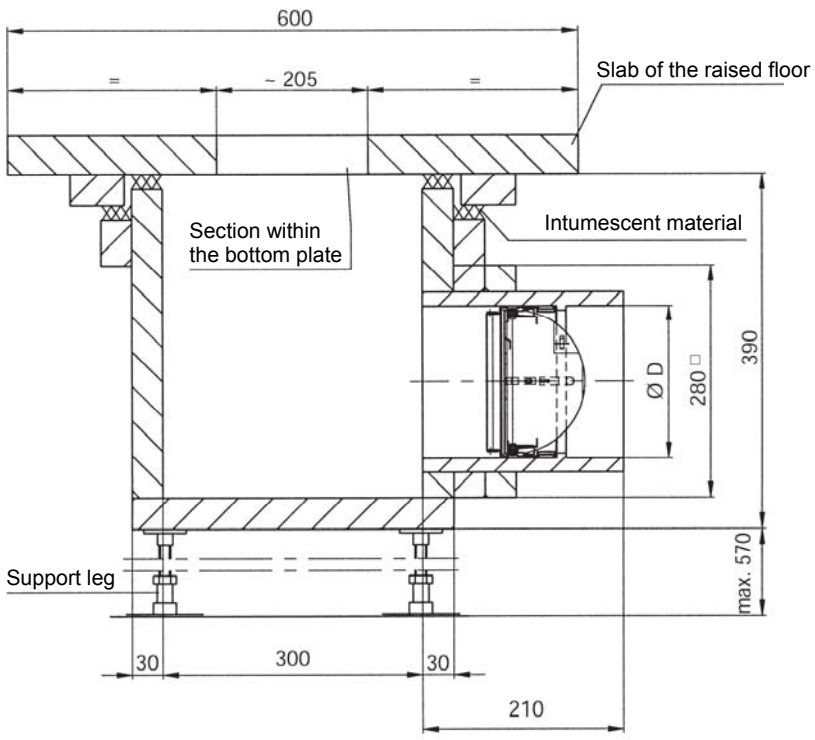
Air plenum box for raised F30 floors

Tested at the "Forschungs- und Versuchslabor" of the Technical University Munich

Technical data

The air plenum box for raised floors is available in several different connection diameters.

On request, it is supplied together with a floor mounting diffuser. Please ask for our brochure.



Dimensions

Ø D
100
125
160
200

Mounting

Mounted together with the raised floor. The same support legs shall be used as for the raised floor (duct diameter).

Maintenance, see page 170

Intumescent damper PX-G

Test certificate Z-19.18-1648

Resistance class F30-F120 in accordance with DIN 4102-2

Ordering example:
PX-G/B = 300/H = 150/60

- 35 mm material thickness
- 60 mm material thickness
- 75 mm material thickness
- Resistance class according to the table on page 201

Dimensions:
Rectangular - 300/150, 200/150 and 200/100
Square - 150/150 and 100/100
Round - Ø 200, 160, 150, 125 and 100
Combinations available on request

Intumescent damper with a cover grille of sheet steel on both sides.
The standard color of the grille is RAL 9010 (clear white); optionally also available in RAL 7001 (silver-grey).

- Fire resistance class:
  - F30-F120 in accordance with DIN 4102 Part 2
  - One hour integrity in accordance with BS 476 Part 20
- No moving parts
- Easy to clean
- Easy to install
- Very good aerodynamic properties, openings in parallel with the airflow – neutralization of turbulences
- Resistant to high humidity and most of the corrosive/industrial air conditions
- New: Installation into a fire-protected housing for switch cabinets with fire-resistant casing for the arrangement inside all rooms except the staircase

sxit intumescent dampers are available in a circular, square or rectangular form. They are molded from intumescent PROXIT material. Therefore frames or e.g. protective coatings do not affect the fire-retardant effect.

sxit intumescent dampers are installed without additional seals, as after activation by heat or fire the intumescent material will fill possible irregularities within the fire-resistant ducts or wall openings, if they do not exceed 2,5 mm.

sxit intumescent dampers will in the event of a fire rapidly foam up and completely seal off the fire compartment. This intumescence is caused by an internal chemical reaction, by heat and no mechanical or other action.

sxit intumescent dampers have been tested at the Warrington Research Center and are rated as follows: One hour integrity in accordance with BS 476 Part 20.

Application:
sxit intumescent dampers can be installed for supply and exhaust air ventilation into light and solid partitions and service shafts and conduits.
The classification F30 or F120 of the component part is not affected by the installation of the ventilation element. The direction of fire attack is not of importance.

sxit intumescent dampers are available in square, rectangular or circular design and in three different thicknesses

They are only installed as an overflow opening fitted with a ventilation grille of sheet steel on both sides.

Ventilation ducts are not allowed to be connected.

A backwash damper is available on request.

Ventilation grille with a stamped-out front plate, deflection ca. 20°, visible screw fixing, steel powder coated in clear white (RAL 9010) or on request in silver-grey (RAL 7001) without extra charge.

Please note:
sxit intumescent dampers are delivered with a ventilation grille on both sides.

Please note:
The PX-G intumescent dampers are allowed to be installed as an overflow opening into walls (also of necessary corridors), provided that the openings are located in the bottom wall region (max. 500 mm midway at the top edge of the ground).

① The cover grilles are only suitable for indoors; cover grilles suitable for outdoors are available on request.

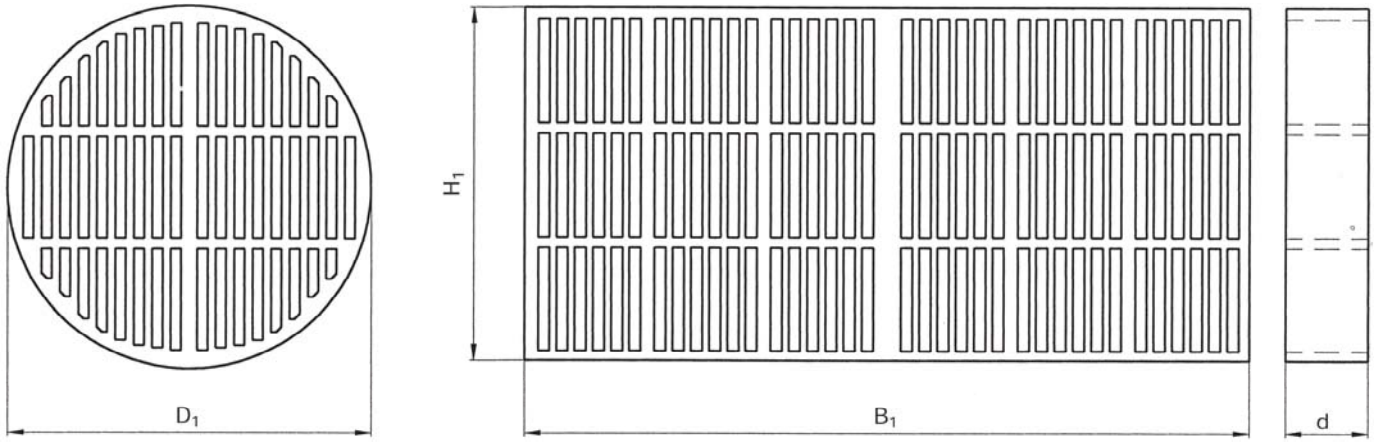
Intumescent damper PX-G

Test certificate Z-19.18-1648

Resistance class F30-F120 in accordance with DIN 4102-2

Dimensions

Fire resistance class		Thickness of the intumescent damper in mm
F30	light partition walls, shaft walls, solid walls of brickwork, aerated concrete or concrete, service shafts and conduits	35
F90	massive walls of brickwork, aerated concrete or concrete	60
F90 and F120	light partitions, shaft walls, service shafts and conduits	75
F120	solid walls of brickwork, aerated concrete and concrete	



PX-G	Actual dimension of the element			Maximum clear opening to be met by the installer			Dimensions of the GF 150 grille			
							Nominal size		Outside dimension	
Ø D	$D_1 \pm 2$	$B_1 \pm 2$	$H_1 \pm 2$	D_2	B_2	H_2	B	H	B_3	H_3
100	100	-	-	103	-	-	152	152	184	184
125	124	-	-	127	-	-	152	152	184	184
150	150	-	-	153	-	-	203	203	235	235
160	159	-	-	162	-	-	203	203	235	235
200	201	-	-	204	-	-	254	254	286	286
B x H										
100 x 100	-	93	93	-	96	96	152	152	184	184
200 x 100	-	186	93	-	189	96	254	102	286	134
150 x 150	-	150	150	-	153	153	203	203	235	235
200 x 150	-	201	150	-	204	153	254	152	286	184
300 x 150	-	300	150	-	303	153	356	152	388	184

Intumescent damper PX-G

Test certificate Z-19.18-1648

Resistance class F30-F120 in accordance with DIN 4102-2

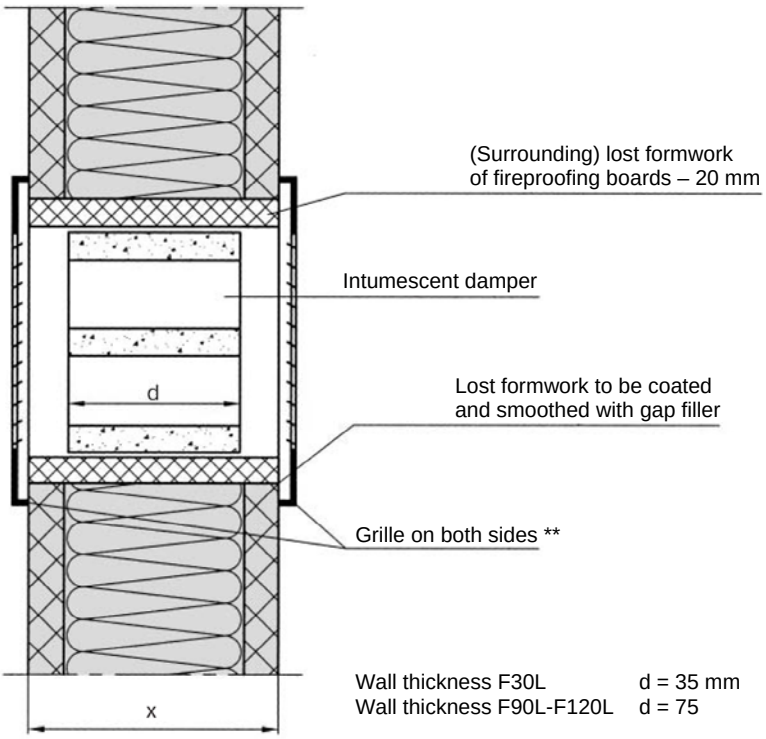
Installation examples

* Please note that due to the lost formwork only square or rectangular Intumescent dampers shall be used for the installation into metal stand walls.

** Type of grille: GF 150
The standard type is in RAL 9010 (clear white). On request, RAL 7001 (silver-grey) is also available without extra charge.

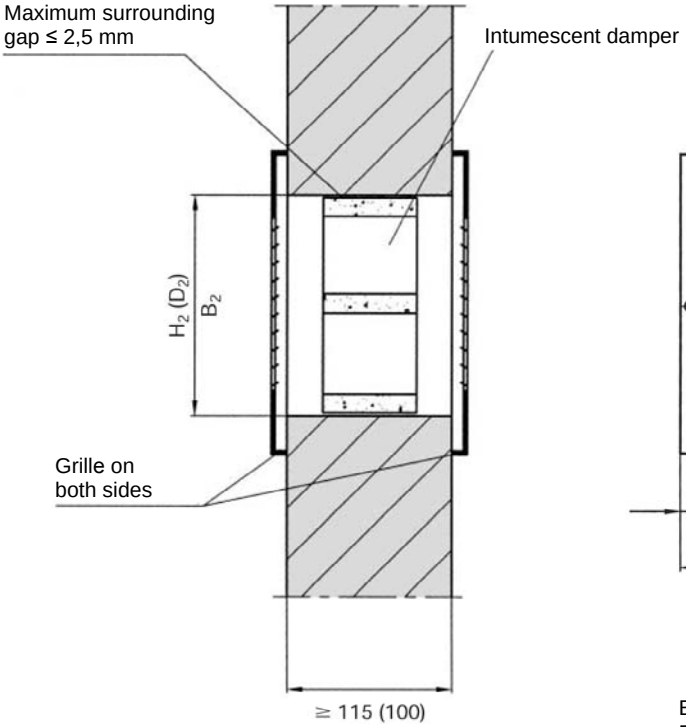
X The minimum wall thickness depends on the classification.

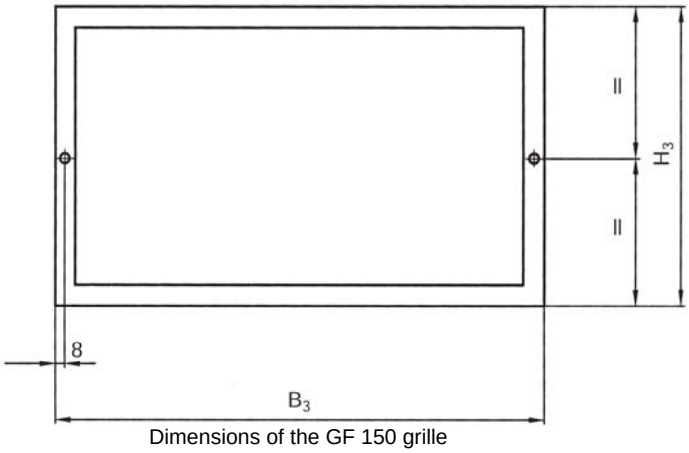
Installation into F30 or F120 C profile metal stand walls



Wall thickness F30L d = 35 mm
Wall thickness F90L-F120L d = 75

Installation into F30 or F120 walls, aerated concrete or concrete walls





Dimensions of the GF 150 grille

Brickwork F30 d = 35 mm
Brickwork F90 d = 60 mm
Brickwork F120 d = 75 mm

Intumescent damper PX-G

Test certificate Z-19.18-1648

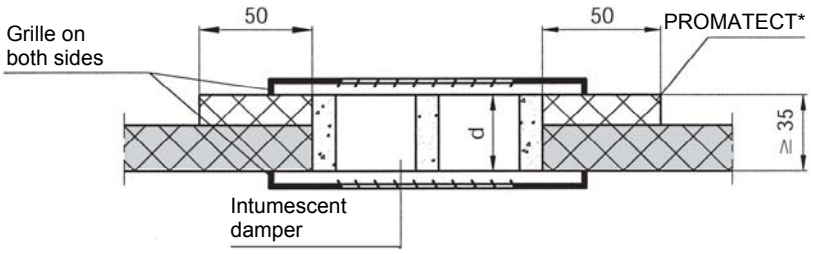
Resistance class F30-F120 in accordance with DIN 4102-2

Installation examples

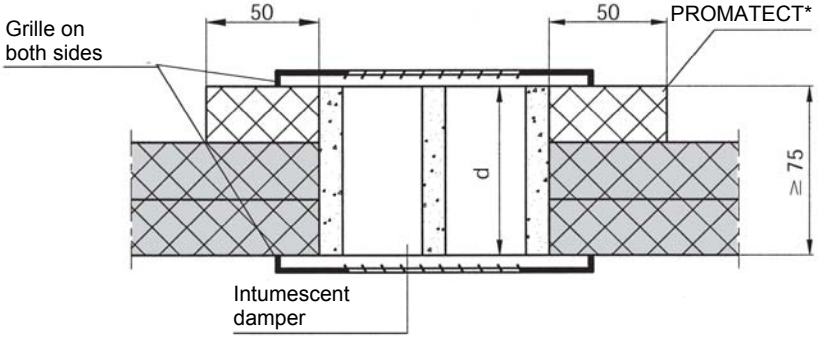
Mounting

Install the doubling of PROMATEC* (by the installer) according to the board material of the light partition wall or service shafts and conduits. Make an opening for the Intumescent damper (can be 1,5 mm larger), insert the intumescent damper according to the classification, cover with steel grilles and affix the grilles to the board material with wooden screws. It is recommended to install the intumescent dampers in cooperation with the wall or shaft builder, as otherwise problems with the doubling or the fastening of the grilles could arise.

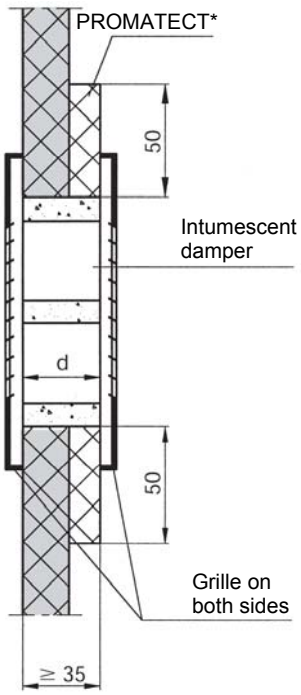
Classified F30 service shafts or conduits



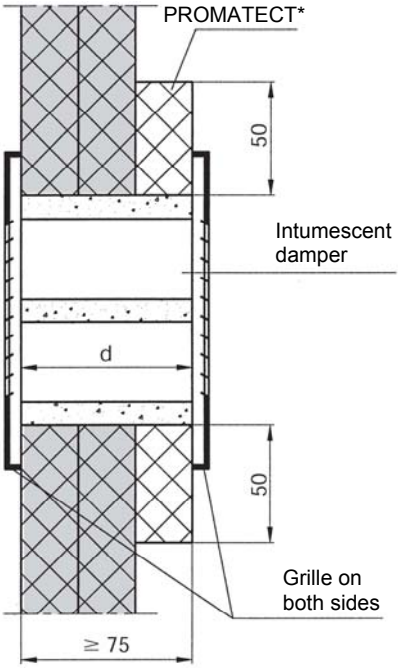
Classified F90-F120 service shafts or conduits



Light F30 partition walls or service shafts and conduits



Light F90-F120 partition walls or service shafts and conduits

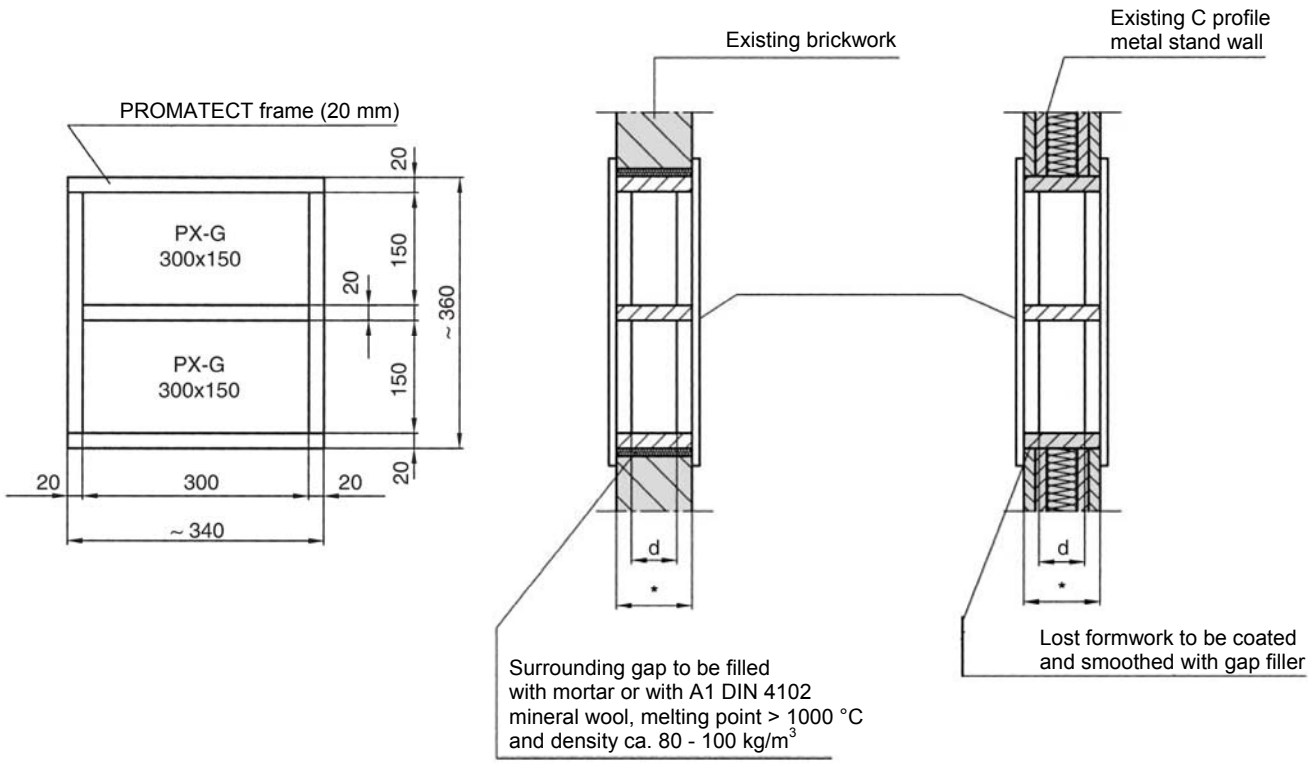


Intumescent damper PX-G

Test certificate Z-19.18-1648

Resistance class F30-F120 in accordance with DIN 4102-2

Special installation examples



Dimensions

Thickness of the intumescent damper
d = depending on the classification of the wall

* lost formwork = existing wall thickness

Scope of delivery

The shown combinations of intumescent dampers with a surrounding PROMATECT frame, separating webs and steel grilles for covering (on both sides) are supplied by STRULIK.

Prices

Dimensions and prices of the intumescent damper combinations are provided on request.

Intumescent damper PX-G

Test certificate Z-19.18-1648

Resistance class F30-F120 in accordance with DIN 4102-2

Possible combinations

Dimensions

The maximum clear area of the shaped fittings for construction products and to close overflow openings is

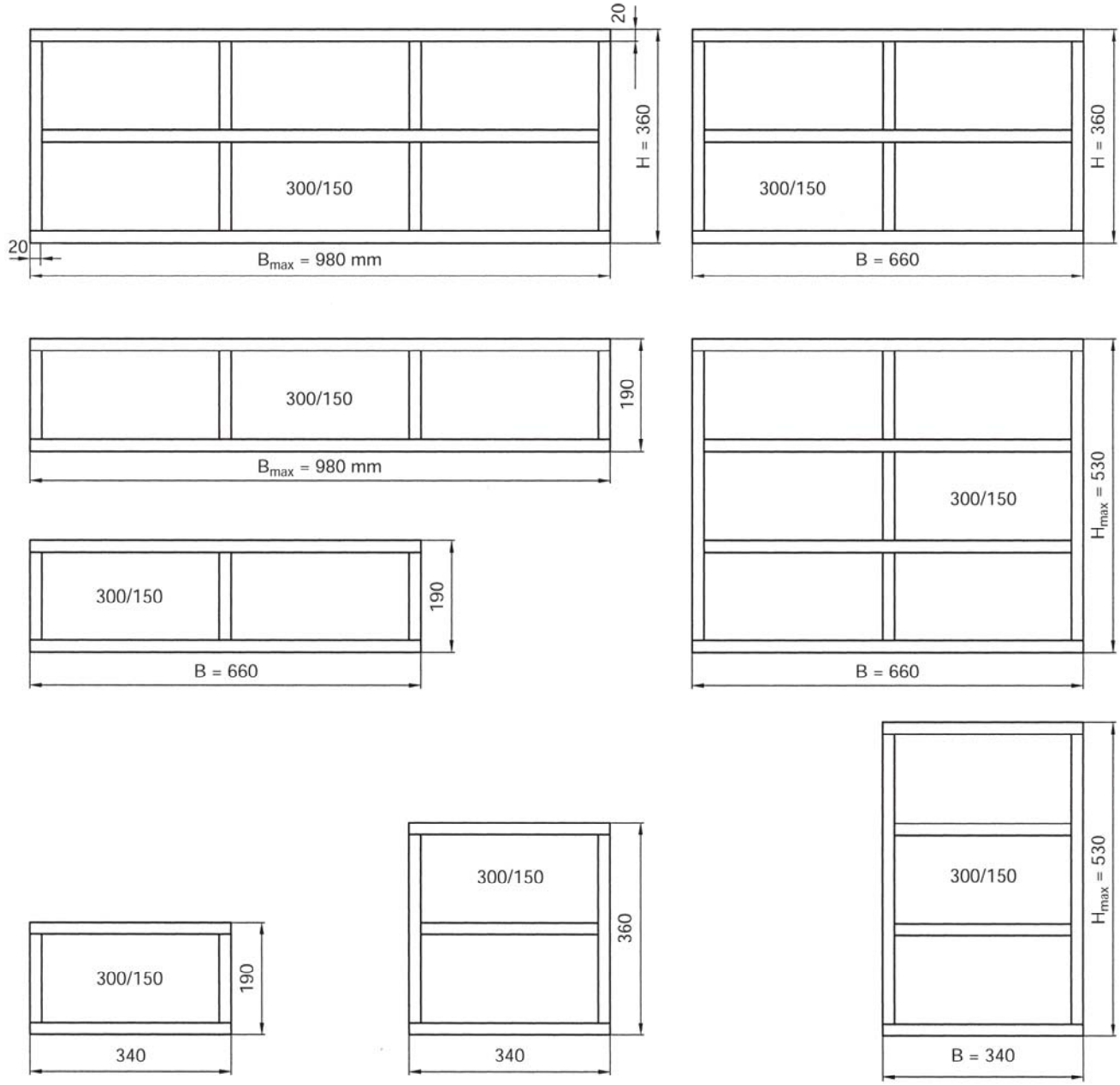
$A_{eff} \leq 1400\ cm^2$

$B_{max} = 980$ mm

$H_{max} = 530$ mm

Please note

Other dimensions within the specified outside dimensions are available on request.



Intumescent damper PX-G

Test certificate Z-19.18-1648

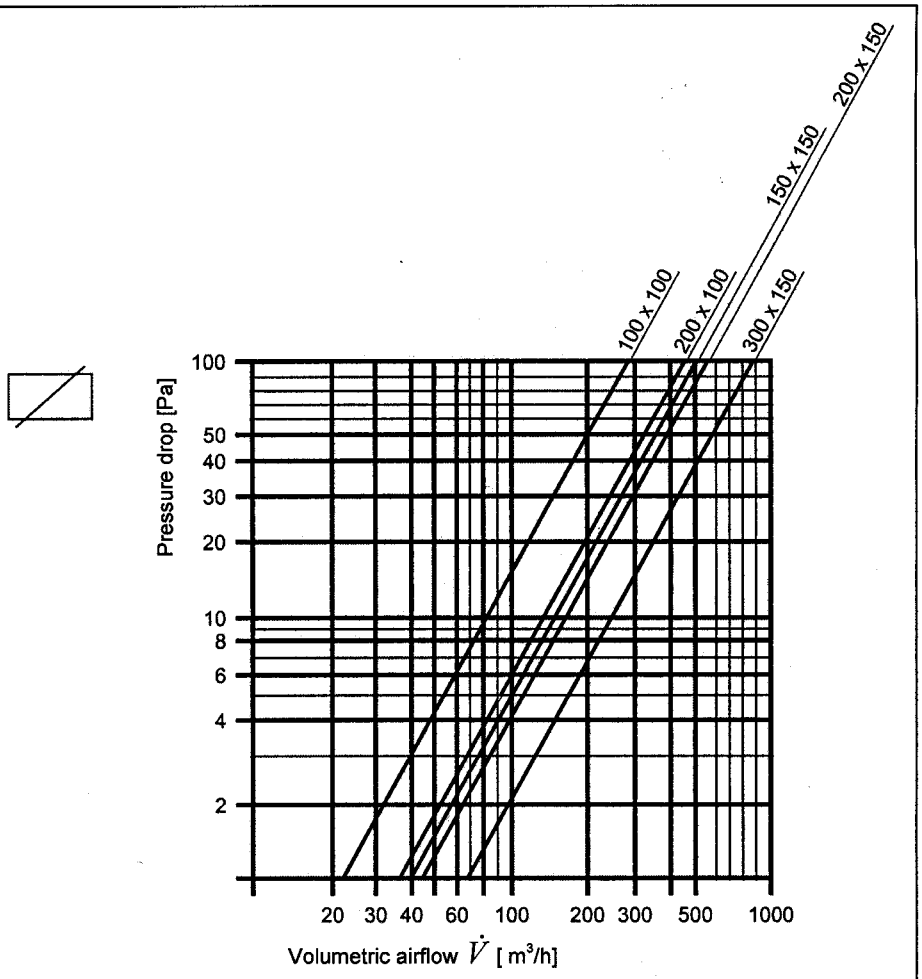
Resistance class F30-F120 in accordance with DIN 4102-2

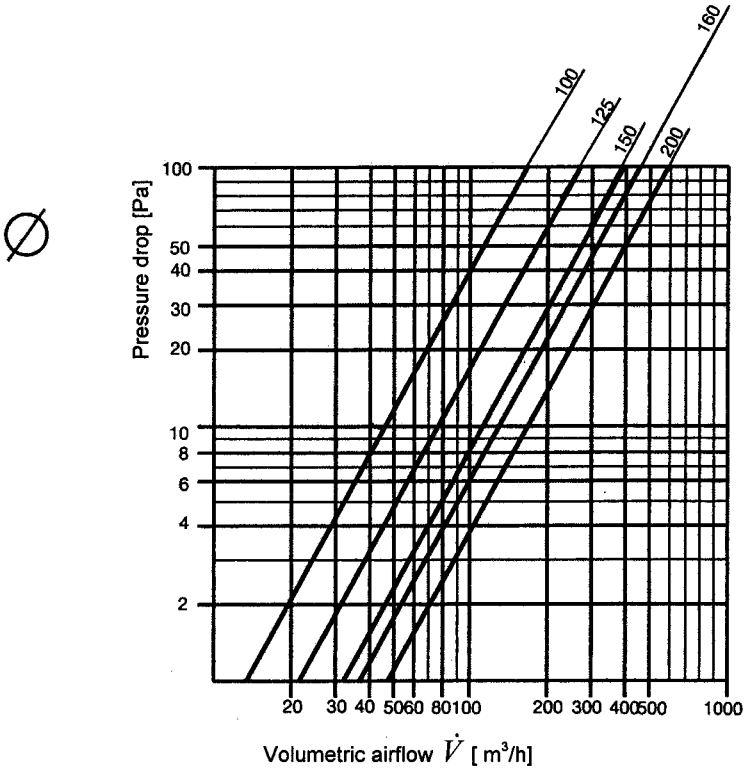
Technical data

Pressure drop in Pa
Volumetric airflow $\dot{V}$ in m^3/h
Calculated clear area A_{eff} in m^2

B x H	A_{eff}
100 x 100	0,005
200 x 100	0,01
150 x 150	0,011
200 x 150	0,0147
300 x 150	0,022

Ø	A_{eff}
100	0,0037
125	0,0043
150	0,0087
160	0,01
200	0,0168





Intumescent damper PX-G

Test certificate Z-19.18-1648

Resistance class F30-F120 in accordance with DIN 4102-2

Technical data

Pressure drop in Pa
Volumetric airflow $\dot{V}$ in m^3/h
Calculated clear area A_{eff} in m^2

B x H	A_{eff}
100 x 100	0,005
200 x 100	0,01
150 x 150	0,011
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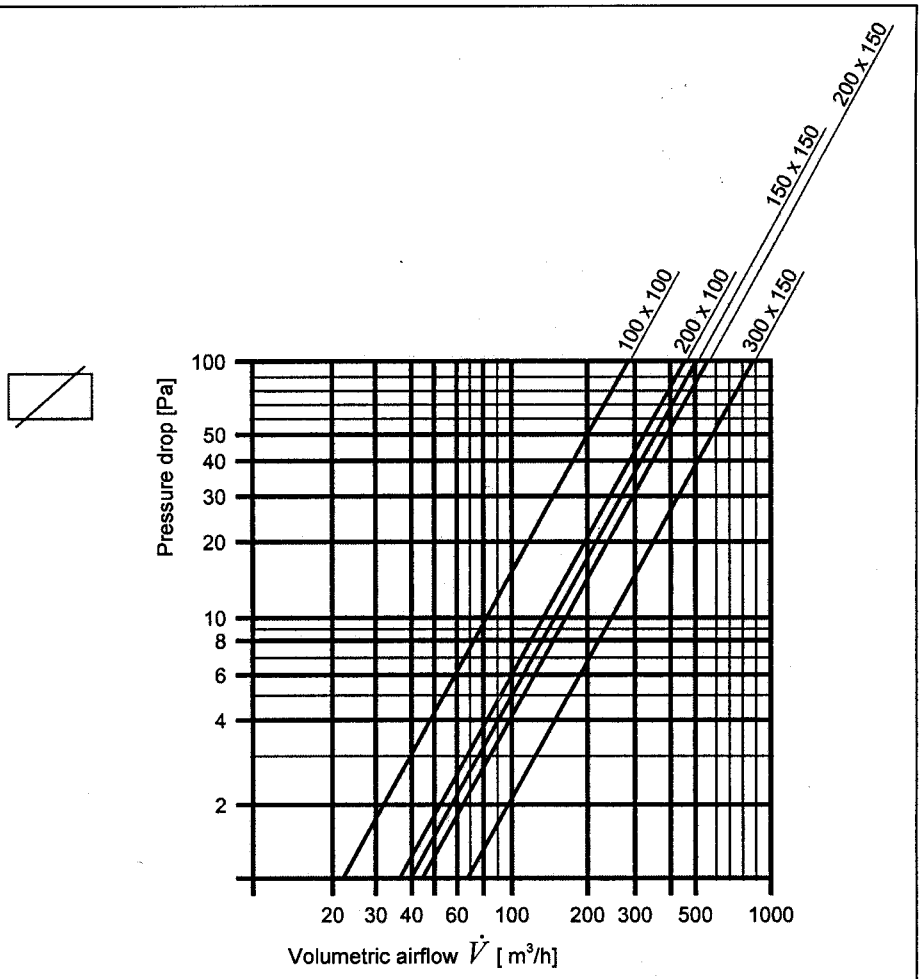
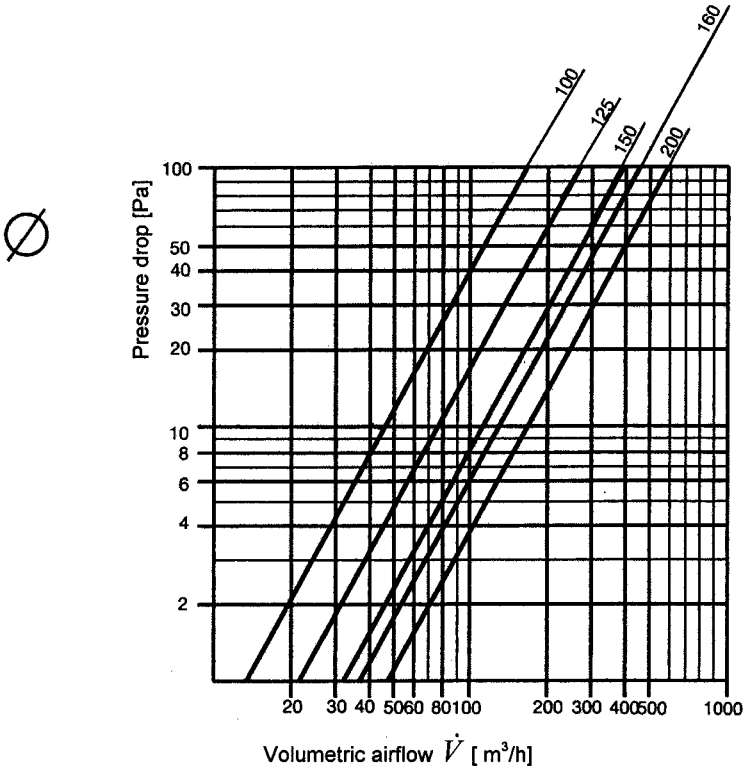




- Fire resistance class:
  - F30 to F120 in accordance with DIN 4102 Part 2
  - One hour integrity in accordance with BS 476 Part 20
- No moving parts
- Easy to clean
- Easy to install
- Very good aerodynamic properties, openings in parallel with the airflow – neutralization of turbulences
- Resistant to high humidity and most of the corrosive/industrial air conditions
- For use in hazardous areas – EX zones on request

Intumescent damper

Resistance time: 30 – 120 min.
Type: PX-G

Test certificate Z-19.18-1648

All prices in EUR/unit

sxit® intumescent dampers are delivered with a ventilation grille of sheet steel on both sides, white or silver-grey stove-enameled (RAL 9010 or 7001).

The cover grilles are only suitable for indoors; cover grilles suitable for outdoors are available on request.

Ordering example: 35 mm thick
PX-G/B=300, H=150/35 mm thick
Ordering code: 5LB330153(W)

Ordering example: 60 mm thick
PX-G/B=300, H=150/60 mm thick
Ordering code: 5LB330156(W)

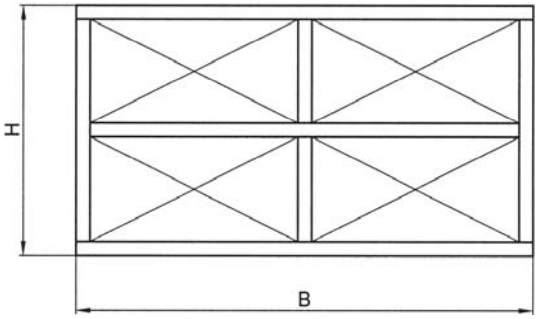
Ordering example: 75 mm thick
PX-G/B=300, H=150/75 mm thick
Ordering code: 5LB330157(W)

(W=RAL 9010; if not stated RAL 7001)

Application:
sxit® intumescent dampers can be installed for supply and exhaust air ventilation into light and solid partitions and service shafts and conduits.
The classification F30 or F120 of the component part is not affected by the installation of the ventilation element. The direction of fire attack is not of importance.

sxit® intumescent dampers are available in circular, square or rectangular form.

PX-G	F30 light partition walls, shaft walls, solid walls of brickwork, aerated concrete or concrete, service shafts and conduits	F90 solid walls of brickwork, aerated concrete and concrete	F90-F120 light partition walls, shaft walls, service shafts and conduits, F120 solid walls of brickwork, aerated concrete and concrete
NW	**35 mm thick**	**60 mm thick**	**75 mm thick**
100	63,20	75,80	84,20
125	74,50	89,40	99,30
150	88,40	106,00	117,80
160	98,80	118,70	131,80
200	111,40	133,70	148,40
B x H			
100 x 100	63,20	75,80	84,20
200 x 100	96,80	116,10	129,10
150 x 150	99,90	119,70	133,00
200 x 150	106,90	128,50	142,70
300 x 150	119,10	143,10	158,90



Intumescent dampers – possible combinations

The maximum clear area is $A_{eff} \leq 1400\ cm^2$

$B_{max} = 980$ mm

$H_{max} = 530$ mm

Prices on request

Tender Text

Item	Description	Unit Piece	Unit price EUR	Total EUR
	sxit® intumescent damper for the installation into structural members having a F30 – F120 classification in accordance with DIN 4102 Part 2. Test certificate: Z-19.18-1648 Type of installation F30: Solid walls of brickwork, aerated concrete or concrete, light partition walls, shaft walls, service shafts and conduits - Material thickness min. 35 mm F90: Solid walls of brickwork, aerated concrete and concrete, - Material thickness min. 60 mm F90: Light partition walls, shaft walls, service shafts and conduits, - Material thickness min. 75 mm F120: Solid walls of brickwork aerated concrete or concrete, light partition walls, shaft walls, service shafts or conduits - Material thickness min. 75 mm Sizes available: NW 100 mm 125 mm 150 mm 160 mm 200 mm B x H 100 x 100 mm 200 x 100 mm 150 x 150 mm 200 x 150 mm 300 x 150 mm Combination sizes: B x H 980 x 360 mm 980 x 190 mm 660 x 190 mm 660 x 360 mm 660 x 530 mm 340 x 530 mm 340 x 360 mm 340 x 190 mm Including a ventilation grille of sheet steel on both sides. The standard color of the grille is RAL 9010, optionally RAL 7001. **The cover grilles are only suitable for indoors; cover grilles suitable for outdoors are available on request.** Manufacturer: **Strulik** Type: **PX-G**			

Conformity attestation

- Name and address of the company that has installed the **construction product for closing an overflow opening** / the **products for closing overflow openings** (object of approval): _____

- Building project: _____

- Date of installation: _____

We herewith confirm that the **object of approval** / the **objects of approval** regarding all details has / have been professionally installed in accordance with all provisions of the test certificate no. Z-19.18-_____ dated _____ (and, where applicable, in accordance with the amendment or supplementary notification dated _____).

_____ (place and date)

_____ (company and signature)

Neesbacher Str. 13
D-65597 Hünfelden-Dauborn
Tel. ++49 (0)6438 839-0
Fax ++49 (0)6438 839-30

Construction product(s) for closing overflow openings within fire resistant structural members

- Conformity attestation -

Enclosure 4

of the test certificate no. Z-19.18-1648

dated 11 November 2004

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