

# Fire Prevention

Dampers and system solutions in accordance with DIN 18017-3

Part II – 01/2006



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Subject to change without notice.

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Contents illustrated in photos

WBE-K90-18017/Z-41.3-619



with a hermetically enclosed release mechanism

WBV-K90-18017/Z-41.3-561



with a hermetically enclosed release mechanism

WBZ-K90-18017/Z-41.3-572



with a hermetically enclosed release mechanism

BSE-K90-18017/Z-41.3-332



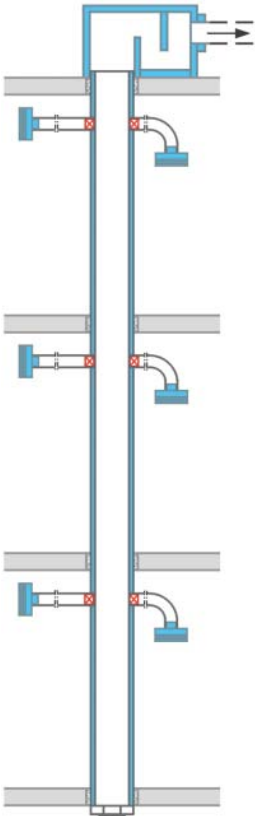
BSV-K90-18017/Z-41.3-606



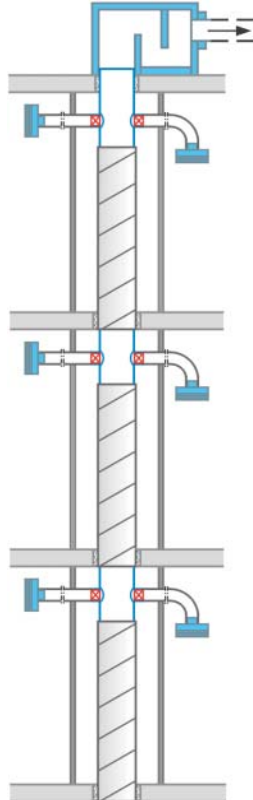
BTZ-K90-18017/Z-41.3-343



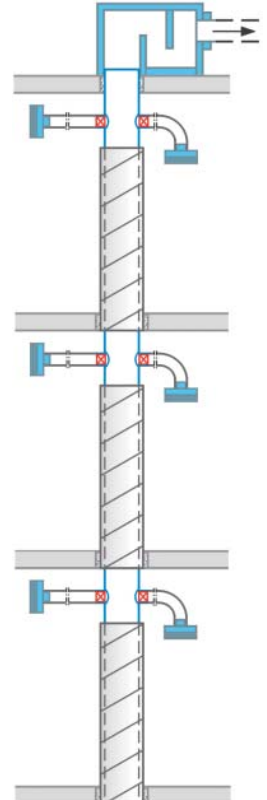
HS 1-1 S25-K90-18017S/Z-41.6-626



D.A.S.-K90-18017S/Z-41.6-565



D.A.S.200-K90-18017S/Z-41.6-597



# ***K90-18017 dampers***

Shaft installations for both exhaust air and supply air installations are only looked upon as K90-18017 dampers, if the criteria of the building supervision guidelines have been fulfilled.

## **For the installation into walls**

The connection shall not exceed 350 cm<sup>2</sup>.

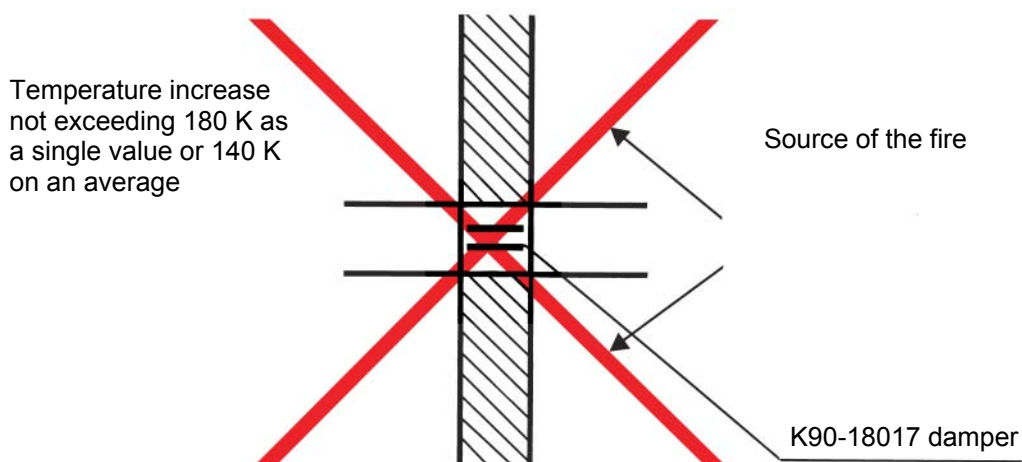
The air-handling duct within the shaft shall not exceed 1000 cm<sup>2</sup>.

## **For the installation into floors**

The air-handling duct within the shaft shall not exceed 350 cm<sup>2</sup>.

## **Not suitable** for compartmentation

(spread of fire from one compartment into another compartment).



**Differences between  
K90-4102-6  
and  
K90-18017-3**

**Introduction**

Since 1974 the production and installation of fire dampers has to be approved in Germany. In order to provide a basis for granting test certificate, the *Institut für Bautechnik* has prepared the principles of construction and testing methods for fire dampers.

Currently the principles for construction and testing methods for dampers against fire and smoke within ventilation ducts in accordance with the version November 1977 and version June 1976 for dampers against the spread of fire within ventilation ducts, in accordance with DIN 18017, are valid.

The expansion of the principles of construction and testing methods in the field of fire prevention for *DIN 18017* is based on tests that have been performed by the *Institut für Haustechnik* in Munich and the parts of *DIN 4102* that have been adopted in 1977 and until then set out the rules for the *DIN 18017* fire prevention, because several manufacturers have tested fireproofing elements in accordance with the 1976 version and thus have also received the appropriate test certificate.

However, these test certificate have the addition *K90-18017*, e.g.:

Damper  
Type: *BCF-K90/Z-41.3-331*

Fireproofing element  
Type: *BSV-K90-18017/Z-41.3-606*

In practice, people often mistake *K90* certificates for *K90-18017* certificates. The test arrangements shall show the differences between *K90* and *K90-18017*.

**Test method**

Figure 1 shows the test arrangement for *K90* fire dampers. The fire dampers are mounted into the wall or floor and are connected with a 90° elbow. The fire dampers are directly exposed to the fire; the thermometer probes are located at the outer face of the wall or at the elbow. In each case, the smallest and largest damper is tested. Four tests are required for each type of damper, i.e. the operating parts are tested both inside and outside the furnace.

Figure 2 shows the test arrangement for the fireproofing *K90-18017* element. The fire-resistant L90 ducts are depending on the diameter mounted into the furnace, e.g. two ducts, in each case one for the smallest diameter and one for the largest. Two fireproofing elements are affixed inside the furnace – one fireproofing element outside the furnace, 2000 mm above the furnace roof. The distance between the fireproofing elements inside and outside the furnace represents the approximate height between floors. The standard time temperature curve is the same as in figure 1, i.e. the fireproofing elements are directly exposed to the flames; however the temperatures, which are required to obtain a positive test report, are measured 2000 mm outside the furnace on the test sample.

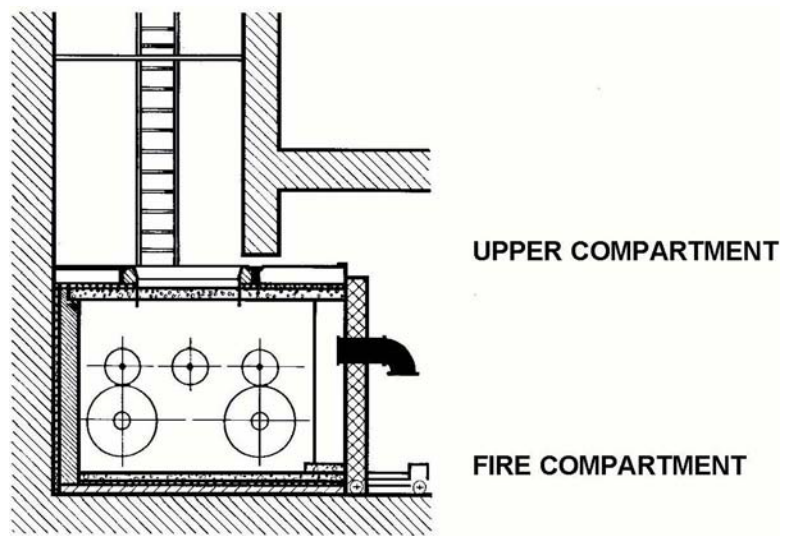


Figure 1. Test arrangement for K90 fire dampers

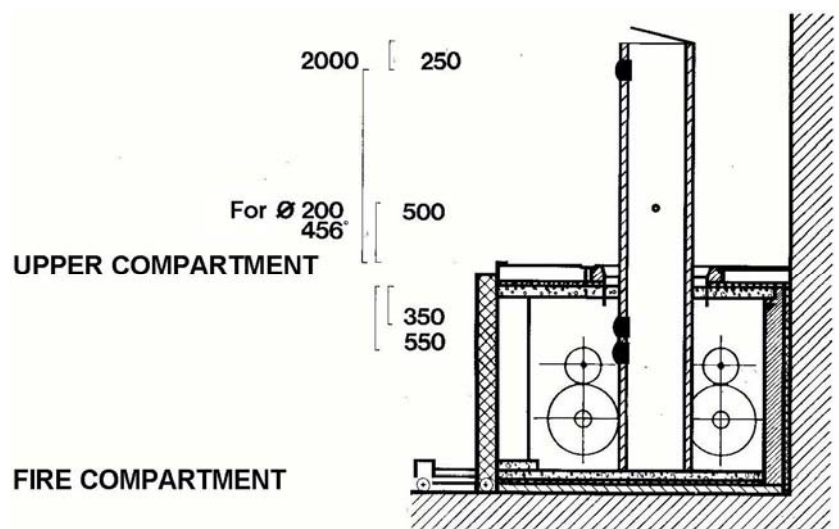


Figure 2. Test arrangement for K90-18017 fire dampers

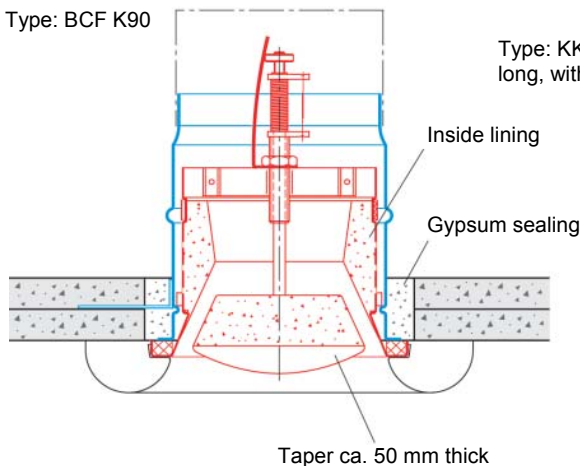
The temperature at the measuring point 500 mm above the furnace roof is in comparison for the BSE, 200 mm diameter, in the 90<sup>th</sup> minute only 456 K, i.e. the temperatures of the test specimen outside the furnace are considerably lower than in case of the test specimens in *figure 1*, where the temperature inside the furnace is in accordance with the standard time temperature curve in the 90<sup>th</sup> minute approximately 1000 K. The temperatures acting on fireproofing elements with the addition *K90-18017* is considerably lower than on *K90* fire dampers. Furthermore, fireproofing elements can only be fitted into ventilation ducts having a maximum size of 1000 m<sup>2</sup> or for the installation into floors, the diameter of the ventilation duct shall not exceed 200 mm. Also the requirements on the release mechanism are different (table 1). Test "a" shows that the time lag of the fireproofing element at elevated temperatures of activation. The force acting on the release mechanism is the same as for test "b". Therefore, one cannot always ask: "Does the damper have a test certificate?" It should be examined for which field of application the dampers are suitable. This is stated in the effective test certificate that have been issued by the "Institut für Bautechnik".

**Table 1. Requirements on the release mechanism**

	K90		K90-18017	
	a	b	a	b
Air velocity in m/s	1,0	1,0	1,0	1,0
Initial temperature in °C	25 ± 2			
Temperature increase in K/min	20			
Steady temperature in °C		60		
Test temperature in °C			160	65
Release requirements	Within 4 min	None within 1 h	Within 10 min	None within 1 h

**Damper  
BCF K90/Z-41.3-331**

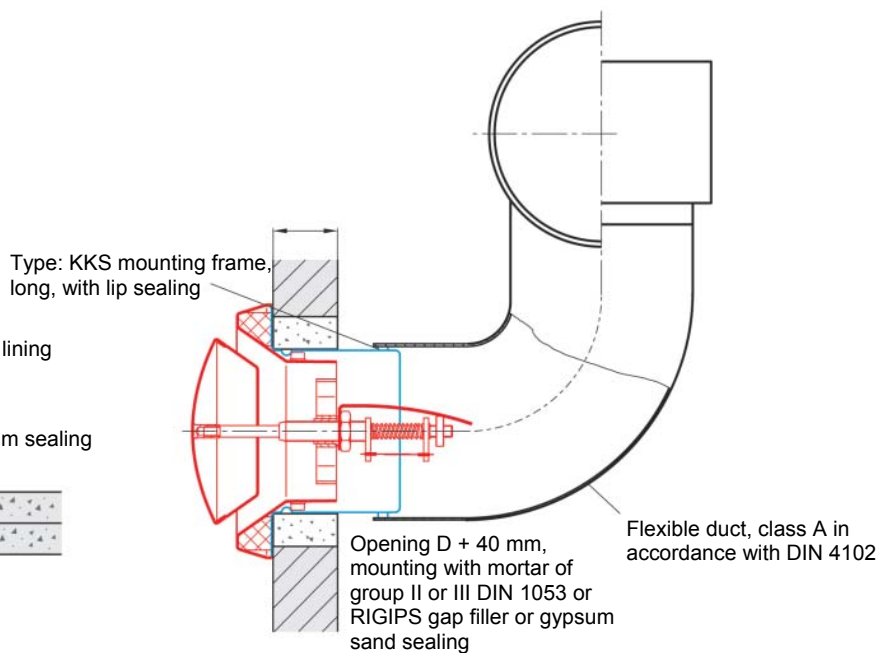
**Inside lining  
Taper thickness ca. 50 mm**



**Damper  
BSV K90-18017/Z-41.3-606**

**Without an inside lining  
Taper thickness 1 mm**

\* F30 – min 25 mm  
F90 – min. 40 mm







## Damper

with a hermetically enclosed release mechanism

WBE-K90-18017

Test certificate Z-41.3-619

Resistance class K90-18017

### Ordering example:

WBE-W-K90-18017/100/MS-E

#### Accessories (optional)

- MS-E - electrical limit switch
- RT - tee for cleaning
- SNP-S - male sleeve connection
- NP - male-male connector

NW 100, 125, 160 and 200 (NW 80 only for the insertion into WFR)

W = installation into walls, optionally with a mounting frame type:

ER } steel mounting frame for the embedding with mortar (wet mounting)

ER-I } steel mounting frame with a fastening plate and dowels, without the embedding with mortar (dry mounting)

ER-T } steel mounting frame with a square fastening plate, without the embedding with mortar (dry mounting)

WS } steel mounting frame with a fastening plate and dowels, without the embedding with mortar (dry mounting)

WP-Z } as above, however for the installation of classified or system-tested shafts, optionally with a connecting collar, type ÜG

D = Floor installation along with ceiling sleeve

### Essential advantages

- The WBE dampers ideally fulfill the functioning of a K90-18017 resistance class damper.
- The dampers can be mounted into walls and floors..
- No special fixing arrangements are required (i.e. saving of time and high economy).
- The dampers are allowed to be used in ventilation systems in accordance with DIN 18017-3 for supply and exhaust air inside and outside of F90/F30 shaft partition walls, L90/L30 classified of system-tested shafts with or without embedding with mortar (wet and dry installation).
- The dampers are allowed to be used in domestic kitchens.
- Ventilation hoods (hoods without an own fan), which are part of a central ventilation system in accordance with DIN 18017-3, are allowed to be connected to these dampers.

### Essential features

#### 1/ Safety classification.

- Official classification: Resistance class K90-18017
- 72 °C release temperature
- Maximum sealing between the body and the blades

#### 2/ Low noise level

- Insignificant reduction of cross-sectional area
- The damper can be combined with a disk valve without disturbing the through-flow of air (ideal relation between the air volume and noise level).

#### 3/ Sizes available

- NW 80 (only for the insertion into spirally wound ducting)
- NW 100
- NW 125
- NW 160
- NW 200



with a hermetically enclosed release mechanism

### DEUTSCHES INSTITUT FÜR BAUTECHNIK

Anstalt des öffentlichen Rechts

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Gesch.Z.: III 12-141.3-1000

#### Allgemeine bauaufsichtliche Zulassung

Zulassungsnummer: Z-41.3-619

Antragsteller: Strulik GmbH  
Neeseitzer Straße 13  
65997 Hattersheim-Dausheim

Zulassungsgegenstand: Absperrvorrichtungen gegen Brandübertragung in Lüftungsteilungen entsprechend DIN 18 017, Typ WBE K90-18 017

Geltungsdauer bis: 15. Februar 2005

Der oben genannte Zulassungsgegenstand wird hiermit allgemein bauaufsichtlich zugelassen.  
Diese allgemeine bauaufsichtliche Zulassung umfasst sieben Seiten und ist Anhang 1.



# Damper

with a hermetically enclosed  
release mechanism

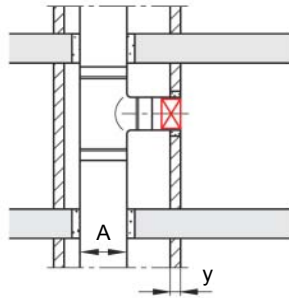
**WBE-K90-18017**

Test certificate Z-41.3-619

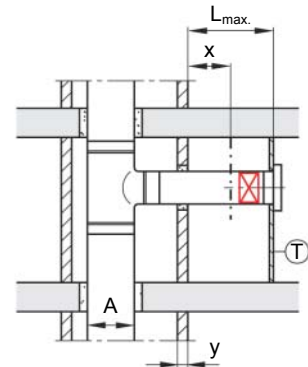
Resistance class K90-18017

Installation example inside and  
outside of shaft walls

Installation into a service shaft with  
internal fire load\*



Installation outside of a service shaft  
with internal fire load\*



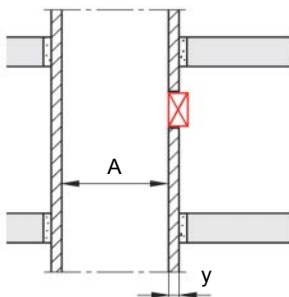
**Please note:**

For dampers in front of shaft wall (max. 6 m), spirally wound ducting or flexible steel ducts shall be used.

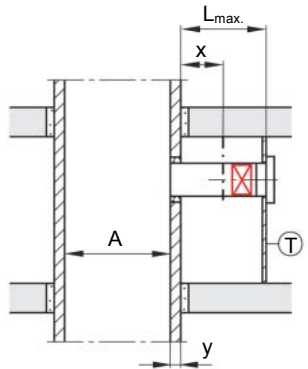
**\*Note:**

Plastic sewer pipes or lines, which are inside the service shaft, shall be secured under fire-proofing aspects in the area of the floor penetration (with R90 fire protection collar and cable partition).

Installation into a classified or system-  
tested shaft



Installation outside of a classified or  
system-tested shaft



## Technical description

A = max. 1000 cm<sup>2</sup>

L<sub>max.</sub> ≤ 6 m

x ≤ 1,5 m

Suspension device, permissible  
tensile load max. 6 N/mm<sup>2</sup>

y = F30 or F90 shaft wall  
L30 or L90 duct  
F30 = minimum wall thickness 24 mm  
F90 = minimum wall thickness 40 mm  
or system-tested components\*

☒ = Symbol for the WBE damper

☐ = Symbol for the steel or plastic disk  
valve or exhaust air automaton

Ⓣ = Partition that does not have a fire  
resistance time or not present

☑ = Symbol for a damper in accordance  
with DIN 4102-6 or in accordance with  
EN 1366-2

Ⓢ = A K90-18017 damper is not allowed  
to be installed

Ⓣ = Suspension in accordance with the  
provisions of classified ducts

\*see system components:

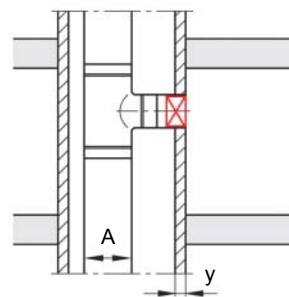
HS 1-1 S

Page 35 to 42

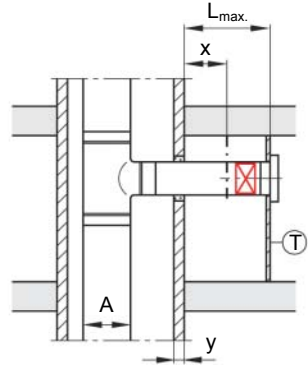
D.A.S.

Page 43 to 57

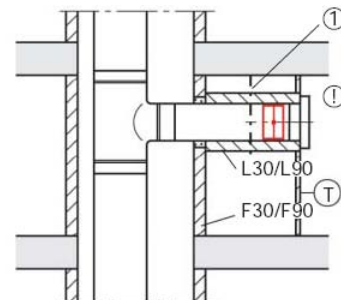
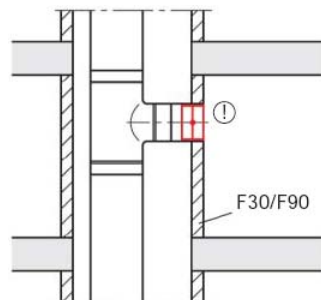
Installation into a service shaft without  
combustible materials



Installation outside of a service shaft  
without combustible materials



Installation inside and outside of classified service shafts  
(with combustible materials, e.g. electric cables or plastic ducts)







## Damper

with a hermetically enclosed release mechanism

WBE-K90-18017  
Test certificate Z-41.3-619

Resistance class K90-18017

Installation example inside and outside of shaft walls

### ER mounting frame

Towards the shaft wall, the mounting frame, type ER, is suitable for the direct connection with WFR, ALUFLEX ductwork or no connection.

Towards the room, e.g. cooker hoods (without built-in ventilator), exhaust air automatons, disk valves or extended ducting can be directly connected by means of a NP male-male connector.

Furthermore, the ER-I and ER-T mounting frames (see details of the mounting frames) are available, which are towards the shaft wall designed such that a sound-absorbing bend or tube turn can be inserted.

For the insertion into standard spirally wound ducting it is recommended that a rivet or a small sheet metal screw is used as a stop ⊗.

Note: The dampers can be used independent of the direction of airflow.

### Dimensions

$\varnothing D = 80$  mm, only for the insertion into standard spirally wound ducting

$\varnothing D = 100, 125, 160$  and  $200$  for all fitting positions

### Technical description

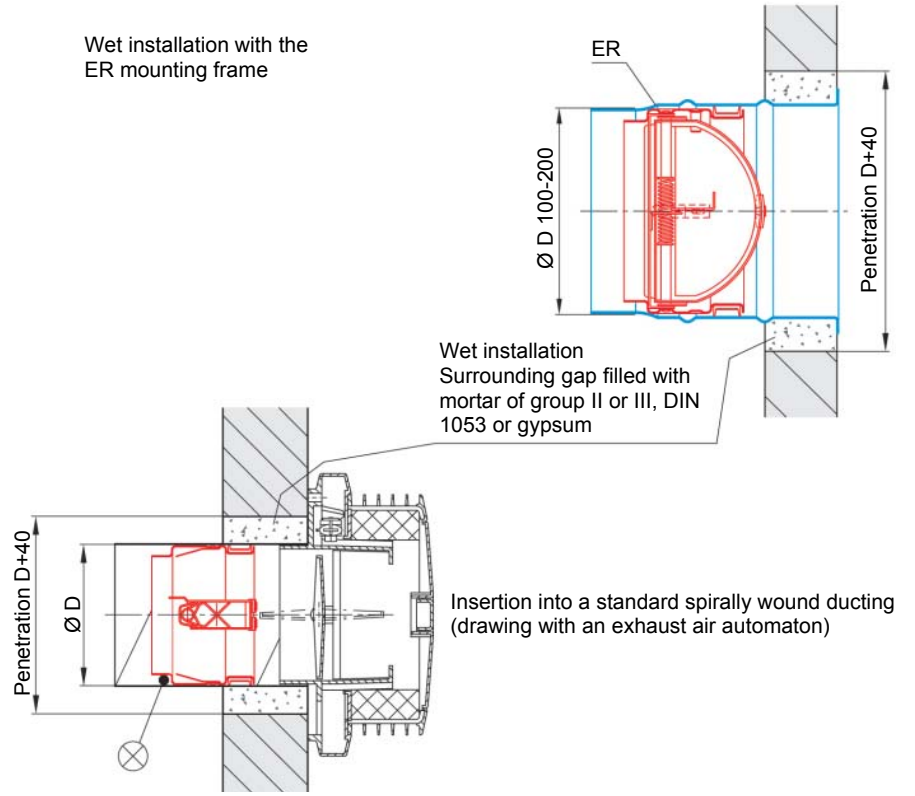
$y = F30$  = minimum wall thickness 24 mm  
 $F90$  = minimum wall thickness 40 mm

⊗ = Symbol for the WBE damper

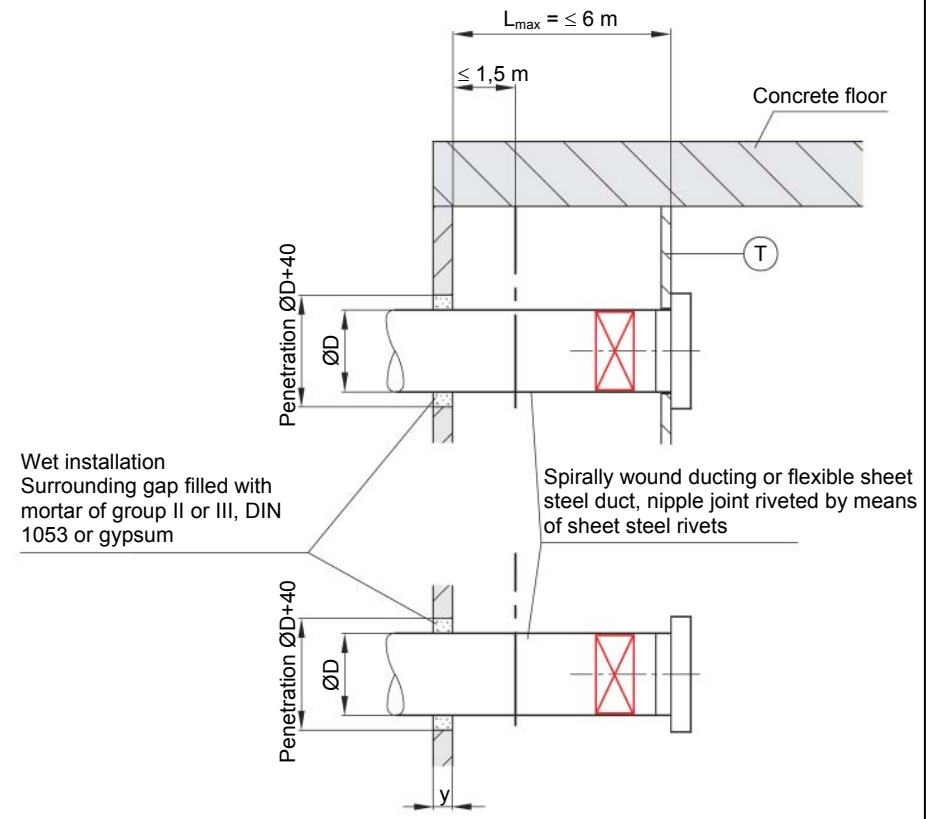
□ = Symbol for the steel or plastic disk valve or exhaust air automaton

Ⓟ = Partition that does not have a fire resistance time or not present

### Installation inside of F90/F30 shaft partition walls, L90/L30 classified or system-tested shaft with a mortar embedding (WET INSTALLATION)



### Installation inside of F90/F30 shaft partition walls, L90/L30 classified or system-tested shaft with a mortar embedding (WET INSTALLATION)





# Damper

with a hermetically enclosed release mechanism

WBE-K90-18017

Test certificate Z-41.3-619

Resistance class K90-18017

Installation example inside and outside of shaft walls

Installation inside and outside of F90/F30 shaft walls, L90/L30 classified or system-tested shafts without an embedding of mortar (DRY INSTALLATION)

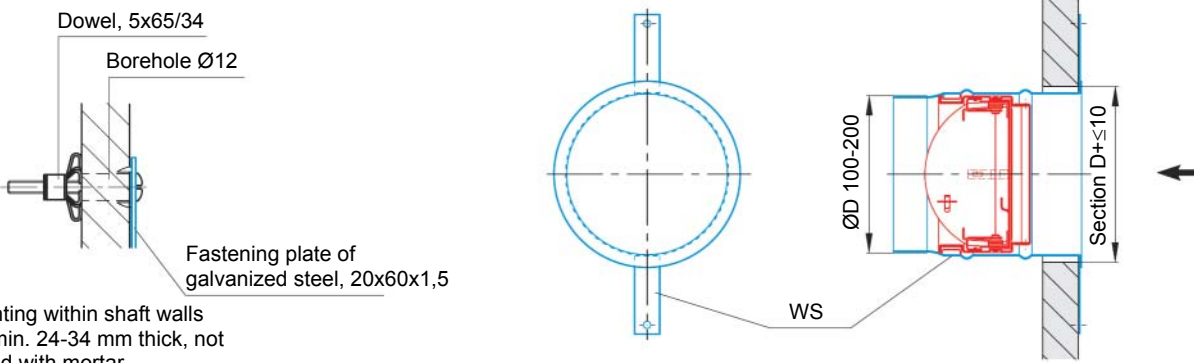
All dimensions in mm

## Fastening of the WP and WP-Z mounting frames

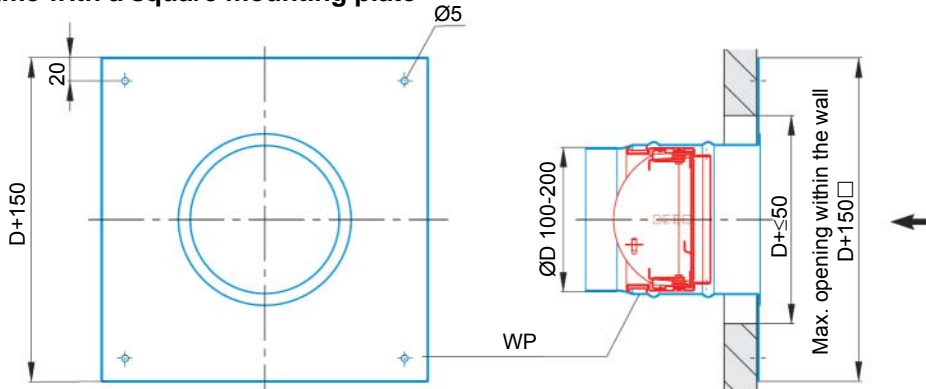
Installation into	Fastening by means of
Brickwork or concrete walls without a mortar embedding	Metal dowels
Walls or shafts of solid gypsum or fireproofing boards, metal stand walls with a covering of fireproofing boards	Wooden screws

In principle, a A1 adhesive (type: SBK 2000) shall be used between the wall and the square sheet metal plate. Mounting material by the installer!

### WS mounting frame with two mounting plates that are staggered by 180°

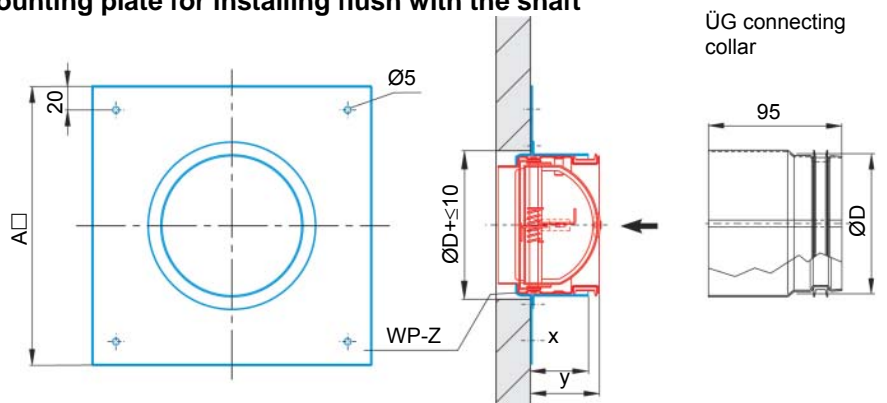


### WP mounting frame with a square mounting plate



### WP-Z mounting frame with a square mounting plate for installing flush with the shaft

ØD	A□*	x	y
80	A□*	~31	~37
100	200	~40	~47
125			



\*other dimensions on request



## Damper

with a hermetically enclosed release mechanism

WBE-K90-18017

Test certificate Z-41.3-619

Resistance class K90-18017

Facility for inspection and cleaning when mounting into a wall with an extended ventilation duct

Facility for inspection in case of an extended ventilation duct of WFR

- SNP-S male sleeve connection with a rubber lip sealing

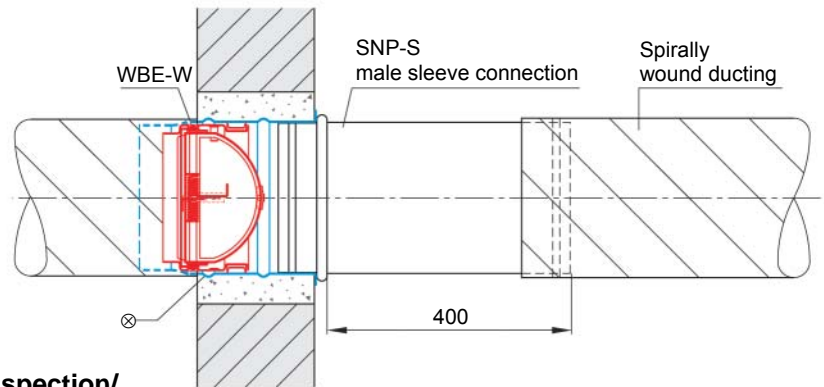
Facility for inspection in case of an extended ventilation duct of flexible aluminium ducting

- NP male-male connector with a rubber lip sealing

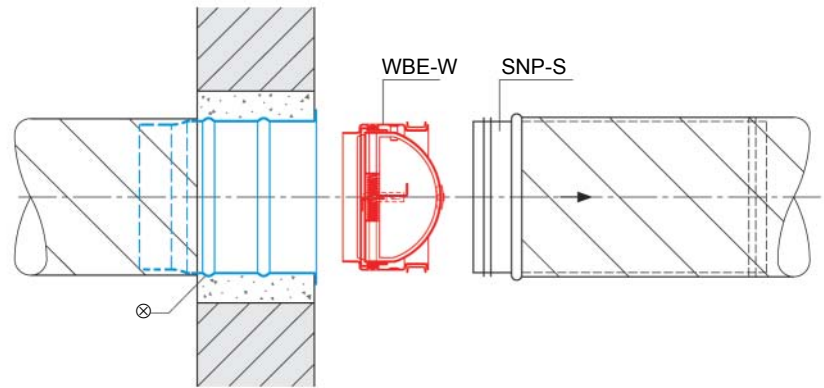
⊗ mounting frame as previously mentioned or standard spirally wound ducting

For installation guidelines, maintenance and repair see our separate operating instructions

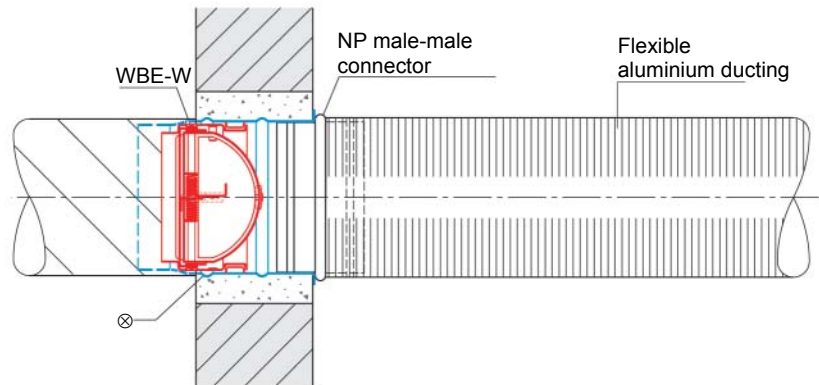
### Operating condition



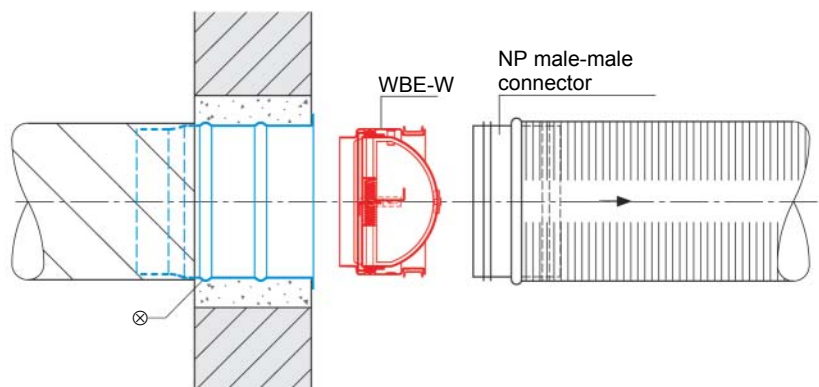
### Inspection/cleaning



### Operating condition



### Inspection/cleaning





## Damper

with a hermetically enclosed  
release mechanism

**WBE-K90-18017**

**Test certificate Z-41.3-619**

**Resistance class K90-18017**

**Installation example:**

**Floors including a facility for  
inspection and cleaning**

A mounting frame of calcium silicate is  
always required for the installation of the  
WBE-D.

Extended ventilation ducts of sheet steel  
are connected by means of the NP male-  
male connector.

The inspection side can be installed above  
or, as shown, beneath the floor. For this  
the mounting frame and element have to  
be turned by 180°.

**For installation guidelines, maintenance  
and repair** see our separate operating  
instructions

### RT tee for cleaning

Here the inspection cover and connecting  
collar or inlet spigot can be exchanged.

#### Note

Where required, the SNP-S male sleeve  
connection (not shown in the drawing) can  
also be used for inspection purposes.

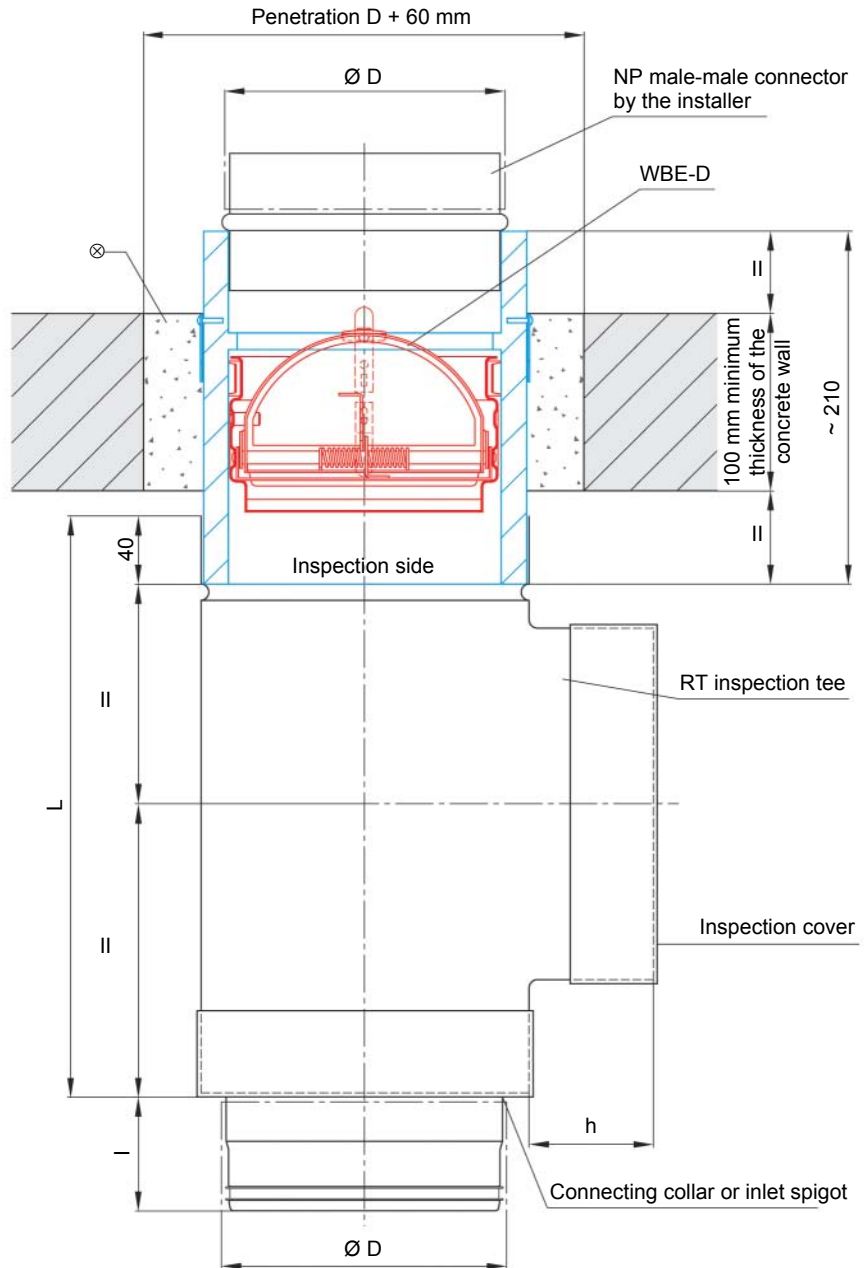
### Dimensions

$\varnothing D = 100, 125, 160$  or  $200$

### Dimensions in mm

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

**Mounting into floors that have a fire resistance time of 30 - 90 minutes  
– including a facility for inspection and cleaning**



⊗ Surrounding gap filled with mortar, mortar group II or III, DIN 1053 or with gypsum



## Damper

with a hermetically enclosed release mechanism

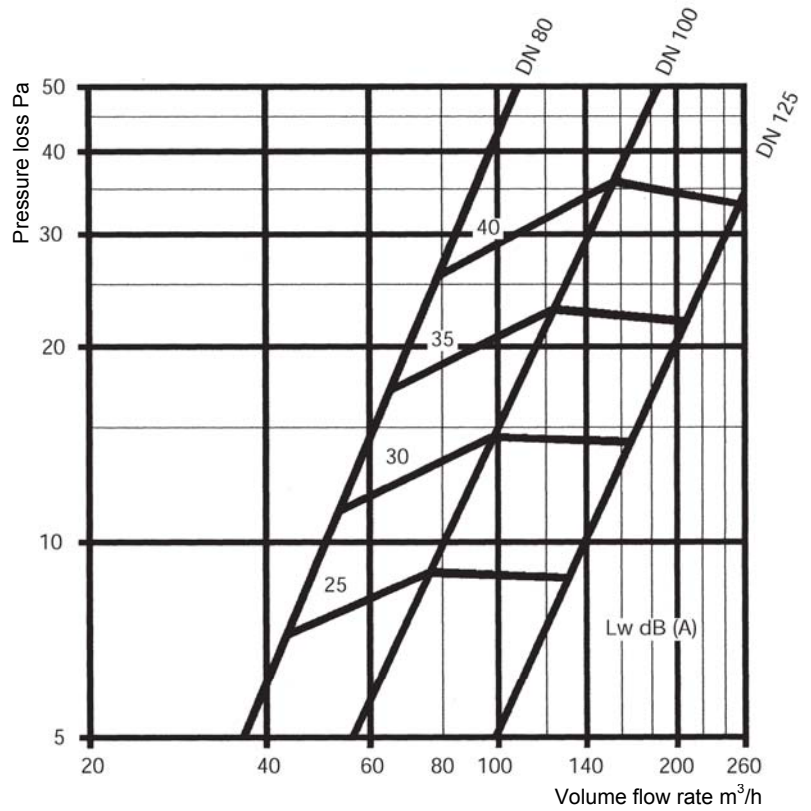
WBE-K90-18017

Test certificate Z-41.3-619

Resistance class K90-18017

Design diagrams

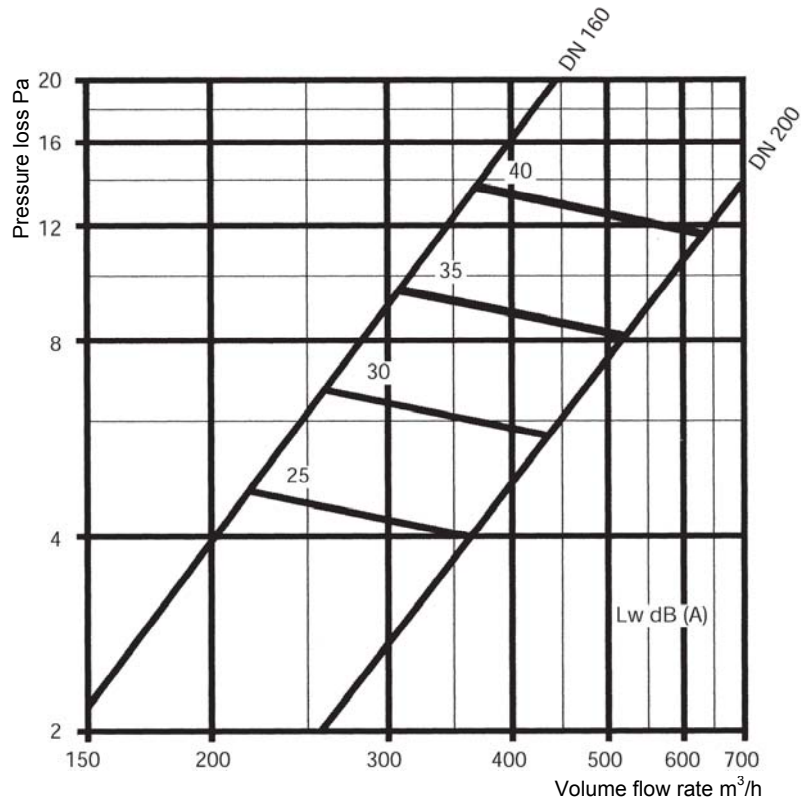
### Pressure loss and noise level



### Note

For aerodynamic reasons the airflow velocity shall not exceed  $\leq 8$  m/s.

The WBE dampers can be used for all directions of airflow.





# Damper

with a hermetically enclosed  
release mechanism

WBE-K90-18017

Test certificate Z-41.3-619

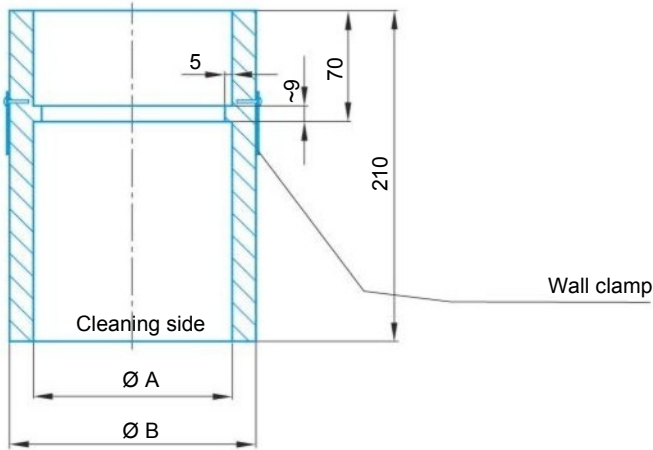
Resistance class K90-18017

Technical data of the mounting  
frame

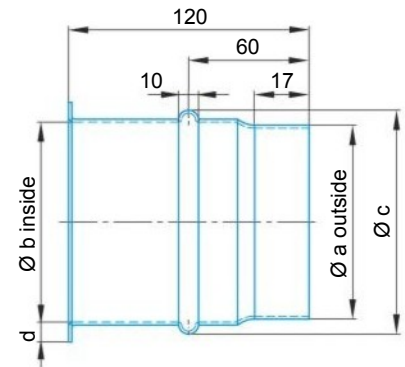
## Dimensions

NW	Ø A	Ø B	Ø a	Ø b	Ø c	d
80	Only for the insertion into spirally wound ducting					
100	101	141	98	101	109	~ 10
125	126	166	124	128	133	~ 10
160	161	201	159	162	170	~ 12
200	201	241	199	201	209	~ 12

### Floor mounting frame for WBE-D (always complete)



### Wall mounting frame, type: ER



#### Please note:

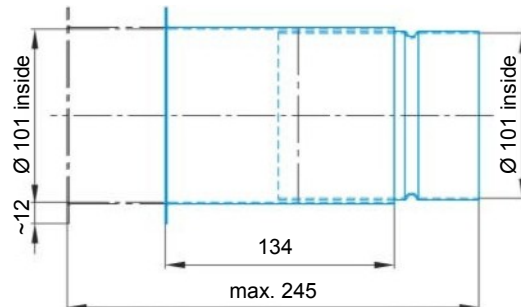
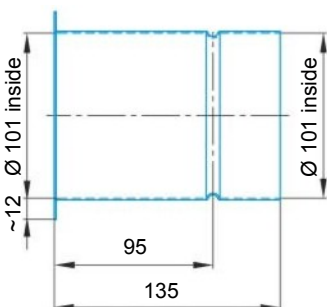
When installing, always take care of the sign »cleaning side«.  
The position of the cleaning side cannot be changed after the  
embedding with mortar.

### Special mounting frame (only in NW 100) for the direct connection to a sound-absorbing bend

Type: ER-I

As a telescopic frame

Type: ER-T







# Damper

with a hermetically enclosed release mechanism

WBE-K90-18017

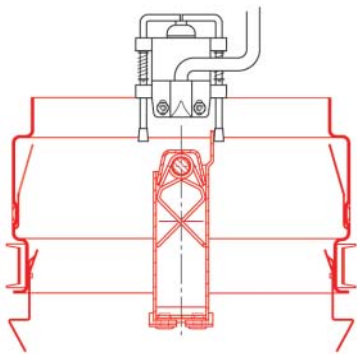
Test certificate Z-41.3-619

Resistance class K90-18017

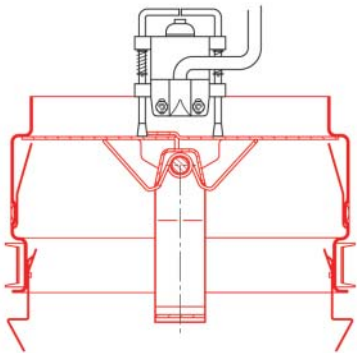
Accessory:

MS-E electrical limit switch

## Position »OPEN«

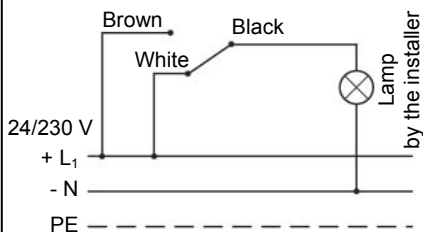


## Position »CLOSED«

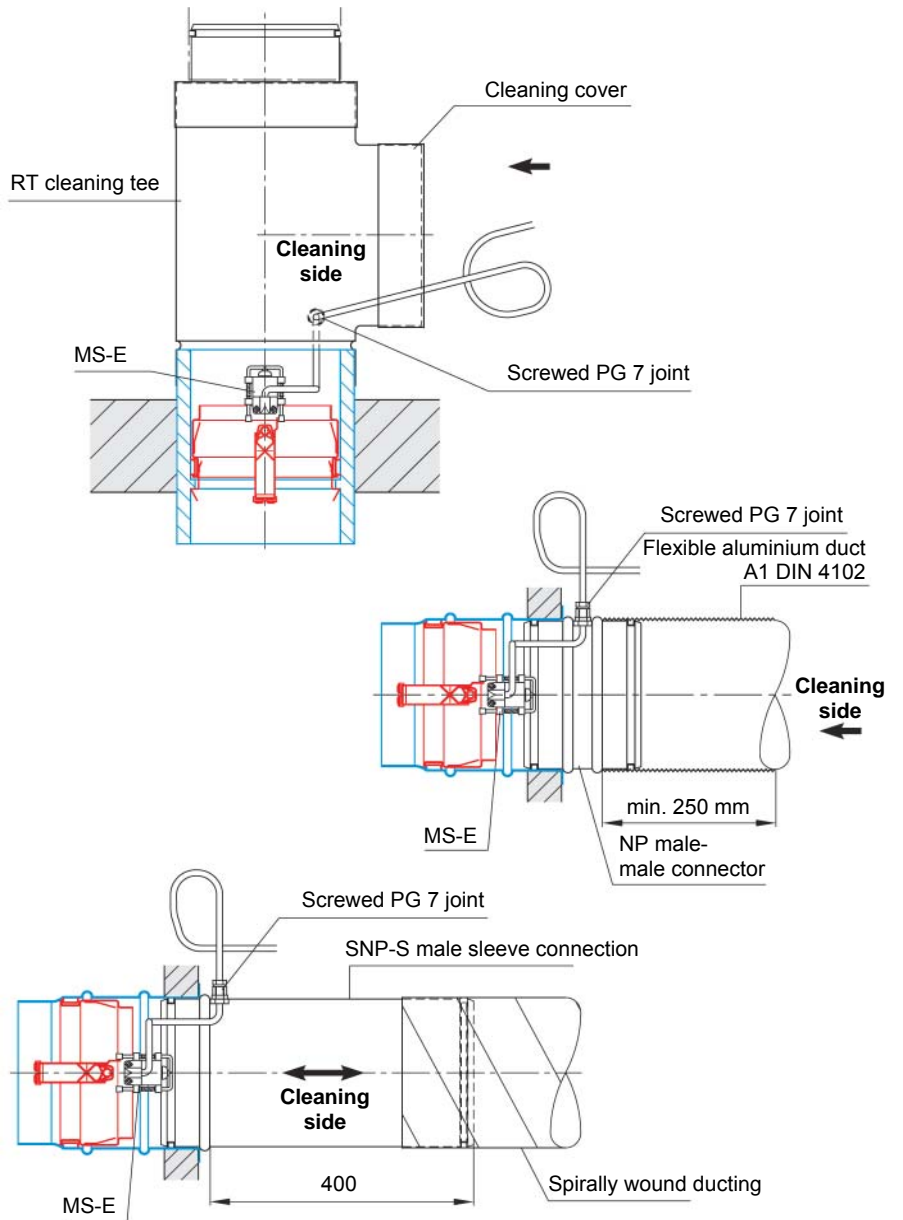


## Wiring diagram

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

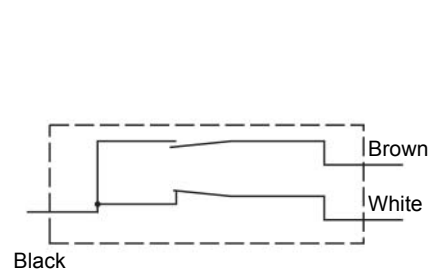


## Facility to inspect the WBE-D damper including electrical limit switch



Lead the cable of the MS-E limit switch out of the screwed joint (PG 7) and leave a loop of ca. 50 cm with a cable binder outside the duct for inspection, so that the damper can be removed easily

## Wiring diagram: MS-E



## Technical details

- Single-pole converter
- IP 65
- Constant current/nominal insulation current: 1,9 A/380 V or 3 A/240 V
- Short circuit protection: 6 A fuse, 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<sup>2</sup>

# Tender Text

Item	Description	Unit Piece	Unit price EUR	Total EUR
	<p><b>Installation into walls</b></p> <p><b>Damper with a hermetically enclosed release mechanism, test certificate Z-41.3-619</b>, for ventilation systems in accordance with DIN 18017, with a K90-18017-3 fire resistance class.                      Installation inside and outside of F90/F30 shaft partition walls, L90/L30 classified or system-tested shafts with or without a mortar embedding (wet or dry installation).                      Minimum thickness 24 mm for F30                      Minimum thickness 40 mm for F90                      The housing consists of a steel cylinder, with two eccentrically arranged butterfly blades of sheet steel and the hermetically enclosed release mechanism.                      For the installation into a wall, the damper is simply inserted into the mounting frame or the spirally wound ducting.</p> <p><b>Technical data</b></p> <p>Diameters:                    80 mm (only for the insertion into standard spirally wound ducting)                                                            100 mm                                                            125 mm                                                            160 mm                                                            200 mm</p> <p>Total length including mounting frame:    120 mm</p> <p>Release temperature:    72 °C</p> <p>Air volume:                    m<sup>3</sup>/h</p> <p>Noise level L<sub>WA</sub>:            dB[A]</p> <p>Manufacturer: <b>Strulik</b></p> <p>Type: <b>WBE-W-K90-18017 + ER</b>                      including mounting frame</p> <p><b>Accessories</b></p> <p>Electrical limit switch    Type: <b>MS-E</b>                      Male sleeve connection    Type: <b>SNP-S</b>                      Male-male connection    Type: <b>NP</b></p> <p><b>Special mounting frames</b></p> <p>Type: <b>WP</b>            including fastening plate, without mortar embedding                      Type: <b>WP-Z</b>        as above, however for the installation into shafts                      Type: <b>WS</b>            including fastening clip and steel dowels, without mortar embedding                      Type: <b>ER-I</b>        for the direct connection with a bend or sound-absorbing bend (only NW 100)                      Type: <b>ER-T</b>        as above, however in telescopic design (only NW 100)</p>			

# Tender Text

Item	Description	Unit Piece	Unit price EUR	Total EUR
	<p><b>Installation into floors</b></p> <p><b>Damper with a hermetically enclosed release mechanism, test certificate Z-41.3-619</b>, for ventilation systems in accordance with DIN 18017, with a K90-18017-3 fire resistance class.            Installation into concrete floors, minimum thickness 100 mm.            The housing consists of a steel cylinder, with two eccentrically arranged butterfly blades of sheet steel and the hermetically enclosed release mechanism.            For the installation into a floor, a special mounting frame is used that has a bar, which takes up the two mounting springs that are staggered by 180°.</p> <p><b>Technical data</b></p> <p>Diameters:                    100 mm                                                  125 mm                                                  160 mm                                                  200 mm</p> <p>Total length including mounting frame:    210 mm</p> <p>Release temperature:    72 °C</p> <p>Air volume:                    m<sup>3</sup>/h</p> <p>Noise level L<sub>wA</sub>:                dB[A]</p> <p>Manufacturer: <b>Strulik</b></p> <p>Type: <b>WBE-D-K90-18017</b>            including mounting frame</p> <p><b>Accessories</b></p> <p>Electrical limit switch            Type: <b>MS-E</b>            Inspection tee                      Type: <b>RT</b>            Male sleeve connection        Type: <b>SNP-S</b>            Male-male connection         Type: <b>NP</b></p>			



## Damper

with a hermetically enclosed release mechanism

**WBV-K90-18017**

Test certificate Z-41.3-561

**WBZ-K90-18017**

Test certificate Z-41.3-572

Resistance class K90-18017

### Ordering example:

**WBV-K90-18017/KKK/100**

NW 100, 125, 160 or 200

#### Mounting frames

**KKK** - Installation within shaft walls, duct installation

**KKS** - As above, however lengthened

**KR** - Clamp collar for the installation outside of shaft walls, duct installation

#### Special mounting frames with mounting material (without plastering)

**KPK** - Installation within shaft walls, duct installation

**KPS** - As above, however lengthened

**WBV** - Exhaust air

**WBZ** - Supply air

### Essential advantages

- The WBV and WBZ dampers are fitted with a hermetically enclosed release mechanism
- The Strulik WBV and WBZ dampers ideally combine the function of an infinitely variable supply and exhaust air valve with the fully effective property of a damper that has the resistance class K90-18017. The dampers can be built into single-layered or multi-layered air shafts that have a minimum wall thickness of 24 mm.
- The dampers can be mounted inside or outside of walls. Outside of walls, the fitting position can be vertical or horizontal.
- No special fixing arrangements are required, i.e. saving of time and high economy.
- The Strulik dampers can subsequently be easily mounted into ventilation systems in accordance with DIN 18017 in order to meet the effective fire safety requirements.
- The dampers are allowed to be used in domestic kitchens.

### Essential features

#### 1/ Safety classification.

- Official classification: Resistance class K90-18017
- Maximum sealing between the body and the calotte

#### 2/ Low noise level

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

#### 3/ Adjustment of air volume

- Infinitely variable control of air volume

#### 4/ Sizes available

- NW 100
- NW 125
- NW 160
- NW 200

### Exhaust air Type: WBV



### Supply air Type: WBZ



#### DEUTSCHES INSTITUT FÜR BAUTECHNIK

Anstalt des öffentlichen Rechts

10829 Berlin, 21. August 1997  
Koblenzstraße 30  
Telefon: (0 30) 7 87 30 - 344  
Telefax: (0 30) 7 87 30 - 320  
Gesch.Z.: III 15-141.3-22/97

#### Allgemeine bauaufsichtliche Zulassung

Zulassungsnummer: Z-41.3-561

Antragsteller: Strulik GmbH  
Neesbacher Straße 13  
65597 Hürten-Dauborn

Zulassungsgegenstand: Absperreinrichtungen gegen Brandübertragung in Lüftungsanlagen, Typ WBV K90-18017

Geltungsdauer bis: 15. August 2002

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



#### DEUTSCHES INSTITUT FÜR BAUTECHNIK

Anstalt des öffentlichen Rechts

10829 Berlin, 15. Oktober 1998  
Koblenzstraße 30 L  
Telefon: (0 30) 7 87 30 - 272  
Telefax: (0 30) 7 87 30 - 320  
Gesch.Z.: III 12-141.3-10/98

#### Allgemeine bauaufsichtliche Zulassung

Zulassungsnummer: Z-41.3-572

Antragsteller: Strulik GmbH  
Neesbacher Straße 13  
65597 Hürten-Dauborn

Zulassungsgegenstand: Absperreinrichtungen gegen Brandübertragung in Lüftungsanlagen entsprechend DIN 18 017-3, Typ WBZ K90-18017

Geltungsdauer bis: 18. März 2003

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





# Damper

with a hermetically enclosed release mechanism

**WBV-K90-18017**

Test certificate Z-41.3-561

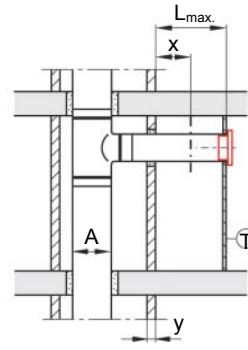
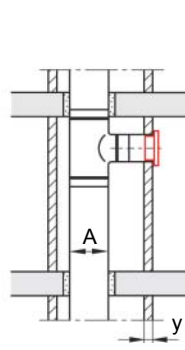
**WBZ-K90-18017**

Test certificate Z-41.3-572

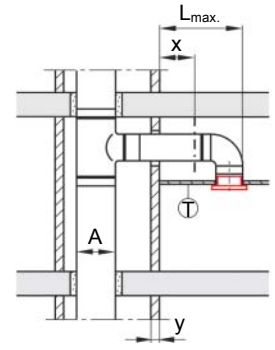
Resistance class K90-18017

Installation examples inside and outside of shaft walls

Installation into a service shaft with internal fire load\*



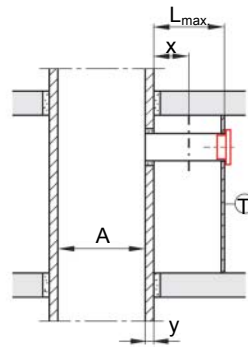
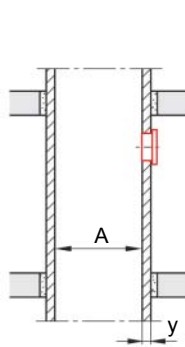
Installation outside of a service shaft with internal fire load\*



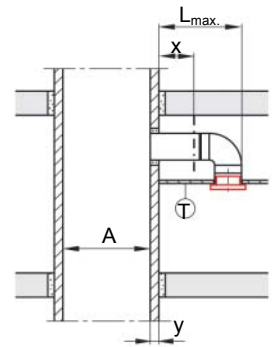
State regulations, published in the appropriate law and official gazettes, set out the rules for the testing of building installations and systems, to which fire dampers also belong. The tests shall be performed in accordance with the effective state building regulations. These tests do not replace the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

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

Installation into a classified or system-tested shaft



Installation outside of a classified or system-tested shaft



## Technical description

$A = \max. 1000 \text{ cm}^2$

$L_{\max.} \leq 6 \text{ m}$

$x \leq 1,5 \text{ m}$

Suspension device, permissible tensile load max.  $6 \text{ N/mm}^2$

$y = \text{F30 or F90 shaft wall, L30 or L90 duct}$

F30 = minimum wall thickness 24 mm  
F90 = minimum wall thickness 40 mm or system-tested components\*

= Symbol for the WBV or WBZ damper

= Partition or suspended ceiling that does not have a fire resistance time or not present

= Symbol for a damper in accordance with DIN 4102-6 or in accordance with EN 1366-2

= A K90-18017 damper is not allowed to be installed

= Suspension in accordance with the provisions of classified ducts

\*see system components:

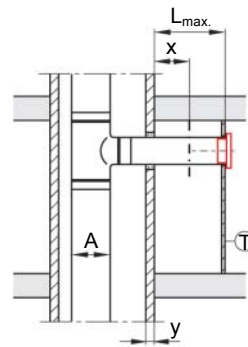
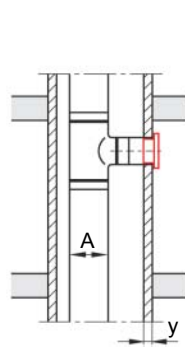
HS 1-1 S

Page 35 to 42

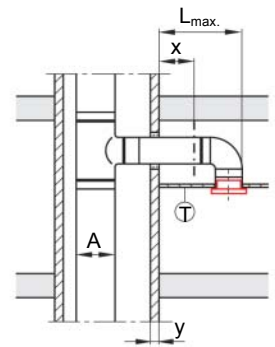
D.A.S.

Page 43 to 57

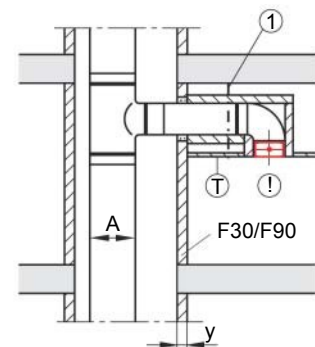
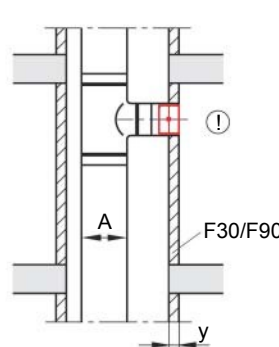
Installation into a service shaft without combustible building materials



Installation outside of a service shaft without combustible building materials



Installation inside and outside of classified service shafts (with combustible building materials, e.g. electric cables or plastic ducts)



# Damper

with a hermetically enclosed release mechanism

**WBV-K90-18017**

Test certificate Z-41.3-561

**WBZ-K90-18017**

Test certificate Z-41.3-572

Resistance class K90-18017

Installation examples inside and outside of shaft walls

## Dimensions

Ø D	100	125	160	200
-----	-----	-----	-----	-----

y = F30 or F90 shaft wall  
L30 or L90 duct  
F30 = minimum wall thickness 24 mm  
F90 = minimum wall thickness 40 mm  
or system-tested components\*

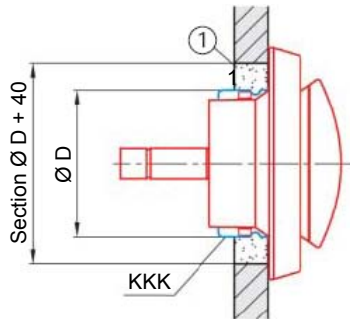
\*see system components:

HS 1-1 S  
D.A.S.

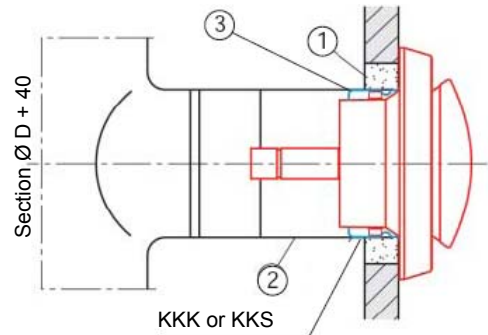
Page 35 to 42  
Page 43 to 57

- ① Gypsum or gap filler within shaft walls of fireproofing boards, mortar in accordance with DIN 1053 group II and III for shaft walls built with brick
  - ② Spirally wound ducting or flexible sheet steel duct
  - ③ The KKK or KKS mounting frame is riveted from the inside with steel rivets to the spirally wound duct.
- Ⓣ Partition or suspended ceiling that does not have a fire resistance time or not present

**Installation into a classified shaft wall and into a classified or system-tested duct**



**Installation into a classified shaft wall or service shaft with a connection to an air handling duct**

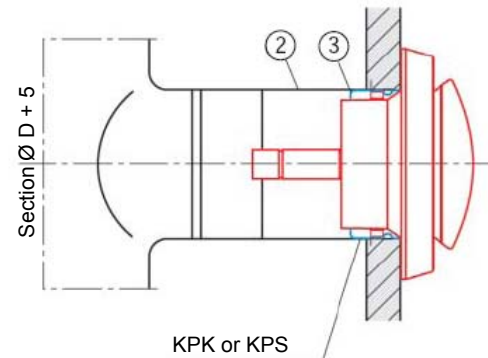
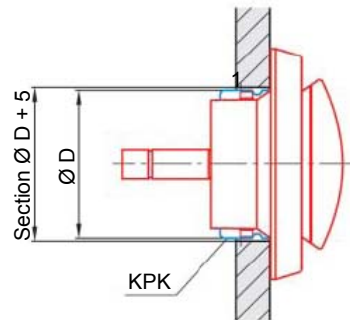


### Wet installation:

Installation of the WBV and WBZ with gypsum or gap filler in connection with the mounting frame  
Type: KKK or in lengthened design  
Type: KKS

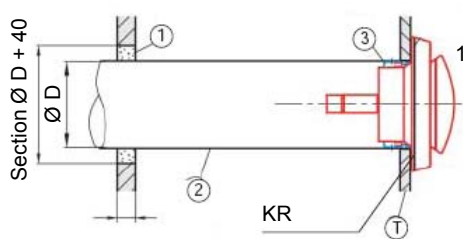
### Dry installation:

Installation of the WBV and WBZ without mortar in connection with the mounting frame  
Type: KPK or in lengthened plates  
Type: KPS with 2 fastening plates 20 x 60 x 1,5 mm and dowel, type HM, 5 x 65 S

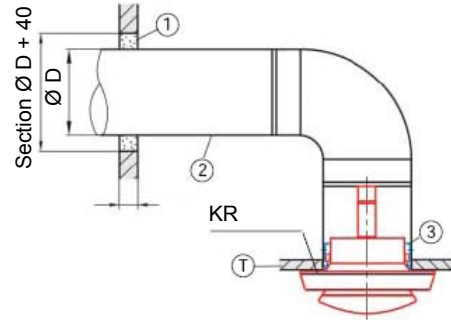


### Horizontal installation

### Installation outside of classified shaft walls



### Vertical installation



For mounting fire disk valves within unclassified wall or floor linings (e.g. gypsum boards, 12,5 mm) or freely on the duct with an additional KR clamp collar – please state this, when ordering.





# Damper

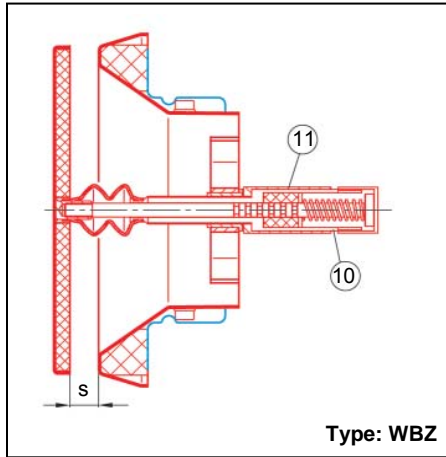
with a hermetically enclosed release mechanism

**WBZ-K90-18017**

Test certificate Z-41.3-572

Resistance class K90-18017

Design diagrams

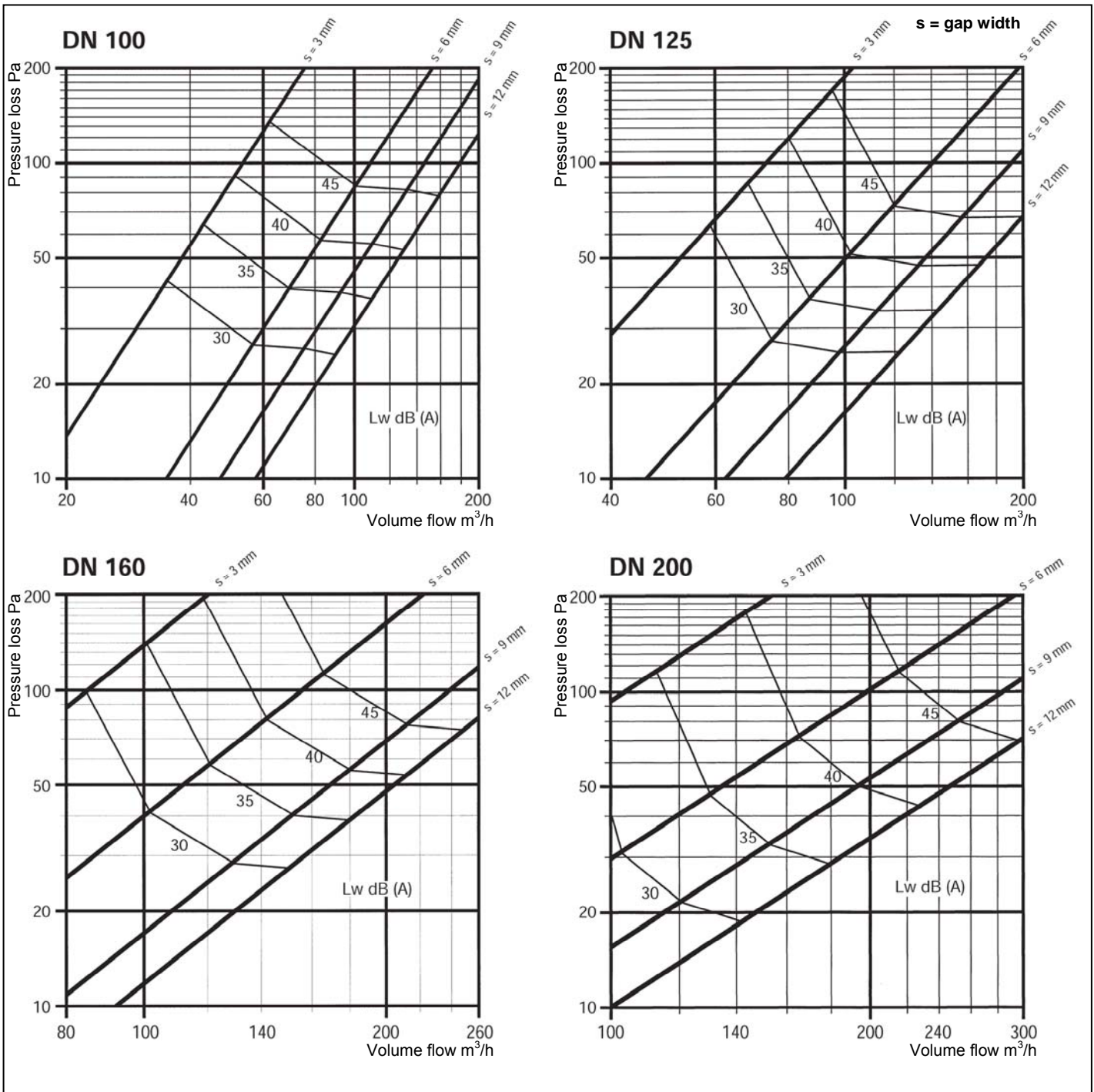


Type: WBZ

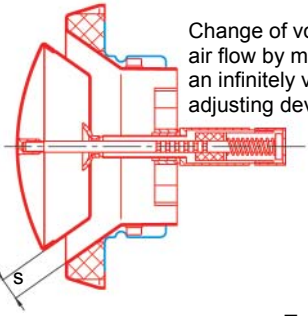
## Diagrams for supply air control and noise level

Change of the air volume flow rate by means of a infinitely variable adjusting device

Remove the aluminium adjusting sleeve (11) by left-hand rotation. Gap »s« is widened by right-hand rotation of the threaded sleeve (10), gap »s« is made smaller by left-hand rotation. After the adjustment, the threaded sleeve and aluminium adjusting sleeve are secured by right-hand rotation.



**Diagrams for  
exhaust air control  
and noise level**



Change of volumetric air flow by means of an infinitely variable adjusting device

Type: WBV

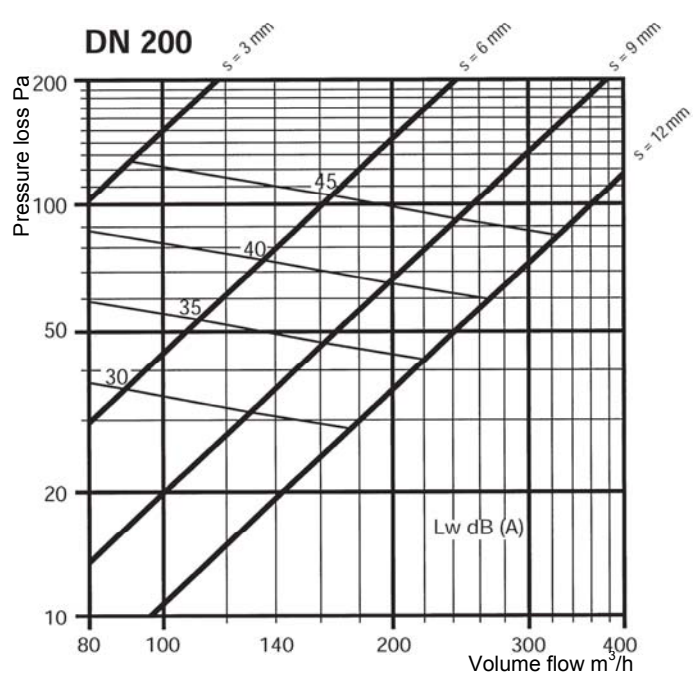
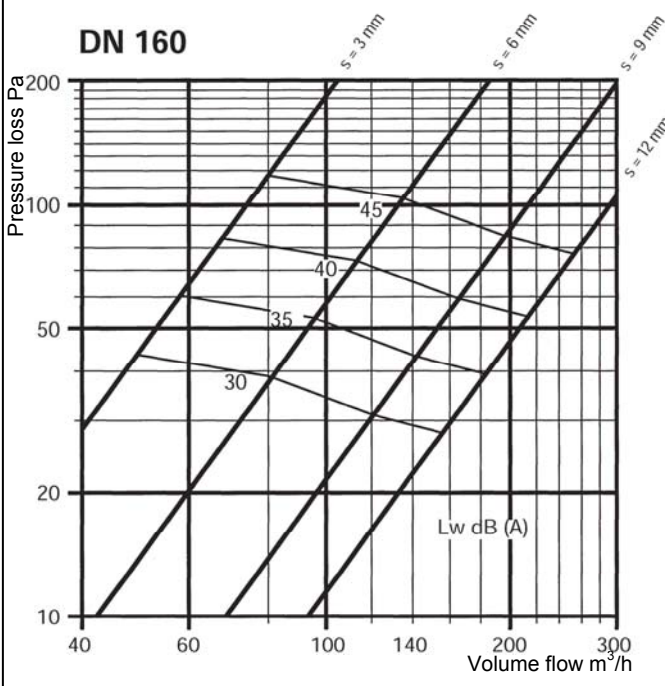
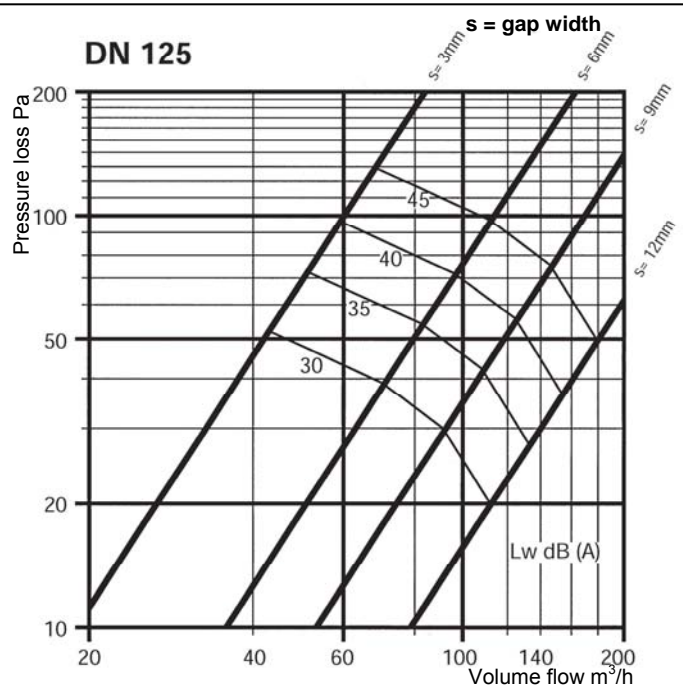
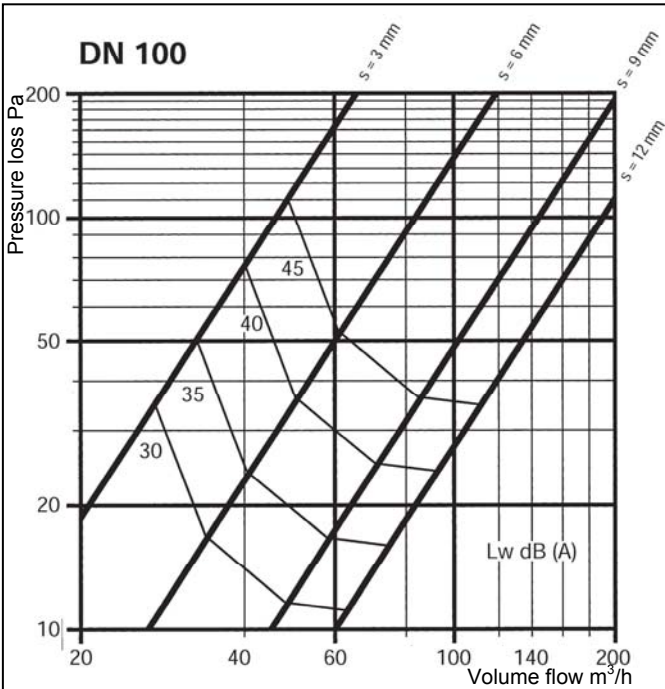
**Flow rate setting for the WBV 100 valve**

From the air-outlet conduit into the room

From the room into the air-outlet conduit

Arrange: I. inside the bend – II. T 100/100/100 – III. T 200/100/200

F [Hz]	Gap width [mm]	125	250	500	1000	2000	4000	F [Hz]	Gap width [mm]	125	250	500	1000	2000	4000
I	2,5	26	21	18	18	23	16	I	2,5	19	22	27	29	43	43
II	2,5	24	26	20	19	25	23	II	2,5	18	29	31	33	43	42
III	2,5	31	24	23	21	25	27	III	2,5	28	30	36	34	45	46
I	6	24	18	15	14	20	14	I	6	19	20	23	28	38	37
II	6	23	25	18	17	22	20	II	6	18	28	29	31	41	42
III	6	30	24	20	19	23	24	III	6	24	28	30	32	45	42
I	10	23	17	13	12	17	12	I	10	18	19	20	25	38	38
II	10	21	23	16	14	20	18	II	10	18	25	28	29	39	38
III	10	30	24	18	17	21	22	III	10	24	29	26	29	43	38





## Damper

with a hermetically enclosed release mechanism

**WBV-K90-18017**

Test certificate Z-41.3-561

**WBZ-K90-18017**

Test certificate Z-41.3-572

Resistance class K90-18017

Technical data of the mounting frame

## Installation

Strulik dampers are delivered as standard together with a mounting frame, which ensures an easy and time-saving mounting by means of a bayonet lock and allows a change of the supply or exhaust air volume at any time.

## Dimensions of the mounting frame

All dimensions in mm

Ø D	a	b ± 1	c ± 1	d ± 1
100	99	128	33	65
125	124	154	37	66
160	159	187	43	67
200	199	233	37	68

## Standard mounting frame

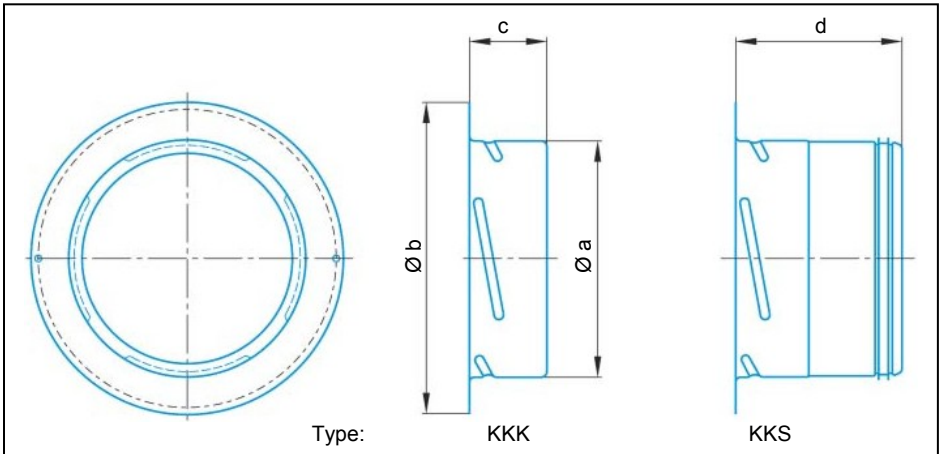
Type: KKK or KKS

For the installation with gypsum, gap filler or group II and III mortar in accordance with DIN 1053

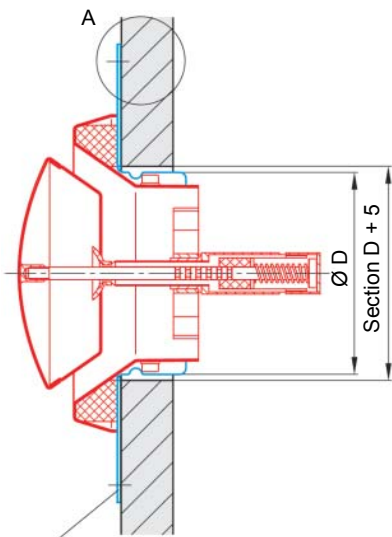
Type: KR.

Clamp collar for the installation into non-classified wall or ceiling linings or freely on the duct

Ø D	Ø d
100	150,5
125	179,3
160	212,45
200	254,5



## Installation example: KPK or KPS

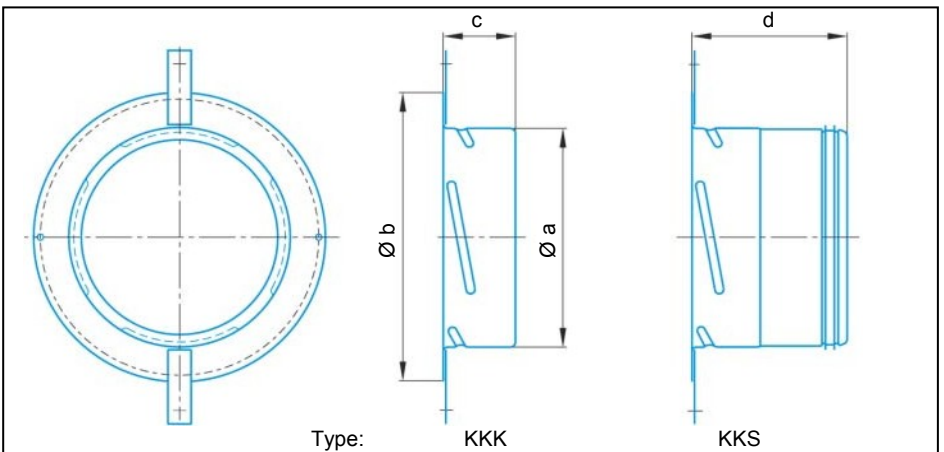
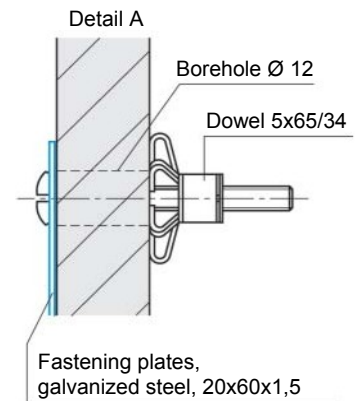


Per mounting frame two mounting plates that are staggered by 180°

## Mounting frame with two mounting plates that are staggered by 180°

Type: KPK or KPS

For mounting within shaft walls that have a minimum thickness of 24 – 34 mm without mortar (dry installation)





# Damper

with a hermetically enclosed release mechanism

**WBV-K90-18017**

Test certificate Z-41.3-561

**WBZ-K90-18017**

Test certificate Z-41.3-572

Resistance class K90-18017

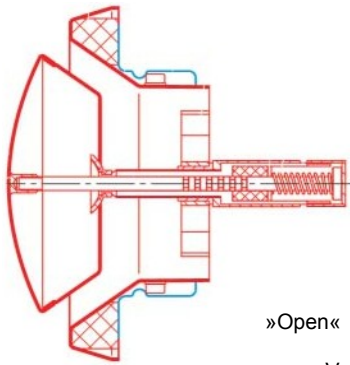
Technical data of the mounting frame

Valve housing and valve disc completely made of sheet steel, powder coated to RAL 9010 (pure white)

## Functioning

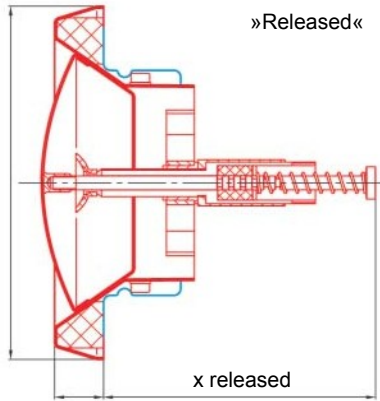
Strulik dampers for supply and exhaust air ventilation can be used in such cases, where the safety regulations require a K90-18017 resistance class for the installation into a wall. The air volume is infinitely variable. In the event of a fire or the like, the integral fusible link releases at 72 °C the tension path of the release spring and the valve closes abruptly, i.e. the valve disc butts hermetically against the inner surfaces of the valve body and thus guarantees fire protection and flame tightness for at least 90 min.

### WBV



»Open«

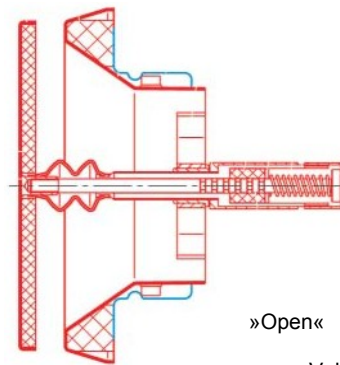
Valve position



»Released«

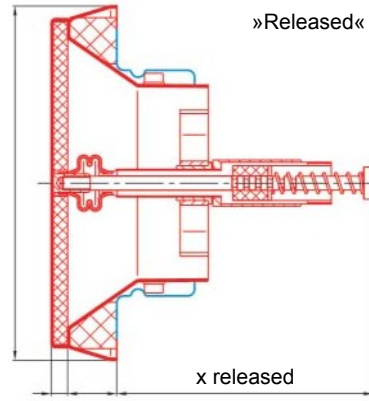
x released

### WBZ



»Open«

Valve position



»Released«

x released

### Dimensions in mm

Type \ NW	Ø D	y	x	e
100	153	22	120	8
125	182			
160	215			
200	257			

### Weight in kg

Type \ NW	WBV	WBZ	KKS
100	~ 0,50	~ 0,50	~ 0,14
125	~ 0,64	~ 0,62	~ 0,16
160	~ 0,84	~ 0,80	~ 0,22
200	~ 1,10	~ 1,00	~ 0,28

For installation guidelines, maintenance and repair, see our separate brochure



# Tender Text

Item	Description	Unit Piece	Unit price EUR	Total EUR
	<p><b>Fire disc valve with a hermetically enclosed release mechanism</b>, with test certificate <b>Z-41.3-561</b>, exhaust air, for ventilation systems in accordance with DIN 18017, with a fire resistance class of K90-18017. For the installation inside and outside of F30/F90 shaft partition walls, L90/L30 classified or system-tested shafts with or without mortar (wet or dry installation).</p> <p>Minimum thickness 24 mm for F30            Minimum thickness 40 mm for F90</p> <p>The housing consists of a steel cylinder, which is designed as a valve seat to hold the valve core, completely powder coated to RAL 9010 (pure white) and the hermetically enclosed release mechanism.</p> <p>The valve is easily screwed into the mounting frame of zinc-plated steel. The special sealing guarantees the exclusion of air and firm seat of the valve.</p> <p><b>Technical data</b></p> <p>Diameter:            100 mm                                      125 mm                                      160 mm                                      200 mm</p> <p>Temperature of activation:    72 °C</p> <p>Air volume:                        m<sup>3</sup>/h</p> <p>Noise level:                        dB[A]</p> <p>Manufacturer:    <b>Strulik</b></p> <p>Type:                    <b>WBV-K90-18017</b></p> <p>Together with the mounting frame            Type: <b>KKK</b></p> <p><b>Accessories (special mounting frames):</b></p> <p>Type: <b>KKS</b>            (the same as KKK, however lengthened and with a lip sealing)            Type: <b>KPK</b>            (short, mounting without mortar)            Type: <b>KPS</b>            (the same as above, however lengthened and with a lip sealing)            Type: <b>KR</b>              (clamp collar for the installation outside of shaft walls)</p>			

# Tender Text

Item	Description	Unit Piece	Unit price EUR	Total EUR
	<p><b>Fire disc valve with a hermetically enclosed release mechanism</b>, with test certificate <b>Z-41.3-572</b>, supply air, for ventilation systems in accordance with DIN 18017, with a fire resistance class of K90-18017. For the installation inside and outside of F30/F90 shaft partition walls, L90/L30 classified or system-tested shafts with or without mortar (wet or dry installation).</p> <p>Minimum thickness 24 mm for F30 Minimum thickness 40 mm for F90</p> <p>The housing consists of a steel cylinder, which is designed as a valve seat to hold the valve core, completely powder coated to RAL 9010 (pure white) and the hermetically enclosed release mechanism.</p> <p>The valve is easily screwed into the mounting frame of zinc-plated steel. The special sealing guarantees the exclusion of air and firm seat of the valve.</p> <p><b>Technical data</b></p> <p>Diameter:            100 mm                           125 mm                           160 mm                           200 mm</p> <p>Temperature of activation:    72 °C</p> <p>Air volume:                    m<sup>3</sup>/h</p> <p>Noise level:                    dB[A]</p> <p>Manufacturer: <b>Strulik</b></p> <p>Type:                    <b>WBZ-K90-18017</b></p> <p>Together with the mounting frame Type: <b>KKK</b></p> <p><b>Accessories (special mounting frames):</b></p> <p>Type: <b>KKS</b>            (the same as KKK, however lengthened and with a lip sealing)</p> <p>Type: <b>KPK</b>            (short, mounting without mortar)</p> <p>Type: <b>KPS</b>            (the same as above, however lengthened and with a lip sealing)</p> <p>Type: <b>KR</b>             (clamp collar for the installation outside of shaft walls)</p>			





## Damper

**BSE-K90-18017**  
**Test certificate Z-41.3-332**

**Resistance class K90-18017**

### Ordering example:

**BSE-W-K90-18017/100/MS-E**

#### Accessories (optional)

- MS-E** - electrical limit switch
- RT** - tee for cleaning
- SNP-S** - male sleeve connection
- NP** - male-male connector

**NW** 100, 125, 160 and 200 (NW 80 only for the insertion into WFR)

**W** = installation into walls, optionally with a mounting frame type:

- ER**
  - ER-I**
  - ER-T**
  - WS**
  - WP**
  - WP-Z**
- steel mounting frame for the embedding with mortar (wet mounting)
- steel mounting frame with a fastening plate and dowels, without the embedding with mortar (dry mounting)
- steel mounting frame with a square fastening plate, without the embedding with mortar (dry mounting)
- as above, however for the installation of classified or system-tested shafts, optionally with a connecting collar, type ÜG
- without a mounting frame for the insertion into spirally wound ducting

**D** = Floor installation along with ceiling sleeve

### Essential advantages

- The STRULIK BSE dampers ideally fulfill the functioning of a K90-18017 resistance class damper.
- The dampers can be mounted into walls and floors..
- No special fixing arrangements are required (duct insertion), i.e. saving of time and high economy.
- The dampers are allowed to be used in ventilation systems in accordance with DIN 18017-3 for supply and exhaust air inside and outside of F90/F30 shaft partition walls, L90/L30 classified of system-tested shafts with or without mortar (wet and dry installation).
- The dampers are allowed to be used in domestic kitchens.
- Ventilation hoods (hoods without an own fan), which are part of a central ventilation system in accordance with DIN 18017-3, are allowed to be connected to these dampers.

### Essential features

#### 1/ Safety classification.

- Official classification:  
Resistance class K90-18017
- 72 °C release temperature
- Maximum sealing between the body and the blades

#### 2/ Low noise level

- Insignificant reduction of cross-sectional area
- The damper can be combined with a disk valve without disturbing the through-flow of air (ideal relation between the air volume and noise level).

#### 3/ Sizes available

- NW 80 (only for the insertion into spirally wound ducting)
- NW 100
- NW 125
- NW 160
- NW 200



**Please note:** The installation examples and the dimensions are the same as for WBE-K90-18017 – see page 6 to 10.

### DEUTSCHES INSTITUT FÜR BAUTECHNIK

Anstalt des öffentlichen Rechts

10229 Berlin, 24. Januar 1997  
 Kolonnenstraße 30  
 Telefon: (0 30) 7 87 30 - 344  
 Telefax: (0 30) 7 87 30 - 320  
 GeschZ: 11 15-1.41.3-68/95

#### Allgemeine bauaufsichtliche Zulassung

Zulassungsnummer:

Antragsteller: Strulik GmbH  
 Neesbäcker Straße 13  
 65597 Hürten-Dauborn

Zulassungsgegenstand: Abgabemrichtungen gegen Brandübertragung in Lüftungsleitungen entsprechend DIN 18 017-3 Typ BSE K 90-18017

Geltungsdauer bis: 31. Januar 2002

Der obgenannte Zulassungsgegenstand wird hiermit allgemein bauaufsichtlich zugelassen.  
 Diese allgemeine bauaufsichtliche Zulassung umfasst sieben Seiten und 15 Anlagen.

### Safety

The Strulik BSE 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 K90-18017 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

BSE-K90-18017

Test certificate Z-41.3-332

Resistance class K90-18017

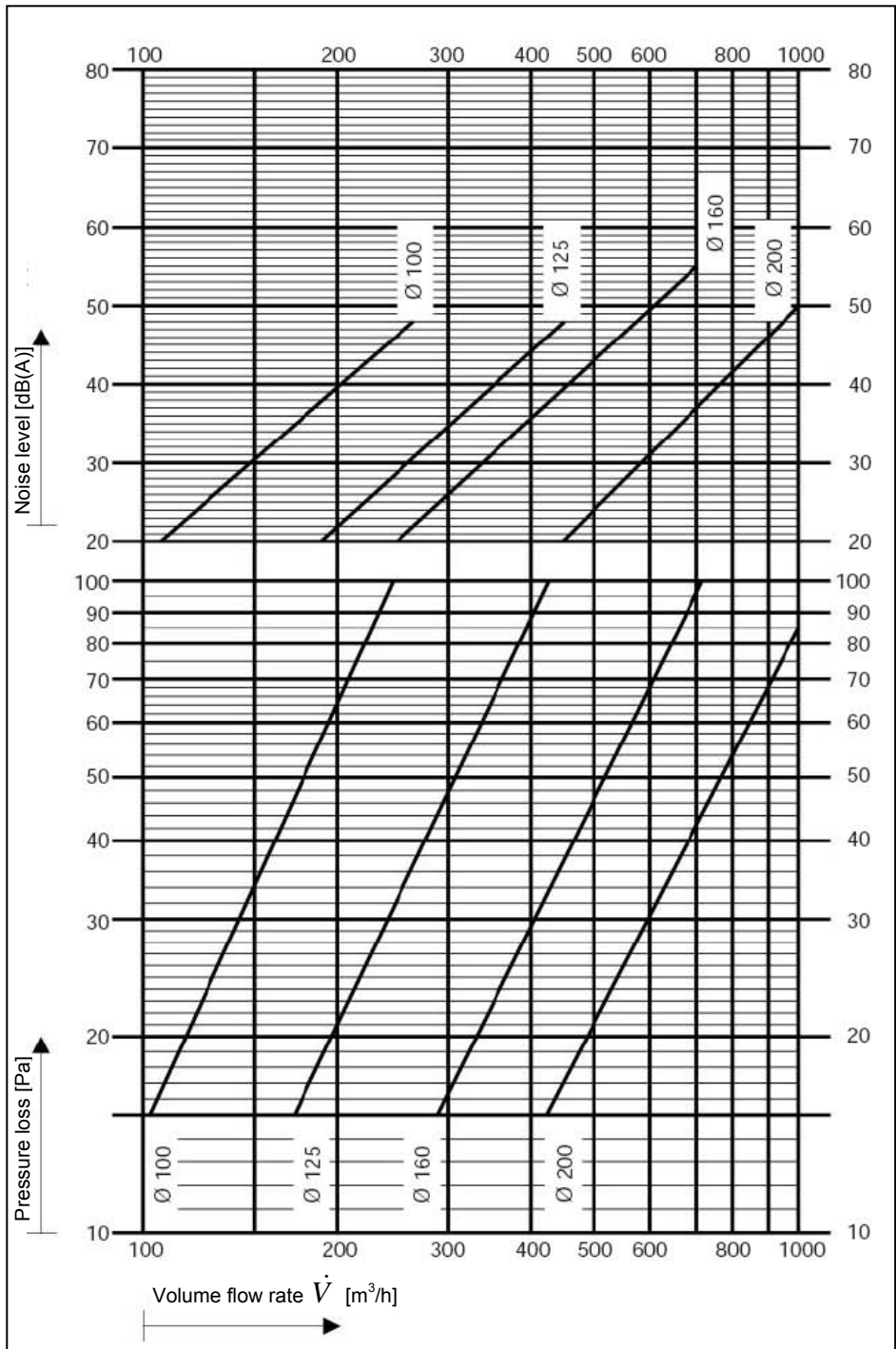
Design diagrams

## Pressure loss and noise level

### Note

For aerodynamic reasons the airflow velocity shall not exceed  $\leq 8$  m/s.

The BSE-W and BSE-D dampers can be used for all directions of airflow.





## Damper

**BSE-K90-18017**

**Test certificate Z-41.3-332**

**Resistance class K90-18017**

**Technical data, maintenance**

### Technical data

Length of the damper

NW 80  $\triangleq$  L= 57 mm

NW 100, 125, 160 and 200  $\triangleq$  L= 72,5 mm

Largest outside diameter of the frame  
(only for BSE-D)

NW 100 = 131 + 3 mm

NW 125 = 156 + 3 mm

NW 160 = 191 + 3 mm

NW 200 = 232 + 3 mm

### Weight in kg

NW	Type	BSE-W only the element	BSE-D complete
80		~ 0,14	–
100		~ 0,24	~ 2,5
125		~ 0,3	~ 3
160		~ 0,48	~ 3,7
200		~ 0,62	~ 5

### Functioning

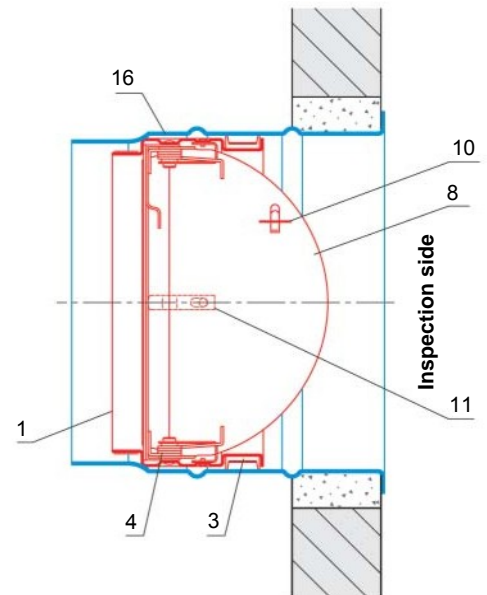
Strulik dampers for supply and exhaust air ventilation can be used in such cases, where the safety regulations require a K90-18017 resistance class for the installation into a wall or floor. In the event of a fire or the like, the integral fusible link releases at 72 °C the tension path of the release spring and the damper blades close abruptly.

After actuation, the damper is put into operation again by simply tensioning the release spring again and inserting a new fusible link.

### BSE-W (drawing with the ER mounting frame)

Technical details

- 1 Housing
- 3 Profile washer
- 4 Locking spring
- 8 Damper blade
- 10 Fusible link
- 11 Locking plate
- 13 Retaining spring
- 15 BSE-D mounting frame
- 16 BSE-W mounting frame
- 18 Retaining clip (only BSE-D or if in the design with an electrical limit switch)
- 21 Wall clamp (only BSE-D)



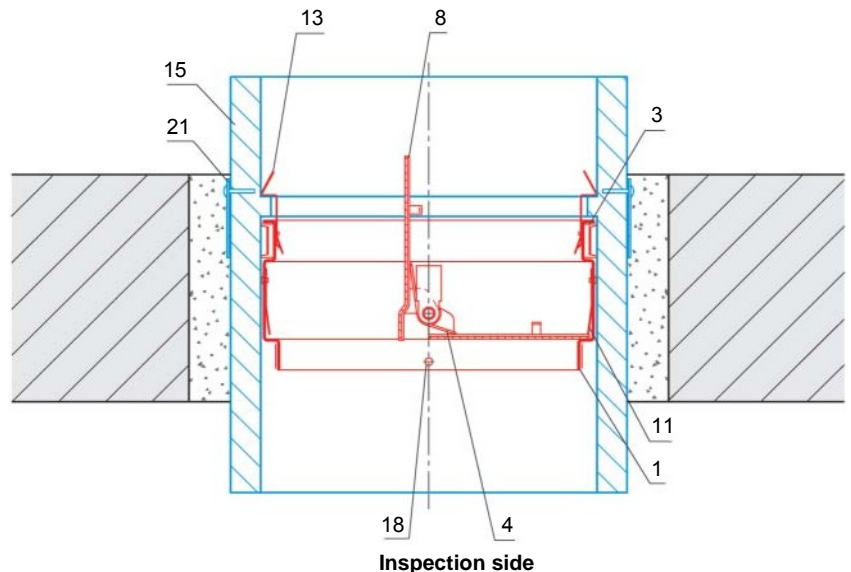
### Maintenance of the damper

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.

### BSE-D



See also our separate operating instructions!

### Testing

Testing of the integrity of the dampers.

After removing the connecting duct, check if the fusible link is in a faultless condition. Take the damper out of the mounting frame (15 or 16), remove the fusible link (10), close the damper a few times; **before opening it again, the locking plates (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 (15 or 16). Assemble the connection piece.

#### Clearing of faults

If faults have been located, then these have to be cleared immediately. Only original parts shall be used for exchange.

# Tender Text

Item	Description	Unit Piece	Unit price EUR	Total EUR
	<p><b>Installation into walls</b></p> <p><b>Damper</b> with test certificate <b>Z-41.3-332</b> for ventilation systems in accordance with DIN 18017, with a K90-18017-3 fire resistance class.                      Installation inside and outside of F90/F30 shaft partition walls, L90/L30 classified or system-tested shafts with or without a mortar embedding (wet or dry installation).                      Minimum thickness 24 mm for F30                      Minimum thickness 40 mm for F90                      The housing consists of a steel cylinder, with two eccentrically arranged butterfly blades of sheet steel.                      For the installation into a wall, the damper is simply inserted into the spirally wound ducting.</p> <p><b>Technical data</b></p> <p>Diameters:                    80 mm (only for the insertion into standard spirally wound ducting)                                                            100 mm                                                            125 mm                                                            160 mm                                                            200 mm</p> <p>Total length including mounting frame:    120 mm</p> <p>Release temperature:    72 °C</p> <p>Air volume:                    m<sup>3</sup>/h</p> <p>Noise level L<sub>WA</sub>:            dB[A]</p> <p>Manufacturer: <b>Strulik</b></p> <p>Type: <b>BSE-W-K90-18017 + ER</b>                      including mounting frame</p> <p><b>Accessories</b></p> <p>Electrical limit switch    Type: <b>MS-E</b>                      Male sleeve connection    Type: <b>SNP-S</b>                      Male-male connection    Type: <b>NP</b></p> <p><b>Special mounting frames</b></p> <p>Type: <b>WP</b>            including fastening plate, without mortar embedding                      Type: <b>WS</b>            including fastening clip and steel dowels, without mortar embedding                      Type: <b>ER-I</b>          for the direct connection with a bend or sound-absorbing bend                      Type: <b>ER-T</b>          as above, however in telescopic design</p>			

# Tender Text

Item	Description	Unit Piece	Unit price EUR	Total EUR
	<p><b>Installation into floors</b></p> <p><b>Damper</b> with test certificate <b>Z-41.3-332</b> for ventilation systems in accordance with DIN 18017, with a K90-18017-3 fire resistance class.                      Installation into concrete floors, minimum thickness 100 mm.                      The housing consists of a steel cylinder with two eccentrically arranged butterfly blades of sheet steel.                      For the installation into a floor, a special mounting frame is used that has a bar, which takes up the two mounting springs that are staggered by 180°.</p> <p><b>Technical data</b></p> <p>Diameters:                    100 mm                                                            125 mm                                                            160 mm                                                            200 mm</p> <p>Total length including mounting frame:    210 mm</p> <p>Release temperature:    72 °C</p> <p>Air volume:                    m<sup>3</sup>/h</p> <p>Noise level L<sub>wA</sub>:                dB[A]</p> <p>Manufacturer: <b>Strulik</b></p> <p>Type: <b>BSE-D-K90-18017</b>                      including mounting frame</p> <p><b>Accessories</b></p> <p>Electrical limit switch            Type: <b>MS-E</b>                      Inspection tee                        Type: <b>RT</b>                      Male sleeve connection            Type: <b>SNP-S</b>                      Male-male connection                Type: <b>NP</b></p>			



## Damper

**BSV-K90-18017**

**Test certificate Z-41.3-606**

**BZV-K90-18017**

**Test certificate Z-41.3-343**

**Resistance class K90-18017**

### Ordering example:

**BSV-K90-18017/KKK/100**

NW 100, 125, 160 or 200

#### Mounting frames

**KKK** - Installation within shaft walls, duct installation

**KKS** - As above, however lengthened

**KR** - Clamp collar for the installation outside of shaft walls, duct installation

#### Special mounting frames with mounting material (without plastering)

**KPK** - Installation within shaft walls, duct installation

**KPS** - As above, however lengthened

**BSV** - Exhaust air

**BZV** - Supply air

### Essential advantages

- The Strulik BSV or BZV dampers ideally combine the function of an infinitely variable supply or exhaust air valve with the fully effective property of a damper that has the resistance class K90-18017. The dampers can be built into single-layered or multi-layered air shafts of mineral materials that have a minimum wall thickness of 24 mm.
- The dampers can be mounted inside or outside of walls. Outside of walls, the fitting position can be vertical or horizontal.
- No special fixing arrangements are required, i.e. saving of time and high economy.
- The Strulik dampers can subsequently be easily mounted into ventilation systems in accordance with DIN 18017 in order to meet the effective fire safety requirements.
- The dampers are allowed to be used in domestic kitchens.

### Essential features

#### 1/ Safety classification.

- Official classification: Resistance class K90-18017
- Maximum sealing between the body and the calotte

#### 2/ Low noise level

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

#### 3/ Adjustment of air volume

- Infinitely variable control of air volume

#### 4/ Sizes available

- NW 100/125/160 and 200

### Exhaust air

#### Type: BSV



#### Supply air Type: BZV



### Safety

The Strulik BSV 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 K90-18017 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

10829 Berlin, 14. Juli 1999  
Köpenickerstraße 30,  
Telefon: (0 30) 7 87 30 - 272  
Telefax: (0 30) 7 87 30 - 320  
GeschZ: (0 30) 7 87 30 - 329

#### Allgemeine bauaufsichtliche Zulassung

Zulassungsnummer: Z-41.3-606

Antragsteller: Strulik GmbH  
Neesbacher Straße 13  
65597 Hürfelden-Dauborn

Zulassungsgegenstand: Absperrvorrichtungen gegen Brandübertragung in Lüftungsleitungen entsprechend DIN 18 017, Typ BSV

Geltungsdauer bis: 2. Juli 2004

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



#### DEUTSCHES INSTITUT FÜR BAUTECHNIK

Anstalt des öffentlichen Rechts

10829 Berlin, 22. Oktober 1996  
Köpenickerstraße 30  
Telefon: (0 30) 7 87 30 - 344  
Telefax: (0 30) 7 87 30 - 320  
GeschZ: (0 30) 7 87 30 - 329

#### Allgemeine bauaufsichtliche Zulassung

Zulassungsnummer: Z-41.3-343

Antragsteller: Strulik GmbH  
Neesbacher Straße 13  
65597 Hürfelden-Dauborn

Zulassungsgegenstand: Absperrvorrichtungen gegen Brandübertragung in Lüftungsleitungen entsprechend DIN 18 017-3 Typ BZV, N 90 - 18 017

Geltungsdauer bis: 22. August 2000

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





## Damper

**BSV-K90-18017**  
**Test certificate Z-41.3-606**

**BZV-K90-18017**  
**Test certificate Z-41.3-343**

**Resistance class K90-18017**

### Spare parts list

- 1 Valve housing
- 2 Sealing ring
- 3 Valve core (BSV)
- 4 Valve disc (BZV)
- 5 Internal thread bush
- 6 Fusible link
- 7 Retaining clip
- 8 Guide pin
- 9 Retaining ring
- 10 Pressure ring
- 11 Threaded sleeve with solder holder and nut
- 12 Guide fork
- 13 Wall frame
- 14 Locking plate
- 15 Valve sealing (only BZV)

### Functioning

Strulik dampers for supply and exhaust air ventilation can be used in such cases, where the safety regulations require a K90-18017 resistance class for the installation into a wall. In the event of a fire or the like, the integral fusible link releases the tension path of the release spring at 72 °C and the valve closes abruptly, i.e. the valve disc butts hermetically against the inner surfaces of the valve body and guarantees fire protection and flame tightness for at least 90 min (see also page 30 of the official certificate). After actuation, the damper is put into operation again by simply tensioning the release spring again and inserting a new fusible link.

### Functional test and repair 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.

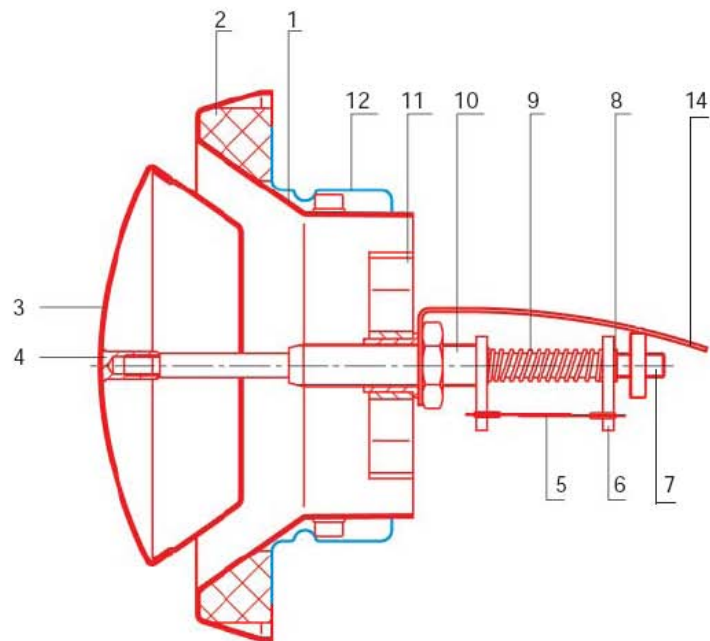
#### 1 Inspection procedures

- 1.1 The damper shall be observed for integrity.
- 1.2 The damper shall be taken out of the mounting frame by counterclockwise rotation (bayonet lock).
- 1.3 The fusible link (5) shall be removed, the valve disc shall be pressed a few times, **in doing so, the locking plate (14) shall be released**, the spindle (7) shall be free-moving.
- 1.4 The fusible link shall be observed for faults. If no faults are apparent, then the fusible link shall be inserted again. If the fusible link is damaged, then a new fusible link shall be inserted.
- 1.5 Observe the mounting frame (12) and duct connection for free opening and clean them in case of necessity.
- 1.6 The sealing ring (2) shall be observed for faults.
- 1.7 The damper shall be inserted again and attention shall be paid to the protection against torsion.

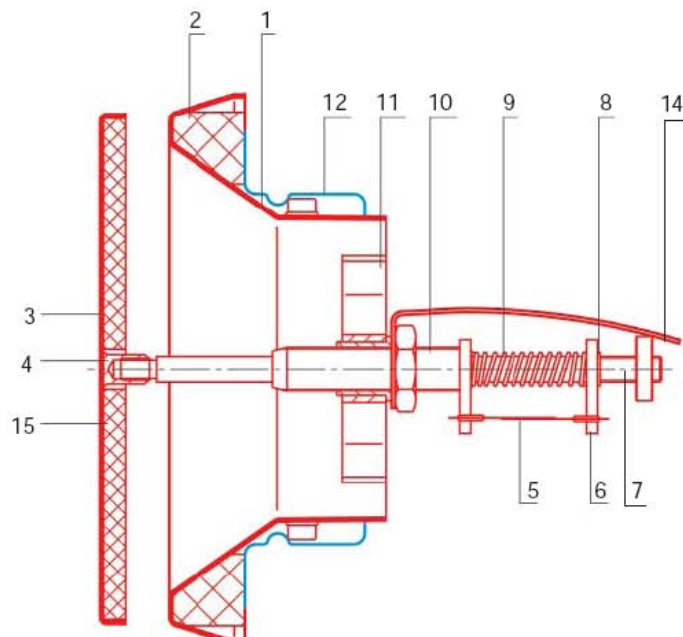
#### Clearing of faults

If faults have been located during the functional test, then these have to be cleared immediately. Only original parts shall be used for exchange. Only non-resinous and non-acid oils shall be used for the moving parts.

### BSV



### BZV



**Installation, maintenance and repair – see our separate operating instructions!**



# Damper

**BSV-K90-18017**  
**Test certificate Z-41.3-606**

**BZV-K90-18017**  
**Test certificate Z-41.3-343**

**Resistance class K90-18017**

**Dimensions, weight**

Valve housing and valve disc completely made of sheet steel, powder-coated to RAL 9010 (clear white)

## Weight in kg

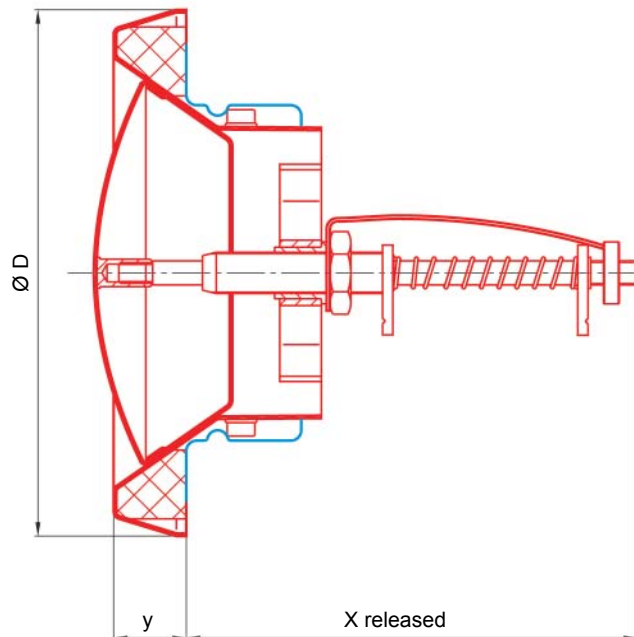
Type NW	BSV	BZV	KKS
100	~ 0,52	~ 0,50	~ 0,14
125	~ 0,66	~ 0,60	~ 0,16
160	~ 0,84	~ 0,78	~ 0,22
200	~ 1,12	~ 0,96	~ 0,28

## Dimensions in mm

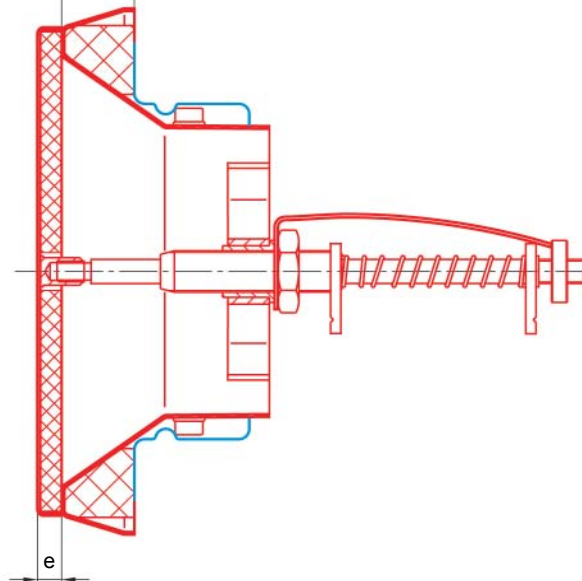
Type NW	Ø D	y	e	x released
100	153	22	8	130
125	182			
160	215			
200	257			

## BSV

Valve position  
 »released«



## BZV



## Tender Text

Item	Description	Unit Piece	Unit price EUR	Total EUR
	<p><b>Fire disc valve</b> with test certificate <b>Z-41.3-606</b>, exhaust air, for ventilation systems in accordance with DIN 18017, with a fire resistance class of K90-18017. For the installation inside and outside of F30/F90 shaft partition walls, L90/L30 classified or system-tested shafts with or without mortar (wet or dry installation).            Minimum thickness 24 mm for F30            Minimum thickness 40 mm for F90            The housing consists of a steel cylinder, which is designed as a valve seat to hold the valve core, completely powder coated to RAL 9010 (clear white).            The valve is easily screwed into the mounting frame of zinc-plated steel. The special sealing guarantees the exclusion of air and firm seat of the valve.</p> <p><b>Technical data</b></p> <p>Diameter:            100 mm                                      125 mm                                      160 mm                                      200 mm</p> <p>Temperature of activation:    72 °C</p> <p>Air volume:                        m<sup>3</sup>/h</p> <p>Noise level:                        dB[A]</p> <p>Manufacturer: <b>Strulik</b></p> <p>Type:                    <b>BSV-K90-18017</b></p> <p>Together with the mounting frame            Type: <b>KKK</b></p> <p><b>Accessories (special mounting frames):</b></p> <p>Type: <b>KKS</b>            (the same as KKK, however lengthened and with a lip sealing)            Type: <b>KPK</b>            (short, mounting without mortar)            Type: <b>KPS</b>            (the same as above, however lengthened and with a lip sealing)            Type: <b>KR</b>              (clamp collar for the installation outside of shaft walls)</p>			

# Tender Text

Item	Description	Unit Piece	Unit price EUR	Total EUR
	<p><b>Fire disc valve</b> with test certificate <b>Z-41.3-572</b>, supply air, for ventilation systems in accordance with DIN 18017, with a fire resistance class of K90-18017. For the installation inside and outside of F30/F90 shaft partition walls, L90/L30 classified or system-tested shafts with or without mortar (wet or dry installation).</p> <p>Minimum thickness 24 mm for F30            Minimum thickness 40 mm for F90</p> <p>The housing consists of a steel cylinder, which is designed as a valve seat to hold the valve core, completely powder coated to RAL 9010 (pure white) and the hermetically enclosed release mechanism.</p> <p>The valve is easily screwed into the mounting frame of zinc-plated steel. The special sealing guarantees the exclusion of air and firm seat of the valve.</p> <p><b>Technical data</b></p> <p>Diameter:            100 mm                                     125 mm                                     160 mm                                     200 mm</p> <p>Temperature of activation:    72 °C</p> <p>Air volume:                    m<sup>3</sup>/h</p> <p>Noise level:                    dB[A]</p> <p>Manufacturer: <b>Strulik</b></p> <p>Type:                    <b>BZV-K90-18017</b></p> <p>Together with the mounting frame            Type: <b>KKK</b></p> <p><b>Accessories (special mounting frames):</b></p> <p>Type: <b>KKS</b>            (the same as KKK, however lengthened and with a lip sealing)            Type: <b>KPK</b>            (short, mounting without mortar)            Type: <b>KPS</b>            (the same as above, however lengthened and with a lip sealing)            Type: <b>KR</b>              (clamp collar for the installation outside of shaft walls)</p>			



## Fire protection exhaust ventilation system HS 1-1 S 25

Test certificate Z-41.6-626

Resistance class K90-18017 S

For ordering examples and  
tender texts, please see our CD  
»Planning and mounting  
instructions«

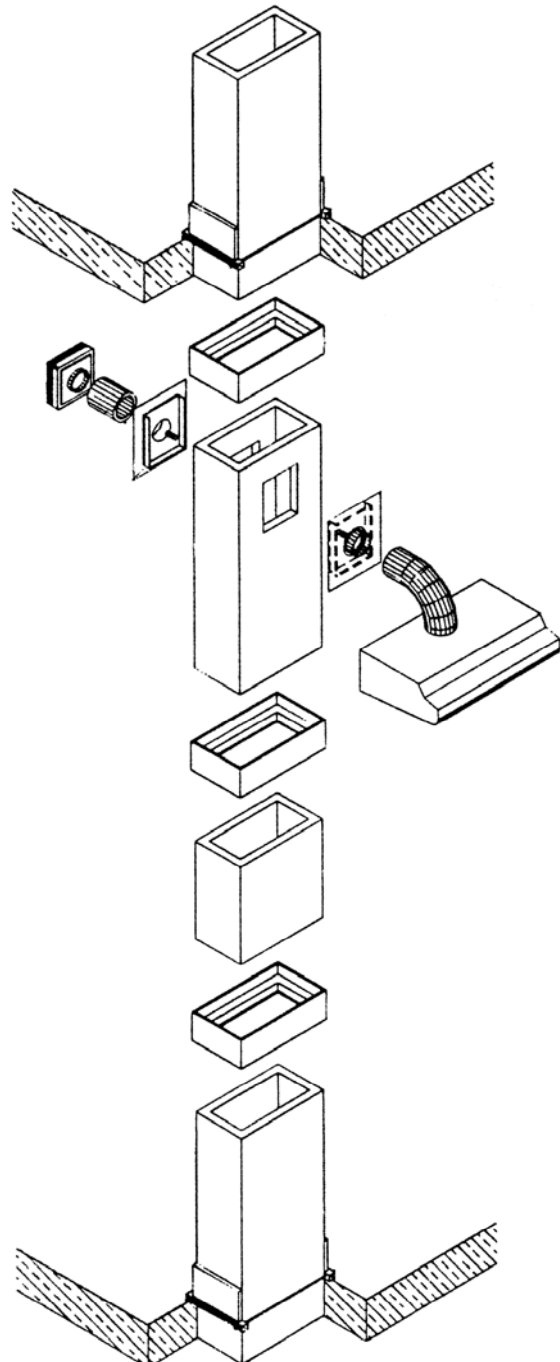
### Acoustics

The HS 1-1 S 25 fire protection exhaust ventilation system fulfills in connection with the MF damper the requirements on noise protection for building constructions in accordance with DIN 4109 of  $R_w$  for the supplement floor = 54 dB.

The Strulik HS 1-1 S 25 fire protection ventilation system is the combination of the air duct made of calcium-silicate boards and the MF 100/125 damper. This system is allowed to be used for residential ventilation in accordance with DIN 18017 up to a cross section of 1000 cm<sup>2</sup>. In this case, the height between floors shall not exceed 4,5 m. An additional covering is not required for reasons of fire safety engineering.

The ducts can be brought together within the area of the roof, if classified ducts are used (depending on the requirement, L30 or L90). If a fireproofing and sound-absorbing is used, then conventional sheet-metal ducts can be used to bring them together.

The openings for the dampers are cut on site. Several dampers can be installed on each floor, if the associated rooms belong to the same apartment.



DEUTSCHES INSTITUT FÜR BAUTECHNIK  
Anstalt des öffentlichen Rechts

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Kilometerstraße 30 L  
Telefon: (0 30) 7 87 30 - 272  
Telefax: (0 30) 7 87 30 - 320  
GewoZ.: 10 124-414-0-20/00

#### Allgemeine bauaufsichtliche Zulassung

Zulassungsnummer: Z-41.6-626

Antragsteller: Strulik GmbH  
Neesbacher Straße 13  
65597 Hönfelden-Dauborn

Zulassungsgegenstand: Brandschutzsystem für Lüftungsanlagen entsprechend  
DIN 18 017 mit der Bezeichnung HS1-1S25-K90-18017S

Geltungsdauer bis: 15. Oktober 2005

Der oben genannte Zulassungsgegenstand wird hiermit allgemein bauaufsichtlich zugelassen.  
Diese allgemeine bauaufsichtliche Zulassung umfasst sechs Seiten und vier Anlagen.





## Fire protection exhaust ventilation system HS 1-1 S 25

Test certificate Z-41.6-626

Resistance class K90-18017 S

### System overview

### Usage of other dampers

Instead of the MF damper (NW 100 or 125, test certificate Z-41.3-301, described under pos. 6 and 9), the following Strulik dampers and disk valves with the classification K90-18017 can be used:

BSE-K90-18017/Z-41.3-332  
See page 25 to 29

BSV-K90-18017/Z-41.3-606  
See page 30 to 34

BZV-K90-18017/Z-41.3-343  
See page 30 to 34

With a hermetically enclosed release mechanism

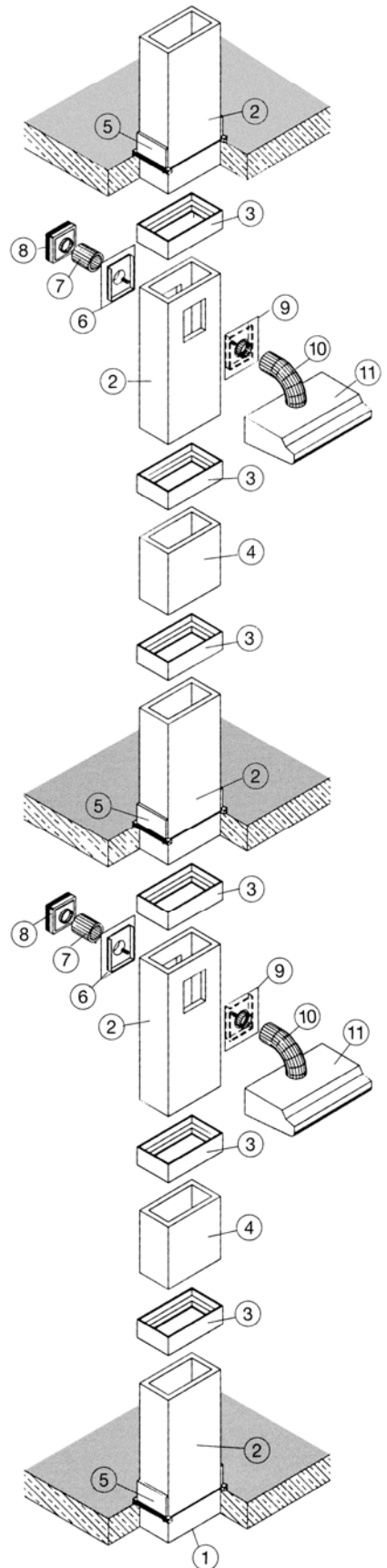
WBE-K90-18017/Z-41.3-619  
See page 5 to 15

WBV-K90-18017/Z-41.3-561  
See page 16 to 24

WBZ-K90-18017/Z-41.3-572  
See page 16 to 24

The positions (7), (8), (10) and (11) are connecting examples from our brochure »Airoset«

- (1) **Terminal as an inspection cover**  
1.1 Either a calcium silicate lid or  
1.2 a K90-18017 damper in closed  
(released) position
- (2) **WAKOFIX 1-1 shaft section**  
Please note that the shaft system  
shown here is designed for a height  
between floors of 2,8 m
- (3) **WAKOFIX double sleeve or  
male-male shaft connector**
- (4) **WAKOFIX 1-1 shaft section,  
adjusting piece**
- (5) **Load transfer**  
Consisting of strips of fireproofing  
boards, (perforated mounting profile,  
threaded rods, washers and nuts – by  
the installer)
- (6) **MF 100 damper**  
Test certificate Z-41.3-301, with a  
hermetically enclosed release  
mechanism
- (7) **ALUFLEX duct, NW 100**
- (8) **WFA-QL exhaust air automaton**
- (9) **MF 125 damper**  
Test certificate Z-41.3-301, with a  
hermetically enclosed release  
mechanism
- (10) **ALUFLEX duct, NW 125**
- (11) **DFA-L cooker hood**  
(without fan)







**Fire protection  
exhaust ventilation system  
HS 1-1 S 25**

Test certificate Z-41.6-626

Resistance class K90-18017 S

Shaft installation

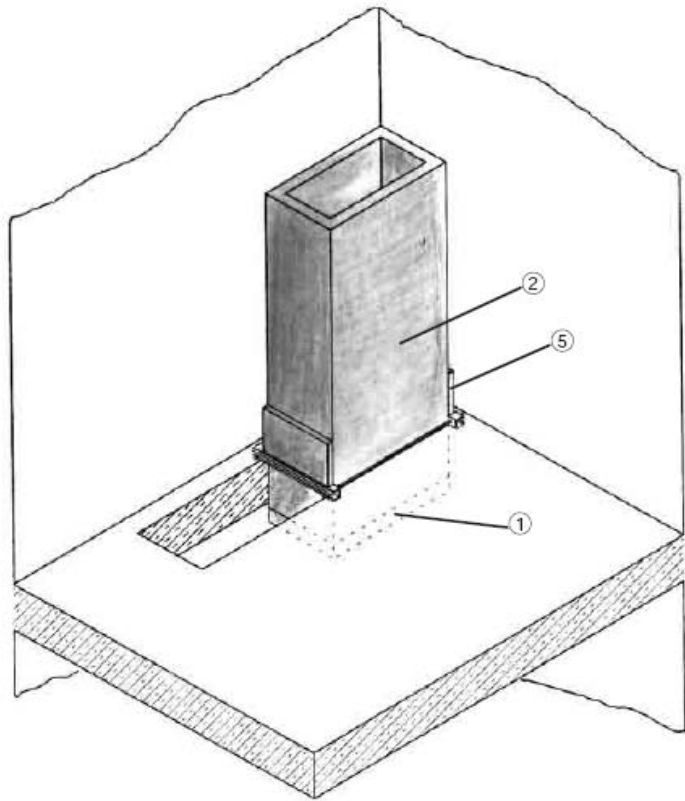
**First section with a facility for inspection**

The placing of the first shaft section is decisive for the total shaft installation. Already in this stage the distance to the wall shall be considered. Also the position of the inspection terminal (1) shall be considered and it shall be removable after the opening has been closed (with mortar). The first section (without the terminal) shall not be within the range of the opening, but shall be flush with the bottom edge of the floor.

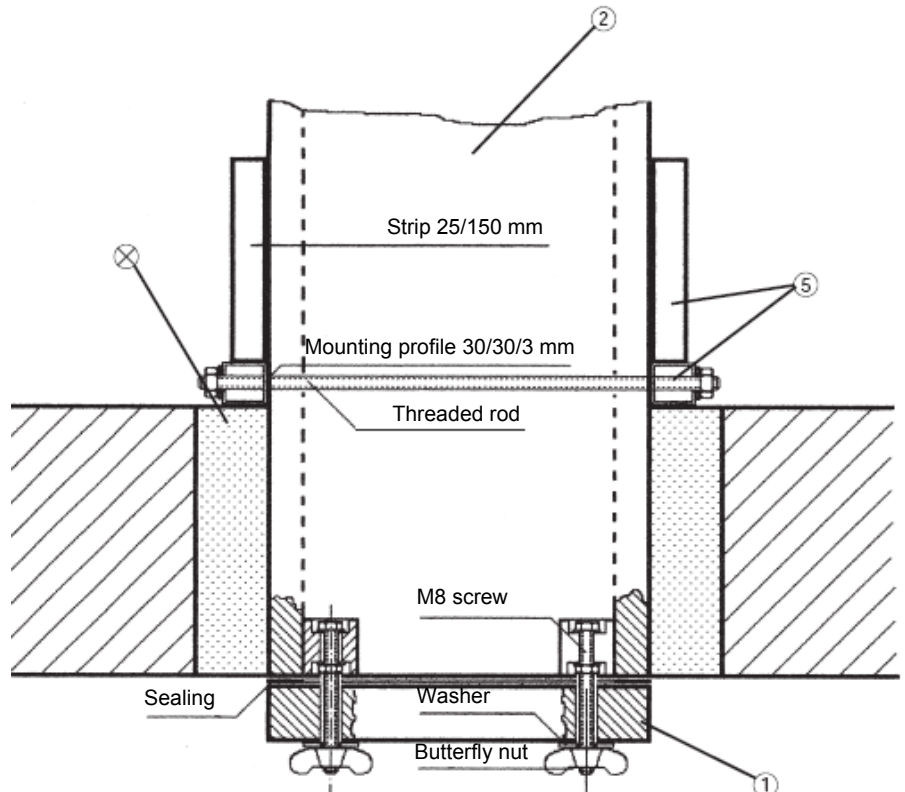
The duct is supported on each floor by cross-members or by profile bars (5). The circumferential gap between the ventilation duct and the floor is filled with a gypsum sand sealing  $\otimes$  or with mortar of group II or III in accordance with DIN 1053 or with concrete.

- (1) Terminal of the facility for inspection
- (2) Shaft
- (3) Set of fasteners consisting of strips of fireproofing boards, perforated mounting profile, threaded rods, washers and nuts

**First section with a facility for inspection**



**Load transfer (on each floor)**



Removable terminal (1) as a connection for inspection

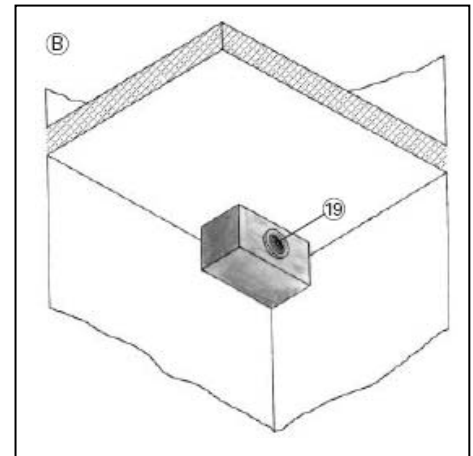
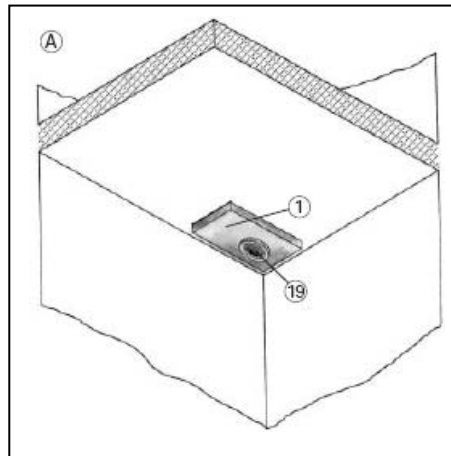


## Fire protection exhaust ventilation system HS 1-1 S 25

Test certificate Z-41.6-626

Resistance class K90-18017 S

Additional inspection facilities  
and shaft installation



### Possibilities of the inspection openings in the basement

- Ⓐ - Inspection opening at the bottom
  - BSV 125 fire valve
  - (without fusible link)
- Ⓑ - Inspection opening at the side

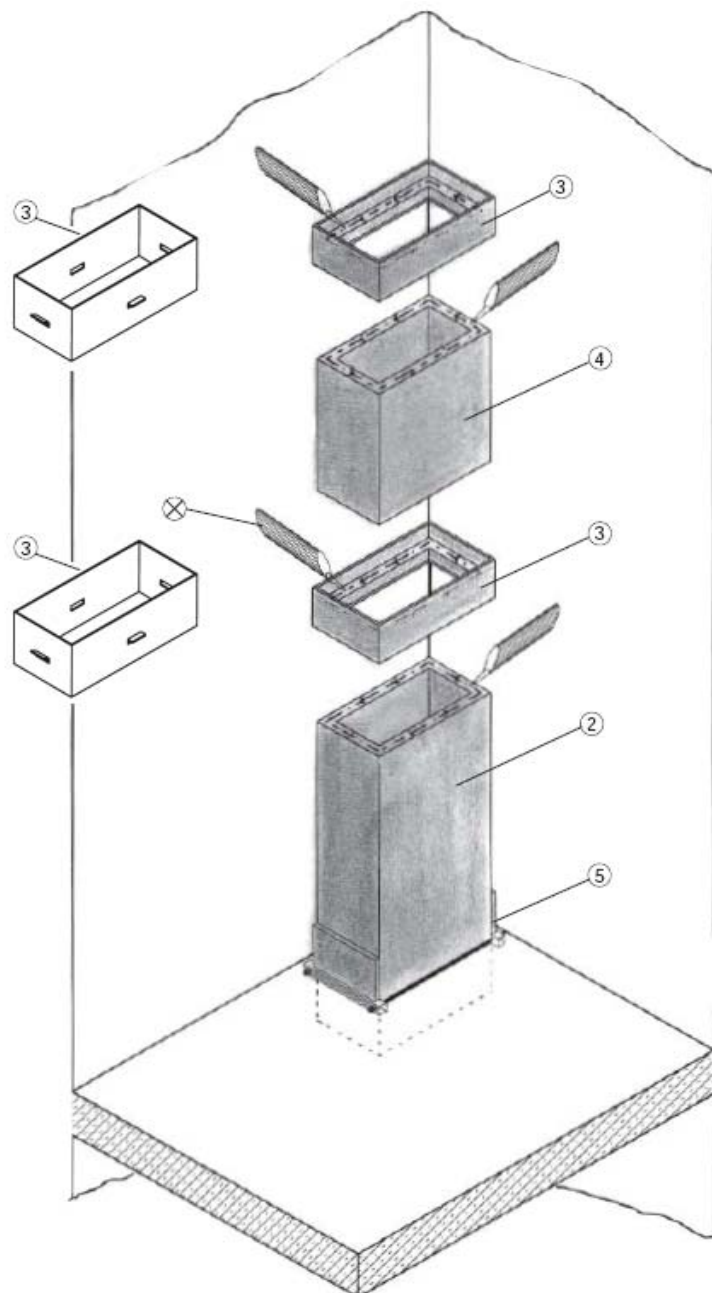
The shaft section (2) shall be installed at a lower point, if for design reasons it should not be possible to use the terminal (1) for inspection.

A fire valve (19) (without fusible link) in accordance with the drawing shall then be provided for inspection.

### Mounting of the rising shaft

After the first shaft section (2) has been set into the floor opening on the first floor/basement, the adhesive is applied at the front side of the shaft section and sleeve by using the hose-shaped bag ⊗. These parts shall then be assembled and aligned.

### Mounting of the rising shaft



- (1) Terminal
- (2) Shaft section
- (3) Double sleeve or male-male shaft connector
- (4) Shaft component
- (5) Set of fasteners
- (19) Fire valve (closed)
- ⊗ SBK 2000



**Fire protection  
exhaust ventilation system  
HS 1-1 S 25**

Test certificate Z-41.6-626

Resistance class K90-18017 S

Shaft installation

**Mounting of the upper shaft section**

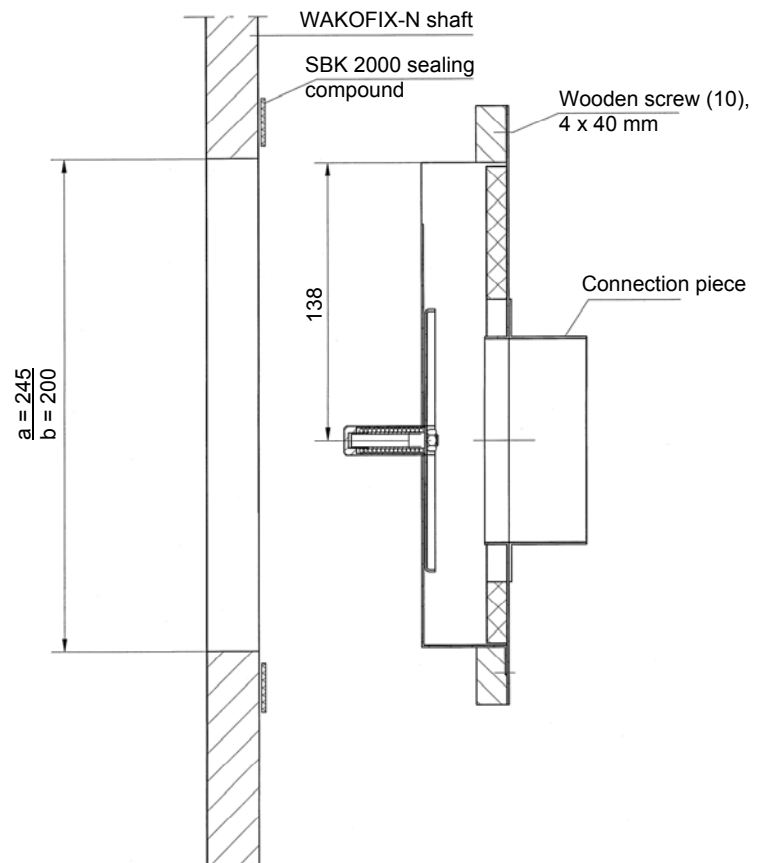
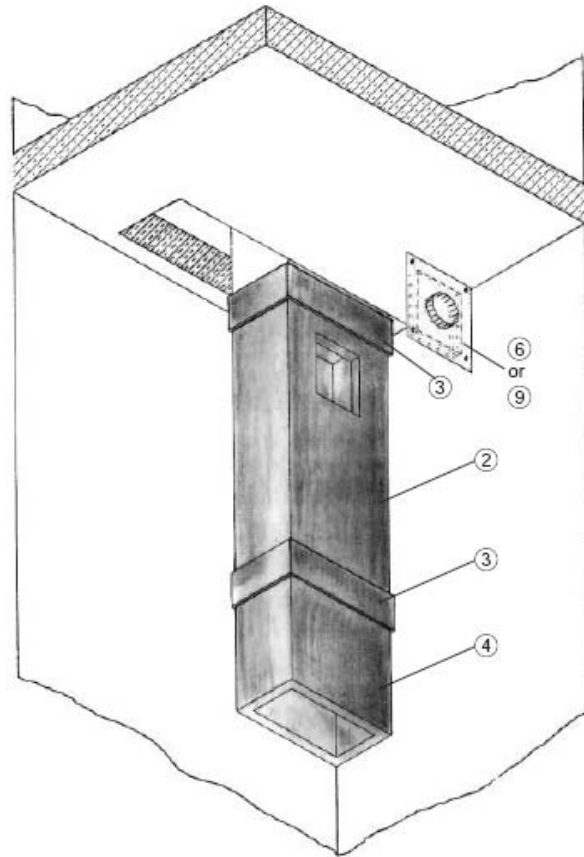
Before mounting the upper shaft section, the openings for the specific connections shall be determined and established with a compass saw. For this their exact position shall be determined. Afterwards the damper is embedded with the SBK 2000 and fastened with four wooden screws, 4 x 40 mm. Then the shaft section is installed as already described. The mounting on the following floors is performed accordingly.

**Dimension of the opening for  
the MF memory damper**

a = 245 mm  
b = 200 mm

- (2) Shaft
- (3) Double sleeve or male-male shaft connector
- (4) Shaft
- (6) MF 100 damper without the requirement for maintenance
- (10) Wooden screw

**Mounting of the upper shaft section**



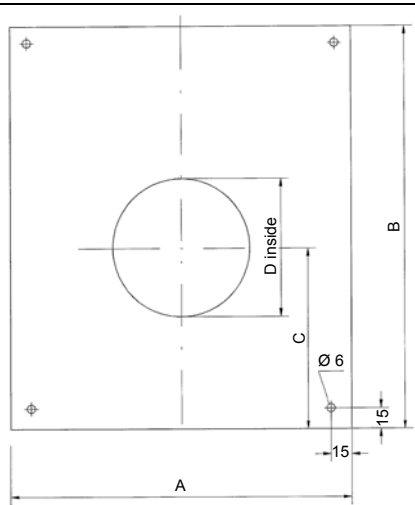


**Fire protection  
exhaust ventilation system  
HS 1-1 S 25**

**Test certificate Z-41.6-626**

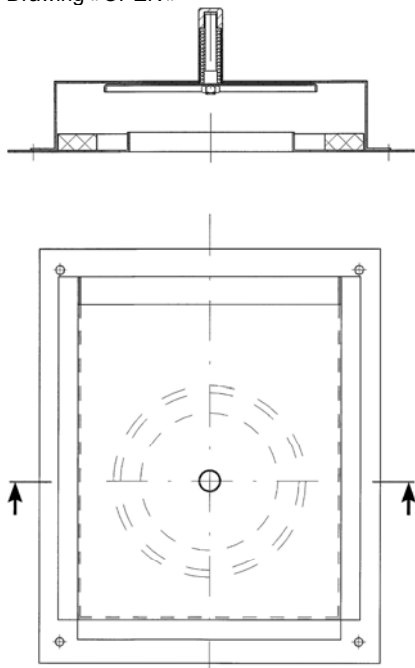
**Resistance class K90-18017 S**

**Damper with a hermetically  
enclosed release mechanism**

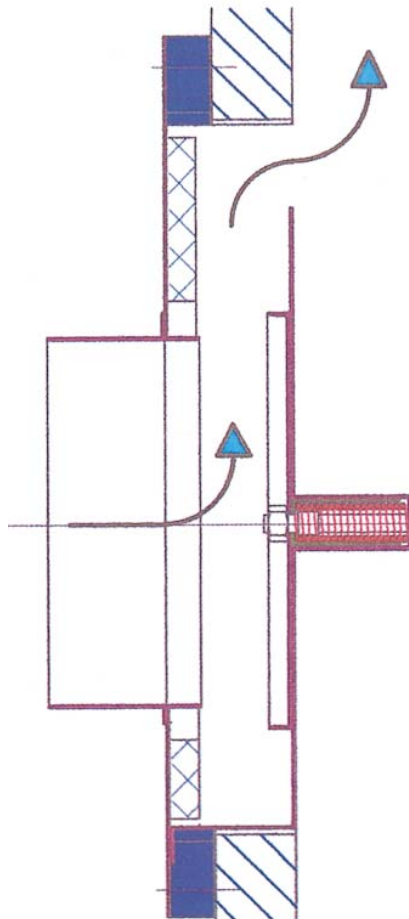


DN	D	A	B	C
100	100	248	300	132
125	125	248	300	132

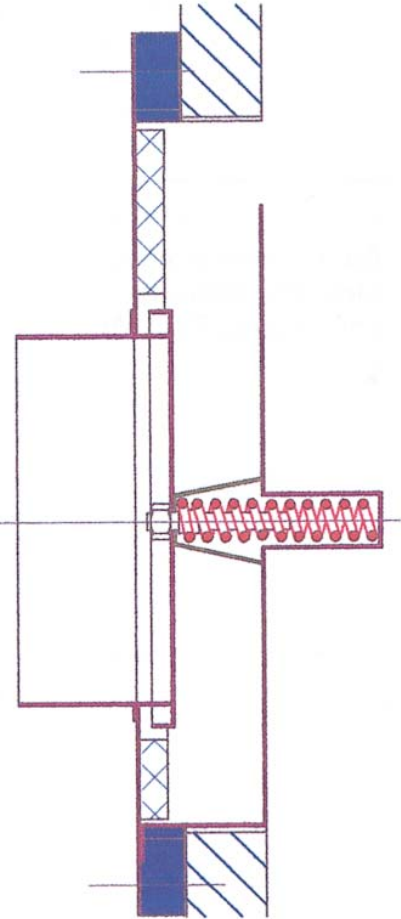
Drawing »OPEN«



**Operating condition  
(open)**



**In the event of a fire  
released (closed)**



**Damper with a hermetically  
enclosed release mechanism**

**Type: MF 100/MF 125**

In the event of a fire, the metal disc presses by means of a spring with memory characteristic against the opening of the inlet spigot and locks.

**Test certificate: Z-41.3-301**



**Fire protection  
exhaust ventilation system  
HS 1-1 S 25**

Test certificate Z-41.6-626

Resistance class K90-18017 S

Assembly of rising ducts at a  
common fan

**Assembly of rising ducts in L30  
to L90 designs**

In principle, it is possible to assemble rising ducts in the area of the miter sill or the attic.  
However, if the shafts run horizontally, then they shall comply with the required fire resistance class in accordance with the state building requirements.

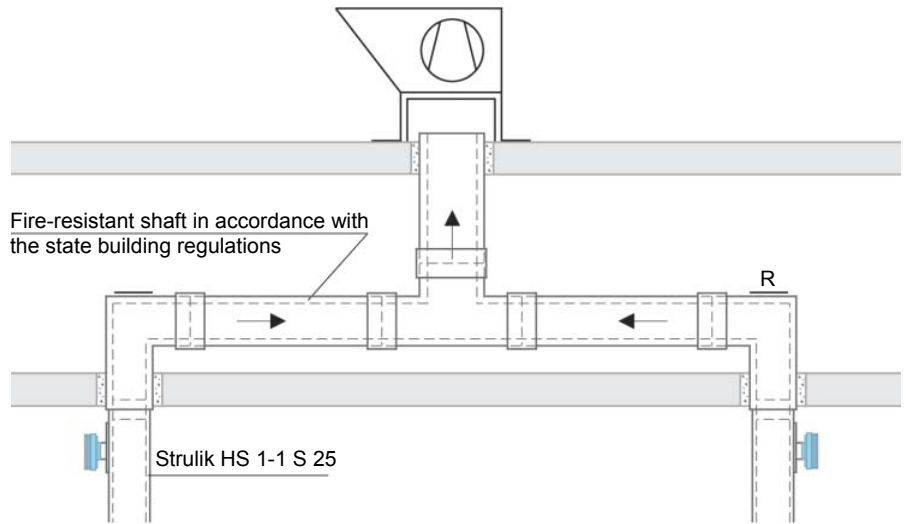
**Assembly of rising ducts by  
means of a BSK fireproofing  
and sound-absorbing box**

A damper or an arrangement of L90/L30 ducts is not required in the area of the attic (for a horizontal arrangement).

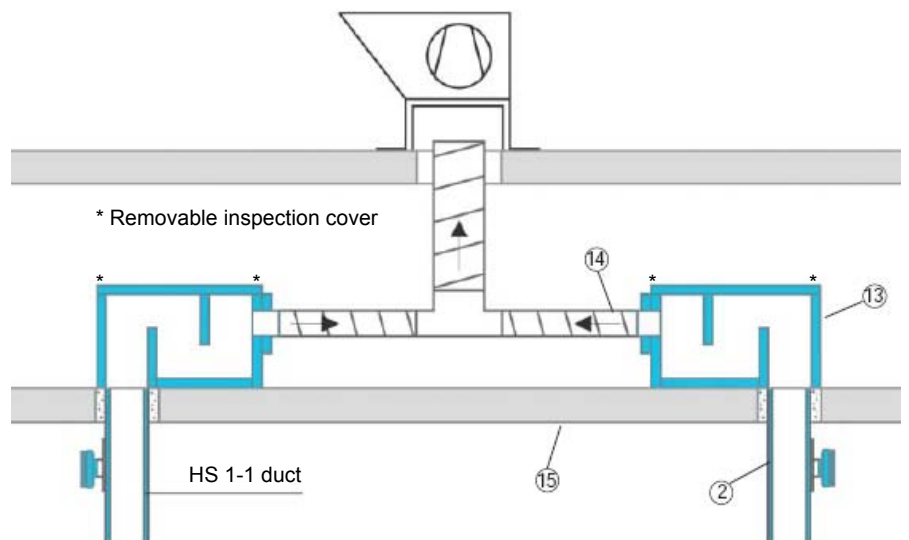
- (2) WAKOFIX HS 1 shaft section
- (13) BSK fireproofing and sound-absorbing box
- (14) Sheet-metal duct  $\frac{\square}{\circ}$
- (15) Concrete floor, 100 mm thick
- \* Removable inspection cover

**Please note:**  
The dimensions of the BSK depend on the dimensions of the HS 1-1 duct.

**Assembly of rising ducts having the required fire resistance class (L30/L60/L90) in accordance with the relevant state building regulations**





**Assembly of rising ducts by means of a fireproofing and sound-absorbing box**



# Tender Text



Item	Description	Unit Piece	Unit price EUR	Total EUR
	<p><b>HS 1-1 S 25 ventilation system</b>, fire resistance class K90-18017 S with a hermetically enclosed release mechanism, for air supply and air exhaust systems in accordance with 18017, as a central or individual ventilation system. The system consists of the individual shaft sections in lengths that are specific to the floor heights and connected to each other with male-male shaft connectors and the SBK 2000 adhesive. All Strulik dampers are allowed to be used as a damper in the area of exhaust air or supply air outlets. An additional covering of the shafts is not required for reasons of fire safety. The duct sections consist of 25 mm thick, extremely light calcium silicate (ca. 7,2 kg/m<sup>2</sup>). The fastening is performed on each floor by means of supporting consoles. The floor penetrations shall be closed after mounting. In the area of the attic a fireproofing and sound-absorbing box can be used as a terminal of the shaft for reasons of fire protection. After that the shafts do not, as usually required, have to be made fireproof.</p> <p>Test certificate: <b>Z-41.6-626</b></p> <p>Units            <b>duct terminals</b>, removable for inspection purposes</p> <p>Linear meters <b>shaft</b>, as described above, including the required SBK 2000 adhesive and supporting strips</p> <p style="padding-left: 40px;">Dimensions ...../..... mm clearance</p> <p>Units            <b>male-male shaft connectors</b>, suitable for the above shaft</p> <p>Units            <b>damper</b> MF 100 or MF 125 (Alternatively: .....)</p> <p>Units            <b>Fireproofing and sound-absorbing box</b>, suitable for the above shaft, type BSK</p>			





**Test certificate Z-41.6-565**

**Resistance class K90-18017 S**

**Test certificate Z-41.6-597**

**Resistance class K90-18017 S**

**Test certificate Z-41.6-598**

**Resistance class K90-18017 S**

### System description

D.A.S., D.A.S. 200 and D.A.S.I are newly developed universal ventilation systems, completely usable with Strulik dampers in accordance with DIN 18017-3. The three systems consist of the ceiling pieces and die dampers (with a hermetically enclosed release mechanism or conventional). Ceiling partitions or classified shaft walls are not required. The systems can be used for both central and individual exhaust ventilation systems; due to the test certificates of the damper, these systems can also be used for residential kitchens and for the direct connection with cooker hood (hoods without an own fan). According to the system approvals, also individual fans can be used. For a horizontal arrangement in the area of the miter sill or in attics (only possible in case of central exhaust ventilation systems, when several rising shafts are connected to a fan), the extended ducting shall be L30 or L90 in accordance with the state building regulations. As an alternative, also fire dampers in accordance with K30 or K90-4102-6 can be inserted into the floors of the miter sill or the fireproofing and sound-absorbing box, type BSK; accordingly, the extended ducting can be made of sheet steel.

The system differences are given in the below table.

### System differences

Type of system	D.A.S.	D.A.S. 200	D.A.S.I
Test certificate	565	597	598
Rising duct of standard spirally wound ducting (by the installer)	●		
Rising duct of double-walled insulating sheet-steel ducting, type RSI		●	
Rising duct up to a maximum nominal width of NW 200	●	●	
Rising duct from NW 224 to 355			●
Plasterboard (GKB) required as a shaft covering	●*		●
Without specified shaft covering		●	
A GKB partition is required if the shaft contains combustible material	●		
Required distance between duct and GKB covering: ≥ 50 mm	●		
Fastening: On each floor one pipe clamp		●	●
Load transfer: On each floor by means of supporting angles		●	●
Usage of a fireproofing and sound-absorbing box for horizontal arrangements in the area of the attic with sheet-steel ducts		●	

\* The GKB partition is not necessary with the arrangement of an insulating layer (pos. 18 on page 42).



Test certificate Z-41.6-565

Resistance class K90-18017 S



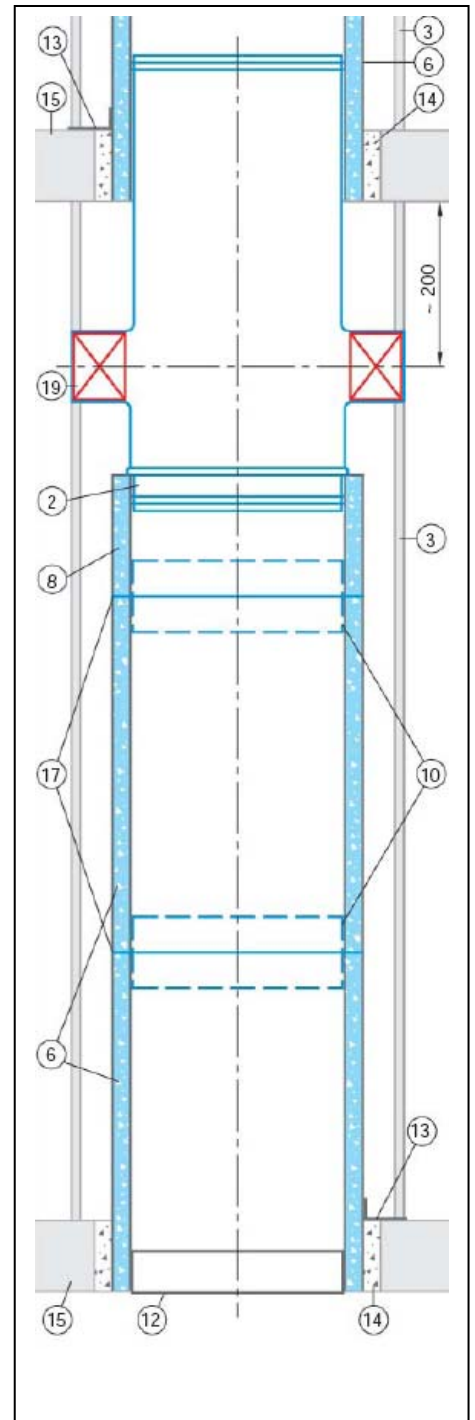
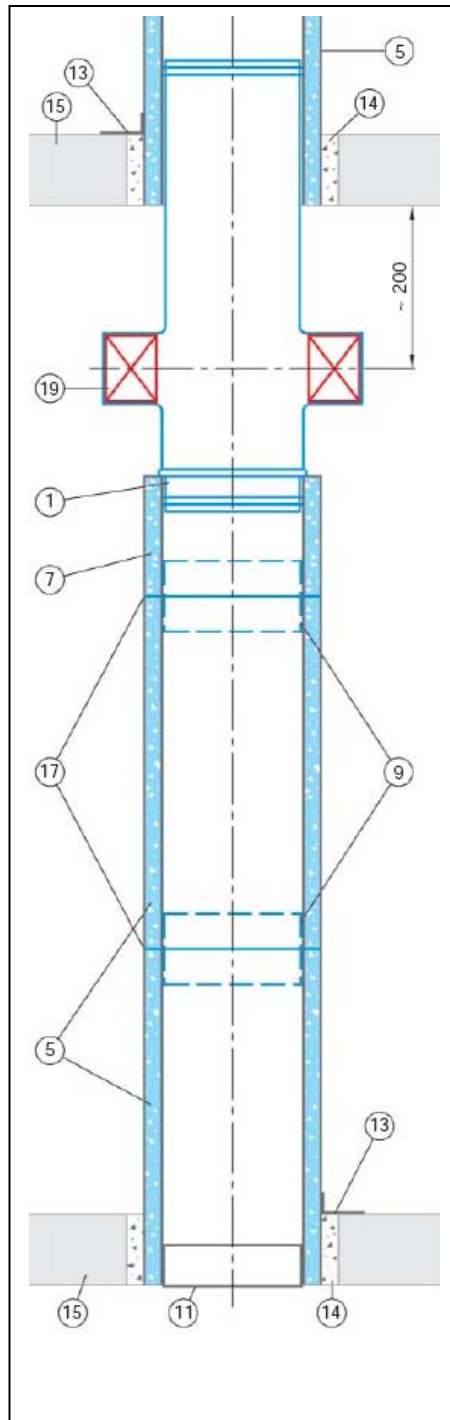
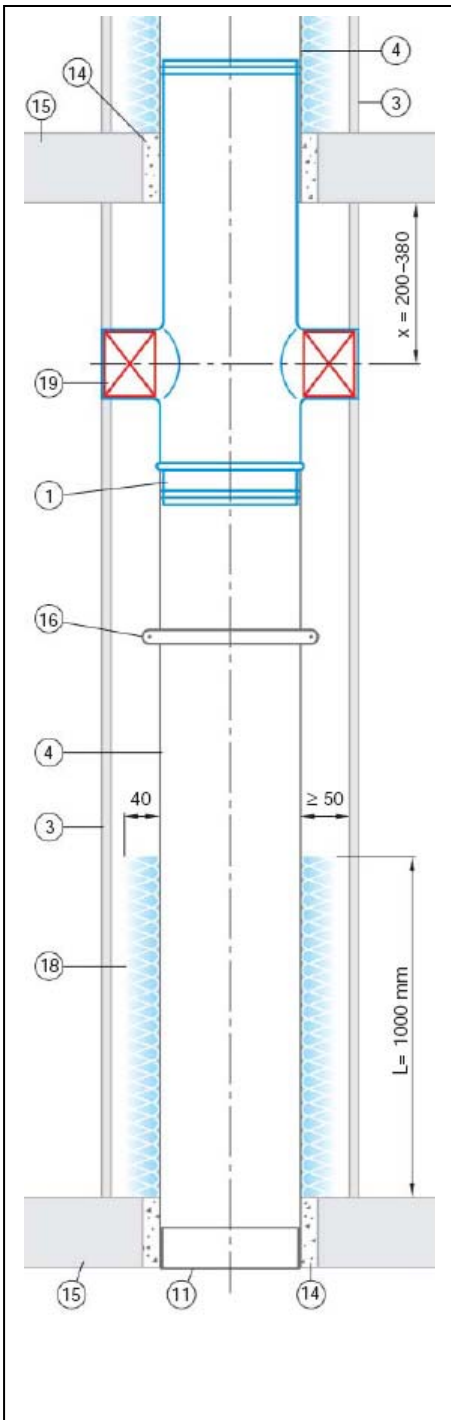
Test certificate Z-41.6-597

Resistance class K90-18017 S



Test certificate Z-41.6-598

Resistance class K90-18017 S



Test certificate Z-41.6-565

Resistance class K90-18017 S

Test certificate Z-41.6-597

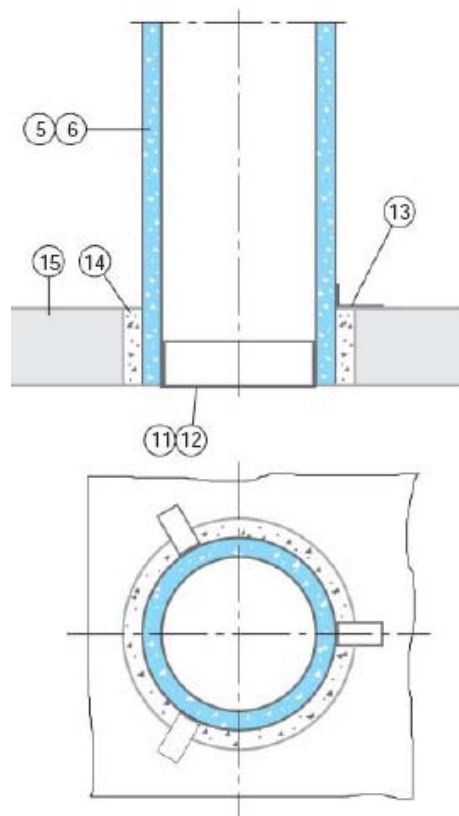
Resistance class K90-18017 S

Test certificate Z-41.6-598

Resistance class K90-18017 S

- (1) Ceiling part, type SNI (K), rising duct diameter NW 100 – NW 200, lateral branches available for NW 80, 100 and 125
  - Equal for the D.A.S. and D.A.S. 200 system
- (2) Ceiling part, type SNI (K), rising duct diameter NW 224 – NW 355, lateral branches available for NW 80, 100 and 125
  - Only relates to the D.A.S.I system
- (3) Shaft wall consisting of normal GKB boards, wall thickness 12,5 mm
  - For the D.A.S. system the distance between the rising duct (WFR) and GKB wall shall be  $\geq 50$  mm.
  - For the D.A.S.I system the distance does not matter.
- (4) Commercial standard spirally wound ducting (by the installer)
- (5) Double-walled sheet-metal insulating tube, NW 100 – 200, type RSI, L = 1100 mm
- (6) Double-walled sheet-metal insulating tube, NW 224 – 355, type RSI, L = 1100 mm
- (7) Double-walled sheet-metal insulating as an adjusting piece tube, NW 100 – 200, type RSA, L = 250 mm
- (8) Double-walled sheet-metal insulating as an adjusting piece tube, NW 224 – 355, type RSA, L = 250 mm
- (9) Connecting nipple, type RSN, NW 100 – 200
- (10) Connecting nipple, type RSN, NW 224 – 355
- (11) Terminal as inspection opening, type RSE, NW 100 – 200
- (12) Terminal as inspection opening, type RSE, NW 224 – 355
- (13) Angle for fastening or angle profile for the load transfer on each floor – by the installer
- (14) Surrounding 20 mm filled with gypsum sand sealing or mortar of group II and III, DIN 1053 or concrete
- (15) Concrete floor, min. 100 mm thick
- (16) Pipe clamp, type RO, including M8 shoulder screw and dowels, NW 100 – 200
- (17) Glued with the SKB 2000 adhesive (A1 DIN 4102-1)
- (18) Insulating layer of aluminum lined mineral wool, L  $\geq 1000$  mm, 40 mm thick, melting point  $\geq 1000$  °C, building material class DIN 4102-A2
- (19) WBE-K90-18017 with a hermetically enclosed release mechanism (all our dampers are of course usable in accordance with K90-18017)

**Load transfer on each floor only for the D.A.S. 200 and D.A.S.I system, optionally with:**

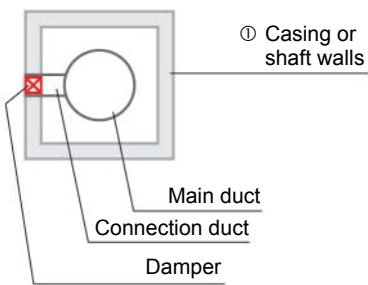


Steel angle (30 x 60 x 30) fastened to the RSI with steel rivets (3 x 10), in each case three staggered by 120°.

Alternatively with two mounting profiles (30 x 30 x 3), fastened with steel rivets (3 x 10) or sheet metal screws (3,5 x 25).

**Please note:**

Dimension X is for the D.A.S. system is dependent on the spirally wound ducting that has been supplied by the installer, but it should not fall below or be exceeded.  
For the D.A.S. 200 and D.A.S.I system a height between floors of 2,8 m has been assumed, for other heights between floors the adapting piece (7) has to be delivered in other lengths.  
Please state the height between floors when ordering for the D.A.S. 200 and D.A.S.I system!

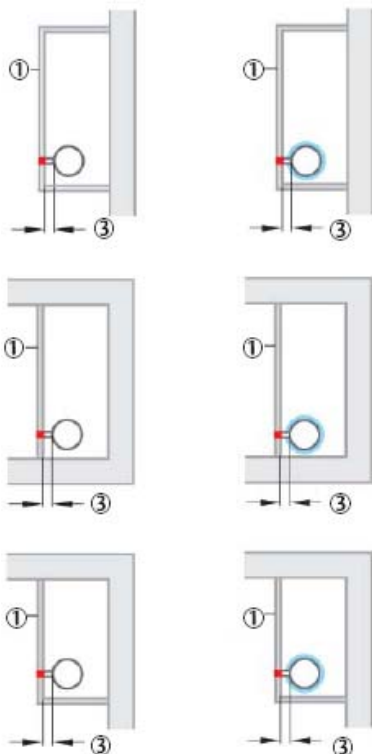


### Casing

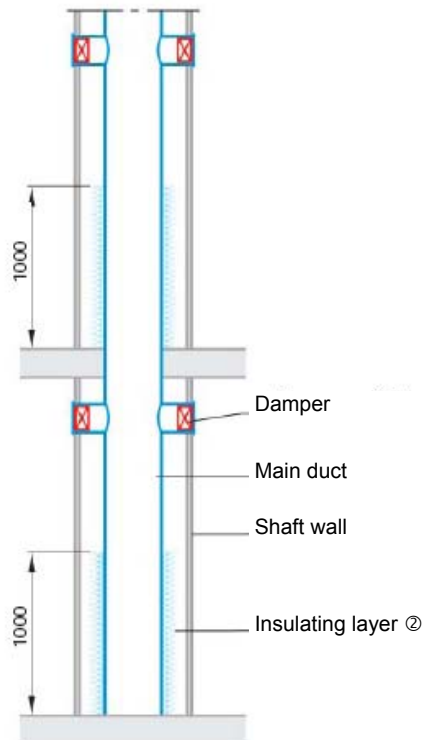
- ① The casing of the specific duct of galvanized sheet steel shall be performed with at least 12,5 mm thick mineral boards (GKB in accordance with DIN 18180, DIN 4102-A2), which have to be assembled with commercial sheet-steel profiles in accordance with the engineering rules. Installation into service shafts I30 – I90 or F30 – F90 shaft divisions or fire rated L30 – L90 ducts.
- ② The insulating layer is required, if combustible building components are mounted into the shaft, e.g. casings of toilet flush tanks, sewer pipes (the insulating layer consists of aluminum-lined mineral wool pipe clamps,  $L \geq 1000$  mm, 40 mm thick, melting point  $\geq 1000$  °C, building material class DIN 4102-A2).
- ③ The distance between the duct and shaft division is at least 50 mm.

### D.A.S.

a) with non-combustible building materials



b) with combustible building materials



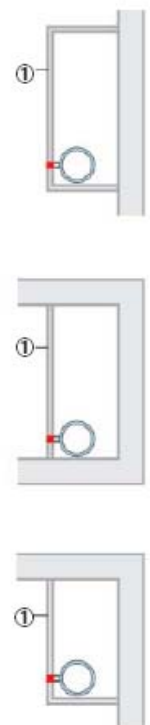
### D.A.S. 200



up to diameter 200 mm without covering



### D.A.S. I

Diameter 224 – 355 mm with covering



**Test certificate Z-41.6-565**  
**Resistance class K90-18017 S**

**Ordering example**

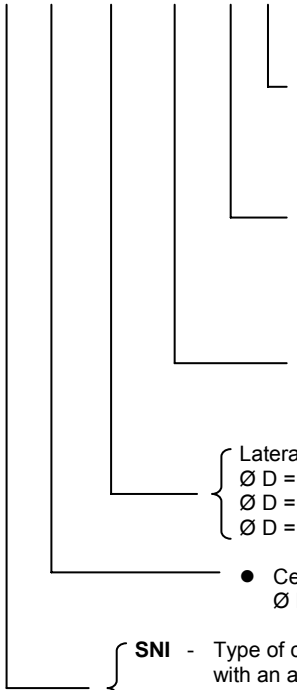
**D.A.S.-SNI (K)**

together with a damper, e.g.



WBE  
WBV  
WBZ  
BSE  
BSV  
BZV

### Ceiling piece with inlet spigot for Strulik K90-18017 dampers

**Ordering example:**  
**D.A.S.-SNI/200/100/KKT/RO/BI/BSK** – Fireproofing and sound-absorbing box (see page 52 for dimensions)



- Aluminum-lined mineral wool, 40 mm thick, 1000 mm long – suitable for rising duct  $\varnothing D = 100, 125, 160$  or 200 mm
- Accessories:**
  - RO** - Pipe clamp NW 100, 125, 160 or 200 mm
  - RSE** - Terminal as an inspection opening NW 100, 125, 160 or 200 mm
- Mounting frame:**
  - KKT** - For all fire disk valves
  - ERT** - For WBE-W
  - ER-I** - for WBE in connection with a sound-absorbing bend
- Lateral inlet spigot dimension  $\varnothing d$ 
  - $\varnothing D = 100$  mm/ $\varnothing d = 80$  mm
  - $\varnothing D = 125$  mm/ $\varnothing d = 80$  and 100 mm
  - $\varnothing D = 160$  and 200 mm/ $\varnothing d = 80, 100$  and 125 mm
- Ceiling piece (suitable for the rising duct)  $\varnothing D = 100, 125, 160$  or 200 mm
- SNI** - Type of ceiling piece with a lateral inlet spigot in connection with an additional damper, e.g. WBV K90-18017
- SNK** - As above, however with an inlet spigot on both sides

**Test certificate Z-41.6-597**  
**Resistance class K90-18017 S**

**Ordering example**

Same ordering example as for the D.A.S. system, however without the RO (pipe clamp), because it is not required (instead load transfer on each floor by the installer). In addition, the following parts are required:

Double-walled insulating sheet-metal tube, type RSI, L = 1100 mm (two on each floor, NW the same as for the D.A.S. system).

Double-walled insulating sheet-metal tube as an adjusting piece, type RSA, L = 250 mm (this refers to a height between floors of 2,8 m).

RSI and RSA dimensions

Inside $\varnothing$	Outside $\varnothing$
100	125
125	150
160	200
200	224

In addition, a fireproofing and sound-absorbing box, type BSK, is available for a horizontal duct arrangement in the area of the attic (see page 52 for dimensions).




**Test certificate Z-41.6-598**  
**Resistance class K90-18017 S**

**Ordering example**

Same ordering example as for the D.A.S. system, however without the RO (pipe clamp), because it is not required (instead load transfer on each floor by the installer). In addition, the following parts are required:

Double-walled insulating sheet-metal tube, type RSI, L = 1100 mm (two on each floor).

Double-walled insulating sheet-metal tube as an adjusting piece, type RSA, L = 250 mm (this refers to a height between floors of 2,8 m).

RSI and RSA dimensions

Inside $\varnothing$	Outside $\varnothing$
224	250
250	280
280	315
315	355
355	400

The lateral inlet spigots of MNI (K) and SNI (K) remain the same as for the D.A.S. system; only the rising duct diameter changes to 224, 250, 280, 315 and 355 mm. In addition a fireproofing and sound-absorbing box, type BSK, is available for a horizontal duct arrangement in the area of the attic (dimensions = depends on the rising duct).



**strulik**  
gmbh

SYSTEM  
**D.A.S.**

Test certificate Z-41.6-565  
Resistance class K90-18017 S

Central ventilation system

**Version A**

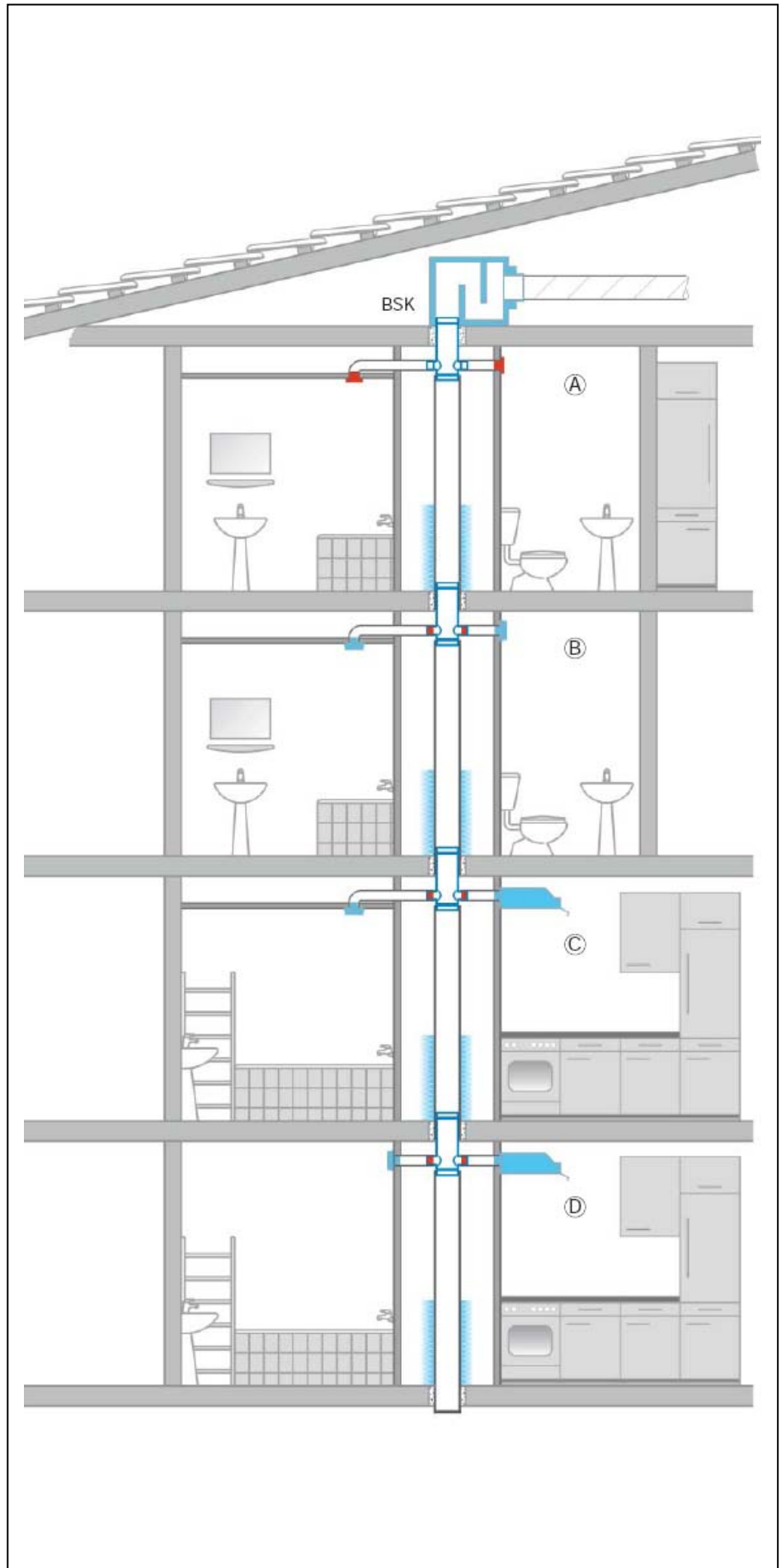
Central ventilation system – not regulated  
Fire disk valve  
WBZ-K90-18017 (exhaust air)  
WBZ-K90-18017 (supply air)  
- with a hermetically enclosed release mechanism -  
including KKT mounting frame

**Version B – D**

Central ventilation system – regulated in each apartment – fireproofing element WBE-K90-18017 – with a hermetically enclosed release mechanism – directly inserted into the inlet spigot of the ceiling piece. WFA exhaust air element or DFA cooker hood – AIROSET system.

**Note:**

In case of a horizontal duct arrangement inside the miter sill for bringing the rising ducts together at a fan, the fireproofing and sound-absorbing BSK box can be used instead of the otherwise required L90 covering. See page 52 for details.







Test certificate Z-41.6-565  
Resistance class K90-18017 S

High-pressure system

**Version (A) + (C)**

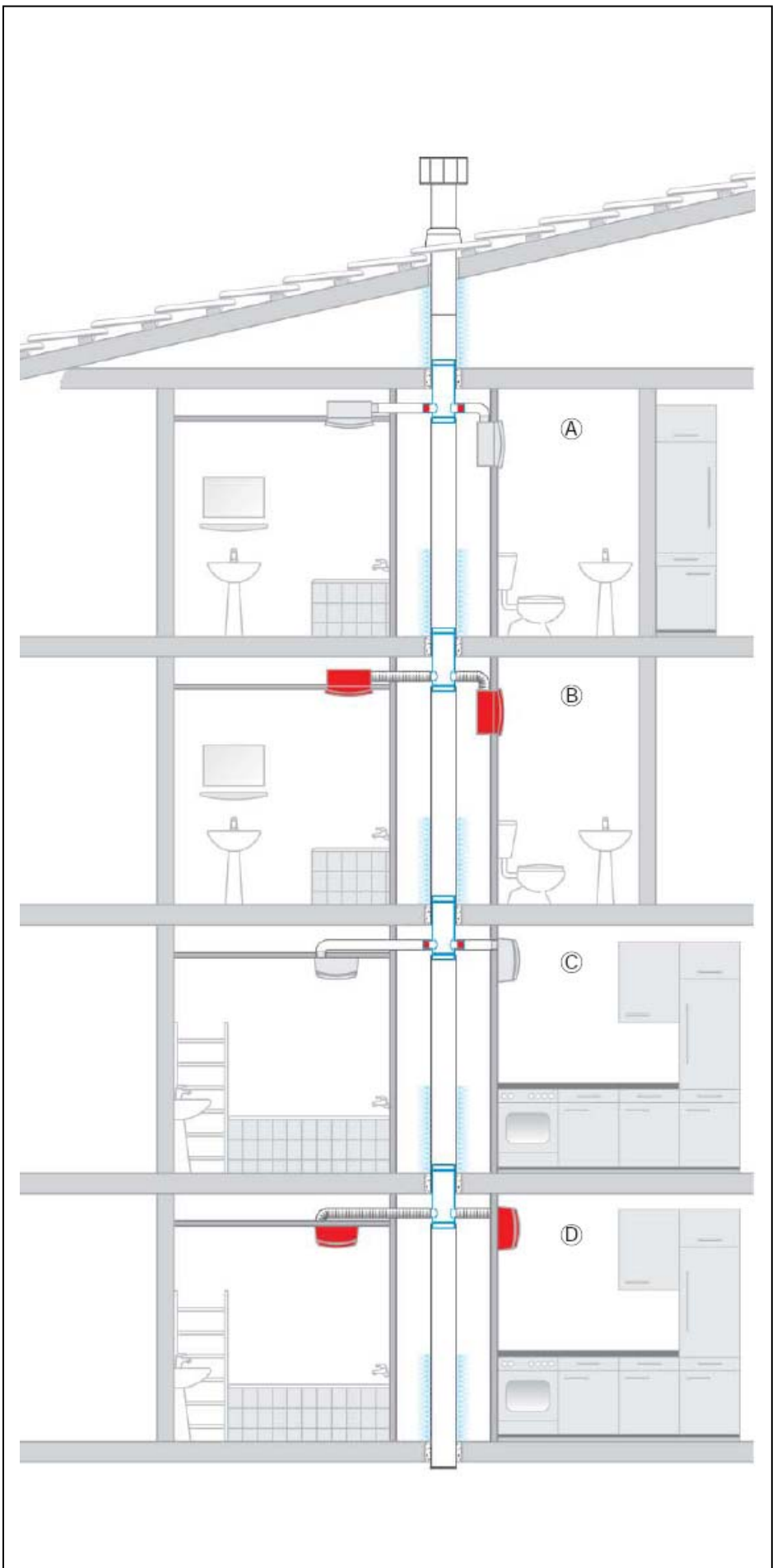
Fireproofing element, manufacturer Strulik, type WBE K90-18017 – with a hermetically enclosed release mechanism – directly inserted into the inlet spigot of the ceiling piece, individual compartment ventilator from MAICO – without fire protection – concealed mounting type ER-UP/G, surface mounting type ER-AP.

The fans and their connecting duct to the ceiling piece do not play a role for the fire protection.

**Version (B) + (D)**

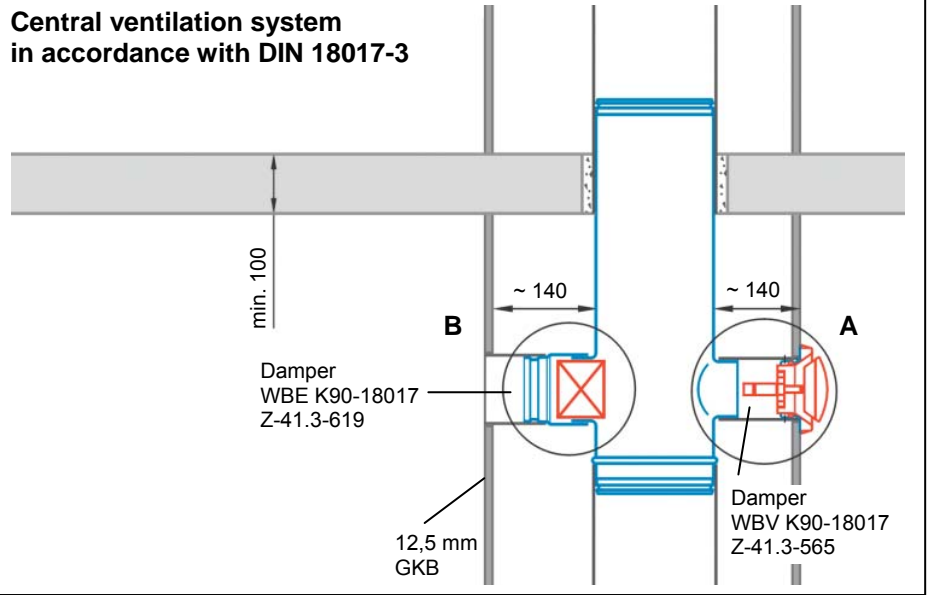
Ventilator for a single room, manufacturer MAICO, with a metal connection and a damper inside the connection. Concealed mounting, type ER-UPD and surface mounting, type ER-APB. The connection between the ceiling piece and ventilator shall be performed by means of spirally wound or flexible steel ducting (max. 6 m) with two steel rivets that are staggered by 180°.

Ventilator, spirally wound or flexible steel ducting and ceiling piece guarantee safety in case of fire.

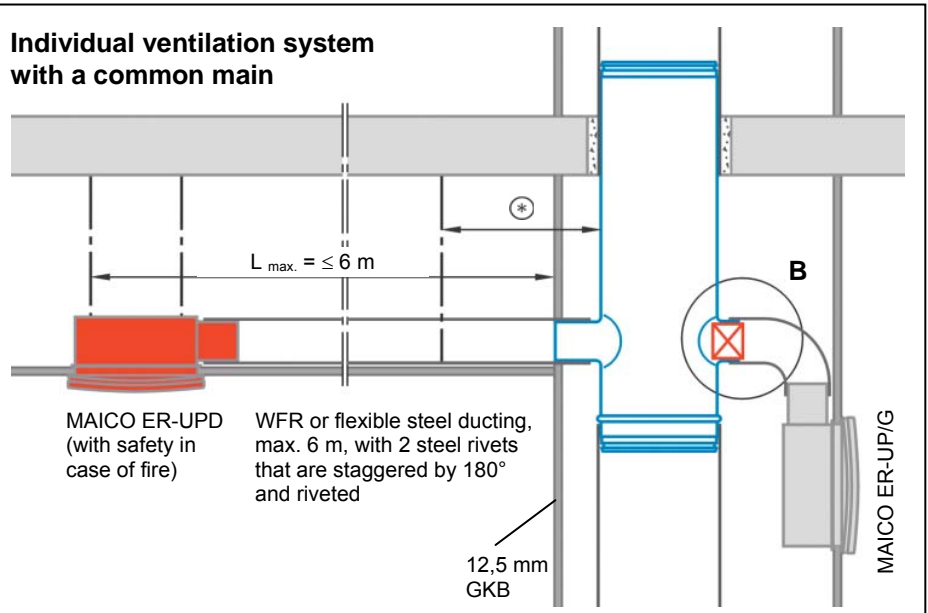


- \* Suspension  $\leq 1,5$  m  
Permissible tensile load max.  $6 \text{ N/mm}^2$
- \* Minimum distance  $\geq 50$  mm

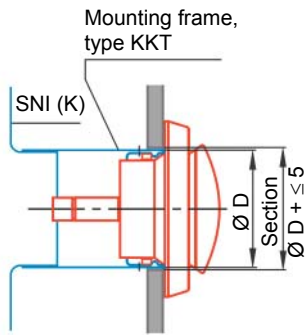
**Central ventilation system  
in accordance with DIN 18017-3**



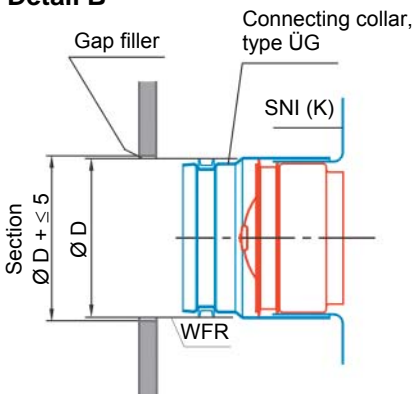
**Individual ventilation system  
with a common main**



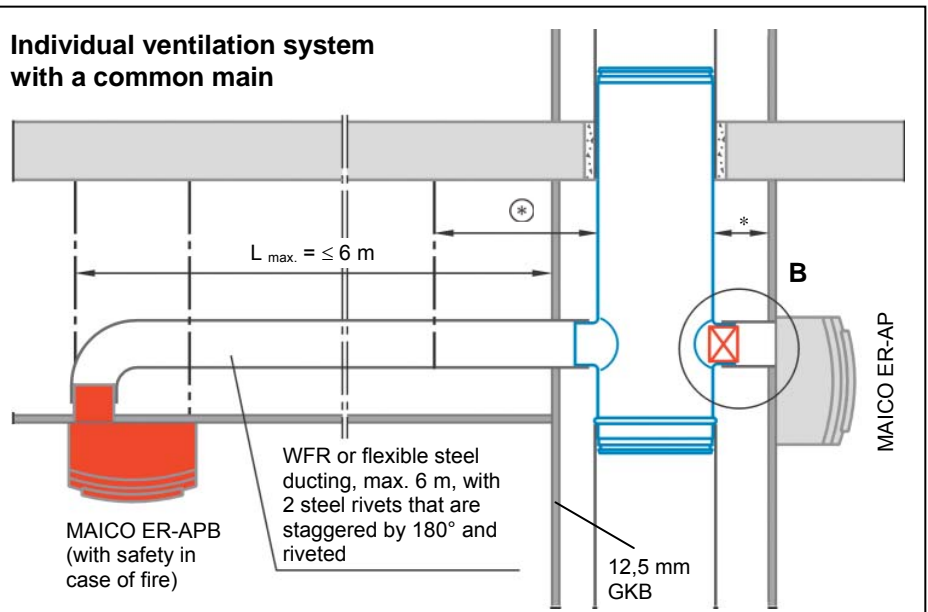
**Detail A**



**Detail B**



**Individual ventilation system  
with a common main**





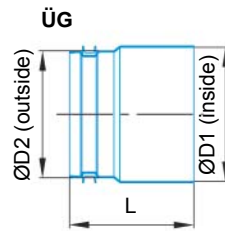
Test certificate Z-41.6-565  
Resistance class K90-18017 S

SNI (K) ceiling piece

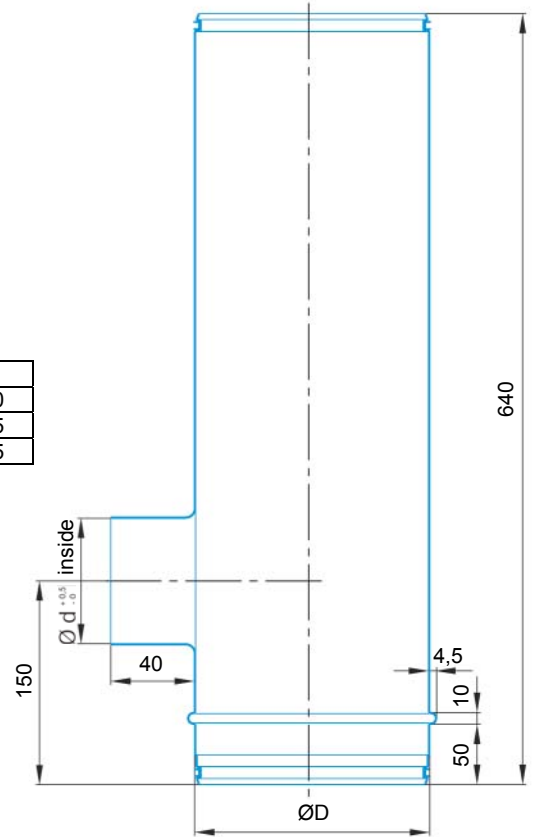
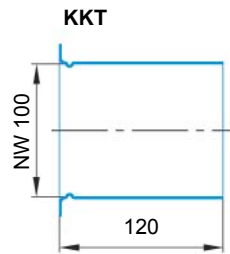
SNI (K) dimensions

NW	Ød	ØD
100	80	99
125	80	124
160	80	159
200	80	199
	100	
	125	

SNI (K) dimensions



DN	D1	D2	L
80	83	77	90
100	103	97	95
125	128	122	95



Easy mounting owing to concerted components without additional fastening

Connection between SNI (K) and KKT mounting frame always with two steel rivets that are staggered by 180°!

WBV or WBZ

KKT

The WBE-W fireproofing element is inserted without the mounting frame into the outlet of the ceiling piece!

WBE-W

ÜG

WFA

WF duct or flexible aluminium ducting (by the installer)

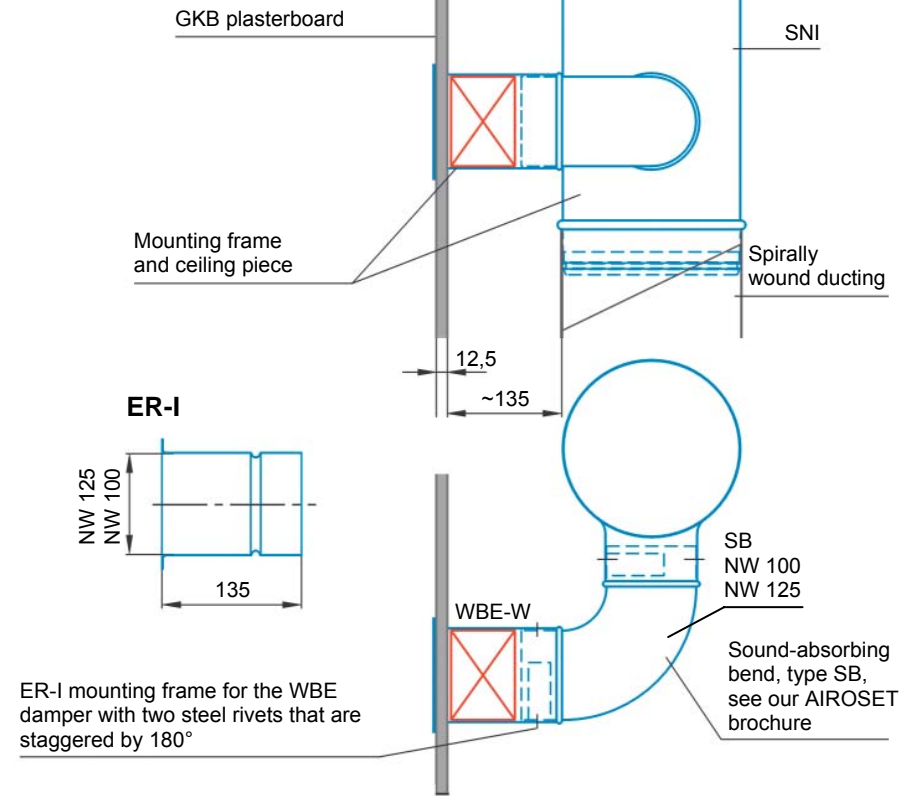


Test certificate Z-41.6-565  
Resistance class K90-18017 S

**Variations**

If for reasons of protection against noise the SB sound-absorbing bend has to be used, then the fireproofing element cannot be directly inserted into the connection piece of the SNI (K) ceiling piece. Instead the ER-I mounting frame is used in order to take up the WBE.

**SNI with a SB sound-absorbing bend and ER-I mounting frame**



**BSK fireproofing and sound-absorbing box**

Suitable for a horizontal arrangement in the miter sill (attic storey) for the combination of risers with one ventilator (only in case of central ventilation systems). No L30 or L90 duct has to be laid and K30 or K90-4102 dampers do not have to be mounted in the ceiling area.

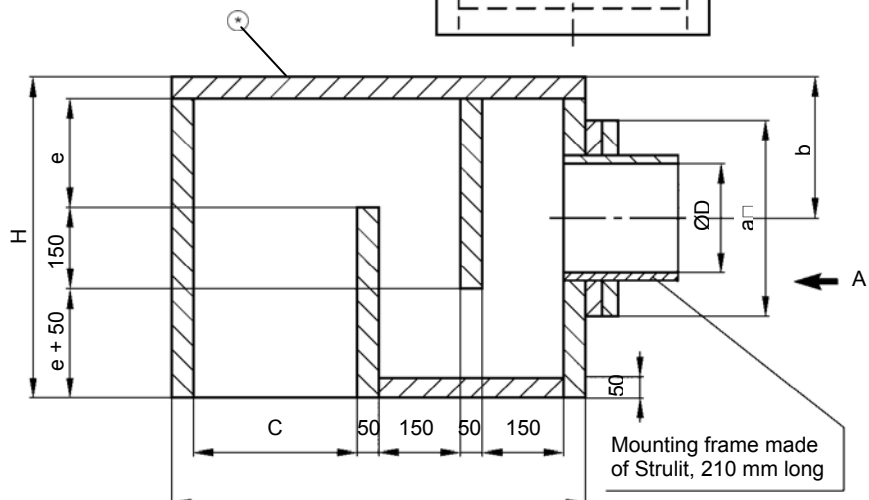
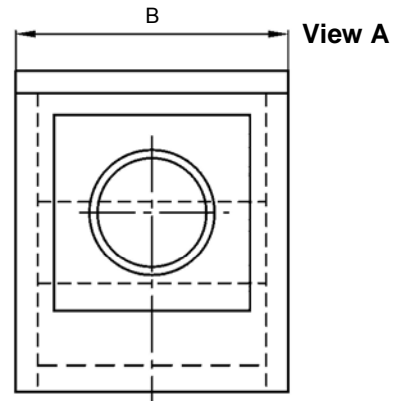
The extended ducting can be performed with commercial spirally wound ducting.

**Mounting instruction:**

BSK, in accordance with the accompanying drawing, to be coated with a fireproof adhesive (SBK 2000) at its bottom side, placed over the opening and pressed onto the concrete ceiling.

**Fireproofing and sound-absorbing box  
Type: BSK**

BSK weight	
NW	kg
100	18
125	22
160	26
200	31



**Dimensions of the BSK related to the nominal width of the riser**

NW	100	125	160	200
B	320	345	380	430
H	450	500	570	650
L	610	635	670	740
e	100	125	160	200
c	110	135	170	240
ØD	100	125	160	200
a	200	225	260	300
b	170	190	200	220



# Tender Text

Item	Description	Unit Piece	Unit price EUR	Total EUR
	<p><b>D.A.S. 200 fire safety system</b>, K90-18017 S resistance class for air supply and air exhaust systems in accordance with DIN 18017-3, as a central or individual ventilation system.</p> <p>The system consists of the ceiling piece with one or two connection pieces, the Strulik K90-18017 dampers and the double-walled insulating duct of sheet steel.</p> <p>SNI ceiling piece, nominal width 100, 125, 160 or 200 mm, length 640 mm, with one connection piece, nominal width 80, 100 or 125 mm, insertion length ca. 400 mm.</p> <p>SNK ceiling piece with two connection pieces, otherwise as described above.</p> <p>Test certificate of the system: <b>Z-41.6-597</b></p> <p><b>Technical data:</b></p> <p>Main duct diameter:                      NW 100, 125, 160 or 200 mm</p> <p>Connection piece diameter:        NW 80, 100, 125 mm</p> <p>Accessory: Strulik K90-18017 damper</p> <p>Type: <b>WBV, WBZ, WBE, BSV, BZV, BSE</b></p> <p>Temperature of activation:        72 °C</p> <p>Type: <b>SNI</b>   (ceiling piece with one connection piece)  Type: <b>SNK</b>   (ceiling piece with two connection pieces)  Type: <b>RSI</b>   (double-walled insulating duct, two per floor, L = 1100 mm)  Type: <b>RSA</b>   (adjusting piece, L = 250 mm) related to a height between floors of 2,8 m</p> <p>Manufacturer: <b>Strulik</b></p> <p><b>Accessories:</b></p> <p>Terminal as an inspection opening        Type: <b>RSE</b>  (one per line)  The nominal width depends on the main duct diameter.</p> <p>Connecting nipple                            Type: <b>RSN</b>  (two per floor)</p> <p>Fireproofing and sound-absorbing box    Type: <b>BSK</b></p>			



# Tender Text

Item	Description	Unit Piece	Unit price EUR	Total EUR
	<p><b>D.A.S. I fire safety system</b>, K90-18017 S resistance class for air supply and air exhaust systems in accordance with DIN 18017-3, as a central or individual ventilation system.</p> <p>The system consists of the ceiling piece with one or two connection pieces, the Strulik K90-18017 dampers, the shaft partition of normal plasterboards by the installer (GKB, min. 12,5 mm thick) and the double-walled insulating duct of sheet steel.</p> <p>SNI ceiling piece, nominal width 224, 250, 280, 315 or 355 mm, length 640 mm, with one connection piece, nominal width 80, 100 or 125 mm, insertion length ca. 400 mm.</p> <p>SNK ceiling piece with two connection pieces, otherwise as described above.</p> <p>Test certificate of the system: <b>Z-41.6-598</b></p> <p><b>Technical data:</b></p> <p>Main duct diameter:                      NW 224, 250, 280, 315 or 355 mm</p> <p>Connection piece diameter:        NW 80, 100, 125 mm</p> <p>Accessory: Strulik K90-18017 damper</p> <p>Type: <b>WBV, WBZ, WBE, BSV, BZV, BSE</b></p> <p>Temperature of activation:        72 °C</p> <p>Type: <b>SNI</b>     (ceiling piece with one connection piece)  Type: <b>SNK</b>     (ceiling piece with two connection pieces)  Type: <b>RSI</b>     (double-walled insulating duct, two per floor, L = 1100 mm)  Type: <b>RSA</b>     (adjusting piece, L = 250 mm) related to a height between floors of 2,8 m</p> <p>Manufacturer: <b>Strulik</b></p> <p><b>Accessories:</b></p> <p>Terminal as an inspection opening        Type: <b>RSE</b>  (one per line)  The nominal width depends on the main duct diameter.</p> <p>Connecting nipple                            Type: <b>RSN</b>  (two per floor)</p> <p>Fireproofing and sound-absorbing box    Type: <b>BSK</b></p>			



**Test certificate Z-41.6-565**  
**Resistance class K90-18017 S**

The connection types for the fireproofing elements and individual compartment ventilators are identical with those for the D.A.S. system.

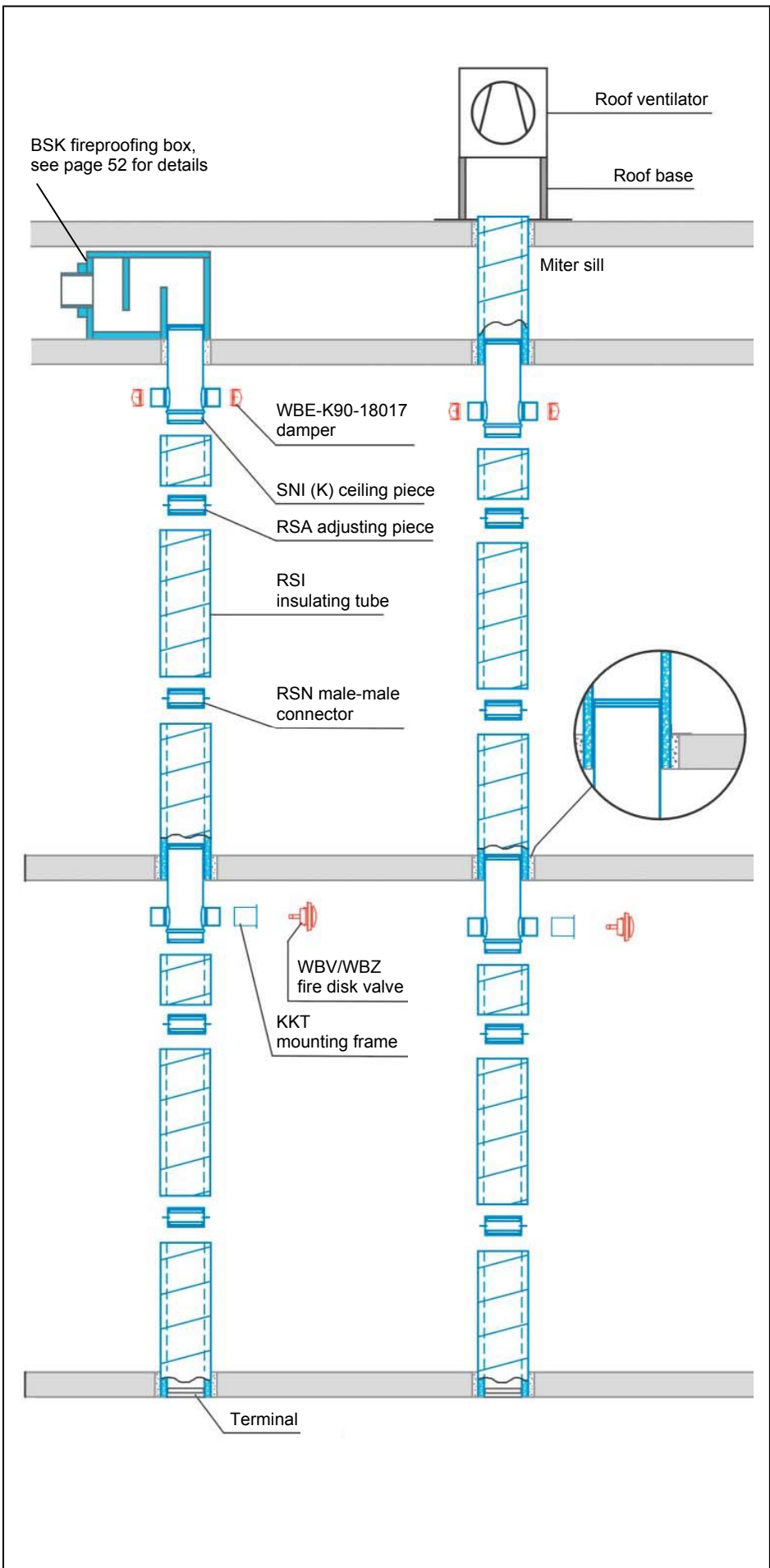
The following components are required per storey (2,8 m):

- 1 x SNI (K)
- 2 x RSI L = 1100 mm
- 1 x RSA L = 250 mm
- 2 x RSN
- 1 sack SBK 2000

The dampers that are needed are selected according to the application

**Dimensions and weight**  
**RSI + RSA**

Inside Ø	Outside Ø	RSI	RSA
			kg
100	125	10,8	2,2
125	160	17,5	3,9
160	200	26,5	5,2
200	224	22	4,5



**strulik**  
gmbh

SYSTEM  
**D.A.S.**

Test certificate Z-41.6-565

Resistance class K90-18017 S

**strulik**  
gmbh

SYSTEM  
**D.A.S. 200**

Test certificate Z-41.6-597

Resistance class K90-18017 S

**strulik**  
gmbh

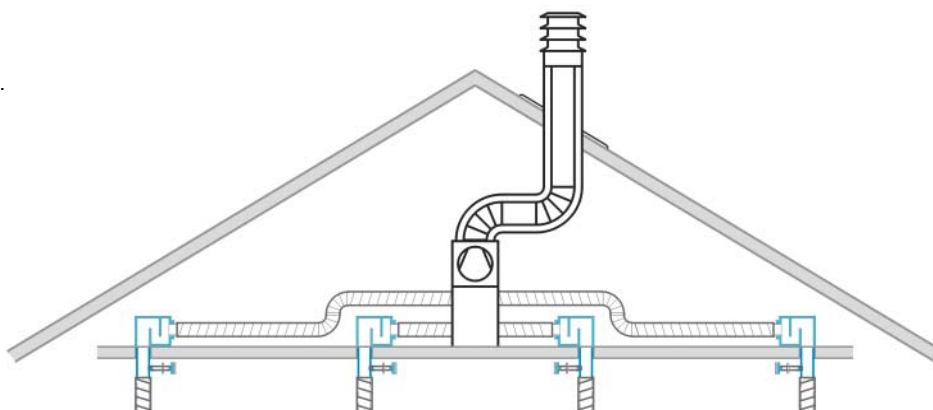
SYSTEM  
**D.A.S. I**

Test certificate Z-41.6-598

Resistance class K90-18017 S

### Horizontal arrangement in the attic

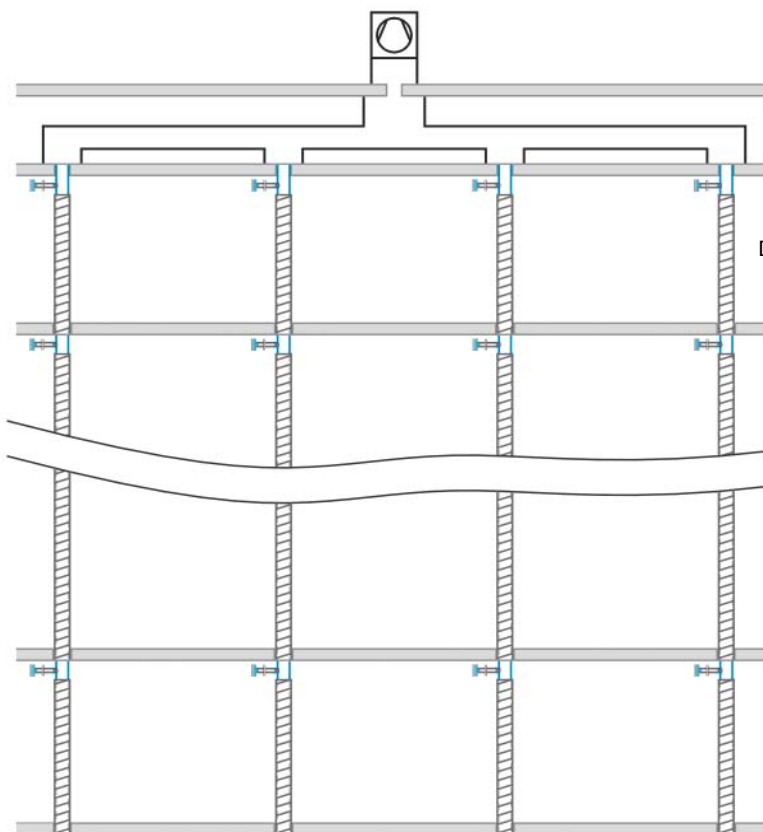
Combination of the riser with the BSK  
fireproofing and sound-absorbing box..  
The extended ducting can be spirally wound.



Combination of the riser with fire-resistant ducts  
(L30, 60, 90 in accordance with the appropriate  
state building regulations).

Possibility for:

- D.A.S.
- D.A.S. 200
- D.A.S. I



D.A.S. 200

Drawing: D.A.S. 200

**New!**  
See  
"Fire prevention"  
Part III/2006



## Round smoke extraction duct of sheet steel

**Test certificate**  
**P-3469/5645 MPA BS**  
**Functional endurance of**  
**120 min at 600 °C**

**Directions for installing and suspension**

### Vertical deviations

Inside the flue of horizontal smoke extraction ducts, bend fittings and vertically arranged smooth fittings are allowed to be arranged for a vertical deviation of up to 2500 mm. The vertical duct sections shall be bedded on consoles at a maximum distance of 1500 mm.

### Inclined ducts

Ducts that deviate up to 10° from the vertical centre line shall be installed in the same way as vertical ducts. More inclined ducts shall be installed in the same way as horizontal ducts with vertical suspensions. Ducts that deviate over 10° from the horizontal lines shall be doubled at the suspensions, such that the ducts on the traverses of the suspensions cannot shift (horizontally).

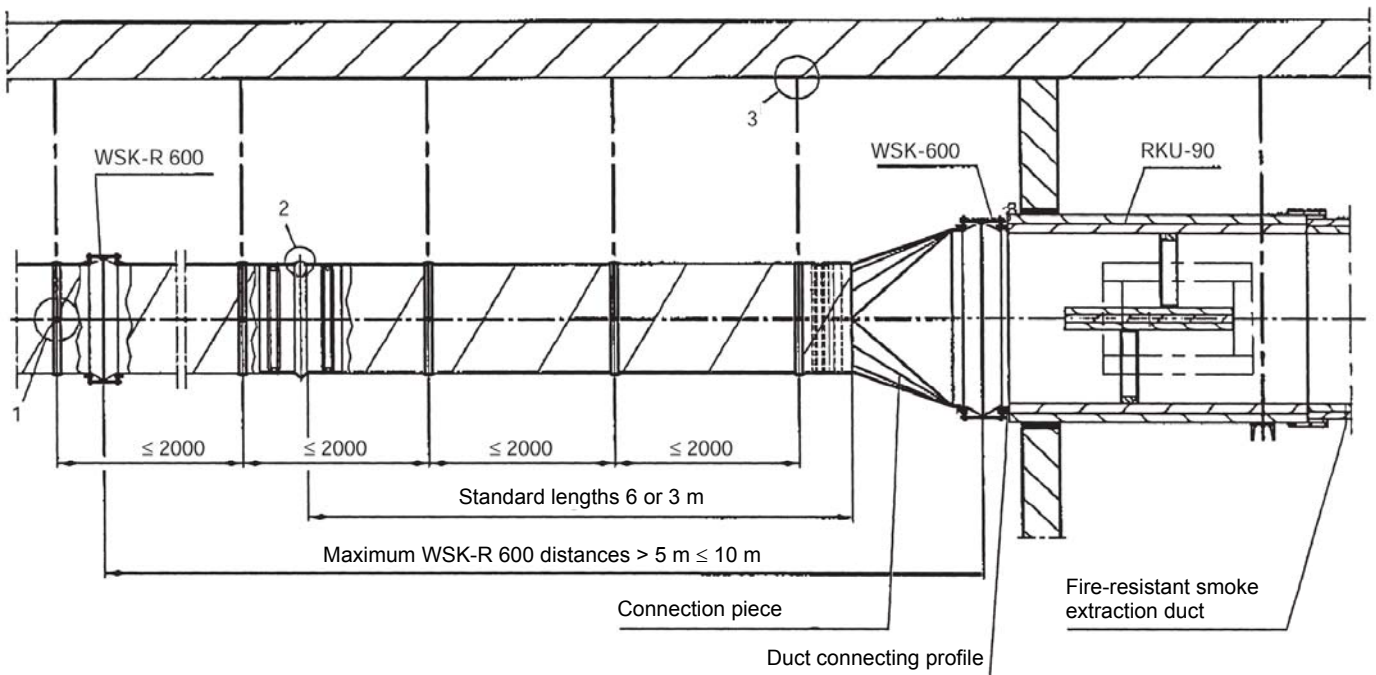
### Design of bends and tee fittings

Bends, nipples and bushings are allowed to be manufactured in the same way as the fittings in accordance with DIN EN 1506. The same limits of dimension apply as for smooth fittings; the length of the bend shall be measured in the duct axis.

### Design of connecting pieces for the installation of smoke control dampers

Sections with stiffeners are allowed to be made into smooth smoke extraction ducts (folded spiral-seam pipes) to connect RKE smoke control dampers.

For further details are given in the test certificate.



Only permitted for single compartments, i.e. the smoke zone and/or fire compartment with smoke extraction ducts of sheet steel are not allowed to be lead through fire-resistant walls or fire walls into other fire compartments.

①

The suspension shall be performed with mounting clamps. The maximum tensile load is  $750 \text{ N} \triangleq 20,5 \text{ N/mm}^2$  (M8).

Alternatively, the suspension can also be performed with L-profiles (35/35/4) or C-profiles (30/20/1,75). In this case the threaded rods shall have a maximum lateral distance of 50 mm to the smoke extraction duct.

②

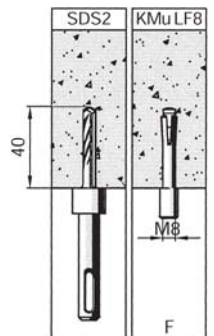
In principle, a fitting (nipple, bend, tee piece etc.) shall be used with a stop seam for the connection with the appropriate duct sections.

The number and dimensions of the fastening screws are given in the test certificate.

Alternatively, airtight steel rivets can also be used. Distance for fastening to the rim of the smoke extraction duct: ca. 10 to 15 mm.

③

M8 fire safety dowel; the maximum tensile load  $F = 750 \text{ N} \triangleq 20,5 \text{ N/mm}^2$





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