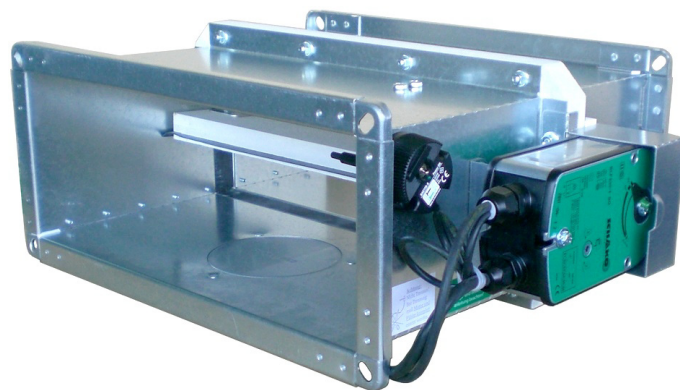


Fire Damper BKP

General building supervisory approval no. Z-41.3-660

Technical documentation
Assembly and Mounting Instructions



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Fire Damper Model BKP

Contents

Description	3
Quality assurance	3
Maintenance information	3
Use	3
Models and dimensions	4
Dimensions	4
Frame bore	4
Damper blade projecting ends	4
Installation details	5
General	5
Installation in solid walls	5
Installation away from solid walls	6
Installation in solid ceilings	8
Installation in light-weight partition walls	9
Installation in shaft walls	11
Installation information	12
Selection of permitted ventilation ducts	13
Connection of ventilation ducts	13
Air flow direction	14
Minimum distances	14
Suspension of the shut-off device	15
Technical Data	16
Quick selection	16
Flow generated noise	17
Free cross-section [m ²]	22
Accessories	22
Limit switch type ES	22
Limit switch type Easy-Eco-Tx	22
Electric spring return actuator type ELD-BLF	23
Magnetic clamp/pulse magnet (24 V DC, 230 V AC)	25
Extension part type VT	26
Assembly part type EBT	26
Flexible connection pieces type FS	26
Duct connection pipe type RS	27
Finishing protective grating type ASG	27
Position indicator type MSZ	27
Legend	27
Specification texts	28

Fire Damper Model BKP

Description

The housing of the fire damper BKP is made from galvanised sheet steel. For connection to the air ducts, the front side has corner angles with long holes.

For maintenance, servicing, retrofitting, etc., it may be necessary to provide on-site inspection openings in suspended ceilings, shaft walls, etc. They must be built in sufficient numbers and size.

- Damper leaf made of silicate board
- A foaming building material forming an insulating layer and made of intumescent material (non-fraying) is attached circumferentially to the center frame in the interior. The seal foams up at a heat flow of approx. 140°C. In addition, a circumferential rubber seal is attached to the damper leaf as cold smoke seal. This guarantees tight sealing of the leaf to DIN 4102-6 Spreading of smoke and fire is effectively prevented.
- Thermal trigger 72°C
- Thermal trigger 98°C for hot-air heating (at an extra charge)
- Useable up to a max. operating pressure of 1000 Pa at a duct speed v_{stirn} of < 10 m/s.
- Equipped with an inspection opening at the bottom from a width $B \geq 200$ mm as standard.

Quality assurance

Regular, legally required self-monitoring and external monitoring carried out by the materials testing institute MPA Stuttgart guarantee a production of highest quality. Production is carried out according to a QM procedure certified by EN ISO 9001.

Use

The fire damper type BKP can be fitted as shown in the following tables.

Use	Installation	Material	Minimum thickness [mm]	Fire resistance class	
WALL	solid	in	concrete	100	K90 ²⁾
			Aerated/lightweight concrete	100	K90 ²⁾
			Plaster board walls to DIN 18163/12859	100	K90 ²⁾
			Masonry according to DIN 1053	115	K90 ²⁾
	away from ¹⁾		concrete	100	K90 ²⁾
			Aerated/lightweight concrete	100	K90 ²⁾
			Plaster board walls to DIN 18163/12859	100	K90 ²⁾
			Masonry according to DIN 1053	115	K90 ²⁾
Lightweight partition wall	in	to DIN 4102-4 Tab. 48 or abP	100	K90 ²⁾	
		Shaft wall, Knauf W 628 type B or abP	125	K90	
CEILING	solid	in	concrete	125	K90 ²⁾
			Aerated/lightweight concrete	125	K90 ²⁾

- 1.) Installation only in connection with an L90 ventilation duct devoid of openings between the BKP and the fire-resistant wall to be protected
- 2.) The approved article may also be installed in walls or ceilings of a lower fire resistance class than F90. In this case, the approved article has the same fire resistance duration in its relevant fire resistance class "K" as the fire-resistant wall or ceiling to be protected.

Maintenance information

We point out that only suitable cleaning materials may be used for cleaning fire dampers in stainless steel design!

Attention

Each builder and engineer is required, according to the Model Building Regulation (MBO), to build in such a way that smoke and fire are prevented from occurring and spreading, and that, in case of fire, no-one gets hurt. Spreading of smoke through the ventilation and air conditioning systems can only be prevented effectively by means of motorised fire dampers in connection with smoke detection triggers.

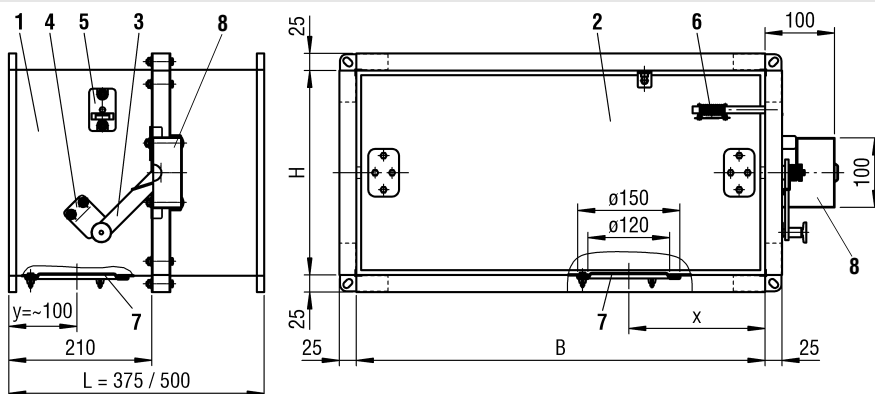
We therefore recommend fitting the fire dampers with spring return actuators which can be triggered via the smoke detectors. A low-cost solution can be early signalling of the fault via SCHA-KO's signalling and switching bus system (e.g. EasyBus or Komes, see catalogue Air Part 2, subregister 09.) either directly to the fire department or to the person in charge in-house.

Fire dampers are designed for the automatic locking of fire lobbies in RLT installations and constitute components that are subject to approval. This is why their use is subject to the "General and Special Regulations" of the general building approval and the operating, mounting and maintenance instructions.

Fire Damper Model BKP

Models and dimensions

Dimensions



Available sizes (mm)

B	H
100	100
150	125
200	150
250	160
300	175
400	200
500	225
600	250
700	300
800	

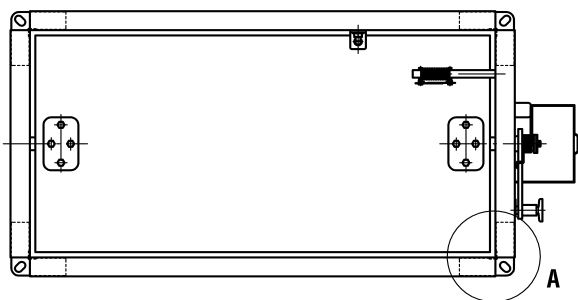
- 1 Housing
- 2 Damper leaf
- 3 Hand lever
- 4 Locking profile
- 5 Release device (always on H side)
- 6 Fusible link
- 7 Inspection openings (from $B \geq 200$ at the bottom)
At $B < 200$ no inspection opening possible
 $200 \geq B \leq 400 \Rightarrow x = B/2$
 $B > 400 \Rightarrow x \sim 200\text{mm}$
 $y \sim 100\text{mm}$ from connection flange
- 8 Cover

All combined widths and heights available.
Other dimensions on request

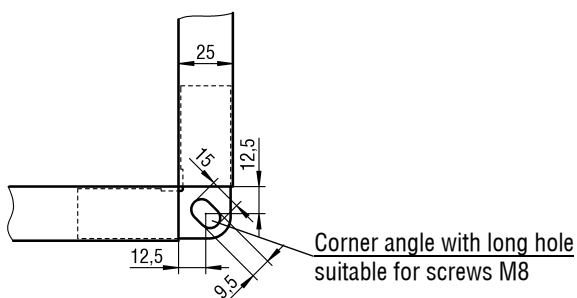
Housing lengths:
L=375mm standard
L=500mm at an extra charge

Frame bore

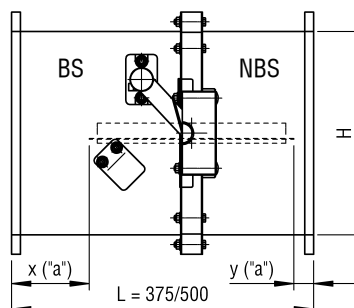
The fire damper type BKP is supplied with front side fitted corner angle long holes for M8 screws.



Detail A



Damper blade projecting ends



H	Operating side (BS)		Non-operating side (NBS)	
	L=375 / L=500		L=375	L=500
100	172	x	102	227
125	159,5		89,5	214,5
150	147		77	202
160	142		72	197
175	134,5		64,5	189,5
200	122		52	177
225	109,5		39,5*	164,5
250	97		27*	152
300	72		2*	127

* Extension piece (VT) necessary

"a" = 50 mm: Minimum distance between the front edge of the open damper leaf and the finishing protective grating (ASG), the flexible connection piece (FS) or the duct connection pipe (RS).
SCHAKO ASG / VT / FS / RS: flange holes to fit BKP

Fire Damper Model BKP

Installation details

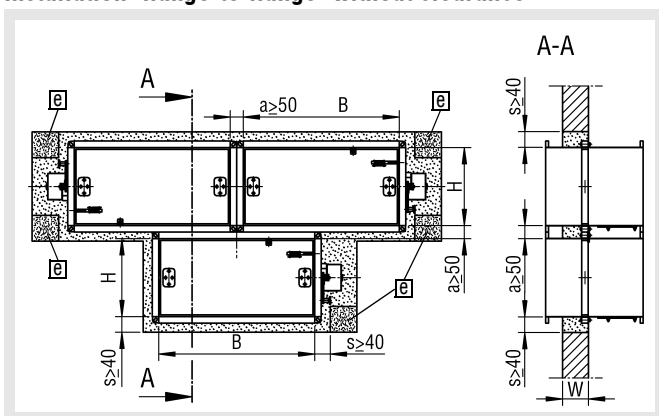
General

- During mounting or assembly, there is a risk of injuries. To avoid any possible injuries, personal protective equipment (PPE) must be worn.
- Fire dampers must be installed such that external forces do not impair their permanent functioning.
- Improper transport/handling may result in damage/functional impairment.
- Carry out a functional check of the fire damper before and after mounting.

Installation in solid walls

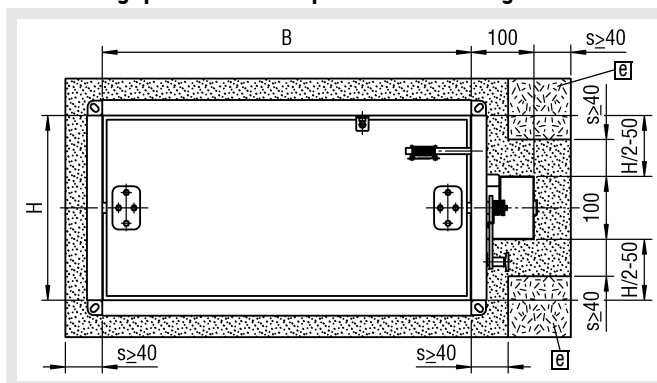
- Installation in solid walls of fire resistance duration F90 or less, including shaft walls, shafts, ducts, channels and fire walls.
- Installation in solid walls "flange-to-flange" without clearance next to or among each other. To fill the gap between the fire dampers, a mortar of mortar group III must be used.
- Installation with complete mortar lining (the circumferential gaps "s" must be completely filled with mortar of group II or III (DIN 1053), or, if wall type is suitable for concrete, plaster or plaster mortar). The minimum gap size s_{min} is 40 mm (for simplifying the mortar lining in general $s_{general} = 60$ mm). If during the construction of the wall, the shut-off damper is installed, the gaps "s" can be omitted. The mortar bed depth must not be less than 100 mm or 115 mm for masonry (DIN 1053).

Installation "flange-to-flange" without clearance



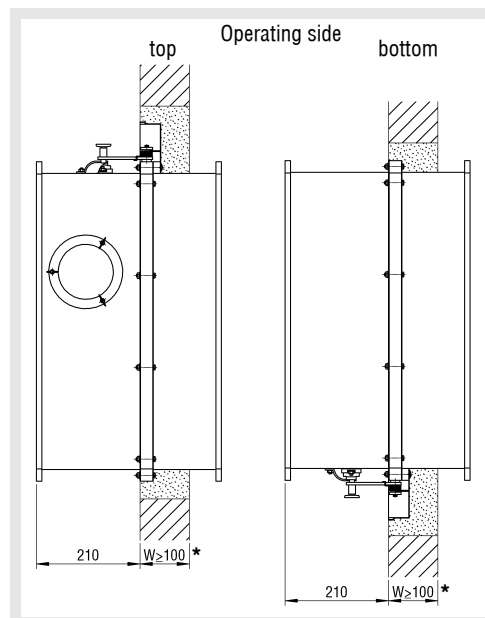
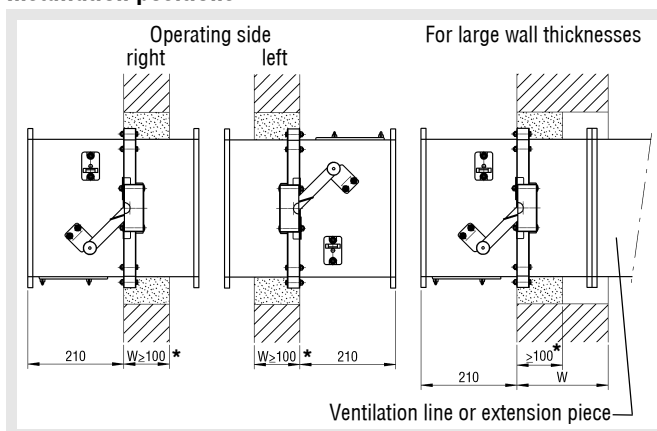
e = optional wall breakthrough

Minimum gap size with complete mortar lining



e = optional wall breakthrough

Installation positions



*) For masonry according to DIN 1053, the minimum wall thickness is 115 mm.

Fire Damper Model BKP

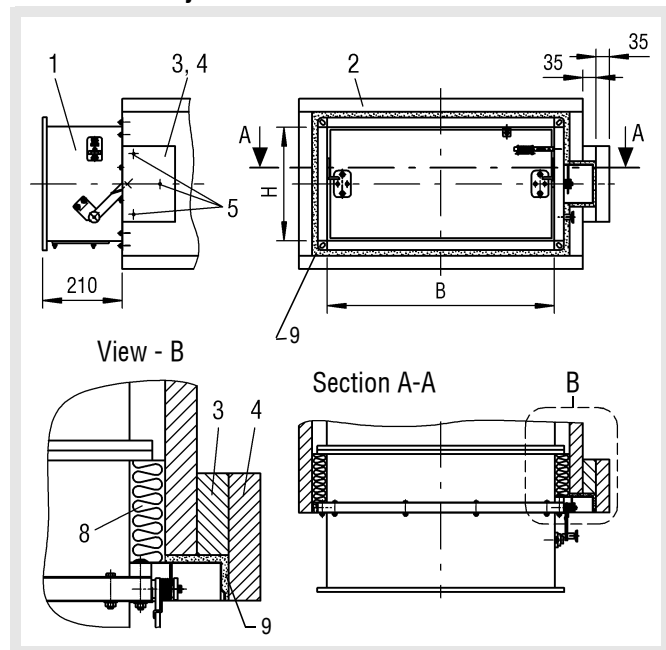
Installation away from solid walls

- Installation away from solid walls of fire resistance duration F90 or less, including shaft walls, shafts, ducts and fire walls, with horizontal mounting position of the damper leaf axle.
- When fitting the fire damper away from solid walls, it must be suspended from the ceiling.
- Installation in connection with a fire-resistant ventilation duct devoid of openings whose classification is at least L90, made of sheet steel with external insulation made of board material.
- The fire resistance duration of the ventilation duct must be proven by means of general building supervisory test certificates, expert opinions or standards.
- The duct must be connected to the side of the BKP opposite to the fire-resistant duct (operating side) by means of a flexible connecting piece (alternatively: flexible aluminum ventilation duct).
- According to the approval certificate, a minimum distance of the fire dampers from one another of at least 150 mm is allowed. However, due to the construction, the distance must be adapted to the particular design of the panelling.

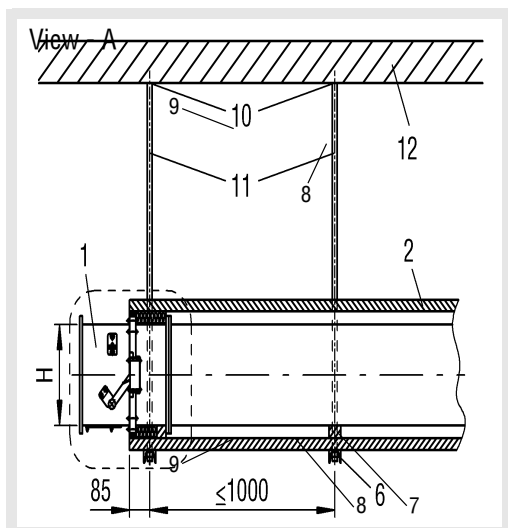
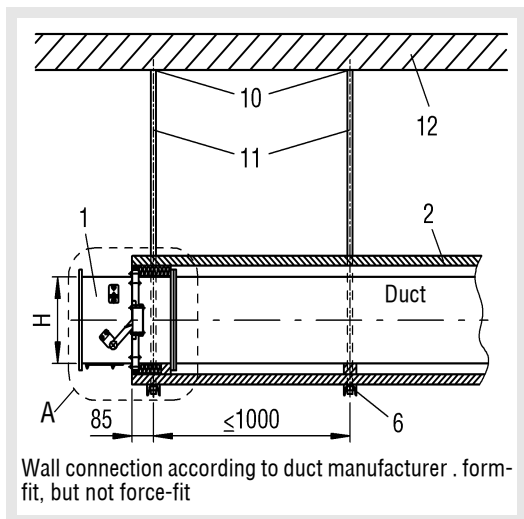
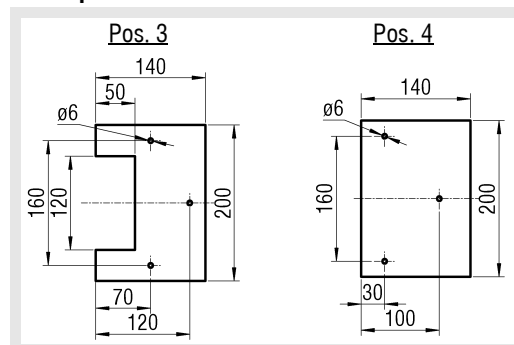
Installation sequence

- Mounting of the BKP (pos.1) on the existing ventilation duct made of sheet steel, if necessary, with the additional use of mounting suspensions, etc.
- Attachment of mineral wool (pos. 8) circumferentially on the non-operating side.
- Fire protection insulation made of board material (pos. 2), at the stainless steel ventilation duct, according to specifications of the duct manufacturer.
- The cover plates (pos.3+4) must be attached in the area of the cover with drywall screws (pos. 5), and gaps must be filled with a jointing material during assembly.
- Suspensions and fastenings (pos. 6/10/11) of the ducts and of the insulation made of board material must be executed according to DIN 4102-4 and the duct manufacturer's certificate.
- Fill the gap between the BKP and the board material with jointing material (pos. 9).
- Remove mounting aids (mounting suspensions, etc.)

Installation away from solid walls - Detailed views -



Cover plates -on site-



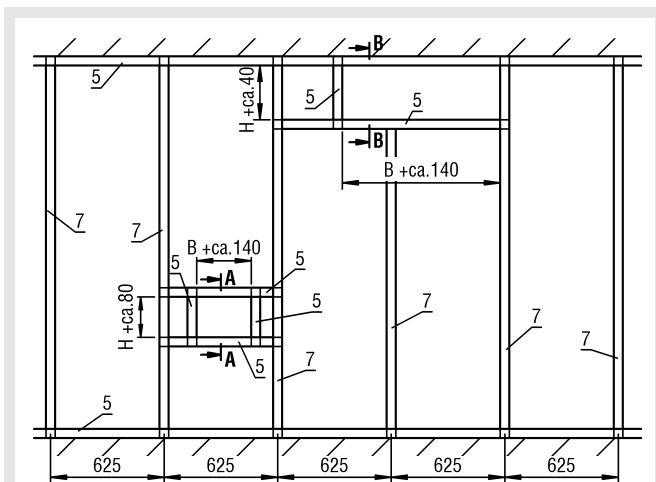
Fire Damper Model BKP

- 1 Fire Damper Model BKP
- 2 Approved fire-resistant ventilation line L90 with proven fire resistance duration, whose suitability is documented with test results, expert opinions or reports.
- 3 Cover plate, Promatect-LS 35
- 4 Cover plate, Promatect-LS 35
- 5 Drywall screws, \varnothing 4.3 x 55 mm
- 6 U-profile, Halfen anchoring system or the like. Observe dimensioning according to statics.
- 7 Support strips ~40 mm made of board material
- 8 Mineral wool (building material class A according to DIN 4102, apparent density > 100 kg/m³, melting point $\geq 1000^{\circ}\text{C}$)
- 9 Filled with plaster
- 10 Fastening by means of fasteners with proven fire protection
- 11 Suspension according to DIN 4102-4 and duct manufacturer's certificate
- 12 Solid ceiling

Fire Damper Model BKP

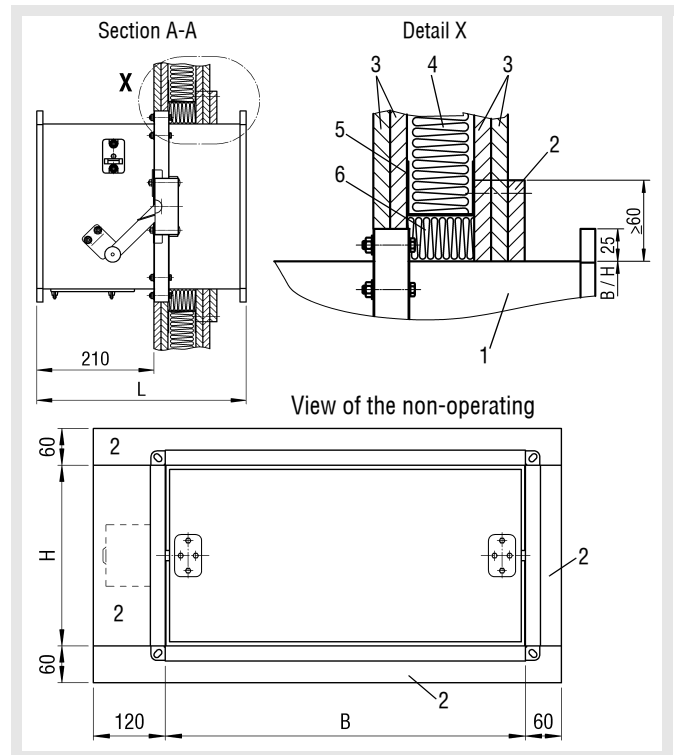
Installation in light-weight partition walls with metal post (F90)

- Installation in lightweight partition walls of fire resistance duration F90 according to DIN 4102-4 Tab. 48 or a suitable abP with metal post and panelling on both sides. For wall thicknesses ≥ 150 mm, the BKP of $L = 500$ mm must be used.
- Installation of flexible connection pieces required on both sides (alternatively: flexible ventilation duct made of aluminium)
- No additional suspensions or attachments of the BKP are allowed, and installation and mounting aids must be removed.
- The minimum distance of fire dampers from one another must be at least 150 mm.



Mounting information:

In the overlap area of the exchangeable profiles, they must be riveted, crimped or screwed once on both sides. These connections are purely for fastening the individual metal profiles during mounting.



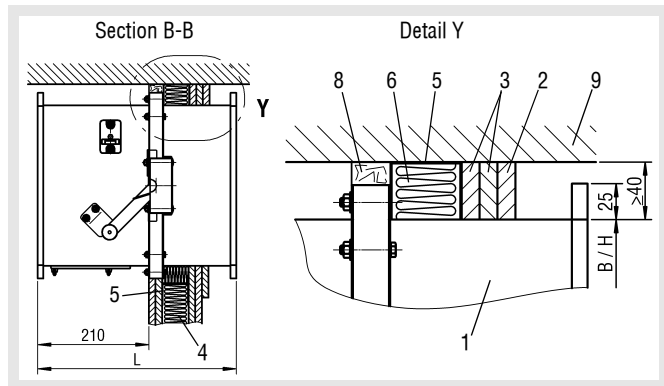
Installation sequence

- Mount the metal posts of the wall in accordance with the specifications of the wall manufacturer and the required exchange parts as shown on the drawing opposite.
- Insert the BKP (pos.1) into the wall recess (operating side - observe the installation dimension of 210 mm). Average out the circumferential annular gap evenly between the wall and the BKP. Mount the BKP with the help of mounting suspensions, etc.
- Insert mineral wool (pos.6) (building material class A to DIN 4102, apparent density 100 kg/m^3 , melting point 1000°C) into the circumferential gap 40 mm in width between the housing of the BKP and the circumferential metal profiles (pos.5).
- Mount the wall panellings on both sides (pos. 3) and the double-board layer on the non-operating side (pos. 2).
- Remove mounting aids (mounting suspensions, etc.)

Fire Damper Model BKP

Installation directly below the solid ceiling

Installation directly below the ceiling must be carried out during assembly of the wall and does not constitute a sliding ceiling connection.



Installation sequence

- Mounting of wall U-profile 50x40x0.6 (pos. 5) on the ceiling
- Insertion of mineral wool strips approx. 50x40 mm (pos. 6) (building material class A to DIN 4102, apparent density 100 kg/m³, melting point ≥ 1000 °C) into the previously described U-profile
- Screw down 3 plaster board strips $L = \wedge$ Housing width B
- Mount the BKF with the help of mounting suspensions, etc. Prior to mounting, plaster or plaster mortar must be applied wedge-like to the upper B side of the thermal insulation such that the gap (pos. 8) is completely filled. The BKP must be positioned at a height distance of approx. 40 mm from the ceiling. In doing so, the housing of the BKP must be pressed against the plaster board strips.
- The remaining metal posts are mounted according to the specified distances.
- Insertion of mineral wool (pos. 4+6)
- Mounting of the wall panelling on both sides (pos. 3) and of the double-board layer (pos. 2)
- Removal of the mounting aids (mounting suspensions, etc.)

1 Fire Damper Model BKP

2 Double-board layer (plaster boards GKF d = 12.5 mm)

- Fastening: Drywall screws TN 3.5x55, $a \leq 150$ mm, or at least 2 screws per side, connection and butt joints of the double-board layers must be filled with the wall material.

3 Lightweight partition wall according to DIN 4102 Part 4, Table 48

Screws of the wall assembly are not shown.

- First layer of the panelling, fastening: Drywall screws TN 3.5x25, $a \leq 750$ mm, according to DIN 18182, or at least 2 screws per side, connection joints between the wall and the BKP must be filled with the wall material.

- Second layer of the panelling, fastening: Drywall screws TN 3.5x35, $a \leq 250$ mm, according to DIN 18182, or at least 2 screws per side, connection joints between the wall and the BKP must be filled with the wall material.

4 Mineral wool, wall type.

5 Profile UW 50/40/0.6 (wall thickness = 100 mm, for larger wall thickness, the profiles must be adapted accordingly).

6 Mineral wool (building material class A according to DIN 4102, apparent density > 100 kg/m³, melting point ≥ 1000 °C, thickness 40 mm)

7 Profile UW 50/50/0.6 (wall thickness = 100 mm, for larger wall thickness, the profiles must be adapted accordingly).

8 Plaster filling (e.g. using the jointing material of the wall) during the assembly of the BKP.

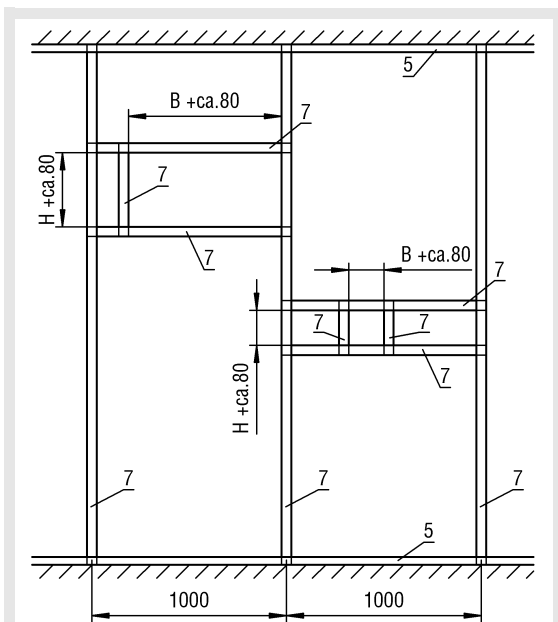
9 Solid ceiling

Fire Damper Model BKP

Installation in shaft walls

Installation in lightweight metal posts and lining on one side, Knauf shaft wall W628 type B or according to a suitable abP of fire resistance class F90.

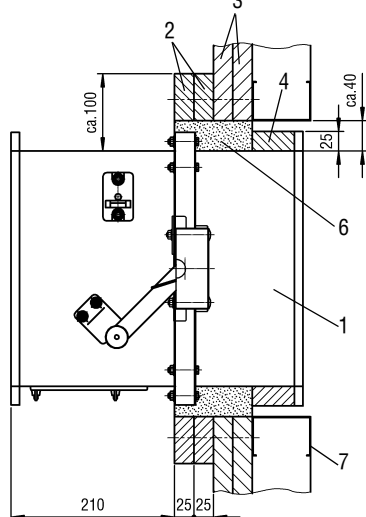
- Installation of flexible connection pieces required on both sides (alternatively: flexible ventilation duct made of aluminium)
- No additional suspensions or attachments of the BKP allowed.
- Installation and mounting aids must be removed.
- Construction-related, the minimum distance of the fire dampers from one another must be at least 200 mm.



Mounting information:

In the overlap area of the exchangeable profiles, they must be riveted, crimped or screwed once on both sides. These connections are purely for fastening the individual metal profiles during mounting.

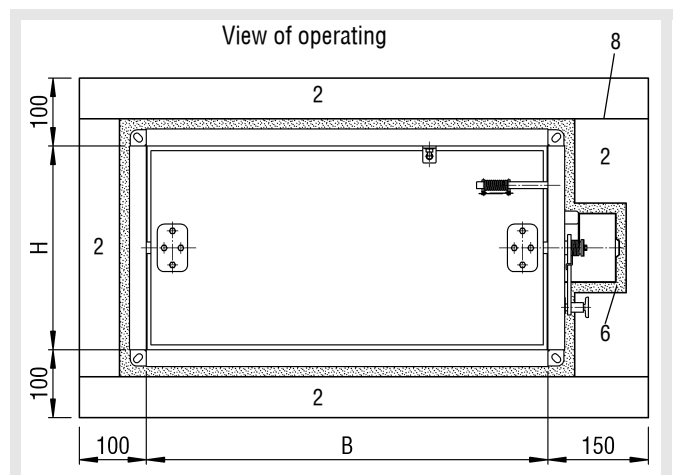
Sectional view



Installation sequence

- Mount the metal posts of the wall in accordance with the specifications of the wall manufacturer and the required exchange parts as shown on the drawing opposite.
- Mount the wall panelling (pos. 3) and the installation opening for the installation of the BKP.
- If desired, mount a filling stop (pos. 4) on the non-operating side of the BKP (! must not be screwed to the housing of the BKP. The filling stop is not required by fire protection regulations).
- Mount the BKP with the help of mounting suspensions, etc. Prior to mounting, plaster or plaster mortar must be applied to the back of the "cover" (area between "cover" and wall panelling) such that the gap is completely filled.
- Insert the BKP into the wall recess (operating side - observe the installation dimension of 210 mm for double-board layer). Average out the annular gap evenly between the circumferential metal profiles of the wall and the housing of the BKP.
- Carry out the joint filling with the jointing material of the wall (pos. 6).
- Mount the double-board layer (pos. 2) on the operating side, and fill the connection and butt joints of the double-board layers with the jointing material of the wall (pos. 6).
- Removal of the mounting aids (mounting suspensions, etc.)

View of operating



Fire Damper Model BKP

Installation information

1 Fire Damper Model BKP

2 Double-board layers (solid GKF boards 2 x 25 mm)

- First double-board layer, fastening: Drywall screws \varnothing 5.0x90, $a \leq 200$ mm, but at least 2 screws per side
- Second double-board layer, fastening: Drywall screws \varnothing 5.0x120, $a \leq 200$ mm, or at least 2 screws per side

3 Shaft wall (Knauf W 628 type B or according to abP)

The specifications of the wall manufacturer must be observed.

- First layer of the panelling, fastening: Drywall screws TN 3.5x35, $a \leq 600$ mm, according to DIN 18182, or at least 2 screws per side.
- Second layer of the panelling, fastening: Drywall screws TN 4.5x70, $a \leq 200$ mm, according to DIN 18182, or at least 2 screws per side

4 Solid plaster boards GKF circumferentially as filling stop for plaster (not required by fire protection regulations)

5 Profile UW 75/40/0.6

6 Plaster jointing, gap completely filled with plaster, carry out jointing during assembly

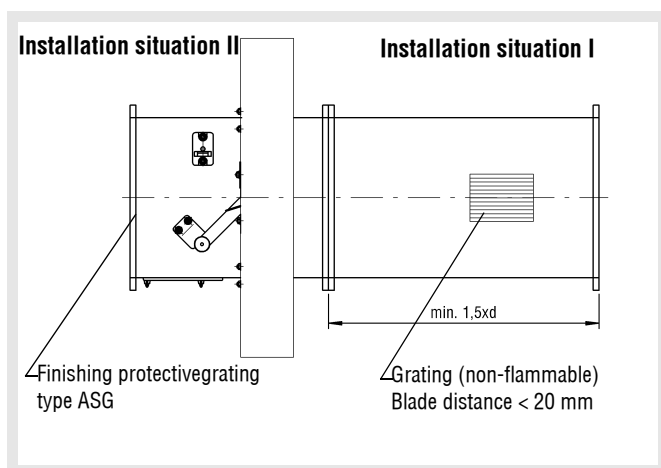
7 Profile CW 75/50/0.6

8 Butt joints: carry out the plaster jointing on all butt joints with the jointing material of the wall during assembly.

Fire Damper Model BKP

Selection of permitted ventilation ducts

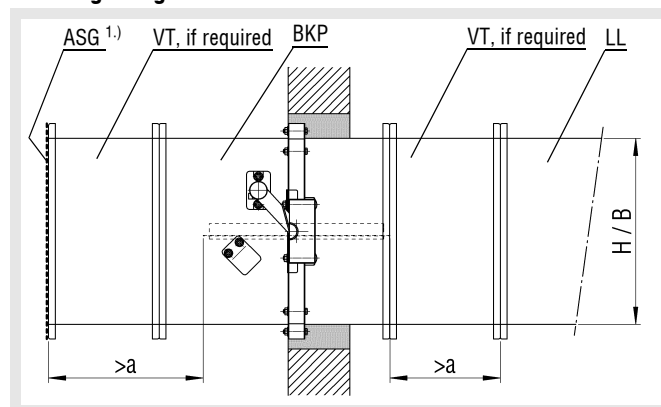
When used in walls or ceilings of classification F 90, the fire dampers of resistance class K 90 must be connected on both sides to the ventilation ducts of the ventilation system made of non-flammable building materials whose openings, except for the openings in the form of safety gratings made of non-flammable building materials, must be distanced from the damper housing by at least 1.5 times the largest side length of the inside cross-section diameter of the ventilation duct at the damper housing (see mounting situation I). Or they are connected on one side to a ventilation duct of the ventilation system and on the opposite side to a finishing protective grating made of non-flammable building materials (class A, DIN 4102) (see mounting situation II). For bends, the calculation of the side length must be based on the average radius. The local regulations regarding ventilation systems (e.g. LüAR) apply. In particular, even in case of fire, no inadmissible forces may act on the shut-off damper and the space-enclosing components and impair their fire resistance duration. The required bellow expansion joints (flexible connection pieces) must be designed as flammable, elastic connection pieces made of at least normally inflammable building materials (building material class B2 according to DIN 4102). Flexible part of the connecting piece (polyester fabric) must have a minimum length l_{\min} of 100 mm when mounted, resulting in an installation dimension of approx $L = 160$ mm. Alternatively, flexible ventilation ducts made of aluminium can be connected instead of the flexible connection pieces. Suspensions must be dimensioned and manufactured to DIN 4102-4.



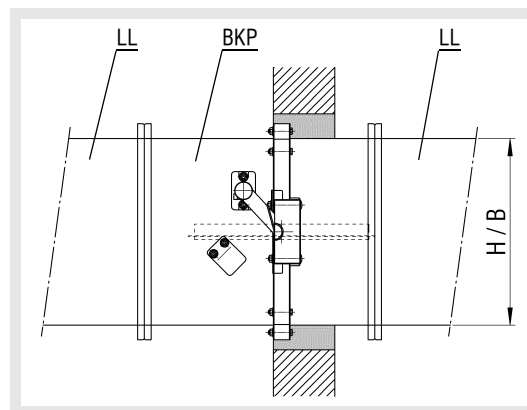
d = the larger dimension of B or H

Connection of ventilation ducts

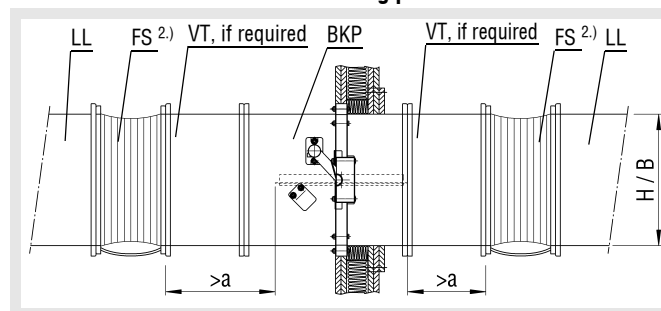
with ventilation duct arranged on one side and finishing protective grating



on both sides with ventilation ducts



on both sides with elastic connecting piece and ventilation ducts



BKP - Fire damper

ASG - Finishing protective grating

VT - Extension piece

FS - Flexible connection piece

LL - Ventilation duct

1.) - made of non-flammable material (class A according to DIN 4102)

2.) - minimum class B 2 to DIN 4102

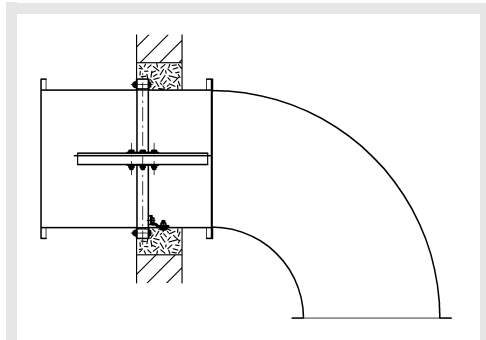
„a“ = 50 mm: Minimum distance between the front edge of the open damper leaf and the finishing protective grating (ASG), the flexible connection piece (FS) or the duct connection pipe (RS).

Fire Damper Model BKP

Air flow direction

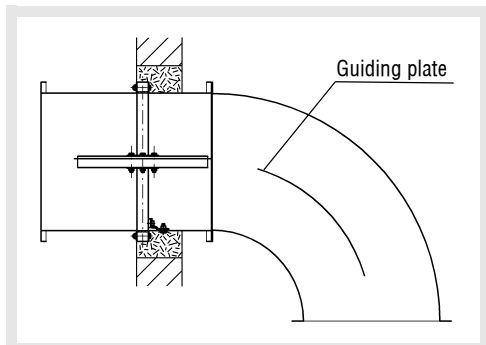
Installation independently of the air flow direction possible. Make sure that a uniform air flow reaches the shut-off device or the damper blade. The air flow must not impair the closing operation.

Unfavourable installation:



The above drawing shows an unfavourable inflow of air at the fire damper, which must be avoided under all circumstances at high speeds.

Favourable installation:



Structural alterations, such as guiding plates, have a favorable effect on the air inflow.

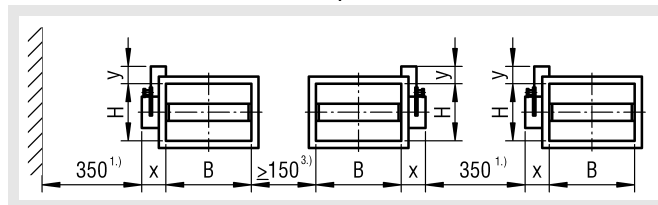
Minimum distances

The dimensions given must be considered an installation recommendation for the BKP and may differ, depending on the local situation.

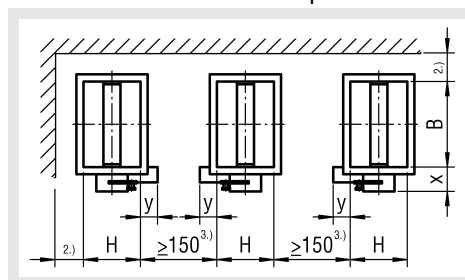
Attention: Please note that the width "B" is always parallel to the damper leaf axle "for assembly with vertical axis".

To guarantee fire safety, with solid walls and ceilings, the fire damper must be set in mortar or concrete all the way around. For lightweight walls, suitable double-board layers must be used. Inspection openings of the shut-off device must be freely accessible, otherwise these inspection openings in the connected ventilation ducts must be provided in the immediate proximity. This must be ensured in particular when at least 2 fire dampers are installed next to each other or below each other in the immediate proximity of load-carrying components.

Installation with horizontal damper leaf axle



Installation with vertical damper leaf axle



- 1.) SCHAKO recommended minimum distances, in order to allow later maintenance
- 2.) The distance between fire damper and load-carrying component (ceiling or wall) must be determined according to the installation situation of the partition walls (minimum distance = 40 mm). This may lead to a situation that the inspection openings are no longer accessible.
- 3.) Installation in solid walls can be effected "flange-to-flange" without clearance. In other installation situations, the distance may become larger as a result of construction. This may lead to a situation in which the inspection openings are no longer accessible.

The dimension x is:

- approx. 110 mm each with manual trigger, spring return actuator and magnetic clamp/pulse magnet

The dimension y is:

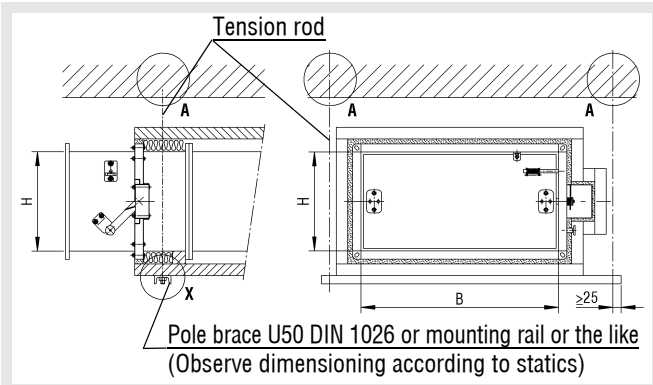
- max. 60 mm with magnetic clamp/pulse magnet

Fire Damper Model BKP

Suspension of the shut-off device

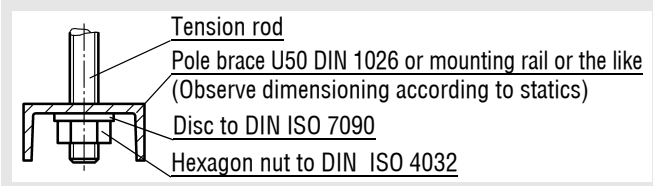
Suspensions must be dimensioned and manufactured according to DIN 4102-4. Starting with suspensions $l \geq 1500$ mm (lower edge of bare ceiling to lower edge of duct), suspensions and pole braces must be fitted with a fire protection insulation. Execution in accordance with the manufacturer's specifications for the system selected in each case.

Pole brace position



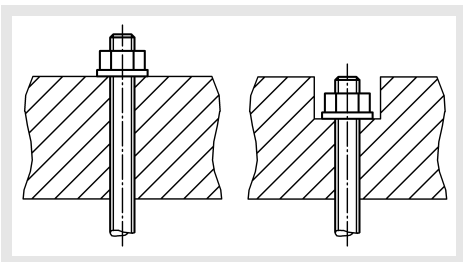
The tension rod distance must be selected in such a way that the tension rods are situated as close as possible to the insulation. Fastening of the tension rods to mounting rails must be done in undamaged exterior mounting bores.

Detail X

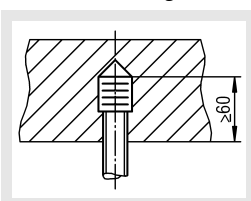


Continuous fastening

Detail A



Dowel fastening



Dowels that are suitable according to fire protection standards must be dimensioned and built in accordance with the corresponding approval document or test certificate. Dowels that do not meet this standard must be made of steel, have a minimum nominal diameter of M8. The minimum mounting depth must be twice as high as requested in the approval certificate in question, but be at least 60 mm deep and have a max. tensile load ≤ 500 N.

Tensile stress limits [N/mm²] according to DIN 4102-4 in suspensions as a function of the fire resistance class

Stress	Dimensioning for fire resistance class:	
	L30 or L60 [N/mm ²]	L90 or L120 [N/mm ²]
Tensile stress σ in vertically arranged parts	9	6
Shear stress τ in screw resistance class 4.6 according to DIN EN ISO 898-1	15	10

Table "allowed loads F_{allowed} [N] for suspensions -tension rods made of threaded steel rods, for fire resistance duration 90 minutes"

Size	$A_s^x)$ [mm ²]	F_{allowed} [N]	
		per unit	per pair
M8	36,6	220	440
M10	58,0	348	696
M12	84,3	506	1012
M14	115,0	690	1380
M16	157,0	942	1884
M20	245,0	1470	2940

X) Stressed cross-sections A_s according to DIN 13

Fire Damper Model BKP

Technical Data

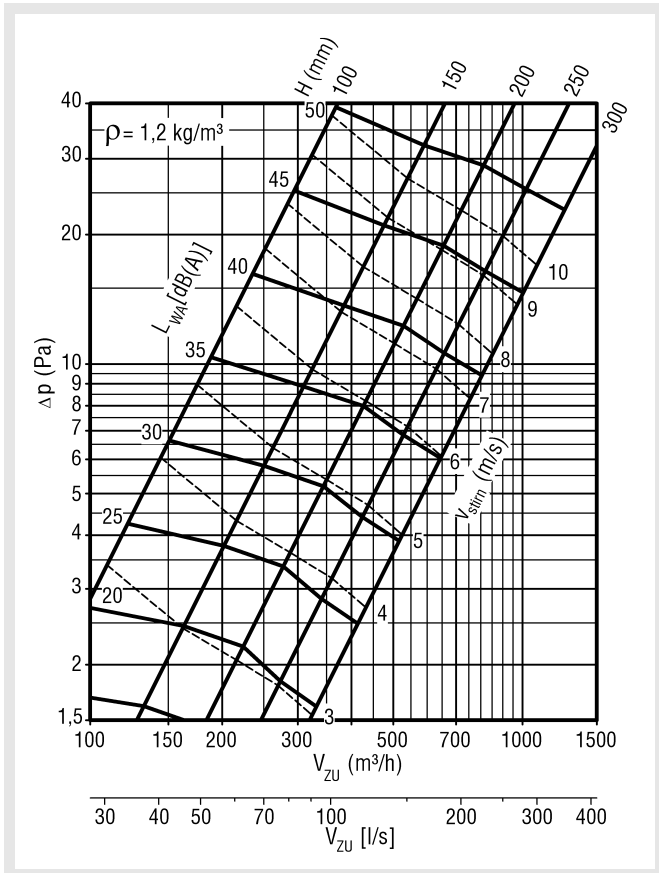
Quick selection

		L _{WA} = 35 dB(A)					L _{WA} = 40 dB(A)					L _{WA} = 45 dB(A)				
		H (mm)					H (mm)					H (mm)				
		100	150	200	250	300	100	150	200	250	300	100	150	200	250	300
100	V _{ZU} (m ³ /h)	190	311	428	530	646	237	386	530	659	805	296	478	6566	8198	1004
	[l/s]	53	86	119	147	179	66	107	147	183	224	82	133	1824	2277	279
	v _{stirn} (m/s)	5,4	5,8	5,9	5,9	6,0	6,6	7,1	7,4	7,4	7,5	8,3	8,8	9,1	9,1	9,3
	Δp (Pa)	10,4	8,9	8,0	6,9	6,1	16,2	13,7	12,3	10,6	94,1	25,2	20,9	18,8	16,4	14,6
150	V _{ZU} (m ³ /h)	281	455	636	787	985	350	570	794	983	1205	435	714	996	1229	1475
	[l/s]	78	126	177	219	274	97	158	221	273	335	121	198	277	341	410
	v _{stirn} (m/s)	5,2	5,6	5,8	5,8	6,1	6,5	7,0	7,3	7,3	7,5	8,1	8,8	9,2	9,1	9,1
	Δp (Pa)	9,7	8,4	7,4	6,5	5,6	15,0	13,2	11,5	10,2	8,4	23,3	20,6	18,1	15,9	12,6
200	V _{ZU} (m ³ /h)	375	610	838	1064	1340	466	765	1044	1347	1657	581	960	1302	1639	2049
	[l/s]	104	169	233	295	372	130	212	290	374	460	161	267	362	455	569
	v _{stirn} (m/s)	5,2	5,7	5,8	5,9	6,2	6,4	7,1	7,3	7,3	7,7	8,1	8,9	9,0	9,1	9,5
	Δp (Pa)	8,1	6,9	6,2	5,7	5,0	12,5	10,8	9,6	8,8	7,6	19,4	17,1	15,0	13,5	11,8
250	V _{ZU} (m ³ /h)	473	750	1046	1361	1721	588	938	1308	1730	2195	732	1175	1636	2199	2800
	[l/s]	131	208	291	378	478	163	261	363	481	610	203	326	455	611	778
	v _{stirn} (m/s)	5,3	5,6	5,8	6,1	6,4	6,6	7,0	7,3	7,7	8,1	8,1	8,7	9,1	9,8	10,4
	Δp (Pa)	7,5	6,4	5,7	5,5	4,3	11,7	10,1	8,9	8,9	7,0	18,1	15,7	13,9	14,4	11,4
300	V _{ZU} (m ³ /h)	568	900	1254	1597	1824	702	1121	1554	1986	2280	869	1396	1926	2470	2852
	[l/s]	158	250	348	444	507	195	311	432	552	633	241	388	535	686	792
	v _{stirn} (m/s)	5,3	5,6	5,8	5,9	5,7	6,5	6,9	7,2	7,4	7,0	8,1	8,6	8,9	9,2	8,8
	Δp (Pa)	7,2	6,1	5,4	5,0	3,3	11,0	9,4	8,3	7,7	5,1	16,8	14,6	12,7	12,0	8,0
400	V _{ZU} (m ³ /h)	749	1207	1705	2004	2477	932	1500	2082	2462	3154	1160	1863	2544	3059	4016
	[l/s]	208	335	473	557	688	259	417	578	684	876	322	517	707	850	1116
	v _{stirn} (m/s)	5,2	5,6	5,9	5,6	5,8	6,5	6,9	7,2	6,9	7,3	8,1	8,6	8,8	8,4	9,3
	Δp (Pa)	6,5	5,5	5,1	4,2	3,2	10,1	8,5	7,6	6,3	5,2	15,6	13,1	11,3	9,5	8,5
500	V _{ZU} (m ³ /h)	976	1567	2130	2530	2932	1216	1951	2696	3125	3699	1515	2440	3378	3861	4667
	[l/s]	271	435	592	703	814	338	542	749	868	1028	421	678	938	1073	1296
	v _{stirn} (m/s)	5,4	5,8	5,9	5,6	5,5	6,8	7,2	7,5	7,0	6,9	8,4	9,0	9,4	8,6	8,7
	Δp (Pa)	6,5	5,5	4,8	3,9	2,4	10,1	8,5	7,7	5,9	3,9	15,6	13,3	12,1	9,0	6,1
600	V _{ZU} (m ³ /h)	1161	1890	2369	2878	3401	1441	2347	2945	3595	4202	1789	2916	3661	4492	5184
	[l/s]	323	525	658	799	945	400	652	818	999	1167	497	810	1017	1248	1440
	v _{stirn} (m/s)	5,4	5,8	5,5	5,4	5,3	6,7	7,3	6,8	6,7	6,5	8,3	9,0	8,5	8,3	8,0
	Δp (Pa)	5,6	4,8	3,6	3,0	2,2	8,6	7,4	5,6	4,7	3,3	13,3	11,4	8,6	7,3	5,1
700	V _{ZU} (m ³ /h)	1421	2292	2736	3552	4137	1764	2848	3395	4399	5142	2194	3539	4213	5449	6391
	[l/s]	395	637	760	987	1149	490	791	943	1222	1428	610	983	1170	1514	1775
	v _{stirn} (m/s)	5,7	6,1	5,5	5,7	5,5	7,0	7,6	6,8	7,0	6,8	8,7	9,4	8,4	8,7	8,5
	Δp (Pa)	5,8	4,9	3,4	3,2	2,5	8,9	7,6	5,3	4,9	3,9	13,7	11,7	8,1	7,5	6,1
800	V _{ZU} (m ³ /h)	1610	2387	3028	3887	4764	2016	2983	3783	4818	5959	2516	3726	4726	5973	7456
	[l/s]	447	663	841	1080	1323	560	829	1051	1338	1655	699	1035	1313	1659	2071
	v _{stirn} (m/s)	5,6	5,5	5,3	5,4	5,5	7,0	6,9	6,6	6,7	6,9	8,7	8,6	8,2	8,3	8,6
	Δp (Pa)	5,5	3,9	2,9	2,8	2,0	8,6	6,1	4,6	4,3	3,1	13,5	9,5	7,1	6,5	4,9

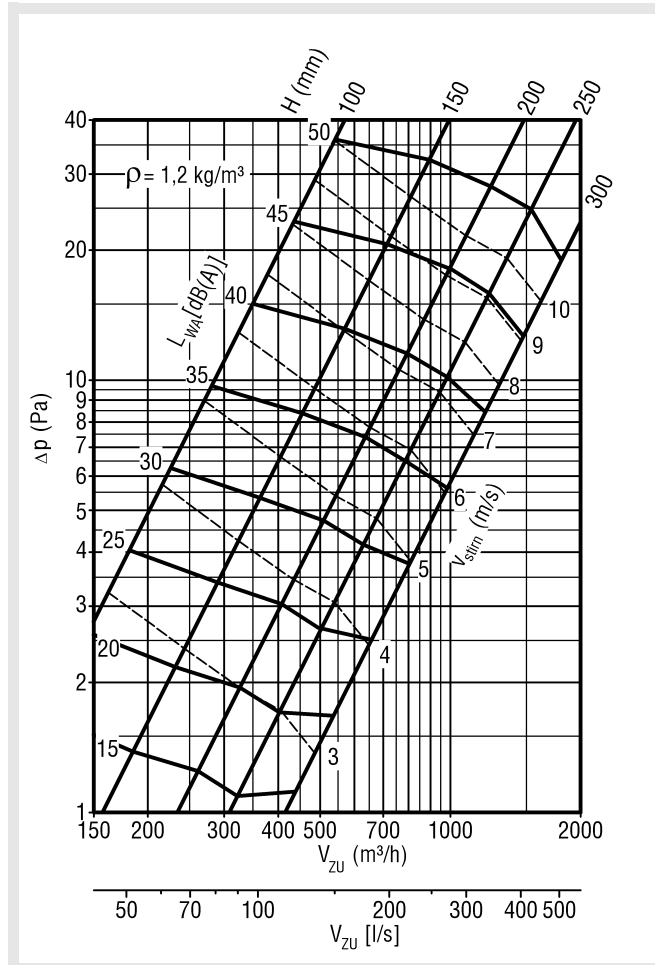
Fire Damper Model BKP

Flow generated noise

Damper width B = 100 mm



Damper width B = 150 mm



Correction values B = 100 mm

with finishing protective grating (-ASG):

$$L_{WA} \times 1.12$$

$$\Delta p \times 1.92$$

Radiated noise:

$$L_{WA} - 7 \text{ [dB(A)]}$$

Correction values B = 150 mm

with finishing protective grating (-ASG):

$$L_{WA} \times 1.12$$

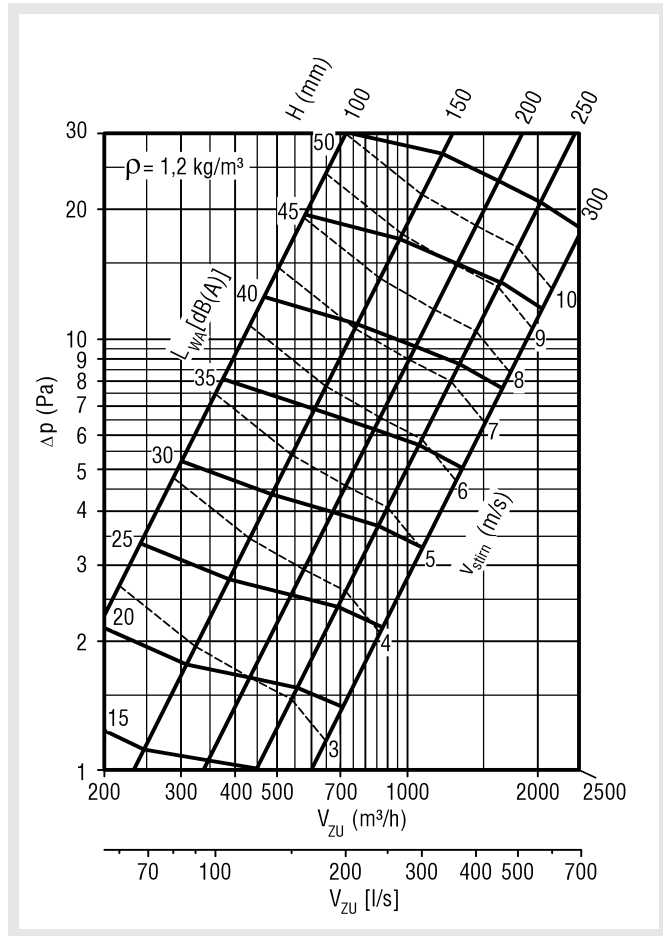
$$\Delta p \times 1.92$$

Radiated noise:

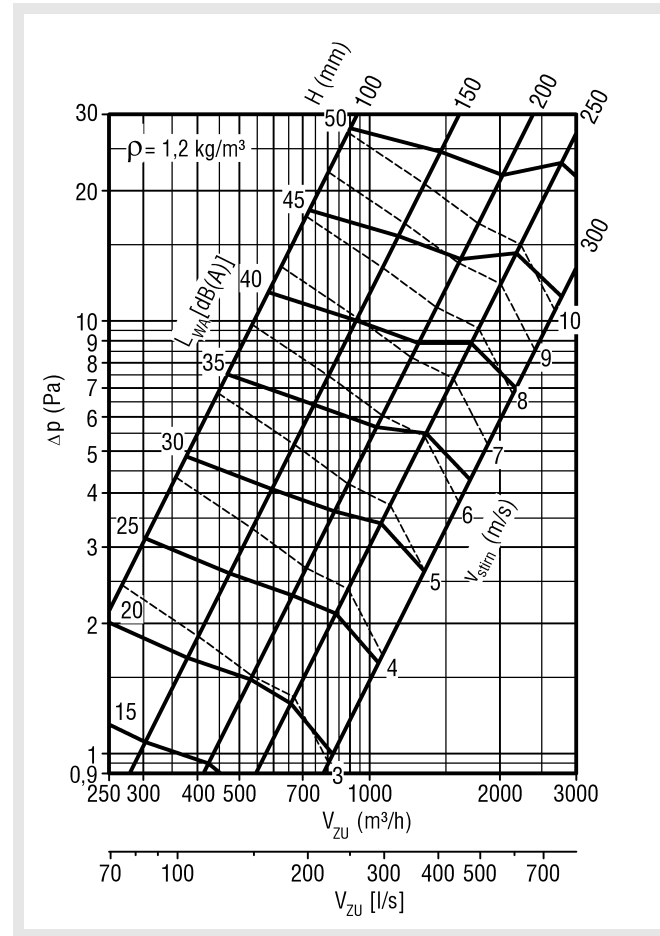
$$L_{WA} - 7 \text{ [dB(A)]}$$

Fire Damper Model BKP

Damper width B = 200 mm



Damper width B = 250 mm



Correction values B = 200 mm

with finishing protective grating (-ASG):

$L_{WA} \times 1.12$

$\Delta p \times 2.04$

Radiated noise:

$L_{WA} - 7$ [dB(A)]

Correction values B = 250 mm

with finishing protective grating (-ASG):

$L_{WA} \times 1.12$

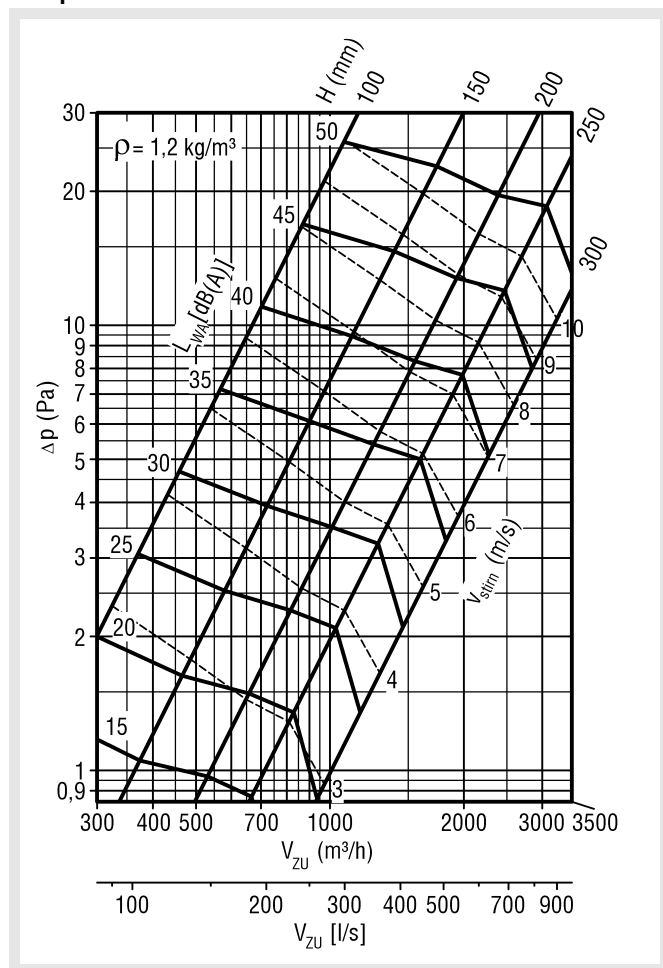
$\Delta p \times 2.16$

Radiated noise:

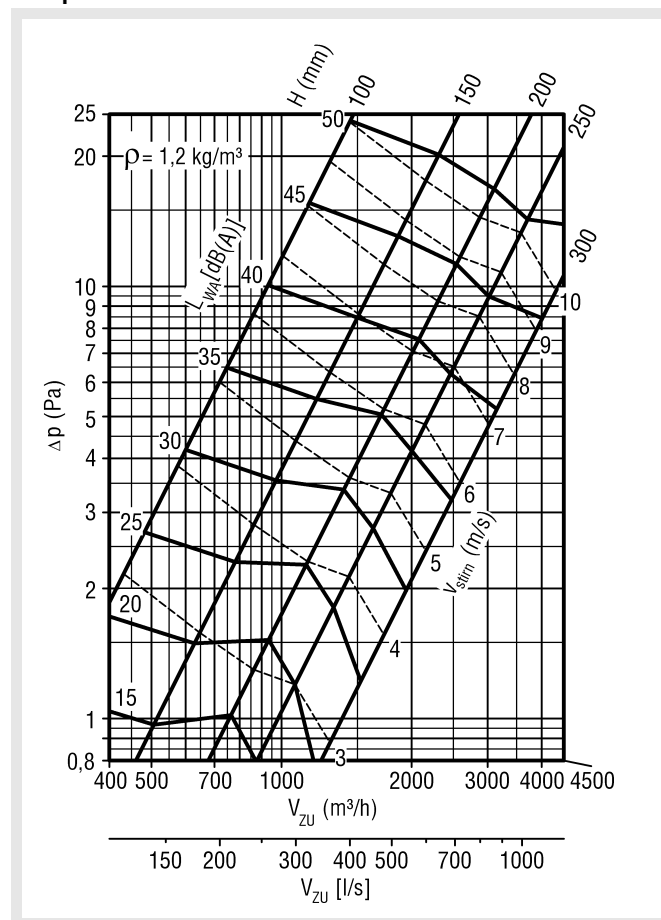
$L_{WA} - 7$ [dB(A)]

Fire Damper Model BKP

Damper width B = 300 mm



Damper width B = 400 mm



Correction values B = 300 mm

with finishing protective grating (-ASG):

$L_{WA} \times 1.12$

$\Delta p \times 2.53$

Radiated noise:

$L_{WA} - 7$ [dB(A)]

Correction values B = 400 mm

with finishing protective grating (-ASG):

$L_{WA} \times 1.14$

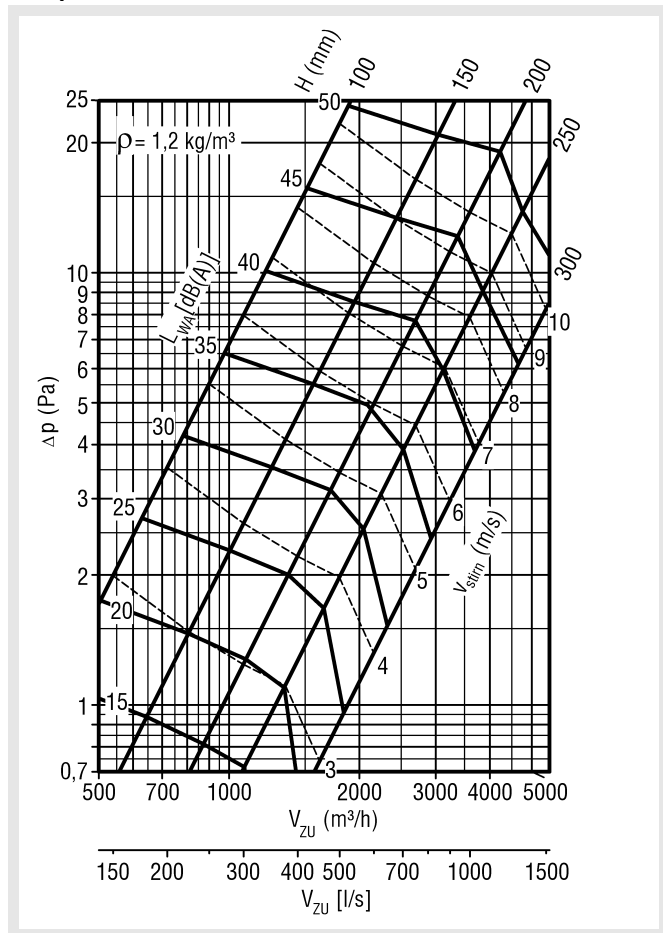
$\Delta p \times 2.61$

Radiated noise:

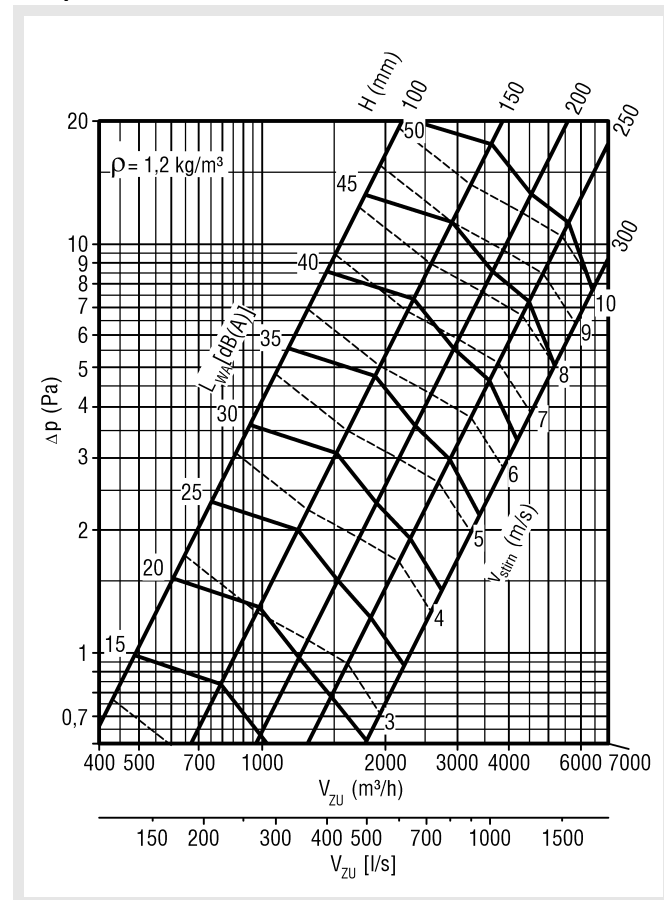
$L_{WA} - 8$ [dB(A)]

Fire Damper Model BKP

Damper width B = 500 mm



Damper width B = 600 mm



Correction values B = 500 mm

with finishing protective grating (-ASG):

$L_{WA} \times 1.16$

$\Delta p \times 2.89$

Radiated noise:

$L_{WA} - 8$ [dB(A)]

Correction values B = 600 mm

with finishing protective grating (-ASG):

$L_{WA} \times 1.14$

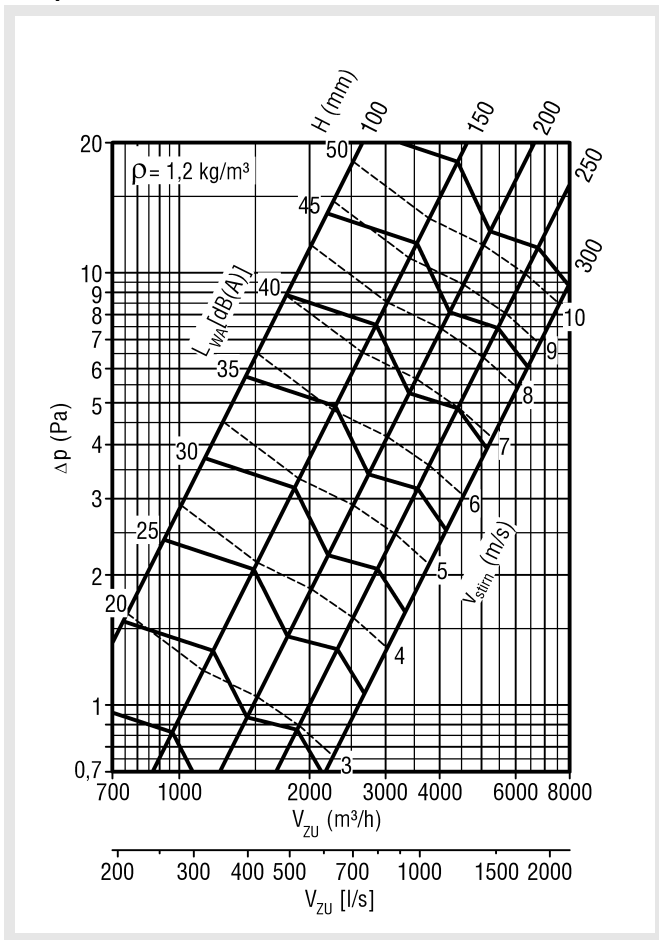
$\Delta p \times 2.92$

Radiated noise:

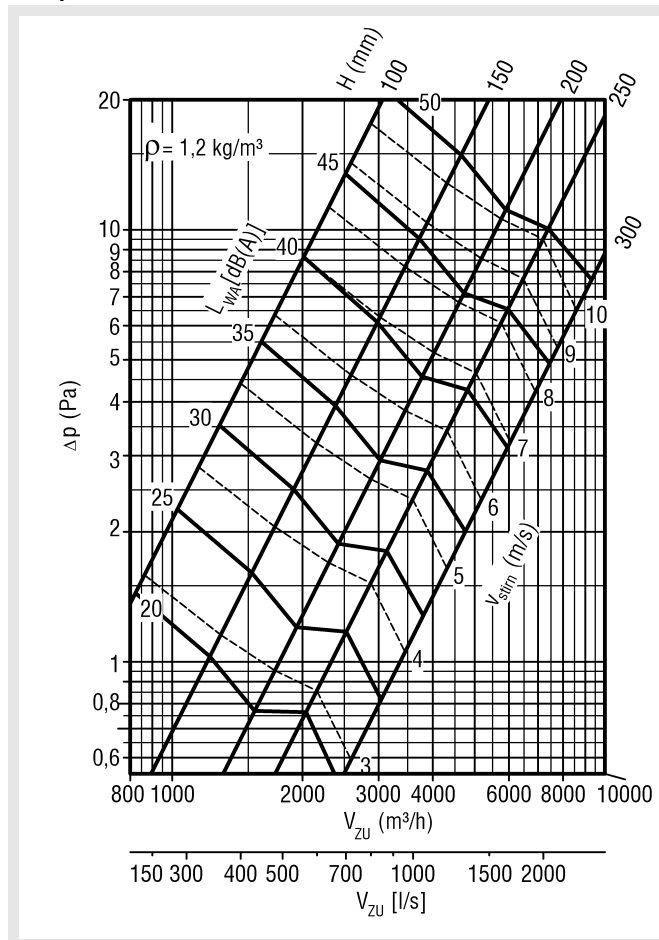
$L_{WA} - 8$ [dB(A)]

Fire Damper Model BKP

Damper width B = 700 mm



Damper width B = 800 mm



Correction values B = 700 mm

with finishing protective grating (-ASG):

$$L_{WA} \times 1.12$$

$$\Delta p \times 2.98$$

Radiated noise:

$$L_{WA} - 8 \text{ [dB(A)]}$$

Correction values B = 800 mm

with finishing protective grating (-ASG):

$$L_{WA} \times 1.12$$

$$\Delta p \times 2.98$$

Radiated noise:

$$L_{WA} - 8 \text{ [dB(A)]}$$

Fire Damper Model BKP

Free cross-section [m²]

		B									
		100	150	200	250	300	400	500	600	700	800
H	100	0.006	0.010	0.013	0.017	0.021	0.028	0.036	0.043	0.051	0.058
	125	0.008	0.013	0.018	0.023	0.028	0.038	0.048	0.058	0.068	0.078
	150	0.011	0.017	0.023	0.029	0.035	0.048	0.060	0.073	0.085	0.098
	160	0.012	0.018	0.025	0.032	0.038	0.052	0.065	0.079	0.092	0.106
	175	0.013	0.020	0.028	0.035	0.043	0.058	0.073	0.088	0.103	0.118
	200	0.016	0.024	0.033	0.042	0.050	0.068	0.085	0.103	0.120	0.138
	225	0.018	0.028	0.038	0.048	0.058	0.078	0.098	0.118	0.138	0.158
	250	0.021	0.032	0.043	0.054	0.065	0.088	0.110	0.133	0.155	0.178
	300	0.026	0.039	0.053	0.067	0.080	0.108	0.135	0.163	0.190	0.218

Accessories

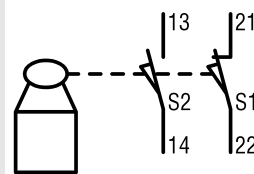
available at extra cost:

- Model made of stainless steel material no. 1.4301 (V2A) or 1.4571 (V4A)
 - Model with additional DD coating (solvent-containing two-component top coat based on polyurethane varnish) inside / outside
 - thermal trigger via fusible link 98°C (hot-air heating)
 - Limit switch type ES, limit switch type Easy-Eco-Tx (Easy-Bus)
 - Electric spring return actuator type ELD-BLF (230V AC, 24 V AC/DC). Trigger temperatures 72° optionally 95 °C Trigger temperature (for hot-air heating). 24 V actuators with connectors
 - Magnetic clamp or pulse magnet (24 V DC, 230 V AC)
 - Smoke alarm system type RMS with abZ No. Z-78.6-58. Usability depends on damper dimension. For a technical description and documentation, see catalogue Air, subregister 09.e.
 - Signalling and switching bus system type EasyBus or KOMES
 - Extension part VT ^{1.)}
 - Assembly part type EBT ^{1.)}
 - required for installation of the smoke alarm system type RMS
 - Flexible connection piece FS; PVC (building material class B2 to DIN 4102), connection profile sheet steel ^{2.)}
 - Finishing protective grating ASG ^{1.)}
- 1.) Standard design galvanised sheet steel, material No. 1.4301 or 1.4571, powder coating (RAL 9010) and DD coating possible.
- 2.) Standard model galvanised sheet steel, model material no. 1.4301 or 1.4571 possible.

Limit switch type ES

Electric limit switch for "OPEN" and/or "CLOSED" position indicators. Switching element including one NC and one NO contact each, 4 connections for M3.5 screw terminals for maximum 2 mm². 250 V AC, I_e 6A, IP67 -using suitable screwed cable glands M20 (on site)- connection / integration into LON networks via SCHAKO module LON-K-OR possible. For a technical description and documentation, see catalogue Air, subregister 09.c. (Technical documentation signalling and switching bus system type KOMES).

Circuit diagram ES



Damper positions that can be displayed:

Type ES 1 Z : "CLOSED"

Type ES 1 A : "OPEN"

Type ES 2 : "OPEN" and "CLOSED"

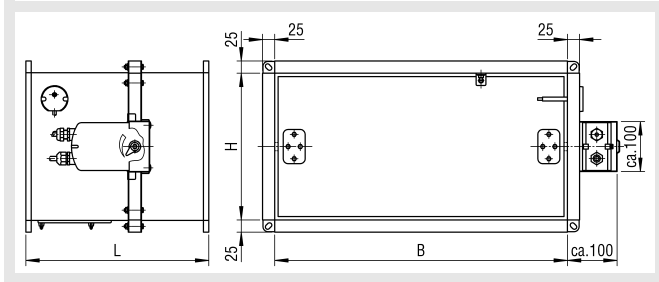
Limit switch type Easy-Eco-Tx

For a technical description and documentation, see catalogue Air, subregister 09.c. (Technical documentation signalling and switching bus system type EasyBus).

Fire Damper Model BKP

Electric spring return actuator type ELD-BLF

(BLF24-T-ST SO / BLF230-T SO)



Electric spring return actuators with thermoelectric release devices BAE-72B-S.

- Trigger temperature 72° optionally 95 °C (for hot-air heating).
- Operating position (damper "OPEN") and tensioning of the return spring by applying the supply voltage (230V AC, 24V AC/DC)
- 24V actuators with connectors
- Safety position (damper "CLOSED") through spring energy when supply voltage is interrupted or the thermal fuses Tf1 (ambient temperature) or Tf2/Tf3 (duct inside temperature) respond. A response of the thermal fuses Tf1, Tf2/Tf3 will interrupt the supply voltage permanently and irrevocably.

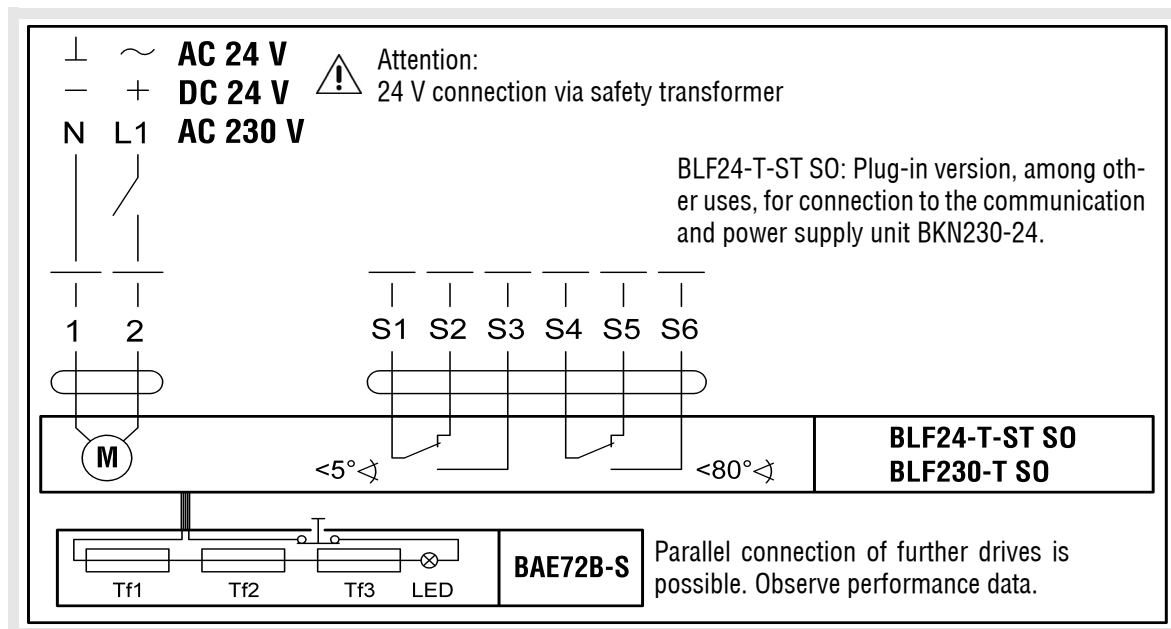
- Indication of the damper end positions by integrated micro switches (S1 - S3 "CLOSED" indicates closed position; S4 - S6 "OPEN" indicates open position)
- Manual actuation and fixing in any position is possible in the de-energised state. It can be unlocked manually or by applying the supply voltage.

Attention:

Safety function is only guaranteed if the drive has been connected to the supply voltage in accordance with regulations.

- On-site function control is possible by means of the control key of BAE-72 B-S
- Spare parts: thermal fuse Tf2/Tf3 with baseplate (ZBAE72 or ZBAE 95), for any other damage etc., the entire "drive-thermal trigger device" unit must be replaced.
- Connection to LON networks possible via SCHAKO LON-K module. For a technical description and documentation, see catalogue Air, subregister 09.c. (Technical documentation signalling and switching bus system type KOMES).

Connection diagram ELD-BLF



Fire Damper Model BKP

ELD-BLF 24 (BLF24-T-ST SO)

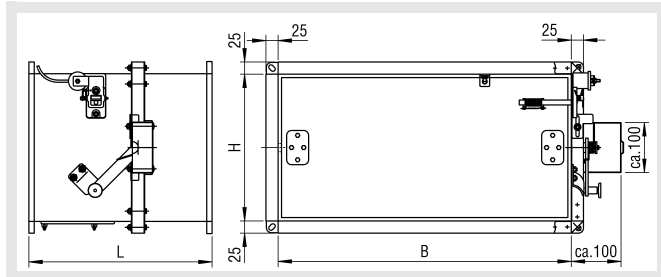
Electric data	
Nominal voltage	AC 24 V - 50/60 Hz; DC 24 V
Functional range	AC 19.2...28.8 V; DC 21.6...28.8 V
Power consumption	Running 5 W @ rated torque Holding 2.5 W Dimensioning 7 VA / I _{max} 5.8 A @ 5 ms
Auxiliary switch	2 x EPU
Contact load (Silver contact, gold-plated)	1 mA...3 A (0.5 A), DC 5 V...AC 250 V <input type="checkbox"/>
Switching points	5° ↯ / 80° ↯
Response temperature of thermal fuses:	Tf1: duct external temperature 72 °C Tf2+Tf3: duct internal temperature 72 °C optional Tf2+Tf3: duct internal temperature 95 °C
Connection	Motor Cable 1 m, 2 x 0.75 mm ² , halogen-free, with 3-pin plug Auxiliary switch cable 1 m, 6 x 0.75 mm ² , halogen-free with 6-pin connector
Functional data	
Torque	Motor Min. 6 Nm Spring return Min. 4 Nm
Direction of rotation	selectable via L / R mounting
angle of rotation	max. 95° ↯ (including 5° ↯ spring pre-tension)
Running time	Motor 40...75 s (0...6 Nm) Spring return ~ 20 s @ -20...+50°C / max. 60s @ -30°C
Sound power level	Motor Max. 45 dB(A) Spring return ~ 62 dB(A)
Damper drive	Positive locking 12mm (10mm with enclosed adapter)
Position indicator	mechanically by pointer
Lifetime	min. 60,000 safety positions
Safety	
Protection class	III Safety extra low voltage
Protection type	IP54 in all mounting positions
EMC	CE according to 2004 / 108 / EC
Low voltage directive	CE according to 2006 / 95 / EC
Mode of action	Type 1.AA.B (EN60730-1)
Rated surge voltage	0.8 kV (EN60730-1)
Contamination level of the environment	3 (EN60730-1)
Ambient temperature	Standard operation -30... +50 °C Safety incident Reaching the safety position is guaranteed up to max. 75 °C
Storage temperature	-40... +50 °C
Ambient humidity	95% r.h., non-condensing (EN 60730-1)
Maintenance	maintenance-free
Weight	
Weight	1.6 kg

ELD-BLF 230 (BLF230-T SO)

Electric data	
Nominal voltage	AC 230 V - 50/60 Hz
Functional range	AC 198 ... 264 V
Power consumption	Running 6 W @ rated torque Holding 3 W Dimensioning 7 VA / I _{max} 150 mA @ 10 ms
Auxiliary switch	2 x EPU
Contact load (Silver contact, gold-plated)	1 mA...3 A (0.5 A), DC 5 V...AC 250 V <input type="checkbox"/>
Switching points	5° ↯ / 80° ↯
Response temperature of wandeigen fuses:	Tf1: duct external temperature 72 °C Tf2+Tf3: duct internal temperature 72 °C optional Tf2+Tf3: duct internal temperature 95 °C
Connection	Motor Cable 1 m, 2 x 0.75 mm ² , halogen-free Auxiliary switch Cable 1 m, 6 x 0.75 mm ² , halogen-free
Functional data	
Torque	Motor Min. 6 Nm Spring return Min. 4 Nm
Direction of rotation	selectable via L / R mounting
angle of rotation	max. 95° ↯ (including 5° ↯ spring pre-tension)
Running time	Motor 40...75 s (0...6 Nm) Spring return ~ 20 s @ -20...+50°C / max. 60s @ -30°C
Sound power level	Motor Max. 45 dB(A) Spring return ~ 62 dB(A)
Damper drive	Positive locking 12mm (10mm with enclosed adapter)
Position indicator	mechanically by pointer
Lifetime	min. 60,000 safety positions
Safety	
Protection class	II protective insulation <input type="checkbox"/>
Protection type	IP54 in all mounting positions
EMC	CE according to 2004 / 108 / EC
Low voltage directive	CE according to 2006 / 95 / EC
Mode of action	Type 1.AA.B (EN60730-1)
Rated surge voltage	4 kV (EN60730-1)
Contamination level of the environment	3 (EN60730-1)
Ambient temperature	Standard operation -30... +50 °C Safety incident Reaching the safety position is guaranteed up to max. 75 °C
Storage temperature	-40... +50 °C
Ambient humidity	according to EN 60730-1
Maintenance	maintenance-free
Weight	
Weight	1.7 kg

Fire Damper Model BKP

Magnetic clamp/pulse magnet (24 V DC, 230 V AC)



Magnetic triggers

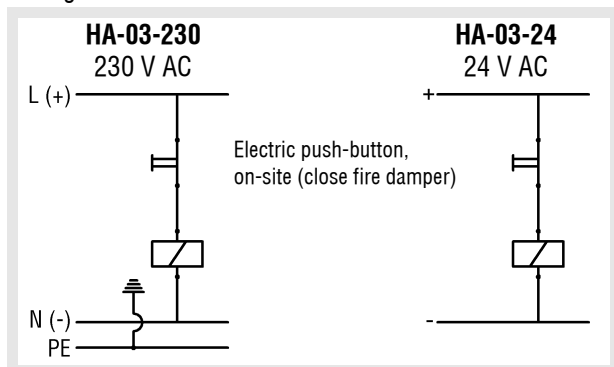
The trigger rocker of the trigger device is held on one side by the anchor plate of a magnet or pulse magnet. On the other side of the release rocker, the lock bolt of the hand lever is arrested.

When the magnet is triggered by interrupting the power supply, the release rocker is tilted by a leg spring attached laterally such that the lock bolt of the hand lever is released, closing the damper.

The pulse magnet is triggered by a short current pulse, which results in the anchor plate being released by the magnet.

Magnetic clamp HA-03-24 / HA-03-230

Wiring note:

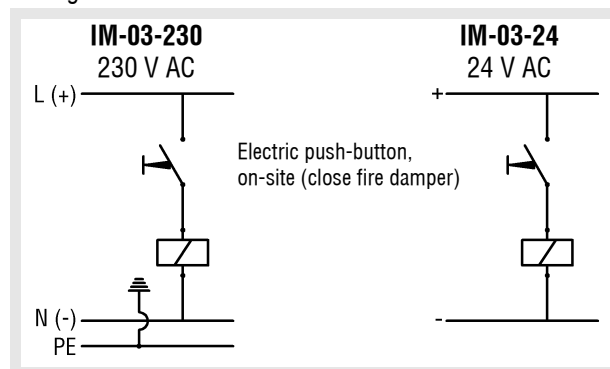


Functional principle:

Magnet clamps consist of an electromagnetic adhesion system. The magnetic circuit, which is open in the switched-on state, allows ferromagnetic workpieces to be held. The shut-off damper is closed by interrupting the power.

Pulse magnet IM-03-24 / IM-03-230

Wiring note:



Functional principle:

Pulse magnets (permanent electric magnets) consists of a permanently magnetic adhesion system for holding ferromagnetic workpieces and an excitation winding, which neutralises the magnetic field at the adhesion surface in the switched-on state, thus allowing the workpieces to be removed or loads to be set down. Owing to the built-in permanently magnetic adhesion system, which is effective in the currentless state of the device, these pulse magnets are preferably used wherever long adhesion times are required and the device is only switched on for a short period or occasionally. The shut-off damper is closed by "briefly" applying a voltage (pulse).

Magnetic trigger:

Trigger time min. 1.5 s

When using pulse magnets for triggering, the operating voltage may be applied during a short period only.

Smoke alarm system type RMS

For a technical description and documentation, see catalogue Air, subregister 09.e.

Smoke detectors only in connection with relay module and spring return actuator or magnetic clamp/pulse magnet.

When using the smoke alarm system type RMS, the additional information in the Technical Documentation of the smoke detector must be observed, since their usability is limited when the dimensions of the BKP are small. Within the radius around the detector given in the Technical Documentation of the smoke detector, nothing must be present that might cause a reflection of the emitted sensor signal.

Signalling and switching bus system EasyBus

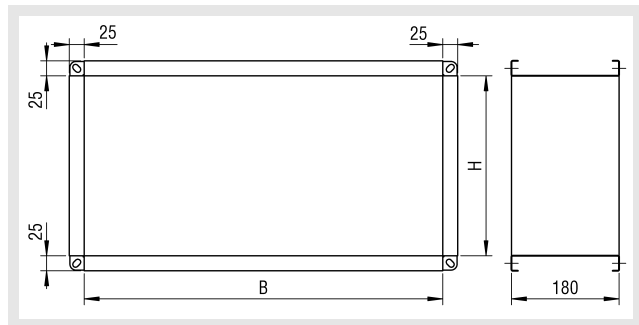
For a technical description and documentation, see catalogue Air, subregister 09.c.

Signalling and switching bus system type KOMES

For a technical description and documentation, see catalogue Air, subregister 09.c.

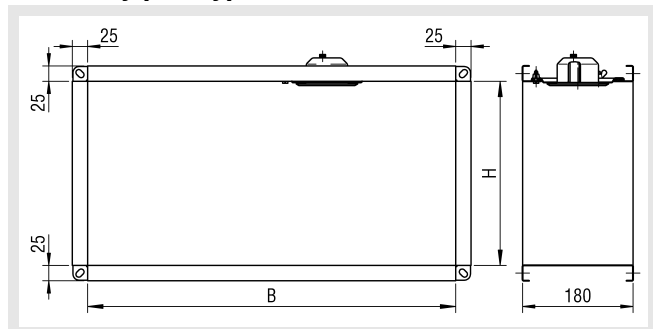
Fire Damper Model BKP

Extension part type VT



- made of profiled sheet steel fitted with connecting flanges
- Intended use:
for large wall/ceiling thickness, in order to maintain a minimum distance $a_{\min} = 50$ mm from the open damper leaf when fitting finishing protective grating type ASG, flexible connecting pieces type FS or connecting pipes type RS

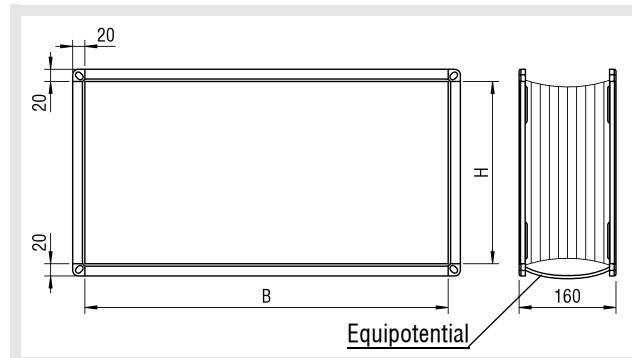
Assembly part type EBT



- made of profiled sheet steel fitted with connecting flanges and mounting opening for SCHAKO smoke alarm system RMS.
- Intended use:
for installation of the SCHAKO smoke alarm system type RMS
- The smoke detector must always be assembled in the assembly part type EBT on the same damper half as the release device.

When using the smoke alarm system type RMS, the additional information in the Technical Documentation of the smoke detector must be observed, since their usability is limited when the dimensions of the BKP are small. Within the radius around the detector given in the Technical Documentation of the smoke detector, nothing must be present that might cause a reflection of the emitted sensor signal.

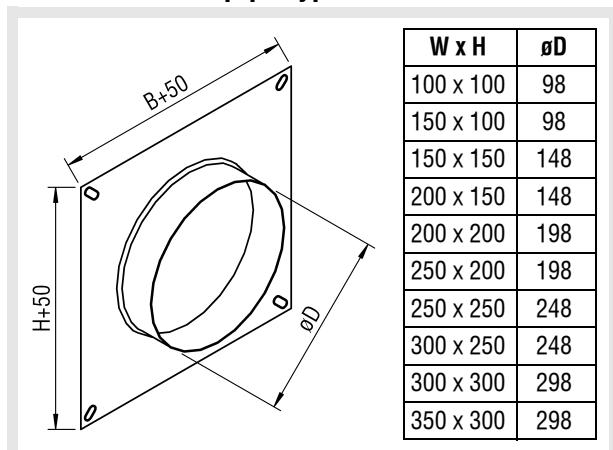
Flexible connection pieces type FS



- Flexible connection piece, consisting of profiled connection flanges (galvanised sheet steel) with elastic intermediate piece made of polyester fabric PVC-coated on both sides, building material class B2 to DIN 4102, with welded lip seals (tightness class C to DIN EN 13180 / DIN EN 1507; temperature-resistant from -20° to $+80^{\circ}\text{C}$). Flexible part of the connecting piece (polyester fabric) must have a minimum length l_{\min} of 100 mm when mounted, resulting in an installation dimension of approx $L = 160$ mm.
- The required equipotential bonding must be carried out on-site according to the VDE regulations. The fire dampers must not be subject to mechanical stress under any circumstances.
- Intended use: to prevent built-in fire dampers or space-enclosing components from being subject to inadmissible forces even in case of fire. The local regulations regarding ventilation systems apply.
. In addition, flexible connection pieces must be mounted in the following mounting situations:
 - Flexible connection piece on both sides when mounting:
 - in walls according to DIN 1053 when $d_{\text{wall}} < 100$ mm
 - in lightweight partition walls (F90) with metal posts
 - in shaft walls of the lightweight partition walls with metal posts design
 - Flexible connection piece on one side when mounting:
 - away from solid walls
- Alternatively, flexible ventilation ducts made of aluminium can be used instead of the flexible connection pieces.
- Flexible connection pieces must be installed in compressed condition. This can result in a reduction of the free cross-section.

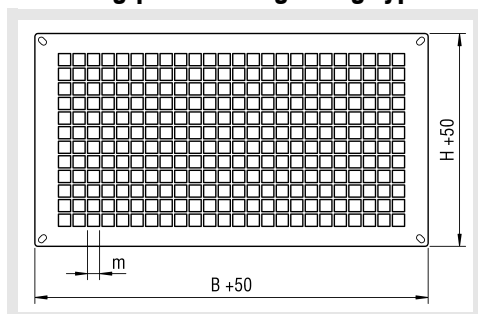
Fire Damper Model BKP

Duct connection pipe type RS



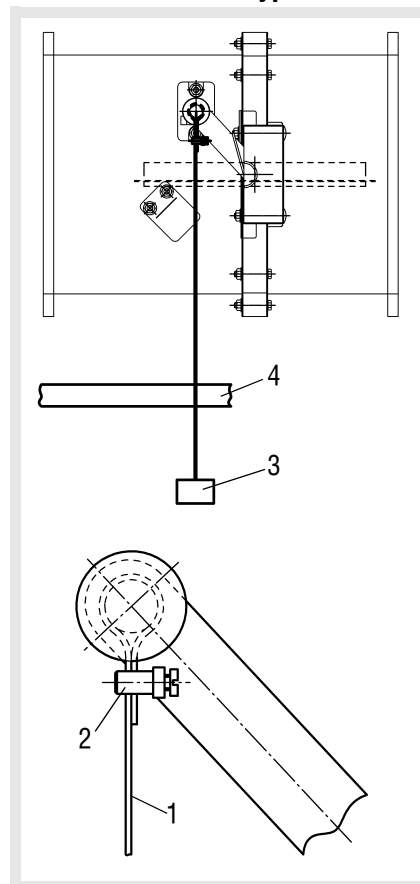
- Round connecting pipe fitted with joining plate, galvanised sheet steel.
- Intended use:
connection/transition from fire damper to round ducts.
- further dimensions on request

Finishing protective grating type ASG



- Wire or punch grid with a mesh width of ≤ 20 mm
- Intended use:
to be fitted for one-sided connection
- Minimum distance $a_{\min} = 50$ mm from open damper blade must be taken into account, if necessary, use extension part type VT .

Position indicator type MSZ



- Steel cable - galvanised - (pos.1) with clamping nipple (pos.2) and position indicator (pos.3) made of plastic material; the steel cable and the position indicator must be mounted perpendicularly.
- Intended use:
Mechanical position indicator for false ceilings (pos. 4).
Usable for each mechanically operated BKP with hand lever.

Legend

V_{ZU}	[m ³ /h] [l/s]	= Supply air volume
Δp	[Pa]	= Static pressure difference
L_{WA}	[dB(A)]	= A-weighted sound power level
v_{stirn}	[m/s]	= Front side velocity
H	[mm]	= Height
B	[mm]	= Width
approx		= approx.
min.		= at least

Fire Damper Model BKP

Specification texts

Fire damper of fire resistance classification K90 to DIN 4102-6 for locking fire lobbies in ventilation and air conditioning systems. Housing made of galvanised sheet steel - 2-part -, without circumferential stop profiles for maximum possible free cross-section, thermal insulation as well as damper leaf made of silicate board. Fixed setting when damper is open. As of $B \geq 200$, always equipped with an inspection opening at the bottom of the B side.

For connection to non-flammable ventilation ducts (one- or two-sided), any air flow direction. Any accessories that may be required for the respective mounting situation (flexible connection pieces, suspensions, pole braces, etc.) are listed in separate positions of the specification.

Installation:

- in solid walls and solid ceilings
- away from solid walls
- in lightweight partition walls (F90) with metal posts according to DIN 4102-4 Tab.48
- in lightweight partition walls with metal posts and lining on one side (Knauf shaft wall W628 type B or according to a suitable abP of fire resistance class F90)
- flange to flange (for installation in solid walls)

Product: SCHAKO **type BKP**

General building supervisory approval no.: **Z-41.3-660**

Dimensions:

Width (B) : mm

Height (H): mm

Length: **375** / 500 mm (at an extra charge)

Operating side: **right** / left

(Unless stated otherwise, operating side "right", length 375 mm and release temperature 72° will be delivered)

Alternative designs or accessories:

("Select as desired")

- Model made of stainless steel material no. 1.4301 (V2A)
- Model made of stainless steel material no. 1.4571 (V4A)
- Housing with DD coating (solvent-containing top coat based on polyurethane varnish)
 - DD coating inside/outside
- Thermal release with mechanical fusible link release temperature 98°C
- Electric limit switch type ES for "OPEN" and/or "CLOSED" position indicators, switching element containing one NC and one NO contact:
 - Type ES 1 Z for "CLOSED"
 - Type ES 1 A for "OPEN"
 - Type ES 2 for "CLOSED" and "OPEN"

- Limit switch type Easy-Eco-Tx, for connection to SCHAKO signalling and switching bus system EasyBus, the status of the damper position is transferred by radio signal. Additional radio receiver type Easy-Eco-Rx required.
- Electric spring return actuator with thermo-electric trigger device BAE-72B-S - release temperature 72°C - and integrated micro switches for indication of damper end positions (24 V drive with connector):
 - Type ELD-BLF (230 V AC, 24 V AC/DC)
 - Communication device BKN230-24LON for connection to LON bus system
 - Communication device BKN230-24MP for connection to Belimo MP bus system
- Magnetic clamp/pulse magnet (24 V DC, 230 V AC)
- Smoke alarm system type RMS with AbZ No. Z-78.6-58
- Signalling and switching bus system type EasyBus
- Signalling and switching bus system type KOMES

Extension piece type VT, for installation with large wall/ceiling thicknesses; to maintain the minimum distance $a_{min} = 50$ mm from the open damper leaf when fitting finishing protective grating type ASG or flexible connection piece type FS. Extension piece made of profiled galvanised sheet steel with connection flanges, $L=180$ mm.

Product: SCHAKO **type VT**

Dimensions:

Width (B) : mm

Height (H): mm

- Extra charge for anticorrosive paint - inside/outside - DD coating (two-component top coat based on polyurethane varnish)
- Extra charge for powder coating (RAL 9010) - inside/outside -
- Extra charge for design:
 - Material No. 1.4301 (V2A)
 - Material No. 1.4571 (V4A)

Position indicator type MSZ consisting of a steel cable - galvanised - with clamping nipple and position indicator made of plastic material. The mechanical position indicator for false ceilings is usable for each mechanically operated BKP with hand lever.

Product: SCHAKO **type MSZ**

Fire Damper Model BKP

Assembly part type EBT, to be built into the SCHAKO smoke alarm system RMS, assembly part made of profiled galvanised sheet steel fitted with connection flanges and installation opening to fit SCHAKO smoke alarm system RMS, L= 180 mm.

Product: SCHAKO **type EBT**

Dimensions::

Width (B) : mm

Height (H): mm

- Extra charge for anticorrosive paint - inside/outside -
 - DD coating (two-component top coat based on polyurethane varnish)
- Extra charge for powder coating (RAL 9010) - inside/outside -
- Extra charge for design:
 - Material No. 1.4301 (V2A)
 - Material No. 1.4571 (V4A)

Flexible connection piece type FS, consisting of profiled connection flanges made of galvanised sheet steel with elastic intermediate piece made of polyester fabric PVC-coated on both sides, building material class B2 to DIN 4102, with welded lip seals (tightness class C to DIN EN 13180 / DIN EN 1507; temperature-resistant from -20° to +80°C). Flexible part of the connecting piece (polyester fabric) must have a minimum length l_{min} of 100 mm when mounted, resulting in an installation dimension of approx L = 160 mm. The required equipotential bonding must be carried out on-site according to the VDE regulations. The fire dampers must not be subject to mechanical stress under any circumstances.

Product: SCHAKO **type FS**

Dimensions:

Width (B) : mm

Height (H): mm

- Extra charge for model with connection flanges:
 - Material No. 1.4301 (V2A)
 - Material No. 1.4571 (V4A)

Duct connection pipe type RS, for connecting round ventilation ducts to BKP, consisting of joining plate with bores and connecting pipe, galvanised sheet steel.

Product: SCHAKO **type RS**

Dimensions: (W, H according to damper size)

Width (B) : mm

Height (H): mm

Connection pipe
ø(øD)8 mm

- Extra charge for anticorrosive paint - inside/outside -
 - DD coating (two-component top coat based on polyurethane varnish)
- Extra charge for powder coating (RAL 9010) - inside/outside -
- Extra charge for design:
 - Material No. 1.4301 (V2A)
 - Material No. 1.4571 (V4A)

Finishing protective grating type ASG, for connection with ventilation duct connection on only one side, galvanised sheet steel, mesh width = 20 mm, minimum distance a_{min} = 50 mm from the open damper blade must be taken into account, if necessary, use extension part type VT.

Product: SCHAKO **type ASG**

Dimensions:

Width (W): mm

Height (H): mm

- Extra charge for anticorrosive paint - inside/outside -
 - DD coating (two-component top coat based on polyurethane varnish)
- Extra charge for powder coating (RAL 9010) - inside/outside -
- Extra charge for design:
 - Material No. 1.4301 (V2A)
 - Material no. 1.4571 (V4A)