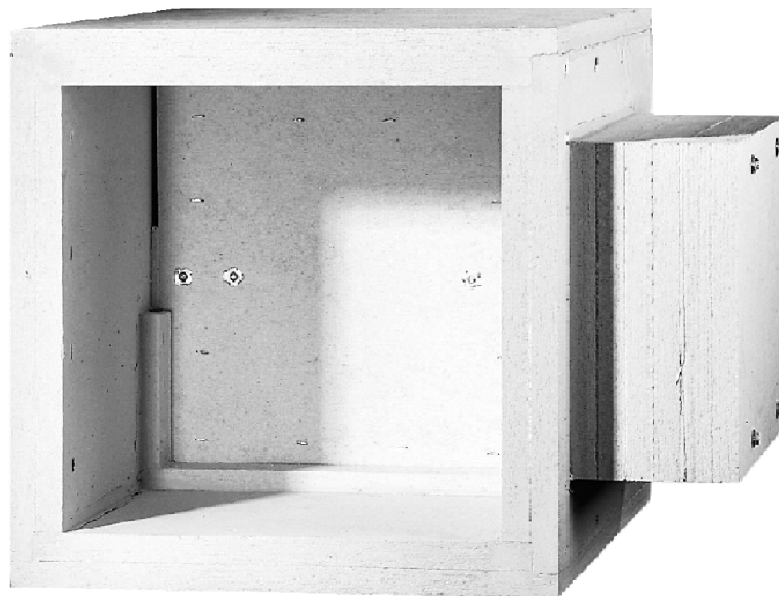




Smoke extraction damper

Model ERK-T-K

with general building supervisory approval Z-78.3-161



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Smoke Extraction Damper Model ERK-T-K

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Smoke Extraction Damper Model ERK-T-K

Description

Smoke extraction dampers may be used, according to the building supervisory regulations of the federal states, in mechanical smoke extraction systems of individual or several fire lobbies in buildings. The smoke extraction damper may be installed in mechanical smoke extraction systems if this mechanical smoke extraction damper has also been approved by the building supervisory authorities for ventilation. The smoke extraction damper may also be used for external air supply to these mechanical smoke extraction systems.

They can be installed:

- in solid walls made of concrete or masonry
- in lightweight partition walls with metal post
- directly in front of solid walls, on or under solid ceilings
- outside walls

The installation position is independent of the air flow direction. The dampers are only available with the "operating side - right". Installation is possible with horizontal or vertical axis of rotation of the damper leaf.

The smoke extraction dampers are driven by a reversible OPEN / CLOSE actuator.

According to approval number: Z-78.3-161, the smoke extraction dampers have fire resistance class EK90, EK60 or EK30, depending on their use. They are also suitable for use in smoke extraction system at a designated temperature of up to 300°C or 600°C with a fire control function of 90, 60 or 30 minutes.

The smoke dampers are not suitable for performing the function of fire dampers.

The legally required external monitoring is carried out by the MPA, Baden-Württemberg.

Housing (50 mm), damper leaf (60 mm thick) and stop bars are made of asbestos-free calcium silicate boards, while the stainless steel damper leaf axle is mounted in bronze bushes.

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.

Installation information

The assembly must be made in a way that the inner viewing, cleaning and maintenance of the smoke damper is possible. To this end, suitable inspection openings must be provided in the connected smoke extraction ducts.

The connection to smoke extraction ducts made of wall boards is done according to inspected duct-specific constructions. The connection to inspected sheet steel ducts or flexible connection pieces is done via the profiled mounting frame type PAR.

Smoke extraction systems with mechanical vents require a secure power supply in case of fire. A power supply above the public supply, through a power producing installation (replacement power) depends on each case of public and legal requirements.

Regulations for use and maintenance

- The system operator of the smoke extraction system must ensure that smoke dampers are always kept in a ready-to-operate state and are maintained.
- Smoke extraction dampers must undergo maintenance at a six-month interval. If two consecutive inspections do not show any malfunctions, the maintenance interval of the smoke extraction dampers can be reduced to once a year.
- An inspection report must be produced, and the documents must be kept by the system operator of the smoke extraction installation.

Actuators

The smoke extraction dampers are driven by a reversible OPEN / CLOSE actuator.

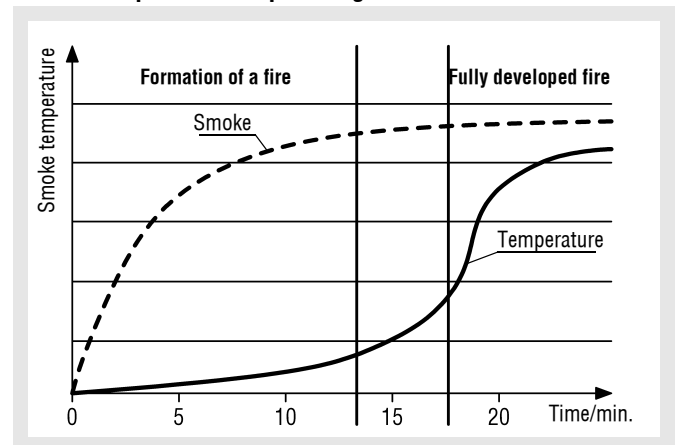
- The actuator types SEL 1.90 SLC/12 AKO are connected on-site.

Attention! If additional bus components have to be integrated into the housing of the actuator, the actuator housing must be enlarged (after technical clarification).

Attention!

Smoke extraction dampers are components subject to approval. This is why their use is subject to the "General and Special Regulations" of the general building supervisory approval and the operating instructions included in each delivery.

Fire development and spreading of smoke



Smoke extraction is recommended during the time before the flash-over. In order to maintain this function, the temperature is therefore limited to 600°C.

Smoke Extraction Damper Model ERK-T-K

Weights (approx. in kg)

H (mm)	B (mm)																L (mm)	
	201	252	318	357	400	449	503	565	634	711	797	894	1003	1125	1262	1416		1500
201	44	48	52	54	57	60	64	69	73	78	84	89	96	105	114	124	129	530
252	47	50	55	58	61	65	69	72	77	82	88	95	102	111	120	130	137	
318	52	55	60	64	66	70	73	78	83	88	94	102	109	119	128	139	145	
357	54	58	64	66	70	73	77	81	87	92	99	106	113	123	133	145	151	
400	58	61	66	70	72	78	81	85	90	96	102	111	118	128	138	150	157	
449	67	72	77	80	84	88	94	99	105	111	117	128	137	148	160	173	181	630
503	71	75	82	85	89	94	98	106	110	117	125	134	143	154	166	181	189	
565	75	80	86	90	94	99	104	110	116	123	130	140	151	163	175	189	197	
634	81	87	93	96	101	105	110	116	123	131	139	148	158	170	183	199	207	
711	93	98	105	110	114	119	125	132	139	148	157	167	179	192	207	223	232	700
797	109	115	123	128	133	139	145	153	161	171	181	193	206	220	237	256	266	800

Application

	Minimum thickness (mm)	Classification
in solid walls made of:		
- Concrete	100	EK90
- Aerated concrete	100	EK90
- Masonry according to DIN 1053	115	EK90
In wallboards made of:		
- Plaster to DIN EN 12859 (DIN 18163)	100	EK90
In lightweight walls in:		
- lightweight partition walls with metal post and plaster board lining	100	EK90
directly in front of solid walls made of:		
- Concrete	100	EK90
- Masonry	115	EK90
directly in front of solid ceilings made of:		
- Concrete / aerated concrete	100	EK90
on fire-resistant ducts^{1.)} made of:		
- for example calcium silicate	-	EK90

1.) Design and technical data conform to the general building inspection test certificate

- Smoke extraction dampers must only be connected to smoke extraction ducts which from their design or type of installation will not exert considerable forces on smoke extraction dampers or the walls, ceilings or other smoke extraction ducts when heated due to a fire.
- Smoke extraction ducts made of sheet steel may be connected to smoke dampers only via a suitable flexible connection piece with at least 100 mm of extension compensation (when mounted).

Construction

Shut-off damper blade

- made of calcium silicate plates

Axle

- made of stainless steel

Housing

- made of calcium silicate plates

Bearing bushes

- made of bronze

Actuator enclosure

- made of calcium silicate plates

Model

ERK-T-K - Standard

Accessories

Finishing protective grating (-ASG-E)

- Galvanised sheet steel

Flexible connection piece (-FS)

- Glass fabric, coated

Profile connection frame (-PAR)

- Galvanised sheet steel

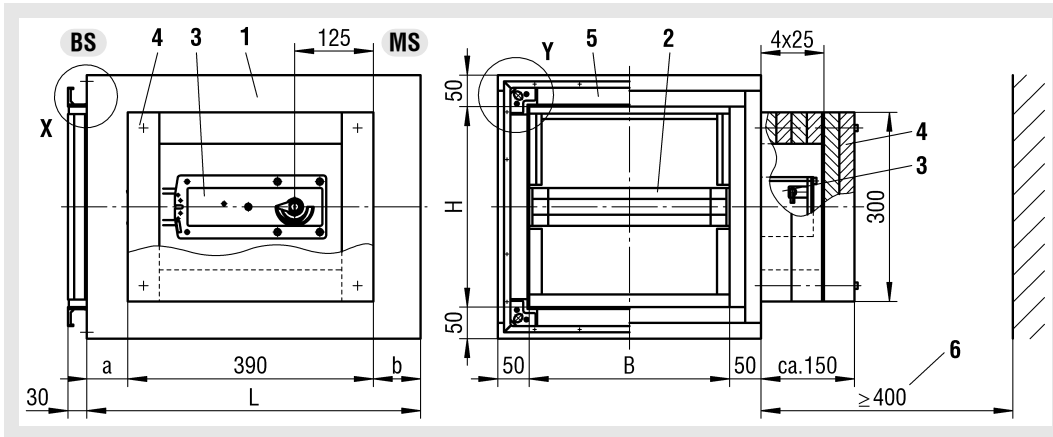
Control and monitoring module:

- SPMa-1K R (24 V AC) is required for activation of the ERK-T-K

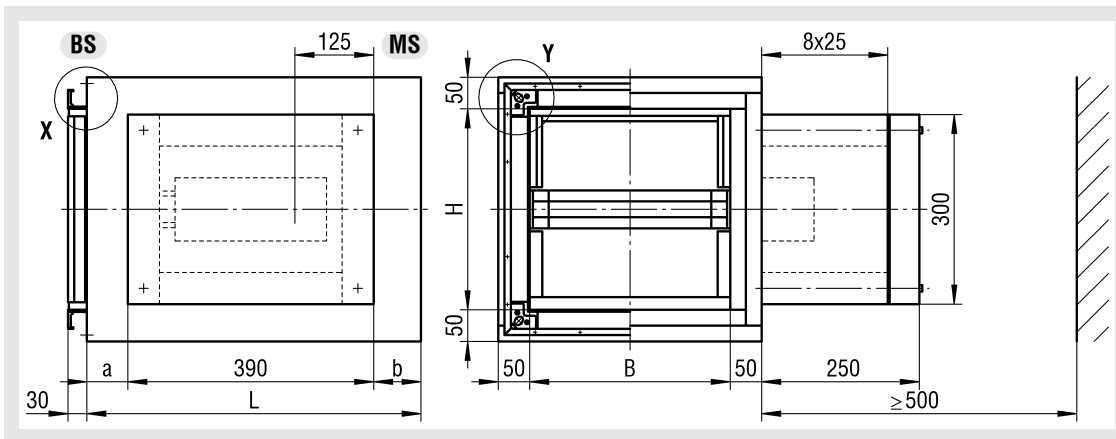
Smoke Extraction Damper Model ERK-T-K

Models and dimensions

Dimensions



- 1 Housing
 - 2 Shut-off damper blade
 - 3 Reversible OPEN/
CLOSED actuator
 - 4 Actuator housing
 - 5 Profile connection frame
(at an extra charge, optionally also on both sides)
 - 6 Distance to ceiling / wall
Operating side
- MS Wall side

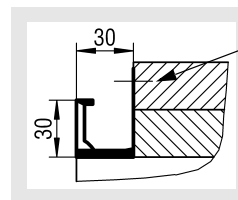


Available sizes (standard)

B	H	L	a	b
201	201	530	65	75
252	252		65	75
318	318		65	75
357	357		65	75
400	400		65	75
449	449	630	65	175
503	503		65	175
565	565		65	175
634	634		50	190
711	711		700	85
797	797	800	135	275
1003				
1125				
1262				
1416				
1500				

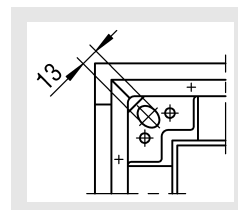
The length depends on the damper height

Detail X



Half round head screws
4.0 x 40 galvanized steel

Detail Y



Mounting lengths up to L = 800 mm are possible with all height dimensions upon request at an extra charge.

Smoke Extraction Damper Model ERK-T-K

Fastening methods

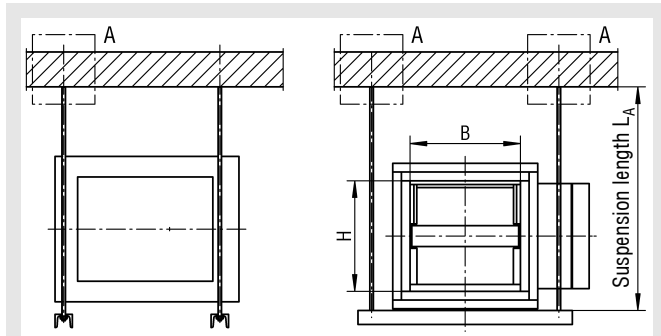
Suspensions

In the following installation situations, the smoke damper must be suspended:

- in solid walls filled with mineral wool
- in lightweight partition walls with metal posts
- on horizontal ducts

Suspensions must be dimensioned and manufactured according to DIN 4102-4 and the data given on this page.

Figure 1



Suspension lengths $L_A > 1.5$ m must be lined in accordance with fire protection regulations.

Fig. 2 / Detail A

Ceiling installation (with or without dowels)

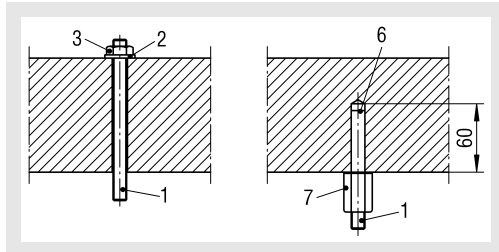


Fig. 3 / Detail pole brace

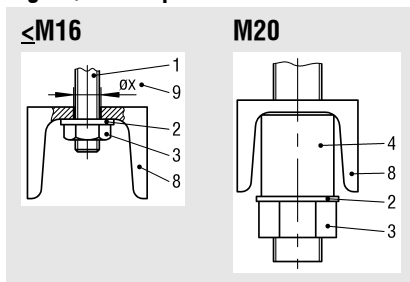


Fig. 4 / Mounting plate for suspension

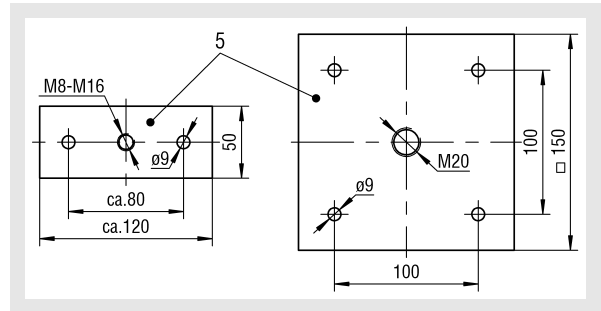


Table "allowed loads F_{allowed} [N] for suspensions -tension rods made of threaded steel rods, for fire resistance duration 90 minutes"

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

- 1 Suspension (threaded rod), M8 to M20, galvanised steel
- 2 Disc, M8 up to M20, galvanised steel
- 3 Hexagon nut, M8 to M20, galvanised steel
- 4 Spacer tube $\varnothing 30 \times 33$, galvanised steel
- 5 Fixing plate, min. 10 mm thick, galvanised steel
- 6 Metal dowel
 - Dowels whose fire protection suitability has been proven by means of the approval or test certificate must be fitted and subjected to a load according to the approval or test certificate.
 - Dowels without proven fire protection suitability must be made of steel and have at least size M8 and fitted twice as deep as required in the approval certificate, but at least 60 mm deep. They must not be subjected to a calculated traction load of more than 500 N.
- 7 Screw socket, galvanised steel
- 8 Pole brace, e.g. U50 x 38 x 5, DIN 1026, galvanised steel or Halfen bar
- 9 $\varnothing X$ [mm] = thread- $\varnothing + 1$

Smoke Extraction Damper Model ERK-T-K

Installation details

in solid walls and plaster board walls

Installation is possible with vertical or horizontal damper axle when fitted into walls - admissible in :

- Masonry walls to DIN 1053 with a min. thickness of 115 mm
- Concrete or aerated concrete walls with a min. thickness of 100 mm.
- Walls made of plaster wallboards to DIN EN 12859 (DIN 18163) for apparent densities $\geq 0.6 \text{ kg/dm}^3$ with a minimum thickness of 100 mm.

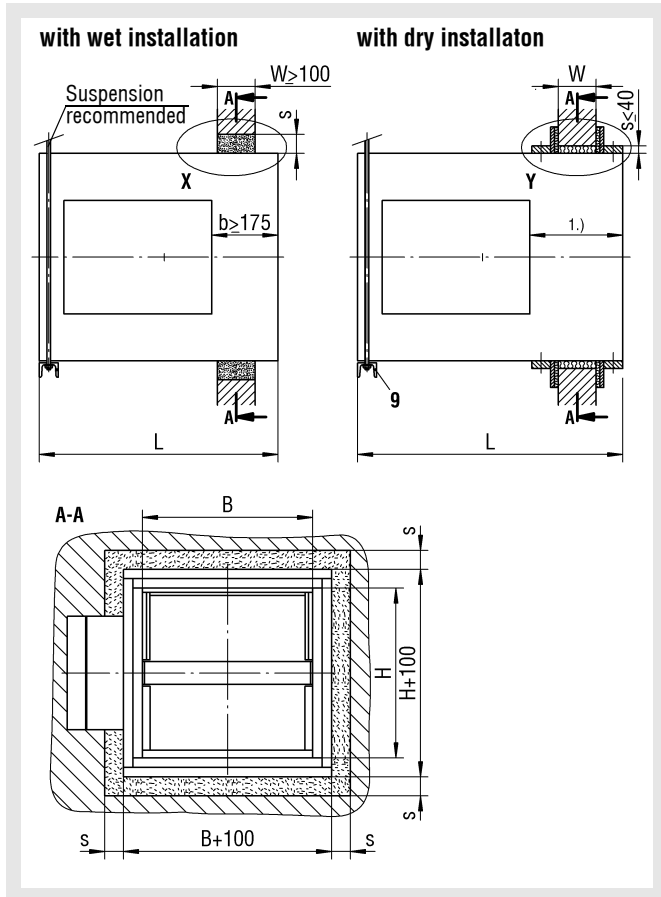
Circumferential gap "s < 80 mm" between the installation opening and the smoke extraction damper must be filled with mortar group II or III to DIN 1053, or with concrete. Installation openings are not required when the smoke extraction damper is fitted during wall construction.

Optionally, gaps "s \leq 40 mm" may be filled with mineral wool with manual filling or s < 20 mm with mineral wool boards, building material class A, DIN 4102, apparent density $\geq 100 \text{ kg/m}^3$, melting point $\geq 1000 \text{ }^\circ\text{C}$.

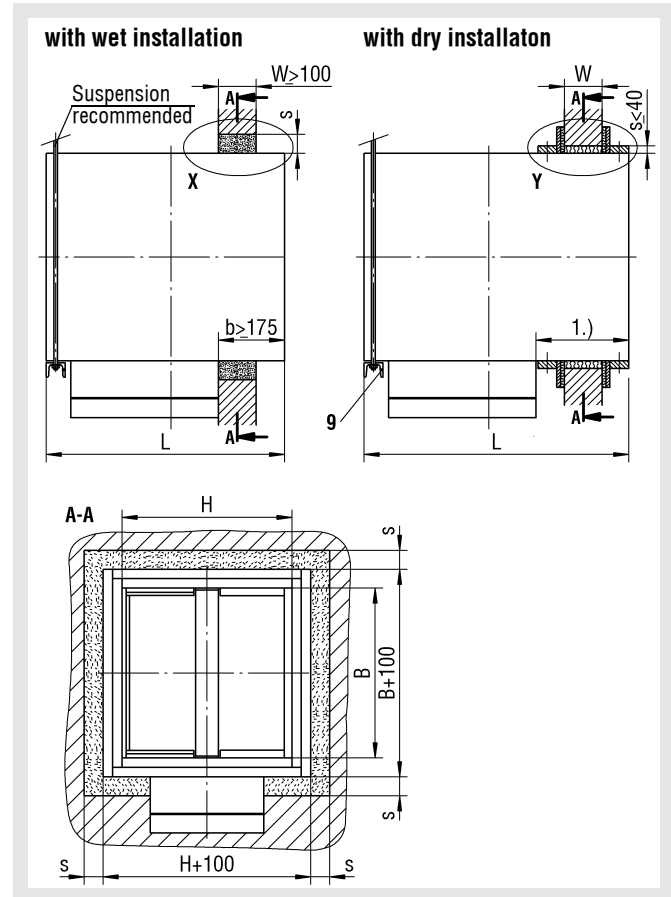
When fitted into solid walls with mineral wool, the smoke extraction dampers must be suspended according to DIN 4102-4.

Wall mounting

with horizontal axis of rotation of the damper leaf

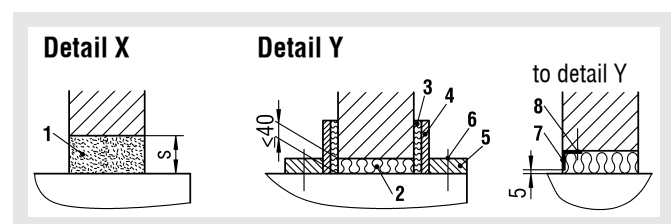


with vertical axis of rotation of the damper leaf



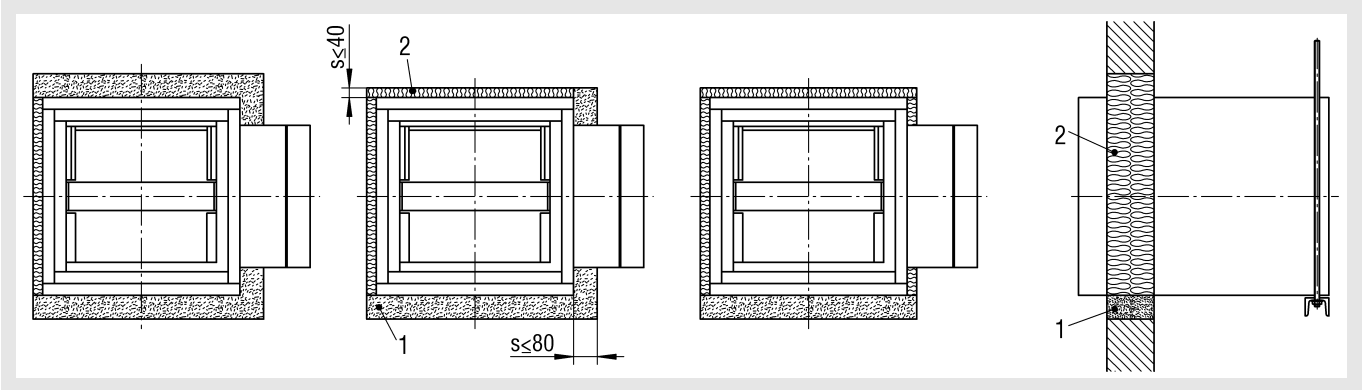
- 1 Mortar (of group II or III to DIN 1053) or concrete
- 2 Lining, mineral wool, building material class A, DIN 4102, melting point $\geq 1000^\circ\text{C}$, apparent density $\geq 100 \text{ kg/m}^3$
- 3 Mineral wool mat, circumferential, 70x10-20 mm
- 4 Fire prevention plate strips, circumferential, 70x10-20 mm
- 5 Fire prevention plate strips, circumferential, $\geq 50 \times 20 \text{ mm}$
- 6 Dry wall screw, galvanised steel, at least 60 mm long
- 7 Sheet steel bracket, t = 1 mm
- 8 Dowel suitable for fire prevention and screw
- 9 Suspension (on-site) according to DIN 4102-4

- 1.) Extension of the housing may be necessary. See table Standard Sizes Page 5



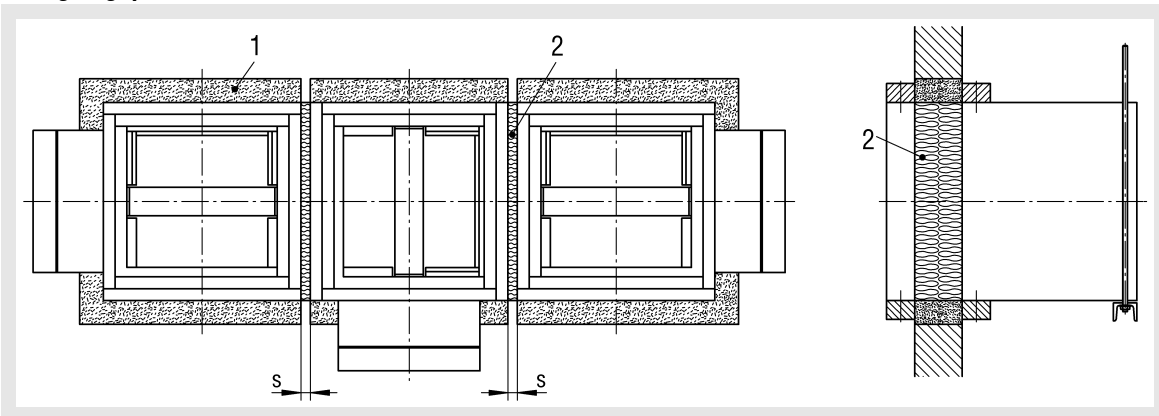
Smoke Extraction Damper Model ERK-T-K

Installation with only partial mortar lining (wall mounting only)



In installation openings of difficult access, the circumferential gaps "s" may be filled on one, two or three sides with mineral wool in combination with mortar lining.

Filling of gaps



The smoke extraction dampers may also be installed directly next to one another or on top of each other, when the gaps "s" are filled with mineral wool.

When fitted into solid walls with mineral wool, the smoke extraction dampers must be suspended according to DIN 4102-4 (Page °7).

- 1 Mortar (of group II or III to DIN 1053) or concrete
- 2 Lining, mineral wool, building material class A, DIN 4102, melting point $\geq 1000^{\circ}\text{C}$, apparent density $\geq 100 \text{ kg/m}^3$

Smoke Extraction Damper Model ERK-T-K

Installation directly in front of solid walls and ceilings

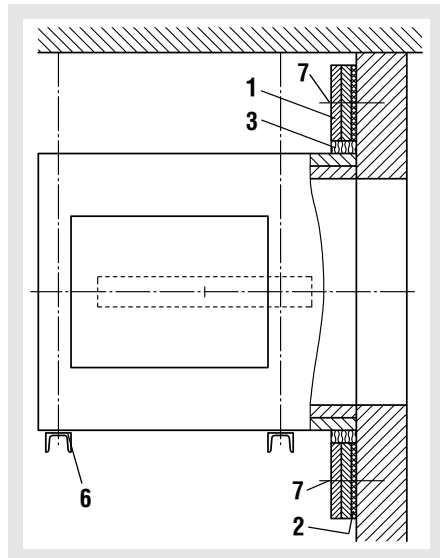
When installed in walls, installation is admissible with horizontal or vertical damper axis in front of:

- Masonry walls to DIN 1053 with a minimum thickness of 115 mm
- Concrete walls with a thickness of min. 100 mm.
- Concrete ceilings with a min. thickness of 100 mm.

Installation in front of walls

(with horizontal axis of rotation of the damper leaf)

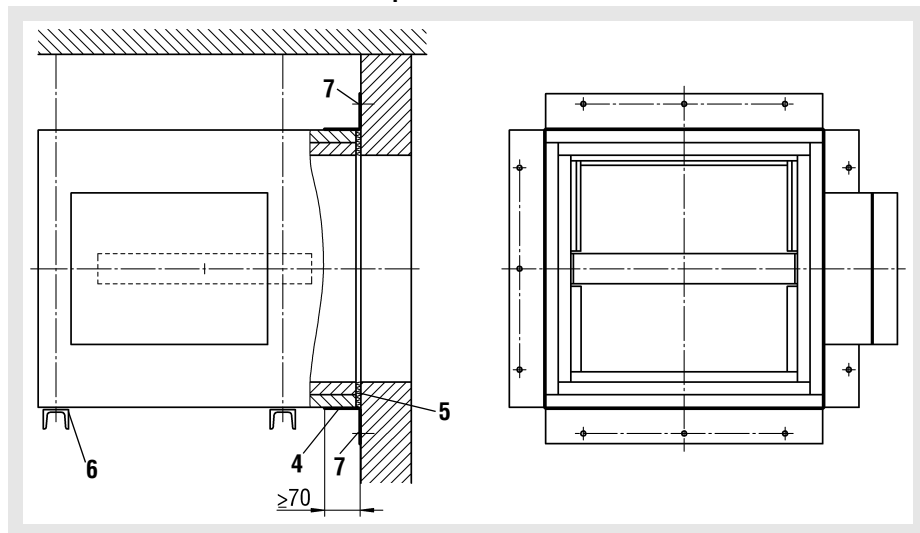
in connection with a Promatect wall frame PR-S



- 1 Wall frame made of calcium silicate boards type PR-S, 2x20x150 mm wide
- 2 Carbowool seal attached to wall frame 150x10 mm thick
- 3 Line circumferential gap (approx. 25 mm) with mineral wool (A1 DIN 4102)
- 4 Frame profile galvanised steel type WP-S, 70x70x1.5 mm thick
- 5 Foam 50x10 mm, bonded at the front of the ERK-T-K with water-based adhesive.
- 6 Suspension, dimensioned to DIN EN 1366-1 or DIN 4102-4
- 7 Steel dowel (on-site)

For an alternative arrangement in front of concrete walls, see p. 09/21-11.

In connection with foam and frame profile WP-S



Flange holes in frame profile:

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

Smoke Extraction Damper Model ERK-T-K

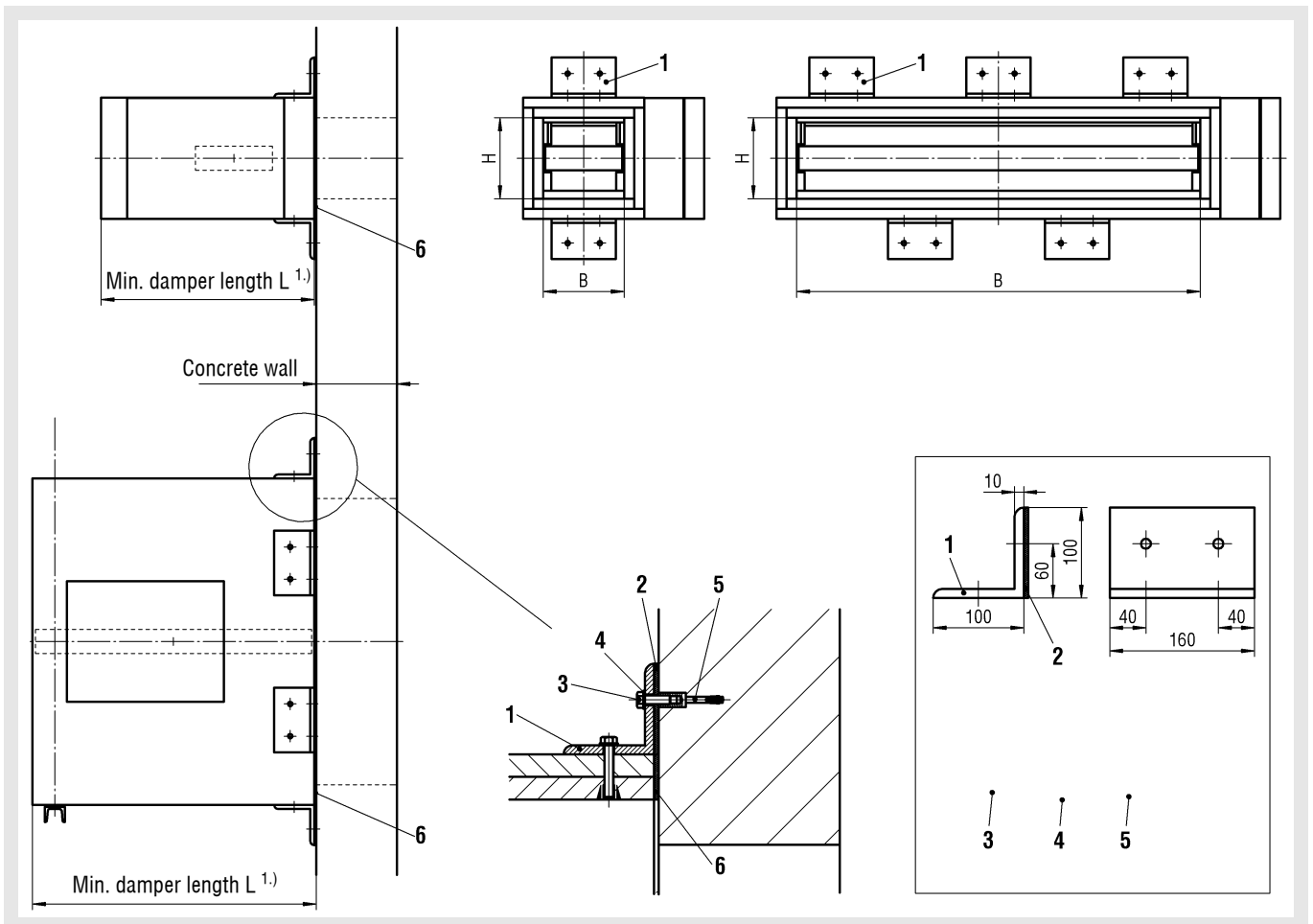
Installation in front of concrete wall

Smoke extraction damper shown without duct connection profile

Proposed installation ERK-T-K in front of concrete wall
The brackets are mounted to the concrete wall with fire safety dowels.

Please note:

Depending on the dimensions of the ERK-T-K, SCHAKO KG will define the exact dimensions and number of mounting brackets WE-S.

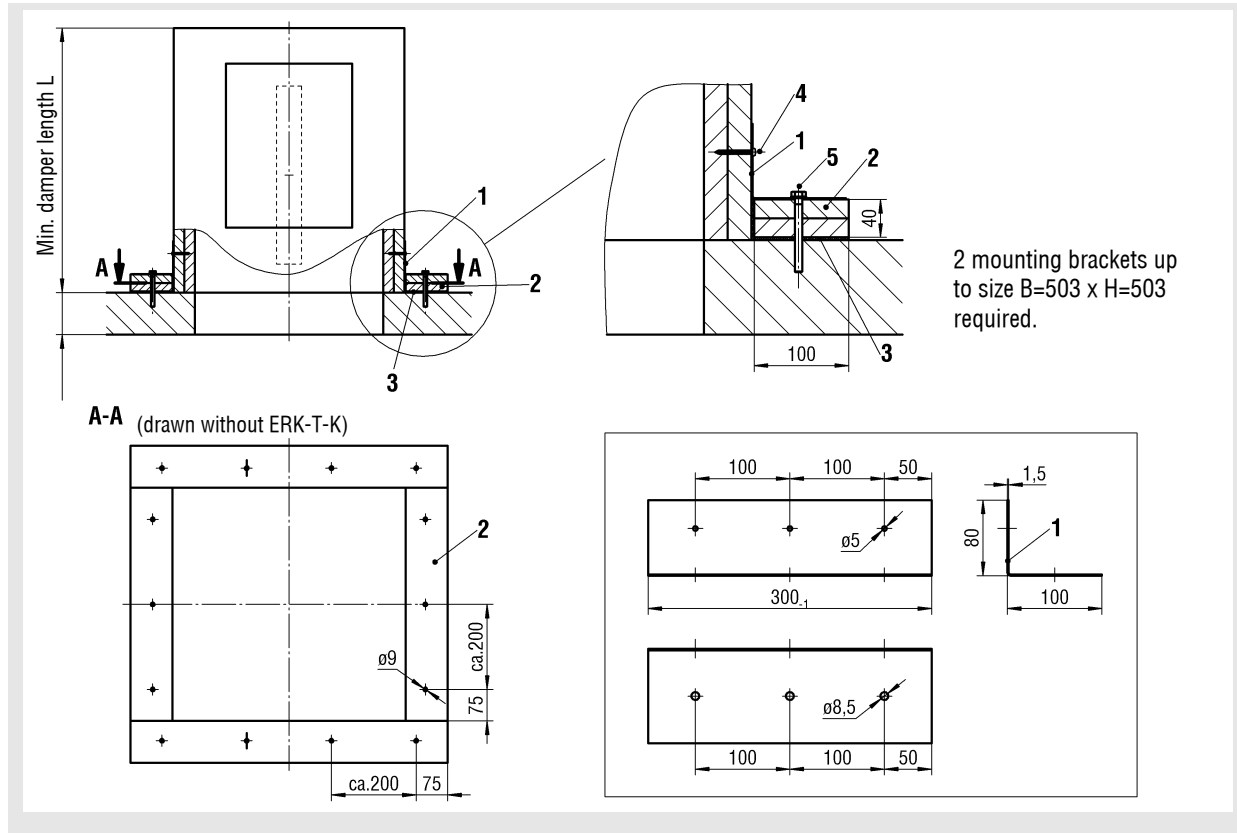


- 1 Mounting bracket type: WE-S
Galvanised steel 100 x 100 x 160 mm long
- 2 Carbowool seal (bonded)
100 x 160 x 5 mm thick
- 3 Hexagon head screw to ISO 4014 M10 x 30 mm
- 4 U disc ISO 7090-10
- 5 Fire safety dowels type KMU-F10 or KMU-F12
- 6 Seal bonded to ERK-T-K
on the front, relative to the Carbowool wall 50 x 5 mm thick

- 1.) Up to $L \leq 530$ mm, load carrying of the ERK-T-K is done solely by the mounting brackets WE-S
From $L > 530$ mm to 800 mm, a U-shaped pole brace is additionally required.

Smoke Extraction Damper Model ERK-T-K

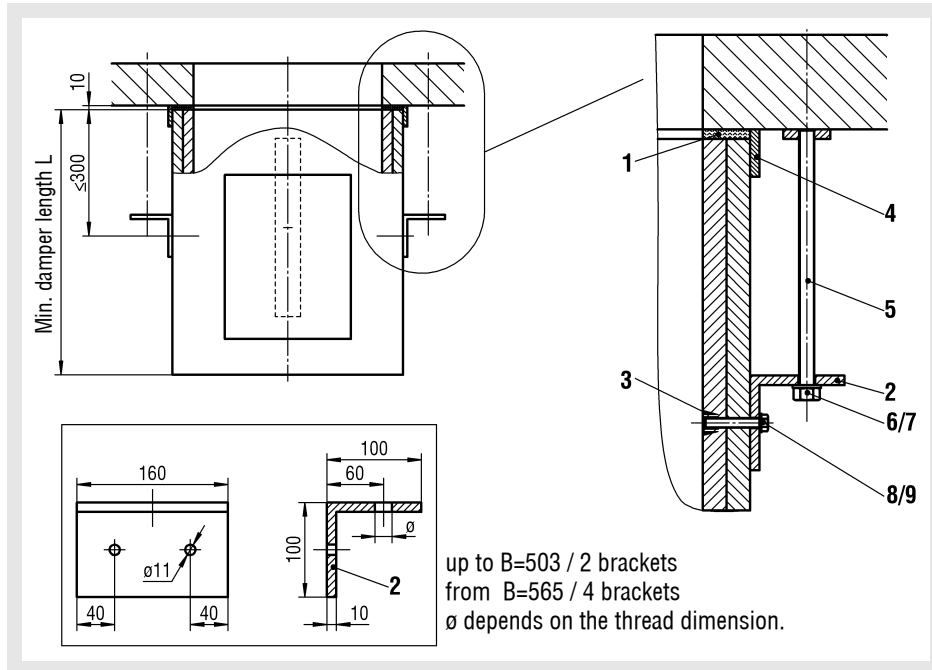
Mounting vertically on the ceiling
with ceiling frame DR-S



- 1 Mounting bracket type: DR-S
Galvanised steel 80 x 100 x 1.5 mm thick x 300 mm long
Only required for smoke extraction dampers whose housing dimension is ≤ 503 , relative to the H and B sides.
- 2 Ceiling frame made of calcium silicate 100x40 mm thick is pressed tightly against ERK-T-K on its circumference and screwed down to the concrete ceiling.
- 3 Carbowool seal, approx. 3 mm thick.
- 4 Dry wall screw 4 x 40 mm, on-site
- 5 Steel dowel M8 and screw M8, on-site

Smoke Extraction Damper Model ERK-T-K

Installation suspended under the ceiling
with suspension bracket WE-S



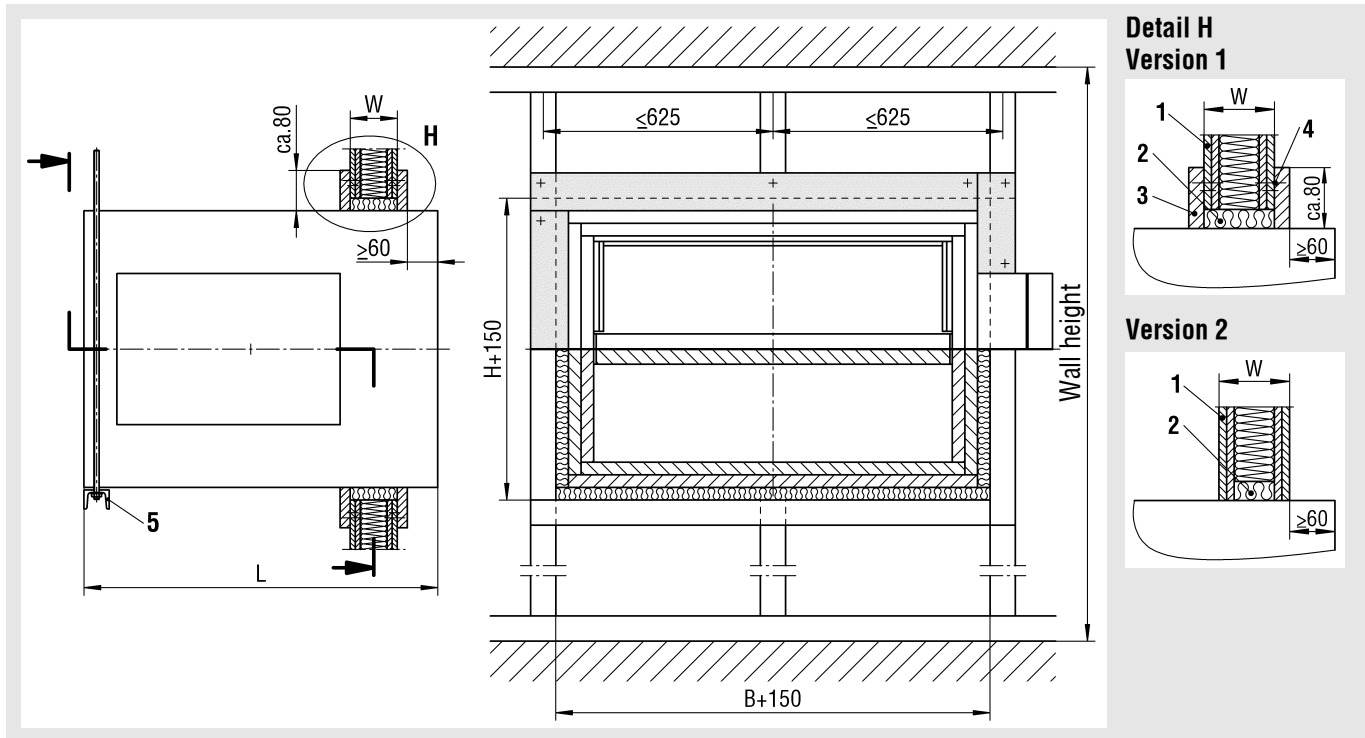
- 1 Foam type: PX-S, 50x10 mm thick, for compensating unevenness under the concrete ceiling and for compensating longitudinal expansion of the threaded rod when exposed to a fire
- 2 Suspension bracket type: WE-S (the number of brackets depends on the weight of the ERK-T-K). For dimensioning, see Page °4.
- 3/8/9 Fastening material for suspension bracket WE-S consists of drive-in nut M10, U disc and hexagon head screw M10x50 mm long. (Fastening to the ERK-T-K shall be done by SCHAKO AG).
- 4 Circumferential frame made of calcium silicate 50x10 mm thick.
- 5/6/7 Threaded rod, nut and U disc according to dimensioning, see Page °7.

Smoke Extraction Damper Model ERK-T-K

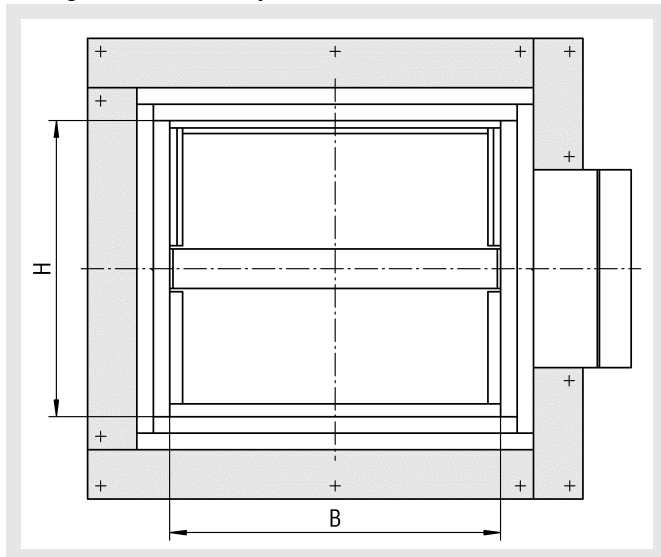
Installation in lightweight partition walls with metal posts

Installation - with horizontal or vertical damper axis - in lightweight mounting walls with metal post and lining on both sides to DIN 4102 Tab. 48 or current general building supervisory test certificate, at a distance of 625 mm maximum (support width) or vertically arranged metal profiles. The fire resistance class of the ERK-T-K (EK30-EK90) corresponds to the selected fire resistance class of the wall (F30-F90).

Metal post



Arrangement of the stripes

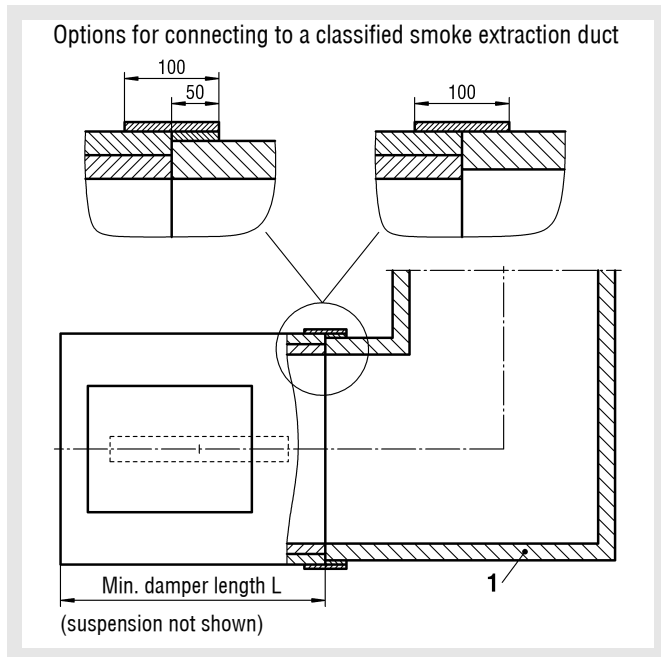


- 1 Partition wall to DIN 4102 Tab. 48 or general building supervisory test certificate
- 2 Lining, mineral wool, building material class A, DIN 4102, melting point $\geq 1000^{\circ}\text{C}$, $s \leq 25$ mm
- 3 Circumferential stripes, approx. 80 mm wide, wall building material
- 4 Dry wall screw, $a \leq 300$ mm
- 5 Suspension (on-site) according to DIN 4102-4 or DIN EN 1366-1

When installed in plate ducts, the connections must be made in duct-specific design. Minimum distance between two smoke extraction dampers is 120 mm to each other. Wall thickness $W \geq 100$, wall height as specified on test certificate of the wall.

Smoke Extraction Damper Model ERK-T-K

Connection to ducts

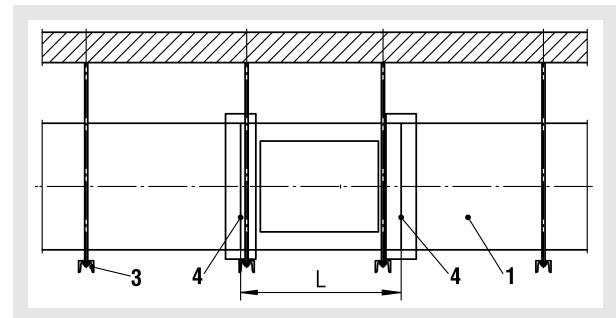


- 1 Fire-resistant smoke extraction duct with general building supervisory test certificate.

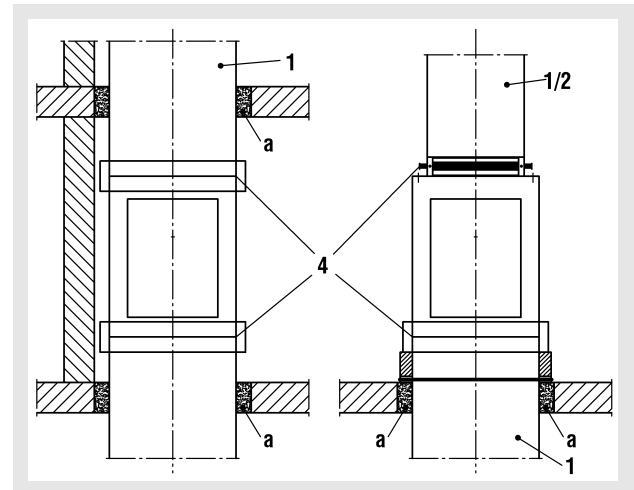
Installation in fire-resistant smoke extraction ducts

1. Installation in fire-resistant smoke extraction ducts with horizontal ducts
 - For horizontal smoke extraction ducts, the smoke extraction damper must be suspended, see suspensions
 - Smoke extraction damper and smoke extraction duct must be connected in duct-specific design according to test certificate / general building supervisory approval of the smoke extraction ducts.
2. Installation in fire-resistant smoke extraction ducts with vertical ducts
 - Smoke extraction damper and smoke extraction duct must be connected in duct-specific design according to test certificate / general building supervisory approval of the smoke extraction ducts.

Horizontal duct



Vertical duct

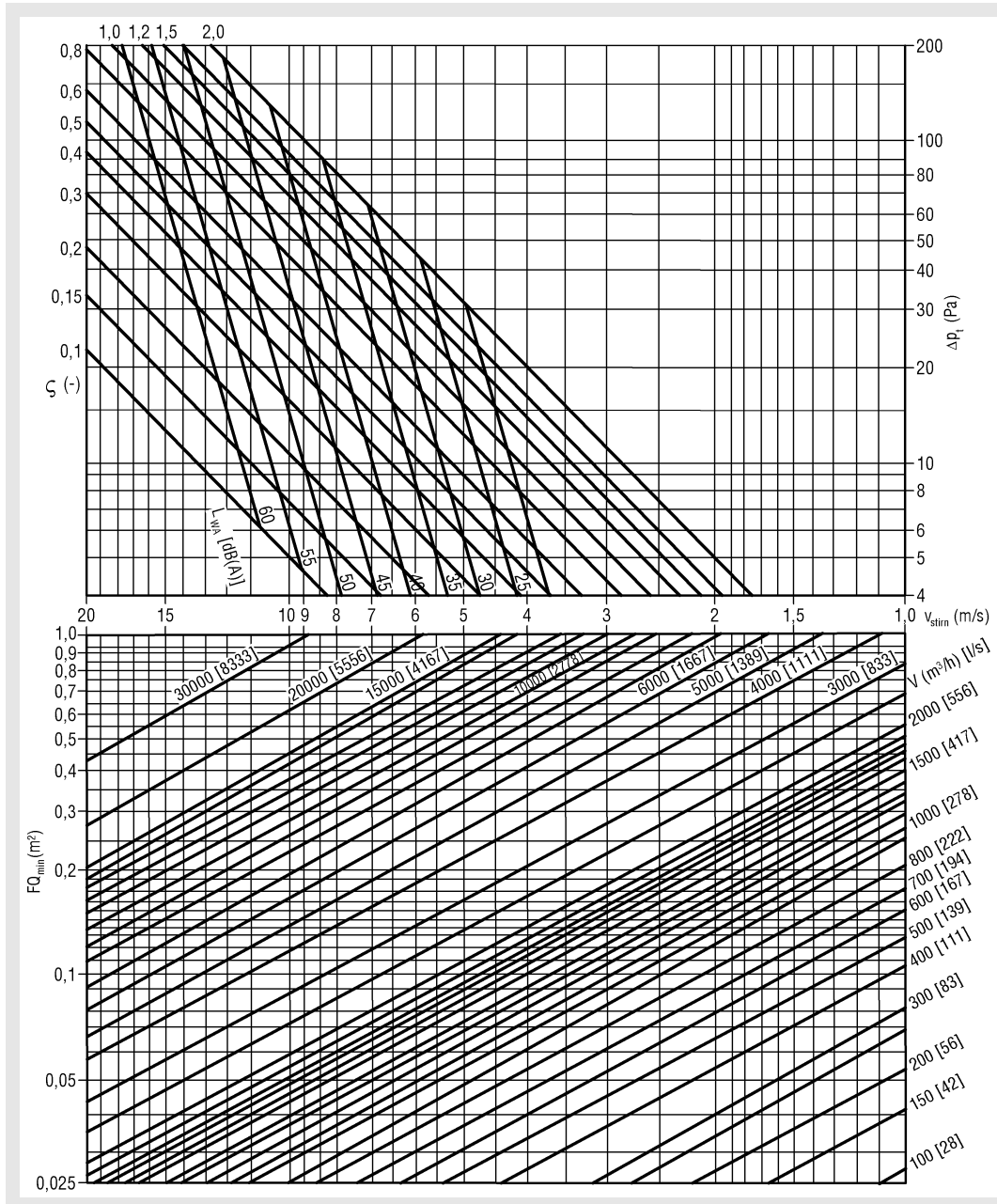


- 1 Duct with fire resistance duration
- 2 Duct (also with fire resistance duration) if required
- 3 Suspension (on-site) according to DIN 4102-4
- 4 Connection in duct-specific design
- a Execute ceiling breaks and load suspensions according to test certificate (general building supervisory approval) of the smoke extraction line.

Smoke Extraction Damper Model ERK-T-K

Technical data

Pressure loss and noise level



Correction table for octave weighting [dB/Oct]

f_m (Hz)	63	125	250	500	1000	2000	4000	8000
KF_0 [dB]	4	2	0	1	4	9	15	21

Sound power per octave

f_m (Hz)	63	125	250	500	1000	2000	4000	8000
L_W [dB]	37	39	41	40	37	33	26	20

$$L_W = L_{WA} + KF_0$$

Calculation example

Assume:
 $B = 894$
 $H = 400$
 $V = 6000 \text{ m}^3/\text{h}$

Find:
 $\Delta p_t = ?$
 $L_{WA} = ?$
 $L_W = ?$

Solution from dimension table:
 $FQ_{\min} = 0.256 \text{ m}^2$
 $\zeta = 0.29$

Solution from diagram:
 $v_{\text{face}} = 6.4 \text{ m/s}$
 $\Delta p_t = 6.8 \text{ Pa}$
 $L_{WA} = 41 \text{ dB(A)}$

Smoke Extraction Damper Model ERK-T-K

Free cross-section, resistance coefficient, duct connection cross-section

H (mm)	B (mm)																	
	201	252	318	357	400	449	503	565	634	711	797	894	1003	1125	1262	1416	1500	
201	0,016	0,021	0,028	0,032	0,036	0,041	0,047	0,053	0,060	0,068	0,076	0,086	0,097	0,110	0,123	0,139	0,147	FQ _{min} (m ²)
	1,20	1,09	1,02	0,96	0,90	0,81	0,75	0,70	0,66	0,60	0,56	0,53	0,50	0,48	0,46	0,42	0,40	ζ -
	0,040	0,056	0,064	0,072	0,080	0,090	0,101	0,113	0,127	0,142	0,160	0,179	0,201	0,226	0,253	0,284	0,301	FQ _K (m ²)
252	0,024	0,032	0,042	0,048	0,055	0,062	0,070	0,080	0,090	0,102	0,115	0,130	0,146	0,165	0,186	0,209	0,222	FQ _{min} (m ²)
	1,07	0,96	0,80	0,74	0,67	0,65	0,60	0,56	0,54	0,49	0,46	0,43	0,40	0,38	0,36	0,33	0,32	ζ -
	0,056	0,063	0,080	0,090	0,100	0,113	0,126	0,142	0,159	0,179	0,200	0,225	0,252	0,283	0,318	0,356	0,378	FQ _K (m ²)
318	0,035	0,046	0,061	0,069	0,078	0,089	0,101	0,114	0,129	0,146	0,165	0,186	0,210	0,237	0,266	0,300	0,318	FQ _{min} (m ²)
	0,89	0,76	0,65	0,60	0,58	0,54	0,49	0,46	0,42	0,40	0,40	0,38	0,33	0,30	0,29	0,26	0,25	ζ -
	0,064	0,080	0,101	0,113	0,127	0,142	0,160	0,179	0,201	0,226	0,253	0,284	0,319	0,357	0,401	0,450	0,477	FQ _K (m ²)
357	0,041	0,054	0,071	0,081	0,093	0,105	0,119	0,135	0,153	0,172	0,195	0,219	0,247	0,279	0,314	0,354	0,375	FQ _{min} (m ²)
	0,81	0,70	0,60	0,56	0,51	0,49	0,44	0,41	0,38	0,36	0,33	0,31	0,30	0,27	0,26	0,24	0,22	ζ -
	0,072	0,090	0,113	0,127	0,142	0,160	0,179	0,201	0,226	0,253	0,284	0,319	0,357	0,401	0,450	0,505	0,535	FQ _K (m ²)
400	0,048	0,064	0,083	0,095	0,108	0,123	0,139	0,158	0,178	0,201	0,227	0,256	0,289	0,326	0,367	0,413	0,438	FQ _{min} (m ²)
	0,74	0,63	0,53	0,51	0,48	0,42	0,40	0,37	0,35	0,33	0,31	0,29	0,26	0,25	0,24	0,22	0,21	ζ -
	0,080	0,100	0,127	0,142	0,160	0,179	0,201	0,226	0,253	0,284	0,318	0,357	0,401	0,450	0,505	0,567	0,600	FQ _K (m ²)
449	0,056	0,074	0,097	0,111	0,126	0,143	0,162	0,183	0,207	0,234	0,264	0,298	0,336	0,379	0,427	0,480	0,510	FQ _{min} (m ²)
	0,67	0,57	0,50	0,46	0,43	0,40	0,38	0,34	0,33	0,30	0,28	0,26	0,25	0,23	0,21	0,19	0,19	ζ -
	0,09	0,113	0,142	0,160	0,179	0,201	0,226	0,253	0,284	0,319	0,357	0,401	0,450	0,505	0,567	0,635	0,673	FQ _K (m ²)
503	0,065	0,085	0,112	0,128	0,145	0,165	0,187	0,212	0,239	0,270	0,305	0,344	0,388	0,437	0,493	0,555	0,588	FQ _{min} (m ²)
	0,62	0,54	0,47	0,42	0,38	0,37	0,36	0,32	0,30	0,28	0,26	0,25	0,22	0,21	0,21	0,19	0,18	ζ -
	0,101	0,126	0,160	0,179	0,201	0,226	0,253	0,284	0,319	0,357	0,401	0,450	0,505	0,567	0,635	0,712	0,754	FQ _K (m ²)
565	0,075	0,099	0,129	0,147	0,167	0,190	0,215	0,244	0,276	0,312	0,352	0,397	0,448	0,505	0,568	0,640	0,679	FQ _{min} (m ²)
	0,51	0,50	0,42	0,40	0,37	0,34	0,31	0,30	0,28	0,26	0,25	0,22	0,20	0,20	0,19	0,18	0,16	ζ -
	0,113	0,142	0,179	0,201	0,226	0,253	0,284	0,319	0,357	0,401	0,450	0,505	0,566	0,635	0,713	0,800	0,847	FQ _K (m ²)
634	0,086	0,113	0,148	0,169	0,192	0,218	0,247	0,280	0,317	0,358	0,404	0,456	0,514	0,579	0,653	0,735	0,780	FQ _{min} (m ²)
	0,53	0,46	0,39	0,35	0,32	0,28	0,27	0,26	0,25	0,23	0,22	0,20	0,19	0,19	0,18	0,16	0,15	ζ -
	0,127	0,159	0,201	0,226	0,253	0,284	0,319	0,357	0,401	0,450	0,505	0,566	0,635	0,713	0,80	0,897	0,951	FQ _K (m ²)
711	0,098	0,13	0,17	0,194	0,22	0,25	0,283	0,321	0,363	0,41	0,463	0,522	0,588	0,663	0,747	0,841	0,892	FQ _{min} (m ²)
	0,51	0,43	0,36	0,33	0,3	0,29	0,26	0,25	0,23	0,22	0,2	0,19	0,18	0,16	0,15	0,15	0,14	ζ -
	0,142	0,179	0,226	0,253	0,284	0,319	0,357	0,401	0,45	0,505	0,566	0,635	0,713	0,8	0,897	1,006	1,066	FQ _K (m ²)
797	0,112	0,148	0,194	0,221	0,251	0,285	0,323	0,366	0,414	0,468	0,528	0,595	0,671	0,756	0,852	0,959	1,018	FQ _{min} (m ²)
	0,46	0,44	0,34	0,3	0,29	0,27	0,24	0,23	0,22	0,2	0,19	0,16	0,15	0,15	0,15	0,15	0,12	ζ -
	0,16	0,2	0,253	0,284	0,319	0,357	0,401	0,45	0,505	0,566	0,635	0,713	0,8	0,897	1,006	1,128	1,195	FQ _K (m ²)

Smoke Extraction Damper Model ERK-T-K

Reversible OPEN/CLOSED actuator

SEL 1.90 SLC/12 AKO

Make Joventa, type SEL 1.90 SLC/12 AKO, with integrated limit switches

U = 24 V AC, 50...60 Hz or 24 V DC

Open P \approx 7 W / in end position P \approx 0.7 W

Dimensioning approx. 13 VA / protection class II / protection type IP 54

100 % ED / running time < 60 s for 90 °

Auxiliary switch: 3 (1.5) A, 230 V

Permissible ambient temperature for storage and operation:

Joventa - 20 °C to + 50 °C

Technical data for Joventa SEL 1.90SLC/12 AKO

Nominal voltage	24 VAC	
Frequency	50/60 Hz	
Power consumption	13 VA	
	minimum	maximum
Supply voltage (via SLC bus)	23 VDC	36 VDC
Supply current	approx. 100 mA	400 mA
Torque	16 Nm	52 Nm
Power resistor	0 Ohm	11 Ohm
Speed	58 sec.	60 sec.
Battery	6.6 V	9.5 V
Number of cycles	2	4
Charging time	approx. 1 h 15 min.	9h
Battery life		approx. 3 years
Continuous ambient temperature	0°C	+45 °C
Short-term ambient temperature	-5 °C	+55 °C
Ambient humidity	30 % of rF	95 % of rF

Circuit diagram

Electrical line systems

The electrical line systems must be designed for a functional endurance of at least 30 minutes according to DIN 4102-12 or must be laid provided with suitable protection.

Only electrical line systems whose functional endurance class has been proven by means of a general building inspection test certificate may be used.

Note:

The E30 cable is passed through the side wall of the L 90 lining by means of a bore of exact fit (bore = outer diameter of E 30 cable).

A strain relief must be provided.

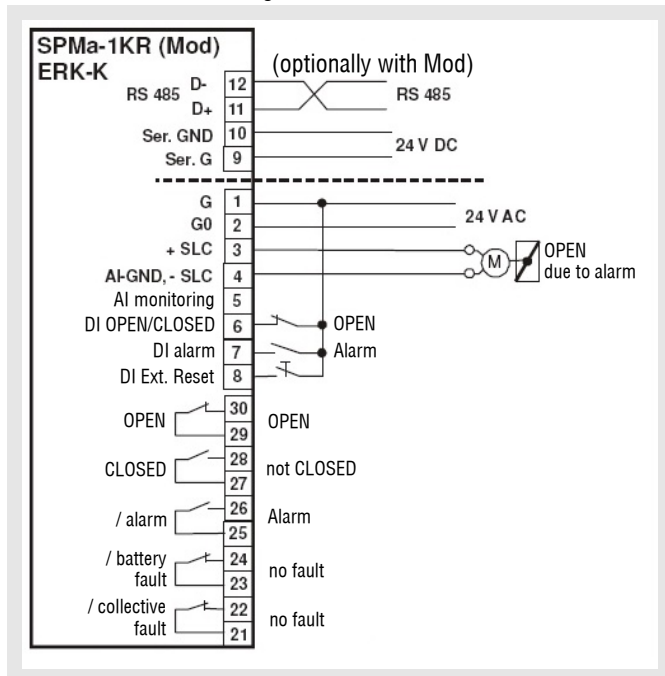
Smoke Extraction Damper Model ERK-T-K

Control and monitoring module

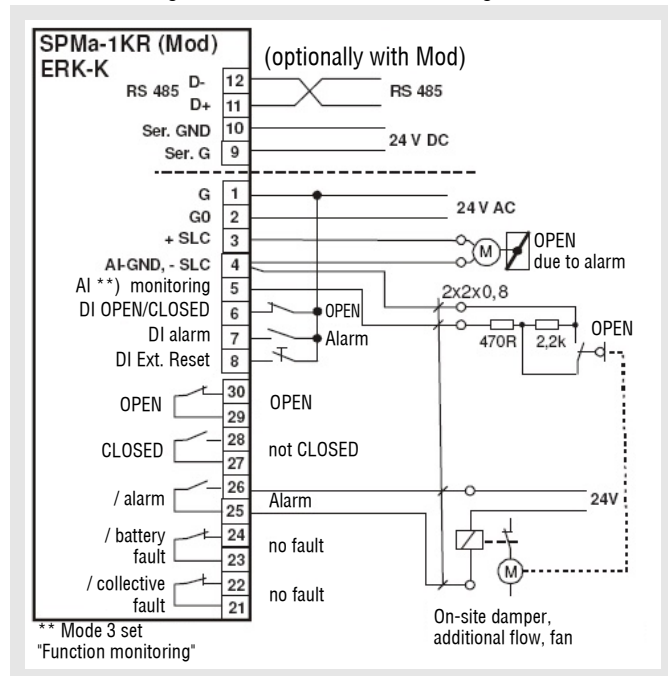
SPMa-1K R (24 V AC)

Connection diagram

Standard connection diagram in smoke extraction mode

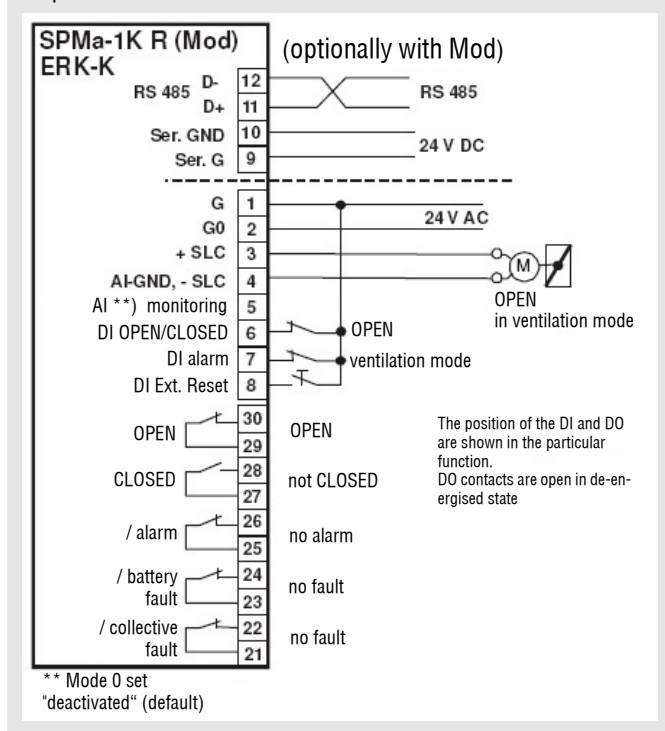


Connection diagram with activated monitoring line



Standard connection diagram in ventilation mode

Example: ERK-K damper
Open in ventilation mode

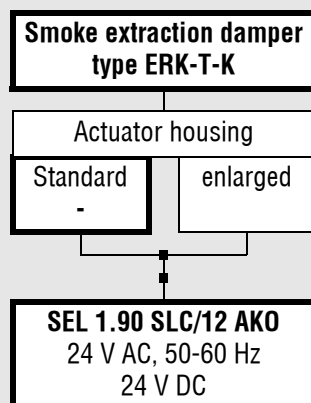


Smoke Extraction Damper Model ERK-T-K

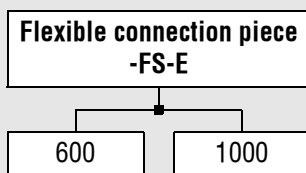
Legend

Δp_t (Pa)	= Pressure loss
v_{face} (m/s)	= Intake velocity, blower stream velocity, outflow velocity, relative to A_{face}
V (m ³ /h) [l/s]	= Volumetric flow
L_{WA} [dB(A)]	= A-weighted sound power level
L_W [dB]	= Sound power level/octave ($L_W=L_{WA}+KF_0$)
B (mm)	= Width
H (mm)	= Height
L (mm)	= Length
FQ_{min} (m ²)	= Smallest flow cross-section inside the smoke extraction damper
FQ_k (m ²)	= Duct connection cross-section
ζ -	= Resistance coefficient (duct installation)
f_m (Hz)	= Octave centre frequency
KF_0 [dB]	= Octave correction value

Ordering details



Accessories:



Finishing protective grating
-ASG-E

Profile connection frame
-PAR

(required)

Control and monitoring module:
Communication device
SPMa-1K R (24 V AC)

Order example:

ERK-T-K-SEL 1.90 SLC/12 AKO

Unless stated otherwise, the thick-frame model will be delivered.

Smoke Extraction Damper Model ERK-T-K

Specification texts

Smoke extraction dampers may be used, according to the building supervisory regulations of the federal states, in mechanical smoke extraction systems of individual or several fire lobbies in buildings. The smoke extraction damper may be installed in mechanical smoke extraction systems if this mechanical smoke extraction damper has also been approved by the building supervisory authorities for ventilation. The smoke extraction damper may also be used for external air supply to these mechanical smoke extraction systems.

Assembly with horizontal or vertical damper axis. Housing, actuator enclosure and damper leaf made of calcium silicate. Damper leaf axle made of stainless steel and mounted in bronze bushes.

Installation:

- in solid walls made of concrete, aerated concrete or lightweight concrete of fire resistance class F90
- in solid walls made of masonry to DIN 1053 or concrete
- directly in solid walls, directly under or directly on concrete ceilings
- in metal post walls to DIN 4102-4 Table 48 or with general building supervisory test certificate
- outside walls and ceilings with connection to inspected smoke extraction ducts

Maximum leakage when exposed to stress according to the unit temperature curve (ETK, DIN 4102) must not exceed 200 m³/h per m² of cross-section area at 500 Pa of negative pressure. In cold condition, this value refers to a negative pressure of 1500 Pa.

Reversible OPEN/CLOSED actuator, in L90 enclosure
Mechanical locking of the drive in case of voltage interruption
Drive:

- Joventa, type SEL 1.90 SLC/12 AKO, 24 V AC/DC with integrated limit switches

Accessories (required)

- Control and monitoring module:
SPMa-1K R (24 V AC) is required for activation of the ERK-T-K required.

Make:

SCHAKO type ERK-T-K, approval number Z-78.3-161

Dimensions:

Height: mm

Width: mm

Length: mm

Operating side:

- only "right-hand" model available

Accessories (select as required):

- Profile connection frame made of galvanised sheet steel
 - on one side (operating side BS or wall side MS) or on both sides, mounted ex works
 - delivered loose (number)

Product: **SCHAKO type PAR**

Dimensions:

Width (B): mm

Height (H): mm

- Flexible connection piece
Temperature-resistant up to 600°C
Expansion of at least 100 cm when installed.
Product: **SCHAKO type FS-E 600**

Dimensions:

Width (B): mm

Height (H): mm

- Flexible connection piece
Temperature-resistant up to 1000°C
Expansion of at least 100 cm when installed.
Product: **SCHAKO type FS-E 1000**

Dimensions:

Width (B): mm

Height (H): mm

- Finishing protective grating made of galvanised sheet steel, mesh width ≤ 20 mm.
Product: **SCHAKO type ASG-E**

Dimensions:

Width (B): mm

Height (H): mm