TECHNICAL DOCUMENTATION
with installation, mounting and operating in-

ERK-MB
Smoke extraction blade damper

USABILITY CERTIFICATES

- **Declaration of Performance**
  DoP-ERK-MB-2019-04-01

PERFORMANCE DATA

- For ventilating smoke in smoke extraction systems and for providing the necessary supply air within the smoke extraction installation
- A wide range of installation situations: Suitable for use in partition walls (solid and dry building walls) and smoke extraction ducts.
- Space-saving installation: low installation depth of only 250 mm
- For automatic (AA) or manual (MA) triggering

CLASSIFICATION AND STANDARDS

- **Classification**
  according to EN 13501-4 is EI 90 (v_{edw}, h_{od} i↔o) S 1000 C_{10000} MA multi, depending on the mounting situation
- **Product standard**
  EN 12101-8
- **Test standards**
  EN 1366-2 and EN 1366-10

SPECIAL FEATURES

- Thermally insulated actuator housing, lateral or front operation
- The installation position does not depend on the air flow direction or the position of the blade damper axles
- Reversible OPEN/CLOSED actuator with 24 V AC/DC or 230 V AC supply voltage
- Optional actuator with Powerline SLC bus technology possible.
  In conjunction with additional communication devices it is possible to retrieve further data, for example indication of end position, keeping timeframe (<60 s) or torque monitoring.

SCHAKO | Ferdinand Schad KG
Steigstraße 25-27
D-78600 Kolbingen

Phone +49 (0) 7463-980-0
Fax +49 (0) 7463-980-200
www.SCHAKO.de | info@SCHAKO.de

TABLE OF CONTENTS

DESCRIPTION

The smoke extraction blade damper ERK-MB meets the requirements of EN 12101-8, EN 13501-4, EN 1366-2 and EN 1366-10. The ERK-MB has been inspected according to EN 1366-2 and EN 1366-10 in accordance with the Declaration of Performance No. DoP-ERK-MB-2019-04-01.
Depending on the installation situation, its classification according to EN 13501-4:
EI 90 (v_{edw}, h_{od} i↔o) S 1000 C_{10000} MA multi.

Smoke extraction blade dampers for multiple sections in rectangular design are intended for extraction of smoke within smoke extraction systems to smoke and heat control systems. The smoke extraction blade dampers are driven by a reversible OPEN/CLOSE actuator with 24 V AC/DC or 230 V AC supply voltage. It is located in a thermally insulated actuator housing to ensure correct opening and closing of the smoke extraction blade damper under fire conditions.

Optionally, the ERK-MB can be equipped with the EK12 (SEL 1.90 SLC, 24 V AC/DC) / EK14 (EK12 + SPMa-1SR) actuator. Each smoke extraction blade damper is connected only with one two-wire line by means of the SLC technology, detecting and reporting short-circuit or line break of the SLC lines by constant monitoring. The function of the actuator EK12 is only active when an additional required communication device (e.g. EK14 = EK12 + SPMa-1SR) is connected.

Suitable communication devices (e.g. SPMa1SR or SPLM-4S 0SD Mod) allow retrieving data, such as indication of end position, keeping timeframe (<60 s) or torque monitoring.

For installation in solid walls and in dry building walls for supplying air or extraction of smoke, also in combination with smoke extraction ducts in compliance with EN 121017 which have been inspected according to EN 13668 or EN 13669.

The national standards and guidelines must be observed in connection with this technical documentation, installation, mounting and operating instructions.

For functional test, service, retrofitting, etc., inspection openings must be provided on site in suspended ceilings, shaft walls, connected ventilation ducts etc., if necessary. They must be built in sufficient numbers and size and must not impair the functioning of the smoke extraction blade dampers.

Housing and blade dampers made of silicate structural panel, optionally (at an extra charge):

- SR impregnation for protection against aggressive media:
  - Inside (BS 06-1)
  - Outside (BS 06-2)
  - inside and outside (BS 06-3)
- Impregnation 2000 for hydrophobization (protection against humidity):
  - Inside (BS 06-4)
  - Outside (BS 06-5)
  - inside and outside (BS 06-6)
- Colour coating (dispersion/alkyd resin-based paint) RAL colour must be specified when ordering:
  - Inside (BS 06-7, 07-xxxx)
  - Outside (BS 06-8, 07-xxxx)
  - inside and outside (BS 06-9,07-xxxx)

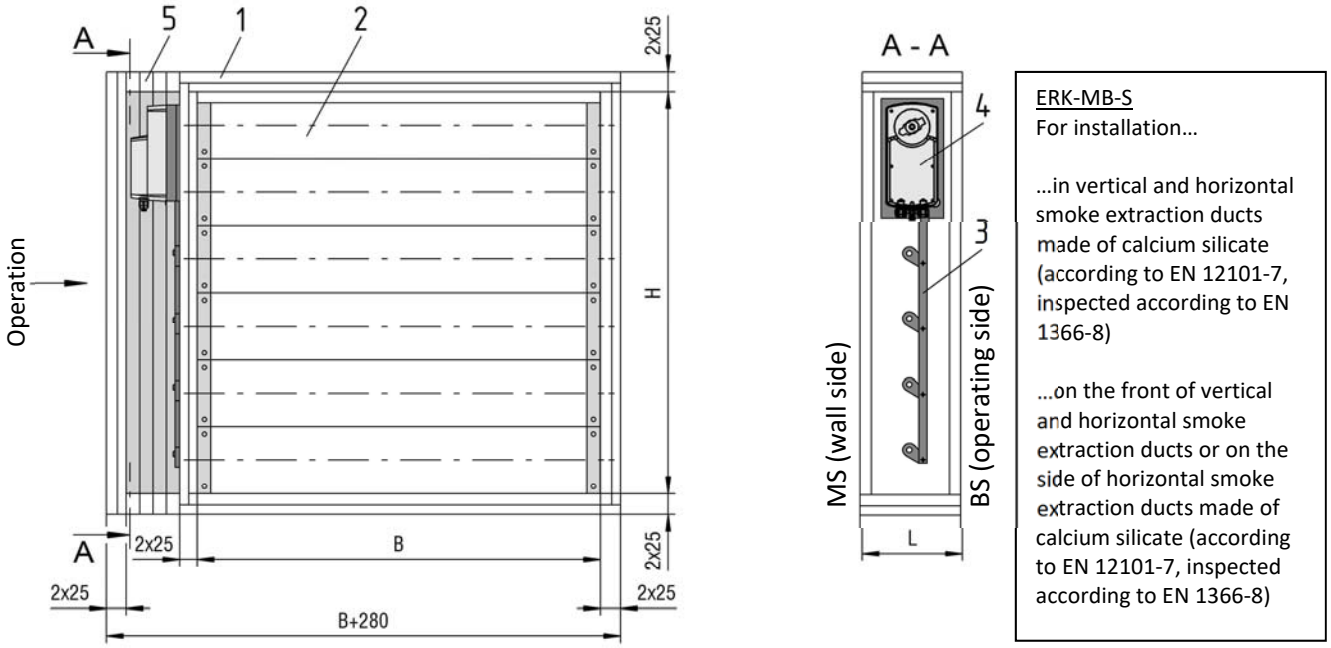
With stop bar seals to meet the cold and hot leakage requirements.
As standard, the security grille ASG-E is mounted on the operating side BS.
Horizontal or vertical position of the blade damper axles (depending on the installation situation).
The installation position does not depend on the air flow direction.
The actuator can be positioned on the right, on the left, at the top or at the bottom.
The maximum inflow velocity v_{stirn} is
≤ 10 m/s (with maximum dimensions).
The connection to smoke extraction ducts made of wall boards is done according to inspected duct-specific constructions. 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.

ATTENTION

Building systems have to be arranged, installed and maintained in such a way that they prevent fire and propagation of fire and smoke (fire propagation) and allow evacuation of persons and animals as well as efficient fire extinguishing work.

MODELS AND DIMENSIONS

ERK-MB-S (operation/inspection cover on the side)



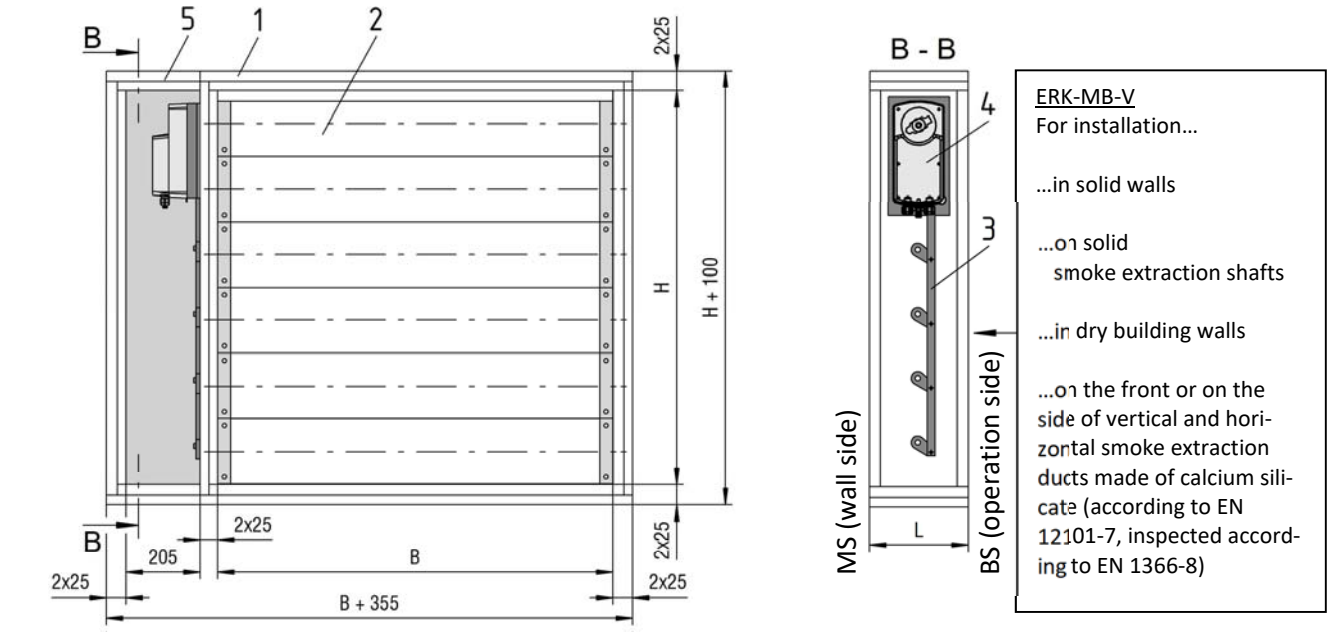
ERK-MB-S
For installation…

…in vertical and horizontal smoke extraction ducts made of calcium silicate (according to EN 12101-7, inspected according to EN 1366-8)

…on the front of vertical and horizontal smoke extraction ducts or on the side of horizontal smoke extraction ducts made of calcium silicate (according to EN 12101-7, inspected according to EN 1366-8)

Figure 1 - Dimensions ERK-MB-S

ERK-MB-V (operation/inspection cover on the front)



ERK-MB-V
For installation…

…in solid walls

…on solid smoke extraction shafts

…in dry building walls

…on the front or on the side of vertical and horizontal smoke extraction ducts made of calcium silicate (according to EN 12101-7, inspected according to EN 1366-8)

Figure 2 - Dimensions ERK-MB-V

1 -- Housing of the ERK-MB (50 mm thick)
2 -- Blade dampers (parallel; 40 mm thick)
3 -- Transmission rod of the blade dampers
4 -- Actuator
5 -- Housing of the actuator and transmission rod incl. inspection cover

Available sizes [mm]

The length of the smoke extraction blade damper is L = 250 mm.
Larger L dimensions may also be needed (the inner length of the housing will be increased), they are available upon request and at an extra charge.
Operating side inspection cover always on H side.

Number of blade dampers depends on the height (H):

Height H [mm]	Width W [mm] 200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000
340	2																
505	3																
670	4																
835	5																
1000	6																

Other width dimensions (in 50 mm steps) are available upon request and at an extra charge.

Table 1 - Available sizes

Figure 3 - ERK-MB-S (shown without ASG-E)

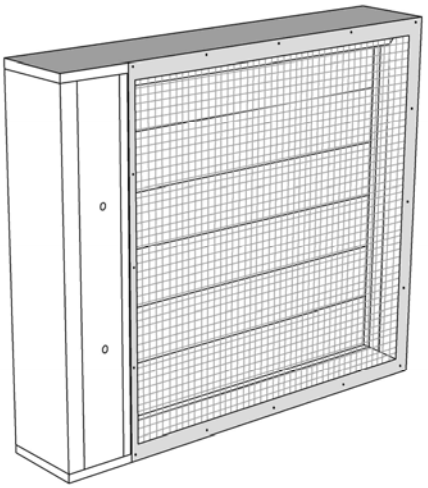


Figure 4 - ERK-MB-V

Use

The smoke extraction blade damper type ERK-MB can be fitted as shown in the following table.

Use		Installation	Material/Model	Minimum thickness [mm]	Minimum distance [mm]	Fire resistance class	For notes, see page
WALL	solid Apparent density ≥ 450 kg/m³	in	for example, concrete, masonry according to EN 1996 or DIN 1053; solid plaster wall boards according to EN 12859 or DIN 18163	100	from one another: 0 Wall: 75 Ceiling: 75	EI 90(v_{ew}, i↔o)S 1000 C_{10000} MA multi	8
		on[1)]	Smoke extraction shafts made of concrete; masonry according to EN 1996 or DIN 1053; solid plaster wall boards according to EN 12859 or DIN 18163	100	from one another: 200 Wall: 75[2)] Ceiling: 75[2)]	EI 90(v_{ew}, i↔o)S 1000 C_{10000} MA multi	12
	Dry building wall	in	in dry building walls with metal posts and panelling on both sides according to classification to EN 13501-2 or comparable national standards	100	from one another: 200 Wall: 75 Ceiling: 75	EI 90(v_{ew}, i↔o)S 1000 C_{10000} MA multi	14
SMOKE EXTRACTION DUCT	horizontal Apparent density ≥ 520 kg/m³	in[3)]	in accordance with EN 12101-7, tested according to EN 1366-8	35	from one another: 200 Wall: 75 Ceiling: 75	EI 90 (v_{ed}, i↔o)S 1000 C_{10000} MA multi	15
		on the front of[3)]	in accordance with EN 12101-7, tested according to EN 1366-8	35	from one another: 200 Wall: 75 Ceiling: 75	EI 90 (v_{ed}, i↔o)S 1000 C_{10000} MA multi	15
		on the side of[3)]	in accordance with EN 12101-7, tested according to EN 1366-8	35	from one another: 200 Wall: 75 Ceiling: 75	EI 90 (v_{ed}, i↔o)S 1000 C_{10000} MA multi	16
		to[3)]	in accordance with EN 12101-7, tested according to EN 1366-8	35	from one another: 200 Wall: 75 Ceiling: 75	EI 90 (h_{od}, i↔o)S 1000 C_{10000} MA multi	16
	vertical Apparent density ≥ 520 kg/m³	in[3)]	in accordance with EN 12101-7, tested according to EN 1366-8	35	from one another: 200 Wall: 75 Ceiling: 75	EI 90 (h_{od}, i↔o)S 1000 C_{10000} MA multi	17
		on the front of[3)]	in accordance with EN 12101-7, tested according to EN 1366-8	35	from one another: 200 Wall: 75 Ceiling: 75	EI 90 (h_{od}, i↔o)S 1000 C_{10000} MA multi	17
		on the side of[3)]	in accordance with EN 12101-7, tested according to EN 1366-8	35	from one another: 200 Wall: 75 Ceiling: 75	EI 90 (v_{ed}, i↔o)S 1000 C_{10000} MA multi	18

[1)] only in connection with mounting brackets WE-S and horizontal blade damper axle
[2)] The allowed minimum distance to the adjacent component (wall/ceiling) is 75 mm. However, due to the construction, the distance must be selected and increased depending on the particular situation.
[3)] in connection with additional on-site suspensions

Table 2 - Usability

General information

- During mounting or installation, there is a risk of injuries. To avoid injuries, personal protective equipment (PPE) must be worn.
- Smoke extraction blade dampers must be installed such that external forces do not impair their functioning. During mounting it may be required to provide reinforcements for the housing or the like. The requirement of statically load-bearing lintels may have to be taken into consideration.
- Improper transport/handling may result in damage/functional impairment. In addition to that, the film of the transport packaging must be removed and the delivery inspected for completeness.
- In storage, smoke extraction blade dampers must be protected from dust,
  dirt, moisture and the effects of extreme temperatures. They must not be exposed to direct effects of the weather.
- The smoke extraction blade dampers must be protected from dirt and damage. After installation is complete, any dirt must be removed immediately.
- Enough space must be provided for installation, mortar lining, etc.
- Carry out a functional check of the smoke extraction blade damper before and after mounting and ensure ready access.
- Electrical installations or work on electrical components may only be carried out by skilled electricians. The supply voltage must be switched off when performing this work and secured against being switched on again.
- In case of an installation in a wall and two-sided connection (sleeve connection), from a wall thickness > 150 mm or in case of a one-sided connection (sleeve connection) from a wall thickness > 200 mm, a housing extension (L dimension) must be taken into consideration.

INSTALLATION DETAILS

Installation in solid walls

Installation of the ERK-MB-V in solid walls (shaft walls, shafts, ducts and fire walls) made of, for example concrete, masonry according to EN 1996 or DIN 1053; solid plaster board walls according to EN 12859 or DIN 18163; apparent density ≥ 450 kg/m³ and wall thickness W ≥ 100 mm.
The distance to adjacent components (wall/solid ceiling) is at least 75 mm.
The smoke extraction blade dampers can be installed next to each other or about each other without clearance (max. 2 pieces) (see p. 9-11, additional mounting kit required).
Position of the blade damper axles: horizontal or vertical position possible.

Wet installation
Circumferential gaps "s" must be completely filled with mortar of category M10 according to EN 998-2 (previously: MG III according to DIN 1053) or fire protection mortar of suitable grades. The minimum gap size s_{min} is ≥ 10 mm; maximum gap size s_{max} ≤ 50 mm.
The mortar lining must be executed such that it is permanent and, for example no mortar breaks occur. The information given by the mortar manufacturer must be observed.
If the smoke extraction blade damper is installed during the construction of the wall, the gaps "s" can be omitted.
The mortar bed depth must be executed in the minimum wall thickness and may not be less than 100 mm. When performing a mortar lining or direct installation, make sure that the housing is not pressed toward the inside (reinforcement). If necessary, a statically active lintel must be provided.

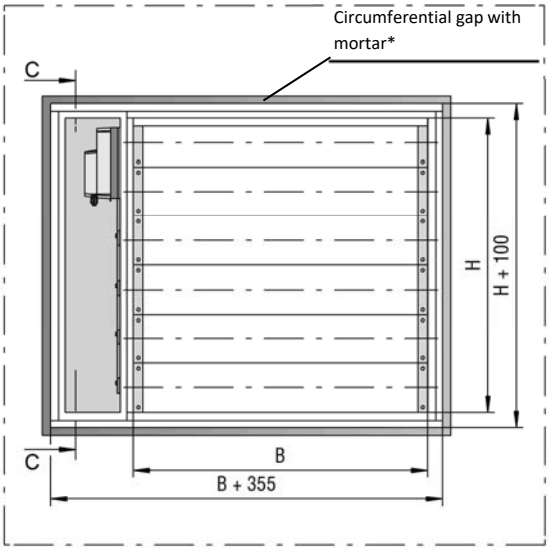


Figure 5 - Gap dimension when installing in a solid wall

*** Please note**
Circumferential gap (at least 10 to ≤ 50 mm) with mortar of category M10 in accordance with EN 998-2 (previously: MG III according to DIN 1053) or fire protection mortar of suitable grades.

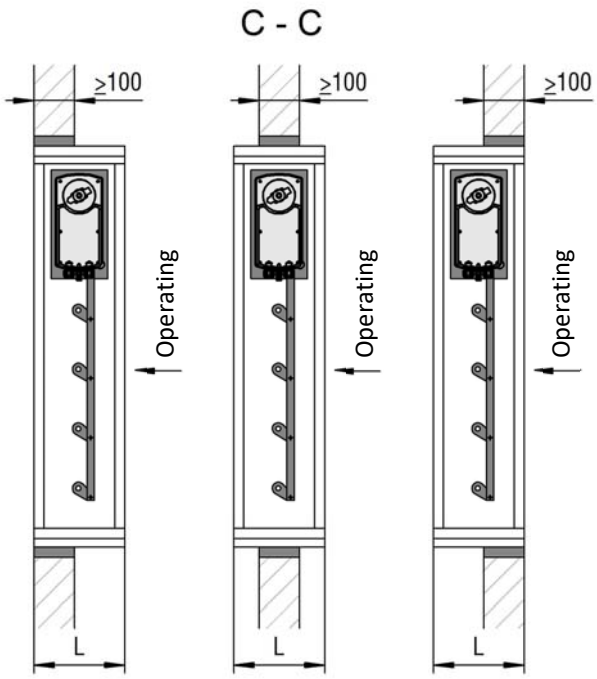


Figure 6 - Possible installation positions in a solid wall

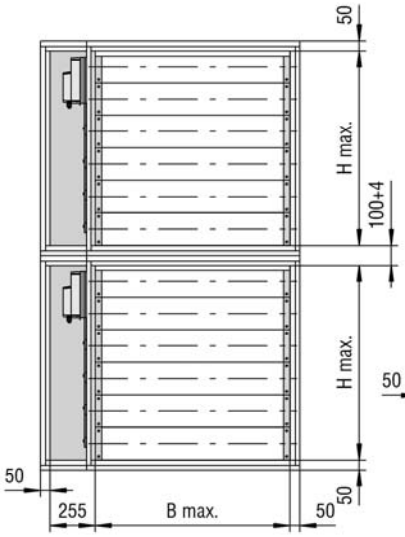
Installation positions

Arrangement of the ERK-MB-V when installed next to each other/above each other without clearance

With this arrangement, depending on the dimension and the positions of the blade damper axles, an additional mounting kit type MS for connecting the smoke extraction blade dampers is required. The connections must be made on site. The distance to other ERK-MB dampers is 200 mm, these dampers may be installed without clearance above each other/next to each other (max. 2).

Horizontal position of the blade dampers

above each other



next to each other

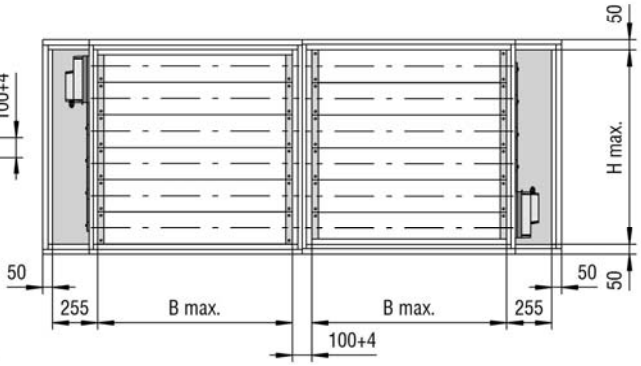
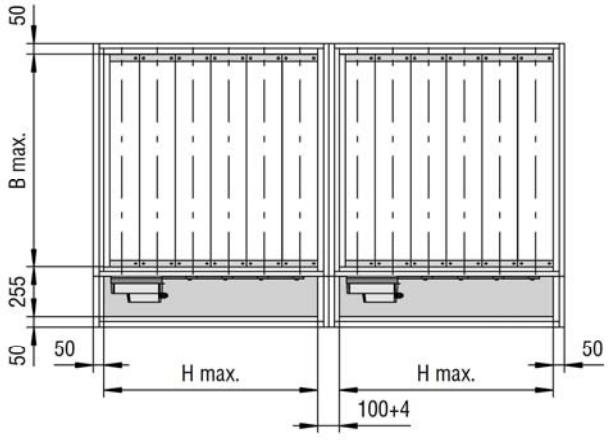


Figure 7 - Installation without clearance with blade dampers in horizontal positions

Vertical position of the blade dampers

next to each other



above each

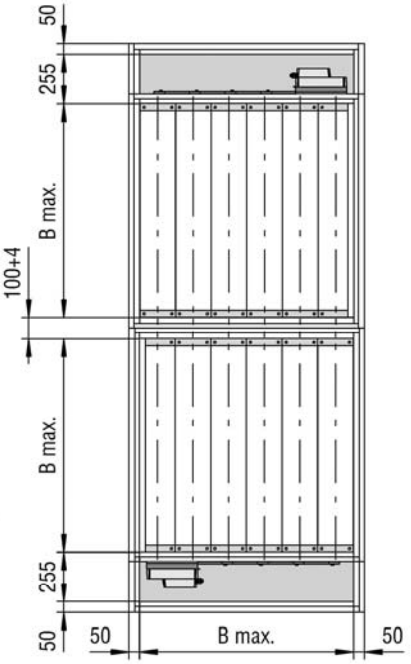
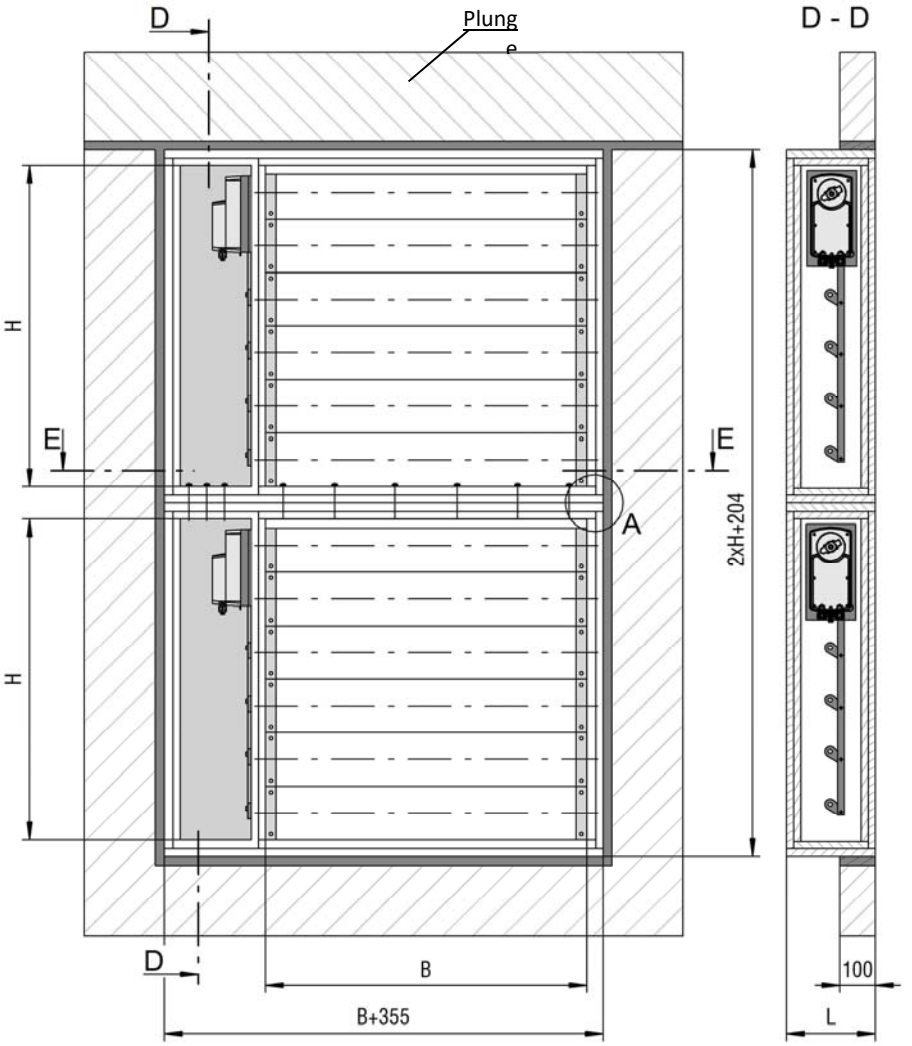
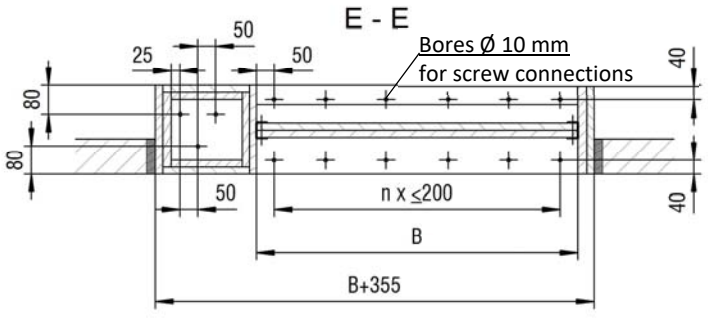


Figure 8 - Installation without clearance with blade dampers in vertical positions

Installation of the ERK-MB-V dampers directly above each other in solid walls (additional mounting kit type MS required)

Horizontal position of the blade dampers





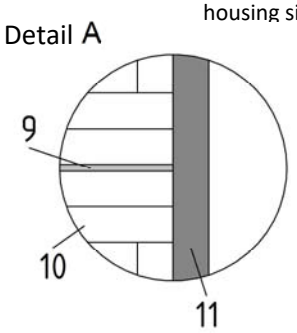
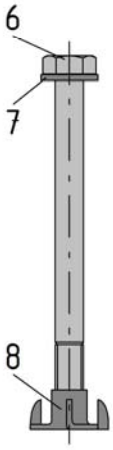


Figure 9 - Installation of the ERK-MB-V dampers above each other with horizontal blade dampers

Arrangement of the screw connection



Connection of the two smoke extraction blade dampers by means of:

6 -- Hexagon screws* with shaft similar to DIN 931 (ISO 4014) M8 x 100 mm

7 -- U-washers to DIN 125 (ISO 7089) int. Ø 8.4 / out. Ø 16 / 1.6 mm thick

8 -- Drive-in nut M8 with 4 prongs (galvanized steel) d2 = 22, d3 = 10, h = 15. The drive-in nut must must be flush with the housing side.

9 -- Insulfrax paper 5 mm thick. Glued to the ERK-MB-V over the entire surface with waterglass glue.

10 -- Housing ERK-MB-V

11 -- Mortar of category M10 to EN 998-2 (previously: MG III to DIN 1053) or fire protection mortar of suitable grades. Gap ≥ 10 to ≤ 50 mm

*** Please note:**
The screw heads do not need to be countersunk if the specified mounting dimensions are observed.

Installation of the ERK-MB-V dampers directly above each other in solid walls (additional mounting kit type MS required)

Vertical position of the blade dampers

Arrangement of the screw connection

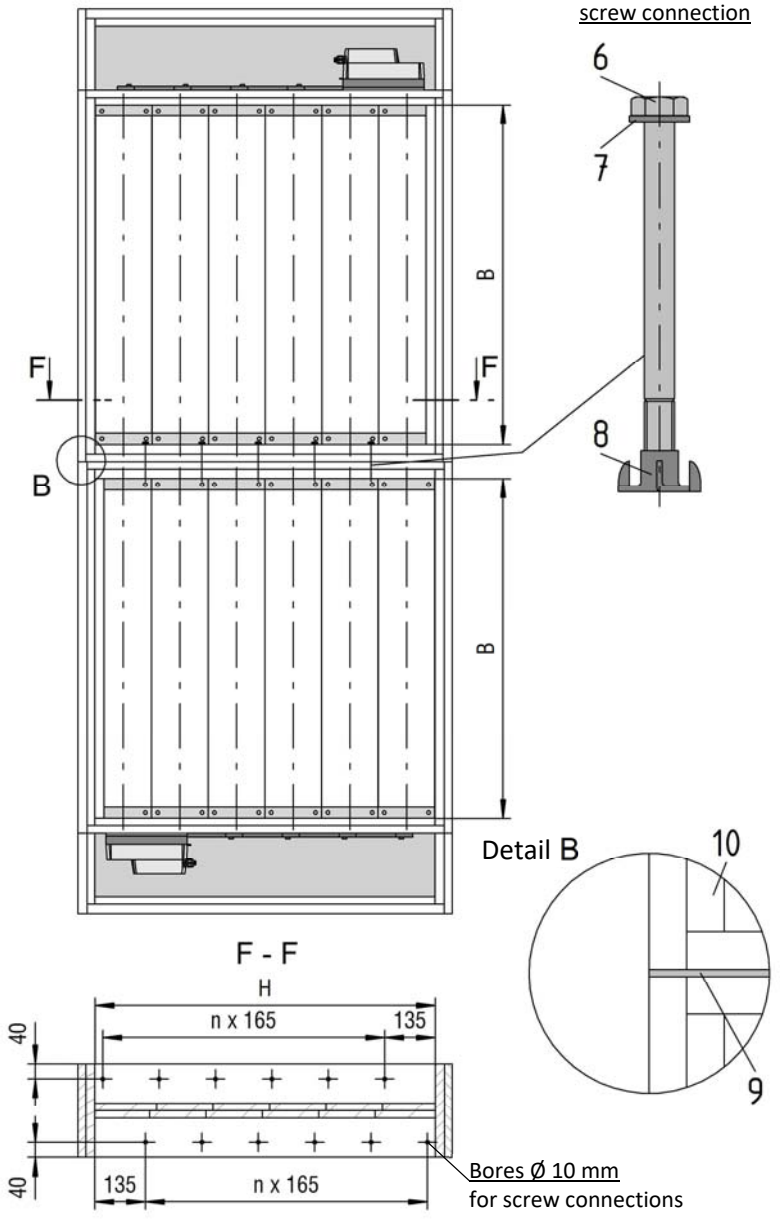


Figure 10 - Installation of the ERK-MB-V dampers above each other with vertical blade dampers

Connection of the two smoke extraction blade dampers by means of:

6 -- Hexagon screws* with shaft similar to DIN 931 (ISO 4014) M8 x 100 mm

7 -- U-washers to DIN 125 (ISO 7089) int. Ø 8.4 / out. Ø 16 / 1.6 mm thick

8 -- Drive-in nut M8 with 4 prongs (galvanized steel) d2 = 22, d3 = 10, h = 15. The drive-in nut must must be flush with the housing side.

9 -- Insulfrax paper 5 mm thick.

Glued to the ERK-MB-V over the entire surface with waterglass glue.

10 -- Housing ERK-MB-V

*** Please note:**
The screw heads do not need to be countersunk if the specified mounting dimensions are observed.

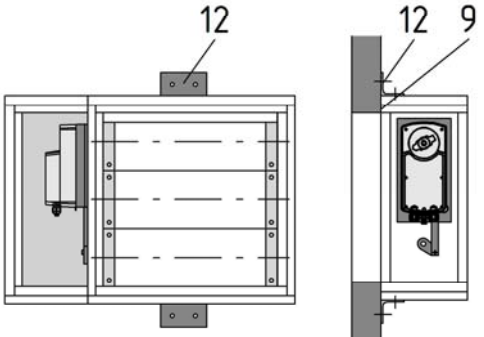
Installation in and on smoke extraction shafts made of solid building materials

Installation of the ERK-MB-V in and on solid smoke extraction shafts (made, for example of concrete; masonry according to EN 1996 or DIN 1053; solid plaster wall boards according to EN 12859 or DIN 18163; apparent density ≥ 450 kg/m³); wall thickness W ≥ 100 mm.

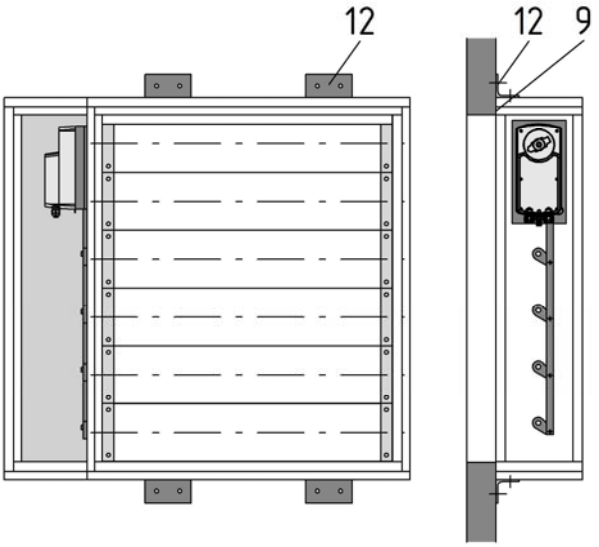
When installed in smoke extraction shafts, the distance between them is 0(4) mm and the distance to adjacent components (wall/solid ceiling) is 75 mm.

When installed on solid smoke extraction shafts in connection with mounting brackets (WE-S), the distance between them is 200 mm and the distance to adjacent components (wall/solid ceiling), due to the construction, is at least 100 mm. Only the horizontal position of the blade damper axles is possible.

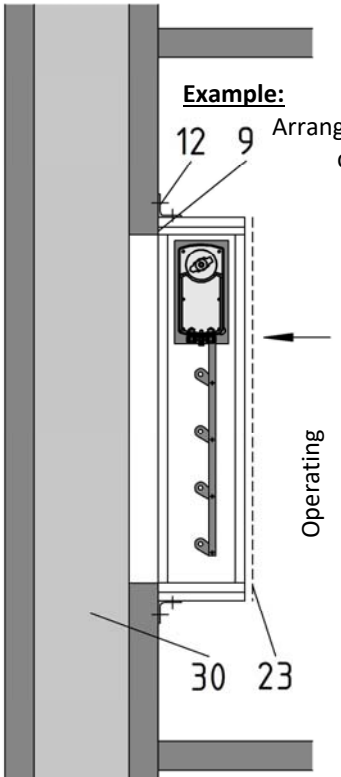
Concrete shaft



Concrete shaft



Example:
Arrangement on the concrete shaft



Example:
Arrangement in the concrete shaft

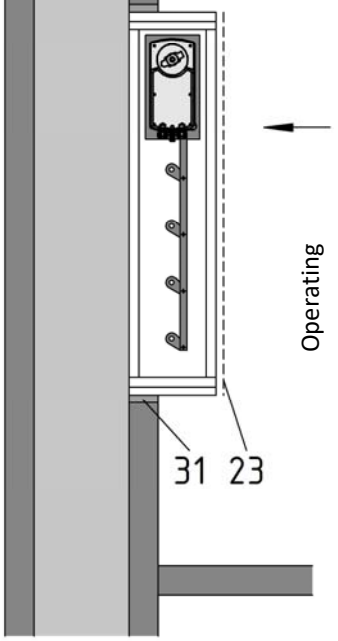


Figure 11 - Installation on and in solid smoke extraction shafts

9 -- Insulfrax paper 5 mm thick.
Glued with waterglass glue on the front.
12 -- Mounting bracket type WE-S (galvanised steel)
23 -- Security grille type ASG-E
30 -- Solid smoke extraction shafts made of solid building materials (e.g. concrete)
31 -- Seal the circumferential gap of at least 20 mm with mortar of group II or III, DIN 1053 or with concrete.

Picture showing mounting bracket WE-S

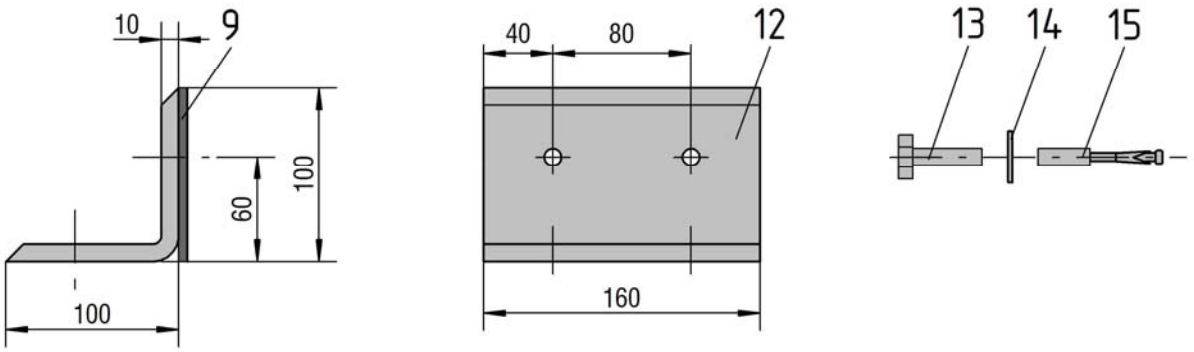


Figure 12 - Mounting bracket WE-S

9 -- Insulfrax paper 5 mm thick
(100 x 160 bonded as a seal)
12 -- Mounting bracket type WE-S
(galvanised steel 100 x 100 x 160 mm long)
13 -- Hexagon head screw to DIN 931 (e.g. M 10 x 30 mm)
14 -- U-washers DIN 125-A
15 -- Fire safety dowels, e.g. type KMU-F10 (for reinforced con crete walls only)

Number and arrangement of mounting brackets WE-S

Please note
Use of the WE-S brackets must be specified when ordering and is only possible with horizontal blade damper axle. The exact number, arrangement and mounting of the WE-S brackets is defined and carried out in factory according to the ERK-MB-V dimensions. The brackets are mounted to solid smoke extraction shafts depending on the dimensions. Information about it can be found in the following tables!

Number of mounting brackets type WE-S

Height H [mm]	Width W [mm]														
	200	250	300	350	400	450	500	550	600	650	700	750	800	900	1000
340	2	2	2	2	2	2	2	2	2	4	4	4	4	4	4
505	2	2	2	2	2	2	2	2	2	4	4	4	4	4	4
670	2	2	2	2	2	2	2	2	2	4	4	4	4	4	4
835	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
1000	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4

Table 3 - Number of mounting brackets WE-S for installation on solid smoke extraction shafts

Number with specification of the arrangement and wall fastening

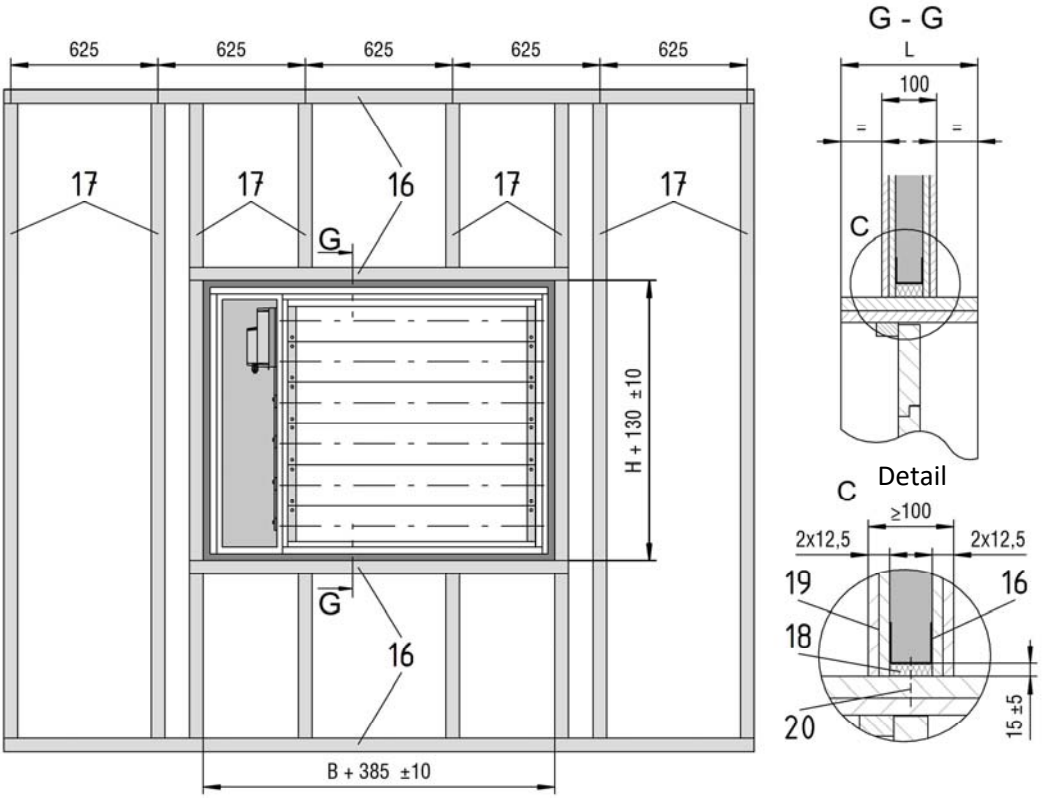
Total number of WE-S (as a function of dimensions)		2	4
Positioning of the WE-S brackets	Top B side	1	2
	Bottom B side	1	2
On-site wall fastening per WE-S bracket with 2 units		M10	M10

Table 4 - WE-S arrangement and wall fastening for installation on solid smoke extraction shafts

Installation in dry building walls with metal posts and panelling on both sides

Installation of the ERK-MB-V in dry building walls with metal posts and panelling on both sides (gypsum-bonded wall boards; wall thickness ≥ 100 mm) according to classification to EN 13501-2 or comparable national standards.
No additional suspensions or attachments of the ERK-MB-V are allowed, and installation and mounting aids must be removed it they were used.
The ERK-MB-V must be installed during the construction of the wall and in dry walls.
The distance between the smoke extraction blade dampers must be at least 200 mm.
The distance to adjacent components (wall/ceiling) is at least 75 mm.

Figure 13 - Metal posts with required



exchange parts and opening dimensions

Please note
Circumferential gaps (at least ≥ 10 to ≤ 20 mm) must be filled with mineral wool (pos. 18).
Circumferential fixing of the ERK-MB-V is carried out by means of universal screws (pos. 20) at a distance of ≤ 250 mm on the metal frame construction (UW and CW profiles).

Installation procedure

- Mount the metal posts in accordance with the specifications of the wall manufacturer and the required exchange parts as shown on Figure 13.
- Insert the ERK-MB-V into the prepared exchange part. Average out the circumferential annular gap evenly between the metal frame construction and the ERK-MB-V. Mount the ERK-MB-V with the help of mounting suspensions, etc. if required.
- Insert mineral wool (pos.18) into the circumferential gap 15±5 mm in width between the housing of the ERK-MB-V and the circumferential metal profiles (pos. 16+17).
- Permanently fix the ERK-MB-V on the circumferential metal post exchange part using universal screws (pos. 20).
- Complete fastening the wall panellings (pos.19). The connection and butt joints must be filled with the jointing material of the wall.
- Remove mounting aids (mounting suspensions, etc.) if used.

16 -- Profile UW 50/40/0.6 (for wall thickness = 100 mm, for larger wall thicknesses, the profiles must be adapted accordingly)
17 -- Profile CW 50/50/0.6 (for wall thickness = 100 mm, for larger wall thicknesses, the profiles must be adapted accordingly)
18 – Mineral wool (non-flammable according to EN13501-1, ap parent density ≥ 100 kg/m³, melting point ≥ 1000 °C, min. thickness according to the actual gap dimension.
Insert the mineral wool over the entire profile web height.
19 – Wall panelling (on both sides, double)
20 – Universal screw, for example 4.0 x 50 mm, distance a ≤ 250 mm, or min. distance, but 2 screws per side.

CONNECTION IN AND TO SMOKE EXTRACTION DUCTS

Connection options on the front side on or in horizontal smoke extraction ducts
in accordance with EN 12101-7, inspected according to EN 1366-8

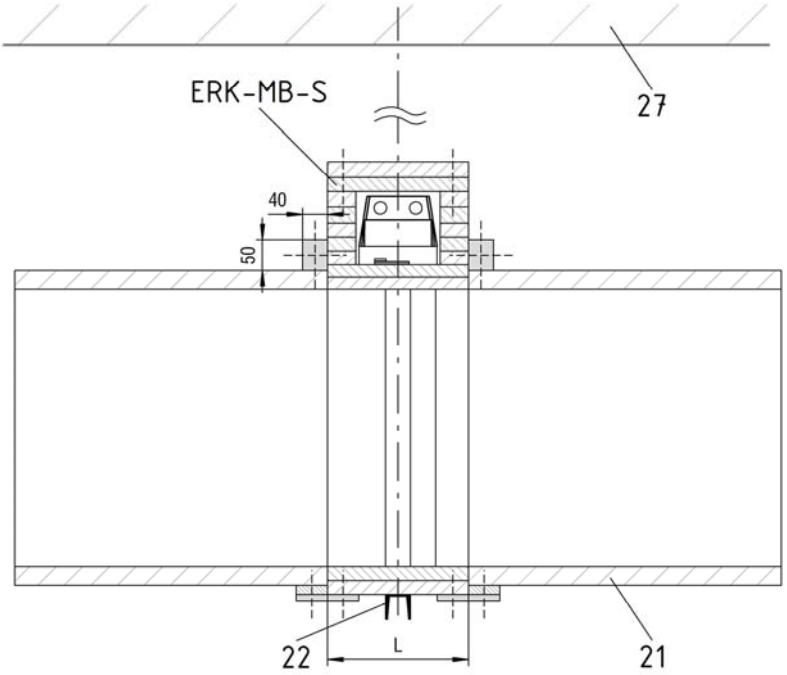


Figure 14 - Connection in horizontal smoke extraction duct

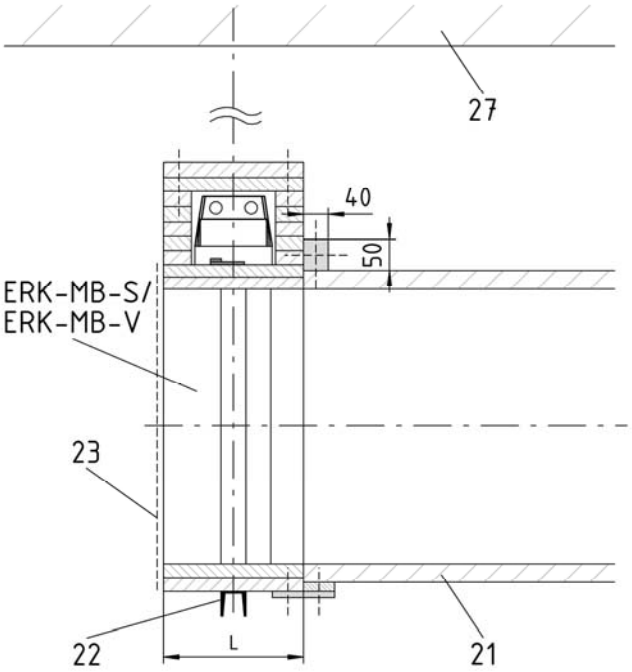
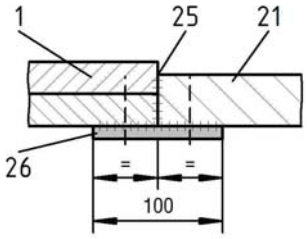


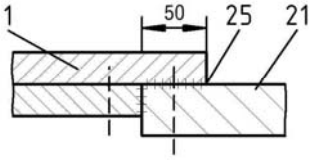
Figure 15 - Front side connection to horizontal smoke extraction duct

Examples of connection to smoke extraction duct

<u>flush outside</u>



<u>directly to the housing extension (L dimension; inner length of the housing)</u>



<u>flush inside</u>

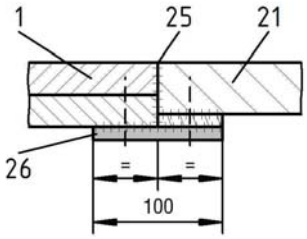
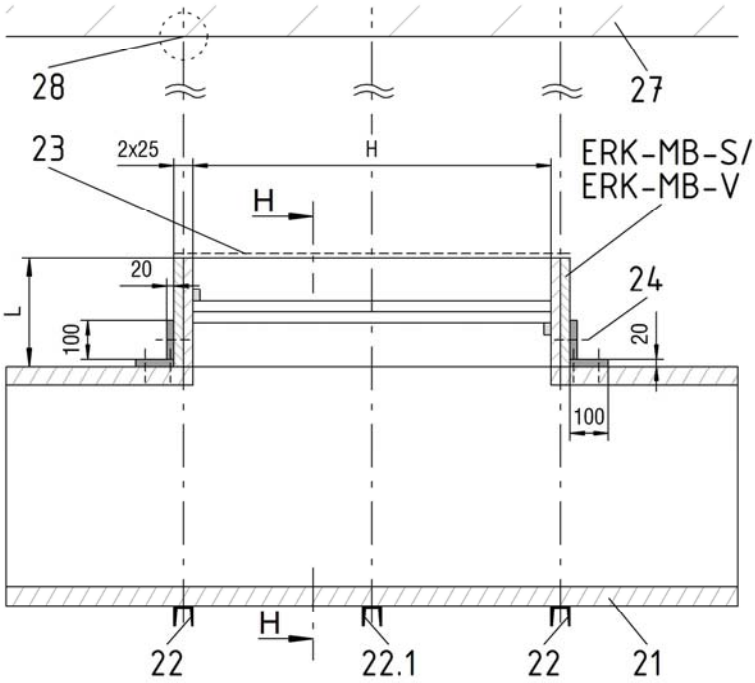


Figure 16 - Examples of connection to smoke extraction duct

<u>Please note</u>
The connection is made via bonding and sealing of the contact surfaces and with the help of mechanical fastening materials.

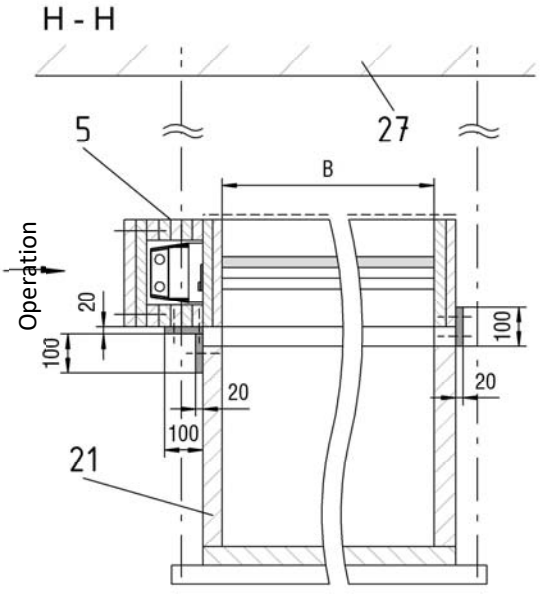
1 -- Housing of the ERK-MB
21 -- Smoke extraction duct (to EN 12101-7, inspected according to EN 1366-8)
22 -- ERK-MB suspension
23 -- Security grille type ASG-E
25 -- Waterglass-based adhesive (shown with dashed lines) - on site
26 -- Sleeve connection (width 100 mm, thickness 20 mm) with fastening material (coarse thread screw ≥ 3.9 × 45, distance ≈ 100 mm) - on site
27 -- Solid ceiling

Connection options on the side of the horizontal smoke extraction ducts in accordance with EN 12101-7, inspected according to EN 1366-8



Required sleeve connections (on site) according to the mounting position. For connecting the ERK-MB to the smoke extraction duct used (incl. bonding with waterglass-based adhesive).

In the sleeve/connection area, the ERK-MB housing must be hung independently of the smoke extraction duct (pos. 22).



Schematic diagram
possible installation positions (sectional view)

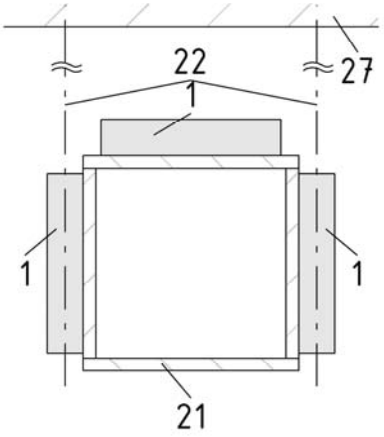


Figure 17 - Lateral connection to the horizontal smoke extraction duct

1 -- Housing of the ERK-MB
5 -- Housing of the actuator and transmission rod incl. inspection cover
21 -- Smoke extraction duct (in accordance with EN 12101-7, inspected according to EN 1366-8)
22 -- ERK-MB suspension
22.1 – Suspension of the smoke extraction duct, taking into account the maximum suspension distances, may be not required.
23 -- Security grille type ASG-E
24 -- Coarse thread screw ≥ 3.9 × 45, distance ≈ 100 mm
27 -- Solid ceiling
28 -- Fire safety dowel (see p. 19)

Front side connection options on or in vertical smoke extraction ducts
in accordance with EN 12101-7, inspected according to EN 1366-8

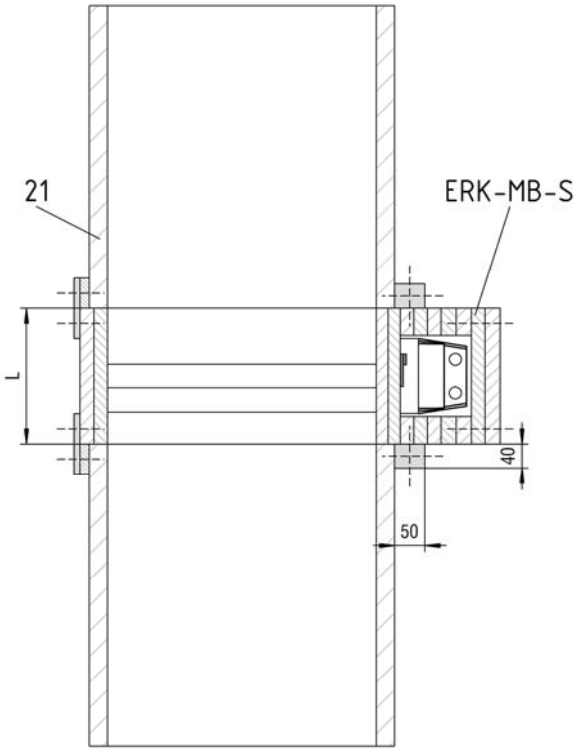


Figure 18 - Connection in vertical smoke extraction duct

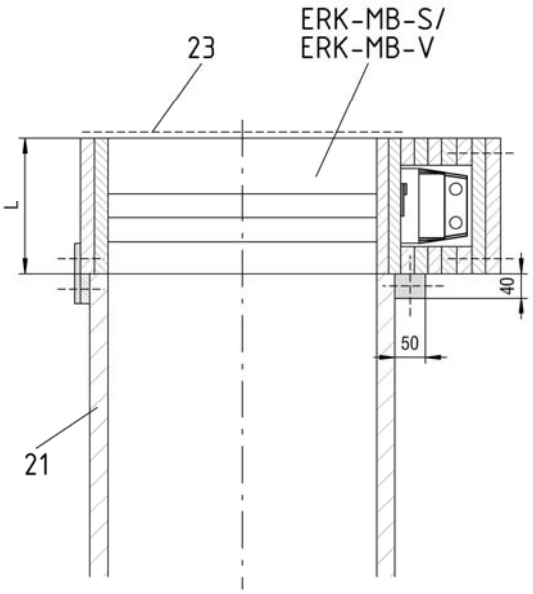


Figure 19 - Front side connection to vertical smoke extraction duct

Examples of connection to smoke extraction duct

flush outside

directly to the housing extension (L dimension; inner length of the housing)

flush inside

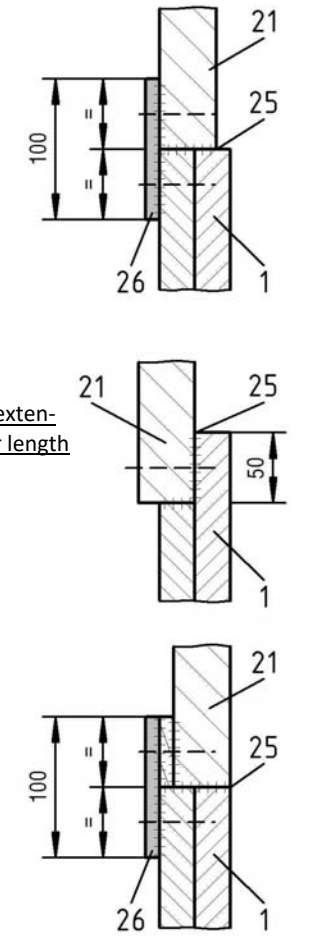
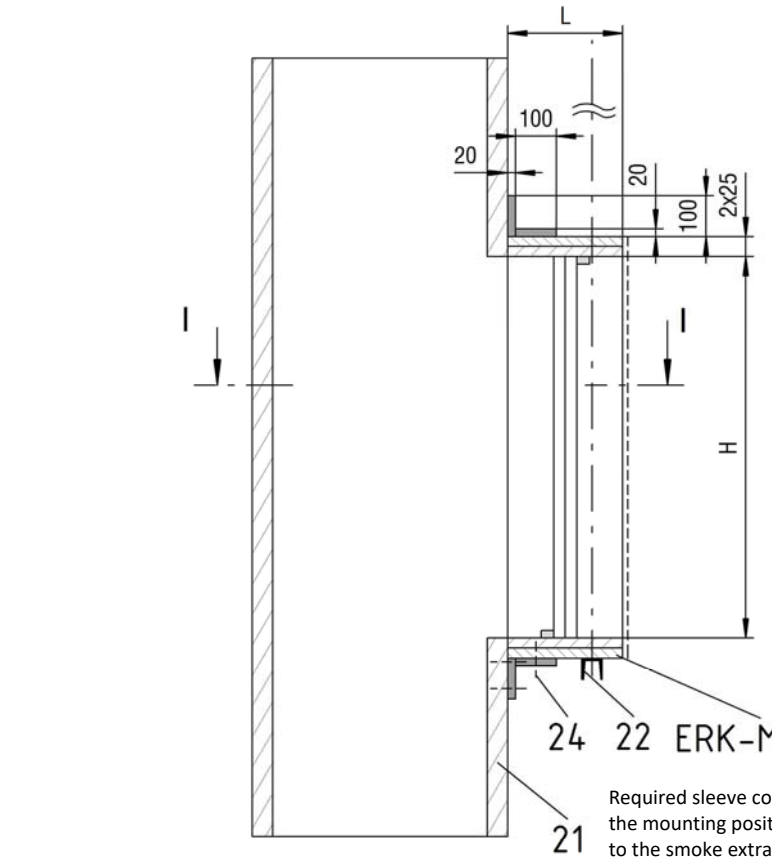


Figure 20 - Examples of connection to smoke extraction duct

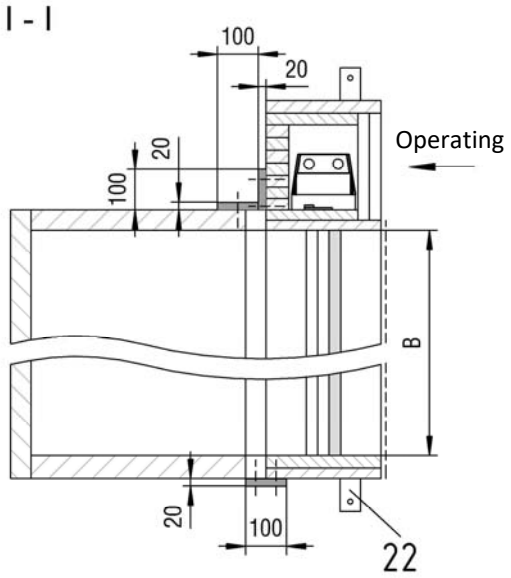
Please note
The connection is made via bonding and sealing of the contact surfaces and with the help of mechanical fastening materials.

1 -- Housing of the ERK-MB
21 -- Smoke extraction duct (to EN 12101-7, inspected according to EN 1366-8)
23 -- Security grille type ASG-E
25 -- Waterglass-based adhesive (shown with dashed lines) - on site
26 -- Sleeve connection (width 100 mm, thickness 20 mm) with fastening material (coarse thread screw ≥ 3.9 × 45, distance ≈ 100 mm) - on site

Connection options on the side of the vertical smoke extraction ducts in accordance with EN 12101-7, inspected according to EN 1366-8



Required sleeve connections (on site) according to the mounting position. For connecting the ERK-MB to the smoke extraction duct used (incl. bonding with waterglass-based adhesive).
The ERK-MB must be hung separately, independently of the smoke extraction duct (pos. 22).



Schematic diagram
possible installation positions (sectional view)

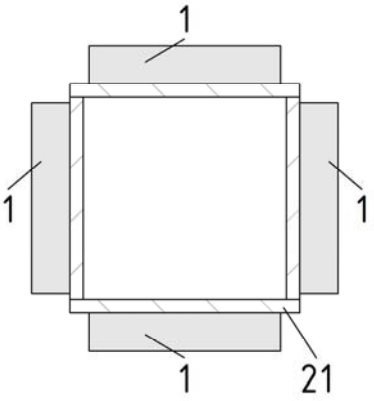


Figure 21 - Lateral connection to the vertical smoke extraction duct

1 -- Housing of the ERK-MB
21 -- Smoke extraction duct (in accordance with EN 12101-7, tested
according to EN 1366-8)
22 -- ERK-MB suspension
24 -- Coarse thread screw ≥ 3.9 × 45, distance ≈ 100 mm

SUSPENSIONS AND WEIGHTS

Fire safety dowels with European technical approval ETA-04/0026 for suspension of the smoke extraction blade dampers

M8 to M12

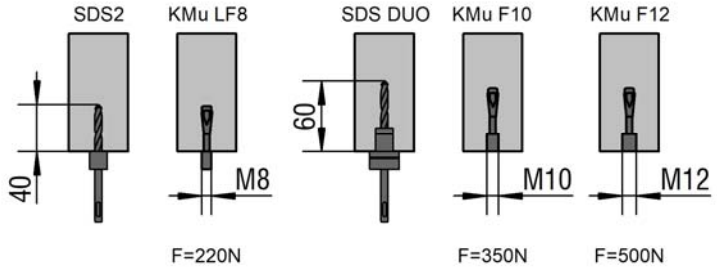
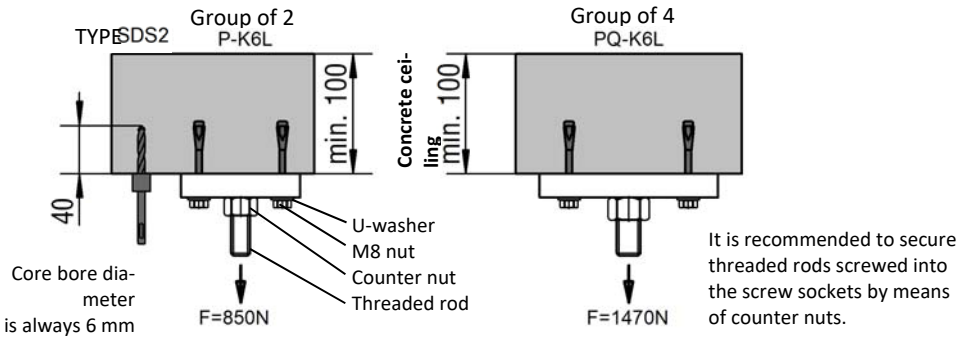


Figure 22 - Suspension fastening M8 to M12

M16 and M20



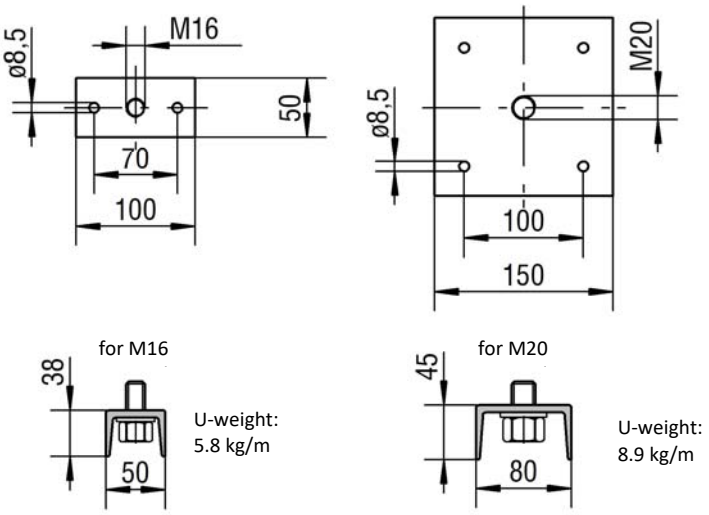


Figure 23 - Suspension fastenings M16 and M20

Suspensions

The uncovered threaded rods must be dimensioned such that the calculated tension of 6 N/mm² is not exceeded (this applies to a max. length of 1.5 m). The suspending brackets must be guided in U-shape around the duct (EN 13661).

Note regarding steel dowels with general building supervisory approval:
The suspending brackets must be fastened using expansion dowels M8 made of steel. The dowels must be installed according to the specifications of the valid approval notifications of the Institute of Structural Engineering and, in addition, the installation length must be twice as deep as required in the approval notification unless stated otherwise in the approval notification; the calculated tensile load per dowel must not exceed 500 N. Special dowels with a maximum tensile load of 700 N can be also used.

Nominal dimension	Rod weight [kg/m]	Stress cross-section [mm²] *	Load at 6 N/mm² per threaded rod	
			[N]	[KP]
M6	0.18	20.1	120.6	12.29
M8	0.32	36.6	219.6	22.38
M10	0.50	58.0	348.0	35.47
M12	0.73	84.3	505.8	51.55
M14	0.97	115.0	690.0	70.33
M16	1.35	157.0	942.0	96.02
M20	2.08	245.0	1470.0	149.84
M24	3.00	353.0	2118.0	215.90
M30	4.75	561.0	3366.0	343.11

* Stressed cross-sections of threaded rods with metric ISO thread to DIN 13, part 28

Table 5 - Suspensions

Please note:
To design suspension with the threaded rods, the following weights must be taken into account:
Smoke extraction blade damper + fire-resistant smoke extraction duct (with attachment/connection) + suspension (threaded rod and pole brace).

With suspension heights >1.5 m, the suspensions (threaded rods) must be covered on site and the weight of the suspension covering must be taken into account when designing the suspension.

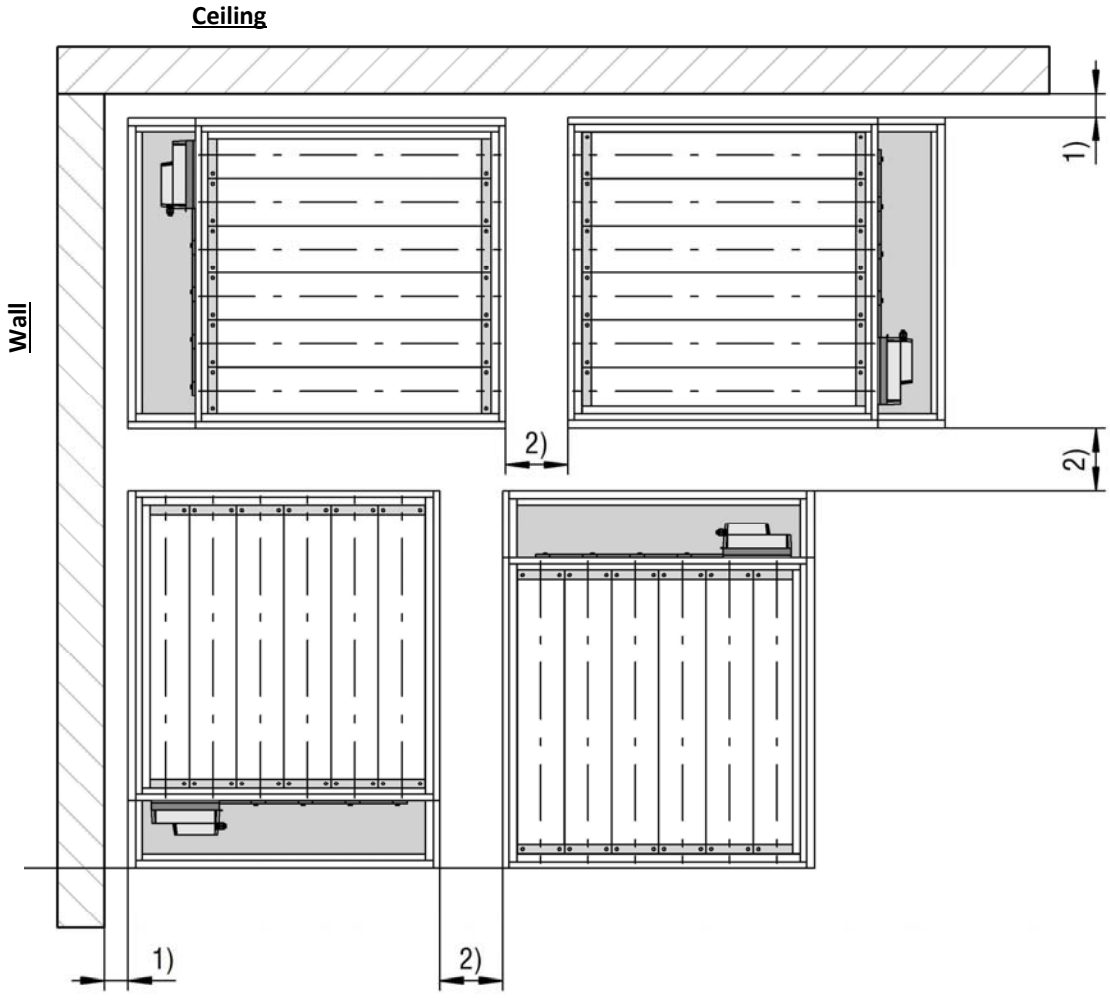
Weight table ERK-MB [kg]

		Width W [mm]									Length L
		200	300	400	500	600	700	800	900	1000	[mm]
Height H [mm]	340	43	45	49	52	56	59	62	65	69	250
	505	52	57	61	65	69	73	76	81	85	
	670	62	67	71	76	80	85	90	95	99	
	835	70	76	80	86	91	97	102	107	112	
	1000	77	83	89	96	101	107	113	119	124	

Table 6 - Weight table

MINIMUM DISTANCES AND PROJECTING ENDS

The dimensions given must be considered an installation recommendation for the ERK-MB and may differ, depending on the local situation. The smoke extraction blade damper must be installed in accordance with the technical documentation, installation, mounting and operating instructions. For functional test, service, retrofitting, etc., inspection openings must be provided on site in suspended ceilings, shaft walls, connected ventilation ducts etc., if necessary. They must be built in sufficient numbers and size and must not impair the functioning of the smoke extraction blade dampers; they may lead to increasing the distances.



1) The distance between smoke extraction blade damper and adjacent component (wall/ceiling) must be determined according to the particular installation situation or adjusted to the dimensions of the projecting ends (e.g. actuator housing) and is at least 75 mm.
2) The distance between two smoke extraction blade dampers depends on the particular installation situation and is described in the corresponding installation situations. (p. 8 and the following pages).

- Horizontal or vertical position of the blade damper axles depending on the installation situations.
- The actuator can be positioned on the right, on the left, at the top or at the bottom.

Figure 24: Minimum distances to walls and ceilings and ERK-MB to one another

TECHNICAL DATA

Pressure loss Δp [Pa] and and noise level L_{WA} [dB (A)]

Damper width B=200 mm

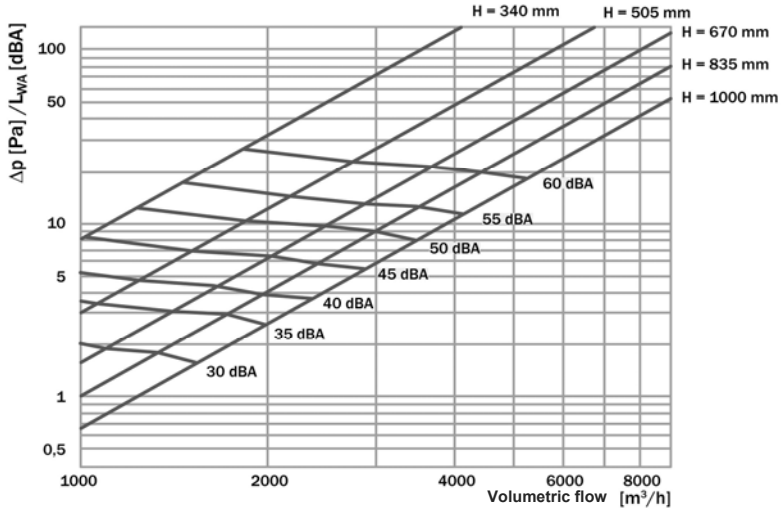


Diagram 1 - Design diagram B=200 mm

Please note:
The design diagrams only apply to the installation situation "Free intake"! In other cases, observe information regarding correction factor on page 25.

Damper width B=300 mm

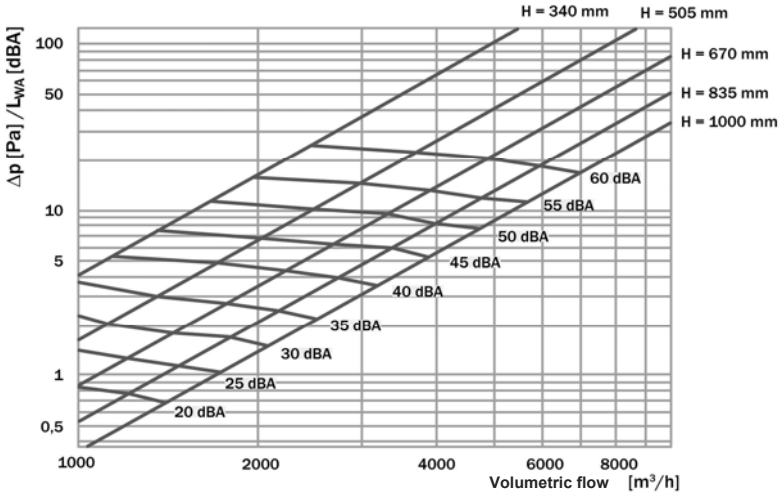


Diagram 2 - Design diagram B=300 mm

Damper width B=400 mm

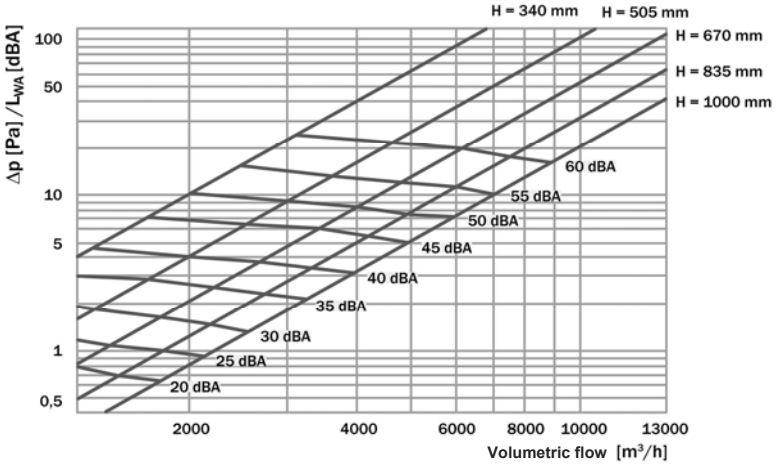


Diagram 3 - Design diagram B=400 mm

Pressure loss Δp [Pa] and and noise level L_{WA} [dB (A)]

Damper width B=500 mm

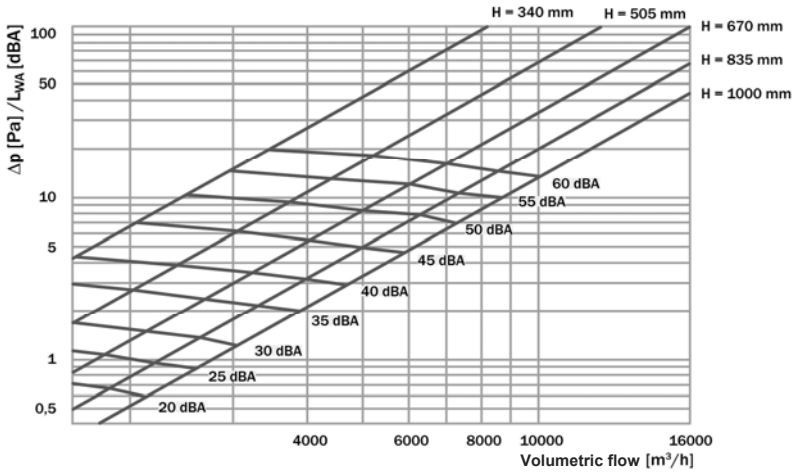


Diagram 4 - Design diagram B=500 mm

Please note:
The design diagrams only apply to the installation situation "Free intake"! In other cases, observe information regarding correction factor on page 25.

Damper width B=600 mm

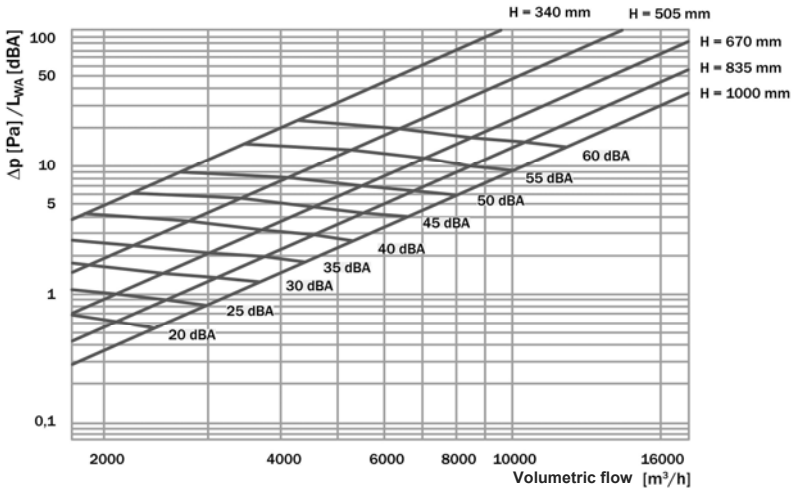


Diagram 5 - Design diagram B=600 mm

Damper width B=700 mm

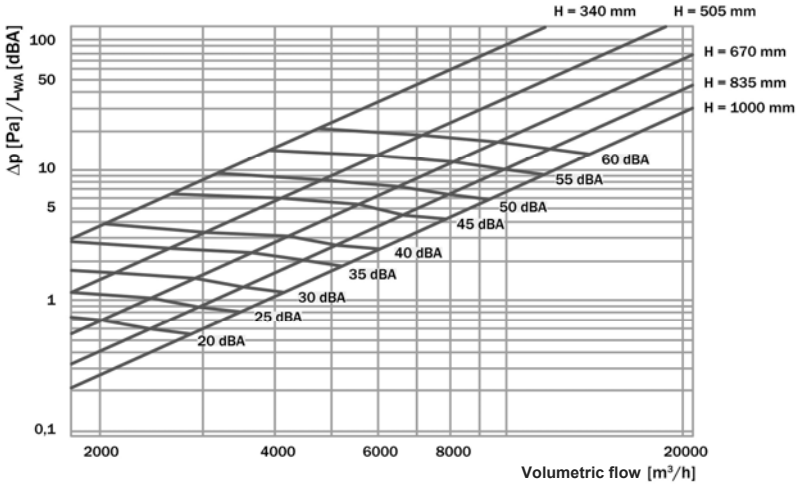


Diagram 6 - Design diagram B=700 mm

Pressure loss Δp [Pa] and and noise level L_{WA} [dB (A)]

Damper width B=800 mm

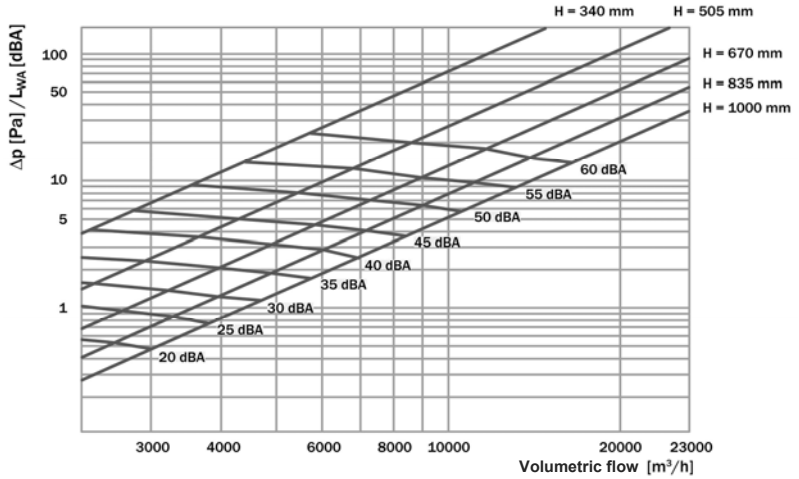


Diagram 7 - Design diagram B=800 mm

Please note:
The design diagrams only apply to the installation situation "Free intake"! In other cases, observe information regarding correction factor on page 25.

Damper width B=900 mm

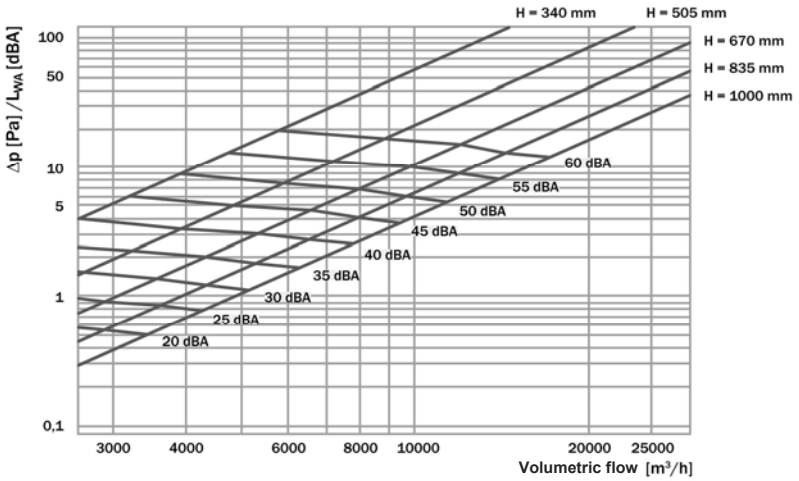


Diagram 8 - Design diagram B=900 mm

Damper width B=1000 mm

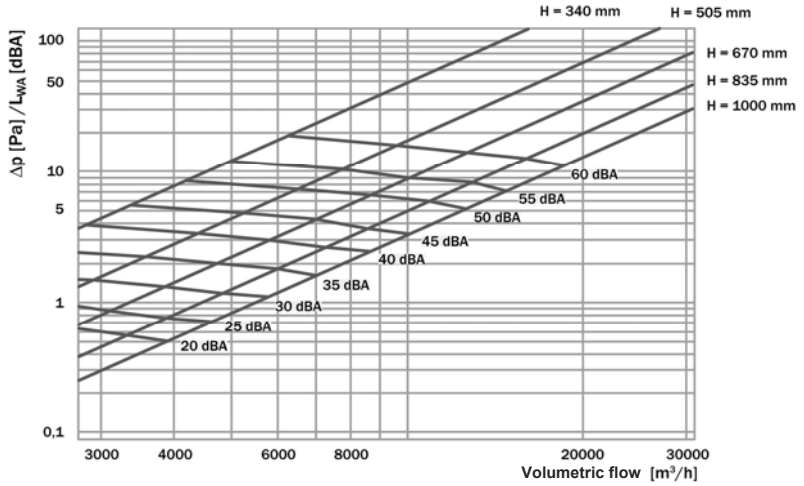
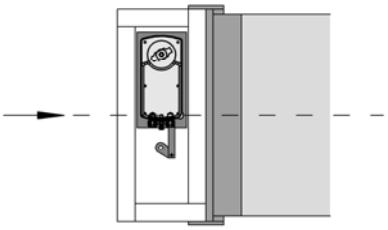


Diagram 9 - Design diagram B=1000 mm

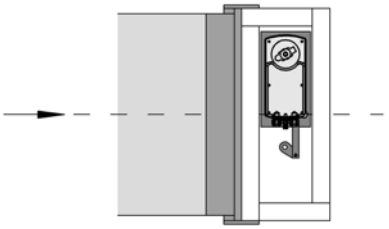
Correction factors

In the diagrams on previous pages (see pages 22 to 24), the pressure loss Δp in Pa and the duct sound power level L_{WA} in dB(A) for the installation situation "Free intake" can be directly read via the required volumetric flow $\dot{V}$ in m^3/h.

Free intake
(Correction factor: not required, can be read directly in the diagrams)



Free outlet
(correction factor: 1.59)



Free outlet/Free intake
(correction factor: 2.91)

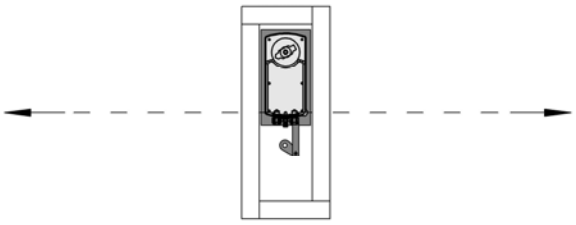
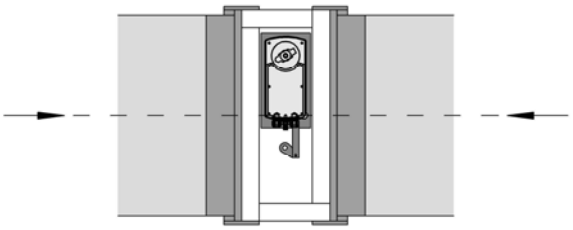


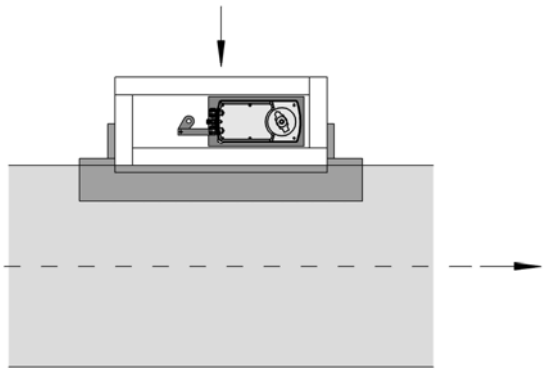
Figure 25 - Information regarding correction factor

For all other installation situations, the read result of the pressure loss Δp in Pa must be multiplied by the following assigned factors, depending on the installation situation (with $\dot{V}$ = constant).
The sound power level L_{WA} in dB (A) is corrected using the calculated pressure loss Δp in Pa via the diagram.
The density of the transferred medium air is ρ=1.2 kg/m^3 at 20 °C.

Duct connection on both sides
(correction factor: 0.68)



Free intake on the duct
(correction factor: 1.59)



Free cross-section FQ_{min} [m²]

Height H [mm]	Width W [mm] 200	300	400	500	600	700	800	900	1000
340	0.042	0.063	0.084	0.105	0.126	0.147	0.168	0.189	0.210
505	0.067	0.100	0.134	0.167	0.201	0.234	0.268	0.301	0.335
670	0.091	0.136	0.182	0.227	0.273	0.318	0.364	0.409	0.455
835	0.117	0.175	0.234	0.292	0.351	0.409	0.468	0.526	0.585
1000	0.141	0.211	0.282	0.352	0.423	0.493	0.564	0.634	0.705

Table 7 - Free cross-section

Note:
Information regarding the free cross-section applies to the smoke extraction blade damper without taking into account the security grille which is optionally available.

ACCESSORIES

- Housing and blade dampers with additional impregnation or colour coating (ex works only):
  - SR impregnation for protection against aggressive media:
    - inside
    - outside
    - inside and outside
  - Impregnation 2000 for hydrophobization (protection against humidity):
    - inside
    - outside
    - inside and outside
  - Colour coating (dispersion/alkyd resin-based paint) RAL colour must be specified when ordering:
    - inside
    - outside
    - inside and outside

- Actuator types
  EK11 (SEL2.90; 230 V AC)
  EK12 (SEL1.90 SLC; 24 V AC/DC)
  EK14 (EK12 + SPMa-1SR)
  EK20 (BE24-12-ST; 24 V AC/DC)
  EK21 (BE230-12; 230 V AC)
- Communication devices for actuator EK12 / EK14 e.g. SPMa1SR (part of EK14) or SPLM-4S 0SD Mod (on site).
- Profile connection frame type PAR for connecting, among others, a security grille type ASG-E, an inspected sheet steel duct or a flexible spigot type FS-E.
- Security grille ype ASG-E
- Flexible connection spigot type FS-E
- Mounting bracket type WE-S
- Mounting kit type MS for connecting the smoke extraction blade dampers when installed above each other/next to each other without clearance in solid walls
- Fire safety dowels M8, M10 and M12 type KMU-L(F)
- Suspension plate incl. dowels, F = 850 N type P-K 6 L
- Suspension plate incl. dowels, F = 1500 N type PQ-K 6 L
- Drill bit for dowels ø 6 mm (for suspension M8) type SDS-2
- Drill bit set for dowels ø 6 mm (for suspension M10-M12) type SDS-DUO
- Setting tool of size 8 to 12 type SMU-H

TECHNICAL DATA - ACTUATORS

The following actuator types are available:
EK10 (SEL1.90; 24 V AC/DC - standard actuator) /
EK11 (SEL2.90; 230 V AC) /
EK20 (BE24-12-ST; 24 V AC/DC) /
EK21 (BE230-12; 230 V AC).
EK12 (SEL1.90 SLC; 24 V AC/DC) /
EK14 (EK12 + SPMa-1SR)
The actuators EK12/EK14 are connected via the so-called 2-wire technology, the corresponding communication devices (e.g. SPMa-1SR or SPLM-4S 0SD Mod; **please order separately**) can be used to retrieve data, for example signalling of end position, keeping timeframe (< 60 s) and monitoring of the torque.
The function of the actuator EK12 is only active when an additional required communication device (e.g. EK14 = EK12 + SPMa-1SR) is connected.

Please note
All electrical connections between actuator and power supply must be made according to the valid VDE guidelines.

Technical data

Actuator type	**EK10 (SEL 1.90)**	**EK11 (SEL 2.90)**	**EK12 (SEL 1.90 SLC) / EK14 (EK12 + SPMa-1SR)**
Rated voltage [V]	AC/DC 24	AC 230	In connection with SPMa or SPLM
Power consumption during operation [W]	7	12	7
Power consumption end position [W]	0.7	3.7	1.0
Dimensioning [VA]	13	13	13
Degree of protection IEC/EN	IP54		
Protection class IEC/EN	II protective insulation		
Torque at least [Nm]	40		
Running time [s]	< 60		
Sound power level [dB(A)]	approx. 50		
Angle of rotation/Operating range	90°		
Switching capacity of auxiliary switch	3 (1.5) A, 230 V		SLC is omitted
Maintenance	maintenance-free		
Weight [kg]	~ 2.7	~ 2.9	~ 2.7

Actuator type	**EK20 (BE24-12-ST)**	**EK21 (BE230-12)**
Rated voltage [V]	AC/DC 24	AC 230
Power consumption during operation [W]	12	8
Power consumption end position [W]	0.5	
Dimensioning [VA]	18	15
Degree of protection IEC/EN	IP54	
Protection class IEC/EN	Safety extra low voltage III	II protective insulation
Torque at least [Nm]	40	
Running time [s]	< 60	
Sound power level [dB(A)]	maximum 62	
Angle of rotation	100°	
Switching capacity of auxiliary switch	2 x EPU, 6 (3) A, AC 250 V	
Maintenance	maintenance-free	
Weight [kg]	~ 2.7	

Table 8 - Technical data of actuators

Actuator arrangement and cable routing

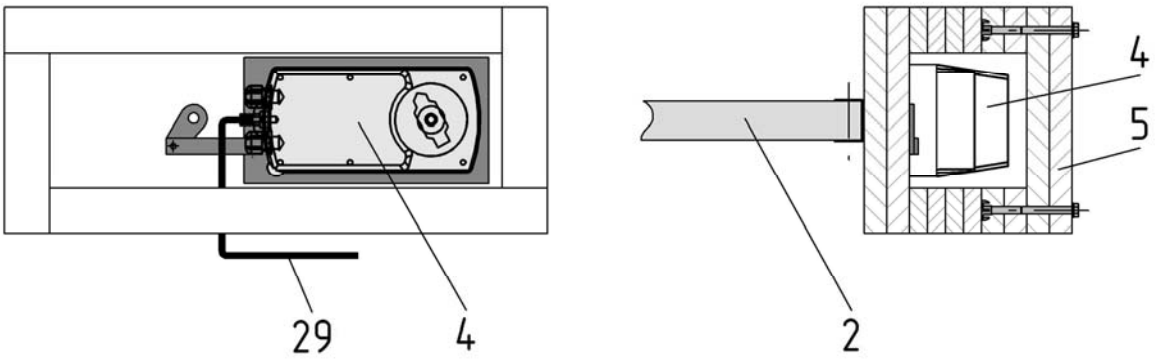


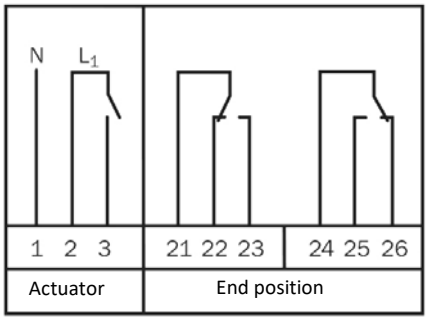
Figure 26 - Actuator arrangement and cable routing

Please note
The E90 or E30 cable is passed through the side wall of the actuator housing (L90) by means of a bore exactly fitting the connection cable (bore = outer diameter of E90 or E30 cable)

2 -- Blade dampers (parallel; 40 mm thick)
4 -- Actuator
5 -- Housing of the actuator and transmission-rod incl. inspection cover
29 -- E90 or E30 cable connection and cable routing according to DIN 4102-12

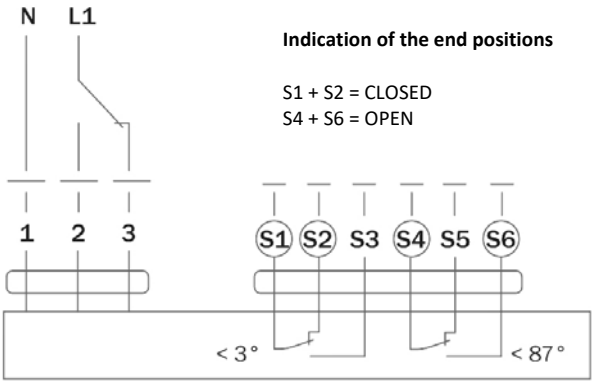
Connection diagram for actuator types EK10 (SEL 1.90; 24 V AC/DC) and EK11 (SEL 2.90; 230 V AC) 2-point or 1-cable control (7-strand)

Picture showing OPEN



⊥	~	AC24V ±20%
−	+	DC24V ±10%
N	L1	AC230V ±10%

Connection diagram for actuator types EK20 (BE24-12-ST; 24 V AC/DC) and EK21 (BE230-12; 230 V AC) 2-wire control



Connection diagram for actuator type EK12 (SEL 1.90 SLC; 24 V AC/DC) / EK14 (EK12+SPMa-1SR) 2-wire technology (2-strand)

see safety communication modules power line system SLC, type SPMa-1SR or SPLM-4S 0SD Mod.

ADD-ON PARTS

Security grille ype ASG-E

The security grille type ASG-E is mounted ex works on one side on the operating side BS (standard). Optionally also possible on both sides (please specify separately when ordering).

ASG3 = mounted ex works on both sides
ASG4 = 1 piece loose

Model: galvanised sheet steel (mesh width ≤ 20 mm).
Recommendation: mounting ex works

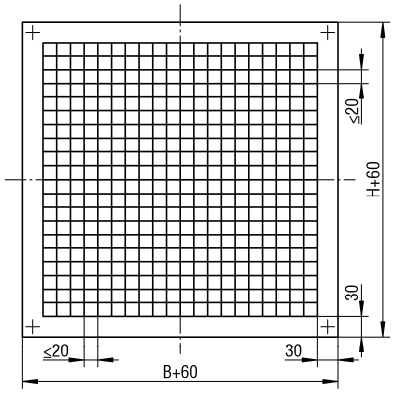


Figure 27 - Security grille type ASG-E

Profile connection frame type PAR

The profile connection frame type PAR can be fitted on one or two sides (please specify separately when ordering).

PAR1 = mounted ex works on operating side BS
PAR2 = mounted ex works on wall side MS
PAR3 = mounted ex works on both sides
PAR4 = 1 piece loose
PAR5 = 2 pieces loose

Model: galvanised sheet steel.
Recommendation: mounting ex works

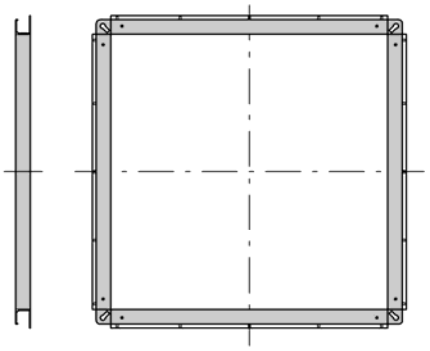


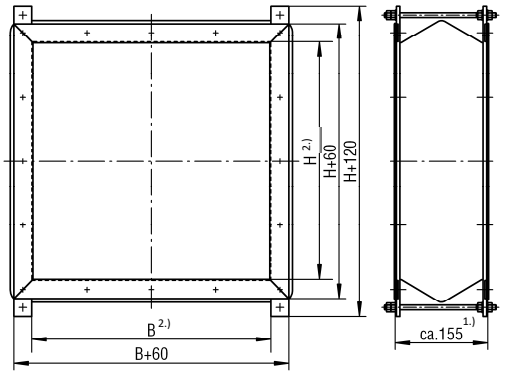
Figure 28 - Profile connection frame type PAR

Flexible connection spigot type FS-E

The flexible spigot type FS-E has a temperature resistance of 600°C and is supplied loose as an accessory. For mounting the FS-E on the smoke extraction blade damper type ERK-MB, the profile connection frame PAR is required (please specify separately when ordering).
Expansion of at least 100 mm when installed must be provided.

PFS1 = PAR mounted ex works on operating side BS + FS-E loose
PFS2 = PAR mounted ex works on wall side MS + FS-E loose
PFS3 = PAR mounted ex works on both sides + FS-E (2 pieces) loose
PFS4 = PAR + FS-E (1 piece each) loose
PFS5 = PAR + FS-E (2 pieces each) loose

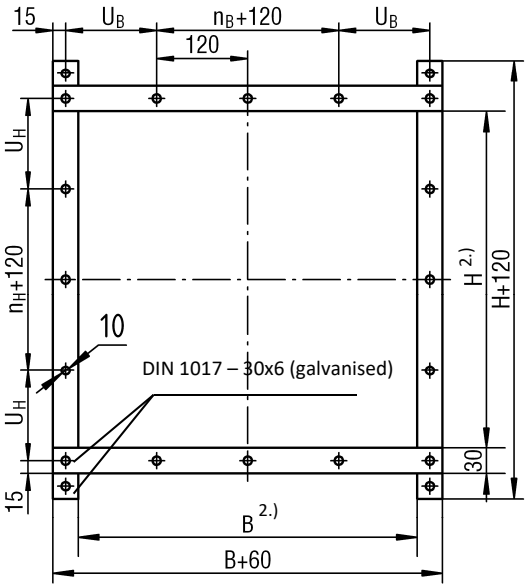
Recommendation: mounting of the PAR ex works



1.) The required installation dimension is 155 mm.
2.) clearance of clamping flange

Figure 29 - Flexible connection spigot type FS-E

Flange dimensions / Drill pattern



2.) clearance of clamping flange

Figure 30 - FS-E flange dimensions/drill pattern

LEGEND

Δp	[Pa]	= Pressure loss
$\dot{V}$	[m³/h] [l/s]	= Volumetric flow
L_{WA}	[dB (A)]	= A-weighted sound power level
B	[mm]	= Width
H	[mm]	= Height
L	[mm]	= Length
FQ_{min}	[m²]	= Smallest flow cross-section inside the smoke extraction blade damper
ρ	[kg/m³]	= Density
BS		= Operating side
MS		= Wall side

1 -- Housing of the ERK-MB (50 mm thick)
2 -- Blade dampers (parallel; 40 mm thick)
3 -- Transmission rod of the blade dampers
4 -- Actuator
5 -- Housing of the actuator and transmission rod incl. inspection cover
6 -- Hexagon screws with shaft similar to DIN 931 (ISO 4014) M8 x 100 mm
7 -- U-washers to DIN 125 (ISO 7089) int. Ø 8.4 / out. Ø 16 / 1.6 mm thick
8 -- Drive-in nut M8 with 4 prongs (galvanized steel) d2 = 22, d3 = 10, h = 15. The drive-in nut must be flush with the housing side.
9 -- Insulfrax paper 5 mm thick glued with waterglass glue.
10 -- Housing ERK-MB-V
11 -- Mortar of category M10 to EN 998-2 (previously: MG III according to DIN 1053) or fire protection mortar of sui table grades; gap ≥ 10 to ≤ 50 mm.
12 -- Mounting bracket type WE-S (galvanised steel 100 x 100 x 160 mm long)
13 -- Hexagon head screw to DIN 931 (e.g. M 10 x 30 mm)
14 -- U-washers DIN 125-A
15 -- Fire safety dowels, e.g. type KMU-F10 (for reinforced concrete walls only)
16 -- Profile UW 50/40/0.6 (for wall thickness = 100 mm, for larger wall thicknesses, the profiles must be adapted accordingly)
17 -- Profile CW 50/50/0.6 (for wall thickness = 100 mm, for larger wall thicknesses, the profiles must be adapted accordingly)
18 – Mineral wool (non-flammable according to EN13501-1, ap parent density ≥ 100 kg/m³, melting point ≥ 1000 °C, min. thickness according to the actual gap dimension. Insert the mineral wool over the entire profile web height.
19 -- Wall panelling (on both sides, double)
20 -- Universal screw, for example 4.0 x 50 mm, distance a ≤ 250 mm or min. distance, but 2 screws per side
21 -- Smoke extraction duct (in accordance with EN 12101-7, tested according to EN 1366-8)
22 -- ERK-MB suspension
22.1 – Suspension of the smoke extraction duct, taking into account the maximum suspension distances, may be not required
23 -- Security grille type ASG-E
24 -- Coarse thread screw ≥ 3.9 × 45, distance ≈ 100 mm
25 -- Waterglass-based adhesive (shown with dashed lines) - on site
26 -- Sleeve connection (width 100 mm, thickness 20 mm) with fastening material (coarse thread screw ≥ 3.9 × 45, distance ≈ 100 mm) - on site
27 -- Solid ceiling
28 -- Fire safety dowel (see p. 19)
29 -- E90 or E30 cable connection and cable routing according to DIN 4102-12
30 -- Solid smoke extraction shafts made of solid building ma terials (e.g. concrete)
31 -- Seal the circumferential gap of at least 20 mm with mortar of group II or III, DIN 1053 or with concrete

ORDER CODE

01	02	03	04	05	06	07	08	09	10
Type	Model	Width	Height	Length	Coating of housing	Coating of housing painted to RAL colour	Actuator	Accessories	Extra bracket
Example									
ERKMB	-V	-1000	-505	-250	-0	-0000	-EK10	-PFS1	-ZU0

EXAMPLE
ERKMB-V-1000-0505-250-0-0000-EK10-PFS1-ZU0
Type **ERKMB** = Smoke extraction blade damper type ERK-MB | model **-V** | front operation | Width = **1000** mm | height = **505** mm | length = **250** mm | coating of housing **-0** = without impregnation/colour coating | RAL colour for the coating of housing **-0000** = without RAL colour (impregnation 0-6) | with actuator **-EK10** = type SEL 1.90 (24 V AC/DC) | with accessory **-PFS1** (corresponds to PAR mounted ex works on the operating side BS + FS-E loose) | without extra bracket **-ZU0**

ORDER DETAILS

01 - TYPE

ERKMB = ERK-MB

02 – MODEL

S = lateral operation
V = front operation

03 - WIDTH

0200 - 0250 - 0300 - 0350 - 0400 - 0450 -
0500 - 0550 - 0600 - 0650 - 0700 - 0750 -
0800 - 0850 - 0900 - 0950 - 1000
in mm - always four digits

04 - HEIGHT

0340 - 0505 - 0670 - 0835 - 1000
in mm - always four digits

05 - LENGTH

250 = 250 mm
in mm - always three digits

06 - COATING OF HOUSING

0 = without impregnation/colour coating
1 = with SR impregnation inside

07 - RAL COLOUR FOR THE COATING OF HOUSING

0000 = without RAL colour

08 - ACTUATOR

EK10 = SEL 1.90 (24 V AC/DC; STANDARD ACTUATOR)
EK11 = SEL 2.90 (230 V AC)
EK12 = SEL 1.90 SLC (24 V AC/DC; additional communication de vice required; please order separately)
EK14 = EK12 including additional required communication device SPMa-1SR
EK20 = BE24-12-ST (24 V AC/DC)
EK21 = BE230-12 (230 V AC)

09 - ACCESSORIES

ZU00 = without accessories (ASG-E already mounted ex works on operating side BS)

ASG3 = ASG-E mounted ex works on both sides
ASG4 = ASG-E - 1 piece loose - with fastening screws

PAR1 = PAR mounted ex works on operating side BS
PAR2 = PAR mounted ex works on wall side MS
PAR3 = PAR mounted ex works on both sides
PAR4 = PAR - 1 piece loose - with fastening screws
PAR5 = PAR - 2 piece loose - with fastening screws

PSG2 = PAR mounted ex works on wall side MS + ASG-E mounted ex works on both sides
PSG3 = PAR + ASG-E mounted ex works on both sides
PSG4 = PAR + ASG-E - 1 piece each loose - with fastening screws
PSG5 = PAR (2 pieces) + ASG-E (1 piece) loose - with fastening screws

PFS1 = PAR mounted ex works on operating side BS + FS-E loose
PFS2 = PAR mounted ex works on wall side MS + FS-E loose
PFS3 = PAR mounted ex works on both sides + FS-E (2 pieces) loose
PFS4 = PAR + FS-E - 1 piece each loose - with fastening screws
PFS5 = PAR + FS-E - 2 pieces each loose - with fastening screws

10 - EXTRA BRACKET

ZU0 = without extra bracket
WE2 = 2 mounting brackets WE-S (delivery in loose form; number ≙ dimension); mounting bracket WE-S required for installation on solid smoke extraction shafts
WE4 = 4 mounting brackets WE-S (delivery in loose form; number ≙ dimension); mounting bracket WE-S required for installation on solid smoke extraction shafts

SPECIFICATION TEXTS

The smoke extraction blade damper ERK-MB meets the requirements of EN 12101-8, EN 13501-4, EN 1366-2 and EN 1366-10.
The ERK-MB has been inspected according to EN 1366-2 and EN 1366-10 in accordance with the Declaration of Performance No. DoP-ERK-MB-2019-04-01.
Classification according to EN 13501-4 is EI 90 (v_{edw}, h_{od} i↔o) S 1000 C_{10000} MA multi., depending on the mounting situation

Smoke extraction blade dampers for multiple sections in rectangular design are intended for extraction of smoke within smoke extraction systems to smoke and heat control systems.

Housing and blade dampers are made of abrasion-resistant, mineral silicate structural panels. The blade damper axles made of stainless steel are mounted in maintenance-free bronze bushes.
The smoke extraction blade dampers are driven by a reversible OPEN/CLOSE actuator with 24 V AC/DC or 230 V AC supply voltage. It is located in a thermally insulated actuator housing to ensure correct opening and closing of the smoke extraction blade damper under fire conditions.
With stop bar seals to meet the cold and hot leakage requirements.
Can be used with blade damper axle in horizontal or vertical position.
Any accessories that may be required for the respective mounting situation are listed in separate positions of the bill of quantities.

Installation

- in solid walls (can be installed without clearance when mounted next to each other/above each other)
- on solid smoke extraction shafts
  (in connection with mounting brackets WE-S and horizontal blade damper axle)
- in dry building walls
- in, on and on the front and on the side of horizontal smoke extraction ducts (with additional on-site suspensions and connections)
- in and on the front and on the side of vertical smoke extraction ducts (with additional on-site suspensions and connections)

Product: SCHAKO **type ERK-MB**
Declaration of Performance No. **DoP-ERK-MB-2019-04-01**
Dimensions:
Width (W): ..... mm
Height (H): ..... mm
Length (L): ..... mm

Unless stated otherwise, the actuator EK10 (24 V AC/DC) will be delivered. Standard length L = 250 mm.

Alternative models or accessories (at an extra charge)
("Select as desired")

- Housing and blade dampers with additional impregnation or colour coating (ex works only)
  - SR impregnation for protection against aggressive media
    - inside
    - outside
    - inside and outside
  - Impregnation 2000 for hydrophobization (protection against humidity)
    - inside
    - outside
    - inside and outside
  - Colour coating (dispersion/alkyd resin-based paint) RAL colour must be specified when ordering
    - inside
    - outside
    - inside and outside

- Actuators with integrated limit switches for indication of the blade damper end positions
  - EK11 (SEL 2.90; actuator 230 V AC)
  - EK20 (BE 24; actuator 24 V AC / DC)
  - EK21 (BE 230; actuator 230 V AC)
- Actuator with SLC technology for activating and monitoring smoke extraction blade dampers. The smoke extraction blade damper is connected only with one two-wire line by means of the SLC technology, detecting and reporting short-circuit or line break of the SLC lines by constant monitoring.
  - EK12 (SEL 1.90 SLC; actuator 24 V AC/DC; without additional required communication device)

  Suitable communication devices, for example SPMa1SR (part of EK14) or SPLM-4S 0SD Mod. allow retrieving data, such as indication of end position, keeping timeframe (<60 s) or torque monitoring. The function of the actuator EK12 is only active when an additional required communication device is connected.
  - EK14 (EK12; actuator 24 V AC/DC;
    including communication device SPMa-1SR)

Security grille type ASG-E, made of galvanised sheet steel, mesh width ≤ 20 mm. Already mounted ex works on one side on the operating side BS (standard).
- ASG3 = mounted ex works on both sides
- ASG4 = 1 piece loose

Product: SCHAKO **type ASG-E**
Dimensions:
Width (W): ..... mm
Height (H): ..... mm

Profile connection frame type PAR, made of galvanised sheet steel, for connecting flexible spigot type FS-E, security grilles ASG-E or inspected sheet steel ducts.

- o PAR1 = mounted ex works on operating side BS
- o PAR2 = mounted ex works on wall side MS
- o PAR3 = mounted ex works on both sides
- o PAR4 = 1 piece loose
- o PAR5 = 2 pieces loose

Product: SCHAKO **type PAR**
Dimensions:
Width (W): ..... mm
Height (H): ..... mm

Flexible spigot type FS-E, in accordance with EN 12101-7, tested according to EN 1366-9; with flange strengthener and screw bolt. Temperature-resistant up to 600°C. Expansion compensation at least 100 mm when mounted. The smoke extraction blade damper must not be subject to mechanical stress under any circumstances. For connection to smoke extraction duct made of sheet steel. Profile connection frame PAR is required for mounting.

- o PFS1 = PAR mounted ex works on operating side BS + FS-E loose
- o PFS2 = PAR mounted ex works on wall side MS + FS-E loose
- o PFS3 = PAR mounted ex works on both sides + FS-E (2 pieces) loose
- o PFS4 = PAR + FS-E (1 pieces each) loose
- o PFS5 = PAR + FS-E (2 pieces each) loose

Product: SCHAKO **type FS-E**
Dimensions:
Width (W): ..... mm
Height (H): ..... mm

Mounting bracket type WE-S, made of galvanised sheet steel, dimensions 100 x 100 x 160 mm. Required for installation on solid smoke extraction shafts made, for example of concrete. The exact arrangement and number of mounting brackets WE-S must be selected according to the ERK-MB-V dimensions, see Table 3 and Table 4 on page 13.

Product: SCHAKO Mounting bracket type WE-S
Dimensions (W/H according to the dimensions of the smoke extraction blade damper)
Width (W): ..... mm
Height (H): ..... mm

The mounting brackets WE-S are delivered only if they have been explicitly ordered and according to specifications for the mounting situation.

CE MARKING

19
CE **0761**
SCHAKO Klima-Luft **Ferdinand Schad KG** **Werk SO / Weidenäcker 9** **D-88605 Meßkirch** 2019 DoP-ERK-MB-2019-04-01
EN 12101-8:2011 Smoke extraction damper Multi compartment Type/version **ERK-MB**

Nominal conditions of activation/response sensitivity: Opening/closing during the the test at the right time and within the allowed time period	MA - passed
Response delay/ closing time:	MA - passed
Operational safety:	10,000 switch cycles - passed
Fire resistance:	
- Fire integrity - E - Heat insulation - I - Smoke tightness - S - Mechanical dimensional stability (under E) - Maintaining the cross-section (under E)	EI 90 (v_{edw}, h_{od}, i↔o) S 1000 C_{10000} MA multi
Durability of:	
- the response delay	passed
- the operational safety	passed

Figure 31 - CE marking

SERVICE

CHECKING THE FUNCTION, CLEANING, REPAIR

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

Regulations for use and maintenance
- - The operator of the smoke extraction installation must ensure that smoke extraction blade dampers are always kept in a ready-to-operate state and are maintained.
- Smoke extraction blade 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 blade dampers can be reduced to once a year.
- An inspection report must be produced, and the documents must be kept by the operator of the smoke extraction installation.

The smoke extraction blade dampers must be installed in accordance with the technical documentation, installation, mounting and operating instructions.
The work must be carried out by specialised companies only.
Observe general accident prevention regulations.
The smoke extraction blade dampers must be installed such that they are accessible.
For internal inspection and cleaning of the smoke extraction blade dampers, install inspection openings in the continuation connection lines.
The cover of the temperature-resistant actuator housing can be dismounted for electrical wiring and must be properly remounted (screwed) once the wiring is completed; the actuator itself is maintenance-free.
The electrical line installation must be at least E30, according to DIN 4102-12.
All electrical connections between actuator and power supply must be made according to the valid VDE guidelines.
Observe the general guidelines for service according to DIN 31051 and EN 13306.
For and after commissioning, the function of the entire smoke extraction system (interaction of all components) must be regularly checked and documented in writing.
The owner or operator must check whether the minimum requirement for his operation is met.
The function can be checked from the central unit.
Repair work can be carried out only after consultation with the manufacturer.

1 - Inspection for commissioning on site
Check the smoke extraction blade damper for damage.
The smoke extraction blade damper must be installed in accordance with the technical documentation, installation, mounting and operating instructions.
Dismount the cover of the temperature-resistant actuator housing.
The electrical wiring is done by a skilled electrician. Cable is inserted via a bore of exact fit = ø E90 or ø E30 cable through the side wall of the temperature-resistant actuator housing.
The smoke extraction blade damper is in closed position, blade dampers "CLOSED".
Connection to electric circuit
*Motors EK10 (SEL 1.90; 24 V AC/DC) / EK11 (SEL 2.90; 230 V AC): 2-point activation of the smoke extraction blade damper.
*Motors EK12 (SEL 1.90 SLC; 24 V AC/DC) / EK14 (EK12 + SPMa-1SR): activation via 2-wire connection (SLC system) only in connection with communication device e.g. SPLM-4S 0SD Mod / SPMa-1SR (component of EK14).
From the switch cabinet, give pulse for open position (smoke extraction) or closed position (fire).
Blade dampers (parallel) move to open/closed position; the movement is controlled by motor.
Limit switches integrated in the actuator indicate the open/closed positions.
Open / close running time < 60 sec.
*Torque monitoring: SLC system at least 40 Nm.
Screw the cover of the temperature-resistant actuator housing again.

2 - Service for commissioning on site
Remove / clean dirt / soiling detected during inspection.

3 - Inspection after commissioning – every 6 months / once a year
See Inspection for commissioning.
Functional test of the smoke extraction blade damper on site.
Functional test by external monitoring.

4 - Service after commissioning depending on system equipment and operating conditions
Internal inspection
Remove / clean system-specific dirt / soiling which affects safety function.

Measures to be implemented for service must be documented in writing and provide proof.

5 - Repair
Repair work must be carried out after consultation with the manufacturer.

SAMPLE OF FUNCTIONAL TEST PROTOCOL

SCHAKO
Ferdinand Schad KG
Steigstrasse 25-27
D-78600 Kolbingen
Phone: +49- (0)7463 / 980-0
Fax: +49- (0)7463 / 980-200
E-mail: info@schako.de
Web: www.schako.de

SAMPLE
Functional test protocol for smoke extraction blade dampers
Cons. No. _____

Smoke extraction blade damper no.: _____
Declaration of performance no.: _____
Series: _____
Actuator: _____

The following functional steps have been carried out according to the documents installation, mounting and operating instructions	before commissioning	next functional check in: _____	next functional test in: _____	next functional test in: _____	next functional test in: _____
External check: System: _____ Item: _____					
Internal check: System: _____ Item: _____					
Additional check: System: _____ Item: _____					
without defects Date / tester					
with defects (see back) Date / tester					
without defects Date / tester					

SCHAKO
Ferdinand Schad KG
Steigstrasse 25-27
D-78600 Kolbingen
Phone: +49- (0)7463 / 980-0
Fax: +49- (0)7463 / 980-200
E-mail: info@schako.de
Web: www.schako.de

SAMPLE
Functional test protocol for smoke extraction blade dampers
Cons. No. _____

Defects found during the test on: _____

Sluggishness due to soiling.
Any remaining mortar must be removed.

Defects found during the test on: _____

Defects found during the test on: _____

Defects found during the test on: _____

FOREIGN BRANCH OFFICES

Belgium SCHAKO S.A.R.L. 165, rue des Pommiers L-2343 Luxembourg Phone: +352 / 403 157 1 Fax: +352 / 403 157 66 info@schako.be www.schako.be	**Denmark** Venti AS Banevænget 3 8362 Hørning Phone: +45 / 86 92 22 66 Fax: +45 / 86 92 22 26 info@venti.dk www.venti.dk	**England** SCHAKO Ltd. Index House St Georges Lane, Ascot SL5 7EU Berkshire Phone: +44 / 13 44 63 63 89 Fax: +44 / 13 44 87 46 58 admin@schako.uk.com www.schako.co.uk	**France** SCHAKO s.a.r.l. 16 Boulevard de la Croix Rousse F-69001 Lyon Phone: +33 / 4 / 78 34 97 34 Fax: +33 / 4 / 78 34 97 31 contact@schako.fr www.schako.fr
Greece EUROPERSIS Odisea Androutsou 2 GR-56224 Evosmos/Tessaloniki Phone: +30 / 310 / 68 57 79 Fax: +30 / 310 / 75 76 13 info@europersis.gr www.europersis.gr	**Israel** Insupco Industrial Supply Ltd. 40 Hayarkon St. Yavne 811 00 Phone: +972 / 8 / 94 20 080 Fax: +972 / 8 / 94 20 311 insupco@netvision.net.il www.insupco.com	**Italy** SCHAKO Italia S.r.l. Via XXV Aprile, 17 20097 S.Donato Milanese-MI Phone: +39 / 02 / 51 64 02 01 Fax: +39 / 02 / 51 62 09 46 info@schako.it www.schako.it	**Croatia** Intel Trade Dr. Ante Mandica 10 HR-51410 Opatija Phone: +385 / 51 741 100 Fax: +385 / 51 701 470 ri@intel-trade.hr www.intel-trade.hr
Luxembourg SCHAKO S.A.R.L. 165, rue des Pommiers L-2343 Luxembourg Phone: +352 / 403 157 1 Fax: +352 / 403 157 66 info@schako.lu www.schako.lu	**Netherlands** SCHAKO S.A.R.L. 165, rue des Pommiers L-2343 Luxembourg Phone: +352 / 403 157 1 Fax: +352 / 403 157 66 Info@schako-nederland.nl www.schako-nederland.nl	**Austria** SCHAKO Vertriebs GmbH Mariahilfer Straße 103/1/TOP 12 A-1060 Wien Phone: +43 / 1 / 890 24 62 Fax: +43 / 1 / 890 24 62 50 info@schako.at www.schako.at	**Poland** SCHAKO Polska Sp. z o.o ul. Pulawska 38 PL-05-500 Piaseczno Phone: +48 / 22 / 7263570 Fax: +48 / 22 / 7263571 info@schako.pl www.schako.pl
Romania SCHAKO Klima Luft SRL Str. Elena Caragiani nr.21 014212 Bucuresti, Phone: +40 / 0 / 21 / 232 13 75 Fax: +40 / 0 / 21 / 232 13 75 info@schakoromania.ro www.schako.ro	**Sweden** EXOTHERM AB Box 60036 21610 Limhamn Phone: +46 / 40 / 631 61 16 Fax: +46 / 40 / 15 60 95 info@exotherm.se www.exotherm.se	**Switzerland** SCHAKO Suisse SA Rue Jean-Prouvé 28 1762 Givisiez Phone: +41 / 26 / 460 88 00 Fax: +41 / 26 / 460 88 05 schako@schako.ch www.schako.ch	**Serbia & Montenegro** TERMOMEHANIKA d.o.o. Koste Glavinica 2 RS-11000 BEOGRAD Phone: +381 / 11 / 369 99 93 Fax: +381 / 11 / 369 09 93 termomehanika@sbb.rs www.termomehanika.rs
Slovakia SCHAKO SK s.r.o. Modrová 187 91635 Modrová Phone: +421 / 337 / 774 1843 Fax: +421 / 337 / 774 1843 schako@schako.sk www.schako.sk	**Spain** SCHAKO IBERIA S.L. Departamento de Ventas Pol. Ind. Río Gállego, Calle B, nave 3 50840 San Mateo de Gállego / Zaragoza Phone: +34 / 976 / 531 999 Fax: +34 / 976 / 690 709 ventas@schako.es www.schako.es	**Czech Republic** SCHAKO s.r.o. Pred Skalkami II. 184/5 CZ-10600 Praha 10-Zabehlice Phone: +42 / 02 / 727 680 43 Fax: +42 / 02 / 727 693 94 info@schako.cz www.schako.cz	**Turkey** EMO-SCHAKO Klima Havalandirma San. ve Tic. Ltd. Sti. Pursaklar Sanayi Sitesi, Karacaören Mah.1638.Cad. No:98 06145 Altindag - Ankara Phone: +90 / 312 527 16 05 Fax: +90 / 312 527 16 08 emo@emo-schako.com.tr www.emo-schako.com.tr
Hungary SCHAKO Kft. Tó Park 6 H-2045 Törökbálint Phone: +36 / 23 / 445670 Fax: +36 / 23 / 445679 e-mail@schako.hu www.schako.hu			

LISTS

LIST OF FIGURES

LIST OF TABLES

LIST OF DIAGRAMS