

CE

## EK90 Smoke Control Dampers

meet all requirements in accordance with European standards and are universal for all applications.

- Maintenance-free: The actuator unit is fully enclosed, which means that no cleaning or regular lubrication and adjustment is required to maintain function
- Functional test: By simply opening and closing locally or by remote control

Further uses and extended fire classification

EI 90 ( $v_{edw}$  -  $h_{odw}$  - i  $\leftrightarrow$  o) S1500 C<sub>mod</sub> HOT400/30 MA multi

# EK90 smoke control dampers

Application examples for smoke extraction and, if required, for ventilation in the form of "combi-dampers"



- |     |  |     |  |
|-----|--|-----|--|
| (A) | Closed smoke control damper                              | (1) | Smoke control damper in an air intake                      |
| (B) | Opened smoke control damper                              | (2) | Smoke control damper suspended underneath ceilings         |
| (C) | Ventilator for smoke extraction and also for ventilation | (3) | Smoke control damper in a shaft wall                       |
| (D) | Smoke extraction duct with fire resistance period        | (4) | Smoke control damper in a vertical smoke extraction duct   |
| (E) | Smoke extraction duct without fire resistance period     | (5) | Smoke control damper in a horizontal smoke extraction duct |

# EK90 smoke control dampers

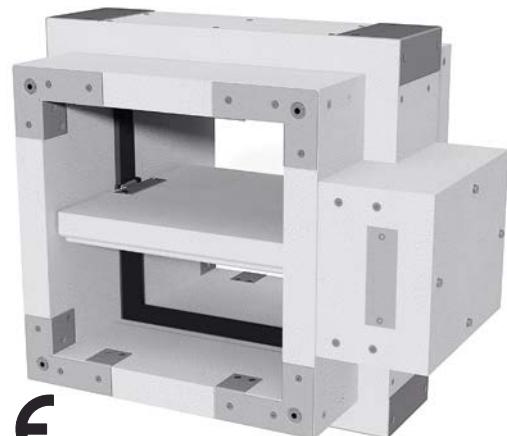
Description, properties, sizes

## EK90 smoke control dampers EN 12101-8 – series EK92 –

With casings and damper blades made from abrasion-proof, safe, corrosion-resistant calcium silicate that is suitable for high temperatures. The edge protection profiles are made from galvanized steel and include connection holes.

Electric motor drives for 24 V AC/DC or 230 V AC and stainless steel shafts are used for opening and closing, even when the fan is running and at inflow velocities of up to 20 m/s.

Special seals without any additional stops allow for large free cross-sections and thus extremely low pressure drops and sound power levels.



Declaration of performance      DoP No. CPR/EK90/003

Fire performance certificate      MPA-BS 6000/233/20

Environmental product declaration as per ISO 14025 and  
EN 15804 + A1 EPD-WIL-20210246-ICC1-EN

Casing leak tightness class C as per EN 1751

EK90 smoke control dampers are essentially made from non-combustible building materials.

### Fire classification

**EI 90 ( $v_{edw}$  -  $h_{odw}$  -  $i \leftrightarrow o$ ) S1500 C<sub>mod</sub> HOT400/30 MA multi**

- **EI90** Fire resistance period of 90 minutes

Installation:

$v_{e_d}$  in and on horizontal smoke extraction ducts.

$h_{o_d}$  in and on vertical smoke extraction ducts.

$v_{e_w}$  in rigid walls and in flexible walls.

$h_{o_w}$  in rigid ceilings.

$i \leftrightarrow o$  Fire exposure on both sides verified.

- **S1500** For smoke extraction systems with operating pressures between 1500 Pa negative pressure and 500 Pa positive pressure (pressure class 3). Smoke-tight at up to 1500 Pa differential pressure.

- **C<sub>mod</sub>** For smoke extraction only systems and for combined systems including ventilation and air extraction as heating, ventilation and air conditioning (HVAC) systems. Intermediate damper blade positions for volume flow adjustment are permitted (modulation mode).

The service life is verified at 20,200 weight-loaded cycles.

- **HOT** The smoke control dampers close and open for at least 30 minutes when exposed to a 400°C fire

- **MA** Closed smoke control dampers can be opened after 25 minutes of full exposure to fire (> 800°C).

- **multi** The smoke control dampers can be used between fire compartments and in individual areas (single).

**Widths W:** 200 mm to 1500 mm

**Heights H::** 200 mm to 800 mm

**Lengths L:** 350 mm to 850 mm

All dimensions are available in 5 mm increments!

**Installation** with horizontal or vertical damper blade:

- in rigid walls and ceilings, ≥ 100 mm thick and ≥ 450 kg/m<sup>3</sup> bulk density. Wet installation with mortar or a dry installation with mineral wool ≥ 100 kg/m<sup>3</sup> are possible.
- in metal stud walls, ≥ 95 mm thick, with or without mineral wool ≤ 100 kg/m<sup>3</sup> inside.
- on and between horizontal or vertical smoke extraction ducts.

### The following can be connected:

- smoke extraction ducts with fire resistance period on one or both sides,
- smoke extraction ducts without fire resistance period on one side,
- protective grille on one or both sides

⇒ see also page 34

### Waterproofing and coating

The calcium silicate surfaces (interior and exterior) can be waterproofed on site using the following products:

- SR impregnation (Promat GmbH)
- Impregnation 2000 (Promat GmbH)
- Tunnel impregnation (Promat GmbH)

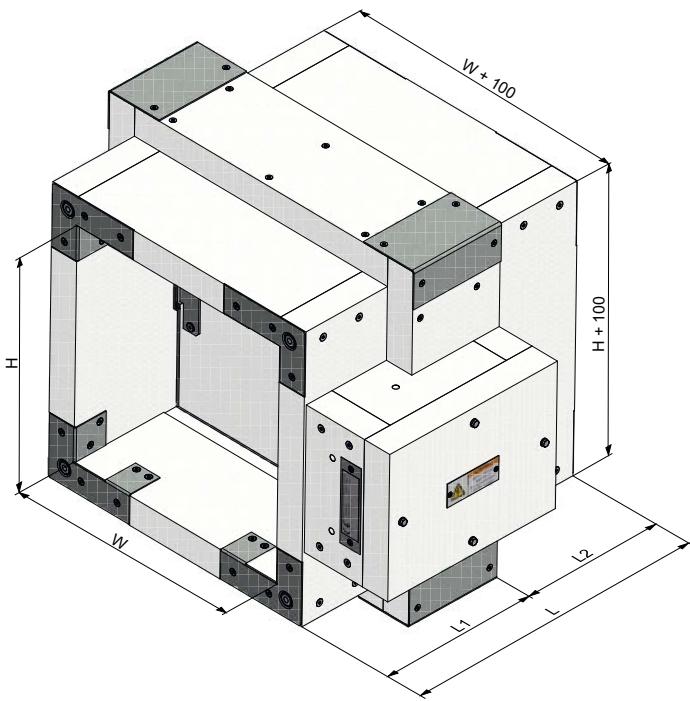
Note: Do not apply to seals, metal parts or identification markings!

To adapt the colour of the EK90 casings, a commercially available emulsion paint, e.g. "Alpina" or comparable, can be used on the outer casing. "Alpina" coat thickness 0.1 - 0.3 mm.

Note: Only use on the outside! Identification markings and labels must not be coated!

# EK90 smoke control dampers

## Data sheet



### Calculating damper blade excess lengths:

- $XL1 = \frac{1}{2} \cdot H - L1 + 105 \text{ mm}; XL2 = \frac{1}{2} \cdot H - L2 - 107 \text{ mm}$
- If  $XL1 \leq 0$  or  $XL2 \leq 0$ , there is no damper blade excess length!

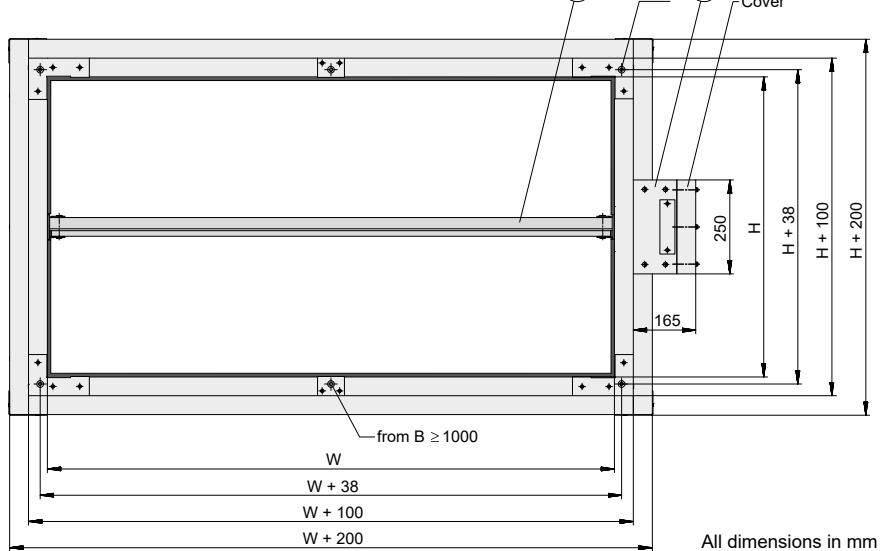
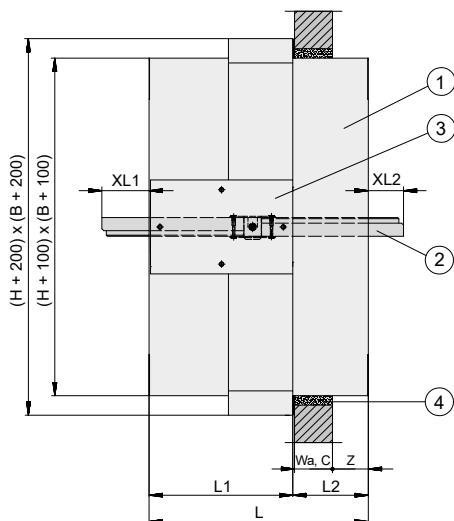
If protective grilles are mounted directly on the casings, then  $XL1$  or  $XL2$  must be at least -20 mm, which equates to a 20 mm freedom of movement.

Hence,  $L1 \geq \frac{1}{2} \cdot H + 125 \text{ mm}$  and  $L2 \geq \frac{1}{2} \cdot H - 87 \text{ mm}$  must be applied!

**$L2 \geq Wa(C) + Z$  is also necessary!** Here,  $Wa$  = thickness of the wall,  $C$  = thickness of the ceiling.  $Z$  is the necessary casing excess length.

Examples:

- To fit the shear protection bracket A. → see page 19
- Connection of smoke extraction ducts. → see page 23



1 Casing

2 Damper blade

3 Protective casing with opening cover for the motor driver

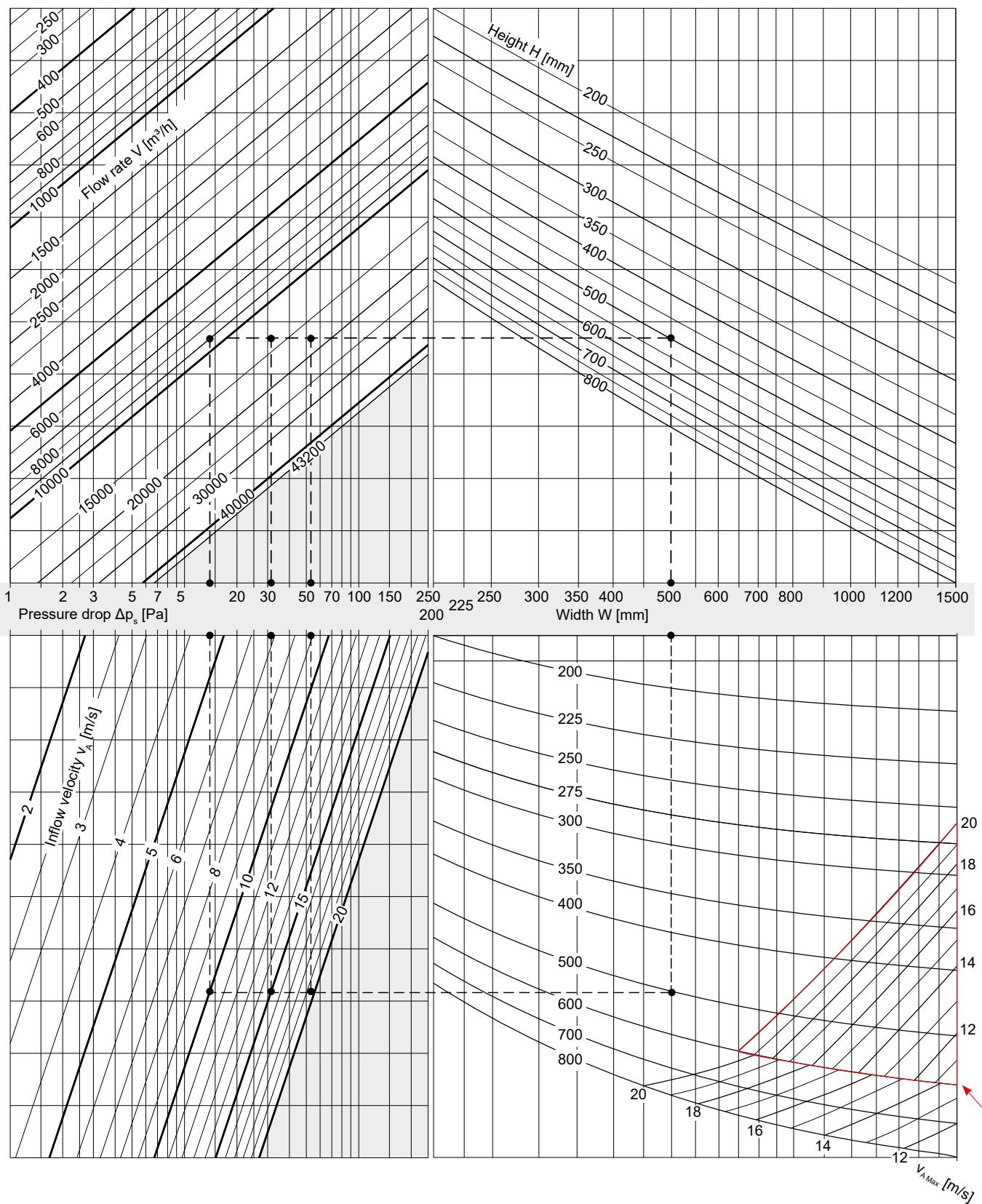
4 Installation gap filled with mortar or mineral wool  $\geq 100 \text{ kg/m}^3$

**Wa: Wall thickness / C: Ceiling thickness / Z: Casing excess length**



# EK90 smoke control dampers

Volume flow V, pressure drop  $\Delta p$ , inflow velocity  $v_A$

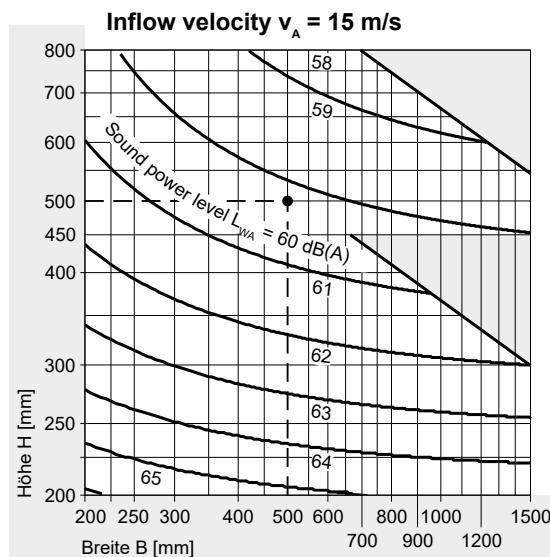
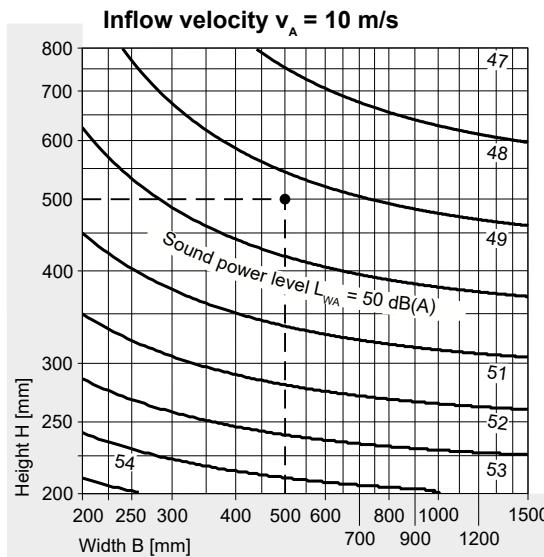
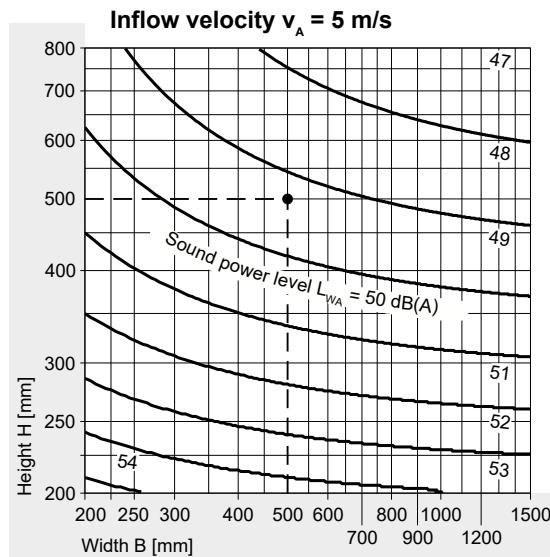


Depending on the width and height of the EK90 smoke control damper, the inflow velocities given by  $v_{A \text{ Max}} = 10$  to  $20 \text{ m/s}$  limit the opening of the smoke control damper. It may need to be reduced temporarily!

Example: The intersection point  $W = 500 \text{ mm}$  with  $H = 500 \text{ mm}$  lies in the field  $v_{A \text{ Max}} = 20 \text{ m/s}$ . There is no restriction here! ⇒ see also table on page 7!

# EK90 smoke control dampers

Sound power level  $L_{WA}$  / examples / inflow velocities  $v_A$



**Relative sound power level  $\Delta L$  [dB]**

| f [Hz]                 | 63 | 125 | 250 | 500 | 1000 | 2000 | 4000 | 8000 |
|------------------------|----|-----|-----|-----|------|------|------|------|
| $v_A = 5 \text{ m/s}$  | 16 | 8   | 2   | -4  | -8   | -12  | -15  | -19  |
| $v_A = 10 \text{ m/s}$ | 10 | 4   | 1   | -4  | -6   | -9   | -12  | -16  |
| $v_A = 15 \text{ m/s}$ | 5  | 2   | 0   | -4  | -6   | -7   | -11  | -15  |
| $v_A = 20 \text{ m/s}$ | 2  | -1  | -2  | -5  | -6   | -7   | -11  | -14  |

**Examples**

|                               |   |                             |
|-------------------------------|---|-----------------------------|
| Width W x height H            | = | 500 mm x 500 mm             |
| Inflow velocity $v_A$         | = | 10    15    20 m/s          |
| Flow rate V                   | = | 9000    13500    18000 m³/h |
| Pressure drop $\Delta p_s$    | = | 14    31    56 Pa           |
| Sound power level $L_{WA}$    | = | 49    60    68 dB(A)        |
| Sound power level $L_{W-Okt}$ | = | $L_{WA} + \Delta L$         |

| Example | 63 | 125 | 250 | 500 | 1000 | 2000 | 4000 | 8000  |
|---------|----|-----|-----|-----|------|------|------|-------|
| 1       | 59 | 53  | 50  | 45  | 43   | 40   | 37   | 33 dB |
| 2       | 65 | 62  | 60  | 56  | 54   | 53   | 49   | 45 dB |
| 3       | 70 | 67  | 66  | 63  | 62   | 61   | 57   | 54 dB |

Nomenclature ⇒ see page 5

**EK90 smoke control dampers can be operated, opened and closed with inflow velocities of  $v_A \leq 20 \text{ m/s}$ . For opening, the inflow velocities are limited to the values given in the table and in the diagrams:**

| H \ W | 200 | 300 | 400 | 450 | 500 | 550 | 600 | 650 | 700 | 750 | 800     | 850     | 900     | 950     | 1000    | 1050    | 1100    | 1150    | 1200    | 1250    | 1300    | 1400    | 1500    |         |
|-------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 250   | 20  | 20  | 20  | 20  | 20  | 20  | 20  | 20  | 20  | 20  | 20      | 20      | 20      | 20      | 20      | 20      | 20      | 20      | 20      | 20      | 20      | 20      | 20      |         |
| 275   | 20  | 20  | 20  | 20  | 20  | 20  | 20  | 20  | 20  | 20  | 20      | 20      | 20      | 20      | 20      | 20      | 20      | 20      | 20      | 20      | 20      | 20      | 19 (20) |         |
| 300   | 20  | 20  | 20  | 20  | 20  | 20  | 20  | 20  | 20  | 20  | 20      | 20      | 20      | 20      | 20      | 20      | 20      | 20      | 20      | 20      | 20      | 18 (20) | 17 (20) |         |
| 325   | 20  | 20  | 20  | 20  | 20  | 20  | 20  | 20  | 20  | 20  | 20      | 20      | 20      | 20      | 20      | 20      | 20      | 20      | 20      | 20      | 19 (20) | 18 (20) | 17 (20) | 16 (20) |
| 350   | 20  | 20  | 20  | 20  | 20  | 20  | 20  | 20  | 20  | 20  | 20      | 20      | 20      | 20      | 20      | 20      | 20      | 20      | 20      | 18 (20) | 18 (20) | 17 (20) | 16 (20) | 15 (20) |
| 375   | 20  | 20  | 20  | 20  | 20  | 20  | 20  | 20  | 20  | 20  | 20      | 20      | 20      | 20      | 20      | 20      | 20      | 20      | 20      | 19 (20) | 19 (20) | 17 (20) | 17 (20) | 15 (20) |
| 400   | 20  | 20  | 20  | 20  | 20  | 20  | 20  | 20  | 20  | 20  | 20      | 20      | 20      | 20      | 20      | 20      | 19 (20) | 18 (20) | 18 (20) | 17 (20) | 17 (20) | 16 (20) | 15 (20) | 14 (20) |
| 450   | 20  | 20  | 20  | 20  | 20  | 20  | 20  | 20  | 20  | 20  | 20      | 20      | 20      | 20      | 20      | 19 (20) | 18 (20) | 17 (20) | 16 (20) | 14 (20) | 15 (20) | 13 (20) | 13 (20) |         |
| 500   | 20  | 20  | 20  | 20  | 20  | 20  | 20  | 20  | 20  | 20  | 19 (20) | 18 (20) | 17 (20) | 17 (20) | 16 (20) | 15 (20) | 15 (19) | 13 (19) | 14 (18) | 13 (18) | 13 (18) | 12 (17) | 12 (16) |         |
| 550   | 20  | 20  | 20  | 20  | 20  | 20  | 20  | 20  | 20  | 20  | 18 (20) | 17 (20) | 16 (19) | 15 (19) | 15 (18) | 14 (18) | 14 (17) | 12 (17) | 13 (17) | 12 (16) | 12 (16) | 11 (15) | 11 (15) |         |
| 600   | 20  | 20  | 20  | 20  | 20  | 20  | 20  | 20  | 20  | 20  | 18 (20) | 17 (19) | 16 (19) | 16 (18) | 15 (18) | 14 (17) | 14 (17) | 13 (16) | 13 (16) | 12 (16) | 12 (15) | 11 (15) | 11 (14) |         |

► In the area with a red border, the special design EA (electrical connection) is possible. The max. inflow velocity of the special design is shown in brackets. ⇒ see page 34

| 650 | 20 | 20 | 20 | 20 | 20 | 20 | 19 | 18 | 18 | 17 | 17 | 16 | 16 | 15 | 15 | 15 | 14 | 14 | 14 | 13 | 13 | 13 |
|-----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| 700 | 20 | 20 | 20 | 20 | 20 | 19 | 18 | 18 | 17 | 16 | 16 | 15 | 15 | 14 | 14 | 14 | 13 | 13 | 13 | 12 | 12 | 12 |
| 750 | 20 | 20 | 20 | 20 | 19 | 18 | 17 | 17 | 16 | 15 | 15 | 14 | 14 | 14 | 13 | 13 | 12 | 12 | 12 | 11 | 11 | 11 |
| 800 | 20 | 20 | 20 | 19 | 18 | 17 | 16 | 16 | 15 | 14 | 14 | 14 | 13 | 13 | 12 | 12 | 12 | 11 | 11 | 11 | 10 | 10 |

# EK90 smoke control dampers

Volume flow, pressure drop, sound power level at 5 m/s inflow velocity (1)

| H   | W =   | 200  | 225  | 250  | 275  | 300  | 325  | 350  | 375  | 400  | 450  | 500  | 550  | 600  | 650  | 700   |
|-----|-------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|-------|
| 200 | m³/h  | 720  | 810  | 900  | 990  | 1080 | 1170 | 1260 | 1350 | 1440 | 1620 | 1800 | 1980 | 2160 | 2340 | 2520  |
|     | Pa    | 17   | 16   | 16   | 15   | 15   | 15   | 14   | 14   | 14   | 14   | 13   | 13   | 13   | 13   | 13    |
|     | dB(A) | 38   | 37   | 37   | 37   | 37   | 37   | 37   | 37   | 37   | 37   | 37   | 37   | 37   | 36   | 36    |
| 225 | m³/h  | 810  | 911  | 1013 | 1114 | 1215 | 1316 | 1418 | 1519 | 1620 | 1823 | 2025 | 2228 | 2430 | 2633 | 2835  |
|     | Pa    | 14   | 13   | 13   | 12   | 12   | 12   | 11   | 11   | 11   | 11   | 11   | 11   | 10   | 10   | 10    |
|     | dB(A) | 37   | 37   | 36   | 36   | 36   | 36   | 36   | 36   | 36   | 36   | 36   | 36   | 36   | 36   | 36    |
| 250 | m³/h  | 900  | 1013 | 1125 | 1238 | 1350 | 1463 | 1575 | 1688 | 1800 | 2025 | 2250 | 2475 | 2700 | 2925 | 3150  |
|     | Pa    | 12   | 11   | 11   | 10   | 10   | 10   | 9    | 9    | 9    | 9    | 9    | 9    | 9    | 9    | 8     |
|     | dB(A) | 36   | 36   | 36   | 36   | 35   | 35   | 35   | 35   | 35   | 35   | 35   | 35   | 35   | 35   | 35    |
| 275 | m³/h  | 990  | 1114 | 1238 | 1361 | 1485 | 1609 | 1733 | 1856 | 1980 | 2228 | 2475 | 2723 | 2970 | 3218 | 3465  |
|     | Pa    | 10   | 10   | 9    | 9    | 9    | 8    | 8    | 8    | 8    | 8    | 8    | 7    | 7    | 7    | 7     |
|     | dB(A) | 35   | 35   | 35   | 35   | 35   | 35   | 35   | 35   | 35   | 34   | 34   | 34   | 34   | 34   | 34    |
| 300 | m³/h  | 1080 | 1215 | 1350 | 1485 | 1620 | 1755 | 1890 | 2025 | 2160 | 2430 | 2700 | 2970 | 3240 | 3510 | 3780  |
|     | Pa    | 9    | 8    | 8    | 8    | 8    | 7    | 7    | 7    | 7    | 7    | 7    | 7    | 6    | 6    | 6     |
|     | dB(A) | 35   | 35   | 35   | 34   | 34   | 34   | 34   | 34   | 34   | 34   | 34   | 34   | 34   | 34   | 34    |
| 325 | m³/h  | 1170 | 1316 | 1463 | 1609 | 1755 | 1901 | 2048 | 2194 | 2340 | 2633 | 2925 | 3218 | 3510 | 3803 | 4095  |
|     | Pa    | 8    | 8    | 7    | 7    | 7    | 7    | 7    | 6    | 6    | 6    | 6    | 6    | 6    | 6    | 6     |
|     | dB(A) | 35   | 34   | 34   | 34   | 34   | 34   | 34   | 34   | 34   | 34   | 33   | 33   | 33   | 33   | 33    |
| 350 | m³/h  | 1260 | 1418 | 1575 | 1733 | 1890 | 2048 | 2205 | 2363 | 2520 | 2835 | 3150 | 3465 | 3780 | 4095 | 4410  |
|     | Pa    | 7    | 7    | 7    | 6    | 6    | 6    | 6    | 6    | 6    | 6    | 5    | 5    | 5    | 5    | 5     |
|     | dB(A) | 34   | 34   | 34   | 34   | 34   | 34   | 33   | 33   | 33   | 33   | 33   | 33   | 33   | 33   | 33    |
| 375 | m³/h  | 1350 | 1519 | 1688 | 1856 | 2025 | 2194 | 2363 | 2531 | 2700 | 3038 | 3375 | 3713 | 4050 | 4388 | 4725  |
|     | Pa    | 7    | 6    | 6    | 6    | 6    | 6    | 5    | 5    | 5    | 5    | 5    | 5    | 5    | 5    | 5     |
|     | dB(A) | 34   | 34   | 34   | 33   | 33   | 33   | 33   | 33   | 33   | 33   | 33   | 33   | 33   | 33   | 33    |
| 400 | m³/h  | 1440 | 1620 | 1800 | 1980 | 2160 | 2340 | 2520 | 2700 | 2880 | 3240 | 3600 | 3960 | 4320 | 4680 | 5040  |
|     | Pa    | 6    | 6    | 6    | 5    | 5    | 5    | 5    | 5    | 5    | 5    | 5    | 4    | 4    | 4    | 4     |
|     | dB(A) | 34   | 33   | 33   | 33   | 33   | 33   | 33   | 33   | 33   | 33   | 32   | 32   | 32   | 32   | 32    |
| 450 | m³/h  | 1620 | 1823 | 2025 | 2228 | 2430 | 2633 | 2835 | 3038 | 3240 | 3645 | 4050 | 4455 | 4860 | 5265 | 5670  |
|     | Pa    | 6    | 5    | 5    | 5    | 5    | 5    | 4    | 4    | 4    | 4    | 4    | 4    | 4    | 4    | 4     |
|     | dB(A) | 33   | 33   | 33   | 33   | 33   | 32   | 32   | 32   | 32   | 32   | 32   | 32   | 32   | 32   | 32    |
| 500 | m³/h  | 1800 | 2025 | 2250 | 2475 | 2700 | 2925 | 3150 | 3375 | 3600 | 4050 | 4500 | 4950 | 5400 | 5850 | 6300  |
|     | Pa    | 5    | 5    | 5    | 4    | 4    | 4    | 4    | 4    | 4    | 4    | 3    | 3    | 3    | 3    | 3     |
|     | dB(A) | 33   | 33   | 33   | 32   | 32   | 32   | 32   | 32   | 32   | 32   | 32   | 31   | 31   | 31   | 31    |
| 550 | m³/h  | 1980 | 2228 | 2475 | 2723 | 2970 | 3218 | 3465 | 3713 | 3960 | 4455 | 4950 | 5445 | 5940 | 6435 | 6930  |
|     | Pa    | 5    | 4    | 4    | 4    | 4    | 4    | 4    | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3     |
|     | dB(A) | 33   | 32   | 32   | 32   | 32   | 32   | 32   | 32   | 31   | 31   | 31   | 31   | 31   | 31   | 31    |
| 600 | m³/h  | 2160 | 2430 | 2700 | 2970 | 3240 | 3510 | 3780 | 4050 | 4320 | 4860 | 5400 | 5940 | 6480 | 7020 | 7560  |
|     | Pa    | 4    | 4    | 4    | 4    | 4    | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3     |
|     | dB(A) | 32   | 32   | 32   | 32   | 32   | 31   | 31   | 31   | 31   | 31   | 31   | 31   | 31   | 31   | 31    |
| 650 | m³/h  | 2340 | 2633 | 2925 | 3218 | 3510 | 3803 | 4095 | 4388 | 4680 | 5265 | 5850 | 6435 | 7020 | 7605 | 8190  |
|     | Pa    | 4    | 4    | 4    | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 2    | 2     |
|     | dB(A) | 32   | 32   | 32   | 32   | 31   | 31   | 31   | 31   | 31   | 31   | 31   | 31   | 31   | 31   | 31    |
| 700 | m³/h  | 2520 | 2835 | 3150 | 3465 | 3780 | 4095 | 4410 | 4725 | 5040 | 5670 | 6300 | 6930 | 7560 | 8190 | 8820  |
|     | Pa    | 4    | 4    | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 2    | 2    | 2    | 2    | 2     |
|     | dB(A) | 32   | 32   | 32   | 31   | 31   | 31   | 31   | 31   | 31   | 31   | 31   | 31   | 30   | 30   | 30    |
| 750 | m³/h  | 2700 | 3038 | 3375 | 3713 | 4050 | 4388 | 4725 | 5063 | 5400 | 6075 | 6750 | 7425 | 8100 | 8775 | 9450  |
|     | Pa    | 4    | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 2    | 2    | 2    | 2    | 2    | 2     |
|     | dB(A) | 32   | 32   | 31   | 31   | 31   | 31   | 31   | 31   | 31   | 30   | 30   | 30   | 30   | 30   | 30    |
| 800 | m³/h  | 2880 | 3240 | 3600 | 3960 | 4320 | 4680 | 5040 | 5400 | 5760 | 6480 | 7200 | 7920 | 8640 | 9360 | 10080 |
|     | Pa    | 4    | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 2    | 2    | 2    | 2    | 2    | 2    | 2     |
|     | dB(A) | 32   | 31   | 31   | 31   | 31   | 31   | 31   | 31   | 31   | 30   | 30   | 30   | 30   | 30   | 30    |

**EK90 smoke control dampers**

Volume flow, pressure drop, sound power level at 5 m/s inflow velocity (2)

| H   | W =   | 750   | 800   | 850   | 900   | 950   | 1000  | 1050  | 1100  | 1150  | 1200  | 1250  | 1300  | 1400  | 1500  |
|-----|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 200 | m³/h  | 2700  | 2880  | 3060  | 3240  | 3420  | 3600  | 3780  | 3960  | 4140  | 4320  | 4500  | 4680  | 5040  | 5400  |
|     | Pa    | 13    | 13    | 13    | 12    | 12    | 12    | 12    | 12    | 12    | 12    | 12    | 12    | 12    | 12    |
|     | dB(A) | 36    | 36    | 36    | 36    | 36    | 36    | 36    | 36    | 36    | 36    | 36    | 36    | 36    | 36    |
| 225 | m³/h  | 3038  | 3240  | 3443  | 3645  | 3848  | 4050  | 4253  | 4455  | 4658  | 4860  | 5063  | 5265  | 5670  | 6075  |
|     | Pa    | 10    | 10    | 10    | 10    | 10    | 10    | 10    | 10    | 10    | 10    | 10    | 10    | 10    | 10    |
|     | dB(A) | 35    | 35    | 35    | 35    | 35    | 35    | 35    | 35    | 35    | 35    | 35    | 35    | 35    | 35    |
| 250 | m³/h  | 3375  | 3600  | 3825  | 4050  | 4275  | 4500  | 4725  | 4950  | 5175  | 5400  | 5625  | 5850  | 6300  | 6750  |
|     | Pa    | 8     | 8     | 8     | 8     | 8     | 8     | 8     | 8     | 8     | 8     | 8     | 8     | 8     | 8     |
|     | dB(A) | 35    | 35    | 35    | 35    | 35    | 35    | 35    | 35    | 35    | 35    | 35    | 35    | 35    | 34    |
| 275 | m³/h  | 3713  | 3960  | 4208  | 4455  | 4703  | 4950  | 5198  | 5445  | 5693  | 5940  | 6188  | 6435  | 6930  | 7425  |
|     | Pa    | 7     | 7     | 7     | 7     | 7     | 7     | 7     | 7     | 7     | 7     | 7     | 7     | 7     | 7     |
|     | dB(A) | 34    | 34    | 34    | 34    | 34    | 34    | 34    | 34    | 34    | 34    | 34    | 34    | 34    | 34    |
| 300 | m³/h  | 4050  | 4320  | 4590  | 4860  | 5130  | 5400  | 5670  | 5940  | 6210  | 6480  | 6750  | 7020  | 7560  | 8100  |
|     | Pa    | 6     | 6     | 6     | 6     | 6     | 6     | 6     | 6     | 6     | 6     | 6     | 6     | 6     | 6     |
|     | dB(A) | 34    | 34    | 34    | 34    | 34    | 33    | 33    | 33    | 33    | 33    | 33    | 33    | 33    | 33    |
| 325 | m³/h  | 4388  | 4680  | 4973  | 5265  | 5558  | 5850  | 6143  | 6435  | 6728  | 7020  | 7313  | 7605  | 8190  | 8775  |
|     | Pa    | 6     | 5     | 5     | 5     | 5     | 5     | 5     | 5     | 5     | 5     | 5     | 5     | 5     | 5     |
|     | dB(A) | 33    | 33    | 33    | 33    | 33    | 33    | 33    | 33    | 33    | 33    | 33    | 33    | 33    | 33    |
| 350 | m³/h  | 4725  | 5040  | 5355  | 5670  | 5985  | 6300  | 6615  | 6930  | 7245  | 7560  | 7875  | 8190  | 8820  | 9450  |
|     | Pa    | 5     | 5     | 5     | 5     | 5     | 5     | 5     | 5     | 5     | 5     | 5     | 5     | 5     | 5     |
|     | dB(A) | 33    | 33    | 33    | 33    | 33    | 33    | 33    | 33    | 33    | 33    | 33    | 33    | 33    | 33    |
| 375 | m³/h  | 5063  | 5400  | 5738  | 6075  | 6413  | 6750  | 7088  | 7425  | 7763  | 8100  | 8438  | 8775  | 9450  | 10125 |
|     | Pa    | 5     | 4     | 4     | 4     | 4     | 4     | 4     | 4     | 4     | 4     | 4     | 4     | 4     | 4     |
|     | dB(A) | 33    | 32    | 32    | 32    | 32    | 32    | 32    | 32    | 32    | 32    | 32    | 32    | 32    | 32    |
| 400 | m³/h  | 5400  | 5760  | 6120  | 6480  | 6840  | 7200  | 7560  | 7920  | 8280  | 8640  | 9000  | 9360  | 10080 | 10800 |
|     | Pa    | 4     | 4     | 4     | 4     | 4     | 4     | 4     | 4     | 4     | 4     | 4     | 4     | 4     | 4     |
|     | dB(A) | 32    | 32    | 32    | 32    | 32    | 32    | 32    | 32    | 32    | 32    | 32    | 32    | 32    | 32    |
| 450 | m³/h  | 6075  | 6480  | 6885  | 7290  | 7695  | 8100  | 8505  | 8910  | 9315  | 9720  | 10125 | 10530 | 11340 | 12150 |
|     | Pa    | 4     | 4     | 4     | 3     | 3     | 3     | 3     | 3     | 3     | 3     | 3     | 3     | 3     | 3     |
|     | dB(A) | 32    | 32    | 32    | 32    | 32    | 32    | 32    | 32    | 32    | 32    | 32    | 31    | 31    | 31    |
| 500 | m³/h  | 6750  | 7200  | 7650  | 8100  | 8550  | 9000  | 9450  | 9900  | 10350 | 10800 | 11250 | 11700 | 12600 | 13500 |
|     | Pa    | 3     | 3     | 3     | 3     | 3     | 3     | 3     | 3     | 3     | 3     | 3     | 3     | 3     | 3     |
|     | dB(A) | 31    | 31    | 31    | 31    | 31    | 31    | 31    | 31    | 31    | 31    | 31    | 31    | 31    | 31    |
| 550 | m³/h  | 7425  | 7920  | 8415  | 8910  | 9405  | 9900  | 10395 | 10890 | 11385 | 11880 | 12375 | 12870 | 13860 | 14850 |
|     | Pa    | 3     | 3     | 3     | 3     | 3     | 3     | 3     | 3     | 3     | 3     | 3     | 3     | 3     | 3     |
|     | dB(A) | 31    | 31    | 31    | 31    | 31    | 31    | 31    | 31    | 31    | 31    | 31    | 31    | 31    | 31    |
| 600 | m³/h  | 8100  | 8640  | 9180  | 9720  | 10260 | 10800 | 11340 | 11880 | 12420 | 12960 | 13500 | 14040 | 15120 | 16200 |
|     | Pa    | 3     | 3     | 3     | 2     | 2     | 2     | 2     | 2     | 2     | 2     | 2     | 2     | 2     | 2     |
|     | dB(A) | 31    | 31    | 31    | 31    | 31    | 31    | 31    | 31    | 31    | 31    | 30    | 30    | 30    | 30    |
| 650 | m³/h  | 8775  | 9360  | 9945  | 10530 | 11115 | 11700 | 12285 | 12870 | 13455 | 14040 | 14625 | 15210 | 16380 | 17550 |
|     | Pa    | 2     | 2     | 2     | 2     | 2     | 2     | 2     | 2     | 2     | 2     | 2     | 2     | 2     | 2     |
|     | dB(A) | 31    | 30    | 30    | 30    | 30    | 30    | 30    | 30    | 30    | 30    | 30    | 30    | 30    | 30    |
| 700 | m³/h  | 9450  | 10080 | 10710 | 11340 | 11970 | 12600 | 13230 | 13860 | 14490 | 15120 | 15750 | 16380 | 17640 | 18900 |
|     | Pa    | 2     | 2     | 2     | 2     | 2     | 2     | 2     | 2     | 2     | 2     | 2     | 2     | 2     | 2     |
|     | dB(A) | 30    | 30    | 30    | 30    | 30    | 30    | 30    | 30    | 30    | 30    | 30    | 30    | 30    | 30    |
| 750 | m³/h  | 10125 | 10800 | 11475 | 12150 | 12825 | 13500 | 14175 | 14850 | 15525 | 16200 | 16875 | 17550 | 18900 | 20250 |
|     | Pa    | 2     | 2     | 2     | 2     | 2     | 2     | 2     | 2     | 2     | 2     | 2     | 2     | 2     | 2     |
|     | dB(A) | 30    | 30    | 30    | 30    | 30    | 30    | 30    | 30    | 30    | 30    | 30    | 30    | 30    | 30    |
| 800 | m³/h  | 10800 | 11520 | 12240 | 12960 | 13680 | 14400 | 15120 | 15840 | 16560 | 17280 | 18000 | 18720 | 20160 | 21600 |
|     | Pa    | 2     | 2     | 2     | 2     | 2     | 2     | 2     | 2     | 2     | 2     | 2     | 2     | 2     | 2     |
|     | dB(A) | 30    | 30    | 30    | 30    | 30    | 30    | 30    | 30    | 30    | 30    | 30    | 30    | 30    | 30    |



**EK90 smoke control dampers**

Volume flow, pressure drop, sound power level at 10 m/s inflow velocity (2)

| H   | W =   | 750   | 800   | 850   | 900   | 950   | 1000  | 1050  | 1100  | 1150  | 1200  | 1250  | 1300  | 1400  | 1500  |
|-----|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 200 | m³/h  | 5400  | 5760  | 6120  | 6480  | 6840  | 7200  | 7560  | 7920  | 8280  | 8640  | 9000  | 9360  | 10080 | 10800 |
|     | Pa    | 51    | 50    | 50    | 50    | 50    | 49    | 49    | 49    | 49    | 49    | 49    | 49    | 48    | 48    |
|     | dB(A) | 54    | 54    | 54    | 54    | 54    | 54    | 54    | 54    | 54    | 54    | 54    | 54    | 54    | 54    |
| 225 | m³/h  | 6075  | 6480  | 6885  | 7290  | 7695  | 8100  | 8505  | 8910  | 9315  | 9720  | 10125 | 10530 | 11340 | 12150 |
|     | Pa    | 40    | 40    | 40    | 40    | 39    | 39    | 39    | 39    | 39    | 39    | 39    | 38    | 38    | 38    |
|     | dB(A) | 53    | 53    | 53    | 53    | 53    | 53    | 53    | 53    | 53    | 53    | 53    | 53    | 53    | 53    |
| 250 | m³/h  | 6750  | 7200  | 7650  | 8100  | 8550  | 9000  | 9450  | 9900  | 10350 | 10800 | 11250 | 11700 | 12600 | 13500 |
|     | Pa    | 33    | 33    | 33    | 33    | 33    | 32    | 32    | 32    | 32    | 32    | 32    | 32    | 32    | 31    |
|     | dB(A) | 52    | 52    | 52    | 52    | 52    | 52    | 52    | 52    | 52    | 52    | 52    | 52    | 52    | 52    |
| 275 | m³/h  | 7425  | 7920  | 8415  | 8910  | 9405  | 9900  | 10395 | 10890 | 11385 | 11880 | 12375 | 12870 | 13860 | 14850 |
|     | Pa    | 29    | 28    | 28    | 28    | 28    | 28    | 28    | 27    | 27    | 27    | 27    | 27    | 27    | 27    |
|     | dB(A) | 52    | 52    | 52    | 52    | 52    | 52    | 52    | 52    | 52    | 52    | 52    | 52    | 52    | 52    |
| 300 | m³/h  | 8100  | 8640  | 9180  | 9720  | 10260 | 10800 | 11340 | 11880 | 12420 | 12960 | 13500 | 14040 | 15120 | 16200 |
|     | Pa    | 25    | 25    | 25    | 24    | 24    | 24    | 24    | 24    | 24    | 24    | 24    | 24    | 23    | 23    |
|     | dB(A) | 51    | 51    | 51    | 51    | 51    | 51    | 51    | 51    | 51    | 51    | 51    | 51    | 51    | 51    |
| 325 | m³/h  | 8775  | 9360  | 9945  | 10530 | 11115 | 11700 | 12285 | 12870 | 13455 | 14040 | 14625 | 15210 | 16380 | 17550 |
|     | Pa    | 22    | 22    | 22    | 22    | 21    | 21    | 21    | 21    | 21    | 21    | 21    | 21    | 21    | 21    |
|     | dB(A) | 51    | 51    | 51    | 51    | 51    | 51    | 51    | 51    | 51    | 51    | 51    | 51    | 51    | 51    |
| 350 | m³/h  | 9450  | 10080 | 10710 | 11340 | 11970 | 12600 | 13230 | 13860 | 14490 | 15120 | 15750 | 16380 | 17640 | 18900 |
|     | Pa    | 20    | 20    | 20    | 19    | 19    | 19    | 19    | 19    | 19    | 19    | 19    | 19    | 19    | 18    |
|     | dB(A) | 51    | 50    | 50    | 50    | 50    | 50    | 50    | 50    | 50    | 50    | 50    | 50    | 50    | 50    |
| 375 | m³/h  | 10125 | 10800 | 11475 | 12150 | 12825 | 13500 | 14175 | 14850 | 15525 | 16200 | 16875 | 17550 | 18900 | 20250 |
|     | Pa    | 18    | 18    | 18    | 18    | 18    | 17    | 17    | 17    | 17    | 17    | 17    | 17    | 17    | 17    |
|     | dB(A) | 50    | 50    | 50    | 50    | 50    | 50    | 50    | 50    | 50    | 50    | 50    | 50    | 50    | 50    |
| 400 | m³/h  | 10800 | 11520 | 12240 | 12960 | 13680 | 14400 | 15120 | 15840 | 16560 | 17280 | 18000 | 18720 | 20160 | 21600 |
|     | Pa    | 17    | 16    | 16    | 16    | 16    | 16    | 16    | 16    | 16    | 16    | 16    | 16    | 15    | 15    |
|     | dB(A) | 50    | 50    | 50    | 50    | 50    | 50    | 50    | 50    | 50    | 50    | 50    | 50    | 50    | 50    |
| 450 | m³/h  | 12150 | 12960 | 13770 | 14580 | 15390 | 16200 | 17010 | 17820 | 18630 | 19440 | 20250 | 21060 | 22680 | 24300 |
|     | Pa    | 14    | 14    | 14    | 14    | 14    | 14    | 14    | 14    | 14    | 13    | 13    | 13    | 13    | 13    |
|     | dB(A) | 49    | 49    | 49    | 49    | 49    | 49    | 49    | 49    | 49    | 49    | 49    | 49    | 49    | 49    |
| 500 | m³/h  | 13500 | 14400 | 15300 | 16200 | 17100 | 18000 | 18900 | 19800 | 20700 | 21600 | 22500 | 23400 | 25200 | 27000 |
|     | Pa    | 13    | 13    | 12    | 12    | 12    | 12    | 12    | 12    | 12    | 12    | 12    | 12    | 12    | 11    |
|     | dB(A) | 49    | 49    | 49    | 49    | 49    | 49    | 49    | 49    | 49    | 49    | 49    | 49    | 49    | 49    |
| 550 | m³/h  | 14850 | 15840 | 16830 | 17820 | 18810 | 19800 | 20790 | 21780 | 22770 | 23760 | 24750 | 25740 | 27720 | 29700 |
|     | Pa    | 11    | 11    | 11    | 11    | 11    | 11    | 11    | 11    | 11    | 10    | 10    | 10    | 10    | 10    |
|     | dB(A) | 49    | 49    | 49    | 49    | 48    | 48    | 48    | 48    | 48    | 48    | 48    | 48    | 48    | 48    |
| 600 | m³/h  | 16200 | 17280 | 18360 | 19440 | 20520 | 21600 | 22680 | 23760 | 24840 | 25920 | 27000 | 28080 | 30240 | 32400 |
|     | Pa    | 10    | 10    | 10    | 10    | 10    | 10    | 10    | 10    | 10    | 9     | 9     | 9     | 9     | 9     |
|     | dB(A) | 48    | 48    | 48    | 48    | 48    | 48    | 48    | 48    | 48    | 48    | 48    | 48    | 48    | 48    |
| 650 | m³/h  | 17550 | 18720 | 19890 | 21060 | 22230 | 23400 | 24570 | 25740 | 26910 | 28080 | 29250 | 30420 | 32760 | 35100 |
|     | Pa    | 9     | 9     | 9     | 9     | 9     | 9     | 9     | 9     | 9     | 9     | 9     | 9     | 8     | 8     |
|     | dB(A) | 48    | 48    | 48    | 48    | 48    | 48    | 48    | 48    | 48    | 48    | 48    | 48    | 48    | 48    |
| 700 | m³/h  | 18900 | 20160 | 21420 | 22680 | 23940 | 25200 | 26460 | 27720 | 28980 | 30240 | 31500 | 32760 | 35280 | 37800 |
|     | Pa    | 9     | 9     | 9     | 8     | 8     | 8     | 8     | 8     | 8     | 8     | 8     | 8     | 8     | 8     |
|     | dB(A) | 48    | 48    | 48    | 48    | 48    | 48    | 48    | 48    | 48    | 48    | 48    | 47    | 47    | 47    |
| 750 | m³/h  | 20250 | 21600 | 22950 | 24300 | 25650 | 27000 | 28350 | 29700 | 31050 | 32400 | 33750 | 35100 | 37800 | 40500 |
|     | Pa    | 8     | 8     | 8     | 8     | 8     | 8     | 8     | 8     | 7     | 7     | 7     | 7     | 7     | 7     |
|     | dB(A) | 48    | 48    | 48    | 47    | 47    | 47    | 47    | 47    | 47    | 47    | 47    | 47    | 47    | 47    |
| 800 | m³/h  | 21600 | 23040 | 24480 | 25920 | 27360 | 28800 | 30240 | 31680 | 33120 | 34560 | 36000 | 37440 | 40320 | 43200 |
|     | Pa    | 8     | 8     | 7     | 7     | 7     | 7     | 7     | 7     | 7     | 7     | 7     | 7     | 7     | 7     |
|     | dB(A) | 47    | 47    | 47    | 47    | 47    | 47    | 47    | 47    | 47    | 47    | 47    | 47    | 47    | 47    |



**EK90 smoke control dampers**

Volume flow, pressure drop, sound power level at 15 m/s inflow velocity (2)

| H   | W =   | 750   | 800   | 850   | 900   | 950   | 1000  | 1050  | 1100  | 1150  | 1200  | 1250  | 1300  | 1400  | 1500  |
|-----|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 200 | m³/h  | 8100  | 8640  | 9180  | 9720  | 10260 | 10800 | 11340 | 11880 | 12420 | 12960 | 13500 | 14040 | 15120 | 16200 |
|     | Pa    | 114   | 113   | 113   | 112   | 112   | 111   | 111   | 110   | 110   | 110   | 109   | 109   | 109   | 108   |
|     | dB(A) | 65    | 65    | 65    | 65    | 65    | 65    | 65    | 65    | 65    | 65    | 65    | 65    | 65    | 65    |
| 225 | m³/h  | 9113  | 9720  | 10328 | 10935 | 11543 | 12150 | 12758 | 13365 | 13973 | 14580 | 15188 | 15795 | 17010 | 18225 |
|     | Pa    | 91    | 90    | 90    | 89    | 89    | 88    | 88    | 88    | 87    | 87    | 87    | 87    | 86    | 86    |
|     | dB(A) | 64    | 64    | 64    | 64    | 64    | 64    | 64    | 64    | 64    | 64    | 64    | 64    | 64    | 64    |
| 250 | m³/h  | 10125 | 10800 | 11475 | 12150 | 12825 | 13500 | 14175 | 14850 | 15525 | 16200 | 16875 | 17550 | 18900 | 20250 |
|     | Pa    | 75    | 75    | 74    | 74    | 73    | 73    | 73    | 72    | 72    | 72    | 72    | 72    | 71    | 71    |
|     | dB(A) | 63    | 63    | 63    | 63    | 63    | 63    | 63    | 63    | 63    | 63    | 63    | 63    | 63    | 63    |
| 275 | m³/h  | 11138 | 11880 | 12623 | 13365 | 14108 | 14850 | 15593 | 16335 | 17078 | 17820 | 18563 | 19305 | 20790 | 22275 |
|     | Pa    | 64    | 64    | 63    | 63    | 63    | 62    | 62    | 62    | 61    | 61    | 61    | 61    | 61    | 60    |
|     | dB(A) | 63    | 63    | 63    | 63    | 63    | 63    | 63    | 63    | 63    | 63    | 63    | 63    | 62    | 62    |
| 300 | m³/h  | 12150 | 12960 | 13770 | 14580 | 15390 | 16200 | 17010 | 17820 | 18630 | 19440 | 20250 | 21060 | 22680 | 24300 |
|     | Pa    | 56    | 56    | 55    | 55    | 55    | 54    | 54    | 54    | 53    | 53    | 53    | 53    | 53    | 52    |
|     | dB(A) | 62    | 62    | 62    | 62    | 62    | 62    | 62    | 62    | 62    | 62    | 62    | 62    | 62    | 62    |
| 325 | m³/h  | 13163 | 14040 | 14918 | 15795 | 16673 | 17550 | 18428 | 19305 | 20183 | 21060 | 21938 | 22815 | 24570 | 26325 |
|     | Pa    | 50    | 49    | 49    | 49    | 48    | 48    | 48    | 48    | 47    | 47    | 47    | 47    | 47    | 46    |
|     | dB(A) | 62    | 62    | 62    | 62    | 62    | 62    | 62    | 62    | 62    | 62    | 62    | 62    | 62    | 62    |
| 350 | m³/h  | 14175 | 15120 | 16065 | 17010 | 17955 | 18900 | 19845 | 20790 | 21735 | 22680 | 23625 | 24570 | 26460 | 28350 |
|     | Pa    | 45    | 44    | 44    | 44    | 43    | 43    | 43    | 43    | 43    | 42    | 42    | 42    | 42    | 42    |
|     | dB(A) | 61    | 61    | 61    | 61    | 61    | 61    | 61    | 61    | 61    | 61    | 61    | 61    | 61    | 61    |
| 375 | m³/h  | 15188 | 16200 | 17213 | 18225 | 19238 | 20250 | 21263 | 22275 | 23288 | 24300 | 25313 | 26325 | 28350 | 30375 |
|     | Pa    | 41    | 40    | 40    | 40    | 39    | 39    | 39    | 39    | 39    | 38    | 38    | 38    | 38    | 38    |
|     | dB(A) | 61    | 61    | 61    | 61    | 61    | 61    | 61    | 61    | 61    | 61    | 61    | 61    | 61    | 61    |
| 400 | m³/h  | 16200 | 17280 | 18360 | 19440 | 20520 | 21600 | 22680 | 23760 | 24840 | 25920 | 27000 | 28080 | 30240 | 32400 |
|     | Pa    | 37    | 37    | 37    | 36    | 36    | 36    | 36    | 36    | 35    | 35    | 35    | 35    | 35    | 34    |
|     | dB(A) | 61    | 61    | 61    | 61    | 61    | 61    | 61    | 61    | 61    | 61    | 61    | 61    | 61    | 61    |
| 450 | m³/h  | 18225 | 19440 | 20655 | 21870 | 23085 | 24300 | 25515 | 26730 | 27945 | 29160 | 30375 | 31590 | 34020 | 36450 |
|     | Pa    | 32    | 32    | 32    | 31    | 31    | 31    | 31    | 30    | 30    | 30    | 30    | 30    | 30    | 29    |
|     | dB(A) | 60    | 60    | 60    | 60    | 60    | 60    | 60    | 60    | 60    | 60    | 60    | 60    | 60    | 60    |
| 500 | m³/h  | 20250 | 21600 | 22950 | 24300 | 25650 | 27000 | 28350 | 29700 | 31050 | 32400 | 33750 | 35100 | 37800 | 40500 |
|     | Pa    | 28    | 28    | 28    | 28    | 27    | 27    | 27    | 27    | 27    | 26    | 26    | 26    | 26    | 26    |
|     | dB(A) | 60    | 60    | 60    | 60    | 60    | 60    | 60    | 60    | 60    | 60    | 60    | 60    | 60    | 60    |
| 550 | m³/h  | 22275 | 23760 | 25245 | 26730 | 28215 | 29700 | 31185 | 32670 | 34155 | 35640 | 37125 | 38610 | 41580 |       |
|     | Pa    | 26    | 25    | 25    | 25    | 24    | 24    | 24    | 24    | 24    | 23    | 23    | 23    | 23    |       |
|     | dB(A) | 60    | 60    | 59    | 59    | 59    | 59    | 59    | 59    | 59    | 59    | 59    | 59    | 59    |       |
| 600 | m³/h  | 24300 | 25920 | 27540 | 29160 | 30780 | 32400 | 34020 | 35640 | 37260 | 38880 |       |       |       |       |
|     | Pa    | 23    | 23    | 23    | 22    | 22    | 22    | 22    | 22    | 21    | 21    |       |       |       |       |
|     | dB(A) | 59    | 59    | 59    | 59    | 59    | 59    | 59    | 59    | 59    | 59    |       |       |       |       |
| 650 | m³/h  | 26325 | 28080 | 29835 | 31590 | 33345 | 35100 | 36855 |       |       |       |       |       |       |       |
|     | Pa    | 21    | 21    | 21    | 21    | 20    | 20    | 20    |       |       |       |       |       |       |       |
|     | dB(A) | 59    | 59    | 59    | 59    | 59    | 59    | 59    |       |       |       |       |       |       |       |
| 700 | m³/h  | 28350 | 30240 | 32130 | 34020 |       |       |       |       |       |       |       |       |       |       |
|     | Pa    | 20    | 19    | 19    | 19    |       |       |       |       |       |       |       |       |       |       |
|     | dB(A) | 59    | 59    | 59    | 59    |       |       |       |       |       |       |       |       |       |       |
| 750 | m³/h  | 30375 |       |       |       |       |       |       |       |       |       |       |       |       |       |
|     | Pa    | 18    |       |       |       |       |       |       |       |       |       |       |       |       |       |
|     | dB(A) | 59    |       |       |       |       |       |       |       |       |       |       |       |       |       |

The volume flows in the marked areas require the special design EA!

⇒ see page 34



**EK90 smoke control dampers**

Volume flow, pressure drop, sound power level at 20 m/s inflow velocity (2)

| H   | W =   | 750   | 800   | 850   | 900   | 950   | 1000  | 1050  | 1100  | 1150  | 1200  | 1250  | 1300  | 1400  | 1500  |
|-----|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 200 | m³/h  | 10800 | 11520 | 12240 | 12960 | 13680 | 14400 | 15120 | 15840 | 16560 | 17280 | 18000 | 18720 | 20160 | 21600 |
|     | Pa    | 203   | 202   | 200   | 199   | 198   | 198   | 197   | 196   | 196   | 195   | 195   | 194   | 193   | 193   |
|     | dB(A) | 73    | 73    | 73    | 73    | 73    | 73    | 73    | 73    | 73    | 73    | 73    | 73    | 73    | 73    |
| 225 | m³/h  | 12150 | 12960 | 13770 | 14580 | 15390 | 16200 | 17010 | 17820 | 18630 | 19440 | 20250 | 21060 | 22680 | 24300 |
|     | Pa    | 161   | 160   | 159   | 158   | 158   | 157   | 156   | 156   | 155   | 155   | 154   | 154   | 153   | 153   |
|     | dB(A) | 72    | 72    | 72    | 72    | 72    | 72    | 72    | 72    | 72    | 72    | 72    | 72    | 72    | 72    |
| 250 | m³/h  | 13500 | 14400 | 15300 | 16200 | 17100 | 18000 | 18900 | 19800 | 20700 | 21600 | 22500 | 23400 | 25200 | 27000 |
|     | Pa    | 134   | 133   | 132   | 131   | 130   | 130   | 129   | 129   | 128   | 128   | 128   | 127   | 127   | 126   |
|     | dB(A) | 71    | 71    | 71    | 71    | 71    | 71    | 71    | 71    | 71    | 71    | 71    | 71    | 71    | 71    |
| 275 | m³/h  | 14850 | 15840 | 16830 | 17820 | 18810 | 19800 | 20790 | 21780 | 22770 | 23760 | 24750 | 25740 | 27720 | 29700 |
|     | Pa    | 114   | 113   | 113   | 112   | 111   | 111   | 110   | 110   | 109   | 109   | 109   | 108   | 108   | 107   |
|     | dB(A) | 71    | 71    | 71    | 71    | 71    | 70    | 70    | 70    | 70    | 70    | 70    | 70    | 70    | 70    |
| 300 | m³/h  | 16200 | 17280 | 18360 | 19440 | 20520 | 21600 | 22680 | 23760 | 24840 | 25920 | 27000 | 28080 | 30240 | 32400 |
|     | Pa    | 100   | 99    | 98    | 97    | 97    | 96    | 96    | 95    | 95    | 95    | 94    | 94    | 94    | 93    |
|     | dB(A) | 70    | 70    | 70    | 70    | 70    | 70    | 70    | 70    | 70    | 70    | 70    | 70    | 70    | 70    |
| 325 | m³/h  | 17550 | 18720 | 19890 | 21060 | 22230 | 23400 | 24570 | 25740 | 26910 | 28080 | 29250 | 30420 | 32760 | 35100 |
|     | Pa    | 89    | 88    | 87    | 86    | 86    | 85    | 85    | 85    | 84    | 84    | 84    | 83    | 83    | 82    |
|     | dB(A) | 70    | 70    | 70    | 70    | 70    | 70    | 70    | 70    | 70    | 70    | 69    | 69    | 69    | 69    |
| 350 | m³/h  | 18900 | 20160 | 21420 | 22680 | 23940 | 25200 | 26460 | 27720 | 28980 | 30240 | 31500 | 32760 | 35280 | 37800 |
|     | Pa    | 80    | 79    | 78    | 78    | 77    | 77    | 76    | 76    | 76    | 75    | 75    | 75    | 74    | 74    |
|     | dB(A) | 69    | 69    | 69    | 69    | 69    | 69    | 69    | 69    | 69    | 69    | 69    | 69    | 69    | 69    |
| 375 | m³/h  | 20250 | 21600 | 22950 | 24300 | 25650 | 27000 | 28350 | 29700 | 31050 | 32400 | 33750 | 35100 | 37800 | 40500 |
|     | Pa    | 73    | 72    | 71    | 71    | 70    | 70    | 69    | 69    | 69    | 68    | 68    | 68    | 67    | 67    |
|     | dB(A) | 69    | 69    | 69    | 69    | 69    | 69    | 69    | 69    | 69    | 69    | 69    | 69    | 69    | 69    |
| 400 | m³/h  | 21600 | 23040 | 24480 | 25920 | 27360 | 28800 | 30240 | 31680 | 33120 | 34560 | 36000 | 37440 | 40320 | 43200 |
|     | Pa    | 67    | 66    | 65    | 65    | 64    | 64    | 63    | 63    | 63    | 63    | 62    | 62    | 62    | 61    |
|     | dB(A) | 69    | 69    | 69    | 69    | 69    | 69    | 69    | 69    | 69    | 69    | 69    | 68    | 68    | 68    |
| 450 | m³/h  | 24300 | 25920 | 27540 | 29160 | 30780 | 32400 | 34020 | 35640 | 37260 | 38880 |       |       |       |       |
|     | Pa    | 57    | 57    | 56    | 56    | 55    | 55    | 54    | 54    | 54    | 54    |       |       |       |       |
|     | dB(A) | 68    | 68    | 68    | 68    | 68    | 68    | 68    | 68    | 68    | 68    |       |       |       |       |
| 500 | m³/h  | 27000 | 28800 | 30600 | 32400 | 34200 | 36000 |       |       |       |       |       |       |       |       |
|     | Pa    | 51    | 50    | 49    | 49    | 49    | 48    |       |       |       |       |       |       |       |       |
|     | dB(A) | 68    | 68    | 68    | 68    | 68    | 68    |       |       |       |       |       |       |       |       |
| 550 | m³/h  | 29700 | 31680 |       |       |       |       |       |       |       |       |       |       |       |       |
|     | Pa    | 45    | 45    |       |       |       |       |       |       |       |       |       |       |       |       |
|     | dB(A) | 68    | 67    |       |       |       |       |       |       |       |       |       |       |       |       |

The volume flows in the marked areas require the special design EA!

⇒ see page 34

# EK90 smoke control dampers

Free cross-sections

Free cross-sections  $A_{\text{free}}$  [ $\text{m}^2$ ]

| H   | W=200 | 225   | 250   | 275   | 300   | 325   | 350   | 375   | 400   | 450   | 500   | 550   | 600   | 650   | 700   |
|-----|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 200 | 0.023 | 0.027 | 0.030 | 0.033 | 0.036 | 0.040 | 0.043 | 0.046 | 0.049 | 0.056 | 0.062 | 0.069 | 0.075 | 0.082 | 0.088 |
| 225 | 0.028 | 0.032 | 0.036 | 0.040 | 0.043 | 0.047 | 0.051 | 0.055 | 0.059 | 0.067 | 0.074 | 0.082 | 0.090 | 0.098 | 0.105 |
| 250 | 0.032 | 0.037 | 0.041 | 0.046 | 0.050 | 0.055 | 0.059 | 0.064 | 0.068 | 0.077 | 0.086 | 0.095 | 0.104 | 0.113 | 0.122 |
| 275 | 0.037 | 0.042 | 0.047 | 0.052 | 0.057 | 0.063 | 0.068 | 0.073 | 0.078 | 0.088 | 0.098 | 0.109 | 0.119 | 0.129 | 0.139 |
| 300 | 0.041 | 0.047 | 0.053 | 0.059 | 0.064 | 0.070 | 0.076 | 0.082 | 0.087 | 0.099 | 0.110 | 0.122 | 0.133 | 0.145 | 0.156 |
| 325 | 0.046 | 0.052 | 0.059 | 0.065 | 0.071 | 0.078 | 0.084 | 0.091 | 0.097 | 0.110 | 0.122 | 0.135 | 0.148 | 0.161 | 0.173 |
| 350 | 0.050 | 0.057 | 0.064 | 0.071 | 0.078 | 0.085 | 0.092 | 0.099 | 0.106 | 0.120 | 0.134 | 0.148 | 0.162 | 0.176 | 0.190 |
| 375 | 0.055 | 0.063 | 0.070 | 0.078 | 0.085 | 0.093 | 0.101 | 0.108 | 0.116 | 0.131 | 0.146 | 0.162 | 0.177 | 0.192 | 0.207 |
| 400 | 0.059 | 0.068 | 0.076 | 0.084 | 0.092 | 0.101 | 0.109 | 0.117 | 0.125 | 0.142 | 0.158 | 0.175 | 0.191 | 0.208 | 0.224 |
| 450 | 0.068 | 0.078 | 0.087 | 0.097 | 0.106 | 0.116 | 0.125 | 0.135 | 0.144 | 0.163 | 0.182 | 0.201 | 0.220 | 0.239 | 0.258 |
| 500 | 0.077 | 0.088 | 0.099 | 0.110 | 0.120 | 0.131 | 0.142 | 0.153 | 0.163 | 0.185 | 0.206 | 0.228 | 0.249 | 0.271 | 0.292 |
| 550 | 0.086 | 0.098 | 0.110 | 0.122 | 0.134 | 0.146 | 0.158 | 0.170 | 0.182 | 0.206 | 0.230 | 0.254 | 0.278 | 0.302 | 0.326 |
| 600 | 0.095 | 0.109 | 0.122 | 0.135 | 0.148 | 0.162 | 0.175 | 0.188 | 0.201 | 0.228 | 0.254 | 0.281 | 0.307 | 0.334 | 0.360 |
| 650 | 0.104 | 0.119 | 0.133 | 0.148 | 0.162 | 0.177 | 0.191 | 0.206 | 0.220 | 0.249 | 0.278 | 0.307 | 0.336 | 0.365 | 0.394 |
| 700 | 0.113 | 0.129 | 0.145 | 0.161 | 0.176 | 0.192 | 0.208 | 0.224 | 0.239 | 0.271 | 0.302 | 0.334 | 0.365 | 0.397 | 0.428 |
| 750 | 0.122 | 0.139 | 0.156 | 0.173 | 0.190 | 0.207 | 0.224 | 0.241 | 0.258 | 0.292 | 0.326 | 0.360 | 0.394 | 0.428 | 0.462 |
| 800 | 0.131 | 0.150 | 0.168 | 0.186 | 0.204 | 0.223 | 0.241 | 0.259 | 0.277 | 0.314 | 0.350 | 0.387 | 0.423 | 0.460 | 0.496 |

| H   | W = 750 | 800   | 850   | 900   | 950   | 1000  | 1050  | 1100  | 1150  | 1200  | 1250  | 1300  | 1400  | 1500  |
|-----|---------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 200 | 0.095   | 0.101 | 0.108 | 0.114 | 0.121 | 0.127 | 0.134 | 0.140 | 0.147 | 0.153 | 0.160 | 0.166 | 0.179 | 0.192 |
| 225 | 0.113   | 0.121 | 0.129 | 0.136 | 0.144 | 0.152 | 0.160 | 0.167 | 0.175 | 0.183 | 0.191 | 0.198 | 0.214 | 0.229 |
| 250 | 0.131   | 0.140 | 0.149 | 0.158 | 0.167 | 0.176 | 0.185 | 0.194 | 0.203 | 0.212 | 0.221 | 0.230 | 0.248 | 0.266 |
| 275 | 0.150   | 0.160 | 0.170 | 0.180 | 0.191 | 0.201 | 0.211 | 0.221 | 0.232 | 0.242 | 0.252 | 0.262 | 0.283 | 0.303 |
| 300 | 0.168   | 0.179 | 0.191 | 0.202 | 0.214 | 0.225 | 0.237 | 0.248 | 0.260 | 0.271 | 0.283 | 0.294 | 0.317 | 0.340 |
| 325 | 0.186   | 0.199 | 0.212 | 0.224 | 0.237 | 0.250 | 0.263 | 0.275 | 0.288 | 0.301 | 0.314 | 0.326 | 0.352 | 0.377 |
| 350 | 0.204   | 0.218 | 0.232 | 0.246 | 0.260 | 0.274 | 0.288 | 0.302 | 0.316 | 0.330 | 0.344 | 0.358 | 0.386 | 0.414 |
| 375 | 0.223   | 0.238 | 0.253 | 0.268 | 0.284 | 0.299 | 0.314 | 0.329 | 0.345 | 0.360 | 0.375 | 0.390 | 0.421 | 0.451 |
| 400 | 0.241   | 0.257 | 0.274 | 0.290 | 0.307 | 0.323 | 0.340 | 0.356 | 0.373 | 0.389 | 0.406 | 0.422 | 0.455 | 0.488 |
| 450 | 0.277   | 0.296 | 0.315 | 0.334 | 0.353 | 0.372 | 0.391 | 0.410 | 0.429 | 0.448 | 0.467 | 0.486 | 0.524 | 0.562 |
| 500 | 0.314   | 0.335 | 0.357 | 0.378 | 0.400 | 0.421 | 0.443 | 0.464 | 0.486 | 0.507 | 0.529 | 0.550 | 0.593 | 0.636 |
| 550 | 0.350   | 0.374 | 0.398 | 0.422 | 0.446 | 0.470 | 0.494 | 0.518 | 0.542 | 0.566 | 0.590 | 0.614 | 0.662 | 0.710 |
| 600 | 0.387   | 0.413 | 0.440 | 0.466 | 0.493 | 0.519 | 0.546 | 0.572 | 0.599 | 0.625 | 0.652 | 0.678 | 0.731 | 0.784 |
| 650 | 0.423   | 0.452 | 0.481 | 0.510 | 0.539 | 0.568 | 0.597 | 0.626 | 0.655 | 0.684 | 0.713 | 0.742 | 0.800 | 0.858 |
| 700 | 0.460   | 0.491 | 0.523 | 0.554 | 0.586 | 0.617 | 0.649 | 0.680 | 0.712 | 0.743 | 0.775 | 0.806 | 0.869 | 0.932 |
| 750 | 0.496   | 0.530 | 0.564 | 0.598 | 0.632 | 0.666 | 0.700 | 0.734 | 0.768 | 0.802 | 0.836 | 0.870 | 0.938 | 1.006 |
| 800 | 0.533   | 0.569 | 0.606 | 0.642 | 0.679 | 0.715 | 0.752 | 0.788 | 0.825 | 0.861 | 0.898 | 0.934 | 1.007 | 1.080 |

# EK90 smoke control dampers

## Weights

Weights [kg] for the length L = 500 mm

| H   | W=200 | 225 | 250 | 275 | 300 | 325 | 350 | 375 | 400 | 450 | 500 | 550 | 600 | 650 | 700 |
|-----|-------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 200 | 39    | 40  | 41  | 42  | 44  | 45  | 46  | 47  | 49  | 51  | 53  | 56  | 58  | 61  | 63  |
| 225 | 40    | 41  | 42  | 44  | 45  | 46  | 47  | 49  | 50  | 52  | 55  | 57  | 60  | 62  | 65  |
| 250 | 41    | 42  | 44  | 45  | 46  | 48  | 49  | 50  | 51  | 54  | 56  | 59  | 61  | 64  | 67  |
| 275 | 42    | 44  | 45  | 46  | 48  | 49  | 50  | 51  | 53  | 55  | 58  | 60  | 63  | 66  | 68  |
| 300 | 44    | 45  | 46  | 48  | 49  | 50  | 52  | 53  | 54  | 57  | 59  | 62  | 65  | 67  | 70  |
| 325 | 45    | 46  | 48  | 49  | 50  | 52  | 53  | 54  | 55  | 58  | 61  | 63  | 66  | 69  | 71  |
| 350 | 46    | 47  | 49  | 50  | 52  | 53  | 54  | 56  | 57  | 60  | 62  | 65  | 68  | 70  | 73  |
| 375 | 47    | 49  | 50  | 51  | 53  | 54  | 56  | 57  | 58  | 61  | 64  | 66  | 69  | 72  | 75  |
| 400 | 49    | 50  | 51  | 53  | 54  | 55  | 57  | 58  | 60  | 62  | 65  | 68  | 71  | 73  | 76  |
| 450 | 53    | 55  | 56  | 57  | 59  | 60  | 62  | 63  | 64  | 67  | 70  | 73  | 76  | 79  | 82  |
| 500 | 55    | 57  | 58  | 60  | 61  | 63  | 64  | 66  | 67  | 70  | 73  | 76  | 79  | 82  | 85  |
| 550 | 58    | 59  | 61  | 62  | 64  | 65  | 67  | 68  | 70  | 73  | 75  | 79  | 82  | 85  | 88  |
| 600 | 60    | 62  | 63  | 65  | 67  | 68  | 70  | 71  | 73  | 76  | 79  | 82  | 85  | 88  | 91  |
| 650 | 63    | 64  | 66  | 68  | 69  | 71  | 72  | 74  | 75  | 79  | 82  | 85  | 88  | 91  | 94  |
| 700 | 65    | 67  | 69  | 70  | 72  | 73  | 75  | 77  | 78  | 82  | 85  | 88  | 91  | 93  | 98  |
| 750 | 68    | 69  | 71  | 73  | 74  | 76  | 78  | 79  | 81  | 83  | 88  | 91  | 94  | 98  | 101 |
| 800 | 70    | 72  | 74  | 75  | 77  | 79  | 80  | 82  | 84  | 86  | 91  | 94  | 97  | 101 | 104 |

| H   | W=750 | 800 | 850 | 900 | 950 | 1000 | 1050 | 1100 | 1150 | 1200 | 1250 | 1300 | 1400 | 1500 |
|-----|-------|-----|-----|-----|-----|------|------|------|------|------|------|------|------|------|
| 200 | 66    | 68  | 71  | 73  | 76  | 78   | 80   | 83   | 85   | 88   | 90   | 93   | 98   | 102  |
| 225 | 67    | 70  | 72  | 75  | 77  | 80   | 82   | 85   | 87   | 90   | 92   | 95   | 100  | 105  |
| 250 | 69    | 72  | 74  | 77  | 79  | 82   | 84   | 87   | 89   | 92   | 94   | 97   | 102  | 107  |
| 275 | 71    | 73  | 76  | 78  | 81  | 84   | 86   | 89   | 91   | 94   | 96   | 99   | 104  | 109  |
| 300 | 72    | 75  | 78  | 80  | 83  | 85   | 88   | 91   | 93   | 96   | 98   | 101  | 106  | 111  |
| 325 | 74    | 77  | 79  | 82  | 85  | 87   | 90   | 93   | 95   | 98   | 101  | 103  | 108  | 114  |
| 350 | 76    | 78  | 81  | 84  | 86  | 89   | 92   | 95   | 97   | 100  | 103  | 105  | 111  | 116  |
| 375 | 77    | 80  | 83  | 86  | 88  | 91   | 94   | 96   | 99   | 102  | 105  | 107  | 113  | 118  |
| 400 | 79    | 82  | 85  | 87  | 90  | 93   | 96   | 98   | 101  | 104  | 107  | 109  | 115  | 121  |
| 450 | 84    | 87  | 90  | 93  | 96  | 103  | 105  | 108  | 111  | 114  | 117  | 120  | 125  | 131  |
| 500 | 88    | 91  | 93  | 96  | 99  | 106  | 109  | 112  | 115  | 117  | 121  | 124  | 130  | 136  |
| 550 | 91    | 94  | 97  | 100 | 103 | 110  | 113  | 116  | 119  | 121  | 125  | 128  | 134  | 140  |
| 600 | 94    | 97  | 101 | 104 | 107 | 114  | 117  | 120  | 123  | 126  | 129  | 132  | 138  | 145  |
| 650 | 98    | 101 | 104 | 107 | 109 | 118  | 121  | 124  | 127  | 130  | 133  | 137  | 143  | 150  |
| 700 | 101   | 104 | 107 | 111 | 114 | 121  | 124  | 128  | 131  | 134  | 137  | 141  | 147  | 154  |
| 750 | 104   | 108 | 111 | 114 | 118 | 125  | 127  | 132  | 135  | 138  | 140  | 145  | 152  | 158  |
| 800 | 108   | 111 | 114 | 118 | 121 | 129  | 132  | 136  | 139  | 142  | 146  | 149  | 156  | 163  |

The weights for other lengths L can be calculated with sufficient accuracy:

Electrical connection design +1.6 kg

Design with additional casing +5.5 kg (H ≤ 600)

or 6.2 kg (with H ≥ 600/electrical connection design EA)

Length L: 350 mm: Factor 0.85 or -15%

400 mm: Factor 0.90 or -10%

450 mm: Factor 0.95 or -5%

**500 mm: Factor 1.00 or 0%**

600 mm: Factor 1.10 or +10%

700 mm: Factor 1.20 or +20%

800 mm: Factor 1.30 or +30%

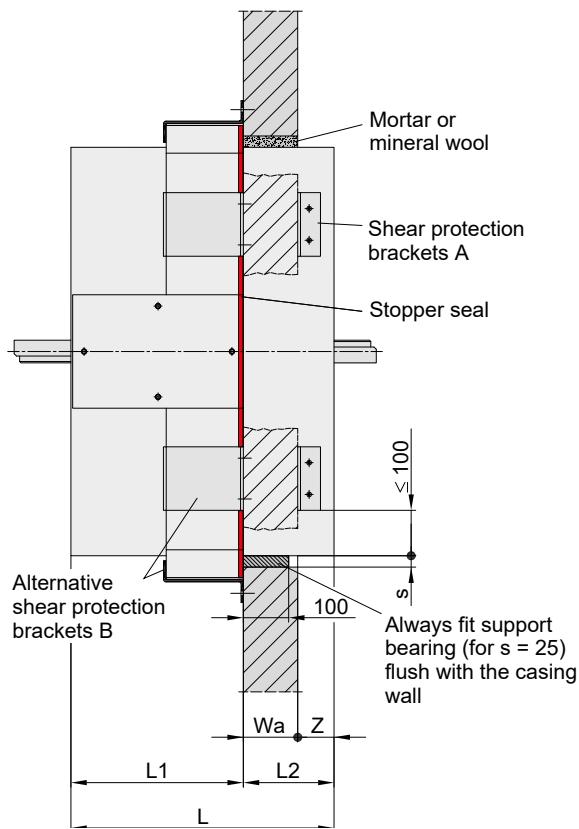
850 mm: Factor 1.35 or +35%

# EK90 smoke control dampers

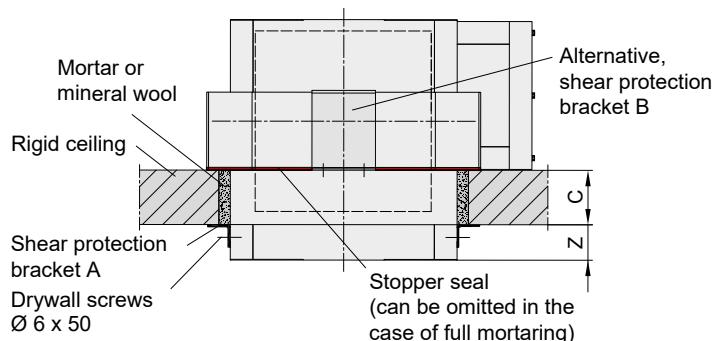
## Installation in rigid walls and ceilings (1) General

The **installation in rigid walls and ceilings from a thickness of 100 mm** is performed using mortar (wet installation). For this, mortar of group II or III as per DIN 1053 or classes M2.5, M.5, M10 or M20 as per EN 998-2, or suitable fire protection mortar or gypsum mortar can be used. Also, gaps up to 25 mm wide can be filled with mineral wool  $\geq 100 \text{ kg/m}^3$  and  $\geq 1000^\circ\text{C}$  melting point. **Shear protection brackets A** protect installation at the rear. Alternatively, **shear protection brackets B** can be used, especially if the installation openings are only accessible from the front, i.e. from the operation side, e.g. in shaft walls.

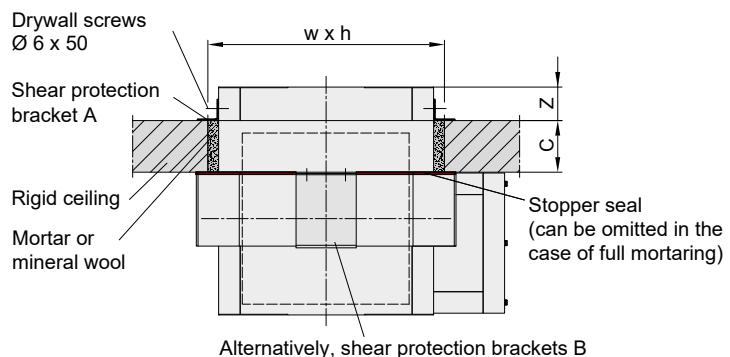
### Installation in rigid walls



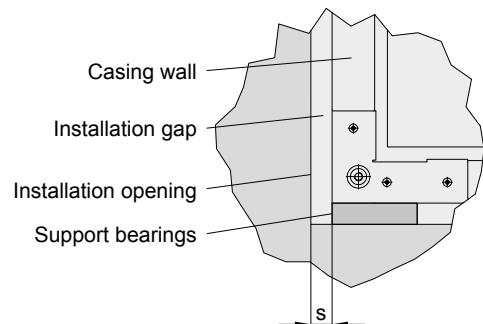
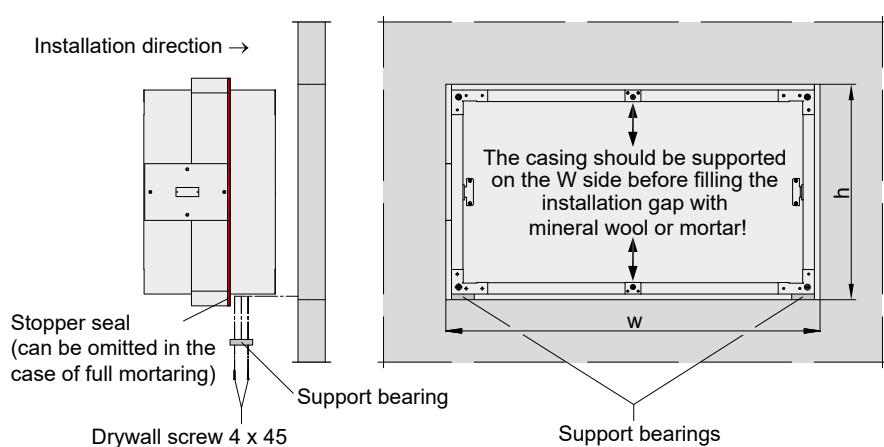
### Vertical installation in ceilings (motor drive above ceiling)



### Suspended installation in ceilings (motor drive underneath the ceiling)



Installation direction →



### Installation in rigid walls and ceilings

- Outer dimensions of the smoke control dampers in the installation area of the wall or ceiling:  $(W + 100 \text{ mm}) \times (H + 100 \text{ mm})$ .
- Installation opening in rigid walls and ceilings:  $w \times h = (W + 100 \text{ mm} + 2 \cdot s [\text{mm}]) \times (H + 100 \text{ mm} + 2 \cdot s [\text{mm}])$
- Mortar gap for wet installation  $s \geq 25 \text{ mm}$ .
- Gap for mineral wool filling  $s = 10 \text{ to } 25 \text{ mm}$ .

- Calcium silicate support bearings with the dimensions  $100 \text{ mm} \times 100 \text{ mm} \times 25 \text{ mm}$  for gaps  $s = 25 \text{ mm}$  are included with the damper.

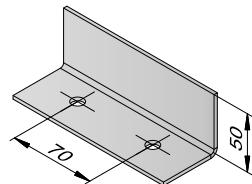
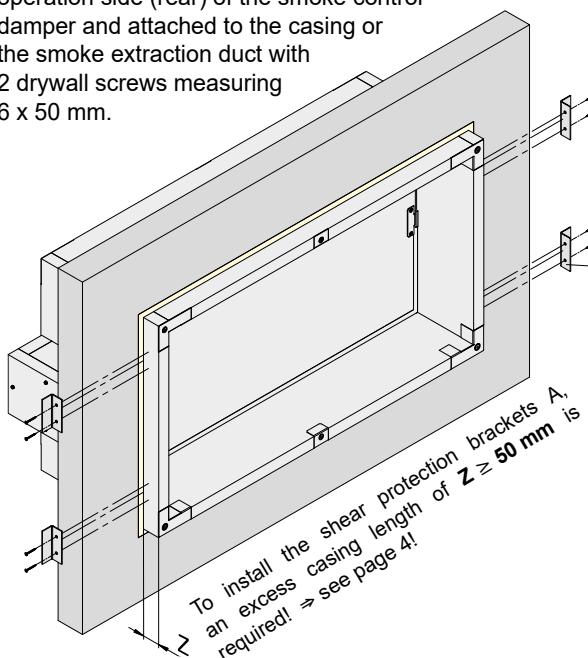
Support bearings must always be used to provide support when performing dry installation with mineral wool in walls, and as centring devices in ceilings. Support bearings can also be used as installation aids, except in metal stud walls.

All dimensions in mm

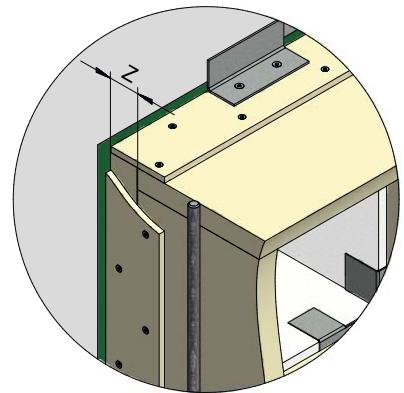
# EK90 smoke control dampers

Installation in rigid walls and ceilings (2) Attachment with shear protection brackets A and B

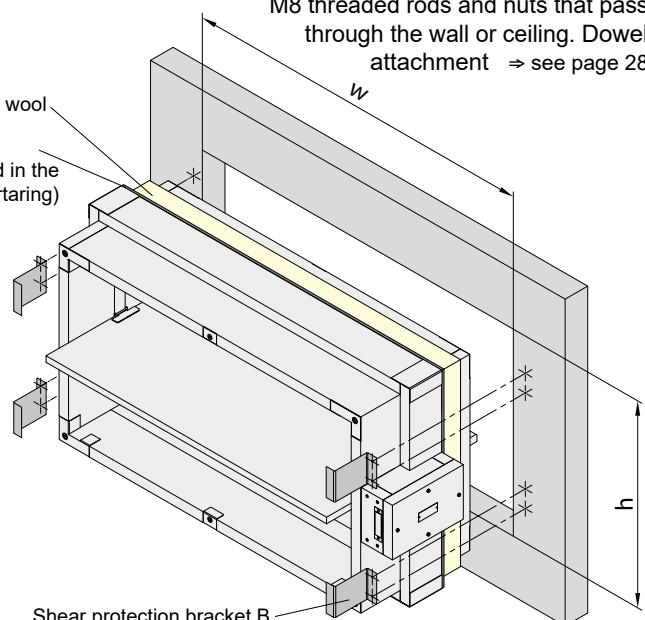
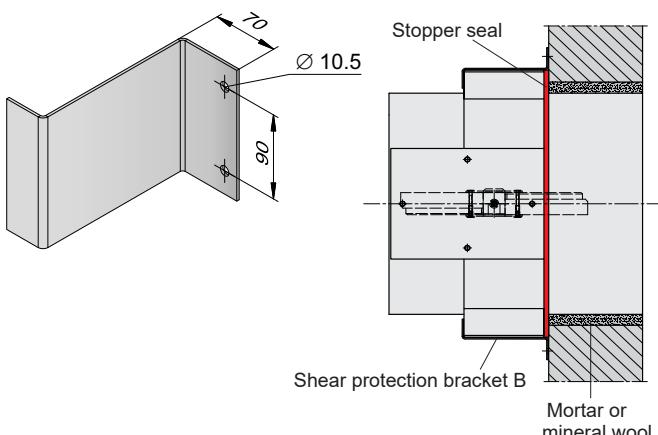
**Shear protection brackets A** are fitted on the non-operation side (rear) of the smoke control damper and attached to the casing or the smoke extraction duct with 2 drywall screws measuring 6 x 50 mm.



**Shear protection brackets A** can also be fitted to **flashing strips** of connected smoke extraction ducts.



**Shear protection brackets B** are fitted on the operation-side (front) of the smoke control damper and attached using M8 threaded rods and nuts that pass through the wall or ceiling. Dowel attachment ⇒ see page 28

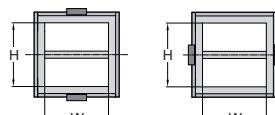
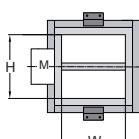


All dimensions in mm

## Number and arrangement of shear protection brackets A and B

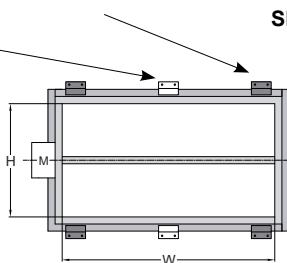
### EK90 smoke control dampers in the sizes W x H

- up to a maximum of 450 mm x 450 mm require 1 shear protection bracket at the centre of each of the two W-sides or each of the two H-sides.
- with  $W > 450 \text{ mm}$  or  $H > 450 \text{ mm}$  the dampers require 2 shear protection brackets on each end of the W-sides or H-sides.

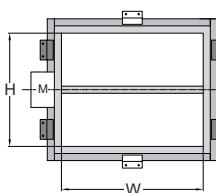


**Lengths L > 600 mm**  
require 1 additional central shear protection bracket on each of the W-sides or H-sides.

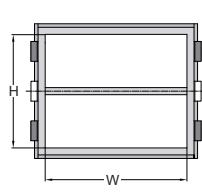
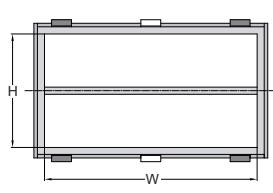
**Shear protection brackets A and B** can also be used in combination, while retaining the same total number of brackets!



**Shear protection brackets B**  
View of the front side

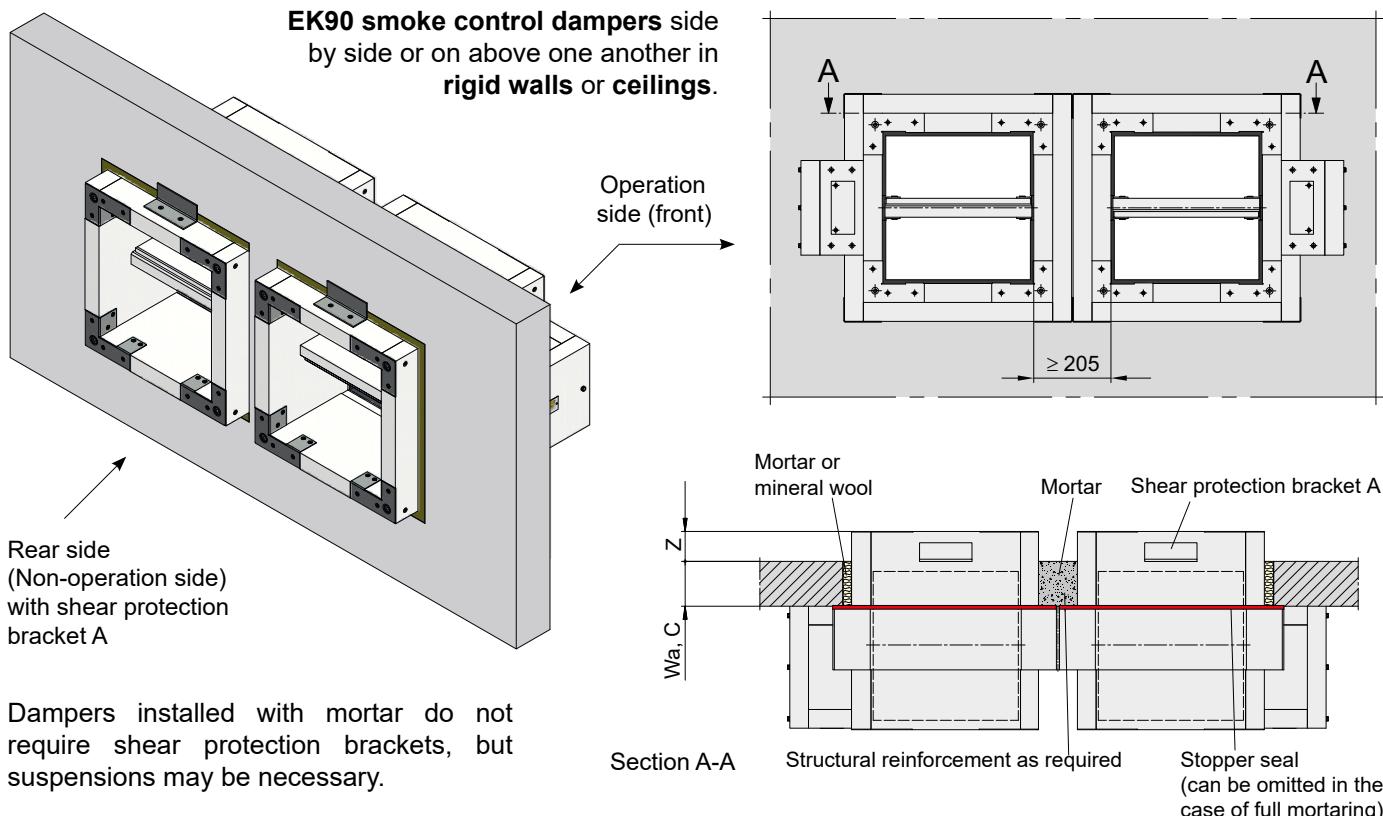


**Shear protection brackets A**  
View of the rear side



# EK90 smoke control dampers

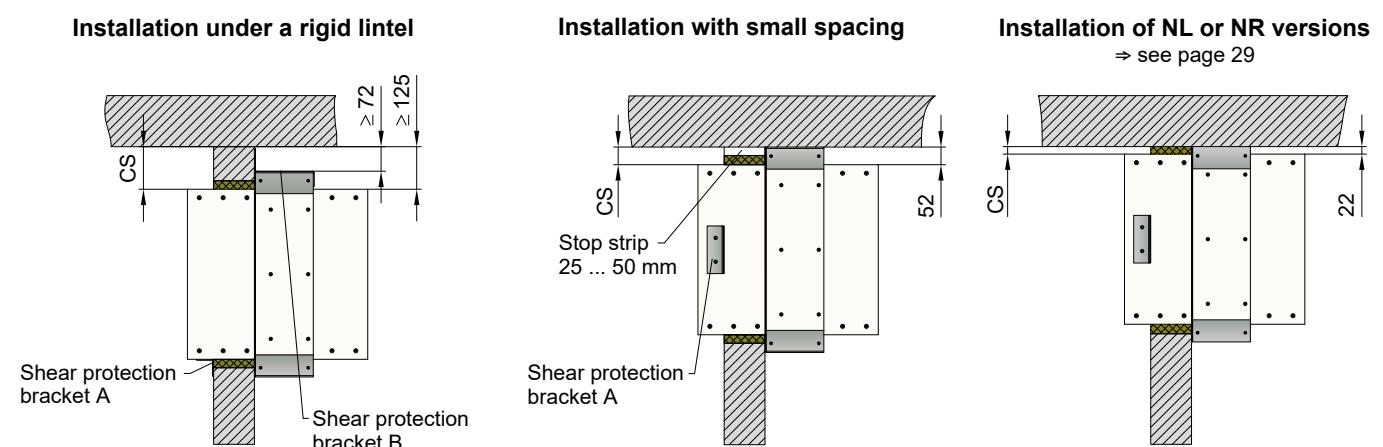
Installation in rigid walls and ceilings (3)



Dampers installed with mortar do not require shear protection brackets, but suspensions may be necessary.

## EK90 smoke control dampers underneath rigid ceilings

**Installation gaps  $s \leq 25$  mm** can be filled with mineral wool. Otherwise, installation gaps must be completely filled with mortar!  
**Shear protection brackets** are required for installation with mineral wool, but not for installation with mortar!



- Spacing  $CS \geq 180$  mm:  
Shear protection brackets A and B can be used at the top, bottom and sides; also as A and B combined. → See page 19
- Spacing  $CS \geq 125$  mm to  $\leq 180$  mm:  
Shear protection brackets A can be used at the sides, and shear protection brackets B above and below.
- Spacing  $CS \geq 52$  mm to  $\leq 125$  mm:  
Shear protection brackets A or B can be used at the sides.  
Depending on the spacing CS, filling strips with a thickness of 25 to 75 mm, made from calcium silicate boards with approx.  $\geq 500$  kg/m<sup>3</sup> bulk density, may be required. They must be fastened to the ceiling with screws or bolts with a diameter of  $\varnothing 5$  mm or more.
- Spacing  $CS = 22$  mm:  
Shear protection brackets A or B can be used at the sides.

All dimensions in mm

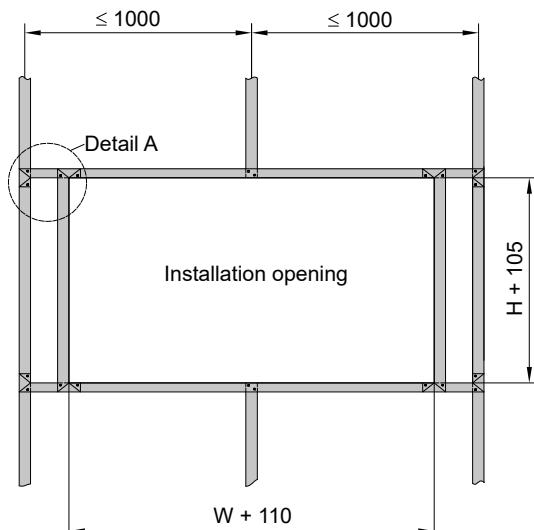
# EK90 smoke control dampers

Installation in flexible walls (1) metal stud walls, including fire walls

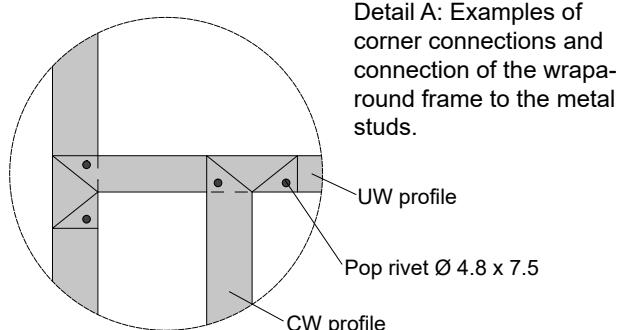
**Installation in flexible walls in the form of metal stud walls with cladding on both sides and a thickness of 95 mm or more and stud spacing up to 1000 mm** is performed as dry installation.

EK90 smoke control dampers are used in wraparound frames made from wall profiles, to suit the thickness of the wall. These must be connected and fixed to the studding.

Installation can be performed in a horizontal or vertical axis position. ⇒ See page 33



Example of an **installation opening** in metal studs  
 $w \times h = (W + 110 \text{ mm}) \times (H + 105 \text{ mm})$



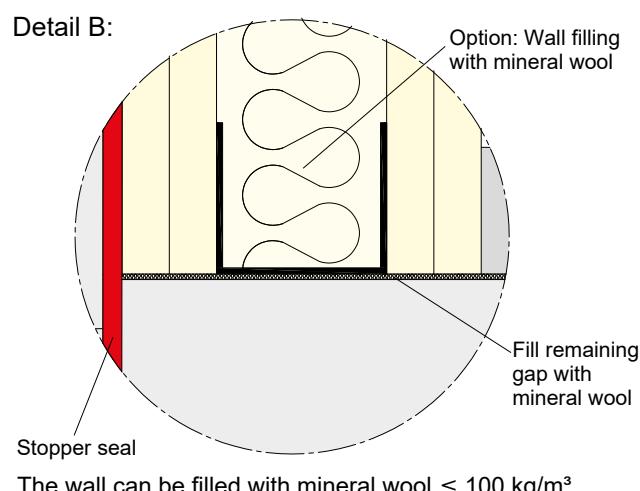
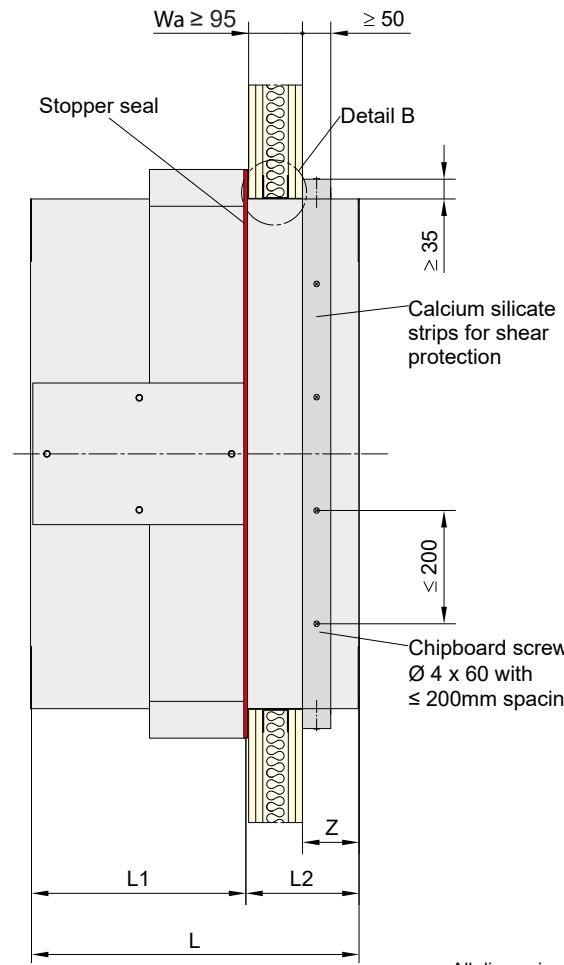
**Shear protection strips** must be fabricated on site using calcium silicate boards with approximately  $\geq 500 \text{ kg/m}^3$ . Cut sizes of  $\geq 50 \text{ mm}$  width and  $35 \text{ mm}$  height are suitable. They must be glued on circumferentially on the non-operation side (rear) of the smoke control damper and screwed at spacings of  $\leq 200 \text{ mm}$ . Where access is limited under ceilings or on walls, at least the two opposing horizontal or vertical strips must be screwed!

To fit the strips, an excess of  $Z \geq 70 \text{ mm}$  must be added to the length L of the smoke control dampers, or  $Z \geq 100 \text{ mm}$  if smoke extraction ducts with fire resistance period are being connected.

⇒ see page 4.

Installation in flexible walls must always be implemented with shear protection strips! The shear protection brackets A and B cannot be used for this type of installation!

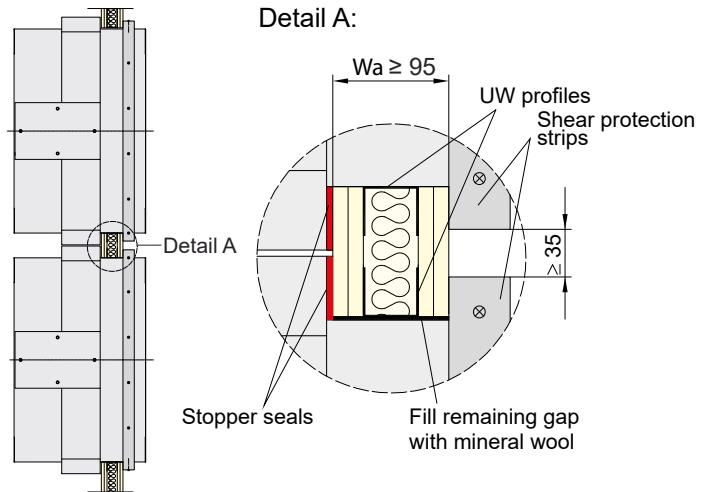
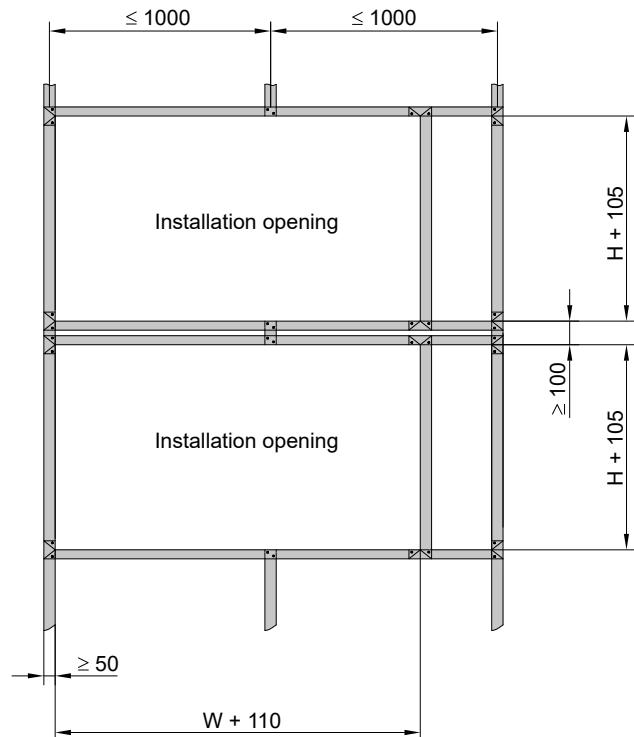
In metal stud walls in the form of **fire walls**, stud profiles with a 2 mm wall thickness (UA profiles) should be used, either directly on each side or in the area of the smoke control dampers, for structural reasons.



# EK90 smoke control dampers

Installation in flexible walls (2) Metal stud walls

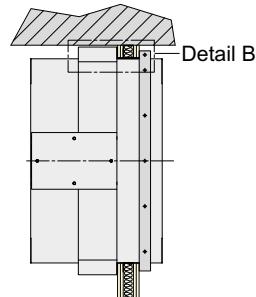
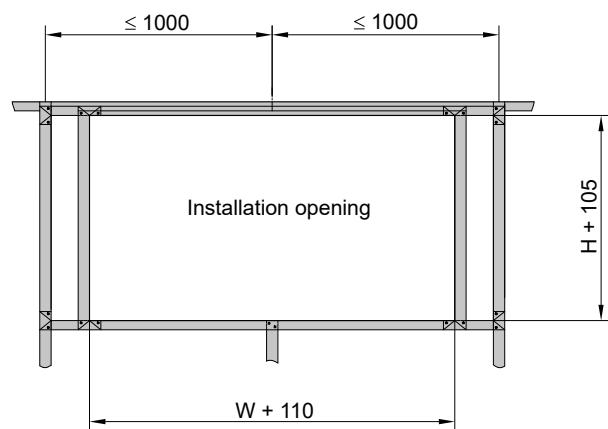
**EK90 smoke control dampers** either side by side or above one another **in metal stud walls** with cladding on both sides.



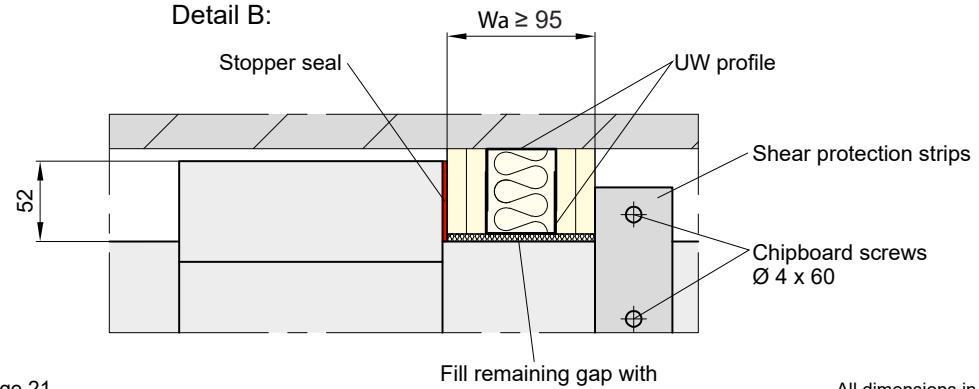
**Example:** Installation of two EK90 smoke control dampers directly above one another.

Installation of the dampers side by side is performed in the same way.

**EK90 smoke control dampers in metal stud walls** with cladding on both sides, directly adjoining rigid walls and ceilings.



Detail B:



**Shear protection strips** → see page 21

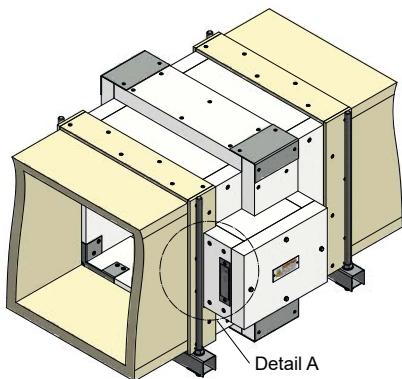
Fill remaining gap with mineral wool

All dimensions in mm

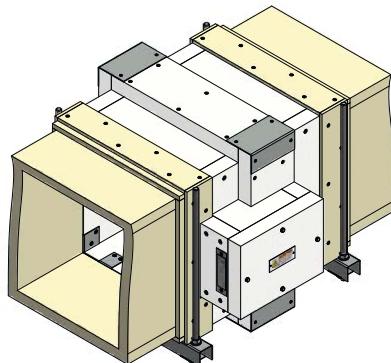
# EK90 smoke control dampers

Installation between smoke extraction ducts and connections

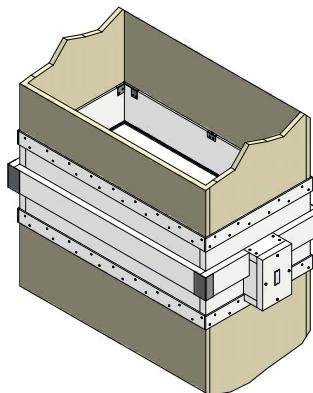
## Connecting smoke extraction ducts with fire resistance period made of wall boards



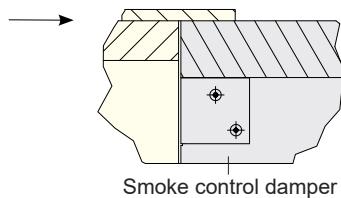
Connect the smoke extraction duct without filling strips.



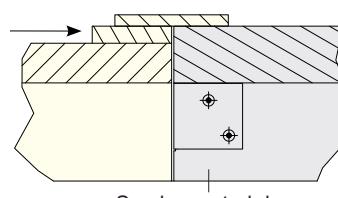
Connect the smoke extraction duct with filling strips made from duct-specific materials.



Connect vertical smoke extraction ducts as shown, with or without filling strips made from duct-specific materials.

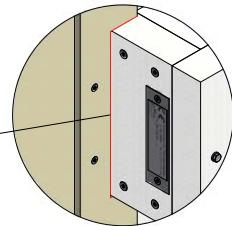


Smoke control damper



Smoke control damper

Detail A  
Notching the  
flashing strip in  
the area of the  
motor cover

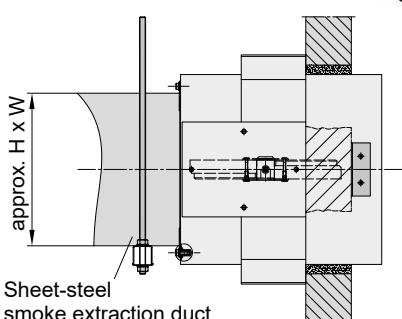
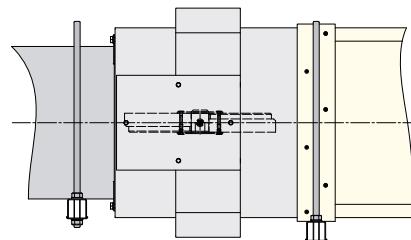
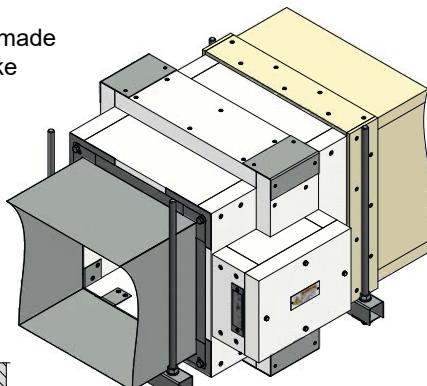


For information on suspending or attaching the smoke control dampers → see page 28

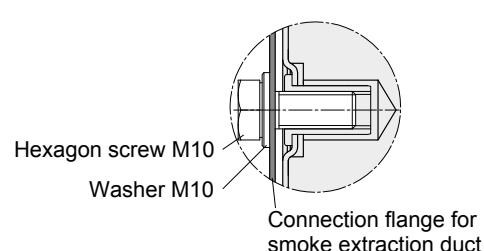
## Connecting the sheet steel smoke extraction duct and protective grille

### Example

Left-side smoke extraction duct made from sheet steel, right-side smoke extraction duct made from wall boards (with fire resistance period).

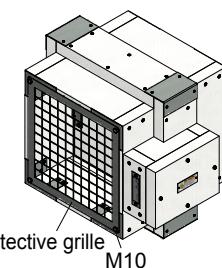


Sheet-steel  
smoke extraction duct



Hexagon screw M10  
Washer M10

Connection flange for  
smoke extraction duct



Protective grille  
M10

- The connection flanges of the smoke extraction ducts and protective grilles can be screwed directly onto the smoke control dampers.
- Freedom of movement of the damper blade must be ensured when mounting protective grilles. → see damper blade excess length on page 4
- Extensions in the design of smoke extraction ducts made from sheet steel can be used as required.

All dimensions in mm

# EK90 smoke control dampers

Lateral mounting on smoke extraction ducts (1)

**EK90 smoke control dampers** can be fitted to the side of smoke extraction ducts with fire resistance period and a wall thickness of  $\geq 35$  mm.

EK90 smoke control dampers can be mounted in a horizontal or vertical axis position. ⇒ See page 33

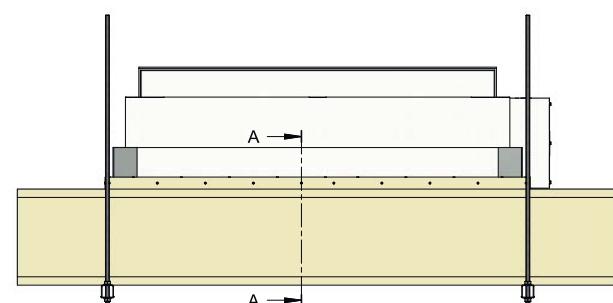
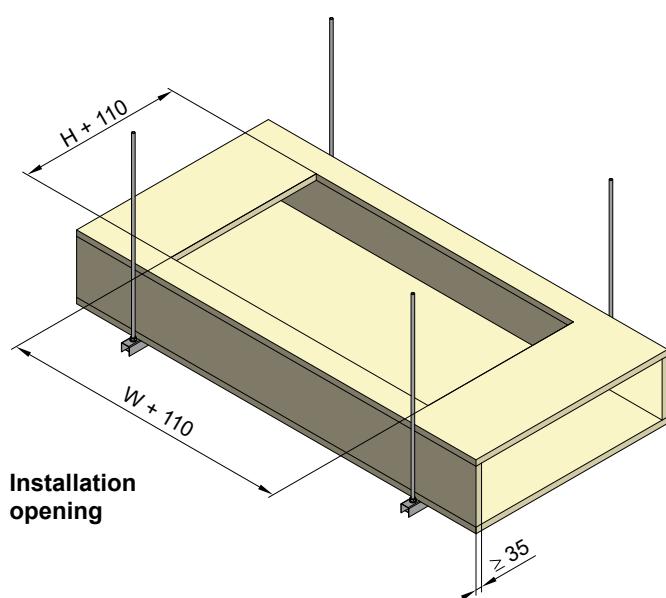
The damper blade should ideally be positioned parallel to the direction of flow or outside of the flow, so as to avoid any interfering forces.

The smoke extraction ducts can be aligned horizontally or vertically, and must be designed and fitted in accordance with the manufacturer's specifications.

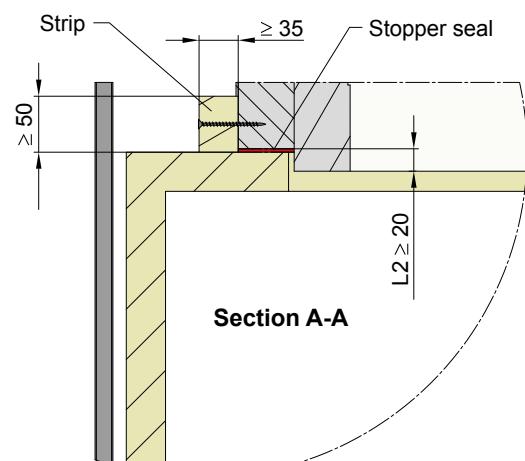
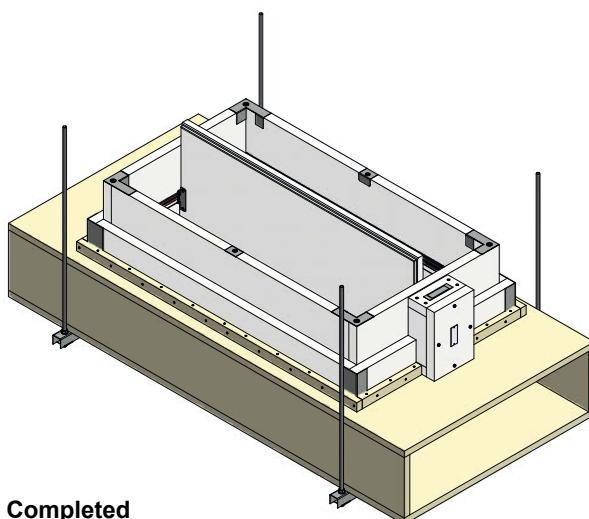
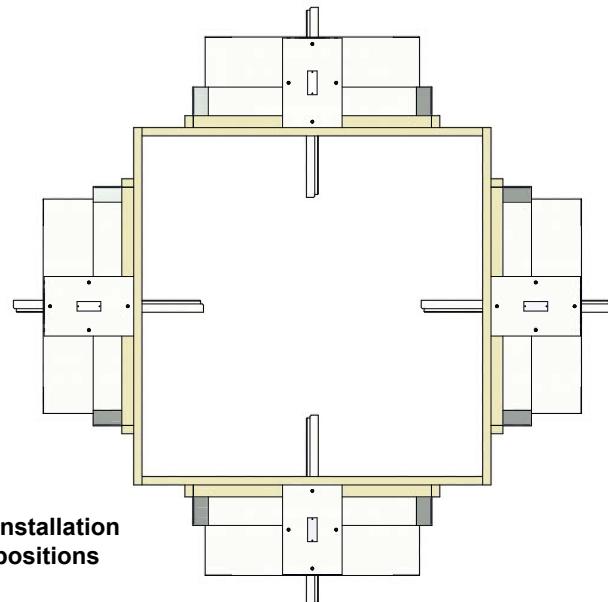
The screw sizes specified in the following drawings relate to smoke extraction ducts with a thickness of 35 mm. For greater thicknesses, the screw lengths need to be adjusted.

## Mounting on smoke extraction ducts with

clear widths  $\geq H_{\text{smoke control damper}} + 300$  mm



**Strips** must be fabricated from duct-specific materials, glued to the smoke extraction duct and secured using chipboard screws with a diameter of  $\varnothing 4 \times 80$  and a spacing of  $\leq 200$  mm. The smoke control dampers are screwed on in the same way, but using chipboard screws with a diameter of  $\varnothing 4 \times \geq 60$ .

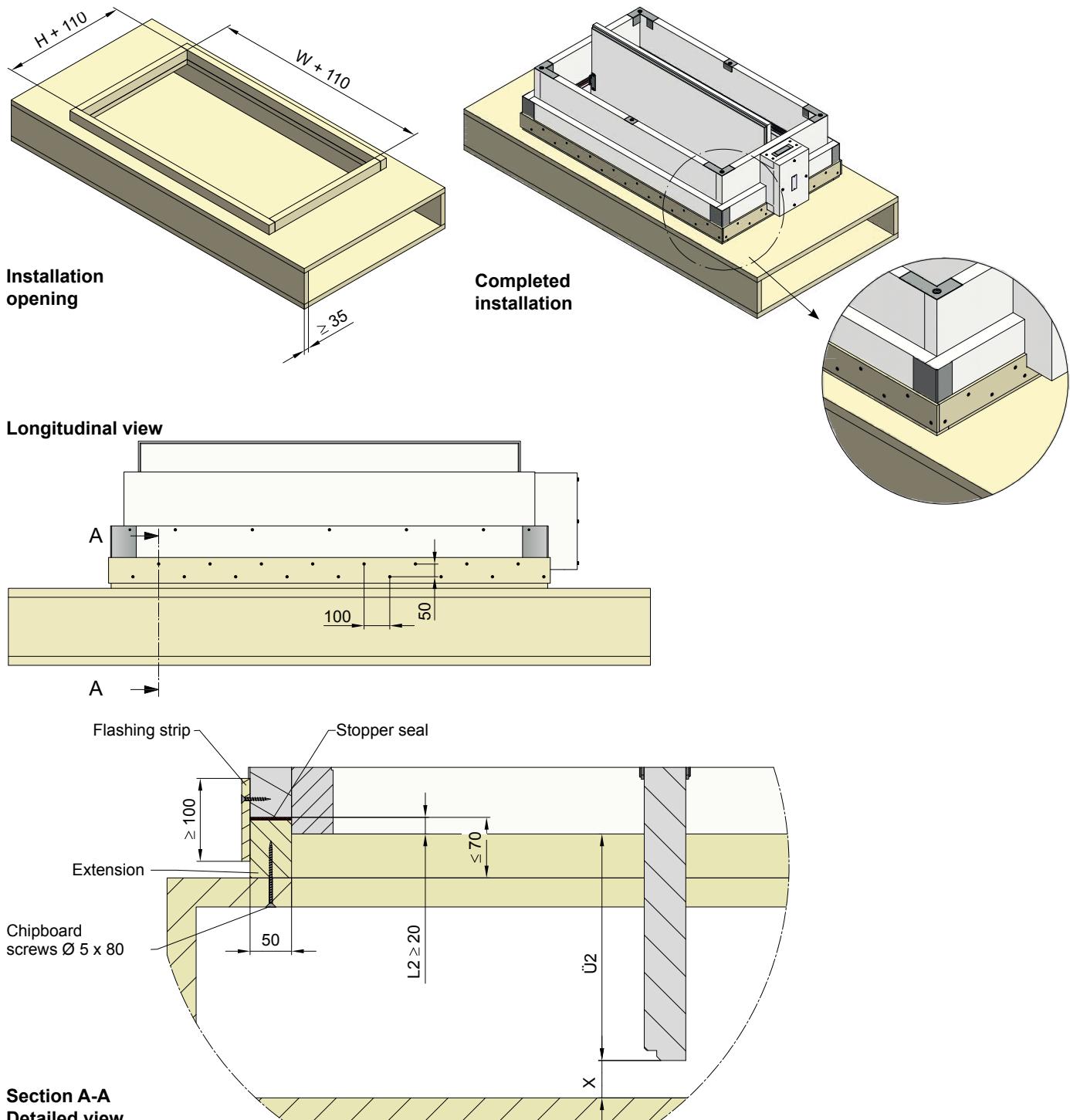


All dimensions in mm

# EK90 smoke control dampers

Lateral mounting on smoke extraction ducts (2)

**Mounting on smoke extraction ducts** with clear widths  $\geq H_{\text{smoke control damper}} + 300 \text{ mm}$ . This installation version enables mounting at a maximum offset of 70 mm. Flashing strips are then used for assembly.



Damper blade excess length  $XL_2 \Rightarrow$  see page 4

Spacing of  $x \geq 20$  mm must remain between the opened damper blade and the casing wall.

**Extensions** must be fabricated from duct-specific materials with  $50 \text{ mm} \times \leq 70 \text{ mm}$  cross-section, glued to the smoke extraction duct and secured using chipboard screws with a diameter of  $\varnothing 5 \times 80$  and a spacing of  $\leq 160 \text{ mm}$

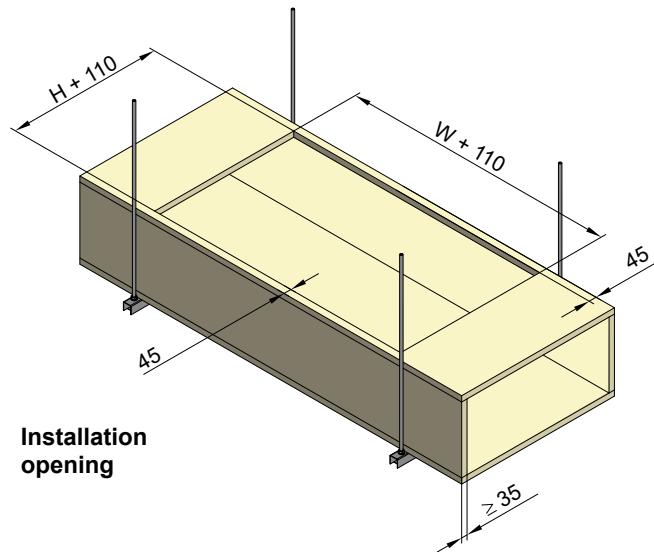
**Flashing strips** must be fabricated from duct-specific materials, glued to the smoke extraction duct and the smoke control damper, and secured using chipboard screws with a diameter of  $4 \times 80$  and a spacing of  $\leq 200 \text{ mm}$ .

All dimensions in mm

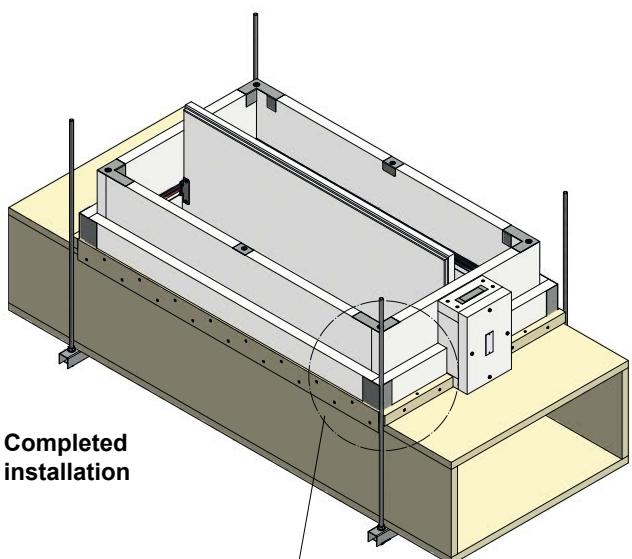
# EK90 smoke control dampers

Lateral mounting on smoke extraction ducts (3)

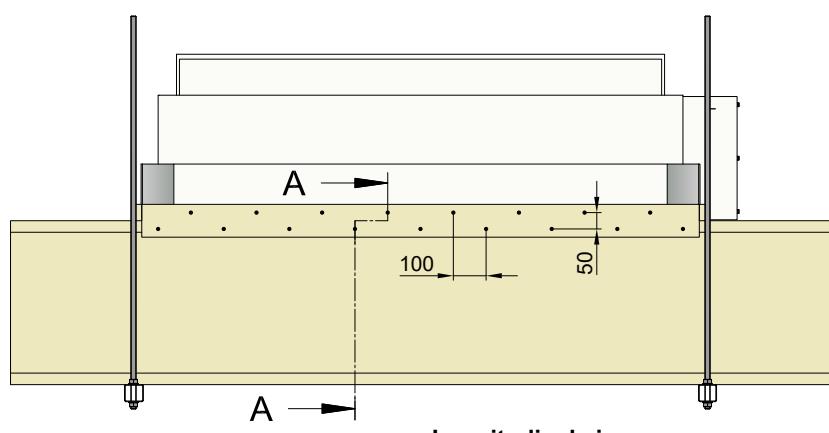
Mounting on smoke extraction ducts with clear widths  $\geq H_{\text{smoke control damper}} + 130 \text{ mm}$



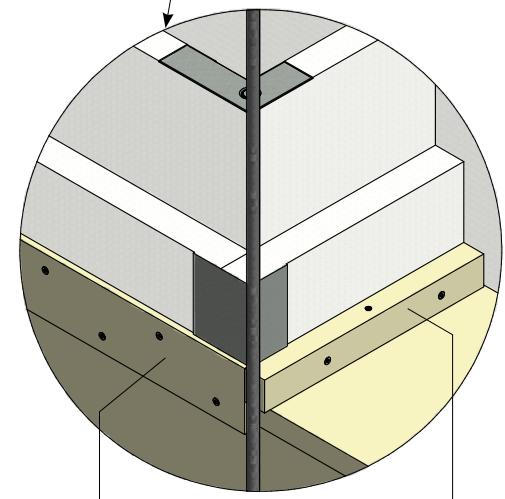
Installation opening



Completed installation

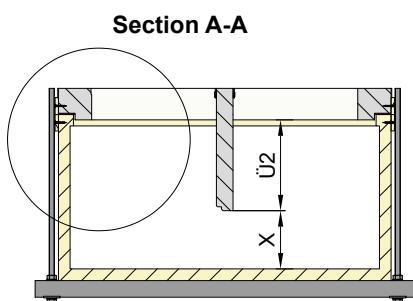


Longitudinal view

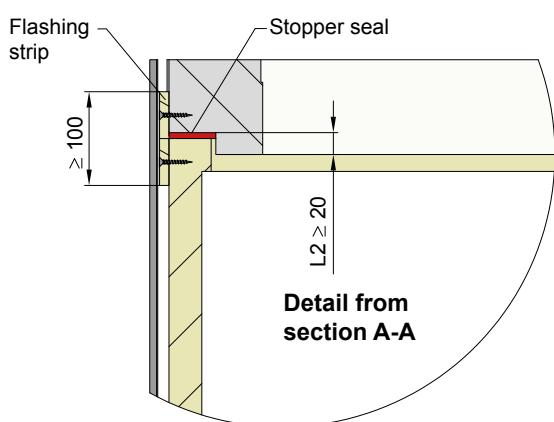


Flashing strip

Strip



Section A-A



Detail from section A-A

Damper blade excess length XL2 → see page 4

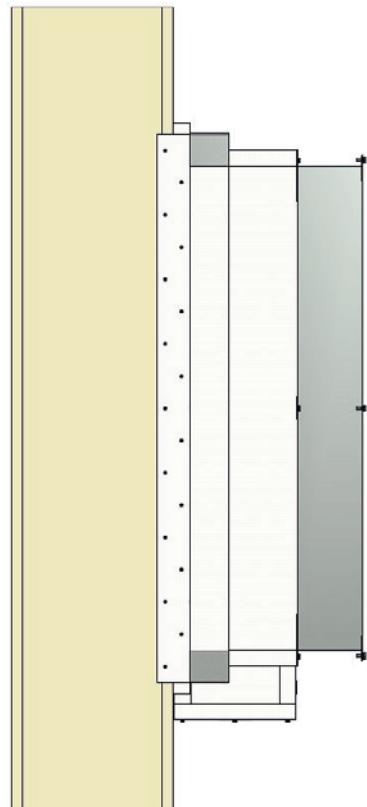
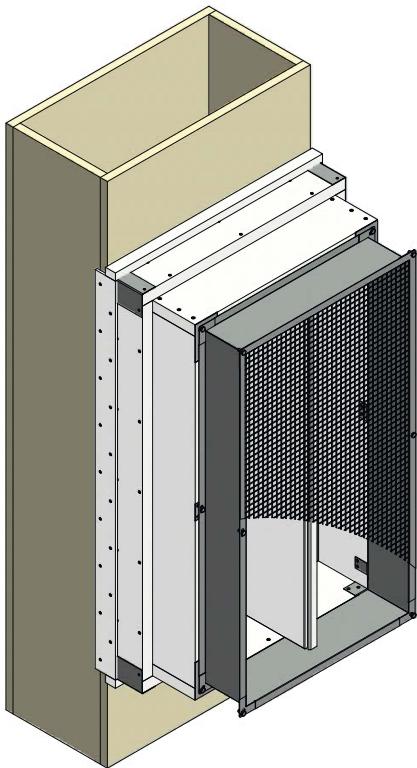
Spacing of  $x \geq 20 \text{ mm}$  must remain between the opened damper blade and the casing wall.

All dimensions in mm

# EK90 smoke control dampers

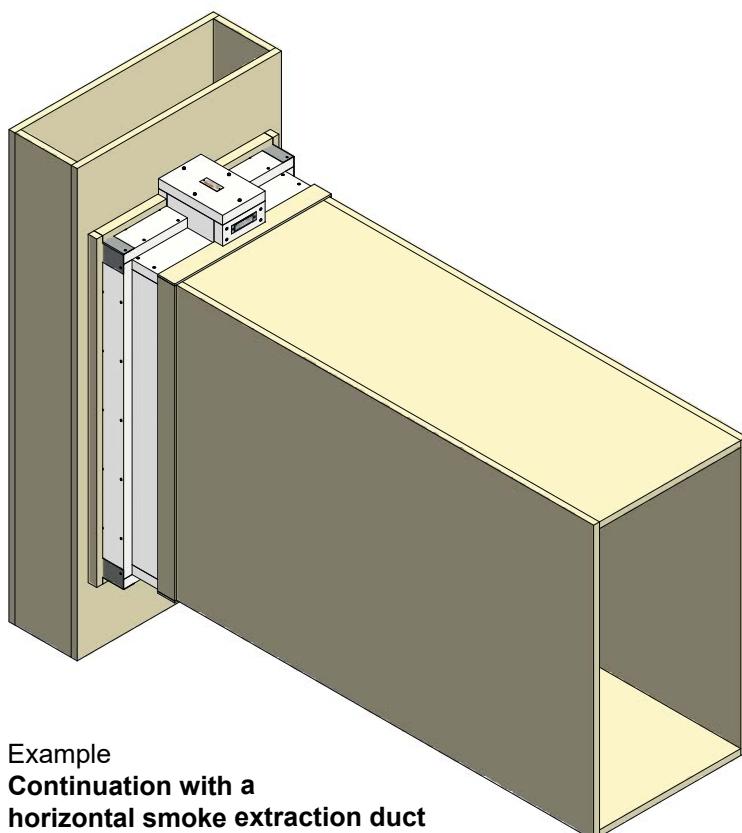
Lateral mounting on smoke extraction ducts (4)

## Mounting on vertical smoke extraction ducts



Example:

**Smoke control damper with protective grille**



- Smoke control dampers must be connected to vertical smoke extraction ducts in the same way as to horizontal ducts! ⇒ See pages 23 to 26
- For information on suspending or attaching the smoke control dampers ⇒ see page 28
- Freedom of movement of the damper blade must be ensured when mounting protective grilles. ⇒ See damper blade excess length on page 4

Extensions in the design of smoke extraction ducts made from sheet steel can be used as required.

Example

**Continuation with a horizontal smoke extraction duct**

All dimensions in mm

# EK90 smoke control dampers

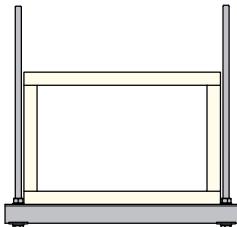
Fire-resistant suspended structures and attachments

## Dimensioning of tie rods as per DIN 4102-4

**Maximum permissible weights G** on suspended structures with steel threaded rods with a fire resistance period of 90 bis 120 minutes:

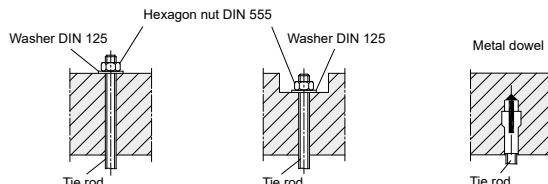
| Size<br>[mm <sup>2</sup> ] | A <sub>s</sub><br>for 1 pc. | Weight load G [kg]<br>for 1 pair |
|----------------------------|-----------------------------|----------------------------------|
| M8                         | 36.6                        | 22                               |
| M10                        | 58.0                        | 35                               |
| M12                        | 84.3                        | 52                               |
| M14                        | 115                         | 70                               |
| M16                        | 157                         | 96                               |
| M18                        | 192                         | 117                              |
| M20                        | 245                         | 150                              |
|                            |                             | 300                              |

A<sub>s</sub>: Stress cross-section as per DIN 13



- Tie rods must fit tightly against the walls of the smoke extraction ducts or against the casing of the smoke control dampers. Otherwise, they will need to be clad. This also applies to tie rods that are longer than 1.5 m.
- Cross-members must be at least U50 as per DIN 1026.
- Shims can be used as required.

## Attachment of tie rods in rigid ceilings

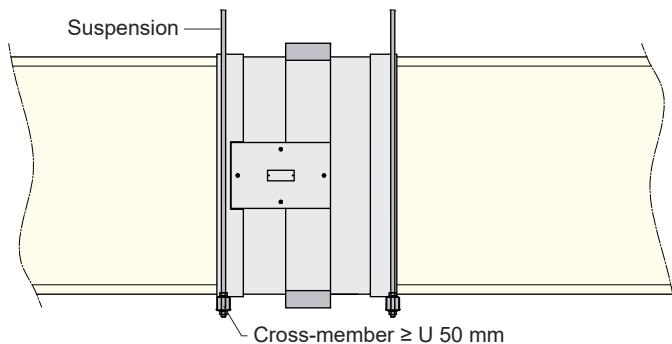


Dowels must be suitable and approved for fire protection, and installed accordingly.

## Example:

Suspension of an EK90 smoke control damper together with connected smoke extraction ducts.

Weights of EK90 smoke control dampers → see page 17



## Attach shear protection brackets B with dowels.

⇒ See page 19

Dowels for a 90-minute fire resistance period are required.

The following are suitable, for example:

- **Concrete:**

Fischer bolt anchor FAZ - II 8

- **Aerated concrete:**

Fischer anchor M8 type FPX - I

- **Concrete, aerated concrete, masonry:**

Fischer injection mortar systems FIS V, VW, VS together with the anchor rods FIS A – M8

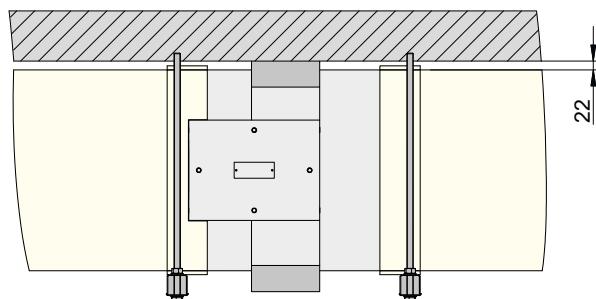
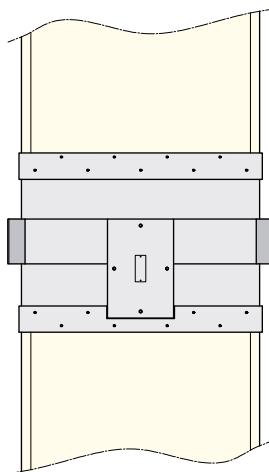
Shims can be used if required.

## Example

EK90 smoke control dampers between vertical smoke extraction ducts are generally supported by the lower sections of the smoke extraction duct.

Fastenings for the smoke control dampers must therefore match the fastenings for the smoke extraction ducts.

The specifications of the smoke extraction duct manufacturer must be observed.



## Example

EK90 smoke control dampers in versions NL or NR directly underneath ceilings. ⇒ See page 29

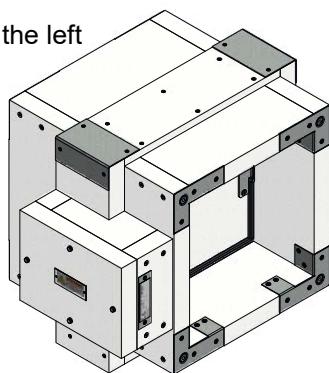
The specifications of the smoke extraction duct manufacturer must be observed.

# EK90 smoke control dampers

Option: NL and NR versions for reducing spacing underneath rigid ceilings

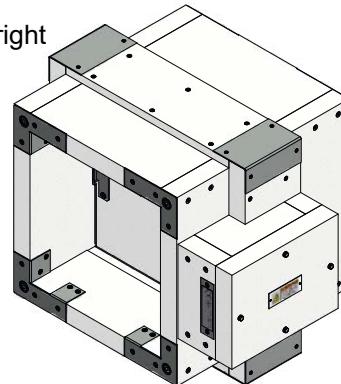
## NL Version

Motor drive on the left

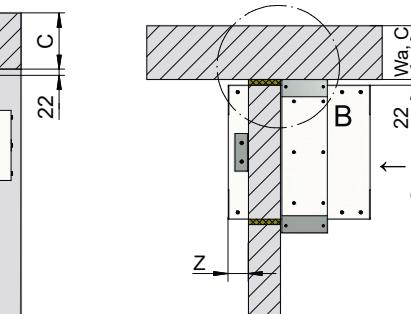
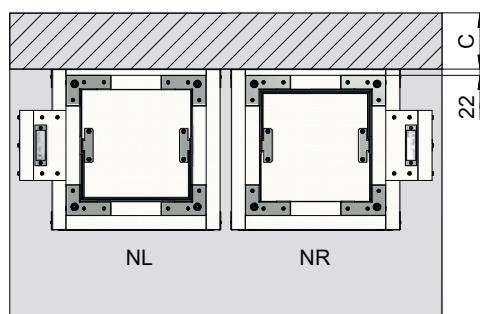
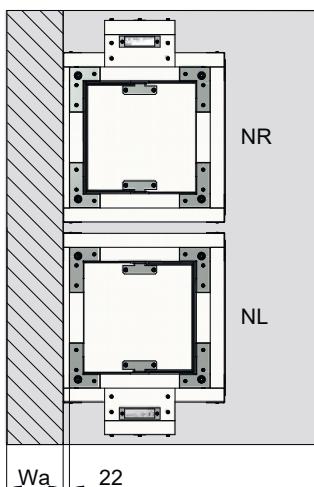


## NR Version

Motor drive on the right

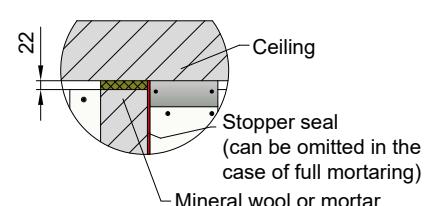


## Installation in rigid walls



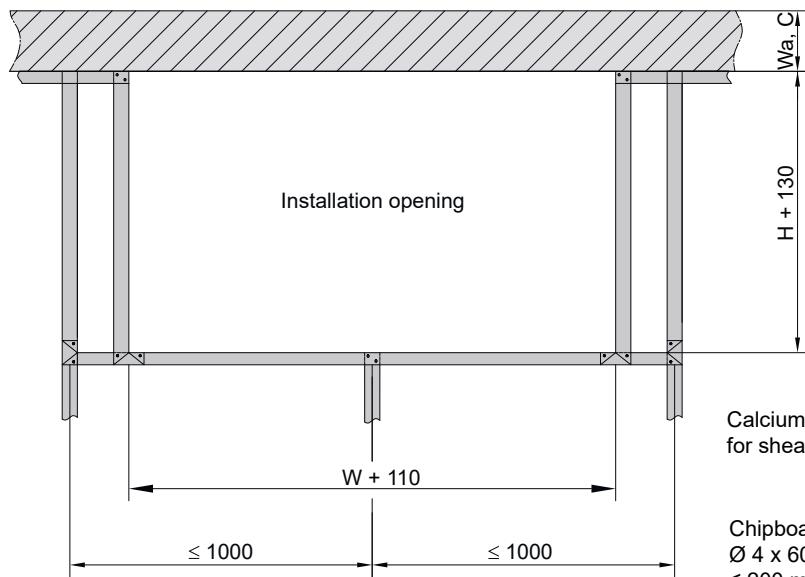
View of the operation side (in direction of installation)

Details for installation and  
shear protection brackets  
→ see pages 18 to 20

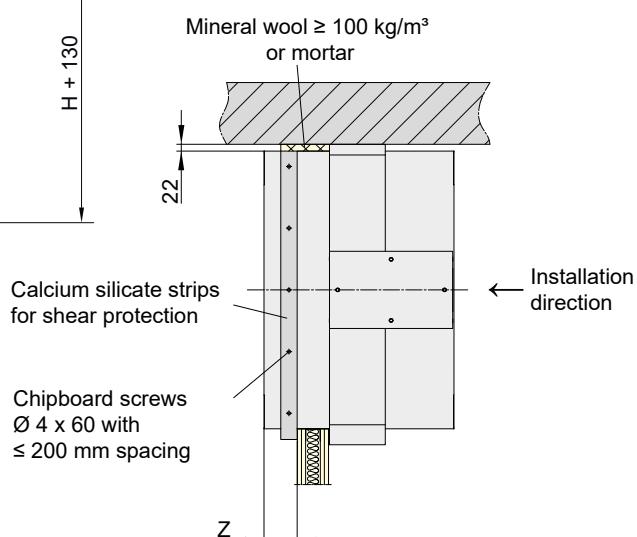


When damper blades are positioned vertically, versions NL and NR can also be positioned vertically on a solid wall.

## Installation in metal stud walls



Details for installation and strips for shear protection  
→ see pages 18 to 20



# EK90 smoke control dampers

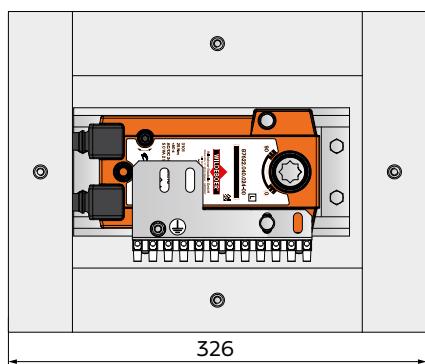
## Electrical connection (1) Motor drives

The **electric motor drive** is located to the side of the smoke control damper, inside a calcium silicate **casing**.

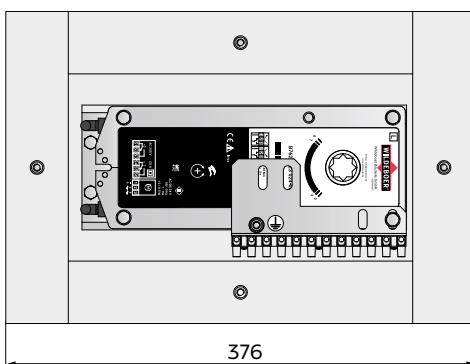
The motor drive can be accessed by unscrewing the casing cover. Electrical cables must be routed through the walls of the casing for the motor drive on site.

Holes must be positioned for these as shown and dimensioned to suit the diameter of the cables.

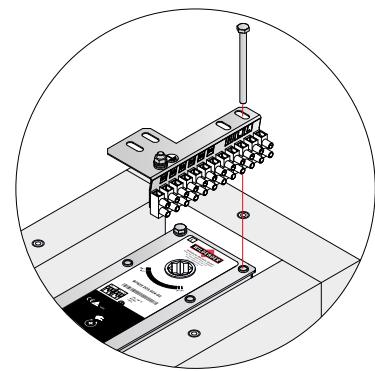
**Motor drives for EK90 smoke control dampers**,  
shown with the optional terminal strip for easy electrical connection.



Motor drive for standard design with  
heights  $H = 200$  to  $600$  mm

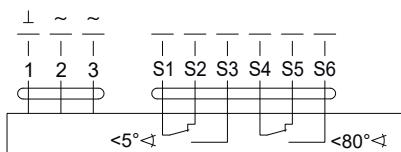


Motor drive for standard design with heights  
 $H > 600$  up to  $800$  mm and for special design EA



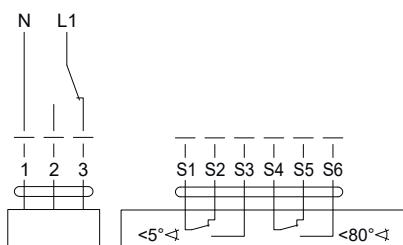
**Option:** terminal strip for  
electrical connection.

Electrical connection  
**Motor drives M1**  
**24 V AC/DC**



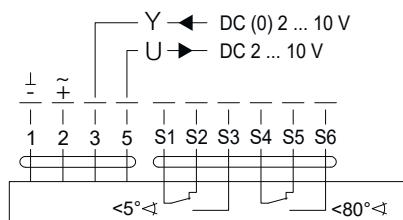
- 1 = Ground, neutral
- 2 = Rotation direction "OPEN"
- 3 = Rotation direction "CLOSED"

Electrical connection  
**Motor drives M2**  
**230 V AC**

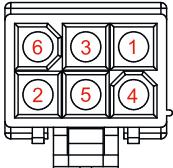
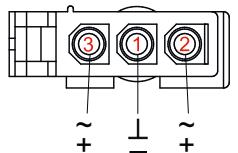


Schematic circuit diagram:  
Limit switch for "CLOSED position" actuated in  $< 5^\circ$  angle, smoke control damper is  
in the "CLOSED position".

Electrical connection  
**Motor drives M3 (continuously variable)** **24 V AC/DC**  
(up to  $H \leq 600$  only)



- In angle position  $< 5^\circ$ , the limit switch for the "CLOSED position" (contact S1 with S2) of the smoke control damper is actuated.
- In angle position  $\geq 80^\circ$ , the limit switch for the "OPEN position" (contact S4 with S6) of the smoke control damper is actuated at angle position  $\geq 80^\circ$ .
- In angle position  $> 5^\circ$  and  $< 80^\circ$ , the intermediate position is signalled (contact S1 with S3 and contact S4 with S5).



S1 ... S6

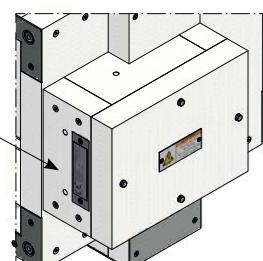
Configuration of AMP connectors on  
the motor drives 24 V AC/DC

### Casing for the motor drive

Recommended **hole positions** for  
inserting the electrical **cables** are  
labelled at the factory.

Holes must be made as required on  
site.

Hole diameter = cable diameter



**Additional casing for control units** ⇒ see page 32

# EK90 smoke control dampers

## Electrical connection (2) Notes for electrical installation and power supply

Depending on the height H of the smoke control damper, motor drives with difference performance data can be fitted:

| Motor drive | Supply voltage | Connecting duct, operation/dimensioning |              |                   | Run time | Power consumption, dimensioning/switching capacity limit switch |  |  | Protection rating |
|-------------|----------------|---|--------------|-------------------|----------|---|--|--|-------------------|
|             |                | H ≤ 600 mm                              | H > 600 mm   | Special design EA |          | H ≤ 600 mm  | H > 600 mm                               | Special design EA                        |                   |
| M1          | 24V AC/DC      | 2.5 W / 5 VA                            | 12 W / 18 VA | 12 W / 18 VA      | ≤ 60 s   | I <sub>max</sub> 8.2 A @ 5 ms                                   | I <sub>max</sub> 8.2 A@5 ms / 1 mA...6 A | I <sub>max</sub> 8.2 A@5 ms / 1 mA...6 A | IP54              |
| M2          | 230 V AC       | 3.5 W / 6 VA                            | 8 W / 15 VA  | 8 W / 15 VA       | ≤ 60 s   | I <sub>max</sub> 4 A@5 ms / 1 mA...3 A                          | I <sub>max</sub> 7.9 A@5 ms / 1 mA...6 A | I <sub>max</sub> 7.9 A@5 ms / 1 mA...6 A | IP54              |
| M3          | 24V AC/DC      | 3 W / 5.5 VA                            | -            | -                 | ≤ 60 s   | I <sub>max</sub> 8.2 A @ 5 ms                                   | -  | -  | IP54              |

### Instructions on electrical installation

- Smoke control dampers should also be able to open and close when exposed to fire.
- For this reason, an electrical power supply that functions in the event of fire and has suitable connection cables to the smoke control dampers is a requirement.

E90 class electrical cables with functional integrity of 90 minutes must be used. The minimum requirement is functional integrity of 30 minutes and E30 classification.

However, the classification tests relate only to short-circuit resistance and power failure in the event of fire.

- The electrical resistance in the connection cable increases when exposed to fire because of the increased temperature; up to 2.6-fold after 30 minutes and up to 4.6-fold after 90 minutes. As a result, the electrical voltage drop increases while the remaining voltage on the motor drives falls.

When dimensioning the connection cables, this must be factored in with suitably large cross-sections, shorter lengths or a higher electrical operating voltage.

The same applies to connection cables for operating voltages with multiplexed data transmission; for example, AS-i and other BUS systems.

Otherwise, smoke control dampers would not be able to open or close as they are supposed to in the event of fire.

- Correct dimensioning of the connection cables and operational safety of data transmission cannot be stressed enough! Likewise, attention must be paid to the prescribed type of routing and installation for electrical cables and their functional integrity!
- It is generally recommended that smoke control dampers are used for 230 V AC and connected via E90 cables with 1.5 mm<sup>2</sup> conductor cross-section.

The length of the E90 cables can be 250 m or more. Otherwise, only connection cables a few metres long might be possible.

Additional switching equipment should be installed in a fireproof room or switch cabinet.

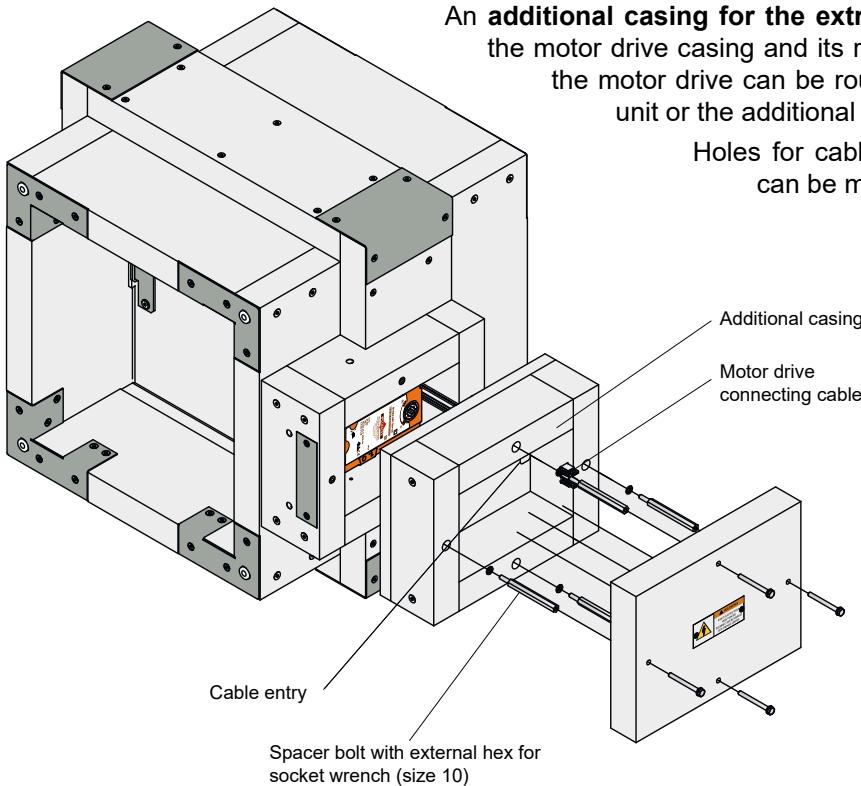
### Power supply

- Mechanical **systems for smoke extraction** require a reliable power supply in the event of fire.

A power supply, as provided by power generation equipment (backup power), in addition to the public power grid conforms to requirements under public law.

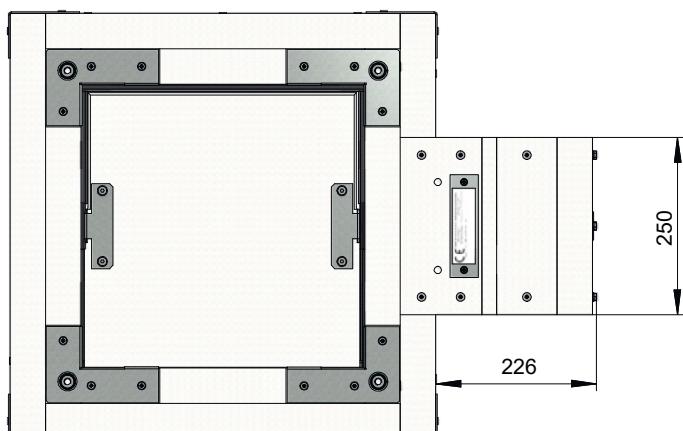
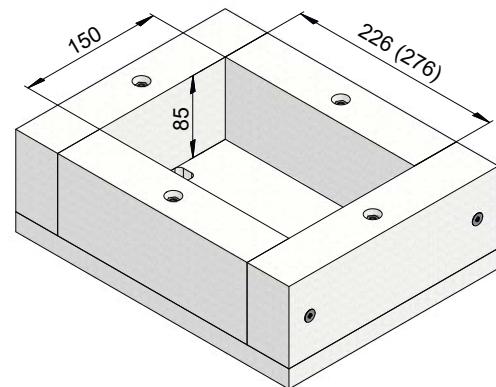
# EK90 smoke control dampers

Electrical connection (3) Option: Additional casing for control units



An additional casing for the extra control units can be installed between the motor drive casing and its removable cover. The connection cables of the motor drive can be routed into this and connected to the control unit or the additional electrical cables.

Holes for cables through the walls of the extra casings can be made on site.



The clear dimension of the additional casing depends on the type of EK90 smoke control damper:

| Design            | Heights H [mm] | Clear dimension [mm] |
|-------------------|----------------|----------------------|
| Standard design   | H ≤ 600        | 226                  |
|                   | H > 600        | 276                  |
| Special design EA | all            | 276                  |

These additional casings can also be retrofitted on site on request! They should then be ordered with either dimension 226 or 276!

*On request:* Designs that differ from clear dimension = 85 mm.

Please follow the instructions for routing and dimensioning cables!

⇒ See page 31

# EK90 smoke control dampers

Function in smoke extraction systems - installation - functional testing/servicing

## Function of smoke extraction systems with EK90 smoke control damper, EK92 series

- EK90 smoke control dampers, EK92 series, are suitable for smoke extraction systems and for combined systems for smoke extraction and building ventilation.

They supersede the former EK90 smoke control dampers in accordance with approval Z-78.2-7 and EK90 smoke control dampers with ventilation function in accordance with approval Z-78.3-104.

- EK90 smoke control dampers, series EK92, in **systems only for smoke extraction** are usually closed.

In the event of fire, all of them or only those required can be opened from the outset. As the fire develops and smoke is released, other ones can be opened and the previously open ones can be closed again.

- In **combined systems for smoke extraction and building ventilation**, the EK90 smoke control dampers, EK92 series, required for building ventilation are usually open, whereas others are closed.

In the event of fire, the smoke control dampers required for smoke extraction are opened or are kept open, while others are closed or remain closed.

- As the fire develops and smoke is released, other EK90 smoke control dampers, series EK92, can be opened and previously opened ones can also be closed. This function is verified with HOT classification.
- EK90 smoke control dampers, series EK92, can still be opened 25 minutes after the onset of full fire exposure. This function is verified with MA classification.

## Installation

- **EK90 smoke control dampers, series EK92, must be installed and operated in accordance with this user manual and in compliance with all other regulations.**

In addition, smoke control dampers must be installed tension-free and appropriately aligned.

Air flows in the smoke extraction ducts must not adversely affect the motor torques acting on the damper blade.

Installation can be in a horizontal or vertical axis position.

Structural requirements and factors must be verified and observed on site, as well as relevant manufacturer specifications.

- Smoke control dampers for outside air supply must be installed such that heavy moisture penetration is avoided, in particular in the event of frost exposure.
- Assembly, electrical wiring, connections etc. must be done on site.
- Smoke extraction ducts and electrical equipment must be suitable, and must be correctly installed and connected.
- Inspection openings must be provided on site in the smoke extraction ducts, if necessary.

## Functional testing/servicing

- Under German regulations, smoke extraction systems must be serviced and kept ready for operation by the owner. The smoke control dampers must be tested for correct functioning at six-month intervals. If they pass successive tests without any defects, the next test may be carried out after a year.

- **Operating instructions** for the EK90 smoke control dampers, EK92 series, are available on the Internet at [www.wildeboer.de](http://www.wildeboer.de).

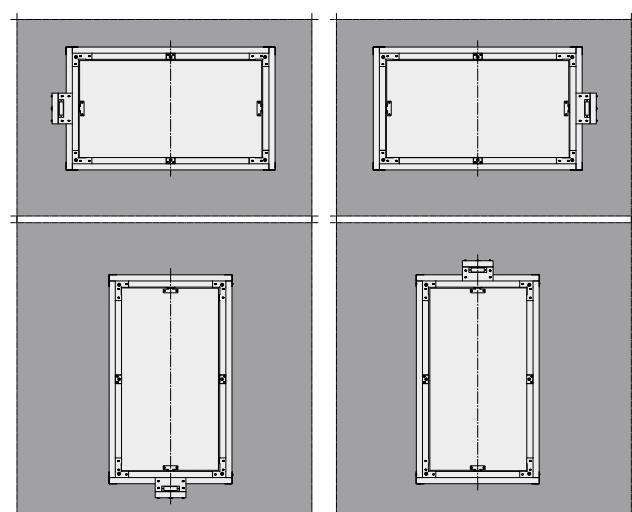
In general, actuating (closing and opening) the smoke control dampers is sufficient for functional testing. This can be done remotely.

EK90 smoke control dampers do not generally require any maintenance work.

Smoke extraction systems should be cleaned according to operating conditions, and this also includes the smoke control dampers.

Repairs or service work are required in the event of malfunctions.

Original spare parts must be used.



Casings must be installed in installation openings in walls such that they lie flush at the bottom as far as possible. If remaining gaps are filled with mineral wool, a melting point of  $\geq 1000^{\circ}\text{C}$  must be verified for this material. Shear protection brackets must be installed appropriately.

# EK90 smoke control dampers

## Ordering data

**EK92 -**

### Size:

- W [mm] x H [mm] x L [mm]

- Standard design

L = 500 mm if H ≤ 600 mm

with L1 = 330 mm and L2 = 170 mm.

L = 550 mm if H > 600 mm

with L1 = 380 mm and L2 = 170 mm.

If smaller or longer

lengths L are ordered, then

L1 = 330 mm or 380 mm is supplied  
and L2 modified accordingly.

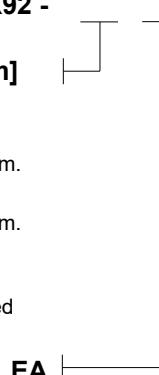
- Option: Special design

L = 550 mm

H = 200 mm to 600 mm and with  
L1 = 380 mm and L2 = 170 mm.

If smaller or longer lengths L  
are ordered, then L1 = 380 mm

is supplied and L2 modified accordingly.



Available in **5 mm increments**:

- clear widths **W** = 200 mm to 1500 mm

- clear heights **H** = 200 mm to 800 mm

- Lengths:

| <b>L = L1 + L2</b> |            |
|--------------------|------------|
| H ≤ 600            | H > 600    |
| 350 to 850         | 400 to 850 |

including

| <b>L1</b>  |            |
|------------|------------|
| H ≤ 600    | H > 600    |
| 330 to 480 | 380 to 530 |

and

| <b>L2</b> |           |
|-----------|-----------|
| H ≤ 600   | H > 600   |
| 20 to 370 | 20 to 320 |

- lengths Special design EA

### Option: Special length L1 [mm]

L1 = 380, 400, 425, 450, 475, 500, 525 mm;

L = L1 + L2 must be ordered!

⇒ See page 4

### Option: Variant with reduced frame height for

- motor drive on the left
- motor drive on the right

**NL**      **NR**

⇒ See page 29

### Motor drive

- 24 V AC/DC with AMP connector **M1**
- 230 V AC **M2**
- 24 V AC/DC - SR (up to H ≤ 600) **M3**

⇒ See page 30

### Options:

- Terminal strip for motor drive

⇒ See page 30

**KL**

- Additional casing for control units **Z**

⇒ See page 32

**A**      **B**

### With shear protection bracket

- for non-operation side attachment

• for operation attachment  
in rigid walls and ceilings;  
otherwise they are not required.  
Shear protection brackets

A are supplied as standard!

### What is included:

- 2 x support bearings for gap width s = 25 mm
- Stopper seal with adhesive
- 1 set of shear protection brackets A or B, if specifically ordered.

**Protective grille** made from 1 mm galvanized sheet steel  
with 20 mm mesh size and approx. 70% free cross-section.

Available dimensions: W x H ⇒ see pages 23 and 27

The length L2 comprises the thickness of  
the wall Wa or ceiling C and the casing  
excess length Z. **L2 = Wa (C) + Z**

⇒ See pages 4, 18, 19, 20 and 21

Generally with Z = 100 mm, shear  
protection brackets A and strips for  
shear protection can be mounted on the  
casing of the smoke control dampers,  
and all smoke extraction ducts can be  
connected at the same time.

⇒ For shorter "Z" dimensions, see page references  
above!

### Lengths for double-sided mounting of protective grilles

Without excess lengths XL1 and XL2 ⇒ see page 4

| for heights H | length L | length L1 | length L2 |
|---------------|----------|-----------|-----------|
| up to 400 mm: | 450 mm   | 330 mm    | 120 mm    |
| up to 500 mm: | 550 mm   | 380 mm    | 170 mm    |
| up to 550 mm: | 600 mm   | 400 mm    | 200 mm    |
| up to 600 mm: | 650 mm   | 425 mm    | 225 mm    |
| up to 650 mm: | 700 mm   | 450 mm    | 250 mm    |
| up to 700 mm: | 750 mm   | 475 mm    | 275 mm    |
| up to 750 mm: | 800 mm   | 500 mm    | 300 mm    |
| up to 800 mm: | 850 mm   | 525 mm    | 325 mm    |

All dimensions in mm

# EK90 smoke control dampers

## Specification text

Maintenance-free smoke control dampers as per EN 12101-8 with Declaration of Performance and CE marking, up to 90 minutes fire resistance period and fire classification EI 90( $v_{edw}$  -  $h_{odw}$  - i ↔ o) S1500 C<sub>mod</sub> HOT400/30 MA multi, for mechanical systems for smoke extraction, ventilation and air supply to multiple or individual fire zones, fire compartments or rooms. Maintenance-free: The actuator unit is fully enclosed, which means that no cleaning or regular lubrication and adjustment is needed to maintain function. Casing and damper blade made from abrasion-proof calcium silicate that is suitable for high temperatures. With edge protection profiles, connection holes, stainless steel drive axles, and electric motor drive for 24 V AC/DC or 230 V AC. Special seals for opening and closing the smoke control dampers during exposure to fire. For installation in rigid walls and ceilings with mortar or mineral wool, in flexible walls and on or between smoke extraction ducts.

..... pcs. Width: ..... mm  
 Height: ..... mm  
 Length: ..... mm  
 Volume flow: ..... m<sup>3</sup>/h  
 Pressure drop: ..... Pa  
 Sound power level: ..... dB(A)

### Fire classification:

EI 90( $v_{edw}$  -  $h_{odw}$  - i ↔ o) S1500 C<sub>mod</sub> HOT400/30 MA multi

Environmental Product Declaration as per ISO 14025 and EN 15804

Manufacturer: WILDEBOER

Type: EK90, series EK92

deliver: .....  
 install: .....

Protective grille for smoke control dampers without connecting ducts for the protection of flow-through openings. Stamped with 20 mm mesh size made from at least 1 mm galvanized steel.

..... pcs. Width: ..... mm  
 Height: ..... mm  
 Manufacturer: WILDEBOER

deliver: .....  
 install: .....

INNOVATIVE • PRACTICAL • ECONOMICAL

**WILDEBOER®**

Factory - Administration  
Telephone: +49 (0)4951 - 950 - 0  
Fax: +49 (0)4951 - 950 - 27120  
E-mail: info@wildeboer.de  
Internet: www.wildeboer.eu

HAMBURG

WEENER / EMS

BERLIN

Utrecht

KÖLN

HANNOVER

**WILDEBOER®**

Utrecht office  
Telephone: +31 30 767 0150  
E-mail: info@utrecht.wildeboer.eu

FRANKFURT

LEIPZIG

Leipzig office  
Telephone: +49 (0)34444 - 310 - 0  
Fax: +49 (0)4951 - 950 - 27298  
E-mail: info@leipzig.wildeboer.de

STUTTGART

MÜNCHEN

**WILDEBOER®**

Ulm office  
Telephone: +49 (0)7392 - 9692 - 0  
Fax: +49 (0)4951 - 950 - 27299  
E-mail: info@ulm.wildeboer.de

ULM

TAKE ADVANTAGE OF OUR STRENGTHS!

**WILDEBOER®**

COMPONENTS FOR VENTILATION + AIR CONDITIONING

air distribution fire protection noise protection

building control systems