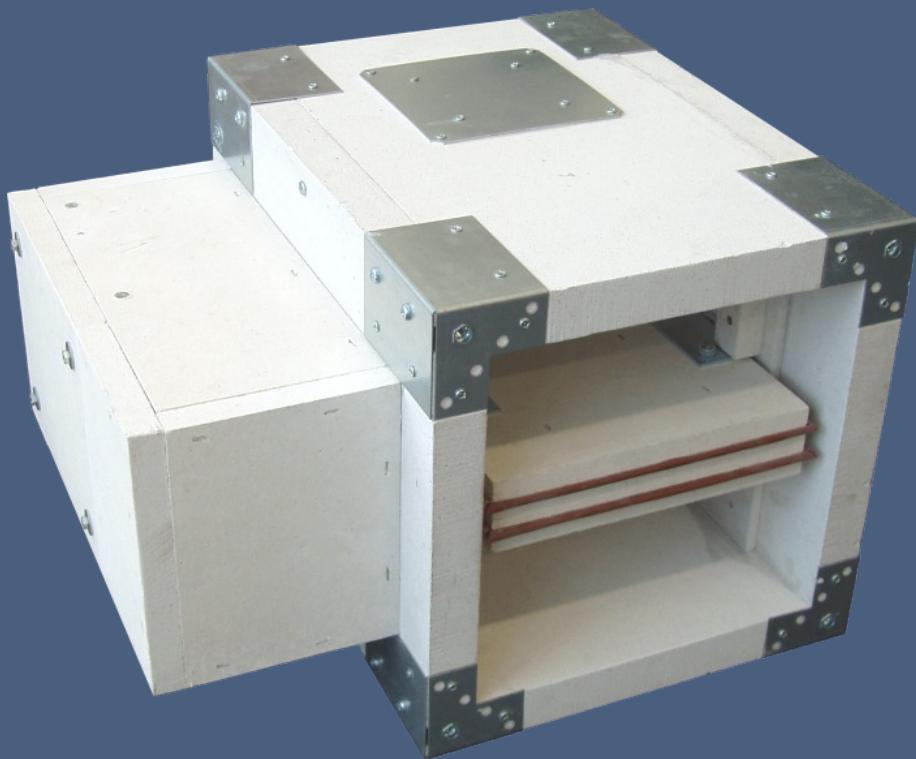


## SEDM

### Multi compartment smoke control damper

Technical Documentation

Installation, Commissioning, Operation, Maintenance and Service Manual



CE  
1391

MANDÍK®

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These technical specifications state a row of manufactured sizes and models of Multi compartment smoke control damper SEDM. It is valid for production, designing, ordering, delivery, maintenance and operation.

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# I. GENERAL

## Description

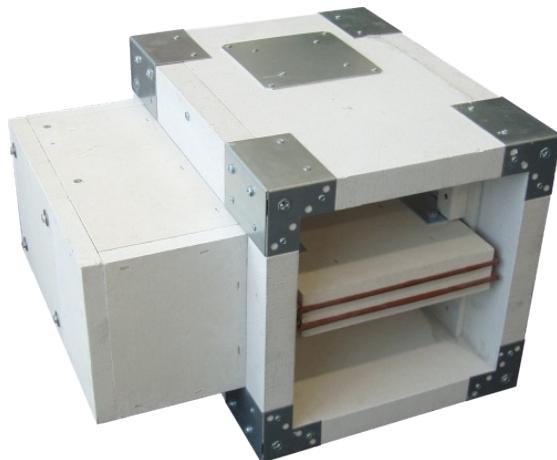
Dampers - SEDM are designed into an inlet or extract smoke ventilation system. The dampers are designed either to close to provide compartmentalization or to open (for fresh air inlet) or to allow removal of the heat and combustible products from a fire in the affected fire zone/compartment.

The damper blade is controlled by electrical actuating mechanism.

Dampers are fire resistant and are intended for systems with manual or automatic activation.

Dampers are designed for using in fire compartments that can be connected to the smoke exhaust ducts (tested according to EN 1366-8) or they can be installed in or on the construction of the fire compartment.

Dampers can be delivered with or without flange(s), with cover grille(s).



*Damper SEDM*

### Damper characteristics

- CE certified acc. to EN 12101-8
- Tested in accordance with EN 1366-10
- Classified acc. to EN 13501-4
- External Casing leakage class C, Internal leakage min. class 2 acc. to EN 1751
- Cycling test in class C<sub>mod</sub> acc. to EN 12101-8
- Certificate of constancy of performance No. 1391-CPR-XXXX/XXXX
- Declaration of Performance No. PM/SEDM/01/XX/X
- Hygienic assessment - Report No. 1.6/pos/19/19c

| Classification of Dampers   |   |   |
|---|---|---|
| Supporting construction   | Installation type   | Classification  |
| Horizontal or vertical smoke extraction ducts                         | Connection to single or multi compartment smoke extraction ducts tested according to EN 1366-8 or 9 | EI 120 (h <sub>od</sub> -v <sub>ed</sub> i↔o) S1000C <sub>mod</sub> HOT 400/30MAmulti*  |
| In solid/gypsum plasterboard wall construction, min. thickness 100 mm | Ablative Coated Batt  | EI 90 (v <sub>ew</sub> i↔o) S1500C <sub>mod</sub> HOT 400/30MAmulti*<br>EI 120 (v <sub>ew</sub> i↔o) S1000C <sub>mod</sub> HOT 400/30AAmulti  |
| In solid ceiling construction, min. thickness 150 mm                  |   | EI 120 (v <sub>ew</sub> i↔o) S1500C <sub>mod</sub> HOT 400/30MAmulti*<br>EI 120 (v <sub>ew</sub> i↔o) S1000C <sub>mod</sub> HOT 400/30AAmulti |
|   |   | EI 120 (h <sub>ow</sub> i↔o) S1500C <sub>mod</sub> HOT 400/30MAmulti*   |

\* In practice dampers are not in the open position at the beginning of smoke threat.

### Working conditions

- Exact damper function is provided under the following conditions
  - maximum air velocity 15 m/s
  - underpressure max. -1500 Pa or overpressure max. 500 Pa
- Dampers are designed for installation in vertical or horizontal openings of fire separating constructions.
- Dampers are designed for macroclimatic areas with mild climate according to EN IEC 60 721-3-3 ed.2., class 3K22. (Environment 3K22 is typically protected place with regulated temperature)
- Temperature in the place of installation is permitted to range from -30°C to +50°C.

## II. DESIGN

### Design with actuating mechanism

#### Design .44 and .54

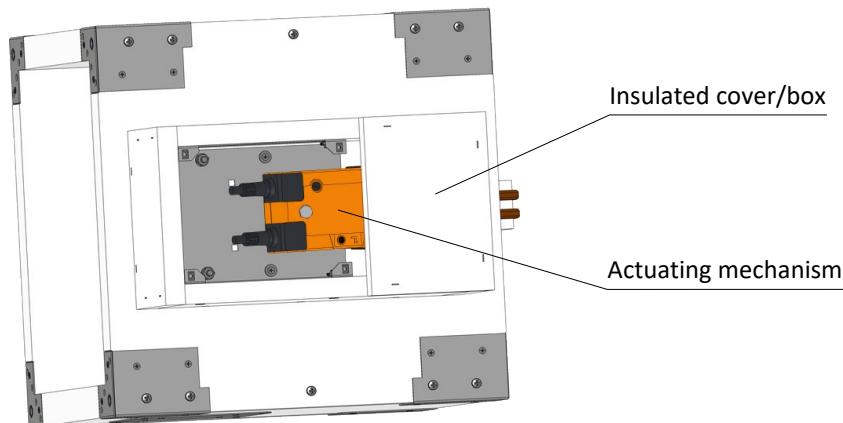
- Belimo actuators are used for dampers, series BEN, BEE, BE for 230V AC resp. 24 V AC/DC, Schischek InMax 50.75-S actuators (universal 24V or 230V supply) are used for large size of dampers.
- After connection to the power supply voltage, the actuator moves the damper blade to the "OPEN" position or "CLOSED" (according to the corresponding connection, see wiring diagram). If the power supply is interrupted, the actuator stops at the current position. The signalling of the "OPEN" and "CLOSED" damper blade positions is ensured by two built-in fixed "potential-free" end-limit switches.

#### Design .65

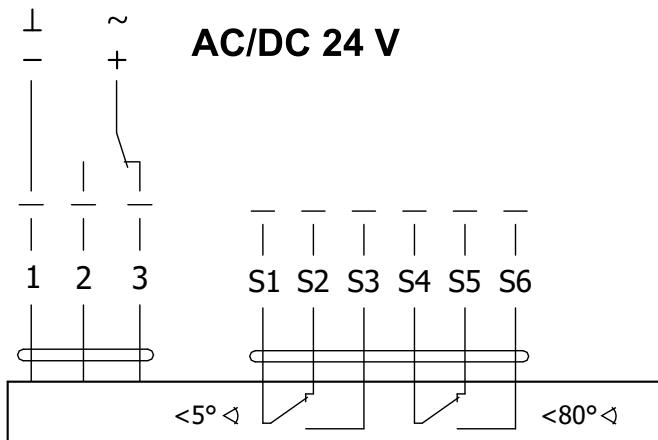
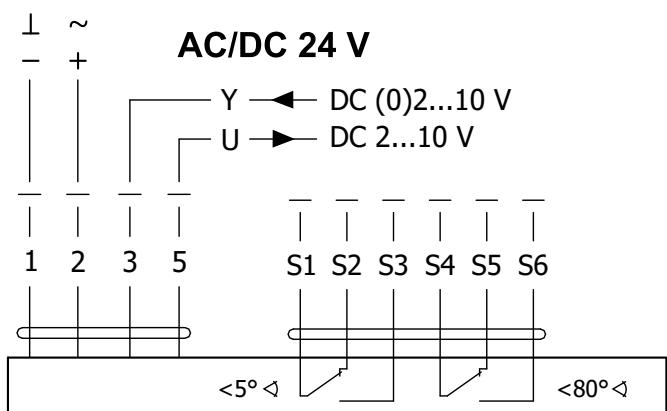
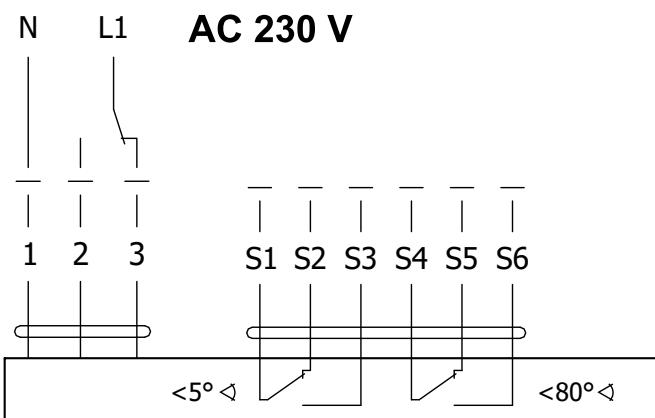
- Belimo modulating actuators, BEN (BEE)-SR series for 24V AC/DC are specially designed for remote control of smoke control dampers. The position of the damper blade is adjustable by means of control voltage 0 (2)...10V DC.
- The signalling of the "OPEN" and "CLOSED" damper blade positions is ensured by two built-in fixed "potential-free" limit switches.
- The actuator for operating the damper blade is mounted in an insulated cover/box. It is accessible after removing

- The actuator for operating the damper blade is mounted in an insulated cover/box. It is accessible after removing the cover lid. The electrical connection of the actuator is made with a non-flammable cable (or a cable located in the adjoining cable duct), which passes through an opening made in the wall of the insulated cover/box when installing the damper or when connecting the actuator power cable. The power and control cable must be Cat 3 as BS EN8519.

the cover lid. The electrical connection of the actuator is made with non-flammable cables (or cables located in the adjoining cable duct), which pass through an opening made in the wall of the insulated cover when installing the damper or when connecting the power cables of the actuator. The power and control cable must be Cat 3 as BS EN8519.



*Design .44, .54 and .65*

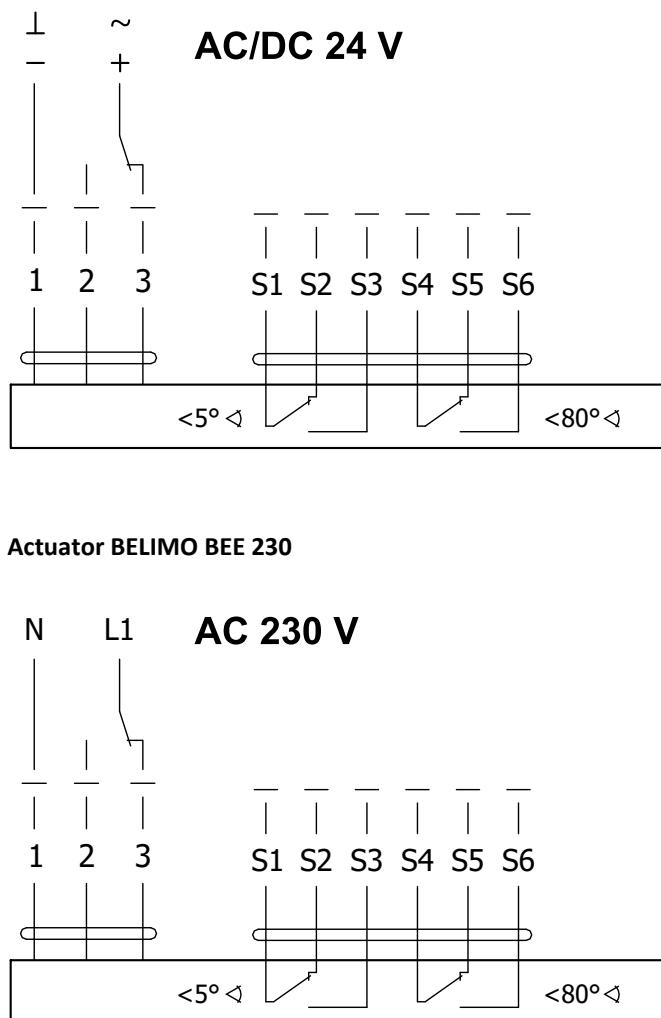
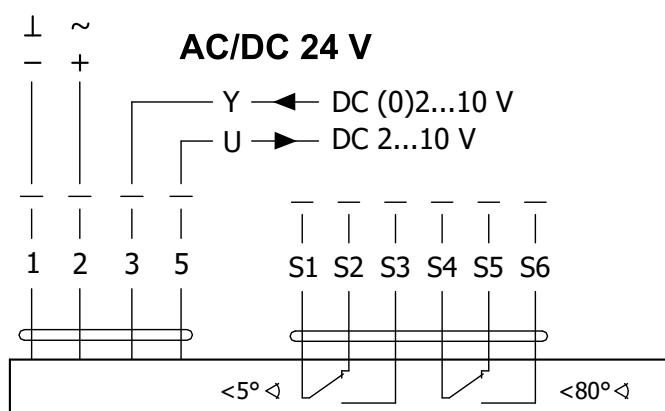
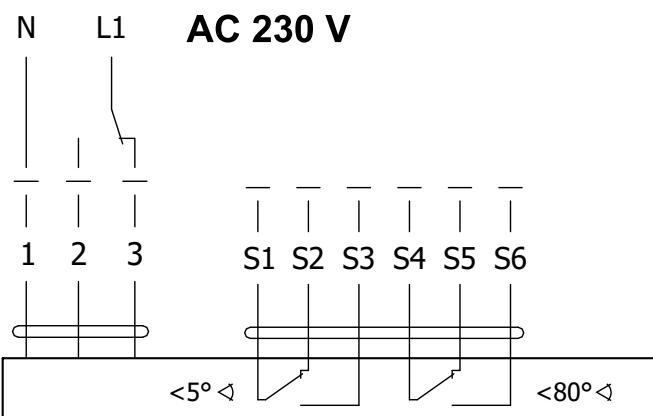
**Actuator BELIMO BEN 24(-ST)****Actuator BELIMO BEN 24-SR****Actuator BELIMO BEN 230**

Extended leads are not possible with smoke control dampers as the belimo cables are not fire rated to a high Field wiring must be brought into and terminated within the damper housing. For more detail → see pages 55 to 57, paragraph Assembly.

**Actuator BELIMO BEN 24(-ST), BEN 24-SR, BEN 230**

| Actuator BELIMO - 15 Nm                                   | BEN 24(-ST)   | BEN 24-SR*   | BEN 230  |
|---|---|--|--|
| Power voltage   | AC/DC 24 V<br>50/60Hz   | AC/DC 24 V<br>50/60Hz  | AC 230 V<br>50/60Hz  |
| Power consumption - in operation<br>- in the end position | 3 W<br>0,1 W  | 3 W<br>0,3 W   | 4 W<br>0,4 W   |
| Dimensioning  | 6 VA (Imax 8,2 A @ 5 ms)  | 6,5 VA (Imax 8,2 A @ 5 ms)   | 7 VA (Imax 4 A @ 5 ms)   |
| Protection class  | III   | III  | II   |
| Degree of protection                                      | IP 54   |  |  |
| Adjustment time for 95°                                   | < 30 s  |  |  |
| Ambient temperature                                       | -30°C ... +55°C   |  |  |
| Storage temperature                                       | -40°C ... +80°C   |  |  |
| Connection - drive<br>- auxiliary switch                  | Cable 1 m, 3 x 0,75 mm <sup>2</sup><br>Cable 1 m, 6 x 0,75 mm <sup>2</sup><br>(BEN 24-ST) with plug<br>connectors | Cable 1 m, 4 x 0,75 mm <sup>2</sup><br>Cable 1 m, 6 x 0,75 mm <sup>2</sup> | Cable 1 m, 3 x 0,75 mm <sup>2</sup><br>Cable 1 m, 6 x 0,75 mm <sup>2</sup> |

\* Only available for 24V and selected damper sizes

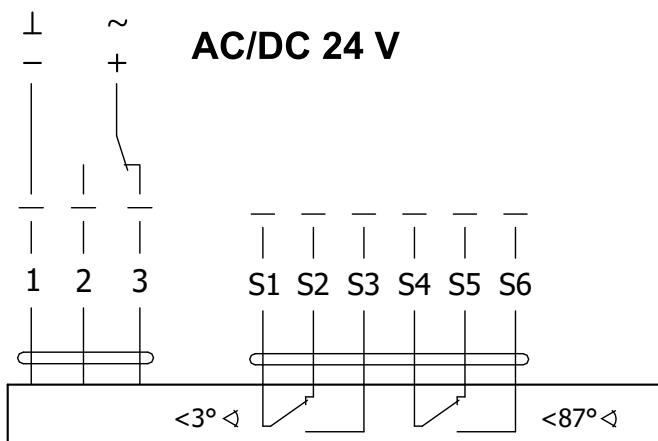
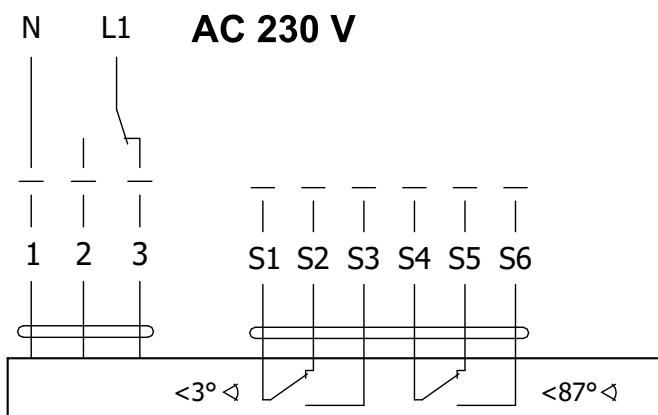
**Actuator BELIMO BEE 24(-ST)****Actuator BELIMO BEE 24-SR****Actuator BELIMO BEE 230**

Extended leads are not possible with smoke control dampers as the belimo cables are not fire rated to a high Field wiring must be brought into and terminated within the damper housing. For more detail → see pages 55 to 57, paragraph Assembly.

**Actuator BELIMO BEE 24(-ST), BEE 24-SR, BEE 230**

| Actuator BELIMO - 25 Nm                                   | BEE 24(-ST)  | BEE 24-SR*   | BEE 230  |
|---|--|--|--|
| Power voltage   | AC/DC 24 V<br>50/60Hz  | AC/DC 24 V<br>50/60Hz  | AC 230 V<br>50/60Hz  |
| Power consumption - in operation<br>- in the end position | 2,5 W<br>0,1 W   | 3 W<br>0,3 W   | 3,5 W<br>0,4 W   |
| Dimensioning  | 5 VA (Imax 8,2 A @ 5 ms)   | 5,5 VA (Imax 8,2 A @ 5 ms)   | 6 VA (Imax 4 A @ 5 ms)   |
| Protection class  | III  | III  | II   |
| Degree of protection                                      | IP 54  |  |  |
| Adjustment time for 95°                                   |  | < 60 s   |  |
| Ambient temperature                                       |  | -30°C ... +55°C  |  |
| Storage temperature                                       |  | -40°C ... +80°C  |  |
| Connection - drive<br>- auxiliary switch                  | Cable 1 m, 3 x 0,75 mm <sup>2</sup><br>Cable 1 m, 6 x 0,75 mm <sup>2</sup><br>(BEE 24-ST) with plug connectors | Cable 1 m, 4 x 0,75 mm <sup>2</sup><br>Cable 1 m, 6 x 0,75 mm <sup>2</sup> | Cable 1 m, 3 x 0,75 mm <sup>2</sup><br>Cable 1 m, 6 x 0,75 mm <sup>2</sup> |

\* Only available for 24V and selected damper sizes

**Actuator BELIMO BE 24-12(-ST)****Actuator BELIMO BE 230-12**

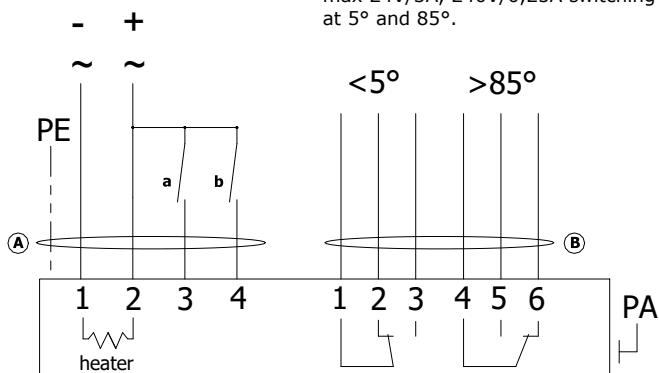
Extended leads are not possible with smoke control dampers as the belimo cables are not fire rated to a high Field wiring must be brought into and terminated within the damper housing. For more detail → see pages 55 to 57, paragraph Assembly.

**Actuator BELIMO BE 24-12(-ST), BE 230-12**

| <b>Actuator BELIMO - 40 Nm</b>                            | <b>BE 24-12(-ST)</b>  | <b>BE 230-12</b>          |
|---|---|---------------------------|
| Power voltage   | AC/DC 24 V<br>50/60Hz   | AC 230 V<br>50/60Hz       |
| Power consumption - in operation<br>- in the end position | 12 W<br>0,5 W   | 8 W<br>0,5 W              |
| Dimensioning  | 18 VA (Imax 8,2 A @ 5 ms)   | 15 VA (Imax 7,9 A @ 5 ms) |
| Protection class  | III   | II                        |
| Degree of protection                                      | IP 54   |                           |
| Adjustment time for 95°                                   | < 60 s  |                           |
| Ambient temperature<br>Storage temperature                | -30°C ... +55°C<br>-40°C ... +80°C  |                           |
| Connection - drive<br>- auxiliary switch                  | Cable 1 m, 3 x 0,75 mm <sup>2</sup><br>Cable 1 m, 6 x 0,75 mm <sup>2</sup><br>(BE 24-ST) with plug connectors |                           |

## Actuator SCHISCHEK InMax 50.75-S

24...230 VAC/DC



Extended leads are not possible with smoke control dampers as the belimo cables are not fire rated to a high Field wiring must be brought into and terminated within the damper housing. For more detail → see pages 55 to 57, paragraph Assembly.

## Actuator SCHISCHEK InMax 50.75-S

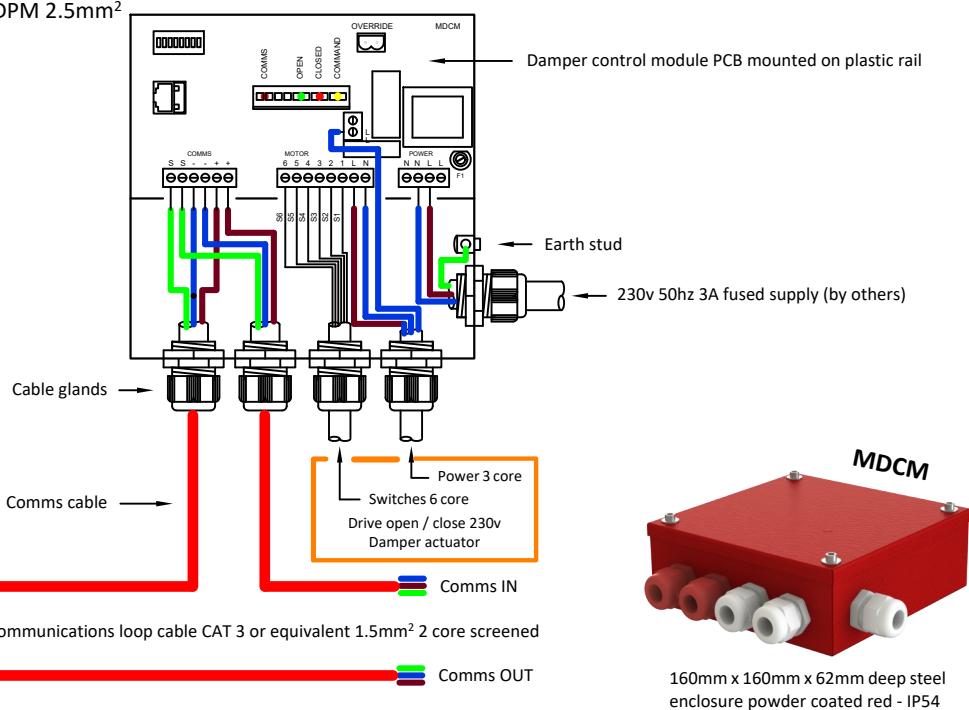
| Actuator SCHISCHEK                        | InMax 50.75-S                  |
|---|--------------------------------|
| Power voltage                             | 24-240 VAC/DC<br>50/60Hz       |
| Power consumption - motoring<br>- heating | 10 W<br>16 W (start at -20°C)  |
| Protection class                          | I                              |
| Degree of protection                      | IP 66                          |
| Adjustment time for 95°                   | < 60 s                         |
| Ambient temperature                       | -40°C ... +50°C                |
| Storage temperature                       | -40°C ... +70°C                |
| Connection                                | Cable 1 m, 0,5 mm <sup>2</sup> |

## Communication and control module MDCM

- The MDCM damper control module is connected on a bi directional communication loop back to a control panel, typically located at the FCC.
- Each MDCM has a 230v local spur to power the damper actuator.
- Max terminal size in MDCM and MDPM 2.5mm<sup>2</sup>



Details of connection of the control module interfaces inside protection box → see page 56



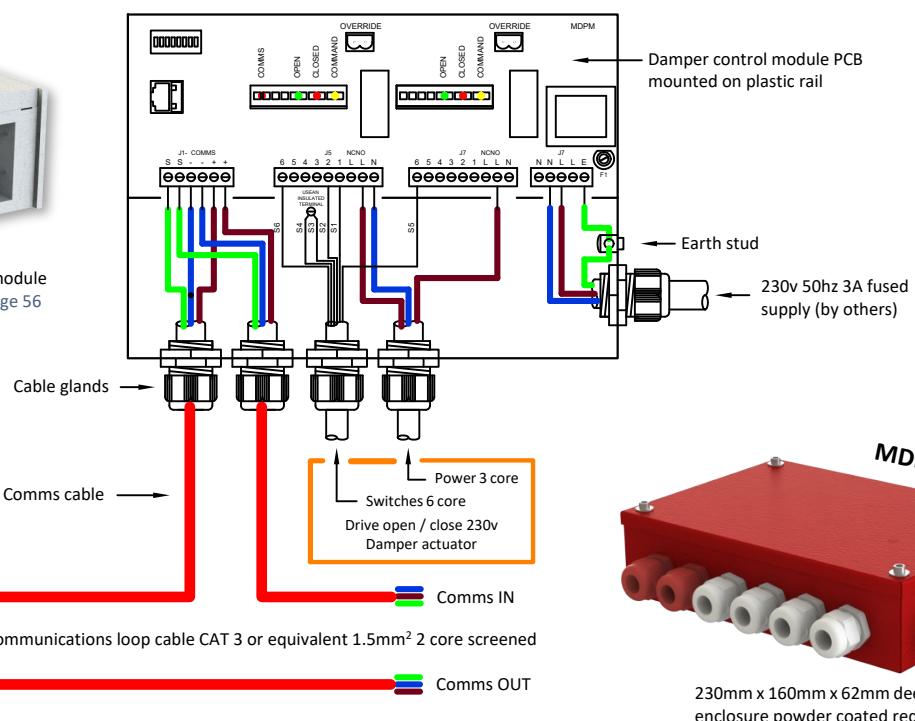
160mm x 160mm x 62mm deep steel enclosure powder coated red - IP54

## Communication and control module MDPM

- The MDPM damper control module is a combined control module and damper positioning module to provide a balanced/3R position.
- It is connected on a bi directional communication loop back to a control panel.
- Max terminal size in MDCM and MDPM 2.5mm<sup>2</sup>



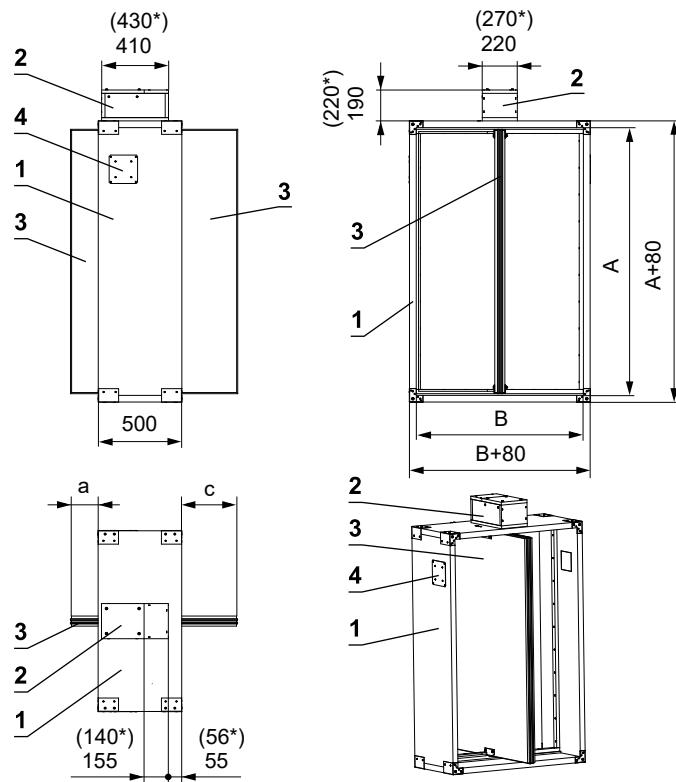
Details of connection of the control module interfaces inside protection box → see page 56



230mm x 160mm x 62mm deep steel enclosure powder coated red - IP54

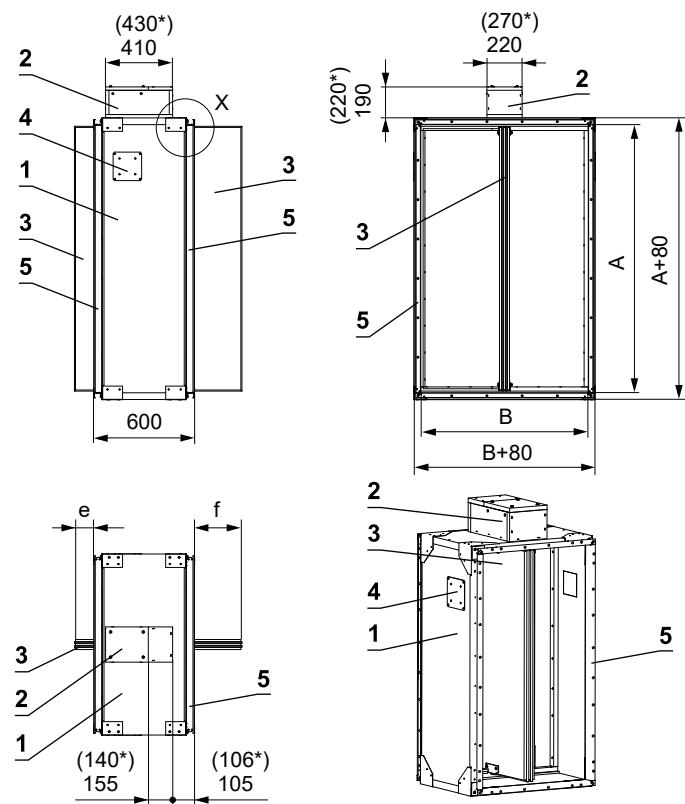
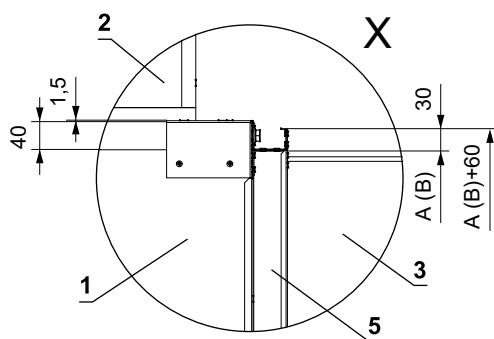
### III. DIMENSIONS

**SEDM without flanges**



**SEDM with flanges**

- External dimensions of flange A(B) + 60 mm is not same as external dimensions of damper



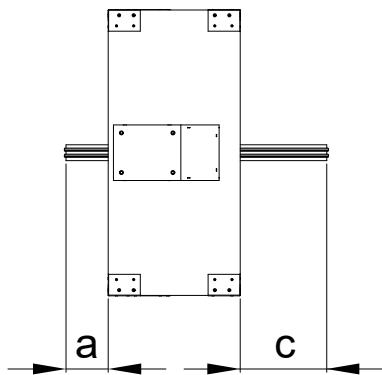
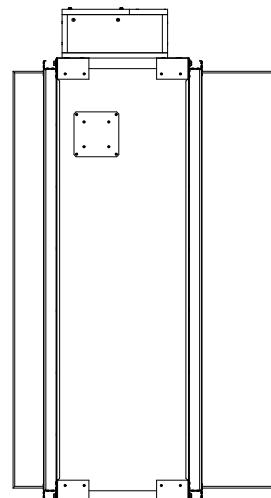
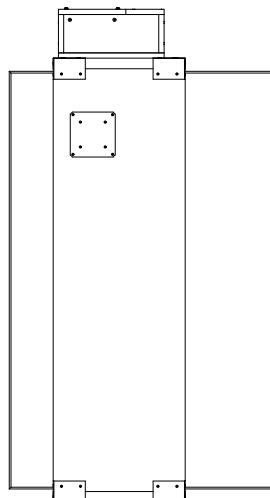
- 1 SEDM
- 2 Actuating mechanism
- 3 Damper blade
- 4 Access door/ inspection cover
- 5 Flange\*\*

\* Dimensions with actuating mechanism InMax 50.75S.

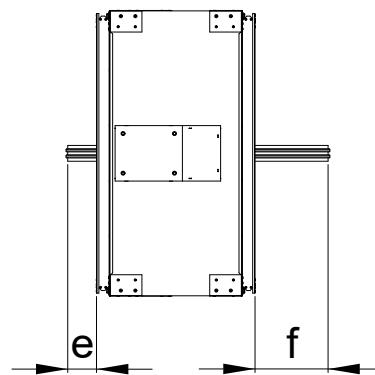
\*\* If it is necessary, arbitrary flange could be removed.

### Damper blade overlaps

- For damper without flanges the open damper blade overlaps the damper body from dimension B = 250 by the value "c" or "a" and "c". These values are specified in chapter Technical parameters → see pages 12 to 23.
- For damper with flanges the open damper blade overlaps the damper body from dimension B = 355 by the value "f" or "e" and "f". These values are specified in chapter Technical parameters → see pages 12 to 23.



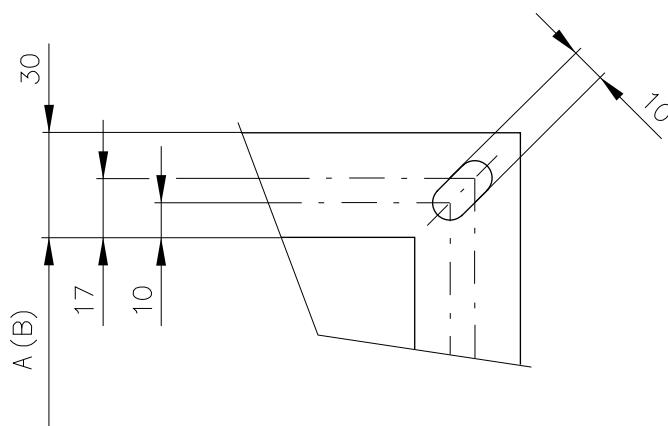
Values "a" and "c" - without flange



Values "e" and "f" - with flange

Values "a", "c", "e" and "f", has to be respected when projecting related smoke exhaust ducts.

### Flange with corner hole



Flanges of dampers are 30 mm wide with oval hole.

## Technical parameters

| A x B<br>[mm] | Damper blade overlaps<br>without flanges |           | Damper blade overlaps<br>with flanges |           | Weight<br>[kg]     |                 | Effective<br>area S <sub>ef</sub><br>[m <sup>2</sup> ] | Actuating mechanism<br>type |
|---------------|--|-----------|---------------------------------------|-----------|--------------------|-----------------|--|-----------------------------|
|               | a<br>[mm]                                | c<br>[mm] | e<br>[mm]                             | f<br>[mm] | Without<br>flanges | With<br>flanges |  |                             |
| 180 x         | 180                                      | -         | -                                     | -         | 38,3               | 41,4            | 0,0077   | BELIMO BEN<br>(15 N.m)      |
|               | 200                                      | -         | -                                     | -         | 39,6               | 42,8            | 0,0099   |                             |
|               | 225                                      | -         | -                                     | -         | 41,2               | 44,4            | 0,0127   |                             |
|               | 250                                      | -         | -                                     | -         | 42,8               | 46,2            | 0,0154   |                             |
|               | 280                                      | -         | -                                     | -         | 44,6               | 48,2            | 0,0187   |                             |
|               | 300                                      | -         | -                                     | -         | 45,9               | 49,5            | 0,0209   |                             |
|               | 315                                      | -         | -                                     | -         | 46,8               | 50,6            | 0,0226   |                             |
|               | 355                                      | -         | 6,5                                   | -         | 49,3               | 53,3            | 0,0270   |                             |
|               | 400                                      | -         | 29                                    | -         | 52,1               | 56,4            | 0,0319   |                             |
|               | 450                                      | -         | 54                                    | -         | 55,2               | 59,8            | 0,0374   |                             |
|               | 500                                      | -         | 79                                    | -         | 58,3               | 63,2            | 0,0429   |                             |
|               | 550                                      | -         | 104                                   | -         | 61,4               | 66,6            | 0,0484   |                             |
|               | 560                                      | -         | 109                                   | -         | 62,1               | 67,2            | 0,0495   |                             |
|               | 600                                      | -         | 129                                   | -         | 64,7               | 69,9            | 0,0539   |                             |
|               | 630                                      | -         | 144                                   | -         | 66,6               | 72,1            | 0,0572   |                             |
|               | 650                                      | -         | 154                                   | -         | 67,8               | 73,4            | 0,0594   |                             |
| 200 x         | 700                                      | 11        | 179                                   | -         | 70,9               | 76,8            | 0,0649   | BELIMO BEE<br>(25 N.m)      |
|               | 710                                      | 16        | 184                                   | -         | 71,6               | 77,5            | 0,0660   |                             |
|               | 750                                      | 36        | 204                                   | -         | 74,0               | 80,2            | 0,0704   |                             |
|               | 800                                      | 61        | 229                                   | 11        | 77,1               | 83,6            | 0,0759   |                             |
|               | 900                                      | 111       | 279                                   | 61        | 83,4               | 90,5            | 0,0869   |                             |
|               | 1000                                     | 161       | 329                                   | 111       | 89,6               | 97,2            | 0,0979   |                             |
|               | 180                                      | -         | -                                     | -         | 39,6               | 42,7            | 0,0091   |                             |
|               | 200                                      | -         | -                                     | -         | 40,9               | 44,1            | 0,0117   |                             |
|               | 225                                      | -         | -                                     | -         | 42,4               | 45,8            | 0,0150   |                             |
|               | 250                                      | -         | -                                     | -         | 44,0               | 47,5            | 0,0182   |                             |
|               | 280                                      | -         | -                                     | -         | 45,9               | 49,7            | 0,0221   |                             |
|               | 300                                      | -         | -                                     | -         | 47,3               | 51,0            | 0,0247   |                             |
|               | 315                                      | -         | -                                     | -         | 48,2               | 52,1            | 0,0267   |                             |
|               | 355                                      | -         | 6,5                                   | -         | 50,8               | 54,8            | 0,0319   |                             |
|               | 400                                      | -         | 29                                    | -         | 53,6               | 58,1            | 0,0377   |                             |
| 225 x         | 450                                      | -         | 54                                    | -         | 56,8               | 61,4            | 0,0442   | BELIMO BEN<br>(15 N.m)      |
|               | 500                                      | -         | 79                                    | -         | 60,1               | 64,9            | 0,0507   |                             |
|               | 550                                      | -         | 104                                   | -         | 63,2               | 68,4            | 0,0572   |                             |
|               | 560                                      | -         | 109                                   | -         | 63,9               | 69,1            | 0,0585   |                             |
|               | 600                                      | -         | 129                                   | -         | 66,4               | 72,0            | 0,0637   |                             |
|               | 630                                      | -         | 144                                   | -         | 68,3               | 74,0            | 0,0676   |                             |
|               | 650                                      | -         | 154                                   | -         | 69,7               | 75,3            | 0,0702   |                             |
|               | 700                                      | 11        | 179                                   | -         | 72,8               | 78,8            | 0,0767   |                             |
|               | 710                                      | 16        | 184                                   | -         | 73,4               | 79,5            | 0,0780   |                             |
|               | 750                                      | 36        | 204                                   | -         | 76,0               | 82,4            | 0,0832   |                             |
|               | 800                                      | 61        | 229                                   | 11        | 79,2               | 85,9            | 0,0897   |                             |
|               | 900                                      | 111       | 279                                   | 61        | 85,6               | 92,7            | 0,1027   |                             |
|               | 1000                                     | 161       | 329                                   | 111       | 91,9               | 99,8            | 0,1157   |                             |
|               | 180                                      | -         | -                                     | -         | 41,0               | 44,4            | 0,0109   |                             |
|               | 200                                      | -         | -                                     | -         | 42,4               | 45,8            | 0,0140   |                             |
|               | 225                                      | -         | -                                     | -         | 44,0               | 47,5            | 0,0178   |                             |
|               | 250                                      | -         | -                                     | -         | 45,6               | 49,3            | 0,0217   | BELIMO BEN<br>(15 N.m)      |
|               | 280                                      | -         | -                                     | -         | 47,7               | 51,4            | 0,0264   |                             |
|               | 300                                      | -         | -                                     | -         | 49,0               | 52,9            | 0,0295   |                             |
|               | 315                                      | -         | -                                     | -         | 50,0               | 54,0            | 0,0318   |                             |
|               | 355                                      | -         | 6,5                                   | -         | 52,5               | 56,8            | 0,0380   |                             |

Sizes listed within the maximum/minimum sizes can be manufactured on request.

| A x B<br>[mm] | Damper blade overlaps<br>without flanges |           | Damper blade overlaps<br>with flanges |           | Weight<br>[kg]     |                 | Effective<br>area S <sub>ef</sub><br>[m <sup>2</sup> ] | Actuating mechanism<br>type |
|---------------|--|-----------|---------------------------------------|-----------|--------------------|-----------------|--|-----------------------------|
|               | a<br>[mm]                                | c<br>[mm] | e<br>[mm]                             | f<br>[mm] | Without<br>flanges | With<br>flanges |  |                             |
| 225 x         | 400                                      | -         | 29                                    | -         | 55,5               | 60,1            | 0,0450   | BELIMO BEN<br>(15 N.m)      |
|               | 450                                      | -         | 54                                    | -         | 58,9               | 63,6            | 0,0527   |                             |
|               | 500                                      | -         | 79                                    | -         | 62,1               | 67,2            | 0,0605   |                             |
|               | 550                                      | -         | 104                                   | -         | 65,3               | 70,7            | 0,0682   |                             |
|               | 560                                      | -         | 109                                   | -         | 66,0               | 71,4            | 0,0698   |                             |
|               | 600                                      | -         | 129                                   | -         | 68,7               | 74,3            | 0,0760   |                             |
|               | 630                                      | -         | 144                                   | -         | 70,6               | 76,4            | 0,0806   |                             |
|               | 650                                      | -         | 154                                   | -         | 72,0               | 77,9            | 0,0837   |                             |
|               | 700                                      | 11        | 179                                   | -         | 75,2               | 81,4            | 0,0915   |                             |
|               | 710                                      | 16        | 184                                   | -         | 75,9               | 82,1            | 0,0930   |                             |
|               | 750                                      | 36        | 204                                   | -         | 78,6               | 85,1            | 0,0992   |                             |
|               | 800                                      | 61        | 229                                   | 11        | 81,8               | 88,6            | 0,1070   |                             |
| 250 x         | 900                                      | 111       | 279                                   | 61        | 88,4               | 95,7            | 0,1225   | BELIMO BEE<br>(25 N.m)      |
|               | 1000                                     | 161       | 329                                   | 111       | 94,9               | 102,9           | 0,1380   |                             |
|               | 180                                      | -         | -                                     | -         | 42,5               | 46,0            | 0,0126   |                             |
|               | 200                                      | -         | -                                     | -         | 43,9               | 47,5            | 0,0162   |                             |
|               | 225                                      | -         | -                                     | -         | 45,6               | 49,3            | 0,0207   |                             |
|               | 250                                      | -         | -                                     | -         | 47,3               | 51,2            | 0,0252   |                             |
|               | 280                                      | -         | -                                     | -         | 49,3               | 53,3            | 0,0306   |                             |
|               | 300                                      | -         | -                                     | -         | 50,6               | 54,8            | 0,0342   |                             |
|               | 315                                      | -         | -                                     | -         | 51,7               | 55,9            | 0,0369   |                             |
|               | 355                                      | -         | 6,5                                   | -         | 54,4               | 58,7            | 0,0441   |                             |
|               | 400                                      | -         | 29                                    | -         | 57,4               | 62,1            | 0,0522   |                             |
|               | 450                                      | -         | 54                                    | -         | 60,8               | 65,7            | 0,0612   |                             |
| 280 x         | 500                                      | -         | 79                                    | -         | 64,1               | 69,4            | 0,0702   | BELIMO BEN<br>(15 N.m)      |
|               | 550                                      | -         | 104                                   | -         | 67,5               | 73,0            | 0,0792   |                             |
|               | 560                                      | -         | 109                                   | -         | 68,2               | 73,7            | 0,0810   |                             |
|               | 600                                      | -         | 129                                   | -         | 70,9               | 76,7            | 0,0882   |                             |
|               | 630                                      | -         | 144                                   | -         | 72,9               | 78,8            | 0,0936   |                             |
|               | 650                                      | -         | 154                                   | -         | 74,3               | 80,3            | 0,0972   |                             |
|               | 700                                      | 11        | 179                                   | -         | 77,6               | 84,0            | 0,1062   |                             |
|               | 710                                      | 16        | 184                                   | -         | 78,3               | 84,8            | 0,1080   |                             |
|               | 750                                      | 36        | 204                                   | -         | 81,0               | 87,6            | 0,1152   |                             |
|               | 800                                      | 61        | 229                                   | 11        | 84,4               | 91,3            | 0,1242   |                             |
|               | 900                                      | 111       | 279                                   | 61        | 91,1               | 98,6            | 0,1422   |                             |
|               | 1000                                     | 161       | 329                                   | 111       | 97,9               | 105,8           | 0,1602   |                             |
| 355           | 180                                      | -         | -                                     | -         | 42,8               | 46,2            | 0,0147   | BELIMO BEN<br>(15 N.m)      |
|               | 200                                      | -         | -                                     | -         | 44,1               | 47,7            | 0,0189   |                             |
|               | 225                                      | -         | -                                     | -         | 45,8               | 49,4            | 0,0242   |                             |
|               | 250                                      | -         | -                                     | -         | 47,5               | 51,2            | 0,0294   |                             |
|               | 280                                      | -         | -                                     | -         | 49,4               | 53,4            | 0,0357   |                             |
|               | 300                                      | -         | -                                     | -         | 50,8               | 54,9            | 0,0399   |                             |
|               | 315                                      | -         | -                                     | -         | 51,7               | 56,0            | 0,0431   |                             |
|               | 355                                      | -         | 6,5                                   | -         | 54,5               | 58,9            | 0,0515   |                             |
|               | 400                                      | -         | 29                                    | -         | 57,5               | 62,1            | 0,0609   |                             |
|               | 450                                      | -         | 54                                    | -         | 60,8               | 65,8            | 0,0714   |                             |
|               | 500                                      | -         | 79                                    | -         | 64,2               | 69,4            | 0,0819   |                             |
|               | 550                                      | -         | 104                                   | -         | 67,5               | 72,9            | 0,0924   |                             |
|               | 560                                      | -         | 109                                   | -         | 68,3               | 73,7            | 0,0945   |                             |
|               | 600                                      | -         | 129                                   | -         | 70,9               | 76,6            | 0,1029   |                             |
|               | 630                                      | -         | 144                                   | -         | 72,9               | 78,8            | 0,1092   |                             |

Sizes listed within the maximum/minimum sizes can be manufactured on request.

| A x B<br>[mm] | Damper blade overlaps<br>without flanges |           | Damper blade overlaps<br>with flanges |           | Weight<br>[kg]     |                 | Effective<br>area S <sub>ef</sub><br>[m <sup>2</sup> ] | Actuating mechanism<br>type |
|---------------|--|-----------|---------------------------------------|-----------|--------------------|-----------------|--|-----------------------------|
|               | a<br>[mm]                                | c<br>[mm] | e<br>[mm]                             | f<br>[mm] | Without<br>flanges | With<br>flanges |  |                             |
| 280 x 750     | 650                                      | -         | 154                                   | -         | 104                | 74,2            | 80,2   | 0,1134                      |
|               | 700                                      | 11        | 179                                   | -         | 129                | 77,6            | 83,9   | 0,1239                      |
|               | 710                                      | 16        | 184                                   | -         | 134                | 78,3            | 84,6   | 0,1260                      |
|               | 280                                      | 36        | 204                                   | -         | 154                | 80,9            | 87,5   | 0,1344                      |
|               | 800                                      | 61        | 229                                   | 11        | 179                | 84,2            | 91,1   | 0,1449                      |
|               | 900                                      | 111       | 279                                   | 61        | 229                | 91,0            | 98,3   | 0,1659                      |
|               | 1000                                     | 161       | 329                                   | 111       | 279                | 97,6            | 105,6  | 0,1869                      |
|               | 180                                      | -         | -                                     | -         | -                  | 43,9            | 47,5   | 0,0161                      |
|               | 200                                      | -         | -                                     | -         | -                  | 45,2            | 49,0   | 0,0207                      |
|               | 225                                      | -         | -                                     | -         | -                  | 46,9            | 50,8   | 0,0265                      |
| 300 x 500     | 250                                      | -         | -                                     | -         | -                  | 48,8            | 52,7   | 0,0322                      |
|               | 280                                      | -         | -                                     | -         | -                  | 50,7            | 54,9   | 0,0391                      |
|               | 300                                      | -         | -                                     | -         | -                  | 52,1            | 56,3   | 0,0437                      |
|               | 315                                      | -         | -                                     | -         | -                  | 53,2            | 57,5   | 0,0472                      |
|               | 355                                      | -         | 6,5                                   | -         | -                  | 55,9            | 60,3   | 0,0564                      |
|               | 400                                      | -         | 29                                    | -         | -                  | 58,9            | 63,7   | 0,0667                      |
|               | 450                                      | -         | 54                                    | -         | 4                  | 62,4            | 67,3   | 0,0782                      |
|               | 500                                      | -         | 79                                    | -         | 29                 | 65,8            | 71,1   | 0,0897                      |
|               | 550                                      | -         | 104                                   | -         | 54                 | 69,2            | 74,8   | 0,1012                      |
|               | 560                                      | -         | 109                                   | -         | 59                 | 69,8            | 75,5   | 0,1035                      |
| 300 x 750     | 600                                      | -         | 129                                   | -         | 79                 | 72,5            | 78,4   | 0,1127                      |
|               | 630                                      | -         | 144                                   | -         | 94                 | 74,6            | 80,6   | 0,1196                      |
|               | 650                                      | -         | 154                                   | -         | 104                | 76,1            | 82,2   | 0,1242                      |
|               | 700                                      | 11        | 179                                   | -         | 129                | 79,4            | 85,8   | 0,1357                      |
|               | 710                                      | 16        | 184                                   | -         | 134                | 80,1            | 86,6   | 0,1380                      |
|               | 750                                      | 36        | 204                                   | -         | 154                | 82,8            | 89,4   | 0,1472                      |
|               | 800                                      | 61        | 229                                   | 11        | 179                | 86,3            | 93,2   | 0,1587                      |
|               | 900                                      | 111       | 279                                   | 61        | 229                | 93,1            | 100,6  | 0,1817                      |
|               | 1000                                     | 161       | 329                                   | 111       | 279                | 100,0           | 107,9  | 0,2047                      |
|               | 180                                      | -         | -                                     | -         | -                  | 44,7            | 48,5   | 0,0172                      |
| 315 x 500     | 200                                      | -         | -                                     | -         | -                  | 46,2            | 49,9   | 0,0221                      |
|               | 225                                      | -         | -                                     | -         | -                  | 47,8            | 51,7   | 0,0282                      |
|               | 250                                      | -         | -                                     | -         | -                  | 49,7            | 53,7   | 0,0343                      |
|               | 280                                      | -         | -                                     | -         | -                  | 51,7            | 55,9   | 0,0417                      |
|               | 300                                      | -         | -                                     | -         | -                  | 53,0            | 57,5   | 0,0466                      |
|               | 315                                      | -         | -                                     | -         | -                  | 54,1            | 58,5   | 0,0502                      |
|               | 355                                      | -         | 6,5                                   | -         | -                  | 56,9            | 61,5   | 0,0600                      |
|               | 400                                      | -         | 29                                    | -         | -                  | 60,1            | 64,9   | 0,0711                      |
|               | 450                                      | -         | 54                                    | -         | 4                  | 63,4            | 68,6   | 0,0833                      |
|               | 500                                      | -         | 79                                    | -         | 29                 | 67,0            | 72,4   | 0,0956                      |
| 315 x 750     | 550                                      | -         | 104                                   | -         | 54                 | 70,5            | 76,1   | 0,1078                      |
|               | 560                                      | -         | 109                                   | -         | 59                 | 71,1            | 76,8   | 0,1103                      |
|               | 600                                      | -         | 129                                   | -         | 79                 | 73,8            | 79,8   | 0,1201                      |
|               | 630                                      | -         | 144                                   | -         | 94                 | 75,9            | 82,0   | 0,1274                      |
|               | 650                                      | -         | 154                                   | -         | 104                | 77,4            | 83,6   | 0,1323                      |
|               | 700                                      | 11        | 179                                   | -         | 129                | 80,9            | 87,4   | 0,1446                      |
|               | 710                                      | 16        | 184                                   | -         | 134                | 81,5            | 88,0   | 0,1470                      |
|               | 750                                      | 36        | 204                                   | -         | 154                | 84,2            | 91,0   | 0,1568                      |
|               | 800                                      | 61        | 229                                   | 11        | 179                | 87,8            | 94,8   | 0,1691                      |
|               | 900                                      | 111       | 279                                   | 61        | 229                | 94,6            | 102,3  | 0,1936                      |
| 315 x 1000    | 1000                                     | 161       | 329                                   | 111       | 279                | 101,7           | 109,7  | 0,2181                      |

Sizes listed within the maximum/minimum sizes can be manufactured on request.

| A x B<br>[mm] | Damper blade overlaps<br>without flanges |           | Damper blade overlaps<br>with flanges |           | Weight<br>[kg]     |                 | Effective<br>area S <sub>ef</sub><br>[m <sup>2</sup> ] | Actuating mechanism<br>type |
|---------------|--|-----------|---------------------------------------|-----------|--------------------|-----------------|--|-----------------------------|
|               | a<br>[mm]                                | c<br>[mm] | e<br>[mm]                             | f<br>[mm] | Without<br>flanges | With<br>flanges |  |                             |
| 355 x         | 180                                      | -         | -                                     | -         | 46,3               | 50,2            | 0,0200   | BELIMO BEN<br>(15 N.m)      |
|               | 200                                      | -         | -                                     | -         | 47,7               | 51,7            | 0,0257   |                             |
|               | 225                                      | -         | -                                     | -         | 49,5               | 53,6            | 0,0328   |                             |
|               | 250                                      | -         | -                                     | -         | 51,3               | 55,6            | 0,0399   |                             |
|               | 280                                      | -         | -                                     | -         | 53,5               | 57,9            | 0,0485   |                             |
|               | 300                                      | -         | -                                     | -         | 54,9               | 59,4            | 0,0542   |                             |
|               | 315                                      | -         | -                                     | -         | 55,9               | 60,5            | 0,0584   |                             |
|               | 355                                      | -         | 6,5                                   | -         | 58,8               | 63,5            | 0,0698   |                             |
|               | 400                                      | -         | 29                                    | -         | 62,0               | 66,9            | 0,0827   |                             |
|               | 450                                      | -         | 54                                    | -         | 65,5               | 70,8            | 0,0969   |                             |
|               | 500                                      | -         | 79                                    | -         | 69,1               | 74,6            | 0,1112   |                             |
|               | 550                                      | -         | 104                                   | -         | 72,6               | 78,5            | 0,1254   |                             |
|               | 560                                      | -         | 109                                   | -         | 73,3               | 79,2            | 0,1283   |                             |
|               | 600                                      | -         | 129                                   | -         | 76,2               | 82,2            | 0,1397   |                             |
| 400 x         | 630                                      | -         | 144                                   | -         | 78,3               | 84,5            | 0,1482   | BELIMO BEE<br>(25 N.m)      |
|               | 650                                      | -         | 154                                   | -         | 79,7               | 86,0            | 0,1539   |                             |
|               | 700                                      | 11        | 179                                   | -         | 83,3               | 89,9            | 0,1682   |                             |
|               | 710                                      | 16        | 184                                   | -         | 84,0               | 90,6            | 0,1710   |                             |
|               | 750                                      | 36        | 204                                   | -         | 86,8               | 93,7            | 0,1824   |                             |
|               | 800                                      | 61        | 229                                   | 11        | 90,4               | 97,5            | 0,1967   |                             |
|               | 900                                      | 111       | 279                                   | 61        | 97,4               | 105,1           | 0,2252   |                             |
|               | 1000                                     | 161       | 329                                   | 111       | 104,6              | 112,8           | 0,2537   |                             |
|               | 180                                      | -         | -                                     | -         | 49,7               | 53,8            | 0,0231   |                             |
|               | 200                                      | -         | -                                     | -         | 51,2               | 55,5            | 0,0297   |                             |
|               | 225                                      | -         | -                                     | -         | 53,0               | 57,5            | 0,0380   |                             |
|               | 250                                      | -         | -                                     | -         | 55,0               | 59,5            | 0,0462   |                             |
|               | 280                                      | -         | -                                     | -         | 57,2               | 61,9            | 0,0561   |                             |
| 450 x         | 300                                      | -         | -                                     | -         | 58,8               | 63,4            | 0,0627   | BELIMO BEN<br>(15 N.m)      |
|               | 315                                      | -         | -                                     | -         | 59,8               | 64,7            | 0,0677   |                             |
|               | 355                                      | -         | 6,5                                   | -         | 62,9               | 68,0            | 0,0809   |                             |
|               | 400                                      | -         | 29                                    | -         | 66,2               | 71,5            | 0,0957   |                             |
|               | 450                                      | -         | 54                                    | -         | 69,9               | 75,5            | 0,1122   |                             |
|               | 500                                      | -         | 79                                    | -         | 73,7               | 79,6            | 0,1287   |                             |
|               | 550                                      | -         | 104                                   | -         | 77,5               | 83,6            | 0,1452   |                             |
|               | 560                                      | -         | 109                                   | -         | 78,3               | 84,4            | 0,1485   |                             |
|               | 600                                      | -         | 129                                   | -         | 81,3               | 87,6            | 0,1617   |                             |
|               | 630                                      | -         | 144                                   | -         | 83,5               | 90,1            | 0,1716   |                             |
|               | 650                                      | -         | 154                                   | -         | 85,0               | 91,7            | 0,1782   |                             |
|               | 700                                      | 11        | 179                                   | -         | 88,8               | 95,7            | 0,1947   |                             |
|               | 710                                      | 16        | 184                                   | -         | 89,6               | 96,5            | 0,1980   |                             |
|               | 750                                      | 36        | 204                                   | -         | 92,6               | 99,7            | 0,2112   |                             |
| 355 x         | 800                                      | 61        | 229                                   | 11        | 96,3               | 103,7           | 0,2277   | BELIMO BEE<br>(25 N.m)      |
|               | 900                                      | 111       | 279                                   | 61        | 103,7              | 111,8           | 0,2607   |                             |
|               | 1000                                     | 161       | 329                                   | 111       | 111,3              | 119,9           | 0,2937   |                             |
|               | 180                                      | -         | -                                     | -         | 52,7               | 57,1            | 0,0266   |                             |
|               | 200                                      | -         | -                                     | -         | 54,2               | 58,8            | 0,0342   |                             |
| 450 x 250     | 225                                      | -         | -                                     | -         | 56,2               | 60,8            | 0,0437   | BELIMO BEN<br>(15 N.m)      |
|               | 250                                      | -         | -                                     | -         | 58,1               | 62,9            | 0,0532   |                             |
|               | 280                                      | -         | -                                     | -         | 60,5               | 65,4            | 0,0646   |                             |
|               | 300                                      | -         | -                                     | -         | 62,0               | 67,1            | 0,0722   |                             |
|               | 315                                      | -         | -                                     | -         | 63,2               | 68,4            | 0,0779   |                             |

Sizes listed within the maximum/minimum sizes can be manufactured on request.

| A x B<br>[mm] | Damper blade overlaps<br>without flanges |           | Damper blade overlaps<br>with flanges |           | Weight<br>[kg]     |                 | Effective<br>area S <sub>ef</sub><br>[m <sup>2</sup> ] | Actuating mechanism<br>type |
|---------------|--|-----------|---------------------------------------|-----------|--------------------|-----------------|--|-----------------------------|
|               | a<br>[mm]                                | c<br>[mm] | e<br>[mm]                             | f<br>[mm] | Without<br>flanges | With<br>flanges |  |                             |
| 355           | -  | 6,5       | -                                     | -         | 66,3               | 71,8            | 0,0931   |                             |
| 400           | -  | 29        | -                                     | -         | 69,9               | 75,5            | 0,1102   |                             |
| 450           | -  | 54        | -                                     | 4         | 73,8               | 79,7            | 0,1292   |                             |
| 500           | -  | 79        | -                                     | 29        | 77,7               | 83,9            | 0,1482   |                             |
| 550           | -  | 104       | -                                     | 54        | 81,6               | 88,0            | 0,1672   |                             |
| 560           | -  | 109       | -                                     | 59        | 82,4               | 88,9            | 0,1710   | BELIMO BEN<br>(15 N.m)      |
| 600           | -  | 129       | -                                     | 79        | 85,5               | 92,3            | 0,1862   |                             |
| 450 x 630     | -  | 144       | -                                     | 94        | 87,9               | 94,8            | 0,1976   |                             |
| 650           | -  | 154       | -                                     | 104       | 89,4               | 96,5            | 0,2052   |                             |
| 700           | 11                                       | 179       | -                                     | 129       | 93,5               | 100,6           | 0,2242   |                             |
| 710           | 16                                       | 184       | -                                     | 134       | 94,3               | 101,5           | 0,2280   |                             |
| 750           | 36                                       | 204       | -                                     | 154       | 97,4               | 104,8           | 0,2432   |                             |
| 800           | 61                                       | 229       | 11                                    | 179       | 101,3              | 109,1           | 0,2622   |                             |
| 900           | 111                                      | 279       | 61                                    | 229       | 109,1              | 117,4           | 0,3002   |                             |
| 1000          | 161                                      | 329       | 111                                   | 279       | 118,3              | 127,1           | 0,3382   |                             |
| 180           | -  | -         | -                                     | -         | 53,4               | 56,9            | 0,0301   |                             |
| 200           | -  | -         | -                                     | -         | 55,0               | 58,7            | 0,0387   |                             |
| 225           | -  | -         | -                                     | -         | 56,9               | 60,6            | 0,0495   |                             |
| 250           | -  | -         | -                                     | -         | 58,9               | 62,7            | 0,0602   |                             |
| 280           | -  | -         | -                                     | -         | 61,3               | 65,2            | 0,0731   |                             |
| 300           | -  | -         | -                                     | -         | 62,9               | 66,9            | 0,0817   |                             |
| 315           | -  | -         | -                                     | -         | 64,0               | 68,1            | 0,0882   |                             |
| 355           | -  | 6,5       | -                                     | -         | 67,1               | 71,5            | 0,1054   |                             |
| 400           | -  | 29        | -                                     | -         | 70,8               | 75,2            | 0,1247   |                             |
| 450           | -  | 54        | -                                     | 4         | 74,6               | 79,2            | 0,1462   | BELIMO BEN<br>(15 N.m)      |
| 500           | -  | 79        | -                                     | 29        | 78,6               | 83,4            | 0,1677   |                             |
| 550           | -  | 104       | -                                     | 54        | 82,5               | 87,5            | 0,1892   |                             |
| 560           | -  | 109       | -                                     | 59        | 83,3               | 88,3            | 0,1935   |                             |
| 600           | -  | 129       | -                                     | 79        | 86,5               | 91,6            | 0,2107   |                             |
| 630           | -  | 144       | -                                     | 94        | 88,8               | 94,1            | 0,2236   |                             |
| 650           | -  | 154       | -                                     | 104       | 90,4               | 95,8            | 0,2322   |                             |
| 700           | 11                                       | 179       | -                                     | 129       | 94,4               | 99,9            | 0,2537   |                             |
| 710           | 16                                       | 184       | -                                     | 134       | 95,1               | 100,7           | 0,2580   |                             |
| 750           | 36                                       | 204       | -                                     | 154       | 98,3               | 104,1           | 0,2752   |                             |
| 800           | 61                                       | 229       | 11                                    | 179       | 102,3              | 108,1           | 0,2967   |                             |
| 900           | 111                                      | 279       | 61                                    | 229       | 110,0              | 116,4           | 0,3397   | BELIMO BEE<br>(25 N.m)      |
| 1000          | 161                                      | 329       | 111                                   | 279       | 119,3              | 126             | 0,3827   |                             |
| 180           | -  | -         | -                                     | -         | 56,1               | 61,0            | 0,0336   |                             |
| 200           | -  | -         | -                                     | -         | 57,9               | 62,8            | 0,0432   |                             |
| 225           | -  | -         | -                                     | -         | 59,9               | 64,9            | 0,0552   |                             |
| 250           | -  | -         | -                                     | -         | 61,9               | 67,0            | 0,0672   |                             |
| 280           | -  | -         | -                                     | -         | 64,4               | 69,6            | 0,0816   |                             |
| 300           | -  | -         | -                                     | -         | 66,0               | 71,4            | 0,0912   |                             |
| 315           | -  | -         | -                                     | -         | 67,3               | 72,8            | 0,0984   |                             |
| 355           | -  | 6,5       | -                                     | -         | 70,5               | 76,3            | 0,1176   |                             |
| 400           | -  | 29        | -                                     | -         | 74,3               | 80,1            | 0,1392   |                             |
| 450           | -  | 54        | -                                     | 4         | 78,3               | 84,5            | 0,1632   |                             |
| 500           | -  | 79        | -                                     | 29        | 82,4               | 88,9            | 0,1872   |                             |
| 550           | -  | 104       | -                                     | 54        | 86,5               | 93,3            | 0,2112   |                             |
| 560           | -  | 109       | -                                     | 59        | 87,4               | 94,1            | 0,2160   |                             |
| 600           | -  | 129       | -                                     | 79        | 90,6               | 97,5            | 0,2352   |                             |

Sizes listed within the maximum/minimum sizes can be manufactured on request.

| A x B<br>[mm] | Damper blade overlaps<br>without flanges |           | Damper blade overlaps<br>with flanges |           | Weight<br>[kg]     |                 | Effective<br>area S <sub>ef</sub><br>[m <sup>2</sup> ] | Actuating mechanism<br>type |
|---------------|--|-----------|---------------------------------------|-----------|--------------------|-----------------|--|-----------------------------|
|               | a<br>[mm]                                | c<br>[mm] | e<br>[mm]                             | f<br>[mm] | Without<br>flanges | With<br>flanges |  |                             |
| 550 x         | 630                                      | -         | 144                                   | -         | 93,1               | 100,1           | 0,2496   | BELIMO BEN<br>(15 N.m)      |
|               | 650                                      | -         | 154                                   | -         | 94,8               | 101,9           | 0,2592   |                             |
|               | 700                                      | 11        | 179                                   | -         | 98,8               | 106,3           | 0,2832   |                             |
|               | 710                                      | 16        | 184                                   | -         | 99,6               | 107,1           | 0,2880   |                             |
|               | 750                                      | 36        | 204                                   | -         | 102,9              | 110,6           | 0,3072   |                             |
|               | 800                                      | 61        | 229                                   | 11        | 107,0              | 115,0           | 0,3312   |                             |
|               | 900                                      | 111       | 279                                   | 61        | 116,5              | 125,0           | 0,3792   |                             |
|               | 1000                                     | 161       | 329                                   | 111       | 124,6              | 133,6           | 0,4272   |                             |
| 560 x         | 180                                      | -         | -                                     | -         | 56,8               | 61,5            | 0,0343   | BELIMO BEN<br>(15 N.m)      |
|               | 200                                      | -         | -                                     | -         | 58,4               | 63,4            | 0,0441   |                             |
|               | 225                                      | -         | -                                     | -         | 60,5               | 65,5            | 0,0564   |                             |
|               | 250                                      | -         | -                                     | -         | 62,5               | 67,8            | 0,0686   |                             |
|               | 280                                      | -         | -                                     | -         | 65,0               | 70,4            | 0,0833   |                             |
|               | 300                                      | -         | -                                     | -         | 66,6               | 72,1            | 0,0931   |                             |
|               | 315                                      | -         | -                                     | -         | 67,9               | 73,4            | 0,1005   |                             |
|               | 355                                      | -         | 6,5                                   | -         | 71,3               | 76,9            | 0,1201   |                             |
|               | 400                                      | -         | 29                                    | -         | 74,9               | 80,9            | 0,1421   |                             |
|               | 450                                      | -         | 54                                    | -         | 79,0               | 85,3            | 0,1666   |                             |
|               | 500                                      | -         | 79                                    | -         | 83,1               | 89,6            | 0,1911   |                             |
|               | 550                                      | -         | 104                                   | -         | 87,3               | 94,0            | 0,2156   |                             |
|               | 560                                      | -         | 109                                   | -         | 88,1               | 94,9            | 0,2205   |                             |
|               | 600                                      | -         | 129                                   | -         | 91,5               | 98,4            | 0,2401   |                             |
|               | 630                                      | -         | 144                                   | -         | 93,9               | 101,1           | 0,2548   |                             |
| 600 x         | 650                                      | -         | 154                                   | -         | 95,6               | 102,9           | 0,2646   | BELIMO BEE<br>(25 N.m)      |
|               | 700                                      | 11        | 179                                   | -         | 99,8               | 107,3           | 0,2891   |                             |
|               | 710                                      | 16        | 184                                   | -         | 100,5              | 108,1           | 0,2940   |                             |
|               | 750                                      | 36        | 204                                   | -         | 103,9              | 111,6           | 0,3136   |                             |
|               | 800                                      | 61        | 229                                   | 11        | 108,0              | 116,0           | 0,3381   |                             |
|               | 900                                      | 111       | 279                                   | 61        | 117,5              | 126,0           | 0,3871   |                             |
|               | 1000                                     | 161       | 329                                   | 111       | 125,8              | 134,9           | 0,4361   |                             |
|               | 180                                      | -         | -                                     | -         | 59,0               | 64,0            | 0,0371   |                             |
|               | 200                                      | -         | -                                     | -         | 60,6               | 65,9            | 0,0477   |                             |
|               | 225                                      | -         | -                                     | -         | 62,8               | 68,1            | 0,0610   |                             |
|               | 250                                      | -         | -                                     | -         | 65,0               | 70,4            | 0,0742   |                             |
|               | 280                                      | -         | -                                     | -         | 67,5               | 73,0            | 0,0901   |                             |
|               | 300                                      | -         | -                                     | -         | 69,3               | 74,9            | 0,1007   |                             |
|               | 315                                      | -         | -                                     | -         | 70,5               | 76,3            | 0,1087   |                             |
|               | 355                                      | -         | 6,5                                   | -         | 73,9               | 79,9            | 0,1299   |                             |
| 600 x         | 400                                      | -         | 29                                    | -         | 77,8               | 83,9            | 0,1537   | BELIMO BEN<br>(15 N.m)      |
|               | 450                                      | -         | 54                                    | -         | 82,0               | 88,4            | 0,1802   |                             |
|               | 500                                      | -         | 79                                    | -         | 86,3               | 92,9            | 0,2067   |                             |
|               | 550                                      | -         | 104                                   | -         | 90,5               | 97,5            | 0,2332   |                             |
|               | 560                                      | -         | 109                                   | -         | 91,4               | 98,4            | 0,2385   |                             |
|               | 600                                      | -         | 129                                   | -         | 94,8               | 102,0           | 0,2597   |                             |
|               | 630                                      | -         | 144                                   | -         | 97,4               | 104,8           | 0,2756   |                             |
|               | 650                                      | -         | 154                                   | -         | 99,0               | 106,5           | 0,2862   |                             |
|               | 700                                      | 11        | 179                                   | -         | 103,3              | 111,0           | 0,3127   |                             |
|               | 710                                      | 16        | 184                                   | -         | 104,1              | 111,9           | 0,3180   |                             |
| 800 x         | 750                                      | 36        | 204                                   | -         | 107,5              | 115,5           | 0,3392   | BELIMO BEE<br>(25 N.m)      |
|               | 800                                      | 61        | 229                                   | 11        | 111,8              | 120,0           | 0,3657   |                             |
|               | 900                                      | 111       | 279                                   | 61        | 121,6              | 130,4           | 0,4187   |                             |

Sizes listed within the maximum/minimum sizes can be manufactured on request.

| A x B<br>[mm] | Damper blade overlaps<br>without flanges |           | Damper blade overlaps<br>with flanges |           | Weight<br>[kg]     |                 | Effective<br>area S <sub>ef</sub><br>[m <sup>2</sup> ] | Actuating mechanism<br>type |
|---------------|--|-----------|---------------------------------------|-----------|--------------------|-----------------|--|-----------------------------|
|               | a<br>[mm]                                | c<br>[mm] | e<br>[mm]                             | f<br>[mm] | Without<br>flanges | With<br>flanges |  |                             |
| 600 x 1000    | 161                                      | 329       | 111                                   | 279       | 130,1              | 139,4           | 0,4717   | BELIMO BE (40 N.m)          |
|               | 180                                      | -         | -                                     | -         | 60,6               | 65,9            | 0,0392   |                             |
|               | 200                                      | -         | -                                     | -         | 62,4               | 67,6            | 0,0504   |                             |
|               | 225                                      | -         | -                                     | -         | 64,6               | 70,0            | 0,0644   |                             |
|               | 250                                      | -         | -                                     | -         | 66,8               | 72,3            | 0,0784   |                             |
|               | 280                                      | -         | -                                     | -         | 69,4               | 75,1            | 0,0952   |                             |
|               | 300                                      | -         | -                                     | -         | 71,1               | 76,9            | 0,1064   |                             |
|               | 315                                      | -         | -                                     | -         | 72,4               | 78,3            | 0,1148   |                             |
|               | 355                                      | -         | 6,5                                   | -         | 75,9               | 82,0            | 0,1372   |                             |
|               | 400                                      | -         | 29                                    | -         | 79,9               | 86,1            | 0,1624   | BELIMO BEN<br>(15 N.m)      |
|               | 450                                      | -         | 54                                    | -         | 84,1               | 90,8            | 0,1904   |                             |
| 630 x         | 500                                      | -         | 79                                    | -         | 88,5               | 95,4            | 0,2184   |                             |
|               | 550                                      | -         | 104                                   | -         | 92,9               | 100,0           | 0,2464   |                             |
|               | 560                                      | -         | 109                                   | -         | 93,8               | 100,9           | 0,2520   |                             |
|               | 600                                      | -         | 129                                   | -         | 97,3               | 104,6           | 0,2744   |                             |
|               | 630                                      | -         | 144                                   | -         | 99,9               | 107,4           | 0,2912   |                             |
|               | 650                                      | -         | 154                                   | -         | 101,6              | 109,3           | 0,3024   |                             |
|               | 700                                      | 11        | 179                                   | -         | 106,0              | 113,9           | 0,3304   |                             |
|               | 710                                      | 16        | 184                                   | -         | 106,9              | 114,8           | 0,3360   |                             |
|               | 750                                      | 36        | 204                                   | -         | 110,4              | 118,5           | 0,3584   | BELIMO BEE<br>(25 N.m)      |
|               | 800                                      | 61        | 229                                   | 11        | 114,8              | 123,1           | 0,3864   |                             |
| 650 x         | 900                                      | 111       | 279                                   | 61        | 124,6              | 133,6           | 0,4424   |                             |
|               | 1000                                     | 161       | 329                                   | 111       | 133,4              | 142,9           | 0,4984   | BELIMO BE (40 N.m)          |
|               | 180                                      | -         | -                                     | -         | 61,8               | 67,1            | 0,0406   |                             |
|               | 200                                      | -         | -                                     | -         | 63,5               | 68,9            | 0,0522   |                             |
|               | 225                                      | -         | -                                     | -         | 65,8               | 71,3            | 0,0667   |                             |
|               | 250                                      | -         | -                                     | -         | 68,0               | 73,6            | 0,0812   |                             |
|               | 280                                      | -         | -                                     | -         | 70,6               | 76,4            | 0,0986   |                             |
|               | 300                                      | -         | -                                     | -         | 72,4               | 78,3            | 0,1102   |                             |
|               | 315                                      | -         | -                                     | -         | 73,8               | 79,8            | 0,1189   |                             |
|               | 355                                      | -         | 6,5                                   | -         | 77,3               | 83,5            | 0,1421   |                             |
| 650 x         | 400                                      | -         | 29                                    | -         | 81,3               | 87,6            | 0,1682   | BELIMO BEN<br>(15 N.m)      |
|               | 450                                      | -         | 54                                    | -         | 85,6               | 92,4            | 0,1972   |                             |
|               | 500                                      | -         | 79                                    | -         | 90,1               | 97,0            | 0,2262   |                             |
|               | 550                                      | -         | 104                                   | -         | 94,5               | 101,8           | 0,2552   |                             |
|               | 560                                      | -         | 109                                   | -         | 95,4               | 102,6           | 0,2610   |                             |
|               | 600                                      | -         | 129                                   | -         | 98,9               | 106,4           | 0,2842   |                             |
|               | 630                                      | -         | 144                                   | -         | 101,6              | 109,3           | 0,3016   |                             |
|               | 650                                      | -         | 154                                   | -         | 103,4              | 111,1           | 0,3132   |                             |
|               | 700                                      | 11        | 179                                   | -         | 107,8              | 115,8           | 0,3422   |                             |
|               | 710                                      | 16        | 184                                   | -         | 108,6              | 116,8           | 0,3480   |                             |
| 700 x         | 750                                      | 36        | 204                                   | -         | 112,3              | 120,5           | 0,3712   | BELIMO BEE<br>(25 N.m)      |
|               | 800                                      | 61        | 229                                   | 11        | 117,9              | 126,4           | 0,4002   |                             |
|               | 900                                      | 111       | 279                                   | 61        | 126,8              | 135,8           | 0,4582   | BELIMO BE<br>(40 N.m)       |
|               | 1000                                     | 161       | 329                                   | 111       | 135,6              | 145,1           | 0,5162   |                             |
|               | 180                                      | -         | -                                     | -         | 64,5               | 66,2            | 0,0441   |                             |
| 700 x         | 200                                      | -         | -                                     | -         | 66,4               | 68,0            | 0,0567   |                             |
|               | 225                                      | -         | -                                     | -         | 68,8               | 70,3            | 0,0725   | BELIMO BEN<br>(15 N.m)      |
|               | 250                                      | -         | -                                     | -         | 71,0               | 72,6            | 0,0882   |                             |
|               | 280                                      | -         | -                                     | -         | 73,8               | 75,4            | 0,1071   |                             |
|               | 300                                      | -         | -                                     | -         | 75,6               | 77,2            | 0,1197   |                             |

Sizes listed within the maximum/minimum sizes can be manufactured on request.

| A x B<br>[mm] | Damper blade overlaps<br>without flanges |           | Damper blade overlaps<br>with flanges |           | Weight<br>[kg]     |                 | Effective<br>area S <sub>ef</sub><br>[m <sup>2</sup> ] | Actuating mechanism<br>type |
|---------------|--|-----------|---------------------------------------|-----------|--------------------|-----------------|--|-----------------------------|
|               | a<br>[mm]                                | c<br>[mm] | e<br>[mm]                             | f<br>[mm] | Without<br>flanges | With<br>flanges |  |                             |
| 700 x         | 315                                      | -         | -                                     | -         | 77,0               | 78,6            | 0,1292   | BELIMO BEN<br>(15 N.m)      |
|               | 355                                      | -         | 6,5                                   | -         | 80,6               | 82,2            | 0,1544   |                             |
|               | 400                                      | -         | 29                                    | -         | 84,8               | 86,4            | 0,1827   |                             |
|               | 450                                      | -         | 54                                    | -         | 89,4               | 90,9            | 0,2142   |                             |
|               | 500                                      | -         | 79                                    | -         | 93,9               | 95,5            | 0,2457   |                             |
|               | 550                                      | -         | 104                                   | -         | 98,5               | 100,1           | 0,2772   |                             |
|               | 560                                      | -         | 109                                   | -         | 99,4               | 101,0           | 0,2835   |                             |
|               | 600                                      | -         | 129                                   | -         | 103,1              | 104,7           | 0,3087   |                             |
|               | 630                                      | -         | 144                                   | -         | 105,9              | 107,4           | 0,3276   |                             |
|               | 650                                      | -         | 154                                   | -         | 107,6              | 109,2           | 0,3402   |                             |
|               | 700                                      | 11        | 179                                   | -         | 112,3              | 113,8           | 0,3717   |                             |
|               | 710                                      | 16        | 184                                   | -         | 113,1              | 114,7           | 0,3780   |                             |
|               | 750                                      | 36        | 204                                   | -         | 116,9              | 118,4           | 0,4032   |                             |
| 710 x         | 800                                      | 61        | 229                                   | 11        | 122,8              | 124,1           | 0,4347   | BELIMO BEE<br>(25 N.m)      |
|               | 900                                      | 111       | 279                                   | 61        | 131,9              | 133,2           | 0,4977   |                             |
|               | 1000                                     | 161       | 329                                   | 111       | 141,0              | 142,4           | 0,5607   |                             |
|               | 180                                      | -         | -                                     | -         | 63,6               | 69,1            | 0,0448   |                             |
|               | 200                                      | -         | -                                     | -         | 65,4               | 70,9            | 0,0576   |                             |
|               | 225                                      | -         | -                                     | -         | 67,6               | 73,3            | 0,0736   |                             |
|               | 250                                      | -         | -                                     | -         | 69,9               | 75,8            | 0,0896   |                             |
|               | 280                                      | -         | -                                     | -         | 72,6               | 78,6            | 0,1088   |                             |
|               | 300                                      | -         | -                                     | -         | 74,4               | 80,5            | 0,1216   |                             |
|               | 315                                      | -         | -                                     | -         | 75,8               | 81,9            | 0,1312   |                             |
|               | 355                                      | -         | 6,5                                   | -         | 79,3               | 85,6            | 0,1568   |                             |
|               | 400                                      | -         | 29                                    | -         | 83,4               | 90,0            | 0,1856   |                             |
|               | 450                                      | -         | 54                                    | -         | 87,8               | 94,8            | 0,2176   |                             |
| 750 x         | 500                                      | -         | 79                                    | -         | 92,4               | 99,6            | 0,2496   | BELIMO BEE<br>(25 N.m)      |
|               | 550                                      | -         | 104                                   | -         | 96,9               | 104,3           | 0,2816   |                             |
|               | 560                                      | -         | 109                                   | -         | 97,8               | 105,2           | 0,2880   |                             |
|               | 600                                      | -         | 129                                   | -         | 101,4              | 109,1           | 0,3136   |                             |
|               | 630                                      | -         | 144                                   | -         | 102,4              | 111,9           | 0,3328   |                             |
|               | 650                                      | -         | 154                                   | -         | 104,2              | 113,8           | 0,3456   |                             |
|               | 700                                      | 11        | 179                                   | -         | 108,6              | 118,6           | 0,3776   |                             |
|               | 710                                      | 16        | 184                                   | -         | 109,6              | 119,6           | 0,3840   |                             |
|               | 750                                      | 36        | 204                                   | -         | 113,0              | 123,3           | 0,4096   |                             |
|               | 800                                      | 61        | 229                                   | 11        | 118,7              | 129,3           | 0,4416   |                             |
|               | 900                                      | 111       | 279                                   | 61        | 127,6              | 138,8           | 0,5056   |                             |
|               | 1000                                     | 161       | 329                                   | 111       | 136,4              | 148,4           | 0,5696   |                             |
|               | 180                                      | -         | -                                     | -         | 64,7               | 70,2            | 0,0476   |                             |
|               | 200                                      | -         | -                                     | -         | 66,5               | 72,1            | 0,0612   |                             |
| 315           | 225                                      | -         | -                                     | -         | 68,8               | 74,6            | 0,0782   | BELIMO BEN<br>(15 N.m)      |
|               | 250                                      | -         | -                                     | -         | 71,0               | 77,0            | 0,0952   |                             |
|               | 280                                      | -         | -                                     | -         | 73,8               | 79,9            | 0,1156   |                             |
|               | 300                                      | -         | -                                     | -         | 75,6               | 81,8            | 0,1292   |                             |
|               | 355                                      | -         | 6,5                                   | -         | 76,9               | 83,3            | 0,1394   |                             |
|               | 400                                      | -         | 29                                    | -         | 80,6               | 87,1            | 0,1666   |                             |
|               | 450                                      | -         | 54                                    | -         | 84,7               | 91,4            | 0,1972   |                             |
|               | 500                                      | -         | 79                                    | -         | 89,3               | 96,2            | 0,2312   |                             |
|               | 550                                      | -         | 104                                   | -         | 93,8               | 101,0           | 0,2652   |                             |
|               | 560                                      | -         | 109                                   | -         | 99,4               | 105,8           | 0,2992   |                             |
|               |  |           |                                       |           |                    |                 | 0,3060   |                             |

Sizes listed within the maximum/minimum sizes can be manufactured on request.

| A x B<br>[mm] | Damper blade overlaps<br>without flanges |           | Damper blade overlaps<br>with flanges |           | Weight<br>[kg]     |                 | Effective<br>area S <sub>ef</sub><br>[m <sup>2</sup> ] | Actuating mechanism<br>type |
|---------------|--|-----------|---------------------------------------|-----------|--------------------|-----------------|--|-----------------------------|
|               | a<br>[mm]                                | c<br>[mm] | e<br>[mm]                             | f<br>[mm] | Without<br>flanges | With<br>flanges |  |                             |
| 750 x 710     | 600                                      | -         | 129                                   | -         | 79                 | 103,0           | 0,3332   | BELIMO BEN (15 N.m)         |
|               | 630                                      | -         | 144                                   | -         | 94                 | 105,7           | 0,3536   |                             |
|               | 650                                      | -         | 154                                   | -         | 104                | 107,5           | 0,3672   |                             |
|               | 700                                      | 11        | 179                                   | -         | 129                | 112,1           | 0,4012   | BELIMO BEE<br>(25 N.m)      |
|               | 710                                      | 16        | 184                                   | -         | 134                | 113,0           | 0,4080   |                             |
|               | 750                                      | 36        | 204                                   | -         | 154                | 117,8           | 0,4352   |                             |
|               | 800                                      | 61        | 229                                   | 11        | 179                | 122,4           | 0,4692   |                             |
|               | 900                                      | 111       | 279                                   | 61        | 229                | 131,5           | 0,5372   | BELIMO BE<br>(40 N.m)       |
|               | 1000                                     | 161       | 329                                   | 111       | 279                | 143,0           | 0,6052   |                             |
|               | 180                                      | -         | -                                     | -         | -                  | 68,4            | 0,0511   |                             |
| 800 x 500     | 200                                      | -         | -                                     | -         | -                  | 70,4            | 0,0657   |                             |
|               | 225                                      | -         | -                                     | -         | -                  | 72,8            | 0,0840   |                             |
|               | 250                                      | -         | -                                     | -         | -                  | 75,2            | 0,1022   |                             |
|               | 280                                      | -         | -                                     | -         | -                  | 78,1            | 0,1241   |                             |
|               | 300                                      | -         | -                                     | -         | -                  | 79,9            | 0,1387   | BELIMO BEN<br>(15 N.m)      |
|               | 315                                      | -         | -                                     | -         | -                  | 81,4            | 0,1497   |                             |
|               | 355                                      | -         | 6,5                                   | -         | -                  | 85,3            | 0,1789   |                             |
|               | 400                                      | -         | 29                                    | -         | -                  | 89,5            | 0,2117   |                             |
|               | 450                                      | -         | 54                                    | -         | 4                  | 94,3            | 0,2482   |                             |
|               | 500                                      | -         | 79                                    | -         | 29                 | 99,2            | 0,2847   |                             |
| 800 x 600     | 550                                      | -         | 104                                   | -         | 54                 | 103,9           | 0,3212   |                             |
|               | 560                                      | -         | 109                                   | -         | 59                 | 104,9           | 0,3285   |                             |
|               | 600                                      | -         | 129                                   | -         | 79                 | 108,7           | 0,3577   |                             |
|               | 630                                      | -         | 144                                   | -         | 94                 | 111,6           | 0,3796   | BELIMO BEE<br>(25 N.m)      |
|               | 650                                      | -         | 154                                   | -         | 104                | 113,6           | 0,3942   |                             |
|               | 700                                      | 11        | 179                                   | -         | 129                | 118,3           | 0,4307   |                             |
|               | 710                                      | 16        | 184                                   | -         | 134                | 119,3           | 0,4380   |                             |
|               | 750                                      | 36        | 204                                   | -         | 154                | 124,3           | 0,4672   |                             |
|               | 800                                      | 61        | 229                                   | 11        | 179                | 129,2           | 0,5037   | BELIMO BE<br>(40 N.m)       |
|               | 900                                      | 111       | 279                                   | 61        | 229                | 138,7           | 0,5767   |                             |
| 900 x 500     | 1000                                     | 161       | 329                                   | 111       | 279                | 148,4           | 0,6497   |                             |
|               | 180                                      | -         | -                                     | -         | -                  | 72,7            | 0,0581   |                             |
|               | 200                                      | -         | -                                     | -         | -                  | 74,8            | 0,0747   |                             |
|               | 225                                      | -         | -                                     | -         | -                  | 77,3            | 0,0955   |                             |
|               | 250                                      | -         | -                                     | -         | -                  | 79,8            | 0,1162   | BELIMO BEN<br>(15 N.m)      |
|               | 280                                      | -         | -                                     | -         | -                  | 82,8            | 0,1411   |                             |
|               | 300                                      | -         | -                                     | -         | -                  | 84,7            | 0,1577   |                             |
|               | 315                                      | -         | -                                     | -         | -                  | 86,3            | 0,1702   |                             |
|               | 355                                      | -         | 6,5                                   | -         | -                  | 90,2            | 0,2034   |                             |
|               | 400                                      | -         | 29                                    | -         | -                  | 94,8            | 0,2407   |                             |
| 900 x 600     | 450                                      | -         | 54                                    | -         | 4                  | 99,8            | 0,2822   |                             |
|               | 500                                      | -         | 79                                    | -         | 29                 | 104,9           | 0,3237   |                             |
|               | 550                                      | -         | 104                                   | -         | 54                 | 109,9           | 0,3652   | BELIMO BEE<br>(25 N.m)      |
|               | 560                                      | -         | 109                                   | -         | 59                 | 110,9           | 0,3735   |                             |
|               | 600                                      | -         | 129                                   | -         | 79                 | 115,0           | 0,4067   |                             |
|               | 630                                      | -         | 144                                   | -         | 94                 | 118,0           | 0,4316   |                             |
|               | 650                                      | -         | 154                                   | -         | 104                | 120,0           | 0,4482   |                             |
|               | 700                                      | 11        | 179                                   | -         | 129                | 126,2           | 0,4897   | BELIMO BE<br>(40 N.m)       |
|               | 710                                      | 16        | 184                                   | -         | 134                | 127,2           | 0,4980   |                             |
|               | 750                                      | 36        | 204                                   | -         | 154                | 131,3           | 0,5312   |                             |
|               | 800                                      | 61        | 229                                   | 11        | 179                | 136,3           | 0,5727   |                             |

Sizes listed within the maximum/minimum sizes can be manufactured on request.

| A x B<br>[mm] | Damper blade overlaps<br>without flanges |           | Damper blade overlaps<br>with flanges |           | Weight<br>[kg]     |                 | Effective<br>area S <sub>ef</sub><br>[m <sup>2</sup> ] | Actuating mechanism<br>type |
|---------------|--|-----------|---------------------------------------|-----------|--------------------|-----------------|--|-----------------------------|
|               | a<br>[mm]                                | c<br>[mm] | e<br>[mm]                             | f<br>[mm] | Without<br>flanges | With<br>flanges |  |                             |
| 900 x 900     | 111                                      | 279       | 61                                    | 229       | 146,3              | 156,2           | 0,6557   | BELIMO BE<br>(40 N.m)       |
|               | 161                                      | 329       | 111                                   | 279       | 156,4              | 166,8           | 0,7387   |                             |
|               | 180                                      | -         | -                                     | -         | 78,1               | 83,5            | 0,0651   |                             |
|               | 200                                      | -         | -                                     | -         | 80,2               | 85,7            | 0,0837   |                             |
|               | 225                                      | -         | -                                     | -         | 82,9               | 88,5            | 0,1070   |                             |
|               | 250                                      | -         | -                                     | -         | 85,6               | 91,2            | 0,1302   |                             |
|               | 280                                      | -         | -                                     | -         | 88,8               | 94,5            | 0,1581   |                             |
|               | 300                                      | -         | -                                     | -         | 90,8               | 96,8            | 0,1767   |                             |
|               | 315                                      | -         | -                                     | -         | 92,5               | 98,4            | 0,1907   |                             |
|               | 355                                      | -         | 6,5                                   | -         | 96,7               | 102,8           | 0,2279   |                             |
|               | 400                                      | -         | 29                                    | -         | 101,5              | 107,7           | 0,2697   |                             |
|               | 450                                      | -         | 54                                    | -         | 106,9              | 113,2           | 0,3162   |                             |
|               | 500                                      | -         | 79                                    | -         | 112,2              | 118,7           | 0,3627   |                             |
|               | 550                                      | -         | 104                                   | -         | 117,6              | 124,1           | 0,4092   | BELIMO BEE<br>(25 N.m)      |
| 1000 x 1000   | 560                                      | -         | 109                                   | -         | 118,7              | 125,3           | 0,4185   |                             |
|               | 600                                      | -         | 129                                   | -         | 122,9              | 129,7           | 0,4557   |                             |
|               | 630                                      | -         | 144                                   | -         | 126,1              | 133,0           | 0,4836   |                             |
|               | 650                                      | -         | 154                                   | -         | 129,5              | 136,4           | 0,5022   |                             |
|               | 700                                      | 11        | 179                                   | -         | 134,8              | 141,8           | 0,5487   |                             |
|               | 710                                      | 16        | 184                                   | -         | 135,8              | 143,0           | 0,5580   |                             |
|               | 750                                      | 36        | 204                                   | -         | 140,2              | 147,4           | 0,5952   |                             |
|               | 800                                      | 61        | 229                                   | 11        | 145,4              | 152,8           | 0,6417   |                             |
|               | 900                                      | 111       | 279                                   | 61        | 156,1              | 163,9           | 0,7347   |                             |
|               | 1000                                     | 161       | 329                                   | 111       | 166,8              | 174,9           | 0,8277   |                             |
| 1100 x 1100   | 180                                      | -         | -                                     | -         | 83,4               | 87,1            | 0,0721   | BELIMO BEN<br>(15 N.m)      |
|               | 200                                      | -         | -                                     | -         | 85,7               | 89,2            | 0,0927   |                             |
|               | 225                                      | -         | -                                     | -         | 88,6               | 92,1            | 0,1185   |                             |
|               | 250                                      | -         | -                                     | -         | 91,3               | 95,0            | 0,1442   |                             |
|               | 280                                      | -         | -                                     | -         | 94,7               | 98,3            | 0,1751   |                             |
|               | 300                                      | -         | -                                     | -         | 97,0               | 100,6           | 0,1957   |                             |
|               | 315                                      | -         | -                                     | -         | 98,6               | 102,2           | 0,2112   |                             |
|               | 355                                      | -         | 6,5                                   | -         | 103,2              | 106,8           | 0,2524   |                             |
|               | 400                                      | -         | 29                                    | -         | 108,2              | 111,9           | 0,2987   |                             |
|               | 450                                      | -         | 54                                    | -         | 114,0              | 117,5           | 0,3502   |                             |
|               | 500                                      | -         | 79                                    | -         | 119,6              | 123,2           | 0,4017   |                             |
|               | 550                                      | -         | 104                                   | -         | 125,3              | 128,9           | 0,4532   |                             |
|               | 560                                      | -         | 109                                   | -         | 126,4              | 130,0           | 0,4635   |                             |
|               | 600                                      | -         | 129                                   | -         | 130,9              | 134,6           | 0,5047   |                             |
|               | 630                                      | -         | 144                                   | -         | 135,5              | 139,0           | 0,5356   |                             |
| 1200 x 1200   | 650                                      | -         | 154                                   | -         | 137,8              | 141,3           | 0,5562   | BELIMO BE<br>(40 N.m)       |
|               | 700                                      | 11        | 179                                   | -         | 143,4              | 147,0           | 0,6077   |                             |
|               | 710                                      | 16        | 184                                   | -         | 144,6              | 148,1           | 0,6180   |                             |
|               | 750                                      | 36        | 204                                   | -         | 149,0              | 152,6           | 0,6592   |                             |
|               | 800                                      | 61        | 229                                   | 11        | 154,7              | 158,4           | 0,7107   |                             |
|               | 900                                      | 111       | 279                                   | 61        | 166,1              | 169,6           | 0,8137   |                             |
|               | 1000                                     | 161       | 329                                   | 111       | 177,4              | 180,9           | 0,9167   |                             |
|               | 180                                      | -         | -                                     | -         | 91,4               | 97,9            | 0,0826   |                             |
|               | 200                                      | -         | -                                     | -         | 94,0               | 100,4           | 0,1062   |                             |
|               | 225                                      | -         | -                                     | -         | 97,0               | 103,6           | 0,1357   |                             |
| 1250 x 1250   | 250                                      | -         | -                                     | -         | 100,1              | 106,7           | 0,1652   | BELIMO BEN<br>(15 N.m)      |
|               | 280                                      | -         | -                                     | -         | 103,7              | 110,4           | 0,2006   |                             |

Sizes listed within the maximum/minimum sizes can be manufactured on request.

| A x B<br>[mm] | Damper blade overlaps<br>without flanges |           | Damper blade overlaps<br>with flanges |           | Weight<br>[kg]     |                 | Effective<br>area S <sub>ef</sub><br>[m <sup>2</sup> ] | Actuating mechanism<br>type       |
|---------------|--|-----------|---------------------------------------|-----------|--------------------|-----------------|--|-----------------------------------|
|               | a<br>[mm]                                | c<br>[mm] | e<br>[mm]                             | f<br>[mm] | Without<br>flanges | With<br>flanges |  |                                   |
| 300           | -  | -         | -                                     | -         | 106,2              | 113,0           | 0,2242   | BELIMO BEN<br>(15 N.m)            |
| 315           | -  | -         | -                                     | -         | 108,0              | 114,8           | 0,2419   |                                   |
| 355           | -  | 6,5       | -                                     | -         | 112,9              | 119,9           | 0,2891   |                                   |
| 400           | -  | 29        | -                                     | -         | 118,4              | 125,6           | 0,3422   |                                   |
| 450           | -  | 54        | -                                     | 4         | 124,6              | 131,8           | 0,4012   | BELIMO BEE<br>(25 N.m)            |
| 500           | -  | 79        | -                                     | 29        | 130,7              | 138,1           | 0,4602   |                                   |
| 550           | -  | 104       | -                                     | 54        | 136,8              | 144,3           | 0,5192   |                                   |
| 560           | -  | 109       | -                                     | 59        | 138,0              | 145,5           | 0,5310   |                                   |
| 1250 x 600    | -  | 129       | -                                     | 79        | 144,1              | 151,7           | 0,5782   |                                   |
|               | -  | 144       | -                                     | 94        | 147,7              | 155,5           | 0,6136   |                                   |
|               | -  | 154       | -                                     | 104       | 150,2              | 158,0           | 0,6372   |                                   |
|               | 11                                       | 179       | -                                     | 129       | 156,4              | 164,3           | 0,6962   | BELIMO BE<br>(40 N.m)             |
|               | 16                                       | 184       | -                                     | 134       | 157,6              | 165,6           | 0,7080   |                                   |
|               | 36                                       | 204       | -                                     | 154       | 162,5              | 170,5           | 0,7552   |                                   |
|               | 61                                       | 229       | 11                                    | 179       | 168,6              | 176,8           | 0,8142   |                                   |
|               | 111                                      | 279       | 61                                    | 229       | 180,8              | 189,4           | 0,9322   |                                   |
|               | 161                                      | 329       | 111                                   | 279       | 192,9              | 204,6           | 1,0502   | SCHISCHEK InMax 50.75 (75 N.m)    |
|               | -  | -         | -                                     | -         | 95,3               | 104,0           | 0,0931   |                                   |
| 180           | -  | -         | -                                     | -         | 97,9               | 106,5           | 0,1197   |                                   |
| 200           | -  | -         | -                                     | -         | 101,1              | 109,8           | 0,1530   |                                   |
| 225           | -  | -         | -                                     | -         | 104,2              | 113,0           | 0,1862   | BELIMO BEN<br>(15 N.m)            |
| 250           | -  | -         | -                                     | -         | 108,0              | 117,0           | 0,2261   |                                   |
| 300           | -  | -         | -                                     | -         | 110,5              | 119,6           | 0,2527   |                                   |
| 315           | -  | -         | -                                     | -         | 112,5              | 121,6           | 0,2727   |                                   |
| 1400 x 500    | -  | 6,5       | -                                     | -         | 117,4              | 126,8           | 0,3259   |                                   |
|               | -  | 29        | -                                     | -         | 123,2              | 132,7           | 0,3857   |                                   |
|               | -  | 54        | -                                     | 4         | 129,5              | 139,3           | 0,4522   | BELIMO BEE<br>(25 N.m)            |
|               | -  | 79        | -                                     | 29        | 135,8              | 145,8           | 0,5187   |                                   |
|               | -  | 104       | -                                     | 54        | 143,3              | 153,5           | 0,5852   |                                   |
|               | -  | 109       | -                                     | 59        | 144,6              | 154,9           | 0,5985   |                                   |
|               | -  | 129       | -                                     | 79        | 149,6              | 160,1           | 0,6517   |                                   |
|               | -  | 144       | -                                     | 94        | 153,4              | 164,1           | 0,6916   |                                   |
|               | -  | 154       | -                                     | 104       | 155,9              | 166,6           | 0,7182   | BELIMO BE<br>(40 N.m)             |
|               | 11                                       | 179       | -                                     | 129       | 162,2              | 173,2           | 0,7847   |                                   |
| 180           | -  | -         | -                                     | -         | 163,4              | 174,6           | 0,7980   |                                   |
| 200           | -  | -         | -                                     | -         | 168,5              | 179,7           | 0,8512   |                                   |
| 225           | -  | -         | -                                     | -         | 174,8              | 186,3           | 0,9177   |                                   |
| 250           | -  | -         | -                                     | -         | 195,3              | 207,2           | 1,0507   | SCHISCHEK InMax 50.75<br>(75 N.m) |
| 300           | -  | -         | -                                     | -         | 195,3              | 207,9           | 1,1837   |                                   |
| 1500 x 500    | -  | 6,5       | -                                     | -         | 207,9              | 220,3           | 1,1837   |                                   |
|               | -  | 29        | -                                     | -         | 100,5              | 109,5           | 0,1001   |                                   |
|               | -  | 54        | -                                     | 4         | 103,2              | 112,2           | 0,1287   |                                   |
|               | -  | 79        | -                                     | 29        | 106,5              | 115,7           | 0,1645   | BELIMO BEN<br>(15 N.m)            |
|               | -  | 104       | -                                     | 54        | 109,8              | 119,1           | 0,2002   |                                   |
|               | -  | 109       | -                                     | 59        | 113,7              | 123,3           | 0,2431   |                                   |
|               | -  | 129       | -                                     | 79        | 116,4              | 125,9           | 0,2717   |                                   |
|               | -  | 144       | -                                     | 94        | 118,3              | 128,0           | 0,2932   |                                   |
|               | -  | 154       | -                                     | 104       | 123,6              | 133,5           | 0,3504   |                                   |
|               | -  | 155       | -                                     | 105       | 129,6              | 139,7           | 0,4147   | BELIMO BEE<br>(25 N.m)            |
| 180           | -  | -         | -                                     | -         | 136,3              | 146,5           | 0,4862   |                                   |
| 200           | -  | -         | -                                     | -         | 142,8              | 153,4           | 0,5577   |                                   |
| 225           | -  | -         | -                                     | -         | 150,7              | 161,5           | 0,6292   | BELIMO BE (40 N.m)                |
| 250           | -  | -         | -                                     | -         | -                  | -               | -  |                                   |
| 300           | -  | -         | -                                     | -         | -                  | -               | -  |                                   |
| 315           | -  | -         | -                                     | -         | -                  | -               | -  |                                   |
| 355           | -  | -         | -                                     | -         | -                  | -               | -  |                                   |
| 400           | -  | -         | -                                     | -         | -                  | -               | -  |                                   |
| 450           | -  | -         | -                                     | -         | -                  | -               | -  |                                   |
| 500           | -  | -         | -                                     | -         | -                  | -               | -  |                                   |
| 550           | -  | -         | -                                     | -         | -                  | -               | -  |                                   |

Sizes listed within the maximum/minimum sizes can be manufactured on request.

| A x B<br>[mm] | Damper blade overlaps<br>without flanges |           | Damper blade overlaps<br>with flanges |           | Weight<br>[kg]     |                 | Effective<br>area S <sub>ef</sub><br>[m <sup>2</sup> ] | Actuating mechanism<br>type       |
|---------------|--|-----------|---------------------------------------|-----------|--------------------|-----------------|--|-----------------------------------|
|               | a<br>[mm]                                | c<br>[mm] | e<br>[mm]                             | f<br>[mm] | Without<br>flanges | With<br>flanges |  |                                   |
| 1500 x        | 560                                      | -         | 109                                   | -         | 59                 | 151,9           | 0,6435   | BELIMO BE<br>(40 N.m)             |
|               | 600                                      | -         | 129                                   | -         | 79                 | 157,2           | 0,7007   |                                   |
|               | 630                                      | -         | 144                                   | -         | 94                 | 161,2           | 0,7436   |                                   |
|               | 650                                      | -         | 154                                   | -         | 104                | 163,9           | 0,7722   |                                   |
|               | 700                                      | 11        | 179                                   | -         | 129                | 170,4           | 0,8437   |                                   |
|               | 710                                      | 16        | 184                                   | -         | 134                | 171,8           | 0,8580   |                                   |
|               | 750                                      | 36        | 204                                   | -         | 154                | 177,1           | 0,9152   |                                   |
|               | 800                                      | 61        | 229                                   | 11        | 179                | 183,7           | 0,9867   |                                   |
|               | 900                                      | 111       | 279                                   | 61        | 229                | 204,7           | 1,1297   | SCHISCHEK InMax 50.75<br>(75 N.m) |
|               | 1000                                     | 161       | 329                                   | 111       | 279                | 217,9           | 1,2727   |                                   |
| 1600 x        | 180                                      | -         | -                                     | -         | -                  | 105,7           | 0,1071   | BELIMO BEN<br>(15 N.m)            |
|               | 200                                      | -         | -                                     | -         | -                  | 108,4           | 0,1377   |                                   |
|               | 225                                      | -         | -                                     | -         | -                  | 111,9           | 0,1760   |                                   |
|               | 250                                      | -         | -                                     | -         | -                  | 115,3           | 0,2142   |                                   |
|               | 280                                      | -         | -                                     | -         | -                  | 119,5           | 0,2601   |                                   |
|               | 300                                      | -         | -                                     | -         | -                  | 122,2           | 0,2907   |                                   |
|               | 315                                      | -         | -                                     | -         | -                  | 124,3           | 0,3137   |                                   |
|               | 355                                      | -         | 6,5                                   | -         | -                  | 129,8           | 0,3749   | BELIMO BEE<br>(25 N.m)            |
|               | 400                                      | -         | 29                                    | -         | -                  | 136,0           | 0,4437   |                                   |
|               | 450                                      | -         | 54                                    | -         | 4                  | 142,9           | 0,5202   |                                   |
| 1600 x        | 500                                      | -         | 79                                    | -         | 29                 | 149,8           | 0,5967   | BELIMO BE<br>(40 N.m)             |
|               | 550                                      | -         | 104                                   | -         | 54                 | 158,0           | 0,6732   |                                   |
|               | 560                                      | -         | 109                                   | -         | 59                 | 159,4           | 0,6885   |                                   |
|               | 600                                      | -         | 129                                   | -         | 79                 | 164,9           | 0,7497   |                                   |
|               | 630                                      | -         | 144                                   | -         | 94                 | 169,1           | 0,7956   |                                   |
|               | 650                                      | -         | 154                                   | -         | 104                | 171,8           | 0,8262   |                                   |
|               | 700                                      | 11        | 179                                   | -         | 129                | 178,7           | 0,9027   |                                   |
|               | 710                                      | 16        | 184                                   | -         | 134                | 180,1           | 0,9180   |                                   |
|               | 750                                      | 36        | 204                                   | -         | 154                | 185,6           | 0,9792   |                                   |
|               | 800                                      | 61        | 229                                   | 11        | 179                | 192,5           | 1,0557   |                                   |
|               | 900                                      | 111       | 279                                   | 61        | 229                | 214,1           | 1,2087   | SCHISCHEK InMax 50.75<br>(75 N.m) |
|               | 1000                                     | 161       | 329                                   | 111       | 279                | 228,0           | 1,3617   |                                   |

Sizes listed within the maximum/minimum sizes can be manufactured on request.

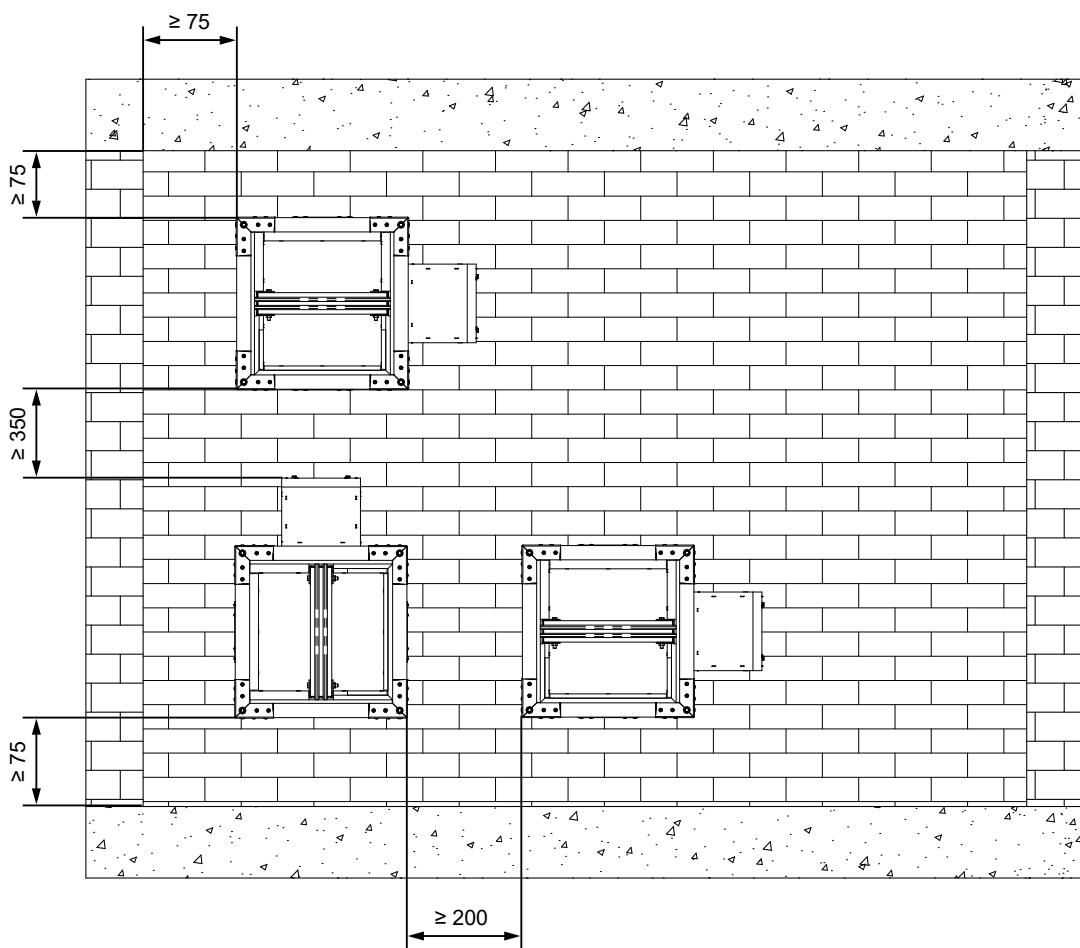
## IV. INSTALLATION

### Placement and installation

- Dampers are designed to remove heat and combustion products (e.g. smoke) from fire compartments
- Dampers are suitable for installation in vertical and horizontal position passages of fire separating constructions. The damper installation procedures must be done so that all load transfer from the fire separating constructions to the damper is absolutely excluded.
- Following air-conditioning duct must be suspended or supported so that all load transfer from the following duct to the damper flange is absolutely excluded.
- The gap between the installed damper and the fire separating construction must be perfectly filled with approved material.
- After installing the damper, the damper blades must only be opened, or closed by operation of the actuator only.
- The distance between the damper and the construction (wall, ceiling) must be 75 mm at the minimum, according to EN 1366-2. If two or more dampers are to be installed in one fire separating construction, the distance between adjacent dampers must be 200 mm at the minimum, according to EN 1366-10.
- To provide the necessary space for access to the control device, it is recommended that other objects be at least 350 mm away from the control parts of the damper.

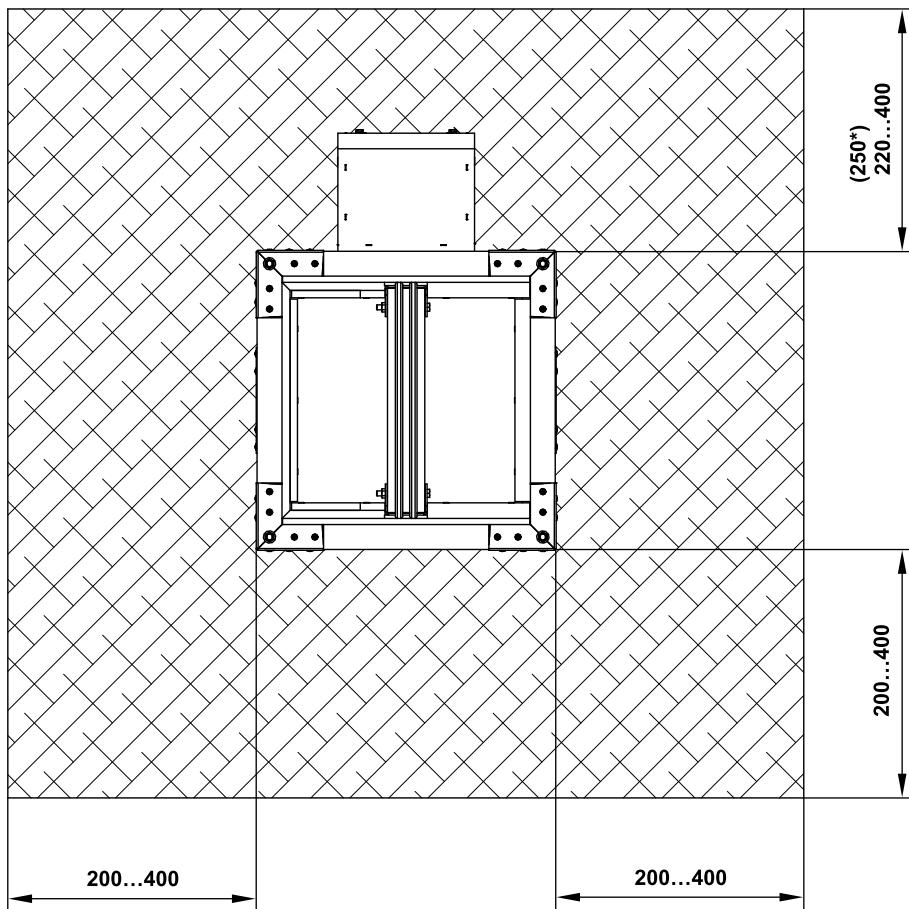
#### Minimum distance between the dampers and the construction

- minimum distance 200 mm between dampers, according to EN 1366-10
- minimum distance 75 mm between damper and construction (wall/ceiling), according to EN 1366-10



- This is the BS EN1366-2 test standard distances. They are considered as minimum. Actual location should be based on wall manufacturers requirements.
- Always consult the wall manufacturers specific guidelines for deflection heads, penetration size, location to other services, fire stopping and load bearing capacity.
- With smoke control ducting then refer to duct manufacturers tested parameters for spacing & pattress requirements.
- No other services should pass through the dampers building work opening.

**Dimensions of an installation opening  
ABLATIVE COATED BATT**



\* Dimensions with actuating mechanism InMax 50.75S.

## Statement of installations

| Type of construction                          | Min. thickness of construction [mm]   | Penetration seal            | Classification   | Page  |
|---|---|-----------------------------|--|-------|
| In solid wall construction                    | 100   | Ablative Coated Batt        | EI 120 ( $v_{ew} i \leftrightarrow o$ ) S1000C <sub>mod</sub> HOT 400/30AAmulti        | 26    |
| In gypsum wall construction                   | 100   | Ablative Coated Batt        | EI 120 ( $v_{ew} i \leftrightarrow o$ ) S1000C <sub>mod</sub> HOT 400/30AAmulti        | 27    |
| In solid ceiling construction                 | 150   | Ablative Coated Batt        | EI 120 ( $h_{ow} i \leftrightarrow o$ ) S1500C <sub>mod</sub> HOT 400/30MAmulti        | 28    |
| Battery in solid wall construction            | 2 dampers side by side  | Ablative Coated Batt        | EI 120 ( $v_{ew} i \leftrightarrow o$ ) S1000C <sub>mod</sub> HOT 400/30AAmulti        | 29    |
|   | 2 dampers on top of each other  |                             |  | 31    |
| Battery in gypsum wall construction           | 2 dampers side by side  | Ablative Coated Batt system | EI 120 ( $v_{ew} i \leftrightarrow o$ ) S1500C <sub>mod</sub> HOT 400/30MAmulti        | 30    |
|   | 4 dampers   |                             |  | 32    |
| Horizontal or vertical smoke extraction ducts | Connection to single or multi compartment smoke extraction ducts tested according to EN 1366-8 or EN 1366-9 |                             | EI 120 ( $h_{od}-v_{ed} i \leftrightarrow o$ ) S1000C <sub>mod</sub> HOT 400/30MAmulti | 33-34 |

Images of plasterboard construction according to Rigips instructions (substitutes can be used such as British Gypsum, Knauf or Lafarge products that are the same overall wall thickness & EI performance on both sides).

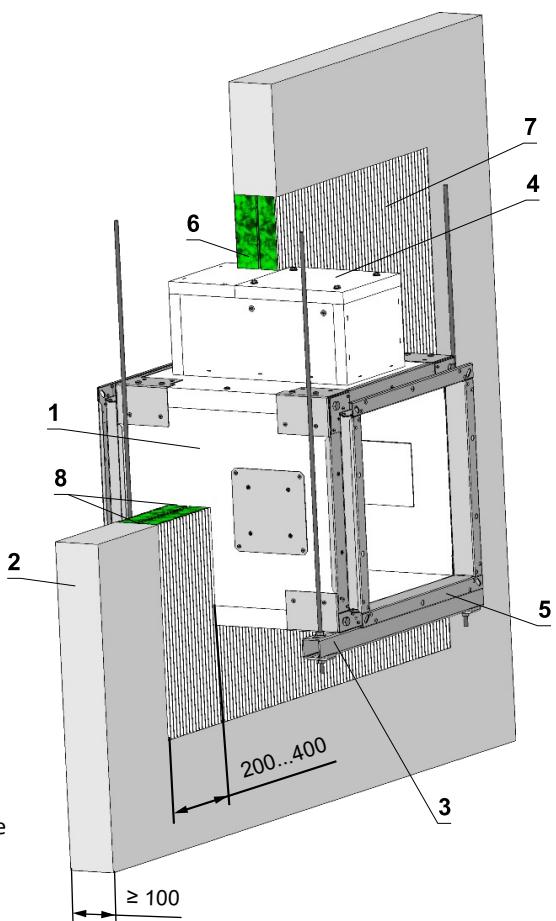
The smoke control damper can be integrated into a gypsum wall construction with fire classification EI120 or EI 90.

## Installation in solid wall construction of fire compartment

### Solid wall - Ablative Coated Batt system - vertical blade axis position

EI 120 S

- For connection following duct → see pages 42 to 44
- Examples of anchors to the fire dividing construction → see pages 39 to 41

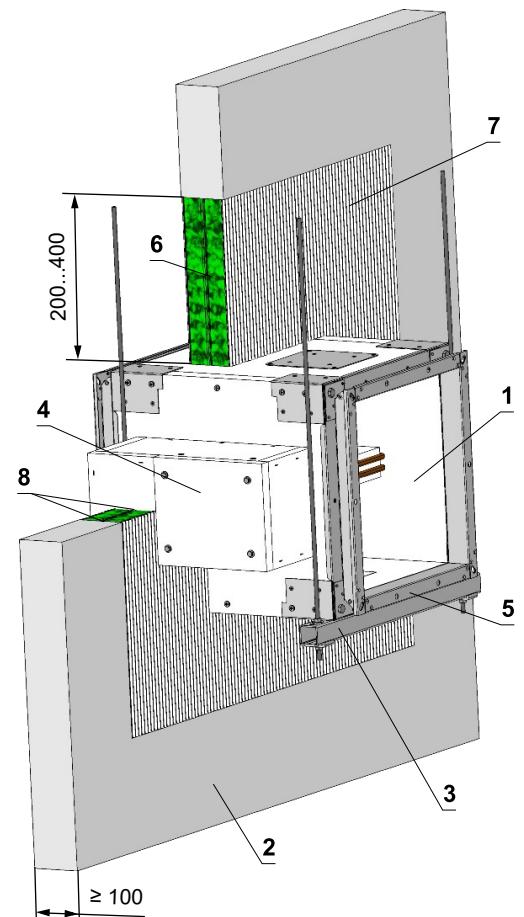


- 1 SEDM
- 2 Solid wall construction
- 3 Profile with threaded rod → see pages 33 to 36
- 4 Actuator cover - must be removable after installation of the damper
- 5 Flange  
Ablative Coated Batt system HILTI
- 6 Mineral wool board - min. density 140 kg/m³ (HILTI CFS-CT B 1S 140/50...)
- 7 Fire stop coating - th. 1 mm (HILTI CFS-CT...) - coating is overcoated on the support construction and on the damper casing/duct.
- 8 Fire-resistant mastic - (HILTI CFS-S ACR...) fill the gap from both sides of the fire separation construction and around the perimeter of penetration and damper casing.

### Solid wall - Ablative Coated Batt system - horizontal blade axis position

EI 120 S

- For connection following duct → see pages 42 to 44
- Examples of anchors to the fire dividing construction → see pages 39 to 41

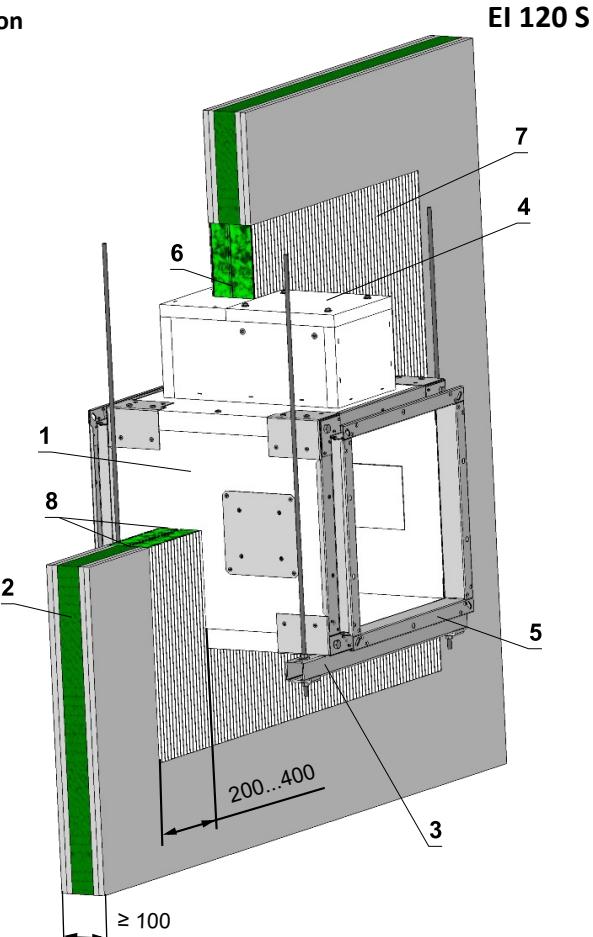


- 1 SEDM
- 2 Solid wall construction
- 3 Profile with threaded rod → see pages 33 to 36
- 4 Actuator cover - must be removable after installation of the damper
- 5 Flange  
Ablative Coated Batt system HILTI
- 6 Mineral wool board - min. density 140 kg/m³ (HILTI CFS-CT B 1S 140/50...)
- 7 Fire stop coating - th. 1 mm (HILTI CFS-CT...) - coating is overcoated on the support construction and on the damper casing/duct.
- 8 Fire-resistant mastic - (HILTI CFS-S ACR...) fill the gap from both sides of the fire separation construction and around the perimeter of penetration and damper casing.

## Installation in gypsum wall construction of fire compartment

### Gypsum wall - Ablative Coated Batt system - vertical blade axis position

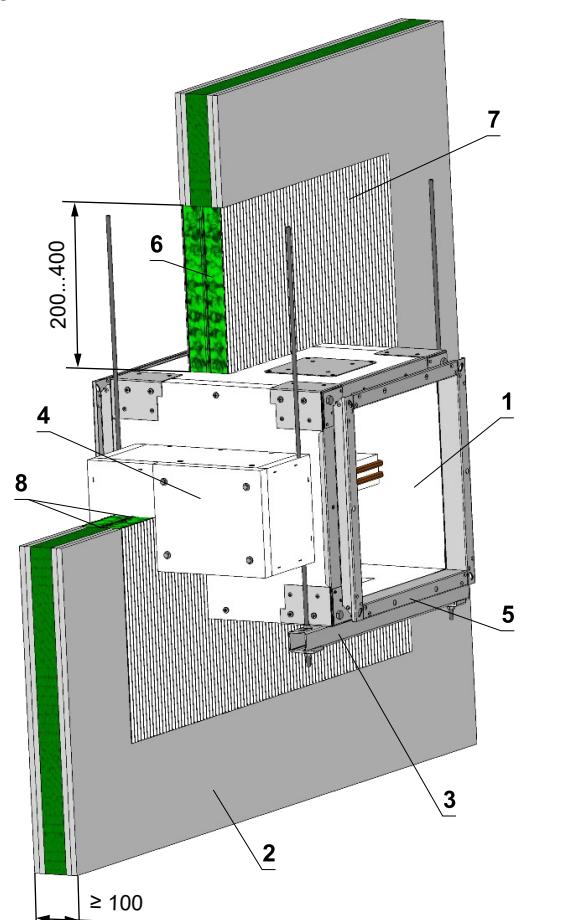
- For connection following duct → see pages 42 to 44
- Examples of anchors to the fire dividing construction → see pages 39 to 41



- 1 SEDM
- 2 Gypsum wall construction
- 3 Profile with threaded rod → see pages 33 to 36
- 4 Actuator cover - must be removable after installation of the damper
- 5 Flange
- Ablative Coated Batt system HILTI
- 6 Mineral wool board - min. density 140 kg/m³ (HILTI CFS-CT B 1S 140/50...)
- 7 Fire stop coating - th. 1 mm (HILTI CFS-CT...) - coating is overcoated on the support construction and on the damper casing/duct.
- 8 Fire-resistant mastic - (HILTI CFS-S ACR...) fill the gap from both sides of the fire separation construction and around the perimeter of penetration and damper casing.

### Gypsum wall - Ablative Coated Batt system - horizontal blade axis position

- For connection following duct → see pages 42 to 44
- Examples of anchors to the fire dividing construction → see pages 39 to 41



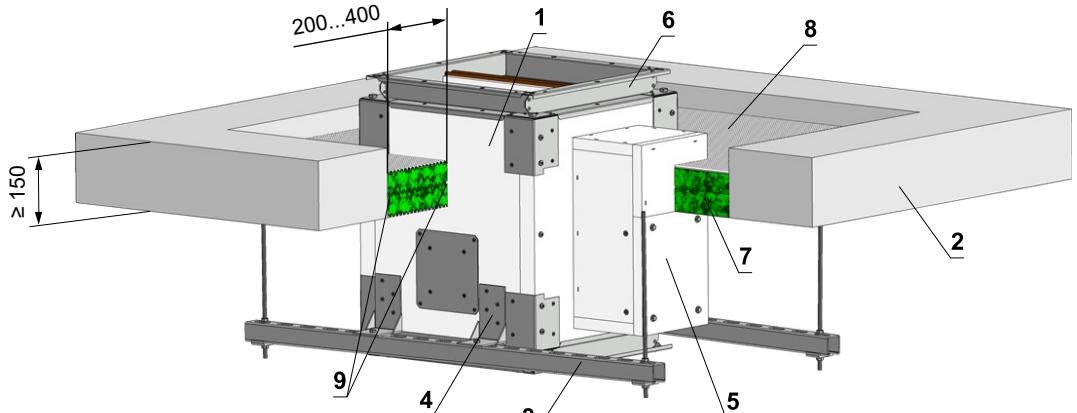
- 1 SEDM
- 2 Gypsum wall construction
- 3 Profile with threaded rod → see pages 33 to 36
- 4 Actuator cover - must be removable after installation of the damper
- 5 Flange
- Ablative Coated Batt system HILTI
- 6 Mineral wool board - min. density 140 kg/m³ (HILTI CFS-CT B 1S 140/50...)
- 7 Fire stop coating - th. 1 mm (HILTI CFS-CT...) - coating is overcoated on the support construction and on the damper casing/duct.
- 8 Fire-resistant mastic - (HILTI CFS-S ACR...) fill the gap from both sides of the fire separation construction and around the perimeter of penetration and damper casing.

## Installation in solid ceiling construction of fire compartment

### In solid ceiling construction - Ablative Coated Batt system - actuator under ceiling

EI 120 S

- For connection of following duct → see pages 42 to 44
- Examples of anchors to the fire dividing construction → see pages 39 to 41
- Number of L-holders and their placement, acc. to AxB dimension → see page 37

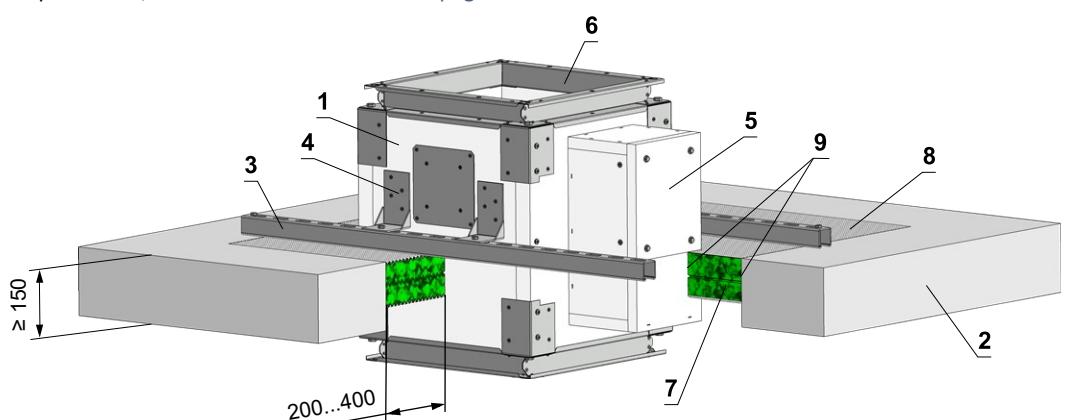


- 1 SEDM
- 2 Solid ceiling construction
- 3 Profile with threaded rod → see pages 33 to 36
- 4 L-holder → see page 37
- 5 Actuator cover - must be removable after installation of the damper
- 6 Flange
- Ablative Coated Batt system HILTI
- 7 Mineral wool board - min. density 140 kg/m³ (HILTI CFS-CT B 1S 140/50...)
- 8 Fire stop coating - th. 1 mm (HILTI CFS-CT...) - coating is overcoated on the support construction and on the damper casing/duct.
- 9 Fire-resistant mastic - (HILTI CFS-S ACR...) fill the gap from both sides of the fire separation construction and around the perimeter of penetration and damper casing.

### In solid ceiling construction - Ablative Coated Batt system - actuator above ceiling

EI 120 S

- For connection of following duct → see pages 42 to 44
- Examples of anchors to the fire dividing construction → see pages 39 to 41
- Number of L-holders and their placement, acc. to AxB dimension → see page 37

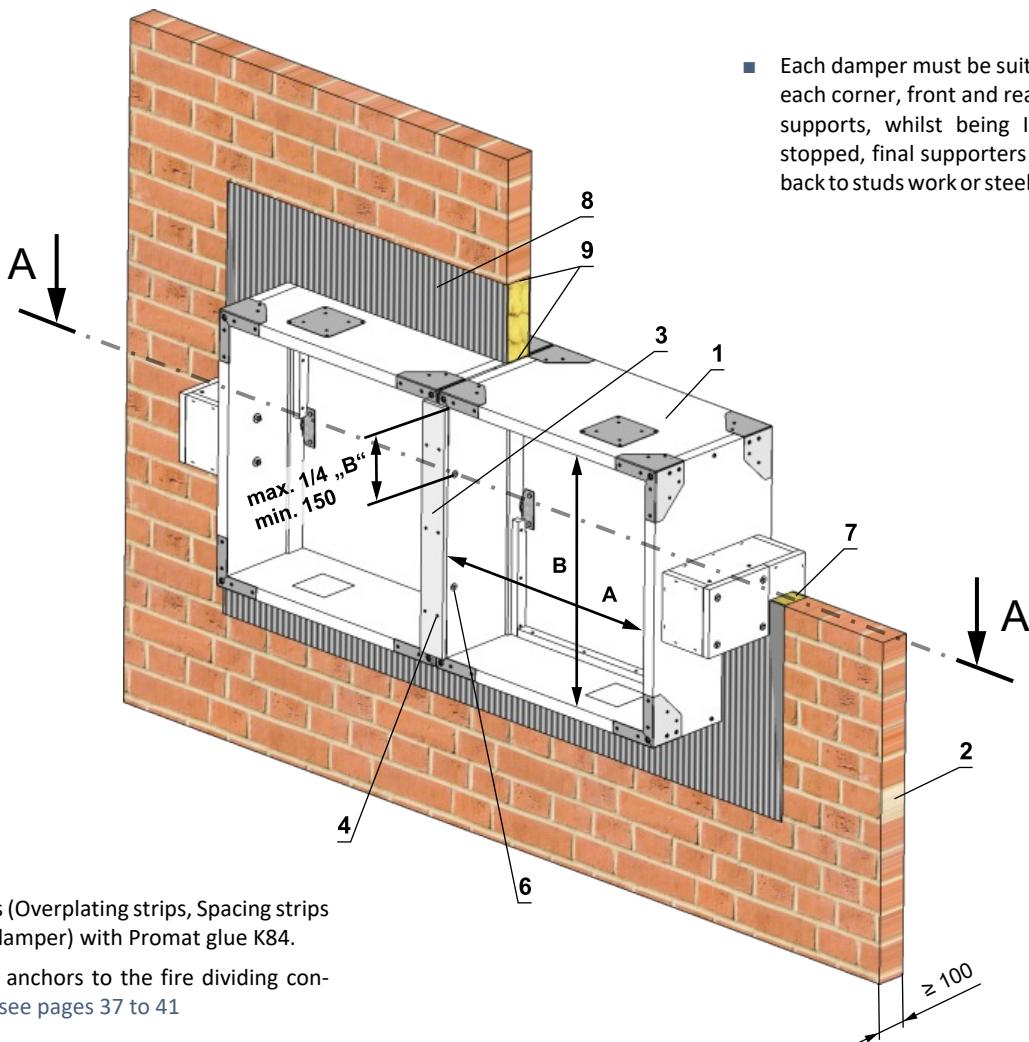


- 1 SEDM
- 2 Solid ceiling construction
- 3 Fixing profile HILTI MQ-41 (or MQ-41/3 or equivalent) → see page 36
- 4 L-holder → see page 37
- 5 Actuator cover - must be removable after installation of the damper
- 6 Flange
- Ablative Coated Batt system HILTI
- 7 Mineral wool board - min. density 140 kg/m³ (HILTI CFS-CT B 1S 140/50...)
- 8 Fire stop coating - th. 1 mm (HILTI CFS-CT...) - coating is overcoated on the support construction and on the damper casing/duct.
- 9 Fire-resistant mastic - (HILTI CFS-S ACR...) fill the gap from both sides of the fire separation construction and around the perimeter of penetration and damper casing.

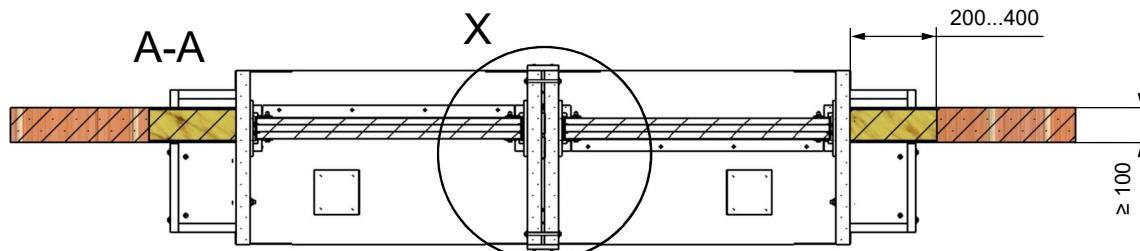
## Installation in battery

2 dampers side by side - solid wall - Ablative Coated Batt system

EI 120 S



- Seal all joints (Overplating strips, Spacing strips with SEDM damper) with Promat glue K84.
- Examples of anchors to the fire dividing construction → see pages 37 to 41

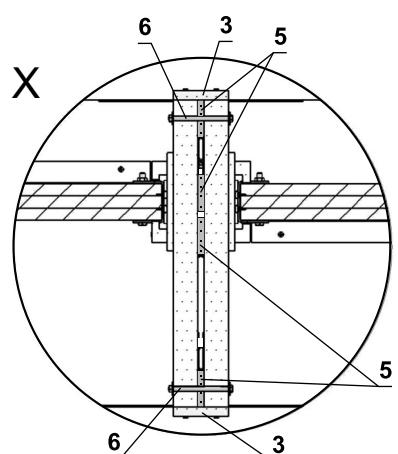


\* **RESPECT JOINT POSITION !**

Bolts and nuts shall not prevent free rotation on the blades.

\*\* When installing a flange, overplating strip is not installed.

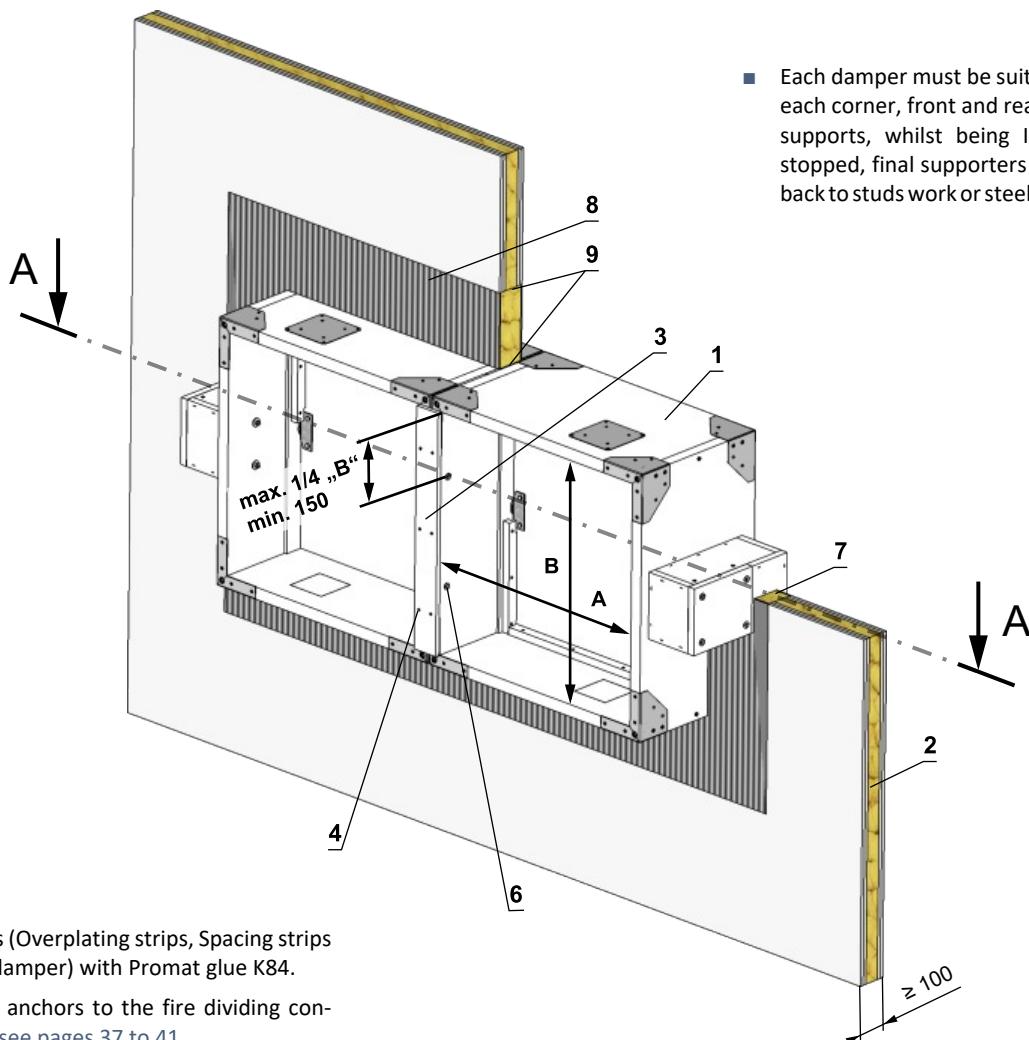
- 1 SEDM
- 2 Solid wall construction
- 3 Overplating strip (e.g. Supalux-S, th. 15 mm)\*\*
- 4 Screw UNI 4x40 mm (span 200-250 mm)
- 5 Spacing strip (e.g. Supalux-S, th. 12 mm, width 40-50 mm)
- 6 M8 bolt assembly on damper side „B“ (bolt M8x105 mm, 2x large washer M8, nut M8), distance from edge see fig. \*
- Ablative Coated Batt system HILTI
- 7 Mineral wool board - min. density 140 kg/m<sup>3</sup> (HILTI CFS-CT B 1S 140/50...)
- 8 Fire stop coating - th. 1 mm (HILTI CFS-CT...) - coating is overcoated on the support construction and on the damper casing/duct.
- 9 Fire-resistant mastic - (HILTI CFS-S ACR...) fill the gap from both sides of the fire separation construction and around the perimeter of penetration and damper casing.



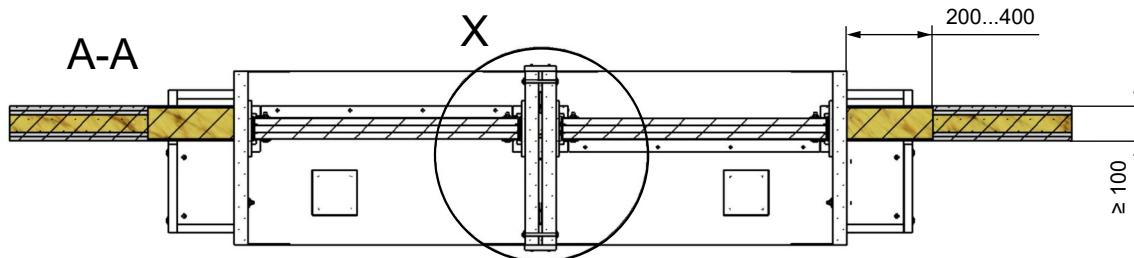
**Connecting straps, spacer straps, screws, screw connections and Promat glue K84 are not included in the delivery !**

## 2 dampers side by side - gypsum wall - Ablative Coated Batt system

EI 120 S



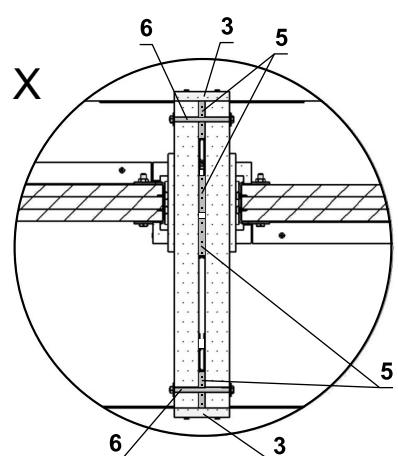
- Seal all joints (Overplating strips, Spacing strips with SEDM damper) with Promat glue K84.
- Examples of anchors to the fire dividing construction → see pages 37 to 41

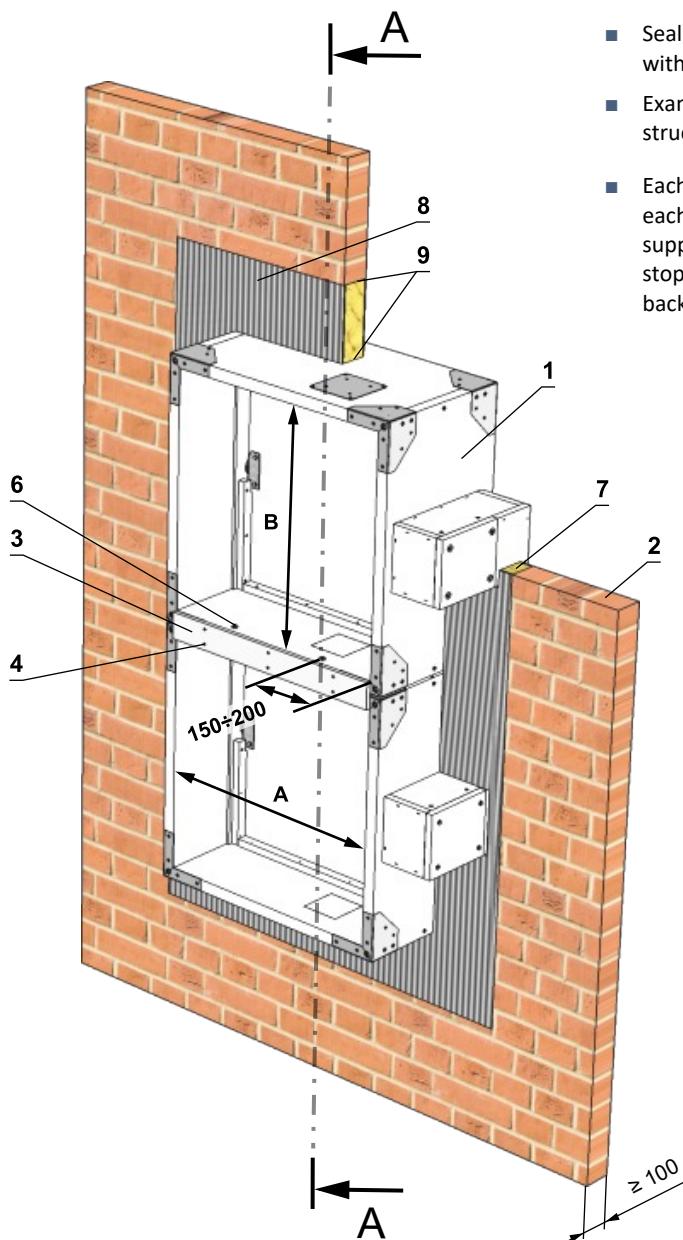


- \* **RESPECT JOINT POSITION !**  
Bolts and nuts shall not prevent free rotation on the blades.
- \*\* When installing a flange, overplating strip is not installed.

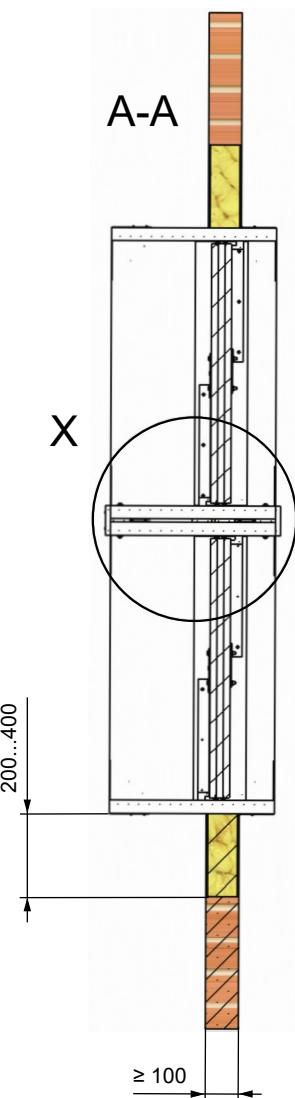
- 1 SEDM
- 2 Gypsum wall construction
- 3 Overplating strip (e.g. Supalux-S, th. 15 mm)\*\*
- 4 Screw UNI 4x40 mm (span 200-250 mm)
- 5 Spacing strip (e.g. Supalux-S, th. 12 mm, width 40-50 mm)
- 6 M8 bolt assembly on damper side „B“ (bolt M8x105 mm, 2x large washer M8, nut M8), distance from edge see fig. \*
- Ablative Coated Batt system HILTI
- 7 Mineral wool board - min. density 140 kg/m³ (HILTI CFS-CT B 1S 140/50...)
- 8 Fire stop coating - th. 1 mm (HILTI CFS-CT...) - coating is overcoated on the support construction and on the damper casing/duct.
- 9 Fire-resistant mastic - (HILTI CFS-S ACR...) fill the gap from both sides of the fire separation construction and around the perimeter of penetration and damper casing.

Connecting straps, spacer straps, screws, screw connections and Promat glue K84 are not included in the delivery !



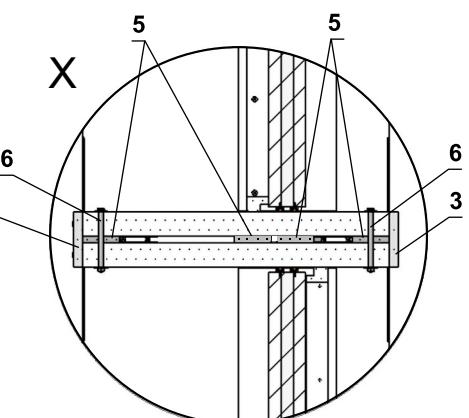
**2 dampers on top of each other - solid wall - Ablative Coated Batt system****EI 120 S**

- Seal all joints (Overplating strips, Spacing strips with SEDM damper) with Promat glue K84.
- Examples of anchors to the fire dividing construction → see pages 37 to 41
- Each damper must be suitably supported in each corner, front and rear with temporary supports, whilst being Installed and fire stopped, final supporters must be installed back to studs work or steel work as required.



\* When installing a flange, overplating strip is not installed.

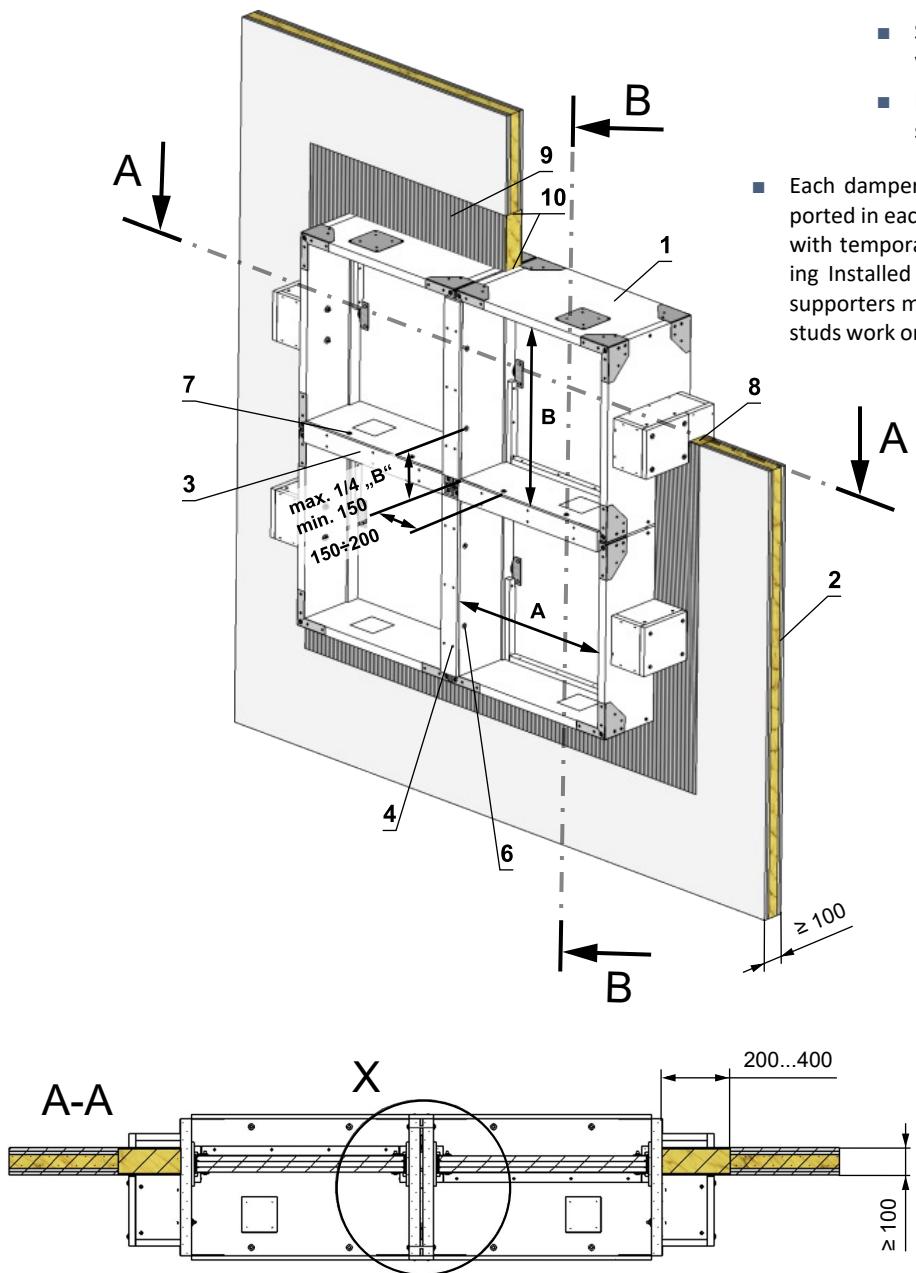
- 1 SEDM
- 2 Solid wall construction
- 3 Overplating strip (e.g. Supalux-S, th. 15 mm)\*
- 4 Screw UNI 4x40 mm (span 200-250 mm)
- 5 Spacing strip (e.g. Supalux-S, th. 12 mm, width 40-50 mm)
- 6 M8 bolt assembly on damper side „A“ (bolt M8x105 mm, 2x large washer M8, nut M8), distance from edge see fig., span max. 400 mm
- Ablative Coated Batt system HILTI
- 7 Mineral wool board - min. density 140 kg/m³ (HILTI CFS-CT B 1S 140/50...)
- 8 Fire stop coating - th. 1 mm (HILTI CFS-CT...) - coating is overcoated on the support construction and on the damper casing/duct.
- 9 Fire-resistant mastic - (HILTI CFS-S ACR...) fill the gap from both sides of the fire separation construction and around the perimeter of penetration and damper casing.



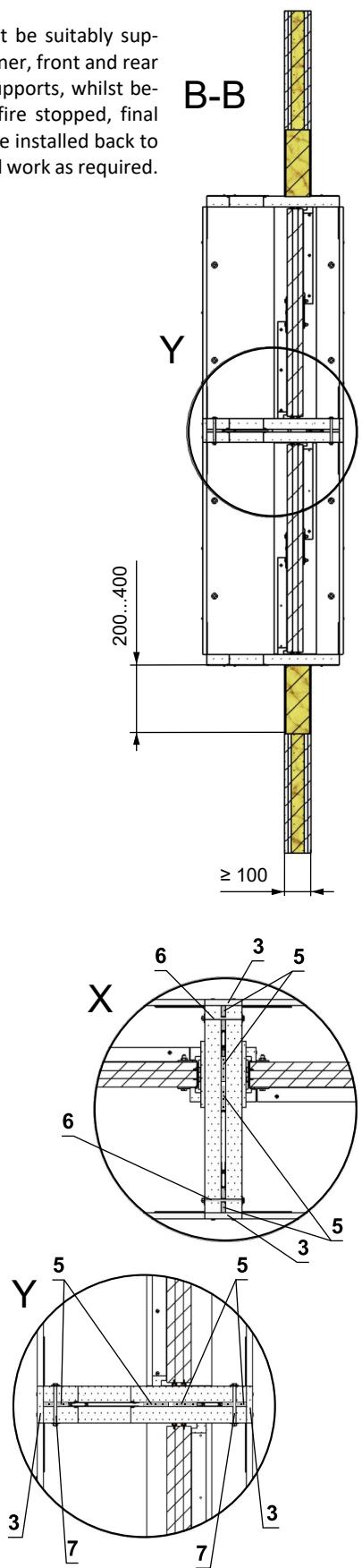
**Connecting straps, spacer straps, screws, screw connections and Promat glue K84 are not included in the delivery !**

## 4 dampers - gypsum wall - Ablative Coated Batt system

EI 120 S



- Seal all joints (Overplating strips, Spacing strips with SEDM damper) with Promat glue K84.
- Examples of anchors to the fire dividing construction → see pages 37 to 41
- Each damper must be suitably supported in each corner, front and rear with temporary supports, whilst being Installed and fire stopped, final supporters must be installed back to studs work or steel work as required.



## \* RESPECT JOINT POSITION !

Bolts and nuts shall not prevent free rotation on the blades.

\*\* When installing a flange, overplating strip is not installed.

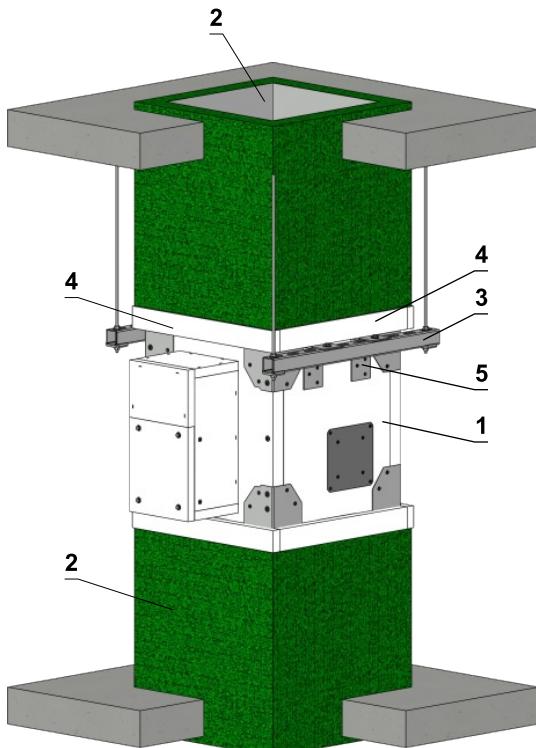
- 1 SEDM
- 2 Gypsum wall construction
- 3 Overplating strip (e.g. Supalux-S, th. 15 mm)\*\*
- 4 Screw UNI 4x40 mm (span 200-250 mm)
- 5 Spacing strip (e.g. Supalux-S, th. 12 mm, width 40-50 mm)
- 6 M8 bolt assembly on damper side „B“ (bolt M8x105 mm, 2x large washer M8, nut M8), distance from edge see fig. \*
- 7 M8 bolt assembly on damper side „A“ (bolt M8x105 mm, 2x large washer M8, nut M8), distance from edge see fig., span max. 400 mm
- Ablative Coated Batt system HILTI
- 8 Mineral wool board - min. density 140 kg/m³ (HILTI CFS-CT B 1S 140/50...)
- 9 Fire stop coating - th. 1 mm (HILTI CFS-CT...) - coating is overcoated on the support construction and on the damper casing/duct.
- 10 Fire-resistant mastic - (HILTI CFS-S ACR...) fill the gap from both sides of the fire separation construction and around the perimeter of penetration and damper casing.

Connecting straps, spacer straps, screws, screw connections and Promat glue K84 are not included in the delivery !

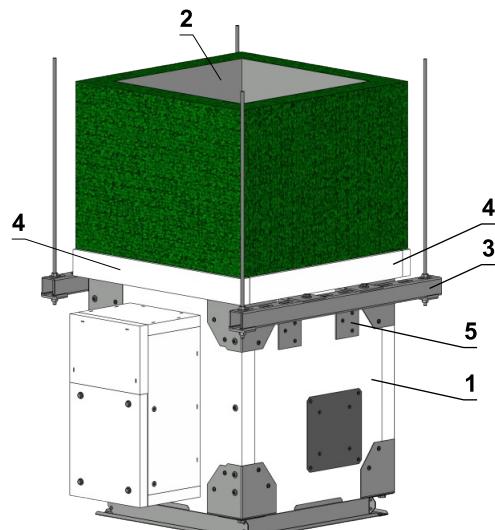
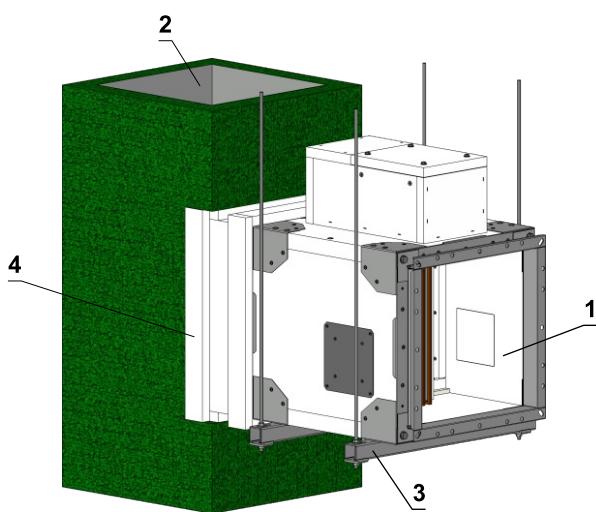
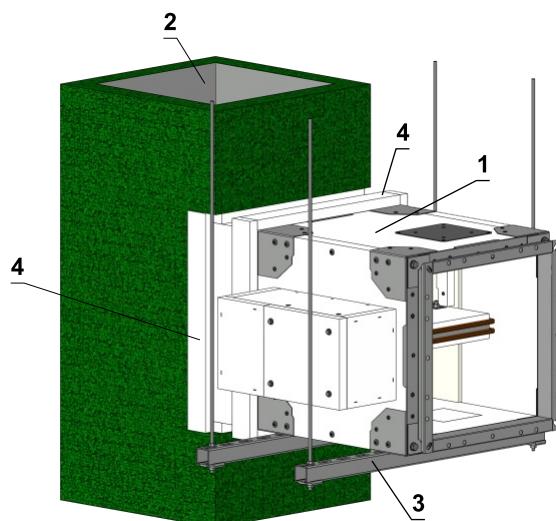
## Installation into/onto vertical or horizontal smoke extraction duct

### Installation of the damper into/onto vertical steel smoke extraction duct

EI 120 S



- Brackets must be mounted on sides, location and symmetry is not a specific requirement but is preferential.
- The dampers and duct must be suspended separately.
- Duct from BS EN 12101-7 in Steel (insulated or spray coated)
- Number of L-holders and their placement, acc. to AxB dimension, → see page 37
- Examples of anchors to the fire dividing construction → see pages 39 to 41
- Example of connection to duct → see pages 43 to 44

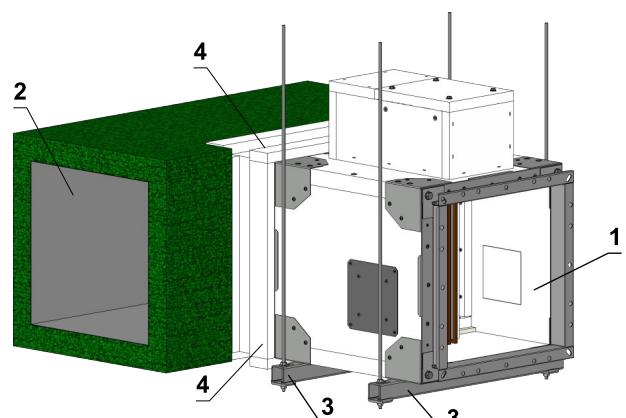
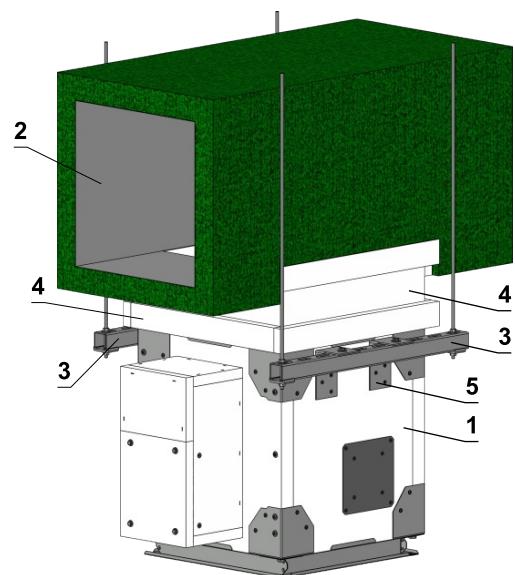
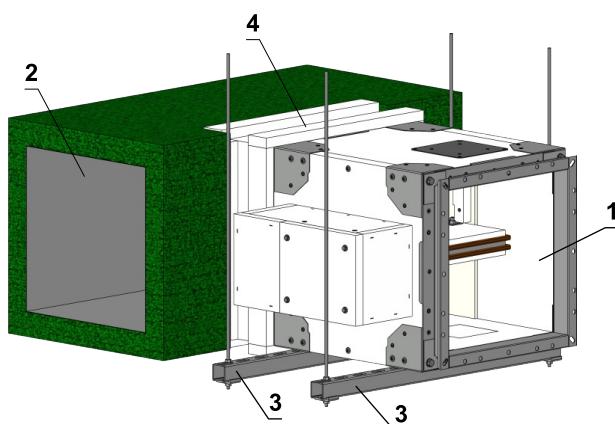
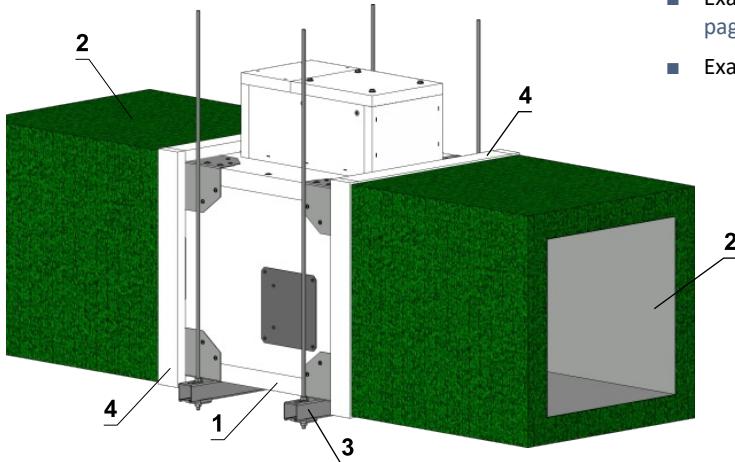


- 1 SEDM
- 2 Smoke extraction duct
- 3 Fixing profile with threaded rod → see page 36
- 4 Connection's insulation
- 5 L-holder → see pages 37 to 41

## Installation of the damper into/onto horizontal steel smoke extraction duct

EI 120 S

- Brackets must be mounted on sides, location and symmetry is not a specific requirement but is preferential.
- The dampers and duct must be suspended separately.
- Duct from BS EN 12101-7 in Steel (insulated or spray coated)
- Number of L-holders and their placement, acc. to AxB dimension, → see page 37
- Examples of anchors to the fire dividing construction → see pages 39 to 41
- Example of connection to duct → see pages 43 to 44



- 1 SEDM
- 2 Smoke extraction duct
- 3 Fixing profile with threaded rod → see page 36
- 4 Connection's insulation
- 5 L-holder → see pages 37 to 41

## V. SUSPENSION SYSTEMS

### Mounting to the ceiling wall

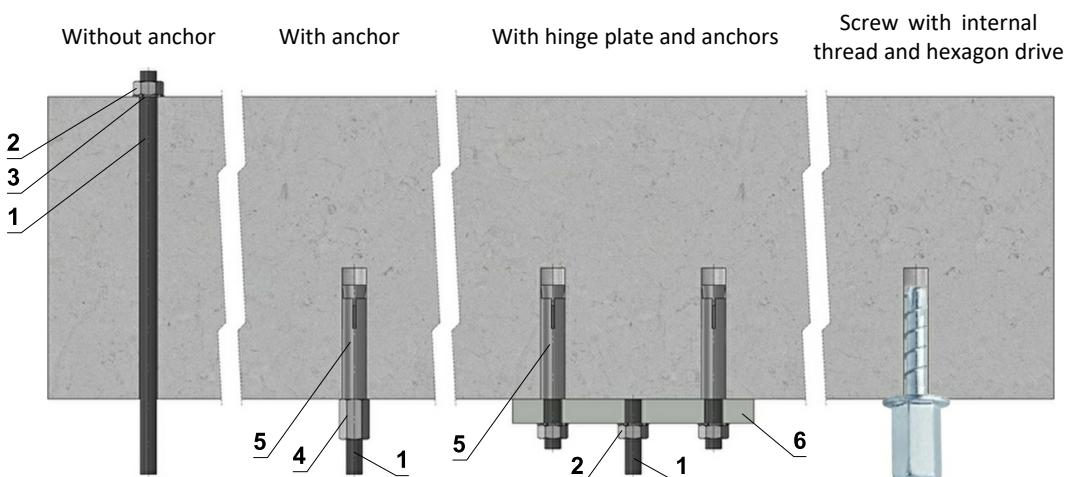
- The dampers must be suspended using threaded rods and mounting profiles. Their dimensioning depend on the weight of the damper.
- The dampers and the duct must be suspended separately.
- Following air-conditioning duct must be suspended or supported so that all load transfer from the following duct

to the damper flanges is absolutely excluded. Adjacent duct must be suspended or supported, as required by the duct suppliers.

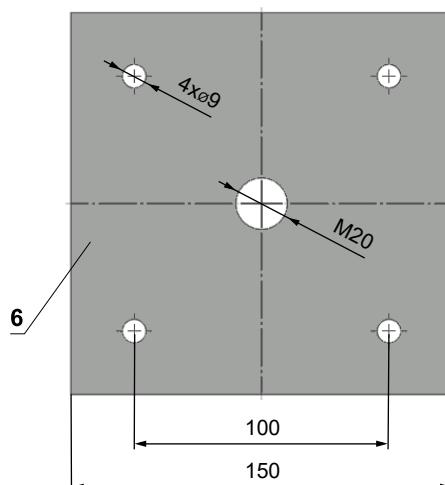
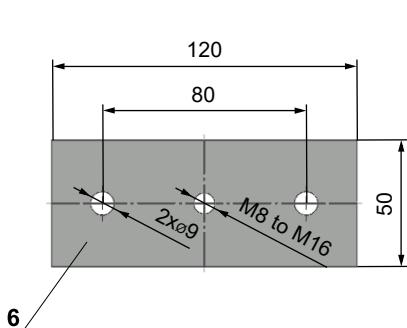
- Threaded rods longer than 1,5 m must be protected by fire insulation.

#### Examples of anchoring to the ceiling construction

**Follow the instructions of fixing specialist or installation company**



Hinge plates

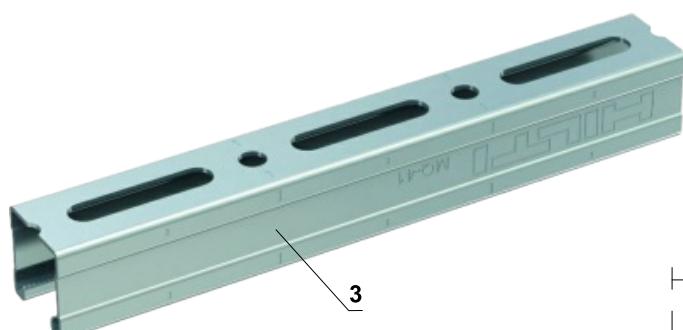
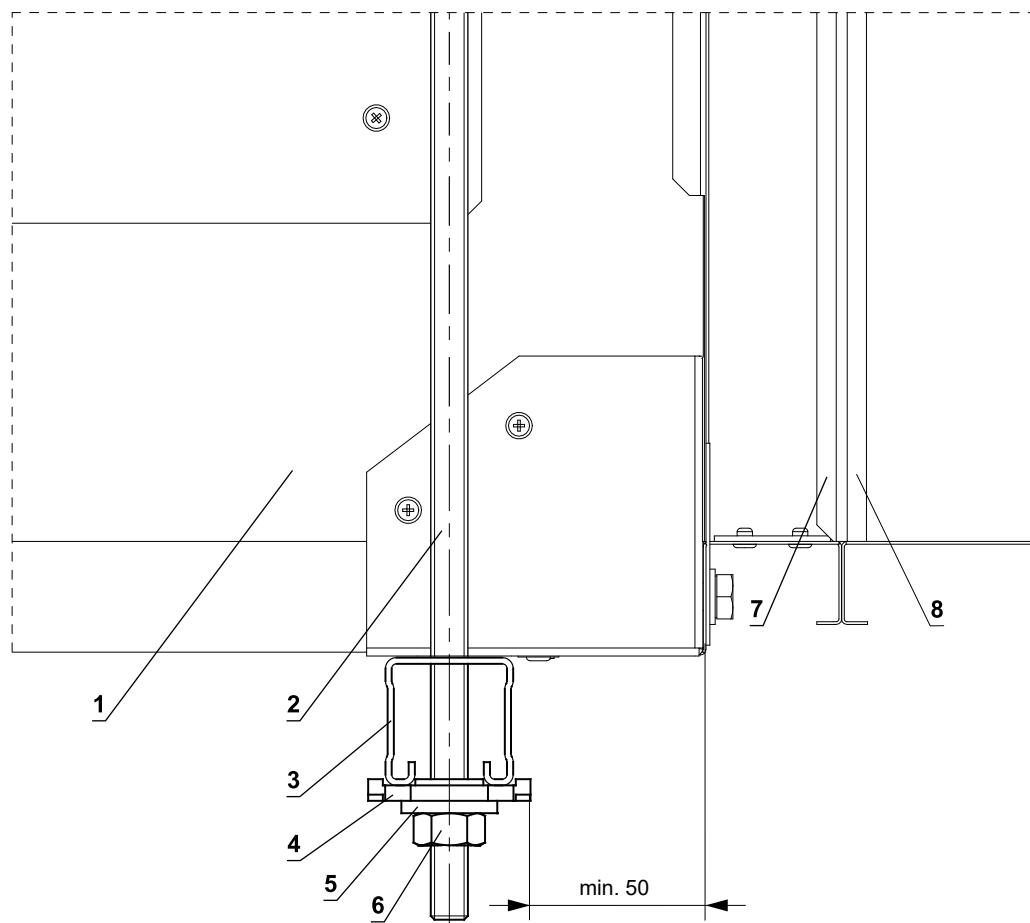


- If in doubt, always consult an anchor specialist engineer such as Halfen or Hilti.

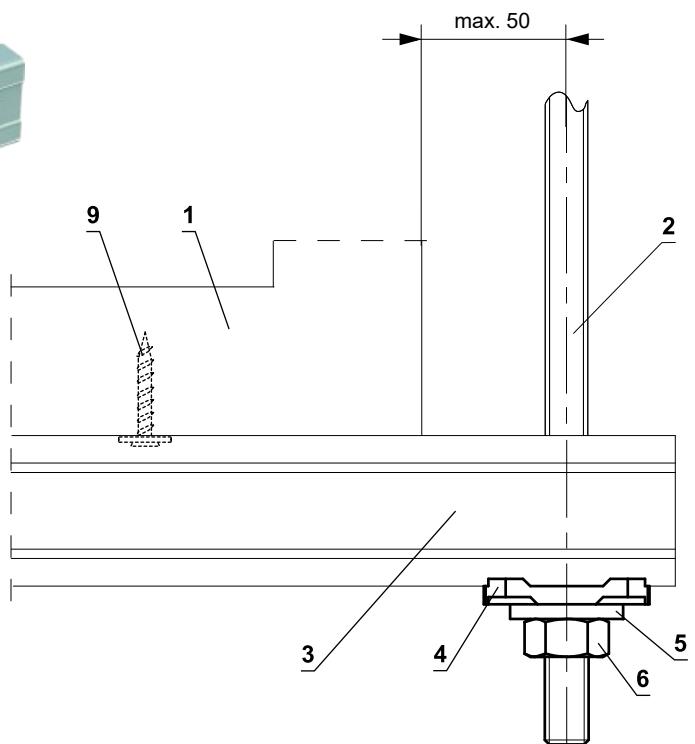
#### Load capacities of threaded rods at the required fire resistance 60 min. $t \leq 120$ min.

| Size | As [mm <sup>2</sup> ] | Weight [kg] |            |
|------|-----------------------|-------------|------------|
|      |                       | for 1 rod   | for 2 rods |
| M8   | 36,6                  | 22          | 44         |
| M10  | 58                    | 35          | 70         |
| M12  | 84,3                  | 52          | 104        |
| M16  | 157                   | 96          | 192        |
| M18  | 192                   | 117         | 234        |
| M20  | 245                   | 150         | 300        |

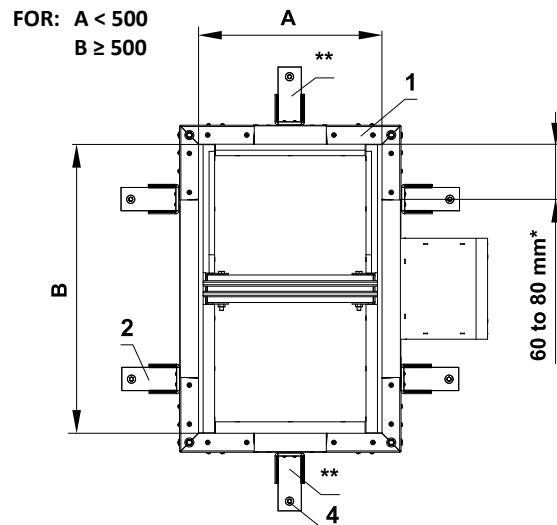
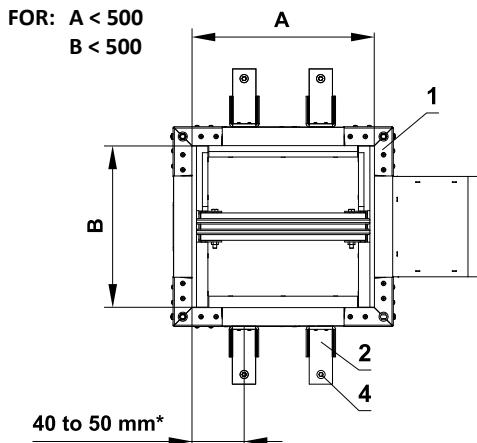
- 1 Threaded rod M8 - M20
- 2 Nut M8 - M20
- 3 Washer for M8 - M20
- 4 Coupling Nut M8 - M20
- 5 Anchor
- 6 Hinge plate - min. thickness 10 mm
- 7 Concrete screw tested for fire resistance R30-R90, max. Tension up to 0.75 KN (length 35 mm)

**Example of placing of mounting profiles HILTI**


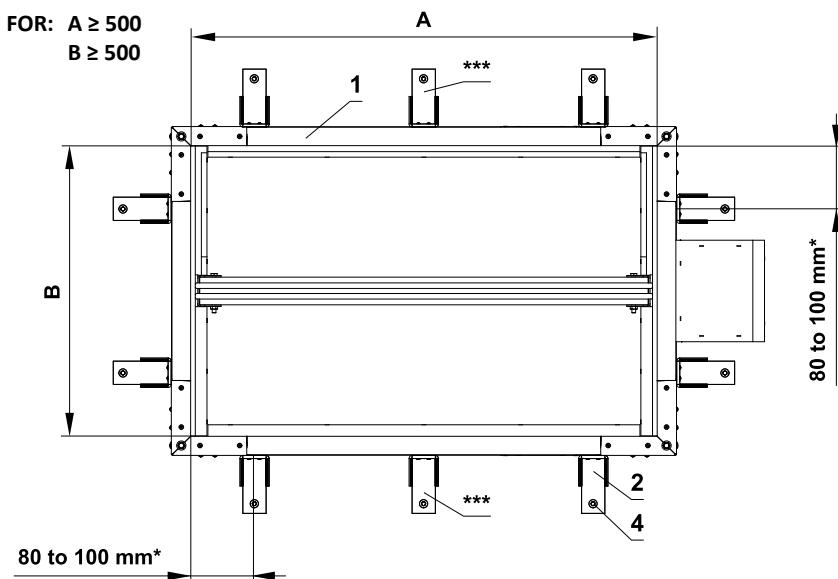
- 1 SEDM
- 2 Threaded rod M8 - M12
- 3 Support HILTI MQ-41 or MQ-41/3
- 4 Bored plate HILTI MQZ-L
- 5 Washer for M8 - M12
- 6 Nut M8 - M12
- 7 Flange of SEDM
- 8 Flange of duct
- 9 Self-tapping screw 5x30 mm and 1 pcs large washer M5 (for additional fixing, prevents the damper from sliding off the support - not necessary use)



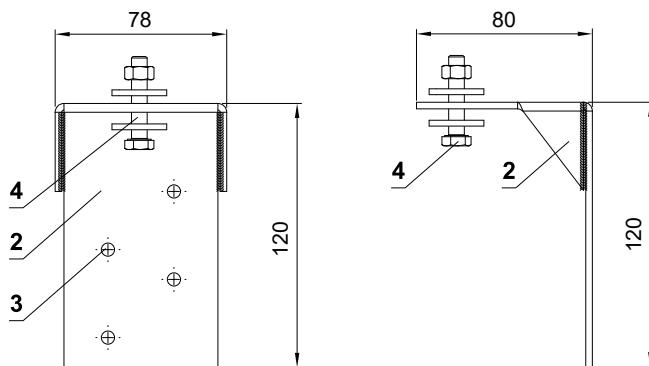
## Fixing SEDM according to size, with L-holder - tested fixing on wall / ceiling



- \* From inner edge of the damper to the center of the holder, on both sides / opposite sides (mirrored)
- \*\* 1 holder to CENTER damper part "A" and on opposite sides (mirrored)
- \*\*\* In case of  $A \geq 1000$ , add holders to the center of the "A" side.



## L-holder for connecting damper on the wall / ceiling (optional accessories MANDIK, a.s.)

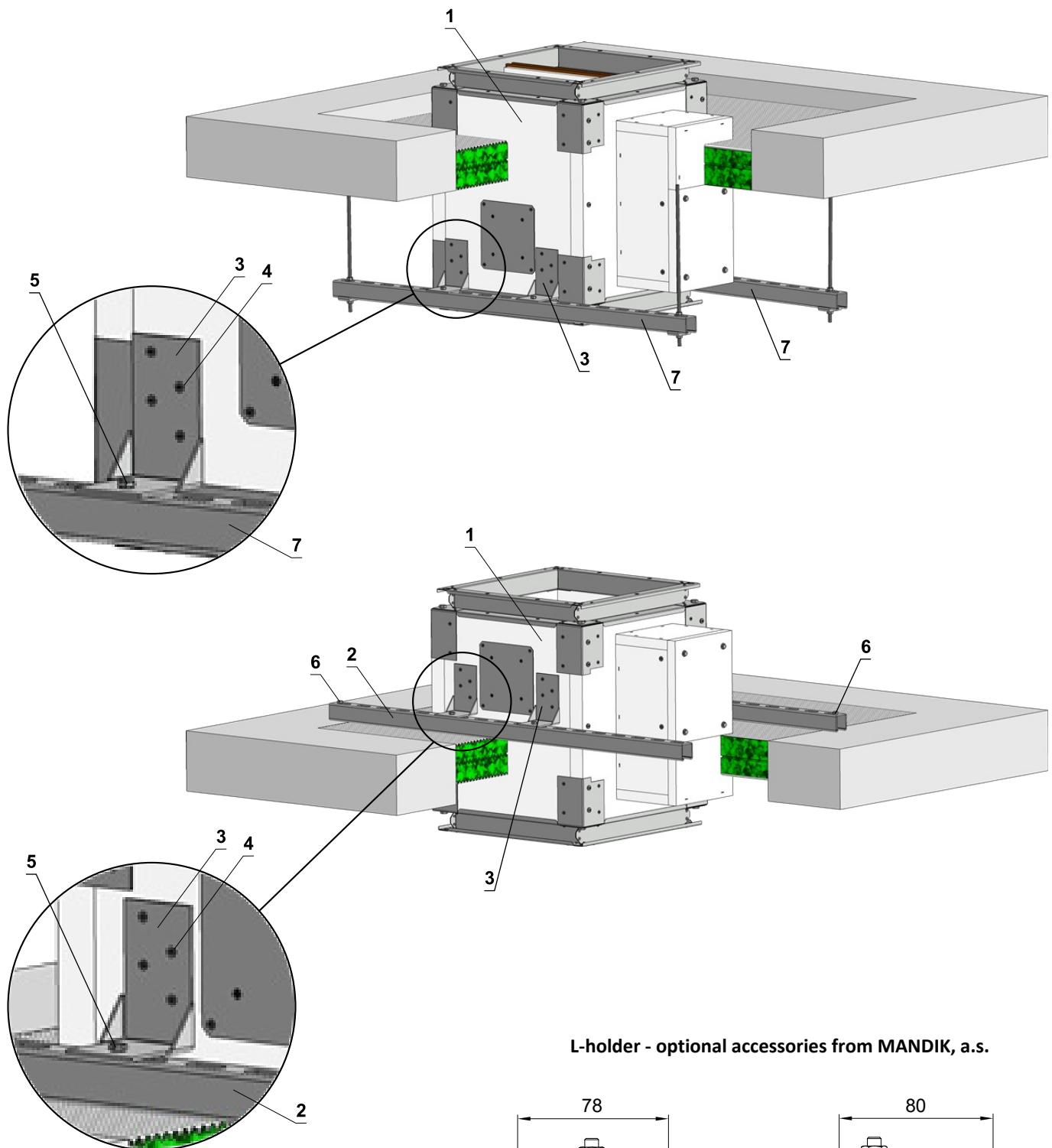


- 1 SEDM
- 2 L-holder - optional accessories from MANDIK, a.s.
- 3 Holes for screw UNI min. 5x30 mm for fastening L-holder to damper body
- 4 M8 bolt assembly (bolt min. M8x60 mm, 2 pcs large washer M8, nut M8) or Anchor to concrete, → see page 35

- Details and examples placing of L-holder  
→ see pages 33 to 34 and 38

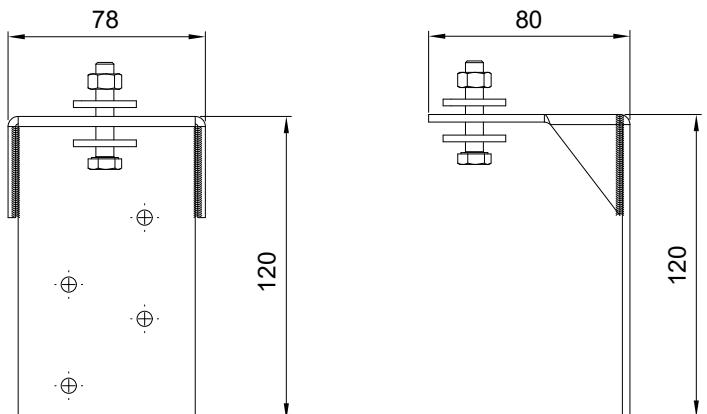
## Examples placing of L-holder and Cantilever arm

Indicative only -final design is the responsibility of the specialist installation contractor.

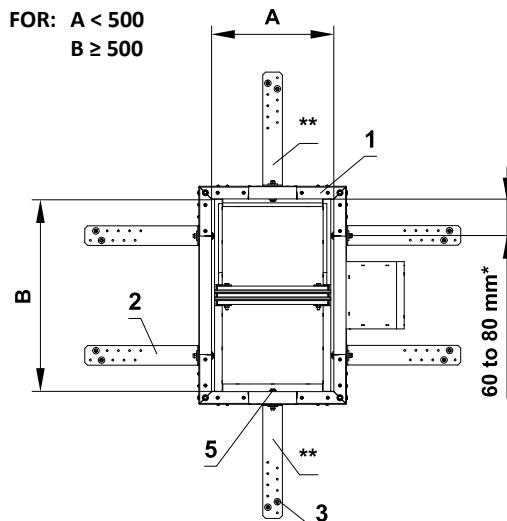
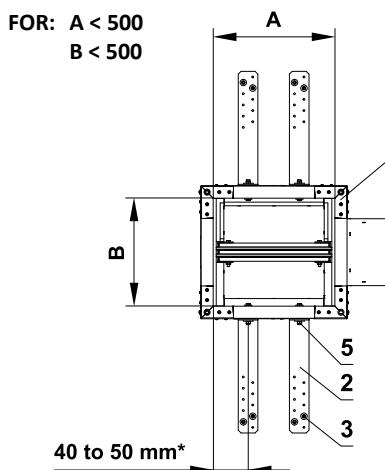


L-holder - optional accessories from MANDIK, a.s.

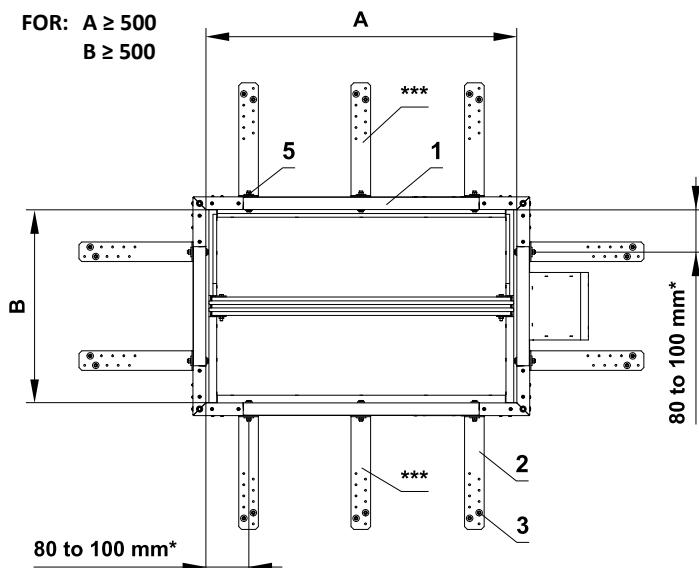
- 1 SEDM
- 2 Support HILTI MQ-41 (or MQ-41/3 or equivalent)
- 3 L-holder - optional accessories from MANDIK, a.s.
- 4 Screw UNI 5x40 mm
- 5 M8 bolt assembly (bolt min. M8x60 mm, 2 pcs large washer M8, nut M8) or equivalent
- 6 Anchor → see page 35
- 7 Fixing profile with threaded rod → see page 36



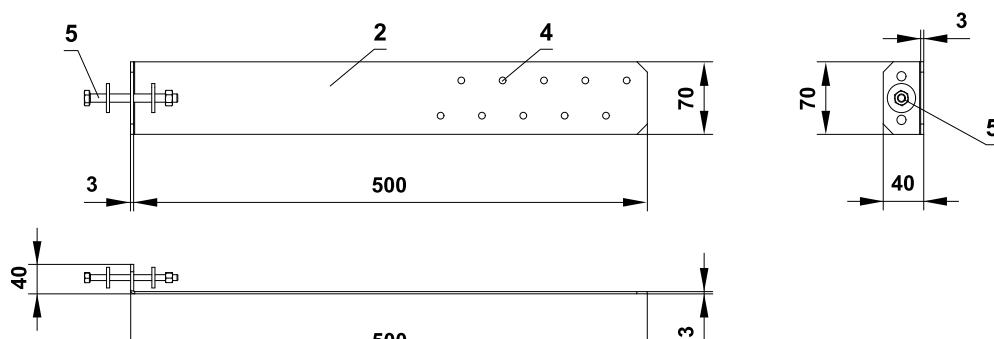
## Fixing SEDM according to size - tested fixing to solid / gypsum or ceiling wall



- \* From inner edge of the damper to the center of the holder, on both sides / opposite sides (mirrored)
- \*\* 1 holder to CENTER damper part "A" and on opposite sides (mirrored)
- \*\*\* In case of  $A \geq 1000$ , add holders to the center of the "A" side.

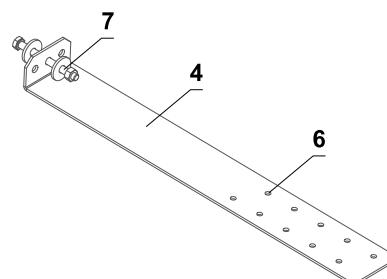
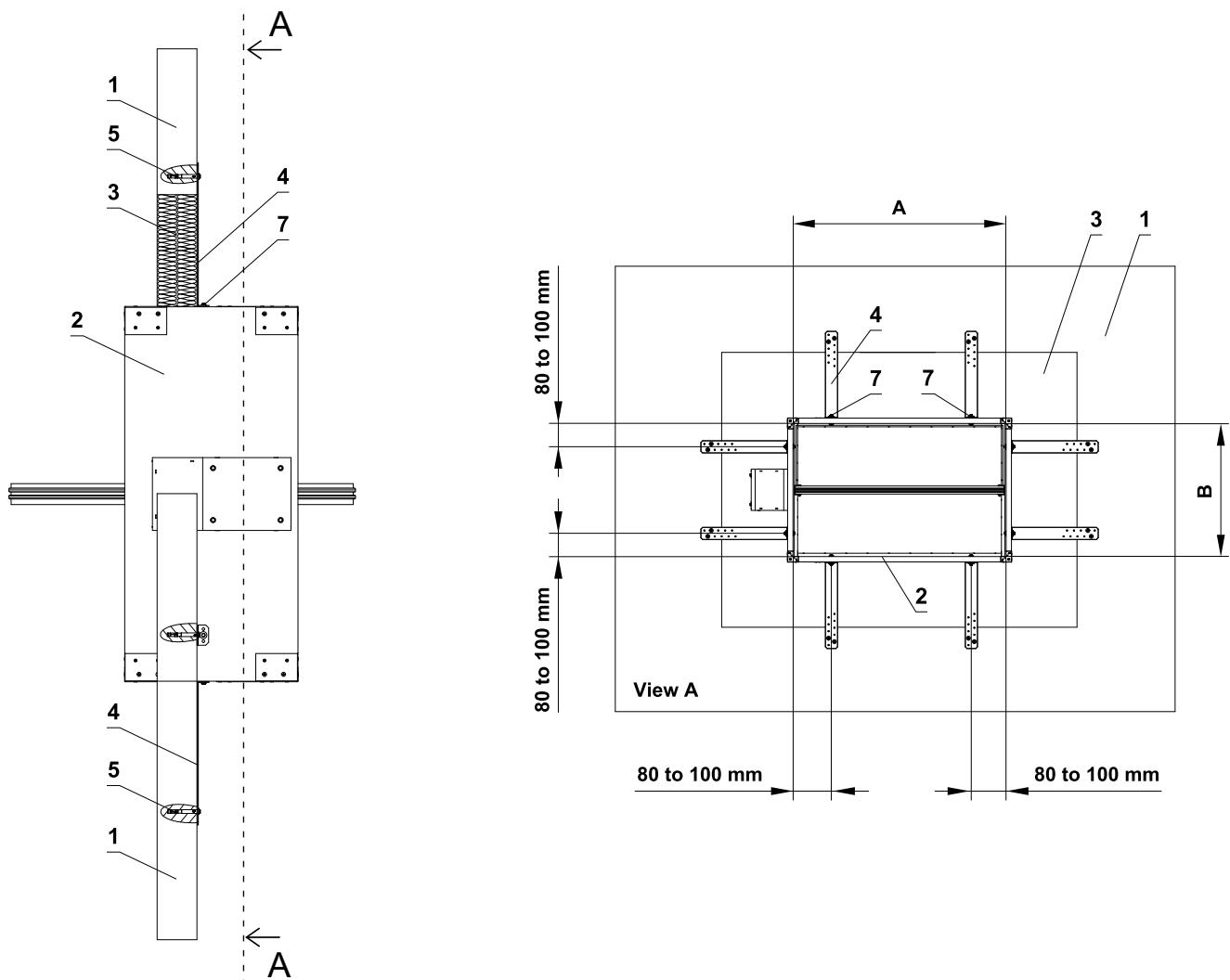


Fixing element/steel holder for connecting damper to the wall (optional accessories MANDIK, a.s.)



- 1 SEDM
- 2 Fixing element/steel holder for connecting damper to the wall (optional accessories MANDIK, a.s. or sheet metal min. thickness 2 mm and min. width 60 mm)
- 3 Anchor to concrete min. M6 or Screw UNI 6x60 mm to Gypsum grid from "C" profile
- 4 Installation holes
- 5 M8 bolt assembly (bolt M8x55 mm, 2 pcs large washer M8, nut M8)

■ Details → see pages 40 to 41

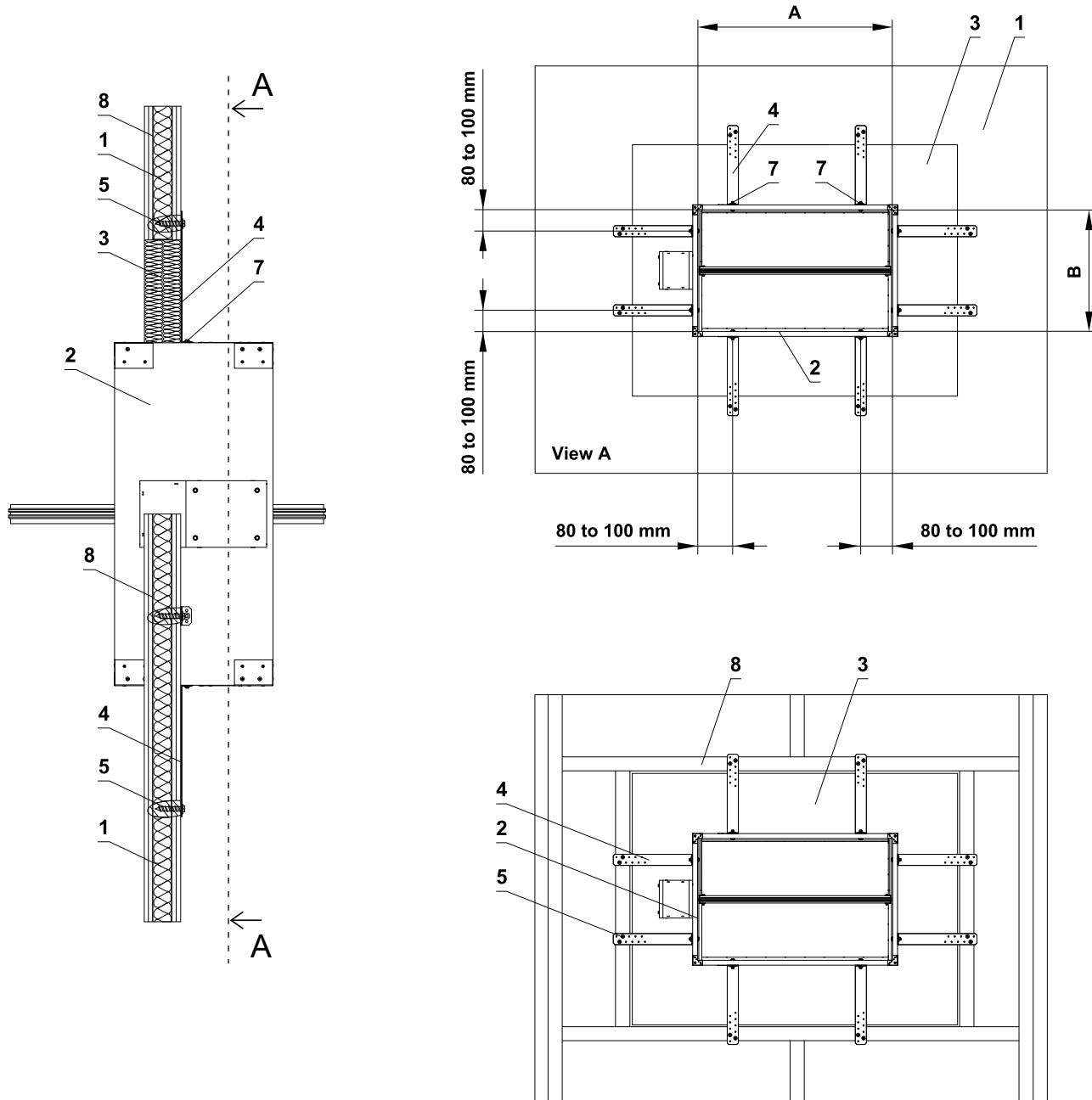
**Fixing SEDM to the solid (ceiling) wall construction with Ablative Coated Batt system**


- \* **ATTENTION TO THE LOCATION OF THE JOINT !**  
Screws and nuts must not impede the free rotation of Blades.

- 1 Solid wall construction
- 2 SEDM
- 3 Ablative Coated Batt
- 4 Fixing element/steel holder for connecting damper to the wall (optional accessories  
MANDIK, a.s. or sheet metal min. thickness 2 mm and min. width 60 mm)
- 5 Anchor to concrete min. M6
- 6 Installation holes
- 7 M8 bolt assembly (bolt M8x55 mm, 2 pcs large washer M8, nut M8) \*

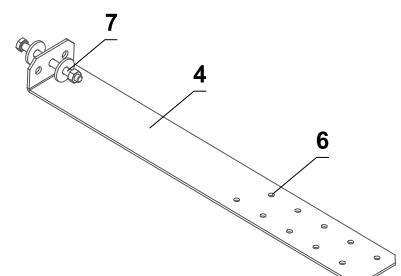
- The method of mounting must meet the minimum requirements for attachment in accordance with national regulations.

## Fixing SEDM to the gypsum wall construction with Ablative Coated Batt system

\* **ATTENTION TO THE LOCATION OF THE JOINT !**

Screws and nuts must not impede the free rotation of Blades.

- 1 Gypsum wall construction
- 2 SEDM
- 3 Ablative Coated Batt
- 4 Fixing element/steel holder for connecting damper to the wall (optional accessories MANDIK, a.s. or sheet metal min. thickness 2 mm and min. width 60 mm)
- 5 Screw UNI 6x60 mm
- 6 Installation holes
- 7 M8 bolt assembly (bolt M8x55 mm, 2 pcs large washer M8, nut M8) \*
- 8 Gypsum grid from "C" profile

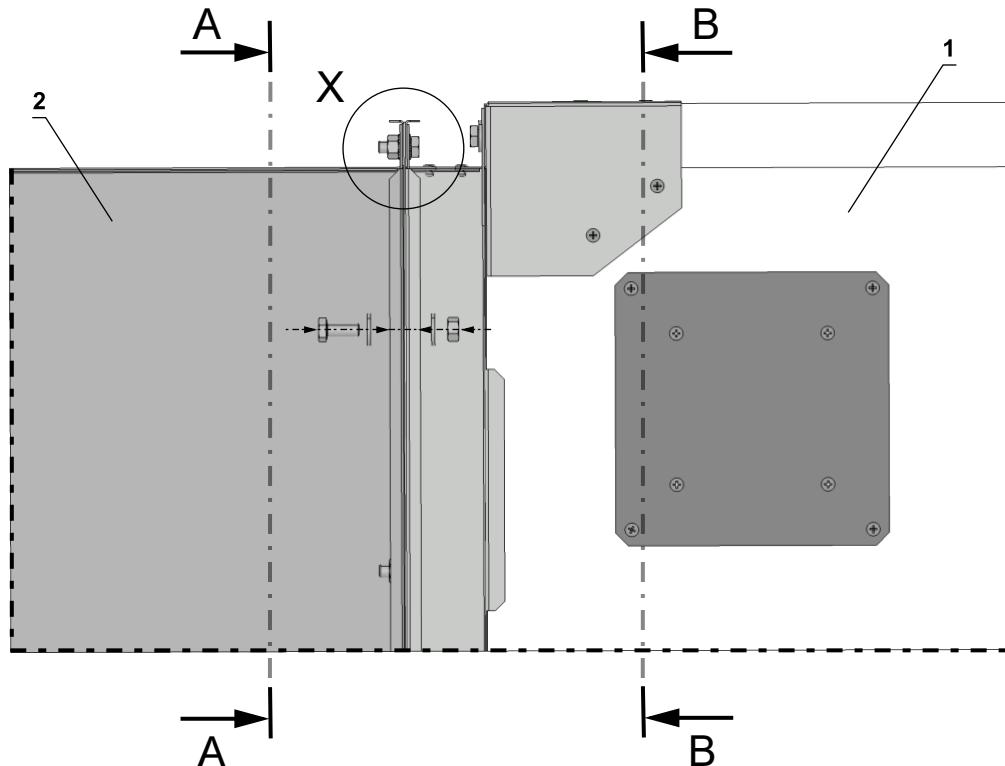


- The method of mounting must meet the minimum requirements for attachment in accordance with national regulations.

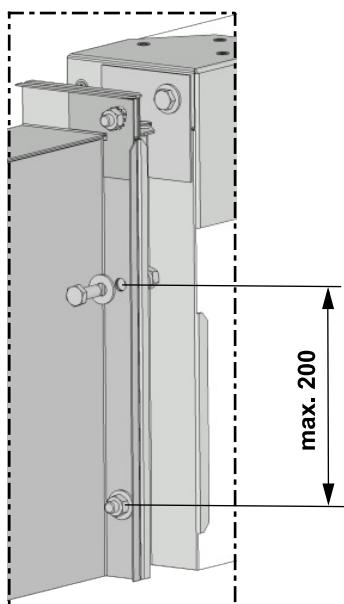
## Example of duct connection

### Flange connection

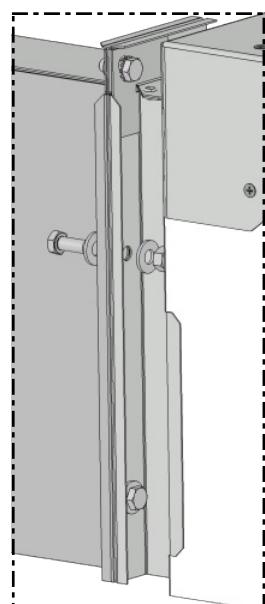
**Connection to smoke extract duct acc. to EN 1366-8 (MULTI) / to EN 1366-9 (SINGLE)**



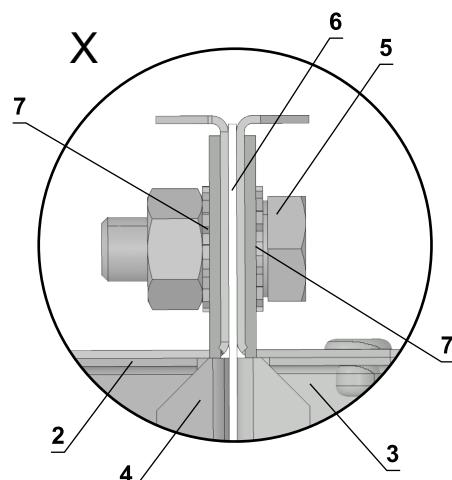
A-A



B-B



Electrically conductive connection

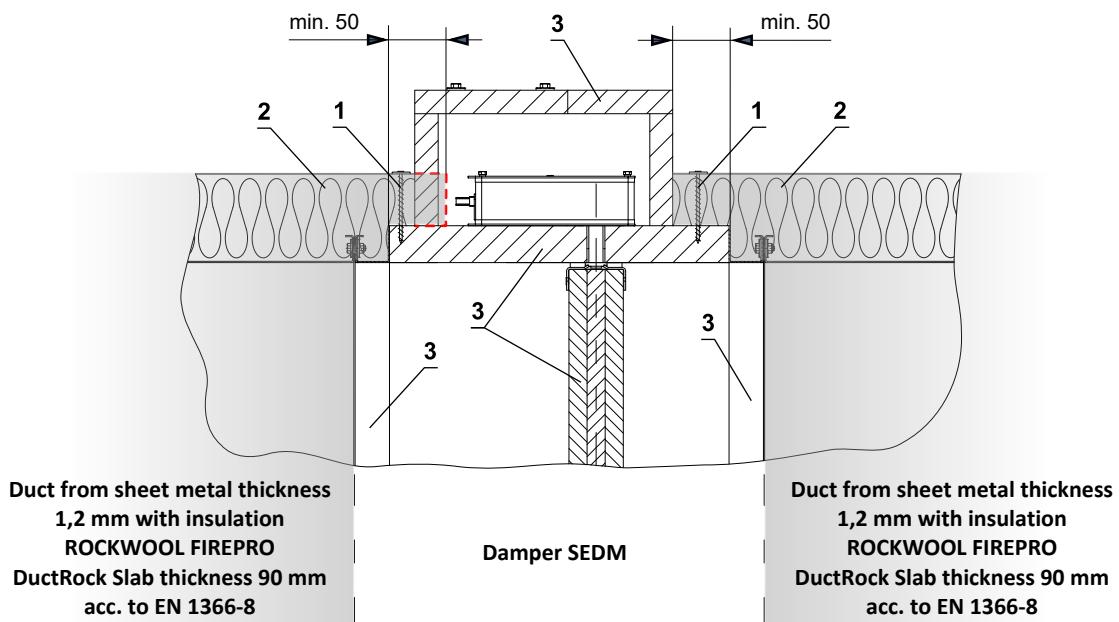


- 1 SEDM
- 2 Connecting air duct MULTI
- 3 Flange of SEDM
- 4 Flange of duct
- 5 M8 bolt assembly (bolt M8x20 mm, 2 pcs large washer M8, nut M8) \*
- 6 Ceramic self-adhesive tape (FJ 120 Pyrosil B 170-250 kg/m<sup>3</sup> - Tremco-illbruck) or equivalent
- 7 Lock washers

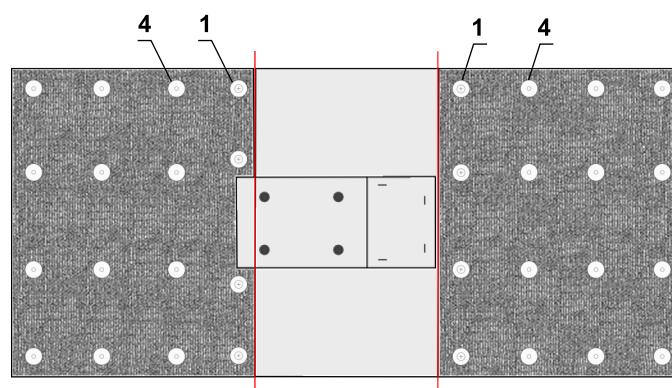
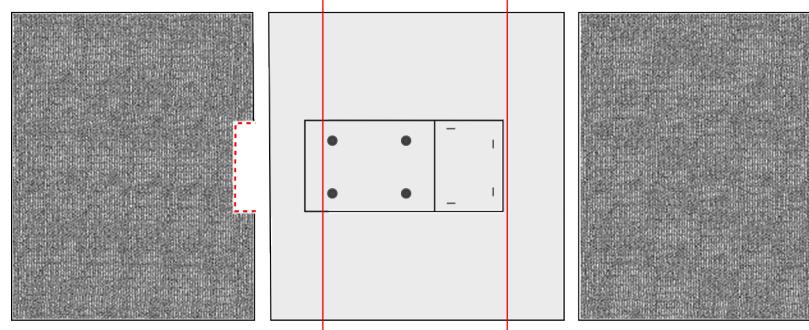
\* min. one connection must be electrically conductive

**Example of connection SEDM damper in steel duct MULTI with insulation ROCKWOOL FIREPRO DuctRock Slab**

Connect the joints of stone wool plates with ROCKWOOL FIREPRO Glue, secure with screws and welding pins at max. spacings of 250 mm. Board joints must be covered using ROCKWOOL black aluminium foil tape. Follow duct supplier's instructions and insulation.



FIREPRO DuctRock Slab with cutout      Damper SEDM      FIREPRO DuctRock Slab without cutout

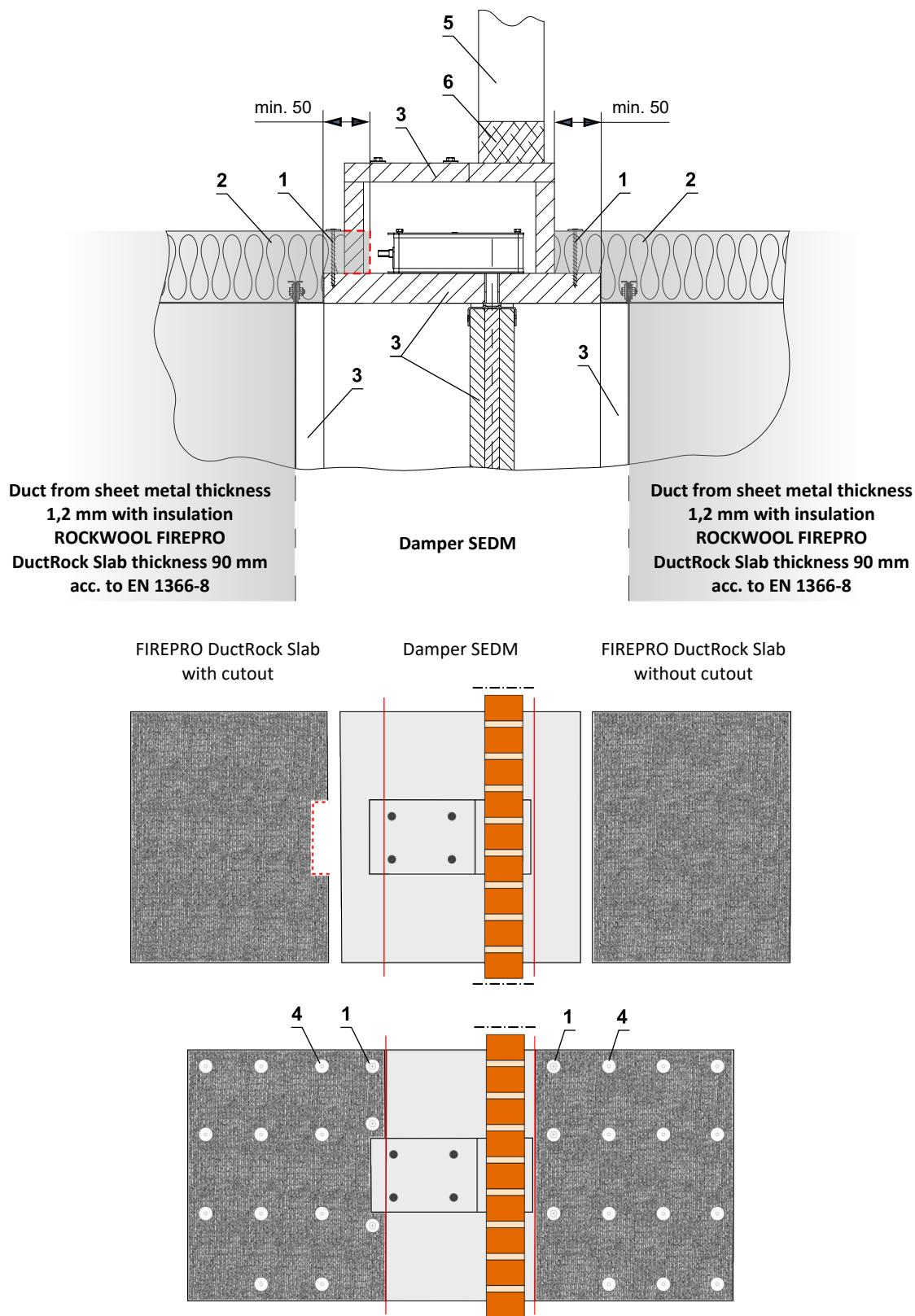


- 1 Universal screw min. Ø5 mm, length 70 mm, max. spacing 250 mm
- 2 ROCKWOOL FIREPRO DuctRock Slab th. 90 mm acc. to EN 1366-8
- 3 Part of SEDM
- 4 Welding pins at max. spacings of 250 mm

Insulation cut-out area around the actuator cover

### Example installed SEDM damper in fire separating construction and connection to steel duct MULTI

Connect the joints of stone wool plates with ROCKWOOL FIREPRO Glue, secure with screws and welding pins at max. spacings of 250 mm. Board joints must be covered using ROCKWOOL black aluminium foil tape. Follow duct supplier's instructions and insulation.



- 1 Universal screw min. Ø5 mm, length 70 mm, max. spacing 250 mm
- 2 ROCKWOOL FIREPRO DuctRock Slab th. 90 mm acc. to EN 1366-8
- 3 Part of SEDM
- 4 Welding pins at max. spacings of 250 mm
- 5 Wall\*
- 6 Penetration

\* Same rules apply to mounting and connection in the ceiling construction

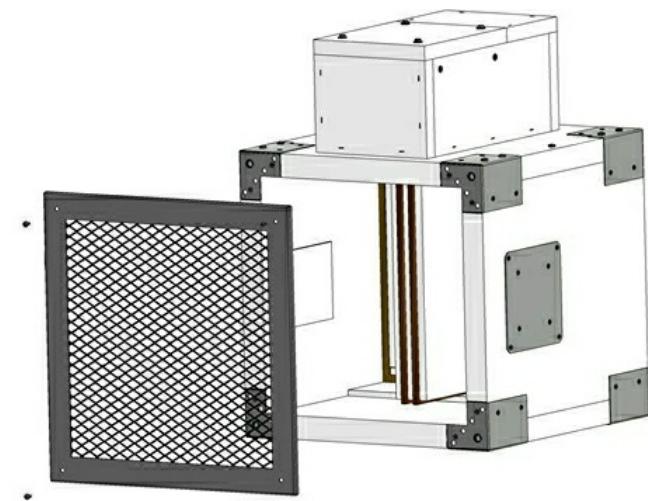
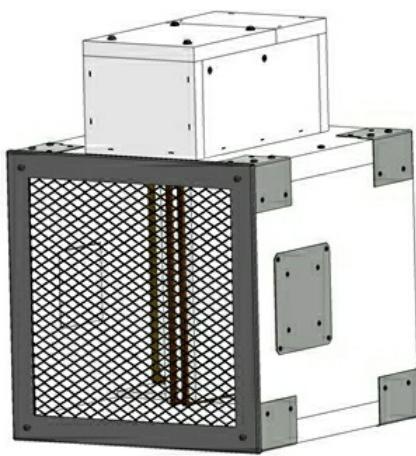
Insulation cut-out area around the actuator cover

## VI. ACCESSORIES

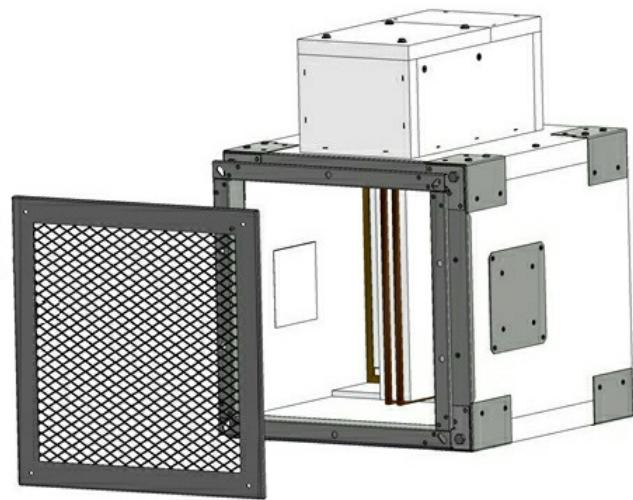
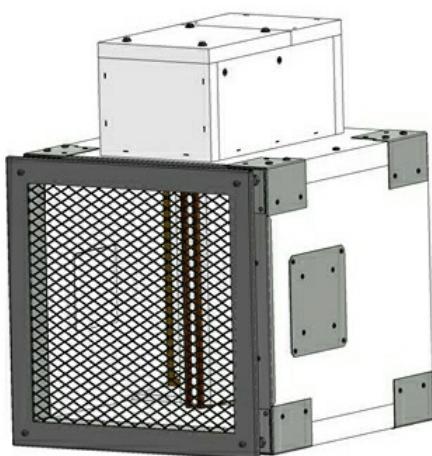
### Cover grille KMM

- The grilles type KMM (TPM 002/96) can be used to close smoke control dampers.
- During grilles installation blade overlaps has to be respected → see page 11.
- These grilles are available in all sizes of the smoke control dampers.
- For KMM grille ensure blade overlaps do not strike KMM- spacer duct may be required - not included in delivery.
- Free area value for KMM is 78%.

**SEDM with cover grille without flange**



**SEDM with cover grille and with flange**



## VII. TECHNICAL DATA

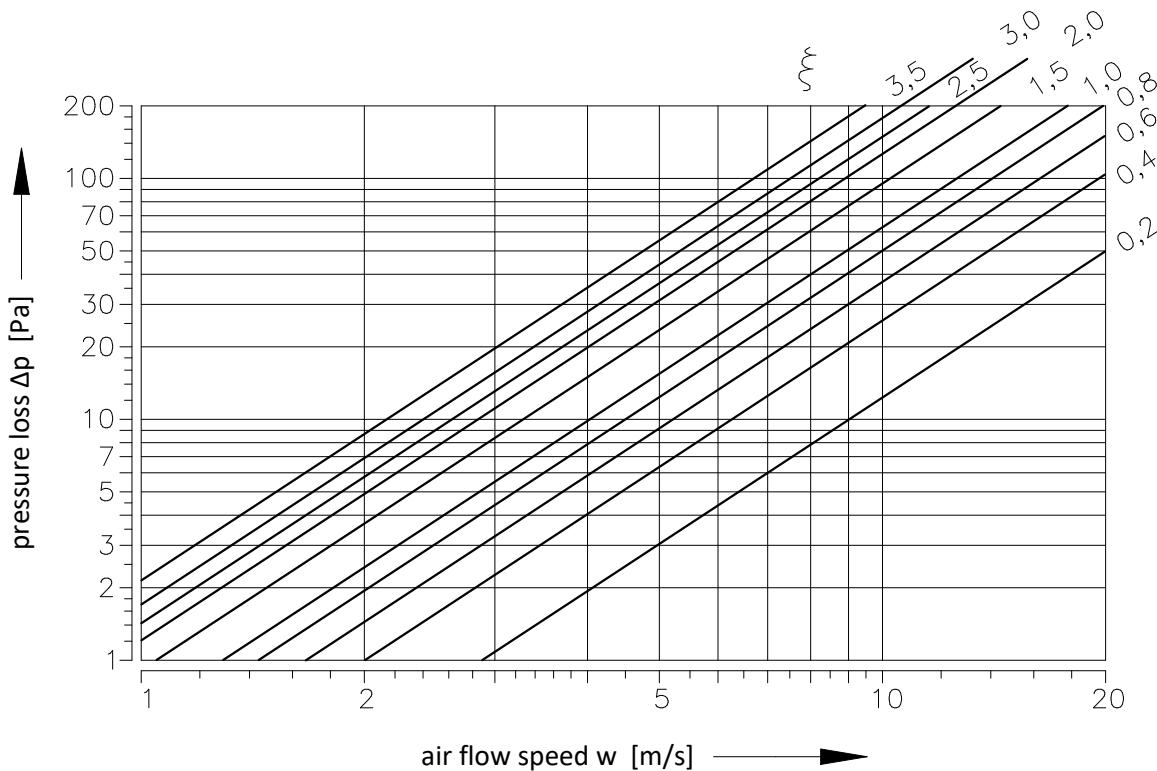
### Pressure loss

#### Pressure loss calculation

$$\Delta p = \xi \cdot \rho \cdot \frac{w^2}{2}$$

|            |         |   |
|------------|---------|---|
| $\Delta p$ | [Pa]    | pressure loss   |
| w          | [m/s]   | air flow speed in nominal damper section  |
| $\rho$     | [kg/m³] | air density   |
| $\xi$      | [-]     | coefficient of local pressure loss for the nominal damper section → see page 47 |

#### Determination of pressure loss by using diagram $\rho = 1,2 \text{ kg/m}^3$



**Coefficient of local pressure loss**

| A           | B      |        |        |        |        |        |        |        |        |        |        |
|-------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
|             | 180    | 200    | 225    | 250    | 280    | 300    | 315    | 355    | 400    | 450    | 500    |
| <b>180</b>  | 3,1433 | 2,5092 | 2,0162 | 1,6711 | 1,4773 | 1,3192 | 1,1951 | 1,0336 | 0,9095 | 0,8126 | 0,7429 |
| <b>200</b>  | 2,9529 | 2,3545 | 1,9584 | 1,5657 | 1,3991 | 1,2512 | 1,1186 | 0,9673 | 0,8500 | 0,7582 | 0,6919 |
| <b>225</b>  | 2,7795 | 2,2032 | 1,8326 | 1,4909 | 1,3226 | 1,1594 | 1,0438 | 0,9231 | 0,8143 | 0,7157 | 0,6562 |
| <b>250</b>  | 2,6401 | 2,1012 | 1,7204 | 1,3923 | 1,2172 | 1,0795 | 0,9911 | 0,8568 | 0,7514 | 0,6698 | 0,6120 |
| <b>280</b>  | 2,5721 | 2,0417 | 1,6677 | 1,3413 | 1,1577 | 1,0506 | 0,9333 | 0,8313 | 0,7242 | 0,6375 | 0,5984 |
| <b>300</b>  | 2,5075 | 1,9822 | 1,5725 | 1,2784 | 1,1373 | 1,0081 | 0,9078 | 0,8075 | 0,7055 | 0,6239 | 0,5627 |
| <b>315</b>  | 2,4055 | 1,9108 | 1,5283 | 1,2376 | 1,0897 | 0,9843 | 0,8806 | 0,7752 | 0,6800 | 0,6052 | 0,5525 |
| <b>355</b>  | 2,3103 | 1,8343 | 1,4552 | 1,2121 | 1,0676 | 0,9265 | 0,8602 | 0,7412 | 0,6511 | 0,5797 | 0,5287 |
| <b>400</b>  | 2,2304 | 1,7697 | 1,3787 | 1,1679 | 1,0217 | 0,9044 | 0,8279 | 0,7140 | 0,6256 | 0,5576 | 0,5083 |
| <b>450</b>  | 2,1607 | 1,7153 | 1,3413 | 1,1305 | 1,0013 | 0,8823 | 0,8007 | 0,6902 | 0,6052 | 0,5389 | 0,4913 |
| <b>500</b>  | 2,1080 | 1,6711 | 1,3362 | 1,1016 | 0,9452 | 0,8483 | 0,7633 | 0,6715 | 0,5882 | 0,5236 | 0,4777 |
| <b>550</b>  | 2,0723 | 1,6507 | 1,2971 | 1,0829 | 0,9231 | 0,8194 | 0,7514 | 0,6613 | 0,5797 | 0,5185 | 0,4726 |
| <b>560</b>  | 2,0587 | 1,6320 | 1,2886 | 1,0744 | 0,9061 | 0,8211 | 0,7429 | 0,6545 | 0,5729 | 0,5100 | 0,4658 |
| <b>600</b>  | 2,0247 | 1,6116 | 1,2801 | 1,0659 | 0,8959 | 0,8041 | 0,7327 | 0,6443 | 0,5627 | 0,5066 | 0,4590 |
| <b>630</b>  | 2,0128 | 1,5946 | 1,2733 | 1,0489 | 0,8857 | 0,7871 | 0,7259 | 0,6392 | 0,5593 | 0,4981 | 0,4539 |
| <b>650</b>  | 2,0043 | 1,5742 | 1,2546 | 1,0421 | 0,8687 | 0,7786 | 0,7225 | 0,6324 | 0,5559 | 0,4947 | 0,4505 |
| <b>700</b>  | 1,9873 | 1,5674 | 1,2512 | 1,0319 | 0,8517 | 0,7701 | 0,7157 | 0,6290 | 0,5508 | 0,4913 | 0,4471 |
| <b>710</b>  | 1,9720 | 1,5623 | 1,2274 | 1,0268 | 0,8534 | 0,7548 | 0,7089 | 0,6256 | 0,5474 | 0,4879 | 0,4437 |
| <b>750</b>  | 1,9567 | 1,5419 | 1,2172 | 1,0183 | 0,8483 | 0,7497 | 0,6987 | 0,6188 | 0,5406 | 0,4845 | 0,4386 |
| <b>800</b>  | 1,9380 | 1,5351 | 1,2087 | 1,0081 | 0,8432 | 0,7446 | 0,6953 | 0,6137 | 0,5372 | 0,4777 | 0,4352 |
| <b>900</b>  | 1,9074 | 1,5096 | 1,2053 | 0,9911 | 0,8228 | 0,7259 | 0,6834 | 0,6035 | 0,5270 | 0,4692 | 0,4284 |
| <b>1000</b> | 1,8836 | 1,4909 | 1,2002 | 0,9792 | 0,7939 | 0,7106 | 0,6749 | 0,5950 | 0,5202 | 0,4641 | 0,4216 |
| <b>1100</b> | 1,8615 | 1,4739 | 1,1917 | 0,9673 | 0,7752 | 0,7004 | 0,6664 | 0,5865 | 0,5134 | 0,4573 | 0,4165 |
| <b>1250</b> | 1,8428 | 1,4569 | 1,1781 | 0,9554 | 0,7735 | 0,6987 | 0,6579 | 0,5814 | 0,5083 | 0,4522 | 0,4114 |
| <b>1400</b> | 1,8241 | 1,4433 | 1,1696 | 0,9469 | 0,7718 | 0,6970 | 0,6511 | 0,5746 | 0,5032 | 0,4471 | 0,4080 |
| <b>1500</b> | 1,8139 | 1,4348 | 1,1611 | 0,9418 | 0,7684 | 0,6936 | 0,6477 | 0,5712 | 0,4998 | 0,4454 | 0,4046 |
| <b>1600</b> | 1,8054 | 1,4280 | 1,1169 | 0,9367 | 0,7667 | 0,6902 | 0,6443 | 0,5678 | 0,4981 | 0,4420 | 0,4029 |

| A           | B      |        |        |        |        |        |        |        |        |        |        |
|-------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
|             | 550    | 560    | 600    | 630    | 650    | 700    | 710    | 750    | 800    | 900    | 1000   |
| <b>180</b>  | 0,6987 | 0,6800 | 0,6477 | 0,6273 | 0,5984 | 0,5933 | 0,5831 | 0,5627 | 0,5474 | 0,5168 | 0,4947 |
| <b>200</b>  | 0,6545 | 0,6341 | 0,6052 | 0,5848 | 0,5627 | 0,5525 | 0,5440 | 0,5304 | 0,5100 | 0,4828 | 0,4607 |
| <b>225</b>  | 0,6188 | 0,5916 | 0,5712 | 0,5559 | 0,5355 | 0,5287 | 0,5134 | 0,5032 | 0,4777 | 0,4556 | 0,4318 |
| <b>250</b>  | 0,5882 | 0,5610 | 0,5372 | 0,5168 | 0,4998 | 0,4913 | 0,4862 | 0,4726 | 0,4488 | 0,4335 | 0,4063 |
| <b>280</b>  | 0,5559 | 0,5304 | 0,5151 | 0,4947 | 0,4828 | 0,4794 | 0,4726 | 0,4471 | 0,4301 | 0,4216 | 0,3927 |
| <b>300</b>  | 0,5321 | 0,5202 | 0,4947 | 0,4743 | 0,4675 | 0,4624 | 0,4573 | 0,4267 | 0,4182 | 0,4029 | 0,3808 |
| <b>315</b>  | 0,5134 | 0,5049 | 0,4692 | 0,4658 | 0,4471 | 0,4386 | 0,4318 | 0,4097 | 0,4046 | 0,3825 | 0,3655 |
| <b>355</b>  | 0,4896 | 0,4828 | 0,4556 | 0,4454 | 0,4318 | 0,4216 | 0,4131 | 0,3961 | 0,3876 | 0,3655 | 0,3485 |
| <b>400</b>  | 0,4743 | 0,4641 | 0,4471 | 0,4284 | 0,4182 | 0,4097 | 0,3978 | 0,3842 | 0,3723 | 0,3519 | 0,3349 |
| <b>450</b>  | 0,4556 | 0,4488 | 0,4352 | 0,4131 | 0,4046 | 0,3927 | 0,3842 | 0,3757 | 0,3587 | 0,3383 | 0,3230 |
| <b>500</b>  | 0,4505 | 0,4369 | 0,4182 | 0,4012 | 0,3876 | 0,3791 | 0,3723 | 0,3587 | 0,3485 | 0,3298 | 0,3145 |
| <b>550</b>  | 0,4437 | 0,4267 | 0,4148 | 0,3978 | 0,3808 | 0,3757 | 0,3655 | 0,3519 | 0,3451 | 0,3247 | 0,3111 |
| <b>560</b>  | 0,4386 | 0,4250 | 0,4097 | 0,3910 | 0,3757 | 0,3723 | 0,3638 | 0,3451 | 0,3400 | 0,3213 | 0,3060 |
| <b>600</b>  | 0,4369 | 0,4199 | 0,3978 | 0,3876 | 0,3672 | 0,3638 | 0,3587 | 0,3434 | 0,3366 | 0,3162 | 0,3026 |
| <b>630</b>  | 0,4301 | 0,4148 | 0,3927 | 0,3825 | 0,3621 | 0,3570 | 0,3536 | 0,3417 | 0,3315 | 0,3128 | 0,2992 |
| <b>650</b>  | 0,4267 | 0,4097 | 0,3927 | 0,3808 | 0,3604 | 0,3553 | 0,3502 | 0,3400 | 0,3298 | 0,3111 | 0,2975 |
| <b>700</b>  | 0,4250 | 0,4080 | 0,3859 | 0,3791 | 0,3587 | 0,3536 | 0,3485 | 0,3383 | 0,3281 | 0,3077 | 0,2941 |
| <b>710</b>  | 0,4216 | 0,4063 | 0,3808 | 0,3740 | 0,3570 | 0,3502 | 0,3468 | 0,3349 | 0,3247 | 0,3060 | 0,2924 |
| <b>750</b>  | 0,4199 | 0,4029 | 0,3757 | 0,3706 | 0,3553 | 0,3468 | 0,3434 | 0,3315 | 0,3213 | 0,3026 | 0,2873 |
| <b>800</b>  | 0,4182 | 0,3978 | 0,3757 | 0,3655 | 0,3536 | 0,3451 | 0,3400 | 0,3281 | 0,3179 | 0,2992 | 0,2856 |
| <b>900</b>  | 0,4148 | 0,3910 | 0,3757 | 0,3604 | 0,3519 | 0,3417 | 0,3332 | 0,3179 | 0,3128 | 0,2941 | 0,2805 |
| <b>1000</b> | 0,4012 | 0,3859 | 0,3706 | 0,3553 | 0,3502 | 0,3349 | 0,3281 | 0,3145 | 0,3077 | 0,2907 | 0,2771 |
| <b>1100</b> | 0,3927 | 0,3808 | 0,3587 | 0,3502 | 0,3417 | 0,3298 | 0,3247 | 0,3094 | 0,3043 | 0,2856 | 0,2737 |
| <b>1250</b> | 0,3876 | 0,3757 | 0,3536 | 0,3451 | 0,3383 | 0,3281 | 0,3213 | 0,3077 | 0,2992 | 0,2822 | 0,2703 |
| <b>1400</b> | 0,3825 | 0,3723 | 0,3502 | 0,3417 | 0,3332 | 0,3264 | 0,3179 | 0,3043 | 0,2975 | 0,2805 | 0,2669 |
| <b>1500</b> | 0,3791 | 0,3706 | 0,3485 | 0,3400 | 0,3298 | 0,3247 | 0,3162 | 0,3026 | 0,2958 | 0,2788 | 0,2652 |
| <b>1600</b> | 0,3774 | 0,3672 | 0,3451 | 0,3383 | 0,3264 | 0,3230 | 0,3145 | 0,2992 | 0,2941 | 0,2771 | 0,2635 |

## Noise data - level of acoustic output corrected with filter A

|      | Air velocity 4 m/s<br>Level of acoustic output [dB] |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |
|------|---|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|
|      | B   |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |
| A    | 180   | 200 | 225 | 250 | 280 | 300 | 315 | 355 | 400 | 450 | 500 | 550 | 560 | 600 | 630 | 650 | 700 | 710 | 750 | 800 | 900 | 1000 |
| 180  | 56  | 49  | 48  | 46  | 44  | 42  | 41  | 41  | 40  | 40  | 40  | 40  | 40  | 40  | 40  | 40  | 40  | 38  | 38  | 37  | 38  | 38   |
| 200  | 52  | 48  | 45  | 44  | 41  | 41  | 41  | 41  | 40  | 40  | 39  | 39  | 39  | 38  | 38  | 38  | 37  | 37  | 37  | 36  | 37  | 37   |
| 225  | 50  | 47  | 45  | 40  | 40  | 40  | 41  | 40  | 39  | 39  | 39  | 38  | 38  | 36  | 36  | 37  | 37  | 36  | 36  | 36  | 36  | 36   |
| 250  | 49  | 45  | 44  | 42  | 40  | 40  | 40  | 39  | 38  | 38  | 37  | 37  | 37  | 37  | 37  | 37  | 37  | 37  | 36  | 36  | 36  | 36   |
| 280  | 47  | 45  | 40  | 40  | 40  | 39  | 38  | 37  | 37  | 37  | 37  | 37  | 37  | 36  | 36  | 36  | 36  | 36  | 36  | 36  | 35  | 35   |
| 300  | 47  | 44  | 40  | 40  | 39  | 39  | 39  | 37  | 36  | 37  | 37  | 37  | 37  | 35  | 35  | 35  | 35  | 35  | 36  | 36  | 36  | 35   |
| 315  | 47  | 44  | 40  | 40  | 39  | 39  | 39  | 37  | 37  | 37  | 36  | 36  | 36  | 36  | 36  | 36  | 36  | 35  | 35  | 35  | 34  | 34   |
| 355  | 46  | 43  | 40  | 39  | 39  | 37  | 37  | 36  | 36  | 36  | 35  | 35  | 35  | 35  | 35  | 35  | 35  | 35  | 33  | 34  | 35  | 35   |
| 400  | 47  | 42  | 40  | 39  | 37  | 37  | 36  | 36  | 36  | 35  | 35  | 35  | 35  | 35  | 35  | 35  | 34  | 34  | 34  | 34  | 33  | 33   |
| 450  | 45  | 42  | 40  | 39  | 37  | 37  | 36  | 35  | 35  | 35  | 35  | 35  | 35  | 35  | 35  | 35  | 35  | 34  | 34  | 34  | 34  | 34   |
| 500  | 45  | 40  | 39  | 38  | 37  | 36  | 36  | 35  | 35  | 35  | 34  | 34  | 33  | 33  | 34  | 34  | 34  | 33  | 33  | 33  | 33  | 33   |
| 550  | 44  | 40  | 40  | 38  | 37  | 37  | 36  | 36  | 35  | 35  | 34  | 34  | 34  | 34  | 33  | 33  | 33  | 33  | 33  | 33  | 33  | 33   |
| 560  | 44  | 40  | 40  | 38  | 37  | 37  | 36  | 35  | 35  | 35  | 34  | 34  | 34  | 34  | 34  | 33  | 33  | 33  | 33  | 33  | 33  | 33   |
| 600  | 44  | 40  | 38  | 36  | 36  | 36  | 36  | 35  | 35  | 35  | 35  | 35  | 35  | 33  | 33  | 33  | 33  | 32  | 32  | 32  | 32  | 32   |
| 630  | 44  | 40  | 38  | 37  | 36  | 36  | 35  | 35  | 34  | 34  | 34  | 34  | 34  | 34  | 33  | 33  | 33  | 33  | 33  | 33  | 32  | 32   |
| 650  | 44  | 40  | 38  | 37  | 36  | 36  | 35  | 35  | 35  | 35  | 34  | 34  | 34  | 34  | 34  | 33  | 33  | 33  | 33  | 33  | 33  | 33   |
| 700  | 43  | 39  | 38  | 38  | 36  | 36  | 36  | 37  | 35  | 36  | 34  | 34  | 34  | 34  | 34  | 33  | 33  | 33  | 33  | 33  | 33  | 33   |
| 710  | 43  | 39  | 38  | 38  | 36  | 36  | 36  | 37  | 35  | 36  | 34  | 34  | 34  | 34  | 34  | 33  | 33  | 33  | 33  | 33  | 33  | 33   |
| 750  | 43  | 40  | 38  | 37  | 36  | 35  | 35  | 34  | 34  | 34  | 34  | 34  | 33  | 33  | 33  | 33  | 33  | 33  | 33  | 33  | 33  | 33   |
| 800  | 43  | 40  | 37  | 37  | 36  | 36  | 35  | 34  | 34  | 34  | 34  | 34  | 33  | 33  | 33  | 33  | 33  | 33  | 33  | 33  | 33  | 33   |
| 900  | 43  | 40  | 37  | 36  | 36  | 36  | 35  | 34  | 34  | 34  | 34  | 34  | 33  | 33  | 33  | 33  | 33  | 33  | 33  | 33  | 33  | 33   |
| 1000 | 43  | 39  | 37  | 37  | 37  | 36  | 35  | 35  | 34  | 34  | 34  | 33  | 33  | 33  | 33  | 33  | 33  | 33  | 33  | 33  | 33  | 33   |
| 1100 | 42  | 39  | 37  | 37  | 37  | 35  | 35  | 34  | 34  | 34  | 33  | 33  | 33  | 33  | 33  | 33  | 33  | 32  | 32  | 32  | 32  | 32   |
| 1250 | 42  | 39  | 37  | 37  | 37  | 35  | 35  | 34  | 34  | 34  | 34  | 34  | 33  | 33  | 33  | 33  | 33  | 32  | 32  | 32  | 32  | 32   |
| 1400 | 42  | 39  | 37  | 37  | 37  | 35  | 35  | 34  | 34  | 34  | 33  | 33  | 33  | 33  | 33  | 33  | 33  | 32  | 32  | 32  | 32  | 31   |
| 1500 | 42  | 39  | 37  | 37  | 37  | 35  | 35  | 34  | 34  | 34  | 33  | 33  | 33  | 33  | 33  | 33  | 33  | 32  | 32  | 32  | 31  | 31   |
| 1600 | 42  | 39  | 37  | 37  | 37  | 35  | 35  | 34  | 34  | 34  | 33  | 33  | 33  | 33  | 33  | 33  | 33  | 32  | 32  | 32  | 31  | 31   |

|      |     | Air velocity 5 m/s<br>Level of acoustic output [dB] |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |
|------|-----|---|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|
|      |     | B   |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |
| A    | 180 | 200   | 225 | 250 | 280 | 300 | 315 | 355 | 400 | 450 | 500 | 550 | 560 | 600 | 630 | 650 | 700 | 710 | 750 | 800 | 900 | 1000 |
| 180  | >55 | 55  | 53  | 52  | 49  | 47  | 48  | 47  | 47  | 47  | 46  | 46  | 46  | 46  | 46  | 45  | 45  | 45  | 45  | 45  | 45  |      |
| 200  | >55 | 55  | 52  | 49  | 48  | 48  | 47  | 47  | 47  | 45  | 45  | 45  | 44  | 44  | 44  | 44  | 45  | 45  | 45  | 45  | 45  |      |
| 225  | >55 | 54  | 50  | 48  | 47  | 47  | 47  | 45  | 44  | 44  | 44  | 44  | 44  | 44  | 44  | 44  | 44  | 44  | 44  | 44  | 43  |      |
| 250  | >55 | 52  | 49  | 48  | 47  | 46  | 46  | 44  | 44  | 44  | 44  | 44  | 44  | 44  | 43  | 43  | 43  | 43  | 43  | 43  | 43  |      |
| 280  | 54  | 50  | 49  | 47  | 46  | 45  | 45  | 44  | 44  | 44  | 43  | 43  | 43  | 43  | 42  | 42  | 42  | 42  | 42  | 42  | 42  |      |
| 300  | 54  | 49  | 47  | 46  | 45  | 45  | 44  | 44  | 43  | 43  | 43  | 43  | 43  | 42  | 42  | 42  | 41  | 42  | 42  | 42  | 41  |      |
| 315  | 54  | 51  | 48  | 47  | 45  | 45  | 44  | 44  | 44  | 43  | 43  | 42  | 42  | 41  | 41  | 41  | 41  | 41  | 41  | 41  | 41  |      |
| 355  | 54  | 50  | 48  | 45  | 44  | 43  | 43  | 43  | 42  | 42  | 41  | 41  | 41  | 41  | 41  | 41  | 41  | 41  | 41  | 40  | 40  |      |
| 400  | 54  | 49  | 46  | 45  | 43  | 43  | 43  | 42  | 42  | 41  | 40  | 40  | 40  | 40  | 40  | 40  | 40  | 40  | 40  | 40  | 40  |      |
| 450  | 52  | 47  | 46  | 43  | 42  | 42  | 42  | 41  | 41  | 40  | 40  | 40  | 40  | 40  | 40  | 40  | 40  | 40  | 39  | 39  | 39  |      |
| 500  | 51  | 48  | 46  | 44  | 43  | 43  | 43  | 41  | 41  | 40  | 40  | 40  | 40  | 40  | 40  | 40  | 40  | 39  | 39  | 39  | 39  |      |
| 550  | 49  | 47  | 46  | 44  | 43  | 43  | 42  | 41  | 40  | 40  | 40  | 40  | 40  | 40  | 39  | 39  | 39  | 39  | 39  | 39  | 38  |      |
| 560  | 49  | 47  | 46  | 44  | 43  | 43  | 42  | 41  | 40  | 40  | 40  | 40  | 40  | 40  | 39  | 39  | 39  | 39  | 39  | 39  | 38  |      |
| 600  | 50  | 47  | 45  | 43  | 43  | 42  | 42  | 41  | 40  | 40  | 40  | 40  | 40  | 40  | 39  | 39  | 39  | 39  | 38  | 38  | 38  |      |
| 630  | 50  | 48  | 45  | 43  | 43  | 42  | 42  | 41  | 40  | 40  | 40  | 40  | 40  | 40  | 40  | 40  | 40  | 38  | 38  | 38  | 38  |      |
| 650  | 50  | 48  | 45  | 43  | 42  | 42  | 42  | 41  | 40  | 40  | 40  | 40  | 39  | 39  | 39  | 39  | 38  | 38  | 38  | 38  | 38  |      |
| 700  | 50  | 48  | 45  | 42  | 42  | 42  | 42  | 41  | 40  | 40  | 40  | 40  | 39  | 39  | 39  | 39  | 38  | 38  | 38  | 38  | 38  |      |
| 710  | 50  | 48  | 45  | 42  | 42  | 42  | 42  | 41  | 40  | 40  | 40  | 40  | 39  | 39  | 39  | 39  | 38  | 38  | 38  | 38  | 38  |      |
| 750  | 50  | 47  | 45  | 42  | 42  | 42  | 42  | 41  | 40  | 40  | 40  | 40  | 39  | 39  | 39  | 39  | 38  | 38  | 38  | 38  | 38  |      |
| 800  | 50  | 47  | 45  | 42  | 42  | 42  | 42  | 41  | 40  | 40  | 40  | 40  | 39  | 39  | 39  | 39  | 38  | 38  | 38  | 38  | 38  |      |
| 900  | 49  | 47  | 44  | 42  | 42  | 41  | 40  | 40  | 40  | 39  | 39  | 39  | 39  | 39  | 38  | 38  | 38  | 38  | 38  | 38  | 38  |      |
| 1000 | 49  | 47  | 43  | 42  | 42  | 42  | 40  | 40  | 40  | 40  | 39  | 39  | 39  | 39  | 38  | 38  | 38  | 38  | 38  | 38  | 38  |      |
| 1100 | 49  | 47  | 43  | 42  | 42  | 42  | 40  | 40  | 40  | 40  | 39  | 39  | 39  | 39  | 38  | 38  | 38  | 38  | 38  | 38  | 38  |      |
| 1250 | 49  | 47  | 43  | 42  | 42  | 40  | 40  | 40  | 40  | 39  | 39  | 39  | 39  | 38  | 38  | 38  | 38  | 38  | 38  | 38  | 38  |      |
| 1400 | 48  | 46  | 43  | 42  | 42  | 41  | 40  | 40  | 39  | 38  | 38  | 38  | 38  | 38  | 38  | 38  | 38  | 38  | 38  | 38  | 37  |      |
| 1500 | 48  | 46  | 43  | 42  | 41  | 41  | 40  | 40  | 39  | 38  | 38  | 38  | 38  | 38  | 38  | 38  | 38  | 38  | 38  | 38  | 37  |      |
| 1600 | 48  | 46  | 43  | 42  | 41  | 41  | 40  | 40  | 39  | 38  | 38  | 38  | 38  | 38  | 38  | 38  | 38  | 38  | 38  | 38  | 37  |      |

|      |     | Air velocity 6 m/s<br>Level of acoustic output [dB] |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |
|------|-----|---|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|
|      |     | B   |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |
| A    | 180 | 200   | 225 | 250 | 280 | 300 | 315 | 355 | 400 | 450 | 500 | 550 | 560 | 600 | 630 | 650 | 700 | 710 | 750 | 800 | 900 | 1000 |
| 180  | >55 | >55   | >55 | >55 | 55  | 54  | 54  | 54  | 54  | 52  | 52  | 52  | 52  | 52  | 52  | 52  | 52  | 52  | 51  | 51  | 51  | 51   |
| 200  | >55 | >55   | >55 | 55  | 54  | 54  | 53  | 53  | 52  | 51  | 50  | 50  | 50  | 50  | 50  | 50  | 50  | 50  | 50  | 50  | 50  | 48   |
| 225  | >55 | >55   | >55 | 54  | 52  | 52  | 52  | 51  | 50  | 50  | 49  | 48  | 48  | 48  | 48  | 48  | 48  | 48  | 48  | 48  | 47  | 47   |
| 250  | >55 | >55   | 55  | 53  | 52  | 52  | 51  | 50  | 50  | 49  | 48  | 48  | 48  | 47  | 47  | 47  | 47  | 47  | 47  | 47  | 47  | 47   |
| 280  | >55 | >55   | 54  | 52  | 51  | 50  | 50  | 49  | 48  | 48  | 48  | 47  | 46  | 46  | 46  | 46  | 46  | 46  | 46  | 46  | 46  | 46   |
| 300  | >55 | >55   | 54  | 52  | 50  | 50  | 50  | 48  | 47  | 47  | 46  | 46  | 46  | 46  | 46  | 46  | 46  | 46  | 46  | 46  | 47  | 45   |
| 315  | >55 | 55  | 53  | 52  | 50  | 49  | 50  | 48  | 47  | 46  | 46  | 46  | 46  | 46  | 46  | 46  | 46  | 46  | 47  | 47  | 46  | 46   |
| 355  | >55 | 55  | 53  | 51  | 50  | 49  | 48  | 47  | 47  | 46  | 46  | 46  | 46  | 46  | 46  | 46  | 46  | 46  | 46  | 46  | 46  | 46   |
| 400  | >55 | 54  | 52  | 50  | 49  | 48  | 48  | 47  | 45  | 45  | 45  | 45  | 45  | 45  | 45  | 45  | 45  | 45  | 45  | 45  | 45  | 45   |
| 450  | >55 | 54  | 51  | 50  | 48  | 48  | 47  | 46  | 45  | 45  | 45  | 45  | 45  | 45  | 45  | 45  | 45  | 45  | 45  | 45  | 45  | 45   |
| 500  | 55  | 54  | 51  | 49  | 48  | 48  | 47  | 45  | 45  | 45  | 45  | 45  | 45  | 45  | 45  | 45  | 45  | 45  | 45  | 45  | 43  | 43   |
| 550  | 55  | 53  | 50  | 50  | 48  | 47  | 45  | 45  | 45  | 45  | 45  | 45  | 45  | 45  | 45  | 45  | 45  | 45  | 45  | 44  | 44  | 44   |
| 560  | 55  | 53  | 50  | 50  | 48  | 47  | 45  | 45  | 45  | 45  | 45  | 45  | 45  | 45  | 45  | 45  | 45  | 45  | 45  | 44  | 44  | 44   |
| 600  | 55  | 53  | 50  | 50  | 48  | 47  | 45  | 45  | 45  | 45  | 45  | 45  | 45  | 45  | 44  | 44  | 44  | 44  | 44  | 44  | 44  | 44   |
| 630  | 55  | 53  | 50  | 49  | 48  | 47  | 45  | 45  | 45  | 45  | 45  | 45  | 44  | 44  | 44  | 44  | 44  | 44  | 44  | 44  | 44  | 44   |
| 650  | 55  | 52  | 50  | 49  | 48  | 47  | 45  | 45  | 45  | 45  | 45  | 45  | 44  | 44  | 44  | 44  | 44  | 44  | 43  | 43  | 43  | 43   |
| 700  | 55  | 52  | 50  | 48  | 48  | 46  | 46  | 45  | 45  | 45  | 45  | 45  | 44  | 44  | 44  | 44  | 44  | 44  | 43  | 43  | 43  | 43   |
| 710  | 55  | 52  | 50  | 48  | 48  | 46  | 46  | 45  | 45  | 45  | 45  | 45  | 44  | 44  | 44  | 44  | 44  | 44  | 43  | 43  | 43  | 43   |
| 750  | 55  | 52  | 50  | 48  | 48  | 46  | 45  | 45  | 45  | 45  | 45  | 45  | 44  | 44  | 44  | 44  | 44  | 44  | 43  | 43  | 43  | 43   |
| 800  | 55  | 52  | 50  | 48  | 48  | 46  | 45  | 45  | 45  | 45  | 45  | 45  | 44  | 44  | 44  | 44  | 44  | 43  | 43  | 43  | 43  | 43   |
| 900  | 55  | 52  | 49  | 48  | 47  | 45  | 45  | 45  | 45  | 45  | 44  | 43  | 43  | 43  | 43  | 43  | 43  | 43  | 43  | 43  | 43  | 43   |
| 1000 | 55  | 52  | 49  | 48  | 47  | 45  | 45  | 45  | 45  | 44  | 44  | 44  | 43  | 43  | 43  | 43  | 43  | 43  | 43  | 43  | 43  | 43   |
| 1100 | 54  | 52  | 49  | 48  | 46  | 45  | 45  | 45  | 45  | 44  | 44  | 44  | 44  | 43  | 43  | 43  | 43  | 43  | 43  | 43  | 43  | 43   |
| 1250 | 54  | 52  | 49  | 47  | 45  | 45  | 45  | 45  | 44  | 44  | 44  | 44  | 43  | 43  | 43  | 43  | 43  | 43  | 43  | 43  | 43  | 43   |
| 1400 | 54  | 52  | 48  | 48  | 46  | 44  | 44  | 45  | 44  | 43  | 43  | 43  | 43  | 43  | 43  | 43  | 43  | 43  | 43  | 43  | 43  | 42   |
| 1500 | 54  | 52  | 48  | 48  | 45  | 44  | 44  | 45  | 44  | 43  | 43  | 43  | 43  | 43  | 43  | 43  | 43  | 43  | 43  | 42  | 42  | 42   |
| 1600 | 54  | 52  | 48  | 48  | 45  | 44  | 44  | 45  | 45  | 43  | 43  | 43  | 43  | 43  | 43  | 43  | 43  | 43  | 42  | 42  | 42  | 42   |

|      |     | Air velocity 7 m/s<br>Level of acoustic output [dB] |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |
|------|-----|---|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|
|      |     | B   |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |
| A    | 180 | 200   | 225 | 250 | 280 | 300 | 315 | 355 | 400 | 450 | 500 | 550 | 560 | 600 | 630 | 650 | 700 | 710 | 750 | 800 | 900 | 1000 |
| 180  | >61 | >61   | >61 | >61 | 61  | 60  | 60  | 58  | 58  | 57  | 56  | 56  | 56  | 55  | 55  | 55  | 55  | 55  | 55  | 56  | 55  | 55   |
| 200  | >61 | >61   | >61 | >61 | 59  | 58  | 58  | 57  | 56  | 55  | 55  | 55  | 55  | 55  | 55  | 55  | 55  | 54  | 54  | 54  | 54  | 54   |
| 225  | >61 | >61   | >61 | 60  | 57  | 56  | 56  | 55  | 55  | 55  | 54  | 54  | 53  | 53  | 53  | 53  | 53  | 53  | 53  | 53  | 53  | 53   |
| 250  | >61 | >61   | >61 | 58  | 56  | 56  | 56  | 55  | 54  | 53  | 53  | 53  | 53  | 52  | 52  | 52  | 52  | 52  | 52  | 53  | 52  | 52   |
| 280  | >61 | >61   | 60  | 57  | 56  | 55  | 55  | 54  | 53  | 52  | 52  | 52  | 51  | 51  | 51  | 51  | 51  | 51  | 51  | 51  | 50  | 50   |
| 300  | >61 | 61  | 58  | 57  | 55  | 54  | 54  | 53  | 53  | 52  | 52  | 52  | 52  | 52  | 52  | 50  | 50  | 50  | 50  | 50  | 50  | 50   |
| 315  | >61 | 61  | 57  | 56  | 55  | 55  | 54  | 53  | 52  | 52  | 51  | 51  | 51  | 51  | 50  | 50  | 50  | 50  | 49  | 49  | 49  | 49   |
| 355  | >61 | 61  | 57  | 55  | 54  | 53  | 53  | 52  | 52  | 52  | 51  | 50  | 50  | 50  | 50  | 49  | 49  | 49  | 48  | 48  | 48  | 48   |
| 400  | >61 | 60  | 57  | 55  | 53  | 53  | 53  | 52  | 51  | 51  | 49  | 49  | 49  | 49  | 49  | 48  | 48  | 48  | 48  | 48  | 48  | 48   |
| 450  | >61 | 59  | 56  | 54  | 52  | 52  | 52  | 51  | 50  | 50  | 50  | 48  | 48  | 48  | 48  | 48  | 48  | 48  | 48  | 48  | 48  | 48   |
| 500  | 60  | 58  | 55  | 54  | 53  | 52  | 52  | 50  | 50  | 50  | 48  | 48  | 48  | 48  | 48  | 48  | 48  | 48  | 48  | 48  | 48  | 48   |
| 550  | 60  | 58  | 55  | 54  | 53  | 52  | 52  | 50  | 50  | 48  | 48  | 48  | 48  | 48  | 48  | 48  | 48  | 48  | 48  | 48  | 48  | 48   |
| 560  | 60  | 58  | 55  | 54  | 53  | 52  | 52  | 50  | 50  | 48  | 48  | 48  | 48  | 48  | 48  | 48  | 48  | 48  | 48  | 48  | 48  | 48   |
| 600  | 60  | 58  | 55  | 54  | 52  | 52  | 51  | 50  | 49  | 48  | 48  | 48  | 48  | 48  | 48  | 48  | 48  | 48  | 48  | 48  | 48  | 48   |
| 630  | 60  | 58  | 55  | 53  | 51  | 51  | 51  | 50  | 49  | 48  | 48  | 48  | 48  | 48  | 48  | 48  | 48  | 48  | 48  | 48  | 48  | 48   |
| 650  | 60  | 58  | 55  | 53  | 52  | 51  | 51  | 50  | 49  | 48  | 48  | 48  | 48  | 48  | 48  | 48  | 48  | 48  | 48  | 48  | 48  | 48   |
| 700  | 59  | 58  | 55  | 53  | 52  | 51  | 51  | 50  | 49  | 48  | 48  | 48  | 48  | 48  | 48  | 48  | 48  | 48  | 48  | 48  | 48  | 48   |
| 710  | 59  | 58  | 55  | 53  | 52  | 51  | 51  | 50  | 49  | 48  | 48  | 48  | 48  | 48  | 48  | 48  | 48  | 48  | 48  | 48  | 48  | 48   |
| 750  | 59  | 58  | 55  | 53  | 52  | 51  | 51  | 50  | 49  | 48  | 48  | 48  | 48  | 48  | 48  | 48  | 48  | 48  | 48  | 48  | 48  | 48   |
| 800  | 59  | 58  | 55  | 53  | 52  | 51  | 51  | 50  | 49  | 48  | 48  | 48  | 48  | 48  | 48  | 48  | 48  | 48  | 48  | 48  | 48  | 48   |
| 900  | 58  | 56  | 53  | 53  | 52  | 50  | 50  | 48  | 48  | 47  | 48  | 48  | 48  | 48  | 48  | 48  | 48  | 48  | 48  | 48  | 47  | 47   |
| 1000 | 58  | 56  | 53  | 53  | 51  | 50  | 50  | 48  | 48  | 48  | 48  | 48  | 48  | 48  | 48  | 48  | 48  | 48  | 48  | 48  | 47  | 47   |
| 1100 | 58  | 56  | 53  | 53  | 51  | 50  | 50  | 48  | 48  | 48  | 48  | 48  | 48  | 48  | 48  | 48  | 48  | 48  | 47  | 47  | 47  | 47   |
| 1250 | 58  | 56  | 53  | 53  | 51  | 50  | 50  | 48  | 48  | 48  | 48  | 48  | 48  | 48  | 48  | 48  | 48  | 48  | 47  | 47  | 47  | 47   |
| 1400 | 58  | 56  | 53  | 52  | 51  | 50  | 48  | 48  | 47  | 47  | 47  | 47  | 47  | 47  | 47  | 47  | 47  | 47  | 47  | 47  | 47  | 46   |
| 1500 | 58  | 56  | 53  | 52  | 51  | 50  | 50  | 48  | 47  | 47  | 47  | 47  | 47  | 47  | 47  | 47  | 47  | 47  | 47  | 47  | 47  | 46   |
| 1600 | 58  | 56  | 53  | 52  | 51  | 50  | 50  | 48  | 47  | 47  | 47  | 47  | 47  | 47  | 47  | 47  | 47  | 47  | 47  | 47  | 47  | 46   |

|      |     | Air velocity 8 m/s<br>Level of acoustic output [dB] |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |
|------|-----|---|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|
|      |     | B   |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |
| A    | 180 | 200   | 225 | 250 | 280 | 300 | 315 | 355 | 400 | 450 | 500 | 550 | 560 | 600 | 630 | 650 | 700 | 710 | 750 | 800 | 900 | 1000 |
| 180  | >63 | >63   | >63 | >63 | >63 | >63 | 63  | 62  | 61  | 61  | 60  | 60  | 60  | 60  | 60  | 60  | 60  | 60  | 60  | 60  | 59  |      |
| 200  | >63 | >63   | >63 | >63 | >63 | 62  | 62  | 61  | 60  | 60  | 60  | 60  | 60  | 60  | 60  | 60  | 60  | 60  | 59  | 59  | 59  | 58   |
| 225  | >63 | >63   | >63 | >63 | >63 | 61  | 61  | 60  | 60  | 58  | 58  | 58  | 58  | 58  | 58  | 58  | 58  | 58  | 58  | 57  | 57  | 57   |
| 250  | >63 | >63   | >63 | >63 | 61  | 60  | 60  | 59  | 58  | 58  | 57  | 57  | 57  | 57  | 57  | 57  | 57  | 57  | 56  | 56  | 56  | 56   |
| 280  | >63 | >63   | >63 | >63 | 59  | 59  | 59  | 58  | 58  | 57  | 57  | 56  | 56  | 56  | 56  | 56  | 56  | 56  | 55  | 55  | 55  | 54   |
| 300  | >63 | >63   | 62  | 61  | 59  | 59  | 59  | 58  | 57  | 56  | 56  | 55  | 55  | 55  | 55  | 55  | 55  | 55  | 54  | 54  | 54  | 54   |
| 315  | >63 | >63   | 62  | 61  | 59  | 59  | 58  | 57  | 57  | 56  | 55  | 55  | 55  | 55  | 55  | 55  | 55  | 55  | 55  | 55  | 54  | 54   |
| 355  | >63 | >63   | 63  | 59  | 58  | 58  | 57  | 56  | 55  | 55  | 54  | 54  | 54  | 54  | 54  | 53  | 53  | 53  | 53  | 53  | 53  | 53   |
| 400  | >63 | 63  | 62  | 60  | 58  | 57  | 56  | 56  | 55  | 54  | 54  | 54  | 54  | 54  | 54  | 53  | 53  | 53  | 53  | 53  | 52  | 52   |
| 450  | >63 | 63  | 60  | 58  | 57  | 56  | 56  | 55  | 55  | 54  | 53  | 53  | 53  | 53  | 53  | 53  | 53  | 53  | 53  | 52  | 52  | 52   |
| 500  | >63 | 62  | 60  | 58  | 56  | 55  | 55  | 54  | 54  | 54  | 53  | 53  | 53  | 53  | 53  | 53  | 53  | 53  | 52  | 51  | 51  | 51   |
| 550  | >63 | 62  | 59  | 58  | 56  | 56  | 55  | 55  | 54  | 53  | 53  | 53  | 53  | 53  | 53  | 53  | 53  | 52  | 52  | 51  | 51  | 51   |
| 560  | >63 | 62  | 59  | 58  | 56  | 56  | 55  | 55  | 54  | 53  | 53  | 53  | 53  | 53  | 53  | 53  | 53  | 52  | 52  | 51  | 51  | 51   |
| 600  | >63 | 62  | 59  | 58  | 56  | 55  | 55  | 54  | 54  | 53  | 53  | 53  | 53  | 53  | 52  | 52  | 52  | 51  | 51  | 50  | 50  | 50   |
| 630  | >63 | 62  | 59  | 58  | 56  | 55  | 55  | 54  | 54  | 53  | 53  | 53  | 53  | 53  | 52  | 52  | 52  | 51  | 50  | 50  | 50  | 50   |
| 650  | >63 | 61  | 59  | 58  | 56  | 55  | 55  | 54  | 54  | 53  | 53  | 53  | 52  | 51  | 51  | 51  | 51  | 50  | 50  | 50  | 50  | 50   |
| 700  | 63  | 62  | 59  | 57  | 56  | 55  | 55  | 54  | 54  | 53  | 53  | 53  | 52  | 51  | 51  | 50  | 50  | 50  | 50  | 49  | 49  | 49   |
| 710  | 63  | 62  | 59  | 57  | 56  | 55  | 55  | 54  | 54  | 53  | 53  | 53  | 52  | 51  | 51  | 50  | 50  | 50  | 50  | 49  | 49  | 49   |
| 750  | 63  | 62  | 59  | 57  | 56  | 55  | 55  | 54  | 54  | 53  | 52  | 52  | 52  | 51  | 51  | 50  | 50  | 50  | 50  | 50  | 50  | 49   |
| 800  | 62  | 60  | 57  | 57  | 56  | 55  | 54  | 54  | 54  | 52  | 52  | 52  | 51  | 51  | 50  | 50  | 50  | 50  | 50  | 50  | 50  | 49   |
| 900  | 62  | 60  | 57  | 56  | 55  | 55  | 54  | 53  | 53  | 52  | 51  | 51  | 51  | 50  | 50  | 50  | 50  | 50  | 50  | 50  | 50  | 50   |
| 1000 | 62  | 60  | 57  | 56  | 56  | 55  | 54  | 53  | 53  | 52  | 52  | 51  | 51  | 51  | 50  | 50  | 50  | 50  | 50  | 50  | 50  | 50   |
| 1100 | 62  | 60  | 57  | 56  | 56  | 55  | 54  | 53  | 53  | 52  | 51  | 51  | 51  | 50  | 50  | 50  | 50  | 50  | 50  | 50  | 50  | 50   |
| 1250 | 62  | 61  | 58  | 56  | 56  | 54  | 54  | 53  | 53  | 52  | 50  | 50  | 50  | 50  | 50  | 49  | 49  | 49  | 49  | 49  | 49  | 49   |
| 1400 | 62  | 61  | 57  | 56  | 56  | 53  | 54  | 53  | 53  | 50  | 50  | 50  | 50  | 50  | 49  | 49  | 49  | 49  | 49  | 49  | 49  | 49   |
| 1500 | 62  | 61  | 57  | 56  | 56  | 54  | 54  | 53  | 52  | 50  | 50  | 50  | 50  | 50  | 49  | 49  | 49  | 49  | 49  | 49  | 49  | 49   |
| 1600 | 62  | 61  | 57  | 56  | 56  | 54  | 54  | 53  | 52  | 50  | 50  | 50  | 50  | 50  | 49  | 49  | 49  | 49  | 49  | 49  | 49  | 49   |

|             |     | Air velocity 9 m/s<br>Level of acoustic output [dB] |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |
|-------------|-----|---|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|
|             |     | B   |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |      |
| A           | 180 | 200   | 225 | 250 | 280 | 300 | 315 | 355 | 400 | 450 | 500 | 550 | 560 | 600 | 630 | 650 | 700 | 710 | 750 | 800 | 900 | 1000 |
| <b>180</b>  | >65 | >65   | >65 | >65 | >65 | >65 | >65 | >65 | 65  | 64  | 64  | 64  | 64  | 64  | 64  | 64  | 64  | 64  | 63  | 63  | 63  |      |
| <b>200</b>  | >65 | >65   | >65 | >65 | >65 | >65 | >65 | 65  | 64  | 64  | 63  | 63  | 63  | 62  | 62  | 62  | 62  | 62  | 62  | 61  | 61  |      |
| <b>225</b>  | >65 | >65   | >65 | >65 | >65 | >65 | 65  | 63  | 63  | 62  | 61  | 61  | 61  | 61  | 61  | 61  | 61  | 61  | 61  | 60  | 60  |      |
| <b>250</b>  | >65 | >65   | >65 | >65 | >65 | 65  | 65  | 63  | 62  | 61  | 60  | 60  | 60  | 60  | 60  | 60  | 60  | 60  | 60  | 60  | 60  |      |
| <b>280</b>  | >65 | >65   | >65 | >65 | 64  | 63  | 62  | 61  | 61  | 60  | 60  | 60  | 60  | 59  | 59  | 59  | 59  | 59  | 59  | 58  | 58  |      |
| <b>300</b>  | >65 | >65   | >65 | 65  | 63  | 62  | 62  | 61  | 60  | 60  | 60  | 60  | 60  | 60  | 59  | 59  | 59  | 59  | 59  | 59  | 59  |      |
| <b>315</b>  | >65 | >65   | >65 | 64  | 63  | 62  | 61  | 61  | 60  | 60  | 60  | 60  | 60  | 59  | 59  | 59  | 59  | 59  | 59  | 59  | 58  |      |
| <b>355</b>  | >65 | >65   | >65 | 64  | 62  | 61  | 60  | 60  | 60  | 60  | 59  | 59  | 59  | 58  | 58  | 58  | 58  | 58  | 58  | 58  | 58  |      |
| <b>400</b>  | >65 | >65   | >65 | 63  | 61  | 60  | 60  | 59  | 58  | 58  | 58  | 58  | 58  | 58  | 58  | 58  | 58  | 58  | 57  | 57  | 57  |      |
| <b>450</b>  | >65 | >65   | 65  | 63  | 60  | 60  | 59  | 58  | 58  | 58  | 57  | 57  | 57  | 57  | 57  | 57  | 57  | 57  | 56  | 56  | 56  |      |
| <b>500</b>  | >65 | >65   | 64  | 61  | 60  | 60  | 60  | 59  | 58  | 57  | 57  | 57  | 57  | 56  | 56  | 56  | 56  | 56  | 56  | 55  | 55  |      |
| <b>550</b>  | >65 | >65   | 62  | 62  | 60  | 60  | 58  | 57  | 58  | 58  | 57  | 57  | 57  | 56  | 56  | 56  | 56  | 56  | 56  | 55  | 55  |      |
| <b>560</b>  | >65 | >65   | 62  | 62  | 60  | 60  | 58  | 57  | 58  | 58  | 57  | 57  | 57  | 56  | 56  | 56  | 56  | 56  | 56  | 55  | 55  |      |
| <b>600</b>  | >65 | >65   | 62  | 62  | 60  | 59  | 58  | 58  | 58  | 57  | 56  | 56  | 56  | 56  | 56  | 55  | 55  | 55  | 55  | 55  | 55  |      |
| <b>630</b>  | >65 | >65   | 62  | 62  | 60  | 59  | 58  | 58  | 58  | 57  | 56  | 56  | 56  | 56  | 56  | 55  | 55  | 55  | 55  | 55  | 55  |      |
| <b>650</b>  | >65 | >65   | 62  | 62  | 59  | 59  | 58  | 58  | 58  | 57  | 56  | 56  | 56  | 56  | 56  | 55  | 55  | 55  | 55  | 55  | 55  |      |
| <b>700</b>  | >65 | >65   | 62  | 61  | 59  | 59  | 58  | 58  | 57  | 56  | 55  | 55  | 55  | 55  | 55  | 55  | 55  | 55  | 55  | 55  | 54  |      |
| <b>710</b>  | >65 | >65   | 62  | 61  | 59  | 59  | 58  | 58  | 57  | 56  | 55  | 55  | 55  | 55  | 55  | 55  | 55  | 55  | 55  | 55  | 54  |      |
| <b>750</b>  | >65 | >65   | 62  | 61  | 59  | 59  | 58  | 57  | 57  | 56  | 55  | 55  | 55  | 55  | 55  | 55  | 55  | 55  | 55  | 55  | 55  |      |
| <b>800</b>  | >65 | 64  | 62  | 61  | 59  | 59  | 58  | 57  | 57  | 56  | 55  | 55  | 55  | 55  | 55  | 55  | 55  | 55  | 55  | 54  | 54  |      |
| <b>900</b>  | >65 | 64  | 62  | 60  | 60  | 59  | 58  | 57  | 57  | 55  | 55  | 55  | 55  | 55  | 55  | 54  | 55  | 55  | 55  | 54  | 54  |      |
| <b>1000</b> | >65 | 64  | 60  | 60  | 58  | 58  | 58  | 57  | 57  | 55  | 55  | 55  | 55  | 55  | 55  | 55  | 55  | 55  | 55  | 54  | 54  |      |
| <b>1100</b> | >65 | 64  | 60  | 59  | 58  | 58  | 57  | 57  | 57  | 55  | 55  | 55  | 55  | 55  | 55  | 55  | 55  | 55  | 55  | 54  | 54  |      |
| <b>1250</b> | >65 | 64  | 60  | 59  | 58  | 58  | 57  | 57  | 56  | 55  | 55  | 55  | 55  | 55  | 54  | 54  | 54  | 54  | 54  | 54  | 53  |      |
| <b>1400</b> | >65 | 64  | 61  | 60  | 58  | 58  | 57  | 57  | 56  | 56  | 55  | 55  | 55  | 55  | 54  | 54  | 54  | 54  | 54  | 53  | 53  |      |
| <b>1500</b> | >65 | 64  | 60  | 60  | 58  | 58  | 56  | 56  | 56  | 55  | 55  | 55  | 55  | 55  | 54  | 54  | 54  | 53  | 53  | 53  | 53  |      |
| <b>1600</b> | >65 | 64  | 60  | 60  | 58  | 58  | 56  | 56  | 56  | 55  | 55  | 55  | 55  | 55  | 54  | 54  | 54  | 53  | 53  | 53  | 53  |      |

## VIII. MATERIAL, FINISHING

- Damper casings and blades are made of fire resistant asbestos free boards made of mineral fibres.
- Fasteners are galvanized.
- According to the customer's requirements, damper can be made of stainless material.

Specifications for stainless-steel models – classification of stainless steel:

- Class A2 – Food-grade stainless steel (AISI 304 – EN 17240)
- Class A4 – Chemistry-grade stainless steel (AISI 316, 316L – EN 17346, 17349)

The respective stainless steel is the material for all components present or accessing the damper interior; components outside the damper body are typically from galvanised sheet metal (fasteners for mounting the actuator).

The following components, including the fasteners, are made from stainless steel at all times:

- Damper body and all components permanently attached
- Blade's holders, including pins, metal parts of blade
- Inspection hole cover and fasteners (if they are parts of the cover)

The leaf of the damper is made from three Supalux-S sheets, thickness 20 mm, connected with galvanised nailed "U" connectors which are sealed with Promat K84 from the outside.

Plastic, rubber and silicon components, sealants, foaming bands, glass-ceramic seals, housings, brass bearings of the blade, actuators, and end switches are identical for all material variants of the dampers.

Some fasteners and components are available in one class of stainless steel; the type will be used in all stainless-steel variants.

The blade in the variants for chemical environments (Class A4) is always treated with a coating of chemically resistant Promat SR.

Any other requirements for the design shall be considered atypical and shall be addressed on an individual basis.

- The actuator cover is made of fire-resistant material (fire protection board).

## IX. TRANSPORTATION AND STORAGE

### Logistic terms

- Dampers are delivered on a pallets. As standard, the dampers are wrapped in plastic foil for protection during transport and must not be used for long-term storage of the equipment. Changes in temperature during transport may cause condensation of water vapour inside the packaging and thereby conditions may arise inside the packaging that are suitable for corrosion of materials used in the equipment (e.g. white corrosion on zinc-coated items or mould on calcium silicate). Therefore, it is necessary to remove the transport packaging immediately after unloading to allow air to circulate around the product.
- The equipment must be stored in clean, dry, well ventilated and dust-free environment out of direct sunlight. ensuring protection against moisture and extremes of temperatures (minimum temperature +5°C) the equipment must be protected against mechanical and accidental damage prior to installation.
- Another required packaging system should be approved and agreed by manufacturer. Packaging material is not

returnable in case that another packaging system (material) is required and used and it is not included into final price of damper.

- For unloading and further manipulation with the damper is necessary to use appropriate tooling (forklifts) due to damper weight. Dampers are fragile.
- Dampers are transported by box freight vehicles without direct weather impact, there must not occur any shocks and ambient temperature must not exceed +50°C. Dampers must be protected against impact when transported and manipulated. During transportation, the damper blade must be in the "CLOSED" position.
- Dampers are stored indoor in environment without any aggressive vapours, gases or dust. Indoor temperature must be in the range from -30°C to +50°C and maximum relative humidity 95% (avoid condensation on the damper body). Dampers must be protected against impact when transported and manipulated.

## X. ASSEMBLY, ATTENDANCE AND MAINTENANCE

- Assembly, maintenance and damper function check can be done only by qualified and trained person, i.e. "AUTHORIZED PERSON" according to the manufacturer documentation. All works done on the smoke control dampers must be done according international and local norms and laws.
- All effective safety standards and directives must be observed during damper assembly.
- To ensure reliable smoke control damper function it is necessary to avoid blocking the closing mechanism and contact surfaces with collected dust, fibre and sticky materials and solvents.
- Manual operation
  - Without power supply, the damper can be operated manually and fixed in any required position.

### **DANGER OF DAMAGE**

Always:

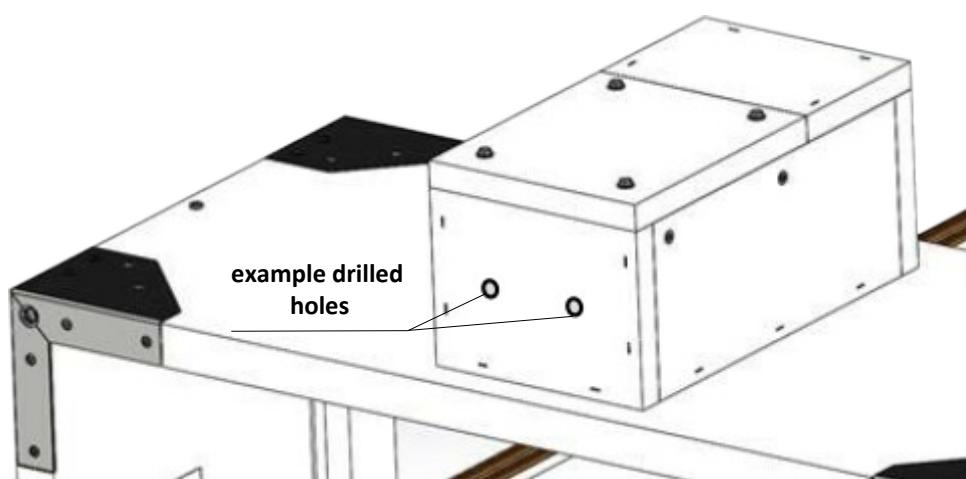
**REMOVE POWER BEFORE USING ALLEN KEY!  
NEVER USE A POWER TOOL!**

Both incorrect operations will damage the clutch Mechanism  
NO WARRANTY CLAIM!

### Electrical connection of the actuator in protection box

#### Protection box without slot or predrilled holes

- Drill two holes into the protection box (from outside to inside) and pull through field wiring cables (CAT 3 fire resistant cables as BS 8519) to connect to the actuator trailing lead inside the housing, using a standard screwed cable connector block, the protection box is made of calcium silicate plates.
- Procedure
  - Use drill (drill size acc. To suit connecting cable  $\varnothing + 2$  mm for seal up by mastic) and make two holes. It is possible to drill holes in any side of the housing.
  - Pull the heat resistant cable through the calcium silicate plate (wall) and connect with cables from actuator acc. to above mentioned electrical diagram.
  - Seal up the space around cable with fire resistant mastic (HILTI CFS-S ACR, PROMASTOP) or equivalent.
  - Let the mastic harden.



*Example of position of holes in the wall of the box, without pre-manufactured slot*

## Connection of the control module MDPM & MDCM interfaces inside protection box

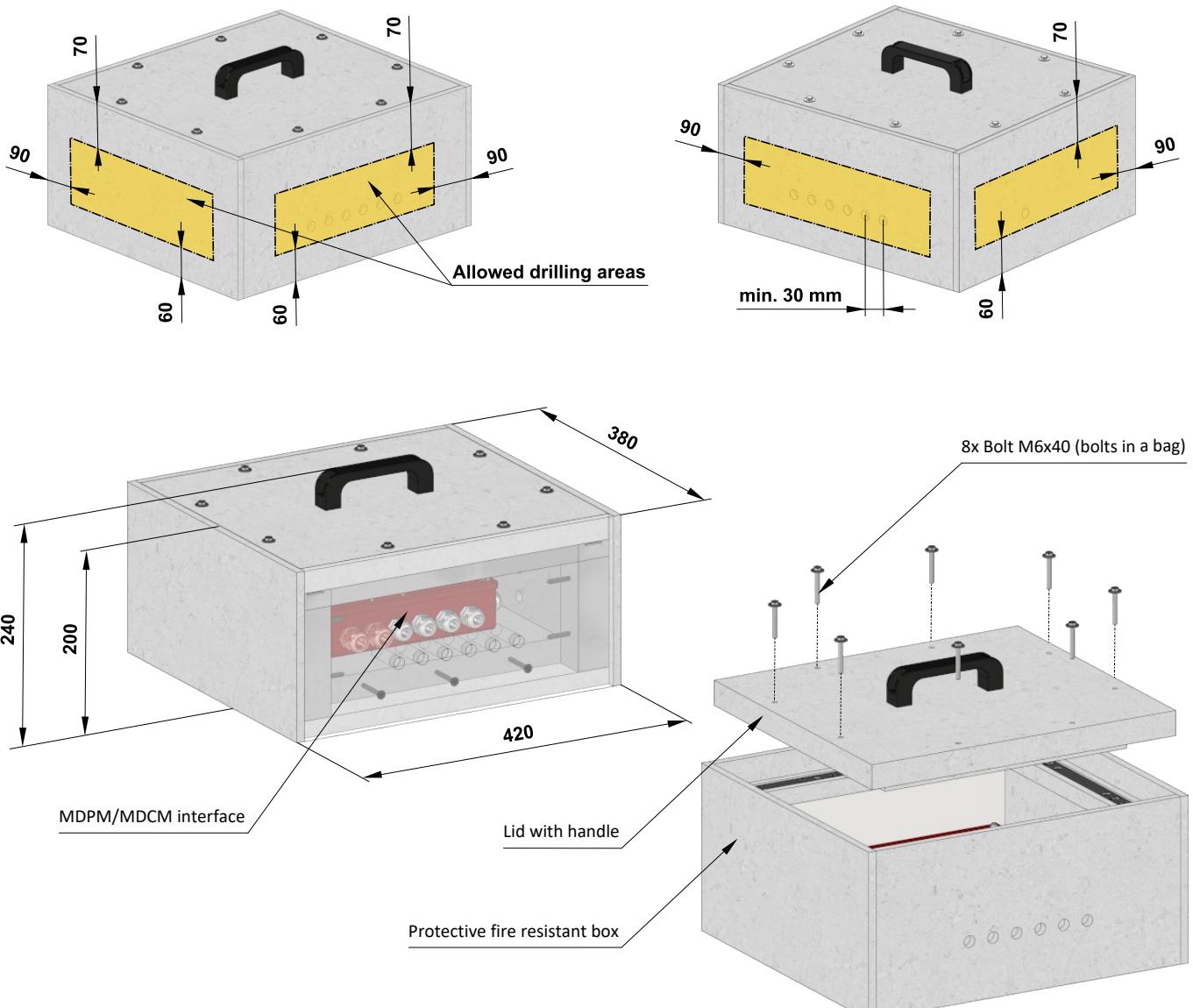
- Drill holes into the protection box (from outside to inside) and pull through field wiring cable (fire resistant cables) to connect control module. Protection box is made of calcium silicate insulating plates.

### Procedure:

- Screw red box of MDPM/MDCM interface inside of the FIRE RATED housing to the back side, use pre drilled holes in red box and self-taping screws 4,8x25 mm. Minimum distance from walls 20 mm.
- Use drill (drill size acc. to suit connecting cable  $\varnothing + 2$  mm for seal up by mastic) and make holes (min. pitch of the holes must be 30 mm), number of holes depends on the type of control module. **It is possible to drill holes in any side of the protection box.**
- Pull the heat resistant cable through the calcium silicate insulating plate (wall) and connect with cables from control module.
- Seal up the space around cable with fire resistant mastic (HILTI CFS-S ACR, PROMASTOP) or equivalent.
- Let the mastic harden.

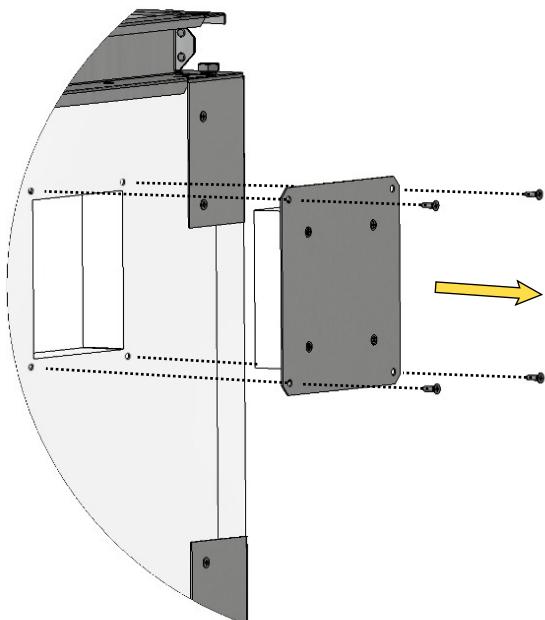
### Placement:

- The FIRE RATED housing can be installed onto a wall.
- For installation, drill 4 holes in the rear of the housing (from inside to outside) with a maximum hole diameter of 8,5mm, use fixing appropriate for the application. Seal all holes and gap between FIRE RATED housing and wall with firestop (HILTI CFS-S ACR, PROMASTOP).



## Entry into service and revisions

- Before entering the dampers into operation after assembly and after sequential revisions, checks and functionality tests of all designs including operation of the electrical components must be successfully provided and finished. After entering into operation, these revisions must be done according to requirement set by national regulations.
- In case that dampers are found unable to serve for their function for any cause, it must be clearly marked. The operator is obliged to ensure that the damper is put into condition in which it is ready for function and meanwhile he is obliged to provide the fire protection by another appropriate way.
- Removing the inspection hole cover
  - Unscrew four of the edge screws to release the cover and then remove it from its original position.



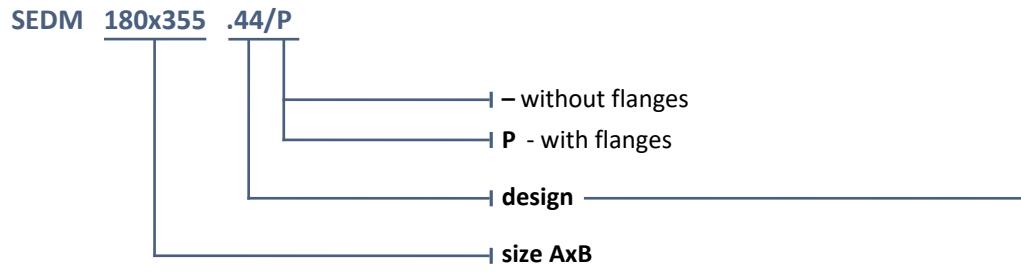
*Inspection hole detail*

- Results of regular checks, imperfections found and all important facts connected with the damper function must be recorded in the "FIRE BOOK" and immediately reported to the operator.
- Before entering the dampers into operation after their assembly and by sequential checks, the following checks must be carried out for all designs.
- Visual inspection of proper damper integration, inside damper area, damper blade, contact surfaces and silicon sealing.

- Ensure each damper is fully checked for operational capability, control should be initiated from the control system. Dampers blades should open and close correctly and operation should be visually inspected and documented prior to handover.

## XI. ORDERING INFORMATION

### Ordering key



#### EXAMPLE:

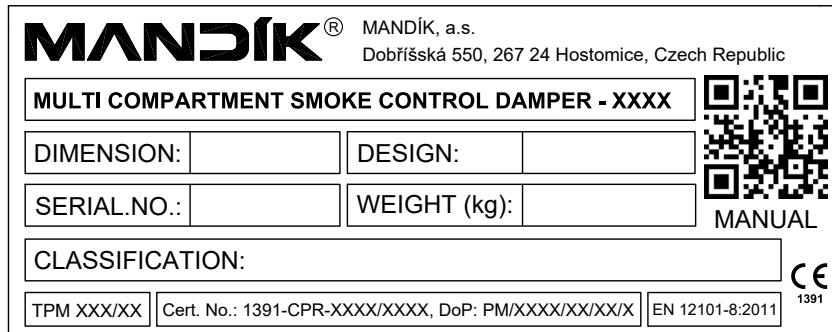
**SEDM 180x355 .44/P** - 180x355-damper size, .44-damper design, P-with flanges

| Dampers design  | Additional digit |
|---|------------------|
| with actuating mechanism BEN, BEE, BE, InMax 50.75-S for 230V | .44              |
| with actuating mechanism BEN, BEE, BE, InMax 50.75-S for 24V  | .54              |
| with actuating mechanism BEN (BEE)-SR for 24V                 | .65*             |

\* Design .65 is not available by using actuating mechanism BE, InMax 50.75-S

### Data label

- Data label is placed on the damper casing (example)



The producer reserves the right for innovations of the product.

For actual product information see [www.mandik.co.uk](http://www.mandik.co.uk)

**MANDÍK®**

[www.mandik.co.uk](http://www.mandik.co.uk)

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Authorized representative

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