

EN 12101-8

MANDÍK®

**SMOKE EXTRACTION
DAMPER / MULTI
SEDM-L**



These technical conditions stipulate a number of manufactured sizes, main dimensions, design and range of use of multi-slat smoke and heat extraction dampers - multi SEDM-L (hereinafter only dampers). They're binding for production, design, ordering, delivery, storage, assembly, operation, maintenance and serviceability checks.

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II. GENERAL

1. Description

- 1.1.** Smoke and heat extraction dampers - multi are closures in the ductwork of smoke extraction devices. In the event of a fire, the smoke and heat removal system open the dampers in the affected section, therefore enabling the extraction fans to remove combustion products and heat from the endangered areas.

The damper slat is controlled by an actuator.

The damper is fire resistant and is designed for systems with automatic or manual activation.

Smoke dampers are intended for use in spaces with multiple fire compartments, which can be connected by a smoke extraction duct tested according to EN 1366-8 or can be installed in the construction of the fire compartment.

The dampers can be supplied with flange(s) or without flange(s), with cover grille(s).

Flanges and grilles are not installed on the damper, they are included loosen. Flanges are required to fit the cover grilles. Grills and flanges must be installed to the dampers only after installation of the damper into the wall.

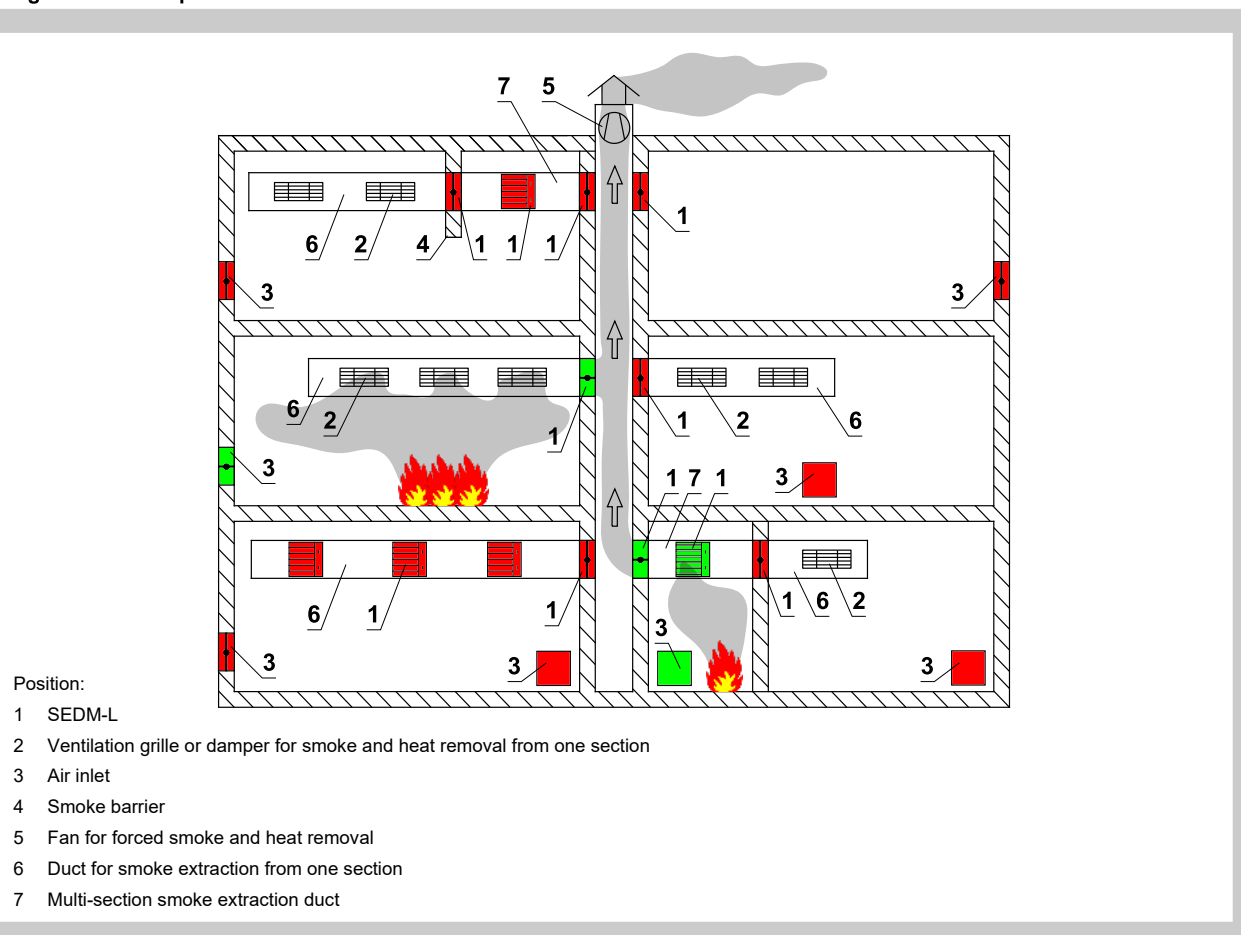
1.2. Smoke and heat removal system

In normal operation, the SEDM-L dampers remain closed. If necessary, in the event of a fire, the SEDM-L dampers in the affected fire section will open completely so that the smoke can be removed. When the smoke and heat removal dampers are activated, the dampers used for air supply in the affected fire section are installed at the ground. The dampers are controlled from the central control system on the basis of signals, e.g. from smoke detectors. The use of cables with a certain fire resistance for the supply voltage ensures that the actuator is supplied even in the event of a fire.

Ventilation system

During ventilation, SEDM-L dampers in the smoke and heat extraction system are controlled by a control system, it's possible to fully open, close or continuously control the flow. The SEDM-L dampers, which are used for air supply, remain closed during ventilation.

Fig. 1 Example of a ventilation device for forced smoke and heat removal



1.3. Damper characteristics

- CE certification according to EN 12101-8
- tested according to EN 1366-10
- classified according to EN 13501-4 + A1
- fire resistance according Tab. 1.3.1
- pressure class 2 (vacuum 1000 Pa / overpressure 500 Pa)
- tightness according to EN 1751 via body class C and via damper slat min. class 3
- C_{mod} cycling according to EN 12101-8
- Certificate of Constancy of Properties No. 1391-CPR-2021/0009
- Performance declaration No. PM/SEDM-L/01/21/1

Tab. 1.3.1. Damper classification SEDM-L

Construction	Classification
In a solid wall construction and on duct in a solid wall construction, th. 100 mm	EI 90 ($V_{edw} - i \leftrightarrow o$) S1000C _{mod} HOT 400/30MAmulti
For duct in a solid wall construction, th. 100 mm	EI 120 ($V_{ed} - i \leftrightarrow o$) S1000C _{mod} HOT 400/30MAmulti
In gypsum wall construction and on the duct in gypsum wall construction, th. 100 mm	EI 120 ($V_{edw} - i \leftrightarrow o$) S1000C _{mod} HOT 400/30MAmulti

1.4. Operating conditions

The damper's faultless operation is ensured under the following conditions:

- maximum air flow speed 12 m/s
- maximum vacuum up to 1000 Pa or overpressure up to 500 Pa

The dampers are suitable for installing in a vertical position, with the slat axis horizontal.

The dampers are designed for environments protected against weather conditions with class 3K5 climatic conditions, without condensation, icing, ice formation, without water and from sources other than rain and with a temperature limit of -30°C to 50°C.

2. Design

2.1. 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.

After connection to the power supply voltage, the actuator moves the damper slats 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 slats positions is ensured by two built-in fixed "potential-free" end- limit switches.

The actuator for operating the damper slats 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 cable entry must meet a minimum fire resistance of 30 minutes.

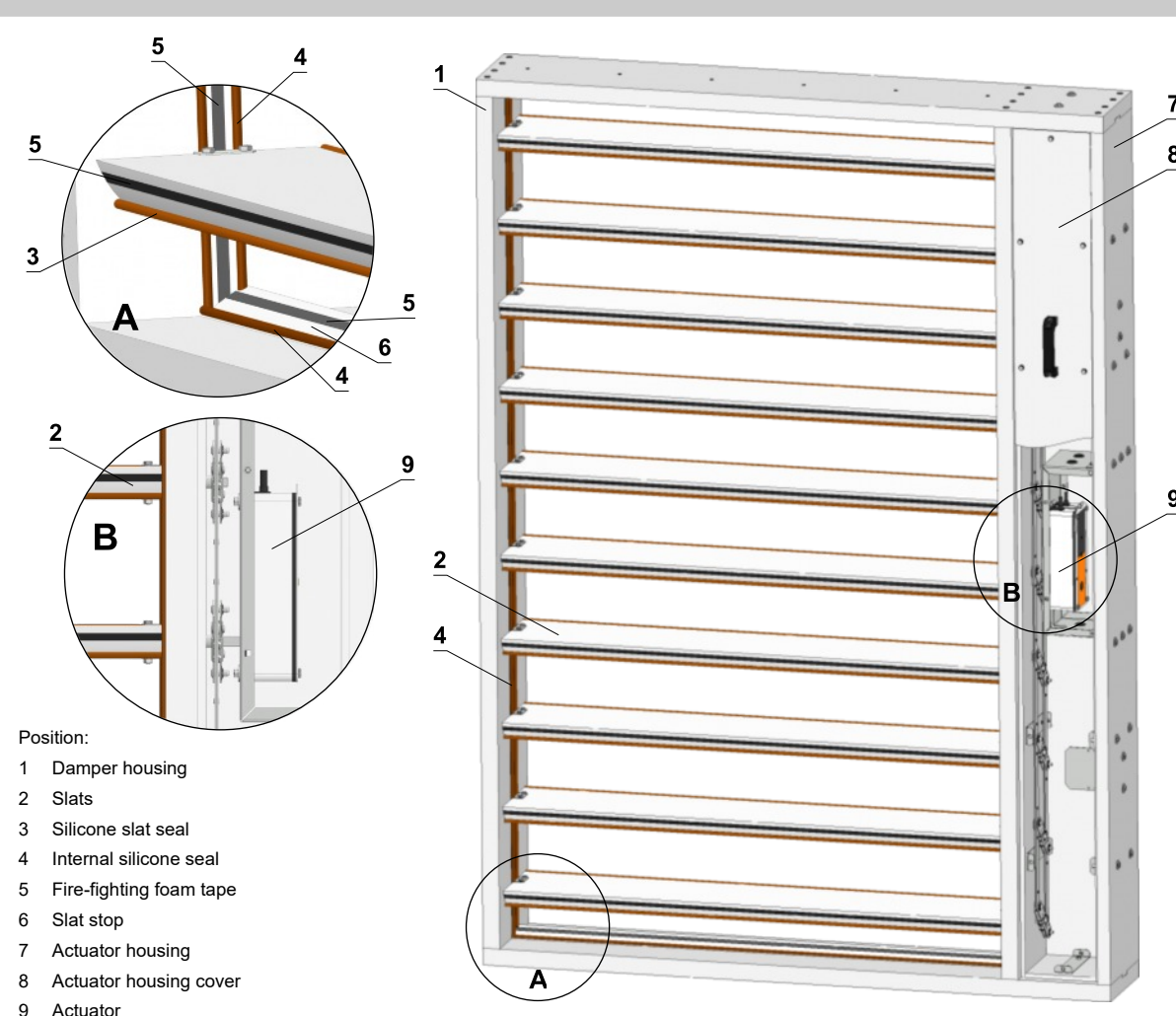
Design .65

Belimo modulating actuators, BEN (BEE)-SR series for 24V AC/DC are specially designed for remote control of fire dampers. The position of the damper slats is adjustable by means of control voltage 0 (2)...10V DC.

The signalling of the "OPEN" and "CLOSED" damper slats positions is ensured by two built-in fixed "potential-free" limit switches.

The actuator for operating the damper slats is mounted in an insulated cover/box. It is accessible after removing 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 cable entry must meet a minimum fire resistance of 30 minutes.

Fig. 2 Design .44, .54



Tab. 2.1.1. 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 50/60Hz	AC/DC 24 V 50/60Hz	AC 230 V 50/60Hz
Power consumption - in operation - in the end position	3 W 0,1 W	3 W 0,3 W	4 W 0,4 W
Dimensioning	6 VA (I _{max} 8,2 A @ 5 ms)	6,5 VA (I _{max} 8,2 A @ 5 ms)	7 VA (I _{max} 4 A @ 5 ms)
Protection class	III	III	II
Degree of protection	IP 54		
Adjustment time for 95°	< 30 s		
Ambient temperature Storage temperature	-30°C ... +55°C -40°C ... +80°C		
Connection - drive - auxiliary switch	Cable 1 m, 3 x 0,75 mm ² Cable 1 m, 6 x 0,75 mm ² (BEN 24-ST) with plug connectors	Cable 1 m, 4 x 0,75 mm ² Cable 1 m, 6 x 0,75 mm ²	Cable 1 m, 3 x 0,75 mm ² Cable 1 m, 6 x 0,75 mm ²

Fig. 3 Actuator BELIMO BEN 24(-ST)

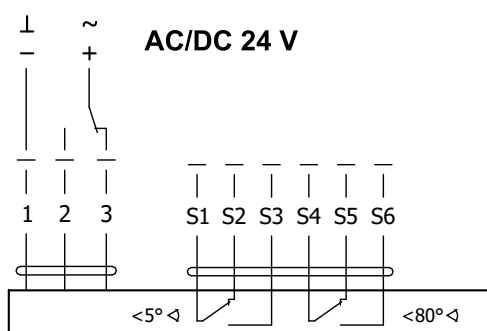


Fig. 4 Actuator BELIMO BEN 24-SR

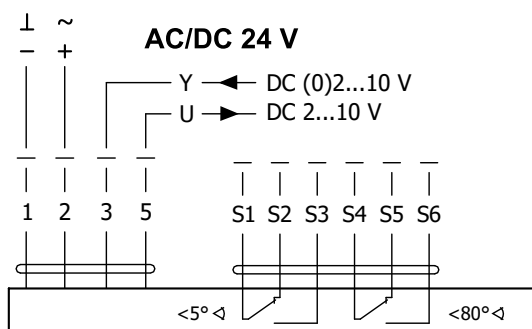
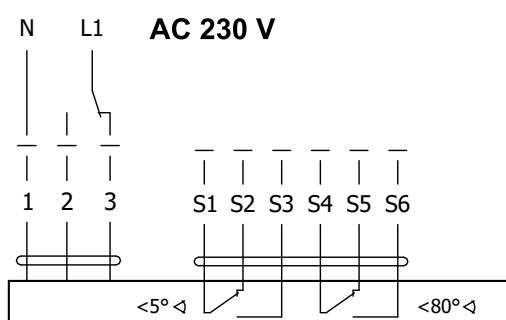


Fig. 5 Actuator BELIMO BEN 230



Tab. 2.1.2. 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 50/60Hz	AC/DC 24 V 50/60Hz	AC 230 V 50/60Hz
Power consumption - in operation - in the end position	2,5 W 0,1 W	3 W 0,3 W	3,5 W 0,4 W
Dimensioning	5 VA (I _{max} 8,2 A @ 5 ms)	5,5 VA (I _{max} 8,2 A @ 5 ms)	6 VA (I _{max} 4 A @ 5 ms)
Protection class	III	III	II
Degree of protection	IP 54		
Adjustment time for 95°	< 60 s		
Ambient temperature Storage temperature	-30°C ... +55°C -40°C ... +80°C		
Connection - drive - auxiliary switch	Cable 1 m, 3 x 0,75 mm ² Cable 1 m, 6 x 0,75 mm ² (BEE 24-ST) with plug connectors	Cable 1 m, 4 x 0,75 mm ² Cable 1 m, 6 x 0,75 mm ²	Cable 1 m, 3 x 0,75 mm ² Cable 1 m, 6 x 0,75 mm ²

Fig. 6 Actuator BELIMO BEE 24(-ST)

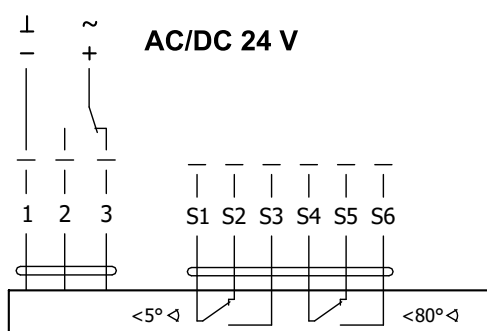


Fig. 7 Actuator BELIMO BEE 24-SR

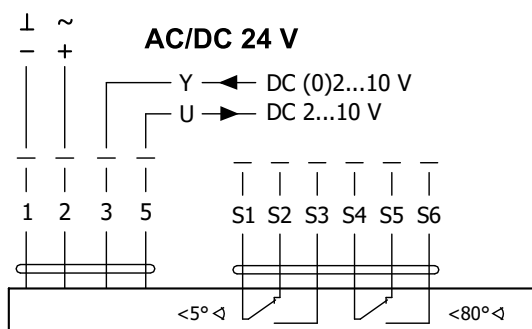
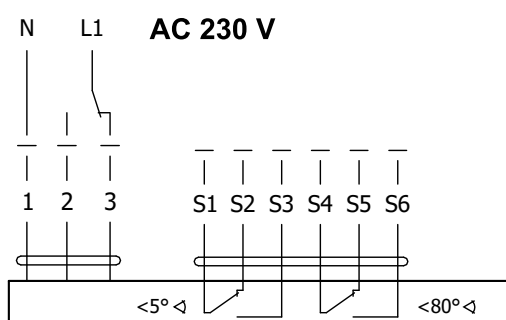
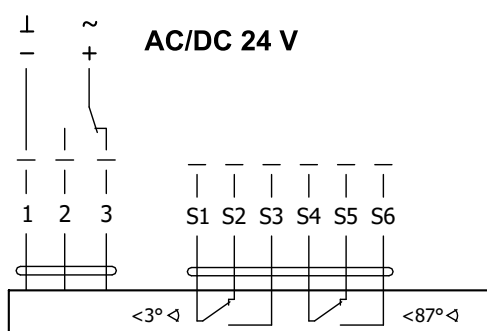
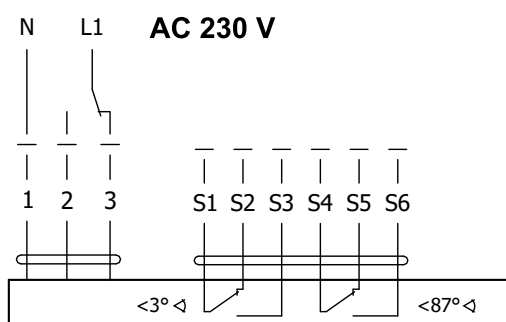


Fig. 8 Actuator BELIMO BEE 230



Tab. 2.1.3. Actuator BELIMO BE 24-12(-ST), BE 230-12

Actuator BELIMO - 40 Nm	BE 24-12(-ST)	BE 230-12
Power voltage	AC/DC 24 V 50/60Hz	AC 230 V 50/60Hz
Power consumption - in operation - in the end position	12 W 0,5 W	8 W 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 Storage temperature	-30°C ... +50°C -40°C ... +80°C	
Connection - drive - auxiliary switch	Cable 1 m, 3 x 0,75 mm ² Cable 1 m, 6 x 0,75 mm ² (BE 24-ST) with plug connectors	

Fig. 9 Actuator BELIMO BE 24-12(-ST)

Fig. 10 Actuator BELIMO BE 230-12


2.2. Design with actuating mechanism, communication and power supply device BKNE 230-24

Design .66

Design with communication and power supply device BKNE 230-24 and with actuator BEN (BEE, BE)-ST for 24V.

The BKNE 230-24 serves on the one hand as a decentralized network device for powering the actuator and on the other hand transmits the signal of the communication and control device BKSE 24-6.

It simplifies electrical installation and connection of dampers. In the meantime, it facilitates "on-site inspection" and allows central control and inspection of dampers using a simple 2-wire line.

The BKNE 230-24 transmits the "OPEN" / "CLOSED" damper position (switches in the actuator) and fault messages to the BKSE 24-6. It also receives commands from the control device and controls the adjustment of the actuator to the desired position. The last control command will be retained even after a temporary network failure..

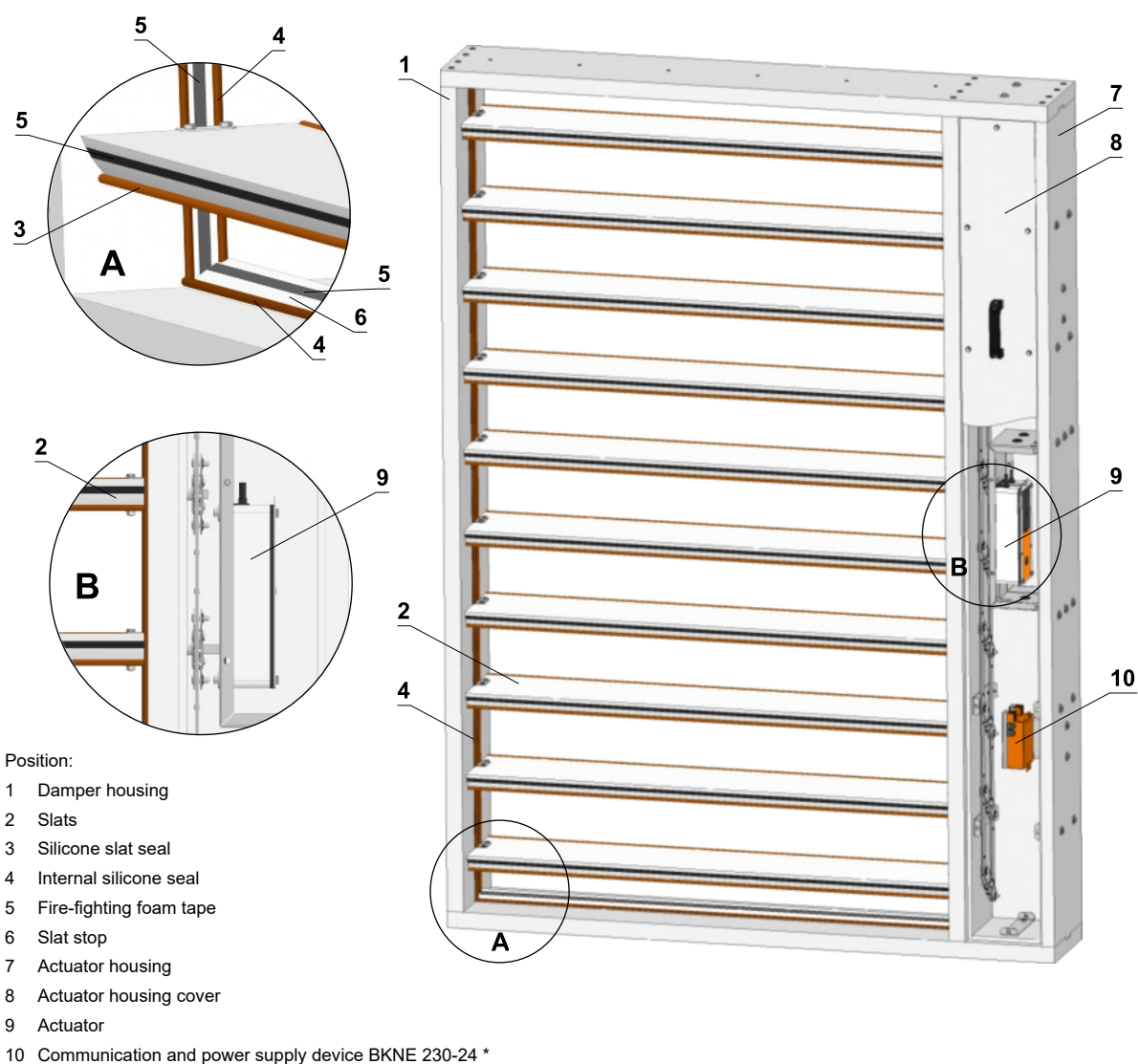
The BKNE 230-24 controls the switching position of the actuator, its adjustment time and the data exchange with the BKSE 24-6. In addition, it controls the actuator current (actuator connection) and the power supply.

To simplify the connection, the actuator is equipped with plug connectors that plug directly into the BKNE 230-24.

The actuator, communication and power supply device BKNE 230-24 are mounted in an insulated cover, they are accessible after removing the cover. The electrical connection of the actuator and the BKNE 230-24 communication and power supply device is made with a non-flammable cable (or a cable located in an adjoining cable duct), the two-wire BKNE 230-24 cable should be connected to terminals 6 and 7. It is also recommended to use cable, which is used for fire signalling network. The cables pass through an opening made in the wall of the insulated cover when installing the damper or when connecting the actuator power cable. The cable entry must meet a minimum fire resistance of 30 minutes.

For more information on actuators and devices, see the Belimo catalogue.

Fig. 11 Design .66

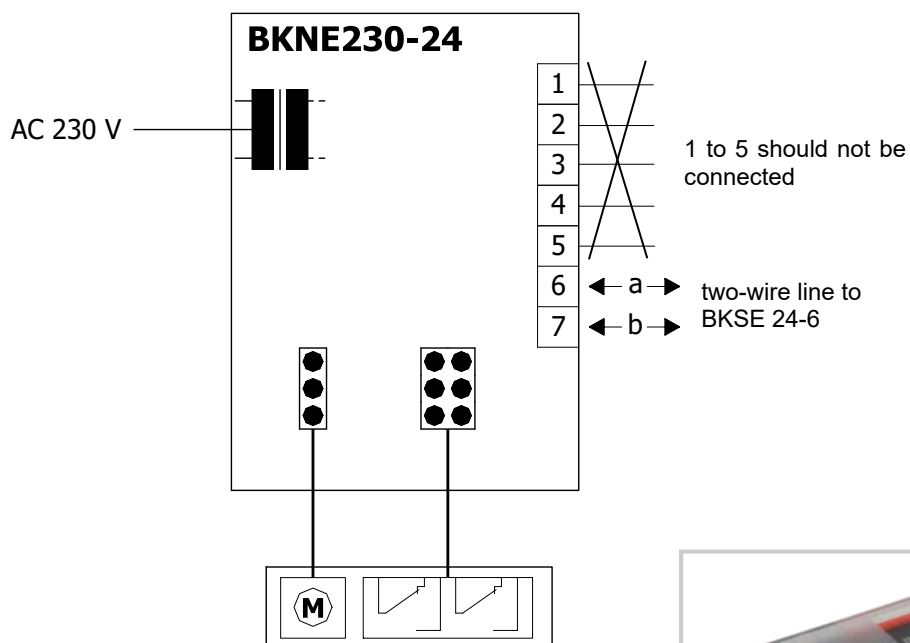


* communication and power supply device BKNE 230-24 can be placed in the space for the actuator with mechanics up to the size **B≥830**.

Tab. 2.2.1. Communication and power supply device BKNE 230-24

Communication and power supply device	BKNE 230-24
Power voltage	AC 230V 50/60Hz
Power consumption	10 W (including actuator)
Dimensioning	19 VA (including actuator)
Protection class	II
Ambient operation temperature	-30°C ... +50°C
Storage temperature	-40°C ... +80°C
Connection - network - drive - terminal blocks	cable 1 m without plug 6-pin plug, 3-pin plug screw terminals for 2x1.5 mm ² conductor

Fig. 12 Communication and power supply device BKNE 230-24



Signalling

LED	State	Function
yellow	flashing	damper rotates to the open position
yellow	lit-up	damper is open
green	flashing	damper rotates to the closed position
green	lit-up	damper is closed
yellow or green	flashes twice as often	fault
yellow + green	dark	network outage

3. Communication and control devices

- 3.1. **BKSE 24-6** indicates operating condition and faults of flue dampers. These conditions can be signalled or transmitted to the higher-level control system via the auxiliary built-in contacts. Signals from individual BKNE 230-24 are evaluated separately. All BKNE 230-24 are controlled simultaneously. A maximum of 6 BKNE 230-24 can be connected to the BKSE 24-6.

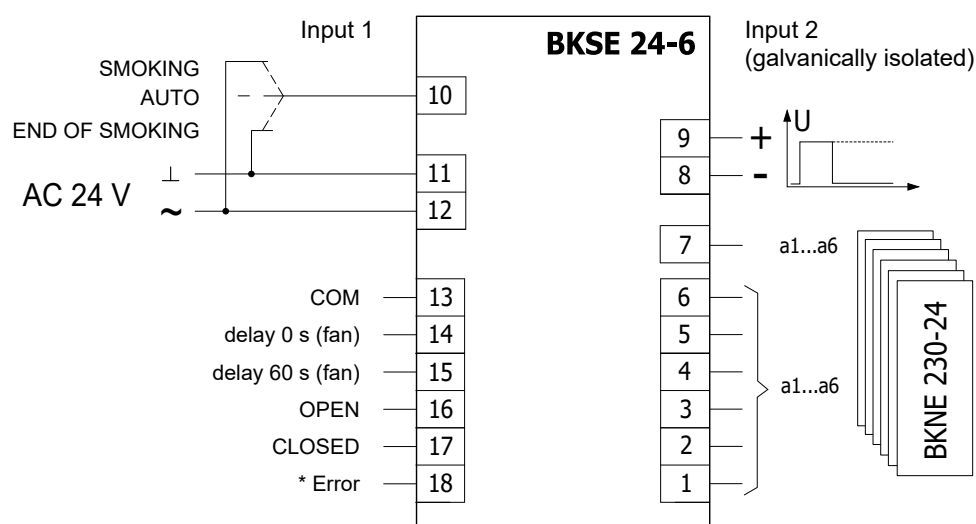
Damper control is ensured with a simple 2-wire line. The damper's correct function is indicated by two LEDs. The operating status of the entire control system and any errors are indicated by these LEDs and the corresponding error LED.

Mounting and connection of BKSE 24-6 can be done on a 35mm DIN rail. It's connected using two 9-pin terminal blocks (plug connectors).

Tab. 3.1.1. Communication and control devices BKSE 24-6

Communication and control devices	BKSE 24-6
Power voltage	AC 24 V 50/60Hz
Power consumption	3,5 W (operating position)
Dimensioning	5,5 VA 18 VA (I _{max} 6.4 A @ 2.5 ms)
Protection class	III (low voltage)
Degree of protection	IP 20
Ambient operation temperature	0 ... +50°C
Connection	screw terminals for 2x1.5 mm ² conductor

Fig. 13 Communication and control devices BKSE 24-6



* reverse output: fault = contact open

4. Dimensions, weights and effective area

4.1. Dimensions

Fig. 14 Without flange and cover grille

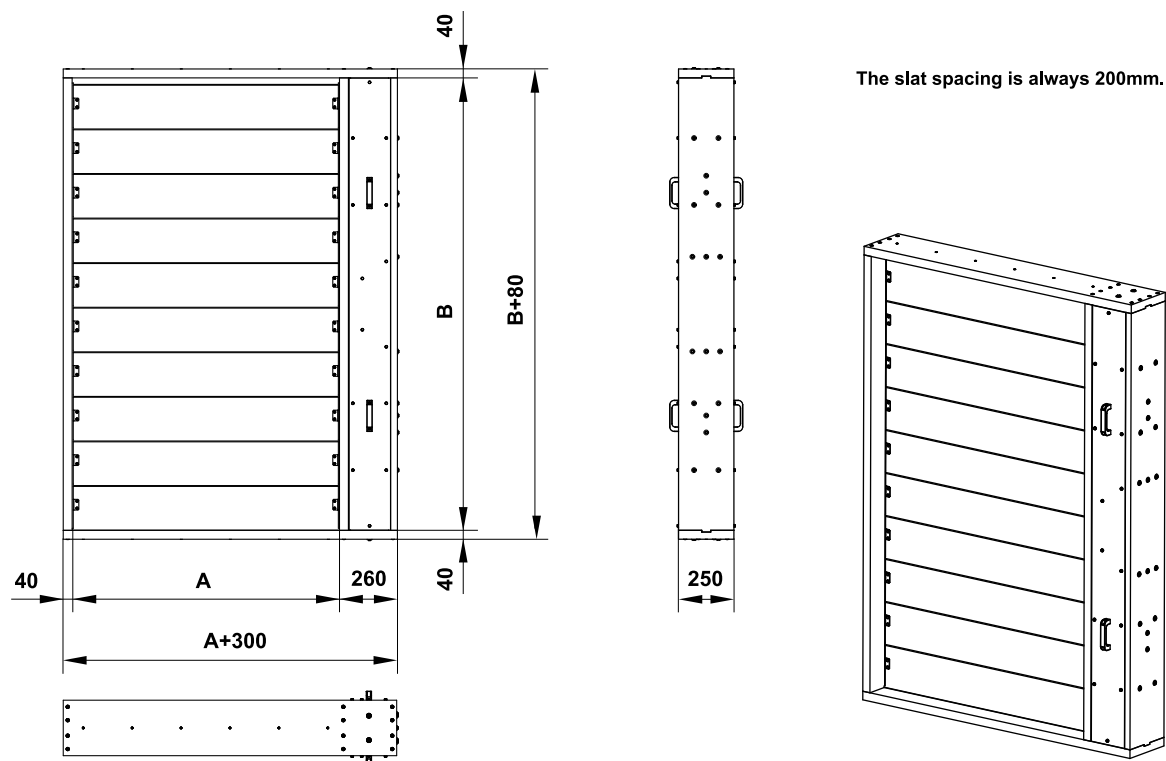


Fig. 15 With flange and cover grille over slats

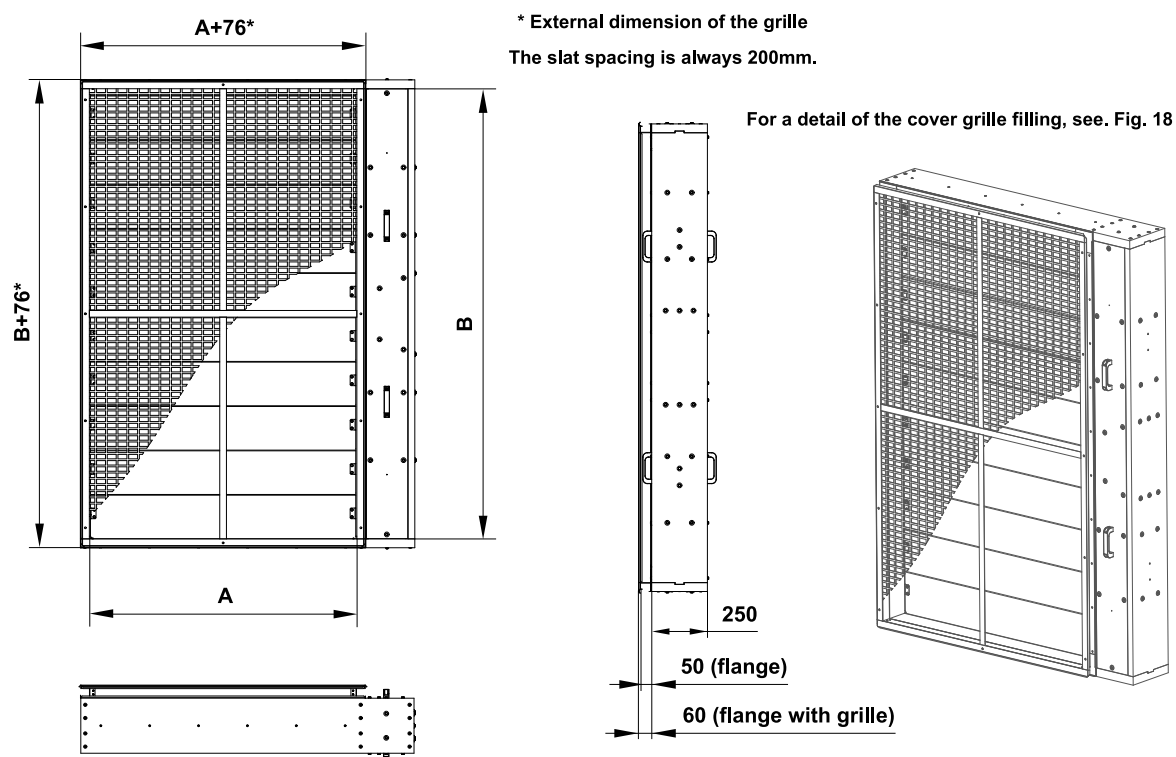


Fig. 16 With flange and cover grille over damper

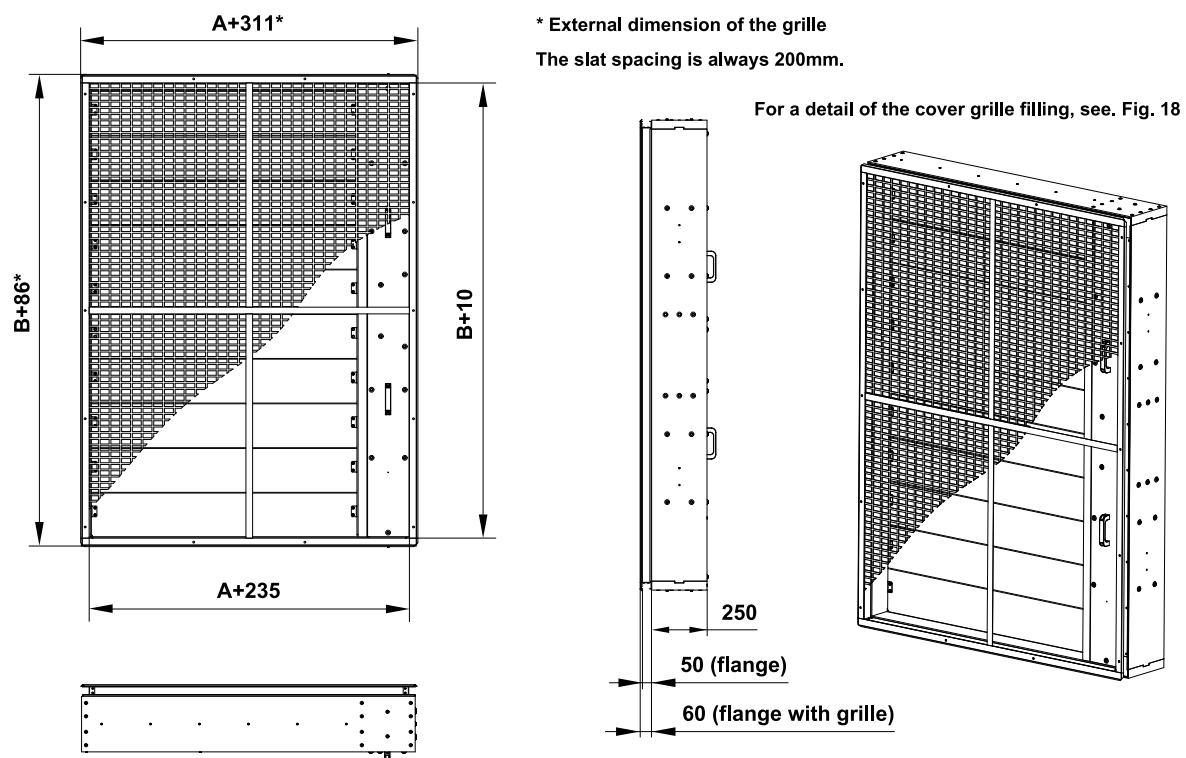


Fig. 17 Flange (2 types)

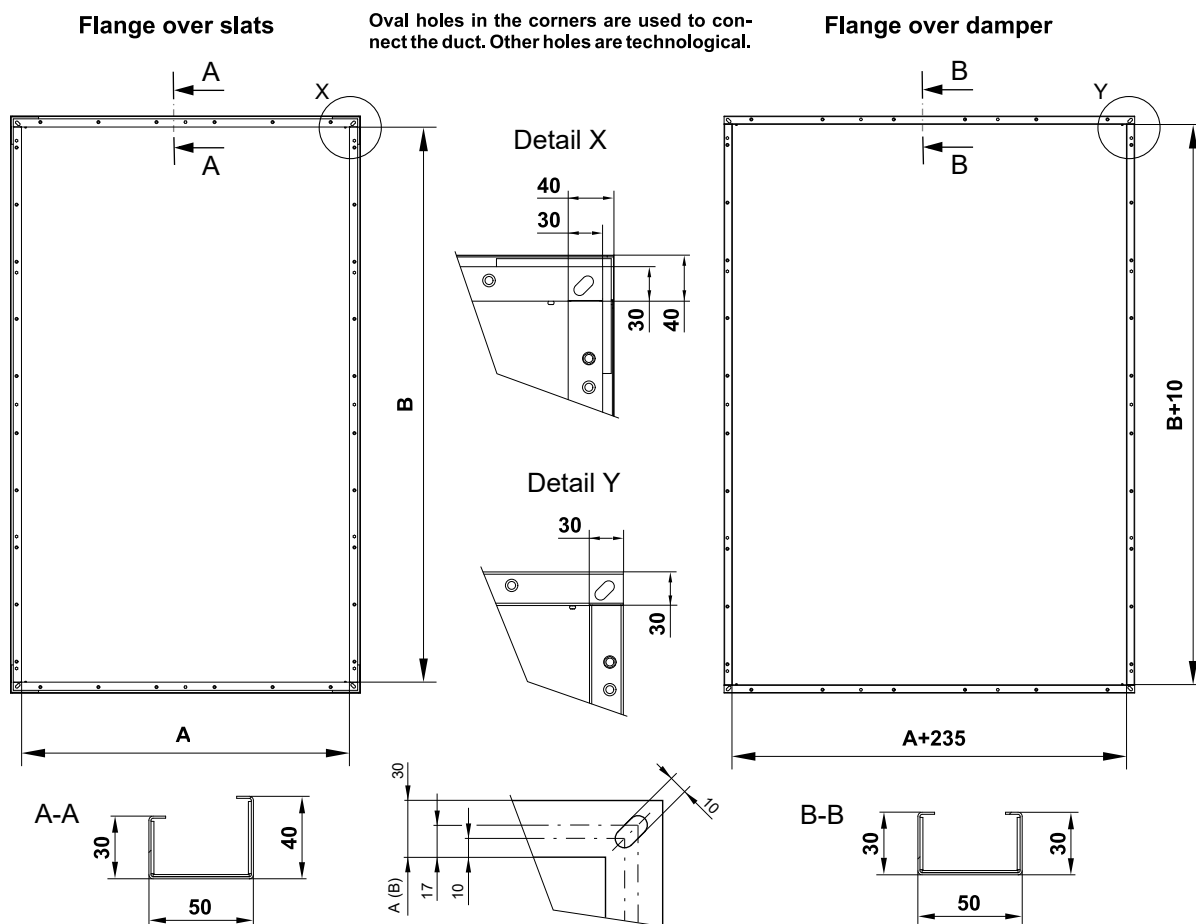


Fig. 18 Covering grille KMM



4.2. Dimensions, weights and effective area

Tab. 4.2.1. Dimensions, weights and effective area

A x B [mm]	Number of slats [ks]	Effective area Sef [m²]	Weight SEDM-L [kg]	Weight flange over slats [kg]	Weight flange over damper [kg]	Weight grille over slats [kg]	Weight grille over damper [kg]	Actuator torque [N.m]
200	2	0,0537	39,0	1,8	2,0	0,9	1,4	BEN (15 N.m)
250		0,0682	40,7	1,9	2,1	1,0	1,5	
300		0,0827	42,4	2,0	2,2	1,1	1,6	
350		0,0972	44,3	2,1	2,3	1,2	1,7	
400		0,1117	45,9	2,2	2,4	1,3	1,8	
450		0,1262	47,6	2,3	2,5	1,4	1,9	
500		0,1407	49,3	2,4	2,6	1,5	2,0	
550		0,1552	51,0	2,5	2,7	1,6	2,1	
600		0,1697	52,7	2,6	2,7	1,7	2,2	
650		0,1842	54,8	2,7	2,8	1,8	2,3	
700 x 430		0,1987	56,5	2,8	2,9	1,9	2,4	
750		0,2132	59,8	2,9	3,0	2,0	2,5	
800		0,2277	61,5	2,9	3,1	2,1	2,6	
850		0,2422	63,2	3,0	3,2	2,2	2,7	
900		0,2567	64,9	3,1	3,3	2,3	2,8	
950		0,2712	66,9	3,2	3,4	2,4	3,0	
1000		0,2857	68,6	3,4	3,5	2,5	3,1	
1050		0,3002	70,3	3,5	3,6	2,6	3,2	
1100		0,3147	72,0	3,6	3,7	2,7	3,3	
1150		0,3292	73,7	3,7	3,8	2,8	3,4	
1200		0,3437	75,4	3,8	3,9	3,0	3,5	
200	3	0,0833	50,3	2,2	2,4	1,2	1,8	BEN (15 N.m)
250		0,1058	52,3	2,3	2,5	1,3	1,9	
300		0,1283	54,4	2,4	2,6	1,4	2,0	
350		0,1508	56,6	2,5	2,7	1,6	2,2	
400		0,1733	58,6	2,6	2,7	1,7	2,3	
450		0,1958	60,7	2,7	2,8	1,8	2,4	
500		0,2183	62,7	2,8	2,9	1,9	2,5	
550		0,2408	64,8	2,9	3,0	2,0	2,7	
600		0,2633	66,8	3,0	3,1	2,2	2,8	
650		0,2858	70,9	3,1	3,2	2,3	2,9	
700 x 630		0,3083	72,9	3,2	3,3	2,4	3,0	
750		0,3308	74,9	3,3	3,4	2,5	3,2	
800		0,3533	77,0	3,3	3,5	2,7	3,4	
850		0,3758	79,0	3,4	3,6	2,8	3,5	
900		0,3983	81,1	3,5	3,7	2,9	3,6	
950		0,4208	83,5	3,6	3,8	3,0	3,8	
1000		0,4433	86,7	3,7	3,9	3,4	3,9	BEE (25 N.m)
1050		0,4658	88,7	3,9	3,9	3,5	4,0	
1100		0,4883	90,8	4,0	4,0	3,6	4,1	
1150		0,5108	92,8	4,1	4,1	3,8	4,3	
1200		0,5333	94,9	4,2	4,2	3,9	4,4	
200	4	0,1129	61,8	2,6	2,7	1,5	2,2	BEN (15 N.m)
250		0,1434	64,2	2,7	2,8	1,6	2,3	
300		0,1739	66,6	2,8	2,9	1,8	2,5	
350		0,2044	69,2	2,9	3,0	1,9	2,6	
400		0,2349	71,6	3,0	3,1	2,1	2,8	
450		0,2654	74,0	3,1	3,2	2,2	2,9	
500		0,2959	76,4	3,2	3,3	2,4	3,1	
550		0,3264	80,4	3,3	3,4	2,5	3,2	
600		0,3569	82,8	3,4	3,5	2,7	3,4	
650		0,3874	85,5	3,5	3,6	2,8	3,5	
700 x 830		0,4179	87,9	3,6	3,7	2,9	3,7	
750		0,4484	91,5	3,7	3,8	3,1	3,8	BEE (25 N.m)
800		0,4789	93,9	3,7	3,9	3,2	4,1	
850		0,5094	96,3	3,8	3,9	3,4	4,3	
900		0,5399	98,7	3,9	4,0	3,5	4,4	
950		0,5704	101,9	4,0	4,1	3,7	4,6	
1000		0,6009	104,3	4,2	4,2	4,1	4,7	
1050		0,6314	106,7	4,3	4,3	4,3	4,9	
1100		0,6619	109,1	4,4	4,4	4,4	5,0	
1150		0,6924	111,5	4,5	4,5	4,6	5,2	
1200		0,7229	113,9	4,6	4,6	4,7	5,3	

A x B [mm]	Number of slats [ks]	Effective area Sef [m²]	Weight SEDM-L [kg]	Weight flange over slats [kg]	Weight flange over damper [kg]	Weight grille over slats [kg]	Weight grille over damper [kg]	Actuator torque [N.m]
200	5	0,1425	74,1	3,0	3,1	1,8	2,6	BEN (15 N.m)
250		0,1810	76,8	3,1	3,2	1,9	2,9	
300		0,2195	79,6	3,2	3,3	2,1	3,1	
350		0,2580	82,6	3,3	3,4	2,3	3,3	
400		0,2965	85,3	3,4	3,5	2,4	3,5	
450		0,3350	89,7	3,5	3,6	2,6	3,7	
500		0,3735	92,4	3,5	3,7	3,0	3,9	
550		0,4120	95,2	3,6	3,8	3,2	4,1	
600		0,4505	99,1	3,7	3,9	3,3	4,3	BEE (25 N.m)
650		0,4890	102,4	3,8	3,9	3,5	4,4	
700 x 1030		0,5275	105,2	3,9	4,0	3,7	4,6	
750		0,5660	108,3	4,0	4,1	3,9	4,8	
800		0,6045	111,1	4,1	4,2	4,1	5,4	
850		0,6430	113,9	4,2	4,3	4,3	5,6	
900		0,6815	116,6	4,3	4,4	4,5	5,8	
950		0,7200	120,0	4,4	4,5	4,7	5,9	
1000		0,7585	122,7	4,5	4,6	5,2	6,1	BE (40 N.m)
1050		0,7970	125,5	4,6	4,7	5,4	6,3	
1100		0,8355	128,2	4,7	4,8	5,6	6,5	
1150		0,8740	131,0	4,8	4,9	5,8	6,7	
1200		0,9125	133,8	4,9	5,0	6,0	6,9	
200	6	0,1721	85,3	3,4	3,5	2,1	3,1	BEN (15 N.m)
250		0,2186	88,4	3,5	3,6	2,3	3,4	
300		0,2651	91,5	3,6	3,7	2,4	3,6	
350		0,3116	94,9	3,7	3,8	2,6	3,8	
400		0,3581	98,0	3,8	3,9	2,8	4,0	
450		0,4046	102,7	3,9	4,0	3,2	4,2	
500		0,4511	107,0	4,0	4,0	3,4	4,4	
550		0,4976	110,1	4,1	4,1	3,6	4,6	BEE (25 N.m)
600		0,5441	113,2	4,2	4,2	3,8	4,9	
650		0,5906	117,3	4,2	4,3	4,0	5,1	
700 x 1230		0,6371	120,4	4,3	4,4	4,2	5,3	
750		0,6836	123,5	4,5	4,5	4,5	5,5	
800		0,7301	126,7	4,5	4,6	4,7	6,1	
850		0,7766	129,8	4,6	4,7	4,9	6,3	
900		0,8231	132,9	4,7	4,8	5,1	6,6	BE (40 N.m)
950		0,8696	136,6	4,8	4,9	5,3	6,8	
1000		0,9161	139,7	4,9	5,0	5,9	7,0	
1050		0,9626	142,8	5,0	5,1	6,2	7,2	
1100		1,0091	145,9	5,1	5,2	6,4	7,4	
1150		1,0556	149,0	5,3	5,2	6,6	7,6	
1200		1,1021	152,1	5,4	5,3	6,8	7,8	
200	7	0,2017	96,7	3,7	3,9	2,3	3,5	BEN (15 N.m)
250		0,2562	100,2	3,8	3,9	2,6	3,8	
300		0,3107	103,6	3,9	4,0	2,8	4,0	
350		0,3652	109,0	4,0	4,1	3,1	4,2	
400		0,4197	112,4	4,1	4,2	3,4	4,5	
450		0,4742	117,0	4,2	4,3	3,6	4,7	
500		0,5287	120,5	4,3	4,4	3,8	5,0	BEE (25 N.m)
550		0,5832	124,4	4,4	4,5	4,1	5,2	
600		0,6377	127,9	4,5	4,6	4,3	5,4	
650		0,6922	132,0	4,6	4,7	4,5	5,7	
700 x 1430		0,7467	135,4	4,7	4,8	4,8	5,9	
750		0,8012	138,9	4,8	4,9	5,0	6,1	
800		0,8557	142,3	4,9	5,0	5,2	6,9	BE (40 N.m)
850		0,9102	145,8	5,0	5,1	5,5	7,1	
900		0,9647	149,2	5,1	5,1	5,7	7,3	
950		1,0192	153,3	5,2	5,2	5,9	7,6	
1000		1,0737	156,7	5,3	5,3	6,7	7,8	
1050		1,1282	160,2	5,4	5,4	6,9	8,0	
1100		1,1827	163,7	5,5	5,5	7,1	8,3	
1150		1,2372	167,1	5,6	5,6	7,4	8,5	
1200		1,2917	170,6	5,7	5,7	7,6	8,7	

A x B [mm]	Number of slats [ks]	Effective area Sef [m²]	Weight SEDM-L [kg]	Weight flange over slats [kg]	Weight flange over damper [kg]	Weight grille over slats [kg]	Weight grille over damper [kg]	Actuator torque [N.m]
200	8	0,2313	108,1	4,2	4,2	2,6	3,9	BEN (15 N.m)
250		0,2938	111,9	4,3	4,3	2,9	4,2	
300		0,3563	115,7	4,4	4,4	3,1	4,5	
350		0,4188	121,4	4,4	4,5	3,5	4,7	
400		0,4813	126,4	4,5	4,6	3,7	5,0	BEE (25 N.m)
450		0,5438	130,2	4,7	4,7	4,0	5,2	
500		0,6063	134,0	4,7	4,8	4,3	5,5	
550		0,6688	138,4	4,8	4,9	4,5	5,8	
600		0,7313	142,2	4,9	5,0	4,8	6,0	BE (40 N.m)
650		0,7938	146,6	5,0	5,1	5,0	6,3	
700 x 1630		0,8563	150,4	5,1	5,2	5,3	6,5	
750		0,9188	154,2	5,2	5,2	5,5	6,8	
800		0,9813	158,0	5,3	5,3	5,8	7,6	
850		1,0438	161,8	5,4	5,4	6,1	7,9	
900		1,1063	165,6	5,5	5,5	6,3	8,1	
950		1,1688	170,0	5,6	5,6	6,6	8,4	
1000		1,2313	173,8	5,7	5,7	7,4	8,7	
1050		1,2938	177,6	5,8	5,8	7,7	8,9	
1100		1,3563	181,4	5,9	5,9	7,9	9,2	
1150		1,4188	185,3	6,0	6,0	8,2	9,4	
1200		1,4813	189,1	6,1	6,1	8,4	9,7	
200	9	0,2609	120,2	4,6	4,6	2,9	4,3	BEN (15 N.m)
250		0,3314	124,3	4,7	4,7	3,2	4,6	
300		0,4019	128,5	4,8	4,8	3,6	4,9	
350		0,4724	135,8	4,9	4,9	3,8	5,2	
400		0,5429	139,9	5,0	5,0	4,1	5,5	BEE (25 N.m)
450		0,6134	144,1	5,1	5,1	4,4	5,8	
500		0,6839	148,2	5,1	5,2	4,7	6,0	
550		0,7544	153,0	5,3	5,2	5,0	6,3	
600		0,8249	157,2	5,4	5,3	5,3	6,6	BE (40 N.m)
650		0,8954	162,1	5,4	5,4	5,5	6,9	
700 x 1830		0,9659	166,3	5,5	5,5	5,8	7,2	
750		1,0364	170,5	5,6	5,6	6,1	7,5	
800		1,1069	174,6	5,7	5,7	6,4	8,4	
850		1,1774	178,8	5,8	5,8	6,7	8,7	
900		1,2479	182,9	5,9	5,9	6,9	8,9	
950		1,3184	187,9	6,0	6,0	7,2	9,2	
1000		1,3889	192,1	6,1	6,1	8,1	9,5	
1050		1,4594	196,2	6,2	6,2	8,4	9,8	
1100		1,5299	200,4	6,3	6,3	8,7	10,1	
1150		1,6004	204,5	6,4	6,4	9,0	10,4	
1200		1,6709	208,7	6,5	6,4	9,3	10,6	
200	10	0,2905	131,3	4,9	5,0	3,2	4,7	BEN (15 N.m)
250		0,3690	135,8	5,0	5,1	3,6	5,1	
300		0,4475	143,1	5,1	5,2	3,9	5,4	
350		0,5260	148,0	5,2	5,2	4,2	5,7	
400		0,6045	152,5	5,3	5,3	4,5	6,0	BEE (25 N.m)
450		0,6830	157,0	5,4	5,4	4,8	6,3	
500		0,7615	161,5	5,5	5,5	5,1	6,6	
550		0,8400	166,7	5,6	5,6	5,4	6,9	
600		0,9185	171,2	5,7	5,7	5,7	7,2	BE (40 N.m)
650		0,9970	176,5	5,8	5,8	6,0	7,5	
700 x 2030		1,0755	181,0	5,9	5,9	6,3	7,8	
750		1,1540	185,5	6,0	6,0	6,6	8,1	
800		1,2325	190,0	6,1	6,1	7,0	9,1	
850		1,3110	194,5	6,2	6,2	7,3	9,4	
900		1,3895	199,1	6,3	6,3	7,6	9,7	
950		1,4680	204,4	6,4	6,3	7,9	10,0	
1000		1,5465	208,9	6,5	6,4	8,9	10,4	
1050		1,6250	213,4	6,6	6,5	9,2	10,7	
1100		1,7035	217,9	6,7	6,6	9,5	11,0	
1150		1,7820	222,4	6,8	6,7	9,8	11,3	
1200		1,8605	226,9	6,9	6,8	10,1	11,6	

5. Placement and Assembly

5.1. Multi-slat smoke and heat dampers - multi SEDM-L

- They're designed for installation in smoke and heat removal duct according to EN1366-8.
- They're suitable for installation in a vertical position, with the slat axis horizontal.
- Dampers and duct must be suspended separately. The connected piping must be suspended in such a way that the transfer of all loads from the adjoining ventilation duct to the damper body is completely excluded. Adjacent duct must be suspended or supported, as required by the duct suppliers.
- o 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.

5.2. Transport to the installation site

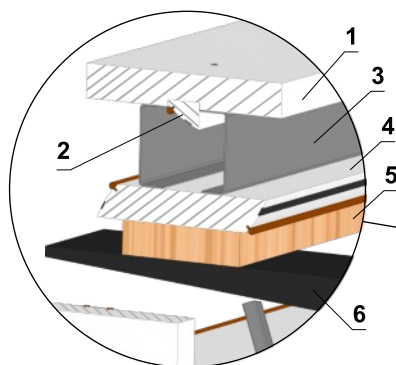
- Transport the damper to the installation site in the transport packaging. Pay attention to the appropriate length of the forks of the forklift /handling equipment/ to avoid breaking of wooden planks, consequently damaging the damper's slats.
- Smaller dimensions can be transported, handled and installed into the mounting hole manually, for dimensions where a handling insert is included in the delivery, it is recommended to use a suitable handling tools and machines, eg. a forklift.

Fig. 19 Damper handling when installed in the mounting hole

1. Place the damper in a vertical position. Do not remove the transport pacers and corners!



2. Place handling inserts between the top slat and the damper housing.



Position:

- 1 Damper housing
- 2 Slat stop
- 3 Handling inserts (2pc)
- 4 Slats
- 5 Board - not included
- 6 Forks



3. Drive the forklift under the highest slat. It's necessary to put a board between the slat and the fork along the slat's entire length so that the slat is not damaged when the damper is raised.

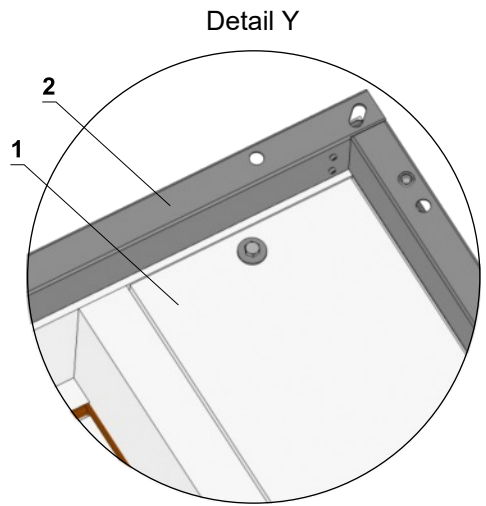
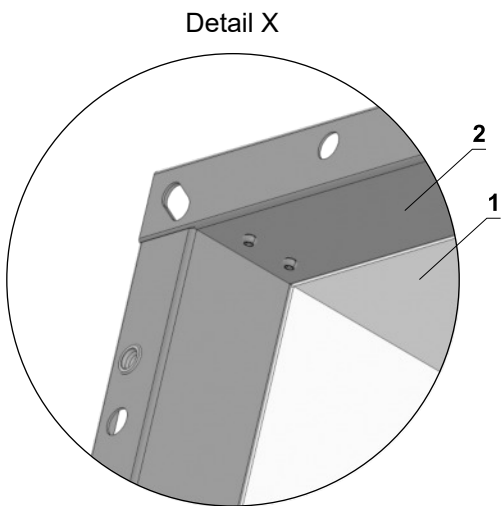
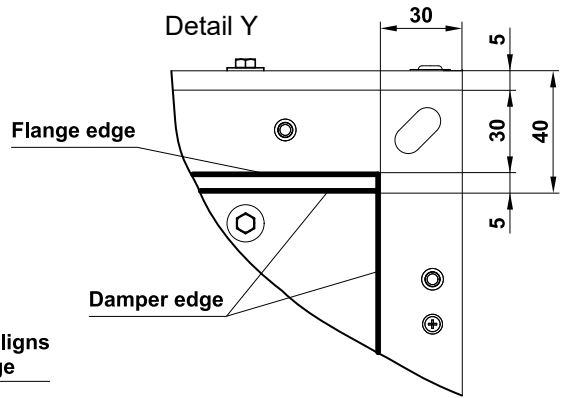
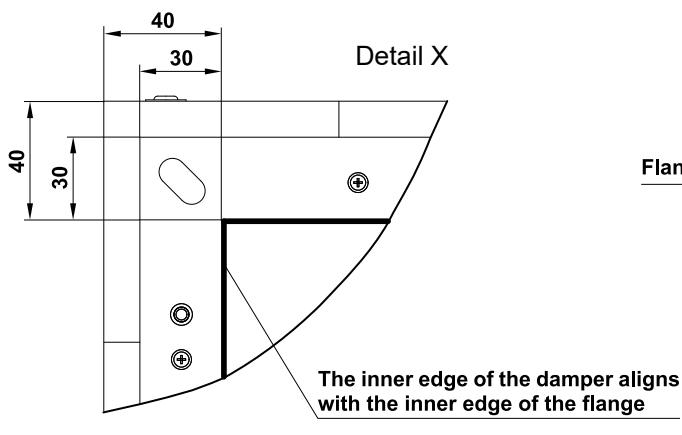
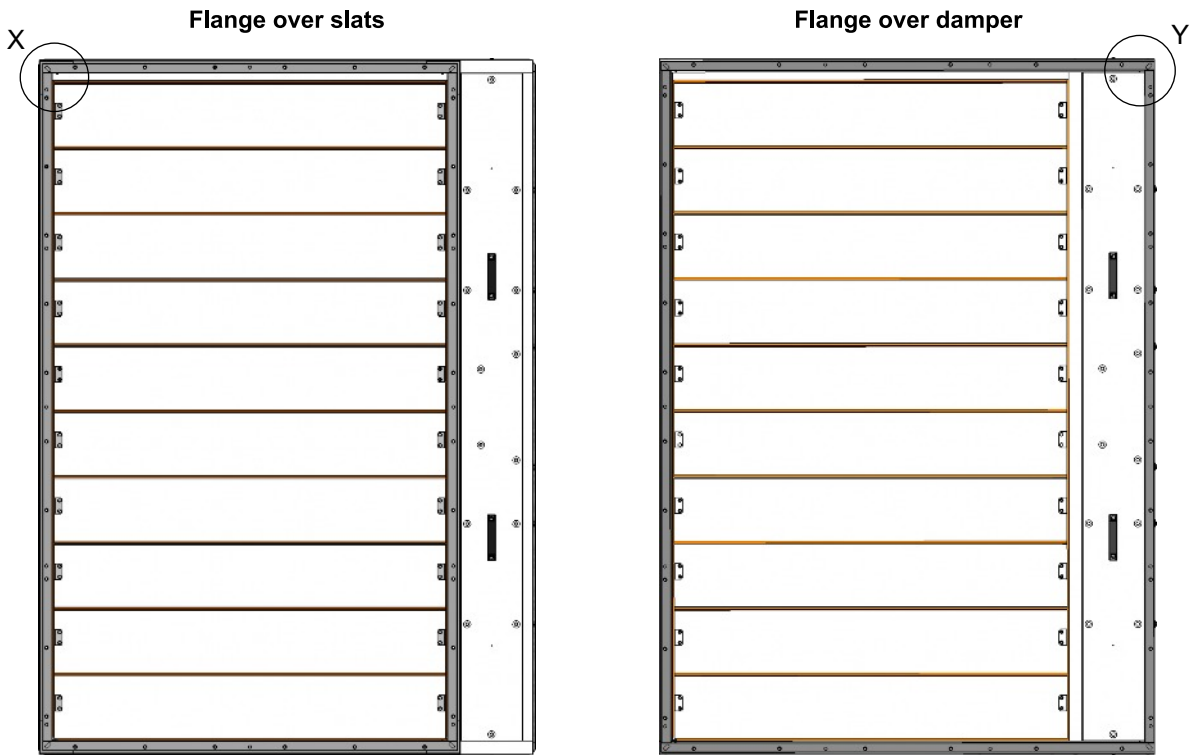
4. Place the damper in the installation hole.



5. After installing the damper and possibly hardening the plaster/mortar, remove the transport struts and corners.



6. Ways of placing the flange on the damper (2 types of flanges)

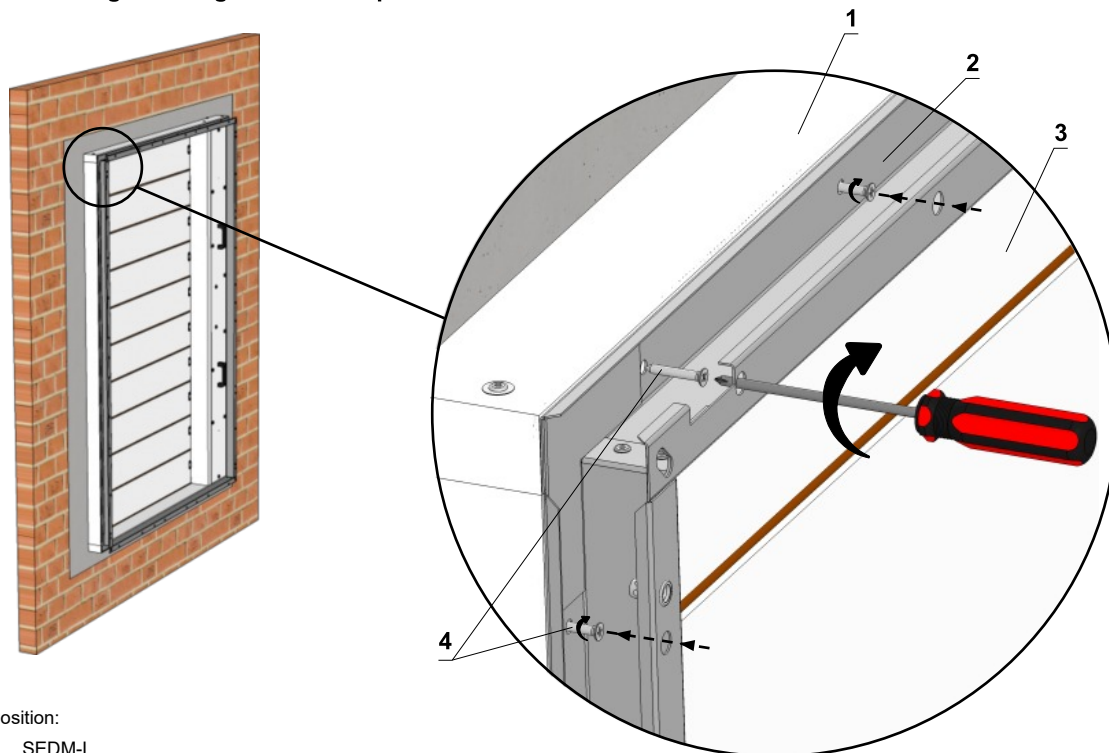


Position:

1 SED-M-L

2 Flange

7. Mounting the flange on the damper

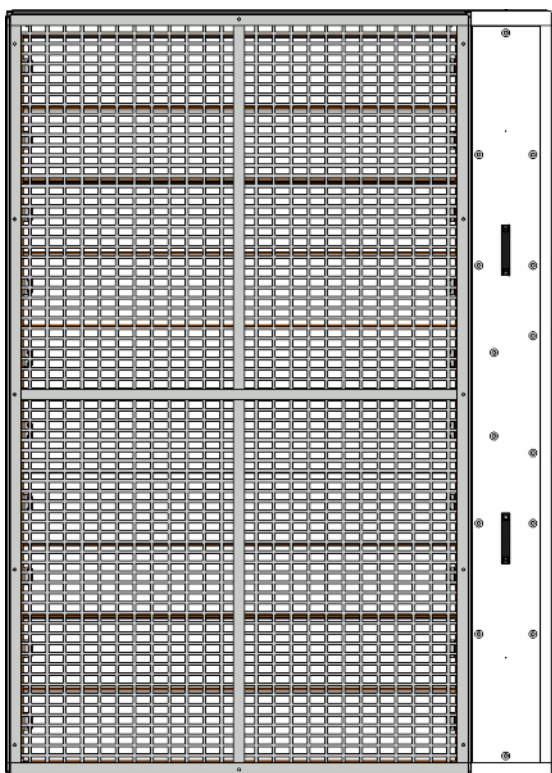


Position:

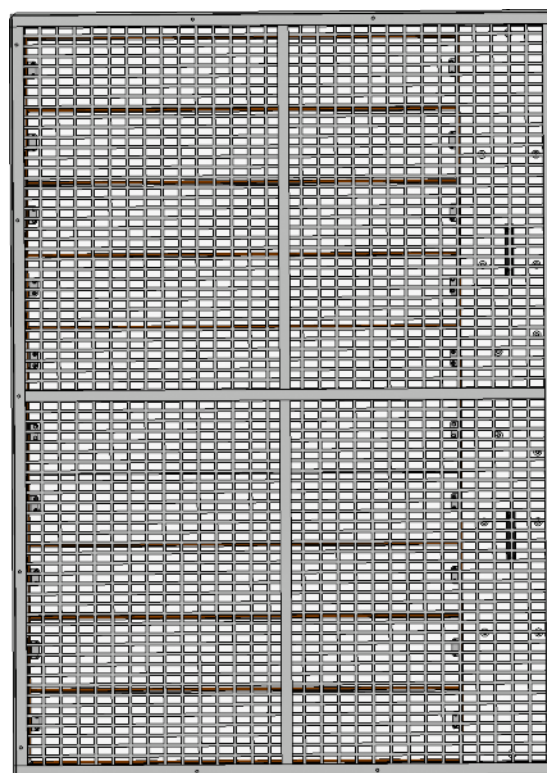
- 1 SEDM-L
- 2 Flange
- 3 Slats
- 4 Universal screw 4x30 (holes around the perimeter of the flange)

8. Ways of placing the grille on the damper with a flange (2 types)

Grille over slats

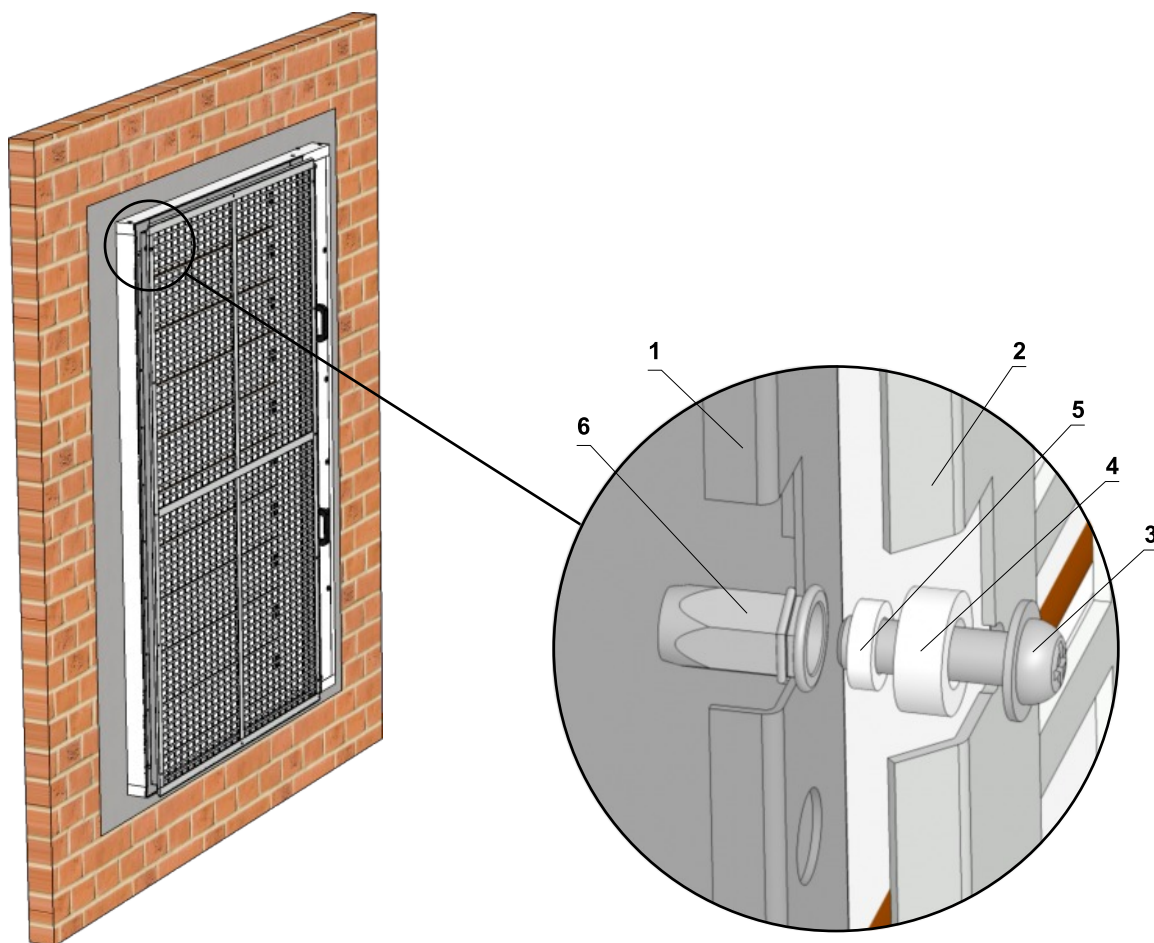


Grille over damper



For a detail of the cover grille filling, see. fig. 18

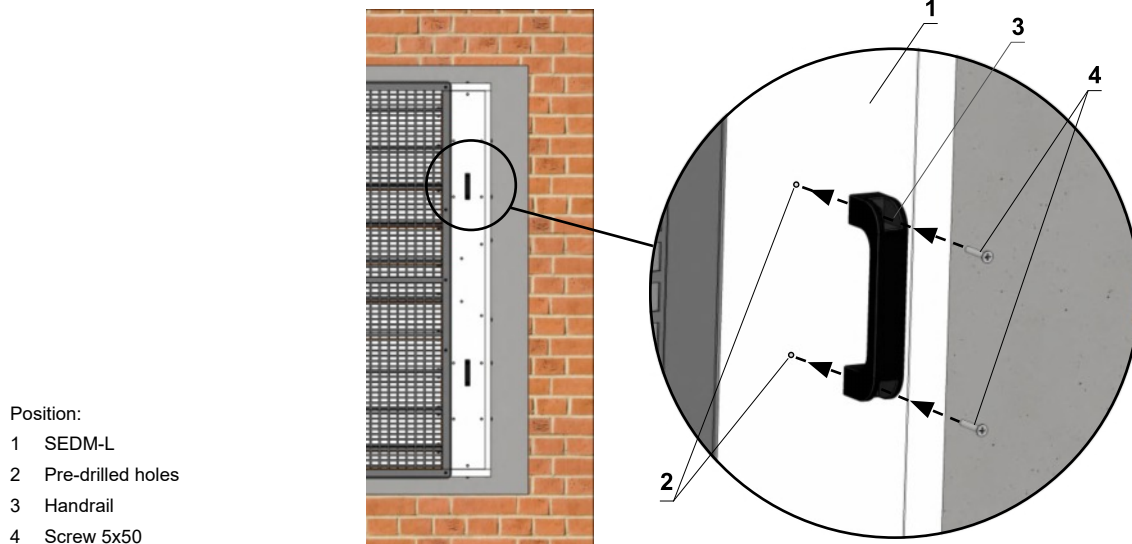
9. Mounting the grille on the flange



Position:

- 1 Flange
- 2 Grille
- 3 Screw M6x20 (BN 4825)
- 4 Spacer ring
- 5 Retaining ring
- 6 Rivet nuts

10. Mounting the handrail on the damper



Position:

- 1 SEDM-L
- 2 Pre-drilled holes
- 3 Handrail
- 4 Screw 5x50

5.3. Installation of multiple dampers in a fire dividing structure

- Minimum distance 200 mm between dampers installed in one fire dividing structure.
- Distance 75 mm between the damper and the structure (wall/ceiling).
- When installing SEDM-L (smaller dimensions), which is not equipped with transport spacers and corners, the sheets must be in the "CLOSED" position. The damper body must not be deformed during installation.
- After installing the damper, the damper slats must not be opened, or closing on the damper body.

Fig. 20 Installation side by side

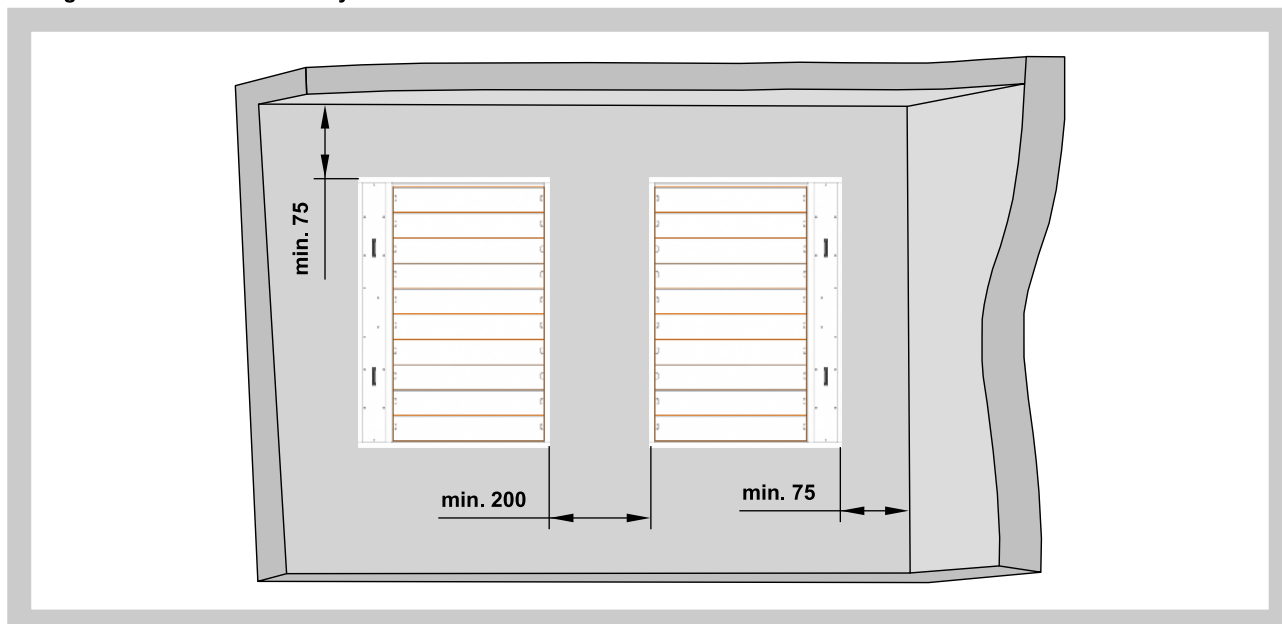


Fig. 21 Installation on top of each other

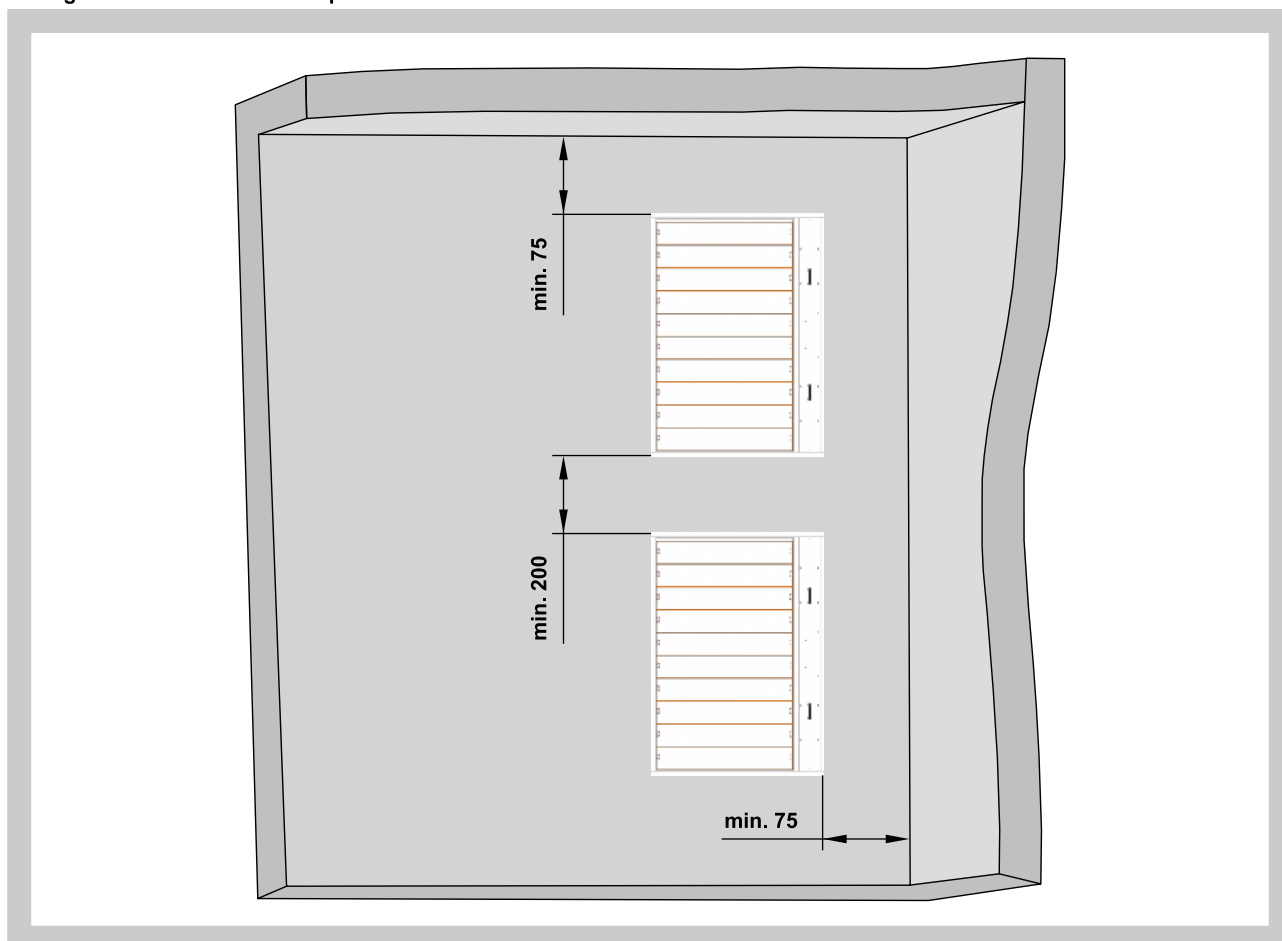
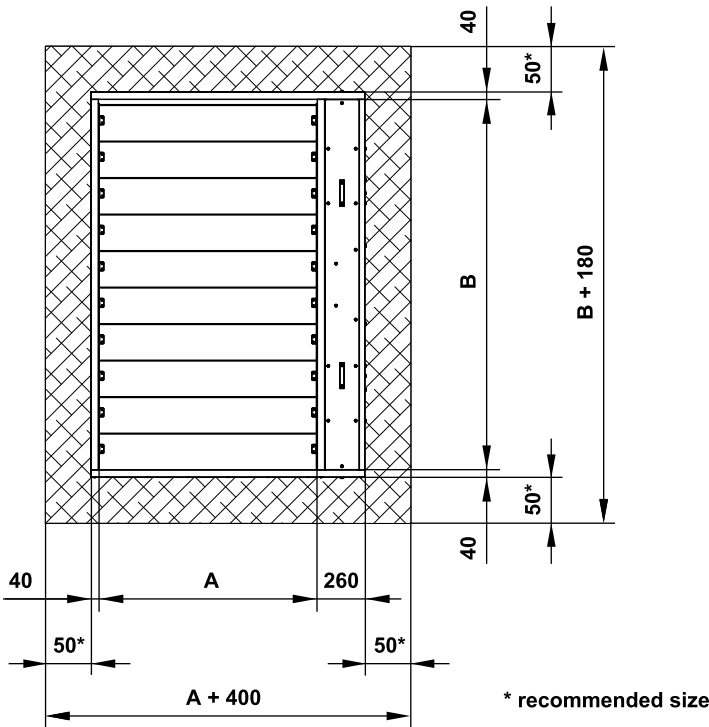
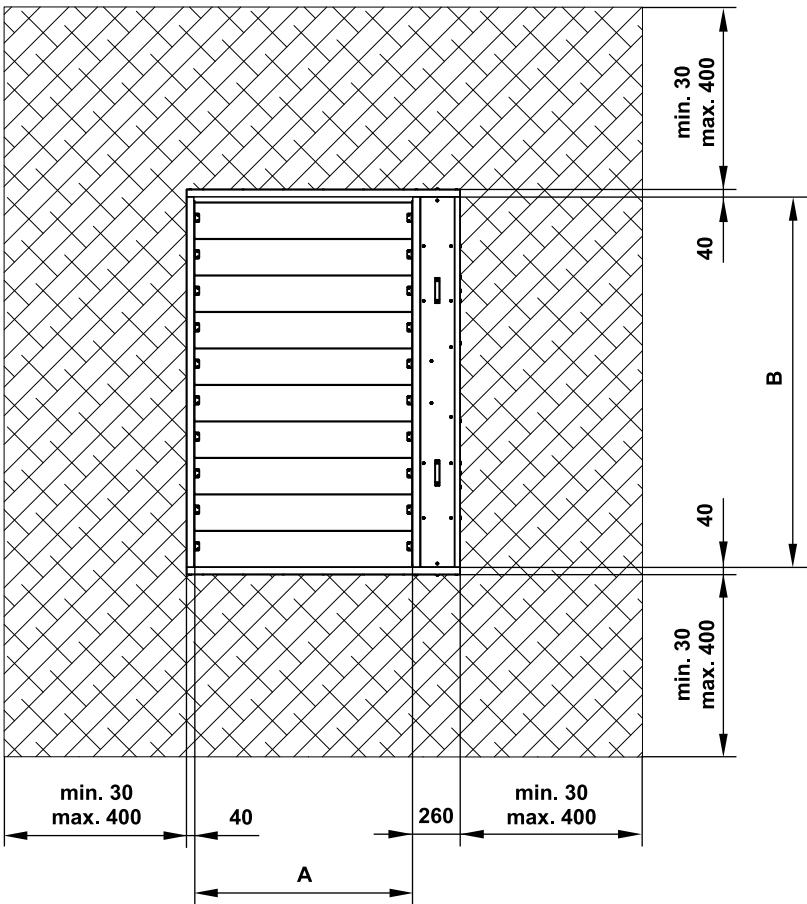


Fig. 22 Recommended construction openings

Construction opening - mortar or gypsum



Construction opening - Weichschott / Ablative Coated Batt system



6 Statement of installations

6.1. Installation methods overview

Tab. 6.1.1. Installation methods overview

Fire separating constru.	Wall	Installation	Fire resist.	Page
	Min. thickness [mm]			
Solid wall / shaft construction	100	Mortar or gypsum	EIS 90	26
	100	Weichschott / Ablative Coated Batt	EIS 120	27
Gypsum wall / shaft construction	100	Weichschott / Ablative Coated Batt	EIS 120	28

6.2. Installation in solid / shaft wall construction

Fig. 23 Solid wall / shaft construction - mortar or gypsum

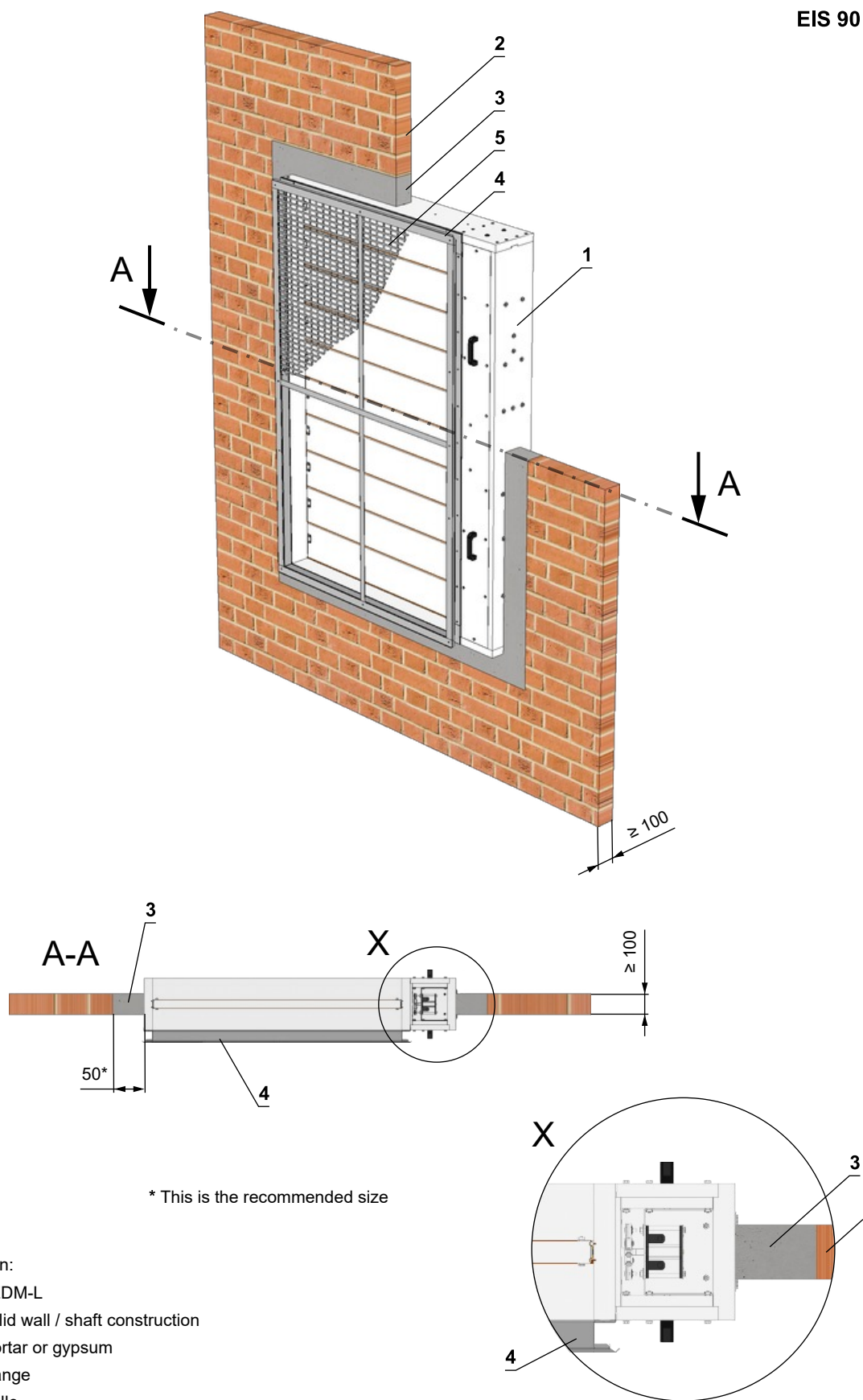
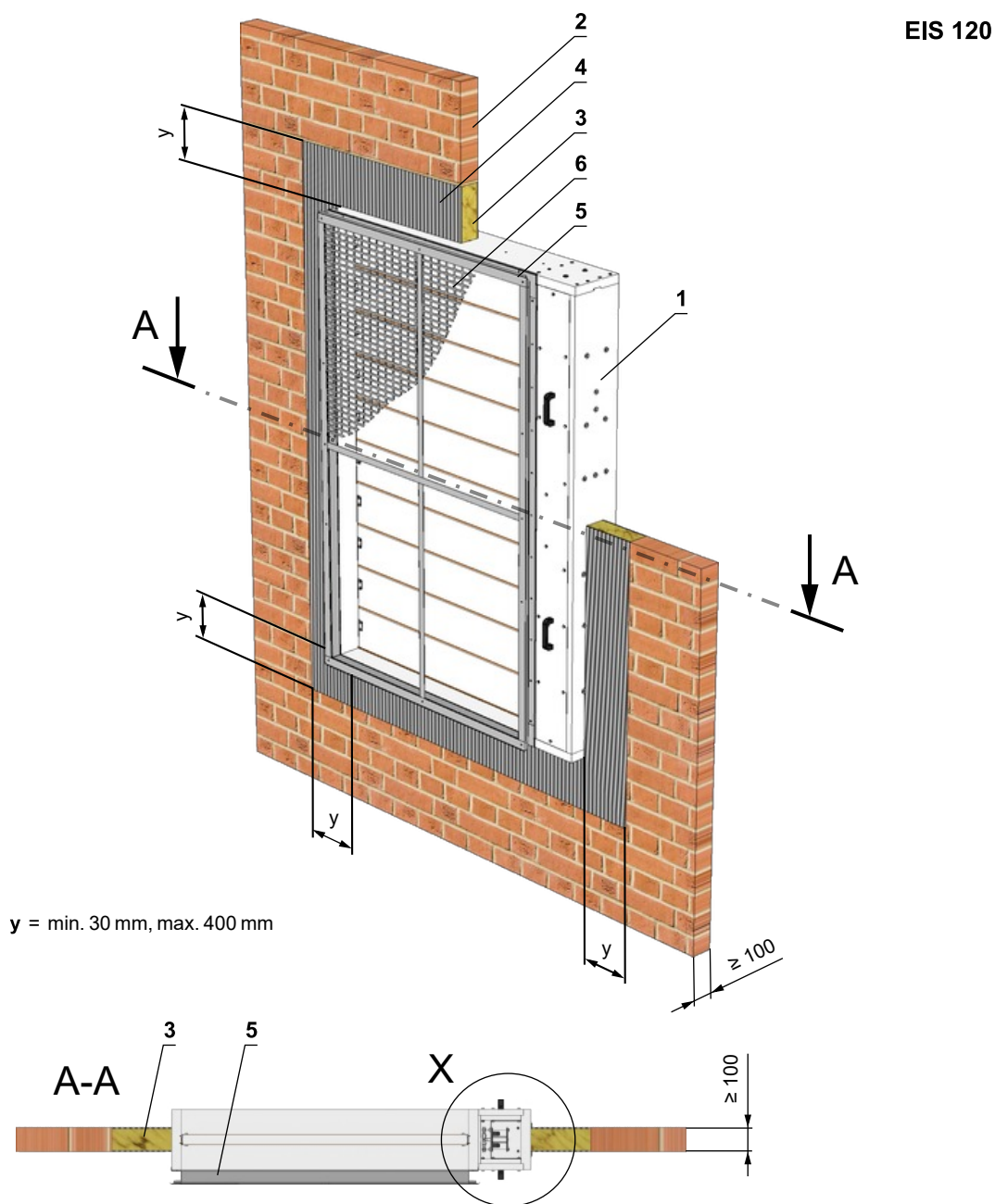


Fig. 24 Solid wall / shaft construction - Weichschott / Ablative Coated Batt

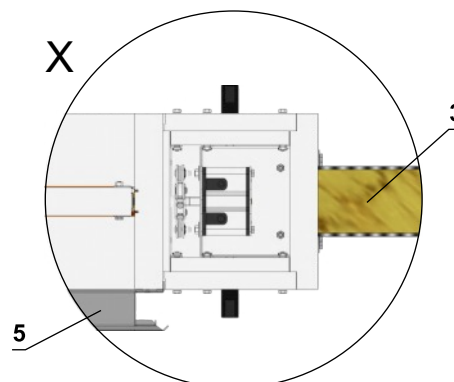
Example of materials used:*

- 3 Hilti CFS-CT B 1S 140/50
- 4 Hilti CFS-CT

* Fire resistant insulation and fire resistant board can be replaced by another approved fire sealing system for damper installation with equivalent material properties.

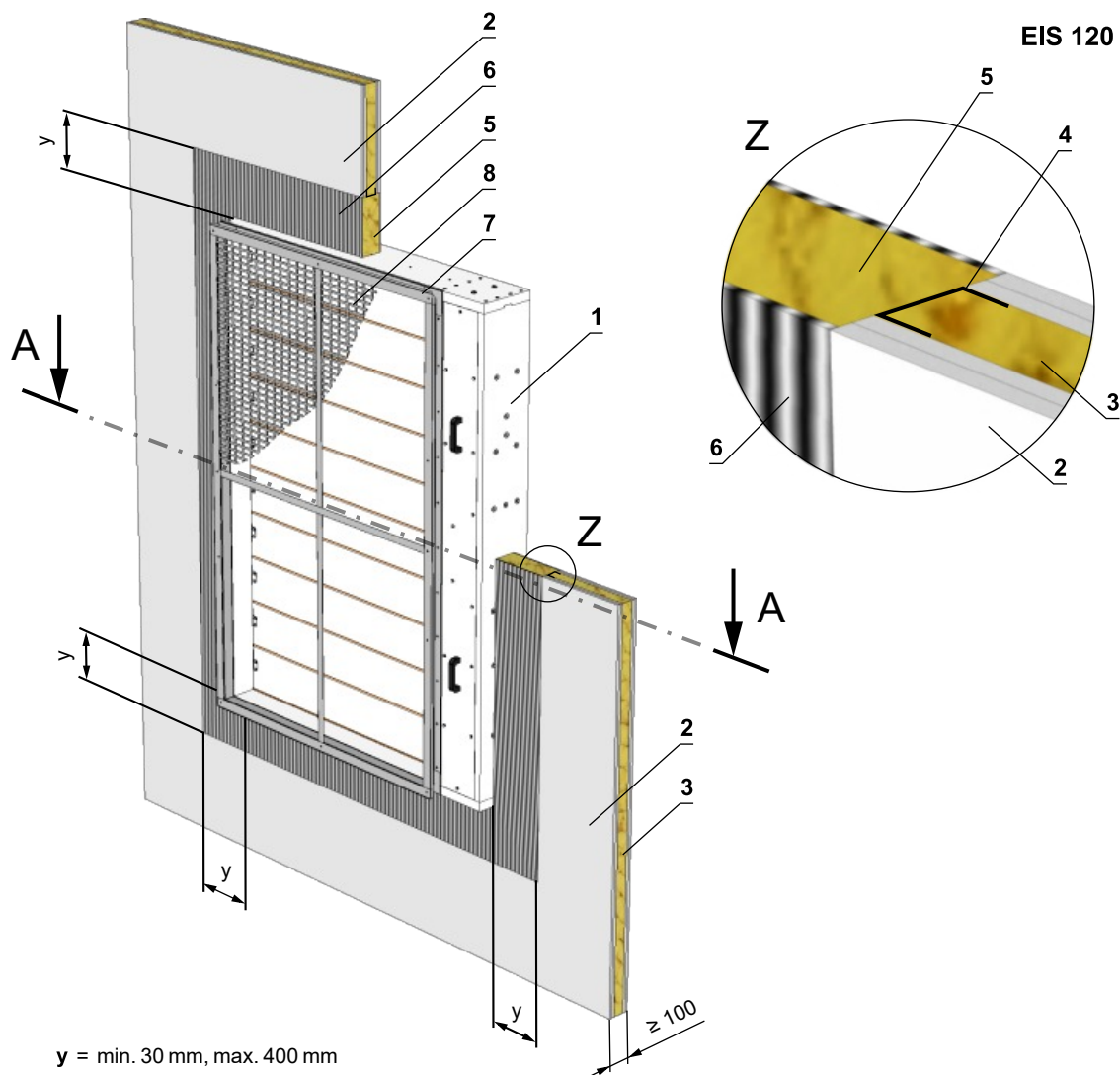
Position:

- 1 SEDM-L
- 2 Solid wall / shaft construction
- 3 Fire board
- 4 Fire coating th. 1 mm
- 5 Flange
- 6 Grille



6.3. Installation in gypsum / shaft wall construction

Fig. 25 Gypsum wall / shaft construction - Weichschott / Ablative Coated Batt



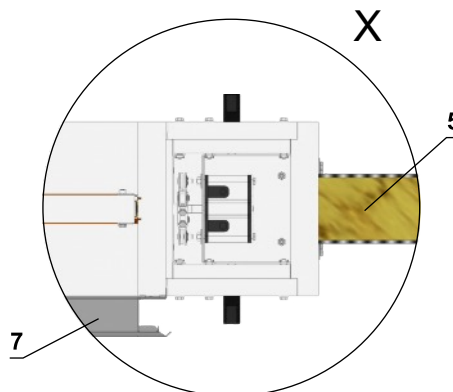
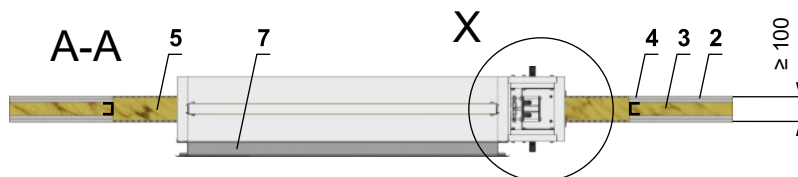
Example of materials used:*

- 5 Hilti CFS-CT B 1S 140/50
- 6 Hilti CFS-CT

* Fire resistant insulation and fire resistant board can be replaced by another approved fire sealing system for damper installation with equivalent material properties.

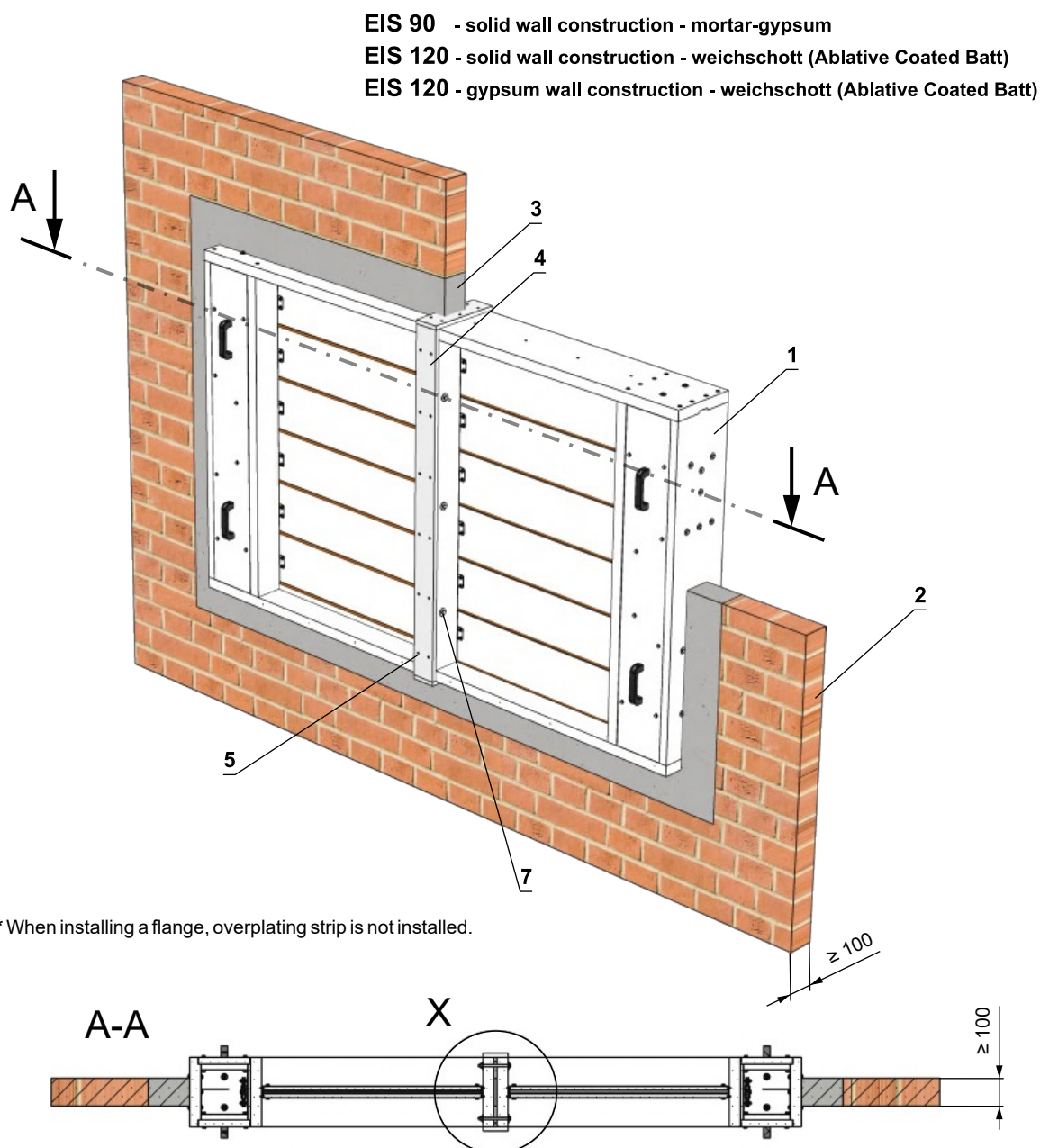
Position:

- 1 SEDM-L
- 2 Gypsum wall / shaft construction
- 3 Mineral wool (type depending on the type of construction)
- 4 Steel profile for plasterboard constructions
- 5 Fire board
- 6 Fire coating th. 1 mm
- 7 Flange
- 8 Grille



6.4. Installation in battery

Fig. 26 2 dampers side by side - solid / gypsum wall construction - mortar or gypsum / weichschott (Ablative Coated Batt)



*** RESPECT JOINT POSITION !**
 Bolts and nuts shall not prevent
 free rotation on the slats.

Position:

- 1 SEDM-L
- 2 Solid / gypsum wall construction
- 3 Mortar or gypsum / weichschott (Ablative Coated Batt)
- 4 Overplating strip (e.g. Promatect-H, th. 15 mm) **
(e.g. Supalux-S, th. 15 mm) **
- 5 Screw 4x40 (span 200 to 250 mm)
- 6 Spacing strip (e.g. Promatect-H, th. 10 mm, width 40 to 50 mm)
(e.g. Supalux-S, th. 12 mm, width 40 to 50 mm)
- 7 M8 bolt assembly (bolt, 2 pcs large washer, nut) *

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

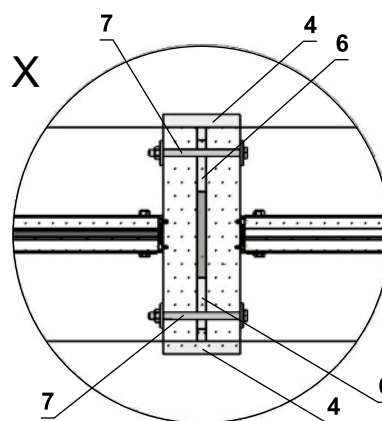


Fig. 27 2 dampers on top of each other - solid / gypsum wall construction - mortar or gypsum / weichschott (Ablative Coated Batt)

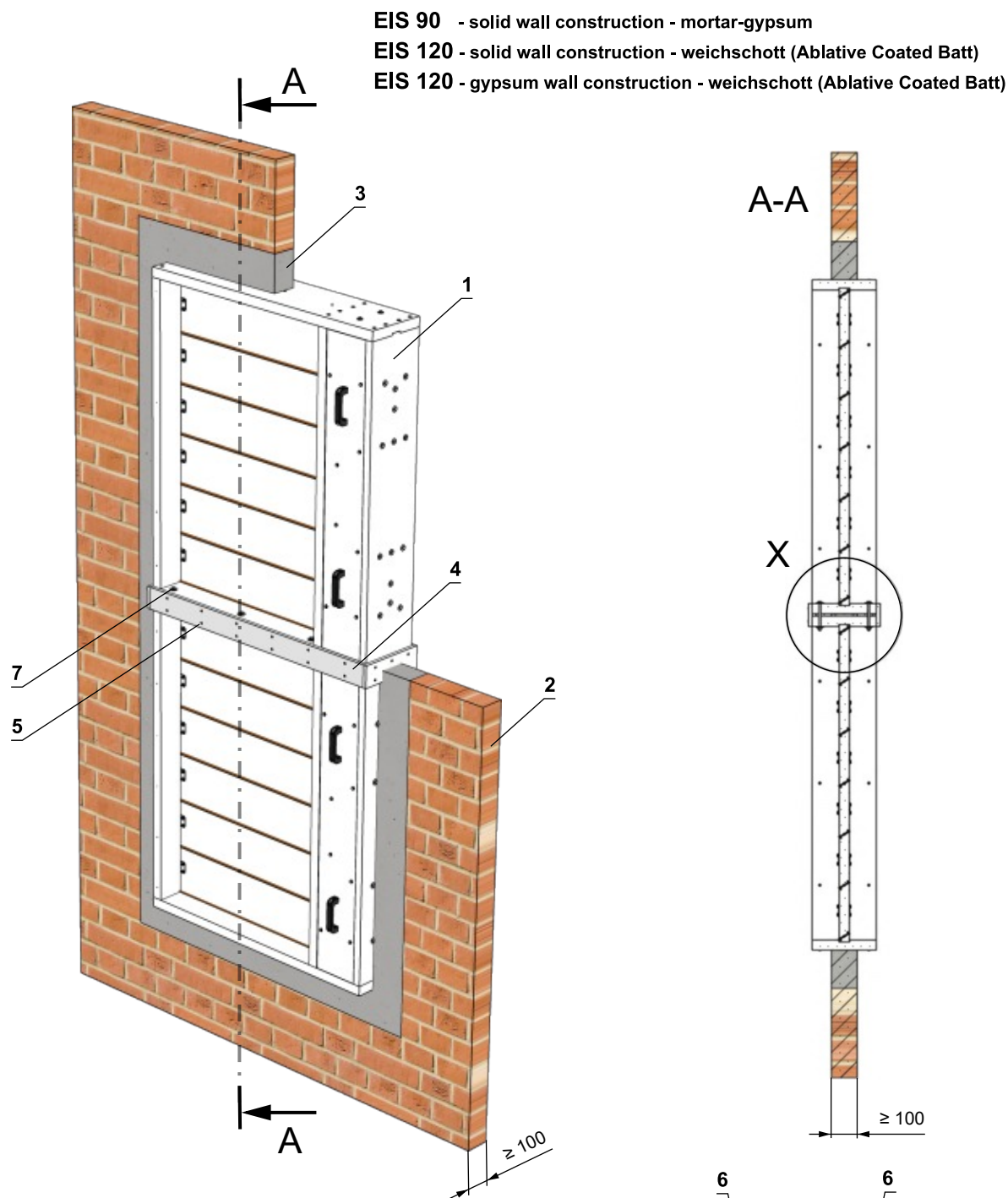
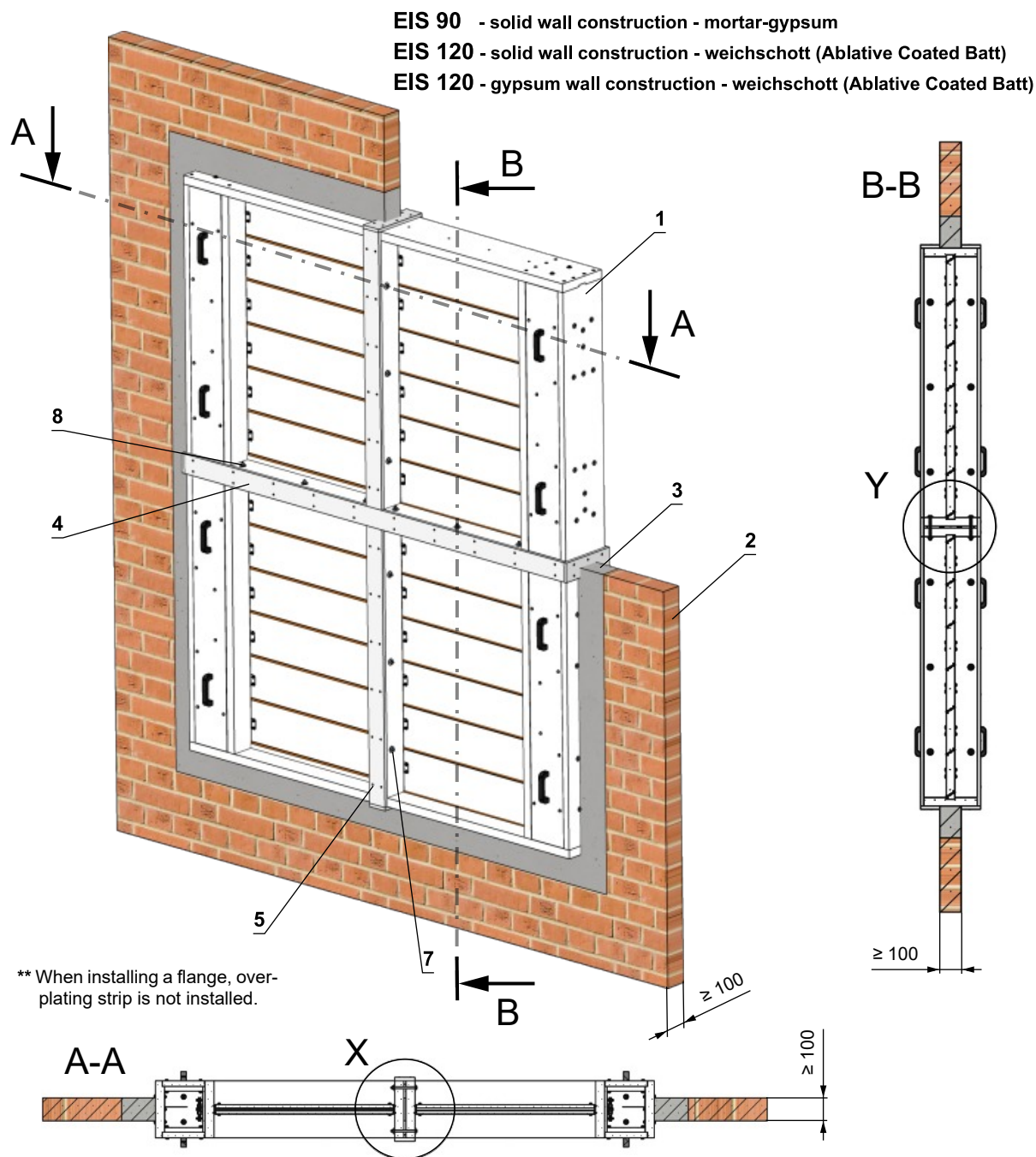


Fig. 28 4 dampers - solid / gypsum wall construction - mortar or gypsum / weichschott (Ablative Coated Batt)



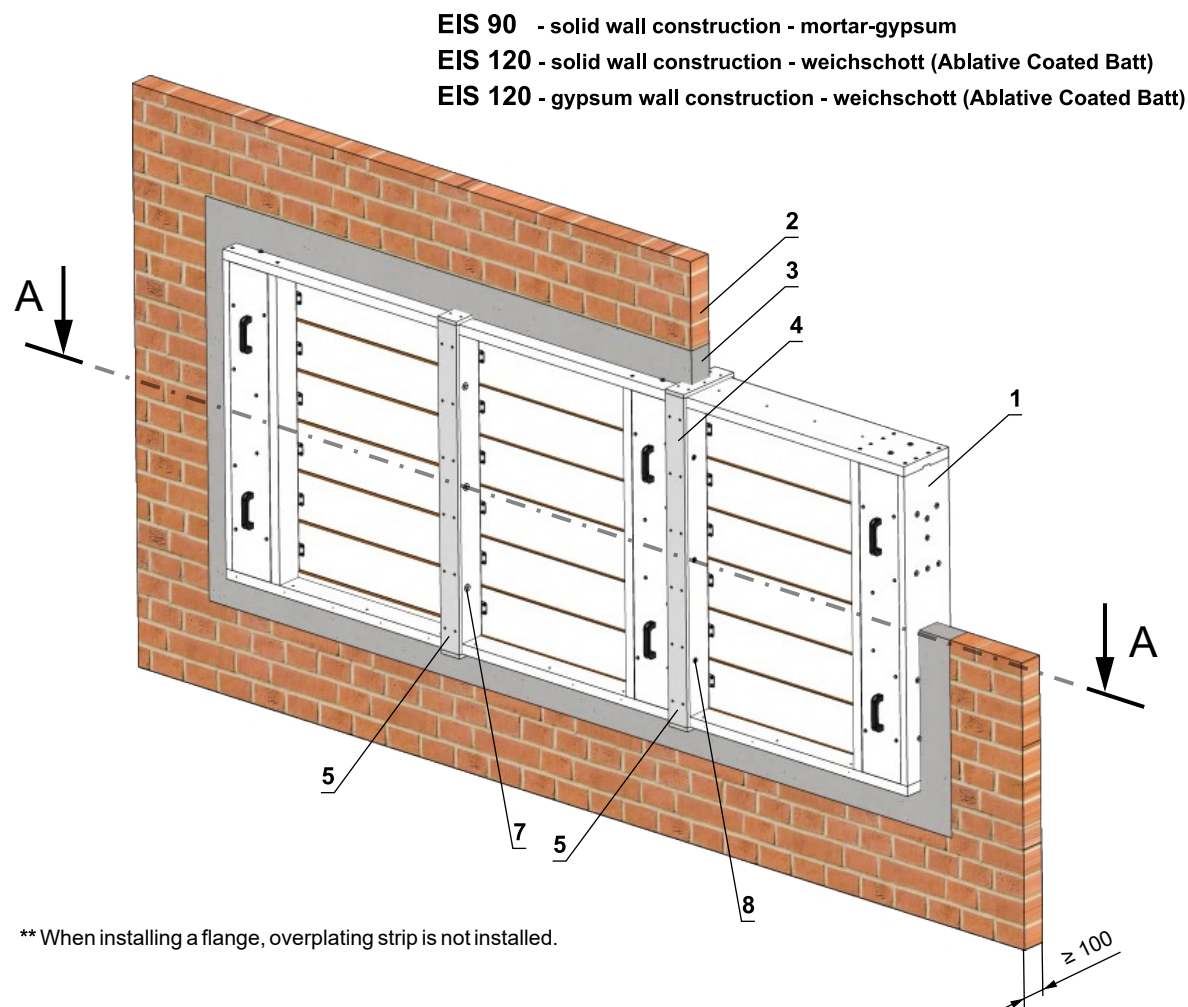
*** RESPECT JOINT POSITION !**
 Bolts and nuts shall not prevent
 free rotation on the slats.

Position:

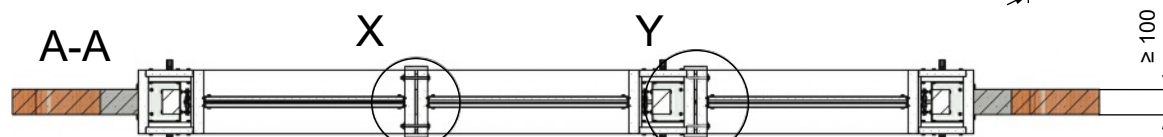
- 1 SEDM-L
- 2 Solid / gypsum wall construction
- 3 Mortar or gypsum / weichschott (Ablative Coated Batt)
- 4 Overplating strip (e.g. Promatect-H, th. 15 mm) **
(e.g. Supalux-S, th. 15 mm) **
- 5 Screw 4x40 (span 200 to 250 mm)
- 6 Spacing strip (e.g. Promatect-H, th. 10 mm, width 40 to 50 mm)
(e.g. Supalux-S, th. 12 mm, width 40 to 50 mm)
- 7 M8 bolt assembly (bolt, 2 pcs large washer, nut) *
- 8 M8 bolt assembly (bolt, 2 pcs large washer, nut), span 200 to 300 mm

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

Fig. 29 3 dampers side by side - solid / gypsum wall construction - mortar or gypsum / weichschott (Ablative Coated Batt)



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



* **RESPECT JOINT POSITION !**
 Bolts and nuts shall not prevent
 free rotation on the slats.

Position:

- 1 SEDM-L
- 2 Solid / gypsum wall construction
- 3 Mortar or gypsum / weichschott (Ablative Coated Batt)
- 4 Overplating strip (e.g. Promatect-H, th. 15 mm) **
 (e.g. Supalux-S, th. 15 mm) **
- 5 Screw 4x40 (span 200 to 250 mm)
- 6 Spacing strip (e.g. Promatect-H, th. 10 mm, width 40 to 50 mm)
 (e.g. Supalux-S, th. 12 mm, width 40 to 50 mm)
- 7 M8 bolt assembly (bolt, 2 pcs large washer, nut) *
- 8 Screw 6x80 with large washer *

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

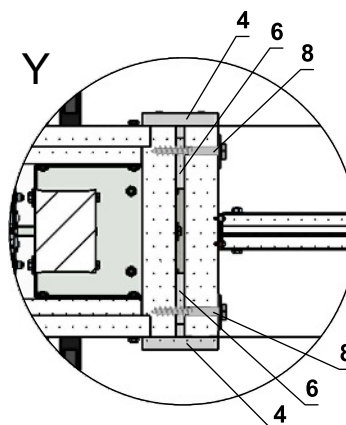
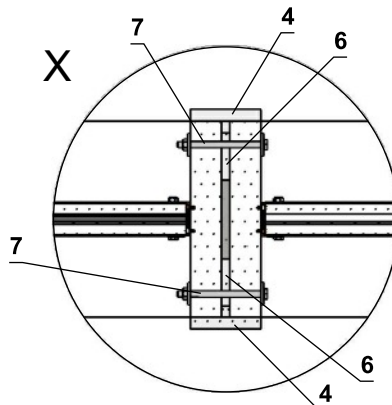
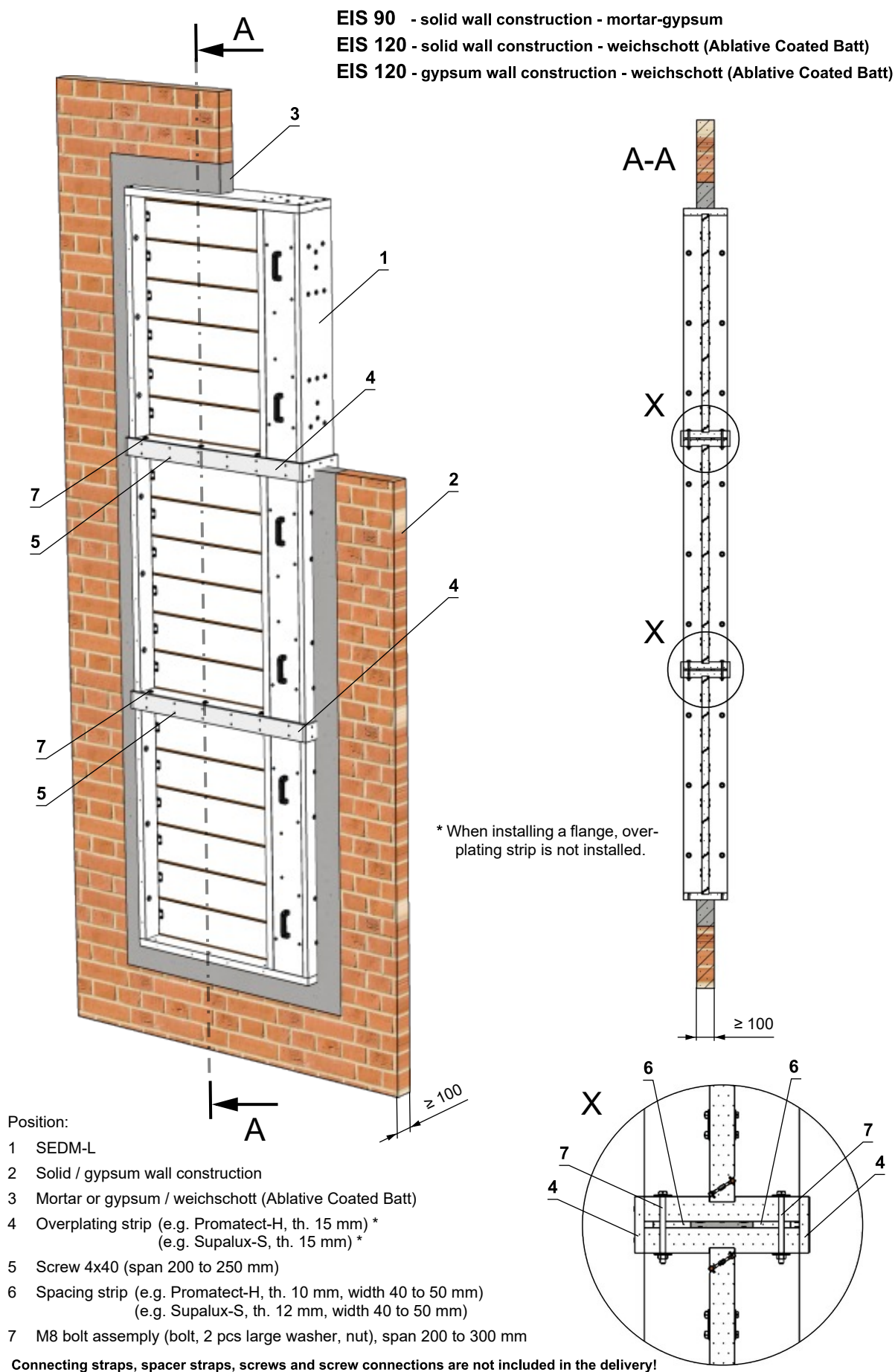


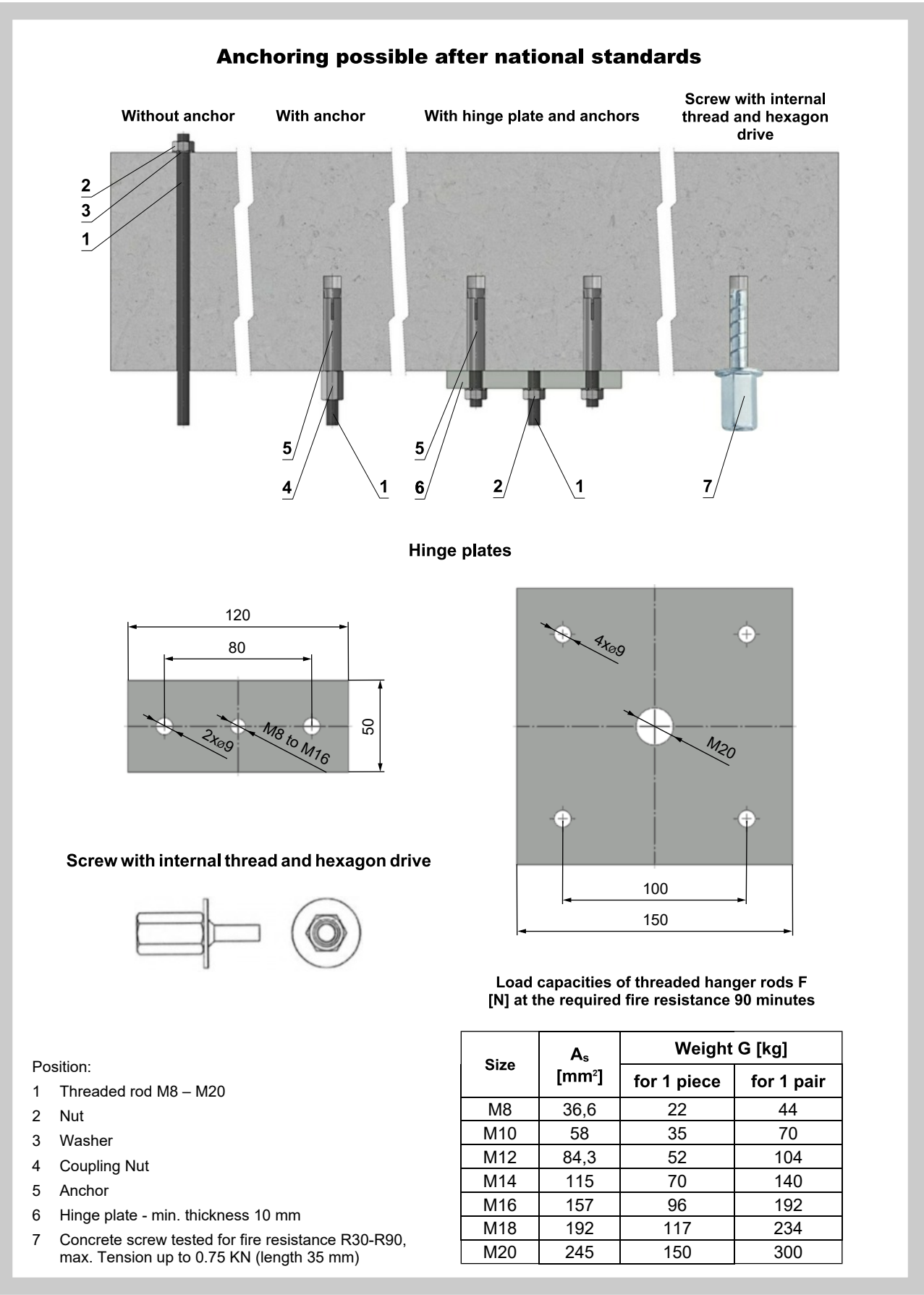
Fig. 30 3 dampers on top of each other - solid / gypsum wall construction - mortar or gypsum / weichschott (Ablative Coated Batt)



7. Suspension systems

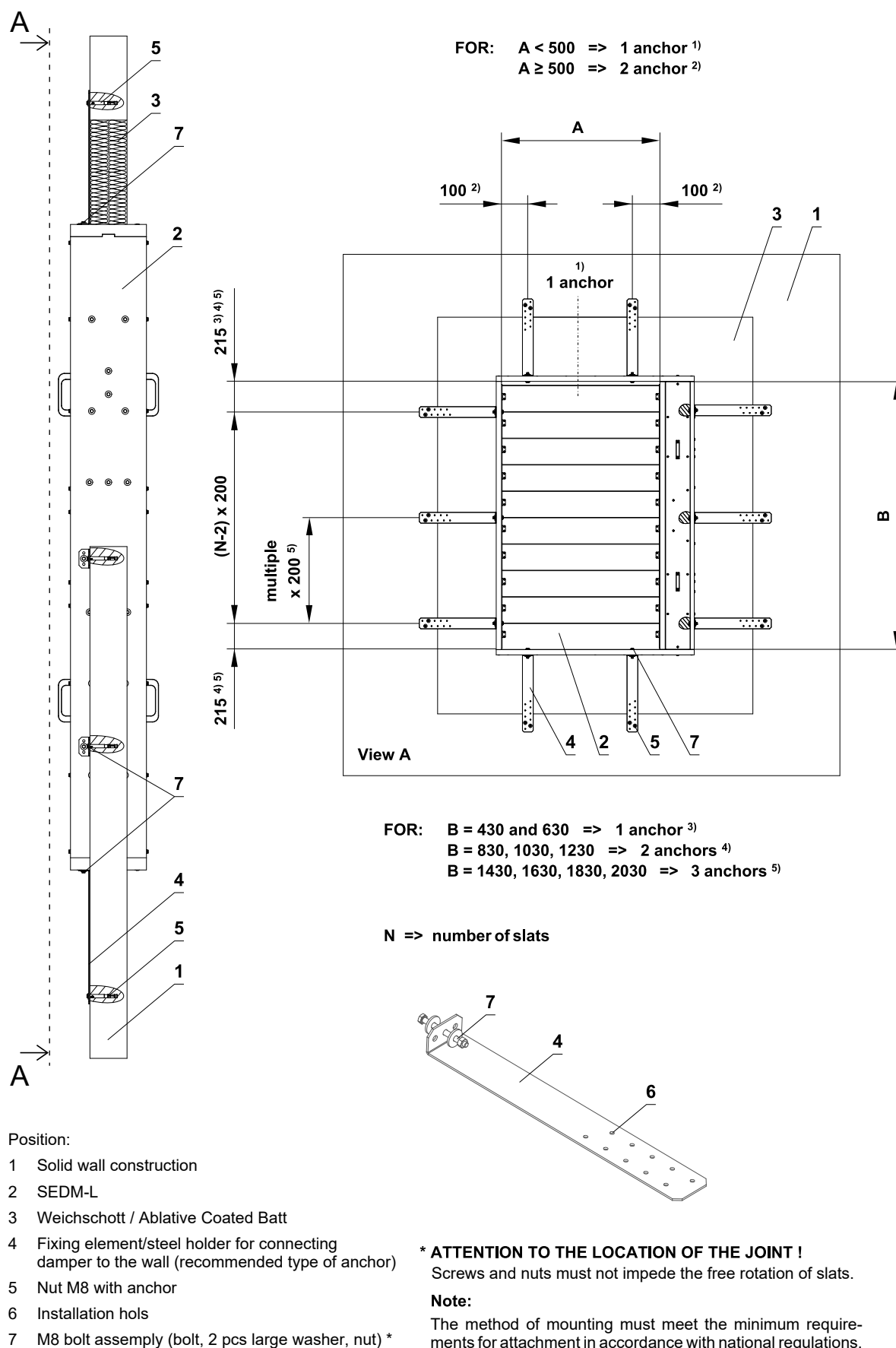
7.1. Mounting to the ceiling wall

Fig. 31 Mounting to the ceiling wall



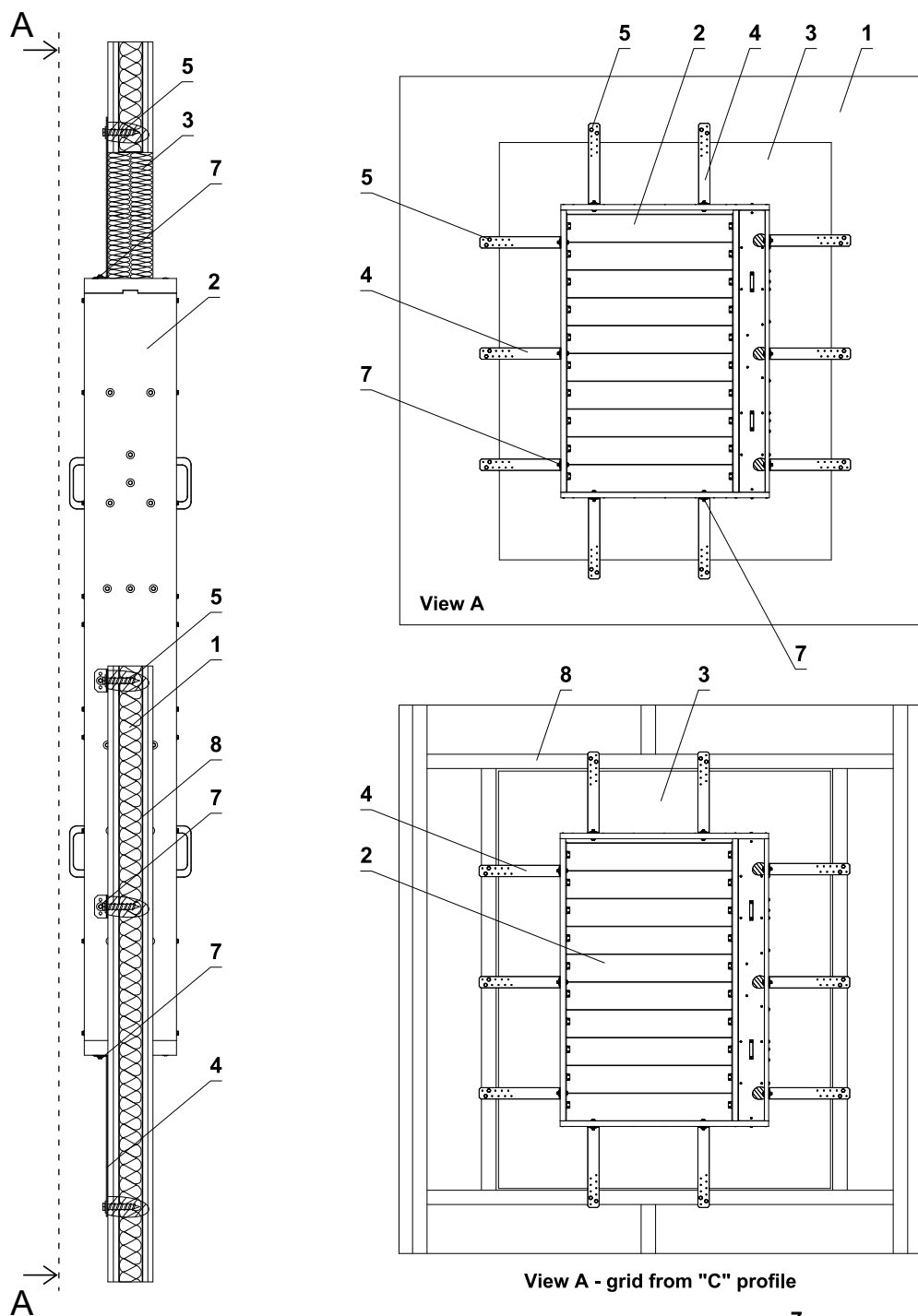
7.2. Fixing SEDM-L to the solid wall construction with Weichschott / Ablative Coated Batt system

Fig. 32 Fixing SEDM-L to the solid wall construction with Weichschott / Ablative Coated Batt system



7.3. Fixing SEDM-L to the gypsum wall construction with Weichschott / Ablative Coated Batt system

Fig. 33 Fixing SEDM-L to the gypsum wall construction with Weichschott / Ablative Coated Batt system



Position:

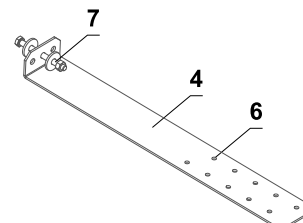
- 1 Gypsum wall construction
- 2 SEDM-L
- 3 Weichschott / Ablative Coated Batt
- 4 Fixing element/steel holder for connecting damper to the wall (recommended type)
- 5 Screw with hexagon head
- 6 Installation holes
- 7 M8 bolt assembly (bolt, 2 pcs large washer, nut) *
- 8 Gypsum grid from "C" profile

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

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

Note:

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



7.4. Installation on horizontal duct

The dampers can be suspended using threaded rods and mounting profiles. Their dimensioning depends on the damper's weight.

The dampers and duct must be suspended separately. The connected piping must be suspended in such a way that the transfer of all loads from the adjoining ventilation duct to the damper body is completely 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.

Fastening threaded rods to the ceiling structure – see Fig. 31

Fig. 34 Example of installing and suspending the damper on a horizontal duct

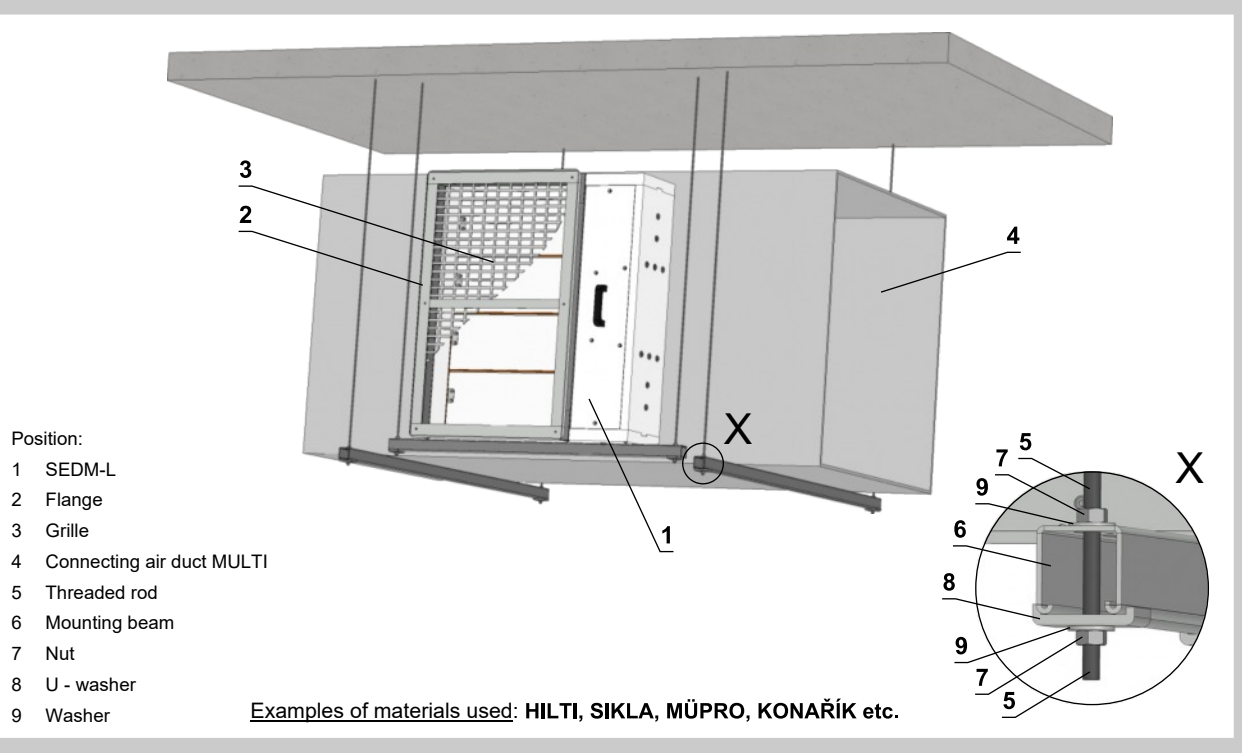
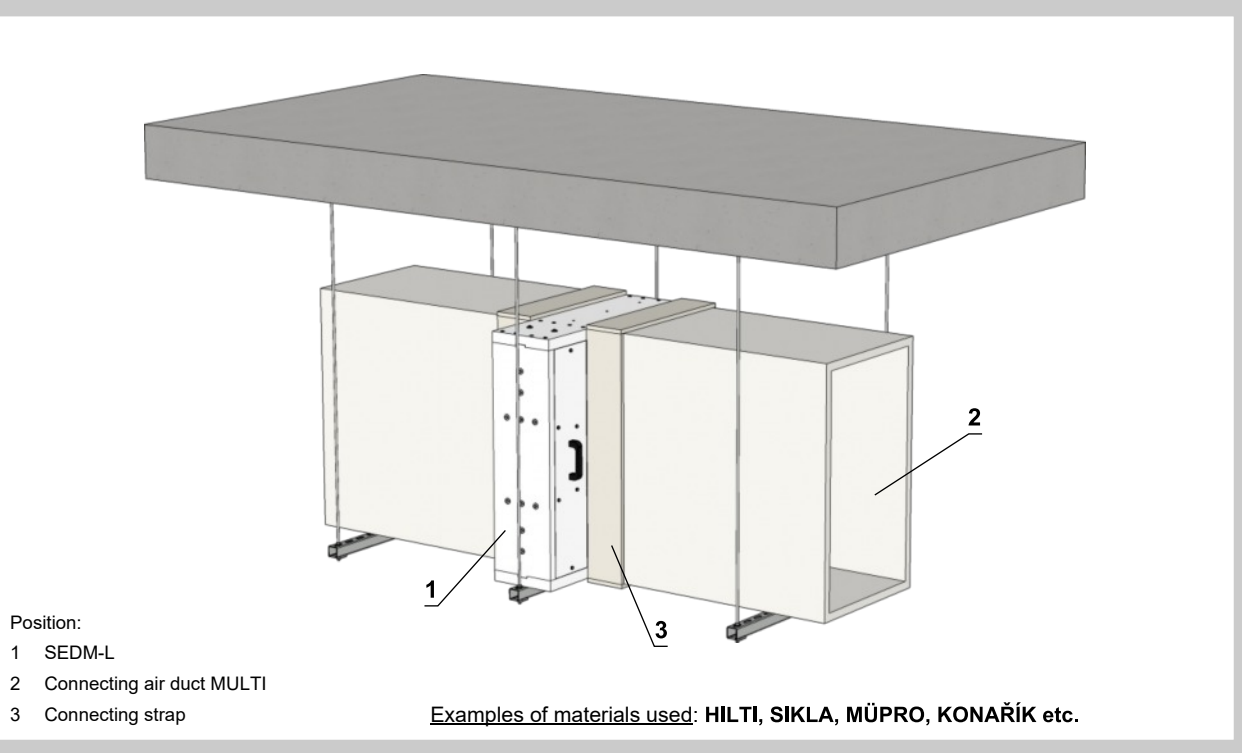


Fig. 35 Example of installing and suspending the damper on a horizontal duct

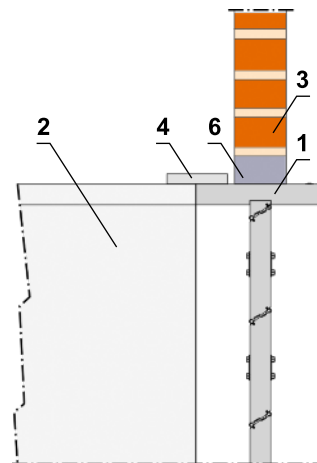
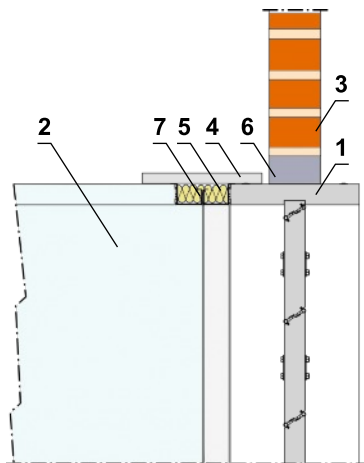


7.5. Duct connection

Fig. 36 Example of connection on a horizontal duct

Example of connection to sheet steel duct

Example of connection to duct made of insulation boards



Position:

- 1 SEDM-L
- 2 Connecting air duct MULTI
- 3 Solid wall construction
- 4 Connecting strap
- 5 Mineral wool
- 6 Mortar or gypsum
- 7 Flange

Example of materials used:

- 4 Calcium silicate boards, min. density 500 kg/m³, min. th. 30 mm (E.g. Promatect-L500, Promatect-MST, Promatect-H)
- 5 Stone wool, min. density 66 kg/m³ – fill the gap around the flange

III. TECHNICAL DATA

8. Pressure loss

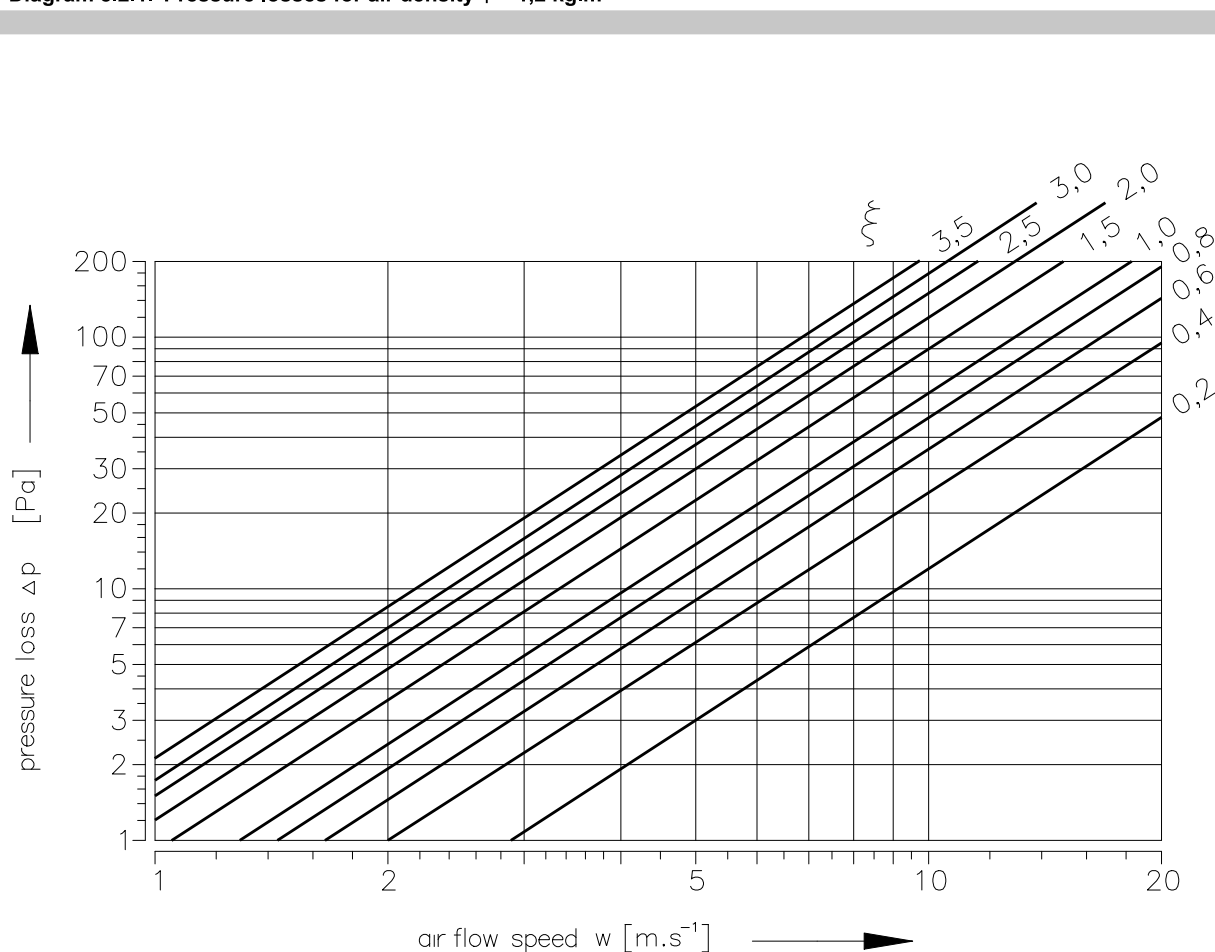
8.1. Pressure loss calculation

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

Δp	[Pa]	pressure loss
w	[m.s ⁻¹]	air flow speed in nominal damper section
ρ	[kg.m ⁻³]	air density
ξ	[-]	coefficient of local pressure loss for the nominal damper section (see Chapter. 9)

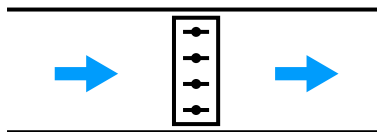
8.2. Determination of pressure loss by using diagram $\rho = 1,2 \text{ kg.m}^{-3}$

Diagram 8.2.1. Pressure losses for air density $\rho = 1,2 \text{ kg.m}^{-3}$



9. Coefficient of local pressure loss ξ [-]

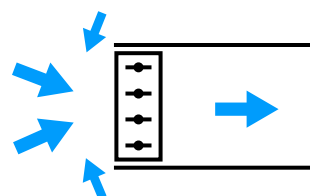
9.1. Installation in duct



Tab. 9.1.1. Installation in duct

A	B								
	430	630	830	1030	1230	1430	1630	1830	2030
200	0,658	0,586	0,554	0,535	0,523	0,515	0,509	0,504	0,500
250	0,637	0,568	0,536	0,518	0,507	0,499	0,493	0,488	0,484
300	0,624	0,556	0,525	0,508	0,496	0,488	0,482	0,478	0,474
350	0,614	0,548	0,517	0,500	0,489	0,481	0,475	0,471	0,467
400	0,608	0,542	0,512	0,494	0,483	0,476	0,470	0,465	0,462
450	0,602	0,537	0,507	0,490	0,479	0,472	0,466	0,461	0,458
500	0,598	0,533	0,504	0,487	0,476	0,468	0,463	0,458	0,455
550	0,595	0,530	0,501	0,484	0,473	0,466	0,460	0,456	0,452
600	0,592	0,528	0,499	0,482	0,471	0,464	0,458	0,454	0,450
650	0,590	0,526	0,497	0,480	0,469	0,462	0,456	0,452	0,448
700	0,588	0,524	0,495	0,478	0,468	0,460	0,455	0,450	0,447
750	0,586	0,522	0,493	0,477	0,466	0,459	0,453	0,449	0,446
800	0,585	0,521	0,492	0,476	0,465	0,458	0,452	0,448	0,445
850	0,583	0,520	0,491	0,475	0,464	0,457	0,451	0,447	0,444
900	0,582	0,519	0,490	0,474	0,463	0,456	0,450	0,446	0,443
950	0,581	0,518	0,489	0,473	0,462	0,455	0,449	0,445	0,442
1000	0,580	0,517	0,488	0,472	0,462	0,454	0,449	0,444	0,441
1050	0,579	0,516	0,488	0,471	0,461	0,453	0,448	0,444	0,440
1100	0,579	0,516	0,487	0,471	0,460	0,453	0,447	0,443	0,440
1150	0,578	0,515	0,487	0,470	0,460	0,452	0,447	0,443	0,439
1200	0,577	0,515	0,486	0,470	0,459	0,452	0,446	0,442	0,439

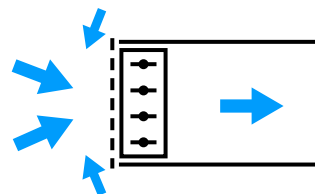
9.2. Installation at the beginning of duct - without grille



Tab. 9.2.1. Installation at the beginning of duct - without grille

A	B								
	430	630	830	1030	1230	1430	1630	1830	2030
200	1,250	1,114	1,052	1,017	0,994	0,978	0,967	0,958	0,950
250	1,210	1,079	1,019	0,985	0,963	0,947	0,936	0,927	0,920
300	1,185	1,056	0,998	0,964	0,943	0,928	0,916	0,908	0,901
350	1,167	1,041	0,983	0,950	0,929	0,914	0,903	0,894	0,888
400	1,154	1,029	0,972	0,939	0,918	0,904	0,893	0,884	0,878
450	1,144	1,020	0,964	0,931	0,911	0,896	0,885	0,877	0,870
500	1,137	1,013	0,957	0,925	0,904	0,890	0,879	0,871	0,864
550	1,130	1,008	0,952	0,920	0,899	0,885	0,874	0,866	0,859
600	1,125	1,003	0,947	0,916	0,895	0,881	0,870	0,862	0,855
650	1,121	0,999	0,944	0,912	0,891	0,877	0,867	0,858	0,852
700	1,117	0,996	0,940	0,909	0,888	0,874	0,864	0,856	0,849
750	1,113	0,993	0,938	0,906	0,886	0,872	0,861	0,853	0,847
800	1,111	0,990	0,935	0,904	0,884	0,869	0,859	0,851	0,845
850	1,108	0,988	0,933	0,902	0,882	0,868	0,857	0,849	0,843
900	1,106	0,986	0,931	0,900	0,880	0,866	0,855	0,847	0,841
950	1,104	0,984	0,930	0,898	0,878	0,864	0,854	0,846	0,839
1000	1,102	0,983	0,928	0,897	0,877	0,863	0,852	0,844	0,838
1050	1,101	0,981	0,927	0,896	0,876	0,862	0,851	0,843	0,837
1100	1,099	0,980	0,926	0,895	0,875	0,860	0,850	0,842	0,836
1150	1,098	0,979	0,924	0,893	0,873	0,859	0,849	0,841	0,835
1200	1,097	0,978	0,923	0,893	0,872	0,858	0,848	0,840	0,834

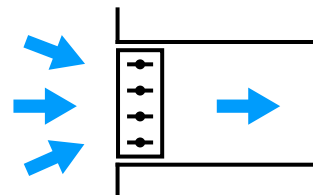
Installation at the beginning of duct - with grille



Tab. 9.2.2. Installation at the beginning of duct - with grille

A	B								
	430	630	830	1030	1230	1430	1630	1830	2030
200	2,350	2,214	2,152	2,117	2,094	2,078	2,067	2,058	2,050
250	2,310	2,179	2,119	2,085	2,063	2,047	2,036	2,027	2,020
300	2,285	2,156	2,098	2,064	2,043	2,028	2,016	2,008	2,001
350	2,267	2,141	2,083	2,050	2,029	2,014	2,003	1,994	1,988
400	2,254	2,129	2,072	2,039	2,018	2,004	1,993	1,984	1,978
450	2,244	2,120	2,064	2,031	2,011	1,996	1,985	1,977	1,970
500	2,237	2,113	2,057	2,025	2,004	1,990	1,979	1,971	1,964
550	2,230	2,108	2,052	2,020	1,999	1,985	1,974	1,966	1,959
600	2,225	2,103	2,047	2,016	1,995	1,981	1,970	1,962	1,955
650	2,221	2,099	2,044	2,012	1,991	1,977	1,967	1,958	1,952
700	2,217	2,096	2,040	2,009	1,988	1,974	1,964	1,956	1,949
750	2,213	2,093	2,038	2,006	1,986	1,972	1,961	1,953	1,947
800	2,211	2,090	2,035	2,004	1,984	1,969	1,959	1,951	1,945
850	2,208	2,088	2,033	2,002	1,982	1,968	1,957	1,949	1,943
900	2,206	2,086	2,031	2,000	1,980	1,966	1,955	1,947	1,941
950	2,204	2,084	2,030	1,998	1,978	1,964	1,954	1,946	1,939
1000	2,202	2,083	2,028	1,997	1,977	1,963	1,952	1,944	1,938
1050	2,201	2,081	2,027	1,996	1,976	1,962	1,951	1,943	1,937
1100	2,199	2,080	2,026	1,995	1,975	1,960	1,950	1,942	1,936
1150	2,198	2,079	2,024	1,993	1,973	1,959	1,949	1,941	1,935
1200	2,197	2,078	2,023	1,993	1,972	1,958	1,948	1,940	1,934

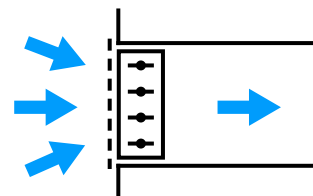
9.3. Installation at the beginning of duct in the wall - without grille



Tab. 9.3.1. Installation at the beginning of duct in the wall - without grille

A	B								
	430	630	830	1030	1230	1430	1630	1830	2030
200	1,151	1,026	0,969	0,937	0,916	0,901	0,890	0,882	0,875
250	1,115	0,994	0,939	0,907	0,887	0,873	0,862	0,854	0,848
300	1,091	0,973	0,919	0,888	0,868	0,854	0,844	0,836	0,830
350	1,075	0,958	0,905	0,875	0,855	0,842	0,832	0,824	0,818
400	1,063	0,948	0,895	0,865	0,846	0,832	0,822	0,815	0,808
450	1,054	0,940	0,888	0,858	0,839	0,825	0,815	0,808	0,802
500	1,047	0,933	0,882	0,852	0,833	0,820	0,810	0,802	0,796
550	1,041	0,928	0,877	0,847	0,828	0,815	0,805	0,798	0,792
600	1,036	0,924	0,872	0,843	0,824	0,811	0,801	0,794	0,788
650	1,032	0,920	0,869	0,840	0,821	0,808	0,798	0,791	0,785
700	1,029	0,917	0,866	0,837	0,818	0,805	0,796	0,788	0,782
750	1,026	0,914	0,864	0,835	0,816	0,803	0,793	0,786	0,780
800	1,023	0,912	0,861	0,833	0,814	0,801	0,791	0,784	0,778
850	1,021	0,910	0,859	0,831	0,812	0,799	0,789	0,782	0,776
900	1,019	0,908	0,858	0,829	0,810	0,797	0,788	0,780	0,775
950	1,017	0,906	0,856	0,828	0,809	0,796	0,786	0,779	0,773
1000	1,015	0,905	0,855	0,826	0,808	0,795	0,785	0,778	0,772
1050	1,014	0,904	0,854	0,825	0,807	0,794	0,784	0,777	0,771
1100	1,012	0,903	0,853	0,824	0,805	0,793	0,783	0,776	0,770
1150	1,011	0,901	0,851	0,823	0,805	0,792	0,782	0,775	0,769
1200	1,010	0,900	0,851	0,822	0,804	0,791	0,781	0,774	0,768

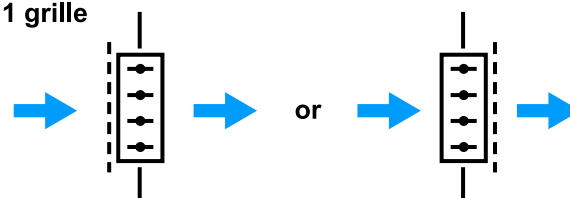
Installation at the beginning of duct in the wall - with grille



Tab. 9.3.2. Installation at the beginning of duct in the wall - with grille

A	B								
	430	630	830	1030	1230	1430	1630	1830	2030
200	2,251	2,126	2,069	2,037	2,016	2,001	1,990	1,982	1,975
250	2,215	2,094	2,039	2,007	1,987	1,973	1,962	1,954	1,948
300	2,191	2,073	2,019	1,988	1,968	1,954	1,944	1,936	1,930
350	2,175	2,058	2,005	1,975	1,955	1,942	1,932	1,924	1,918
400	2,163	2,048	1,995	1,965	1,946	1,932	1,922	1,915	1,908
450	2,154	2,040	1,988	1,958	1,939	1,925	1,915	1,908	1,902
500	2,147	2,033	1,982	1,952	1,933	1,920	1,910	1,902	1,896
550	2,141	2,028	1,977	1,947	1,928	1,915	1,905	1,898	1,892
600	2,136	2,024	1,972	1,943	1,924	1,911	1,901	1,894	1,888
650	2,132	2,020	1,969	1,940	1,921	1,908	1,898	1,891	1,885
700	2,129	2,017	1,966	1,937	1,918	1,905	1,896	1,888	1,882
750	2,126	2,014	1,964	1,935	1,916	1,903	1,893	1,886	1,880
800	2,123	2,012	1,961	1,933	1,914	1,901	1,891	1,884	1,878
850	2,121	2,010	1,959	1,931	1,912	1,899	1,889	1,882	1,876
900	2,119	2,008	1,958	1,929	1,910	1,897	1,888	1,880	1,875
950	2,117	2,006	1,956	1,928	1,909	1,896	1,886	1,879	1,873
1000	2,115	2,005	1,955	1,926	1,908	1,895	1,885	1,878	1,872
1050	2,114	2,004	1,954	1,925	1,907	1,894	1,884	1,877	1,871
1100	2,112	2,003	1,953	1,924	1,905	1,893	1,883	1,876	1,870
1150	2,111	2,001	1,951	1,923	1,905	1,892	1,882	1,875	1,869
1200	2,110	2,000	1,951	1,922	1,904	1,891	1,881	1,874	1,868

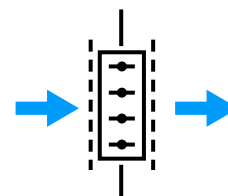
9.4. Installation in the wall between the rooms - 1 grille



Tab. 9.4.1. Installation in the wall between the rooms - 1 grille

	B								
A	430	630	830	1030	1230	1430	1630	1830	2030
200	3,994	3,680	3,537	3,456	3,403	3,366	3,339	3,318	3,301
250	3,903	3,599	3,460	3,381	3,330	3,294	3,268	3,247	3,231
300	3,844	3,546	3,411	3,333	3,283	3,248	3,222	3,202	3,187
350	3,803	3,510	3,376	3,300	3,251	3,216	3,191	3,171	3,156
400	3,773	3,483	3,351	3,276	3,227	3,193	3,168	3,148	3,133
450	3,750	3,463	3,332	3,257	3,209	3,175	3,150	3,131	3,115
500	3,732	3,446	3,316	3,242	3,194	3,160	3,136	3,117	3,101
550	3,717	3,433	3,304	3,230	3,182	3,149	3,124	3,105	3,090
600	3,705	3,422	3,294	3,220	3,173	3,139	3,115	3,096	3,081
650	3,695	3,413	3,285	3,212	3,165	3,131	3,107	3,088	3,073
700	3,686	3,405	3,278	3,205	3,158	3,125	3,100	3,081	3,067
750	3,679	3,399	3,271	3,199	3,152	3,119	3,094	3,076	3,061
800	3,672	3,393	3,266	3,193	3,146	3,114	3,089	3,071	3,056
850	3,666	3,388	3,261	3,189	3,142	3,109	3,085	3,066	3,051
900	3,661	3,383	3,257	3,184	3,138	3,105	3,081	3,062	3,048
950	3,657	3,379	3,253	3,181	3,134	3,101	3,077	3,059	3,044
1000	3,652	3,375	3,249	3,177	3,131	3,098	3,074	3,056	3,041
1050	3,649	3,372	3,246	3,174	3,128	3,095	3,071	3,053	3,038
1100	3,645	3,369	3,243	3,172	3,125	3,093	3,069	3,050	3,036
1150	3,642	3,366	3,241	3,169	3,123	3,090	3,066	3,048	3,033
1200	3,640	3,364	3,239	3,167	3,121	3,088	3,064	3,046	3,031

Installation in the wall between the rooms - 2 grille



Tab. 9.4.2. Installation in the wall between the rooms - 2 grille

	B								
A	430	630	830	1030	1230	1430	1630	1830	2030
200	4,894	4,580	4,437	4,356	4,303	4,266	4,239	4,218	4,201
250	4,803	4,499	4,360	4,281	4,230	4,194	4,168	4,147	4,131
300	4,744	4,446	4,311	4,233	4,183	4,148	4,122	4,102	4,087
350	4,703	4,410	4,276	4,200	4,151	4,116	4,091	4,071	4,056
400	4,673	4,383	4,251	4,176	4,127	4,093	4,068	4,048	4,033
450	4,650	4,363	4,232	4,157	4,109	4,075	4,050	4,031	4,015
500	4,632	4,346	4,216	4,142	4,094	4,060	4,036	4,017	4,001
550	4,617	4,333	4,204	4,130	4,082	4,049	4,024	4,005	3,990
600	4,605	4,322	4,194	4,120	4,073	4,039	4,015	3,996	3,981
650	4,595	4,313	4,185	4,112	4,065	4,031	4,007	3,988	3,973
700	4,586	4,305	4,178	4,105	4,058	4,025	4,000	3,981	3,967
750	4,579	4,299	4,171	4,099	4,052	4,019	3,994	3,976	3,961
800	4,572	4,293	4,166	4,093	4,046	4,014	3,989	3,971	3,956
850	4,566	4,288	4,161	4,089	4,042	4,009	3,985	3,966	3,951
900	4,561	4,283	4,157	4,084	4,038	4,005	3,981	3,962	3,948
950	4,557	4,279	4,153	4,081	4,034	4,001	3,977	3,959	3,944
1000	4,552	4,275	4,149	4,077	4,031	3,998	3,974	3,956	3,941
1050	4,549	4,272	4,146	4,074	4,028	3,995	3,971	3,953	3,938
1100	4,545	4,269	4,143	4,072	4,025	3,993	3,969	3,950	3,936
1150	4,542	4,266	4,141	4,069	4,023	3,990	3,966	3,948	3,933
1200	4,540	4,264	4,139	4,067	4,021	3,988	3,964	3,946	3,931

10. Noise data

10.1. Level of acoustic output corrected with filter A

Tab. 10.1.1. Air velocity 2 m/s

Level of acoustic output [dB]									
A	B								
	430	630	830	1030	1230	1430	1630	1830	2030
200	27	28	29	30	30	31	31	32	32
250	28	29	30	30	31	32	32	33	33
300	28	29	30	31	32	32	33	33	34
350	29	30	31	32	32	33	33	34	34
400	29	30	31	32	33	33	34	34	35
450	30	31	32	33	33	34	34	35	35
500	30	31	32	33	34	34	35	35	36
550	31	32	33	33	34	35	35	36	36
600	31	32	33	34	34	35	36	36	36
650	31	32	33	34	35	35	36	36	37
700	32	33	34	34	35	36	36	37	37
750	32	33	34	35	35	36	36	37	37
800	32	33	34	35	36	36	37	37	38
850	32	34	34	35	36	36	37	37	38
900	33	34	35	35	36	37	37	38	38
950	33	34	35	36	36	37	37	38	38
1000	33	34	35	36	37	37	38	38	39
1050	33	34	35	36	37	37	38	38	39
1100	34	35	36	36	37	38	38	39	39
1150	34	35	36	36	37	38	38	39	39
1200	34	35	36	37	37	38	38	39	39

Tab. 10.1.2. Air velocity 3 m/s

Level of acoustic output [dB]									
A	B								
	430	630	830	1030	1230	1430	1630	1830	2030
200	36	37	38	39	39	40	40	41	41
250	37	38	39	39	40	41	41	42	42
300	37	38	39	40	41	41	42	42	43
350	38	39	40	41	41	42	42	43	43
400	38	39	40	41	42	42	43	43	44
450	39	40	41	42	42	43	43	44	44
500	39	40	41	42	43	43	44	44	45
550	40	41	42	42	43	44	44	45	45
600	40	41	42	43	43	44	45	45	45
650	40	41	42	43	44	44	45	45	46
700	41	42	43	43	44	45	45	46	46
750	41	42	43	44	44	45	45	46	46
800	41	42	43	44	45	45	46	46	47
850	41	43	43	44	45	45	46	46	47
900	42	43	44	44	45	46	46	47	47
950	42	43	44	45	45	46	46	47	47
1000	42	43	44	45	46	46	47	47	48
1050	42	43	44	45	46	46	47	47	48
1100	43	44	45	45	46	47	47	48	48
1150	43	44	45	45	46	47	47	48	48
1200	43	44	45	46	46	47	47	48	48

Tab. 10.1.3. Air velocity 4 m/s

Level of acoustic output [dB]									
	B								
A	430	630	830	1030	1230	1430	1630	1830	2030
200	42	43	44	45	46	47	47	47	48
250	43	44	45	46	47	47	48	48	49
300	44	45	46	47	47	48	49	49	49
350	44	46	47	47	48	49	49	50	50
400	45	46	47	48	49	49	50	50	51
450	45	47	48	48	49	50	50	51	51
500	46	47	48	49	50	50	51	51	52
550	46	47	48	49	50	51	51	52	52
600	47	48	49	50	50	51	51	52	52
650	47	48	49	50	51	51	52	52	53
700	47	48	49	50	51	52	52	53	53
750	48	49	50	51	51	52	52	53	53
800	48	49	50	51	51	52	53	53	53
850	48	49	50	51	52	52	53	53	54
900	48	50	50	51	52	53	53	54	54
950	49	50	51	52	52	53	53	54	54
1000	49	50	51	52	52	53	54	54	54
1050	49	50	51	52	53	53	54	54	55
1100	49	50	51	52	53	53	54	54	55
1150	49	51	52	52	53	54	54	55	55
1200	50	51	52	53	53	54	54	55	55

Tab. 10.1.4. Air velocity 5 m/s

Level of acoustic output [dB]									
	B								
A	430	630	830	1030	1230	1430	1630	1830	2030
200	49	50	51	52	53	54	54	54	55
250	50	51	52	53	54	54	55	55	56
300	51	52	53	54	54	55	56	56	56
350	51	53	54	54	55	56	56	57	57
400	52	53	54	55	56	56	57	57	58
450	52	54	55	55	56	57	57	58	58
500	53	54	55	56	57	57	58	58	59
550	53	54	55	56	57	58	58	59	59
600	54	55	56	57	57	58	58	59	59
650	54	55	56	57	58	58	59	59	60
700	54	55	56	57	58	59	59	60	60
750	55	56	57	58	58	59	59	60	60
800	55	56	57	58	58	59	60	60	60
850	55	56	57	58	59	59	60	60	61
900	55	57	57	58	59	60	60	61	61
950	56	57	58	59	59	60	60	61	61
1000	56	57	58	59	59	60	61	61	61
1050	56	57	58	59	60	60	61	61	62
1100	56	57	58	59	60	60	61	61	62
1150	56	58	59	59	60	61	61	62	62
1200	57	58	59	60	60	61	61	62	62

Tab. 10.1.5. Air velocity 6 m/s

Level of acoustic output [dB]									
	B								
A	430	630	830	1030	1230	1430	1630	1830	2030
200	54	55	56	57	58	58	59	59	60
250	55	56	57	58	59	59	60	60	61
300	55	57	58	59	59	60	60	61	61
350	56	57	58	59	60	60	61	61	62
400	57	58	59	60	60	61	62	62	62
450	57	58	59	60	61	62	62	63	63
500	57	59	60	61	61	62	62	63	63
550	58	59	60	61	62	62	63	63	64
600	58	60	61	61	62	63	63	64	64
650	59	60	61	62	62	63	64	64	64
700	59	60	61	62	63	63	64	64	65
750	59	60	61	62	63	64	64	65	65
800	59	61	62	63	63	64	64	65	65
850	60	61	62	63	64	64	65	65	66
900	60	61	62	63	64	64	65	65	66
950	60	61	62	63	64	65	65	66	66
1000	60	62	63	64	64	65	65	66	66
1050	61	62	63	64	64	65	66	66	67
1100	61	62	63	64	65	65	66	66	67
1150	61	62	63	64	65	65	66	66	67
1200	61	62	63	64	65	66	66	67	67

Tab. 10.1.6. Air velocity 8 m/s

Level of acoustic output [dB]									
	B								
A	430	630	830	1030	1230	1430	1630	1830	2030
200	60	62	63	64	64	65	66	66	66
250	61	63	64	65	65	66	66	67	67
300	62	63	64	65	66	67	67	68	68
350	63	64	65	66	67	67	68	68	69
400	63	65	66	67	67	68	68	69	69
450	64	65	66	67	68	68	69	69	70
500	64	66	67	67	68	69	69	70	70
550	65	66	67	68	69	69	70	70	71
600	65	66	67	68	69	70	70	71	71
650	65	67	68	69	69	70	70	71	71
700	66	67	68	69	70	70	71	71	72
750	66	67	68	69	70	71	71	72	72
800	66	68	69	69	70	71	71	72	72
850	66	68	69	70	70	71	72	72	73
900	67	68	69	70	71	71	72	72	73
950	67	68	69	70	71	72	72	73	73
1000	67	68	70	70	71	72	72	73	73
1050	67	69	70	71	71	72	73	73	73
1100	67	69	70	71	72	72	73	73	74
1150	68	69	70	71	72	72	73	73	74
1200	68	69	70	71	72	73	73	74	74

Tab. 10.1.7. Air velocity 10 m/s

Level of acoustic output [dB]									
	B								
A	430	630	830	1030	1230	1430	1630	1830	2030
200	66	68	69	70	70	71	72	72	72
250	67	69	70	71	71	72	72	73	73
300	68	69	70	71	72	73	73	74	74
350	68	70	71	72	73	73	74	74	75
400	69	71	72	72	73	74	74	75	75
450	70	71	72	73	74	74	75	75	76
500	70	71	73	73	74	75	75	76	76
550	70	72	73	74	75	75	76	76	77
600	71	72	73	74	75	76	76	77	77
650	71	73	74	75	75	76	76	77	77
700	71	73	74	75	76	76	77	77	78
750	72	73	74	75	76	77	77	78	78
800	72	73	75	75	76	77	77	78	78
850	72	74	75	76	76	77	78	78	79
900	72	74	75	76	77	77	78	78	79
950	73	74	75	76	77	78	78	79	79
1000	73	74	76	76	77	78	78	79	79
1050	73	75	76	77	77	78	79	79	79
1100	73	75	76	77	78	78	79	79	80
1150	74	75	76	77	78	78	79	79	80
1200	74	75	76	77	78	79	79	80	80

Tab. 10.1.8. Air velocity 12 m/s

Level of acoustic output [dB]									
	B								
A	430	630	830	1030	1230	1430	1630	1830	2030
200	71	73	74	75	75	76	76	77	77
250	72	73	75	75	76	77	77	78	78
300	73	74	75	76	77	78	78	79	79
350	73	75	76	77	78	78	79	79	80
400	74	75	77	77	78	79	79	80	80
450	74	76	77	78	79	79	80	80	81
500	75	76	77	78	79	80	80	81	81
550	75	77	78	79	80	80	81	81	82
600	76	77	78	79	80	81	81	82	82
650	76	77	79	79	80	81	81	82	82
700	76	78	79	80	81	81	82	82	83
750	77	78	79	80	81	81	82	83	83
800	77	78	79	80	81	82	82	83	83
850	77	79	80	81	81	82	83	83	84
900	77	79	80	81	82	82	83	83	84
950	78	79	80	81	82	82	83	84	84
1000	78	79	80	81	82	83	83	84	84
1050	78	80	81	82	82	83	83	84	84
1100	78	80	81	82	82	83	84	84	85
1150	78	80	81	82	83	83	84	84	85
1200	79	80	81	82	83	84	84	85	85

IV. MATERIAL, SURFACE TREATMENT

11. Material

- 11.1.** Damper bodies and slats are made of asbestos-free fire-resistant mineral fibre boards.
Damper bodies and slats can be coated with Promat 2000 anti-moisture coating or Promat-SR anti-aggressive coating.
The connecting material is galvanised.

- 11.2.** According to the customer's request, a stainless-steel damper can be supplied.

Specification of stainless-steel design - division of stainless-steel material:

- class A2 - food stainless-steel (AISI 304 - EN 17240)
- class A4 - chemical stainless-steel (AISI 316, 316L - EN 17346, 17349)

Everything that is located or enters the inner space or the cross-section of the damper is from a given stainless-steel material. The parts located outside the body and in the damper mechanism space are made of galvanised material as standard. In the case of the stainless-steel design, the cover grilles are always made of galvanised material with a "powder-coated" coating.

Plastic, rubber and silicone parts, sealants, foaming tapes, seals from glass-ceramic materials, brass housing, sheet bearings, actuators are the same for all material versions of dampers.

Some types of fasteners and parts are only available from one type of stainless steel, this type will be used in all stainless-steel designs.

The slats and body of the dampers for chemical design (class A4) are always provided with a coating against the effect of Promat SR chemicals.

Other design requirements are taken as atypical and will be solved individually, according to customer requirements.

V. INSPECTION, TESTING

12. Inspection

- 12.1.** Dimensions are checked with common gauges according to the standard of non-tolerated dimensions used in air conditioning.
- 12.2.** Inter-operational inspections of parts and main dimensions are performed according to the drawing documentation.

13. Testing

- 13.1.** After workshop assembly, a 100% check of the functionality of the closing device and electrical elements is performed.

VI. PACKAGING, TRANSPORT, ACCEPTANCE, STORAGE, WARRANTY

14. Logistic terms

- 14.1. Dampers are delivered on special pallets. Other packaging methods must be agreed with the manufacturer in advance. If packaging is used, these are non-refundable and their price is included in the product price.
- 14.2. Depending on the weight of the delivery, it's advisable to provide handling equipment for stacking at the unloading location.
- 14.3. The dampers are transported in covered transport, there must be no severe shocks and the ambient temperature must not exceed +50°C. When handling during transport, the dampers must be protected against mechanical damage and weathering. The damper slat must be in a "CLOSED" position during transport.
- 14.4. If the acceptance method isn't specified in the order, handing over dampers will be considered acceptance.
- 14.5. Dampers must be stored in covered buildings, in an environment free of aggressive vapours, gases and dust. A temperature in the range of -5°C to +40°C and relative humidity max. 80% must be observed in the buildings. When handling during storage, the dampers must be protected against mechanical damage.
- 14.6. The scope of delivery includes a complete damper and delivery note.

15. Warranty

- 15.1. The manufacturer provides a 24-month warranty on dampers from the shipment date.
The manufacturer's warranty for SEDM-L dampers completely expires after any unprofessional handling by untrained workers (see chapter 16.1.) With the control device, disassembly of electrical elements, i.e. actuators, communication and power supply devices.
The warranty also expires when dampers are used for purposes, equipment and working conditions other than those permitted by these technical conditions or after mechanical damage during handling.
- 15.2. If the dampers are damaged by transport, it's necessary to draft a report with the courier upon acceptance for the possibility of a later complaint.

VII. INSTALLATION, OPERATION, MAINTENANCE AND OPERATIONAL CHECK

16. Assembly

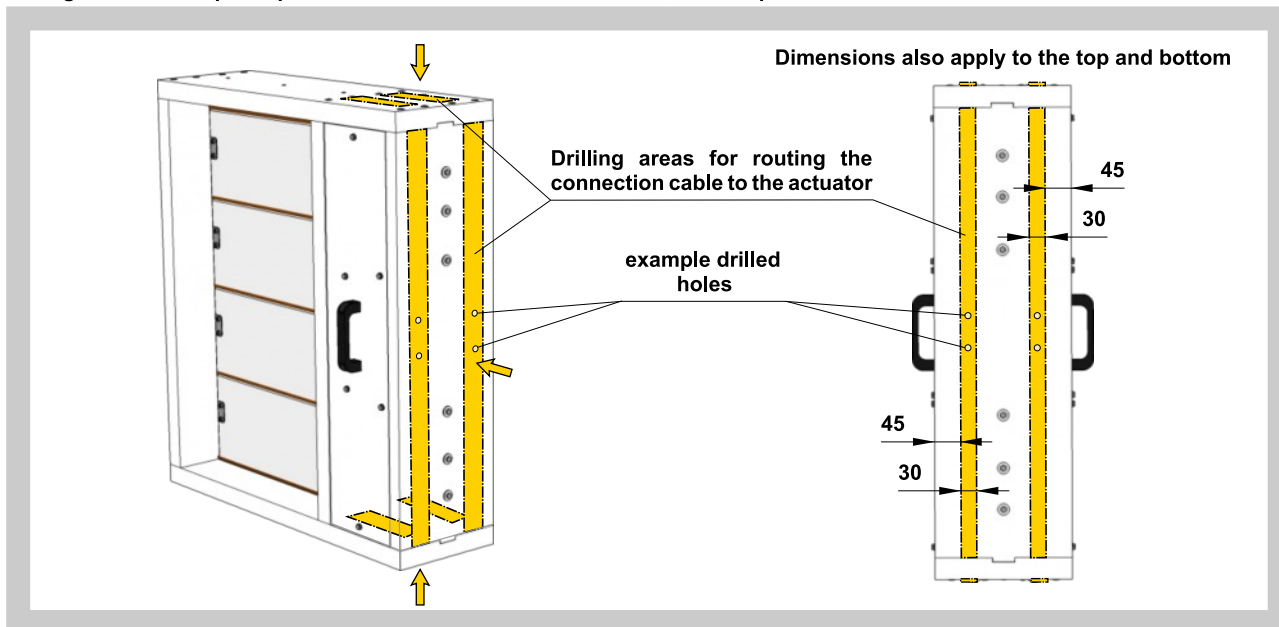
- 16.1. Assembly, maintenance and damper function check can be done only by qualified and trained person, i.e. "AUTHORIZED PERSON" according to the manufacturer documentation. All works done on the fire dampers must be done according international and local norms and laws.
- 16.2. All effective safety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

16.5. 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 (fire resistant cables) to connect actuator trailing lead. Protection box is made of calcium silicate plates.

Fig. 37 Example of position of holes in the wall of the box, without pre-manufactured slot



Procedure:

- Use drill (drill size acc. To suit connecting cable $\varnothing + 2$ mm for seal up by mastic) and make two holes (see fig. 37). **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.

17. Entry into service and revisions

- 17.1. Prior to commissioning the dampers and during subsequent serviceability checks, all versions, including electrical component operation, must be inspected and functionally tested. After commissioning, serviceability checks must be performed at least twice annually. If no defect is found during two consecutive serviceability checks, then it's possible to perform serviceability checks once yearly.

The results of regular inspections, deficiencies found and all-important facts concerning the dampers function must be entered in the "FIRE BOOK" and immediately reported to the operator.

If, for any reason, the dampers are found unfit to perform their function, this must be clearly indicated. The operator is obliged to ensure that the damper is brought into a state where it will be able to perform its function again and during this time must provide fire protection in another sufficient way.

- 17.2. These checks must be carried out before the dampers are put into operation and during subsequent serviceability checks.

Visual inspection of the damper's correct installation, the damper's internal space, the damper slats, the bearing surfaces of the slats and the silicone seal.

Check the adjustment of the damper slat from the open position to the closed position and back.

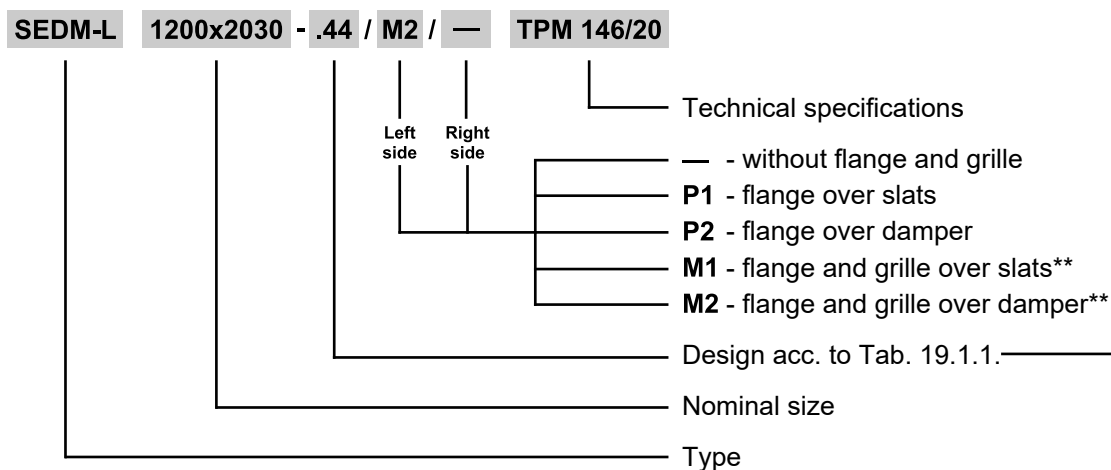
18. Spare parts

- 18.1. Spare parts are only delivered on order.

VIII. ORDERING INFORMATION

19. Ordering key

19.1. Smoke extraction damper



Tab. 19.1.1. Dampers design

Dampers design	Additional digit
with actuating mechanism BEN, BEE, BE for 230V	.44
with actuating mechanism BEN, BEE, BE for 24V	.54
with actuating mechanism BEN (BEE)-SR for 24V	.65***
with the communication and supply device BKNE 230-24 and actuating mechanism BEN (BEE, BE)-ST for 24V	.66*

* When using the BKNE 230-24 communication and power supply device, a weight of 0.68 kg must be added.

** The surface of the grille is provided with powder coating, standard colour is the RAL 9006. Requirements for other colour must be discussed in advance with the manufacturer.

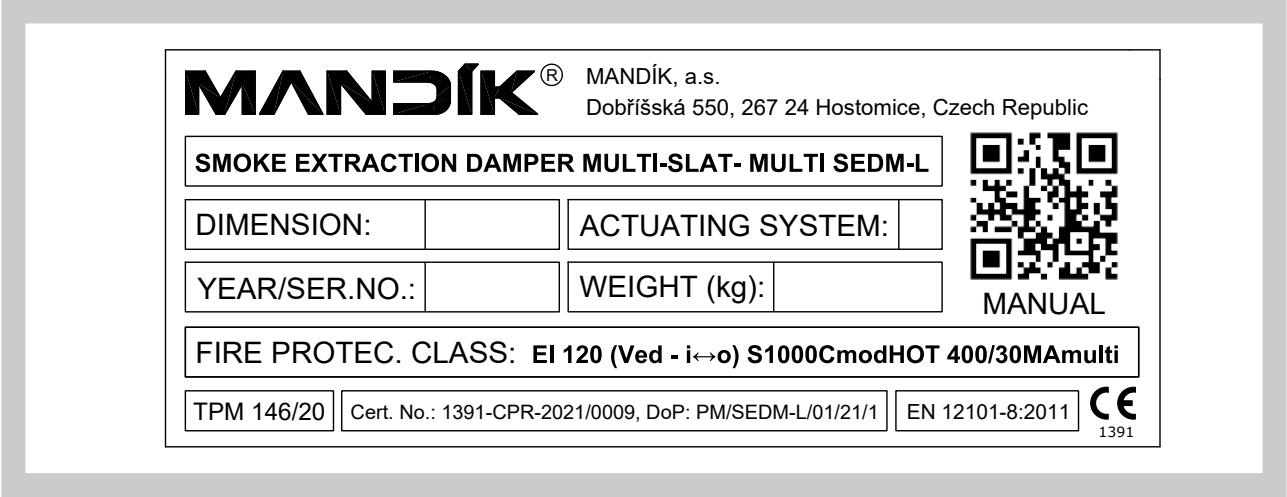
*** Design .65 is not available by using actuating mechanism BE

IX. PRODUCT INFORMATION

20. Data label

20.1. The data label is attached to the damper body.

Fig. 38 Data label



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The producer reserves the right for innovations of the product. For actual product information see
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