



NORDfire

SEDS-L Smoke Extraction Damper

Square dampers from 200×200 to 1200×1200 mm

CE certified acc. to EN 12101-8

Tested in accordance with EN 1366-10

Classified acc. to EN 13501-4+A1

ES Certificate No. 1391-CPR-2020/0187

Declaration of Performance No. PM/SEDS-L/01/22/1

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General Information

1. Description

Smoke extraction dampers - single are shutters in smoke exhaust piping systems. Dampers are designed to remove heat and combustion products (e.g. smoke) from single fire compartment. In the event of fire the Smoke and Fire ventilation system opens the damper in the affected section which removes combustion products and heat from this section. The damper blade is operated by an actuating mechanism.

The dampers can be installed in various duct sizes with respect to the field of direct applications according with EN 1366-9. The field of direct applications based on tests results is acceptable according to EN 1363-1, part A.1 and A.2, EN 1366-2, part 13 and EN 1366-10, part 9.

Smoke extraction dampers - single are classified as $E_{600} 120 (v_e - i \leftrightarrow o) S1500C_{mod} MA_{single}$.

Fig. 1. Damper SEDS-L



1.1 Damper Characteristics

- CE certified acc. to EN 12101-8
- Tested in accordance with EN 1366-10
- Classified acc. to EN 13501-4+A1
- External Casing leakage min. class B, Internal leakage min. class 3 acc. to EN 1751
- Cycling test in class C_{mod} acc. to EN 12101-8
- ES Certificate No. 1391-CPR-2020/0187
- Declaration of Performance No. PM/SEDS-L/01/22/1
- Hygienic assessment of smoke control dampers - Report No. 1.6/pos/19/19c

1.2 Working Conditions

Dampers are designed for smoke exhaust piping systems with underpressure max. 1500 Pa or overpressure max. 500 Pa. Dampers are designed for maximum air velocity 15 m/s.

Dampers are installed with the horizontal or vertical axis of the blades. Dampers are intended for installation on air ducts and in/onto the walls where in the case of wall installation, this wall with damper does not have fire resistance and therefore does not separate two fire compartments.

Dampers are suitable for systems without abrasive, chemical and adhesive particles. Dampers are designed for macroclimatic areas with mild climate according to EN 60 721-3-3. Temperature in the place of installation is permitted to range from -30°C to $+50^{\circ}\text{C}$.

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 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.

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 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 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 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. Act. mechanism in the cover



Tab. 1. Actuator BELIMO BEN 24(-ST), BEN 24-SR, BEN 230




BELIMO – 15 Nm	BEN 24(-ST)	BEN 24-SR	BEN 230
			
Power voltage	AC/DC 24 V 50/60 Hz	AC/DC 24 V 50/60 Hz	AC 230 V 50/60 Hz
Power consumption			
- in operation	3 W	3 W	4 W
- in the end position	0,1 W	0,3 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		-30 °C ... +55 °C	
Storage temperature		-40 °C ... +80 °C	
Connection			
- drive	Cable 1 m, 3 × 0,75 mm ²	Cable 1 m, 4 × 0,75 mm ²	Cable 1 m, 3 × 0,75 mm ²
- auxiliary switch	Cable 1 m, 6 × 0,75 mm ² (BEN 24-ST) with plug connectors	Cable 1 m, 6 × 0,75 mm ²	Cable 1 m, 6 × 0,75 mm ²

Fig. 3. Belimo BEN 24(-ST)

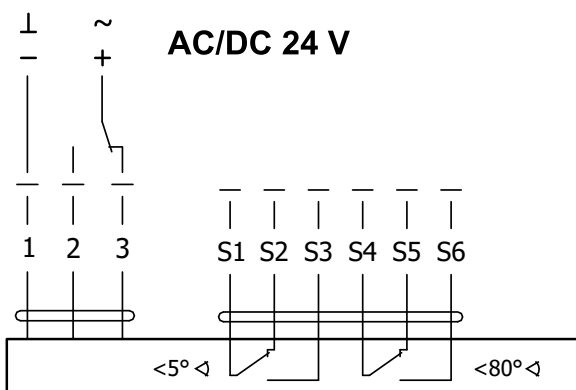


Fig. 4. Belimo BEN 24-SR

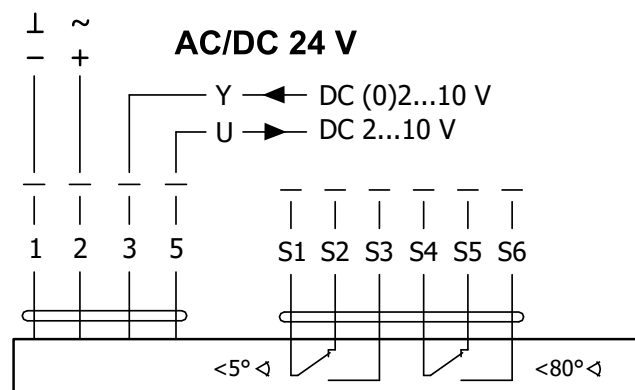
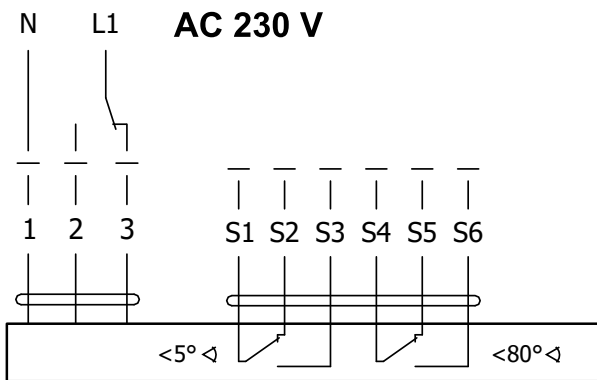


Fig. 5. Belimo BEN 230



Tab. 2. Actuator BELIMO BEE 24(-ST), BEE 24-SR, BEE 230




BELIMO – 25 Nm	BEE 24(-ST)	BEE 24-SR	BEE 230
			
Power voltage	AC/DC 24 V 50/60 Hz	AC/DC 24 V 50/60 Hz	AC 230 V 50/60 Hz
Power consumption			
- in operation	2,5 W	3 W	3,5 W
- in the end position	0,1 W	0,3 W	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	Cable 1 m, 3 × 0,75 mm ²	Cable 1 m, 4 × 0,75 mm ²	Cable 1 m, 3 × 0,75 mm ²
- auxiliary switch	Cable 1 m, 6 × 0,75 mm ² (BEE 24-ST) with plug connectors	Cable 1 m, 6 × 0,75 mm ²	Cable 1 m, 6 × 0,75 mm ²

Fig. 6. Belimo BEE 24(-ST)

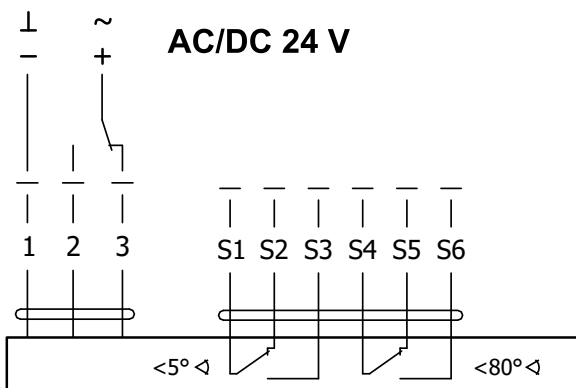


Fig. 7. Belimo BEE 24-SR

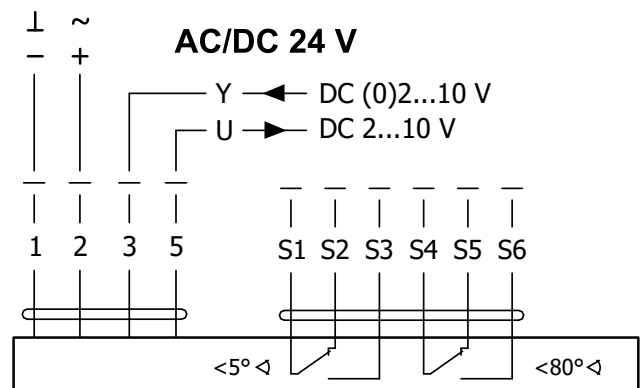
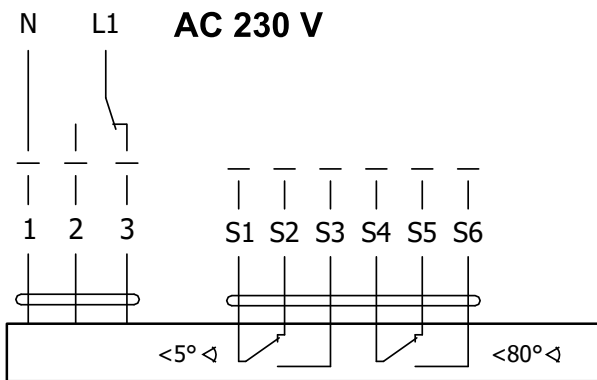


Fig. 8. Belimo BEE 230



Tab. 3. Actuator BELIMO BE 24-12(-ST), BE 230-12



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

Fig. 9. Belimo BE 24-12(-ST)

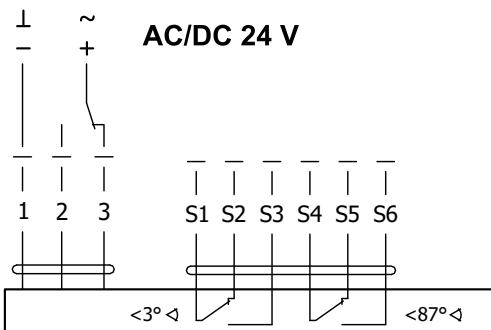
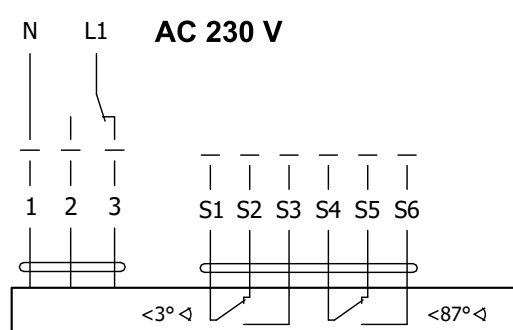


Fig. 10. Belimo BE 230-12



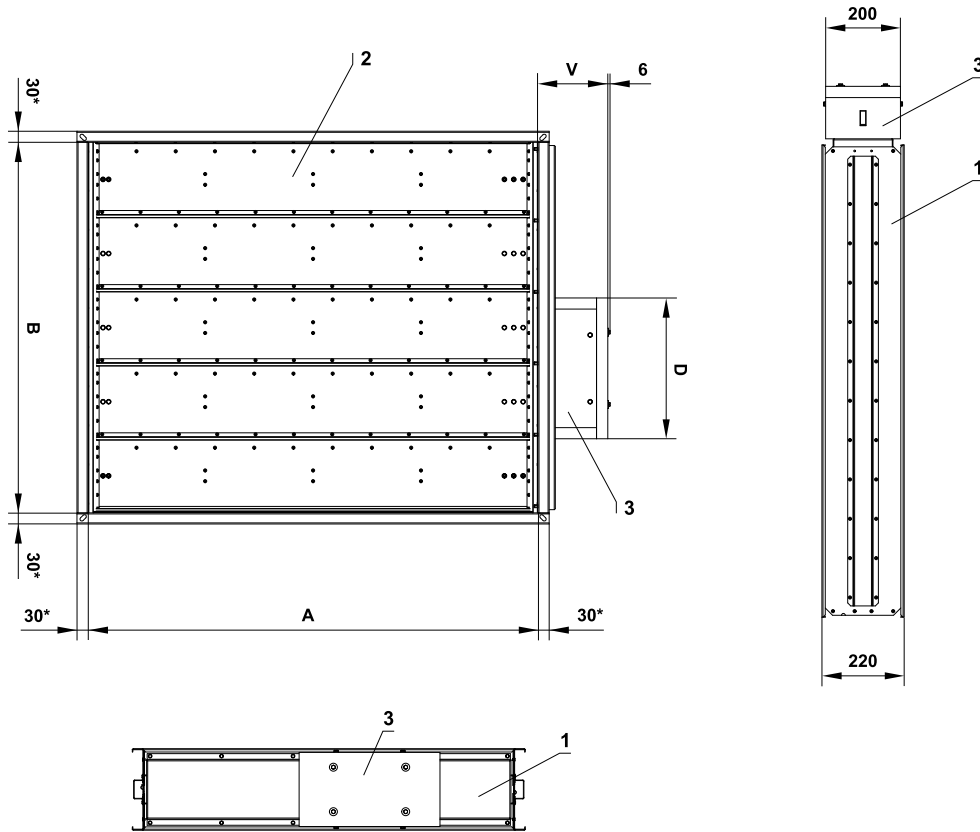
3. Material, Dimensions and Weights

3.1 Material

Damper casing and damper blade are made of galvanized plate without any other surface finish. Fasteners are galvanized. The actuator cover is made of fire-resistant material (fire protection board).

3.2 Dimensions and Weights

Fig. 11. Damper SEDS-L



Position:

- 1 – Damper body
- 2 – Damper blade
- 3 – Actuating mechanism cover

* standard height of the flange

Act. mechanism	V (mm)	D (mm)
BEN / BEE	176,5	315
BE	186,5	380
BEN / BEE + BKNE	236,5	315
BE + BKNE	251,5	380

Tab. 7. Weights and effective area cross section

A	B	Number of blades	Weight (kg)	S _{ef} (m ²)	Actuator
200	200	1	14,3	0,0227	BEN
200	250	2	16,4	0,0270	BEN
200	300	2	17,3	0,0350	BEN
200	350	2	18,3	0,0430	BEN
200	400	2	19,2	0,0510	BEN
200	450	3	21,2	0,0554	BEN
200	500	3	22,2	0,0634	BEN
200	600	3	24,1	0,0794	BEN
200	700	4	27,0	0,0917	BEN
200	800	4	28,9	0,1077	BEN
200	900	5	34,5	0,1200	BEE
200	1000	5	36,4	0,1360	BEE
200	1100	6	39,3	0,1483	BEE
200	1200	6	41,2	0,1643	BEE
250	200	1	15,1	0,0298	BEN
250	250	2	17,4	0,0355	BEN
250	300	2	18,4	0,0460	BEN
250	350	2	19,4	0,0565	BEN
250	400	2	20,4	0,0670	BEN
250	450	3	22,5	0,0727	BEN
250	500	3	23,5	0,0832	BEN
250	600	3	25,5	0,1042	BEN
250	700	4	28,7	0,1203	BEN
250	800	4	30,7	0,1413	BEN
250	900	5	36,5	0,1575	BEE
250	1000	5	38,5	0,1785	BEE
250	1100	6	41,6	0,1947	BEE
250	1200	6	43,6	0,2157	BEE
300	200	1	15,9	0,0369	BEN
300	250	2	18,3	0,0439	BEN
300	300	2	19,4	0,0569	BEN
300	350	2	20,5	0,0699	BEN
300	400	2	21,5	0,0829	BEN
300	450	3	23,8	0,0900	BEN
300	500	3	24,9	0,1030	BEN
300	600	3	27,0	0,1290	BEN
300	700	4	30,3	0,1490	BEN
300	800	4	32,5	0,1750	BEN
300	900	5	38,5	0,1950	BEE
300	1000	5	40,6	0,2210	BEE
300	1100	6	43,9	0,2410	BEE
300	1200	6	46,1	0,2670	BEE
350	200	1	16,8	0,0440	BEN
350	250	2	19,3	0,0524	BEN
350	300	2	20,4	0,0679	BEN
350	350	2	21,6	0,0834	BEN
350	400	2	22,7	0,0989	BEN
350	450	3	25,1	0,1073	BEN
350	500	3	26,2	0,1228	BEN
350	600	3	28,5	0,1538	BEN
350	700	4	32,0	0,1776	BEN
350	800	4	34,3	0,2086	BEN
350	900	5	40,5	0,2325	BEE
350	1000	5	42,7	0,2635	BEE
350	1100	6	46,3	0,2874	BEE
350	1200	6	48,5	0,3184	BEE
400	200	1	17,6	0,0511	BEN
400	250	2	20,3	0,0608	BEN
400	300	2	21,5	0,0788	BEN
400	350	2	22,6	0,0968	BEN
400	400	2	23,8	0,1148	BEN
400	450	3	26,4	0,1246	BEN
400	500	3	27,6	0,1426	BEN
400	600	3	30,0	0,1786	BEN
400	700	4	33,7	0,2063	BEN
400	800	4	36,1	0,2423	BEN
400	900	5	42,5	0,2700	BEE
400	1000	5	44,8	0,3060	BEE
400	1100	6	48,6	0,3337	BEE
400	1200	6	51,0	0,3697	BEE
450	200	1	18,4	0,0582	BEN
450	250	2	21,3	0,0693	BEN
450	300	2	22,5	0,0898	BEN
450	350	2	23,7	0,1103	BEN
450	400	2	25,0	0,1308	BEN
450	450	3	27,7	0,1419	BEN
450	500	3	28,9	0,1624	BEN
450	600	3	31,4	0,2034	BEN
450	700	4	38,0	0,2349	BEE
450	800	4	40,5	0,2759	BEE
450	900	5	44,5	0,3075	BEE
450	1000	5	47,0	0,3485	BEE
450	1100	6	50,9	0,3801	BEE
450	1200	6	53,4	0,4211	BEE
500	200	1	19,2	0,0653	BEN
500	250	2	22,2	0,0777	BEN
500	300	2	23,5	0,1007	BEN
500	350	2	24,8	0,1237	BEN
500	400	2	26,1	0,1467	BEN
500	450	3	29,0	0,1592	BEN
500	500	3	30,3	0,1822	BEN
500	600	3	32,9	0,2282	BEN
500	700	4	39,7	0,2636	BEE
500	800	4	42,3	0,3096	BEE
500	900	5	46,5	0,3450	BEE
500	1000	5	49,1	0,3910	BEE
500	1100	6	53,2	0,4264	BEE
500	1200	6	55,8	0,4724	BE
600	200	1	20,9	0,0795	BEN
600	250	2	24,2	0,0946	BEN
600	300	2	25,6	0,1226	BEN
600	350	2	27,0	0,1506	BEN
600	400	2	28,4	0,1786	BEN
600	450	3	31,6	0,1938	BEN
600	500	3	33,0	0,2218	BEN
600	600	3	35,8	0,2778	BEN

A	B	Number of blades	Weight (kg)	S _{ef} (m ²)	Actuator
600	700	4	43,1	0,3209	BEE
600	800	4	45,9	0,3769	BEE
600	900	5	50,5	0,4200	BEE
600	1000	5	53,3	0,4760	BEE
600	1100	6	57,9	0,5191	BE
600	1200	6	60,7	0,5751	BE
700	200	1	22,5	0,0937	BEN
700	250	2	26,1	0,1115	BEN
700	300	2	27,7	0,1445	BEN
700	350	2	29,2	0,1775	BEN
700	400	2	30,7	0,2105	BEN
700	450	3	34,2	0,2284	BEN
700	500	3	35,7	0,2614	BEN
700	600	3	38,8	0,3274	BEN
700	700	4	46,4	0,3782	BEE
700	800	4	49,5	0,4442	BEE
700	900	5	54,5	0,4950	BEE
700	1000	5	57,5	0,5610	BE
700	1100	6	62,5	0,6118	BE
700	1200	6	65,6	0,6778	BE
800	200	1	24,2	0,1079	BEN
800	250	2	28,1	0,1284	BEN
800	300	2	29,7	0,1664	BEN
800	350	2	31,4	0,2044	BEN
800	400	2	33,0	0,2424	BEN
800	450	3	36,8	0,2630	BEN
800	500	3	38,4	0,3010	BEN
800	600	3	41,7	0,3770	BEN
800	700	4	49,8	0,4355	BEE
800	800	4	53,1	0,5115	BEE
800	900	5	58,5	0,5700	BE
800	1000	5	61,8	0,6460	BE
800	1100	6	67,2	0,7045	BE
800	1200	6	70,5	0,7805	BE
900	200	1	25,8	0,1221	BEN
900	250	2	30,0	0,1453	BEN
900	300	2	31,8	0,1883	BEN
900	350	2	33,5	0,2313	BEN
900	400	2	35,3	0,2743	BEN
900	450	3	39,4	0,2976	BEN
900	500	3	41,1	0,3406	BEN
900	600	3	47,3	0,4266	BEE
900	700	4	53,1	0,4928	BEE
900	800	4	56,7	0,5788	BE
900	900	5	62,5	0,6450	BE
900	1000	5	66,0	0,7310	BE
900	1100	6	71,8	0,7972	BE
900	1200	6	75,4	0,8832	BE
1000	200	1	27,5	0,1363	BEN
1000	250	2	32,0	0,1622	BEN
1000	300	2	33,9	0,2102	BEN
1000	350	2	35,7	0,2582	BEN
1000	400	2	37,6	0,3062	BEN
1000	450	3	42,0	0,3322	BEN

A	B	Number of blades	Weight (kg)	S _{ef} (m ²)	Actuator
1000	500	3	43,9	0,3802	BEN
1000	600	3	50,3	0,4762	BEE
1000	700	4	56,5	0,5501	BE
1000	800	4	60,3	0,6461	BE
1000	900	5	66,5	0,7200	BE
1000	1000	5	70,2	0,8160	BE
1000	1100	6	76,5	0,8899	BE
1000	1200	6	80,2	0,9859	BE
1100	200	1	29,1	0,1505	BEN
1100	250	2	34,0	0,1791	BEN
1100	300	2	35,9	0,2321	BEN
1100	350	2	37,9	0,2851	BEN
1100	400	2	39,9	0,3381	BEN
1100	450	3	47,2	0,3668	BEE
1100	500	3	49,2	0,4198	BEE
1100	600	3	53,2	0,5258	BEE
1100	700	4	59,9	0,6074	BE
1100	800	4	63,8	0,7134	BE
1100	900	5	70,5	0,7950	BE
1100	1000	5	74,5	0,9010	BE
1100	1100	6	81,1	0,9826	BE
1100	1200	6	85,1	1,0886	BE
1200	200	1	30,8	0,1647	BEN
1200	250	2	35,9	0,1960	BEN
1200	300	2	38,0	0,2540	BEN
1200	350	2	40,1	0,3120	BEN
1200	400	2	42,2	0,3700	BEN
1200	450	3	49,8	0,4014	BEE
1200	500	3	51,9	0,4594	BEE
1200	600	3	56,1	0,5754	BE
1200	700	4	63,2	0,6647	BE
1200	800	4	67,4	0,7807	BE
1200	900	5	74,5	0,8700	BE
1200	1000	5	78,7	0,9860	BE
1200	1100	6	85,8	1,0753	BE
1200	1200	6	90,0	1,1913	BE

Example, how to calculate effective area and size of SEDS-L damper, when knowing air volume in (m³/s) or (m³/h) on damper. Maximum allowed air velocity on SEDS-L is 12 (m/s).

$$S_{ef} = Q / v$$

Q - air volume (m³/s)
S_{ef} - effective free area of damper (m²)
v - air velocity on damper (m/s)

Example:

Air volume needed is 26 000 m³/h

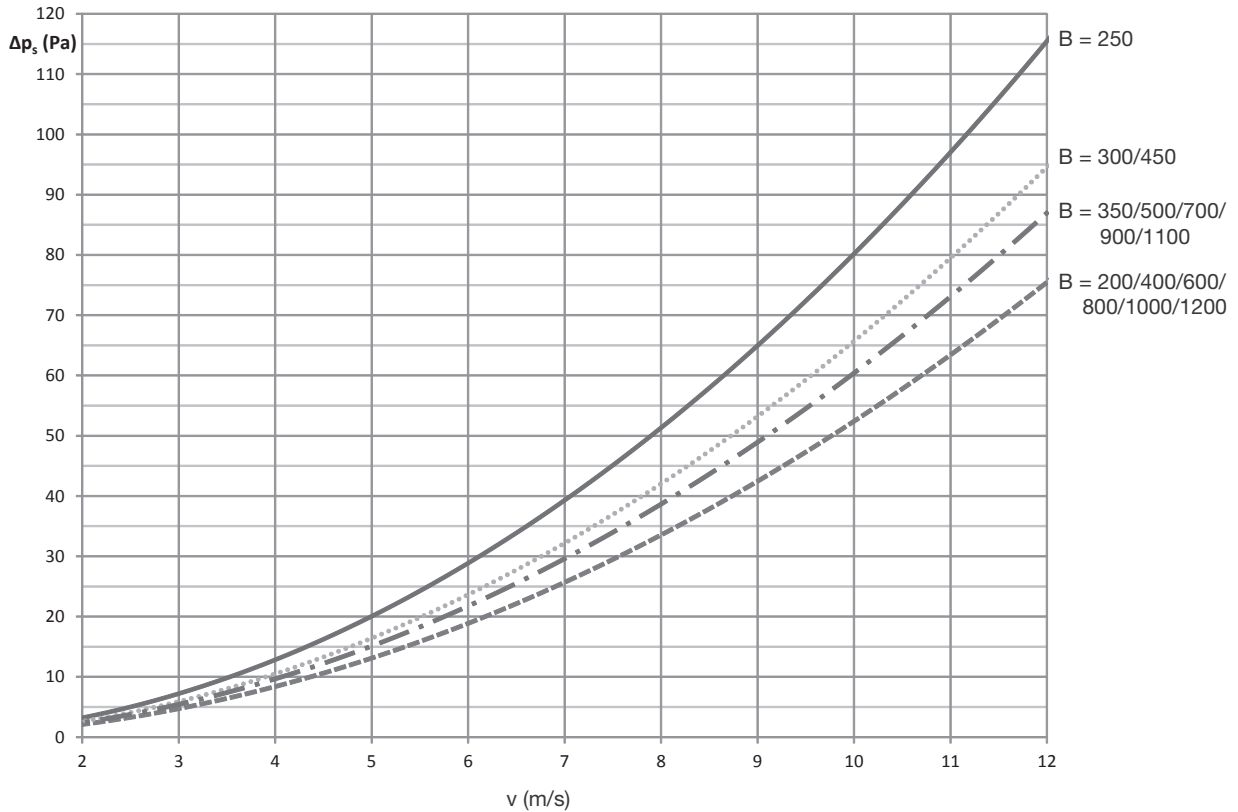
$$26000 / 3600 = 7,222 \text{ m}^3/\text{s}$$

$$7,222 / 12 = 0,602 \text{ m}^2 \text{ is min. effective free area (S}_{ef}\text{)}$$

Find the value S_{ef} in the tab. 7. The effective area has to be the same or bigger. There will be more options of damper, sizes AxB.

4. Technical Data

4.1 Pressure Drops



Air density $\rho=1,2 \text{ kg/m}^3$

- Δp_s - pressure drop (Pa)
- v - air velocity (m/s)
- B - height of the damper

4.2 Noise Data

Sound power level corrected with filter A

L_w dB(A) – sound power level

v (m/s) – air velocity in the free cross section ($A \times B$)

Tab. 4. Sound power level L_w in dB(A) for $B=250/300/450$ mm, damper fully open

v (m/s)	Frequency of octave band f (Hz)								Total
	63	125	250	500	1000	2000	4000	8000	
2	16	24	29	29	28	26	23	9	35
3	25	33	38	38	37	35	32	18	44
4	32	40	45	45	44	42	39	25	51
5	38	46	51	51	50	48	45	31	57
6	42	50	55	55	54	52	49	35	61
7	46	54	59	59	58	56	53	39	65
8	49	57	62	62	61	59	56	42	68
9	50	58	63	63	62	60	57	43	69
10	53	61	66	66	65	63	60	46	72
11	55	63	68	68	67	65	62	48	74
12	57	65	70	70	69	67	64	50	76

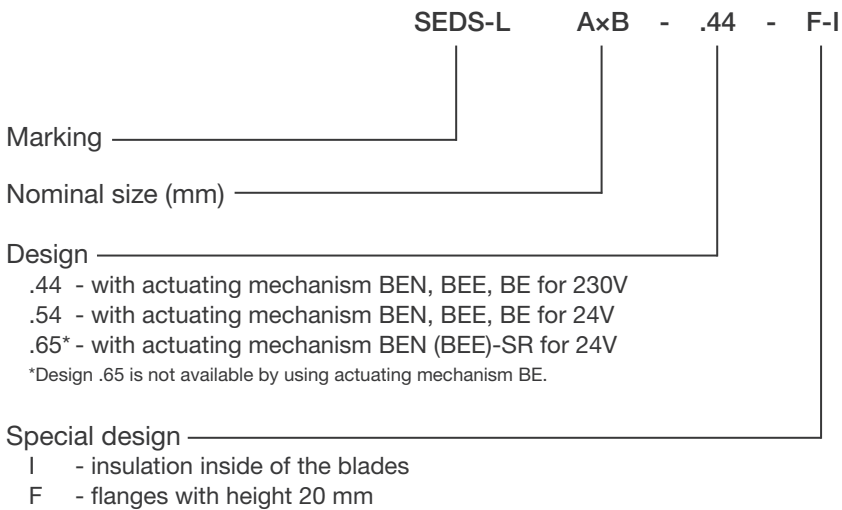
Tab. 5. Sound power level Lw in dB(A) for B=350/500/700/900/1100 mm, damper fully open

v (m/s)	Frequency of octave band f (Hz)								
	63	125	250	500	1000	2000	4000	8000	Kokku
2	15	23	28	28	27	25	22	8	34
3	24	32	37	37	36	34	31	17	43
4	31	39	44	44	43	41	38	24	50
5	36	44	49	49	48	46	43	29	55
6	41	49	54	54	53	51	48	34	60
7	45	53	58	58	57	55	52	38	64
8	48	56	61	61	60	58	55	41	67
9	49	57	62	62	61	59	56	42	68
10	51	59	64	64	63	61	58	44	70
11	53	61	66	66	65	63	60	46	72
12	55	63	68	68	67	65	62	48	74

Tab. 6. Sound power level Lw in dB(A) for B=200/400/600/800/1000/1200 mm, damper fully open

v (m/s)	Frequency of octave band f (Hz)								
	63	125	250	500	1000	2000	4000	8000	Yhteensä
2	13	21	26	26	25	23	20	6	32
3	21	29	34	34	33	31	28	14	40
4	28	36	41	41	40	38	35	21	47
5	34	42	47	47	46	44	41	27	53
6	38	46	51	51	50	48	45	31	57
7	42	50	55	55	54	52	49	35	61
8	45	53	58	58	57	55	52	38	64
9	47	55	60	60	59	57	54	40	66
10	48	56	61	61	60	58	55	41	67
11	50	58	63	63	62	60	57	43	69
12	52	60	65	65	64	62	59	45	71

5. Product Marking



Example: SEDS-L 200x200 -.44 - F-I

Product label placed on the damper body:

MANDÍK ®		MANDÍK, a.s. Dobříšská 550, 267 24 Hostomice, Czech Republic		 MANUAL
SMOKE EXTRACTION DAMPER - SINGLE SEDS-L				
DIMENSION:		ACTUATING SYSTEM:		
YEAR/SER.NO.:		WEIGHT (kg):		
FIRE PROTEC. CLASS: E600 120 (ve -i ↔ o) S1500CmodMAsingle				
TPM 121/16	Cert. No.: 1391-CPR-2020/0187, DoP: PM/SEDS-L/01/22/1	EN 12101-8:2011	 1391	

Installation

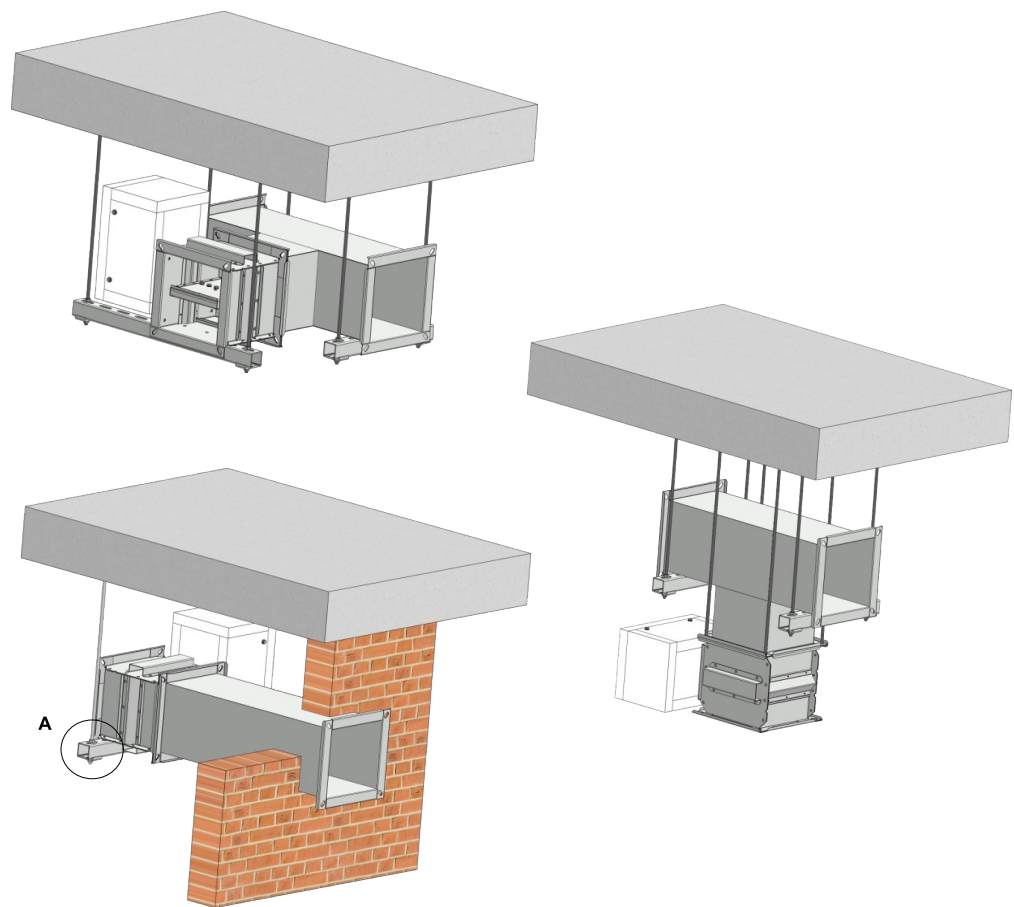
6. Placement and Assembly

Smoke extraction dampers single are designed to remove heat and combustion products (e.g. smoke) from single fire compartment according EN1366-9.

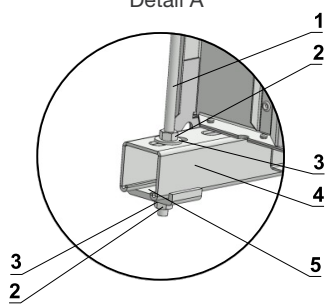
Smoke extraction dampers single are designed for installation with horizontal or vertical axis of the blades. Backtoback smoke exhaust duct has to be hung or supported so as all load transfer from the backtoback smoke exhaust duct to the damper is absolutely excluded. To provide needed access space to the control device, all other objects must be situated at least 350 mm from the control parts of the damper.

During installation the damper blade must be in position CLOSED. The damper body should not be deformed in the course of installation. Once the damper built in, its blade should not grind on the damper body during opening or closing.

Fig. 12. Installation Examples

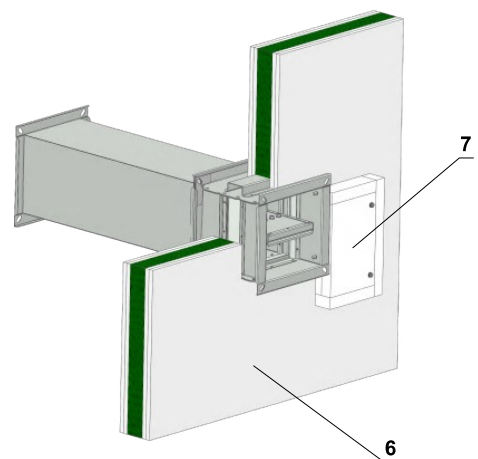


Detail A



Position:

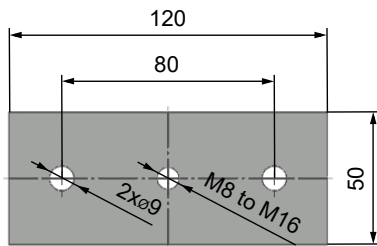
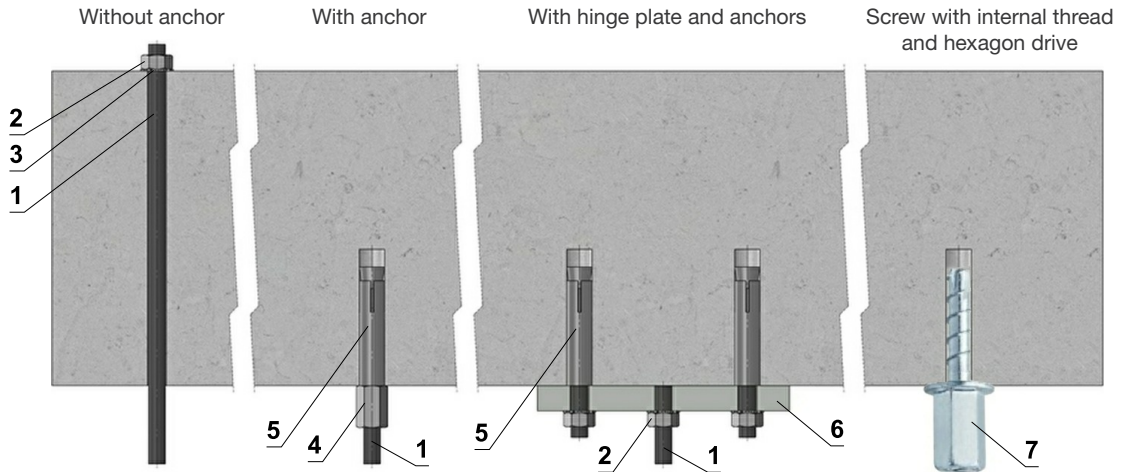
- 1 – Damper hinge
- 2 – Nut
- 3 – Washer
- 4 – Profile C
- 5 – Washer C
- 6 – Wall construction without fire resistance
- 7 – Atypical protection box with access to actuator from side, not as standard from the top



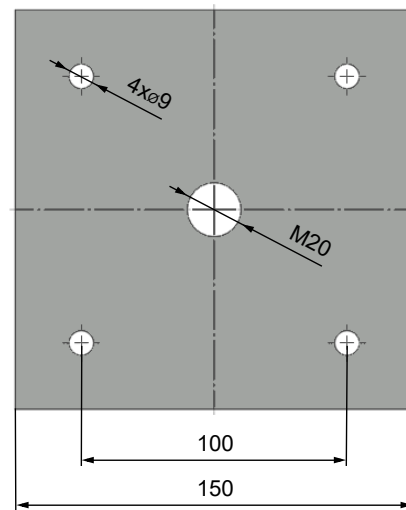
7. Suspension Systems

7.1 Mounting to the ceiling wall

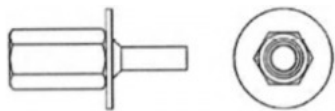
Fig. 13. Mounting to the ceiling wall



Hinge plates



Screw with internal thread and hexagon drive



Load capacities of threaded hanger rod F (N) at the required fire resistance 90 minutes

Size	A _s (mm ²)	Weight G (kg)	
		for 1 piece	for 1 pair
M8	36,6	22	44
M10	58	35	70
M12	843	52	104
M14	115	70	140
M16	157	96	192
M18	192	117	234
M20	245	150	300

Position:

- 1 – Threaded rod M8 – M20
- 2 – Nut
- 3 – Washer
- 4 – Coupling Nut
- 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)

8. Inspection and Testing

The appliance is constructed and preset by the manufacturer, its operation is dependent on proper installation and adjustment.

9. Transportation and Storage

Dampers are transported by box freight vehicles without direct weather impact, there must not occur any shocks and ambient temperature must not exceed +40°C. Dampers must be protected against mechanic damages 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 -5°C to +40°C and maximum relative humidity 80%. Dampers must be protected against mechanic damages when transported and manipulated.

10. Assembly, Attendance, Maintenance and Revisions

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 exhaust 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

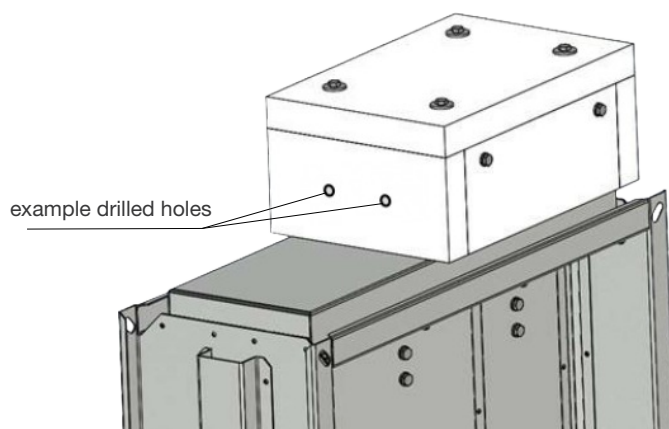
Without power supply, the damper can be operated manually and fixed in any required position.

10.1 Electrical Connection of the Actuator in Protection Box

Protection Box Without Slot of 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.

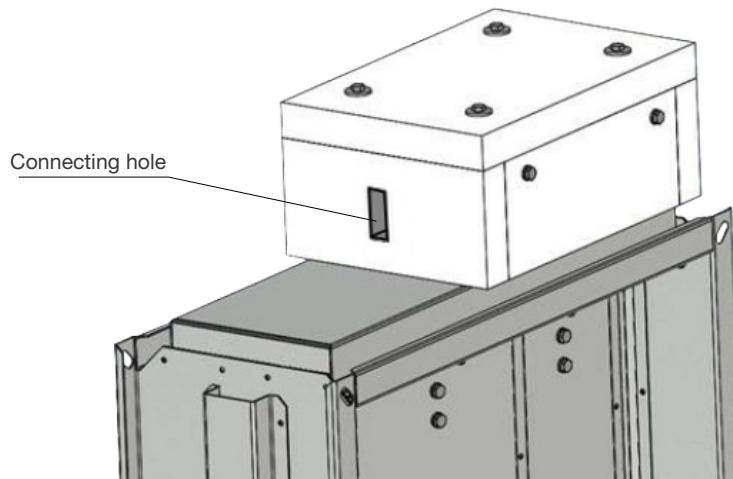
Fig. 14. Example of position of holes in the wall of the box, without pre-manufactured slot



- Use drill (drill size acc. To suit connecting cable $\varnothing + 2$ mm for seal up by mastic) and make two holes (see fig. 14). 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.

Protection Box with Slot Including Intumescent Tapes

Fig. 15. Example of pre-manufactured slot in the insulating box, with intumescent tape inside slot



To connect the actuator, use the prepared hole in the box, which is equipped with intumescent tape. If necessary, the hole can be additionally filled with fire-resistant sealant.

11. 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.

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.

Check of damper blade displacement can be realized after actuating mechanism supply connection or signal connection from higher level control systems. Blade displacement from position "OPEN" to position "CLOSED" and return displacement is checked.

12. Spare Parts

Spare parts are supplied only on basis of an order.



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