CE

TPM 121/16
Revision 2
Valid from 29/5/19

EN 12101-8

MANDÍK®

SQUARE SMOKE EXTRACTION DAMPER - SINGLE

SEDS-L

These technical specifications state a row of manufactured sizes and models of smoke extraction dampers - single (further only dampers) SEDS-L. It is valid for production, designing, ordering, delivery, maintenance and operation.

I. CONTENT

II. GENERAL INFORMATION

1. Description

1.1. 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_{edw} - i↔o) S1500C_{10000}MAsingle

The duct can be ended by KMM (TPM 002/96) grilles.

Fig. 1 Damper SEDS-L

1.2. 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 10000 acc. to EN 12101-8
- ES Certificate No. 1391-CPR-2018/0106
- Declaration of Perfomance No. PM/SEDS-L/01/16/1

1.3. 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 12 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 72133.

Temperature in the place of installation is permitted to range from - 20°C to + 50°C.

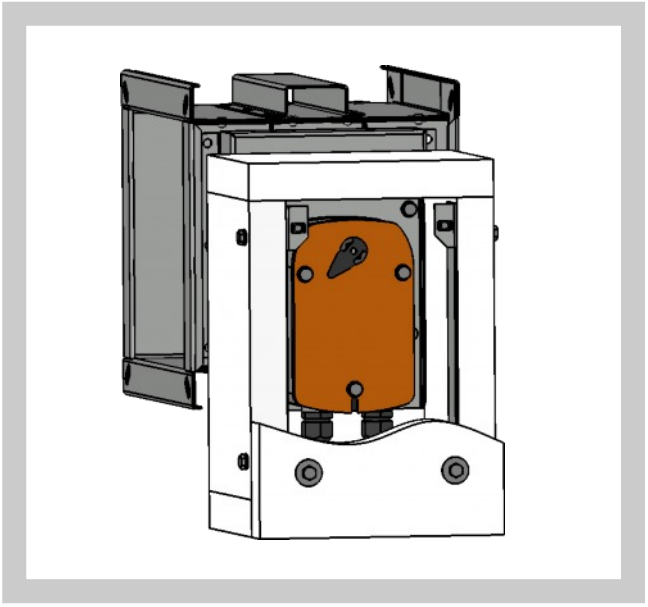
2. Design

2.1. Design with actuating mechanism

Design .44, .54

SEDS-L is equipped by actuating mechanism Belimo BLE24 (BE24-12) for 24V supply or BLE230 (BE230-12) for 230V supply. After being connected to power supply the actuating mechanism displaces the damper blade into operation position "OPEN" or „CLOSED“ (according to method of connection, see connection diagram). Running time is max. 60s. If is power supply cut off, actuating mechanism is stopped in actual position. The crank handle supplied with the actuator allows it to be operated manually. Signaling of the damper blade positions "OPEN" and "CLOSED" is provided by means of two integrated, invariably set terminal switches.

Fig. 2 Damper SEDS-L - actuating mechanism in the cover



Tab. 2.1.1. Actuating mechanism BELIMO BLE 24(-ST), BLE 230

Actuating mechanism **BELIMO**	**BLE 24(-ST)**	**BLE230**
Nominal voltage	AC 24V 50/60Hz DC 24 V	AC 230 V 50/60Hz
Power consumption - motoring - holding	7,5 W < 0,5 W	5W < 1 W
Dimensioning	9 VA (Imax 2,7 A @ 5 ms)	12 VA (Imax 6 A @ 5 ms)
Protection class	III	II
Degree of protection	IP 54	
Running time for 95°	< 30 s	
Ambient temperature range Non-operating temperature	- 30 °C … + 50 °C - 40 °C … + 80 °C	
Connecting - motor - auxiliary switch	cable 1 m, 3 x 0,75 mm² cable 1 m, 6 x 0,75 mm² (BLE 24-ST) with plug-in connectors	

Fig. 3 Actuating mechanism BELIMO BLE 24(-ST)

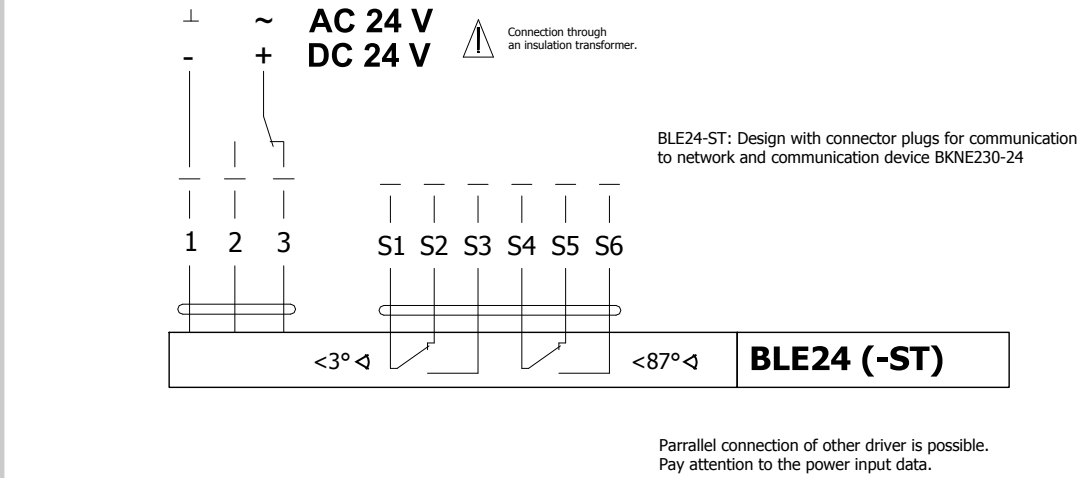
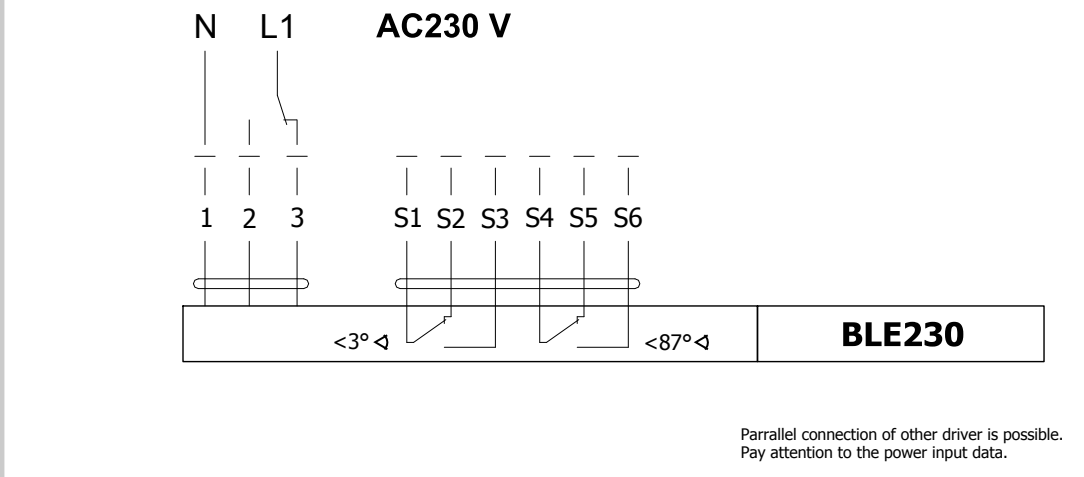


Fig. 4 Actuating mechanism BELIMO BLE 230



Tab. 2.1.2. Actuating mechanism BELIMO BE 24-12(-ST), BE 230-12

Actuating mechanism BELIMO	BE 24-12 (-ST)	BE230-12
Nominal voltage	AC 24V 50/60Hz DC 24 V	AC 230 V 50/60Hz
Power consumption - motoring - holding	12 W 0,5 W	8W 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	
Running time for 95°	< 60 s	
Ambient temperature range Non-operating temperature	- 30 °C … + 50 °C - 40 °C … + 80 °C	
Connecting - motor - auxiliary switch	cable 1 m, 3 x 0,75 mm² cable 1 m, 6 x 0,75 mm² (BE 24-ST) with plug-in connectors	

Fig. 5 Actuating mechanism BELIMO BE 24-12(-ST)

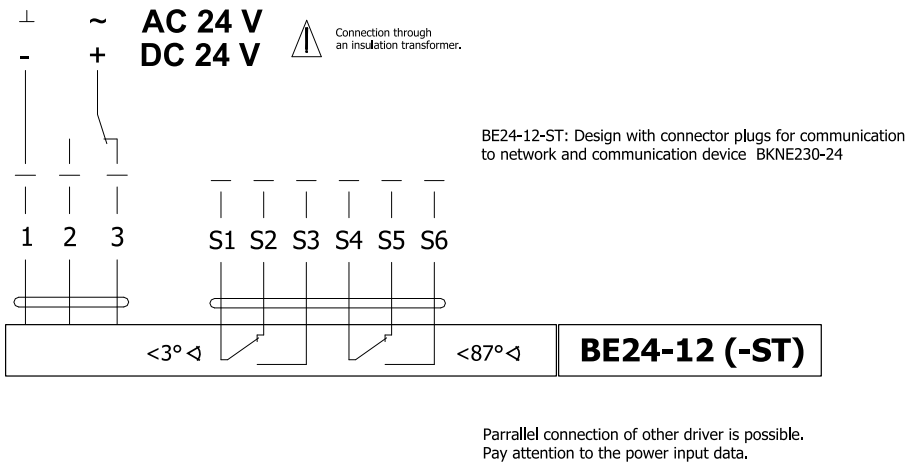
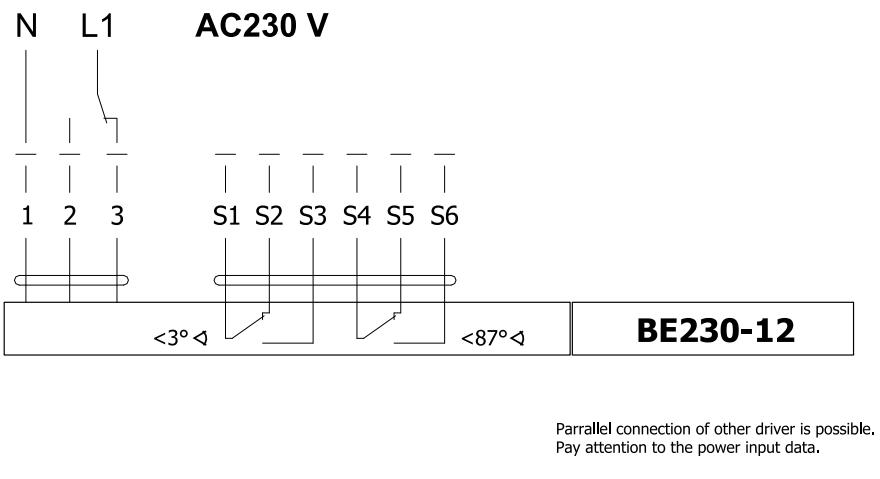


Fig. 6 Actuating mechanism BELIMO BE 230-12



2.2. Design with the communication and power supply unit

Design .66

Design with the communication and power supply unit BKNE230-24 and the actuating mechanism BLE24(BE24-12)-ST.

BKNE230-24 functions as a decentralized network device for supplying the actuating mechanism BLE24(BE24-12)-ST on one hand and on the other hand it transmits signals from communication and control device BKSE24-6.

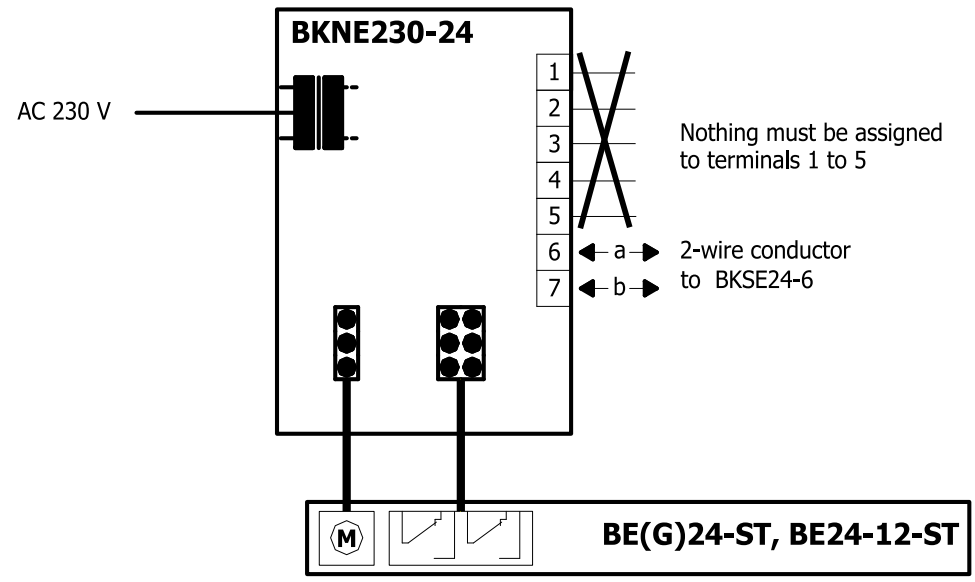
It simplifies electrical wiring and interconnection of dampers. It facilitates on site check and enables central control and checks of fire damper by means of a simple 2-conductor wiring. BKNE230-24 signals the damper position „OPEN"/„CLOSED" (from switches on the actuator) and any fault alarms to the BKSE24-6 unit. It also receives positioning commands from the control unit and triggers the actuator to the required position. The last control command is retained troughout temporary power failures.

The BKNE230-24 unit monitors the positions of the switches on the actuator, its running time and the exchange of data with the control and monitoring unit BKSE24-6. It also monitors the actuator current and the power supply. In order to make installation as simple as possible the smoke extraction damper actuators ...-ST are fitted with plug connectors that can be inserted directly into the BKNE230-24 unit.

The 2-wire conductor must be connected to screw terminals 6 and 7. It is recommended that a fire alarm signal cable suitable for the application be used for the 2-wire conductor. It is essential to ensure the correct polarity.

More information in catalogue Belimo.

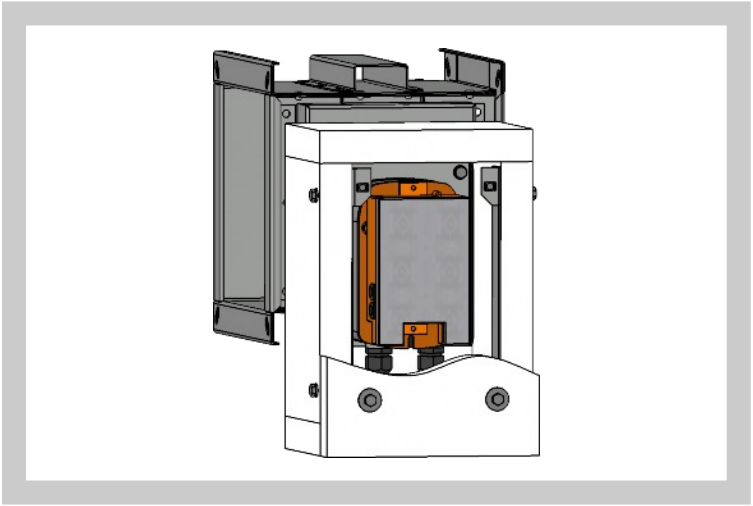
Fig. 7 Communication and power supply unit BKNE 230-24



Displays

LED	Condition	Function
yellow	flashing light	damper moving to OPEN
yellow	steady light	damper open
green	flashing light	damper moving to CLOSED
green	steady light	damper closed
yellow or green	flashing at double frequency	fault
yellow+green	dark	power failure

Fig. 8 Damper SEDS-L - actuating machanism and BKNE in the cover



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

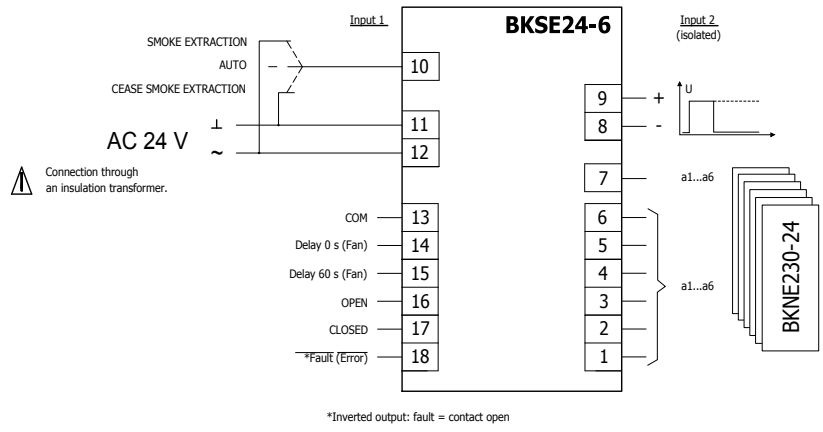
Communication and supply device	BKNE 230-24
Nominal voltage	AC 230V 50/60Hz
Power consumption	10 W (including actuating mechanism)
Dimensioning	19 VA (including actuating mechanism)
Degree of protection	II
Ambient temperature range Non-operating temperature	- 30 °C … + 50 °C - 40 °C … + 80 °C
Connecting - net - actuator - terminal board	cable 1 m without plug 6-pole connector, 3-pole connector screw terminals for cable 2x1,5 mm²

2.3. Communication and control devices

BKSE24-6 indicates operating status and fault signals for the smoke extraction dampers. The auxiliary contacts that are incorporated also allow functions to be signaled or passed on to higherlevel control systems. The signals from the BKNE230-24 unit are received by the BKSE24-6 unit and evaluated individually. All BKNE230-24 units are triggered simultaneously. To BKSE24-6 can be connected max. 6 BKNE230-24.

Communication is via the 2-wire conductor. Correct operation of the dampers is indicated by means of two LEDs. The operating status of the SBSE-Control system and any faults are also indicated by this LED and the corresponding fault LED.
The BKSE24-6 unit can be clipped directly to a 35 mm DIN mounting rail and connected by means of two 9-pole plug-in terminals. The BKSE24-6 unit isn´t in the scope of delivery MANDIK company.

Fig. 9 Communication and control devices BKSE 24-6



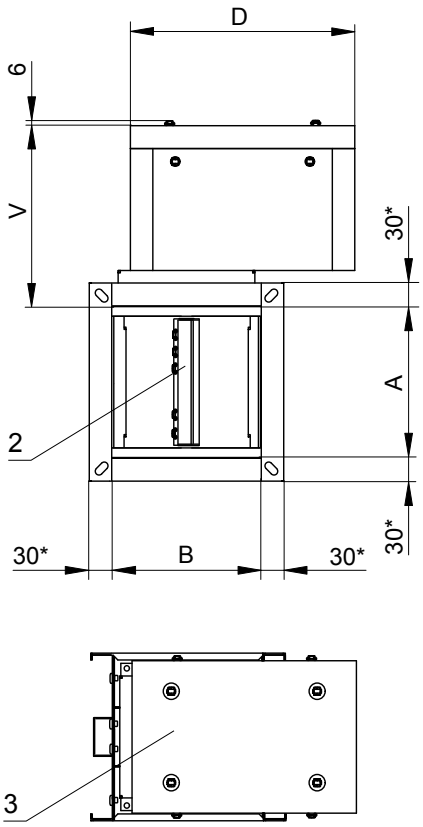
Tab. 2.3.1. **Communication and control devices BKSE 24-6**

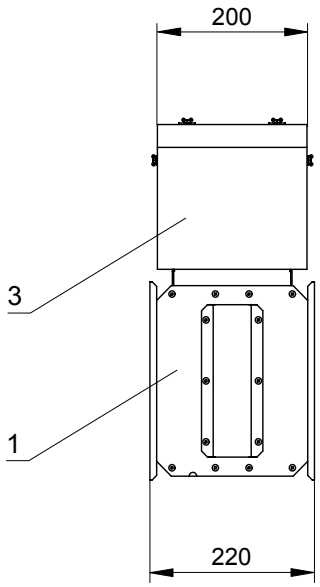
Communication and control devices	**BKSE 24-6**
Nominal voltage	AC 24 V 50/60Hz
Power consumption	3,5 W (operating position)
Dimensioning	5,5 VA 18 VA (Imax 6.4 A @ 2.5 ms)
Protection class	III
Degree of protection	IP 20
Ambient temperature range	0 … + 50 °C
Connecting	screw terminals for cable 2x1,5 mm²

3. Dimensions, weights

3.1. Dimensions

Fig. 10 Damper SEDS-L





* standard height of the flange

Position:

1 Damper body
2 Damper blade
3 Actuating mechanism cover

Actuating mechanism	**V** [mm]	**D** [mm]
BLE	176,5	300
BE	186,5	380
BLE + BKNE	236,5	300
BE + BKNE	251,5	380

3.2. Weights and effective area cross section

Tab. 3.2.1. Weights and effective area cross section

Size AxB	Number of blades	Weight [kg]	Sef [m²]	Actuating mechanism BELIMO	Size AxB	Number of blades	Weight [kg]	Sef [m²]	Actuating mechanism BELIMO
200 x 200	1	14.3	0.0227	BLE	**400 x 200**	1	17.6	0.0511	BLE
x 250	2	16.4	0.0270	BLE	**x 250**	2	20.3	0.0608	BLE
x 300	2	17.3	0.0350	BLE	**x 300**	2	21.5	0.0788	BLE
x 350	2	18.3	0.0430	BLE	**x 350**	2	22.6	0.0968	BLE
x 400	2	19.2	0.0510	BLE	**x 400**	2	23.8	0.1148	BLE
x 450	3	21.2	0.0554	BLE	**x 450**	3	26.4	0.1246	BLE
x 500	3	22.2	0.0634	BLE	**x 500**	3	27.6	0.1426	BLE
x 600	3	24.1	0.0794	BLE	**x 600**	3	30.0	0.1786	BLE
x 700	4	27.0	0.0917	BLE	**x 700**	4	33.7	0.2063	BLE
x 800	4	28.9	0.1077	BLE	**x 800**	4	36.1	0.2423	BLE
x 900	5	34.5	0.1200	BE	**x 900**	5	42.5	0.2700	BE
x 1000	5	36.4	0.1360	BE	**x 1000**	5	44.8	0.3060	BE
x 1100	6	39.3	0.1483	BE	**x 1100**	6	48.6	0.3337	BE
x 1200	6	41.2	0.1643	BE	**x 1200**	6	51.0	0.3697	BE
250 x 200	1	15.1	0.0298	BLE	**450 x 200**	1	18.4	0.0582	BLE
x 250	2	17.4	0.0355	BLE	**x 250**	2	21.3	0.0693	BLE
x 300	2	18.4	0.0460	BLE	**x 300**	2	22.5	0.0898	BLE
x 350	2	19.4	0.0565	BLE	**x 350**	2	23.7	0.1103	BLE
x 400	2	20.4	0.0670	BLE	**x 400**	2	25.0	0.1308	BLE
x 450	3	22.5	0.0727	BLE	**x 450**	3	27.7	0.1419	BLE
x 500	3	23.5	0.0832	BLE	**x 500**	3	28.9	0.1624	BLE
x 600	3	25.5	0.1042	BLE	**x 600**	3	31.4	0.2034	BLE
x 700	4	28.7	0.1203	BLE	**x 700**	4	38.0	0.2349	BE
x 800	4	30.7	0.1413	BLE	**x 800**	4	40.5	0.2759	BE
x 900	5	36.5	0.1575	BE	**x 900**	5	44.5	0.3075	BE
x 1000	5	38.5	0.1785	BE	**x 1000**	5	47.0	0.3485	BE
x 1100	6	41.6	0.1947	BE	**x 1100**	6	50.9	0.3801	BE
x 1200	6	43.6	0.2157	BE	**x 1200**	6	53.4	0.4211	BE
300 x 200	1	15.9	0.0369	BLE	**500 x 200**	1	19.2	0.0653	BLE
x 250	2	18.3	0.0439	BLE	**x 250**	2	22.2	0.0777	BLE
x 300	2	19.4	0.0569	BLE	**x 300**	2	23.5	0.1007	BLE
x 350	2	20.5	0.0699	BLE	**x 350**	2	24.8	0.1237	BLE
x 400	2	21.5	0.0829	BLE	**x 400**	2	26.1	0.1467	BLE
x 450	3	23.8	0.0900	BLE	**x 450**	3	29.0	0.1592	BLE
x 500	3	24.9	0.1030	BLE	**x 500**	3	30.3	0.1822	BLE
x 600	3	27.0	0.1290	BLE	**x 600**	3	32.9	0.2282	BLE
x 700	4	30.3	0.1490	BLE	**x 700**	4	39.7	0.2636	BE
x 800	4	32.5	0.1750	BLE	**x 800**	4	42.3	0.3096	BE
x 900	5	38.5	0.1950	BE	**x 900**	5	46.5	0.3450	BE
x 1000	5	40.6	0.2210	BE	**x 1000**	5	49.1	0.3910	BE
x 1100	6	43.9	0.2410	BE	**x 1100**	6	53.2	0.4264	BE
x 1200	6	46.1	0.2670	BE	**x 1200**	6	55.8	0.4724	BE
350 x 200	1	16.8	0.0440	BLE	**600 x 200**	1	20.9	0.0795	BLE
x 250	2	19.3	0.0524	BLE	**x 250**	2	24.2	0.0946	BLE
x 300	2	20.4	0.0679	BLE	**x 300**	2	25.6	0.1226	BLE
x 350	2	21.6	0.0834	BLE	**x 350**	2	27.0	0.1506	BLE
x 400	2	22.7	0.0989	BLE	**x 400**	2	28.4	0.1786	BLE
x 450	3	25.1	0.1073	BLE	**x 450**	3	31.6	0.1938	BLE
x 500	3	26.2	0.1228	BLE	**x 500**	3	33.0	0.2218	BLE
x 600	3	28.5	0.1538	BLE	**x 600**	3	35.8	0.2778	BLE
x 700	4	32.0	0.1776	BLE	**x 700**	4	43.1	0.3209	BE
x 800	4	34.3	0.2086	BLE	**x 800**	4	45.9	0.3769	BE
x 900	5	40.5	0.2325	BE	**x 900**	5	50.5	0.4200	BE
x 1000	5	42.7	0.2635	BE	**x 1000**	5	53.3	0.4760	BE
x 1100	6	46.3	0.2874	BE	**x 1100**	6	57.9	0.5191	BE
x 1200	6	48.5	0.3184	BE	**x 1200**	6	60.7	0.5751	BE

Size AxB	Number of blades	Weight [kg]	Sef [m²]	Actuating mechanism BELIMO	Size AxB	Number of blades	Weight [kg]	Sef [m²]	Actuating mechanism BELIMO
700 x 200	1	22.5	0.0937	BLE	**1000 x 200**	1	27.5	0.1363	BLE
x 250	2	26.1	0.1115	BLE	**x 250**	2	32.0	0.1622	BLE
x 300	2	27.7	0.1445	BLE	**x 300**	2	33.9	0.2102	BLE
x 350	2	29.2	0.1775	BLE	**x 350**	2	35.7	0.2582	BLE
x 400	2	30.7	0.2105	BLE	**x 400**	2	37.6	0.3062	BLE
x 450	3	34.2	0.2284	BLE	**x 450**	3	42.0	0.3322	BLE
x 500	3	35.7	0.2614	BLE	**x 500**	3	43.9	0.3802	BLE
x 600	3	38.8	0.3274	BLE	**x 600**	3	50.3	0.4762	BE
x 700	4	46.4	0.3782	BE	**x 700**	4	56.5	0.5501	BE
x 800	4	49.5	0.4442	BE	**x 800**	4	60.3	0.6461	BE
x 900	5	54.5	0.4950	BE	**x 900**	5	66.5	0.7200	BE
x 1000	5	57.5	0.5610	BE	**x 1000**	5	70.2	0.8160	BE
x 1100	6	62.5	0.6118	BE	**x 1100**	6	76.5	0.8899	BE
x 1200	6	65.6	0.6778	BE	**x 1200**	6	80.2	0.9859	BE
800 x 200	1	24.2	0.1079	BLE	**1100 x 200**	1	29.1	0.1505	BLE
x 250	2	28.1	0.1284	BLE	**x 250**	2	34.0	0.1791	BLE
x 300	2	29.7	0.1664	BLE	**x 300**	2	35.9	0.2321	BLE
x 350	2	31.4	0.2044	BLE	**x 350**	2	37.9	0.2851	BLE
x 400	2	33.0	0.2424	BLE	**x 400**	2	39.9	0.3381	BLE
x 450	3	36.8	0.2630	BLE	**x 450**	3	47.2	0.3668	BE
x 500	3	38.4	0.3010	BLE	**x 500**	3	49.2	0.4198	BE
x 600	3	41.7	0.3770	BLE	**x 600**	3	53.2	0.5258	BE
x 700	4	49.8	0.4355	BE	**x 700**	4	59.9	0.6074	BE
x 800	4	53.1	0.5115	BE	**x 800**	4	63.8	0.7134	BE
x 900	5	58.5	0.5700	BE	**x 900**	5	70.5	0.7950	BE
x 1000	5	61.8	0.6460	BE	**x 1000**	5	74.5	0.9010	BE
x 1100	6	67.2	0.7045	BE	**x 1100**	6	81.1	0.9826	BE
x 1200	6	70.5	0.7805	BE	**x 1200**	6	85.1	1.0886	BE
900 x 200	1	25.8	0.1221	BLE	**1200 x 200**	1	30.8	0.1647	BLE
x 250	2	30.0	0.1453	BLE	**x 250**	2	35.9	0.1960	BLE
x 300	2	31.8	0.1883	BLE	**x 300**	2	38.0	0.2540	BLE
x 350	2	33.5	0.2313	BLE	**x 350**	2	40.1	0.3120	BLE
x 400	2	35.3	0.2743	BLE	**x 400**	2	42.2	0.3700	BLE
x 450	3	39.4	0.2976	BLE	**x 450**	3	49.8	0.4014	BE
x 500	3	41.1	0.3406	BLE	**x 500**	3	51.9	0.4594	BE
x 600	3	47.3	0.4266	BE	**x 600**	3	56.1	0.5754	BE
x 700	4	53.1	0.4928	BE	**x 700**	4	63.2	0.6647	BE
x 800	4	56.7	0.5788	BE	**x 800**	4	67.4	0.7807	BE
x 900	5	62.5	0.6450	BE	**x 900**	5	74.5	0.8700	BE
x 1000	5	66.0	0.7310	BE	**x 1000**	5	78.7	0.9860	BE
x 1100	6	71.8	0.7972	BE	**x 1100**	6	85.8	1.0753	BE
x 1200	6	75.4	0.8832	BE	**x 1200**	6	90.0	1.1913	BE

If is used the communication and supply device BKNE230-24, the weight is higher by 0,68 kg.

Example, how to calculate effective area and size of SEDS-L damper [AxB], when knowing air volume in [m^3/s] or [m^3/h] on damper. Maximum allowed air velocity on SEDS-L is 12 [m/s].

Formula:

Sef = Q / v

Q … air volume [m^3/s]

Sef … effective free area of damper [m^2]

v … air velocity on damper [m/s]

Example:

Air volume needed is 26000 m^3/h

26000 / 3600 = 7,222 m^3/s

7,222 / 12 = 0,602 m^2 is min. effective free area [Sef]

Find the value Sef in the table 3.2.1. The effective are has to be the same or bigger. There will be more options of damper, sizes AxB.

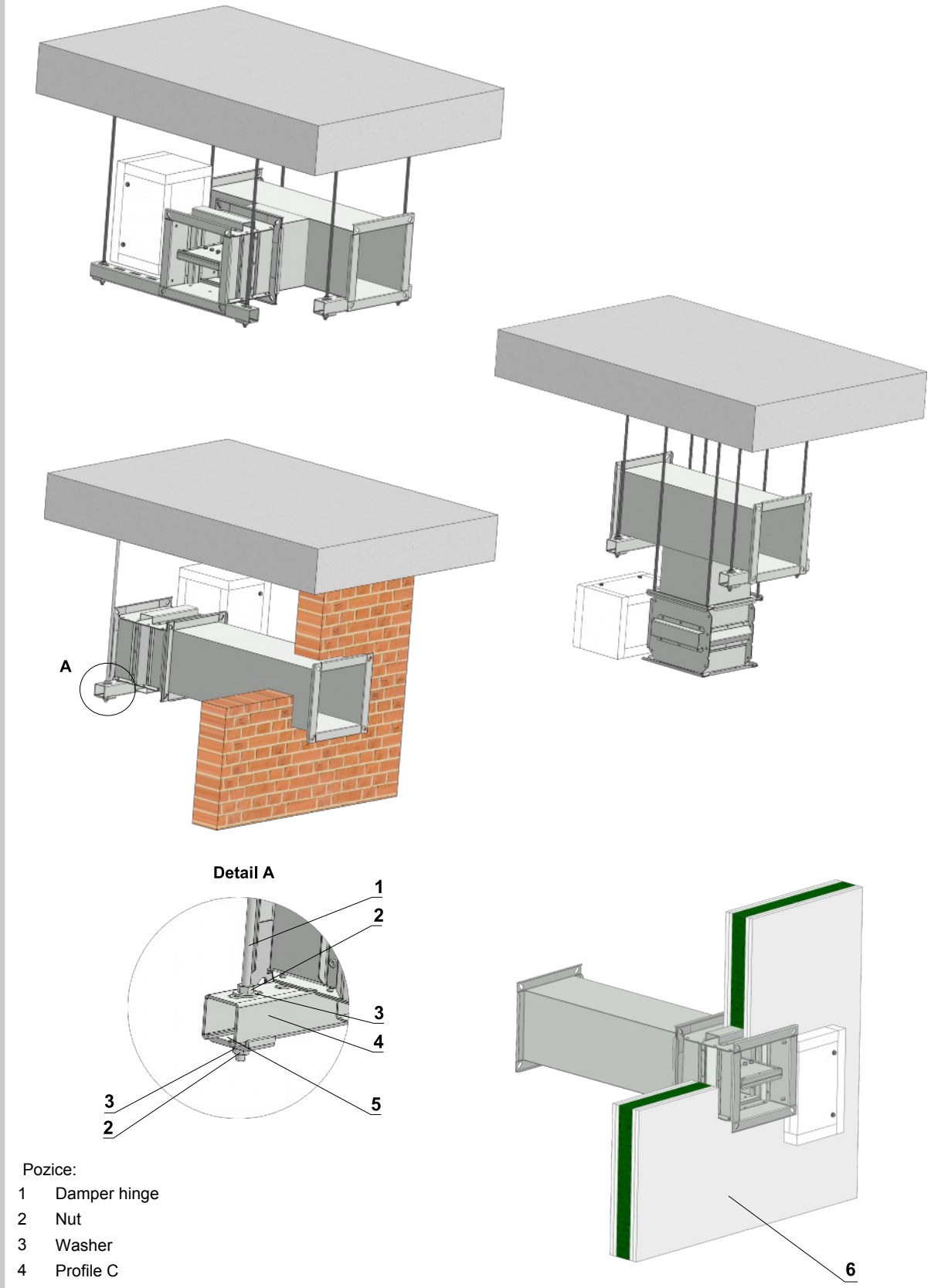
4. Placemant and Assembly

4.1. 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.

4.2. 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.

4.3. Installation examples

Fig. 11 Installatiom examples



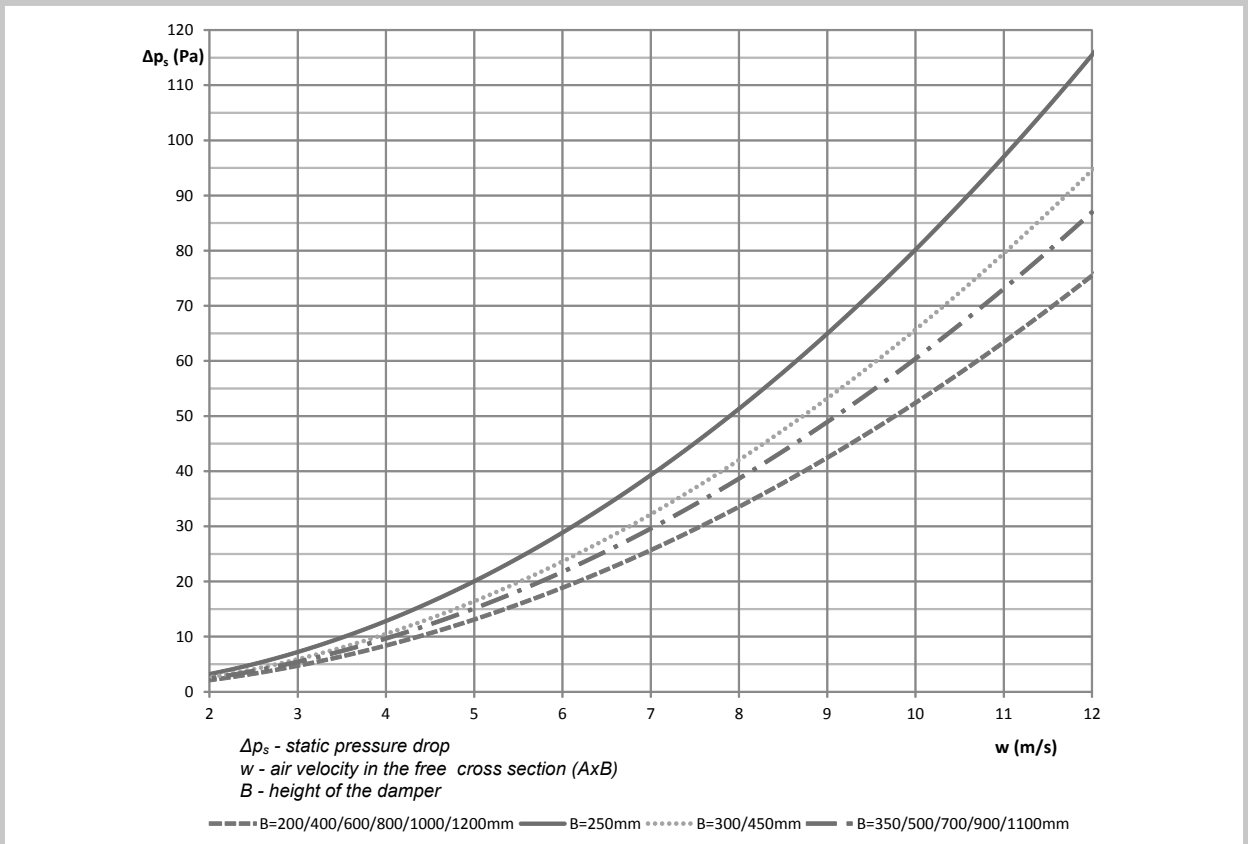
Pozice:

1 Damper hinge
2 Nut
3 Washer
4 Profile C
5 Washer C
6 Wall construction without fire resistance

III. TECHNICAL DATA

5. Pressure drops

Diagram 1 Pressure drops of the damper was determined for air density 1,2 kg/m^3



6. Noise data

6.1. Sound power level corrected with filter A

Tab. 6.1.1. Sound power level Lw in dB(A) for B=250/300/450mm, damper fully open

	f (Hz)	63	125	250	500	1000	2000	4000	8000	Total
w (m/s)	**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**

w - air velocity in the free cross section (AxB) - i.e. before blades
f - frequency of octave band

Tab. 6.1.2. Sound power level Lw in dB(A) for B=350/500/700/900/1100mm, damper fully open

	f (Hz)	63	125	250	500	1000	2000	4000	8000	Total
w (m/s)	**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**

w - air velocity in the free cross section (AxB) - i.e. before blades
f - frequency of octave band

Tab. 6.1.3. Sound power level Lw in dB(A) for B=200/400/600/800/1000/1200mm, damper fully open

	f (Hz)	63	125	250	500	1000	2000	4000	8000	Total
w (m/s)	**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**

w - air velocity in the free cross section (AxB) - i.e. before blades
f - frequency of octave band

IV. MATERIAL, FINISHING

7. Material

7.1. Damper casing and damper blade are made of galvanized plate without any other surface finish.

7.2. Fasteners are galvanized.

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

V. INSPECTION, TESTING

8. Inspection, testing

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

VI. TRANSPORTATION AND STORAGE

9. Logistic terms

9.1. 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.

9.2. 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.

VII. ASSEMBLY, ATTENDANCE, MAINTENANCE AND REVISIONS

10. Assembly

10.1. 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.

10.2. All effective safety standards and directives must be observed during damper assembly.

10.3. 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.

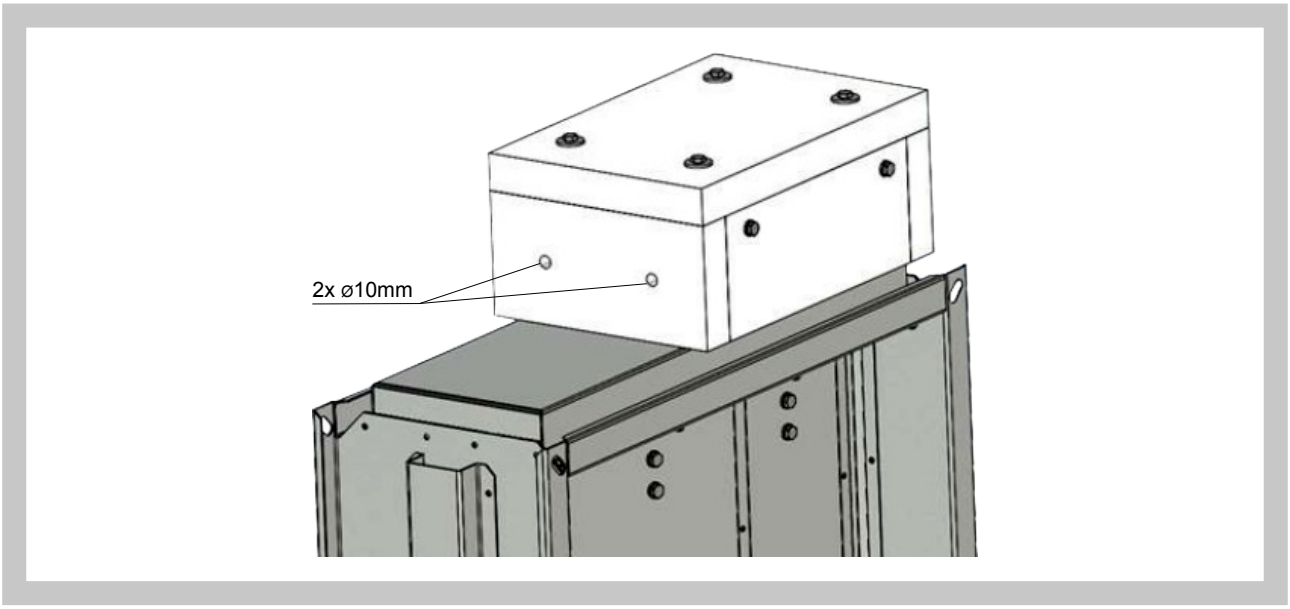
10.4. **Manual operation**

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

10.5. For electrical connection of the actuator use the prefabricated slot in the protection box on the top side of the box.

10.6. If it is necessary to use other position of the connecting holes, then make two holes to the protection box to pull in connecting cables (heat resistant cables) to the cables of damper´s actuator. Protection box is made of calcium silicate plates.

Fig. 11 Connecting holes



Procedure:

- use drill ⌀10 and make two holes (see figure 11). It is possible to make 2 holes in any wall of the box.
- pull the heat resistant cable through the calcium silicate plate (wall) and connect with cables from actuator according to above mentioned electrical diagram
- seal up the space in the hall with fire resistant mastic or sealant
- let the sealant harden

11. Entry into service and revisions

11.1. 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.

11.1.1. 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.

11.1.2. 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.

11.2. Before entering the dampers into operation after their assembly and by sequential checks, the following checks must be carried out for all designs.

11.2.1. Visual inspection of proper damper integration, inside damper area, damper blade, contact surfaces and silicon sealing.

11.2.2. Check of damper blade displacement can be realize 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

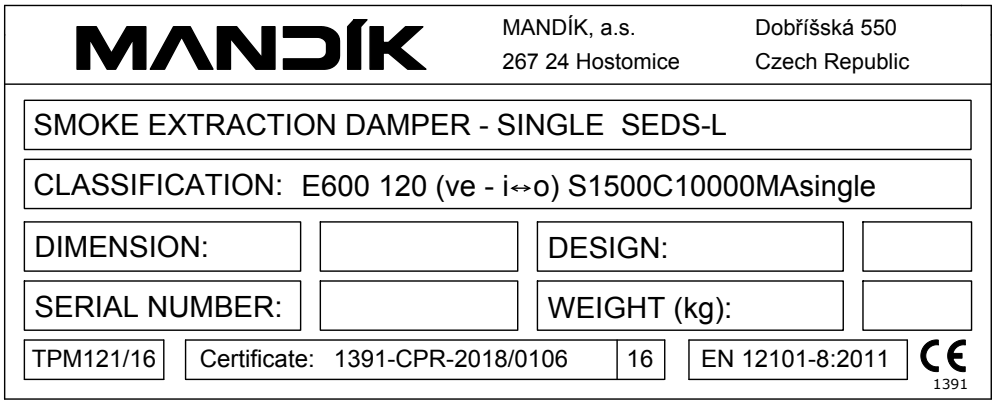
12.1. Spare parts are supplied only on basis of an order.

VIII. PRODUCT DATA

13. Product label

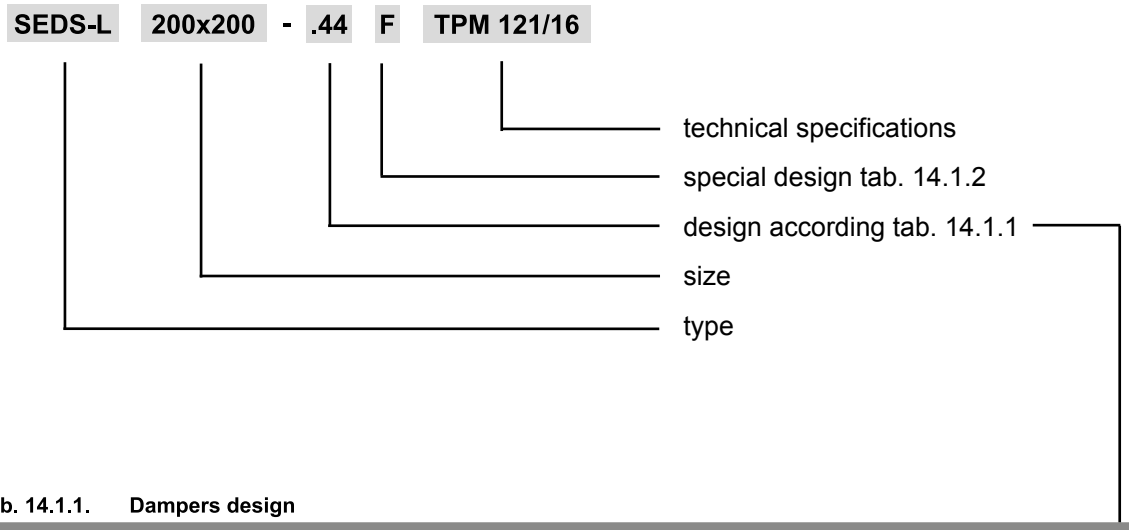
13.1. Product label is placed on the damper casing

Fig. 12 Product label (Nameplate)



IX. ORDERING INFORMATION

14. Ordering key



Tab. 14.1.1. Dampers design

Dampers design	Additional digit
with actuating mechanism BLE230 (BE230-12)	.44
with actuating mechanism BLE24 (BE24-12)	.54
with the communication and supply device BKNE 230-24 and actuating mechanism BLE24 (BE24-12)-ST	.66

Tab. 14.1.2. Dampers design

Special design	Additional letter
insulation inside of the blades	I
flanges with height 20 mm	F

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