



# Lindab **Smoke Control Damper** **SDJR-S**

Technical manual

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# Smoke Control Damper

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## General information

### 1. Description

**1.1.** Smoke control 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 EN1366-9.

The field of direct applications based on tests results is acceptable according to EN1363-1, part A.1 and A.2, EN1366-2, part 13 and EN1366-10, part 9.

Smoke control dampers - single are classified as

**E<sub>600</sub> 120 (v<sub>e</sub> - i↔o) S1500 C<sub>mod</sub> MA Single**

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

### 1.2. Damper characteristics

- CE certified acc. to EN12101-8
- Tested in accordance with EN1366-10
- Classified acc. to EN13501- 4+A1
- External Casing leakage min. class B, Internal leakage min. class 3 acc. to EN1751
- Cycling test in class Cmod acc. to EN12101-8
- ES Certificate No. 1391-CPR-2020/0187
- Declaration of Performance SDJR-S DoP
- Hygienic assessment of fire dampers - Report No. 1.6/pos/19/19c

### 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 60 721-3-3. Temperature in the place of installation is permitted to range from -20°C to +50°C.

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## 2. Design

### 2.1. Design with actuating mechanism

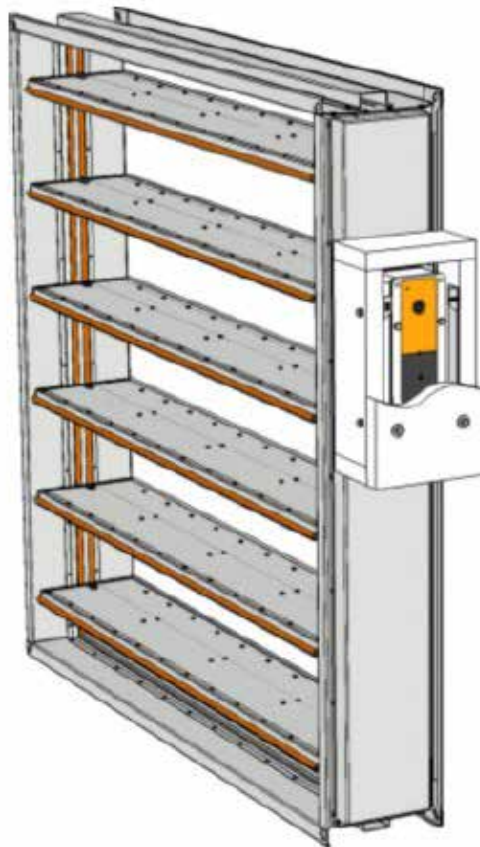
#### Design .44 and .54

Belimo actuators are used for dampers, series BEN, BEE, BE for 230V AC resp. 24V 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.

**Fig.1 Damper SDJR-S - actuating mechanism in the cover**



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**Tab. 2.1.1. Actuator BELIMO BEN 24(-ST), BEN 24-SR, BEN 230**

Actuator BELIMO - 15Nm	BEN 24(-ST)	BEN 24-SR	BEN 230
Power voltage	AC/DC 24V 50/60Hz	AC/DC 24V 50/60Hz	AC 230V 50/60Hz
Power consumption - in operation - in the end position	3W 0,1W	3W 0,3W	4W 0,4W
Dimensioning	6VA (Imax8,2 A @ 5ms)	6,5 VA (Imax8.2 A @ 5ms)	7VA (Imax4 A @ 5ms)
Protection class	III	III	II
Degree of protection	IP 54		
Adjustment time for 95°	< 30s		
Ambient temperature Storage temperature	-30°C ... +55°C -40°C ... +80°C		
Connection - drive - auxiliary switch	Cable 1m, 3x0,75mm <sup>2</sup> Cable 1m, 6x0,75mm <sup>2</sup> (BEN 24-ST) with plug connectors	Cable 1m, 4x0,75mm <sup>2</sup> Cable 1m, 6x0,75mm <sup>2</sup>	Cable 1m, 3x0,75mm <sup>2</sup> Cable 1m, 6x0,75mm <sup>2</sup>

**Fig. 2 Actuator BELIMO BEN 24(-ST)**



**Fig. 3 Actuator BELIMO BEN 24-SR**



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**Fig. 4 Actuator BELIMO BEN 230**



**Tab. 2.1.2. Actuator BELIMO BEE 24(-ST), BEE 24-SR, BEE 230**

Actuator BELIMO - 25Nm	BEE 24(-ST)	BEE 24-SR	BEE 230
Power voltage	AC/DC 24V 50/60Hz	AC/DC 24V 50/60Hz	AC 230V 50/60Hz
Power consumption - in operation - in the end position	2,5W 0,1W	3W 0,3W	3,5W 0,4W
Dimensioning	5VA (Imax8,2 A @ 5ms)	5,5VA (Imax8.2 A @ 5ms)	6VA (Imax4 A @ 5ms)
Protection class	III	III	II
Degree of protection	IP 54		
Adjustment time for 95°	< 60s		
Ambient temperature Storage temperature	-30°C ... +55°C -40°C ... +80°C		
Connection - drive - auxiliary switch	Cable 1m, 3x0,75mm <sup>2</sup> Cable 1m, 6x0,75mm <sup>2</sup> (BEE 24-ST) with plug connectors	Cable 1m, 4x0,75mm <sup>2</sup> Cable 1m, 6x0,75mm <sup>2</sup>	Cable 1m, 3x0,75mm <sup>2</sup> Cable 1m, 6x0,75mm <sup>2</sup>

**Fig. 5 Actuator BELIMO BEE 24(-ST)**



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**Fig. 6 Actuator BELIMO BEE 24-SR**



**Fig. 7 Actuator BELIMO BEE 230**



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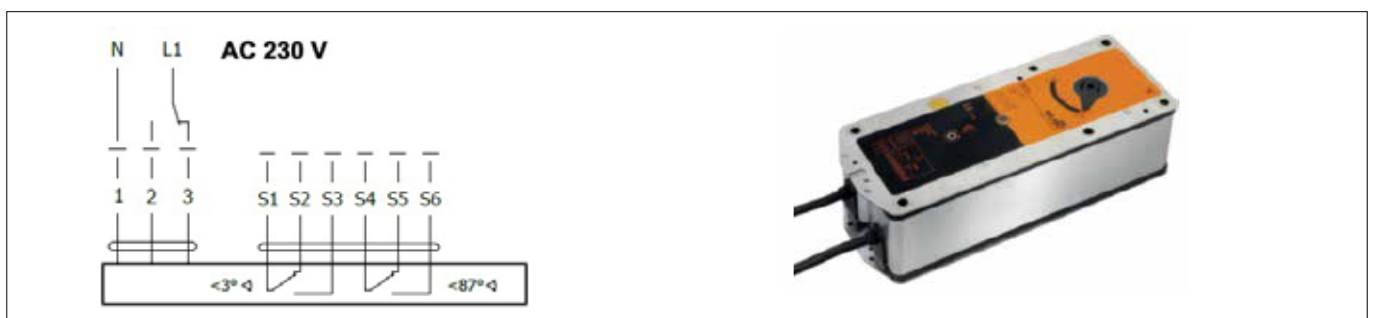
**Tab. 2.1.3. Actuator BELIMO BE 24-12(-ST), BE 230-12**

Actuator BELIMO - 40Nm	BE 24-12(-ST)	BE 230-12
Power voltage	AC/DC 24V 50/60Hz	AC 230V 50/60Hz
Power consumption - in operation - in the end position	12W 0,5W	8W 0,5W
Dimensioning	18VA (Imax8,2 A @ 5 ms)	15VA (Imax7,9 A @ 5ms)
Protection class	III	II
Degree of protection	IP 54	
Adjustment time for 95°	< 60s	
Ambient temperature Storage temperature	-30°C ... +50°C -40°C ... +80°C	
Connection - drive - auxiliary switch	Cable 1m, 3x0,75mm <sup>2</sup> Cable 1m, 6x0,75mm <sup>2</sup> (BE 24-ST) with plug connectors	

**Fig. 8 Actuator BELIMO BE 24-12(-ST)**



**Fig. 9 Actuator BELIMO BE 230-12**





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### 2.2. Design with the communication and power supply unit

#### Design .66

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

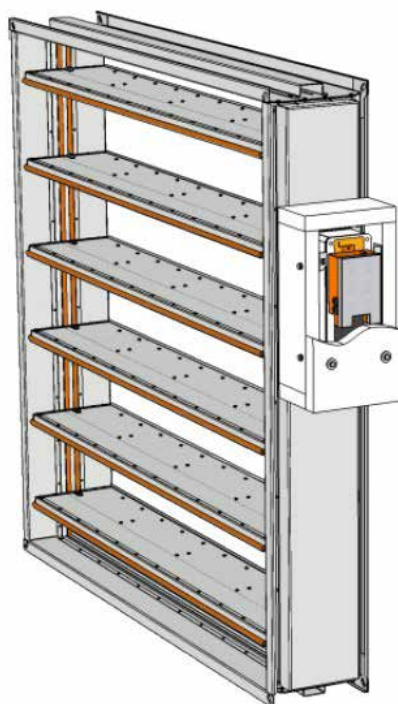
The BKNE 230-24 controls the switching position of the actuator, its adjustment time and the data exchange with the BKSE 24-6. In addition, it controls the actuator current (actuator connection) and the power supply.

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. 10 Damper SDJR-S - actuating mechanism and BKNE in the cover**



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## 2.3. Communication and supply device

**Tab. 2.3.1. Communication and power supply device BKNE 230-24**

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

**Fig. 11 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

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## 2.4. Communication and control device

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.

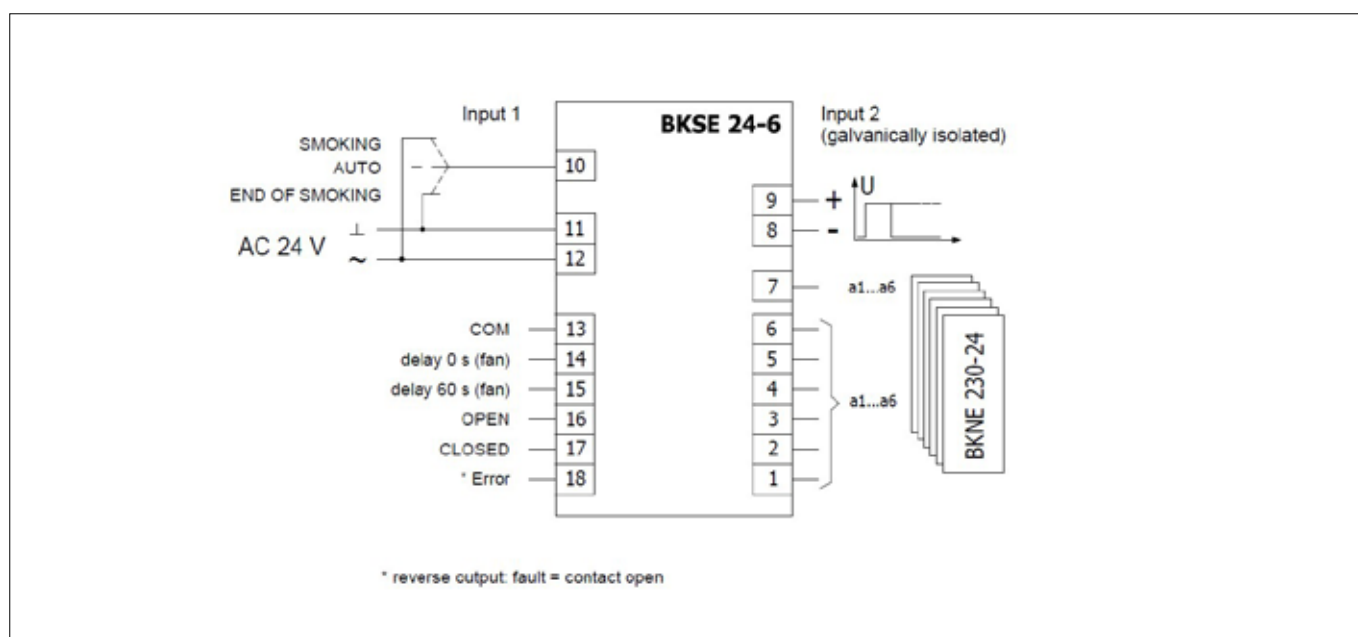
Damper control is ensured with a simple 2-wire line. The damper's correct function is indicated by two LEDs. The operating status of the entire control system and any errors are indicated by these LEDs and the corresponding error LED.

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. 2.4.1. Communication and control devices BKSE 24-6

Communication and control devices	BKSE 24-6
Power voltage	AC 24V 50/60Hz
Power consumption	3,5W (operating position)
Dimensioning	5,5VA 18 A (Imax6.4 A @ 2.5ms)
Protection class	III (low voltage)
Degree of protection	IP 20
Ambient operation temperature	0 ...+50°C
Connection	screw terminals for 2x1.5mm <sup>2</sup> conductor

Fig. 12 Communication and control devices BKSE 24-6



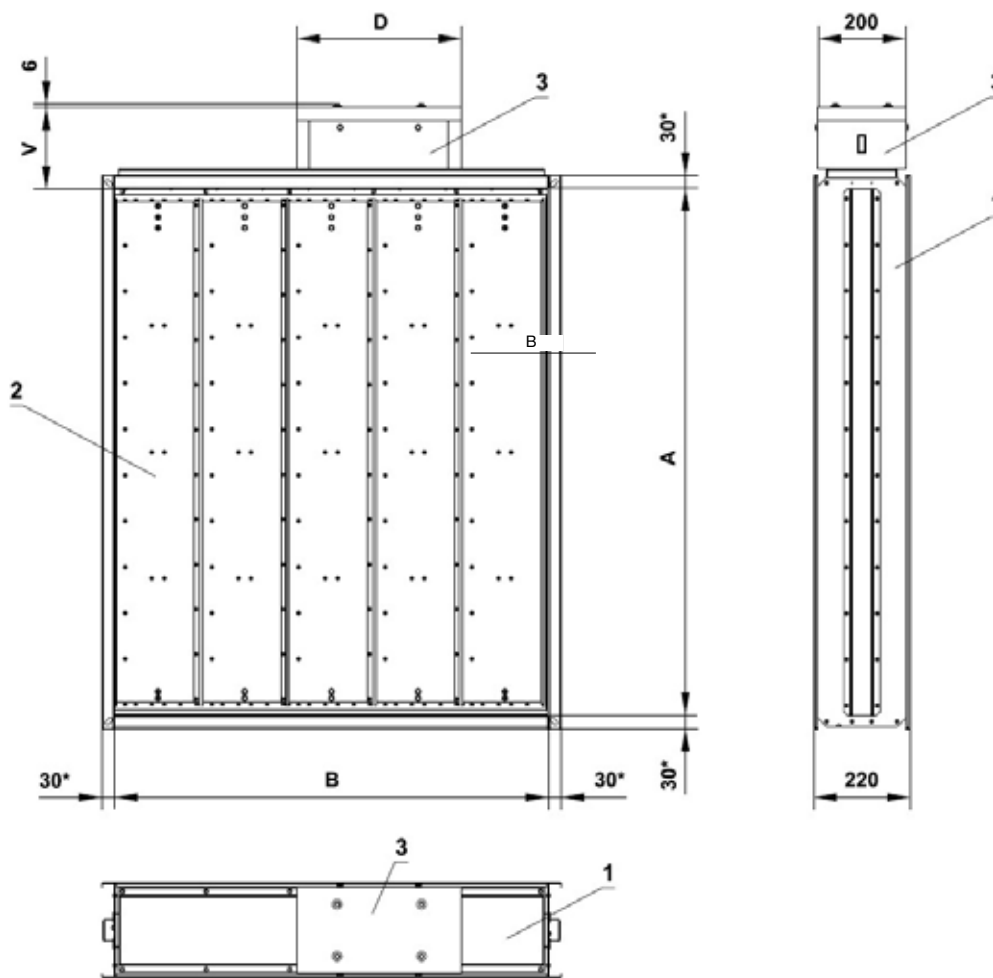
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## 3. Dimensions, weights

### 3.1. Dimensions

Fig. 13 Damper SDJR-S



\*standard height of the flange

Position:

- 1. Damper body
- 2. Damper plate
- 3. Actuating mechanism cover

Actuating mechanism	V [mm]	D [mm]
BEN / BEE	176,5	300
BE	186,5	380
BEN / BEE + BKNE	236,5	300
BE + BKNE	251,5	380

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## 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 [m <sup>2</sup> ]	Actuating Mechanism	Size AxB	Number of blades	Weight [kg]	Sef [m <sup>2</sup> ]	Actuating Mechanism
<b>200x200</b>	1	14.3	0.0227	BEN	<b>350x200</b>	1	16.8	0.0440	BEN
<b>x250</b>	2	16.4	0.0270	BEN	<b>x250</b>	2	19.3	0.0524	BEN
<b>x300</b>	2	17.3	0.0350	BEN	<b>x300</b>	2	20.4	0.0679	BEN
<b>x350</b>	2	18.3	0.0430	BEN	<b>x350</b>	2	21.6	0.0834	BEN
<b>x400</b>	2	19.2	0.0510	BEN	<b>x400</b>	2	22.7	0.0989	BEN
<b>x450</b>	3	21.2	0.0554	BEN	<b>x450</b>	3	25.1	0.1073	BEN
<b>x500</b>	3	22.2	0.0634	BEN	<b>x500</b>	3	26.2	0.1228	BEN
<b>x600</b>	3	24.1	0.0794	BEN	<b>x600</b>	3	28.5	0.1538	BEN
<b>x700</b>	4	27.0	0.0917	BEN	<b>x700</b>	4	32.0	0.1776	BEN
<b>x800</b>	4	28.9	0.1077	BEN	<b>x800</b>	4	34.3	0.2086	BEN
<b>x900</b>	5	34.5	0.1200	BEE	<b>x900</b>	5	40.5	0.2325	BEE
<b>x1000</b>	5	36.4	0.1360	BEE	<b>x1000</b>	5	42.7	0.2635	BEE
<b>x1100</b>	6	39.3	0.1483	BEE	<b>x1100</b>	6	46.3	0.2874	BEE
<b>x1200</b>	6	41.2	0.1643	BEE	<b>x1200</b>	6	48.5	0.3184	BEE
<b>250x200</b>	1	15.1	0.0298	BEN	<b>400x200</b>	1	17.6	0.0511	BEN
<b>x250</b>	2	17.4	0.0355	BEN	<b>x250</b>	2	20.3	0.0608	BEN
<b>x300</b>	2	18.4	0.0460	BEN	<b>x300</b>	2	21.5	0.0788	BEN
<b>x350</b>	2	19.4	0.0565	BEN	<b>x350</b>	2	22.6	0.0968	BEN
<b>x400</b>	2	20.4	0.0670	BEN	<b>x400</b>	2	23.8	0.1148	BEN
<b>x450</b>	3	22.5	0.0727	BEN	<b>x450</b>	3	26.4	0.1246	BEN
<b>x500</b>	3	23.5	0.0832	BEN	<b>x500</b>	3	27.6	0.1426	BEN
<b>x600</b>	3	25.5	0.1042	BEN	<b>x600</b>	3	30.0	0.1786	BEN
<b>x700</b>	4	28.7	0.1203	BEN	<b>x700</b>	4	33.7	0.2063	BEN
<b>x800</b>	4	30.7	0.1413	BEN	<b>x800</b>	4	36.1	0.2423	BEN
<b>x900</b>	5	36.5	0.1575	BEE	<b>x900</b>	5	42.5	0.2700	BEE
<b>x1000</b>	5	38.5	0.1785	BEE	<b>x1000</b>	5	44.8	0.3060	BEE
<b>x1100</b>	6	41.6	0.1947	BEE	<b>x1100</b>	6	48.6	0.3337	BEE
<b>x1200</b>	6	43.6	0.2157	BEE	<b>x1200</b>	6	51.0	0.3697	BEE
<b>300x200</b>	1	15.9	0.0369	BEN	<b>450x200</b>	1	18.4	0.0582	BEN
<b>x250</b>	2	18.3	0.0439	BEN	<b>x250</b>	2	21.3	0.0693	BEN
<b>x300</b>	2	19.4	0.0569	BEN	<b>x300</b>	2	22.5	0.0898	BEN
<b>x350</b>	2	20.5	0.0699	BEN	<b>x350</b>	2	23.7	0.1103	BEN
<b>x400</b>	2	21.5	0.0829	BEN	<b>x400</b>	2	25.0	0.1308	BEN
<b>x450</b>	3	23.8	0.0900	BEN	<b>x450</b>	3	27.7	0.1419	BEN
<b>x500</b>	3	24.9	0.1030	BEN	<b>x500</b>	3	28.9	0.1624	BEN
<b>x600</b>	3	27.0	0.1290	BEN	<b>x600</b>	3	31.4	0.2034	BEN
<b>x700</b>	4	30.3	0.1490	BEN	<b>x700</b>	4	38.0	0.2349	BEE
<b>x800</b>	4	32.5	0.1750	BEN	<b>x800</b>	4	40.5	0.2759	BEE
<b>x900</b>	5	38.5	0.1950	BEE	<b>x900</b>	5	44.5	0.3075	BEE
<b>x1000</b>	5	40.6	0.2210	BEE	<b>x1000</b>	5	47.0	0.3485	BEE
<b>x1100</b>	6	43.9	0.2410	BEE	<b>x1100</b>	6	50.9	0.3801	BEE
<b>x1200</b>	6	46.1	0.2670	BEE	<b>x1200</b>	6	53.4	0.4211	BEE

\* table continues on next page

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Tab. 3.2.1. Weights and effective area cross section

Size AxB	Number of blades	Weight [kg]	Sef [m <sup>2</sup> ]	Actuating Mechanism	Size AxB	Number of blades	Weight [kg]	Sef [m <sup>2</sup> ]	Actuating Mechanism
<b>500x200</b>	1	19.2	0.0653	BEN	<b>800x200</b>	1	24.2	0.1079	BEN
<b>x250</b>	2	22.2	0.0777	BEN	<b>x250</b>	2	28.1	0.1284	BEN
<b>x300</b>	2	23.5	0.1007	BEN	<b>x300</b>	2	29.7	0.1664	BEN
<b>x350</b>	2	24.8	0.1237	BEN	<b>x350</b>	2	31.4	0.2044	BEN
<b>x400</b>	2	26.1	0.1467	BEN	<b>x400</b>	2	33.0	0.2424	BEN
<b>x450</b>	3	29.0	0.1592	BEN	<b>x450</b>	3	36.8	0.2630	BEN
<b>x500</b>	3	30.3	0.1822	BEN	<b>x500</b>	3	38.4	0.3010	BEN
<b>x600</b>	3	32.9	0.2282	BEN	<b>x600</b>	3	41.7	0.3770	BEN
<b>x700</b>	4	39.7	0.2636	BEE	<b>x700</b>	4	49.8	0.4355	BEE
<b>x800</b>	4	42.3	0.3096	BEE	<b>x800</b>	4	53.1	0.5115	BEE
<b>x900</b>	5	46.5	0.3450	BEE	<b>x900</b>	5	58.5	0.5700	BE
<b>x1000</b>	5	49.1	0.3910	BEE	<b>x1000</b>	5	61.8	0.6460	BE
<b>x1100</b>	6	53.2	0.4264	BEE	<b>x1100</b>	6	67.2	0.7045	BE
<b>x1200</b>	6	55.8	0.4724	BE	<b>x1200</b>	6	70.5	0.7805	BE
<b>600x200</b>	1	20.9	0.0795	BEN	<b>900x200</b>	1	25.8	0.1221	BEN
<b>x250</b>	2	24.2	0.0946	BEN	<b>x250</b>	2	30.0	0.1453	BEN
<b>x300</b>	2	25.6	0.1226	BEN	<b>x300</b>	2	31.8	0.1883	BEN
<b>x350</b>	2	27.0	0.1506	BEN	<b>x350</b>	2	33.5	0.2313	BEN
<b>x400</b>	2	28.4	0.1786	BEN	<b>x400</b>	2	35.3	0.2743	BEN
<b>x450</b>	3	31.6	0.1938	BEN	<b>x450</b>	3	39.4	0.2976	BEN
<b>x500</b>	3	33.0	0.2218	BEN	<b>x500</b>	3	41.1	0.3406	BEN
<b>x600</b>	3	35.8	0.2778	BEN	<b>x600</b>	3	47.3	0.4266	BEE
<b>x700</b>	4	43.1	0.3209	BEE	<b>x700</b>	4	53.1	0.4928	BEE
<b>x800</b>	4	45.9	0.3769	BEE	<b>x800</b>	4	56.7	0.5788	BE
<b>x900</b>	5	50.5	0.4200	BEE	<b>x900</b>	5	62.5	0.6450	BE
<b>x1000</b>	5	53.3	0.4760	BEE	<b>x1000</b>	5	66.0	0.7310	BE
<b>x1100</b>	6	57.9	0.5191	BE	<b>x1100</b>	6	71.8	0.7972	BE
<b>x1200</b>	6	60.7	0.5751	BE	<b>x1200</b>	6	75.4	0.8832	BE
<b>700x200</b>	1	22.5	0.0937	BEN	<b>1000x200</b>	1	27.5	0.1363	BEN
<b>x250</b>	2	26.1	0.1115	BEN	<b>x250</b>	2	32.0	0.1622	BEN
<b>x300</b>	2	27.7	0.1445	BEN	<b>x300</b>	2	33.9	0.2102	BEN
<b>x350</b>	2	29.2	0.1775	BEN	<b>x350</b>	2	35.7	0.2582	BEN
<b>x400</b>	2	30.7	0.2105	BEN	<b>x400</b>	2	37.6	0.3062	BEN
<b>x450</b>	3	34.2	0.2284	BEN	<b>x450</b>	3	42.0	0.3322	BEN
<b>x500</b>	3	35.7	0.2614	BEN	<b>x500</b>	3	43.9	0.3802	BEN
<b>x600</b>	3	38.8	0.3274	BEN	<b>x600</b>	3	50.3	0.4762	BEE
<b>x700</b>	4	46.4	0.3782	BEE	<b>x700</b>	4	56.5	0.5501	BE
<b>x800</b>	4	49.5	0.4442	BEE	<b>x800</b>	4	60.3	0.6461	BE
<b>x900</b>	5	54.5	0.4950	BEE	<b>x900</b>	5	66.5	0.7200	BE
<b>x1000</b>	5	57.5	0.5610	BE	<b>x1000</b>	5	70.2	0.8160	BE
<b>x1100</b>	6	62.5	0.6118	BE	<b>x1100</b>	6	76.5	0.8899	BE
<b>x1200</b>	6	65.6	0.6778	BE	<b>x1200</b>	6	80.2	0.9859	BE

\* table continues on next page

## Smoke Control Damper

## SDJR-S

Tab. 3.2.1. Weights and effective area cross section

Size AxB	Number of blades	Weight [kg]	Sef [m <sup>2</sup> ]	Actuating Mechanism	Size AxB	Number of blades	Weight [kg]	Sef [m <sup>2</sup> ]	Actuating Mechanism
<b>1100x200</b>	1	29.1	0.1505	BEN	<b>1200x200</b>	1	30.8	0.1647	BEN
<b>x250</b>	2	34.0	0.1791	BEN	<b>x250</b>	2	35.9	0.1960	BEN
<b>x300</b>	2	35.9	0.2321	BEN	<b>x300</b>	2	38.0	0.2540	BEN
<b>x350</b>	2	37.9	0.2851	BEN	<b>x350</b>	2	40.1	0.3120	BEN
<b>x400</b>	2	39.9	0.3381	BEN	<b>x400</b>	2	42.2	0.3700	BEN
<b>x450</b>	3	47.2	0.3668	BEE	<b>x450</b>	3	49.8	0.4014	BEE
<b>x500</b>	3	49.2	0.4198	BEE	<b>x500</b>	3	51.9	0.4594	BEE
<b>x600</b>	3	53.2	0.5258	BEE	<b>x600</b>	3	56.1	0.5754	BE
<b>x700</b>	4	59.9	0.6074	BE	<b>x700</b>	4	63.2	0.6647	BE
<b>x800</b>	4	63.8	0.7134	BE	<b>x800</b>	4	67.4	0.7807	BE
<b>x900</b>	5	70.5	0.7950	BE	<b>x900</b>	5	74.5	0.8700	BE
<b>x1000</b>	5	74.5	0.9010	BE	<b>x1000</b>	5	78.7	0.9860	BE
<b>x1100</b>	6	81.1	0.9826	BE	<b>x1100</b>	6	85.8	1.0753	BE
<b>x1200</b>	6	85.1	1.0886	BE	<b>x1200</b>	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 SDJR-S damper [AxB], when knowing air volume in [m<sup>3</sup>/s] or [m<sup>3</sup>/h] on damper. Maximum allowed air velocity on SDJR-S is 12 [m/s].

Formula:

$$Sef = Q / v$$

Q ... air volume [m<sup>3</sup>/s]

Sef ... effective free area of damper [m<sup>2</sup>] v ... air velocity on damper [m/s]

Example:

Air volume needed is 26000 m<sup>3</sup>/h

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

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

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.

# Smoke Control Damper

SDJR-S

## 4. Placement and Assembly

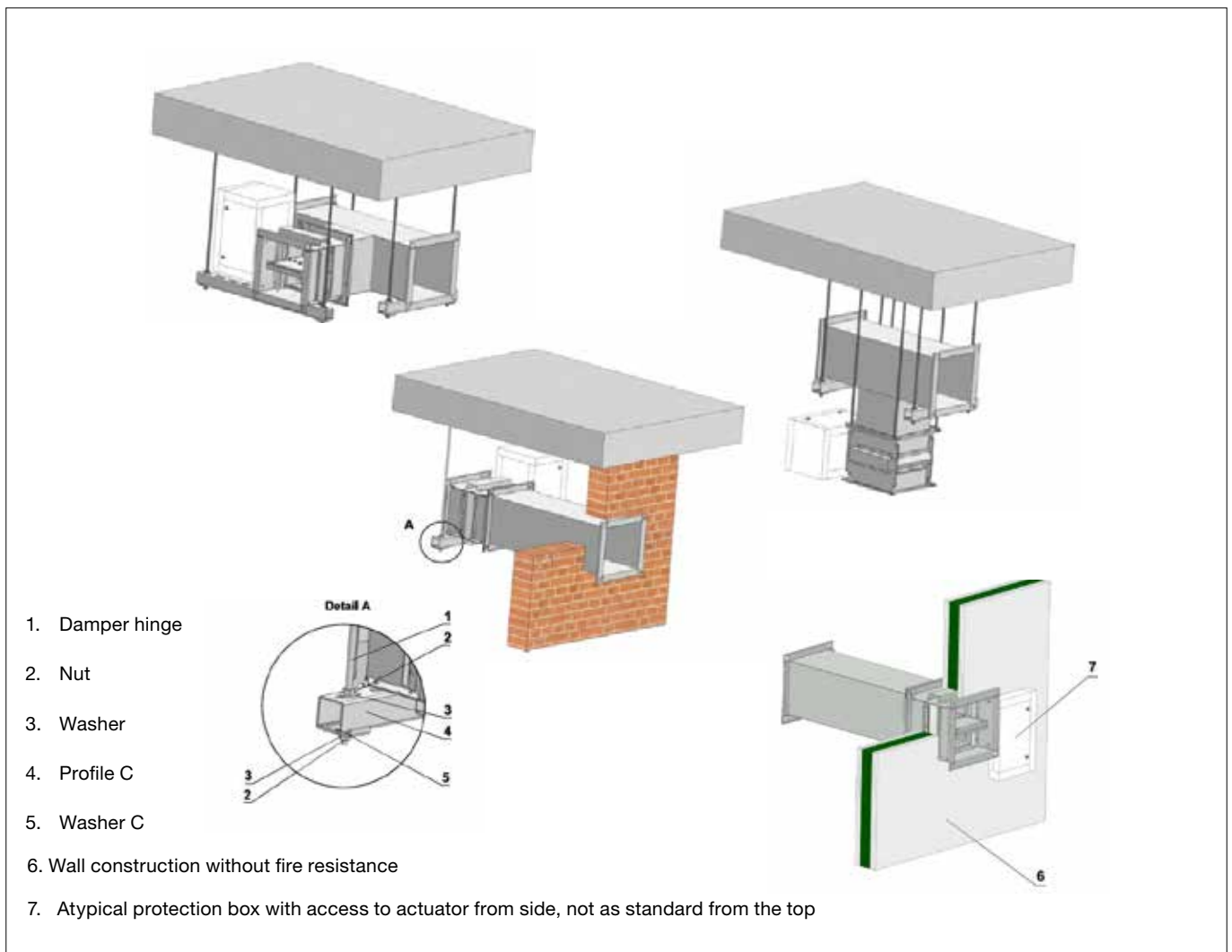
**4.1.** Smoke control dampers single are designed to remove heat and combustion products (e.g. smoke) from single fire compartment according EN1366-9.

Smoke control 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 example

**Fig. 14** Installation example





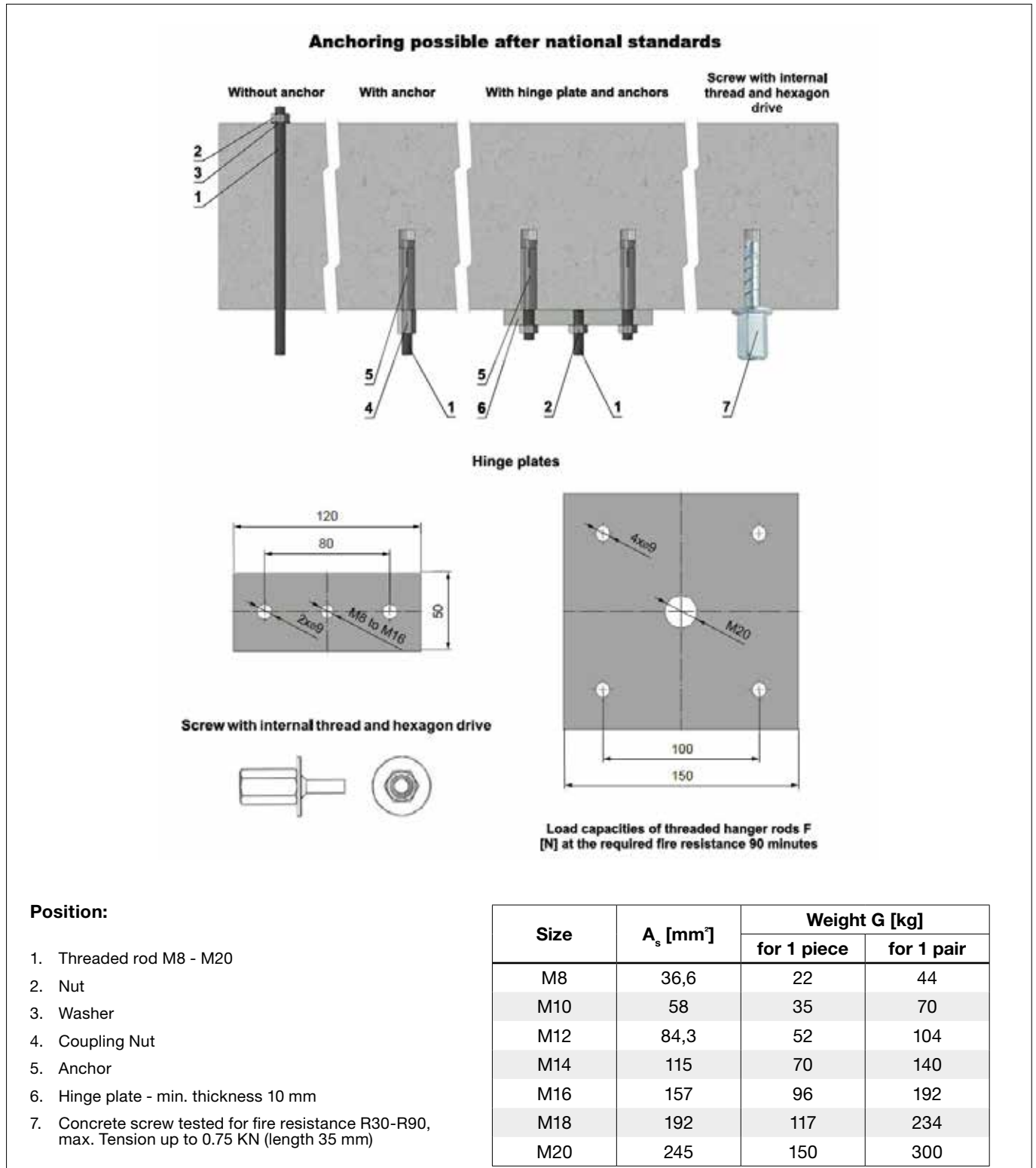
# Smoke Control Damper

# SDJR-S

## 5. Suspension system

### 7.1. Mounting to the ceiling wall

Fig. 15 Mounting to the ceiling wall



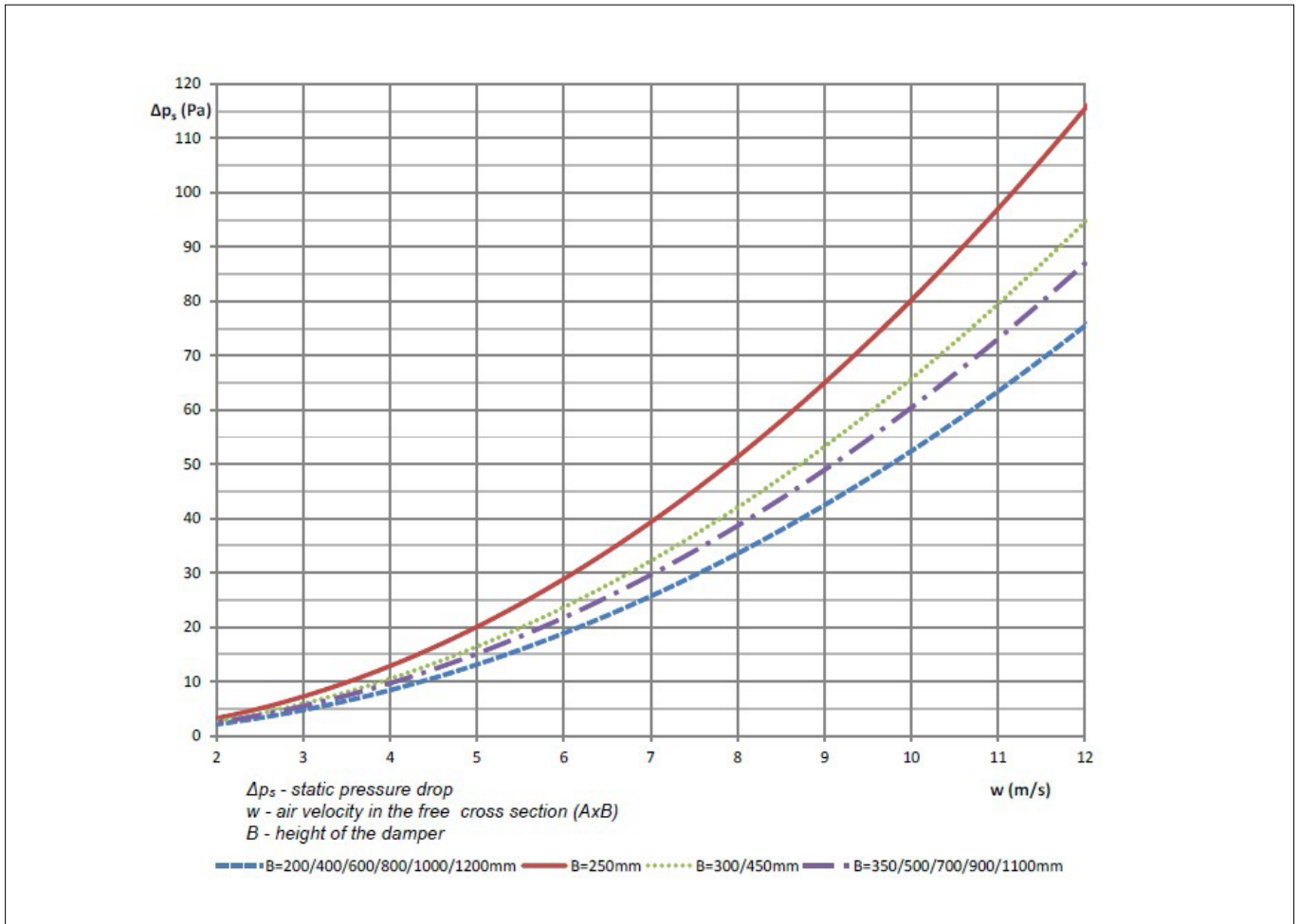
# Smoke Control Damper

SDJR-S

## Technical data

### 6. Pressure loss

Diagram 6.1. Pressure drops of the damper was determined for air density 1,2 kg/m³



## Smoke Control Damper

## SDJR-S

## 10. Noise data

## 7.1. Sound power level corrected with filter A

Tab. 7.1.1. Sound power level  $L_w$  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. 7.1.2. Sound power level  $L_w$  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

# Smoke Control Damper

SDJR-S

**Tab. 7.1.3. 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

## Material, finish

### 8. Material

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

## Inspection, testing

### 9. Inspection, testing

- 9.1.** 9.1. The appliance is constructed and preset by the manufacturer, its operation is dependent on proper installation and adjustment.

# Smoke Control Damper

SDJR-S

## Transportation and storage

### 10. Logistic terms

**10.1.** Dampers are transported by boxfreight 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.

**10.2.** 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.

## Assembly, attendance, maintenance and revision

### 11. Assembly

**11.1.** 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.

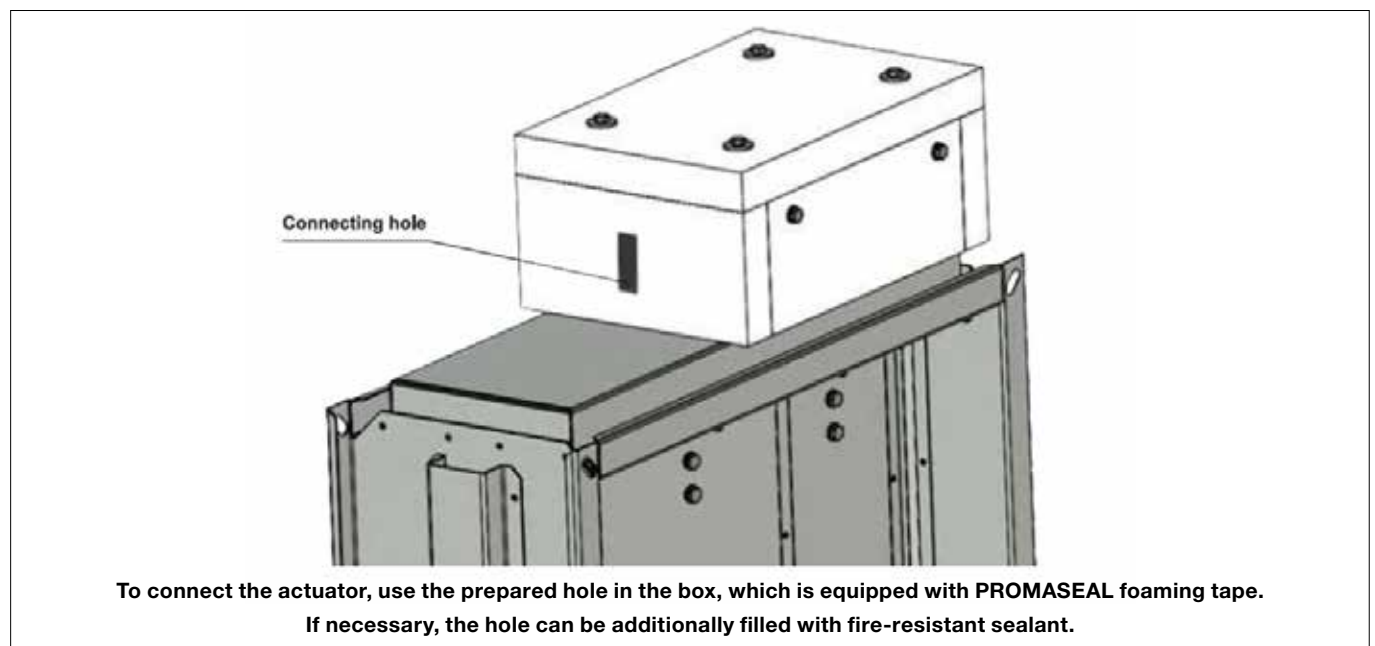
**11.2.** All effective safety standards and directives must be observed during damper assembly.

**11.3.** 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.

#### 11.4. Manual operation

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

**Fig. 16** Connecting hole



# Smoke Control Damper

# SDJR-S

## 12. Entry into service and revisions

**12.1.** 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.

**12.1.1.** 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.

**12.1.2.** 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.

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

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

**12.2.2.** 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.

## 13. Spare parts

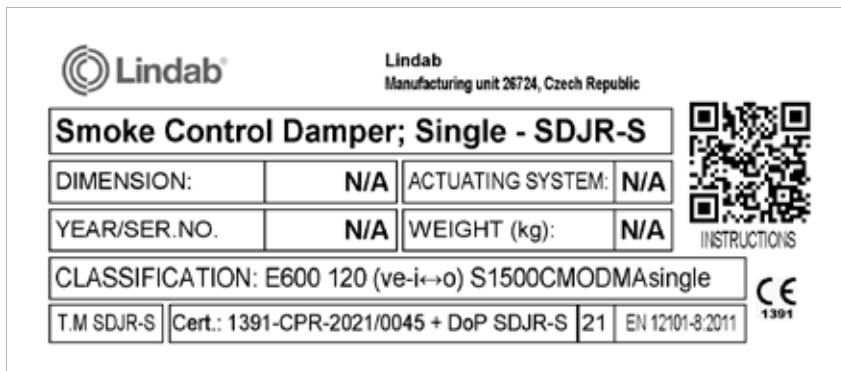
**13.1.** Spare parts are supplied only on basis of an order.

## Product data

### 14. Product label

**14.1.** Product label is placed on the damper casing

**Fig. 17** Product label (Nameplate)



# Smoke Control Damper

# SDJR-S

## Ordering information

### 15. Ordering example

	SDJR-S	180	180	230V	Yes	30mm
Product						
Width						
Height						
Actuator						
Insulated blade						
Flanges/grilles						

Example: SDJR-S-200-200-230V-Insulated-30mm



## Good Thinking

**At Lindab**, good thinking is a philosophy that guides us in everything we do. We have made it our mission to create a healthy indoor climate – and to simplify the construction of sustainable buildings. We do that by designing innovative products and solutions that are easy to use, as well as offering efficient availability and logistics. We are also working on ways to reduce our impact on our environment and climate. We do that by developing methods to produce our solutions using a minimum of energy and natural resources, and by reducing negative effects on the environment. We use steel in our products. It's one of few materials that can be recycled an infinite number of times without losing any of its properties. That means less carbon emissions in nature and less energy wasted.

**We simplify construction**