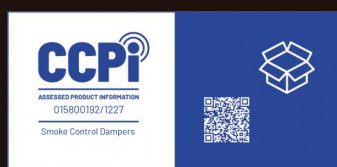


SEDS-L

Single compartment smoke control damper

Technical Documentation

Installation, Commissioning, Operation, Maintenance and Service Manual



MANDÍK[®]

www.mandik.co.uk

Manufacturer

MANDÍK, a. s. • Dobříšská 550 • 267 24 Hostomice • Czech Republic • Tel.: +420 311 706 742 • E-Mail: mandik@mandik.cz

Authorized representative

MANDIK UK Ltd • 130 Aztec West • Bristol BS32 4UB • United Kingdom • Tel.: +44 117 4526376 • E-Mail: help@mandik.co.uk

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

CONTENT

I. GENERAL.....	3
Description.....	3
II. DESIGN.....	4
Design with actuating mechanism.....	4
Communication and control module MDCM.....	8
Communication and control module MDPM.....	8
III. DIMENSIONS.....	9
Technical parameters.....	10
IV. INSTALLATION.....	12
Placement and installation.....	12
V. SUSPENSION SYSTEMS.....	13
Example of duct connection.....	15
VI. ACCESSORIES.....	16
VII. TECHNICAL DATA.....	17
Pressure loss.....	17
Noise data - level of acoustic output corrected with filter A.....	18
VIII. MATERIAL, FINISHING.....	19
IX. TRANSPORTATION AND STORAGE.....	19
Logistic terms.....	19
X. ASSEMBLY, ATTENDANCE AND MAINTENANCE.....	20
Electrical connection of the actuator in protection box.....	20
Connection of the control module MDPM & MDCM interfaces inside protection box.....	21
Entry into service and revisions.....	22
XI. ORDERING INFORMATION.....	23
Ordering key.....	23
Data label.....	24

I. GENERAL

Description

Dampers - SEDS-L are shutters in smoke ventilation system. 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 controlled by electrical actuating mechanism.

The dampers can be installed in various duct sizes with respect to the field of direct applications according with BS EN 1366-9.

The field of direct applications based on tests results is acceptable according to BS EN 1363-1, part A.1 and A.2, BS EN 1366-2, part 13 and BS EN 1366-10, part 9.



Damper SEDS-L

Damper characteristics

- CE certified acc. to BS EN 12101-8
- Tested in accordance with BS EN 1366-10
- Classified **E₆₀₀ 120 (v_{ed}-h_{od}-i↔o) S1500C_{mod}MA_{single}** acc. to BS EN 13501-4
- External Casing leakage class ATC 4 (old marking "B"), Internal leakage min. class 3 acc. to BS EN 1751
- Cycling test in class C_{mod} acc. to BS EN 12101-8
- Certificate of constancy of performance UKCA No. 2822-UKCA-CPR-XXXX
- Certificate of constancy of performance CE No. 1391-CPR-XXXX/XXXX
- Declaration of Performance UKCA No. PM/SEDS-L/02/XX/X
- Declaration of Performance CE No. PM/SEDS-L/01/XX/X
- Hygienic assessment - Report No. 1.6/pos/19/19b

Working conditions

- Exact damper function is provided under the following conditions
 - maximum air velocity 12 m/s
 - underpressure max. -1500 Pa or overpressure max. 500 Pa
- 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 BS EN IEC 60 721-3-3 ed.2., class 3K22.
- Temperature in the place of installation is permitted to range from -20°C to +50°C.
- The Damper can be fitted with a grille.

II. DESIGN

Design with actuating mechanism

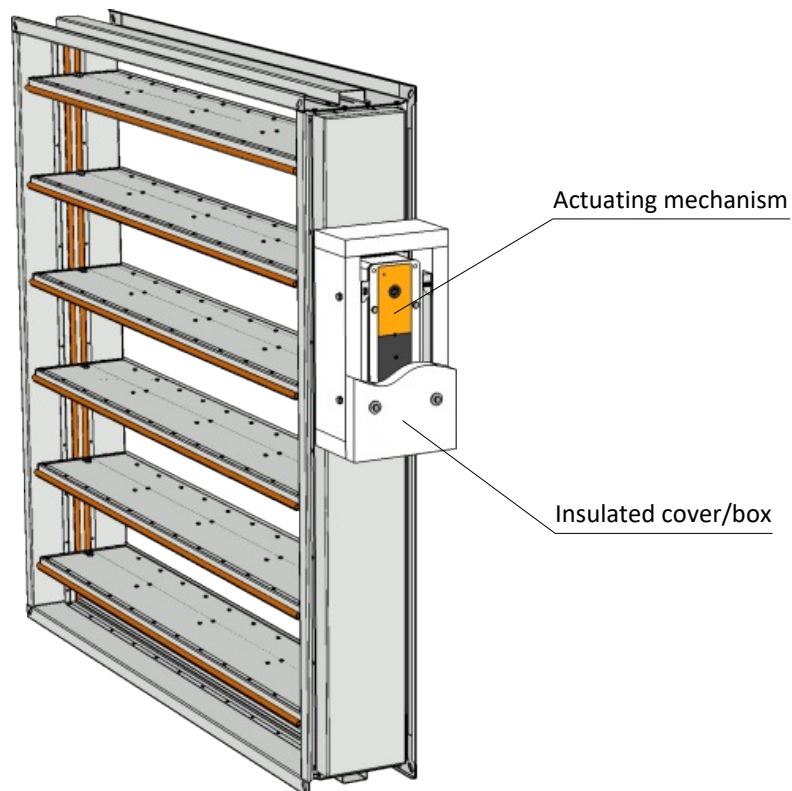
Design .44 and .54

- Belimo actuators are used for dampers, series BEN, BEE, BE for 230V AC resp. 24 V AC/DC actuators (universal 24V or 230V supply) are used for large size of dampers.
- After connection to the power supply voltage, the actuator moves the damper blade to the "OPEN" position or "CLOSED" (according to the corresponding connection, see wiring diagram). If the power supply is interrupted, the actuator stops at the current position. The signalling of the "OPEN" and "CLOSED" damper blade positions is ensured by two built-in fixed "potential-free" end- limit switches.
- The actuator for operating the damper blade is mounted in an insulated cover/box. It is accessible after removing the cover lid. The electrical connection of the actuator is made with a non-flammable cable (or a cable located in the adjoining cable duct), which passes through an opening made in the wall of the insulated cover/box when installing the damper or when connecting the actuator power cable. The power and control cable must be CAT 3 as BS EN8519.

Design .65

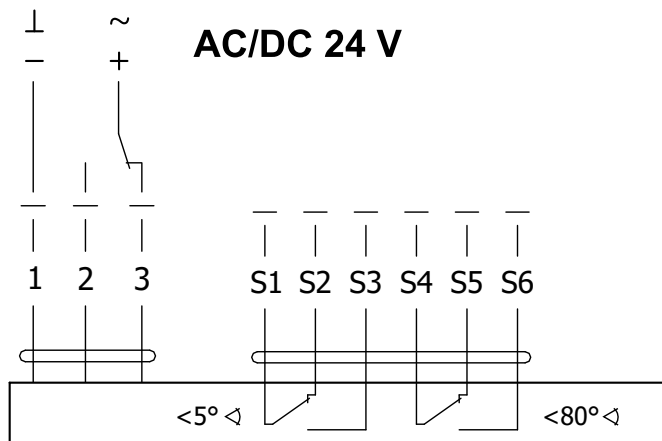
- Belimo modulating actuators, BEN (BEE)-SR series for 24V AC/DC are specially designed for remote control of smoke control dampers. The position of the damper blade is adjustable by means of control voltage 0 (2)...10V DC.
- The signalling of the "OPEN" and "CLOSED" damper blade positions is ensured 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 power and control cable must be CAT 3 as BS EN8519.

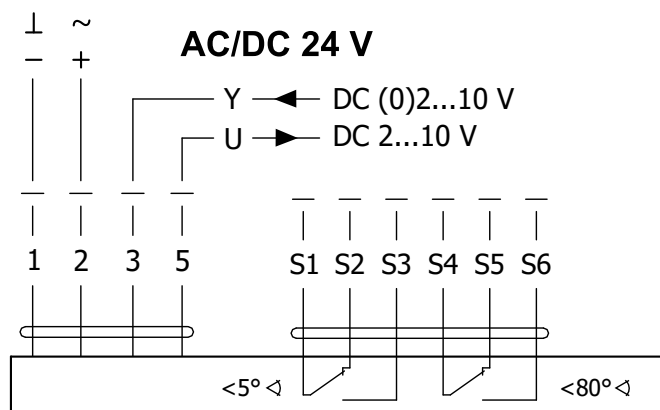


Design .44, .54 and .65

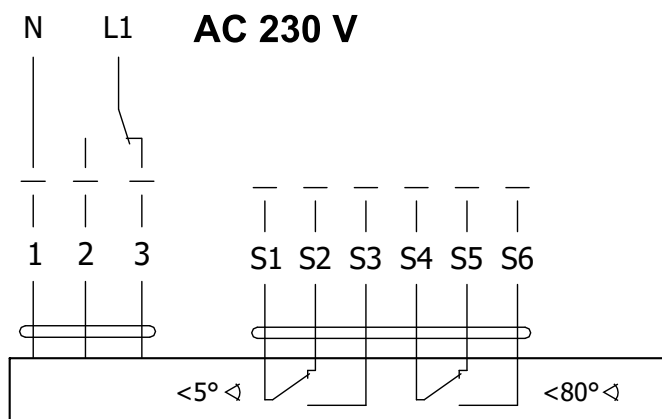
Actuator BELIMO BEN 24(-ST)



Actuator BELIMO BEN 24-SR



Actuator BELIMO BEN 230



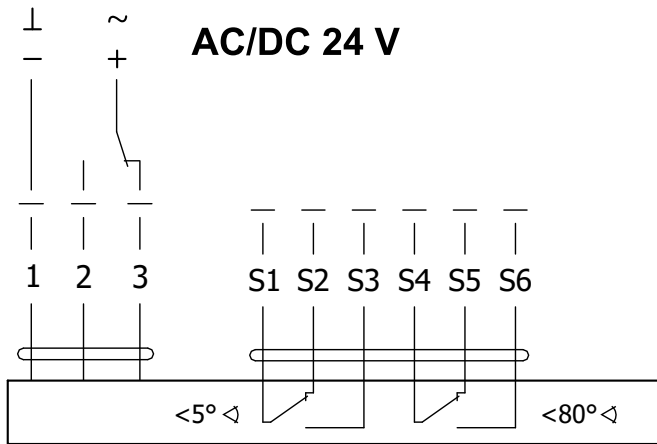
Extended leads are not possible with smoke control dampers as the belimo cabls are not fire rated to a high Field wiring must be brought into and terminated within the damper housing. For more detail → see pages 20 to 22, paragraph Assembly.

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

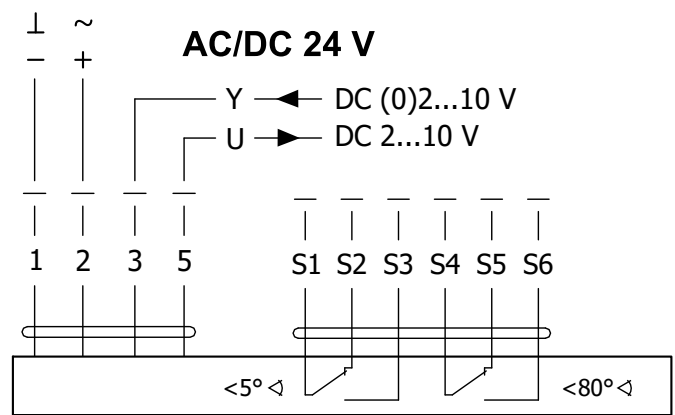
Actuator BELIMO - 15 Nm	BEN 24(-ST)	BEN 24-SR*	BEN 230
Power voltage	AC/DC 24 V 50/60Hz	AC/DC 24 V 50/60Hz	AC 230 V 50/60Hz
Power consumption - in operation - in the end position	3 W 0,1 W	3 W 0,3 W	4 W 0,4 W
Dimensioning	6 VA (Imax 8,2 A @ 5 ms)	6,5 VA (Imax 8.2 A @ 5 ms)	7 VA (Imax 4 A @ 5 ms)
Protection class	III	III	II
Degree of protection		IP 54	
Adjustment time for 95°		< 30 s	
Ambient temperature		-30°C ... +55°C	
Storage temperature		-40°C ... +80°C	
Connection - drive - 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

* Only available for 24V and selected damper sizes

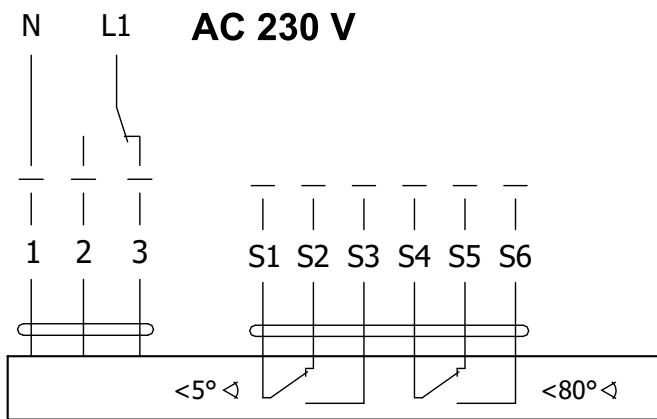
Actuator BELIMO BEE 24(-ST)



Actuator BELIMO BEE 24-SR



Actuator BELIMO BEE 230



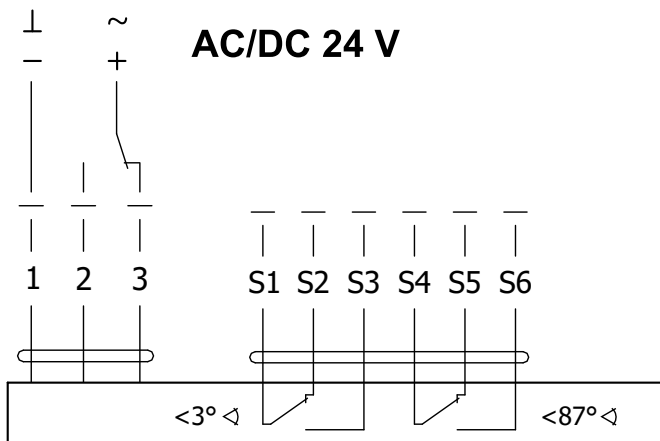
Extended leads are not possible with smoke control dampers as the belimo cables are not fire rated to a high Field wiring must be brought into and terminated within the damper housing. For more detail → see pages 20 to 22, paragraph Assembly.

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

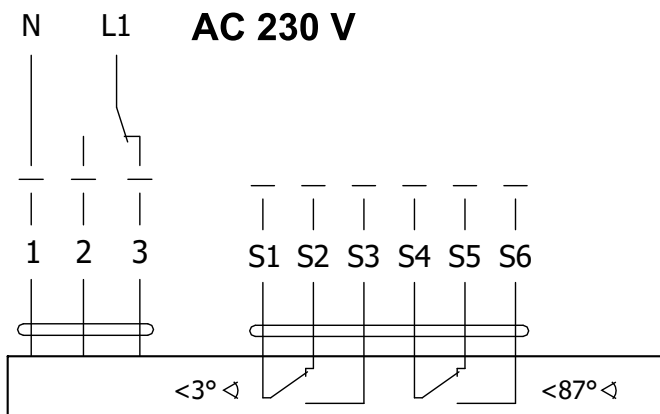
Actuator BELIMO - 25 Nm	BEE 24(-ST)	BEE 24-SR*	BEE 230
Power voltage	AC/DC 24 V 50/60Hz	AC/DC 24 V 50/60Hz	AC 230 V 50/60Hz
Power consumption - in operation	2,5 W	3 W	3,5 W
- in the end position	0,1 W	0,3 W	0,4 W
Dimensioning	5 VA (Imax 8,2 A @ 5 ms)	5,5 VA (Imax 8.2 A @ 5 ms)	6 VA (Imax 4 A @ 5 ms)
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 x 0,75 mm ²	Cable 1 m, 4 x 0,75 mm ²	Cable 1 m, 3 x 0,75 mm ²
- auxiliary switch	Cable 1 m, 6 x 0,75 mm ² (BEE 24-ST) with plug connectors	Cable 1 m, 6 x 0,75 mm ²	Cable 1 m, 6 x 0,75 mm ²

* Only available for 24V and selected damper sizes

Actuator BELIMO BE 24-12(-ST)



Actuator BELIMO BE 230-12



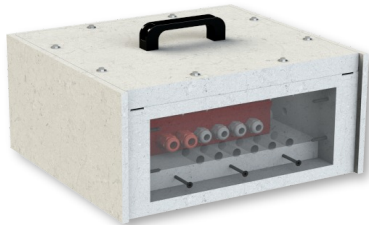
Extended leads are not possible with smoke control dampers as the belimo cables are not fire rated to a high Field wiring must be brought into and terminated within the damper housing. For more detail → see pages 20 to 22, paragraph Assembly.

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	-30°C ... +55°C	
Storage temperature	-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	

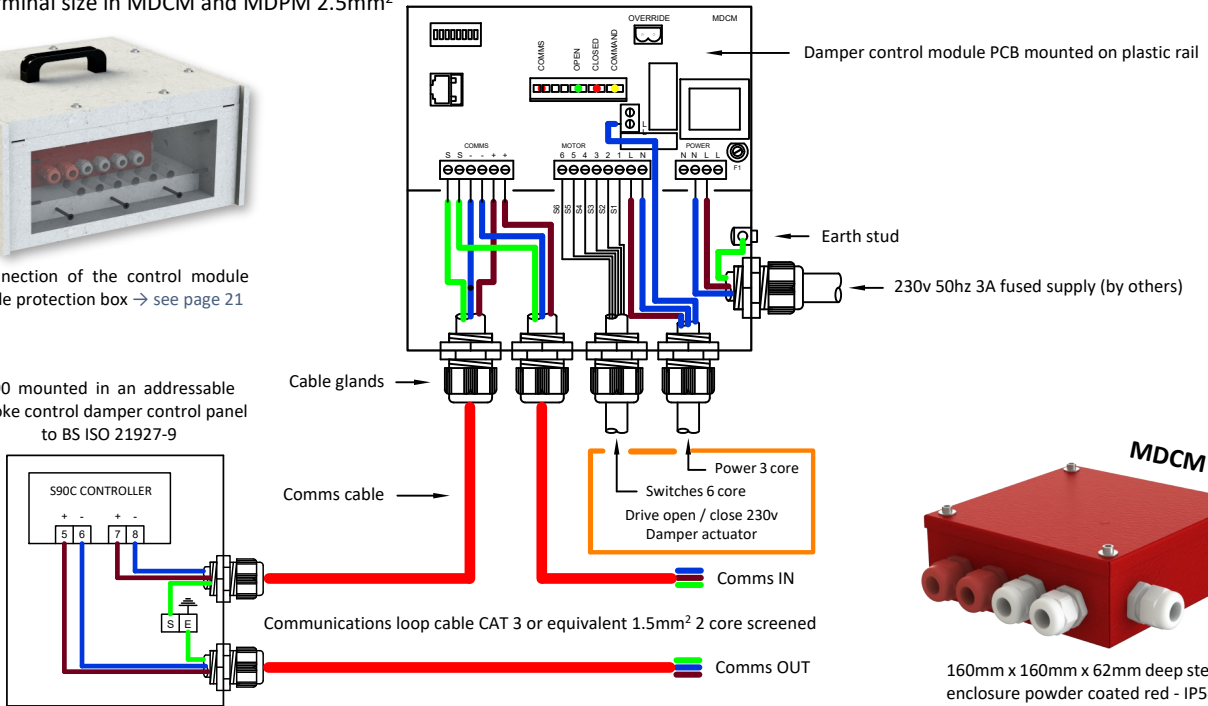
Communication and control module MDCM

- The MDCM damper control module is connected on a bi directional communication loop back to a control panel, typically located at the FCC.
- Each MDCM has a 230v local spur to power the damper actuator.
- Max terminal size in MDCM and MDPM 2.5mm²
- Up to 96x MDCM's can be connected on one loop and multiple loops can be incorporated.
- With an MA or AA system the MDCM's are mounted in a fire rated and tested Ca-Si housing to BS EN1366-10.



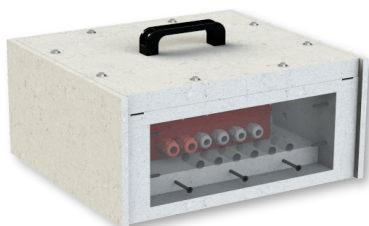
Details of connection of the control module interfaces inside protection box → see page 21

S90 mounted in an addressable smoke control damper control panel to BS ISO 21927-9



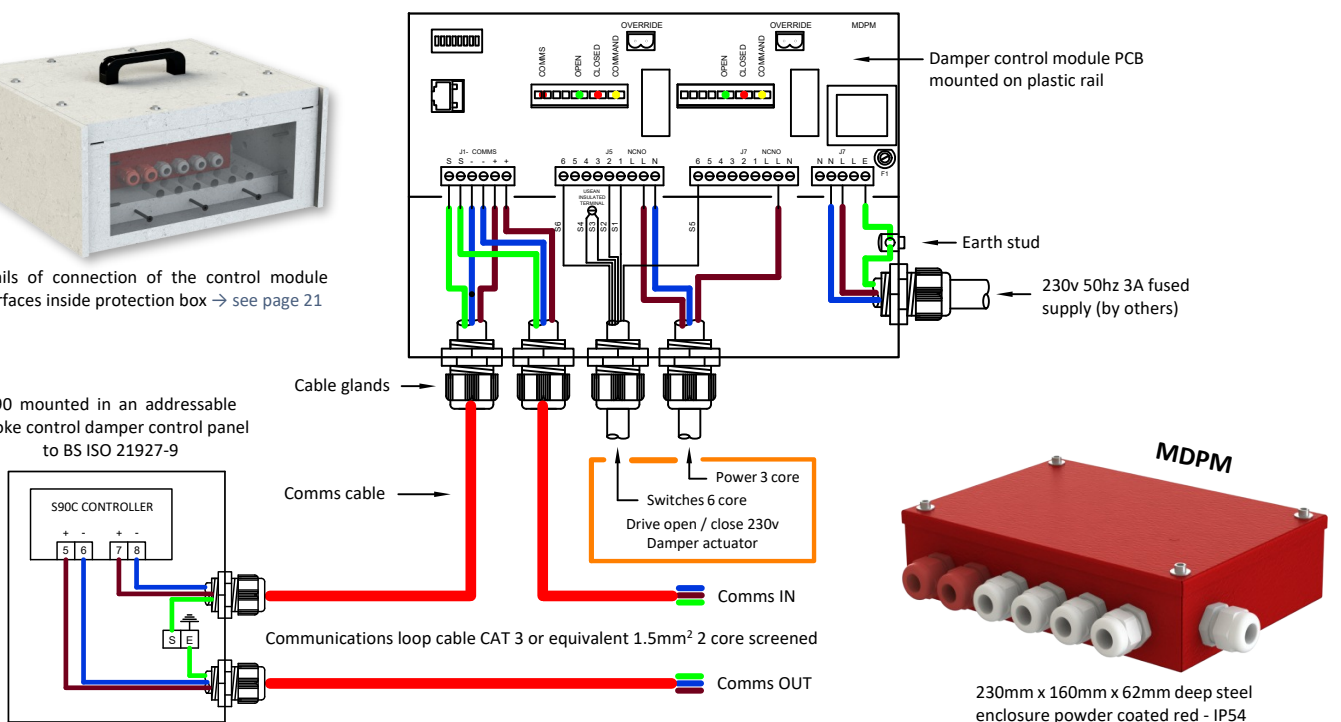
Communication and control module MDPM

- The MDPM damper control module is a combined control module and damper positioning module to provide a balanced/3R position.
- It is connected on a bi directional communication loop back to a control panel.
- Max terminal size in MDCM and MDPM 2.5mm²
- Each MDPM has a 230v local spur for powering the damper actuator, located at the FCC.
- Up to 96x MDPM's can be connected on one loop and multiple loops can be incorporated.
- With an MA or AA system the MDPM's are mounted in a fire rated and tested Ca-Si housing to BS EN1366-10.



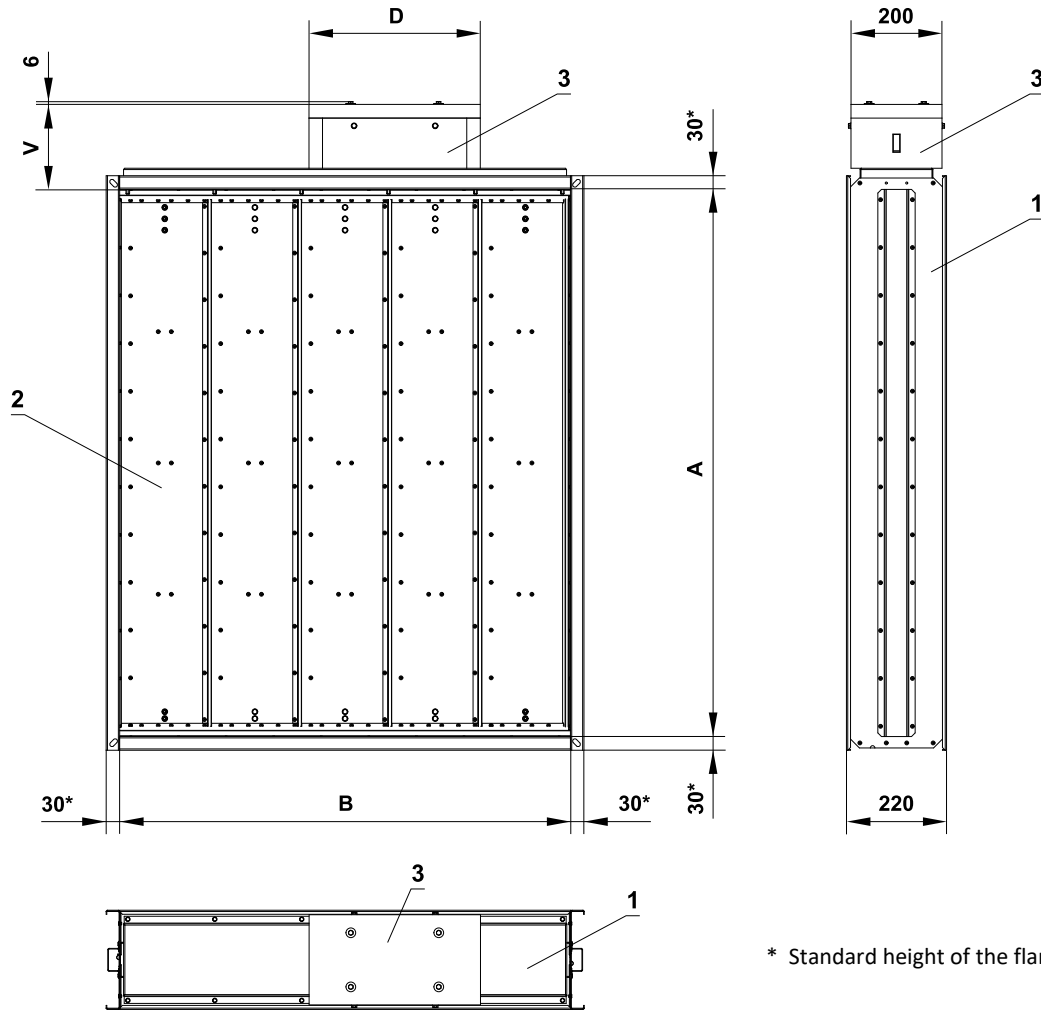
Details of connection of the control module interfaces inside protection box → see page 21

S90 mounted in an addressable smoke control damper control panel to BS ISO 21927-9



III. DIMENSIONS

Damper SEDS-L

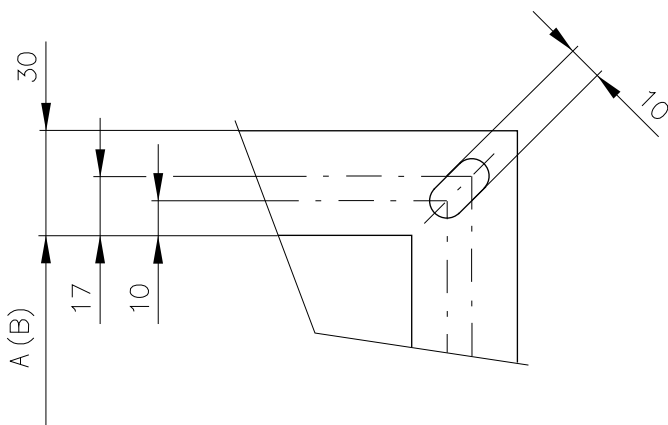


* Standard height of the flange

Actuating mechanism	V [mm]	D [mm]
BEN / BEE	176,5	315
BE	186,5	380

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

Flange with corner hole



Flanges of dampers are 30 mm wide with oval hole.

Technical parameters

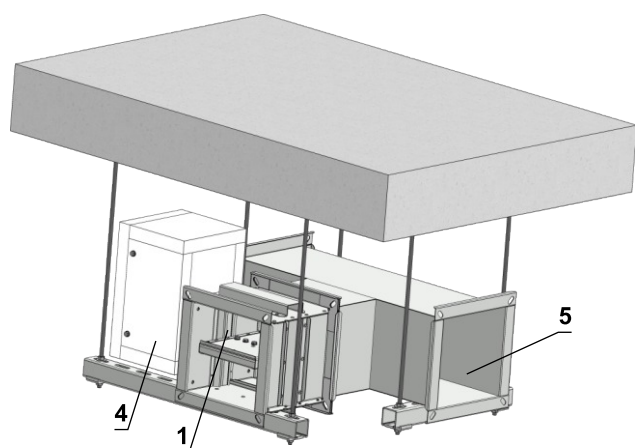
A x B [mm]	Number of blades	Weight [kg]	Free area S _f [m ²]	Actuating mechanism type	A x B [mm]	Number of blades	Weight [kg]	Free area S _f [m ²]	Actuating mechanism type	
200 x	200	1	13,4	0,0227	BELIMO BEN (15 N.m)	400 x	200	1	16,3	0,0511
	250	2	14,1	0,0270			250	2	17,7	0,0608
	300	2	14,9	0,0350			300	2	19,1	0,0788
	350	2	15,6	0,0430			350	2	20,5	0,0968
	400	2	16,3	0,0510			400	2	21,9	0,1148
	450	3	17	0,0554			450	3	23,3	0,1246
	500	3	17,7	0,0634			500	3	24,7	0,1426
	600	3	19,1	0,0794			600	3	27,4	0,1786
	700	4	20,5	0,0917			700	4	30,1	0,2063
	800	4	21,9	0,1077			800	4	32,7	0,2423
	900	5	23,3	0,1200			900	5	35,3	0,2700
	1000	5	24,7	0,1360			1000	5	37,9	0,3060
1100	6	26	0,1483	BELIMO BEE (25 N.m)	1100	6	40,4	0,3337		
1200	6	27,4	0,1643		1200	6	42,9	0,3697		
250 x	200	1	14,1	0,0298	BELIMO BEN (15 N.m)	450 x	200	1	17	0,0582
	250	2	15	0,0355			250	2	18,6	0,0693
	300	2	15,9	0,0460			300	2	20,2	0,0898
	350	2	16,8	0,0565			350	2	21,8	0,1103
	400	2	17,7	0,0670			400	2	23,3	0,1308
	450	3	18,6	0,0727			450	3	24,9	0,1419
	500	3	19,5	0,0832			500	3	26,4	0,1624
	600	3	21,2	0,1042			600	3	29,4	0,2034
	700	4	23	0,1203			700	4	32,4	0,2349
	800	4	24,7	0,1413			800	4	35,3	0,2759
	900	5	26,4	0,1575			900	5	38,2	0,3075
	1000	5	28,1	0,1785			BELIMO BEE (25 N.m)	1000	5	41
1100	6	29,8	0,1947	1100	6	43,8		0,3801		
1200	6	31,4	0,2157	1200	6	46,5		0,4211		
300 x	200	1	14,9	0,0369	BELIMO BEN (15 N.m)	500 x	200	1	17,7	0,0653
	250	2	15,9	0,0439			250	2	19,5	0,0777
	300	2	17	0,0569			300	2	21,2	0,1007
	350	2	18,1	0,0699			350	2	23	0,1237
	400	2	19,1	0,0829			400	2	24,7	0,1467
	450	3	20,2	0,0900			450	3	26,4	0,1592
	500	3	21,2	0,1030			500	3	28,1	0,1822
	600	3	23,3	0,1290			600	3	31,4	0,2282
	700	4	25,4	0,1490			700	4	34,7	0,2636
	800	4	27,4	0,1750			800	4	37,9	0,3096
	900	5	29,4	0,1950			900	5	41	0,3450
	1000	5	31,4	0,2210			BELIMO BEE (25 N.m)	1000	5	44,1
1100	6	33,4	0,2410	1100	6	47,1		0,4264		
1200	6	35,3	0,2670	1200	6	50,1		0,4724		
350 x	200	1	15,6	0,0440	BELIMO BEN (15 N.m)	600 x	200	1	19,1	0,0795
	250	2	16,8	0,0524			250	2	21,2	0,0946
	300	2	18,1	0,0679			300	2	23,3	0,1226
	350	2	19,3	0,0834			350	2	25,4	0,1506
	400	2	20,5	0,0989			400	2	27,4	0,1786
	450	3	21,8	0,1073			450	3	29,4	0,1938
	500	3	23	0,1228			500	3	31,4	0,2218
	600	3	25,4	0,1538			600	3	35,3	0,2778
	700	4	27,7	0,1776			700	4	39,1	0,3209
	800	4	30,1	0,2086			800	4	42,9	0,3769
	900	5	32,4	0,2325			900	5	46,5	0,4200
	1000	5	34,7	0,2635			BELIMO BEE (25 N.m)	1000	5	50,1
1100	6	36,9	0,2874	1100	6	53,6		0,5191		
1200	6	39,1	0,3184	1200	6	56,9		0,5751		

A x B [mm]	Number of blades	Weight [kg]	Free area S _f [m ²]	Actuating mechanism type	A x B [mm]	Number of blades	Weight [kg]	Free area S _f [m ²]	Actuating mechanism type
700 x	200	1	20,5	0,0937	1000 x	200	1	24,7	0,1363
	250	2	23	0,1115		250	2	28,1	0,1622
	300	2	25,4	0,1445		300	2	31,4	0,2102
	350	2	27,7	0,1775		350	2	34,7	0,2582
	400	2	30,1	0,2105		400	2	37,9	0,3062
	450	3	32,4	0,2284		450	3	41	0,3322
	500	3	34,7	0,2614		500	3	44,1	0,3802
	600	3	39,1	0,3274		600	3	50,1	0,4762
	700	4	43,5	0,3782		700	4	55,8	0,5501
	800	4	47,7	0,4442		800	4	61,3	0,6461
	900	5	51,8	0,4950		900	5	66,5	0,7200
	1000	5	55,8	0,5610		1000	5	71,5	0,8160
1100	6	59,7	0,6118	1100	6	76,2	0,8899		
1200	6	63,4	0,6778	1200	6	80,7	0,9859		
800 x	200	1	21,9	0,1079	1100 x	200	1	26	0,1505
	250	2	24,7	0,1284		250	2	29,8	0,1791
	300	2	27,4	0,1664		300	2	33,4	0,2321
	350	2	30,1	0,2044		350	2	36,9	0,2851
	400	2	32,7	0,2424		400	2	40,4	0,3381
	450	3	35,3	0,2630		450	3	43,8	0,3668
	500	3	37,9	0,3010		500	3	47,1	0,4198
	600	3	42,9	0,3770		600	3	53,6	0,5258
	700	4	47,7	0,4355		700	4	59,7	0,6074
	800	4	52,4	0,5115		800	4	65,5	0,7134
	900	5	56,9	0,5700		900	5	71	0,7950
	1000	5	61,3	0,6460		1000	5	76,2	0,9010
1100	6	65,5	0,7045	1100	6	81,1	0,9826		
1200	6	69,5	0,7805	1200	6	85,8	1,0886		
900 x	200	1	23,3	0,1221	1200 x	200	1	27,4	0,1647
	250	2	26,4	0,1453		250	2	31,4	0,1960
	300	2	29,4	0,1883		300	2	35,3	0,2540
	350	2	32,4	0,2313		350	2	39,1	0,3120
	400	2	35,3	0,2743		400	2	42,9	0,3700
	450	3	38,2	0,2976		450	3	46,5	0,4014
	500	3	41	0,3406		500	3	50,1	0,4594
	600	3	46,5	0,4266		600	3	56,9	0,5754
	700	4	51,8	0,4928		700	4	63,4	0,6647
	800	4	56,9	0,5788		800	4	69,5	0,7807
	900	5	61,8	0,6450		900	5	75,3	0,8700
	1000	5	66,5	0,7310		1000	5	80,7	0,9860
1100	6	71	0,7972	1100	6	85,8	1,0753		
1200	6	75,3	0,8832	1200	6	90,5	1,1913		

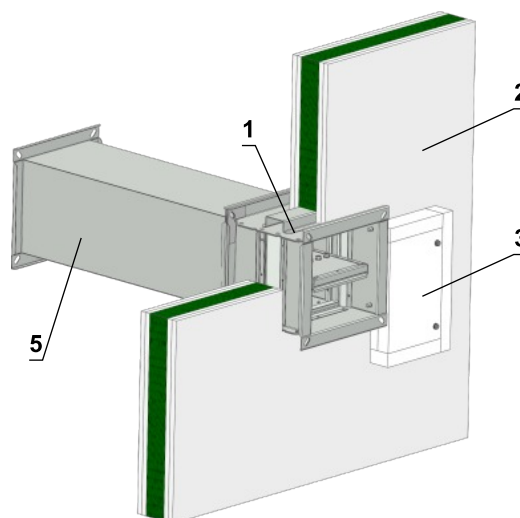
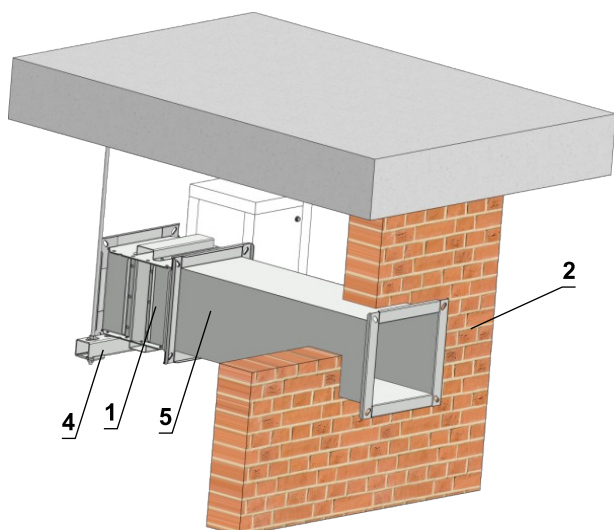
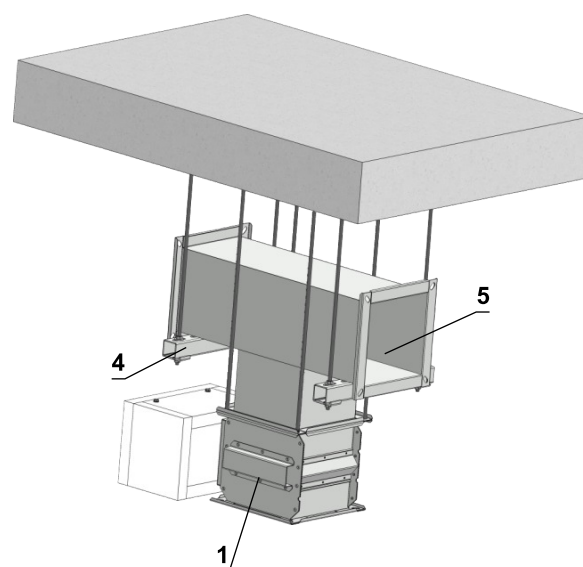
IV. INSTALLATION

Placement and installation

- Dampers single are designed to remove heat and combustion products (e.g. smoke) from single fire compartment according BS EN 12101-8.
- Dampers are designed for installation with horizontal or vertical axis of the blades.
- Connecting smoke exhaust duct has to be hung or supported so as all load transfer from the connecting 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 blades must be in position "CLOSED". The damper body should not be deformed in the course of installation.
- Once the damper is built in, its blade should move freely and not rub against the body of the damper during operation.



- The dampers and duct must be suspended separately.
- Duct from BS EN 12101-7 in Steel
- Details of connection to duct → see page 15



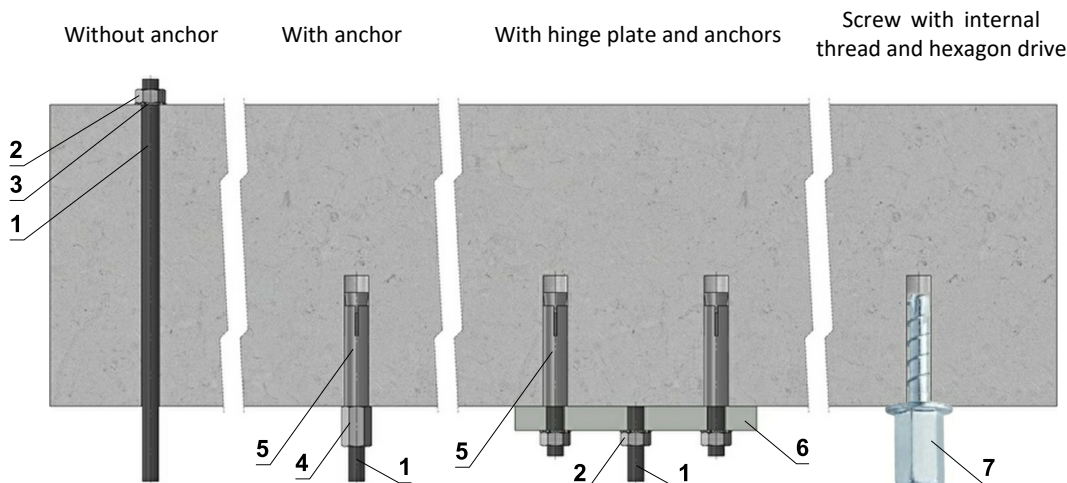
- 1 SEDS-L
- 2 Wall construction without fire resistance
- 3 Atypical protection box with access to actuator from side, not as standard from the top
- 4 Fixing profile with threaded rod → see pages 13 to 14
- 5 Duct

V. SUSPENSION SYSTEMS

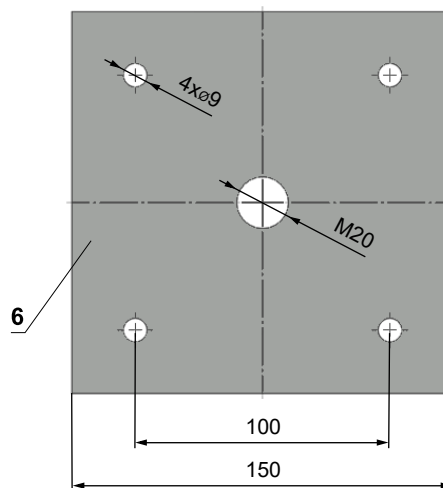
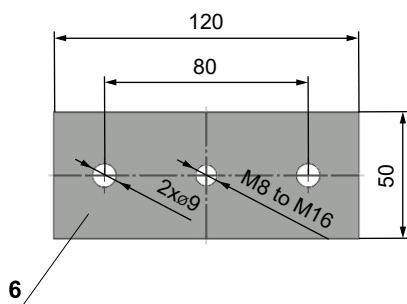
Mounting to the ceiling wall

- The dampers must 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 duct 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.

Possible examples of anchoring to the ceiling construction
 Follow the instructions of fixing specialist or installation company



Hinge plates



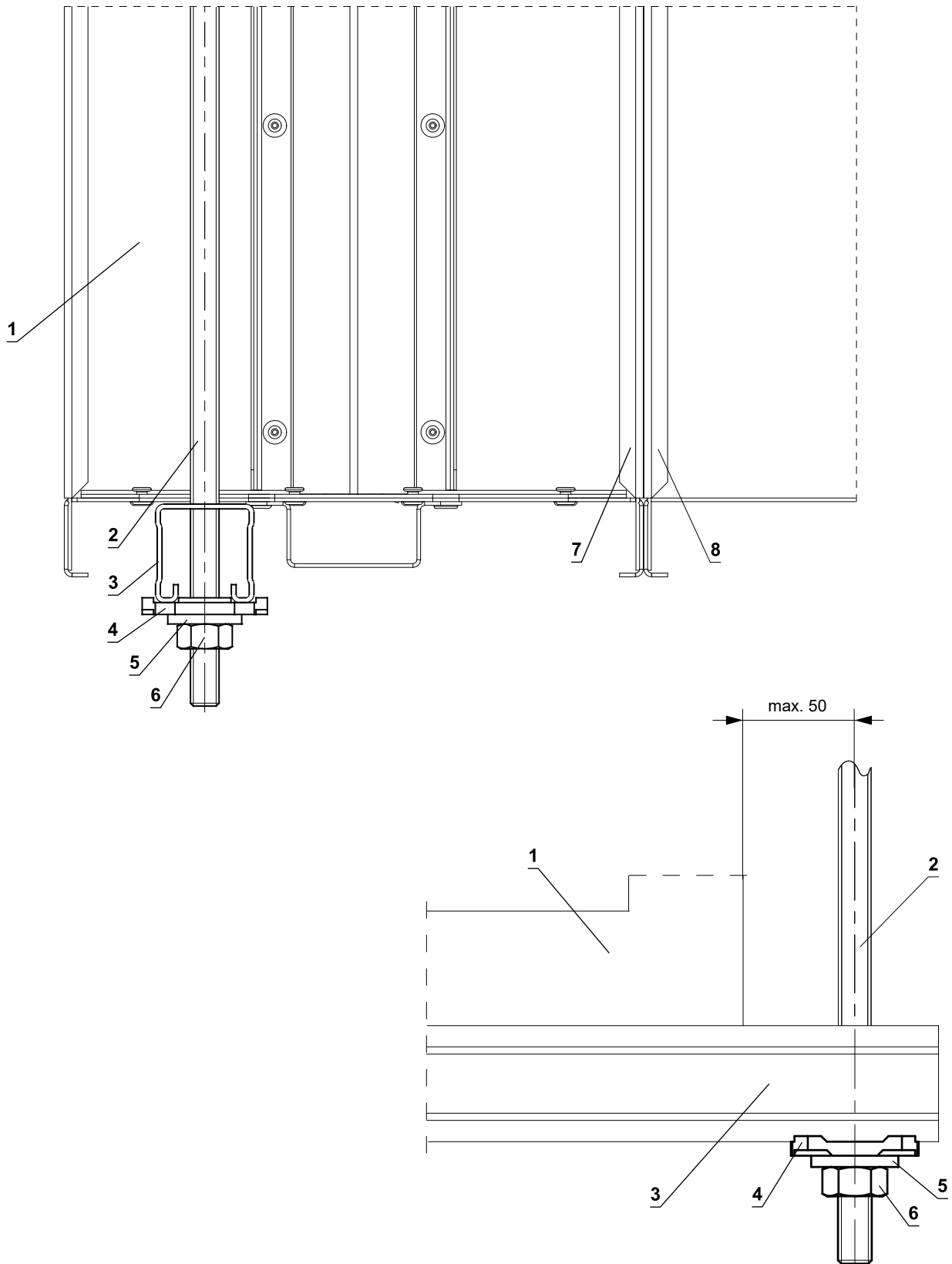
- If in doubt then always consult a specialist anchor engineer such as Halfen or Hilti.

Load capacities of threaded rods at the required fire resistance 60 min. $t \le 120 \text{ min.}$

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

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

Example of placing of mounting profiles HILTI

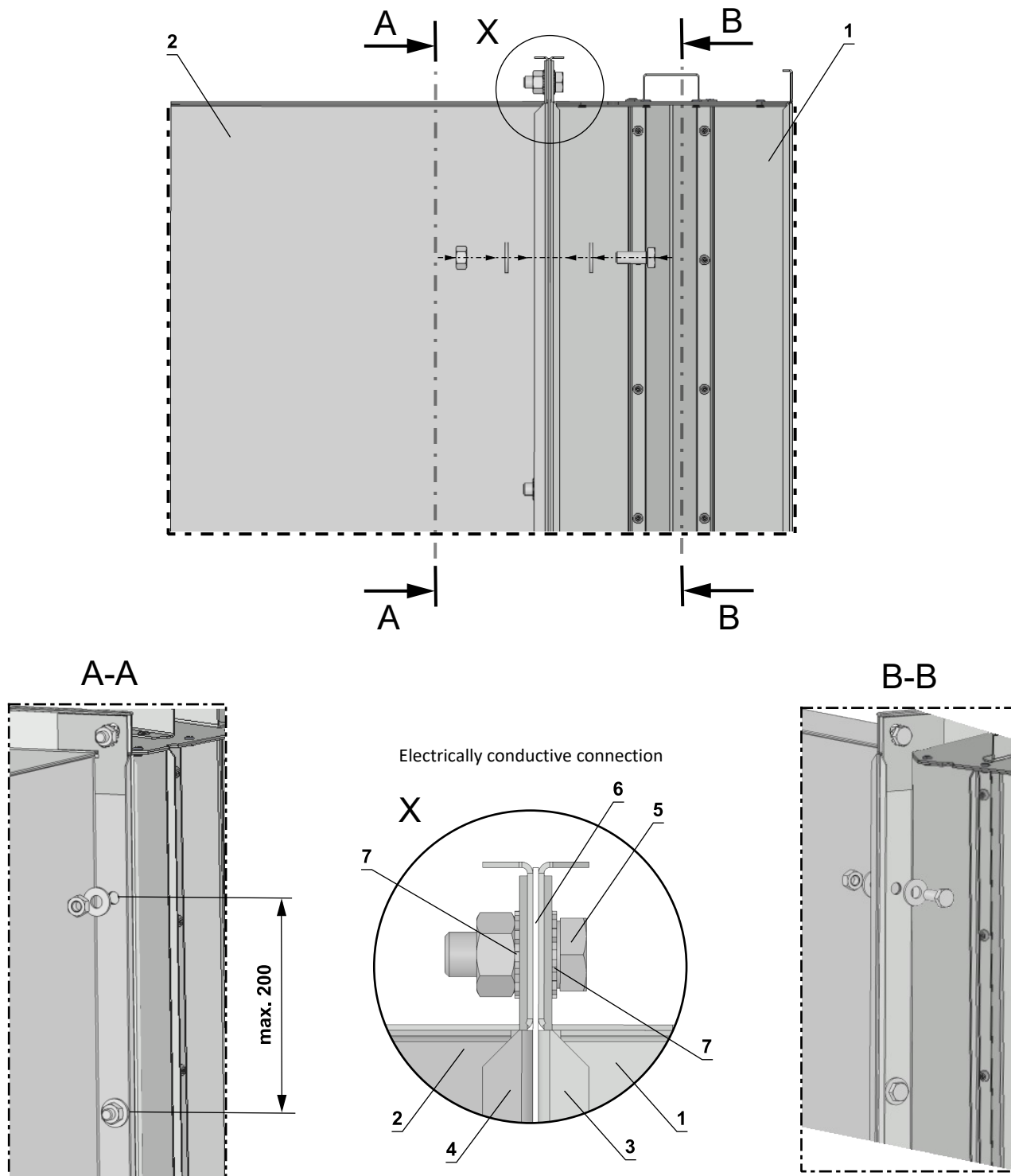


- 1 SEDS-L
- 2 Threaded rod M8 - M12
- 3 Support HILTI MQ-41 or MQ-41/3
- 4 Bored plate HILTI MQZ-L
- 5 Washer for M8 - M12
- 6 Nut M8 - M12
- 7 Flange of SEDS-L
- 8 Flange of duct

Example of duct connection

Flange connection

Connection to smoke extract duct



- 1 SEDS-L
- 2 Connecting air duct
- 3 Flange of SEDS-L
- 4 Flange of duct
- 5 M8 bolt assembly (bolt M8x20 mm, 2 pcs large washer M8, nut M8) *
- 6 Ceramic self-adhesive tape (FJ 120 Pyrosil B 170-250 kg/m³ - Tremco-illbruck) or equivalent
- 7 Lock washers

* min. one connection must be electrically conductive

VI. ACCESSORIES

Cover grille KMM

- The grilles type KMM (TPM 002/96) can be used to close smoke control dampers.
- These grilles are available in all sizes of the smoke control dampers.
- Free area value for KMM is 78%.

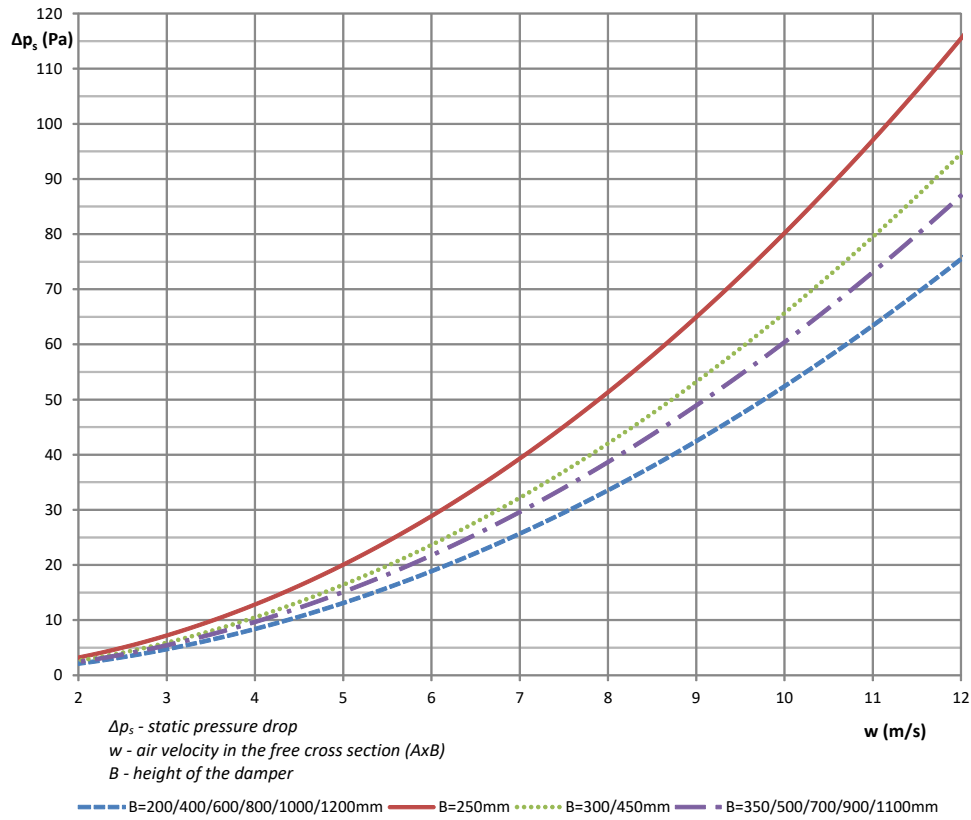
SEDS-L with cover grille



VII. TECHNICAL DATA

Pressure loss

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



Noise data - level of acoustic output corrected with filter A

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

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

w - air velocity in the free cross section (AxB) - i.e. before blades

f - frequency of octave band

Sound power level L_w 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

VIII. MATERIAL, FINISHING

- Damper casing and damper blade are made of galvanized sheet metal without any other surface finish.
- Fasteners are galvanized.
Any other requirements for the design shall be considered atypical and shall be addressed on an individual basis.
- The actuator cover is made of fire-resistant material (fire protection board).

IX. TRANSPORTATION AND STORAGE

Logistic terms

- Dampers are delivered on a pallets. As standard, the dampers are wrapped in plastic foil for protection during transport and must not be used for long-term storage of the equipment. Changes in temperature during transport may cause condensation of water vapour inside the packaging and thereby conditions may arise inside the packaging that are suitable for corrosion of materials used in the equipment (e.g. white corrosion on zinc-coated items or mould on calcium silicate). Therefore, it is necessary to remove the transport packaging immediately after unloading to allow air to circulate around the product.
- The equipment must be stored in clean, dry, well ventilated and dust-free environment out of direct sunlight. ensuring protection against moisture and extremes of temperatures (minimum temperature +5°C) the equipment must be protected against mechanical and accidental damage prior to installation.
- Another required packaging system should be approved and agreed by manufacturer. Packaging material is not returnable in case that another packaging system (material) is required and used and it is not included into final price of damper.
- For unloading and further manipulation with the damper is necessary to use appropriate tooling (forklifts) due to damper weight. Dampers are fragile.
- Dampers are transported by box freight vehicles without direct weather impact, there must not occur any shocks and ambient temperature must not exceed +50°C. Dampers must be protected against impact when transported and manipulated. During transportation, the damper blade must be in the "CLOSED" position.
- Dampers are stored indoor in environment without any aggressive vapours, gases or dust. Indoor temperature must be in the range from -30°C to +50°C and maximum relative humidity 95% (avoid condensation on the damper body). Dampers must be protected against impact when transported and manipulated.

X. ASSEMBLY, ATTENDANCE AND MAINTENANCE

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

DANGER OF DAMAGE

Always:

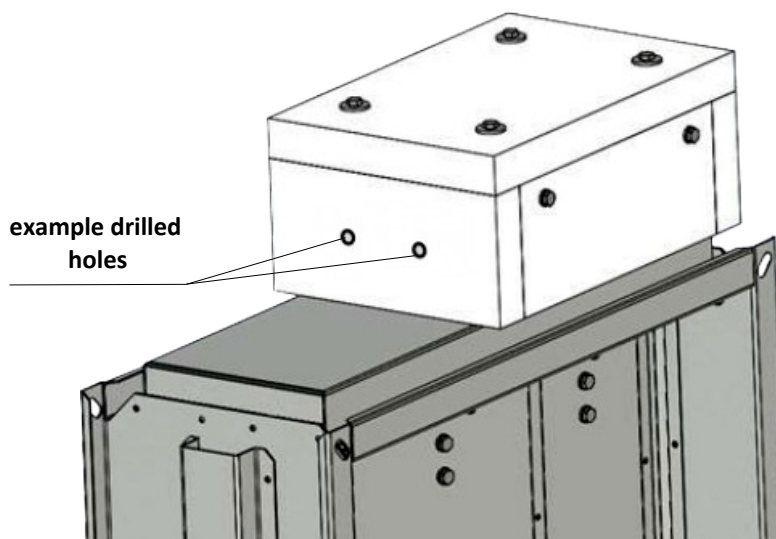
**REMOVE POWER BEFORE USING ALLEN KEY!
NEVER USE A POWER TOOL!**

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

Electrical connection of the actuator in protection box

Protection box without slot or predrilled holes

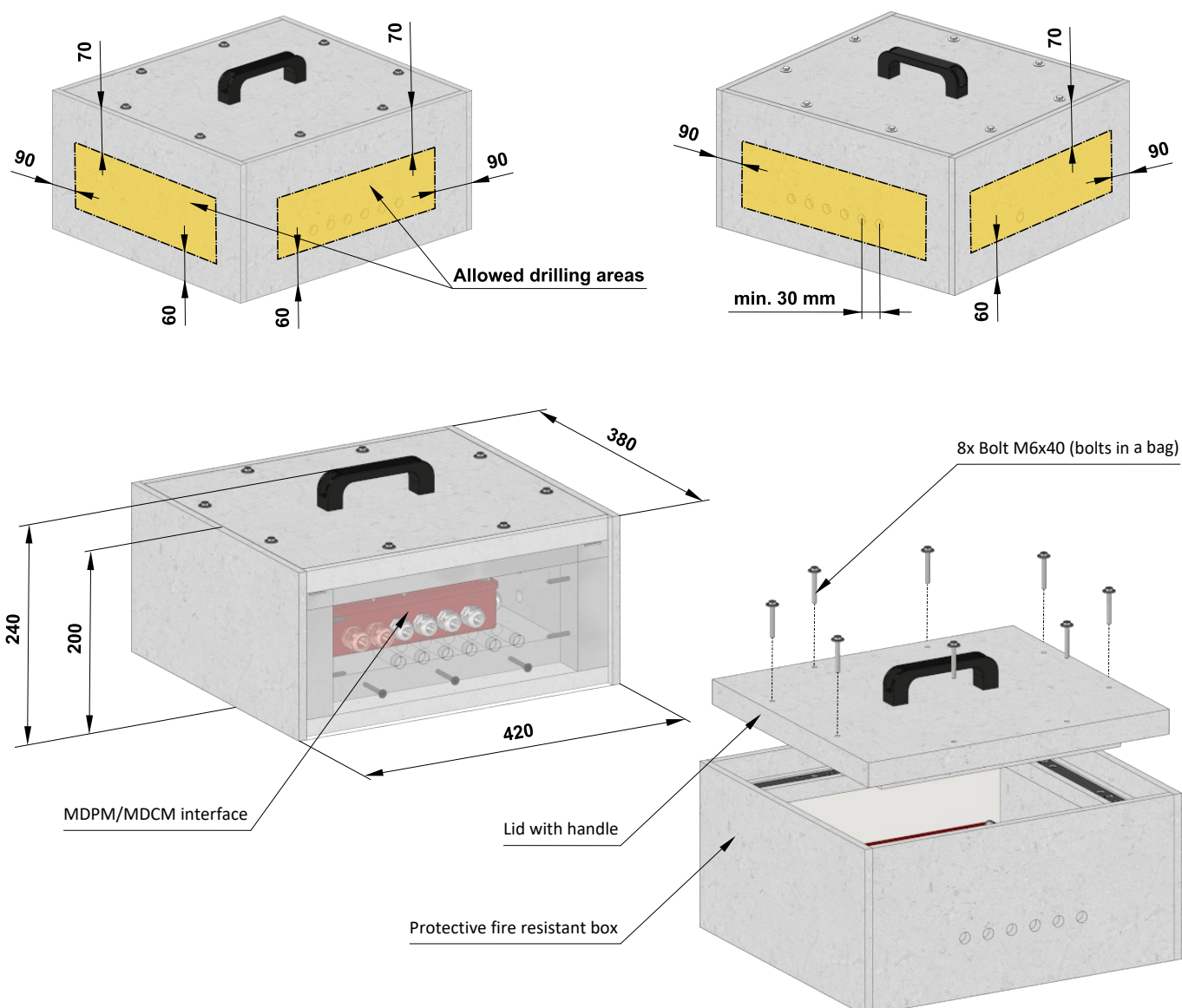
- Drill two holes into the protection box (from outside to inside) and pull through field wiring cables (CAT 3 fire resistant cables as BS 8519) to connect to the actuator trailing lead inside the housing, using a standard screwed cable connector block, the protection box is made of calcium silicate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



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

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

- Drill holes into the protection box (from outside to inside) and pull through field wiring cable (fire resistant cables) to connect control module. Protection box is made of calcium silicate insulating plates.
- Procedure:
 - Screw red box of MDPM/MDCM interface inside of the FIRE RATED housing to the back side, use pre drilled holes in red box and self-taping screws 4,8x25 mm. Minimum distance from walls 20 mm.
 - Use drill (drill size acc. to suit connecting cable $\varnothing + 2$ mm for seal up by mastic) and make holes (min. pitch of the holes must be 30 mm), number of holes depends on the type of control module. **It is possible to drill holes in any side of the protection box.**
 - Pull the heat resistant cable through the calcium silicate insulating plate (wall) and connect with cables from control module.
 - Seal up the space around cable with fire resistant mastic (HILTI CFS-S ACR, PROMASTOP) or equivalent.
 - Let the mastic harden.
- Placement:
 - The FIRE RATED housing can be installed onto a wall.
 - For installation, drill 4 holes in the rear of the housing (from inside to outside) with a maximum hole diameter of 8,5mm, use fixing appropriate for the application. Seal all holes and gap between FIRE RATED housing and wall with firestop (HILTI CFS-S ACR, PROMASTOP).



Entry into service and revisions

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

XI. ORDERING INFORMATION

Ordering key



EXAMPLE:

SEDS-L UK 200x200 .44 Q30-ZN

Smoke control damper SEDS-L, dimension 200x200 mm, control design with spring return actuator AC 230 V, flange width 30 mm, galvanized material variant.

1 | Smoke control damper type - SEDS-L

2 | Country of destination

3 | Damper dimensions A x B → see pages 10 to 11

"A" is the width of the damper

"B" is the height of the damper

4 | Damper design

.44	With actuating mechanism BEN, BEE, BE for 230V
.54	With actuating mechanism BEN, BEE, BE for 24V
.65*	With actuating mechanism BEN (BEE)-SR for 24V

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

5 | Flange dimension


Q30	Flange width 30 mm
-----	--------------------


6 | Material

ZN	Galvanized
----	------------

Data label

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

MANDÍK [®]		MANDÍK, a.s. Dobříšská 550, 267 24 Hostomice, Czech Republic	
SINGLE COMPARTMENT SMOKE CONTROL DAMPER - XXXX			
DIMENSION:	<input type="text"/>	DESIGN:	<input type="text"/>
SERIAL.NO.:	<input type="text"/>	WEIGHT (kg):	<input type="text"/>
CLASSIFICATION:		MANUAL	
TPM XXX/XX	Cert. No.: 2822-UKCA-CPR-XXXX, DoP: PM/XXXX/XX/XX/X	XX	EN 12101:2011
			UKCA 2822

MANDÍK [®]		MANDÍK, a.s. Dobříšská 550, 267 24 Hostomice, Czech Republic	
SINGLE COMPARTMENT SMOKE CONTROL DAMPER - XXXX			
DIMENSION:	<input type="text"/>	DESIGN:	<input type="text"/>
SERIAL.NO.:	<input type="text"/>	WEIGHT (kg):	<input type="text"/>
CLASSIFICATION:		MANUAL	
TPM XXX/XX	Cert. No.: 1391-CPR-XXXX/XXXX, DoP: PM/XXXX/XX/XX/X	XX	EN 12101:2011
			CE 1391

The producer reserves the right for innovations of the product.
For actual product information see www.mandik.co.uk

MANDIK[®]

www.mandik.co.uk

Manufacturer

MANDIK, a. s. • Dobříšská 550 • 267 24 Hostomice • Czech Republic • Tel.: +420 311 706 742 • E-Mail: mandik@mandik.cz

Authorized representative

MANDIK UK Ltd • 130 Aztec West • Bristol BS32 4UB • United Kingdom • Tel.: +44 117 4526376 • E-Mail: help@mandik.co.uk