

Type EK-EU



FOR MECHANICAL SMOKE EXTRACT SYSTEMS AND AS AN ADDITIONAL SUPPLY AIR INLET

Rectangular smoke control dampers with extract ventilation function, for smoke extract with mechanical smoke extract systems or as an additional supply air inlet

- Nominal sizes 200 × 200 – 1500 × 800 mm, in increments of 1 mm
- Casing, damper blade and actuator encasing made of temperature-resistant calcium silicate
- Remote control with actuator
- Pressure level 3 (operating pressure –1500 to 500 Pa)
- Manual or automatic release
- For smoke extract ducts from 35 mm wall thickness
- Cmod = ventilation function and intermediate positions for flow rate balancing
- Casing air leakage to EN 1751, class C

Optional equipment and accessories

- Connecting subframe
- Cover grille
- Integration into the central BMS with TROXNETCOM



Application

- Smoke control dampers of Type EK-EU, with CE marking and declaration of performance, for smoke extract with mechanical smoke extract systems; also for natural smoke and heat exhaust systems
- Provision of fresh air supply for mechanical smoke extract systems
- Extract ventilation function is possible if the mechanical smoke extract system has been approved (general building approval) for extract ventilation
- Integration into the central BMS with TROXNETCOM

Special characteristics

- Declaration of performance according to Construction Products Regulation
- Classification to EN 13501-4, EI 90 ($v_{edw} - h_{odw}, i \leftrightarrow o$) S1500 C_{mod} MA multi
- C_{mod} Use for ventilation function in combined systems and intermediate position for hydraulic balancing with TROXNETCOM
- Complies with the requirements of EN 12101-8
- Tested for fire resistance properties to DIN 1366-10 and EN 1366-2
- Casing air leakage to EN 1751, class C
- Low sound power level and differential pressure
- Any airflow direction
- Integration into the central BMS with TROXNETCOM
- General building inspectorate licence Z-56.4212-990

Classification

- EI 90 ($v_{edw} - h_{odw}, i \leftrightarrow o$) S1500 C_{mod} MA multi to EN 13501-4

Nominal sizes

- Width/height 200/200 – 1500/800 mm (in increments of 1 mm)
- Casing length L = 600 mm or 800 mm, depending on casing height
- 490 mm upon request

Parts and characteristics

- Installation position is independent of the airflow direction or position of the damper blade shaft
- Pressure level 3 (operating pressure –1500 to 500 Pa)
- Automatic (AA) or manual release (MA)

Attachments

- Open/Close actuator, 24 V AC/DC or 230 V AC supply voltage
- Network module for the integration with AS-i networks, e.g. AS-EM/EK, AS-EM/SIL2

Accessories

- Connecting subframe

- Cover grille tested to EN 1366-10
- Inspection access on the operating side, at the top/bottom

Useful additions

- Duct smoke detector RM-O-3-D
- Duct smoke detector with airflow monitor RM-O-VS-D

X-FANS smoke exhaust fans

- Smoke exhaust fan for roof installation BVDAX/BVD
- Smoke exhaust fan for wall installation BVW/BVWAXN
- Smoke exhaust centrifugal fan BVREH/BVRA
- Smoke exhaust jet fans BVGAX/BVGAXN

All smoke exhaust fans are tested to EN 12101-3, for F200/F300/F400 and F600, depending on the type. With CE marking, declaration of performance and application approval for the German market.

Construction features

- Rectangular construction
- Reversible open/close actuator
- Remote control with actuator
- Suitable for the connection of cover grilles or connecting subframes
- Inspection access at the top and bottom

Materials and surfaces

- Casing, damper blade and actuator encasing made of temperature-resistant calcium silicate
- Brass bearings
- Shafts made of stainless steel

Standards and guidelines

- Construction Products Regulation
- EN 12101-8:2011 Smoke and heat control systems – Smoke control dampers
- EN 1366-10:2011 Fire resistance tests for service installations – Smoke control dampers
- EN 1366-2:1999 Fire resistance tests for service installations – Fire dampers
- EN 13501-4:2009 Fire classification of construction products and building elements
- EN 1751:1999 Ventilation for buildings – Air terminal devices
- German MLAR guideline (guideline on fire protection requirements for duct systems)

Maintenance

- Mechanical smoke extract systems require that the power supply is maintained even in the event of a fire
- Smoke control dampers must be maintained regularly and must be operational at

all times

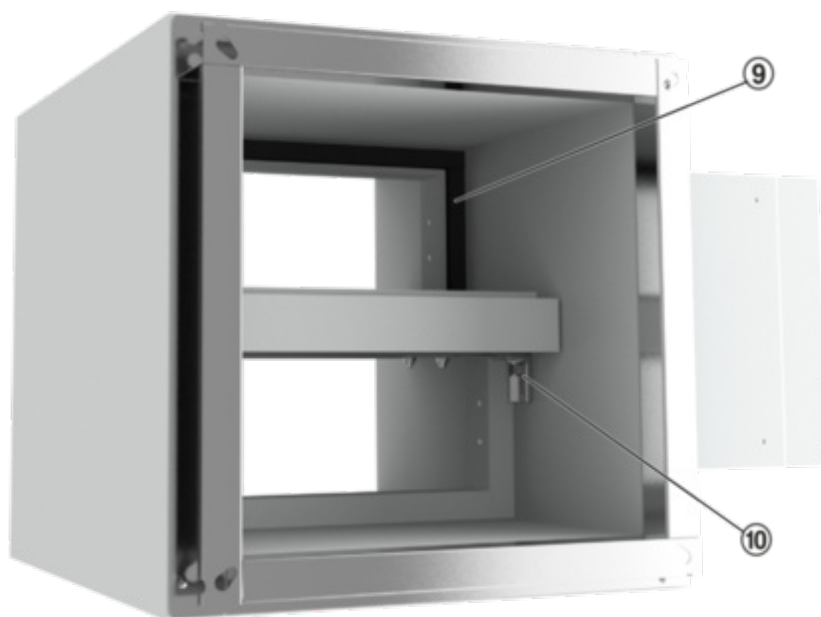
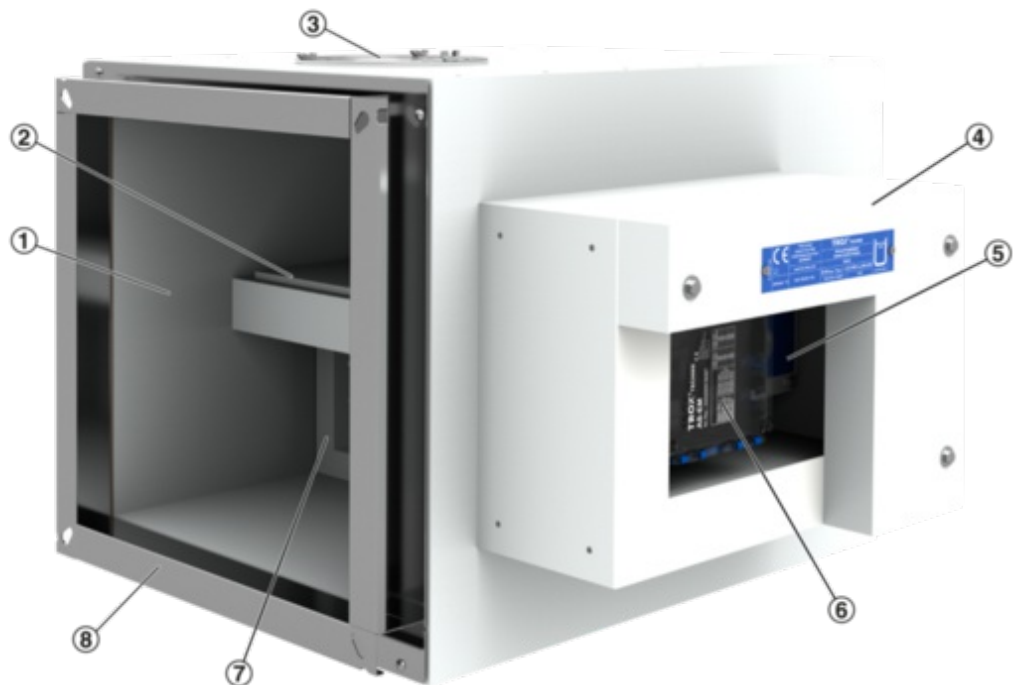
- Maintenance is required at least every 6 months
- A maintenance report must be created; documents must be kept for reference
- The functional reliability of the smoke control damper must be tested at least every six months; this has to be arranged out by the owner of the smoke extract system; functional tests must be carried out in compliance with the basic maintenance principles stated in EN 13306 and DIN 31051. If two consecutive tests, one 6 months after the other, are successful, the next test can be conducted one year later
- For details on maintenance and inspection refer to the installation and operating manual

TECHNICAL INFORMATION

Functional description

Smoke control dampers are used in mechanical smoke extract systems and in natural smoke and heat exhaust systems. They are used for extracting smoke gases and for providing additional supply air to one or more fire compartments. The dampers are made of calcium silicate panels and are opened by an encased actuator; when smoke is detected, the actuator is triggered by a signal either from a duct smoke detector or from a fire alarm system. Smoke control dampers have two safety positions: open and closed. In the case of fire-resistant smoke control dampers for multiple compartments, the safety position is either 'open' or 'closed', depending on the fire site and the path of the smoke to be extracted. If the safety position is 'open', the free area must be maintained even in the event of a fire. According to the specified time-temperature curve, an EK-EU can still fully open or close after 25 minutes (MA, manual release). Regular maintenance of the smoke control damper is required to ensure its functional reliability.

Schematic illustration of the EK-EU with open/close actuator



- ① Casing
- ② Damper blade
- ③ Actuator encasing (sectional view)
- ④ Open/Close actuator
- ⑤ Control module AS-EM or AS-EM/SIL2 (optional)
- ⑥ Travel Stop with seal
- ⑦ Connecting subframe or cover grille (optional)
- ⑧ Seal

© Blade restrictor

Nominal sizes	200 × 200 mm – 1500 × 800 mm, in increments of 1 mm
Casing length	600 and 800 mm
Volume flow rate range	Up to 12000 l/s or up to 43200 m ³ /h
Differential pressure range	Pressure level 3: –1500 to 500 Pa
Operating temperature	–30 to 50 °C
Upstream velocity*	≤ 10 m/s

* Data applies to uniform upstream and downstream conditions for the smoke control damper

Volume flow rate [m³/h], pressure loss ΔP [Pa] and sound power level [dB(A)] based on damper blade dimensions, at 10 m/s upstream velocity

H	10 m/s	B									
H	10 m/s	200	250	300	350	400	450	500	550	600	650
200	m³/h	1440	1800	2160	2520	2880	3240	3600	3960	4320	4680
200	Pa	683	388	282	226	191	167	149	135	124	115
200	dB(A)	79	76	75	74	74	74	74	73	73	73
250	m³/h	1800	2250	2700	3150	3600	4050	4500	4950	5400	5850
250	Pa	304	213	168	141	123	110	100	91	85	79
250	dB(A)	72	70	69	68	68	68	68	68	68	68
300	m³/h	2160	2700	3240	3780	4320	4860	5400	5940	6480	7020
300	Pa	209	155	126	108	95	85	78	72	67	63
300	dB(A)	68	67	66	65	65	65	65	65	65	65
350	m³/h	2520	3150	3780	4410	5040	5670	6300	6930	7560	8190
350	Pa	164	125	103	89	79	71	65	60	56	53
350	dB(A)	66	65	64	64	63	63	63	63	63	64
400	m³/h	2880	3600	4320	5040	5760	6480	7200	7920	8640	9360
400	Pa	137	106	88	77	68	62	57	53	49	46
400	dB(A)	65	64	63	63	62	62	62	62	62	63
450	m³/h	3240	4050	4860	5670	6480	7290	8100	8910	9720	10530
450	Pa	119	93	78	68	61	55	51	47	44	41
450	dB(A)	64	63	62	62	62	62	62	62	62	62
500	m³/h	3600	4500	5400	6300	7200	8100	9000	9900	10800	11700
500	Pa	106	83	70	61	55	50	46	43	40	38
500	dB(A)	63	62	62	61	61	61	61	61	61	61
550	m³/h	3960	4950	5940	6930	7920	8910	9900	10890	11880	12870
550	Pa	96	76	64	56	50	46	42	39	37	35
550	dB(A)	63	62	61	61	61	61	61	61	61	61
600	m³/h	4320	5400	6480	7560	8640	9720	10800	11880	12960	14040
600	Pa	88	70	59	52	47	43	39	37	34	32
600	dB(A)	63	62	61	61	61	61	61	61	61	61
650	m³/h	4680	5850	7020	8190	9360	10530	11700	12870	14040	15210
650	Pa	81	65	55	49	44	40	37	34	32	30
650	dB(A)	63	61	61	61	60	60	60	61	61	61
700	m³/h	5040	6300	7560	8820	10080	11340	12600	13860	15120	16380
700	Pa	76	61	52	46	41	38	35	32	30	29
700	dB(A)	62	61	61	60	60	60	60	60	60	61
750	m³/h	5400	6750	8100	9450	10800	12150	13500	14850	16200	17550
750	Pa	72	58	49	43	39	36	33	31	29	27
750	dB(A)	62	61	61	60	60	60	60	60	60	61
800	m³/h	5760	7200	8640	10080	11520	12960	14400	15840	17280	18720
800	Pa	68	55	47	41	37	34	31	29	27	26
800	dB(A)	62	61	61	60	60	60	60	60	60	60

Cover grilles have not been considered for the pressure loss values.

The extra zeta value applies to air transfer including two cover grilles and for exhaust with a cover grille.

The Easy Product Finder allows you to size products using your project-specific data.

You will find the Easy Product Finder on our website.

Volume flow rate [m³/h], pressure loss ΔP [Pa] and sound power level [dB(A)] based on damper blade dimensions, at 10 m/s upstream velocity

H	10 m/s	B									
H	10 m/s	700	750	800	900	1000	1100	1200	1300	1400	1500
200	m³/h	5040	5400	5760	6480	7200	7920	8640	9360	10080	10800
200	Pa	108	101	96	87	80	74	69	65	61	58
200	dB(A)	73	73	73	74	74	74	74	74	74	75
250	m³/h	6300	6750	7200	8100	9000	9900	10800	11700	12600	13500
250	Pa	75	71	67	61	57	53	49	47	44	42
250	dB(A)	68	68	68	68	68	69	69	69	69	69
300	m³/h	7560	8100	8640	9720	10800	11880	12960	14040	15120	16200
300	Pa	59	56	53	49	45	42	40	38	36	34
300	dB(A)	65	65	65	66	66	66	66	66	67	67
350	m³/h	8820	9450	10080	11340	12600	13860	15120	16380	17640	18900
350	Pa	50	48	45	42	39	36	34	32	31	29
350	dB(A)	64	64	64	64	64	64	65	65	65	65
400	m³/h	10080	10800	11520	12960	14400	15840	17280	18720	20160	21600
400	Pa	44	42	40	37	34	32	30	28	27	26
400	dB(A)	63	63	63	63	63	63	64	64	64	64
450	m³/h	11340	12150	12960	14580	16200	17820	19440	21060	22680	24300
450	Pa	39	37	36	33	30	29	27	25	24	23
450	dB(A)	62	62	62	62	63	63	63	63	63	64
500	m³/h	12600	13500	14400	16200	18000	19800	21600	23400	25200	27000
500	Pa	36	34	33	30	28	26	25	23	22	21
500	dB(A)	61	62	62	62	62	62	63	63	63	63
550	m³/h	13860	14850	15840	17820	19800	21780	23760	25740	27720	29700
550	Pa	33	31	30	28	26	24	23	22	21	20
550	dB(A)	61	61	61	62	62	62	62	62	63	63
600	m³/h	15120	16200	17280	19440	21600	23760	25920	28080	30240	32400
600	Pa	31	29	28	26	24	22	21	20	19	18
600	dB(A)	61	61	61	61	62	62	62	62	62	63
650	m³/h	16380	17550	18720	21060	23400	25740	28080	30420	32760	35100
650	Pa	29	27	26	24	23	21	20	19	18	17
650	dB(A)	61	61	61	61	61	62	62	62	62	62
700	m³/h	17640	18900	20160	22680	25200	27720	30240	32760	35280	37800
700	Pa	27	26	25	23	21	20	19	18	17	16
700	dB(A)	61	61	61	61	61	62	62	62	62	62
750	m³/h	18900	20250	21600	24300	27000	29700	32400	35100	37800	40500
750	Pa	26	25	24	22	20	19	18	17	16	15
750	dB(A)	61	61	61	61	61	62	62	62	62	62
800	m³/h	20160	21600	23040	25920	28800	31680	34560	37440	40320	43200
800	Pa	25	23	22	21	19	18	17	16	15	15
800	dB(A)	61	61	61	61	61	61	62	62	62	62

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Volume flow rate [m³/h], pressure loss ΔP [Pa] and sound power level [dB(A)] based on damper blade dimensions, at 5 m/s upstream velocity

H	5 m/s	B									
H	5 m/s	200	250	300	350	400	450	500	550	600	650
200	m³/h	720	900	1080	1260	1440	1620	1800	1980	2160	2340
200	Pa	171	97	70	56	48	42	37	34	31	29
200	dB(A)	57	55	55	54	54	54	54	54	54	54
250	m³/h	900	1125	1350	1575	1800	2025	2250	2475	2700	2925
250	Pa	76	53	42	35	31	27	25	23	21	20
250	dB(A)	52	50	50	49	49	49	49	49	49	49
300	m³/h	1080	1350	1620	1890	2160	2430	2700	2970	3240	3510
300	Pa	52	39	31	27	24	21	19	18	17	16
300	dB(A)	49	47	47	46	46	46	46	46	46	46
350	m³/h	1260	1575	1890	2205	2520	2835	3150	3465	3780	4095
350	Pa	41	31	26	22	20	18	16	15	14	13
350	dB(A)	47	45	45	44	44	44	44	44	44	44
400	m³/h	1440	1800	2160	2520	2880	3240	3600	3960	4320	4680
400	Pa	34	27	22	19	17	15	14	13	12	12
400	dB(A)	46	44	44	43	43	43	43	43	43	43
450	m³/h	1620	2025	2430	2835	3240	3645	4050	4455	4860	5265
450	Pa	30	23	19	17	15	14	13	12	11	10
450	dB(A)	45	43	43	42	42	42	42	42	42	42
500	m³/h	1800	2250	2700	3150	3600	4050	4500	4950	5400	5850
500	Pa	26	21	18	15	14	12	11	11	10	9
500	dB(A)	45	43	43	42	42	42	42	42	42	42
550	m³/h	1980	2475	2970	3465	3960	4455	4950	5445	5940	6435
550	Pa	24	19	16	14	13	11	11	10	9	9
550	dB(A)	45	43	43	42	42	42	42	42	42	42
600	m³/h	2160	2700	3240	3780	4320	4860	5400	5940	6480	7020
600	Pa	22	18	15	13	12	11	10	9	9	8
600	dB(A)	44	42	42	41	41	41	41	41	41	41
650	m³/h	2340	2925	3510	4095	4680	5265	5850	6435	7020	7605
650	Pa	20	16	14	12	11	10	9	9	8	8
650	dB(A)	44	42	42	41	41	41	41	41	41	41
700	m³/h	2520	3150	3780	4410	5040	5670	6300	6930	7560	8190
700	Pa	19	15	13	11	10	9	9	8	8	7
700	dB(A)	44	42	42	41	41	41	41	41	41	41
750	m³/h	2700	3375	4050	4725	5400	6075	6750	7425	8100	8775
750	Pa	18	14	12	11	10	9	8	8	7	7
750	dB(A)	44	42	42	41	41	41	41	41	41	41
800	m³/h	2880	3600	4320	5040	5760	6480	7200	7920	8640	9360
800	Pa	17	14	12	10	9	8	8	7	7	6
800	dB(A)	44	42	42	41	41	41	41	41	41	41

Cover grilles have not been considered for the pressure loss values.

The extra zeta value applies to air transfer including two cover grilles and for exhaust with a cover grille.

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Volume flow rate [m³/h], pressure loss ΔP [Pa] and sound power level [dB(A)] based on damper blade dimensions, at 5 m/s upstream velocity

H	5 m/s	B									
H	5 m/s	700	750	800	900	1000	1100	1200	1300	1400	1500
200	m³/h	2520	2700	2880	3240	3600	3960	4320	4680	5040	5400
200	Pa	27	25	24	22	20	18	17	16	15	15
200	dB(A)	54	54	54	55	55	55	55	55	56	56
250	m³/h	3150	3375	3600	4050	4500	4950	5400	5850	6300	6750
250	Pa	19	18	17	15	14	13	12	12	11	11
250	dB(A)	49	49	49	50	50	50	50	50	51	51
300	m³/h	3780	4050	4320	4860	5400	5940	6480	7020	7560	8100
300	Pa	15	14	13	12	11	11	10	9	9	9
300	dB(A)	46	46	46	47	47	47	47	47	48	48
350	m³/h	4410	4725	5040	5670	6300	6930	7560	8190	8820	9450
350	Pa	13	12	11	10	10	9	8	8	8	7
350	dB(A)	44	44	44	45	45	45	45	45	46	46
400	m³/h	5040	5400	5760	6480	7200	7920	8640	9360	10080	10800
400	Pa	11	10	10	9	8	8	7	7	7	6
400	dB(A)	43	43	43	44	44	44	44	44	45	45
450	m³/h	5670	6075	6480	7290	8100	8910	9720	10530	11340	12150
450	Pa	10	9	9	8	8	7	7	6	6	6
450	dB(A)	42	42	42	43	43	43	43	43	44	44
500	m³/h	6300	6750	7200	8100	9000	9900	10800	11700	12600	13500
500	Pa	9	9	8	7	7	7	6	6	6	5
500	dB(A)	42	42	42	43	43	43	43	43	44	44
550	m³/h	6930	7425	7920	8910	9900	10890	11880	12870	13860	14850
550	Pa	8	8	8	7	6	6	6	5	5	5
550	dB(A)	42	42	42	43	43	43	43	43	44	44
600	m³/h	7560	8100	8640	9720	10800	11880	12960	14040	15120	16200
600	Pa	8	7	7	6	6	6	5	5	5	5
600	dB(A)	41	41	41	42	42	42	42	42	43	43
650	m³/h	8190	8775	9360	10530	11700	12870	14040	15210	16380	17550
650	Pa	7	7	7	6	6	5	5	5	5	4
650	dB(A)	41	41	41	42	42	42	42	42	43	43
700	m³/h	8820	9450	10080	11340	12600	13860	15120	16380	17640	18900
700	Pa	7	6	6	6	5	5	5	4	4	4
700	dB(A)	41	41	41	42	42	42	42	42	43	43
750	m³/h	9450	10125	10800	12150	13500	14850	16200	17550	18900	20250
750	Pa	6	6	6	5	5	5	4	4	4	4
750	dB(A)	41	41	41	42	42	42	42	42	43	43
800	m³/h	10080	10800	11520	12960	14400	15840	17280	18720	20160	21600
800	Pa	6	6	6	5	5	5	4	4	4	4
800	dB(A)	41	41	41	42	42	42	42	42	43	43

Cover grilles have not been considered for the pressure loss values.

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Rectangular or square smoke control dampers to product standard EN 12101-8, tested to EN 1366-10 and EN 1366-2, for use in smoke extract systems. Smoke control dampers not only prevent the spreading of smoke and combustion products between fire compartments, they also prevent the leakage of emitted, dangerous and poisonous fire suppression gases from the affected area, and they maintain positive pressure in pressurisation systems. The EK-EU is suitable as a pressure relief damper for gas fire extinguishing systems. For extracting smoke gases and for providing additional supply air to one or more fire compartments. The EK-EU can be used in smoke extract systems which have been approved for extract ventilation. The fire-resistant smoke control damper for multiple compartments is suitable for installation in solid walls and ceiling slabs as well as in and on fire-resistant smoke extract ducts. Open/Close actuator, with fully wired and ready-to-operate control module AS-EM/EK, AS-EM/SIL2 or BKNE in a temperature resistant encasing (optional).

Special characteristics

- Declaration of performance according to Construction Products Regulation
- Classification to EN 13501-4, EI 90 ($v_{edw} - h_{odw}, i \leftrightarrow o$) S1500 C_{mod} MA multi
- C_{mod} Use for ventilation function in combined systems and intermediate position for hydraulic balancing with TROXNETCOM
- Complies with the requirements of EN 12101-8
- Tested for fire resistance properties to DIN 1366-10 and EN 1366-2
- Casing air leakage to EN 1751, class C
- Low sound power level and differential pressure
- Any airflow direction
- Integration into the central BMS with TROXNETCOM
- General building inspectorate licence Z-56.4212-990

Materials and surfaces

- Casing, damper blade and actuator encasing made of temperature-resistant calcium silicate
- Brass bearings
- Shafts made of stainless steel

Technical data

- Nominal sizes: 200 × 200 mm – 1500 × 800 mm, in increments of 1 mm
- Casing length: 600 and 800 mm
- Volume flow rate range: up to 12000 l/s or 43200 m³/h
- Differential pressure range, pressure level 3: –1500 to 500 Pa
- Operating temperature: –30 to 50 °C
- Upstream velocity: ≤ 10 m/sec

Data applies to uniform upstream and downstream conditions for the smoke control damper

EK-EU / R / DE / 1200x600x800 / F0 / B24

1

2

3

4

5

6

1 Type

EK-EU Smoke control damper

2 Inspection access

No entry: none
R On the operating side, at the top/bottom

3 Country of destination

DE Germany
 Other destination countries upon request

4 Nominal size [mm]

B × H × L

5 Accessories

No entry: none
F0 Connecting subframe on the operating side
0F Connecting subframe on the installation side
FF Connecting subframes on both sides
A0 Cover grille on the operating side
0A Cover grille on the installation side
AA Cover grilles on both ends
FA Connecting subframe on the operating side and cover grille on the installation side
AF Connecting subframe on the installation side and cover grille on the operating side

6 Attachments

Belimo

B24 BE 24-12, 24 V AC/DC
B230 BE 230-12, 230 V AC/DC
B24A BE 24-12, with AS-EM/EK, 30 V DC (AS-i)
B24M BE 24-12, with switch for intermediate position
B24AM BE 24-12, with AS-EM/EK, 30 V DC (AS-i), switch for intermediate position
B24AS BE 24-12, with AS-EM/SIL2, 24 V AC/DC
B24B230 BE 24-12, with BKNE230/24

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