

Butterfly fire damper

FDA-BU



Description

The fire dampers are manufactured in the following nominal sizes: DN100, DN125, DN160, DN200. The fire dampers are equipped with a thermal fuse mechanism ensuring the damper switch to the safe position in case of reaching an ambient temperature equal to or higher than 72°C. The fire dampers allow using limit switches signalling closed position of the damper blade (1 limit switch) or blades (in case of using 2 limit switches).

The casing is made from galvanised steel sheet; the fire damper blade is made from a silicate cement board.

Version: 001/04/21/MC

Available labelling:

FDA-BU - aaa - bbb - ccc

aaa - nominal size: 100, 125, 160, 200

bbb - fire resistance: EIS120, EIS90, EIS60

ccc - optional accessories:

- No limit switches (standard)
- Z1 - one limit switch (closed position)
- Z2 - two limit switch (closed position)

Product code example

Product code: **FDA-BU - 160 - EIS120 - Z2**

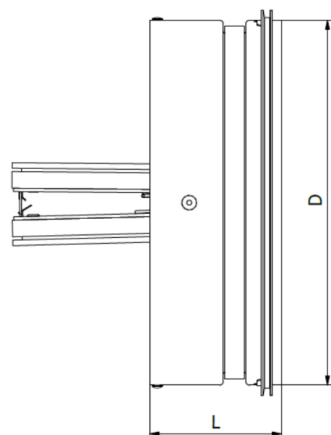
Fire damper

Nominal size

EIS fire resistance rating

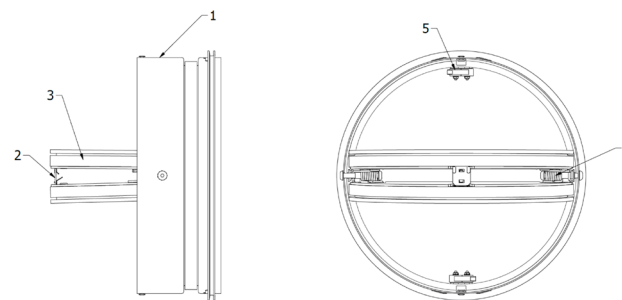
Optional accessories

Dimensions



Product code	Diameter [mm]	D [mm]	L [mm]	Weight [kg]	Effective area A_{eff} [m ²]
FDA-BU-100	100	97,5	70	0,33	0,0027
FDA-BU-125	125	122,5	70	0,44	0,0056
FDA-BU-160	160	157,5	70	0,64	0,0113
FDA-BU-200	200	197,5	70	0,90	0,0202

Design



1. casing
2. thermal fuse
3. damper blade
4. torsion spring
5. limit switch

Butterfly fire damper

FDA-BU

Tests and certificates

- Fire resistance rating: EIS 120, EIS 90, EIS 60,
- Test method as per EN 1366-2:2015, classification method as per EN 13501-3+A1:2010P,
- Corrosion resistance as per EN 15650,
- EC declaration of conformity (EN 15650).

Intended use and application

Circular fire dampers used in general ventilation, incorporated in the system at the point of passage through the building partition, are intended to reproduce the characteristics and protective functions of the partition. The fire damper blade remains open under normal operating conditions – it is closed automatically in the event of a fire.

Partition type	Minimum partition thickness [mm]
concrete ceiling	150
concrete wall	130
solid brick wall	130
cellular concrete block wall	130
plasterboard wall supported on a steel structure	130

Possible installation of fire dampers with any position of the rotation axis.

All necessary information is contained in the operation and maintenance manual.

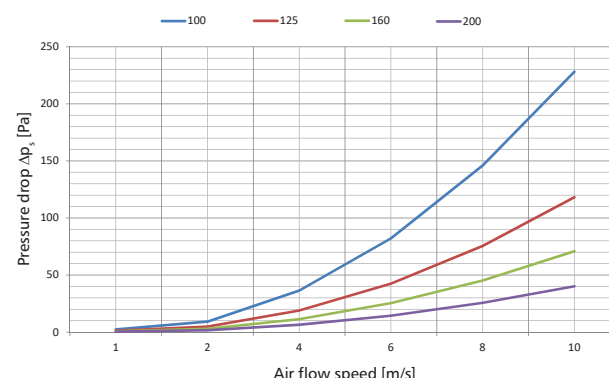
Characteristics

The FDA-BU circular fire dampers are designed for use in general ventilation systems as a protection to prevent smoke and fire from spreading between separated adjacent fire zones.

The fire dampers are classified according to procedures included in PN-EN 13501-3+A1:2010P standard (Fire classification of construction products and building elements). The fire resistance was tested according to PN-EN 1366-2:2015 standard (Fire resistance tests for service installations - Part 2: Fire dampers). The entire manufacturing process meets the requirements of EN 15650:2010 standard. The FDA-BU fire dampers can be used in vertical building partitions providing fire resistance up to EI 120 class (ve i $\leftrightarrow$ o) S class (depending on building partition resistance class) and in horizontal building partitions providing fire resistance up to EI 90 class (ho i $\leftrightarrow$ o) S class (depending on building partition resistance class).

Technical specifications

Pressure losses for air density $\rho=1,21 \text{ kg/m}^3$



Coefficient of local pressure loss ζ

Diameter ØD [mm]	Local pressure loss ζ
Ø100	3,773
Ø125	1,954
Ø160	1,171
Ø200	0,664

Fire damper with air valve

FDA-BU-KN / FDA-BU-KW**Description**

Shut-off fire dampers FDA-BU-KW and FDA-BU-KN series, used in general ventilation systems as protection against penetration of smoke and fire between separated adjacent fire zones. The fire damper is available in Ø 100, 125, 160, and 200 mm. The shut-off fire dampers can be used for passage of ventilation systems through vertical and horizontal building partitions, providing fire tightness class E, fire insulation class I, smoke tightness class S of:

- FDA-BU-KW EI 120 (ve ho i↔o) S (300 Pa)
- FDA-BU-KN EI 120 (ve ho i↔o) S (300 Pa)

The damper is closed automatically as a result of temperature increase to of about 72°C by breaking the fusible release. The released partition closes immediately. The fire dampers can be fitted with one or two limit switches to indicate the closed position of one or two damper blades.

Available versions:

FDA-BU-KW - aaa - bbb - ccc

aaa - nominal size: 100, 125, 160, 200

bbb - fire resistance: EI120, EI60

ccc - optional accessories:

- no limit switches (standard)
- Z1 - one limit switch (closed position)
- Z2 - two limit switches (closed position)

Product code example

Product code: **FDA-BU - KW - 200 - 120 - Z1**

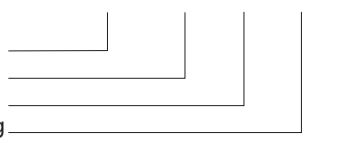
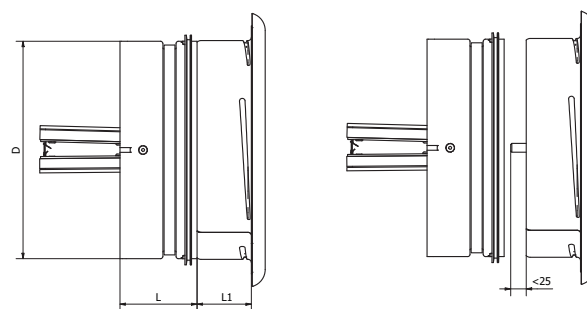
Fire damper

Air valve

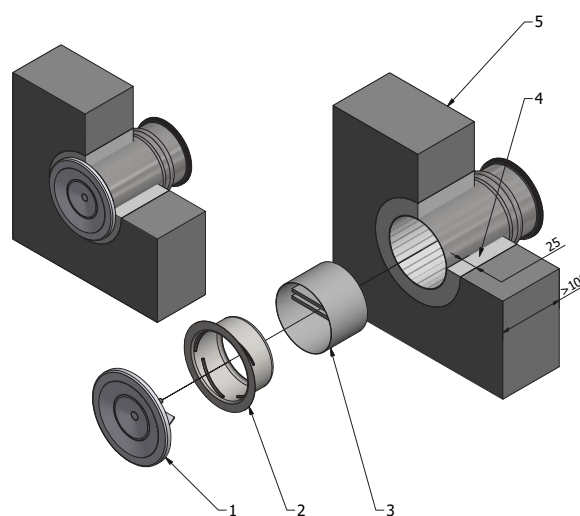
Nominal size

EIS fire resistance rating

Optional accessories

**Dimensions**

Product code	D [mm]	L [mm]	L ₁ [mm]	Weight [kg]	Effective area A _{eff} [m ²]
FDA-BU-KN-100 FDA-BU-KW-100	100	70	50	0.33	0.0027
FDA-BU-KN-125 FDA-BU-KW-125	125	70	50	0.44	0.0056
FDA-BU-KN-160 FDA-BU-KW-160	160	70	50	0.64	0.0113
FDA-BU-KN-200 FDA-BU-KW-200	200	70	50	0.90	0.0202

Design

1. Air supply or air exhaust valve
2. Mounting frame
3. FDA-BU fire damper in RML casing
4. Seal: concrete or gypsum mortar
5. Fire partition

Fire damper with air valve

FDA-BU-KN / FDA-BU-KW**Tests and certificates**

- Fire resistance rating: EIS 120, EIS 60,
- Test method as per EN 1366-2:2015, classification method as per EN 13501-3+A1:2010P,
- Corrosion resistance as per EN 15650,
- EC declaration of conformity (EN 15650).

Installation

The round fire dampers are designed for installation in general ventilation systems. When integrated into fire partitions, they provide equivalent protective performance and features as the partitions. The fire damper blade remains open under normal operating conditions – it is closed automatically in the event of a fire.

The fire dampers can be installed in the following partitions:

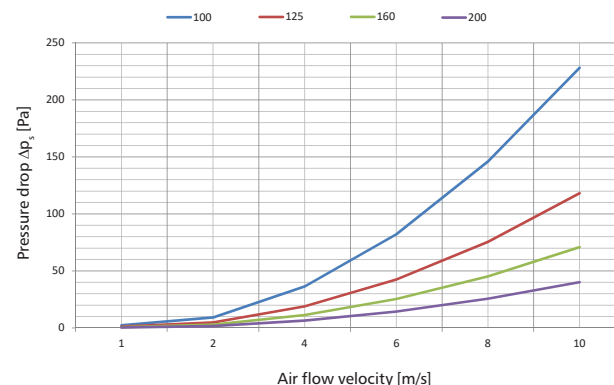
Type of partition	Minimum partition thickness [mm]
Concrete floor	150
Concrete wall	130
Solid brick wall	130
Cellular concrete block wall	130
Plasterboard wall on steel framing	130

It is allowed to install the dampers in a partition in any position of the axis of rotation from 0° to 360.

See the technical documentation shut-off fire damper FDA-BU for all information about wing-blade fire dampers and related installation options.

**Technical data**

Pressure drops for air density $\rho=1.21 \text{ kg/m}^3$



Local loss factor ζ

Diameter ØD [mm]	Local loss factor ζ
Ø100	3.773
Ø125	1.954
Ø160	1.171
Ø200	0.664

Fire damper with air valve

FDA-BU-KN / FDA-BU-KW

Specification of hydraulic parameters depending on the position of the FDA-BU damper

Diagram FDA-BU-KW-125 - exhaust

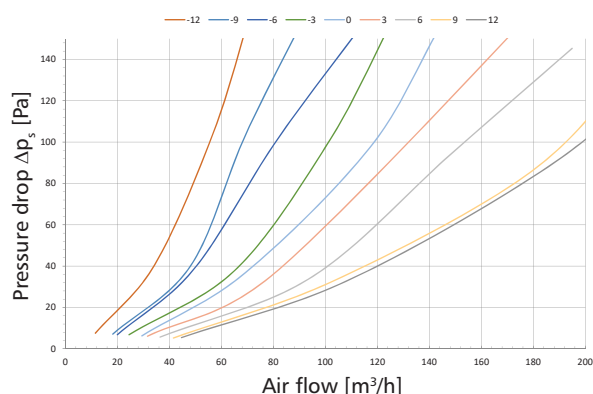


Diagram FDA-BU-KN-125 - supply

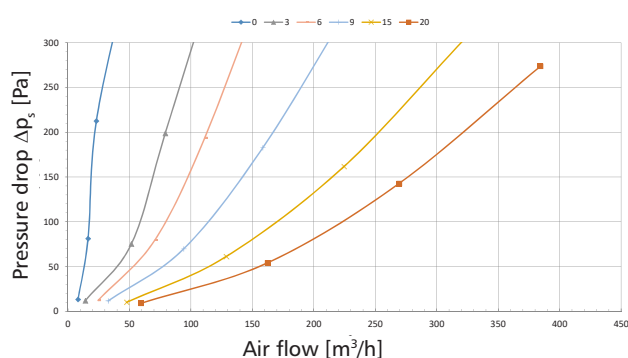


Diagram FDA-BU-KW-160 - exhaust

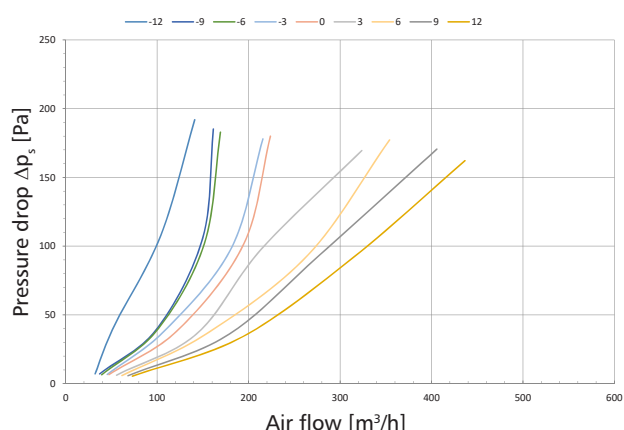


Diagram FDA-BU-KN-160 - supply

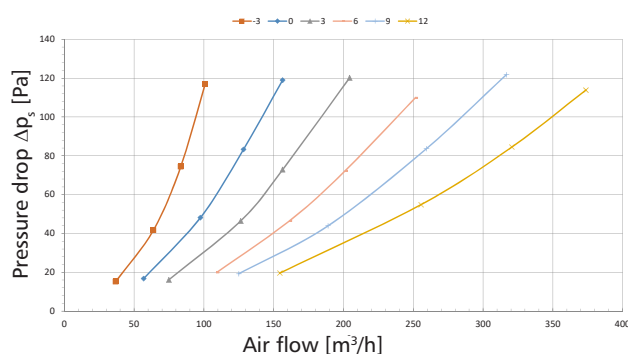


Diagram FDA-BU-KW-200 - exhaust

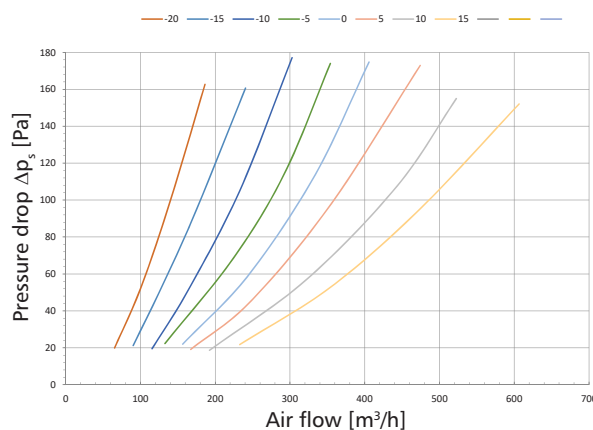
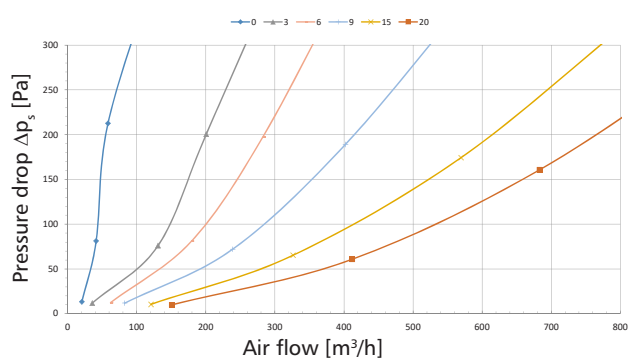


Diagram FDA-BU-KN-200 - supply



Shut-off fire dampers

FDA-12-T/FDA-12-M**Description**

The FDA-12 round fire dampers are designed for use in general ventilation systems to seal off smoke and fire between adjacent fire partitions.

The fire dampers are classified according to EN 13501-3+A1:2010P (Fire classification of construction products and building elements). The fire resistance was tested as per PN-EN 1366-2:2001P (Fire resistance tests for service installations - Part 2: Fire dampers). The entire manufacturing process meets the requirements of EN 15650:2010.

The FDA-12 fire dampers can be installed in horizontal and vertical fire partitions to provide fire resistance of EI 120 (which may depend on the actual fire resistance of the partition).

The fire dampers are available in the nominal diameter sizes DN100, DN125, DN160, DN200, DN250, and DN315. All fire dampers have a pull spring control gear and a fusible thermal trip (in FDA-12-T) or a return-spring actuator coupled with a thermal trip (in FDA-12-M). The spring-action versions can be provided with optional limit switches. The casing and optional accessories are made from galvanized steel sheet; the fire damper blade is made from silicate cement board.

Revision: 008/03/20/PG.

Available materials - Product code examples

FDA-12- aaa - bbb - ccc

aaa - control method: T - pull spring with fusible thermal fuse

bbb - nominal diameter 100, 125, 160, 200, 250, 315

ccc - optional accessories:

- no limit switches (standard version)
- Z - limit switch (closed position feedback)
- O - limit switch (open position feedback)
- ZO - limit switch (open and closed position feedback)

aaa - control method: M - return-spring actuator with thermal fuse

bbb - nominal diameter 100, 125, 160, 200, 250, 315

ccc - optional accessories:

- B24 - BELIMO BFL24-T / BLF-24-T actuator
- B230 - BELIMO BFL230-T / BLF230-T actuator
- B24ST - BELIMO BFL24-T-ST / BLF-24-T-ST actuator

Intended use and application

Round fire dampers are designed for installation in general ventilation systems. When integrated into fire partitions, they provide equivalent protective performance and features as the partitions. The fire damper blade remains open under normal operating conditions. It is closed shut automatically in the event of a fire.

The fire dampers can be installed in the following partitions:

Type of partition	Minimum partition thickness (mm)
concrete separating floor	150
concrete wall	115
solid brick wall	115
cellular concrete unit wall	115
gypsum board wall on steel frame with fire resistance rated at EI 120 or higher	125

Product code example

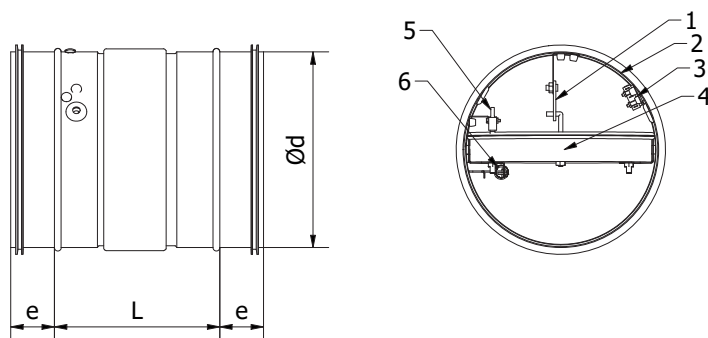
Product code: **FDA-12** **aaa** **bbb** **ccc**
 type _____
 Control method _____
 Ød _____
 Optional accessories _____

Shut-off fire dampers

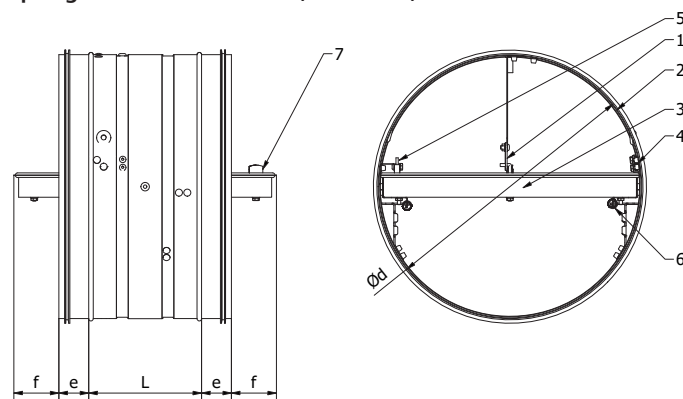
FDA-12-T/FDA-12-M*Dimensions and design of the damper*

DN	Ød [mm]	e [mm]	L [mm]	L1 [mm]	f [mm]	Waga FDA-12-T [kg]	Waga FDA-12-M* [kg]
100	99	36	132	248	0,0	0,5	2,3
125	124	36	132	248	0,0	0,8	2,7
140	139	36	132	248	0,0	0,9	2,8
150	149	36	132	248	0,0	1,0	2,9
160	159	36	132	248	0,0	1,1	3,1
180	179	36	132	248	0,0	1,3	3,3
200	199	36	132	248	0,0	1,5	3,5
224	223	36	132	248	10	2,2	4,4
250	249	36	132	248	25	2,6	4,9
280	279	36	132	248	40	3,0	5,4
315	314	36	132	248	50	3,6	6,0

* BFL actuator, manufactured by Belimo

FDA-12-T, fire damper with a spring and a thermal fuse (Ø100-200)

- 1 – thermal fuse; 2 – casing; 3 – limit switch - CLOSED (option); 4 – damper blade;
5 – limit switch - OPENED (option); 6 – tension spring

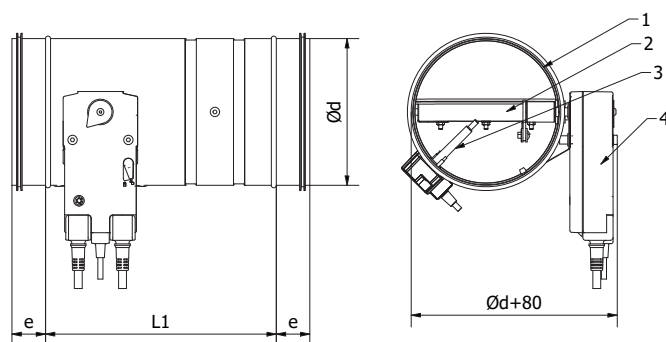
FDA-12-T, fire damper with a spring and a thermal fuse (Ø224-315)

- 1 – thermal fuse; 2 – casing; 3 – damper blade; 4 – limit switch - CLOSED (option);
5 – limit switch - OPENED (option); 6 – tension spring; 7 – lock

Shut-off fire dampers

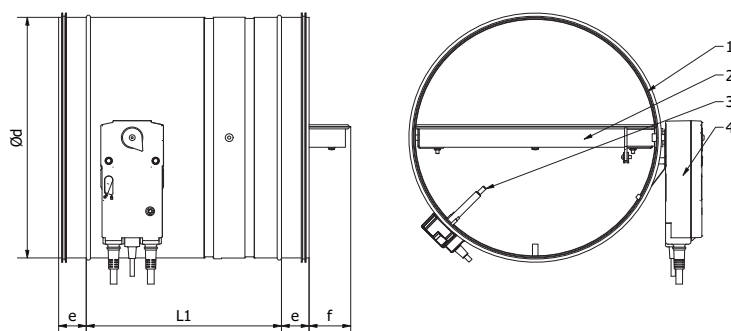
FDA-12-T/FDA-12-M

FDA-12-M, fire damper with an actuator with the return spring (Ø100-200)



1 – casing; 2 – damper blade; 3 – release; 4 – actuator

FDA-12-M, fire damper with an actuator with the return spring (Ø224-315)



1 – casing; 2 – damper blade; 3 – release; 4 – actuator

Technical specifications

The pressure loss and the sound pressure level of emission into the ductwork.

DN	v	q		Δp	L _w [dB/Okt]								L _w [dB]	L _{wA} [dB(A)]
		[m³/s]	[l/s]		[Pa]	f _m [Hz]								
	63			125		250	500	1000	2000	4000	8000			
100	2	39	11	4	12	12	11	11	11	5	-3	-11	19	14
	4	78	22	16	30	30	30	29	29	29	23	15	37	34
	6	116	32	35	41	41	40	40	40	40	38	30	48	46
	8	155	43	63	48	48	48	48	47	47	47	41	56	54
	10	194	54	98	54	54	54	54	53	53	53	49	62	60
125	2	66	18	2	11	11	10	10	8	0	-8	-16	17	11
	4	132	37	10	29	29	29	28	28	26	18	10	36	32
	6	198	55	22	40	40	39	39	39	39	33	25	47	44
	8	264	73	40	47	47	47	47	46	46	44	36	55	52
	10	330	92	62	53	53	53	53	52	52	52	44	61	59
160	2	116	32	2	10	10	10	10	3	-5	-13	-20	16	9
	4	232	64	6	28	28	28	28	28	21	13	5	35	31
	6	348	97	14	39	39	39	38	38	36	28	21	46	43
	8	464	129	25	47	47	46	46	46	46	39	31	54	51
	10	580	161	39	53	52	52	52	52	52	47	40	60	57
200	2	190	53	1	10	10	9	7	-1	-8	-16	-24	15	7
	4	380	105	4	28	28	28	28	27	20	12	4	35	30
	6	570	158	9	39	39	38	38	38	33	25	17	46	41
	8	759	211	16	46	46	46	46	46	43	35	28	54	50
	10	949	264	25	52	52	52	52	51	51	44	36	60	57
250	2	298	83	1	12	12	11	7	-1	-9	-17	-24	17	7
	4	596	166	4	30	30	30	30	25	17	9	1	36	30
	6	894	248	9	41	41	40	40	40	32	24	17	48	43
	8	1192	331	17	48	48	48	48	48	43	35	27	55	51
	10	1490	414	26	54	54	54	54	54	51	43	36	61	58
315	2	490	136	1	12	11	11	3	-5	-13	-20	-28	16	5
	4	981	272	3	30	30	30	29	21	13	6	-2	36	28
	6	1471	409	6	41	40	40	40	36	28	21	13	47	41
	8	1961	545	10	48	48	48	48	47	39	31	24	55	50
	10	2451	681	16	54	54	54	54	53	48	40	32	61	57

Shut-off fire dampers

FDA2-12-T / FDA2-12-M**Description**

The FDA2-12 round fire dampers are designed for use in general ventilation systems to seal off smoke and fire between adjacent fire partitions.

The fire dampers are classified according to EN 13501-3+A1:2010 P (Fire classification of construction products and building elements). The fire resistance was tested as per PN-EN 1366-2:2015 (Fire resistance tests for service installations — Part 2: Fire dampers). The entire manufacturing process meets the requirements of EN 15650:2010.

The FDA2-12 fire dampers can be installed in horizontal and vertical fire partitions to provide fire resistance of EI 120 (which may depend on the actual fire resistance of the partition).

The fire dampers are available in the nominal diameter sizes DN200, DN224, DN250, DN280, DN300, DN315, DN355, DN400, DN450, DN500, DN560, DN600, DN630. All fire dampers have a torsion spring trip (in FDA2-12-T) or a return-spring actuator coupled with a thermal trip (in FDA2-12-M). The spring-action versions can be provided with optional limit switches. The casing and optional accessories are made from galvanized steel sheet; the fire damper blade is made from silicate cement board.

Version 002/04/19

Product code examples

Product code: **FDA2 - aaa - bbb - ccc**

type _____
 control method _____
 DN (ØD) _____
 Optional accessories _____

Intended use and application

Round fire dampers are designed for installation in general ventilation systems. When integrated into fire partitions, they provide equivalent protective performance and features as the partitions. The fire damper blade remains open under normal operating conditions. It is closed shut automatically in the event of a fire.

The fire dampers can be installed in the following partitions:

Partition type	Minimum partition thickness (mm)
concrete separating floor	150
concrete wall	135
solid brick wall	135
cellular concrete unit wall	135
gypsum board wall on steel frame	135

See all essential data in the respective Operating and Maintenance Manual.

Product identification:

FDA2-12-aaa-bbb-ccc:

aaa – control:

T - torsion spring trip;

bbb – nominal size (DN):

200, 224, 250, 280, 300, 315, 355, 400, 450, 500, 560, 600, 630 mm;

ccc – optional accessories:

no limit switches (standard version);

Z - limit switch (closed position feedback);

O - limit switch (open position feedback);

ZO - limit switch (open and closed position feedback);

aaa – control:

M - return-spring actuator coupled with a thermal trip;

bbb – nominal diameter (DN):

200, 224, 250, 280, 300, 315, 355, 400, 450, 500, 560, 600, 630 mm;

ccc – optional accessories:

B24 - actuator Belimo BFL/BFN/BF24-T ;

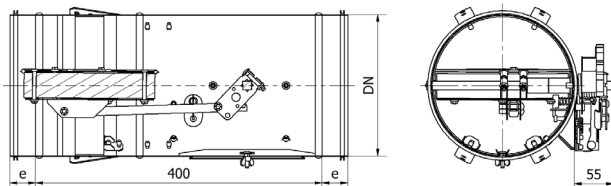
B230 - actuator Belimo BFL/BFN/BF230-T;

B24ST – actuator Belimo BFL/BFN/BF24-T-ST;

Dimensions

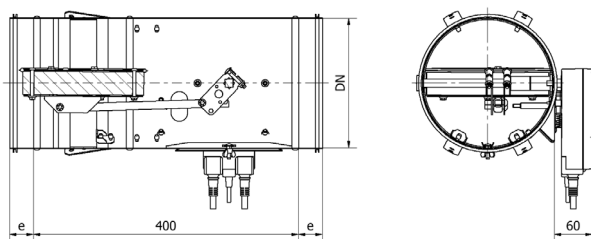
FDA2-12-T (Ø200-400)

Fire damper w/torsion spring trip



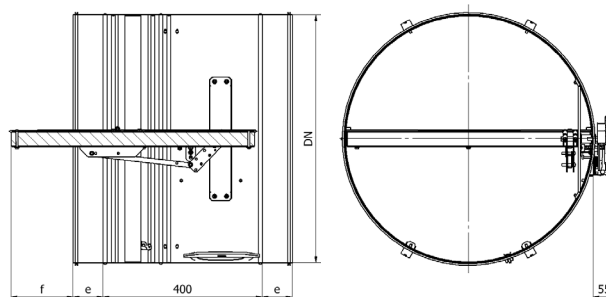
FDA2-12-M (Ø200-400)

Fire damper with return-spring actuator



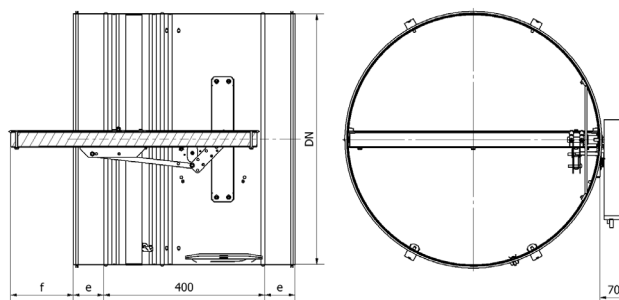
FDA2-12-T (Ø450-630)

Fire damper w/torsion spring trip



FDA2-12-M (Ø450-630)

Fire damper with return-spring actuator



DN [mm]	L [mm]	e [mm]	f [mm]	Actuator	A _{eff} [m ²]	Weight FDA2-12-T [kg]	Weight FDA2-12-M [kg]
200	400	36	-	BFL	0.02	5.6	6.3
224	400	36	-	BFL	0.03	6.5	7.3
250	400	36	6	BFL	0.04	7.1	7.8
280	400	36	21	BFL	0.05	7.8	8.5
300	400	36	31	BFL	0.06	8.3	9.0
315	400	36	38	BFL	0.06	8.7	9.4
355	400	55	40	BFL	0.08	10.6	11.3
400	400	55	62	BFL	0.11	12.0	12.7
450	400	75	66	BFN	0.14	13.6	14.6
500	400	75	90	BFN	0.17	15.4	16.4
560	400	75	120	BFN	0.22	17.6	18.7
600	400	75	140	BF	0.26	19.3	21.9
630	400	75	155	BF	0.28	20.5	23.1

BFL/BFN/BF actuator, manufactured by Belimo Siłowniki S.A.

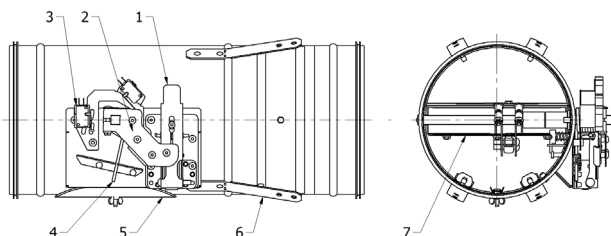
Shut-off fire dampers

FDA2-12-T / FDA2-12-M

Design of the damper

FDA2-12-T (Ø200-400)

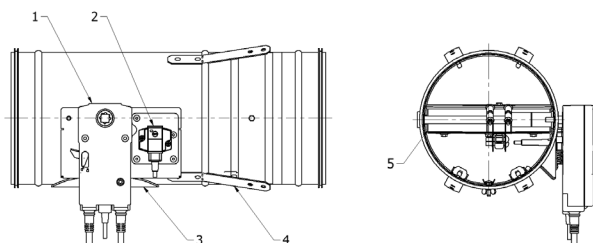
Fire damper w/torsion spring trip



1 - trip, 2 - control arm, 3 - limit switch, 4 - torsion spring
5 - access door, 6 - installation bracket, 7 - shutter.

FDA2-12-M (Ø200-400)

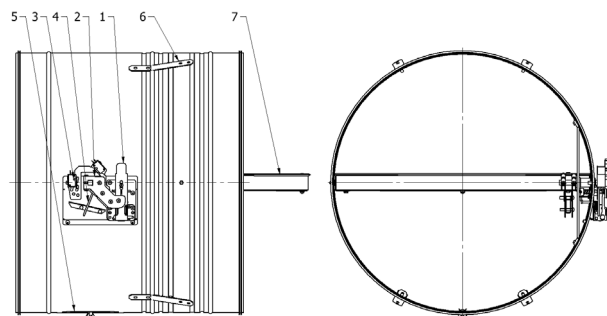
Fire damper with return-spring actuator



1 - motor operator, 2 - thermal electric trip, 3 - access door
4 - installation bracket, 5 - shutter.

FDA2-12-T (Ø450-630)

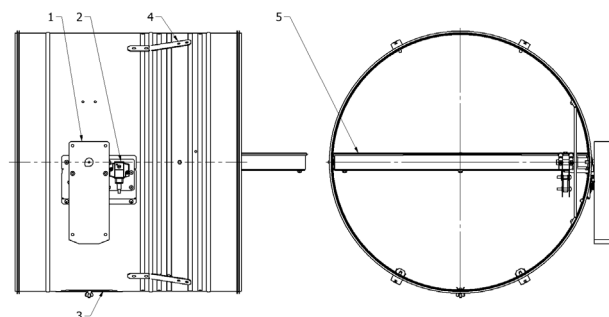
Fire damper w/torsion spring trip



1 - trip, 2 - control arm, 3 - limit switch, 4 - torsion spring
5 - access door, 6 - installation bracket, 7 - shutter.

FDA2-12-M (Ø450-630)

Fire damper with return-spring actuator



1 - motor operator, 2 - thermal electric trip, 3 - access door
4 - installation bracket, 5 - shutter.

Technical specifications

Fire damper hydraulic and sound performance values

DN	v [m/s]	q [m³/h] [l/s]		Δp [Pa]	L _w [dB/Okt]								L _w [dB]	L _{wa} [dB(A)]
					f _m [Hz]									
					63	125	250	500	1000	2000	4000	8000		
200	2	168	47	3	15	15	14	14	7	-1	-9	-17	21	14
	4	336	93	10	33	33	33	33	32	25	17	9	40	35
	6	503	140	23	44	44	43	43	43	40	32	24	51	47
	8	671	186	41	51	51	51	51	51	50	43	35	59	56
	10	839	233	64	57	57	57	57	56	56	51	43	65	62
224	2	218	61	2	15	14	14	12	4	-3	-11	-19	20	12
	4	437	121	8	33	33	32	32	30	23	15	7	39	34
	6	655	182	18	44	43	43	43	43	38	30	22	50	46
	8	874	243	33	51	51	51	50	50	48	41	33	58	55
	10	1092	303	51	57	57	57	56	56	56	49	41	64	61
250	2	279	78	2	14	14	14	11	3	-5	-13	-21	20	11
	4	558	155	7	33	33	32	32	29	21	13	5	39	33
	6	838	233	15	43	43	43	43	43	36	28	20	50	46
	8	1117	310	27	51	51	51	50	50	47	39	31	58	54
	10	1396	388	43	57	57	56	56	56	55	47	39	64	61
280	2	360	100	1	15	14	14	9	1	-7	-15	-22	20	10
	4	720	200	6	33	33	32	32	28	20	13	5	39	33
	6	1079	300	13	43	43	43	43	42	34	26	19	50	45
	8	1439	400	23	51	51	51	50	50	45	37	29	58	54
	10	1799	500	36	57	57	57	56	56	53	46	38	64	60
300	2	419	116	1	15	15	14	8	0	-7	-15	-23	20	10
	4	839	233	5	33	33	33	32	26	18	11	3	39	32
	6	1258	349	12	44	43	43	43	41	34	26	18	50	45
	8	1678	466	21	51	51	51	51	50	44	36	29	58	54
	10	2097	582	33	57	57	57	57	56	53	45	37	64	60
315	2	467	130	1	15	14	14	7	0	-8	-16	-24	20	9
	4	933	259	5	33	33	33	32	25	18	10	2	39	32
	6	1400	389	11	44	43	43	43	41	33	25	17	50	44
	8	1867	519	20	51	51	51	51	50	43	36	28	58	53
	10	2333	648	31	57	57	57	56	56	52	44	36	64	60
355	2	606	168	1	13	13	12	4	-3	-11	-19	-27	18	7
	4	1212	337	4	32	31	31	30	22	15	7	-1	37	30
	6	1817	505	9	42	42	42	42	38	30	22	14	48	42
	8	2423	673	17	50	50	49	49	48	41	33	25	56	51
	10	3029	841	26	56	56	55	55	55	49	41	33	63	58
400	2	783	217	1	13	13	10	2	-5	-13	-21	-29	17	5
	4	1566	435	4	31	31	31	28	21	13	5	-3	37	28
	6	2349	652	8	42	42	42	41	36	28	20	12	48	41
	8	3132	870	14	50	49	49	49	46	39	31	23	56	50
	10	3915	1087	23	55	55	55	55	55	47	39	31	62	58

Shut-off fire dampers

FDA2-12-T / FDA2-12-M

DN	v [m/s]	q [m³/h] [l/s]		Δp [Pa]	L _w [dB/Okt]								L _w [dB]	L _{WA} [dB(A)]
					f _m [Hz]									
					63	125	250	500	1000	2000	4000	8000		
450	2	1007	280	1	12	12	8	0	-8	-16	-24	-31	16	3
	4	2014	559	3	30	30	30	26	18	10	2	-6	35	26
	6	3021	839	7	41	41	40	40	33	25	17	10	47	40
	8	4028	1119	13	48	48	48	48	44	36	28	20	55	48
	10	5035	1399	20	54	54	54	54	52	44	36	29	61	55
500	2	1259	350	1	12	12	6	-2	-10	-17	-25	-33	15	1
	4	2518	699	3	30	30	30	24	16	9	1	-7	35	25
	6	3777	1049	6	41	41	40	39	31	24	16	8	46	39
	8	5036	1399	11	48	48	48	48	42	34	27	19	54	48
	10	6295	1749	18	54	54	54	54	50	43	35	27	60	55
560	2	1600	444	1	11	11	4	-4	-12	-20	-28	-35	14	-1
	4	3200	889	3	29	29	29	22	14	6	-2	-10	34	23
	6	4800	1333	6	40	39	39	37	29	21	13	6	45	37
	8	6400	1778	10	47	47	47	47	40	32	24	16	53	46
	10	8000	2222	16	53	53	53	53	48	40	32	25	59	53
600	2	1856	516	1	11	11	3	-5	-13	-21	-28	-36	14	-1
	4	3713	1031	2	29	29	29	21	13	5	-2	-10	34	23
	6	5569	1547	5	40	40	39	36	28	20	13	5	45	36
	8	7426	2063	9	47	47	47	47	39	31	23	16	53	46
	10	9282	2578	15	53	53	53	53	47	40	32	24	59	53
630	2	2049	569	1	10	9	2	-6	-14	-22	-30	-37	13	-2
	4	4098	1138	2	29	29	28	20	12	4	-3	-11	34	22
	6	6148	1708	5	40	39	39	35	27	20	12	4	45	36
	8	8197	2277	9	47	47	47	46	38	30	22	15	53	45
	10	10246	2846	14	53	53	53	52	46	39	31	23	59	52

Shut-off fire dampers

FDA2-12-T / FDA2-12-M**Description**

The FDA2-12 square fire dampers are designed for use in general ventilation systems to seal off smoke and fire between adjacent fire partitions.

The fire dampers are classified according to EN 13501-3+A1:2010 P (Fire classification of construction products and building elements). The fire resistance was tested as per PN-EN 1366-2:2015 (Fire resistance tests for service installations — Part 2: Fire dampers). The entire manufacturing process meets the requirements of EN 15650:2010.

The FDA2-12 fire dampers can be installed in horizontal and vertical fire partitions to provide fire resistance of EI 120 (ve ho i→o) S (which may depend on the actual fire resistance of the partition).

The fire dampers are available in the nominal sizes 160x160 – 1000x500 mm. All fire dampers have a torsion spring trip (in FDA2-12-T) or a return-spring actuator coupled with a thermal trip (in FDA2-12-M). The spring-action versions can be provided with optional limit switches. The casing and optional accessories are made from galvanized steel sheet; the fire damper blade is made from silicate cement board.

Version 002/04/19

Product code examples

Product code: **FDA2 - aaa - bbb - ccc**

type	_____
control method	_____
size	_____
Optional accessories	_____

Intended use and application

Square fire dampers are designed for installation in general ventilation systems. When integrated into fire partitions, they provide equivalent protective performance and features as the partitions. The fire damper blade remains open under normal operating conditions. It is closed shut automatically in the event of a fire.

The fire dampers can be installed in the following partitions:

Partition type	Minimum partition thickness (mm)
concrete separating floor	150
concrete wall	135
solid brick wall	135
cellular concrete unit wall	135
gypsum board wall on steel frame	135

Fire dampers can be installed with both horizontal and vertical axis of rotation.

NOTE: If the fire damper installation with a vertical axis of rotation and with an actuator at the bottom of the casing is required, notify the manufacturer about it before placing an order.

See all essential data in the respective Operating and Maintenance Manual.

Product identification:

FDA2-12-aaa-bbb-ccc:

aaa – control:

T - torsion spring trip;

bbb – size:

160x160 – 1000x500 mm;

ccc – optional accessories:

no limit switches (standard version);

Z - limit switch (closed position feedback);

O - limit switch (open position feedback);

ZO - limit switch (open and closed position feedback);

aaa – control:

M - return-spring actuator coupled with a thermal trip;

bbb – size:

160x160 – 1000x500 mm

ccc – optional accessories:

B24 - actuator Belimo BFL/BFN/BF24-T ;

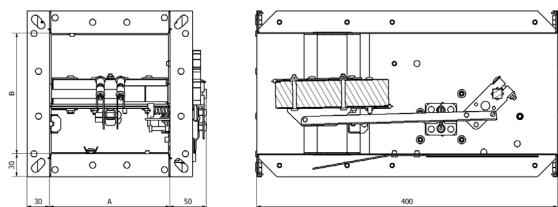
B230 - actuator Belimo BFL/BFN/BF230-T;

B24ST - actuator Belimo BFL/BFN/BF24-T-ST;

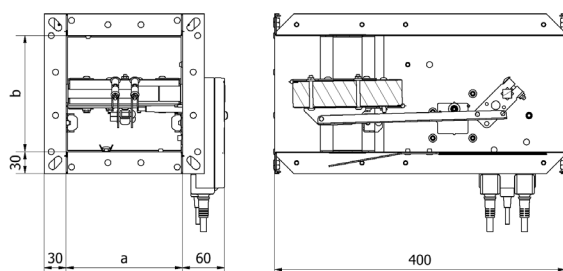
Shut-off fire dampers

FDA2-12-T / FDA2-12-M**Dimensions****FDA2-12-T (160x160 - 1000-300 mm)**

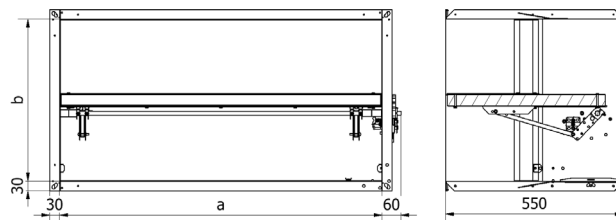
Fire damper w/torsion spring trip

**FDA2-12-M (160x160 - 1000x300 mm)**

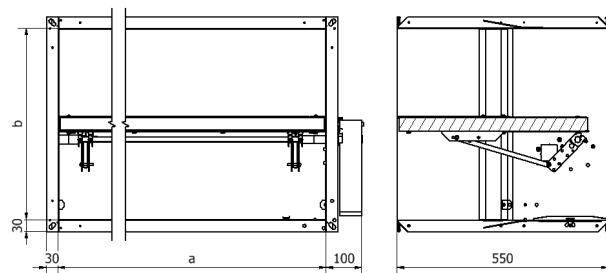
Fire damper with return-spring actuator

**FDA2-12-T (>1000-300 mm)**

Fire damper w/torsion spring trip

**FDA2-12-M (>1000x300 mm)**

Fire damper with return-spring actuator



a [mm]	b [mm]	L [mm]	Operator type	A _{eff} [m ²]	Weight FDA2-12-T [kg]	Weight FDA2-12-M [kg]
160	160	400	BFL	0.02	6.2	6.9
200	160	400	BFL	0.03	6.6	7.4
250	160	400	BFL	0.03	7.2	8.0
300	160	400	BFL	0.04	7.8	8.5
350	160	400	BFL	0.05	8.4	9.1
400	160	400	BFL	0.06	9.0	9.7
450	160	400	BFL	0.07	10.5	11.3
500	160	400	BFL	0.07	11.2	11.9
550	160	400	BFL	0.08	11.9	12.6
600	160	400	BFL	0.09	12.5	13.3
650	160	400	BFL	0.10	13.2	13.9
700	160	400	BFL	0.11	13.9	14.6
750	160	400	BFL	0.11	14.5	15.3
800	160	400	BFL	0.12	15.2	15.9
850	160	400	BFL	0.13	15.9	16.6
900	160	400	BFL	0.14	16.5	17.3
950	160	400	BFL	0.15	17.2	17.9
1000	160	400	BFL	0.15	17.9	18.6

Shut-off fire dampers

FDA2-12-T / FDA2-12-M

<i>a</i> [mm]	<i>b</i> [mm]	<i>L</i> [mm]	Operator type	<i>A_{eff}</i> [m ²]	Weight FDA2-12-T [kg]	Weight FDA2-12-M [kg]
200	200	400	BFL	0.03	7.2	7.9
250	200	400	BFL	0.04	7.8	8.6
300	200	400	BFL	0.05	8.5	9.2
350	200	400	BFL	0.06	9.1	9.9
400	200	400	BFL	0.07	9.8	10.5
450	200	400	BFL	0.08	11.4	12.2
500	200	400	BFL	0.09	12.2	12.9
550	200	400	BFL	0.10	12.9	13.6
600	200	400	BFL	0.11	13.6	14.4
650	200	400	BFL	0.12	14.3	15.1
700	200	400	BFL	0.13	15.1	15.8
750	200	400	BFL	0.14	15.8	16.5
800	200	400	BFL	0.15	16.5	17.3
850	200	400	BFL	0.16	17.2	18.0
900	200	400	BFL	0.17	18.0	18.7
950	200	400	BFL	0.18	18.7	19.4
1000	200	400	BFL	0.19	19.4	20.2
250	250	550	BFL	0.05	9.9	10.7
300	250	550	BFL	0.07	10.8	11.5
350	250	550	BFL	0.08	11.6	12.4
400	250	550	BFL	0.09	12.5	13.2
450	250	550	BFL	0.10	14.9	15.6
500	250	550	BFL	0.12	15.8	16.6
550	250	550	BFL	0.13	16.8	17.5
600	250	550	BFL	0.14	17.7	18.5
650	250	550	BFL	0.15	18.7	19.4
700	250	550	BFL	0.17	19.7	20.4
750	250	550	BFL	0.18	20.6	21.4
800	250	550	BFL	0.19	21.6	22.3
850	250	550	BFL	0.20	22.5	23.3
900	250	550	BFL	0.22	23.5	24.2
950	250	550	BFL	0.23	24.5	25.2
1000	250	550	BFL	0.24	25.4	26.2
300	300	550	BFL	0.08	13.1	13.8
350	300	550	BFL	0.09	14.1	14.8
400	300	550	BFL	0.11	15.1	15.9
450	300	550	BFL	0.12	16.2	16.9
500	300	550	BFL	0.14	17.2	17.9
550	300	550	BFL	0.15	18.2	19.0
600	300	550	BFL	0.17	19.3	20.0
650	300	550	BFL	0.18	20.3	21.0
700	300	550	BFL	0.20	21.3	22.1
750	300	550	BFL	0.21	22.4	23.1
800	300	550	BFL	0.23	23.4	24.2
850	300	550	BFN	0.24	24.4	25.5
900	300	550	BFN	0.26	25.5	26.5
950	300	550	BFN	0.27	26.5	27.6
1000	300	550	BFN	0.29	27.5	28.6

Shut-off fire dampers

FDA2-12-T / FDA2-12-M

<i>a</i> [mm]	<i>b</i> [mm]	<i>L</i> [mm]	Operator type	<i>A_{eff}</i> [m ²]	Weight FDA2-12-T [kg]	Weight FDA2-12-M [kg]
350	350	550	BFN	0.11	15.3	16.3
400	350	550	BFN	0.13	16.4	17.4
450	350	550	BFN	0.14	17.5	18.5
500	350	550	BFN	0.16	18.6	19.6
550	350	550	BFN	0.18	19.7	20.7
600	350	550	BFN	0.20	20.8	21.8
650	350	550	BFN	0.21	21.9	23.0
700	350	550	BFN	0.23	23.0	24.1
750	350	550	BFN	0.25	24.1	25.2
800	350	550	BFN	0.27	25.2	26.3
850	350	550	BFN	0.28	26.3	27.4
900	350	550	BFN	0.30	27.5	28.5
950	350	550	BFN	0.32	28.6	29.6
1000	350	550	BFN	0.34	29.7	30.7
400	400	550	BFN	0.15	17.6	18.7
450	400	550	BFN	0.17	18.8	19.8
500	400	550	BFN	0.19	20.0	21.0
550	400	550	BFN	0.21	21.2	22.2
600	400	550	BFN	0.23	22.3	23.4
650	400	550	BFN	0.25	23.5	24.6
700	400	550	BFN	0.27	24.7	25.7
750	400	550	BFN	0.29	25.9	26.9
800	400	550	BFN	0.31	27.1	28.1
850	400	550	BFN	0.33	28.2	29.3
900	400	550	BFN	0.35	29.4	30.5
950	400	550	BFN	0.37	30.6	31.6
1000	400	550	BFN	0.39	31.8	32.8
450	450	550	BFN	0.19	20.1	21.1
500	450	550	BFN	0.21	21.4	22.4
550	450	550	BFN	0.23	22.6	23.7
600	450	550	BFN	0.25	23.9	24.9
650	450	550	BFN	0.28	25.1	26.2
700	450	550	BFN	0.30	26.4	27.4
750	450	550	BFN	0.32	27.6	28.7
800	450	550	BFN	0.34	28.9	29.9
850	450	550	BFN	0.37	30.1	31.2
900	450	550	BFN	0.39	31.4	32.4
950	450	550	BFN	0.41	32.7	33.7
1000	450	550	BFN	0.43	33.9	35.0

Shut-off fire dampers

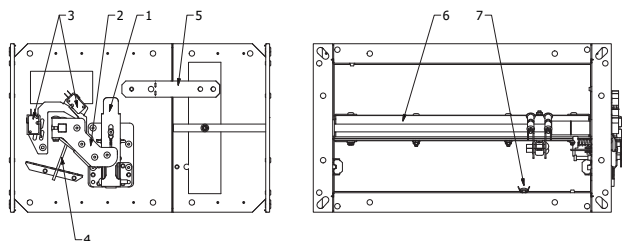
FDA2-12-T / FDA2-12-M

<i>a</i> [mm]	<i>b</i> [mm]	<i>L</i> [mm]	Operator type	<i>A_{eff}</i> [m ²]	Weight FDA2-12-T [kg]	Weight FDA2-12-M [kg]
500	500	550	BFN	0.23	22.7	23.8
550	500	550	BFN	0.26	24.1	25.1
600	500	550	BFN	0.28	25.4	26.4
650	500	550	BFN	0.31	26.7	27.8
700	500	550	BFN	0.33	28.1	29.1
750	500	550	BFN	0.36	29.4	30.4
800	500	550	BFN	0.38	30.7	31.8
850	500	550	BFN	0.41	32.0	33.1
900	500	550	BFN	0.43	33.4	34.4
950	500	550	BF	0.46	36.3	38.9
1000	500	550	BF	0.48	37.6	40.3

BFL/BFN/BF actuator, manufactured by Belimo Siłowniki S.A.

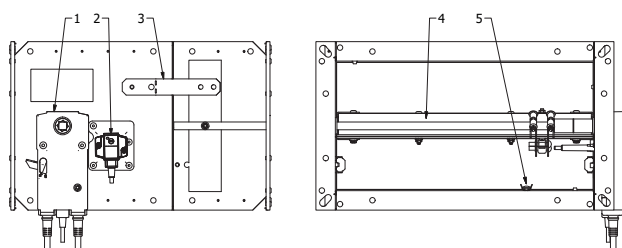
Design of the damper

FDA2-12-T (160x160 - 1000-300 mm)
Fire damper w/torsion spring trip



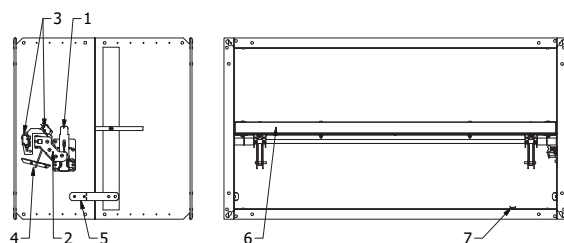
1 - trip, 2 - control arm, 3 - limit switch, 4 - torsion spring
5 - installation bracket, 6 - shutter, 7 - access door.

FDA2-12-M (160x160 - 1000x300 mm)
Fire damper with return-spring actuator



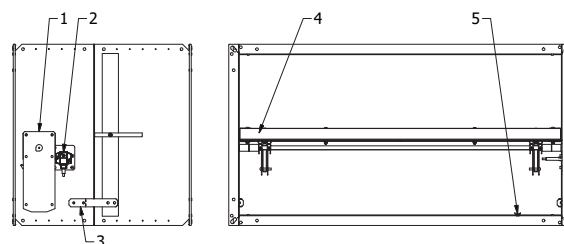
1 - motor operator, 2 - thermal electric trip, 3 - installation bracket, 4 - shutter, 5 - access door.

FDA2-12-T (>1000-300 mm)
Fire damper w/torsion spring trip



1 - trip, 2 - control arm, 3 - limit switch, 4 - torsion spring
5 - installation bracket, 6 - shutter, 7 - access door.

FDA2-12-M (>1000x300 mm)
Fire damper with return-spring actuator



1 - motor operator, 2 - thermal electric trip, 3 - installation bracket, 4 - shutter, 5 - access door.

Shut-off fire dampers

FDA2-12-T / FDA2-12-M*Technical specifications*

Fire damper hydraulic and sound performance values

<i>b</i> [mm]	<i>v</i> [m/s]	Δp [Pa]																	
		<i>a</i> [mm]																	
		160	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000
160	2	12	10	9	8	7	7	6	6	6	6	5	5	5	5	5	5	5	5
	4	49	40	35	31	29	27	25	24	23	22	22	21	21	20	20	19	19	19
	6	111	91	79	71	65	61	57	55	52	51	49	48	46	45	44	43	43	42
	8	198	161	140	126	115	108	102	97	93	90	87	85	82	80	78	77	76	74
	10	309	252	219	196	180	168	159	152	145	140	136	132	128	126	123	121	118	116
	12	445	363	315	283	260	242	229	219	209	202	196	190	185	181	177	174	170	167
200	2	-	6	5	5	4	4	4	3	3	3	3	3	3	3	3	3	3	3
	4	-	24	21	18	17	16	15	14	13	13	12	12	12	11	11	11	11	10
	6	-	54	46	41	38	35	33	31	30	29	28	27	26	26	25	24	24	24
	8	-	96	83	74	67	62	59	56	53	51	49	48	46	46	44	44	43	42
	10	-	151	129	115	105	97	91	87	83	80	77	75	72	71	69	68	67	65
	12	-	217	186	166	151	140	132	125	120	115	111	108	104	102	100	98	96	94
250	2	-	-	4	3	3	3	2	2	2	2	2	2	2	2	2	2	2	2
	4	-	-	15	13	12	11	10	9	9	9	8	8	8	8	7	7	7	7
	6	-	-	33	29	26	24	22	21	20	19	19	18	17	17	16	16	16	15
	8	-	-	58	51	46	43	40	38	36	34	33	32	31	30	29	28	28	27
	10	-	-	91	80	72	67	62	59	56	53	51	50	48	47	46	44	44	43
	12	-	-	131	115	104	96	90	85	80	77	74	71	70	68	66	64	63	61
300	2	-	-	-	2	2	2	2	2	2	2	2	1	1	1	1	1	1	1
	4	-	-	-	10	9	8	8	7	7	6	6	6	6	5	5	5	5	5
	6	-	-	-	22	20	18	17	16	15	14	14	13	13	12	12	12	11	11
	8	-	-	-	40	36	33	30	28	27	26	24	24	23	22	22	21	20	20
	10	-	-	-	62	56	51	48	44	42	40	38	37	36	34	34	32	32	31
	12	-	-	-	90	80	73	69	64	60	58	55	53	51	49	48	47	46	45
350	2	-	-	-	-	2	2	2	1	1	1	1	1	1	1	1	1	1	1
	4	-	-	-	-	8	7	6	6	5	5	5	5	5	4	4	4	4	4
	6	-	-	-	-	17	15	14	13	12	12	11	11	10	10	10	9	9	9
	8	-	-	-	-	30	27	25	23	22	21	20	19	18	17	17	16	16	15
	10	-	-	-	-	47	43	39	36	34	32	30	29	29	27	27	25	25	24
	12	-	-	-	-	68	61	56	52	49	47	44	42	41	39	38	37	36	35
400	2	-	-	-	-	-	1	1	1	1	1	1	1	1	1	1	1	1	1
	4	-	-	-	-	-	6	5	5	5	4	4	4	4	4	4	3	3	3
	6	-	-	-	-	-	13	12	11	11	10	9	9	9	8	8	8	8	7
	8	-	-	-	-	-	24	22	20	19	17	17	16	15	15	14	14	13	13
	10	-	-	-	-	-	37	34	31	29	27	26	25	24	23	22	22	21	20
	12	-	-	-	-	-	53	48	45	42	39	38	36	35	33	32	31	30	29

Shut-off fire dampers

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b [mm]	v [m/s]	Δp [Pa]																	
		a [mm]																	
450	2	-	-	-	-	-	-	1	1	1	1	1	1	1	1	1	1	1	1
	4	-	-	-	-	-	-	5	4	4	4	4	4	3	3	3	3	3	3
	6	-	-	-	-	-	-	11	10	9	9	8	8	8	7	7	7	6	6
	8	-	-	-	-	-	-	20	18	17	16	15	14	13	13	12	12	11	11
	10	-	-	-	-	-	-	30	28	26	25	24	22	21	20	19	18	18	17
	12	-	-	-	-	-	-	44	40	38	36	34	32	30	29	27	27	26	25
500	2	-	-	-	-	-	-	1	1	1	1	1	1	1	1	1	1	1	1
	4	-	-	-	-	-	-	4	4	4	3	3	3	3	3	3	3	3	2
	6	-	-	-	-	-	-	9	9	8	8	7	7	7	6	6	6	6	5
	8	-	-	-	-	-	-	17	15	14	13	13	12	12	11	11	10	10	10
	10	-	-	-	-	-	-	26	24	22	21	20	19	18	17	17	16	16	15
	12	-	-	-	-	-	-	38	35	32	30	29	27	27	25	24	23	23	22

The pressure loss and the sound pressure level of emission into the ductwork.

b [mm]	v [m/s]	L_{WA} [dB(A)]																	
		a [mm]																	
160	2	-6	-6	-7	-7	-7	-8	-8	-8	-8	-8	-8	-7	-7	-7	-7	-7	-7	-7
	4	15	14	14	13	13	13	13	13	13	13	13	13	13	14	14	14	14	14
	6	26	26	25	25	25	25	25	25	25	25	25	25	25	25	26	26	26	26
	8	34	34	33	33	33	33	33	33	33	33	33	33	33	34	34	34	34	34
	10	40	40	40	39	39	39	39	40	40	40	40	40	40	40	40	40	40	40
	12	45	45	45	44	44	44	44	44	44	45	45	45	45	45	45	45	45	45
200	2	-	-12	-12	-13	-13	-13	-13	-13	-13	-13	-12	-12	-12	-12	-12	-12	-12	-12
	4	-	9	9	13	9	9	9	9	9	9	9	9	9	9	9	10	10	10
	6	-	22	21	25	21	21	21	21	21	21	21	21	21	21	21	21	21	21
	8	-	30	29	33	29	29	29	29	29	29	29	30	30	30	30	30	30	30
	10	-	36	35	40	35	35	35	35	35	35	36	36	36	36	36	36	36	36
	12	-	41	41	45	40	40	40	40	41	41	41	41	41	41	41	41	41	41
250	2	-	-	-16	-16	-16	-16	-17	-17	-17	-17	-17	-17	-16	-16	-16	-16	-16	-16
	4	-	-	6	6	6	5	5	5	5	5	6	6	6	6	6	6	6	6
	6	-	-	18	18	18	18	18	18	18	18	18	18	18	18	18	19	19	19
	8	-	-	27	26	26	26	26	26	26	26	26	26	27	27	27	27	27	27
	10	-	-	33	33	33	33	33	33	33	33	33	33	33	33	34	34	34	34
	12	-	-	38	38	38	38	38	38	38	38	38	38	39	39	39	39	39	39
300	2	-	-	-	-19	-19	-19	-19	-19	-19	-19	-19	-19	-19	-19	-19	-19	-19	-19
	4	-	-	-	3	3	3	3	3	3	3	3	3	3	4	4	4	4	4
	6	-	-	-	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16
	8	-	-	-	25	25	24	25	25	25	25	25	25	25	25	25	25	25	25
	10	-	-	-	31	31	31	31	31	31	31	31	31	31	31	31	31	32	32
	12	-	-	-	37	37	37	37	37	37	37	37	37	37	37	37	37	37	37

Shut-off fire dampers

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<i>a</i> [mm]	<i>v</i> [m/s]	<i>L_{WA}</i> [dB(A)]																	
		<i>b</i> [mm]																	
		160	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000
350	2	-	-	-	-	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21	-21
	4	-	-	-	-	2	2	2	2	2	2	2	2	2	2	2	2	2	2
	6	-	-	-	-	15	14	14	14	14	14	14	14	14	14	15	14	15	15
	8	-	-	-	-	24	24	23	24	24	24	24	24	24	24	24	24	24	24
	10	-	-	-	-	30	30	30	30	30	30	30	30	30	30	30	30	30	30
	12	-	-	-	-	35	35	35	35	35	35	35	35	35	35	36	36	36	36
400	2	-	-	-	-	-	-22	-23	-23	-23	-23	-23	-23	-23	-23	-23	-23	-23	-23
	4	-	-	-	-	-	1	0	0	0	0	0	0	0	0	0	0	0	0
	6	-	-	-	-	-	13	13	13	13	13	13	13	13	13	13	14	14	14
	8	-	-	-	-	-	22	22	22	22	22	22	22	22	22	22	22	22	23
	10	-	-	-	-	-	29	29	29	29	29	29	29	30	30	30	30	30	30
	12	-	-	-	-	-	34	34	34	34	34	34	35	35	35	35	35	35	35
450	2	-	-	-	-	-	-	-24	-24	-24	-24	-24	-24	-24	-24	-24	-24	-24	-24
	4	-	-	-	-	-	-	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1
	6	-	-	-	-	-	-	13	13	13	13	13	13	13	13	13	13	13	13
	8	-	-	-	-	-	-	21	21	21	21	21	21	21	21	21	21	21	21
	10	-	-	-	-	-	-	29	28	28	28	29	28	28	29	28	28	28	29
	12	-	-	-	-	-	-	34	34	34	34	34	34	34	34	34	34	34	34
500	2	-	-	-	-	-	-	-	-25	-25	-25	-25	-25	-25	-25	-26	-26	-26	-26
	4	-	-	-	-	-	-	-	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2
	6	-	-	-	-	-	-	-	12	12	12	12	12	12	12	12	12	12	12
	8	-	-	-	-	-	-	-	21	21	21	21	21	21	21	21	21	21	21
	10	-	-	-	-	-	-	-	28	28	28	28	28	28	28	28	28	28	28
	12	-	-	-	-	-	-	-	34	34	34	34	34	34	34	34	34	34	34