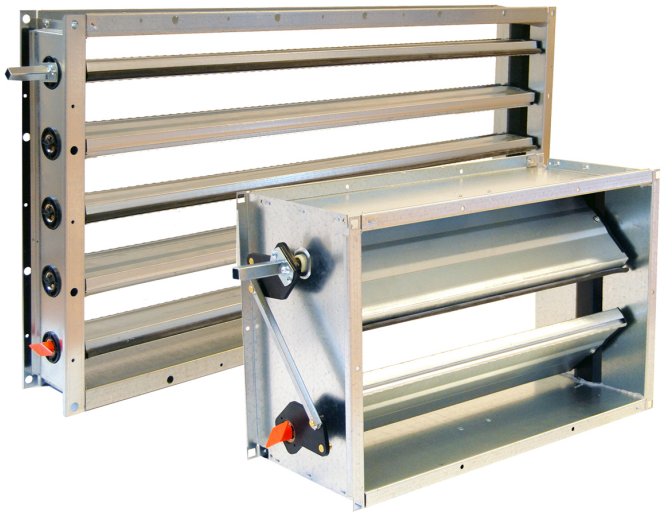
Regulation and shut-off damper SPBA and SPCA



Multi leaf dampers are used as regulation, shut-off and mixing dampers in air handling systems and units.

Dampers are mounted to air handling units and rectangular ducts by means of a slip joint or a flange joint, and to circular ducts with sealed spigots. They are equipped with a base for actuator and an external position indicator.

With the face area larger than 5 m², the damper is put together of two or more units with each having its own actuator.

Specifications

Leakage classes CEN1, CEN3 and CEN4

Non insulated, blades insulated and casing insulated

Robust construction

Split, flange and circular joint

Base for actuator as default

Large range of actuators

Made of galvanized steel sheet or acid-proof steel

Body width 120 mm / 220 mm

Product code example

Shut off damper

SPBA-3L01400180000

Damper with tightness class CEN 3, blades thermally insulated, nominal size 1400x1800, slip joint, galvanized steel

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Predstavništvo u Beogradu
Kumanovska 14, 11000 Beograd
Tel: 011/3836886, 3085740
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web: www.airtrend.rs

Properties SPBA

SPBA-1...

- regulation damper for balancing air flows
- no thermal insulation
- leakage class: 1 (CEN)
- leakage class of casing: B

SPBA-3...

- regulation and shut-off damper to be used where low leakage is required
- no thermal insulation
- leakage class: 3 (CEN)
- leakage class of casing: C

SPBA-3L...

- shut-off damper to be used where low leakage and effective thermal insulation are required
- blades thermally insulated
- leakage class: 3 (CEN)
- leakage class of casing: C
- heat transmission U_m = 4 W/m^{2}K

SPBA-3LE...

- shut-off damper to be used where low leakage and effective thermal insulation are required also through casing
- blades and casing thermally insulated
- leakage class: 3 (CEN)
- leakage class of casing: C
- heat transmission U_m = 4 W/m^{2}K

SPBA-4L...

- shut-off damper to be used where low leakage and effective thermal insulation are of great importance
- blades thermally insulated
- leakage class: 4 (CEN)
- leakage class of casing: C
- heat transmission U_m = 4 W/m^{2}K

SPBA-4LE...

- shut-off damper to be used where low leakage and effective thermal insulation are of great importance
- blades and casing thermally insulated
- leakage class: 4 (CEN)
- leakage class of casing: C
- heat transmission U_m = 4 W/m^{2}K

General information SPBA

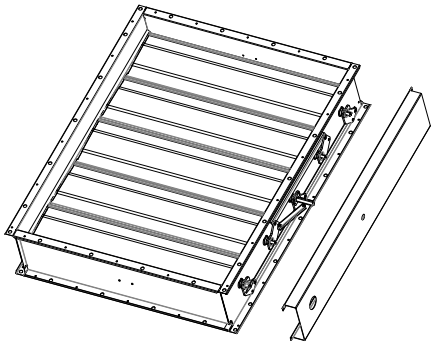
Construction

Multi leaf damper is available with slip or flange joint. The width of the SPBA body is 220 mm. The blades are profiled and mechanically jointed and they are linked with a lever mechanism to achieve opposite actions. The drive shaft is the third shaft from the bottom; in two-blade dampers the upper shaft is the driving one.

The dampers are equipped with a base for actuator and an external position indicator.

The normal operating temperature of the dampers with standard construction varies between -40 °C and +80 °C.

The multi leaf damper is also available with a protective cover for the lever mechanism. The protective cover is attached to the damper with screws, so that it can easily be detached e.g. for installation. The protective cover also serves as base for motor.



Installation

The multi leaf dampers are mounted to air handling units and rectangular ducts by means of a slip joint or a flange joint, and to circular ducts with sealed spigots.

If the face area is larger than 5 m², the damper is put together of two or more units with each having its own actuator.

Material

The casing and blades of a multi leaf damper are made of hot-galvanized steel sheet or acid-proof steel.

The bearings and edges of the blades are made of polyamide, the seals are profiled PVC and EPDM.

The material used for thermal insulation is mineral wool.

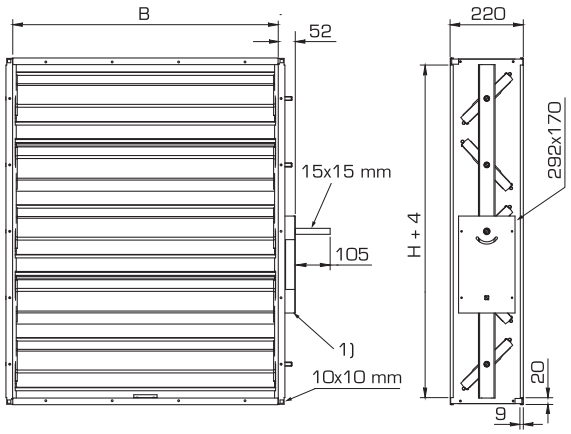
Dimensions SPBA

Width B	200 - 2500 mm
Height H	200 - 2600 mm
B x H	max 5 m²

NOTE! Insulated casing increases the dimensions: B+160, H+60

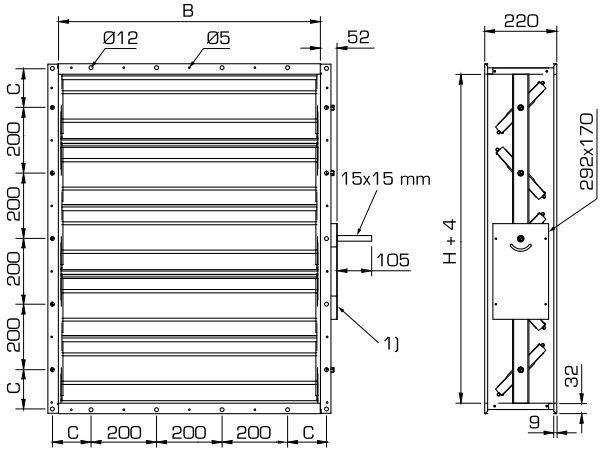
If the face area is larger than 5 m², the damper is put together of two or more units. Construction and dimensions are agreed on separately.

Slip joint



1) Base for actuator

Flange joint

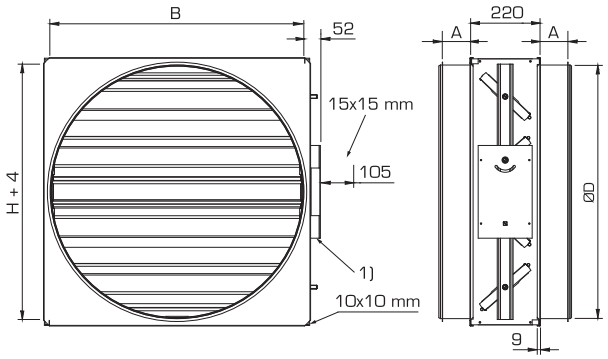


1) Base for actuator

C = 120 mm when H = 200, 400, etc. C = 170 mm when H = 300, 500, etc.

Dampers with flange joints are equipped with Ø5 mm screw holes with 200 mm spacing to enable the mounting e.g. to wall surface without a counter-flange.

Circular joints

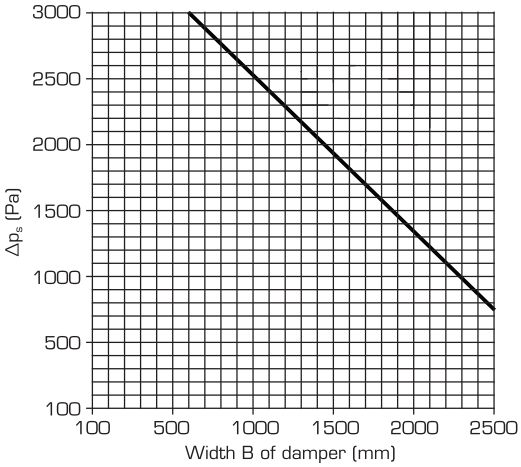


1) Base for actuator

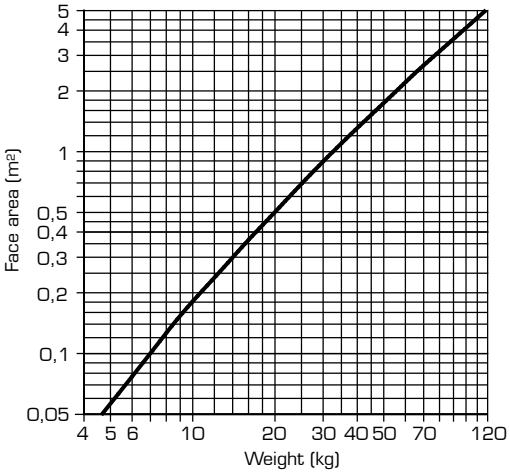
ØD	B x H	A (mm)
160	200 x 200	35
200	200 x 200	35
250	300 x 300	45
315	400 x 400	45
400	400 x 400	85
500	500 x 500	70
630	650 x 650	80
800	800 x 800	140
1000	1000 x 1000	140
1250	1300 x 1300	140

Technical data SPBA

Max allowable pressure difference



Damper weight



Sound power level Lw

SPBA	CORRECTION K_{oct} (dB) Medium frequence of octave band (Hz)							
	63	125	250	500	1000	2000	4000	8000
	9	4	1	2	-1	-3	-8	-12
Tol.±	5	5	5	4	4	4	4	4

CORRECTION K_A (dB) Face area of damper (m²)								
0.1	0.15	0.25	0.4	0.6	1.0	1.6	2.5	4.0
-10	-8	-6	-4	-2	0	2	4	6

The sound power levels of the duct for every octave band are obtained by adding the corrections K_{oct} of octave bands and K_A of the face area (see tables above) to the total sound pressure level L_{p10A}, dB(A), according to the following formula:

$L_{Woct} = L_{p10A} + K_{oct} + K_A$

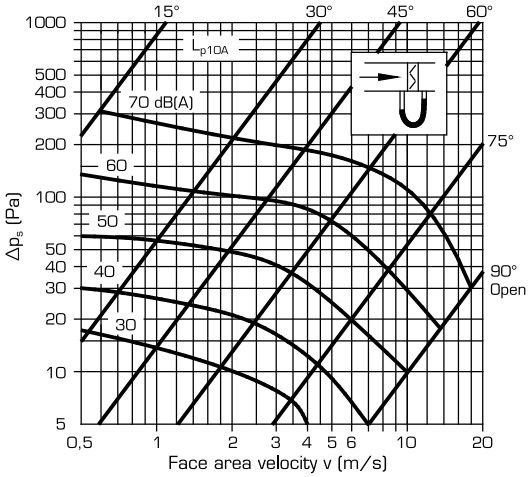
Correction K_{oct} is the average in the area of application of SPBA.

Sound power level Lw in duct when damper closed

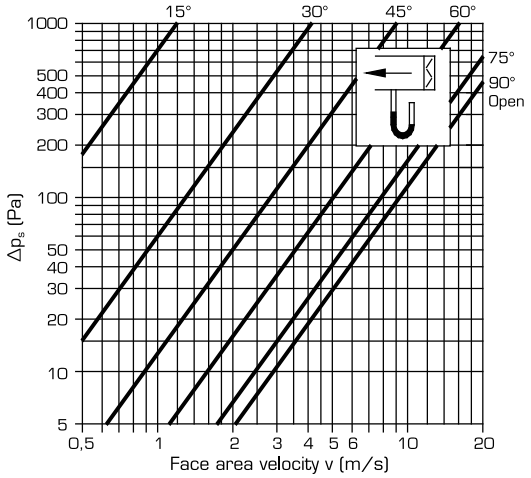
(SPBA-300, SPBA-3L0, SPBA-3LE)

Δp (Pa)	L_W (A = 1 m²) (dB) Medium frequence of octave band (Hz)							
	63	125	250	500	1000	2000	4000	8000
500	43	38	43	47	50	53	62	69
1000	43	41	48	52	56	60	67	70

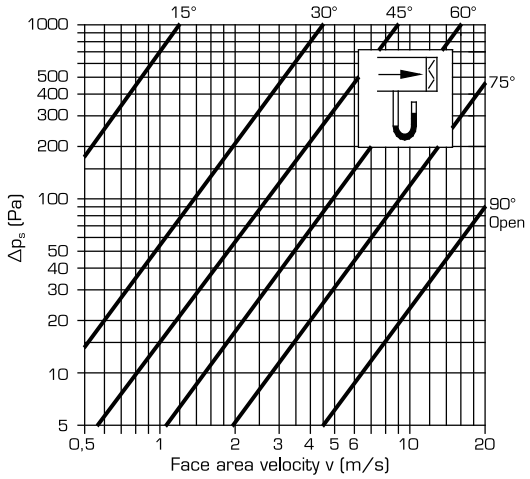
In duct



Duct end, extract



Duct end, supply

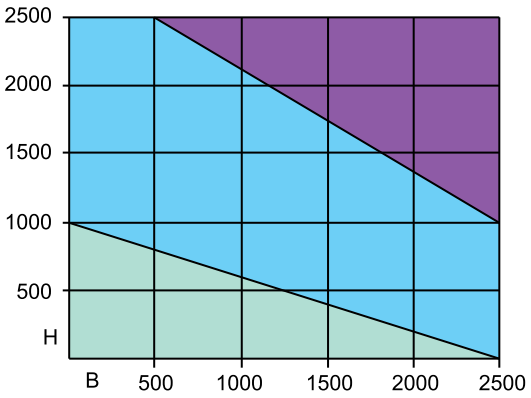


Actuator torque SPBA

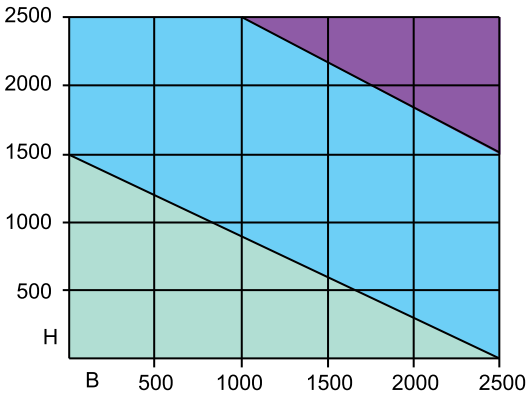
The torque used depends e.g. on the type, width and length of the multi leaf damper, the total length of the sealing surfaces and the mounting method.

The actuator torque required for the shut-off function of SPBA-3... and SPBA-4... and the recommended actuator type are shown in the tables below.

SPBA-4...



SPBA-3...



1: 10 Nm actuator

2: 20 Nm actuator

3: 30 Nm actuator

Properties SPCA

SPCA-3...

- regulation and shut-off damper to be used where low leakage is required
- no thermal insulation
- leakage class: 3 (CEN)
- leakage class of casing: C

SPCA-3L...

- shut-off damper to be used where low leakage and effective thermal insulation are required
- blades thermally insulated
- leakage class: 3 (CEN)
- leakage class of casing: C
- heat transmission U_m = 4.5 W/m^{2}K

SPCA-3LE...

- shut-off damper to be used where low leakage and effective thermal insulation are required also through casing
- blades and casing thermally insulated
- leakage class: 3 (CEN)
- leakage class of casing: C
- heat transmission U_m = 4.5 W/m^{2}K

SPCA-4...

- shut-off damper to be used where low leakage is required
- no thermal insulation
- leakage class: 4 (CEN)
- leakage class of casing: C

SPCA-4L...

- shut-off damper to be used where low leakage and effective thermal insulation are of great importance
- blades thermally insulated
- leakage class: 4 (CEN)
- leakage class of casing: C
- heat transmission U_m = 4.5 W/m^{2}K

SPCA-4LE...

- shut-off damper to be used where low leakage and effective thermal insulation are of great importance
- blades and casing thermally insulated
- leakage class: 4 (CEN)
- leakage class of casing: C
- heat transmission U_m = 4.5 W/m^{2}K

General information SPCA

Construction

Multi leaf damper is available with slip or flange joint. The width of the SPCA body is 120 mm with a slip joint and 130 mm with a flange joint. The blades are profiled and mechanically jointed to achieve high strength and they are linked with a lever mechanism to achieve opposite actions. The top shaft is the drive shaft.

The dampers are equipped with a screw-on cover plate that protects and supports the total length of the gear unit. the base for actuator is installed on the cover plate. NOTE! Dampers are never delivered without the protective cover.

The normal operating temperature varies between -40 °C and +80 °C.

Installation

The dampers are mounted to air handling units and rectangular ducts by means of a slip joint or a flange joint.

Material

The casing and blades of a multi leaf damper are made of hot-galvanized steel sheet or acid-proof steel.

The bearings and edges of the blades are made of polyamide, the seals are profiled PVC and EPDM.

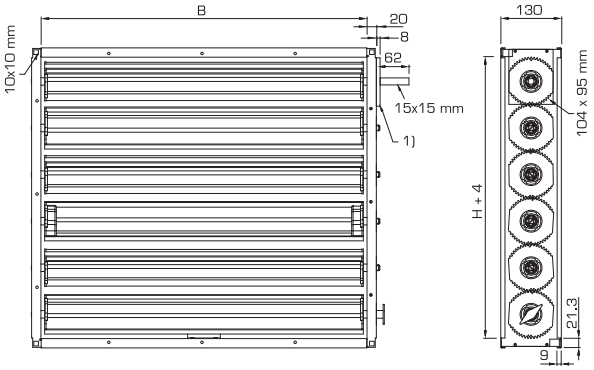
The material used for thermal insulation is mineral wool.

Dimensions SPCA

Width B	200 - 1400 mm
Height H	200 - 1000 mm

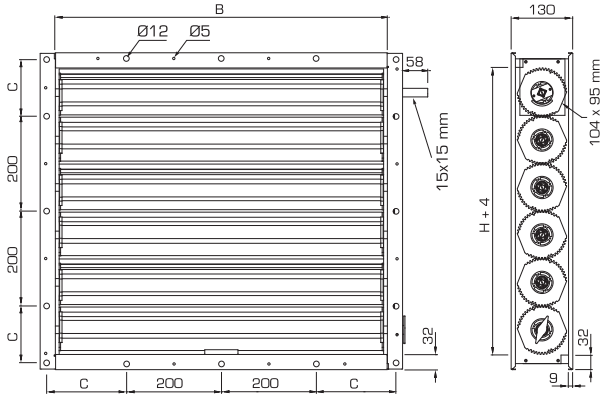
NOTE! Insulated casing increases the dimensions: B+120, H+60

Slip joint



1) Axel support

Flange joint



C = 120 mm when H = 200, 400, etc.
C = 170 mm when H = 300, 500, etc.

Technical data SPCA

Sound power level Lw

SPCA	CORRECTION K_{oct} (dB) Medium frequence of octave band (Hz)							
	63	125	250	500	1000	2000	4000	8000
	6	5	3	1	0	-4	-8	-15
Tol.±	5	5	5	4	4	4	4	4

CORRECTION K_A (dB) Face area of damper (m²)								
0.04	0.06	0.1	0.15	0.25	0.4	0.65	1.0	1.6
-10	-8	-6	-4	-2	0	2	4	6

The sound power levels of the duct for every octave band are obtained by adding the corrections K_{oct} of octave bands and K_A of the face area (see tables above) to the total sound pressure level L_{p10A}, dB(A), according to the following formula:

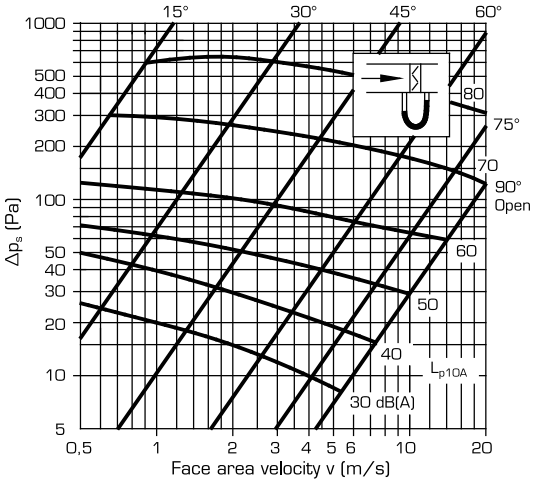
$L_{Woct} = L_{p10A} + K_{oct} + K_A$

Correction K_{oct} is the average in the area of application of SPCA.

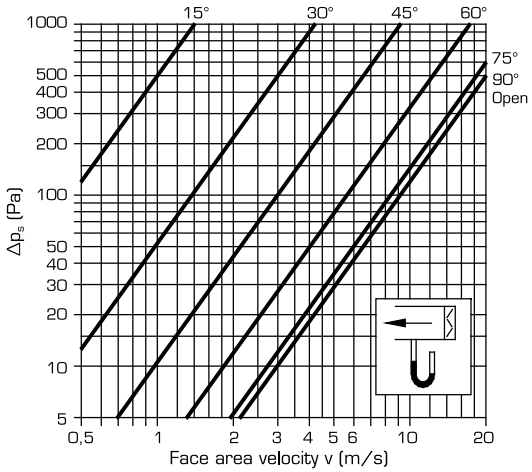
Sound power level Lw in duct when damper closed

Δp (Pa)	L_W (A = 1 m²) (dB) Medium frequence of octave band (Hz)							
	63	125	250	500	1000	2000	4000	8000
500	34	37	41	49	54	56	59	54
1000	43	41	45	53	59	62	65	64

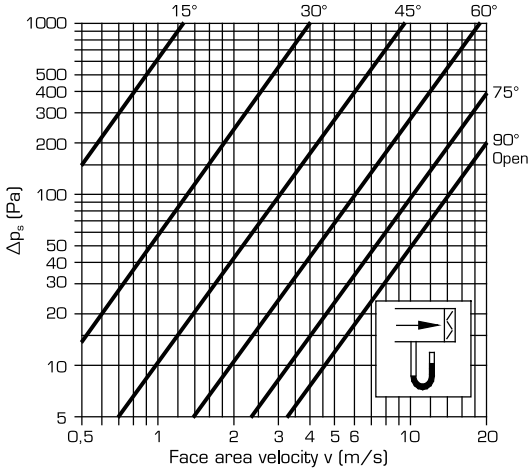
In duct



Duct end, extract



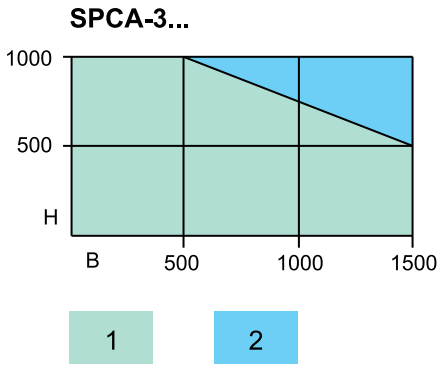
Duct end, supply



Actuator torque SPCA

The torque used depends e.g. on the type, width and length of the multi leaf damper, the total length of the sealing surfaces and the mounting method.

The actuator torque required for the shut-off function of SPCA and the recommended actuator type are shown in the table below.



1: 10 Nm actuator

2: 20 Nm actuator

Product code SPBA

Multi leaf damper **SPBA-abcddddeeeefg**

Tightness class (a)
1 = CEN 1 (b = 0, c = 0)
3 = CEN 3
4 = CEN 4 (b = L)
Blade insulation (b)
0 = none
L = insulated blade (a = 3 or 4)
Casing insulation (c)
0 = none
E = insulated casing (a = 3 or 4, b = L)
Damper width or duct diameter (dddd)
Width 200-1000 mm in steps of 50 mm
Width 1100-2500 mm in steps of 100 mm
Duct diameter 0160, 0200, 0250, 0315, 0400, 0500, 0630, 0800, 1000, 1250 (eeee = 0000, f = 2 or 3)
Damper height (eeee)
Height 200-1000 mm in steps of 50 mm
Height 1100-2600 mm in steps of 100 mm
0000 = duct diameter (f = 2 or 3)
Joint type (f)
0 = slip joint
1 = flange joint
2 = circular duct connection on one side + slip joint on other side
3 = circular duct connection on both sides
Material (g)
0 = galvanized steel
1 = acid-proof stainless steel 316L

Examples

SPBA-3L01400180000

Damper with tightness class CEN 3, blades thermally insulated, nominal size 1400x1800, slip joint, galvanized steel

SPBA-1000800150011

Damper with tightness class CEN 1, nominal size 800x1500, flange joint, acid-proof steel

Product code SPCA

Multi leaf damper **SPCA-abcddddeeeefg**

Tightness class (a)
3 = CEN 3
4 = CEN 4
Blade insulation (b)
0 = none
L = insulated blade (a = 3 or 4)
Casing insulation (c)
0 = none
E = insulated casing (a = 3 or 4, b = L)
Damper width or duct diameter (dddd)
Width 200-1000 mm in steps of 50 mm
Width 1100-1400 mm in steps of 100 mm
Duct diameter 0160, 0200, 0250, 0315, 0400, 0500, 0630, 0800, 1000, 1250 (eeee = 0000, f = 2 or 3)
Damper height (eeee)
Height 200-1000 mm in steps of 100 mm
0000 = duct diameter (f = 2 or 3)
Joint type (f)
0 = slip joint
1 = flange joint
2 = circular duct connection on one side + slip joint on other side
3 = circular duct connection on both sides
Material (g)
0 = galvanized steel
1 = acid-proof stainless steel 316L

Examples

SPCA-3L00400080000

Damper with tightness class CEN 3, blades thermally insulated, nominal size 0400x0800, slip joint, galvanized steel

NOTE! SPCA dampers are always delivered with protective cover for gear unit. Base for actuator is mounted on protective cover.

Accessories

Manual regulator **SPBZ-01-aa**
standard with CEN 1 model (SPBA-1...)

Regulator with extension **SPBZ-02-aa**
length 1500 mm

Protective cover for level mechanism **SPBZ-03-aa**
Material (aa)
00 = galvanized
01 = acid-proof

Actuator **SPBZ-04-aa**
Model (aa)
00 = On-off 24 V, 5 Nm without spring-return
01 = On-off 24 V, 10 Nm without spring-return
02 = On-off 24 V, 20 Nm without spring-return
03 = On-off 24 V, 40 Nm without spring-return

Actuator **SPBZ-05-aa**
Model (aa)
00 = On-off 24 V auxiliary switch , 5 Nm without spring-return
01 = On-off 24 V auxiliary switch, 10 Nm without spring-return
02 = On-off 24 V auxiliary switch, 20 Nm without spring-return

Actuator **SPBZ-06-aa**
Model (aa)
00 = On-off 230 V, 5 Nm without spring-return
01 = On-off 230 V, 10 Nm without spring-return
02 = On-off 230 V, 20 Nm without spring-return
03 = On-off 230 V, 40 Nm without spring-return

Actuator **SPBZ-07-aa**
Model (aa)
00 = On-off 230 V auxiliary switch , 5 Nm without spring-return
01 = On-off 230 V auxiliary switch, 10 Nm without spring-return
02 = On-off 230 V auxiliary switch, 20 Nm without spring-return

Actuator **SPBZ-08-aa**
Model (aa)
00 = 24 V Control DC 2-10 V, 5 Nm without spring-return
01 = 24 V Control DC 2-10 V, 10 Nm without spring-return
02 = 24 V Control DC 2-10 V, 20 Nm without spring-return
03 = 24 V Control DC 2-10 V, 40 Nm without spring-return

Actuator **SPBZ-09-aa**
Model (aa)
00 = 230 V Control DC 2-10 V, 5 Nm without spring-return
01 = 230 V Control DC 2-10 V, 10 Nm without spring-return
02 = 230 V Control DC 2-10 V, 20 Nm without spring-return

Actuator **SPBZ-10-aa**
Model (aa)
00 = On-off 24 V, 4 Nm with spring-return
01 = On-off 24 V, 10 Nm with spring-return
02 = On-off 24 V, 20 Nm with spring-return
03 = On-off 24 V, 30 Nm with spring-return

Actuator **SPBZ-11-aa**
Model (aa)
00 = On-off 24 V auxiliary switch , 4 Nm with spring-return
01 = On-off 24 V auxiliary switch, 10 Nm with spring-return
02 = On-off 24 V auxiliary switch, 20 Nm with spring-return
03 = On-off 24 V auxiliary switch, 30 Nm with spring-return

Actuator **SPBZ-12-aa**
Model (aa)
00 = On-off 230 V, 4 Nm with spring-return
01 = On-off 230 V, 10 Nm with spring-return
02 = On-off 230 V, 20 Nm with spring-return
03 = On-off 230 V, 30 Nm with spring-return

Actuator **SPBZ-13-aa**
Model (aa)
00 = On-off 230 V auxiliary switch , 4 Nm with spring-return
01 = On-off 230 V auxiliary switch, 10 Nm with spring-return
02 = On-off 230 V auxiliary switch, 20 Nm with spring-return
03 = On-off 230 V auxiliary switch, 30 Nm with spring-return

Actuator **SPBZ-14-aa**
Model (aa)
00 = 24 V Control DC 2-10 V, 4 Nm with spring-return
01 = 24 V Control DC 2-10 V, 10 Nm with spring-return
02 = 24 V Control DC 2-10 V, 20 Nm with spring-return
03 = 24 V Control DC 2-10 V, 30 Nm with spring-return