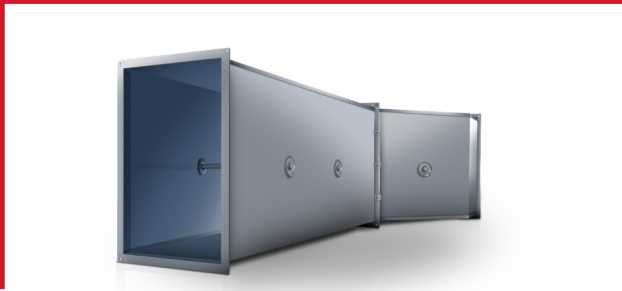


SDS

SINGLE COMPARTMENT SMOKE EXHAUST DUCTS



Intended use:

SDS are a set of products for the installation of steel rectangular duct smoke exhaust systems used for smoke exhaust and heat dissipation in smoke and heat propagation control systems within a single fire zone.

Formal and Legal Aspects of Introducing SDS Ducts into the Market

The law requires that in order to be used SDS type smoke exhaust ducts with cross-section dimensions up to 250 mm (width) x 1000 mm (height) must have a 1488-CPR-0463/W Certificate of Constancy of Performance as defined in PN-EN 12101-7:2012, and those with larger dimensions (up to 2500 mm wide x 1500 mm high) – a Certificate of Conformity with ITB Technical Approval No. AT-15-9349/2016.

SDS ducts manufactured in accordance with the said documents may be concurrently used and connected with each other in a single system. ITB Technical Approval No. AT-15-9349/2016 specifies their connection methods.

A single compartment smoke exhaust system, made of SDS products, may be connected to a multi-compartment system. The method for connecting SDS ducts with another multi-compartment system should be determined in the technical design made for a given building. Figure 1 shows an example of connecting SDS type smoke exhaust ducts with a PROMAT multi-compartment system.

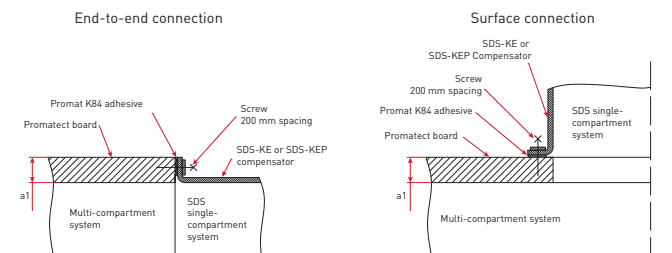


Figure 1. Example of connecting SDS smoke exhaust ducts with a multi-compartment system.

a1	Screw size	
	End-to-end connection	Surface connection
25	5,0x35	4,0x35
30	5,0x35	4,5x35
40	5,0x45	5,0x45
50	6,0x45	5,0x45

Table 1 presents standard cross-section dimensions of rectangular ductwork elements.

Table 2 presents standard diameters of round ductwork elements.

Table 1. Standard cross-section dimensions of rectangular ductwork elements.

Duct Height [mm]	Duct Width B [mm]															
	100	150	200	250	300	400	500	600	800	1000	1250	1500	1750	2000	2250	2500
	Cross Section Area [m²]															
100	0,01	0,015	0,02	0,025	0,03	0,04	0,05	0,06	0,08	0,10	0,125					
150	0,015	0,0225	0,03	0,0375	0,045	0,06	0,075	0,09	0,12	0,15	0,1875					
200	0,02	0,03	0,04	0,05	0,06	0,08	0,10	0,12	0,16	0,20	0,25	0,20	0,35	0,40	0,45	0,50
250	0,025	0,0375	0,05	0,0625	0,075	0,10	0,125	0,15	0,20	0,25	0,3125	0,375	0,437	0,50	0,562	0,625
300	0,03	0,045	0,06	0,075	0,09	0,09	0,15	0,18	0,24	0,30	0,375	0,45	0,525	0,60	0,675	0,75
400	0,04	0,06	0,08	0,10	0,12	0,16	0,20	0,24	0,32	0,40	0,50	0,60	0,70	0,80	0,90	1,00
500	0,05	0,075	0,10	0,125	0,15	0,20	0,25	0,30	0,40	0,50	0,625	0,75	0,875	1,00	1,125	1,25
600	0,06	0,09	0,12	0,15	0,18	0,24	0,30	0,36	0,48	0,60	0,75	0,90	1,05	1,20	1,35	1,50
800	0,08	0,12	0,16	0,20	0,24	0,32	0,40	0,48	0,64	0,80	1,00	1,20	1,40	1,60	1,80	2,00
1000	0,10	0,15	0,20	0,25	0,30	0,40	0,50	0,60	0,80	1,00	1,25	1,50	1,75	2,00	2,25	2,50
1250			0,25	0,312	0,375	0,50	0,625	0,75	1,00	1,25	1,562	1,875	2,187	2,50	2,812	3,125
1500			0,30	0,375	0,45	0,60	0,75	0,90	1,20	1,50	1,875	2,25	2,625	3,00	3,375	3,75

Range covered by the PN-EN 12101-7 standard

It is acceptable to make ducts with other cross-section dimensions as long as they are within the limits set out in Table 1.

Table 2. Standard diameters of round ductwork elements.

Diameter of an element [mm]													
100	125	160	200	250	315	400	500	630	800	1000	1250	1600	2000
Cross Section Area [m ²]													
0,008	0,012	0,020	0,031	0,049	0,078	0,126	0,196	0,312	0,503	0,785	1,23	2,01	3,14

It is acceptable to making elements with other diameters, provided that $D \leq 2500$.

SDS type single compartment steel smoke exhaust ducts should be made in accordance with the technical design specifically developed for a given object and taking into account the laid down in building regulations, including without limitation the Regulation of the Minister of Infrastructure of 12 April 2002 on Technical Conditions for Buildings and their Location [Journal of Laws No. 690, Item 690, as amended], and the requirements of the PN-EN 12101-7:2012 standard or (for larger dimensions) of ITB Technical Approval No. AT-15-9349/2016.

Intended use

SDS type single compartment smoke exhaust ducts are a set of products for the installation of steel rectangular duct smoke exhaust systems used for smoke exhaust and heat dissipation in smoke and heat propagation control systems within a single fire zone. They can be applied in dual-purpose systems (working as a general ventilation and smoke exhaust system at the same time), provided that they exhaust smoke only from the zone in which they are installed. They can make up an independent system or be connected to a multi-compartment system.

In order to save energy or lower noise emission, an SDS type system can be insulated if used for general ventilation. Insulation can only be placed on the external surfaces of ducts, in a way that prevents spread of fire. The insulation method should be determined in the technical design made for a given building.

SDS smoke exhaust ductwork elements may be coated, e.g. by the Manufacturer, with polyester powder paints in accordance with applicable processes.

SDS steel single compartment smoke exhaust ducts are classified according to the PN-EN 13501-4+A1:2010 standard as E600120(h0)S1500 single fire resistance class, and as non-flammable, and fire retardant. SDS-KE and SDS-KEP compensators are classified as B-s1,d0 fire reaction class according to the PN-EN 13501-1+A1:2010 standard.

Steel sheet elements coated according to applicable requirements are classified as A2-s2,d0 fire reaction class.

SDS ducts can only be installed horizontally. The ducts can exhaust gasses at temperatures lower than 600°C. The permissible range of working pressure is from -1500 Pa negative pressure to +500 Pa positive pressure.

All or some of the products below can be used to configure an system:

1. SDS-XXX galvanized steel sheet ductwork elements
2. SDS-DC thermal expansion compensative ducts
3. SDS-KE or SDS-KEP thermal expansions compensators
4. SDS-PWO jalousie control dampers
5. SDS-TAP duct silencers
6. SDS-DR inspection covers
7. Grilles for SDS-STW, SDS-STS1 Intake and Exhaust Openings
8. SDS-GS control dampers for intake and exhaust grilles.

Installation Conditions

Ducts should be installed by companies trained by Smay Sp. z o.o. in terms of product technical properties, the conditions of installation works, and the inspection and the performed works.

The information on installed SDS smoke exhaust ductwork should be placed on the duct or recorded in the Construction Site Log. This information must include the following:

- the duct name according to PN-EN 12101-7 or ITB Technical Approval No. AT-15-9349/2016,
- the duct manufacturer's name,
- fire resistance class,
- the name of the installation company,
- and the installation date.

Individual ductwork elements (connectors, fittings, compensative ducts, compensators, silencers) are connected with each other with minimum 3.6 durability class bolts. For flange connections of steel elements, use ceramic or silicate gaskets with a minimum 20 x 5 mm cross section. They should also be resistant to temperatures of up to 1000°C. For flange connections larger than 250 mm, use galvanized steel mounting clamps. Do not exceed 250 mm distance between clamps.

Connect SDS-KE compensators with other system elements by means of standard P30 or P40 frames. Connect SDS-KEP compensators by means of multi-screw flange connections, screwed with M10 screws. Compensator flanges are made of galvanized steel 30 x 6 flat bars.

Textile compensator flanges provide sufficient sealing for the SDS-KEP compensator connections.

Compensation ducts or compensators should be used for ducts longer than 5 m. Never exceed the maximum acceptable distance between compensation elements, which is 10 m. You must not use any other compensators.

The suspensions of SDS type smoke exhaust ducts are made of dowels, of threaded rods with nuts and washers, and of supporting beams. Acceptable tensile stresses for threaded rods must not exceed 6 N/mm².

Tabela 3. Selection of diameters for threaded rods.

Rod Size	M10	M12	M16	M20
Force in a single rod with the tensile stress equal to 6 N/mm ²	304,2 N	443,4 N	846 N	1314 N

Caution: Different rod manufacturers may declare different values.

For suspension beams, select only elements with such cross-section bending strength W_x that will ensure that bending stress under continuous load will not exceed the permissible stress $k_g = 0.3 Re$ [MPa]. It is recommended that the tables included in the "Guidelines for Selecting Suspension Elements" (rev. November 2015) be used when selecting suspension elements.

Ducts weigh approximately 15 kg/m² of steel sheet area. The weight of standard silencers is presented in Tables 4 – 8. The maximum distance between a suspension and a flange connection is 750 mm. The suspension spacing must not exceed 1500 mm, while the maximum permissible distance between a tie rod and the side of a duct is 50 mm.

Product Description

SDS-XXX Steel Ductwork Elements

Ductwork elements include the following product types:

- Straight rectangular ducts SDS-K
- Rectangular bend SDS-BA
- Rectangle-to-round diffuser SDS-UA
- Symmetrical rectangle-to-rectangle SDS-US
- Zwęzki prostokąt/koło SDS-RA
- Symmetrical rectangle-to-round diffuser SDS-RS
- Rectangle-to-rectangle tees SDS-TR1
- Rectangle-to-round tees SDS-TR2
- Rectangular fuller SDS-ES
- Other fittings SDS-XX
- Plug SDS-B0

The size range is the same as in the table on page 4.

- the maximum length of a straight duct or fitting is 1500 mm
- the maximum internal radius of an elbow is 500 mm.
- the angle of an elbow is 15–90°
- the maximum diameter of a round section is 2500 mm.

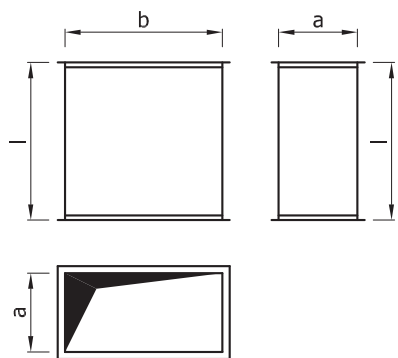
Ductwork elements are made of galvanized steel sheet. The dimensioning tolerance of ducts and fittings is in accordance with PN-EN 1505:2001.

Straight duct sections and fittings longer than 500 mm are fitted with internal supports symmetrically placed along the duct axis. The distance between supports and between supports and flange connections is not greater than 500 mm. The distance between supports, measured transversely to the duct axis, does not exceed 630 mm. (This also applies to the distance between the end support and the side of a duct/fitting). For 631–2500 mm wide and 631–1500 mm elements, cross reinforcements are used, which are connected by means of metal joints.

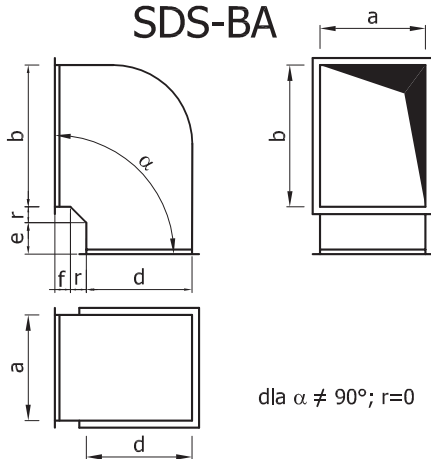
Ductwork elements are terminated with flange frames made of a 30 mm wide profile for cross-section dimensions up to 1000 x 1000 mm and of a 40 mm wide profile for larger dimensions. Ductwork elements are additionally sealed, internally or externally, by means of silicone.

Dimensioning Principles for Ductwork Elements

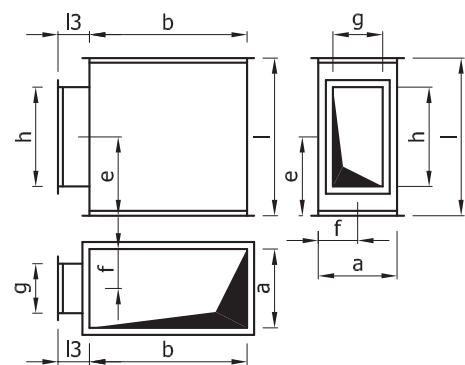
SDS-K



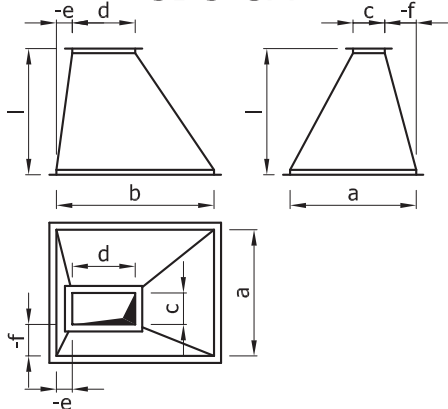
SDS-BA



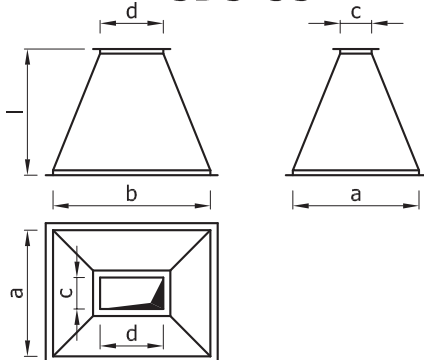
SDS-TR1



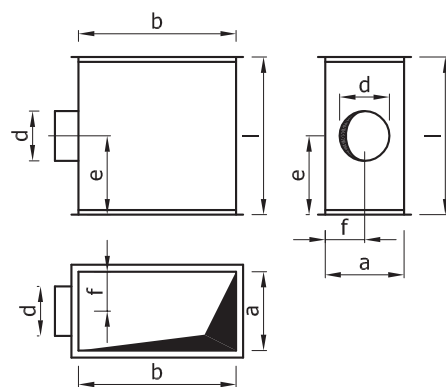
SDS-UA



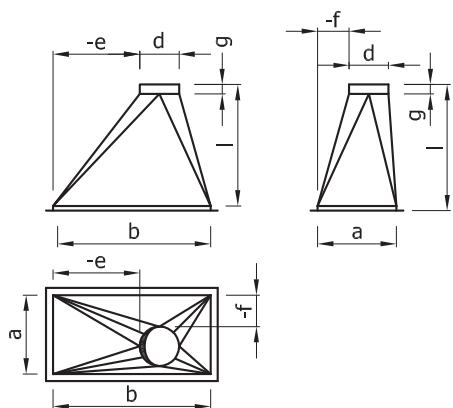
SDS-US



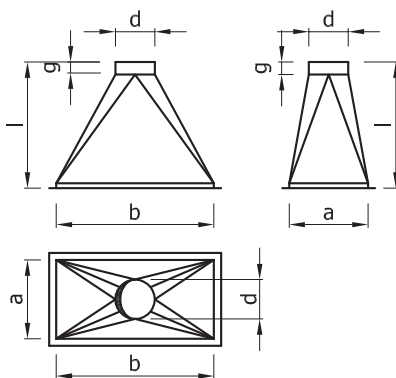
SDS-TR2



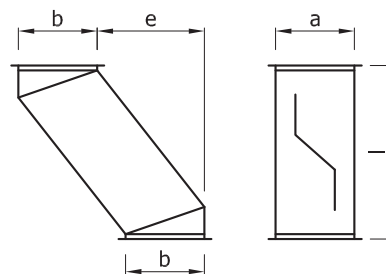
SDS-RA



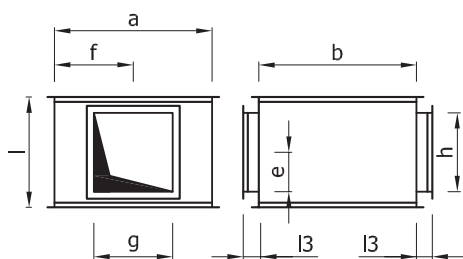
SDS-RS



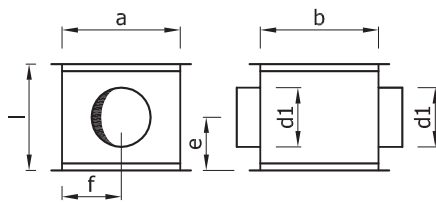
SDS-ES



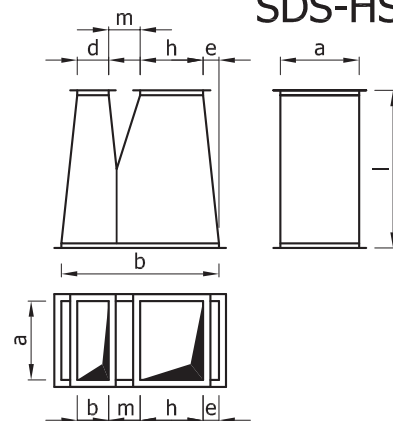
SDS-CR1



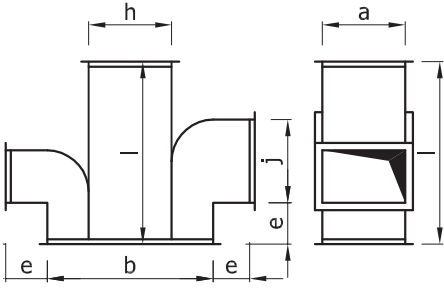
SDS-CR2



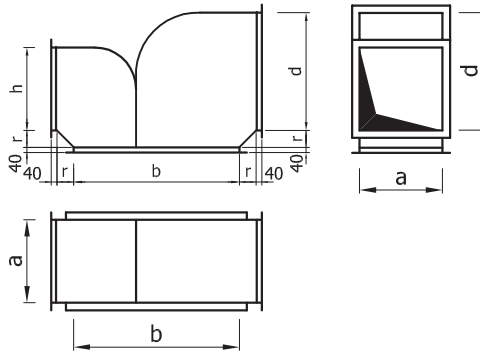
SDS-HS



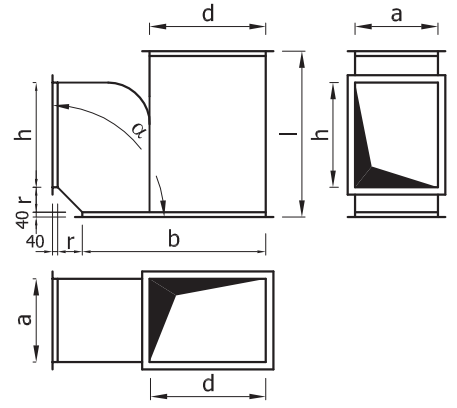
SDS-CR5



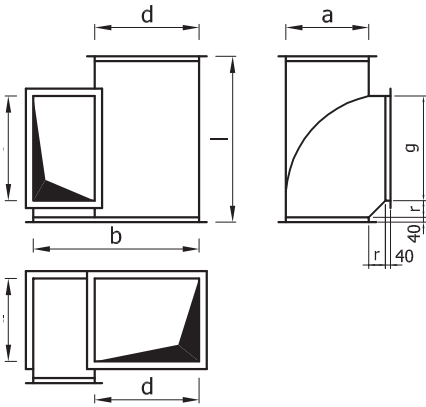
SDS-TR3



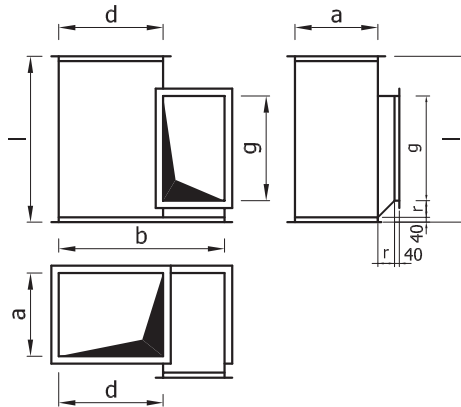
SDS-TR4



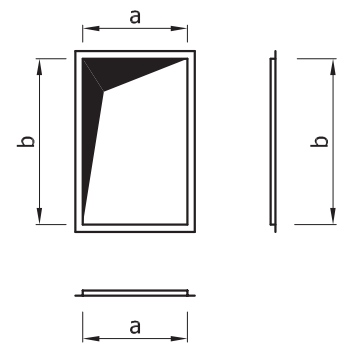
SDS-TR7



SDS-TR8



SDS-BO



Ordering:

When ordering, please provide information in accordance with the following pattern:

SDS-K- <a>-b-<l> /<ADD></l>	SDS-CR1- <a>-b-<g>-h-<l>-e-<f>-<l3> <add><="" a=""></l3>></f></l></g>
SDS-BA- <a>-a--<d>-<e>-<f>-<r> /<ADD></r></f></e></d>	SDS-CR2- <a>-b-<d1>-<l>-<e>-<f> /<ADD></f></e></l></d1>
SDS-UA- <a>-b-<c>-<d>-<l>-<e>-<f> /<ADD></f></e></l></d></c>	SDS-HS- <a>-b-<d>-<h>-<e>-<m>-<l> /<ADD></l></m></e></h></d>
SDS-US- <a>-b-<c>-<d>-<l> /<ADD></l></d></c>	SDS-CR5- <a>-b-<d>-<h>-<j>-<e>-<l> /<ADD></l></e></j></h></d>
SDS-RA- <a>-b-<d>-<g>-<l>-<e>-<f></f></e></l></g></d>	SDS-TR3- <a>-b-<d>-<h>-<r> /<ADD></r></h></d>
SDS-RS- <a>-b-<d>-<g>-<l></l></g></d>	SDS-TR4- <a>-b-<d>-<h>-<r>-<l>-<a> /<ADD></l></r></h></d>
SDS-TR1- <a>-b-<g>-<h>-<l>-<e>-<f>-<l3> <add><="" a=""></l3>></f></e></l></h></g>	SDS-TR7- <a>-b-<d>-<g>-<r>-<l> /<ADD></l></r></g></d>
SDS-TR2- <a>-b-<d>-<l>-e-<f> /<ADD></f></l></d>	SDS-TR8- <a>-b-<d>-<g>-<r>-<l> /<ADD></l></r></g></d>
SDS-ES- <a>-b-<e>-<l> /<ADD></l></e>	SDS-BO- <a>-b> /<ADD>

Where:

<SDS>	Smoke Duct System
<K, BA, UA, US, RA, RS, TR1, TR2, ES, CR1, CR2, HS, CR5, TR3, TR4, TR7, TR8, BO>	fitting type
<a, b, c, d, e, f, g, h, j, l, l ₃ , m, r, a>	typical dimensions in mm,
<ADD>	Accessories
<SDS-STW>	- Lamella grille
<SDS-ST51>	- Mesh grille
<SDS-GS>	- Grille damper
<SDS-DR>	- Inspection cover

Order example: **SDS-ES-1000-250-300-1000**

Compensation Elements

Compensators are used in order to counteract the linear expansion of smoke exhaust ducts caused by heat during fire. The lack of compensators can cause damage to the system, resulting in inefficient smoke exhaust.

SDS-DC Compensative Duct

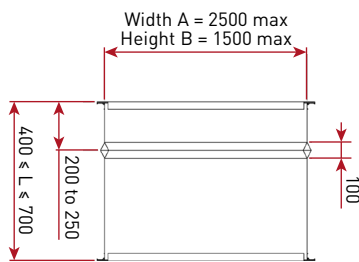


Figure 2. Dimensioning principles for SDS-DC compensation ducts

Compensative ducts are made of DX51+Z275 galvanized steel sheet in accordance with the PN-EN 10346:2011 P standard. The basic dimensions correspond to the SDS-K duct series. The total length is 400 to 700 mm. Compensation is achieved through deformation in the shell of a duct.

SDS-DC compensative ducts, in parallel to SDS-K ducts, are terminated with frames made of 30 or 40 mm wide profiles. SDS-DC elements longer than 500 mm are stiffened and sealed in the same way as other ductwork elements.

Ordering:

When ordering, please provide information in accordance with the following pattern:

SDS-DC - <a> - - <l>

Where:

SDS	Smoke Duct System
DC	Compensative duct
a, b, l	Typical dimensions in mm

Order example: **SDS-DC-1000-250-400**

SDS-KE Compensators

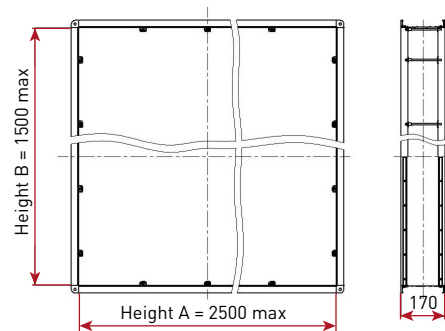


Figure 3. Dimensioning principles for SDS-KE compensators.

SDS-KE compensators are made of heat resistant plastic. Connection flanges are made of 30 or 40 mm wide galvanized steel profiles (30 mm wide profiles are used if a duct/fitting is neither longer nor wider than 1000 mm). SDS-KE compensators free length is 170 mm.

Ordering:

When ordering, please provide information in accordance with the following pattern:

SDS-KE-<A>-x-

Where:

SDS	Smoke Duct System
KE	Compensator type
A, B	Typical dimensions in mm

Order example: **SDS-KE-1000x-250**

SDS-KEP Compensators

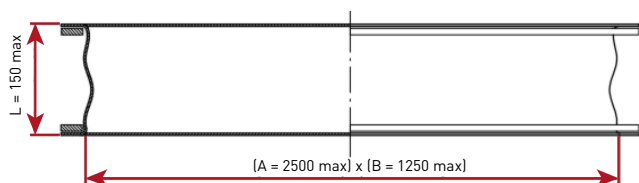


Figure 4. Dimensioning principles for SDS-KEP compensators.

The soft plastic bodies of SDS-KEP compensators are so shaped as to allow termination with 30 mm wide textile flanges for cross-section dimensions up to 1000 x 1000 mm and with 40 mm wide textile flanges for larger dimensions. Each SDS-KEP compensator is fitted with steel flat flanges for M10 multi-screw connections.

Ordering:

When ordering, please provide information in accordance with the following pattern:

SDS-KEP-<A>-x-

Where:

SDS	Smoke Duct System
KEP	Compensator type
A, B	Typical dimensions in mm

Order example: **SDS-KEP-1000x-250**

SDS-PWO Control Dampers

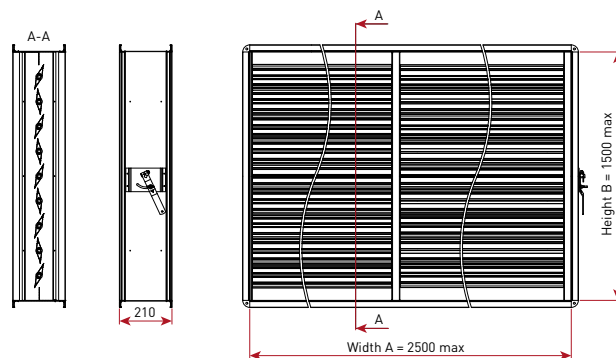


Figure 5. Dimensioning principles for SDS-PWO dampers.

SDS-PWO dampers are designed for flow rate control in SDS systems. They are made in the full range of SDS duct dimensions (width up to 2500 mm, height up to 1500 mm). Dampers are 210 mm long. They are made of galvanized steel profiles. Connection flanges are made of 30 or 40 mm wide profiles (30 mm – if no cross-section dimension exceeds 1000 mm). There are holes in frame corners to enable the connection of adjacent elements by means of M10 steel screws.

For dampers wider than 1250 mm, the shutter has two coupled kinematic fields. SDS-PWO dampers have no plastic parts. The degree of damper adjustment is factory limited to 20 – 90°.

Ordering:

When ordering, please provide information in accordance with the following pattern:

SDS-PWO-<A>-x-

Where:

SDS	Smoke Duct System
PWO	Damper type
A, B	Typical dimensions in mm

Order example: **SDS-PWO-1000x-250**

SDS-TAP Duct Silencer

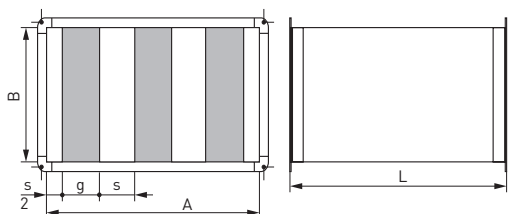


Figure 6. Dimensioning principles for silencers.

SDS-TAP silencers are manufactured in the same range of cross-section dimensions as SDS-K ducts. The maximum length is 1500 mm. For logistics reasons, silencers heavier than 360 kg are separated into 2 or 3 shorter elements for delivery.

Silencer bodies are made of galvanized steel sheet. The deviation and tolerance for basic dimensions of enclosures is determined in accordance with the PN-EN 1505:2001 standard.

Silencer bodies are terminated with flange frames made of a 30 mm wide profile for cross-section dimensions up to 1000 x 1000 mm and of a 40 mm wide profile for larger dimensions. Attenuating plates (splitters) are 100 or 200 mm thick and consist of properly stiffened galvanized steel sheet frame and mineral wool filling with a density of less than 40 kg/m³. The side surfaces of the splitters are covered with perforated galvanized steel sheet (40% perforation). In order to reduce the flow resistance, the splitters can be fitted with elbow or straight deflectors on one or both sides.

Dimensions, flow areas, weights of SDS-TAP silencers

Table 4. SDS-TAP 11 acoustic silencer.

A	200		400		600		800		1000		1200		1400		1600	
B	Flow Area [m ²] / Weight [kg] per 1 rm															
200	0,02	18,2	0,04	29,1	0,06	40,3	0,08	51,2	0,10	62,1	0,12	74,3	0,14	85,1	0,16	96,0
250	0,025	20,5	0,05	32,7	0,075	44,5	0,10	56,3	0,125	68,4	0,15	81,2	0,175	93,0	0,20	105,1
300	0,03	22,8	0,06	35,9	0,09	48,6	0,12	61,3	0,15	74,4	0,18	88,1	0,21	100,8	0,24	113,9
400	0,04	27,4	0,08	42,3	0,12	56,9	0,16	71,4	0,20	86,4	0,24	101,9	0,28	116,4	0,32	131,3
500	0,05	32,4	0,10	48,8	0,15	65,2	0,20	81,9	0,25	98,3	0,30	115,6	0,35	132,4	0,40	148,8
600	0,06	37,0	0,12	55,2	0,18	73,5	0,24	92,1	0,30	110,3	0,36	129,4	0,42	148,1	0,48	166,3
800	0,08	47,2	0,16	70,1	0,24	93,4	0,32	116,3	0,40	139,2	0,48	163,4	0,56	186,3	0,64	209,2
1000	0,10	56,4	0,20	83,4	0,30	110,0	0,40	136,5	0,50	163,5	0,60	191,0	0,70	217,6	0,80	244,5
1250		0,25	102,4	0,375	135,0	0,50	167,1	0,625	199,3	0,75	231,9	0,875	264,0	1,00	296,2	
1500		0,30	118,9	0,45	155,7	0,60	192,4	0,75	229,6	0,90	266,4	1,05	303,1	1,20	340,3	

Range covered by PN-EN 12101-7

Table 5. SDS-TAP 15 acoustic silencer

A	150		300		450		600		750		900		1050		1200	
B	Flow Area [m ²] / Weight [kg] per 1 rm															
200	0,01	16,8	0,02	26,3	0,03	36,2	0,04	45,7	0,05	55,2	0,06	64,7	0,07	75,4	0,08	84,9
250	0,0125	19,1	0,025	29,5	0,0375	40,3	0,05	50,7	0,0625	61,1	0,075	71,6	0,0875	83,3	0,10	93,7
300	0,015	21,4	0,03	32,7	0,045	44,4	0,06	55,8	0,075	67,1	0,09	78,5	0,105	91,1	0,12	102,4
400	0,020	26,0	0,04	39,6	0,06	52,7	0,08	65,9	0,10	79,1	0,12	92,6	0,14	106,7	0,16	119,9
500	0,025	31,0	0,05	46,0	0,075	61,0	0,10	76,0	0,125	91,4	0,15	106,4	0,175	122,3	0,20	137,4
600	0,03	35,6	0,06	52,4	0,09	69,3	0,12	86,1	0,15	103,4	0,18	120,2	0,21	138,0	0,24	154,8
800	0,04	45,8	0,08	67,3	0,12	89,2	0,16	110,8	0,20	132,3	0,24	153,8	0,28	176,6	0,32	198,1
1000	0,05	55,0	0,10	80,6	0,15	105,8	0,20	131,0	0,25	156,2	0,30	181,8	0,35	207,9	0,40	233,1
1250		0,125	99,6	0,188	130,4	0,25	161,6	0,312	192,4	0,375	223,2	0,437	254,0	0,50	285,1	
1500		0,15	115,8	0,225	151,5	0,30	186,9	0,375	222,3	0,45	257,7	0,525	293,4	0,45	328,8	

Range covered by PN-EN 12101-7

Table 6. SDS-TAP 21 acoustic silencer

A	300		600		900		1200		1500		1800	
B	Flow Area [m ²] / Weight [kg] per 1 rm											
200	0,02	23,3	0,04	39,7	0,06	55,7	0,08	73,0	0,10	89,1	0,12	106,4
250	0,025	25,9	0,05	43,6	0,075	60,8	0,10	79,3	0,125	96,6	0,15	115,1
300	0,03	28,5	0,06	47,4	0,09	65,9	0,12	85,7	0,15	104,1	0,18	123,9
400	0,04	34,2	0,08	55,1	0,12	76,4	0,16	98,3	0,20	119,6	0,24	141,5
500	0,05	39,4	0,10	62,8	0,15	86,6	0,20	110,9	0,25	134,7	0,30	159,00
600	0,06	44,6	0,12	70,5	0,18	96,7	0,24	123,5	0,30	149,8	0,36	176,6
800	0,08	56,7	0,16	89,4	0,24	121,7	0,32	155,4	0,40	187,8	0,48	221,4
1000	0,10	67,5	0,20	104,8	0,30	142,4	0,40	180,7	0,50	218,3	0,60	256,5
1250	0,125	83,1	0,25	128,4	0,375	173,4	0,50	218,8	0,625	263,8	0,75	310,1
1500	0,15	96,1	0,30	147,7	0,45	198,8	0,60	250,4	0,75	301,5	0,90	354,0

Range covered by PN-EN 12101-7

Table 7. SDS-TAP 215 acoustic silencer.

A	350		700		1050		1400		1750		2100	
B	Flow Area [m ²] / Weight [kg] per 1 rm											
200	0,03	24,7	0,06	42,5	0,09	61,2	0,12	78,6	0,15	97,3	0,18	114,7
250	0,038	27,3	0,076	46,3	0,114	66,3	0,152	84,9	0,19	104,8	0,23	123,5
300	0,045	30,3	0,09	50,2	0,135	71,3	0,18	91,2	0,225	112,4	0,27	132,2
400	0,06	35,5	0,12	57,9	0,18	81,5	0,24	103,8	0,30	127,5	0,36	150,2
500	0,075	40,8	0,15	65,6	0,225	91,7	0,30	116,8	0,375	142,5	0,45	167,7
600	0,09	46,0	0,18	73,6	0,27	101,8	0,36	129,5	0,45	157,6	0,54	185,3
800	0,12	58,0	0,24	92,2	0,36	127,2	0,48	160,9	0,60	196,0	0,72	229,7
1000	0,15	68,9	0,30	107,6	0,45	147,5	0,60	186,2	0,75	226,2	0,90	265,2
1250	0,187	84,4	0,375	131,2	0,562	177,6	0,75	224,4	0,94	271,7	1,125	318,4
1500	0,225	97,9	0,45	150,5	0,675	203,4	0,90	255,9	1,125	309,8	1,35	362,3

Range covered by PN-EN 12101-7

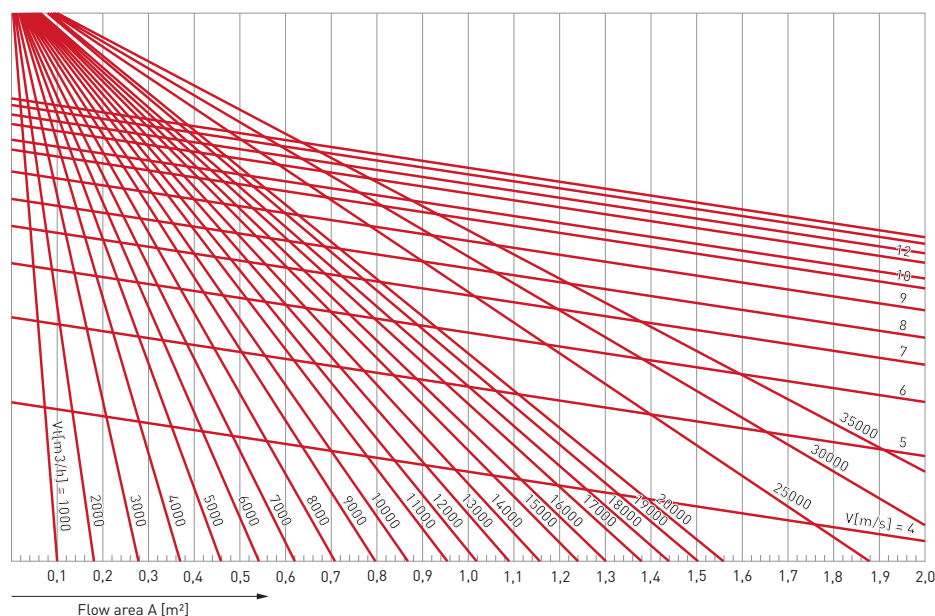
Table 8. SDS-TAP 22 acoustic silencer.

A	400		800		1200		1600		2000	
B	Flow Area [m ²] / Weight [kg] per 1 rm									
200	0,04	26,1	0,08	45,2	0,12	65,3	0,16	84,1	0,20	104,2
250	0,05	29,1	0,10	49,1	0,15	70,4	0,20	90,8	0,25	111,7
300	0,06	31,7	0,12	52,9	0,18	75,5	0,24	97,1	0,30	119,3
400	0,08	36,9	0,16	60,6	0,24	85,7	0,32	109,7	0,40	134,4
500	0,10	42,2	0,20	68,7	0,30	95,8	0,40	122,4	0,50	149,8
600	0,12	47,4	0,24	76,4	0,36	106,0	0,48	135,0	0,60	164,9
800	0,16	59,4	0,32	94,9	0,48	131,3	0,64	166,5	0,80	202,9
1000	0,20	70,3	0,40	110,3	0,60	151,7	0,80	192,1	1,00	233,1
1250	0,25	85,8	0,50	134,0	0,75	182,1	1,00	229,9	1,25	279,0
1500	0,30	99,3	0,60	153,2	0,90	207,5	1,20	261,8	1,50	316,7

Range covered by PN-EN 12101-7

Selection of parameters for SDS-TAP/TAPS silencers

Nomogram I



Selection of parameters for SDS-TAP/TAPS silencers – Attenuation ratio in dB for individual frequency bands

Table 9.

		SDS-TAP 11							
L [m]		Frequency Bands [Hz]							
		63	125	250	500	1000	2000	4000	8000
500		3	4	5	8	12	15	11	8
1000		4	8	10	13	21	21	15	10
1500		5	10	15	19	29	29	19	13

Table 10.

		SDS-TAP 15							
L [m]		Frequency Bands [Hz]							
		63	125	250	500	1000	2000	4000	8000
500		3	10	10	12	19	24	21	16
1000		5	11	18	21	29	34	28	22
1500		7	15	27	28	37	42	35	29

Table 11.

		SDS-TAP 21							
L [m]		Frequency Bands [Hz]							
		63	125	250	500	1000	2000	4000	8000
500		2	5	12	13	15	12	10	8
1000		5	9	22	21	27	21	13	10
1500		6	13	31	30	36	27	17	15

Table 12.

		SDS-TAP 215							
L [m]		Frequency Bands [Hz]							
		63	125	250	500	1000	2000	4000	8000
500		2	3	8	10	11	8	7	5
1000		3	6	16	16	16	13	9	8
1500		4	10	22	22	21	17	11	8

Table 13.

		SDS-TAP 22							
L [m]		Frequency Bands [Hz]							
		63	125	250	500	1000	2000	4000	8000
500		1	3	7	7	7	6	5	3
1000		1	7	12	12	12	9	8	6
1500		3	10	18	17	15	12	9	7

Because of unlimited possibilities, acoustic and flow parameters for TAPS custom-made silencers are provided on request.

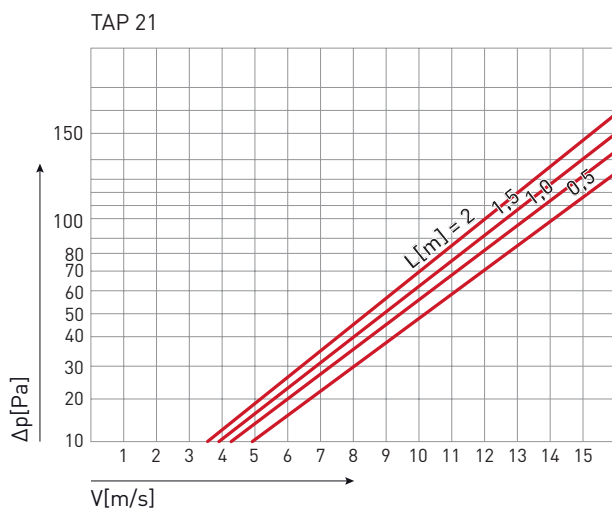
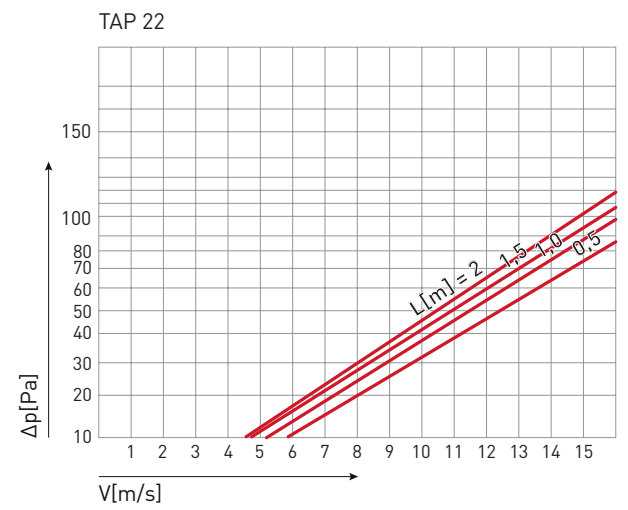
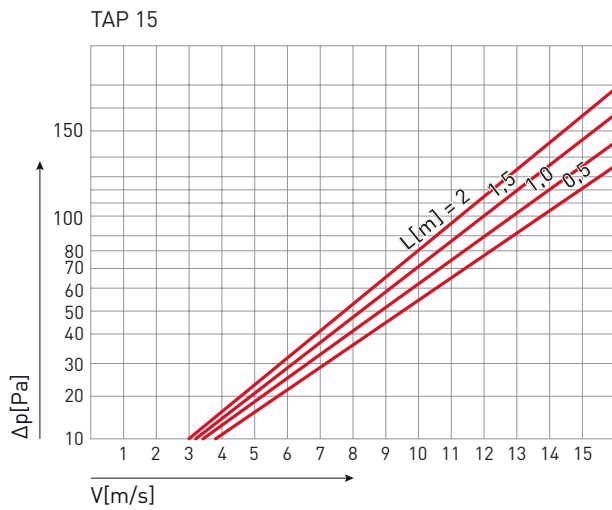
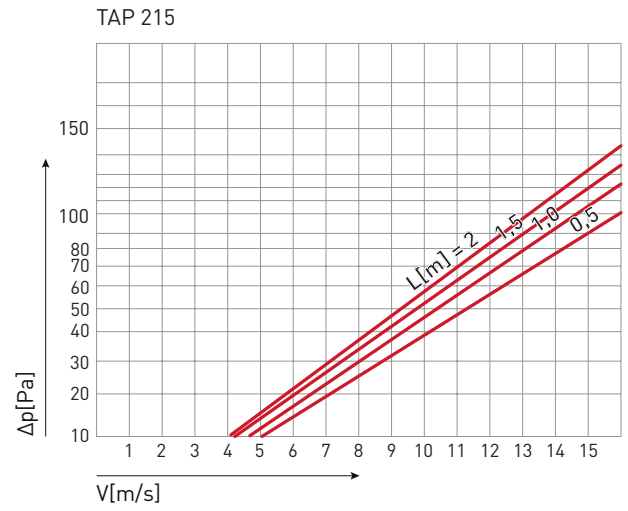
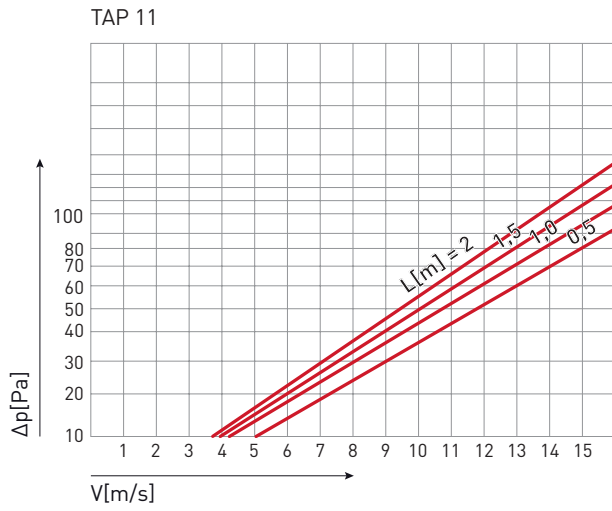
Selection of parameters for SDS-TAP/TAPS silencers – Self-noise of silencers $L_w [dB_{(A)}]$

Table 14.

v [m/s]	Flow Area [m²]							
	0,2	04,4	0,6	0,8	1,0	1,2	1,4	1,6
5,0	26	29	30	32	33	34	34	35
8,0	34	36	38	39	40	41	42	43
10,0	39	42	44	45	46	47	48	49
12,0	44	46	48	50	52	53	54	55

Selection of parameters for SDS-TAP/TAPS silencers – Pressure loss relative to velocity, flow rate and length of a silencer

Nomogram II



Ordering:

When ordering, please provide information in accordance with the following pattern:

SDS - TAP - <X> - <TK> - <A> - x - - x - <L>

SDS - TAPS - <TK> - <A> - x - - x - <L> - (<GR> x <SZ>) x <IK>

Where:

SDS	Smoke Duct System
TAP, TAPS	Silencer series
X	Silencer type
	11 - 100 mm thick splitter, 100 mm distance between splitters
	15 - 100 mm thick splitter, 50 mm distance between splitters
	21 - 200 mm thick splitter, 100 mm distance between splitters
	215 - 200 mm thick splitter, 150 mm distance between splitters
	22 - 200 mm thick splitter, 200 mm distance between splitters
TK	splitter type
	none - no deflectors
	H - with elbow deflectors on one side
	HH - with elbow deflectors on both sides
	K - with straight deflectors on one side
	KK - with straight deflectors on both sides
A	Silencer inner clearance width in mm
B	Silencer inner clearance height in mm
L	Silencer length in mm
GR	Splitter thickness in mm
SZ	distance between splitters in mm
IK	the number of splitters

Order example: **SDS-TAP22-H-1200x1000x1000**
SDS-TAPS-1150x1000x1000 - (200+87)x4

SDS-DR Inspection Covers

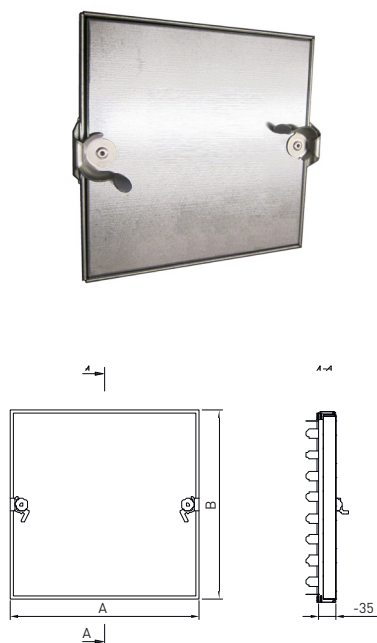


Figure 7. Dimensioning principles for inspection covers.

SDS-DR inspection covers are manufactured in the following sizes: DR15 – 150 x 150, DR20 – 200 x 200, DR21 – 200 x 125, DR25 – 250 x 250, DR30 – 300 x 300.

Inspection covers are made of galvanized steel sheet. A set includes 25 mm thick insulated covers with locks and a frame adapted for mounting inside a duct.

Ordering:

When ordering, please provide information in accordance with the following pattern:

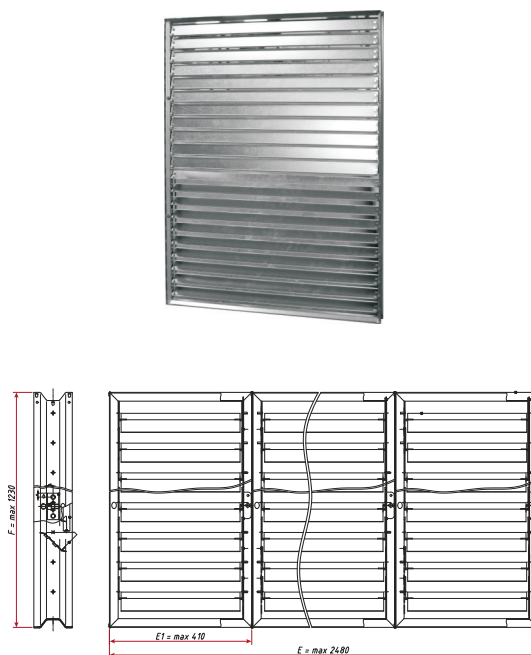
SDS-DR-<A>-x-

Where:

SDS	Smoke Duct System
DR	Inspection cover
A	Cover width in mm
B	Cover height in mm

Order example: **SDS-DR-200x200**

SDS-GS Dampers for Intake and Exhaust Grilles



Notice: Dimensioning is referenced to the grille mounting hole CxD

Figure 8. Dimensioning principles for SDS-GS dampers

SDS-GS type dampers are used with SDS-xxx grilles. They are fitted at the rear part of a grille with self-tapping screws or blind rivets. The maximum dimensions of a damper are 2500 x 1250 mm in accordance with the grille mounting dimensions, with singles dampers used for grilles with dimension C 417 mm, and two (up to the size of 834 mm) or three separate individually adjusted dampers used for larger grilles. Damper shutters may be set in an open position of 45–90°. The shutter position is set by means of screw gears, which are accessible from the outside of a grille.

Ordering:

When ordering, please provide information in accordance with the following pattern:

SDS-GS-<C>-x-<D>

Where:

SDS	Smoke Duct System
GS	Damper type
C	Grille mounting hole width in mm
D	Grille mounting hole height in mm

Order example: **SDS-GS-625x425**

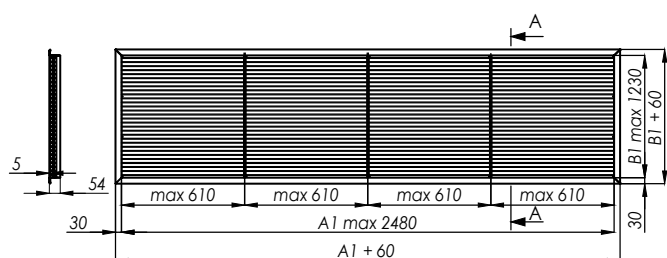
Grilles for SDS-STW, SDS-ST51 Intake and Exhaust Openings



The maximum size of SDS-STW and SDS-ST51 grilles is 1250 x 1000 mm for SDS ducts covered by PN-EN 12101-7 and 2500 x 1250 mm for SDS ducts covered by the ITB Technical Approval No. AT-15-9349-2016. They can be mounted individually or in batteries, on any wall of an SDS duct.

SDS-STW grilles are single-row grilles and are made of galvanized steel profiles. Their blades are fixed perpendicularly to the grille surface. Grilles over 610 mm wide have one gap for thermal expansion compensation, ones over 1220 mm wide two such gaps, and those over 1830 mm wide three such gaps.

SDS-ST51 grilles are mesh grilles whose effective area is filled with 4.5 x 9 mm expanded metal mesh. The grilles are made of galvanized steel and they have no plastic parts. SDS-STW and SDS-ST51 can be coated with polyester powder paint of any colour from the RAL Colour Chart.



Notice: 1. Dimensioning referenced to the grille mounting hole CxD.

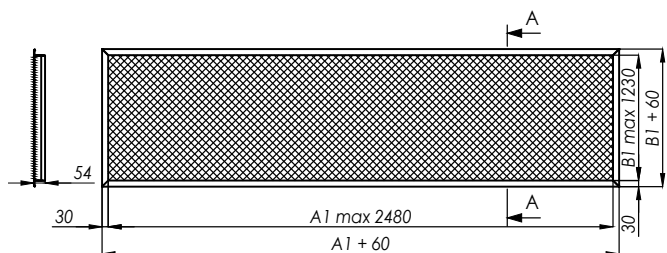


Figure 9. Dimensioning principles for grilles

Ordering:

When ordering, please provide information in accordance with the following pattern:

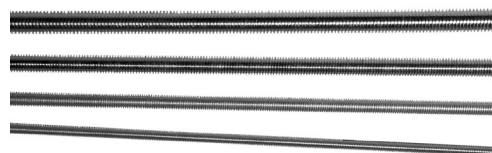
SDS-<T>-<C>-x-<D>-<P>x<RAL>

Where:

SDS	Smoke Duct System
T	Grille type
	STW - Single-row, with fixed blades
	ST51 - Mesh
C	Mounting hole width in mm
D	Mounting hole height in mm
P	Finishing
	SO - Galvanized steel
	SL - Coated steel
RAL	Colour according to RAL Colour Chart

Order example: **SDS-STW-625x425 - SL 9010**

SDS-MPG Threaded Rods



Threaded rods, with nuts and connectors, are used for the suspensions of ventilation, air-conditioning and smoke exhaust systems. In order to select diameters of threaded rods for an SDS system, refer to the installation instructions in the f"Guidelines on Selecting Suspension Elements" (rev. 09/2015).

Available range of products :

Thread size:	M10	M10	M12	M12	M16	M16	M20	M20
Length [mm]	1000	2000	1000	2000	1000	2000	1000	2000

Ordering:

When ordering, please provide information in accordance with the following pattern:

SDS-MPG-<T>-<L>-<K>

Where:

SDS	Smoke Duct System
MPG	Threaded rod
T	Thread size in mm
S	Length in mm
K	Strength class

Order example: **SDS-MPG-10x2000-3.6**

SDS-MKZ Mounting Clamp



Clamps are designed for the additional locking of flange profile connections of ducts and fittings in ventilation, air-conditioning and SDS smoke exhaust systems. The clamps are normally made of steel and covered with zinc coating. It is permissible to use galvanized steel clamps in SDS systems. Their spacing should not exceed 250 mm.

Ordering:

When ordering, please provide information in accordance with the following pattern:

SDS-MKZ

Where:

SDS	Smoke Duct System
MKZ	Clamp type

SDS-UC Ceramic Gasket



For flange connections of steel elements in an SDS system, use ceramic/silicate gaskets resistant to temperatures higher than 1000°C, with a minimum 20 x 5 mm cross section. Connections with an SDS-KEP compensator are sealed with the compensator textile flanges.
Package – 100 m

Ordering:

When ordering, please provide information in accordance with the following pattern:

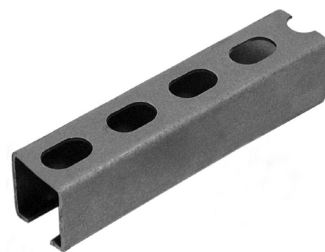
SDS - UC - <T> -x - <S>

Where:

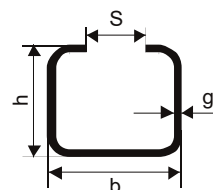
SDS	Smoke Duct System
UC	Gasket
T	Gasket width in mm
S	Gasket thickness in mm

Order example: **SDS-UC-20x5**

SDS-MSZ Mounting Rails

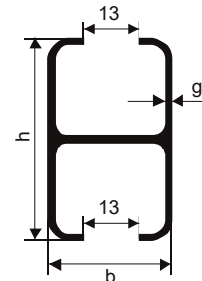


MSZ mounting rails can be used as support elements (beams) for ventilation, air-conditioning and SDS smoke exhaust system suspensions. In order to select the size of rails for an SDS system, refer to the installation instructions in the *f* "Guidelines on Selecting Suspension Elements" (rev. 09/2015).



Available range of products

Type	h [mm]	b [mm]	S [mm]	g [mm]	W _x [cm ³]
MSZ-30E	30	30	16	1,5	0,7636
MSZ-45E	45	30	16	1,5	1,491
MSZ-30G	30	30	13	1,7	1,1813
MSZ-45G	45	30	13	1,7	2,2347



Type	h [mm]	b [mm]	S [mm]	g [mm]	W _x [cm ³]
MSZ-90G	90	30	13	1,7	6,4178

The rails are made of DX-51D+Z steel

Ordering:

When ordering, please provide information in accordance with the following pattern:

SDS - MSZ - <T>

Where:

SDS	Smoke Duct System
MSZ	Mounting rail
T	Rail type 30g, 45G, 30E, 45E, 90G

Order example: **SDS-MSZ-30G**

SDS-FS Elastic Sealant

Silicone-based agents are applied to seal all spots where an SDS system may leak:

- SOUDAL Fire Silicone B1 FR
- BOLL high temperature silicone

SOUDAL Fire Silicone B1 FR is a single-component, fire-retardant, neutral curing elastic silicone sealant for indoor and outdoor use.

Basic features of Fire Silicone B1 FR:

- Colour – grey
- EL 240, F4 (4h) resistance to fire, B1 (DIN 4102) flammability class
- Ready for immediate use
- Permanently elastic when cured
- Perfect adhesion to typical structural substrates
- Low elasticity module
- Resistant to weather conditions and UV radiation
- Package: 310 ml cartridge – 15 pieces per cardboard box

The product is classified as a dangerous substance: harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment. The product is not classified as harmful to the environment, but it is recommended that it be handled with caution. The product does not dissolve in water. No data available on product bioaccumulation or biodegradation. Volatile organic substances content 7%. The product is not dangerous to the ozone layer.

The other technical data, properties and recommendations are included in the SOUDAL Product Data Sheet.

BOLL high temperature silicone is a highly elastic, temperature resistant single-component silicone paste. It has good sheet metal, metal, aluminium, glass and plastic adhesion properties.

Basic characteristics:

- Colour – red, black,
- Thermal resistance range: from -40 to 350°C
- Surface drying time: approx. 5 minutes
- Deep curing time: 2 mm / 24 h
- Breakaway strength: 0.51 MPa
- Shore A hardness 32
- Elongation until tear: 70%
- Application temperature range: from 5 to 40°C

All technical data is indicative only.

The substance is classified, according to criteria laid down in Regulation No. 1272/2008, as hazardous. Skin sensitizer, may cause allergic skin reaction.

The other technical data, properties and recommendations are included in the BOLL Product Safety Data Sheet.

Ordering:

When ordering, please provide information in accordance with the following pattern:

SDS-FS-<T>-<Colour>

Where:

SDS	Smoke Duct System
FS	Sealant
T	Type
	S - Soudal
	B - Boll
Colour	Colour
	Grey - only for S
	Red - only for B
	black - only for B

Order example: **SDS-MPG-10x2000-3.6**

Advantages of SDS Single Compartment Smoke Exhaust Ducts

- Maximum cross-section dimensions: up to 2500 mm wide and up to 1500 mm high
- A complete set of products for the installation of steel ductwork smoke exhaust systems:
 - ducts and fittings made of galvanized steel sheet,
 - compensative ducts,
 - compensators for thermal expansion of ducts,
 - jalousie control dampers,
 - duct silencers,
 - inspection covers,
 - grilles for intake and exhaust openings,
 - control dampers for intake and exhaust grilles,
 - support elements, stiffeners,
 - suspension elements.
- Applicable in dual-purpose systems (working as a general ventilation and smoke exhaust system at the same time),
- Low installation costs
- Easy mounting (close to standard installation)
- Smaller dimensions and weight in comparison to a system made of fire retardant boards.

Storage and Transport

Ductwork elements from an SDS set are transported and delivered in bulk, without packaging. Cardboard or wooden separators should be placed between elements in contact. During transport products should be protected against moving and weather conditions. SDS-TAP silencers and SDS-PWO dampers are transported on pallets. Equipment such as: SDS-KEP, SDS-KE, SDS-DR, SDS-STW, SDS-STS1, or SDS-GS is delivered on pallets, in foil packaging and with cardboard separators or in cardboard boxes.

SDS set elements should be stored indoors and protected against weather conditions, mechanical damage and any change of their technical properties.

Installation Conditions

Ducts should be installed according to DTR guidelines by companies trained by Smay Sp. z o.o. in terms of product technical properties, the conditions of installation works, and the inspection and the performed works.

Routine servicing and maintenance instructions

Before installation in a system, check the elements of an SDS product set for mechanical damage. Ship any defective elements back to the Manufacturer in order to have them assessed in terms of any repair options and repaired if possible. Never attempt to repair any elements of an SDS smoke exhaust and heat dissipation set on your own. During operation, systems made of SDS products must be inspected not less than once a year, with the inspection recorded with an inspection report.

During periodic inspection, pay particular attention to the continuity of the sealing of ductwork elements, to the adjustment of grille dampers, the condition of the compensators, and the corrosion protection of ductwork elements and suspension systems.



Notify the Manufacturer in the event of any defects. Fan equipment and any other components installed inside SDS ducts that are not covered by the SDS system certification are subject to a respective Manufacturer's installation, maintenance and periodic servicing guidelines.