



**AIRFLOW AC**

# SLOT DIFFUSERS

**Airflow AC Middle East FZE-LLC**

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SLOT DIFFUSER



Description

SD slot diffusers have been designed to maintain a high quality of air diffusion in occupied spaces. The SD series can be used for supply, return and exhaust air applications. When used in supply air systems, the air pattern can be easily changed by rotating the air deflectors in either direction. When used in return or exhaust air applications, air deflectors are not needed.

Standard Construction

**Materials:**  
The slot diffusers along with air deflectors and hit and miss damper are made of extruded aluminum alloy profiles.

**Air Deflectors:**  
Two air deflectors are provided in each slot which can be set to provide a horizontal or vertical air diffusion patterns.

**Hit and Miss damper:**  
The air volume can be controlled by adjusting the hit and miss damper attached to the top side of the slot diffuser. It is consisted of two extruded aluminum profiles with equally spaced rectangle openings; top profile is adjustable; however, bottom profile is fixed. It should be noted that adjusting the hit and miss damper can increase NC level inside the occupied spaces. It is advisable to use equalizing grid only and control the air volume on the plenum box inlet collar with volume control damper.

**Equalizing grid:**  
The equalizing grid is consisted of a single extruded aluminum profile attached to the top side of slot diffuser with equally spaced rectangle openings. The equalizing grid improves equal distribution of air on the discharge side of the diffuser.

**Slot Width:**  
Available in 3/4" (20mm) and 1" (25mm).

**Standard Length:**  
The maximum length of single section is 3000mm.

**Mitered Corners:**  
Mitered corners are available for continuous slot diffusers around ceiling edges.

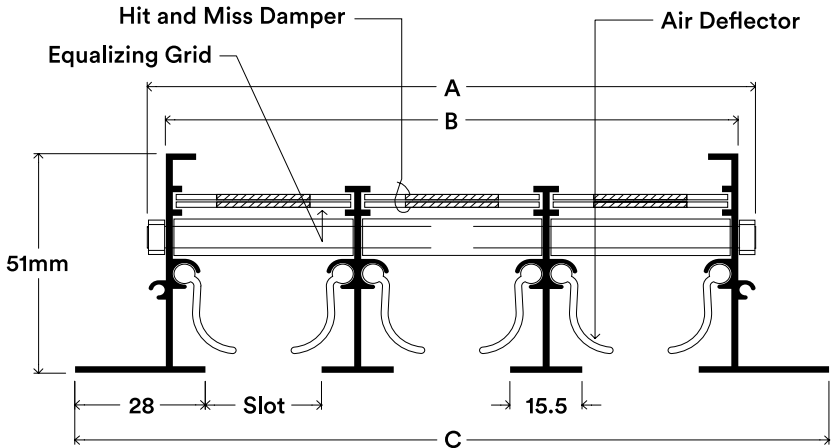
**Finish:**  
The standard coating finish is polyester powder coating, white color RAL 9010. The hit and miss damper and equalizing grid are in black color.

**Optional Finish:**  
The slot diffuser and air deflectors can be anodized aluminum in silver or can be powder coated to any color required. The hit and miss damper and equalizing grid are in black color.



SLOT DIFFUSER

Dimensions



Listed Sizes

Model: SD - 20		3/4" Slot Width					
No. of Slot		1	2	3	4	5	6
A (mm)		47	82.5	118	153.5	189	224.5
B (mm)		37	72.5	108	143.5	179	214.5
C (mm)		76	111.5	147	182.5	218	253.5
CFM / ft (m3/s/0.305m)		25 - 80 (0.012 - 0.038)	30 - 90 (0.014 - 0.042)	40 - 100 (0.019 - 0.047)	60 - 150 (0.028 - 0.071)	70 - 175 (0.033 - 0.083)	80 - 200 (0.038 - 0.094)

Model: SD - 25		1" Slot Width					
No. of Slot		1	2	3	4	5	6
A (mm)		52	93	133	174	214	255
B (mm)		42	82.5	123	163.5	204	244.5
C (mm)		81	121.5	162	202.5	243	283.5
CFM / ft (m3/s/0.305m)		25 - 80 (0.012 - 0.038)	40 - 100 (0.019 - 0.047)	50 - 125 (0.024 - 0.059)	70 - 175 (0.033 - 0.083)	80 - 200 (0.038 - 0.094)	90 - 250 (0.042 - 0.118)

## PERFORMANCE DATA



Linear Slot Diffuser: 3/4" Slot Width

MODEL : SD - 20

No. of Slots	Ak (ft <sup>2</sup> /ft)	Air Volume							
		CFM/FT	25	30	40	50	60	70	80
1	0.021	THROW-H	6-11-17	8-15-21	11-17-23	18-23-28	21-26-31	23-28-33	25-30-35
		SP-H	0.084	0.128	0.196	0.352	0.624	0.884	1.444
		NC	22	26	32	40	46	52	58
	0.033	THROW-V	2-4-7	4-7-9	6-9-12	10-13-16	12-15-18	14-17-20	16-19-21
		SP-V	0.039	0.068	0.144	0.324	0.524	0.716	0.956
		NC	<20	<20	22	36	43	48	52
2	0.037	CFM/FT	30	40	50	60	70	80	90
		THROW-H	4-10-17	9-15-22	15-20-25	18-23-28	21-26-31	24-29-34	27-32-37
		SP-H	0.044	0.076	0.156	0.224	0.308	0.384	0.484
	0.064	NC	<20	22	31	37	43	46	50
		THROW-V	2-5-8	4-7-10	6-9-12	9-12-15	11-14-17	13-16-19	15-18-21
		SP-V	0.036	0.052	0.084	0.132	0.204	0.316	0.352
3	0.055	NC	<20	<20	<20	25	31	36	40
		CFM/FT	40	50	60	70	80	90	100
		THROW-H	12-17-22	15-20-24	18-23-26	20-25-29	23-28-32	25-30-35	28-33-39
	0.096	SP-H	0.04	0.06	0.09	0.12	0.16	0.2	0.24
		NC	<20	<20	26	30	33	37	40
		THROW-V	3-7-10	5-9-12	6-10-13	8-13-15	11-15-18	14-17-21	16-20-24
4	0.075	SP-V	0.01	0.02	0.03	0.05	0.07	0.09	0.11
		NC	<20	<20	<20	<20	22	26	31
		CFM/FT	60	70	80	90	100	125	150
	0.124	THROW-H	12-18-23	15-21-26	18-23-28	21-26-31	24-29-34	28-33-38	32-37-42
		SP-H	0.048	0.084	0.128	0.164	0.204	0.324	0.484
		NC	<20	24	28	33	36	45	51
5	0.095	THROW-V	6-9-11	7-10-12	9-11-14	11-13-16	13-15-18	16-18-21	19-21-24
		SP-V	0.036	0.048	0.084	0.104	0.128	0.204	0.296
		NC	<20	<20	21	24	27	34	40
	0.152	CFM/FT	70	80	90	100	125	150	175
		THROW-H	13-18-23	17-22-27	19-24-29	21-26-31	24-29-34	29-34-39	34-39-44
		SP-H	0.085	0.15	0.16	0.17	0.23	0.35	0.45
6	0.120	NC	27	30	34	36	43	49	54
		THROW-V	5-9-14	7-11-16	10-13-19	13-16-22	15-19-25	17-21-27	20-24-31
		SP-V	0.035	0.045	0.05	0.065	0.1	0.15	0.205
	0.189	NC	<20	<20	23	26	33	37	41
		CFM/FT	80	90	100	125	150	175	200
		THROW-H	14-19-24	17-22-27	20-25-30	24-29-34	27-32-37	30-35-40	33-38-43

## NOTE

1. Airflow shown are CFM per feet, Ak is area factor, NC levels are based on 10dB room absorption.
2. Throw datas are based on isothermal air conditions at 150, 100 and 50 FPM terminal velocity.
3. Horizontal throw datas are for 1-Way air pattern.
4. Static Pressure (SP-Horizontal, SP-Vertical) in inches W.G.
5. For return/exhaust without pattern controller only, NC=above NC (Vertical) - 3 dB, SP=1.25XSP-V
6. For return/exhaust without damper and pattern controller, NC=above NC (Vertical) - 5 dB, SP=1.1XSP-V



## PERFORMANCE DATA

Linear Slot Diffuser: 1" Slot Width

MODEL : SD - 25

No. of Slots	Ak (ft <sup>2</sup> /ft)	Air Volume							
		CFM/FT	25	30	40	50	60	70	80
1	0.021	THROW-H	5-11-17	7-13-19	10-16-22	16-21-26	19-24-29	21-26-31	23-28-33
		SP-H	0.052	0.096	0.192	0.288	0.472	0.656	0.896
		NC	<20	24	31	39	46	52	57
	0.035	THROW-V	2-5-7	3-6-8	6-9-12	9-12-15	11-14-17	13-16-19	15-18-21
		SP-V	0.036	0.048	0.108	0.164	0.236	0.356	0.476
		NC	<20	<20	<20	25	30	35	40
2	0.041	CFM/FT	40	50	60	70	80	90	100
		THROW-H	8-14-21	13-18-22	16-21-26	18-23-28	21-25-29	22-27-31	23-28-32
		SP-H	0.044	0.064	0.136	0.172	0.236	0.328	0.435
	0.079	NC	<20	22	30	35	40	45	48
		THROW-V	3-6-9	5-8-11	8-12-15	10-13-16	11-15-18	13-16-19	14-17-21
		SP-V	0.032	0.044	0.068	0.096	0.136	0.192	0.235
3	0.056	NC	<20	<20	<20	21	26	30	33
		CFM/FT	50	60	70	80	90	100	125
		THROW-H	10-14-20	13-18-23	16-21-26	19-23-28	21-26-30	22-27-31	25-30-35
	0.120	SP-H	0.076	0.104	0.156	0.204	0.276	0.356	0.536
		NC	<20	<20	25	30	34	37	45
		THROW-V	4-7-10	5-8-11	7-10-15	8-13-18	10-15-20	12-17-22	14-20-26
4	0.076	SP-V	.008	.024	0.036	0.056	0.076	0.112	0.156
		NC	<20	<20	<20	<20	22	25	31
		CFM/FT	70	80	90	100	125	150	175
	0.161	THROW-H	14-20-25	18-22-28	19-24-29	20-25-30	23-28-33	27-32-37	31-36-41
		SP-H	0.064	0.104	0.144	0.184	0.304	0.448	0.596
		NC	22	27	30	35	42	48	52
5	0.105	THROW-V	5-8-11	6-9-13	7-11-16	9-14-18	11-16-22	13-18-25	15-21-27
		SP-V	0.016	0.036	0.044	0.064	0.096	0.148	0.164
		NC	<20	<20	<20	20	25	31	34
	0.197	CFM/FT	80	90	100	125	150	175	200
		THROW-H	16-20-25	18-23-28	19-24-29	22-27-32	25-30-35	28-33-38	31-36-41
		SP-H	0.044	0.076	0.092	0.156	0.244	0.316	0.416
6	0.127	NC	20	24	27	34	40	45	49
		THROW-V	5-8-11	6-10-14	8-12-16	9-14-19	12-17-22	14-20-26	16-22-28
		SP-V	0.024	0.036	0.044	0.072	0.112	0.144	0.176
	0.184	NC	<20	<20	<20	21	27	31	34
		CFM/FT	90	100	125	150	175	200	250
		THROW-H	16-20-26	18-23-28	21-26-31	24-29-34	27-32-37	29-34-39	32-36-41

## NOTE

1. Airflow shown are CFM per feet, Ak is area factor, NC levels are based on 10dB room absorption.
2. Throw datas are based on isothermal air conditions at 150, 100 and 50 FPM terminal velocity.
3. Horizontal throw datas are for 1-Way air pattern.
4. Static Pressure (SP-Horizontal, SP-Vertical) in inches W.G.
5. For return/exhaust without pattern controller only, NC=above NC (Vertical) - 3 dB, SP=1.25XSP-V
6. For return/exhaust without damper and pattern controller , NC=above NC (Vertical) - 5 dB, SP=1.1XSP-V

TECHNICAL DATA



Definitions:

**Throw** of a jet is the distance an airstream travels from the air outlet to a point where the maximum velocity in the airstream cross section has been reduced to a selected terminal velocity.

**Throw Distance** of a jet is denoted by Tv, where subscript V indicates the terminal velocity for which the throw is given.

**Characteristic Room Length (L)** is the distance from the diffuser to the nearest boundary wall in the horizontal direction of airflow. However, if the airflow is directed to the opposite diffuser, the characteristic room length is one-half the distance between two diffusers plus the distance the mixed air jet travels downward to reach the occupied zone.

**Terminal Velocity (Vt)** is the maximum sustained airstream velocity at the end of the throw (e.g. 150, 100, 50 fpm).

**Discharge or Intake Velocity (Vk)** of an outlet or inlet (in fpm) is the velocity of airstream measured at certain locations between the outlet's or inlet's vanes.

**Area Factor (Ak)** of an air outlet or inlet is a factor determined from discharge or intake velocity (Vk) and the volume flow rate (Q in CFM).  
 $Ak = Q/Vk$

**Throw Data:**  
All throws indicated in the performance data are based on isothermal air and 3 feet diffuser slot length. For other lengths, the throws can be determined in Table 1.

Table 1 - Throw Correction Factors

Diffuser Slot Length (ft.)	2	3	4	6 - 10
Correction Factor	0.8	1	1.05	1.2

**Noise Criterion Data:**  
All NC shown in the performance data are based on 10dB room absorption and 3 feet slot diffuser length. For other lengths the NC levels can be determined in Table 2.

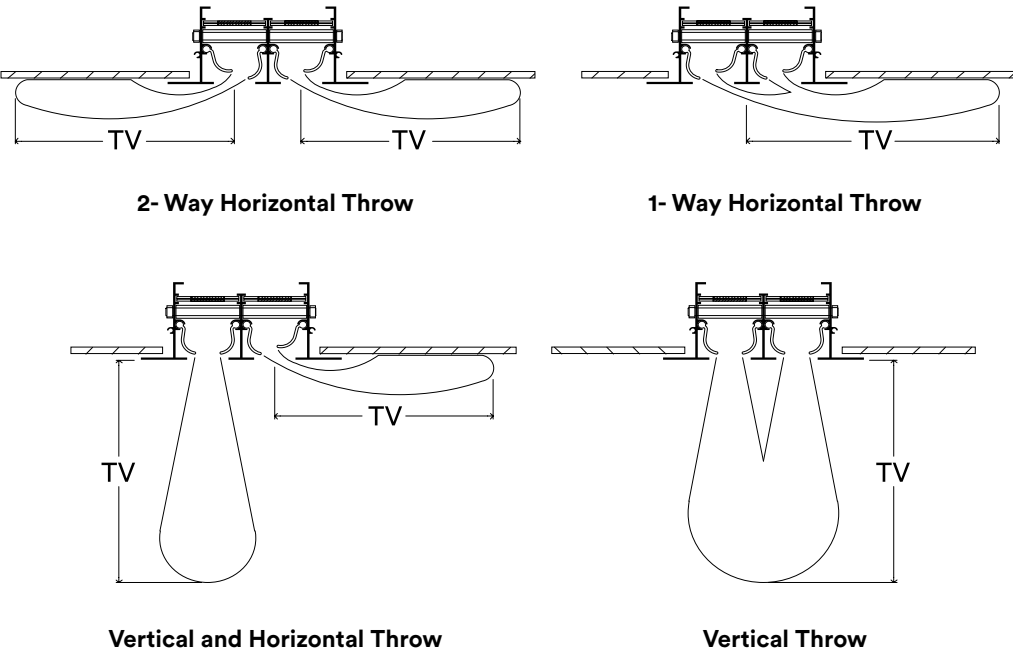
Table 2 - NC Correction Factors

Diffuser Slot Length (ft.)	2	3	4	5	6 - 8
Correction Factor	-1	0	+1	+1.5	+2



TECHNICAL DATA

Air Pattern



Selection Example

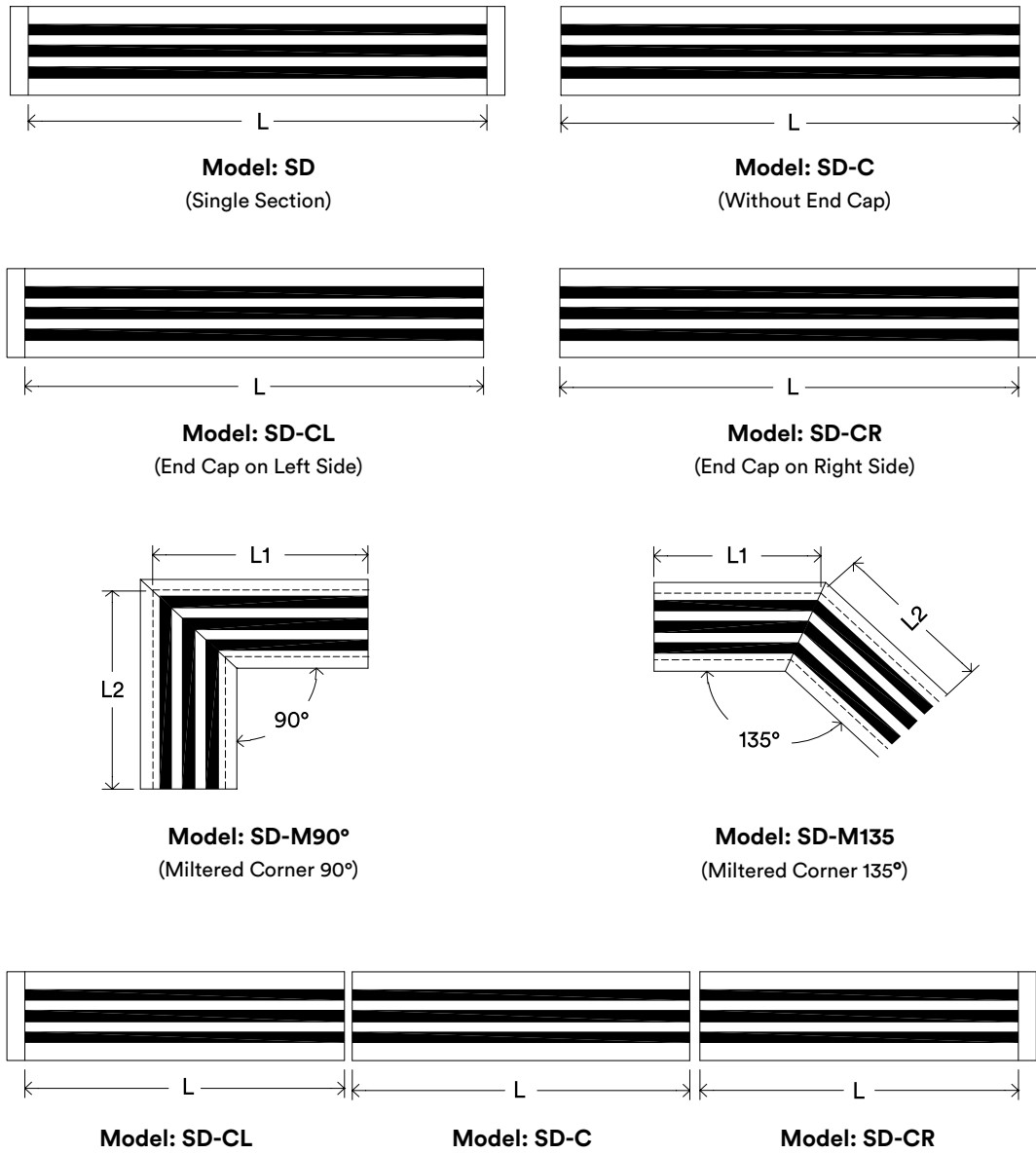
Determine the size of slot diffuser Model SD-25 (1" slot width) for 240 CFM supply air with 1-Way horizontal throw.

- Solution:**
- A. Refer to performance data of linear slot diffuser 1" slot width.
  - B. If 3 slots is selected at the following capacity, the length of diffuser is as follows:
    - 1. For capacity of 80 CFM/FT, the length of diffuser is equal to 240 CFM divided by 80 CFM/FT.

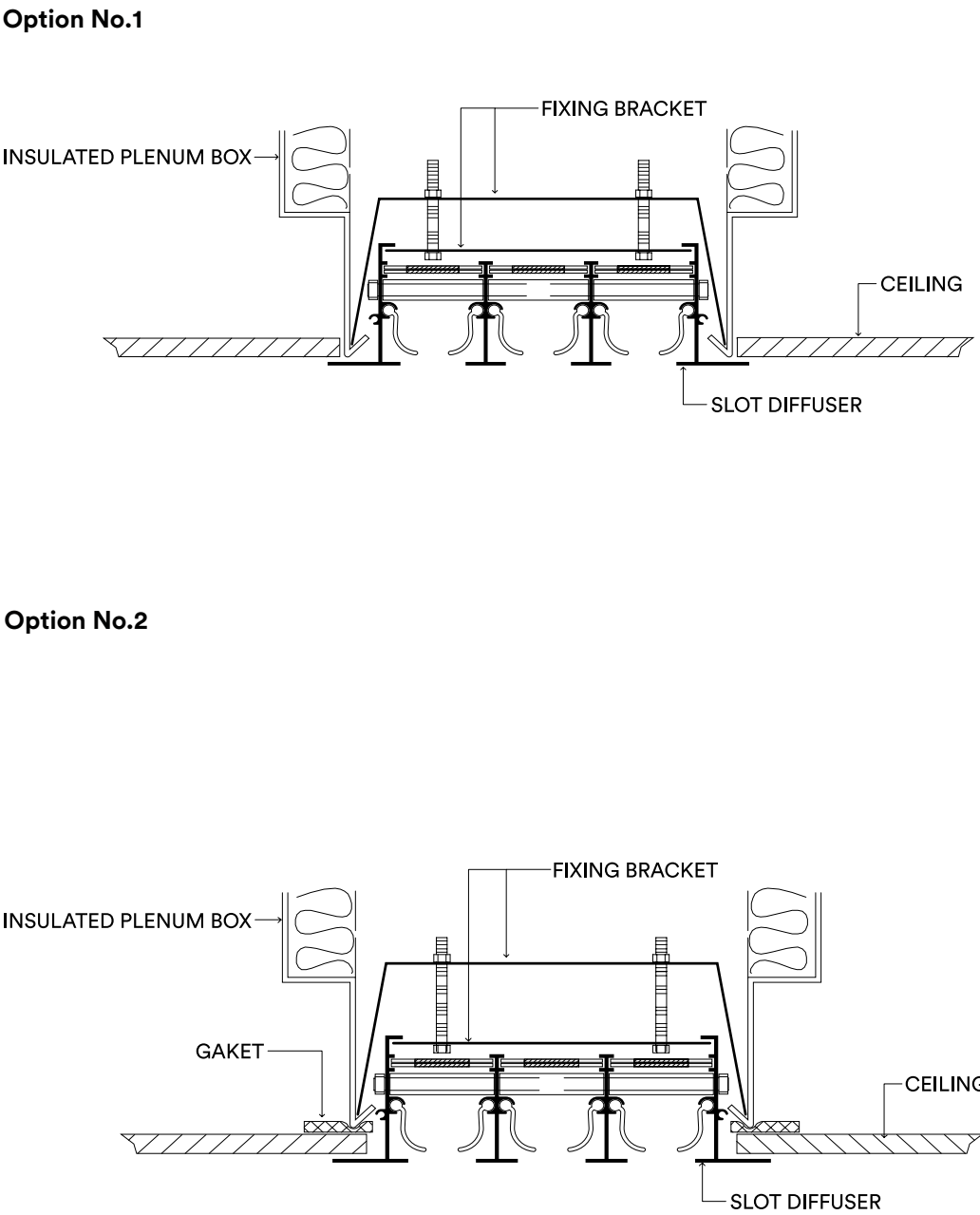
Length	=	3 feet
SP	=	0.204
Throw @ 150 FPM (Tv)	=	19 feet
@ 100 FPM (Tv)	=	23 feet
@ 50 FPM (Tv)	=	28 feet
NC level	=	30 dB



Unit Assembly



Assembly To Plenum Box



NOTE

It is recommended to put gasket between the ceiling and the tip of plenum box to avoid air leakage.

ORDER REFERENCE DETAILS



Order Details

SD Series

Order Code:

SD-aa-b-ccc-d-e-f-g-h

Model:

SD = Single section

SD-C = Without end cap

SD-CL = End cap on left side

SD-CR = End cap on right side

SD-M90 = Mitered corner 90°

SD-M135 = Mitered corner 135°

Width of Slot

20 = 3/4" slot width

25 = 1" slot width

Nos. of Slots

1 = 1 Slot

2 = 2 Slots

3 = 3 Slots

4 = 4 Slots

5 = 5 Slots

6 = 6 Slots

Length of diffuser ( mm )

D= With air deflector

X= Without air deflector

E= With equalizing grid only

H= With hit & miss damper

S= Standard finish powder coated, white color RAL 9010

Non-standard color to be specified

Order Example

Specifications:

Single section slot diffuser with 3/4" slot width, 3 nos. slots with air deflectors and with hit and miss damper, 2000mm long. Powder coated, white color RAL 9010.

Ordering:  
Make : SAFID  
Type : SD-20 -3- 2000 -D-H- S  
Qty. : 1 pc



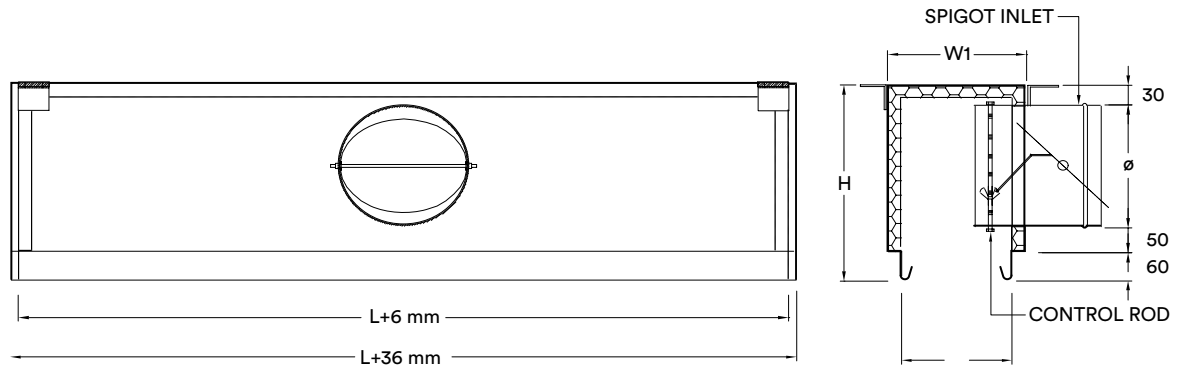
PLENUM BOXES FOR SLOT DIFFUSERS

VK SERIES [VK - 110, VK - 120, VK - 140]

Plenum Box

VK - 110

VK - 110 plenum boxes designed for slot diffusers are suitable for supply, exhaust and ducted return air systems. Standard construction is built of galvanized steel sheet Ga.24, conform to ASTM A653, lock forming quality with 25mm thk. and with acoustic lining of density 48kg/m³. The exposed surface of acoustic lining is made of strong black cloth facing to avoid fiberglass erosion. The spigot inlet has a built- in balancing damper which can be adjusted from the face of diffuser.



Dimensions

Plenum Size for SD - 20

3/4" Slot Width						
No. of slots	1	2	3	4	5	6
W (mm)	59	95	130	166	201	237
W1 (mm)	109	145	180	216	251	287
H (mm)	ø+140	ø+140	ø+140	ø+140	ø+140	ø+140

Plenum Size for SD - 25

1" Slot Width						
No. of slots	1	2	3	4	5	6
W (mm)	64	105	145	186	226	267
W1 (mm)	114	155	195	236	276	317
H (mm)	ø+140	ø+140	ø+140	ø+140	ø+140	ø+140



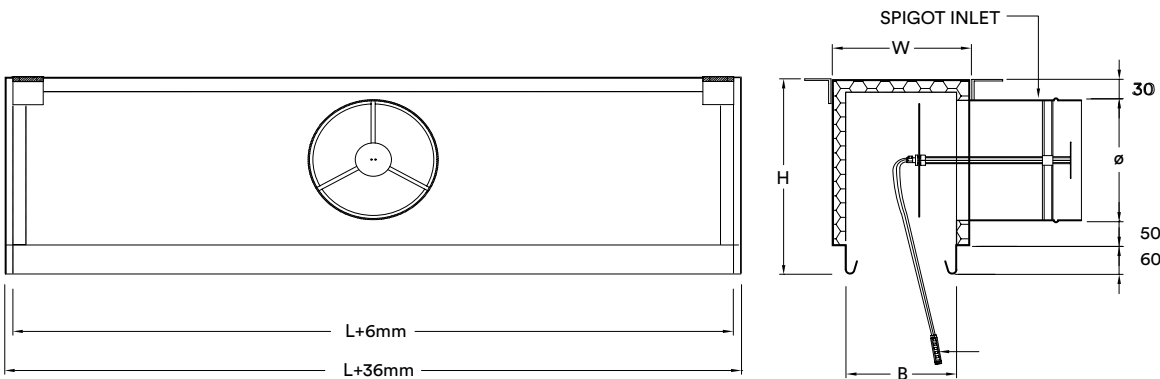


VK SERIES [VK - 110, VK - 120, VK - 140]

Plenum Box

VK - 120

VK - 110 plenum boxes designed for slot diffusers are suitable for supply, exhaust and ducted return air systems. Standard construction is built of galvanized steel sheet Ga.24, conform to ASTM A653, lock forming quality with 25mm thk. And with acoustic lining of density 48kg/m³. The exposed surface of acoustic lining is made of strong black cloth facing to avoid fiberglass erosion. The spigot inlet has a built-in balancing damper which can be adjusted from the face of diffuser. A plastic tube is fitted to damper control for pressure test if required.



Plenum Size for SD - 20

3/4" Slot Width						
No. of slots	1	2	3	4	5	6
W (mm)	59	95	130	166	201	237
W1 (mm)	109	145	180	216	251	287
H (mm)	ø+140	ø+140	ø+140	ø+140	ø+140	ø+140

Plenum Size for SD - 25

1" Slot Width						
No. of slots	1	2	3	4	5	6
W (mm)	64	105	145	186	226	267
W1 (mm)	114	155	195	236	276	317
H (mm)	ø+140	ø+140	ø+140	ø+140	ø+140	ø+140

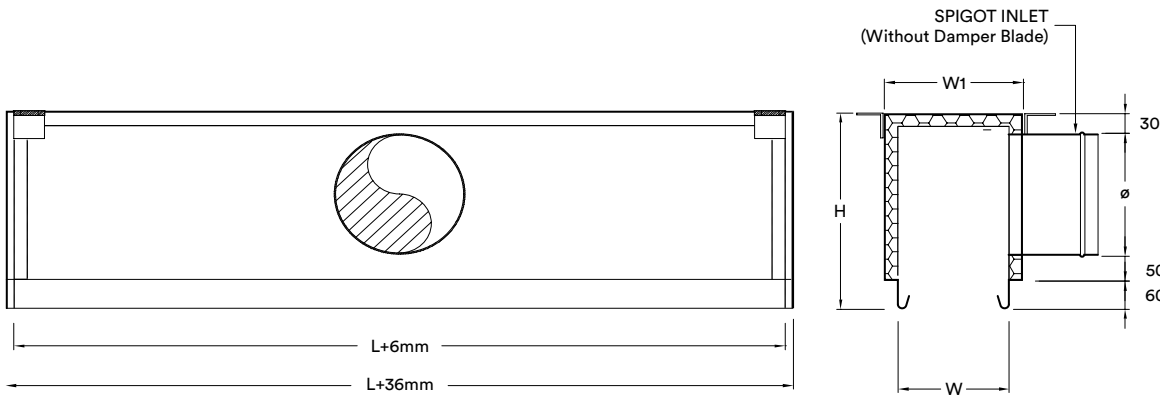


VK SERIES [VK - 110, VK - 120, VK - 140]

Plenum Box

VK - 140

VK - 140 plenum boxes designed for slot diffusers are suitable for supply, exhaust and ducted return air systems. Standard construction is built of galvanized steel sheet Ga.24, conform to ASTM A653, lock forming quality with 25mm thk. and with acoustic lining of density 48kg/m³. The exposed surface of acoustic lining is made of strong black cloth facing to avoid fiberglass erosion. The spigot inlet does not have a balancing damper.



Dimensions

Plenum Size for SD - 20

3/4" Slot Width						
No. of slots	1	2	3	4	5	6
W (mm)	59	95	130	166	201	237
W1 (mm)	109	145	180	216	251	287
H (mm)	ø+140	ø+140	ø+140	ø+140	ø+140	ø+140

Plenum Size for SD - 25

1" Slot Width						
No. of slots	1	2	3	4	5	6
W (mm)	64	105	145	186	226	267
W1 (mm)	114	155	195	236	276	317
H (mm)	ø+140	ø+140	ø+140	ø+140	ø+140	ø+140

ORDER REFERENCE DETAILS



Order Details

VK Series

Order Code:

Vk- a bb- c- ddd- eee

Model:

VK-110

VK-120

VK-140

Optional Extras:

P = with perforated sheet covering the acoustic liner facing.

S = built of stainless steel sheet Type 304

Width of Slot

20 = 3/4" slot width

25 = 1" slot width

Nos. of Slots

1 = 1 slots

2 = 2 slots

3 = 3 slots

4 = 4 slots

5 = 5 slots

6 = 6 slots

Length of plenum box ( = length of diffuser + 6mm )

Diameter of Spigot inlet ( mm )

Order Example

Specifications:

Single section slot diffuser with 3/4" slot width, 3 nos. with air deflectors and with hit and miss damper, 2000mm long. Power coated, white color RAL 9010

Ordering:

Make : Airflow AC  
Type : SD-20- 3 - 2000 - D - H - S  
Qty : 1 pc

