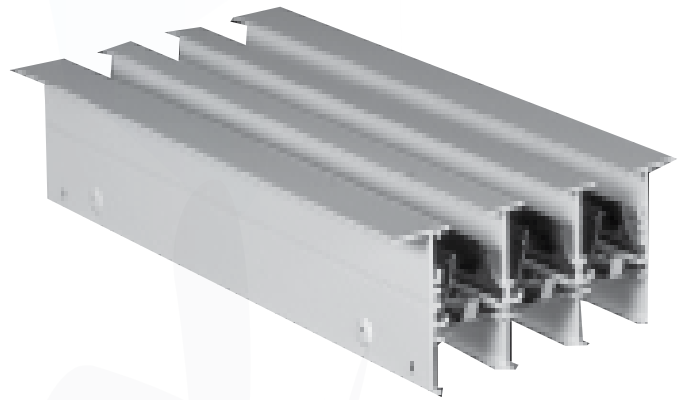
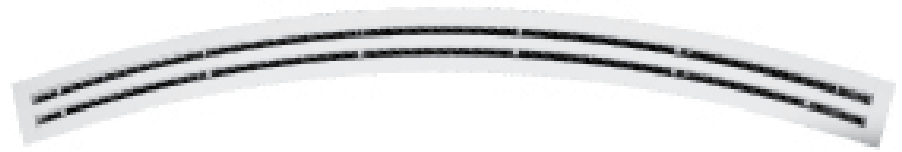


LINEAR SLOT DIFFUSERS



CHAPTER 3

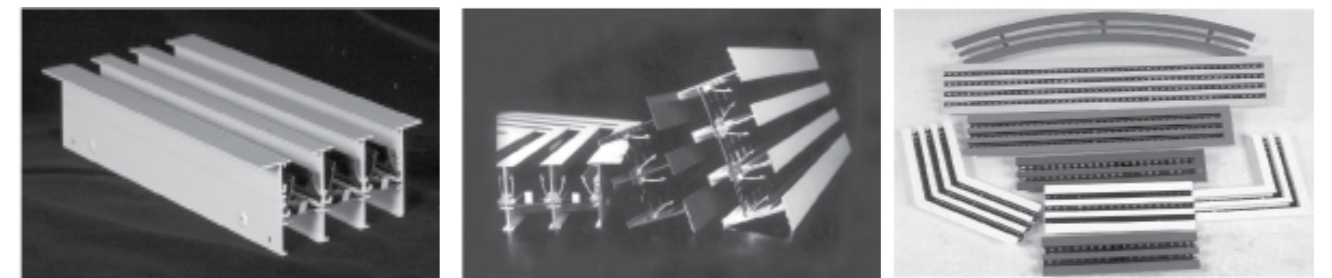


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الهندسية ENGINEERING

LINEAR SLOT DIFFUSERS

CONTENTS

01	Introduction, Features & Characteristics.
02	Operating Range, Multi Sections, End Cap / Flange Arrangements.
03	MHered Corners, Linear Slot Diffusers in Curved Shape.
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05	Available Models.
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07- 09	Selection Diagrams, Vertical Discharge.
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13	Throw and WaD Effect for Vertical Discharge, Using Selection Diagrams, illustrative Examples.
14 - 16	Performances at Selected Values of Air Flow Rate.
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➔ **TFE** Linear Slot Diffusers have been designed to satisfy architectural concepts that require continuous length applications without compromising air distribution performance. A combination of engineering excellence and architectural appeal in a single product is provided in this type of units. Linear Slot Diffusers for supply air applications are usually installed in ceilings or high side wall locations, the design of these units features an

adjustable supply air pattern and makes them particularly suitable for open office perimeter zones, main floor entrance foyers and lobbies, elevator lobbies, conference rooms, mall atriums and theatres.

- Construction: Frame, Core & Deflection Blades are made of high quality Extruded Aluminium Profiles of 6063 Alloy.
- Hit - and - Miss Damper Material: made of Pre-painted Aluminium coils of 3005 Alloy in matt black color finish.

➔ Features & Characteristics:

- Frame Flange Width: 28 mm.
- Available in 1 to 8 Numbers of Slots.
- Available in three different slot widths (openings):
 - 20 mm (3/4) as standard.
 - 16 and 25 mm (5/8 and 1) as option.
- The design of linear slot diffusers provides a full flexibility in volume and air pattern control.
- The Volume Control Damper (Hit- and - Miss Damper) installed in the rear part of the linear slot diffuser consists of two Aluminium strips, the rear one is fixed and the other one is sliding.
- Both the Hit and Miss strips are having 10 x 10 mm square holes. Adjacent holes are spaced in 10 mm distances also.
- Manually and from the slot face opening, the air flow rate can be adjusted by moving the sliding part of the Hit- and - Miss damper left or right.
- The Volume Control Damper (Hit- and - Miss Damper) is designed in a unique way that it can be used as an equalizing grid.
- Air pattern can be directed vertically or horizontally by means of Deflection Blades in fully 180 degree range without changing the air flow rate. These blades can be manually adjusted from slot face opening.
- The Adjustable Deflection Blades allow for the air pattern to be directed along the ceiling, straight down or at some intermediate setting.
- To maintain perfect and unbroken appearance for continuous runs, alignment joining strips are provided in proper lengths and quantities with no extra cost.
- Also, End Cap pieces to be provided in proper sizes as requested with no extra cost.
- Mounting Instructions: see page No. LD - 06.
- Surface Finishes: see page No. LD- 17.

OPERATING RANGE AND QUICK SELECTION TABLE FOR LINEAR SLOT DIFFUSERS					
SLOT OPENING = 16 mm		SLOT OPENING = 20 mm (Standard)		SLOT OPENING = 25 mm	
No. of Slots	CFM Range	No. of Slots	CFM Range	No. of Slots	CFM Range
1	50 - 74	1	70 - 95	1	85 - 127
2	95 - 136	2	119 - 170	2	155 - 229
3	125 - 191	3	165 - 248	3	252 - 318
4	163 - 254	4	212 - 316	4	265 - 413
5	201 - 290	5	259 - 371	5	345 - 519
6	248 - 339	6	314 - 424	6	403 - 583
7	271 - 381	7	350 - 519	7	473 - 678
8	297 - 424	8	386 - 562	8	530 - 742

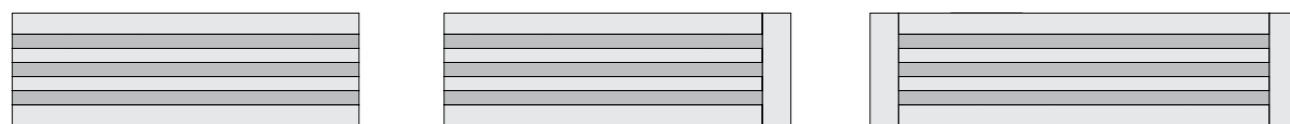
CFM Values are based on:

- Length of one metre
- Noise level ranging from 15-25 (dB).
- Vertical Discharge without wall effect

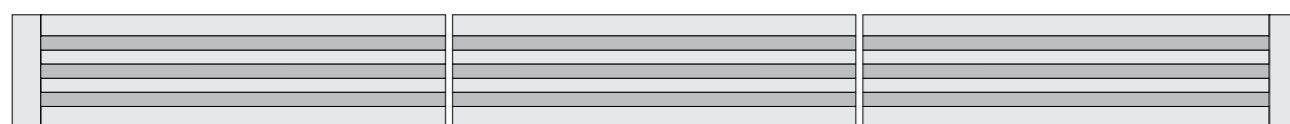
NO. OF SECTIONS PER RUNNING UNIT			
No. of Slots	ONE SECTION	TWO SECTIONS	MULTI SECTIONS
1	≤ 4.0	> 4.0	> 6.0
2	≤ 4.0	> 4.0	> 6.0
3	≤ 4.0	> 4.0	> 6.0
4	≤ 4.0	> 4.0	> 6.0
5	≤ 3.5	> 3.5	> 6.0
6	≤ 3.5	> 3.5	> 6.0
7	≤ 3.5	> 3.5	> 6.0
8	≤ 3.5	> 3.5	> 6.0

• Above arrangements are approximate and subject to change according to order / site conditions

End Cap / Flange Arrangements

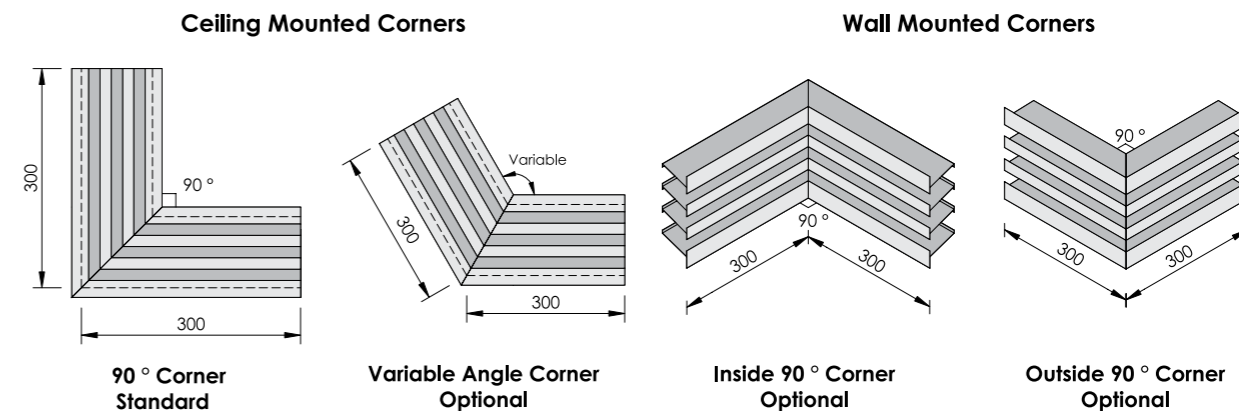


- Open Ends
- End Cap at One side
- End Cap at Both side



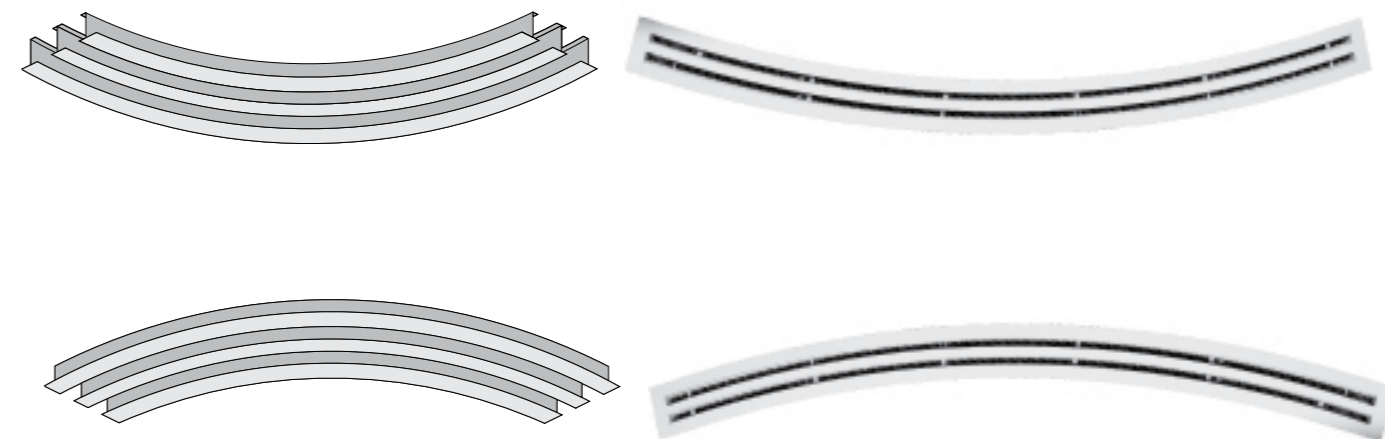
- End Cap at Both Terminal Sides (Multi Sections)

MITERED CORNERS



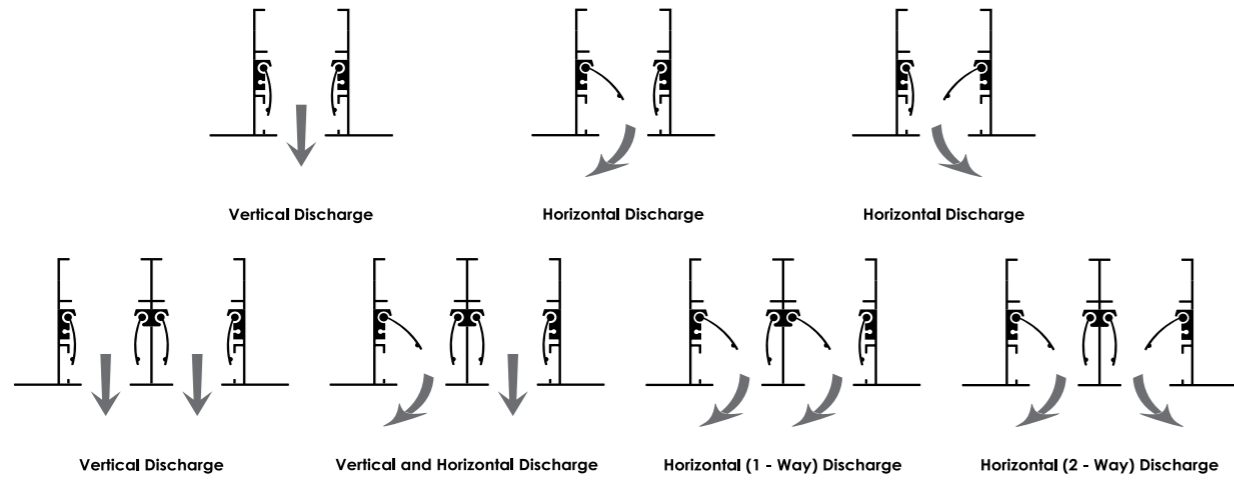
- Corners are always supplied in 300 mm adjacent sides as standard unless otherwise specified or required

Features & Characteristics:



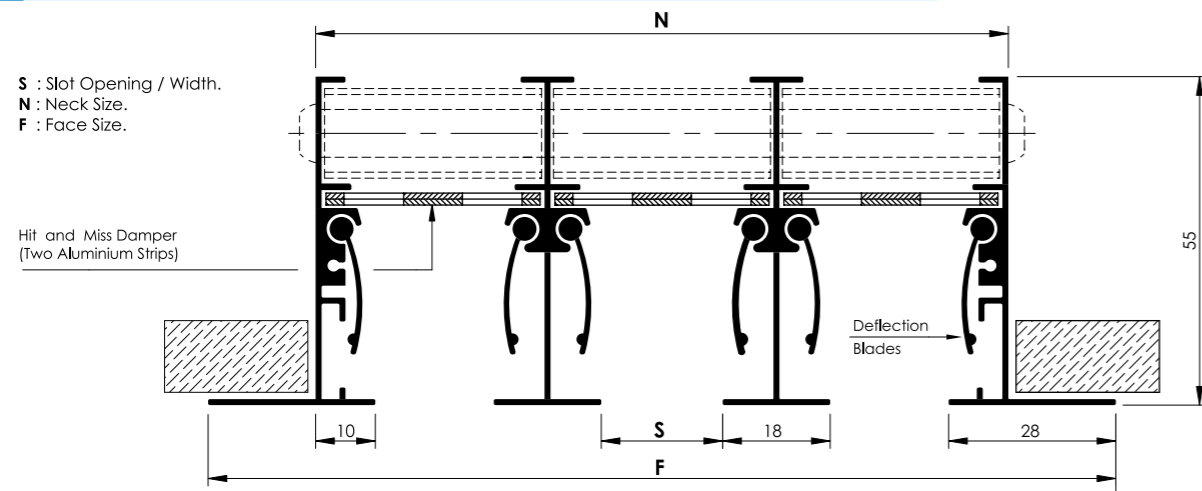
- Curves can be fabricated in minimum curvature radius = 1 mtr.
- Curve applications are not possible for side wall installations

Single and Multiple Slot PaHern Adjustment



- Two deflectors per slot provide an adjustable air pattern of fully 180 degrees

Single and Multiple Slot PaHern Adjustment

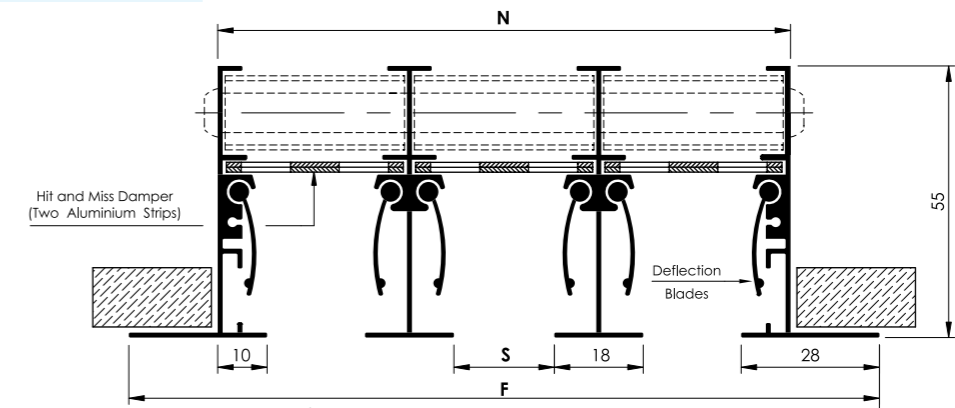


NECK & OVERALL DIMENSIONS FOR LINEAR SLOT DIFFUSERS						
No. of Slots	S = 16 mm		S = 20 mm (Standard)		S = 25 mm	
	N	F	N	F	N	F
1	36	72	40	76	46	82
2	70	106	78	114	90	126
3	104	140	116	152	134	170
4	138	174	154	188	178	214
5	172	208	192	228	222	258
6	206	242	230	266	266	302
7	240	276	268	304	310	346
8	274	310	306	342	354	390

- All dimensions are in mm and subject to ± 1 mm tolerance.

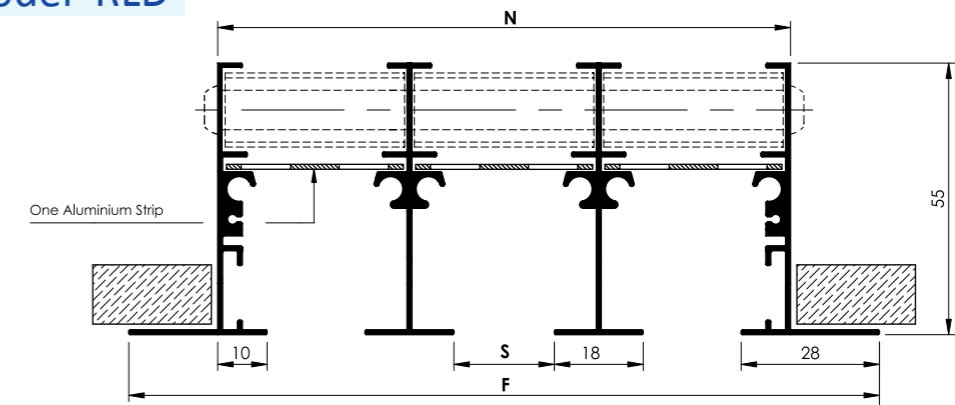
Available Models Construction and Dimensional Details

Model SLD



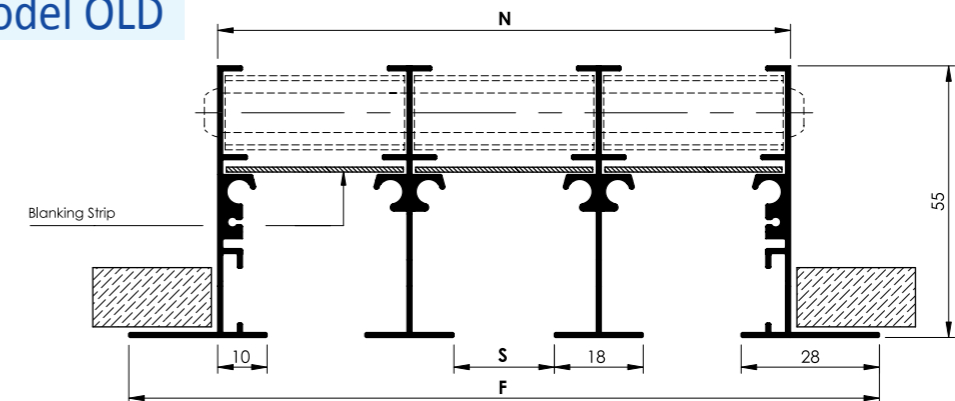
- **SLD**: is Supply Air Linear Slot Diffuser c/w Deflection Blades & Hit and Miss Damper.

Model RLD



- **RLD**: is Return 1 Extract Air Linear Slot Diffuser w/o Deflection Blades & Hit and Miss Damper.

Model OLD



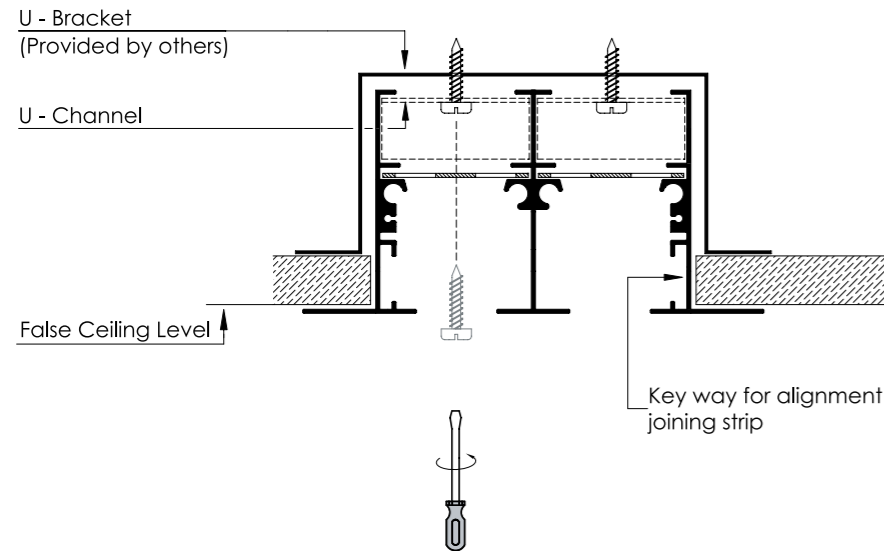
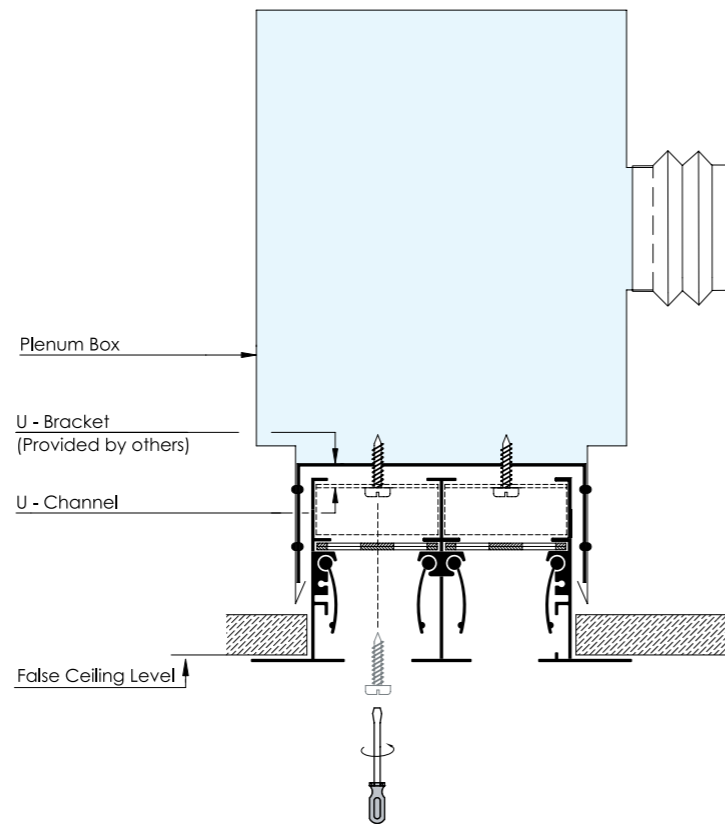
- S** : Slot Opening1 Width.
- N** : Neck Size.
- F** : Face Size.

All dimensions are in mm and subject to ± 1 mm tolerance.

Mounting Instructions

With Plenum Box (provided by others):

Fix the plenum to the ceiling. The plenum has a border in the lower part by which the upper part of the diffuser can be inserted into it. Your diffuser is provided with ceiling mounting fixing U - Channels. These channels are inserted into the keyway and should be slid into the final position corresponding to the opposite fixing point previously prepared on the U - Bracket as shown (plenums usually supplied with these brackets). The two elements (diffuser and plenum) can be attached together using self-tapping screws and screw driver. The diffuser should be made level using a water level and by adjusting the screw positions (left, right, up and down) as shown.



Without Plenum Box:

In this case the diffuser can be attached to U - Shape bracket (provided by others) and rest directly on the ceiling as shown.

Diffusers in Continuous Running:

Normal installations as described above but, besides adjoining sections. After insertion and alignment of the apply the provided joining key strips between the diffuser

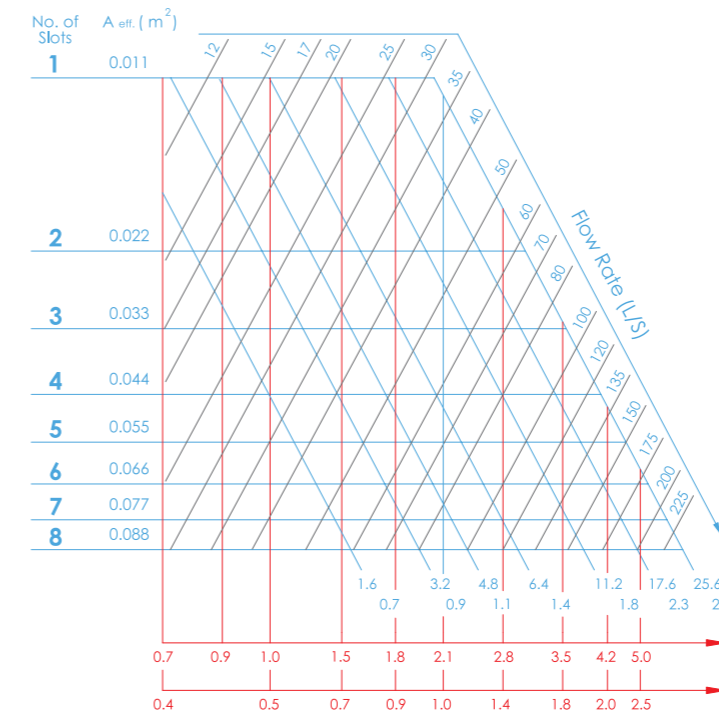
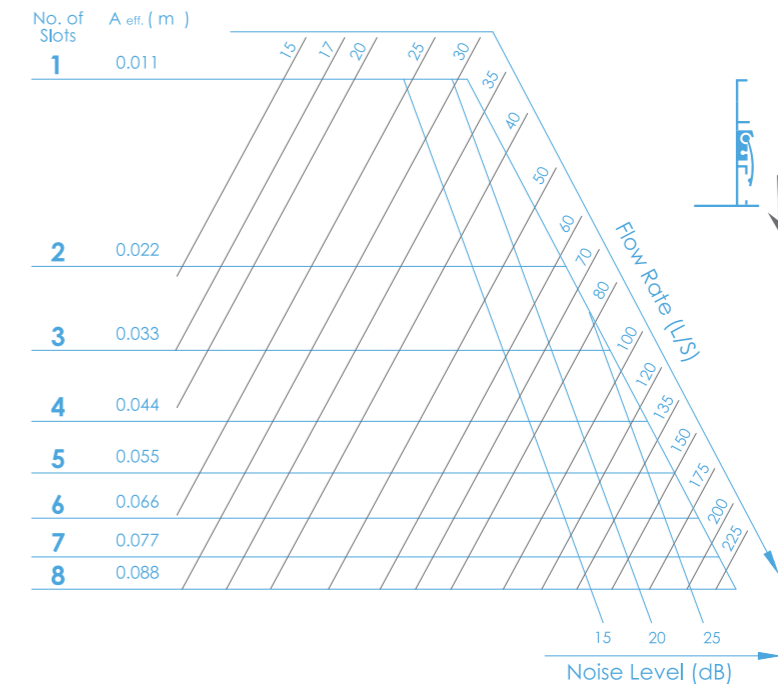
joined sections set diffusers in the final position.

Vertical Discharge

Slot Opening / Width = 16mm

Correction table for other Lengths :

Length (m)	Noise Level	Throw (m)
1.0	0	x 1.00
1.5	+ 2	x 1.05
2.0	+ 3	
2.5	+ 4	
3.0	+ 5	x 1.10
4.0	+ 6	
5.0	+ 7	
6.0	+ 8	
8.0	+ 9	x 1.15
10.0	+ 10	



Correction table for Return/Extract applications :

$V_{eff.}$ (m/s)	x 0.45
ΔPt (Pa)	x 0.65
NC	- 10

Pressure Drop
 ΔPt (Pa)
 $V_{eff.}$ (m/s)
 Th. (m)
 (@ $Vt = 0.25$ m/s)
 Th. (m)
 (@ $Vt = 0.50$ m/s)

- Performances are based on a length of one metre and with no wall effect.
- Hit-Miss Damper at full open position.
- For Return / Extract applications select performance

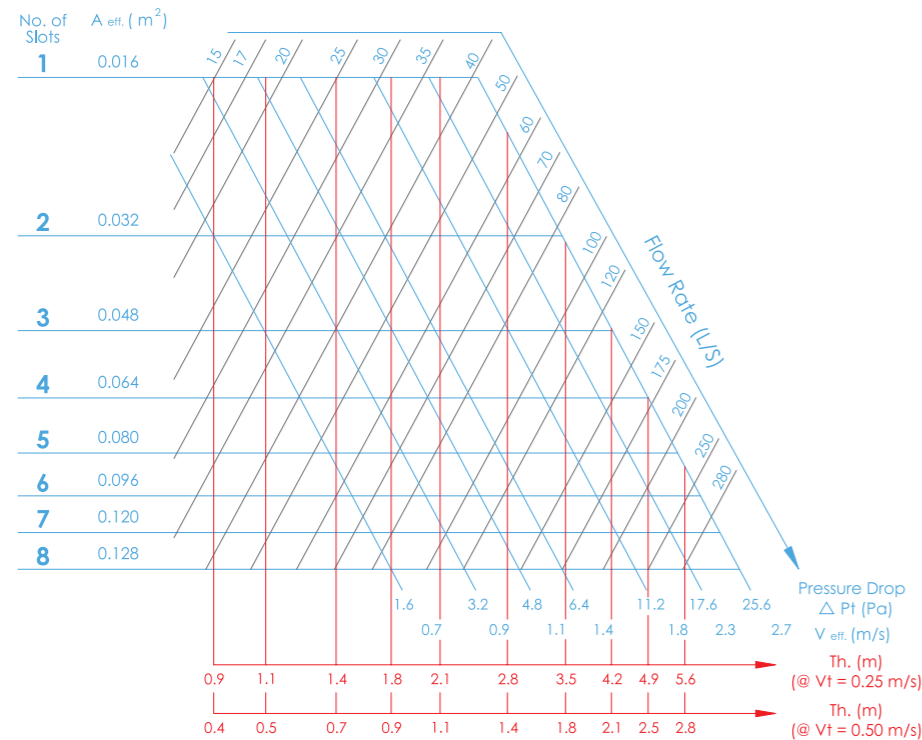
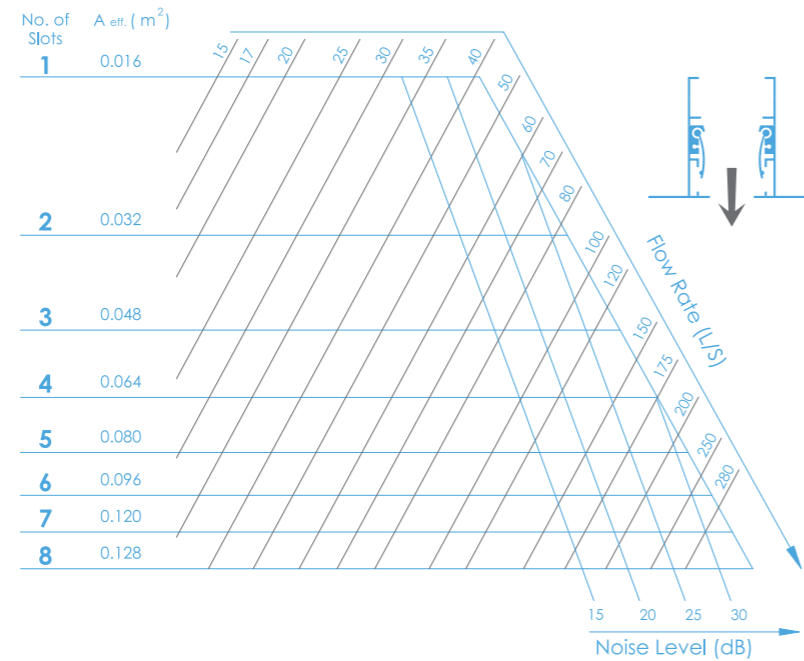
data using above charts and correction table after ignoring throw values.

- Noise Level values are based on 1dB room attenuation.

Vertical Discharge Slot Opening / Width = 20 mm (standard)

Correction table for other Lengths :

Length (m)	Noise Level	Throw (m)
1.0	0	x 1.00
1.5	+ 2	x 1.05
2.0	+ 3	
2.5	+ 4	
3.0	+ 5	x 1.10
4.0	+ 6	
5.0	+ 7	
6.0	+ 8	
8.0	+ 9	x 1.15
10.0	+ 10	



Correction table for Return/Extract applications :

V_{eff} (m/s)	x 0.45
ΔP_t (Pa)	x 0.65
NC	- 10

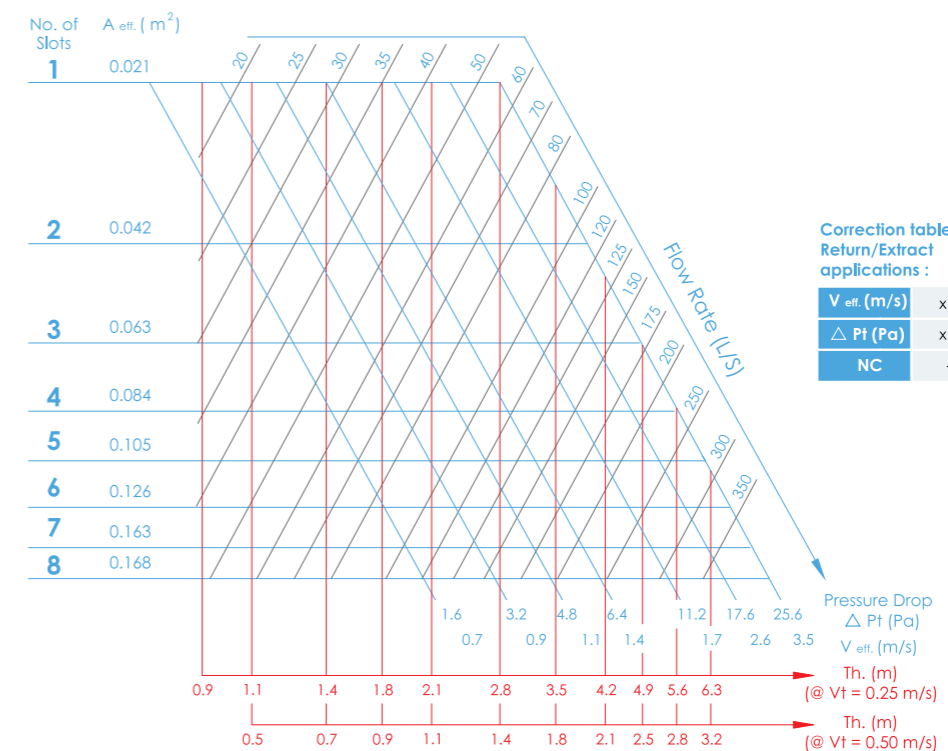
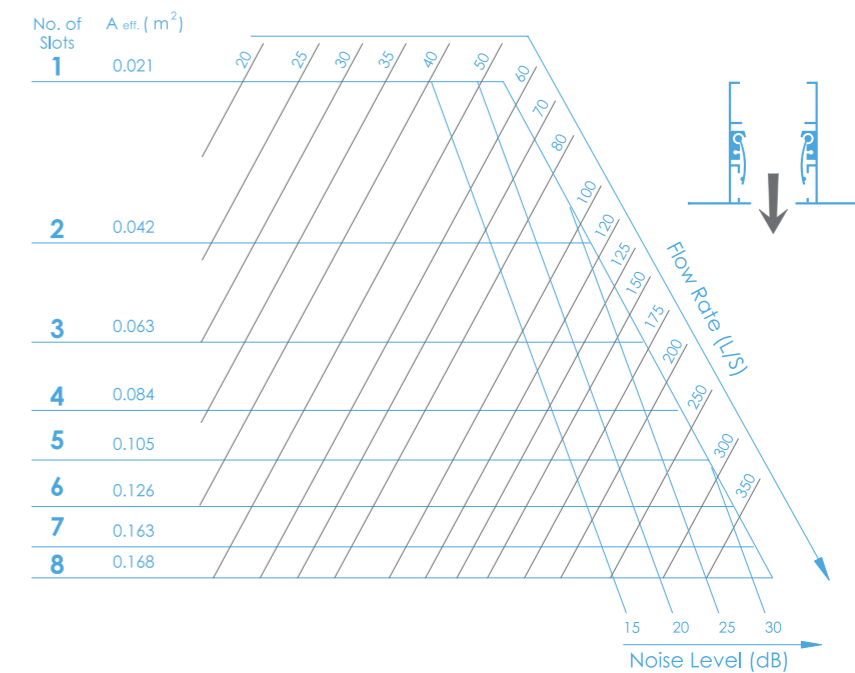
- Performances are based on a length of one metre and with no wall effect.
- Hit-Miss Damper at full open position.
- For Return / Extract applications select performance

- data using above charts and correction table after ignoring throw values.
- Noise Level values are based on 10 dB room attenuation.

Vertical Discharge Slot Opening / Width = 25 mm (standard)

Correction table for other Lengths :

Length (m)	Noise Level	Throw (m)
1.0	0	x 1.00
1.5	+ 2	x 1.05
2.0	+ 3	
2.5	+ 4	
3.0	+ 5	x 1.10
4.0	+ 6	
5.0	+ 7	
6.0	+ 8	
8.0	+ 9	x 1.15
10.0	+ 10	



Correction table for Return/Extract applications :

V_{eff} (m/s)	x 0.45
ΔP_t (Pa)	x 0.65
NC	- 10

- Performances are based on a length of one metre and with no wall effect.
- Hit-Miss Damper at full open position.
- For Return / Extract applications select performance

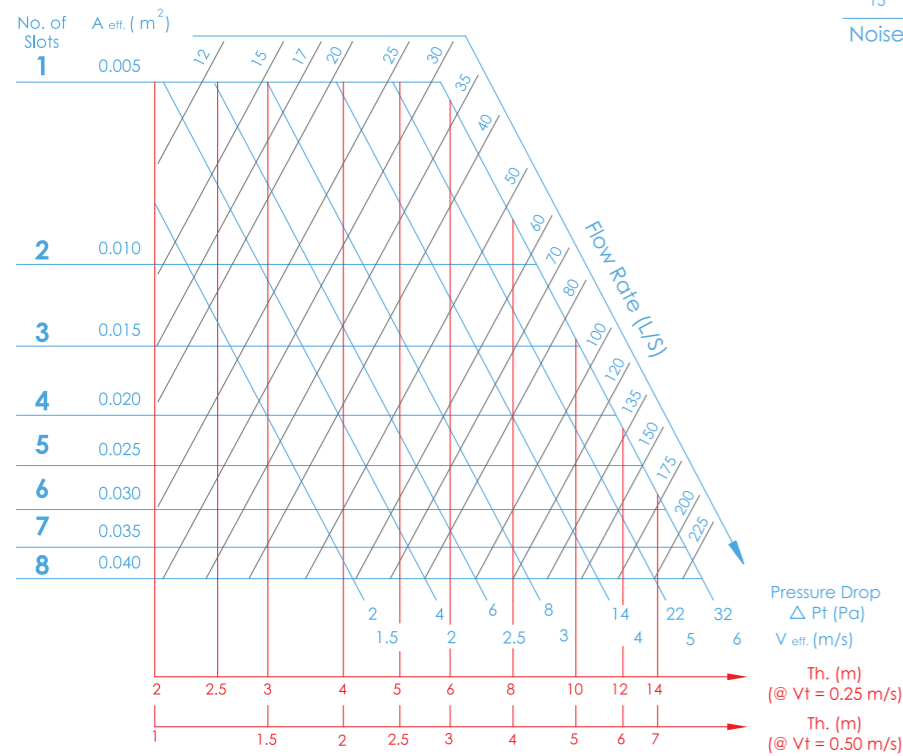
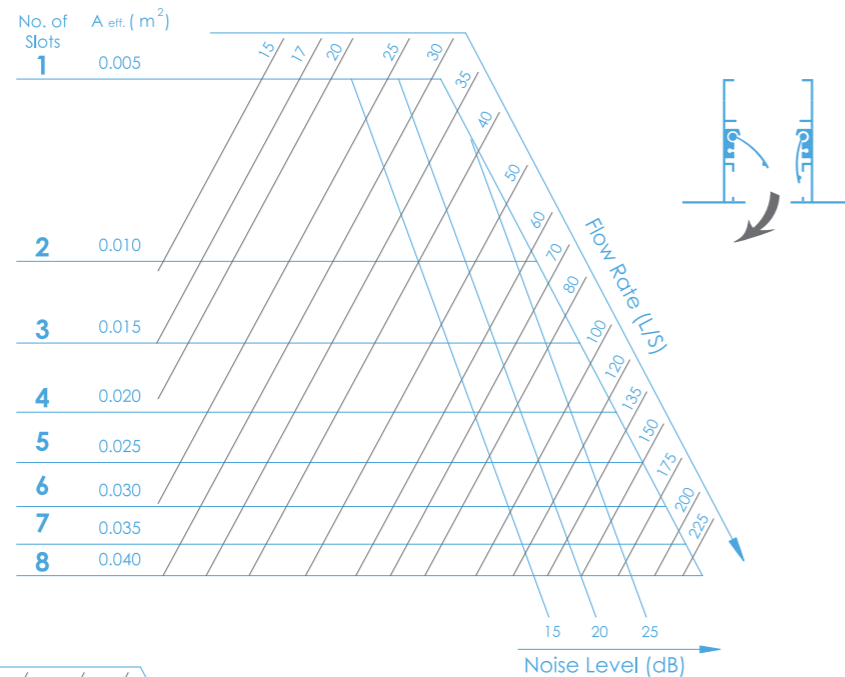
- data using above charts and correction table after ignoring throw values.
- Noise Level values are based on 10 dB room attenuation.

Horizontal Discharge

Slot Opening / Width = 16 mm

Correction table for other Lengths :

Length (m)	Noise Level	Throw (m)
1.0	0	x 1.00
1.5	+2	x 1.05
2.0	+3	
2.5	+4	
3.0	+5	x 1.10
4.0	+6	
5.0	+7	
6.0	+8	
8.0	+9	x 1.15
10.0	+10	



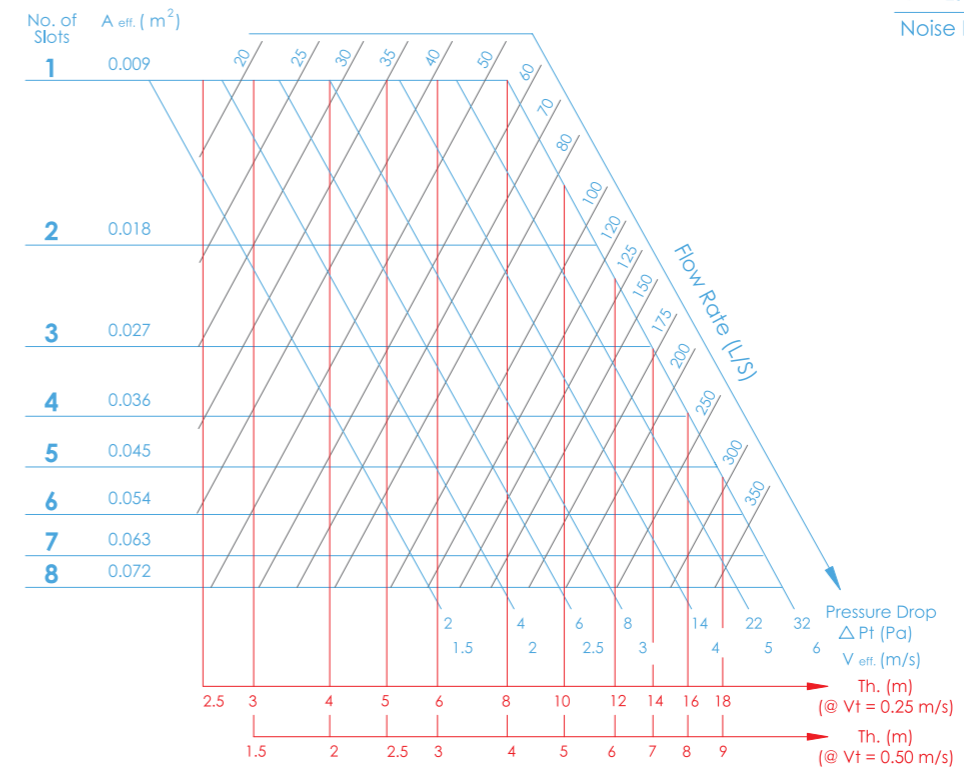
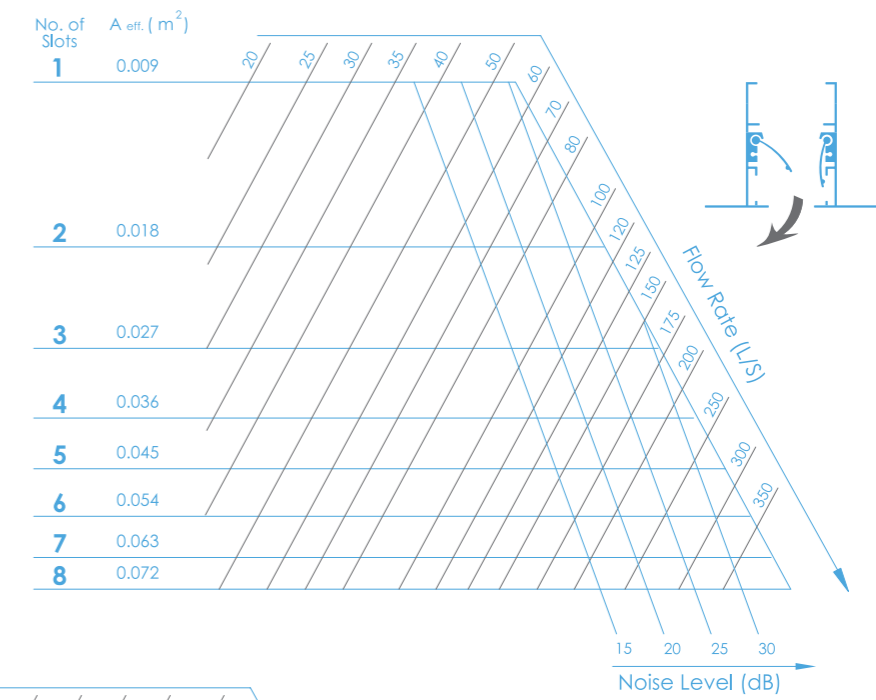
- Performances are based on a length of one metre
- Hit-Miss Damper at full open position.
- For Return / Extract applications select performance data using above charts and correction table after ignoring throw values.
- Noise Level values are based on 10 dB room attenuation.

Horizontal Discharge

Slot Opening / Width = 20 mm (standard)

Correction table for other Lengths :

Length (m)	Noise Level	Throw (m)
1.0	0	x 1.00
1.5	+2	x 1.05
2.0	+3	
2.5	+4	
3.0	+5	x 1.10
4.0	+6	
5.0	+7	
6.0	+8	
8.0	+9	x 1.15
10.0	+10	



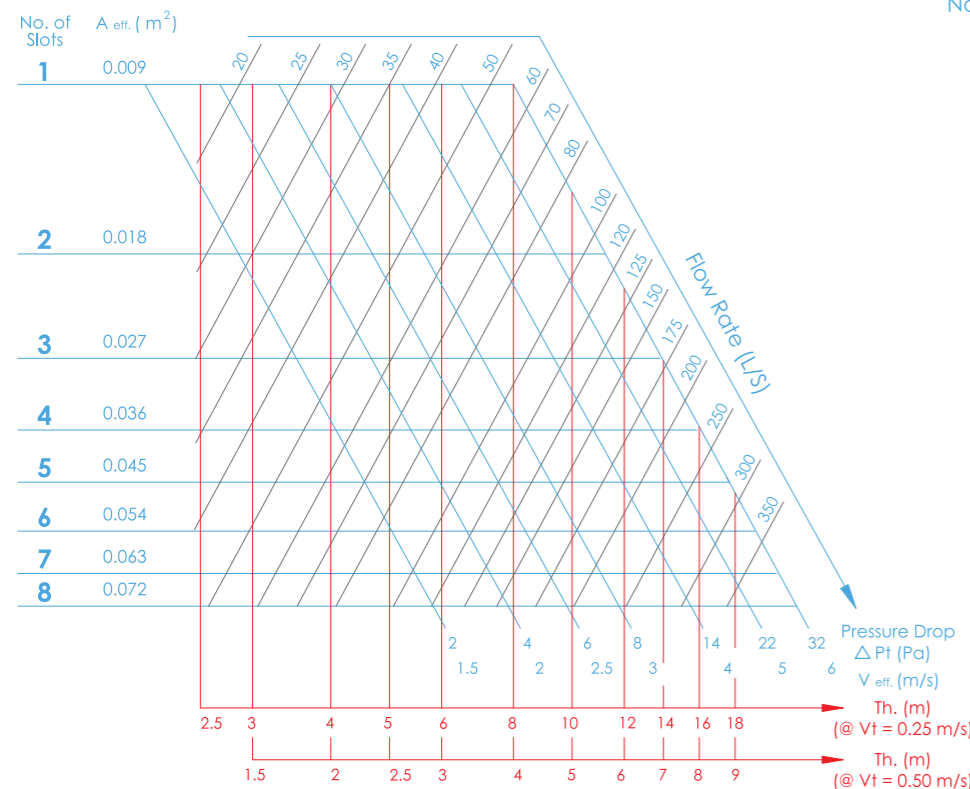
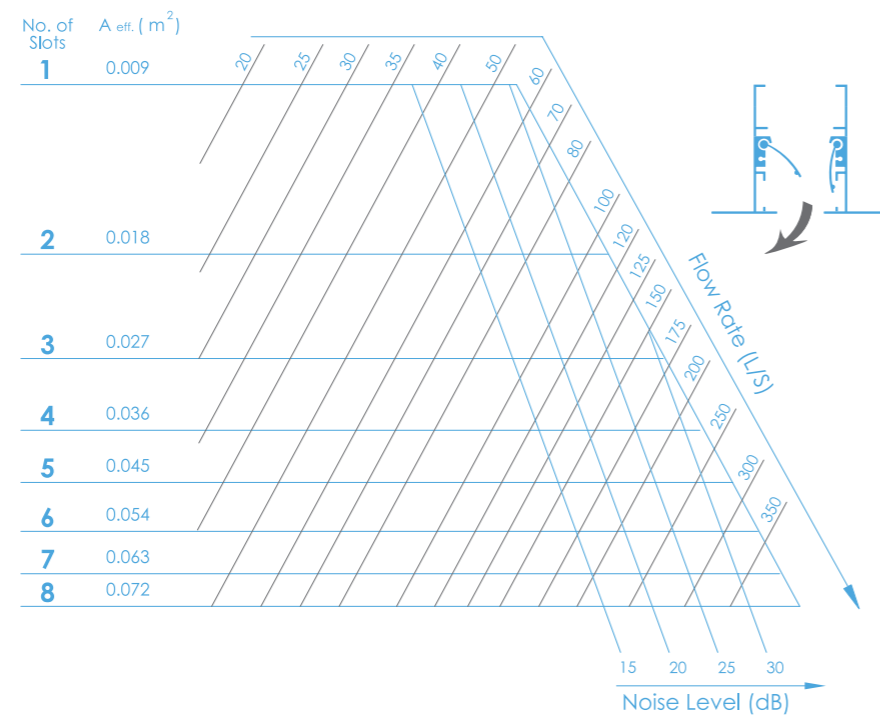
- Performances are based on a length of one metre.
- Hit-Miss Damper at full open position.
- For Return / Extract applications select performance data using above charts and correction table after ignoring throw values.
- Noise Level values are based on 1 dB room attenuation.

Horizontal Discharge

Slot Opening / Width = 25 mm

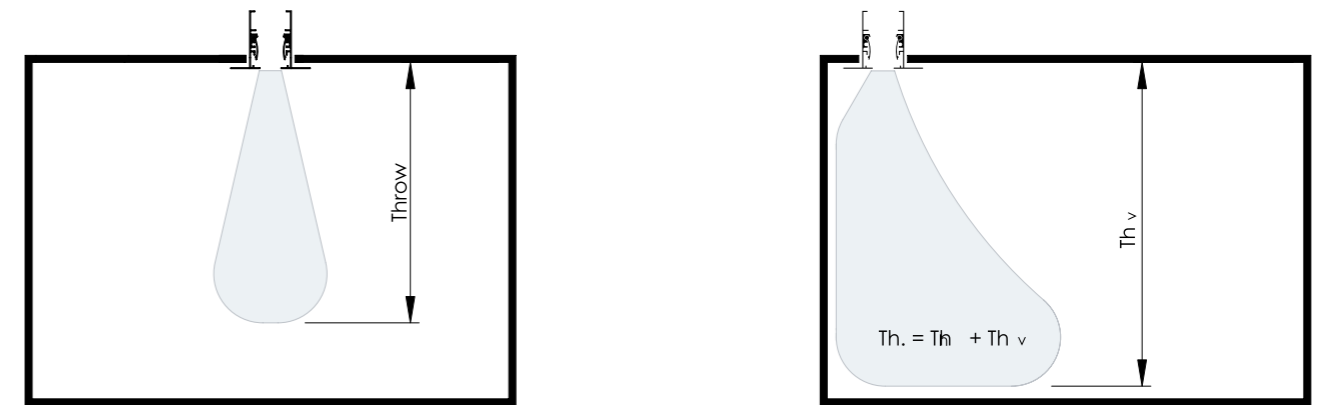
Correction table for other Lengths :

Length (m)	Noise Level	Throw (m)
1.0	0	x 1.00
1.5	+ 2	x 1.05
2.0	+ 3	
2.5	+ 4	
3.0	+ 5	x 1.10
4.0	+ 6	
5.0	+ 7	
6.0	+ 8	
8.0	+ 9	x 1.15
10.0	+ 10	



- Performances are based on a length of one metre
- Hit-Miss Damper at full open position.
- For Return / Extract applications select performance data using above charts and correction table after ignoring throw values.
- Noise Level values are based on 10 dB room attenuation.

Throw and Wall Effect for Vertical Discharge



• Note, in case of wall effect all performance data will remain the same except that throw values are to be multiplied by 1.43

Linear Slot Diffusers Selection Procedure

I. Vertical Discharge (without wall effect): (Illustrative Example)

Given Data:
 No. of Slots = 3
 Slot Opening / Width = 20 mm (Standard). Length = 2.5 m.
 Air Flow Rate = 530 CFM = 250 (L/S).
 Per one metre length 250 (L/S)/2.5 m = 100 (L/S)/m.
 Refer to page No. LD - 08 for Vertical Discharge and 20 mm slot opening and find out that:
 $A_{elf} = 0.048 m^2$.
 Noise Level = 22 + 4 = 26 dB (value as read from the chart and corrected by the correction table for other lengths@ 2.5 m).
 $V_{elf} = 2.2 m/s$.
 $\Delta Pt = 16.8 Pa$.
 $Th @ V_t = 0.25 m/s = 3.4 \times 1.1 = 3.7 m$ (value as read from the chart and corrected by the correction table for other lengths@ 2.5 m).
 Ditto, but @ 0.5 m/s = 1.7 x 1.1 = 1.9 m.
 In case of wall effect as shown above, only correct the throw values to be : $Th @ V_t = 0.25 m/s = 3.7 \times 1.43 = 5.3 m$.
 Ditto, but @ 0.5 m/s = 1.9 x 1.43 = 2.7 m.

For Return / Extract data (if required) ignore throw values and read others as followings :-
 Noise Level = 26 - 10 = 16 dB (see correction table).
 $V_{elf} = 2.2 \times 0.45 = 1.0 m/s$ (see correction table).
 $\Delta Pt = 16.8 \times 0.65 = 10.9 Pa$ (see correction table).

II. Horizontal Discharge: (Illustrative Example)

Given Data:
 No. of Slots = 4
 Slot Opening / Width = 25 mm.
 Length = 5.0 m.
 Air Flow Rate = 1430 CFM = 675 (L/S).
 Per one metre length 675 (L/S) / 5.0 m = 135 (L/S)/m. Refer to page No. LD - 12 for Horizontal Discharge and 25 mm slot opening and find out that:
 $A_{elf} = 0.036 m^2$.
 Noise Level = 19 + 7 = 26 dB (value as read from the chart and corrected by the correction table for other lengths @ 5 m).
 $v_{elf} = 3.8 m/s$.
 $\Delta Pt = 12.5 Pa$.
 $Th @ V_t = 0.25 m/s = 10 \times 1.1 = 11 m$ (value as read from the chart and corrected by the correction table for other lengths@ 5.0 m).
 Ditto, but @ 0.5 m/s = 5 x 1.1 = 5.5 m.
 For Return / Extract data (if required) ignore throw values and read others after applying the same given data again but on Vertical Discharge charts (page No. LD - 09) as follows:-
 Noise Level = 17 - 10 = 7 < 15 dB (see correction table).
 $V_{elf} = 5.6 \times 0.45 = 2.5 m/s$ (see correction table).
 $\Delta Pt = 10 \times 0.65 = 6.5 Pa$ (see correction table).

Ordering Data

Available Surface Finishes for Linear Slot Diffusers:

- Na1ural I Matt Silver Anodized.
- Powder Coating (Standard Colors are white RAL 9010/9016, other optional colors if required to be provided
- Aluminium in Mill Finish.
- Other Special finishes (on request if available).

Available Surface Finishes For Hit- and - Miss Damper & Deflection Blades:

- Matt Black Powder Coating only as standard.

Ordering Specifications:

SpecHy:

1. Linear Slot Diffuser Description (Supply, Return, Extract, Dummy, etc.).
2. No. of Slots.
3. Linear Slot Diffuser Length.
4. Quantity.
5. Linear Slot Diffuser Surface Finish.
6. RAL- No. (Only mention if powder coating surface finish is required).
7. Curve (only mention if required in curved shape).
8. End Caps (to be mentioned as required).
9. Slot opening /width (only indicate if not standard, i.e. for 16 or 25 mm only).

Example 1:

1	2	3	4	5	6	7	8	9
SLD	3	1000 mm	30	Powder Coating	9016	-	End Cap at both Sides	-

Example 2:

1	2	3	4	5	6	7	8	9
RLD	6	2.85 m	15	Silver Anodized	-	Curve	-	25 mm

Example 3:

1	2	3	4	5	6	7	8	9
DLD	4	120 "	10	Powder Coating	1013 (Optional)	-	End Cap at one Side	16 mm

*S.I. UNITS

SLOTS	L/S per meter	16m m		20mm		25mm	
		P _s	NC	P _s	NC	P _s	NC
1	35	3.38	24	2.16	19	1.38	15
	47	5.95	31	3.81	25	2.44	20
	59	9.13	40	5.84	32	3.74	26
	71	13.81	49	8.84	39	5.66	31
	83	18.66	55	11.94	44	7.64	35
2	71	3.97	24	2.54	19	1.63	15
	83	5.80	31	3.71	25	2.37	20
	94	7.19	36	4.60	29	2.94	23
	118	11.11	45	7.11	36	4.55	29
	142	15.88	53	10.16	42	6.50	34
3	94	3.97	25	2.54	20	1.63	16
	118	6.19	33	3.96	26	2.53	21
	142	8.94	39	5.72	31	3.66	25
	165	12.14	46	7.77	37	4.97	30
	212	20.16	54	12.90	43	8.26	34
4	142	6.34	28	4.06	22	2.60	18
	165	8.61	35	5.51	28	3.53	22
	189	11.11	40	7.11	32	4.55	26
	236	16.78	48	10.74	38	6.87	30
	283	24.92	55	15.95	44	10.21	35
5	142	4.44	26	2.84	21	1.82	17
	189	7.86	35	5.03	28	3.22	22
	236	12.30	43	7.87	34	5.04	27
	283	17.66	48	11.30	38	7.23	30
	330	24.02	55	15.37	44	9.84	35
6	189	6.19	29	3.96	23	2.53	18
	236	9.64	36	6.17	29	3.95	23
	283	13.89	44	8.89	35	5.69	28
	330	18.86	49	12.07	39	7.72	31
	378	24.69	55	15.80	44	10.11	35

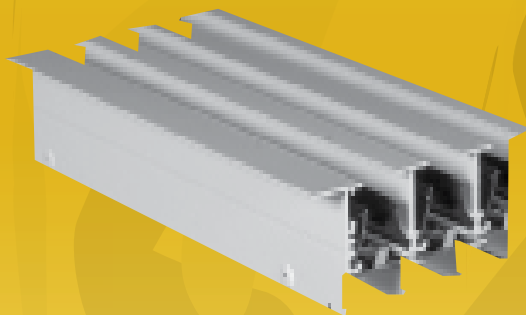
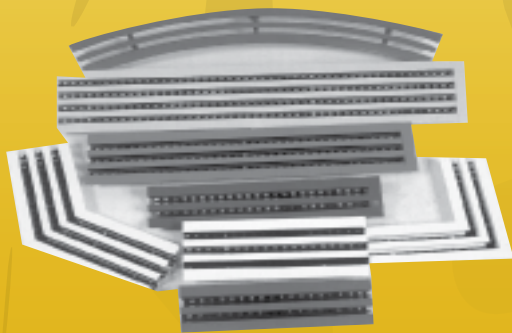
SYMBOLS

- L/S : Air volume in liter per second.
 P/s : Negative static pressure in millimeters water gauge.
 NC : Noise Criteria.

CONDITIONS

- *Return
 *Damper is full open.
 *Noise Criteria values are based on(10 db) room attenuation
 *The tested specimens were of 1000mm length

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