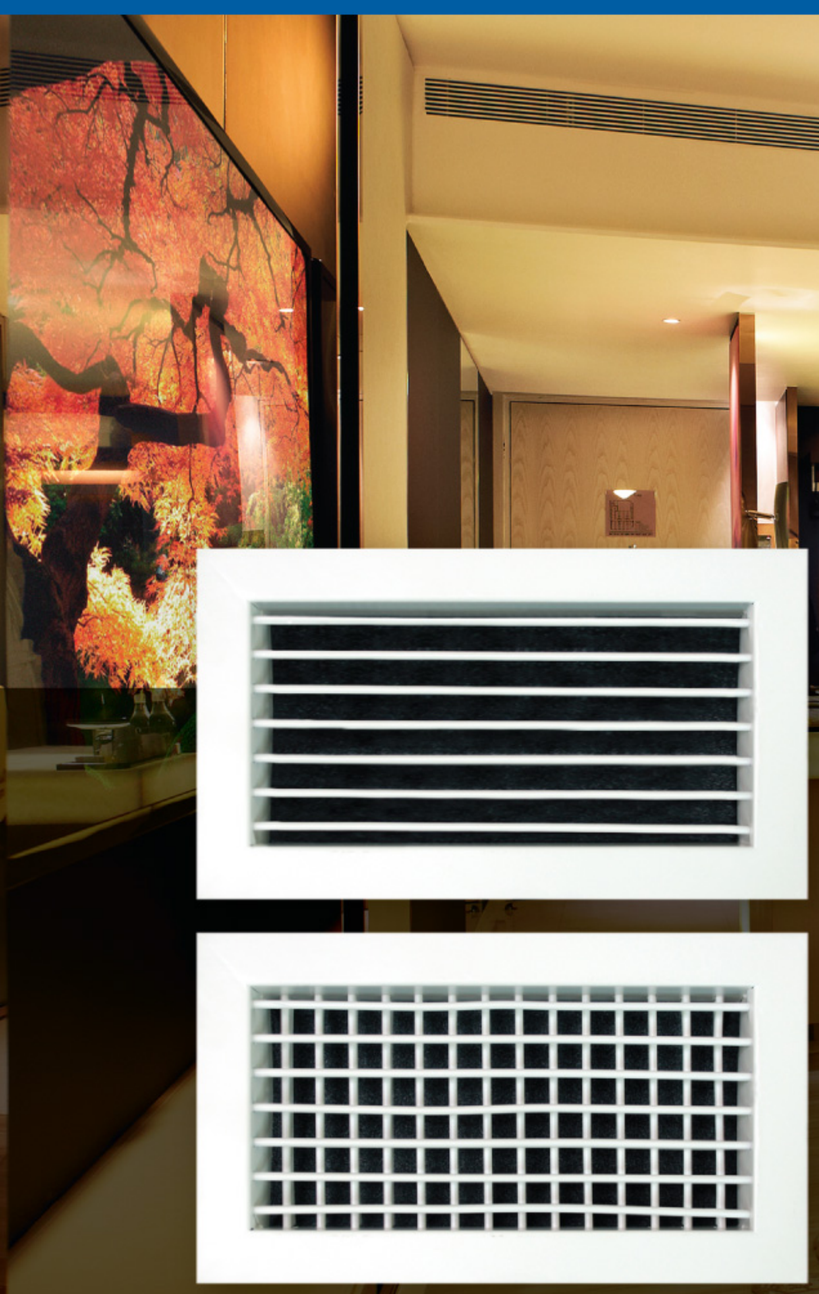
PrudentAire®

SD DD *Single & Double Deflection*

SYSTEM CERTIFICATION BMTRADA ISO 9001 · UKAS MANAGEMENT SYSTEMS 012 · MALAYSIA Power Brand 2011 MARK OF QUALITY · MADE IN MALAYSIA

SD DD | *Single & Double Deflection*



Introduction

Equipped with both horizontal or/and vertical deflection blades, the Deflection Grilles (Single & Double Deflection, SD/DD) are able to have adjustable flow pattern and threw length and thus providing the required air diffusion pattern (Double Deflection) and exhaust/return applications (Single Deflection).

Both horizontal and vertical blades adjustments are done manually easily without compromising the firmness of blade positions.

Adjustable flow pattern and threw length are achieved with horizontal blades directing the flow pattern and vertical blades adjusting throw length and jet width.

CONSTRUCTIONS & MATERIALS

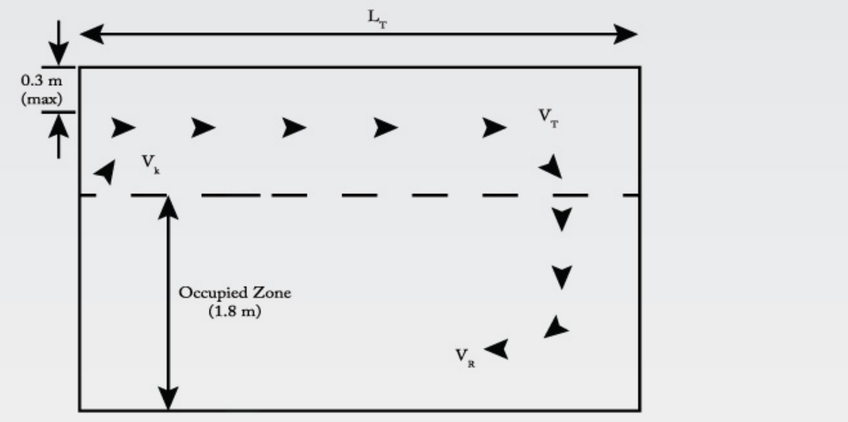
- Average of 56% effective area
- Vanes pitch of 20mm
- Grille sizing:
  i) Minimum size: 100mm x 100mm
  ii) Maximum size: 2400mm x 1200mm
- Stainless steel construction avaliable

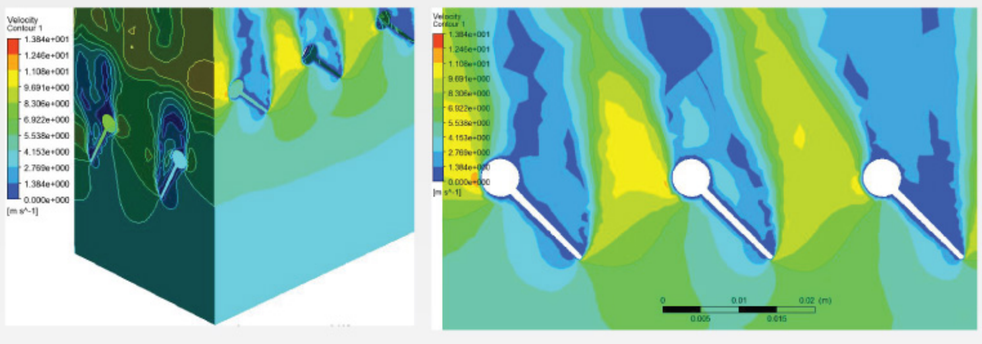
Frames

AL	GI
1.2mm	0.6mm
Extruded Aluminium	Galvanized Steel

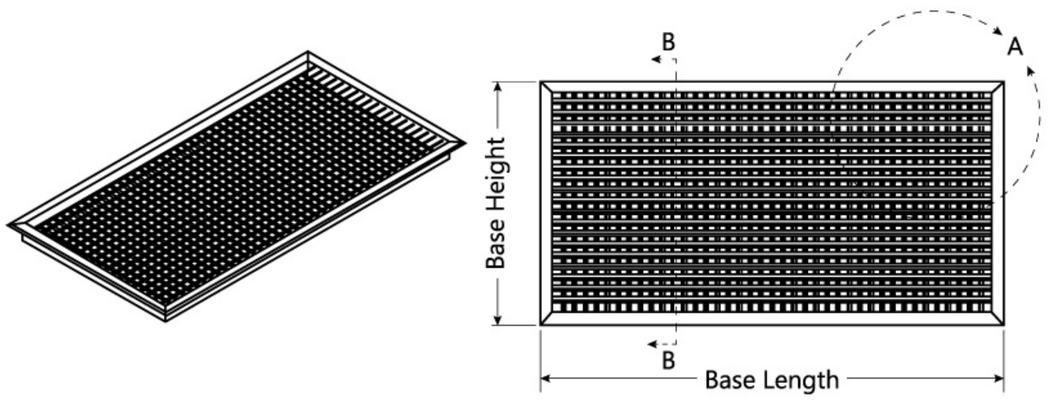
Vanes

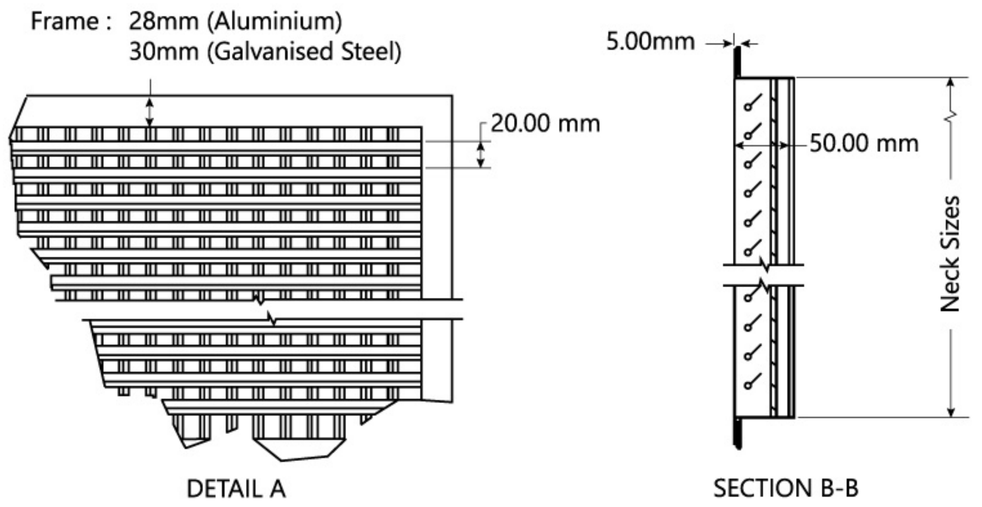
AL	GI
1.0mm	0.5 - 1.0mm
Extruded Aluminium	Galvanized Steel (Size Dependent)





DIMENSIONS



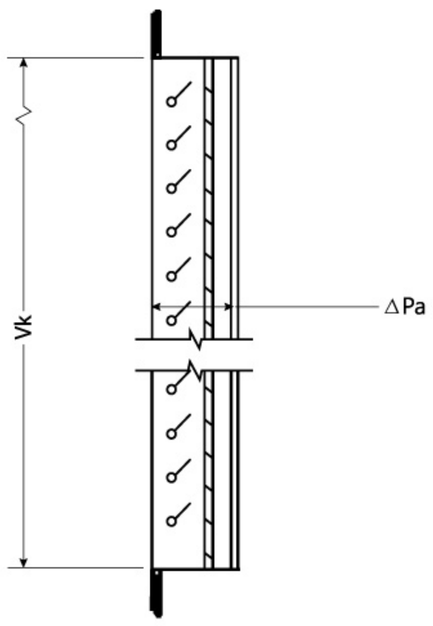


Correction Factors

Conditions	15° Deflection	20° Deflection	40° Deflection
Effective Area (m^2)	x 0.95	x 0.87	x 0.80
V_K	x 1.05	x 1.15	x 1.25
Pressure Lost(Pa)	+ 1.0	+ 1.1	+ 1.2
NR	+ 0	+ 3	+ 5
L_T (m)	x 0.95	x 0.85	x 0.75
Induction Ratio, i	x 1.1	x 1.4	x 2
Temperature Quotient	x 1.1	x 1.4	x 2
Ceiling Distance(>0.9m)	L_T x 0.75	L_T x 0.75	L_T x 0.75

TECHNICAL PERFORMANCE DATA

Supply (Double Deflection)

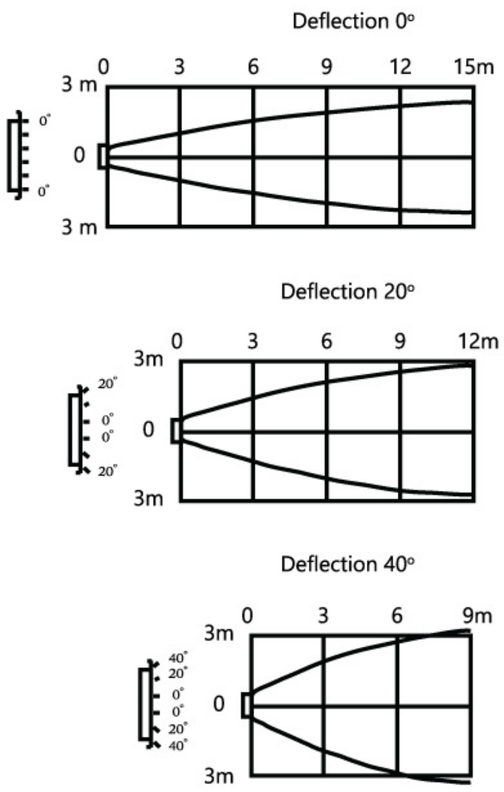


* Diffuser performance data factored in 0° deflection, coanda effect & fully opened Radial OBD conditions.

* The effective area given is to the best estimation & knowledge of Prudentaire's engineers at the point of entry.

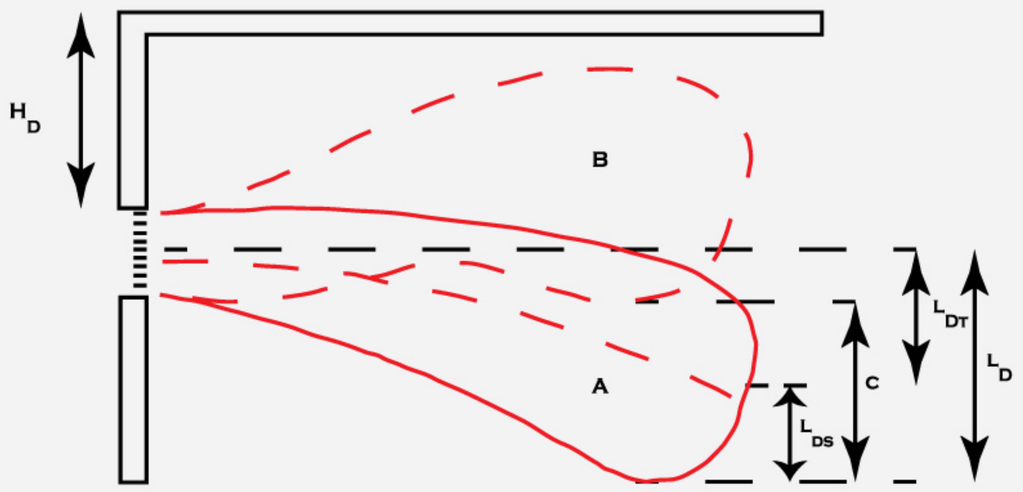
Grille Neck Size, mm	Neck Area (Eff. Area) m^2	Unit Volume Flowrate, m^3/hr Unit Volume Flowrate, l/s	250 70	500 140	800 224	1000 280	1400 392	1600 448	2000 560	2500 588	3000 840
			NR25	NR35	NR40	NR45					
200 x 200	0.04 (0.016)	Throw Distance (0.25 m/s), m Face Velocity, m/s Total Pressure Loss, Pa Noise Rating (NR) Temperature Quotient Induction Ratio	5.5 4.3 12.5 20 0.15 12	11 8.7 55 42 0.075 >20	16 13.9 >80 >50 - -	- - - - - -	- - - - - -	- - - - - -	- - - - - -	- - - - - -	- - - - - -
200 x 500	0.1 (0.051)	Throw Distance (0.25 m/s), m Face Velocity, m/s Total Pressure Loss, Pa Noise Rating (NR) Temperature Quotient Induction Ratio	- - - - - -	6.0 2.7 5.5 <20 0.24 7.8	9.5 4.4 12.5 25 0.15 12	11.5 5.4 22 33 12.2 14.5	16 7.6 45 44 - -	19 8.7 55 49 - -	34 10.9 >80 >50 - -	- - - - - -	- - - - - -
			NR25	NR35	NR40	NR45					
300 x 300	0.09 (0.039)	Throw Distance (0.25 m/s), m Face Velocity, m/s Total Pressure Loss, Pa Noise Rating (NR) Temperature Quotient Induction Ratio	- - - - - -	7.0 3.6 10 <20 0.18 10	11 5.7 23 32 0.115 16	13 7.1 38 37 0.095 18.5	17 10.0 78 48 - -	23 11.4 >80 >50 - -	- - - - - -	- - - - - -	- - - - - -
300 x 800	0.24 (0.113)	Throw Distance (0.25 m/s), m Face Velocity, m/s Total Pressure Loss, Pa Noise Rating (NR) Temperature Quotient Induction Ratio	- - - - - -	- - - - - -	6.0 2.0 3.0 <10 0.34 5.4	7.0 2.5 4.5 <20 0.27 6.2	11 3.4 9.0 18 0.18 10	13 3.9 12 23 0.15 12	15 4.9 17 30 0.13 13.5	18 6.1 27 37 - -	30 7.4 45 42 - -
300 x 1200	0.36 (0.179)	Throw Distance (0.25 m/s), m Face Velocity, m/s Total Pressure Loss, Pa Noise Rating (NR) Temperature Quotient Induction Ratio	- - - - - -	- - - - - -	- - - - - -	- - - - - -	8.8 2.2 3.5 <10 0.3 6.5	11 2.5 4.5 <20 0.23 8.0	13 3.1 7.0 18 0.19 9.5	16 3.9 11.5 27 - -	18 4.7 16 31 - -

Supply (Double Deflection)

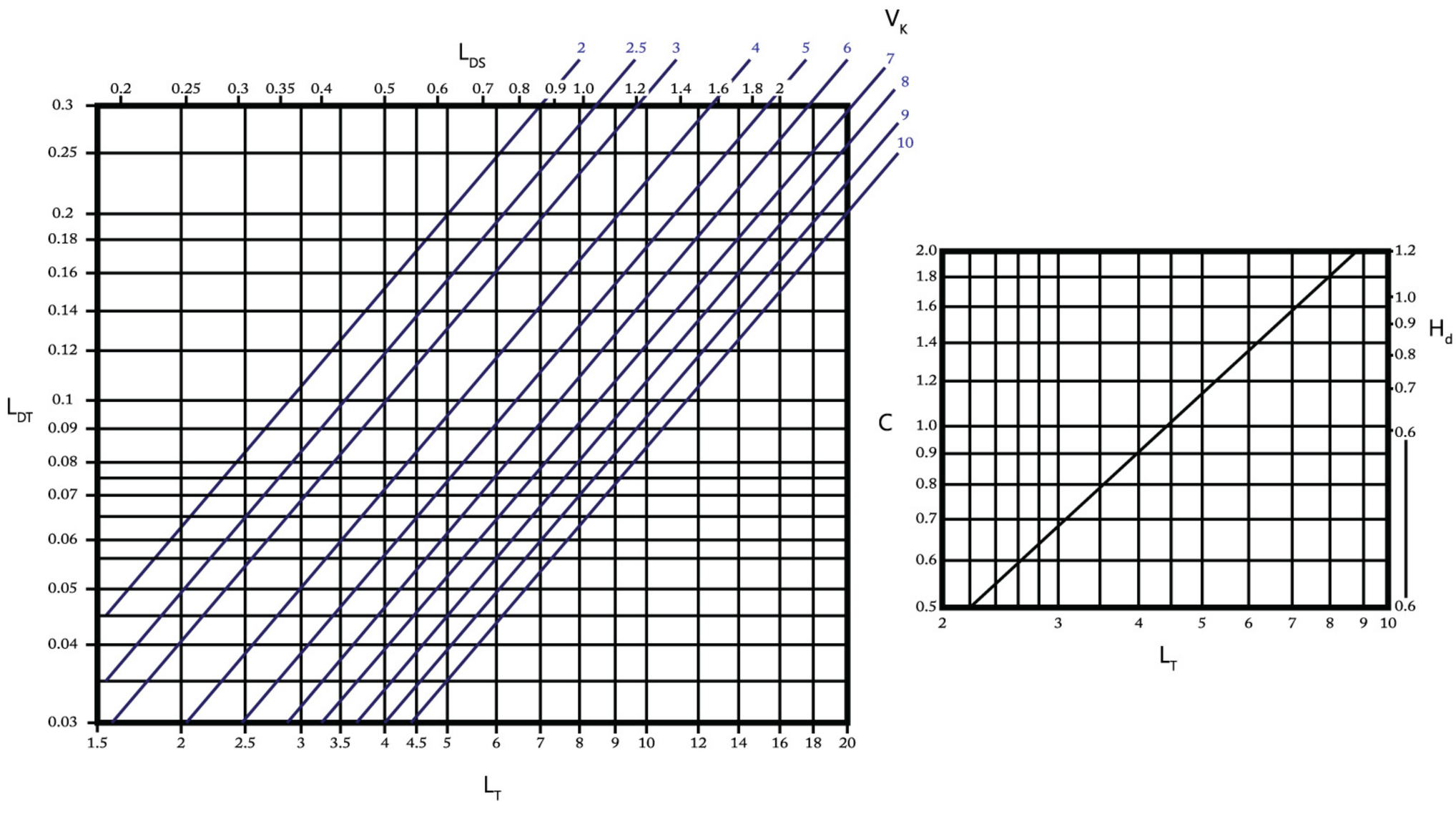


Grille Neck Size, mm	Neck Area (Eff. Area) m^2	Unit Volume Flowrate, m^3/hr Unit Volume Flowrate, l/s	250 70	500 140	800 224	1000 280	1400 392	1600 448	2000 560	2500 588	3000 840
			NR25	NR35	NR40				NR50		
400 x 400	0.16 (0.084)	Throw Distance (0.25 m/s), m Face Velocity, m/s Total Pressure Loss, Pa Noise Rating (NR) Temperature Quotient Induction Ratio	- - - - - -	- - - - - -	7.5 2.6 5.0 <20 0.22 7.5	9.0 3.3 7.5 19 0.2 9.2	13 4.6 15 32 0.14 13	16 5.3 20 37 - -	18 6.6 30 42 - -	34 8.3 50 50 - -	33 9.9 78 >50 - -
400 x 800	0.32 (0.179)	Throw Distance (0.25 m/s), m Face Velocity, m/s Total Pressure Loss, Pa Noise Rating (NR) Temperature Quotient Induction Ratio	- - - - - -	- - - - - -	- - - - - -	6.2 1.6 <2 <10 0.5 4.5	9.8 2.2 3.5 <20 0.27 7.0	11 2.5 4.5 18 0.22 8.0	13 3.1 7.2 23 0.19 9.5	17 3.9 11 31 - -	19 4.7 17 35 - -
400 x 1200	0.48 (0.270)	Throw Distance (0.25 m/s), m Face Velocity, m/s Total Pressure Loss, Pa Noise Rating (NR) Temperature Quotient Induction Ratio	- - - - - -	- - - - - -	- - - - - -	- - - - - -	- - - - - -	8.5 1.6 <3 <10 0.37 5.5	11 2.1 3.1 <20 0.28 7.2	13 2.6 5.0 18 0.24 8.5	16 3.1 7.0 22 - -
			NR25	NR35	NR40	NR50					
500 x 500	0.09 (0.039)	Throw Distance (0.25 m/s), m Face Velocity, m/s Total Pressure Loss, Pa Noise Rating (NR) Temperature Quotient Induction Ratio	- - - - - -	- - - - - -	6.0 1.5 <3 <10 0.34 5.4	7.0 1.9 <3 <20 0.27 6.2	11 2.7 5.0 18 0.18 10	13 3.1 6.5 23 0.15 12	15 3.8 10 30 0.13 13.5	18 4.8 16 37 - -	30 5.7 24 42 - -
500 x 1200	0.60 (0.367)	Throw Distance (0.25 m/s), m Face Velocity, m/s Total Pressure Loss, Pa Noise Rating (NR) Temperature Quotient Induction Ratio	- - - - - -	- - - - - -	- - - - - -	- - - - - -	- - - - - -	- - - - - -	- - - - - -	- - - - - -	14 2.3 3.5 <20 0.09 7.0

Drop Correction



Label	Description
A	Envelope of non-isothermal air stream without drop correction
B	Envelope of a non-isothermal air stream with drop correction
L_{DS}	Distance between the centre of an air current and the lowest point of the envelope
L_{DT}	Distance between the centre of the grille core and the air current centerline
C	Correction factor, m
L_T	Throw distance, m
H_d	Grilles-Ceiling height, m



Airstream Drop

The total drop is the maximum vertical distance between the centre of a grille core and the lowest point of a specified enveloper, determined by the envelope velocity V_T.

The total drop consist of two elements :

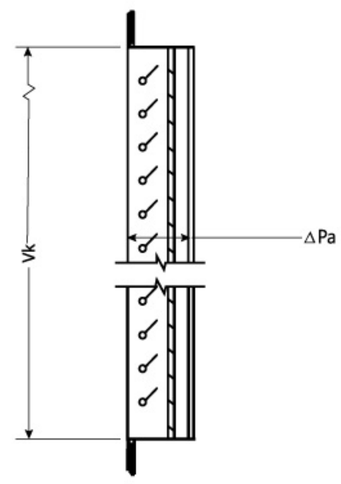
$$L_D = L_{DS} + L_{DT}$$

Drop Correction L_D

Drop correction is possible by projecting the air current upward, with supply grille having adjustable horizontal bars. The drop effect can be significantly corrected if the air is projected upward 15° to 20°, as shown in the drop correction diagram. The correction factors "C" in the diagram are only valid if the minimum distance Hd between the centre of the grille and the ceiling is maintained.

TECHNICAL PERFORMANCE DATA

Exhaust (Single Deflection)



Grille Neck Size, mm	Neck Area (Eff. Area) m²	Unit Volume Flowrate, m³/hr Unit Volume Flowrate, l/s	250 70	300 84	400 112	500 140	600 168	800 224	1000 280	1500 420	2000 560
100 x 250	0.025 (0.010)	Face Velocity, m/s Total Pressure Loss, Pa Noise Rating (NR)	6.9 7.0 35	8.3 9.0 40	11.1 17 >50	- - -	- - -	- - -	- - -	- - -	- - -
100 x 300	0.03 (0.012)	Face Velocity, m/s Total Pressure Loss, Pa Noise Rating (NR)	5.8 5.0 27	6.9 34 33	9.3 12 46	11.6 18 >50	- - -	- - -	- - -	- - -	- - -
100 x 400	0.04 (0.016)	Face Velocity, m/s Total Pressure Loss, Pa Noise Rating (NR)	4.3 2.7 20	5.2 4.0 26	6.9 34 37	8.7 12 45	10.4 16 >50	- - -	- - -	- - -	- - -
100 x 500	0.05 (0.020)	Face Velocity, m/s Total Pressure Loss, Pa Noise Rating (NR)	3.5 2 <20	4.2 2.7 <20	5.6 4.7 29	6.9 34 36	8.3 9.0 43	11.1 17 >50	- - -	- - -	- - -

* The effective area given is to the best estimation & knowledge of Prudentaire's engineers at the point of entry.

150 x 300	0.045 (0.020)	Face Velocity, m/s Total Pressure Loss, Pa Noise Rating (NR)	3.5 2 <20	4.2 2.7 <20	5.6 4.7 29	6.9 34 36	8.3 9.0 43	11.1 17 >50	- - -	- - -	- - -
150 x 500	0.075 (0.033)	Face Velocity, m/s Total Pressure Loss, Pa Noise Rating (NR)	- - -	- - -	3.4 2 <20	4.2 2.7 21	5.1 4.0 27	6.7 7.0 37	8.4 9.0 46	12.6 22 >50	- - -
150 x 600	0.090 (0.037)	Face Velocity, m/s Total Pressure Loss, Pa Noise Rating (NR)	- - -	- - -	3.0 <2 <20	3.8 2.5 <20	4.5 3.0 23	6.0 5.0 35	7.5 8.0 42	11.3 18 >50	- - -
150 x 800	0.12 (0.054)	Face Velocity, m/s Total Pressure Loss, Pa Noise Rating (NR)	- - -	- - -	- - -	- - -	3.1 <2 <20	4.1 2.7 25	5.1 4.0 34	7.7 9.0 46	10.3 15 >50

200 x 500	0.1 (0.045)	Face Velocity, m/s Total Pressure Loss, Pa Noise Rating (NR)	- - -	- - -	- - -	- - -	3.7 2.5 <20	4.9 3.7 28	6.2 5.5 37	9,3 12 50	12.3 22 >50
200 x 600	0.12 (0.054)	Face Velocity, m/s Total Pressure Loss, Pa Noise Rating (NR)	- - -	- - -	- - -	- - -	- - -	4.1 2.6 22	5.1 4.0 30	7.7 9.0 43	10.3 16 >50
200 x 800	0.16 (0.071)	Face Velocity, m/s Total Pressure Loss, Pa Noise Rating (NR)	- - -	- - -	- - -	- - -	- - -	3.1 <2 <20	3.9 2.5 23	5.9 4.7 34	7.8 9.0 47
200 x 1000	0.2 (0.092)	Face Velocity, m/s Total Pressure Loss, Pa Noise Rating (NR)	- - -	- - -	- - -	- - -	- - -	- - -	3.0 <2 <20	4.5 3.0 25	6.0 5.0 37

300 x 500	0.15 (0.071)	Face Velocity, m/s Total Pressure Loss, Pa Noise Rating (NR)	- - -	- - -	- - -	- - -	- - -	3.1 <2 <20	3.9 2.5 23	5.9 4.7 34	7.8 9.0 47
300 x 600	0.18 (0.084)	Face Velocity, m/s Total Pressure Loss, Pa Noise Rating (NR)	- - -	- - -	- - -	- - -	- - -	- - -	3.3 <2 <20	5.0 3.8 30	6.6 6.2 43
300 x 800	0.24 (0.114)	Face Velocity, m/s Total Pressure Loss, Pa Noise Rating (NR)	- - -	- - -	- - -	- - -	- - -	- - -	- - -	3.7 2.5 20	4.9 3.7 32
300 x 1000	0.3 (0.143)	Face Velocity, m/s Total Pressure Loss, Pa Noise Rating (NR)	- - -	- - -	- - -	- - -	- - -	- - -	- - -	- - -	3.9 2.5 23

TECHNICAL PERFORMANCE DATA

Single Deflection Grille

ALUMINIUM TECHNICAL SPECIFICATION

Frame Construction
1. Frame to be in extruded aluminium. Frame thickness should be in minimum 1.2mm thick, unless otherwise stated.
2. The margin to be in 28mm from the neck height to the edge.
3. Frame height to be in 40mm.
4. The corner of the frame should be pressed with a 90° corner piece to ensure the frames are in 90°.
5. Removable core designs are available upon request.

Vanes Construction
1. Vanes to be in extruded aluminium.
2. Vanes to be in 1.0mm thick aerofoil design to provide a better air pattern.
3. Vanes are arranged with single layer only and able to be adjusted individually.
4. Vanes pitch to be in 20mm.

Finishing
1. Finishing should be in powder coated RAL 9010 SG white matt, unless otherwise stated.

Performance
1. Free area of the grill to be in 56%.
2. Vanes angle should be with pre-set 90° and adjustable individually.
3. Single Deflection Grilles are designed to be installed as wall mounted as an exhaust or return opening.

GALVANIZED STEEL TECHNICAL SPECIFICATION

Frame Construction
1. Frame to be in galvanized steel. Frame thickness should be in minimum 0.6mm thick, unless otherwise stated.
2. The margin to be in 30mm from the neck height to the edge.
3. Frame height to be in 40mm.
4. Removable core designs are available upon request.

Vanes Construction
1. Vanes to be in extruded aluminium.
2. Vanes to be in 1.0mm thick aerofoil design to provide a better air pattern.
3. Vanes are arranged with single layer only and able to be adjusted individually.
4. Vanes pitch to be in 20mm.

Finishing
1. Finishing should be in powder coated RAL 9010 SG white matt, unless otherwise stated.

Performance
1. Free area of the grill to be in 56%.
2. Vanes angle should be with pre-set 90° and adjustable individually.
3. Single Deflection Grilles are designed to be installed as wall mounted as an exhaust or return opening.

Double Deflection Grille

ALUMINIUM TECHNICAL SPECIFICATION

Frame Construction
1. Frame to be in extruded aluminium. Frame thickness should be in minimum 1.2mm thick, unless otherwise stated.
2. The margin to be in 28mm from the neck height to the edge.
3. Frame height to be in 50mm.
4. The corner of the frame should be pressed with a 90° corner piece to ensure the frames are in 90°.
5. Removable core designs are available upon request.

Vanes Construction
1. Vanes to be in extruded aluminium.
2. Vanes to be in 1.0mm thick aerofoil design to provide a better air pattern.
3. Vanes are arranged with double layer and able to be adjusted 4 directional individually.
4. Vanes pitch to be in 20mm.

Finishing
1. Finishing should be in powder coated RAL 9010 SG white matt, unless otherwise stated.

Performance
1. Free area of the grill to be in 52%.
2. Vanes angle should be with pre-set 90° and adjustable individually to achieved to required air pattern.
3. Double Deflection Grilles are designed to be installed as wall mounted as a supply air or return air opening.

GALVANIZED STEEL TECHNICAL SPECIFICATION

Frame Construction
1. Frame to be in galvanized steel. Frame thickness should be in minimum 0.6mm thick, unless otherwise stated.
2. The margin to be in 30mm from the neck height to the edge.
3. Frame height to be in 50mm.
4. Removable core designs are available upon request.

Vanes Construction
1. Vanes to be in extruded aluminium.
2. Vanes to be in 1.0mm thick aerofoil design to provide a better air pattern.
3. Vanes are arranged with Double layer and able to be adjusted 4 directional individually.
4. Vanes pitch to be in 20mm.

Finishing
1. Finishing should be in powder coated RAL 9010 SG white matt, unless otherwise stated.

Performance
1. Free area of the grill to be in 52%.
2. Vanes angle should be with pre-set 90° and adjustable individually to achieved required air throw pattern.
3. Double Deflection Grilles are designed to be installed as wall mounted as a supply air or return air opening.

AVAILABLE TYPES

Fixed

Removable Type

Round

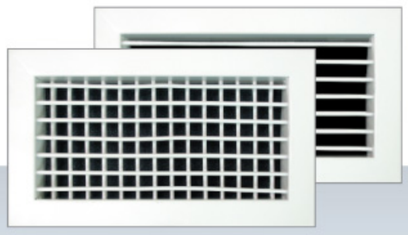
Fixed

Removable Type

Round

GRILLE + ACCESSORIES COMBINATION

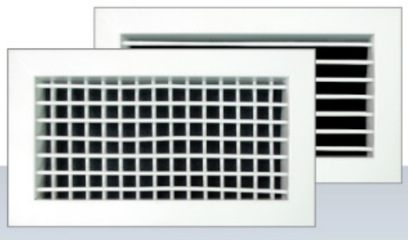
A



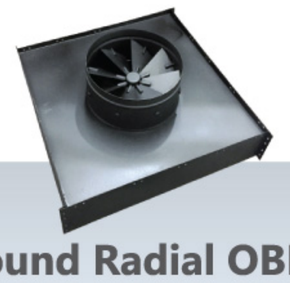
SD / DD

Square OBD

B

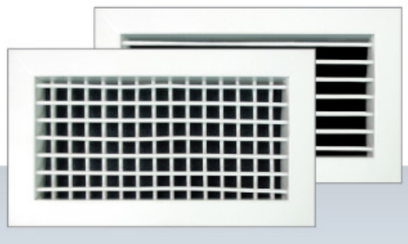


SD / DD



Round Radial OBD

C

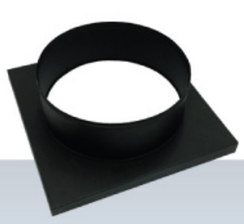


SD / DD

Round Butterfly OBD

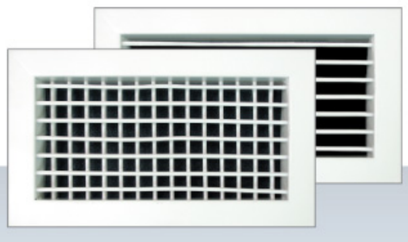
D

SD / DD



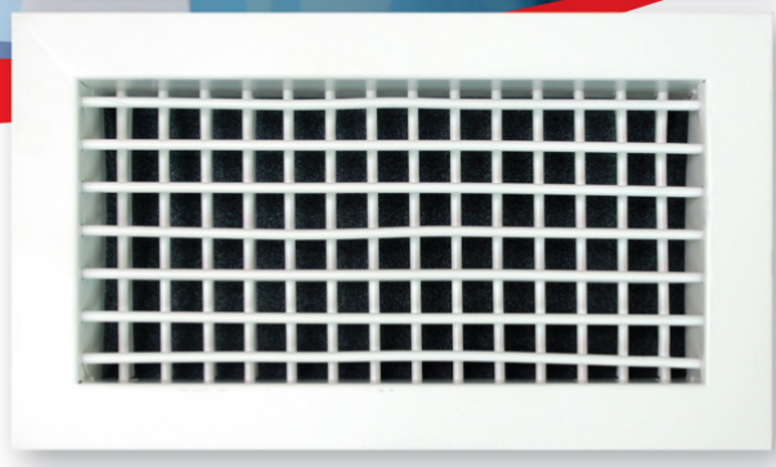
Round Collar

E



SD / DD

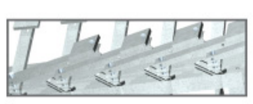
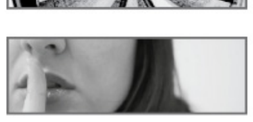
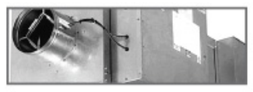
Square OBD + Round Collar



SD & DD

Single & Double Deflection

Products Range

- Grilles
- Diffusers
- Dampers 
- Fire & Smoke Protection
- VAV
- Others 
- Accessories 

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