



SD DD *Single & Double
Deflection Grille*



Introduction

Equipped with both horizontal or/and vertical deflection blades, Prudent Aire Deflection Grilles (Single & Double Deflection, SD/DD) are able to have adjustable flow pattern and throw 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 throw length are achieved with horizontal blades directing the flow pattern and vertical blades adjusting throw length and jet width.

CONSTRUCTIONS & MATERIALS

- Standard 86% (SD) & 74% (DD) free area
- Vanes pitch of 20mm
- Grille sizing:
 - Minimum size: BS.150mm x 150mm
 - Maximum size: BS.3000mm x 1400mm
- Stainless steel construction available

Frames



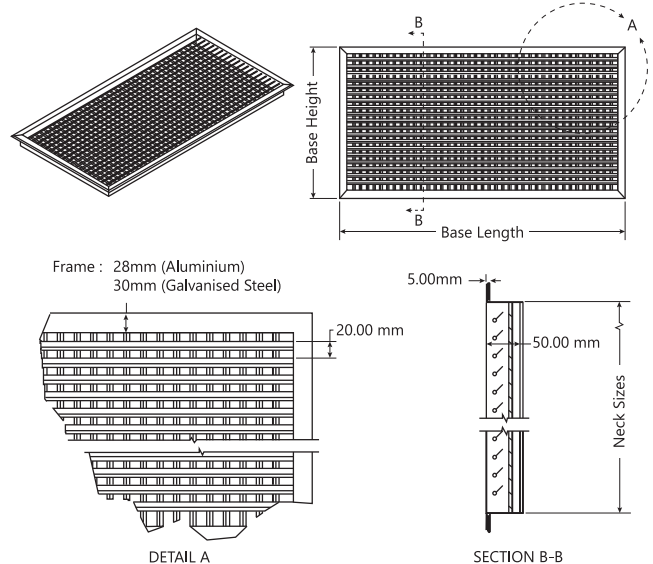
Vanes



Surface Finishing

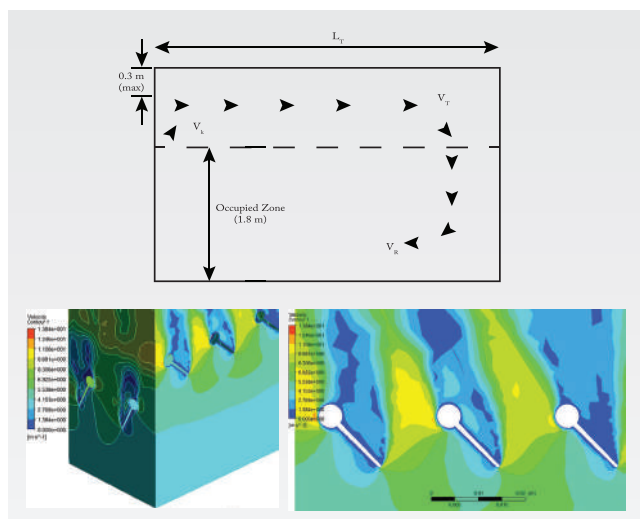


DIMENSIONS

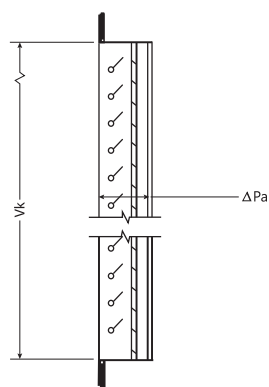


Correction Factors

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



Supply (Double Deflection Grille)



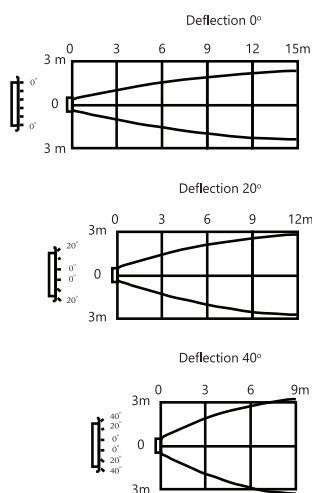
* Diffuser performance data factored in 0° deflection, coanda effect & fully opened Radial OBD conditions.

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

Reflection Grille)			NR25	NR35	NR40	NR45					
Grille Neck Size, mm	Neck Area (Eff. Area) m²	Unit Volume Flowrate, m³/hr Unit Volume Flowrate, l/s	250 70	500 140	800 224	1000 280	1400 392	1600 448	2000 560	2500 588	3000 840
200 x 200	0.04 (0.016)	Throw Distance (0.25 m/s), m	5.5	11	16	-	-	-	-	-	-
		Face Velocity, m/s	4.3	8.7	13.9	-	-	-	-	-	-
		Total Pressure Loss, Pa	12.5	55	>80	-	-	-	-	-	-
		Noise Rating (NR)	20	42	>50	-	-	-	-	-	-
		Temperature Quotient	0.15	0.075	-	-	-	-	-	-	-
		Induction Ratio	12	>20	-	-	-	-	-	-	-
200 x 500	0.10 (0.052)	Throw Distance (0.25 m/s), m	-	6.0	9.5	11.5	16	19	34	-	-
		Face Velocity, m/s	-	2.7	4.4	5.4	7.6	8.7	10.9	-	-
		Total Pressure Loss, Pa	-	5.5	12.5	22	45	55	>80	-	-
		Noise Rating (NR)	-	<20	25	33	44	49	>50	-	-
		Temperature Quotient	-	0.24	0.15	12.2	-	-	-	-	-
		Induction Ratio	-	7.8	12	14.5	-	-	-	-	-

					NR25	NR35	NR40	NR45			
300 x 300 (0.039)	0.09	Throw Distance (0.25 m/s), m	-	7.0	11	13	17	23	-	-	-
		Face Velocity, m/s	-	3.6	5.7	7.1	10.0	11.4	-	-	-
		Total Pressure Loss, Pa	-	10	23	38	78	>80	-	-	-
		Noise Rating (NR)	-	<20	32	37	48	>50	-	-	-
		Temperature Quotient	-	0.18	0.115	0.095	-	-	-	-	-
		Induction Ratio	-	10	16	18.5	-	-	-	-	-
300 x 800 (0.113)	0.24 (0.113)	Throw Distance (0.25 m/s), m	-	-	6.0	7.0	11	13	15	18	30
		Face Velocity, m/s	-	-	2.0	2.5	3.4	3.9	4.9	6.1	7.4
		Total Pressure Loss, Pa	-	-	3.0	4.5	9.0	12	17	27	45
		Noise Rating (NR)	-	-	<10	<20	18	23	30	37	42
		Temperature Quotient	-	-	0.34	0.27	0.18	0.15	0.13	-	-
		Induction Ratio	-	-	5.4	6.2	10	12	13.5	-	-
300 x 1200	0.36 (0.174)	Throw Distance (0.25 m/s), m	-	-	-	-	8.8	11	13	16	18
		Face Velocity, m/s	-	-	-	-	2.2	2.5	3.1	3.9	4.7
		Total Pressure Loss, Pa	-	-	-	-	3.5	4.5	7.0	11.5	16
		Noise Rating (NR)	-	-	-	-	<10	<20	18	27	31
		Temperature Quotient	-	-	-	-	0.3	0.23	0.19	-	-
		Induction Ratio	-	-	-	-	6.5	8.0	9.5	-	-

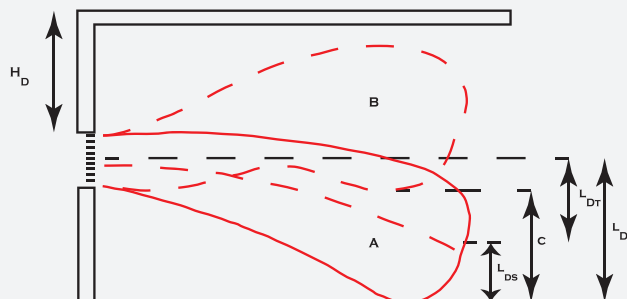
Supply (Double Deflection Grille)



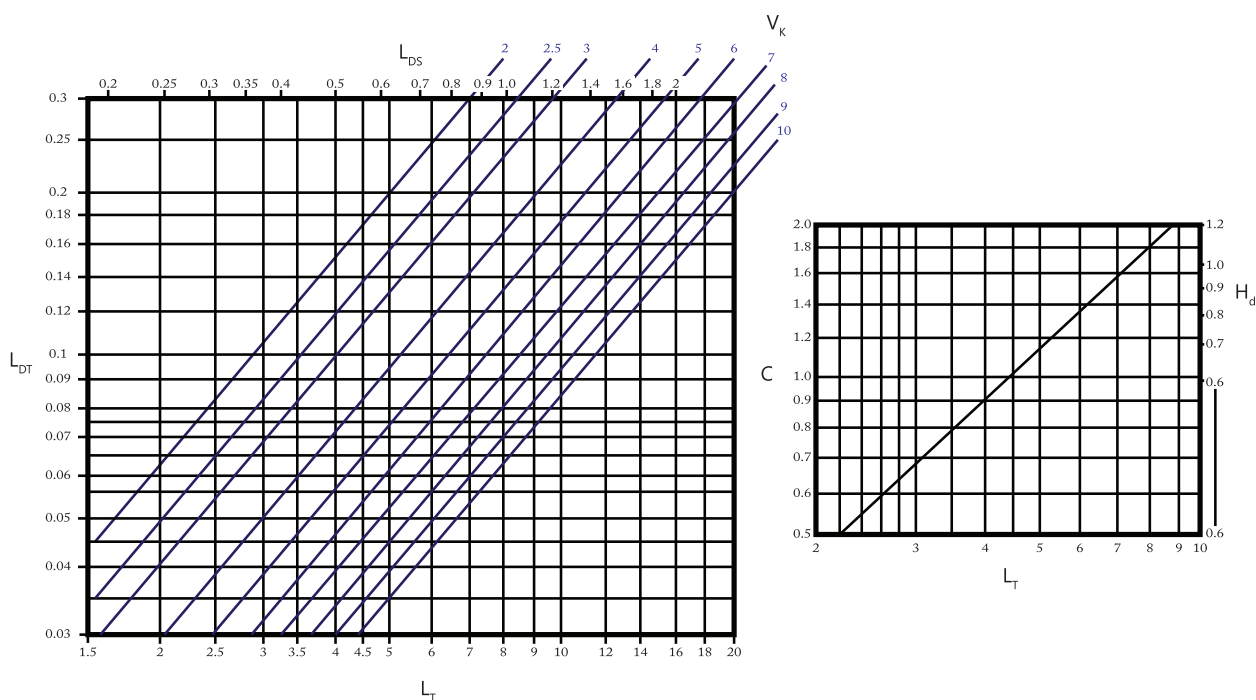
Flexion Grille)							NR25	NR35	NR40	NR50	
Grille Neck Size, mm	Neck Area (Eff. Area) m²	Unit Volume Flowrate, m³/hr Unit Volume Flowrate, l/s	250 70	500 140	800 224	1000 280	1400 392	1600 448	2000 560	2500 588	3000 840
400 x 400	0.16 (0.084)	Throw Distance (0.25 m/s), m	-	-	7.5	9.0	13	16	18	34	33
		Face Velocity, m/s	-	-	2.6	3.3	4.6	5.3	6.6	8.3	9.9
		Total Pressure Loss, Pa	-	-	5.0	7.5	15	20	30	50	78
		Noise Rating (NR)	-	-	<20	19	32	37	42	50	>50
		Temperature Quotient	-	-	0.22	0.2	0.14	-	-	-	-
		Induction Ratio	-	-	7.5	9.2	13	-	-	-	-
400 x 800	0.32 (0.174)	Throw Distance (0.25 m/s), m	-	-	-	6.2	9.8	11	13	17	19
		Face Velocity, m/s	-	-	-	1.6	2.2	2.5	3.1	3.9	4.7
		Total Pressure Loss, Pa	-	-	-	<2	3.5	4.5	7.2	11	17
		Noise Rating (NR)	-	-	-	<10	<20	18	23	31	35
		Temperature Quotient	-	-	-	0.5	0.27	0.22	0.19	-	-
		Induction Ratio	-	-	-	4.5	7.0	8.0	9.5	-	-
400 x 1200	0.48 (0.258)	Throw Distance (0.25 m/s), m	-	-	-	-	-	8.5	11	13	16
		Face Velocity, m/s	-	-	-	-	-	1.6	2.1	2.6	3.1
		Total Pressure Loss, Pa	-	-	-	-	-	<3	3.1	5.0	7.0
		Noise Rating (NR)	-	-	-	-	-	<10	<20	18	22
		Temperature Quotient	-	-	-	-	-	0.37	0.28	0.24	-
		Induction Ratio	-	-	-	-	-	5.5	7.2	8.5	-

									NR25	NR35	NR40	NR50
500 x 500 (0.143)	0.25	Throw Distance (0.25 m/s), m	-	-	6.0	7.0	11	13	15	18	30	
		Face Velocity, m/s	-	-	1.5	1.9	2.7	3.1	3.8	4.8	5.7	
		Total Pressure Loss, Pa	-	-	<3	<3	5.0	6.5	10	16	24	
		Noise Rating (NR)	-	-	<10	<20	18	23	30	37	42	
		Temperature Quotient	-	-	0.34	0.27	0.18	0.15	0.13	-	-	
		Induction Ratio	-	-	5.4	6.2	10	12	13.5	-	-	
500 x 1200 (0.365)	0.60	Throw Distance (0.25 m/s), m	-	-	-	-	-	-	-	-	14	
		Face Velocity, m/s	-	-	-	-	-	-	-	-	-	2.3
		Total Pressure Loss, Pa	-	-	-	-	-	-	-	-	-	3.5
		Noise Rating (NR)	-	-	-	-	-	-	-	-	-	<20
		Temperature Quotient	-	-	-	-	-	-	-	-	-	0.09
		Induction Ratio	-	-	-	-	-	-	-	-	-	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 envelope, determined by the envelope velocity V_K .

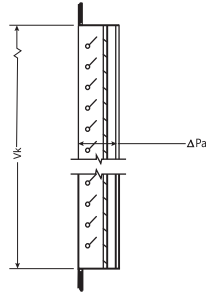
The total drop consist of two elements :

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

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 H_d between the centre of the grille and the ceiling is maintained.

Exhaust (Single Deflection Grille)



Grille Neck Size, mm	Neck Area (Eff. Area) m ²	Unit Volume Flowrate, m ³ /hr Unit Volume Flowrate, l/s	NR25	NR35	NR40							
			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	6.9	8.3	11.1	-	-	-	-	-	-	
		Total Pressure Loss, Pa	7.0	9.0	17	-	-	-	-	-	-	
		Noise Rating (NR)	35	40	>50	-	-	-	-	-	-	
100 x 300	0.03 (0.012)	Face Velocity, m/s	5.8	6.9	9.3	11.6	-	-	-	-	-	
		Total Pressure Loss, Pa	5.0	34	12	18	-	-	-	-	-	
		Noise Rating (NR)	27	33	46	>50	-	-	-	-	-	
100 x 400	0.04 (0.016)	Face Velocity, m/s	4.3	5.2	6.9	8.7	10.4	-	-	-	-	
		Total Pressure Loss, Pa	2.7	4.0	34	12	16	-	-	-	-	
		Noise Rating (NR)	20	26	37	45	>50	-	-	-	-	
100 x 500	0.05 (0.020)	Face Velocity, m/s	3.5	4.2	5.6	6.9	8.3	11.1	-	-	-	
		Total Pressure Loss, Pa	2	2.7	4.7	34	9.0	17	-	-	-	
		Noise Rating (NR)	<20	<20	29	36	43	>50	-	-	-	

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

			NR25	NR35	NR40	NR50					
			150 42	200 56	250 70	300 84	400 112	500 140	600 168	800 224	1000 280
150 x 300	0.045 (0.020)	Face Velocity, m/s	3.5	4.2	5.6	6.9	8.3	11.1	-	-	-
		Total Pressure Loss, Pa	2	2.7	4.7	34	9.0	17	-	-	-
		Noise Rating (NR)	<20	<20	29	36	43	>50	-	-	-
150 x 500	0.075 (0.033)	Face Velocity, m/s	-	-	3.4	4.2	5.1	6.7	8.4	12.6	-
		Total Pressure Loss, Pa	-	-	2	2.7	4.0	7.0	9.0	22	-
		Noise Rating (NR)	-	-	<20	21	27	37	46	>50	-
150 x 600	0.090 (0.037)	Face Velocity, m/s	-	-	3.0	3.8	4.5	6.0	7.5	11.3	-
		Total Pressure Loss, Pa	-	-	<2	2.5	3.0	5.0	8.0	18	-
		Noise Rating (NR)	-	-	<20	<20	23	35	42	>50	-
150 x 800	0.12 (0.054)	Face Velocity, m/s	-	-	-	-	3.1	4.1	5.1	7.7	10.3
		Total Pressure Loss, Pa	-	-	-	-	<2	2.7	4.0	9.0	15
		Noise Rating (NR)	-	-	-	-	<20	25	34	46	>50

			NR25	NR35	NR40	NR50					
			200 56	250 70	300 84	400 112	500 140	600 168	800 224	1000 280	1500 420
200 x 500	0.10 (0.045)	Face Velocity, m/s	-	-	-	-	3.7	4.9	6.2	9.3	12.3
		Total Pressure Loss, Pa	-	-	-	-	2.5	3.7	5.5	12	22
		Noise Rating (NR)	-	-	-	-	<20	28	37	50	>50
200 x 600	0.12 (0.055)	Face Velocity, m/s	-	-	-	-	-	4.1	5.1	7.7	10.3
		Total Pressure Loss, Pa	-	-	-	-	-	2.6	4.0	9.0	16
		Noise Rating (NR)	-	-	-	-	-	22	30	43	>50
200 x 800	0.16 (0.072)	Face Velocity, m/s	-	-	-	-	-	3.1	3.9	5.9	7.8
		Total Pressure Loss, Pa	-	-	-	-	-	<2	2.5	4.7	9.0
		Noise Rating (NR)	-	-	-	-	-	<20	23	34	47
200 x 1000	0.2 (0.093)	Face Velocity, m/s	-	-	-	-	-	-	3.0	4.5	6.0
		Total Pressure Loss, Pa	-	-	-	-	-	-	<2	3.0	5.0
		Noise Rating (NR)	-	-	-	-	-	-	<20	25	37

			NR25	NR35	NR40	NR50					
			300 84	400 112	500 140	600 168	800 224	1000 280	1500 420	2000 560	
300 x 500	0.15 (0.072)	Face Velocity, m/s	-	-	-	-	3.1	3.9	5.9	7.8	
		Total Pressure Loss, Pa	-	-	-	-	<2	2.5	4.7	9.0	
		Noise Rating (NR)	-	-	-	-	<20	23	34	47	
300 x 600	0.18 (0.085)	Face Velocity, m/s	-	-	-	-	-	3.3	5.0	6.6	
		Total Pressure Loss, Pa	-	-	-	-	-	<2	3.8	6.2	
		Noise Rating (NR)	-	-	-	-	-	<20	30	43	
300 x 800	0.24 (0.114)	Face Velocity, m/s	-	-	-	-	-	-	3.7	4.9	
		Total Pressure Loss, Pa	-	-	-	-	-	-	2.5	3.7	
		Noise Rating (NR)	-	-	-	-	-	-	20	32	
300 x 1000	0.3 (0.144)	Face Velocity, m/s	-	-	-	-	-	-	-	3.9	
		Total Pressure Loss, Pa	-	-	-	-	-	-	-	2.5	
		Noise Rating (NR)	-	-	-	-	-	-	-	23	

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 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 single layer only and able to be adjusted individually.
4. Vanes pitch to be in 20mm.

Finishing

1. White powder coated, oven baked as standard. RAL 9010 SG or HY 1001/A127. Others available upon request.

Performance

1. Free area of the grill to be in 86%.
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 50mm.
4. Removable core designs are available upon request.

Vanes Construction

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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. White powder coated, oven baked as standard. RAL 9010 SG or HY 1001/A127. Others available upon request.

Performance

1. Free area of the grill to be in 74%.
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.
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4. Removable core designs are available upon request.

Vanes Construction

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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

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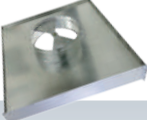
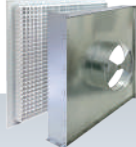
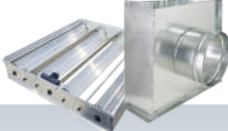
Performance

1. Free area of the grill to be in 74%.
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

 SD Fixed	 SD Double Margin Removable Type	 SD Round
 DD Fixed	 DD Double Margin Removable Type	 DD Round

GRILLE + ACCESSORIES COMBINATION

A	 SD / DD	+	 Square OBD	=	
B	 SD / DD	+	 Square Adaptor to Round Fan Blade OBD	=	
C	 SD / DD	+	 Square Adaptor to Round Butterfly OBD	=	
D	 SD / DD	+	 Square Adaptor to Round Collar	=	
E	 SD / DD	+	 Square OBD + Square Adaptor to Round Collar	=	



SD & DD

Single & Double Deflection Grille

Products Range

Grilles		◀
Diffusers		
Dampers		
Fire & Smoke Protection		
VAV		
Others		
Accessories		



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