WATERLOO
A Swegon Group Company

DIFFUSERS

Linear Diffusers
Square Diffusers
Swirl Difffusers
Circular Diffusers
Jet Diffusers
Air Valves

Reliability

To reliably give your client the service and support they expect, you need confidence that your suppliers will compliment and support your own professionalism. Waterloo's World Class attitudes and beliefs provide this confidence.

World-Class is not a reflection of size or number of employees, it is to do with values such as flexibility, innovation, customer service, integrity, strength of character and good humour. These are the values that separate the outstanding from the ordinary.

Innovation

Some projects are common place, but as the possibilities of building design are pushed to wider and wider boundaries you need to continually search for technically and cost effective solutions to give satisfaction to your client. Waterloo is committed to constant innovation to provide you with those solutions.

We at Waterloo challenge accepted knowledge and use our understanding and learning to sustain our reputation for technical excellence and continually develop one of the widest ranges of air terminal devices in the world. For over 100 years Waterloo have actively pioneered the use of innovative manufacturing techniques, an approach that is still integral to the way we work today.

Quick Delivery

When you are working on fast track projects (or just dealing with unexpected site requirements) you need confidence that your supplier understands and can respond with the required urgency. To give you complete support, Waterloo obsessively maintains high delivery and quality performance.

Waterloo has a well justified reputation throughout the construction industry for very quick service – when others might offer four or six weeks delivery periods, Waterloo prides itself in delivering most small and medium orders in five (yes, five) days.

Flexibility

In an ideal world all projects would commence with the entire design complete and documented. Until then, to give your client maximum confidence and satisfaction, Waterloo's renowned flexibility is at your service.

Unanticipated design issues or site conditions might require complex but timely solutions to exceptional problems. Waterloo's flexibility is founded on our wealth of experience, the fluency and knowledge of our highly-skilled staff and our willingness to explore new ways of working, and our desire to share with you the benefits of our expertise in construction, design, management, planning, procurement and programming.

Specials as Standard

Architectural design is continually developing and the tasks of interpreting the requirements and providing cost effective and practical solutions become more important. Waterloo's complimentary made-to-order programme and fluency with the design and manufacture of bespoke air terminal devices will allow you to realise your vision or solve unanticipated problems on site.

Symbols Used

T	Maximum Throw (for air velocity of 0.15 m/s) in occupied zone in isothermal conditions (unless otherwise stated) [m]
V_t	Terminal Velocity [m/s]
V	Air Velocity 25 mm from the grille face [m/s]
V_n	Neck Velocity
V_o	Face Velocity
V_r	Room Air Velocity
q_v	Air Volume [l/s] or [m^3/h]
P_s	Static Pressure [Pa]
L_w	Uncorrected sound power level [dB]
Δt	Temperature Differential
L_{WA}	dBA level is based on a room absorption of 8 dB for sound power ref 10^{-12} W
W	Nominal Width [mm]
H	Nominal Height [mm]
L	Nominal Length [mm]
v_{eff}	Effective Air Velocity [m/s]
v	Average air velocity in the duct [m/s]
P_d	Pressure in the duct [Pa]

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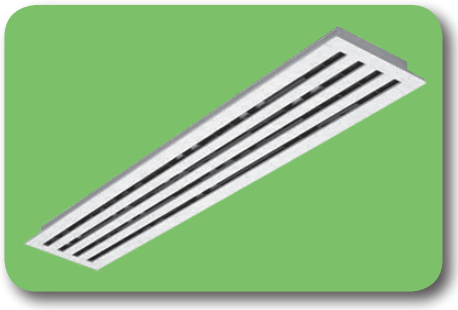
CSB 15-P / CSB 15-F



Introduction

The Waterloo CSB 15 High Induction Barrel Slot Diffuser enhances our already comprehensive range of slot diffusers and complements the larger CSB 25. An attractive and efficient design makes the CSB 15 ideally suited to a huge variety of applications. Close pattern control gives the CSB 15 its highly adjustable air distribution characteristics, over much shorter runs than have previously been achievable.
Constructed from extruded aluminium and ABS FR, the CSB 15 is designed to integrate seamlessly into any installation. In ceiling, sidewall and bulkhead applications, the CSB 15 will provide horizontal or vertical projection, and is suitable for both supply and exhaust ventilation.

Product Description

CSB 15 –F Standard flange for general purpose
CSB 15 –P Narrow flange for flush/recess mounting
ENDS End caps
PBHLB Plenum box to suit, 1 - 4 duct connections
PHB Plenum hanging bracket
DHB Dummy section hanging bracket

Features

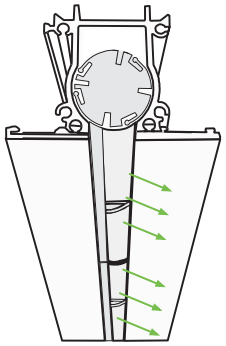
- One to four slot
- High induction characteristics
- Modular design
- Black or white barrels
- Fully adjustable close control air pattern
- Consistent fascia appearance
- Can be fitted in continuous runs
- Full length plenum flow distribution baffle included
- Standard single lengths up to 1500mm

Standard finishes

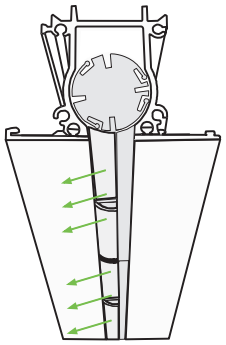
PPG9010 (RAL 9010 Gloss - 80% Gloss White)
PPM9010 (RAL 9010 Matt - 20% Gloss White)
PPM9006 (RAL 9006 Matt - 30% Gloss Silver)
Other colours are available upon request

Diffuser weights including plenum

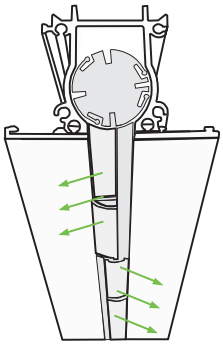
CSB 15-F/P-S1 5kg/m
CSB 15-F/P-S2 7kg/m
CSB 15-F/P-S3 9kg/m
CSB 15-F/P-S4 12kg/m



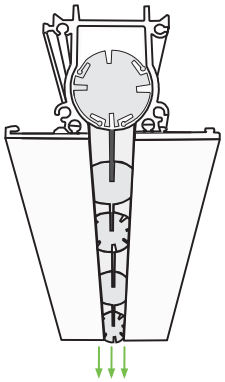
One way throw right



One way throw left

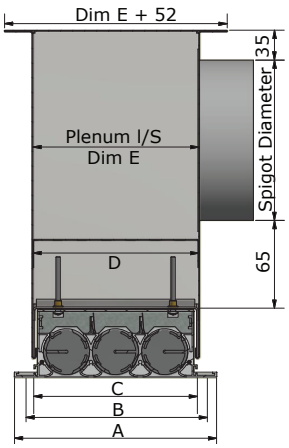


Two way throw



Vertical throw

Dimensions for CSB 15				
	CSB 15 S1	CSB 15 S2	CSB 15 S3	CSB 15 S4
A = CSB 15 F O/A Flange	71	106	141	176
A = CSB 15 P O/A Flange	51	86	121	156
B = CSB15 F Ceiling cutout	52	87	122	157
B = CSB15 P Ceiling cutout	45	80	115	150
C = O/A stack width	38	73	104	133
D = Outside stack width	25	60	95	130
E = O/A plenum width	32	67	102	137
F = CSB 15 F Flange thickness	5	5	5	5
F = CSB 15 P Flange thickness	1.5	1.5	1.5	1.5



Ceiling cut out openings	
Length	Nom + 10

Order Example

CSBF/15/S4/1000/ENDS/PPM9010

Type
Nozzle Type
No of Slots
Length
Ends
Finish

Barrel Slot Diffusers

CSB 15-P / CSB 15-F

Selection Criteria

Ceiling height is 2.7m. Increase throw by 1m for every 1m increase in ceiling height.
Apply a factor of 1.1 to throw values for isothermal conditions or vertical diffusion, and a factor of 1.15 for 10 degrees of heating.
Noise level is based on diffuser sound power level less 8dB room absorption.
Performance parameters for supply include plenums.

Selection Example

CSBF/15/S3/1000

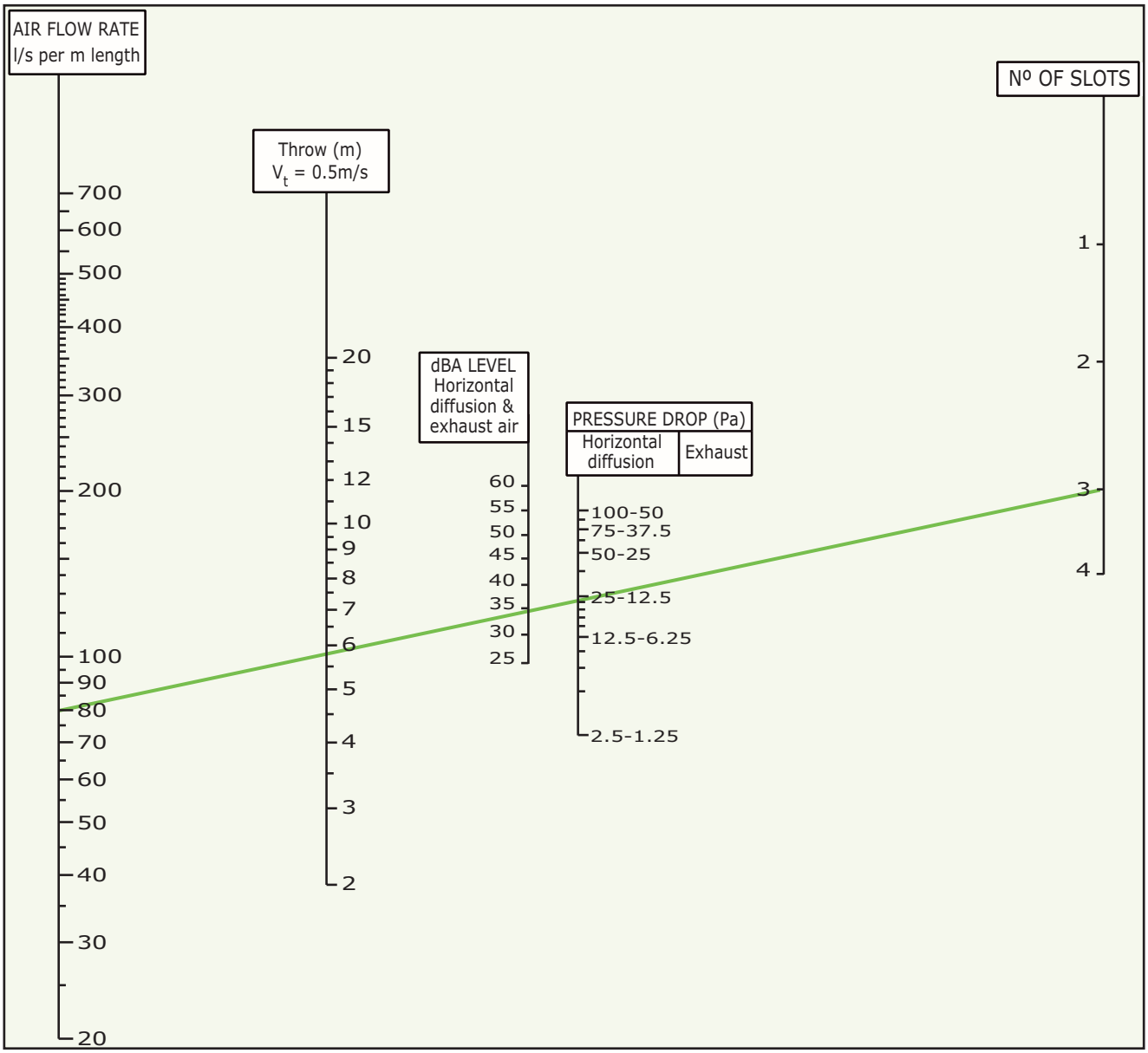
Air flow rate 80 l/s/m
Throw 5.8 x 0.74 = 4.3 m
Pressure drop 21 Pa
Noise level 31 dBA

Corrections for length

Active Length	1	1.5	2	2.5	3
Noise level dBA	-5	-3	-2	-1	0
Throw Multiplier	0.74	0.8	0.83	0.91	1

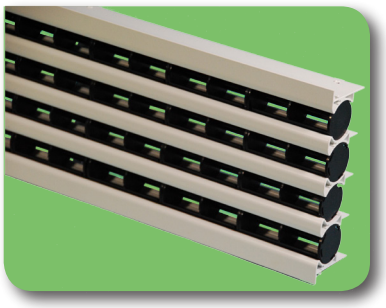
NOTE: Throw data for room velocity (V_R) of 0.15m/s

Selection Nomogram for Horizontal Diffusion at 10° C of cooling



Barrel Slot Diffusers

CSB 25-P / CSB 25-F

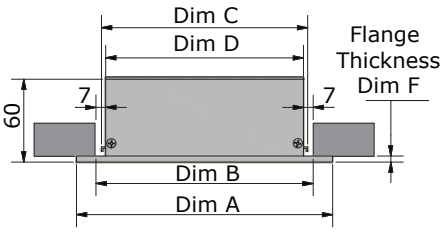


Introduction

The Waterloo CSB 25 Barrel Slot Diffuser is the one of the latest additions to our range of diffusers. CSB 25 has a slot opening of 25mm and has a rounded slot gap for improved performance and a sleek modern look.
The CSB 25 ideally suited to a huge variety of applications particularly when high volumes and design integrity are required, such as office spaces. The 100mm rotating barrels have stepped adjustment which makes set up simple, air flow can be left, right or alternating dependant on your requirements.
Constructed from extruded aluminium and ABS FR the CSB 25 is durable and perfectly suited for installation in continuous linear runs as single units, the design of the CSB 25 allows for the use of mitred corners which allows for continuous perimeter diffusers.
The smaller CSB 15 is available when air volumes are lower or a more discrete diffuser is required.

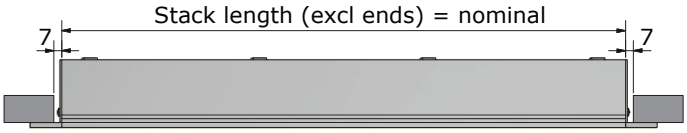
Product Description

CSB 25 –F Standard flange for general purpose
CSB 25 –P Narrow flange for flush/recess mounting
ENDS End caps
PBHLB Plenum box to suit, 1 - 4 duct connections
PHB Plenum hanging bracket
DHB Dummy section hanging bracket



Features

- CSB 25 available in One to four slot
- Large capacity
- Modmodular design
- Fully adjustable close control air pattern
- Consistent fascia appearance
- Can be fitted in continuous runs
- Full length plenum flow distribution baffle included
- Standard single lengths up to 1500mm

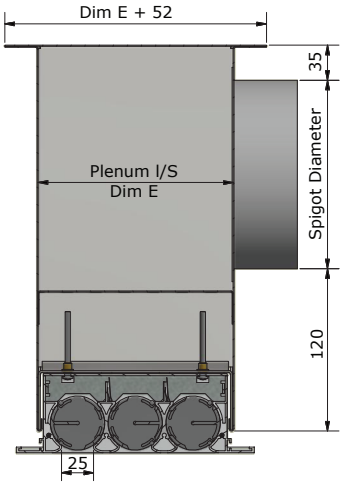


Standard finishes

PPG9010 (RAL 9010 Gloss - 80% Gloss White)
PPM9010 (RAL 9010 Matt - 20% Gloss White)
PPM9006 (RAL 9006 Matt - 30% Gloss Silver)
Other colours are available upon request

Diffuser weights including plenum

CSB 25-F/P-S1 5kg/m
CSB 25-F/P-S2 7kg/m
CSB 25-F/P-S3 9kg/m
CSB 25-F/P-S4 12kg/m



Dimensions for CSB 25				
	CSB 25 S1	CSB 25 S2	CSB 25 S3	CSB 25 S4
A = CSB 25 F O/A Flange	96	141	186	231
A = CSB 25 P O/A Flange	76	121	166	211
B = Ceiling cutout	68	113	158	203
C = O/A stack width	60	105	150	195
D = Outside stack width	54	99	144	189
E = O/A plenum width	62	107	152	197
F = CSB 25 F Flange thickness	5	5	5	5
F = CSB 25 P Flange thickness	1.5	1.5	1.5	1.5

Ceiling cut out openings	
Length	Nom + 14

Order Example

CSBF/25/S2/1000/ENDS/PPM9010

Type
Nozzle Type
No of Slots
Length
Ends
Finish

Barrel Slot Diffusers

CSB 25-P / CSB 25-F

Selection Criteria

Ceiling height is 2.7m. Increase throw by 1m for every 1m increase in ceiling height.
Apply a factor of 1.1 to throw values for isothermal conditions or vertical diffusion, and a factor of 1.145 for 10 degrees of heating.
Noise level is based on diffuser sound power level less 8dB room absorption.
Performance parameters for supply include plenums.

Selection Example

CSBF/25/S2/1000

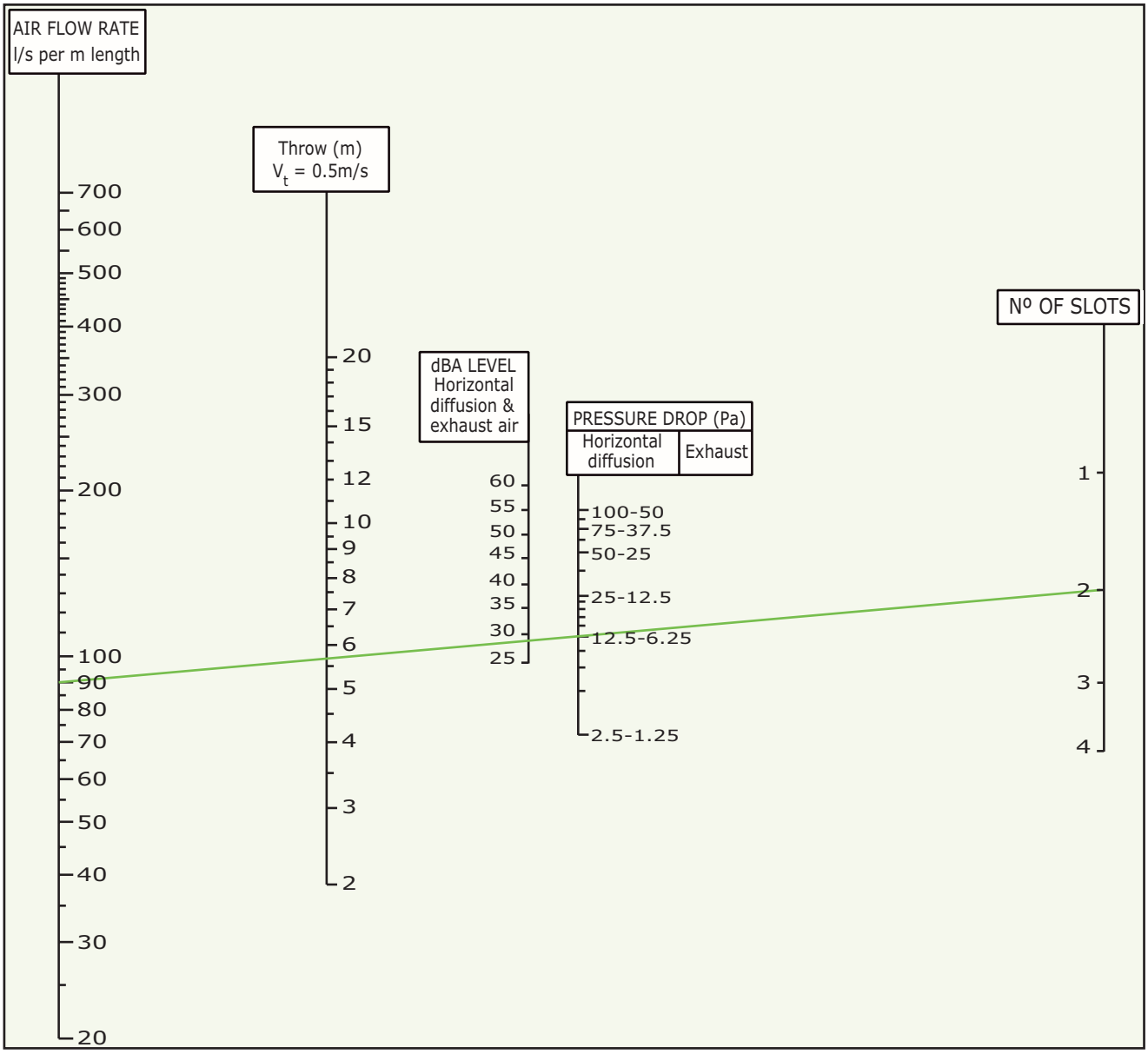
Air flow rate 90 l/s/m
Throw 5.6 x 0.74 = 4.1 m
Pressure drop 12.5 Pa
Noise level 29 dBA

Corrections for length

Active Length	1	1.5	2	2.5	3
Noise level dBA	-5	-3	-2	-1	0
Throw Multiplier	0.74	0.8	0.83	0.91	1

NOTE: Throw data for room velocity (V_R) of 0.15m/s

Selection Nomogram for Horizontal Diffusion at 10° C of cooling



High Flow Diffuser

HFC / HFD

Introduction

The Waterloo High Flow diffusers are designed to give exceptional performance and the visual appearance of an architectural shadow gap that has become a very desirable design feature within buildings.

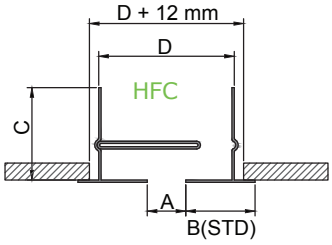
High Flow Diffusers are available in two variants: HFC (High Flow Coanda), which is usually ceiling mounted, providing a horizontal throw through the Coanda effect; and HFD (High Flow Directional) which is generally mounted in a wall for directional, horizontal projection of air into a space or provide a coanda throw if positioned close to a horizontal surface.

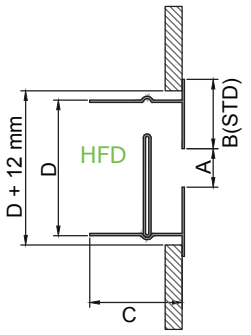
High Flow diffusers are designed to accommodate a dynamic range of air volume, from high to low. Featuring an excellent air distribution pattern to eliminate draughts in the occupied zone. Available as a single slot and sectional for continuous, linear runs.

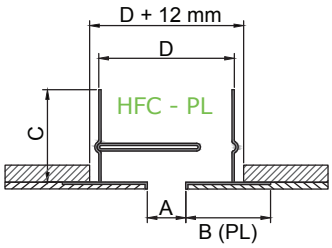
HFC and HFD are manufactured using aluminium extrusions and features easily adjustable, hidden air pattern control elements.

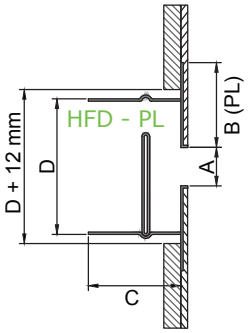
The standard bordered version is available with an RAL polyester powder coated border with black anodised internals.

The Plasterline version (PL) is available when a plastered in product is required, the internals of the products have a black anodised finish to maintain the shadow gap appearance.









Product Description

HFC High Flow Coanda
HFD High Flow Directional
HFC-PL High Flow Coanda Plasterline
HFD-PL High Flow Directional Plasterline

Features

- Dynamic capacity from high to low values
- Strong coanda pattern for best performance
- Hidden control elements
- Continuous joint detail for linear runs
- 3 slot sizes available

Finishes

- HFC/D

PPG9010 (RAL 9010 Gloss - 80% Gloss White)
PPM9010 (RAL 9010 Matt - 20% Gloss White)
PPM9006 (RAL 9006 Matt - 30% Gloss Silver) Other colours available on request

- HFC/D-PL

Anodised black only

Sizes

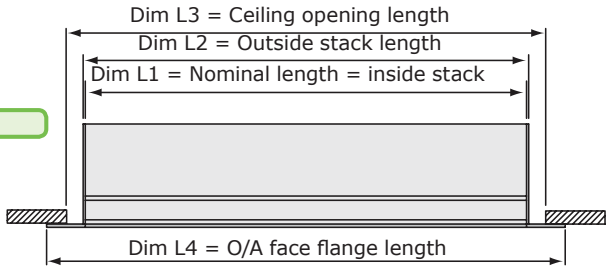
3 standard slot sizes are available 25mm, 40mm and 60mm, standard module lengths are 1500mm.

Dim Size	25	40	60
A	25	40	60
B (STD)	45	45	45
B (PL)	50	50	50
C	60	60	60
D	88	103	123

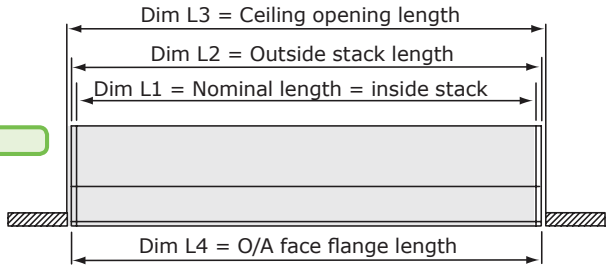
Standard End Caps				
Diffuser style	Dim L1	Dim L2	Dim L3	Dim L4
HFC/HFD	Nominal Length	Nominal Length +3	Nominal Length +19	Nominal Length +56
HFC/HFD-PL	Nominal Length	Nominal Length +6	Nominal Length +8	Nominal Length +6

Nominal length = inside of stack
Note: HFC/HFD has 28mm end caps

HFC/HFD



HFC/HFD-PL



Order Example

HFC/25/1800/PPM9010/ENDS

Type
Slot size
Length
Finish
Ends caps

High Flow Diffuser - Coanda ceiling

HFC

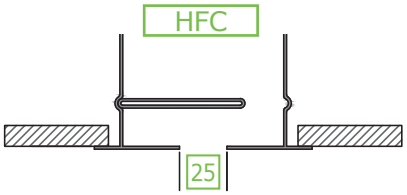
Selection Criteria

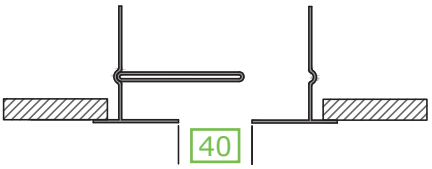
2.7m ceiling height, increase throw by 1m for every increase of 1m in ceiling height.
Horizontal throw is based on 10°c cooling.

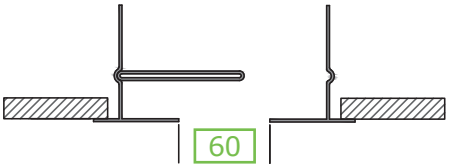
Selection Example

HFC/40/1000

Total air flow rate	= 130 l/s
Maximum throw	= 7.2m
Pressure drop	= 20Pa
Sound	= 36dBA

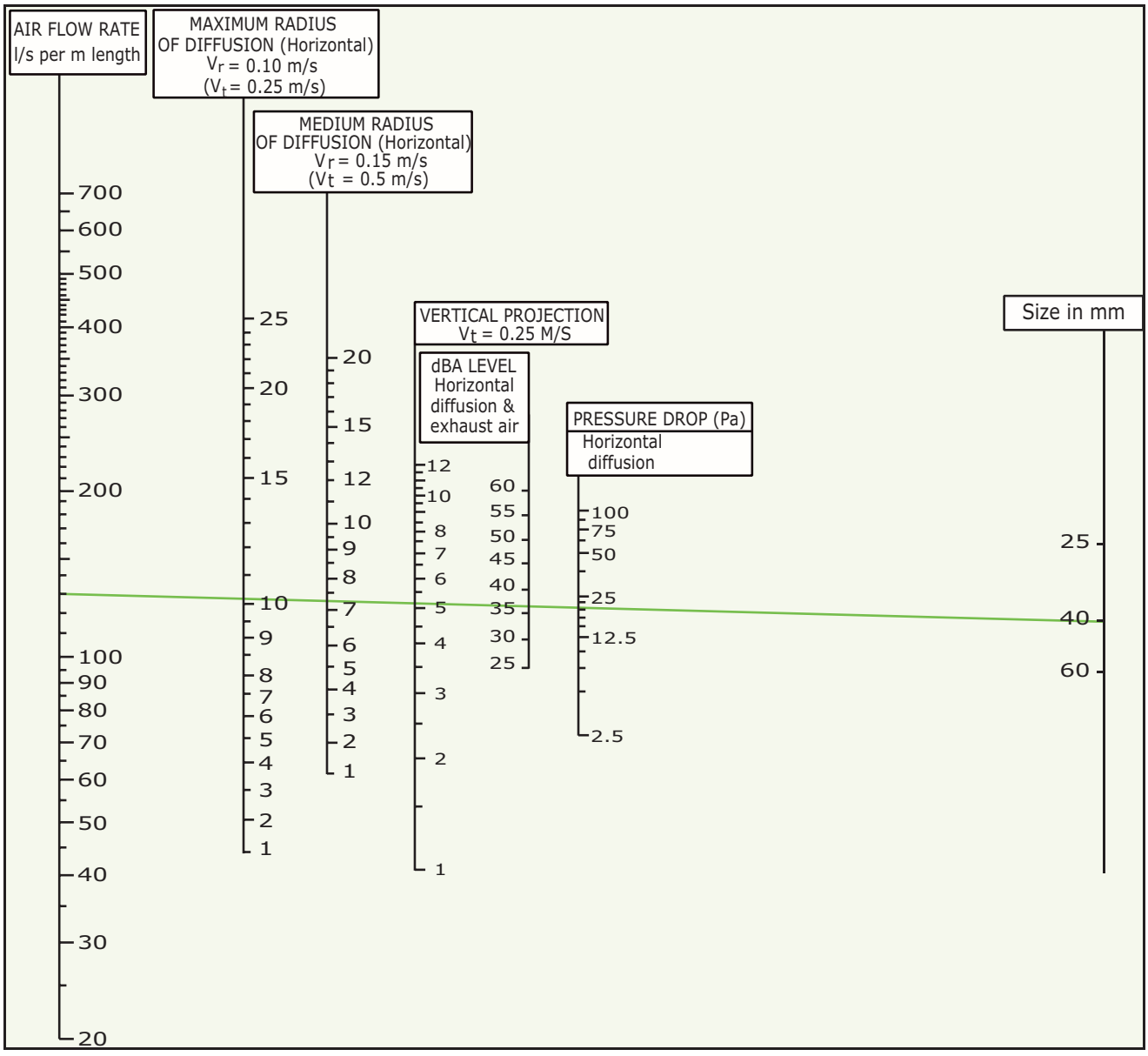






Length corrections					
Active Length (m)	0.5	1.25	2.0	2.5	3.0
dBA Reduction	-8	-5	-3	-2	0
Throw multiplier	0.45	0.65	0.8	0.9	1.0

Performance Nomogram



High Flow Diffuser - Side wall

HFD

Selection Criteria

HFD Side wall

0° Horizontal throw

Note: 25LP is a lower pressure model that has very limited control on the direction of the air flow.

If air is directed along the ceiling throw correction will be x 1.25.

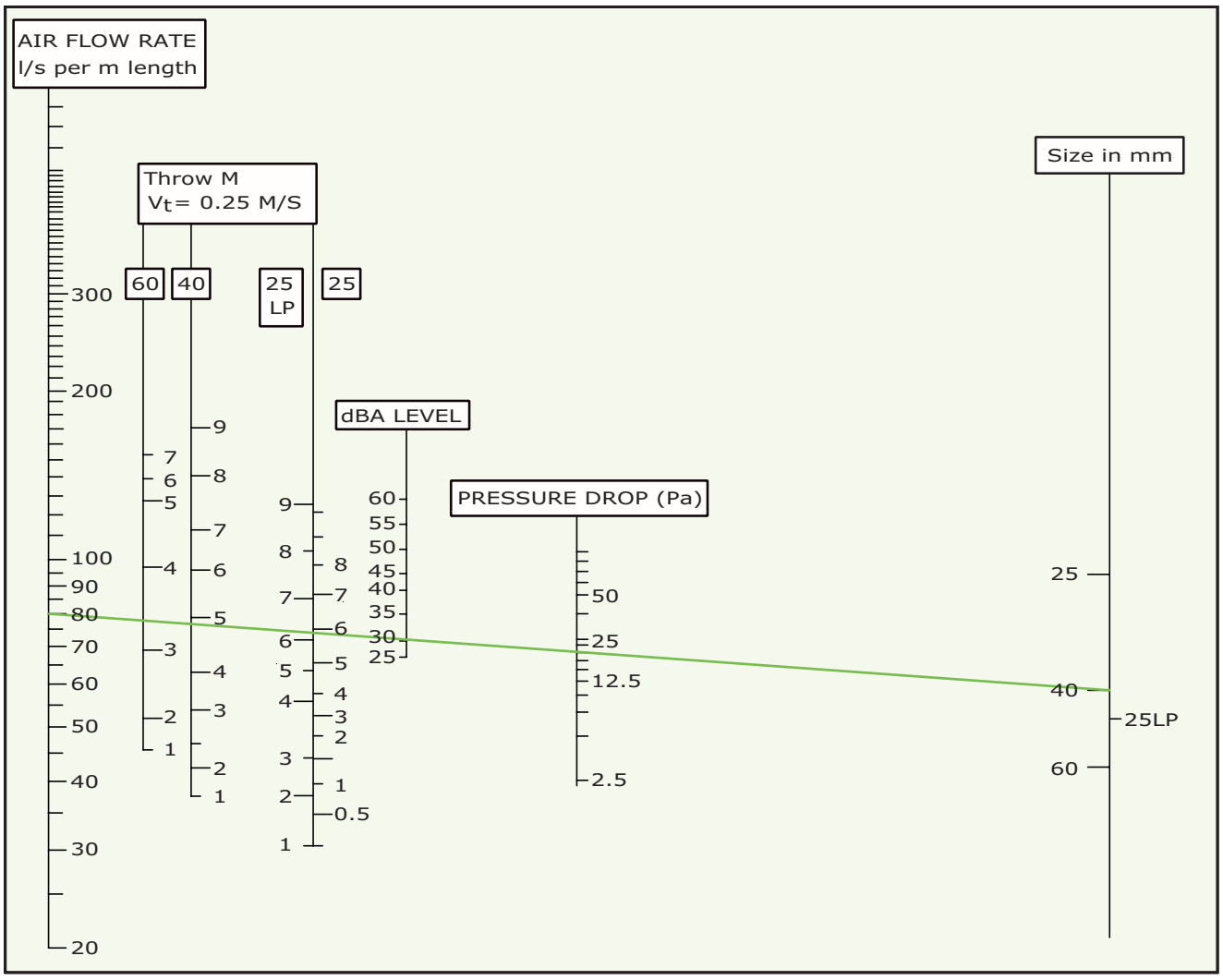
Selection Example

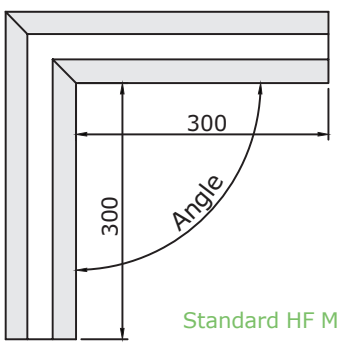
HFD/40/1000

Total air flow rate	= 80 l/s
Maximum throw	= 4.8m
Pressure drop	= 20Pa
Sound	= 30dBA

Length corrections					
Active Length (m)	0.5	1.25	2.0	2.5	3.0
dBA Reduction	-8	-5	-3	-2	0
Throw multiplier	0.45	0.65	0.8	0.9	1.0

Performance Nomogram



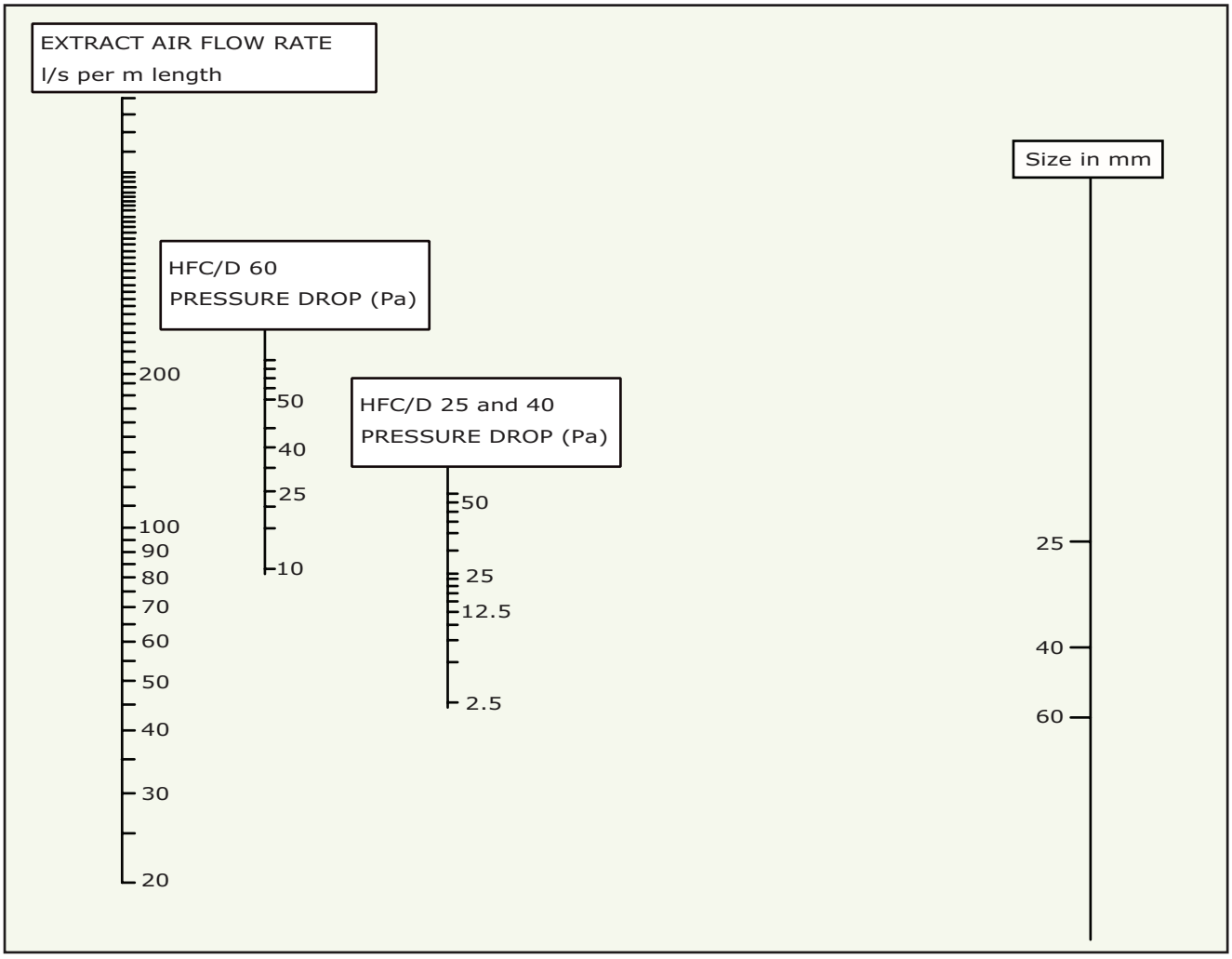


Standard HF Mitred Corner

High Flow Diffuser - Extract

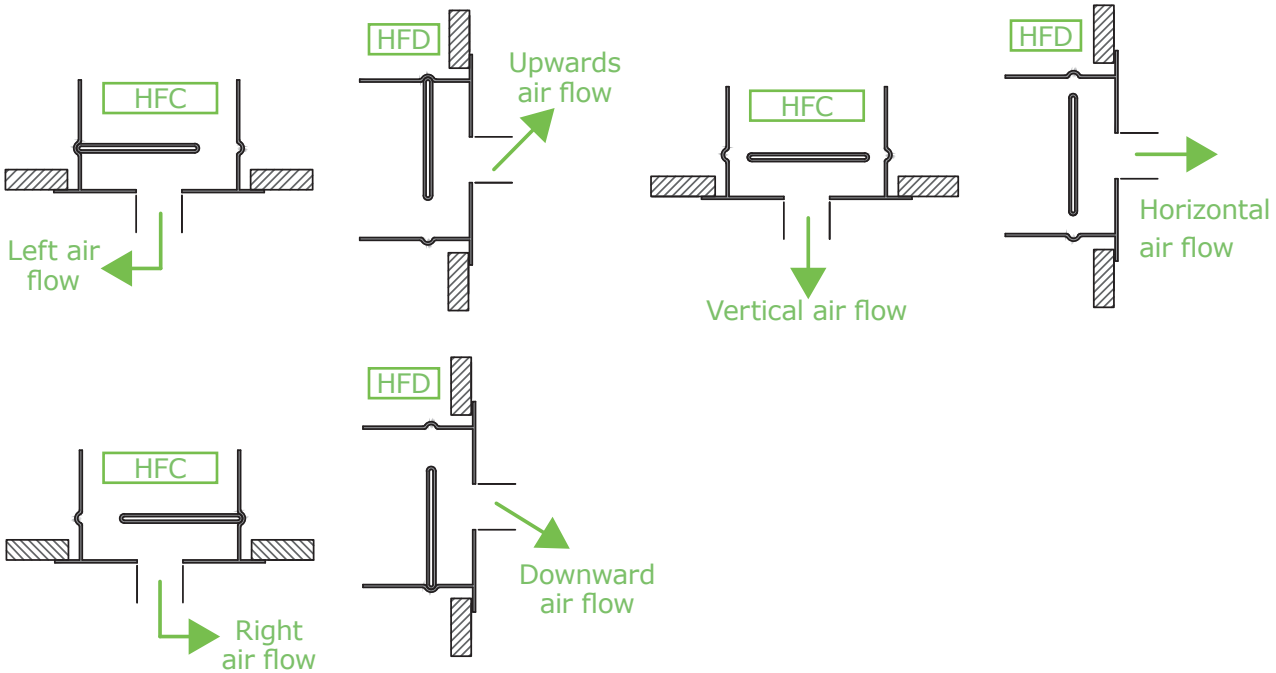
HFC / HFD

Performance Nomogram



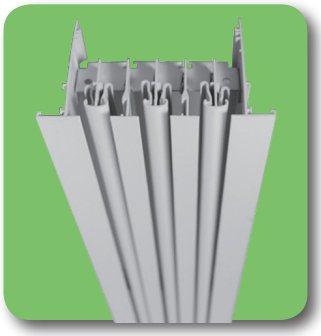
High Flow Diffuser - Side wall

HFC / HFD



Linear Slot Diffusers

CS-F / CS-P / CS-J / CS-M / CS-S&E / CS-TW / CS Plank



Introduction

The Waterloo Small Format Continuous Slot Diffuser series (CS), has for many years set the industry standard in terms of highest aerodynamic and acoustic performance. The CS range is ideally suited to variable volume applications due to its excellent low flow rate air diffusion characteristics and high air handling capacity. The novel air pattern control element design allows any air diffusion to vertical projection, without any change in the facial appearance.
CS diffusers are suitable for all commercial and industrial projects requiring single or multi-slot diffusers for ceilings, bulkheads or sidewall supply and exhaust.
Diffusers are manufactured from aluminium alloy extrusions fixed or clipped to cross stays allowing easy removal of internal vanes and pattern control elements.

Product Description

CS-F Standard 28mm flange for general purpose
CS-P Narrow 18mm flange for flush / recess mounting
CS-J Medium 25mm flange for general purpose
CS-M For Tegular 30mm, 16mm & 8mm drop fitting
CS-S&E Supply and Exhaust (or dual supply) system diffuser
CS-TW Extra wide flange
CS Plank Plank replacement unit (Refer to Head Office for details)
Ends Standard end caps
MEC Mitred end caps
BP Blanking plate - supplied loose in 1250 lengths (for fitting on site by others)
ED Equalising deflector

Features

- High air capacity
- Wide dynamic range perfect for VAV systems
- Strong coanda effects for good low flow performance
- Fully adjustable air pattern from horizontal to vertical
- Hidden flow control vanes for consistent facial appearance
- Continuous joint detail for ceiling integrations

Finishes

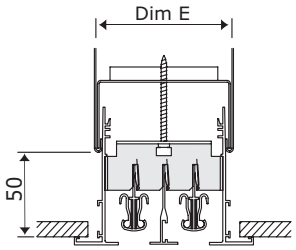
PPG9010 (RAL 9010 Gloss - 80% Gloss White)
PPM9010 (RAL 9010 Matt - 20% Gloss White)
PPM9006 (RAL 9006 Matt - 30% Gloss Silver)
Other colours available on request

Pattern control elements are supplied with the same finish as the frame (standard) but can be supplied in black.

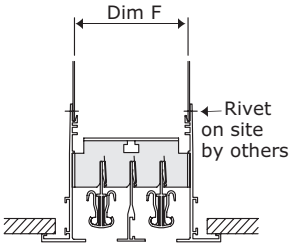
Sizes

Standard from 1 to 8 slots wide in 1500mm long sections (excluding flanged ends).
Continuous diffuser lengths are supplied in sections for butt jointing on site. (Alignment plates supplied)

Weights kg/m								
	No of slots							
Style	1	2	3	4	5	6	7	8
CS-F	1.9	2.7	3.5	4.3	5.1	5.9	6.7	7.5
CS-P	1.8	2.6	3.4	4.2	5.0	5.8	6.6	7.4
CS-J	1.9	2.7	3.5	4.3	5.1	5.9	6.7	7.5
CS-M	1.8	2.6	3.4	4.2	5.0	5.8	6.6	7.4
CSM -TEG	1.8	2.6	3.4	4.2	5.0	5.8	6.6	7.4
CS-S & E-F	2.0	2.8	3.6	4.4	5.2	6.0	6.8	7.6
CS-TW	2.6	3.4	4.2	5.0	5.8	6.6	7.4	8.2



Standard plenum mounting
Type PB



Riveted plenum mounting
Type PLS
(Access required both sides)

	Type PB	Type PLS
Slots	Dim E	Dim F
1 Slot	46	34
2 Slot	84	72
3 Slot	122	110
4 Slot	160	148
5 Slot	198	186
6 Slot	236	225
7 Slot	274	263
8 Slot	312	301

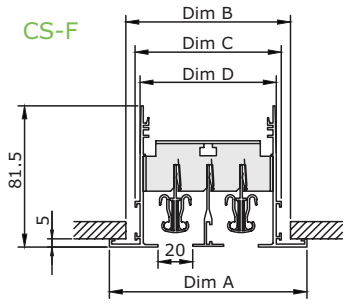
Order Example

CS-F/3000/S1/PPM9010/ENDS
Type
Length
No of Slots
Finish
Ends caps

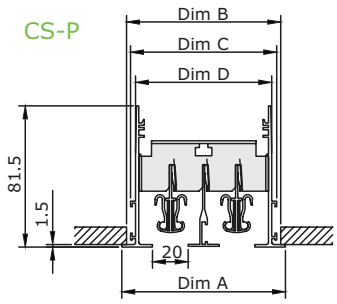
Linear Slot Diffusers

CS-F / CS-P / CS-J / CS-M / CS-S&E / CS-TW / CS Plank

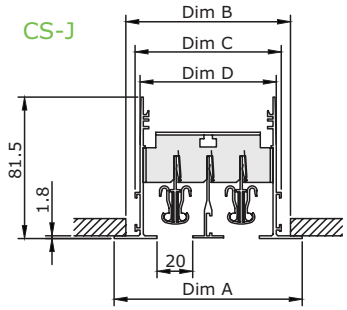
CS-F



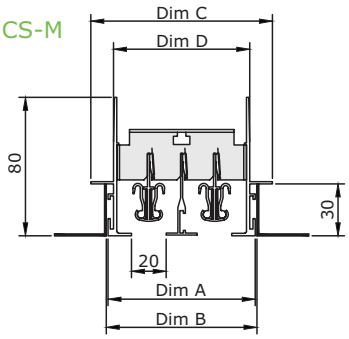
CS-P



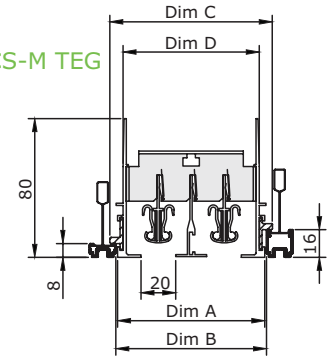
CS-J



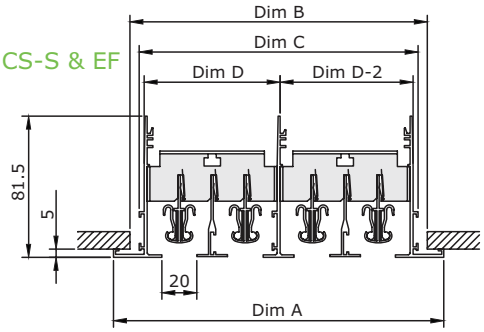
CS-M



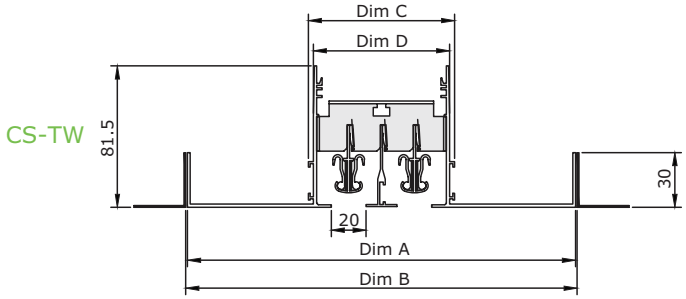
CS-M TEG

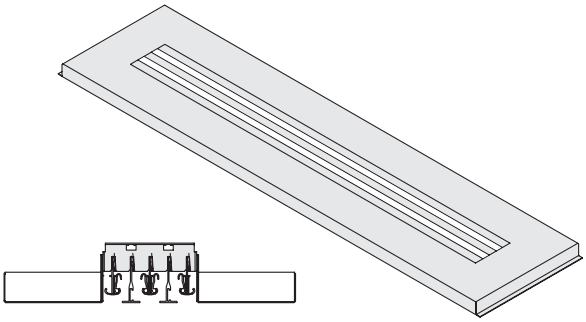


CS-S & EF

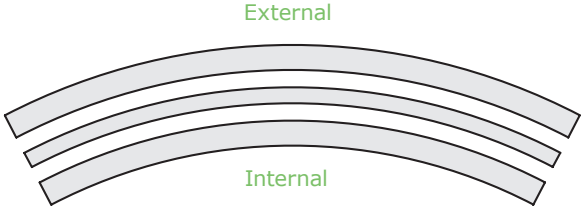


CS-TW





CS Plank
(Typical size is 1200 x 150 with internal 2 slot
or 1200 x 300 with internal 3/4 slot)



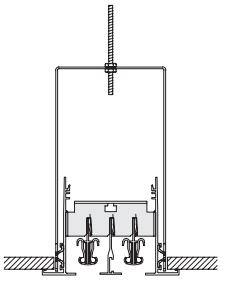
Internal, external or vertical
air throw available, please
specify on order.

Linear Slot Diffusers

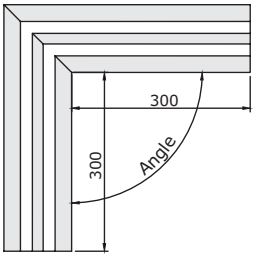
CS-F / CS-P / CS-J / CS-M / CS-S&E / CS-TW / CS Plank

Diffuser Type	Dimension Reference	No of slots							
		1	2	3	4	5	6	7	8
CS-F	Dim A = O/A Face Flange Width	76	114	152	190	228	266	304	343
	Dim B = Ceiling Cutout Width	57	95	133	171	209	247	285	324
	Dim C = O/A Stack Width	45	84	122	160	198	236	274	312
	Dim D = Outside Stack Width	40	79	117	155	193	231	269	307
CS-P	Dim A = O/A Face Flange Width	56	95	133	171	209	247	285	323
	Dim B = Ceiling Cutout Width	50	89	127	165	203	241	279	317
	Dim C = O/A Stack Width	45	84	122	160	198	236	274	312
	Dim D = Outside Stack Width	40	79	117	155	193	231	269	307
CS-J	Dim A = O/A Face Flange Width	70	108	146	184	222	260	298	337
	Dim B = Ceiling Cutout Width	57	95	133	171	209	247	285	324
	Dim C = O/A Stack Width	45	84	122	160	198	236	274	312
	Dim D = Outside Stack Width	40	79	117	155	193	231	269	307
CS-M	Dim A = O/A Face Flange Width	46	84	122	160	198	236	274	313
	Dim B = Ceiling Cutout Width	48	86	124	162	200	238	276	315
	Dim C = O/A Stack Width	67	105	143	181	219	257	295	334
	Dim D = Outside Stack Width	40	79	117	155	193	231	269	307
CS-M TEG	Dim A = O/A Face Flange Width	46	84	122	160	198	236	274	313
	Dim B = Ceiling Cutout Width	48	86	124	162	200	238	276	315
	Dim C = O/A Fitting Lug Width	56	94	132	170	208	246	284	323
	Dim D = Outside Stack Width	40	79	117	155	193	231	269	307
CS-S & E-F	Dim A = O/A Face Flange Width	-	114	152	190	228	266	304	343
	Dim B = Ceiling Cutout Width	-	95	133	171	209	247	385	324
	Dim C = O/A Stack Width	40	79	117	155	193	231	269	-
	Dim D = Outside Stack Width	-	84	122	160	198	236	274	312
CS-TW	Dim A = O/A Face Flange Width	184	223	261	299	337	375	413	451
	Dim B = Ceiling Cutout Width	185	224	262	300	338	376	414	452
	Dim C = O/A Stack Width	45	84	122	160	198	236	274	312
	Dim D = Outside Stack Width	40	79	117	155	193	231	269	307

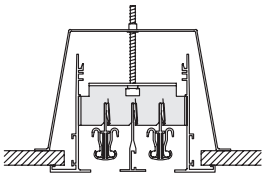
Please note: CS-P requires that the ceiling cut out is exactly as described by 'Dim B' to avoid fitment issues due to the small dimension of the over hang of the border.



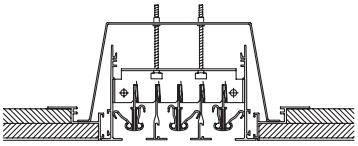
Dummy hanging bracket fixing available for 1 to 8 slot



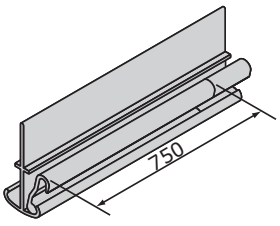
Standard CS Mitred Corner



Plasterboard bracket fixing available for 1 to 6 slot

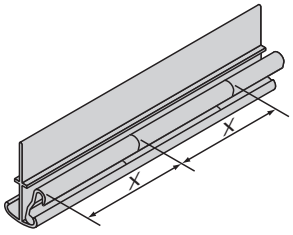


CSP Plaster Frame



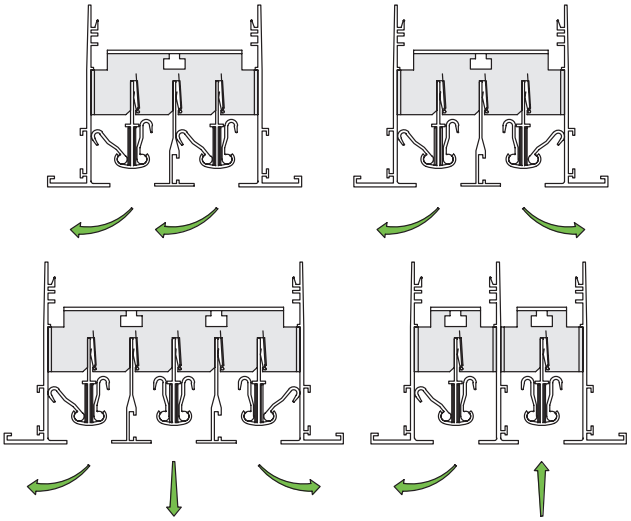
Standard

Diffusers are supplied with flow control vanes in lengths up to 750mm (to suit diffuser length).



Special

To provide finer control of the air pattern, flow control vanes may be supplied in any specified length.

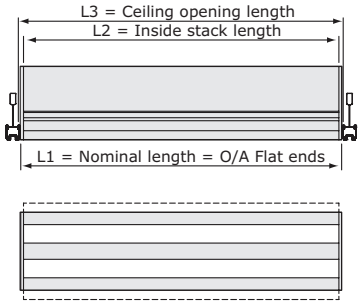


Typical PCE Settings

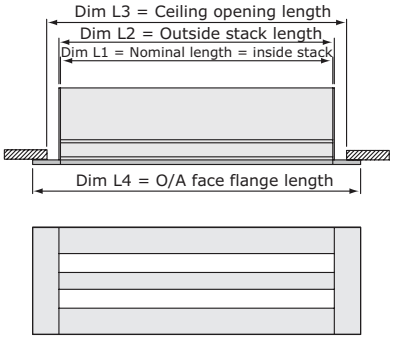
Linear Slot Diffusers

CS-F / CS-P / CS-J / CS-M / CS-S&E / CS-TW / CS Plank

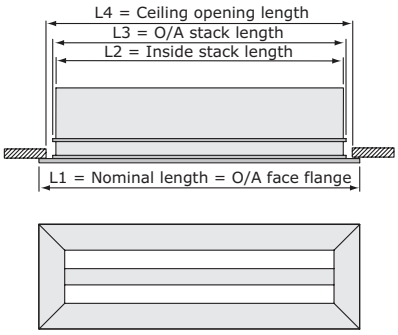
FLAT END CAPS			
Diffuser Style	Dim L1	Dim L2	Dim L3
CS-M	Nominal Length	Nominal Length - 6	Nominal Length + 2
CS-M TEG	Nominal Length	Nominal Length - 6	Nominal Length + 2



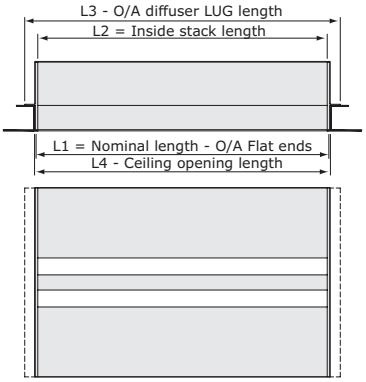
STANDARD END CAPS				
Diffuser Style	Dim L1	Dim L2	Dim L3	Dim L4
CS-F	Nominal Length	Nominal Length + 3	Nominal Length + 19	Nominal Length + 56
CS-P	Nominal Length	Nominal Length + 3	Nominal Length + 19	Nominal Length + 36
CS-J	Nominal Length	Nominal Length + 3	Nominal Length + 19	Nominal Length + 56
CS-S & E-F	Nominal Length	Nominal Length + 3	Nominal Length + 19	Nominal Length + 56
CSM	Nominal Length	Nominal Length + 6	Nominal Length + 2	Nominal Length + 6



MITRED END CAPS				
Diffuser Style	Dim L1	Dim L2	Dim L3	Dim L4
CS-F	Nominal Length	Nominal Length - 39	Nominal Length - 30	Nominal Length - 19
CS-P	Nominal Length	Nominal Length - 20	Nominal Length - 11	Nominal Length - 7
CS-J	Nominal Length	Nominal Length - 33	Nominal Length - 24	Nominal Length - 12
CS-S & E-F	Nominal Length	Nominal Length - 39	Nominal Length - 30	Nominal Length - 19



FLAT END CAPS				
Diffuser Style	Dim L1	Dim L2	Dim L3	Dim L4
CS-TW	Nominal Length	Nominal Length - 6	Nominal Length + 25	Nominal Length + 2



Linear Slot Diffusers

CS-F / CS-P / CS-J / CS-M / CS-S&E / CS-TW / CS Plank

Selection Criteria

Ceiling height 2.75m, increase throw by 1m for each 1m increase in ceiling height. Horizontal diffusion is based on a cooling differential of 11°C.

For isothermal diffusion apply a factor of 1.1 to throw values. For heating in horizontal diffusion apply a factor of 1.2 to throw values.

Vertical projection is based on a heating differential of 11°C. Noise level is based on diffuser sound power level less 8dB room absorption.

V_r = mean room air velocity (m/s)
V_t = terminal velocity of supply air jet (m/s)

Selection Example CS2/1800

Total air flow rate 180 l/s = 100 l/s/m

1 Way Throw

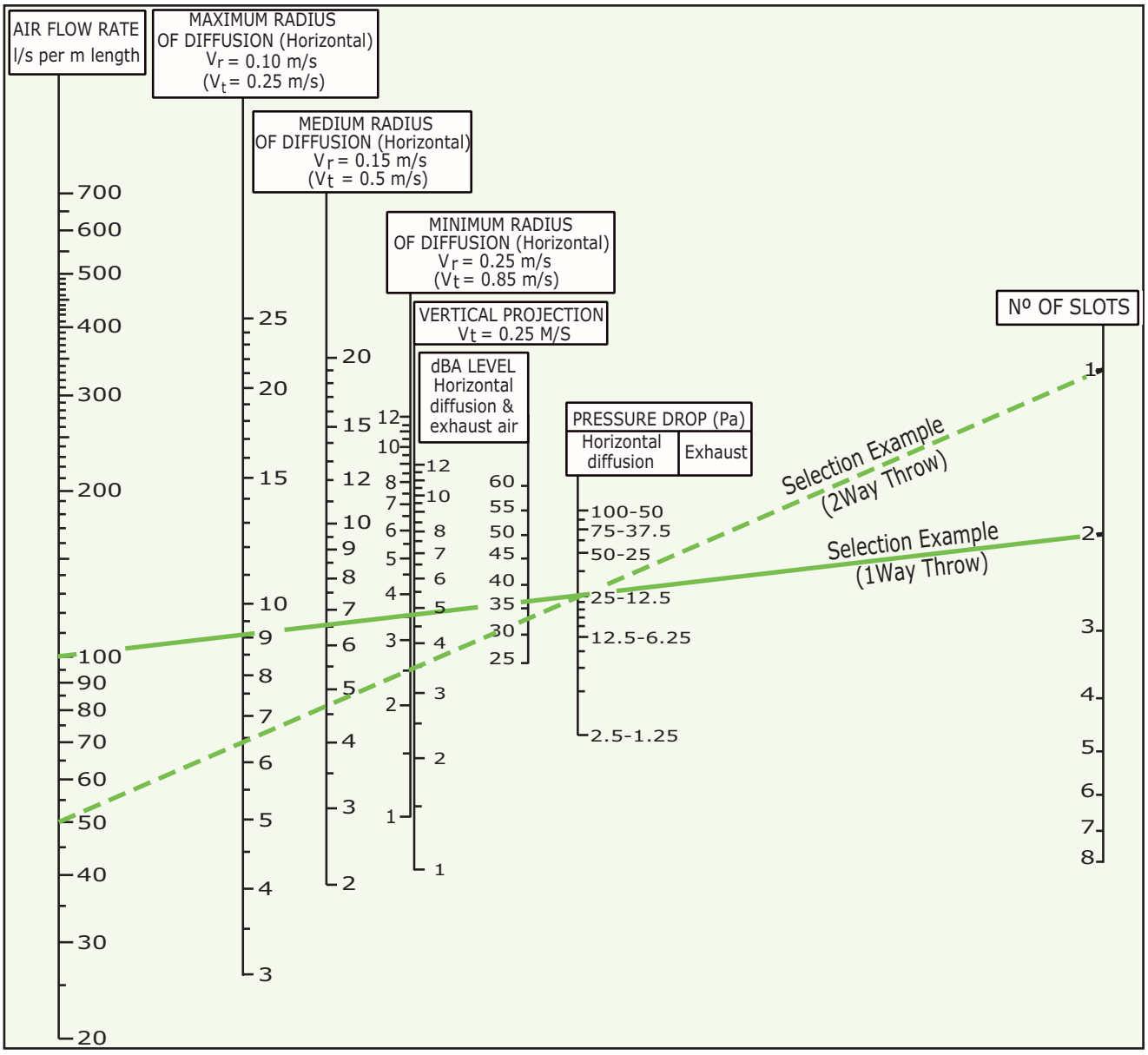
Minimum throw 2.8m (3.5 x 0.8 factor) Maximum throw 7.2m (9.0 x 0.8 factor) Pressure drop 25Pa
Noise level 34dBA (37dBA - 3dB length correction)

2 Way Throw

Minimum throw 2.0m (2.5 x 0.8 factor) Maximum throw 5.2m (6.5 x 0.8 factor) Pressure drop 25Pa
Noise level 30dBA (33dBA - 3dB length correction)

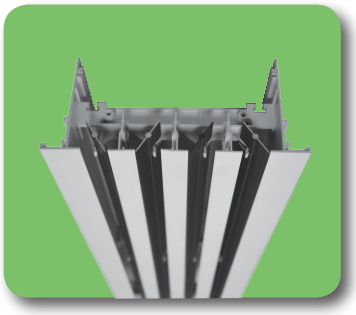
Length corrections					
Active Length (m)	0.5	1.25	2.0	2.5	3.0
dBA Reduction	-8	-5	-3	-2	0
Throw multiplier	0.45	0.65	0.8	0.9	1.0

Performance Nomogram



Linear Slot Diffusers

LCS



Introduction

The LCS Linear Slot Diffuser has been developed to offer a cost effective alternative to the infinitely variable CS range of slot diffusers. Available in 2, 3 or 4 slots it comes complete with a black anodised aluminium pattern control element and will provide either a one or two way horizontal distribution. The LCS can be combined with the standard CS flange and plenum combinations.

Product Description

LCS-F	28 mm flanged general purpose
LCS-P	18 mm flange for flush/recess mounting
LCS-J	25 mm flange for flush/recess mounting
LCS-TW	82.5 mm flange for flush/recess mounting
LCS-M	No flange
LCS-Plank	Plank replacement unit
Ends	End caps
ED	Equalising deflector

Features

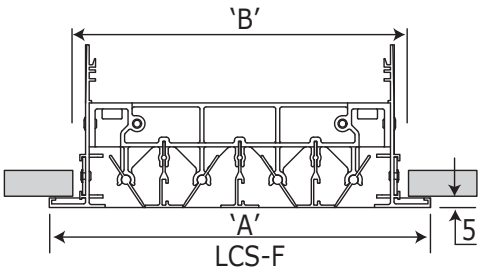
- Common plenum design with CS
- 2, 3 or 4 slot formats
- Easily adjustable air pattern
- Common external trim detail

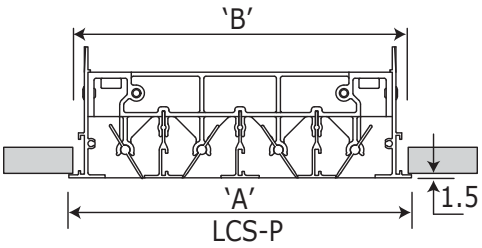
Finishes

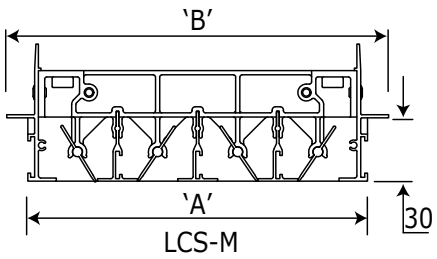
PPG9010 (RAL 9010 Gloss - 80% Gloss White)
PPM9010 (RAL 9010 Matt - 20% Gloss White)
PPM9006 (RAL 9006 Matt - 30% Gloss Silver) Other colours available on request

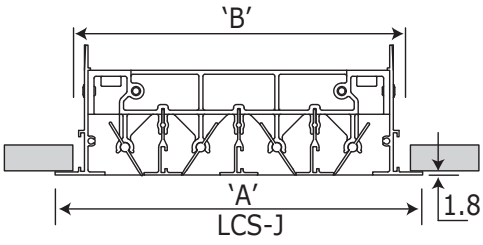
Sizes

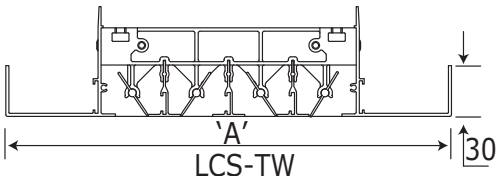
Standard from 2, 3 or 4 slots wide, 1800mm long (excluding ends).
Continuous diffuser lengths are supplied in sections for butt jointing on site. (Alignment plates supplied)











Dimensions

Diffuser Type	Number of Slots		
LCS-F	2	3	4
O/A Flange Dim 'A'	114	152	190
Cutout Opening Size 'B'	95	133	171
LCS-J	2	3	4
O/A Flange Dim 'A'	108	146	184
Cutout Opening Size 'B'	89	127	165
LCS-M	2	3	4
O/A Flange Dim 'B'	105	143	181
Face Flange Dim 'A'	86	124	162
LCS-P	2	3	4
O/A Flange Dim 'A'	95	133	171
Flush Cutout Size 'B'	89	127	165
Recess Cutout Size 'B'	96	134	172
LCS-TW	2	3	4
O/A Flange Dim 'A'	223	261	299

Order Example

LCS-F/1800/4SL/PPM9010/ENDS

Type
Length
No of Slots
Finish
Ends caps

Linear Slot Diffusers

LCS

Selection Criteria

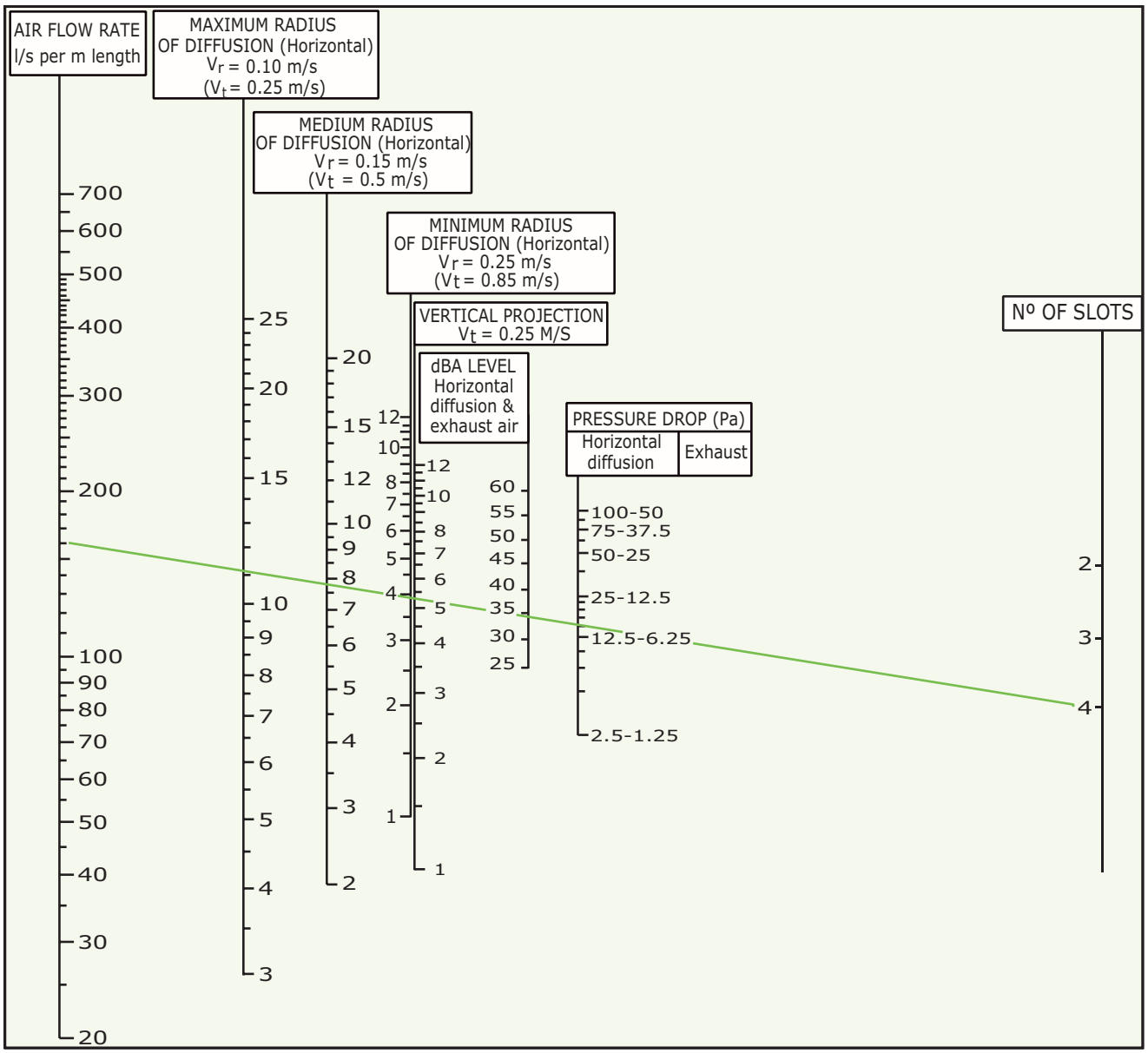
Ceiling height 2.75m, increase throw by 1m for each 1m increase in ceiling height. Horizontal diffusion is based on a cooling differential of 11°C. Vertical projection is based on a heating differential of 11°C.
Noise level is based on diffuser sound power level less 8dB room absorption.
V_r = mean room air velocity (m/s)
V_t = terminal velocity of supply air jet (m/s)

Length corrections					
Active Length (m)	0.5	1.25	2.0	2.5	3.0
dBA Reduction	-8	-5	-3	-2	0
Throw multiplier	0.45	0.65	0.8	0.9	1.0

Selection Example LCS/1800/4SL

Total air flow rate 288 l/s = 160 l/s/m
Minimum throw 4.0 x 0.8 = 3.2 m
Maximum throw 11.0 x 0.8 = 8.8 m
Pressure drop 16 Pa
Noise level 34 - 3 = 31 dBA

Performance Nomogram



Linear Fan Coil Diffusers

FCD1 / FCD2

Introduction

The Waterloo Linear Fan Coil Diffuser series (FCD) has been developed as an alternative form of continuous air distribution product for fan coil or variable air volume applications.
Available with either one or two way core configurations, the blade profile is specifically designed to produce throw characteristics with a high induction rate, so prompting rapid mixing and diffusion within the space. The core sections of the diffusers are retained with quick release spring clips and safety cords to allow easy removal during installation and service access.

Product Description

FCD1	One way fan coil diffuser
FCD2	Two way fan coil diffuser
LH	Left hand end cap for FCD1
RH	Right hand end cap for FCD1
Ends	Pair of end caps

Features

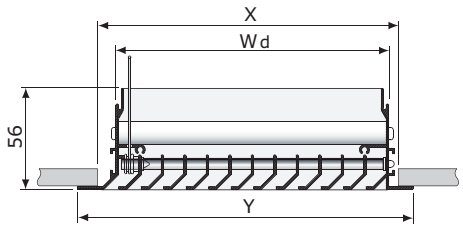
- High induction rate
- Quick release cores
- Wide size range
- Tile replacement units available

Finishes

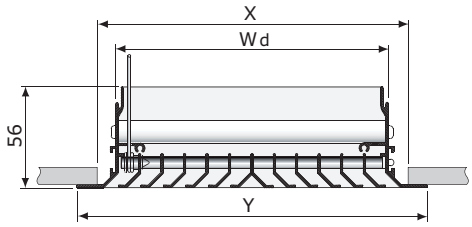
PPG9010 (RAL 9010 Gloss - 80% Gloss White)
PPM9010 (RAL 9010 Matt - 20% Gloss White)
PPM9006 (RAL 9006 Matt - 30% Gloss Silver)
Other colours available on request

Sizes

150mm to 400mm wide in 50mm increments.
Single lengths of 500mm up to 1500mm, continuous applications are supplied in 1200mm lengths with alignments strips.



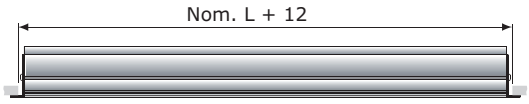
FCD1

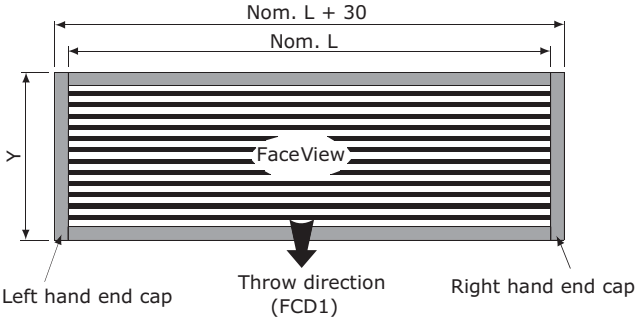


FCD2

Dimensions & Weights

Nom. Width	Wd	X		Y		Weight (Kg/m)
		FCD1	FCD2	FCD1	FCD2	
150	151	160	164	186	194	2.3
200	201	210	214	236	244	2.8
250	251	260	264	286	294	3.3
300	301	310	314	336	344	3.8
350	351	360	364	386	394	4.3
400	401	410	414	436	444	4.8





Order Example

FCD1/3000/250/PPM9010/ENDS

Type
Length
Width
Finish
Ends caps

Linear Fan Coil Diffusers

FCD1 / FCD2

Selection Criteria

Tabulated data is based on tests with a 1.2m diffuser. Correction factors should be applied to the acoustic and throw data for continuous lengths.
Noise data is valid for one or two way throw configurations and is expressed in terms of dBA level with a room absorption factor of 8dB.
Throws are based on a terminal velocity of 0.5 m/s, corresponding to an average room air velocity (V_r) of
0.25 m/s with a cooling differential of 10°C. For isothermal or 10°C heating conditions apply a factor of 1.15 to the throws.
To avoid draughts in the occupied zone, the selection of diffuser sizes and the resulting throws should be related to the ceiling height. The following tables provide a general recommendation for maximum throw selections at various ceiling heights.

Length corrections					
Active Length (m)	0.5	1.0	2.0	2.5	3.0
dBA Reduction	-4	-1	+2	+3	+5
Throw multiplier	0.7	0.8	1.1	1.25	1.5

Throw Recommendations					
Ceiling Height (m)	2.5	2.7	3.0	3.5	4.0
Max Throw (m)	4.0	5.5	6.5	9.5	12.0

Performance Table

FCD	Supply Air Volume per metre										
	Nom. H	150					200				
m³/h/m	l/s/m	1 Way Throw	2 Way Throw	P_s Supply	P_s Extract	L_w (dBA)	1 Way Throw	2 Way Throw	P_s Supply	P_s Extract	L_w (dBA)
270	75	3.0	2.1	2	4	-					
360	100	4.2	3.1	4	7	-	3.3	2.4	-	-	-
450	125	5.3	4.3	6	11	25	4.4	3.2	3	6	-
540	150	6.5	5.5	8	15	30	5.3	4.1	4	8	25
630	175	7.9	6.8	11	20	35	6.4	5.0	6	11	29
720	200	9.2	7.6	14	27	38	7.4	6.1	8	15	33
810	225										
900	250										
990	275										
		250					300				
432	120	3.4	2.5	2	3	-					
504	140	4.1	2.9	3	4	-					
576	160	4.8	3.5	3	5	25	4.2	2.9	2	4	-
648	180	5.6	4.1	4	6	28	4.8	3.4	3	5	25
720	200	6.2	4.7	5	8	30	5.4	3.9	3	6	28
810	225	7.2	5.5	6	10	33	6.2	4.6	4	8	31
900	250	7.9	6.4	7	12	36	7.1	5.4	5	10	34
990	275	9.1	7.2	9	15	38	7.8	6.2	6	12	36
1080	300	10.0	8.5	11	18	40	8.7	7.0	7	14	38
		350					400				
792	220	5.5	3.9	3	6	27					
864	240	6.0	4.4	3	7	30					
936	260	6.5	4.8	4	8	32	6.0	4.3	3	6	29
1008	280	7.0	5.5	4	9	34	6.5	4.8	3	7	31
1080	300	7.8	5.9	5	11	35	7.0	5.2	4	8	33
1170	325	8.5	6.8	6	13	37	7.6	6.0	4	10	35
1260	350	9.0	7.3	7	14	39	8.7	6.5	5	11	37
1350	375	10.0	8.3	8	16	41	9.2	7.3	6	13	38
1440	400						9.8	7.9	6	15	40

Linear Diffusers

DSL / DSL-D

Introduction

The Waterloo Large Format Linear Diffuser series (DSL) are ideal for most commercial supply and exhaust systems and integrate well with ceiling tile and lighting layouts. The clear design provides an extremely low air resistance characteristic and this makes the diffuser ideal for any fan coil or induction system which is pressure sensitive. Single or multi-slot diffusers are available with fixed 1 or 2 way air patterns; multi-slot 2 way diffusers may be adjusted to suit site conditions by changing vanes.
The diffusers are constructed from aluminium alloy extrusions fixed or clipped to cross stays. Internal vanes are removable for installation, access or cleaning.

Product Description

DSL	Large format one way discharge
DSL-D	Large format two way discharge
Ends	End caps
OBSS	Allen key operated opposed blade damper
ED	Equalising Deflector

Features

- Ultra low pressure loss characteristics suited to fan coil and induction supply systems
- Single or multi-slot to suit most air handling requirements
- Clean design for practical integration with lighting or ceiling systems
- Fixed 1 or 2 way pattern to prevent unwanted adjustment of air diffusion

Finishes

PPG9010 (RAL 9010 Gloss - 80% Gloss White)
PPM9010 (RAL 9010 Matt - 20% Gloss White)
PPM9006 (RAL 9006 Matt - 30% Gloss Silver)
Other colours available on request

Weights

0.4N + 0.6 kg/m
N = number of slots

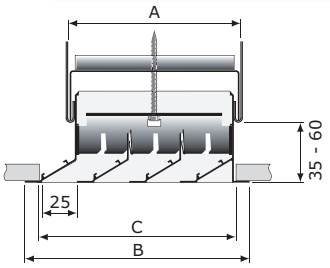
Sizes

From 1 to 8 slots wide
1500mm long (excluding ends)
Continuous diffuser lengths are supplied in sections for butt jointing on site (Alignment plates supplied)

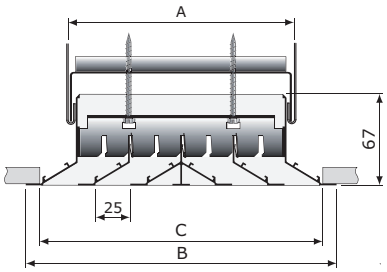
Dimensions

Type	A	B	C
DSL-1	46	89	70
DSL-2	84	127	108
DSL-3	122	165	146
DSL-4	160	203	185
DSL-5	198	241	222
DSL-6	237	279	260
DSL-7	275	317	298
DSL-8	313	355	336
DSL-D11	84	154	137
DSL-D12	122	192	175
DSL-D22	160	230	213
DSL-D23	198	268	251
DSL-D33	237	306	289
DSL-D34	275	345	327
DSL-D44	313	382	365

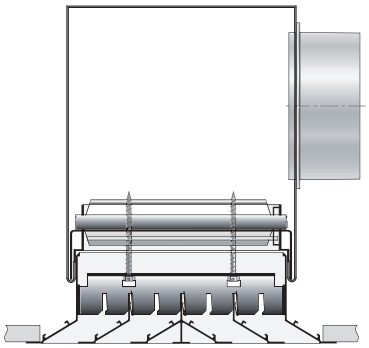
*Please specify number of slots in each direction



DSL

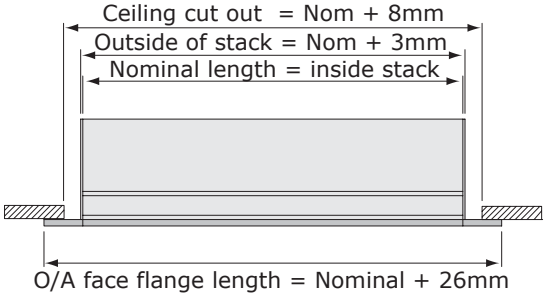


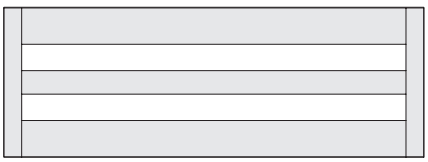
DSL-D



DSL-D + OBSS + Plenum

End caps





Order Example

DSL/3000/S1/PPM9010/ENDS

Type
Length
No of Slots
Finish
Ends caps

Linear Diffusers

DSL / DSL-D

Selection Criteria

From a ceiling height of 3.0m, increase throw by 300mm for each 300mm increase in ceiling height.
Horizontal diffusion is based on a cooling differential of 11°C
Under isothermal conditions apply a factor of 1.1 to throw values
Noise level is based on diffuser sound power level less 8dB room absorption
V_r = mean room air velocity (m/s)
V_t = terminal velocity of supply air jet (m/s)

Selection Example

DSL/2000/S4

Total air flow rate 400 l/s
Air flow rate per metre = 200 l/s/m Minimum throw 6.8m (8.5 x 0.8 factor) Maximum throw 12m (15.0 x 0.8 factor) Pressure drop 13Pa
Noise level 27dBA (30dBA - 3dB length correction)

Equalizing Deflector Corrections				
Diffuser Length (m)	0.5	0.75	1.0	1.5
Throw Multiplier using ED Blades	0.33	0.42	0.48	0.54

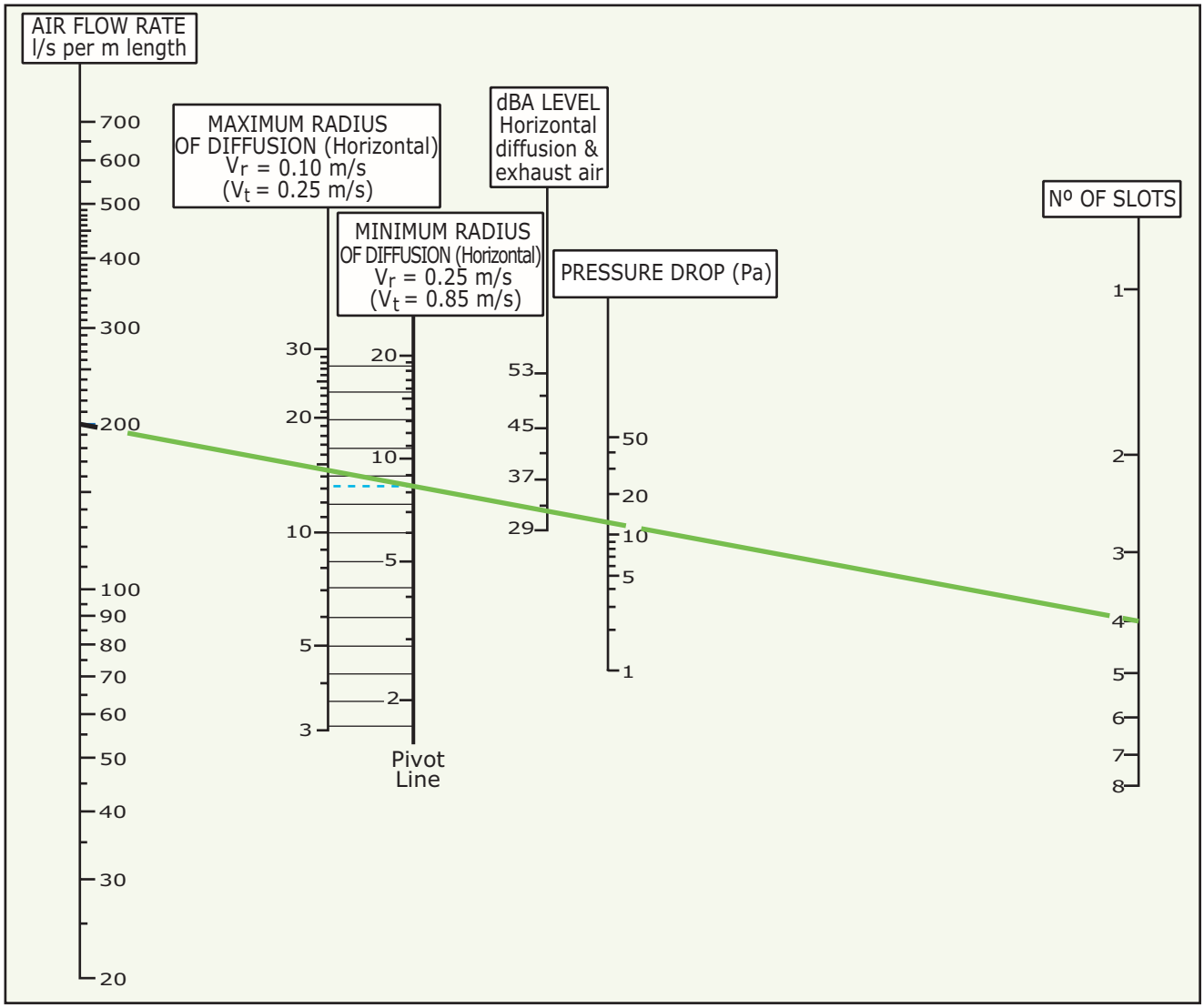
Equalizing Deflector Corrections				
Diffuser Length (m)	0.5	0.75	1.0	1.5
Throw Multiplier using ED Blades	0.33	0.42	0.48	0.54

Length Corrections					
Active Length (m)	0.5	1.25	2.0	2.5	3.0
dBA Reduction	-8	-5	-3	-2	0
Throw Multiplier	0.45	0.65	0.8	0.9	1.0

Length Corrections					
Active Length (m)	0.5	1.25	2.0	2.5	3.0
dBA Reduction	-8	-5	-3	-2	0
Throw Multiplier	0.45	0.65	0.8	0.9	1.0

DSL Exhaust Corrections
Pressure Loss Multiply x 2
Noise Level +5 dB

Performance Nomogram



Adjustable Curved Vane Diffusers

ACDH / ACDV

Introduction

The Waterloo ACD diffusers are ideally suited to commercial and industrial projects requiring relatively low cost but versatile air outlets. Available with 1, 2, 3 or 4 way patterns with individually adjustable vanes, the diffusers can be manufactured to any increment between the minimum and maximum sizes to suit ceiling or duct integration requirements.
As the air pattern is easily adjustable from the face it is recommended that ACD diffusers are not located in low or easily accessible ceiling locations.

Product Description

ACDH	Vanes are parallel to the width dimension
ACDV	Vanes are parallel to the height dimension
OBSS	Allen key operated opposed blade damper through face of diffuser

Features

- 1, 2, 3 and 4 way patterns
- Variable size range
- Adjustable air patterns
- Vertical or horizontal diffusers

Finishes

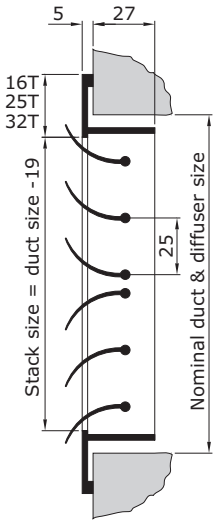
PPG9010 (RAL 9010 Gloss - 80% Gloss White)
PPM9010 (RAL 9010 Matt - 20% Gloss White)
PPM9006 (RAL 9006 Matt - 30% Gloss Silver)
Other colours available on request

Weights

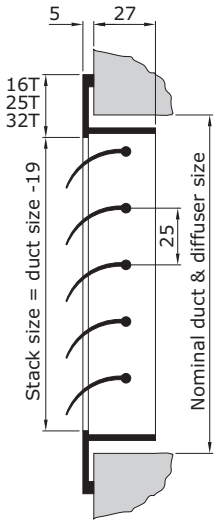
Approx	9kg/m² face area
OBSS/ED	9.5kg/m² face area

Sizes

Standard sizes	Minimum size - 150 x 150mm Maximum size - 600 x 600mm
Special sizes (ACD1 & 2 only)	Minimum size - 150 x 100mm Maximum size - 1500 x 1500mm

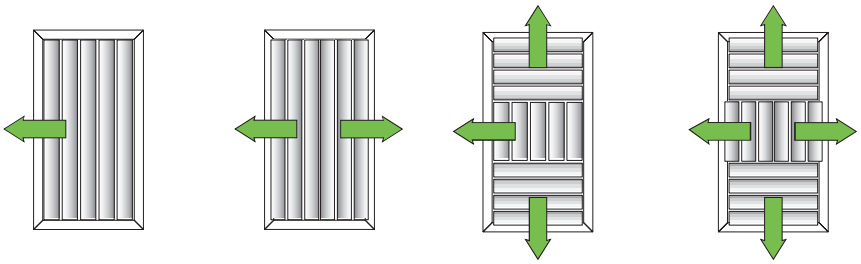


ACD2



ACD1

Patterns



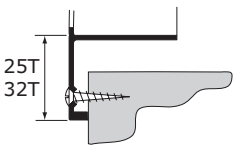
ACD1 ACD2 ACD3 ACD4

Order Example

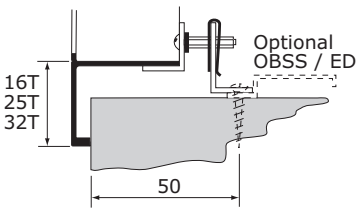
ACDH/4/300/300/25T/SF/PPG9010/OBSS

- Type
- Air pattern
- Duct width
- Duct height
- Border type
- Fixing
- Finish
- Damper

Border and fixing options



SF
Screw fixing through flange
(available on 25T & 32T only)



CRB
Concealed rear bracket
(Bracket can be reversed to reduce overall depth)

Adjustable Curved Vane Diffusers

ACDH / ACDV

Selection Criteria

Performance data is based on diffusers mounted in a ceiling with air at 11 °C cooling differential.
l/s tabulated is the total discharged by the diffuser. For a 2 way pattern one half of the tabulated l/s is discharged in each direction and for a 3 way one third in each direction. The 4 way pattern discharges one third at the tabulated l/s through each end section (Xl) & one sixth through each centre section (Xs).
Noise level is based on diffuser sound power level (L_w) re 10^{-12} W level less 8dB room absorption.

Selection Example ACD 600 x 400

Total air flow rate 400 l/s

ACD1
Velocity 2.8 m/s — Pressure Loss 4.4 Pa
Throw 3.8m — 41dBA level

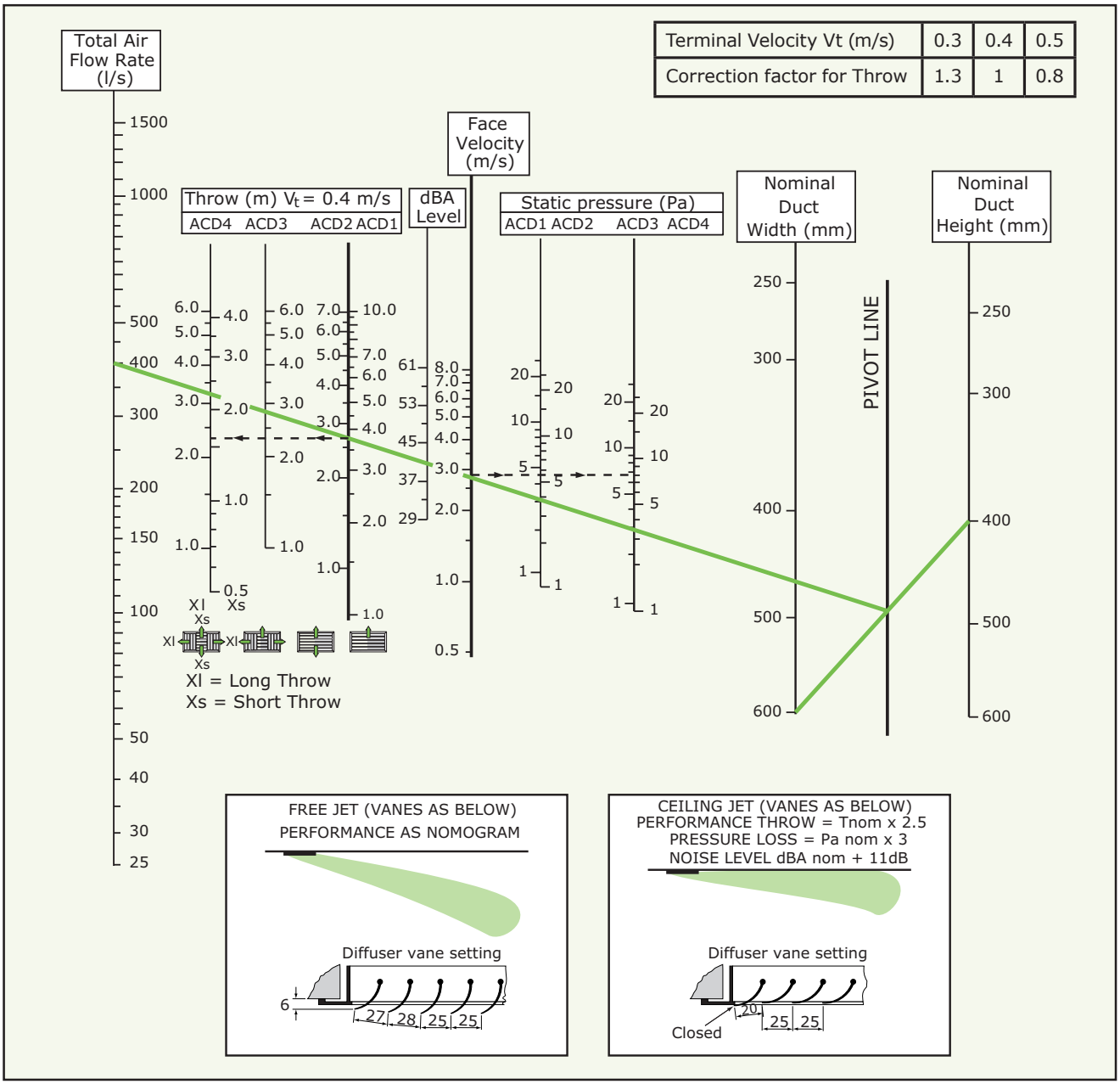
ACD2
Velocity 2.8 m/s — Pressure Loss 5.4 Pa
Throw 2.7m — 41dBA level

ACD3
Velocity 2.8 m/s — Pressure Loss 6.5 Pa
Throw 2.4m — 41dBA level

ACD4
Velocity 2.8 m/s — Pressure Loss 7.6 Pa
Throw 2.4m (Xl) 1.6m (Xs) — 41dBA level

Performance Nomogram

Terminal Velocity Vt (m/s)	0.3	0.4	0.5
Correction factor for Throw	1.3	1	0.8



Louvred Face Diffusers

DF / MD / DE / TD

Introduction

The Waterloo series D multicone diffusers are supplied as pressed aluminium construction in the standard square sizes. Other sizes and shapes are constructed of aluminium alloy extrusions with mitred and welded/cleated frames.

They are ideal for most commercial projects requiring high quality diffusers for integration with a variety of ceiling types. The range is available with 5 frame styles and 14 different air pattern control core designs for vertical and horizontal diffusion.

Product Description

DF/MD	Flanged horizontal blow diffuser
DF-T8	8mm drop tegular tile replacement 375 & 450mm neck sizes
DF-T16	16mm drop tegular tile replacement 375 & 450 square necks
DE	Recessed frame horizontal blow diffuser
TD	Tile diffuser 4 way 450 x 450 only
OBSS	Opposed blade damper
OBLL	Lever operated damper via the diffuser face
PBD	Plenum box
NR/D	Top entry neck reducer

Features

- Five frame styles for integration with most ceilings
- 14 core styles to suit required air pattern
- Lightweight aluminium construction
- Fixed or adjustable patterns
- Suits 300, 500, 600 & 1200 ceiling grid systems

Finishes

PPG9010 (RAL 9010 Gloss - 80% Gloss White)

PPM9010 (RAL 9010 Matt - 20% Gloss White)

PPM9006 (RAL 9006 Matt - 30% Gloss Silver)

Other colours available on request
Note: TD only in RAL 9010 - 20% Gloss

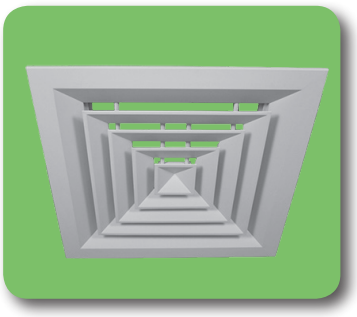
Weights

DF/MD/DE/TD	12.5kg/m² face area
OBSS/ED	9.5kg/m² face area

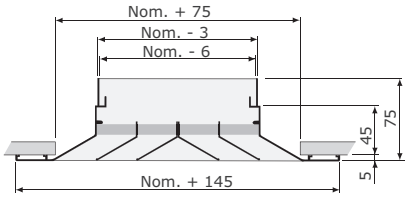
Sizes

Series DF/DE	Minimum size - 150 x 150 duct size
	Maximum size - 1200 x 600 duct size
Series DF-T8/T16	Minimum size - 375 x 375 duct size (500mm tile replacement)
	Maximum size - 450 x 450 duct size (600mm tile replacement)

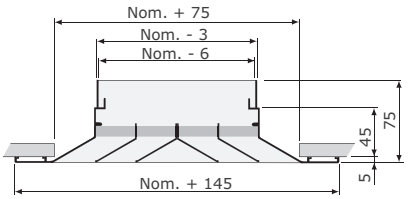
Standard increments of 75mm only



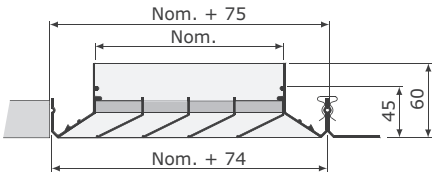
DF



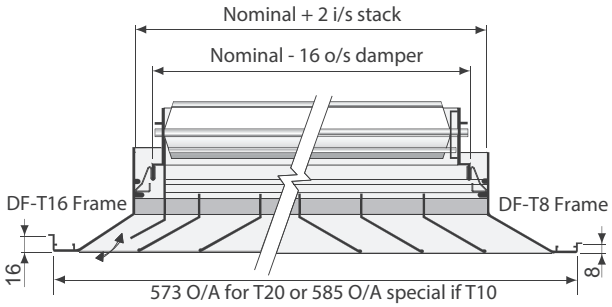
DF Typical lay-in grid



MD / TD Typical lay-in grid



DE Typical clip in grid



OBLL damper
Lever operation at diffuser face.
Suitable for core 41 only

OBSS damper
Operated by screwdriver after removing core. Suitable for all types

DF - T16 and DF - T8 Typical tegular grid

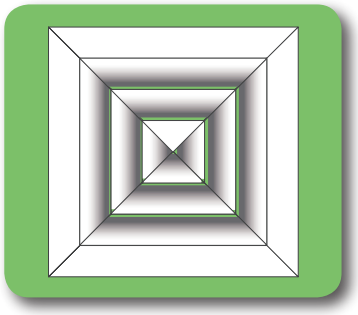
Order Example

DF-41/300/300/PPM9010/OBSS

Type
Duct width
Duct height
Finish
Damper

Louvred Face Diffusers

DF / DE core 41



Selection Example

DF41/300x300

Air flow rate 225 l/s
Throw 2.0 - 4.5 m
Total Pressure Loss 23 Pa
Noise level 33 dBA

Exhaust & OBSS corrections		
Supply diffuser	0dB	Pa x 1.0
Supply diffuser + OBSS	+ 3dB	Pa x 1.0
Exhaust diffuser	+ 3dB	Pa x 1.1
Exhaust diffuser + OBSS	+13dB	Pa x 1.15

Note:

MD = Pressed aluminium

DF/DE/TD = Extruded and mitred aluminium

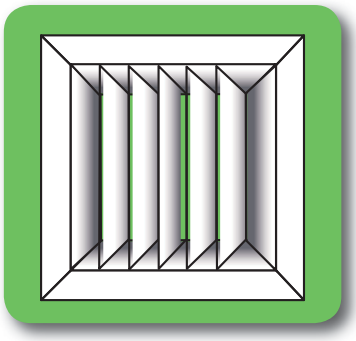
Performance Table

DF / MD / DE / TD		Core 41 						
Supply						TD		
Total pressure drop (Pa)		150 x 150	225 x 225	300 x 300	375 x 375	450 x 450	525 x 525	600 x 600
9	l/s	34	76	135	211	304	413	540
	Min Max (m)	1.0-1.5	1.0-2.0	1.5-2.5	2.0-3.5	2.0-4.0	2.5-5.0	2.5-5.5
	L_w	-	-	-	-	23	24	25
15	l/s	45	101	180	282	405	551	720
	Min Max (m)	1.0-2.0	1.5-2.5	2.0-3.5	2.0-4.5	2.5-5.0	3.0-6.0	3.5-7.0
	L_w	-	24	27	28	30	31	32
23	l/s	56	127	225	352	506	689	900
	Min Max (m)	1.5-2.5	2.0-3.5	2.0-4.5	2.5-5.5	3.5-6.5	4.0-8.0	4.5-8.5
	L_w	26	30	33	34	36	37	38
33	l/s	68	152	270	422	608	827	1080
	Min Max (m)	1.5-3.0	2.0-4.0	2.5-5.0	3.5-6.5	4.0-8.0	4.5-9.0	5.0-10.5
	L_w	31	35	38	39	41	42	43
43	l/s	79	177	315	492	709	964	1260
	Min Max (m)	2.0-3.5	2.0-4.5	3.0-6.0	4.0-7.5	4.5-9.0	5.0-10.5	6.0-12.0
	L_w	35	39	42	43	45	46	47

Please note: TD Tile diffuser 450 x 450 only

Louvred Face Diffusers

DF / DE core 11



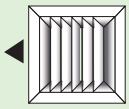
Selection Criteria

Ceiling height 2.7m.
Temperature differential -10K
Radius of diffusion - Minimum and maximum throw which results in an average air velocity within the occupied zone of 0.25m/s and 0.10m/s respectively.
Noise level is based on diffuser sound power level less 8dB room absorption.

Selection Example DF11/300x300

Air flow rate	225 l/s
Throw	4.5 - 8.5 m
Total Pressure Loss	23 Pa
Noise level	35 dBA

Performance Table

DF / DE		Core 11 						
Supply								
Total pressure drop (Pa)		150 x 150	225 x 225	300 x 300	375 x 375	450 x 450	525x525	600x600
9	l/s	34	76	135	211	304	413	540
	Min - Max (m)	1.5-2.5	2.0-4.0	2.5-5.5	3.5-6.5	3.5-7.0	4.0-8.0	4.5-8.5
	L_w	-	-	-	29	31	33	35
15	l/s	45	101	180	282	405	551	720
	Min - Max (m)	2.0-3.5	2.5-5.5	3.5-6.5	4.5-8.5	5.5-10.0	5.5-10.0	6.0-11.0
	L_w	22	26	29	31	33	35	37
23	l/s	56	127	225	352	506	689	900
	Min - Max (m)	2.0-4.5	3.5-6.5	4.5-8.5	5.5-11.0	6.5-13.0	6.5-13.0	7.0-14.0
	L_w	28	32	35	37	39	41	44
33	l/s	68	152	270	422	608	827	1080
	Min - Max (m)	2.5-5.5	4.0-8.0	5.0-10.5	6.5-13.5	7.0-14.0	7.5-16.0	8.5-17.5
	L_w	33	37	40	42	44	46	49
43	l/s	79	177	315	492	709	964	1260
	Min - Max (m)	3.0-6.0	4.5-9.0	6.5-12.0	7.5-15.0	9.0-18.0	9.5-18.5	10.0-19.0
	L_w	37	41	44	46	49	52	55

Louvred Face Diffusers

DF / DE core 12 / 13

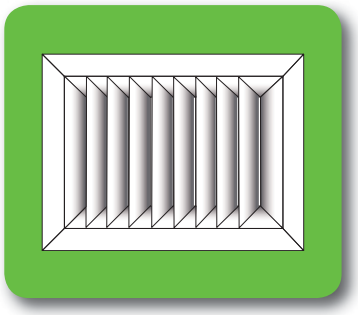
Selection Criteria

Ceiling height 2.7 m
Temperature differential -10K
Radius of diffusion - Minimum and maximum throw which results in an average air velocity within the occupied zone of 0.25m/s and 0.10m/s respectively.
Noise level is based on diffuser sound power level less 8dB room absorption.

Selection Example DF12/450x150

Air flow rate 169 l/s
Throw 4.0 - 8.0 m
Total Pressure Loss 23 Pa
Noise level 34 dBA

Exhaust & OBSS corrections		
Supply diffuser	0dB	Pa x 1.0
Supply diffuser + OBSS	+ 3dB	Pa x 1.0
Exhaust diffuser	+ 3dB	Pa x 1.1
Exhaust diffuser + OBSS	+13dB	Pa x 1.15



Performance Table

DF / DE Supply		Core 12 / Core 13										
Total pressure drop (Pa)		225 x 150	300 x 150	375 x 150	450 x 150	525 x 150	600 x 150	300 x 225	375 x 225	450 x 225	525 x 225	600 x 225
9	l/s	51	67	84	101	118	135	101	127	153	177	203
core 12	Min - Max (m)	2.0-3.5	2.5-4.0	2.5-4.5	3.0-5.0	3.5-5.5	4.0-6.0	2.5-5.0	3.0-5.5	3.5-6.0	4.0-7.0	4.5-8.0
core 13	Min - Max (m)	2.0-3.5	2.0-3.5	2.0-4.0	2.5-5.0	3.0-5.5	4.0-6.0	2.5-5.0	2.5-5.5	3.0-6.0	3.5-6.5	4.0-7.0
	L_w	-	-	-	20	21	22	20	20	21	23	25
15	l/s	68	90	113	135	158	180	135	169	203	237	271
core 12	Min - Max (m)	2.0-4.5	2.5-5.0	2.7-6.0	3.0-7.0	3.5-7.5	4.0-8.0	3.0-6.0	3.5-6.5	4.0-7.0	4.5-8.0	5.0-9.0
core 13	Min - Max (m)	2.0-4.5	2.5-5.0	2.5-6.0	3.0-6.0	3.5-7.0	4.5-9.0	3.0-6.0	3.5-6.5	4.0-7.0	4.5-8.0	5.0-9.0
	L_w	24	27	27	28	29	30	28	28	29	30	31
23	l/s	84	113	140	169	197	225	169	211	253	295	337
core 12	Min - Max (m)	2.5-5.5	3.0-6.0	3.5-7.0	4.0-8.0	4.5-9.0	5.0-10.0	4.0-8.0	4.5-8.5	5.0-9.0	5.5-10.0	6.0-12.0
core 13	Min - Max (m)	2.5-5.5	3.0-6.0	3.5-6.5	4.0-7.5	4.5-8.0	5.0-10.0	4.0-7.5	4.5-8.5	5.0-10.0	5.5-11.0	6.0-12.0
	L_w	30	33	33	34	35	36	33	34	35	36	37
33	l/s	101	135	169	202	236	270	202	253	303	354	404
core 12	Min - Max (m)	3.5-6.5	4.0-7.0	4.5-8.5	5.0-10.0	5.5-10.5	6.0-11.0	4.5-9.0	5.0-9.5	5.5-10.0	6.0-12.0	7.0-14.0
core 13	Min - Max (m)	3.5-6.5	4.0-7.5	4.0-8.0	4.5-9.0	5.0-11.0	6.0-12.0	4.5-9.0	5.0-10.0	5.5-11.0	6.0-12.0	7.0-14.0
	L_w	35	38	38	39	40	41	38	39	40	41	42
43	l/s	118	158	197	236	275	315	236	295	354	413	472
core 12	Min - Max (m)	4.0-7.5	4.5-8.0	5.5-10.0	6.0-11.0	6.5-12.0	7.0-13.0	5.0-10.5	5.5-11.0	6.0-11.5	7.0-15.0	8.0-16.0
core 13	Min - Max (m)	4.0-7.5	4.5-8.5	5.0-10.0	5.0-10.5	6.0-12.0	7.0-15.0	5.0-10.5	6.0-12.0	6.5-13.0	7.0-14.0	8.0-16.0
	L_w	39	42	42	43	44	46	43	43	44	45	46

Total pressure drop (Pa)		375 x 300	450 x 300	525 x 300	600 x 300	450 x 375	525 x 375	600 x 375	525 x 450	600 x 450	600 x 525
9	l/s	169	203	236	271	253	296	339	354	406	474
core 12	Min - Max (m)	2.5-6.0	3.0-6.5	3.5-7.0	4.0-8.0	3.0-6.5	3.5-7.0	4.0-8.0	3.0-7.0	4.0-8.0	3.0-8.5
core 13	Min - Max (m)	2.5-6.0	3.5-6.5	4.0-7.0	4.5-7.5	3.0-6.5	3.5-7.0	4.0-7.5	3.5-7.5	4.0-8.0	3.0-8.5
	L_w	21	23	24	25	23	24	25	24	25	26
15	l/s	225	270	315	360	338	394	450	472	540	629
core 12	Min - Max (m)	4.0-8.0	4.5-9.0	5.0-10.0	6.0-11.0	4.5-9.0	5.0-10.0	6.0-11.0	5.0-9.5	6.0-11.0	6.0-11.0
core 13	Min - Max (m)	4.0-8.0	4.5-8.5	5.0-9.0	5.5-10.0	4.5-9.0	5.0-10.0	5.5-11.0	5.0-10.0	6.0-11.0	6.0-11.0
	L_w	29	30	32	33	30	31	33	31	32	33
23	l/s	281	338	394	441	422	492	562	591	675	785
core 12	Min - Max (m)	5.0-10.0	5.5-11.0	6.0-12.0	7.0-13.0	5.5-11.0	6.0-12.0	7.0-13.0	6.0-12.0	7.0-13.0	7.0-14.0
core 13	Min - Max (m)	5.0-10.0	5.0-10.5	5.5-11.5	6.0-12.0	5.5-11.0	6.0-12.0	6.5-13.0	6.5-12.5	7.0-13.0	7.0-14.0
	L_w	35	37	38	39	36	37	38	37	38	40
33	l/s	338	405	473	540	506	591	674	709	810	942
core 12	Min - Max (m)	6.0-12.0	6.5-13.0	7.0-15.0	8.0-16.0	6.5-13.0	7.0-14.0	8.0-16.0	7.0-14.5	8.0-16.0	9.0-18.0
core 13	Min - Max (m)	6.0-11.5	6.5-13.0	7.0-14.0	7.5-15.0	6.5-13.0	7.0-14.0	7.5-15.0	7.5-15.0	8.0-16.0	8.5-17.5
	L_w	40	41	42	44	41	42	44	42	43	45
43	l/s	394	473	551	630	590	689	788	827	945	1103
core 12	Min - Max (m)	7.0-13.5	7.5-15.0	8.0-16.0	9.0-18.0	7.5-15.0	8.0-16.0	9.0-18.0	8.5-16.0	9.0-18.0	10.0-20.0
core 13	Min - Max (m)	7.0-13.5	7.5-15.0	8.0-16.0	9.0-18.0	7.5-15.0	8.0-16.0	9.0-17.0	9.0-16.5	9.5-18.0	10.0-20.0
	L_w	44	45	46	47	45	46	47	46	47	49

Louvred Face Diffusers

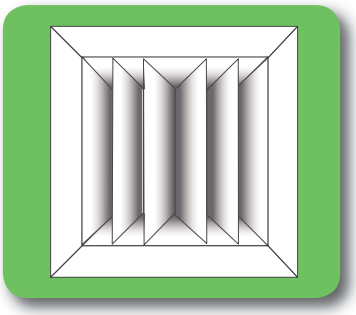
DF / DE core 21 / 25

Selection Criteria

Ceiling height 2.7 m
Temperature differential -10K
Radius of diffusion - Minimum and maximum throw which results in an average air velocity within the occupied zone of 0.25m/s and 0.10m/s respectively.
Noise level is based on diffuser sound power level less 8dB room absorption.

Selection Example DF21/300x300

Air flow rate 225 l/s
Throw 3.0 - 6.0 m
Total Pressure Loss 23 Pa
Noise level 34 dBA

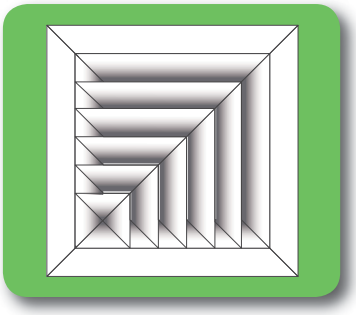


Performance Table

DF / DE Supply		Core 21						
Total pressure drop (Pa)		150 x 150	225 x 225	300 x 300	375 x 375	450 x 450	525 x 525	600 x 600
9	l/s	34	76	135	211	304	413	540
	Min Max (m)	1.0-2.0	1.5-2.5	2.0-3.5	2.5-4.5	2.5-6.0	3.0-6.5	3.5-7.0
	L_w	-	-	-	23	24	26	28
15	l/s	45	101	180	282	405	551	720
	Min Max (m)	1.0-2.5	2.0-3.5	2.5-5.0	3.0-6.0	3.5-7.5	4.0-8.0	4.5-8.5
	L_w	-	25	28	30	31	33	35
23	l/s	56	127	225	352	506	689	900
	Min Max (m)	1.5-3.0	2.5-5.0	3.0-6.0	4.0-7.5	4.5-9.0	5.0-10.0	5.5-10.5
	L_w	27	31	34	36	37	39	41
33	l/s	68	152	270	422	608	827	1080
	Min Max (m)	2.0-3.5	2.5-5.5	3.5-7.5	5.0-9.5	5.5-11.0	6.5-13.0	6.5-13.0
	L_w	32	36	39	41	42	43	45
43	l/s	79	177	315	492	709	964	1260
	Min Max (m)	2.0-4.5	3.0-6.0	4.5-8.5	5.5-11.0	6.5-13.0	7.5-15.0	7.5-15.0
	L_w	36	40	43	45	46	48	49

Selection Example DF25/300x300

Air flow rate 225 l/s
Throw 3.0 - 6.0 m
Total Pressure Loss 23 Pa
Noise level 34 dBA



Performance Table

DF / DE Supply		Core 25						
Total pressure drop (Pa)		150 x 150	225 x 225	300 x 300	375 x 375	450 x 450	525 x 525	600 x 600
9	l/s	34	76	135	211	304	413	540
	Min Max (m)	1.0-2.0	1.5-2.5	2.0-3.5	2.5-4.5	2.5-6.0	3.0-6.5	3.0-7.0
	L_w	-	-	20	23	24	25	26
15	l/s	45	101	180	282	405	551	720
	Min Max (m)	1.0-2.5	2.0-3.5	2.5-5.0	3.0-6.0	3.5-7.5	4.0-8.0	4.0-9.0
	L_w	-	25	28	30	31	32	33
23	l/s	56	127	225	352	506	689	900
	Min Max (m)	1.5-3.0	2.5-5.0	3.0-6.0	4.0-7.5	4.5-9.0	5.0-10.0	5.0-11.0
	L_w	27	31	34	36	37	38	39
33	l/s	68	152	270	422	608	827	1080
	Min Max (m)	2.0-3.5	2.5-5.5	3.5-7.5	5.0-9.5	5.5-11.0	6.0-12.0	6.0-13.0
	L_w	32	36	39	41	42	43	44
43	l/s	79	177	315	492	709	964	1260
	Min Max (m)	2.0-4.5	3.0-6.0	4.5-8.5	5.5-11.0	6.5-13.0	7.0-14.0	7.0-15.0
	L_w	36	40	43	45	46	47	48

Louvred Face Diffusers

DF / DE core 22 / 23

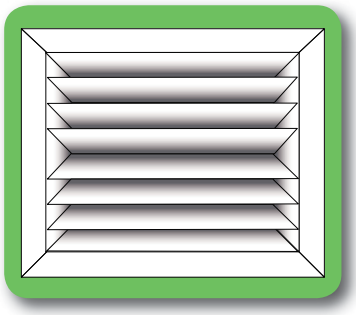
Selection Criteria

Ceiling height 2.7 m
Temperature differential -10K
Radius of diffusion - Minimum and maximum throw which results in an average air velocity within the occupied zone of 0.25m/s and 0.10m/s respectively.
Noise level is based on diffuser sound power level less 8dB room absorption.

Selection Example DF22/450x150

Air flow rate 169 l/s
Throw 3.0 - 5.5 m
Total Pressure Loss 23 Pa
Noise level 33 dBA

Exhaust & OBSS corrections		
Supply diffuser	0dB	Pa x 1.0
Supply diffuser + OBSS	+ 3dB	Pa x 1.0
Exhaust diffuser	+ 3dB	Pa x 1.1
Exhaust diffuser + OBSS	+13dB	Pa x 1.15



DF - core 23

Performance Table

DF / DE Supply		Core 22 / Core 23										
Total pressure drop (Pa)		225 x 150	300 x 150	375 x 150	450 x 150	525 x 150	600 x 150	300 x 225	375 x 225	450 x 225	525 x 225	600 x 225
9	l/s	51	67	84	101	118	135	101	127	153	177	203
core 22	Min - Max (m)	1.0-2.5	1.5-2.5	1.5-3.0	2.0-3.0	2.5-3.5	3.0-4.0	2.0-3.5	2.0-3.5	2.5-4.0	3.0-4.5	3.5-5.0
core 23	Min - Max (m)	1.0-2.5	1.5-2.5	1.5-3.0	2.0-3.5	2.5-4.0	3.0-5.0	2.0-3.5	2.0-4.0	2.5-4.0	3.0-4.5	3.5-5.0
	L_w	-	-	-	-	20	21	-	-	20	21	22
15	l/s	68	90	113	135	158	180	135	169	203	237	271
core 22	Min - Max (m)	1.5-3.0	2.0-3.5	2.5-4.0	3.0-4.5	3.5-5.0	4.0-5.5	2.0-4.5	2.5-5.0	3.0-5.5	3.5-6.0	4.0-6.5
core 23	Min - Max (m)	1.5-3.0	2.0-3.5	2.0-4.0	2.5-4.5	3.0-5.0	3.5-6.0	2.0-4.5	2.5-5.0	3.0-5.5	3.5-6.0	4.0-7.0
	L_w	23	25	26	27	28	29	27	28	28	29	30
23	l/s	84	113	140	169	197	225	169	211	253	295	337
core 22	Min - Max (m)	2.0-3.5	2.0-4.5	2.5-5.0	3.0-5.5	3.5-6.0	4.0-7.0	2.5-5.0	3.0-6.0	3.5-6.5	4.0-7.0	4.5-8.0
core 23	Min - Max (m)	2.0-3.5	2.0-4.5	2.5-5.0	3.0-5.5	3.5-6.0	4.0-7.0	2.5-5.5	3.0-6.0	3.5-6.5	3.5-7.5	4.5-9.0
	L_w	29	31	32	33	34	35	33	34	34	35	36
33	l/s	101	135	169	202	236	270	202	253	303	354	404
core 22	Min - Max (m)	2.0-4.5	2.5-5.0	3.0-5.0	3.5-6.0	4.0-6.5	4.5-8.0	3.5-6.5	3.5-7.5	4.0-8.0	4.5-9.0	5.0-10.0
core 23	Min - Max (m)	2.0-4.5	2.5-5.0	3.0-6.0	3.5-6.5	4.0-7.0	4.5-8.0	3.5-6.5	3.5-7.5	4.0-8.0	4.5-8.5	5.5-11.0
	L_w	34	36	37	38	39	40	38	39	39	41	42
43	l/s	118	158	197	236	275	315	236	295	354	413	472
core 22	Min - Max (m)	2.5-5.0	3.0-6.0	3.5-6.5	4.0-7.0	4.5-8.0	5.0-9.0	4.0-7.5	4.5-8.5	5.0-9.0	5.5-10.0	6.0-11.0
core 23	Min - Max (m)	2.5-5.0	3.0-6.0	3.5-7.0	4.0-7.5	4.5-8.0	5.0-9.0	4.0-7.5	4.0-8.5	5.0-9.0	5.0-10.0	7.0-13.0
	L_w	38	40	41	42	43	44	42	43	43	45	46

Total pressure drop (Pa)		375 x 300	450 x 300	525 x 300	600 x 300	450 x 375	525 x 375	600 x 375	525 x 450	600 x 450	600 x 525
9	l/s	169	203	236	271	253	296	339	354	406	474
core 22	Min - Max (m)	2.0-4.0	2.5-4.5	3.5-5.0	3.5-5.5	2.5-5.0	3.0-5.5	3.5-6.0	2.5-5.0	3.0-5.5	4.0-6.0
core 23	Min - Max (m)	2.0-4.0	2.0-4.5	2.5-5.0	3.0-6.0	2.5-5.0	3.0-6.0	3.5-6.5	2.5-5.0	3.0-5.5	3.0-5.5
	L_w	21	23	24	25	23	24	25	24	25	26
15	l/s	225	270	315	360	338	394	450	472	540	629
core 22	Min - Max (m)	2.5-5.5	3.0-6.0	3.5-6.5	4.0-7.0	3.0-6.5	3.5-7.0	4.0-8.0	3.0-6.5	4.0-7.0	5.0-8.0
core 23	Min - Max (m)	2.5-6.0	3.0-6.0	3.5-6.5	4.0-7.0	3.5-6.5	4.0-7.0	4.5-8.0	3.0-6.5	3.5-7.0	4.0-8.0
	L_w	29	30	32	33	30	31	33	31	32	33
23	l/s	281	338	394	441	422	492	562	591	675	785
core 22	Min - Max (m)	3.5-7.0	4.0-7.5	4.5-8.0	5.0-9.0	4.0-8.5	4.5-9.0	5.0-10.0	4.0-8.5	5.0-9.0	5.5-10.0
core 23	Min - Max (m)	3.5-7.0	4.0-8.0	4.5-9.0	5.0-10.0	4.5-8.5	5.0-9.0	5.5-10.0	4.0-8.5	4.5-9.0	5.0-10.0
	L_w	34	37	38	39	36	37	38	37	38	40
33	l/s	338	405	473	540	506	591	674	709	810	942
core 22	Min - Max (m)	4.0-8.0	4.5-9.0	5.0-10.0	6.0-12.0	5.0-9.5	5.5-10.0	6.0-11.0	5.0-9.5	6.0-11.0	6.5-12.0
core 23	Min - Max (m)	4.0-8.0	4.5-9.0	5.0-10.0	5.5-12.0	5.0-10.0	5.5-11.0	6.0-12.0	5.0-9.5	5.5-10.0	6.0-11.0
	L_w	39	41	42	44	41	42	44	42	43	45
43	l/s	394	473	551	630	590	689	788	827	945	1103
core 22	Min - Max (m)	5.0-9.5	5.5-10.0	6.0-12.0	7.0-14.0	6.0-11.0	6.5-12.0	7.0-13.0	6.0-11.5	7.0-13.0	8.0-14.0
core 23	Min - Max (m)	5.0-9.5	5.5-10.5	6.0-12.0	7.0-14.0	6.0-12.0	7.0-13.0	7.5-14.0	6.0-12.0	7.0-13.0	7.0-14.0
	L_w	44	45	46	47	45	46	47	46	47	49

Louvred Face Diffusers

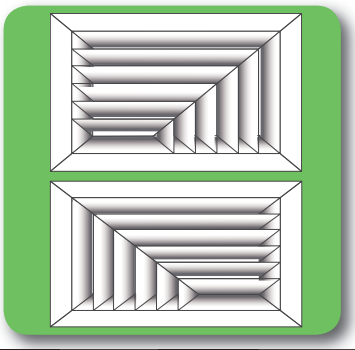
DF / DE core 26 / 27

Selection Criteria

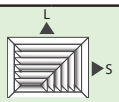
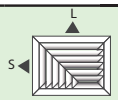
Ceiling height 2.7 m
Temperature differential -10K
Radius of diffusion - Minimum and maximum throw which results in an average air velocity within the occupied zone of 0.25m/s and 0.10m/s respectively.
Noise level is based on diffuser sound power level less 8dB room absorption.

Selection Example DF26/450x150

Air flow rate 169 l/s
Short side throw 2.5 - 4.0 m
Long side throw 3.5 - 6.5 m
Total Pressure Loss 23 Pa
Noise level 32 dBA



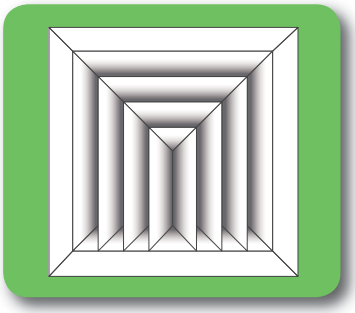
Performance Table

DF / DE		Core 26 					Core 27 				S = Short side throw L = Long side throw	
Supply												
Total pressure drop (Pa)		225 x 150	300 x 150	375 x 150	450 x 150	525 x 150	600 x 150	300 x 225	375 x 225	450 x 225	525 x 225	600 x 225
9	l/s	51	67	84	101	118	135	101	127	153	177	203
	S Min - Max (m)	1.0-2.0	1.0-2.0	1.0-2.0	1.5-2.5	2.0-3.0	2.5-3.5	1.5-3.0	2.0-3.5	2.5-4.0	3.0-4.0	3.0-5.0
	L Min - Max (m)	1.5-2.5	2.0-3.5	2.0-4.0	2.5-4.5	2.5-5.0	3.0-5.5	2.0-4.0	2.5-4.5	3.0-5.0	3.5-5.5	3.5-6.0
	L_w	-	-	-	-	-	20	-	-	20	21	22
15	l/s	68	90	113	135	158	180	135	169	203	237	271
	S Min - Max (m)	1.0-2.5	1.0-2.5	1.0-2.5	1.5-3.0	2.0-3.5	2.5-3.5	2.0-4.0	2.5-4.5	3.0-5.0	3.0-5.5	3.0-6.0
	L Min - Max (m)	2.0-3.5	2.0-4.5	2.5-5.0	3.0-5.5	3.0-6.0	3.5-6.5	2.5-5.0	3.0-5.5	3.5-6.0	4.0-7.0	3.5-7.0
	L_w	23	25	25	26	27	28	27	28	28	29	30
23	l/s	84	113	140	169	197	225	169	211	253	295	337
	S Min - Max (m)	2.0-3.5	2.0-3.5	2.0-3.5	2.5-4.0	3.0-4.5	3.5-5.0	2.5-5.0	3.0-5.5	3.5-6.0	4.0-7.0	4.0-8.0
	L Min - Max (m)	2.0-4.5	2.5-5.0	3.0-6.0	3.5-6.5	4.0-7.0	4.0-8.0	2.5-6.0	3.0-6.5	3.5-7.0	4.0-8.0	4.5-9.0
	L_w	29	31	31	32	34	35	33	34	34	35	36
33	l/s	101	135	169	202	236	270	202	253	303	354	404
	S Min - Max (m)	2.0-4.0	2.0-4.0	2.0-4.0	2.5-4.5	3.5-5.0	3.5-5.5	2.5-6.0	3.0-6.5	3.5-7.0	4.0-8.0	4.5-9.0
	L Min - Max (m)	2.5-5.0	3.5-6.5	4.5-7.5	4.5-8.0	5.0-8.0	5.5-9.5	3.5-7.5	4.0-8.0	4.5-9.0	5.0-10.0	5.5-11.0
	L_w	34	36	37	38	39	40	38	39	39	41	42
43	l/s	118	158	197	236	275	315	236	295	354	413	472
	S Min - Max (m)	2.0-4.5	2.0-4.5	2.0-4.5	2.5-5.0	3.0-5.5	3.5-6.0	3.5-6.5	4.0-7.0	4.5-8.0	5.0-9.0	5.5-10.0
	L Min - Max (m)	3.0-6.0	4.0-7.5	4.5-8.5	5.5-9.0	5.5-10.0	6.0-11.0	4.5-8.0	5.0-9.0	5.5-9.0	6.0-11.0	7.0-12.0
	L_w	38	40	41	42	43	44	42	43	43	45	46

Total pressure drop (Pa)		375 x 300	450 x 300	525 x 300	600 x 300	450 x 375	525 x 375	600 x 375
9	l/s	169	203	236	271	253	296	339
	S Min - Max (m)	2.0-4.0	2.0-4.0	2.5-4.5	2.5-5.0	2.5-4.5	2.5-5.0	3.0-6.0
	L Min - Max (m)	2.5-5.0	2.5-5.0	3.0-5.5	3.0-6.0	3.0-5.5	3.0-6.0	3.5-6.5
	L_w	20	21	22	23	23	24	25
15	l/s	225	270	315	360	338	394	450
	S Min - Max (m)	2.5-5.0	2.5-5.0	3.0-5.5	3.0-6.0	3.0-5.5	3.0-6.0	3.5-7.0
	L Min - Max (m)	3.0-6.0	3.5-7.5	4.0-7.5	4.5-8.5	4.0-7.5	4.5-8.0	5.0-8.5
	L_w	28	29	31	32	30	31	32
23	l/s	281	338	394	441	422	492	562
	S Min - Max (m)	3.0-6.0	3.0-6.0	3.5-6.5	4.0-7.0	3.5-6.5	4.0-7.0	5.0-8.0
	L Min - Max (m)	4.5-7.0	4.5-9.5	5.0-10.0	5.5-11.0	5.0-10.0	6.0-11.0	6.5-12.0
	L_w	34	35	37	38	36	37	37
33	l/s	338	405	473	540	506	591	674
	S Min - Max (m)	4.0-7.5	4.0-7.5	4.5-8.5	5.0-9.0	4.5-8.5	5.0-9.0	6.0-10.0
	L Min - Max (m)	4.5-9.0	5.0-10.5	5.5-11.5	6.0-12.0	5.5-11.5	6.0-13.0	7.0-14.0
	L_w	39	40	41	43	41	43	42
43	l/s	394	473	551	630	590	689	788
	S Min - Max (m)	4.5-8.5	4.5-8.5	5.0-9.5	6.0-12.0	5.0-9.5	6.0-11.0	7.0-12.0
	L Min - Max (m)	5.0-10.5	6.5-12.0	6.5-13.0	8.0-15.0	6.5-13.0	7.0-15.0	8.0-16.0
	L_w	43	44	45	46	45	47	46

Louvred Face Diffusers

DF / DE core 31



Selection Criteria

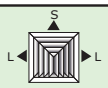
Ceiling height 2.7 m
Temperature differential -10K
Radius of diffusion - Minimum and maximum throw which results in an average air velocity within the occupied zone of 0.25m/s and 0.10m/s respectively.
Noise level is based on diffuser sound power level less 8dB room absorption.

Selection Example DF31/300x300

Air flow rate 225 l/s
Short side throw 2.0 - 4.5 m
Long side throw 2.5 - 5.0 m
Total Pressure Loss 23 Pa
Noise level 33 dBA

Exhaust & OBSS corrections		
Supply diffuser	0dB	Pa x 1.0
Supply diffuser + OBSS	+ 3dB	Pa x 1.0
Exhaust diffuser	+ 3dB	Pa x 1.1
Exhaust diffuser + OBSS	+13dB	Pa x 1.15

Performance Table

DF / DE Supply		Core 31 					S = Short side throw L = Long side throw	
Total pressure drop (Pa)		150 x 150	225 x 225	300 x 300	375 x 375	450 x 450	525 x 525	600 x 600
9	l/s	34	76	135	211	304	413	540
	S Min - Max (m)	1.0-2.0	1.0-2.0	1.5-3.0	2.0-3.5	2.5-5.0	3.5-7.0	4.0-8.0
	L Min - Max (m)	1.0-2.0	1.0-2.5	2.0-3.5	2.0-4.0	3.5-6.5	4.5-9.0	5.5-10.0
	L_w	-	-	-	-	23	24	25
15	l/s	45	101	180	282	405	551	720
	S Min - Max (m)	1.0-2.0	1.0-2.5	2.0-4.0	2.0-4.5	2.5-5.0	3.5-7.0	4.0-8.0
	L Min - Max (m)	1.0-2.0	2.0-3.5	2.0-4.5	2.5-5.0	3.5-7.0	5.0-9.5	5.5-10.0
	L_w	-	24	27	29	30	31	32
23	l/s	56	127	225	352	506	689	900
	S Min - Max (m)	1.0-2.0	2.0-3.5	2.0-4.5	2.5-5.5	3.5-6.5	4.0-7.0	5.0-8.0
	L Min - Max (m)	1.5-2.5	2.0-4.0	2.5-5.0	3.5-6.0	4.0-8.0	5.5-9.0	5.0-10.0
	L_w	26	30	33	35	36	37	38
33	l/s	68	152	270	422	608	827	1080
	S Min - Max (m)	1.5-2.5	2.0-4.5	2.5-5.0	3.5-6.5	4.0-8.0	4.5-9.0	5.0-10.0
	L Min - Max (m)	2.0-3.5	2.5-5.5	3.5-6.5	4.0-8.0	5.0-10.0	5.5-11.0	6.0-12.0
	L_w	31	35	38	40	41	42	43
43	l/s	79	177	315	492	709	964	1260
	S Min - Max (m)	2.0-3.5	2.5-4.5	3.0-6.0	4.0-7.5	4.5-9.0	5.0-10.0	6.0-12.0
	L Min - Max (m)	2.0-4.0	2.5-6.0	4.0-7.5	5.0-9.5	6.0-11.5	6.5-12.0	7.0-14.0
	L_w	35	39	42	44	45	46	47

Louvred Face Diffusers

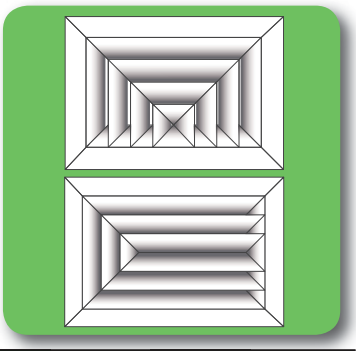
DF / DE core 32 / 33

Selection Criteria

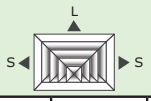
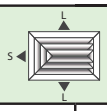
Ceiling height 2.7 m
Temperature differential -10K
Radius of diffusion - Minimum and maximum throw which results in an average air velocity within the occupied zone of 0.25m/s and 0.10m/s respectively.
Noise level is based on diffuser sound power level less 8dB room absorption.

Selection Example DF32/450x150

Air flow rate 169 l/s
Short side throw 1.5 - 3.0 m
Long side throw 3.0 - 6.0 m
Total Pressure Loss 23 Pa
Noise level 31 dBA



Performance Table

DF / DE		Core 32 					Core 33 			S = Short side throw L = Long side throw	
Supply											
Total pressure drop (Pa)		225 x 150	300 x 150	375 x 150	450 x 150	525 x 150	600 x 150	300 x 225	375 x 225	450 x 225	525 x 225	600 x 225
9	l/s	51	67	84	101	118	135	101	127	153	177	203
	S Min - Max (m)	1.0-2.0	1.0-2.0	1.0-2.0	1.0-2.0	1.5-2.5	2.0-4.0	1.5-3.0	2.0-3.0	2.5-4.0	3.0-5.0	3.0-6.0
	L Min - Max (m)	1.0-2.0	1.5-2.5	2.0-3.5	2.0-3.5	2.5-4.0	3.0-4.5	1.5-3.0	2.0-3.5	2.5-4.0	2.5-5.0	3.0-6.0
	L_w	-	-	-	-	-	-	-	-	-	20	21
15	l/s	68	90	113	135	158	180	135	169	203	237	271
	S Min - Max (m)	1.0-2.0	1.0-2.0	1.0-2.0	1.0-2.0	1.5-2.5	2.0-3.0	2.0-4.0	2.5-3.5	3.0-4.0	3.5-5.0	4.0-5.5
	L Min - Max (m)	1.0-2.5	2.0-3.5	2.0-4.5	2.5-5.0	3.0-5.5	3.5-6.0	2.0-4.0	2.0-4.5	2.5-5.0	3.0-6.0	3.5-6.5
	L_w	20	24	25	25	26	27	25	26	27	28	29
23	l/s	84	113	140	169	197	225	169	211	253	295	337
	S Min - Max (m)	1.5-3.0	1.5-3.0	1.5-3.0	1.5-3.0	1.5-3.5	2.0-4.0	2.0-4.5	2.0-4.0	2.5-5.0	3.0-6.0	3.5-7.0
	L Min - Max (m)	2.0-3.5	2.0-4.5	2.5-5.0	3.0-6.0	3.5-6.5	4.0-7.0	2.0-4.5	2.5-5.5	3.0-6.0	3.5-7.0	4.0-9.0
	L_w	28	30	31	31	33	34	31	32	33	34	35
33	l/s	101	135	169	202	236	270	202	253	303	354	404
	S Min - Max (m)	2.0-3.5	2.0-3.5	2.0-3.5	2.0-3.5	2.5-4.0	3.0-4.5	2.5-5.0	2.5-5.0	3.0-6.0	3.5-7.0	4.0-8.0
	L Min - Max (m)	2.0-4.0	2.5-5.0	3.5-6.5	4.0-7.5	4.5-8.5	5.0-9.0	2.5-5.0	3.5-6.5	4.0-7.0	4.5-9.0	5.0-10
	L_w	33	35	36	36	37	39	36	37	38	39	40
43	l/s	118	158	197	236	275	315	236	295	354	413	472
	S Min - Max (m)	2.0-4.5	2.0-4.5	2.0-4.5	2.0-4.5	2.5-5.5	3.0-6.0	3.0-6.0	3.5-6.5	4.0-7.0	5.0-8.0	5.5-9.0
	L Min - Max (m)	2.5-4.5	3.0-6.0	4.0-7.5	4.5-8.5	5.0-9.5	5.5-11.0	3.0-6.0	4.0-8.0	4.5-9.0	5.0-10.0	5.5-12.0
	L_w	37	39	40	41	42	43	41	41	42	43	44

Total pressure drop (Pa)		375 x 300	450 x 300	525 x 300	600 x 300	450 x 375	525 x 375	600 x 375	525 x 450	600 x 450	600 x 525
9	l/s	169	203	236	271	253	296	339	354	406	474
	S Min - Max (m)	2.0-3.5	2.0-3.5	2.5-4.0	3.0-4.5	2.0-4.0	2.5-4.5	3.0-5.0	2.5-5.0	3.0-5.5	3.0-5.5
	L Min - Max (m)	2.0-3.5	2.0-4.0	2.5-4.5	3.0-5.0	2.0-4.5	2.5-5.0	3.0-6.0	2.5-5.0	3.0-5.5	3.0-5.5
	L_w	-	20	21	22	21	23	25	24	24	25
15	l/s	225	270	315	360	338	394	450	472	540	629
	S Min - Max (m)	2.0-4.5	2.5-5.0	3.0-5.5	3.5-6.0	2.5-5.0	3.0-5.5	3.5-6.0	3.0-6.0	3.5-6.5	3.5-6.5
	L Min - Max (m)	2.5-5.0	2.5-5.0	3.0-5.5	3.5-6.0	2.5-5.5	3.0-6.0	3.5-6.5	3.5-6.5	4.0-7.0	4.0-7.0
	L_w	27	28	29	30	29	30	31	31	31	32
23	l/s	281	338	394	441	422	492	562	591	675	785
	S Min - Max (m)	2.5-5.5	2.5-6.0	3.0-6.5	3.5-7.0	3.5-6.5	4.0-7.0	4.5-7.5	4.0-7.5	4.5-8.0	4.5-8.0
	L Min - Max (m)	2.5-6.0	3.5-6.5	4.0-7.0	4.5-7.5	3.5-7.5	4.0-8.0	4.5-8.5	4.5-8.5	5.0-9.0	5.0-9.0
	L_w	33	34	35	36	35	36	37	37	37	39
33	l/s	338	405	473	540	506	591	674	709	810	942
	S Min - Max (m)	3.5-6.5	3.5-7.5	4.0-8.0	4.5-8.5	4.0-8.0	4.5-9.0	5.0-9.5	4.5-9.0	5.0-10.0	5.0-9.5
	L Min - Max (m)	3.5-7.5	4.0-8.0	4.5-8.5	5.0-9.0	4.5-8.5	5.0-9.0	5.5-10.0	5.0-10.0	5.5-11.0	5.5-10.5
	L_w	38	39	40	41	40	41	42	42	42	43
43	l/s	394	473	551	630	590	689	788	827	945	1103
	S Min - Max (m)	4.0-7.5	4.0-8.0	4.5-8.5	5.0-9.0	4.5-9.0	5.0-10.0	5.5-11.0	5.5-11.0	6.0-12.0	6.0-11.5
	L Min - Max (m)	4.0-8.0	4.5-9.0	5.0-9.5	5.5-10.0	5.0-10.0	5.5-11.0	6.0-12.0	6.0-12.0	6.5-13.0	6.5-12.5
	L_w	42	43	44	45	44	45	46	46	47	47

Louvred Face Diffusers

DF / DE core 42

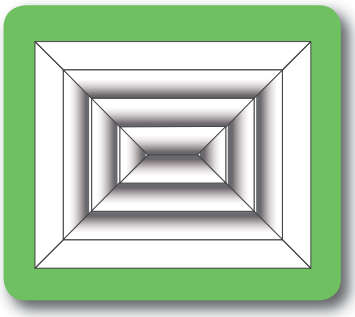
Selection Criteria

Ceiling height 2.7 m
Temperature differential -10K
Radius of diffusion - Minimum and maximum throw which results in an average air velocity within the occupied zone of 0.25m/s and 0.10m/s respectively.
Noise level is based on diffuser sound power level less 8dB room absorption.

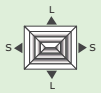
Selection Example DF42/450x150

Air flow rate 169 l/s
Short side throw 1.0 - 2.5 m
Long side throw 2.5 - 5.0 m
Total Pressure Loss 23 Pa
Noise level 31 dBA

Exhaust & OBSS corrections		
Supply diffuser	0dB	Pa x 1.0
Supply diffuser + OBSS	+ 3dB	Pa x 1.0
Exhaust diffuser	+ 3dB	Pa x 1.1
Exhaust diffuser + OBSS	+ 13dB	Pa x 1.15



Performance Table

DF / DE		Core 42 										S = Short side throw L = Long side throw
Supply												
Total pressure drop (Pa)		225 x 150	300 x 150	375 x 150	450 x 150	525 x 150	600 x 150	300 x 225	375 x 225	450 x 225	525 x 225	600 x 225
9	l/s	51	67	84	101	118	135	101	127	153	177	203
	S Min - Max (m)	1.0-1.5	1.0-1.5	1.0-1.5	1.0-1.5	1.5-2.0	2.0-2.5	1.0-2.0	1.0-2.0	1.0-2.0	1.0-2.0	1.5-2.5
	L Min - Max (m)	1.0-2.0	1.0-2.5	1.5-3.0	1.5-3.5	2.0-4.0	2.5-4.5	1.0-2.5	1.5-3.0	2.0-3.5	2.0-4.0	2.5-4.5
	L_w	-	-	-	-	-	-	-	-	-	-	20
15	l/s	68	90	113	135	158	180	135	169	203	237	271
	S Min - Max (m)	1.0-2.0	1.0-2.0	1.0-2.0	1.0-2.0	1.5-2.5	2.0-3.0	1.0-2.5	1.0-2.5	1.0-2.5	1.0-2.5	1.5-3.0
	L Min - Max (m)	1.0-2.5	1.5-3.5	2.0-3.5	2.0-4.0	2.5-4.5	3.0-5.0	2.0-3.5	2.0-3.5	2.5-4.0	2.5-5.0	3.0-5.5
	L_w	-	24	24	25	25	26	25	26	27	27	28
23	l/s	84	113	140	169	197	225	169	211	253	295	337
	S Min - Max (m)	1.0-2.5	1.0-2.5	1.0-2.5	1.0-2.5	1.5-3.0	2.0-3.5	2.0-3.5	2.0-3.5	2.0-3.5	2.0-3.5	2.5-4.0
	L Min - Max (m)	1.5-3.5	2.0-3.5	2.0-4.5	2.5-5.0	3.0-5.5	3.5-6.0	2.0-4.5	2.0-4.5	2.5-5.0	3.0-6.0	3.5-6.5
	L_w	28	30	30	31	32	33	31	32	32	33	34
33	l/s	101	135	169	202	236	270	202	253	303	354	404
	S Min - Max (m)	1.5-3.0	1.5-3.0	1.5-3.0	1.5-3.0	2.0-3.5	2.5-4.0	2.0-4.0	2.0-4.0	2.0-4.0	2.0-4.0	2.5-4.5
	L Min - Max (m)	2.0-3.5	2.0-4.5	2.5-5.0	2.5-6.0	3.0-6.5	3.5-7.0	2.5-5.0	3.0-6.5	3.5-7.0	4.0-7.5	4.5-8.0
	L_w	33	35	35	36	37	38	36	37	37	38	39
43	l/s	118	158	197	236	275	315	236	295	354	413	472
	S Min - Max (m)	2.0-3.5	2.0-3.5	2.0-3.5	2.0-3.5	2.5-4.0	3.0-4.5	2.0-4.5	2.0-4.5	2.0-4.5	2.0-4.5	2.5-5.0
	L Min - Max (m)	2.0-4.5	2.5-5.0	3.0-6.0	3.5-6.5	4.0-7.0	4.5-7.5	2.5-6.0	3.5-7.5	4.0-8.0	4.5-8.5	5.0-9.0
	L_w	37	39	40	40	41	42	40	41	41	42	43

Total pressure drop (Pa)		375 x 300	450 x 300	525 x 300	600 x 300	450 x 375	525 x 375	600 x 375	525 x 450	600 x 450	600 x 525
9	l/s	169	203	236	271	253	296	339	354	406	474
	S Min - Max (m)	1.0-2.5	1.0-2.5	1.0-2.5	1.5-3.0	2.0-3.5	2.0-3.5	2.5-4.0	2.0-4.0	2.0-4.0	2.5-4.5
	L Min - Max (m)	2.0-3.5	2.0-3.5	2.0-4.5	2.5-5.0	2.0-4.0	2.0-4.5	2.5-5.0	2.5-5.0	2.5-5.0	3.0-5.5
	L_w	-	20	21	21	21	23	23	24	24	24
15	l/s	225	270	315	360	338	394	450	472	540	629
	S Min - Max (m)	2.0-3.5	2.0-3.5	2.0-3.5	2.5-4.0	2.0-4.5	2.0-4.5	2.5-5.0	2.5-5.0	2.5-5.0	3.0-5.5
	L Min - Max (m)	2.0-4.5	2.5-5.0	2.5-6.0	3.0-6.5	2.5-5.0	2.5-6.0	3.0-6.5	3.0-6.0	3.5-7.0	4.0-7.5
	L_w	27	28	29	29	29	30	30	31	31	31
23	l/s	281	338	394	441	422	492	562	591	675	785
	S Min - Max (m)	2.0-4.0	2.0-4.5	2.0-4.5	2.5-5.0	2.5-5.5	2.5-5.5	3.0-6.0	3.5-6.5	3.5-6.5	4.0-7.0
	L Min - Max (m)	2.5-5.0	3.0-6.0	3.5-6.5	4.0-7.0	3.5-6.5	3.5-7.5	4.0-8.0	4.0-7.5	4.5-8.5	5.0-9.0
	L_w	33	34	35	35	35	36	36	37	37	38
33	l/s	338	405	473	540	506	591	674	709	810	942
	S Min - Max (m)	2.5-5.0	2.5-5.0	2.5-5.0	3.0-5.5	3.5-6.5	3.5-6.5	4.0-7.0	4.0-8.0	4.0-8.0	4.5-8.5
	L Min - Max (m)	3.5-6.5	4.0-8.0	4.0-8.0	4.5-8.5	4.0-7.5	4.5-8.5	5.0-9.0	4.5-9.0	5.0-10.0	5.5-10.5
	L_w	38	39	40	40	40	41	41	42	42	42
43	l/s	394	473	551	630	590	689	788	827	945	1103
	S Min - Max (m)	3.0-6.0	3.0-6.0	3.0-6.0	3.5-5.5	4.0-7.5	4.0-7.5	4.5-8.0	4.5-9.0	4.5-9.0	5.0-9.5
	L Min - Max (m)	4.0-7.5	4.5-8.0	5.0-9.5	4.5-8.5	4.5-9.0	5.0-10.5	5.5-11.0	5.0-10.5	6.0-12.0	6.5-12.5
	L_w	42	43	44	44	44	45	45	46	47	47

Louvred Face Diffusers

DTR Tile Replacement

Introduction

The DTR is a Direct Tile Replacement overall size 595 x 595 mm. Horizontal air supply in four directions, also suitable for exhaust. Installation flush to the ceiling, low unit height.Removable front panel enables cleaning of the diffuser and ductwork.

Product Description

DTR Direct Tile Replacement

Features

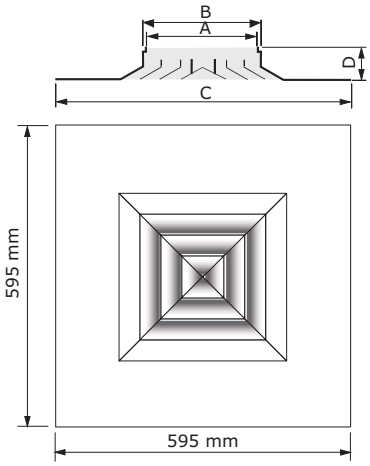
- Lightweight construction

Finishes

PPM9010 (RAL 9010 Matt - 20% Gloss White)

Sizes

DTR Overall size 595 x 595 mm.
Available in neck sizes of 150, 225, 300 and 375mm.



Std. Size mm	A	B	C	D
150 X 150	131	144	595	45
225 X 225	207	220	595	45
300 X 300	278	294	595	45
375 X 375	355	369	595	45

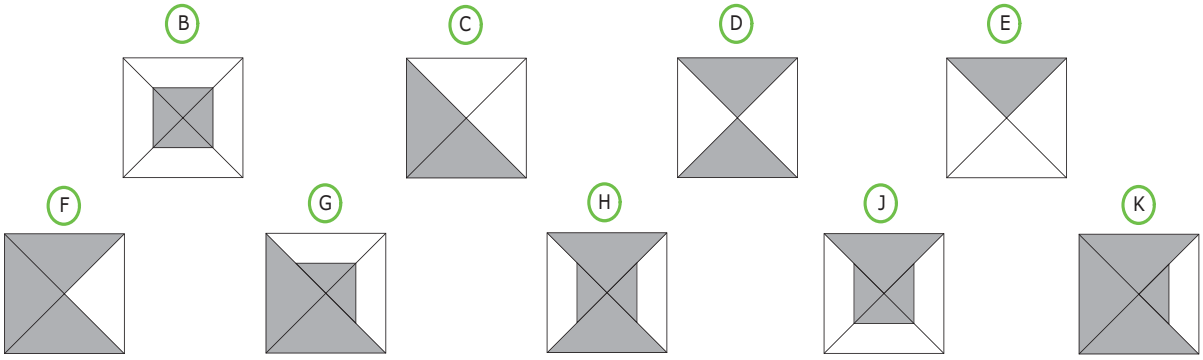
DTR / Supply					
Total pressure drop (Pa)		150 x 150	225 x 225	300 x 300	375 x 375
9	l/s	34	76	135	211
	Min - Max (m)	1.0-1.5	1.0-2.0	1.5-2.5	2.0-3.5
	L_w	-	-	-	-
15	l/s	45	101	180	282
	Min - Max (m)	1.0-2.0	1.5-2.5	2.0-3.5	2.0-4.5
	L_w	-	24	27	28
23	l/s	56	127	225	352
	Min - Max (m)	1.5-2.5	2.0-3.5	2.0-4.5	2.5-5.5
	L_w	26	30	33	34
33	l/s	68	152	270	422
	Min - Max (m)	1.5-3.0	2.0-4.0	2.5-5.0	3.5-6.5
	L_w	31	35	38	39
43	l/s	79	177	315	492
	Min - Max (m)	2.0-3.5	2.0-4.5	3.0-6.0	4.0-7.5
	L_w	35	39	42	43

Order Example

DTR/300/300/PPM9010/OBSS

Type
Duct width
Duct height
Finish
Damper

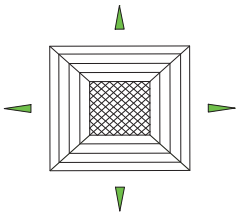
Blanking Plates (for 4 way core)



Type B core 41 - 4 way (Neck 450 x450)

UNBLANKED					
Neck Vel	1.0	1.5	2.0	2.5	3.0
Pressure	5	9	15	23	33
Volume	203	304	405	506	608
dBA Level	26	30	35	39	42
Min Rad	1.7	2.0	2.5	3.5	4.0
Max Rad	3.4	4.0	5.0	6.5	8.0

BLANK B 150 x 150					
Neck Vel	1.0	1.5	2.0	2.5	3.0
Pressure	5	9	15	23	33
Volume	180	270	360	450	540
dBA Level	25	29	34	38	41
Min Rad	1.6	2.0	2.4	3.3	3.9
Max Rad	3.3	3.9	4.9	6.3	7.6



Type B

BLANK B 225 x 225					
Neck Vel	1.0	1.5	2.0	2.5	3.0
Pressure	5	9	15	23	33
Volume	152	228	304	380	456
dBA Level	25	29	33	37	40
Min Rad	1.5	1.7	2.2	2.7	3.7
Max Rad	2.9	3.7	4.7	5.7	6.8

Blank B 300 x 300					
Neck Vel	1.0	1.5	2.0	2.5	3.0
Pressure	5	9	15	23	33
Volume	113	169	225	281	338
dBA Level	-	26	30	34	38
Min Rad	1.5	1.7	2.0	2.2	2.8
Max Rad	2.0	2.8	3.8	4.8	5.5

BLANK B 375 x 375					
Neck Vel	1.0	1.5	2.0	2.5	3.0
Pressure	5	9	15	23	33
Volume	62	93	124	155	186
dBA Level	-	-	27	30	33
Min Rad	0.9	1.2	1.7	2.0	2.2
Max Rad	1.7	2.2	2.8	3.8	4.5

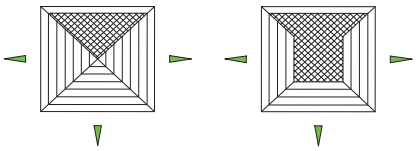
Louvred Face Diffusers

Blanking Plates (for 4 way core)

Type E & J core 41 - 3 way (Neck 450 x 450)

BLANK E					
Neck Vel	1.0	1.5	2.0	2.5	3.0
Pressure	5	9	15	23	33
Volume	152	228	304	380	456
dBA Level	25	30	34	38	40
Min Rad	2.2	2.5	2.7	3.3	4.0
Max Rad	3.7	4.5	5.5	7.0	8.1

BLANK J 150 x 150					
Neck Vel	1.0	1.5	2.0	2.5	3.0
Pressure	5	9	15	23	33
Volume	135	203	270	338	405
dBA Level	-	29	32	36	39
Min Rad	1.4	1.8	2.2	2.7	3.7
Max Rad	2.7	3.6	4.7	5.7	6.7



Type E Type J

BLANK J 225 x 225					
Neck Vel	1.0	1.5	2.0	2.5	3.0
Pressure	5	9	15	23	33
Volume	114	171	228	285	342
dBA Level	-	28	31	34	37
Min Rad	1.3	1.7	2.0	2.5	3.1
Max Rad	2.4	3.2	4.1	4.8	5.5

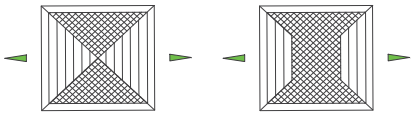
BLANK J 300 x 300					
Neck Vel	1.0	1.5	2.0	2.5	3.0
Pressure	5	9	15	23	33
Volume	84	127	169	211	253
dBA Level	-	26	30	34	36
Min Rad	1.2	1.5	1.9	2.3	2.5
Max Rad	2.2	2.8	3.4	4.0	4.4

BLANK J 375 x 375					
Neck Vel	1.0	1.5	2.0	2.5	3.0
Pressure	5	9	15	23	33
Volume	46	70	93	116	139
dBA Level	-	-	27	31	35
Min Rad	0.8	1.0	1.4	1.8	2.3
Max Rad	1.7	2.0	2.9	3.6	4.7

Type D & H core 41 - 2 way opposite (Neck 450 x 450)

BLANK D					
Neck Vel	1.0	1.5	2.0	2.5	3.0
Pressure	5	9	15	23	33
Volume	101	152	203	253	304
dBA Level	-	28	32	36	39
Min Rad	1.8	2.2	2.7	3.5	4.3
Max Rad	3.7	4.0	5.5	6.7	8.5

BLANK H 150 x 150					
Neck Vel	1.0	1.5	2.0	2.5	3.0
Pressure	5	9	15	23	33
Volume	90	135	180	225	270
dBA Level	-	27	31	35	38
Min Rad	1.5	2.0	2.2	2.5	3.5
Max Rad	2.4	3.5	5.0	6.0	7.5



Type D Type H

BLANK H 225 x 225					
Neck Vel	1.0	1.5	2.0	2.5	3.0
Pressure	5	9	15	23	33
Volume	76	114	152	190	228
dBA Level	-	26	30	34	38
Min Rad	1.2	1.8	2.0	2.5	3.1
Max Rad	2.1	3.0	4.2	5.7	6.5

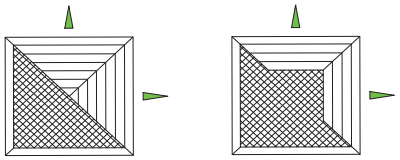
BLANK H 300 x 300					
Neck Vel	1.0	1.5	2.0	2.5	3.0
Pressure	5	9	15	23	33
Volume	56	84	113	141	169
dBA Level	-	25	29	33	36
Min Rad	1.0	1.5	2.0	2.5	2.7
Max Rad	1.9	2.5	3.5	5.0	5.5

BLANK H 375 x 375					
Neck Vel	1.0	1.5	2.0	2.5	3.0
Pressure	5	9	15	23	33
Volume	31	46	62	77	93
dBA Level	-	-	25	30	34
Min Rad	0.8	1.2	1.5	2.0	2.3
Max Rad	1.7	2.2	3.0	4.0	4.5

Type C & G core 41 - 2 way corner (Neck 450 x 450)

BLANK C					
Neck Vel	1.0	1.5	2.0	2.5	3.0
Pressure	5	9	15	23	33
Volume	101	152	203	253	304
dBA Level	-	28	32	36	39
Min Rad	1.8	2.2	2.7	3.5	4.3
Max Rad	3.7	4.0	5.5	6.7	8.5

BLANK G 150 x 150					
Neck Vel	1.0	1.5	2.0	2.5	3.0
Pressure	5	9	15	23	33
Volume	90	135	180	225	270
dBA Level	-	27	31	35	38
Min Rad	1.5	2.0	2.2	2.5	3.5
Max Rad	2.4	3.5	5.0	6.0	7.5



Type C Type G

BLANK G 225 x 225					
Neck Vel	1.0	1.5	2.0	2.5	3.0
Pressure	5	9	15	23	33
Volume	76	114	152	190	228
dBA Level	-	26	30	34	38
Min Rad	1.2	1.8	2.0	2.5	3.1
Max Rad	2.1	3.0	4.2	5.7	6.5

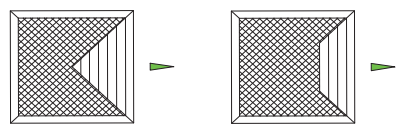
BLANK G 300 x 300					
Neck Vel	1.0	1.5	2.0	2.5	3.0
Pressure	5	9	15	23	33
Volume	56	84	113	141	169
dBA Level	-	25	29	33	36
Min Rad	1.0	1.5	2.0	2.5	2.7
Max Rad	1.9	2.5	3.5	5.0	5.5

BLANK G 375 x 375					
Neck Vel	1.0	1.5	2.0	2.5	3.0
Pressure	5	9	15	23	33
Volume	31	46	62	77	93
dBA Level	-	-	25	30	34
Min Rad	0.8	1.2	1.5	2.0	2.3
Max Rad	1.7	2.2	3.0	4.0	4.5

Type F & K core 41 - 1 way (Neck 450 x 450)

BLANK F					
Neck Vel	1.0	1.5	2.0	2.5	3.0
Pressure	5	9	15	23	33
Volume	51	76	101	127	152
dBA Level	-	26	29	33	36
Min Rad	1.5	2.0	2.5	3.5	4.0
Max Rad	3.0	4.0	5.5	6.5	8.0

BLANK K 150 x 150					
Neck Vel	1.0	1.5	2.0	2.5	3.0
Pressure	5	9	15	23	33
Volume	45	68	90	113	135
dBA Level	-	24	29	32	34
Min Rad	1.4	1.9	2.4	3.3	3.8
Max Rad	2.8	3.9	5.3	6.2	7.6



Type F Type K

BLANK K 225 x 225					
Neck Vel	1.0	1.5	2.0	2.5	3.0
Pressure	5	9	15	23	33
Volume	38	57	76	95	114
dBA Level	-	-	27	30	34
Min Rad	1.2	1.8	2.3	3.1	3.5
Max Rad	2.5	3.7	4.8	5.8	6.7

BLANK K 300 x 300					
Neck Vel	1.0	1.5	2.0	2.5	3.0
Pressure	5	9	15	23	33
Volume	28	42	56	70	84
dBA Level	-	-	26	30	33
Min Rad	1.1	1.6	2.2	2.8	3.1
Max Rad	2.3	3.5	4.2	5.3	6.4

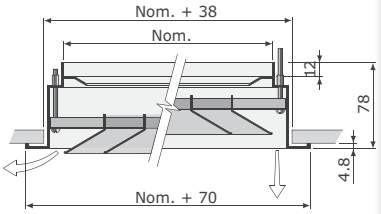
BLANK K 375 x 375					
Neck Vel	1.0	1.5	2.0	2.5	3.0
Pressure	5	9	15	23	33
Volume	15	23	31	39	46
dBA Level	-	-	-	27	31
Min Rad	0.8	1.3	1.9	2.1	2.5
Max Rad	1.8	2.3	3.4	4.4	5.3

Louvred Face Diffusers

DFA

Product Description

DFA Flanged adjustable diffuser for horizontal or vertical projection (4 way only)
OBSS Opposed blade damper
OBLL Lever operated damper via the diffuser face
PBD Plenum box
NR/D Top entry neck reducer



Features

- Standard flanged frame style for integration with T-bar ceilings
- 2 core styles to suit required air pattern
- Lightweight aluminium construction
- Adjustable air patterns for vertical and horizontal diffusion

Finishes

PPG9010 (RAL 9010 Gloss - 80% Gloss White)
PPM9010 (RAL 9010 Matt - 20% Gloss White)
PPM9006 (RAL 9006 Matt - 30% Gloss Silver)
Other colours available on request

Weights

DFA 12.5 kg/m² face area
OBSS/ED 9.5 kg/m² face area

Sizes

DFA Minimum size - 150 x 150 duct size
Maximum size - 1200 x 600 duct size
Standard increments of 75mm only

DFA 41	Isothermal vertical projection (Cones fully raised)			
	150 x 150	225 x 225	300 x 300	375 x 375
l/s	34	76	135	211
T (m)	6.3	9.4	12.5	15.6
L_w	-	-	-	-
Pa	21	17	17	17
l/s	45	101	180	282
T (m)	8.3	12.5	16.7	20.8
L_w	-	-	-	-
Pa	37	30	30	30
l/s	56	127	225	352
T (m)	10.7	16.1	21.5	26.8
L_w	-	-	-	-
Pa	60	47	47	47
l/s	68	152	270	422
T (m)	13.5	20.5	-	-
L_w	-	-	-	20
Pa	87	67	67	67
l/s	79	177	315	492
T (m)	15.0	-	-	-
L_w	-	-	21	22
Pa	122	90	90	90

Terminal Velocities For Isothermal Vertical Projection			
V_t (m/s)	0.25	0.40	0.60
Factor	1.00	0.65	0.40

Temperature Differentials For Heating Vertical Projection						
Δt (°C)	5	10	15	20	25	30
Factor	1.5	1	0.85	0.7	0.6	0.5

Order Example

DFA-41/300/300/PPM9010/OBSS
Type
Duct width
Duct height
Finish
Damper

DFA 41	Horizontal diffusion (Cones fully lowered) Δt = 10°C cooling			
	150 x 150	225 x 225	300 x 300	375 x 375
l/s	34	76	135	211
Min - Max (m)	0.5-1.0	0.5-1.5	1.5-2.5	1.5-2.5
L_w	-	-	-	-
Pa	11	11	11	11
l/s	45	101	180	282
Min - Max (m)	0.5-1.5	1.0-2.0	1.5-3.0	1.5-3.0
L_w	-	-	-	-
Pa	21	21	21	21
l/s	56	127	225	352
Min - Max (m)	1.0-2.0	1.5-2.5	1.5-3.0	2.0-4.0
L_w	-	-	-	-
Pa	32	32	32	32
l/s	68	152	270	422
Min - Max (m)	1.0-2.5	1.5-3.0	2.0-4.0	2.5-5.0
L_w	-	-	-	-
Pa	47	47	47	47
l/s	79	177	315	492
Min - Max (m)	1.5-2.5	1.5-3.0	2.5-4.5	3.0-5.5
L_w	-	-	-	20
Pa	65	65	65	65

DFA 41	Heating vertical projection (Cones fully raised) Δt = 10°C heating (correct for other temp.)			
	150 x 150	225 x 225	300 x 300	375 x 375
l/s	34	76	135	211
T (m)	2.0	2.3	2.4	2.7
L_w	-	-	-	-
Pa	21	17	17	17
l/s	45	101	180	282
T (m)	2.7	3.3	3.6	3.9
L_w	-	-	-	-
Pa	37	30	30	30
l/s	56	127	225	352
T (m)	3.4	4.1	4.8	5.1
L_w	-	-	-	-
Pa	60	47	47	47
l/s	68	152	270	422
T (m)	4.1	4.7	5.8	6.2
L_w	-	-	-	21
Pa	87	67	67	67
l/s	79	177	315	492
T (m)	4.8	5.4	6.6	7.3
L_w	-	20	22	23
Pa	122	90	90	90

Lay on Ceiling Tile Diffuser

LCT20

Introduction

The LCT20 has been developed for use when mounted directly on top of a 20% open area ceiling tile (supplied by others must be 20% after paint). The diffuser is supplied in black matt finish as standard. For fitting the LCT20 can be retained using double sided adhesive strip or by using edge clips. Available in a range of sizes to suit specific flow ranges. Can be duct or plenum mounted. Supplied with 3mm foam gasket.

Product Description

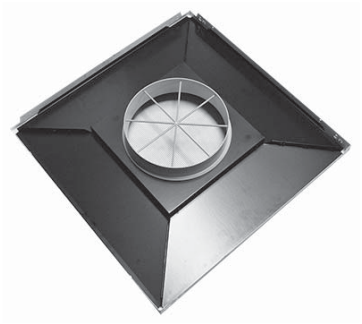
LCT20 Lay on Ceiling Tile diffuser
PBR Side entry plenum box
Lined 6mm acoustic lining (optional) reaction to fire class C-s3-d0 to EN 13501-1: 2007

Finishes

Black (RAL9005)

Sizes

As indicated in the table.

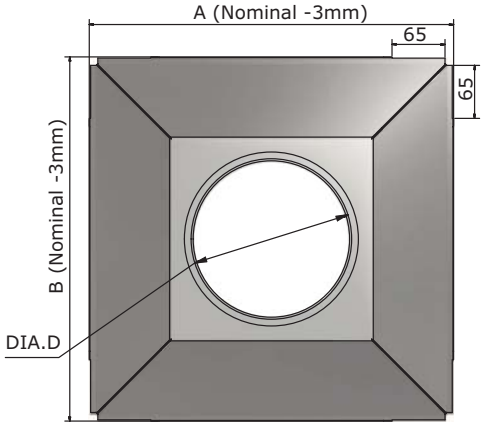


Performance Table

Supply Air Volume										
LCT20	l/s	60	70	80	90	100	120	140	160	180
Size	m³/hr	216	252	288	324	360	432	504	576	648
370	T (m)	0.6	0.9	1.2						
	L_{WA} (dBA)	27	28	32						
	P_s (Pa)	11	16	21						
450	T (m)		0.8	1.1	1.3	1.5				
	L_{WA} (dBA)		27	31	36	42				
	P_s (Pa)		7	11	17	24				
600	T (m)					1.8	2.3	2.6	2.8	3.0
	L_{WA} (dBA)					28	30	33	37	41
	P_s (Pa)					7	12	17	22	27

Terminal velocity = 0.25 m/s At 10°c cooling

Please note that the spigot size to match diffuser inlet should not be varied.
Three versions are available. Each has a specific operational range. Operating these outside the specified range is not recommended as functionality is affected.



Dimension table			
Size	370	450	600
A/B	367	447	597
C	95	95	95
D	157	197	247

Recommended rating (l/s)		
Size	Min	Max
370	61	75
450	75	100
600	100	180

Order Example

LCT20/370/PBR/LINED

Type
Size
Plenum
Lined

M Aircell Polymer Louvre Face Diffusers

M300 / M450 / M500 / M600

Introduction

The Waterloo Aircell M series presents all the cost and design advantages of the 2000 series with the visual appeal of clean, unbroken lines on the traditional multicone design.
The diffusers are available in a range of 4 sizes to integrate with standard 300mm and 600mm ceilings and the 500mm and 600mm European systems.

Product Description

M300 300 sq diffusers
M450 450 sq diffusers
M500 500 sq diffusers
M600 600 sq diffusers
O Black polymer opposed blade damper
P Black polymer plenum box
F Fixing kit
BM Blanking kit
R600 Reducer with 312 Ø spigot

Features

- Contemporary style designed for visual integration with luminaires and other ceiling elements
- Ease of installation with concealed, single point fixing into P series plenum or rigid ducting
- Full range of integrated accessories available including directional or core blanking kits, universal plenums and opposed blade dampers

Finishes

Diffusers are self-coloured white.
Damper and plenum are self-coloured black

Weights

M300 0.6 kg
M450 1.4 kg
M500 1.6 kg
M600 2.6 kg

Authority

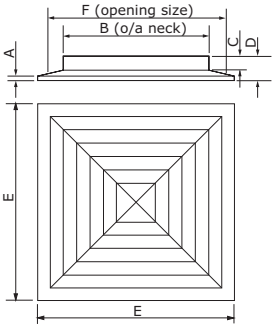
Patents: 2221530, 2223840, 8818337 others pending
Registered Designs: 1052716, 106216
Fire Rating: BS476 Pt 7 Class 0. BS476 Pt 5, P Rating.
Maximum supply air temperature must not exceed 50°C.

Selection Criteria

Ceiling Height 2.7 m
Temperature Differential - 10K
Average room velocity v_r 0.25 m/s
Noise level = peak level on noise rating curves based on Sound Power Level less 8dB room absorption
All performance data includes the plenum box

Selection Example Aircell M450

Air flow rate 180 l/s
Throw 2.0m
Static Pressure Loss 15 Pa
Noise level 28 dBA
Note: Sizes are overall



Performance Table

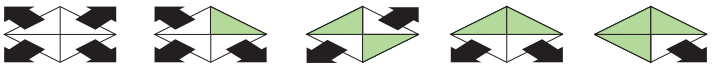
M		Supply M300				Supply M450 - M500				Supply M600				Extract M300	Extract M450 M500	Extract M600
l/s		4 way	3 way	2 way	1 way	4 way	3 way	2 way	1 way	4 way	3 way	2 way	1 way	4 way	4 way	4 way
34	T	1.0	1.2	1.6					1.5							
	P_s	9	15	33					9					10		
	L_w	-	-	-					-					-		
45	T	1.2	1.5						2.0							
	P_s	15	23						15					17		
	L_w	-	-						28					-		
56	T	1.5	1.7					1.3	2.2							
	P_s	23	34					7	23					25		
	L_w	-	25					23	33					-		
68	T	1.6						1.5	2.5							
	P_s	33						9	33					36		
	L_w	-						25	38					26		
79	T	2.0					1.3	1.7	3.0				2.0			
	P_s	43					8	12	43				9	47		
	L_w	26					20	32	41				30	29		
135	T					1.5	2.0	2.5					3.7			
	P_s					9	15	33					26		10	
	L_w					17	28	38					43		26	
180	T					2.0	2.3					2.2	4.6			
	P_s					15	25					12	44		17	
	L_w					28	34					32	50		31	
225	T					2.2	2.7				1.8	2.8				
	P_s					23	35				7	17			25	
	L_w					33	40				27	40			36	
270	T					2.5					2.2	3.7				
	P_s					33					12	26			36	
	L_w					38					33	43			41	
315	T					3.0				2.0	2.5	4.1				
	P_s					43				9	15	35			47	10
	L_w					41				30	37	46			44	33
405	T									2.5	3.6					
	P_s									15	25					17
	L_w									37	44					40
506	T									3.5	4.3					
	P_s									23	38					25
	L_w									42	47					45
608	T									4.0						
	P_s									33						36
	L_w									45						48
709	T									4.5						
	P_s									43						47
	L_w									49						52

Aircell M	A	B	C	D	E	F
M300	6	230	36	56	296	235
M450	6	307	36	56	446	375
M500	6	307	36	56	496	375
M600	6	456	36	56	596	525

Order Example

Aircell M300/O300/P300/F300/BM300
Type
Damper
Plenum
Fixing Kit
Blanking Kit

Blanking Arrangements



4 way 3 way 2 way 2 way 1 way

Aircell Diffusers

2300 / 2600

Introduction

The Waterloo Aircell 2000 series presents a contemporary diffuser style combining high performance and robust construction with the significant cost advantage of injection moulded engineering polymers.
The diffusers are available in 2 sizes to integrate with standard 300mm or 600mm lay-in or concealed 'T' ceiling systems.

Product Description

2300 300 sq diffusers
2600 600 sq diffusers
O Black polymer opposed blade damper
P Black polymer plenum box
F Fixing kit
B Blanking kit

Features

- Contemporary style designed for visual integration with luminaires and other ceiling elements
- Ease of installation with concealed, single point fixing into P series plenum or rigid ducting
- Full range of integrated accessories available including directional or core blanking kits, universal plenums and opposed blade dampers

Finishes

Diffusers are self-coloured white.
Damper and plenum are self-coloured black

Weights

2300 0.6 kg
2600 3.2 kg

Authority

Patents: 2221530, 2223840, 8818337 others pending
Registered Designs: 1052716, 106216
Fire Rating: BS476 Pt 7 Class 0. BS476 Pt 5, P Rating.
Maximum supply air temperature must not exceed 50°C.

Selection Criteria

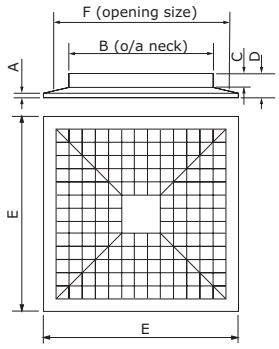
Ceiling Height 2.7 m
Temperature Differential - 10K
Average room velocity v_r 0.25 m/s
Noise level = peak level on noise rating curves based on Sound Power Level less 8dB room absorption
All performance data includes the plenum box

Selection Example

Aircell 2300-4

Air flow rate	75 l/s
Throw	1.1 m
Static Pressure Loss	17 Pa
Noise level	27 dBA

Note: Sizes are overall



Aircell 2000	A	B	C	D	E	F
2300	3	229	41	53	296	269
2600	6	459	31	56	596	546

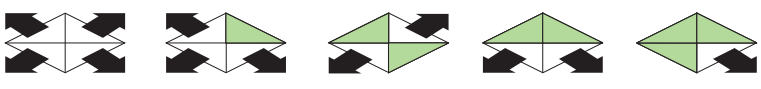
Performance Table

2000 Air Volume l/s	2000 Air Volume m³/h		Supply 2300 4 way	Supply 2300 3 way	Supply 2300 2 way	Supply 2300 1 way	Supply 2600 4 way	Supply 2600 3 way	Supply 2600 2 way	Supply 2600 1 way	Extract 2300	Extract 2600
25	90	T (m)	0.6	0.7	0.8	1.7						
		P_s	2	5	8	28					4	
		L_w	-	-	-	35					-	
50	180	T (m)	0.8	1.4	1.7					0.9		
		P_s	8	17	28					10	15	
		L_w	-	25	35					25	24	
75	270	T (m)	1.1	1.7	2.3					1.8		
		P_s	17	28	60					22	30	
		L_w	27	35	46					36	33	
100	360	T (m)	1.7	2.2					0.9	2.5		
		P_s	28	50					10	40	50	
		L_w	35	43					25	43	40	
125	450	T (m)	2.0	2.5			0.3	0.7	1.4			
		P_s	44	66			4	8	15		75	
		L_w	41	48			-	22	31		45	
150	540	T (m)	2.3				0.5	0.9	1.8			
		P_s	60				6	10	22		100	6
		L_w	46				-	25	36		50	-
200	720	T (m)					0.9	1.6	2.5			
		P_s					10	18	40			12
		L_w					25	33	43			-
250	900	T (m)					1.4	2.1				
		P_s					15	28				20
		L_w					31	38				25
300	1080	T (m)					1.8	2.5				
		P_s					22	40				29
		L_w					36	43				32
350	1260	T (m)					2.2					
		P_s					30					41
		L_w					40					37
400	1440	T (m)					2.5					
		P_s					40					54
		L_w					43					42

Order Example

Aircell 2300/O300/P300/F300/B300
Type
Damper
Plenum
Fixing Kit
Blanking Kit

Blanking Arrangements



Aircell Diffusers

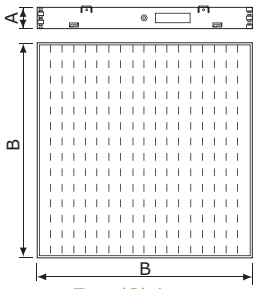
Controls and Fixing Options

Performance

The unique integrated design of the plenum, damper and diffuser assembly has been specifically developed to promote smooth flow lines, ensuring an exceptional aerodynamic and acoustic performance.
Aircell products can be used in any air distribution system where temperatures do not exceed 50° C.

Opposed Blade Damper Type 'O'

The 'O' series opposed blade damper is designed to integrate with the plenum and diffuser range to provide a simple means of flow regulation from the diffuser face.
The unit is designed to snap-fit into the universal plenum, or alternatively can be easily screw or rivet fixed into steel ducting using the inbuilt mounting lugs.
Manufactured in black engineering grade polymer, the damper is inherently smooth and positive in operation.



Type 'O' damper

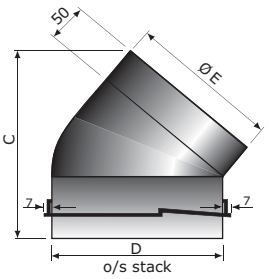
Weights

O300 0.5 kg, O450 1.0 kg, O600 2.2 kg

Plenum Type 'P'

The 'P' series plenum is aerodynamically profiled to provide ideal flow conditions with either top or side entry duct arrangements.
Manufactured in black engineering grade polymer, the design incorporates features such as internal guide vanes to reduce air turbulence, and snap-in locks to retain the opposed blade damper and diffuser mounting bar.
The plenum can be fixed to the ceiling grid or suspended by drop rods from the slab. Either fixing method is carried out using patented mounting brackets which simply slide into the plenum retaining slots.

Model	A	B	C	D	E
O300	41	215	-	-	-
O450	41	290			
O600	41	440	-	-	-
P300	-	-	245	224	197
P450	-	-	277	299	247
P600	-	-	366	449	397



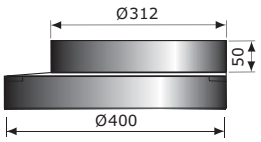
Type 'P' plenum

Weights

P300 0.7 kg, P450 1.0 kg, P600 1.7 kg

Neck Reducer R600

The R600 snap-fit neck reducer is available as an option to convert the P600 plenum spigot from 397 Ø to 312 Ø.



R600 neck reducer

Aircell Diffusers

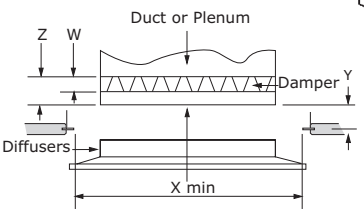
Installation and Specification

Installation

Particular attention has been paid to the installation method to minimise site fixing time. The plenum is easily installed using the slide-in brackets as support legs from above the ceiling 'T', or with drop rods from the slab. The damper and diffuser support bar can then be clipped in place, with the diffuser finally being secured by the single centre fixing screw.

Specification

Aircell are manufactured from injection moulded engineering polymer, in self-coloured white as standard. Overall diffuser size shall be nominally 300 or 600mm to suit standard ceiling grids.
A captive centre line polymer fixing bolt and metal fixing bracket kit shall be provided.
Directional blanking is obtained with snap-in plates to provide 1, 2 or 3 way air patterns or reduced area blanking.
Opposed blade dampers (type 'O') is manufactured from injection moulded engineering polymer in self-coloured black as standard, operable through the diffuser face.
Plenum box (type 'P') is manufactured from injection moulded engineering polymer of a universal design and in self-coloured black, incorporating guide vanes and bracket location slots.

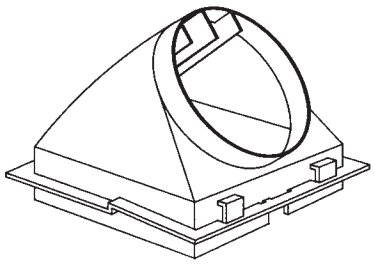


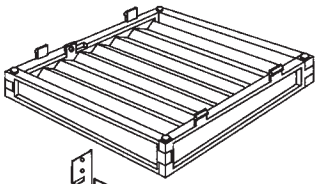
W = Damper depth
X = Ceiling opening (+5 -0)
Y = Face of T bar to underside of Duct or Plenum (+0 -10)
Z = Underside of duct to underside of damper

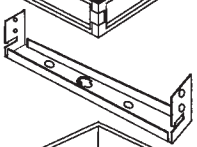
Model	W	X	Y	Z
2300	45	269	41	88
2600	45	546	41	88

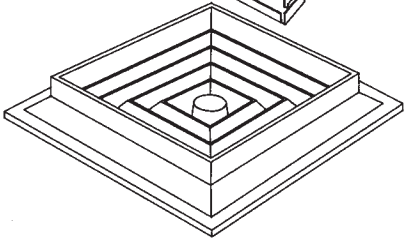
Note:

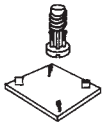
Specially designed clips mean that you can use a type 'O' damper with a diffuser without a universal Plenum.


Universal plenum type P


Face operated opposed blade damper type O


Diffuser fixing bracket type F - for fixing plenum or duct


Aircell diffuser


Captive fixing bolt

Removable core

Laminar Flow Diffusers

LFF / LFM

Introduction

LF diffusers have been designed for use in clean rooms, laboratories, operating theatres, or other applications where critical control of room air movement is necessary. They are also suitable for less critical applications such as animal rooms or kitchens where a vertical flow pattern may be required.

The laminar air pattern is achieved by use of a primary baffle within the plenum box and a low free-area perforated discharge plate at the face of the diffuser. The diffusers are available with either a flanged frame style (type LFF) to suit conventional exposed or concealed 'T' ceilings, or, with a flangeless frame (type LFM) suitable for modular panel constructions.

The LFM units can be supplied with a perimeter trim strip to suit the overall dimensions of the panel assembly. Support brackets and mounting plates can also be manufactured to fit suspended light bases used in operating theatres.

The units are available in three standard sizes with options for top, side, or end entry inlet spigots and screw operated louvre dampers.

Description

LF laminar flow diffusers are constructed from aluminium extruded frames and assembled using welding and soldering techniques to form a robust construction.

The perforated aluminium face plate can be easily removed for cleaning using the hook tool provided. Plenum boxes are manufactured from galvanised sheet steel, with all exposed edges and spot welds protected.

Product Description

LFF Laminar flow panel with flanged frame

LFM Laminar flow panel with modular flangeless frame

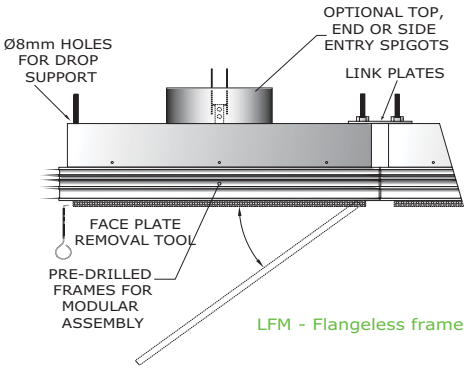
LD Louvre damper

Features

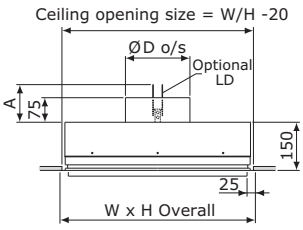
- Two frame styles and sizes to suit 600mm and 1200mm 'T' ceilings or modular panel assemblies.
- Side, top, or end entry spigot connections with optional spigot mounted louvre damper.
- Pivoting, removable face plate for easy maintenance.
- Easy clean aluminium face plate and frame with durable polyester powder coating.

Finishes

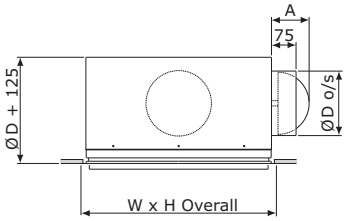
PPG9010 (RAL 9010 Gloss - 80% Gloss White)
PPM9010 (RAL 9010 Matt - 20% Gloss White)
PPM9006 (RAL 9006 Matt - 30% Gloss Silver)
Other colours available on request



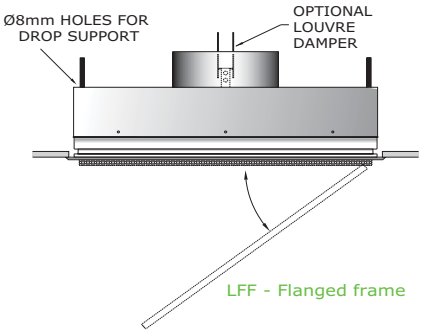
LFM - Flangeless frame



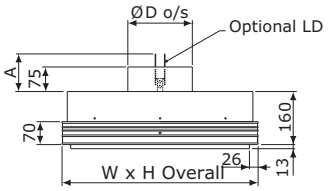
LFF-TE = Top Entry



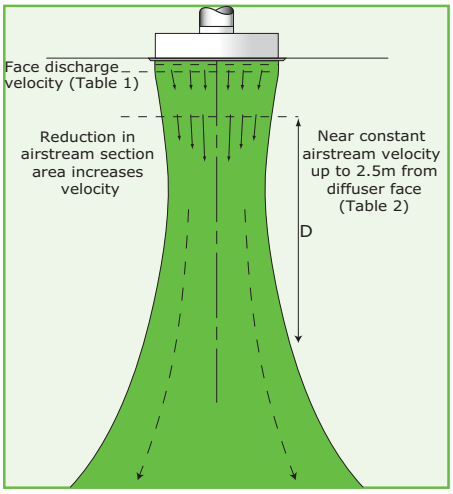
LFF-SE = Side Entry
LFF-EE = End Entry

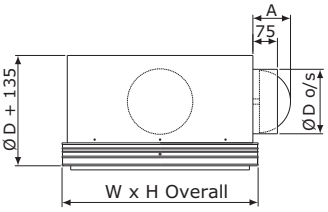


LFF - Flanged frame



LFM-TE = Top Entry





LFM-SE = Side Entry
LFM-EE = End Entry

Order Example

LFM/900/600/TE/PPM9010/LD

- Type
- Nominal Width
- Nominal Height
- Spigot Location
- Finish
- Damper (if required)

Free Area
23%

Type	Unit size	W x H	ØD	A
LFM	600 x 600	600 x 600	197	120
LFM	900 x 600	900 x 600	197	120
LFM	1200 x 600	1200 X 600	312	165
LFF	600 x 600	598 x 598	197	120
LFF	1200 x 600	1198 x 598	312	165

Laminar Flow Diffusers

LFF / LFM

Performance Table

Table 1. Average Face Air Velocity														
LFM / LFF		Air Flow Rate												
Unit size	m³/h	72	108	144	180	216	288	360	432	504	576	648	720
	l/s	20	30	40	50	60	80	100	120	140	160	180	200
600x600		0.05	0.10	0.13	0.17	0.21	0.30	0.37					
900x600			0.05	0.07	0.10	0.13	0.18	0.24	0.30				
1200x600					0.05	0.06	0.11	0.15	0.19	0.24	0.28	0.32	0.37

Table 2. Average Airstream Velocity													
LFM / LFF		Air Flow Rate											
Unit size	m³/h	72	108	144	180	216	288	360	432	504	576	648	720
	l/s	20	30	40	50	60	80	100	120	140	160	180	200
	DT												
600 x 600	-3 °C	0.09	0.11	0.13	0.16	0.20	0.26	0.33					
	-5 °C	0.09	0.12	0.15	0.20	0.25	0.31	0.36					
	-10 °C	0.10	0.13	0.15	0.25	0.32	0.41	0.45					
900 x 600	-3 °C	0.07	0.09	0.11	0.12	0.14	0.16	0.22	0.25				
	-5 °C	0.07	0.10	0.13	0.17	0.20	0.25	0.29	0.32				
	-10 °C	0.08	0.11	0.15	0.20	0.24	0.31	0.36	0.40				
1200 x 600	-3 °C				0.05	0.07	0.09	0.10	0.14	0.22	0.26	0.29	0.31
	-5 °C				0.05	0.07	0.10	0.12	0.16	0.25	0.30	0.35	0.39
	-10 °C				0.05	0.10	0.14	0.23	0.30	0.38	0.42	0.45	0.47

Table 3. Airstream Temperature Rise (°C)														
LFM / LFF			Air Flow Rate											
Unit size	DT	m³/h	72	108	144	180	216	288	360	432	504	576	648	720
		l/s	20	30	40	50	60	80	100	120	140	160	180	200
		D												
600 x 600	-3°C	1m	2.5	2.5	2.5	2.5	2.0	2.0	1.0					
		2m	3.0	3.0	3.0	3.0	2.5	2.5	2.0					
	-5°C	1m	4.5	4.5	4.5	4.0	3.5	3.0	2.5					
		2m	5.0	5.0	5.0	4.5	4.0	3.5	3.0					
	-10°C	1m	8.5	8.0	8.0	8.0	7.5	6.5	6.0					
		2m	9.5	9.5	9.5	9.0	8.5	8.0	7.0					
900 x 600	-3°C	1m	3.0	3.0	3.0	3.0	2.5	2.5	2.0	1.5				
		2m	3.0	3.0	3.0	3.0	3.0	2.5	2.5	2.0				
	-5°C	1m	5.0	4.5	4.5	4.5	4.0	3.5	3.0	2.5				
		2m	5.0	5.0	5.0	5.0	4.5	4.5	4.0	3.5				
	-10°C	1m	10.0	9.5	9.5	9.0	8.5	8.0	7.0	5.5				
		2m	10.0	10.0	9.5	9.5	9.0	8.5	8.0	7.0				
1200 x 600	-3°C	1m				3.0	3.0	3.0	2.5	2.5	2.0	2.0	1.5	1.0
		2m				3.0	3.0	2.5	2.5	2.5	2.5	2.5	2.0	1.5
	-5°C	1m				4.5	4.5	4.5	4.0	4.0	3.5	3.0	2.5	2.0
		2m				5.0	5.0	5.0	5.0	4.5	4.5	4.0	3.0	2.5
	-10°C	1m				10.0	10.0	10.0	9.5	9.0	8.0	7.5	6.5	5.5
		2m				10.0	10.0	10.0	9.5	9.5	9.0	8.5	8.0	7.0

Table 4. Diffuser Static Pressure Loss (Pa) (open damper)													
LFM / LFF		Air Flow Rate											
Unit size	m³/h	72	108	144	180	216	288	360	432	504	576	648	720
	l/s	20	30	40	50	60	80	100	120	140	160	180	200
600x600		1	1	1	2	2	4	5					
900x600		1	1	1	2	2	4	5	7				
1200x600					1	1	1	2	2	3	3	4	4

Table 5. Acoustic Data (Noise Level) dBA (open damper)													
LFM / LFF		Air Flow Rate											
Unit size	m³/h	72	108	144	180	216	288	360	432	504	576	648	720
	l/s	20	30	40	50	60	80	100	120	140	160	180	200
600x600					<20	25	29	33					
900x600						<20	28	32	35				
1200x600												<20	<20

Selection Criteria

Laminar flow diffuser airstreams are characterised by the tendency to reduce in sectional area from the point of discharge, particularly with high cooling differentials.

Although this produces a slight initial increase in the core velocity, friction between the airstream boundary and the static room air offsets this, the nett result being to maintain a near constant air velocity at distances up to 2.5m from the face.

This characteristic is reflected in the data presentation of Tables 1 and 2 which give information on the face discharge velocity and the average airstream velocity over this distance.

The discharge velocity is based on an average number of vane anemometer readings at the face plate, whilst the airstream velocity is derived from time averaged readings with a 15 probe array at distances of 1m and 2m from the face.

In the case of the latter, data is given for cooling differentials of 3°C, 5°C and 10°C.

The temperature diffusion data presented in Table 3 can be used to determine the approximate airstream temperature by adding the indicated temperature rise to the discharge air temperature.

The acoustic data shown in Table 5 is presented in terms of sound power based dBA levels.

To obtain the resulting dBA level in the occupied zone, room absorption factors should be applied as appropriate to the installation conditions.

Diffuser selection criteria will be dependent on the application, but as a general guide most sedentary occupants would be tolerant of airstream velocities up to 0.25m/s if the air temperature is 1-2°C below that in the room.

In applications where there are concentrated heat sources or where the occupants are mostly transitory, this can generally be increased to 0.35 - 0.5m/s. As an example, consider the use of a 1200 x 600 diffuser in an operating theatre where the cooling differential is to be 5 °C with a supply air temperature of 17°C.

Reference to Table 2 shows that the maximum air flow rate to achieve an average airstream velocity of 0.25m/s would be 140 l/s.

Airstream temperatures at distances of 1m and 2m from the diffuser face can be found from Table 3; in this case, at 140 l/s, the supply air temperature will rise by 3.5°C and 4.5°C respectively, giving moving air temperatures of 20.5°C and 21.5°C at the two heights.

The diffuser noise level can be found from Table 5, which assuming a fully open damper, would be less than 25dBA at 140 l/s.

Selection Example LFM 600 x 600

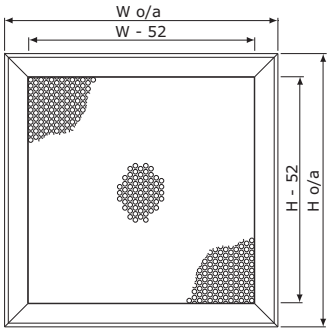
Air flow 60 l/s
Cooling differential 5°C
Average face velocity 0.21 m/s
Average airstream velocity 0.25 m/s
Static pressure loos 2 Pa
Noise level 25 dBA

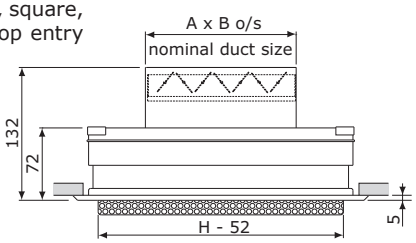
Perforated Face Diffusers

CPD / CPDE

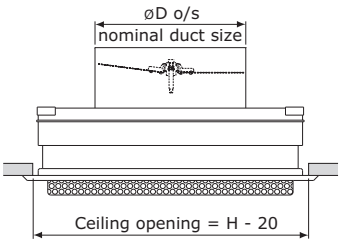
Introduction

The Waterloo CPD range of diffusers have been designed for use in commercial applications and are particularly suited to projects with high air change rates and high cooling differentials.
CPD diffusers are suitable for installation in 300, 600 and 1200mm tile module systems and the range includes square and rectangular types.
The aluminium face plate may be pivoted down and removed to ease installation, commissioning and maintenance and is held closed by spring clips.
The diffusers are constructed from aluminium extruded frames and perforated face plates with plated steel, square, rectangular and circular connections suitable for top entry ducts.





CPD/OBSS



CPD/LD

Product Description

CPD2 2 way perforated face supply diffuser
CPD3 3 way perforated face supply diffuser
CPD4 4 way perforated face supply diffuser
CPDE Exhaust air perforated face diffuser
OBSS Opposed blade damper for square /rectangular connections
LD Louvre damper for circular connections

Features

- Integrate with 300, 600 and 1200mm tile sizes
- All aluminium face construction
- Pivoting, removable face plate
- Range of four sizes
- High air handling capacity
- Supply or exhaust diffusers visually compatible

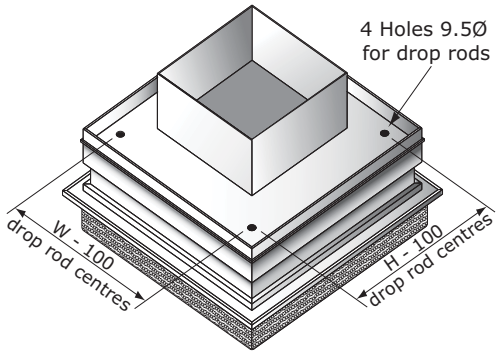
Finishes

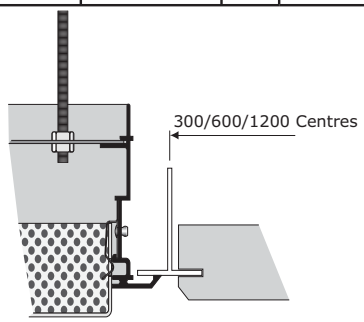
PPG9010 (RAL 9010 Gloss - 80% Gloss White)
PPM9010 (RAL 9010 Matt - 20% Gloss White)
PPM9006 (RAL 9006 Matt - 30% Gloss Silver)
Other colours available on request

Type	Unit size	W x H	ØD	A x B	Weight (kg)
CPD	300 x 300	295 x 295	147	147 x 147	2.0
CPD	600 x 600	595 x 595	297	297 x 297	3.4
CPD	600 x 300	595 x 295	—	297 x 147	2.8
CPD	1200 x 600	1195 x 595	—	597 x 297	6.5
CPDE	300 x 300	295 x 295	—	147 x 147	2.0
CPDE	600 x 600	595 x 595	—	447 x 447	3.4
CPDE	600 x 300	595 x 295	—	447 x 147	2.8
CPDE	1200 x 600	1195 x 595	—	597 x 297	6.5

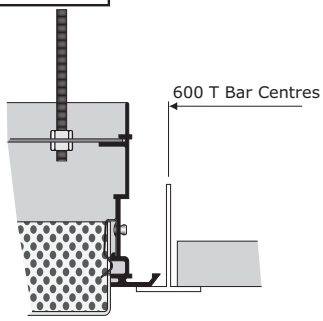
Installation

Drop rod (or tie wire) support method is recommended for concealed T and flush mounting options.

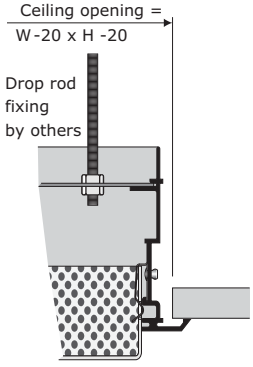




CONCEALED T BAR



LAY-IN / EXPOSED T BAR



FLUSH

Order Example

CPD/4/300/300/150 DIA/PPM9010/LD

Type
Pattern
Nominal Width
Nominal Height
Spigot Size
Finish
Damper

Free Area
54%

Perforated Face Diffusers

CPD / CPDE

Selection Criteria

Ceiling height up to 2.8 m
Radius of diffusion is based on terminal velocities of 0.75 m/s (minimum) and 0.15 m/s (maximum) to achieve mean room air velocities of 0.25 m/s and 0.10 m/s respectively.
Noise level is based on diffuser sound power level less 8dB room absorption.

Selection Example

CPD4/300X300/150

Air flow rate	88 l/s
Throw	0.8 - 1.9 m
Static Pressure Loss	7 Pa
Noise level	38 dBA

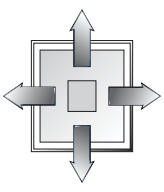
Square Neck Supply Diffuser Corrections	
CPD / 300 x 300/ 150 x 150 as 150Ø - 6dB	Pa x 0.65
CPD / 600 x 600/ 300 x 300 as 300Ø - 6dB	Pa x 0.65

Performance Table

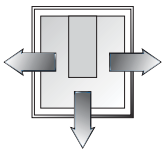
CPD		4 way				3 way			2 way			Exhaust			
Sizes		300 X 300	600 X 600	600 X 300	1200 X 600	300 X 300	600 X 600	600 X 300	300 X 300	600 X 600	600 X 300	300 X 300	600 X 300	600 X 600	1200 X 600
Spigot size		Ø 150	Ø 300	300 X 150	600 X 300	Ø 150	Ø 300	300 X 150	Ø 150	Ø 300	300 X 150	150 X 150	450 X 150	450 X 450	600 X 300
Air Flow Rate	m³/h	126	508	324	1296	126	508	324	126	508	324	162	486	1458	1296
	l/s	35	141	90	360	35	141	90	35	141	90	45	135	405	360
Throw Short Side Min.-Max. [m]		0.2-0.5	1.0-2.3	0.8-1.8	1.0-3.2	0.3-0.6	1.0-2.3	0.8-1.8	0.8-1.8	1.4-3.3	1.1-2.5				
Throw Long Side Min.-Max. [m]				1.0-2.3	1.7-4.0			1.0-2.3							
Noise Level [dBA]			23	21	36	21	24	24	25	28	26				
Static Pressure Loss [Pa]		1	3	4	18	2	3	4	3	4	6	6	6	6	6
Air Flow Rate	m³/h	191	763	486	1944	191	763	486	191	763	486	241	727	2185	1944
	l/s	53	212	135	540	53	212	135	53	212	135	67	202	607	540
Throw Short Side Min.-Max. [m]		0.4-0.9	1.5-3.6	1.3-3.1	1.8-4.0	0.5-1.1	1.5-3.6	1.3-3.1	1.3-3.1	2.3-5.4	2.5-5.8				
Throw Long Side Min.-Max. [m]				1.9-4.4	2.6-5.0			1.9-4.4							
Noise Level [dBA]		27	32	33	47	29	33	31	34	37	34		20	24	25
Static Pressure Loss [Pa]		3	6	4	40	4	6	9	8	9	12	10	10	10	10
Air Flow Rate	m³/h	252	1015	648	2592	252	1015	648	252	1015	648	324	972	2916	2592
	l/s	70	282	180	720	70	282	180	70	282	180	90	270	810	720
Throw Short Side Min.-Max. [m]		0.6-1.4	2.1-5.0	1.9-4.4	2.7-5.0	0.7-1.7	2.1-5.0	1.9-4.4	2.0-4.6	3.2-7.6	3.8-9.0				
Throw Long Side Min.-Max. [m]				2.8-6.6	3.3-6.0			2.8-6.6							
Noise Level [dBA]		33	41	37	56	35	41	37	39	43	41	24	30	34	33
Static Pressure Loss [Pa]		5	10	14	70	7	11	17	13	16	22	14	14	14	14
Air Flow Rate	m³/h	-	-	-	-	-	-	-	-	-	-	403	1213	3636	3240
	l/s	-	-	-	-	-	-	-	-	-	-	112	337	1010	900
Throw Short Side Min.-Max. [m]		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Throw Long Side Min.-Max. [m]		-	-	-	-	-	-	-	-	-	-	-	-	-	-
Noise Level [dBA]		-	-	-	-	-	-	-	-	-	-	32	38	42	41
Static Pressure Loss [Pa]		-	-	-	-	-	-	-	-	-	-	20	20	20	20

Deflection Patterns

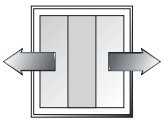
CPD4
4 way



CPD3
3 way



CPD2
2 way

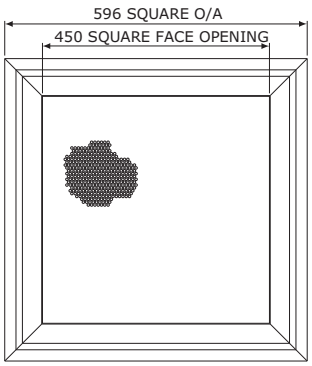


CPDE
Exhaust

Nominal Size (mm)	Deflecting Pad Size		
	CPD4	CPD3	CPD2
300x300	150x150	195x150	240x150
600x600	200x200	370x200	540x200
600x300	300x150	420x150	540x150
1200x600	950x200	-	-

Perforated Face Diffusers

KRCP / KRCPE

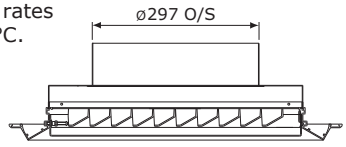


Introduction

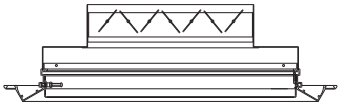
The Waterloo KRCP range of diffusers have been designed to suit 600mm square ceiling modules of 'Burgess type', lay-in T and concealed T arrangements. The diffuser incorporates an easily removable perforated face plate and adjustable inner multicone pattern control cores which produce an efficient 4, 3, 2 or 1 way air diffusion pattern. Matching exhaust units are available. The control cores are available as separate items to facilitate simple on-site changes.
This diffuser may be applied to most commercial projects, but as the frame detail incorporates an anti-smudge ring, it is ideal for kitchen and restaurant applications. The range is suitable for systems involving air change rates up to 20 per hour and cooling differentials up to 14°C.

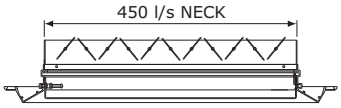
Product Description

KRCP Perforated face supply diffuser
KRCPE Perforated face exhaust diffuser
OBSS Opposed blade damper for square connections
LD Louvre damper for circular connections

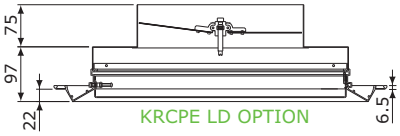


KRCP


KRCPE 300 SQ OBSS OPTION



KRCPE 450 SQ OBSS OPTION



KRCPE LD OPTION

Features

- Easy maintenance
- Anti-smudge frame
- Pivoted front plate
- Adjustable pattern control cores
- Versatile ceiling integration

Finishes

PPG9010 (RAL 9010 Gloss - 80% Gloss White)
PPM9010 (RAL 9010 Matt - 20% Gloss White)
PPM9006 (RAL 9006 Matt - 30% Gloss Silver)
Other colours available on request

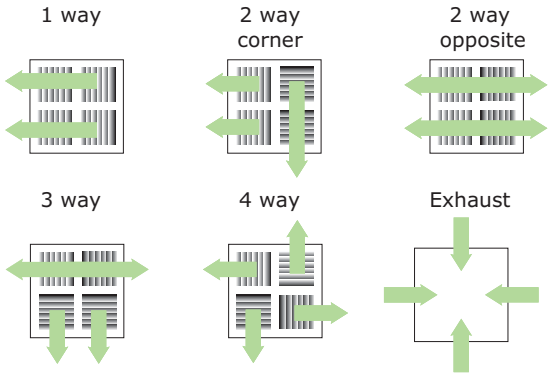
Sizes

All diffusers are 596 x 596mm overall. Available spigot sizes are as follows:-
KRCP Ø 300
KRCPE 450 x 450, 300 x 300 or Ø 300

Weights

KRCP 5.7 kg
KRCPE 3.7 kg
OBSS 4.0 kg

Core Patterns



Selection Criteria

Ceiling Height 3.0 m
Radius of diffusion is based on terminal velocities of 0.75 m/s (minimum) and 0.10 m/s (maximum) respectively. Noise level is based on diffuser sound power level less 8dB room absorption.
Data is based on testing in accordance with BS 4773 Part 1 and 2 for isothermal air conditions.
Data is directly applicable to cooling and heating applications

Performance Table

KRCP			Exhaust	
m³/h	l/s		Spigot 450x450	Spigot Ø 300
504	140	Pa	1	6
		L_w	-	-
1008	280	Pa	4	22
		L_w	-	-
1512	420	Pa	9	50
		L_w	23	28
2016	560	Pa	15	88
		L_w	35	38
2520	700	Pa	23	125
		L_w	45	46

KRCP			Supply				
			4 way throw	3 way throw long side	3 way throw short side	2 way throw	1 way throw
m³/h	l/s						
504	140	T	0.3-1.1	0.3-1.3	0.3-0.8	0.3-1.8	0.4-2.5
		Pa	4	4	4	4	4
		L_w	22	22	22	22	22
756	210	T	0.7-1.8	1.0-3.0	0.5-1.6	0.6-2.5	1.8-3.5
		Pa	7	7	7	7	7
		L_w	33	33	33	33	33
1008	280	T	1.2-2.5	1.6-3.5	0.7-2.0	1.2-3.5	3.2-5.5
		Pa	17	17	17	17	17
		L_w	42	42	42	42	42
1260	350	T	1.7-3.2	2.1-4.0	1.2-2.5	1.7-4.5	4.5-8.0
		Pa	26	26	26	26	26
		L_w	49	49	49	49	49

Selection Example

KRCP/600x600/300

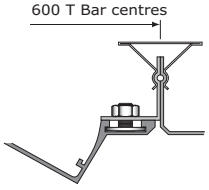
4 way throw
Air Flow Rate 210 l/s
Throw 0.7 - 2.0m
Static Pressure Loss 7 Pa
Noise level 33 dBA

Order Example

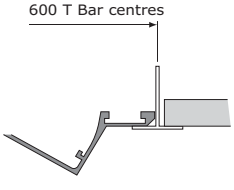
KRCP/600/600/300 DIA/PPG9010/LD

Type
Nominal Width
Nominal Height
Spigot Size
Finish
Damper

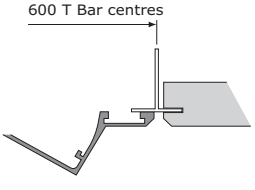
Installation Options



BURGESS TYPE MOUNT



LAY-IN / EXPOSED T BAR



CONCEALED T BAR

Perforated Face Diffusers

MWVP / MWVPD

Introduction

The MWVP(D) is a high induction multi-directional (through blanking plate arrangement) ceiling diffuser with a perforated front-plate. The diffuser is suitable for both supply and extract applications, with chilled, warm or isothermal air. It is delivered with an acoustically lined plenum attached as standard. The plenum also has a sound attenuation blade specially designed to have a minimal effect on pressure, helping to reduce noise levels even further. Extract diffusers can have an optional G2 filter fitted.

Product Description

MWVPD-4 Side-Entry, 4-Way Perforated Plate Supply Diffuser
MWVPD-3 Side-Entry, 3-Way Perforated Plate Supply Diffuser
MWVPD-2 Side-Entry, 2-Way Perforated Plate Supply Diffuser
MWVP-4 Top-Entry, 4-Way Perforated Plate Supply Diffuser
MWVP-3 Top-Entry, 3-Way Perforated Plate Supply Diffuser
MWVP-2 Top-Entry, 2-Way Perforated Plate Supply Diffuser
MWVPD-R Side-Entry Perforated Plate Extract Diffuser
MWVPD-RF Side-Entry Perforated Plate Extract Diffuser With Filter
MWVP-R Top-Entry Perforated Plate Extract Diffuser
MWVP-RF Top-Entry Perforated Plate Extract Diffuser With Filter

Features

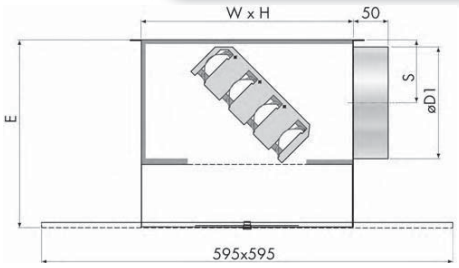
- Supply and extract functionality
- Suitable for chilled, isothermal or warmed air.
- Ideal for modular ceiling tile replacement
- High entrainment and mixing of surrounding air.
- Short throw

Finishes

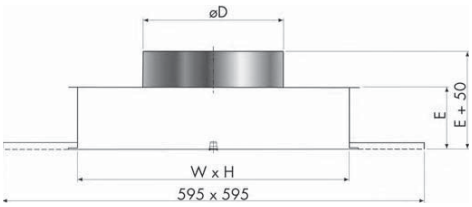
Front-plate: PPM9010 (RAL 9010 Matt - 20% Gloss White)
Other colours are available on request

Sizes

See Table



MWVPD



MWVP-R

	MWVPD			MWVP	
W x H	øD1	E	S	øD	E
240x240	125	235	72	125	87
300x300	160	270	90	160	92
380x380	200	300	110	200	92
480x480	250 oval*	295	102	250	97
560x560	315 oval*	295	99	315	107

W x H	Ø D	E MWVP	E MWVPD	Filter Size	S
340x340	200	100	296	335x335	110
440x440	250 oval*	100	296	435x435	117
* The perimeter of the oval is equivalent to the circumference of a circle of the stated diameter					

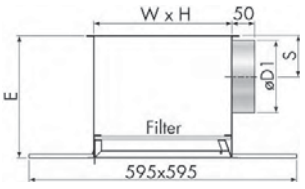
Selection Criteria

Ceiling Height 2.7 m
Temperature Differential -10K
Air Velocity in the Comfort Zone 0.15 m/s
Noise level is based on diffuser sound power level less 8dB room absorption.
All selections include the plenum

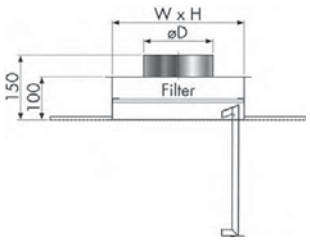
Selection Example

MWVP(D)-4-250

Air Volume 111 l/s
or 400 m³/h
Throw 1.1 m
Pressure Drop 9 Pa
Noise Level 25 dBA



MWVPD-RF



Order Example

MWVPD/3/200/PPM9010
Type
Number of Directions
Inlet Spigot Diameter
Finish

Performance Table

MWVP(D)			4-Way Supply					3-Way Supply					2-Way Supply					Extract					Extract With Filter	
m³/h	l/s		125	160	200	250	315	125	160	200	250	315	125	160	200	250	315	125	160	200	250	315	200	250
100	28	T	0.5	0.4				0.5	0.4				0.6											
		P_s	8	3				11	5				17					5					3	
		L_w	-	-				-	-				21					-					-	
150	42	T	0.8	0.6				0.8	0.7				1.3	0.9										
		P_s	16	7				24	10				40	16				14					6	
		Lw	27	-				29	-				34	-				-					-	
200	56	T	1.0	0.8	0.7			1.1	0.9	0.8			2.0	1.1	0.8									
		P_s	33	12	5			24	18	8			68	30	12			25	11				9	
		L_w	35	21	-			38	25	-			45	29	-			22	-				-	
250	69	T	1.3	1.0	0.8	0.5			1.1	0.8	0.5			1.6	1.0	0.7								
		P_s	48	18	8	3			28	12	5			44	17	8		39	16				13	3
		L_w	44	29	-	-			32	-	-			36	23	-		28	-				-	-
300	83	T		1.2	1.0	0.8			1.3	1.1	0.9			2.1	1.3	1.1								
		P_s		28	12	5			40	18	7			64	27	11		56	21	9			18	5
		Lw		38	20	-			39	28	-			44	28	-		32	-	-			-	-
400	111	T			1.3	1.1	0.9			1.4	1.3	1.0			2.1	1.3	1.0							
		P_s			20	9	4			30	12	5			48	20	8		31	15			29	9
		L_w			31	-	-			33	23	-			36	28	-		27	-			-	-
500	139	T			1.6	1.4	1.2			1.7	1.7	1.3				2.6	2.1							
		P_s			32	13	6			48	20	7				30	11		44	24	10		41	44
		L_w			37	25	-			42	31	20				34	24		33	23	-		27	-
600	167	T				1.7	1.4				2.1	1.6				3.5	2.6							
		P_s				18	9				28	17				44	18			35	14	5	55	20
		L_w				32	21				36	24				40	29			26	-	-	32	28
750	208	T					1.7					2.0					3.3							
		P_s					13					18					28			54	22	11		31
		L_w					29					33					36			33	-	-		33
1000	278	T					2.3					2.7												
		P_s					24					28								36	14		56	
		L_w					40					41								29	-		40	

Fixed Blade Swirl Diffusers

SDFC / SDFS

Introduction

Waterloo Air Products range of Fixed Blade Swirl Diffusers presents an attractive and aerodynamically efficient alternative to conventional circular or square ceiling air terminals.
The diffusers are designed to produce a horizontal, radial air pattern with a turbulent, high induction jet characteristic and are ideally suited for applications with high heating or cooling differentials.
Manufactured from aluminium with press formed blades, the units are available in a range of six ISO sizes in either circular (type SDFC) or square format (type SDFS) and can be supplied complete with a duct mounting collar for easy assembly.
The steel duct mounting collar can be used as a means of fixing and supporting the diffuser from rigid ductwork, or alternatively, ceiling support brackets (supplied on request) can be fitted for use with flexible ducting.

Product Description

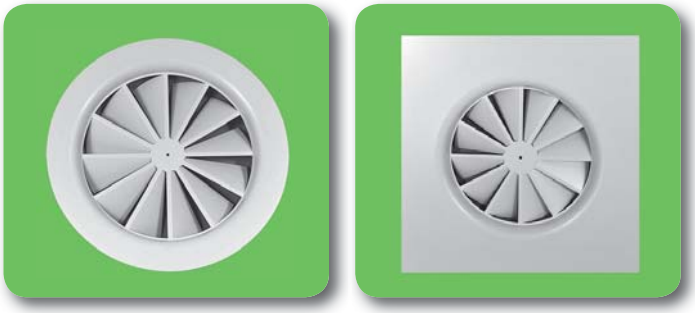
SDFC	Circular face swirl diffuser
SDFC	Circular face swirl diffuser
SDFS	Square face swirl diffuser
DM	Duct collar
BC	Blanking collar for use with exposed ceiling installations.
WTP	Side entry plenum box
FDC1	Cord operated flap damper
FDQ1	Quadrant operated flap damper
LINED	6mm acoustic lining (optional) reaction to fire class C-s3-d0 to EN 13501-1: 2007

Finishes

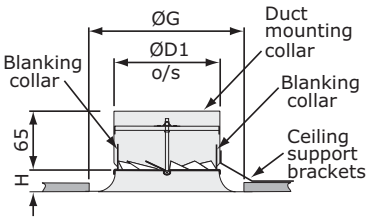
PPG9010 (RAL 9010 Gloss - 80% Gloss White)
PPM9010 (RAL 9010 Matt - 20% Gloss White)
PPM9006 (RAL 9006 Matt - 30% Gloss Silver)
Other colours available on request

Note:

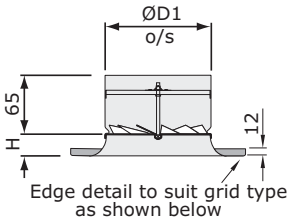
- The duct collar is not required when ordering diffusers with plenums.
- For available blanking options please contact the head office.
- Blanking Collar increases horizontal throw performance when no ceiling is present, BC are supplied un painted and fit behind the swirl blades.

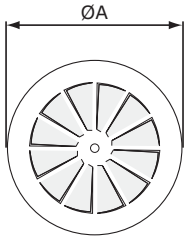


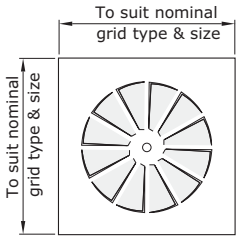
SDFC

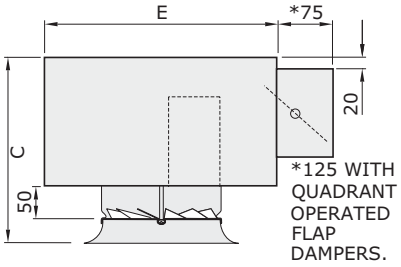


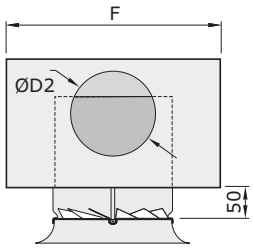
SDFS





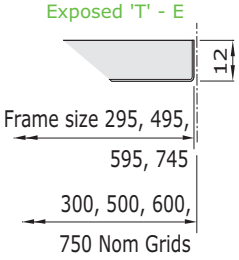




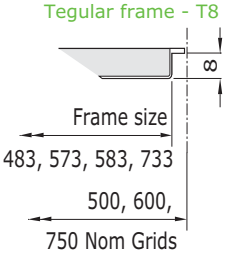


SDFS Frame Styles and Grid Sizes

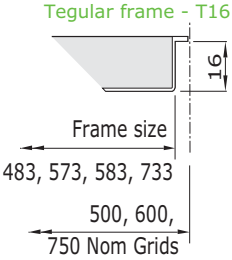
Exposed 'T' - E



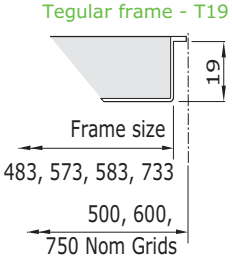
Tegular frame - T8



Tegular frame - T16



Tegular frame - T19



Weights

SDFC Size	Diffuser + Collar	Plenum
125 Ø	0.3 kg	1.6 kg
160 Ø	0.4 kg	1.9 kg
200 Ø	0.6 kg	4.5 kg
250 Ø	0.7 kg	5.1 kg
315 Ø	1.0 kg	7.4 kg
400 Ø	1.5 kg	9.5 kg
SDFS Grid Size	**Diffuser + Collar**	**Plenum**
300 x 300	1.1 kg	For plenum weights use data above based on nominal neck size
500 x 500	1.5 kg	
600 x 600	2.1 kg	
750 x 750	3.2 kg	

Order Example

SDFS/250/500/T8/DM/9010-Matt
Type
Nominal size
Grid size
Frame style
Duct collar
Finish

Please note: For plenum order example see page 66.

Fixed Blade Swirl Diffusers

SDFC / SDFS

Selection Criteria

Throw data is expressed in metres and is based on a terminal velocity of 0.5m/s and a 10°C cooling differential. For isothermal conditions apply a factor of 1.15 to the throws. For 10°C heating apply a factor of 1.32.

Noise levels are based on sound pressure levels with an assumed 8dB room absorption factor allowed.

Pressure loss data is shown in terms of static pressure loss (Pa) based on a diffuser fitted with a DM collar, or for a diffuser installed in a WTP plenum.

Selection Example SDFC/315

Air flow rate 120 l/s

Ducted Diffuser

Throw 1.9 m
Static Pressure Loss 25 Pa
Noise level 35 dBA

Plenum Mounted Diffuser

Throw 1.9 m
Static Pressure Loss 31 Pa
Noise level 37 dBA

Note.

When using the SDF products with Blanking collar in an exposed ceiling installation the throw correction factor will be 0.66

Dimensions

Nom. Size	Ø A	Available Grid Sizes for SDFS	C	Ø D1	Ø D2	E	F	Ø G	H
125	200	300, 500, 600 or 750	215	123	97	320	300	160	25
160	250	300, 500, 600 or 750	240	158	122	320	300	200	25
200	300	300, 500, 600 or 750	275	198	157	420	400	250	25
250	350	300, 500, 600 or 750	315	248	197	420	400	300	25
315	450	500, 600 or 750	370	313	247	520	500	370	30
400	535	500, 600 or 750	435	397	312	580	560	460	30

Please note a 300x300 grid is only available for an exposed lay-in type, and with neck sizes up to 250 Ø .

Performance Table

SDFC / SDFS		Supply Air Volume																			
Diameter	m^3 /h	36	72	108	144	180	216	252	288	324	360	432	504	576	648	720	810	900	990	1080
	l/s	10	20	30	40	50	60	70	80	90	100	120	140	160	180	200	225	250	275	300
125	Throw	0.3	0.5																	
	L_W Duct	25	39																	
	L_W Plenum	27	41																	
	P_S Duct	16	47																	
	P_S Plenum	20	59																	
160	Throw		0.4	0.6	1.0	1.3														
	L_W Duct		-	29	38	43														
	L_W Plenum		-	31	40	46														
	P_S Duct		10	21	25	55														
	P_S Plenum		12	26	31	69														
200	Throw		0.4	0.6	0.9	1.3	1.5	1.8												
	L_W Duct		-	-	25	32	37	41												
	L_W Plenum		-	-	27	34	39	43												
	P_S Duct		4	9	15	22	30	40												
	P_S Plenum		5	11	19	28	38	50												
250	Throw				0.6	1.0	1.3	1.4	1.6	1.8	2.1	2.3								
	L_W Duct				-	-	-	26	29	23	36	42								
	L_W Plenum				-	-	25	28	31	35	38	44								
	P_S Duct				5	8	11	15	19	24	29	40								
	P_S Plenum				6	10	14	19	24	30	36	50								
315	Throw					0.8	1.0	1.2	1.3	1.4	1.6	1.9	2.2	2.4						
	L_W Duct					-	-	-	-	27	30	35	40	43						
	L_W Plenum					-	-	-	25	29	32	37	42	45						
	P_S Duct					5	7	9	11	14	17	25	33	41						
	P_S Plenum					6	9	11	14	17	21	31	41	51						
400	Throw										1.0	1.2	1.3	1.7	2.2	2.4	2.6	3.0	3.4	3.6
	L_W Duct										-	-	-	-	-	27	30	33	35	38
	L_W Plenum										-	-	-	-	25	29	32	35	37	40
	P_S Duct										3	5	6	8	11	13	17	20	24	29
	P_S Plenum										4	6	8	10	14	16	21	25	30	36
For exhaust applications add 3dB to the dBA level and multiply pressure loss by 1.1																				

Perforated Face Swirl Diffusers

SDFS-P

Introduction

Waterloo Air Products range of perforated face, fixed blade swirl diffusers presents an attractive and aerodynamically efficient alternative to conventional circular or square ceiling air terminals.

The diffusers are designed to produce a horizontal, radial air pattern with a turbulent, high entrainment jet characteristic and are ideally suited for applications with high heating or cooling differentials.

Manufactured from aluminium with press formed blades, the units have an aesthetically pleasing perforated face which has Ø 4.5mm holes on an 8mm 45° pitch, giving a free area of 49.7%. They are available in a range of 4 standard ISO sizes in 3 different frame configurations to suit 4 nominal ceiling grid sizes.

The steel duct mounting collar can be used as a means of fixing and supporting the diffuser from rigid ductwork, or alternatively, ceiling support brackets (supplied as standard) can be fitted for use with flexible ducting.

Product Description

SDFS-P Perforated face swirl diffuser
SDFS-P-E Perforated face extract diffuser
DM Duct collar
WTP Side entry plenum box
FDC1 Cord operated flap damper
FDQ1 Quadrant operated flap damper
LINED 6mm acoustic lining (optional) reaction to fire class C-s3-d0 to EN 13501-1: 2007

Please note the duct collar is not required when ordering diffusers with plenums.

Sizes

SDFS-P diffusers are available in ISO duct sizes ranging from 160mm to 400mm diameter, with 3 frame options to suit ceiling grid sizes of 300, 500, 600 & 750 square.

Finishes

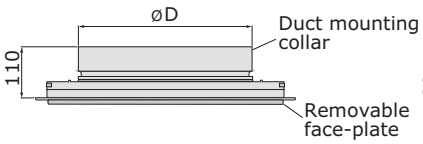
PPG9010 (RAL 9010 Gloss - 80% Gloss White)
PPM9010 (RAL 9010 Matt - 20% Gloss White)
PPM9006 (RAL 9006 Matt - 30% Gloss Silver)
Other colours available on request

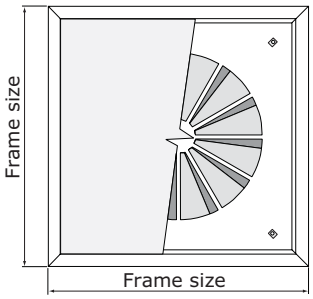
Weights

Nom Neck & Grid Size	Diffuser + Collar	Plenum
160/300x300	1.6 kg	1.9 kg
250/500x500	2.5 kg	5.1 kg
315/500x500	2.5 kg	7.4 kg
315/600x600	3.6 kg	7.4 kg
400/600x600	3.6 kg	9.5 kg
400/750x750	5.4 kg	9.5 kg

SDFS-P

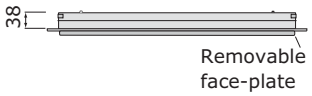
Perforated supply diffuser

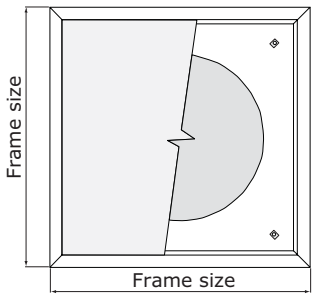




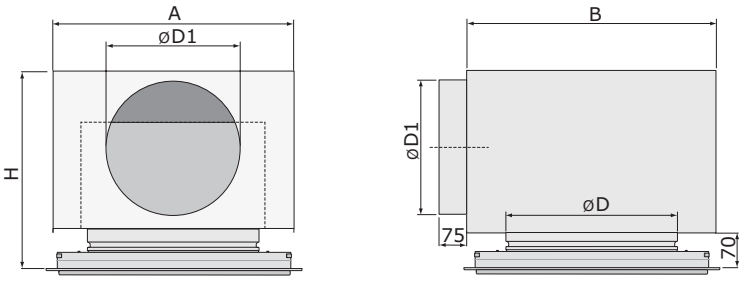
SDFS-P-E

Perforated extract diffuser (for ceiling void return only)



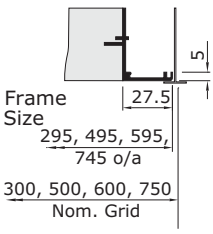


SDFS-P Perforated supply diffuser with WTP plenum

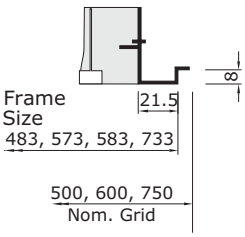


Modular Frame Styles and Grid Sizes

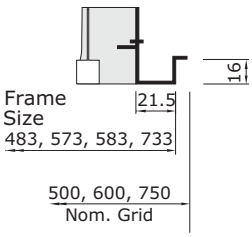
Exposed 'T' - E



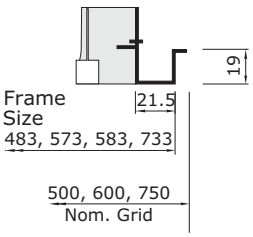
Tegular frame - T8



Tegular frame - T16



Tegular frame - T19



Order Example

SDFS-P/250/500/T16/483/DM/9010-Matt

Type
Nominal size
Grid size
Frame style
Frame size
Duct collar
Finish

Note:
Tegular T8 & T16 frame size refers to the exposed border dimension.

Please note: For plenum order example see page 66.

Perforated Face Swirl Diffusers

SDFS-P

Nom. Size	Grid Sizes	Ø D	Ø D1	A	B	H
125	300 x 300	125	100	300	325	240
160	300 x 300	160	122	300	325	255
200	500 x 500	200	147	400	425	290
250	500 x 500	250	197	400	425	330
315	500 x 500	315	247	500	525	380
315	600 x 600	315	247	500	525	380
400	600 x 600	400	312	560	585	430
400	750 x 750	400	312	560	585	430

Selection Criteria

Throw data is expressed in metres and is based on a terminal velocity of 0.5m/s and a 10°C cooling differential. For isothermal conditions apply a factor of 1.15 to the throws. For 10°C heating apply a factor of 1.32.

Noise levels are based on sound pressure levels with an assumed 8dB room absorption factor allowed.

Pressure loss data is shown in terms of static pressure loss (Pa) based on a diffuser fitted with a DM collar, or for a diffuser installed in a WTP plenum.

Selection Example SDFS-P-315/E/600

Air flow rate 125 l/s

Ducted Diffuser

Throw 1.2m

Static Pressure Loss 11 Pa

Noise level 28 dBA

Plenum Mounted Diffuser

Throw 1.2m

Static Pressure Loss 18 Pa

Noise level 31 dBA

Performance Table

SDFS-P	Supply Air Volume														
Diameter	m^3 /h	72	108	144	180	216	288	360	450	540	630	720	810	900	990
	l/s	20	30	40	50	60	80	100	125	150	175	200	225	250	275
125	Throw	0.4	0.8	1.3											
	L_w Duct	28	36	43											
	L_w Plenum	28	36	43											
	P_s Duct	20	42	64											
	P_s Plenum	23	50	78											
160	Throw		0.5	0.9	1.4										
	L_w Duct		27	35	42										
	L_w Plenum		27	35	42										
	P_s Duct		14	27	44										
	P_s Plenum		18	36	54										
200	Throw			0.4	0.8	1.3									
	L_w Duct			28	35	42									
	L_w Plenum			28	35	42									
	P_s Duct			14	21	33									
	P_s Plenum			18	30	43									
250	Throw				0.3	0.7	1.1	1.6							
	L_w Duct				18	26	33	40							
	L_w Plenum				18	26	33	40							
	P_s Duct				7	10	19	26							
	P_s Plenum				8	14	23	36							
315	Throw						0.5	0.9	1.3	1.7	2.1				
	L_w Duct						16	23	29	35	40				
	L_w Plenum						17	25	32	38	43				
	P_s Duct						6	8	12	17	22				
	P_s Plenum						8	12	18	26	35				
400	Throw								0.9	1.2	1.5	1.8	2.1	2.4	2.7
	L_w Duct								14	20	26	31	35		
	L_w Plenum								15	22	28	33	37	41	44
	P_s Duct								5	8	11	15	18	23	28
	P_s Plenum								6	10	14	18	23	30	39

Exhaust Air Volume														
Grid Size	m^3 /h	108	144	180	216	288	360	450	540	630	720	810	900	990
	l/s	30	40	50	60	80	100	125	150	175	200	225	250	275
300 x 300	Pressure loss Pa (All selections <L_w 20)	2	3	5	8	15								
500 x 500					1	2	3	5	7	10				
600 x 600						6	7	7	8	9	11	12	14	16
750 x 750						6	7	7	8	9	11	12	14	16

Fixed Blade Swirl Diffusers

SDT / SDC

Introduction

The SDT / SDC Fixed Blade Swirl Diffuser present an attractive alternative to the existing range.
These diffusers produce a horizontal radial air pattern with high induction effect, making them ideally suited for applications with high heating and cooling differentials.
Manufactured from sheet steel with press formed blades, the units are available in four standard sizes with either 24 straight (SDTA/SDCA) or 24 curved blades (SDTB/SDCB).

Product Description

SDTA Square plate straight pattern swirl diffuser
SDTB Square plate curved pattern swirl diffuser
SDCA Circular plate straight pattern swirl diffuser
SDCB Circular plate curved pattern swirl diffuser
DM Duct collar
WTP Side entry plenum box
FDC1 Cord operated flap damper
FDQ1 Quadrant operated flap damper
LINED 6mm acoustic lining (optional) reaction to fire class C-s3-d0 to EN 13501-1: 2007

Please note the duct collar is not required when ordering diffusers with plenums.

Sizes

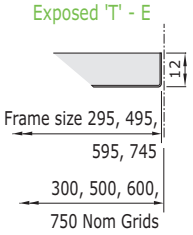
See table

Finishes

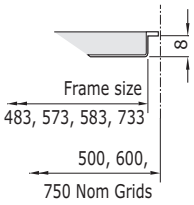
PPG9010 (RAL 9010 Gloss - 80% Gloss White)
PPM9010 (RAL 9010 Matt - 20% Gloss White)
PPM9006 (RAL 9006 Matt - 30% Gloss Silver)
Other colours available on request

SDTA - SDTB Frame Styles and Grid Sizes

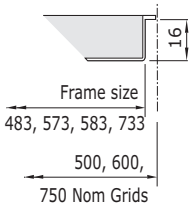
Exposed 'T' - E



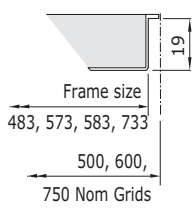
Tegular frame - T8

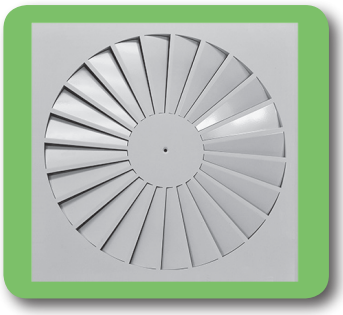


Tegular frame - T16



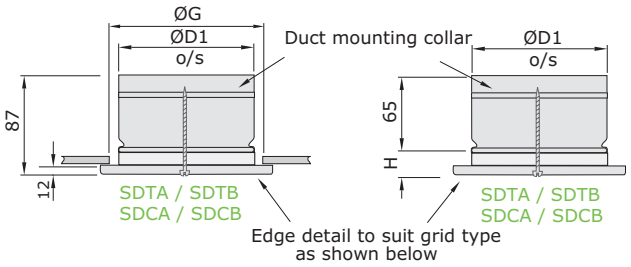
Tegular frame - T19

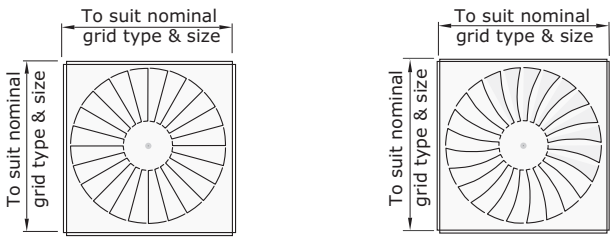


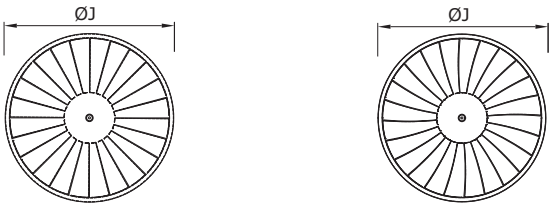


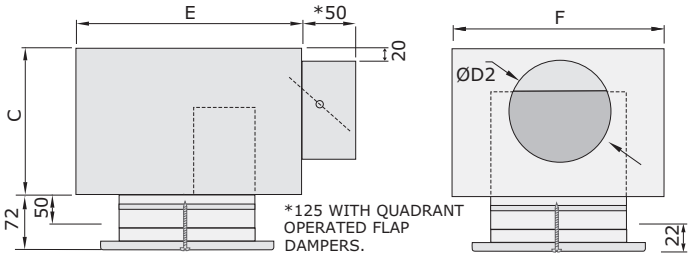
SDTA

SDCB









Nominal Size	Available Grid Sizes	Plenum Width ' F '	Plenum Length ' E '	Plenum Height ' C '	Spigot size ØD2	Duct collar ØD1	Ceiling opening ØG	H	J
250	300, 500, 600 or 750	400	400	260	200	248	260	22	270
350	500, 600 or 750	500	500	310	250	343	360	22	370
450	500, 600 or 750	560	560	375	315	443	460	22	470
550	600 or 750	650	650	375	315	543	560	22	580

Order Example

SDTA/250/500/T8/483/DM/9010-Matt
Type
Nominal size
Grid size
Frame style
Frame size
Duct collar
Finish

Please note: For plenum order example see page 66.

Weights

SDTA / SDTB	Diffuser + Collar	Plenum
250 Ø	3.7 kg	5.1 kg
350 Ø	3.9 kg	7.7 kg
450 Ø	4.0 kg	10.2 kg
550 Ø	4.2 kg	12.4 kg

Fixed Blade Swirl Diffusers

SDT / SDC

Performance Table

SDT & SDC			Supply Air Volume (l/s)								
Diameter	Type	Parameter	25	30	40	60	80	100	125	150	175
250	A & B	Throw (m)	0.8	1.4	2.2						
	A	L_{WA} (dBA)	<20	21	24						
		Δp (Pa)	4	9	17						
	B	L_{WA} (dBA)	<20	20	23						
		Δp (Pa)	4	7	15						
350	A & B	Throw (m)		0.8	1.5	2.2	3.0				
	A	L_{WA} (dBA)		<20	<20	21	29				
		Δp (Pa)		4	9	18	27				
	B	L_{WA} (dBA)		<20	<20	20	24				
		Δp (Pa)		4	6	15	25				
450	A & B	Throw (m)				1.6	2.4	3.1	3.6		
	A	L_{WA} (dBA)				<20	23	30	36		
		Δp (Pa)				10	14	23	41		
	B	L_{WA} (dBA)				<20	22	25	28		
		Δp (Pa)				8	11	21	36		
550	A & B	Throw (m)				0.6	1.5	2.3	3.0	3.6	4.1
	A	L_{WA} (dBA)				<20	20	22	28	35	42
		Δp (Pa)				4	7	10	16	25	32
	B	L_{WA} (dBA)				<20	<20	22	23	24	26
		Δp (Pa)				4	5	7	13	22	29

Selection Criteria

Throw data is expressed in metres and is based on a terminal velocity of 0.5 m/s at 10°C cooling differential. For isothermal conditions apply a factor of 1.15 to the throws. For 10°C heating apply a factor of 1.32. Noise levels are sound power levels with an assumed 8 dB room attenuation expressed in dBA. Pressure loss data is shown for a WTP plenum mounted diffuser.

Selection Example

SDTA/350, SDTB/350
SDCA/350, SDCB/350

Air flow rate 60 l/s

SDTA Diffuser
SDCA Diffuser

Throw 2.2m
Static Pressure Loss 18 Pa
Noise level 21 dBA

SDTB Diffuser
SDCB Diffuser

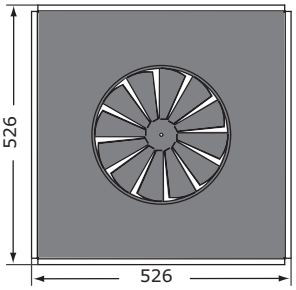
Throw 2.2m
Static Pressure Loss 15 Pa
Noise level 20 dBA

Fixed Blade Swirl Diffusers

SDFS - LCT

Introduction

The SDFS - LCT has been developed for use when mounted directly on top of a ceiling tile (supplied by others). The diffuser is supplied in matt black as standard and the outer flange has a black gasket to seal against the back of the tile and offers a high induction effect.



Order Example

SDFS-LCT/200/600/T16/583/DM/9005-Matt

- Type
- Nominal size
- Grid size
- Frame style
- Frame size
- Duct collar
- Finish

Please note: For plenum order example see page 66.

Product Description

SDFS-LCT Lay-on ceiling tile
DM Duct collar
WTP Side entry plenum box
FDC1 Cord operated flap damper
FDQ1 Quadrant operated flap damper
LINED 6mm acoustic lining (optional) reaction to fire class C-s3-d0 to EN 13501-1: 2007

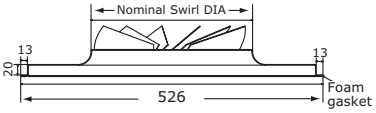
Please note the duct collar is not required when ordering diffusers with plenums.

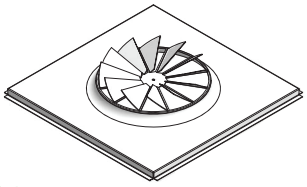
Finishes

Matt Black

Performance Table

SDFS - LCT			Supply Air Volume													
Diameter	Grid Size	m^3/h	108	144	180	216	288	360	450	540	630	720	810	900	990	
		l/s	30	40	50	60	80	100	125	150	175	200	225	250	275	
160	600x600	Throw (m)	0.5	0.8	1											
		L_{WA} Plenum (dBA)	27	36	42											
		P_s Plenum (Pa)	17	31	52											
200	600x600	Throw (m)		0.5	0.6	0.8	1.1									
		L_{WA} Plenum (dBA)		20	29	38	43									
		P_s Plenum (Pa)		15	20	32	41									
250	600x600	Throw (m)			0.4	0.5	0.8	1.3								
		L_{WA} Plenum (dBA)			22	28	33	40								
		P_s Plenum (Pa)			8	11	23	35								
315	600x600	Throw (m)				0.3	0.5	0.7	0.9	1.4	1.9					
		L_{WA} Plenum (dBA)				15	21	26	31	36	41					
		P_s Plenum (Pa)				5	8	12	18	26	35					
400	600x600	Throw (m)						0.4	0.6	0.9	1.1	1.4	1.6	1.7	2	
		L_{WA} Plenum (dBA)						<10	16	23	29	33	37	40	42	
		P_s Plenum (Pa)						5	9	11	14	17	22	29	35	





Notes:

Tested at 40% free area perforated ceilling tile. Different size perforation will effect the tested data. Not recommended to go below 35% free area without first consulting head office.

High Capacity Swirl Diffusers

SDFCH / SDICH / SDACH

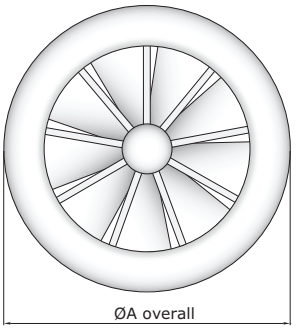
Introduction

The Waterloo SDFCH is a high capacity fixed blade swirl diffuser designed to produce a horizontal, radial air pattern with a turbulent, high entrainment jet characteristic and is ideally suited for applications with high heating or cooling differentials.

The Waterloo SDICH is based on the SDFCH but allows the individual adjustment of blades to create a specifically required air pattern.

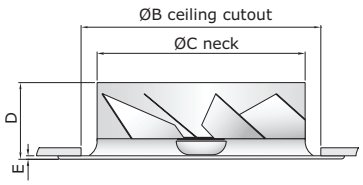
The Waterloo SDACH is also based on the SDFCH but provides adjustment to the angle of all of the blades in unison in order to create the required air pattern. This can also be controlled remotely with an optional motor.

Both the SDICH and the SDACH allow a continual adjustment from providing coanda effect to vertical dumping. They are particularly useful in areas that experience a varied thermal load, for example areas that are effected heavily by the changes in season.
All products in the high capacity swirl diffuser range are suitable for ceilings up to 15m.



Product Description

SDFCH	Large format, high capacity fixed swirl diffuser
SDICH	Large format, high capacity swirl diffuser with individually adjustable blades
SDACH	Large format, high capacity swirl diffuser with connected adjustable blades
SDACH-T	Diffuser with thermostatic actuator controlled connected blades
SDACH-TE	Diffuser with thermostatic actuator controlled connected blades, with equaliser
SDACH-TP	Diffuser with thermostatic actuator controlled connected blades, 595 x 595 tile
SDP	Side entry plenum box
FDC1	Cord operated flap damper
FDQ1	Quadrant operated flap damper
LINED	6mm acoustic lining (optional) reaction to fire class C-s3-d0 to EN 13501-1: 2007
M	Optional motorised actuator for the SDACH only



Features

- Large size range
- Profiled frame
- Optional standard side entry plenum

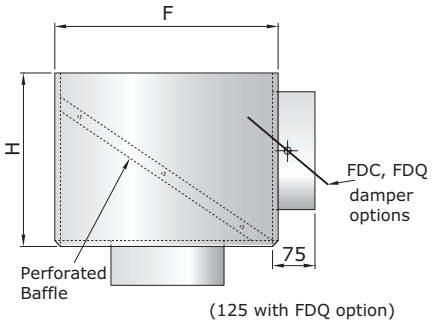
Finishes

PPG9010 (RAL 9010 Gloss - 80% Gloss White)
PPM9010 (RAL 9010 Matt - 20% Gloss White)
PPM9006 (RAL 9006 Matt - 30% Gloss Silver)
Other colours available on request

Advantages

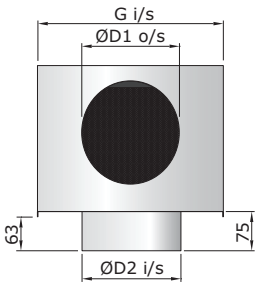
- High air volume capacity
- Standard top entry neck, or side entry with plenum box

* FD trimming damper not suitable for use with a spigot velocity greater than 3.0m/s



Nom Size	ØA	ØB	ØC	D	E	F	G	H	J*	ØD1	ØD2
200	280	225	197	90	5	395	375	290	413	197	200
250	330	275	247	100	5	445	425	340	473	247	250
315	430	360	312	115	5	520	500	405	553	312	315
400	530	450	397	130	5	595	575	490	653	397	400
500	650	550	497	185	8	695	675	590	808	497	500
630	790	680	627	200	8	820	800	720	953	627	630

* Please note the total installed height assumes an overlap of 30mm on the diffuser neck / plenum connection.



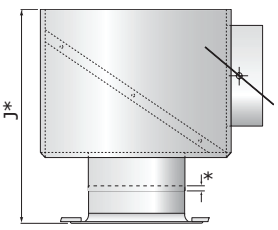
Order Example

SDFCH/200/ 9010-Gloss
Type
Nominal size
Finish

Please note: For plenum order example see page 67.

Weights

Nom Size	Diffuser (kg)	Plenum (kg)
200	0.5	5.5
250	0.7	7.0
315	1.2	9.0
400	1.7	13.5
500	3.5	18.5
630	4.5	25



High Capacity Swirl Diffusers

SDFCH / SDICH / SDACH

Selection Criteria

Throw data is for a ceiling mounted diffuser and is based on a cooling differential of 10°C and a jet terminal velocity of 0.5m/s
For isothermal conditions apply a factor of 1.15 to the throws.
For 10°C heating applications apply a factor of 1.32 to the throws.
For duct mounted installations without a ceiling, reduce jet throws by a factor of 0.7
P_s is the static pressure loss in Pa and is shown for a ducted diffuser or for a diffuser installed in an SDP plenum.
Noise levels are based on sound pressure levels with an assumed 8dB room absorption allowance.

Selection Example

SDFCH/500
Air Flow Rate 500 l/s

Ducted Diffuser
Throw 4.0 m
Static Pressure Loss 21 Pa
Noise Level 26 dBA

Plenum Mounted Diffuser
Throw 4.0 m
Static Pressure Loss 32 Pa
Noise Level 32 dBA

Performance Table

Also suitable for the SDICH and SDACH when set in the optimum coanda effect position

SDFCH		Supply Air Volume																						
Diameter	m³/h	72	144	216	288	360	432	540	630	720	810	900	1080	1260	1440	1620	1800	2160	2520	2880	3240	3600	3960	4320
	l/s	20	40	60	80	100	120	150	175	200	225	250	300	350	400	450	500	600	700	800	900	1000	1100	1200
200	Throw	0.4	0.9	1.3	1.6	1.9																		
	P_s Duct	3	10	23	40	62																		
	P_s Plenum	3	12	27	47	70																		
	L_w Duct	-	-	-	27	35																		
	L_w Plenum	-	-	-	27	35																		
250	Throw			1.1	1.3	1.6	1.8	2.0	2.2															
	P_s Duct			8	14	22	33	50	66															
	P_s Plenum			10	17	26	40	59	80															
	L_w Duct			-	-	-	-	29	34															
	L_w Plenum			-	-	-	28	35	40															
315	Throw					1.4	1.6	1.8	2.0	2.4	2.8	3.3												
	P_s Duct					7	11	15	21	28	35	43												
	P_s Plenum					9	14	20	27	35	43	56												
	L_w Duct					-	-	-	27	32	36	39												
	L_w Plenum					-	-	25	30	35	39	42												
400	Throw							1.7	1.9	2.2	2.4	2.8	3.5	3.8	4.2	4.7								
	P_s Duct							5	6	9	11	14	20	27	35	45								
	P_s Plenum							6	8	11	14	18	25	35	47	58								
	L_w Duct							-	-	-	-	-	-	31	37	42								
	L_w Plenum							-	-	-	-	-	27	34	40	45								
500	Throw													3.2	3.5	3.7	4.0	4.7	5.3					
	P_s Duct													10	13	17	21	30	40					
	P_s Plenum													13	18	22	27	40	54					
	L_w Duct													-	-	-	26	32	37					
	L_w Plenum													26	30	34	37	42	47					
630	Throw															2.8	3.1	3.8	4.4	5.4	6.1	7.0	7.7	8.2
	P_s Duct															6	8	12	16	21	26	34	40	49
	P_s Plenum															9	11	16	22	28	36	44	52	62
	L_w Duct															-	-	-	-	26	30	34	37	40
	L_w Plenum															-	-	26	30	34	38	41	44	47

For exhaust applications add 3dB to the dBA level and multiply pressure loss by 1.1
For vertical throw using SDICH/SDACH with vanes at 65 degrees inclination, and 10°C cooling, apply a factor of 1.1 to throws.
For 10°C heating apply a factor of 0.85 to throws.

Vane Swirl Diffusers

SDVS / SDVC

Introduction

The Waterloo Vane Swirl Diffusers are designed for areas where rapid mixing of supply air is required in rooms of ceiling height between 2.6m and 4m.

Product Description

SDVSA Square plate vane swirl diffuser with radial pattern (angled slot)
SDVCA Circular plate vane swirl diffuser with radial pattern (angled slot)
SDVSB Square plate vane swirl diffuser with radial pattern (normal slot)
SDVCB Circular plate vane swirl diffuser with radial pattern (normal slot)
S Side entry plenum
V Top entry plenum
ADJ Room adjustable vanes
E Lay-in, T8 / T16 tegular

Note: For available blanking options please contact the head office.

Features

- High air volume capacity
- Standard top entry neck, or side entry with plenum box
- Adjustable polymer deflectors enabling different discharge directions
- Optional room adjustable vanes
- Flat or ribbed blade appearance
- Attractive lightweight design
- Side or top entry plenums available
- In order to keep the same appearance the same design is used for supply and extract diffusers. There is no requirement to identify this on the order
- Lay in tegular options

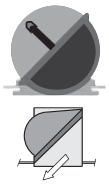
Finishes

Black or white deflectors (to be specified on order)
PPG9010 (RAL 9010 Gloss - 80% Gloss White)
PPM9010 (RAL 9010 Matt - 20% Gloss White)
PPM9006 (RAL 9006 Matt - 30% Gloss Silver)
Other colours available on request

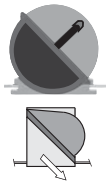
Advantages

- Suitable for high ceilings (relative to other diffusers)
- Rapid induction of supply air

SDVS SDVC	Number of vanes	A x A	Ø A	B x H	B1 x H1	Nom. Ø D	E
300	8	295x295	300	290x290	390x390	160	290
400	16	395x395	400	390x390	490x490	200	330
500	16 / 24	495x495	500	490x490	590x590	200	330
600	16	595x595	600	590x590	690x690	200	330
600	24/40/48	595x595	600	590x590	690x690	250	380
625	16	620x620	625	615x615	690x690	200	330
625	24/40/48	620x620	625	615x615	690x690	250	380
800	64/72	795x795	800	790x790	890x890	315	450
825	64/72	820x820	825	815x815	890x890	315	450



Air discharge left



Air discharge right

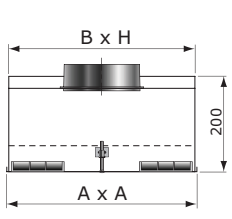
Order Example

SDVSA/600/E/48/595/ADJ/WH/9010-Matt

Type
Grid size
Lay-in
Vanes
Frame size
Room adjustable vanes
Vanes colour
Finish

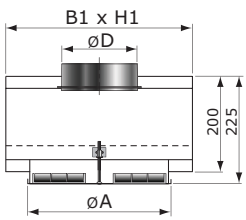
Please note: For plenum order example see page 67.

SDVS

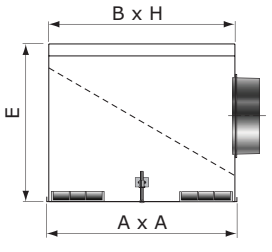


SDVSA-V / SDVSB-V

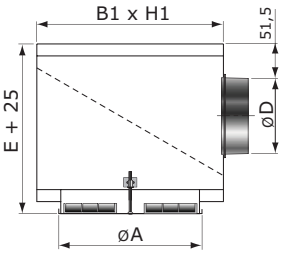
SDVC



SDVCA-V / SDVCB-V



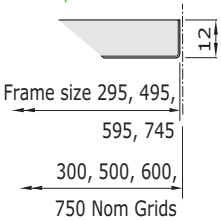
SDVSA-S / SDVSB-S



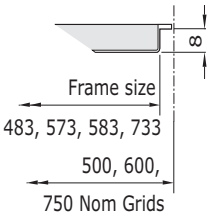
SDVCA-S / SDVCB-S

Frame Styles and Grid Sizes

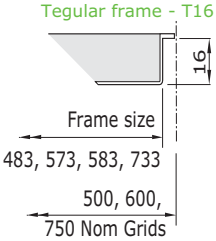
Exposed 'T' - E



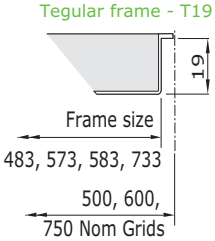
Tegular frame - T8

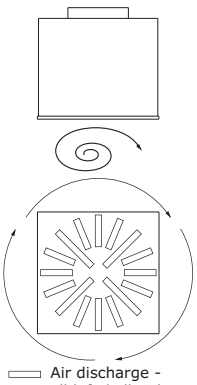


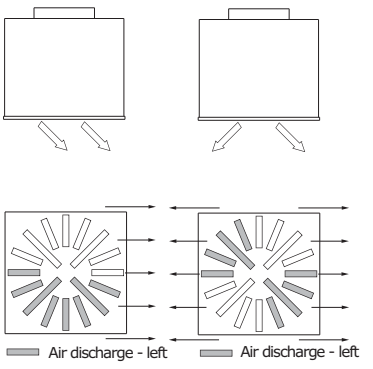
Tegular frame - T16



Tegular frame - T19





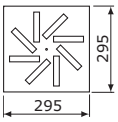


Vane Swirl Diffusers

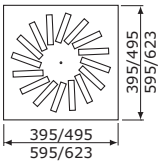
SDVS / SDVC

SDVSA

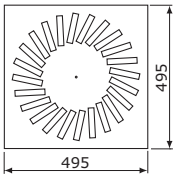
SDVSA-300-8



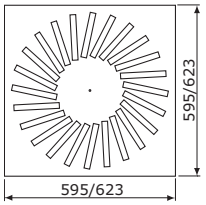
SDVSA-400-16
SDVSA-500-16
SDVSA-600-16
SDVSA-625-16



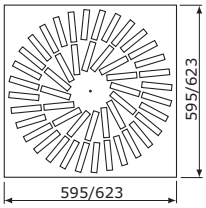
SDVSA-500-24



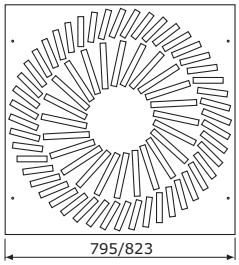
SDVSA-600-24
SDVSA-625-24



SDVSA-600-48
SDVSA-625-48



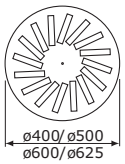
SDVSA-800-72
SDVSA-825-72



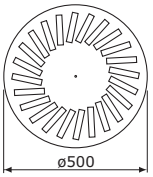
SDVCA

SDVCA-300-8

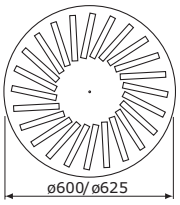
SDVCA-400-16
SDVCA-500-16
SDVCA-600-16
SDVCA-625-16



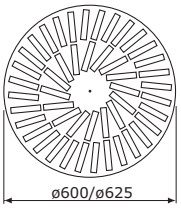
SDVCA-500-24



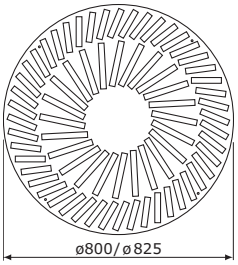
SDVCA-600-24
SDVCA-625-24



SDVCA-600-48
SDVCA-625-48

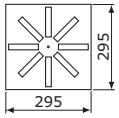


SDVCA-800-72
SDVCA-825-72

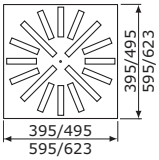


SDVSB

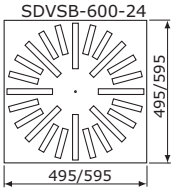
SDVSB-300-8



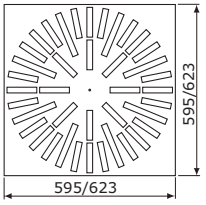
SDVSB-400-16
SDVSB-500-16
SDVSB-600-16
SDVSB-625-16



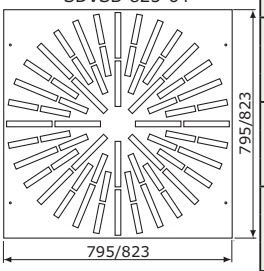
SDVSB-500-24
SDVSB-600-24



SDVSB-600-40
SDVSB-625-40



SDVSB-800-64
SDVSB-825-64



Fixing

Sizes 300 - 600 (inclusive) 1 central screw

Sizes 625 - 825 (inclusive) 4 screws

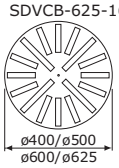
Performance Table

SDVSB / SDVCB			Supply				
m^3/h	l/s		300 - 8	400-16 500-16 600-16 625-16	500 -24 600 -24	600-40 625-40	800-64 825-64
90	25	T	0.9				
		P_s	6				
		L_w	-				
108	30	T	1.0				
		P_s	8				
		L_w	-				
144	40	T	1.2				
		P_s	12				
		L_w	30				
180	50	T	1.4	1.2			
		P_s	21	17			
		L_w	36	32			
216	60	T	1.6	1.4	1.0		
		P_s	30	24	7		
		L_w	41	36	-		
252	70	T	1.8	1.6	1.1		
		P_s	41	30	9		
		L_w	46	41	27		
288	80	T	2.2	1.9	1.3		
		P_s	54	40	11		
		L_w	50	45	31		
360	100	T		2.3	1.5	1.0	
		P_s		62	17	6	
		L_w		50	37	27	
450	125	T			1.8	1.5	0.9
		P_s			26	11	1
		L_w			44	32	-
540	150	T			2.1	1.6	1.1
		P_s			38	19	7
		L_w			48	37	26
720	200	T				2.1	1.5
		P_s				34	14
		L_w				45	34
900	250	T				2.5	1.8
		P_s				56	22
		L_w				51	40
1080	300	T					2.2
		P_s					31
		L_w					44
1260	350	T					2.5
		P_s					43
		L_w					49

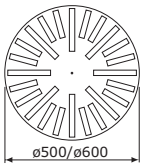
SDVCB

SDVCB-300-8

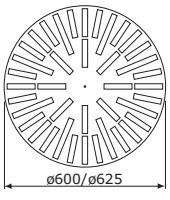
SDVCB-400-16
SDVCB-500-16
SDVCB-600-16
SDVCB-625-16



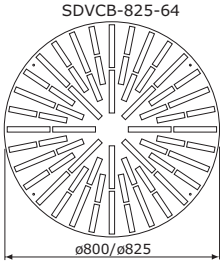
SDVCB-500-24
SDVCB-600-24



SDVCB-600-40
SDVCB-625-40



SDVCB-800-64
SDVCB-825-64



Vane Swirl Diffusers

SDVS / SDVC

Selection Criteria

Throw data is expressed in metres and is based on a terminal velocity of 0.5m/s and a 10°C cooling differential. For isothermal or 10°C heating conditions apply a factor of 1.15 or 1.32 respectively to the throws.
Noise levels are based on sound pressure levels with an assumed 8dB room absorption factor allowed.
Pressure loss data is shown in terms of static pressure loss (Pa) based on a diffuser fitted with a side entry plenum

Selection Example

SDVSA-600-24
Supply airflow 80 l/s
Horizontal diffusion 1.5 m from centre
Static Pressure loss 4 Pa
Regenerated Noise 7 dBA

Performance Table

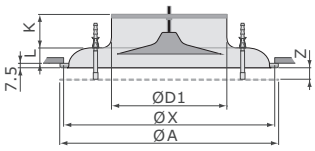
SDVSA SDVCA			Supply						Exhaust with side entry plenum						Exhaust with top entry plenum					
m^3/h	l/s		300 - 8	400-16 500-16 600-16 625-16	500 - 24	600-24 625-24	600-48 625-48	800-72 825-72	300 - 8	400-16 500-16 600-16 625-16	500 - 24	600-24 625-24	600-48 625-48	800-72 825-72	300 - 8	400-16 500-16 600-16 625-16	500 - 24	600-24 625-24	600-48 625-48	800-72 825-72
90	25	T	1.1																	
		P_S	9																	
		L_W	15																	
108	30	T	1.3	1.1																
		P_S	12	3											4					
		L_W	20	-											-					
144	40	T	1.6	1.3	1.1															
		P_S	22	6	3										7					
		L_W	27	-	-										-					
180	50	T	1.9	1.4	1.3															
		P_S	34	9	4				16						12					
		L_W	33	18	-				14						12					
216	60	T	2.1	1.6	1.4	1.3														
		P_S	50	14	6	2			24						17					
		L_W	38	22	17	-			20						18					
252	70	T	2.4	1.7	1.6	1.4														
		P_S	68	18	8	3			32						23					
		L_W	42	26	21	-			24						23					
288	80	T	2.6	1.8	1.7	1.5														
		P_S	88	24	11	4			42	14					30	11				
		L_W	45	30	24	12			28	14					27	14				
360	100	T		2.0	2.0	1.7	1.8													
		P_S		38	17	7	5		66	21	13				47	17	12			
		L_W		36	30	18	-		35	21	14				33	21	13			
450	125	T		2.3	2.3	1.9	1.9													
		P_S		59	26	11	7		103	33	20				73	26	19	8		
		L_W		42	36	24	18		42	28	20				40	27	19	11		
540	150	T			2.6	2.1	2.0	1.9												
		P_S			38	15	10	3		48	29	13				38	27	12	10	
		L_W			40	28	23	-		31	26	15				33	25	17	11	
720	200	T				2.5	2.2	2.1												
		P_S				27	18	6		85	52	23	18	7		67	48	21	18	
		L_W				36	31	20		42	35	24	20	13		42	34	25	20	
900	250	T				2.8	2.4	2.3												
		P_S				42	28	9			82	36	29	11			75	34	28	11
		L_W				42	36	26			42	31	26	20			41	32	27	15
1080	300	T					2.5	2.5												
		P_S					41	13			118	51	41	16			108	48	40	16
		L_W					41	30			47	36	32	26			46	38	32	21
1260	350	T						2.6												
		P_S						17				70	56	22				66	55	22
		L_W						34				41	37	30				42	37	26
1440	400	T						2.8												
		P_S						23				91	73	28				86	72	29
		L_W						38				45	41	34				46	41	30
1620	450	T						2.9												
		P_S						29					93	36					91	37
		L_W						41					44	38					45	33
1800	500	T						3.0												
		P_S						35						45						45
		L_W						44						41						37
2160	600	T																		
		P_S																		65
		L_W																		42

Perforated Face Circular Diffusers

RWI

Introduction

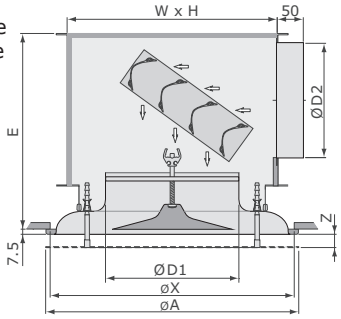
The Waterloo high induction Perforated Face Circular Diffuser type RWI has an adjustable radial diffusion pattern and provides excellent induction characteristics. The diffuser and face-plate are manufactured from aluminium with a plenum in zintec steel and have been designed with modern ceiling types in mind. With their perforated face design, these diffusers ensure that the primary air is already mixed inside the diffuser with the room air, which results in a rapid temperature decay and short throw.



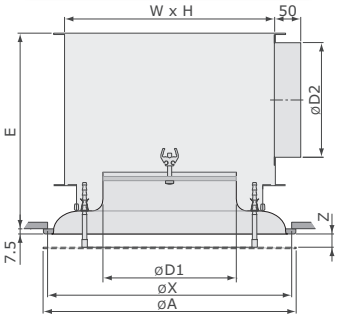
RWI

Product Description

RWI Circular supply diffuser with perforated face-plate
RWI-R Circular return diffuser with perforated face-plate
UKDV Supply air plenum
UKDVI Insulated supply air plenum
UKRV Return air plenum
UKRVI Insulated return air plenum
RW - FIX Plasterboard fixing



RWI + UKDVI



RWI-R + UKRV

Features

- Supply and exhaust applications for heating, cooling and isothermal conditions
- Excellent induction characteristics
- Variety of air patterns
- Suitable for modular ceiling systems

Finishes

PPM9010 (RAL 9010 Matt - 20% Gloss White)
Other colours available on request

Advantages

- Excellent aerodynamic performance
- No ceiling effect required
- Short throw

Selection Criteria

Ceiling Height 2.7m
Temperature Differential -11K
Average room velocity V_r 0.15m/s
Noise level is based on diffuser sound power level less 8dB room absorption.
All selections include the plenum

Selection Example RWI-200

Air Volume 111 l/s
Throw 1.2 m
Pressure Drop 37 Pa
Noise Level 31 dBA

Nom Size Ø D1	W x H	Ø D2	Ø A overall	Ø X aperture	E	K	L
100	210x210	100	190	175	205	55	12.5
125	210x210	125	230	215	215	60	20.0
160	310x310	160	270	255	295	65	27.5
200	310x310	200	370	345	295	70	27.5
250	410X410	250	470	440	365	75	35.0
315	510X510	315	570	535	435	90	35.0

Note: Z = 19/26.5/34mm (depending on face-plate setting)

Face-plate	Z (mm)	'T' Throw(m)	Pressure (Pa)	Noise level (dBA)
Height Corrections	19	x 1.0	x 1.0	0
	26.5	x 0.9	x 0.6	- 1
	34	x 0.8	x 0.5	- 2

Order Example

RWI-200/RW-FIX/9010-Gloss/UKDV
Type
Fixing
Finish
Plenum Type

Performance Table

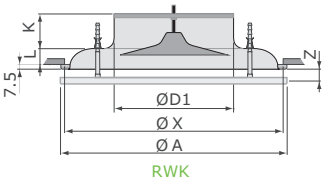
RWI			Supply						Exhaust					
m^3/h	l/s		100 Dia	125 Dia	160 Dia	200 Dia	250 Dia	315 Dia	100 Dia	125 Dia	160 Dia	200 Dia	250 Dia	315 Dia
50	14	T	0.2											
		P_s	10						7					
		L_w	-						-					
75	21	T	0.3	0.2										
		P_s	22	10					21					
		L_w	29	-					27					
100	28	T	0.4	0.3										
		P_s	35	14					30	6				
		L_w	33	26					31	-				
125	35	T	0.5	0.4	0.3									
		P_s	56	22	10				46	10				
		L_w	38	33	-				36	-				
150	42	T		0.5	0.4									
		P_s		29	15					13	5	2		
		L_w		33	25					-	-	-		
200	56	T		0.7	0.6	0.5								
		P_s		45	25	12				23	9	4		
		L_w		39	29	-				23	-	-		
250	69	T			0.7	0.6								
		P_s			33	19				36	13	5	2	
		L_w			34	-				29	-	-	-	
300	83	T			1.1	0.9	0.8							
		P_s			48	23	9			52	19	8	3	
		L_w			37	26	-			34	-	-	-	
400	111	T				1.2	1.0							
		P_s				37	17			91	34	14	6	2
		L_w				31	25			40	28	-	-	-
500	139	T				1.5	1.3	1.1						
		P_s				50	24	11			52	21	9	4
		L_w				35	29	26			34	20	-	-
600	167	T					1.5	1.3						
		P_s					33	16			75	31	13	5
		L_w					33	29			39	27	-	-
750	208	T					1.9	1.6						
		P_s					50	22				48	21	9
		L_w					39	33				33	-	-
1000	278	T						2.3						
		P_s						36				84	38	15
		L_w						39				41	28	-
1250	347	T						2.9						
		P_s						52					60	24
		L_w						43					34	24

Plain Face Circular Diffusers

RWK

Introduction

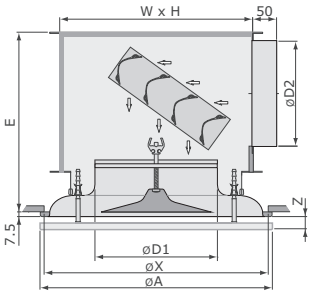
The Waterloo Circular Diffuser type RWK has an adjustable radial diffusion pattern and provides excellent induction characteristics. The diffuser and face-plate are manufactured from aluminium and the plenum is zintec steel. The shape of both the plenum and the adjustable face-plate ensure an excellent air pattern, and the internal control disc can also be adjusted to achieve high induction rates and a low sound power level.



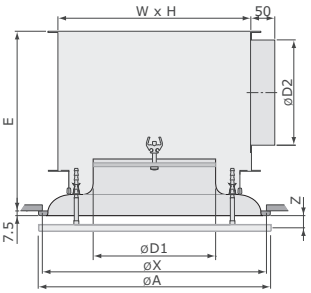
RWK

Product Description

RWK Circular supply diffuser with plain face-plate
RWK-R Circular return diffuser with plain face-plate
UKDV Supply air plenum
UKDVI Insulated supply air plenum
UKRV Return air plenum
UKRVI Insulated return air plenum
RW - FIX Plasterboard fixing



RWK + UKDVI



RWK-R + UKRV

Features

- Supply and exhaust applications for heating, cooling and isothermal conditions
- Excellent induction characteristics
- Variety of air patterns
- Suitable for modular ceiling systems

Finishes

PPM9010 (RAL 9010 Matt - 20% Gloss White)
Other colours available on request

Advantages

- Excellent aerodynamic performance
- No ceiling effect required
- Short throw

Selection Criteria

Ceiling Height 2.7m
Temperature Differential -11K
Average room velocity V_r 0.15m/s
Noise level is based on diffuser sound power level less 8dB room absorption.
All selections include the plenum

Selection Example RWK-125

Air Volume 42 l/s
Throw 1.1 m
Pressure Drop 29 Pa
Noise Level 25 dBA

Nom Size Ø D1	W x H	Ø D2	Ø A overall	Ø X aperture	E	K	L
100	210x210	100	190	175	205	55	12.5
125	210x210	125	230	215	215	60	20.0
160	310x310	160	270	255	295	65	27.5
200	310x310	200	370	345	295	70	27.5
250	410X410	250	470	440	365	75	35.0
315	510X510	315	570	535	435	90	35.0

Note: Z = 19/26.5/34mm (depending on face-plate setting)

Face-plate	Z (mm)	'T' Throw(m)	Pressure (Pa)	Noise level (dBA)
Height Corrections	19	x 1.0	x 1.0	0
	26.5	x 0.9	x 0.6	- 1
	34	x 0.8	x 0.5	- 2

Order Example

RWK-250/RW-FIX/9010-Gloss/UKDV
Type
Fixing
Finish
Plenum Type

Performance Table

RWK			Supply						Exhaust					
m^3/h	l/s		100 Dia	125 Dia	160 Dia	200 Dia	250 Dia	315 Dia	100 Dia	125 Dia	160 Dia	200 Dia	250 Dia	315 Dia
50	14	T	0.5											
		P_s	6						7					
		L_w	-						-					
75	21	T	0.6	0.5										
		P_s	20	7					17					
		L_w	-	-					-					
100	28	T	0.8	0.7										
		P_s	36	12					27	10				
		L_w	25	-					-	-				
125	35	T	1.0	0.9	0.7									
		P_s	50	20	8				39	16	9			
		L_w	29	-	-				26	-	-			
150	42	T		1.1	0.8									
		P_s		29	12				51	22	13			
		L_w		25	-				32	-	-			
200	56	T		1.3	1.1									
		P_s		48	18					40	23	8		
		L_w		36	-					25	-	-		
250	69	T			1.4	1.3								
		P_s			28	12				60	36	14		
		L_w			28	-				31	26	-		
300	83	T			1.7	1.5	1.4							
		P_s			40	16	7				53	20		
		L_w			32	-	-				25	-		
400	111	T				1.9	1.7							
		P_s				30	13					36	12	
		L_w				29	21					-	-	
500	139	T				2.3	2.1	1.2						
		P_s				45	20	7				56	18	
		L_w				34	31	-				29	26	
600	167	T					2.5	1.5						
		P_s					30	10				80	26	10
		L_w					36	26				33	29	-
750	208	T					3.1	2.1						
		P_s					48	15					39	14
		L_w					45	33					35	28
1000	278	T						2.7						
		P_s						30						24
		L_w						39						34
1250	347	T						3.5						
		P_s						54						32
		L_w						45						37

Plain Face Adjustable Circular Diffusers

RWV

Introduction

The Waterloo Plain Face Circular Diffuser type RWV has a solid circular face providing a 360° air pattern with excellent air induction characteristics. This all aluminium diffuser is fully adjustable for horizontal and vertical discharge patterns.

With their high induction ratios these diffusers ensure rapid primary and secondary air mixing with low noise levels.

The diffusers are available with zintec steel plenums with the option of thermal insulation lining on supply plenums.

Product Description

RWV Circular supply diffuser with plain face-plate
RWV-R Circular return diffuser with plain face-plate
UKDV Supply air plenum
UKDVI Insulated supply air plenum
UKRV Return air plenum
UKRVI Insulated return air plenum
RW - FIX Plasterboard fixing

Features

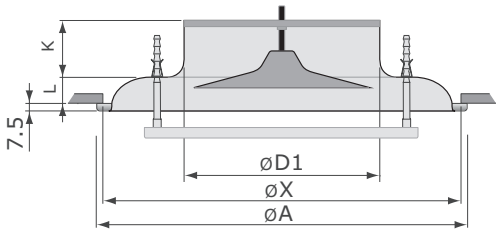
- Supply and exhaust applications for heating, cooling and isothermal conditions
- Excellent induction characteristics
- Variety of air patterns
- Suitable for modular ceiling systems

Finishes

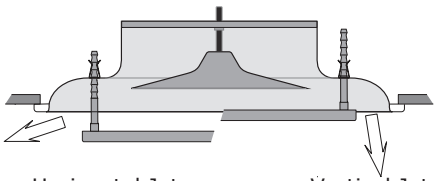
PPM9010 (RAL 9010 Matt - 20% Gloss White)
Other colours available on request

Advantages

- Excellent aerodynamic performance
- Suitable for exposed ceilings
- Short throw



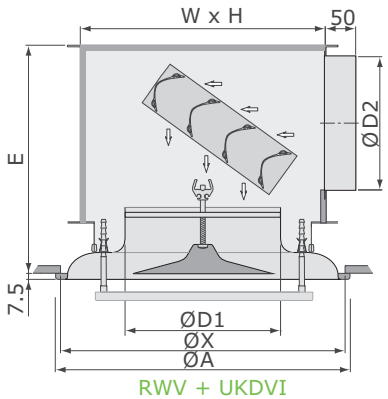
RWV



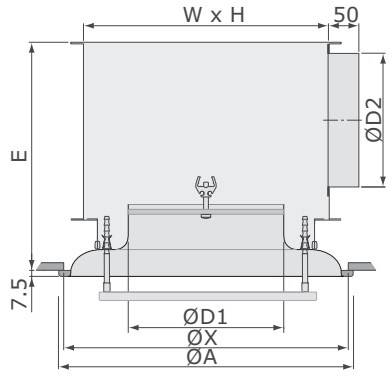
Horizontal Jet (Lowered Face Plate)

Vertical Jet (Raised Face Plate)

Nom Size Ø D1	W x H	Ø D2	Ø A overall	Ø X aperture	E	K	L
100	210x210	100	190	175	205	55	12.5
125	210x210	125	230	215	215	60	20.0
160	310x310	160	270	255	295	65	27.5
200	310x310	200	370	345	295	70	27.5
250	410X410	250	470	440	365	75	35.0
315	510X510	315	570	535	435	90	35.0



RWV + UKDVI



RWV-R + UKRV

Order Example

RWV-160/RW-FIX/9010-Gloss/UKDV

Type
Fixing
Finish
Plenum Type

Plain Face Adjustable Circular Diffusers

RWV

Selection Criteria

Ceiling Height 2.7m
Temperature Differential -11K
Average room velocity V_r 0.15m/s
Noise level is based on diffuser sound power level less 8dB room absorption.
All selections include the plenum

Selection Example RWV-200

(Horizontal throw)
Air Volume 139 l/s
Throw 3.6 m
Pressure Drop 28 Pa
Noise Level 35 dBA

Performance Table

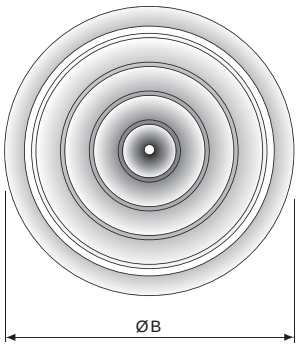
RWV			Horizontal						Vertical						Exhaust					
m³/h	l/s		100 Dia	125 Dia	160 Dia	200 Dia	250 Dia	315 Dia	100 Dia	125 Dia	160 Dia	200 Dia	250 Dia	315 Dia	100 Dia	125 Dia	160 Dia	200 Dia	250 Dia	315 Dia
50	14	T	0.7						1.2											
		P_S	6						20						4					
		L_w	-						-						-					
75	21	T	1.2						1.8											
		P_S	12						44						10					
		L_w	-						25						-					
100	28	T	1.6	1.3					2.7	2.0										
		P_S	20	7					80	40					17	5				
		L_w	26	-					31	-					-	-				
125	35	T	2.1	1.5	1.4				3.8	3.0	2.0									
		P_S	31	11	4				125	60	16				26	9				
		L_w	33	-	-				37	27	-				29	-				
150	42	T	2.5	1.7	1.6					3.9	2.6									
		P_S	42	16	6					90	24				33	13	4			
		L_w	37	25	-					31	-				35	-	-			
200	56	T		2.1	2.0	1.4				5.2	3.7	2.9								
		P_S		28	11	5				150	42	20				23	9			
		L_w		32	-	-				37	27	-				30	-			
250	69	T			2.3	1.8					5.0	4.0								
		P_S			16	8					65	32				39	14	7		
		L_w			-	-					31	25				45	-	-		
300	83	T			2.7	2.2	1.8				6.4	5.2	4.6							
		P_S			23	11	8				90	46	22			52	20	10		
		L_w			30	-	-				36	28	-			42	27	-		
400	111	T				2.9	2.2					7.8	6.7							
		P_S				18	14					81	39				33	16	11	
		L_w				27	-					33	27				39	26	-	
500	139	T				3.6	2.5	2.2				10.0	9.5	7.6						
		P_S				28	21	8				127	61	24				24	18	6
		L_w				35	25	-				39	32	24				32	-	-
600	167	T				4.3	2.9	2.7					12.0	10.0						
		P_S				40	30	18					87	35				34	26	14
		L_w				38	31	-					37	27				37	33	-
750	208	T					3.5	3.3					14.0	12.0						
		P_S					45	26					136	54					40	21
		L_w					39	30					41	32					39	30
1000	278	T						4.0						14.0						
		P_S						47						96						31
		L_w						39						38						37
1250	346	T						4.7												
		P_S						70												
		L_w						45												

Small Format Circular Diffusers

MC

Introduction

The Waterloo MC diffuser has been designed for both supply and exhaust applications requiring compact circular diffusers; unlike conventional high aspiration diffusers the MC has a small overall to neck size ratio. The diffusers are adjustable to produce horizontal or vertical air patterns.



Product Description

MC Small format circular diffuser
LD Butterfly type Louvre Damper
ED & LD Equalising Deflector & Louvre Damper
Blind Fix Available as standard (see drawing)

Features

- Compact frame design
- Robust steel construction
- Adjustable for vertical or horizontal air patterns

Finishes

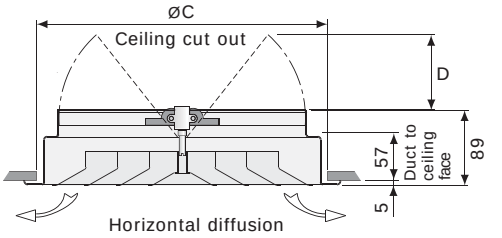
PPG9010 (RAL 9010 Gloss - 80% Gloss White)
PPM9010 (RAL 9010 Matt - 20% Gloss White)
PPM9006 (RAL 9006 Matt - 30% Gloss Silver)
Other colours available on request.
Not recommended to leave unpainted.

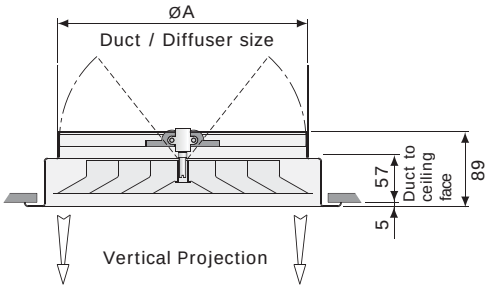
Weights

MC/150 1.0 kg
MC/200 2.1 kg
MC/300 3.4 kg
MC/450 4.8 kg

Manufacture

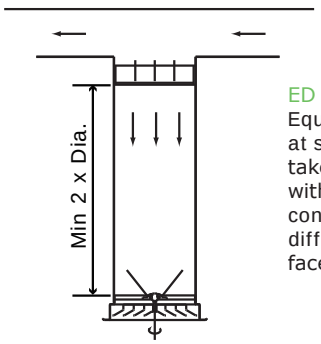
The MC diffusers are constructed from steel spinnings retained on aluminium spider braces.



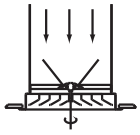


Ø A Diffuser & Duct Size	Ø B Overall Diameter	Ø C Ceiling Opening	D Maximum open LD height
150	228	203	75
200	305	280	100
300	381	356	150
450	533	508	225

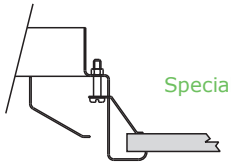
Accessories



ED & LD - Equalisation at stub duct take off with volume control at diffuser face.



LD - Standard arrangement for supply ducts. Adjustable through diffuser face.



Special Blind fixing

Order Example

MC-200/BLIND FIX/9010-Gloss/LD
Diffuser type
Diffuser diameter
Fixing
Finish
Butterfly damper

Please note: For LD butterfly-style damper see page 71.

Small Format Circular Diffusers

MC

Selection Criteria

Noise level is based on diffuser sound power level less 8dB room absorption.
Pressure Loss (Pa): static pressure loss of the diffuser.
Throw: radius of diffusion and projection see individual tables

Supply Horizontal Diffusion

Radius of diffusion.
Minimum — space covered by one diffuser which results in a mean room air movement of 0.25 m/s Maximum — space covered by one diffuser which results in a mean room air movement of 0.10 m/s

Supply Vertical Projection

Projection — downward throw to a terminal velocity
v_t = 0.5 m/s

Selection Example MC/200

- Total air flow rate 94 l/s
- Horizontal Supply Application
  Throw Min - Max —1.5 - 3.0 m
  Noise Level — 26 dBA
  Pressure Loss — 21 Pa
- Exhaust Application
  Noise Level — 36 dBA
  Pressure Loss — 38 Pa

Performance Table

MC		Air Volume (Vertical)			
150 Dia	m³/h	65	126	191	252
	l/s	18	35	53	70
	Projection (m)	0.9	1.5	2.5	3.5
	L_w	-	22	32	41
	P_s	4	14	33	56
200 Dia	m³/h	112	227	338	454
	l/s	31	63	94	126
	Projection (m)	1.3	2.1	3.0	4.3
	L_w	-	24	36	45
	P_s	4	17	38	65
300 Dia	m³/h	256	508	763	1016
	l/s	71	141	212	282
	Projection (m)	2.0	3.1	4.6	6.3
	L_w	-	27	39	48
	P_s	5	20	48	80
450 Dia	m³/h	572	1145	1717	2290
	l/s	159	318	477	636
	Projection (m)	3.2	5.0	7.6	10.1
	L_w	19	32	45	53
	P_s	8	32	75	128

MC		Air Volume (Horizontal)				
150 Dia	m³/h	65	126	191	252	317
	l/s	18	35	53	70	88
	Min - Max (m)	0.5-1.0	0.8-1.5	1.0-2.1	1.5-3.0	2.0-4.0
	L_w	-	-	23	31	39
	P_s	2	9	21	37	58
200 Dia	m³/h	112	227	338	454	565
	l/s	31	63	94	126	157
	Min - Max (m)	0.5-1.0	0.9-1.8	1.5-3.0	2.0-4.0	2.5-5.0
	L_w	-	18	26	36	45
	P_s	2	9	21	37	58
300 Dia	m³/h	256	508	763	1016	1271
	l/s	71	141	212	282	353
	Min - Max (m)	0.7-1.5	1.4-2.8	2.1-4.2	2.8-5.6	5.0-10
	L_w	-	23	34	44	51
	P_s	2	9	21	37	58
450 Dia	m³/h	572	1145	1717	2290	-
	l/s	159	318	477	636	-
	Min - Max (m)	1.3-2.5	2.5-5.0	3.8-7.6	5.0-10	-
	L_w	-	26	40	50	-
	P_s	4	18	41	72	-

Exhaust

MC		Air Volume				
150 Dia	m³/h	65	126	191	252	317
	l/s	18	35	53	70	88
	L_w	-	18	23	31	40
	P_s	3	11	23	38	56
200 Dia	m³/h	112	227	338	454	565
	l/s	31	63	94	126	157
	L_w	-	19	28	38	46
	P_s	4	15	31	51	76
300 Dia	m³/h	256	508	763	1016	-
	l/s	71	141	212	282	-
	L_w	-	22	37	47	-
	P_s	6	23	49	80	-
450 Dia	m³/h	572	1145	1717	-	-
	l/s	159	318	477	-	-
	L_w	18	32	47	-	-
	P_s	10	35	74	-	-

Large Format Circular Diffusers

WR

Introduction

The Waterloo WR series is suitable for ceiling or exposed ductwork mounting and includes a rotating central core adjustment feature to provide projection heating and spot cooling, or conventional horizontal diffusion. Manufactured from aluminium spinnings, the diffusers are available with a range of dampers and equalising grids for effective control of air distribution.

Product Description

WR Large Format Circular Diffuser
LD Butterfly type louvre damper (sizes 6-18 only)
OBSS Opposed blade damper (sizes 21-24 only)
SD/ED Splitter Damper / Equalising Deflector

Note: For available blanking options please contact the head office.

Features

- High air handling capacity
- Easily removable central core assembly
- Simple installation
- Maintenance free
- Core adjustment feature
- Range of accessories
- Suitable for supply and exhaust

Finishes

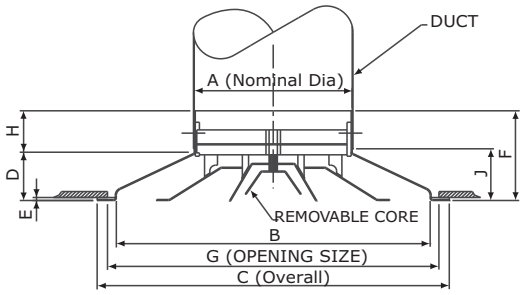
PPG9010 (RAL 9010 Gloss - 80% Gloss White)
PPM9010 (RAL 9010 Matt - 20% Gloss White)
PPM9006 (RAL 9006 Matt - 30% Gloss Silver)
Other colours available on request

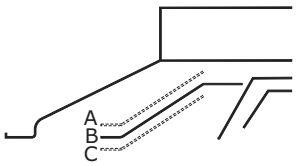
Weights

WR/6 1.2 kg, WR/8 1.5 kg, WR/10 2.3 kg,
WR/12 3.3 kg, WR/15 5.5 kg, WR/18 7.8 kg,
WR/21 10.5 kg, WR/24 14.0 kg

Installation

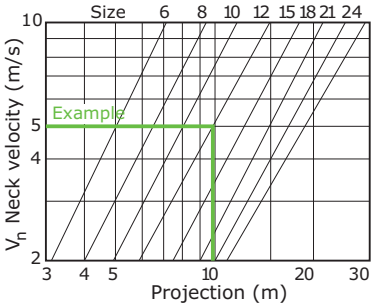
Remove core from bayonet fixing and offer diffuser frame into opening.
Screw fix through diffuser stack into duct. Replace core ensuring the bayonet fixing is secure.





Size	A	B	C	D	E	F	G	H	J
6	152	305	340	51	5	136	320	85	61
8	203	407	457	64	5	149	430	85	74
10	254	508	569	86	5	171	530	85	96
12	305	610	680	95	6	180	640	85	105
15	381	762	851	121	6	206	800	85	131
18	457	860	940	146	24	246	880	100	156
21	534	1080	1148	173	18	273	1100	100	183
24	610	1080	1170	173	18	273	1100	100	183

Vertical Projection - Cone setting A



Order Example

WR-15/9010-Gloss/LD
Type
Diffuser size
Finish
Butterfly damper

Large Format Circular Diffusers

WR

Selection Criteria

- Radius of Diffusion:

The minimum and maximum throw covered by one diffuser which results in an average air velocity in the occupied zone of 0.25 m/s and 0.10 m/s respectively (based on 3.0m mounting height and 10°C cooling)

- Noise level:

Is based on diffuser sound power level less 8db room absorption.

- Pressure Loss (Pa):

Static pressure loss at the supply duct.

- Cone Settings:

Setting B: Flush for general applications producing horizontal diffusion (performance as table)
Setting A: Projection setting — multiply tabulated P_s x 1.7, add 2dB to dBA values.
Setting C: Exposed duct setting — multiply tabulated P_s x 0.8, subtract 2dB from dBA values.

- Exhaust:

P_s (exhaust) = P_s (supply) x 1.2
dBA(exhaust) = dBA (supply) + 3 dB

- Vertical Projection Data:

Projection is based on isothermal supply conditions with a terminal velocity of 0.5 m/s. Correct for heating, cooling and other V_t.
For projection use graph. For required throw, corrected for temperature differential, select suitable size and neck velocity.
Noise generation and Pressure loss: Use the table for horizontal diffusion corrected for cone setting.

Selection Example

Size 12 WR diffuser handling 350 l/s
produces a horizontal throw range of 2.1 - 3.9m and a dBA level of 34 with pressure loss of 25 Pa. With vertical projection (setting A) the resulting throw would be 10m for isothermal conditions and a dBA level of 42 with a pressure of 42 Pa.

Heating Dt (°C)	5	10	15	20	25	30
Projection Factor	0.98	0.95	0.85	0.75	0.62	0.50

Terminal Velocity V_t (m/s)	0.75	0.50	0.40	0.30
Correction Factor	0.80	1.0	1.11	1.30

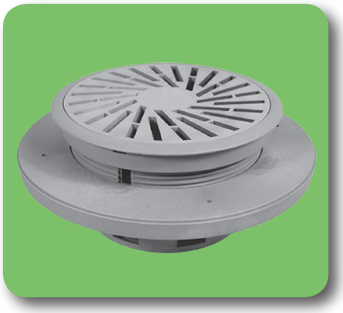
Projection Factor for Cooling Δt= 10°C - 1.15

Performance Table

WR		Air Volume (Horizontal Diffusion Supply)					
6	m³/h	263	328	392	457	522	652
	l/s	73	91	109	127	145	181
	Min - Max (m)	1.0-1.5	1.0-1.8	1.2-2.4	1.5-2.7	1.5-3.0	2.1-3.9
	L_w	24	32	39	44	48	55
	P_s	24	37	53	72	95	141
8	m³/h	468	583	677	806	922	1152
	l/s	130	162	188	224	256	320
	Min - Max (m)	1.2-2.1	1.5-2.7	1.8-3.3	2.2-4.0	2.2-4.5	3.0-5.5
	L_w	29	35	41	45	48	55
	P_s	21	33	47	64	84	131
10	m³/h	731	907	1095	1278	1458	1825
	l/s	203	252	304	355	405	507
	Min - Max (m)	1.5-2.7	1.8-3.3	2.1-3.9	2.4-4.8	2.7-3.9	3.6-6.7
	L_w	30	37	43	48	52	59
	P_s	17	27	39	53	70	109
12	m³/h	1015	1282	1577	1840	2106	2632
	l/s	292	366	438	511	585	731
	Min - Max (m)	1.5-3.0	2.1-3.9	2.4-4.8	2.7-3.9	3.0-6.0	3.9-7.5
	L_w	31	39	45	50	54	61
	P_s	16	25	37	50	65	102
15	m³/h	1642	2052	2448	2873	3283	4104
	l/s	456	570	680	798	912	1140
	Min - Max (m)	1.8-3.6	2.4-4.8	3.0-6.0	3.3-6.6	3.9-7.5	4.8-9.5
	L_w	33	39	45	49	53	60
	P_s	13	20	29	39	51	80
18	m³/h	2362	2952	3543	4133	4723	5908
	l/s	656	820	984	1148	1312	1641
	Min - Max (m)	2.4-4.5	3.0-6.0	3.6-7.0	4.2-8.1	4.8-9.3	6.0-12.0
	L_w	33	40	46	51	55	62
	P_s	10	16	23	32	42	65
21	m³/h	3226	4032	4838	5645	6451	8064
	l/s	896	1120	1344	1568	1792	2240
	Min - Max (m)	4.2-8.4	4.8-9.7	5.4-10.8	6.0-12.0	6.6-13.2	8.1-16.5
	L_w	38	45	51	55	59	66
	P_s	7	12	17	23	30	46
24	m³/h	4205	5256	6300	7362	8424	10512
	l/s	1168	1460	1750	2045	2340	2920
	Min - Max (m)	5.0-10.0	5.5-11.0	6.0-12.0	6.5-13.0	8.0-16.0	10.0-20.0
	L_w	40	46	52	56	60	67
	P_s	13	21	30	41	56	84

Aircell Polymer Floor Diffusers

WFOR / WFOV / WFOI



Introduction

The Waterloo Aircell WFO series floor diffusers offer the choice of horizontal or vertical air patterns with its flip over design, as well as a host of other unique & patented features.
The WFOV low pressure vertical supply disc offers vertical projection with a 50% increase in air volume capacity, compared with standard WFOR units.
The WFOI provides a high induction discharge pattern at between 30 and 45 degrees which provides dynamic mixing that results in efficient velocity equalisation within the occupied zone.
The WFO diffuser discs are 200mm Ø and have been designed to resist permanent deformation when subjected to point loads up to 500 kg.
The WFOV diffuser disc is suitable for point loads up to 300kg.
All materials used are fire retardant.

Product Description

WFORT Pressurised Floor Void - Tile installation suitable for fitting into standard floor tile thicknesses of up to 50mm, supplied with a locking collar which is screw fixed to the underside of the tile
WFOIT As above but with high induction disc
WFOVT As above but with low pressure vertical air pattern disc
WFORS Pressurised Void - Slab floor installation supplied with a steel adaptor collar which is cast into the floor slab. The diffuser can then be installed into the collar with concealed spring clips
WFORP Ducted installation with plenum
WFOVP As above but with low pressure vertical air pattern disc
WFOID Step Drilled Installation. The diffuser disc only is supplied, suitable for installation into pre-cut holes in floor tiles.

Features

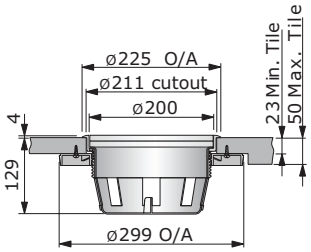
- Unique 'flip-over design' (WFOR)
- Memory locating peg
- Easy fit locking collar
- Concealed fixing bracket for concrete / slab flooring
- Combined damper / dirt tray with incremental damper positioning
- Heavy duty glass reinforced polycarbonate construction
- Compact plenum with optional spigots to suit 100 or 125mm ducting

Finishes

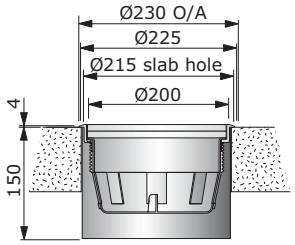
WFO diffusers are available in a slate grey finish (RAL 7037 Mid Grey) as standard. Limited other colours can be specified subject to a minimum order quantity of 1000 No. (Note: lead time and price will be affected).

Advantages

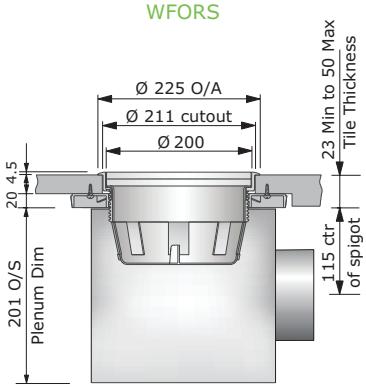
- Ability to change between horizontal and vertical settings instantly (WFOR)
- Commissioning settings are retained once set using the memory locating peg
- Reduced installation time with easy fit locking collar



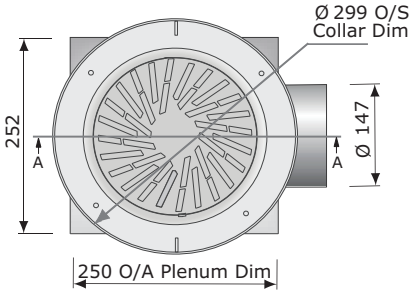
WFORT WFOVT WFOIT

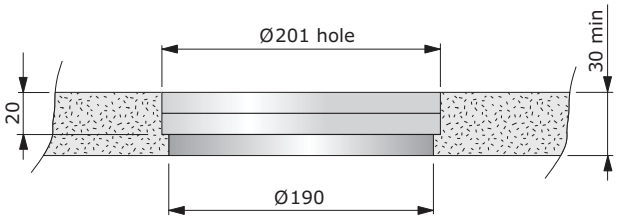


WFORS



WFORP WFOVP





WFORD

Order Example

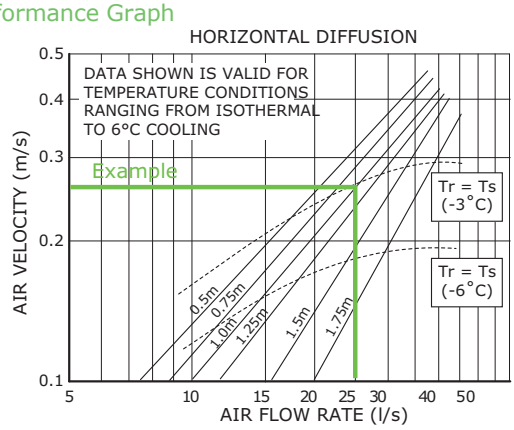
WFO/R/T
Type
Disc type
Installation

Aircell Polymer Floor Diffusers

WFOR / WFOV / WFOI

WFOR Standard Disc Performance

Performance Graph

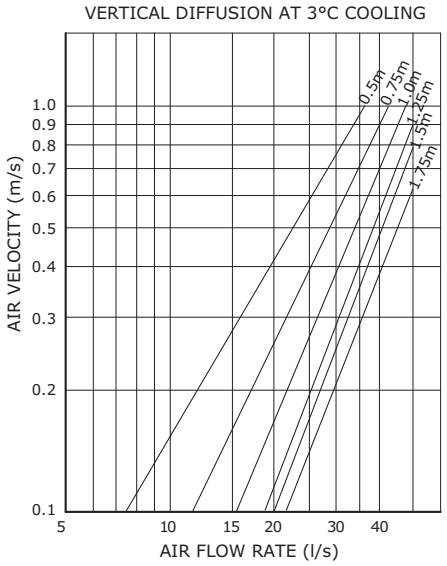


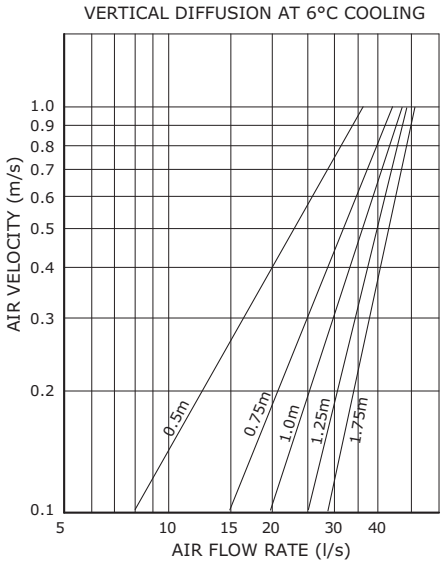
Product Type Code	
I	Intermediate Type
R	Reversible Type
V	Vertical Type
D	Disk only
P	Plenum installation type
S	Slab installation type
T	Tile installation type

The dotted lines represent the approximate distances from the diffuser where the jet air temperature (Ts) is the same as the room air temperature (Tr).

WFOR Standard Disc Performance

Performance Graph





Selection Example WFOR (Horizontal Setting)

Air Volume 25 l/s
Jet velocity at 1m from the diffuser will be 0.26 m/s for 3°C cooling
Pressure Drop 25Pa
Noise Level 29 dBA

Pressure Loss Data - Both Settings

Air Flow Rate (l/s)							
	10	15	20	25	30	35	40
Static Pressure Loss (Pa)							
WFORT	5	10	17	25	35	45	56
WFORS	5	10	17	27	38	50	-
WFORP	7	17	29	45	64	-	-
WFORD	4	7	12	19	26	35	45

All pressure loss data is based on a fully open damper

Acoustic Data - Horizontal Setting

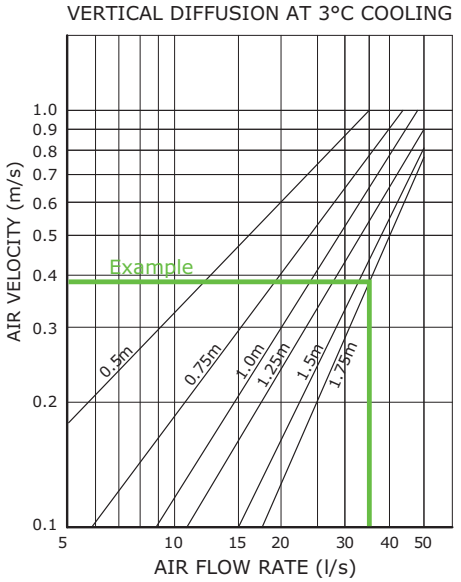
Air Flow Rate (l/s)							
	10	15	20	25	30	35	40
dBA L_W (Ref. 8dB Room Absorption)							
WFORT	<20	<20	24	29	34	38	41
WFORS	<20	20	26	31	35	39	-
WFORP	<20	23	30	35	40	-	-
WFORD	-	-	<20	25	29	33	37

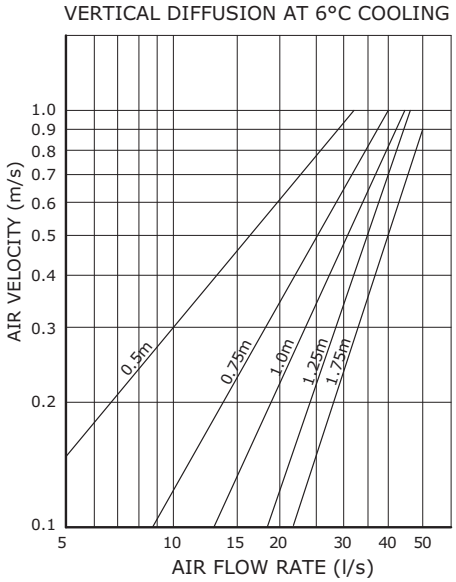
All acoustic data is based on a fully open damper and horizontal diffusion. Reduce tabulated figures by 8dBA for vertical diffusion.

Aircell Polymer Floor Diffusers

WFOV Low Pressure Disc Performance

Performance Graph





Selection Example WFOV

Air Volume 35 l/s
Jet velocity at 1.75m vertically from the diffuser will be 0.39 m/s for 3°C cooling
Pressure Drop 20Pa
Noise Level 23 dBA

Pressure Loss Data

Air Flow Rate (l/s)							
	10	15	20	25	30	35	40
Static Pressure Loss (Pa)							
WFOVT	2	4	7	11	15	20	26
WFOVP	0.7	2.6	3.7	6	8.7	13	16

All pressure loss data is based on a fully open damper

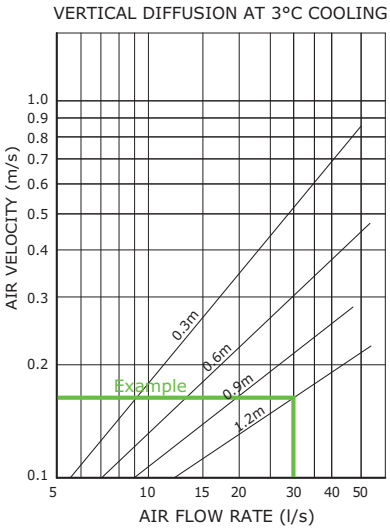
Acoustic data

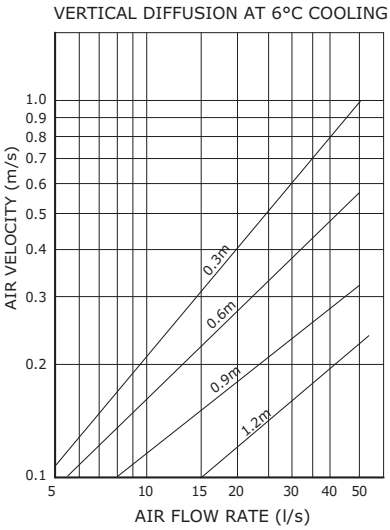
Air Flow Rate (l/s)							
	10	15	20	25	30	35	40
dBA L_w (Ref. 8dB Room Absorption)							
WFOVT	-	-	-	-	<20	23	27
WFOVP	<20	23	30	35	40	-	-

All acoustic data is based on a fully open damper.

WFOI High Induction Disc Performance

Performance Graph





Selection Example WFOI

Air Volume 30 l/s
Jet velocity at 1.2m vertically from the diffuser will be 0.17 m/s for 3°C cooling
Pressure Drop 10Pa
Noise Level 12 dBA

Pressure Loss Data

Air Flow Rate (l/s)					
	20	25	30	35	40
Static Pressure Loss (Pa)					
WFOIT	4	7	10	15	22
WFOIP	6	16	26	34	42

All pressure loss data is based on a fully open damper

Acoustic data

Air Flow Rate (l/s)					
	20	25	30	35	40
dBA L_w (Ref. 8dB Room Absorption)					
WFOIT	-	-	<20	<20	20
WFOIP	<20	<20	22	25	29

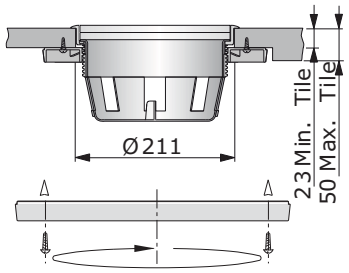
All acoustic data is based on a fully open damper.

Aircell Polymer Floor Diffusers

Installation

Type WFO * T (Tile installation)

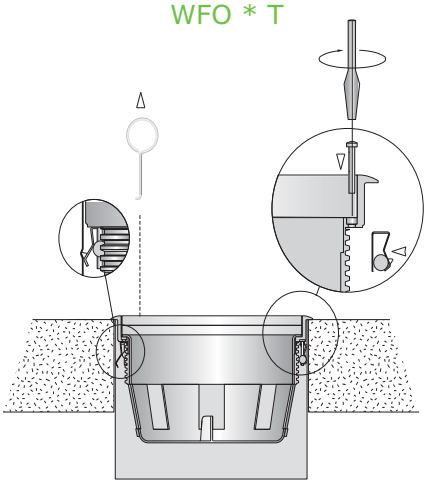
Type WFO * T Diffusers are suitable for installation into floor tiles from 23.5mm to 50mm thick. A 211mm diameter hole is drilled/cut through the tile. Ensuring the aperture is free from shavings/rough edges etc., insert the mounting frame into the hole. Locate locking collar onto the underside body of the mounting frame and tighten to the underside of the tile. The main body of the unit should now be firmly held in position, screw holes are provided in the locking collar should additional fixing be required. The combined damper/dirt tray can now be positioned into the mounting frame. Ensure that the damper airways are open and place location peg into the slot provided to lock in position.
Finally select the air pattern required either vertical or horizontal by referring to the disc location tab and place into the aperture ensuring alignment tab engages with the cut out in the mounting frame. To remove the disc use the tool provided.



WFO * T

Type WFO * P (Tile installation with plenum)

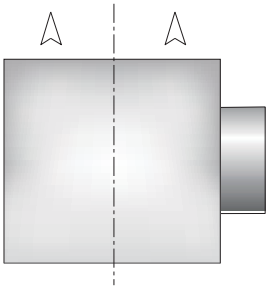
Installation as described for WFO * T. Take the mounting collar and place it facedown on the plenum box opening. Align the fixing holes and secure using the self tapping screws supplied. Place diffuser frame in the tile opening and engage with mounting ring. Screw bracket into mounting ring until flush. Adjust spigot portion as required. Lay the tile and connect up to ductwork.
To remove the disc use the tool provided.



WFO * S

Type WFO * S (Slab floor or wall installation)

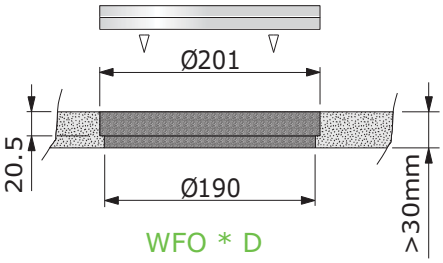
The steel sleeve is positioned to the customers requirements and cast into concrete floor/wall slab. Ensure that the sleeve and face flange are free from debris, fit the mounting clamps, screws and cylinder nuts as shown, to the mounting frame, insert into steel sleeve, gradually tighten the screw head clockwise until the cylinder nut has expanded the clip into the sleeve groove. Establish that the mounting frame is secure and insert damper/dirt tray locking pin, and diffuser disc.
There is no requirement for the locking collar so this can be disposed of.
To remove the disc use the tool provided.



WFO * P

Type WFO * D (Diffuser disc only)

Drill/cut a 211mm diameter hole in the floor, 20.5 mm deep. Ensure the aperture is free of shavings/debris and place the disc into position. To remove the disc use the tool provided.



WFO * D

Drum Jet Diffusers

WDJ

Introduction

The Waterloo WDJ Drum Jet diffuser is a high capacity unit specifically designed for warehouses, sports halls or factory units etc. where a long throw is required. The WDJ is fully adjustable to provide a full jet spread and directional control.
The unit is constructed from aluminium extrusions and comes complete with brush strips to provide a low friction, airtight seal. Standard installation is screw fixing through the face flange.

Product Description

WDJ Drum Jet Diffuser
OBSS Opposed blade damper

Features

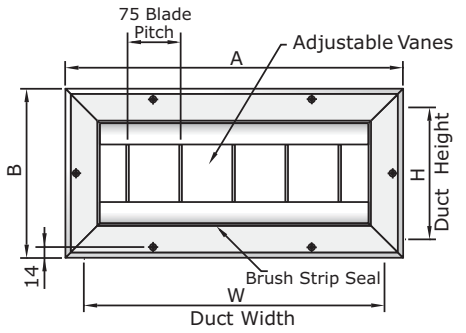
- Fully adjustable drum
- Fully adjustable air pattern
- Suitable for sidewall or exposed duct applications

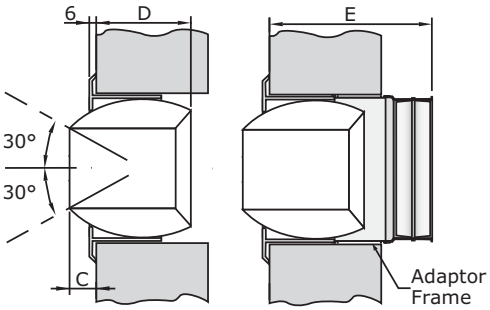
Finishes

RAL 9010 White
Satin Anodised Aluminium

Advantages

- Long throws
- Low resistant friction on drum
- Ease of adjustment





WDJ WDJ + OBSS

Throw Correction Factor							
Vane Angle	0°	5°	10°	20°	30°	40°	60°
Factor	1.0	0.9	0.82	0.68	0.6	0.52	0.4

Dimensions and Weight

No	A	B	W	H	C	D	E	Weight (kg)
906	300	217	261	170	36	87	146	1.5 kg
1206	376	217	337	170	36	87	146	1.7 kg
1806	529	217	490	170	36	87	146	2.0 kg
2406	681	217	642	170	36	87	146	2.5 kg
2010	579	319	540	271	63	138	207	5.5 kg
2510	706	319	667	271	63	138	207	6.5 kg
3010	833	319	794	271	63	138	207	7.0 kg
3510	960	319	921	271	63	138	207	7.5 kg

Selection Criteria

Temperature differential - 0°C (Isothermal)
Terminal velocity - 0.25m/s
Noise level with a room absorption factor of 8dB

Selection Example

WDJ-2406

Air flow rate 400 l/s
Throw 17.0 m
Pressure drop 45Pa
Noise level 34 dBA

Order Example

WDJ/1806/OBSS
Type
Number
Damper

Performance Table

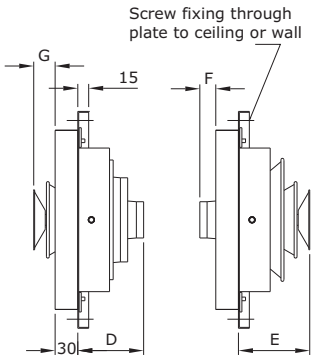
WDJ		Air Volume							
	m^3/h	360	720	1080	1440	2160	2880	3600	4320
	l/s	100	200	300	400	600	800	1000	1200
906	Throw	3.5	16						
	P_s	20	75						
	L_w	23	34						
1206	Throw	2	9.5	22					
	P_s	12	45	100					
	L_w		31	39					
1806	Throw		5	15	26				
	P_s		24	48	77				
	L_w		26	33	38				
2406	Throw		3.5	9	17	36			
	P_s		10	25	45	98			
	L_w		21	27	34	40			
2010	Throw		1.8	4	8	18	34		
	P_s			12	22	50	80		
	L_w			24	29	35	41		
2510	Throw			3	5	14	25	37	50
	P_s			10	12	26	50	75	105
	L_w			22	25	32	37	41	48
3010	Throw			2.2	4	10	18	28	40
	P_s				10	18	40	50	75
	L_w				21	29	35	39	37
3510	Throw				3.2	7.5	15	22	30
	P_s					14	25	40	55
	L_w					27	33	37	39

Hi-Flo Jet Diffusers

RWH / RWH-P

Introduction

The Waterloo RWH diffusers have been designed to handle high air flow rates and provide relatively long throws which makes them particularly suitable for conditioning of large spaces such as halls, auditoria, terminal buildings, warehouses and factories.
The diffusers are versatile in application by virtue of the novel "reversible and rotatable" core design which allows the air jet to be adjusted for both pattern and deflection. Units may be mounted individually or in banks, in bulkhead arrangements or directly into stub ducts.
The diffusers are constructed from aluminium spinnings supported on a studding and spacer assembly. The core may be rotated through 180° to expose either a straight or diffused core assembly. In addition, the diffuser spigot may be rotated within the mounting plate (if supplied) to enable a full 360° adjustment, by releasing the tension bolts.



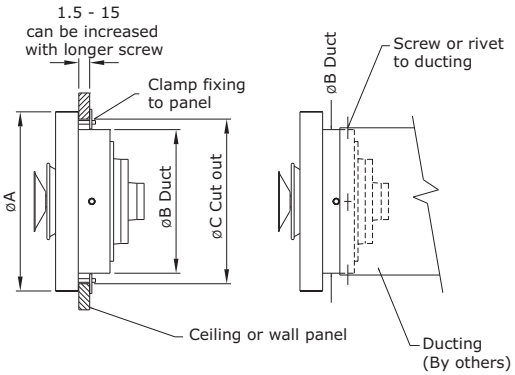
RWH assembly Diffuser setting

RWH assembly Jet setting

Product Description

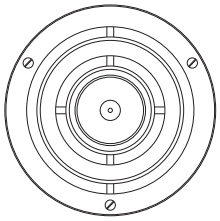
RWH Complete diffuser assembly including diffuser core, spigot and mounting plate (wall or ceiling mounting).

RWH-P Diffuser core and spigot only (suitable for mounting onto bulkheads or stub ducts thus eliminating the large mounting plate)



RWH-P assembly

RWH-P assembly



RWH Diffuser setting

Features

- Simple and effective air diffusion for large spaces
- Long throw characteristics
- High air handling capacity
- Easy to install and adjust
- Reversible core to produce long throw jet or short throw diffuser patterns
- Core rotatable through 360° for "eyeball" jet direction
- Jet may be deflected off axis by up to 15°
- Available in four sizes
- Multiple outlet arrangements

Finishes

PPG9010 (RAL 9010 Gloss - 80% Gloss White)
PPM9010 (RAL 9010 Matt - 20% Gloss White)
PPM9006 (RAL 9006 Matt - 30% Gloss Silver)
Other colours available on request

Nom. size	ØA	ØB	ØC	D	E	F	G
200	247	198	235	92	98	22	28
250	312	248	285	104	116	34	34
315	377	313	350	124	154	47	68
380	447	378	415	159	155	80	65

Selection Criteria

All data is for the diffuser set for 0° deflection and operating under isothermal conditions in either "jet" or "diffuser" pattern. Correction factors for 15° deflection are given below.
When diffusers are mounted on a common plate/plenum the noise level and throw will increase.
Correction factors are given in the table below.
Noise level = Peak level on dBA curves based on SWL ref 10^{-12} W less 8dB room absorption.
Throw = Forward distance to the point where the jet velocity has retarded to a terminal velocity of 0.5 m/s.
P_s = Static pressure loss (Pa).

Weights

Size	RWH	RWH-P
200	1.6 kg	1.2 kg
250	2.5 kg	1.8 kg
315	4.2 kg	3.1 kg
380	5.3 kg	4.1 kg

Order Example

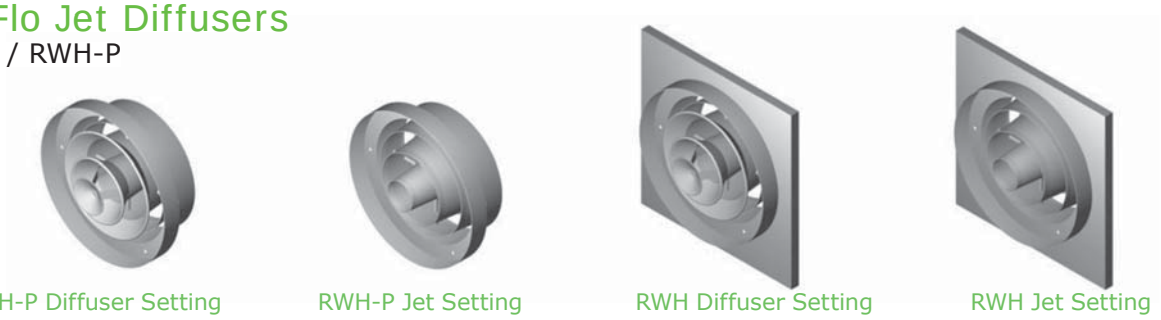
RWH-P/380/PPM9010
Type
Duct & Diffuser Size
Finish

Performance Table

RWH / RWH-P		Air Volume												
		m^3/h	360	450	540	720	900	1080	1440	1800	2160	2880	3600	4320
		l/s	100	125	150	200	250	300	400	500	600	800	1000	1200
200 Dia	Jet	T_m	5.7	7.0	8.2	11.5	15.0	17.0						
		L_w	<20	23	29	37	43	49						
		P_s	18	28	40	65	110	160						
	Diffuser	T_m	2.8	3.5	4.1	5.8	7.5	8.5						
		L_w	<20	<20	25	36	44	51						
		P_s	18	28	40	65	110	160						
250 Dia	Jet	T_m	4.0	5.1	6.0	7.2	10	12.0	16.5					
		L_w	<20	22	27	35	41	46	53					
		P_s	6	10	14	21	31	48	80					
	Diffuser	T_m	2.0	2.6	3.0	3.6	5.0	6.0	8.3					
		L_w	<20	<20	<20	29	37	43	54					
		P_s	6	10	14	21	31	48	80					
315 Dia	Jet	T_m			5.0	6.8	8.5	9.8	13.0	16.0	20.0	26.0		
		L_w			<20	<20	24	29	38	44	49	58		
		P_s			4	8	13	18	30	45	60	105		
	Diffuser	T_m			2.5	3.4	4.3	4.9	6.5	8.0	10.0	13.0		
		L_w			<20	<20	<20	25	36	44	51	62		
		P_s			4	8	13	18	30	45	60	105		
380 Dia	Jet	T_m				5.4	6.8	8.0	10.5	14.0	16.4	22.0	28.0	35.0
		L_w				<20	<20	<20	26	33	38	46	53	58
		P_s				3	5	7	12	20	30	50	70	100
	Diffuser	T_m				2.7	3.4	4.0	5.3	7.0	8.2	11.0	14.0	17.5
		L_w				<20	<20	<20	<20	28	35	46	55	62
		P_s				3	5	7	12	20	30	50	70	100

Hi-Flo Jet Diffusers

RWH / RWH-P



RWH-P Diffuser Setting | RWH-P Jet Setting | RWH Diffuser Setting | RWH Jet Setting

SWL Spectrum Correction Data By Octaves						
Frequency (Hz)	125	250	500	1K	2K	4K
Diffuser / 0 °	-1	+1	+3	+8	+7	0
Diffuser / 15 °	0	+2	+4	+8	+7	+2
Jet/ 0°	-3	-1	+3	+8	+6	+5
Jet/ 15°	+1	+3	+4	+7	+6	+1

Terminal Velocity Correction Factors						
Vt (m/s)	0.2	0.3	0.4	0.5	1.0	1.5
Factor	2.5	1.7	1.25	1.0	0.5	0.3

Multiple Unit Correction Factors				
No. of units	1	2	3	4
dBA addition	0	+3	+5	+6
Throw factor	1.0	1.37	1.86	2.06

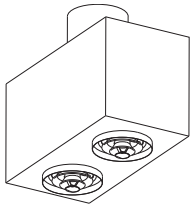
15° Core Setting Correction Factors		
	Jet	Diffuser
dBA addition	+11dB	+4dB
Pressure Loss Factor	1.25	1.25

Heating Differential			
Size	5°C	10°C	20°C
RWH-200	0.95	0.90	0.65
RWH-250	0.90	0.85	0.60
RWH-315	0.80	0.75	0.55
RWH-380	0.70	0.65	0.45

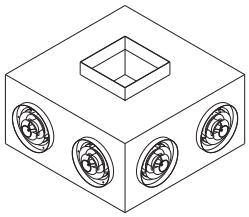
To estimate vertical projection under cooling conditions multiply throw (to relevant terminal velocity) by factors as follows
10°C cooling x 1.15
5°C cooling x 1.10

The above data is based on isothermal supply air conditions. To estimate maximum vertical projection under warming conditions multiply "jet" throw data above by the relevant factor.

Plenums



Full details of standard plenums are available from Head Office. Typical standard plenum arrangement with optional circular or rectangular connections

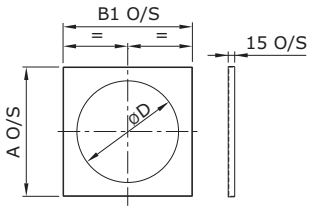


Special designs are available to suit non-standard applications, for example, rooftop air handling units and high level ducting

Mounting Plates

1- Element

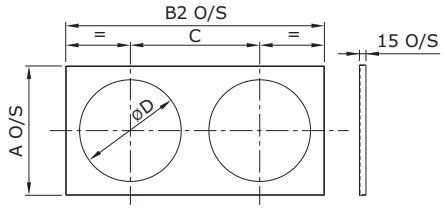
Size	A	B1	Ø D
Ø 200	299	299	Ø 235
Ø 250	349	349	Ø 285
Ø 315	399	399	Ø 350
Ø 380	499	499	Ø 415



1 Element

2- Element

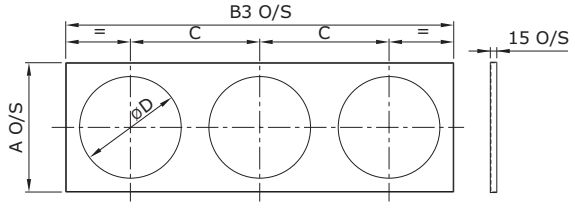
Size	A	B2	C	Ø D
Ø 200	299	598	299	Ø 235
Ø 250	349	698	349	Ø 285
Ø 315	399	798	399	Ø 350
Ø 380	499	998	499	Ø 415



2 Elements

3- Element

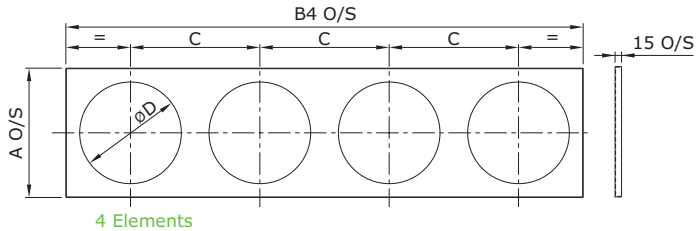
Size	A	B3	C	Ø D
Ø 200	299	897	299	Ø 235
Ø 250	349	1047	349	Ø 285
Ø 315	399	1197	399	Ø 350
Ø 380	499	1497	499	Ø 415



3 Elements

4- Element

Size	A	B4	C	Ø D
Ø 200	299	1196	299	Ø 235
Ø 250	349	1396	349	Ø 285
Ø 315	399	1596	399	Ø 350
Ø 380	499	1996	499	Ø 415



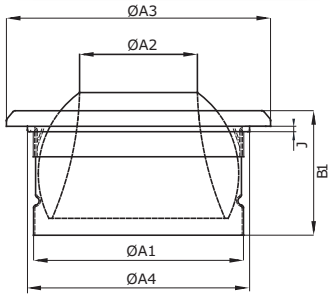
4 Elements

Supply Air Nozzles

EBD

Introduction

Waterloo EBD supply nozzles are capable of delivering air to spaces where long distance penetration and low noise levels are required. Suitable for cold and warm air supply applications, these versatile adjustable units are ideal for providing focussed ventilation or where precision is required. When grouped, penetration can be considerably enhanced.
EBD supply nozzles are made of pressed and spun aluminium, painted RAL 9010 20% gloss as standard although other colours are available upon request. Available in 7 sizes to suit standard duct dimensions. EBD's are manually adjusted to their chosen position, although a motorised option is available. Adjustment of up to 30° from the major axis is possible.



EBD

Product Description

EBD Supply Air Nozzle
B1 Belimo LM24 motor, 24v - 2 position or continuous
B2 Belimo LM230 motor, 230v - 2 position or continuous
DMPR Damper

Features

- 360° directional adjustment
- Excellent throw penetration
- High capacity
- Low noise levels
- Motorised version available

Finishes

PPM 9010 as standard
Other colours available on request

Selection Criteria

Temperature differential – 0 C (Isothermal)
Terminal velocity – 0.25 m/s
Noise level is sound power (L_w) in dBA less room absorption of 8 dB

Selection Example

EBD/P/-/100

Airflow Rate = 15 l/s
Temperature differential = -5° C
Throw = 14 m
Noise level = <20 dBA
Pressure Loss = 75 Pa
Fall = 4 m

Weights

Dimensions	Weights kg
100	0.6
125	0.8
160	1.0
200	1.4
250	1.9
315	2.0
400	2.6

Dimensions

Dimensions	ØA1	ØA2	ØA3	ØA4	J	B1
100	98	50	135	105	2	79
125	123	64	169	130	0	89
160	158	72	196	162	5	118
200	198	108	255	215	5	138
250	248	136	300	260	8	178
315	313	174	384	325	10	195
400	398	230	462	408	10	214

Order Example

EBD/125/B1/2-Pos/DMPR/PPM9010

Type
Nominal size
Motor Type (if required)
Motor Option
Damper
Finish

Thermal effects resulting in rise and fall of plume	
Δt = -10	See Performance Table
Δt = -5	See Performance Table
Δt = 0	See Performance Table
Δt = +5	See Performance Table
Δt = +10	See Performance Table

Angle of discharge effect on rise and fall of plume	
Angle of Discharge	Throw Multiplier
+10	1.08
+20	1.21
+30	1.35

Performance Table

EBD	Flow Rate	Throw	Pressure Loss	Lw	Rise/Fall Δt = 0	Rise/Fall Δt = ±5	Rise/Fall Δt = ±10
Size	l/s	m	Pa	dBA	m	m	m
100	13	10	35	<20	0.4	2.5	4.8
	26	20	75	27	0.8	4	8.5
	38	30	150	42	1.2	6	-
125	17	10	12	<20	0.7	3.9	7
	20	11	23	<20	0.9	4	7.2
	34	20	50	20	1.2	4.3	8.5
	50	30	150	37	2.4	5.2	-
160	23	10	8	<20	1.1	3.8	-
	30	13	20	<20	1.4	5.8	-
	46	20	52	24	2.5	8.2	-
	70	30	100	32	3	-	-
200	30	10	5	<20	1.3	3.4	-
	50	17	18	<20	1.8	4.1	-
	70	20	33	21	2.9	6.8	-
	100	30	80	25	3.5	-	-
250	38	10	7	<20	2.5	4.2	-
	76	18	14	<20	3	5.8	-
	106	20	30	21	4	-	-
	150	30	70	23	5.8	-	-
315	48	10	<5	<20	3.6	4.4	-
	98	20	10	<20	4.8	5.6	-
	150	30	28	20	6	-	-
400	64	10	<5	<20	4	5	-
	129	12	8	<20	6.4	7.4	-
	150	24	15	<20	8.2	-	-
	195	30	30	<20	9.8	-	-

Table content for terminal velocity of 0.25 m/s

Supply and Exhaust Valves

VA / VAF / VB / VBF / VC

Introduction

A range of high quality valves for supply and exhaust applications for commercial and industrial projects. Series V valves are best applied to air distribution systems handling relatively low air flow rates within small circular ductwork. The valves provide high initial resistance with wide throttling capability which is necessary to offset the relatively high system resistances.
VAF and VBF are passively protected for 60 minutes against the spread of fire.

Product Description

VA Supply valve with spindle locknut
VB Exhaust valves with spindle locknut
VAF Fire rated supply valve with spindle locknut
VBF Fire rated exhaust valves with spindle locknut
VC Exhaust valve with tamper proof screw locking of inner core

Installation

All units are supplied with a steel mounting subframe which should be fixed to the prepared opening.

- Cut aperture to suit subframe size shown in table below
- Screw subframe into aperture
- Offer valve body into subframe and rotate into bayonet fixing
- Valves can be made tamper proof with the addition of a lock nut on either side of the rear bracket.

Finishes

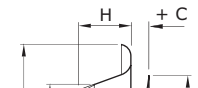
Standard - polyester powder gloss white
VC - available as RAL 9010 Gloss

Selection Criteria

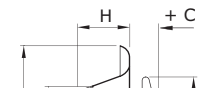
Throw is the radius of diffusion (V_t = 0.2 m/s)
(Supply valve VA/F only).
P_s is the static pressure loss (Pa).
Noise level is based on diffuser sound power level less 8dB room absorption.

Selection Example

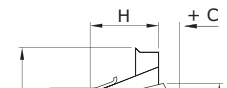
VA/200
Air Volume 80 l/s
Throw 2.1 m
Pressure Drop 24 Pa
Noise Level <20 dBA



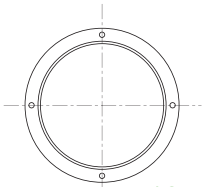
Supply Valve VA/F



Exhaust Valve VB/F



Exhaust Valve VC
C - Core adiustment



Subframe

	Subframe				
	Ø 100	Ø 125	Ø150	Ø160	Ø 200
B1	100	125	150	160	200
A1	130	155	180	190	236
H1	28	29	31	31	33

Performance Tables for C = Max

VA/F	Air Volume										
	m^3/h	36	72	108	144	180	216	288	360	432	504
	l/s	10	20	30	40	50	60	80	100	120	140
100 Dia	Throw	0.8	1.2	1.9							
	P_s (Pa)	7	26	60							
	L_w (dBA)	-	22	34							
125 Dia	Throw		-	2.0	2.4	2.8	3.1				
	P_s (Pa)		-	11	27	41	61				
	L_w (dBA)		-	-	25	31	37				
150 Dia	Throw			0.8	1.1	1.3	1.6				
	P_s (Pa)			9	16	25	37				
	L_w (dBA)			-	-	20	26				
160 Dia	Throw			0.7	1.1	1.3	1.6	2.1			
	P_s (Pa)			10	19	30	44	72			
	L_w (dBA)			-	-	-	28	37			
200 Dia	Throw					1.3	1.6	2.1	2.4	2.0	3.3
	P_s (Pa)					10	14	24	36	44	80
	L_w (dBA)					-	-	-	25	28	37

VC	Air Volume							
	m^3/h	36	72	108	144	180	216	288
	l/s	10	20	30	40	50	60	80
100 Dia	P_s (Pa)	10	39	85				
	L_w (dBA)	-	20	25				
125 Dia	P_s (Pa)		16	34	62			
	L_w (dBA)		-	22	28			
160 Dia	Ps (Pa)		8	16	30	45	70	
	L_w (dBA)		-	-	-	22	28	
200 Dia	P_s (Pa)			12	20	32	50	80
	L_w (dBA)			-	-	-	24	34

VB/F	Air Volume										
	m^3/h	36	72	108	144	180	216	288	360	432	504
	l/s	10	20	30	40	50	60	80	100	120	140
100 Dia	P_s (Pa)	4	21	50							
	L_w (dBA)	-	-	25							
125 Dia	P_s (Pa)		9	19	35						
	L_w (dBA)		-	-	20						
150/160 Dia	P_s (Pa)		6	12	22	32	47				
	L_w (dBA)		-	-	-	20	27				
200 Dia	P_s (Pa)					7	11	18	29	37	60
	L_w (dBA)					-	-	-	22	25	30

Ø 160mm not available in VAF or VBF

Order Example
VA/125
Type
Size

	VA/F					VB/F					VC			
	Ø 100	Ø 125	Ø 150	Ø 160	Ø 200	Ø 100	Ø 125	Ø 150	Ø 160	Ø 200	Ø 100	Ø 125	Ø 160	Ø 200
Ø D	137	161	202	212	249	137	161	202	212	248	135	160	189	240
S	74	97	117	127	156	74	97	117	127	156	-	-	-	-
B	94	110	135	145	194	75	100	120	130	157	87	103	130	175
H	47	49	50	54	63	47	49	50	54	63	50	47	47	47

Polymer Supply and Exhaust Valves

RPVB

Introduction

The Waterloo Aircell RPVB air valves are an attractive and versatile form of air terminal for use as either a side wall grille or ceiling diffuser in supply or extract applications. Moulded in ABS engineering polymer to achieve a high quality finish, the units are available in 100mm or 125mm diameter neck sizes and can be supplied with optional pre-set flow regulators.

The RPVB valve comprises a flanged frame with a perforated snap-fit fascia. The perforated fascia can be configured to give either horizontal diffusion or a projection jet using a concealed deflection pad. The RPVB valves are fitted with a removable internal baffle to limit the jet spread angle when wall mounted or when ceiling mounted close to a wall. This internal baffle may be simply snapped off to give 360° jet spread.

The optional air flow regulators (AR) are designed to push fit into the frame to control air in either supply or extract mode and are available in three flow settings for each size. The units maintain a constant flow over a pressure range of 50-200 Pa.

Product Description

RPVB Wall or ceiling application - perforated fascia
AR121 12 l/s regulator for Ø 100
AR171 17 l/s regulator for Ø 100
AR251 25 l/s regulator for Ø 100
AR175 17 l/s regulator for Ø 125
AR255 25 l/s regulator for Ø 125
AR335 33 l/s regulator for Ø 125
DC1 Installation collar for Ø 100
DC5 Installation collar for Ø 125

Installation

RPVB valves simply push fit into circular ducting or optional installation collar when using flexible ducting. Suitable for mounting in wall or ceiling tiles.

Finishes

White - standard
All others subject to minimum order quantity

Selection Example

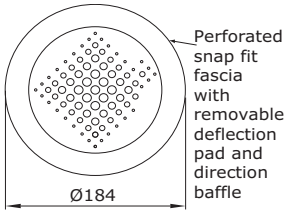
RPVB/125
Air Volume 25 l/s
Throw ceiling 5.5 m, wall 5.6 m
P_s pressure drop 16 Pa
25 dBA

Selection Criteria

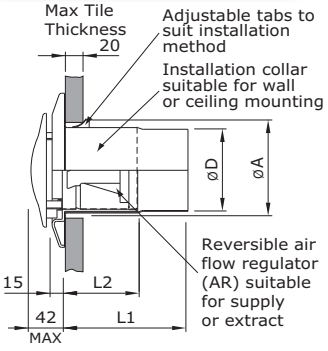
Throw data is presented in Table 1 for ceiling and wall installations and is based on isothermal conditions to a terminal air velocity of 0.25m/s.

The ceiling installation data is for a partial radial pattern with the internal baffle fitted and the fascia in a lowered position. Removing the baffle produces a full radial pattern and reduces the throws by a factor of 0.85. Data for wall installations is based on a confined jet and assumes that the valve is mounted within 300mm of the ceiling.

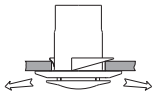
Static pressure loss data presented in Tables 1 & 2 is valid for wall or ceiling valve configurations and is based on units fitted with the internal baffle. Removal of the baffle reduces the pressure loss by a factor of 0.65. Noise level is based on diffuser sound power level less 8dB room absorption. The data is based on units fitted with the internal baffle.



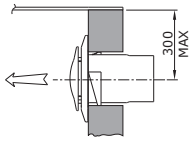
	Ø A	Ø D	L1	L2
RPV100	110	97	140	85
RPV125	135	122	150	85

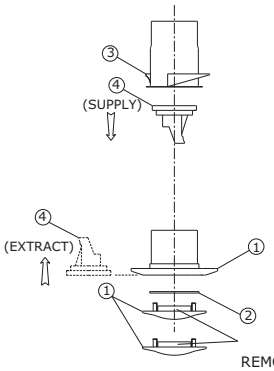


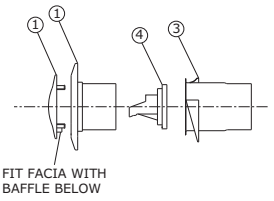
CEILING MOUNTING



WALL MOUNTING







1. FRAME/FASCIA
2. DEFLECTION PAD
3. INSTALLATION COLLAR
4. OPTIONAL FLOW REGULATOR

Performance Tables

Table 1: Supply Air Valve Data - Ceiling and Wall Installation

RPVB	Air Volume							
	m³/h	36	54	72	90	108	126	144
	l/s	10	15	20	25	30	35	40
100 Dia	Throw (m) ceiling	3.6	4.7	5.7				
	Throw (m) wall	3.3	4.1	4.7				
	P_s	2	4	8				
	L_w	-	-	-				
125 Dia	Throw (m) ceiling			5.0	5.5	6.0	6.2	6.6
	Throw (m) wall			4.9	5.6	6.2	6.9	7.5
	P_s			10	16	24	33	43
	L_w			-	-	25	31	37

Table 2 : Extract Air Valve Data

RPVB	Air Volume							
	m³/h	36	54	72	90	108	126	144
	l/s	10	15	20	25	30	35	40
100 Dia	P_s	3	5	10				
	L_w	-	-	-				
125 Dia	P_s			13	21	31	43	56
	L_w			-	25	31	37	43

Table 3 : Air Regulator Acoustic Data at 50 Pa - Supply and Extract

RPVB	Air Volume				
	m³/h	43	61	90	119
	l/s	12	17	25	33
100 Dia	Supply	45	52	58	
	Extract	30	36	45	
125 Dia	Supply		41	42	43
	Extract		27	32	37

Order Example

RPVB125/AR335/DC5/White
Type
Size
Regulator (if required)
Installation Collar
Colour

Plenum Boxes for Linear Diffusers

Introduction

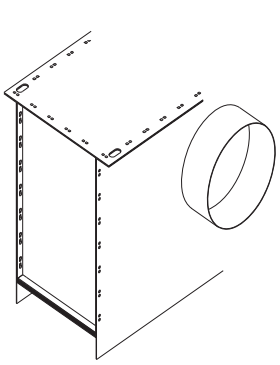
Correct selection and sizing of distribution plenum boxes and neck reducers is critical because terminal air resistance is very low relative to the distribution ductwork resistance. It is therefore recommended that whenever possible terminals are served by low velocity stub ducts from branch ducting systems fitted with correct balancing controls.
Where it is necessary to specify and use plenums a generous allowance for commissioned noise generation should be made. A similar effect results from use of neck reducers with circular duct connections because the reduced duct area will cause generally higher velocities and hence increased risk of noise generation.

Product Description

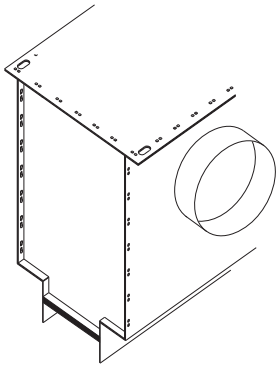
PBHL	High-Line Plenum box
PBLL	Low-Line Plenum box
SE	Side Entry spigot
TE	Top Entry spigot
EE	End Entry spigot
CC	Circular Connection
RC	Rectangular Connection
LINED	6mm acoustic lining (optional) reaction to fire class C-s3-d0 to EN 13501-1: 2007
BAFFLE	Perforated plate for a more even air flow to diffuser (Recommended for top entry and offset spigots)

Installation

The plenum boxes and neck reducers are supported by four drop rods through a locating hole positioned near each corner.
When ordering plenum boxes please specify length, width & height, spigot size and position (Top or Side Entry), and control options. Please note that the plenum height should, in general, be 100mm greater than the spigot diameter (Side Entry applications).

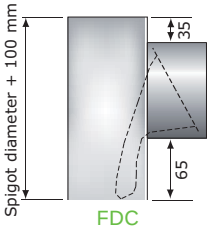


High-Line plenum box

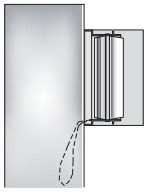


Low-Line plenum box

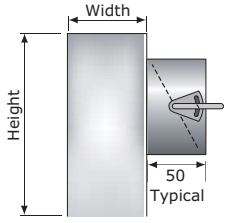
Control Options



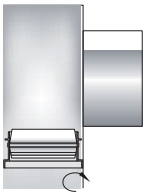
FDC
Cord operated flap damper for mounting within circular spigots to plenum boxes.



OBCO
Cord operated opposed blade damper for installation within square or rectangular plenum spigots.



FDQ
Flap damper with external quadrant control for mounting within circular spigots to plenum boxes.



OBSS / ED
Standard opposed blade damper for diffuser or duct mounting.

Order Example

PBHL/CSF/1200/250/250/SE/150/1CC/Lined/Baffle

- Type
- Diffuser Type
- Plenum Box Length
- Plenum Box Width
- Plenum Box Height
- Entry
- Spigot Size
- Spigot Connections
- Option
- Option

Plenum Boxes for Linear Diffusers

Selection Criteria (Using the Nomogram)

By way of example, referring to the data in the CS section, consider a diffuser handling 180 l/s total with a pressure drop of 25Pa. Projecting from this volume through the diffuser pressure loss, then pivot on the plenum dimensions to suit the diffuser 2 slot width, which gives a minimum plenum height of approx 280mm. Draw a line from the air flow selection point through the required spigot air velocity and read off the nearest standard spigot size. In this example the spigot diameter exceeds the selected plenum height, so the height now becomes 315 + 100 = 415mm.
Alternatively, to maintain the original height, select a suitably sized rectangular spigot (300 x 200 in the example) or use multiple circular spigots.

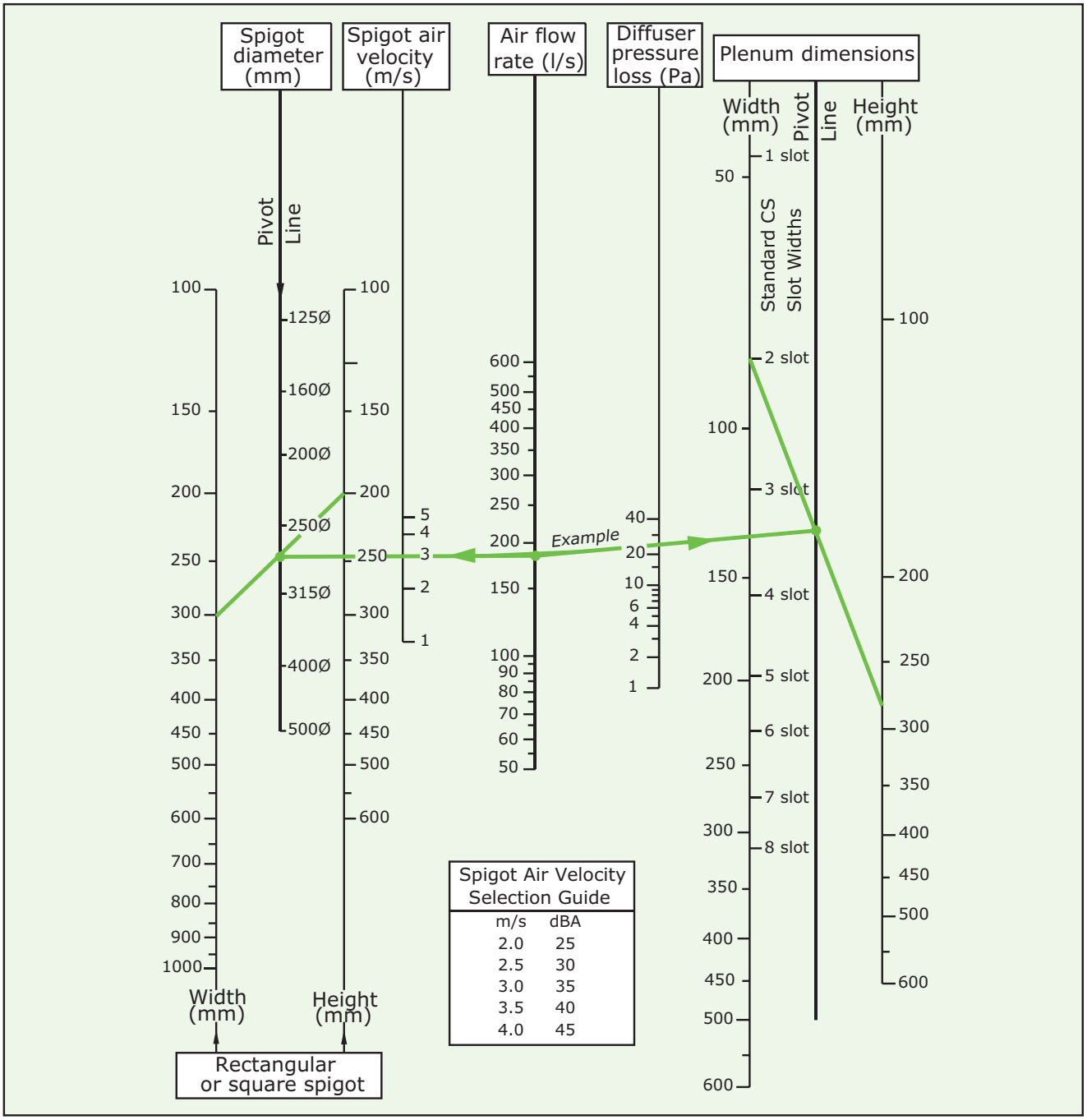
Recommended max air volume for 3 m/s, 35 dBA based on recommended spigot sizes							
Diameter	97	122	157	197	247	312	397
l/s	22	35	58	92	144	229	370

Note: Actual spigot diameter is nominal - 3mm (i.e. 200mm is 197mm actual).

Note: Plenum length is determined by linear diffuser selection.

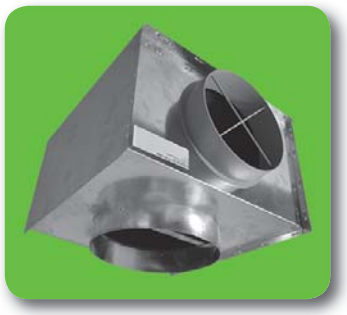
Note: The connection between the diffuser and plenum is adequately sealed for most installations, although secondary additional sealing may be required at the discretion of the installers, if the leakage rate required is particularly low.

Performance Nomogram



Plenum Box to suit Swirl Diffusers

WTP

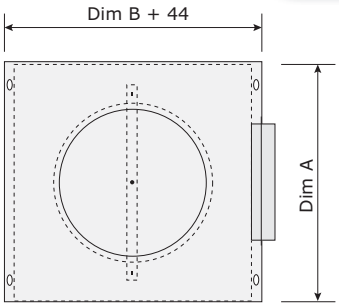


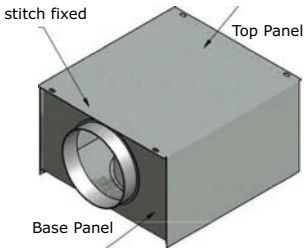
Introduction

Plenum boxes for our SDF swirl diffusers are designed to guarantee a good mixing of the air prior to diffusion through the terminals. Available with Side or Top Entry connections to customer-specific diameters, these can be fitted with Spigot Flap Dampers, cord- / quadrant-operated, as well as 6mm acoustic lining (optional) reaction to fire class C-s3-d0 to EN 13501-1: 2007 to avoid noise generation.
The Supply air plenum box includes an internal baffle plate to evenly distribute the airflow over the swirl area.

Product Description

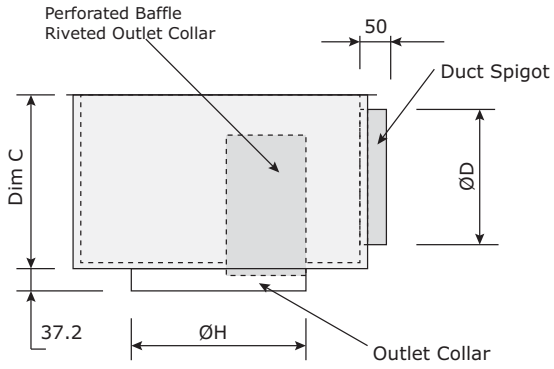
WTP	Plenum box to suit SDF Fixed Blade Swirl Diffusers
SE	Side Entry spigot
TE	Top Entry spigot
FDC	Cord-operated Flap Damper (optional)
FDQ	Quadrant-operated Flap Damper (optional)
LINED	6mm acoustic lining (optional) reaction to fire class C-s3-d0 to EN 13501-1: 2007
BLACK	Plenum painted black to prevent through vision (optional)





Features

- Galvnised steel, stitch fixed
- Side Entry spigot with optional airflow control damper
- Oblong holes on top plate for easy drop rod installation
- Internal baffle plate for Supply air diffuser



Finish

WTP Galvanised sheet steel

Dimensions

Nominal Collar Size	Where Used	Plenum Width 'A'	Plenum Width 'B'	Plenum Width 'C'	Spigot Size ØD	Outlet Collar ØE	Baffle Height 'F'	Baffle Length 'G'	Duct Collar ØH	Baffle Radius 'R'	Mounting Bar Hole Ctrs 'J'	Mounting Bar Length 'K'
Ø125	SDF Series	300	300	160	100	125	100	175	123	62	185	225
Ø160	SDF Series	300	300	185	125	160	140	230	158	80	220	260
Ø200	SDF Series	400	400	220	160	200	165	285	198	100	260	300
Ø250	SDF & SDT Series	400	400	260	200	250	205	365	248	125	310	350
Ø315	SDF Series	500	500	310	250	315	245	465	313	157	375	415
Ø350	SDT Series	500	500	310	250	345	245	514	343	172	375	395
Ø400	SDF Series	560	560	375	315	400	310	600	398	200	460	500
Ø450	SDT Series	560	560	375	315	445	310	664	443	222	500	545
Ø550	SDT Series	650	650	375	315	545	310	814	543	272	600	645

Order Example

WTP-200/SE/1CC/197dia/FDC/Lined 19mm/BFL

- Type
- Size
- Spigot position
- Spigot type
- Spigot size
- Spigot damper
- Acoustic lining
- Baffle

Plenum Box to suit SDCH Swirl Diffusers

SDP

Introduction

Plenum boxes for our SDCH swirl diffusers are designed to guarantee a good mixing of the air prior to diffusion through the terminals. Available with Side Entry connections matching the diffuser neck (nominal size), these can be fitted with Spigot Flap Dampers, cord- / quadrant-operated, as well as 6mm acoustic lining (optional) reaction to fire class C-s3-d0 to EN 13501-1: 2007 to avoid noise generation. The Supply air plenum box includes an internal baffle plate to evenly distribute the airflow over the swirl area.

Product Description

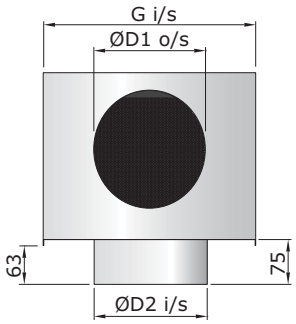
SDP Side Entry plenum box to suit SDCH Diffusers
FDC Cord-operated Flap Damper (optional)
FDQ Quadrant-operated Flap Damper (optional)
LINED 6mm acoustic lining (optional) reaction to fire class C-s3-d0 to EN 13501-1: 2007
BLACK Plenum painted black to prevent through vision (optional)

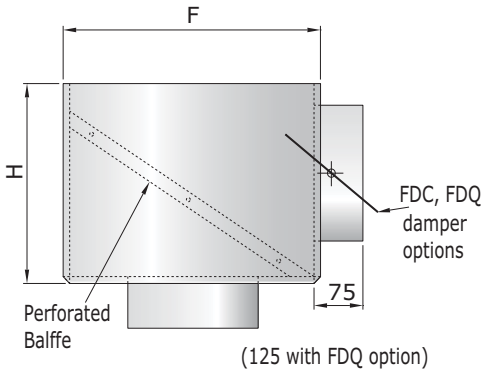
Features

- Galavnised steel, stitch fixed
- Side entry spigot with optional airflow control damper
- Oblong holes on top plate for easy drop rod installation
- Internal baffle plate for Supply air diffuser

Finish

SDP Galvanised sheet steel





Nom Size	F	G	H	ØD1	ØD2
200	395	375	290	197	200
250	445	425	340	247	250
315	520	500	405	312	315
400	595	575	490	397	400
500	695	675	590	497	500
630	820	800	720	627	630

* Please note the total installed height assumes an overlap of 30mm on the neck / plenum connection.

Plenum Order Example

SDP-SDFCH/200/375/395/290/SE/1CC/197DIA//FDC/Lined

Type
Size
Plenum box length
Plenum box width
Plenum box height
Spigot position
Spigot type
Spigot size
Spigot damper
Acoustic lining

Plenum Box to suit Louvred Face Diffusers

PBD / NRD Neck Reducer

Introduction

Correct selection and sizing of distribution plenum boxes and neck reducers is critical because terminal air resistance is very low relative to the distribution ductwork resistance. It is therefore recommended that, whenever possible, terminals are served by low velocity stub ducts from branch ducting systems fitted with correct balancing controls.

Where it is necessary to specify and use plenums a generous allowance for commissioned noise generation should be made. A similar effect results from use of neck reducers with circular duct connections due to the reduced duct area causing generally higher velocities and therefore increasing risk of noise generation

Product Description

PBD	Plenum box for Louvre-faced Diffusers (DF, DE, DFA, DF-T, DTR)
PBD/LL	Low-Line Plenum box for Louvre-faced Diffusers (DF, DE, DFA, DF-T, DTR)
NRD	Neck Reducer for Louvre-faced Diffusers
SE	Side Entry spigot
TE	Top Entry spigot
CC	Circular Connection
RC	Rectangular Connection
FO	Flat Oval Connection
FDC	Cord-operated Flap Damper (optional)
FDQ	Quadrant-operated Flap Damper (optional)
LINED	6mm acoustic lining (optional) reaction to fire class C-s3-d0 to EN 13501-1: 2007
BFL	Internal perforated baffle plate (optional)
BLACK	Plenum painted black to prevent through vision (optional)

Features

- Galavnised steel, stitch fixed
- Available in High-Line or Low-Line to accommodate larger spigot sizes
- 1 to 4 connections – Circular, Rectangular or Flat Oval (reduced plenum height)
- Side or Top Entry spigots with optional airflow control damper
- Oblong holes on top plate for easy drop rod installation
- Internal baffle plate for optimum air distribution (optional)

Finish

PBD/NRD Galvanised sheet steel

Installation

The plenum boxes and neck reducers are supported by 4 drop rods through a locating hole positioned near each corner.

When ordering plenum boxes please specify length x width x height, spigot size and position (top or side entry), and control options. Please note that the plenum height should in general be 100mm greater than the spigot diameter (side entry applications).

Neck reducers are available as standard in sizes up to 1200 x 600. The high profile is designed to accommodate an opposed blade damper.

Plenum boxes

Pressure loss: multiply diffuser pressure loss by 1.25

Note: Actual spigot size = nominal - 3mm

Neck reducers

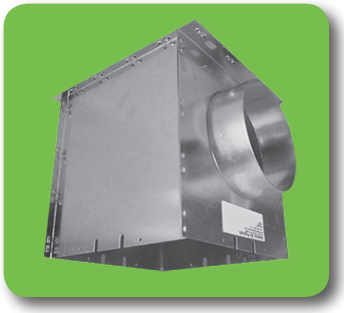
Pressure loss and noise levels should be based on the spigot air velocity and the nominal diffuser size, ie. if a 450 sq neck diffuser handling 200 l/s is fitted with a neck reducer having a 315 Ø spigot, the inlet air velocity is approximately 2.5 m/s.

Throw: use catalogue data providing that the ratio of diffuser to neck size remains less than 1.5:1.

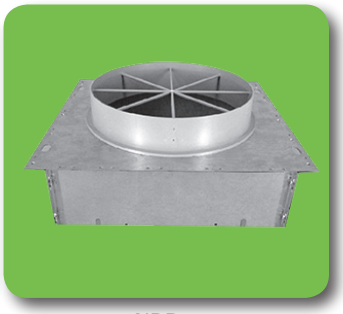
Order Example

PBD/450/450/400/1CC/SE/297dia/FDC/LINED

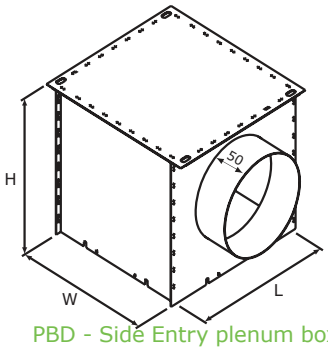
- Type
- Plenum Box Length
- Plenum Box Width
- Plenum Box Height
- Spigot Number / Shape
- Entry
- Spigot Size
- Option
- Option



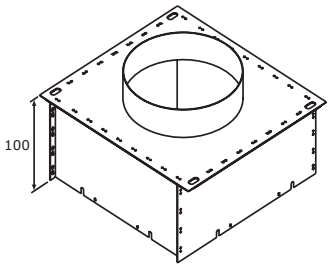
PBD



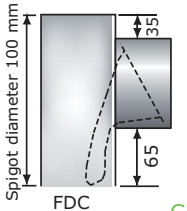
NRD



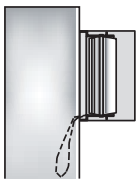
PBD - Side Entry plenum box



NRD - Neck Reducer

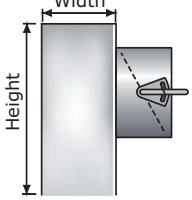


FDC

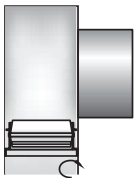


OBCO

Control Options



FDQ



OBSS / ED

Performance Table

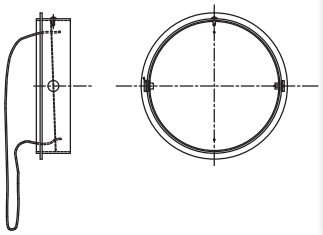
Diffuser Neck size	Nominal Spigot size	Diffuser + Plenum + Open OBSS Maximum flow rate to achieve stated noise levels (l/s)					Actual Plenum Dimensions		
(mm)	(mm)	30dB	35dB	40dB	45dB	50dB	L	W	H
150x150	150Ø	45	55	65	80	95	150	150	250
225x225	200Ø	75	100	125	150	175	225	225	300
225x150	200Ø	60	80	100	115	130	225	150	300
300x 300	250Ø	140	170	210	260	310	300	300	350
300x225	250Ø	90	130	170	210	240	300	225	350
300x150	250Ø	85	110	135	160	185	300	150	350
375x375	350Ø	210	240	290	355	430	375	375	450
375x300	350Ø	160	210	260	330	400	375	300	450
375x225	350Ø	125	170	215	270	330	375	225	450
375x150	350Ø	120	140	170	210	260	375	150	450
450x450	400Ø	230	310	400	500	650	450	450	500
450x375	400Ø	220	280	355	450	590	450	375	500
450x300	400Ø	190	260	330	410	490	450	300	500
525x525	500Ø	290	410	540	670	840	525	525	600
525x450	500Ø	280	380	490	610	810	525	450	600
525x375	500Ø	275	360	460	580	690	525	375	600
525x300	500Ø	235	315	380	480	590	525	300	600
600x600	500Ø	530	620	700	850	1020	600	600	600
600x450	500Ø	380	450	540	660	850	600	450	600
600x300	500Ø	350	410	460	560	680	600	300	600

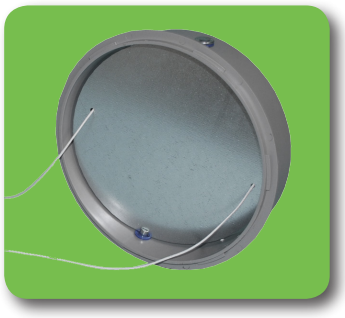
FD Spigot Control Dampers

Introduction

Designed as a cost-effective, efficient way to adjust the airflow supplied through plenum boxes or neck reducers, the FD Flap Dampers can be fitted to any of our spigots - circular, rectangular or flat oval.

They can be adjusted with a cord, fed through the air terminal device and ready for commissioning, or with an external quadrant accessible from outside the duct, allowing for the damper to be locked into position.





Product Description

FDC Flap Spigot Damper, Cord operated

FDQ Flap Spigot Damper, Quadrant operated

Features

- Cost-effective airflow regulation
- Suitable for any size / shape spigot
- Choice of adjustment devices – Cord for commissioning flexibility or Quadrant for position control

Finish

FD Galvanised steel blades

Dimensions

Any, to match spigot sizes

Note – the FD can only be selected with the relevant Plenum Box or Neck Reducer and trimming damper not suitable for use with a spigot velocity greater than 3.0m/s

Order Example

PBD-DF/200/200/260/SE/1CC/157dia/FDC/Lined

- Type
- Plenum box length
- Plenum box width
- Plenum box height
- Spigot position
- Spigot type
- Spigot size
- Spigot damper
- Acoustic lining

LD Butterfly-style Louvre Damper

Introduction

Designed to adjust the airflow in our Format Circular Diffusers MC, WR and Perforated faced diffusers LF, CPD, KRCP the LD butterfly dampers allow for the air to be regulated prior to distribution through the terminals.

They are adjustable from the front of the Diffuser with a screwdriver and are made in aluminium.

They allow for the airflow to be left fully open, or restricted to closed low-leakage configuration when the damper is in the shut-off position.

Product Description

LD Butterfly-style Louvre Damper, Screwdriver operated

Features

- Screwdriver operated from terminal face

Finish

LD Aluminium blades

Dimensions

MCØ 150 / 200 / 300 / 450mm

WRØ 150 / 200 / 250 / 300 / 375 / 450 / 525 / 600mm

Also sizes to suit standard circular spigots.

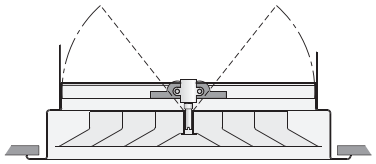
Note – the LD can only be selected with the MC or WR Circular Diffusers and the KRCP, CPD, LF perforated diffusers

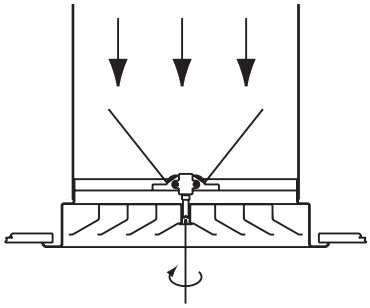
Order Example

MC-200/BLIND FIX/9010-Gloss/LD

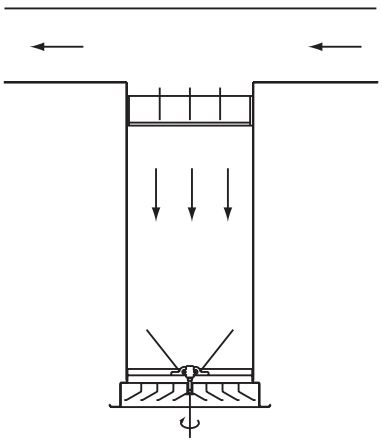
- Diffuser type
- Diffuser diameter
- Fixing
- Finish
- Butterfly damper

MC / LD





LD - Standard arrangement for supply ducts. Adjustable through diffuser face.



ED & LD - Equalisation at stub duct take off with volume control at diffuser face.

PB / NR Spigot Selection Sheet

Circular Ductwork / Spigots										
Duct Size	Spigot Size	Velocity Per Spigot (m/s)							Spigot Area	Spigot Circumference
		3	2.75	2.5	2.25	2	1.75	1.5		
mm	mm	Air Flow Rate Per Spigot (l/s)							m^2	mm
75	72	12	11	10	9	8	7	6	0.0041	226
100	97	22	20	18	17	15	13	11	0.0074	305
125	122	35	32	29	26	23	20	18	0.0117	383
150	147	51	47	42	38	34	30	25	0.0170	462
160	157	58	53	48	44	39	34	29	0.0194	493
175	172	70	64	58	52	46	41	35	0.0232	540
180	177	74	68	62	55	49	43	37	0.0246	556
200	197	91	84	76	69	61	53	46	0.0305	619
225	222	116	106	97	87	77	68	58	0.0387	697
250	247	144	132	120	108	96	84	72	0.0479	776
275	272	174	160	145	131	116	102	87	0.0581	855
300	297	208	191	173	156	139	121	104	0.0693	933
315	312	229	210	191	172	153	134	115	0.0765	980
325	322	244	224	204	183	163	143	122	0.0814	1,012
350	347	284	260	237	213	189	166	142	0.0946	1,090
375	372	326	299	272	245	217	190	163	0.1087	1,169
400	397	372	341	310	279	248	217	186	0.1238	1,247
425	422	420	385	350	315	280	245	210	0.1399	1,326
450	447	471	432	392	353	314	275	235	0.1569	1,404
475	472	525	481	438	394	350	306	263	0.1750	1,483
500	497	582	534	485	437	388	340	291	0.1940	1.561

Flat Oval Spigots / Based on Area										
Duct Size	Spigot Size	Velocity Per Spigot (m/s)							Spigot Area	Spigot Circumference
		3	2.75	2.5	2.25	2	1.75	1.5		
mm	mm	Air Flow Rate Per Spigot (l/s)							m^2	mm
100 x 50	97 x 47	12	11	10	9	8	7	6	0.0041	248
170 x 50	167 x 47	22	20	18	17	15	13	11	0.0074	388
181 x 75	178 x 72	35	32	29	26	23	20	18	0.0117	438
255 x 75	252 x 72	51	47	43	38	34	30	26	0.0170	586
287 x 75	284 x 72	58	53	48	44	39	34	29	0.0193	650
264 x 100	261 x 97	70	64	58	52	47	41	35	0.0233	633
278 x 100	275 x 97	74	68	62	55	49	43	37	0.0247	661
338 x 100	335 x 97	91	84	76	69	61	53	46	0.0305	781
347 x 125	344 x 122	116	107	97	87	78	68	58	0.0388	827
422 x 125	419 x 122	144	132	120	108	96	84	72	0.0479	977
430 x 150	427 x 147	174	160	145	131	116	102	87	0.0581	1,022
506 x 150	503 x 147	208	191	173	156	139	121	104	0.0693	1,174
476 x 175	473 x 172	225	206	188	169	150	131	113	0.0750	1,142
514 x 175	511 x 172	245	224	204	183	163	143	122	0.0815	1,218
526 x 200	523 x 197	284	260	237	213	189	166	142	0.0947	1,271
597 x 200	594 x 197	326	299	272	245	217	190	163	0.1087	1,413
674 x 200	671 x 197	372	341	310	279	248	217	186	0.1239	1,567
681 x 200	678 x 222	420	385	350	315	280	245	210	0.1399	1,609
692 x 250	689 x 247	471	432	393	353	314	275	236	0.1571	1,660
765 x 250	762 x 247	525	482	438	394	350	306	263	0.1751	1,806
775 x 275	772 x 272	582	534	485	437	388	340	291	0.1941	1,855

PB / NR Spigot Selection Sheet

Flat Oval Spigots / Spigot Circumference										
Duct Size	Spigot Size	Velocity Per Spigot (m/s)							Spigot Area	Spigot Circumference
		3	2.75	2.5	2.25	2	1.75	1.5		
mm	mm	Air Flow Rate Per Spigot (l/s)							m^2	mm
89 x 50	86 x 47	11	10	9	8	7	6	5	0.0036	226
129 x 50	126 x 47	16	15	14	12	11	10	8	0.0054	306
154 x 75	151 x 72	29	27	24	22	20	17	15	0.0098	384
193 x 75	190 x 72	38	35	31	28	25	22	19	0.0126	462
209 x 75	209 x 72	41	38	34	31	27	24	21	0.0137	494
218 x 100	215 x 97	57	52	47	42	38	33	28	0.0188	541
226 x 100	223 x 97	59	54	49	44	39	34	29	0.0196	557
257 x 100	254 x 97	68	62	57	51	45	40	34	0.0226	619
282 x 125	279 x 122	93	85	77	69	62	54	46	0.0308	697
321 x 125	318 x 122	107	98	89	80	71	62	53	0.0356	775
346 x 150	343 x 147	137	126	114	103	92	80	69	0.0458	854
386 x 150	383 x 147	155	142	129	116	103	90	78	0.0517	934
395 x 175	392 x 172	183	168	153	137	122	107	92	0.0611	980
411 x 175	408 x 172	192	176	160	144	128	112	96	0.0638	1,012
436 x 200	433 x 197	231	212	192	173	154	135	115	0.0770	1,091
475 x 200	472 x 197	254	233	212	191	169	148	127	0.0847	1,169
514 x 200	511 x 197	277	254	231	208	185	162	139	0.0923	1,247
539 x 200	536 x 222	325	298	271	244	217	190	163	0.1084	1,325
564 x 250	561 x 247	376	345	314	282	251	220	188	0.1255	1,404
603 x 250	600 x 247	405	372	338	304	270	236	203	0.1351	1,482
628 x 275	625 x 272	462	424	385	347	308	270	231	0.1541	1,561

Technical Guide

Typical Ceiling Grid Option

Burgess / Armstrong / SAS / Danoline

Clip In

Typical Burgess Type - 599 O/A
SAS System - 120 and 150
Armstrong Orcal 3000 or Spring Tee A Bar

Tegular

Burgess Tegular - T8 / T16 / T19
SAS System 130 – T8 / T16
Armstrong 15/24 - T8 / T16 + Orcal Plank – TE8 / TE16 / TE30
Danoline Linear 600 is T8 and Markant 600 is T16

Plank

Typical with T30 Ends and/or sides
SAS System 330
Burgess T35 ends and 35 fold on sides
Armstrong Orcal Planks T8 / T16 or T30 on ends

Other Grids

Refer to Website for specials
Example – Danoline contor 600 – offset Tegular

Typical T Bar or Lay in

Burgess 15/24 Lay-in
Armstrong Prima TBar/ Utlima TBar
Danoline 600 or Danoline Plaza

Overall To Nominal

Grille or Border Type	Nominal to Overall	Overall to Nominal	Nominal to Opening
16T	+ 7	- 7	0
25T	+ 25	- 25	0
32T	+ 39	- 39	0
25T + PF	+ 21	- 21	0
RTC - R5	+ 4	- 4	0
RTC - R16	+ 26	- 26	0
RCHS (16T)	+ 39	- 39	0
DSR	+ 45	- 45	0
DSRX	+ 51	- 51	0
ACD -25T	+ 31	- 31	0
AFG	+ 12	- 12	0
1K /2K	+ 57	- 57	0
SG1	+ 100	- 100	+ 82
SG2	+ 100	- 100	+ 16
SG3	+ 50	- 50	+ 12

Diffuser or Border Type	Nominal to Overall	Overall to Nominal	Nominal to Opening
CSF /ENDS	+ 56	- 56	+ 19
CSF / MECS	Nominal = Overall	i/s Stack - 39	- 19
CSP / ENDS	+ 36	- 36	+ 5
CSP / MECS	Nominal = Overall	i/s Stack - 20	- 7
DSL - ENDS	+ 26	- 26	+ 10
FCD - ENDS	+ 30	- 30	+ 8
CSB-F/ENDS	+ 56	- 56	+ 10
CSB-P/ENDS	+ 36	- 36	+ 5
DF / MD	+ 145	- 145	+ 75
DE	+ 74	- 74	+ 75
DFA	+ 70	- 70	+ 38

Louvre or Border Type	Nominal to Overall	Overall to Nominal	Nominal to Opening
WG / EF	+ 60	- 60	0
WG / RF	- 6	+ 6	0
YG / EF	+ 45	- 45	0
YG / RF	- 6	+ 6	0
SL - EF	+ 60	- 60	0
SL - RF	- 6	+ 6	0

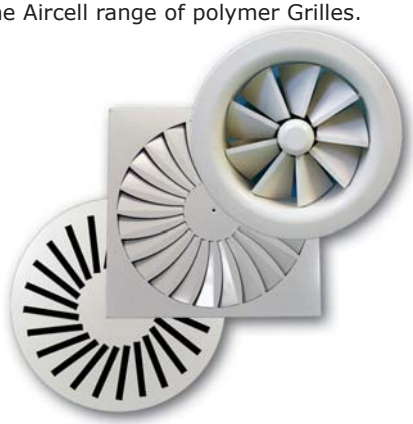
General Notes Regarding Plenums

Grilles use PBG if plenum is full length of grille (up to 2000 long) - If not or plenum is part of grille length then use PBLG
CSF / Mitred Ends - If diffuser is single length (say 1200 long) and plenum is full length then reduce plenum by 50mm (1150 long)
CSP / Mitred Ends - If diffuser is single length (say 1200 long) and plenum is full length then reduce plenum by 30mm (1170 long)

Waterloo Product Range

GRILLES

A complete range of products suitable for all wall, ceiling and floor applications. Most grilles are made from aluminium and have a range of fixed or moveable blades designed to give performance whilst remaining aesthetically pleasing to the eye. Grilles are made to customer specified sizes and colours (PPM/G); standard colour PPM9010 (20% Gloss White). The range is complemented by the Aircell range of polymer Grilles.



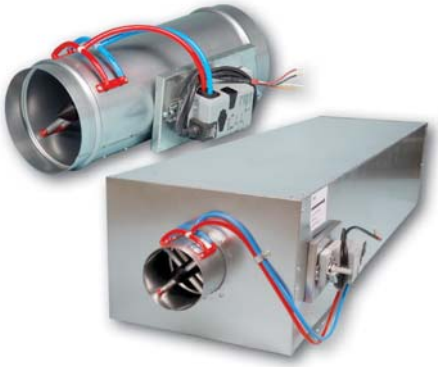
DIFFUSERS

Designed to be installed in various ceiling systems, we have a complete range to suit both performance and aesthetical requirements. Most diffusers are made from aluminium and can be ordered with or without plenum boxes for easy duct work. Diffusers can be ordered in customer specified colours (PPM/G); standard colour is PPM 9010 (20% Gloss White). This range is complemented by the Aircell range of polymer Diffusers.

ACTIVE AND PASSIVE CHILLED BEAMS

The finest quality range of high output active beams, used for ventilated heating and cooling applications. These units have 4 pipe coils to allow heating and cooling circuits to run simultaneously, giving constant and responsive control. The design allows a large optimum capacity and also allows the customer to specify the nozzle type and pitch for individual circumstances.

Active beams are made from steel to a large range of customer specified sizes and as such are suitable for various different ceiling systems. Standard finish is PPM 9010, however other (PPM/G) colours are available on request.



AIR VOLUME CONTROL DAMPERS

Pressure independent Variable Air Volume and Constant Air Volume dampers made from zintec plate. Most volume dampers are regulated with an electronic motor and sensors and are calibrated to customer specifications before delivery.

The Constant Air Volume damper requires no power source as it is controlled via a mechanical device and calibrated before delivery. All volume dampers can be ordered with a single or double (insulation) skin.

EXTERNAL LOUVRES

A quality range of products for external wall applications. Made from aluminium, with birdscreen or insect screen options. All louvres are made to customer specified sizes and (PPM/G) colours; standard colour is PPM 9006.

DISPLACEMENT

A full range of recessed, semi-recessed, floor, wall and corner units providing high ventilation efficiency and excellent comfort. The very low pressure involved also offer quiet installations. Displacement units are available as wall or floor mounted, or indeed integrated within the architectural design.

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bsi. ISO 9001:2015 Quality Management
FM 27823

bsi. ISO 14001:2015 Environmental Management
EMS 590755

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July 2019