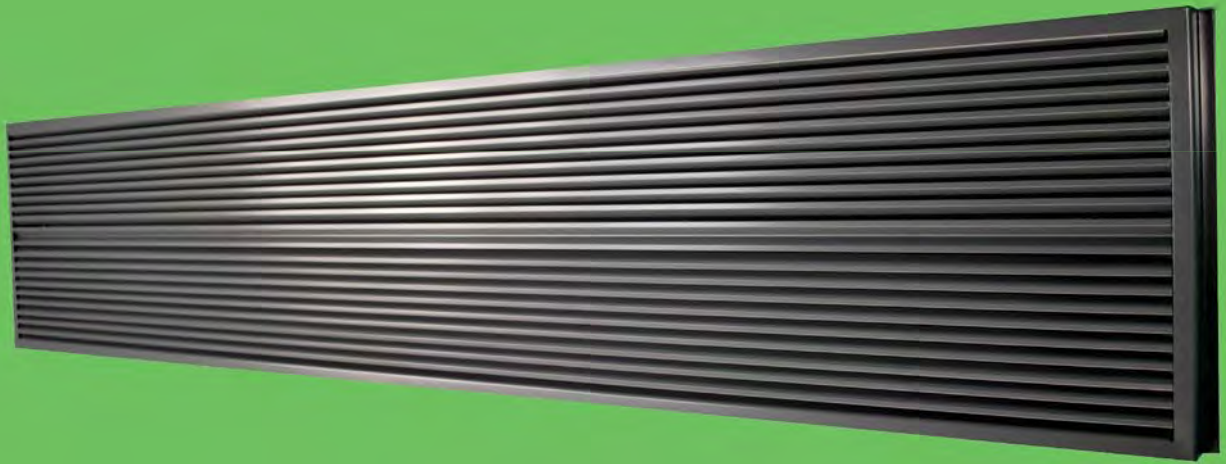


FCD Linear Fan Coil Diffusers

FCD1 One way fan coil diffuser

FCD2 Two way fan coil diffuser



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)

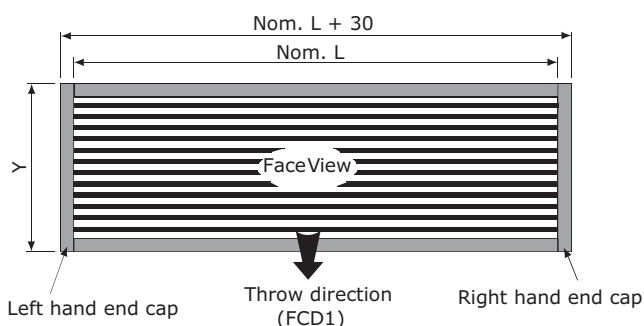
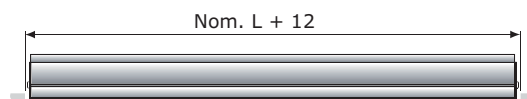
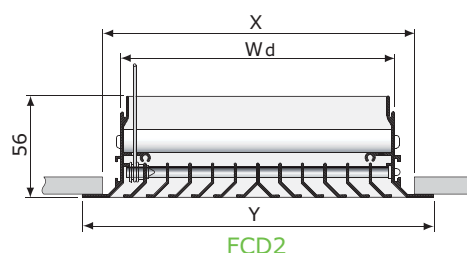
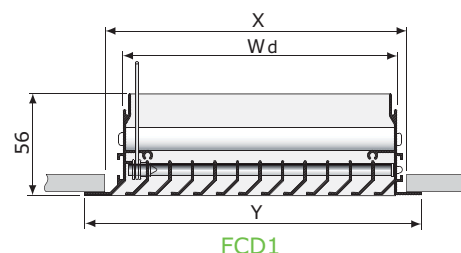
Other colours available on request

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.



ORDER EXAMPLE

FCD-1/3000/250/9010-Matt/2-ENDS

Type _____
 Length _____
 Width _____
 Finish _____
 Ends caps _____

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

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_p) 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				
m ³ /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

Plenum Boxes

Introduction

Our High- / Low- Line plenum boxes are designed to guarantee a good distribution of the air prior to diffusion through the terminals. Available with Side or Top Entry connections to customer-specific diameter/shape, 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. Also available with rivet fix (hem fix as standard).

Product Description

PBHL	High-Line Plenum box to suit CS / LCS / DSL / HF Linear Slot Diffusers
PBLL	Low-Line Plenum box to suit CS / LCS / DSL / HF Linear Slot Diffusers
PBHLB	High-Line Plenum box to suit CSB Barrel Slot Diffusers
PBLLB	Low-Line Plenum box to suit CSB Barrel Slot Diffusers
PBHLH	High-Line Plenum box to suit FCD Fan Coil Diffusers
PBLLH	Low-Line Plenum box to suit FCD Fan Coil 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 plate for Supply air diffusers (optional)
BLACK	Plenum painted black to prevent through vision (optional)

Features

- Galvanised 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
- Slotted holes on top plate for easy drop rod installation

Finish

Galvanised sheet steel

Dimensions

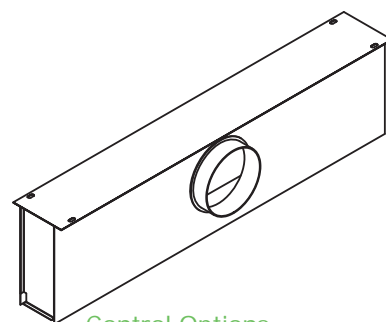
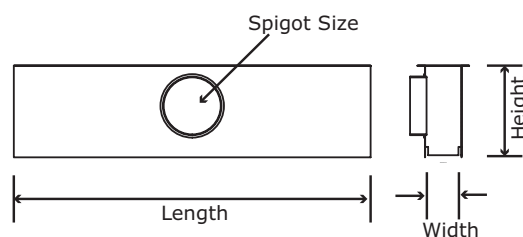
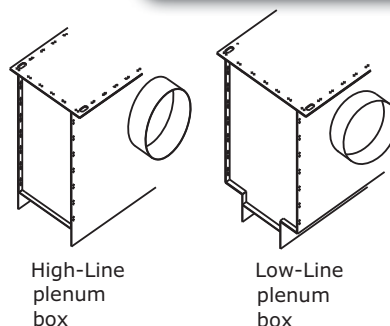
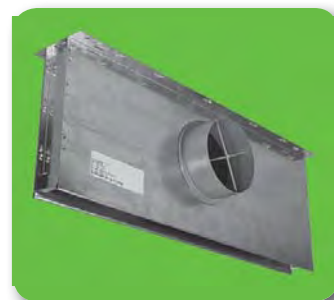
Length	PBHLH / Fan Coil Diffuser length PBHL, PBHLB / Linear Slot diffuser length
Width	PBHLH / Fan Coil Diffuser width PBHL, PBHLB / Number of slots
Height	SE – Spigot diameter or height + 100mm as standard TE – as specified by customer (200mm minimum recommended)

Order

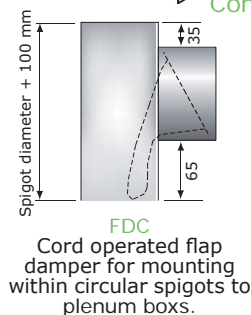
When ordering plenum boxes please specify length, width & height, spigot size and position (Top or Side Entry) and control options. Please note that the plenum height should in general be 100mm greater than the spigot diameter (Side Entry applications).

ORDER EXAMPLE

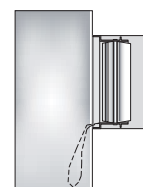
Type	PBHL/HF/2/1200/250/250/SE/147/2CC/OBSS/LINED
Diffuser type	
Number of slots	
Plenum box Length	
Plenum box Width	
Plenum box Height	
Entry position	
Spigot Size	
Spigot Number / Shape	
Option	
Option	



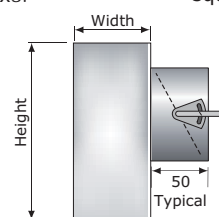
Control Options



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.

Plenum Boxes

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 $315 + 100 = 415\text{mm}$.

Alternatively, to maintain the original height, select a suitably sized rectangular spigot (300 x 200 in the example) or use multiple circular spigots.

Installation

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

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

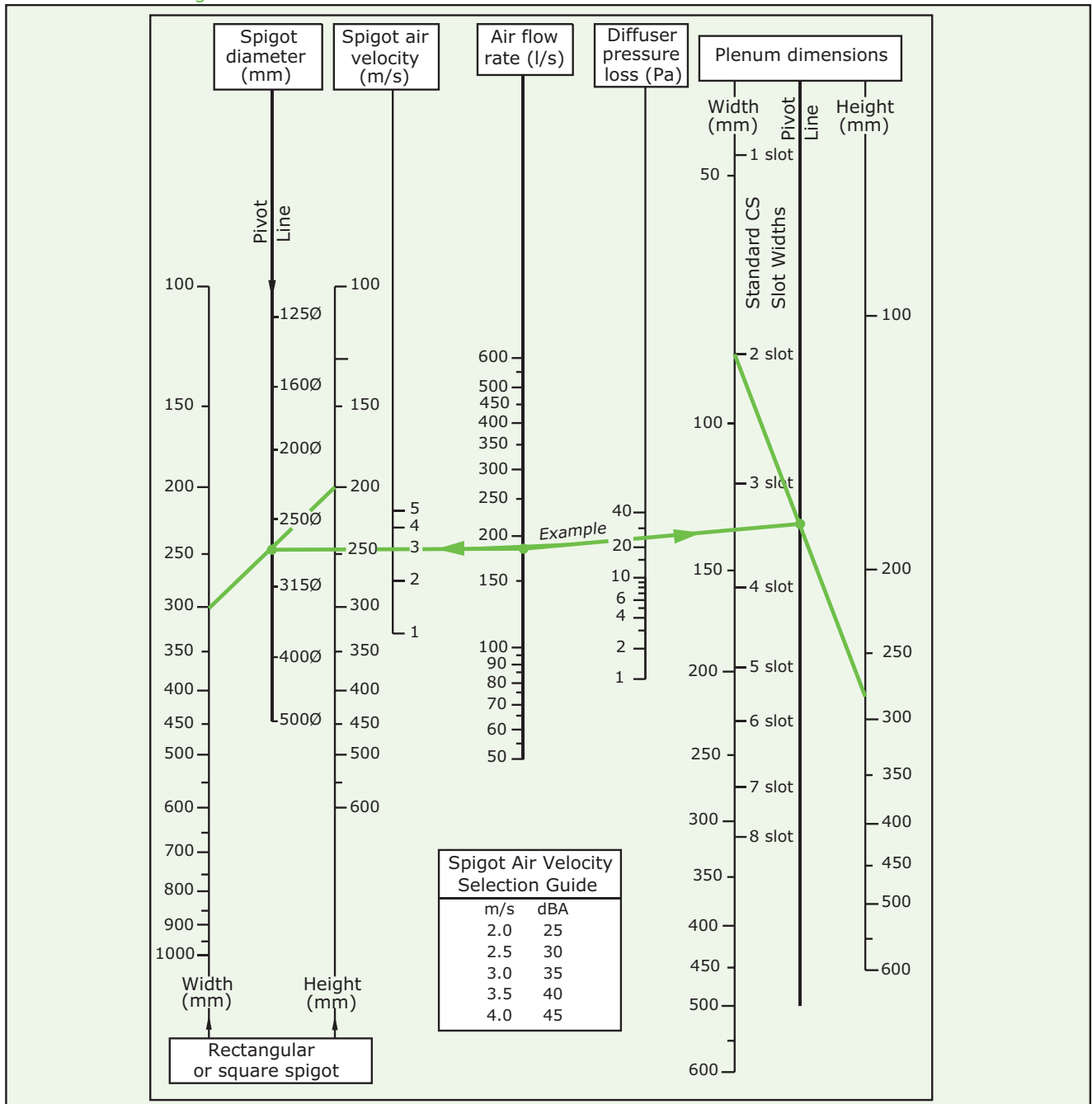
Note: Plenum length is determined by linear diffuser selection.

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.

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

Performance Nomogram





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

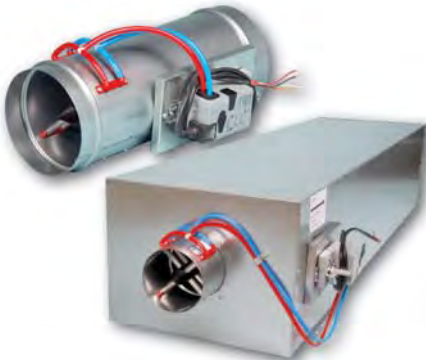
Designed to be installed in various ceiling systems, we have a complete range to suit both performance and aesthetic requirements. Most diffusers are made from aluminium and can be ordered with or without plenum boxes for easy duct work. Diffusers can be ordered in customer specified colours (PPM/G); 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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