

DSL Linear Diffusers

DSL Large format one way discharge

DSL-D Large format two way discharge



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

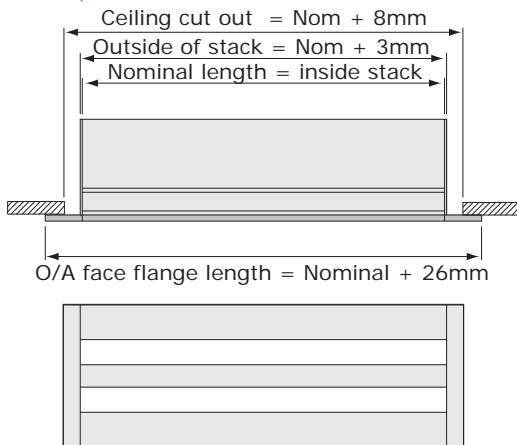
Finishes

- 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

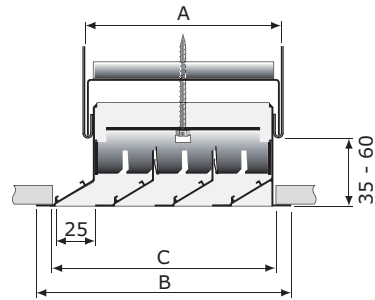
End caps



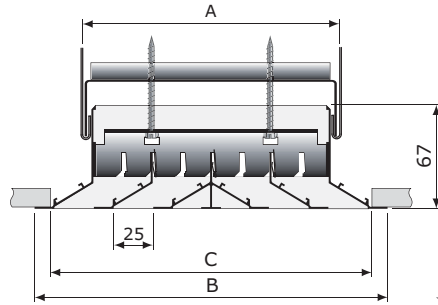
ORDER EXAMPLE

DS-L/3000/1SL/9010-Matt/2-ENDS

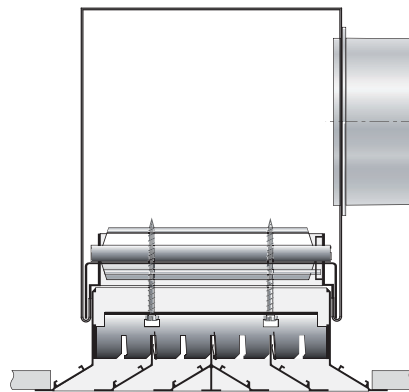
Type _____
 Length _____
 No of Slots _____
 Finish _____
 Ends caps _____



DSL



DSL-D



DSL-D + OBSS + Plenum

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

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

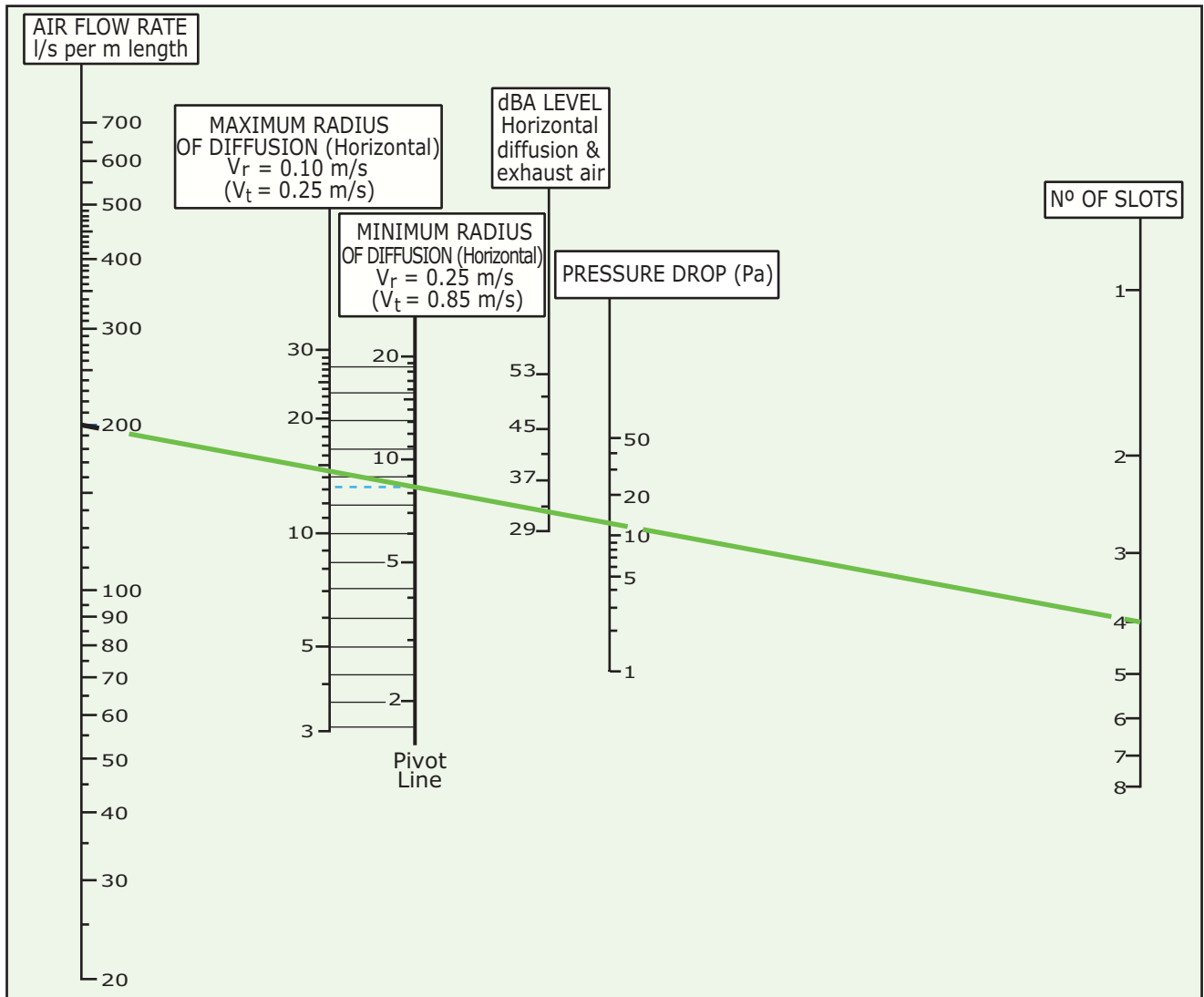
Noise level 27dBA (30dBA - 3dB length correction)

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

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

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

Performance Nomogram



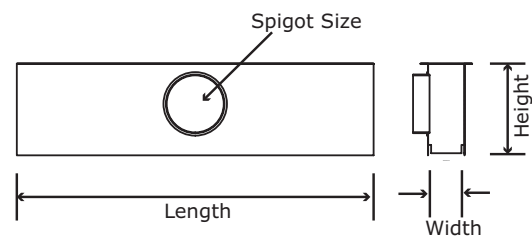
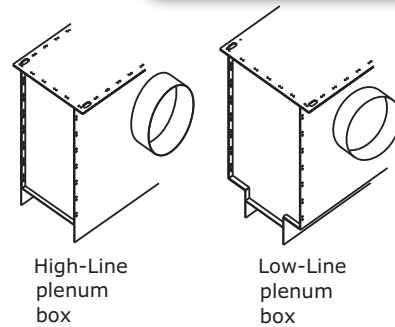
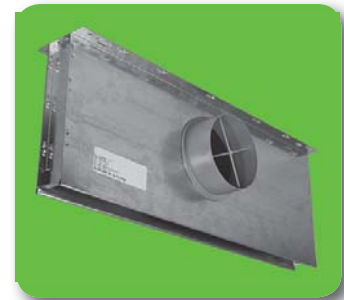
Plenum Boxes

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

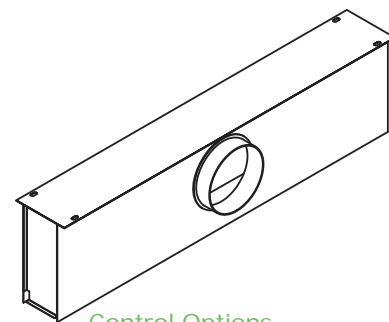
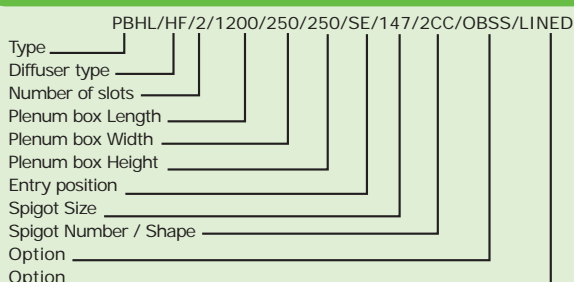
Dimensions

- 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)

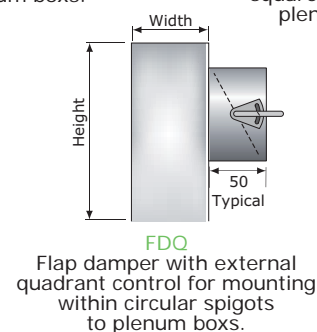
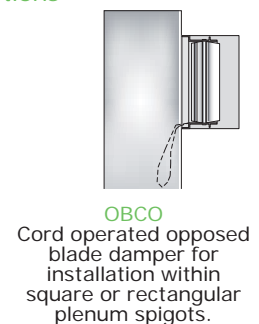
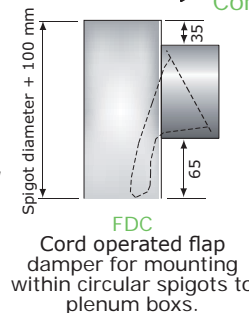
Order

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



Control Options



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 = 415mm.

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.

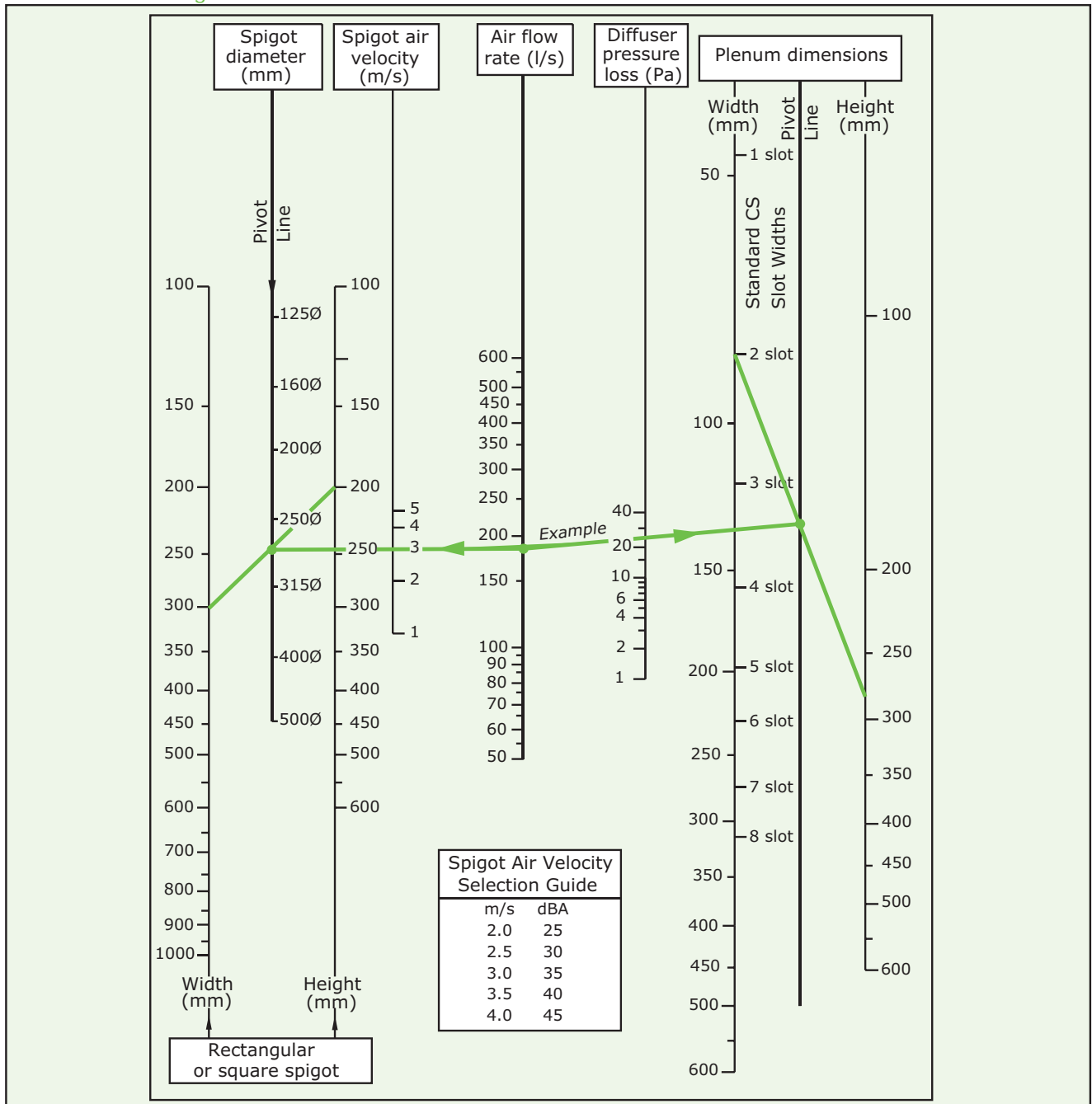
Note: Actual spigot diameter is nominal - 3mm (i.e. 200mm is 197mm actual).

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



Control Options - Grille Mounted OBSS Opposed Blade Damper (Volume Control Damper)

Introduction

Waterloo OB Opposed Blade Dampers are manufactured to suit virtually the whole of our square / rectangular Air Terminal range and can be fitted to the neck of the terminals or inside plenum box.

They are adjustable from the front of the Grille or Diffuser with a screwdriver as standard, but are also available with cord- or lever-operation.

Manufactured with linked aluminium extruded blades, in sizes to suit any Waterloo Grille or Diffuser, they are useful for fine airflow regulation and can be adjusted from fully open to closed low-leakage position.

Product Description

- OBSS** Opposed Blade Damper, Screwdriver operated
- OBCO** Opposed Blade Damper, Cord operated
- OBSL** Opposed Blade Damper, Short Lever operated
- OBLL** Opposed Blade Damper, Long Lever operated
- BLACK** Painted black to prevent through vision

Features

- Linked aluminium extrusions for limited extra weight
- Large choice of adjustments to suit any configuration
- Can be fitted to virtually any Waterloo Grille or Diffuser

Finishes

Extruded aluminium blades

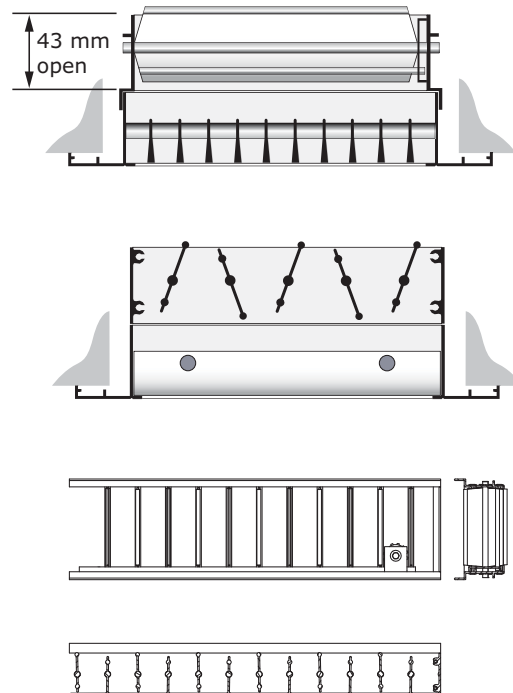
Sizes

Minimum Size - 100 x 75

Minimum Size for Plasterline - 100 x 50

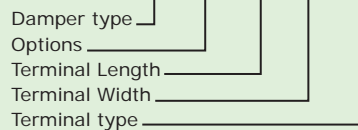
Maximum Size - single section 800x600mm

Multiple sections will be banked to accommodate larger terminal sizes.



ORDER EXAMPLE

OBSS/Black/600/200/For ALN



ED Equalising Dampers (Directional Blades Incapable of Shut Off)

Introduction

Waterloo ED Equalising Dampers are manufactured to suit virtually the whole of our square / rectangular Air Terminal range and can be fitted to the neck of the terminals or inside plenum box.

They are individually adjustable to control air direction and may be used for localised blanking.

Manufactured with aluminium extruded blades, in sizes to suit any Waterloo Grille or Diffuser, they can be adjusted manually by removing the Grille or Diffuser core.

Product Description

- ED** Equalising deflector
- BLACK** Painted black to prevent through vision

Features

- Aluminium extrusions for limited extra weight
- Individually adjustable for fine airflow regulation
- Can be fitted to virtually any Waterloo Grille or Diffuser

Finishes

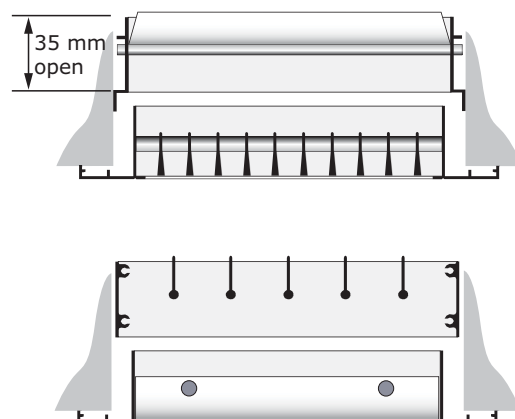
Extruded aluminium blades

Sizes

Minimum Size - 100 x 50

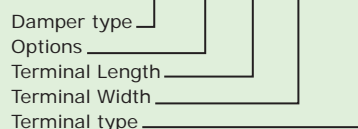
Maximum Size - single section 800x600mm

Multiple sections will be banked to accommodate larger terminal sizes.



ORDER EXAMPLE

ED/Black/600/200/For A CSF



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

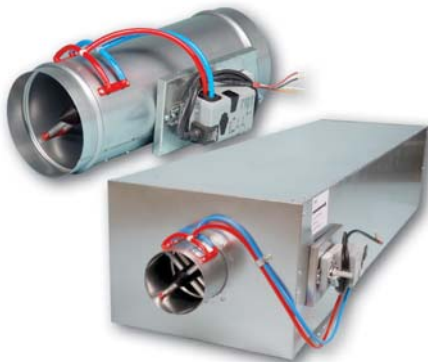
Designed to be installed in various ceiling systems, we have a complete range to suit both performance and aesthetic requirements. Most diffusers are made from aluminium and can be ordered with or without plenum boxes for easy duct work. Diffusers can be ordered in customer specified colours (PPM/G);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