

# Barrel Slot Diffusers

CSB 15 - P Narrow Flange for Flush / Recess Mounting

CSB 15 - F Standard Flange for General Purpose



## Barrel Slot Diffusers

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

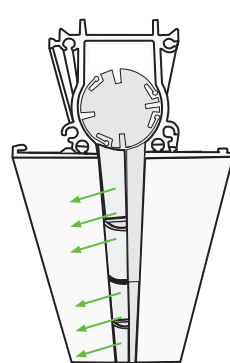
### Diffuser weights including plenum

CSB 15-F/P-S1 5kg/m

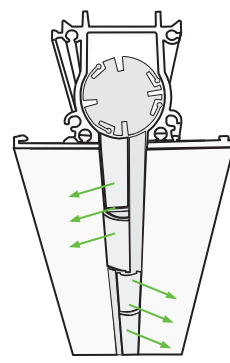
CSB 15-F/P-S2 7kg/m

CSB 15-F/P-S3 9kg/m

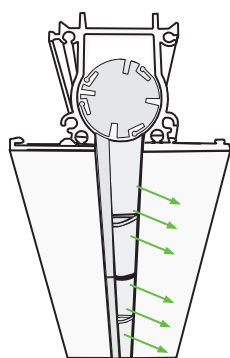
CSB 15-F/P-S4 12kg/m



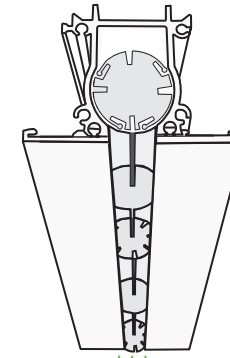
One way  
throw left



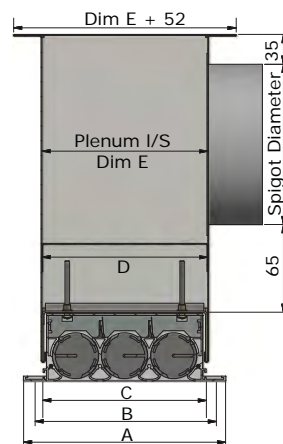
Two way  
throw



One way  
throw right



Vertical  
throw



### ORDER EXAMPLE

CS-BF-15/BL/1000/4SL/9010-Matt/1-END

Type \_\_\_\_\_  
 Nozzle Type \_\_\_\_\_  
 Black Barrel \_\_\_\_\_  
 Length \_\_\_\_\_  
 No of Slots \_\_\_\_\_  
 Finish \_\_\_\_\_  
 Ends \_\_\_\_\_

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			

## 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  $5.8 \times 0.74 = 4.3$  m

Pressure drop 21 Pa

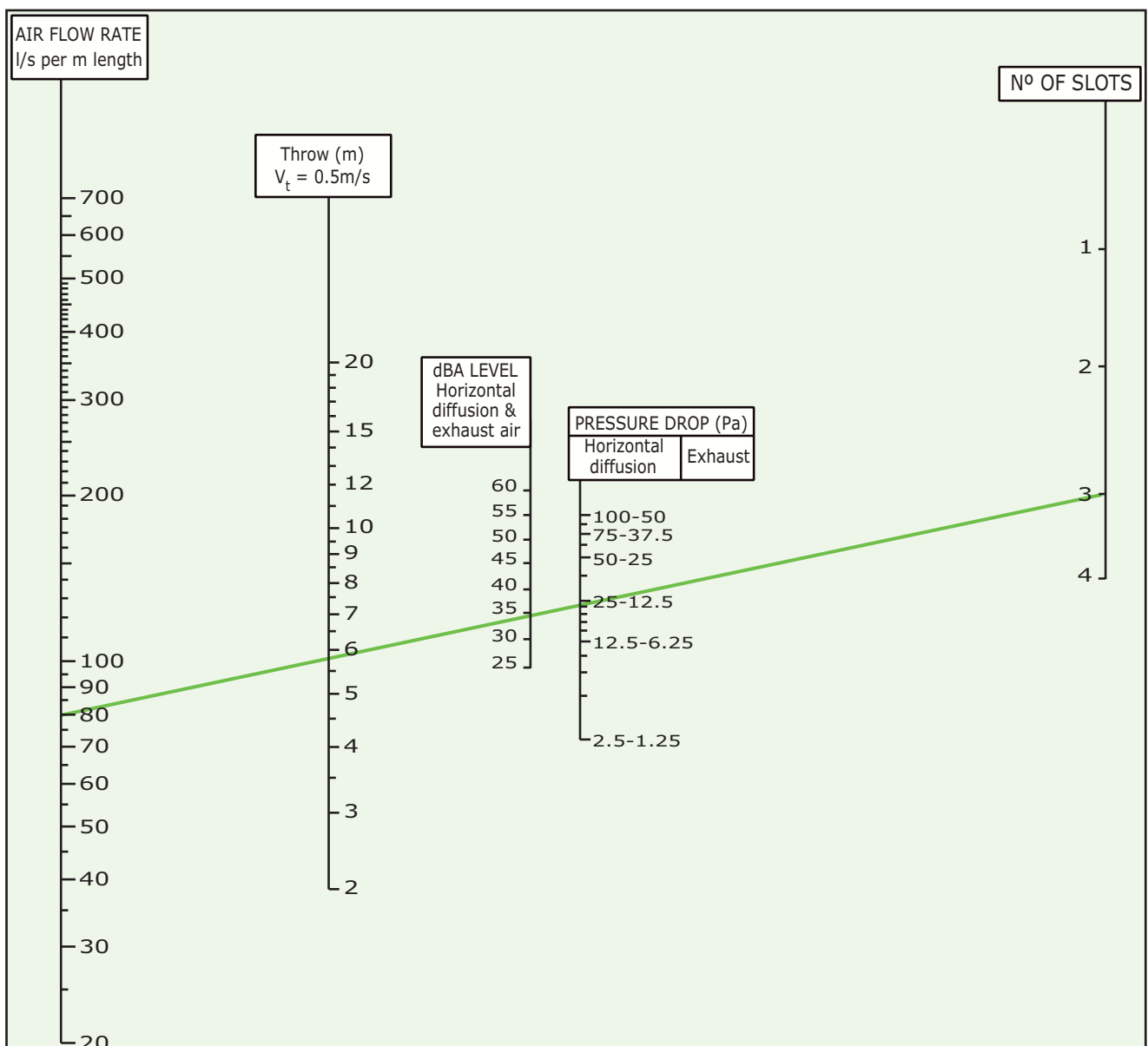
Noise level 31 dBA

### 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



## 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

<b>PBHL</b>	High-Line Plenum box to suit CS / LCS / DSL / HF Linear Slot Diffusers
<b>PBLL</b>	Low-Line Plenum box to suit CS / LCS / DSL / HF Linear Slot Diffusers
<b>PBHLB</b>	High-Line Plenum box to suit CSB Barrel Slot Diffusers
<b>PBLLB</b>	Low-Line Plenum box to suit CSB Barrel Slot Diffusers
<b>PBHLH</b>	High-Line Plenum box to suit FCD Fan Coil Diffusers
<b>PBLLH</b>	Low-Line Plenum box to suit FCD Fan Coil Diffusers
<b>SE</b>	Side Entry spigot
<b>TE</b>	Top Entry spigot
<b>CC</b>	Circular Connection
<b>RC</b>	Rectangular Connection
<b>FO</b>	Flat Oval Connection
<b>FDC</b>	Cord-operated Flap Damper (optional)
<b>FDQ</b>	Quadrant-operated Flap Damper (optional)
<b>LINED</b>	6mm acoustic lining (optional) reaction to fire class C-s3-d0 to EN 13501-1: 2007
<b>BFL</b>	Internal perforated plate for Supply air diffusers (optional)
<b>BLACK</b>	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

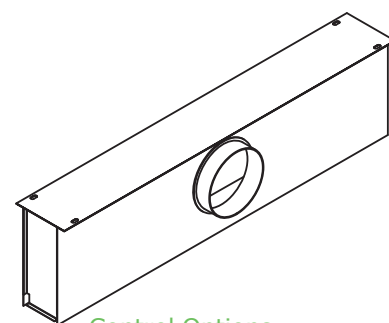
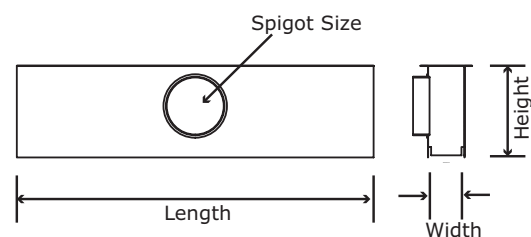
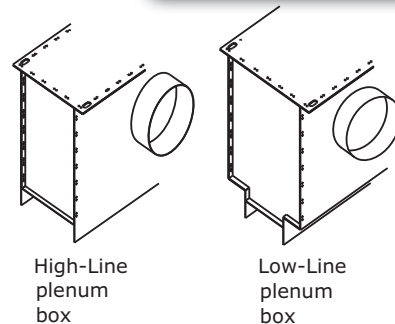
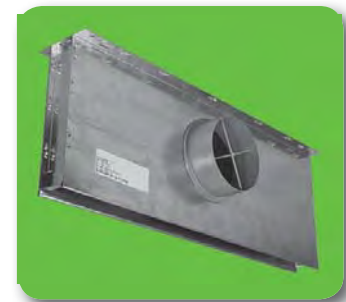
Length	PBHLH / Fan Coil Diffuser length PBHL, PBHLB / Linear Slot diffuser length
Width	PBHLH / Fan Coil Diffuser width PBHL, PBHLB / Number of slots
Height	SE – Spigot diameter or height + 100mm as standard TE – as specified by customer (200mm minimum recommended)

### Order

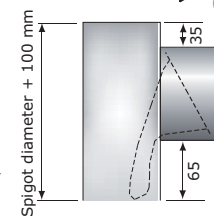
When ordering plenum boxes please specify length, width & height, spigot size and position (Top or Side Entry) and control options. Please note that the plenum height should in general be 100mm greater than the spigot diameter (Side Entry applications).

### ORDER EXAMPLE

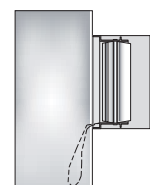
Type	PBHL/HF/2/1200/250/250/SE/147/2CC/OBSS/LINED
Diffuser type	
Number of slots	
Plenum box Length	
Plenum box Width	
Plenum box Height	
Entry position	
Spigot Size	
Spigot Number / Shape	
Option	
Option	



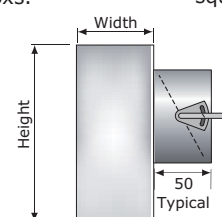
### Control Options



**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)

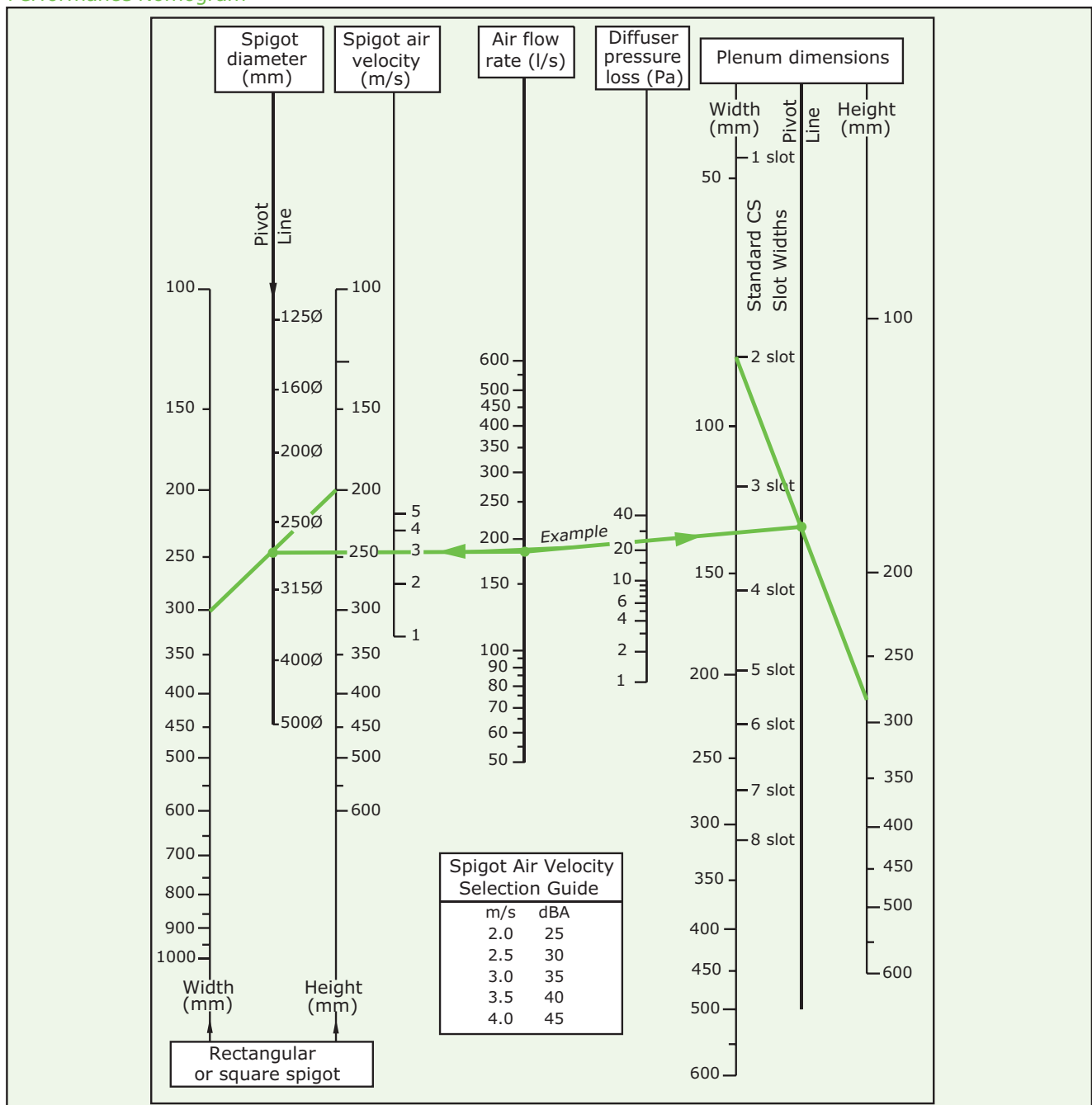
By way of example, referring to the data in the CS section, consider a diffuser handling 180 l/s total with a pressure drop of 25Pa. Projecting from this volume through the diffuser pressure loss, then pivot on the plenum dimensions to suit the diffuser 2 slot width, which gives a minimum plenum height 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.

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



### 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.



## 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

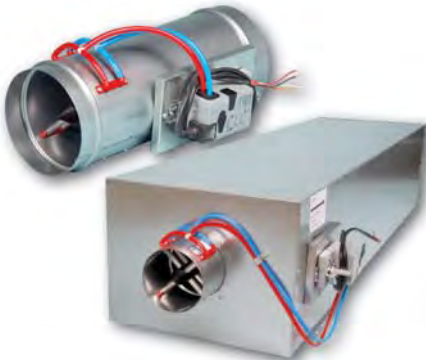
Designed to be installed in various ceiling systems, we have a complete range to suit both performance and aesthetical requirements. Most diffusers are made from aluminium and can be ordered with or without plenum boxes for easy duct work. Diffusers can be ordered in customer specified colours (PPM/G);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