WATERLOO
A Swegon Group Company

Acoustic Transfer Grilles

DSR Acoustic transfer grille

DSRX Acoustic transfer grille for variable depth

DSR2 Back to back acoustic transfer grille

Acoustic Transfer Grilles

DSR / DSRX

Introduction

The Waterloo DSR has been developed for use in partitions and doors where a reduction in noise transfer or “cross-talk” from one space to another is required, as well as ventilation air transfer.
The DSR is manufactured from high quality aluminium extrusions with channel section cores forming a labyrinth airway lined internally with acoustic damping media. The cores are retained within a flanged frame which is fitted with a sealing gasket. DSRX units are supplied with fixed border and matching adjustable rear border frame.
DSR units will only provide acoustic isolation improvements over that of a clear aperture. DSR units may be used in series to increase transmission loss.

Product Description

DSR	Acoustic transfer grille
DSRX	Acoustic transfer grille for variable depth partition of 40 to 100 mm with rear matching frame
DSR2	Back to back acoustic transfer grille

Features

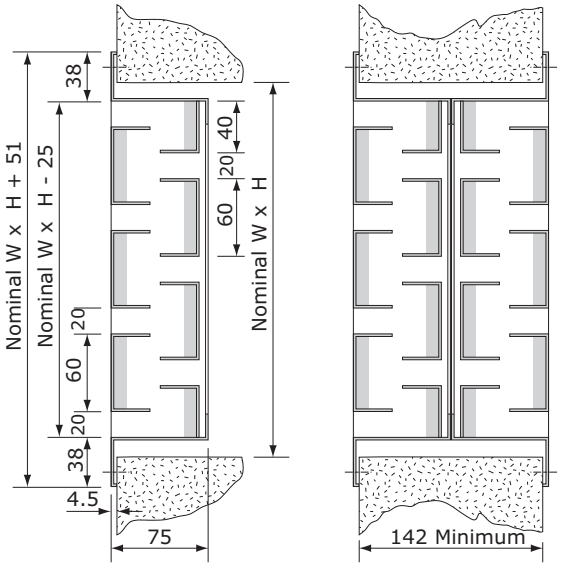
- Suitable for partition, wall or door mounting
- Easy to install
- Fits most standard doors and partitions
- Easy to clean
- Modular sizes

Finishes

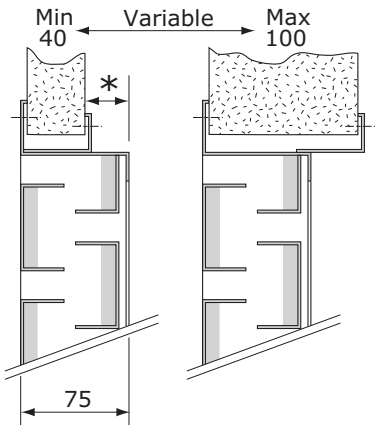
PPG9010 (RAL 9010 Gloss - 80% Gloss White)
PPM9010 (RAL 9010 Matt - 20% Gloss White)
PPM9006 (RAL 9006 Matt - 30% Gloss Silver)
Other colours available on request

Sizes

Width 150 minimum to 1025 maximum.
Height 125 minimum to 1005 maximum in 80mm increments.



DSR DSR2



DSRX

Door / Partition mounting 40 - 100mm thick
* Note: 30mm protrusion with minimum depth of door

Free Area
23%

Order Example

DSR/425/285/9010-Matt

Type
Nominal width
Nominal height
Finish

Acoustic Transfer Grilles

DSR / DSRX

Selection Criteria

Select a DSR grille to handle 70 l/s when mounted within a 100mm partition and a maximum permitted pressure loss of 20 Pa.

Spectrum Correction (Add to dBA)

Frequency (Hz)					
125	250	500	1K	2K	4K
+1	+4	+3	0	-10	-16

From Nomogram Select Size 425 x 365

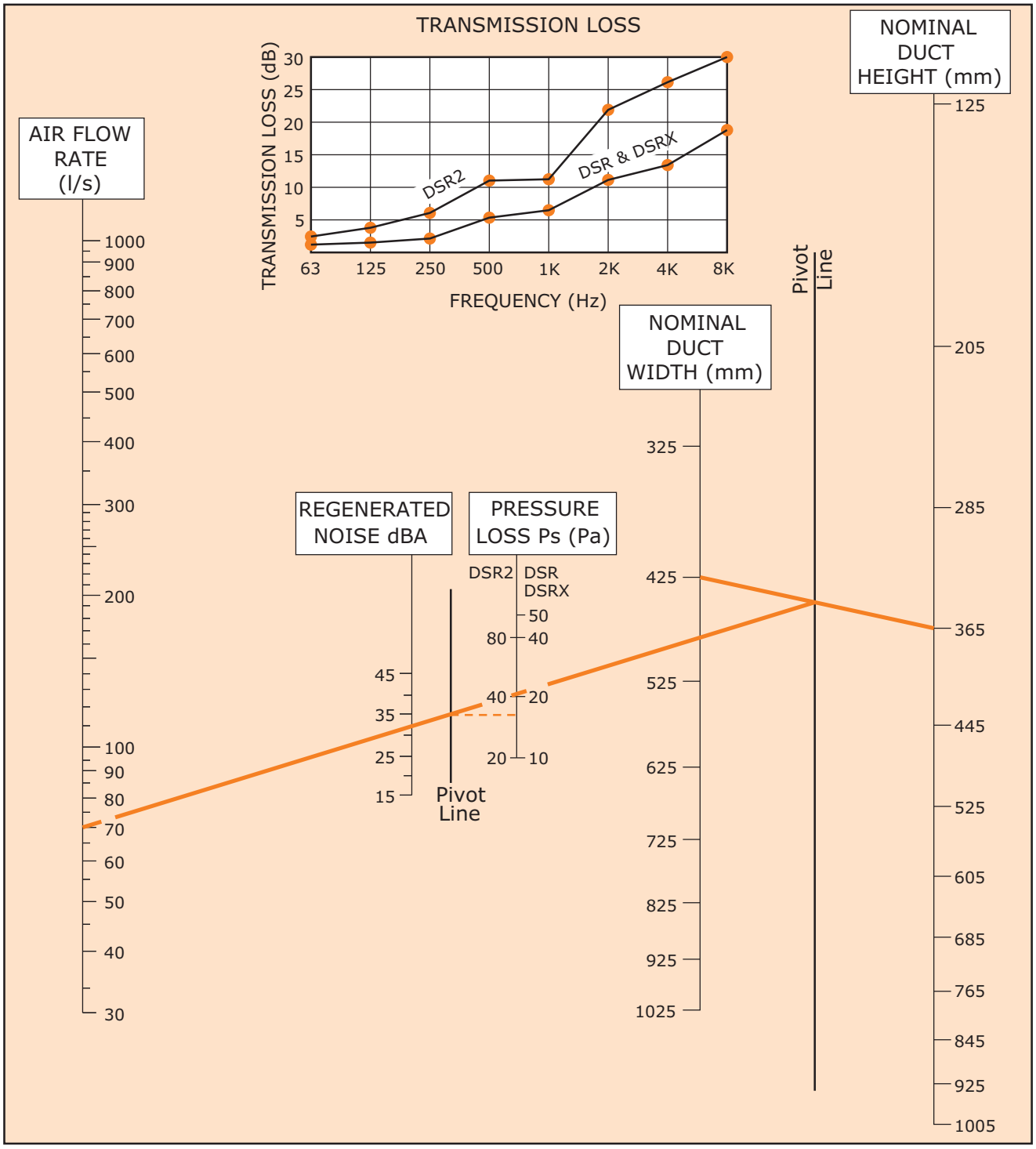
Pressure loss = 16 Pa (DSR)

31 dBA

Sound Power Spectrum is:

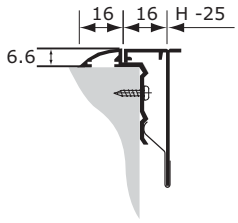
Freq (Hz)	125	250	500	1K	2K	4K
SWL (dB)	32	35	34	31	21	15

Performance Nomogram

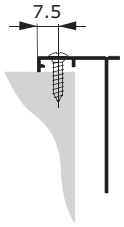


Controls and Fixing Options

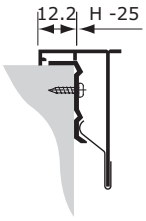
Fixing Options



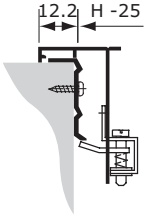
Frame: R16
Mounting: RCCF



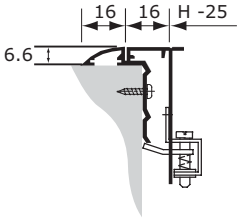
Frame: R25 / R32
Mounting: SF



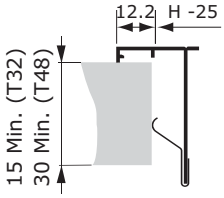
Frame: R25 / R32
Mounting: AFCF



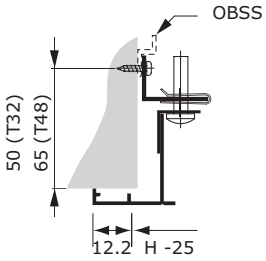
Frame: R25 / R32
Mounting: AFHS



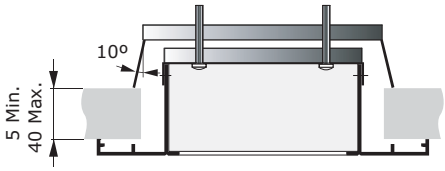
Frame: R16
Mounting: RCHS



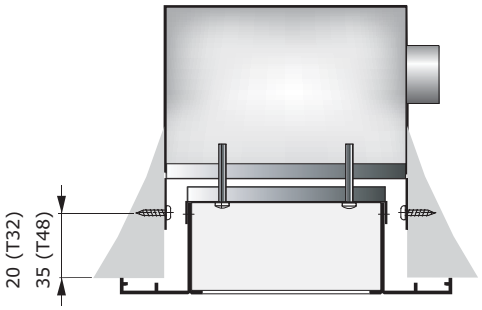
Frame: R16 / R25 / R32
Mounting: CF



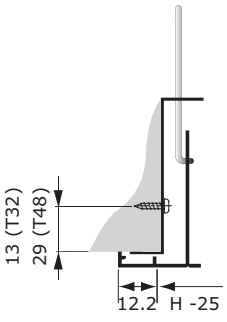
Frame: R16 / R25 / R32
Mounting: CRB



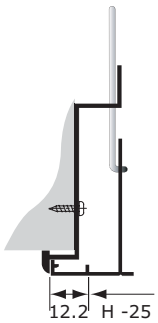
BSSBD (R16 / R25 / R32)
Duct / Plasterboard fixing



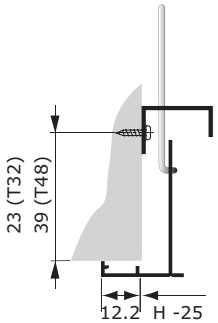
BSSBP (R16 / R25 / R32)
Plenum fixing (-15mm)



Frame: R25
Mounting: AFVS



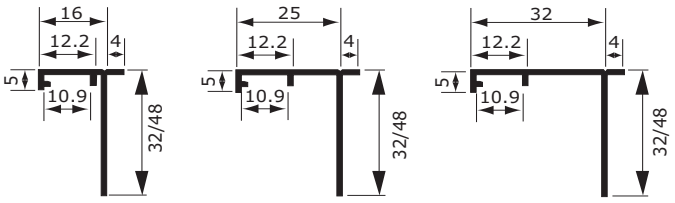
Frame: R25
Mounting: PFVS



Frame: R16 / R25 /R32
Mounting: VS

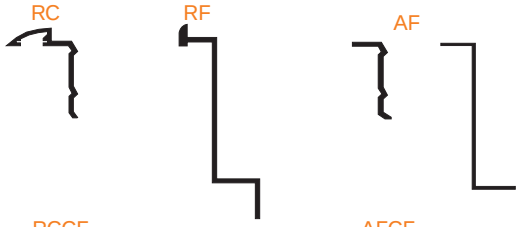
Standard Frames

Standard Frames



R16 R25 R32

Sub Frames



RCCF RCHS PFVS AFCF AFHS AFVS

Overall Grille Sizes
Grille with R16 = Nominal W/H + 7mm
Grille with R25 = Nominal W/H + 25mm
Grille with R32 = Nominal W/H + 39mm
Grille with RC = Nominal W/H + 39mm
Grille with PF = Nominal W/H + 21mm

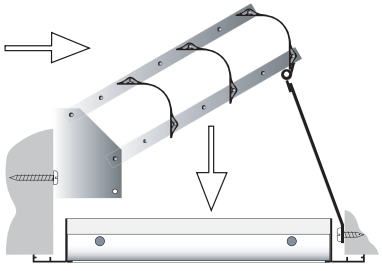
Note:
AF and RC subframes can be made to a maximum size of 800mm in any direction in one piece. For sizes above that, we supply in parts for assembly on site by others.

DT-2M - Duct Fitted

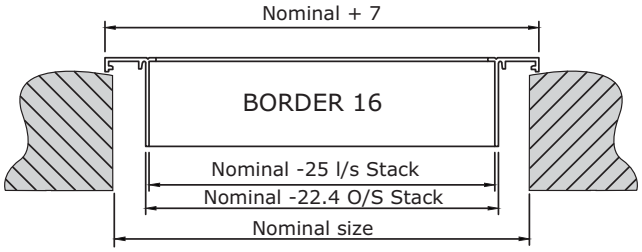
The hinged strip is used to calibrate the amount of air desired, by altering the angle of the blades and therefore altering the amount of disruption to the airflow.

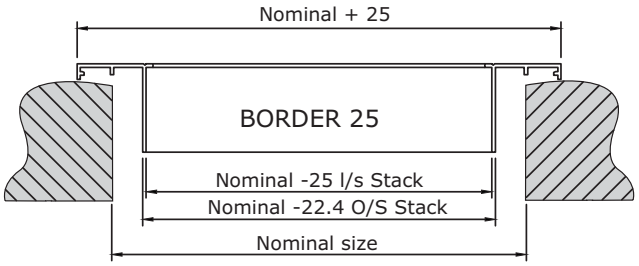
Sizes for DT-2M
Width = 100 - 1225
Height = 75 - 425

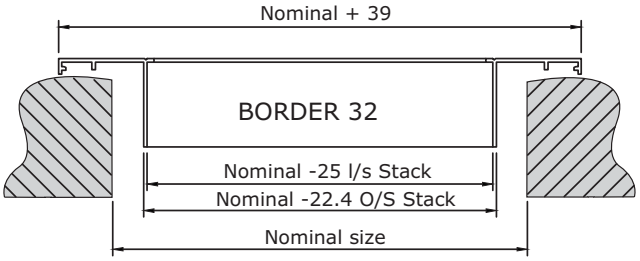
Correction for Grille + Damper		
Supply 0° spread	dBA + 2	P_S x 1.3
Supply 45° spread	dBA + 2	P_S x 1.1
Exhaust	dBA + 2	P_S x 1.2



Grille Nominal Sizes







Grille Fixing Selection

Types	SF	CF	CRB	VS	AFVS	PFVS	BSSB	AFCF	AFHS	RCCF	RCHS
1H / 2H / 1V / 2V	A/C	A	A/C	A/C	A/C	A/C	A/B/C	A	A/C	A	A/C
1KH / 2KH	A/C										
1KV / 2KV	A/C										
1HM / 2HM	A/C										
1VM / 2VM	A/C										
PER / 3HF	A/C	A		A/C	A/C	A/C		A		A	
GC5 / 3HG / 3HJ	A/C	A	A/C	A/C	A/C	A/C	A/B/C	A	A/C	A	A/C
ALF / 2ALF	A/C	A		A/C	A/C	A/C		A		A	
ALN / ALM / ALG / ALJ	A/C	A	A/C	A/C	A/C	A/C	A/B/C	A	A/C	A	A/C
ALG2 / ALJ2	A/C	A	A/C	A/C	A/C	A/C		A	A/C	A	A/C
ALM2 / ALN2	A/C	A	A/C	A/C	A/C	A/C		A	A/C	A	A/C
2ALM / 2ALJ / ALG10 / ALJ10	A/C	A		A/C	A/C	A/C		A		A	A/C
NSA / NSB / DVA / DVB	A/C										
DVC / NSC	A/C	A		A/C	A/C	A/C		A		A	
RTC / 2RTC	A/C										
BORDER STYLES	25T/32T	16T/25T/32T	16T/25T/32T	16T/25T/32T	25T/32T	25T	RTC/16T 25T/32T	25T/32T	25T/32T	16T/RTC-R16	16T/RTC-R16

A = SUITABLE FOR DUCTING AND WALL
B = SUITABLE FOR PLASTERBOARD
C = SUITABLE FOR CEILING

Removable Cores

Types	Removable	RCCF	RCHS	PFVS	AV	AFCF	AFHS	RTC	RCG - GC5	Special
1H/2H/1V/2V	Grille	B	B	B	N	N	N			
PER/GC5	Grille	B	B	B	N	N	N			
RCG - GC5	Core								B	
3HG/3HJ	Grille	B	B	B	N	N	N			
3HG/3HJ	Core							B		B
3HF/ALF	Grille	B		B	N	N				
3HF/3HJ	Core							B		B
ALN/ALM/ALG/ALJ	Grille	B	B	B	N	N	N			
ALN/ALM/ALG/ALJ	Core							B		B
ALG10/ALJ10	Grille	B		B	N	N				
ALG10/ALJ10	Core							B		B
NSC/DVC	Grille	B		B	N	N				
RTC/2RTC	Grille	B								
RTC/2RTC	Core							B		

B = BEADED FRAME
N = NON BEADED FRAME
RTC = R5 OR R16 FRAME WITH CORE AND PACKERS
SPECIAL = PART 6200001 FRAME WITH CORE AND BRACKET INCORPORATING TERRY CLIP

Grille Plenum Chambers

Introduction

Correct selection and sizing of distribution plenum chambers is critical because grille air resistance is very low relative to the distribution ductwork resistance. It is therefore recommended that whenever possible grilles are served by low velocity stub ducts from branch ducting systems fitted with correct balancing controls.
Where it is necessary to specify and use grille plenums a generous allowance for commissioned noise generation should be made.

Product Description

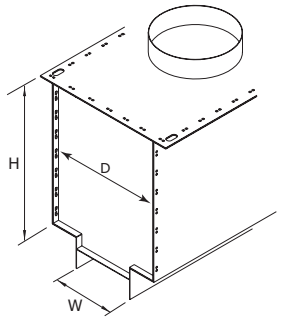
PBG	Individual grille plenum
PBG/LL	Low line grille plenum
NRG	Neck reducer
PBLG	Linear grille plenum
PBLG/LL	Low line linear grille plenum
PBSG	Security grille plenum

Spigot Options

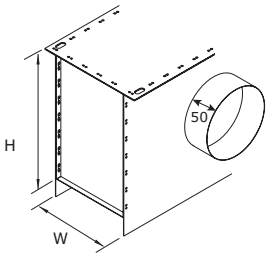
SE	Side Entry
TE	Top Entry
1CC	1- Circular Connection
1RC	1- Rectangular/Square Connection
1FO	1- Flat Oval Connection

Features

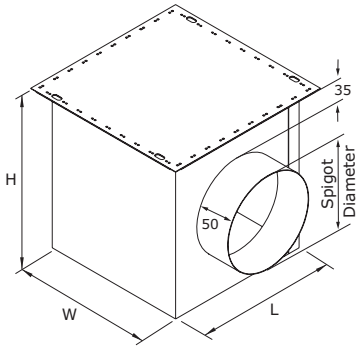
- Plated steel with stitched seam joints.
- Standard circular connection diameters: 97, 122, 157, 197, 247, 312 and 397 Ø
- Available with circular, square,rectangular or flat oval spigots in either top or side entry applications
- Standard or Low-line configurations
- Optional 6mm internal thermal/acoustic lining



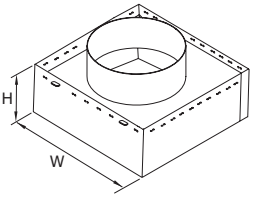
PBLG/LL - Top entry Low-line linear grille plenum box.



PBLG - Side entry Linear grille plenum box.



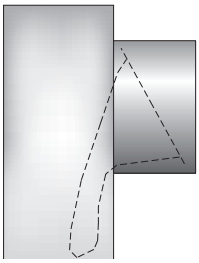
PBG - Side entry grille plenum box



NRG - Neck Reducer

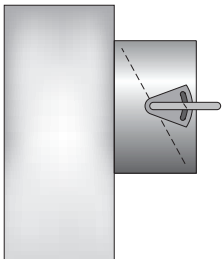
Note: The connection between the grille and plenum is adequately sealed for most installations, although secondary additional sealing may be required at the discretion of the installers, if the leakage rate required is particularly low.

Control Options



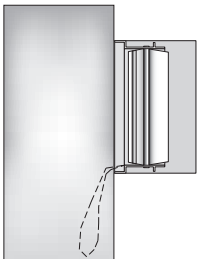
FDC

Cord operated flap damper for mounting within circular spigots to plenum chambers. The cord should be fed through the air terminal device ready for commissioning.



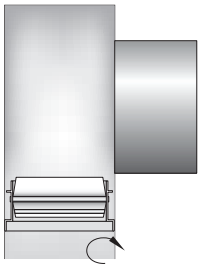
FDQ

Flap damper with external quadrant control for mounting within circular spigots to plenum chambers. The quadrant is accessible from outside the duct and the damper can be locked in any position.



OBCO

Cord operated opposed blade damper for installation within square or rectangular spigots to plenum chambers. The cord should be fed through the air terminal device ready for commissioning.



OBSS / ED

Standard opposed blade damper for diffuser or duct mounting. Adjustable by screwdriver inside the duct or through the face of the air terminal device. The ED is an individually adjustable blade device for equalising airflow across the diffuser.

Finish

PBG/NRG Galvanised sheet steel

Dimensions

Length	Extract Grille length
Width	Extract Grille width
Height	SE – Spigot diameter or height + 100mm as standard
	TE – as specified by customer (200mm minimum recommended)

Order

When ordering plenum chambers 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 that the spigot diameter (Side Entry applications).

Plenum Order Example

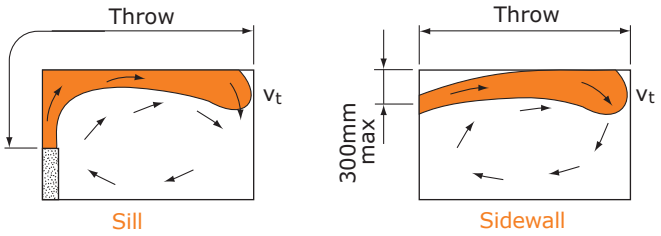
PBG-1H/570/570/400/SE/1CC/157dia/Lined

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

Technical Information

Basis of Throw

Unless noted differently on the individual supply grille performance information, all Throw performance data is based on isothermal supply air conditions, to a terminal velocity (v_t), in the centre of the jet, of 0.5 m/s. See tables below for other conditions.



Remark:

If the distance between grille and ceiling is more than 300 mm, the throw will be reduced by 30%.

Jet Temperature Decay Characteristics

The following graph indicates the jet residual temperature at

various throw distances.

Given throw = x (m) and supply air differential = ΔTo

Calculate √Ac = √Grille Area (m²)

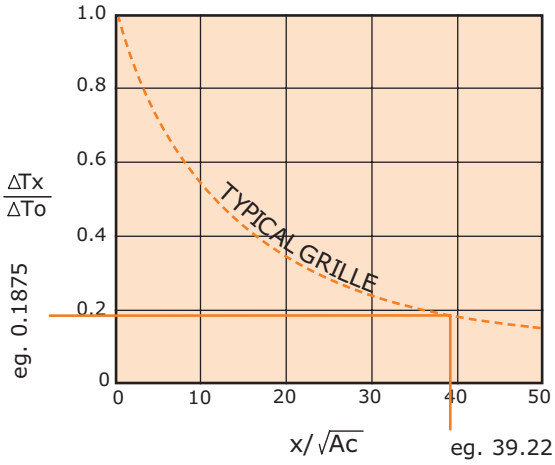
Calculate x/√Ac

Enter graph at required value x/√Ac

Exit graph at value ΔTx /ΔTo

Calculate ΔTx = ΔTo x (ΔTx / ΔTo)

ΔTx = Residual temperature differential (°C)



Working Example for Temperature Decay Calculations

1H/300/150/R25/SF

Supply Air Temp = 18 °C

Room Temp = 20 °C

ΔTo = 2 °C

Air Volume = 200 l/s

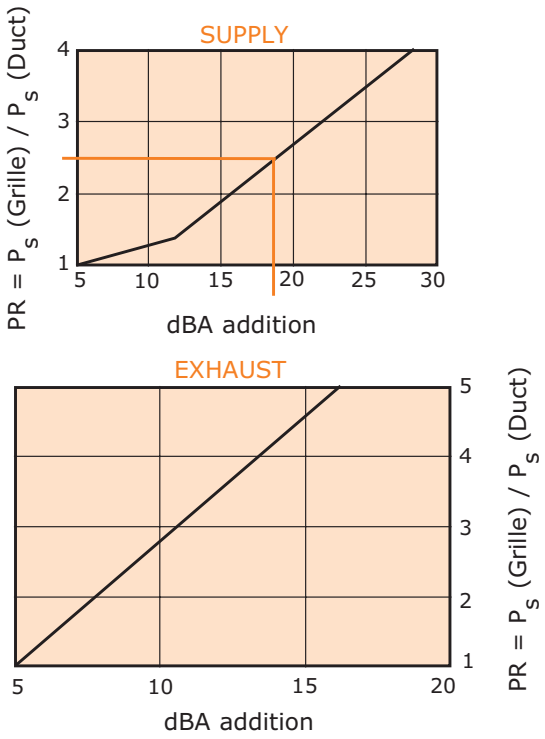
From Performance data see page 24

Throw = 8.32 m

x√Ac = 8.32/ √(0.3 x 0.15) = 39.22

Therefore = ΔTx = 0.375 °C and the air temperature at maximum throw (8.32 m) is = 19.6 (19.625) °C

Throttled Damper Factors



Example of Throttled Damper Factor Handling

Consider a Supply Grille with Damper

P_S (Grille) = 50 Pa

P_S (Duct) = 20 Pa

PR = 2.5

Therefore addition is = 18 dBA

Assume that we are using the same grille as in the Temperature Decay Calculation (above);

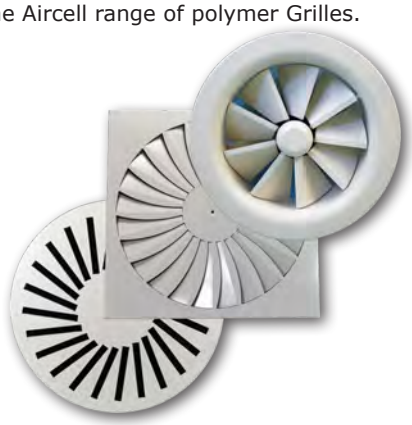
From the Performance data on page 8,

dBA = 30 + 18 = 48 dBA

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.



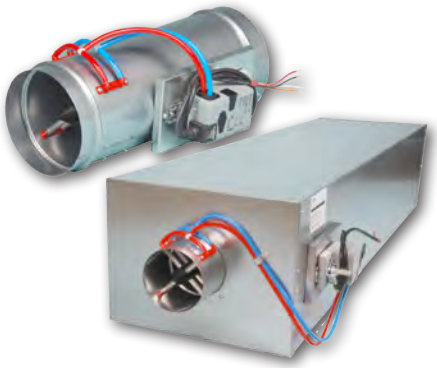
DIFFUSERS

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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Waterloo declare that, at the time of print, all products are in accordance with relevant directives, as identified by HEVAC and other European Organisations and will display the CE Marking where required.

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