

Series K Heavy duty Grilles

1KH Single set of horizontal blades

1KV Single set of vertical blades

2KH Double set of blades with front set horizontal

2KV Double set of blades with front set vertical



Heavy Duty Adjustable Blade Grilles

1KH / 1KV / 2KH / 2KV

Introduction

The Waterloo Series K adjustable, single and double deflection, grilles have been designed for industrial and heavy commercial applications and may be used for supply and exhaust systems. The vanes are screw fixed through nylon bearings to eliminate vane rattle - even at very high supply velocities; the vanes can also be tightened on site to suit individual applications. Grille vanes are individually adjustable to allow jet spread or deflection to be set within 45° of the duct axis.

Product Description

- 1KH** Heavy duty single set of horizontal blades
- 1KV** Heavy duty single set of vertical blades
- 2KH** Heavy duty double set of blades with front set horizontal
- 2KV** Heavy duty double set of blades with front set vertical
- OBSS** Allen key operated opposed blade damper
- SF** Screw fixing

Features

- Aluminium alloy extrusions with welded mitred frames
- Heavy duty frames and vanes for robust construction
- Single or double deflection for optimum air pattern adjustment
- Vibration free vane fixing to maintain setting and eliminate blade rattle
- Adjustable blade tension to suit low/high velocity applications

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

Series 1K 11 kg/m² face area

Series 2K 17 kg/m² face area

OBSS/ED 9.5 kg/m² face area

Sizes

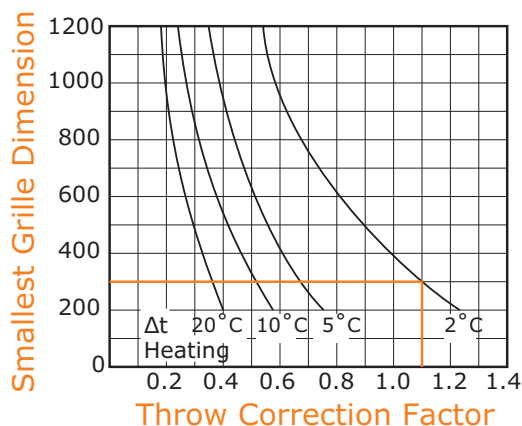
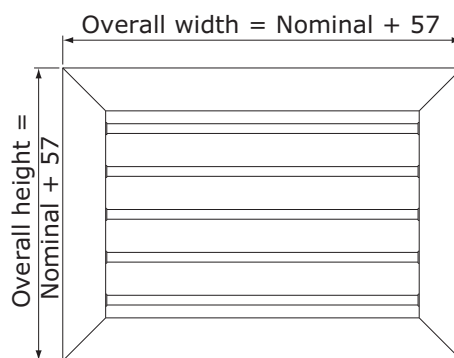
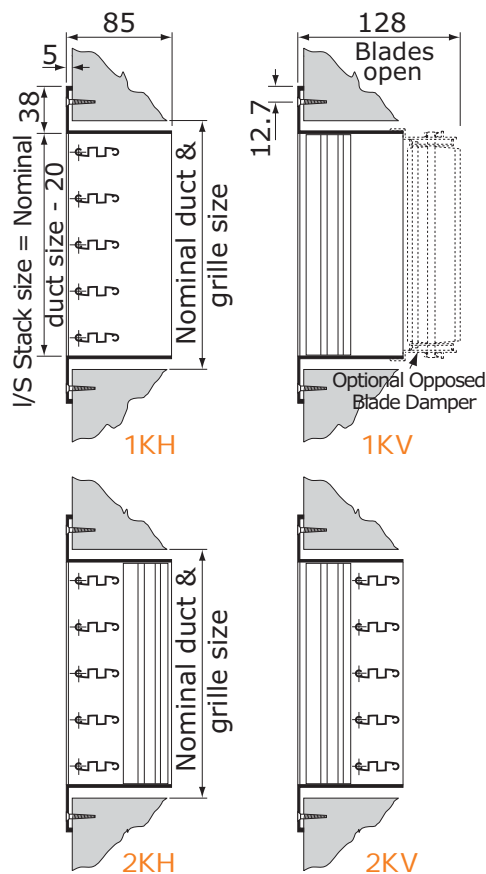
Minimum Size - 200 x 200

Maximum Size - 1100 x 1100

Standard increments 50/100 mm

Fixing

Screw through flange only with a 38 mm border.



ORDER EXAMPLE

1KH/600/200/R38/SF/9010-Matt /OBSS

Type _____
 Length _____
 Height _____
 Border _____
 Fixing (Screw Fix as standard) _____
 Finish _____
 Damper _____

Heavy Duty Adjustable Blade Grilles

1KH / 1KV / 2KH / 2KV

Selection Criteria

Data presented below is based on isothermal supply air conditions with 0° spread. Data may be corrected for other applications.

dBA is based on a room absorption of 8 dB for sound power ref 10^{-12} w.

Ps is static pressure loss (Pa).

Throw is the forward distance travelled by the jet to where the velocity has retarded to 0.5m/s.

Data is based on free jet application. If grille is located within 400mm of the ceiling throw is increased by 50%. For exhaust applications multiply

Ps x 1.5 and add 3 dB to dBA.

Terminal velocity correction factors					
V _t (m/s)	1.0	0.8	0.5	0.4	0.3
Throw multiplier	0.5	0.6	1.0	1.3	1.7

Spectrum correction factors						
Frequency(Hz)	125	250	500	1k	2k	4k
0° Blades	+10	+11	+11	+9	+8	0
45° Blades	+17	+17	+16	+14	+12	0

Selection Example

2KH/300/300/SF

Air Volume 250 l/s

• Grille @ 0° deflection

Throw 8.8 m dBA 24 P_s 13 Pa

Vertical projection heating

Using the graph determine the throw correction factor to be applied to the tabulated data, based on the smallest nominal grille dimension and the heating differential.

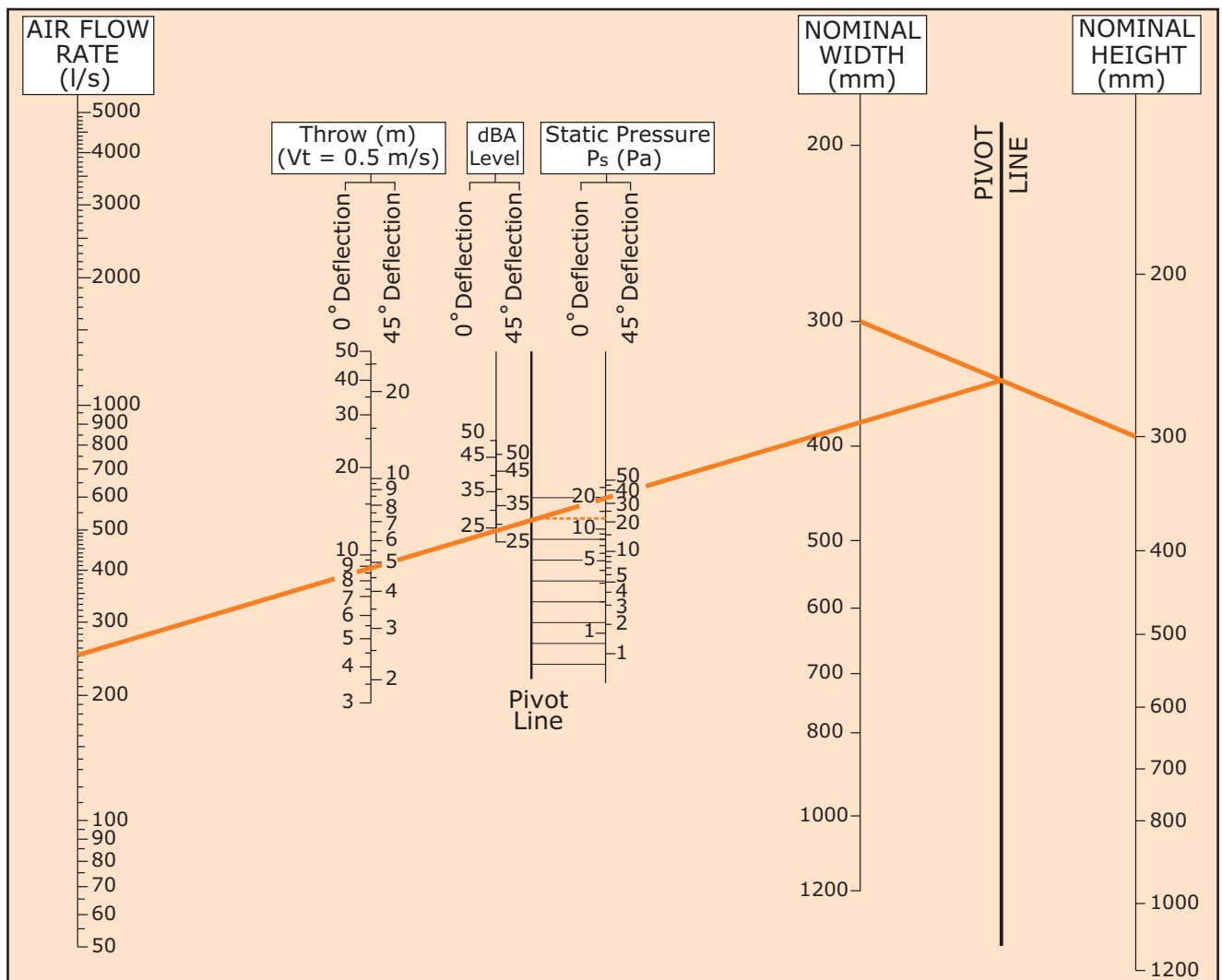
For example: 600 x 300 grille

Discharging at a 2°C heating differential results in a correction factor of 1.1.

When applied to the nomogram the maximum downward projection is established.

Correction factors for grilles with an open damper					
Smallest grille size	200+	250+	300+	600+	1000+
dBA addition	9	8	7	4	3
P _s multiplier	2.0	1.9	1.8	1.5	1.2

Performance Nomogram



Plenum Box to suit Grilles

PBG / NRG Neck Reducer

Introduction

The plenum boxes for Grilles constitute an easy and cost-effective way to connect the grilles back to ductwork. 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.

An internal baffle plate can be fitted to the plenum box to help evenly distribute the airflow over the whole surface of the grille if used for Supply air.

Product Description

PBG	Plenum Box for Grilles
NRG	Neck Reducer
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

- Plated steel with stitched seam joints
- 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

PBG/NRG Galvanised sheet steel

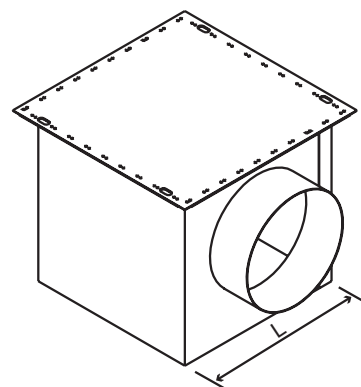
Dimensions

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)

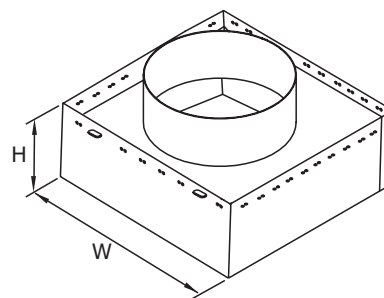
Order

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 than the spigot diameter (Side Entry applications).

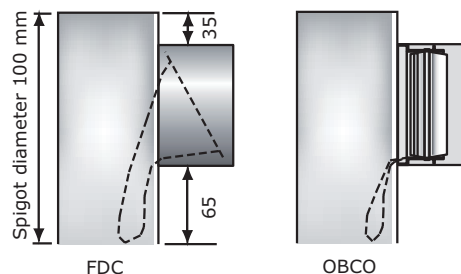
Note: The connection between the grille and plenum is adequately sealed for most installations, although secondary additional sealing may be required at the discretion of the installers, if the leakage rate required is particularly low.



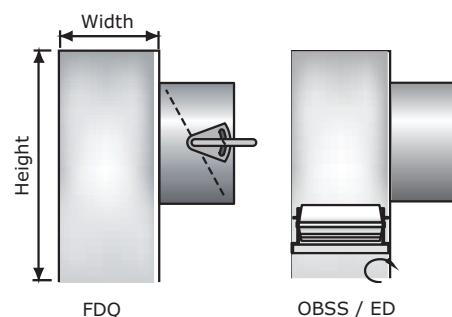
PBG - Side Entry grille plenum box



NRG - Neck Reducer



Control Options



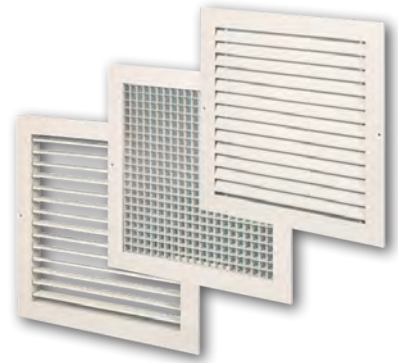
PLENUM ORDER EXAMPLE

Type	PBG-1H/570/570/400/SE/1CC/157dia/Lined
Plenum box length	
Plenum box width	
Plenum box height	
Spigot position	
Spigot type	
Spigot size	
Acoustic lining	

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

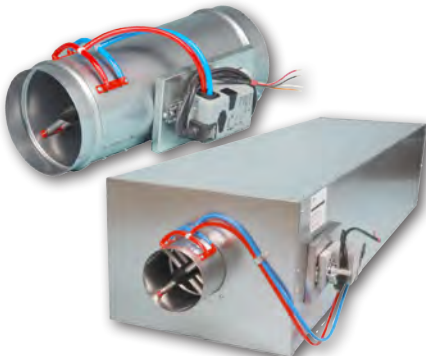
Designed to be installed in various ceiling systems, we have a complete range to suit both performance and aesthetical requirements. Most diffusers are made from aluminium and can be ordered with or without plenum boxes for easy duct work. Diffusers can be ordered in customer specified colours (PPM/G);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



Waterloo Air Products Ltd

Head Office:

Mills Road, Aylesford,
Maidstone, Kent ME20 7NB
Tel: +44 (0)1622 711 500
Fax: +44 (0)1622 710 648
email: sales@waterloo.co.uk
internet: www.waterloo.co.uk

Northern Office:

Hyde Park House, Cartwright Street,
Newton, Hyde SK14 4EH
Tel: +44 (0)161 367 1264
Fax: +44 (0)161 367 1262
email: sales@waterloo.co.uk
internet: www.waterloo.co.uk



FM 27823



EMS 590755

All products conform to the Terms and Conditions of Waterloo Air Products Ltd a copy of which are available upon request. Due to our continuous research and development programme, Waterloo Air Products Ltd reserve the right to alter products and prices without prior notification.

Copyright Waterloo Air Products Ltd 2019

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.