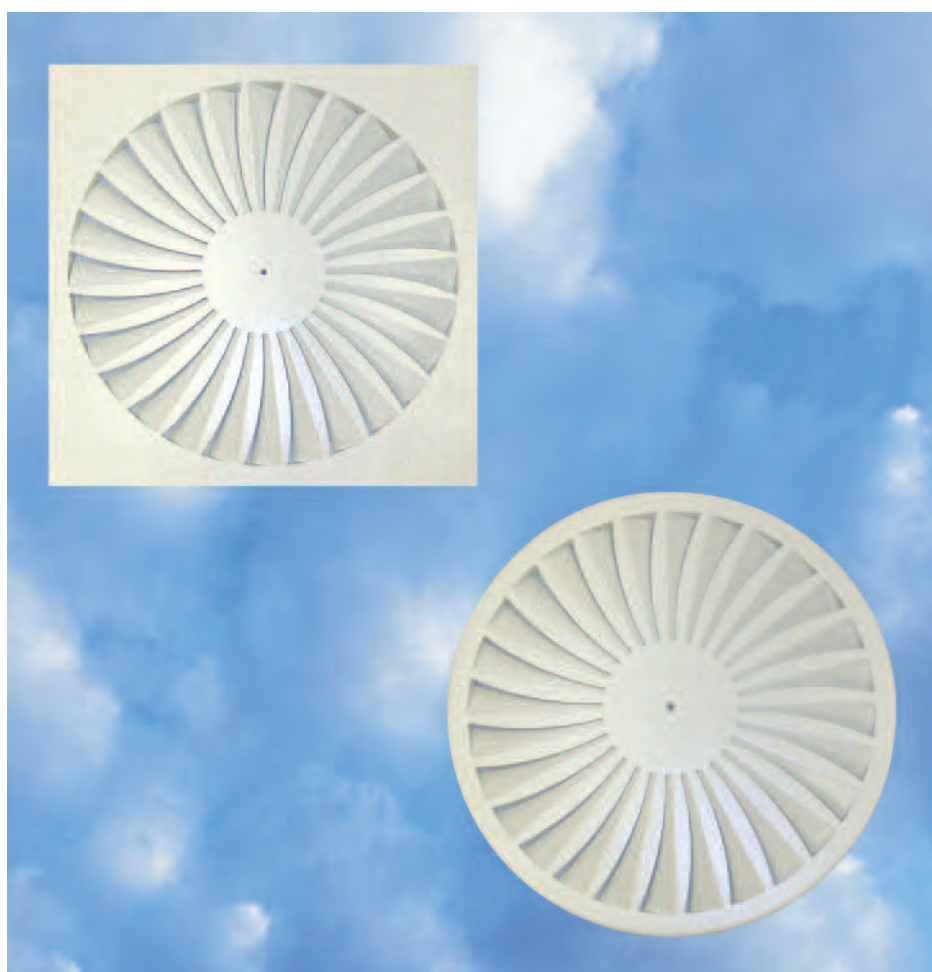


# Fixed Pattern Swirl Diffuser

Model OD-5

## Features

- Horizontal Air Pattern Swirl Diffuser
- 5 Standard Sizes
- Square or Circular Panels
- Supply or Extract Air Application
- Side or Top Entry Plenum Box



# Air Diffusion

Grilles Diffusers Louvres Chilled Beams

Ruskin Air Management Limited  
[www.ruskinuk.co.uk](http://www.ruskinuk.co.uk)

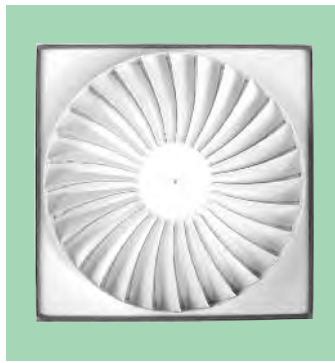
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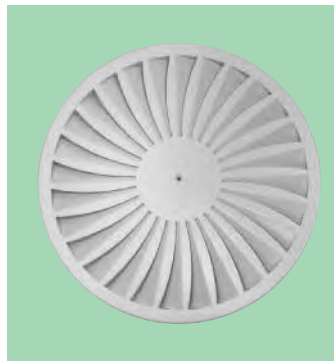
## Description



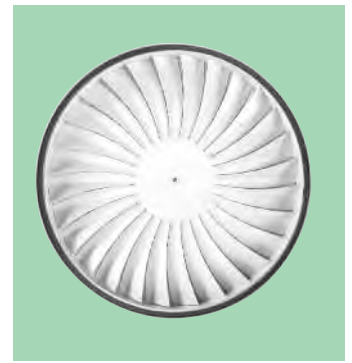
**OD-5/K1 front view**



**OD-5/K1 rear view**



**OD-5R/1 front view**



**OD-5R/1 rear view**

The Model OD-5 is a fixed horizontal air pattern swirl diffuser available in either a square or circular panel, suitable for mounting heights up to 4.5 metres. A temperature differential of -10 to 0K degrees between the supply air and room is recommended which together with a low static pressure drop and low noise levels are performance advantages of the diffuser.

A purpose designed top or side entry plenum box is normally supplied with the diffuser to ensure the correct air - flow onto the diffuser. If required a cord or quadrant operated single leaf balancing damper can be fitted to the plenum inlet spigot. The plenum box also provides a secure method of installation for the complete assembly.

The Model OD-5 fixed pattern swirl diffuser may be used for either supply or extract and typical applications include offices, retail premises, hotels, reception areas, fitness suites and other similar areas.

### Specification

Formed on a CNC press machine from sheet steel material.

### Installation Methods

#### Square Panel Diffuser

Single countersunk screw hole in centre of panel.

**or**

Four countersunk screw holes located in the corners of the panel.

#### Circular Panel Diffuser

Single countersunk screw hole in centre of panel.

Alternatively a plain panel without screw holes may be supplied on request.

When a diffuser is supplied with a plenum box, the diffuser is fixed to the plenum using a single central fixing screw. The combined plenum/diffuser assembly is supported via wires or drop rods (by others).

### Size Range

Nominal square panel size: 300 x 300mm, 400 x 400mm, 500 x 500mm, 600 x 600mm and 625 x 625mm. (Actual overall size - 5mm)

Nominal circular panel size: 300mm diameter, 400mm diameter, 500mm diameter, 600mm diameter and 625mm diameter.

See page 5 for full dimensions.

### Model Types

**Model OD-5/K1:** square diffuser panel having single central fixing.

**Model OD-5/K4:** square diffuser panel having four corner fixings.

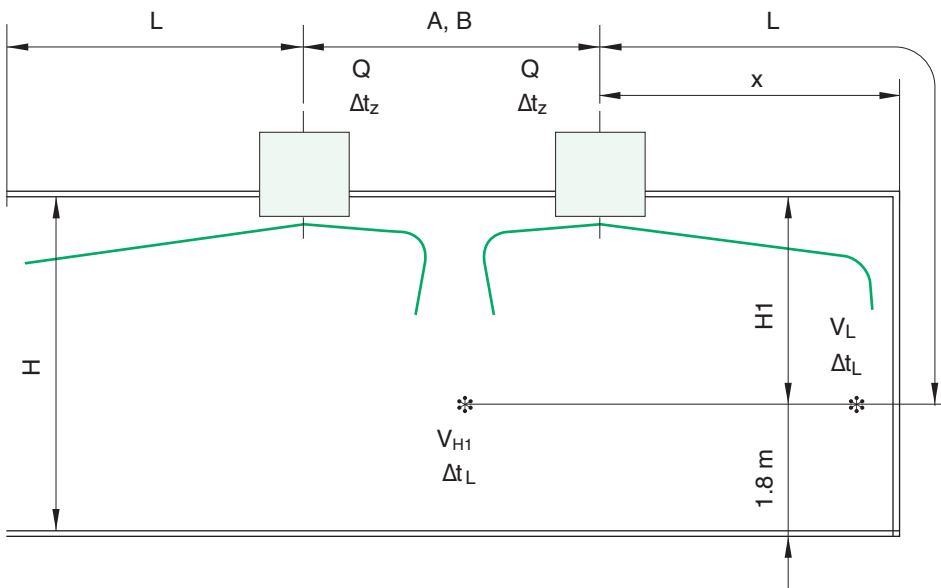
**Model OD-5/R1:** circular diffuser panel having single central fixing.

### Finish

Standard finish: WHITE RAL9010 (30% gloss) Polyester Powder Coat.

Alternative paint finishes to the relevant RAL colours are available on request. (Subject to a surcharge).

# Performance Guide



- Q (m<sup>3</sup>/h)** air volume per diffuser
- Q (l/s)** air volume per diffuser
- x (m)** horizontal distance to wall
- H (m)** room height
- H1 (m)** ceiling to living zone distance
- L (m)** throw distance (L=H1 + x)
- V<sub>L</sub> (m/s)** velocity on the throw distance L
- Δt<sub>z</sub> (K)** difference between room temperature and supply air temperature
- Δt<sub>L</sub> (K)** difference between room temperature and air flow temperature on distance L
- Ap<sub>t</sub> (Pa)** pressure drop
- L<sub>WA</sub> (dB(A))** sound power level
- V<sub>H1</sub> (m/s)** velocity on distance H1
- A, B (m)** distance between two diffusers (length and width)

All figures are based on a diffuser mounting height of 2.8m and a room absorption of 8 dBA

## Quick Selection Table ΔT = -10K

Size	Q (m <sup>3</sup> /h)	150	200	250	300	400	500	600	700	800	900
	Q(l/s)	42	56	69	83	111	139	167	194	222	250
300	H1 = 1m: V <sub>H1</sub> (m/s)	0.16	0.23	0.29	0.44	-	-	-	-	-	-
	H1 = 1.5m: V <sub>H1</sub> (m/s)	-	0.10	0.14	0.22	-	-	-	-	-	-
	L = 3m: V <sub>L1</sub> (m/s)	0.14	0.19	0.24	0.28	0.38	-	-	-	-	-
	L = 3.5m: V <sub>L1</sub> (m/s)	0.12	0.16	0.20	0.24	0.32	-	-	-	-	-
	Δp (Pa)	14	26	40	56	97	-	-	-	-	-
	L <sub>WA</sub> (dB(A))	22NR	29NR	36NR	42NR	45NR	-	-	-	-	-
400	H1 = 1m: V <sub>H1</sub> (m/s)	-	-	0.27	0.33	0.47	-	-	-	-	-
	H1 = 1.5m: V <sub>H1</sub> (m/s)	-	-	0.13	0.16	0.24	0.31	-	-	-	-
	L = 3m: V <sub>L1</sub> (m/s)	-	0.14	0.18	0.21	0.28	-	-	-	-	-
	L = 3.5m: V <sub>L1</sub> (m/s)	-	0.12	0.15	0.18	0.24	0.3	-	-	-	-
	Δp (Pa)	-	7	12	17	30	45	-	-	-	-
	L <sub>WA</sub> (dB(A))	-	15NR	18NR	22NR	31NR	45NR	-	-	-	-
500	H1 = 1m: V <sub>H1</sub> (m/s)	-	-	-	0.20	0.29	0.38	0.48	-	-	-
	H1 = 1.5m: V <sub>H1</sub> (m/s)	-	-	-	-	0.14	0.19	0.24	-	-	-
	L = 3m: V <sub>L1</sub> (m/s)	-	0.11	0.14	0.17	0.23	0.29	0.34	-	-	-
	L = 3.5m: V <sub>L1</sub> (m/s)	-	-	0.12	0.15	0.20	0.24	0.29	-	-	-
	Δp (Pa)	-	-	-	11	21	32	45	-	-	-
	L <sub>WA</sub> (dB(A))	-	10NR	15NR	18NR	27NR	33NR	41NR	-	-	-
600	H1 = 1m: V <sub>H1</sub> (m/s)	-	-	-	-	0.22	0.30	0.38	0.45	0.52	-
	H1 = 1.5m: V <sub>H1</sub> (m/s)	-	-	-	-	-	0.14	0.21	0.23	0.27	-
	L = 3m: V <sub>L1</sub> (m/s)	-	-	0.14	0.17	0.23	0.30	0.34	0.40	0.45	-
	L = 3.5m: V <sub>L1</sub> (m/s)	-	-	0.12	0.14	0.19	0.24	0.29	0.34	0.39	-
	Δp (Pa)	-	-	-	-	11	18	26	35	45	-
	L <sub>WA</sub> (dB(A))	-	-	10NR	15NR	20NR	24NR	32NR	36NR	39NR	-
625	H1 = 1m: V <sub>H1</sub> (m/s)	-	-	-	-	0.22	0.30	0.38	0.45	-	-
	H1 = 1.5m: V <sub>H1</sub> (m/s)	-	-	-	-	-	0.14	0.19	0.23	0.27	0.35
	L = 3m: V <sub>L1</sub> (m/s)	-	-	-	0.23	0.28	0.34	0.40	0.45	0.51	-
	L = 3.5m: V <sub>L1</sub> (m/s)	-	-	-	0.19	0.24	0.29	0.34	0.39	0.45	-
	Δp (Pa)	-	-	-	11	18	26	35	45	55	-
	L <sub>WA</sub> (dB(A))	-	-	-	20NR	26NR	31NR	36NR	39NR	45NR	-

## Performance Guide

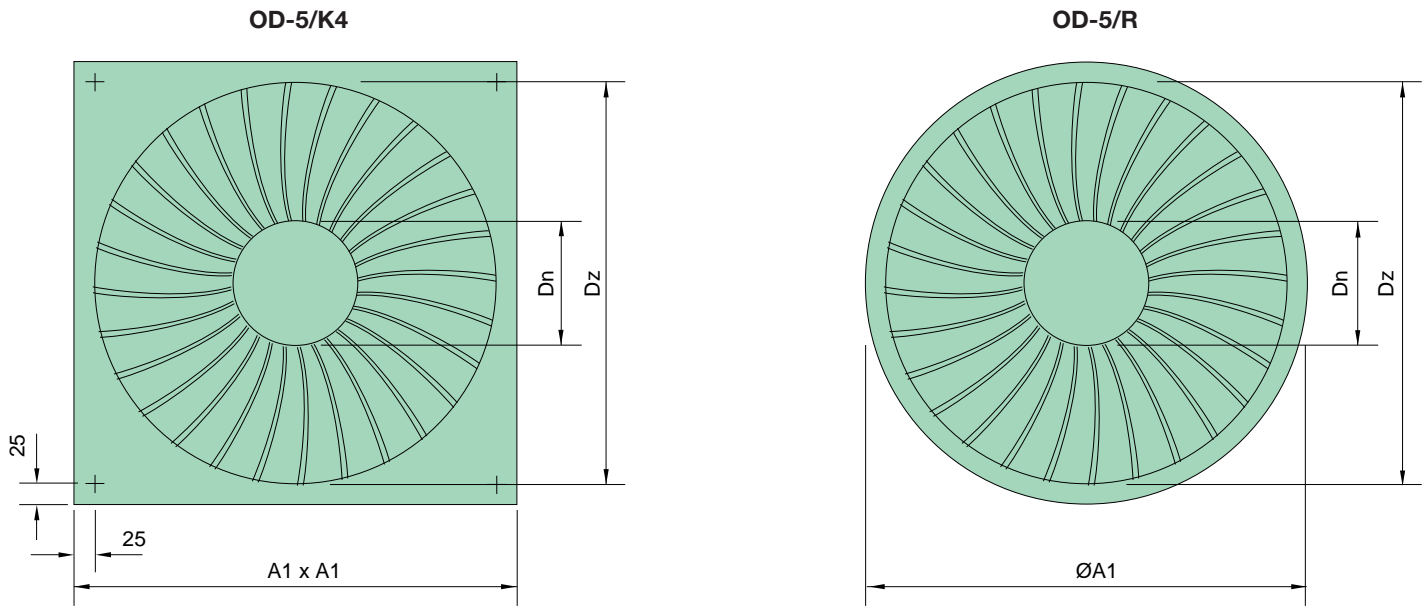
**Quick Selection Table  $\Delta T = -5k$**

Size	Q (m <sup>3</sup> /h) Q(l/s)	150	200	250	300	400	500	600	700	800	900
300	H1 = 1m: V <sub>H1</sub> (m/s)	0.16	0.23	0.30	0.45	-	-	-	-	-	-
	H1 = 1.5m: V <sub>H1</sub> (m/s)	-	0.10	0.15	0.23	-	-	-	-	-	-
	L = 3m: V <sub>L1</sub> (m/s)	0.14	0.19	0.24	0.29	0.38	-	-	-	-	-
	L = 3.5m: V <sub>L1</sub> (m/s)	0.12	0.16	0.21	0.25	0.33	-	-	-	-	-
	$\Delta p$ (Pa)	14	25	41	56	98	-	-	-	-	-
	L <sub>WA</sub> (dB(A))	19NR	27NR	32NR	40NR	46NR	-	-	-	-	-
400	H1 = 1m: V <sub>H1</sub> (m/s)	-	-	0.29	0.34	0.49	0.60	-	-	-	-
	H1 = 1.5m: V <sub>H1</sub> (m/s)	-	-	0.14	0.17	0.25	0.32	-	-	-	-
	L = 3m: V <sub>L1</sub> (m/s)	-	0.15	0.18	0.22	0.29	0.36	0.43	-	-	-
	L = 3.5m: V <sub>L1</sub> (m/s)	-	0.13	0.16	0.19	0.25	0.30	0.37	-	-	-
	$\Delta p$ (Pa)	-	7	12	17	30	44	63	-	-	-
	L <sub>WA</sub> (dB(A))	-	14NR	18NR	23NR	31NR	38NR	45NR	-	-	-
500	H1 = 1m: V <sub>H1</sub> (m/s)	-	-	-	0.21	0.30	0.30	0.49	-	-	-
	H1 = 1.5m: V <sub>H1</sub> (m/s)	-	-	-	0.10	0.15	0.20	0.25	-	-	-
	L = 3m: V <sub>L1</sub> (m/s)	-	-	-	0.18	0.23	0.29	0.35	0.41	-	-
	L = 3.5m: V <sub>L1</sub> (m/s)	-	-	-	0.15	0.20	0.25	0.30	0.35	-	-
	$\Delta p$ (Pa)	-	-	-	11	21	32	45	60	-	-
	L <sub>WA</sub> (dB(A))	-	-	-	18NR	27NR	34NR	39NR	43NR	-	-
600	H1 = 1m: V <sub>H1</sub> (m/s)	-	-	-	-	0.24	0.31	0.39	0.47	0.54	0.61
	H1 = 1.5m: V <sub>H1</sub> (m/s)	-	-	-	-	0.12	0.16	0.21	0.24	0.28	0.32
	L = 3m: V <sub>L1</sub> (m/s)	-	-	-	0.18	0.24	0.29	0.35	0.41	0.46	0.52
	L = 3.5m: V <sub>L1</sub> (m/s)	-	-	-	0.16	0.21	0.25	0.30	0.35	0.40	0.45
	$\Delta p$ (Pa)	-	-	-	-	11	18	26	35	44	55
	L <sub>WA</sub> (dB(A))	-	-	-	15NR	20NR	27NR	32NR	36NR	40NR	42NR
625	H1 = 1m: V <sub>H1</sub> (m/s)	-	-	-	-	0.24	0.31	0.39	0.47	0.54	0.61
	H1 = 1.5m: V <sub>H1</sub> (m/s)	-	-	-	-	0.12	0.16	0.21	0.24	0.28	0.32
	L = 3m: V <sub>L1</sub> (m/s)	-	-	-	-	0.24	0.29	0.35	0.41	0.47	0.52
	L = 3.5m: V <sub>L1</sub> (m/s)	-	-	-	-	0.21	0.25	0.30	0.35	0.40	0.45
	$\Delta p$ (Pa)	-	-	-	-	11	18	26	35	45	55
	L <sub>WA</sub> (dB(A))	-	-	-	-	20NR	27NR	32NR	36NR	39NR	42NR

**Quick Selection Table  $\Delta T = -0k$**

Size	Q (m <sup>3</sup> /h) Q(l/s)	150	200	250	300	400	500	600	700	800	900
300	H1 = 1m: V <sub>H1</sub> (m/s)	0.16	0.23	0.30	0.45	-	-	-	-	-	-
	H1 = 1.5m: V <sub>H1</sub> (m/s)	-	0.10	0.15	0.23	-	-	-	-	-	-
	L = 3m: V <sub>L1</sub> (m/s)	0.15	0.19	0.24	0.29	0.38	-	-	-	-	-
	L = 3.5m: V <sub>L1</sub> (m/s)	0.13	0.16	0.21	0.25	0.33	-	-	-	-	-
	$\Delta p$ (Pa)	14	25	41	56	97	-	-	-	-	-
	L <sub>WA</sub> (dB(A))	20NR	27NR	36NR	40NR	46NR	-	-	-	-	-
400	H1 = 1m: V <sub>H1</sub> (m/s)	-	-	0.29	0.34	0.48	0.61	-	-	-	-
	H1 = 1.5m: V <sub>H1</sub> (m/s)	-	-	0.14	0.18	0.25	0.32	-	-	-	-
	L = 3m: V <sub>L1</sub> (m/s)	-	0.15	0.18	0.22	0.29	0.36	0.43	-	-	-
	L = 3.5m: V <sub>L1</sub> (m/s)	-	0.13	0.16	0.19	0.25	0.31	0.37	-	-	-
	$\Delta p$ (Pa)	-	7	12	17	30	45	63	-	-	-
	L <sub>WA</sub> (dB(A))	-	15NR	18NR	24NR	30NR	39NR	44NR	-	-	-
500	H1 = 1m: V <sub>H1</sub> (m/s)	-	-	-	0.22	0.30	0.39	0.49	-	-	-
	H1 = 1.5m: V <sub>H1</sub> (m/s)	-	-	-	0.11	0.15	0.20	0.26	-	-	-
	L = 3m: V <sub>L1</sub> (m/s)	-	-	-	0.18	0.24	0.29	0.35	0.41	-	-
	L = 3.5m: V <sub>L1</sub> (m/s)	-	-	-	0.16	0.20	0.25	0.30	0.35	-	-
	$\Delta p$ (Pa)	-	-	-	11	21	32	45	60	-	-
	L <sub>WA</sub> (dB(A))	-	-	-	20NR	27NR	34NR	39NR	45NR	-	-
600	H1 = 1m: V <sub>H1</sub> (m/s)	-	-	-	-	0.24	0.32	0.40	0.47	0.55	0.61
	H1 = 1.5m: V <sub>H1</sub> (m/s)	-	-	-	-	0.13	0.17	0.21	0.24	0.29	0.33
	L = 3m: V <sub>L1</sub> (m/s)	-	-	-	0.19	0.24	0.29	0.36	0.41	0.47	0.53
	L = 3.5m: V <sub>L1</sub> (m/s)	-	-	-	0.16	0.21	0.25	0.31	0.35	0.41	0.45
	$\Delta p$ (Pa)	-	-	-	-	11	18	26	35	45	55
	L <sub>WA</sub> (dB(A))	-	-	-	14NR	20NR	27NR	31NR	36NR	39NR	42NR
625	H1 = 1m: V <sub>H1</sub> (m/s)	-	-	-	-	0.24	0.31	0.39	0.48	0.55	0.61
	H1 = 1.5m: V <sub>H1</sub> (m/s)	-	-	-	-	0.13	0.16	0.21	0.25	0.29	0.33
	L = 3m: V <sub>L1</sub> (m/s)	-	-	-	-	0.24	0.29	0.36	0.41	0.47	0.53
	L = 3.5m: V <sub>L1</sub> (m/s)	-	-	-	-	0.21	0.25	0.31	0.36	0.41	0.45
	$\Delta p$ (Pa)	-	-	-	-	11	18	26	35	45	55
	L <sub>WA</sub> (dB(A))	-	-	-	-	20NR	27NR	31NR	36NR	39NR	42NR

## Diffuser - Dimensions



Size	Dn	Dz	A1 x A1	ØA1	A <sub>ef</sub> (m <sup>2</sup> )
300	84	254	295 x 295	300	0.0145
400	92	350	395 x 395	400	0.0301
500	150	450	495 x 495	500	0.0386
600	170	540	595 x 595	600	0.0580
625	170	540	620 x 620	625	0.0580

## Diffuser - Ordering Information

### Example

Model Type	Fixing and Panel Type	Colour Finish	Size
OD-5	K1	83	600
Fixed Air Pattern Swirl Diffuser	<p><b>K1</b> – Square panel with central fixing hole</p> <p><b>K4</b> – Square panel with four corner fixing holes</p> <p><b>R1</b> – Circular panel with central fixing hole</p> <p><b>Note:</b> if diffuser panel is required without fixings please clearly identify separately on order.</p>	<p>Standard Finish:</p> <p><b>83 - White</b> RAL9010 (30% gloss)</p> <p>Other finishes available on request.</p>	<p>300</p> <p>400</p> <p>500</p> <p>*600</p> <p>625</p>
			*Note: Size 600 available from stock. See website for details.

**Important Note:** All orders must be addressed to Air Diffusion, Ruskin Air Management Limited.

## Plenum Box – Specification Sheet Metal

### Plenum Box Specification Sheet Metal

<p><b>Material</b> Standard is a minimum of 0.7mm thick galvanised or zinc coated steel.</p> <p><b>Construction</b> Plenum boxes are generally fabricated in 3 sections having indented ends, which are either mechanically joined or spot welded to form an airtight seal as standard. plenum boxes are supplied with indented ends. Flush ends (no tray indents) are also available. Standard is for side entry spigots located centrally. All boxes are supplied with plain edges, as standard.</p> <p><b>Standard Installation Method</b> The tray ends of the plenum box incorporate a 15mm indent, on each side to allow for 8mm drop rod fixings, which gives space for holes to be drilled (by others) without disturbing the active section.</p>	<p><b>Installation Options</b> Fixing lugs can be factory fitted if preferred or special fixing methods (by others) may be used.</p> <p>For plenum boxes having flush ends separate hanging brackets/fixing lugs need to be fitted to allow independent support of diffuser and plenum box.</p> <p><b>Accessories</b> 12mm thick Class 'O' internal lining. Equalising grids. Spigot dampers include; cord operated, or quadrant control. Flush Ends (No Indent). Joggled style plenum boxes or pan adapters. Turning Vanes. Fixing lugs special fixings (by others).</p>	<p><b>Finish</b> Self finish galvanised or zinc coated steel as standard.</p> <p>Black paint can be applied to internal faces if required.</p> <p><b>Standard Model Types</b> <b>PBS – 1</b> Standard unlined plenum box with either 1 number centrally located circular or square/rectangular <b>side</b> entry spigot having no damper or equalising grid. <b>PBS – 2</b> Standard unlined plenum box with either 1 number centrally located circular or square/rectangular <b>top</b> entry spigot having no damper or equalising grid.</p>
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## Plenum Boxes – Selection Guide

### Pressure Drop and Sound Ratings

The pressure drop given is for supply diffuser with damper fully open. When the diffuser is installed with plenum box, the pressure loss of the box has to be added to the diffuser.

Spigot Velocity m/s	1.5	2.0	2.5	3.0	3.5	4.0
Pressure Drop Pa*	2	4	6	8	12	16
Sound Level NR*	-	-	25	30	35	40

\* The figures given are approximate - dependent upon spigot entry conditions.

### Plenum Box Spigot Volumes

Diameter (mm)	Spigot velocity m/s					
	1.5	2.0	2.5	3.0	3.5	4.0
100	10	15	19	22	26	30
125	18	24	30	35	41	47
150	25	34	42	51	60	68
160	35	46	58	70	82	94
200	45	60	75	91	109	121
225	58	77	96	117	137	151
250	71	95	120	142	170	191
275	86	115	145	172	205	230
300	103	139	172	208	240	275
315	120	160	200	240	280	320
350	140	188	235	280	328	375
400	185	245	310	370	430	495

Air volumes in l/s.

### Plenum Boxes - Ordering Information

#### Example

Model	Internal Lining	Spigot Damper	Options	Dimensions
PBS-1	U	C	2	
<b>Sheet Metal</b>				
<p><b>PBS-1</b> - Plenum box to suit square/rectangular diffuser with circular or square side entry spigot.</p> <p><b>PBS-2</b> - Plenum box to suit square/rectangular diffuser with circular or square top entry spigot.</p>	<p><b>U</b> - Standard Unlined Plenum Box</p> <p><b>L</b> - 12mm Class 'O' Internal Lining.</p>	<p><b>N</b> - Plain spigot no damper</p> <p><b>C</b> - Cord operated damper fitted to spigot.</p> <p><b>Q</b> - Quadrant damper fitted to spigot.</p>	<p><b>0</b> - No options</p> <p><b>1</b> - Internal faces painted black.</p> <p><b>2</b> - Equalising grid</p> <p><b>3</b> - Fixing lugs fitted to side of plenum.</p> <p><b>4</b> - Flush ends</p> <p><b>6</b> - Turning vanes</p>	<p>See example below</p>

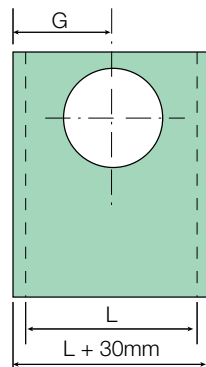
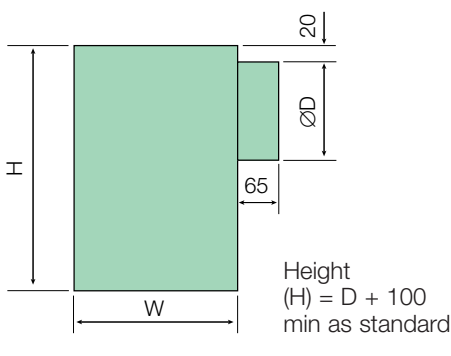
#### Dimensions PBS - 1, PBS - 2, Example

Neck Size	Plenum Height	Circular Spigot Diameter	OR	Sq. / Rect. Spigot Width x Height	Centre Line of Spigot
L x W 450 x 450	H 350	∅D 250∅		F x E 0	G 0

**Important Note:** Whilst the standard construction of plenum boxes is with indented ends, in certain instances, to co-ordinate with the ceiling system a plenum box having flush ends may be preferred. When using a circular diffuser the standard arrangement is to add a circular spigot to the outlet of the plenum box to fix the diffuser/plenum together. Therefore, prior to ordering please check the overall dimensions/configuration of the plenum box/diffuser arrangement.

### Plenum Boxes - Dimensions

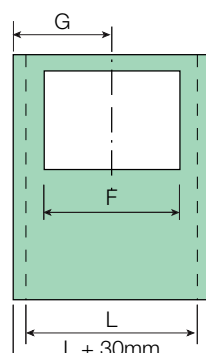
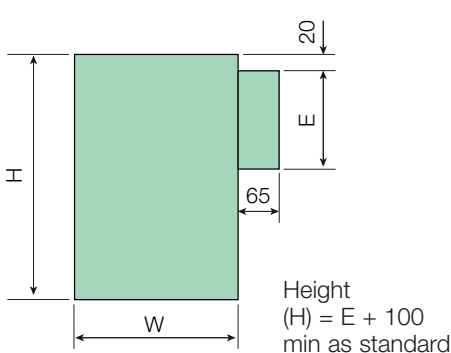
#### Type PBS-1 Circular Spigot



Spigot Damper can be supplied if required.  
Top entry box  
Type PBS-2

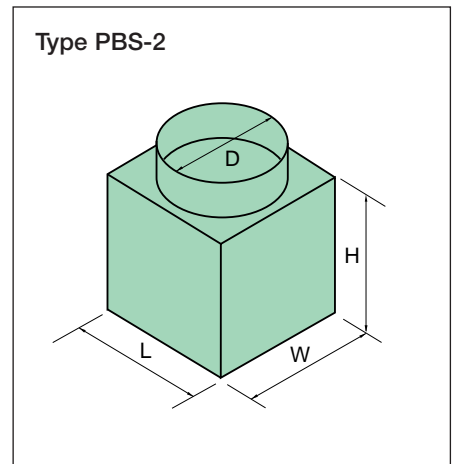
Shown with standard indented ends

#### Type PBS-1 Square/Rectangular Spigot



Spigot Damper can be supplied if required.  
Top entry box  
Type PBS-2

Shown with standard indented ends



Please see important note above regarding dimensions.

### Ruskin Air Management Limited a BS EN ISO 9000 registered company

The statements made in this brochure or by our representatives in consequence of any enquiries arising out of this document are given for information purposes only. They are not intended to have any legal effect and the company is not to be regarded as bound thereby. The company will only accept obligations which are expressly negotiated for and agreed and incorporated into a written agreement made with its customers.

Due to a policy of continuous product development the specification and details contained herein are subject to alteration without prior notice.

Comprehensive and detailed information is available for all Air Diffusion products. Visit our website at [www.air-diffusion.co.uk](http://www.air-diffusion.co.uk)

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## Air Diffusion

Grilles Diffusers Louvres Chilled Beams