

Large Format Circular Diffusers

WR Large Format Circular Diffuser



Large Format Circular Diffusers

WR

Introduction

The Waterloo WR series is suitable for ceiling or exposed ductwork mounting and includes a rotating central core adjustment feature to provide projection heating and spot cooling, or conventional horizontal diffusion. Manufactured from aluminium spinings, the diffusers are available with a range of dampers and equalising grids for effective control of air distribution.

Product Description

WR Large Format Circular Diffuser

LD Butterfly type louver damper (sizes 6-18 only)

OBSS Opposed blade damper (sizes 21-24 only)

SD/ED Splitter Damper / Equalising Deflector

Note: For available blanking options please contact the head office.

Features

- High air handling capacity
- Easily removable central core assembly
- Simple installation
- Maintenance free
- Core adjustment feature
- Range of accessories
- Suitable for supply and exhaust

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.

Not recommended to leave unpainted.

Weights

WR/6 1.2 kg, WR/8 1.5 kg, WR/10 2.3 kg,

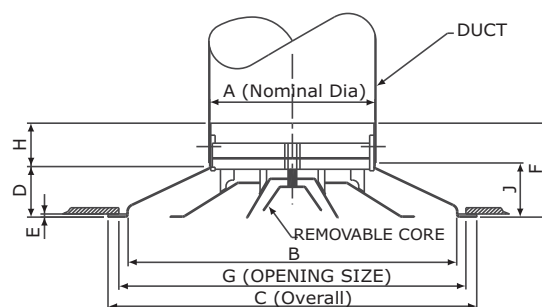
WR/12 3.3 kg, WR/15 5.5 kg, WR/18 7.8 kg,

WR/21 10.5 kg, WR/24 14.0 kg

Installation

Remove core from bayonet fixing and offer diffuser frame into opening.

Screw fix through diffuser stack into duct. Replace core ensuring the bayonet fixing is secure.



Size	A	B	C	D	E	F	G	H	J
6	152	305	340	51	5	136	320	85	61
8	203	407	457	64	5	149	430	85	74
10	254	508	569	86	5	171	530	85	96
12	305	610	680	95	6	180	640	85	105
15	381	762	851	121	6	206	800	85	131
18	457	860	940	146	24	246	880	100	156
21	534	1080	1148	173	18	273	1100	100	183
24	610	1080	1170	173	18	273	1100	100	183

ORDER EXAMPLE

WR-15/9010-Gloss/LD

Type _____

Diffuser size _____

Finish _____

Butterfly damper _____

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Selection Criteria

- **Radius of Diffusion:**

The minimum and maximum throw covered by one diffuser which results in an average air velocity in the occupied zone of 0.25 m/s and 0.10 m/s respectively (based on 3.0m mounting height and 10°C cooling)

- **Noise level:**

Is based on diffuser sound power level less 8db room absorption.

- **Pressure Loss (Pa):**

Static pressure loss at the supply duct.

- **Cone Settings:**

Setting B: Flush for general applications producing horizontal diffusion (performance as table)

Setting A: Projection setting — multiply tabulated

$P_s \times 1.7$, add 2dB to dBA values.

Setting C: Exposed duct setting — multiply tabulated

$P_s \times 0.8$, subtract 2dB from dBA values.

- **Exhaust:**

$P_s (\text{exhaust}) = P_s (\text{supply}) \times 1.2$

$\text{dBA}(\text{exhaust}) = \text{dBA} (\text{supply}) + 3 \text{ dB}$

- **Vertical Projection Data:**

Projection is based on isothermal supply conditions with a terminal velocity of 0.5 m/s. Correct for heating, cooling and other V_t .

For projection use graph. For required throw, corrected for temperature differential, select suitable size and neck velocity.

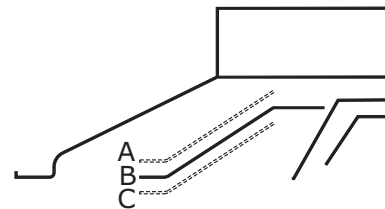
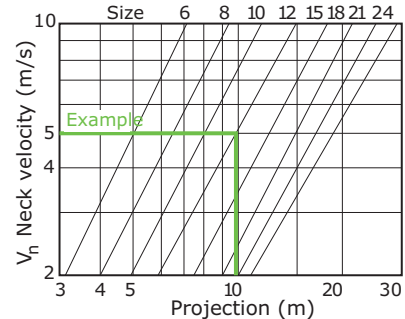
Noise generation and Pressure loss: Use the table for horizontal diffusion corrected for cone setting.

Selection Example

Size 12 WR diffuser handling 350 l/s

produces a horizontal throw range of 2.1 - 3.9m and a dBA level of 34 with pressure loss of 25 Pa. With vertical projection (setting A) the resulting throw would be 10m for isothermal conditions and a dBA level of 42 with a pressure of 42 Pa.

Vertical Projection - Cone setting A



Heating Dt (°C)	5	10	15	20	25	30
Projection Factor	0.98	0.95	0.85	0.75	0.62	0.50

Terminal Velocity V_t (m/s)	0.75	0.50	0.40	0.30
Correction Factor	0.80	1.0	1.11	1.30

Projection Factor for Cooling $\Delta t = 10^\circ\text{C} - 1.15$
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WR

Performance Table

WR		Air Volume (Horizontal Diffusion Supply)					
6	m ³ /h	263	328	392	457	522	652
	l/s	73	91	109	127	145	181
	Min - Max (m)	1.0-1.5	1.0-1.8	1.2-2.4	1.5-2.7	1.5-3.0	2.1-3.9
	L _w	24	32	39	44	48	55
	P _s	24	37	53	72	95	141
8	m ³ /h	468	583	677	806	922	1152
	l/s	130	162	188	224	256	320
	Min - Max (m)	1.2-2.1	1.5-2.7	1.8-3.3	2.2-4.0	2.2-4.5	3.0-5.5
	L _w	29	35	41	45	48	55
	P _s	21	33	47	64	84	131
10	m ³ /h	731	907	1095	1278	1458	1825
	l/s	203	252	304	355	405	507
	Min - Max (m)	1.5-2.7	1.8-3.3	2.1-3.9	2.4-4.8	2.7-3.9	3.6-6.7
	L _w	30	37	43	48	52	59
	P _s	17	27	39	53	70	109
12	m ³ /h	1015	1282	1577	1840	2106	2632
	l/s	292	366	438	511	585	731
	Min - Max (m)	1.5-3.0	2.1-3.9	2.4-4.8	2.7-3.9	3.0-6.0	3.9-7.5
	L _w	31	39	45	50	54	61
	P _s	16	25	37	50	65	102
15	m ³ /h	1642	2052	2448	2873	3283	4104
	l/s	456	570	680	798	912	1140
	Min - Max (m)	1.8-3.6	2.4-4.8	3.0-6.0	3.3-6.6	3.9-7.5	4.8-9.5
	L _w	33	39	45	49	53	60
	P _s	13	20	29	39	51	80
18	m ³ /h	2362	2952	3543	4133	4723	5908
	l/s	656	820	984	1148	1312	1641
	Min - Max (m)	2.4-4.5	3.0-6.0	3.6-7.0	4.2-8.1	4.8-9.3	6.0-12.0
	L _w	33	40	46	51	55	62
	P _s	10	16	23	32	42	65
21	m ³ /h	3226	4032	4838	5645	6451	8064
	l/s	896	1120	1344	1568	1792	2240
	Min - Max (m)	4.2-8.4	4.8-9.7	5.4-10.8	6.0-12.0	6.6-13.2	8.1-16.5
	L _w	38	45	51	55	59	66
	P _s	7	12	17	23	30	46
24	m ³ /h	4205	5256	6300	7362	8424	10512
	l/s	1168	1460	1750	2045	2340	2920
	Min - Max (m)	5.0-10.0	5.5-11.0	6.0-12.0	6.5-13.0	8.0-16.0	10.0-20.0
	L _w	40	46	52	56	60	67
	P _s	13	21	30	41	56	84

LD Butterfly-style Louvre Damper

Introduction

Designed to adjust the airflow in our Format Circular Diffusers MC, WR and Perforated faced diffusers LF, CPD, KRCP the LD butterfly dampers allow for the air to be regulated prior to distribution through the terminals.

They are adjustable from the front of the Diffuser with a screwdriver and are made in aluminium.

They allow for the airflow to be left fully open, or restricted to closed low-leakage configuration when the damper is in the shut-off position.

Product Description

LD Butterfly-style Louvre Damper, Screwdriver operated

Features

- Screwdriver operated from terminal face

Finish

LD Aluminium blades

Dimensions

MCØ 150 / 200 / 300 / 450mm

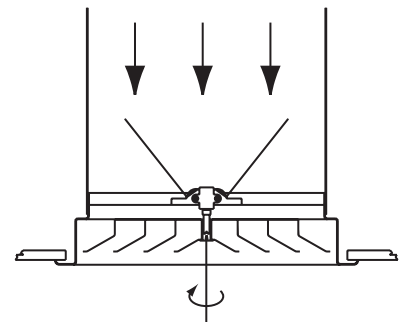
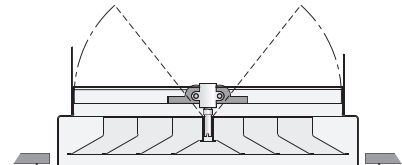
WRØ 150 / 200 / 250 / 300 / 375 / 450 / 525 / 600mm

Also sizes to suit standard circular spigots.

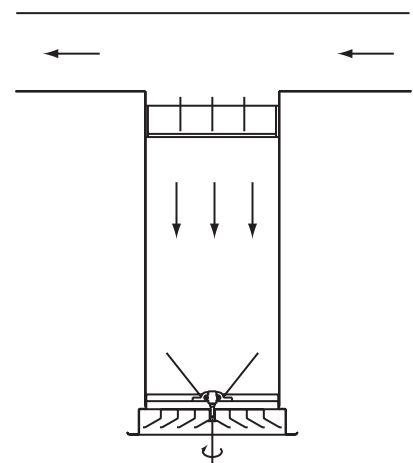
Note – the LD can only be selected with the MC or WR Circular Diffusers and the KRCP, CPD, LF perforated diffusers



MC / LD



LD - Standard arrangement for supply ducts.
Adjustable through diffuser face.



ED & LD - Equalisation at stub duct take

ORDER EXAMPLE

LD to suit WR-15/9010-Gloss/LD
Type _____
Diffuser size _____
Finish _____
Butterfly damper _____

Notes



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

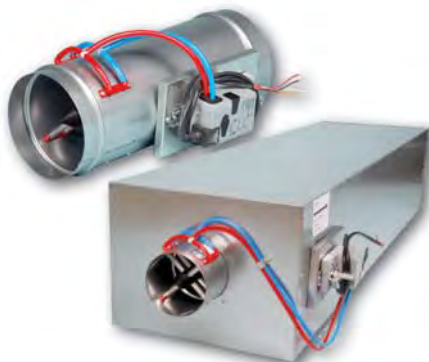
Designed to be installed in various ceiling systems, we have a complete range to suit both performance and aesthetical requirements. Most diffusers are made from aluminium and can be ordered with or without plenum boxes for easy duct work. Diffusers can be ordered in customer specified colours (PPM/G);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