



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 spinnings, 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 louvre 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

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.

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 (exhaust) = P_s (supply) \times 1.2

dBA(exhaust) = dBA (supply) + 3 dB

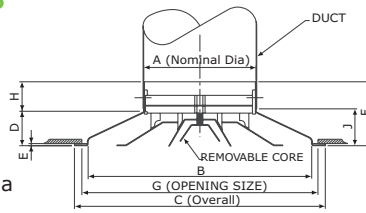
Vertical Projection Data:

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.



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	914	1040	146	24	246	950	100	156
21	534	1080	1148	173	18	273	1100	100	183
24	610	1080	1170	173	18	273	1100	100	183

Performance Table

WR	Air Volume (Horizontal Diffusion Supply)						
	m³/h	263	328	392	457	522	652
6	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	m³/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
10	P _s	21	33	47	64	84	131
	m³/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
12	L _w	30	37	43	48	52	59
	P _s	17	27	39	53	70	109
	m³/h	1015	1282	1577	1840	2106	2632
	l/s	292	366	438	511	585	731
15	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
	m³/h	1642	2052	2448	2873	3283	4104
18	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
21	m³/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
24	P _s	10	16	23	32	42	65
	m³/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
24	L _w	38	45	51	55	59	66
	P _s	7	12	17	23	30	46
	m³/h	4205	5256	6300	7362	8424	10512
	l/s	1168	1460	1750	2045	2340	2920
24	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

ORDER EXAMPLE

WR/15/PPM9010/LD

Type _____

Diffuser Size _____

Finish _____

Extras _____

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 Δt = 10°C - 1.15						

