Briteair Systems Ltd
Unit 21 Smithies Mill, 885 Bradford Road, Batley, West Yorkshire WF17 8NN
Telephone: 01924 444 174 | Fax: 01924 476 600 | www.briteair.co.uk

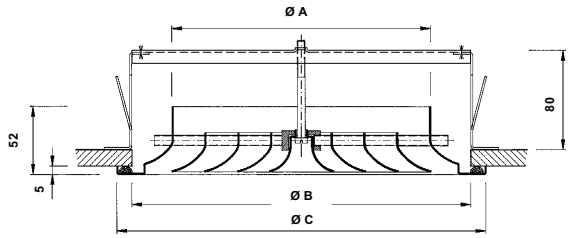
BCD - Circular Diffuser



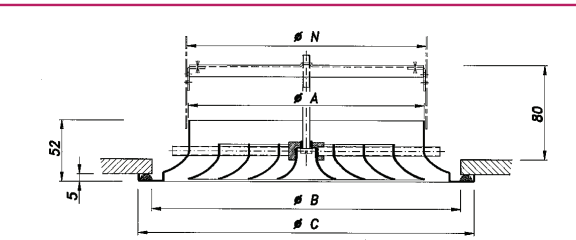
Description
Type BCD ` with multiple cones, positioned in one plane aligned with the ceiling.

Finishes
Anodised aluminium in its natural colour.
Special finishes available upon request.

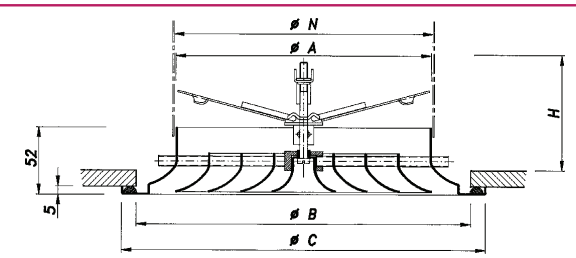
General dimensions
See page 6.



BCD - **PM**
Circular diffuser with mounting bridge for fibre ducts.



BCD **+ PMC**
Circular diffuser with mounting bridge for sheet ducts.



BCD - D **+ PM and**
BCD - D **+ PMC**
Circular diffuser with flap damper and mounting bridge. The volume control damper is operated through the diffuser.
H is the maximum height of the diffuser with the damper fully open.

BCD	***Series, aluminium diffuser***
BCD-D	***Volume control damper Without indication, not incorporated***
BCD-PM BCD - PMC	***Mounting bridge for fibre ducts Mounting bridge for sheet ducts***
	From 6 to 16 according to table
	From 160 to 400 according to table

Identification
With the mounting bridge the fixing to the ceiling is quick and easy. The existing difference between exterior and neck diameters resolves space problems in certain installations.

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Quick Selection Table

Notes:

- This selection table is based on full-scale laboratory tests according to standards ISO 5219 and ISO 5135 and 3741.
- The diffuser is placed in the centre of a square room.
- The jet is adherent, i.e. the diffuser is mounted aligned with the ceiling.
- Room height is 3 ± 0,5 m.
- Sound index NR is based on sound power, without room attenuation and without damper (mounting according to ISO).
- To obtain the pressure loss or sound level of diffuser BCD - with damper, see the corresponding graph on page 15.
- Throws given correspond to a terminal velocity (V_z) of 0,25 m/s in the occupied zone.

Symbols:

V_k = Effective velocity in m/s
X = Throw in m
P_t = Total pressure in Pa
NR = Noise level index in dB
A_k = Effective area in m²

Q			Nominal ∅ of diffuser in mm.						
			160	200	250	315	355	400	
			Size						
Q			6	8	10	12	14	16	
m³/h	l/s	Ak	0,0092	0,0138	0,0206	0,0312	0,0386	0,0477	
100	27,8	V_k	3,0	2,0	1,3				
		X	0,9	0,8	0,6				
		P_t	3,6	1,6	0,7				
		NR							
120	33,3	V_k	3,6	2,4	1,6				
		X	1,1	0,9	0,7				
		P_t	5,1	2,3	1,0				
		NR	4						
140	38,9	V_k	4,2	2,8	1,9	1,2			
		X	1,3	1,1	0,9	0,7			
		P_t	7,0	3,1	1,4	0,6			
		NR	9						
160	44,4	V_k	4,8	3,2	2,2	1,4	1,2		
		X	1,5	1,2	1,0	0,8	0,7		
		P_t	9,1	4,0	1,8	0,8	0,5		
		NR	14	4					
180	50,0	V_k	5,4	3,6	2,4	1,6	1,3		
		X	1,7	1,4	1,1	0,9	0,8		
		P_t	11,5	5,1	2,3	1,0	0,7		
		NR	18	8					
200	55,6	V_k	6,0	4,0	2,7	1,8	1,4	1,2	
		X	1,8	1,5	1,2	1,0	0,9	0,8	
		P_t	14,2	6,3	2,8	1,2	0,8	0,5	
		NR	22	12	2				
250	69,4	V_k	7,5	5,0	3,4	2,2	1,8	1,5	
		X	2,3	1,9	1,5	1,2	1,1	1,0	
		P_t	22,2	9,9	4,4	1,9	1,3	0,8	
		NR	29	19	10				
300	83,3	V_k	9,1	6,0	4,0	2,7	2,2	1,7	
		X	2,8	2,3	1,8	1,5	1,3	1,2	
		P_t	32,0	14,2	6,4	2,8	1,8	1,2	
		NR	36	26	16	6			
350	97,2	V_k	10,6	7,0	4,7	3,1	2,5	2,0	NR ≤ 10
		X	3,2	2,6	2,1	1,7	1,6	1,4	
		P_t	43,6	19,4	8,7	3,8	2,5	1,6	
		NR	41	31	21	11	6		
400	111,1	V_k		8,1	5,4	3,6	2,9	2,3	
		X		3,0	2,5	2,0	1,8	1,6	
		P_t		25,3	11,3	4,9	3,2	2,1	
		NR		36	26	16	11	6	
450	125,0	V_k		9,1	6,1	4,0	3,2	2,6	
		X		3,4	2,8	2,2	2,0	1,8	
		P_t		32,0	14,4	6,3	4,1	2,7	
		NR		40	30	20	15	10	
500	138,9	V_k		10,1	6,7	4,5	3,6	2,9	
		X		3,8	3,1	2,5	2,2	2,0	
		P_t		39,5	17,7	7,7	5,0	3,3	
		NR		44	34	24	19	13	
600	166,7	V_k		12,1	8,1	5,3	4,3	3,5	NR ≤ 30
		X		4,5	3,7	3,0	2,7	2,4	
		P_t		56,9	25,5	11,1	7,3	4,8	
		NR		50	40	30	25	20	
700	194,4	V_k			9,4	6,2	5,0	4,1	
		X			4,3	3,5	3,1	2,8	
		P_t			34,7	15,1	9,9	6,5	
		NR			46	35	30	25	
800	222,2	V_k			10,8	7,1	5,8	4,7	
		X			4,9	4,0	3,6	3,2	
		P_t			45,4	19,8	12,9	8,5	
		NR			50	40	35	30	
900	250,0	V_k			12,1	8,0	6,5	5,2	
		X			5,5	4,5	4,0	3,6	
		P_t			57,4	25,0	16,4	10,7	
		NR			54	44	39	34	
1000	277,8	V_k				8,9	7,2	5,8	
		X				5,0	4,5	4,0	
		P_t				30,9	20,2	13,2	
		NR				48	43	37	
1200	333,3	V_k				10,7	8,6	7,0	NR > 30
		X				6,0	5,4	4,8	
		P_t				44,5	29,1	19,0	
		NR				54	49	44	
1400	388,9	V_k				12,5	10,1	8,2	
		X				7,0	6,3	5,7	
		P_t				60,6	39,6	25,9	
		NR				60	54	49	
1600	444,4	V_k					11,5	9,3	
		X					7,2	6,5	
		P_t					51,7	33,9	
		NR					59	54	

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General information

General dimensions

Diffuser size	Dimensions in mm				
	Ø N	Ø A	Ø B	Ø C	H
6	160	159	213	247	132
8	200	199	264	287	152
10	250	249	315	337	177
12	315	314	366	402	209
14	355	354	417	442	229
16	400	399	462	487	252

Symbols

Ø N = Duct diameter in mm
Ø A = Exterior neck diameter of diffuser in mm
Ø B = Diameter of opening in ceiling in mm
Ø C = Total exterior diameter of diffuser in mm
H = Maximum height of the diffuser with the volume control damper fully open

Example of selection

Requirements:
Air flow rate _____ 300 m³/h
Throw _____ 1,3 to 1,6 m
Sound level _____ below 20 NR
Application _____ Offices
Required pressure loss _____ below 10 Pa

Solution:
With the selection table for diffusers type 43 SF and following the general criterion that for comfort installations the recommended discharge velocity for this type of diffusers lies between 2 and 3 m/s, we obtain:

Q (Air flow rate) _____ 300 m³/h
V_k (Effective velocity) _____ 2,7 m/s
X (Throw) _____ 1,5 m
P_t (Pressure loss) _____ 2,8 Pa
NR (Sound level) _____ 6

With optional delivery of damper 49 MM

Observing the results, the data obtained fulfil the requirements of the project.

Throw correction factor for distance of diffuser to ceiling (C_h)

For adherent jets, i.e. diffuser aligned with ceiling :

$$C_h = 1$$

For free jets, with the diffuser separated from the ceiling :

$$C_h = 1,4$$

The corrected throw (X_c) is obtained by multiplying the throw (X) by the throw correction factor (C_h)

$$X_c = X \cdot C_h$$