



Round Duct Blade Diffuser DBBRR



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Round duct blade diffuser DBBRR

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Round duct blade diffuser DBBRR

Description

In modern architecture, sheet metal and spiral ducts of air-conditioning systems are often incorporated in the design of the room. Emphasis is often placed deliberately on parts of the supply system. In this visible installation of the ventilation ducts, it is a good idea to integrate the air diffusers into the ducts.

In order to be able to offer planners a technically advanced air diffuser, which can also be well integrated into modern architectural concepts, we have developed our round duct blade diffuser type DBBRR.

The diffuser type DBBRR consists of a round duct with integrated, linear blades which can be subsequently adjusted by hand, with integrated hit-and-miss damper which allows the air to be blown absolutely uniformly over the entire diffuser area. The centrally arranged blades in support profile sections ensure that the free cross-section at every blade is the same. As a result, the noise level and pressure are not affected by changing the blade position. In heating mode, this allows a large penetration depth, thus providing an effective, cost-saving heating phase. In cooling mode, the maximum end velocity of jet and temperature difference are reduced to such an extent that no draughts are produced in the occupied zone.

This uniform admission allows the round duct blade diffuser type DBBRR to be installed at any point along the duct system. Accessories, such as dummy pipes, end covers and connection sleeves complete the range for this diffuser (only available for up to NW500; see documentation for round duct system RR-Complete or round duct systems accessories).

For maintenance, service, retrofitting, etc., inspection openings in sufficient number and size must be provided on site.

Advantages:

- Sound power level and pressure loss remain constant in all blade positions.
- Dimensionally stable smooth duct is easy to clean.

Construction

Blades

- Without blades (-00000, only possible for return air).
- With blades of plastic material.
 - Similar to RAL colour 9010 (-L9010, white).
 - Similar to RAL colour 9005 (-L9005, black) (standard).
- With blades made of aluminium painted to the RAL colour of the round duct (-Axxxx) (colour always with 4 digits), painted blades cannot be subsequently adjusted.

Round duct

- Galvanised sheet steel (-SV-0000).
- Sheet steel painted to RAL colour 9010 (white, standard) (-SB-9010).
- Sheet steel painted to a freely selectable RAL colour (-SB-xxxx) (colour always with 4 digits).

Hit-and-miss damper

- Without hit-and-miss damper (-SN).
- With integrated hit-and-miss damper (-SS, standard) for simple air volume and ductwork regulation, made of the same material as the round duct.

Model

- DBBRR-Z-... - Supply air model with air deflection blades.
- DBBRR-A-... - Return air model without air deflection blades.
- DBBRR-...-3U-... - horizontal throw right (3 o'clock)
- DBBRR-...-6U-... - vertical throw downward (6 o'clock)
- DBBRR-...-9U-... - horizontal throw left (9 o'clock)
- DBBRR-...-0U-... - vertical throw upward (12 o'clock)
- DBBRR-...-02-... - 2-slot
- DBBRR-...-04-... - 4-slot
- DBBRR-...-06-... - 6-slot (possible from NW 280 upwards)
- DBBRR-...-08-... - 8-slot (possible from NW 355 upwards)
- DBBRR-...-10-... - 10-slot (possible for NW 500)
- DBBRR-...-12-... - 12-slot (possible for NW 500)
- DBBRR-...-14-... - 14-slot (possible for NW 500)

Accessories

- Rubber lip seal
 - without rubber lip seal (-GD0) (standard).
 - with rubber lip seal (-GD1), on both sides, made of EPDM.

For more accessories, please refer to the separate documentation "Round duct system accessories".

Fastening methods

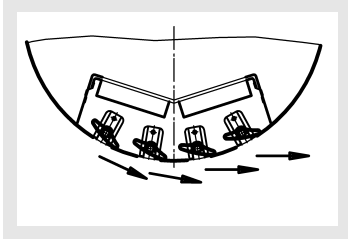
- fastening hole
 - without fastening hole (-B0).
 - With fastening hole $\varnothing 11.5$ mm (-BB, standard). Prepared for suspended installation by using an M8 threaded rod and an M8 nut to be provided on site.

Round duct blade diffuser DBBRR

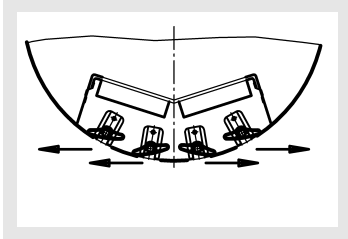
Air throw pattern

Throw directions (blade position 6 o'clock)

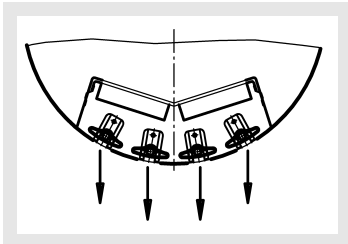
one-way horizontal (-E)



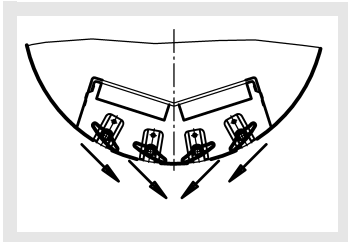
two-way horizontal (-B, standard)



vertical (-V)



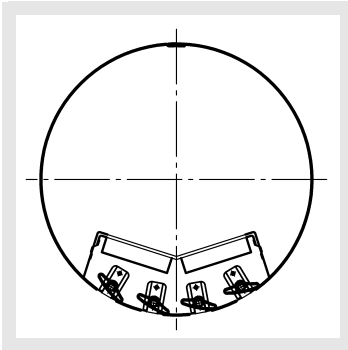
crosswise (-K)



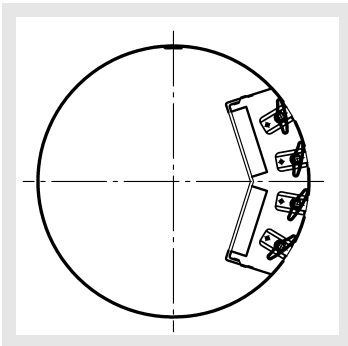
Round duct blade diffuser DBBRR

Mounting position

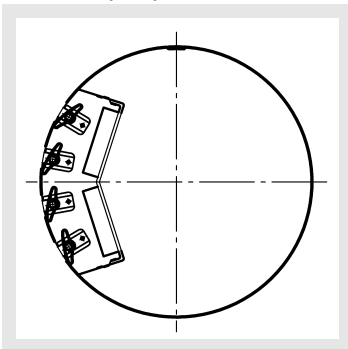
6 o'clock (-6U, standard)



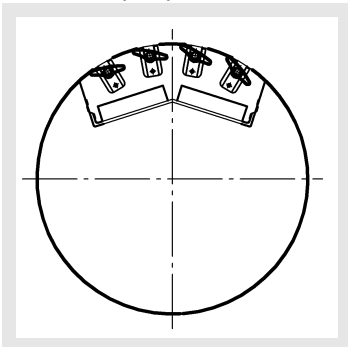
3 o'clock (-3U)



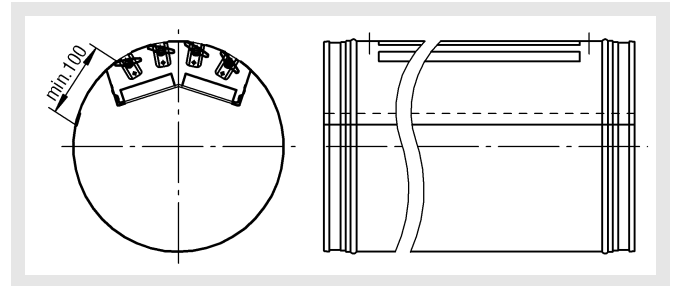
9 o'clock (-9U)



12 o'clock (-0U)



Please note that for the vertical throw a distance of at least 100 mm is necessary between the weld seam and the diffuser. This means that the weld seam must be offset accordingly.



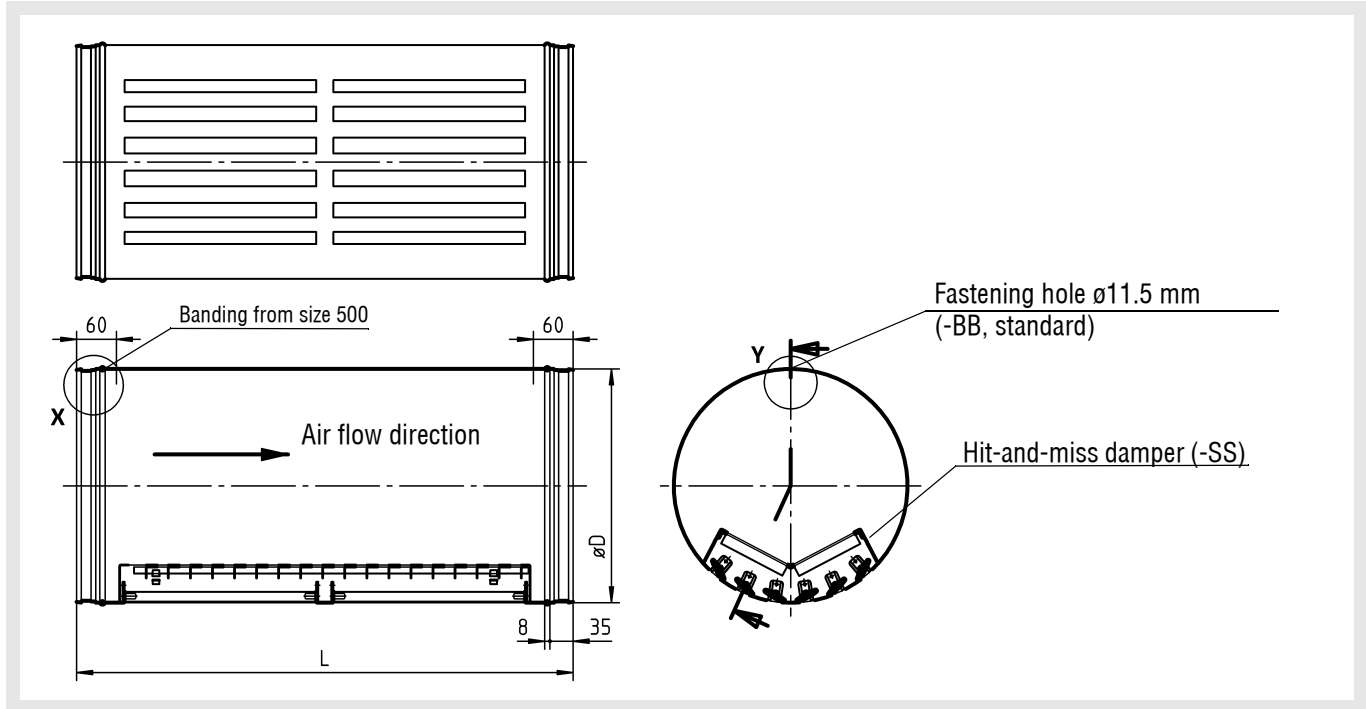
Ex works, the blades are set to the 6 o'clock blade position. On request the blade position "3 o'clock", "9 o'clock" or "12 o'clock", each in the air flow direction, is also available.

Round duct blade diffuser DBBRR

Models and dimensions

Dimensions

DBBRR



Available sizes

NW	øD	Number of slots along circumference							
		2	4	6	8	10	12	14	
200	198	x	x	-	-	-	-	-	
224	222	x	x	-	-	-	-	-	
250	248	x	x	-	-	-	-	-	
280	278	x	x	x	-	-	-	-	
315	313	x	x	x	-	-	-	-	
355	353	x	x	x	x	-	-	-	
400	398	x	x	x	x	-	-	-	
450	448	x	x	x	x	-	-	-	
500	498	x	x	x	x	x	x	x	
560	558	x	x	x	x	x	x	x	
630	628	x	x	x	x	x	x	x	

Length L	Number of slots lengthwise
750	2
1000	3
1500	4
1750	5
2000	6

x = available
- = not available

Accessories only available for up to NW500 (see documents for round duct system RR-COMPLETE or accessories for round duct systems).

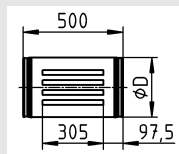
For detail Y, see page 7

Round duct blade diffuser DBBRR

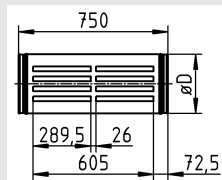
Length of sections

1-part:

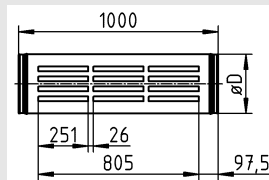
Length 500



Length 750

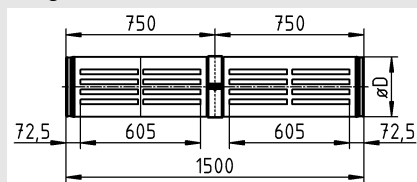


Length 1000

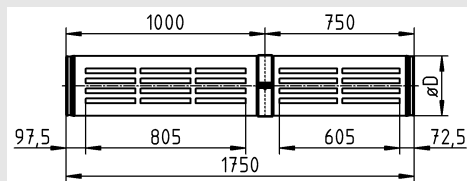


2-part:

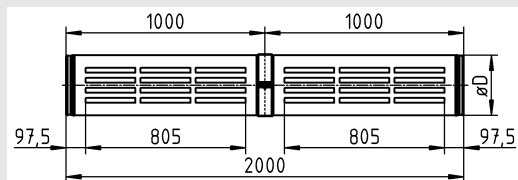
Length 1500



Length 1750



Length 2000



Round duct blade diffusers with a length of >1000 mm are delivered in two sections and are connected with a sleeve in factory. The dimensions of the dummy pipe fit the dimensions of the round duct grille type DBBRR.

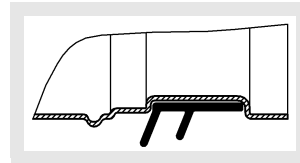
A different division of length is possible on special request. However, the maximum length for a middle or end piece is 1000 mm.

Accessories

Rubber lip seal (-GD0 / -GD1)

- without rubber lip seal (-GD0) (standard).
- with rubber lip seal (-GD1), on both sides, made of EPDM.

Detail X



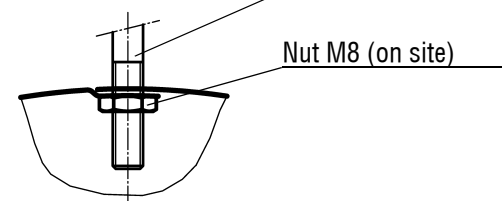
Fastening methods

Fastening hole (-B0 / -BB)

- without fastening hole (-B0).
- with fastening hole $\varnothing 11.5$ mm (-BB, standard).

Suspension on site

Detail Y

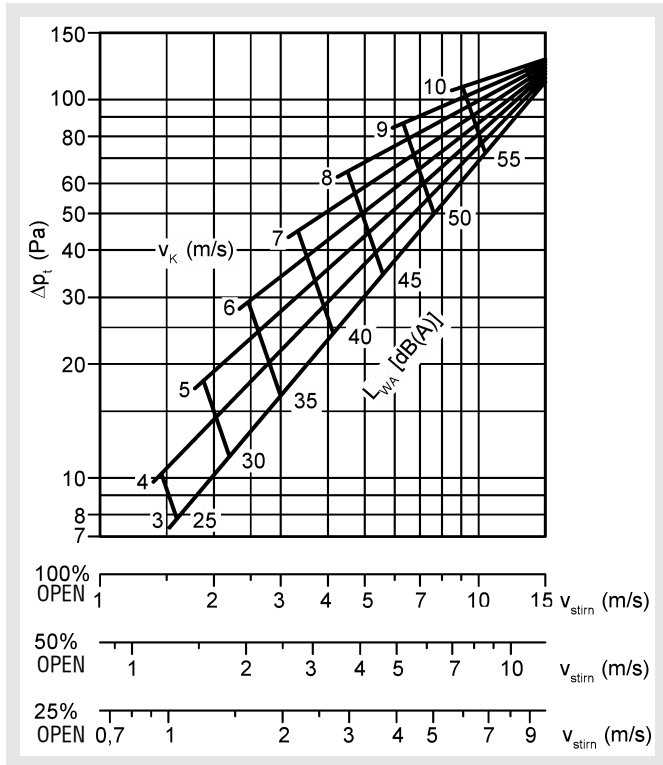


Prepared for suspended installation by using an M8 threaded rod and an M8 nut to be provided by the custom-

Round duct blade diffuser DBBRR

Technical data

Pressure loss and noise level



OPEN = hit-and-miss damper position

Correction factor pressure loss and noise level

$$V_{Stirn} = V_{ZU} \text{ (m}^3\text{/h)} : (\text{FQ} \times 3600 \times \text{KF})$$

NW	V_{ZU} (at $v_k=1$ m/s) (m ³ /h) [l/s]		FQ (m ²)						
			Number of slots along circumference						
			2	4	6	8	10	12	14
200	108	30	0,01	0,02	-	-	-	-	-
224	139	39	0,01	0,02	-	-	-	-	-
250	174	48	0,01	0,02	-	-	-	-	-
280	219	61	0,01	0,02	0,03	-	-	-	-
315	277	77	0,01	0,02	0,03	-	-	-	-
355	356	99	0,01	0,02	0,03	0,04	-	-	-
400	448	124	0,01	0,02	0,03	0,04	-	-	-
450	567	158	0,01	0,02	0,03	0,04	-	-	-
500	701	195	0,01	0,02	0,03	0,04	0,05	0,06	0,07
560	978	272	0,01	0,02	0,03	0,04	0,05	0,06	0,07
630	1115	310	0,01	0,02	0,03	0,04	0,05	0,06	0,07

	Length L	KF
1-part	500	x 0.5
	750	x 0.75
	1000	x 1.00
2-part	1500	x 1.5
	1750	x 1.75
	2000	x 2.0

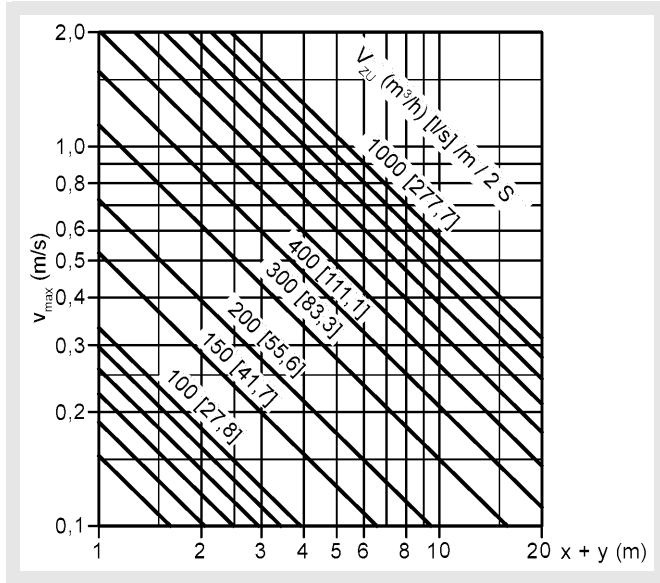
Correction factor pressure loss and noise level for DBBRR without hit-and-miss damper

$$L_{WA \text{ 100\% OPEN}} \times 0,877$$

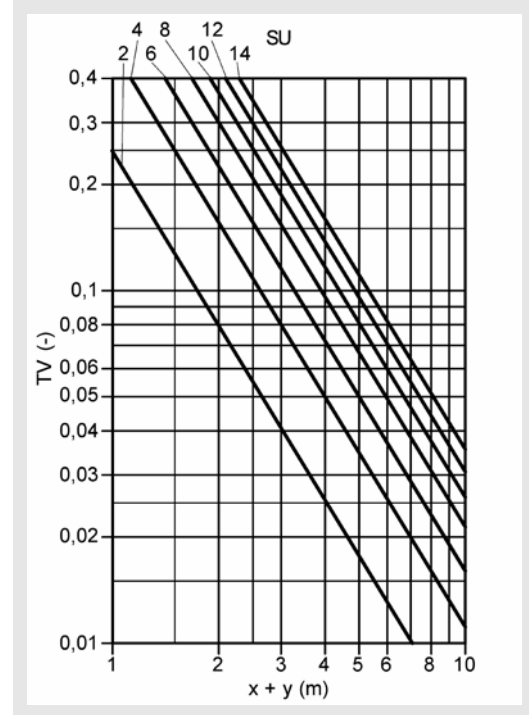
$$\Delta p_{t \text{ 100\% OPEN}} \times 0,78$$

Round duct blade diffuser DBRR

Maximum end velocity of jet



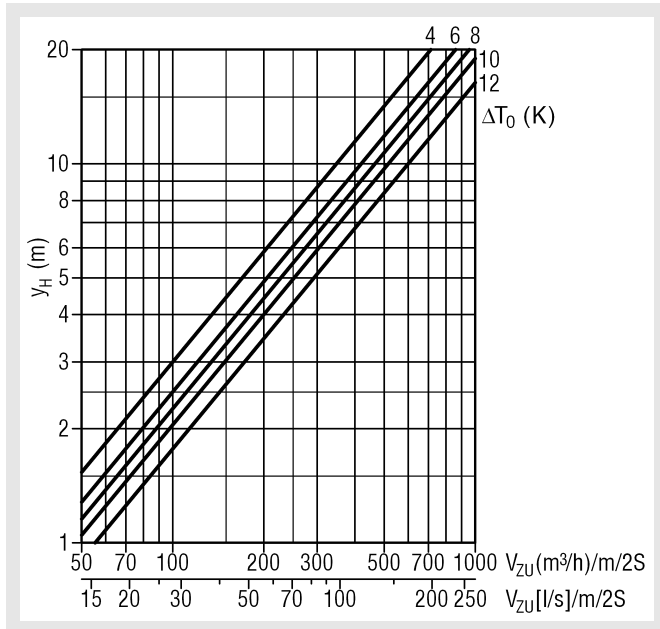
Temperature ratio one-way horizontal throw



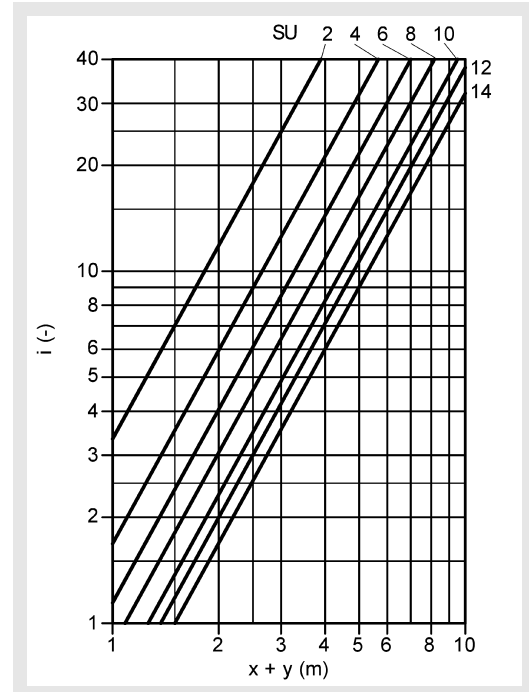
Correction factor Maximum end velocity of jet

	Number of slots along circumference						
	2	4	6	8	10	12	14
one-way horizontal	x1	x1.2	x1.4	x1.68	x2.02	x2.42	x2.88
horizontal left / right	x0.58	x0.72	x0.8	x0.96	x1.17	x1.39	x1.67

Maximum penetration



Induction ratio one-way horizontal throw



Correction factor max. penetration

	Number of slots along circumference						
	2	4	6	8	10	12	14
vertical	x1	x1.17	x1.36	x1.59	x1.86	x2.18	x2.56
crosswise	x1.2	x1.44	x1.73	x2.08	x2.49	x2.99	x3.58

Round duct blade diffuser DBBRR

Relative sound power spectrum

DBB-RR-Z (hit-and-miss damper 100%)							
Frequency	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz
KF	9,4	4,0	-2,7	-9,8	-16,5	-20,3	-23,3

DBB-RR-Z (hit-and-miss damper 50%)							
Frequency	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz
KF	9,4	3,6	-2,5	-8,8	-15,9	-20,5	-23,6

DBB-RR-Z (hit-and-miss damper 25%)							
Frequency	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz
KF	9,6	3,8	-2,7	-9,1	-16,1	-20,6	-23,2

DBB-RR-Z (without hit-and-miss damper)							
Frequency	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz
KF	10,4	4,0	-5,2	-11,5	-17,8	-20,6	-22,8

$$L_W = L_{WA} + KF$$

Round duct blade diffuser DBBRR

Legend

V_{ZU} ($m^3/h/m/2S$)	= Supply air volume per meter per 2 slots
V_{ZU} [$l/s/m/2S$]	= Supply air volume per meter per 2 slots
V_x (m^3/h) [l/s]	= total air jet volume at point x
Δp_t (Pa)	= Pressure loss
v_{stirn} (m/s)	= Intake velocity, blower stream velocity, out-flow velocity, relative to A_{stirn}
v_{max} (m/s)	= Maximum end velocity of jet
v_K (m/s)	= Duct velocity
L_{WA} [dB(A)]	= A-weighted sound power level
L_W (dB)	= relative sound power level
KF (-)	= Correction factor
x+y (m)	= Horizontal + vertical throw
y_H (m)	= Maximum penetration in heating mode
ΔT_0 (K)	= Temperature difference between supply air temperature and room temperature ($\Delta T_0 = t_{ZU} - t_R$)
ΔT_x (K)	= Temperature difference at point x
t_{ZU} ($^{\circ}C$)	= Supply air temperature
t_R ($^{\circ}C$)	= Room temperature
i (-)	= Induction ratio ($i = V_x / V_{ZU}$)
TV (-)	= Temperature ratio ($TV = \Delta T_x / \Delta T_0$)
KF (-)	= Correction factor
FQ (m^2)	= Free cross-section
NW	= Nominal width
SU	= Number of slots along circumference

Round duct blade diffuser DBBRR

Order code DBBRR

01	02	03	04	05	06	07
Type	Air throw	Nominal width	Length	Air throw pattern	Material	Paint
Example						
DBBRR	-Z	200	-1000	-B	-SB	-9010

08	09	10	11	12	13
Blade colour	Number of slots	Mounting position	Hit-and-miss damper	Rubber lip seal	Fastening methods
-L9005	-04	-6U	-SS	-GD0	-BB

Sample

DBBRR-Z-200-1000-B-SB-9010-L9005-04-6U-SS-GD0-BB

Round duct blade diffuser DBBRR | Supply air | Nominal width 200 mm | Length 1000 mm | Two-way horizontal throw | Sheet steel | Painted to RAL colour 9010 (white) | Blade colour black similar to RAL 9005 | 4-slot | 6 o'clock | With hit-and-miss damper | Without rubber lip seal | With fastening hole

Order details

01 - Type

DBBRR = Round duct blade diffuser DBBRR

02 - Air throw

Z = Supply air

A = return air

03 - Nominal width

200 = 200 mm

224 = 224 mm

250 = 250 mm

280 = 280 mm

315 = 315 mm

355 = 355 mm

400 = 400 mm

450 = 450 mm

500 = 500 mm

560 = 560 mm

630 = 630 mm

04 - Length

0500 = 500 mm (1-part)

0750 = 750 mm (1-part)

1000 = 1000 mm (1-part)

1500 = 1500 mm (2-part)

1750 = 1750 mm (2-part)

2000 = 2000 mm (2-part)

05 - Air throw pattern

E = one-way horizontal throw

B = two-way horizontal throw (standard)

V = vertical throw

K = crosswise throw

O = Return air without blades

06 - Material

SB = Sheet steel (standard with paint)

SV = galvanised sheet steel

07 - Paint

0000 = Without paint

9010 = Painted to RAL colour 9010 (white, standard)

xxxx = Painted to a freely selectable RAL colour (always with 4 digits)

08 - Blade colour

L9005 = Blades made of plastic, similar to RAL colour 9005 (black, standard)

L9010 = Blades made of plastic similar to RAL colour 9010 (white)

Axxxx = Blades made of aluminium, RAL colour can be freely selected

00000 = without blades (only possible for return air)

09 - Number of slots

02 = 2-slot

04 = 4-slot

06 = 6-slot (possible from NW 280 upwards)

08 = 8-slot (possible from NW 355 upwards)

10 = 10-slot (possible from NW 500 upwards)

12 = 12-slot (possible from NW 500 upwards)

14 = 14-slot (possible from NW 500 upwards)

Round duct blade diffuser DBBRR

10 - Mounting position

- 3U = 3 o'clock
- 6U = 6 o'clock (standard)
- 9U = 9 o'clock
- 0U = 12 o'clock

11 - Hit-and-miss damper

- SN = without hit-and-miss damper
- SS = with hit-and-miss damper (standard)

12 - Rubber lip seal

- GD0 = without rubber lip seal (standard)
- GD1 = with rubber lip seal

13 - Fastening methods

- B0 = without fastening hole
- BB = with fastening hole $\varnothing 11.5$ mm (standard)

Round duct blade diffuser DBBRR

Specification texts

Round duct blade diffuser suitable for connection to DIN ducts. With integrated, manually adjustable air deflection blades. Sound power level and pressure loss remain constant in all blade positions.

Product: SCHAKO type **DBBRR-Z...**

- for return air, without air deflection blades
Product: SCHAKO type **DBBRR-A...**

- Nominal width:

- 200 mm (-200)
- 224 mm (-224)
- 250 mm (-250)
- 280 mm (-280)
- 315 mm (-315)
- 355 mm (-355)
- 400 mm (-400)
- 450 mm (-450)
- 500 mm (-500)
- 560 mm (-560)
- 630 mm (-630)

- Length:

- 1-part: 500 / 750 / 1000 (-0500/-0750/-1000)
- 2-part: 1500 / 1750 / 2000 (-1500/-1750/-2000)

- Air throw pattern:

- one-way horizontal throw (-E).
- two-way horizontal throw (-B, standard).
- vertical throw (-V).
- crosswise throw (-K).
- Return air without blades (-O).

- Material and paint (round duct):

- Galvanised sheet steel (-SV-000) (at an extra charge).
- Sheet steel painted to RAL 9010 (white) (standard, -SB-9010).
- Sheet steel painted to a freely selectable RAL colour (-SB-xxxx) (colour always with 4 digits).

- Blade colour:

- Without blades (-00000, only possible for return air).
- With blades of plastic material:
 - Similar to RAL colour 9010 (-L9010, white).
 - Similar to RAL colour 9005 (-L9005, black) (standard).
- With blades made of aluminium painted to the RAL colour of the round duct (-Axxxx) (colour always with 4 digits), painted blades cannot be subsequently adjusted.

- Number of slots:

- 2-slot (-02).
- 4-slot (-04).
- 6-slot (possible from NW 280 upwards) (-06).
- 8-slot (possible from NW 355 upwards) (-08).
- 10-slot (possible from NW 500 upwards) (-10).
- 12-slot (possible from NW 500 upwards) (-12).
- 14-slot (possible from NW 500 upwards) (-14).

- Mounting position:

- 3 o'clock (-3U).
- 6 o'clock (-6U, standard).
- 9 o'clock (-9U).
- 12 o'clock (-0U).

- Hit-and-miss damper:

- Without hit-and-miss damper (-SN).
- With integrated hit-and-miss damper (-SS) for simple air volume and ductwork regulation, made of the same material as the round duct.

- Fastening methods:

- fastening hole
 - without fastening hole (-B0).
 - With fastening hole $\varnothing 11.5$ mm (-BB, standard). (Prepared for suspended installation by using an M8 threaded rod and an M8 nut to be provided on site).

Accessories (at an extra charge):

- Rubber lip seal
 - Without rubber lip seal (-GD0).
 - with rubber lip seal (-GD1), on both sides, made of EPDM.

For more accessories, please refer to the separate documentation "Round duct system accessories".