

**DF swirl diffusers**  
for optimum air distributions

- SERIES DF2**
- Smooth glossy powder coating, standard – colour RAL 9010
  - Optimised plenum box

# DF swirl diffusers

Description, type overview

**DF swirl diffusers** are suitable for constant and variable supply air volume flow rates and for exhaust air. Air is distributed radially via conical diffusers on square and circular front panels with radial guide vanes as air deflection elements.

DF swirl diffusers ensure high induction with the room air immediately at the outlet. This quickly reduces the velocity of the flowing supply air and the temperature differentials. This also applies when heating or cooling a room with a temperature difference of -12 K between the room air and supply air. If the minimum volume flow rates are maintained in the area of application, there is never a risk of airflow coming off the ceiling when cooling a room. Air is deflected into the occupied zone by room walls and counterflows. Optimum air distribution is possible in rooms with heights of approximately 2.5 to 4 m, and is best achieved with swirl diffusers installed flush in ceilings.

DF swirl diffusers are made of galvanized sheet steel. A resilient extremely colour-fast and anti-static surface finish made of polyester and sintered at a high temperature has been applied to the front plates and funnel. With powdered coating in colour RAL 9010 (white) smooth glossy with 80 to 90% gloss level or in another RAL colour.

With low-turbulence connection elements for optimum air distribution with extremely low flow noise designed as special perforated plates for on-site connecting ducts and with reducers, also with ceiling clamping ring.

The plenum boxes made of galvanized sheet steel are optimised for swirl diffusers and low heights and are also available with powder coating. A lateral connecting piece is available as standard, in addition to dampers and special air deflector plates for optimum air distribution, especially for supply air. The volume flow can be adjusted without dismantling the swirl diffuser. With holes for suspensions and with concealed central fastening.

## Type overview

### Swirl diffuser DFR0 / DFQ0 / DFH0 / DFG0

without	
• Additional connection elements	DF...0
with	
• Perforated sheet metal	DF...0 - L
• Reducer R	DF...0 - R
• Reducer RK	DF...0 - RK
• Plenum box with lateral connecting piece and	
▪ without damper, without air deflector plate	DF...0 - K4
▪ with damper	DF...0 - K4 - D
▪ with air deflector plate	DF...0 - K4 - L
▪ with damper, with air deflector plate	DF...0 - K4 - DL

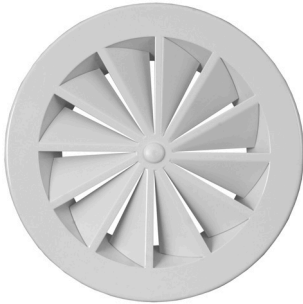
## DF swirl diffusers

- satisfy the **hygiene requirements** according to VDI 6022-1, VDI 3803-1, DIN 1946-4 and DIN EN13779.
- are **resistant to microbes**, and therefore **do not promote the growth of microorganisms (fungi, bacteria)**. This reduces the risk of infection for people and also the necessary cleaning and disinfection work!
- are **resistant to cleaning agents and disinfectants** and are suitable for use in hospitals and similar facilities!



# DF swirl diffusers

Data sheet: Front plates



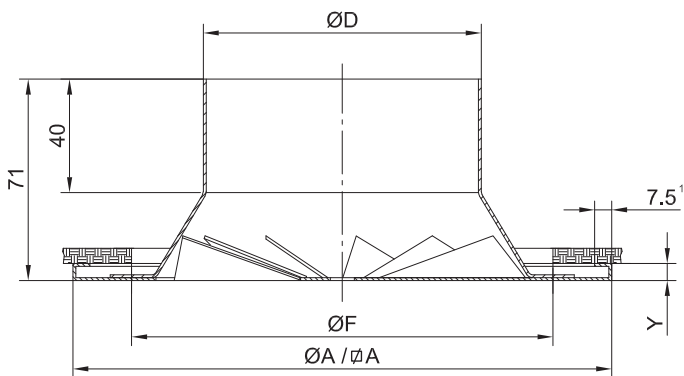
**Circular front DFR0**



**Square front DFQ0**



**Square front DFH0 / DFG0**



<sup>1)</sup> surrounding edging only with DFH0 and DFG0

**Central fastening**

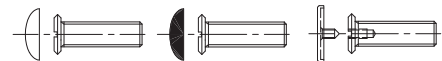
with concealed screws M8x25:

**Colour of swirl diffuser**

RAL 9010 | Special colour RAL.....

**Colour of corresponding cap**

White | Black | Special colour  
RAL 9010 | RAL 9017 | RAL.....



Nominal size	Type:		DFQ0		DFH0		DFG0		DFR0		ØF	A <sub>free</sub> [m <sup>2</sup> ]	Application with supply air from: ⇒ see page 15
	Ø D	Ø A Y	Ø A Y	Ø A Y	Ø A Y	Ø A Y	Ø A Y						
DN 100	98	198 5	595 9	623 9	190 5	138	0.0039	25 m <sup>3</sup> /h					
DN 125	123	198 5	595 9	623 9	220 5	163	0.0057	35 m <sup>3</sup> /h					
DN 160	158	248 5	595 9	623 9	250 5	198	0.0094	45 m <sup>3</sup> /h					
DN 200	198	298 5	595 9	623 9	330 5	238	0.0155	55 m <sup>3</sup> /h					
DN 250	248	348 5	595 9	623 9	380 5	288	0.0212	70 m <sup>3</sup> /h					
DN 315	313	398 5	595 9	623 9	450 5	353	0.0371	95 m <sup>3</sup> /h					
DN 355	353	448 5	595 9	623 9	500 5	393	0.0421	145 m <sup>3</sup> /h					

All dimensions in mm

**Special designs**

- Coating of front plates with polyester in other colours. Colours are available from the RAL Classic colour collection as standard. Customised colours – besides those available at the factory – can always be ordered!
- Coating of plenum boxes with polyester, black inside and outside, or outside in colours<sup>3)</sup> as before.

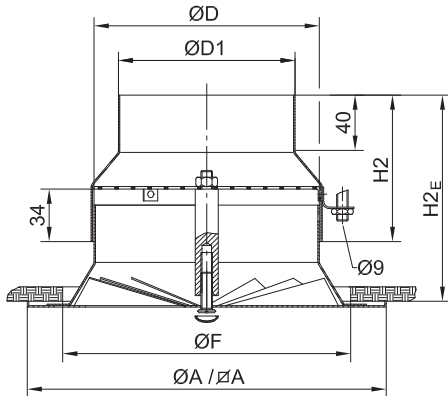
<sup>3)</sup> for colours ⇒ see page 18

# DF swirl diffusers

Data sheet: Connections with reducers

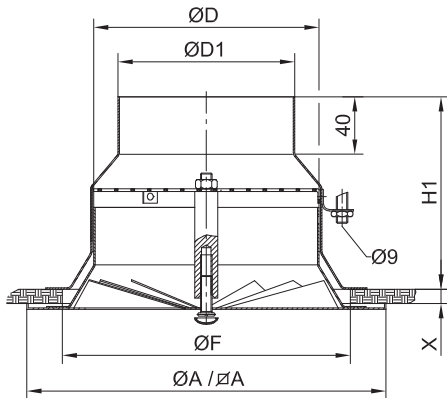
## R - reducer and perforated sheet metal rectifier

- For central fastening
- For all applications



## RK - Reducer, perforated sheet metal rectifier and ceiling clamping ring

- For central fastening
- For closed ceiling systems



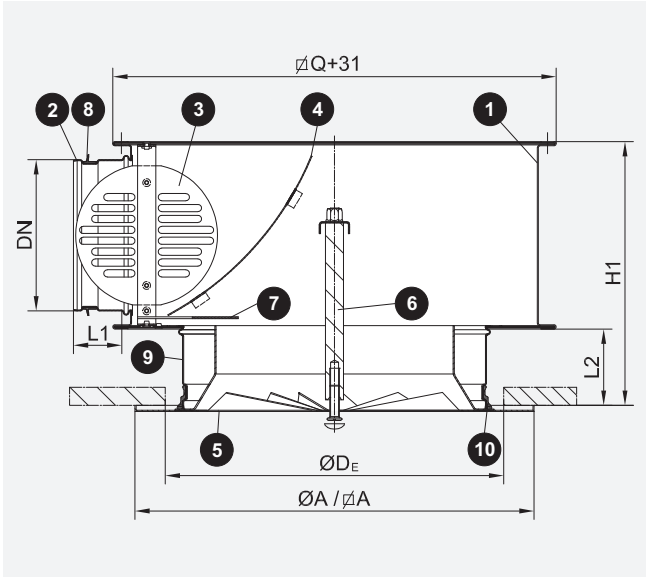
Type:	DFQ0	DFH0	DFG0	DFR0							
Nominal size	$\varnothing A$	$\varnothing A$	$\varnothing A$	$\varnothing A$	$\varnothing D$	$\varnothing D1$	$\varnothing F$	H1	H2	$H2_E$ <sup>*)</sup>	X
DN 125	198	595	623	220	123	98	163	128	96	141	10-20
DN 160	248	595	623	250	158	123	198	132	100	145	10-20
DN 200	298	595	623	330	198	178	238	124	92	133	10-20
DN 250	348	595	623	380	248	198	288	140	108	153	10-20
DN 315	398	595	623	450	313	248	353	149	117	162	10-20
DN 355	448	595	623	500	353	277	393	154	122	167	10-20

<sup>\*)</sup> The  $H2_E$  value specified for DFH0 and DFG0 is 4 mm smaller

# DF swirl diffusers

Data sheet: Plenum boxes for closed ceiling systems, grid ceilings and for freely suspended installation.

## K4 - with lateral connecting piece



### Parts list

- 1 Plenum box
- 2 Connecting piece
- 3 Damper (option)
- 4 Air deflector plate (option)
- 5 Swirl diffuser
- 6 Central fastening
- 7 Adjustment device of damper
- 8 Lip seal (optional)
- 9 Coupling piece
- 10 Connection seal

### Plenum box dimensions K4

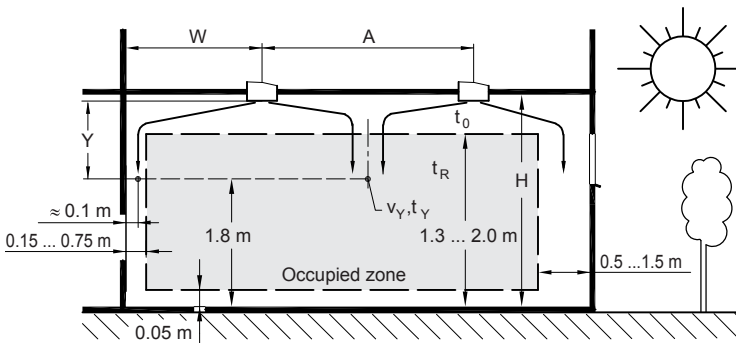
The heights H1 of the plenum box K4 with standard connector are printed in bold

Type:	DFQ0	DFH0	DFG0	DFR0	Height H1 [mm] for plenum box K4 With connecting piece DN									
	∅A	∅A	∅A	∅A	∅Q	L2	∅D <sub>E</sub>	100	125	160	200	250	280	315
DN 100	198	595	623	190	260	45	170	<b>195</b>	-	-	-	-	-	-
DN 125	198	595	623	220	260	45	190	<b>195</b>	220	-	-	-	-	-
DN 160	248	595	623	250	260	45	220	195	<b>220</b>	-	-	-	-	-
DN 200	298	595	623	330	337	65	270	-	220	<b>255</b>	-	-	-	-
DN 250	348	595	623	380	437	65	320	-	-	255	<b>295</b>	-	-	-
DN 315	398	595	623	450	437	65	375	-	-	-	295	<b>345</b>	-	-
DN 355	448	595	623	500	537	55	420	-	-	-	-	345	<b>375</b>	410
Length of connecting piece L1								40	40	40	40	60	60	60

All dimensions in mm

# DF swirl diffusers

Dimensioning



## Occupied zone according to EN 13779

The occupied zone is defined in EN 13779 as a spatial element. The comfort criteria it lays out must be met.

In the usual area of application, the height is 1.30 m to 2.00 m. The permissible flow velocities  $v_Y$  should be set as standard at a height of 1.80 m. Higher velocities are permissible outside the occupied zone, at distances of 0.15 m to 0.75 m from interior and exterior walls and from 0.5 m to 1.5 m from exterior walls with windows or doors.

## Dimensioning of DF swirl diffusers

The flow velocity  $v_Y$  is determined by the nominal size of the swirl diffusers, the volume flow  $V$ , the room height  $H$ , the orthogonal distances  $A$  and  $B$  of the swirl diffusers from one another and from the wall  $W$ . In addition to the absolute distances  $A$  and  $B$ , the ratio of  $A$  to  $B$  is important. Swirl diffusers in strict rectangular arrangements with  $A \gg B$  or  $B \gg A$ , which can also be single row arrangements, produce significantly different flow velocities  $v_Y$  compared to square and slightly rectangular arrangements. By using suitable arrangements therefore, the flow velocities in the room can be optimised; which may be particularly necessary with a high air change rate.

The following applies to the occupied zone:

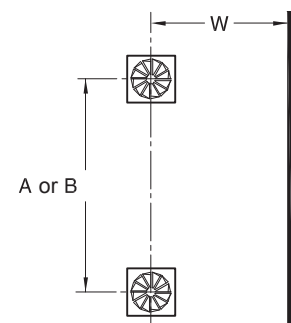
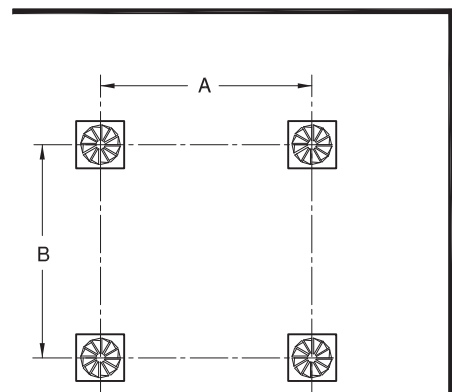
### DF swirl diffusers achieve

- lower flow velocities  $v_Y$ , if
  - both distances  $A$  and  $B$  are relatively large, or if
  - the distances  $A$  and  $B$  are significantly different. One distance should be at least 3 m, and the other should be 2 m at the most.
- higher flow velocities  $v_Y$ , if
  - both distances  $A$  and  $B$  are relatively small, or if in general
  - the distances  $A$  and  $B$  are square.

The flow velocities  $v_Y$  of DF swirl diffusers in the area of the wall reduce as the distances increase. This applies for the distances  $A$  or  $B$  of the swirl diffusers parallel to the wall and also for their distance  $W$  from the wall.

The nomograms show these relationships and the effect of adjacent walls.

The room airflow can be optimised using various arrangements of DF swirl diffusers and by choosing suitable nominal sizes. In this way, it is possible to use fewer swirl diffusers. However, effective room airflow and large enough flow velocities for effective airflow in the room should also always be ensured.



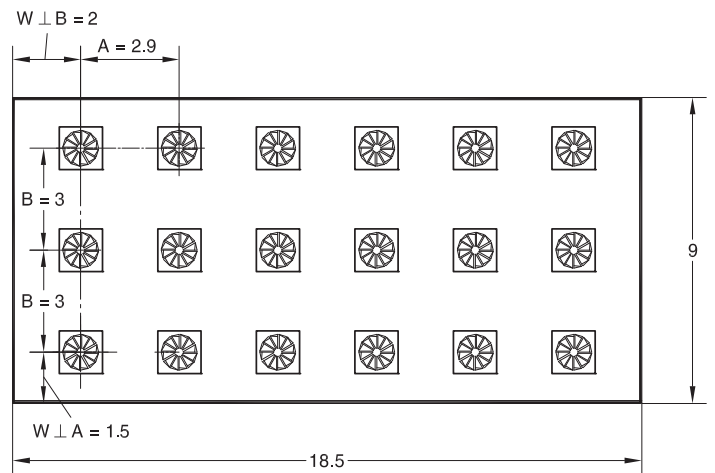
# DF swirl diffusers

Dimensioning example

## Rectangular arrangement

### Specified:

Room dimension 1		18.5 m
Room dimension 2		9.0 m
Room height	H =	2.9 m
Ceiling spacing	Y =	1.2 m
Distance from floor for $t_y$ and $v_y$	H - Y =	1.7 m
Air change		6.7 h <sup>-1</sup>
Room volume		482 m <sup>3</sup>
Total volume flow	$V_{tot}$ =	3240 m <sup>3</sup> /h
Room temperature	$t_R$ =	22 °C
Supply air temperature	$t_0$ =	16 °C



Dimensions in [m]

### Plenum box with standard connection piece

<b>DFQ0 - 200 - K4 - 160 - DL<sup>1)</sup></b>		18 Pc
Volume flow per diffuser	V	= 180 m <sup>3</sup> /h
Cross-section	$A_{free}$	= 0.0155 m <sup>2</sup>
Flow velocity in $A_{free}$	$v_0$	= 3.2 m/s
$\Delta p_t$ , damper OPEN	$\Delta p_t$	= 18 Pa
$L_{WA}$ , damper OPEN	$L_{WA}$	= 30 dB(A)
⇒ see nomogram page 11		
$\Delta p_t$ , damper CLOSED	18 Pa · 2.1 <sup>2)</sup>	= 38 Pa
$L_{WA}$ , damper CLOSED	30 dB(A) + 3.8 <sup>2)</sup>	= 34 dB(A)

### Octave sound power level $L_{W-Oct}$ , damper OPEN

f [Hz]	63	125	250	500	1000	2000	4000	8000
$L_{WA}$ [dB(A)]	30	30	30	30	30	30	30	30
$\Delta L_{3.2 (m/s)}$ [dB]	+14	+10	+4	-4	-8	-14	-25	-26
$L_{W-Oct}$ [dB]	44	40	34	26	22	<20	<20	<20

⇒ see nomogram page 11

### Plenum box with other connecting piece size

<b>DFQ0 - 200 - K4 - 125 - DL<sup>1)</sup></b>		18 Pc
Volume flow per diffuser	V	= 180 m <sup>3</sup> /h
Cross-section	$A_{free}$	= 0.0155 m <sup>2</sup>
Flow velocity in $A_{free}$	$v_0$	= 3.2 m/s
$\Delta p_t$ , damper OPEN		= 28 Pa
$L_{WA}$ , damper OPEN		= 36 dB(A)
⇒ see nomogram page 11		
$\Delta p_t$ , damper CLOSED	28 Pa · 3.2 <sup>2)</sup>	= 90 Pa
$L_{WA}$ , damper CLOSED	36 dB(A) + 7.8 <sup>2)</sup>	= 44 dB(A)

### Octave sound power level $L_{W-Oct}$ , damper OPEN

f [Hz]	63	125	250	500	1000	2000	4000	8000
$L_{WA}$ [dB(A)]	36	36	36	36	36	36	36	36
$\Delta L_{3.2 (m/s)}$ [dB]	+14	+10	+4	-4	-8	-14	-25	-26
$L_{W-Oct}$ [dB]	50	46	40	32	28	22	<20	<20

⇒ see nomogram page 11

<sup>1)</sup> Order information ⇒ see page 18

<sup>2)</sup> Correction values ⇒ see page 11

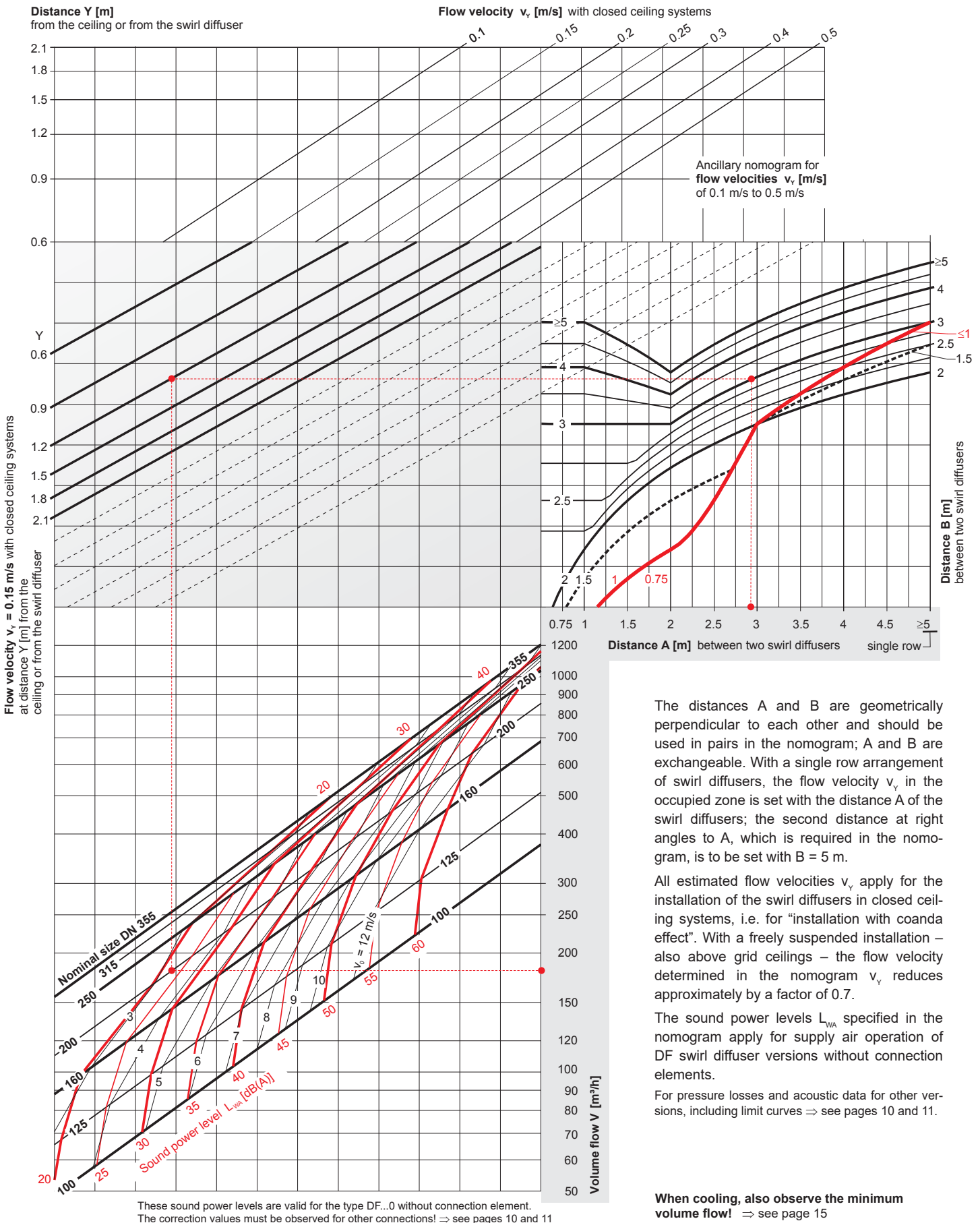
### Room airflow

Distance A	A =	2.90 m
Distance B	B =	3.00 m
Distance W, at right angles to A	W =	1.50 m
Distance W, at right angles to B	W =	2.00 m
Flow velocity in occupied zone	$v_y$ =	0.15 m/s
⇒ see nomogram on page 8		
Flow velocity at the wall, at right angles to A	$v_y$ =	0.20 m/s
⇒ see nomogram on page 9		
Flow velocity at the wall, at right angles to B	$v_y$ =	0.15 m/s
⇒ see nomogram on page 9		
Temperature ratio	$\Delta t/\Delta t_0$ =	0.04
Induction	i =	25
⇒ see nomogram on page 14		

Nomenclature ⇒ see page 14

# DF swirl diffusers

Room airflow (air streams towards each other)



The distances A and B are geometrically perpendicular to each other and should be used in pairs in the nomogram; A and B are exchangeable. With a single row arrangement of swirl diffusers, the flow velocity  $v_v$  in the occupied zone is set with the distance A of the swirl diffusers; the second distance at right angles to A, which is required in the nomogram, is to be set with B = 5 m.

All estimated flow velocities  $v_v$  apply for the installation of the swirl diffusers in closed ceiling systems, i.e. for "installation with coanda effect". With a freely suspended installation – also above grid ceilings – the flow velocity determined in the nomogram  $v_v$  reduces approximately by a factor of 0.7.

The sound power levels  $L_{wa}$  specified in the nomogram apply for supply air operation of DF swirl diffuser versions without connection elements.

For pressure losses and acoustic data for other versions, including limit curves ⇒ see pages 10 and 11.

**When cooling, also observe the minimum volume flow!** ⇒ see page 15

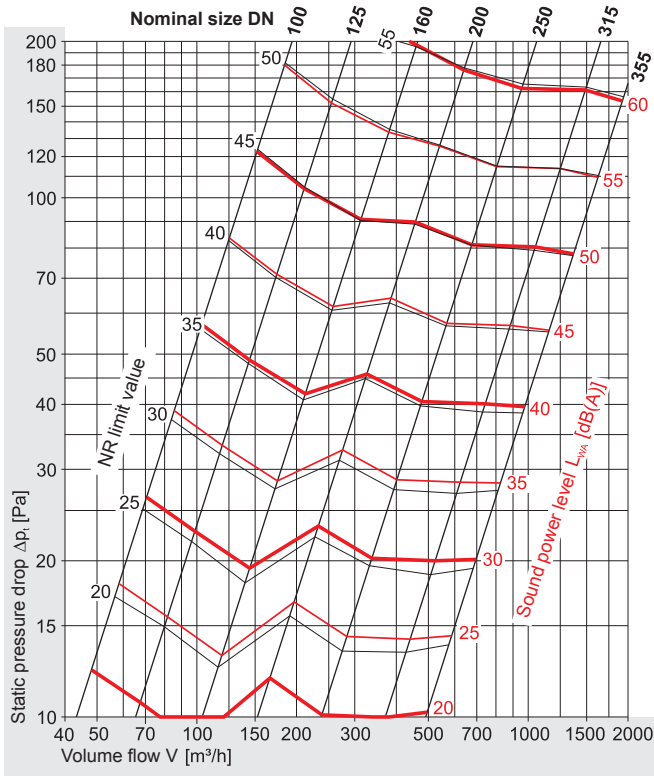




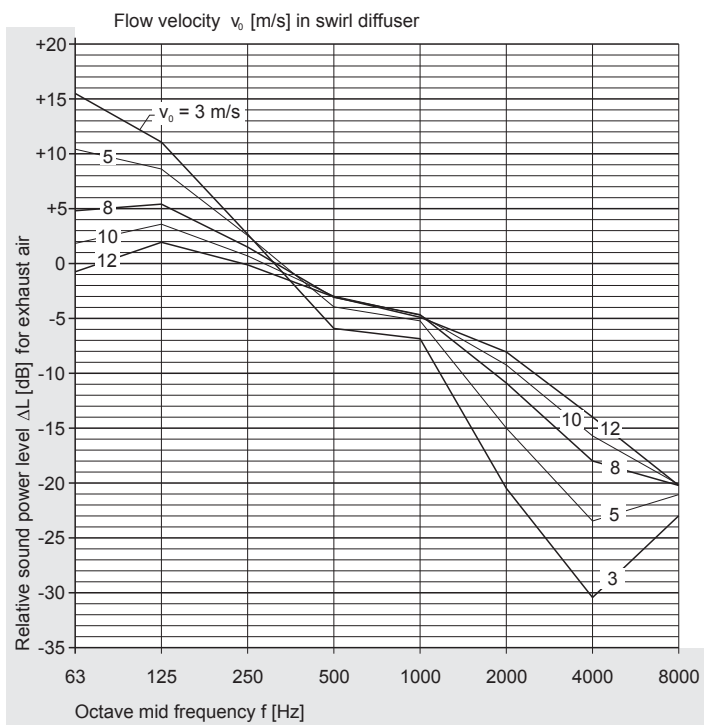
# DF swirl diffusers

SUPPLY AIR: Pressure drop, sound power level, NR (noise rating), relative sound power level

## DF without connection element



## DF without connection element



### Correction values:

#### Connection versions L, R, RK

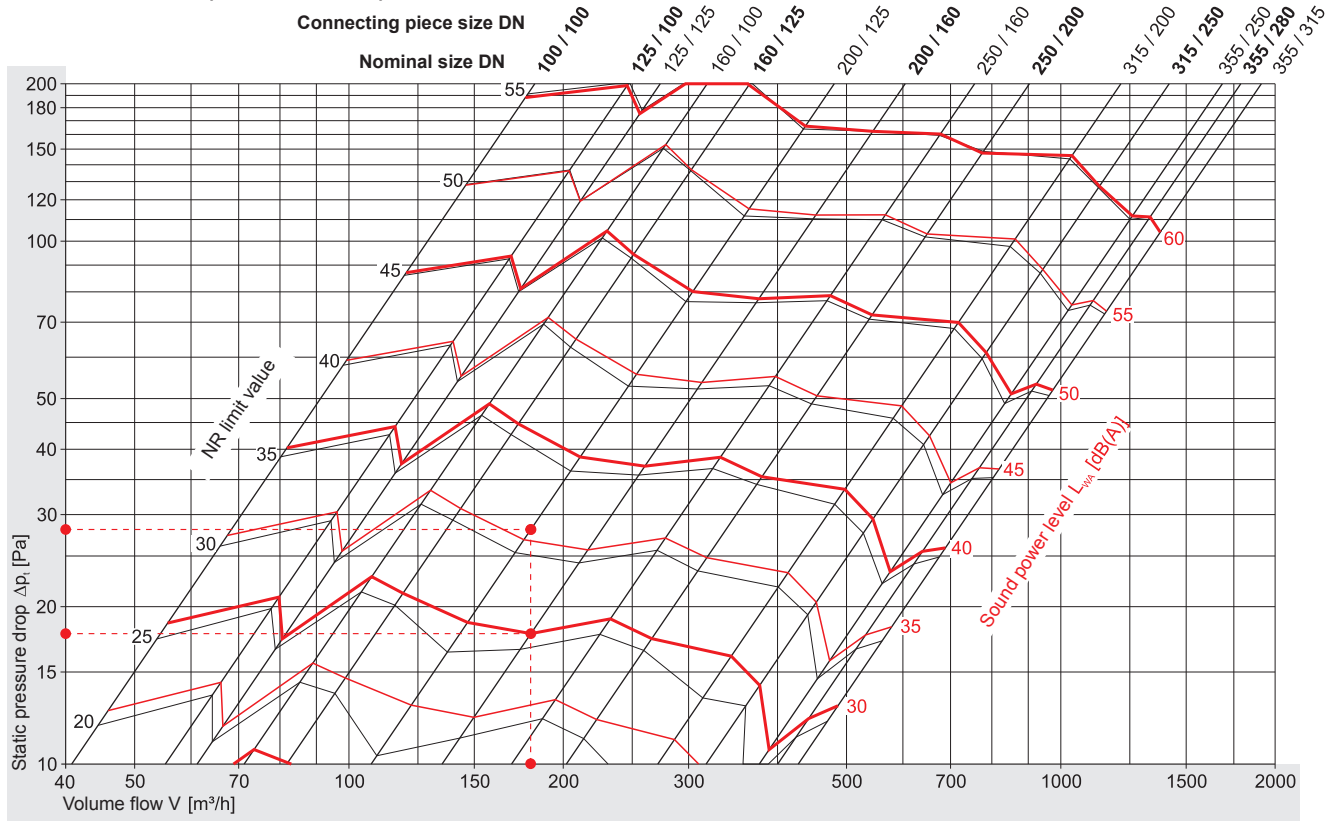
Nominal size	Version	x $\Delta p$	+ $L_{WA}$
DN 100	L	x 1.3	+5
	R/RK	-	-
DN 125	L	x 1.4	+5
	R/RK	x 1.6	+7
DN 160	L	x 1.3	+4
	R/RK	x 1.5	+6
DN 200	L	x 1.3	+4
	R/RK	x 1.3	+5
DN 250	L	x 1.4	+7
	R/RK	x 1.5	+8
DN 315	L	x 1.3	+8
	R/RK	x 1.4	+9
DN 355	L	x 1.3	+8
	R/RK	x 1.5	+9

# DF swirl diffusers

SUPPLY AIR: Pressure drop, sound power level, NR (noise rating), relative sound power level

## DF with plenum box K4-DL

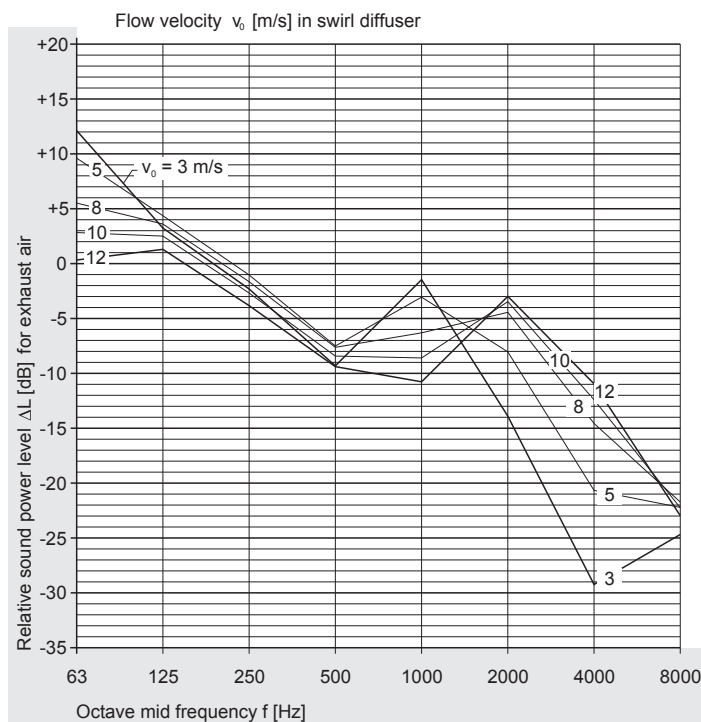
with air deflector plate and damper OPEN



Example  $\Rightarrow$  see page 7

## DF with plenum box K4-DL

with air deflector plate and damper OPEN



## Correction values:

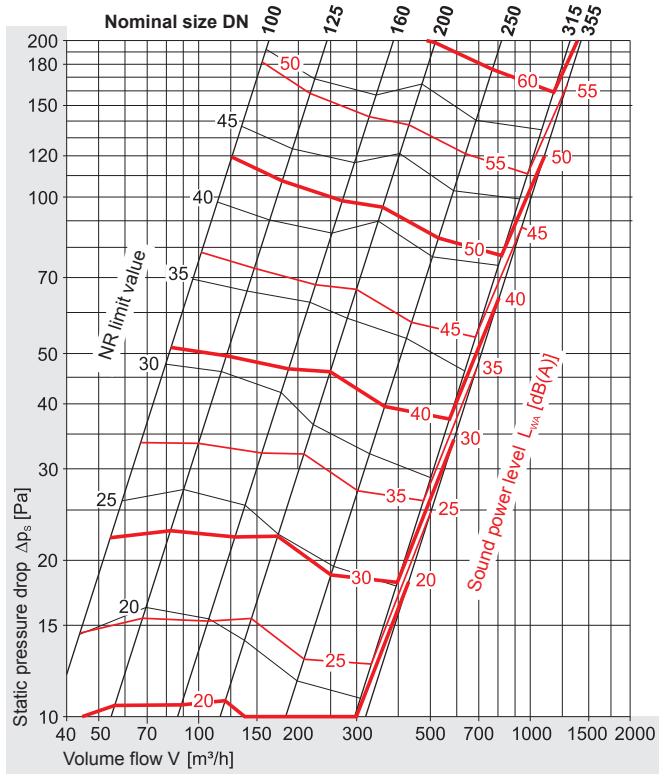
Plenum box K4  
with damper CLOSED

Nominal size	Connecting piece DN	$\times \Delta p$	$+ L_{WA}$
DN 100	100	1.8	0.6
DN 125	100	2.4	4.9
	125	1.7	0.7
DN 160	100	3.4	12.0
	125	2.3	5.5
DN 200	125	3.2	7.8
	160	2.1	3.8
DN 250	160	2.6	6.2
	200	1.9	2.5
DN 315	200	2.8	7.2
	250	1.9	2.5
DN 355	250	2.5	2.8
	280	1.8	1.8
	315	1.5	0.7

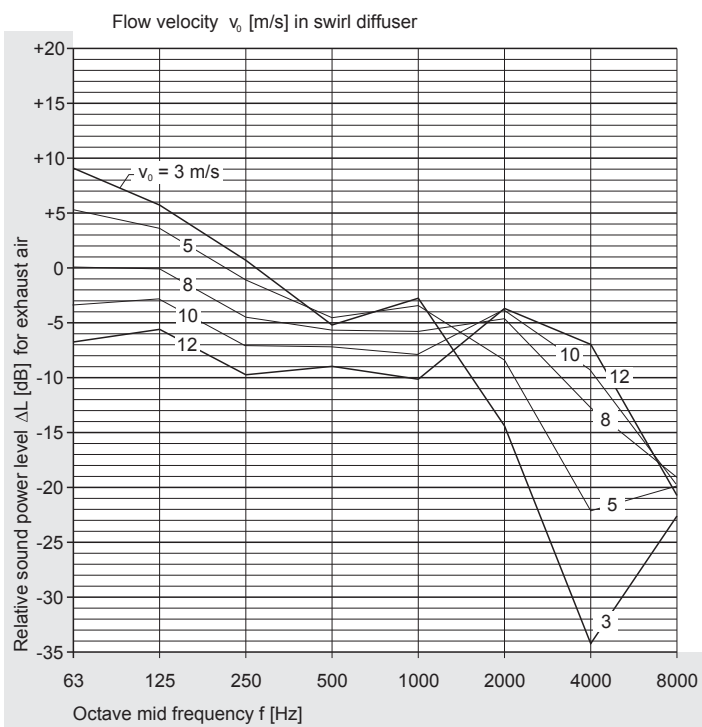
# DF swirl diffusers

EXHAUST AIR: Pressure drop, sound power level, NR (noise rating), relative sound power level

## DF without connection element



## DF without connection element



### Correction values: Connection versions L, R, RK

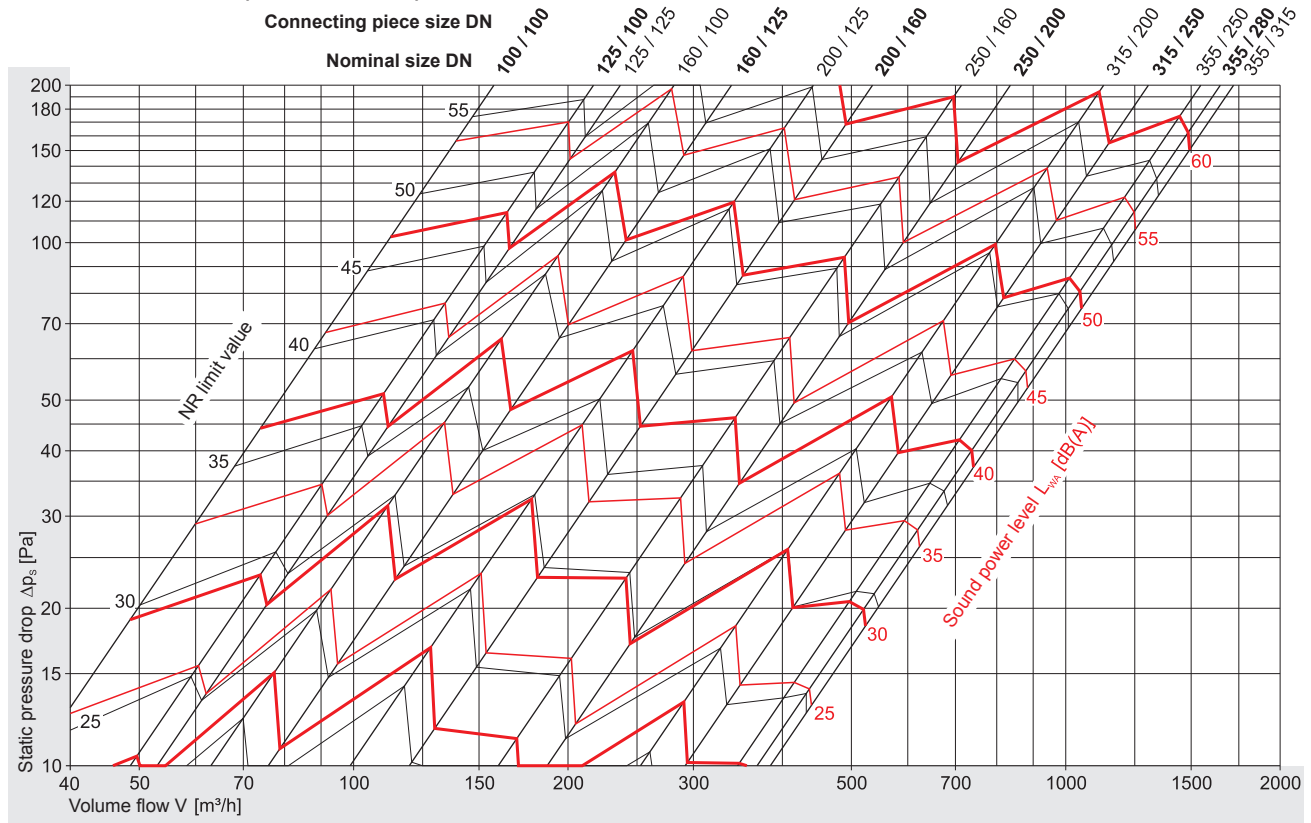
Nominal size	Version	x $\Delta p$	+ $L_{WA}$
DN 100	L	x 1.3	+2
	R/RK	-	-
DN 125	L	x 1.2	+3
	R/RK	x 1.7	+4
DN 160	L	x 1.3	+3
	R/RK	x 1.7	+5
DN 200	L	x 1.2	+3
	R/RK	x 1.3	+1
DN 250	L	x 1.3	+1
	R/RK	x 1.7	+2
DN 315	L	x 1.2	+2
	R/RK	x 1.8	+4
DN 355	L	x 1.1	+3
	R/RK	x 1.2	+8

# DF swirl diffusers

EXHAUST AIR: Pressure drop, sound power level, NR (noise rating), relative sound power level

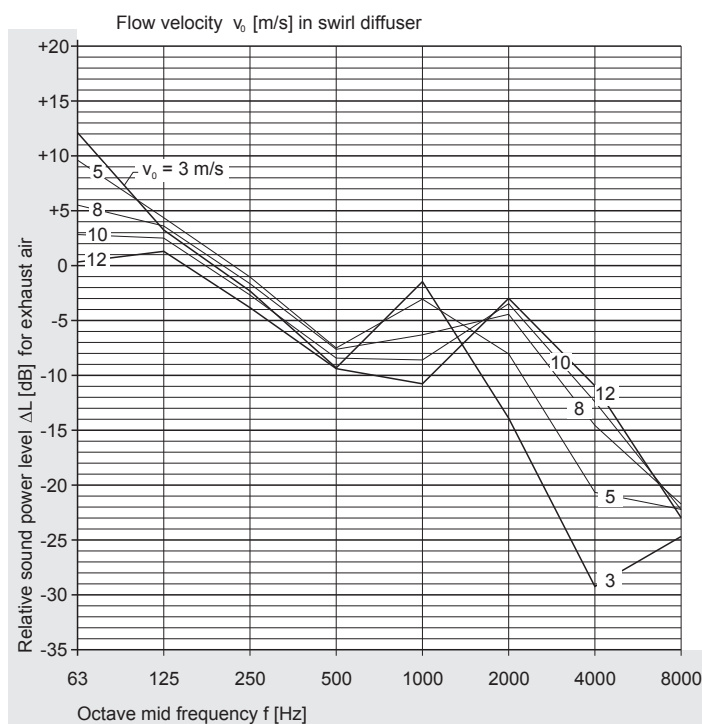
## DF with plenum box K4-D

without air deflector plate and damper OPEN



## DF with plenum box K4-D

without air deflector plate and with damper OPEN



## Correction values:

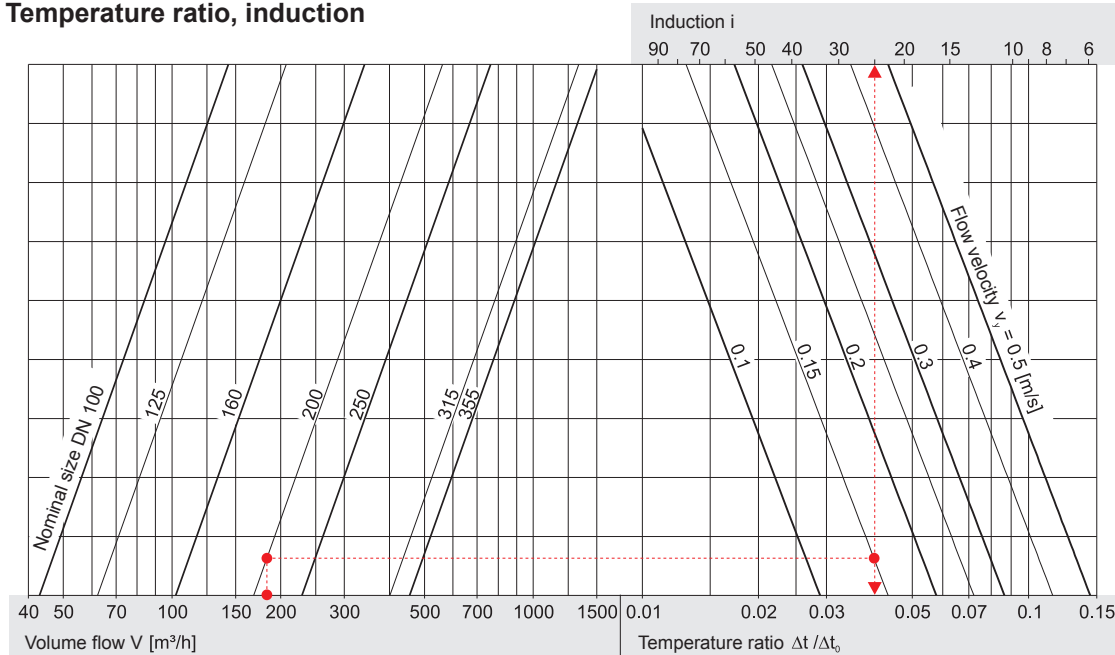
Plenum box K4  
with damper CLOSED

Nominal size	Connecting piece DN	x $\Delta p$	+ $L_{wa}$
DN 100	100	1.4	0.1
DN 125	100	1.9	1.6
	125	1.4	0.4
DN 160	100	2.6	10.3
	125	1.9	4.1
DN 200	125	2.7	11.2
	160	1.8	3.0
DN 250	160	2.3	6.7
	200	1.8	1.6
DN 315	200	2.5	11.7
	250	1.9	6.1
DN 355	250	2.2	8.6
	280	1.7	5.0
	315	1.5	3.3

# DF swirl diffusers

Temperature ratio, induction, nomenclature, acoustic limit values, room attenuation

## Temperature ratio, induction



**Example** (⇒ see also page 7)

<b>Specified:</b>	Nominal size 200	<b>Result:</b>	
Volume flow	$V = 180 \text{ m}^3/\text{h}$	Temperature ratio	$\Delta t/\Delta t_0 = 0.04$
Flow velocity	$v_y = 0.15 \text{ m/s}$	Calculate temperature $t_y$ :	$V_s = 25 \cdot 180 \text{ m}^3/\text{h} = 4500 \text{ m}^3/\text{h}$
Room temperature	$t_R = 22 \text{ }^\circ\text{C}$	$t_y = 0.04 \cdot (16 - 22) + 22 = 21.8 \text{ }^\circ\text{C}$	
Supply air temperature	$t_0 = 16 \text{ }^\circ\text{C}$	Induction	$i = 25$

## Nomenclature

$A_{\text{free}}$ [m <sup>2</sup> ]	= Free cross-section of swirl diffuser or exhaust air diffuser	$V_s$ [m <sup>3</sup> /h]	= Secondary volume flow; $V_s = i \cdot V$
DN [mm]	= Connecting piece size	$\Delta p_t$ [Pa]	= Total pressure drop
$V$ [m <sup>3</sup> /h]	= Volume flow	$\Delta p_s$ [Pa]	= Static pressure drop
$V_{\text{tot}}$ [m <sup>3</sup> /h]	= Total volume flow	$L_p$ [dB]	= Sound pressure level
$v_o$ [m/s]	= Flow velocity in $A_{\text{free}}$ ; it is $v_o = V / (3600 \cdot A_{\text{free}})$	$L_{pA}$ [dB(A)]	= A-weighted sound pressure level
$v_y$ [m/s]	= Flow velocity along air stream path	$L_w$ [dB]	= Sound power level
A, B [m]	= Distance between two diffusers	$L_{wA}$ [dB(A)]	= A-weighted sound power level
W [m]	= Distance of diffuser to wall	$L_{w\text{-Oct}}$ [dB]	= Octave sound power level $L_{w\text{-Oct}} = L_{wA} + \Delta L$
Y [m]	= Distance from the ceiling	$\Delta L$ [dB]	= Relative sound power level to $L_{wA}$
H [m]	= Room height	$\Delta L_R$ [dB]	= Acoustic room attenuation
$t_y$ [°C]	= Temperature along the air stream path; it is $t_y = (\Delta t/\Delta t_0) \cdot (t_0 - t_R) + t_R$	f [Hz]	= Octave mid frequency
$t_0$ [°C]	= Supply air temperature	NR	= NR limit value relating to sound power
$t_R$ [°C]	= Room temperature	NC	= NC limit value relating to sound power
$\Delta t_0$ [K]	= Temperature differential; it is $\Delta t_0 = t_0 - t_R$		
$\Delta t/\Delta t_0$	= Temperature ratio		
i	= Induction		

## Acoustic limit values NR, NC

The NR limit values specified in the nomograms according to ISO 1996 are calculated from octave sound power levels and not in relation to sound pressure levels. The room attenuation  $\Delta L_R$  is not taken into account. It depends on the acoustics of the room in each individual case.

NC limit values should be related like NR limit values to the sound pressure level. In the application area of ventilation and air conditioning, NC may be roughly estimated at  $NC = NR - 4$ .

## Room attenuation $\Delta L_R$

The sound power levels are always stated in the nomograms. The sound pressure level must be used when rating the acoustics. It differs from the sum total of the sound power levels by the room attenuation:

$$L_p, L_{pA} = L_w, L_{wA} + \Delta L_R$$

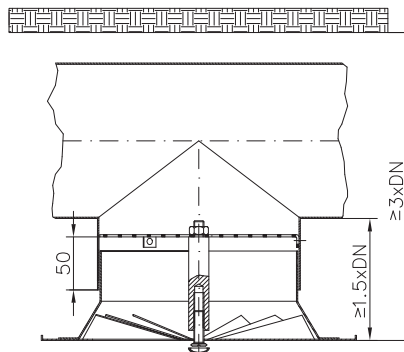
In ventilation and air conditioning systems,  $\Delta L_R$  can be set at approximately -8 dB.

# DF swirl diffusers

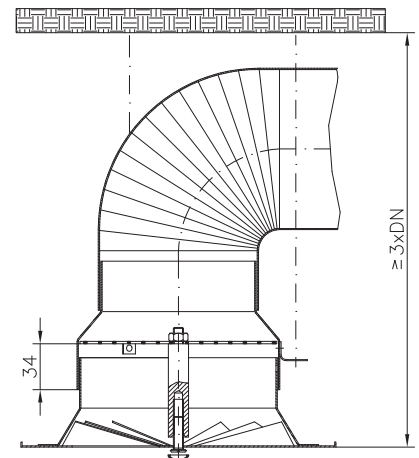
Installation instructions

## Installation without plenum box

- DF swirl diffusers can be used directly in circular ventilation ducts or in their branches. Perforated plates are recommended for rectification of the supply air flow and for a central fastening.
- DF swirl diffusers mounted freely in the room should have a nominal size DN which is at least three times the distance to the ceiling. This is the minimum requirement for horizontal dispersion of the air stream; otherwise this could lead to the (undesirable) coanda effect of the air flow being redirected towards the ceiling.



With perforated plate + T-piece



With reducer + connecting bend

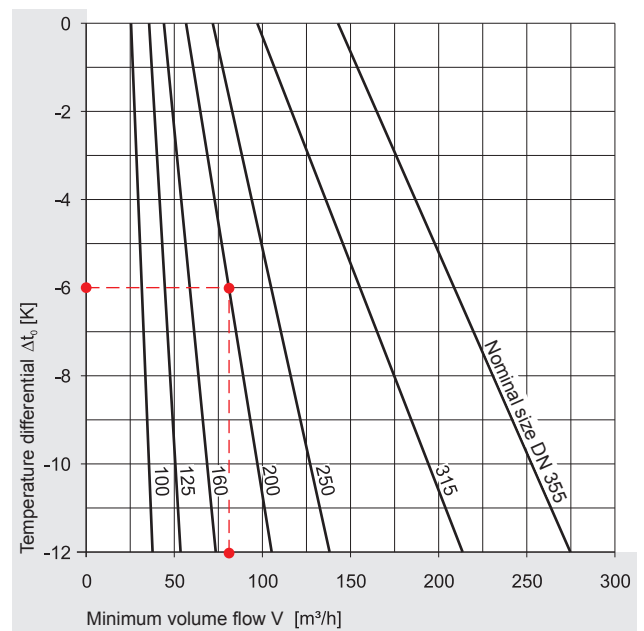
## Area of application

To ensure an optimum distribution of supply air in rooms with a height of roughly 2.5 to 4 m, flush-mounted DF swirl diffusers in ceilings are required; they then distribute the supply air radially below the ceiling. Air is deflected into the occupied zone by room walls and counterflows. In the case of cooling, the minimum flow rates specified for a given temperature differential  $\Delta t_0$  between the supply air and room air should be complied with. A partial drop of cold air by way of stratification, accompanied by draught effects in the occupied zone, is prevented, and may otherwise occur when cold air is introduced into the room at a higher temperature.

In general, the volume flow rates should never fall below a minimum level in order to ensure a sufficient level of room ventilation, even in heating mode and under isothermal conditions with  $\Delta t_0 = 0$  K.

Thermally induced deflections occur with a freely suspended installation. In this respect, the supply air penetrating into the occupied zone can be expected with changed flow velocities. Comfort criteria can therefore only be satisfied to a limited extent with this type of installation.

## Cooling condition



Example (⇒ see page 7)

**DFQ0 - 200 - K4 - 160 - DL**

Room temperature	$t_r = 22$ °C
Supply air temperature	$t_0 = 16$ °C
Temperature differential	$\Delta t_0 = -6$ K
Specified volume flow	$V = 180$ m³/h supply air
Minimum volume flow	$\geq 80$ m³/h

⇒ see nomogram above

Due to

$$180 \text{ m}^3/\text{h} > 80 \text{ m}^3/\text{h}$$

the cooling condition based on the nominal size DN 200 and cooling with a maximum temperature differential of  $\Delta t_0 = -6$  K is satisfied!

# DF swirl diffusers

SUPPLY AIR: Quick selection

## Volume flow [m³/h] / pressure drop [Pa]

Connecting piece size DN Nominal size DN			Sound power level [dB(A)]						
			20	25	30	35	40	45	50
<b>DF</b> without <b>connection element</b>	100	100	48 / 12	58 / 18	70 / 26	85 / 38	105 / 59	125 / 83	150 / 120
	125	125	68 / 11	80 / 15	100 / 23	120 / 34	145 / 49	175 / 72	210 / 103
	160	160	100 / 9	120 / 13	145 / 19	175 / 28	210 / 41	260 / 63	310 / 89
	200	200	165 / 12	195 / 16	230 / 23	280 / 34	330 / 47	390 / 65	460 / 91
	250	250	240 / 10	280 / 14	340 / 21	400 / 28	480 / 41	570 / 58	680 / 82
	315	315	370 / 10	440 / 14	520 / 20	620 / 28	740 / 40	880 / 56	1050 / 80
	355	355	500 / 10	590 / 14	700 / 20	820 / 28	980 / 40	1160 / 56	1370 / 78
<b>DF</b> with <b>perforated sheet metal L</b>	100	100	40 / 11	48 / 16	59 / 23	70 / 33	85 / 49	105 / 75	125 / 107
	125	125	56 / 10	68 / 14	80 / 20	100 / 32	120 / 46	145 / 67	175 / 97
	160	160	85 / 9	100 / 12	125 / 19	150 / 28	185 / 42	220 / 60	270 / 90
	200	200	145 / 12	175 / 17	210 / 24	240 / 32	290 / 47	340 / 64	410 / 93
	250	250	185 / 8	220 / 12	260 / 17	310 / 24	370 / 34	440 / 48	530 / 69
	315	315	290 / 8	340 / 11	400 / 15	480 / 22	570 / 31	680 / 44	810 / 63
	355	355	380 / 8	450 / 11	540 / 16	640 / 22	750 / 31	890 / 43	1060 / 61
<b>DF</b> with <b>reducer / clamping reducer</b> <b>R / RK</b>	125	100	51 / 10	62 / 14	75 / 21	90 / 30	110 / 44	130 / 62	160 / 94
	160	125	80 / 9	95 / 13	115 / 19	140 / 28	170 / 41	210 / 63	250 / 89
	200	180	140 / 11	165 / 16	200 / 23	230 / 31	280 / 45	330 / 63	390 / 88
	250	200	185 / 9	220 / 13	260 / 18	310 / 25	370 / 36	440 / 51	520 / 72
	315	250	270 / 8	320 / 11	380 / 15	450 / 21	540 / 30	640 / 42	760 / 60
	355	280	370 / 8	440 / 12	520 / 16	620 / 23	730 / 32	860 / 45	1020 / 63
<b>DF</b> with <b>plenum box</b> <b>K4 - DL</b> with <b>air deflector plate</b> <b>Damper OPEN</b>	100	<b>100</b>	38 / 9	46 / 13	56 / 19	67 / 27	80 / 38	100 / 60	120 / 87
	125	<b>100</b>	55 / 10	66 / 14	80 / 21	95 / 30	115 / 43	140 / 64	170 / 95
	125	125	55 / 8	67 / 12	80 / 17	100 / 27	120 / 38	145 / 56	175 / 82
	160	100	75 / 11	90 / 16	110 / 24	130 / 33	155 / 47	190 / 71	230 / 104
	160	<b>125</b>	80 / 10	100 / 15	120 / 22	145 / 31	175 / 46	210 / 66	250 / 93
	200	125	100 / 9	120 / 12	145 / 18	175 / 27	210 / 38	250 / 54	300 / 78
	200	<b>160</b>	125 / 9	150 / 12	180 / 18	220 / 26	260 / 37	310 / 53	380 / 79
	250	160	165 / 10	195 / 13	230 / 18	280 / 27	330 / 38	400 / 56	470 / 77
	250	<b>200</b>	185 / 8	220 / 12	270 / 18	320 / 25	380 / 35	450 / 50	540 / 71
	315	200	240 / 8	290 / 11	340 / 16	410 / 23	500 / 34	600 / 49	720 / 70
	315	<b>250</b>	260 / 7	310 / 10	380 / 14	450 / 20	540 / 29	650 / 42	790 / 62
355	250	260 / 5	320 / 7	390 / 11	470 / 16	580 / 24	700 / 34	850 / 51	
355	<b>280</b>	310 / 6	370 / 9	440 / 12	530 / 18	640 / 26	770 / 37	920 / 53	
355	315	340 / 6	410 / 9	490 / 13	580 / 18	690 / 26	820 / 37	970 / 51	

Standard connecting pieces of plenum boxes K4 are in bold.

When cooling, also observe the minimum volume flow! ⇒ see page 15



# DF swirl diffusers

EXHAUST AIR: Quick selection

## Volume flow [m³/h] / pressure drop [Pa]

Connecting piece size DN Nominal size DN			Sound power level [dB(A)]						
			20	25	30	35	40	45	50
<b>DF</b> without <b>connection element</b>	100	100	36 / 10	44 / 15	54 / 22	67 / 34	85 / 54	100 / 75	125 / 118
	125	125	56 / 11	68 / 15	80 / 22	100 / 34	120 / 48	145 / 71	180 / 109
	160	160	90 / 11	105 / 15	130 / 23	155 / 32	185 / 46	230 / 71	270 / 97
	200	200	120 / 11	145 / 16	175 / 23	210 / 33	250 / 46	300 / 67	360 / 96
	250	250	175 / 9	210 / 13	250 / 19	300 / 27	360 / 39	440 / 58	530 / 84
	315	315	280 / 9	330 / 13	400 / 18	480 / 26	570 / 37	680 / 53	820 / 77
	355	355	430 / 18	500 / 25	590 / 34	690 / 47	810 / 65	940 / 87	1100 / 119
<b>DF</b> with <b>perforated sheet metal L</b>	100	100	32 / 10	40 / 16	49 / 24	61 / 36	75 / 55	90 / 79	115 / 130
	125	125	50 / 10	61 / 15	75 / 23	90 / 34	110 / 50	130 / 70	160 / 106
	160	160	80 / 11	95 / 15	115 / 22	140 / 33	165 / 46	200 / 67	240 / 97
	200	200	105 / 10	130 / 15	155 / 21	185 / 30	220 / 43	270 / 65	320 / 91
	250	250	165 / 10	200 / 15	240 / 21	290 / 31	350 / 46	420 / 66	500 / 93
	315	315	250 / 9	310 / 13	370 / 19	440 / 27	520 / 38	630 / 56	750 / 79
	355	355	390 / 16	450 / 22	530 / 30	620 / 41	720 / 55	850 / 77	990 / 104
<b>DF</b> with <b>reducer / clamping reducer</b> <b>R / RK</b>	125	100	47 / 12	57 / 18	69 / 27	85 / 41	100 / 57	125 / 88	150 / 127
	160	125	75 / 13	90 / 19	110 / 28	130 / 39	155 / 55	190 / 83	230 / 122
	200	180	115 / 13	140 / 19	165 / 27	200 / 40	240 / 57	290 / 84	340 / 115
	250	200	160 / 13	195 / 19	240 / 29	280 / 39	340 / 57	410 / 84	500 / 124
	315	250	240 / 12	290 / 18	350 / 26	420 / 37	500 / 52	600 / 75	720 / 108
355	280	340 / 14	400 / 19	460 / 25	540 / 35	640 / 49	740 / 66	870 / 91	
<b>DF</b> with <b>plenum box</b> <b>K4 - D</b> without <b>air deflector plate,</b> <b>Damper OPEN</b>	100	<b>100</b>	32 / 8	39 / 12	49 / 19	60 / 29	75 / 45	90 / 65	115 / 107
	125	<b>100</b>	50 / 10	61 / 16	75 / 24	90 / 34	110 / 51	135 / 77	165 / 115
	125	125	51 / 9	62 / 14	75 / 20	90 / 29	110 / 43	135 / 65	165 / 97
	160	100	75 / 14	95 / 23	110 / 30	135 / 46	160 / 64	195 / 96	230 / 133
	160	<b>125</b>	80 / 11	95 / 16	115 / 23	140 / 34	165 / 47	200 / 69	240 / 100
	200	125	130 / 17	150 / 23	180 / 33	210 / 45	250 / 64	290 / 86	340 / 118
	200	<b>160</b>	130 / 12	155 / 17	180 / 23	210 / 31	250 / 44	300 / 63	350 / 85
	250	160	170 / 11	200 / 16	240 / 23	290 / 33	340 / 45	410 / 66	490 / 94
	250	<b>200</b>	170 / 8	200 / 11	240 / 16	290 / 24	350 / 35	420 / 50	500 / 72
	315	200	290 / 13	340 / 18	410 / 26	480 / 36	570 / 51	670 / 70	800 / 100
	315	<b>250</b>	290 / 10	350 / 14	410 / 20	490 / 28	580 / 39	690 / 56	820 / 79
	355	250	350 / 10	420 / 15	500 / 21	590 / 29	710 / 42	850 / 60	1010 / 85
	355	<b>280</b>	370 / 10	440 / 14	520 / 20	620 / 28	740 / 40	880 / 57	1050 / 81
355	315	370 / 9	440 / 13	520 / 18	620 / 26	740 / 37	880 / 52	1050 / 74	

Standard connecting pieces of plenum boxes K4 are in bold.

# DF swirl diffusers

Order information

		<b>DF2</b>		
<b>Front plate:</b>		- - - - -		
square 625	<b>G0</b>			<b>Connecting piece</b>
square 600	<b>H0</b>			<b>LD</b> with lip seal
square, small	<b>Q0</b>			<b>Plenum box design</b>
circular	<b>R0</b>			<b>VK</b> galvanized
⇒ see page 2				<b>KL<sup>2)</sup></b> outside in RAL .....
				<b>SK</b> black inside and outside
<b>Nominal size DN:</b>				<b>Installation parts for plenum box</b>
	<b>100</b>			<b>D</b> with damper
	<b>125</b>			<b>L</b> with air deflector plate
	<b>160</b>			<b>DL</b> with damper and
	<b>200</b>			air deflector plate
	<b>250</b>			<b>Connecting piece size DN...</b>
	<b>315</b>			⇒ see page 5
	<b>355</b>			<b>Connection element</b>
<b>Colour</b>				- without
Front plate RAL 9010				<b>L</b> with perforated plate
Cap RAL 9010	<b>ST<sup>1)</sup></b>			<b>R</b> with reducer <sup>3)</sup>
Front plate RAL ....				<b>RK</b> with clamping reducer <sup>3)</sup>
Cap RAL 9017 (black)	<b>FL<sup>2)</sup></b>			<b>K4</b> square plenum box with
Front plate RAL ....				lateral connecting piece
Cap accordingly	<b>FS<sup>2)</sup></b>			

<sup>1)</sup> standard colour

<sup>2)</sup> also specify the RAL colour

<sup>3)</sup> available from nominal size DN 125

⇒ see page 4

### Ordering examples:

... pc DF2 Q0 - 125 - ST - RK

... pc DF2 G0 - 355 - FL - R

... pc DF2 R0 - 250 - FS - K4 - 200 - DL - VK - LD

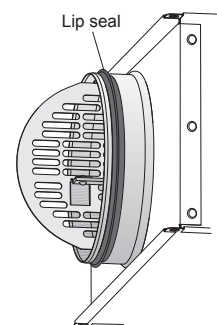
### Quick selection

⇒ see pages 16 and 17.

### NOTE concerning colours

- The RAL colours which are available as standard correspond to the RAL CLASSIC colour collection.
- Colour variations should never be totally avoided for technical reasons; this is particularly the case for colours RAL 9006 (white aluminium) and RAL 9007 (grey aluminium). A special colour matching is advisable in particular instances, and in conjunction with surrounding colours, for example, suspended ceilings!

### Connecting piece with lip seal



# DF swirl diffusers

## Specification text

Swirl diffuser with high induction for constant and variable volume flows and temperature differentials up to -12 K during cooling. With square / circular front plate, conical diffuser, integrated guide vanes and concealed central fastening. Made of galvanized sheet steel with resilient, colour-fast, anti-static polyester coating, smooth glossy in colour RAL 9010 (white) or in RAL special colour. Cap to match or RAL 9017 (black).

with

- Special perforated plate for uniform air inflow for installation in the connection duct and with fixture for concealed central fastening.
- Reducer made of galvanized sheet steel, inserted perforated plate for uniform air inflow, surface-mounted suspension lugs and concealed central fastening
- Reducer made of galvanized sheet steel for ceiling clip-on fixing, inserted perforated plate for uniform air inflow, surface-mounted suspension lugs and concealed central fastening
- Plenum box with central fastening, made of galvanized sheet steel with lateral connecting piece and holes for suspension fixtures with
  - special air deflector plate, in particular for supply air, for optimum air distribution with low flow noise
  - black powder coating inside and outside
  - powder coating in RAL special colour on outside
  - lip seal
  - damper for adjusting volume flow without dismantling the swirl diffuser

Certificate of conformity as proof of compliance with the hygiene requirements according to VDI 6022-1, VDI 3803-1, DIN 1946-4 and DIN EN 13779.

Installation in closed ceiling systems, grid ceilings and freely suspended.

..... Pc

<b>Volume flow:</b>	.....	<b>m<sup>3</sup>/h</b>	
<b>Pressure drop:</b>	.....	<b>Pa</b>	
<b>Sound power level</b>	.....	<b>dB (A)</b>	
<b>Manufacturer:</b>	<b>WILDEBOER®</b>		
<b>Type/series:</b>	<b>DF / DF2</b>		
<b>Nominal size</b>	.....		
Connecting piece size DN:	.....	<b>mm</b>	
Colour of swirl diffuser:	RAL .....		
Colour of plenum box:	RAL .....		
<b>complete with fixings</b>		<b>deliver:</b>	.....
		<b>install:</b>	.....

Delete texts not highlighted in bold as required!

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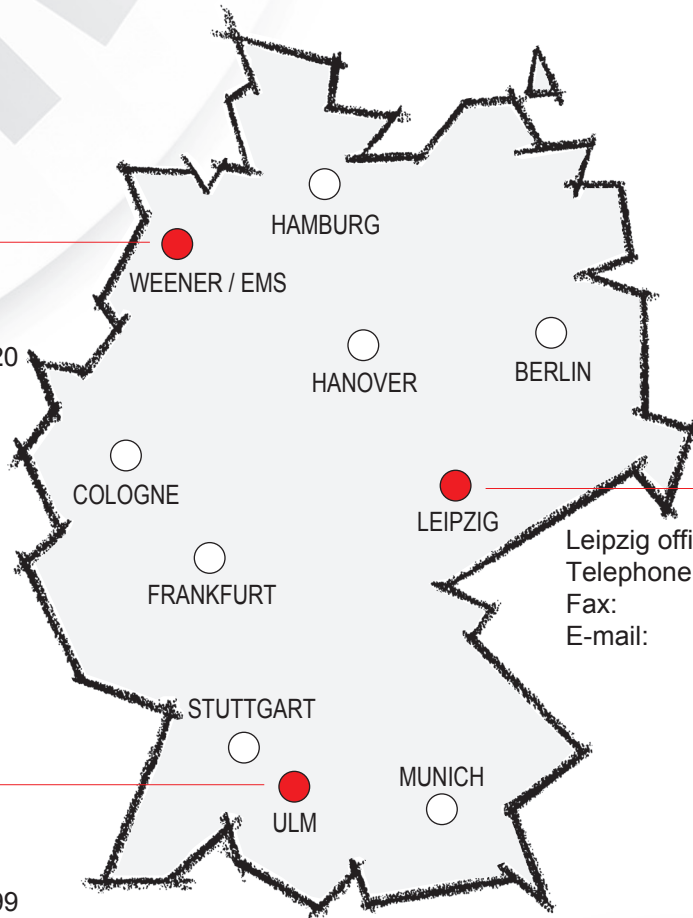
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