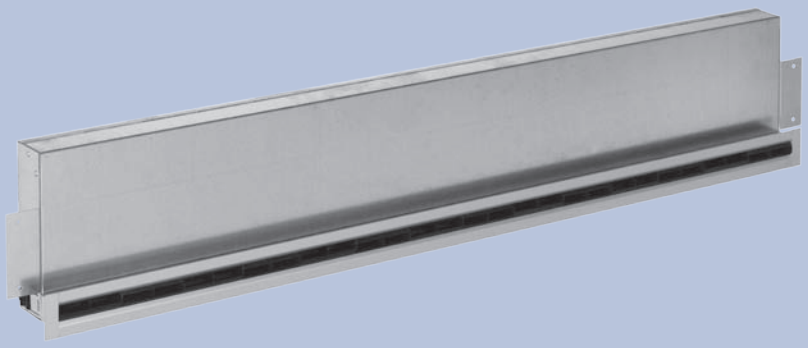
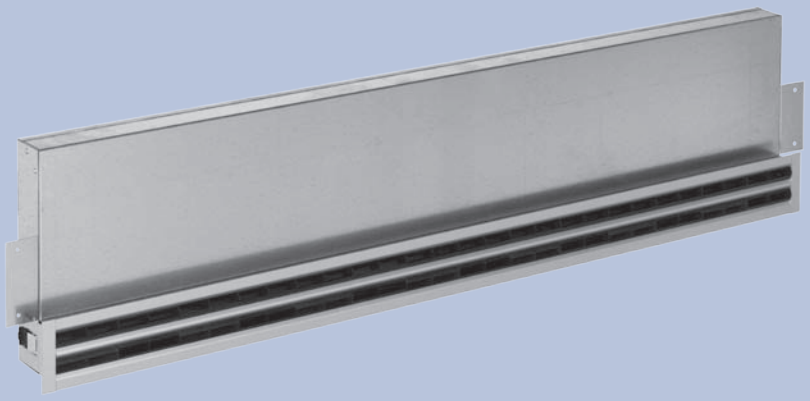




Krantz Components

Wall slot diffuser WSD....

Air distribution systems

DS 4119 E 12.2013

Wall slot diffuser

Preliminary remarks

The wall slot diffuser WSD of Krantz Components is an aesthetic, slim air outlet with adjustable air distribution elements. Since it requires little space, it is specially designed for installation in standard gypsum board walls. It generates a turbulent mixed air flow.

The wall slot diffuser is particularly suitable for administrative and office buildings, ideally in conjunction with air-and-water systems (e.g. concrete core cooling, chilled ceiling and chilled sail).

The installation of the connection box and the air supply are preferably from the corridor. The slot element is inserted into the connection box from the room side only once the room construction has been completed; it is thus protected from dirt and potential damage during construction. It is also easy to take off for cleaning to German guideline VDI 6022.

Owing to their construction design both the connection box and the slot element have very low sound power levels and a high insertion loss. If the connection box is fitted with acoustic lining, in many cases there is no need for a crosstalk silencer.

The wall slot diffuser is available for supply air or return air, or as a combined supply and return air diffuser.

Mode of operation

The wall slot diffuser is suitable for room depths > 4 m. The recommended installation height is between 2.4 and 3.5 m.
Depending on requirements the wall slot diffuser is manufactured with one or two rows [1] in 525 mm, 1 050 mm or 1 125 mm length [2].

The supply air jet is spread out evenly. At 1 to 2 m from the diffuser, the air stream has a diffuse pattern and spreads at floor level towards the facade in a way similar to displacement ventilation. Thus, a high level of thermal comfort is achieved in the room. The vertical temperature gradient is much lower than the allowable limit value of 2 K/m [4].
Other important criteria for thermal comfort are the mean indoor air velocities and the local temperature in the occupied zone. The draught rating (DR) can be referred to for assessing thermal comfort. [4]
Often a draught rating DR ≤ 15% is agreed upon for buildings with high thermal comfort requirements such as administrative and office buildings.
People who, due to their activity, have higher metabolic rates (> 1.2 met) are less sensitive to discomfort caused by draughts. Therefore, a draught rating of 20% can be assumed in applications such as salesrooms, museums, or restaurants.
The resulting air flow parameters can be read off the following table.

Application

Wall slot diffuser		DR 15% 1-row design	DR 15% 2-row design	DR 20% 1-row design	DR 20% 2-row design
Max. volume flow rate per m of diffuser $\dot{V}_{A\,max}$	l/(s•m)	34	53	39	67
$\dot{V}_{A\,max}$	m³/(h•m)	120	190	140	240
Recommended discharge height H	m	2.4 – 3.5			
Room depth	m	≥ 4	≥ 5	≥ 4	≥ 5
Max. cooling capacity	W/m²	see Graph 1, page 5			
Max. temperature difference supply air to indoor air $\Delta\vartheta$	K	+6 to –8		+6 to –10	

Construction design

The wall slot diffuser consists of the connection box with connection spigot and the slot element.
The slot element is very easy to install; it is inserted into the connection box upon completion of the room construction.
During installation of the HVAC system, the connection box is mounted either inside (Type Z) or behind (Type H) the gypsum board wall and connected to the ductwork (see Fig. 1).
The connection box is fixed to the wall panels by screwing from the room side, using drywall screws that are driven into the L-fasteners provided for.
Due to the construction design very good insertion loss values are achieved with all WSD models.

An abrasion-resistant acoustic lining is optionally available for the connection box whose depth will yet remain unchanged. In many cases this acoustic lining obviates the need for a crosstalk silencer.

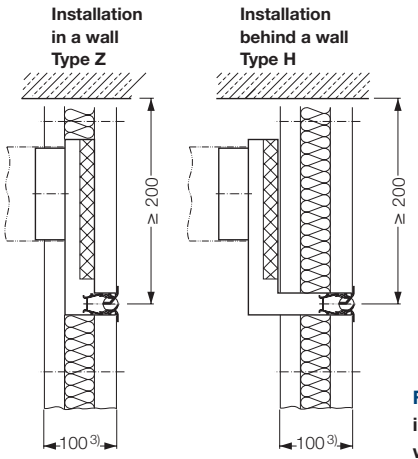


Fig. 1: Types of installation of wall slot diffuser

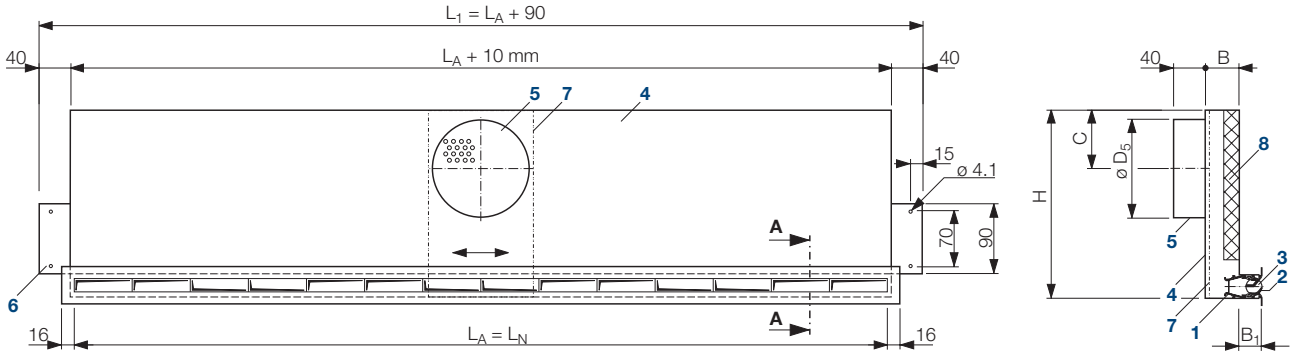
The combined wall slot diffuser for supply air and return air is divided into two independent segments of same length. The slot element has a blind slot in its middle so as to prevent short-circuiting of supply air and return air. The spigots for supply air and return air respectively are optionally available with a volume flow damper which is adjustable from the room.
The adjustable air distribution elements made of plastic are preset to a certain position and secured by snap-in cams.

1) 3-row design available on enquiry
2) Other lengths or continuous strip design also available on enquiry
3) Other wall thicknesses on enquiry
4) Also see EN ISO 7730

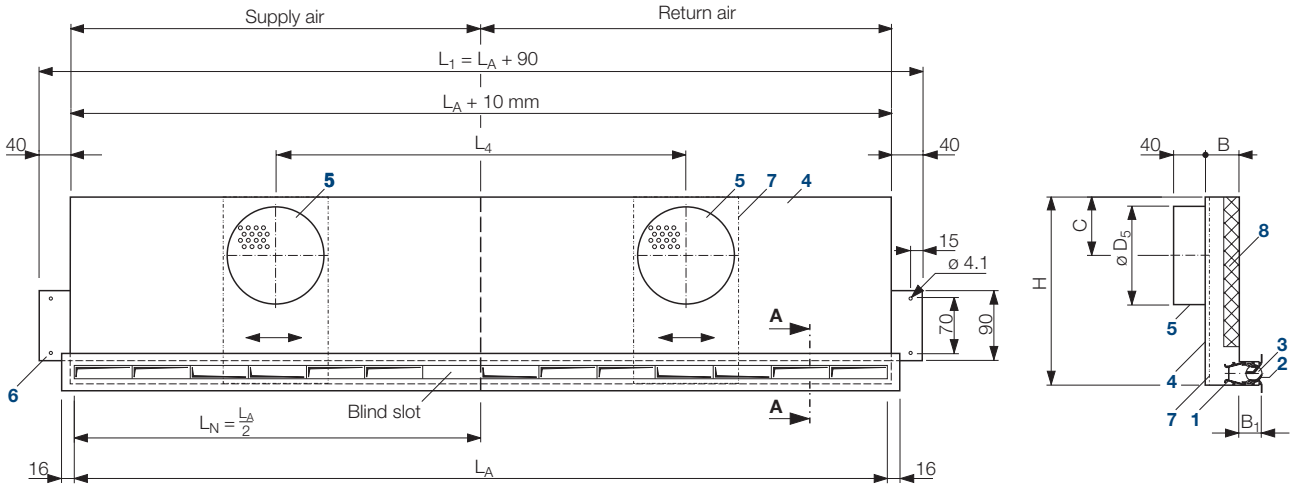
Wall slot diffuser

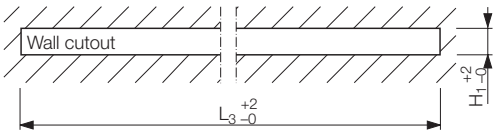
Dimensions

Wall slot diffuser for supply air or return air

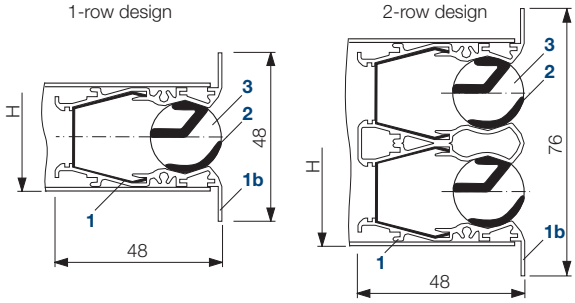


Combined wall slot diffuser for supply air and return air





Section A – A (at scale **1:2**)



Key for all pages

1 Slot element profile
1b Wall contact profile
2 Air distribution element
3 Jet channel
4 Connection box
5 Connection spigot
6 L-fastener
7 V̇ damper (optional) adjustable from room
8 Acoustic lining (optional)

Design	Diffuser type	L_A mm	L_1 mm	L_3 [1] mm	H_1 [1] mm	L_4 mm	Connection type Z [2] B mm	Connection type Z [2] B_1 mm	Connection type H [2] B mm	Connection type H [2] B_1 mm	Without acoustic lining H mm	Without acoustic lining C mm	Without acoustic lining ø D_5 mm	Without acoustic lining W kg	With acoustic lining Connection type Z [2] H mm	With acoustic lining Connection type Z [2] C mm	With acoustic lining Connection type Z [2] ø D_5 mm	With acoustic lining Connection type H [2] H mm	With acoustic lining Connection type H [2] C mm	With acoustic lining Connection type H [2] ø D_5 mm	With acoustic lining W kg
1 row	Supply air or return air	525	615	541	34	—	45	24	45	99	140	52	79	2.6	240	52	79	240	52	79	3.6
		1 050	1 140	1 066					60		180	75	124	5.7		75	124		75	124	7.0
		1 125	1 215	1 141					60		180	75	124	6.1		75	124		75	124	7.6
	Combined	1 050	1 140	1 066	34	530	45	24	45	99	140	52	79	4.9	240	52	79	240	52	79	6.8
		1 125	1 215	1 141		567			45					5.2							7.3
2 rows	Supply air or return air	525	615	541	62	—	45	24	60	99	180	62	99	3.4	240	62	99	240	62	99	4.1
		1 050	1 140	1 066							240	92	159	7.2	280	112	199	240	92	159	8.4
		1 125	1 215	1 141							240	92	159	7.7	280	112	199	240	92	159	8.9
	Combined	1 050	1 140	1 066	62	530	45	24	60	99	180	62	99	6.4	240	62	99	240	62	99	7.7
		1 125	1 215	1 141		567								6.8							8.2

[1] Wall cutout

[2] Connection type Z = installation in a wall; connection type H = installation behind a wall

Wall slot diffuser

Comfort criteria and layout

Fig. 2: **Wall slot diffuser in the recreation room of an office building**

Fig. 3: **Wall slot diffuser in the entrance area of an office building**

Comfort criteria [1] and layout specifications

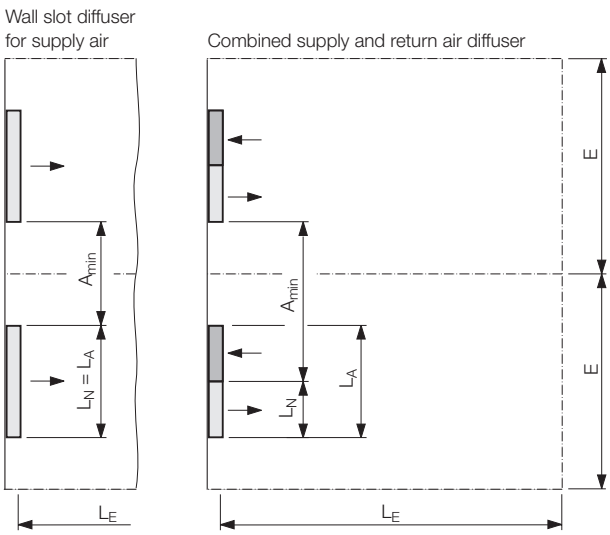
The outlet layout must comply with the maximum allowable indoor air velocities in the occupied zone in cooling mode. The indoor air velocity depends on the cooling load that is to be removed from the room. The maximum specific cooling capacity $\dot{q}$ depends on the discharge height and the maximum allowable indoor air velocity u (Graph 1). First, the maximum specific volume flow rate $\dot{V}_{Sp\ max}$ is determined in relation to the indoor air velocity u, the discharge height H and the maximum temperature difference supply air to return air $\Delta\vartheta_{max}$ using Graph 1.

To comply with the maximum allowable indoor air velocities, the volume flow rate supplied to the room $\dot{V}_{Sp\ act}$ may not exceed the maximum specific volume flow rate $\dot{V}_{Sp\ max}$. On the basis of the maximum specific volume flow rate $\dot{V}_{Sp\ max}$ and the coverage length L_E, the coverage width E and the minimum air outlet spacing A_{min} can be determined using the following equations:

$$E = \frac{\dot{V}}{\dot{V}_{Sp\ max} \cdot L_E} \qquad A_{min} \geq E - L_N$$

Key for layout:

DR = draught rating in %
E = coverage width of supply air flow in m
L_E = coverage length of supply air flow in m (corresponds to room depth)
L_A = diffuser length in m
L_N = nominal length of diffuser in m (with combined diffuser, length of supply air segment only)
n = number of diffusers
$\dot{V}_{tot}$ = total supply air volume flow rate in l/s
$\dot{V}$ = volume flow rate per diffuser in l/s
$\dot{V}_A = \frac{\dot{V}}{L_N}$ = volume flow rate per metre of active diffuser length, in l/(s•m)
$\dot{V}_{Sp\ max}$ = max. specific supply air volume flow rate per m^2 of floor area in l/(s•m^2)
$\dot{V}_{Sp\ act}$ = actual specific supply air volume flow rate per m^2 of floor area in l/(s•m^2)
$\dot{V}_{A\ max}$ = max. volume flow rate per m of diffuser in l/(s•m)
$\Delta\vartheta_{max}$ = max. temperature difference supply air to return air in K
$\dot{q}$ = max. specific cooling capacity in W/m^2
H_R = ceiling height in m
H = discharge height in m
A_{min} = minimum spacing required between two diffusers in m
u = max. allowable indoor air velocity in m/s
L_{WA} = sound power level in dB(A) ref. 10^{-12} W
Δp_t = total pressure drop in Pa



[1] See our brochure ref. TB 69 'Layout specifications for thermal comfort'

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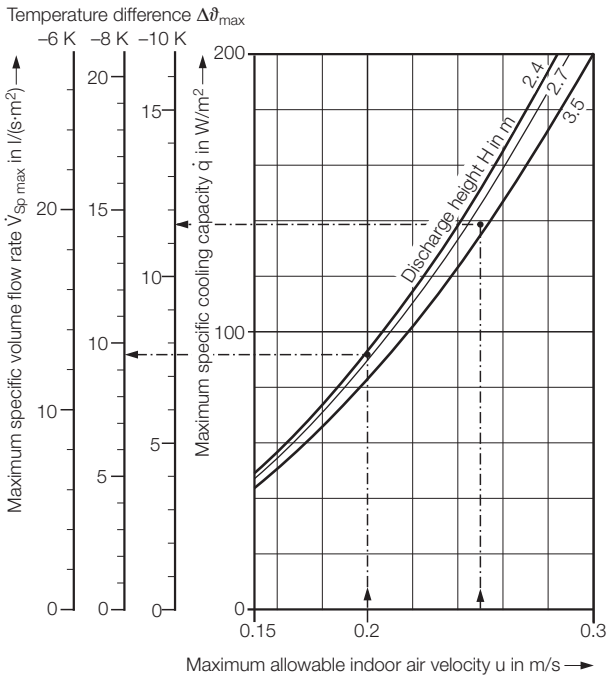
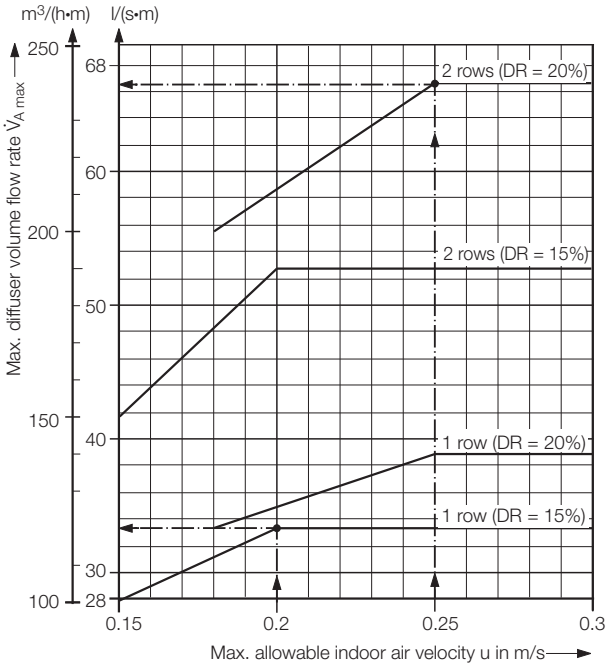
Wall slot diffuser

Comfort criteria and layout

Layout graphs



Graph 1: Max. specific volume flow rate



Graph 2: Max. diffuser volume flow rate

Layout example
Combined wall slot diffuser installed in an office

Max. allowable indoor air velocity		=	0.2 m/s
Room height	H_R	=	2.7 m
Discharge height	H	=	2.5 m
Room width	B	=	2.7 m
Room depth	L_E	=	5.5 m
Total supply air volume flow rate	$\dot{V}_{tot}$	=	33 l/s
Temperature difference	$\Delta\vartheta_{max}$	=	–8 K
Number	n	=	2 units (Length L_A = 1 050 mm)
Type	HI	=	Installation behind the wall, with acoustlic lining

1 Check $\dot{V}_{Sp\,act} < \dot{V}_{Sp\,max}$:

$\dot{V}_{Sp\,act} = \frac{\dot{V}_{tot}}{B \bullet L_E} = \frac{33}{2.7 \bullet 5.5} = 2.2$ l/(s·m²)

From Graph 1: $\dot{V}_{Sp\,max} = 9.5$ l/(s·m²) ⇒ criterion is met

2 $\dot{V} = \frac{\dot{V}_{tot}}{n} = \frac{33}{2} = 16.5$ l/s

3 $E = \frac{\dot{V}}{\dot{V}_{Sp\,max} \bullet L_E} = \frac{16.5}{9.5 \bullet 5.5} = 0.32$ m

$L_N = \frac{L_A}{2} = \frac{1.05}{2} = 0.525$ m (:2 since combined diffuser)

Since $E < L_N$, no spacing A_{min} required

4 $\dot{V}_A = \frac{\dot{V}}{L_N} = \frac{16.5}{0.525} \approx 31.6$ l/(s·m)

$\dot{V}_A < \dot{V}_{A\,max}$ ⇒ $\dot{V}_{A\,max} = 33$ l/(s·m) from Graph 2 for DR = 15%

Selected diffuser: 1-row design **WSD–K1–1050-HI**

From Graph on page 7:

5 L_{WA} ≈ 30 dB(A)
$\Delta p_{t\,Supply\,air}$ ≈ 33 Pa
$\Delta p_{t\,Return\,air}$ ≈ 40 Pa

Layout example
Wall slot diffuser for supply air installed in a restaurant

Max. allowable indoor air velocity		=	0.25 m/s
Room height	H_R	=	3.5 m
Discharge height	H	=	3.2 m
Room width	B	=	20 m
Room depth	L_E	=	5 m
Total supply air volume flow rate	$\dot{V}_{tot}$	=	1 000 l/s
Temperature difference	$\Delta\vartheta_{max}$	=	–10 K
Number	n	=	15 units (Length L_A = 1 050 mm)
Type	Z	=	Installation in the wall, without acoustlic lining

1 Check $\dot{V}_{Sp\,act} < \dot{V}_{Sp\,max}$:

$\dot{V}_{Sp\,act} = \frac{\dot{V}_{tot}}{B \bullet L_E} = \frac{1\,000}{20 \bullet 5} = 10$ l/(s·m²)

From Graph 1: $\dot{V}_{Sp\,max} \approx 11.5$ l/(s·m²) ⇒ criterion is met

2 $\dot{V} = \frac{\dot{V}_{tot}}{n} = \frac{1\,000}{15} = 66.6$ l/s

3 $E = \frac{\dot{V}}{\dot{V}_{Sp\,max} \bullet L_E} = \frac{66.6}{11.5 \bullet 5} = 1.16$ m

$A_{min} \geq E - L_N = 1.16 - 1.05 = 0.11$ m

4 $\dot{V}_A = \frac{\dot{V}}{L_N} = \frac{66.6}{1.05} = 263.6$ l/(s·m)

$\dot{V}_A < \dot{V}_{A\,max}$ ⇒ $\dot{V}_{A\,max} = 63.5$ l/(s·m) from Graph 2 for DR = 20%

Selected diffuser: 2-row design **WSD–Z2–1050-Z**

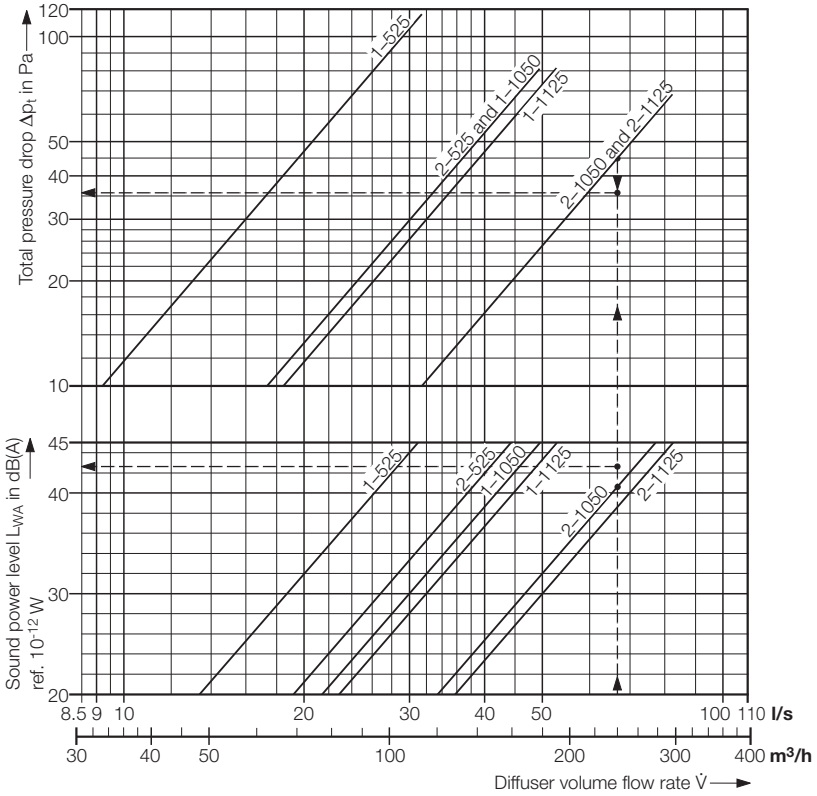
From Graph on page 6:

5 L_{WA} ≈ 43 dB(A) [41.5 dB(A) + 2 dB(A)]
Δp_t ≈ 36 Pa [45 Pa – 20%]

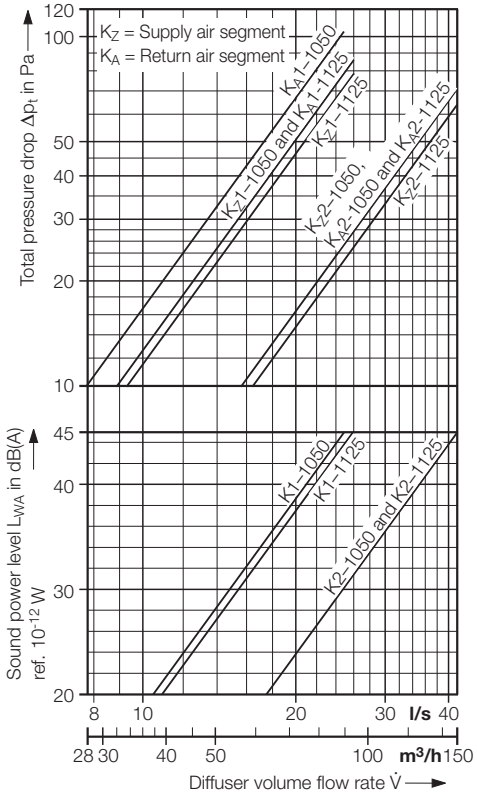
Wall slot diffuser

Layout sheet for types Z and ZI, inside a wall

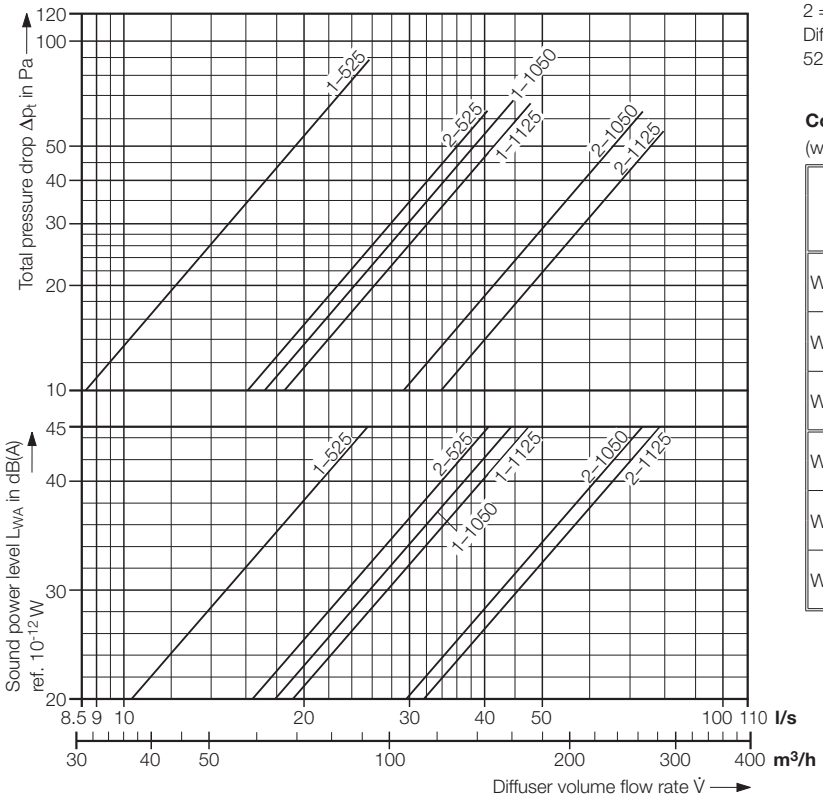
Diffuser for supply air, type ZI
(with acoustic lining)



Combined diffuser, type ZI
(with acoustic lining)



Diffuser for return air, type ZI
(with acoustic lining)



Design

1 = 1 row
2 = 2 rows
Diffuser lengths:
525, 1 050 and 1 125 [mm]

Example 2-1050:
2-row design,
diffuser length 1 050 mm

Correction table for type Z
(without acoustic lining)

		Supply air	Return air	Combined Supply air	Combined Return air
WSD-_1-525-Z	L_W	+5	+3	—	
	Δp	–10%	–5%	—	
WSD-_1-1050-Z	L_W	+3	+2	+3	
	Δp	–9%	–8%	–6%	–5%
WSD-_1-1125-Z	L_W	+3	+2	+3	
	Δp	–6%	–10%	–6%	–6%
WSD-_2-525-Z	L_W	+5	+2	—	
	Δp	–20%	–25%	—	
WSD-_2-1050-Z	L_W	+2	+1	+2	
	Δp	–20%	–15%	–15%	–15%
WSD-_2-1125-Z	L_W	+2	+1	+1	
	Δp	–14%	–14%	–15%	–15%

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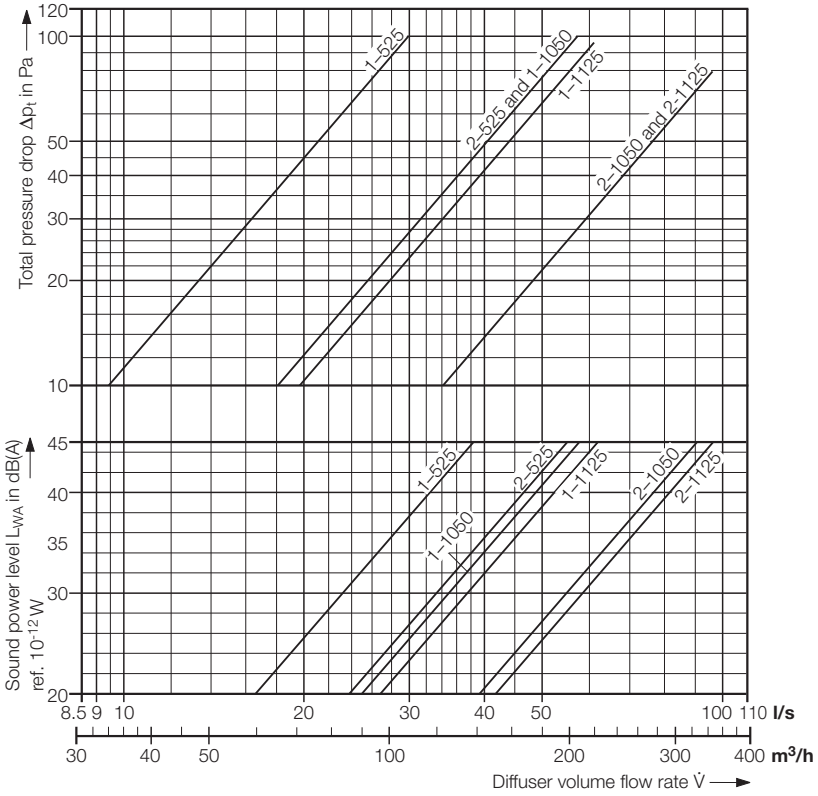
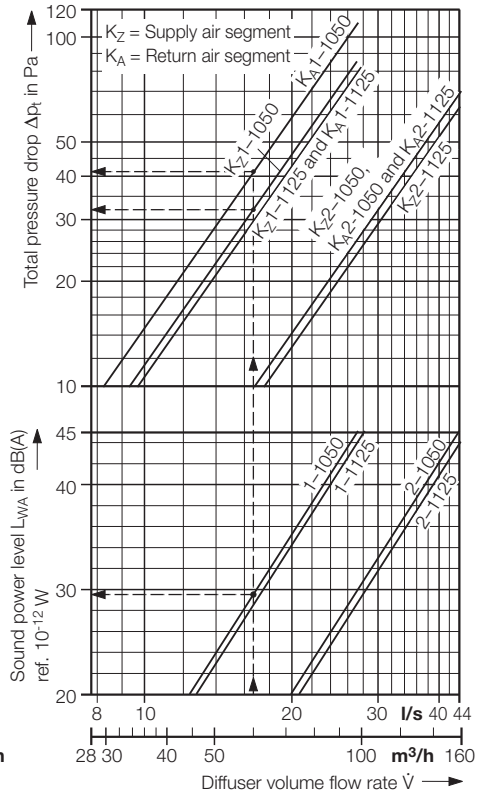
Wall slot diffuser

Layout sheet for types H and HI, behind a wall

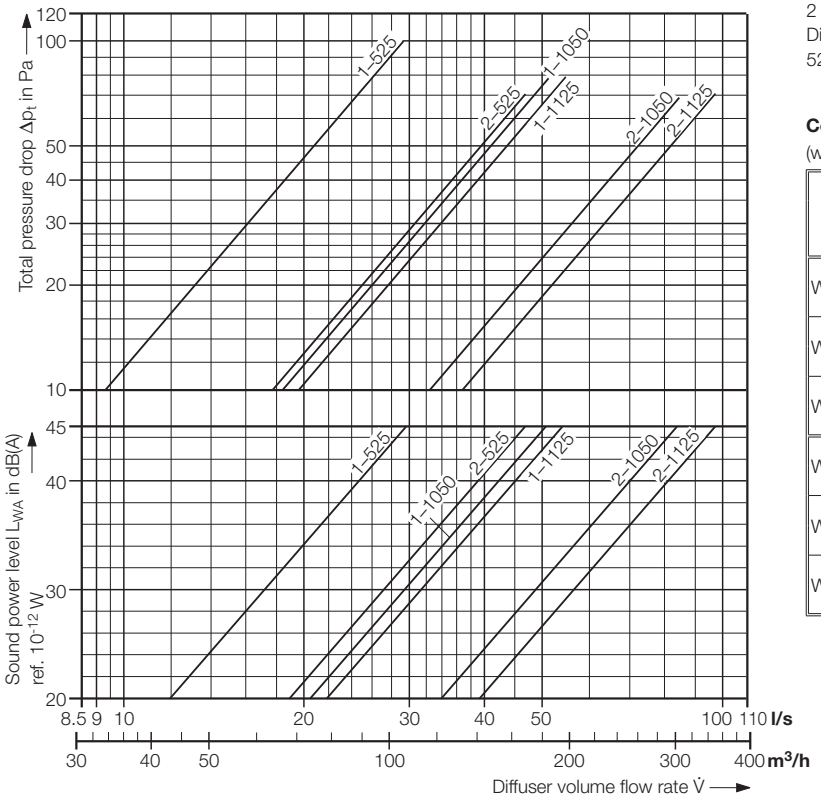
Diffuser for supply air, type HI
(with acoustic lining)



Combined diffuser, type HI
(with acoustic lining)



Diffuser for return air, type HI
(with acoustic lining)



Design

1 = 1 row
2 = 2 rows
Diffuser lengths:
525, 1 050 and 1 125 [mm]

Example 2-1050:
2-row design,
diffuser length 1 050 mm

Correction table for type H
(without acoustic lining)

		Supply air	Return air	Combined	
				Supply air	Return air
WSD-_1-525-H	L_W	+5	+2	—	
	Δp	–10%	–5%	—	
WSD-_1-1050-H	L_W	+3	+2	+3	
	Δp	–10%	–6%	–6%	–5%
WSD-_1-1125-H	L_W	+3	+2	+3	
	Δp	–6%	–9%	–6%	–6%
WSD-_2-525-H	L_W	+5	+1	—	
	Δp	–20%	–22%	—	
WSD-_2-1050-H	L_W	+2	+1	+1	
	Δp	–12%	–16%	–10%	–12%
WSD-_2-1125-H	L_W	+2	+1	+1	
	Δp	–16%	–14%	–12%	–12%

Wall slot diffuser

Sound power level and insertion loss, with acoustic lining

Diffuser for supply air

Diffuser length	Diffuser volume flow rate		Total pressure drop	Sound power level L_W in dB ref. 10^{-12} W								
L_A	$\dot{V}$		Δp_t	L_{WA}	Octave band centre frequency in Hz							
mm	l/s	m^3/h	Pa	dB(A)	63	125	250	500	1 K	2 K	4 K	8 K
Type ZI, 1 row												
	14	50	22	20	27	22	24	18	13	—	—	—
525	22	80	58	35	31	34	38	33	30	22	11	—
	32	115	114	45	35	39	46	41	40	39	25	—
	22	80	16	20	29	23	25	17	11	—	—	—
1 050	36	130	42	35	36	37	39	33	29	21	11	—
	50	180	82	45	42	45	46	42	40	37	28	18
	24	85	16	20	24	24	25	18	10	—	—	—
1 125	39	140	44	35	35	38	38	33	30	20	10	—
	53	190	81	45	45	48	47	41	40	38	30	—
Type HI, 1 row												
	17	60	31	20	26	23	25	18	12	—	—	—
525	28	100	85	35	30	35	38	33	29	20	10	—
	39	140	166	45	33	40	45	42	40	38	24	—
	25	90	19	20	21	28	25	17	9	—	—	—
1 050	42	150	55	35	30	41	38	32	29	24	14	—
	58	210	100	45	36	48	46	41	40	38	29	—
	28	100	20	20	28	26	25	18	11	—	—	—
1 125	44	160	51	35	34	38	39	32	29	19	—	—
	63	225	100	45	39	49	46	40	40	38	28	—
Type ZI, 2 rows												
	19	70	13	20	31	23	25	17	10	—	—	—
525	32	115	35	35	42	35	38	33	30	18	8	—
	44	160	66	45	48	41	45	42	42	35	19	—
	34	120	11	20	28	24	25	16	11	—	—	—
1 050	56	200	32	35	40	38	38	32	30	22	14	—
	78	280	62	45	47	49	46	42	41	34	29	—
	36	130	13	20	29	25	25	16	12	—	—	—
1 125	60	215	36	35	40	39	38	32	30	22	15	—
	84	300	70	45	48	51	47	41	41	35	31	—
Type HI, 2 rows												
	24	85	17	20	26	24	25	17	11	—	—	—
525	40	145	49	35	44	35	37	35	28	23	11	—
	56	200	95	45	54	40	44	45	38	36	21	—
	39	140	13	20	27	26	26	16	—	—	—	—
1 050	65	235	37	35	47	39	39	33	29	23	10	—
	92	330	72	45	54	45	45	42	40	39	26	—
	42	150	15	20	27	27	26	17	10	—	—	—
1 125	69	250	41	35	47	40	39	34	29	22	—	—
	97	350	95	45	54	46	45	43	40	38	27	—

Note:
Sound power levels ≤ 6 dB are not listed

	Insertion loss in dB [1]						
	Octave band centre frequency in Hz						
	125	250	500	1 K	2 K	4 K	8 K
WSD-_1- 525	2	4	9	14	18	20	23
WSD-_1-1050	3	5	10	16	20	22	26
WSD-_1-1125	4	6	11	17	21	23	26

[1] Values apply to 1-row design; for 2-row design they are higher by 1 dB ref. 10^{-12} W

[2] Values for 2-row design on request

Combined diffuser

Diffuser length	Diffuser volume flow rate		Total pressure drop		Sound power level L_W in dB ref. 10^{-12} W								
L_A	$\dot{V}$		Δp_t in Pa		L_{WA}	Octave band centre frequency in Hz							
mm	l/s	m^3/h	Supply air	Return air	dB(A)	63	125	250	500	1 K	2 K	4 K	8 K
Type ZI, 1 row													
	11	39	15	20	20	23	18	24	19	10	—	—	—
1 050	18	63	39	52	35	33	32	38	34	30	22	13	—
	24	87	74	98	45	38	40	46	42	42	34	25	—
	11	40	14	17	20	22	20	25	18	10	—	—	—
1 125	18	65	38	41	35	33	33	38	33	30	23	13	—
	26	92	75	82	45	39	40	45	42	41	38	28	—
Type HI, 1 row													
	12	43	18	23	20	25	20	23	20	11	—	—	—
1 050	20	72	46	58	35	34	33	39	33	30	22	14	—
	27	98	86	110	45	39	41	45	43	42	33	26	—
	13	45	15	16	20	21	19	24	17	11	—	—	—
1 125	21	75	43	45	35	34	34	37	33	30	24	14	—
	28	102	83	86	45	40	41	45	42	40	39	29	—
Type ZI, 2 rows													
	18	63	13	13	20	32	19	25	18	9	—	—	—
1 050	28	102	33	34	35	40	39	38	34	30	20	9	—
	39	140	62	65	45	44	49	44	42	41	36	25	—
	18	64	11	13	20	33	20	24	19	9	—	—	—
1 125	29	106	32	37	35	41	38	39	33	29	19	10	—
	42	150	64	74	45	45	49	46	42	41	36	24	—
Type HI, 2 rows													
	19	70	14	14	20	33	20	26	19	—	—	—	—
1 050	32	115	37	37	35	40	39	38	33	30	21	—	—
	44	160	70	70	45	43	48	45	42	41	37	23	—
	20	72	12	13	20	34	21	23	19	10	—	—	—
1 125	33	117	34	37	35	41	38	38	34	29	20	11	—
	46	165	68	74	45	44	48	47	42	40	37	26	—

Diffuser for return air [2]

Diffuser length	Diffuser volume flow rate		Total pressure drop	Sound power level L_W in dB ref. 10^{-12} W								
L_A	$\dot{V}$		Δp_t	L_{WA}	Octave band centre frequency in Hz							
mm	l/s	m^3/h	Pa	dB(A)	63	125	250	500	1 K	2 K	4 K	8 K
Type ZI, 1 row												
	11	40	15	20	25	22	23	19	12	—	—	—
525	18	65	43	35	29	30	38	34	29	25	15	—
	26	95	89	45	32	34	46	42	39	38	31	—
	18	65	11	20	22	24	24	19	10	—	—	—
1 050	31	110	31	35	31	34	40	34	27	21	12	—
	44	160	66	45	37	40	48	41	39	37	28	—
	19	70	11	20	21	25	24	18	10	—	—	—
1 125	33	120	27	35	32	35	39	34	28	20	11	—
	47	170	64	45	40	42	47	41	40	36	26	—
Type HI, 1 row												
	13	45	17	20	21	23	22	20	11	—	—	—
525	21	75	50	35	28	31	38	35	29	24	14	—
	29	105	100	45	32	36	46	42	40	37	30	—
	21	75	12	20	24	26	24	19	—	—	—	—
1 050	36	130	38	35	34	38	38	32	29	26	15	—
	51	185	78	45	39	42	44	40	39	40	32	—
	22	80	13	20	25	27	23	19	10	—	—	—
1 125	38	135	37	35	35	38	39	31	30	24	14	—
	56	200	80	45	37	44	43	41	40	36	28	—

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Wall slot diffuser

Sound power level and insertion loss, without acoustic lining

Diffuser for supply air

Diffuser length	Diffuser volume flow rate		Total pressure drop	Sound power level L_W in dB ref. 10^{-12} W								
L_A	$\dot{V}$		Δp_t	L_{WA}	Octave band centre frequency in Hz							
mm	l/s	m^3/h	Pa	dB(A)	63	125	250	500	1 K	2 K	4 K	8 K
Type Z, 1 row												
	11	40	13	20	22	20	24	20	—	—	—	—
525	18	65	35	35	30	31	37	35	26	20	11	—
	26	95	72	45	35	38	45	43	40	36	27	—
	19	70	11	20	20	20	25	20	—	—	—	—
1 050	32	115	30	35	31	34	39	35	26	19	8	—
	44	160	60	45	38	42	46	44	39	34	23	10
	21	75	11	20	21	21	26	20	—	—	—	—
1 125	35	125	29	35	32	35	40	35	27	18	—	—
	49	175	56	45	39	43	47	44	40	35	24	11
Type H, 1 row												
	14	50	19	20	24	21	24	21	—	—	—	—
525	24	85	54	35	27	32	37	35	27	19	12	—
	32	115	102	45	30	38	44	44	40	36	28	8
	22	80	13	20	27	24	26	17	10	—	—	—
1 050	38	135	39	35	32	37	39	32	29	23	10	—
	53	190	75	45	37	45	47	41	41	35	25	10
	24	85	13	20	28	26	27	16	11	—	—	—
1 125	40	145	38	35	33	38	39	32	30	23	—	—
	56	200	73	45	38	46	48	41	40	36	27	11
Type Z, 2 rows												
	17	60	8	20	20	23	24	20	—	—	—	—
525	28	100	21	35	36	35	36	36	28	17	—	—
	39	140	40	45	44	40	41	45	39	36	23	—
	32	115	9	20	17	22	24	19	10	—	—	—
1 050	53	190	25	35	29	34	38	34	30	19	—	—
	74	265	48	45	37	41	45	43	41	33	24	—
	35	125	10	20	18	23	24	19	10	—	—	—
1 125	56	200	26	35	30	35	37	34	30	20	—	—
	78	280	50	45	38	42	45	42	42	31	21	10
Type H, 2 rows												
	21	75	11	20	27	20	24	21	15	—	—	—
525	33	120	28	35	33	30	34	36	28	23	11	—
	47	170	55	45	36	35	39	43	40	38	21	—
	38	135	10	20	17	24	25	18	10	—	—	—
1 050	61	220	28	35	30	37	38	33	30	21	—	—
	85	305	53	45	36	44	45	42	41	37	23	—
	40	145	11	20	18	25	25	17	11	—	—	—
1 125	65	235	30	35	29	36	38	34	31	20	—	—
	92	330	58	45	37	45	44	43	41	36	22	11

Note:
Sound power levels ≤ 6 dB are not listed

	Insertion loss in dB [1]						
	Octave band centre frequency in Hz						
	125	250	500	1 K	2 K	4 K	8 K
WSD-_1- 525	1	2	6	8	8	8	10
WSD-_1-1050	1	3	7	9	10	10	12
WSD-_1-1125	2	3	8	10	11	11	12

[1] Values apply to 1-row design; for 2-row design they are higher by 1 dB ref. 10^{-12} W

[2] Values for 2-row design on request

Combined diffuser

Diffuser length	Diffuser volume flow rate		Total pressure drop		Sound power level L_W in dB ref. 10^{-12} W								
L_A	$\dot{V}$		Δp_t in Pa		L_{WA}	Octave band centre frequency in Hz							
mm	l/s	m^3/h	Supply air	Return air	dB(A)	63	125	250	500	1 K	2 K	4 K	8 K
Type Z, 1 row													
	10	35	12	16	20	26	18	22	21	—	—	—	—
1 050	16	58	31	42	35	35	30	37	36	26	20	12	—
	22	80	58	79	45	40	37	42	46	38	32	26	—
	10	36	11	13	20	27	17	26	19	7	—	—	—
1 125	17	60	29	32	35	35	30	36	36	26	20	12	—
	23	82	56	62	45	40	38	45	45	40	34	27	9
Type H, 1 row													
	11	38	13	17	20	25	17	21	22	—	—	—	—
1 050	18	64	36	47	35	25	30	36	37	26	19	11	—
	25	90	68	88	45	40	37	41	45	39	33	27	—
	11	40	12	14	20	28	18	22	22	—	—	—	—
1 125	18	66	32	34	35	35	30	36	35	27	20	13	—
	26	92	64	67	45	40	38	44	45	40	33	26	—
Type Z, 2 rows													
	17	60	10	11	20	28	20	24	19	7	—	—	—
1 050	27	97	26	27	35	37	33	36	36	27	19	9	—
	38	135	51	53	45	41	39	43	46	39	33	21	—
	17	62	9	10	20	22	18	23	20	7	—	—	—
1 125	29	103	27	30	35	37	34	35	35	27	19	9	—
	40	145	53	59	45	49	43	42	45	38	35	27	—
Type H, 2 rows													
	19	67	12	12	20	27	19	24	19	—	—	—	—
1 050	31	110	30	31	35	36	32	35	36	27	18	—	—
	42	150	57	56	45	41	39	42	45	40	33	22	—
	19	70	10	10	20	22	18	22	21	—	—	—	—
1 125	32	115	29	30	35	38	35	34	34	28	18	10	—
	44	160	56	58	45	44	41	42	44	39	36	27	—

Diffuser for return air [2]

Diffuser length	Diffuser volume flow rate		Total pressure drop	Sound power level L_W in dB ref. 10^{-12} W								
L_A	$\dot{V}$		Δp_t	L_{WA}	Octave band centre frequency in Hz							
mm	l/s	m^3/h	Pa	dB(A)	63	125	250	500	1 K	2 K	4 K	8 K
Type Z, 1 row												
	10	35	12	20	22	18	19	22	10	—	—	—
525	17	60	34	35	29	31	35	36	27	22	16	—
	24	85	70	45	33	38	44	43	38	38	34	—
	17	60	9	20	18	22	23	21	—	—	—	—
1 050	29	105	25	35	29	32	38	36	24	20	10	—
	42	150	54	45	38	38	46	45	36	35	27	10
	18	65	9	20	16	23	24	22	—	—	—	—
1 125	31	110	24	35	31	33	39	36	24	20	—	—
	44	160	57	45	39	39	47	45	37	36	28	11
Type H, 1 row												
	11	40	14	20	20	19	19	22	—	—	—	—
525	19	70	40	35	28	32	34	35	27	21	15	—
	28	100	81	45	32	37	43	43	37	38	33	9
	19	70	11	20	22	21	24	21	10	—	—	—
1 050	33	120	31	35	30	32	38	34	28	25	13	—
	47	170	63	45	34	37	45	41	40	39	30	12
	21	75	11	20	23	22	24	22	—	—	—	—
1 125	35	125	28	35	31	33	39	36	24	21	—	—
	50	180	60	45	36	39	46	45	36	35	27	12

Wall slot diffuser

Features and type code

Features

- Turbulent mixing ventilation with high level of thermal comfort
- Compact construction design for installation inside or behind a gypsum board wall of 100 mm [1] thickness
- Overall lengths suited to standard wall support profiles
- Slot element easy to install from the room side upon completion of room construction
- Slot element easy to take off for cleaning as per German guideline VDI 6022
- Diffuser available for supply air or return air, or as combined diffuser for supply and return air
- Diffuser in 1-row or 2-row design [2]
- Adjustable air distribution elements preset and secured by snap-in cams
- Owing to the construction design all models have low sound power levels and high insertion loss values
- High insertion loss with abrasion-resistant acoustic lining of class A2 to DIN 4102-1 (optional); this obviates the need for crosstalk silencers
- Optional volume flow damper for flow regulation adjustable from room
- Recommended installation height: 2.4 to 3.5 m
- Volume flow rate up to 67 l/s [240 m^3/h] per metre of diffuser length

[1] Other wall thicknesses on enquiry
[2] 3-row design on enquiry
[3] For lengths of 1 050 mm and 1 125 mm
[4] Other lengths on enquiry

Type code

WSD – __ – __ – ____ – __ – __ – __ – __ – ___ – __

Wall slot diffuser | Supply/Return air | Outlet rows | Length | Design | Damper | Insulation | Surface finish | Colour of discharge element

Supply/Return air
Z = supply air
A = return air
K = combined supply and return air [3]

Outlet rows
1 = 1 row
2 = 2 rows

Length [4]
525 = 525 mm
1050 = 1 050 mm
1125 = 1 125 mm

Design [1]
H = with connection box for installation behind a two-layer gypsum board wall, wall thickness = 100 mm
Z = with connection box for installation inside a two-layer gypsum board wall, wall thickness = 100 mm

Damper
O = no volume flow damper
R = with volume flow damper adjustable from room

Insulation
O = without acoustic lining
I = with acoustic lining

Surface finish (slot element profile)
elox = aluminium anodized in natural colour (E6EV1)
9010 = face painted to RAL 9010, semi-matt
.... = face painted to RAL ....

Colour of discharge element
S = black similar to RAL 9005
W = white similar to RAL 9010

Fig. 4: Jet spread made visible by smoke tracer
Above: at an upward incline and downwards
Right: horizontal

Wall slot diffuser

Tender text

Tender text
– for supply air or return air

..... units
Wall slot diffuser for **supply air** or **return air**, in slim design, with high induction effect for turbulent mixing ventilation close to the wall in front of the diffuser, which results in quick decrease in temperature difference and discharge velocity and generates a low-turbulence supply air flow in the occupied zone; for installation inside or behind a two-layer gypsum board wall of 100 mm thickness [1], for horizontal air discharge or extraction,

consisting of:
- slot element fitted with consecutive cylindrical air distribution elements preset at the factory, which can be turned in order to adjust the discharge direction; 1-row or 2-row design; slot element easy to clip into the connection box from the room side;
- connection box with lateral L-fasteners for fixing to gypsum board panels and with round spigot at the rear; optional volume flow damper adjustable from the room side; optional abrasion-resistant acoustic lining.

Material:
- Slot element profile with endwise pieces made of aluminium powder coated to RAL 9010, pure white [2], or anodized in natural colour (E6 EV1)
- Air distribution elements made of polycarbonate (PC, UL 94 V-0) body-tinted in black similar to RAL 9005 or in white similar to RAL 9010
- Connection box made of galvanized sheet metal

Make: Krantz Components
Type: WSD – __ – __ – ____ – __ – __ – __ – ___ – __

[1] Other wall thicknesses on enquiry
[2] Other colours on request

– combined supply air and return air

..... units
Combined wall slot diffuser for supply air and return air, in slim design, with high induction effect for turbulent mixing ventilation close to the wall in front of the diffuser, which results in quick decrease in temperature difference and discharge velocity and generates a low-turbulence supply air flow in the occupied zone; for installation inside or behind a two-layer gypsum board wall of 100 mm thickness [1],
with a supply air and a return air segment, for horizontal air discharge and extraction,

consisting of:
- slot element fitted with consecutive cylindrical air distribution elements preset at the factory, which can be turned in order to adjust the discharge direction; 1-row or 2-row design; slot element easy to clip into the connection box from the room side;
- connection box with lateral L-fasteners for fixing to gypsum board panels, with separate segments for supply air and return air and with round spigots at the rear; optional volume flow damper adjustable from the room side; optional abrasion-resistant acoustic lining.

Material:
- Slot element profile with endwise pieces made of aluminium powder coated to RAL 9010, pure white [2], or anodized in natural colour (E6 EV1)
- Air distribution elements made of polycarbonate (PC, UL 94 V-0) body-tinted in black similar to RAL 9005 or in white similar to RAL 9010
- Connection box made of galvanized sheet metal

Make: Krantz Components
Type: WSD – K – __ – ____ – __ – __ – __ – ___ – __

Subject to technical alterations.

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