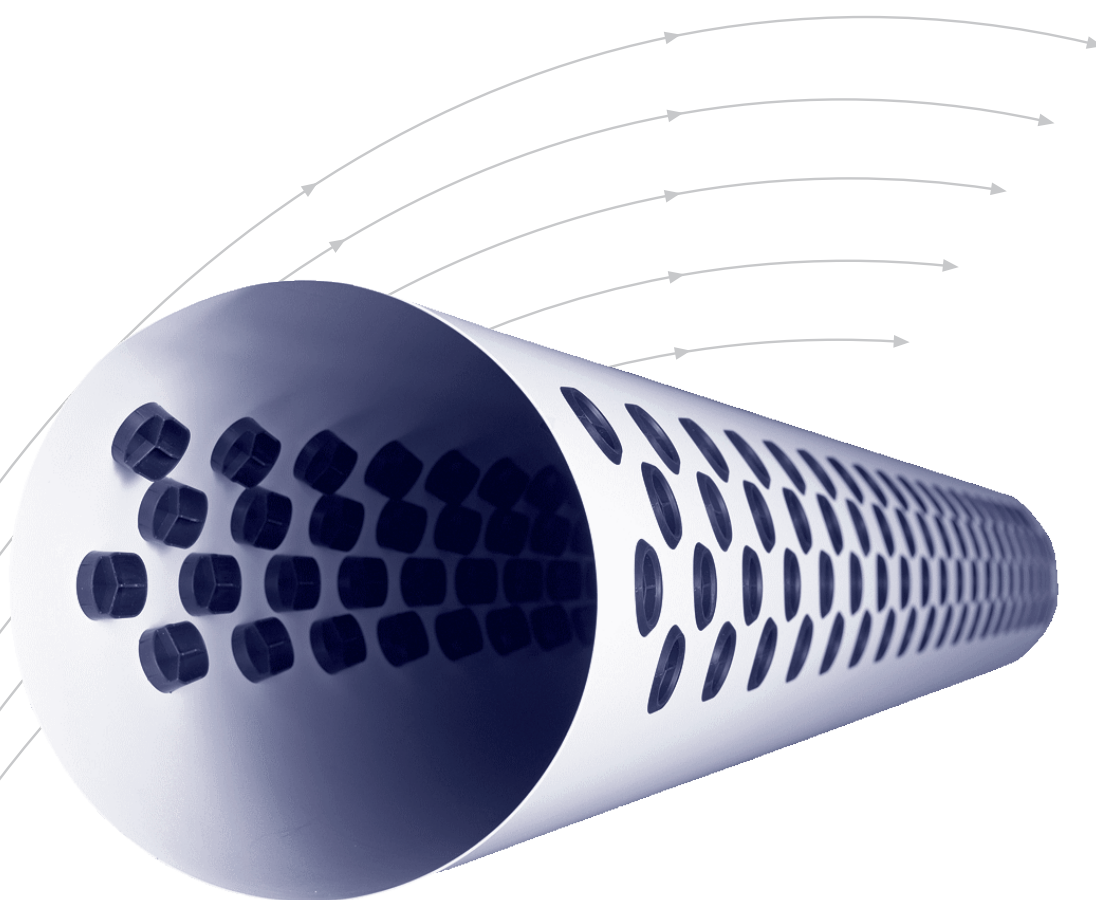


# Duct Nozzle Diffuser



**TROX<sup>®</sup> TECHNIK**



The art of handling air

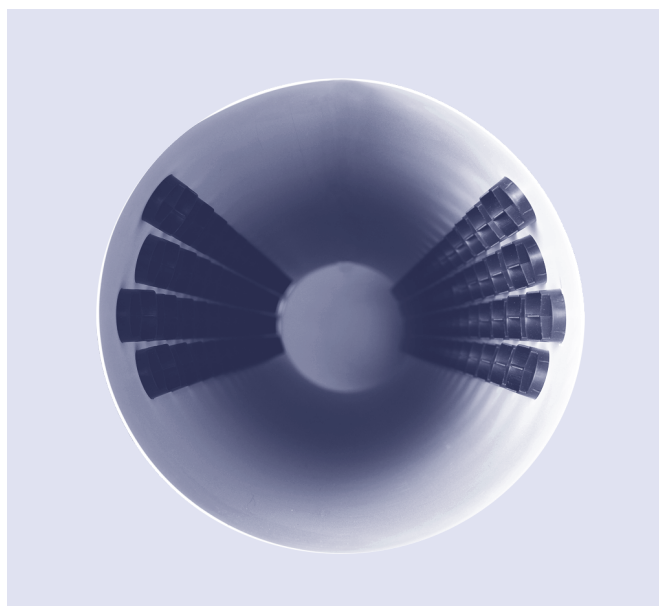
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## Application

The TROX HESCO duct nozzle diffusers are particularly suitable for rooms with a high air change rate. The diffusers are freely suspended from the ceiling. The air is evenly distributed inside the duct, and discharged into the room causing very little turbulence and induction. Air discharge can be horizontal, downward or upward. Room ventilation is best achieved when the temperature of the supply air is lower than that of the room; the supply air temperature is ideally -2 to -6 K lower than the extract air temperature. Duct nozzle diffusers should not be used for heating.

## Construction

The welded ducts are made of galvanised steel or sheet steel; the longitudinal welded seam is at the top and therefore hardly visible. Rows of evenly arranged plastic nozzles are placed at the sides along the entire duct length. The number of nozzle rows on the left and right side of the duct can be different. The duct nozzle diffuser is available in lengths of 1.0 m to 20.0 m and consists of individual ducts of 0.5 to 2.0 m, the required connecting sleeves, and 1 end cap per complete duct diffuser assembly. On site, the duct nozzle diffuser can be suspended from the ceiling, for example with threaded rods and duct clamps.

## Safety instructions

### CAUTION!

**Risk of injury from sharp edges and corners, ridges and thin-walled sheet metal parts!**

- Proceed carefully with all work.
- Wear protective gloves, safety shoes and protective helmet.

### WARNING!

**Danger from incorrect use. Misuse of the product may lead to dangerous situations.**

The product must not be used:

- in areas subject to explosion hazards;
- in the open air without sufficient protection against weather effects;
- in atmospheres that may have a damaging and/or corrosive effect on the product due to scheduled or unscheduled chemical reactions.

### CAUTION!

**Damage to the product due to improper handling. Check the device for damage and contamination prior to operation!**

Improper handling may lead to considerable material damage of the product.

- Do not use any acid or abrasive cleaning agents.
- Adhesives from sticky tape may lead to colour damage.
- Excessive moisture may lead to colour damage and corrosion.
- Use only cleaning agents, greases and oils that are expressly specified.

### FLAME RETARDANT

## Dimensions / Weight

Pipe		Ø160	Ø200	Ø250	Ø315	Ø400	Ø450	Ø500
Inside Ø	[mm]	160	200	250	315	400	450	500
$L_{min}$	[mm]	500	500	500	500	500	500	500
$L_{max}$	[mm]	1'030	1'030	2'030	2'030	2'030	1'400	1'400
Weight	[kg/m]	3.93	4.94	6.12	7.68	9.76	11.00	12.18

## Duct lengths

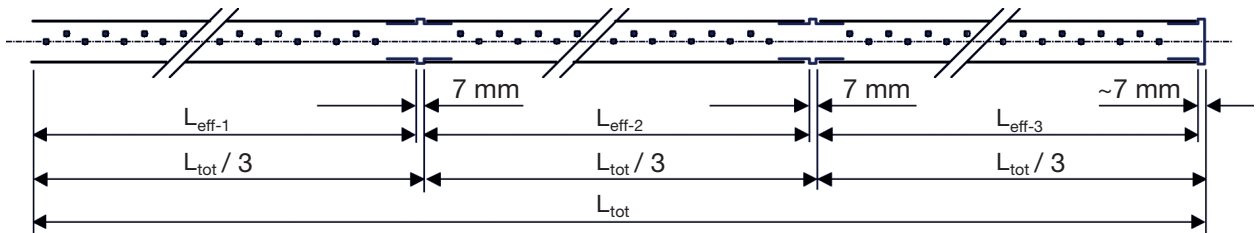
As standard, the total length  $L_{tot}$  of the duct nozzle diffuser is divided into equal sections, i.e. ducts. The effective length of each of these ducts is actually a little shorter because the bead width on the connecting sleeve (= 7 mm) is subtracted to ensure that the total length of the duct nozzle diffuser is not exceeded once installed. The area where the connecting sleeve is placed is not equipped with nozzles.

Example: Duct nozzle diffuser consisting of 3 sections (ducts)

Total diffuser length  $L_{tot}$  = 4800 mm

Length of each duct  $L_{tot} / 3$  = 4800 mm / 3 = 1600 mm

Effective length of each duct as delivered = 1600 mm - 7 mm = 1593 mm

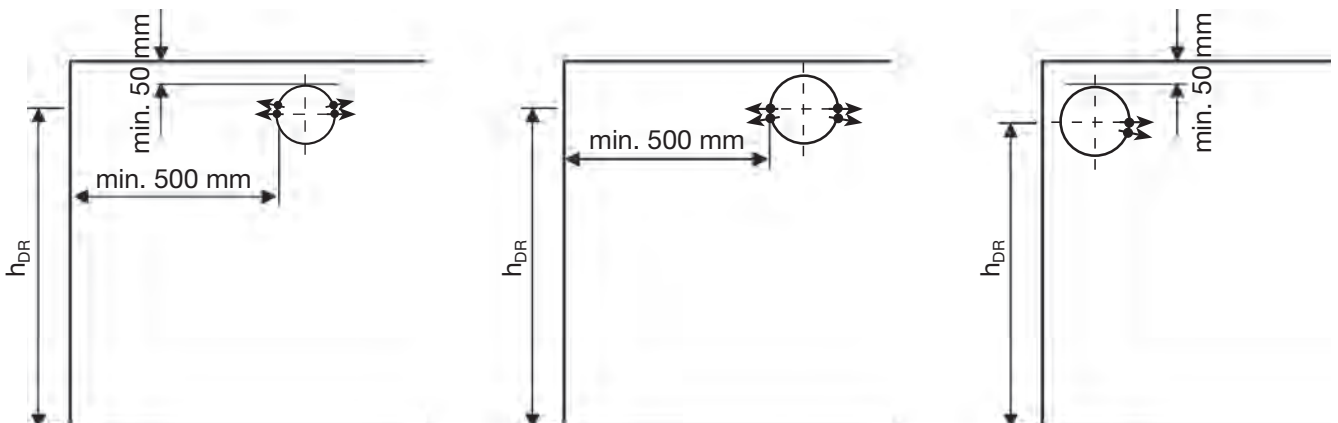


## Installation

On site, the ducts can be installed as conventional ventilation ducting, e.g. with threaded rods and duct clamps adjacent to connecting sleeves.

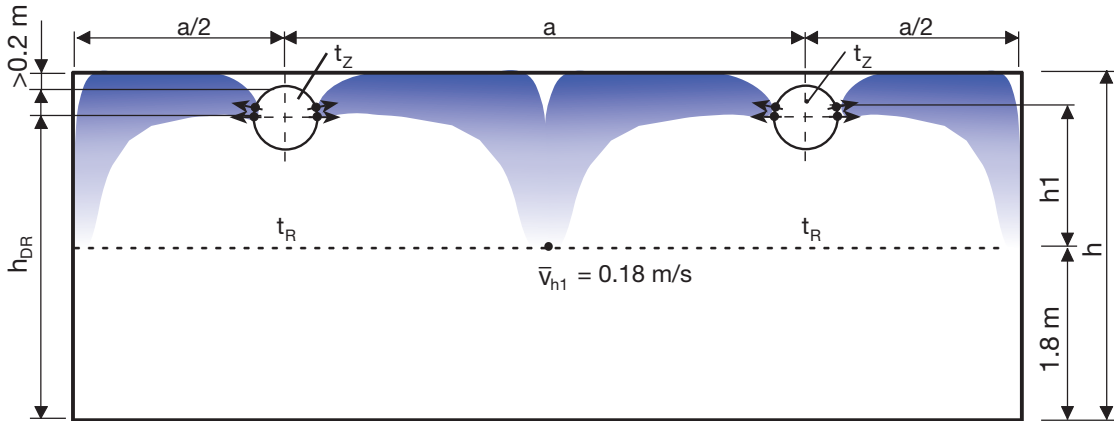
The nozzle duct can then be suspended.

A minimum distance from the ceiling slab and the walls is required (see below).



# Quick selection

## Quick selection for ducts with 1 to 3 rows of nozzles

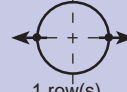
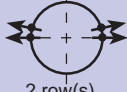
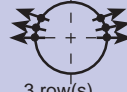


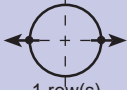


Pipe Ø [mm]	Velocity upstream of the diffuser						
	1.0 m/s	1.5 m/s	2.0 m/s	2.5 m/s	3.0 m/s	3.5 m/s	4.0 m/s
	Volume flow rate [m³/h]						
160	72	109	145	181	217	253	290
200	113	170	226	283	339	396	452
250	177	265	353	442	530	619	707
315	281	421	561	701	842	982	1122
400	452	679	905	1131	1357	1583	1810
450	573	859	1145	1431	1718	2004	2290
500	707	1060	1414	1767	2121	2474	2827

**Ideal range**

$L_{tot} = 2000 \text{ mm}$		$\text{Ø } 200 \text{ mm}$		$\Delta t = -6.0 \text{ K}$		$v_{h1} = 0.18 \text{ m/s}$													
Installation height $h_{DR}$	Space betw. diffusers $a$	L1 ↔ R1 1 row(s)						L2 ↔ R2 2 row(s)						L3 ↔ R3 3 row(s)					
		$\dot{V}$	$\Delta p_t$	$L_{WA}$	$v_2$	$\dot{q}$	$\dot{V}$	$\Delta p_t$	$L_{WA}$	$v_2$	$\dot{q}$	$\dot{V}$	$\Delta p_t$	$L_{WA}$	$v_2$	$\dot{q}$			
[m]	[m]	[m³/h]	[l/s]	[Pa]	[dB(A)]	[m/s]	[W/m²]	[m³/h]	[l/s]	[Pa]	[dB(A)]	[m/s]	[W/m²]	[m³/h]	[l/s]	[Pa]	[dB(A)]	[m/s]	[W/m²]
2.80	2.0	98	27	8	23	1.3	35	128	36	5	20	0.9	46	149	41	4	19	0.7	53
	2.5	105	29	10	25	1.4	30	142	39	6	22	1.0	41	170	47	6	21	0.8	49
	3.0	111	31	11	26	1.5	27	153	43	7	23	1.1	37	187	52	7	22	0.9	45
	3.5	116	32	12	26	1.6	24	162	45	8	24	1.1	33	199	55	8	23	0.9	41
	4.0	120	33	12	27	1.6	22	169	47	8	24	1.2	30	210	58	8	24	1.0	38
	4.5	124	34	13	27	1.7	20	175	48	9	25	1.2	28	219	61	9	25	1.0	35
3.10	2.0	118	33	12	27	1.6	42	152	42	7	23	1.0	55	173	48	6	21	0.8	62
	2.5	128	36	14	28	1.8	37	170	47	9	25	1.2	49	200	56	8	23	0.9	58
	3.0	136	38	16	29	1.9	32	184	51	10	26	1.3	44	221	61	9	25	1.0	53
	3.5	142	39	17	30	1.9	29	195	54	11	27	1.3	40	237	66	11	26	1.1	49
	4.0	147	41	19	30	2.0	26	204	57	12	28	1.4	37	250	69	12	27	1.1	45
	4.5	151	42	20	31	2.1	24	212	59	13	28	1.5	34	261	72	13	28	1.2	42
3.40	2.0	137	38	16	29	1.9	49	174	48	9	25	1.2	63	194	54	7	23	0.9	70
	2.5	149	41	19	31	2.0	43	196	54	11	27	1.3	56	227	63	10	25	1.0	65
	3.0	158	44	22	32	2.2	38	213	59	14	28	1.5	51	252	70	12	27	1.2	60
	3.5	166	46	24	33	2.3	34	226	63	15	29	1.6	46	271	75	14	29	1.2	56
	4.0	172	48	26	33	2.4	31	237	66	17	30	1.6	43	287	80	16	30	1.3	52
	4.5	178	49	27	34	2.4	28	246	68	18	31	1.7	39	301	83	17	31	1.4	48
3.70	2.0	155	43	21	31	2.1	56	195	54	11	27	1.3	70	213	59	9	24	1.0	76
	2.5	169	47	25	33	2.3	49	221	61	15	29	1.5	63	253	70	12	27	1.2	73
	3.0	180	50	28	34	2.5	43	240	67	17	30	1.6	58	282	78	15	29	1.3	67
	3.5	189	52	31	35	2.6	39	256	71	19	31	1.8	52	304	84	18	31	1.4	62
	4.0	196	54	33	36	2.7	35	269	75	22	32	1.8	48	323	90	20	32	1.5	58
	4.5	202	56	35	36	2.8	32	279	78	23	33	1.9	45	338	94	22	33	1.5	54

# Quick selection

$L_{tot} = 3000 \text{ mm}$		$\varnothing 200 \text{ mm}$		$\Delta t = -6.0 \text{ K}$		$v_{h1} = 0.18 \text{ m/s}$													
Installation height	Space betw. diffusers	L1  R1					L2  R2					L3  R3							
		$\dot{V}$	$\Delta p_t$	$L_{WA}$	$v_2$	$\dot{q}$	$\dot{V}$	$\Delta p_t$	$L_{WA}$	$v_2$	$\dot{q}$	$\dot{V}$	$\Delta p_t$	$L_{WA}$	$v_2$	$\dot{q}$			
$h_{DR}$	$a$	[m³/h]	[l/s]	[Pa]	[dB(A)]	[m/s]	[W/m²]	[m³/h]	[l/s]	[Pa]	[dB(A)]	[m/s]	[W/m²]	[m³/h]	[l/s]	[Pa]	[dB(A)]	[m/s]	[W/m²]
2.80	2.0	146	41	9	25	1.3	35	192	53	7	23	0.9	47	223	62	7	22	0.7	54
	2.5	158	44	11	26	1.4	31	213	59	9	24	1.0	41	255	71	10	25	0.8	50
	3.0	167	46	12	27	1.5	27	230	64	10	26	1.1	37	280	78	11	27	0.9	45
	3.5	174	48	13	28	1.6	24	242	67	11	27	1.1	34	299	83	13	28	0.9	41
	4.0	180	50	14	29	1.6	22	253	70	12	27	1.2	31	314	87	14	29	1.0	38
4.5	185	51	15	29	1.7	20	262	73	13	28	1.2	28	328	91	16	30	1.0	35	
3.10	2.0	177	49	14	28	1.6	43	228	63	10	25	1.0	55	259	72	10	25	0.8	63
	2.5	192	53	16	30	1.8	37	255	71	13	27	1.2	50	300	83	13	28	0.9	58
	3.0	203	56	18	31	1.9	33	276	77	15	29	1.3	45	331	92	16	30	1.0	54
	3.5	212	59	20	32	1.9	29	292	81	16	30	1.3	41	355	98	18	32	1.1	49
	4.0	220	61	22	32	2.0	27	306	85	18	31	1.4	37	374	104	21	33	1.1	45
4.5	227	63	23	33	2.1	24	317	88	19	32	1.5	34	391	109	22	34	1.2	42	
3.40	2.0	206	57	19	31	1.9	50	261	72	13	28	1.2	63	290	81	12	28	0.9	70
	2.5	224	62	22	33	2.0	43	294	82	17	30	1.3	57	341	95	17	31	1.0	66
	3.0	237	66	25	34	2.2	38	319	89	20	32	1.5	52	378	105	21	33	1.2	61
	3.5	249	69	28	35	2.3	35	339	94	22	33	1.6	47	407	113	24	35	1.2	56
	4.0	258	72	30	35	2.4	31	355	99	24	34	1.6	43	431	120	27	37	1.3	52
4.5	266	74	32	36	2.4	29	369	103	26	35	1.7	40	451	125	30	38	1.4	49	
3.70	2.0	233	65	24	33	2.1	57	292	81	16	30	1.3	71	318	88	15	30	1.0	77
	2.5	254	70	29	35	2.3	49	331	92	21	32	1.5	64	379	105	21	33	1.2	74
	3.0	270	75	32	36	2.5	44	360	100	25	34	1.6	58	422	117	26	36	1.3	68
	3.5	283	79	36	37	2.6	39	384	107	28	36	1.8	53	456	127	31	38	1.4	63
	4.0	294	82	38	38	2.7	36	403	112	31	37	1.8	49	484	134	34	39	1.5	59
4.5	303	84	41	38	2.8	33	419	116	34	38	1.9	45	507	141	38	41	1.5	55	

$L_{tot} = 4000 \text{ mm}$		$\varnothing 250 \text{ mm}$		$\Delta t = -6.0 \text{ K}$		$v_{h1} = 0.18 \text{ m/s}$													
Installation height	Space betw. diffusers	L1  R1					L2  R2					L3  R3							
		$\dot{V}$	$\Delta p_t$	$L_{WA}$	$v_2$	$\dot{q}$	$\dot{V}$	$\Delta p_t$	$L_{WA}$	$v_2$	$\dot{q}$	$\dot{V}$	$\Delta p_t$	$L_{WA}$	$v_2$	$\dot{q}$			
$h_{DR}$	$a$	[m³/h]	[l/s]	[Pa]	[dB(A)]	[m/s]	[W/m²]	[m³/h]	[l/s]	[Pa]	[dB(A)]	[m/s]	[W/m²]	[m³/h]	[l/s]	[Pa]	[dB(A)]	[m/s]	[W/m²]
2.80	2.0	206	57	9	27	1.3	38	271	75	6	24	0.9	51	314	87	6	23	0.7	59
	2.5	222	62	11	28	1.4	33	301	83	8	25	1.0	45	361	100	8	25	0.8	54
	3.0	235	65	12	29	1.5	29	324	90	9	26	1.1	40	396	110	10	27	0.9	49
	3.5	245	68	13	30	1.6	26	342	95	10	27	1.1	36	423	117	11	28	0.9	45
	4.0	253	70	14	30	1.6	24	357	99	11	28	1.2	33	445	123	13	29	1.0	42
4.5	261	72	15	31	1.7	22	370	103	12	29	1.2	31	464	129	14	29	1.0	38	
3.10	2.0	249	69	13	30	1.6	46	321	89	9	26	1.0	60	360	100	8	25	0.8	67
	2.5	270	75	16	31	1.8	40	360	100	11	28	1.2	54	424	118	11	28	0.9	63
	3.0	286	79	17	32	1.9	36	389	108	13	29	1.3	48	467	130	14	30	1.0	58
	3.5	299	83	19	33	1.9	32	412	114	15	30	1.3	44	501	139	16	31	1.1	54
	4.0	310	86	21	34	2.0	29	431	120	16	31	1.4	40	529	147	18	32	1.1	49
4.5	319	89	22	34	2.1	26	447	124	17	32	1.5	37	553	153	19	33	1.2	46	
3.40	2.0	289	80	18	32	1.9	54	368	102	12	29	1.2	69	401	111	10	27	0.9	75
	2.5	315	87	21	34	2.0	47	415	115	15	31	1.3	62	478	133	15	30	1.0	71
	3.0	334	93	24	35	2.2	42	450	125	18	32	1.5	56	533	148	18	32	1.2	66
	3.5	350	97	26	36	2.3	37	478	133	20	33	1.6	51	575	160	21	34	1.2	61
	4.0	363	101	28	37	2.4	34	501	139	22	34	1.6	47	608	169	24	35	1.3	57
4.5	374	104	30	37	2.4	31	520	144	24	35	1.7	43	636	177	26	36	1.4	53	
3.70	2.0	327	91	23	35	2.1	61	408	113	15	30	1.3	76	439	122	12	28	1.0	82
	2.5	357	99	27	36	2.3	53	466	129	19	33	1.5	70	528	147	18	32	1.1	79
	3.0	380	105	31	37	2.5	47	507	141	22	34	1.7	63	596	165	23	35	1.3	74
	3.5	398	111	34	38	2.6	43	540	150	25	36	1.8	58	644	179	26	36	1.4	69
	4.0	414	115	37	39	2.7	39	567	158	28	37	1.8	53	683	190	30	38	1.5	64
4.5	427	118	39	40	2.8	35	590	164	30	37	1.9	49	716	199	33	39	1.6	59	

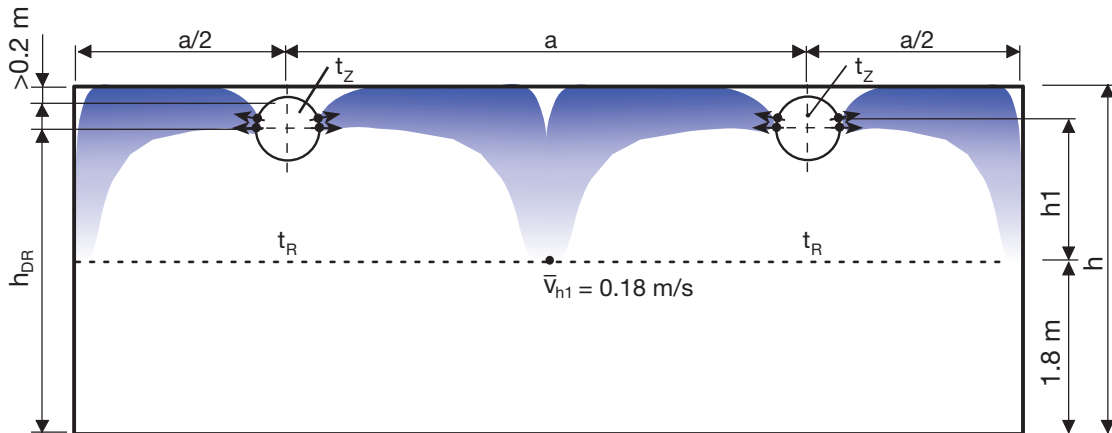
# Quick selection

$L_{tot} = 5000 \text{ mm}$							$\text{Ø } 250 \text{ mm}$							$\Delta t = -6.0 \text{ K}$					$v_{h1} = 0.18 \text{ m/s}$				
Installation height	Space betw. diffusers	L1  R1					L2  R2					L3  R3											
		$\dot{V}$	$\Delta p_t$	$L_{wA}$	$v_2$	$\dot{q}$	$\dot{V}$	$\Delta p_t$	$L_{wA}$	$v_2$	$\dot{q}$	$\dot{V}$	$\Delta p_t$	$L_{wA}$	$v_2$	$\dot{q}$							
		[m³/h]	[l/s]	[Pa]	[dB(A)]	[m/s]	[W/m²]	[m³/h]	[l/s]	[Pa]	[dB(A)]	[m/s]	[W/m²]	[m³/h]	[l/s]	[Pa]	[dB(A)]	[m/s]	[W/m²]				
2.80	2.0	260	72	10	28	1.3	40	331	92	8	25	0.9	51	387	108	9	25	0.7	59				
	2.5	280	78	12	29	1.4	34	368	102	10	27	1.0	45	447	124	11	28	0.8	55				
	3.0	296	82	13	30	1.5	30	396	110	11	28	1.1	40	489	136	14	30	0.9	50				
	3.5	309	86	14	31	1.6	27	418	116	13	29	1.1	37	523	145	16	31	0.9	46				
	4.0	320	89	15	31	1.6	24	436	121	14	30	1.2	33	550	153	17	32	1.0	42				
3.10	2.0	314	87	15	31	1.6	48	393	109	11	28	1.0	60	443	123	11	28	0.8	68				
	2.5	341	95	18	32	1.8	42	440	122	14	30	1.2	54	524	145	16	31	0.9	64				
	3.0	361	100	20	33	1.9	37	476	132	17	31	1.3	49	578	160	19	33	1.0	59				
	3.5	377	105	21	34	1.9	33	504	140	19	32	1.3	44	620	172	22	35	1.1	54				
	4.0	391	109	23	35	2.0	30	527	146	20	33	1.4	40	654	182	24	36	1.1	50				
3.40	2.0	365	101	20	34	1.9	56	450	125	15	30	1.2	69	494	137	14	30	0.9	76				
	2.5	397	110	24	35	2.0	49	507	141	19	33	1.3	62	590	164	20	34	1.0	72				
	3.0	422	117	27	36	2.2	43	550	153	22	34	1.5	56	660	183	25	36	1.2	67				
	3.5	442	123	29	37	2.3	39	584	162	25	35	1.6	51	710	197	29	38	1.2	62				
	4.0	458	127	32	38	2.4	35	613	170	27	36	1.6	47	752	209	32	39	1.3	58				
3.70	2.0	413	115	26	36	2.1	63	499	139	18	32	1.3	76	541	150	17	32	0.9	83				
	2.5	451	125	31	37	2.3	55	570	158	24	35	1.5	70	651	181	24	36	1.1	80				
	3.0	480	133	35	39	2.5	49	621	172	28	37	1.7	63	737	205	31	39	1.3	75				
	3.5	503	140	38	39	2.6	44	661	183	32	38	1.8	58	796	221	36	41	1.4	70				
	4.0	522	145	41	40	2.7	40	694	193	35	39	1.8	53	845	235	41	42	1.5	65				
4.5	539	150	44	41	2.8	37	722	200	38	40	1.9	49	885	246	45	43	1.6	60					

$L_{tot} = 6000 \text{ mm}$							$\text{Ø } 315 \text{ mm}$							$\Delta t = -6.0 \text{ K}$					$v_{h1} = 0.18 \text{ m/s}$				
Installation height	Space betw. diffusers	L1  R1					L2  R2					L3  R3											
		$\dot{V}$	$\Delta p_t$	$L_{wA}$	$v_2$	$\dot{q}$	$\dot{V}$	$\Delta p_t$	$L_{wA}$	$v_2$	$\dot{q}$	$\dot{V}$	$\Delta p_t$	$L_{wA}$	$v_2$	$\dot{q}$							
		[m³/h]	[l/s]	[Pa]	[dB(A)]	[m/s]	[W/m²]	[m³/h]	[l/s]	[Pa]	[dB(A)]	[m/s]	[W/m²]	[m³/h]	[l/s]	[Pa]	[dB(A)]	[m/s]	[W/m²]				
2.80	2.0	308	86	9	28	1.3	40	396	110	6	25	0.9	51	462	128	6	24	0.7	60				
	2.5	333	92	10	30	1.4	35	440	122	7	27	1.0	46	535	148	8	26	0.8	56				
	3.0	352	98	12	31	1.5	30	473	131	8	28	1.1	41	586	163	9	27	0.9	51				
	3.5	367	102	13	31	1.6	27	500	139	9	29	1.1	37	626	174	10	28	0.9	47				
	4.0	380	105	13	32	1.6	25	522	145	10	29	1.2	34	659	183	11	29	1.0	43				
3.10	2.0	391	109	14	32	1.7	23	540	150	11	30	1.2	31	687	191	12	30	1.0	40				
	2.5	373	103	13	32	1.6	48	469	130	8	28	1.0	61	528	147	7	26	0.8	69				
	3.0	404	112	15	33	1.8	42	526	146	10	29	1.2	55	624	173	10	28	0.9	65				
	3.5	428	119	17	34	1.9	37	568	158	12	31	1.3	49	691	192	13	30	1.0	60				
	4.0	448	124	19	35	1.9	33	602	167	14	32	1.3	45	741	206	15	31	1.1	55				
3.40	2.0	464	129	20	35	2.0	30	630	175	15	32	1.4	41	783	217	16	32	1.2	51				
	2.5	478	133	21	36	2.1	28	654	182	16	33	1.5	38	817	227	18	33	1.2	47				
	3.0	433	120	17	34	1.9	56	535	149	11	30	1.2	70	588	163	9	27	0.9	76				
	3.5	472	131	21	36	2.0	49	606	168	14	32	1.3	63	702	195	13	30	1.0	73				
	4.0	501	139	23	37	2.2	43	657	183	16	33	1.5	57	788	219	16	33	1.2	68				
3.70	2.0	524	146	26	38	2.3	39	698	194	18	34	1.6	52	849	236	19	34	1.3	63				
	2.5	544	151	28	38	2.4	35	732	203	20	35	1.6	48	899	250	21	35	1.3	58				
	3.0	561	156	29	39	2.4	32	761	211	22	36	1.7	44	941	261	23	36	1.4	54				
	3.5	491	136	22	36	2.1	64	594	165	13	31	1.3	77	643	179	11	29	0.9	84				
	4.0	535	149	27	38	2.3	56	681	189	17	34	1.5	71	775	215	16	32	1.1	81				
4.5	570	158	30	39	2.5	49	742	206	21	35	1.7	64	880	244	20	35	1.3	76					



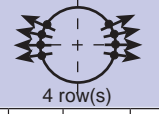
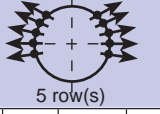
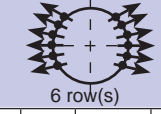
## Quick selection for ducts with 4 to 6 rows of nozzles

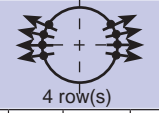
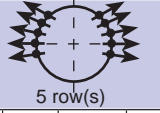
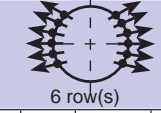


Pipe Ø [mm]	Velocity upstream of the diffuser						
	1.0 m/s	1.5 m/s	2.0 m/s	2.5 m/s	3.0 m/s	3.5 m/s	4.0 m/s
	Volume flow rate [m³/h]						
160	72	109	145	181	217	253	290
200	113	170	226	283	339	396	452
250	177	265	353	442	530	619	707
315	281	421	561	701	842	982	1122
400	452	679	905	1131	1357	1583	1810
450	573	859	1145	1431	1718	2004	2290
500	707	1060	1414	1767	2121	2474	2827
Ideal range							

$L_{tot} = 2000 \text{ mm}$		$\text{Ø } 315 \text{ mm}$		$\Delta t = -6.0 \text{ K}$		$v_{h1} = 0.18 \text{ m/s}$													
Installation height $h_{DR}$ [m]	Space betw. diffusers $a$ [m]	L4 R4 4 row(s)						L5 R5 5 row(s)						L6 R6 6 row(s)					
		$\dot{V}$ [m³/h]	$\dot{V}$ [l/s]	$\Delta p_t$ [Pa]	$L_{WA}$ [dB(A)]	$v_z$ [m/s]	$\dot{q}$ [W/m²]	$\dot{V}$ [m³/h]	$\dot{V}$ [l/s]	$\Delta p_t$ [Pa]	$L_{WA}$ [dB(A)]	$v_z$ [m/s]	$\dot{q}$ [W/m²]	$\dot{V}$ [m³/h]	$\dot{V}$ [l/s]	$\Delta p_t$ [Pa]	$L_{WA}$ [dB(A)]	$v_z$ [m/s]	$\dot{q}$ [W/m²]
3.10	3.0	245	68	4	22	0.8	59	246	68	3	20	0.7	59	273	76	3	20	0.6	65
	3.5	266	74	4	23	0.9	55	273	76	3	22	0.7	56	306	85	4	22	0.7	63
	4.0	283	79	5	24	0.9	51	295	82	4	23	0.8	53	331	92	4	23	0.7	59
	4.5	298	83	6	25	1.0	48	313	87	5	23	0.8	50	352	98	5	23	0.8	56
	5.0	310	86	6	26	1.0	44	328	91	5	24	0.9	47	370	103	5	24	0.8	53
	5.5	320	89	6	26	1.1	42	342	95	5	25	0.9	45	385	107	6	25	0.9	50
3.40	3.0	279	78	5	24	0.9	67	275	76	4	22	0.7	66	304	84	3	21	0.7	73
	3.5	305	85	6	25	1.0	63	307	85	4	23	0.8	63	345	96	4	23	0.8	71
	4.0	325	90	7	26	1.1	58	333	93	5	24	0.9	60	376	104	5	24	0.8	67
	4.5	342	95	7	27	1.1	55	355	98	6	25	1.0	57	401	111	6	25	0.9	64
	5.0	357	99	8	28	1.2	51	373	104	7	26	1.0	54	422	117	7	26	0.9	61
	5.5	370	103	9	28	1.2	48	389	108	7	27	1.0	51	441	122	7	27	1.0	58
3.70	3.0	311	86	6	26	1.0	74	301	83	4	23	0.8	72	333	92	4	23	0.7	80
	3.5	340	94	7	27	1.1	70	339	94	5	25	0.9	70	379	105	5	24	0.8	78
	4.0	365	101	8	28	1.2	66	369	103	6	26	1.0	66	417	116	7	26	0.9	75
	4.5	385	107	9	29	1.3	61	394	109	7	27	1.1	63	447	124	8	27	1.0	71
	5.0	402	112	10	30	1.3	58	416	115	8	28	1.1	60	472	131	8	28	1.1	68
	5.5	417	116	11	30	1.4	54	434	121	9	28	1.2	57	493	137	9	28	1.1	64
4.00	3.0	340	94	7	27	1.1	81	325	90	5	24	0.9	78	333	92	4	23	0.7	80
	3.5	374	104	9	28	1.3	77	368	102	6	26	1.0	76	412	114	6	26	0.9	85
	4.0	402	112	10	30	1.3	72	403	112	8	27	1.1	72	457	127	8	27	1.0	82
	4.5	425	118	11	31	1.4	68	432	120	9	28	1.2	69	490	136	9	28	1.1	78
	5.0	445	123	12	31	1.5	64	456	127	10	29	1.2	66	519	144	10	29	1.2	75
	5.5	462	128	13	32	1.5	60	477	133	11	30	1.3	62	544	151	11	30	1.2	71

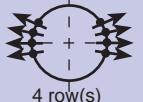
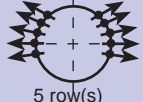

# Quick selection

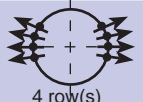
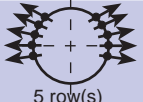

<b>L<sub>tot</sub> = 3000 mm</b>		<b>Ø 315 mm</b>										<b>Δt = -6.0 K</b>		<b>v<sub>h1</sub> = 0.18 m/s</b>					
Installation height	Space betw. diffusers	<b>L4 R4</b>  4 row(s)						<b>L5 R5</b>  5 row(s)						<b>L6 R6</b>  6 row(s)					
		$\dot{V}$	$\Delta p_t$	$L_{wA}$	$v_2$	$\dot{q}$	$\dot{V}$	$\Delta p_t$	$L_{wA}$	$v_2$	$\dot{q}$	$\dot{V}$	$\Delta p_t$	$L_{wA}$	$v_2$	$\dot{q}$			
<b>h<sub>DR</sub></b>	<b>a</b>	[m³/h]	[l/s]	[Pa]	[dB(A)]	[m/s]	[W/m²]	[m³/h]	[l/s]	[Pa]	[dB(A)]	[m/s]	[W/m²]	[m³/h]	[l/s]	[Pa]	[dB(A)]	[m/s]	[W/m²]
3.10	3.0	358	99	5	24	0.8	58	358	99	4	22	0.7	58	400	111	4	22	0.6	65
	3.5	388	108	6	25	0.9	54	397	110	5	23	0.7	55	446	124	5	24	0.7	62
	4.0	413	115	7	26	0.9	50	429	119	6	25	0.8	52	483	134	6	25	0.7	59
	4.5	434	121	7	27	1.0	47	456	127	7	25	0.8	49	513	143	7	26	0.8	55
	5.0	452	125	8	27	1.0	44	478	133	7	26	0.9	46	539	150	8	26	0.8	52
5.5	467	130	8	28	1.1	41	498	138	8	27	0.9	44	562	156	9	27	0.9	50	
3.40	3.0	407	113	6	26	0.9	66	400	111	5	24	0.7	65	445	124	5	23	0.7	72
	3.5	444	123	8	27	1.0	62	447	124	6	25	0.8	62	504	140	7	25	0.8	70
	4.0	474	132	9	28	1.1	58	485	135	7	26	0.9	59	548	152	8	27	0.8	67
	4.5	500	139	10	29	1.1	54	517	143	8	27	1.0	56	585	162	9	28	0.9	63
	5.0	521	145	11	30	1.2	51	543	151	9	28	1.0	53	616	171	10	28	0.9	60
5.5	540	150	11	30	1.2	48	567	157	10	29	1.0	50	643	179	11	29	1.0	57	
3.70	3.0	453	126	8	27	1.0	73	438	122	6	25	0.8	71	487	135	6	25	0.7	79
	3.5	497	138	10	29	1.1	69	493	137	8	27	0.9	68	555	154	8	27	0.8	77
	4.0	532	148	11	30	1.2	65	537	149	9	28	1.0	65	609	169	10	28	0.9	74
	4.5	561	156	12	31	1.3	61	574	159	10	29	1.1	62	652	181	12	29	1.0	70
	5.0	587	163	13	32	1.3	57	605	168	12	30	1.1	59	688	191	13	30	1.1	67
5.5	609	169	14	32	1.4	54	632	176	13	31	1.2	56	720	200	14	31	1.1	64	
4.00	3.0	496	138	10	29	1.1	80	473	131	7	26	0.9	77	487	135	6	25	0.7	79
	3.5	546	152	12	30	1.3	76	536	149	9	28	1.0	74	603	168	10	28	0.9	84
	4.0	587	163	13	32	1.3	71	587	163	11	29	1.1	71	666	185	12	30	1.0	81
	4.5	620	172	15	32	1.4	67	629	175	12	30	1.2	68	715	199	14	31	1.1	77
	5.0	649	180	16	33	1.5	63	664	184	14	31	1.2	65	757	210	16	32	1.2	74
5.5	674	187	18	34	1.5	60	695	193	15	32	1.3	61	793	220	17	33	1.2	70	

<b>L<sub>tot</sub> = 4000 mm</b>		<b>Ø 400 mm</b>										<b>Δt = -6.0 K</b>		<b>v<sub>h1</sub> = 0.18 m/s</b>					
Installation height	Space betw. diffusers	<b>L4 R4</b>  4 row(s)						<b>L5 R5</b>  5 row(s)						<b>L6 R6</b>  6 row(s)					
		$\dot{V}$	$\Delta p_t$	$L_{wA}$	$v_2$	$\dot{q}$	$\dot{V}$	$\Delta p_t$	$L_{wA}$	$v_2$	$\dot{q}$	$\dot{V}$	$\Delta p_t$	$L_{wA}$	$v_2$	$\dot{q}$			
<b>h<sub>DR</sub></b>	<b>a</b>	[m³/h]	[l/s]	[Pa]	[dB(A)]	[m/s]	[W/m²]	[m³/h]	[l/s]	[Pa]	[dB(A)]	[m/s]	[W/m²]	[m³/h]	[l/s]	[Pa]	[dB(A)]	[m/s]	[W/m²]
3.10	3.0	491	136	4	25	0.8	61	542	150	4	25	0.7	67	542	150	3	23	0.6	67
	3.5	533	148	5	26	0.9	57	601	167	5	26	0.8	64	611	170	4	25	0.7	65
	4.0	567	158	6	27	0.9	53	646	179	6	27	0.9	60	663	184	5	26	0.7	62
	4.5	596	165	6	28	1.0	49	683	190	7	28	0.9	57	705	196	6	27	0.8	59
	5.0	620	172	7	29	1.0	46	715	199	7	28	1.0	53	741	206	6	27	0.8	55
5.5	642	178	7	29	1.1	44	743	206	8	29	1.0	50	771	214	7	28	0.9	52	
3.40	3.0	559	155	6	27	0.9	70	603	167	5	26	0.8	75	603	167	4	24	0.7	75
	3.5	610	169	7	28	1.0	65	677	188	6	28	0.9	72	684	190	6	26	0.8	73
	4.0	651	181	8	29	1.1	61	731	203	8	29	1.0	68	753	209	7	27	0.8	70
	4.5	685	190	8	30	1.1	57	775	215	8	30	1.0	64	803	223	8	28	0.9	67
	5.0	715	198	9	31	1.2	53	813	226	9	30	1.1	61	846	235	8	29	0.9	63
5.5	741	206	10	31	1.2	50	846	235	10	31	1.1	57	883	245	9	30	1.0	60	
3.70	3.0	618	172	7	29	1.0	77	659	183	6	27	0.9	82	659	183	5	26	0.7	82
	3.5	681	189	8	30	1.1	73	744	207	8	29	1.0	79	752	209	7	27	0.8	80
	4.0	730	203	10	31	1.2	68	811	225	9	30	1.1	76	832	231	8	29	0.9	78
	4.5	770	214	11	32	1.3	64	862	239	10	31	1.2	72	895	248	9	30	1.0	74
	5.0	805	223	12	33	1.3	60	907	252	12	32	1.2	68	945	262	11	31	1.1	71
5.5	835	232	13	33	1.4	57	945	262	13	33	1.3	64	988	274	12	32	1.1	67	
4.00	3.0	674	187	8	30	1.1	84	713	198	7	28	1.0	89	659	183	5	26	0.7	82
	3.5	749	208	10	32	1.3	80	808	224	9	30	1.1	86	817	227	8	29	0.9	87
	4.0	804	223	12	33	1.3	75	886	246	11	32	1.2	83	906	252	10	30	1.0	85
	4.5	851	236	13	34	1.4	71	945	263	13	33	1.3	78	982	273	11	32	1.1	82
	5.0	890	247	14	34	1.5	67	995	276	14	34	1.3	74	1039	289	13	32	1.2	78
5.5	925	257	15	35	1.5	63	1039	288	15	34	1.4	71	1089	302	14	33	1.2	74	



# Quick selection

$L_{tot} = 5000 \text{ mm}$		$\varnothing 400 \text{ mm}$		$\Delta t = -6.0 \text{ K}$		$v_{ht} = 0.18 \text{ m/s}$													
Installation height	Space betw. diffusers	L4  R4						L5  R5						L6  R6					
		$\dot{V}$	$\Delta p_t$	$L_{wA}$	$v_2$	$\dot{q}$	$\dot{V}$	$\Delta p_t$	$L_{wA}$	$v_2$	$\dot{q}$	$\dot{V}$	$\Delta p_t$	$L_{wA}$	$v_2$	$\dot{q}$			
$h_{DR}$	$a$	[m³/h]	[l/s]	[Pa]	[dB(A)]	[m/s]	[W/m²]	[m³/h]	[l/s]	[Pa]	[dB(A)]	[m/s]	[W/m²]	[m³/h]	[l/s]	[Pa]	[dB(A)]	[m/s]	[W/m²]
3.10	3.0	597	166	5	26	0.8	61	662	184	5	26	0.7	68	660	183	4	24	0.6	67
	3.5	648	180	6	27	0.9	57	735	204	6	27	0.8	64	743	206	6	26	0.7	65
	4.0	690	192	7	28	0.9	53	790	219	7	28	0.9	60	806	224	7	27	0.7	62
	4.5	724	201	8	29	1.0	49	835	232	8	29	0.9	57	857	238	7	28	0.8	58
	5.0	754	209	8	30	1.0	46	874	243	9	30	1.0	54	901	250	8	28	0.8	55
3.40	3.0	679	189	7	28	0.9	69	737	205	6	27	0.8	75	734	204	5	25	0.7	75
	3.5	741	206	8	29	1.0	65	827	230	8	29	0.9	72	832	231	7	27	0.8	73
	4.0	791	220	9	30	1.1	61	894	248	9	30	1.0	68	915	254	9	29	0.8	70
	4.5	833	231	10	31	1.1	57	948	263	10	31	1.0	64	976	271	10	30	0.9	66
	5.0	869	241	11	32	1.2	53	994	276	12	32	1.1	61	1029	286	11	30	0.9	63
3.70	3.0	901	250	12	32	1.2	50	1035	287	12	32	1.1	58	1074	298	12	31	1.0	60
	3.5	752	209	8	29	1.0	77	806	224	8	28	0.9	82	802	223	7	27	0.7	82
	4.0	828	230	10	31	1.1	72	910	253	10	30	1.0	80	916	254	9	29	0.8	80
	4.5	887	246	11	32	1.2	68	991	275	11	32	1.1	76	1012	281	10	30	0.9	77
	5.0	937	260	13	33	1.3	64	1054	293	13	33	1.2	72	1088	302	12	31	1.0	74
4.00	3.0	979	272	14	34	1.3	60	1108	308	14	33	1.2	68	1149	319	13	32	1.1	70
	3.5	1015	282	15	34	1.4	56	1155	321	16	34	1.3	64	1202	334	15	33	1.1	67
	4.0	821	228	10	31	1.1	84	872	242	9	30	1.0	89	802	223	7	27	0.7	82
	4.5	911	253	12	33	1.3	80	988	274	11	31	1.1	86	994	276	10	30	0.9	87
	5.0	978	272	14	34	1.3	75	1084	301	14	33	1.2	83	1103	306	12	32	1.0	84

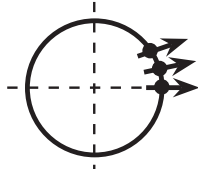
$L_{tot} = 6000 \text{ mm}$		$\varnothing 500 \text{ mm}$		$\Delta t = -6.0 \text{ K}$		$v_{ht} = 0.18 \text{ m/s}$													
Installation height	Space betw. diffusers	L4  R4						L5  R5						L6  R6					
		$\dot{V}$	$\Delta p_t$	$L_{wA}$	$v_2$	$\dot{q}$	$\dot{V}$	$\Delta p_t$	$L_{wA}$	$v_2$	$\dot{q}$	$\dot{V}$	$\Delta p_t$	$L_{wA}$	$v_2$	$\dot{q}$			
$h_{DR}$	$a$	[m³/h]	[l/s]	[Pa]	[dB(A)]	[m/s]	[W/m²]	[m³/h]	[l/s]	[Pa]	[dB(A)]	[m/s]	[W/m²]	[m³/h]	[l/s]	[Pa]	[dB(A)]	[m/s]	[W/m²]
3.10	3.0	696	193	4	27	0.8	60	767	213	4	26	0.7	67	770	214	3	24	0.6	67
	3.5	755	210	5	28	0.9	56	848	235	5	27	0.8	63	868	241	4	26	0.7	65
	4.0	804	223	5	29	0.9	52	911	253	5	28	0.9	59	940	261	5	27	0.7	61
	4.5	844	234	6	29	1.0	49	963	268	6	29	0.9	56	999	277	5	28	0.8	58
	5.0	879	244	6	30	1.0	46	1008	280	7	30	1.0	52	1049	291	6	29	0.8	55
3.40	3.0	910	253	7	31	1.1	43	1047	291	7	30	1.0	50	1093	304	6	29	0.9	52
	3.5	792	220	5	29	0.9	69	854	237	5	27	0.8	74	857	238	4	26	0.7	74
	4.0	864	240	6	30	1.0	64	955	265	6	29	0.9	71	972	270	5	28	0.8	72
	4.5	923	256	7	31	1.1	60	1031	286	7	30	1.0	67	1067	296	6	29	0.8	69
	5.0	972	270	8	32	1.1	56	1094	304	8	31	1.0	63	1138	316	7	30	0.9	66
3.70	3.0	1014	282	9	32	1.2	53	1147	319	8	32	1.1	60	1199	333	8	31	0.9	62
	3.5	1050	292	9	33	1.2	50	1194	332	9	32	1.1	56	1251	348	8	31	1.0	59
	4.0	879	244	6	30	1.0	76	934	259	6	29	0.9	81	937	260	5	27	0.7	81
	4.5	966	268	8	31	1.1	72	1054	293	7	31	1.0	78	1070	297	6	29	0.8	80
	5.0	1035	287	9	33	1.2	67	1144	318	8	32	1.1	74	1182	328	7	30	0.9	77
4.00	3.0	1092	303	10	33	1.3	63	1217	338	10	33	1.2	70	1268	352	8	31	1.0	73
	3.5	1141	317	11	34	1.3	59	1279	355	11	34	1.2	67	1340	372	9	32	1.1	70
	4.0	1184	329	12	35	1.4	56	1333	370	11	34	1.3	63	1401	389	10	33	1.1	66
	4.5	959	266	8	31	1.1	83	1011	281	7	30	1.0	88	937	260	5	27	0.7	81
	5.0	1062	295	9	33	1.3	79	1145	318	8	32	1.1	85	1161	323	7	30	0.9	86

# Nozzle rows

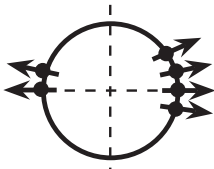
## Arrangement of nozzle rows

The arrangement of nozzle rows is always viewed in the direction of air flow. The nozzles are arranged along the entire length of each duct. There can be rows of nozzles on one side or on both sides of a duct. In case of nozzles on both sides, the number of rows can be different.

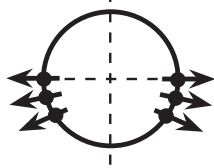
As standard, the first row of nozzles is placed on the horizontal axis of the duct. An upward or downward air discharge is only possible with several rows of nozzles, in which case it influences the air distribution in the room.



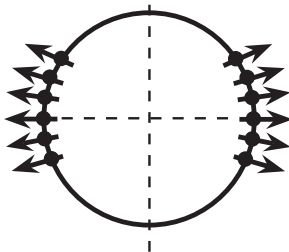
Upward air discharge  
3 rows of nozzles on the right  
Order code: DR30-CH-O-L0-R3 / ....



Upward air discharge  
2 rows of nozzles on the left, 4 rows on the right  
Order code: DR30-CH-O-L2-R4 / ....



Downward air discharge  
3 rows of nozzles on the left, 3 rows on the right  
Order code: DR30-CH-U-L3-R3 / ....

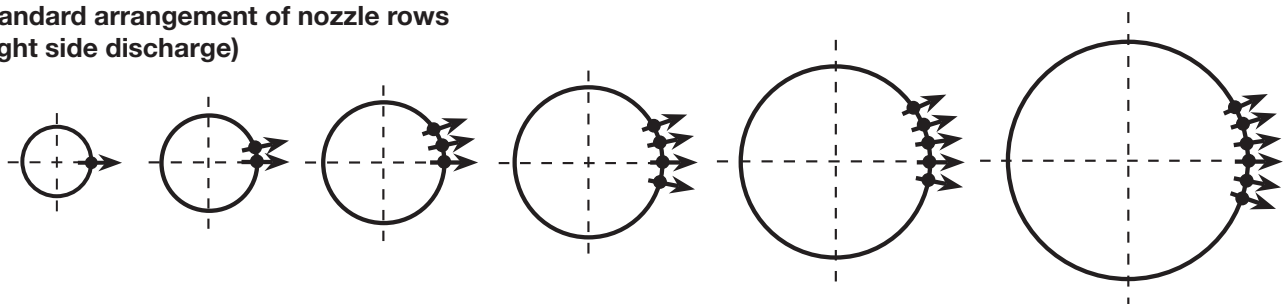


Upward air discharge  
6 rows of nozzles on the left, 6 rows on the right  
Order code: DR30-CH-O-L6-R6 / ....

## Maximum number of nozzle rows on each side for a given duct diameter

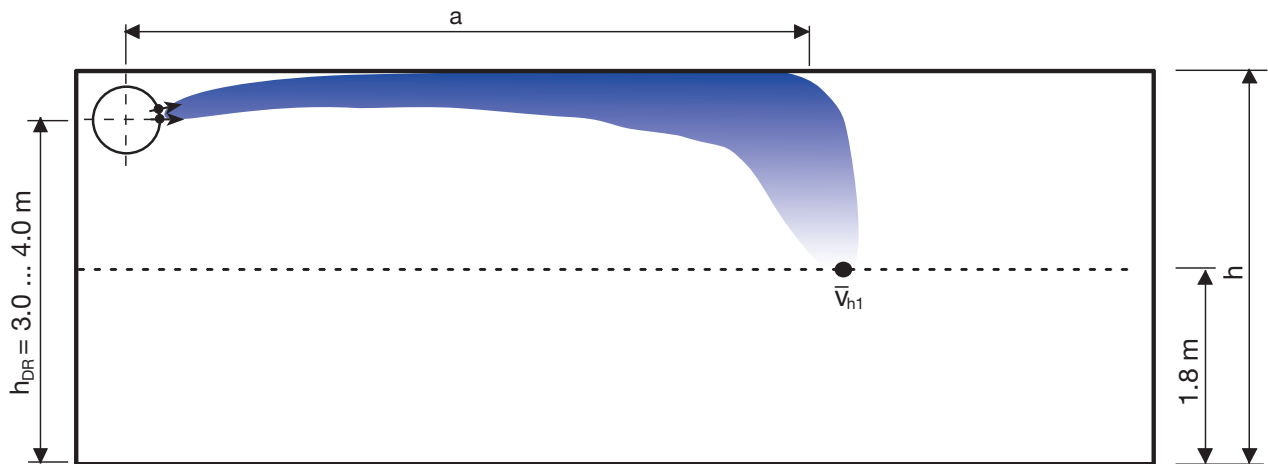
	Pipe	Ø160	Ø200	Ø250	Ø315	Ø400	Ø450	Ø500
No. of rows	[-]	3	4	6	7	9	9	9

## Standard arrangement of nozzle rows (right side discharge)

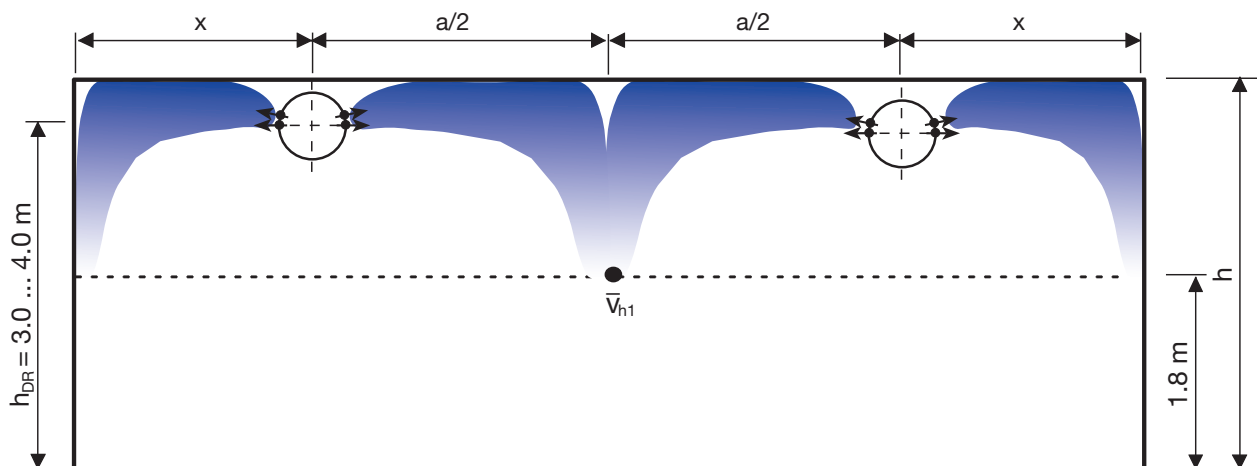


# Air discharge options

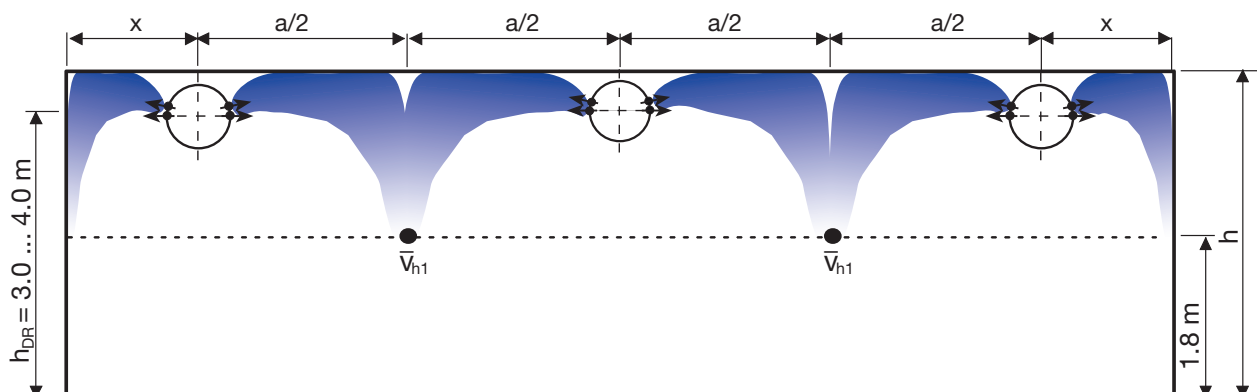
## Option A: 1 duct nozzle diffuser, one-way air discharge



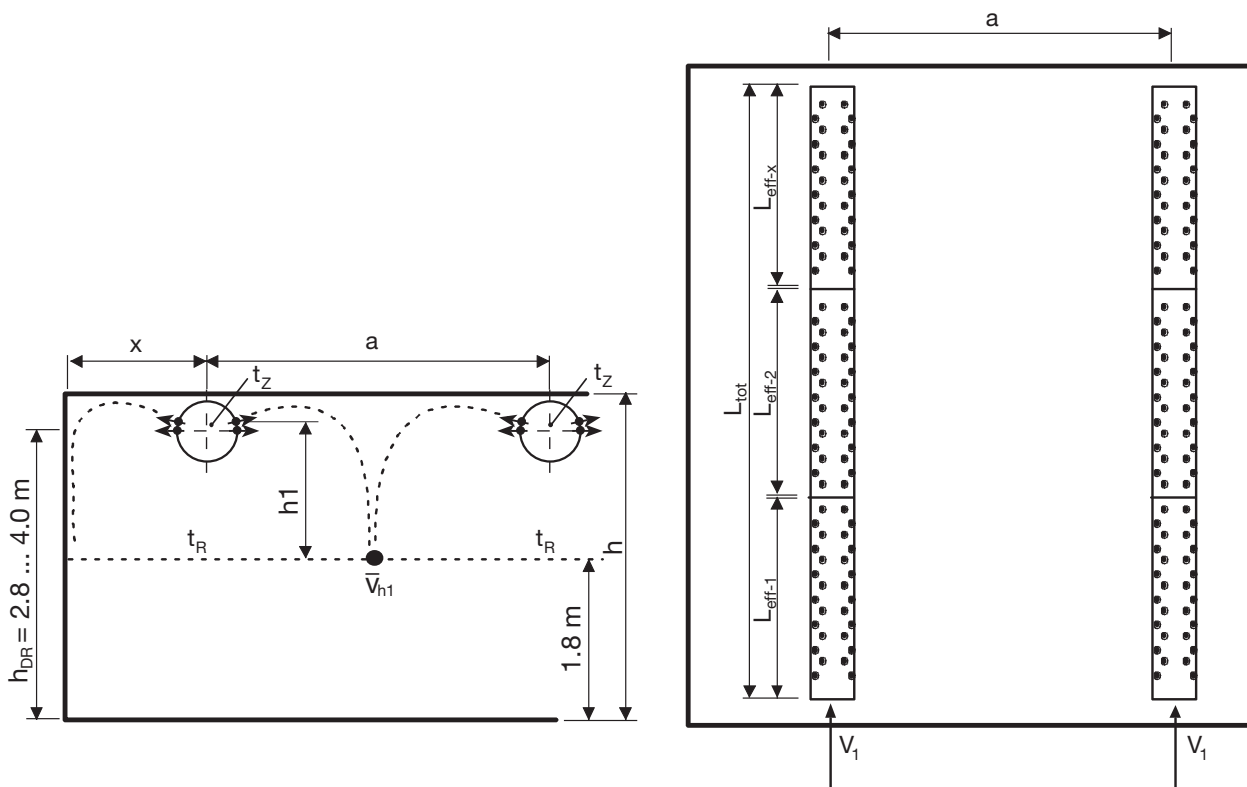
## Option B: 2 duct nozzle diffusers, two-way air discharge



## Option C: 3 or more duct nozzle diffusers



# Nomenclature



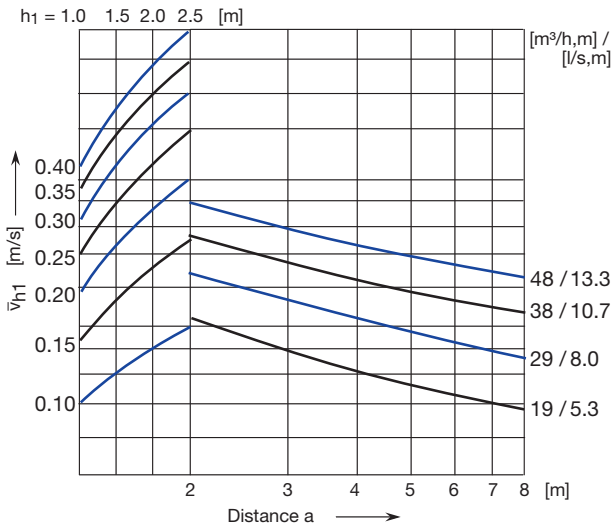
$\dot{V}$	m <sup>3</sup> /h	Volume flow rate per diffuser
$\dot{V}$	l/s	Volume flow rate per diffuser
$v_1$	m/s	Velocity upstream of the diffuser
$v_2$	m/s	Nozzle discharge velocity
$a$	m	Distance between two diffusers (centre line to centre line)
$x$	m	Distance between diffuser centre line and wall
$l \times b \times h$	m	Room dimensions: L x B x H
$h_1$	m	Distance between point of discharge and top of occupied zone
$h_{DR}$	m	Installation height (to diffuser centre line)
$f_{h1}$	m/s	Time average velocity at the distance $h_1$ from the point of discharge and in the centre between two diffusers
$t_R$	°C	Room air temperature
$t_Z$	°C	Supply air temperature
$Dt$	K	Temperature difference between supply air and room air (cooling)
$Dp_t$	Pa	Total differential pressure
$L_{WA}$	dB(A)	A-weighted sound power level
$L_{WNC}$		NC rating of the sound power level
		$L_{WNC} \sim L_{WA} - 4$ dB
$L_{wOct}$	dB	Sound power level at octave band centre frequency

Correction table, at octave band centre frequencies ( $L_{wOct} = L_{wA} - L$ )

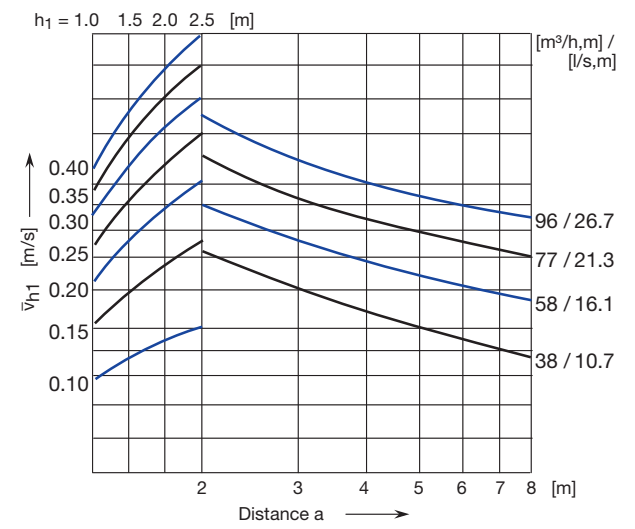
f	[Hz]	125	250	500	1000	2000	4000	8000
$\Delta L$	[dB]	2	-2	-3	-6	-10	-10	-17

Volume flow rate per 1.0 m of duct nozzle diffuser length, one-way air discharge

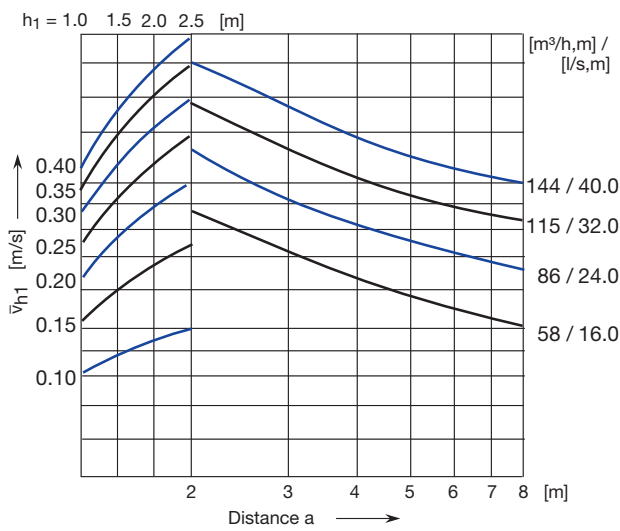
1 row of nozzles  $\Delta t = -6$  K



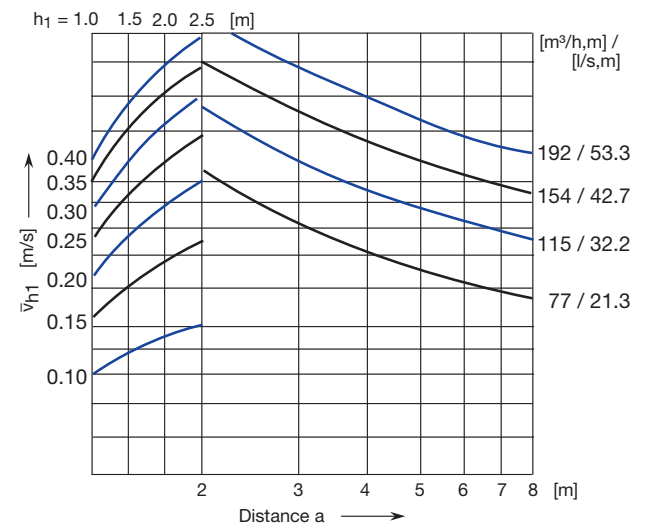
2 rows of nozzles  $\Delta t = -6$  K



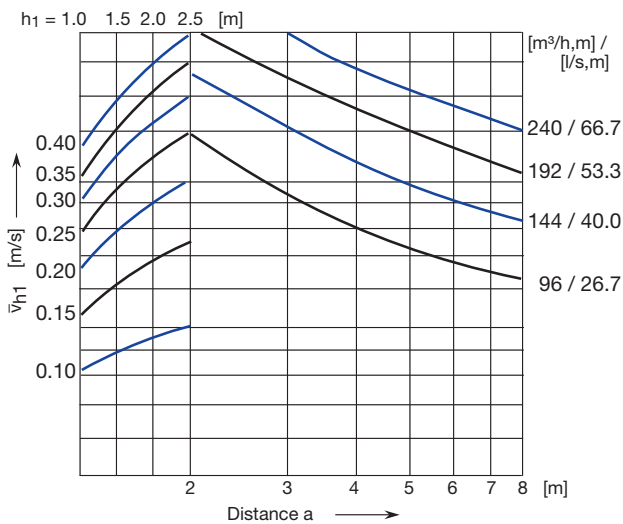
3 rows of nozzles  $\Delta t = -6$  K



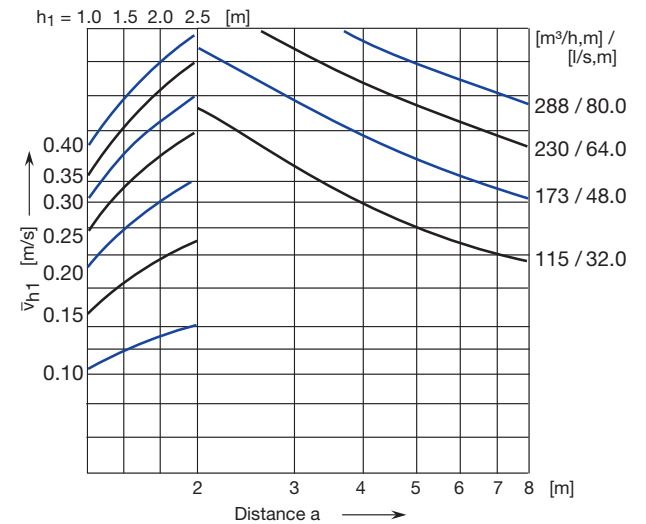
4 rows of nozzles  $\Delta t = -6$  K



5 rows of nozzles  $\Delta t = -6$  K



6 rows of nozzles  $\Delta t = -6$  K



# Technical data

Differential pressure and sound power level, one-way air discharge

Ø160			1						2						3							
			2 m		3 m		4 m		2 m		3 m		4 m		2 m		3 m		4 m			
$\dot{V}$	$v_1$		$\Delta p_t$	$Lw_A$	$\Delta p_t$	$Lw_A$	$\Delta p_t$	$Lw_A$	$\Delta p_t$	$Lw_A$	$\Delta p_t$	$Lw_A$	$\Delta p_t$	$Lw_A$	$\Delta p_t$	$Lw_A$	$\Delta p_t$	$Lw_A$	$\Delta p_t$	$Lw_A$	$\Delta p_t$	$Lw_A$
[m³/h]	[l/s]	[m/s]	[Pa]	dB(A)	[Pa]	dB(A)	[Pa]	dB(A)	[Pa]	dB(A)	[Pa]	dB(A)	[Pa]	dB(A)	[Pa]	dB(A)	[Pa]	dB(A)	[Pa]	dB(A)	[Pa]	dB(A)
72	20.1	1.0	16	26	8	21	5	18	5	18	3	<15	2	<15	3	<15	2	<15	2	<15	2	<15
109	30.2	1.5	35	34	17	28	11	25	11	25	7	21	5	19	7	21	5	18	4	16	4	16
145	40.2	2.0	62	39	31	33	20	30	20	30	12	26	9	23	12	26	8	23	7	21	7	21
181	50.3	2.5	98	44	48	38	31	34	31	34	19	30	14	28	19	30	13	27	11	26	11	26
217	60.3	3.0	141	47	69	41	45	37	45	37	27	33	21	32	27	33	19	31	16	30	16	30
253	70.4	3.5			95	44	61	41	61	41	37	37	28	35	37	37	26	35	22	34	22	34
290	80.4	4.0			123	47	79	43	79	43	48	40	37	38	48	40	34	38	29	37	29	37
326	90.5	4.5					100	46	100	46	60	42	46	41	60	42	43	41	36	40	36	40
362	100.5	5.0					124	48	124	48	74	45	57	44	74	45	53	43	45	43	45	43

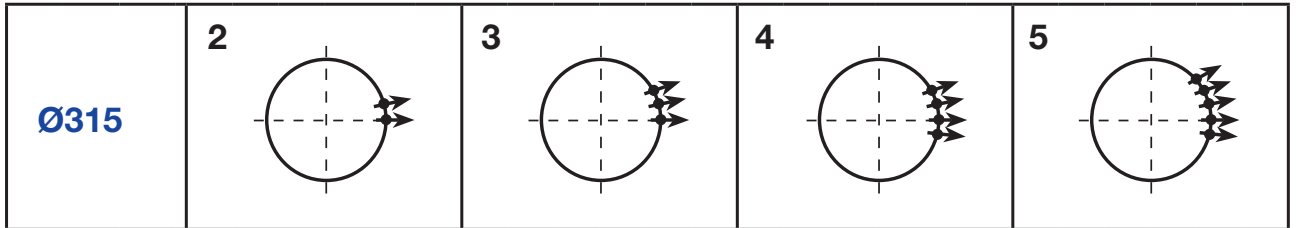
Ø200			1						2						3						4					
			2 m		3 m		4 m		2 m		3 m		4 m		2 m		3 m		4 m		2 m		3 m		4 m	
$\dot{V}$	$v_1$		$\Delta p_t$	$Lw_A$	$\Delta p_t$	$Lw_A$	$\Delta p_t$	$Lw_A$	$\Delta p_t$	$Lw_A$	$\Delta p_t$	$Lw_A$	$\Delta p_t$	$Lw_A$	$\Delta p_t$	$Lw_A$	$\Delta p_t$	$Lw_A$	$\Delta p_t$	$Lw_A$	$\Delta p_t$	$Lw_A$	$\Delta p_t$	$Lw_A$		
[m³/h]	[l/s]	[m/s]	[Pa]	dB(A)	[Pa]	dB(A)	[Pa]	dB(A)	[Pa]	dB(A)	[Pa]	dB(A)	[Pa]	dB(A)	[Pa]	dB(A)	[Pa]	dB(A)	[Pa]	dB(A)	[Pa]	dB(A)	[Pa]	dB(A)		
113	31.4	1.0	36	35	17	29	10	25	10	25	5	21	4	18	5	21	3	17	2	<15	4	18	2	<15		
170	47.1	1.5	81	42	38	36	23	32	23	32	12	27	8	24	12	27	7	23	5	20	8	24	5	20		
226	62.8	2.0	144	48	67	42	40	38	40	38	21	32	14	29	21	32	12	27	9	25	14	29	9	25		
283	78.5	2.5			105	46	63	42	63	42	33	36	22	33	33	36	19	31	15	29	22	33	15	29		
339	94.2	3.0					91	45	91	45	47	40	32	36	47	40	28	35	21	33	32	36	21	33		
396	110.0	3.5					123	49	123	49	64	43	44	39	64	43	38	38	29	36	44	39	29	36		
452	125.7	4.0									84	45	57	42	84	45	50	41	38	39	57	42	38	39		
509	141.4	4.5									106	48	72	45	106	48	63	44	48	42	72	45	48	42		
565	157.1	5.0									131	50	89	47	131	50	78	46	59	44	89	47	59	44		

Ø250			1						2						3						4					
			3 m		4 m		5 m		3 m		4 m		5 m		3 m		4 m		5 m		3 m		4 m		5 m	
$\dot{V}$	$v_1$		$\Delta p_t$	$Lw_A$	$\Delta p_t$	$Lw_A$	$\Delta p_t$	$Lw_A$	$\Delta p_t$	$Lw_A$	$\Delta p_t$	$Lw_A$	$\Delta p_t$	$Lw_A$	$\Delta p_t$	$Lw_A$	$\Delta p_t$	$Lw_A$	$\Delta p_t$	$Lw_A$	$\Delta p_t$	$Lw_A$	$\Delta p_t$	$Lw_A$		
[m³/h]	[l/s]	[m/s]	[Pa]	dB(A)	[Pa]	dB(A)	[Pa]	dB(A)	[Pa]	dB(A)	[Pa]	dB(A)	[Pa]	dB(A)	[Pa]	dB(A)	[Pa]	dB(A)	[Pa]	dB(A)	[Pa]	dB(A)	[Pa]	dB(A)		
177	49.1	1.0	39	37	23	33	15	30	11	28	7	24	5	22	6	23	4	20	3	18	4	20	3	18		
265	73.6	1.5	88	45	51	41	34	37	24	35	15	31	11	28	13	29	8	26	7	24	8	26	6	23		
353	98.2	2.0			90	46	60	43	43	40	27	36	19	33	22	34	15	31	12	28	15	31	11	28		
442	122.7	2.5			141	51	93	47	68	44	42	40	30	37	35	39	23	35	18	32	23	35	17	32		
530	147.3	3.0					135	51	97	48	60	44	43	41	50	42	34	38	26	36	34	38	25	35		
619	171.8	3.5						132	51	82	47	59	44	68	45	46	41	36	39	46	41	33	38	28	37	
707	196.3	4.0								107	49	77	46	89	48	60	44	47	42	60	44	44	41	36	39	
795	220.9	4.5								136	52	97	49	113	50	76	46	59	44	76	46	55	44	46	42	
884	245.4	5.0										120	51	140	52	94	49	73	46	94	49	68	46	56	45	

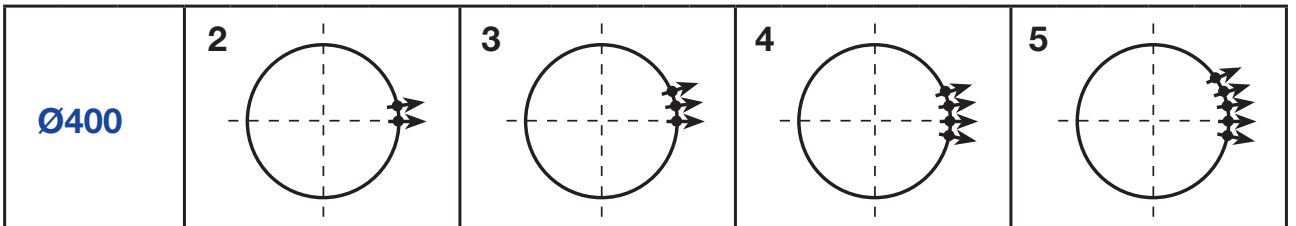


# Technical data

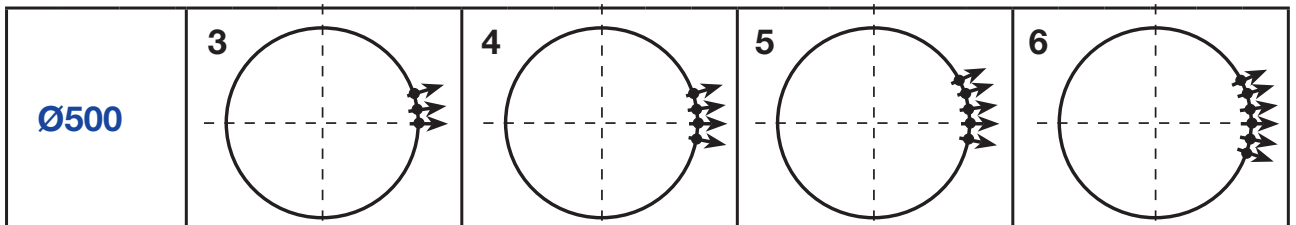
Differential pressure and sound power level, one-way air discharge



Length of duct $L_{tot}$			4 m				5 m				6 m				4 m				5 m				6 m				4 m				5 m				6 m			
			$\dot{V}$	$v_1$	$\Delta p_t$	$Lw_A$	$\Delta p_t$	$Lw_A$	$\Delta p_t$	$Lw_A$	$\Delta p_t$	$Lw_A$	$\Delta p_t$	$Lw_A$	$\Delta p_t$	$Lw_A$	$\Delta p_t$	$Lw_A$	$\Delta p_t$	$Lw_A$	$\Delta p_t$	$Lw_A$	$\Delta p_t$	$Lw_A$	$\Delta p_t$	$Lw_A$	$\Delta p_t$	$Lw_A$	$\Delta p_t$	$Lw_A$	$\Delta p_t$	$Lw_A$	$\Delta p_t$	$Lw_A$	$\Delta p_t$	$Lw_A$		
[m³/h]	[l/s]	[m/s]	[Pa]	dB(A)	[Pa]	dB(A)	[Pa]	dB(A)	[Pa]	dB(A)	[Pa]	dB(A)	[Pa]	dB(A)	[Pa]	dB(A)	[Pa]	dB(A)	[Pa]	dB(A)	[Pa]	dB(A)	[Pa]	dB(A)	[Pa]	dB(A)	[Pa]	dB(A)	[Pa]	dB(A)	[Pa]	dB(A)	[Pa]	dB(A)				
281	77.9	1.0	15	32	10	29	7	27	7	27	5	24	4	23	5	24	4	22	3	20	4	22	3	20	2	19												
421	116.9	1.5	33	39	22	36	16	34	16	34	12	31	9	29	11	30	8	28	6	26	8	28	6	25	5	24												
561	155.9	2.0	59	45	40	41	29	39	29	39	21	36	16	34	19	35	14	32	12	30	14	32	11	30	9	28												
701	194.8	2.5	92	49	62	46	46	43	46	43	32	40	25	37	30	39	22	36	18	34	22	36	17	34	15	32												
842	233.8	3.0	133	53	89	49	66	47	66	47	47	43	36	41	43	42	32	39	26	37	32	39	25	37	21	35												
982	272.8	3.5			122	52	90	50	90	50	64	46	49	44	58	45	43	42	35	40	43	42	34	40	29	38												
1122	311.7	4.0					117	52	117	52	83	49	65	46	76	48	57	45	46	43	57	45	44	43	38	41												
1262	350.7	4.5					148	55	148	55	105	51	82	49	96	50	72	47	58	45	72	47	56	45	48	43												
1403	389.7	5.0									130	53	101	51	118	53	88	50	72	48	88	50	69	47	59	46												



Length of duct $L_{tot}$			5 m				6 m				7 m				5 m				6 m				7 m				5 m				6 m				7 m			
			$\dot{V}$	$v_1$	$\Delta p_t$	$Lw_A$	$\Delta p_t$	$Lw_A$	$\Delta p_t$	$Lw_A$	$\Delta p_t$	$Lw_A$	$\Delta p_t$	$Lw_A$	$\Delta p_t$	$Lw_A$	$\Delta p_t$	$Lw_A$	$\Delta p_t$	$Lw_A$	$\Delta p_t$	$Lw_A$	$\Delta p_t$	$Lw_A$	$\Delta p_t$	$Lw_A$	$\Delta p_t$	$Lw_A$	$\Delta p_t$	$Lw_A$	$\Delta p_t$	$Lw_A$	$\Delta p_t$	$Lw_A$				
[m³/h]	[l/s]	[m/s]	[Pa]	dB(A)	[Pa]	dB(A)	[Pa]	dB(A)	[Pa]	dB(A)	[Pa]	dB(A)	[Pa]	dB(A)	[Pa]	dB(A)	[Pa]	dB(A)	[Pa]	dB(A)	[Pa]	dB(A)	[Pa]	dB(A)	[Pa]	dB(A)	[Pa]	dB(A)	[Pa]	dB(A)	[Pa]	dB(A)	[Pa]	dB(A)				
452	125.7	1.0	24	37	17	35	13	33	11	32	8	30	6	28	7	29	5	27	4	25	5	26	4	24	3	23												
679	188.5	1.5	53	45	38	42	29	40	25	39	19	37	14	35	16	35	12	33	10	31	11	32	9	30	7	29												
905	251.3	2.0	94	51	67	48	51	46	45	45	33	42	26	40	28	40	21	38	17	36	20	37	15	35	13	33												
1131	314.2	2.5	148	55	105	52	80	50	70	49	52	46	40	44	43	45	33	42	26	40	31	41	24	39	20	37												
1357	377.0	3.0					115	53	101	52	74	50	58	47	63	48	47	45	38	43	45	45	35	42	29	40												
1583	439.8	3.5							138	55	101	53	79	50	85	51	64	48	52	46	61	48	47	45	39	43												
1810	502.7	4.0								132	55	103	53	84	51	68	49	57	49	79	50	62	48	51	46													
2036	565.5	4.5												130	55	141	56	106	53	86	51	100	53	78	50	65	48											
2262	628.3	5.0															131	55	106	53	124	55	97	52	80	50												



Length of duct $L_{tot}$			6 m				7 m				8 m				6 m				7 m				8 m				6 m				7 m				8 m			
			$\dot{V}$	$v_1$	$\Delta p_t$	$Lw_A$	$\Delta p_t$	$Lw_A$	$\Delta p_t$	$Lw_A$	$\Delta p_t$	$Lw_A$	$\Delta p_t$	$Lw_A$	$\Delta p_t$	$Lw_A$	$\Delta p_t$	$Lw_A$	$\Delta p_t$	$Lw_A$	$\Delta p_t$	$Lw_A$	$\Delta p_t$	$Lw_A$	$\Delta p_t$	$Lw_A$	$\Delta p_t$	$Lw_A$	$\Delta p_t$	$Lw_A$	$\Delta p_t$	$Lw_A$	$\Delta p_t$	$Lw_A$				
[m³/h]	[l/s]	[m/s]	[Pa]	dB(A)	[Pa]	dB(A)	[Pa]	dB(A)	[Pa]	dB(A)	[Pa]	dB(A)	[Pa]	dB(A)	[Pa]	dB(A)	[Pa]	dB(A)	[Pa]	dB(A)	[Pa]	dB(A)	[Pa]	dB(A)	[Pa]	dB(A)	[Pa]	dB(A)	[Pa]	dB(A)	[Pa]	dB(A)	[Pa]	dB(A)				
707	196.3	1.0	18	37	14	35	11	34	11	34	8	32	7	30	7	31	6	29	5	28	6	29	4	27	4	26												
1060	294.5	1.5	41	45	31	43	24	41	24	41	19	39	15	37	17	38	13	36	11	34	13	35	10	34	8	32												
1414	392.7	2.0	73	50	55	48	43	46	43	46	33	44	27	42	30	43	23	41	19	39	22	40	18	38	15	37												
1767	490.9	2.5	113	55	86	52	68	50	68	50	52	48	42	46	46	47	36	45	30	43	35	44	28	42	23	41												
2121	589.0	3.0			123	56	97	54	97	54	75	52	60	50	67	51	52	48	43	46	50	48	40	46	34	44												
2474	687.2	3.5					132	57	132	57	102	55	82	53	91	54	71	51	59	49	68	51	55	49	46	47												
2827	785.4	4.0									133	57	107	55	119	56	93	54	77	52	89	53	72	51	60	49												
3181	883.6	4.5											136	58			118	56	97	54	113	56	91	54	76	52												
3534	981.7	5.0															146	58	120	56	140	58	112	56	94	54												

# Technical data

Differential pressure and sound power level, two-way air discharge

Ø160			1						2						3							
			2 m		3 m		4 m		2 m		3 m		4 m		2 m		3 m		4 m			
$\dot{V}$	$v_1$		$\Delta p_t$	$Lw_A$	$\Delta p_t$	$Lw_A$	$\Delta p_t$	$Lw_A$	$\Delta p_t$	$Lw_A$	$\Delta p_t$	$Lw_A$	$\Delta p_t$	$Lw_A$	$\Delta p_t$	$Lw_A$	$\Delta p_t$	$Lw_A$	$\Delta p_t$	$Lw_A$	$\Delta p_t$	$Lw_A$
[m³/h]	[l/s]	[m/s]	[Pa]	dB(A)	[Pa]	dB(A)	[Pa]	dB(A)	[Pa]	dB(A)	[Pa]	dB(A)	[Pa]	dB(A)	[Pa]	dB(A)	[Pa]	dB(A)	[Pa]	dB(A)	[Pa]	dB(A)
72	20.1	1.0	5	18	3	<15	2	<15	2	<15	2	<15	2	<15	2	<15	2	<15	2	<15	1	<15
109	30.2	1.5	11	25	7	21	5	19	5	19	4	16	4	15	4	16	4	<15	3	<15	3	<15
145	40.2	2.0	20	30	12	26	9	23	9	23	7	21	6	21	7	21	6	20	6	20	6	20
181	50.3	2.5	31	34	19	30	14	28	14	28	11	26	10	26	11	26	10	25	9	25	9	25
217	60.3	3.0	45	37	27	33	21	32	21	32	16	30	15	30	16	30	14	30	13	30	13	30
253	70.4	3.5	61	41	37	37	28	35	28	35	22	34	20	34	22	34	19	34	18	34	18	34
290	80.4	4.0	79	43	48	40	37	38	37	38	29	37	26	37	29	37	25	37	24	37	24	37
326	90.5	4.5	100	46	60	42	46	41	46	41	36	40	33	40	36	40	32	40	30	40	30	40
362	100.5	5.0	124	48	74	45	57	44	57	44	45	43	41	43	45	43	39	43	37	43	37	43

Ø200			1						2						3						4					
			2 m		3 m		4 m		2 m		3 m		4 m		2 m		3 m		4 m		2 m		3 m		4 m	
$\dot{V}$	$v_1$		$\Delta p_t$	$Lw_A$	$\Delta p_t$	$Lw_A$	$\Delta p_t$	$Lw_A$	$\Delta p_t$	$Lw_A$	$\Delta p_t$	$Lw_A$	$\Delta p_t$	$Lw_A$	$\Delta p_t$	$Lw_A$	$\Delta p_t$	$Lw_A$	$\Delta p_t$	$Lw_A$	$\Delta p_t$	$Lw_A$	$\Delta p_t$	$Lw_A$		
[m³/h]	[l/s]	[m/s]	[Pa]	dB(A)	[Pa]	dB(A)	[Pa]	dB(A)	[Pa]	dB(A)	[Pa]	dB(A)	[Pa]	dB(A)	[Pa]	dB(A)	[Pa]	dB(A)	[Pa]	dB(A)	[Pa]	dB(A)	[Pa]	dB(A)		
113	31.4	1.0	10	25	5	21	4	18	4	18	2	<15	2	<15	2	<15	2	<15	2	<15	2	<15	2	<15		
170	47.1	1.5	23	32	12	27	8	24	8	24	5	20	4	18	5	20	4	18	4	16	4	18	4	16		
226	62.8	2.0	40	38	21	32	14	29	14	29	9	25	8	23	9	25	7	23	7	21	8	23	7	21		
283	78.5	2.5	63	42	33	36	22	33	22	33	15	29	12	27	15	29	11	27	10	26	12	27	10	26		
339	94.2	3.0	91	45	47	40	32	36	32	36	21	33	17	31	21	33	16	31	15	30	17	31	15	30		
396	110.0	3.5	123	49	64	43	44	39	44	39	29	36	24	35	29	36	22	34	20	34	24	35	20	34		
452	125.7	4.0			84	45	57	42	57	42	38	39	31	38	38	39	29	38	26	37	31	38	26	37		
509	141.4	4.5			106	48	72	45	72	45	48	42	39	41	48	42	37	41	33	40	39	41	33	40		
565	157.1	5.0			131	50	89	47	89	47	59	44	49	43	59	44	46	43	41	43	49	43	41	43		

Ø250			1						2						3						4					
			3 m		4 m		5 m		3 m		4 m		5 m		3 m		4 m		5 m		3 m		4 m		5 m	
$\dot{V}$	$v_1$		$\Delta p_t$	$Lw_A$	$\Delta p_t$	$Lw_A$	$\Delta p_t$	$Lw_A$	$\Delta p_t$	$Lw_A$	$\Delta p_t$	$Lw_A$	$\Delta p_t$	$Lw_A$	$\Delta p_t$	$Lw_A$	$\Delta p_t$	$Lw_A$	$\Delta p_t$	$Lw_A$	$\Delta p_t$	$Lw_A$	$\Delta p_t$	$Lw_A$		
[m³/h]	[l/s]	[m/s]	[Pa]	dB(A)	[Pa]	dB(A)	[Pa]	dB(A)	[Pa]	dB(A)	[Pa]	dB(A)	[Pa]	dB(A)	[Pa]	dB(A)	[Pa]	dB(A)	[Pa]	dB(A)	[Pa]	dB(A)	[Pa]	dB(A)		
177	49.1	1.0	11	28	7	24	5	22	4	20	3	18	2	16	2	17	2	15	2	<15	2	15	2	<15		
265	73.6	1.5	24	35	15	31	11	28	8	26	6	23	5	21	6	22	4	20	4	19	4	20	4	17		
353	98.2	2.0	43	40	27	36	19	33	15	31	11	28	9	26	10	27	8	25	7	23	8	25	7	23		
442	122.7	2.5	68	44	42	40	30	37	23	35	17	32	14	30	15	31	12	29	11	27	12	29	11	27		
530	147.3	3.0	97	48	60	44	43	41	34	38	25	35	20	33	22	34	18	32	16	31	18	32	16	31		
619	171.8	3.5	132	51	82	47	59	44	46	41	33	38	28	37	30	37	24	36	22	35	24	36	21	35		
707	196.3	4.0			107	49	77	46	60	44	44	41	36	39	39	40	32	39	28	38	32	39	28	38		
795	220.9	4.5			136	52	97	49	76	46	55	44	46	42	50	43	40	41	36	41	40	41	35	41		
884	245.4	5.0				120	51	94	49	68	46	56	45	61	45	50	44	44	43	50	44	43	43	40		

## Differential pressure and sound power level, two-way air discharge

Ø315			2						3						4						5					
			2		3		4		5		2		3		4		5		2		3		4		5	
Length of duct $L_{tot}$			4 m		5 m		6 m		4 m		5 m		6 m		4 m		5 m		6 m		4 m		5 m		6 m	
$\dot{V}$	$v_1$		$\Delta p_t$	$Lw_A$	$\Delta p_t$	$Lw_A$	$\Delta p_t$	$Lw_A$	$\Delta p_t$	$Lw_A$	$\Delta p_t$	$Lw_A$	$\Delta p_t$	$Lw_A$	$\Delta p_t$	$Lw_A$	$\Delta p_t$	$Lw_A$	$\Delta p_t$	$Lw_A$	$\Delta p_t$	$Lw_A$	$\Delta p_t$	$Lw_A$	$\Delta p_t$	$Lw_A$
[m³/h]	[l/s]	[m/s]	[Pa]	dB(A)	[Pa]	dB(A)	[Pa]	dB(A)	[Pa]	dB(A)	[Pa]	dB(A)	[Pa]	dB(A)	[Pa]	dB(A)	[Pa]	dB(A)	[Pa]	dB(A)	[Pa]	dB(A)	[Pa]	dB(A)	[Pa]	dB(A)
281	77.9	1.0	5	24	4	22	3	20	3	20	2	19	2	17	2	18	2	17	2	16	2	17	2	15	2	<15
421	116.9	1.5	11	30	8	28	6	26	6	26	5	24	5	22	5	23	4	22	4	20	4	22	4	20	4	19
561	155.9	2.0	19	35	14	32	12	30	12	30	9	28	8	27	9	27	8	26	7	25	8	26	7	24	7	23
701	194.8	2.5	30	39	22	36	18	34	18	34	15	32	13	30	14	31	12	30	11	28	12	30	11	28	10	27
842	233.8	3.0	43	42	32	39	26	37	26	37	21	35	19	34	20	35	17	33	16	32	17	33	16	32	15	31
982	272.8	3.5	58	45	43	42	35	40	35	40	29	38	25	37	27	38	24	36	22	35	24	36	21	35	20	35
1122	311.7	4.0	76	48	57	45	46	43	46	43	38	41	33	40	36	40	31	39	28	38	31	39	28	38	26	38
1262	350.7	4.5	96	50	72	47	58	45	58	45	48	43	42	42	45	43	39	42	36	41	39	42	35	41	33	41
1403	389.7	5.0	118	53	88	50	72	48	72	48	59	46	51	45	56	45	48	44	44	44	48	44	44	44	41	43

Ø400			2						3						4						5					
			2		3		4		5		2		3		4		5		2		3		4		5	
Length of duct $L_{tot}$			5 m		6 m		7 m		5 m		6 m		7 m		5 m		6 m		7 m		5 m		6 m		7 m	
$\dot{V}$	$v_1$		$\Delta p_t$	$Lw_A$	$\Delta p_t$	$Lw_A$	$\Delta p_t$	$Lw_A$	$\Delta p_t$	$Lw_A$	$\Delta p_t$	$Lw_A$	$\Delta p_t$	$Lw_A$	$\Delta p_t$	$Lw_A$	$\Delta p_t$	$Lw_A$	$\Delta p_t$	$Lw_A$	$\Delta p_t$	$Lw_A$	$\Delta p_t$	$Lw_A$	$\Delta p_t$	$Lw_A$
[m³/h]	[l/s]	[m/s]	[Pa]	dB(A)	[Pa]	dB(A)	[Pa]	dB(A)	[Pa]	dB(A)	[Pa]	dB(A)	[Pa]	dB(A)	[Pa]	dB(A)	[Pa]	dB(A)	[Pa]	dB(A)	[Pa]	dB(A)	[Pa]	dB(A)	[Pa]	dB(A)
452	125.7	1.0	7	29	5	27	4	25	4	24	3	23	3	22	3	22	2	21	2	20	2	20	2	19	2	18
679	188.5	1.5	16	35	12	33	10	31	9	30	7	28	6	27	6	27	5	26	5	24	5	25	5	24	4	23
905	251.3	2.0	28	40	21	38	17	36	15	35	12	33	11	31	11	32	9	30	8	29	9	30	8	28	7	27
1131	314.2	2.5	43	45	33	42	26	40	24	39	19	37	17	35	17	36	15	34	13	32	14	33	13	32	12	30
1357	377.0	3.0	63	48	47	45	38	43	35	42	28	40	24	38	25	39	21	37	19	35	21	36	18	35	17	34
1583	439.8	3.5	85	51	64	48	52	46	47	45	38	43	33	41	34	42	29	40	26	38	28	39	25	38	23	37
1810	502.7	4.0	111	54	84	51	68	49	62	48	50	46	43	44	45	44	38	42	34	41	37	42	32	40	30	40
2036	565.5	4.5	141	56	106	53	86	51	78	50	63	48	54	46	56	47	48	45	43	43	46	44	41	43	38	42
2262	628.3	5.0			131	55	106	53	97	52	78	50	66	48	70	49	59	47	53	46	57	47	50	45	46	45

Ø500			3						4						5						6					
			3		4		5		6		3		4		5		6		3		4		5		6	
Length of duct $L_{tot}$			6 m		7 m		8 m		6 m		7 m		8 m		6 m		7 m		8 m		6 m		7 m		8 m	
$\dot{V}$	$v_1$		$\Delta p_t$	$Lw_A$	$\Delta p_t$	$Lw_A$	$\Delta p_t$	$Lw_A$	$\Delta p_t$	$Lw_A$	$\Delta p_t$	$Lw_A$	$\Delta p_t$	$Lw_A$	$\Delta p_t$	$Lw_A$	$\Delta p_t$	$Lw_A$	$\Delta p_t$	$Lw_A$	$\Delta p_t$	$Lw_A$	$\Delta p_t$	$Lw_A$	$\Delta p_t$	$Lw_A$
[m³/h]	[l/s]	[m/s]	[Pa]	dB(A)	[Pa]	dB(A)	[Pa]	dB(A)	[Pa]	dB(A)	[Pa]	dB(A)	[Pa]	dB(A)	[Pa]	dB(A)	[Pa]	dB(A)	[Pa]	dB(A)	[Pa]	dB(A)	[Pa]	dB(A)	[Pa]	dB(A)
707	196.3	1.0	6	29	4	27	4	26	4	26	3	25	3	24	3	24	3	23	2	22	2	23	2	22	2	21
1060	294.5	1.5	13	35	10	34	8	32	8	32	7	30	6	29	7	30	6	28	5	27	6	28	5	27	4	26
1414	392.7	2.0	22	40	18	38	15	37	15	37	13	35	11	33	12	34	10	32	9	31	10	32	9	31	8	30
1767	490.9	2.5	35	44	28	42	23	41	23	41	20	39	17	37	18	38	16	36	14	35	15	36	14	34	12	33
2121	589.0	3.0	50	48	40	46	34	44	34	44	28	42	25	40	26	41	23	39	20	38	22	39	20	37	18	36
2474	687.2	3.5	68	51	55	49	46	47	46	47	38	45	33	43	36	44	31	42	28	41	30	42	27	40	24	39
2827	785.4	4.0	89	53	72	51	60	49	60	49	50	47	44	46	47	46	40	45	36	43	39	44	35	43	32	41
3181	883.6	4.5	113	56	91	54	76	52	76	52	63	50	55	48	59	49	51	47	46	45	50	47	44	45	40	44
3534	981.7	5.0	140	58	112	56	94	54	94	54	78	52	68	50	73	51	63	49	56	48	61	49	54	47	50	46

# Calculation example

## Given data

Room dimensions  $l \times b \times h = 10.0 \times 6.0 \times 3.5 \text{ m} = 210 \text{ m}^3$

Installation height (point of air discharge)  $h_{DR} = 3.3 \text{ m}$ , Occupied zone / head level = 1.8 m;

Distance between diffusers  $a = 3.0 \text{ m}$

Temperature difference: Supply air to room air  $-6.0 \text{ K}$  (cooling)

## Assumptions

2 duct nozzle diffusers, 5.0 m long, two-way air discharge

2 duct nozzle diffusers, 5.0 m long, one-way air discharge

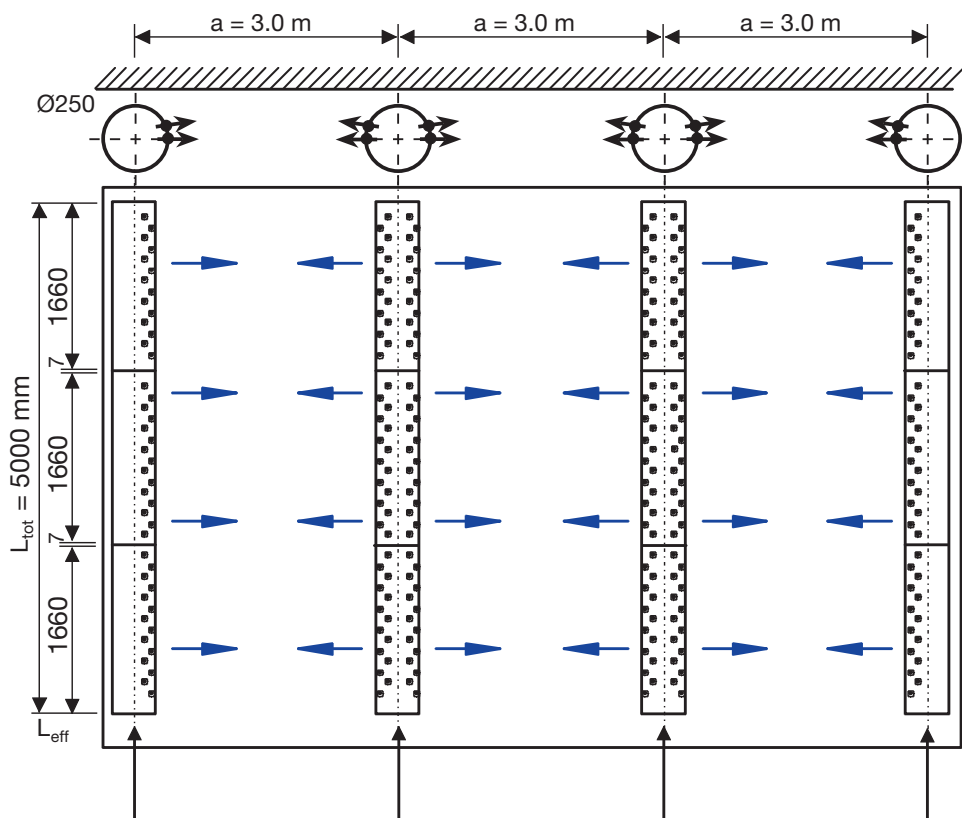
Rows of nozzles on each side = 2

Duct diameter = 250 mm

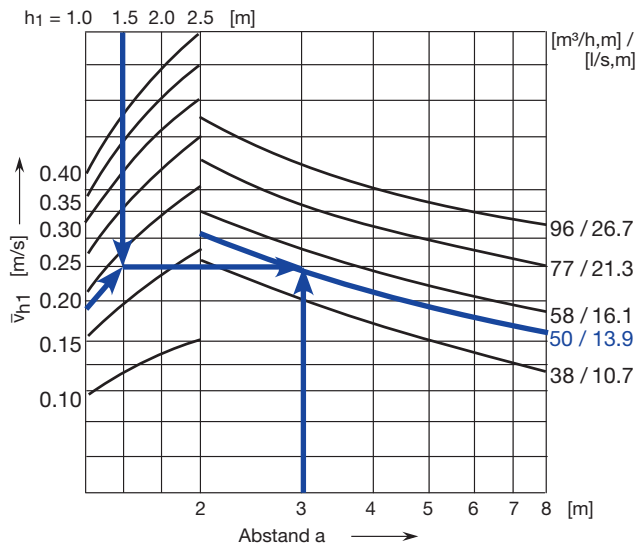
## Required

- Optimum volume flow rate when the air velocity  $v_{h1}$  is 0.18 m/s max.

- Sound power level  $L_{wA}$  and total differential pressure  $\Delta p_t$



# Calculation example



## Solution

from page 13:

Determine the volume flow rate per metre of diffuser length, one-way air discharge:  $h_1 = 3.3 - 1.8 \text{ m} = 1.5 \text{ m}$ ;

Entry at  $f_{h1} = 0.18 \text{ m/s}$  and distance  $a = 3.0 \text{ m}$

Volume flow rate per metre of diffuser, one-way air discharge:  $\dot{V} = 50 \text{ m}^3/\text{h}, \text{m}$

Active diffuser length (m):  
 $(2 \text{ diffusers} * 2\text{-way} + 2 \text{ diffusers} * 1\text{-way}) * 5.0 \text{ m} = 30.0 \text{ m}$

Total volume flow rate:  
 $30.0 \text{ m} * 50 \text{ m}^3/\text{h}, \text{m} = 1500 \text{ m}^3/\text{h}$

Air change rate:  $1500 \text{ m}^3/\text{h} / 210 \text{ m}^3 = 7.1 / \text{h}$

Ø250	1		2		3 m		4 m		5 m		3 m		4 m		5 m	
	Length of duct $L_{\text{tot}}$															
	$\dot{V}$	$v_1$	$\Delta p_t$	$Lw_A$	$\Delta p_t$	$Lw_A$	$\Delta p_t$	$Lw_A$	$\Delta p_t$	$Lw_A$	$\Delta p_t$	$Lw_A$	$\Delta p_t$	$Lw_A$	$\Delta p_t$	$Lw_A$
177	49.1	1.0	11	28	7	24	5	22	4	20	3	18	2	16		
265	73.6	1.5	24	35	15	31	11	28	8	26	6	23	5	21		
353	98.2	2.0	43	40	27	36	19	33	15	31	11	28	9	26		
442	122.7	2.5	68	44	42	40	30	37	23	35	17	32	14	30		
530	147.3	3.0	97	48	60	44	43	41	34	38	25	35	20	33		
619	171.8	3.5	132	51	82	47	59	44	46	41	33	38	28	37		
707	196.3	4.0			107	49	77	46	60	44	44	41	36	39		
795	220.9	4.5			136	52	97	49	76	46	55	44	46	42		
884	245.4	5.0					120	51	94	49	68	46	56	45		

from page 16:

Volume flow rate for a Ø250-mm duct nozzle diffuser, two-way air discharge:  
 $2 * 5.0 \text{ m} * 50 \text{ m}^3/\text{h}, \text{m} = 500 \text{ m}^3/\text{h}$

Velocity upstream of the diffuser = 2.83 m/s

Sound power level  $Lw_A = 32 \text{ dB(A)}$ ;

Total differential pressure  $\Delta p_t = 18 \text{ Pa}$

Ø250	1		2		3 m		4 m		5 m		3 m		4 m		5 m	
	Length of duct $L_{\text{tot}}$															
	$\dot{V}$	$v_1$	$\Delta p_t$	$Lw_A$	$\Delta p_t$	$Lw_A$	$\Delta p_t$	$Lw_A$	$\Delta p_t$	$Lw_A$	$\Delta p_t$	$Lw_A$	$\Delta p_t$	$Lw_A$	$\Delta p_t$	$Lw_A$
177	49.1	1.0	39	37	23	33	15	30	11	28	7	24	5	22		
265	73.6	1.5	88	45	51	41	34	37	24	35	15	31	11	28		
353	98.2	2.0			90	46	60	43	43	40	27	36	19	33		
442	122.7	2.5			141	51	93	47	68	44	42	40	30	37		
530	147.3	3.0					135	51	97	48	60	44	43	41		
619	171.8	3.5						132	51	82	47	59	44			
707	196.3	4.0							107	49	77	46				
795	220.9	4.5							136	52	97	49				
884	245.4	5.0											120	51		

from page 14:

Volume flow rate for a Ø250-mm duct, one-way air discharge:  
 $1 * 5.0 \text{ m} * 50 \text{ m}^3/\text{h}, \text{m} = 250 \text{ m}^3/\text{h}$

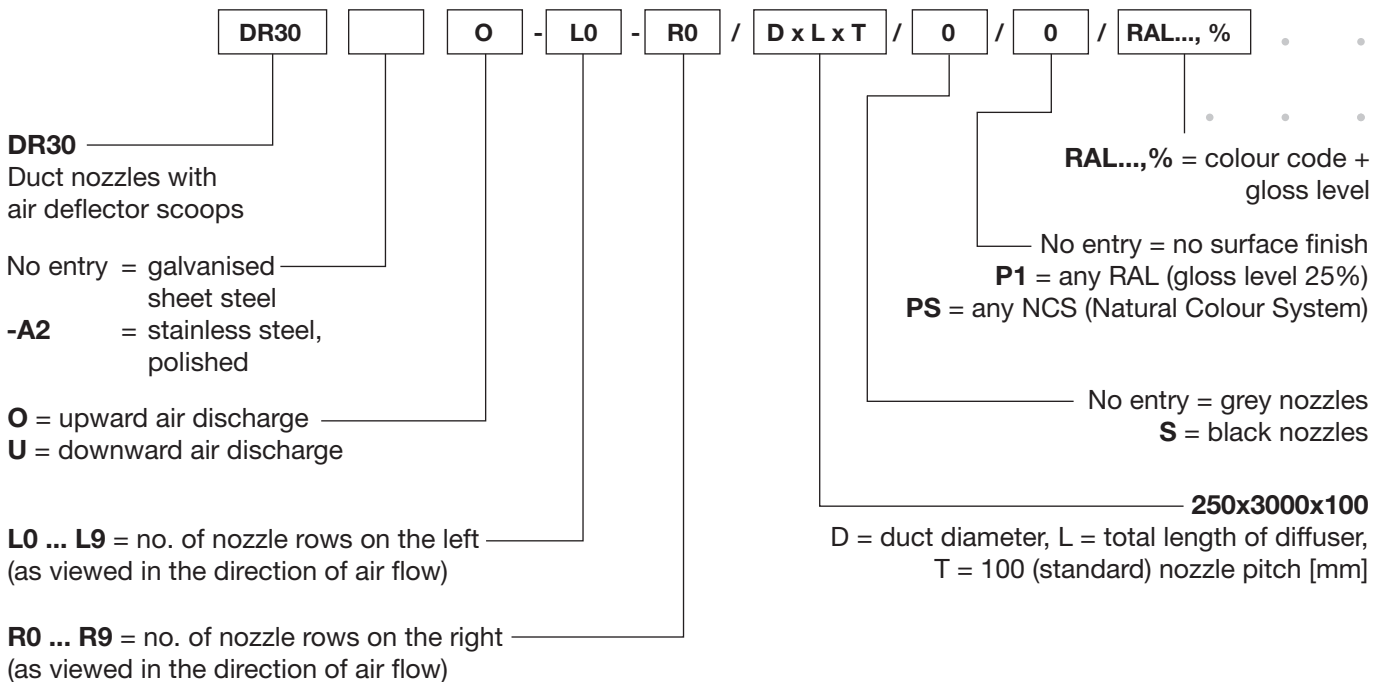
Velocity upstream of the diffuser = 1.41 m/s

Sound power level  $Lw_A = 27 \text{ dB(A)}$ ;

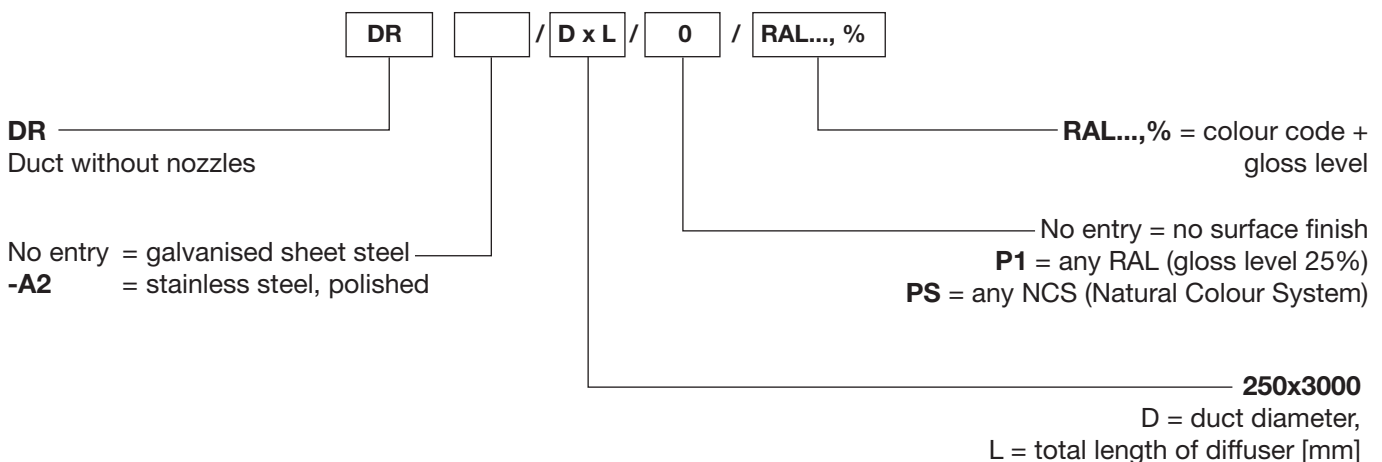
Total differential pressure  $\Delta p = 10 \text{ Pa}$

# Order details

## Order code for duct with nozzles



## Order code for duct without nozzles



## Specification text

Maintenance-free duct nozzle diffuser for optimum air conditioning with regularly arranged nozzles with air deflector scoops, each of which takes an equal quantity of air from the passing volume flow, thereby ensuring a uniform velocity profile. Connecting sleeves and duct end caps are supplied.

## Materials (standard)

Galvanised, welded ducts; connecting sleeves and end caps made of galvanised sheet steel; nozzles made of grey plastic.