

# Slot diffusers

## Slot diffuser LD-18

### Application

Slot diffuser LD-18 are designed for supply of cold or warm air in rooms with a height between 2.5 m and 4 m. They allow easy setting of air deflectors for different modes of operation and can be mounted to ceiling or wall.

### Description

LD-18 slot diffuser are designed in 1, 2, 3 and 4-slot versions. The unit's front consists of anodised aluminium profiles (on customer's request, these can be powder painted in RAL 9010 or another colour). The individually adjustable air deflectors are made of plastic in white (RAL 9010) or black (RAL 9005) colour). Plenum box is made of galvanised sheet steel. Slot diffuser LD-18 are made in standard lengths: from 500 up to 2000 mm with a 100 mm step (any length available upon request).

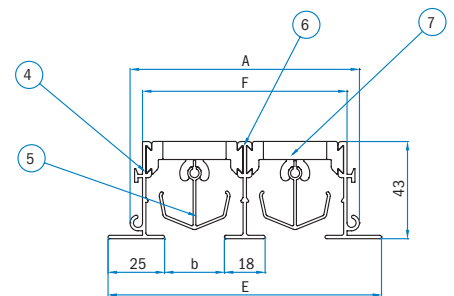
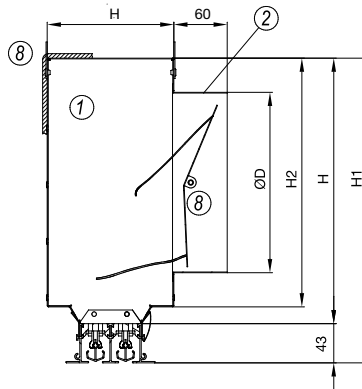
Nominal air volume per 1 m of slot:

LD-18 – 200 m<sup>3</sup>/h

( $\Delta p_i = 30$  Pa, NR = 35 dB)



1. Plenum box
2. Inlet spigot
3. Volume control damper
4. Side section
5. Cylindrical deflector
6. Intermediate section
7. Connecting bar
8. Insulation (entire outside surface of the plenum box)



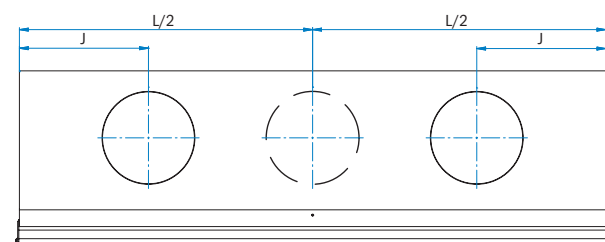
LD-18 b=26.5							
No. of slots	A	F	E	B	H	H1	H2
1	57.0	46.0	76.5	118	233	276	216.5
2	101.0	90.5	121.0	162	253	296	236.5
3	146.0	135.0	165.5	207	293	336	276.5
4	190.5	179.5	210.0	251	318	361	301.5

## Number and diameter of inlet spigots

L	500 to 1000		1100 to 1500		1600 to 2000	
Number of slots	Number and diameter of inlet spigots					
	LD-17	LD-18	LD-17	LD-18	LD-17	LD-18
1	1x98	1x123	2x98	2x123	2x123	2x138
2	1x138	1x158	2x123	2x138	2x138	2x158
3	1x158	1x198	2x138	2x158	2x158	2x198
4	1x198	1x223	2x158	2x198	2x198	2x223

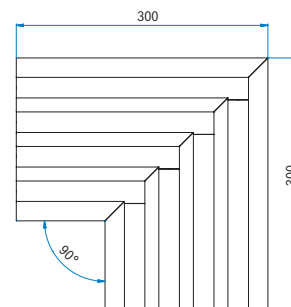
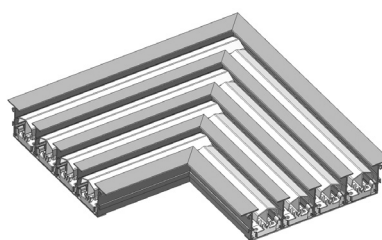
## Position of inlet spigots

Number of spigots	Standard length	Position of inlet spigots
1	500-1000	L/2
2	1100-1500	J=300
2	1600-2000	J=400



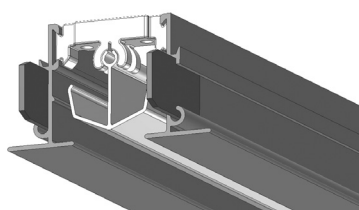
## Slot diffuser face plate designs

Slot diffuser face plates are made of linear or angular ended sections, which allow the diffusers to be joined at different angles.



## Joining diffusers together in length

Joining in length requires connecting plates (the total length of combined diffusers is not limited).

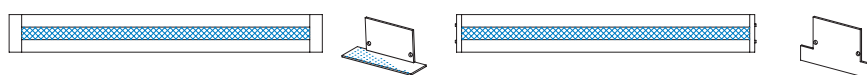


## End seals

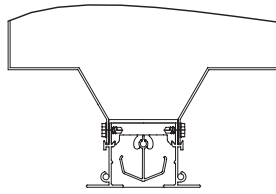
End seals are components of the diffuser face plate. They are available in two designs:

- as an angle piece (**E** – on both ends, **ET** – on one end only) or
- plates (**F** – on both ends, **FT** – on one end only).

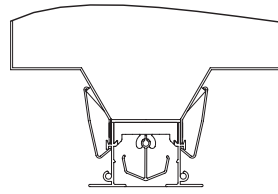
The connecting strip-section has no end anglepieces or plates seals (designation T).



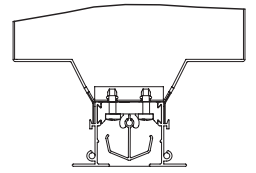
**Fixing of the plenum box onto LD-18 diffuser**



Fixing with self-tapping screws (U)

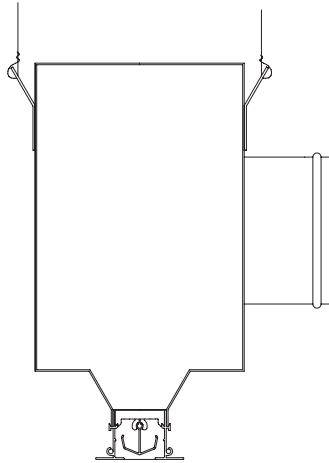


Fixing with spring clamps (S)

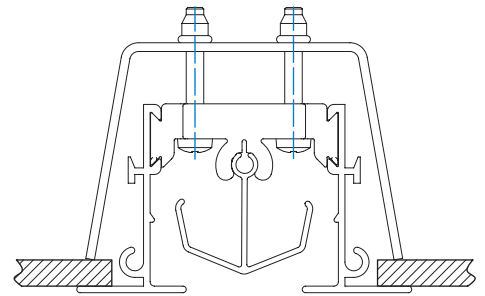


Fixing with a cross-member (Z)

**Installation methods**

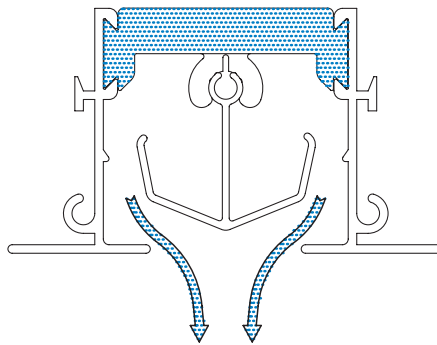


Installation with hangers (P)

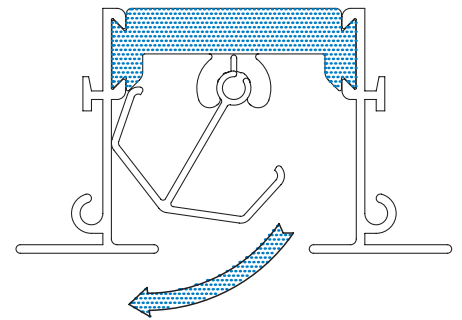


Installation with a cross member without plenum box (N)

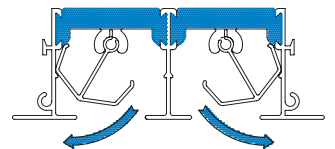
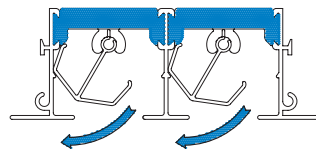
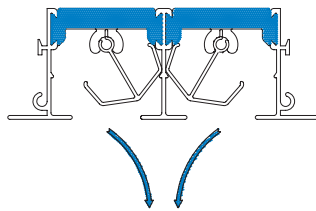
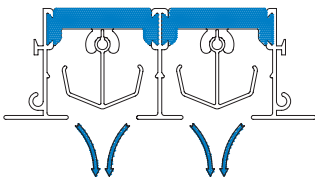
**Types of air discharges**



Vertical – heating



Horizontal – cooling



Different settings of the two slot model (similar combinations are possible also for diffusers with more slots).

## Ordering key

**LD-18 / 1 / B / E / K / M / S / P I5 L=...**

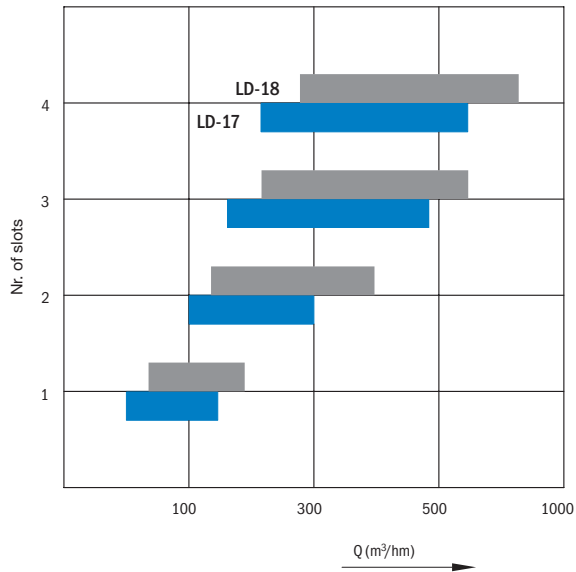
1	2	3	4	5	6	7	8	9	10
1 Diffuser type									
<b>LD-18</b>	Slot diffuser type								
2 Number of slots									
<b>1</b>									
<b>2</b>									
<b>3</b>									
<b>4</b>									
3 Deflectors									
<b>B</b>	Black deflectors								
<b>W</b>	White deflectors								
4 End seals									
<b>E</b>	End sealing on both ends								
<b>ET</b>	End sealing on one end								
<b>F</b>	End plate on both ends								
<b>FT</b>	End plate on one end								
<b>T</b>	Rail-type without end sealings and plates								
5 Plenum box									
<b>K</b>	Plenum box								
6 Air volume regulation									
<b>M</b>	End sealing on both ends								
7 Installation									
<b>Z</b>	Fixing of the diffuser to the plenum box with a cross-member								
<b>S</b>	Fixing of the diffuser to the plenum box with spring clamps								
<b>U</b>	Fixing of the diffuser to the plenum box with self-tapping screws								
8 Plenum box installation									
<b>N</b>	Diffuser installation with a cross-member without plenum box								
<b>P</b>	Installation of the plenum box with hangers								
9 Insulation									
<b>I5</b>	Thermal insulation (polyethylene), 5 mm thick, on the outside of the plenum box								
<b>I9</b>	Sound and thermal insulation (from -40 °C to 105 °C), 9 mm thick, on the outside of the plenum box (synthetic rubber based material)								
<b>I19</b>	Sound and thermal insulation (from -40 °C to 105 °C), 19 mm thick, on the outside of the plenum box (synthetic rubber based material)								
10 Length									
<b>L</b>	Single piece length in mm ( <b>L= 500, 600, ..., 2000</b> )								

### Note:

- Please specify the deflector colour in your order.
- Standard eloxal colour of the aluminium section is the original aluminium colour. Other colours shall be specified in the order.
- When installing in cooling ceilings, consult the manufacturer.
- Versions with insulation on the inside of the plenum box are also available.



## Quick selection diagram: $L_{WA} < 35 \text{ dB(A)}$



## Sound power level, pressure drop and throw distances

### LD-18 horizontal discharge

Type	Q	[l/s]	27.8	41.7	55.6	83.3	111.1	138.9	166.7	194.4	222.2	250.0	277.8	333.3	388.9
		[m³/h]	100	150	200	300	400	500	600	700	800	900	1000	1200	1400
LD-18/1 L=500 mm	$L_{WA}$	[dB (A)]	41	51											
	$\Delta p_t$	[Pa]	24	53											
	$L_{0.2}$	[m]	6.6	6.9											
	$L_{min}$	[m]	>15	>15											
LD-18/1 L=1000 mm	$L_{WA}$	[dB (A)]	29	37	44										
	$\Delta p_t$	[Pa]	16	36	64										
	$L_{0.2}$	[m]	6.2	6.5	6.7										
	$L_{min}$	[m]	12.8	>15	>15										
LD-18/1 L=1500 mm	$L_{WA}$	[dB (A)]	25	31	36	46									
	$\Delta p_t$	[Pa]	9	19	34	77									
	$L_{0.2}$	[m]	5.8	6.2	6.4	6.6									
	$L_{min}$	[m]	4.2	12.8	>15	>15									
LD-18/1 L=2000 mm	$L_{WA}$	[dB (A)]	<25	28	32	40	47	53	58	62					
	$\Delta p_t$	[Pa]	1	2	4	9	15	24	35	47					
	$L_{0.2}$	[m]	5.2	5.9	6.2	6.5	6.7	6.8	6.9	6.9					
	$L_{min}$	[m]	2	6.6	12.8	>15	>15	>15	>15	>15					
LD-18/2 L=500 mm	$L_{WA}$	[dB (A)]	29	37	45	56									
	$\Delta p_t$	[Pa]	6	13	24	53									
	$L_{0.2}$	[m]	5.4	5.6	5.7	5.8									
	$L_{min}$	[m]	14	>15	>15	>15									
LD-18/2 L=1000 mm	$L_{WA}$	[dB (A)]	<25	27	32	40	48								
	$\Delta p_t$	[Pa]	4	9	16	37	65								
	$L_{0.2}$	[m]	5	5.3	5.5	5.6	5.7								
	$L_{min}$	[m]	2	8	13.4	>15	>15								
LD-18/2 L=1500 mm	$L_{WA}$	[dB (A)]		<25	27	34	40	45	50						
	$\Delta p_t$	[Pa]		5	9	20	35	55	80						
	$L_{0.2}$	[m]		5	5.2	5.4	5.6	5.7	5.7						
	$L_{min}$	[m]		2	5.8	13.4	>15	>15	>15						

Type	Q	[l/s]	27.8	41.7	55.6	83.3	111.1	138.9	166.7	194.4	222.2	250.0	277.8	333.3	388.9
		[m <sup>3</sup> /h]	100	150	200	300	400	500	600	700	800	900	1000	1200	1400
LD-18/2 L=2000 mm	L <sub>WA</sub>	[dB (A)]			25	30	35	39	44	47	51	54	57	62	67
	Δp <sub>t</sub>	[Pa]			1	3	6	9	13	18	23	29	36	52	71
	L <sub>0.2</sub>	[m]			5	5.3	5.4	5.5	5.6	5.7	5.7	5.7	5.8	5.8	5.8
	L <sub>min</sub>	[m]			2	8	13.4	>15	>15	>15	>15	>15	>15	>15	>15
LD-18/3 L=500 mm	L <sub>WA</sub>	[dB (A)]	<25	31	37	48	56	63							
	Δp <sub>t</sub>	[Pa]	3	6	11	24	42	66							
	L <sub>0.2</sub>	[m]	8	8.3	8.6	8.8	9	9.1							
	L <sub>min</sub>	[m]	8	10	11.2	12.6	13.4	13.8							
LD-18/3 L=1000 mm	L <sub>WA</sub>	[dB (A)]		<25	27	34	40	46	51	55					
	Δp <sub>t</sub>	[Pa]		4	7	16	29	45	65	88					
	L <sub>0.2</sub>	[m]		7.7	8	8.3	8.6	8.7	8.8	8.9					
	L <sub>min</sub>	[m]		6.4	8	10	11.2	12	12.6	13					
LD-18/3 L=1500 mm	L <sub>WA</sub>	[dB (A)]			<25	29	34	38	42	46	50	53	56		
	Δp <sub>t</sub>	[Pa]			4	9	15	24	34	47	61	77	96		
	L <sub>0.2</sub>	[m]			7.6	8	8.2	8.4	8.6	8.7	8.7	8.8	8.9		
	L <sub>min</sub>	[m]			5.8	8.2	9.6	10.6	11.2	11.8	12.2	12.6	12.8		
LD-18/3 L=2000 mm	L <sub>WA</sub>	[dB (A)]				26	30	34	37	40	44	46	49	54	58
	Δp <sub>t</sub>	[Pa]				1	2	3	4	6	8	10	12	17	23
	L <sub>0.2</sub>	[m]				7.7	8	8.2	8.4	8.5	8.6	8.6	8.7	8.8	8.9
	L <sub>min</sub>	[m]				6.4	8	9.2	10	10.8	11.2	11.8	12	12.6	13
LD-18/4 L=500 mm	L <sub>WA</sub>	[dB (A)]		28	34	44	52	58	64	68					
	Δp <sub>t</sub>	[Pa]		3	6	13	24	37	53	72					
	L <sub>0.2</sub>	[m]		7.4	7.6	7.8	8	8.1	8.2	8.3					
	L <sub>min</sub>	[m]		8.2	9	10.2	10.6	11	11.2	11.4					
LD-18/4 L=1000 mm	L <sub>WA</sub>	[dB (A)]			<25	31	37	42	47	51	55	58			
	Δp <sub>t</sub>	[Pa]			4	9	16	26	37	50	65	83			
	L <sub>0.2</sub>	[m]			7	7.4	7.6	7.7	7.8	7.9	8	8			
	L <sub>min</sub>	[m]			6.2	8.2	9	9.6	10.2	10.4	10.6	10.8			
LD-18/4 L=1500 mm	L <sub>WA</sub>	[dB (A)]				26	31	35	38	42	45	48	51	56	
	Δp <sub>t</sub>	[Pa]				5	9	14	20	28	36	46	57	82	
	L <sub>0.2</sub>	[m]				7	7.3	7.4	7.6	7.7	7.8	7.8	7.9	8	
	L <sub>min</sub>	[m]				6.2	7.6	8.4	9	9.6	9.8	10	10.4	10.6	
LD-18/4 L=2000 mm	L <sub>WA</sub>	[dB (A)]					28	31	34	37	40	42	45	50	54
	Δp <sub>t</sub>	[Pa]					2	3	4	6	7	9	11	16	22
	L <sub>0.2</sub>	[m]					7	7.2	7.4	7.5	7.6	7.7	7.7	7.8	7.9
	L <sub>min</sub>	[m]					6.2	7.4	8.2	8.6	9.2	9.4	9.8	10.2	10.4

### Definition of symbols

L <sub>WA</sub>	A-weighted sound power level
Δp <sub>t</sub>	Total pressure drop calculated to normal conditions
L <sub>0.2</sub>	Isothermal throw distance of supply air jet, when its velocity drops down to 0.2 m/s
L <sub>min</sub>	Minimum distance between diffusers, that the jet velocity is less than or equal to 0.2 m/s

### Conditions for L<sub>min</sub>:

Q=600 m <sup>3</sup> /h	
L=1000 mm	
Room height:	H=2.8 m
Occupied zone height:	1.8 m
Room temperature:	24 °C
Supply temperature:	DT= -6 K



## Sound power level, pressure drop and throw distances

### LD-18 vertical discharge

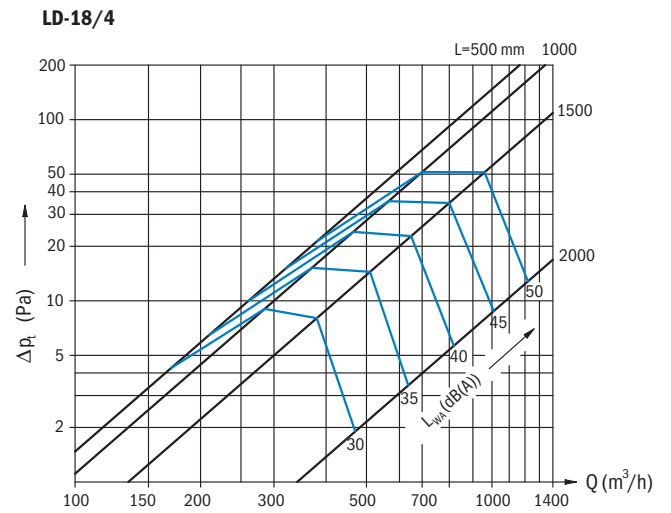
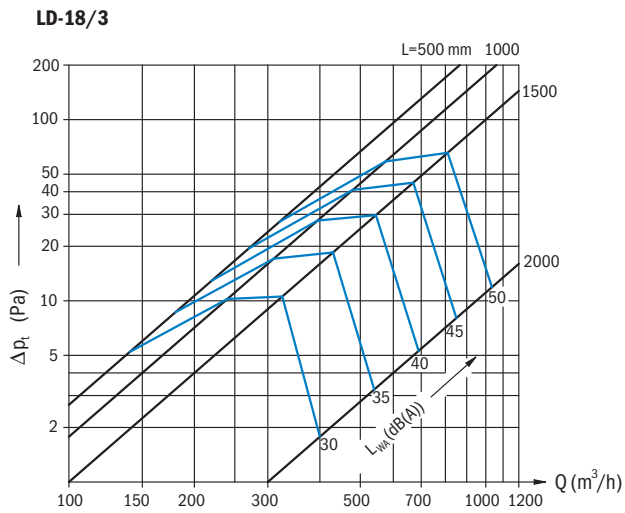
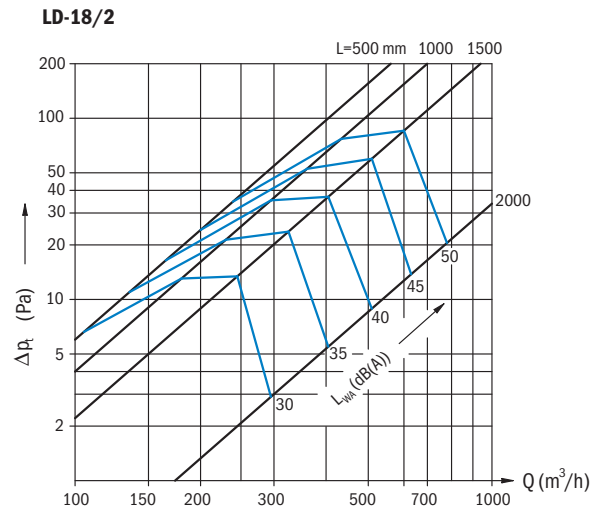
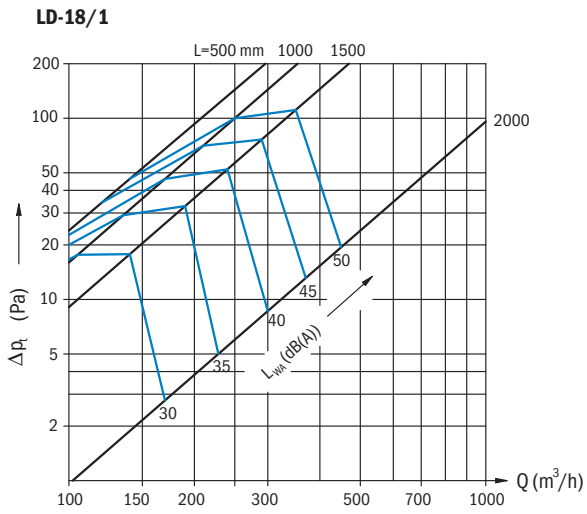
Type	Q	[l/s]	27.8	41.7	55.6	83.3	111.1	138.9	166.7	194.4	222.2	250.0	277.8	333.3	388.9
		[m³/h]	100	150	200	300	400	500	600	700	800	900	1000	1200	1400
LD-18/1 L=500 mm	L <sub>WA</sub>	[dB (A)]	40	51											
	Δp <sub>t</sub>	[Pa]	25	56											
	L <sub>0.2</sub> (+10K)	[m]	3.4	5.1											
LD-18/1 L=1000 mm	L <sub>WA</sub>	[dB (A)]	29	36	43										
	Δp <sub>t</sub>	[Pa]	17	39	69										
	L <sub>0.2</sub> (+10K)	[m]	1.5	2.5	3.4										
LD-18/1 L=1500 mm	L <sub>WA</sub>	[dB (A)]	25	31	36	45									
	Δp <sub>t</sub>	[Pa]	10	21	38	86									
	L <sub>0.2</sub> (+10K)	[m]	0.7	1.5	2.2	3.5									
LD-18/1 L=2000 mm	L <sub>WA</sub>	[dB (A)]		28	32	39	46	52	57						
	Δp <sub>t</sub>	[Pa]		4	7	17	30	47	67						
	L <sub>0.2</sub> (+10K)	[m]		0.9	2	2.5	3.5	4.4	5.2						
LD-18/2 L=500 mm	L <sub>WA</sub>	[dB (A)]	29	37	44	55									
	Δp <sub>t</sub>	[Pa]	6	14	25	56									
	L <sub>0.2</sub> (+10K)	[m]	2.4	3.2	3.8	4.6									
LD-18/2 L=1000 mm	L <sub>WA</sub>	[dB (A)]	<25	27	32	40	47								
	Δp <sub>t</sub>	[Pa]	4	10	17	39	69								
	L <sub>0.2</sub> (+10K)	[m]	1	1.9	2.4	3.2	3.8								
LD-18/2 L=1500 mm	L <sub>WA</sub>	[dB (A)]		<25	27	33	39	44	49						
	Δp <sub>t</sub>	[Pa]		6	10	22	39	61	88						
	L <sub>0.2</sub> (+10K)	[m]		1.1	1.7	2.4	3	3.4	3.8						
LD-18/2 L=2000 mm	L <sub>WA</sub>	[dB (A)]			25	30	35	39	43	47	50	53	56	61	
	Δp <sub>t</sub>	[Pa]			2	5	9	15	21	29	38	48	59	85	
	L <sub>0.2</sub> (+10K)	[m]			1	1.9	2.4	2.9	3.2	3.5	3.8	4	4.3	4.6	
LD-18/3 L=500 mm	L <sub>WA</sub>	[dB (A)]	23	30	36	46	54	60							
	Δp <sub>t</sub>	[Pa]	3	6	11	25	44	69							
	L <sub>0.2</sub> (+10K)	[m]	1.9	3.1	4	5.7	7.1	8.2							
LD-18/3 L=1000 mm	L <sub>WA</sub>	[dB (A)]		<25	26	33	39	44	49	53					
	Δp <sub>t</sub>	[Pa]		4	8	17	31	49	70	95					
	L <sub>0.2</sub> (+10K)	[m]		1.3	1.9	3.1	4	5	5.8	6.5					
LD-18/3 L=1500 mm	L <sub>WA</sub>	[dB (A)]			23	28	33	37	41	45	48	51			
	Δp <sub>t</sub>	[Pa]			5	10	18	28	41	56	73	92			
	L <sub>0.2</sub> (+10K)	[m]			1	1.9	2.7	3.4	4	4.7	5.2	5.8			
LD-18/3 L=2000 mm	L <sub>WA</sub>	[dB (A)]				26	29	33	36	39	42	45	47	52	56
	Δp <sub>t</sub>	[Pa]				3	5	8	12	16	21	27	34	48	66
	L <sub>0.2</sub> (+10K)	[m]				1.3	1.9	2.5	3.1	3.6	4	4.5	5	5.8	6.5
LD-18/4 L=500 mm	L <sub>WA</sub>	[dB (A)]	21	27	33	42	50	56	61						
	Δp <sub>t</sub>	[Pa]	2	3	6	14	25	39	56						
	L <sub>0.2</sub> (+10K)	[m]	2.1	3.3	4.1	5.4	6.4	7.2	7.9						
LD-18/4 L=1000 mm	L <sub>WA</sub>	[dB (A)]			<25	30	36	41	45	49	53	56			
	Δp <sub>t</sub>	[Pa]			4	10	18	27	39	54	70	89			
	L <sub>0.2</sub> (+10K)	[m]			2.1	3.3	4.1	4.8	5.4	6	6.5	6.9			
LD-18/4 L=1500 mm	L <sub>WA</sub>	[dB (A)]				26	30	34	37	41	44	47	50	54	
	Δp <sub>t</sub>	[Pa]				6	10	16	23	32	41	52	65	93	
	L <sub>0.2</sub> (+10K)	[m]				2.1	2.9	3.6	4.1	4.6	5	5.5	5.8	6.5	
LD-18/4 L=2000 mm	L <sub>WA</sub>	[dB (A)]					27	30	33	36	39	41	44	48	52
	Δp <sub>t</sub>	[Pa]					3	5	7	10	13	16	20	29	39
	L <sub>0.2</sub> (+10K)	[m]					2.1	2.8	3.3	3.8	4.2	4.5	4.8	5.5	6

### Definition of symbols

- L<sub>WA</sub> A-weighted sound power level  
 Δp<sub>t</sub> Total pressure drop calculated to normal conditions  
 L<sub>0.2</sub> (+10 °C) Isothermal throw distance of supply air jet with temperature +10K, when its velocity drops down to 0.2 m/s

## Pressure drop

(valid for horizontal discharge and plenum box with 100 % opened volume control damper)





## Correction factors

LD-18/1	Type of discharge	Horizontal		Vertical	
		Open	Closed	Open	Closed
Length	Volume control damper				
	$\Delta p_t$	x 1	x 1	x 1	x 1.4
L=500	$L_{WA}$	-	+ 1	-	-
	$\Delta p_t$	x 1	x 1.1	x 1.1	x 1.4
L=1000	$L_{WA}$	-	+ 1	-	-
	$\Delta p_t$	x 1	x 1.2	x 1.1	x 1.5
L=1500	$L_{WA}$	-	+ 1	-	-
	$\Delta p_t$	x 1	x 2.8	x 1.9	x 2.6
L=2000	$L_{WA}$	-	+ 1	-	-

LD-18/2	Type of discharge	Horizontal		Vertical	
		Open	Closed	Open	Closed
Length	Volume control damper				
	$\Delta p_t$	x 1	x 2.1	x 1	x 2.1
L=500	$L_{WA}$	-	+ 3	-	+ 1
	$\Delta p_t$	x 1	x 2.2	x 1.1	x 2.1
L=1000	$L_{WA}$	-	+ 3	-	+ 1
	$\Delta p_t$	x 1	x 2.2	x 1.1	x 2.2
L=1500	$L_{WA}$	-	+ 3	-	+ 1
	$\Delta p_t$	x 1	x 3	x 1.6	x 3.3
L=2000	$L_{WA}$	-	+ 3	-	+ 1

LD-18/3	Type of discharge	Horizontal		Vertical	
		Open	Closed	Open	Closed
Length	Volume control damper				
	$\Delta p_t$	x 1	x 2.5	x 1.0	x 2.4
L=500	$L_{WA}$	-	+ 6	-	+ 3
	$\Delta p_t$	x 1	x 2.5	x 1.1	x 2.5
L=1000	$L_{WA}$	-	+ 6	-	+ 3
	$\Delta p_t$	x 1	x 2.5	x 1.2	x 2.7
L=1500	$L_{WA}$	-	+ 6	-	+ 2
	$\Delta p_t$	x 1	x 3.1	x 2.8	x 6.5
L=2000	$L_{WA}$	-	+ 6	-	+ 3

LD-18/4	Type of discharge	Horizontal		Vertical	
		Open	Closed	Open	Closed
Length	Volume control damper				
	$\Delta p_t$	x 1	x 2.2	x 1	x 2.4
L=500	$L_{WA}$	-	+ 5	+ 1	+ 2
	$\Delta p_t$	x 1	x 2.3	x 1.1	x 2.5
L=1000	$L_{WA}$	-	+ 5	-	+ 2
	$\Delta p_t$	x 1	x 2.6	x 1.1	x 2.6
L=1500	$L_{WA}$	-	+ 5	-	+ 2
	$\Delta p_t$	x 1	x 5	x 1.8	x 4.3
L=2000	$L_{WA}$	-	+ 4	-	+ 2