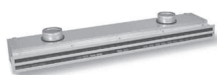


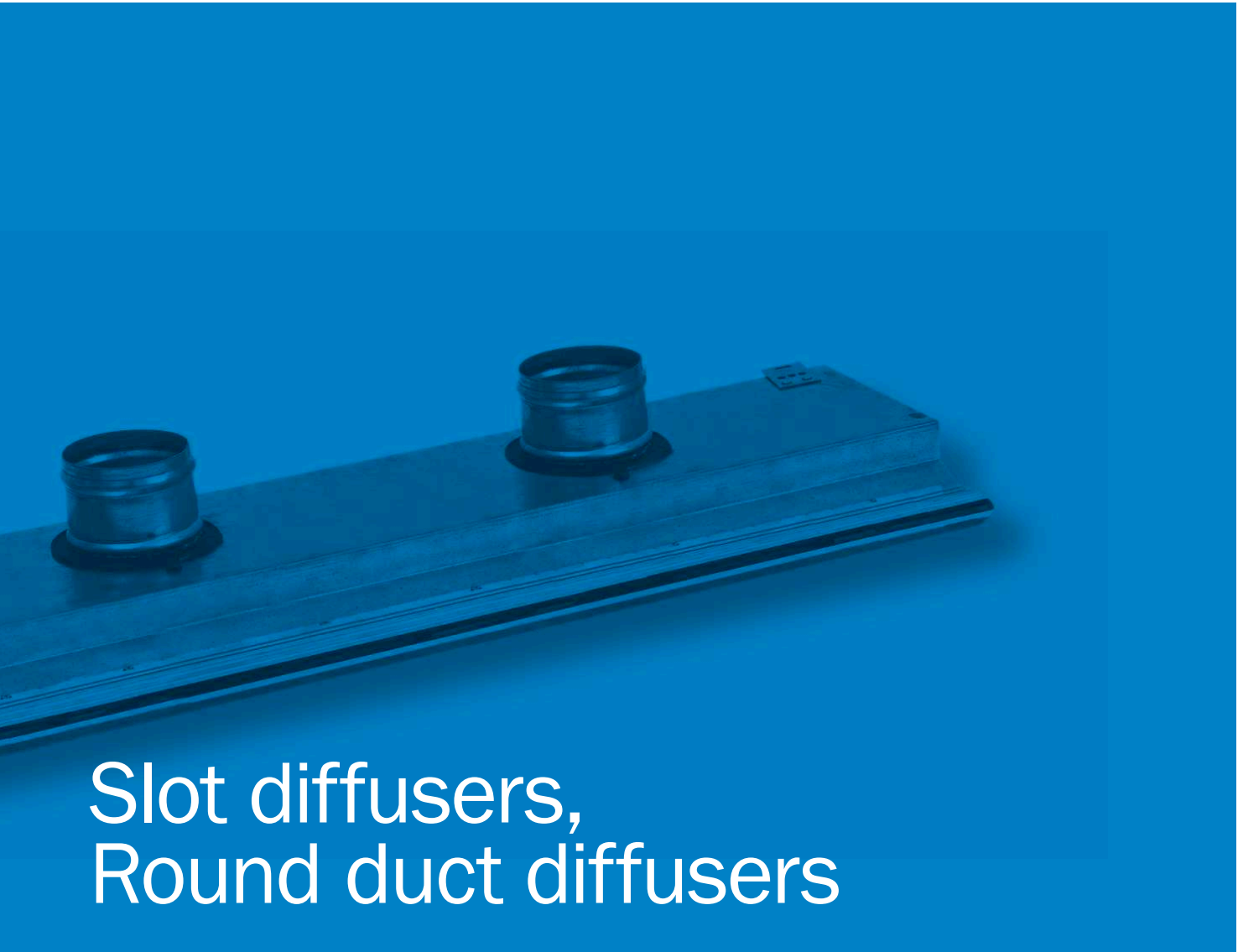
# 04



Slot diffusers



Round duct diffusers



# Slot diffusers, Round duct diffusers

Slot diffusers are designed for air supply in rooms with floor to ceiling heights of 2.5 to 4 m. They are suitable for supplying either cold or warm air, in particular in applications where air conditioning comfort demands are stringent. Due to their high induction rate and rapid decrease of temperature difference, these diffusers are also suitable for variable systems.

Round duct diffusers can be installed at various locations within the duct network. They are suitable for supplying either cold or warm air.

VENTILATING GRILLES, VENTILATING VALVES
CIRCULAR DIFFUSERS, SQUARE DIFFUSERS
SWIRL DIFFUSERS, VARIABLE SWIRL DIFFUSERS
SLOT DIFFUSERS, ROUND DUCT DIFFUSERS
AIR DISPLACEMENT UNITS
SUPPLY AIR NOZZLES
EXTERNAL ELEMENTS
AIR FLOW CONTROL UNITS
SOUND ATTENUATORS, SOUND ATTENUATING LOUVRES

# Overview

## Slot diffusers

Slot diffusers are designed for air supply in rooms with floor to ceiling heights of 2.5 to 4 m. They are suitable for supplying either cold or warm air, in particular in applications where air conditioning comfort demands are stringent. Due to their high induction rate and rapid decrease of temperature difference, these diffusers are also suitable for variable systems.

## Nozzle diffusers

Nozzle diffusers LD-19 are designed for supply of warm or cold air and can be mounted in the wall or in the ceiling. Adjustable deflectors allow us to set different directions of air discharge.

Nozzle diffusers LD-20 are designed to supply low quantities of air on big window surfaces to prevent condensation (ceiling installation near windows) or for big throws for cooling when wall installation (Coanda effect).

## Panel design slot diffusers

A panel design slot diffuser consists of a face plate and a plenum box. Cylindrical air deflectors, equal to those in LD-13 and LD-14 diffusers, are installed in the slots, to allow continuous adjustment of discharged air direction within the 360° range. On order, diverse plate designs and slot patterns are available.

## Floor slot diffusers

LD-16N floor slot diffusers are a suitable solution for swimming pools and similar rooms with large glass surfaces and windows. They are designed for installation in the floor. Warm air is supplied in the upwards direction, towards the window.

## Round duct diffusers

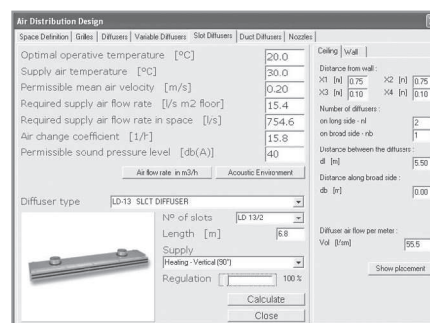
Round duct diffusers can be installed at various locations within the duct network. They are suitable for supplying either cold or warm air.

## Software: KLIMA ADE

LD and SKD Software:

- available calculation and graphical display of air supply for slot diffusers LD-13, LD-14 and LD-15
- available calculation of technical specifications for the application of wall- or ceiling-mounted slot diffusers
- available calculation of ceiling-mounted multiple-diffuser configuration air supply
- application of vertical or horizontal slot diffuser air supply into the room, depending on the mode of operation – heating or cooling
- the package supports basic air supply mode models for the SKD-13 round duct diffuser
- available calculation of SKD-13 round duct diffusers cooling mode: single-side and two-side horizontal supply and alternating horizontal supply heating mode: vertical air supply

## Software: Klima ADE



## Slot diffusers



LD-13

LD-14



LD-15

LD-18

## Nozzle diffusers



LD-19

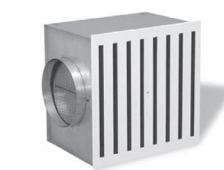
LD-20

## Floor slot diffusers



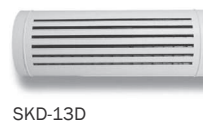
LD-16N

## Panel design slot diffusers



LDP-14

## Round duct diffusers












SKD-13D

# Content

	Page
<b>SLOT DIFFUSERS</b>	<b>180</b>
Slot diffusers LD-13, LD-14	180
Slot diffusers LD-15	195
Slot diffusers LD-17, LD-18	199
Nozzle diffusers LD-19	213
Nozzle diffusers LD-20	219
Floor slot diffusers LD-16N	230
Panel design slot diffusers LDP-13, LDP-14	232
<b>ROUND DUCT DIFFUSERS</b>	<b>234</b>
Round duct diffusers SKD-13	234

## Legend of symbols

- |  |   |   |
|--|---|---|
| <b>Al</b> Element is made of aluminium profiles, aluminium sheet or aluminium casting.   |  Element is intended to be built in the wall.  |  Element is suitable for the supply of cool air (cooling).   |
| <b>St</b> Element is made of steel sheet.  |  Element is intended to be built in the ceiling or in the wall.                      | <b>M</b> Element allows regulation by electric motor (Belimo electric motors).  |
|  Element is powder painted in standard RAL 9010 colour. Other desired colour is to be specified in the order. |  Element for air conditioning of rooms with floor to ceiling heights room up to 4 m. | <b>F</b> Element is intended for air filtration. The filter of class ... is built in.   |
|  Shady symbol means possibility of optional material, surface protection, motor version, ...                  |  Element for air conditioning of rooms with floor to ceiling heights from 6 to 15 m. | <b>CD</b> The possibility of the automatic selection and calculation of the technical characteristics of grilles and difusers in regard to the given conditions with the assistance of the Klima ADE program. |
|  Element is intended to be built in the floor.  |  Element is suitable for the supply of warm air (heating).                           | <b>INOX</b> The element is made of stainless sheet steel AISI 304.  |

## ■ Nozzle diffuser LD-19

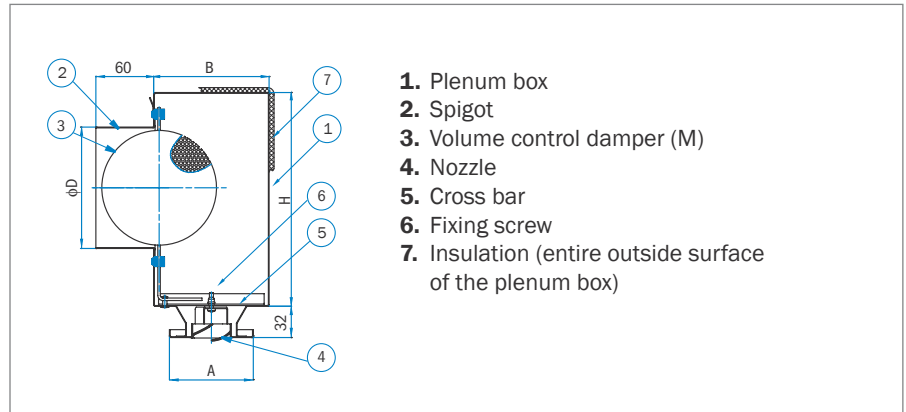
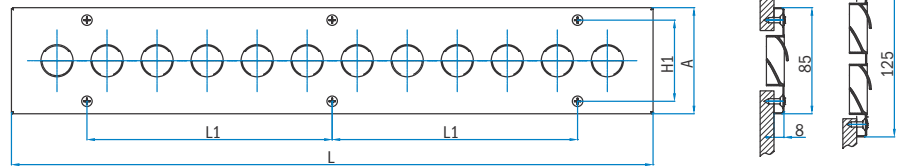
### Application

Nozzle diffuser LD-19 is designed for supply of warm or cold air and can be mounted in the wall or in the ceiling. Adjustable deflectors allow us to set different directions of air discharge.

### Description

Front plate is made of sheet steel and powder painted in white (RAL 9010) or any other RAL colour (on customer's request). Individually adjustable nozzles are made of plastics in white (RAL 9010) or black (RAL 9005) colour.

Plenum box is made of sheet steel. Nozzle diffusers are made in standard lengths (one section) from 600 up to 2000 mm with 100 mm step.



### Dimensions

	L	600	700	800	900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000
<b>L1</b>		552	652	752	852	476	526	576	626	676	726	776	826	876	926	976
<b>No. of nozzles*</b>		12	14	16	18	20	22	24	26	28	30	32	34	36	38	40

\*Up to length L=900mm: fixing with 4 screws. Other sizes: fixing with 6 screws.

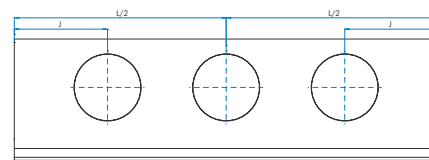
No. of rows	A	H1	B	H
1	85	65	117	216.5
2	125	105	162	236.5

### Number and dimensions of spigots

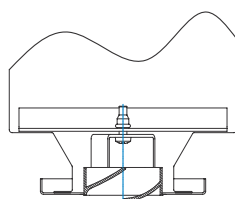
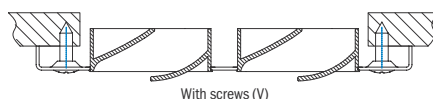
L	600 - 1000	1100 - 1500	1600 - 2000
No. of rows	Number and dimensions of spigots $\phi D$		
1	1x123	2x123	2x138
2	1x158	2x138	2x158

### Position of inlet spigots

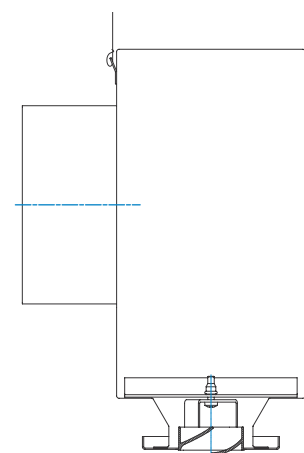
No. of inlet spigots	Standard length	Position of inlet spigots
1	600-1000	L/2
2	1100-1500	J=300
2	1600-2000	J=400



### Front plate installation

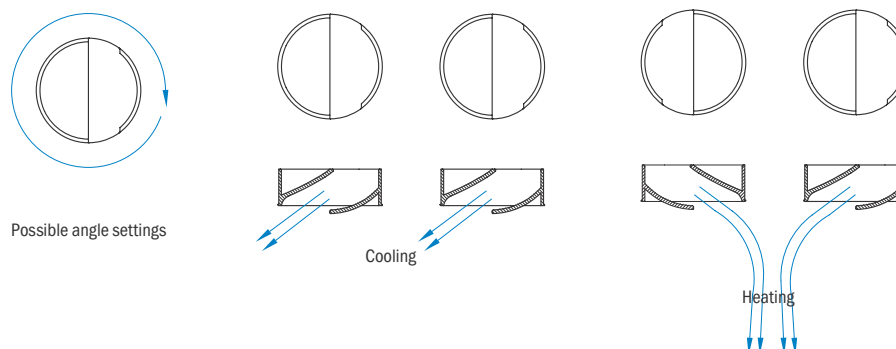


Installation with a cross-member (Z)  
Installation on a cross bar can be made through the hole, in which is mounted a nozzle.



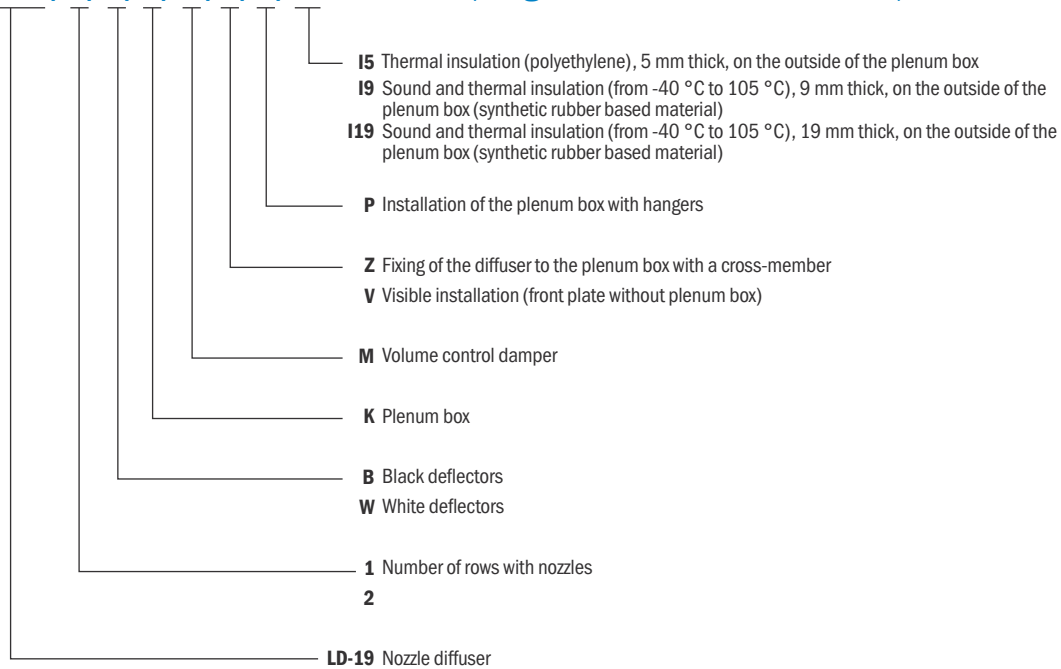
Installation of a plenum box with suspension bracket (P)

### Types of air discharge



### Ordering key

**LD-19/1/B/K/M/Z/P/I5** L=1000 (length L=600, 700, ..., 2000)



**Note:**

Standard colour is RAL 9010. Other colours on customer's request.

VENTILATING GRILLES,  
VENTILATING VALVES

CIRCULAR DIFFUSERS,  
SQUARE DIFFUSERS

SWIRL DIFFUSERS,  
VARIABLE SWIRL  
DIFFUSERS

SLOT DIFFUSERS,  
ROUND DUCT DIFFUSERS

AIR DISPLACEMENT  
UNITS

SUPPLY AIR NOZZLES

EXTERNAL ELEMENTS

AIR FLOW  
CONTROL UNITS

SOUND ATTENUATORS,  
SOUND ATTENUATING  
LOUVRES

## Quick selection

### Sound power level, pressure drop and throw distances

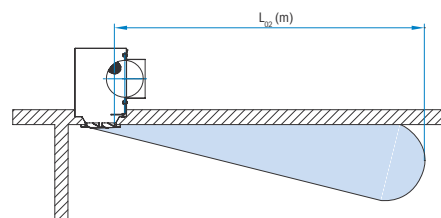
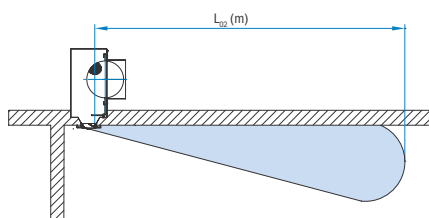
Horizontal discharge $\Delta T = 0K$									
Type	Q	(l/s)	13.9	27.8	41.7	55.6	69.4	83.3	111.1
		(m <sup>3</sup> /h)	50	100	150	200	250	300	400
LD-19/1 L=600 mm	$L_{WA}$	(dB(A))	27	40	46.8	/	/	/	/
	$\Delta p_t$	(Pa)	12.8	47	101.2	/	/	/	/
	$L_{0.2}$	(m)	2.7	3.5	4.1	/	/	/	/
	$L_{min}$	(m)	4.3	5.9	7.1	/	/	/	/
LD-19/1 L=1000 mm	$L_{WA}$	(dB(A))	21.4	33.7	40.8	44.8	/	/	/
	$\Delta p_t$	(Pa)	5	17.7	37.7	64.6	/	/	/
	$L_{0.2}$	(m)	2.2	2.8	3.6	4.4	/	/	/
	$L_{min}$	(m)	3.2	4.4	6.0	7.6	/	/	/
LD-19/1 L=1500 mm	$L_{WA}$	(dB(A))	16.4	27.4	34.8	39.7	43.1	/	/
	$\Delta p_t$	(Pa)	2.3	7.9	16.9	28.9	43.8	/	/
	$L_{0.2}$	(m)	2	2.5	2.8	3.3	3.9	/	/
	$L_{min}$	(m)	2.7	3.7	4.4	5.4	6.6	/	/
LD-19/1 L=2000 mm	$L_{WA}$	(dB(A))	13.1	22.8	30	35.2	39.1	41.9	45.5
	$\Delta p_t$	(Pa)	1.4	4.6	9.7	16.5	25	35.2	60.4
	$L_{0.2}$	(m)	1.9	2.2	2.6	2.9	3.2	3.6	3.9
	$L_{min}$	(m)	2.5	3.1	3.9	4.5	5.1	5.9	6.6
LD-19/2 L=600 mm	$L_{WA}$	(dB(A))	19.1	30.9	38.2	/	/	/	/
	$\Delta p_t$	(Pa)	3.4	12.2	26	/	/	/	/
	$L_{0.2}$	(m)	3.2	4.6	6.8	/	/	/	/
	$L_{min}$	(m)	5.4	8.2	12.6	/	/	/	/
LD-19/2 L=1000 mm	$L_{WA}$	(dB(A))	13.1	22.8	30	35.2	/	/	/
	$\Delta p_t$	(Pa)	1.5	4.9	10.1	17.1	/	/	/
	$L_{0.2}$	(m)	2.7	3.5	4.3	5.4	/	/	/
	$L_{min}$	(m)	4.3	5.9	7.6	9.8	/	/	/
LD-19/2 L=1500 mm	$L_{WA}$	(dB(A))	10.3	18.4	24.9	30.1	34.2	/	/
	$\Delta p_t$	(Pa)	0.7	2.4	4.8	7.9	11.9	/	/
	$L_{0.2}$	(m)	2.4	3	3.4	4.2	4.8	/	/
	$L_{min}$	(m)	3.7	4.9	5.7	7.3	8.5	/	/
LD-19/2 L=2000 mm	$L_{WA}$	(dB(A))	9.1	16.6	22.8	27.8	31.9	35.3	40.3
	$\Delta p_t$	(Pa)	0.5	1.4	2.8	4.7	6.9	9.6	16.2
	$L_{0.2}$	(m)	2.4	2.8	3.1	3.6	4	4.4	5.6
	$L_{min}$	(m)	3.6	4.4	5.1	6.1	6.9	7.7	10.1

#### Definition of symbols

$L_{WA}$ (dB(A))	Sound power level
$\Delta p_t$ (Pa)	Total pressure drop
$L_{0.2}$ (m)	Isothermal throw length of supply air jet, when its speed drops down to 0.2 m/s
$L_{min}$ (m)	Minimum distance between diffusers, that the jet velocity is less than or equal to 0.2 m/s

#### Conditions for $L_{min}$ :

Room height:	H=2.8 m
Occupied zone height:	1.8 m
Room temperature:	24 °C
Supply temperature by cooling:	$\Delta T = -6 K$





**Sound power level, pressure drop and throw distances**

**Vertical discharge  $\Delta T= 0K$**

Type	Q	(l/s)	13.9	27.8	41.7	55.6	69.4	83.3	111.1
		(m³/h)	50	100	150	200	250	300	400
LD-19/2 L=600 mm	$L_{WA}$	(dB(A))	19.1	30.9	38.2	/	/	/	/
	$\Delta p_t$	(Pa)	3.4	12.2	26	/	/	/	/
	$L_{0.2}$	(m)	1.8	2.6	3.9	/	/	/	/
LD-19/2 L=1000 mm	$L_{WA}$	(dB(A))	13.1	22.8	30	35.2	/	/	/
	$\Delta p_t$	(Pa)	1.5	4.9	10.1	17.1	/	/	/
	$L_{0.2}$	(m)	1.6	2.0	2.3	2.8	/	/	/
LD-19/2 L=1500 mm	$L_{WA}$	(dB(A))	10.3	18.4	24.9	30.1	34.2	/	/
	$\Delta p_t$	(Pa)	0.7	2.4	4.8	7.9	11.9	/	/
	$L_{0.2}$	(m)	1.4	1.7	1.9	2.4	2.7	/	/
LD-19/2 L=2000 mm	$L_{WA}$	(dB(A))	9.1	16.6	22.8	27.8	31.9	35.3	40.3
	$\Delta p_t$	(Pa)	0.5	1.4	2.8	4.7	6.9	9.6	16.2
	$L_{0.2}$	(m)	1.3	1.6	1.8	2.1	2.3	2.5	3.2

**Vertical discharge  $\Delta T= +5K$**

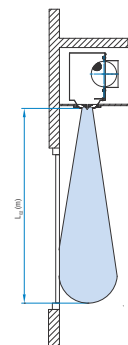
Type	Q	(l/s)	13.89	27.78	41.67	55.56	69.44	83.33	111.11
		(m³/h)	50.00	100.00	150.00	200.00	250.00	300.00	400.00
LD-19/2 L=600 mm	$L_{WA}$	(dB(A))	19.1	30.9	38.2	/	/	/	/
	$\Delta p_t$	(Pa)	3.4	12.2	26	/	/	/	/
	$L_{0.2}$	(m)	1.20	1.72	2.55	/	/	/	/
LD-19/2 L=1000 mm	$L_{WA}$	(dB(A))	13.1	22.8	30	35.2	/	/	/
	$\Delta p_t$	(Pa)	1.5	4.9	10.1	17.1	/	/	/
	$L_{0.2}$	(m)	1.16	1.45	1.64	2.03	/	/	/
LD-19/2 L=1500 mm	$L_{WA}$	(dB(A))	10.3	18.4	24.9	30.1	34.2	/	/
	$\Delta p_t$	(Pa)	0.7	2.4	4.8	7.9	11.9	/	/
	$L_{0.2}$	(m)	1.07	1.33	1.51	1.87	2.14	/	/
LD-19/2 L=2000 mm	$L_{WA}$	(dB(A))	9.1	16.6	22.8	27.8	31.9	35.3	40.3
	$\Delta p_t$	(Pa)	0.5	1.4	2.8	4.7	6.9	9.6	16.2
	$L_{0.2}$	(m)	1.03	1.26	1.40	1.62	1.80	1.98	2.52

**Vertical discharge  $\Delta T= +10K$**

Type	Q	(l/s)	13.89	27.78	41.67	55.56	69.44	83.33	111.11
		(m³/h)	50.00	100.00	150.00	200.00	250.00	300.00	400.00
LD-19/2 L=600 mm	$L_{WA}$	(dB(A))	19.1	30.9	38.2	/	/	/	/
	$\Delta p_t$	(Pa)	3.4	12.2	26	/	/	/	/
	$L_{0.2}$	(m)	0.85	1.22	1.81	/	/	/	/
LD-19/2 L=1000 mm	$L_{WA}$	(dB(A))	13.1	22.8	30	35.2	/	/	/
	$\Delta p_t$	(Pa)	1.5	4.9	10.1	17.1	/	/	/
	$L_{0.2}$	(m)	0.86	1.07	1.22	1.50	/	/	/
LD-19/2 L=1500 mm	$L_{WA}$	(dB(A))	10.3	18.4	24.9	30.1	34.2	/	/
	$\Delta p_t$	(Pa)	0.7	2.4	4.8	7.9	11.9	/	/
	$L_{0.2}$	(m)	0.74	0.92	1.04	1.29	1.47	/	/
LD-19/2 L=2000 mm	$L_{WA}$	(dB(A))	9.1	16.6	22.8	27.8	31.9	35.3	40.3
	$\Delta p_t$	(Pa)	0.5	1.4	2.8	4.7	6.9	9.6	16.2
	$L_{0.2}$	(m)	0.69	0.85	0.94	1.09	1.21	1.33	1.69

**Definitions of symbols**

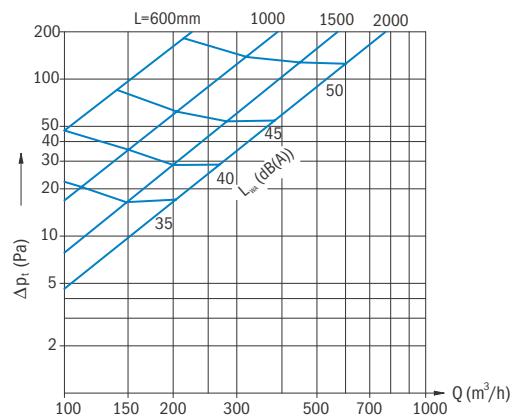
- $L_{WA}$  (dB(A)) Sound power level
- $\Delta p_t$  (Pa) Total pressure drop
- $L_{0.2}$  (m) Isothermal throw length of supply air jet, when its speed drops down to 0.2 m/s



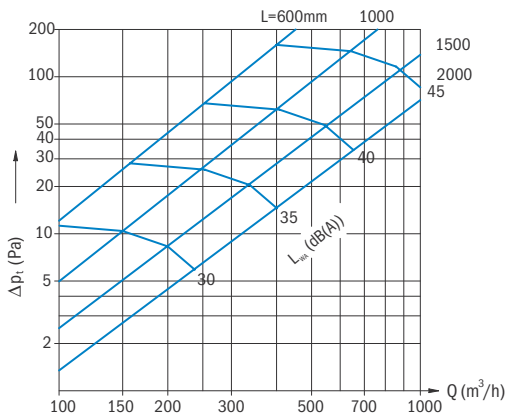
### Sound power level and pressure drop

Pressure drop by horizontal discharge and 100 % opened volume control damper.

**LD 19/1**



**LD 19/2**



### Correction factors applicable to LD-19

Length	LD-19/1		LD-19/2	
	Volume control damper		Volume control damper	
	open	closed	open	closed
<b>L=600</b>	X 1	X 1.3	X 1	X 1.8
<b>L=1000</b>	X 1	X 1.4	X 1	X 2
<b>L=1500</b>	X 1	X 1.5	X 1	X 2.2
<b>L=2000</b>	X 1	X 2	X 1	X 2.5

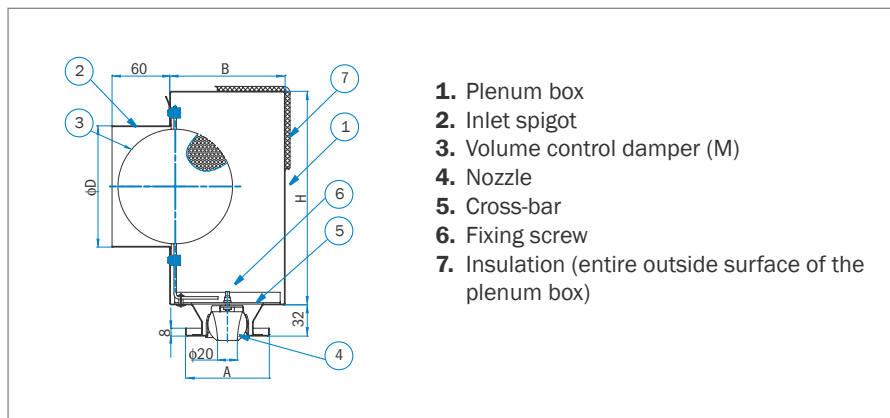
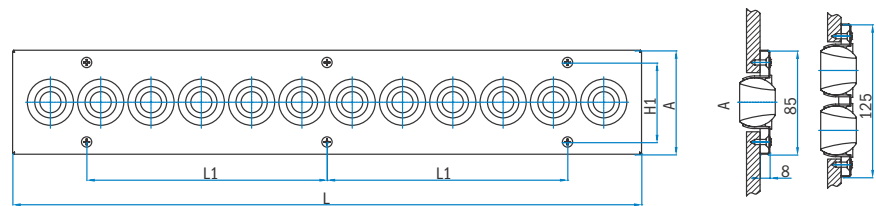
## ■ Nozzle diffuser LD-20

### Application

Nozzle diffuser LD-20 is designed to supply low quantities of air on big window surfaces to prevent condensation (ceiling installation near windows) or for big throws for cooling when wall installation (Coanda effect).

### Description

The front plate is made of sheet steel powder painted in white (RAL 9010) or any other RAL colour (on customer's request). Individually adjustable nozzles are made from plastic in white (RAL 9010) or black (RAL 9005) colour. Plenum box is made of sheet steel. Nozzle diffuser LD-20 can be made in standard lengths (one section) from 600 up to 2000 mm with 100 mm step.



<b>L</b>	600	700	800	900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000
<b>L1</b>	552	652	752	852	476	526	576	626	676	726	776	826	876	926	976
<b>No. of nozzles</b>	12	14	16	18	20	22	24	26	28	30	32	34	36	38	40

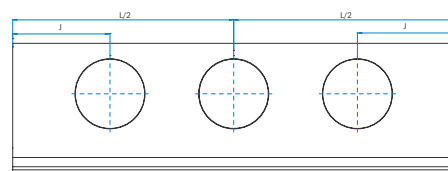
<b>No. of rows</b>	<b>H1</b>	<b>B</b>	<b>H</b>	<b>A</b>
<b>1</b>	65	117	216.5	85
<b>2</b>	105	162	236.5	125

**Number and dimensions of spigots**

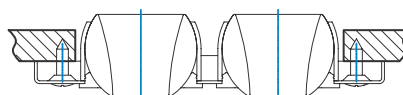
L	600 - 1000	1100 - 1500	1600 - 2000
No. of rows	Number and dimensions of spigots $\phi D$		
1	1x123	2x123	2x138
2	1x158	2x138	2x158

**Position of inlet spigots**

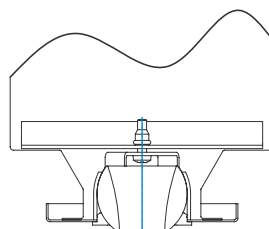
No. of inlet spigots	Standard length	Position of inlet spigots
1	600-1000	L/2
2	1100-1500	J=300
2	1600-2000	J=400



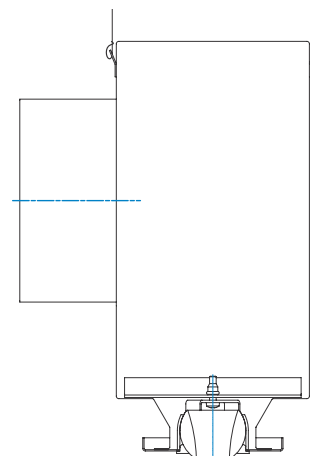
**Front plate installation**



With screws(V)

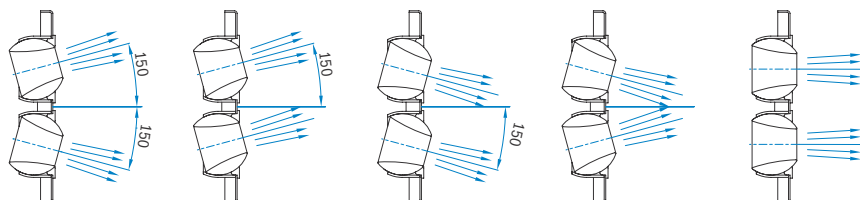


Installation with a cross-member (Z)  
Installation on a cross bar can be made through the hole, in which is mounted a nozzle.



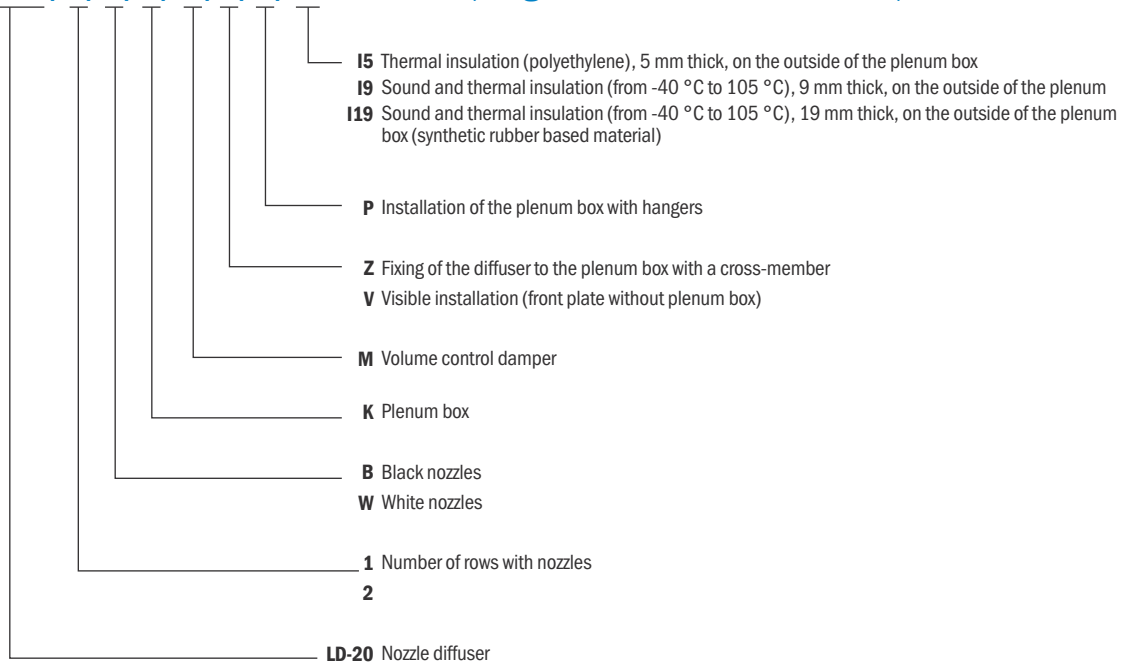
Installation of a plenum box with suspension bracket (P)

**Possible angle settings**



### Ordering key

**LD-20/1/B/K/M/Z/P/I5** L=1000 (length L=600, 700, ..., 2000)



**Note:**

Standard colour is RAL 9010. Other colours on customer's request.

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## Quick selection

### Sound power level, pressure drop and throw distances

Horizontal discharge $\Delta T=0K$									
Type	Q	(l/s)	13.9	27.8	41.7	55.6	69.4	83.3	111.1
		(m <sup>3</sup> /h)	50	100	150	200	250	300	400
LD-20/1 L=600 mm	L <sub>WA</sub>	(dB(A))	20	33.8	41	/	/	/	/
	$\Delta p_t$	(Pa)	13.5	35.6	74.8	/	/	/	/
	L <sub>0,2</sub>	(m)	6.6	> 10	> 10	/	/	/	/
LD-20/1 L=1000 mm	L <sub>WA</sub>	(dB(A))	11	23.2	30	36	/	/	/
	$\Delta p_t$	(Pa)	12	22	43	76	/	/	/
	L <sub>0,2</sub>	(m)	3.8	6.6	9.3	> 10	/	/	/
LD-20/1 L=1500 mm	L <sub>WA</sub>	(dB(A))	8	14.5	25	31	35	37.5	43
	$\Delta p_t$	(Pa)	5.5	12.5	25	39.6	55	86.4	136.8
	L <sub>0,2</sub>	(m)	2.1	3.5	5	6.4	7.9	9.3	> 10
LD-20/1 L=2000 mm	L <sub>WA</sub>	(dB(A))	/	11	21	26.5	31	34.7	40
	$\Delta p_t$	(Pa)	/	7.5	15	23.7	33	45.5	75.2
	L <sub>0,2</sub>	(m)	/	2.5	3.6	4.6	5.7	6.7	7.5
LD-20/2 L=600 mm	L <sub>WA</sub>	(dB(A))	14	25	31	/	/	/	/
	$\Delta p_t$	(Pa)	2	8.3	18.3	/	/	/	/
	L <sub>0,2</sub>	(m)	4.2	9.1	> 10	/	/	/	/
LD-20/2 L=1000 mm	L <sub>WA</sub>	(dB(A))	/	19	24	27.8	31	/	/
	$\Delta p_t$	(Pa)	/	4	8	15	22	/	/
	L <sub>0,2</sub>	(m)	/	7.1	8.9	> 10	> 10	/	/
LD-20/2 L=1500 mm	L <sub>WA</sub>	(dB(A))	/	14.6	20.4	24	27	28.5	32.5
	$\Delta p_t$	(Pa)	/	2.4	4.7	7.6	13	17	28.5
	L <sub>0,2</sub>	(m)	/	4.3	5.3	6.2	7.3	8.1	8.9
LD-20/2 L=2000 mm	L <sub>WA</sub>	(dB(A))	/	11	17	21.5	24	26.3	30.3
	$\Delta p_t$	(Pa)	/	1.4	2.7	4.2	6.5	8.2	14.4
	L <sub>0,2</sub>	(m)	/	2.8	3.5	4.0	4.7	5.3	5.8

**Sound power level, pressure drop and throw distances**

Horizontal discharge $\Delta T = -5K$									
Type	Q	(l/s)	13.9	27.8	41.7	55.6	69.4	83.3	111.1
		(m <sup>3</sup> /h)	50	100	150	200	250	300	400
LD-20/1 L=600 mm	L <sub>WA</sub>	(dB(A))	20	33.8	41	/	/	/	/
	$\Delta p_t$	(Pa)	13.5	35.6	74.8	/	/	/	/
	L <sub>0,2</sub>	(m)	5.1	> 10	> 10	/	/	/	/
LD-20/1 L=1000 mm	L <sub>WA</sub>	(dB(A))	11	23.2	30	36	/	/	/
	$\Delta p_t$	(Pa)	12	22	43	76	/	/	/
	L <sub>0,2</sub>	(m)	2.9	6.9	8.8	> 10	/	/	/
LD-20/1 L=1500 mm	L <sub>WA</sub>	(dB(A))	8	14.5	25	31	35	37.5	43
	$\Delta p_t$	(Pa)	5.5	12.5	25	39.6	55	86.4	136.8
	L <sub>0,2</sub>	(m)	1.6	3.8	4.8	6.6	8.2	9.8	> 10
LD-20/1 L=2000 mm	L <sub>WA</sub>	(dB(A))	/	11	21	26.5	31	34.7	40
	$\Delta p_t$	(Pa)	/	7.5	15	23.7	33	45.5	75.2
	L <sub>0,2</sub>	(m)	/	2.7	3.4	4.7	5.8	7.0	8.1
LD-20/2 L=600 mm	L <sub>WA</sub>	(dB(A))	14	25	31	/	/	/	/
	$\Delta p_t$	(Pa)	2	8.3	18.3	/	/	/	/
	L <sub>0,2</sub>	(m)	7.3	9.1	> 10	/	/	/	/
LD-20/2 L=1000 mm	L <sub>WA</sub>	(dB(A))	/	19	24	27.8	31	/	/
	$\Delta p_t$	(Pa)	/	4	8	15	22	/	/
	L <sub>0,2</sub>	(m)	/	4.7	7.1	9.3	> 10	/	/
LD-20/2 L=1500 mm	L <sub>WA</sub>	(dB(A))	/	14.6	20.4	24	27	28.5	32.5
	$\Delta p_t$	(Pa)	/	2.4	4.7	7.6	13	17	28.5
	L <sub>0,2</sub>	(m)	/	2.8	4.3	5.6	7.0	8.2	9.3
LD-20/2 L=2000 mm	L <sub>WA</sub>	(dB(A))	/	11	17	21.5	24	26.3	30.3
	$\Delta p_t$	(Pa)	/	1.4	2.7	4.2	6.5	8.2	14.4
	L <sub>0,2</sub>	(m)	/	1.8	2.8	3.6	4.5	5.3	6.0

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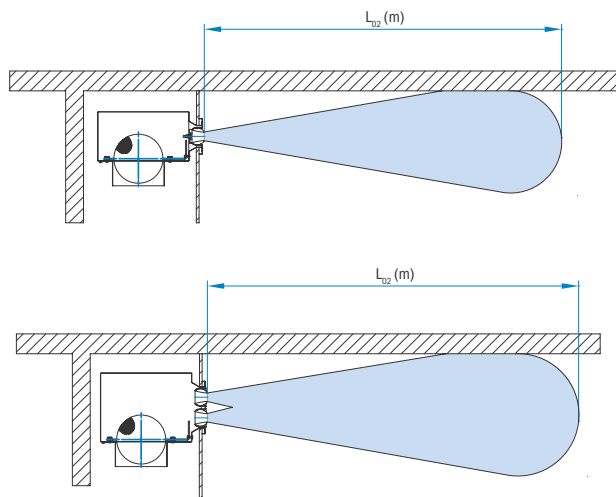
**Sound power level, pressure drop and throw distances**

**Horizontal discharge  $\Delta T = -10K$**

Type	Q	(l/s)	13.9	27.8	41.7	55.6	69.4	83.3	111.1
		(m <sup>3</sup> /h)	50	100	150	200	250	300	400
LD-20/1 L=600 mm	$L_{WA}$	(dB(A))	20	33.8	41	/	/	/	/
	$\Delta p_t$	(Pa)	13.5	35.6	74.8	/	/	/	/
	$L_{0.2}$	(m)	3.5	8.5	> 10	/	/	/	/
LD-20/1 L=1000 mm	$L_{WA}$	(dB(A))	11	23.2	30	36	/	/	/
	$\Delta p_t$	(Pa)	12	22	43	76	/	/	/
	$L_{0.2}$	(m)	2	4.9	8.1	> 10	/	/	/
LD-20/1 L=1500 mm	$L_{WA}$	(dB(A))	8	14.5	25	31	35	37.5	43
	$\Delta p_t$	(Pa)	5.5	12.5	25	39.6	55	86.4	136.8
	$L_{0.2}$	(m)	1.1	2.6	4.4	5.9	7.3	9.1	> 10
LD-20/1 L=2000 mm	$L_{WA}$	(dB(A))	/	11	21	26.5	31	34.7	40
	$\Delta p_t$	(Pa)	/	7.5	15	23.7	33	45.5	75.2
	$L_{0.2}$	(m)	/	1.9	3.1	4.2	5.3	6.6	7.5
LD-20/2 L=600 mm	$L_{WA}$	(dB(A))	14	25	31	/	/	/	/
	$\Delta p_t$	(Pa)	2	8.3	18.3	/	/	/	/
	$L_{0.2}$	(m)	3.4	4.3	7.74	/	/	/	/
LD-20/2 L=1000 mm	$L_{WA}$	(dB(A))	/	19	24	27.8	31	/	/
	$\Delta p_t$	(Pa)	/	4	8	15	22	/	/
	$L_{0.2}$	(m)	/	2.5	4.5	6.7	9.7	/	/
LD-20/2 L=1500 mm	$L_{WA}$	(dB(A))	/	14.6	20.4	24	27	28.5	32.5
	$\Delta p_t$	(Pa)	/	2.4	4.7	7.6	13	17	28.5
	$L_{0.2}$	(m)	/	1.5	2.7	4.0	5.8	6.9	8.3
LD-20/2 L=2000 mm	$L_{WA}$	(dB(A))	/	11	17	21.5	24	26.3	30.3
	$\Delta p_t$	(Pa)	/	1.4	2.7	4.2	6.5	8.2	14.4
	$L_{0.2}$	(m)	/	1.0	1.8	2.6	3.8	4.5	5.4

**Definition of symbols**

- $L_{WA}$  (dB(A))** Sound power level
- $\Delta p_t$  (Pa)** Total pressure drop
- $L_{0.2}$  (m)** Isothermal throw length of supply air jet, when its speed drops down to 0.2 /s





**Sound power level, pressure drop and throw distances**

Vertical discharge  $\Delta T=0K$

Type	Q	(l/s)	13.9	27.8	41.7	55.6	69.4	83.3	111.1
		(m <sup>3</sup> /h)	50	100	150	200	250	300	400
LD-20/1 L=600 mm	L <sub>WA</sub>	(dB(A))	20	33.8	41	/	/	/	/
	$\Delta p_t$	(Pa)	13.5	35.6	74.8	/	/	/	/
	L <sub>0.2</sub>	(m)	5.2	> 10	> 10	/	/	/	/
LD-20/1 L=1000 mm	L <sub>WA</sub>	(dB(A))	11	23.2	30	36	/	/	/
	$\Delta p_t$	(Pa)	12	22	43	76	/	/	/
	L <sub>0.2</sub>	(m)	3.2	7.4	9.4	> 10	/	/	/
LD-20/1 L=1500 mm	L <sub>WA</sub>	(dB(A))	8	14.5	25	31	35	37.5	43
	$\Delta p_t$	(Pa)	5.5	12.5	25	39.6	55	86.4	136.8
	L <sub>0.2</sub>	(m)	1.5	3.9	6.6	9.8	> 10	> 10	> 10
LD-20/1 L=2000 mm	L <sub>WA</sub>	(dB(A))	/	11	21	26.5	31	34.7	40
	$\Delta p_t$	(Pa)	/	7.5	15	23.7	33	45.5	75.2
	L <sub>0.2</sub>	(m)	/	2.6	4.6	6.6	9	> 10	> 10
LD-20/2 L=600 mm	L <sub>WA</sub>	(dB(A))	14	25	31	/	/	/	/
	$\Delta p_t$	(Pa)	2	8.3	18.3	/	/	/	/
	L <sub>0.2</sub>	(m)	2.7	5.4	8.8	/	/	/	/
LD-20/2 L=1000 mm	L <sub>WA</sub>	(dB(A))	/	19	24	27.8	31	/	/
	$\Delta p_t$	(Pa)	/	4	8	15	22	/	/
	L <sub>0.2</sub>	(m)	/	3	5.4	7.2	8.9	/	/
LD-20/2 L=1500 mm	L <sub>WA</sub>	(dB(A))	/	14.6	20.4	24	27	28.5	32.5
	$\Delta p_t$	(Pa)	/	2.4	4.7	7.6	13	17	28.5
	L <sub>0.2</sub>	(m)	/	3.3	4.6	6.1	7.7	9.4	> 10
LD-20/2 L=2000 mm	L <sub>WA</sub>	(dB(A))	/	11	17	21.5	24	26.3	30.3
	$\Delta p_t$	(Pa)	/	1.4	2.7	4.2	6.5	8.2	14.4
	L <sub>0.2</sub>	(m)	/	1.9	2.6	3.4	4.2	5.1	7.1

VENTILATING GRILLES,  
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CONTROL UNITS

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LOUVRES

Sound power level, pressure drop and throw distances

Vertical discharge  $\Delta T=+5K$

Type	Q	(l/s)	13.9	27.8	41.7	55.6	69.4	83.3	111.1
		(m <sup>3</sup> /h)	50	100	150	200	250	300	400
LD-20/1 L=600 mm	L <sub>WA</sub>	(dB(A))	20	33.8	41	/	/	/	/
	$\Delta p_t$	(Pa)	13.5	35.6	74.8	/	/	/	/
	L <sub>0,2</sub>	(m)	3.9	> 10	> 10				
LD-20/1 L=1000 mm	L <sub>WA</sub>	(dB(A))	11	23.2	30	36	/	/	/
	$\Delta p_t$	(Pa)	12	22	43	76	/	/	/
	L <sub>0,2</sub>	(m)	2	5.1	8.6	> 10	/	/	/
LD-20/1 L=1500 mm	L <sub>WA</sub>	(dB(A))	8	14.5	25	31	35	37.5	43
	$\Delta p_t$	(Pa)	5.5	12.5	25	39.6	55	86.4	136.8
	L <sub>0,2</sub>	(m)	1.2	3	5.1	7.5	> 10		
LD-20/1 L=2000 mm	L <sub>WA</sub>	(dB(A))	/	11	21	26.5	31	34.7	40
	$\Delta p_t$	(Pa)	/	7.5	15	23.7	33	45.5	75.2
	L <sub>0,2</sub>	(m)	/	2.1	3.6	5.2	7	9.1	> 10
LD-20/2 L=600 mm	L <sub>WA</sub>	(dB(A))	14	25	31	/	/	/	/
	$\Delta p_t$	(Pa)	2	8.3	18.3	/	/	/	/
	L <sub>0,2</sub>	(m)	2.3	5.9	> 10	/	/	/	/
LD-20/2 L=1000 mm	L <sub>WA</sub>	(dB(A))	/	19	24	27.8	31	/	/
	$\Delta p_t$	(Pa)	/	4	8	15	22	/	/
	L <sub>0,2</sub>	(m)	/	3	5.4	7.2	8.4	/	/
LD-20/2 L=1500 mm	L <sub>WA</sub>	(dB(A))	/	14.6	20.4	24	27	28.5	32.5
	$\Delta p_t$	(Pa)	/	2.4	4.7	7.6	13	17	28.5
	L <sub>0,2</sub>	(m)	/	1.85	3.1	4.5	6.2	7.9	> 10
LD-20/2 L=2000 mm	L <sub>WA</sub>	(dB(A))	/	11	17	21.5	24	26.3	30.3
	$\Delta p_t$	(Pa)	/	1.4	2.7	4.2	6.5	8.2	14.4
	L <sub>0,2</sub>	(m)	/	1.6	2.2	3.2	4.3	5.4	8

**Sound power level, pressure drop and throw distances**

Vertical discharge  $\Delta T=+10K$

Type	Q	(l/s)	13.9	27.8	41.7	55.6	69.4	83.3	111.1
		(m <sup>3</sup> /h)	50	100	150	200	250	300	400
LD-20/1 L=600 mm	L <sub>WA</sub>	(dB(A))	20	33.8	41	/	/	/	/
	$\Delta p_t$	(Pa)	13.5	35.6	74.8	/	/	/	/
	L <sub>0.2</sub>	(m)	2.6	6.3	> 10	/	/	/	/
LD-20/1 L=1000 mm	L <sub>WA</sub>	(dB(A))	11	23.2	30	36	/	/	/
	$\Delta p_t$	(Pa)	12	22	43	76	/	/	/
	L <sub>0.2</sub>	(m)	1.5	3.6	6.2	8.8	/	/	/
LD-20/1 L=1500 mm	L <sub>WA</sub>	(dB(A))	8	14.5	25	31	35	37.5	43
	$\Delta p_t$	(Pa)	5.5	12.5	25	39.6	55	86.4	136.8
	L <sub>0.2</sub>	(m)	1.5	2	3.3	4.8	6.5	8.3	> 10
LD-20/1 L=2000 mm	L <sub>WA</sub>	(dB(A))	/	11	21	26.5	31	34.7	40
	$\Delta p_t$	(Pa)	/	7.5	15	23.7	33	45.5	75.2
	L <sub>0.2</sub>	(m)	/	1.4	2.4	3.4	4.6	5.8	8.5
LD-20/2 L=600 mm	L <sub>WA</sub>	(dB(A))	14	25	31	/	/	/	/
	$\Delta p_t$	(Pa)	2	8.3	18.3	/	/	/	/
	L <sub>0.2</sub>	(m)	1.5	4.5	8.2	/	/	/	/
LD-20/2 L=1000 mm	L <sub>WA</sub>	(dB(A))	/	19	24	27.8	31	/	/
	$\Delta p_t$	(Pa)	/	4	8	15	22	/	/
	L <sub>0.2</sub>	(m)	/	2	3.6	5.3	7.4	/	/
LD-20/2 L=1500 mm	L <sub>WA</sub>	(dB(A))	/	14.6	20.4	24	27	28.5	32.5
	$\Delta p_t$	(Pa)	/	2.4	4.7	7.6	13	17	28.5
	L <sub>0.2</sub>	(m)	/	1.1	2.1	3.3	4.6	6.1	9.2
LD-20/2 L=2000 mm	L <sub>WA</sub>	(dB(A))	/	11	17	21.5	24	26.3	30.3
	$\Delta p_t$	(Pa)	/	1.4	2.7	4.2	6.5	8.2	14.4
	L <sub>0.2</sub>	(m)	/	0.7	1.3	2.1	3	3.9	6.1

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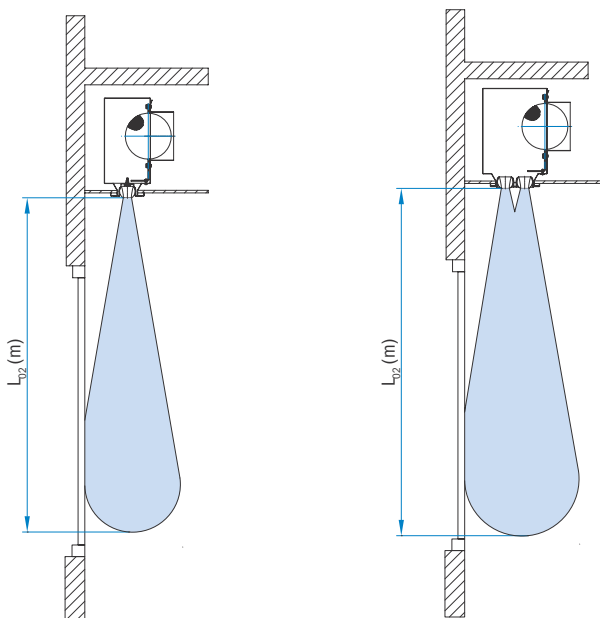
Sound power level, pressure drop and throw distances

Vertical discharge  $\Delta T=+15K$

Type	Q	(l/s)	13.9	27.8	41.7	55.6	69.4	83.3	111.1
		(m <sup>3</sup> /h)	50	100	150	200	250	300	400
LD-20/1 L=600 mm	$L_{WA}$	(dB(A))	20	33.8	41	/	/	/	/
	$\Delta p_t$	(Pa)	13.5	35.6	74.8	/	/	/	/
	$L_{0.2}$	(m)	1.8	4.5	7.9	/	/	/	/
LD-20/1 L=1000 mm	$L_{WA}$	(dB(A))	11	23.2	30	36	/	/	/
	$\Delta p_t$	(Pa)	12	22	43	76	/	/	/
	$L_{0.2}$	(m)	1.1	2.6	4.3	5.1	/	/	/
LD-20/1 L=1500 mm	$L_{WA}$	(dB(A))	8	14.5	25	31	35	37.5	43
	$\Delta p_t$	(Pa)	5.5	12.5	25	39.6	55	86.4	136.8
	$L_{0.2}$	(m)	1.1	1.4	2.4	3.5	4.6	6	8.8
LD-20/1 L=2000 mm	$L_{WA}$	(dB(A))	/	11	21	26.5	31	34.7	40
	$\Delta p_t$	(Pa)	/	7.5	15	23.7	33	45.5	75.2
	$L_{0.2}$	(m)	/	1	1.6	2.4	3.3	4.2	6.1
LD-20/2 L=600 mm	$L_{WA}$	(dB(A))	14	25	31	/	/	/	/
	$\Delta p_t$	(Pa)	2	8.3	18.3	/	/	/	/
	$L_{0.2}$	(m)	1.2	3.1	5.6	/	/	/	/
LD-20/2 L=1000 mm	$L_{WA}$	(dB(A))	/	19	24	27.8	31	/	/
	$\Delta p_t$	(Pa)	/	4	8	15	22	/	/
	$L_{0.2}$	(m)	/	1.6	2.4	3.7	5.3	/	/
LD-20/2 L=1500 mm	$L_{WA}$	(dB(A))	/	14.6	20.4	24	27	28.5	32.5
	$\Delta p_t$	(Pa)	/	2.4	4.7	7.6	13	17	28.5
	$L_{0.2}$	(m)	/	1	1.5	2.3	3.2	4.2	6.3
LD-20/2 L=2000 mm	$L_{WA}$	(dB(A))	/	11	17	21.5	24	26.3	30.3
	$\Delta p_t$	(Pa)	/	1.4	2.7	4.2	6.5	8.2	14.4
	$L_{0.2}$	(m)	/	0.6	0.9	1.5	2.1	2.8	4.2

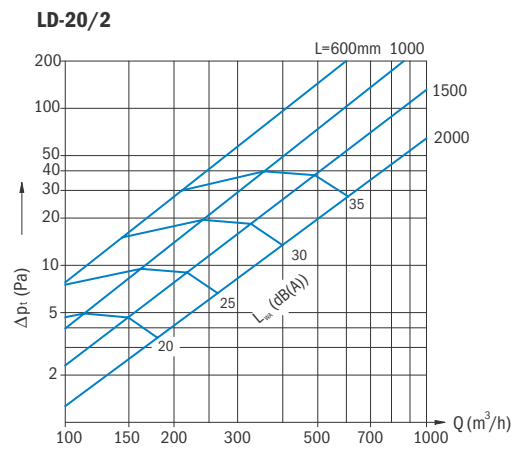
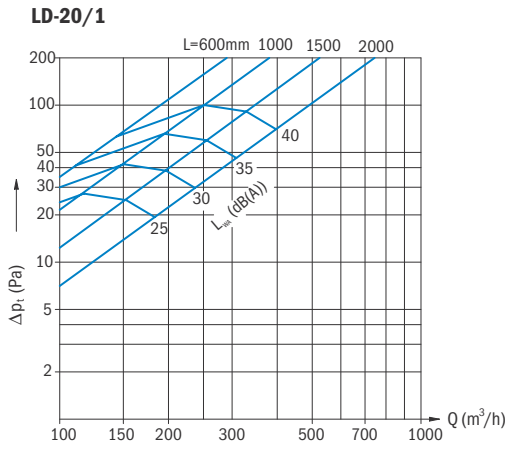
**Definition of symbols**

- $L_{WA}$  (dB(A)) Sound power level
- $\Delta p_t$  (Pa) Total pressure drop
- $L_{0.2}$  (m) Isothermal throw length of supply air jet, when its speed drops down to 0.2 m/s



### Sound power level and pressure drop

Pressure drop by horizontal discharge and 100 % opened volume control damper



### Correction factors applicable to LD-20

Length	LD-20/1		LD-20/2	
	Volume control damper		Volume control damper	
	open	closed	open	closed
<b>L=600</b>	X 1	X 1.25	X 1	X 1.6
<b>L=1000</b>	X 1	X 1.3	X 1	X 1.8
<b>L=1500</b>	X 1	X 1.4	X 1	X 2
<b>L=2000</b>	X 1	X 1.8	X 1	X 2.3