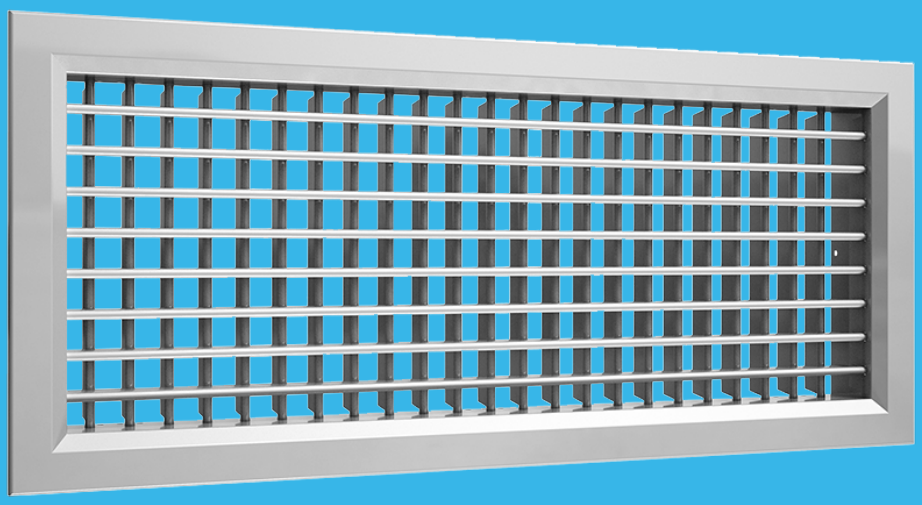
MALCON
MARINE AND LAND CONSTRUCTION



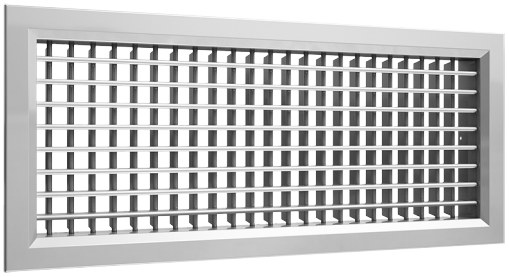
SD

Grilles

Lindab®

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Grille SD



Description

SD is an adjustable single or double deflection grille made of galvanized steel or powder painted black steel. With the adjustable blades, the grille is very suitable for air supply and is adaptable to the required throw and air spread pattern.
The grille is available with several mounting options and can be delivered with mounting frame and opposed blade damper as an accessories.
Available in various standard dimensions. Customized sizes available on request.

Order code

Product	SD	a	b	c	d	eee x fff	gggg

Type
SD

Frame
1 - Single deflection - 28 mm frame
2 - Double deflection - 28 mm frame

Grid
1 - Horizontal
2 - Vertical

Installation
- Not prepared
C Clips
CM Clips + mounting frame
V Visible screw holes
VM Visible screw holes + mounting frame
H Hidden screw
HM Hidden screw + mounting frame (H>225)

Accessories
- No accessories
D Opposed blade damper DGS

Size
L: 150 - 1200 mm
H: 100 - 500 mm

Grilles standard finish:
- Galvanized steel
9010 RAL 9010, gloss 30
9003 RAL 9003, gloss 30
xxxx On request, other RAL colour

Example 1: SD-11-CMD-400-200-9003
Example 2: SD-22-500-150

Min. - max. dimensions

H \ L	150	200	250	300	350	400	450	500 ↔ 1200
100								
150								
200								
250								
300								
350								
400								
450								
500								

Standard SD grilles are available within the above min. and max. sizes .

LindQST

Use the advanced Lindab web tool LindQST to calculate the full range of grilles and to find the suitable grille type and dimension for all applications.
Product selection, room dimensioning and documentation search are easy available directly on web and mobile devices.
Find this and much more on www.lindQST.com.

Maintenance

The grille should be removed to gain access to the plenum box or duct. The external parts should be wiped with a damp cloth.

Accessories

Mounting frame:	MFS
Opposed blade damper:	DGS

Materials and finish

Grille frame and blades:	Steel
Mounting frame:	Galvanized steel
Opposed blade damper:	Casing in galvanized steel Blades in plastic
Grilles standard finish:	
	- Galvanized steel - RAL 9010, gloss 30 - RAL 9003, gloss 30

The grille is available in other colours. Please contact Lindab's sales department for further information.

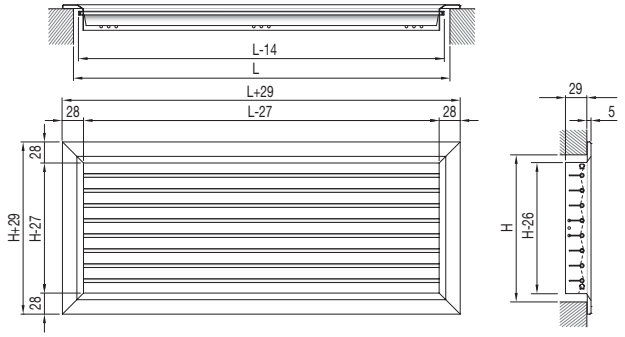
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Grille

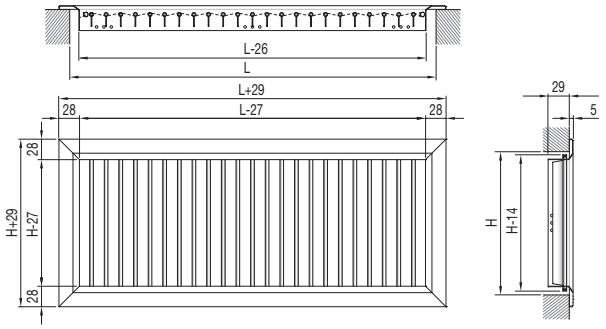
SD

Frame and grid

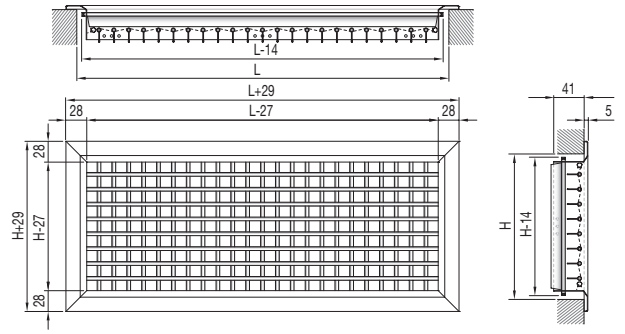
SD-11 Single deflection with horizontal blades.



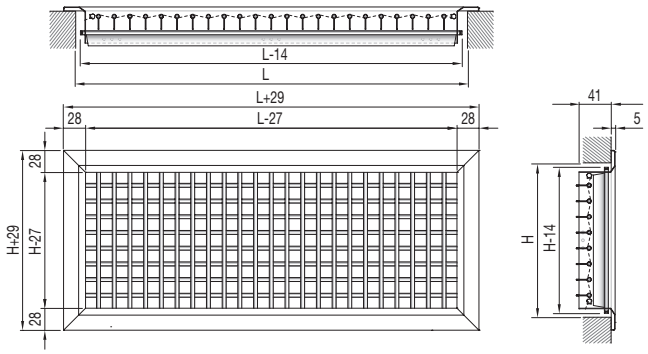
SD-12 Single deflection with vertical blades.



SD-21 Double deflection with horizontal front blades.

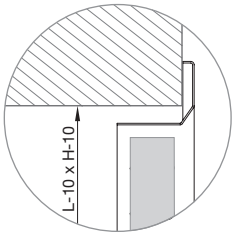


SD-22 Double deflection with vertical front blades.

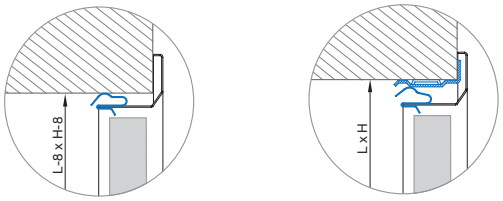


Installation

- Not prepared

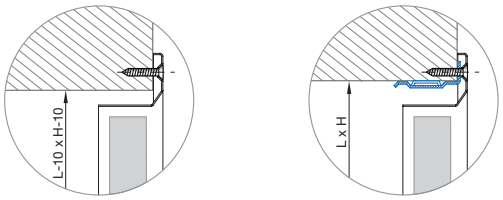


C - Clips
CM - Clips + mounting frame



C **CM**

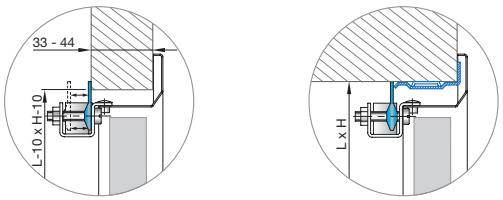
V* - Visible screw holes
VM* - Visible screw holes + mounting frame



V* **VM***

* Screws are not included.

H - Hidden screws
HM - Hidden screws + mounting frame



H **HM**

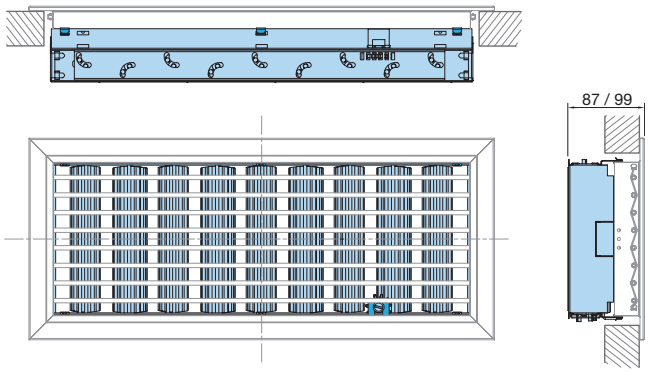
Grille

SD

Accessories

- No damper

D - Opposed blade damper DGS



A full length click on DGS damper is available for all SD variants.
The DGS is made of galvanized steel with wide counter directional blades made of plastic. These can be controlled with a screwdriver via the gear wheel to control the air flow rate.

SD + DGS depth, (See drawing above).

SD-11, SD-12, Single deflection : 87 mm.
SD-21, SD-22, Double deflection : 99 mm.

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Grille SD

Free area

L: 150 - 650 mm

H / L	SD-2 Steel deflection grille A_k [m^2]										
	150	200	250	300	350	400	450	500	550	600	650
100	0,007	0,009	0,012	0,015	0,018	0,020	0,023	0,026	0,028	0,031	0,034
150	0,011	0,016	0,020	0,025	0,030	0,034	0,039	0,043	0,048	0,053	0,057
200		0,022	0,029	0,035	0,042	0,048	0,055	0,061	0,067	0,074	0,080
250			0,037	0,045	0,054	0,062	0,070	0,079	0,087	0,095	0,104
300				0,056	0,066	0,076	0,086	0,096	0,106	0,117	0,127
350					0,078	0,090	0,102	0,114	0,126	0,138	0,150
400						0,104	0,118	0,131	0,145	0,159	0,173
450							0,133	0,149	0,165	0,181	0,196
500								0,167	0,184	0,202	0,220

L: 700 - 1200 mm

H / L	SD-2 Steel deflection grille A_k [m^2]										
	700	750	800	850	900	950	1000	1050	1100	1150	1200
100	0,037	0,039	0,042	0,045	0,047	0,050	0,053	0,056	0,058	0,061	0,064
150	0,062	0,066	0,071	0,075	0,080	0,085	0,089	0,094	0,098	0,103	0,107
200	0,087	0,093	0,100	0,106	0,113	0,119	0,125	0,132	0,138	0,145	0,151
250	0,112	0,120	0,128	0,137	0,145	0,153	0,162	0,170	0,178	0,187	0,195
300	0,137	0,147	0,157	0,167	0,178	0,188	0,198	0,208	0,218	0,228	0,239
350	0,162	0,174	0,186	0,198	0,210	0,222	0,234	0,246	0,258	0,270	0,282
400	0,187	0,201	0,215	0,229	0,243	0,256	0,270	0,284	0,298	0,312	0,326
450	0,212	0,228	0,244	0,259	0,275	0,291	0,307	0,322	0,338	0,354	0,370
500	0,237	0,255	0,272	0,290	0,308	0,325	0,343	0,360	0,378	0,396	0,413

Grille SD

Quick selection, Supply air, SD-2

Grille size [mm]			Air flow rate																		
		m³/h	100	150	200	250	300	350	400	500	600	700	800	900	1000	1250	1500	2000	2500	3000
	A_k [m²]	l/s	(28)	(42)	(56)	(69)	(83)	(97)	(111)	(139)	(167)	(194)	(222)	(250)	(278)	(347)	(417)	(556)	(694)	(833)
H=100		L_{WA} [dB(A)]	<20	23	31	38	43	48												
	200x100	V_k [m/s]	3	4,4	5,9	7,4	8,9	10,3												
	(0,009)	Δp_t [Pa]	5,5	12,5	22,1	34,6	49,8	67,8												
		$L_{0,2}$ [m]	7,5	11,1	14,6	18,1	21,5	25,0												
		L_{WA} [dB(A)]		<20	<20	26	32	36	40	47										
	300x100	V_k [m/s]		2,8	3,7	4,7	5,6	6,5	7,5	9,4										
	(0,015)	Δp_t [Pa]		5	8,9	13,9	20	27,2	35,6	55,6										
		$L_{0,2}$ [m]		9,0	11,8	14,6	17,5	20,2	23,0	>25										
		L_{WA} [dB(A)]			<20	<20	24	28	32	39	44	49								
	400x100	V_k [m/s]			2,7	3,4	4,1	4,8	5,5	6,8	8,2	9,6								
	(0,02)	Δp_t [Pa]			4,8	7,4	10,7	14,6	19,1	29,8	42,9	58,3								
		$L_{0,2}$ [m]			10,2	12,7	15,1	17,5	19,9	24,7	>25	>25								
		L_{WA} [dB(A)]				<20	<20	22	26	33	38	43	47	50						
	500x100	V_k [m/s]				2,7	3,2	3,8	4,3	5,4	6,5	7,6	8,6	9,7						
	(0,026)	Δp_t [Pa]				4,6	6,7	9,1	11,8	18,5	26,7	36,3	47,4	60						
		$L_{0,2}$ [m]				11,4	13,6	15,7	17,9	22,1	>25	>25	>25	>25						
		L_{WA} [dB(A)]					<20	<20	22	28	33	38	42	45	49					
	600x100	V_k [m/s]					2,7	3,1	3,6	4,5	5,3	6,2	7,1	8	8,9					
	(0,031)	Δp_t [Pa]					4,5	6,2	8,1	12,6	18,2	24,7	32,3	40,9	50,5					
		$L_{0,2}$ [m]					12,4	14,4	16,4	20,3	24,1	>25	>25	>25	>25					
		L_{WA} [dB(A)]						<20	<20	21	26	31	34	38	41	48				
	800x100	V_k [m/s]						2,3	2,6	3,3	4	4,6	5,3	5,9	6,6	8,3				
	(0,042)	Δp_t [Pa]						3,4	4,4	6,9	10	13,6	17,7	22,5	27,7	43,3				
		$L_{0,2}$ [m]						12,5	14,3	17,7	21,0	24,4	>25	>25	>25	>25				
H=150		L_{WA} [dB(A)]				<20	<20	23	27	34	39	44	48							
	300x150	V_k [m/s]				2,8	3,3	3,9	4,4	5,6	6,7	7,8	8,9							
	(0,025)	Δp_t [Pa]				4,9	7	9,6	12,5	19,6	28,2	38,4	50,1							
		$L_{0,2}$ [m]				11,5	13,7	15,9	18,1	22,4	>25	>25	>25							
		L_{WA} [dB(A)]					<20	<20	<20	26	31	36	40	43	46					
	400x150	V_k [m/s]					2,4	2,8	3,3	4,1	4,9	5,7	6,5	7,3	8,1					
	(0,034)	Δp_t [Pa]					3,8	5,1	6,7	10,5	15,1	20,6	26,8	34	41,9					
		$L_{0,2}$ [m]					11,9	13,8	15,7	19,4	23,1	>25	>25	>25	>25					
		L_{WA} [dB(A)]							<20	<20	25	30	34	37	40	47				
	500x150	V_k [m/s]							2,6	3,2	3,8	4,5	5,1	5,8	6,4	8				
	(0,043)	Δp_t [Pa]							4,2	6,5	9,4	12,8	16,7	21,1	26,1	40,8				
		$L_{0,2}$ [m]							14,1	17,4	20,7	24,0	>25	>25	>25	>25				
		L_{WA} [dB(A)]								<20	20	25	29	32	35	42	47			
	600x150	V_k [m/s]								2,6	3,2	3,7	4,2	4,8	5,3	6,6	7,9			
	(0,053)	Δp_t [Pa]								4,4	6,4	8,7	11,4	14,4	17,8	27,8	40			
		$L_{0,2}$ [m]								15,9	19,0	22,0	>25	>25	>25	>25	>25			
		L_{WA} [dB(A)]									<20	<20	21	25	28	34	40	48		
	800x150	V_k [m/s]									2,4	2,7	3,1	3,5	3,9	4,9	5,9	7,8		
	(0,071)	Δp_t [Pa]									3,5	4,8	6,2	7,9	9,8	15,3	22	39,1		
		$L_{0,2}$ [m]									16,5	19,2	21,8	24,4	>25	>25	>25	>25		
H=200		L_{WA} [dB(A)]							<20	<20	23	27	31	35	38	44	50			
	400x200	V_k [m/s]							2,3	2,9	3,5	4	4,6	5,2	5,8	7,2	8,7			
	(0,048)	Δp_t [Pa]							3,4	5,3	7,6	10,4	13,6	17,2	21,2	33,1	47,7			
		$L_{0,2}$ [m]							13,4	16,6	19,8	22,9	>25	>25	>25	>25	>25			
		L_{WA} [dB(A)]								<20	<20	21	25	29	32	38	44			
	500x200	V_k [m/s]								2,3	2,7	3,2	3,6	4,1	4,6	5,7	6,8			
	(0,061)	Δp_t [Pa]								3,3	4,7	6,5	8,4	10,7	13,2	20,6	29,7			
		$L_{0,2}$ [m]								14,9	17,7	20,6	23,4	>25	>25	>25	>25			
		L_{WA} [dB(A)]									<20	<20	20	24	27	33	39	47		
	600x200	V_k [m/s]									2,3	2,6	3	3,4	3,8	4,7	5,6	7,5		
	(0,074)	Δp_t [Pa]									3,2	4,4	5,7	7,3	9	14	20,2	35,9		
		$L_{0,2}$ [m]									16,2	18,8	21,4	24,0	>25	>25	>25	>25		
		L_{WA} [dB(A)]											<20	<20	<20	26	31	40	46	
	800x200	V_k [m/s]											2,2	2,5	2,8	3,5	4,2	5,6	7	
	(0,1)	Δp_t [Pa]											3,2	4	4,9	7,7	11,1	19,7	30,9	
		$L_{0,2}$ [m]											18,6	20,9	23,1	>25	>25	>25	>25	
H=300		L_{WA} [dB(A)]										<20	<20	<20	20	27	32	41	47	
	500x300	V_k [m/s]										2	2,3	2,6	2,9	3,6	4,3	5,8	7,2	
	(0,096)	Δp_t [Pa]										2,6	3,4	4,3	5,3	8,3	11,9	21,2	33,1	
		$L_{0,2}$ [m]										16,7	18,9	21,2	23,5	>25	>25	>25	>25	
		L_{WA} [dB(A)]												<20	<20	22	27	36	42	48
	600x300	V_k [m/s]												2,1	2,4	3	3,6	4,8	6	7,2
	(0,117)	Δp_t [Pa]												2,9	3,6	5,6	8,1	14,4	22,5	32,5
		$L_{0,2}$ [m]												19,4	21,5	>25	>25	>25	>25	>25
		L_{WA} [dB(A)]														<20	<20	28	35	40
	800x300	V_k [m/s]														2,2	2,7	3,5	4,4	5,3
	(0,157)	Δp_t [Pa]														3,1	4,5	7,9	12,4	17,8
		$L_{0,2}$ [m]														23,2	>25	>25	>25	>25

10 ≤ L_{WA} < 30 30 ≤ L_{WA} < 40 40 ≤ L_{WA} < 50

Data valid for:

- Supply air
- Blade setting 0°
- Isotherm conditions
- Throw without ceiling effect (distance >800 mm. to ceiling)

Terminology:

- A_k = effective free area
- V_K = effective face velocity
- Δp_t = total pressure loss
- L_{WA} = sound power level
- $l_{0,2}$ = throw to terminal velocity at 0,2 m/s

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2020-02-14

Grille

SD

Technical data

Capacity

Air flow rate q_v [l/s] and [m³/h], total pressure loss Δp_t [Pa], throw $l_{0.2}$ [m] and sound power level L_{WA} [dB(A)] can be seen in the diagrams.

Air Jet Dispersal

Throw l_x [m] at an average speed of 0,2; 0,25 and 0,3 m/s, 0° blade setting without ceiling effect (distance from grille to ceiling over 800 mm) can be seen in the diagrams. Correction for dispersal - see table below.

Sound power level L_{WA}

Sound power level L_{WA} [dB(A)] at 0° blade setting can be seen in the diagrams. The sound power levels apply for grilles without an opposed blade damper. See the table below for correction of sound power level on blade settings [dB].
Correction values for sound power levels and total pressure loss below are valid for SD-21 and SD-22, (grilles with double deflection). For SD-11 and SD-12, (single deflection), go to www.lindQST.com

Blade settings	45°	90°
Throw l_x	x 0.81	x 0.61
Sound power level L_{WA} *	+ 3	+ 7
Total pressure loss Δp_t *	x 1.13	x 1.40

Frequency-related sound power level

The sound power level in the frequency band is defined as
$L_{Wf} = L_{WA}+K_{ok}$.

K_{ok} values are given in the table below.

	Centre frequency Hz							
	63	125	250	500	1K	2K	4K	8K
Supply air	-1	-1	-1	-2	-7	-12	-16	-16
Extract air	-5	-5	-2	-3	-4	-14	-21	-19

Opposed blade damper DGS

Correction of total pressure loss Δp_t [Pa] and sound power level L_{WA} [dB(A)] using a damper. See table below.

Damper position	Open	25% Closed	50% Closed
Total pressure loss Δp_t	x 1.16	x 1.34	x 4.4
Sound power level L_{WA}	+ 2	+ 7	+ 14

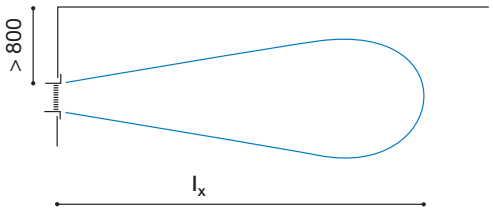
Extract air

Sound power level L_{WA}	- 2

Throw and air jet dispersal

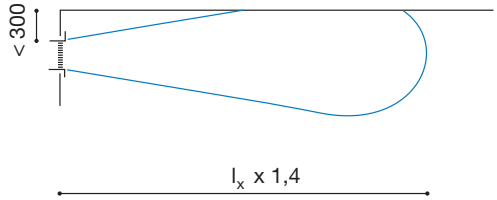
Throw

All given throw data applies for installation more than 800 mm from the ceiling.



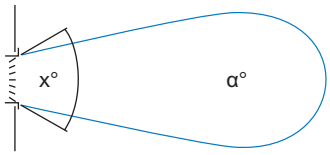
For grilles installed less than 300 mm from the ceiling, the air throw is extended by 40% so that:

$l_{x\ result} = 1,4 \times l_{x\ diagram\ value}$



Air jet dispersal

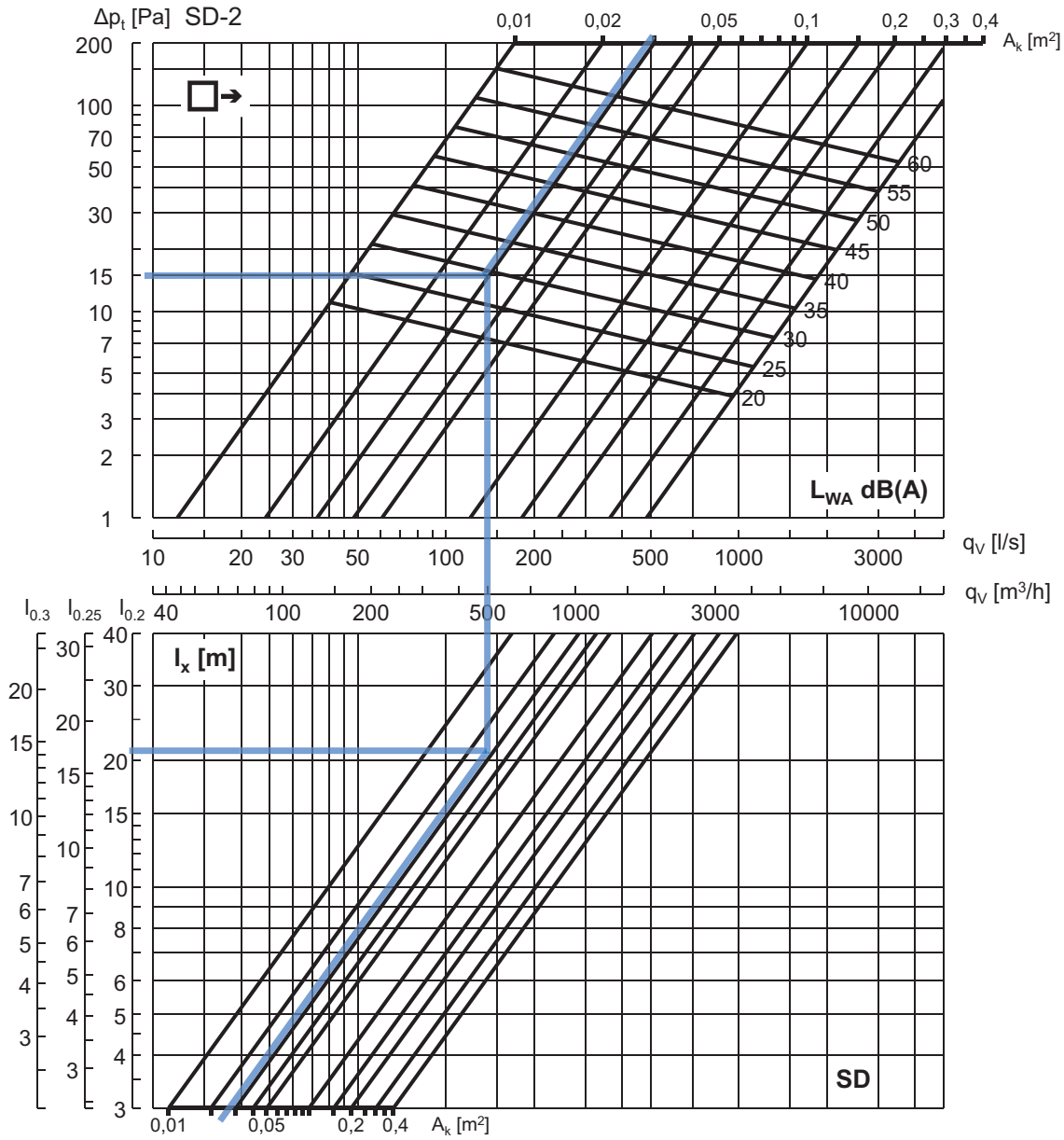
Adjustable blade settings for various jet dispersals, correction values can be seen in the table.



X = 45° = α = 35°
X = 90° = α = 60°

Grille SD

Technical data



Example: SD-22

Grille size (LxH):	400×150 mm
Free area A_k:	0,034 m²
Air flow rate q_v:	500 m³/h (139 l/s)

Result:

Sound power level L_{WA}:	~26 [dB(A)]
Total presure loss Δp_t	~11 [Pa]
Throw $l_{0.2}$:	~19 [m]

Data valid for:

- Supply air
- Blade setting 0°
- Isotherm conditions
- Throw without ceiling effect (distance >800 mm. to ceiling)

For grilles with free area > 0,4 m², we refer to use Lindabs online calculation tool on www.lindQST.com

Lindab reserves the right to make changes without prior notice
2020-02-14

Good Thinking

At Lindab, good thinking is a philosophy that guides us in everything we do. We have made it our mission to create a healthy indoor climate – and to simplify the construction of sustainable buildings. We do that by designing innovative products and solutions that are easy to use, as well as offering efficient availability and logistics. We are also working on ways to reduce our impact on our environment and climate. We do that by developing methods to produce our solutions using a minimum of energy and natural resources, and by reducing negative effects on the environment. We use steel in our products. It's one of few materials that can be recycled an infinite number of times without losing any of its properties. That means less carbon emissions in nature and less energy wasted.

We simplify construction

www.lindab.com

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