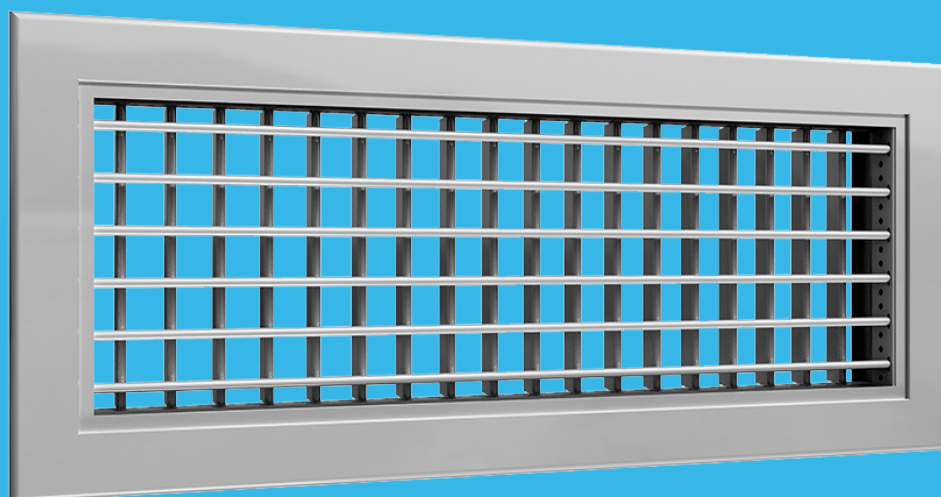




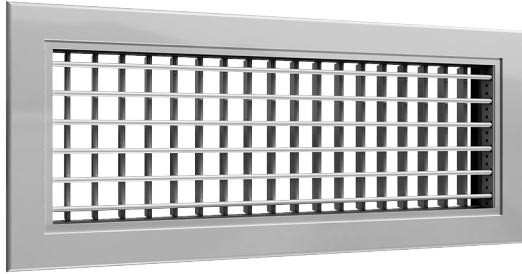
AD

Grilles Global version



Grille Global version

AD



Description

AD is an adjustable single or double deflection grille made of aluminium. With adjustable blades, the grille is very useful for air supply and can be adapted to the required throw and air spread pattern.

The grille is available with several mounting options and can be delivered with mounting frame, opposed blade damper and plenum box accessories.

Grilles are available in 2 versions:

- Global version: wall opening is $L + 5 \times H + 5$
- Nordic version: wall opening is $L \times H$

Order code

Product	AD	a	b	c	d	eee x fff	gggg
Type	AD						
Frame							
1 - Single deflection, 25 mm frame							
2 - Double deflection, 25 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 installation							
HM Hidden screws + mounting frame							
Accessories							
- No accessories							
D Opposed blade damper							
Size							
L: 100 - 1500 mm							
H: 75 - 1500 mm							
Grilles standard finish:							
- Anodized aluminium							
9010 RAL 9010, gloss 30							
9003 RAL 9003, gloss 30							
xxxx On request, other RAL colour							

Example 1: AD-21-C-300-150-9010

Example 2: AD-22-600-200

Min. - max. dimensions

H \ L	100	600	1200	1500
75				
600				
1200				
1500				

Standard grilles are available with 50 mm pitch within the above min. and max. sizes.

Customized sizes available on request.

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

Remove the grille to gain access to the plenum box or duct. External parts should be wiped with a damp cloth.

Accessories

Plenum box:	PBA, VBX
Mounting frame:	MFA
Opposed blade damper:	DGA

Materials and finish

Grille frame and blades:	Anodized aluminium
Mounting frame:	Galvanized steel
Opposed blade damper:	Galvanized steel
Grilles standard finish:	- Aluminium anodized
	- RAL 9010, gloss 30
	- RAL 9003, gloss 30

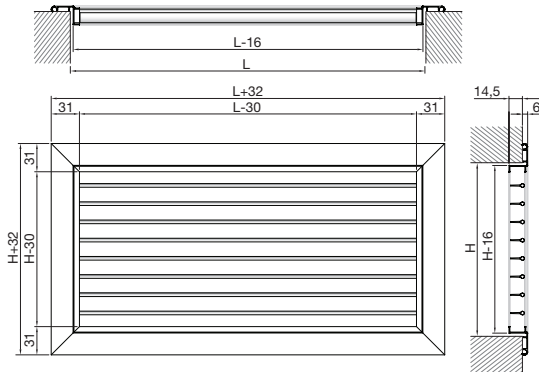
The grille is available in other colours. Please contact Lindab's sales department for further information.

Grille Global version

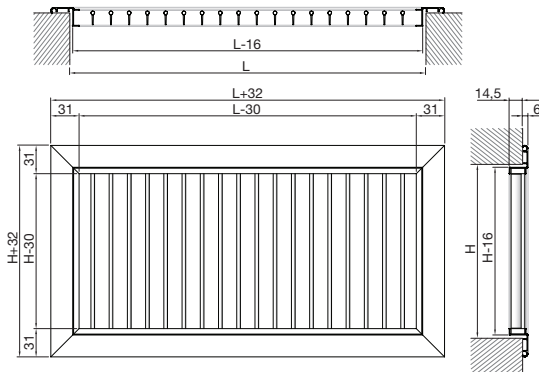
AD

Frame and grid

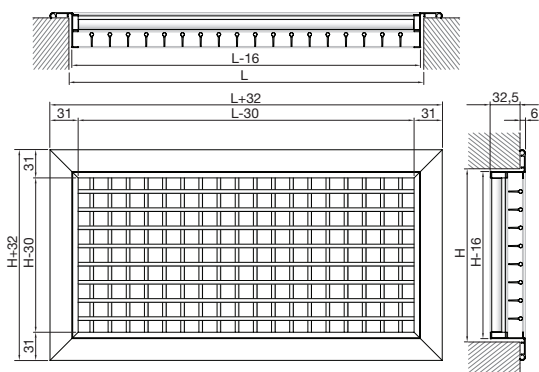
AD-11 Single deflection with horizontal blades.



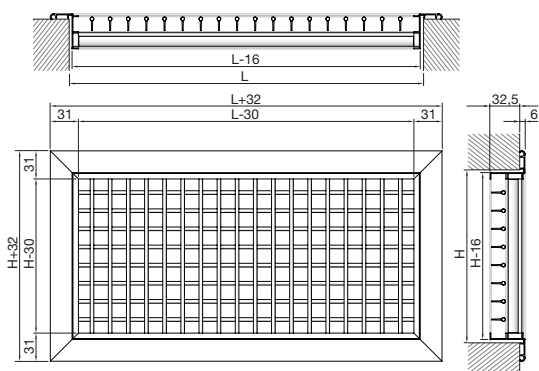
AD-12 Single deflection with vertical blades.



AD-21 Double deflection with horizontal front blades.

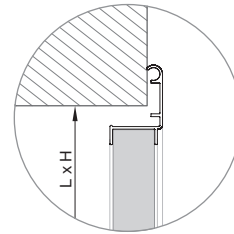


AD-22 Double deflection with vertical front blades.



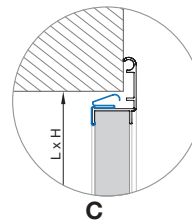
Installation

- Not prepared

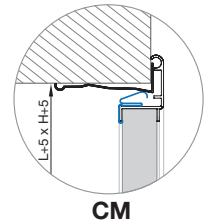


C - Clips

CM - Clips + mounting frame



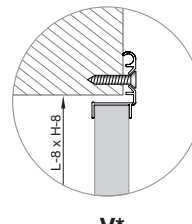
C



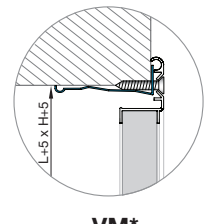
CM

V* - Visible screw holes

VM* - Visible screw holes + mounting frame



V*

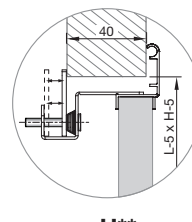


VM*

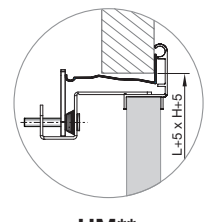
* Screws are not included.

H** - Hidden screws

HM** - Hidden screws + mounting frame



H**



HM**

** Limitation max. length: 1200 mm, max. height: 1000 mm.

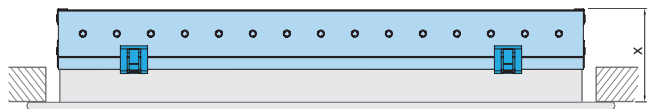
Grille Global version

AD

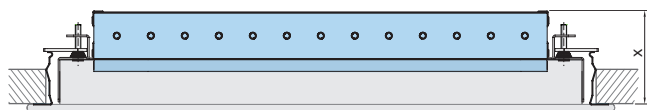
Accessories

- No damper

D - Opposed blade damper DGA



AC with installation type C, CM, V and VM.
A full length click-on DGA-damper is available.



AC with installation type H or HM has a shortend DGA damper option due to the hidden screw installation type. The damper is mounted from factory and is not detachable.

- | | |
|-----------------------|-----------|
| 1 - Single deflection | x = 51 mm |
| 2 - Double deflection | x = 69 mm |

Available DGA sizes

H \ L	100 ↔ 600 ↔ 800 ↔ 1000 ↔ 1200 ↔ 1600 ↔ 2000
75	Single piece
↕	Multiple pieces
400	1000 x 400
500	800 x 500
600	600 x 600
↕	1200 x 600
800	1000 x 800
↕	Not available sizes
1000	800 x 1000
↕	
1200	600 x 1200

DGA in combination with hidden screw installation.

H \ L	600 ↔ 1000 ↔ 1200
300	Compatible with DGA
600	
1000	Not compatible with DGA

- plenum box
- mounting frame

Details see website on www.lindQST.com

Grille Global version

AD

Free area

H / L	AD-2 Deflection grille $A_k(m^2)$														
	100	150	200	250	300	350	400	450	500	550	600	700	800	900	1000
75	0,003	0,005	0,007	0,010	0,012	0,014	0,016	0,018	0,021	0,023	0,025	0,029	0,034	0,038	0,043
100	0,005	0,008	0,012	0,015	0,018	0,022	0,025	0,029	0,032	0,036	0,039	0,046	0,053	0,060	0,066
150	0,008	0,014	0,020	0,026	0,032	0,038	0,043	0,049	0,055	0,061	0,067	0,079	0,090	0,102	0,114
200	0,012	0,020	0,028	0,037	0,045	0,053	0,062	0,070	0,078	0,086	0,095	0,111	0,128	0,145	0,161
250	0,015	0,026	0,037	0,047	0,058	0,069	0,080	0,090	0,101	0,112	0,123	0,144	0,166	0,187	0,209
300	0,018	0,032	0,045	0,058	0,071	0,084	0,098	0,111	0,124	0,137	0,151	0,177	0,203	0,230	0,256
350	0,022	0,038	0,053	0,069	0,084	0,100	0,116	0,131	0,147	0,163	0,178	0,210	0,241	0,272	0,304
400	0,025	0,043	0,062	0,080	0,098	0,116	0,134	0,152	0,170	0,188	0,206	0,242	0,279	0,315	0,351
450	0,029	0,049	0,070	0,090	0,111	0,131	0,152	0,173	0,193	0,214	0,234	0,275	0,316	0,357	0,398
500	0,032	0,055	0,078	0,101	0,124	0,147	0,170	0,193	0,216	0,239	0,262	0,308	0,354	0,400	0,446
550	0,036	0,061	0,086	0,112	0,137	0,163	0,188	0,214	0,239	0,264	0,290	0,341	0,392	0,442	0,493
600	0,039	0,067	0,095	0,123	0,151	0,178	0,206	0,234	0,262	0,290	0,318	0,373	0,429	0,485	0,541
700	0,046	0,079	0,111	0,144	0,177	0,210	0,242	0,275	0,308	0,341	0,373	0,439	0,505	0,570	0,636
800	0,053	0,090	0,128	0,166	0,203	0,241	0,279	0,316	0,354	0,392	0,429	0,505	0,580	0,655	0,730
900	0,060	0,102	0,145	0,187	0,230	0,272	0,315	0,357	0,400	0,442	0,485	0,570	0,655	0,740	0,825
1000	0,066	0,114	0,161	0,209	0,256	0,304	0,351	0,398	0,446	0,493	0,541	0,636	0,730	0,825	0,920

Grille Global version

AD

Quick selection, Supply air, AD-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	200x100 (0,012)	L _{WA} [dB(A)]	20	32	41	47															
		V _k [m/s]	2,4	3,6	4,8	5,9															
		Δp _t [Pa]	4	10	17	26															
		L _{0,2} [m]	4,5	6,6	8,7	10,6															
	300x100 (0,018)	L _{WA} [dB(A)]		21	29	35	41	45	49												
		V _k [m/s]		2,3	3	3,7	4,5	5,2	6												
		Δp _t [Pa]		4	7	10	15	21	27												
		L _{0,2} [m]		3,9	5,1	6,2	7,4	8,5	9,7												
	400x100 (0,025)	L _{WA} [dB(A)]		<20	21	27	33	37	41	48											
		V _k [m/s]		1,7	2,2	2,7	3,3	3,8	4,4	5,5											
		Δp _t [Pa]		2	4	6	8	11	14	23											
		L _{0,2} [m]		4,3	5,7	7	8,3	9,6	10,9	13,5											
500x100 (0,032)	L _{WA} [dB(A)]			<20	21	27	31	35	42	47											
	V _k [m/s]			1,7	2,1	2,6	3	3,4	4,3	5,2											
	Δp _t [Pa]			2	3	5	7	9	14	20											
	L _{0,2} [m]			5	6,1	7,3	8,4	9,6	11,9	14,2											
600x100 (0,039)	L _{WA} [dB(A)]			<20	<20	22	26	30	37	42	47										
	V _k [m/s]			1,4	1,8	2,1	2,5	2,8	3,6	4,3	5										
	Δp _t [Pa]			2	2	3	5	6	10	14	19										
	L _{0,2} [m]			4,5	5,5	6,6	7,6	8,7	10,7	12,8	14,7										
800x100 (0,053)	L _{WA} [dB(A)]					<20	<20	23	29	35	39	43	47	50							
	V _k [m/s]					1,6	1,8	2,1	2,6	3,2	3,7	4,2	4,7	5,3							
	Δp _t [Pa]					2	3	3	5	8	10	13	17	21							
	L _{0,2} [m]					5,6	6,5	7,4	9,1	10,8	12,5	14,2	15,9	17,6							
H=150	300x150 (0,032)	L _{WA} [dB(A)]			<20	22	27	32	36	42	48										
		V _k [m/s]			1,8	2,2	2,6	3,1	3,5	4,4	5,3										
		Δp _t [Pa]			2	4	5	7	9	14	21										
		L _{0,2} [m]			5,1	6,2	7,3	8,5	9,7	12	14,3										
	400x150 (0,043)	L _{WA} [dB(A)]				<20	<20	24	28	34	40	44	48								
		V _k [m/s]				1,6	1,9	2,2	2,6	3,2	3,8	4,5	5,1								
		Δp _t [Pa]				2	3	4	5	8	11	15	20								
		L _{0,2} [m]				5,2	6,2	7,2	8,2	10,1	12	13,9	15,8								
	500x150 (0,055)	L _{WA} [dB(A)]					<20	<20	22	28	34	38	42	46	49						
		V _k [m/s]					1,5	1,8	2	2,5	3	3,5	4	4,5	5						
		Δp _t [Pa]					2	2	3	5	7	9	12	15	19						
		L _{0,2} [m]					5,4	6,3	7,2	8,9	10,6	12,2	13,9	15,5	17,2						
600x150 (0,067)	L _{WA} [dB(A)]						<20	<20	23	29	33	37	41	44	50						
	V _k [m/s]						1,5	1,7	2,1	2,5	2,9	3,3	3,7	4,2	5,2						
	Δp _t [Pa]						2	2	3	5	6	8	10	13	20						
	L _{0,2} [m]						5,7	6,5	8	9,5	11	12,5	14	15,5	19,1						
800x150 (0,09)	L _{WA} [dB(A)]								<20	21	26	30	33	36	43	48					
	V _k [m/s]								1,5	1,8	2,1	2,5	2,8	3,1	3,8	4,6					
	Δp _t [Pa]								2	3	3	5	6	7	11	16					
	L _{0,2} [m]								6,8	8,1	9,4	10,6	11,9	13,2	16,3	19,4					
H=200	400x200 (0,0615)	L _{WA} [dB(A)]					<20	<20	<20	26	31	35	39	43	46						
		V _k [m/s]					1,3	1,6	1,8	2,3	2,7	3,2	3,6	4,1	4,5						
		Δp _t [Pa]					1	2	2	4	6	7	10	12	15						
		L _{0,2} [m]					5,1	6	6,8	8,4	10	11,5	13,1	14,6	16,2						
	500x200 (0,078)	L _{WA} [dB(A)]							<20	<20	25	29	33	37	40	46					
		V _k [m/s]							1,4	1,8	2,1	2,5	2,8	3,2	3,6	4,4					
		Δp _t [Pa]							2	2	3	5	6	8	9	15					
		L _{0,2} [m]							6	7,4	8,8	10,1	11,5	12,9	14,2	17,6					
	600x200 (0,095)	L _{WA} [dB(A)]								<20	20	24	28	32	35	42	47				
		V _k [m/s]								1,5	1,8	2	2,3	2,6	2,9	3,7	4,4				
		Δp _t [Pa]								2	2	3	4	5	6	10	15				
		L _{0,2} [m]								6,6	7,9	9,1	10,4	11,6	12,8	15,8	18,9				
800x200 (0,128)	L _{WA} [dB(A)]									<20	<20	21	24	27	34	39	48				
	V _k [m/s]									1,3	1,5	1,7	2	2,2	2,7	3,3	4,3				
	Δp _t [Pa]									1	2	2	3	4	6	8	14				
	L _{0,2} [m]									6,7	7,8	8,8	9,9	10,9	13,5	16	21,1				
H=300	500x300 (0,124)	L _{WA} [dB(A)]									<20	<20	22	25	28	35	40	49			
		V _k [m/s]									1,3	1,6	1,8	2	2,2	2,8	3,4	4,5			
		Δp _t [Pa]									1	2	2	3	4	6	8	15			
		L _{0,2} [m]									6,8	7,9	9	10	11,1	13,7	16,3	21,4			
	600x300 (0,151)	L _{WA} [dB(A)]											<20	<20	20	23	30	35	44	50	
		V _k [m/s]											1,3	1,5	1,7	1,8	2,3	2,8	3,7	4,6	
		Δp _t [Pa]											1	2	2	3	4	6	10	16	
		L _{0,2} [m]											7,1	8,1	9	10	12,3	14,7	19,3	23,8	
	800x300 (0,203)	L _{WA} [dB(A)]													<20	<20	22	28	36	43	48
		V _k [m/s]													1,2	1,4	1,7	2,1	2,7	3,4	4,1
		Δp _t [Pa]													1	1	2	3	6	9	13
		L _{0,2} [m]													7,7	8,5	10,5	12,5	16,4	20,3	24,1

Data valid for:

Terminology:

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

- 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

Grille Global version

AD

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 and apply for grilles without an opposed blade damper.

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 a opposed blade damper. See the table below for correction of sound power level on blade settings [dB].

Blade settings	45°	90°
Throw l_x	x 0.84	x 0.65
Sound power level L_{WA}	+ 4	+ 7
Total pressure loss Δp_t	x 1.1	x 1.3

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	7	5	0	-3	-8	-14	-13	-9
Extract air	5	4	1	-2	-9	-16	-15	-8

Opposed blade damper DGA

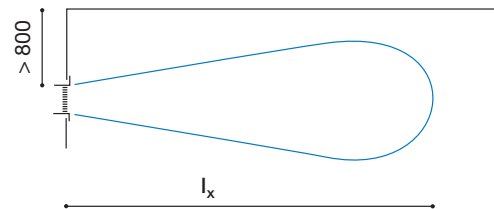
Correction of total pressure loss Δp_t [Pa] and sound power level L_{WA} [dB(A)] using a damper. See table below.

Damper position	Open	25% Closed	50% Closed
Total pressure loss Δp_t	x 1.06	x 2.8	x 11
Sound power level L_{WA}	+ 2	+ 15	+ 25

Throw and air jet dispersal

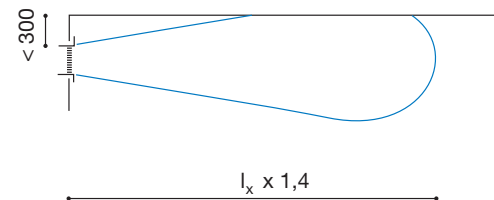
Throw

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



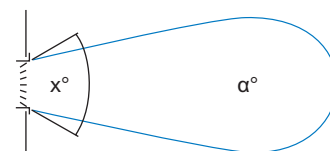
For grilles installed less than 300 mm from the ceiling, the air throw is extended by 40% so that:

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



Air jet dispersal

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



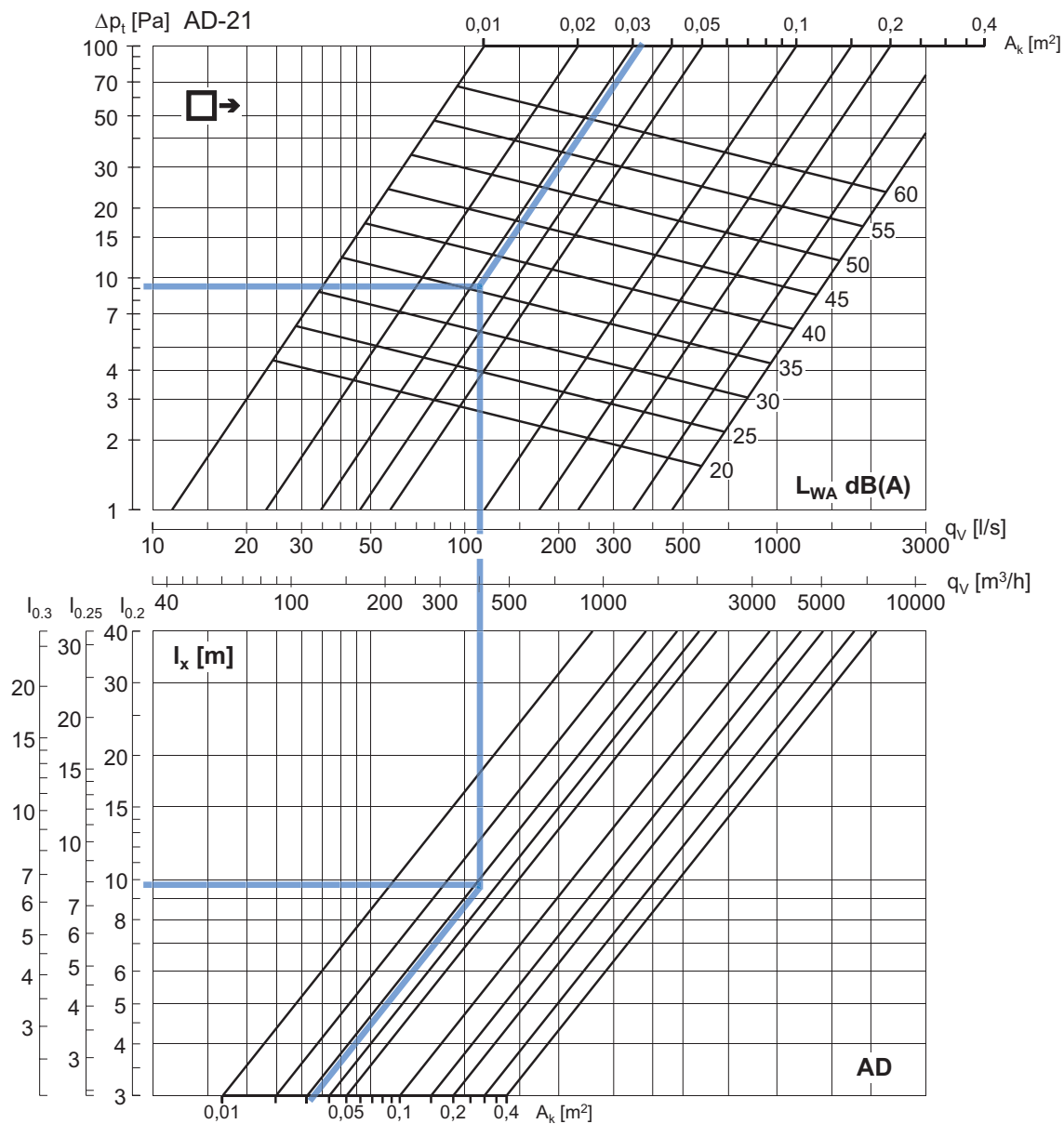
$$X = 45^\circ = \alpha = 35^\circ$$

$$X = 90^\circ = \alpha = 60^\circ$$

Grille Global version

AD

Technical data

**Example AD-21:**

Grille size (LxH): 300x150 mm
 Free area A_k : 0,032 m²
 Air flow rate q_v : 400 m³/h (111 l/s)

Result:

Sound power level L_{WA} : ~36 [dB(A)]
 Total pressure loss Δp_t : ~9 [Pa]
 Throw $l_{0.2}$: ~10 [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



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