

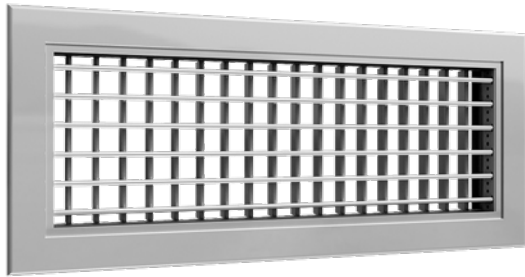
AD

Grilles Nordic version



Grille Nordic 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 x H + 5
- Nordic version: wall opening is L x H

Order code - Nordic version

| Product | AD | 1 | a | b | c | ddd x eee | fff |
|--|----|---|---|---|---|-----------|-----|
| Type | | | | | | | |
| AD | | | | | | | |
| Frame | | | | | | | |
| 1 - Single deflection, 25 mm frame | | | | | | | |
| 2 - Double deflection, 25 mm frame | | | | | | | |
| Grid | | | | | | | |
| 1 -Horizontal | | | | | | | |
| 2 -Vertical | | | | | | | |
| Installation | | | | | | | |
| - Not prepared | | | | | | | |
| CN Clips | | | | | | | |
| CMN Clips + mounting frame | | | | | | | |
| V Visible screw holes | | | | | | | |
| VMN Visible screw holes + mounting frame | | | | | | | |
| H Hidden screw installation | | | | | | | |
| HMN Hidden screws + mounting frame | | | | | | | |
| Accessories | | | | | | | |
| - No accessories | | | | | | | |
| DN Opposed blade damper | | | | | | | |
| Size | | | | | | | |
| L: 100 - 1500 mm | | | | | | | |
| H: 75 - 1500 mm | | | | | | | |
| Grilles standard finish: | | | | | | | |
| - Anodized aluminium | | | | | | | |
| 9003 RAL 9003, gloss 30 | | | | | | | |
| xxxx On request, other RAL colour | | | | | | | |

Example 1: AD-21-CN-300-150-9003

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: | VBA, PBAN |
| Mounting frame: | MFAN |
| Opposed blade damper: | DGAN |

Materials and finish

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

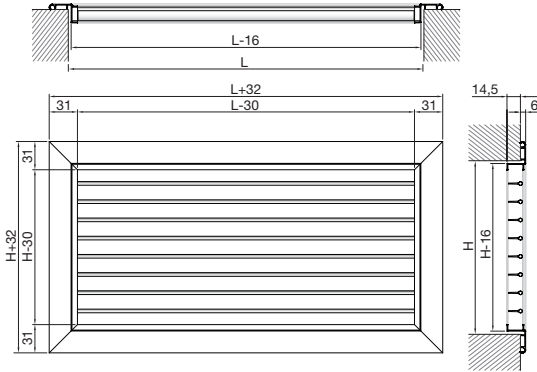
The grille is available in other colours. Please contact Lindab's sales department for further information.

Grille Nordic version

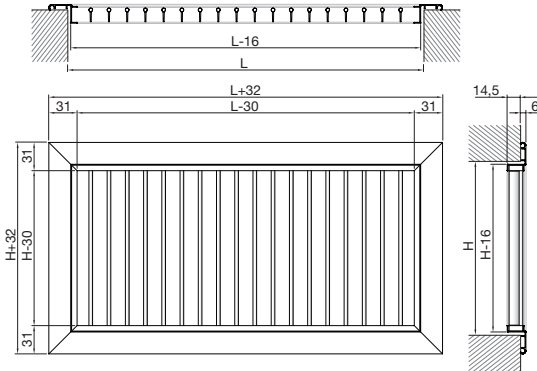
AD

Frame and grid

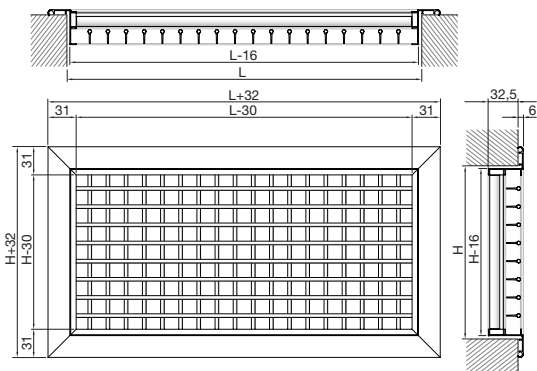
AD-11 Single deflection with horizontal blades.



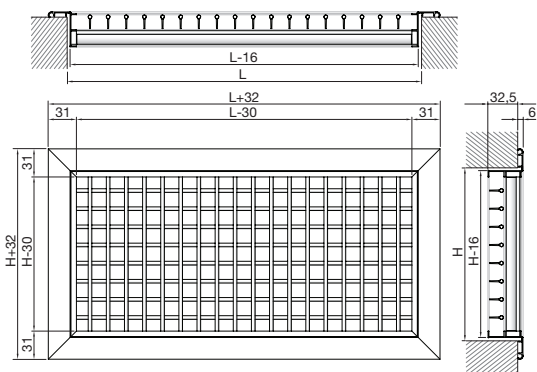
AD-12 Single deflection with vertical blades.



AD-21 Double deflection with horizontal front blades.

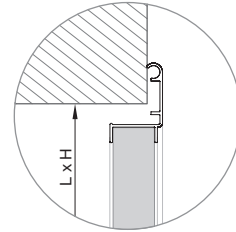


AD-22 Double deflection with vertical front blades.

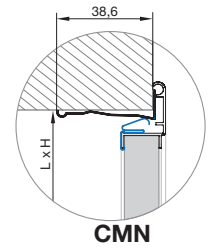
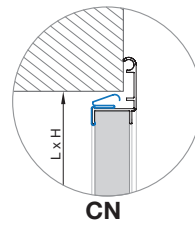


Installation

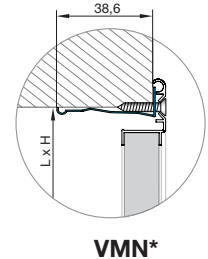
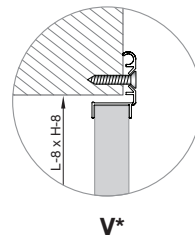
- Not prepared



CN - Clips
CMN - Clips + mounting frame

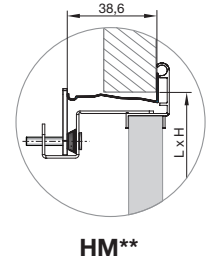
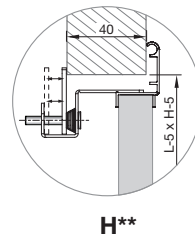


V* - Visible screw holes
VMN* - Visible screw holes + mounting frame



* Screws are not included.

H** - Hidden screws
HM** - Hidden screws + mounting frame



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

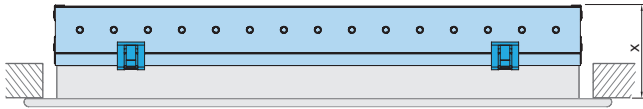
Grille Nordic version

AD

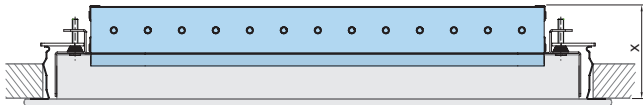
Accessories

- No damper

DN - Opposed blade damper DGAN



AD with installation type CN, CMN, V and VMN.
A full length click-on DGAN-damper is available.



AD with installation type H or HMN has a shortend DGAN 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 DGAN sizes

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

DGAN in combination with hidden screw installation.

| H \ L | 600 ↔ 1000 ↔ 1200 |
|-------|--------------------------|
| 300 | Compatible with DGAN |
| 600 | Not compatible with DGAN |
| 1000 | |

- plenum box
- mounting frame

Details see website on www.lindQST.com.

Grille Nordic 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 Nordic 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 | | | | | | | | | | | | | | | | |
| | | L _{WA} [dB(A)] | | 21 | 29 | 35 | 41 | 45 | 49 | | | | | | | | | | | | | |
| | | V _k [m/s] | | 2,3 | 3 | 3,7 | 4,5 | 5,2 | 6 | | | | | | | | | | | | | |
| H=150 | 300x150 (0,032) | 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 | | | | | | | | | | | |
| | | 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 | | | | | | | | | |
| H=200 | 400x200 (0,0615) | L _{WA} [dB(A)] | | | | | <20 | <20 | 22 | 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 | | | | | | | | |
| | | 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 | | | | | | |
| H=300 | 500x300 (0,124) | L _{WA} [dB(A)] | | | | | | | | | <20 | <20 | 22 | 25 | 28 | 35 | 40 | 49 | | | | |
| | | V _k [m/s] | | | | | | | | | 1,3 | 1,5 | 1,7 | 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 | | | | |
| | | 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 | | | |

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

Grille Nordic 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 DGAN

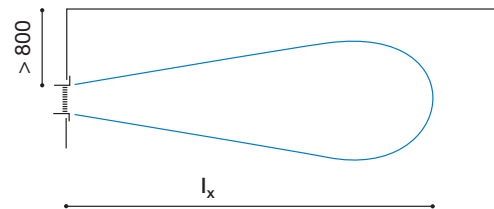
Correction of total pressure loss Δp_t [Pa] and sound power level L_{WA} [dB(A)] using a damper. See table below.

| Damper position | Open | 25% | 50% |
|----------------------------------|--------|--------|--------|
| | | Closed | 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

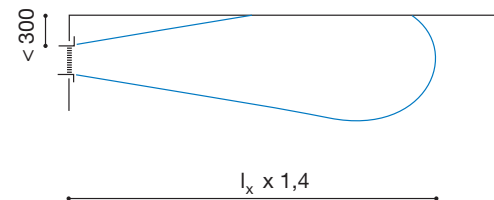
Throw

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



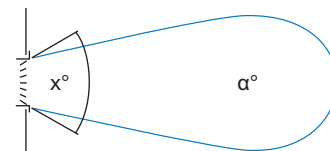
For grilles installed less than 300 mm from the ceiling, the air throw is extended by 40% so that:

$$l_{x \text{ result}} = 1.4 \times l_{x \text{ diagram value}}$$



Air jet dispersal

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



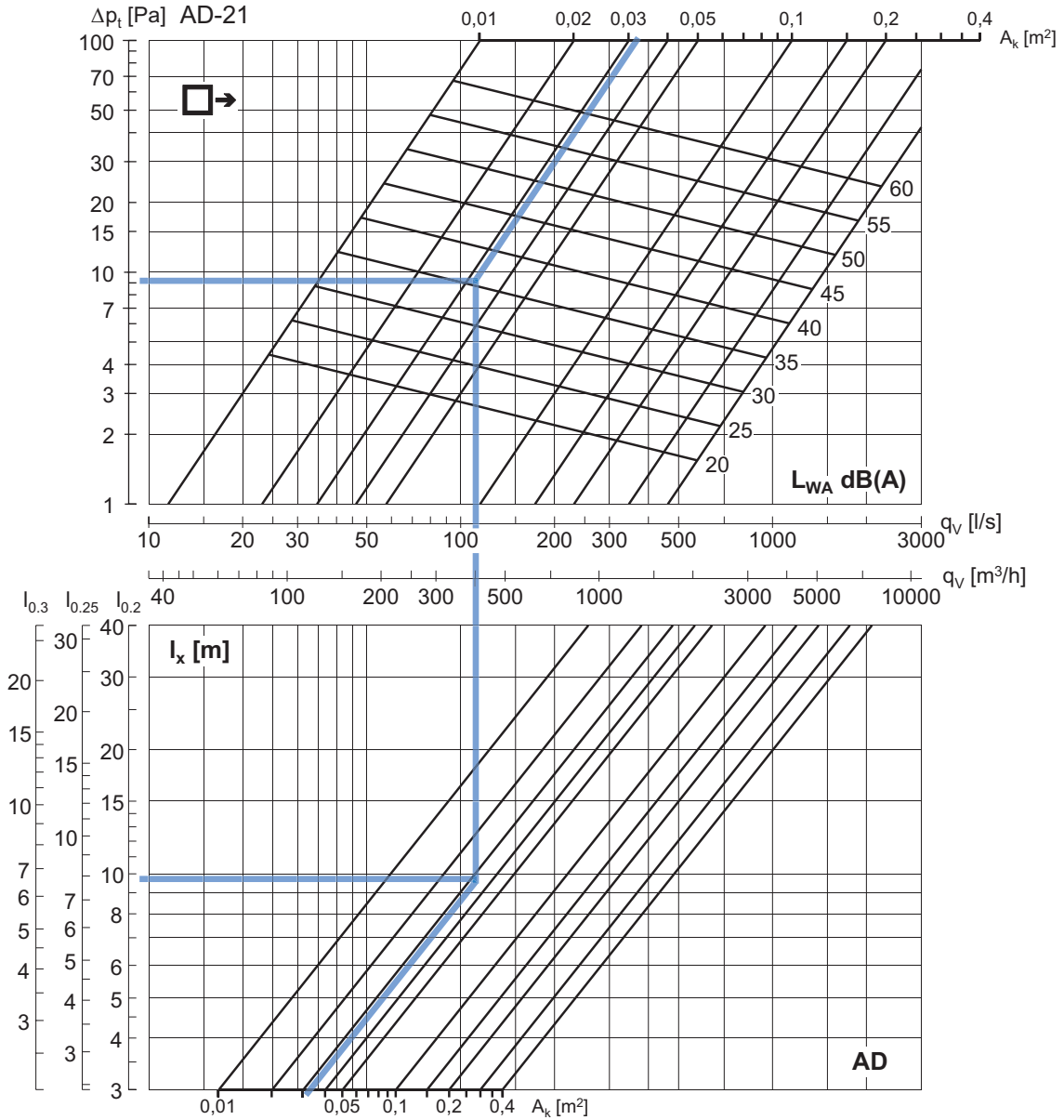
$$X = 45^\circ = \alpha = 35^\circ$$

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

Grille Nordic 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.



Most of us spend the majority of our time indoors. Indoor climate is crucial to how we feel, how productive we are and if we stay healthy.

We at Lindab have therefore made it our most important objective to contribute to an indoor climate that improves people's lives. We do this by developing energy-efficient ventilation solutions and durable building products. We also aim to contribute to a better climate for our planet by working in a way that is sustainable for both people and the environment.

Lindab | For a better climate