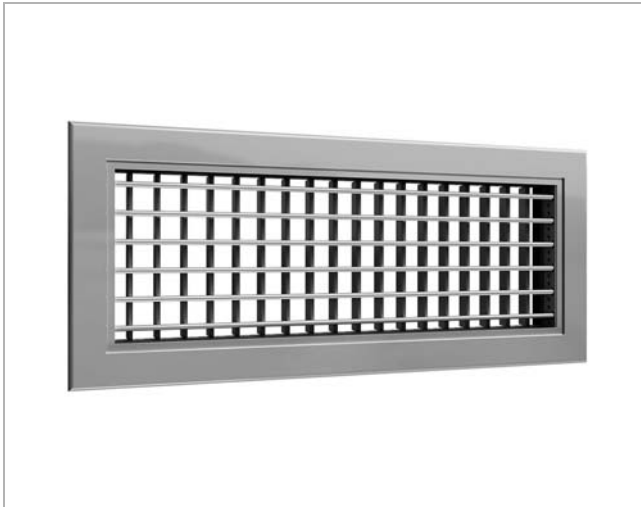


# Grille

# 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.

## Order code

Product	AD	a	b	c	d	eee	x	fff	gggg
<b>Type</b>									
AD									
<b>Frame</b>									
1 - Single deflection, 25 mm frame									
2 - Double deflection, 25 mm frame									
<b>Grid</b>									
1 - Horizontal									
2 - Vertical									
<b>Installation</b>									
- 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									
<b>Accessories</b>									
- No accessories									
D Opposed blade damper									
<b>Size</b>									
L: 100 - 1500 mm									
H: 75 - 1500 mm									
<b>Grilles standard finish:</b>									
- 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 50mm 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](http://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:	VBX, PBA
Mounting frame:	MFA
Opposed blade damper:	DGA

## Materials and finish

Grilles frame and blades:	Aluminium
Mounting frame:	Galvanized steel
Opposed blade damper:	Galvanized steel

### Grilles standard finish:

- Aluminium anodized
- RAL 9010 gloss 30
- RAL 9003 gloss 30

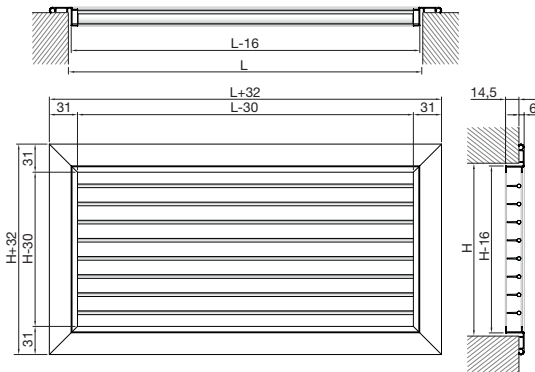
The grille is available in other colours. Please contact Lindab's sales department for further information.

# Grille

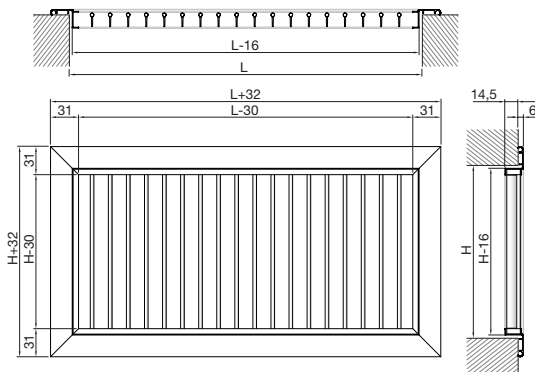
AD

## Frame and grid

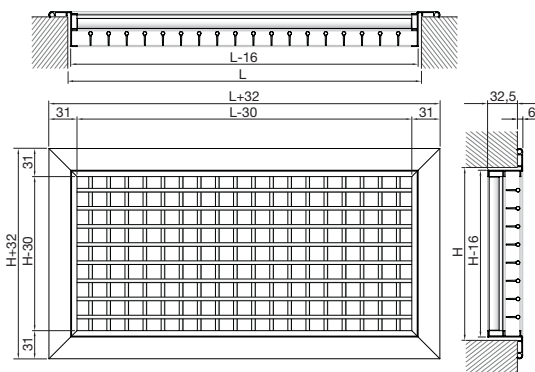
**AD-11** Single deflection with horizontal blades



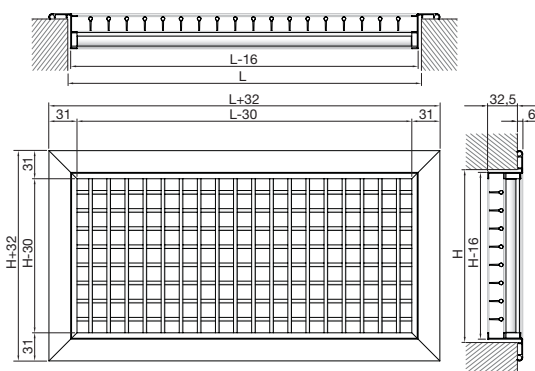
**AD-12** Single deflection with vertical blades



**AD-21** Double deflection with horizontal front blades

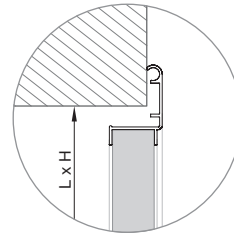


**AD-22** Double deflection with vertical front blades

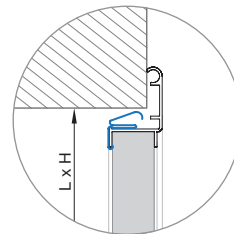


## Installation

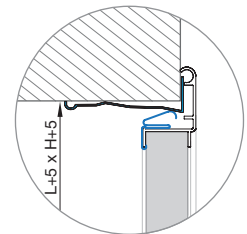
- Not-prepared



**C - Clips**  
**CM - Clips + mounting frame**

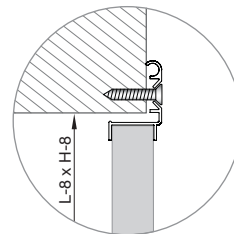


C

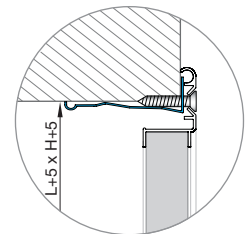


CM

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



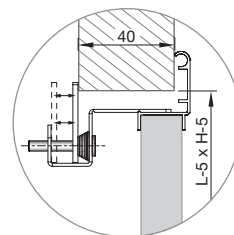
V



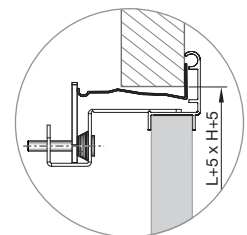
VM

\* Screws are not included

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



H



HM

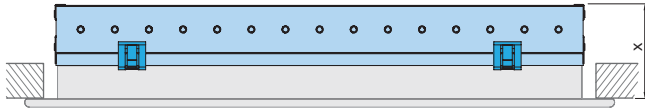
# Grille

# AD

## Accessories

- No damper

### D - Opposed blade damper DGA



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



AD 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			2000 x 400
500		800 x 500				1600 x 500	
600	600 x 600				1200 x 600		
800			1000 x 800				
1000		800 x 1000					
1200	600 x 1200						

Not available sizes

# Grille

# AD

## Free area

H / L	AD-2 Deflection grille														
	A <sub>k</sub> (m <sup>2</sup> )														
	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

## Quick selection, Supply air, AD-2

Grille size [mm]		Air flow rate																	
A <sub>k</sub> [m <sup>2</sup> ]	m <sup>3</sup> /h l/s	100	150	200	250	300	350	400	500	600	700	800	900	1000	1250	1500	2000	2500	3000
		(28)	(42)	(56)	(69)	(83)	(97)	(111)	(139)	(167)	(194)	(222)	(250)	(278)	(347)	(417)	(556)	(694)	(833)
H=100	200x100 (0,012)	L <sub>WA</sub> [dB(A)]	20	32	41	47													
		V <sub>k</sub> [m/s]	2,4	3,6	4,8	5,9													
		Δp <sub>t</sub> [Pa]	4	10	17	26													
		L <sub>0,2</sub> [m]	4,5	6,6	8,7	10,6													
		300x100 (0,018)	L <sub>WA</sub> [dB(A)]		21	29	35	41	45	49									
		V <sub>k</sub> [m/s]		2,3	3	3,7	4,5	5,2	6										
H=150	300x150 (0,032)	L <sub>WA</sub> [dB(A)]			<20	21	27	31	35	42	47								
		V <sub>k</sub> [m/s]			1,7	2,1	2,6	3	3,4	4,3	5,2								
		Δp <sub>t</sub> [Pa]			2	3	5	7	9	14	20								
		L <sub>0,2</sub> [m]			5	6,1	7,3	8,4	9,6	11,9	14,2								
		400x150 (0,043)	L <sub>WA</sub> [dB(A)]				<20	<20	24	28	34	40	44	48					
		V <sub>k</sub> [m/s]				1,6	1,9	2,2	2,6	3,2	3,8	4,5	5,1						
H=200	400x200 (0,0615)	L <sub>WA</sub> [dB(A)]					<20	<20	26	31	35	39	43	46					
		V <sub>k</sub> [m/s]					1,3	1,6	1,8	2,3	2,7	3,2	3,6	4,1	4,5				
		Δp <sub>t</sub> [Pa]					1	2	2	4	6	7	10	12	15				
		L <sub>0,2</sub> [m]					5,1	6	6,8	8,4	10	11,5	13,1	14,6	16,2				
		500x200 (0,078)	L <sub>WA</sub> [dB(A)]						<20	<20	25	29	33	37	40	46			
		V <sub>k</sub> [m/s]							1,4	1,8	2,1	2,5	2,8	3,2	3,6	4,4			
H=300	500x300 (0,124)	L <sub>WA</sub> [dB(A)]								<20	<20	22	25	28	35	40	49		
		V <sub>k</sub> [m/s]								1,3	1,6	1,8	2	2,2	2,8	3,4	4,5		
		Δp <sub>t</sub> [Pa]								1	2	2	3	4	6	8	15		
		L <sub>0,2</sub> [m]								6,8	7,9	9	10	11,1	13,7	16,3	21,4		
		600x300 (0,151)	L <sub>WA</sub> [dB(A)]									<20	<20	20	23	30	35	44	50
		V <sub>k</sub> [m/s]										1,3	1,5	1,7	1,8	2,3	2,8	3,7	4,6

10 ≤ L<sub>WA</sub> < 30  
30 ≤ L<sub>WA</sub> < 40  
40 ≤ L<sub>WA</sub> < 50

**Data valid for:**

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

**Terminology:**

- A<sub>k</sub> = effective free area
- V<sub>k</sub> = effective face velocity
- Δp<sub>t</sub> = total pressure loss
- L<sub>WA</sub> = sound power level
- l<sub>0,2</sub> = throw to terminal velocity at 0,2 m/s

# Grille

AD

## Technical data

### Capacity

Air flow rate  $q_v$  [l/s] and [m<sup>3</sup>/h], total pressure loss  $\Delta p_t$  [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 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 $\Delta p_t$	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

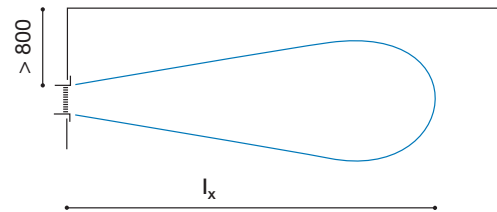
Correction of total pressure loss  $\Delta p_t$  [Pa] and sound power level  $L_{WA}$  [dB(A)] using a damper. See table below.

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

## Throw and air jet dispersal

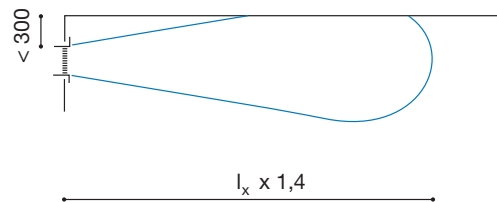
### Throw

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



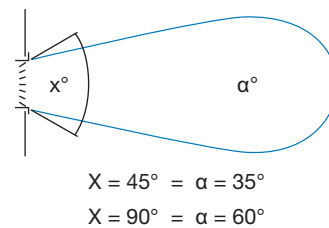
For grilles installed less than 300 mm from the ceiling, the air throw is extended by 40% so that:

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



### Air jet dispersal

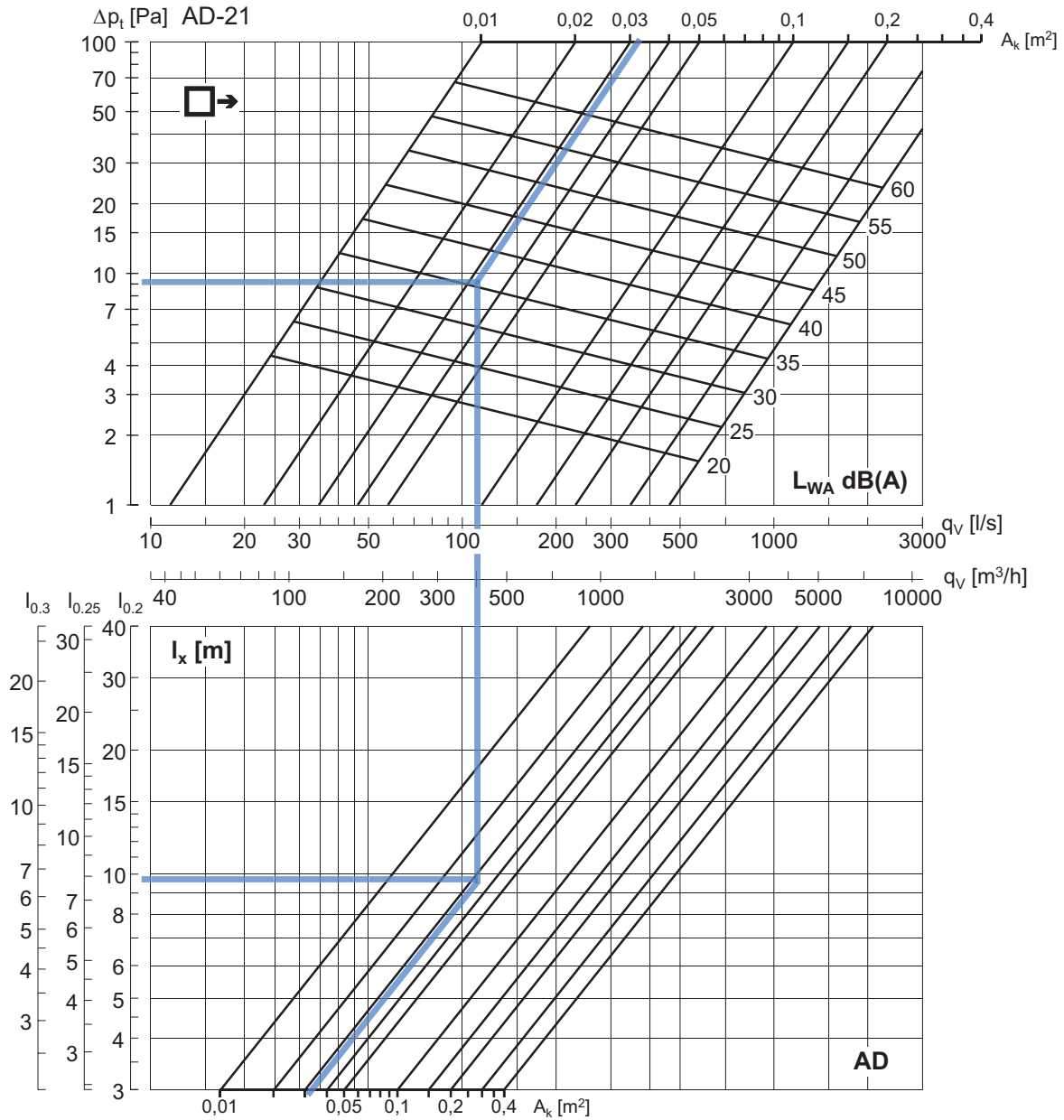
Adjustable blade settings for various jet dispersals, correction values can be seen in the table.



# Grille

# AD

## Technical data



**Example: AD-21**

Grille size (LxH): 300x150 mm  
 Free area  $A_k$ : 0,032 m<sup>2</sup>  
 Air flow rate  $q_v$ : 400 m<sup>3</sup>/h (111 l/s)

**Result:**

Sound power level  $L_{WA}$ : ~36 [dB(A)]  
 Total pressure loss  $\Delta p_t$ : ~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 m<sup>2</sup>, we refer to use Lindabs online calculation tool on [www.lindqst.com](http://www.lindqst.com)

# Plenum box

# VBX



## Description

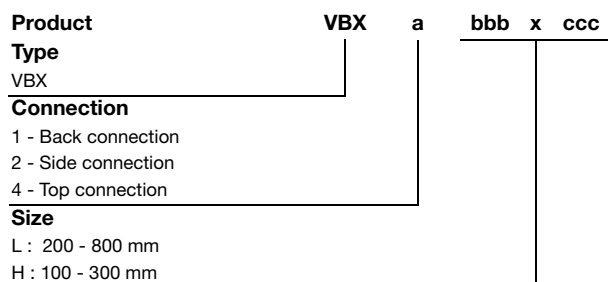
VBX is a plenum box for supply and extract air intended to achieve a stable flow to a rectangular grille or other types of face plates. VBX is equipped with an adjustment damper and pressure measurement device. The plenum box can be connected from the side, the top or the back. The adjustment damper is operated from the front of the box by means of a graduated handle with integrated locking mechanism. VBX is equipped with a telescopic connection for easy installation.

- Can be used for both supply and extract air
- Easy-to-detach face plate for access to duct
- Same box used for all front grilles (AD, AE, AL, AR)

## Maintenance

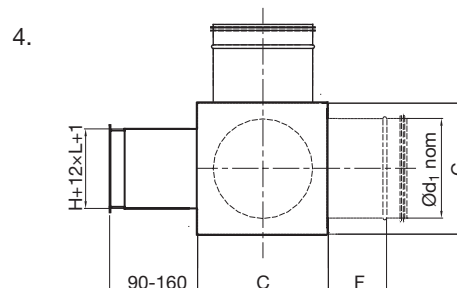
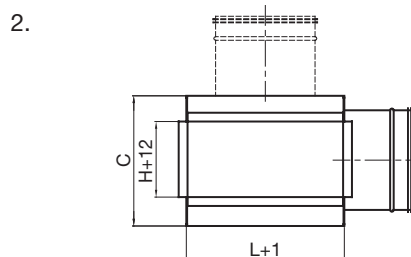
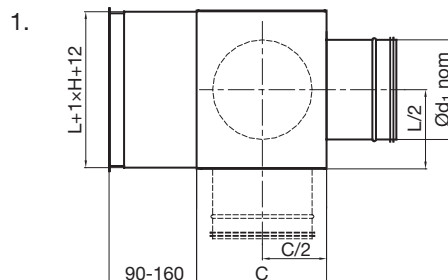
The grille can be removed in connection with cleaning of the internal parts of the plenum box.

## Order code



Example: VBX-2-600-200

## Dimensions



L	x	H	Ød <sub>1</sub> mm	C	F
200	x	100	125	165	90
300	x	100	160	200	110
300	x	150	200	240	130
400	x	100	160	200	110
400	x	150	250	290	155
400	x	200	250	290	155
500	x	100	200	240	130
500	x	150	250	290	155
500	x	200	315	355	190
500	x	300	400	440	215
600	x	100	250	290	155
600	x	150	250	290	155
600	x	200	315	355	190
600	x	300	400	440	215
800	x	100	250	290	155
800	x	150	315	355	190
800	x	200	315	355	190
800	x	300	400	440	215

## Materials and finish

Box, plenum plate and damper are made of hot-galvanised steel plate.

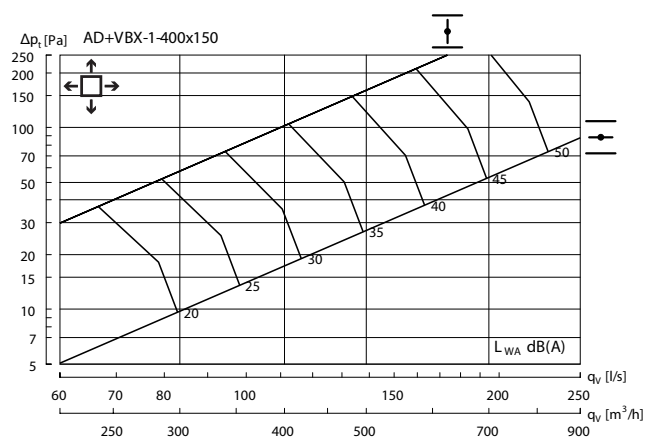
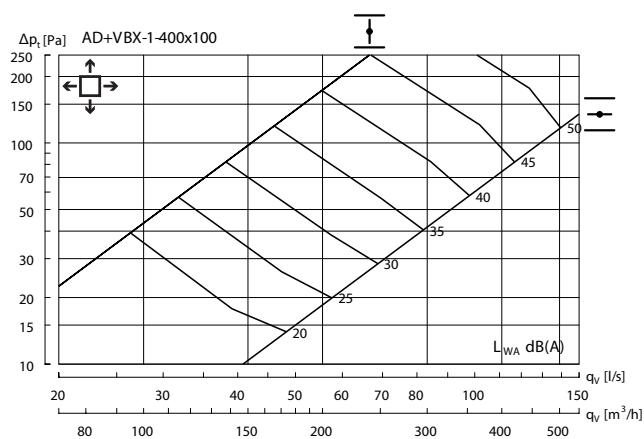
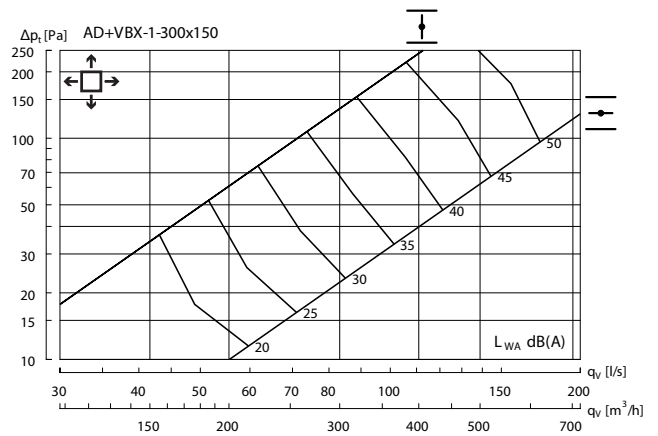
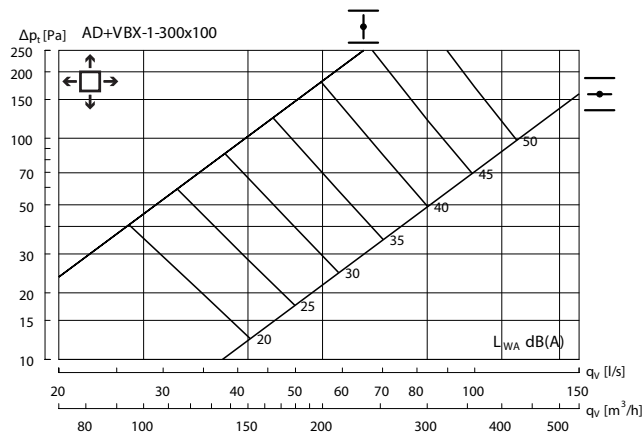
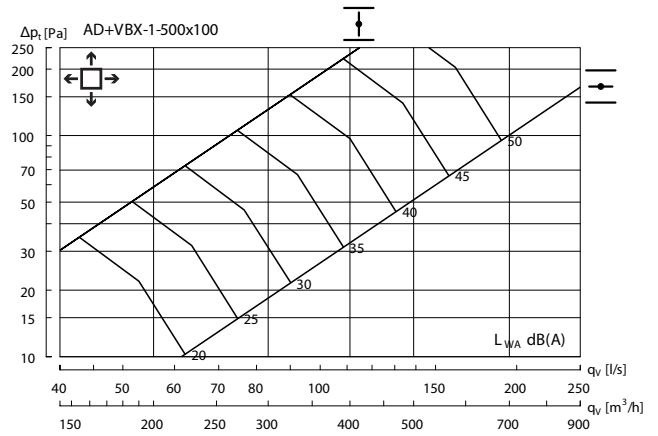
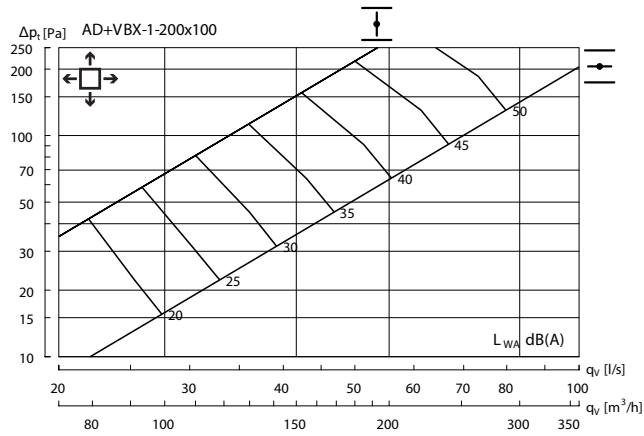


# Grille

# AD+VBX

## Technical data

### Supply air



## Technical data

### Supply air

