



**BAA**

Grilles

## Description

The BAA type grilles are designed for duct or wall applications. They can be used for supply or extract air.

## Properties

The BAA type grilles have adjustable blades. For supply air purposes, they are characteristically suitable for horizontal air throws. Where "Coanda effect" is required, they should be installed close to the ceiling. The blades are easily and individually adjustable from the front of the grille. The blades can be single or double rows, depending on the request.

## Materials

The frame and the blades are manufactured from ETIAL-60 norm aluminium extruded profile.

## Surface Treatment

The surfaces of the grilles are first cleaned, then treated with chromating process; after which, are painted electrostatically, with 20% gloss RAL 9010 (white) as standard. Other colours are also available upon request.

## Accessories

### Damper with opposed blades

Depending on application characteristics, an opposed blade damper can be installed on the back side of the grille. This damper is a separate item which can be operated by its special tool from the face of the grille. Opposed blade dampers are manufactured from ETIAL-60 norm aluminium extruded profiles. To prevent reflection, they are painted RAL 9005 (matt black) as standard.

### Damper with parallel blades

Depending on application characteristics, a parallel blade damper can be installed on the back side of the grille. This damper is a separate item which can be operated by its special tool from the face of the grille. It can also be manufactured as fixed to the grille frame. Parallel blade dampers are manufactured from ETIAL-60 norm aluminium extruded profiles. To prevent reflection, they are painted RAL 9005 (matt black) as standard, if manufactured separately. If manufactured as a unit with the grille, then they are painted the same colour with the grille.

### Plenum Box

The plenum box is used to achieve optimum throw characteristics. It has the inlet either at the top or at one side. Depending on request, a damper can be installed at the inlet, which can be operated internally or externally (has to be specified with the order). The plenum boxes are made from 0.6 mm thick galvanized steel sheets and have 4 hanging brackets on their body. Optionally, a 6 mm thick acoustic foam can be laid inside the plenum box.

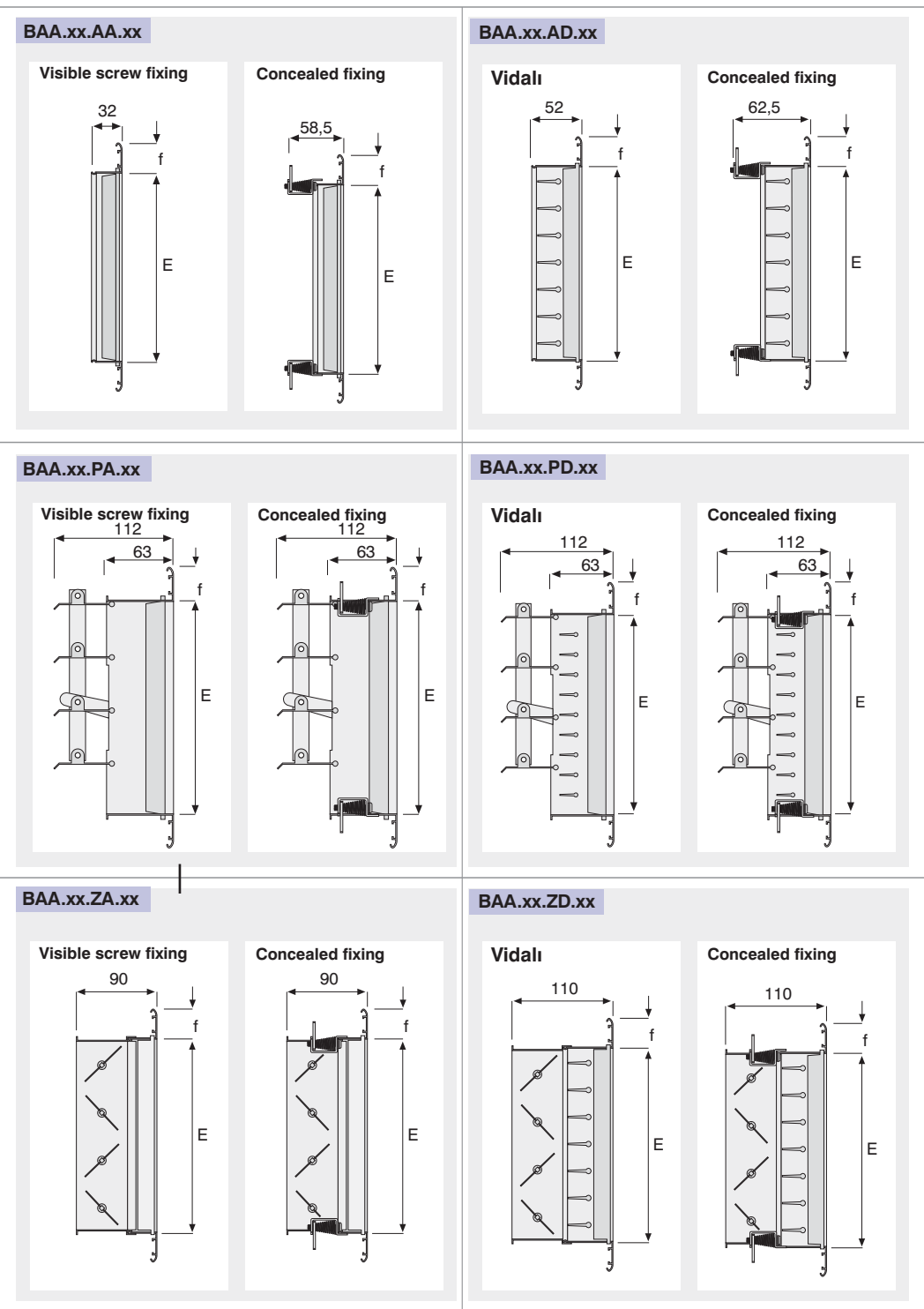
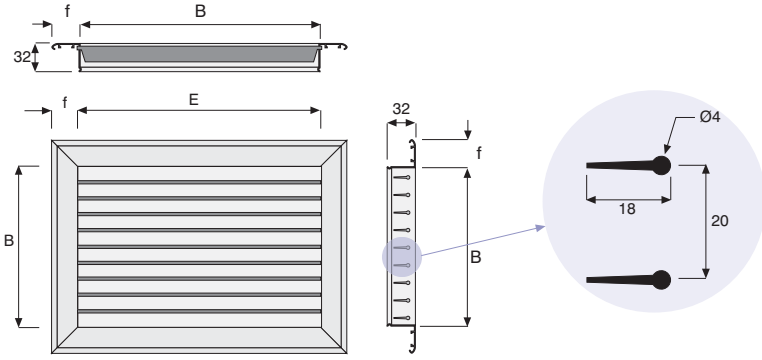
### Second row of blades

A second row of blades can be installed behind the front main row, and on a separate frame. These blades are also made from ETIAL-60 norm extruded aluminium profile and are painted the same colour with the grille. The second row option is advised to be used for supply air.

### Installation subframe

On customer request, an installation subframe is given with the grille for easy installation. This subframe is made of galvanized steel sheet and is painted the same colour with the grille.

Dimensions



\* E is the horizontal dimension. E and B are internal frame dimensions. f is the frame flange width.

## Dimensions

## Standard Dimensions

Double-Row Grilles Net Area ( $A_{\text{eff}}$ ) chart (cm<sup>2</sup>)

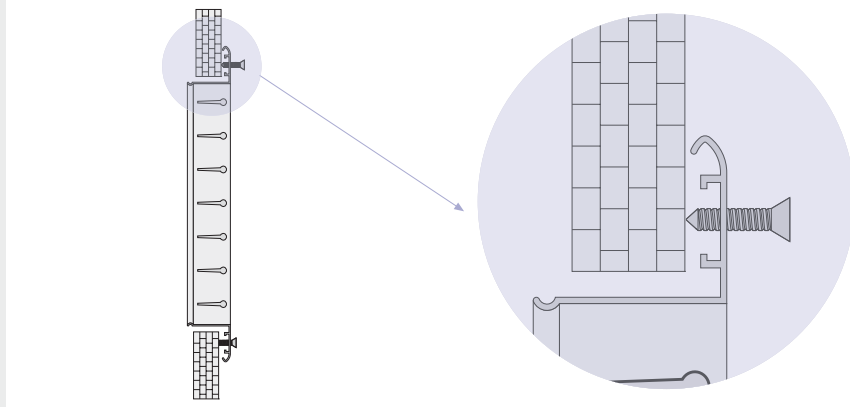
		B (mm)									
		100	200	300	400	500	600	700	800	900	1000
E (mm)	100	64									
	200	128	256								
	300	192	384	576							
	400	256	512	768	1024						
	500	320	640	960	1280	1600					
	600	384	768	1152	1536	1920	2304				
	700	448	896	1344	1792	2240	2688	3136			
	800	512	1024	1536	2048	2560	3072	3584	4096		
	900	576	1152	1728	2304	2880	3456	4032	4608	5184	
	1000	640	1280	1920	2560	3200	3840	4480	5120	5760	6400
	1100	704	1408	2112	2816	3520	4224	4928	5632	6336	7040
	1200	768	1536	2304	3072	3840	4608	5376	6144	6912	7680

Single-Row Grilles Net Area ( $A_{\text{eff}}$ ) chart (cm<sup>2</sup>)

		B (mm)									
		100	200	300	400	500	600	700	800	900	1000
E (mm)	100	80									
	200	160	320								
	300	240	480	720							
	400	320	640	960	1280						
	500	400	800	1200	1600	2000					
	600	480	960	1440	1920	2400	2880				
	700	560	1120	1680	2240	2800	3360	3920			
	800	640	1280	1920	2560	3200	3840	4480	5120		
	900	720	1440	2160	2880	3600	4320	5040	5760	6480	
	1000	800	1600	2400	3200	4000	4800	5600	6400	7200	8000
	1100	880	1760	2640	3520	4400	5280	6160	7040	7920	8800
	1200	960	1920	2880	3840	4800	5760	6720	7680	8640	9600

## Installation

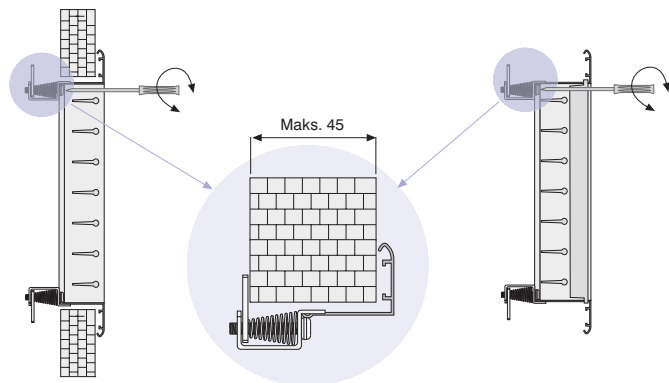
Fixing with screws, in the wall



A set of  $\text{Ø } 4.2 \times 38$  mm screws, painted the same colour, are given with the product.

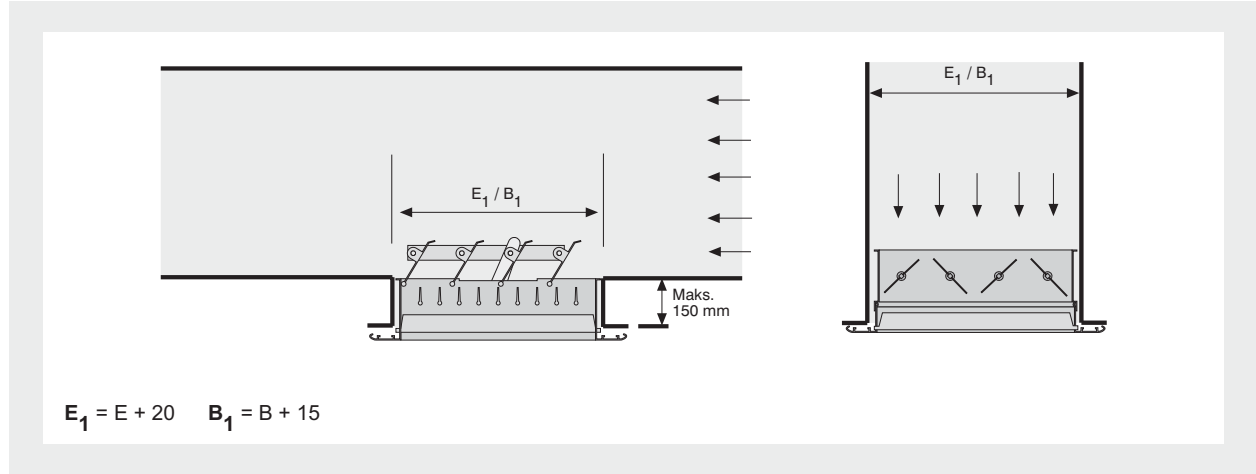
Concealed fixing

Concealed fixing can be applied to duct, wall or plenum box installations. No holes are present on the face of the grille flange. The fixing mechanism can be accessed easily at the front, by a screw driver. It is advised that the special installation subframes are used for this type of fixing.

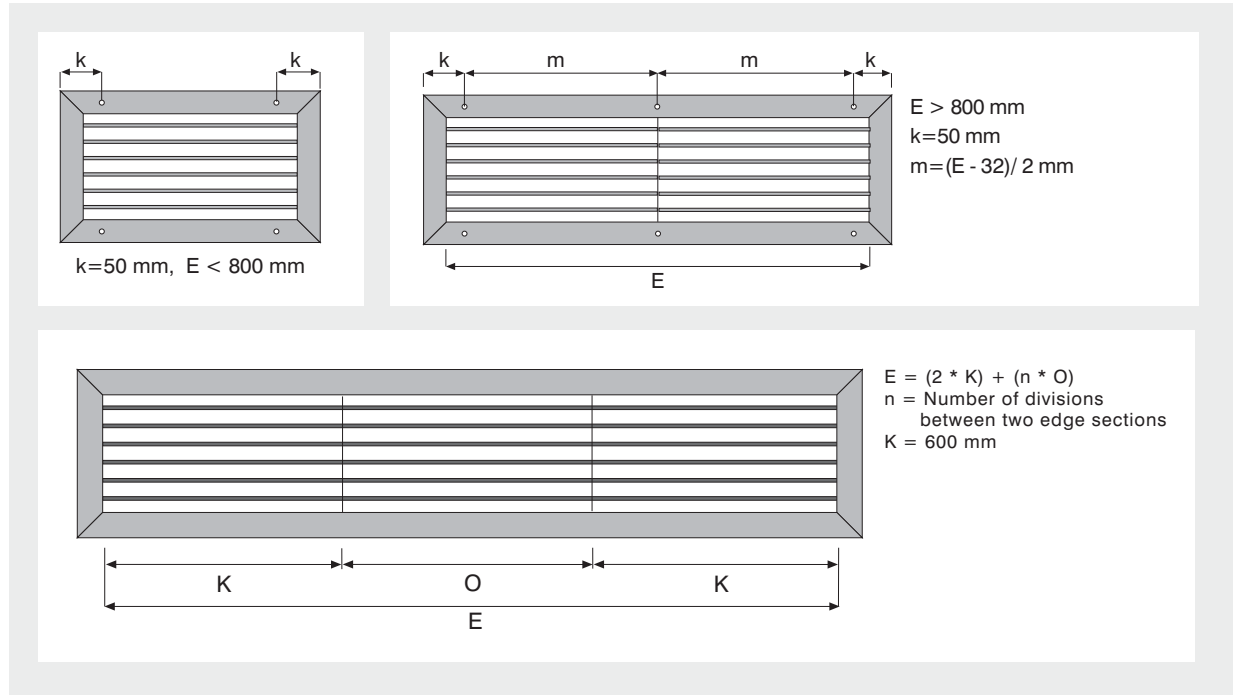


# Installation

## Duct Installation

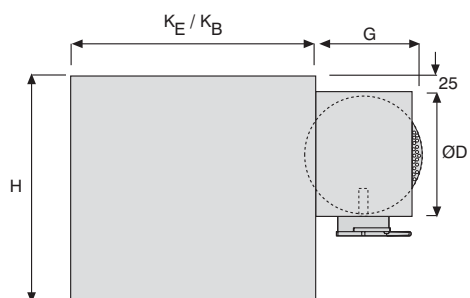


## Dimensions for installation holes



## Plenum Box

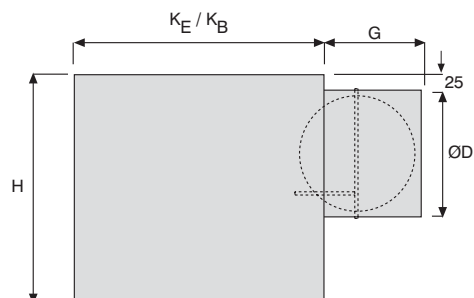
Externally Operated Side Inlet



$$K_E = E + 15$$

$$K_B = B + 15$$

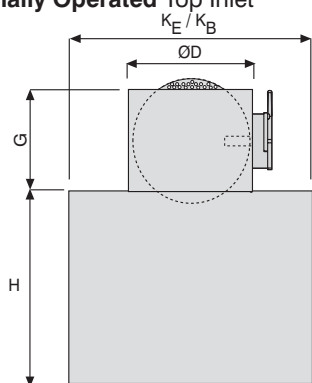
Internally Operated Side Inlet



$$K_E = E + 15$$

$$K_B = B + 15$$

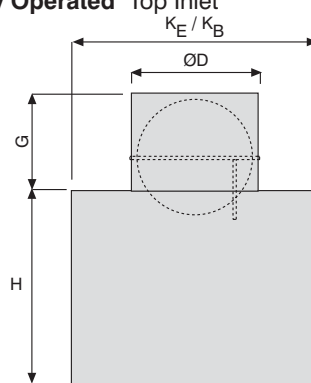
Externally Operated Top Inlet



$$K_E = E + 15$$

$$K_B = B + 15$$

Internally Operated Top Inlet

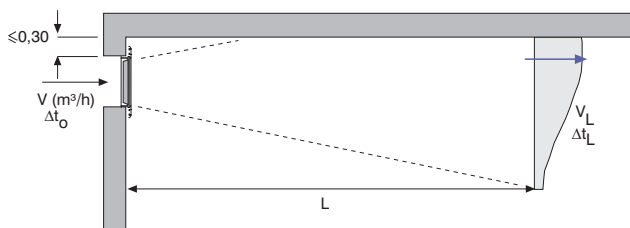


$$K_E = E + 15$$

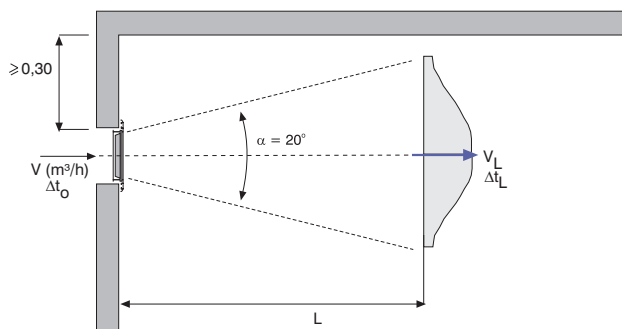
$$K_B = B + 15$$

## Nomenclature

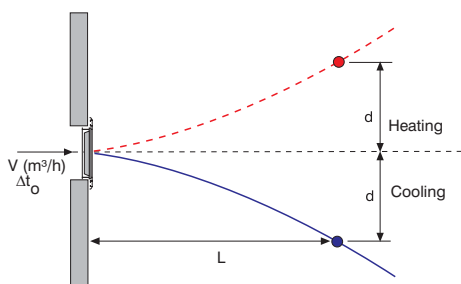
## With ceiling effect



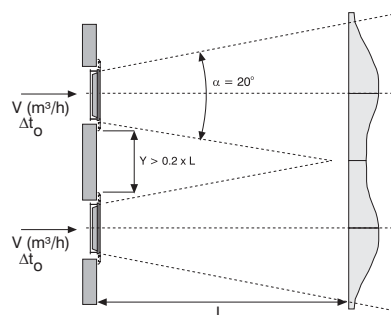
## Without ceiling effect



## Heating &amp; Cooling air throw



## Positioning grilles side by side



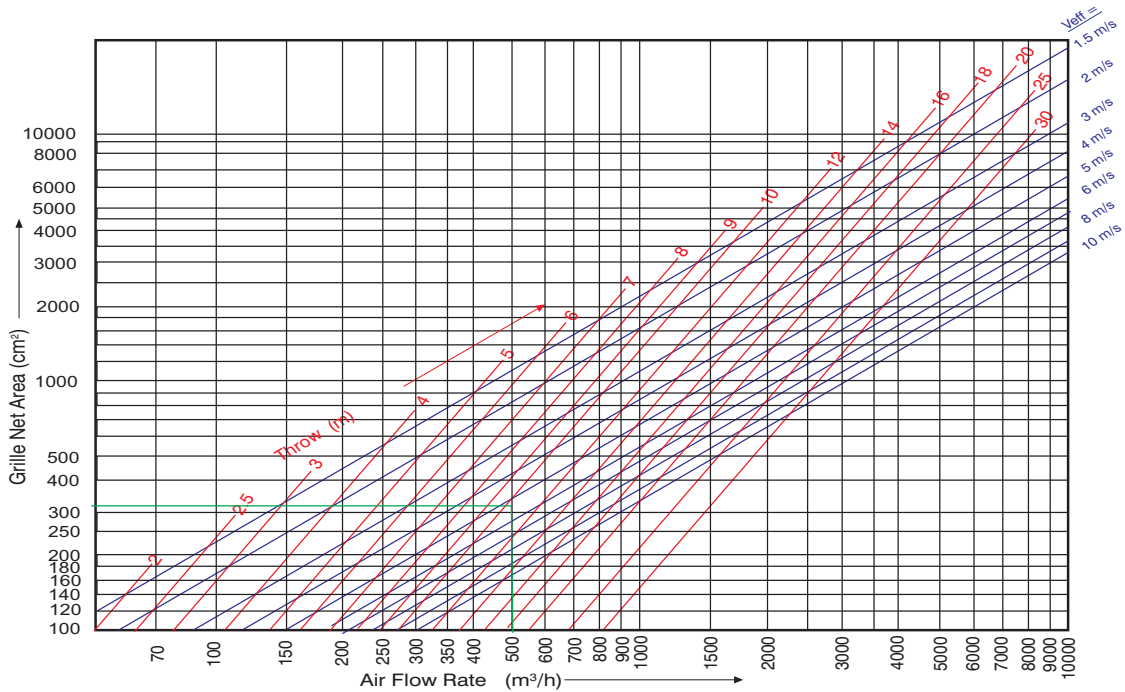
$A_{\text{eff.}}$	Effective area (cm <sup>2</sup> )
$v_{\text{eff.}}$	Effective distance velocity (m/s)
$v_L$	Velocity at distance L
$Y$	Spacing between grilles (m)
$d$	Vertical deflection of air (m)
$V_T$	Total air flow rate (m <sup>3</sup> /h)
$\Delta t_L$	Difference between core and room temperature at distance L (°C)
$\Delta t_0$	Difference between supply air and room air temperatures (°C)
$L$	Throw length (m)
$\alpha$	Air discharge angle (°)



## Technical Data

**NOTE:**

This chart is valid for the condition that the top of the grille is closer than 300 mm to the ceiling. For farther locations, throw length must be multiplied by 0.7. Pressure loss and sound power level values are valid for 100% open damper position. Refer to table below, for different blade angle settings.



**Table of coefficients for various blade angles**

Horizontal blades (°)	0°	0°	0°	45°	90°	45°	90°
Vertical blades (°)	0°	45°	90°	0°	0°	45°	90°
Throw length(m)	x 1,0	x 0,7	x 0,5	x 0,7	x 0,5	x 0,5	x 0,25
Pressure loss (Pa)	x 1,0	x 1,1	0 1,2	x 1,1	x 1,2	x 1,1	x 1,5
Sound power level dB (A)	-	+ 1	+ 3	+ 1	+ 3	+ 1	+ 6

**Supply Air**

V <sub>eff.</sub> (m/s)	Pressure loss (Pa)	Sound power level dB(A)
2	3	<20
3	7	20
4	13	28
5	20	35
6	29	40
7	37	43
8	44	47
9	60	50
10	80	55

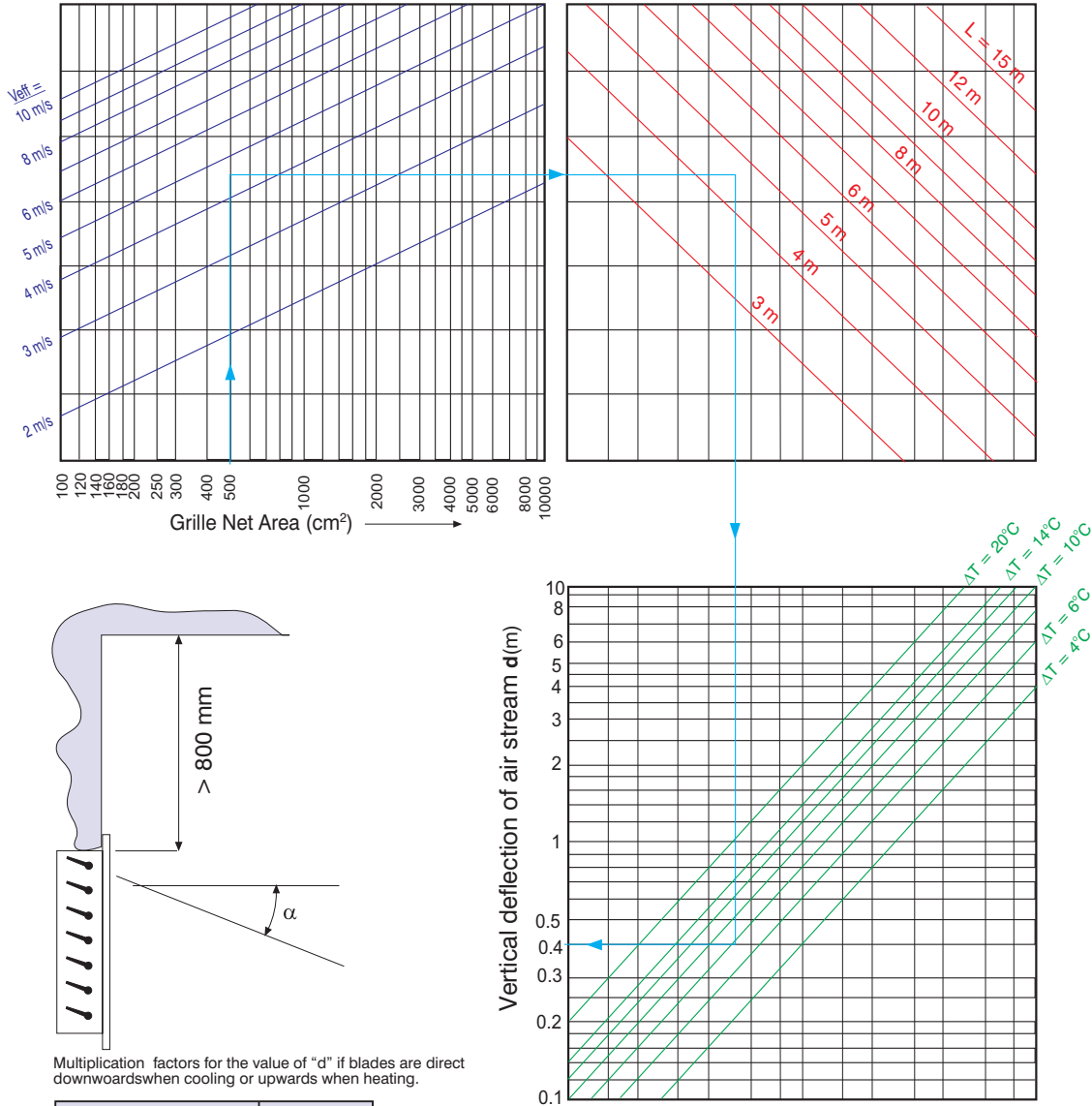
**Extract Air**

V <sub>eff.</sub> (m/s)	Pressure loss (Pa)	Sound power level dB(A)
2	1	<20
3	3	20
4	5	23
5	8	33
6	12	38
7	17	42
8	21	45
9	30	48
10	36	51

**Technical Data**

**NOTE:**

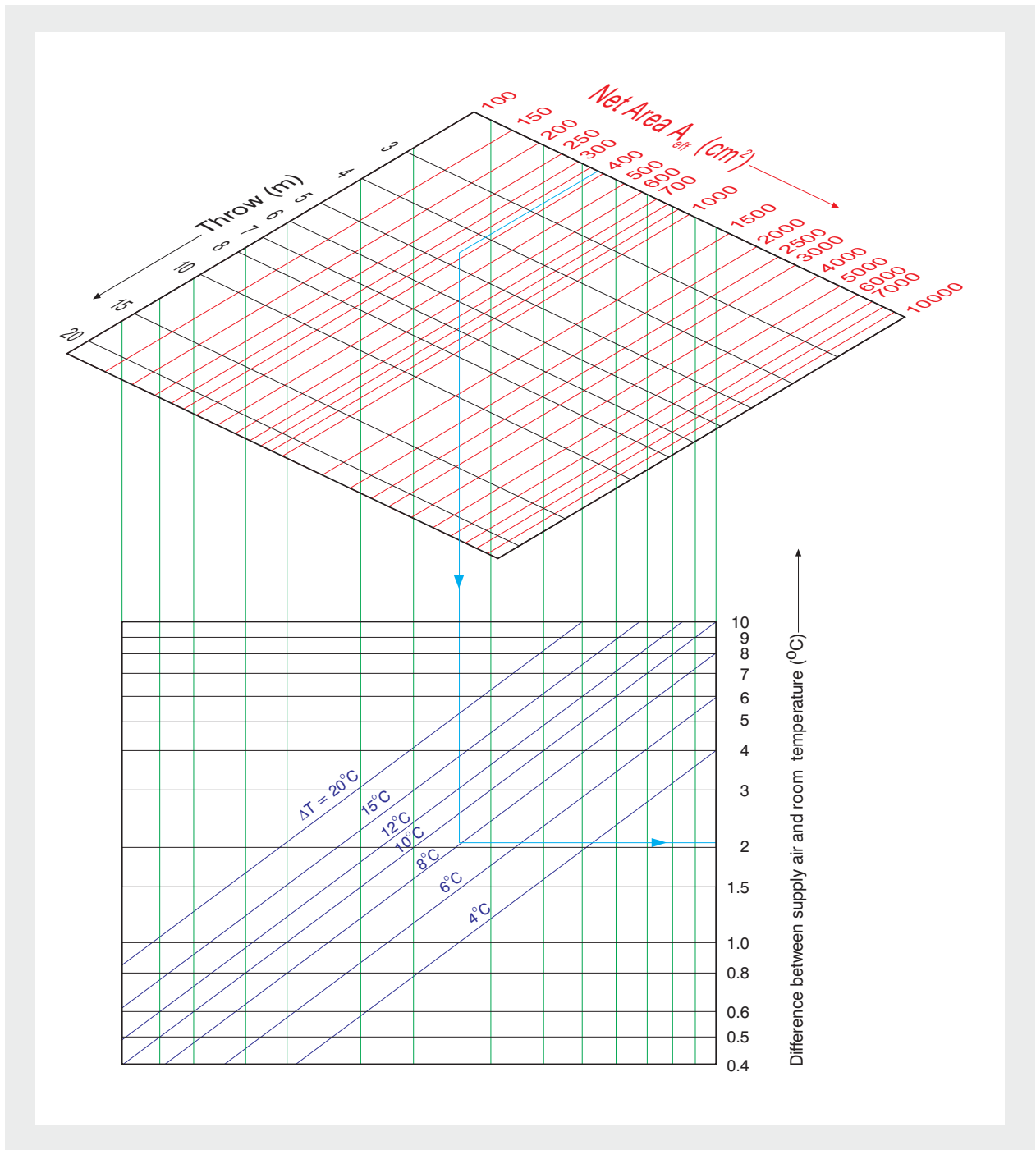
This chart is valid for the condition that the top of the grille is located farther than 300 mm to the ceiling. Deflection (d) is upwards for heating and downwards for cooling. Refer to table given, for coefficients of different blade angles.



Technical Data

NOTE:

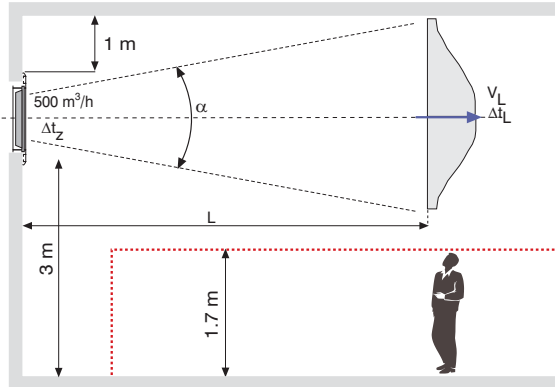
This chart is valid for the condition that the top of the grille is closer than 300 mm ceiling. For farther locations, the temperature gradient value must be multiplied by 0.7



**Example:**

Air at 500 m<sup>3</sup>/h from each of the double-row grilles on a wall, are to be supplied into a room. The grilles are 1m below the ceiling and 3m above the floor. The required throw is 5m. The first row of blades are to remain horizontal, while the back row blades are to be set at 45°. Supplied air temperature is 8°C below room temperature.

300 x 200 mm grilles are intended to be used, check if they are suitable for the purpose.

**Solution:**

- 1) From the table on page 9, the coefficient for given blade angles is found to be 0.7
- 2) Throw length for lookup on the graph is calculated as  $5 / 0.7 = 7.14\text{m}$
- 3) Due to being without ceiling effect, throw length for lookup on the graph is calculated as  $7.14 / 0.7 = 10.2\text{m}$
- 4) From the graph on page 9, net grille area is read as 320 cm<sup>2</sup> for a throw of 10.2 m and flow rate of 500 m<sup>3</sup>/h.
- 5) From the table on page 4, the net area for 300x200mm grille is read as 384 cm<sup>2</sup>.
- 6) From the graph on page 9, throw is read as 9.5m for a flow rate of 500m<sup>3</sup>/h and net grille area of 384 cm<sup>2</sup>.  
The outlet velocity is read as 4.5 m/s.
- 7) Applying coefficients to find true throw, we find  $9.5 \times 0.7 \times 0.7 = 4.65\text{m}$ .
- 8) From the graph on page 10; we read the vertical deflection of air to be 0.4m, for 500 m<sup>3</sup>/h flow rate, 4.5 m/s outlet velocity, 4.65 m throw and 8°C temperature difference. Since it is above the comfort zone, the case is acceptable.
- 9) From the graph on page 11, the temperature gradient is read as 2.1°C for 4.65m throw, 384 cm<sup>2</sup> net area and 8°C temperature difference.
- 10) From the tables on page 9, for 4.5 m/s outlet velocity, the pressure loss is read as 16.5 Pa and sound power level as 31 dB(A)
- 11) Applying corrections for blade angles, the values become  $16.5 \times 1.1 = 18\text{ Pa}$  and  $31 + 1 = 32\text{ dB(A)}$ .

## Specification Text

Air grille for wall or duct installation. The grille will be manufactured from ETIAL-60 norm aluminium profiles, and chromated; then will be painted to ordered request with electrostatic powder paint and a minimum thickness of 60 $\mu$ . The grille will be composed of two parts, the frame and the blades. The blades will be easily adjustable from the face of the grille. Optionally, opposed or parallel blade dampers will be installed at the back of the grille. The dampers will be manufactured from ETIAL-60 norm aluminium profile, and painted. The dampers will be adjusted from the front of the grille by its special tool (opposed blades) or by a small lever arm (parallel blades). Optionally, the installation subframe will be given with the product. The plenum box will be manufactured from 0.6 mm galvanized steel sheets by seams. There will be 4 hanging brackets on the box. Optionally, the entry spigot will be equipped with a volume

control damper, operated externally or internally, depending on request. Also, optionally, 6-mm thick acoustic foam (according to BS 476 Part 6 & 7 Class 0) will be installed inside the plenum box.

## Order Code

Model		<b>BAA.32.AA.1 1-300 x 200-9010</b>	
<b>Frame</b>	22 mm 32 mm	E x B (mm) Refer to page 3	Indicate RAL Colour Code
<b>Accessories</b>	AA..Single Row Blades AD..Double Row Blades PA..Single Row and Parallel Blade Damper PD..Double Row and Parallel Blade Damper ZA..Single Row and Opposed Blade Damper ZD..Double Row and Opposed Blade Damper		
<b>Installation</b>	0.....Without Screw Holes 1.....With Screw Holes 3.....Concealed Fixing		
<b>Installation Accessories</b>	0.....Without installation subframe 1.....With installation subframe		

## Plenum Box Order Code

Model		<b>PLA.10.S B.1 1-320 x 220 x 300 x 193 x 1</b>	
<b>Installation</b>	10...With Screws 30...Concealed Fixing	Please indicate if special dimensions are requested $K_E \times K_B \times H \times \text{ØD}$ (mm) x s (no.of inlet spigots)	<b>Plenum Box Dimensions</b>
<b>Box Inlet</b>	S.....Side Inlet T.....Top Inlet		
<b>Spigot Damper</b>	A.....Without Damper B.....Externally operated C.....Internally Operated		
<b>Perforated Rectifier Plate</b>	0.....Without Plate 1.....With Plate		
<b>Insulation</b>	0.....Without Insulation 1.....With Accoustic Insulation		

**B**

**BAA**

Grilles

**KES KLİMA**

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