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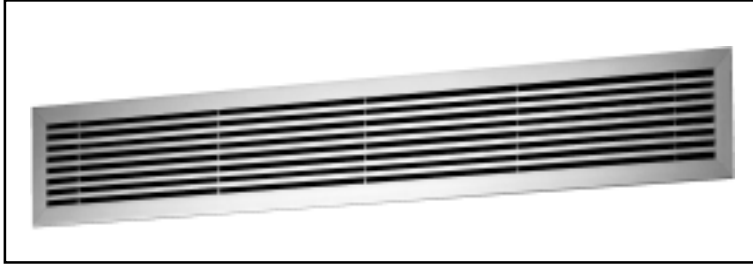


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Linear grilles

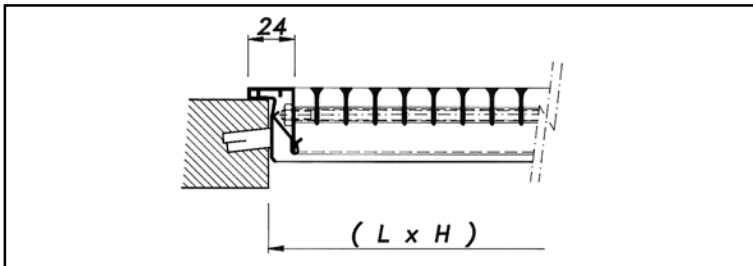


Description

Type 31-1 aluminium grilles, fixed blades, deflection 0°.
Type 31-15 aluminium grilles, fixed blades, deflection 15°.

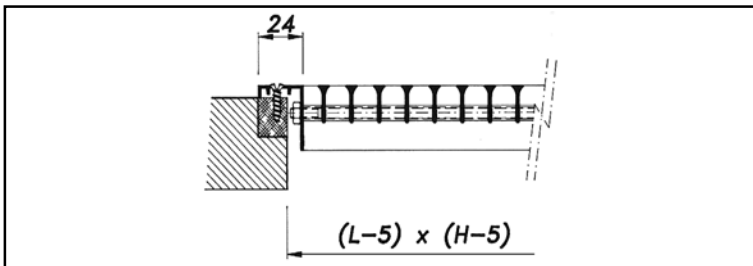
Finishes

Anodised aluminium in its natural colour.
Special finishes available upon request.



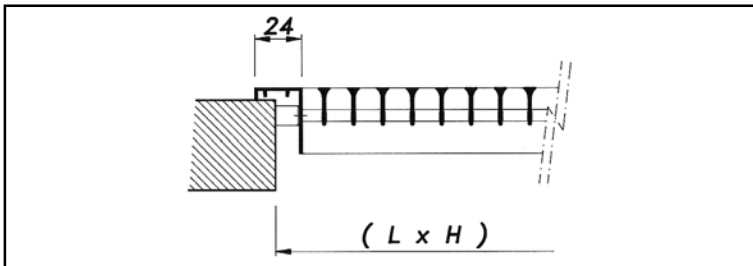
Dimensions for use with mounting frame

When the grilles are fixed with a metal frame, the size of the opening corresponds to the nominal size of the grilles. For example, a grille of 500 x 300 would require an opening of the same dimensions.



Dimensions for screw mounting

When the grilles are fixed with screws, the size of the opening corresponds to the nominal size of the grilles reduced by 5mm in both length and height. For example, a grille of 500 x 300 would require an opening of 495 x 295.



Dimensions for mounting with lateral clips

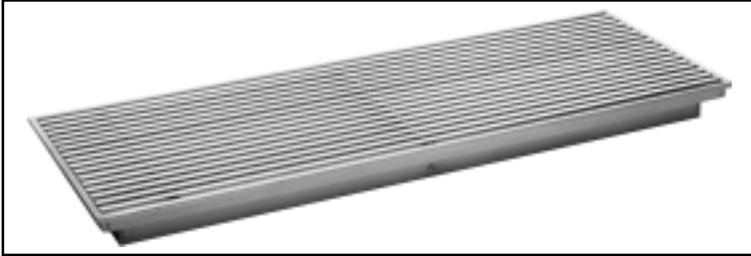
For horizontal mounting (e.g. fan-coils), the grille incorporates clips for lateral pressure. The size of the opening corresponds to the nominal size of the grilles. For example, a grille of 500 x 300 would require an opening of the same dimensions. (For additional dimensions see page 8).

31	Series, aluminium grille
1 15	Deflection 0° Deflection 15°
O	Without indication, not incorporated Volume control damper type 29-0
G	Without indication, not incorporated Directional grille
MM with MM for MM	Without indication, with lateral clips Mounting frame The grille is supplied with mounting frame The grille is supplied without mounting frame, but it is prepared for its usage
screw	The grille is provided with holes for screwing
SB	Without indication, with frame of 24 mm Without frame
L x H	Length in mm (horizontal direction) x height in mm (vertical direction)

Identification

All grille dimensions are defined by length (L) and followed by height (H). L x H is the dimension of the free opening. When the grille does not incorporate a mounting frame but is prepared for screwing, the dimension of the opening will be L-5 mm x H-5 mm. For mounting with lateral clips, the dimension of the free opening will be equal to the nominal dimension of the grille.

Linear floor grilles



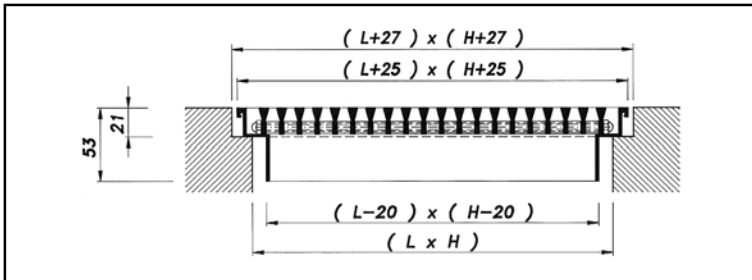
Description

Type 31-1-F aluminium grilles, fixed blades, deflection 0°.

Type 31-15 -F aluminium grilles, fixed blades, deflection 15°.

Finishes

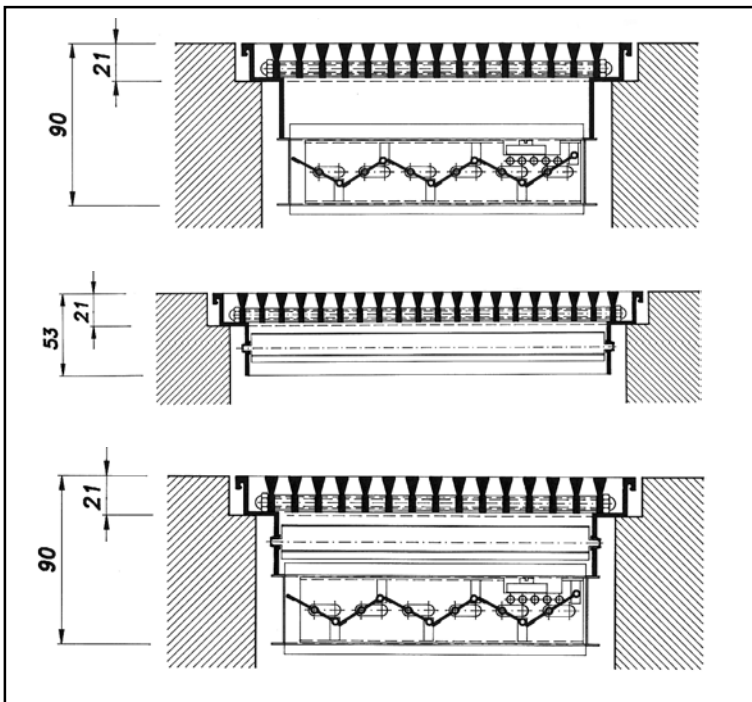
Aluminium in its natural colour (not anodised).
Special finishes available upon request.



Dimensions

The normalised dimensions are for a rabbet in the floor of 21 mm. To calculate the dimension of the opening, both length and height should be increased 27 mm. Special dimensions are available on request.

31-1-F or 31-15-F



Accessories

The grilles can incorporate volume control damper type 29-O and directional grille type G. (See description on page 9).

31-1-F-O or 31-15-F-O

31-1-F-G or 31-15-F-G

31-1-F-O-G or 31-15-F-O-G

31	Series, aluminium grille
1	Deflection 0°
15	Deflection 15°
F	For floor (reinforced)
O	Without indication, not incorporated Volume control damper type 29-O
G	Without indication, not incorporated Directional grille
SB	Without indication, with frame Without frame
L x H	Length in mm (horizontal direction) x height in mm (vertical direction)

Identification

All grille dimensions are defined by length (L) and followed by height (H). L x H is the dimension of the free opening.

Quick Selection Table

Q		L	1000	1000	1000	1000	1000	1000	1000	1000
		H	50	75	100	125	150	200	250	300
m ³ /h/m	l/s/m	A _k	0,024	0,0370	0,0500	0,0630	0,0820	0,1080	0,1400	0,1720
100	27,8	V _k	1,2	0,8	0,6					
		X	2,3	1,9	1,6					
		P _t	0,8	0,3	0,2					
		NR								
120	33,3	V _k	1,4	0,9	0,7					
		X	2,8	2,2	1,9					
		P _t	1,1	0,5	0,3					
		NR								
140	38,9	V _k	1,6	1,1	0,8					
		X	3,2	2,6	2,2					
		P _t	1,5	0,6	0,4					
		NR								
160	44,4	V _k	1,9	1,2	0,9					
		X	3,7	3,0	2,6					
		P _t	2,0	0,8	0,5					
		NR								
180	50,0	V _k	2,1	1,4	1,0	0,8				
		X	4,1	3,3	2,9	2,6				
		P _t	2,5	1,1	0,6	0,4				
		NR	8							
200	55,6	V _k	2,3	1,5	1,1	0,9				
		X	4,6	3,7	3,2	2,8				
		P _t	3,1	1,3	0,7	0,5				
		NR	10							
250	69,4	V _k	2,9	1,9	1,4	1,1	0,8			
		X	5,8	4,6	4,0	3,6	3,1			
		P _t	4,9	2,0	1,1	0,7	0,4			
		NR	16	7						
300	83,3	V _k	3,5	2,3	1,7	1,3	1,0	0,8	0,6	
		X	6,9	5,6	4,8	4,3	3,7	3,3	2,9	
		P _t	7,0	2,9	1,6	1,0	0,6	0,3	0,2	
		NR	21	11						
350	97,2	V _k	4,1	2,6	1,9	1,5	1,2	0,9	0,7	0,6
		X	8,1	6,5	5,6	5,0	4,4	3,8	3,3	3,0
		P _t	9,5	4,0	2,2	1,4	0,8	0,5	0,3	0,2
		NR	25	15	9					
400	111,1	V _k	4,6	3,0	2,2	1,8	1,4	1,0	0,8	0,6
		X	9,2	7,4	6,4	5,7	5,0	4,3	3,8	3,4
		P _t	12,4	5,2	2,9	1,8	1,1	0,6	0,4	0,2
		NR	28	19	12	8				
450	125,0	V _k	5,2	3,4	2,5	2,0	1,5	1,2	0,9	0,7
		X	10,4	8,3	7,2	6,4	5,6	4,9	4,3	3,9
		P _t	15,7	6,6	3,6	2,3	1,3	0,8	0,5	0,3
		NR	31	22	15	11	5			
500	138,9	V _k	5,8	3,8	2,8	2,2	1,7	1,3	1,0	0,8
		X	11,5	9,3	8,0	7,1	6,2	5,4	4,8	4,3
		P _t	19,4	8,2	4,5	2,8	1,7	1,0	0,6	0,4
		NR	34	25	18	13	8			
600	166,7	V _k	6,9	4,5	3,3	2,6	2,0	1,5	1,2	1,0
		X	13,8	11,1	9,6	8,5	7,5	6,5	5,7	5,2
		P _t	28,0	11,8	6,4	4,1	2,4	1,4	0,8	0,5
		NR	38	29	23	18	12	6		
700	194,4	V _k	8,1	5,3	3,9	3,1	2,4	1,8	1,4	1,1
		X	16,1	13,0	11,2	9,9	8,7	7,6	6,7	6,0
		P _t	38,1	16,0	8,8	5,5	3,3	1,9	1,1	0,7
		NR	42	33	27	22	16	10	5	
800	222,2	V _k	9,3	6,0	4,4	3,5	2,7	2,1	1,6	1,3
		X	18,4	14,8	12,8	11,4	10,0	8,7	7,6	6,9
		P _t	49,7	20,9	11,5	7,2	4,3	2,5	1,5	1,0
		NR	46	37	30	25	20	14	8	
900	250,0	V _k		6,8	5,0	4,0	3,0	2,3	1,8	1,5
		X		16,7	14,4	12,8	11,2	9,8	8,6	7,7
		P _t		26,5	14,5	9,1	5,4	3,1	1,8	1,2
		NR		40	33	28	23	17	11	7
1000	277,8	V _k		7,5	5,6	4,4	3,4	2,6	2,0	1,6
		X		18,5	15,9	14,2	12,5	10,9	9,5	8,6
		P _t		32,7	17,9	11,3	6,7	3,8	2,3	1,5
		NR		42	36	31	25	20	14	10
1200	333,3	V _k			6,7	5,3	4,1	3,1	2,4	1,9
		X			19,1	17,1	14,9	13,0	11,4	10,3
		P _t			25,8	16,2	9,6	5,5	3,3	2,2
		NR			41	36	30	24	19	14
1400	388,9	V _k				6,2	4,7	3,6	2,8	2,3
		X				19,9	17,4	15,2	13,3	12,0
		P _t				22,1	13,0	7,5	4,5	3,0
		NR				40	34	28	23	18

Symbols:

L = Length in mm
H = Nominal height in mm
Q = Air flow rate per m.
length
A_k = Effective area in m² per
m.length
V_k = Effective velocity in m/s
X = Throw in m
P = Total pressure in Pa
NR = Noise level index in dB

NR < 10
NR 10 - 20

Example of selection

The selection should take into account, for a given air flow rate, the sound level and throw.

The throws in the Quick Selection Table correspond to a terminal velocity in the occupied zone of 0,25 m/s.

Example

Requirements:

Air flow rate _____ 350 m³/h
 Throw _____ 4 m plus corrections
 Sound level _____ below 20 NR
 Application _____ Medical consult room
 Required pressure loss _____ below 10 Pa
 Effective velocity _____ below 3 m/s
 Location of grille _____ in window-sill, at 2 m from the ceiling and 1 m from the ground

Before entering the Table, the corrected throw (X_c) should be calculated based on throw (X), distance (h) of the grille to the ceiling and C_s (correction factor for linear grilles mounted in sill or floor). The factor C_s for grilles mounted in sill or floor is always 1,1:

$$\begin{aligned} X_c &= (X + h) \cdot C_s \\ X_c &= (4 + 2) \cdot 1,1 \\ X_c &= 6,6 \text{ m} \end{aligned}$$

Solution:

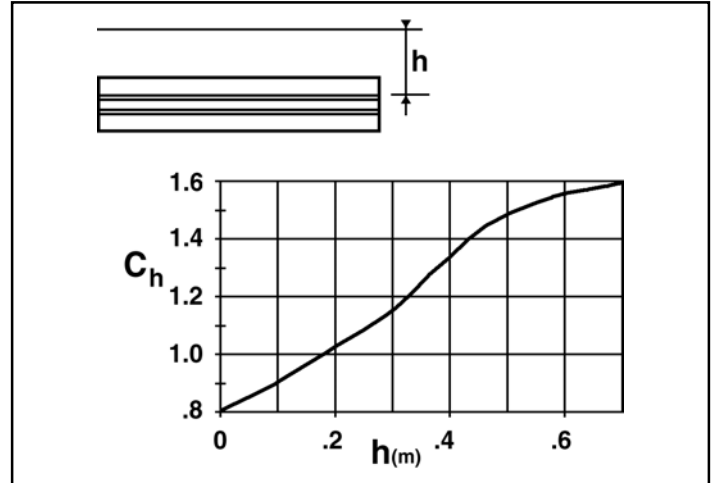
Entering the selection table with an air flow rate of 350 m³/h and a corrected throw of 6,6 m we obtain:

Q (Air flow rate) _____ 350 m³/h (97,2 l/s)
 V_k (Effective velocity) _____ 2,6 m/s
 X_c (Corrected throw) _____ 6,5 m
 P_t (Pressure loss) _____ 4,0 Pa
 NR (Sound level) _____ 15

Grille type 31-1 size 1000 x 75

Correction factors for wall mounting

Apart from the before-mentioned factor C_s (for grilles mounted in sill or floor), another correction factor exists for the distance of the grille to the ceiling, when mounted in a wall. For a free jet this factor C_h will be 1,6 (see next figure).



$$X_c = X \cdot C_h$$

Corrected throw = Throw $\cdot C_h$, with h in the graph the distance between grille and ceiling.

Useful recommendations

Maximum distance H max.

To obtain an adhering jet with cold air when the grille is mounted in a wall, it is advisable not to exceed the distance of the grille with respect to the ceiling (h max.) and the temperature difference Δt (difference between room and supply air temperature) according to the following table.

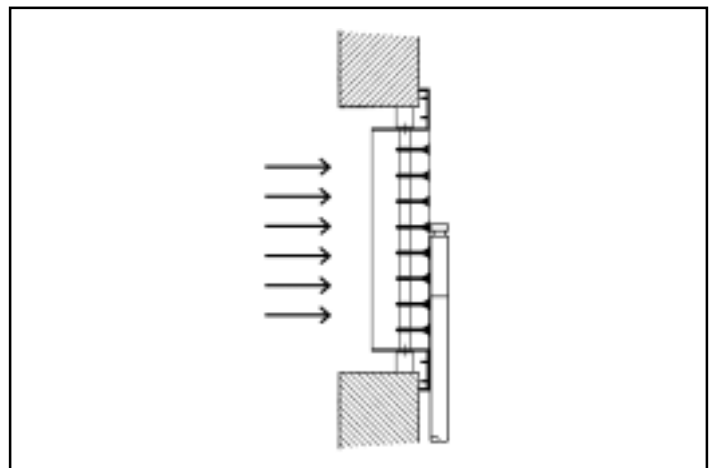
Δt (°C)	0	6	9	12
h max (m)	0,65	0,37	0,25	0,13

Flow rate measurement

The air flow rate (q_v) is obtained from the product of the effective area of the grille (A_k) and its effective velocity (V_k):

$$q_v \text{ (m}^3\text{/h)} = A_k \text{ (m}^2\text{/m)} \cdot V_k \text{ (m/s)} \cdot 3600 \cdot L / 1000$$

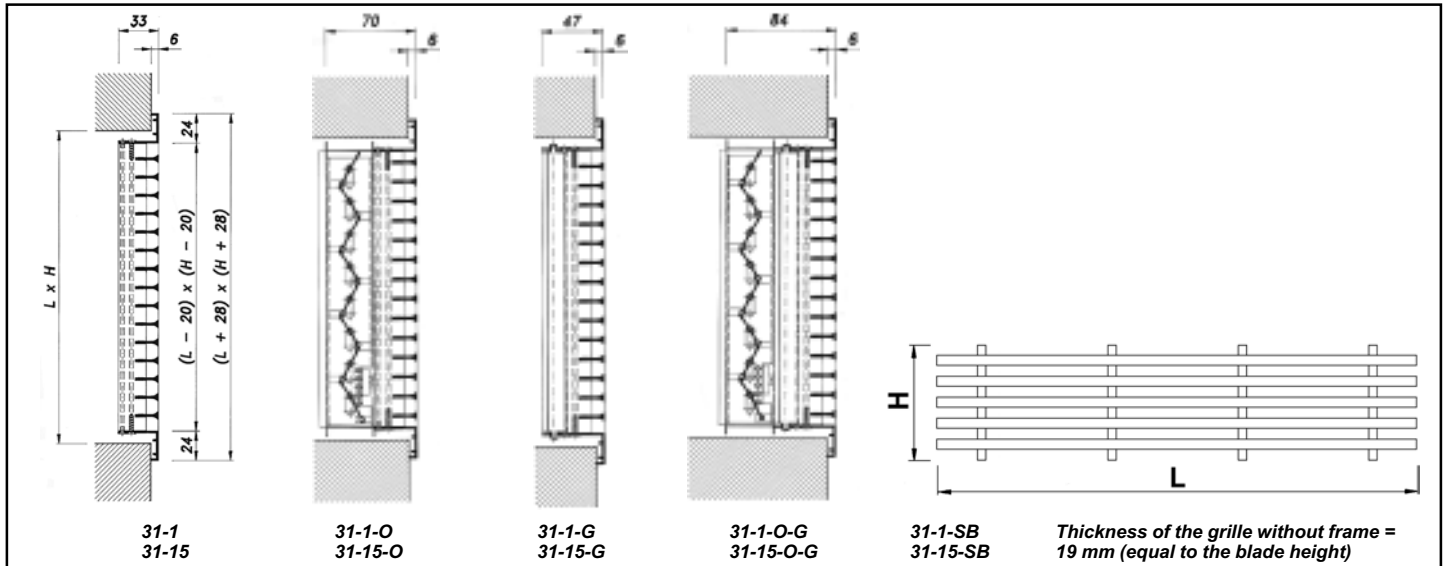
To obtain V_k use is recommended of a hot-wire anemometer (e.g. type TSI_VELOCICALC)



GENERAL DIMENSIONS

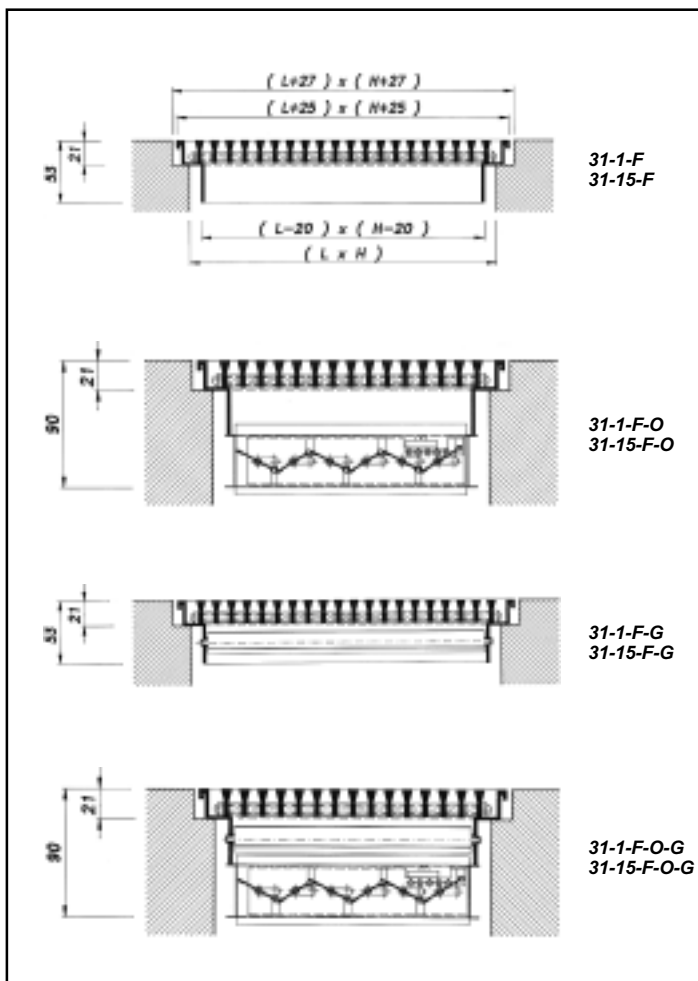
General dimensions of grilles type 30.

Wall and ceiling

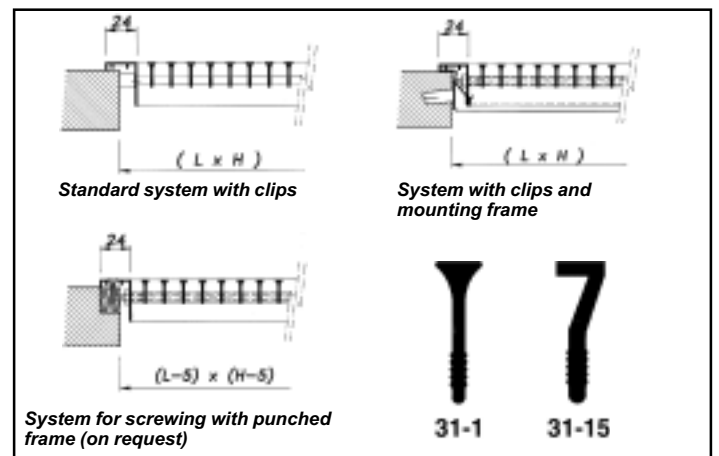


Mounting systems and blade types.

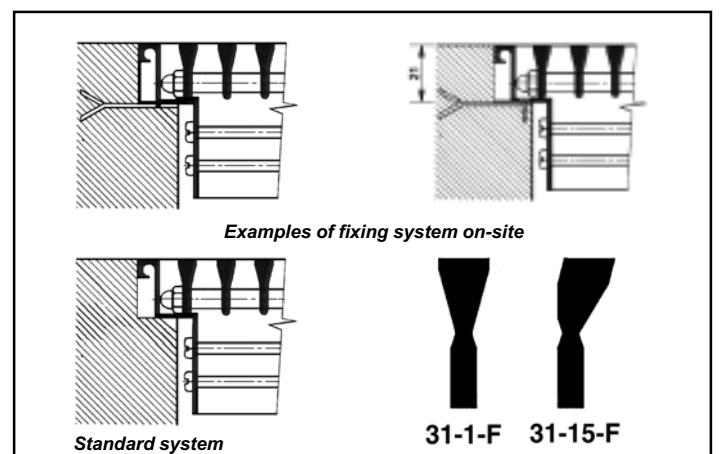
Floor



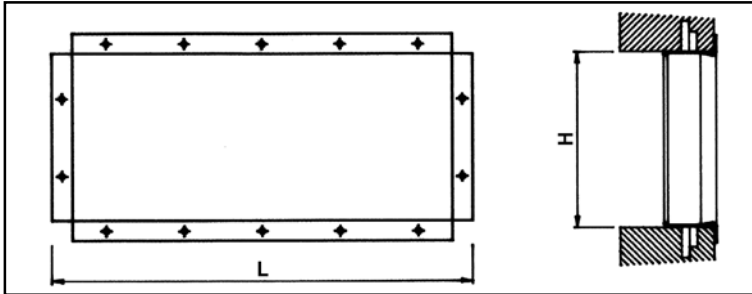
Installation in ceiling or wall



Floor installation

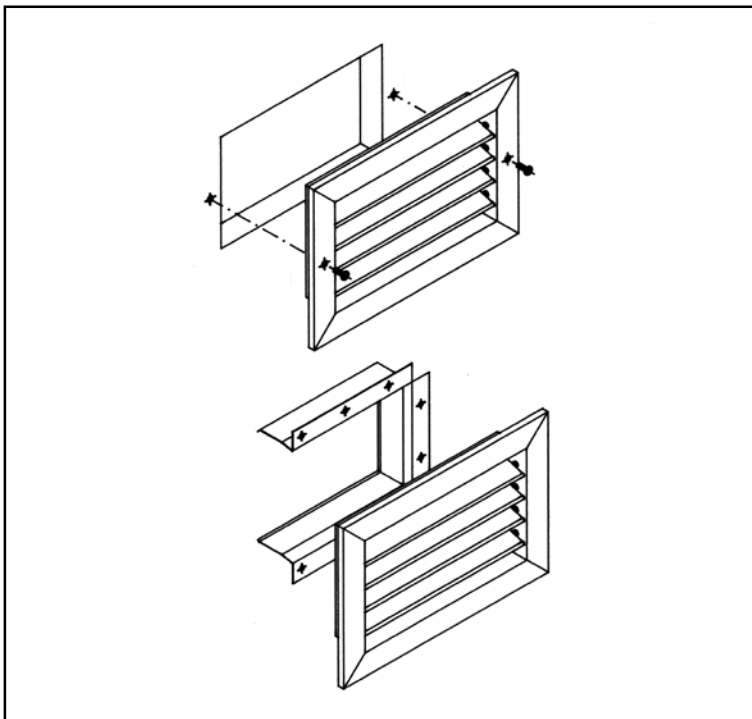


ACCESSORIES AND MOUNTING



Type MM

Metallic frame for grille mounting.
Only for types 31-1 and 31-15.



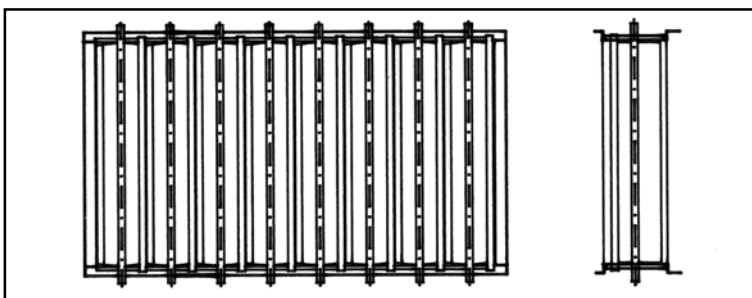
Screw mounting

Placing the grille in the opening, it can be screwed directly onto the wall, sheet duct, etc.
For mounting in fibre ducts it is recommended that the metallic mounting frame MM is used.

Fixing with mounting frame

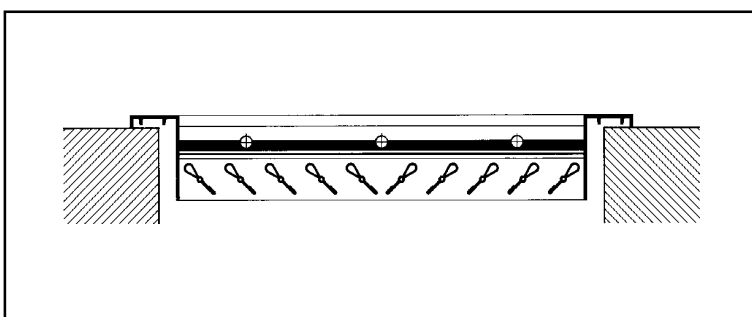
Once the metallic frame is located into the wall opening (fasteners are incorporated in the frame), the grille can be placed. Pressing lightly the grille will be attached perfectly to the mounting frame by means of pressure clips.

Note: The mounting frame is always provided with drilled holes, offering the possibility of screw mounting. This procedure is more useful for larger grilles and recommended for mounting in ceilings.



Volume control damper 29-0

Volume control damper 29-0 is made of galvanised steel sheet with opposite blades. They can be applied to any type of grille (wall-, ceiling- as well as floor-mounted). It can easily be operated from outside by a screwdriver.



Directional grille type G

Below the linear grilles a second directional grille type "G" can be mounted, with independently adjustable blades.

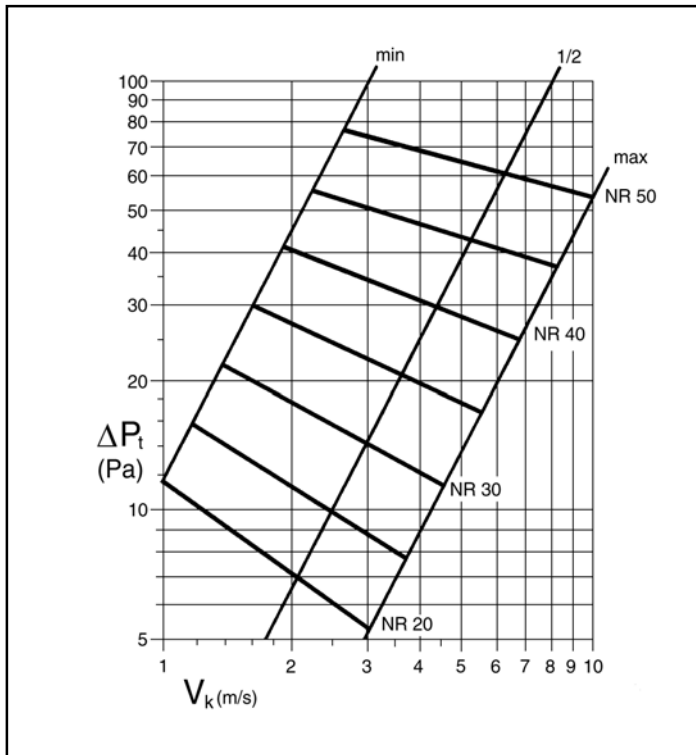
GENERAL INFORMATION

The volume control damper 29-0 modifies the values of sound level and pressure loss given in the selection table.

Hereafter, and in the corresponding graph sound levels and total pressure losses (ΔP_t) are presented for the grille including the volume control damper as a function of the parameters V_k (effective velocity) and percentage of opening of the damper (min, 1/2, max.).

The graph expresses sound level NR as sound power level (without room attenuation) for the combination of grille and damper 29-0.

The value of V_k in the graph is that for the grille without damper.



A correction factor should be applied to the sound level as a function of A_k (effective discharge area) according to the following table.

A_k (m ²)	0,01	0,02	0,03	0,05	0,1	0,2
NR	-5,2	-1,9	0	+2,4	+5,8	+9,1

General information on linear grilles type 30

- All grilles 31-1 and 31-15, both with and without frame, and without volume control damper nor directional grille, can be manufactured with an hingable access panel at one or both ends of the grille. The standard length of each panel piece is 150 mm, although this length can be varied upon request.
- Due to the large amount of possibilities offered by this type of grilles, it is recommended to consult in specific cases with special dimensions (openings, exterior dimensions, separation between blades, etc...).
- Likewise it is recommended to consult when the grilles are to be mounted in a false floor (e.g. computer rooms, etc...), since the existing variety of floors and tiles will have a great influence on the thickness and exterior dimensions of the grille. In general, after consulting and on request, it will be possible to manufacture various models for this type of floors.
- This range of grilles has the necessary characteristics for its integration in contemporary architecture and interior design. They can be installed in ceilings, walls, consoles, fan-coils, induction units, both for supply and return air application and, properly reinforced, in floors.
- The maximum recommended length is 2 m in one piece, although 2 or more modules can be combined so as to give an appearance of continuity.

Normalised dimensions of the grilles (in mm)

Types 31-1, 31-15

Length (L) 200, 250, 300, 350, 400, 450, 500, 600, 700, 800, 900, 1000

Height (H) 100, 125, 150, 200, 250, 300

Types 31-1-F, 31-15-F

Length (L) 200, 300, 400, 500, 600, 700, 800, 900, 1000

Height (H) 75, 100, 125, 150, 200, 250, 300, 600

Special dimensions can be supplied upon request.