



**AIRTECHNIC**

www.airtechnic.gr

Air-Conditioning & Ventilation Components & Systems

- **Weather resistant louvre**

# GW



# Weather resistant louvre **GW**

Weather resistant louvres **GW** have a special design with 1 row of **fixed Z-shaped blades**, **45° inclined**, parallel to the 1<sup>st</sup> dimension, which offers protection against rain. They are suitable for use in air-conditioning and ventilation systems and outdoor wall or air-duct installation, for supplying fresh air or indoor air exhaust.

Weather louvres **GW** can be manufactured from anodized aluminium, aluminium painted in RAL color, from galvanized or stainless steel and copper:

**GW...** : Blades & frame from **anodized aluminium** or **aluminium painted in RAL color**.

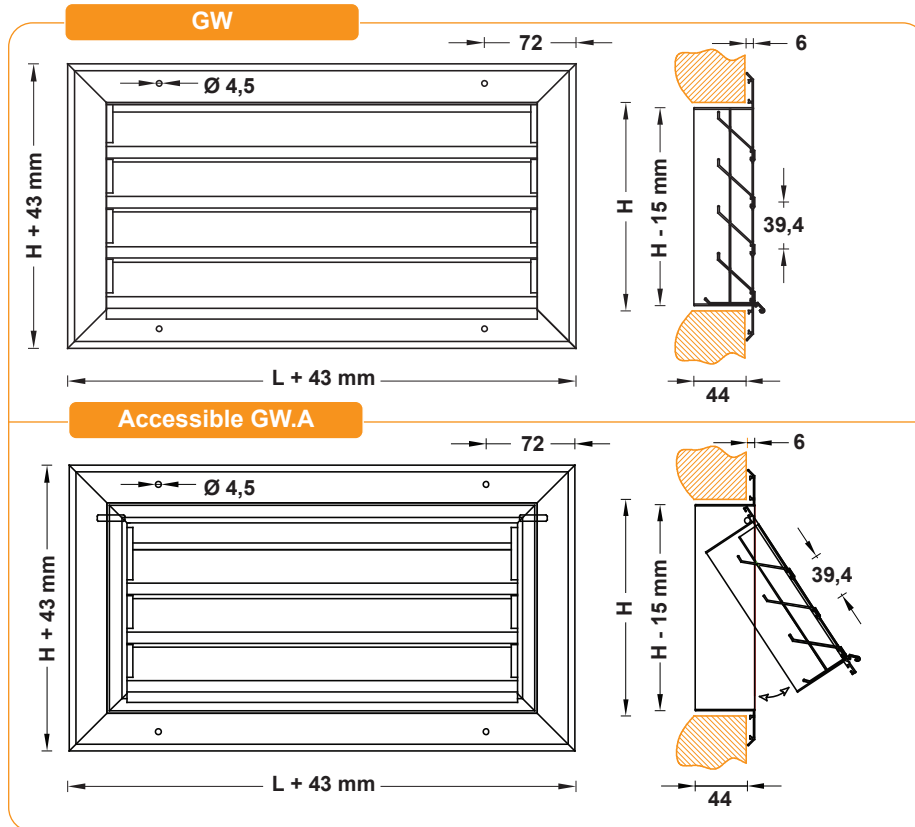
**GW... | C** : Blades & frame from **copper**.

**GW... | GL** : Blades & frame from **galvanized steel**.

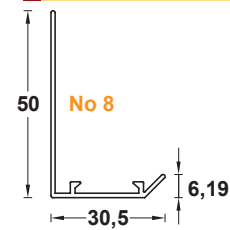
**GW... | I** : Blades & frame from **stainless steel**.



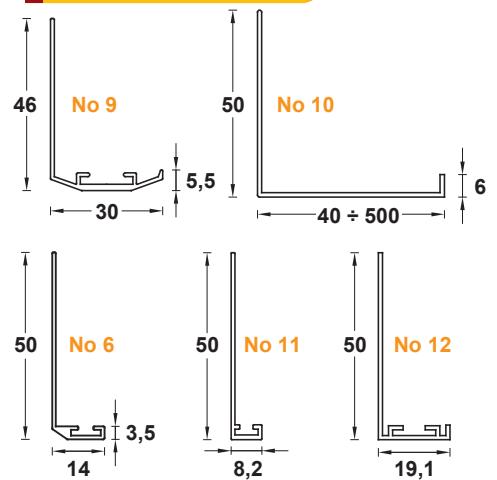
**GW**



## Default frame



## Available frames



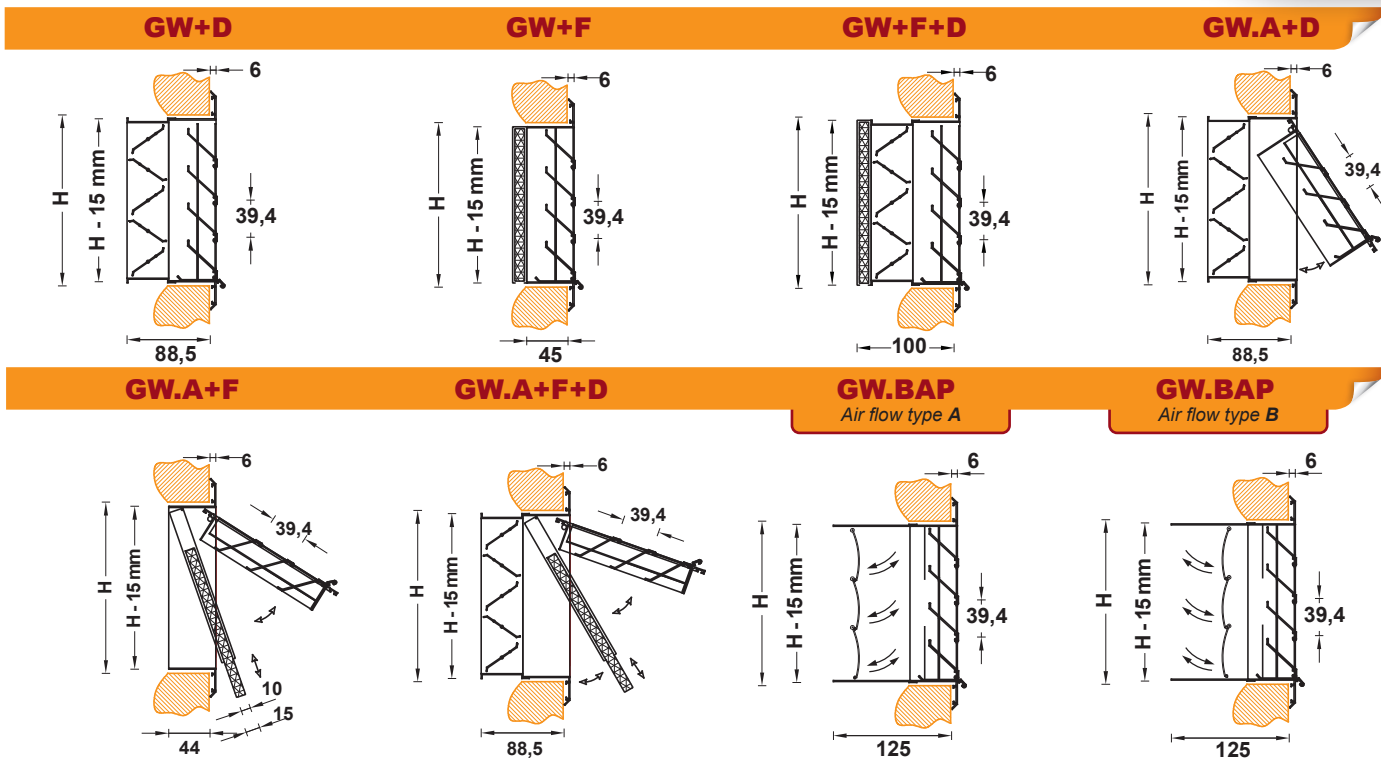
## WEATHER LOUVRE **GW** TYPES

- GW** From **aluminium**. 1 Row of fixed Z-shaped blades, 45° inclined, parallel to the 1<sup>st</sup> dimension.
- GW+D** From **aluminium**. 1 Row of fixed Z-shaped blades, 45° inclined, parallel to the 1<sup>st</sup> dimension. **With volume damper**.
- GW.A** From **aluminium**. 1 Row of fixed Z-shaped blades, 45° inclined, parallel to the 1<sup>st</sup> dimension. **Accessible**.
- GW.A+D** From **aluminium**. 1 Row of fixed Z-shaped blades, 45° inclined, parallel to the 1<sup>st</sup> dimension. **Accessible with volume damper**.
- GW+F** From **aluminium**. 1 Row of fixed Z-shaped blades, 45° inclined, parallel to the 1<sup>st</sup> dimension. **With G3 filter**.
- GW.A+F** From **aluminium**. 1 Row of fixed Z-shaped blades, 45° inclined, parallel to the 1<sup>st</sup> dimension. **Accessible with G3 filter**.
- GW+F+D** From **aluminium**. 1 Row of fixed Z-shaped blades, 45° inclined, parallel to the 1<sup>st</sup> dimension. **With G3 filter and volume damper**.
- GW.A+F+D** From **aluminium**. 1 Row of fixed Z-shaped blades, 45° inclined, parallel to the 1<sup>st</sup> dimension. **Accessible with G3 filter and volume damper**.
- GW.GL** From **galvanized steel**. 1 Row of fixed Z-shaped blades, 45° inclined, parallel to the 1<sup>st</sup> dimension. **With grid 6 x 6 or 12 x 12 mm for protection against birds**.
- GW.BAP** From **aluminium**. 1 Row of fixed Z-shaped blades, 45° inclined, parallel to the 1<sup>st</sup> dimension. **With gravity blades at the back and protection grid 6 x 6 mm**.
- GW.BAP.PVC** From **aluminium**. 1 Row of fixed Z-shaped blades, 45° inclined, parallel to the 1<sup>st</sup> dimension. **With plastic gravity blades at the back and protection grid 6 x 6 mm**.

For GW.BAP and GW.BAP.PVC types please consult the technical document for BAP gravity grilles for selecting the appropriate type of gravity blades: BAP1.A for indoor air exhaust, BAP1.B for fresh air supply.

## OPTIONAL ACCESSORIES

**Under request**, weather louvres **GW** can have aluminium or stainless steel grid for protection against insects and leaves, G2 aluminium filter washable, G4 filter, oil filter, perimeter flange on the contact surface (of the wall or air-duct) for water-tightness and volume control damper.



## INSTALLATION METHODS

Weather louvers **GW** can be installed on air ducts or on walls, as shown in the adjacent drawings and can be used in fresh air intake systems (air flow type **B**) or in indoor air exhaust systems (air flow type **A**).

Page (6) diagrams are suitable for calculating the pressure drop and produced noise, of weather louvers **GW**, for air flow type **B**.

Page (7) diagrams are suitable for calculating the pressure drop and produced noise, of weather louvers **GW**, for air flow type **A**.

Weather louvers **GW** can be installed with the following ways :

### 1. Visible installation with screws

For easy, quick and secure installation. The number of screws required depends on the size of the louver. Bigger louvers require greater number of screws. In case the louver is extremely big, it can be fragmented according to specifications. **For all GW types.**

### 2. Concealed installation with springs

For situations that require an aesthetically better result. Laminas with special cavities, are placed inside the opening where the louver is to be installed, while springs are placed on the louver's frame. The support of the louver is achieved when the springs are secured inside the special cavities of the laminas. **Not used for accessible weather louvers GW.A.**

### 3. Concealed installation with Π-shaped support frame

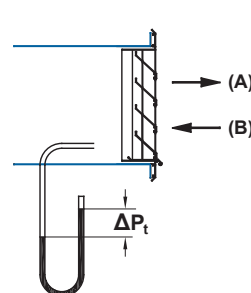
For situations that require both an aesthetically better result and a secure installation. A Π-shaped frame is mounted in the hole in which the louver is to be installed and supported by visible screws. The louver is secured on the frame with internal screw located at the back of the louver. This screw is accessible by screwdriver through the front face of the louver. **Not used for accessible weather louvers GW.A.**

### 4. Concealed installation with internal screws at the side of the louver

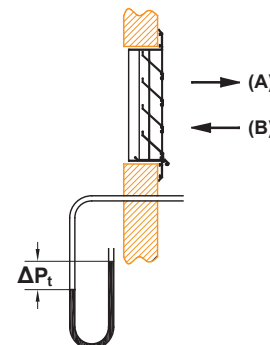
**For accessible weather louvers GW.A** that require both an aesthetically better result and a secure installation. The louver is secured in the hole with internal screws placed in both sides of the louver. The screws are accessible through the opening face of the louver.

If the width *L* is over 2.200 mm or if the height *H* is over 2.000 mm or if the total surface of the louver is over 4 m<sup>2</sup> then the louver is supplied fragmented to more than 1 piece. In the following drawing we see the way of connection for 2 or more louvers. Additional frames for support of the louvers can be supplied under request, with extra charge.

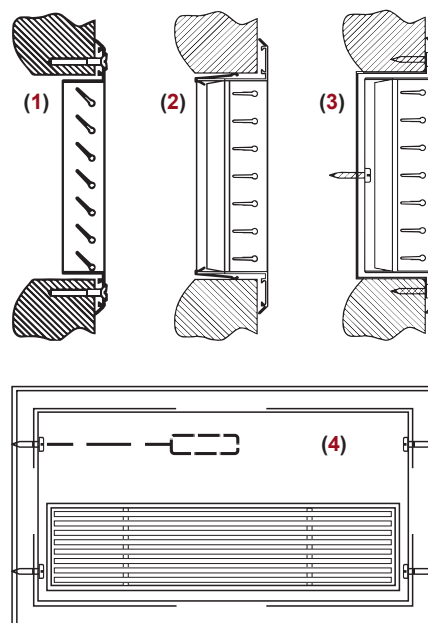
## Air duct installation

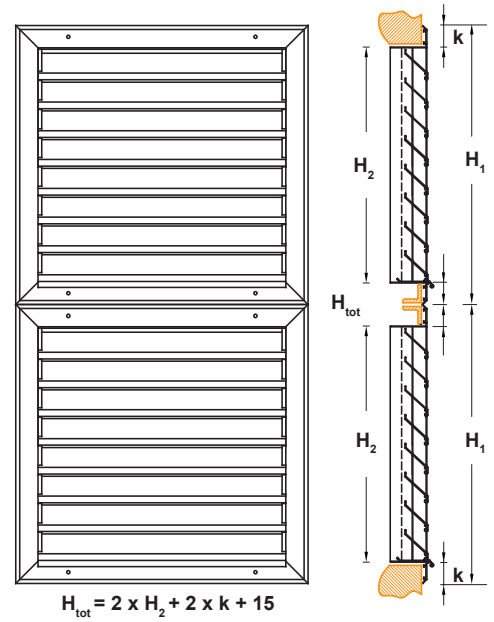
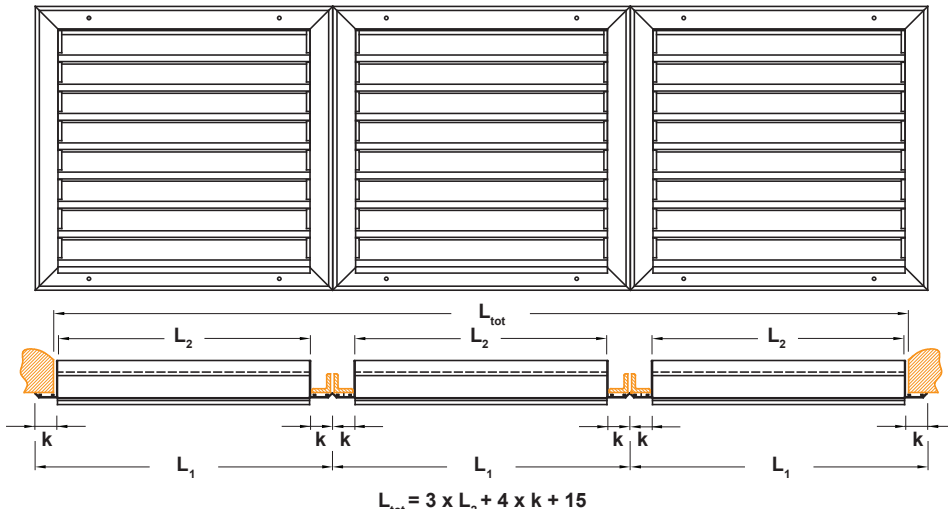
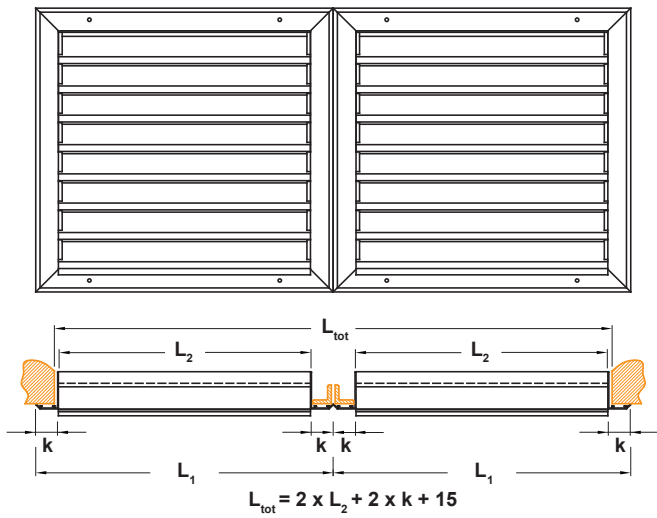


## Wall installation



## Installation options

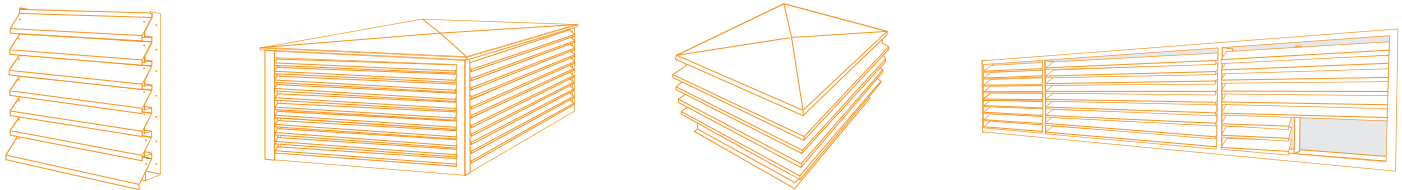




Where **k** is the width of the frame selected, for example for frame No8 : **k = 30,5**

### SPECIAL GW CONSTRUCTIONS

In addition to standard **GW** types, it is possible to manufacture weather louvres of special design for face installation, for roof installation and linear type for continuous lengths.

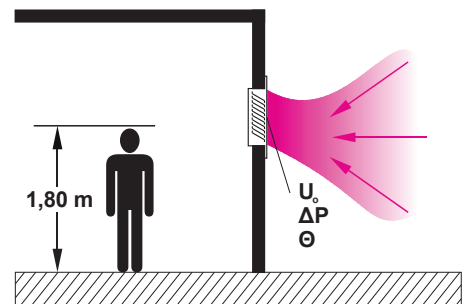


### GW & GW.A SIZE SELECTION

The selection of weather louvres **GW** & **GW.A** will be made using the following diagrams and in accordance with the guideline **CR 1752:1998** (Ventilation for buildings - Design criteria for the indoor environment).

The technical specifications for weather louvres **GW** and **GW.A** are the following :

Louvre width	<b>W</b>	[mm]
Louvre height	<b>H</b>	[mm]
Louvre surface factor	<b>A<sub>f</sub></b>	
Pressure drop inside the louvre	<b>ΔP</b>	[Pa]
Maximum air velocity inside the louvre	<b>U<sub>o</sub></b>	[m/s]
Noise level	<b>Θ</b>	dB[A]



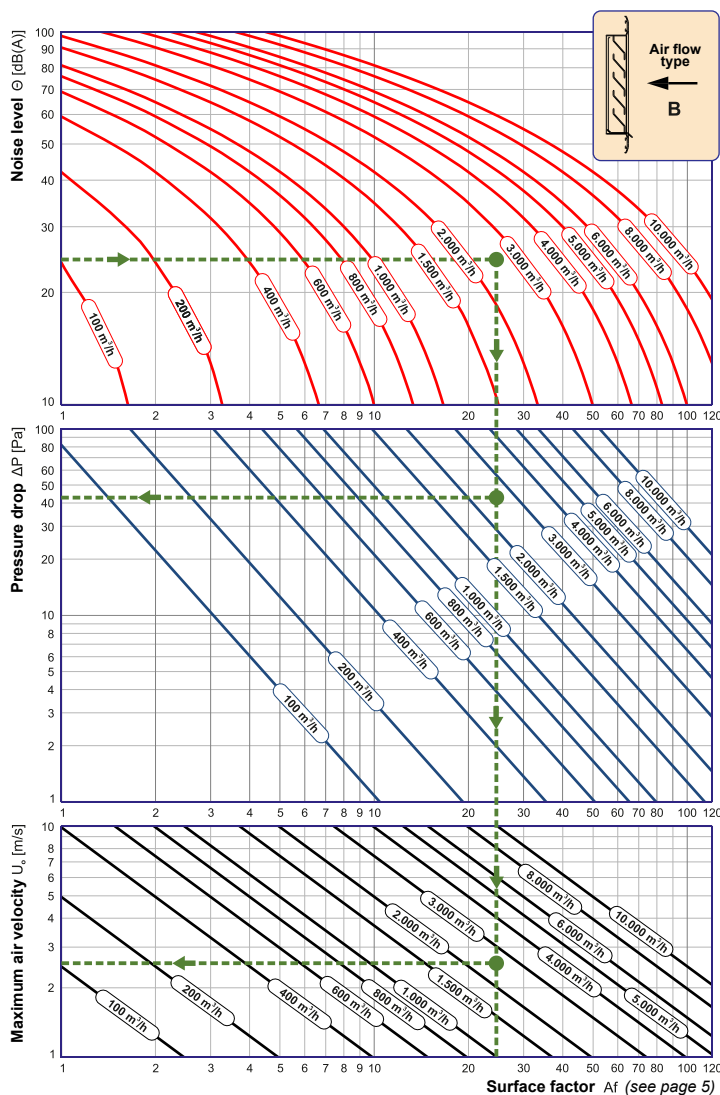


DIAGRAM 1.3

DIAGRAM 1.2

DIAGRAM 1.1

**Selection example 1 :**

Which are the dimensions of a GW louvre if the air flow is 2.600 m<sup>3</sup>/h, the installation is in an office building and the louvre is used for air intake (air flow type B)?

For air flow type B, we use the diagrams from page (6). The louvre will be installed in an office. From the guideline **CR 1752:1998** (types of spaces & permissible sound pressure levels) we establish that the maximum permissible noise level must be 30 dB(A). Therefore a produced noise level of 25 dB(A) is acceptable and from diagram 1.3, for air flow of 2.600 m<sup>3</sup>/h, we estimate that the surface factor Af is 25,2. If one dimension, for construction reasons, is 450 mm then from the surface factor Af selection table we determine that for louvre height equal to 450 mm the louvre width must be 750 mm. The maximum air velocity inside the louvre 750 x 450, is estimated from diagram 1.1 and it's equal to 2,5 m/s, while from diagram 1.2 we calculate that the pressure drop is 42,4 Pa.

**Selection example 2 :**

Which is the pressure drop and the produced noise level in a GW louvre 600 x 350 mm, if the airflow is 1.500 m<sup>3</sup>/h and the louvre is used for air exhaust (air flow type A)?

For air flow type A, we use the diagrams from page (7). From the surface factor Af selection table we establish that according to the louvre's dimensions the surface factor Af is equal to 15,6. From diagrams 2.1, 2.2 and 2.3, for air flow of 1.500 m<sup>3</sup>/h and surface factor Af of 15,6 we estimate that the maximum air velocity inside the louvre is 2,4 m/s, the pressure drop is 33,3 Pa and the produced noise level is 18 dB(A).

The diagrams are an approximate selection method for GW louvres. For more precise calculation, please use the **AIRTECHNIC** air grilles calculation software or contact us.

The standard dimensions of weather louvres **GW** are listed in the following **surface factor selection table**, but it is possible to manufacture GW louvres in any dimension, under request.

	100	125	150	200	250	300	350	400	450	500	550	600	800	1.000
200	1,3	1,7	2,0	2,7	3,4	4,2	4,9	5,7	6,4	7,1	7,9	8,6	11,6	14,5
250	1,7	2,1	2,6	3,4	4,3	5,3	6,2	7,1	8,0	9,0	9,9	10,8	14,5	18,2
300	2,0	2,6	3,1	4,2	5,3	6,3	7,5	8,6	9,7	10,8	11,9	13,0	17,5	22,0
350	2,4	3,0	3,7	4,9	6,2	7,5	8,9	10,3	11,6	12,9	14,3	15,6	21,0	26,3
400	2,7	3,5	4,2	5,7	7,1	8,6	10,3	11,7	13,2	14,8	16,3	17,8	23,9	30,0
450	3,1	3,9	4,7	6,4	8,0	9,7	11,6	13,2	14,9	16,6	18,3	20,0	26,9	33,8
500	3,5	4,4	5,3	7,1	9,0	10,8	12,9	14,8	16,6	18,4	20,4	22,3	29,9	37,5
550	3,8	4,8	5,8	7,9	9,9	11,9	14,3	16,3	18,3	20,4	22,4	24,5	32,9	41,3
600	4,2	5,3	6,4	8,6	10,8	13,0	15,6	17,8	20,0	22,3	24,5	27,0	36,3	45,6
650	4,5	5,7	6,9	9,3	11,8	14,2	16,9	19,4	21,8	24,2	26,6	29,4	39,4	49,3
700	4,9	6,2	7,5	10,1	12,7	15,3	18,3	20,9	23,5	26,1	28,7	31,7	42,5	52,9
750	5,2	6,6	8,0	10,8	13,6	16,4	19,6	22,4	25,2	28,0	30,8	34,0	45,6	56,7
800	5,6	7,1	8,6	11,6	14,5	17,5	21,0	23,9	26,9	29,9	32,9	36,3	48,7	60,6
850	6,0	7,5	9,1	12,3	15,5	18,6	22,3	25,5	28,6	31,8	35,0	38,6	51,8	64,5
900	6,3	8,0	9,7	13,0	16,4	19,7	23,6	27,0	30,3	33,7	37,1	41,0	54,9	68,3
950	6,7	8,4	10,2	13,8	17,3	20,9	25,0	28,5	32,1	35,6	39,2	43,3	58,0	72,2
1.000	7,0	8,9	10,8	14,5	18,2	22,0	26,3	30,0	33,8	37,5	41,3	45,6	61,1	76,1
1.050	7,4	9,4	11,3	15,2	19,2	23,1	27,6	31,6	35,5	39,4	43,4	47,9	64,2	79,9
1.100	7,7	9,8	11,9	16,0	20,1	24,2	29,0	33,1	37,2	41,3	45,5	50,2	67,3	83,8
1.150	8,1	10,3	12,4	16,7	21,0	25,3	30,3	34,6	38,9	43,2	47,6	52,5	70,4	87,7
1.200	8,5	10,7	13,0	17,5	22,0	26,5	31,7	36,2	40,7	45,2	49,6	54,9	73,6	91,5
1.250	8,8	11,2	13,5	18,2	22,9	27,6	33,0	37,7	42,4	47,1	51,7	57,2	76,7	95,4
1.300	9,2	11,6	14,1	18,9	23,8	28,7	34,3	39,2	44,1	49,0	53,8	59,5	79,8	99,3
1.350	9,5	12,1	14,6	19,7	24,7	29,8	35,7	40,7	45,8	50,9	55,9	61,8	82,9	103,1
1.400	9,9	12,5	15,1	20,4	25,7	30,9	37,0	42,3	47,5	52,8	58,0	64,1	86,0	107,0
1.450	10,2	13,0	15,7	21,1	26,6	32,0	38,3	43,8	49,2	54,7	60,1	66,4	89,1	110,9
1.500	10,6	13,4	16,2	21,9	27,5	33,2	39,7	45,3	51,0	56,6	62,2	68,8	92,2	114,7

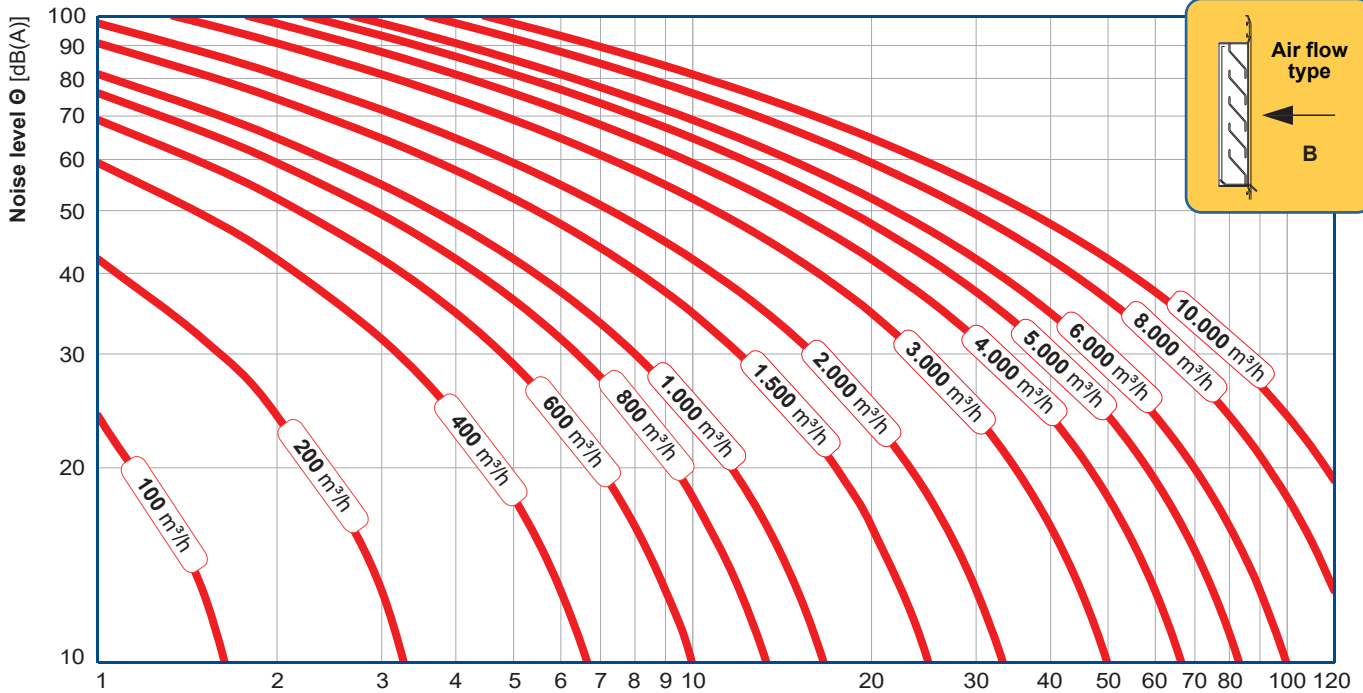


DIAGRAM 1.3

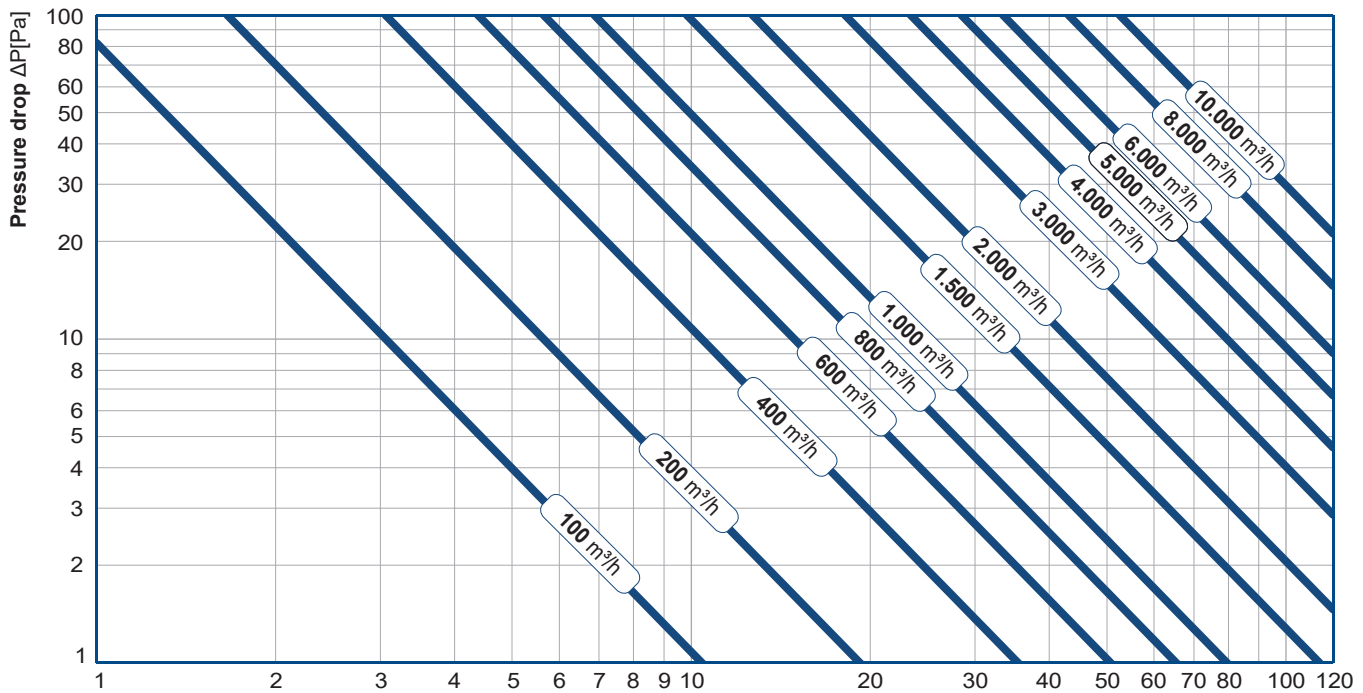


DIAGRAM 1.2

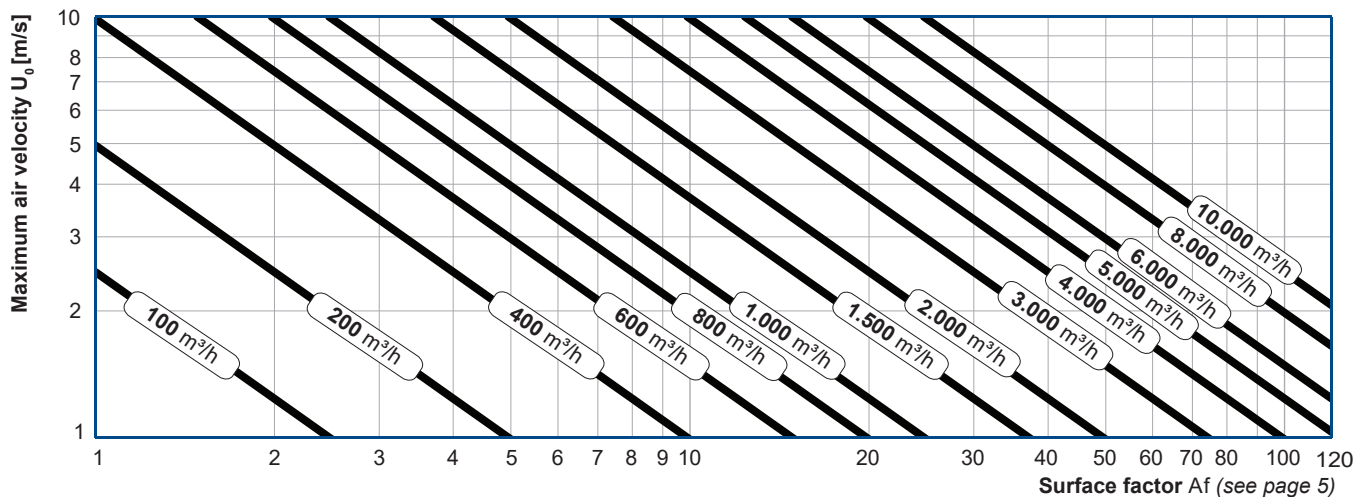


DIAGRAM 1.1

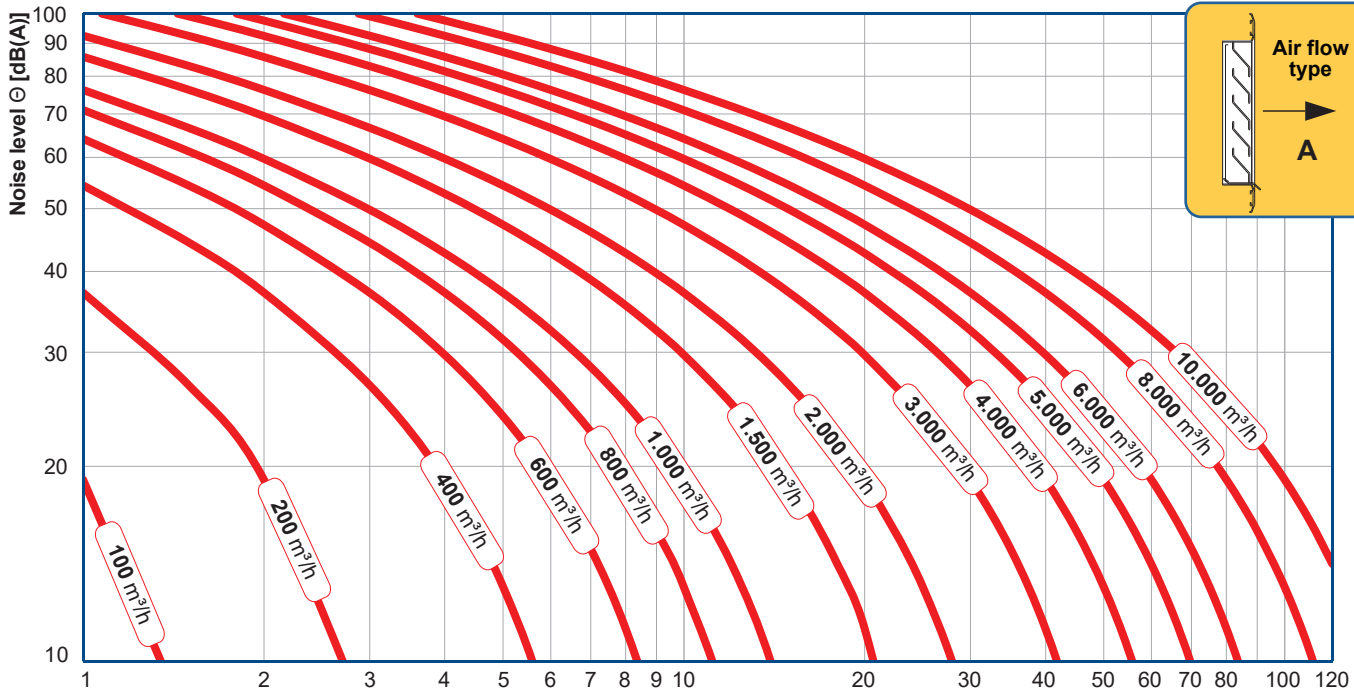


DIAGRAM 2.3

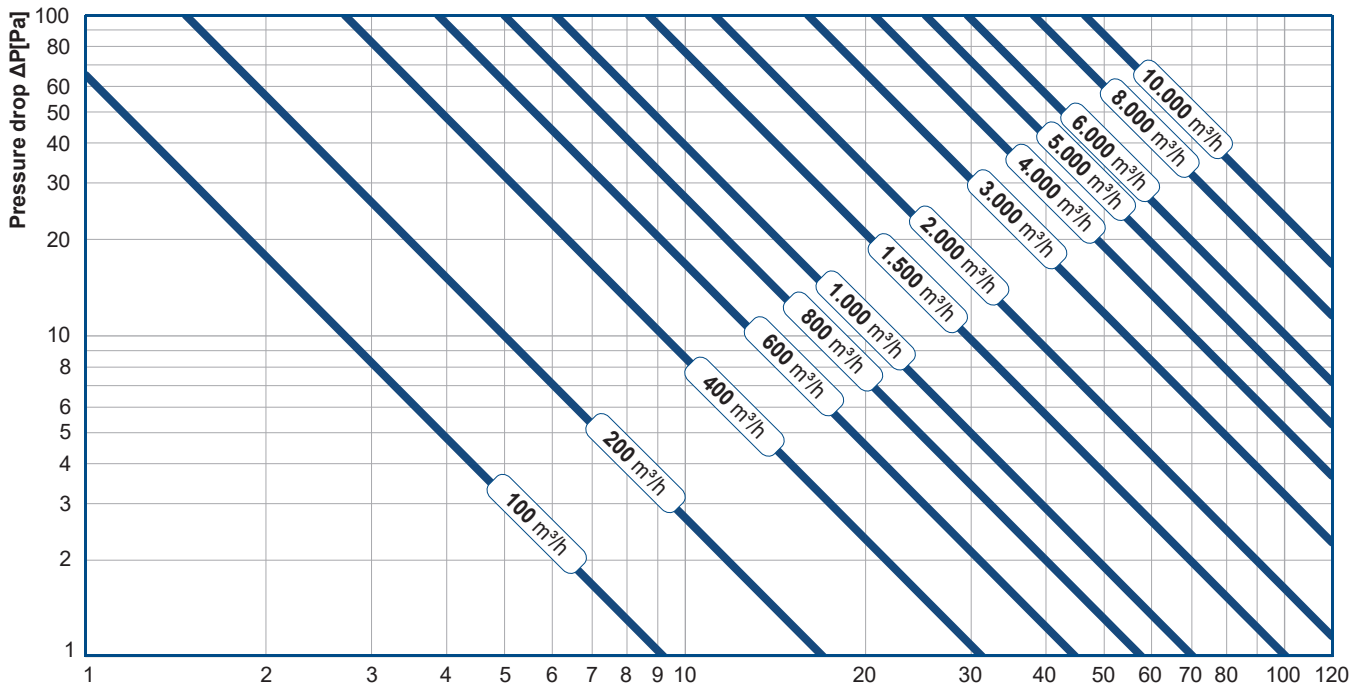


DIAGRAM 2.2

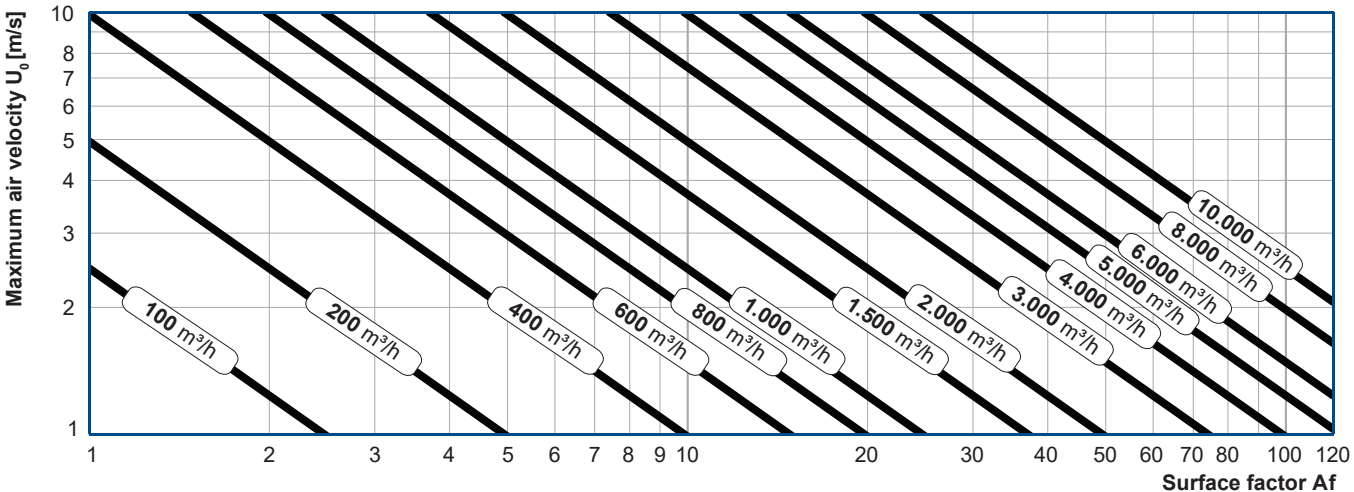


DIAGRAM 2.1

**PRESSURE DROP & NOISE LEVEL - WEATHER LOUVRE WITH VOLUME DAMPER**

If we have a weather louvre with volume damper **GW+D**, the calculation of the total pressure drop and noise level is made using the weather louvre calculation diagrams (as shown on pages 6 & 7), the louvre volume damper calculation diagrams (as listed in their respective technical document) and the following equations. The following examples were made for airflow type B.

**Calculation example 1 :**  
*Pressure drop and noise level calculation in a louvre GW+D, with damper blade angle of 0°.*

We have a louvre GW+D with dimensions **400 x 400** and an air flow of 1.200 m<sup>3</sup>/h. The louvre GW with dimensions **400 x 400** has, according to page 6 diagrams, for air flow equal to 1.200 m<sup>3</sup>/h, a pressure drop of 49,6 Pa and a noise level of 24,7 dB. A louvre damper with dimensions **400 x 400** has, according to its respective selection diagrams, for blade angle 0° and air flow of 1.200 m<sup>3</sup>/h, a pressure drop of 6,8 Pa and a noise level of 21,5 dB.

The total pressure drop inside the louvre GW+D with dimensions **400 x 400** is the algebraic sum of the pressure drop inside the louvre and the pressure drop inside the damper:  $\Delta p_{GW} + \Delta p_{Damper} = 49,6 + 6,8 = 56,4$  Pa.

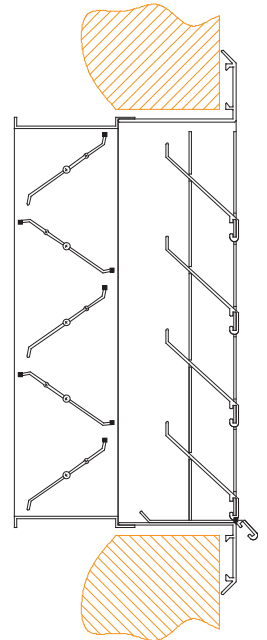
The total noise level is calculated by using the following equation:  $L_{tot} = L_{GW} \oplus L_{Damper} = L_{max} + C(\Delta L)$ . The difference between the noise levels of the 2 independent sound sources (the louvre GW and the damper) is  $\Delta L = 3,2$ . Therefore from the following diagram we determine that for  $\Delta L = 3,2$  the correction factor  $C(\Delta L)$  is equal to 1,7. So, the total noise level is  $L_{tot} = L_{max} + C(\Delta L) = 24,7 + 1,7 = 26,4$  dB.

**Calculation example 2 :**  
*Pressure drop and noise level calculation in a louvre GW+D, with damper blade angle of 30°.*

We have a louvre GW+D with dimensions **400 x 400** and an air flow of 1.000 m<sup>3</sup>/h. The louvre GW with dimensions **400 x 400** has, according to page 6 diagrams, for air flow equal to 1.000 m<sup>3</sup>/h, a pressure drop of 36,7 Pa and a noise level of 19,8 dB. A louvre damper with dimensions **400 x 400** has, according to its respective selection diagrams, for blade angle 30° and air flow of 1.000 m<sup>3</sup>/h, a pressure drop of 27,3 Pa and a noise level of 32,7 dB.

The total pressure drop inside the louvre GW+D with dimensions **400 x 400** is the algebraic sum of the pressure drop inside the louvre and the pressure drop inside the damper:  $\Delta p_{GW} + \Delta p_{Damper} = 36,7 + 27,3 = 64,0$  Pa.

The total noise level is calculated by using the following equation:  $L_{tot} = L_{GW} \oplus L_{Damper} = L_{max} + C(\Delta L)$ . The difference between the noise levels of the 2 independent sound sources (the louvre GW and the damper) is  $\Delta L = 12,9$ . Therefore from the following diagram we determine that for  $\Delta L = 12,9$  the correction factor  $C(\Delta L)$  is equal to 0,25. So, the total noise level is  $L_{tot} = L_{max} + C(\Delta L) = 32,7 + 0,25 = 32,95$  dB.



**CALCULATING THE TOTAL NOISE LEVEL BETWEEN 2 INDEPENDENT SOUND SOURCES**

Since noise in [dB] is a quantity that is defined in logarithmic scale, when we have 2 (or more) independent sound sources, the total noise is not calculated by the algebraic sum of the 2 sources. The "sum" of 2 sound sources L1, L2 is symbolized by the internationally defined symbol  $\oplus$  and is calculated by using the following equation :

$$L_{tot} = L1 \oplus L2 = 10 \times \log(10^{0,1 \times L1} + 10^{0,1 \times L2})$$

Because of the previous equation requiring some complex calculations, we can define the sum of 2 sound sources with sufficient accuracy using the following approximate equation :

$$L_{tot} = L1 \oplus L2 = L_{max} + C(\Delta L),$$

where  $L_{max}$  is the largest noise level between L1 and L2 and  $C(\Delta L)$  a correction factor (in dB) which depends on the difference  $\Delta L = |L2 - L1|$  and is calculated by using the following diagram.



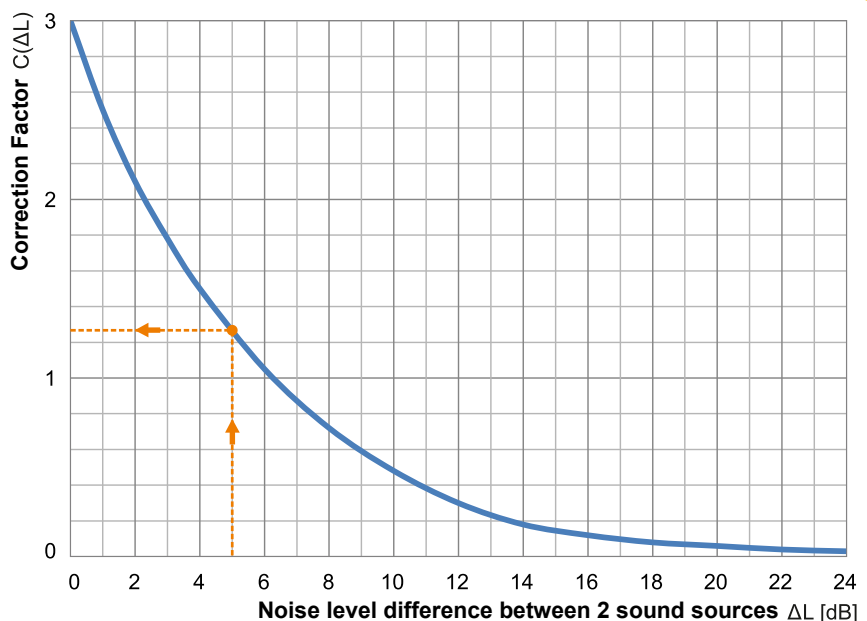
**Calculation example**

We have a grille which produces noise L1 = 25 dB in an area. If, in the same area, the noise produced from a 2nd independent grille is L2 = 30 dB, then the total noise level is calculated as follows:  
 $L_{tot} = L1 \oplus L2 = L_{max} + C(\Delta L)$ .

We have  
 $L_{max} = L2 = 30$  dB and  
 $\Delta L = L2 - L1 = 5$  dB

From the adjacent diagram we define that for  $\Delta L$  equal to 5 dB the correction factor is  $C(\Delta L) = 1,2$  dB.

Therefore the total noise level is:  
 $L_{tot} = 25 \oplus 30 = 30 + C(5) \cong 30 + 1,2 = 31,2$  dB.





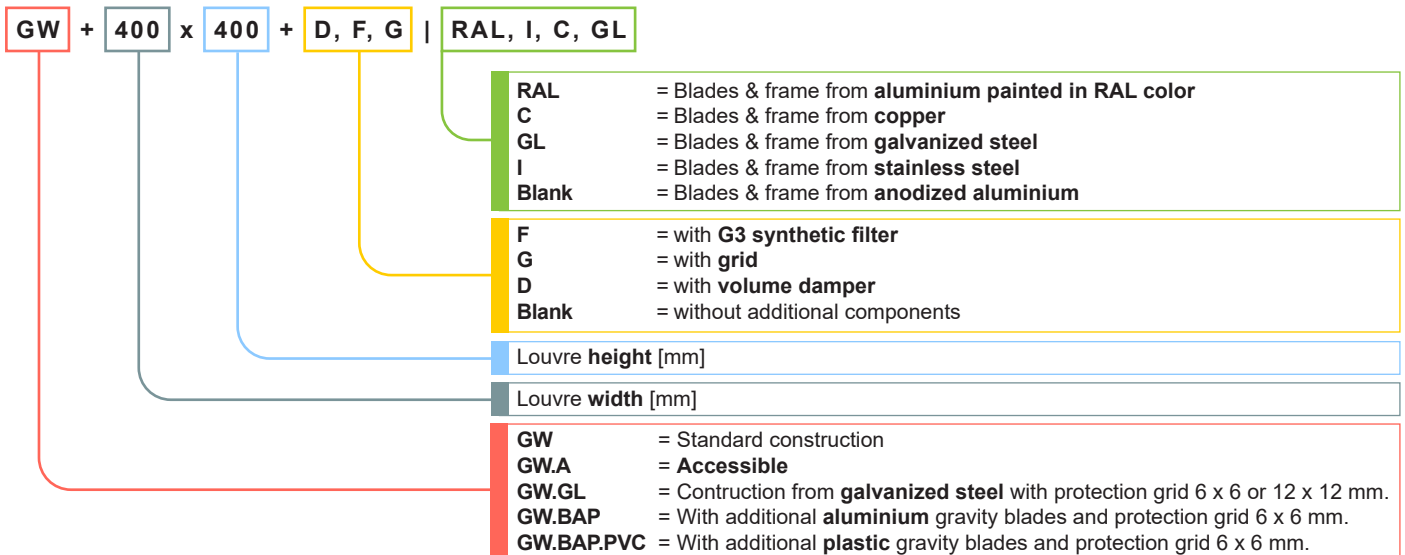
All louvres can be powder painted in any RAL color, upon request. For the full range of RAL colors please contact us.



Color examples

## GW - ORDER CODIFICATION

For the proper order of weather louvres **GW** please use the following codification :



### Examples

#### **GW 600 x 400 + D =**

Weather louvre GW, **600 mm** in width, **400 mm** in height, with blades and frame from aluminium and volume damper.

#### **GW.A 400 x 600 + F | 9005 =**

Weather louvre GW.A accessible, **400 mm** in width, **600 mm** in height, with blades and frame from aluminium powder painted in RAL9005 & G3 filter.

For ordering **GW** louvres with optional accessories not listed in the standard codes above or special constructions, please contact our sales department.



## SPECIFICATIONS

### Rectangular weather grille, **GW**

Rectangular weather grille, indicative type **GW** by **AIRTECHNIC**, manufactured of anodized aluminum / aluminum painted in RAL... color / copper / galvanized steel / stainless steel and 1 row of fixed Z-shaped blades, 45° inclined, parallel to the 1<sup>st</sup> dimension, for rain-tightness. The manufacturer will have performed measurements of the technical characteristics of the grille, in an independent laboratory according to the standard ISO 5219-1984. It will have a volume damper [D] / filter G3 [F] / protection grid [G]. It will be suitable for external wall or air duct placement, for fresh air intake or for indoor air exhaust and visible installation with screws / concealed installation with springs / concealed installation with Π-shaped subframe. The factory will be certified according to **ISO 9001:2015** (Quality Management Systems) and according to **ISO 14001:2015** (Environmental Management Systems).

It will be manufactured by **AIRTECHNIC** type **GW / GW +D, +F, +G**

### Rectangular weather grille, **GW.A**

Rectangular weather grille, indicative type **GW.A** by **AIRTECHNIC**, manufactured of anodized aluminum / aluminum painted in RAL... color / copper / galvanized steel / stainless steel, 1 row of fixed Z-shaped blades, 45° inclined, parallel to the 1<sup>st</sup> dimension, for rain-tightness and accessible face. The manufacturer will have performed measurements of the technical characteristics of the grille, in an independent laboratory according to the standard ISO 5219-1984. It will have a volume damper [D] / filter G3 [F] / protection grid [G]. It will be suitable for external wall or air duct placement, for fresh air intake or for indoor air exhaust and visible installation with screws / concealed installation with springs / concealed installation with Π-shaped subframe. The factory will be certified according to **ISO 9001:2015** (Quality Management Systems) and according to **ISO 14001:2015** (Environmental Management Systems).

It will be manufactured by **AIRTECHNIC** type **GW.A / GW.A +D, +F, +G**

### Rectangular weather grille, **GW.GL**

Rectangular weather grille, indicative type **GW.GL** by **AIRTECHNIC**, manufactured of galvanized steel, 1 row of fixed Z-shaped blades, 45° inclined, parallel to the 1<sup>st</sup> dimension, for rain-tightness and protection grid 6 x 6 or 12 x 12 mm. The manufacturer will have performed measurements of the technical characteristics of the grille, in an independent laboratory. It will be suitable for external wall or air duct placement, for fresh air intake or for indoor air exhaust and visible installation with screws / concealed installation with springs / concealed installation with Π-shaped subframe. The factory will be certified according to **ISO 9001:2015** (Quality Management Systems) and according to **ISO 14001:2015** (Environmental Management Systems).

It will be manufactured by **AIRTECHNIC** type **GW.GL**

### Rectangular weather grille, **GW.BAP**

Rectangular weather grille, indicative type **GW.BAP** by **AIRTECHNIC**, manufactured of anodized aluminum / aluminum painted in RAL... color / copper / galvanized steel / stainless steel, 1 row of fixed Z-shaped blades, 45° inclined, parallel to the 1<sup>st</sup> dimension, for rain-tightness, additional gravity blades manufactured of anodized aluminum at the back of the grille and protection grid 6 x 6 mm. The manufacturer will have performed measurements of the technical characteristics of the grille, in an independent laboratory. It will be suitable for external wall or air duct placement, for fresh air intake or for indoor air exhaust and visible installation with screws / concealed installation with springs / concealed installation with Π-shaped subframe. The factory will be certified according to **ISO 9001:2015** (Quality Management Systems) and according to **ISO 14001:2015** (Environmental Management Systems).

It will be manufactured by **AIRTECHNIC** type **GW.BAP**

### Rectangular weather grille, **GW.BAP.PVC**

Rectangular weather grille, indicative type **GW.BAP.PVC** by **AIRTECHNIC**, manufactured of anodized aluminum / aluminum painted in RAL... color / copper / galvanized steel / stainless steel, 1 row of fixed Z-shaped blades, 45° inclined, parallel to the 1<sup>st</sup> dimension, for rain-tightness, additional plastic gravity blades at the back of the grille and protection grid 6 x 6 mm. The manufacturer will have performed measurements of the technical characteristics of the grille, in an independent laboratory. It will be suitable for external wall or air duct placement, for fresh air intake or for indoor air exhaust and visible installation with screws / concealed installation with springs / concealed installation with Π-shaped subframe. The factory will be certified according to **ISO 9001:2015** (Quality Management Systems) and according to **ISO 14001:2015** (Environmental Management Systems).

It will be manufactured by **AIRTECHNIC** type **GW.BAP.PVC**





ISO 9001:2015



ISO 14001:2015



Management System  
ISO 14001:2015  
Valid until:  
2024-05-24



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### EVAPORATIVE COOLING

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