



AIRTECHNIC

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Air-Conditioning & Ventilation Components & Systems

Return grille

G1S



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V. 4

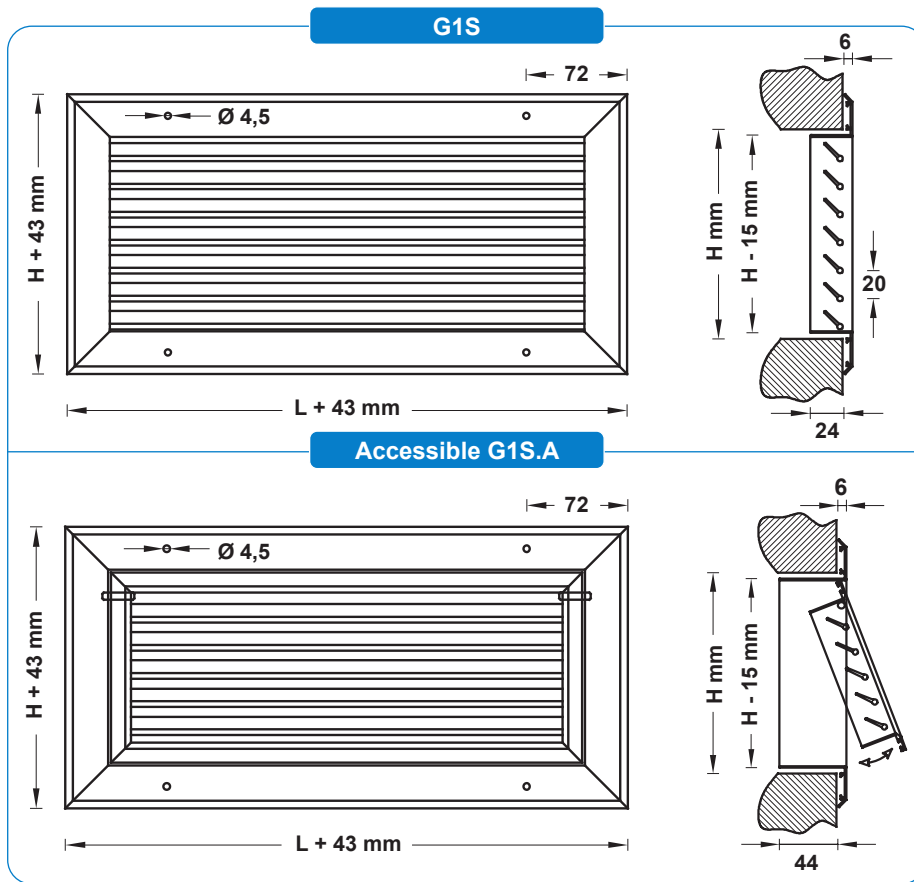
Return grille **G1S**

Return grilles **G1S** have **1 row of fixed blades, 45° inclined**, parallel to the 1st dimension. They are suitable for use in air-conditioning and ventilation systems and wall, roof or air-duct placement, for indoor air exhaust.

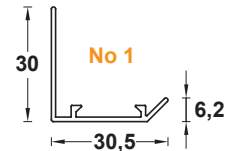
Return grilles **G1S** can be manufactured from anodized aluminium, aluminium painted in RAL color, from galvanized or stainless steel and copper:

- G1S...** : Blades & frame from **anodized aluminium or aluminium painted in RAL color**.
- G1S... | C** : Blades & frame from **copper**.
- G1S... | GL** : Blades & frame from **galvanized steel**.
- G1S... | I** : Blades & frame from **stainless steel**.

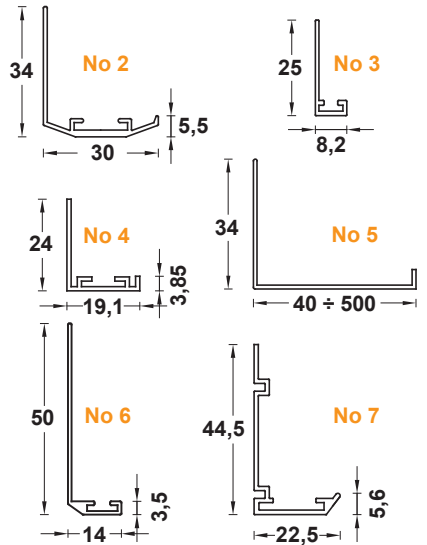
It is possible to manufacture **G1S** grilles from **PVC plastic**, under request.



Default frame



Available frames



RETURN GRILLE **G1S** - TYPES

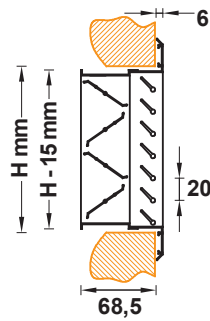
- G1S** From **aluminium**. 1 Row of fixed blades, 45° inclined, parallel to the 1st dimension.
- G1S+D** From **aluminium**. 1 Row of fixed blades, 45° inclined, parallel to the 1st dimension. **With volume damper.**
- G1S.A** From **aluminium**. 1 Row of fixed blades, 45° inclined, parallel to the 1st dimension. **Accessible.**
- G1S.A+D** From **aluminium**. 1 Row of fixed blades, 45° inclined, parallel to the 1st dimension. **Accessible with volume damper.**
- G1S+F** From **aluminium**. 1 Row of fixed blades, 45° inclined, parallel to the 1st dimension. **With G3 filter.**
- G1S.A+F** From **aluminium**. 1 Row of fixed blades, 45° inclined, parallel to the 1st dimension. **Accessible with G3 filter.**
- G1S+D+F** From **aluminium**. 1 Row of fixed blades, 45° inclined, parallel to the 1st dimension. **With G3 filter and volume damper.**
- G1S.A+D+F** From **aluminium**. 1 Row of fixed blades, 45° inclined, parallel to the 1st dimension. **Accessible with G3 filter and volume damper.**

OPTIONAL ACCESSORIES

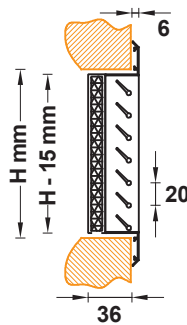
Under request, return grilles **G1S** can have plenum box, aluminium, galvanized or stainless steel grid for protection against insects and leaves, G2 aluminium filter washable, G4 filter, perforated metal sheet and false ceiling plate with external dimensions 595 x 595 mm.



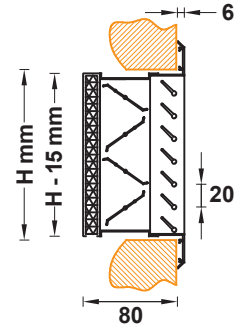
G1S+D



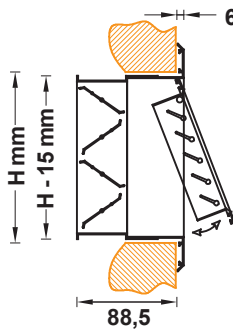
G1S+F



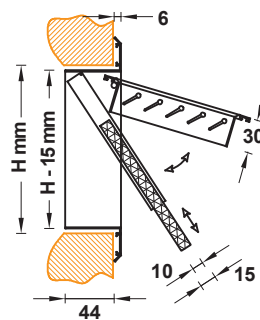
G1S+D+F



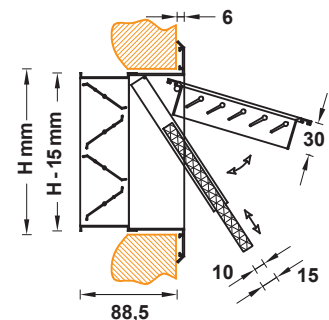
G1S.A+D



G1S.A+F



G1S.A+D+F



INSTALLATION OPTIONS

Return grilles G1S 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 grille. Bigger grilles require greater number of screws. In case the grille is extremely big, it can be fragmented according to specifications. For all G1S 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 grille is to be installed, while springs are placed on the grille's frame. The support of the grille is achieved when the springs are secured inside the special cavities of the laminas. This installation method is suitable only for wall installation and not for ceiling installation, for security reasons. Not used for accessible return grilles G1S.A.

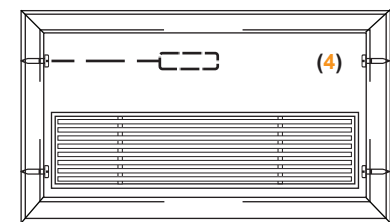
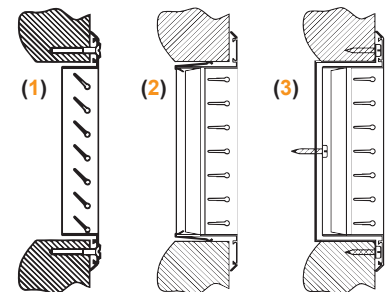
3. Concealed installation with Π-shaped subframe

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 grille is to be installed and supported by visible screws. The grille is secured on the frame with internal screw located at the back of the grille. This screw is accessible by screwdriver through the front face of the grille. Not used for accessible return grilles G1S.A.

4. Concealed installation with internal screws at the side of the grille

For accessible return grilles G1S.A that require both an aesthetically better result and a secure installation. The grille is secured in the hole with internal screws placed in both sides of the grilles. The screws are accessible through the accessible face of the grille.

Installation options

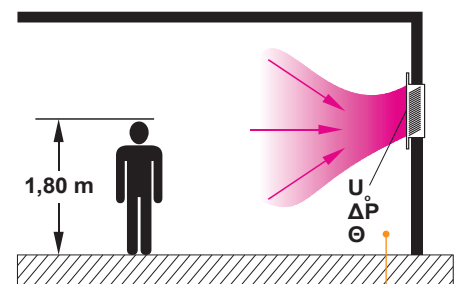


G1S - SIZE SELECTION

The selection of return grilles G1S & G1S.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 return grilles G1S and G1S.A are the following :

Grille width	W [mm]
Grille height	H [mm]
Grille surface factor	Af
Pressure drop inside the grille	ΔP [Pa]
Maximum air velocity inside the grille	U ₀ [m/s]
Noise level	Θ dB[A]



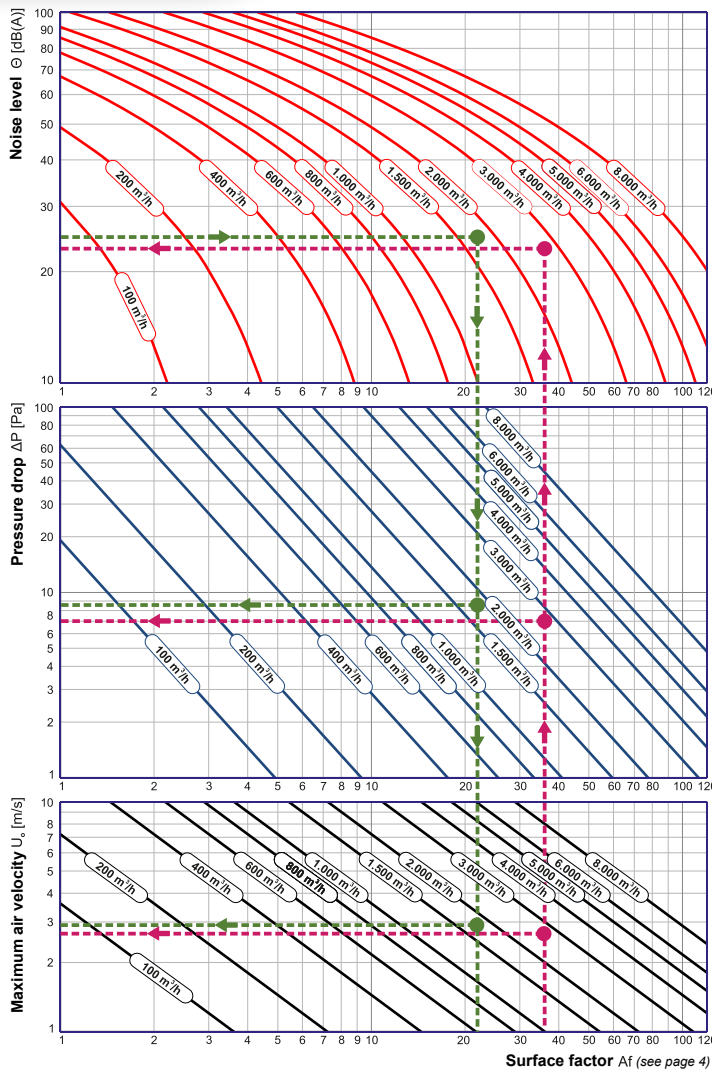


DIAGRAM 1.3

DIAGRAM 1.2

DIAGRAM 1.1

Selection example 1 :

Which are the dimensions of a G1S grille if the air flow is 1.800 m³/h and the installation is in an office building?

The G1S grille 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 1.800 m³/h, we determine that the surface factor Af is 22,1. If one dimension, for construction reasons, is 450 mm then from the surface factor Af selection table we have that for grille height equal to 450 mm the grille width must be 650 mm. The maximum air velocity inside the grille 650 x 450, is estimated from diagram 1.1 and it's equal to 2,9 m/s, while from diagram 1.2 we calculate that the pressure drop is 8,6 Pa.

Selection example 2 :

Which is the pressure drop and the produced noise level in a G1S grille 850 x 550 mm, if the airflow is 2.700 m³/h?

From the surface factor Af selection table we establish that according to the grille's dimensions the surface factor Af is equal to 35,7. From diagrams 1.1, 1.2 and 1.3, for air flow of 2.700 m³/h and surface factor Af of 35,7 we estimate that the maximum air velocity inside the louvre is 2,7 m/s, the pressure drop is 7 Pa and the produced noise level is 23,4 dB(A).

The diagrams are an approximate selection method for G1S grilles. For more precise calculation, please use the AIRTECHNIC air grilles calculation software or contact us.

The standard dimensions of return grilles G1S are listed in the following surface factor selection table, but it is possible to manufacture G1S grilles in any dimension, under request.

	100	125	150	200	250	300	350	400	450	500	550	600	800	1.000
200	1,2	1,6	2,0	2,7	3,4	4,2	4,9	5,6	6,4	7,1	7,8	8,6	11,5	14,5
250	1,6	2,1	2,5	3,4	4,4	5,3	6,3	7,2	8,2	9,1	10,1	11,0	14,8	18,6
300	1,9	2,5	3,1	4,2	5,3	6,4	7,6	8,7	9,8	11,0	12,1	13,2	17,8	22,3
350	2,2	2,9	3,6	4,9	6,3	7,6	9,0	10,3	11,6	13,0	14,3	15,7	21,1	26,4
400	2,6	3,4	4,2	5,6	7,2	8,7	10,3	11,8	13,3	14,8	16,4	17,9	24,0	30,2
450	2,9	3,8	4,7	6,4	8,2	9,8	11,6	13,3	15,1	16,9	18,6	20,3	27,3	34,3
500	3,2	4,3	5,3	7,1	9,1	11,0	13,0	14,8	16,9	18,7	20,6	22,6	30,3	38,0
550	3,6	4,7	5,8	7,8	10,1	12,1	14,3	16,4	18,6	20,6	22,9	25,0	33,6	42,2
600	3,9	5,1	6,4	8,6	11,0	13,2	15,7	17,9	20,3	22,6	25,0	27,2	36,6	45,9
650	4,2	5,6	6,9	9,3	12,0	14,4	17,0	19,4	22,1	24,5	27,2	29,6	39,7	50,0
700	4,6	6,0	7,4	10,0	12,9	15,5	18,4	21,0	23,8	26,4	29,3	31,9	42,8	53,8
750	4,9	6,5	8,0	10,8	13,9	16,6	19,7	22,5	25,6	28,4	31,4	34,2	46,0	57,7
800	5,2	6,9	8,5	11,5	14,8	17,8	21,1	24,0	27,3	30,3	33,6	36,6	49,1	61,6
850	5,6	7,3	9,1	12,2	15,7	18,9	22,4	25,6	29,1	32,2	35,7	38,9	52,2	65,6
900	5,9	7,8	9,6	13,0	16,7	20,0	23,8	27,1	30,8	34,2	37,9	41,2	55,4	69,5
950	6,3	8,2	10,2	13,7	17,6	21,2	25,1	28,6	32,6	36,1	40,0	43,6	58,5	73,4
1.000	6,6	8,7	10,7	14,5	18,6	22,3	26,4	30,2	34,3	38,0	42,2	45,9	61,6	77,4
1.050	6,9	9,1	11,3	15,2	19,5	23,4	27,8	31,7	36,1	40,0	44,3	48,2	64,8	81,3
1.100	7,3	9,5	11,8	15,9	20,5	24,6	29,1	33,2	37,8	41,9	46,5	50,6	67,9	85,2
1.150	7,6	10,0	12,3	16,7	21,4	25,7	30,5	34,8	39,5	43,8	48,6	52,9	71,0	89,2
1.200	7,9	10,4	12,9	17,4	22,4	26,9	31,8	36,3	41,3	45,8	50,8	55,2	74,2	93,1
1.250	8,3	10,9	13,4	18,1	23,3	28,0	33,2	37,9	43,0	47,7	52,9	57,6	77,3	97,0
1.300	8,6	11,3	14,0	18,9	24,2	29,1	34,5	39,4	44,8	49,7	55,0	59,9	80,4	101,0
1.350	8,9	11,7	14,5	19,6	25,2	30,3	35,9	40,9	46,5	51,6	57,2	62,3	83,6	104,9
1.400	9,3	12,2	15,1	20,3	26,1	31,4	37,2	42,5	48,3	53,5	59,3	64,6	86,7	108,8
1.450	9,6	12,6	15,6	21,1	27,1	32,5	38,5	44,0	50,0	55,5	61,5	66,9	89,8	112,8
1.500	9,9	13,1	16,2	21,8	28,0	33,7	39,9	45,5	51,8	57,4	63,6	69,3	93,0	116,7



G1S & G1S.A - PRESSURE DROP & NOISE LEVEL CALCULATION

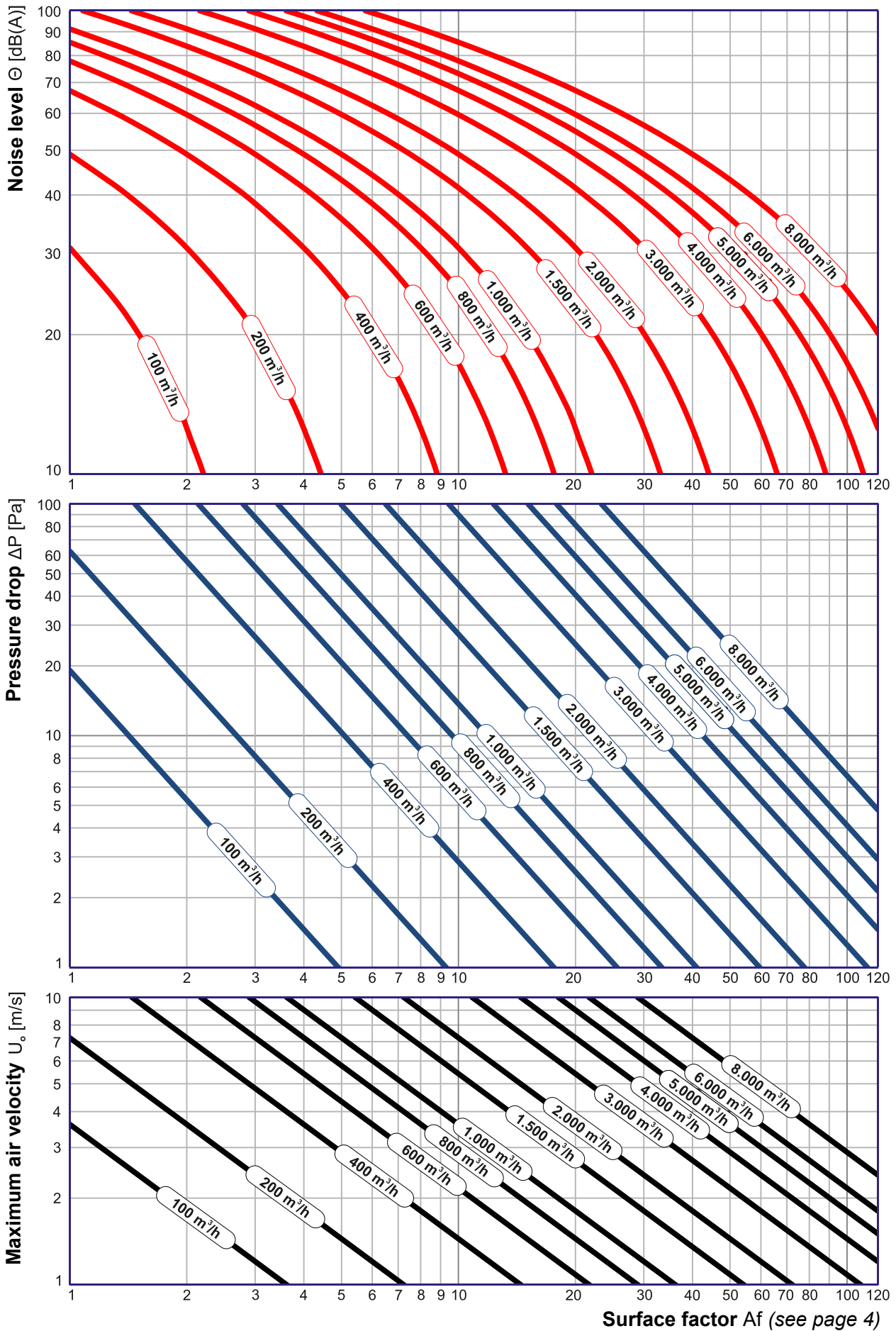


DIAGRAM 1.3

DIAGRAM 1.2

DIAGRAM 1.1

PRESSURE DROP & NOISE LEVEL - RETURN GRILLE WITH VOLUME DAMPER

If we have a return grille with volume damper **G1S+D**, the calculation of the total pressure drop and noise level is made using the **G1S** calculation diagrams (as shown on page 5), the grille volume damper calculation diagrams (as listed in their respective technical document) and the following equations.

Calculation example 1 :
Pressure drop and noise level calculation in a G1S+D, with damper blade angle of 0°.

We have a grille **G1S+D** with dimensions **400 x 400** and an air flow of 1.000 m³/h. The grille **G1S+D** with dimensions **400 x 400** has, according to page 5 diagrams, for air flow equal to 1.000 m³/h, pressure drop of 10 Pa and a noise level of 26,5 dB. A grille damper with dimensions **400 x 400** has, according to its respective selection diagrams, for blade angle 0° and air flow of 1.000 m³/h, a pressure drop of 4,8 Pa and a noise level of 16,7 dB.

The total pressure drop inside the grille **G1S+D** with dimensions **400 x 400** is the algebraic sum of the pressure drop inside the grille and the pressure drop inside the damper: $\Delta p_{G1S} + \Delta p_{Damper} = 10 + 4,8 = 14,8$ Pa.

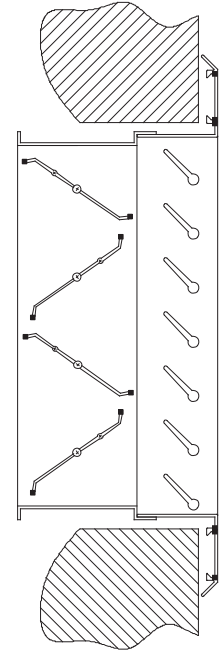
The total noise level is calculated by using the following equation: $L_{tot} = L_{G1S} \oplus L_{Damper} = L_{max} + C(\Delta L)$. The difference between the noise levels of the 2 independent sound sources (the grille **G1S** and the damper) is $\Delta L = 9,8$. Therefore from the following diagram we determine that for $\Delta L = 9,8$ the correction factor $C(\Delta L)$ is equal to 0,6. So, the total noise level is $L_{tot} = L_{max} + C(\Delta L) = 26,5 + 0,6 = 27,1$ dB.

Calculation example 2 :
Pressure drop and noise level calculation in a G1S+D, with damper blade angle of 30°.

We have a grille **G1S+D** with dimensions **400 x 400** and an air flow of 1.000 m³/h. The grille **G1S+D** with dimensions **400 x 400** has, according to page 5 diagrams, for air flow equal to 1.000 m³/h, pressure drop of 10 Pa and a noise level of 26,5 dB. A grille damper with dimensions **400 x 400** has, according to its respective selection diagrams, for blade angle 30° and air flow of 1.000 m³/h, a pressure drop of 27,3 Pa and a noise level of 32,7 dB.

The total pressure drop inside the grille **G1S+D** with dimensions **400 x 400** is the algebraic sum of the pressure drop inside the grille and the pressure drop inside the damper: $\Delta p_{G1S} + \Delta p_{Damper} = 10 + 27,3 = 37,3$ Pa.

The total noise level is calculated by using the following equation: $L_{tot} = L_{G1S} \oplus L_{Damper} = L_{max} + C(\Delta L)$. The difference between the noise levels of the 2 independent sound sources (the grille **G1S** and the damper) is $\Delta L = 6,2$. Therefore from the following diagram we determine that for $\Delta L = 6,2$ the correction factor $C(\Delta L)$ is equal to 1,0. So, the total noise level is $L_{tot} = L_{max} + C(\Delta L) = 32,7 + 1,0 = 33,7$ 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.



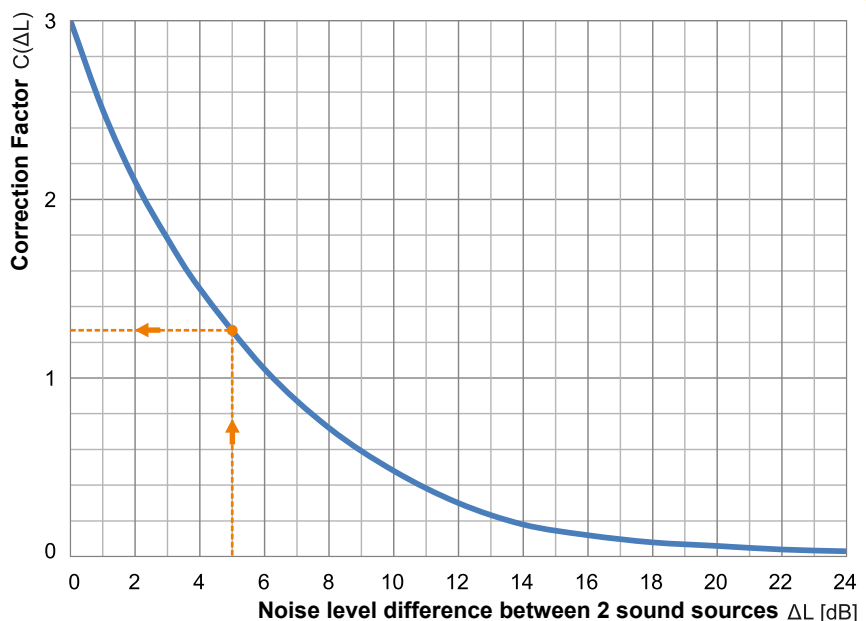
Calculation example

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 ΔL 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.





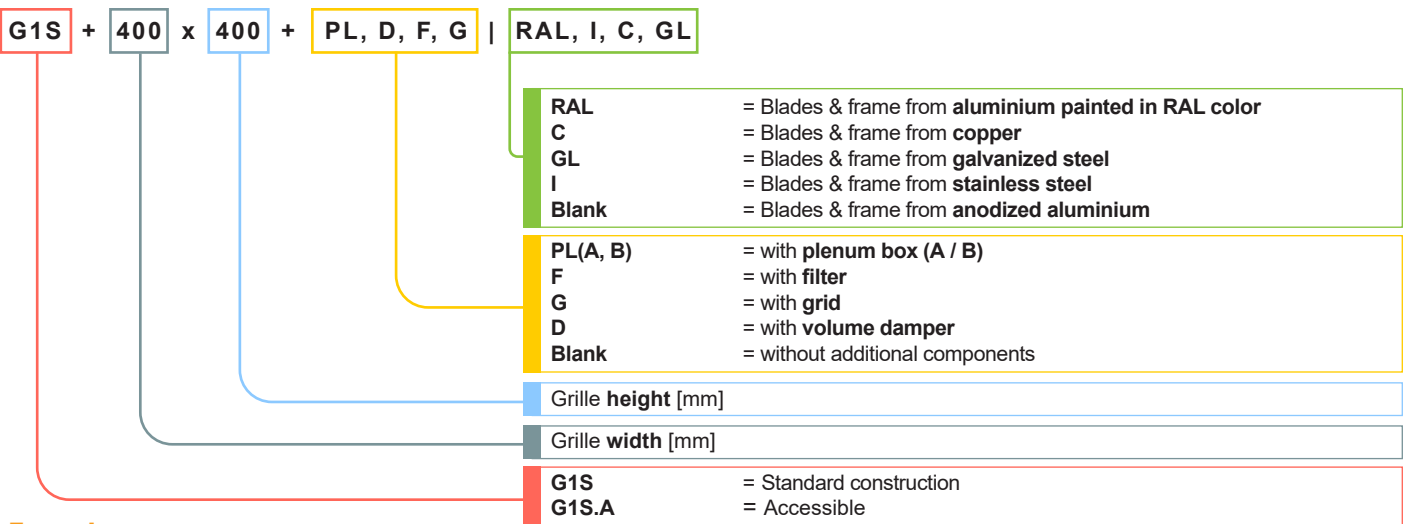
All grilles can be powder painted in any RAL color, under request. For the full range of RAL colors please contact us.



Color examples

G1S - ORDER CODIFICATION

For the proper order of return grilles G1S please use the following codification :



Examples

G1S.A 800 x 400 + F =

Return grille G1S.A accessible, 800 mm in width, 400 mm in height, with blades and frame from aluminium and filter.

G1S 600 x 400 +PL.A (Ø150) | 7040 =

Return grille G1S, 600 mm in width, 400 mm in height, blades and frame from aluminium powder painted in RAL 7040 and type A plenum box for connection with flexible air-duct 150 mm in diameter.

For ordering G1S grilles with optional accessories not listed in the standard codes above or special constructions please contact our sales department.

SPECIFICATIONS

Single row grille with fixed blades, G1S

Rectangular exhaust grille, indicative type G1S of AIRTECHNIC, manufactured of anodized aluminum / aluminum painted in RAL... color / copper / galvanized steel / stainless steel and 1 row of fixed blades inclined at 45°, parallel to the 1st dimension. The manufacturer will have performed measurements of the technical characteristics of the grille, in an independent laboratory according to the standard ELOT EN 12238: 2002. It will have a volume damper [D] / filter G3 [F] / protection grid [G] / plenum box type A/B [PL(A/B)]. It will be suitable for wall, ceiling or air duct placement and visible installation with screws / concealed installation with springs / concealed installation with П-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 G1S / G1S +D, +F, +G, +PL(A/B).

Single row grille with fixed blades - accessible, G1S.A

Rectangular return grille, indicative type G1S.A of AIRTECHNIC, manufactured of anodized aluminum / aluminum painted in RAL... color / copper / galvanized steel / stainless steel, 1 row of fixed blades inclined at 45°, parallel to the 1st dimension and accessible face. The manufacturer will have performed measurements of the technical characteristics of the grille, in an independent laboratory according to the standard ELOT EN 12238: 2002. It will have a volume damper [D] / filter G3 [F] / protection grid [G] / plenum box type A/B [PL(A/B)]. It will be suitable for wall, ceiling or air duct placement and visible installation with screws / concealed installation with internal screws, on the side of the outer frame. 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 G1S.A / G1S.A +D, +F, +G, +PL(A/B).



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



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ISO 9001:2015

ISO 14001:2015

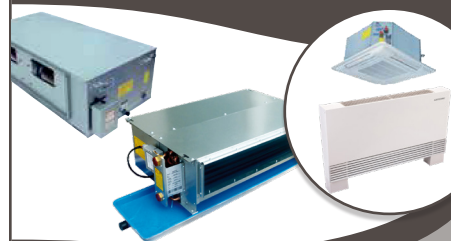
ΚΕΝΤΡΙΚΕΣ ΜΟΝΑΔΕΣ ΚΛΙΜΑΤΙΣΜΟΥ



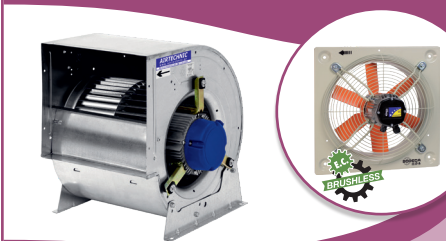
ΕΝΑΛΛΑΚΤΕΣ ΑΕΡΑ - ΑΕΡΑ



FAN COIL UNITS



ΑΝΕΜΙΣΤΗΡΕΣ & FAN SECTIONS



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ΣΤΟΜΙΑ ΑΕΡΑ



ΥΓΡΑΝΤΗΡΕΣ ΑΤΜΟΥ - ΑΦΥΓΡΑΝΤΗΡΕΣ



ΚΕΝΤΡΙΚΗ ΗΛΕΚΤΡΙΚΗ ΣΚΟΥΠΑ



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THINK CLEAN

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ΦΙΛΤΡΑ



ΑΕΡΟΚΟΥΡΤΙΝΕΣ



ΔΡΟΣΙΣΜΟΣ



ΕΔΡΑ - ΑΘΗΝΑ

Μιχαήλ Καραολή 19,
τ.κ.: 14343, Ν. Χαλκηδόνα Αθήνα
211 - 70.55.500
sales@airtechnic.gr

ΕΡΓΟΣΤΑΣΙΟ - ΘΗΒΑ

4° χλμ. Θήβας - Χαλκίδας,
τ.κ.: 32200, Θήβα
22620 - 89.006
factory@airtechnic.gr

ΕΡΓΟΣΤΑΣΙΟ - ΘΕΣΣΑΛΟΝΙΚΗ

Τέρμα προέκτασης Μαϊάνδρου,
τ.κ.: 57013, Ωραιόκαστρο Θεσ/νίκη
2311 - 82.40.00
thessaloniki@airtechnic.gr