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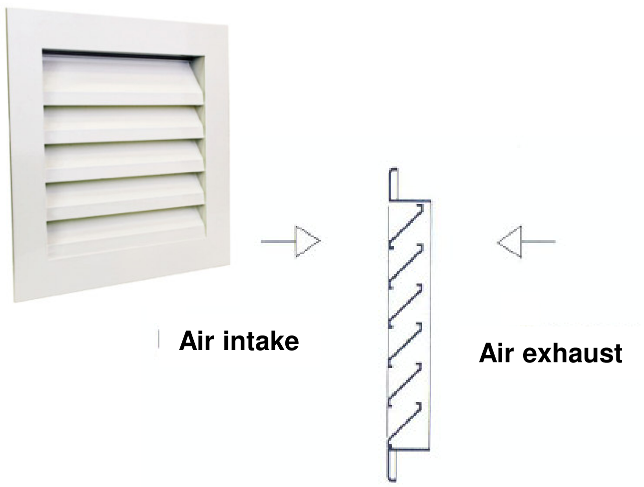
Aldes ME Flash

N°32 – October 2011

Technical Information

How to select the right louvre for your application?

Fresh air louvres - definition



A fresh air louvre is designed for air intake as well as air exhaust in commercial and industrial applications. Total structure of fresh air louvre is weather proof and blades are inclined downwards to **protect against rain water**.

- **Air intake**: air transfer from outside to inside
- **Air exhaust**: air transfer from inside to outside

Fresh air louvres are manufactured in extruded aluminum as **standard construction** (casing / frame manufactured from 1.2 mm) or with a **robust construction** (casing / frame manufactured from 3 mm extruded aluminum). Insect mesh, bird mesh and filters can also be provided upon request.

Fresh air louvres - selection

*This selection is made with the example of Aldes ME product: **AG 639** (fresh air louvre) for **air intake**.*

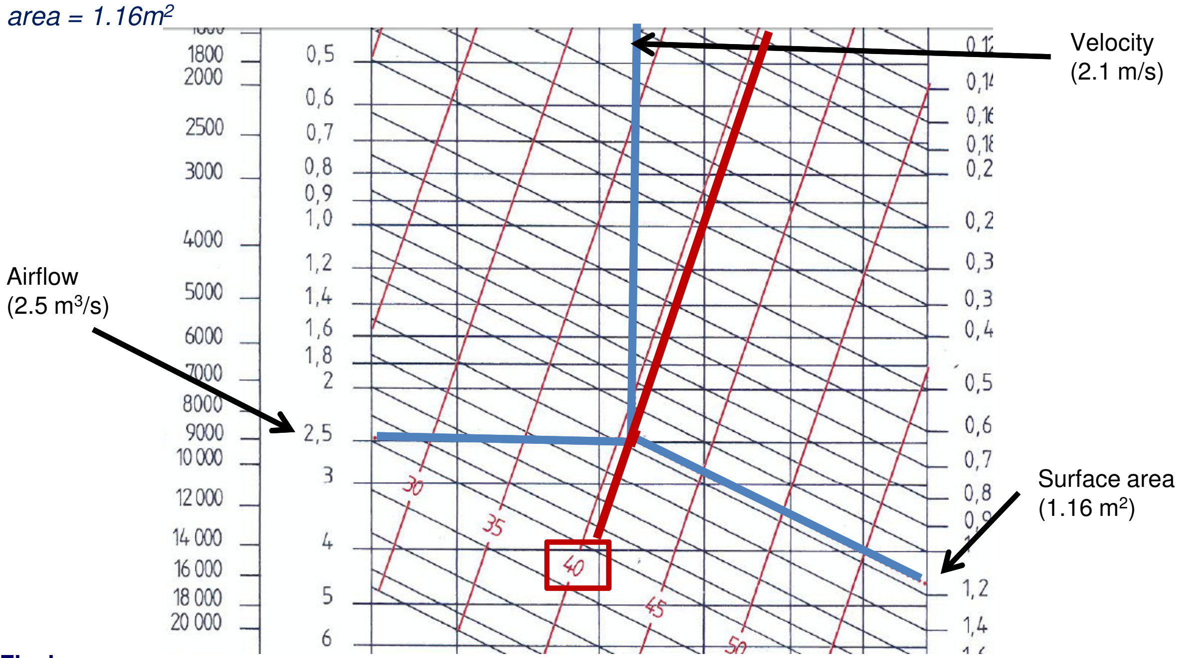
❶ Client's data for selection of fresh air louvre:

** Airflow = 9000 m^3/h → 2.5 m^3/s*

** Frontal velocity = 2.1 m/s*

❷ Based on provided data, go to the selection graph to find out the **frontal surface area** with the help of airflow and velocity details provided by client**.**

** Surface area = 1.16m^2*



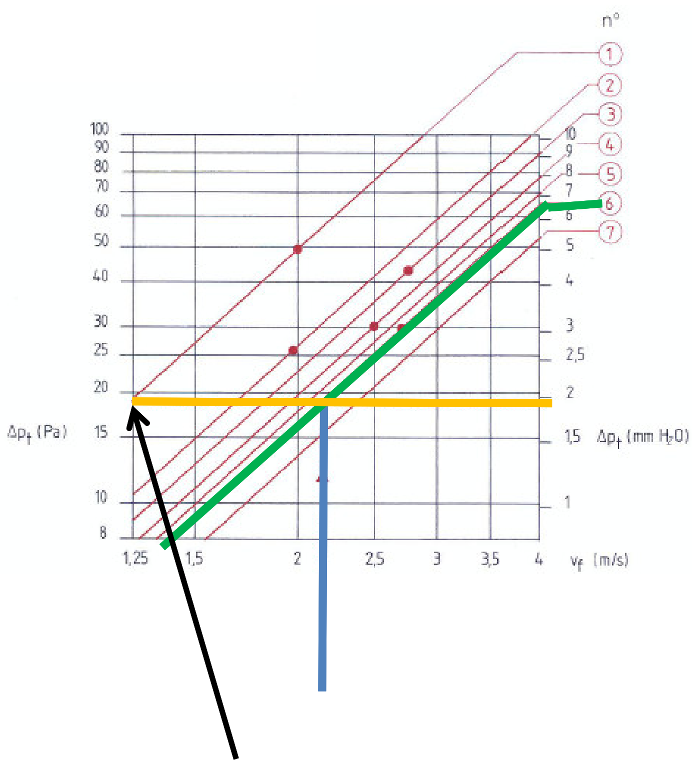
❸ Based on the frontal surface area found in previous step i.e. 1.16m², **select the dimensions** (Length x Height) of the fresh air louvre from the table (in our example: AG639).

The selected fresh air louvre should be:
** L = 800 mm*
** H = 1600 mm*

AG 639

H (mm)	L (mm) 400	500	600	800	1000	1200	1400	1600	1800	2000
400	0.11	0.14	0.17	0.23	0.29	0.35	0.41	0.47	0.52	0.58
500	0.15	0.19	0.23	0.31	0.39	0.47	0.54	0.62	0.70	0.78
600	0.19	0.24	0.29	0.39	0.48	0.58	0.68	0.78	0.88	0.98
800	0.26	0.33	0.40	0.54	0.68	0.82	0.96	1.10	1.24	1.37
1000	0.34	0.43	0.52	0.70	0.88	1.05	1.23	1.41	1.59	1.77
1200	0.41	0.52	0.63	0.85	1.07	1.29	1.51	1.73	1.95	2.17
1400	0.49	0.62	0.75	1.01	1.27	1.53	1.78	2.04	2.30	2.56
1600	0.57	0.71	0.86	1.16	1.46	1.76	2.06	2.36	2.66	2.96
1800	0.64	0.81	0.98	1.32	1.66	2.00	2.34	2.67	3.01	3.35
2000	0.72	0.91	1.10	1.47	1.85	2.23	2.61	2.99	3.37	3.75

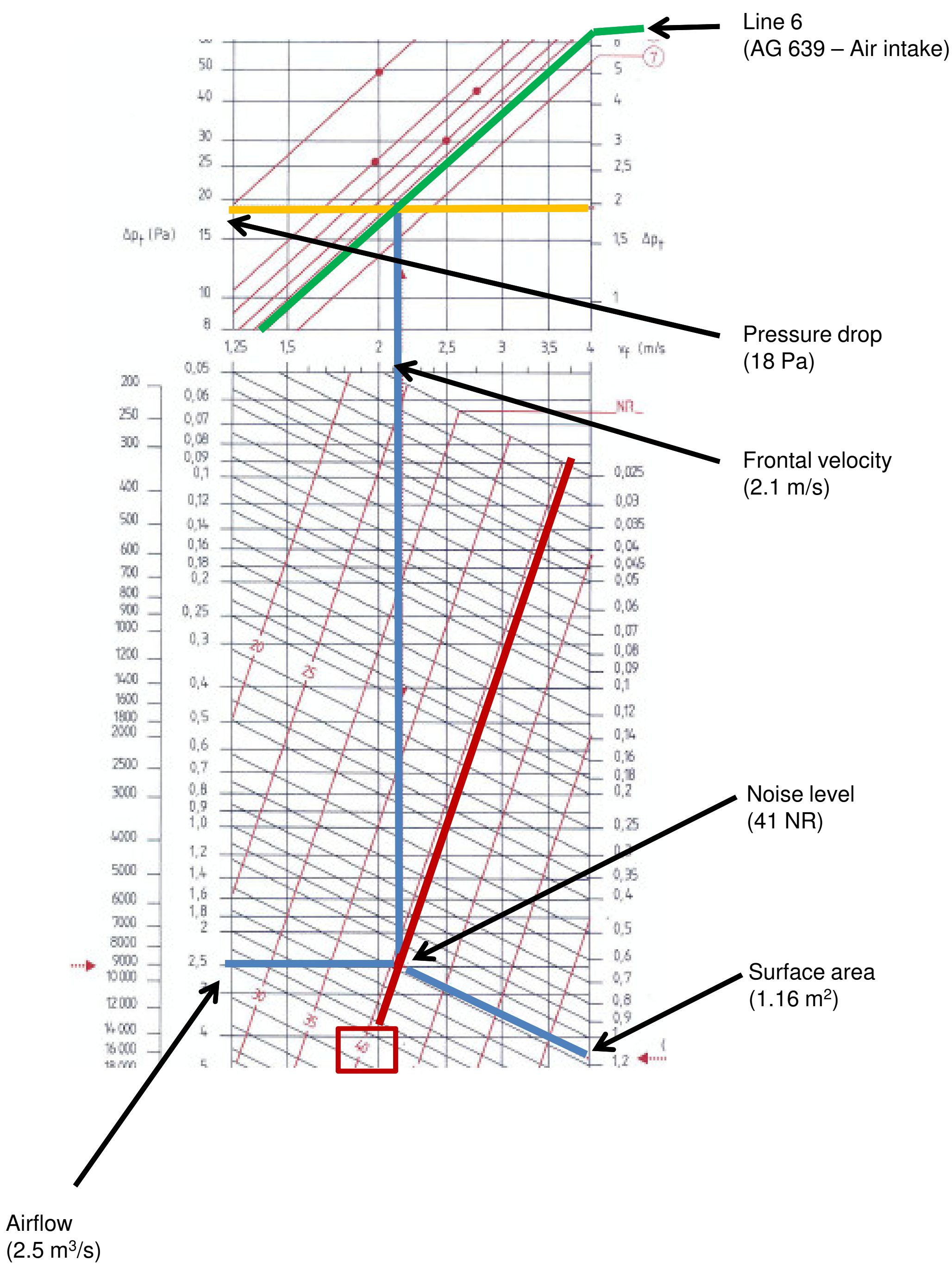
❹ After finding out the dimensions of the louvre now find out the **pressure drop and noise level** of the louvre.
We have mentioned in the beginning of this selection to go for a fresh air louvre AG 639, for air intake.
→Line 6 of the table
Extend the blue line for the previous selection until it crosses with Line 6 in the upper part of the selection graph



Pressure drop
(18 Pa)

n°	NR	Intake air I	Reject air II
1	+9	632	632
2	+6	631	-
3	+4	640, 641, AP	631
4	+2	638	-
5	+1	-	640, 641, AP
6	0	639	638
7	-2	-	639

Full view of selection graph for fresh air louvres



Acoustic louvres - definition

An acoustic louvre is designed to provide **optimal acoustic performance** (by reducing the noise) **with minimal airflow restrictions**. Available in aluminum or galvanized steel, acoustic louvres are well-adapted to commercial and industrial applications. It can also be installed in a generator room of a residential building.

It is possible to combine 2 acoustic louvres, back to back, to achieve extra noise reduction, model SU 632.

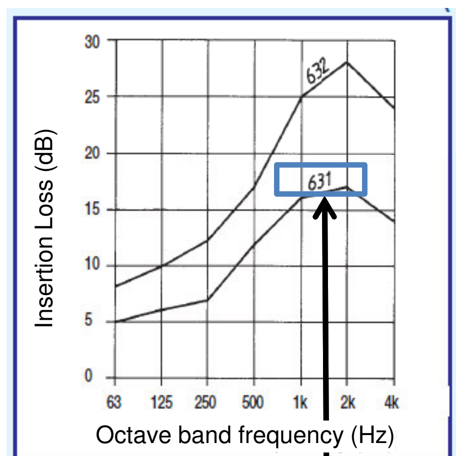
It is mostly used for air exhaust, but may also be used for air intake.

Acoustic louvres - selection

❶ The first step is to define the **required insertion loss** in octave band (63Hz – 8kHz) **to select the correct model** of acoustic louvre. For example: to achieve a noise level of NR 45 from a noise source with a noise level of NR 50, the required insertion loss is calculated by subtracting the octave band of NR 45 from octave band of NR 50.

	Octave band (Hz)							
	63	125	250	500	1k	2k	4k	8k
NR 50	75	65	59	53	50	47	45	43
NR 45	71	61	54	48	45	42	4	38
Required Insertion Loss	**4**	**4**	**5**	**5**	**5**	**5**	**41**	**5**

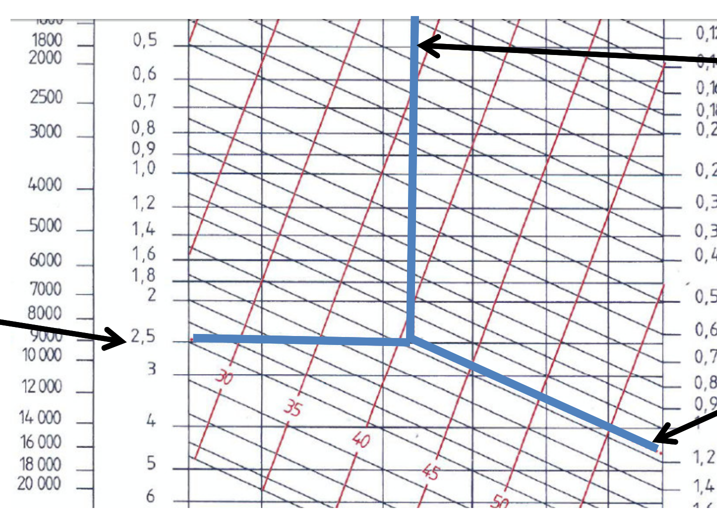
With the help of above required insertion loss, model SU 631 shall be selected from selection graph as given on the right.



SU 631 selected

❷ The second step is to define the **required dimensions** of the acoustic louvres as per the data provided by the client.
For example the data given by client is given below:
** Airflow = 9000 m³/h → 2.5 m³/s*
** Frontal velocity = 2.1 m/s*

Hence, surface area = **1.16m²**



3 Based on the frontal surface area found in previous step i.e. 1.16m², **select the dimensions** (Length x Height) of the acoustic louvre from the table (in our example: SU 631).

The selected acoustic louvre should be:
** L = 1000 mm*
** H = 1500 mm*

H (mm)	L (mm) 400	500	600	800	1000	1200
600	0.11	0.15	0.18	0.24	0.31	0.38
900	0.21	0.28	0.34	0.47	0.59	0.72
1200	0.32	0.41	0.50	0.69	0.87	1.06
1500	0.42	0.54	0.66	0.91	1.16	1.40
1800	0.52	0.67	0.83	1.13	1.44	1.74
2100	0.62	0.81	0.99	1.35	1.72	2.09

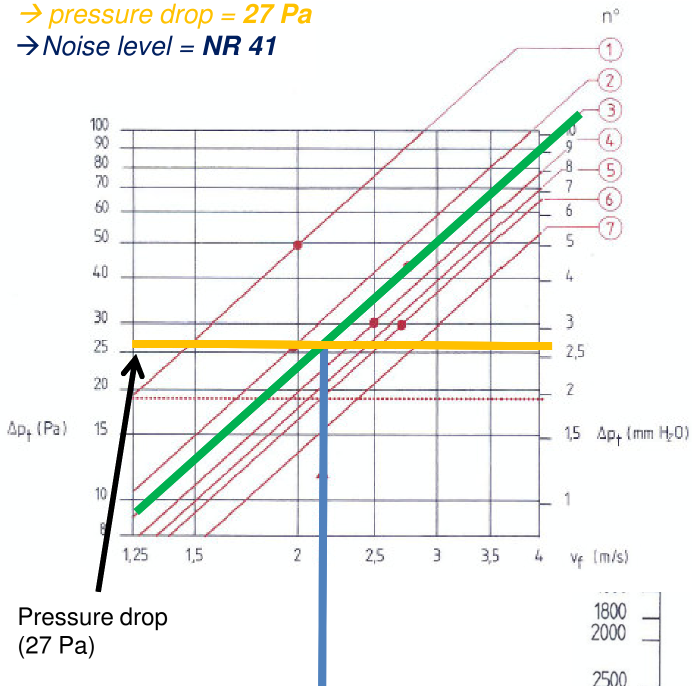
4 After finding out the dimensions of the louvre now find out the **pressure drop and noise level** of the acoustic louvre SU 631 for air exhaust.

→Line 3 of the table

Extend the blue line for the previous selection until it crosses with Line 3 in the upper part of the selection graph

*→ pressure drop = **27 Pa***

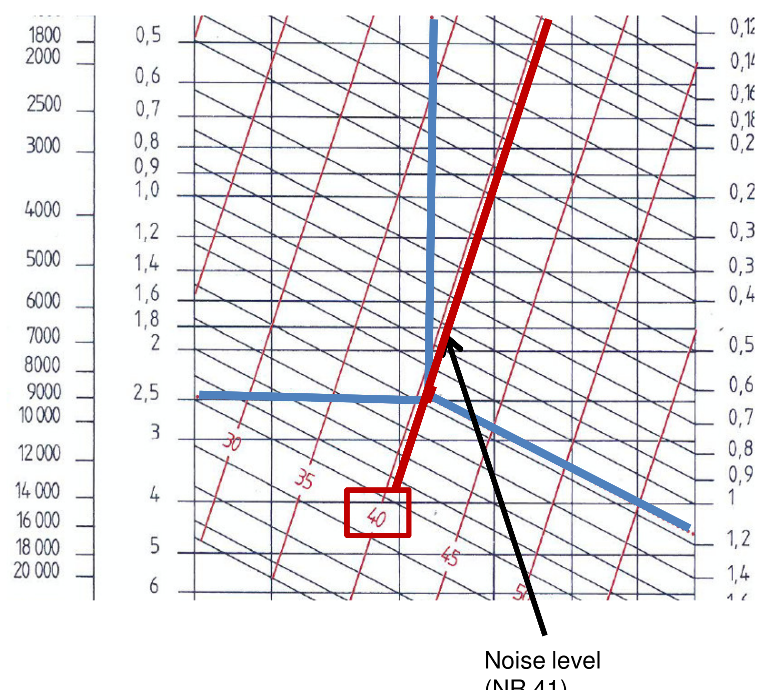
*→Noise level = **NR 41***



n°	NR	Intake air I	Reject air II
1	+9	632	632
2	+6	631	-
3	+4	640, 641, AP	631
4	+2	638	-
5	+1	-	640, 641, AP
6	0	639	638
7	-2	-	639

Therefore, corrected value for acoustic louvre SU 631 will be:

NR = 41 + 4 = 45



Sand trap louvres - definition

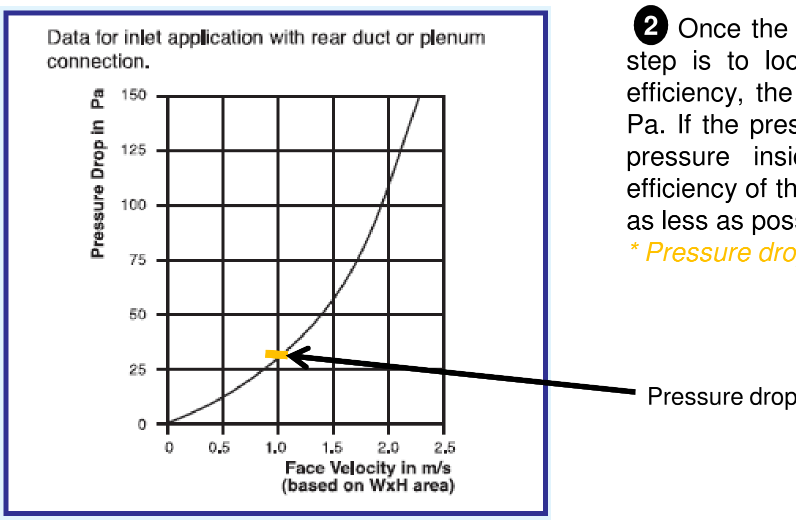
A sand trap louvre, designed for **air intake** only, is used as a pre-filter for the protection of air conditioning plants. It definitely **separates dust and sand from airflow** while entering a building. Indeed, the vertical arranged sections and holes for sand drainage ensure that the sand trap louver is self-cleaning and maintenance-free.

Sand trap louvre is essential in areas exposed to extreme levels of industrial pollution, near the beach or the desert.

Sand trap louvres - selection

*This selection will be made with the example of Aldes ME product: **SG 644** (sand trap louvre)*

❶ The first step is to get the **airflow** and to define the available **opening sizes**. With these elements it is possible to calculate the velocity, through the formula: **Q=AxV** (Q: airflow; V: velocity; A: area)
If the result is bigger than 2m/s, then it is essential to **increase** the size of the sand trap louvre to achieve a better sand separation efficiency. This can be done by selecting an optimal size of the louvre where the **velocity should be less than or equal to 2m/s.**
** suggested optimum velocity = 1.0 m/s*



❷ Once the size and the velocity has been defined, next step is to look at the **pressure drop**. For a maximum efficiency, the maximum limit of a pressure drop is 40-50 Pa. If the pressure drop is too high, there will be negative pressure inside the ductwork and will decrease the efficiency of the system. Therefore pressure drop should be as less as possible.
** Pressure drop = 30 Pa*

❸ The last stage consists in checking the performance, through the particles sizes.
We have defined that the velocity was equal to 1.0 m/s. So that, as per Aldes filtration performance for SG 644 sand trap louvres, the filtration performance is quite good.

The filtration performance is dependant on the dust type and the velocity of the air.

Particles Size Range	Filtration Efficiency in % at 1.0 m/s	at 2.0 m/s
350 - 700	90	70
75 - 700	60	approx. 30