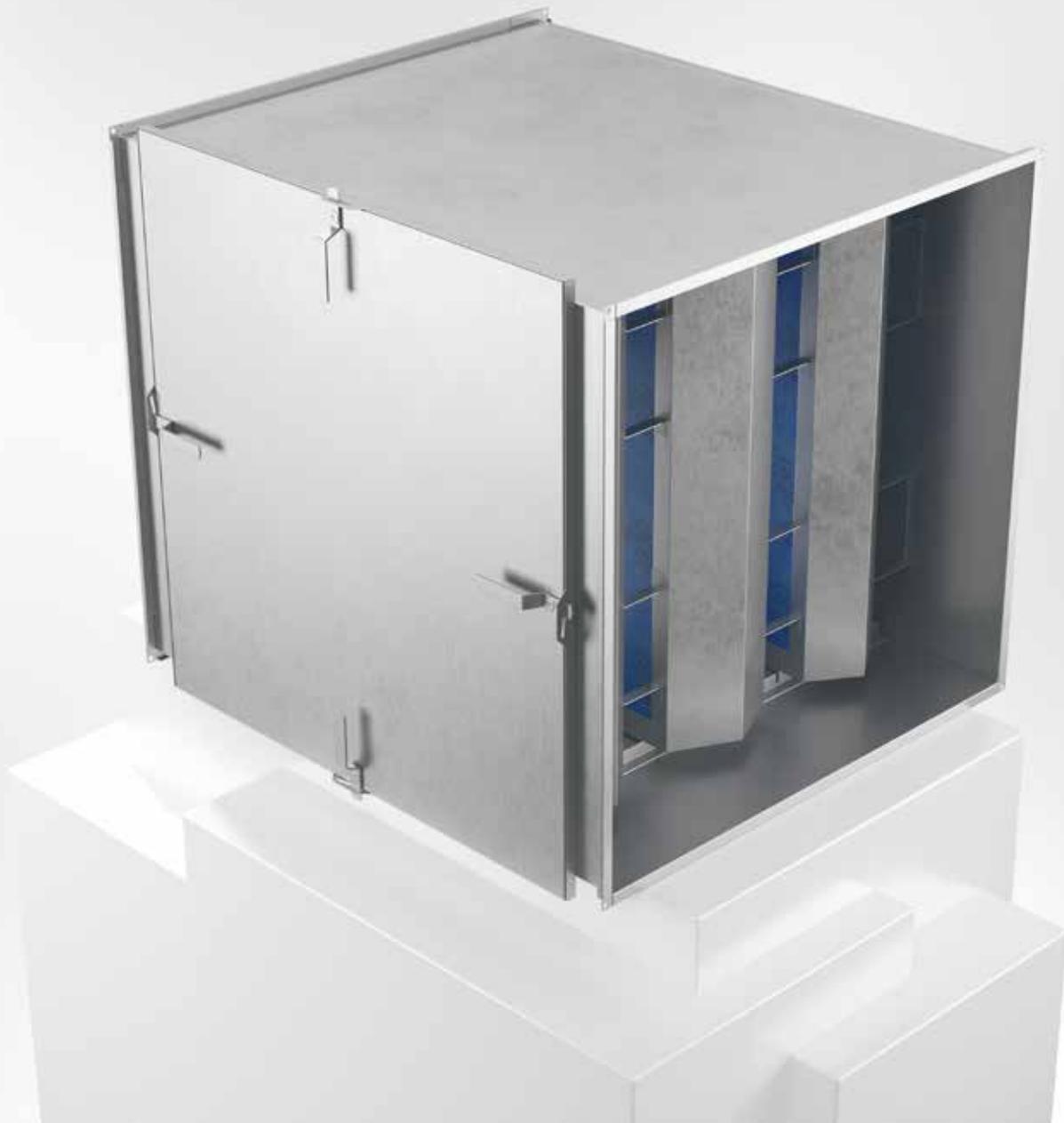


LFAR

Cleanable rectangular silencer



SILENCERS



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Cleanable rectangular silencer LFAR



Quick facts

- Sizes from width 300 mm to 2000 mm and height from 300 mm to 2000 mm
- Three standard types in 5 different lengths
- Removable baffles via Inspection hatch for good cleanability
- Type approved cleanable Protec surface layer
- Can be manufactured in many special versions

Use

Silencer LFAR is designed for good cleanability with removable baffles and accessibility for cleaning the duct system. It is intended for installations with high cleaning requirements, e.g. kitchen flues, healthcare, clean rooms, etc. LFAR complies with all requirements as per applicable building regulations in terms of cleanability, fibre safety, emissions and microorganisms.

LFAR is manufactured in three attenuation classes (type 1, 3, and 5), where type 1 has the best attenuation. The inlet and outlet sides of the baffles are equipped with angled profiles to limit the pressure drop. The absorption material has a type-approved surface layer that is cleanable and fibre-proof. The casing is co-insulated with the duct system. The silencer is installed irrespective of the air direction. As standard it comes with slip-clamp connections, but can also be supplied with flange connections. In the event of large sizes or restricted entry openings, the silencers are delivered in sections that are assembled on site. For general information about silencers and technical data, see "General information about silencers" in the technical section on www.bevent-rasch.com

Special

The silencer can be supplied in many different custom designs concerning dimensions, choice of material, etc. Contact Bevent Rasch.

Materials and surface treatment

As standard, LFAR is made of galvanized sheet steel with absorption material of mineral wool. The silencer can also be made of e.g. stainless steel and with or without surface treatment.

When installing in kitchen flues, the baffles must be encapsulated and fitted with perforated sheet metal.

Specifications

Example:

Silencer LFAR - 3 - 1000 - 500 - 1200 - 1 - 1 - 0

Type, 1-3-5	_____	_____	_____	_____	_____	_____	_____
Width x Height, mm	_____	_____	_____	_____	_____	_____	_____
Length, mm	_____	_____	_____	_____	_____	_____	_____
<i>Connection:</i>							
Slip joint					= 1		_____
Flange					= 2		_____
<i>Material*):</i>							
Galvanized sheet steel					= 1		_____
Stainless AISI 3041 – EN 1.4301					= 2		_____
Stainless AISI 316L – EN 1.4404					= 3		_____
<i>Baffles:</i>							
Standard, type approved surface finish					= 0		_____
Perforated plate					= 1		_____
Perforated plate + foil					= 2		_____

* Casing + baffles



Size and weight



Width, height and length are freely selected according to (for standard dimensions, see table):
 Width (W) = 300 - 2000 mm
 Height (H) = 300 - 2000 mm
 Length (L) = 600 - 2500 mm. Non-reported lengths in the table 'Insertion loss', are interpolated.

For larger dimensions, LFAR is delivered in sections, which are easily assembled on site.

The weight is calculated according to: $B+0,2 \times H \times L \times F_v = \text{kg}$ where W, H och L are stated in metres.

LFAR	Typ 1	Typ 3	Typ 5
Factor F_v	160	100	90

NB: In order to extract the baffles, we recommend at least one meter of free space next to the hatch. The baffles are dismantled one at a time.



Selection

1. The type of silencer is selected with respect to attenuation requirements, duct area and length. Type 1 has the best attenuation. Select in the first instance the width and height the same as the duct size, and the length according to attenuation requirements. Where necessary the width and/or height can be increased.

2. Check the relevant flow line in the selection diagram and read off the pressure drop and gross area for the selected type of silencer.

3. Determine the silencer's width and height with respect to the gross area, duct dimension, and available space.

The reported working areas to the left of the selection diagram are a recommendation. For the working areas reported as a "comfort zone" the "self noise" (inherent sound generation) is as a rule negligible.

Pressure drop according to the selection diagram refers to duct-duct connected silencers irrespective of the length. For other installations, seen in the direction of the air, the pressure drop is multiplied by the following factor:

LFAR	Type 1	Type 3	Type 5
Chamber – Chamber	2,0	2,9	3,5
Duct – Chamber	1,7	2,4	2,9
Chamber – Duct	1,2	1,5	1,7

4. The "self noise" (inherent sound generation) should be checked for larger silencers with high air velocities and critical applications for sound power levels after the sound absorber. L_{wt} is obtained from the pressure drop section of the selection diagram. The correction factor L_{wk} is obtained from the lower section of the diagram, which should be adjusted to L_{wtot} as per the formula: $L_{wt} + L_{wk} = L_{wtot}$.

Correction of the sound power level, L_{Wok} in octave band:

$$L_{Wok} = L_{Wtot} + K_{ok}$$

Frequency band, Hz	63	125	250	500	1000	2000	4000	8000
Factor K_{ok}	-3	-5	-10	-12	-14	-15	-18	-21

The inherent sound level should be approx. 8 dB lower than the sound level after the silencer to avoid an increase in the sound.

Insertion loss

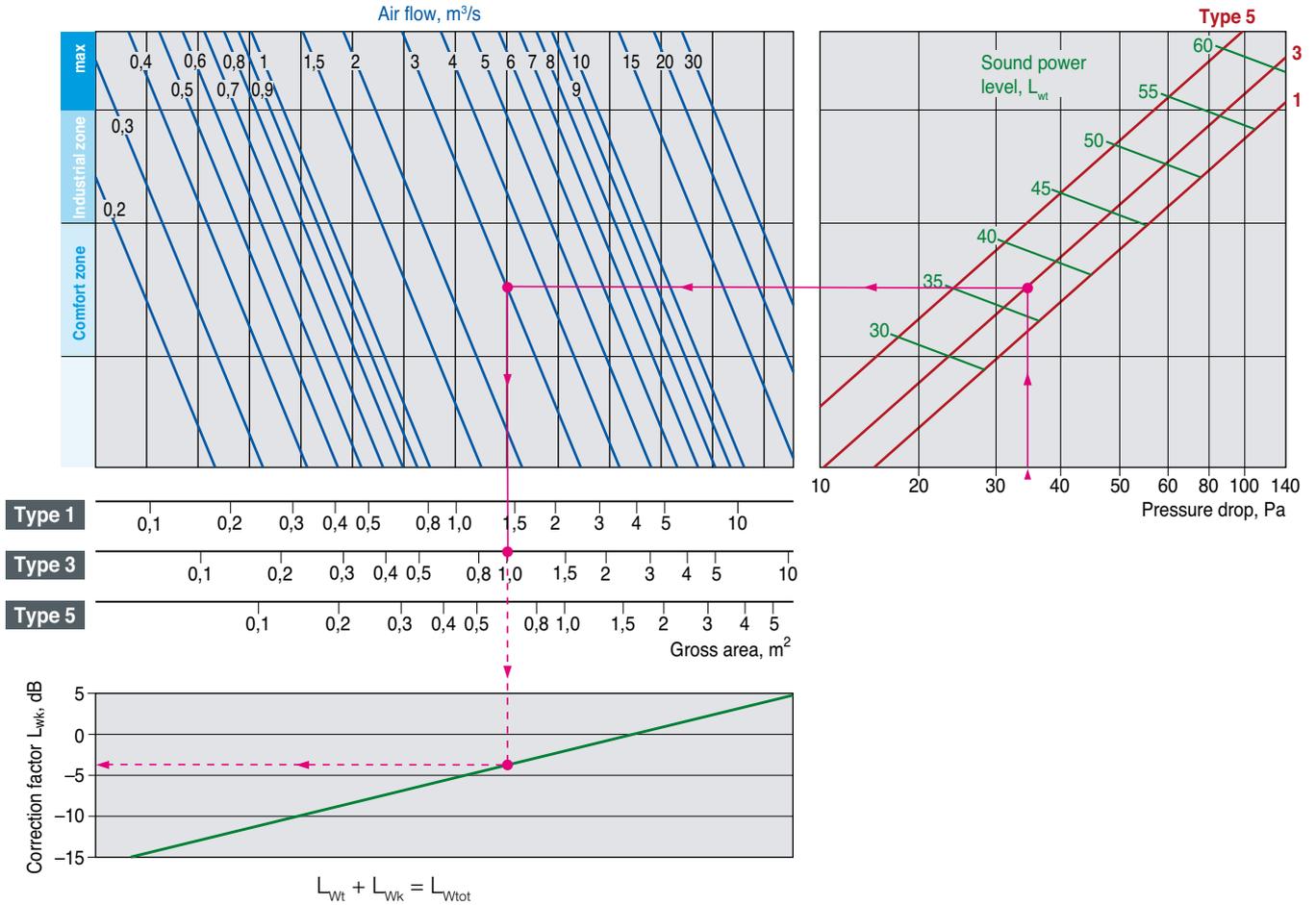
Type 1	Length mm	Insertion loss in octave band dB							
		Centre frequency Hz							
		63	125	250	500	1K	2K	4K	8K
	600	7	14	20	26	30	30	26	20
	900	8	16	25	36	40	39	31	25
	1200	8	18	30	41	50	50	40	28
	1500	10	20	35	49	50	50	50	34
	1800	13	23	40	50	50	50	50	40

Type 3	Length mm	Insertion loss in octave band dB							
		Centre frequency Hz							
		63	125	250	500	1K	2K	4K	8K
	600	4	7	10	16	21	17	12	9
	900	5	9	15	23	28	23	17	11
	1200	6	13	19	26	35	26	20	13
	1500	7	16	22	30	40	30	22	16
	1800	9	17	26	38	46	35	24	18

Type 5	Length mm	Insertion loss in octave band dB							
		Centre frequency Hz							
		63	125	250	500	1K	2K	4K	8K
	600	4	5	7	12	15	10	7	6
	900	4	6	9	15	20	13	9	7
	1200	4	7	12	18	25	16	12	9
	1500	5	9	14	22	30	18	12	10
	1800	5	10	17	27	35	21	12	12



Selection diagram



Selection example

Assumptions:

- Air flow 3 m³/s
- Max. pressure drop 35 Pa
- Required attenuation 19 dB (250 Hz).
- The size of the connecting duct (W x H) is 1200 x 600 mm with space for an increase in height (max 800 mm) and L = max 1500 mm.

Results:

- From the tables for Insertion loss we obtain:
 - **Type 3, length 1200 mm**
- From the selection diagram we obtain:
 - **Type 3 = 1,0 m², select (W x H) 1200 x 800 mm**
- According to the diagram, the "self noise" (inherent sound generation) $L_{wt} = 37$ dB. Using the correction factor L_{wk} (-4 dB) we obtain $L_{wtot} = 33$ dB.