LFIV
Rectangular angled silencer

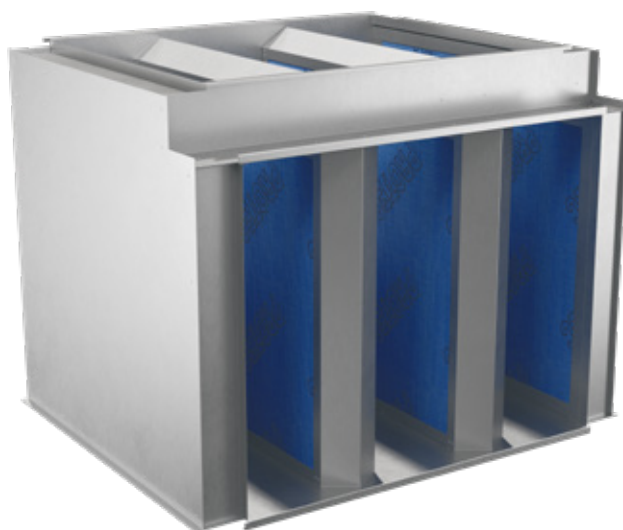27/03/2025

BEVENT RASCH

Quick facts

- Sizes from width 300 mm to 2000 mm and height from 300 mm to 2000 mm
- Three standard types in 3 different lengths
- Indented connection for low pressure drop
- Type approved cleanable Protec surface layer
- Can be manufactured in many special versions
- Available in Magicad
- Available with an inspection hatch

Use

Angled duct silencer LFIV is designed for sound attenuation of fan noise in ventilation ducts. LFIV conforms to all requirements according to the current building regulations in terms of cleanability, fibre proofing, emissions and micro-organisms.

LFIV is manufactured in three attenuation classes (type 1, 3 and 5), where type 1 has the best attenuation. It is designed with a varying number of baffles, whose inlet and outlet sides 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. If necessary, LFIV can be fitted with an inspection hatch, uninsulated or insulated design (specified in plain text when ordering).

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 (specified in plain text when ordering).

For larger sizes and long internal angular legs or restricted transport openings, the silencer is delivered in sections that are easily assembled on site. The silencer can also be supplied in different dimensions on the inlet and outlet. For general information about silencers and technical data, see "General information about silencers" in the technical section on bevent-rasch.se

Special

The duct silencer can be supplied in many different special designs regarding dimensions, materials, etc.
Contact Bevent Rasch.

Materials and surface treatment

As standard, LFIV is made of galvanized sheet steel with absorption material of mineral wool. The silencer can also be made of e.g. stainless steel or Magnelis.
Duct tightness, class B.
In heavily contaminated air, the baffles can be enclosed and fitted with perforated sheet.

Specifications

Examples: **Silencer**
LFIV - 3 - 1200 - 800 - 1400 - 300 - 300 - 1

Type, 1-3-5

X x Y, mm

Centre length, mm

Leg length, 150-150 mm
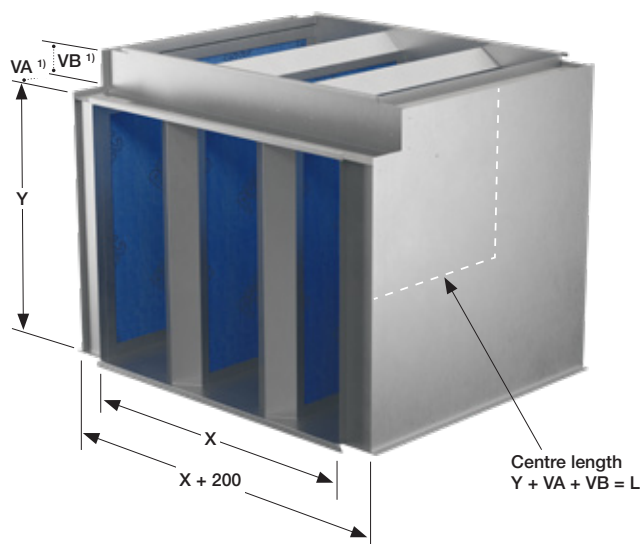300-300 mm
600-600 mm

Material:
Galvanized sheet steel = 1
Stainless AISI 316L – EN 1.4404 = 3
Magnelis ZM120 (C4) = 5

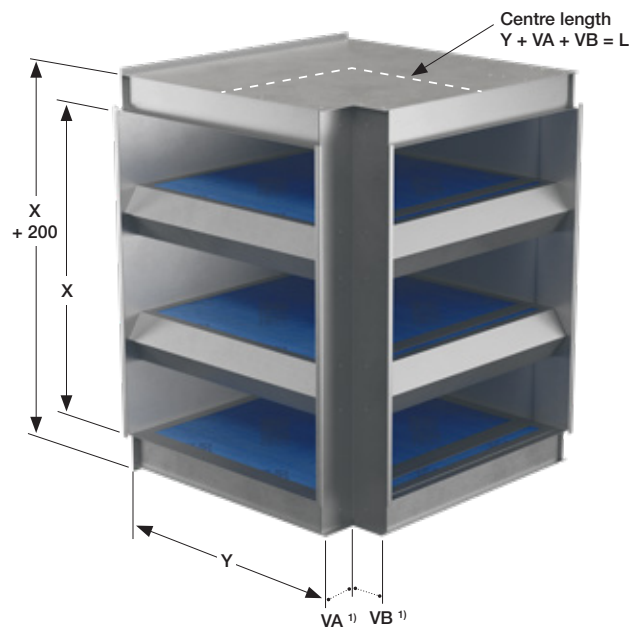*NB: If an inspection hatch is required, specify this in plain text*

Size and weight

Vertical installation

VA [1] VB [1]

Y

X

X + 200

Centre length
Y + VA + VB = L

Horizontal installation

Centre length
Y + VA + VB = L

X
+ 200

X

Y

VA [1] VB [1]

Width and height are freely selected according to
(for standard dimensions, see table):
X = 300 - 2000 mm
Y = 300 - 2000 mm
Centre length (L) = 600 - 3000 mm.
Internal leg length (VA and VB) = 150, 300, 600 mm.
Non-reported lengths in table 'Insertion loss',
are interpolated.

[1] When fitted with a flange connection, the BRGF accessory must
be used, which increases the lengths (VA and VB) by approx. 65 mm
respectively.

The weight is calculated according to: $(X+0.2) \times Y \times L \times F_v = kg$
where X, Y and L are stated in metres

LFIV	Type 1	Type 3	Type 5
Factor F_v	96	62	42

Selection

1. The duct silencer type is selected with respect to the attenuation requirements, duct area and length. Type 1 has the best attenuation. First, select the width and height equal to the duct size and centre length according to the attenuation requirements. If necessary, increase the width and/or height measurements.
Internal insulation is integrated in the absorption material and does not affect the reported data.

2. Find the current flow line in the selection diagram and read the pressure drop and gross area of the selected duct silencer type.

3. Determine the duct silencer's width and height measurements for the gross area, the dimension of the duct and the available space. Distribute the centre length on each inner angle leg.
The reported data applies to an equal inlet and outlet. If necessary, width and height measurements can be different on the inlet or outlet sides. Reported work areas to the left of the selection diagram are a recommendation.
For working areas reported as 'comfort zone', the inherent sound generation is generally negligible.
Pressure drop according to the selection diagram refers to duct-duct connected silencer regardless of length. In other installations, in terms of air direction, the pressure drop is multiplied by the following factor:

LFIK	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. Inherent sound generation should be checked for large duct silencers at large air velocities and high demands on sound power level after the duct silencer. From the selection diagram's pressure drop section, we obtain L_{wt}. In the lower part of the diagram we obtain the correction factor L_{Wk}, which is to be adjusted to L_{wtot} according to the formula:
$L_{Wt} + L_{Wk} = L_{Wtot}$.

Correction of sound power level, L_{Wok}, in the 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	-13	-18	-22	-24	-20

The inherent sound level should be about 8 dB lower than the sound level after the silencer so as not to give any sound contribution.
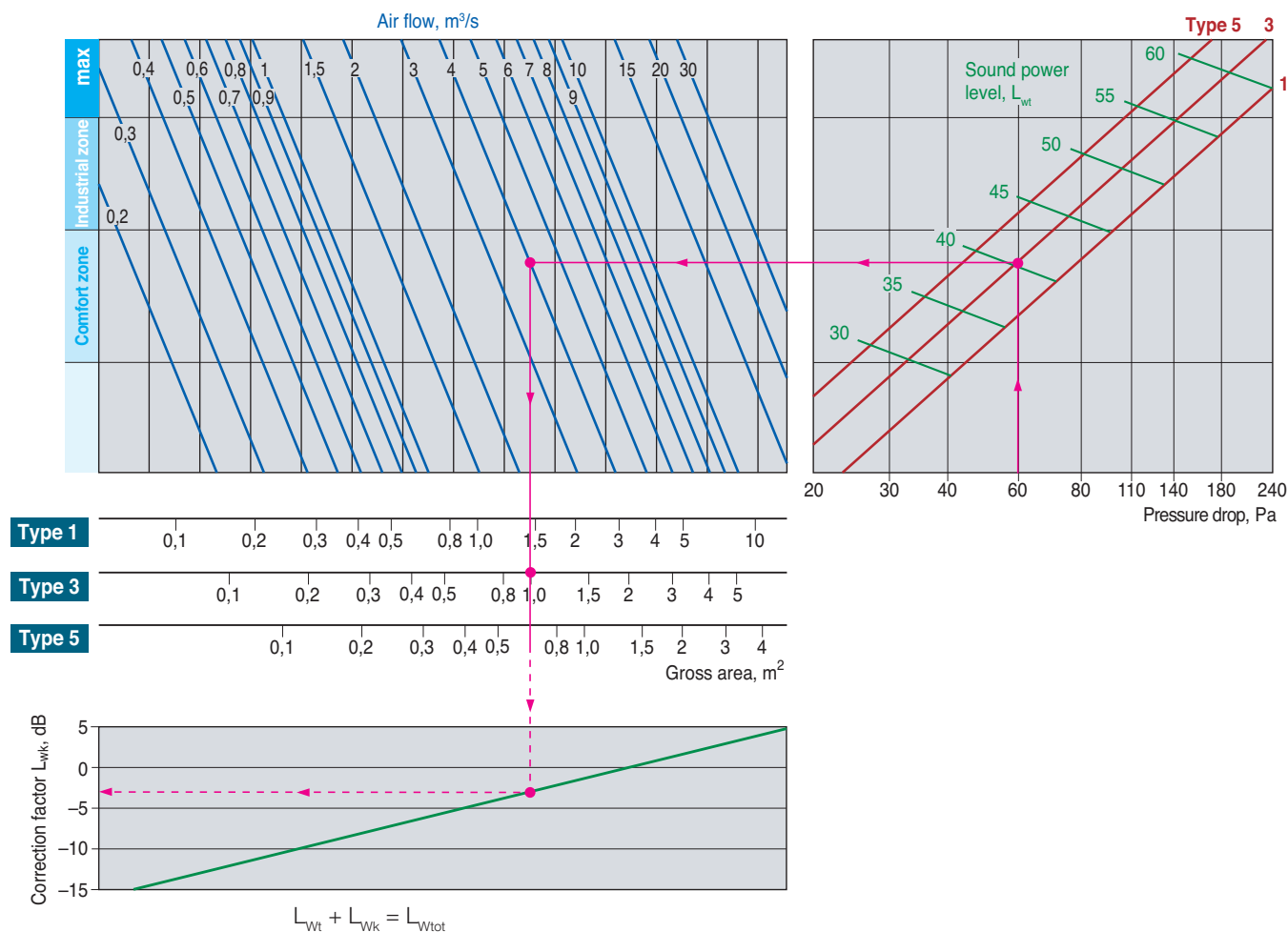
Insertion loss

Type 1

Length mm	Insertion loss in octave band dB Mid frequency Hz							
	63	125	250	500	1K	2K	4K	8K
600	8	12	17	19	19	21	21	16
900	10	15	21	25	26	27	28	22
1200	11	18	25	31	32	34	34	29
1500	13	20	30	37	38	40	41	35
1800	14	23	34	44	44	46	47	42
2100	16	26	38	50	50	48	49	48
2400	17	28	43	50	50	50	50	50
2700	19	31	47	50	50	50	50	50
3000	20	34	50	50	50	50	50	50

Type 3

Length mm	Insertion loss in octave band dB Mid frequency Hz							
	63	125	250	500	1K	2K	4K	8K
600	7	10	14	16	17	18	17	13
900	8	12	17	20	23	23	21	18
1200	9	14	20	25	28	27	26	23
1500	10	15	22	29	33	32	31	28
1800	11	17	25	34	38	37	36	33
2100	11	19	28	38	43	42	40	38
2400	12	20	31	42	49	47	45	43
2700	13	22	34	47	50	50	50	48
3000	14	24	37	50	50	50	50	50

Type 5

Length mm	Insertion loss in octave band dB Mid frequency Hz							
	63	125	250	500	1K	2K	4K	8K
600	6	9	12	14	14	14	14	10
900	6	10	15	18	18	18	18	14
1200	7	11	17	21	22	22	21	18
1500	7	12	20	25	25	25	25	22
1800	8	14	22	29	29	29	29	25
2100	8	15	25	33	33	33	33	29
2400	9	16	27	37	37	36	37	33
2700	9	17	30	41	41	40	41	37
3000	10	18	33	45	45	44	45	42

Selection diagram

Air flow, m³/s

Type 5   3

Sound power level, L_{wt}

max

Industrial zone

Comfort zone

0,4	0,6	0,8	1	1,5	2	3	4	5 6 7 8	10	15 20 30
	0,5	0,7	0,9						9	

0,3

0,2

60
55
50
45
40
35
30

Pressure drop, Pa

20 30 40 60 80 110 140 180 240

Type 1	0,1	0,2	0,3 0,4 0,5	0,8 1,0	1,5 2	3 4 5	10
Type 3		0,1	0,2	0,3 0,4 0,5	0,8 1,0	1,5 2	3 4 5
Type 5			0,1	0,2	0,3 0,4 0,5	0,8 1,0	1,5 2	3 4

Gross area, m²

Correction factor L_{wk}, dB

5
0
−5
−10
−15

$L_{Wt} + L_{Wk} = L_{Wtot}$

Selection example

Conditions:

– Flow 4 m³/s
– Max. pressure drop 60 Pa
– Required attenuation 20 DB (250 Hz).
– Connecting duct size (X x Y) is 1200 x 800 mm

Result:

– From the tables for insertion loss wet obtain:
  • **Type 3, centre length 1500 mm**
– From the selection diagram we obtain:
  • **Type 3 = 1.0 m², select (X x Y) 1200 x 800 mm**
– According to the diagram, the inherent sound generation
will be L_{wt} = 40 DB.
   With the help of the correction factor L_{Wk} (– 3 DB) we obtain
   L_{wtot} = 37 dB