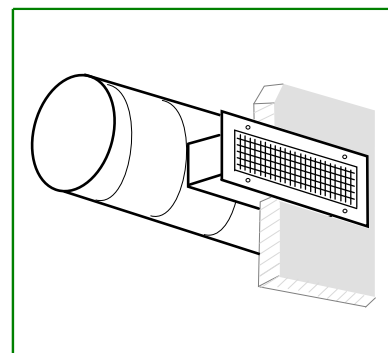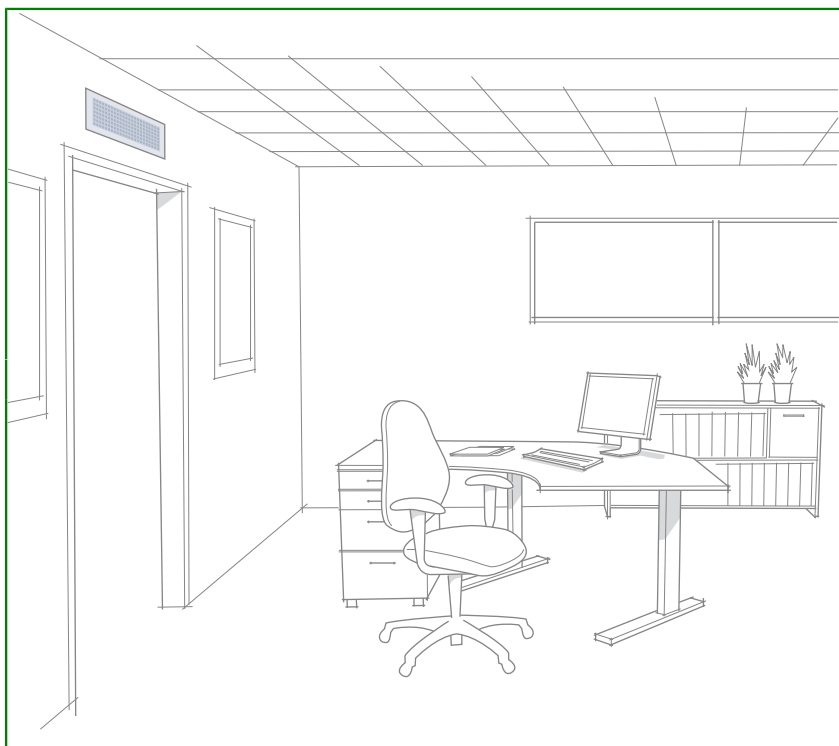# USR Grille

The grille USR is designed for use as exhaust air terminal device. It can be mounted into a wall or onto ceiling. It may also be mounted into a connection box TGE. The adjusting device S is also available as an additional accessory.

Quick Selection

exhaust air without connection box

Size	Connection TGE	Air flow l/s(m^3/h) at sound level		
(B·H)	against duct, Ø mm	25 dB(A)	30 dB(A)	35 dB(A)
USR-200-100	125	50	58 (209)	67
USR-300-100	160	85	98 (353)	120
USR-400-100	160	100	120 (432)	140
USR-500-100	200	130	150 (540)	170
USR-600-100	250	175	200 (720)	225
USR-800-100	250	220	250 (900)	290
USR-1000-100	250	290	330 (1188)	375
USR-300-150	200	130	150 (540)	170
USR-400-150	250	175	200 (720)	225
USR-500-150	250	220	250 (900)	290
USR-600-150	250	250	280 (1008)	330
USR-800-150	315	400	400 (1440)	450
USR-1000-150	315	480	480 (1728)	540
USR-400-200	250	250	280 (1008)	330
USR-500-200	315	290	330 (1188)	375
USR-600-200	315	350	400 (1440)	450
USR-800-200	315	420	480 (1728)	540
USR-1000-200	315	500	580 (1980)	760

Product Facts

- Designed for use as exhaust air terminal device.
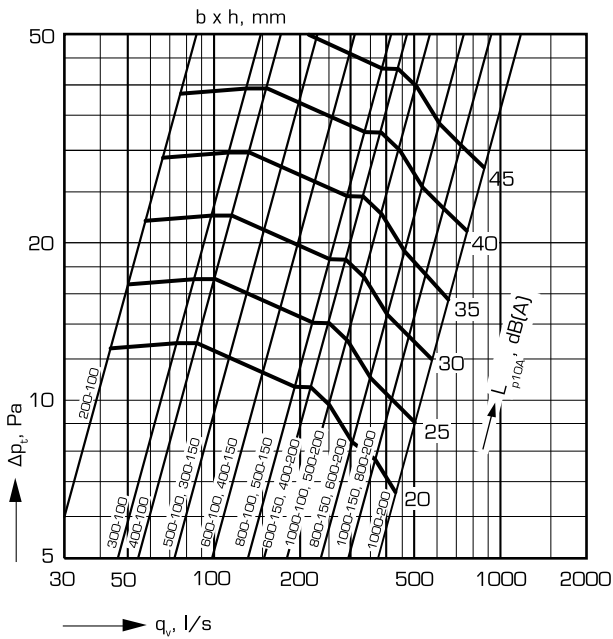- With or without connection box.
- Adjusting device as accessory.

Product code example

Grille USR-600-100
Connection box TGE-600-100-A
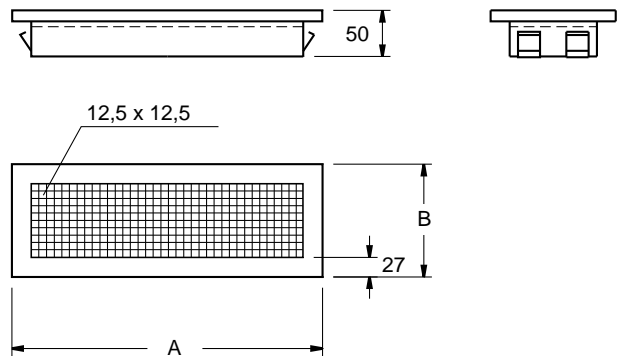Adjusting device S-600-100

Air flow, pressure drop, sound data, dimensions and weights

Selection diagram

b x h, mm

Dimensions and weights

50

12,5 x 12,5

B

27

A

Size	A	B	Weight,kg
200-100	221	121	0,36
300-100	321		0,45
400-100	421		0,54
500-100	521		0,63
600-100	621		0,72
800-100	821		0,90
1000-100	1021		1,09
300-150	321	171	0,53
400-150	421		0,63
500-150	521		0,74
600-150	621		0,85
800-150	821		1,06
1000-150	1021		1,27
400-200	421	221	0,72
500-200	521		0,85
600-200	621		0,97
800-200	821		1,21
1000-200	1021		1,46

Sound attenuation

Grille without a connection box / check plate

Size	Sound attenuation ΔL [dB] octave bands, mean frequency, Hz						
	125	250	500	1000	2000	4000	8000
200-100	10	6	2	-	-	-	-
300-100	9	4	2	-	-	-	-
400-100	8	4	1	-	-	-	-
500-100	7	3	1	-	-	-	-
600-100	6	3	1	-	-	-	-
800-100	5	2	-	-	-	-	-
1000-100	4	1	-	-	-	-	-
300-150	8	4	1	-	-	-	-
400-150	7	3	1	-	-	-	-
500-150	6	3	1	-	-	-	-
600-150	5	2	-	-	-	-	-
800-150	4	1	-	-	-	-	-
1000-150	3	1	-	-	-	-	-
400-200	5	2	-	-	-	-	-
500-200	5	2	-	-	-	-	-
600-200	4	1	-	-	-	-	-
800-200	3	1	-	-	-	-	-
1000-200	3	1	-	-	-	-	-
Tol. ±	3	2	2	2	2	2	3

Mounting frame K

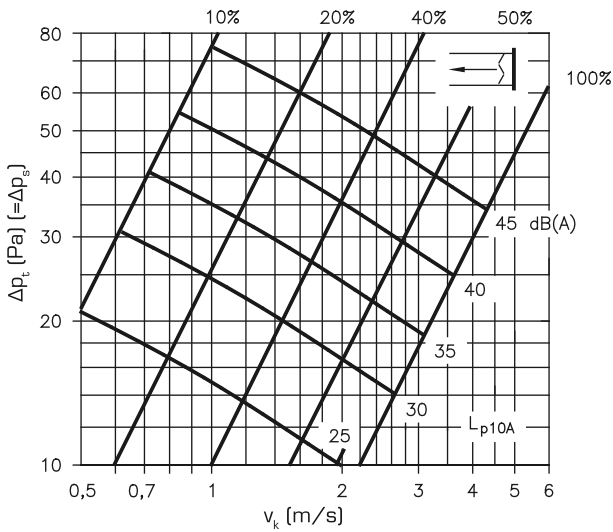40

12

(H-4) x (B-4)

Adjusting device S

47

(H-12) x (B-12)
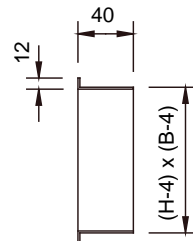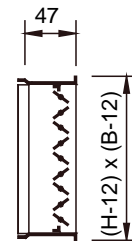
Adjustment, calculation example

Adjusting device S, exhaust air

Sound level of damper:

$$L_{p10As} = L_{p10A} + K_A$$

Face velocity: $v_k = (q_v/(B \times H))$ $[(m^3/s)/m^2]$

Influence of the face area (Ak) to the sound pressure level:

$A_k = B \times H$	0,03	0,06	0,12	0,2	0,4	m2
K_A	±0	+3	+8	+11	+15	dB

Total sound level of grille and adjusting device:

Difference of sound levels between grille and adjusting device	0 – 1	2 - 3	4 - 9	≥10	dB
Addition to the higher sound pressure level	3	2	1	0	dB

Calculation example

1. The need for the air flow is 150 l/s.

2. The requirement for the sound attenuation of the room is $L_{pA} \le 50$ dB(A).

3. Check that the ducts are adjustable.

Solution:

1. Select the grille USR-600-100.

2. Calculate the permitted sound level L_{A10} in consideration of the actual room attenuation and other devices of the room, for example 44 dB(A).

3. When using the adjusting device S it is to be calculated as follows:

$v_k = [(0.15 m^3/s)/(0.6 \times 0.10\ m^2)] \approx 2.5$ m/s ; $A_k = 0.06\ m^2$

-> K_A = +3 dB

Permitted sound level for the adjusting device:

L_{A10} = 44 – 3 = 41 dB(A).

Sound level difference of the grille and adjusting device is 41 - 21 = 20 dB (in this case the grille doesn't increase the total sound level).

The pressure control area when using the adjusting device S is Δp_t = 35 Pa.

Construction, material, installation, product code

Construction

The USR grille is designed for use as exhaust air terminal device. It can be mounted into a wall or in a ceiling. It may also be mounted into connection box TGE. The adjusting device S is also available as an additional accessory. USR has a frame and grid blades of fixed regulation blades.

The dimensions of the installation hole (BxH in mm) are given with the order. The gradation of the grilles in width is 100 mm and in height is 50 mm, in the design of 200x100 to 1000x200. Bigger sizes are also available. Grilles, larger than width B>1200 and/ or height H>600 are available with modular construction. Max. height of the adjusting device S is 600 mm. Adjusting devices, larger than width B>600 are available with modular construction.

Material and surface finish

The USR grilles (frame and grid blades) are manufactured from aluminium. The mounting frame K and the adjusting device S are manufactured from hot galvanized steel sheet. The regulation blades are manufactured from aluminium.

The grille is powder coated for a high surface finish and good impact and scratch resistance.

Standard colour White RAL-9010.

Installation

The grille is fitted into a mounting frame K or into connection box TGE by using springs (all sizes) or screw holes (sizes B ≥ 600 or H ≥ 300).

Instructions

Directions for installation, adjustment and care are set out in detail in our technical instruction which accompanies each product. The instruction is also accessible on www.flaktwoods.com.

Technical data and dimensioning

For complete dimensioning, please see Fläkt Woods product selection program. Contact our nearest sales office for further information.

Product code

Grille
USR-aaaa-bbb

Width in mm (aaaa)

Height in mm (bbb)

Grille with mounting frame
USR-aaaa-bbb-K

Width in mm (aaaa)

Height in mm (bbb)

Mounting frame installed (K)

Accessories

Connection box
TGE-aaaa-bbb-c

Length of grille connection, mm (aaaa)

Height of grille connection, mm (bbb)

Connection alternative (c)
A = from the side
B = from the rear
C = from above / from below

Mounting frame
K-aaaa-bbb

Width in mm (aaaa)

Height in mm (bbb)

Adjusting device
S-aaaa-bbb

Width in mm (aaaa)

Height in mm (bbb)