Rectangular supply/exhaust air tower SP

Application

Air towers are designed for the supply and exhaust of air.

Description

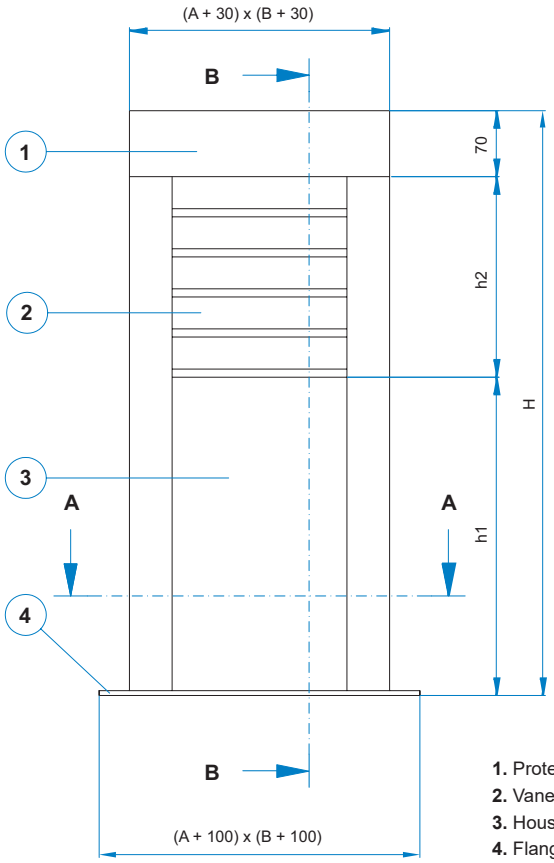
- Possible air flow up to 30000 m3/h.
- Construction elements are joined together so as to reduce the possibility of corrosion to the minimum.
- The vane provides protection from external influences, such as rain, birds and large insects.
- The flange is always manufactured from rust-resistant sheet metal.
- Uniform design of the end cap.

Installation

Air towers are installed with flanges on the concrete duct.

Definition of symbols

H	Total height of the air tower
h1	Housing mantle height
h2	Vane height
A x B	Nominal dimensions, as seen in the A – A cross-section



1. Protective cap
2. Vane
3. Housing mantle
4. Flange

Dimension limits

H	The total height of the air tower is limited to 3000 mm
A x B	Nominal dimensions are limited to a maximum of 1000 mm x 1000 mm and a minimum of 300 mm x 300 mm

Maximum speed limit

Speed limit in the housing mantle, v_{SP}:

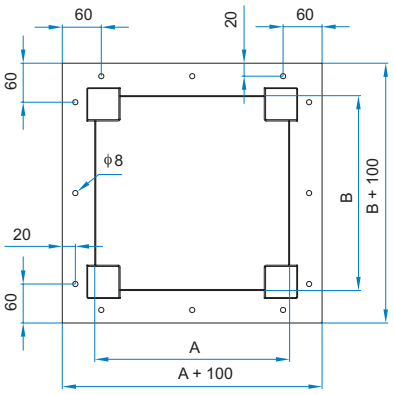
Due to noise level and pressure drop, the speed is limited to vSP ≤10 m/s.

vSP ≤ Q / ((A-0.08)x(B-0.08)x3600) [m/s]

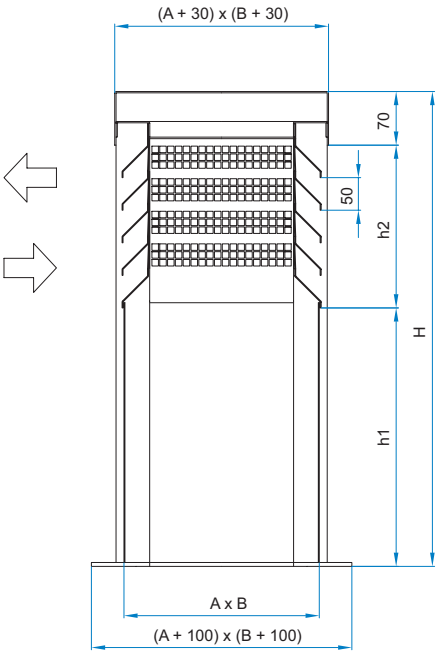
Speed limits on the vanes, v_{EF}:

- maximum vEF when supply 3 m/s
- maximum vEF when exhaust 4 m/s
- optimal velocity is 2.8 m/s, in this case pressure drop < 60 Pa and small sound power level

A-A cross section



B-B cross section



Definition of symbols

v_{SP} [m/s]	Speed in narrow part of housing
Q [m3/h]	Air flow
A, B [m]	Nominal dimensions

Number of vanes

The number of vanes **n**[/] depends on the nominal dimensions **A x B** [m], flow rate **Q** [m3/h] and speed on the vanes **v_{EF}** [m/s].

$n = 1 + Q / (A_{VANE} * v_{EF})$ [/]

where the surface of one vane

$A_{VANE} = ((2*(A-0.08) + 2*(B-0.08)) * 0.04 * 0.694$ [m2]

The calculated number of vanes n is always rounded to the first whole value.

Calculation of the total height

H = h1 + h2 + 70 mm [mm]

where the height of vane part **h2** depends on the number of vanes **n**.

h2 = n * 50 mm

Ordering key

SP - K / A x B / H / h1 / material / flow rate

1 2 3 4 5 6

1		
SP-K	Rectangular	
2	Dimension	
A x B		
3	Height	
4	Height of the housing	
5	Material	
		Rust-resistant sheet metal AISI 304 (2B) Rust-resistant sheet metal AISI 304 gloss (BA) Aluminium + RAL in optional colour Zinc-coated sheet metal+ RAL in optional colour
6	Flow rate	
	$m^{3/h}$	