07

Protection louvres

Supply air/exhaust air towers

External elements

Protection louvres are installed in building fronts (in supply and exhaust air openings) as a protection against the direct ingress of rain, birds, bigger insects etc. They are suitable for all low pressure air-conditioning, heating and ventilation.

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

Overview

Protection louvres

Protection louvres are installed in building fronts (in supply and exhaust air openings) as a protection against the direct ingress of rain, birds, bigger insects etc. They are suitable for all low pressure air-conditioning, heating and ventilation. They are made of galvanised steel or aluminium in numerous standard or special dimensions.

Protection louvres

AZR-3

AZR-4

JZR-6

OZR-1

Supply air/exhaust air towers

Air towers are used for the supply and exhaust of air. Various construction types can be made of different materials and in different dimensions according to the customer's request.

Supply air/exhaust air towers

SP - round

SP - rectangular

Content

Supply air/exhaust air towers

Circular supply air/exhaust air tower SP

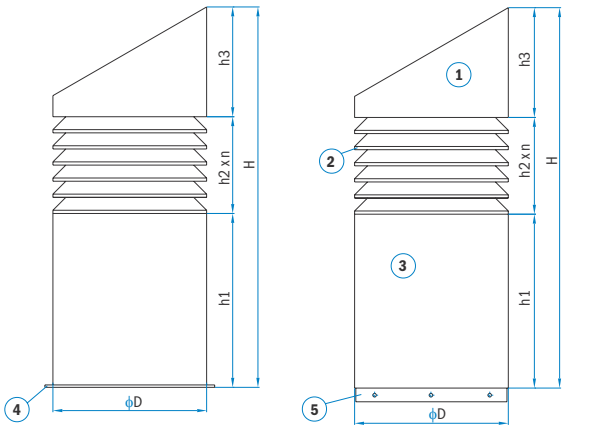
Application
Towers SP are designed for supply and exhaust of air from rooms. In case of high noise level, air displacement tower can be fitted with sound attenuator.

Description
They are available in circular and square versions. They consist of three parts:

- **Housing mantle** with attached flange or special connection
- **Vane** is fitted at any height and under any inclination. Number of blades depends on required effective area.
- **Cap** is available in three forms: (flat, pointed or inclined).

Materials and dimensions of product are determined by the customer. Possible materials & colours: aluminium, steel or rust-resistant coated (polished). Air displacement towers can be painted in any RAL colour.

Types of installation
Tower is installed via the flange or special connection. If special connection is being used, air displacement tower is fixed on concrete duct with screws.

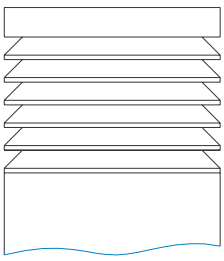


1. Installation with flange
2. Installation with special connection

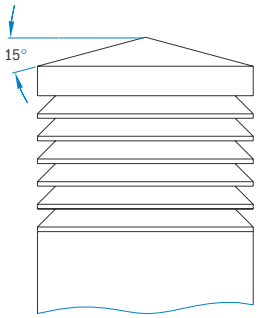
1. End cap
2. Vane
3. Housing mantle
4. Flange
5. Connection

Types of end cap

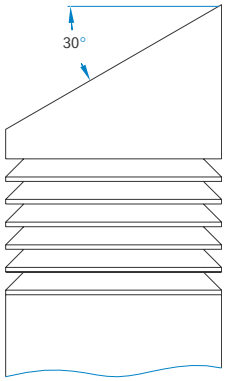
Type 1
Flat end cap



Type 2
Pointed end cap: inclination 15°



Type 3
Inclined end cap: inclination 30°

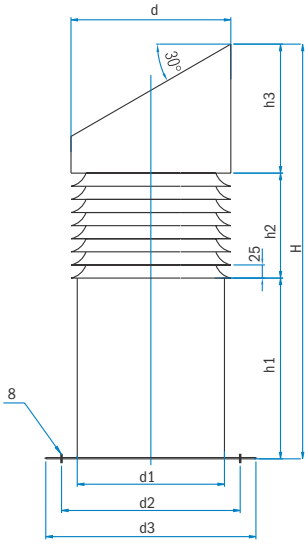


Dimensions

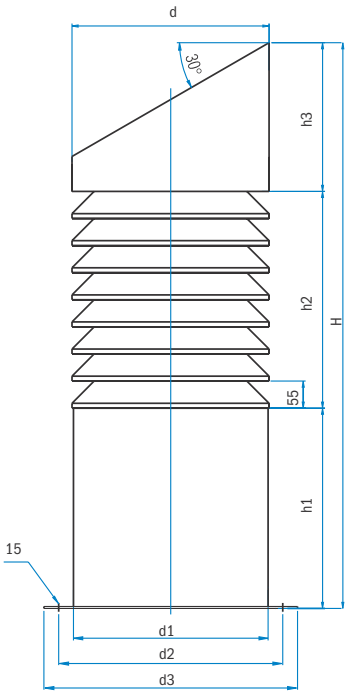
					h3		
Size	**d**	**d1**	**d2**	**d3**	**Cap1**	**Cap2**	**Cap3**
140	137	113	173	233		88	149
200	193	170	230	290		96	181
250	249	225	285	345	70	103	214
300	305	281	340	400		111	246
360	361	336	396	456		118	278
400	400	395	455	515		124	301
500	500	495	555	615		137	359
700	700	695	755	815		164	474
900	900	895	955	1015		191	589
1000	1000	995	1055	1115		204	647
1300	1300	1295	1355	1415		244	820

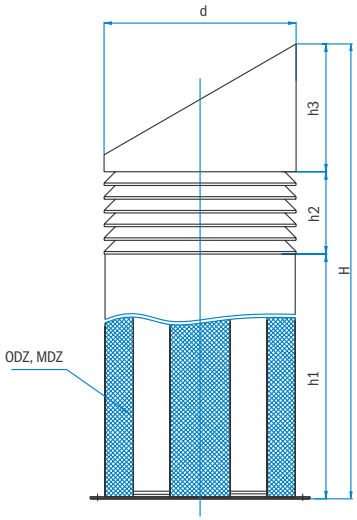
Note: Air tower SP is also available in square or rectangular cross-sections (AxB).

Sizes 140-360



Sizes 400-1300





Technical data

All necessary technical data are provided according to the project on the basis of the customer's requests (required dimensions, air flow, etc.).

Variant with the sound attentuator

The sound attentuator is mounted in the housing mantle of the supply air/exhaust air tower.

For the determination of technical data, see the chapter: Sound Attenuators, Type MDZ.

Ordering key

SP-R / 400 / 1851 / 1000 / Cap type 3 / material / flow rate

- Rust-resistant sheet metal AISI 304 mat
- Rust-resistant sheet metal AISI 304
- Polished aluminium + RAL in optional colour
- Zinc-coated sheet metal + RAL in optional colour
- Cap type (1, 2, 3)
- Height of the housing (h1)
- Height (H)
- Size
- Round

ODZ and MDZ on customer's request.
When d>400, vanes are made of aluminium.

Print out of selection programme

Supply	Velocity in duct	Return
◉	2.00	◉

Maximal velocity can not exceed 10m/s.

Input data		
Q	3000	m^3/h
v_{ef}	3.30	m/s

Maximal effektiv velocity can not exceed 4m/s.

d	895	mm
h1	1000	mm
Maximal number of vanes is 17.		
n	5	kos
h2	275	mm
h3	587	mm
h	1862	mm
Total height is to big. Strengthened flange. Lying transport.		

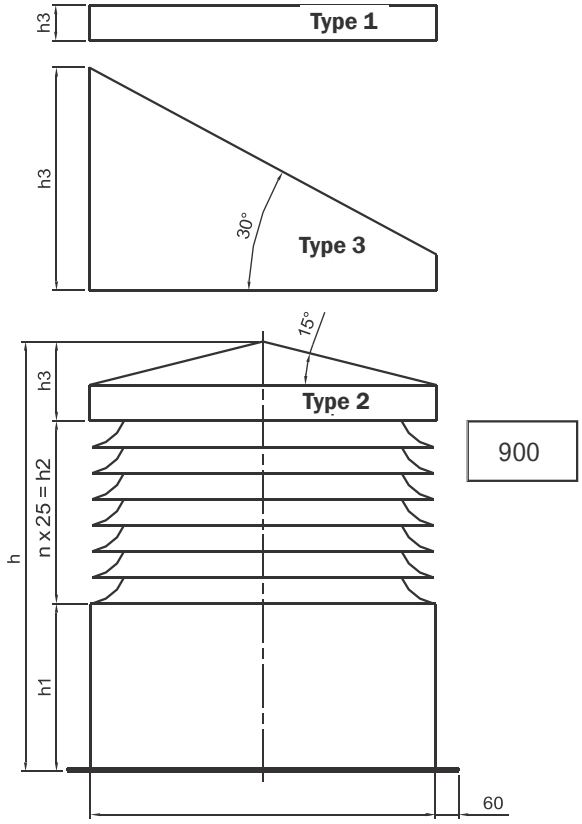
Cap		
Type 1	Type 2	Type 3
○	◉	○

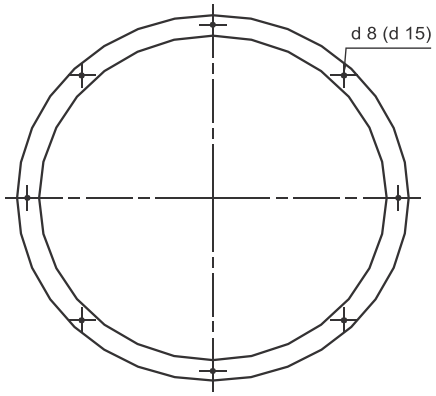
Material	
d>=400 vanes are always made of aluminium and coloured.	
Housing	
galvanized steel+powder coated	◉
aluminium+powder coated	○
stainless steel ASI 304 matt	○
stainless steel ASI 304 polished	○

Pressure drop ∆p [Pa]
4

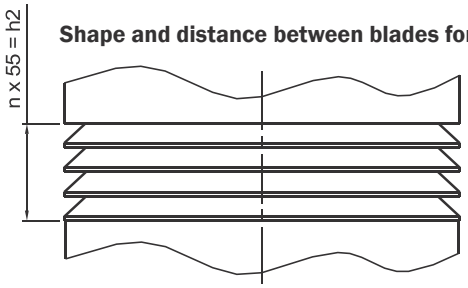
Sound power level LWA [dB(A)]
22

Discount in %	100
Price [EUR/pcs]	





Shape and distance between blades for d≥400

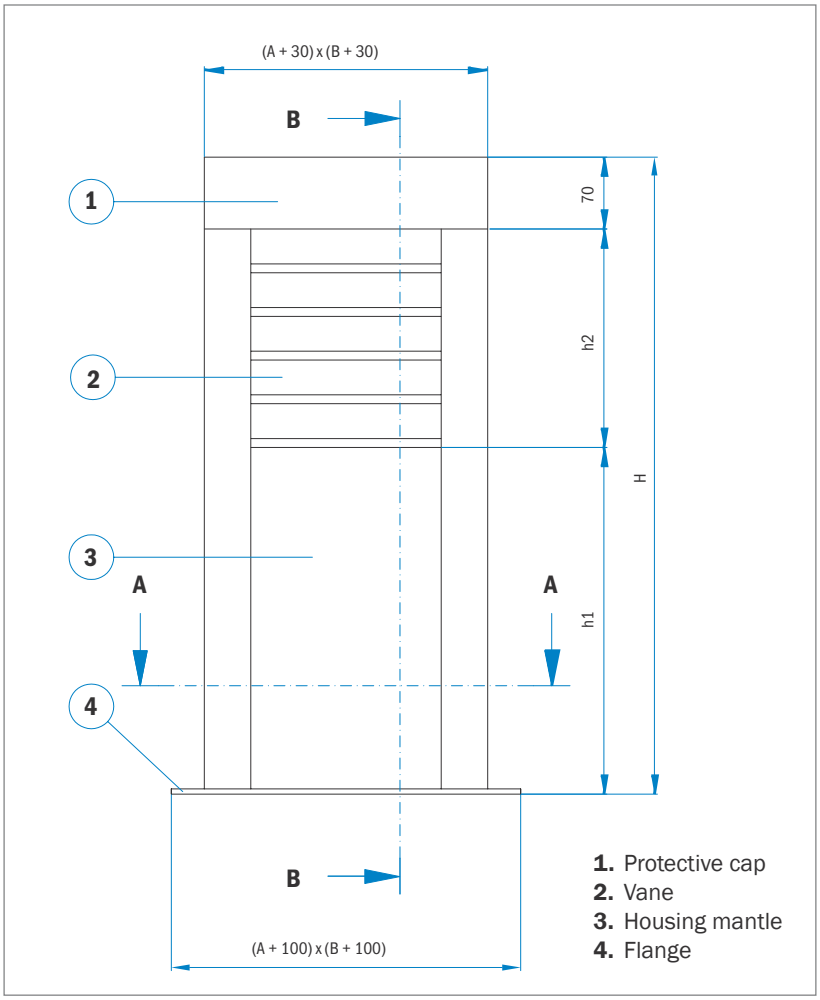


Rectangular supply/exhaust air tower SP

Application
Air towers are designed for the supply and exhausting 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.
- The optional installation of a DZ-2 or DZ-3 sound attenuator, the calculation of attenuation is performed according to the project on the basis of the customer's requirements.
- The optional installation of fabric filters of filter class G3 or G4. The calculation of flow rates and the selection of the pre-filter is performed according to the project on the basis of customer's requirements. Optional filter replacement with a special door on the air tower housing mantle from the outside.

Manner of installation
Air towers are installed with flanges on the concrete duct.



Definition of symbols

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

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 $v_{SP} \leq 10$ m/s.

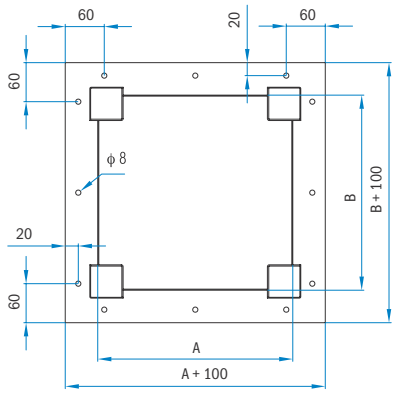
$v_{SP} \leq 10$ m/s

$v_{SP} \leq Q / ((A-0.08)x(B-0.08)x3600)$ [m/s]

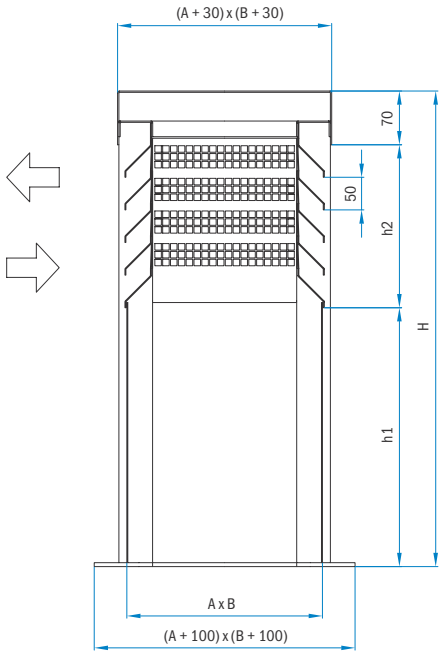
Speed limits on the vanes, v_{EF}:

- maximum v_{EF} when supply 3 m/s
- maximum v_{EF} when exhaust 4 m/s
- optimal velocity is 2.8 m/s, in this case pressured 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

- Rust-resistant sheet metal AISI 304 mat
- Rust-resistant sheet metal AISI 304
- Polished aluminium + RAL in optional colour
- Zinc-coated sheet metal + RAL in optional colour

Housing mantle height (h1)

Total height (H)

Height

Rectangular