

## Description and application

Square swirl diffuser NWK-2 on the square panel is used for ventilation and air conditioning industrial and public buildings with a height of 2.5 m - 4.5 m, such as offices, hotels, cinemas, conference rooms, supermarkets. They are characterized by easy assembly in suspended ceilings, plenum boxes or directly on rectangular ducts. Assembly is done using visible screws in the corners of the faceplate or using a central mounting. By appropriate location of the slots in the faceplate we get a swirling motion to the air flow. By using movable plastic blades it can also adjust the flow direction of air flow.

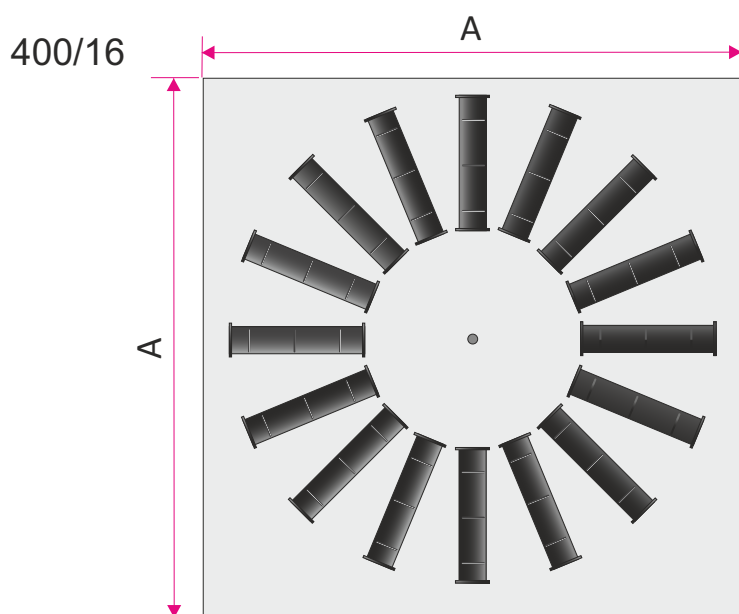
Square swirl diffuser has Hygienic Certificate HK/K/0522/01/2016

## Material and workmanship

Diffusers are made of galvanized sheet steel powder coated, standard on the white color 9016 or on request to any color from the RAL palette and special execution of stainless steel or aluminum. NWK-2 in supply air version have plastic blades located in each of the slots, with individually settings. Blades are standard in color black (on request there is possible to put the blades in white). Version extract air don't have a blades regulators.

## Size

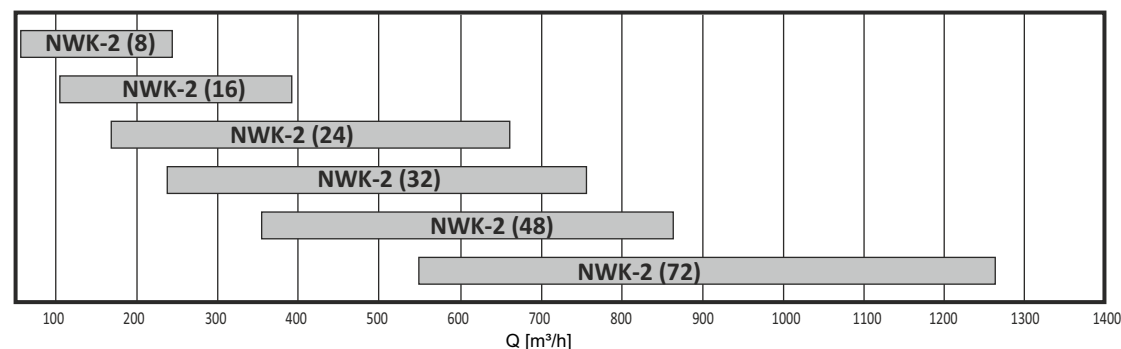
The diffusers are manufactured on order. Examples dimensions of the diffusers are given in the table.



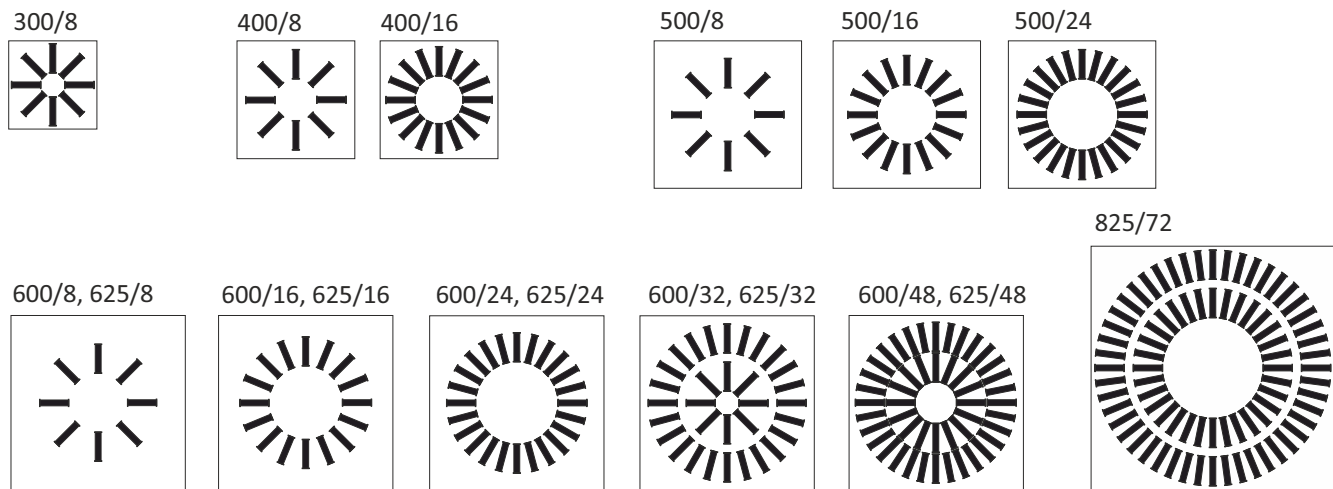
Size A	Quantity of blades	Aef(m <sup>2</sup> )
300x300	8	0,012
400x400	8	0,012
400x400	16	0,024
500x500	8	0,012
500x500	16	0,024
500x500	24	0,036
600x600	24	0,036
595x595	24	0,036
600x600	32	0,048
595x595	32	0,048
600x600	48	0,072
595x595	48	0,072
625x625	24	0,036
625x625	32	0,048
625x625	48	0,072
825x825	72	0,108

## Technical data

Quick selection diffusers NWK-2 for LWA<40dB (in parenthesis the number of plastic blades).

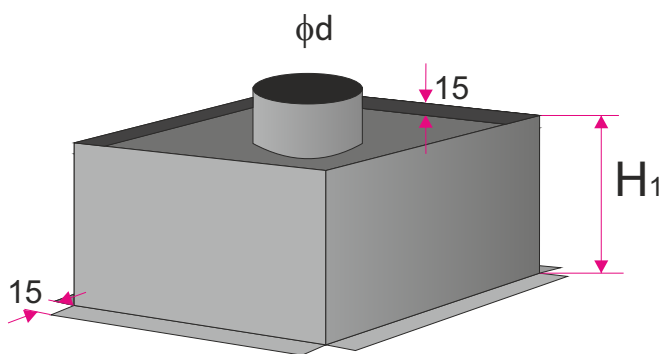


## Dimensions - examples of the arrangement blades

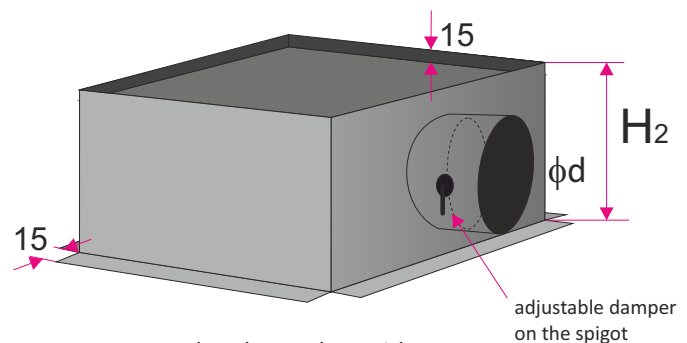


## Accessories- plenum box

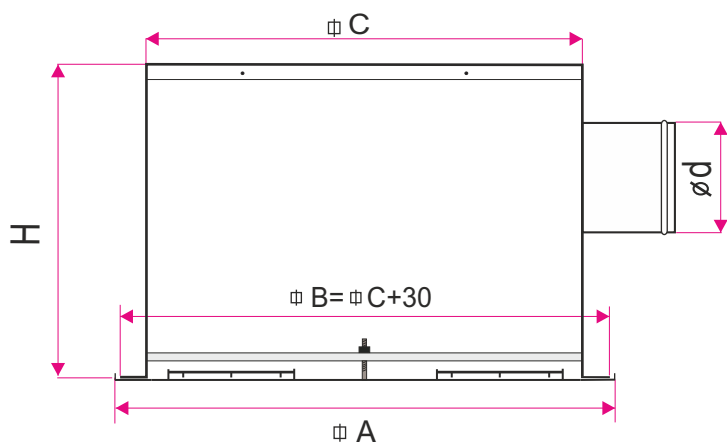
Plenum box is made of galvanized steel. On request it can be equipped with a damper control onto the connected spigot. The plenum box can be isolated inside with rubber (acoustic) or outside with mineral wool (thermal). In the standard height of the plenum box is adapted to size of the spigot or diffuser size (you can specify the height of the plenum box).



Rectangular plenum box with the spigot on the top



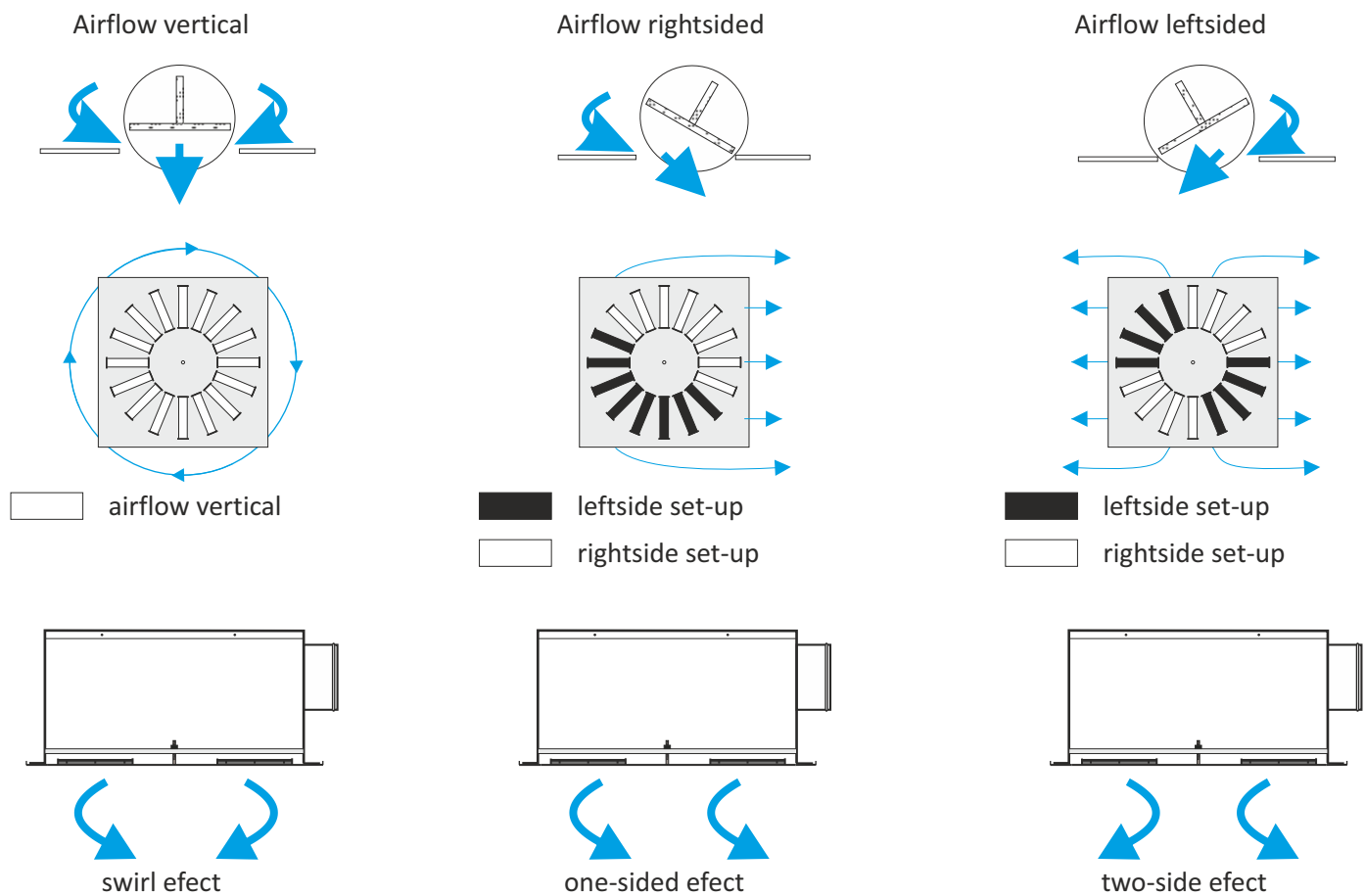
Rectangular plenum box with the spigot on the side



Size A	C	H <sub>1</sub>	H <sub>2</sub>	$\phi d$
300x300	265x265	310	280	158
400x400	365x365	310	280	158
500x500	465x465	310	280	198
595x595	560x560	310	330	248
600x600	565x565	310	330	248
625x625	590x590	310	330	248
825x825	790x790	310	380	313

Other sizes are produced on customer request

## Workmanship - the setting variants of blades and direction of air flow



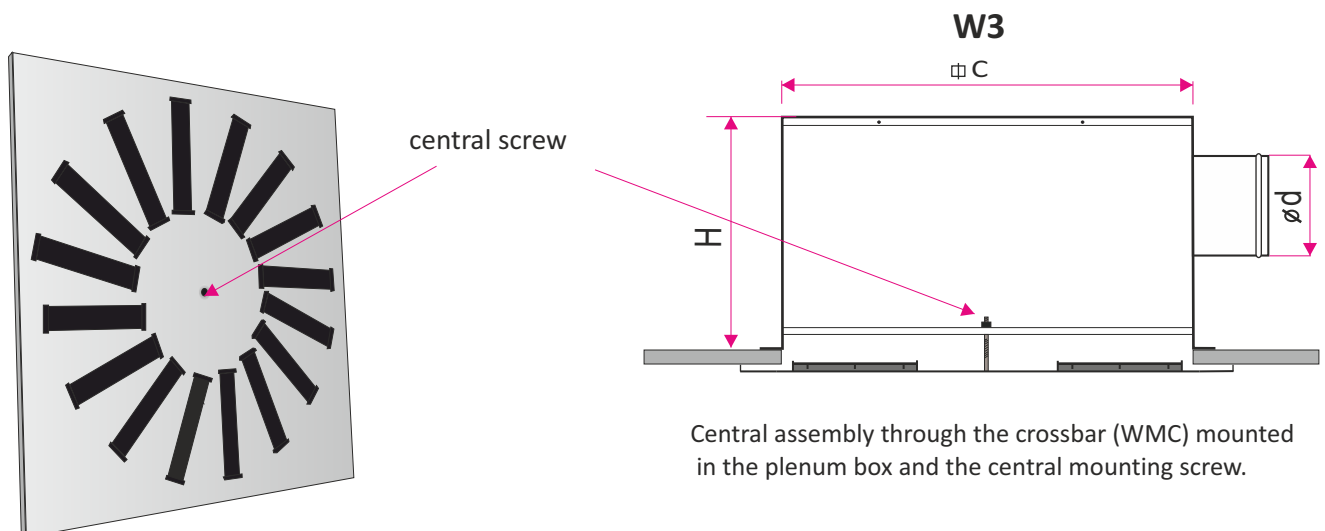
## Methods of mounting



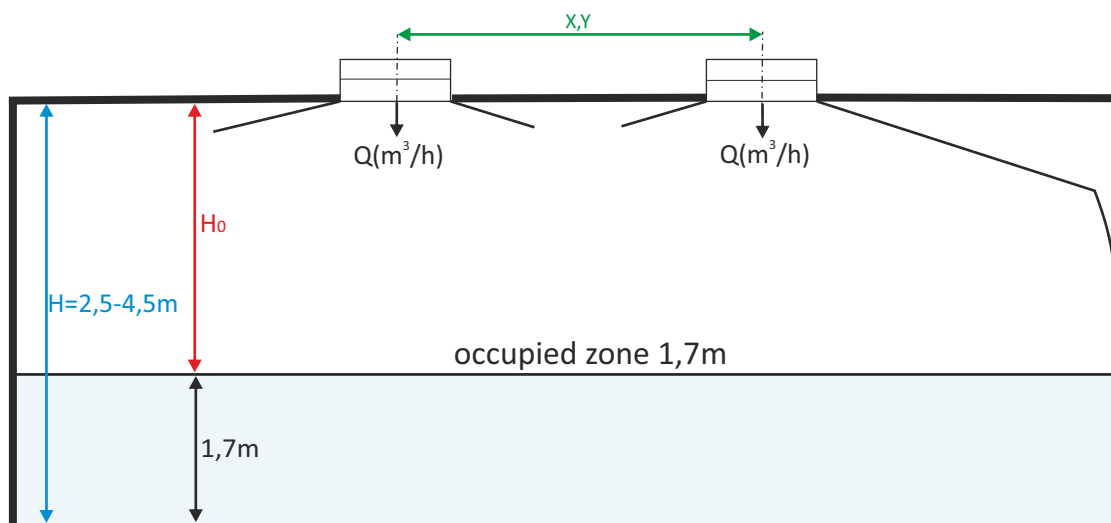
Assembly invisible on the construction of the suspended ceiling  
- diffuser panel 595x595 - diffuser without mounting holes in the panel.



Assembly visible using screws and the mounting holes in the corners of diffuser faceplate.



Technical data



**Marking:**

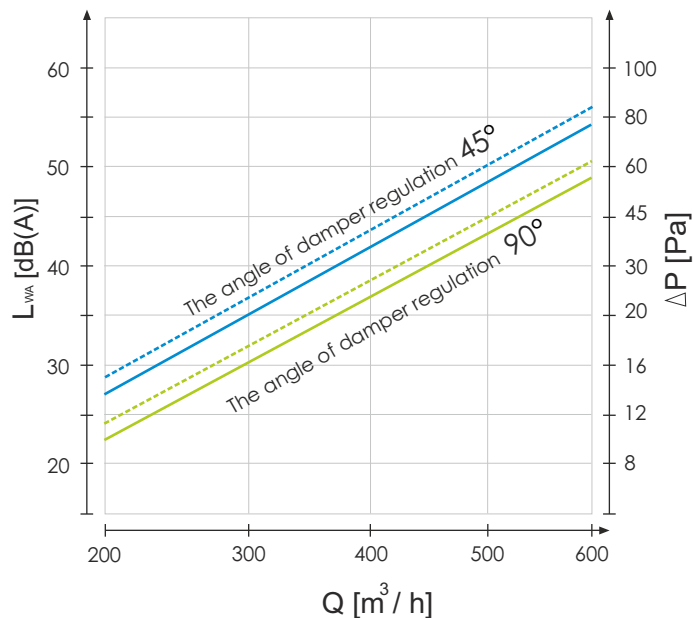
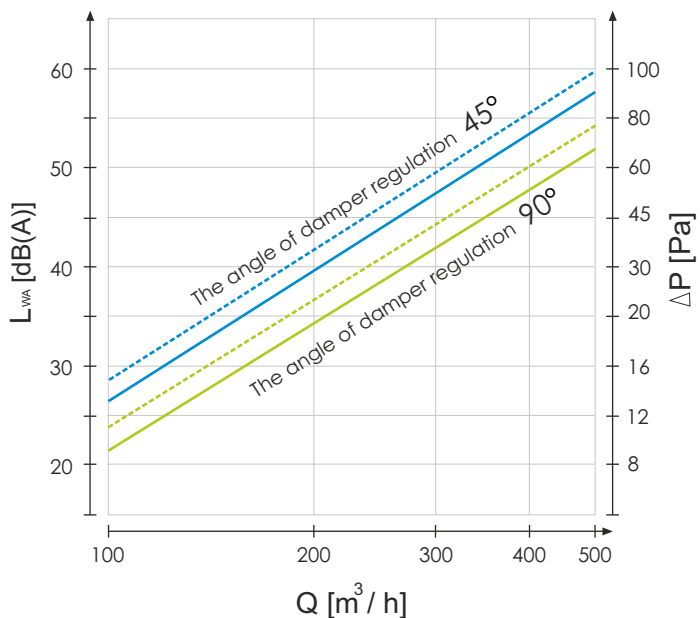
- X [m]-distance between the diffusers (length)
- Y [m]-distance between the diffusers (width)
- Q [m<sup>3</sup>/h]- air volume flow
- L<sub>WA</sub> [dB(A)]- acoustic power level
- ΔP [Pa]- pressure drop
- H<sub>0</sub> [m]- height from the ceiling to the occupied zone
- V<sub>H0</sub> [m/s]- air velocity at the height of H<sub>0</sub>

Pressure drop and acoustic power

Plenum box with spigot : top \_\_\_\_\_ side .....

Size : 300/8, 400/8, 500/8, 600/8

Size : 400/16, 500/16, 600/16, 625/16

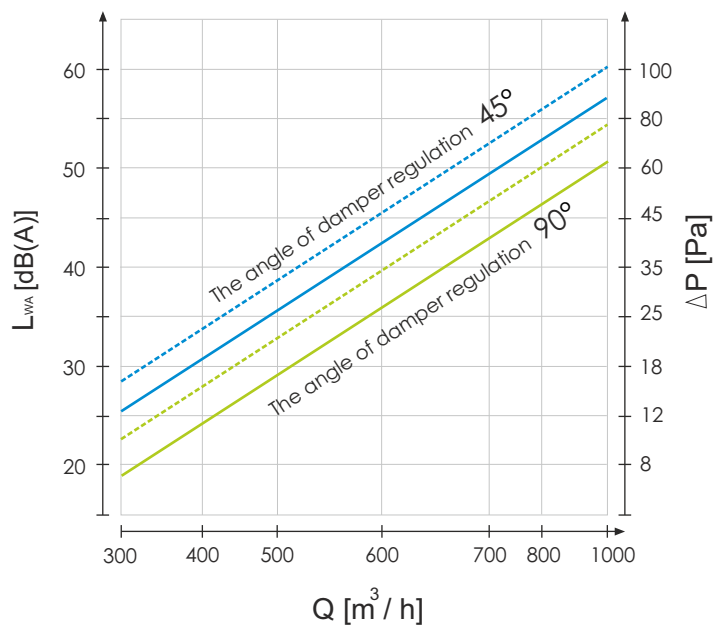


## Pressure drop and acoustic power

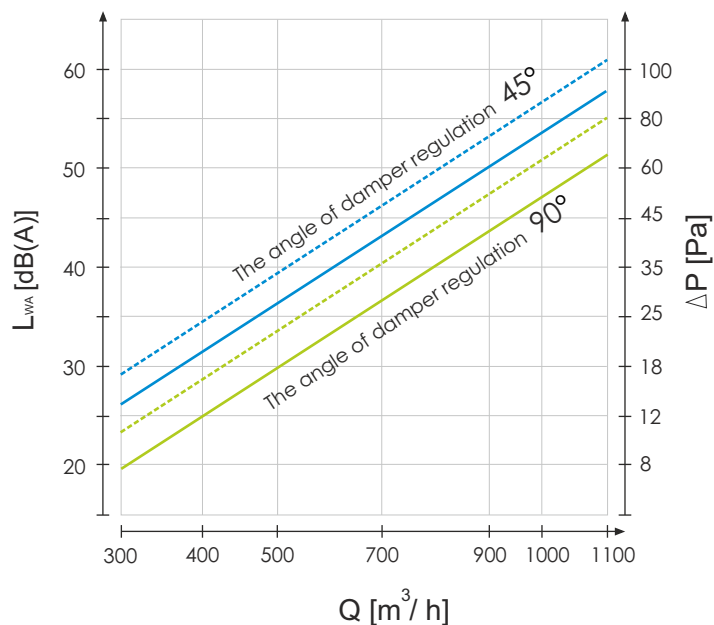
Plenum box with spigot : top —————

side ..... (dotted line)

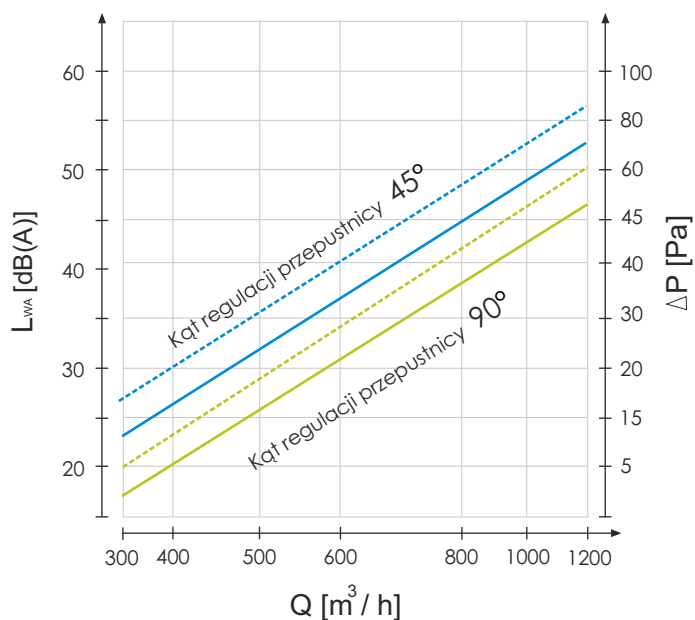
Size : 500/24, 600/24, 625/24



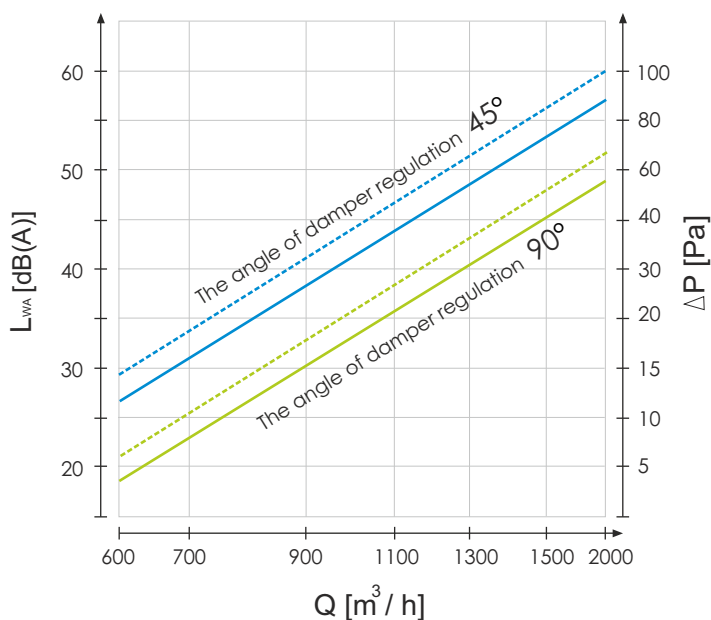
Size : 600/32, 625/32



Size : 600x600/48



Size : 825x825/72



### Marking:

Q [m³/h]- air volume flow

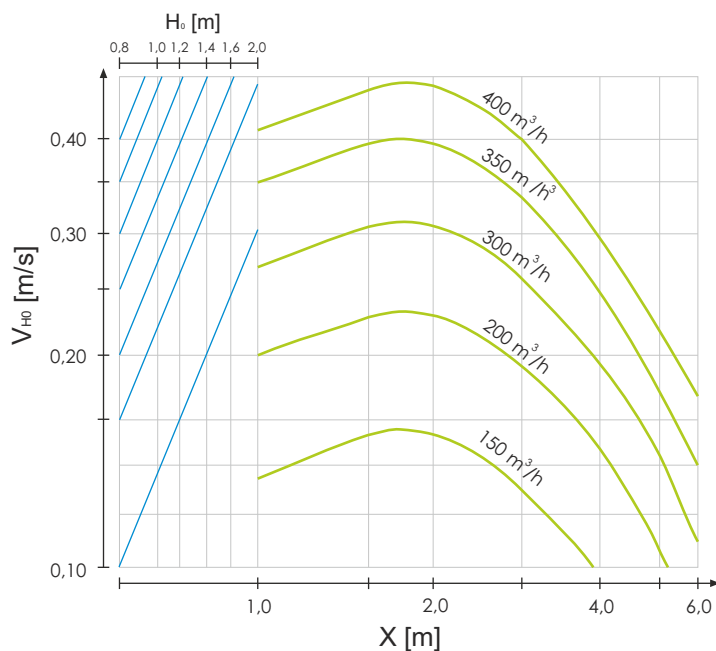
L<sub>wa</sub> [dB(A)]- acoustic power level

ΔP [Pa]- pressure drop

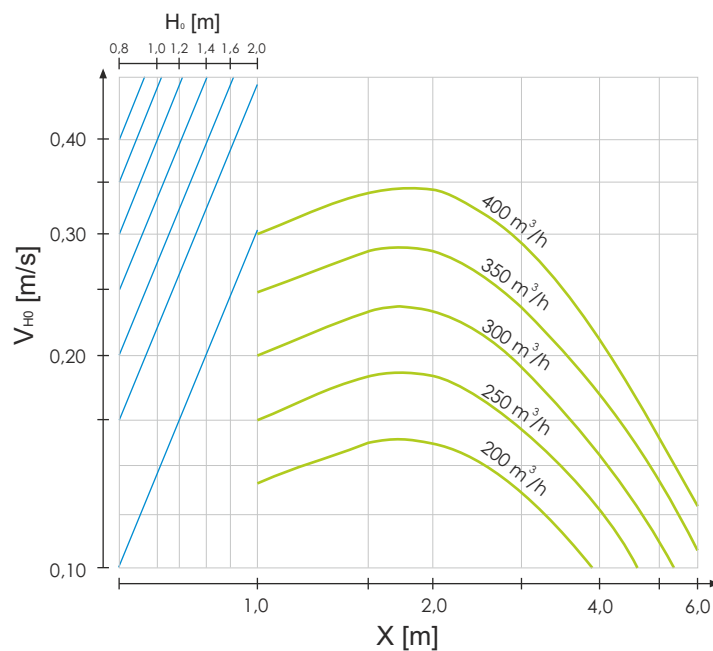
## Dependence of the air velocity from stream range

Size : 300/8, 400/8, 500/8, 600/8

Spacing between diffusers  $Y=2,5$  do  $3,5$  m

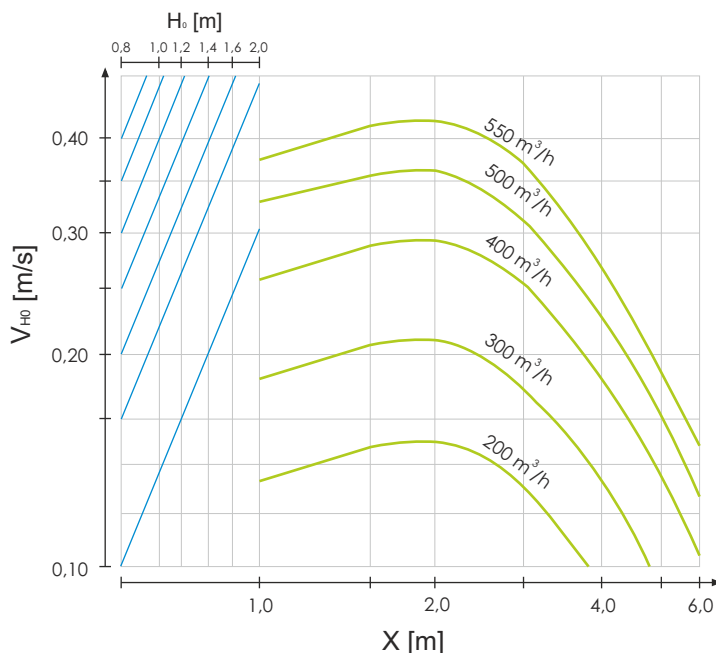


Spacing between diffusers  $Y>4$  m

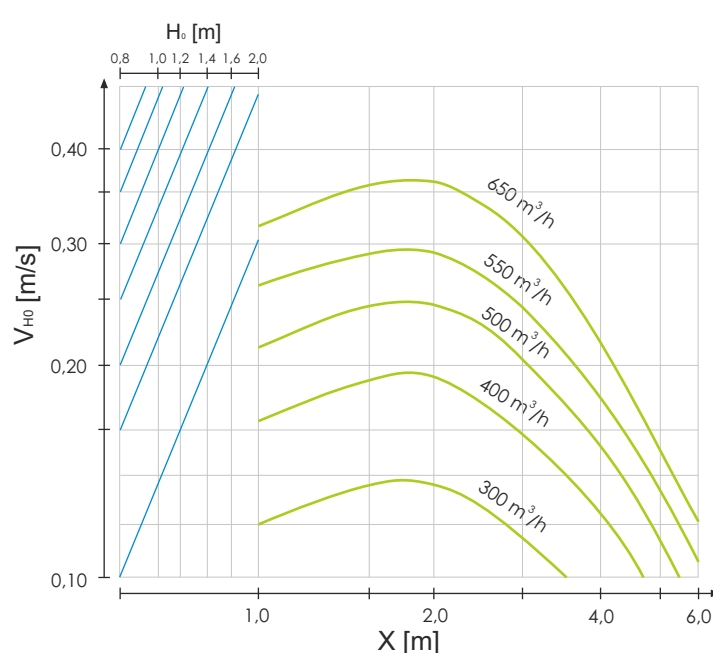


Size : 400/16, 500/16, 600/16, 625/16

Spacing between diffusers  $Y=2,5$  do  $3,5$  m



Spacing between diffusers  $Y>4$  m



### Marking:

$X$  [m.]-distance between the diffusers (length)

$Y$  [m.]-distance between the diffusers (width)

$Q$  [m<sup>3</sup>/h]- air volume flow

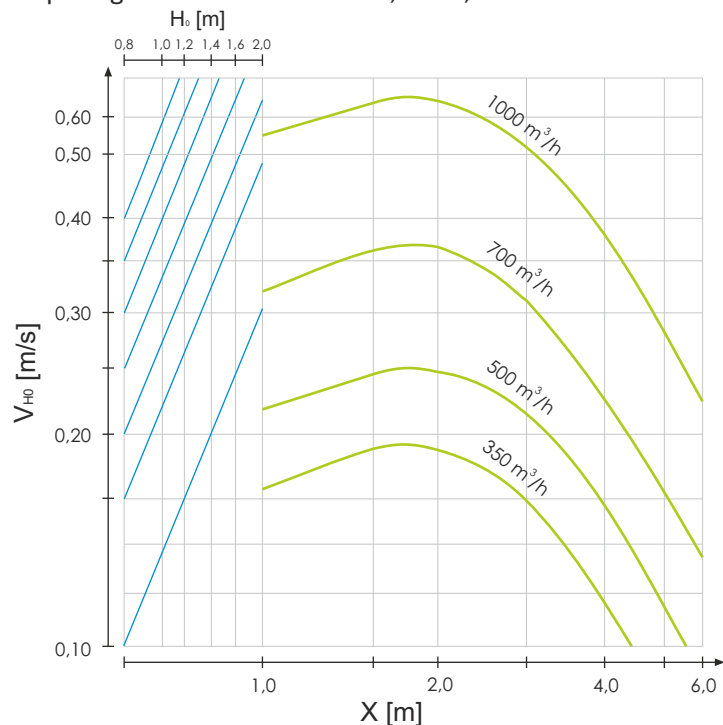
$H_0$  [m.]- height from the ceiling to the occupied zone

$V_{H_0}$  [m/s]- air velocity at the height of  $H_0$

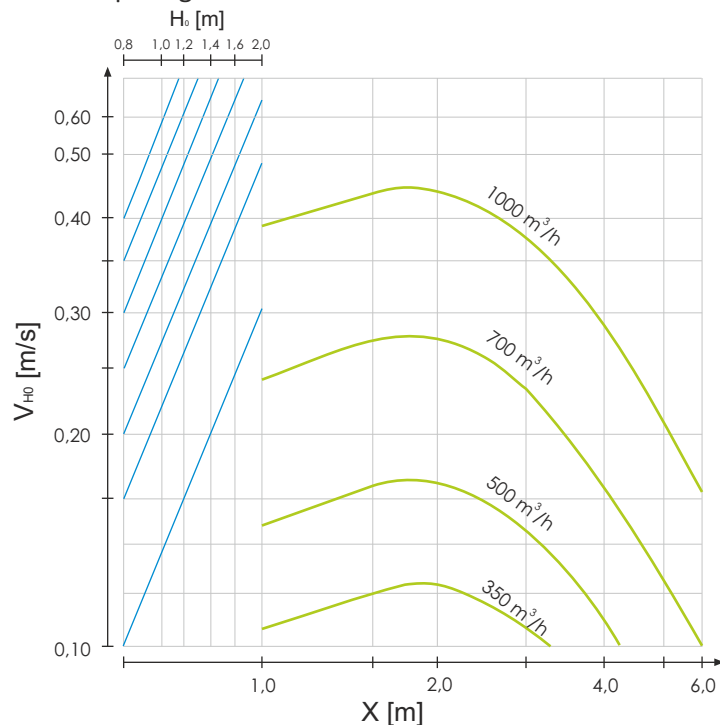
## Dependence of the air velocity from stream range

Size : 500/24, 600/24, 625/24

Spacing between diffusers  $Y=2,5$  do  $3,5$  m

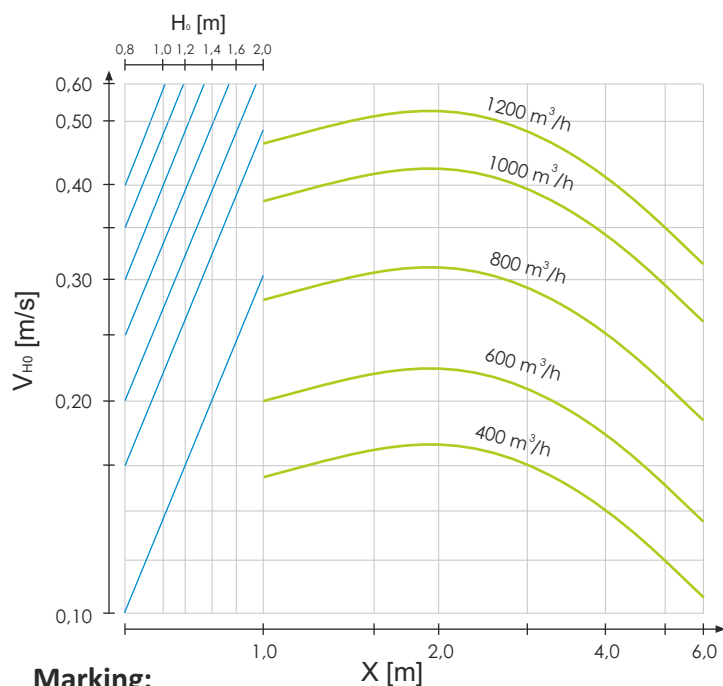


Spacing between diffusers  $Y>4$  m

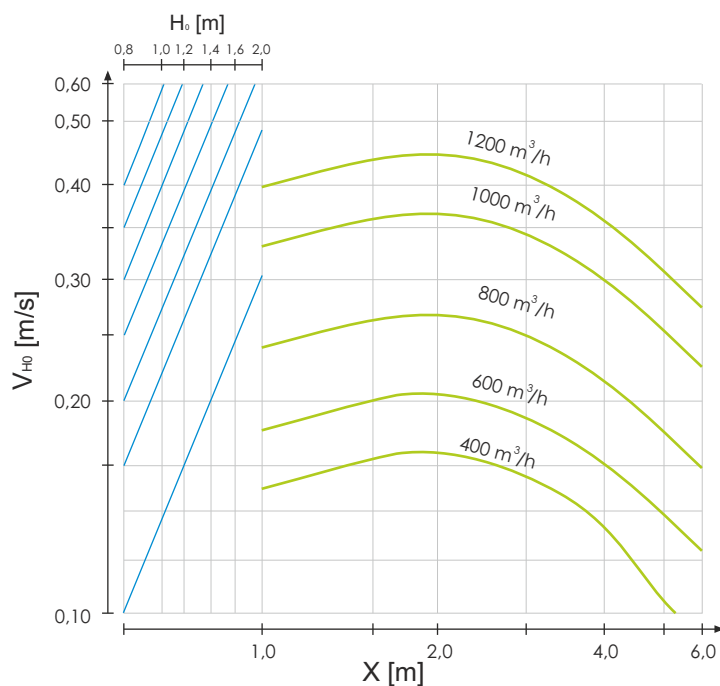


Size : 600/32, 625/32

Spacing between diffusers  $Y=2,5$  do  $3,5$  m



Spacing between diffusers  $Y>4$  m



### Marking:

$X$  [m]-distance between the diffusers (length)

$Y$  [m]-distance between the diffusers (width)

$Q$  [ $\text{m}^3/\text{h}$ ]- air volume flow

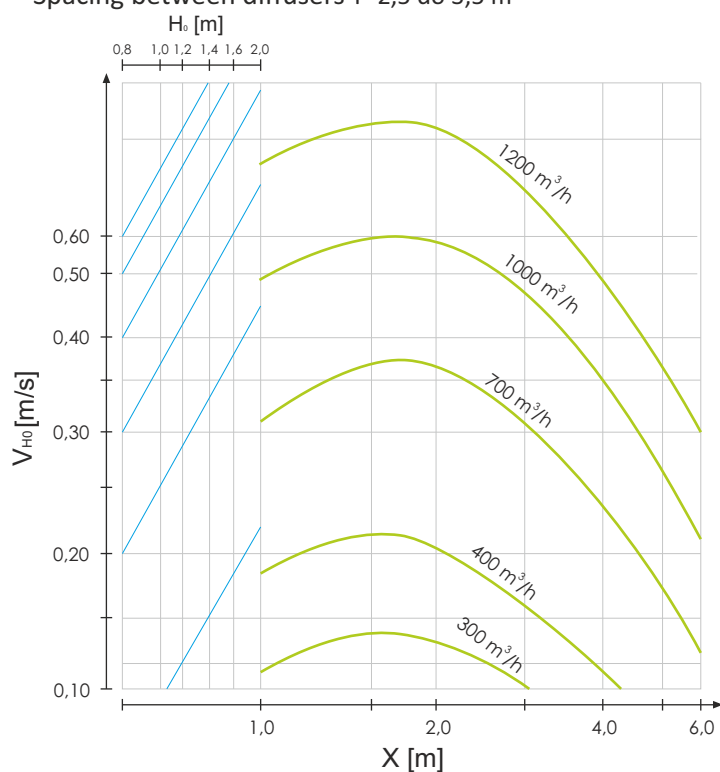
$H_0$  [m]- height from the ceiling to the occupied zone

$V_{H_0}$  [m/s]- air velocity at the height of  $H_0$

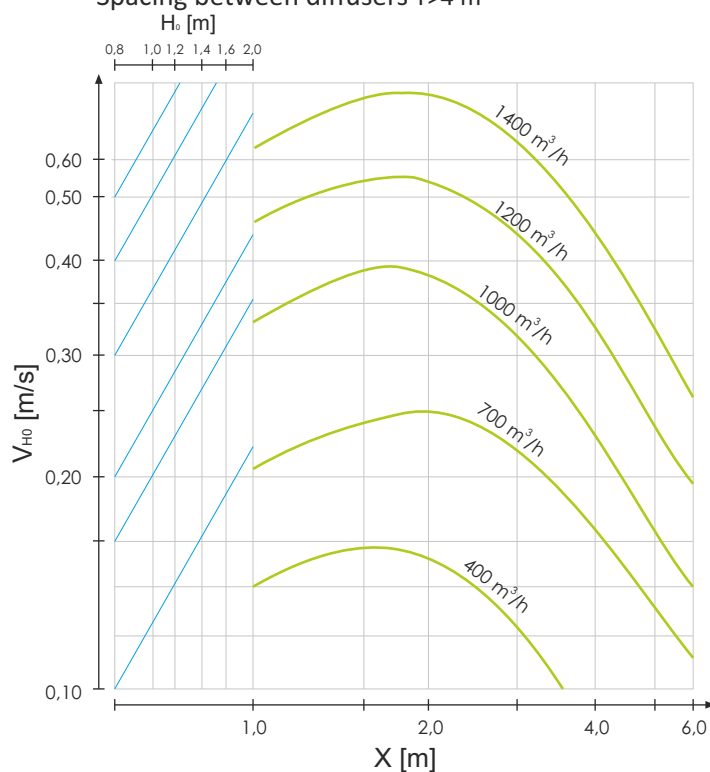
## Dependence of the air velocity from stream range

Size : 600x600/48

Spacing between diffusers  $Y=2,5$  do  $3,5$  m

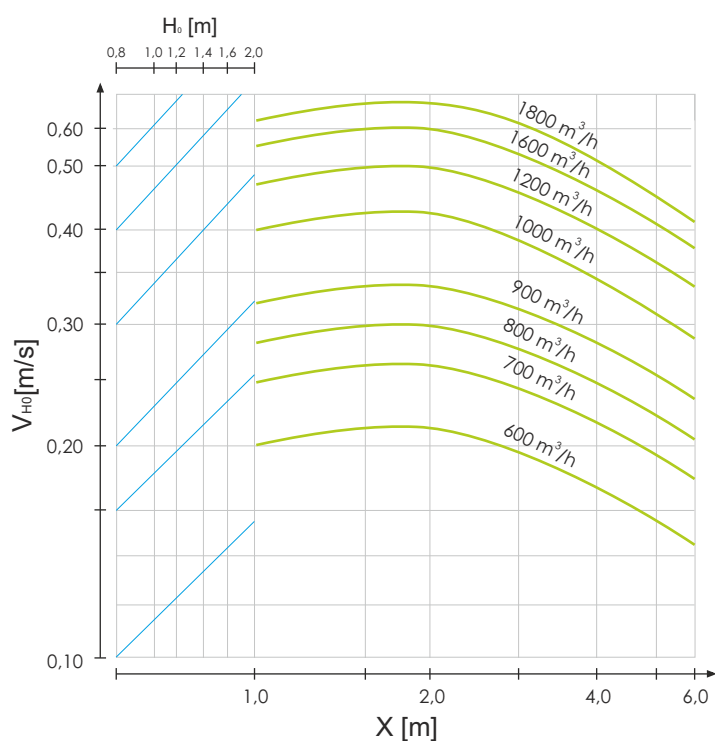


Spacing between diffusers  $Y>4$  m

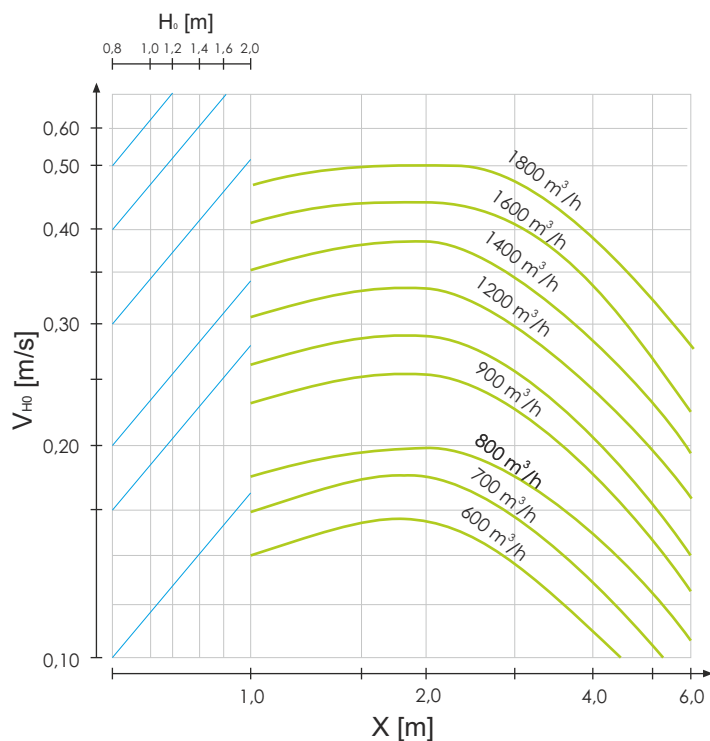


Size: 825x825/72

Spacing between diffusers  $Y=2,5$  do  $3,5$  m



Spacing between diffusers  $Y>4$  m



### Marking:

$X$  [m]-distance between the diffusers (length)

$Y$  [m]-distance between the diffusers (width)

$Q$  [ $m^3/h$ ]- air volume flow

$H_0$  [m]- height from the ceiling to the occupied zone

$V_{H_0}$  [m/s]- air velocity at the height of  $H_0$



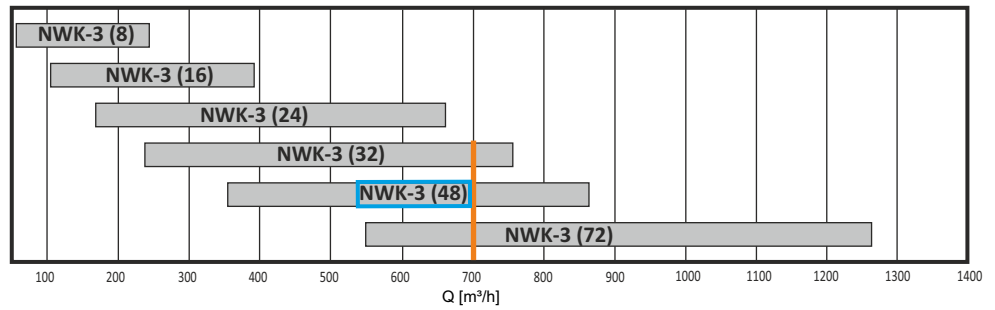
## EXAMPLE

### EXAMPLE

- plate 600x600
- diffuser efficiency  $Q=700 \text{ m}^3/\text{h}$

#### Reading from a graph:

- Appropriate diffusers 32 and 48 blades (72 blades only in plates 825x825)
- selected diffuser NWK-3 (48 blades)



### EXAMPLE

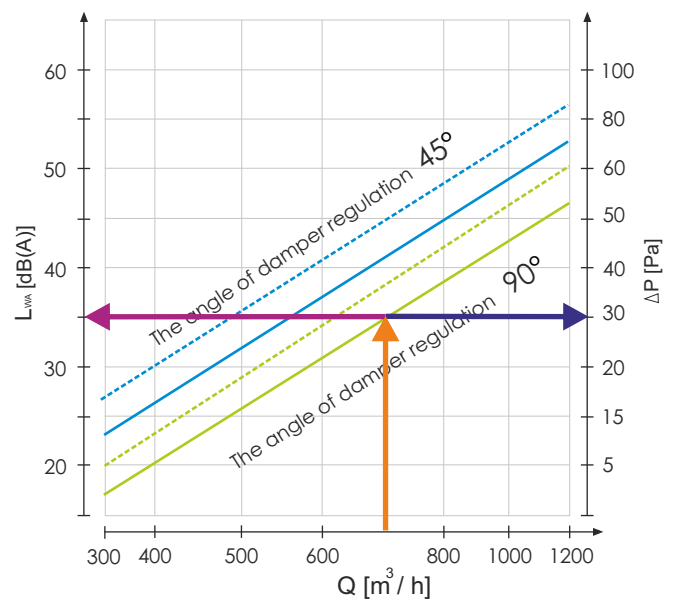
- plenum box with top spigot
- damper - full opening ( $90^\circ$ )
- diffuser efficiency  $Q=700 \text{ m}^3/\text{h}$

#### Reading from the graph:

- acoustic power  $L_{WA} = 35 \text{ dB}$
- pressure drop  $\Delta p = 30 \text{ Pa}$

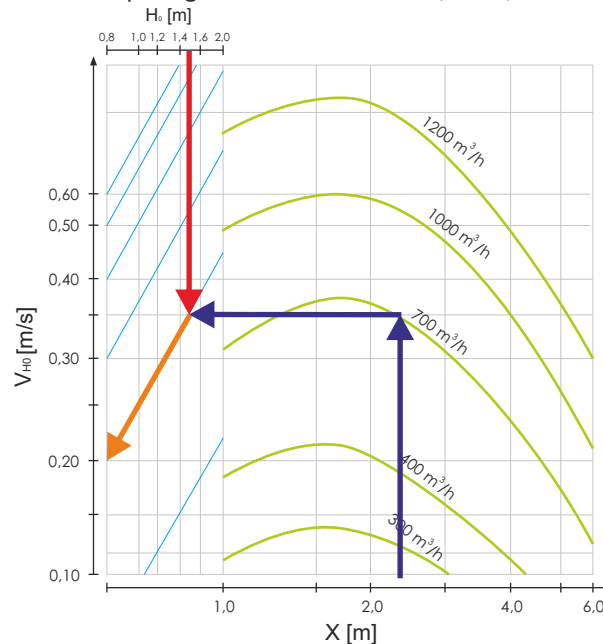
Size : 600x600/48

Plenum box with spigot: top ———  
side - - - - -



Size : 600x600/48

Spacing between diffusers  $Y=2,5 \text{ do } 3,5 \text{ m}$



### EXAMPLE

- Spacing between diffusers  $Y= 3,5\text{m}$
- Spacing between diffusers  $X= 2,4\text{m}$
- room height  $H= 3,2\text{m}$
- height from the ceiling to the occupied zone  $H_0= H-1,7\text{m}= 3,2\text{m}- 1,7\text{m}= 1,5\text{m}$

#### Reading from the graph:

- air velocity  $V_{H0}= 0,20 \text{ m/s}$

**The method of placing an order**

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Please make orders according to the following formula:

**NWK-2 / 'N' / 'L' / 'P' / 'RAL' / 'M' / 'W' + 'SR' / 'I' / 'P' / 'K' / 'H'**

- 'N' the size of the diffuser: **300, 400, 500, 595, 600, 625, 800, 825**
- 'L' quantity of blades **8, 16, 24, 32, 48, 54, 72**
- 'P' purpose of the diffuser:  
**Nc** - supply air (diffuser equipped with black blades)\*  
**Nb** - supply air (diffuser equipped with white blades)  
**W** - extract air (diffuser without blades)
- 'RAL' diffuser color according to RAL palette (standard RAL9016\*)
- 'M' material:  
**ST** - powder coated steel\*  
**AL** - aluminum powder coated  
**KO** - stainless steel / acid proof steel (type 1.4301 or 1.4404)
- 'W' mounting option:  
**W1** - assembly invisible on the construction of the suspended ceiling  
**W2** - visible assembly with screws  
**W3** - the central assembly using the crossbar (in plenum box)
- 'SR' plenum box:  
**SR-Gc** - plenum box with top spigot connection  
**SR-Bc** - plenum box with side spigot connection
- 'I' isolation:  
**none** - plenum box without isolation\*  
**Iz** - outside isolation (thermal)  
**Iw** - inside isolation (acoustic)
- 'P' adjustment damper at spigot connection:  
**none** - no damper\*  
**P** - damper on spigot connection adjustable from the outside  
**PP** - damper on spigot connection adjustable from the inside
- 'K' diameter spigot connection in size mm
- 'H' the height of the plenum box in mm\*

\* - If you don't give the information will be used standard parameters.