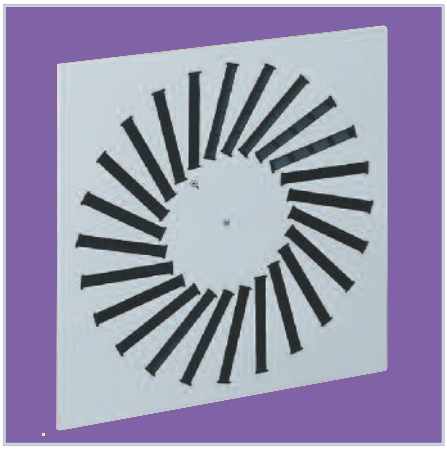
Model SWF



Model SWA*24

Model SRD-F

Model SRD-A

Airflow AC Middle East FZE-LLC

Introduction

Swirl diffusers are designed to create a swirling motion to supply air, which rapidly mixes with the room air to quickly decrease the velocity and temperature difference of the supply air.

With Airflow range of swirl diffuser, we can offer Fixed air patters, Adjustable air pattern variable air pattern swirl diffuser.

The Fixed air pattern swirl diffusers have a horizontal discharge and are suitable for minimum mounting heights of 2.6mts to a maximum of 4mts at a temperature difference of ± 10°K. Adjustable air pattern diffusers are used for mounting heights 2.6mts to 4mts and temperature differences, but can be adjusted for horizontal or vertical discharge. The variable air pattern swirl diffuser have either a horizontal or vertical discharge and are suitable for mounting heights upto 15mts at a temperature difference of ± 10°K.

The variable air swirl diffusers can be fitted with electric actuator as optional for remote operation which adjust the air discharge from horizontal to vertical and otherway around. Alternatively it can be adjusted manually with a quadrant.

Purpose designed and individually selected plenum boxes are available to ensure the performance.

All models are standard powercoated RAL 9010, alternatively other RAL colors are available at additional cost.

Model SWF

Model SWA*24

Model SRD-F

Model SRD-A

Model SWF

Model SWF

The Model SWF is a fixed air pattern swirl diffusers giving a horizontal discharge with a set of pre-formed close pitch vanes and option of square or circular ceiling panel.

Typical applications include General office and reception areas.

Size Range in Square or circular panels.

Size 400
Size 500
Size 600
Size 625

Material and construction on CNC press from sheet steel.

Installation options
Single central countersunk screw hole in a circular or square ceiling panel diffusers.

Plenum Box with the diffuser as options. The diffuser is normally fixed to the box by a single central fixing.

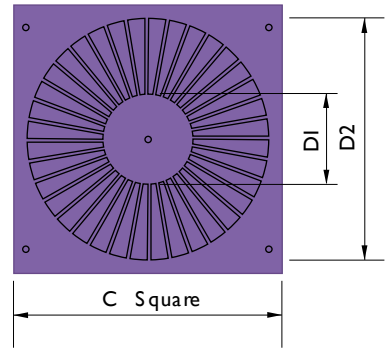
Single fixing bars or angle for duct fixing are by others.

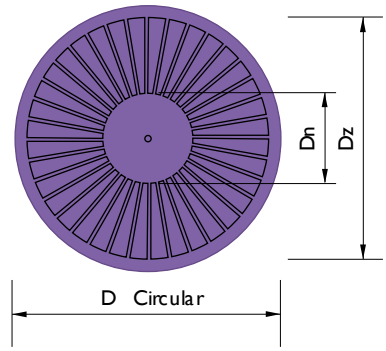
Models:-
SWF-A1 - Circular swirl diffuser in square ceiling panel with single central countersunk screw hole.

SWF-A2 - Circular swirl diffuser in circular ceiling panel with single central countersunk screw hole.

Finish : Powdercoated to RAL 9010, other RAL colors available as optional.

Model Types and Dimensions

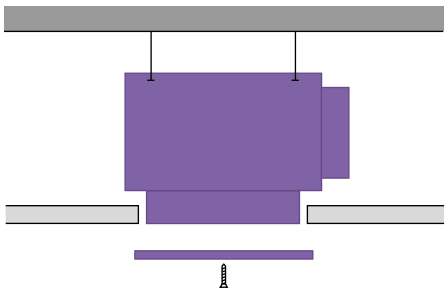




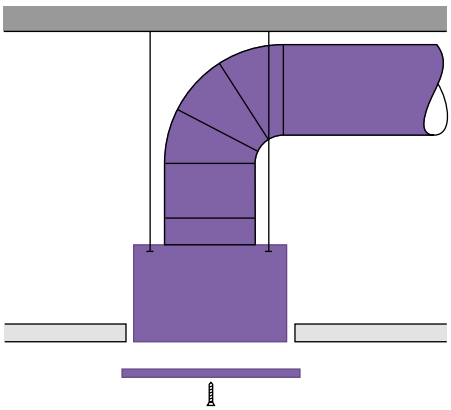
Size	D1	D2	C	D (dia)	Aef (m²)
400	130	350	398	400	0.0138
500	130	350	498	500	0.0138
600	130	350	598	600	0.0138
625	130	350	623	625	0.0138

Aef - effective discharge area (m²)

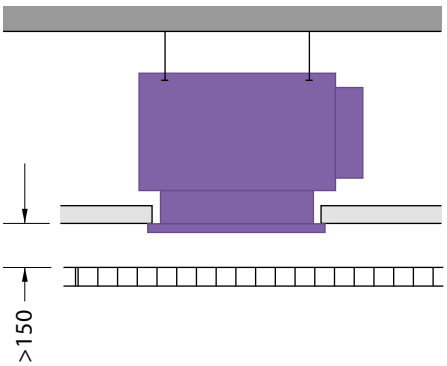
Plenum box with side entry



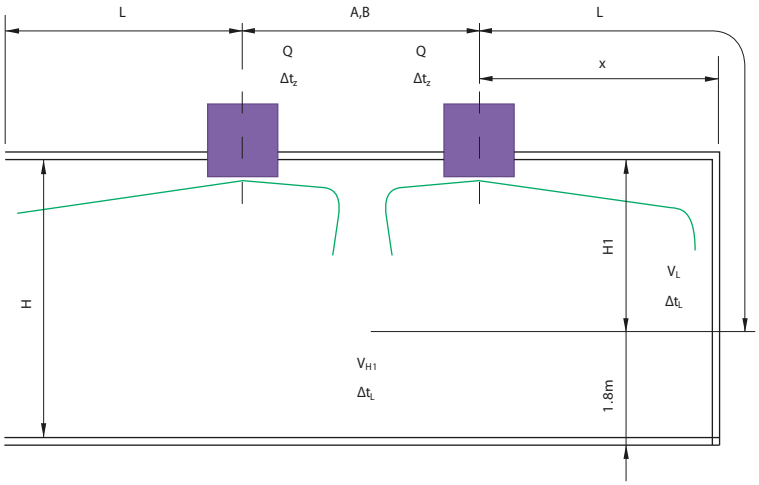
Plenum box with top entry



Above open grid ceiling



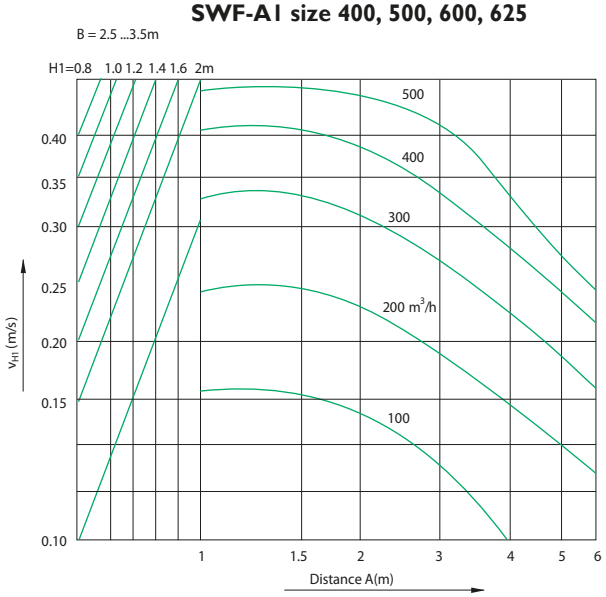
Single central fixing position shown



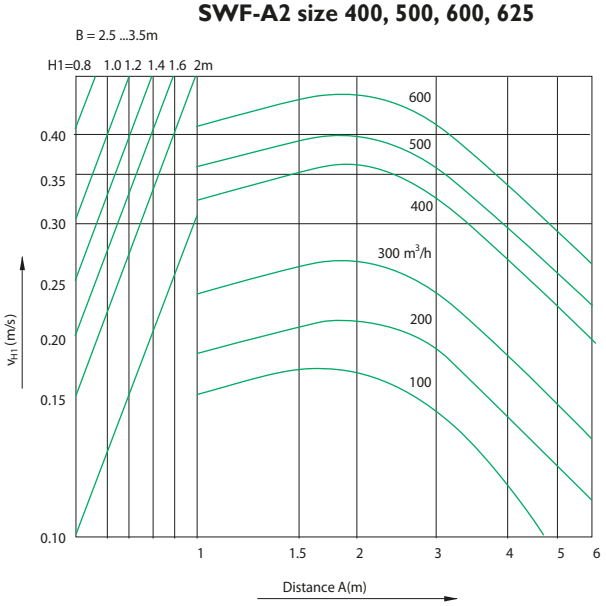
Q (m^3/h)	Air flow
x (m)	Horizonal distance to the wall
H (m)	Room height
H1 (m)	Distance from ceiling to occupied zone
L (m)	Throw distance (L=H1 + x)
V_L(m/s)	Air velocity at the throw distance L
Δt_z(K)	Temperate difference between the supply and room air
Δt_L(K)	Difference between the core and room ai temperature
Δp_t(Pa)	Pressure drop
L_{WA}(db(A))	Sound power level
V_{H1}(m/s)	Air velocity at the H1 distance
A, B (m)	Distance between diffusers by length and by width

Air velocity at the throw distances (for SWF and with ceiling effect)

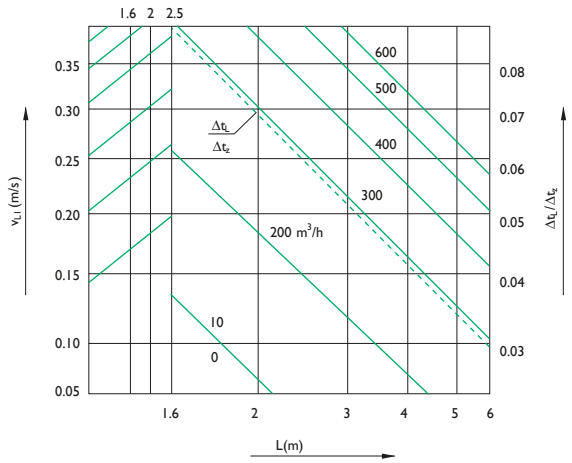
SWF-A1 size 400, 500, 600, 625



SWF-A2 size 400, 500, 600, 625

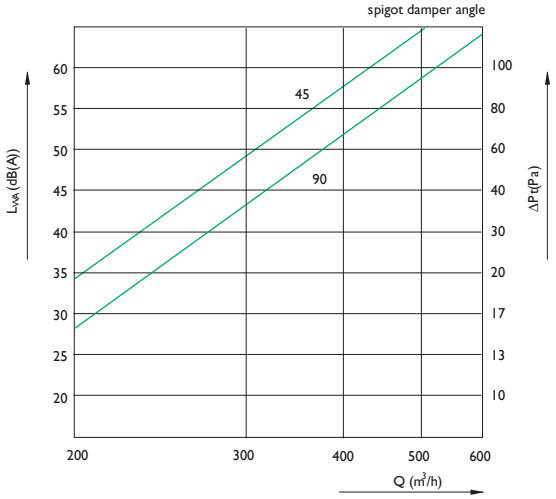


SWF size 400, 500, 600, 625

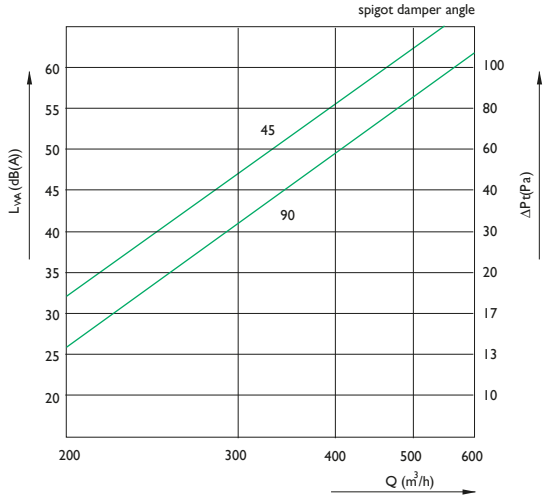


Pressure drop and sound power level (with plenum box having equalizing grid)
Spigot damper angle 90° - opened, 45° - half opened.

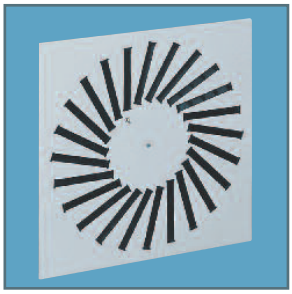
SWF size 400, 500, 600, 625 (Side Entry)



OD-4/V size 400, 500, 600, 625 (Top Entry)



Model SWA-24, SWA-48, SWA-54, SWA-72



Model SWA

The Model SWA swirl diffuser is an adjustable horizontal or vertical air pattern swirl diffuser having series of slot in curved radial format, within a circular or square ceiling panel. Contained in the slot are nylon 2 way deflectors allowing deflection of supply air to left or right.

For Return air air deflectors are not used.

Typical applications are general offices, Retail shops and general low ceiling height areas.

Faceplate and plenum from galvanized sheet steel with the air deflectors from nylon.

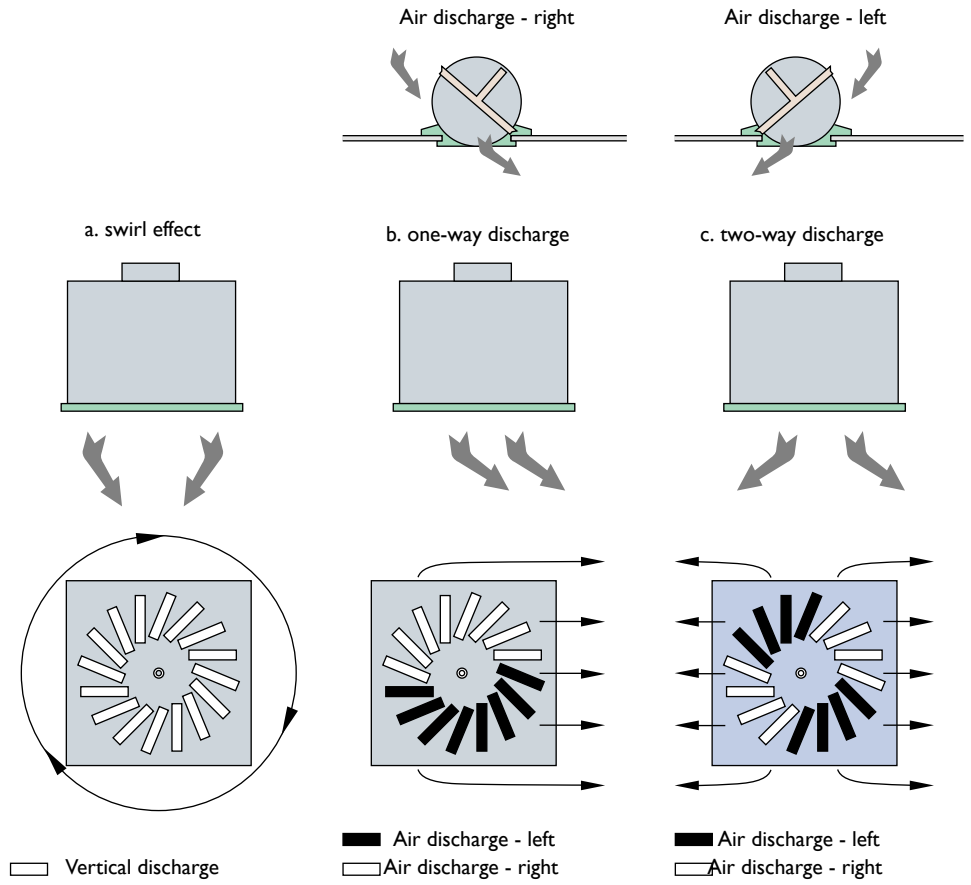
Installation methods:
Single counter sunk screw hole in circular or square ceiling panel diffusers.

Single fixing bars or angles for duct fixings are by others

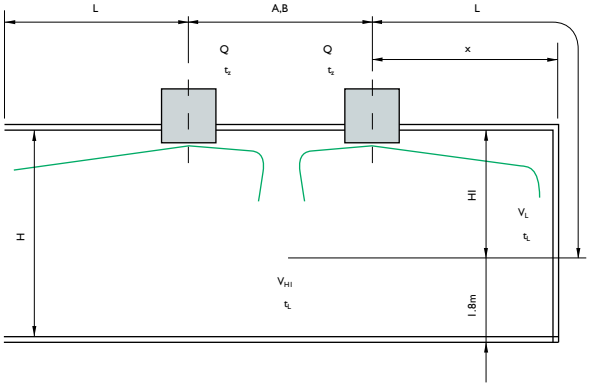
All installation require diffuser with plenum box for supply air to be supported individually.

Finish
Standard is powder coated RAL 9010 or RAL 9016. Other RAL colors are available as optional.

Size Range
Size 300/8
Size 400/16
Size 500/16
Size 600/16
Size 625/16
Size 500/24
Size 600/24
Size 625/24
Size 600/48
Size 625/54
Size 800/72
Size 825/72

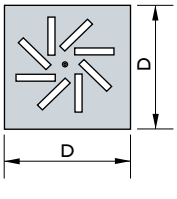


Performance Data

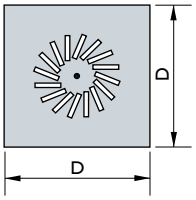


Q (m³/h)	Air flow
x (m)	Horizonal distance to the wall
H (m)	Room height
H1 (m)	Distance from ceiling to occupied zone
L (m)	Throw distance (L=H1 + x)
V_L(m/s)	Air velocity at the throw distance L
t_z(K)	Temperate difference between the supply and room air
t_L(K)	Difference between the core and room air temperature
p_t(Pa)	Pressure drop
L_{WA}(db(A))	Sound power level
V_{H1}(m/s)	Air velocity at the H1 distance
A, B (m)	Distance between diffusers by length and by width

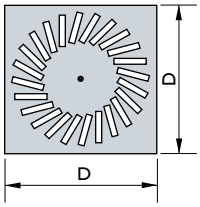
SWA-8S
300/8



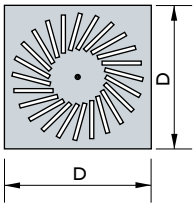
400/16, 500/16
600/16, 625/16



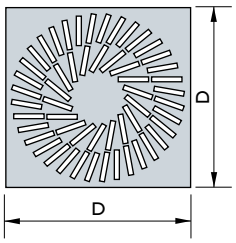
500/24



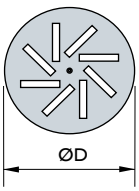
600/24, 625/24



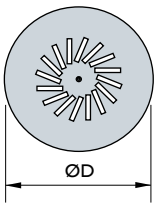
625/54



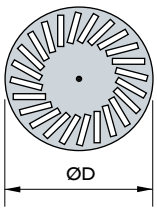
SWA-8R
300/8



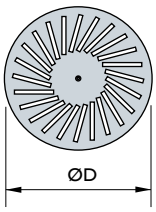
400/16, 500/16
600/16, 625/16



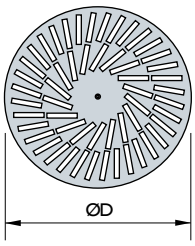
500/24



600/24, 625/24



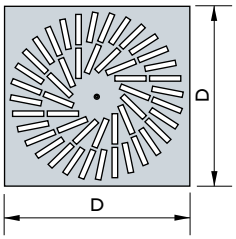
625/54



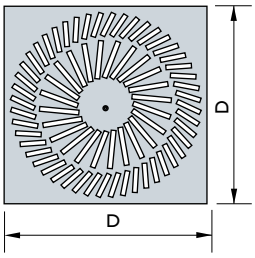
Size	ØD	D	A_{ef} (m²)
300/8	300	298	0.009464
400/16	400	398	0.018928
500/16	500	498	
600/16	600	598	
625/16	625	623	
500/24	500	498	0.028392
600/24	600	598	0.044928
625/24	625	623	
600/48	600	598	0.056784
625/54	625	623	0.063882
800/72	800	798	0.101712
825/72	825	823	

A_{ef} (m²) - effective discharge area (m²)

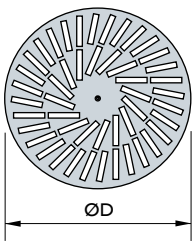
SWA-48S
600/48



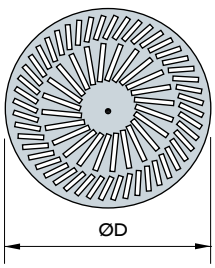
800/72, 825/72



SWA-48R
600/48



800/72, 825/72

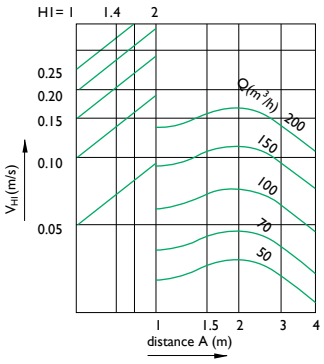


Size	C
300/8 S	298
400/16 S	398
500/16 S	498
600/16 S	598
625/16 S	623
500/24 S	498
600/24 S	598
625/24 S	623
600/48 S	598
625/54 S	623
800/72 S	798
825/72 S	823

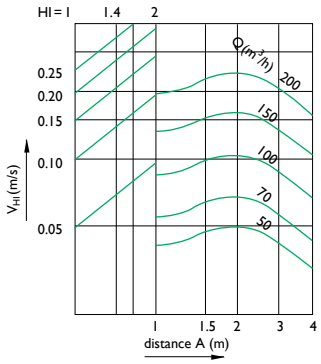
Size	ØD
300/8 R	300
400/16 R	400
500/16 R	500
600/16 R	600
625/16 R	625
500/24 R	500
600/24 R	600
625/24 R	625
600/48 R	600
625/54 R	625
800/72 R	800
825/72 R	825

Air velocity at the throw distances and temperature quotient (with ceiling effect)

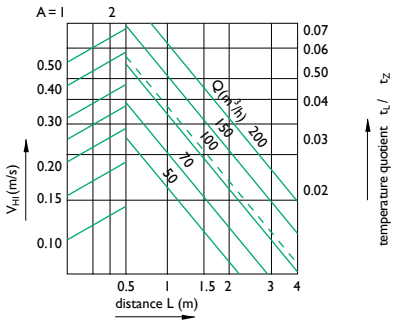
Size 300/8
B>4m



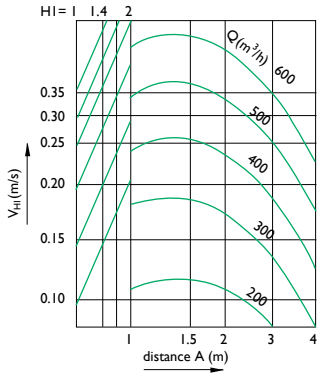
Size 300/8
B>2.5 3.5m



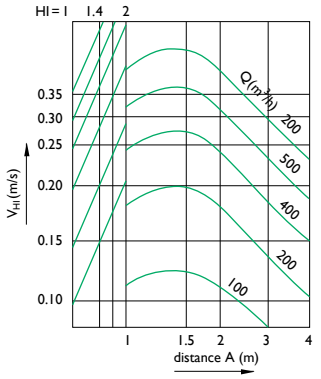
Size 300/8



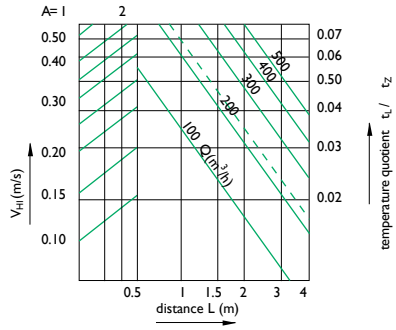
Size 400/16, 500/16, 600/16, 625/16
B>4m



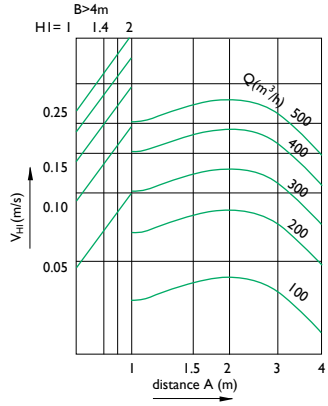
Size 400/16, 500/16, 600/16, 625/16
B>2.5 3.5m



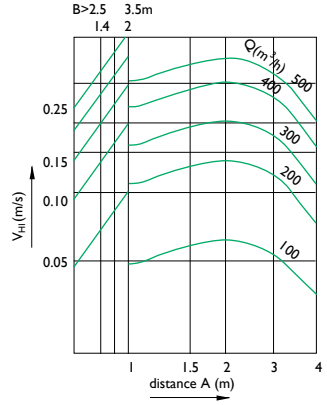
Size 400/16, 500/16, 600/16, 625/16



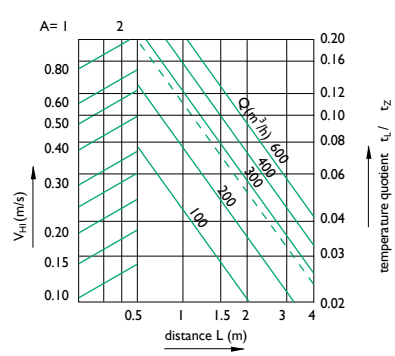
Size 500/24
B>4m



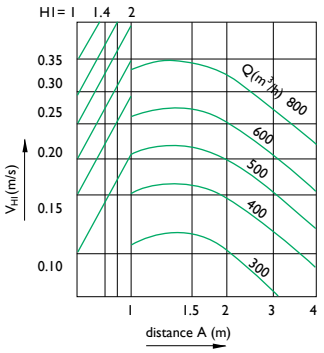
Size 500/24
B>2.5 3.5m



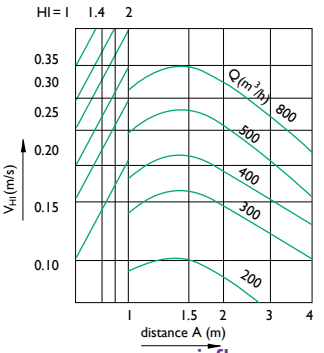
Size 500/24



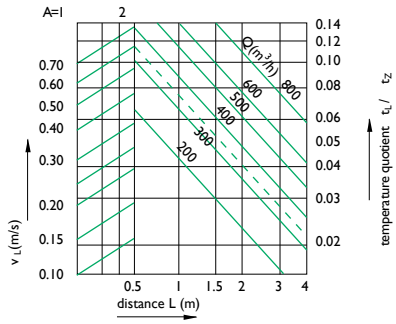
Size 600/24, 625/24
B>4m



Size 600/24, 625/24
B>2.5 3.5m



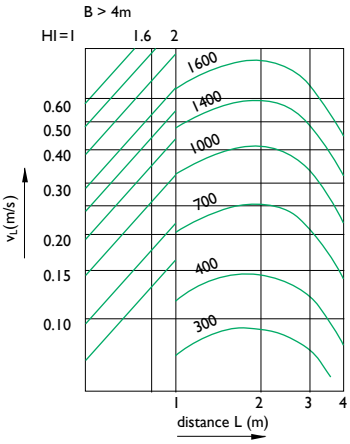
Size 600/24, 625/24



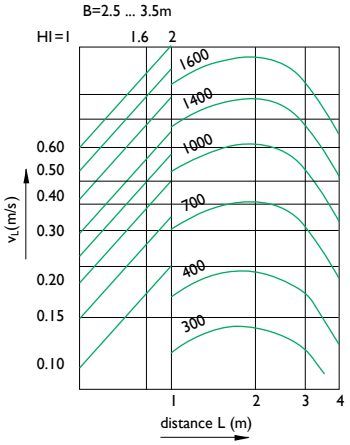
Performance Data Continued

Air velocity at the throw distance and temperature quotient (with ceiling effect)

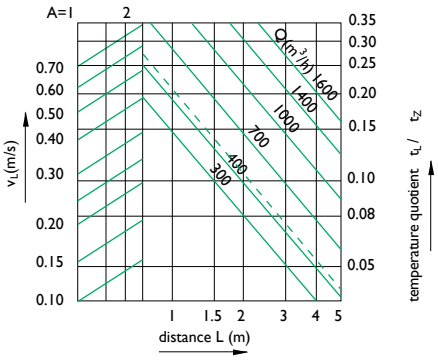
Size 600/48



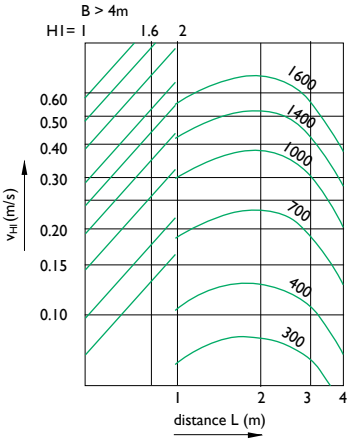
Size 600/48



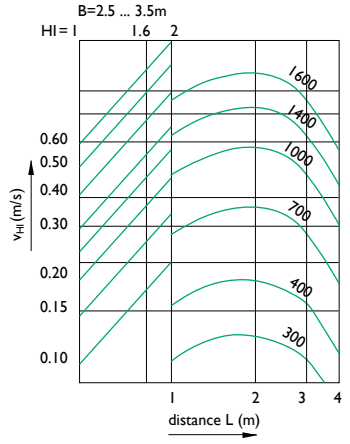
Size 600/48



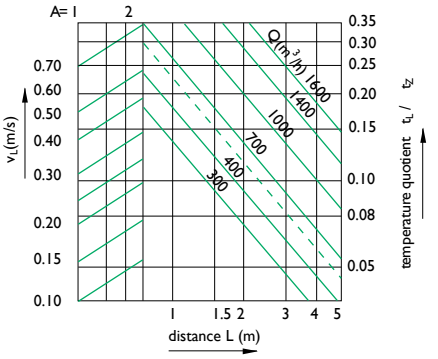
Size 625/54



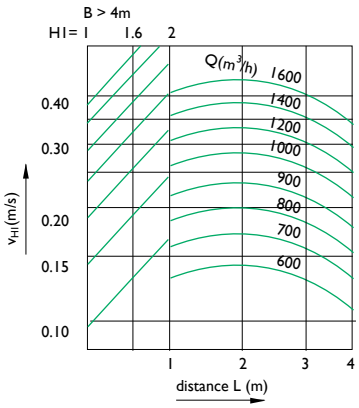
Size 625/54



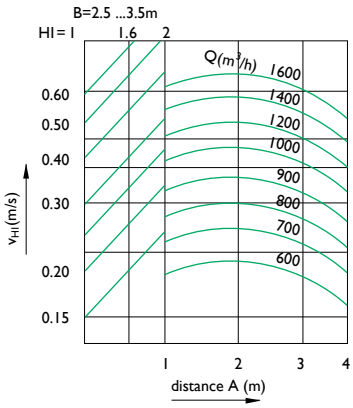
Size 625/54



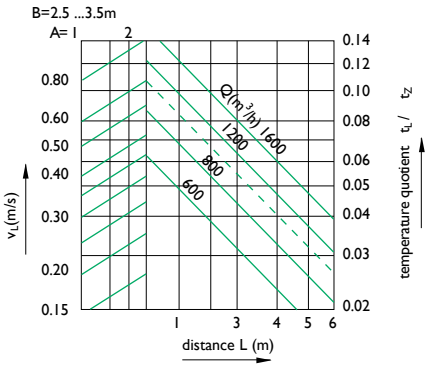
Size 800/72, 825/72



Size 800/72, 825/72

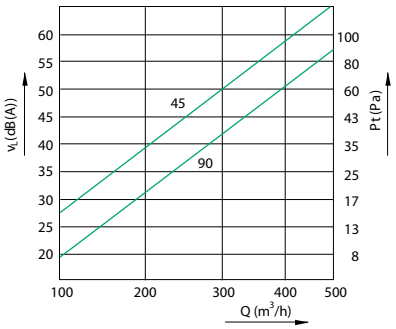


Size 800/72, 825/72

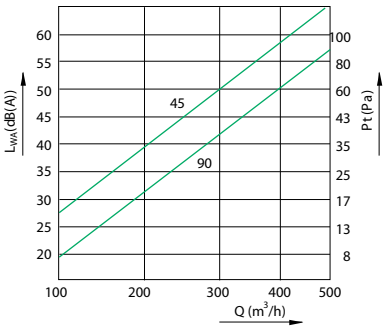


Pressure drop & sound power level diagrams (spigot damper 90° - opened 45° - Half opened) Plenum box having equalizing grid.

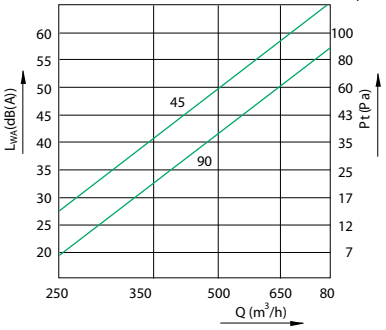
300/8 top entry spigot SPG damper position



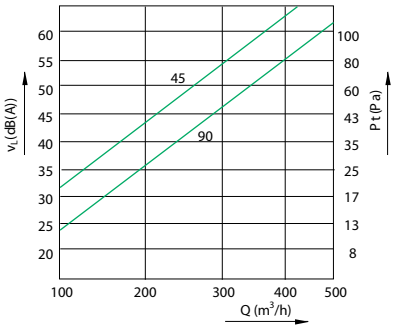
400/16, 500/16, 600/16, 625/16 damper



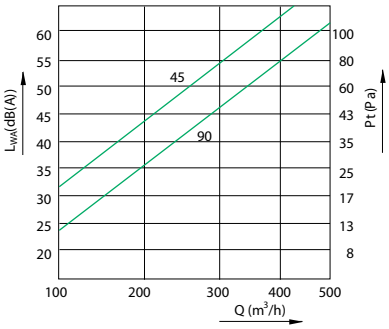
500/24 damper



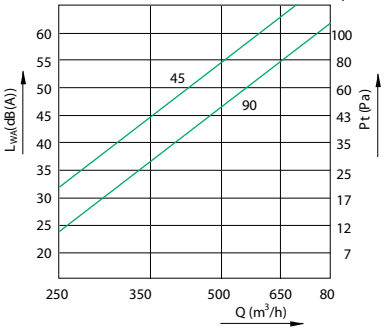
400/16, 500/16. 600/16, 625/16 side entry spigot damper



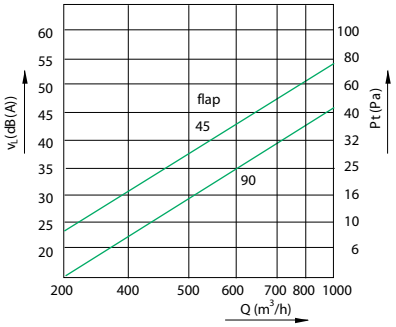
400/16, 500/16, 600/16, 625/16 damper



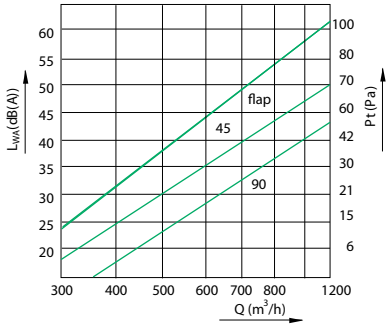
500/24 damper



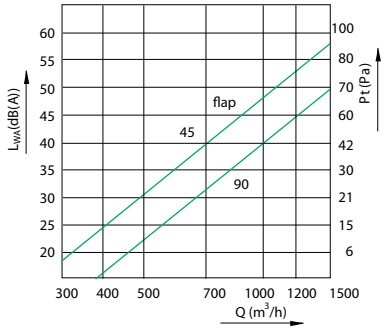
400/16, 500/16. 600/16, 625/16 side entry spigot



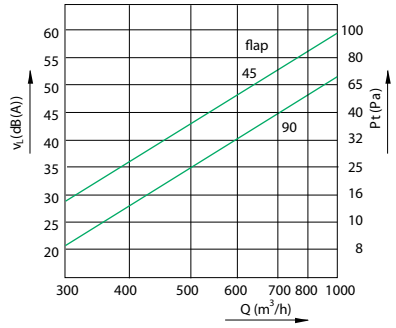
600/48



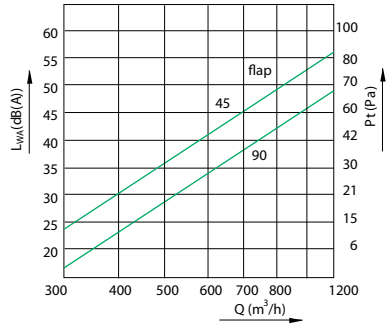
625/54



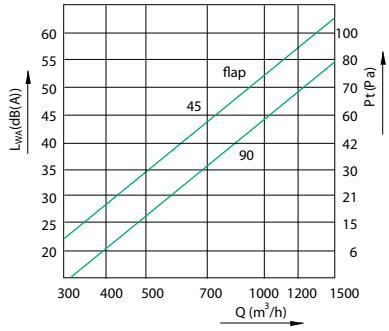
600/24, 625/24 side entry spigot



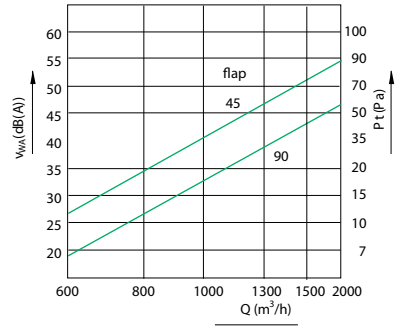
600/48



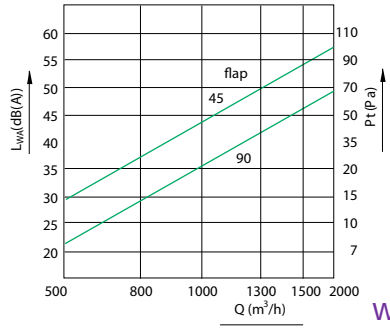
625/54



800/72, 825/72 top entry spigot

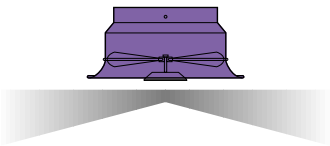


800/72, 825/72

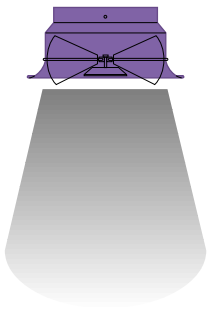


Model SRD-A - Variable Swirl Diffuser

Discharge type by cooling



Discharge type by heating



Description

The Model SRD-A is a variable air pattern swirl diffuser having a set of movable inner vanes to alter the angle of discharge from horizontal to vertical, which is imperative to ensure optimum heating and cooling function. By regulating the inner vanes, varying throw discharges can be achieved from fully horizontal to vertical projection, which is important in the heating mode. To accomplish this adjustment two types of control are offered, manual or electric motor operation. Supplied with a circular outer tube casing having a flush flange and a set of movable inner vanes. Typical applications include shopping malls, exhibition halls and other large open spaces with mounting heights of between 3 m to 12m, where large air volumes and temperature differentials are required.

Specification

Material
Outer tube casing constructed from aluminium sheet with other components from sheet steel.

Installation Methods

Two alternative installation methods are available as follows:
Direct Spigot Connection to duct.
Plenum box supplied with diffuser.

(When using a diffuser and plenum box combination, the diffuser is normally fixed to the plenum box through the spigot)

All installation methods require diffuser or plenum box / diffuser combination to be supported independently.

Finish

White polyester powder coat to RAL9010 (20% gloss)

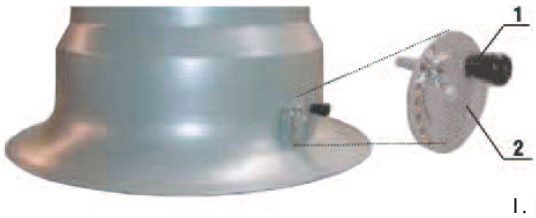
Other colours are also available on request.

Size Range

Model SRD-A
Size 125
Size 160
Size 200
Size 250
Size 315
Size 400
Size 500
Size 630
Size 800

Accessories

Perforated diffusion plate
Manual operating handle
Electric motor operation
Purpose designed plenum box, with spigot damper if required.



Manual handle (RR)

1. Handle
2. Fixing screw

Model Types and Dimensions

Model SRD-R – circular variable swirl diffuser with individual manual adjustment of the inner vane assembly.

Model SRD-RR
circular variable swirl diffuser with manual handle adjustment for ganged operation of the inner vane assembly.

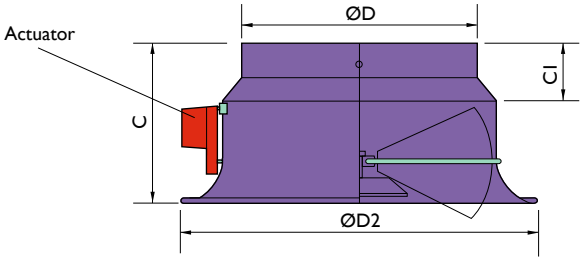
Model SRD-LM24
circular variable swirl diffuser with electric motor adjustment for ganged operation of the inner vane assembly (LM 24 motor).

Model SRD-LM230
circular variable swirl diffuser with electric motor adjustment for ganged operation of the inner vane assembly (LM 230 motor.

(Note: Motor types are as shown with exception of size 630 where an NM type motor is used and size 800 where an AM type motor is used).

Each model may be fitted with a perforated diffusion plate.

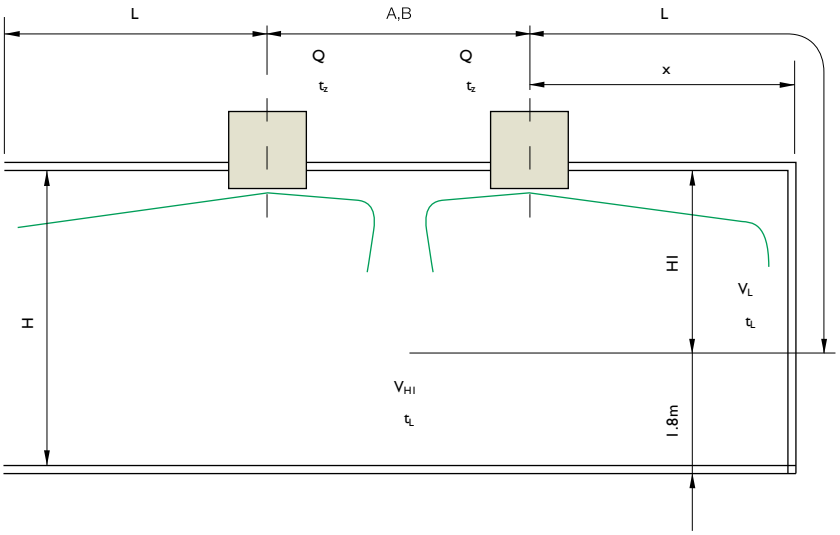
Dimensions



Size	ØD	ØD2	C	Cl	A_{ef}/m^2
125	125	205	130	40	0.012
160	160	155	250	40	0.020
200	200	310	174	40	0.030
250	250	400	200	40	0.048
315	315	480	240	40	0.077
400	400	615	265	55	0.125
500	500	780	320	60	0.195
630	630	940	380	80	0.310
800	800	1142	555	75	0.503

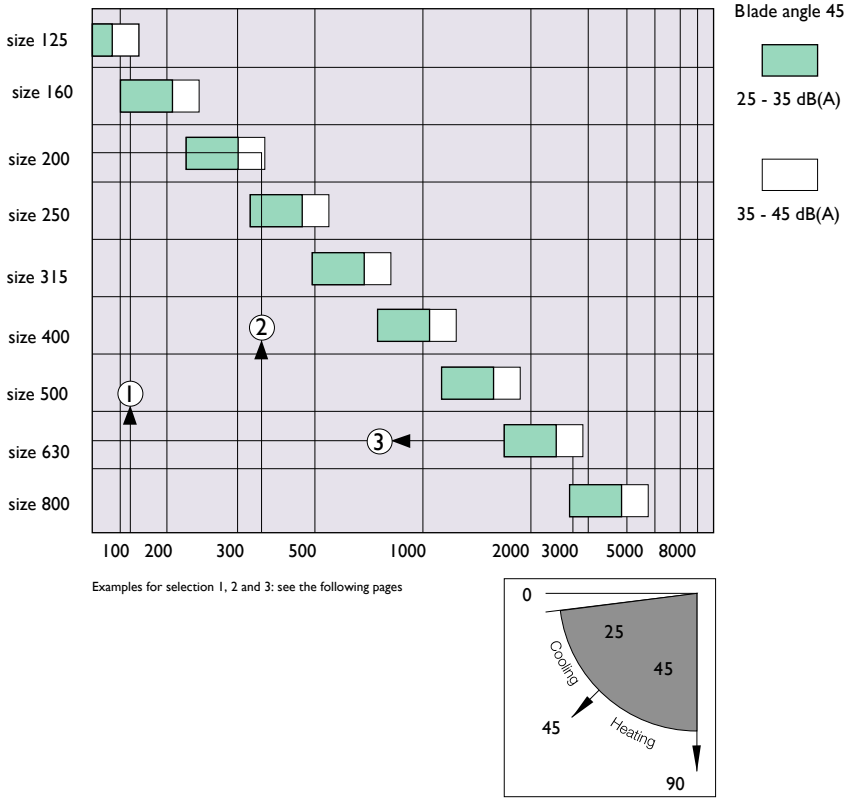
A_{ef} - effective discharge area (m^2)

Performance data



Q (m³/h)	Air flow
x (m)	Horizonal distance to the wall
H (m)	Room height
H1 (m)	Distance from ceiling to occupied zone
L (m)	Throw distance (L=H1 + x)
V_L(m/s)	Air velocity at the throw distance L
t_z(K)	Temperate difference between the supply and room air
t_L(K)	Difference between the core and room air temperature
p_t(Pa)	Pressure drop
L_{WA}(db(A))	Sound power level
V_{H1}(m/s)	Air velocity at the H1 distance
A, B (m)	Distance between diffusers by length and by width

Quick Selection chart

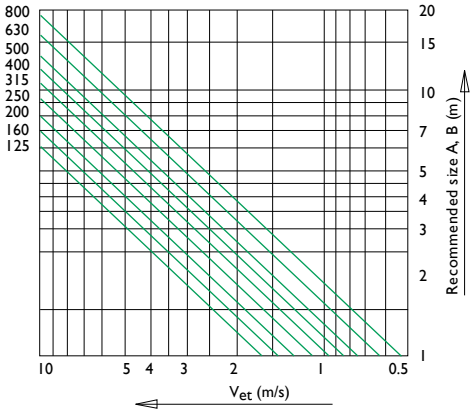


Examples for selection 1, 2 and 3: see the following pages

Corrections

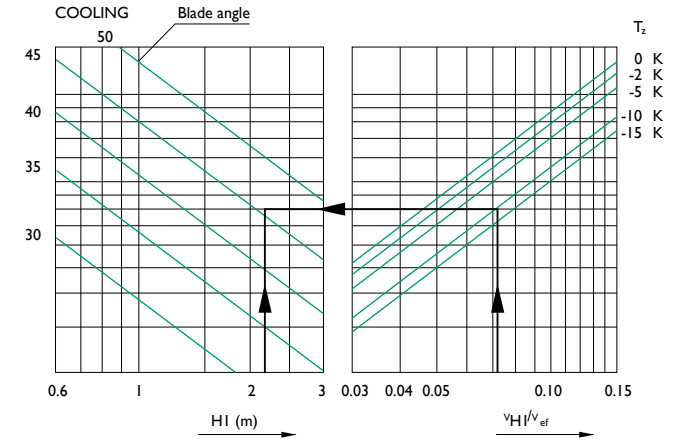
In the case of the diffuser installation in the ceiling, the velocity Vh at the level A/2+H is to be multiplied with a factor of 1.4 (due to the Coanda effect). The above applies to the cases of heating and cooling operation with blade opening angles less than 30°.

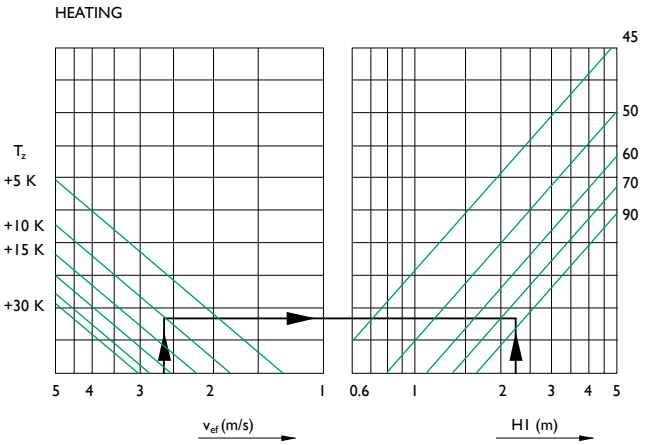
Diffuser size as distance between units and effective velocity



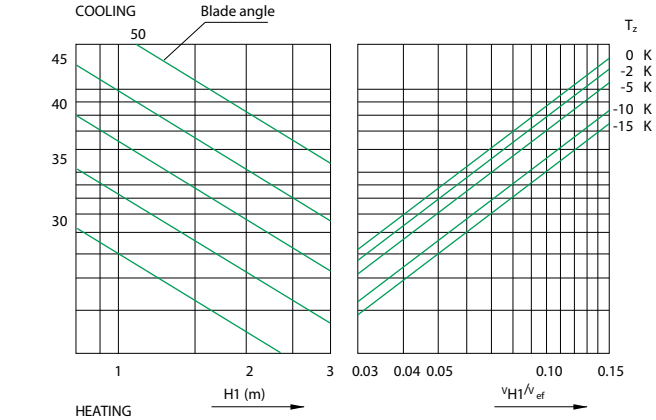
Blade opening angle during heating and cooling

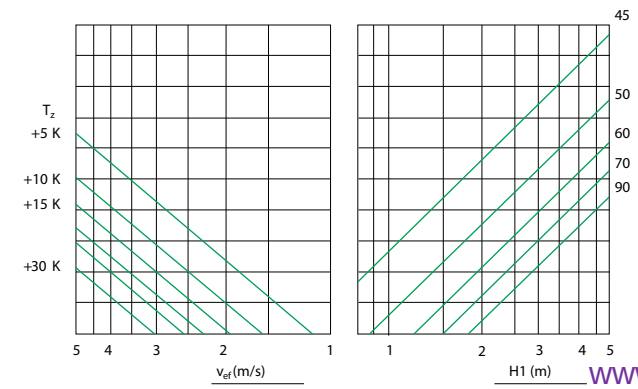
Size 125





Size 160





Example 1 (cooling)
Q = 120m³/h
H = 4m
H1 = H-1, 8 = 4-1, 8 = 2.2m
V_{H1} = 0.2m/s
T_z = -10 K
Recommended size: 125

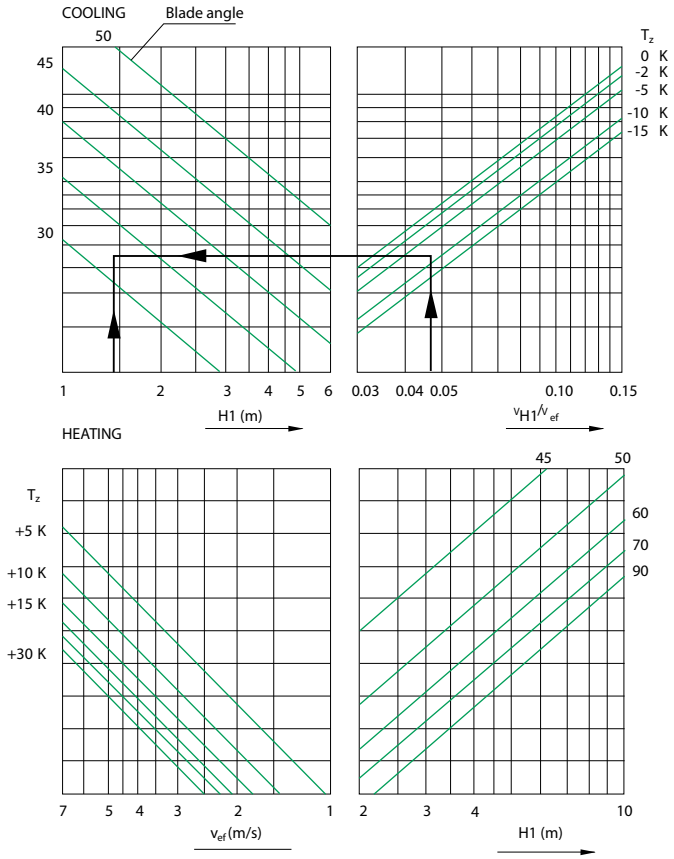
V_{ef} = Q/A_{ef} x 3600 = 120/0.012 x 3600
V_{ef} = 2.7 m/s
V_{H1}/V_{ef} = 0.2/2.7 = 0.074
Blade angle: **46**

Example 1 (heating)
Q = 120m³/h
H = 4m H1 = 2.2m
V_{H1} = 0.2m/s
T_z = +10 K
Recommended size: 125

V_{ef} = 2.7m/s
Blade angle: **80**

Blade opening angle during Heating and cooling mode

Size 200



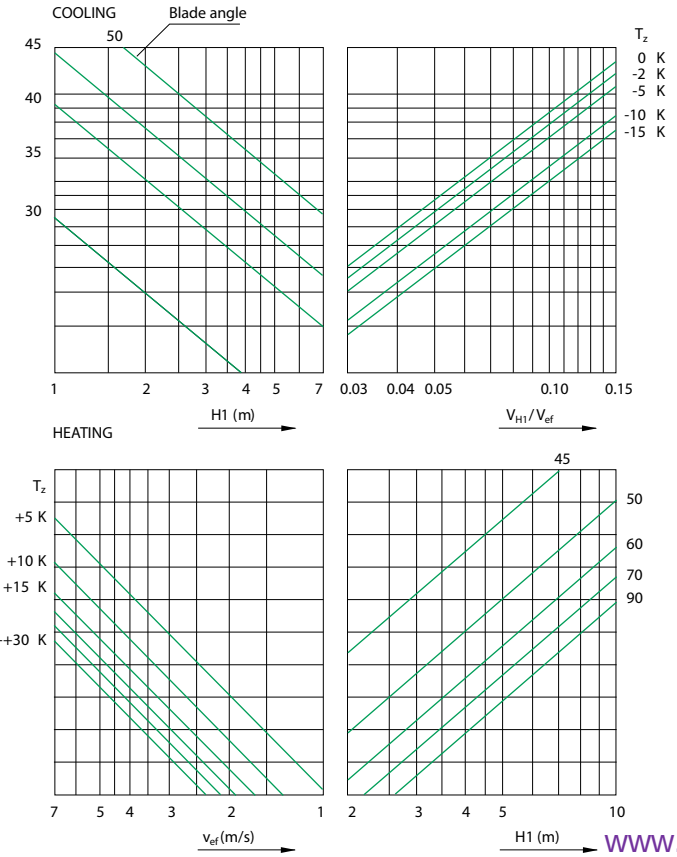
Example 2 (cooling)

Q = 350m³/h
H1 = 1.4m
V_{H1} = 0.15m/s
T_z = -8 K
Recommended size:: 200

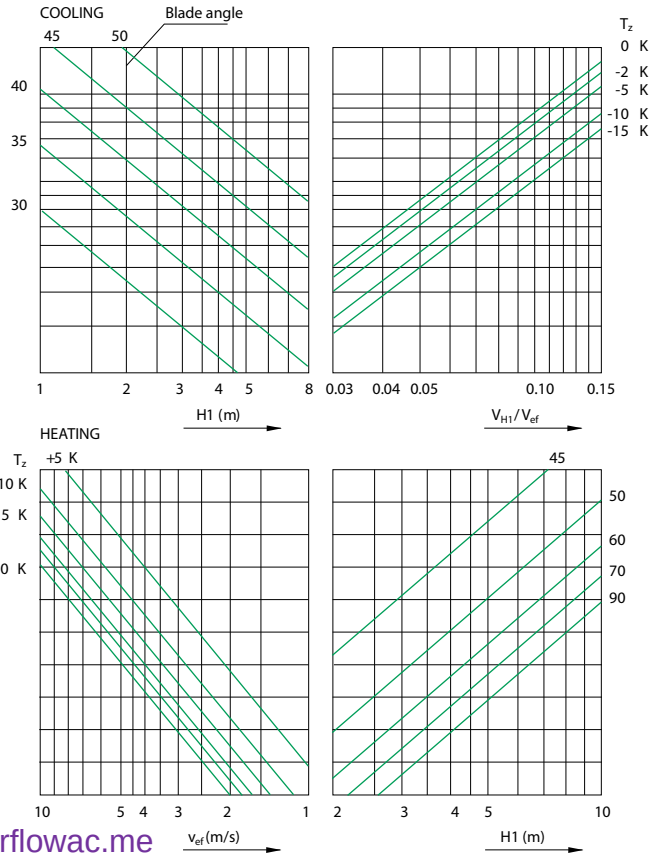
V_{ef} = Q/A_f x 3600 = 350/0.031 x 3600
V_{ef} = 3.13m/s
V_{H1}/V_{ef} = 0.15/3, 24 = 0.046
Blade angle: 32

Blade angle: 32 Coanda effect)
H1 = 1.4 x 1.4 = 1.96m
H = H1 + 1.8 = 1.96 + 1.8 = 3.67m
or
H = 1.4 V_{H1} = 0.15 x 1.4 = 0.25m/s

Size 250

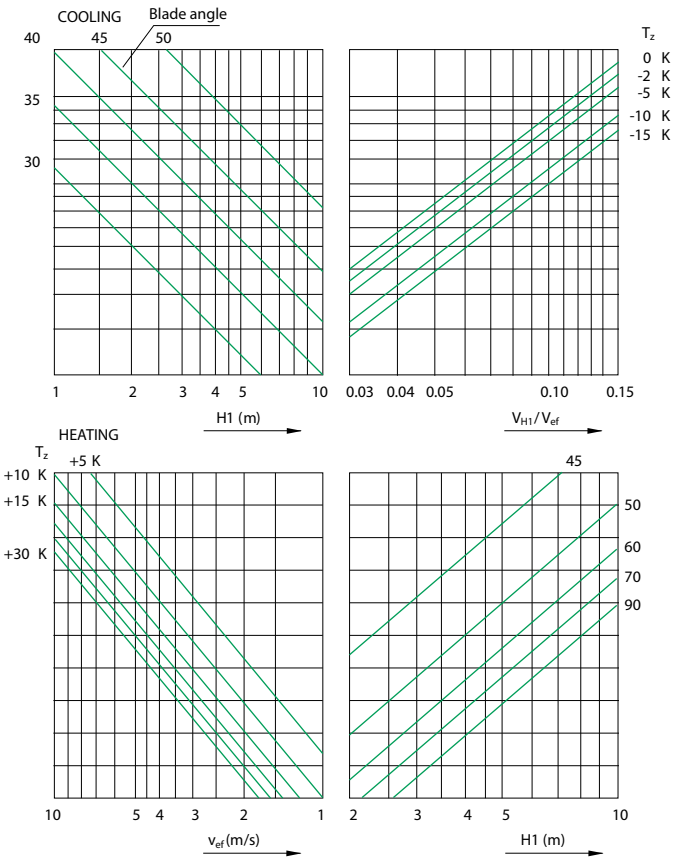


Size 315

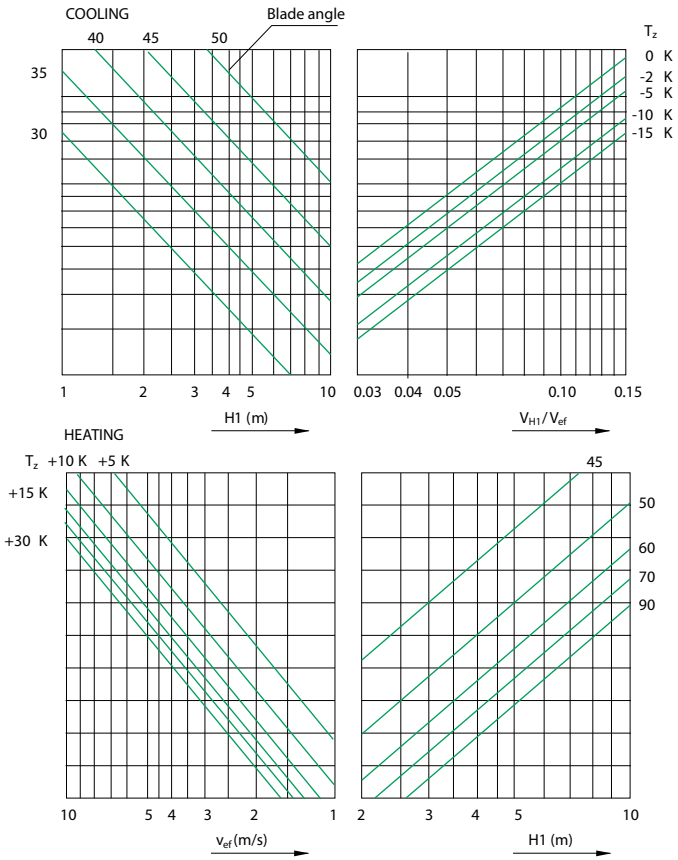


Blade opening angle during Heating and cooling mode

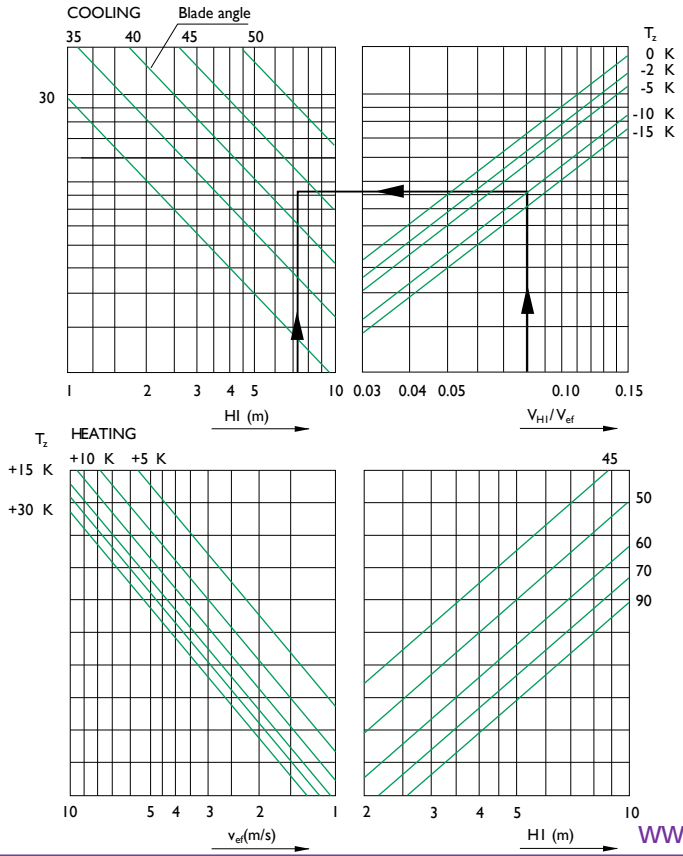
Size 400



Size 500



Size 630

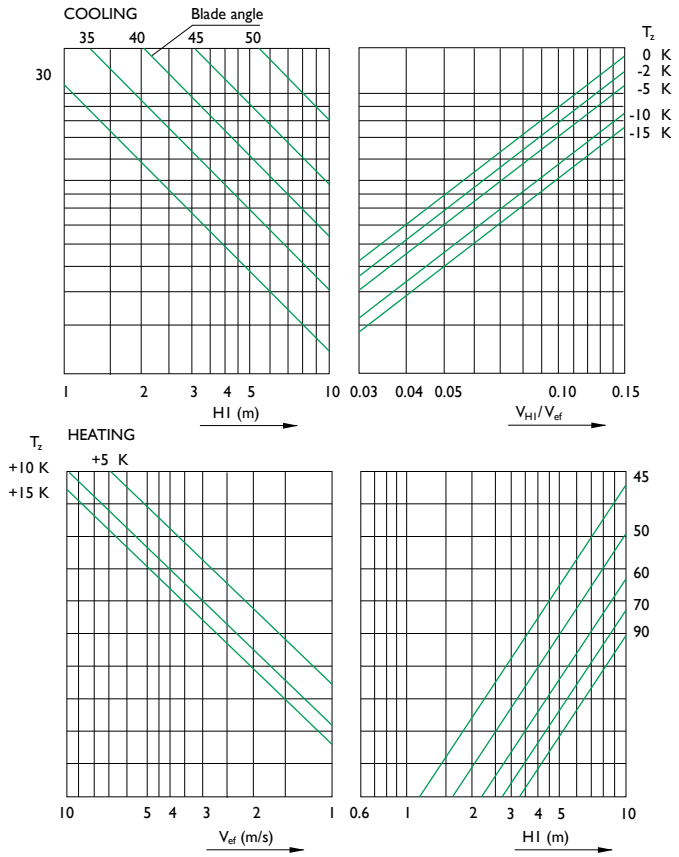


Example 3 (cooling)

Q = 2700m³/h
V_{HI} = 0.2m/s
T_z = -10 K
HI = 9m H1=9-1.8 = 7.2m
Recommended size: **630**

V_{ef} = Q/A_{ef} x 3600 = 2700/0.32 x 3600
V_{ef} = 2.3m/s
V_{HI}/V_{ef} = 0.2/2.3 = 0.08
Blade angle: **43**

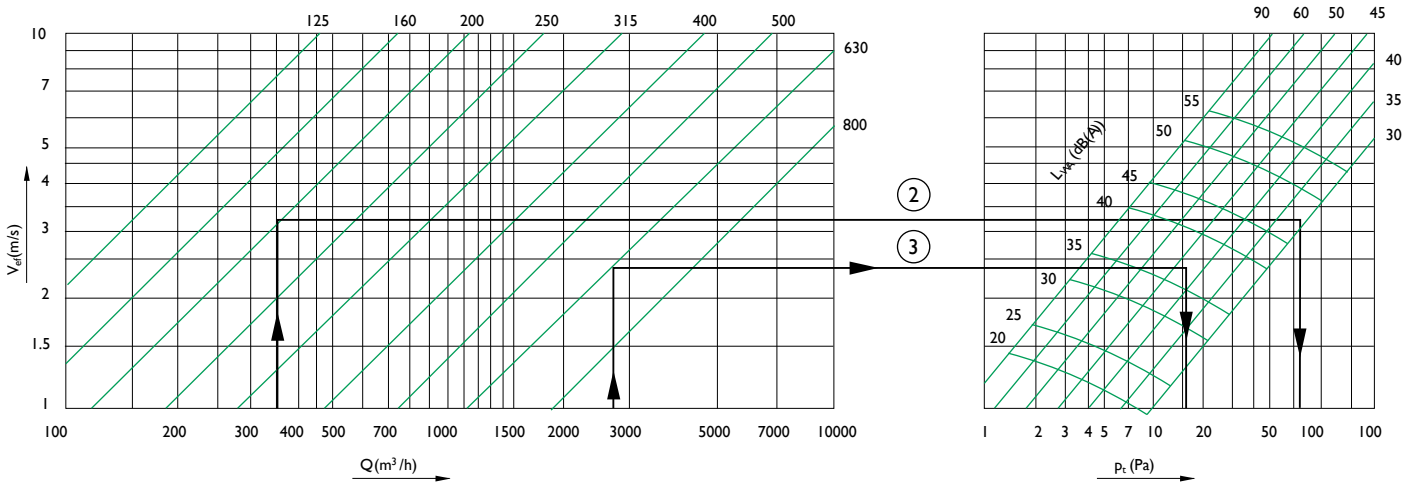
Size 800



Pressure Drop and Sound power level with Perforated baffle plate

Size 125 - 800

PRESSURE DROPS AND SOUND POWER LEVEL



Example 2 (cooling)
Q = 350m³/h
L_{WA} = 48 dB(A)
p = 77Pa
Blade angle: 32

Example 3 (cooling)
Q = 2700m³/h
L_{WA} = 37 dB(A)
p = 16Pa
Blade angle: 43