

# CONTENTS

	PAGE
<b>Swirl diffusers DF-RE</b> _____	<b>4</b>
Quick selection graphs _____	<b>6</b>
General information _____	<b>10</b>
Example of selection _____	<b>11</b>

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# Swirl diffusers DF-RE with fixed blades



## Description

Type DF-RE, steel sheet swirl diffuser with fixed blades.

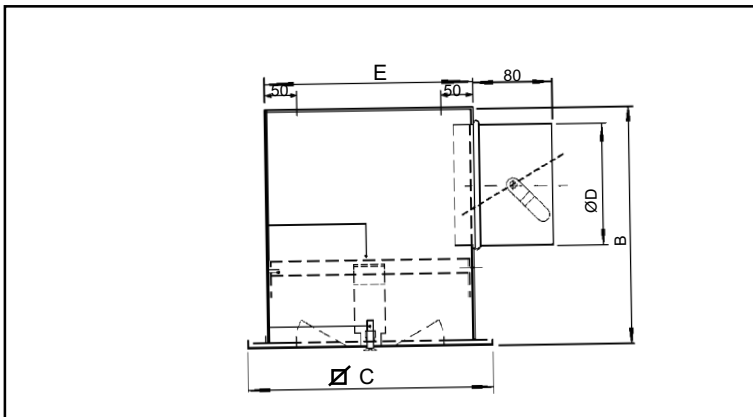
## Finishes

Painted in white RAL 9010.

Special finishes available upon request.

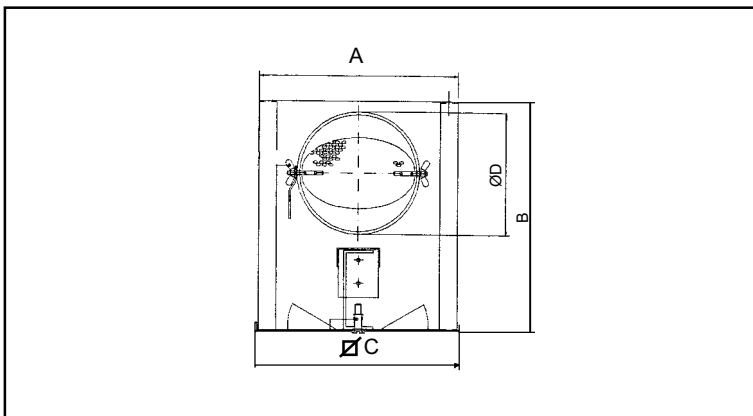
## General dimensions

See page 16.



## Applications

Swirl diffusers type DF-RE have been developed for ventilation and climatization installations in both comfort and industrial applications, due to its high induction rate. These diffusers are inserted in square panels for adaptation to modular or any other type of false ceiling.



## Plenum box

The plenum boxes for swirl diffusers type DF-RE incorporate in the duct connection a manually operated volume flow damper made of perforated sheet. Upon request the plenum boxes can be provided with interior isolation.

## Identification

The diffuser panel can easily be separated from plenum by means of a screw in the centre of the diffuser. The plenum boxes incorporate angle cleats for drop rod support.

## General dimensions

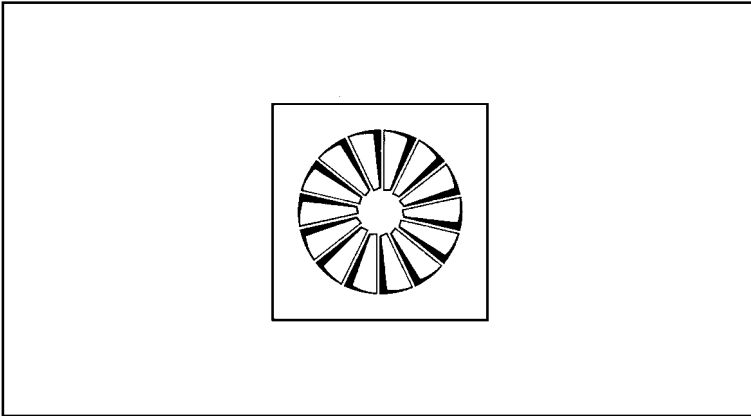
NOMINAL	A	B	∅C	∅D	E
125	168	195	171	99	150
160	210	220	213	124	192
200	260	245	264	149	242
250	323	275	326	179	305
315	402	345	405	249	384
315	592	345	595	249	574

**DF-RE** Series, steel sheet swirl diffuser with fixed blades

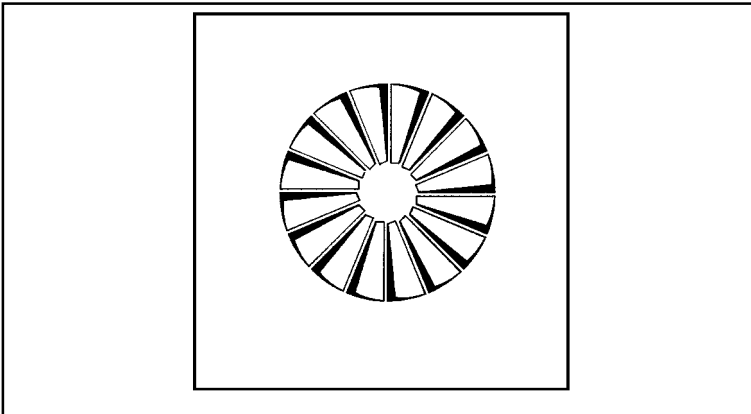
**-** standard panel  
**-Q** panel size 595x595

**Sizes and dimensions** from Ø125 a Ø315 according to table

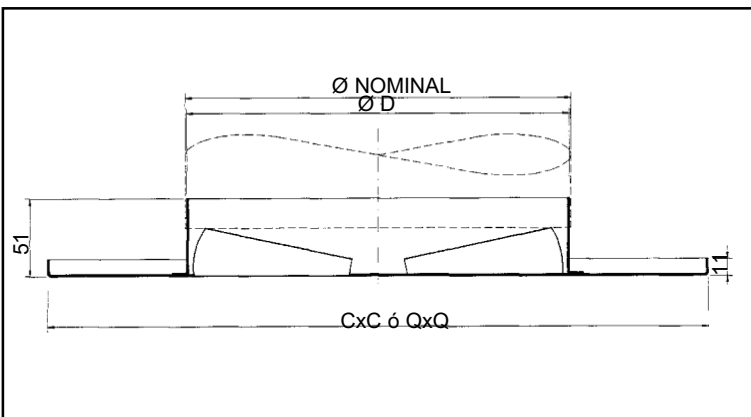
**SP** without plenum box  
**CPD** with removable plenum box

**DF-RE**

Swirl diffuser with fixed blades in panel with size as indicated in the table.

**DF-RE-Q**

Swirl diffuser with fixed blades in panel size 595x595mm, for modular false ceilings.

**Diffuser neck dimensions**

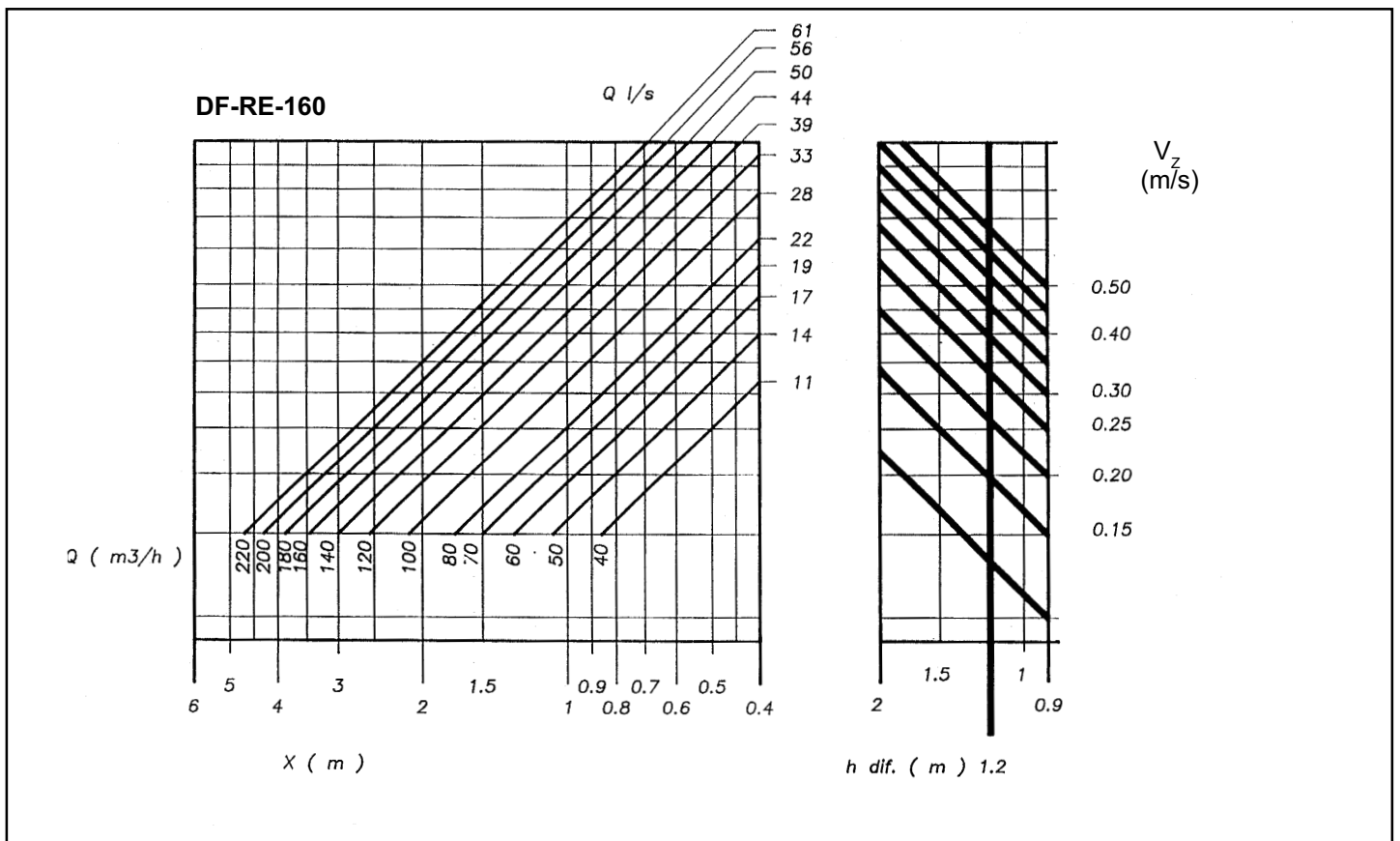
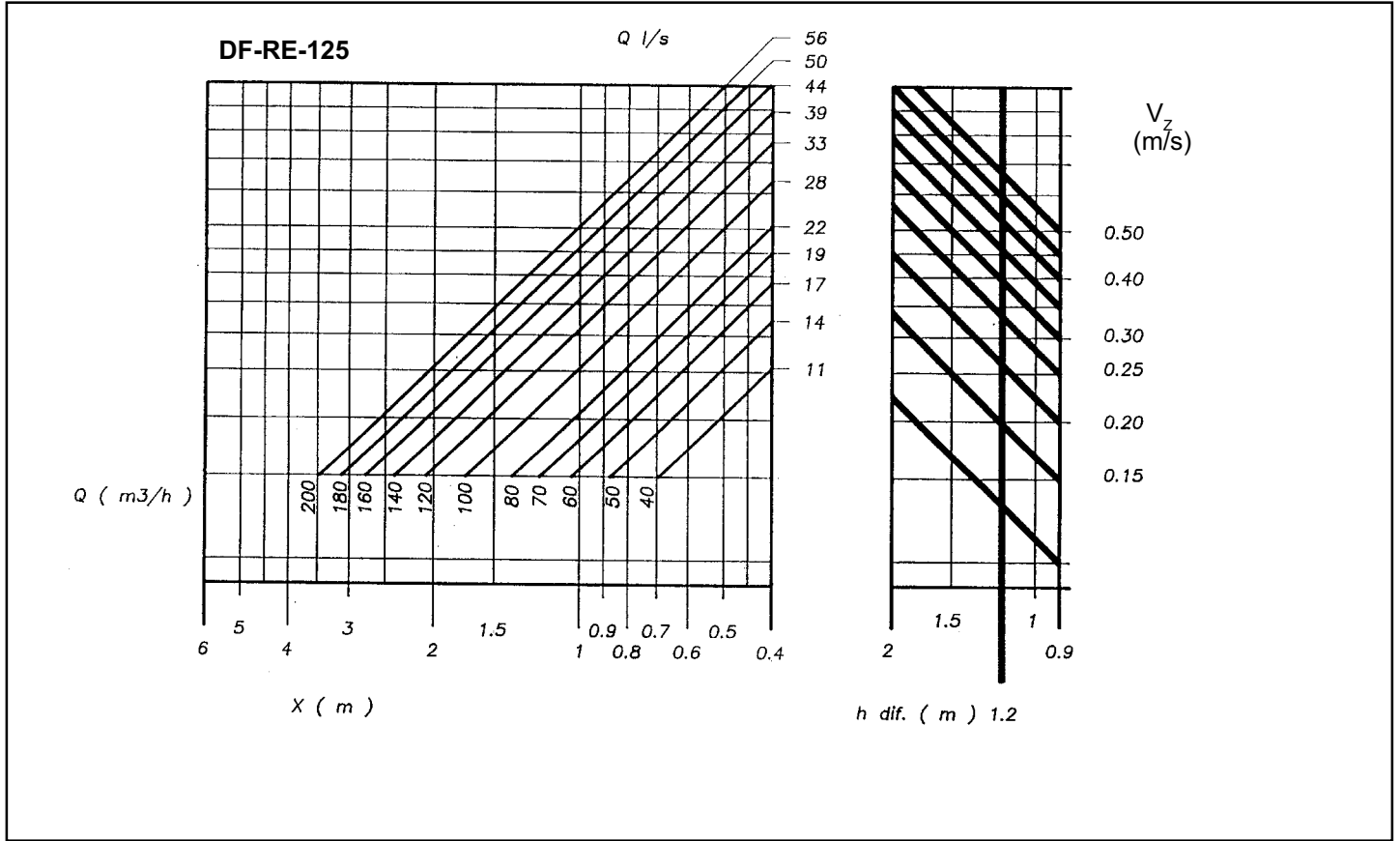
Neck dimensions correspond to standardised ducts according to ISO standard (Ø125,160,200, 250 y 315).

NOMINAL	Ø D	DF-RE	DF-RE-Q
		CxC	QxQ
Ø125	123	171x171	595x595
Ø160	158	213x213	595x595
Ø200	198	264x264	595x595
Ø250	248	326x326	595x595
Ø315	313	405x405	595x595

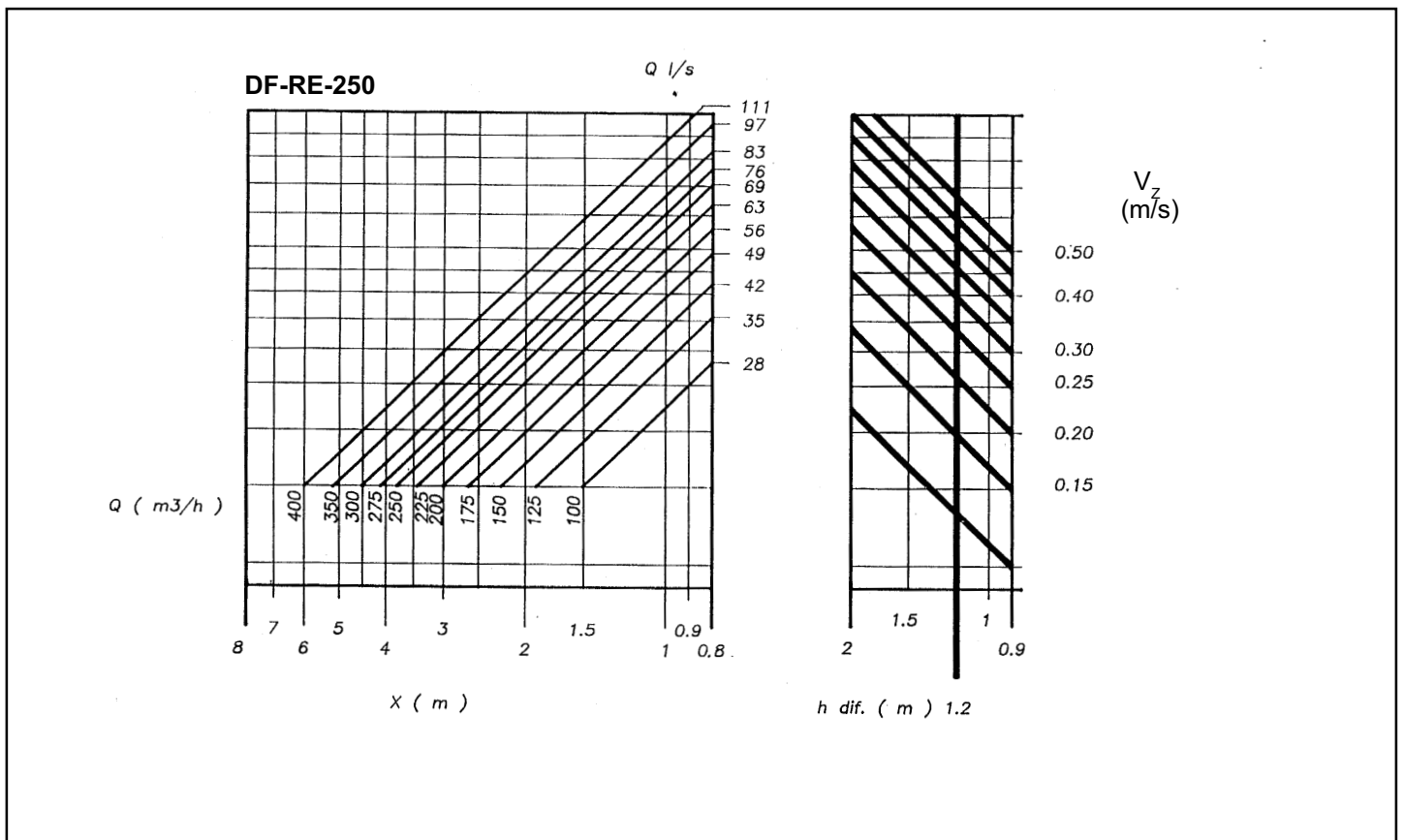
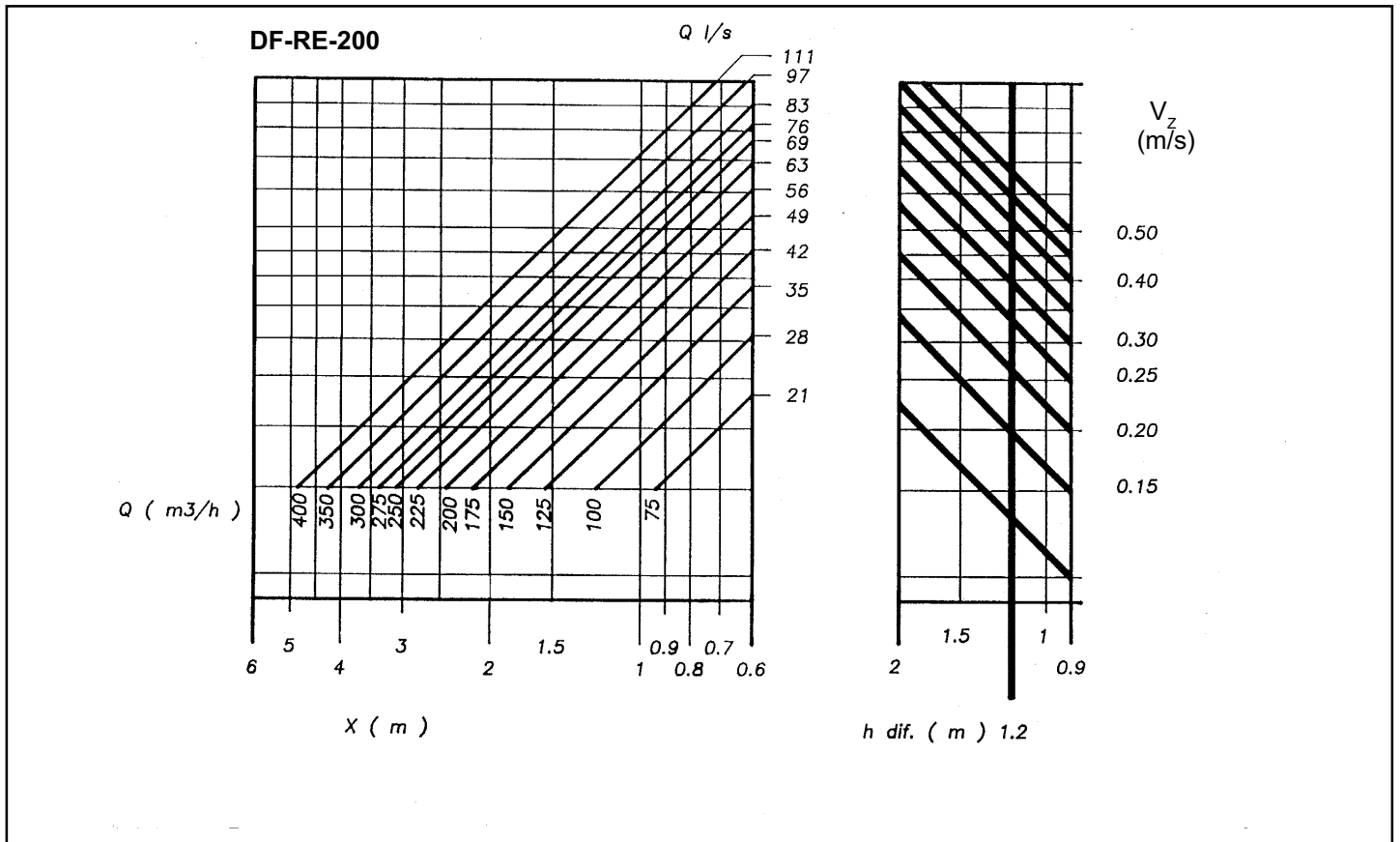
**Dimensions and characteristics**

The types DF-RE comprise five panel sizes : 171x171, 213x213, 264x264, 326x326 and 405x405. Type DF-RE-Q incorporates a panel size 595x595. Other panel sizes can be provided upon request. Also upon request circular diffuser panels with cylindrical plenum boxes can be constructed.

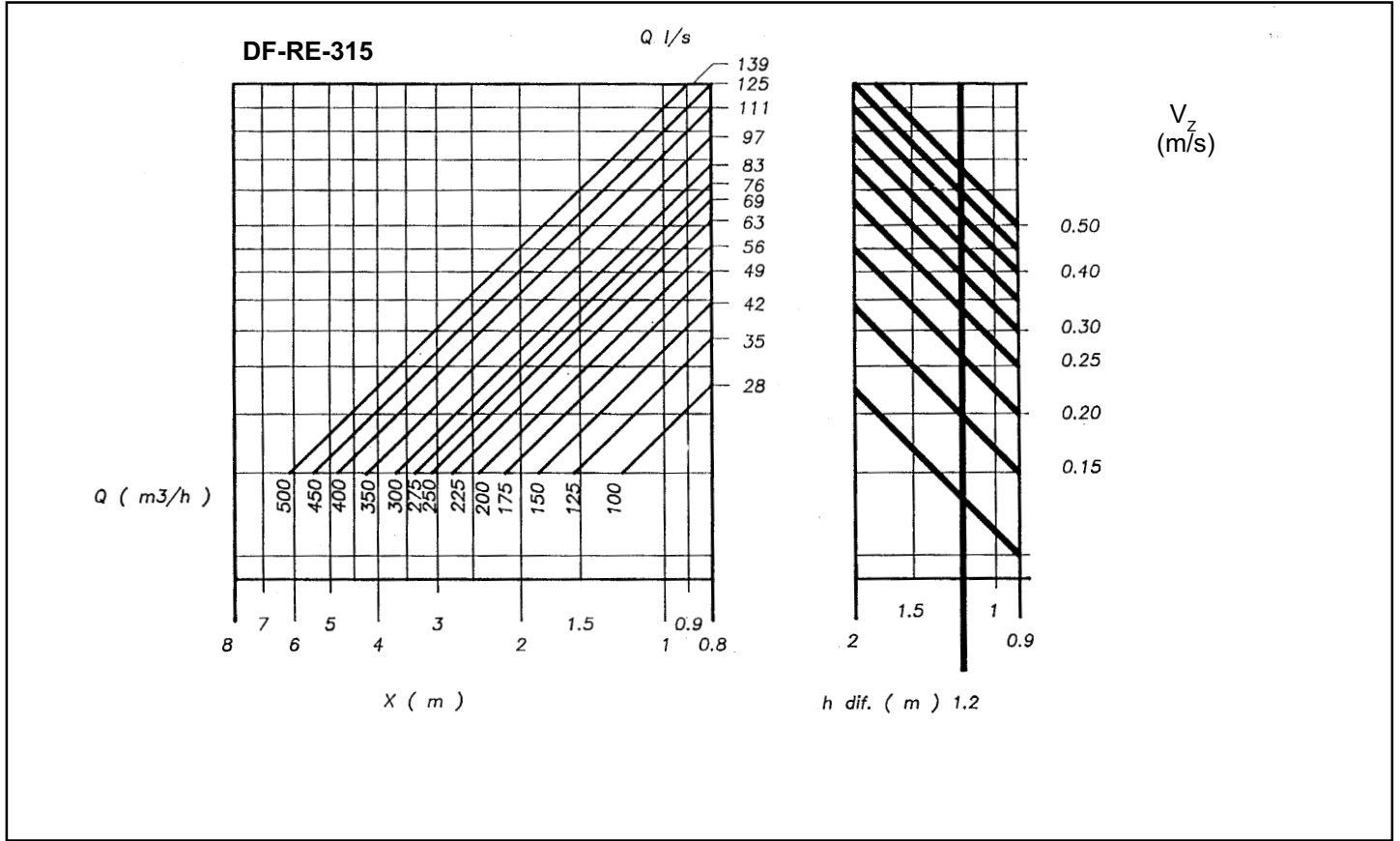
# Quick Selection Graphs (Diffusers type DF-RE)



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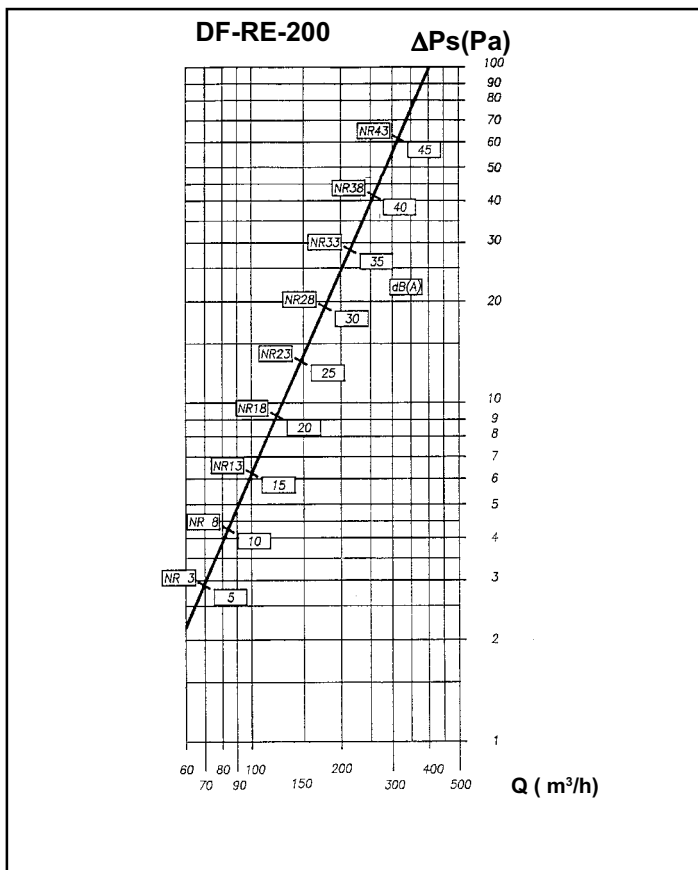
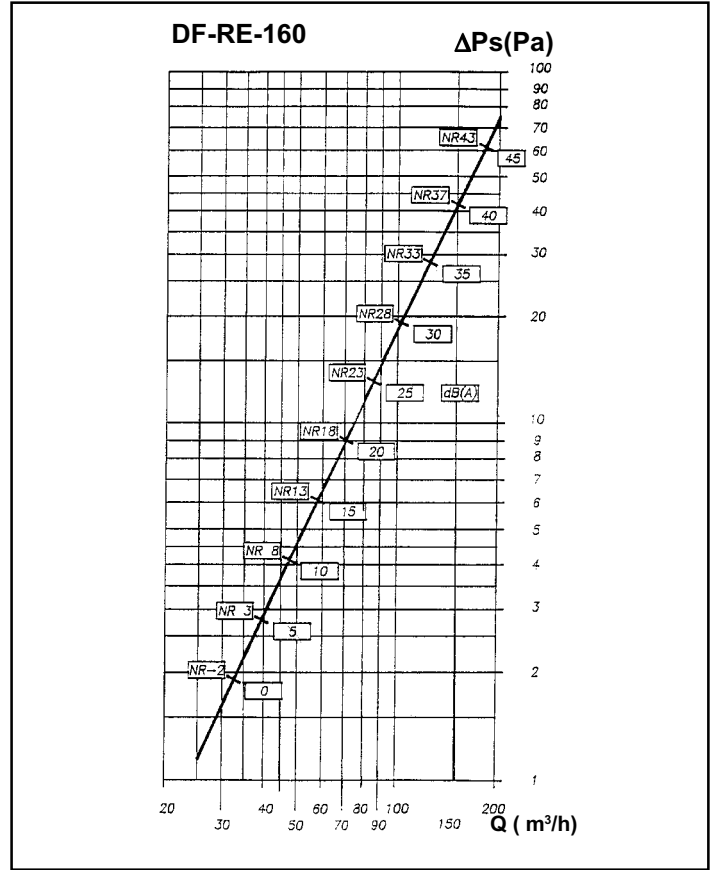
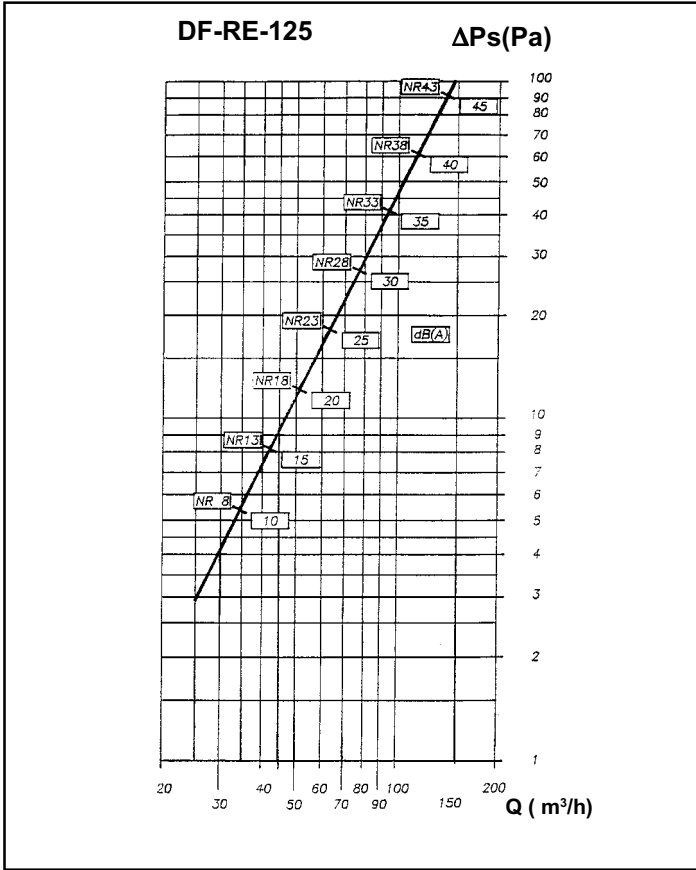
# Quick Selection Graphs (Diffusers type DF-RE)



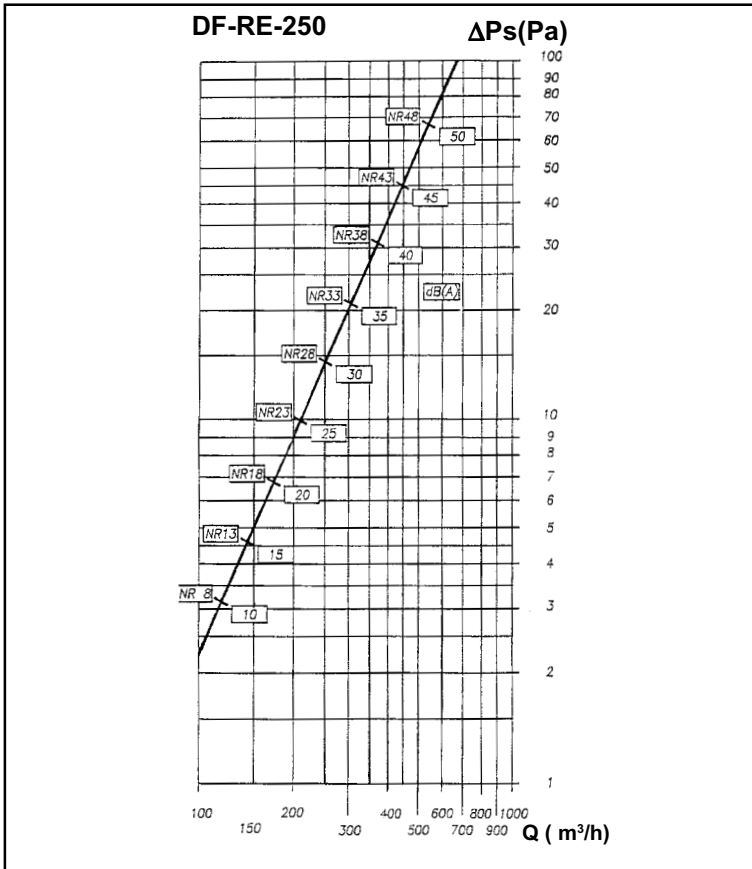
**Symbols:**

- h dif.(m) = Height from occupied zone to ceiling in m.
- V<sub>z</sub>(m/s) = Velocity in occupied zone in m/s.
- Q(m³/h) = Air flow rate in m³ per hour.
- Q(l/s) = Air flow rate in litres per second.
- X(m) = Throw in m.

# Graphs for air flow rate / pressure / noise levels



## Graphs for air flow rate / pressure / noise levels

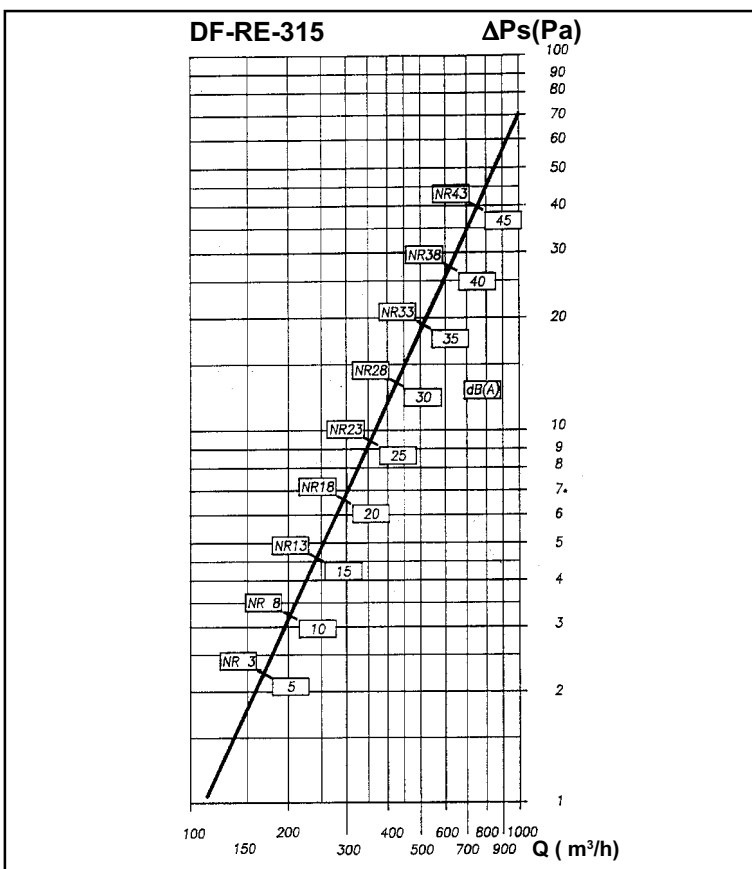


## General information

- Air diffusion by means of swirl diffusers form an important innovation in comparison with traditional circular diffusers, especially with respect to its high induction capacity. The rotational turbulence produced, cause a rapid mixing of supply and induced air, resulting in rapid mixing of temperatures and considerably shorter jet throws.
- This type of diffusers can be used in both constant and variable volume systems, allowing for variations in air flow rate from 100% to 25% without risk of jet detach. A high air renovation ratio can be obtained in the room with temperature differences from + 12 K to -12 K
- Swirl diffusers type DF-RE should preferably be used for heights between 2,7 and 4 m. They can satisfy practically all air diffusion requirements, both in comfort and industrial applications. Its geometry is very decorative and its integration in false ceilings harmonise perfectly with any type of decoration.

### General notes on the quick selection graphs

- These selection graphs are based on full-scale laboratory tests according to standards ISO 5219 and ISO 5135 and 3741.
- The jet is adherent, i.e. the diffuser is mounted aligned with the ceiling.
- Room height is 3 ±0,5 m.
- Sound index NR is based on sound power, without room attenuation and without damper (mounting according to ISO).

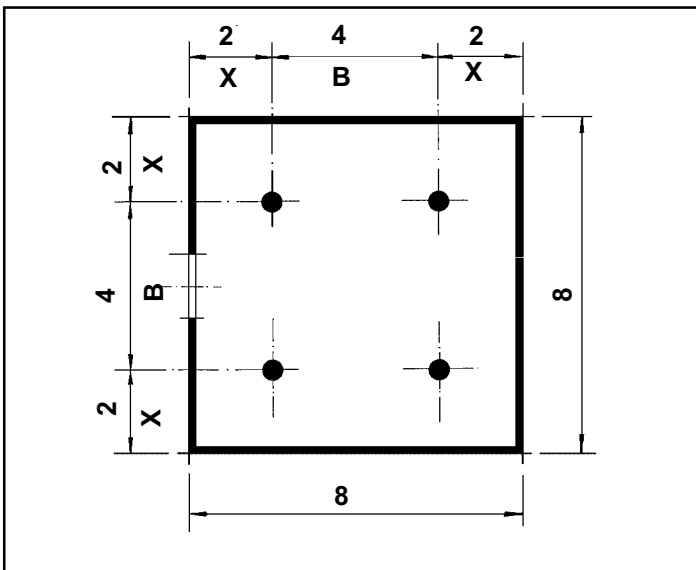




## Example of selection

Once the total supply air flow rate, room dimensions and maximum permitted noise level are defined, the required number of diffusers can be determined for optimum comfort conditions, according to the following procedure:

Room : 8 m x 8 m x 3 m (square)  
 Total air flow rate : 1.100 m<sup>3</sup>/h (306 l/s)  
 Max. permitted noise level : NR 40  
 Max. velocity in occupied zone : 0,20 m/s  
 Diffuser type : DF-RE-200



Procedure:

With the occupied zone upto 1,8 m from the floor its distance to the ceiling will be 3 - 1,8 = 1,2 m. With this value the corresponding graph (see page 18) can be entered so as to find the intersection between h dif. and  $V_z$ .

The next step consists of defining the maximum air flow rate for each diffuser, without exceeding the specified noise limit (NR 40)..

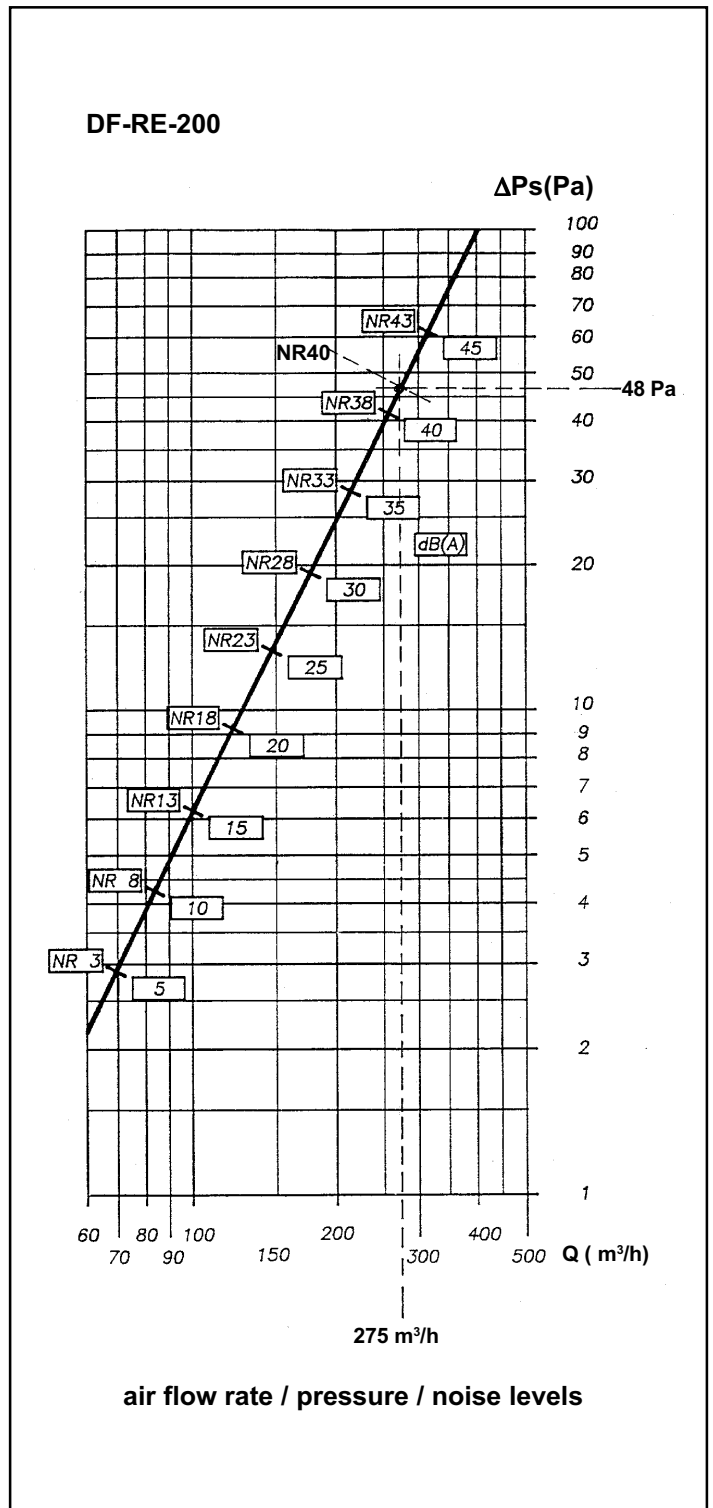
In the graph for flow rate/pressure/noise level corresponding to this diffuser type, it can be found that the air flow rate for NR 40 is 275 m<sup>3</sup>/h.

Dividing the total air flow rate for the room by the flow rate per diffuser we obtain  $1.100 / 275 = 4$  diffusers. Distributing the diffusers symmetrically, 4 diffusers can be installed at a distance of 4 m between axes and 2 m to each wall. The maximum throw for each diffuser should not exceed 2 m and not be lower than 0,66 B/2 for cold air.

In the graph on page 18 the air flow rate can be found for which this condition will be satisfied :

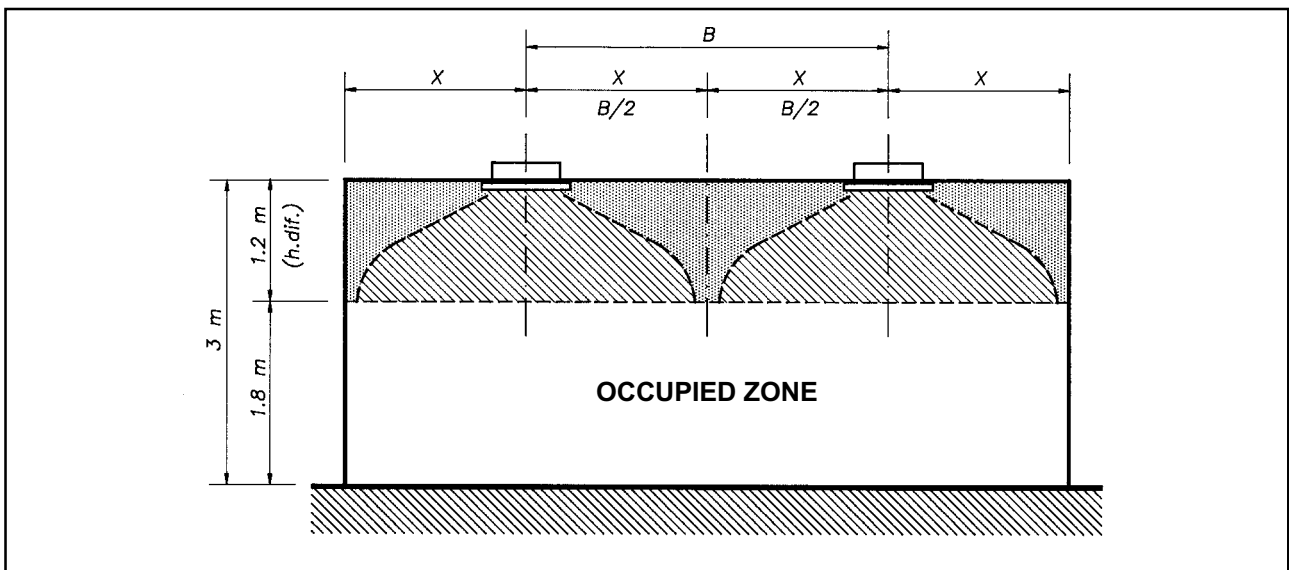
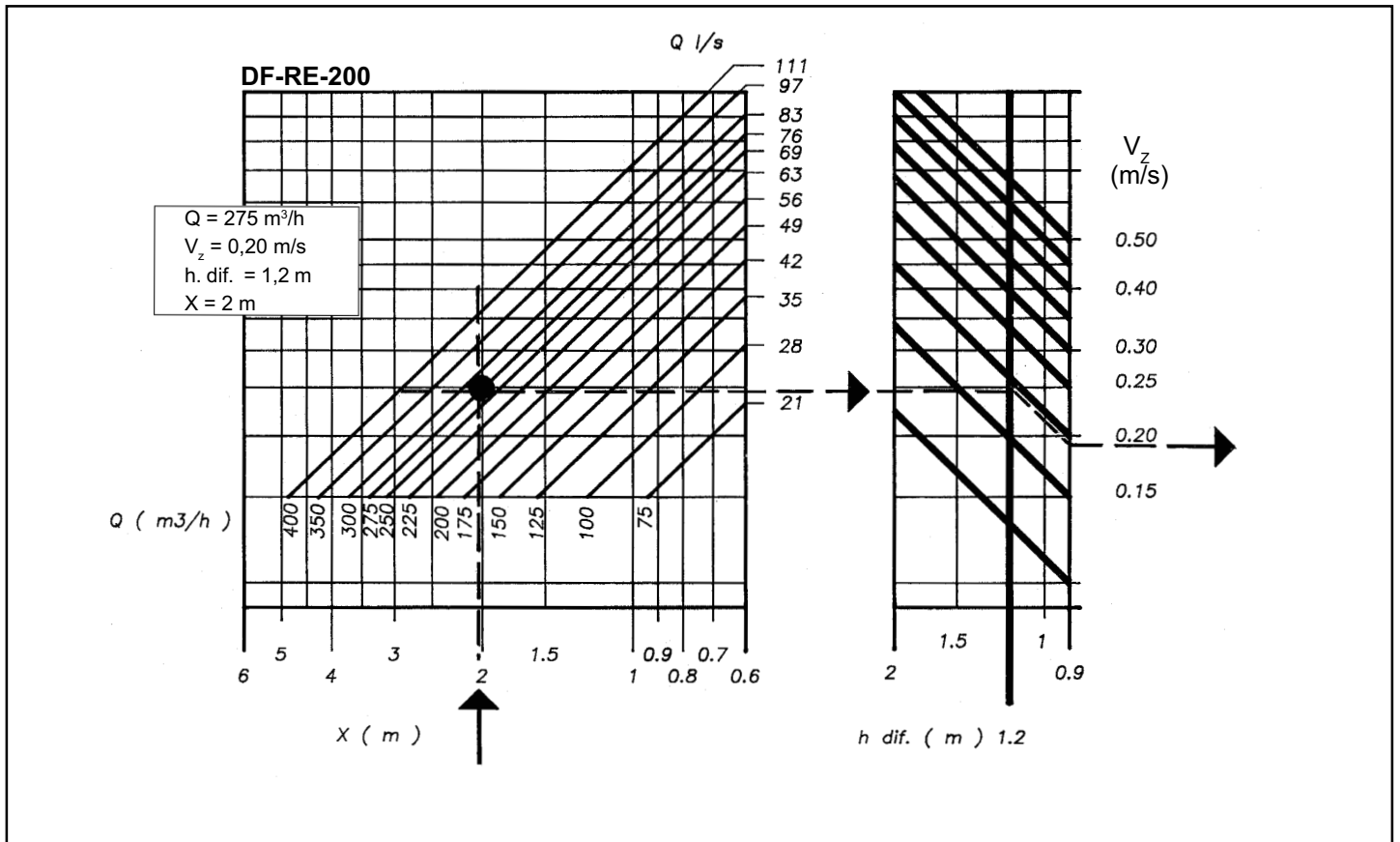
Having defined the maximum air flow rate for acoustical reasons to be 275 m<sup>3</sup>/h, it can be seen that at this flow rate, at a distance of 1,2 m from the ceiling a maximum velocity in the occupied zone of 0,20 m/s will be obtained with a throw X of 2 m.

The nominal air flow rate per diffuser will be :  
 $1.100 / 4 = 275 \text{ m}^3/\text{h}$ .





# Example of selection



(This example is based on a room with a height of 3 m).

$h \text{ dif. (m)}$  = Height from occupied zone to ceiling in m.

$V_z \text{ (m/s)}$  = Velocity in occupied zone in m/s.

$Q_z \text{ (m}^3\text{/h)}$  = Air flow rate in  $\text{m}^3$  per hour.

$Q \text{ (l/s)}$  = Air flow rate in litres per second.

$X \text{ (m)}$  = Throw in m ( $X = B/2$ ).

$B$  = Distance between diffuser axes.