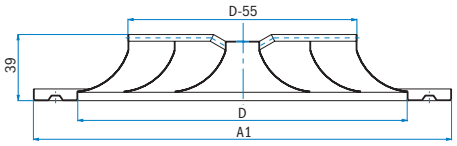
Circular diffusers

Circular diffusers OD-1, OD-2

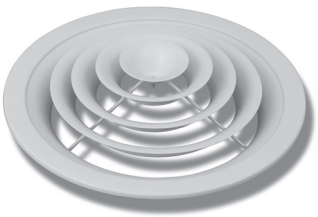
OD-1

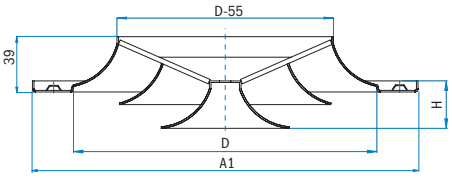
- Fixed diffuser rings
- Central screw installation or fixing with three peripheral screws
- Peripheral foamy sealing strip
- Registers J2



OD-2

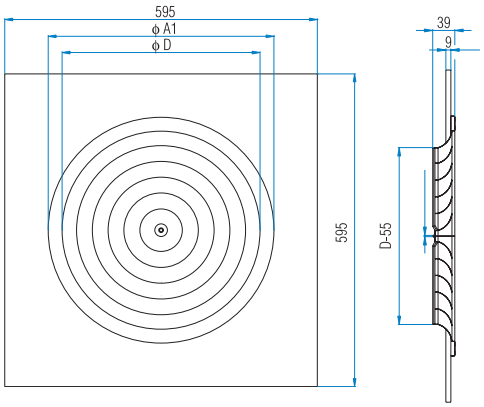
- Fixed diffuser cone-form rings
- Central screw installation or fastening with three peripheral screws
- Peripheral foamy sealing strip
- Registers J2





OD-1 in the plate

- OD-1 in the plate 595x595
- Sizes from 1 to 5 are available
- Only installation with cross-bar is possible
- Plenum boxes are equal to those for standard OD-1 corresponding nominal sizes



OD-1 and OD-2 dimensions

Size	D (mm)	A1 (mm)	H (mm)	OD-1 A_{ef} (m^2)	OD-2 A_{ef} (m^2)
1	192	244	30	0.0085	0.0090
2	248	300	45	0.0157	0.0167
3	304	356	60	0.0257	0.0282
4	360	412	75	0.0381	0.0422
5	416	468	90	0.0536	0.0618
6	472	542	98	0.0730	0.0812
7	528	598	112	0.0955	0.1037
8	584	654	126	0.1150	0.1235

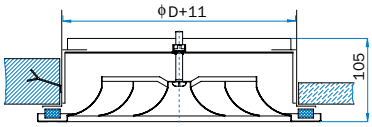
Dimensions of volume control dampers J2 for OD-1 and OD-2

Size	ΦD-52 (mm)	ΦD+11 (mm)
1	140	203
2	196	259
3	252	315
4	308	371
5	364	427
6	420	483
7	476	539
8	532	595

Installation of circular diffusers OD-1, OD-2

Installation 7

- Installation with crossbar.
  Designation: **OD-1/7, OD-2/7**



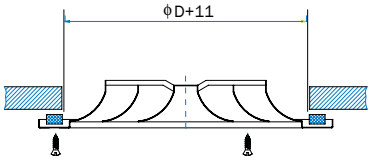
Built-in duct Duct through the panel ceiling

Installation 8

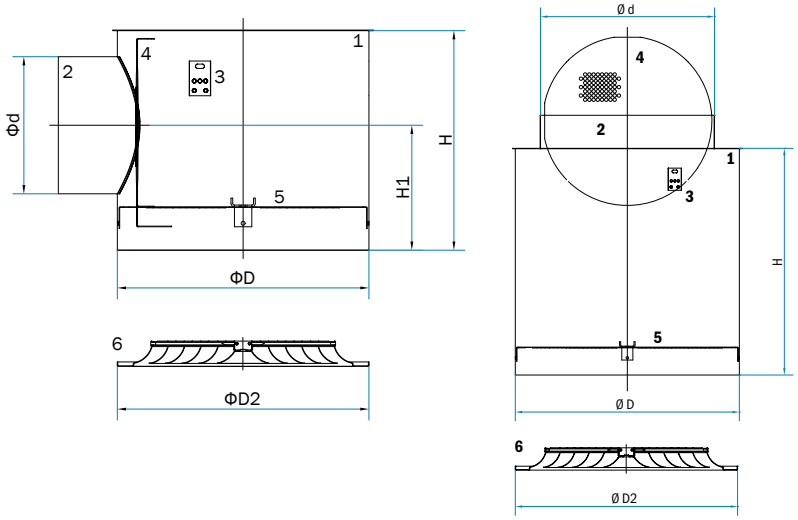
- Installation on register fastened in the duct.
  Register has three girders.
  Designation: **OD-1/8-(J2), OD-2/8-(J2)**

Installation X (without opening in the middle)

- Direct installation in the ceiling with three screws
  Designation: **OD-1/X, OD-2/X**



Round diffuser OD-1 (side and vertical air supply)



1. Plenum box
2. Inlet spigot
3. Hanger
4. Perforated steel sheet (supply only)
5. Plenum box grill
6. Diffuser OD-1

Size	Φ D	Φ d	H	H1	H2
1	204	123	210	125.5	210
2	260	158	245	143	245
3	319	198	285	163	280
4	370	198	285	163	280
5	430	248	335	188	330
6	488	248	335	188	330
7	540	248	335	188	330
8	596	313	400	220.5	395

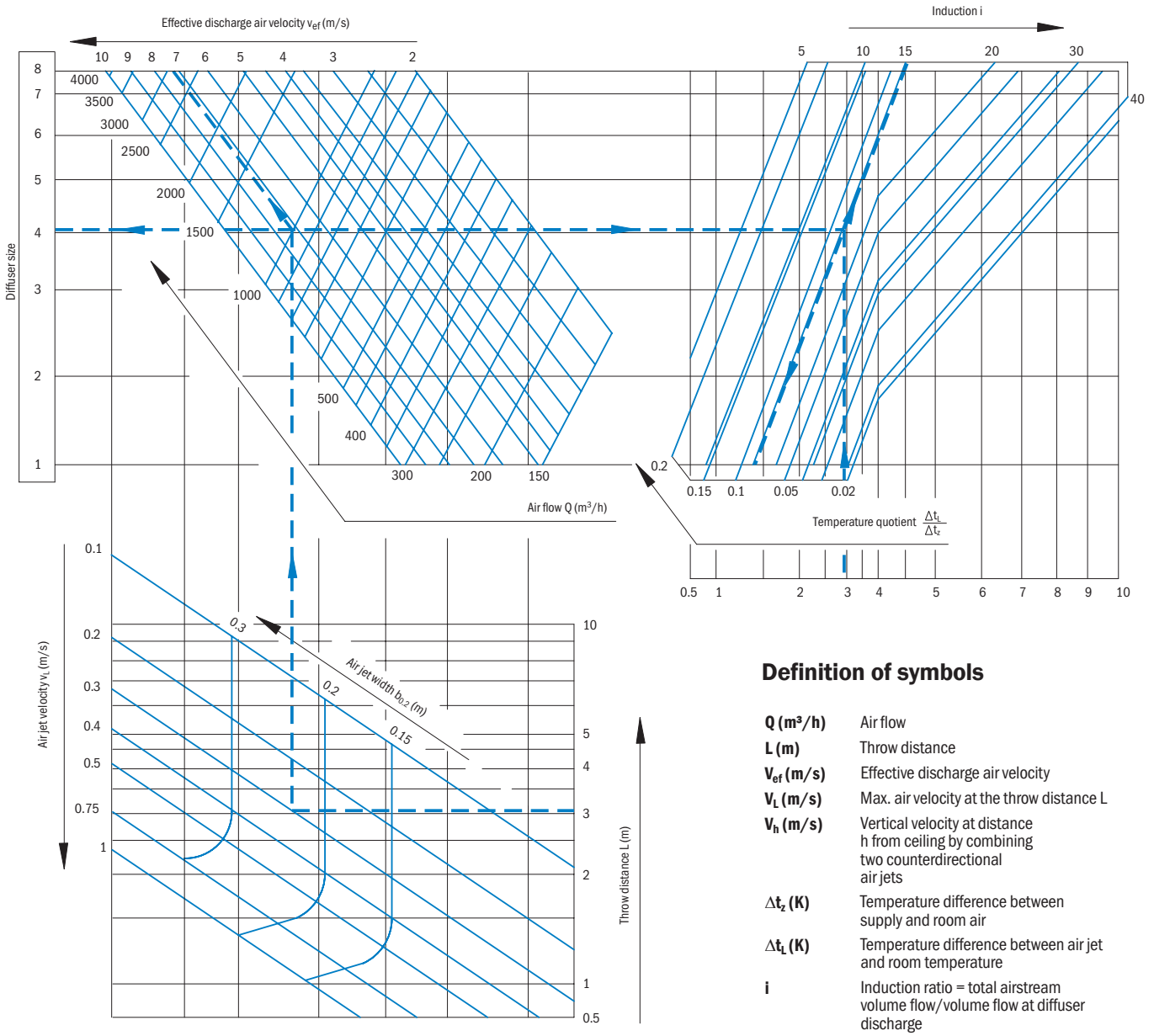
Ordering key

OD-1 / ZR / 7 - J2 Size 2 / 600

1 2 3 4 5

1 Diffuser type	
OD-1	Circular diffuser
OD-2	Circular diffuser
2 Plenum box	
ZR	Circular plenum box for air supply
AR	Circular plenum box for air exhaust
3 Installation (without plenum box)	
7	With cross-bar
8	On volume control damper fastened in the duct
x	Three boreholes on the ring without central borehole
4 Register	
J2	Only without plenum box
5 Dimensions	
Size 1	Fi 244, also version in the plate 595x595 available
Size 2	Fi 300, also version in the plate 595x595 available
Size 3	Fi 356, also version in the plate 595x595 available
Size 4	Fi 412, also version in the plate 595x595 available
Size 5	Fi 468, also version in the plate 595x595 available
Size 6	Fi 542
Size 7	Fi 598
Size 8	Fi 654

Diagram for determining the size, induction and temperature of the air jet flow of the circular diffusers OD-1



Definition of symbols

Q (m³/h)	Air flow
L (m)	Throw distance
V_{ef} (m/s)	Effective discharge air velocity
V_L (m/s)	Max. air velocity at the throw distance L
V_h (m/s)	Vertical velocity at distance h from ceiling by combining two counterdirectional air jets
Δt_z (K)	Temperature difference between supply and room air
Δt_L (K)	Temperature difference between air jet and room temperature
i	Induction ratio = total airstream volume flow/volume flow at diffuser discharge
$b_{0.2}$ (m)	Width of the air jet is measured at a distance from ceiling where air flow velocity is 0.2 m/s

Example

Given:

Air flow:	Q = 1000 m³/h, L = 3 m
Air jet velocity:	V_L = 0.3 m/s
Temperature difference:	Δt_z = 5 °C

Solution:

From the diagram select the diffuser OD-1 size 4.

effective outlet velocity	v_{ef} = 7.2 m/s
temperatue quotient	$\Delta t_L / \Delta t_Z$ = 0.08
temperature difference	Δt_L = 0.08 x 5 = 0.4 °C
induction	i = 16
width of the air jet	$b_{0.2}$ = 0.22 m

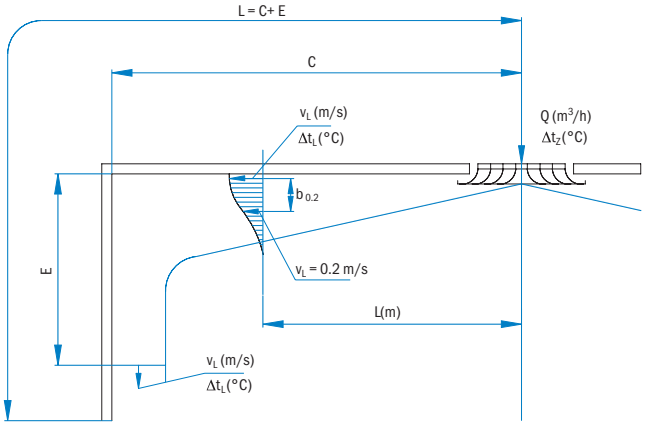
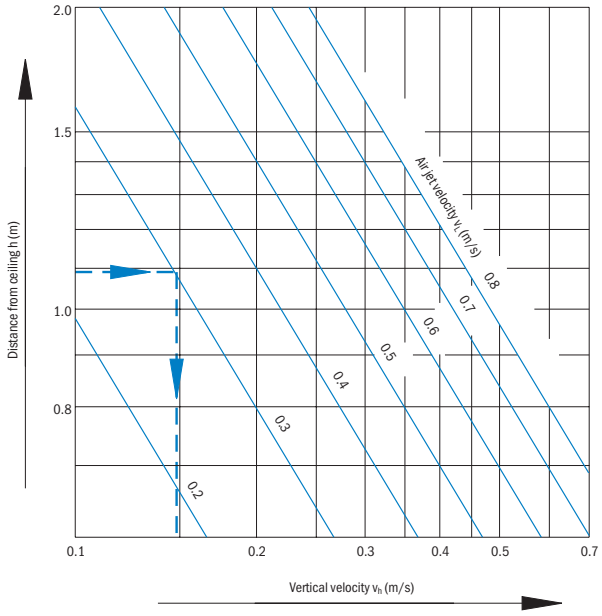
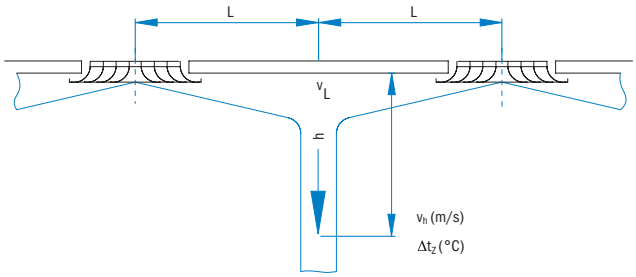


Diagram for determination of vertical velocity

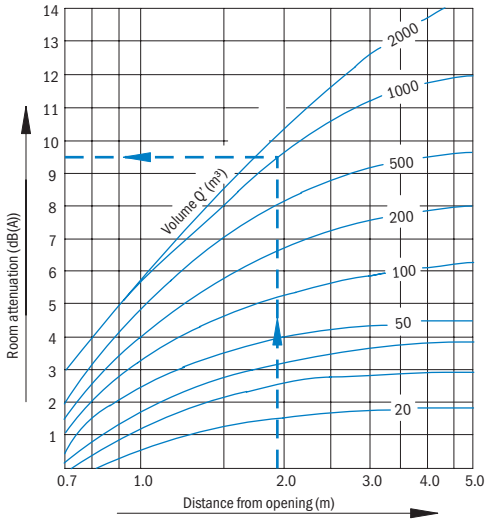




Max temperature quotient $\Delta t_h / \Delta t_z$ determined using the diagram 1 for temperature quotient:

$L_{diagram} = L + h$

Room attenuation diagram



Q' (m³)	calculated volume, depending on room reflectance
Q (m³)	actual room volume

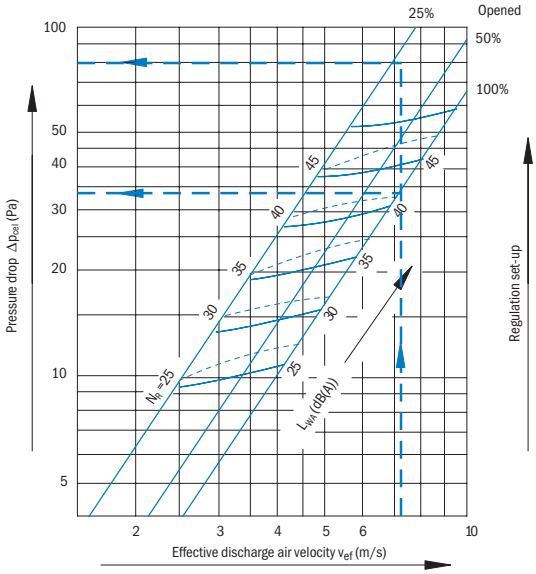
The following data are necessary to calculate the volume Q'.

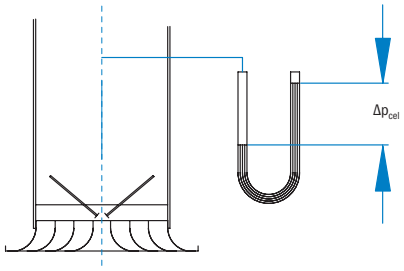
1. Normal rooms	Q' = Q
2. Rooms with highly reflective walls	Q' = 0.5Q
3. Rooms with absorption walls	Q' = 2Q

Definition of symbols

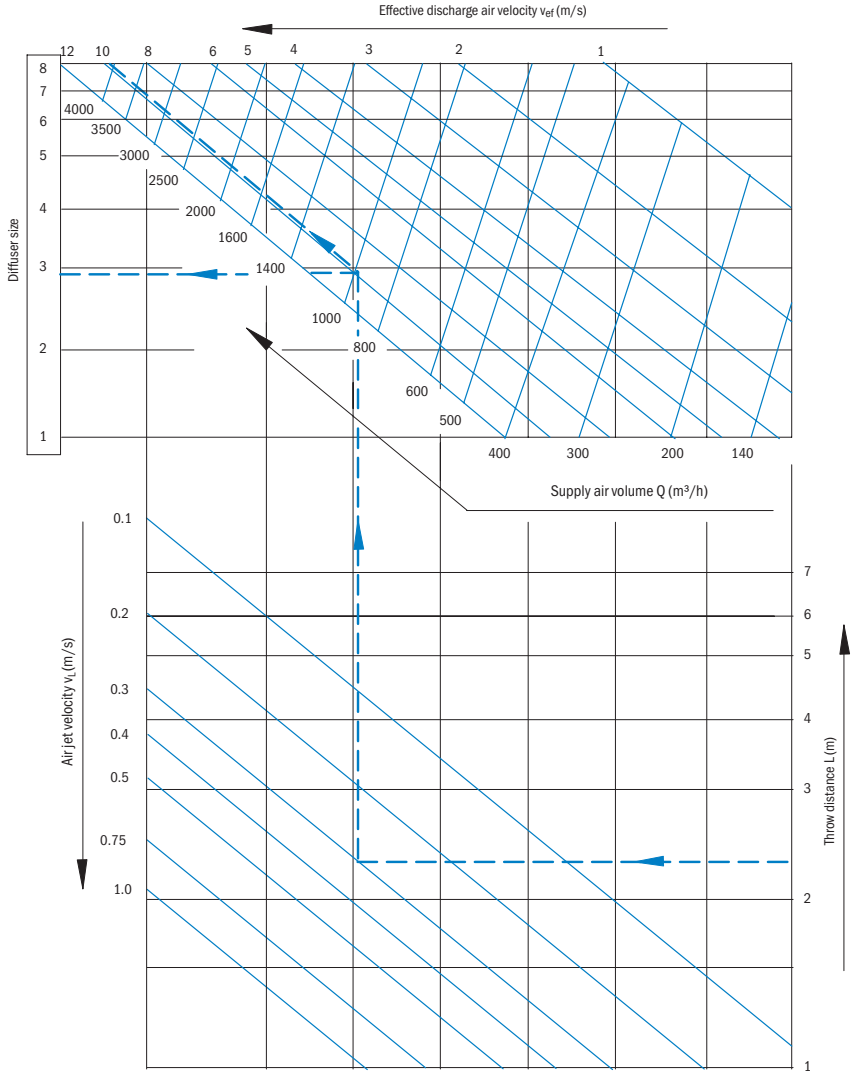
Δp_{cel} (Pa)	Pressure drop
L_{WA} (dB(A))	Sound power level
N_R	Max. value according to ISO

Pressure drop diagram (Valid for volume control damper J2)





Sizing diagram for circular diffusers OD-2



Definition of symbols

Q (m³/h)	Air flow
L (m)	Throw distance
V_{ef} (m/s)	Effective discharge air velocity
V_L (m/s)	Max. air velocity at the throw distance L
V_h (m/s)	Vertical velocity at distance h from ceiling by combining two counterdirectional air jets
Δt_z (K)	Temperature difference between supply and room air
Δt_L (K)	Temperature difference between air jet and room temperature
i	Induction ratio = total air stream volume flow/volume flow at diffuser discharge
$b_{0.2}$ (m)	Width of the air jet is measured at a distance from ceiling where air flow velocity is 0.2 m/s
Δp_{cel} (Pa)	Pressure drop
L_{WA} (dB(A))	Sound power level
N_R	Border value according to ISO

Example

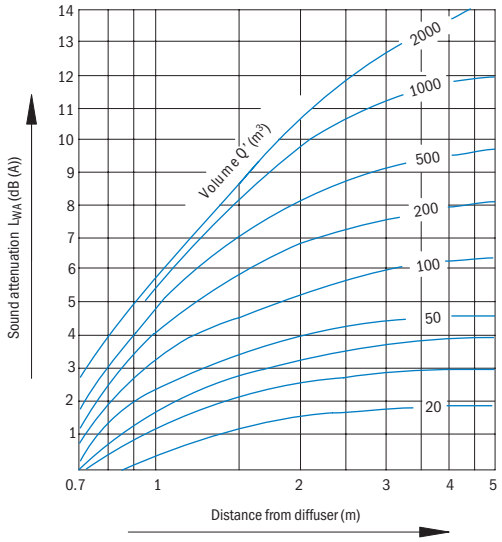
Given:

Air flow volume:	Q = 1000 m³/h, L = 2.4 m
Air jet velocity:	V_L = 0.3 m/s
Temperature difference:	Δt_z = 5 °C

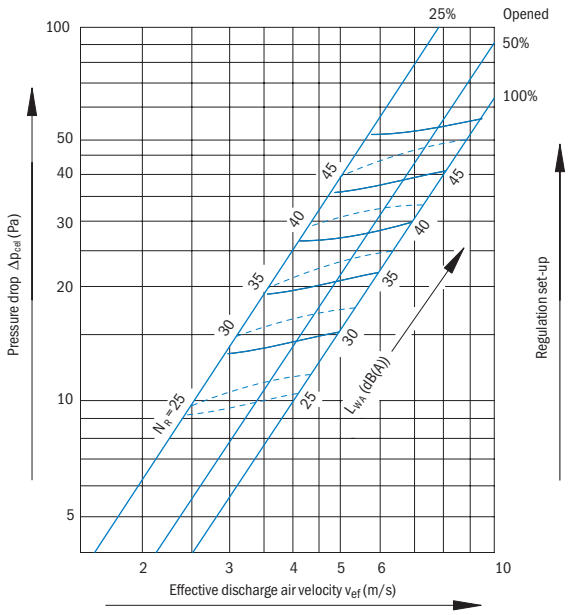
Solution:

From the diagram select the diffuser OD-2 size 3.

Effective discharge velocity v_{ef} = 9.8 m/s



Pressure drop diagram (Valid for register J2)



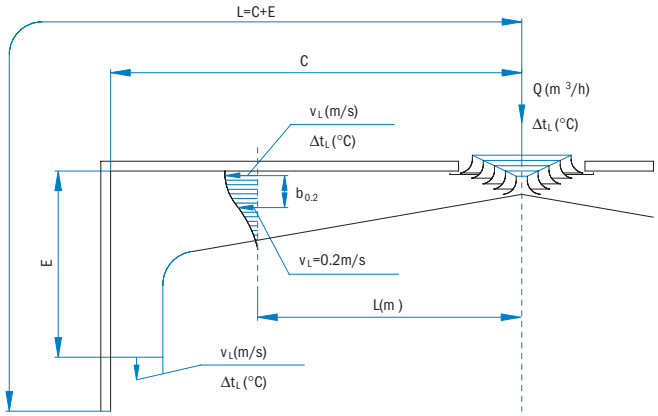


Diagram for approximate determination of room attenuation

Q' (m³)	Calculated volume, depending on room reflectance
Q (m³)	Actual room volume

The following data are necessary to calculate the volume Q'.

1. Normal rooms	Q' = Q
2. Rooms with highly reflective walls	Q' = 0.5Q
3. Rooms with absorption walls	Q' = 2Q