

LINEAR DIFFUSERS

BF.E



CONSTRUCTION FEATURES:

The single slot linear diffusers with concealed perimeter frame of the BF.E series are generally installed in spaces with a height of between 2.7 and 4.0 m and with ventilation systems operating within ± 10 K temperature differential between internal and supplied air. The most frequently used type of installation is flush with plasterboard, with ceiling installation (vertical throw) and on the wall (horizontal throw). In the wall installation, if the distance between the upper edge of the diffuser and the ceiling is less than 200 mm, a Coanda effect is obtained; otherwise, a free throw is achieved. The concealed perimeter frame, designed to facilitate positioning on plasterboard, makes the BF.E series highly appreciated by designers who find in it not only functionality but also furnishing motifs. They can be used for both supply and return and in systems with variable air flow rates in the range 50...100%. In the special execution, they can be mounted one after the other to make continuous lines which, with the use of particular inactive corner pieces, are able to follow the ideal line of the perimeter of the room.

FIXING

Based on plenum box choice.

MATERIALS

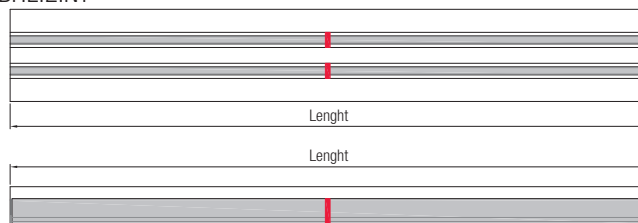
Perimeter frame, inverted T profiles, end caps, spacers and flow deviating blades in extruded aluminum painted in white, RAL 9016 or black, RAL 9005; raw, anodized aluminium or other RAL paint on request.

Equalising stretched sheet and slinding damper in galvanized steel. Spacers in plastic

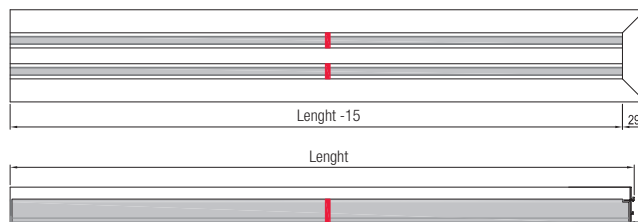
Plenum box in galvanized sheet steel; possible external insulation in polyethylene foam (fire reaction Euroclass, according to UNI EN 13501-1:2009, B-s2, d0).

DIMENSIONS - customized lenght on request

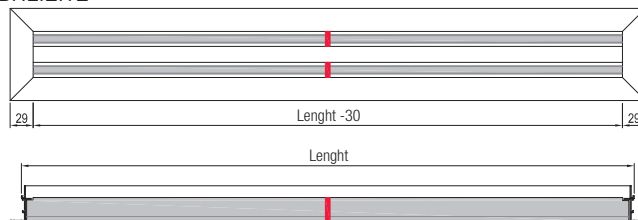
B.F.E.2.NT



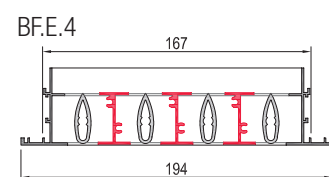
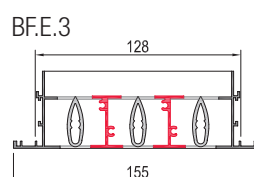
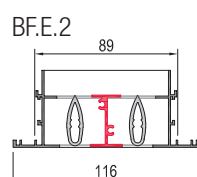
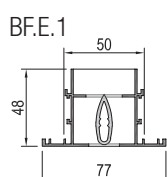
B.F.E.2.T1



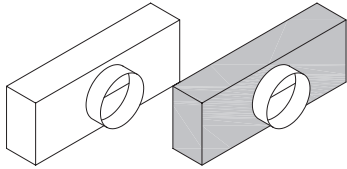
B.F.E.2.T2



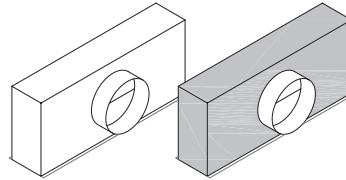
n° of slots	lenght	n° of inlets	Ø inlet
	mm		mm
1 B.F.E.1	1000	1	125
	1500	2	
	2000	3	
	2500	3	
	3000	4	
2 B.F.E.2	1000	1	150
	1500	2	
	2000	3	
	2500	3	
	3000	4	
3 B.F.E.3	1000	1	150
	1500	2	
	2000	3	
	2500	3	
	3000	4	
4 B.F.E.4	1000	1	180
	1500	2	
	2000	3	
	2500	3	
	3000	4	



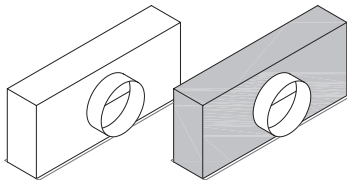
ACCESSORIES

**PL.BF and PL.BF.ISO**

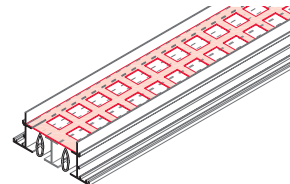
Plenum box, with or without external insulation, with lateral circular inlet, riveted in the factory to the diffuser.

**PL.BF.PE and PL.BF.PE.ISO**

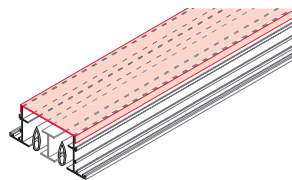
Plenum box, with or without external insulation, with lateral circular inlet and external perimeter flange with internal support brackets for diffuser installation.

**PL.BF.PC and PL.BF.PC.ISO**

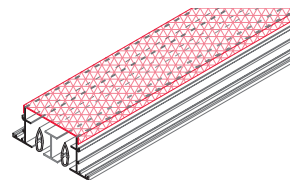
Plenum box, with or without external insulation, with lateral circular inlet and external perimeter flange with fixed and sliding u-brackets for diffuser installation.

**SER.BF**

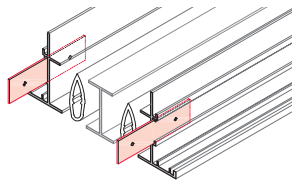
Sliding regulation damper, handling from the front of the diffuser.

**TEG.BF**

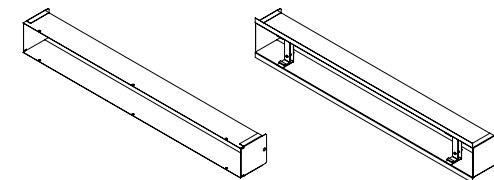
Closing plate for the air passage, suitable for making part of the diffuser inactive.

**LE.BF**

Equalising stretched sheet steel fitted on the back of the diffuser.

**PG.BF**

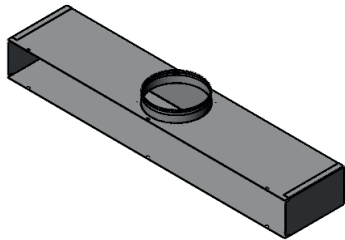
Steel junction plate for diffusers alignment.

**CM.BF**

Open end frame, riveted or screwed to the diffuser.

PLENUM

PL.BF / PL.BF.ISO

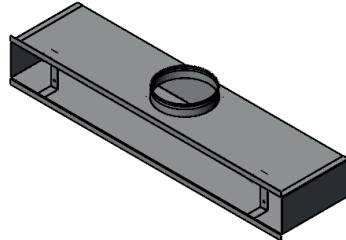


Galvanized steel plenum box

- riveted to the diffuser.
- standard inlet or with built-in damper on request.
- eyebolts for fixing.

PL.BF.ISO: external insulated version with CE marked polyethylene foam (Euroclass of reaction to fire, according to UNI EN 13501-1:2009, B-s2, d0).
Note that the insulation layer provides +6mm thickness on each covered side.

PL.BF.PE / PL.BF.PE.ISO

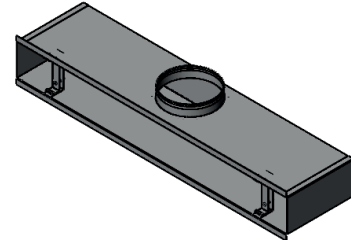


Galvanized steel plenum box

- diffuser to be installed on site.
- standard inlet or with built-in damper on request.
- outer perimeter flange (including inner support brackets for the diffuser frontal installation).
- eyebolts for fixing.

PL.BF.PE.ISO: external insulated version with CE marked polyethylene foam (Euroclass of reaction to fire, according to UNI EN 13501-1:2009, B-s2, d0).
Note that the insulation layer provides +6mm thickness on each covered side.

PL.BF.PC / PL.BF.PC.ISO



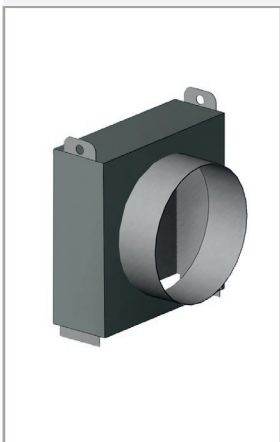
Galvanized steel plenum box

- diffuser to be installed on site.
- standard inlet or with built-in damper on request.
- outer perimeter flange (including u-brackets for the diffuser frontal installation).
- eyebolts for fixing.

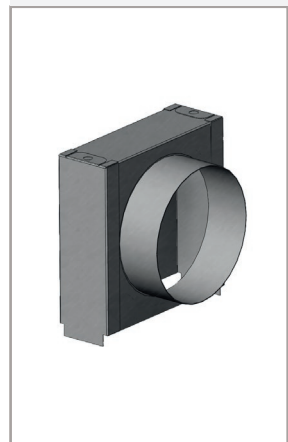
PL.BF.PC.ISO: external insulated version with CE marked polyethylene foam (Euroclass of reaction to fire, according to UNI EN 13501-1:2009, B-s2, d0).
Note that the insulation layer provides +6mm thickness on each covered side.

PARTS IN DETAIL

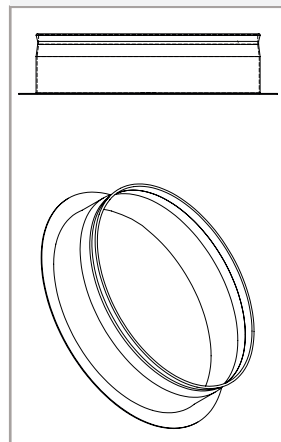
Straight eyebolts for fixing in a PL.ISO (insulated)



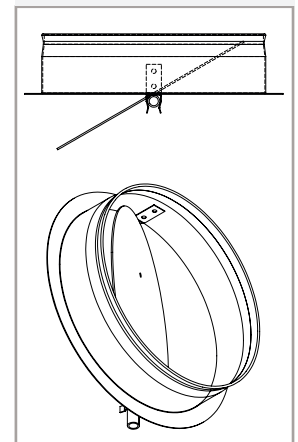
Folded eyebolts for fixing in a PL. (non insulated)



Standard inlet



Inlet with built-in damper

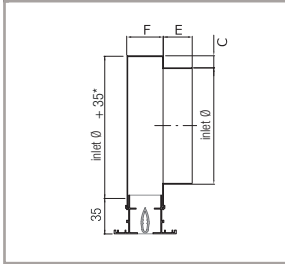


DIMENSIONS

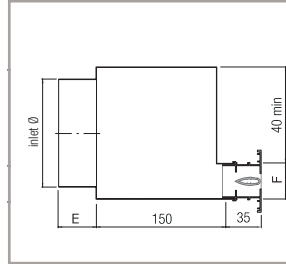
N° of slots	Inlet Ø	F	F1	C	E
	mm	mm	mm	mm	mm
1 - B.F.E.1	125	44	59	15	50
2 - B.F.E.2	150	83	98	15	50
3 - B.F.E.3	150	122	137	15	50
4 - B.F.E.4	180	161	176	15	50

POSSIBLE SHAPES FOR PLENUM PL.BF / PL.BF.ISO

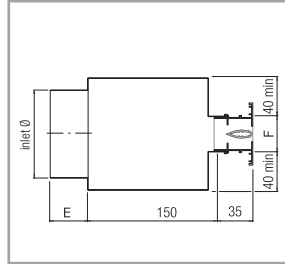
Standard



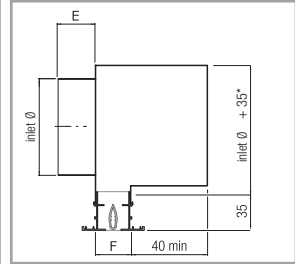
A-shaped - rear inlet



B-shaped - rear inlet



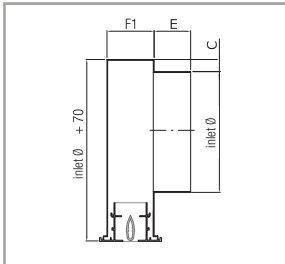
A-shaped - side inlet



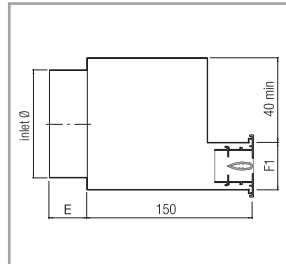
*Ø + 50 with inlet with built-in damper

POSSIBLE SHAPES FOR PLENUM PL.BF.PC / PL.BF.PC.ISO / PL.BF.PE / PL.BF.PE.ISO

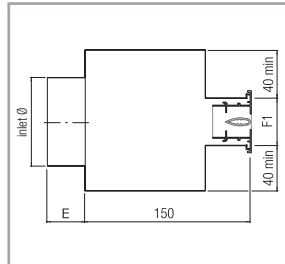
Standard



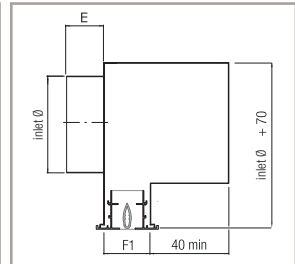
A-shaped - rear inlet



B-shaped - rear inlet



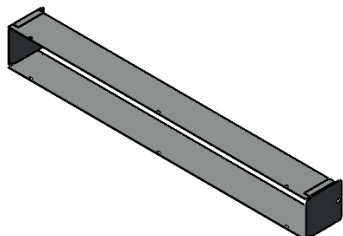
A-shaped - side inlet



The air flow damper is not the same product (SER.BF) mentioned in the accessories page. SER.BF is located in the diffuser.

FRAMES

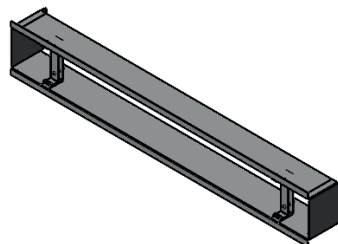
CM.BF



Galvanized steel frame

- riveted to the diffuser.
- eyebolts for fixing.

CM.BF.PC



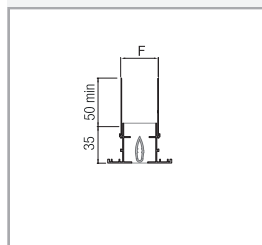
Galvanized steel frame

- diffuser to be installed on site.
- outer perimeter flange (including u-brackets for the diffuser frontal installation).
- eyebolts for fixing.

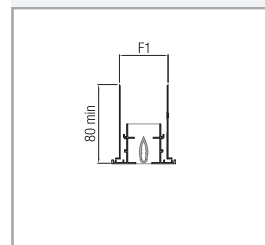
DIMENSIONS

N° of slots	F	F1
	mm	mm
1 - B.F.E.1	44	59
2 - B.F.E.2	83	98
3 - B.F.E.3	122	137
4 - B.F.E.4	161	176

CM.BF

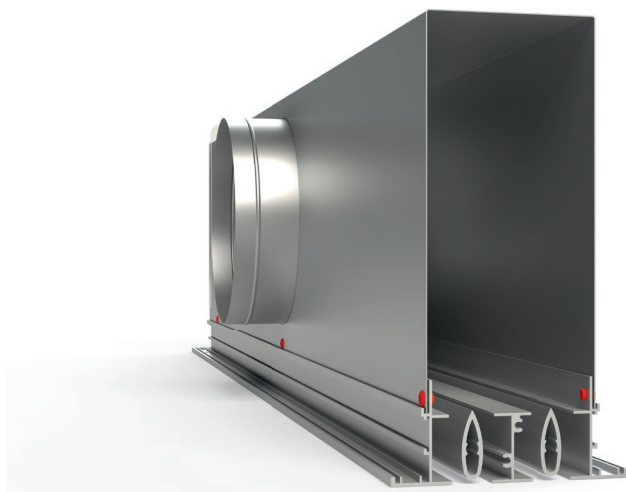


CM.BF.PC

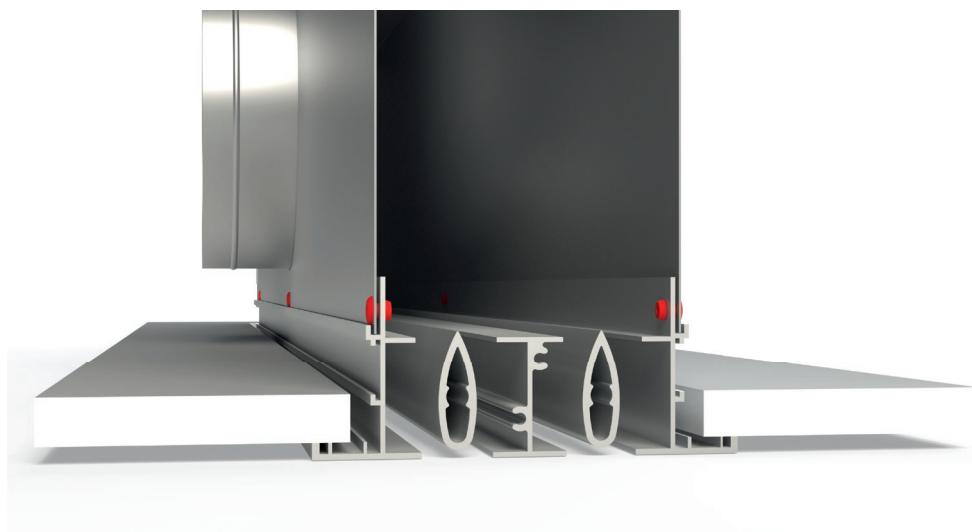


PL.BF INSTALLATION

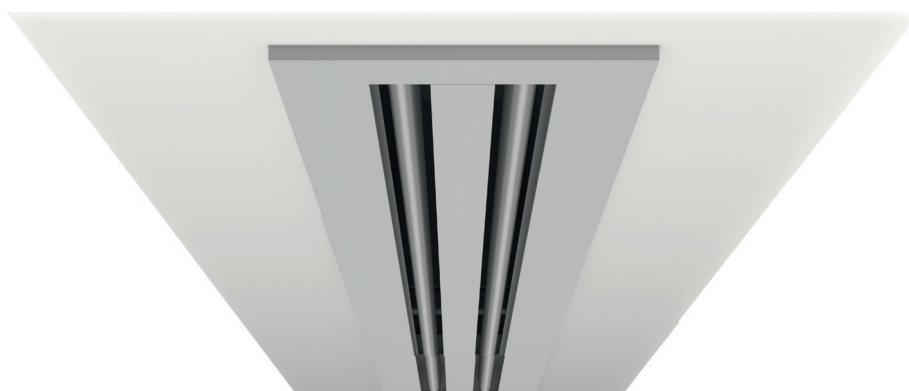
Riveted PL.BF on the diffuser



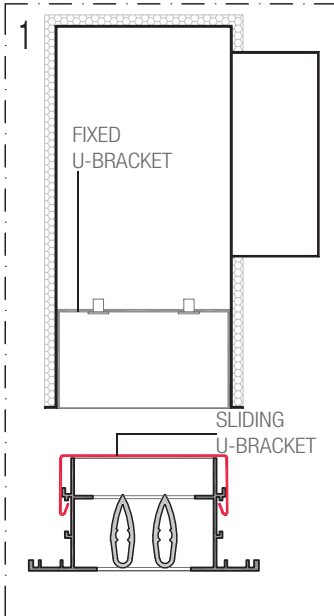
Positioning



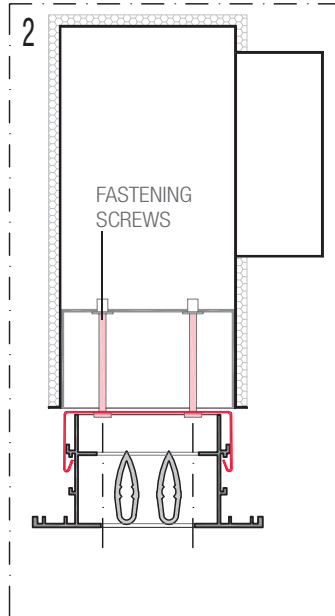
Final result



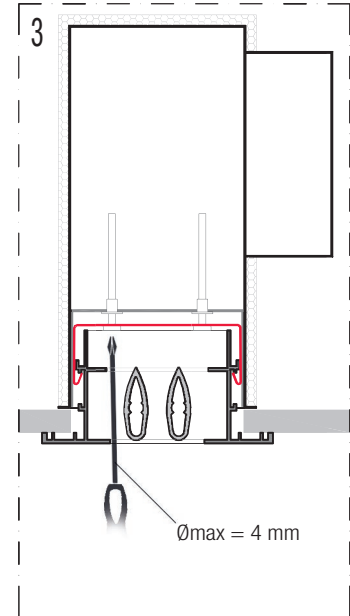
PL.BF.PE INSTALLATION



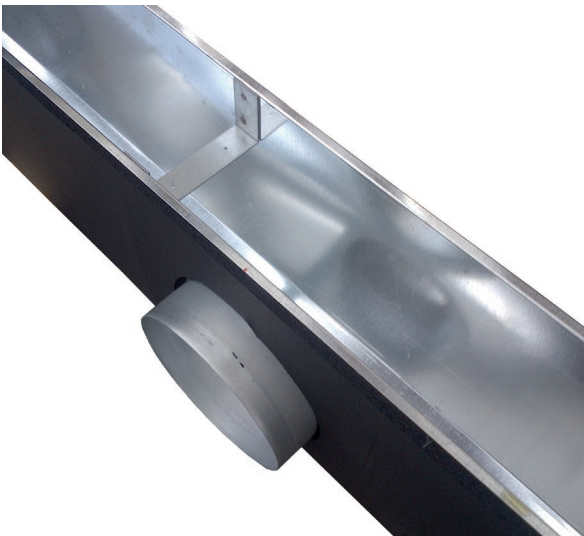
Lock the PLENUM BOX in its place.



Join the linear diffuser by inserting the fastening screws (M4x80) between the SLIDING U-BRACKET and the FIXED U-BRACKET



Tighten the FASTENING SCREWS till the diffuser frame is flush with the plasterboard panels.



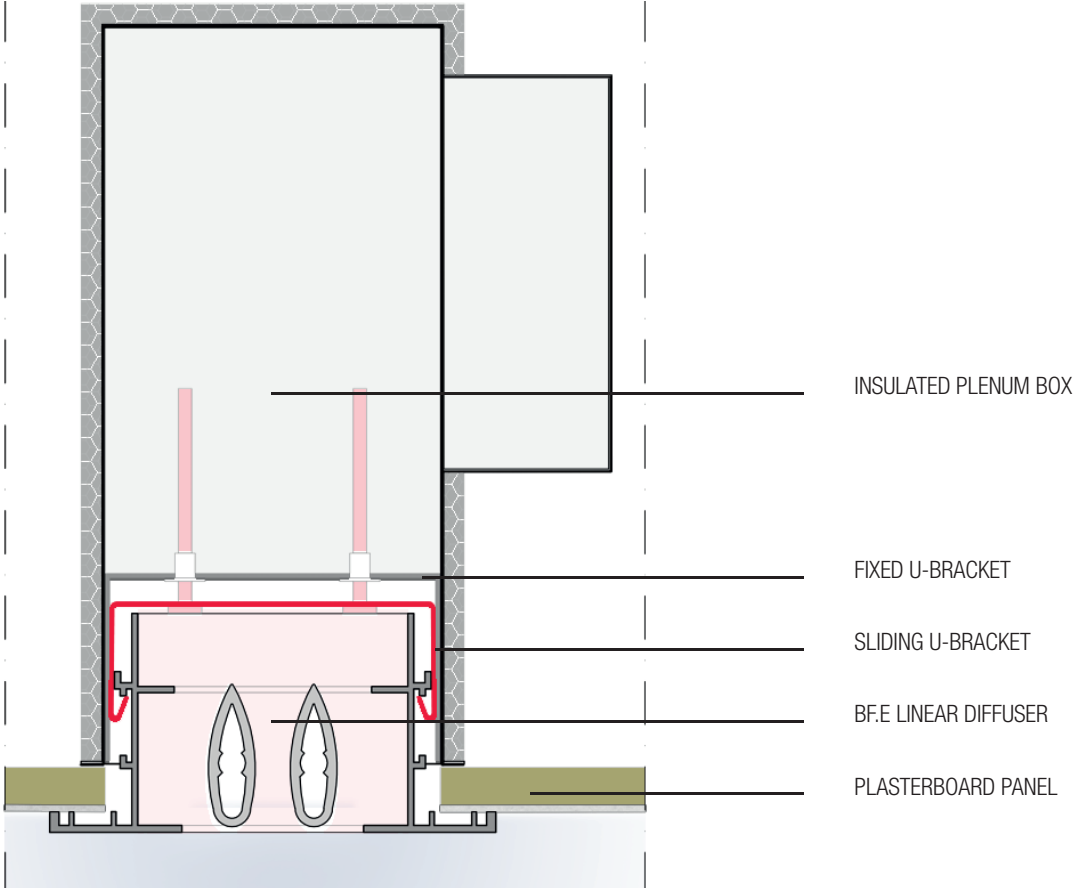
PLENUM BOX with built-in fixed U-BRACKETS.



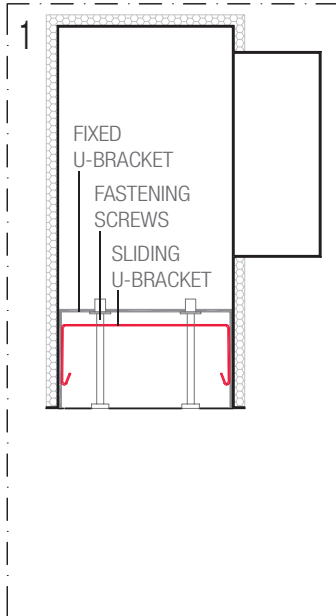
Diffuser with built-in SLIDING U-BRACKETS.

LINEAR DIFFUSERS

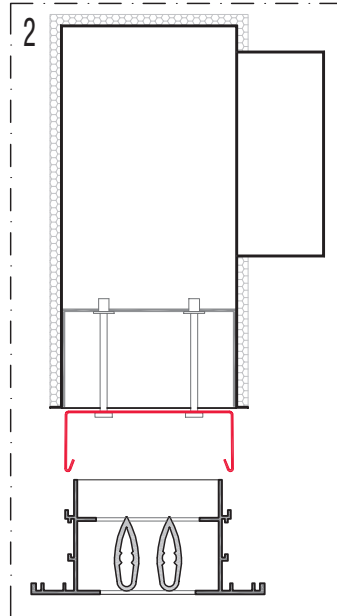
BF.E



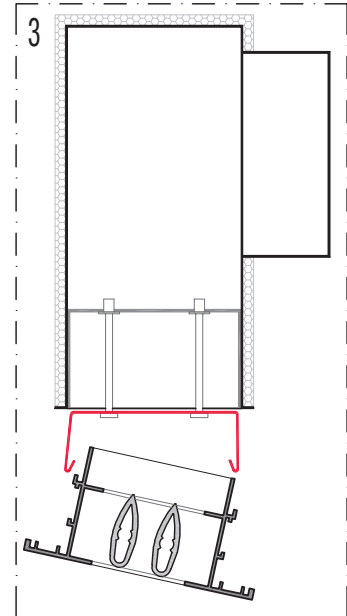
PL.BF.PC INSTALLATION



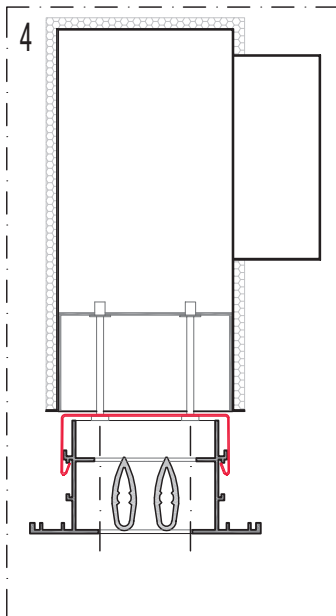
Lock the PLENUM BOX in its place.



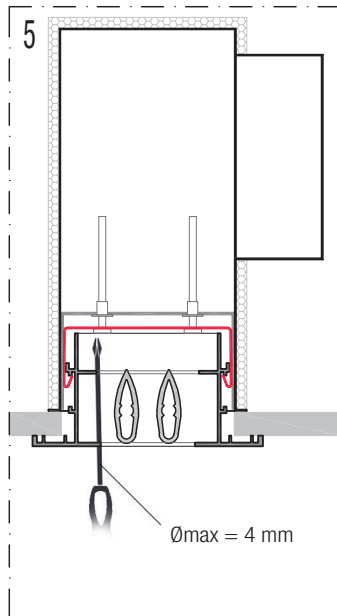
Slide the U-BRACKETS through the fastening screws, passing over the outer perimeter flange of the PLENUM BOX.



Slightly bend the U-BRACKET edges in order to hook the LINEAR DIFFUSER.

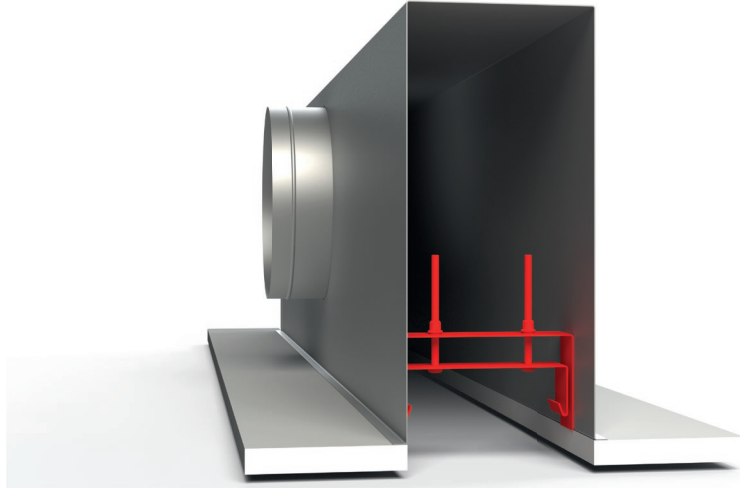


Hook both the LINEAR DIFFUSER edges by fitting the hooks into the specific housing of the U-Bracket profile.

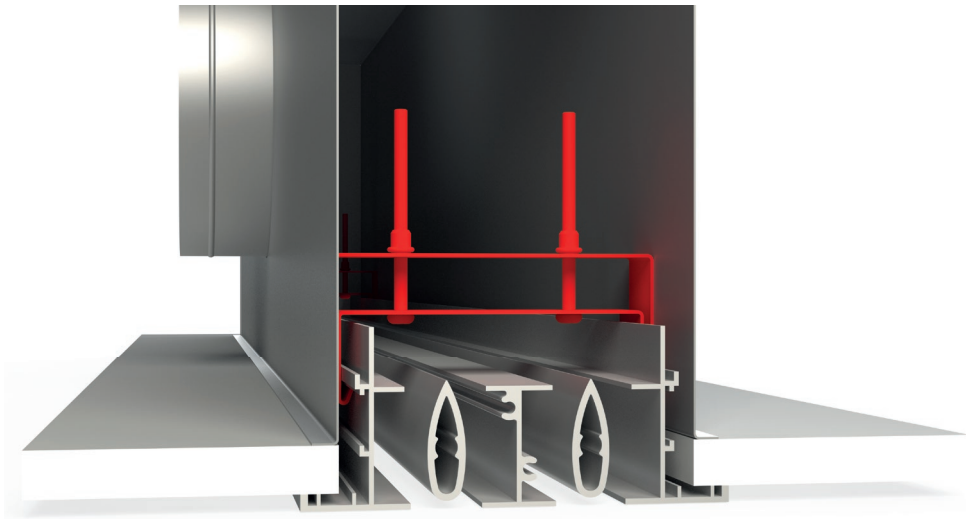


Tighten the FASTENING SCREWS till the diffuser frame is flush with the plasterboard panels.

Plenum positioning



Diffuser installation through screws



Final result

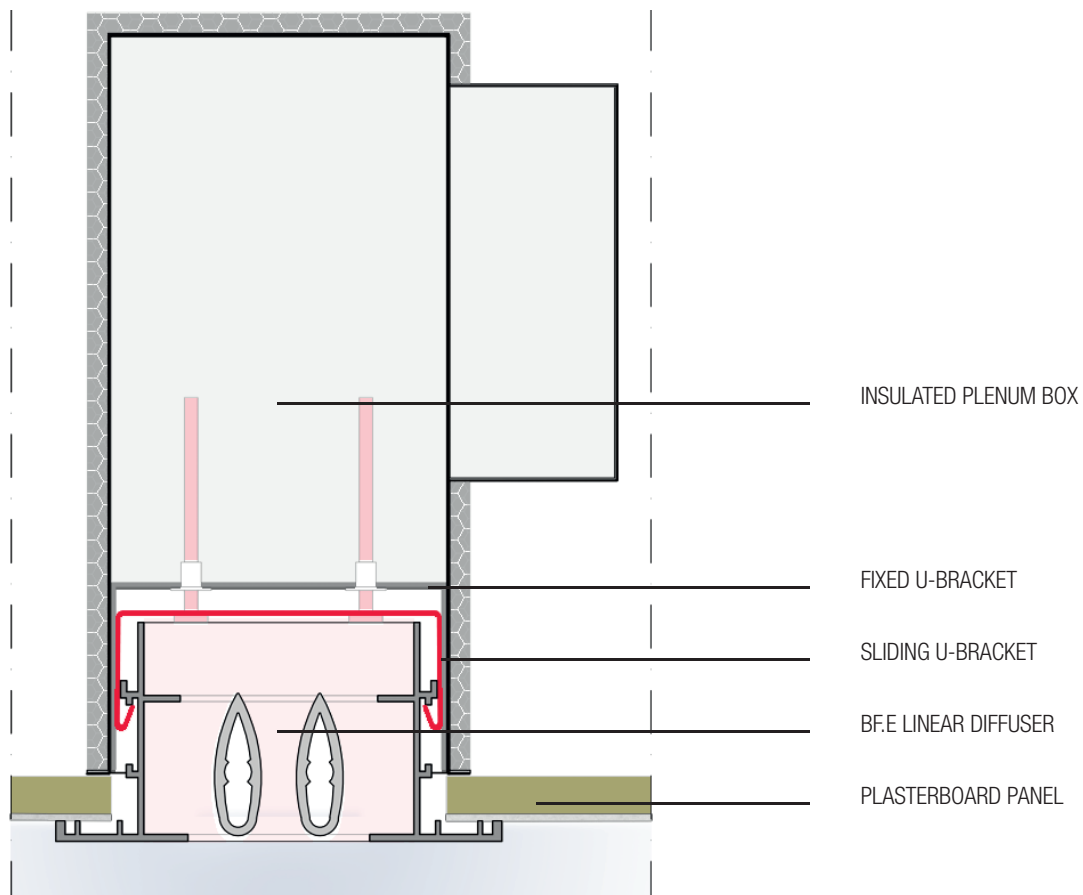




Sliding U-BRACKETS in optimal position during the PLENUM BOX installation.



Sliding U-BRACKETS in optimal position during the LINEAR DIFFUSER installation.



TECNICAL DATA

Quick selection table

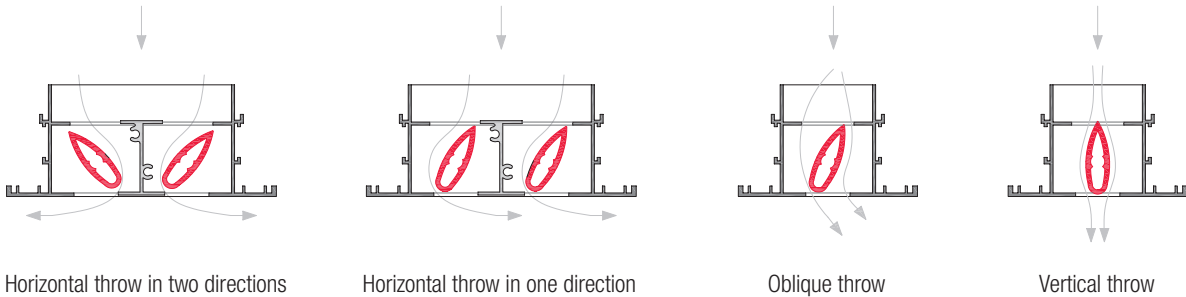
type	L	Qmin		Qmax		LWAmin	LWAmx	Δp_{min}	Δp_{max}
	mm	l/s	m ³ /h	l/s	m ³ /h	dB(A)	dB(A)	Pa	Pa
BFE.1	1.000	11,7	42	50,0	180	<20	45	5	78
BFE.2	1.000	23,6	85	83,3	300	<20	44	5	55
BFE.3	1.000	34,7	125	138,9	500	<20	46	3	90
BFE.4	1.000	47,2	170	166,7	600	<20	47	6	45

Q air flow rate per diffuser per linear metre

L_{WA} A-weighted sound power level, correction in compliance with UNI EN ISO 3741

Δp static pressure drop

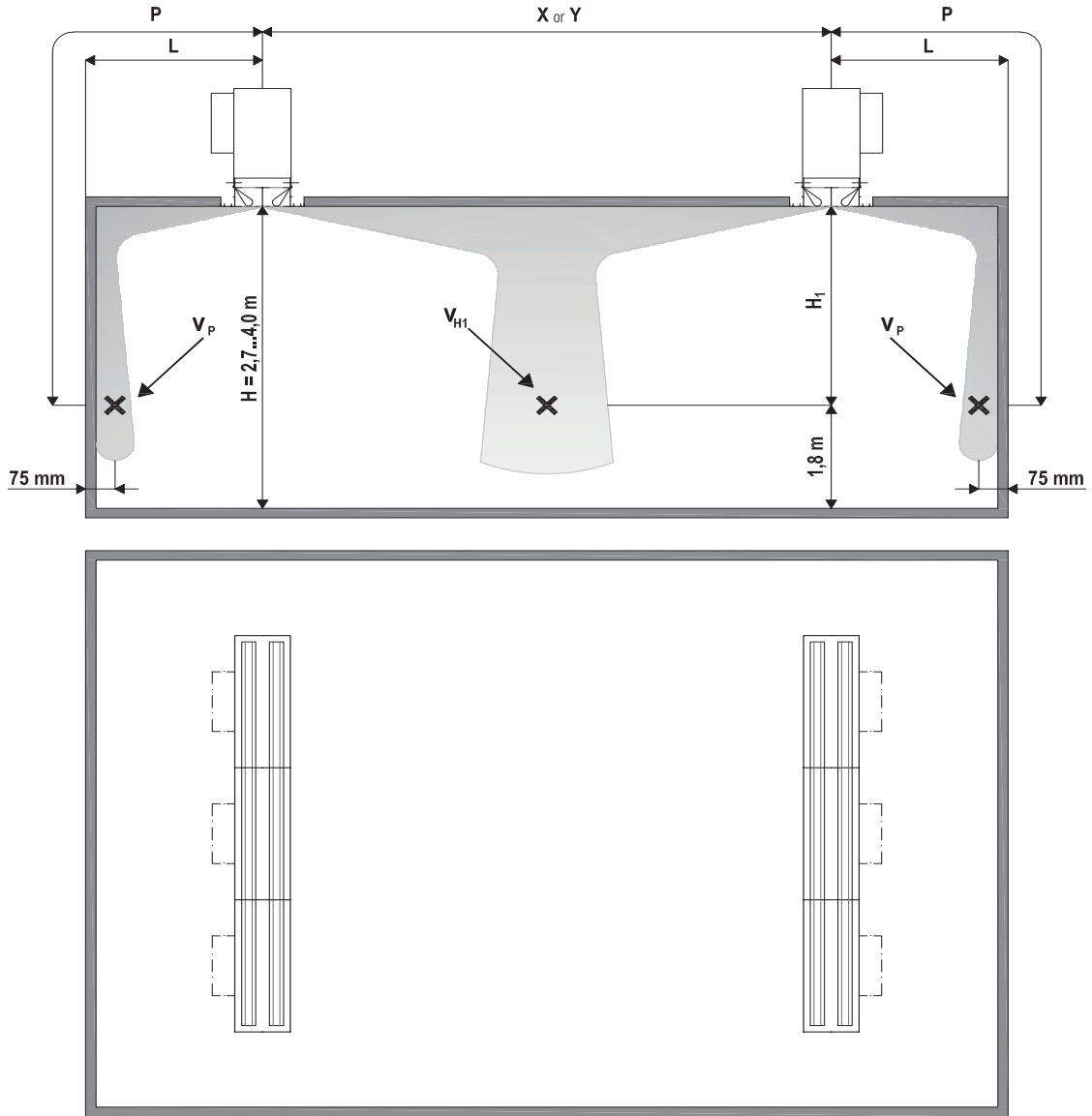
Throw direction



AERAUIC - ACOUSTIC CHARACTERISTICS

The aeraulic characteristics were measured in our test room, varying the flow rate, the distance between two contiguous rows of diffusers, the distance from the wall and the position of the measuring point. The average speed of the air that can be obtained from the diagrams is intended as the average speed at a height of 1.8 m from the floor for a certain flow rate, for a certain distance between the diffusers and for a certain position of the measuring point or for a from the wall of 75 mm. The acoustic data relating to the generated sound level were measured in the reverberation room of the Giordano Institute, test report 205710 dated 16.12.2005.

Technical data ($\Delta T = 10^\circ C$)



- Q flow rate per linear metre diffuser
- X or Y distance between two diffusers
- P horizontal distance L + vertical H_1 for throw towards the wall
- L distance between the center of the diffuser and the wall
- H_1 distance between ceiling and living area
- V_{H1} average velocity between two diffusers at distance H_1
- v_p average velocity at 75 mm from the wall at distance P

Free area of passage A_{eff} in m^2 per $L = 1000mm$

Type	Throw from ceiling		
	Horizontal	Oblique	Vertical
B.F.E (per slot)	0,007	0,010	0,011

AEREAULIC DATA - Pressure drop - Power sound level

Chart 1: BF.1.E

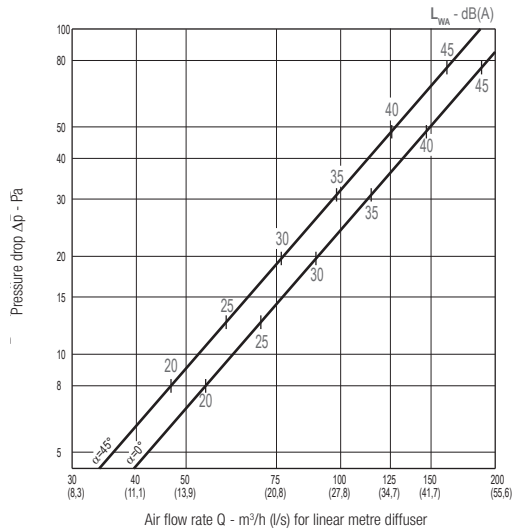


Chart 2: BF.2.E

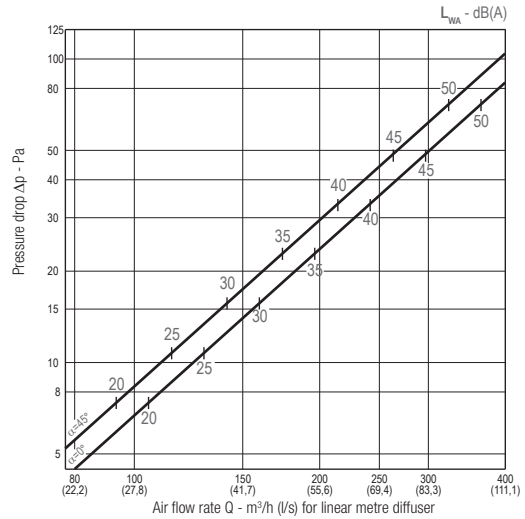
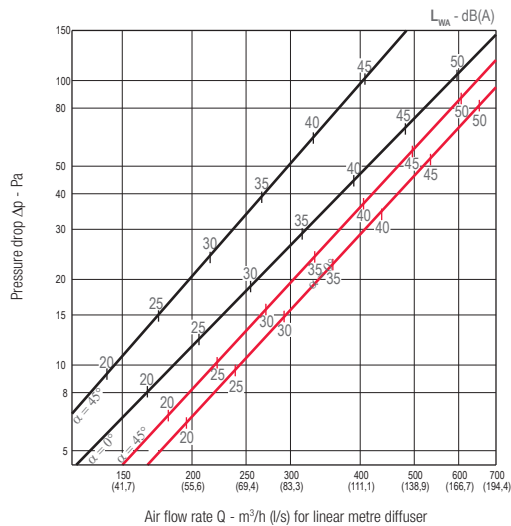


Chart 3: BF.3.E - BF.4.E

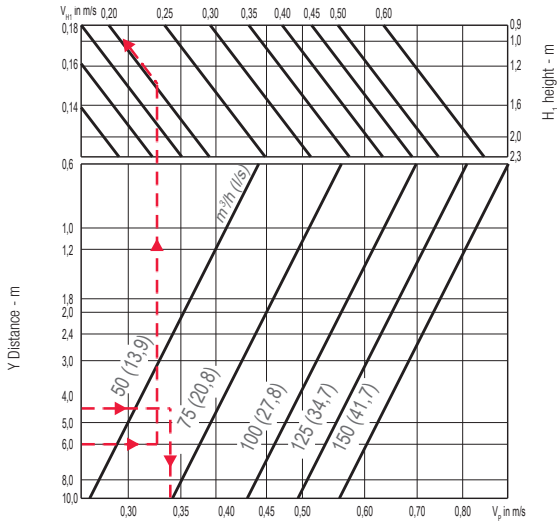


Correction for chart 1 - 2 - 3

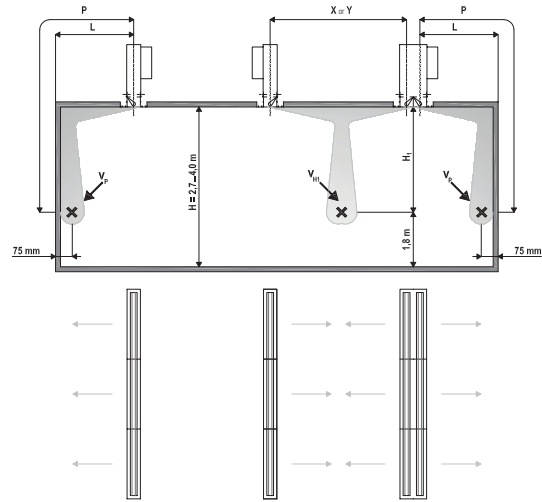
Parameter	Throw					
	Horizontal with damper		Oblique with damper		Vertical with damper	
	0°	45°	0°	45°	0°	45°
Δp	-	-	x 0,85	x 1,25	x 0,8	x 1,2
L_{WA}	-	-	-2	+1	-1	+2

AERAILIC DATA - Horizontal throw from the ceiling on one or two sides

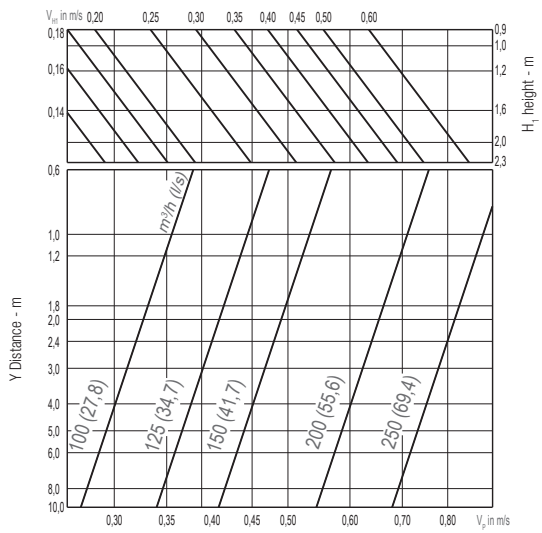
BF.1.E



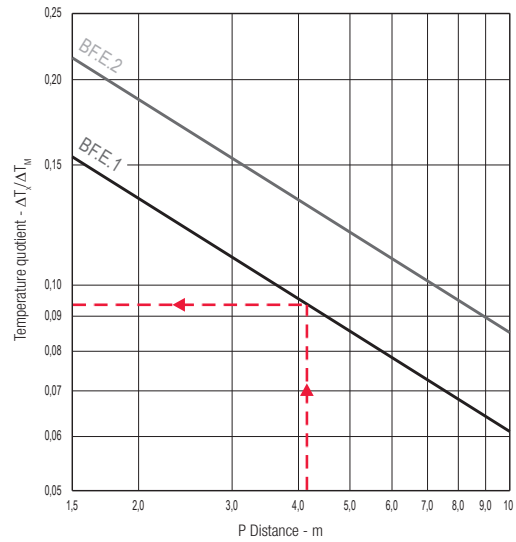
Throw type



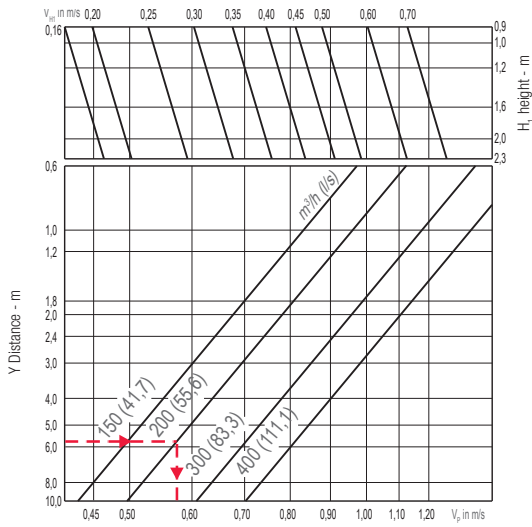
BF.2.E



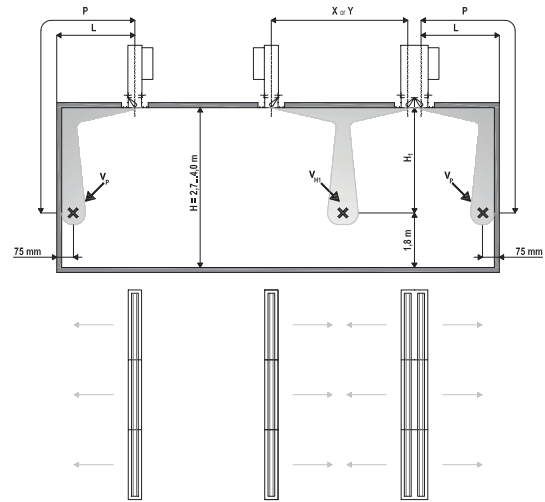
Temperature quotient



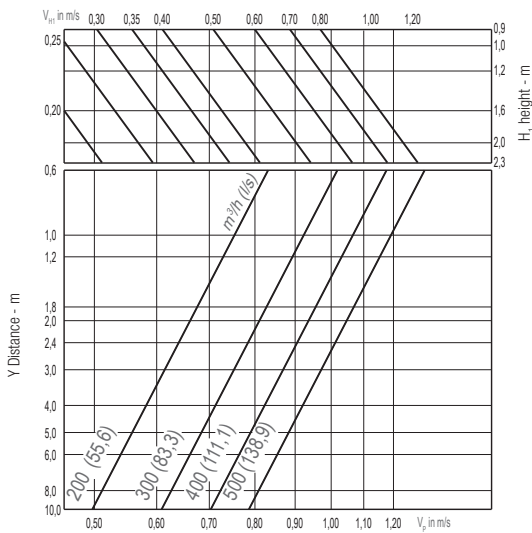
BF.3.E



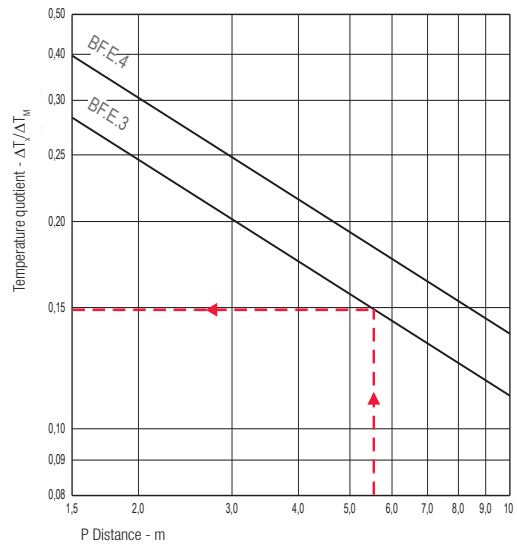
Throw type



BF.4.E

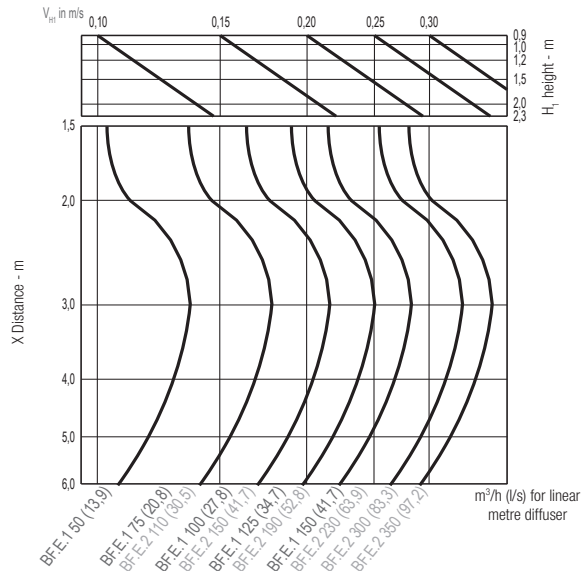


Temperature quotient

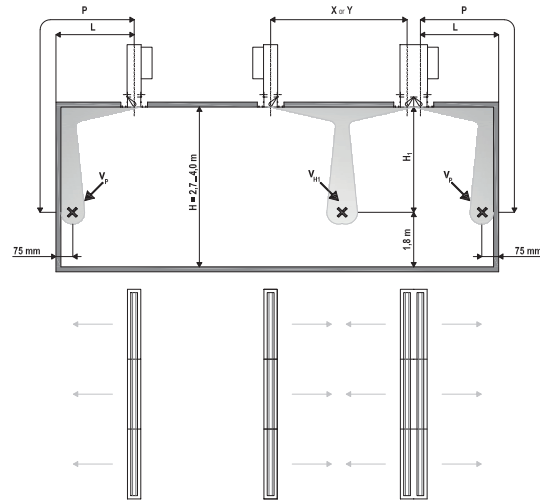


AEREAULIC DATA - Alternate horizontal throw

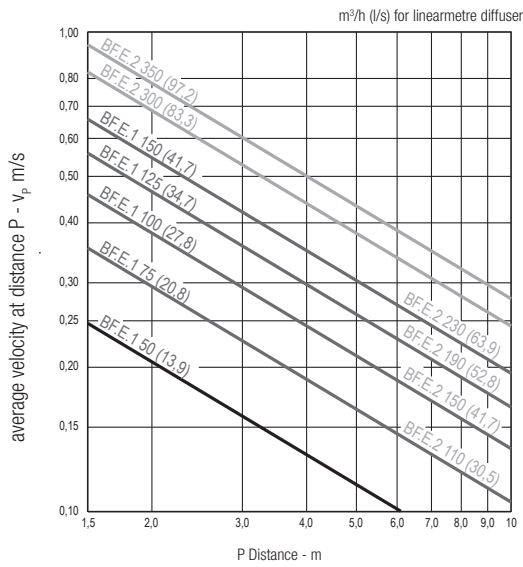
B.F.E.1 - B.F.E.2



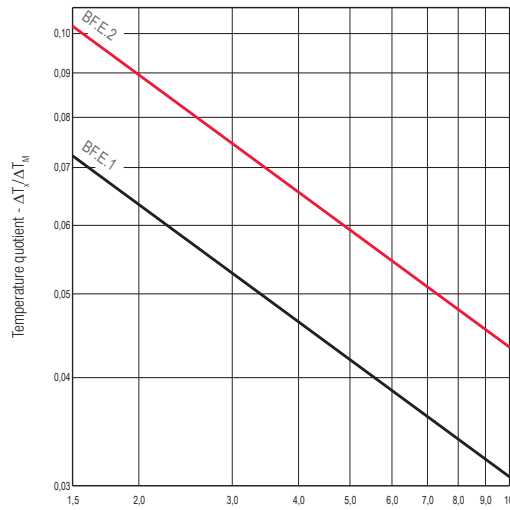
Throw type



B.F.E.1 - B.F.E.2

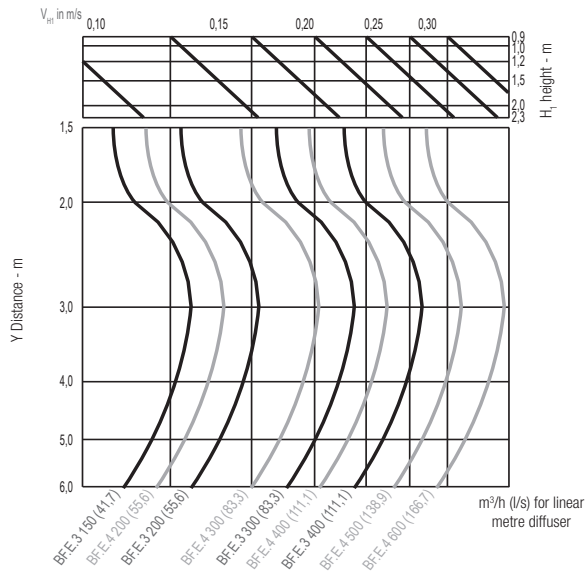


Temperature quotient

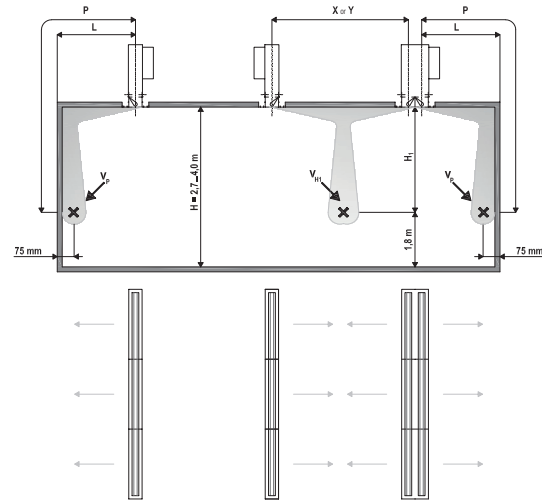


AERAILIC DATA - Alternate horizontal throw

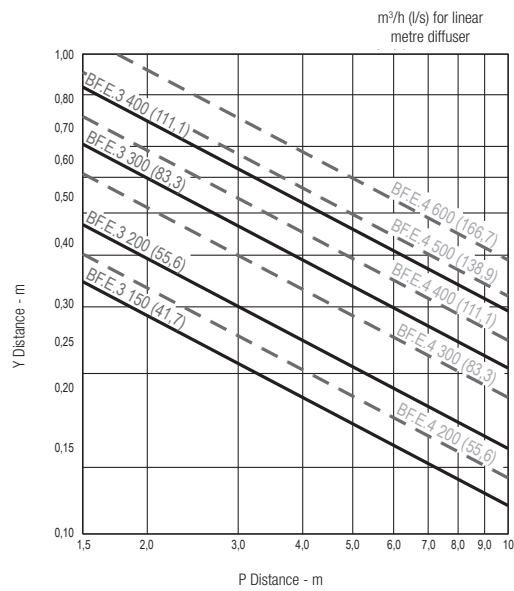
B.F.E.3 - B.F.E.4



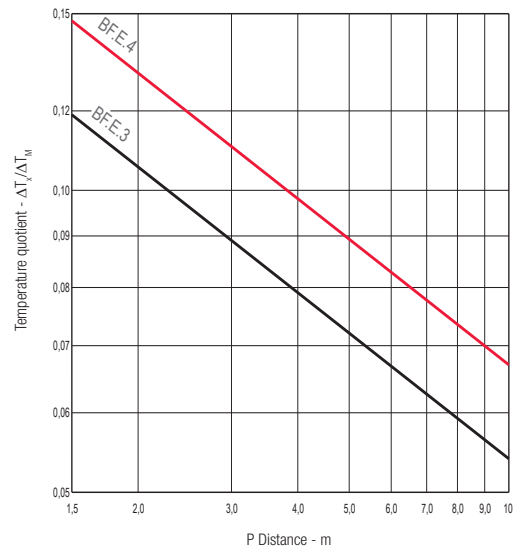
Throw type



B.F.E.3 - B.F.E.4

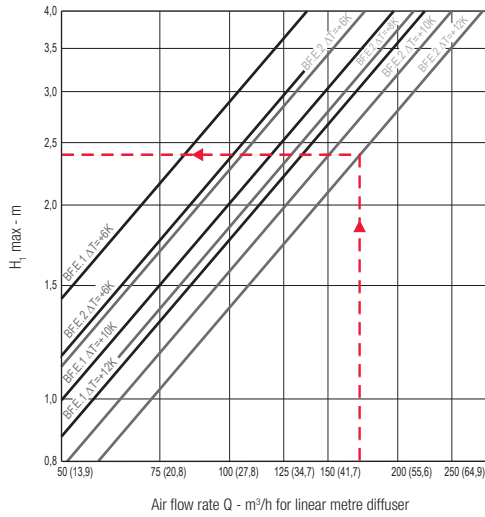


Temperature quotient

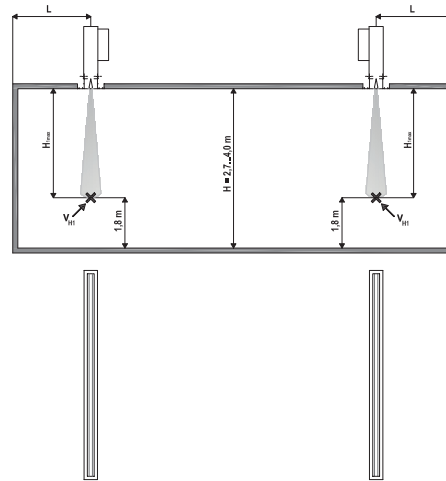


AERAUIC DATA - Vertical throw

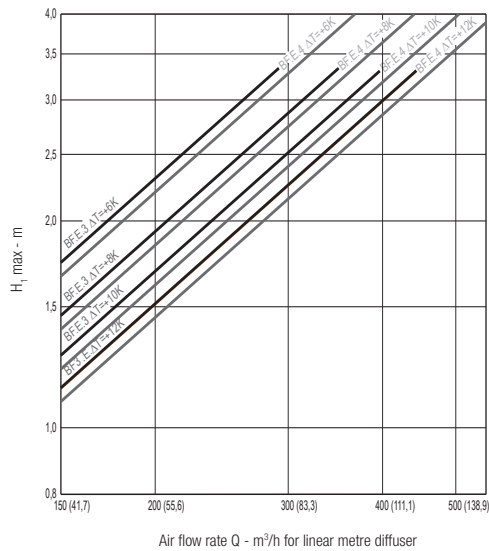
BF.1.E - BF.2.E



Throw type



BF.3.E - BF.4.E



Example

Data:

- 2 slots diffuser, 270m³/h
 - lenght 1700mm
 - Δt = +11 K
- Find the maximal depth of the air flow

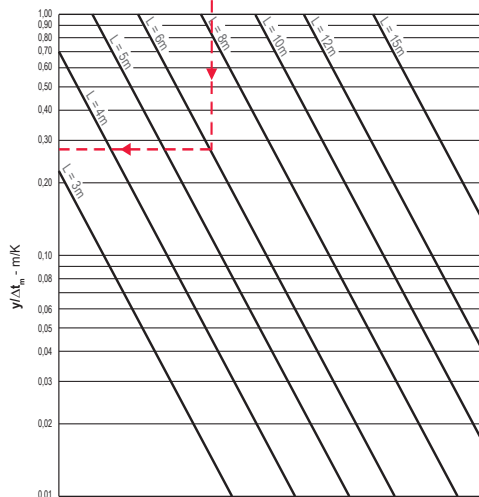
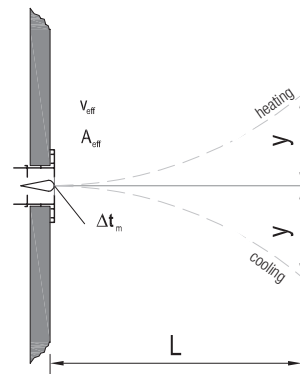
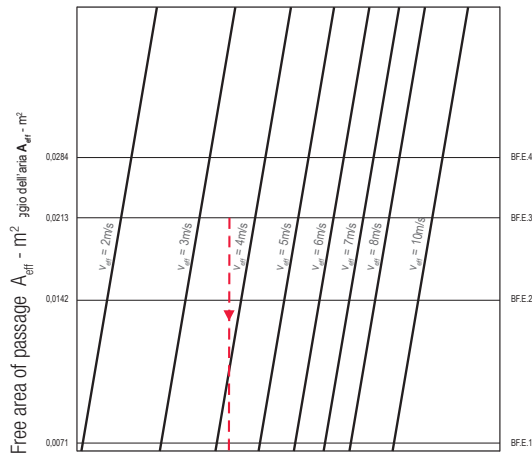
Solution:

- linear metre flow rate
270/1,7 = 158,8 m³/h
- maximal depth of the air flow = 2,4m

AERAUIC DATA - Throw from wall - Throw deviation

Throw deviation depending on Δt

Throw type



Example

Data

- 3 slots diffuser, 580 m³/h
- lenght: 2150 mm
- $\Delta t = - 8 \text{ K}$

Find the throw deviation at distance $L = 6 \text{ m}$

Solution:

- linear metre flow rate
 $580/2,15 = 269,7 \text{ m}^3/\text{h}$
- $v_{\text{eff}} = Q/A_{\text{eff}} =$
 $= 269,7/(0,0071 \times 3 \times 3600) = 3,52 \text{ m/s}$
- $y/Dt_m = 0,285$
 $y = 0,285 \times 8 = 2,12 \text{ m}$

TEXT FOR TECHNICAL SPECIFICATION

Linear diffusers with one or more slots, made of anodized aluminum profiles powder coated in white, RAL 90016, or black, RAL 9005, possibly paintable in other shades of the RAL scale, teardrop deflectors with aerodynamic profile, adjustable from the front, with or without a series of accessories such as: plenum box with or without external thermal insulation in CE polyethylene foam (Euroclass fire reaction according to UNI EN 13501-1:2009 B-s2, d0), damper, equalizer plate. Option of having continuous lines by assembling modules without closing frames. Flexible installation depending on the plenum box for lateral or front assembly. Suitable for supply or return and, on request, with both supply and return in one double chamber plenum box.

