



# Installation and maintenance instructions

Arcalam Electrical Evolution

**Designation and commercial reference:** Arcalam Evolution Electric

**Certificate No.** : 0333 CPR 219 056

**DOP No .:** ALE

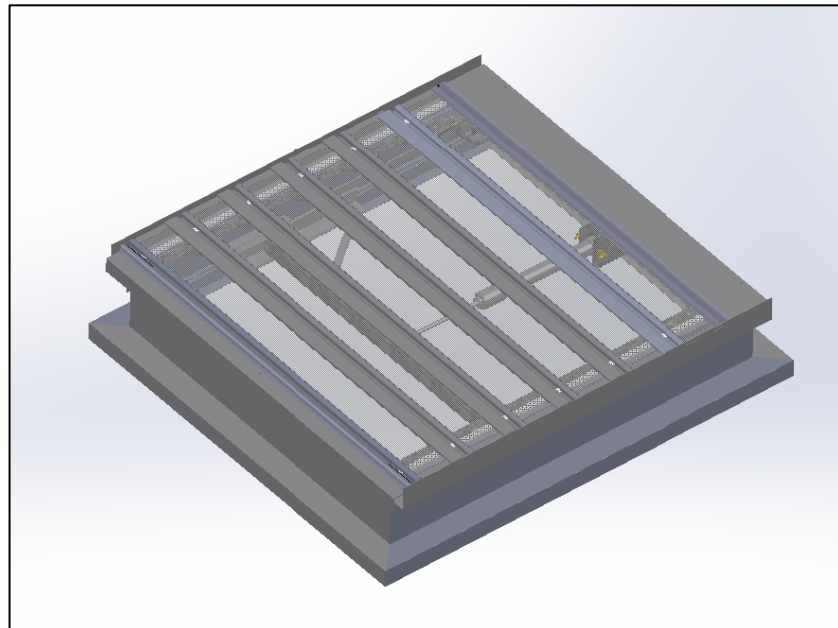
**Year of certificate:** 2008

**Reference standard:** NF EN 12010-2 / NF S 61-937-1 / NF S 61-937-7 / NF S 61-937-8

**Certification Number:** CE 219 / NF 537

**Warning:**

This notice cannot constitute a contractual document; the manufacturer reserves the right to make without notice any modification he deems useful.



**Certifying body:**

**AFNOR Certification**

11, rue Francis de Pressensé  
F-93571 La Plaine Saint Denis Cedex  
Phone : +33(0)1.41 62 80 00  
Fax: +33(0)1 49 17 90 00

Websites: [www.afnor.org](http://www.afnor.org) and [www.marque-nf.com](http://www.marque-nf.com)

Email: [certification@afnor.org](mailto:certification@afnor.org)



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### 1 Identification

#### 1.1 Type of DENFC (Natural Smoke and Heat Evacuation System)

DENFC mounted on the roof.

#### 1.2 Type of range

Smoke extraction slide opening blade range ARCALAM EVOLUTION ELECTRIC

#### 1.3 Type of energy

DENFC powered by internal and/or external ELECTRIC energy within the meaning of standard NF EN 12101-2.

The availability of the energy source must be ensured.

#### 1.4 Possible variants in the range

- Upstand:
  - Right costière
  - Enhances
- Fills:
  - 10 mm thick cellular polycarbonate
  - Aluminium profiles
  - Laminated glass 33.2
- Options:
  - Position switch

### 2 Characteristics

#### 2.1 2.1 General characteristics of Operated Safety Devices (SARs)

- A D.A.S. must not issue an order
- Devices for checking the safety and/or waiting positions of the D.A.S.
- Unblocking energy external to the D.A.S.
- Functional independence of the self-control and remote control
- No remote reset if passing in safety position by self-control
- Rearmament by remote control only if the energy to the previous rearmament has been interrupted
- End-of-life damping
- Type B or type A if height of the component to be handled less than or equal to 2.50 m from the ground

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### 2.2 General characteristics of constituents

- Control of the positions of the D.A.S.
- Class III for electrical equipment operating under very low safety voltage (TBTS)
- Isolation of electrical circuits in TBTS and electrical circuits of other equipment
- Minimum protection class IP 42
- Presence of the main connecting device
- Specific TBTS connection device
- Operation of the traction stop device
- Minimum electrical characteristics of position contacts
- Independence of control electrical circuits with other circuits

### 3 **Precautions on the support**

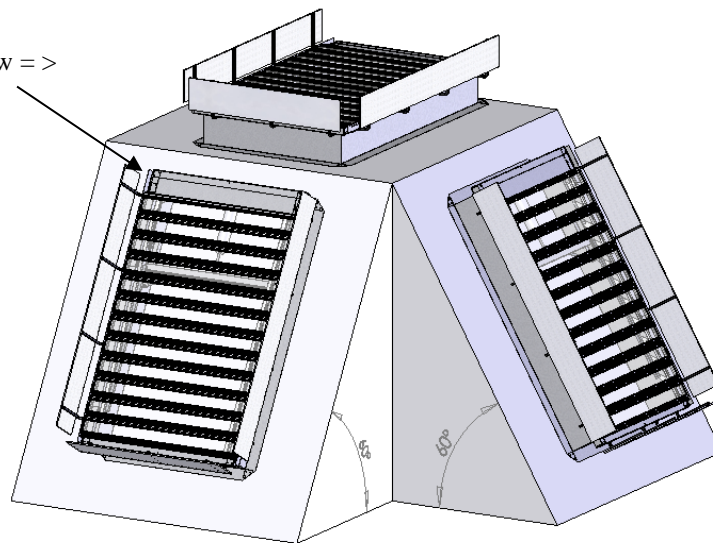
3.1 The support receiving the DENFC must be flat, within the normative tolerances of building construction.

3.2 The installation of the DENFC is carried out according to the following rule :

**Rule:** *The roof slope must be between 3° and 60° maximum (i.e. 173.2%) regardless of the position of the axis of articulation. However, when the axis of articulation is perpendicular to the slope, the cylinder must be positioned at the top of the slope.*

Mini 3°:

Horizontal plane yew =>  
inclined Curb



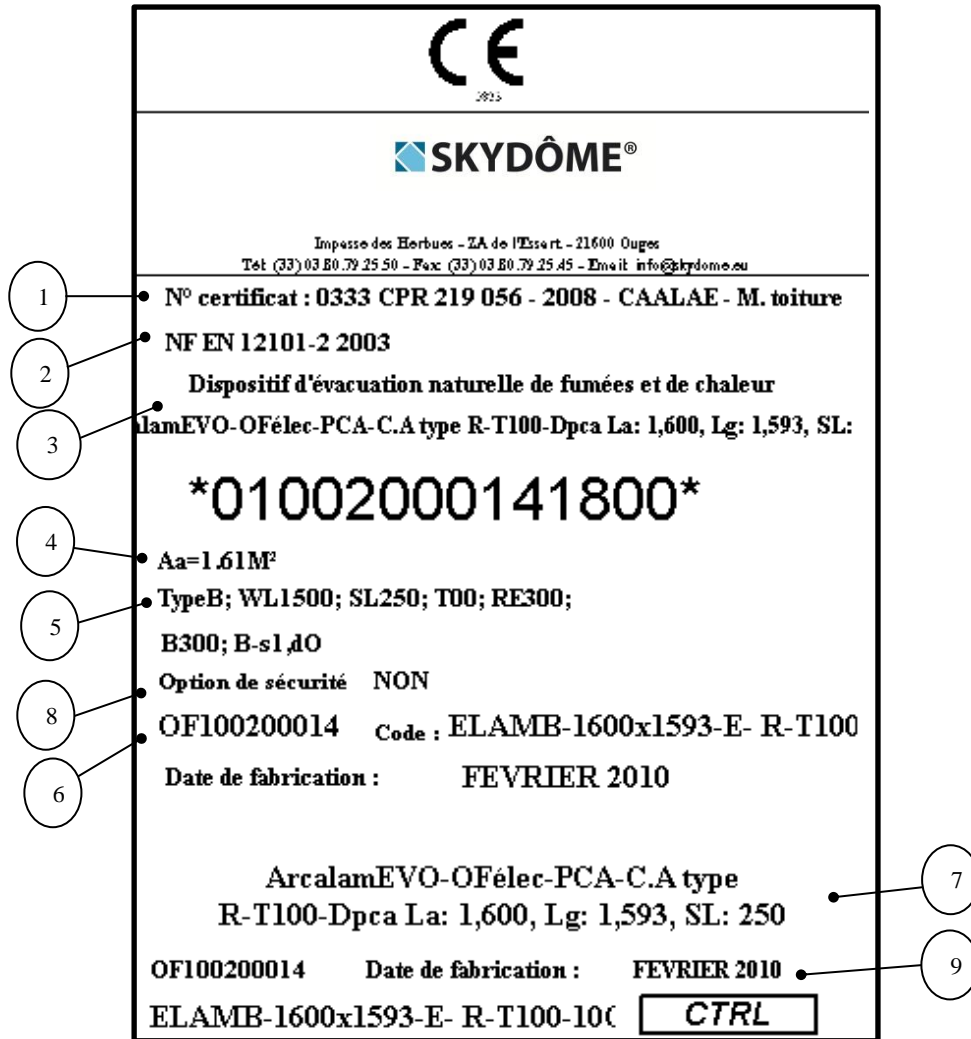
Maximum slope of 60°  
Cylinder at the top

***Warning: the device must be installed according to the standards, technical instructions, and any rules or texts in force.***

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4 Explanation of the product marking code



- ① Number of certificate, date of receipt, D.O.P. number and type of assembly
- ② Reference standard in effect.
- ③ Trade description of the device.
- ④ Useful opening surface (Aa).
- ⑤ Respectively:
  - Type of opening of the natural smoke and heat evacuation device.
  - Classification of wind load.
  - Classification of snow load.
  - Ambient temperature classification.
  - Reliability classification.
  - Heat resistance classification.
  - Reaction to fire classification of the materials constituting the DENFC, according to the European standard in force.

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- ⑥ Manufacturing order number.
- ⑦ Item code (for device traceability).
- ⑧ Description of security options:  
Trigger temperature for the hot melt option, presence or absence of a position contactor.
- ⑨ Date of manufacture of the device.

## 5 The range

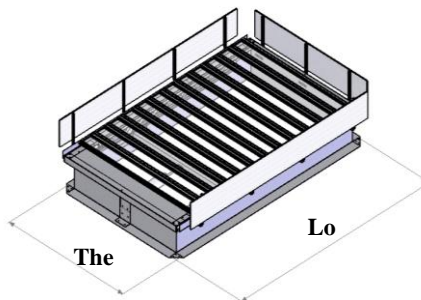
The input characteristics of the device are available on the CE marking label on the inside front of the costière.

The dimensions of the upstand hopper vary from:

- 1107 mm to 3051 mm in length
- 1000 mm to 2200 mm in width

Hopper Dimension			
Width "The" (in mm)		Length "Lo" (in mm)	
≥ 1000	≤ 2200	≥ 1107	≤ 3051

"Lo" is the length of the device  
 "The" is the width of the device.



The range is able to open the ARCALAM EVOLUTION ELECTRIC despite the presence of an unfavorable wind of 10 m/s and an overload of: 25 kg/m<sup>2</sup> or 50 kg/m<sup>2</sup>.

Below is the table summarizing the power consumption according to the dimensions of your device, its filling and the snow load (SLxxx).

Cylinder	VERIN	
TREMIE	INTENSITE (A)	VOLTAGE (v)
Range	0.8 to 4.1	24

- **For PCA10 filling**

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Permissible overload kg/m <sup>2</sup>													
Width	1000	1100	1200	13 00	1400	15 00	16 00	17 00	18 00	19 00	20 00	21 00	22 00
Length													
1107	50	50	50	50	50	50	50	50	50	50	50	50	50
1269	50	50	50	50	50	50	50	50	50	50	50	50	50
1431	50	50	50	50	50	50	50	50	50	50	50	50	50
1593	50	50	50	50	50	50	50	50	50	50	50	50	50
1755	50	50	50	50	50	50	50	50	50	50	50	50	50
1917	50	50	50	50	50	50	50	50	50	50	50	50	25
2079	50	50	50	50	50	50	50	50	50	50	25	25	25
2241	50	50	50	50	50	50	50	50	25	25	25	25	25
2403	50	50	50	50	50	50	50	25	25	25	25	25	25
2565	50	50	50	50	50	50	25	25	25	25	25	25	25
2727	50	50	50	50	50	25	25	25	25	25	25	25	25
2889	50	50	50	50	25	25	25	25	25	25	25	25	25
3051	50	50	50	25	25	25	25	25	25	25	25	25	25

The amperage of the cylinder as a function of the size of the device and the overload, see table below.

Table of consumption in amperes for an overload of 25 kg/m <sup>2</sup>													
Width	1000	1100	1200	13 00	1400	15 00	16 00	17 00	18 00	19 00	20 00	21 00	22 00
Length													
1107	0,45	0,45	0,45	0,45	0,45	0,45	0,45	0,45	0,45	0,45	0,45	0,45	0,45
1269	0,45	0,45	0,45	0,45	0,45	0,45	0,45	0,45	0,45	0,45	0,45	0,45	0,45
1431	0,45	0,45	0,45	0,45	0,45	0,45	0,45	0,45	0,45	0,45	0,45	0,45	0,45
1593	0,45	0,45	0,45	0,45	0,45	0,45	0,45	0,45	0,45	0,45	0,45	0,45	0,45
1755	0,45	0,45	0,45	0,45	0,45	0,45	0,45	0,45	0,45	0,45	0,45	0,45	1
1917	0,45	0,45	0,45	0,45	0,45	0,45	0,45	0,45	0,45	0,45	1	1	1
2079	0,45	0,45	0,45	0,45	0,45	0,45	0,45	0,45	0,45	1	1	1,1	1,2
2241	0,45	0,45	0,45	0,45	0,45	0,45	0,45	1	1	1	1,1	1,2	1,3
2403	0,45	0,45	0,45	0,45	0,45	0,45	1	1	1,1	1,2	1,3	1,4	1,6
2565	0,45	0,45	0,45	0,45	0,45	1	1	1,1	1,2	1,3	1,4	1,6	1,6
2727	0,45	0,45	0,45	0,45	1	1	1,1	1,2	1,3	1,4	1,6	1,7	1,8
2889	0,45	0,45	0,45	1	1	1,1	1,2	1,3	1,6	1,6	1,7	1,8	1,9
3051	0,45	0,45	1	1	1,1	1,2	1,3	1,6	1,6	1,7	1,8	1,9	2

## Installation and maintenance instructions

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Table consumption in amperes for an overload of 50 kg/m <sup>2</sup>													
Width	1000	1100	1200	13 00	1400	15 00	16 00	17 00	18 00	19 00	20 00	21 00	22 00
Length													
1107	0,45	0,45	0,45	0,45	0,45	0,45	0,45	0,45	0,45	0,45	0,45	0,45	1,00
1269	0,45	0,45	0,45	0,45	0,45	0,45	0,45	0,45	0,45	1	1	1,1	1,1
1431	0,45	0,45	0,45	0,45	0,45	0,45	0,45	1	1	1,1	1,2	1,3	1,4
1593	0,45	0,45	0,45	0,45	0,45	1	1	1,1	1,2	1,3	1,4	1,6	1,6
1755	0,45	0,45	0,45	1	1	1,1	1,2	1,3	1,4	1,6	1,7	1,8	1,9
1917	0,45	0,45	1	1	1,1	1,3	1,4	1,6	1,6	1,8	1,9	2	
2079	0,45	1	1,1	1,2	1,3	1,6	1,6	1,7	1,8	2			
2241	1	1,1	1,2	1,3	1,6	1,6	1,8	1,9					
2403	1	1,2	1,3	1,6	1,6	1,8	2						
2565	1,1	1,3	1,6	1,6	1,8	2							
2727	1,3	1,4	1,6	1,8	2								
2889	1,4	1,6	1,8	1,9									
3051	1,6	1,7	1,9										

- For opaque cover filling

Permissible overload kg/m <sup>2</sup>													
Width	1000	1100	1200	13 00	1400	15 00	16 00	17 00	18 00	19 00	20 00	21 00	22 00
Length													
1107	50	50	50	50	50	50	50	50	50	50	50	50	50
1269	50	50	50	50	50	50	50	50	50	50	50	50	50
1431	50	50	50	50	50	50	50	50	50	50	50	50	50
1593	50	50	50	50	50	50	50	50	50	50	50	50	50
1755	50	50	50	50	50	50	50	50	50	50	50	50	50
1917	50	50	50	50	50	50	50	50	50	50	50	50	25
2079	50	50	50	50	50	50	50	50	50	50	25	25	25
2241	50	50	50	50	50	50	50	50	25	25	25	25	25
2403	50	50	50	50	50	50	50	25	25	25	25	25	25
2565	50	50	50	50	50	50	25	25	25	25	25	25	25
2727	50	50	50	50	50	25	25	25	25	25	25	25	25
2889	50	50	50	50	25	25	25	25	25	25	25	25	
3051	50	50	50	25	25	25	25	25	25	25	25		





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Arcalam Electrical Evolution

The amperage of the cylinder as a function of the size of the device and the overload, see tablex below.

Table of consumption in amperes for an overload of 25 kg/m <sup>2</sup>													
Width	1000	1100	1200	13 00	1400	15 00	16 00	17 00	18 00	19 00	20 00	21 00	22 00
Length													
1107	0,45	0,45	0,45	0,45	0,45	0,5	0,45	0,45	0,45	0,45	0,45	0,5	0,45
1269	0,45	0,45	0,45	0,45	0,45	0,5	0,45	0,45	0,45	0,45	0,45	0,5	0,5
1431	0,45	0,45	0,45	0,45	0,45	0,5	0,45	0,45	0,45	0,45	0,45	0,5	0,5
1593	0,45	0,45	0,45	0,45	0,45	0,5	0,45	0,45	0,45	0,45	0,45	0,5	0,5
1755	0,45	0,45	0,45	0,45	0,45	0,5	0,45	0,45	0,45	0,45	0,45	0,5	1
1917	0,45	0,45	0,45	0,45	0,45	0,5	0,45	0,45	0,45	0,45	1	1	1,1
2079	0,45	0,45	0,45	0,45	0,45	0,5	0,45	0,45	1	1	1,1	1,1	1,2
2241	0,45	0,45	0,45	0,45	0,45	0,5	0,45	1	1	1,1	1,2	1,3	1,4
2403	0,45	0,45	0,45	0,45	0,45	0,5	1	1	1,1	1,2	1,3	1,4	1,6
2565	0,45	0,45	0,45	0,45	1	1	1,1	1,2	1,3	1,4	1,6	1,6	1,7
2727	0,45	0,45	0,45	0,45	1	1,1	1,2	1,3	1,4	1,6	1,6	1,7	1,8
2889	0,45	0,45	0,45	1	1,1	1,2	1,3	1,4	1,6	1,6	1,8	1,9	
3051	0,45	0,45	1	1	1,1	1,3	1,4	1,6	1,6	1,8	1,9		

Table consumption in amperes for an overload of 50 kg/m <sup>2</sup>													
Width	1000	1100	1200	13 00	1400	15 00	16 00	17 00	18 00	19 00	20 00	21 00	22 00
Length													
1107	0,45	0,45	0,45	0,45	0,45	0,45	0,45	0,45	0,45	0,45	0,45	0,45	1,00
1269	0,45	0,45	0,45	0,45	0,45	0,45	0,45	0,45	0,45	1	1	1,1	1,1
1431	0,45	0,45	0,45	0,45	0,45	0,45	1	1	1,1	1,1	1,2	1,3	1,4
1593	0,45	0,45	0,45	0,45	1	1	1,1	1,2	1,3	1,4	1,6	1,6	1,7
1755	0,45	0,45	0,45	1	1	1,1	1,3	1,4	1,6	1,6	1,7	1,8	1,9
1917	0,45	0,45	1	1,1	1,2	1,3	1,4	1,6	1,7	1,8	1,9		
2079	0,45	1	1,1	1,2	1,3	1,6	1,6	1,8	1,9	2			
2241	1	1,1	1,2	1,4	1,6	1,7	1,8	2					
2403	1,1	1,2	1,4	1,6	1,7	1,8	2						
2565	1,2	1,3	1,6	1,7	1,8	2							
2727	1,3	1,6	1,7	1,8	2								
2889	1,4	1,6	1,8	2									
3051	1,6	1,7	1,9										



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- For laminated glass filling**

Permissible overload kg/m <sup>2</sup>													
Width	1000	1100	1200	13 00	1400	15 00	16 00	17 00	18 00	19 00	20 00	21 00	22 00
Length													
1107	50	50	50	50	50	50	50	50	50	50	50	50	50
1269	50	50	50	50	50	50	50	50	50	50	50	50	50
1431	50	50	50	50	50	50	50	50	50	50	50	50	50
1593	50	50	50	50	50	50	50	50	50	50	50	50	25
1755	50	50	50	50	50	50	50	50	50	50			
1917	50	50	50	50	50	50	50	50	25				
2079	50	50	50	50	50	50	50						
2241	50	50	50	50	50	25							
2403	50	50	50	50	25								
2565	50	50	50	25									
2727	50	50	50										
2889	50	50											
3051	50	25											

The amperage of the cylinder as a function of the size of the device and the overload, see table below.

Table of consumption in amperes for an overload of 25 kg/m <sup>2</sup>													
Width	1000	1100	1200	13 00	1400	15 00	16 00	17 00	18 00	19 00	20 00	21 00	22 00
Length													
1107	0,45	0,45	0,45	0,45	0,45	0,5	0,45	0,45	0,45	0,45	0,45	0,5	0,45
1269	0,45	0,45	0,45	0,45	0,45	0,5	0,45	0,45	0,45	0,45	0,45	0,5	0,45
1431	0,45	0,45	0,45	0,45	0,45	0,5	0,45	0,45	0,45	0,45	0,45	1	1
1593	0,45	0,45	0,45	0,45	0,45	0,5	0,45	0,45	0,45	1	1	1,1	1,1
1755	0,45	0,45	0,45	0,45	0,45	0,5	0,45	1	1	1,1			
1917	0,45	0,45	0,45	0,45	0,45	1	1	1,1	1,1				
2079	0,45	0,45	0,45	0,45	1	1	1,1						
2241	0,45	0,45	0,45	1	1	1,1							
2403	0,45	0,45	1	1	1,1								
2565	0,45	1	1	1,1									
2727	0,45	1	1,1										
2889	1	1,1											
3051	1	1,2											



Consumption in amperes for an overload of 50 kg/m <sup>2</sup>													
Width	1000	1100	1200	13 00	1400	15 00	16 00	17 00	18 00	19 00	20 00	21 00	22 00
Length													
1107	0,45	0,45	0,45	0,45	0,45	0,45	0,45	0,45	0,45	1	1	1,1	1,20
1269	0,45	0,45	0,45	0,45	0,45	0,45	1	1	1,1	1,2	1,3	1,4	1,6
1431	0,45	0,45	0,45	0,45	1	1	1,1	1,2	1,3	1,4	1,6	1,7	1,8
1593	0,45	0,45	1	1	1,1	1,2	1,4	1,6	1,6	1,7	1,8	1,9	
1755	0,45	1	1	1,2	1,3	1,4	1,6	1,7	1,8	2			
1917	1	1,1	1,2	1,3	1,6	1,6	1,8	1,9					
2079	1,1	1,2	1,4	1,6	1,7	1,8	2						
2241	1,2	1,4	1,6	1,7	1,9								
2403	1,3	1,6	1,7	1,9									
2565	1,6	1,7	1,9										
2727	1,6	1,8	2										
2889	1,8	2											
3051	1,9												

## 6 Installation and implementation

### 6.1 The installation of the device

*Caution: any maneuver that may damage the mechanisms and/or structure of the DENFC is prohibited. SKYDOME® cannot be held responsible for the impact of such maneuvers.*

#### 6.1.1 Implementation of the ARCALAM EVOLUTION ELECTRIQUE according to its support

- *Trimmer :* Through self-drilling screws or rivets or others  
Boulonneries respecting a **maximum distance between 2 fastenings of 330 mm.**
- *Ribbed steel sheets:* Through self-drilling screws or rivets or others  
Bolts respecting a **maximum distance between 2 fasteners of 330 mm.**
- *Masonry support:* Through adapted fastenings respecting a **center distance Maximum between 2 fasteners of 200 mm.**

The insulation that may be present on the DENFC includes a bituminous film designed to receive leakage readings directly.



**6.1.2 Installation of the ARCALAM EVOLUTION ELECTRIQUE in enhanced version**

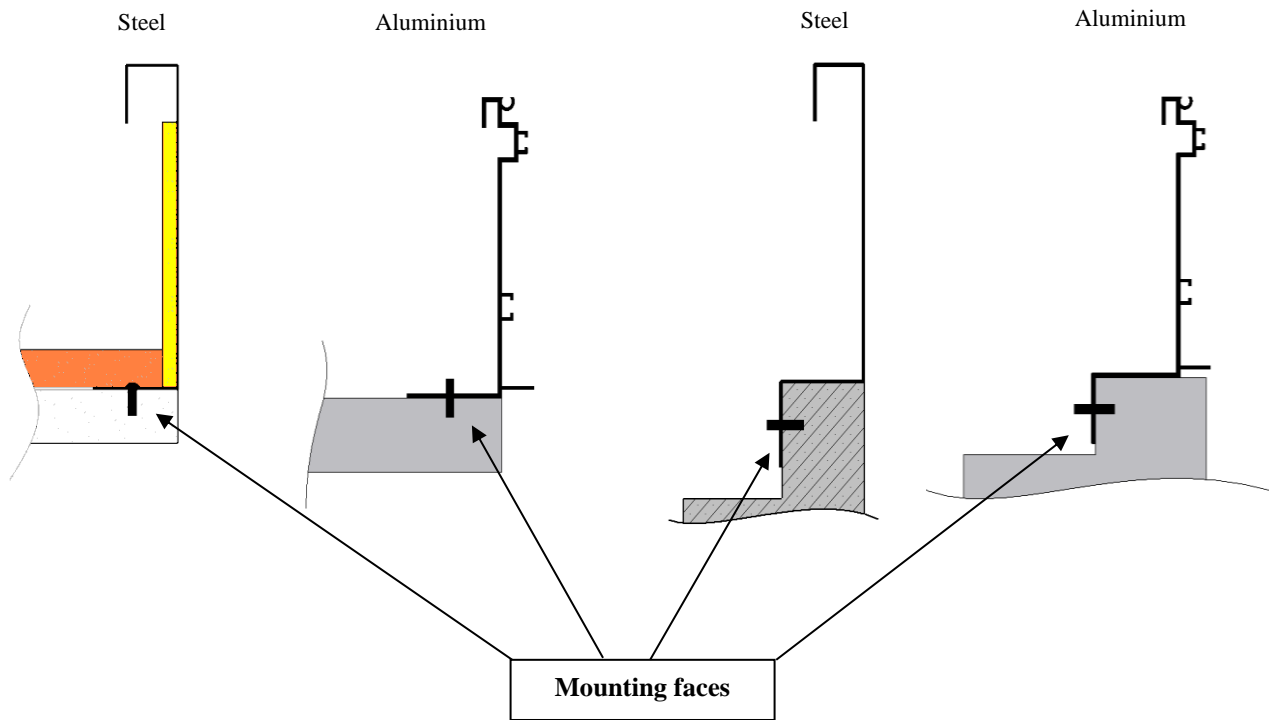
The distance requirements described above are identical for the raised version subject to installation on a suitable existing support, i.e. steel, concrete, wood or any other material which has already passed the thermal deformation test.

The geometric surface (Av) of the existing support costing must be greater than or equal to the geometric surface of the capping cost.

The smoke extraction DENFC must be fixed and sealed according to the requirements defined in the waterproofing D.T.U. (Unified Technical Document) in force.

**6.1.3 Schematics for fixing an apparatus according to its version**

**Figure 1: Standard Rib Scheme**  
**Diagram 2: Rising Rack**



**Be careful, any other place for fixing, may cause water leaks.**



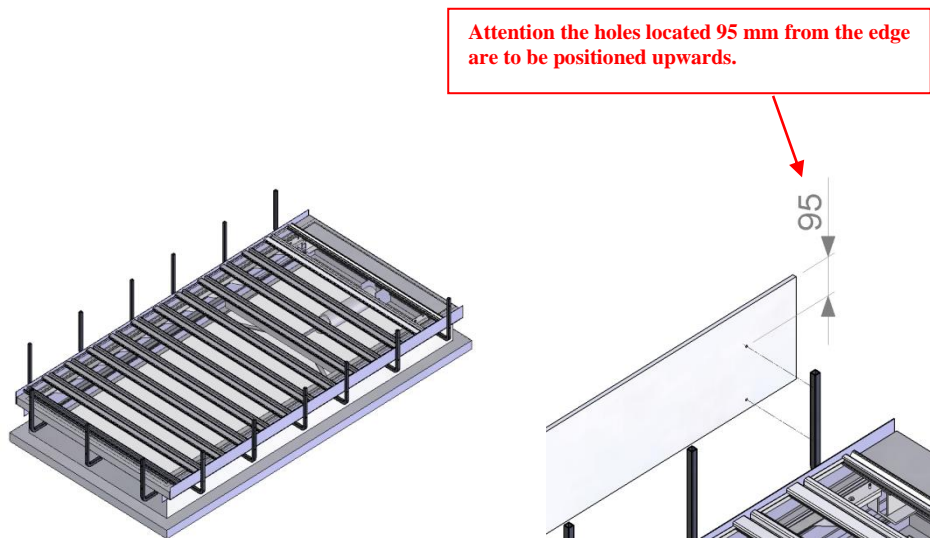
### 6.1.4 Implementation of the ARCALAM EVOLUTION ELECTRIQUE

The device will be fixed according to the recommendations of the texts and standards in force.

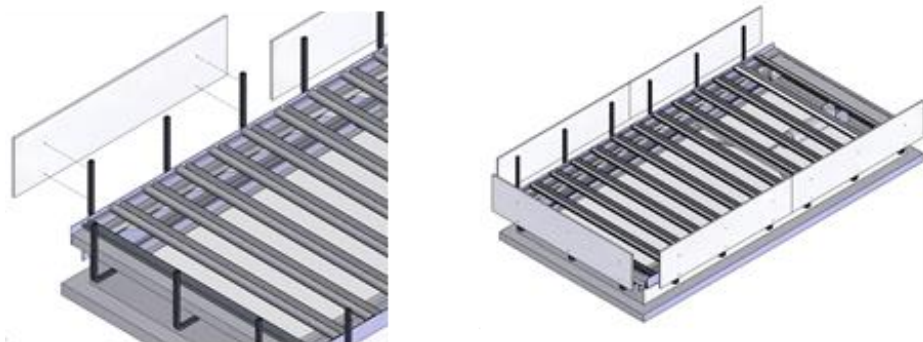
### 6.2 The installation of deflectors

The device can optionally be equipped with deflectors to improve the aeraulic coefficient of the device. These deflectors are located in the length of the device, as well as on the front panel. They are made of PCA or aluminium and are fixed to the rib by the intermediary of self-drilling screws (the *installation remains the same in all cases*).

#### *Fixing deflectors*



- Attach the PCA or aluminum plates to the tubes from the holes in the ends. Then attach the plate to the central tubes. Attention the side deflectors are different from the front deflectors.





### 6.3 Assembly and connection

For the connection of the DENFC and its options to the safety power supply (APS): refer to the standard in force.

## 7 Instructions for use

Carry out a test(s) to verify the proper functioning of the DENFC. Check the mechanical and electrical opening and closing, as well as the holding of the lock.

## 8 Maintenance instructions

*Please note: our devices are not warranted for an exhibition that may alter the initial characteristics of an element or function of the DENFC.*

The operation, maintenance and periodic verification operations will be carried out according to the requirements of the texts and standards in force as well as the following SKYDOME® requirements:

- Proceed at least 2 times a year to the opening/closing in a safe position of the DENFC.
- Verification operations:
  - Check the condition of the joints, connecting rods and cylinder rods. It is important to keep these elements lubricated ( Teflon grease for slides, oil), except the cylinder stem.
  - Control the tightening of the screwed elements.
  - Do not clean the cylinder stem with a solvent, as this can damage the inner seals.
  - Do not paint the stem of the cylinder.
  - Clean drainage channels
  - Check that the joints are not glued.
- DENFC verification operations must be carried out at least 1 time per year.

## 9 Replacement

All components of the device are available on request from SKYDOME.®

## 10 Note

- Devices equipped with a position switch are exempt from NF certification.
- In accordance with the Labour Code, project owners and companies have an obligation not to endanger staff circulating on roofs

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