RENSON
INNOVATION IN VENTILATION

CONTINUOUS LOUVRE SYSTEM

LINIUS®

1. INTRODUCTION

The first louvres were designed to allow the passage of the sounds of bells and chimes whilst protecting the bell tower from rain.

Today, louvres have evolved to be able to help protect against noise, rain, birds, vermin and in some cases air! In other cases louvres have been designed to explicitly allow the passage of air.

Many options including the incorporation of access doors and hatches can be achieved in one homogeneous façade with the RENSON continuous louvre system.

RENSON Ventilation, Waregem (BE), arch. : J. Crepain

TABLE OF CONTENTS

2. RENSON COMPANY PROFILE

6 good reasons to become a RENSON customer.

1. Customer satisfaction by personal contact, professional advice, excellent service and reliable, high-performance products are the main aims of our company.

2. RENSON is a well-known and established multinational company with international expertise and experience thanks to the efforts of our local specialists. They are present in all regions of the world. RENSON has assisted with projects across the whole world, from Moscow to Tahiti and from Monaco to Shanghai.

3. A complete service from start to finish, effective support and advice during the design phase, site meetings and installation.

4. The production process is fully vertically integrated which enables manufacturing to the strictest of standards. Investments in injection moulding machinery, anodising facilities and a fully automatic powder coating installation ensure efficiency and accuracy.

5. Continuous research and development translates customer needs into unique solutions and innovative products.

6. RENSON specialises in all aspects of ventilation and solar shading to achieve the current goals of the design of a Healthy Building.

Ref. : Paris-Expo – Parijs Porte de Versailles, Arch. : Valode & Pistre

WORLDWIDE REFERENCE LIST

BELGIUM
Madou Tower - Brussels
Hogeschool GroepT - Leuven
Airport - Zaventem
Smithkline Beecham Plant - Brussels
Alcatel Building - Antwerpen

FRANCE
Futuroscope - Poitiers
Euralille - Lille
Paris-Expo - Paris
UVE - Rouen
Gemey Maybelline - Orléans
(Arch: Alain Bailly - Lionel Colson, Paris)
Siege SNCF - Mouchotte, Paris
Chu - Perpignan
Ifremer - Sète
Thomson - Rousset

GERMANY
AIRBUS - Hamburg
Airport - Frankfurt
Messehalle - Frankfurt
VW Design - Potsdam
Messehalle - München
Audi - Neckarsulm
Regierungsviertel - Erfurt
Technologiecentrum - Gelsenkirchen
Peek & Cloppenburg - Köln
Parcheggio - Rostock
Technologiecentrum - Heidelberg

ISRAEL
Telephone company - Naharia

HUNGARY
Vodafone - Budapest
NBC-Building - Budapest
ING - Vörösnarty - Budapest

ITALY
University - Bologna

POLAND
Riviera - Warszawa
Reform Plaza - Warszawa
Metro - Warszawa
Hotel Mercure – Poznań
Galeria Kazimierz - Kraków

THE NETHERLANDS
Bouwhuis - Zoetermeer
HST station - Barendrecht
Mosae Forum – Maastricht
High Tech Centre Philips - Eindhoven
Haagse Poort – Den Haag
Prinsenhof - Den Haag
Showbizzcity - Aalsmeer
BAM Krasnapolsky - Amsterdam
Alexandrium - Amsterdam
Scheepvaart en transportcollege - Rotterdam
Maritiem Museum - Rotterdam
KPN Callcenter - Amersfoort
Sony Music - Delft

TURKEY
Pamuk Bank - Istanbul

UNITED KINGDOM
More Plot 1 & 3 - London
Fetter Lane - London
Concert Hall – Perth
Royal Opera House - London
Carlton Gardens - London
Odeon - Glasgow
Breahead Park – Glasgow
Candy Wharf – Copperfield Road – London

SWITZERLAND
World Trade Center - Lugano

LUXEMBOURG
Licée technique du Centre – Dommeldange

RUSSIA
Olympic Village – Moscow
City Dell – Moscow

Ref. Highschool Leuven (BE) – L.066 curved

Ref. Villa De Pinte (BE) – L.033

Ref. L.075S

Ref. Fraunhoferinstitut VDTC,
Magdenburg (DE), L.050 and L.033

Ref.: Les Iris - Toulouse (FR),
Main contractor: O.P.A.C - Arch.: Tassera - Toulouse,
Installer: SMAC ACIEROID

Ref. Omega Pharma, Nazareth (BE) L.065G

Ref. VM Skoda garage, Gent (BE), L.033

Ref. Vodafone, Budapest (HU)

Ref. Seabreas, Dundee (UK), L.095

Ref. Concordia, Waregem (BE), L.066

Ref. Fraunhoferinstitut VDTC, Magdenburg (DE), L.050 and L.033

Ref. Hotel Raddisson, Berlin (DE), L.050.01

3. PURPOSE OF THE CLS


1


2


3


4


5


6

1. Screening of installations

An application ideal for concealing unsightly equipment or fassades.

2. Ventilation

An assembly allowing the passage of air in and out of a building whilst restricting the entry of rain. Here the CLS offers by far the best aesthetic solution.

3. Screening against the weather

The continuous louvres system protects your installation from wind, rain and vermin.

4. Acoustics

Fitted with acoustic blades the LWS is ideal for the screening of noisy installations. The structure of the louvres system together with the noise damping qualities ensure that noise is strongly damped, but while keeping good ventilation.

5. Aesthetic cladding

Other applications where the design of a blade profile is preferred over other applications.

6. Interior

Interior cladding possibly incorporating back lighting.

4. OVERVIEW

The continuous louvre system consists of a support structure to which blades are fitted.

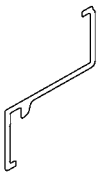
The support structure holds the complete louvre assembly and is formed by vertically placed mullions fixed by brackets at set distances. Depending on the structure, RENSON offers different mullion types. Blade supports are permanently fixed to the mullions allowing the blades to be clip-locked onto their supports. The method of construction is simple and well tested. Mitred corners, doors, vermin, bird or insect mesh can all be incorporated.

Depending on the application, different constructions are possible.

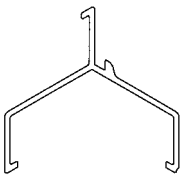
BLADE TYPES

Extruded Aluminium

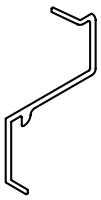
Ref. L.033
Small format
p. 12



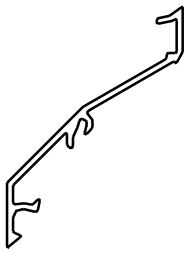
Ref. L.033V
V-blade
p. 14



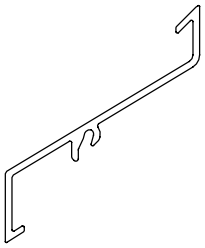
Ref. L.033.08
Storm blade
p. 14



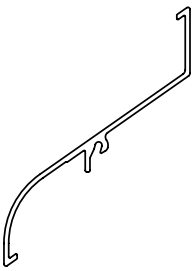
Ref. L.050
Heavy blade
p. 16



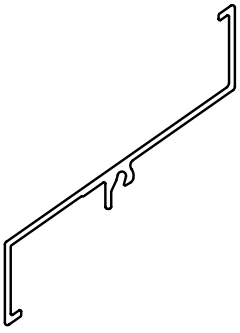
Ref. L.050HF
Heavy blade
p. 18



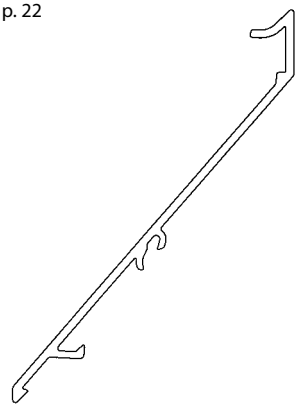
Ref. L.050S
Heavy blade, curved
p. 18



Ref. L.066
Heavy blade
p. 20

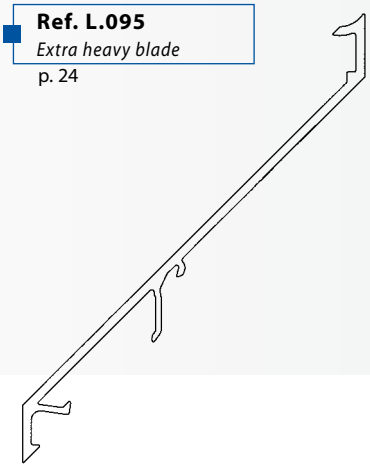


Ref. L.075
Extra heavy blade
p. 22



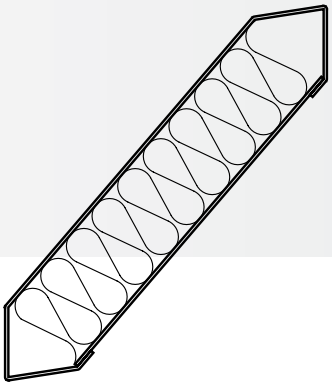
Extruded Aluminium

Ref. L.095
Extra heavy blade
p. 24

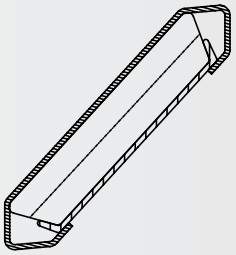


Acoustic

Ref. L.150AC
Acoustic blade
p. 28



Ref. L.060AC
Compact acoustic blade
p. 28

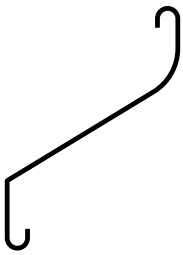


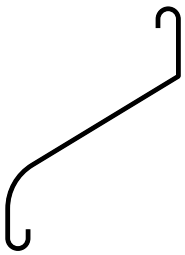
Roll-formed

Ref. L.065AL
Aluminium
p. 26

Ref. L.065GL
Galvanised steel
p. 26

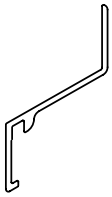
Ref. L.065StS
Stainless steel
p. 26



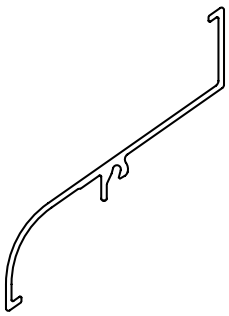


Project solutions

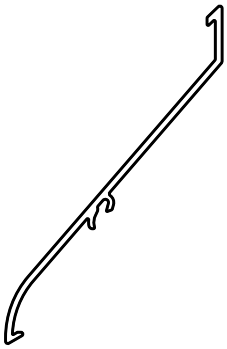
Ref. L.033.09
Blade with enhanced free area
p. 16



Ref. L.066S
Aluminium
p. 20



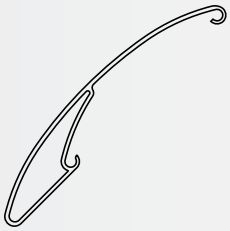
Ref. L.075S
Aluminium
p. 22



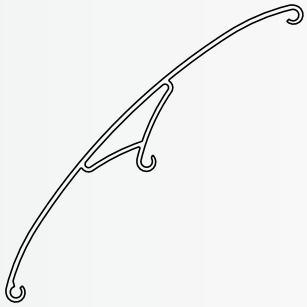
SUNCLIPS® EVO blades

Ref. SE.096
Aluminium
p. 30

Ref. SE.130
Aluminium
p. 30

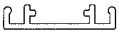


Ref. SE.176
Aluminium
p. 30

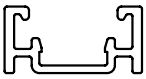


Supporting structure LINIUS®

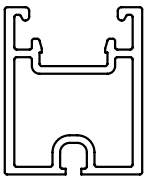
Ref. LD.0065
Light duty
p. 36



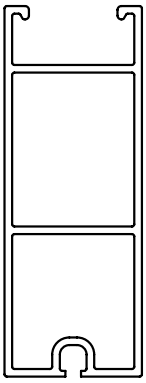
Ref.LD.0195
Medium duty
p. 37



Ref. LD.0460
Heavy duty
p. 38

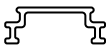


Ref. LD.0995
Extra heavy duty
p. 39

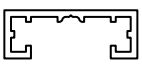


Supporting structure SUNCLIPS®

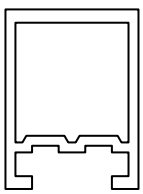
Ref. LD.0108
p. 42



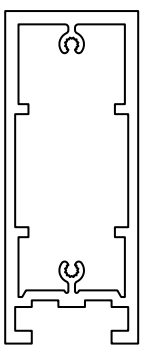
Ref. SD.014
p. 42



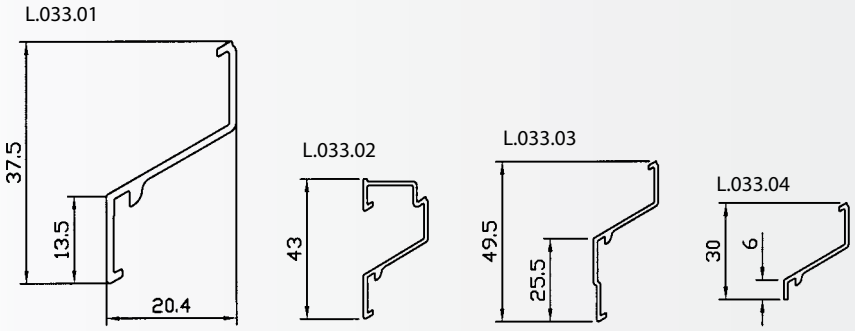
Ref. SD.054
p. 42

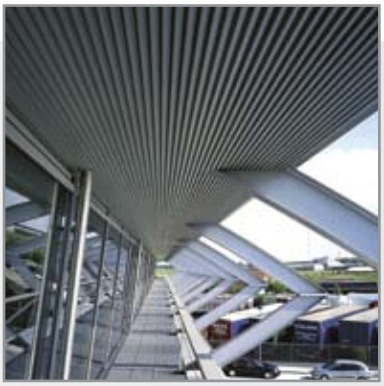


Ref. SD.100
p. 42



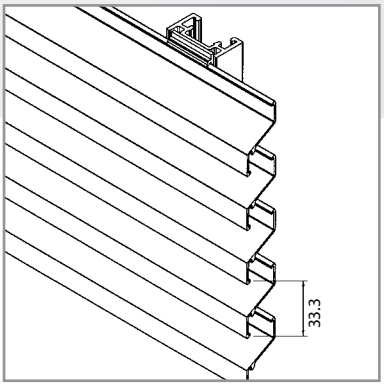
5. BLADE TYPES - L.033





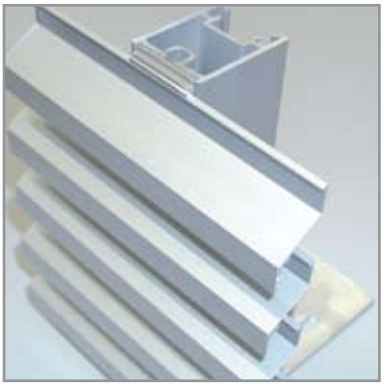
Description

Extruded aluminium profile for light duty with a 33.3 mm pitch. Normally used for smaller surface areas, round and special shapes.



MATERIALS
Aluminium extrusion, alloy EN AW 6063 T66

FINISH
- Anodised (20 micron)
- Polyester powdercoating RAL or Syntha Pulvin® colours (60 - 70 micron / 40 micron (UK))

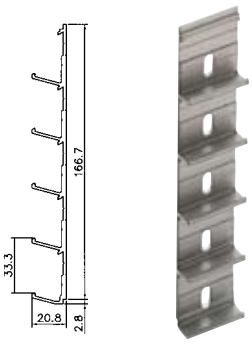


MESH
Fixed to rear of the support structure

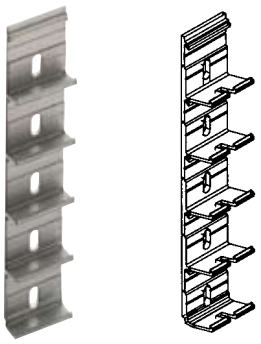
FEATURES
Can be curved with a minimum radius of 800 mm. Top blade L.033.02 for an attractive top connection (cannot be curved). Short bottom blade L.033.04 and long bottom blade L.033.03. Can be used together with the block blade L.033.05 (see p. 54)

DOORS
Single and double doors available with the standard RENSON finish hardware and rotating on pivot
(see p. 46 - 48)

BLADE SUPPORT
Single blade support: type L.033.11
Double blade support for thermal expansion: type L.033.12 (connecting piece for 2 blades)



L.033.11



L.033.12

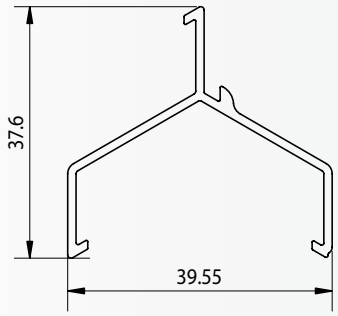
TECHNICAL DATA L.033
Pitch: 33,3 mm
Depth: 20,4 mm
Height: 37,5 mm
K-Factor*: 19,04
Visual free area*: 59%
Physical free area*: 43%
Max. unsupported span between mullions: 800 mm

* Definition see p. 32

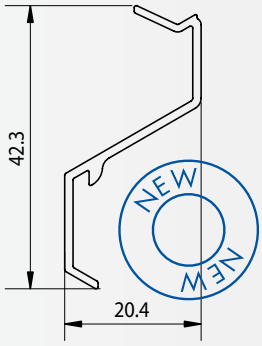
Ref.: De Groote, Zwevezele (BE)

5. BLADE TYPES - L.033 SPECIAL

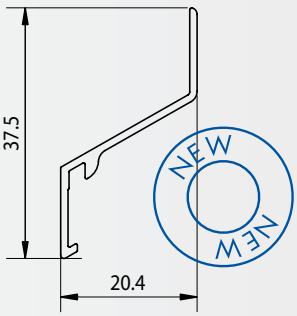
L.033.06

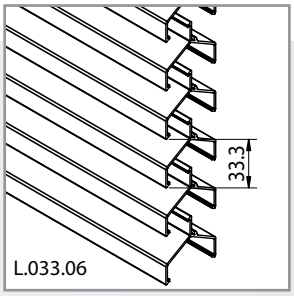


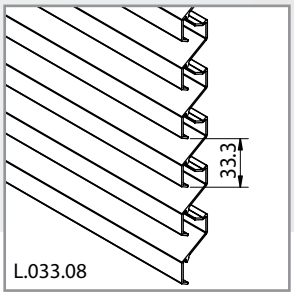
L.033.08

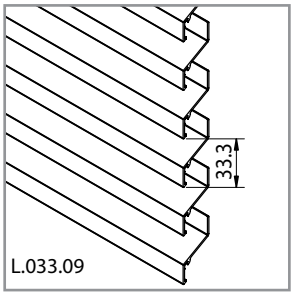


L.033.09 - project profile









Description

Extruded aluminium profile with a 33.3 mm pitch.

APPLICATION EXAMPLES

L.033.06 and L.033.08:

- 'Risk' applications such as high voltage units with restricted access
- Visual screening
- Small format for high weather resistance (L.033.06: HEVAC category A)
- Blade L.033.06 can be used together with blade L.033.01 thanks to an identical appearance

L.033.09 :

- Physical free area 50%

MATERIALS

Aluminium extrusion, alloy EN AW-6063 T66

FINISH

- Anodised (20 micron)
- Polyester powdercoating RAL or Syntha Pulvin® colours (60 - 70 micron / 40 micron (UK))

MESH

Fixed to support structure

DOORS

Single and double doors available with RENSON standard finish hardware and turning on pivot (see p. 46 - 48)

BLADE SUPPORT

Single blade support: L.033.11

Double blade support for thermal expansion: L.033.12 (connecting piece for 2 blades)

The blade supports are the same for all L.033 blade types.

Only for blade type L.033.06 are they fitted upside down.

TECHNICAL DATA L.033.06

Pitch: 33,3 mm
Depth x Height: 39,6 mm x 37,6 mm
K-Factor*: 61,04
Visual free area*: 60 %
Physical free area*: 43 %
Max. unsupported span between mullions: 1200 mm

TECHNICAL DATA L.033.08

Pitch: 33,3 mm
Depth x Height: 20,4 mm x 42,3 mm
K-Factor*: 137
Visual free area*: 56 %
Physical free area*: 26 %
Max. unsupported span between mullions: 1000 mm

TECHNICAL DATA L.033.09

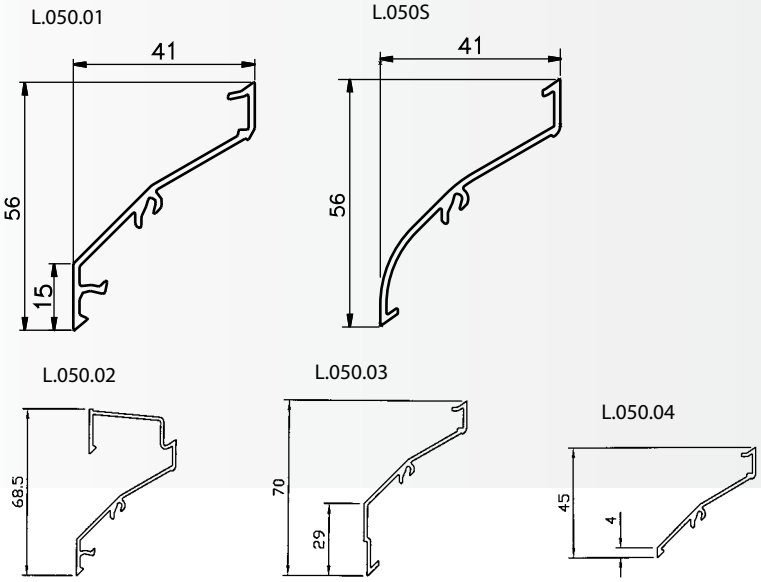
Pitch: 33,3 mm
Depth x Height: 20,4 mm x 37,5 mm
Visual free area*: 59 %
Physical free area*: 50 %
Max. unsupported span between mullions: 800 mm

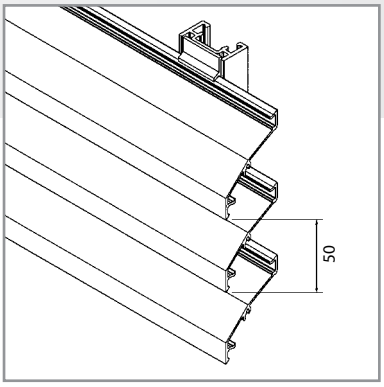
* Definition see p. 32

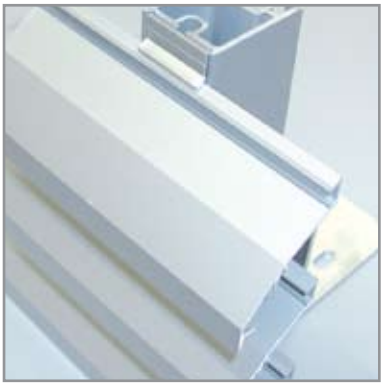
EXTRUDED ALUMINIUM BLADE

Ref.: private home, Deinze (BE)

5. BLADE TYPES - L.050







Description

Heavy duty extruded aluminium profile at 50 mm pitch with very high airflow. Often to be found where the blade pitch reflects the aesthetics of the overall project design. Doors, round and special shapes also possible with this type of blade.

MATERIALS
Aluminium extrusion, alloy EN AW-6063 T66

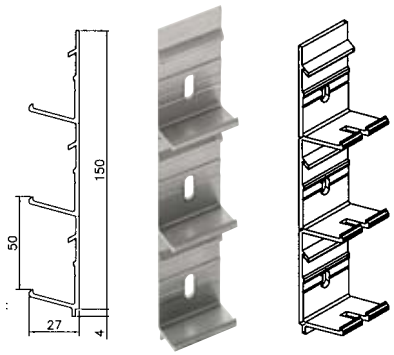
FINISH
- Anodised (20 micron)
- Polyester powdercoating RAL or Syntha Pulvin® colours (60 - 70 micron / 40 micron (UK))

MESH
Clicked between the blades (see p. 42) or Fixed to the rear of the support structure.

FEATURES
Can be curved with a minimum radius of 800 mm. Top blade L.050.02 available for attractive top connection. Short lower blade L.050.04 and long lower blade L.050.03 for optimal finish. Can be used together with block blade L.050.05 (see p. 54)

DOORS
Single and double doors available with RENSON standard finish hardware and turning on pivot (see p. 46 - 48)

BLADE SUPPORT
Single blade support: Type L.050.11
Double blade support for thermal expansion: L.050.12 (connecting piece for 2 blades)



L.050.11 L.050.12

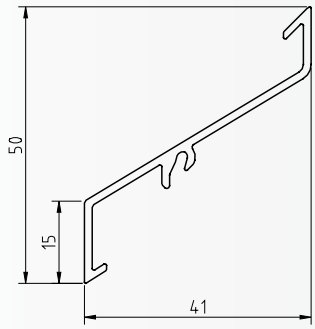
TECHNICAL DATA L.050
Pitch: 50 mm
Depth: 41,0 mm
Height: 56,0 mm
K-Factor*: 12,57
Visual free area*: 70%
Physical free area*: 49%
Max. unsupported span between mullions: 1200 mm

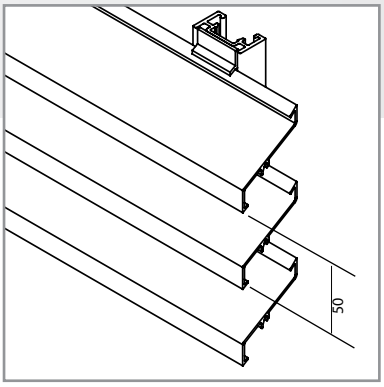
* Definition see p. 32

Ref. L.050: Plot More, London (UK)

5. BLADE TYPES - L.050HF

L.050.09





Description

Extruded Aluminium profile for heavy duty with high-performance air passage and a pitch of 50 mm. Often to be found where the blade pitch reflects the aesthetics of the overall project design.

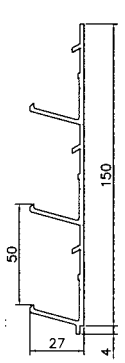
MATERIALS
Aluminium extrusion, alloy EN AW-6063 T66

FINISH
- Anodised (20 micron)
- Polyester powdercoating RAL or Syntha Pulvin® colours (60 - 70 micron / 40 micron (UK))

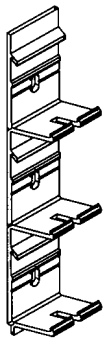
MESH
Fixed to the rear of the support structure

DOORS
Single and double doors available with RENSON standard finish hardware and turning on pivot (see p. 46 - 48)

BLADE SUPPORT
Single blade support: Type L.050.11
Double blade support for thermal expansion: L.050.12 (connecting piece for 2 blades)



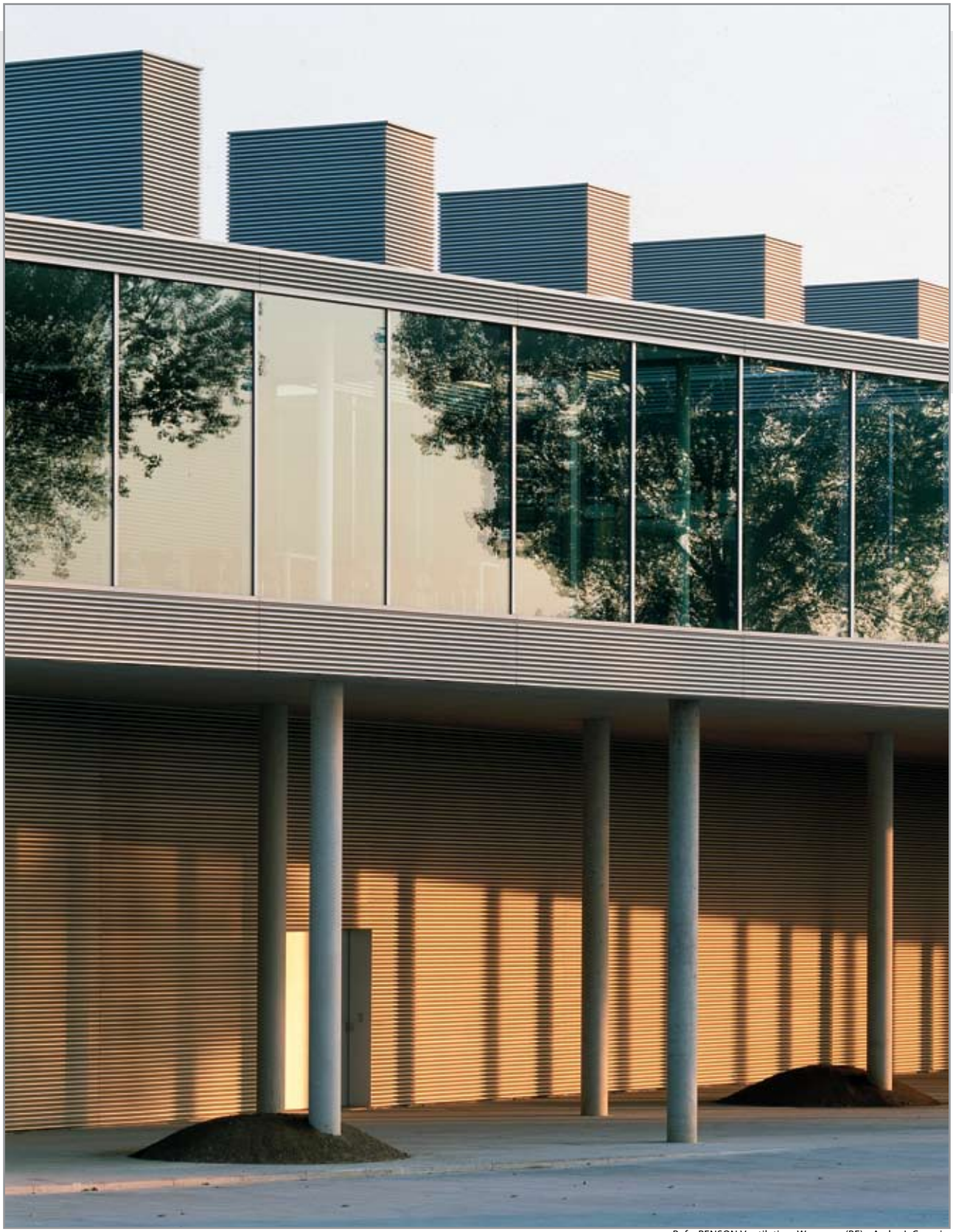
L.050.11



L.050.12

TECHNICAL DATA L.050HF
Pitch: 50 mm
Depth: 41,0 mm
Height: 50,0 mm
K-Factor*: 8,03
Visual free area*: 70%
Physical free area*: 60%
Max. unsupported span between mullions: 1200 mm

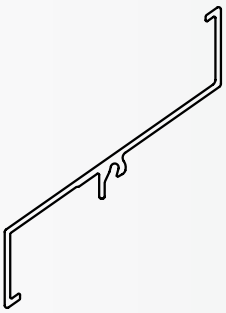
* Definition see p. 32



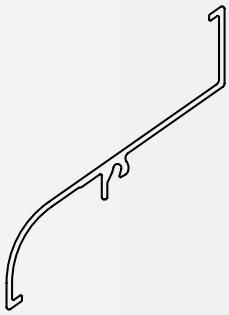
Ref. : RENSON Ventilation, Waregem (BE) - Arch.: J. Crepain

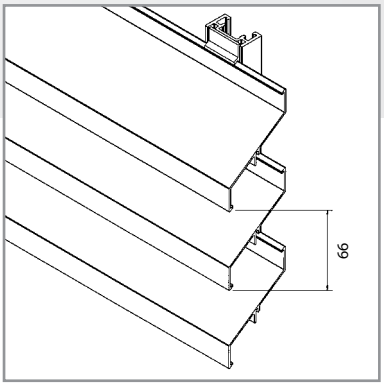
5. BLADE TYPES - L.066

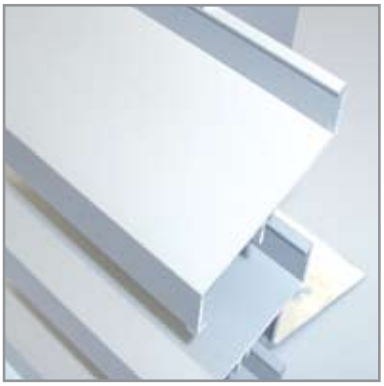
L.066.01



L.066S - project profile







Description

Heavy duty extruded aluminium profile with a 66 mm pitch and high airflow capacity. The largest of the «small» format louvres retaining high airflow characteristics while providing a significant degree of weatherability.

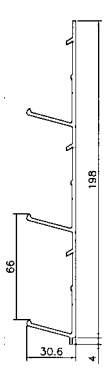
MATERIALS
Aluminium extrusion, alloy EN AW-6063 T66

FINISH
- Anodised (20 micron)
- Polyester powdercoating RAL or Syntha Pulvin® colours (60 - 70 micron / 40 micron (UK))

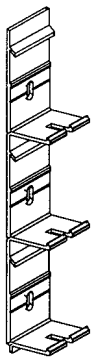
MESH
Fixed to the rear of the support structure.

DOORS
Single and double doors available with RENSON standard finish hardware and turning on pivot (see p. 46 - 48)

BLADE SUPPORT
Single blade support: Type L.066.11
Double blade support for thermal expansion: L.066.12
(connecting piece for 2 blades)



L.066.11



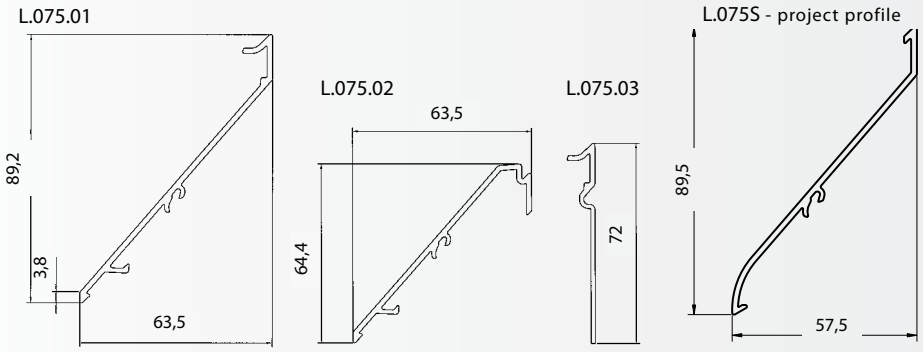
L.066.12

TECHNICAL DATA L.066
Pitch: 66 mm
Depth: 55,0 mm
Height: 76,5 mm
K-Factor*: 13,62
Visual free area*: 70%
Physical free area*: 47%
Max. unsupported span between mullions: 1400 mm

* Definition see p. 32

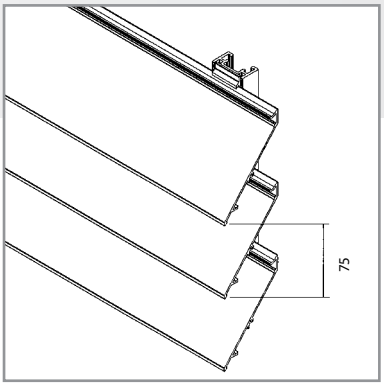
Ref. : Expo Paris, (Arch. : Valode and Pistre)

5. BLADE TYPES - L.075



Description

Extruded aluminium profile for extra heavy duty with very high air passage and a pitch of 75 mm. This latest innovation in the RENSON range is offered with a variety of mesh options to provide a solution for any possible environment.



MATERIALS
Aluminium extrusion, alloy EN AW-6063 T66

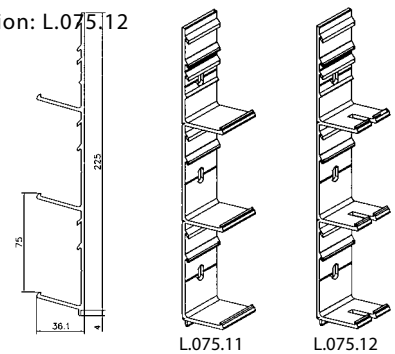
FINISH
- Anodised (20 micron)
- Polyester powdercoating RAL or Syntha Pulvin® colours (60 - 70 micron / 40 micron (UK))

MESH
Fixed to the rear of the support structure

FINISH
- Top blade L.075.02 for optimal finish
- Lower blade L.075.03 for an optimum sill lining
- Frame without flange (see p. 51)
- Frame with flange (see p. 51)

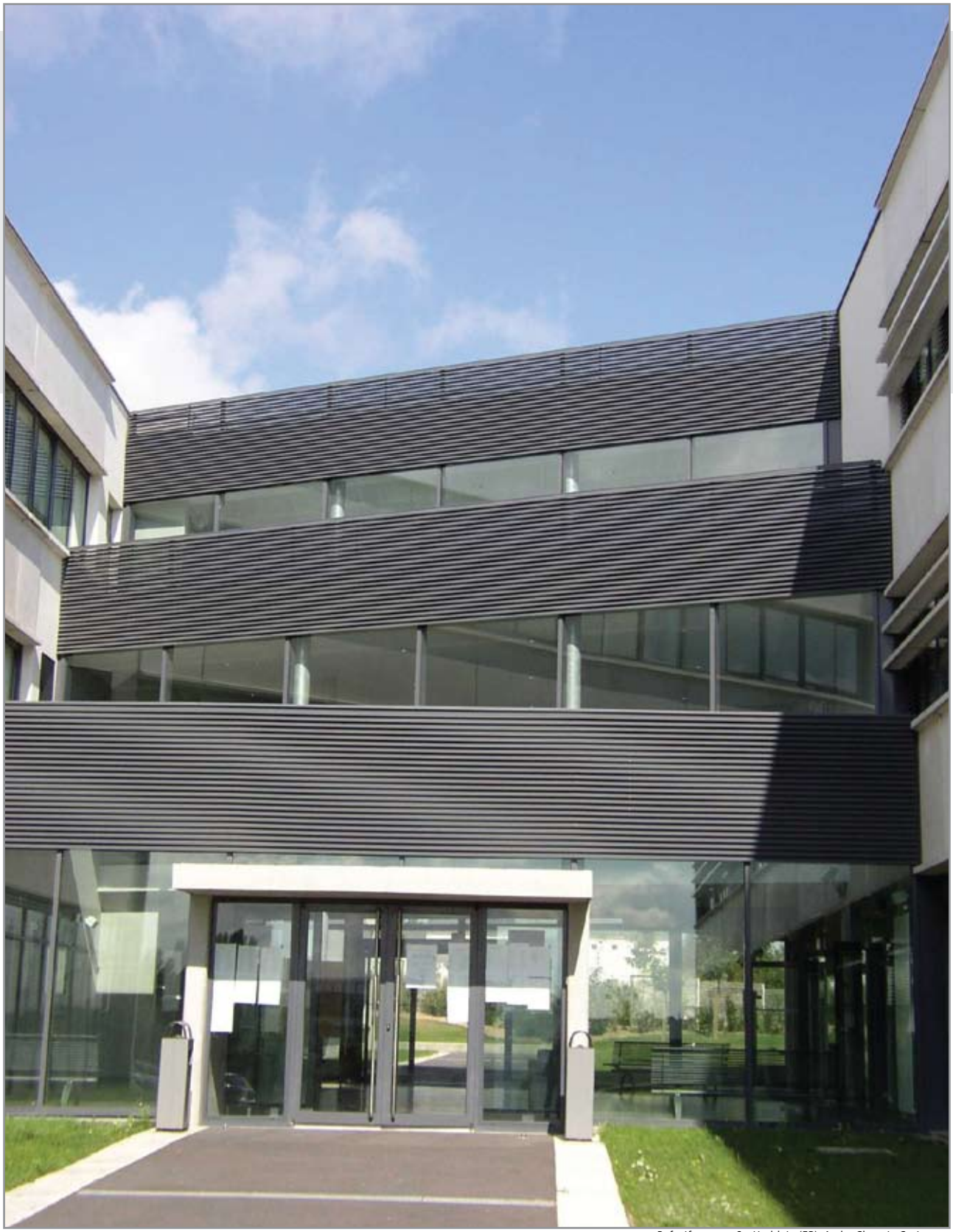
DOORS
Single and double doors available with RENSON standard finish hardware and turning on pivot (see p. 46 - 48)

BLADE SUPPORT
Blade support: Type L.075.11
Double blade support for thermal expansion: L.075.12 (connecting piece for 2 blades)



TECHNICAL DATA L.075
Pitch: 75 mm
Depth: 63,5 mm
Height: 89,2 mm
K-Factor*: 16,52
Visual free area*: 94%
Physical free area*: 43%
Max. unsupported span between mullions: 1500 mm

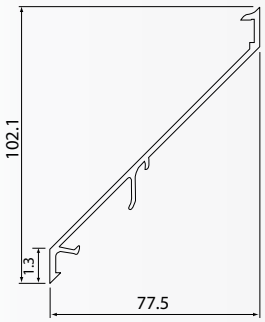
* Definition see p. 32

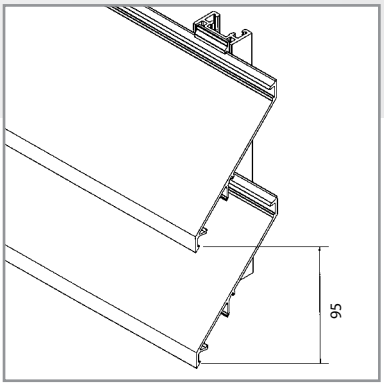


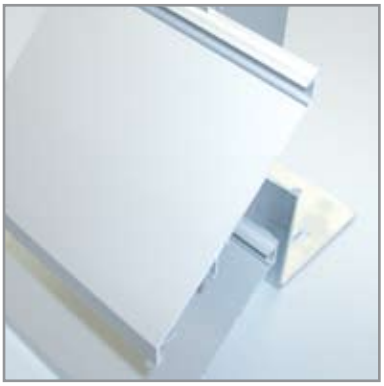
Ref. : Ifocotep - St.-Herblain (FR), Arch.: Chenais-Cruignant

5. BLADE TYPES - L.095

L.095.01







Description

Extruded aluminium blade for extra heavy duty with an extra high free airflow and a pitch of 95 mm.

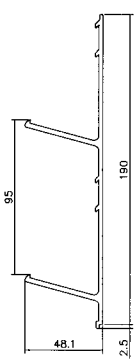
MATERIALS
Aluminium extrusion, alloy EN AW-6063 T66

FINISH
- Anodised (20 micron)
- Polyester powdercoating RAL or Syntha Pulvin® colours (60 - 70 micron / 40 micron (UK))

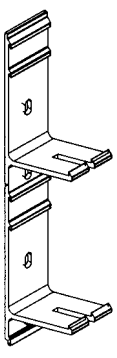
MESH
Fixed to the rear of the support structure

DOORS
Single and double doors available with RENSON standard finish hardware and turning on pivot (see p. 46 - 48)

BLADE SUPPORT
Single blade support: Type L.095.11
Double blade support for thermal expansion: L.095.12
(connecting piece for 2 blades)



L.095.11



L.095.12

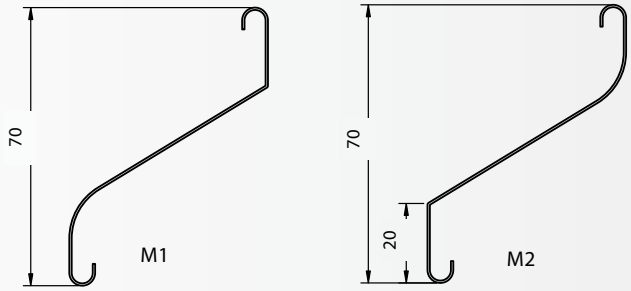
TECHNICAL DATA L.095
Pitch: 95 mm
Depth: 77,5 mm
Height: 102,1 mm
K-Factor*: 11,41
Visual free area*: 86%
Physical free area*: 50%
Max. unsupported span between mullions: 1500 mm

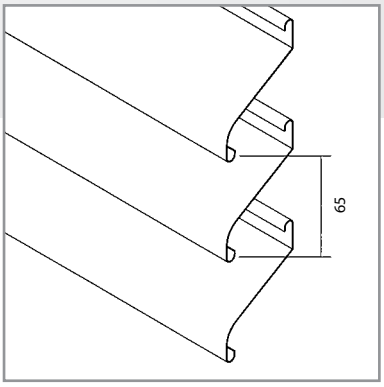
* Definition see p. 32

Ref. L.095: Seabreas, Dundee (UK)

5. BLADE TYPES - L.065AL - L.065GL - L.065STS

Type L.065: 2 fastening options





Description

Rolled aluminium profile (L.065AL), galvanized steel (L.065GL) or stainless steel (L.065StS). Light duty strip material with a pitch of 65 mm and resistance to normal weather conditions. For use as a screen, ideal if a low-priced solution is required. Mounted with a soft flowing appearance.

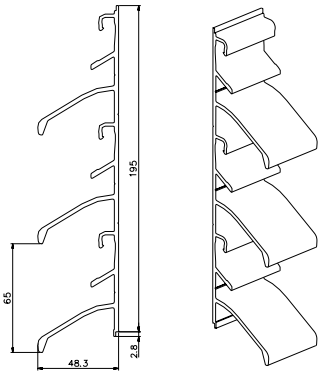
MATERIALS
Aluminium EN AW 3005-H18
Galvanised steel EN 10142
Stainless steel

FINISH
Polyester powdercoating RAL or Syntha Pulvin® colours
(60 - 70 micron / 40 micron (UK)) (only for L.065AL)

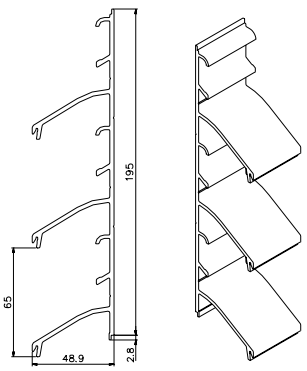
MESH
Fixed to the rear of the support structure

DOORS
Only possible with L.065AL blade (aluminium)

BLADE SUPPORT
Type L.065AL.11 also for thermal expansion (connecting piece for 2 blades)



L.065AL.11



L.065GL.11
L.065StS.11

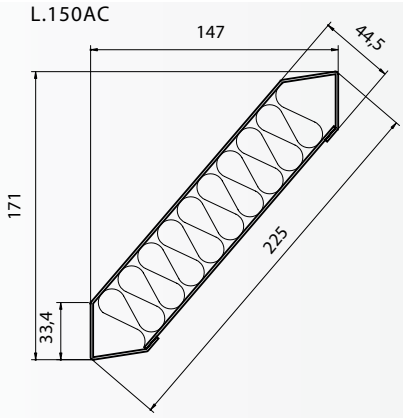
TECHNICAL DATA
L.065AL, GL & StS
Pitch: 65 mm
Depth: 50,0 mm
Height: 70,0 mm
K-Factor*: 13,32
Visual free area*: 70%
Physical free area*: 56%
Max. unsupported span
between mullions: 1200 mm

* Definition see p. 32

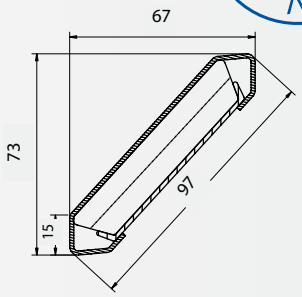
Ref. : Shopping Mall Alexandrium, Rotterdam (NL)

5. BLADE TYPES - ACOUSTIC BLADES

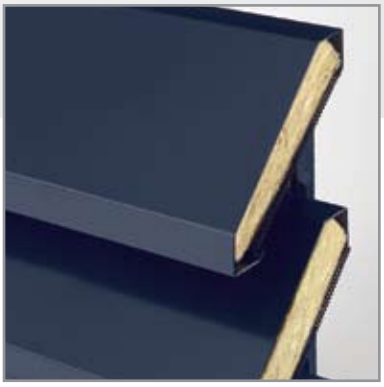
L.150AC



L.060AC



NEW



Description

L.150AC: Folded aluminium sheet blade with a pitch of 150 mm and perforated inner profile; maximum blade length 3,000 mm.
L.060AC: Extruded aluminium blade with a pitch of 60 mm and perforated inner profile; maximum blade length 6,000 mm.
Blades packed with inorganic mineral wool for acoustic performance. Developed to provide an aesthetic solution for sound reducing continuous louvre applications.

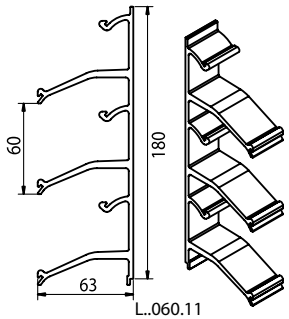
MATERIALS
L.150AC: Aluminium AlMg3, Mineral wool
L.060AC: Aluminium EN AW-6063 T66, Mineral wool, PVC

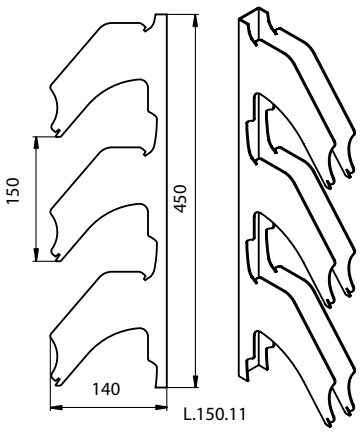
FINISH
- Polyester powdercoating RAL or Syntha Pulvin® colours (60 - 70 micron / 40 micron (UK))
- L.060AC: Anodised (20 micron)

MESH
Fixed to the rear of the support structure

ACOUSTIC PROPERTIES
L.150AC : R_w ($C;C_{tr}$)= 11 (0;-1) dB
L.060AC : R_w ($C;C_{tr}$)= 7 (0;-2) dB

BLADE SUPPORT
L.150AC : Type L.150.11
L.060AC : Type L.060.11





TECHNICAL DATA L.150AC
Pitch: 150 mm
Depth: 147 mm
Height: 171 mm
K-Factor*: 14,2
Visual free area*: 78%
Physical free area*: 37%
Max. unsupported span between mullions: 1200 mm

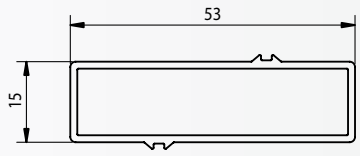
TECHNICAL DATA L.060AC
Pitch: 60 mm
Depth: 67 mm
Height: 73 mm
K-Factor*: 9,22
Visual free area*: 76 %
Physical free area*: 34 %
Max. unsupported span between mullions: 1600 mm

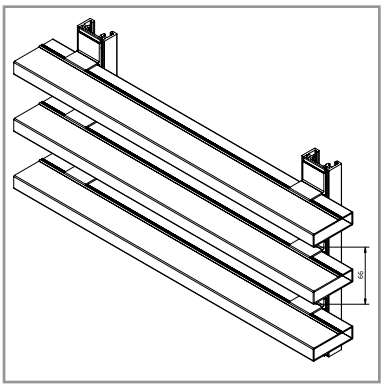
* Definition see p. 32

Ref. : Shopping Center Galeria Kazimierz (PL)

5. BLADE TYPES - L.066P

L.066P





Description

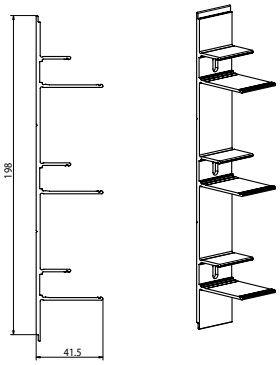
The LINIUS® L.066P Plano type is characterised by its unique and contemporary design. LINIUS Plano blades are rectangular extruded aluminium blades. The system can be used for different purposes. It offers the opportunity to simply create modern architectural constructions both outside and inside.

APPLICATIONS
- Sunshading blades
- Visual screening
- Aesthetic cladding
- Both exterior and interior applications
- Partition
- Ceiling covering
- Integration in sunshading sliding panels type LOGGIA®

MATERIALS
Aluminium extrusion, alloy EN AW 6063 T66

FINISH
- Anodised (20 micron)
- Polyester powdercoating RAL or Syntha Pulvin® colours (60 - 70 micron / 40 micron (UK))

BLADE SUPPORT
Single blade support: L.066P.11
Double blade support for thermal expansion: L.066P.12
(connecting piece for 2 blades)

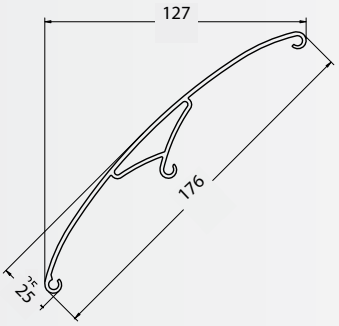


L.066P.11

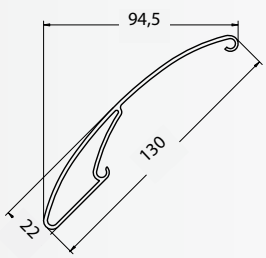
TECHNICAL DATA L.066P
Pitch: 66 mm
Depth: 53 mm
Height: 15 mm
Visual free area*: 77 %
Physical free area*: 77 %
Max. unsupported span between mullions: 1500 mm

* Definition see p. 32

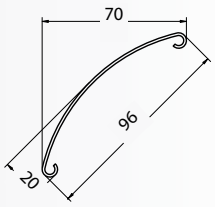
SE.176



SE.130



SE.096



Description

SUNCLIPS® Evo blades composed of extruded aluminium profiles to be used as solar shading, cladding or visual barrier. SUNCLIPS® Evo blades are semi-open C-shaped profiles fitted with screw ducts with 96, 130 and 176 mm oversizing.

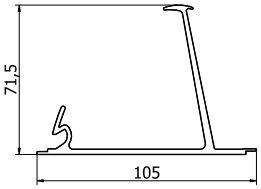
MATERIALS
Aluminium extrusion, alloy EN AW-6063 T66

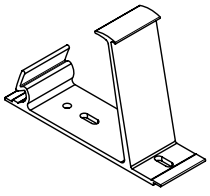
FINISH
- Anodised (20 micron)
- Polyester powdercoating RAL or Syntha Pulvin® colours (60 - 70 micron / 40 micron (UK))

MESH
Fixed to the rear of the support structure

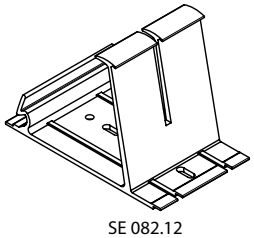
DOORS
Single and double doors available with RENSON standard finish hardware and turning on pivot (see p. 46 - 48)

BLADE SUPPORT
Single blade support: Type SE.082.11
Double blade support for thermal expansion: SE.082.12
(connecting piece for 2 blades)





SE 082.11



SE 082.12

TECHNICAL DATA

SUNCLIPS® Evo

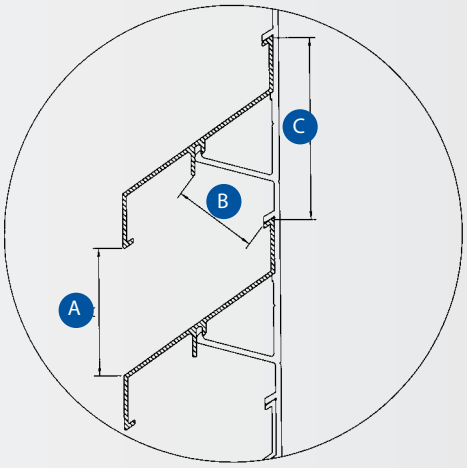
Pitch: variabel (min. 100mm)
Depth and Height:
Evo 96 = 70 mm
Evo 130 = 94.5 mm
Evo 176 = 127 mm
Visual free area* EVO96: 100%
Physical free area* EVO96: 53%
K-Factor* EVO96: 6,23
Max. unsupported span between mullions:
Evo 96 = 1400 mm
Evo 130 = 1600 mm
Evo 176 = 2000 mm

* Definition see p. 32

RENSON
INNOVATION IN VENTILATION

6. SELECTION CRITERIA

This chapter shows you how to select the ideal RENSON continuous louvre system. Some definitions well-known in the field of natural ventilation are explained. If the CLS is only used for aesthetic reasons, the theoretical values calculated using the formulas below can still provide an added value.



A Visual distance between 2 blades

B Narrowest opening between 2 blades

C The pitch of the blade

Definition 1 : Visual free area (*)

The visual free area is determined by the ratio between the visual distance between two blades (A) and the pitch of the blade (C).

Definition 2 : Physical free area (*)

The physical free area is determined by the ratio between the narrowest opening between two blades (B) and the pitch of the blade (C).

(*) Both definitions of the free area do not take into account the influence of top and bottom blades

Definition 3 : K-Factor

The K-factor is a value describing the aerodynamic resistance to airflow. Contrary to the free area it describes the relationship between the airflow through the louvre and the pressure drop over it. For exact interpretation purposes, the calculation is explained step by step below.

To find the resistance to airflow due to the insertion of a louvre into an opening, the K-factor must be determined. This factor is determined by means of a test. Where specific volumes or air speed are required, one can better not use the free area to calculate the pressure drop over or the size of the louvre.

RENSON recommends the use of K-factors which are established by the actual testing of a louvre. Blades with the same free area can have different K-factors. This is caused by small differences in the form of the profiles (e.g. different blade gradient, different shape of the edges of the blades, etc.). ...

The free area must be used in cases where the open part of the CLS must be equal to a certain percentage of the floor surface.

Before we can determine the pressure drop we have to determine the air speed using the following equation:

$$\text{Air speed} = \frac{\text{AIRFLOW RATE}}{\text{SURFACE AREA}} \quad \text{(a)}$$

Airflow rate = m^3/s The volume of air passing through the CLS
Surface area = m^2 The size of the louvre (front view)
Air speed = m/s The speed of the approaching air at the front of the CLS.
(This is the result of a certain volume passing through the CLS.)

If two elements are known in this equatation, we can calculate the third.

$$\text{Pressure drop} = K \times 0{,}6 \times \text{AIR SPEED} \quad \text{(b)}$$

One can transpose the equations to determine dimensions, air speeds or pressure drop.

Use of the K-Factor method

METHOD 1 : identify suitable louvre type for a certain opening size	**METHOD 2** : determine required louvre size when louvre type is already chosen
1. Determine the required airflow rate 2. Determine the available opening (size of the louvre) 3. Determine the maximum permitted pressure drop 4. Choose the appropriate louvre type based on the K-Factor	1. Choose preferred louvre type 2. Determine the air speed at the front of the louvre using the K-factor and the maximum pressure drop 3. Determine the required airflow rate 4. Determine the minimum louvre size

Example of method 1

Which type of louvre is suitable to achieve the desired ventilation volume of 55,000 m^3/h with a maximum pressure drop of 25 Pa and an opening of 10 m^2?

Calculation:

Calculation formula (a)
Flow rate = 55000 /3600 = 15,28 m^3/s
Size of the louvre = 10 m^2

Air speed = 15,28 m^3/s /10 m^2 (surface area) = 1,53 m/s

Calculation formula (b)
Drop of pressure = 25 Pa
Air speed = 1,53 m/s

K-Factor = 25 / (0,6 x $1,53^2$) = 17.80

This is the maximum K-value to achieve the desired volume with a certain pressure drop and size. Blade type L.050, L.066, L.075 and L.095 can be recommended. The final choice depends on personal preference.

Example of method 2

Blade type L.050 is preferred by the architect. Which size is required to have a maximum pressure drop of 30 Pa with a given flow rate of 10,000 m^3/h ?

Calculation:

Calculation formula (a)
Flow rate = 55000 /3600 = 15,28 m^3/s
Size of the louvre = 10 m^2

Air speed = $\sqrt{\frac{30}{0,6 \times 12,57}}$ = 1,99 m/s

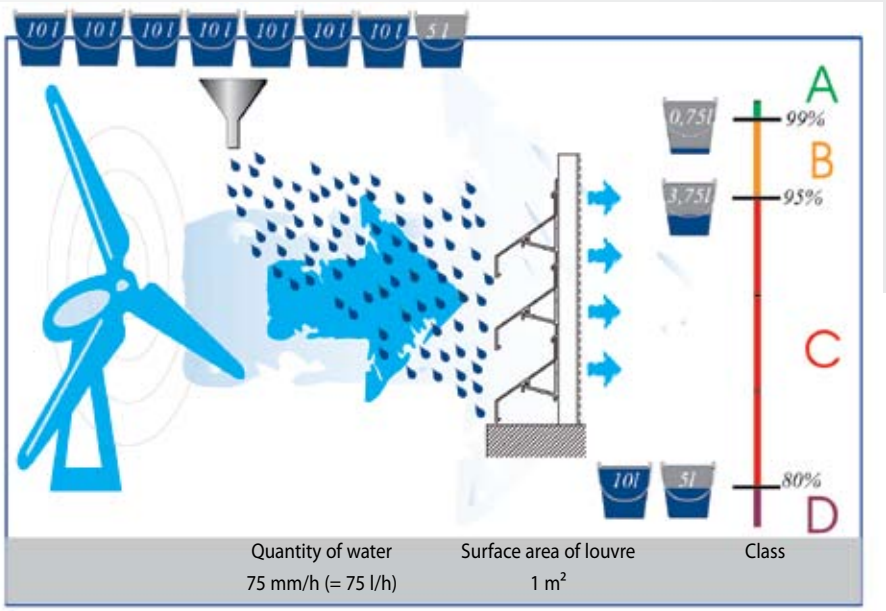
Surface area = $\frac{2,78\ m^3/s}{1,99\ m/s}$ = 1,39 m^2

This is the minimum necessary surface area of louvre type L.050 to obtain a pressure drop lower than 30 Pa with an airflow rate of 10,000 m^3/h.

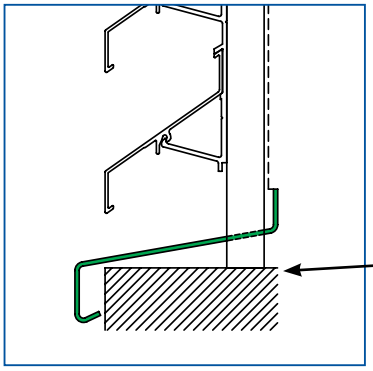
Water penetration tests (or HEVAC tests). The principle:

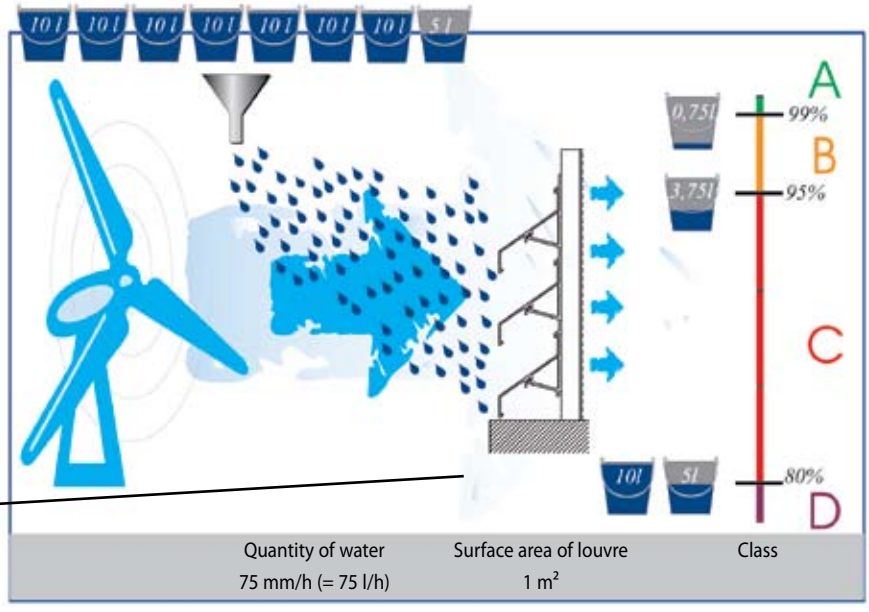
The RENSON louvres were subjected to HEVAC testing in Great Britain by a research organisation accredited worldwide.

A wall of 1 m², possibly fitted with a stainless steel 304 mesh, was tested in heavy rain conditions with a capacity of 75 litres/hour and a wind speed of 13 m/second. The HEVAC class table is drawn up depending on the results obtained, i.e. the quantity of water passing through the louvre.



Test of a standard CLS





Test of a CLS with mesh and sill

	Class	% Water tightness
Very good rain protection	A	100 - 99
Good rain protection	B	98,9 - 95
Average rain protection	C	94,9 - 80
Low rain protection	D	< 80

With mesh 2,3 x 2,3 mm

		Standard design	With sill
Type	**Air speed (m/s)**	**Class**	**Class**
L.033.01	0,0 0,5 1,0 1,5	B B C D	B B B C
L.050.01	0,0 0,5 1,0 1,5 2,0	B B C C C	B B B C
L.066.01	0,0 0,5 1,0 1,5 2,0 2,5	C C C C D D	B B C C C C
L.095.01	0,0 0,5 1,0 1,5 2,0	C D D	B C C C D

With mesh 6 x 6 mm

		Standard design	With sill
Type	**Air speed (m/s)**	**Class**	**Class**
L.033.06	0,0 0,5 1,0 1,5 2,0	A B C C D	A A B C D
L.050.01	0,0 0,5 1,0 1,5 2,0 2,5	C C D D D D	C C C C C D
L.066.01	0,0 0,5 1,0 1,5	C C D D	C C C D
L.095.01	0,0 0,5 1,0 1,5	D D D D	C C C D

Type	Air speed (m/s)	Without mesh	With mesh L.075.32
L.075.01	0,0 0,5 1,0 1,5	C C C D	A B C D
	Air speed (m/s)	**Without mesh L.075.33**	**With mesh L.075.34**
	0,0 0,5 1,0 1,5 2,0	C C C C D	B B C D

SUMMARY TABLE

BLADE TYPE	L.033	L.033V	L.050	L.050	L.050HF	L.065AL	L.065GL/StS	L.066
PITCH	33.3	33.3	50	50	50	65	65	66
MATERIALS	alu	alu	alu	alu	alu	alu	galv. steel/ stainless steel	alu
MESH	behind	behind	behind	L.050.33	behind	behind	behind	behind
				between				
CURVED	yes	no	yes	no	no	no	no	no
DOOR	yes	yes	yes	yes	yes	yes	no	yes
MITRED CORNERS	yes	yes	yes	yes	yes	yes	no	yes
VISUAL FREE AREA %	59	60	70	70	92	70	70	70
PHYSICAL FREE AREA %	43	43	49	23	60	56	56	47
K-FACTOR								
Supply without mesh	19.0	61.0	12.6	-	8.0	13.3	13.3	13.6
Supply with mesh	22.7	66.1	13.4	14.8	-	13.9	13.9	14.2
Exhaust without mesh	25.1	61.0	8.9	-	8.8	17.1	17.1	14.9
Exhaust with mesh	26.4	66.1	9.4	12.9	-	17.2	17.2	14.9

BLADE TYPE	L.075	L.075	L.075	L.075	L.095	L.095	L.150AC
PITCH	75	75	75	75	95	95	150
MATERIALS	alu	alu	alu	alu	alu	alu	alu
MESH	behind	L.075.32	L.075.33	L.075.34	behind	L.095.33	behind
		between	between	between		between	
CURVED	no	no	no	no	no	no	no
DOOR	yes	yes	yes	yes	yes	yes	no
MITRED CORNERS	yes	yes	yes	yes	yes	yes	yes
VISUAL FREE AREA %	94	94	94	94	86	86	78
PHYSICAL FREE AREA %	43	23	43	30	50	49	37
K-FACTOR							
Supply without mesh	16.5	-	-	-	11.4	-	14.2
Supply with mesh	-	41.6	19.7	30.5	-	15.4	-
Exhaust without mesh	17.6	-	-	-	11.6	-	14.2
Exhaust with mesh	-	35.4	19.9	32.6	-	14.8	-

To calculate the exact height of the louvre system, use the following formula. N = number of blades.

Louvre height = (N - 1) x pitch + blade height

BLADE TYPE	L.033	L.033V	L.050	L.050HF	L.065 AL	L.065 GL	L.065StS	L.066	L.075	L.095	L.150 AC
Pitch	33.3	33.3	50	50	65	65	65	66	75	95	150
Height of blade	38	38	56	50	70	70	70	76	90	102	171

A system consisting of extruded aluminium mullions to which the blade supports and blades are fixed.

The complete homogenous structure is designed according to CEN/TC250/SC9 Eurocode - 9/BS8118 for the structural use of aluminium. The fitting of the mullions is determined in accordance with CEN/TC250/SC1 Eurocode 1/BS CP152, section 3 and good craftsmanship.

The blades click tight onto the blade supports, the choice of the pitch and other aspects is based on the data described on page 29. The various options of doors, mitred corners and acoustic elements can be selected and integrated in the design, see page 39.

The complete support structure is prepared for the fastening of the blade supports. Fastening can already fully take place at the factory or be partly left for assembly on site. With the last option you have the flexibility to fasten the last blade supports on site and cut the mullions to size for a perfect installation.

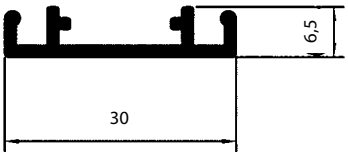
7. SUPPORT STRUCTURE - LD.0065

Description

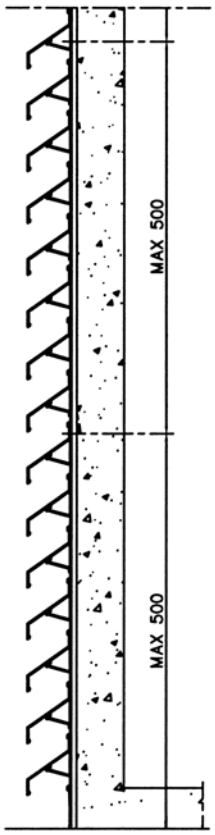
Extruded aluminium profile for light duty, for direct assembly to an existing wall or steel support structure.

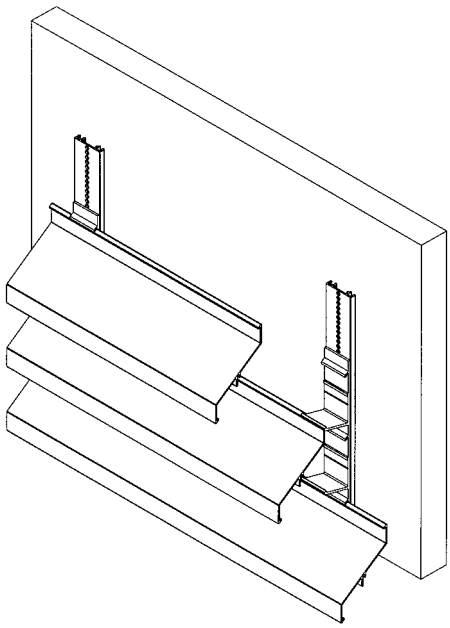
MATERIALS
Aluminium extrusion, alloy EN AW-6063 T66

FINISH
- Anodised (20 micron)
- Polyester powdercoating RAL or Syntha Pulvin® colours (60 - 70 micron / 40 micron (UK))



LD.0065





TECHNICAL DATA LD.0065
Profile depth: 6,5 mm
Profile width: 30 mm
Moment of inertia: 260 mm^4
Flexural modulus: 59 mm^3

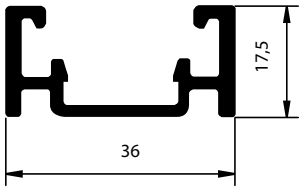
Recommended for fastening to fixed structures.

Description

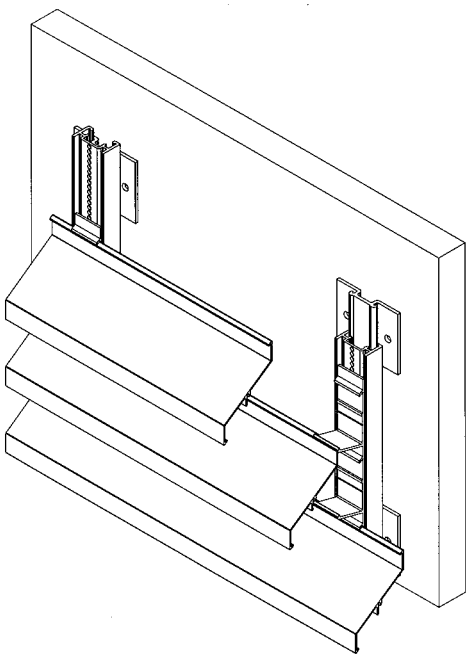
Extruded aluminium profile for average duty, for direct assembly to an existing wall or steel support structure. Type LD.0195 is used for a maximum span of ± 600 mm.

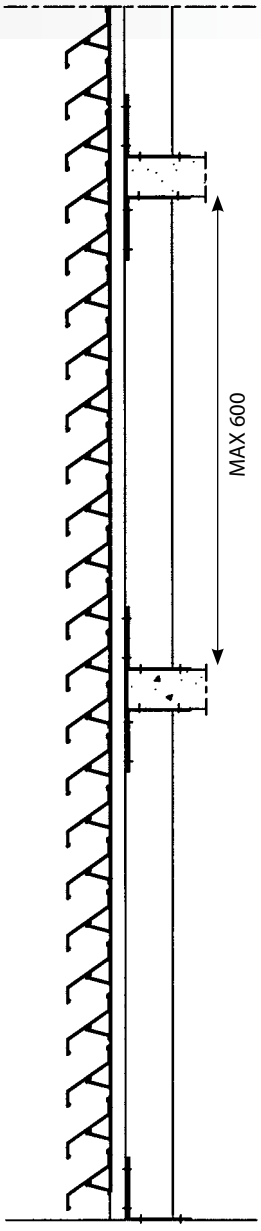
MATERIALS
Aluminium extrusion, alloy EN AW-6063 T66

FINISH
- Anodised (20 micron)
- Polyester powdercoating RAL or Syntha Pulvin® colours (60 - 70 micron / 40 micron (UK))



LD.0195





TECHNICAL DATA LD.0195

Profile depth: 17,50 mm
Profile width: 36 mm
Moment of inertia: 6.560 mm^4
Max. height span: ± 600 mm
Flexural modulus: 607 mm^3

(Max. span is calculated at centre distance between mullions of 800 mm and depends on the local situation and applicable standards, moment of inertia is a universal norm)

RENSON
INNOVATION IN VENTILATION

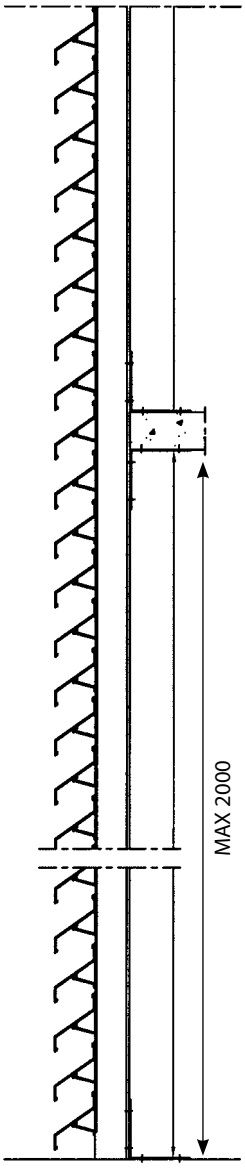
7. SUPPORT STRUCTURE - LD.0460

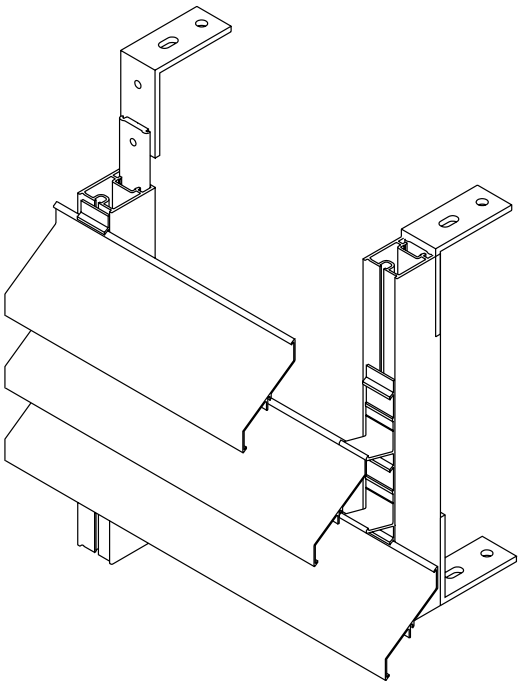
Description

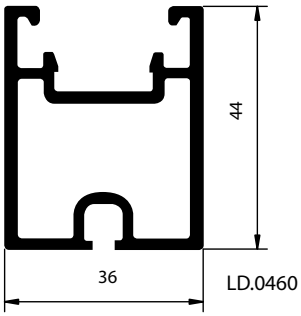
Extruded aluminium profile for heavy duty use with a maximum span of ± 2,000 mm.

MATERIALS
Aluminium extrusion, alloy EN AW-6063 T66

FINISH
- Anodised (20 micron)
- Polyester powdercoating RAL or Syntha Pulvin® colours (60 - 70 micron / 40 micron (UK))







TECHNICAL DATA LD.0460

Profile depth: 44 mm
Profile width: 36 mm
Moment of inertia: 81.900 mm^4
Flexural modulus: 3426 mm^3
Max. height span: ± 2000 mm

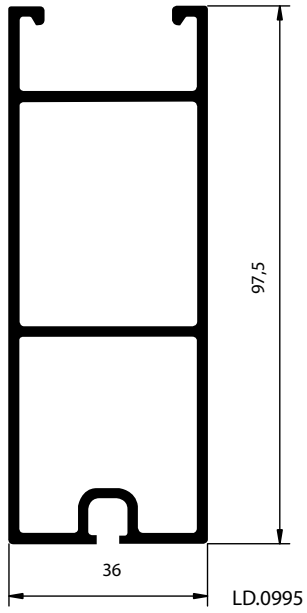
(Max. span is calculated at centre distance between mullions of 800 mm and depending on the local situation and applicable standards, moment of inertia is a universal norm)

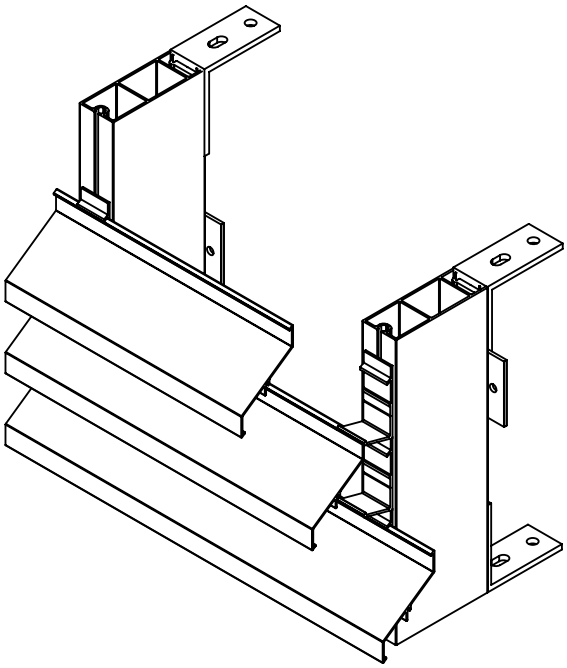
Description

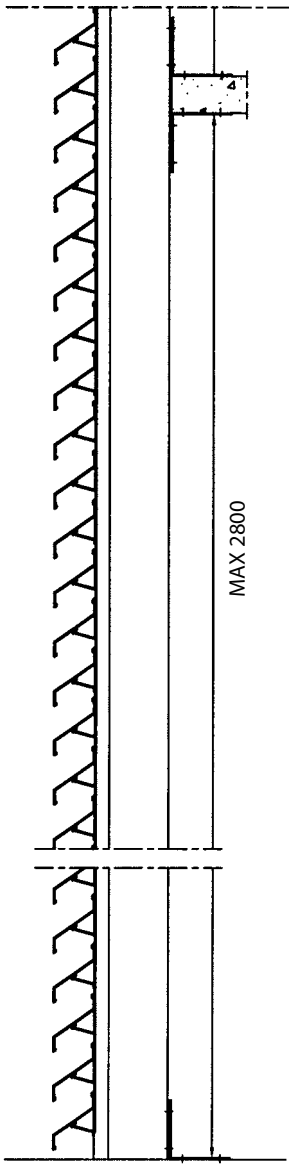
The LD.0995 type can be used to extend the height to ± 2,800 mm. Both are fixed to the structure using the provided mechanical fastenings.

MATERIALS
Aluminium extrusion, alloy EN AW-6063 T66

FINISH
- Anodised (20 micron)
- Polyester powdercoating RAL or Syntha Pulvin® colours (60 - 70 micron / 40 micron (UK))







TECHNICAL DATA LD.0995
Profile depth: 97,50 mm
Profile width: 40 mm
Moment of inertia: 481.949 mm^4
Flexural modulus: 11.197 mm^3
Max. height span: ± 2.800 mm

(Max. span is calculated at centre distance between mullions of 800 mm and depending on the local situation and applicable standards, moment of inertia is a universal norm)

RENSON
INNOVATION IN VENTILATION

7. SUNCLIPS® SUPPORT SECTIONS - TYPE SD.014 - SD.054 - SD.100

Description

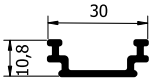
Extruded aluminium profiles, always to be used in combination with adapter profile LD.0108 (depth 14, 54 and 100 mm) as support structure for aesthetic applications. Also for use in combination with LINIUS® blades as horizontal sun blind. For more info please see our RENSON SUNCLIPS® brochure.

MATERIALS

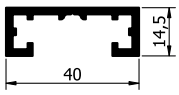
Aluminium extrusion, alloy EN AW-6063 T66

FINISH

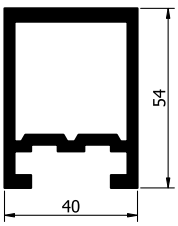
- Anodised (20 micron)
- Polyester powdercoating RAL or Syntha Pulvin® colours (60 - 70 micron / 40 micron (UK))



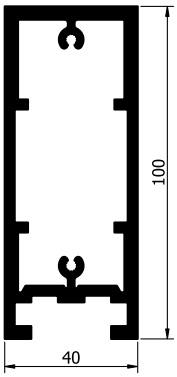
Adapter profile
LD.0108



SD.014



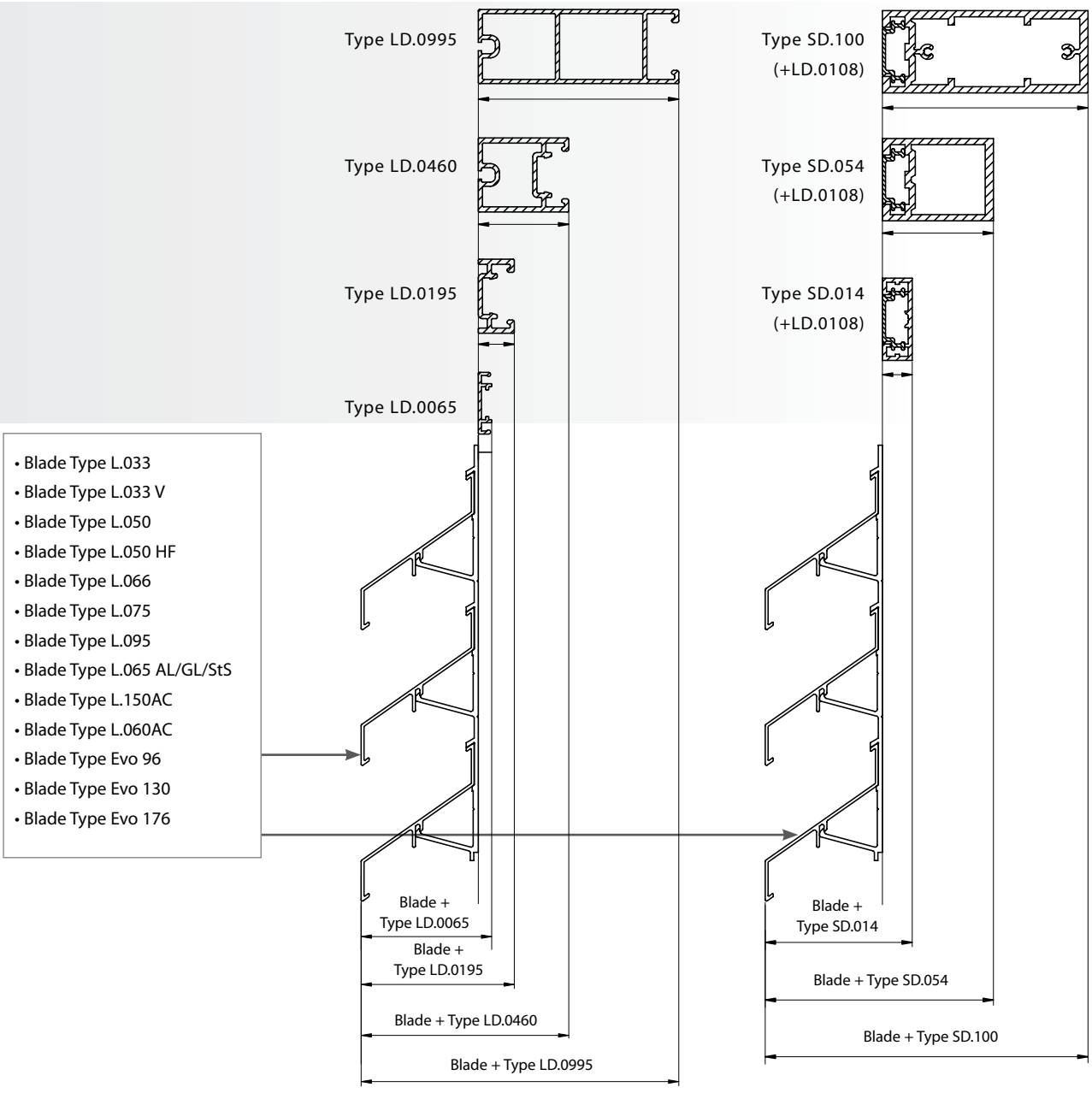
SD.054



SD.100

TECHNICAL DATA SD.

Profile depth: SD.014 = 14,5 mm
SD.054 = 54 mm
SD.100 = 100 mm
Profile width: SD.014/54/100 = 40 mm
Moment of inertia: SD.014 = 4.506 mm^4
SD.054 = 208.600 mm^4
SD.100 = 1.248.321 mm^4
Flexural modulus: SD.014 = 495 mm^3
SD.054 = 7.371 mm^3
SD.100 = 24.381 mm^3
Max. height span: SD.014 +/- 600 mm
SD.054 +/- 2100 mm
SD.100 +/- 3800 mm
(Max. span is calculated at centre distance between mullions of 800 mm and depending on the local situation and applicable standards, moment of inertia is a universal norm)



Total depth of a CLS (mm)	Type LD.0065	Type LD.0195	Type LD.0460	Type LD.0995	Type SD.014	Type SD.054	Type SD.100
Type L.033	29 mm	40 mm	66,5 mm	120 mm	37 mm	76,5 mm	122,5 mm
Type L.033V	48,1 mm	59,1 mm	85,6 mm	139,1 mm	56,1 mm	95,6 mm	141,6 mm
Type L.050 (HF)	49,5 mm	60,5 mm	87 mm	140,5 mm	57,5 mm	97 mm	143 mm
Type L.066	63,5 mm	74,5 mm	101 mm	154,5 mm	71,5 mm	111 mm	157 mm
Type L.075	72 mm	83 mm	109,5 mm	163 mm	80 mm	119,5 mm	165,5 mm
Type L.095	86 mm	97 mm	123,5 mm	177 mm	94 mm	133,5 mm	179,5 mm
Type L.065 AL/GL/StS	58,5 mm	69,5 mm	96 mm	149,5 mm	66,5 mm	106 mm	152 mm
Type L.150AC	176,5 mm	187,5 mm	214 mm	267,5 mm	184,5 mm	224 mm	270 mm
Type L.060AC	86 mm	97 mm	123,5 mm	177 mm	95 mm	133,5 mm	179,5 mm
Type Evo® 96	81,8 mm	92,8 mm	119,3 mm	172,8 mm	89,8 mm	126,3 mm	175,3 mm
Type Evo® 130	106,2 mm	117,2 mm	143,7 mm	197,2 mm	114,2 mm	153,7 mm	199,7 mm
Type Evo® 176	138,2 mm	149,2 mm	175,7 mm	229,2 mm	146,2 mm	185,7 mm	231,7 mm

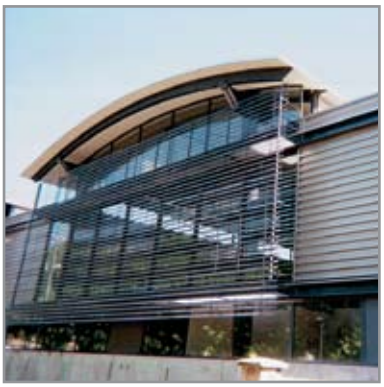
9. FIXING ELEMENTS

The LINIUS mullions are fixed to an existing structure by means of specific brackets. With brackets type LZ.4202, LZ.4203, LZ.4206, LZ.4209 and LZ.4211 from the standard Renson range, assembly of the mullions is easy in most situations.

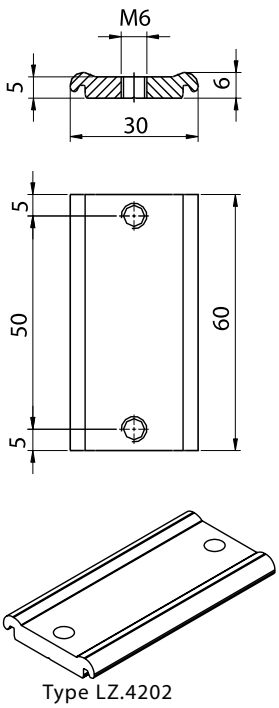
The corners LZ.4203 and LZ.4209 are assembled on the rear of the mullions by means of clamping pieces LZ.4202 or LZ.4211. These parts have a thread or press bolt. This way the corners can be fixed at any height to the support profile.

The LZ.4206 bracket slides into the rear of the support sections and can move freely in these profiles. A fastening point with this bracket guarantees horizontal stability but allows vertical movement due to thermal dilatation.

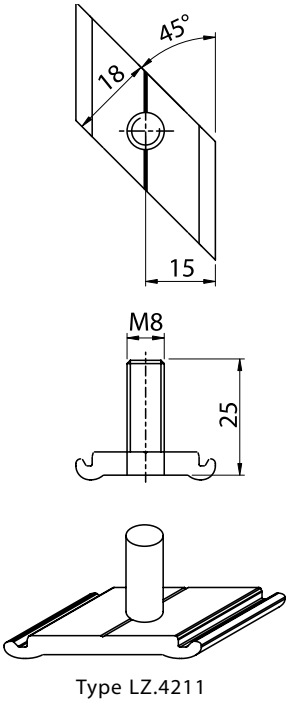
The necessary number and type of brackets depends on the properties of each type of mullion.



Fixing bracket LZ.4202 and LZ.4211

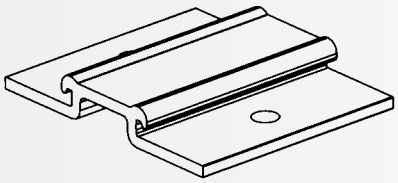


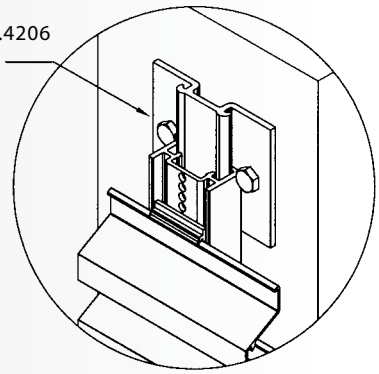
Type LZ.4202

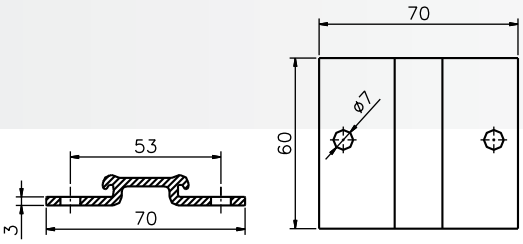


Type LZ.4211

Sliding bracket LZ.4206



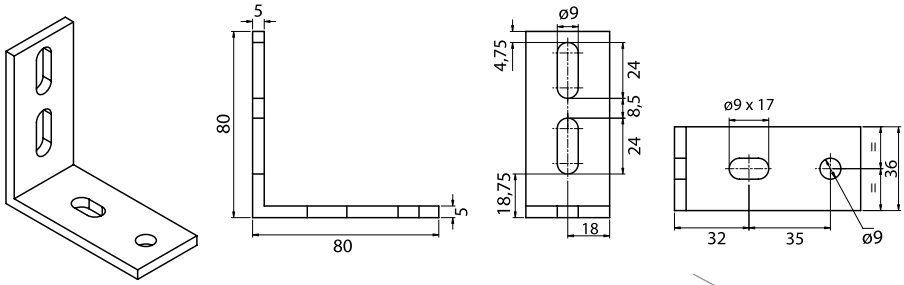




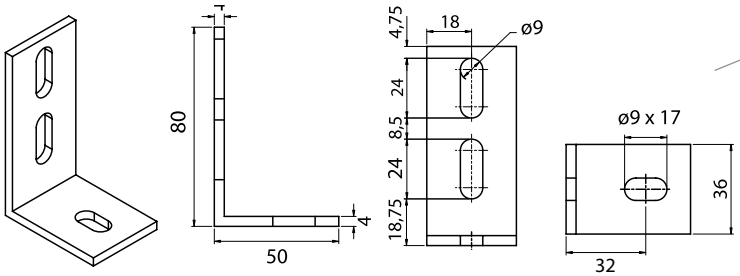
Angle bracket LZ.4203 and LZ.4209

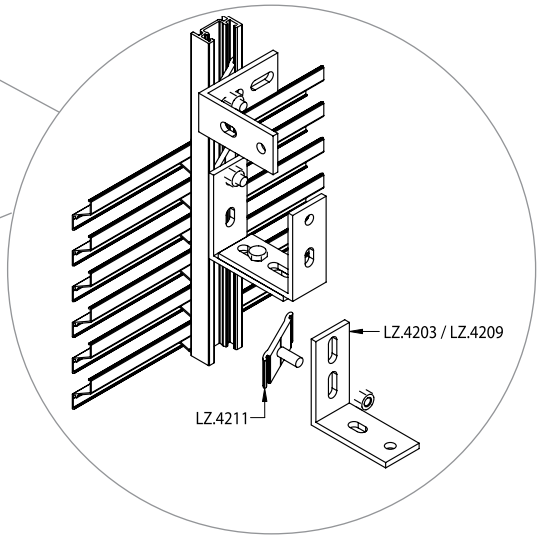
Where necessary, project specific brackets can be designed and provided by a RENSON approved manufacturer/installer.

Type LZ.4203



Type LZ.4209





10. ACCESSORIES

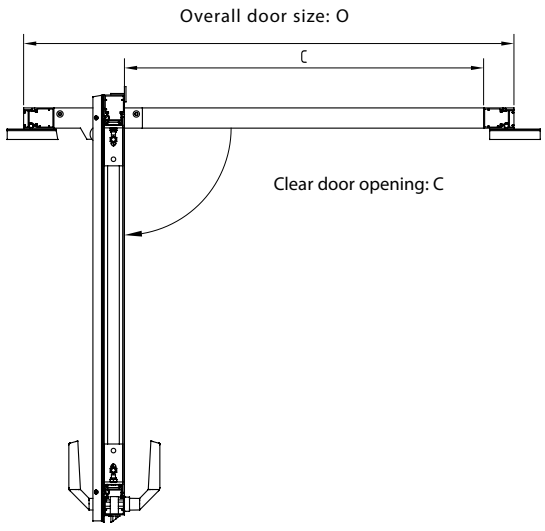
The CLS can be fitted with
- entrance doors
- insect, vermin or bird mesh
- sills or peripheral frames for finishes

A. Doors

RENSON offers single or double doors in custom made sizes, opening internally or externally. In some cases, access behind the continuous louvre system is required, for example to maintain and service (hidden) industrial appliances. The doors are fitted with locks, pivots, handles and restraining chain on request.

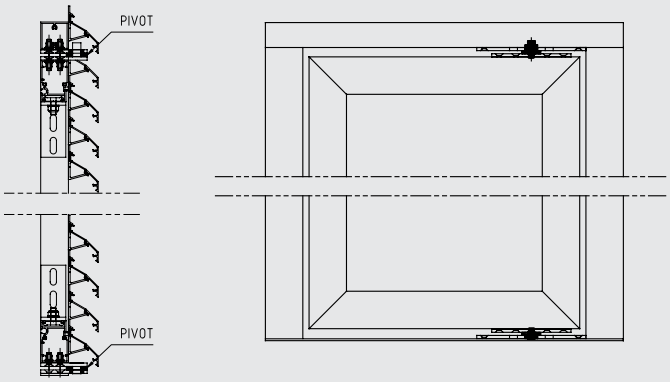
Difference between overall size (O) and clear door opening (C)

O - C (mm)	L.033.01		L.050.01		L.066.01		L.075.01		L.095.01	
	Single	*Double*	*Single*	*Double*	*Single*	*Double*	*Single*	*Double*	*Single*	*Double*
Opening outwards	259.5	399	259.5	399	259.5	399	259,5	399	279.5	439
Opening inwards	218	-	238,5	-	252,5	-	261,5	-	275,5	-

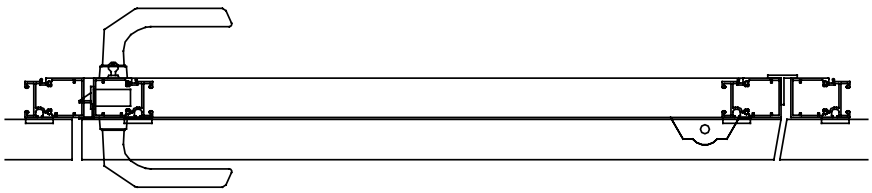


Be aware that the clear opening size (C) is smaller than the actual door size (O) due to the pivoting mechanism. The position of the pivot will in turn depend on the total load of the louvre door. RENSON can assist you in determining the correct sizes.

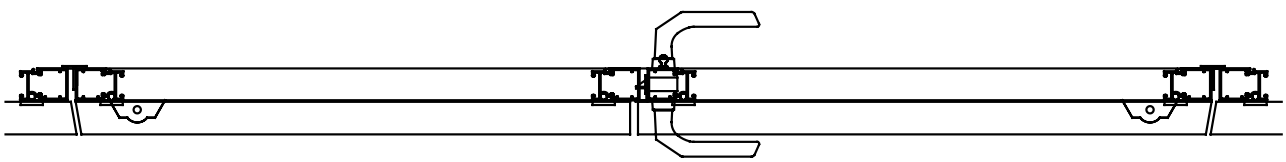
Pivots



Single door



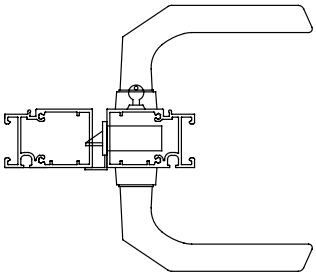
Double door



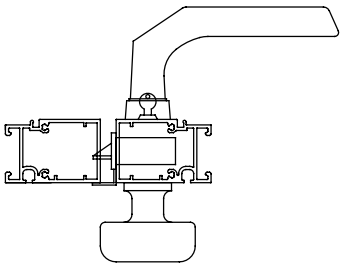
Handles and locks

One can choose between a single, a double or no door handle. In case you do not choose to fit a door handle you can open and close the door with the key to the lock. The handle can be a turning knob or a standard handle. It is important to specify the handle type.

STANDARD SOLUTION



SINGLE HANDLE

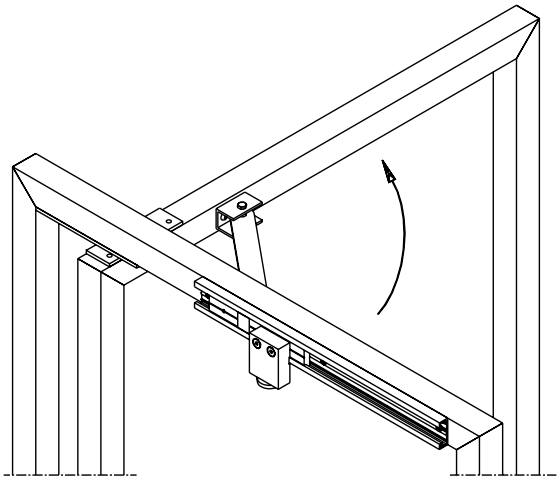


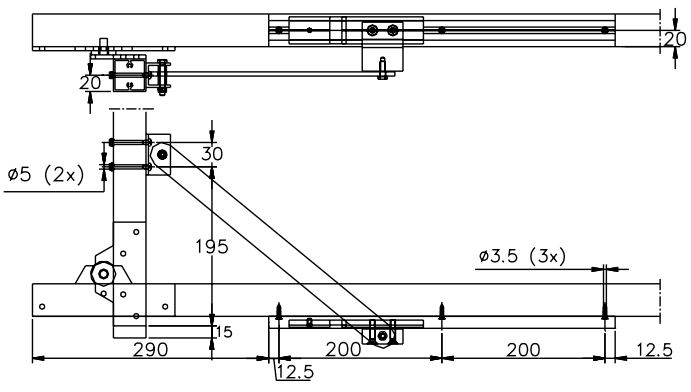
The Yale® cylinder is the only approved option. Other proposals can be considered if full technical data is provided to RENSON for consideration. Other types are available on request.

Accessories such as door dampers, storm chain,... are available on request.

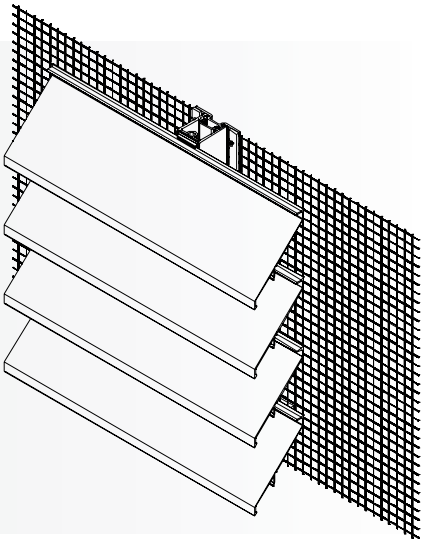
Door restrictor

Door restrictor is available as an option.





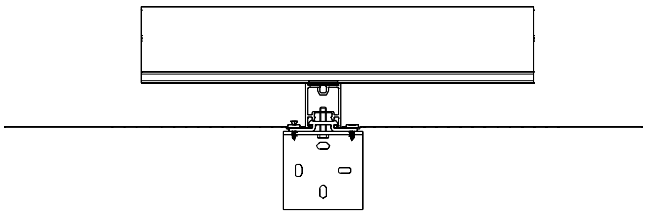
B. Mesh



To prevent the entry of insects, birds or vermin behind the continuous louvres system, RENSON offers various types of meshes.

1. The mesh can be riveted to the rear of the CLS by means of a flat profile.

Various types of stainless steel meshes of different sizes are available on rolls:



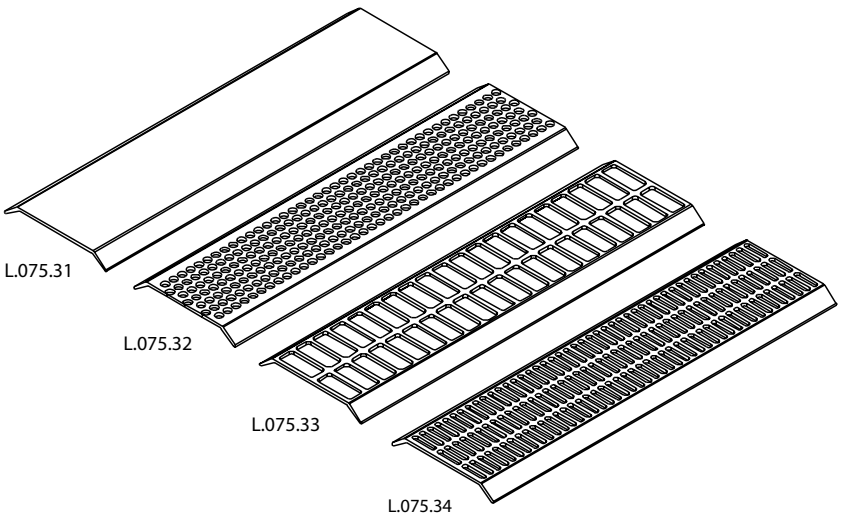
Bracket LZ.4206
- insect: 2.3 mm x 2.3 mm (stainless steel)
- birds: 6 mm x 6 mm (stainless steel)
- vermin: 20 mm x 20 mm (stainless steel)

2. The mesh can be slid between two blades. This is possible with blade type L.075, L.050, L.095.

For blade type L.075.01, there are 4 types of meshes:

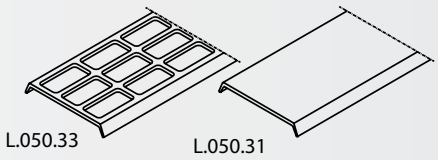
- Dense sheet (BOP) L.075.31
- Insect mesh L.075.32
  - K-Factor = 42,72
  - Physical free area = 23,5%
- Bird mesh L.075.33
  - K-Factor = 19,73
  - Physical free area = 42%
- Insect mesh L.075.34
  - K-Factor = 30,52
  - Physical free area = 28%

Material: hard PVC, colour: black



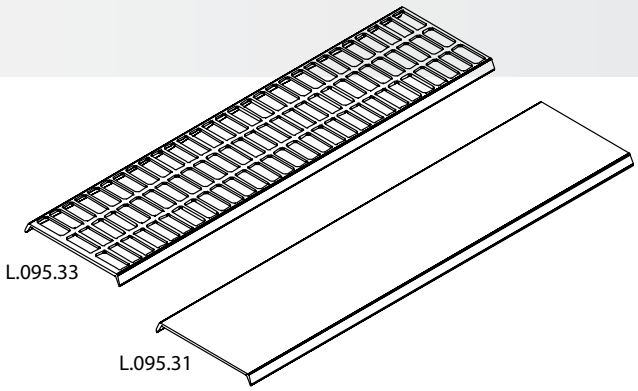
For blade type L.050.01, there are 2 types of meshes:

- Dense sheet (BOP) L.075.31
- Bird mesh L.075.33
  - K-Factor = 19,73
  - Physical free area = 42%



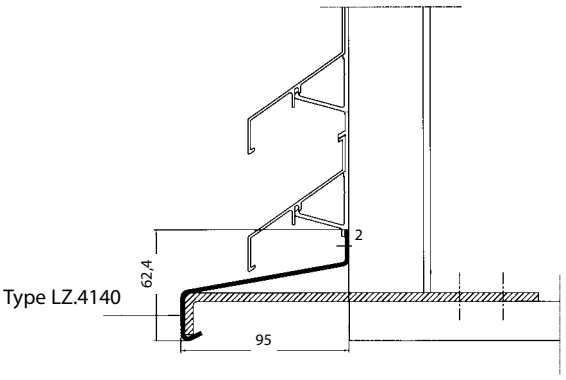
For blade type L.095.01, there are 2 types of meshes:

- Dense sheet (BOP) L.075.31
- Bird mesh L.075.33
  - K-Factor = 19,73
  - Physical free area = 42%



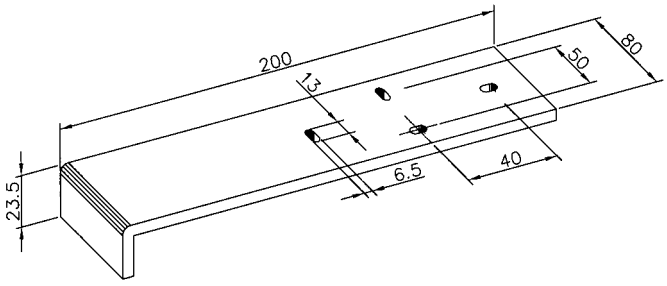
C. Sills

To keep rain outside a sill (Type LZ.4140) can be fitted in the CLS.

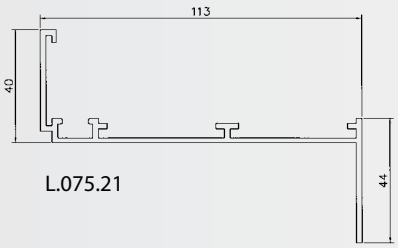


Mounting for a sill type LZ.4201

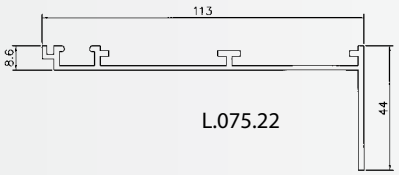
Instead of a sill, for the L.075 system one can use a frame (see point D).



D. Aluminium frames



L.075.21

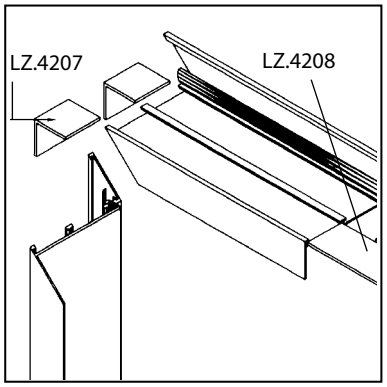


L.075.22

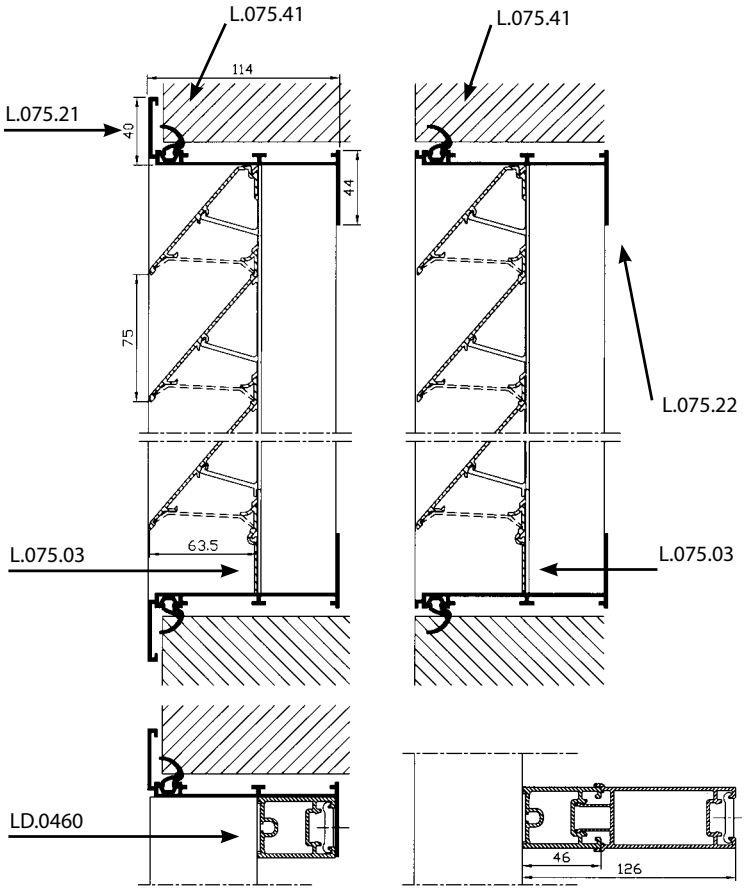
L.075.41

The louvre system type 75 has been designed with the option of a frame with or without flange. The design with flange gives the aesthetically attractive appearance of a continuous blade surface.

A sealing rubber can be used to give the louvre a perfect finish so the use of silicone is not necessary.



LZ.4207: Corner trim connector
LZ.4208: Intermediate trim connector

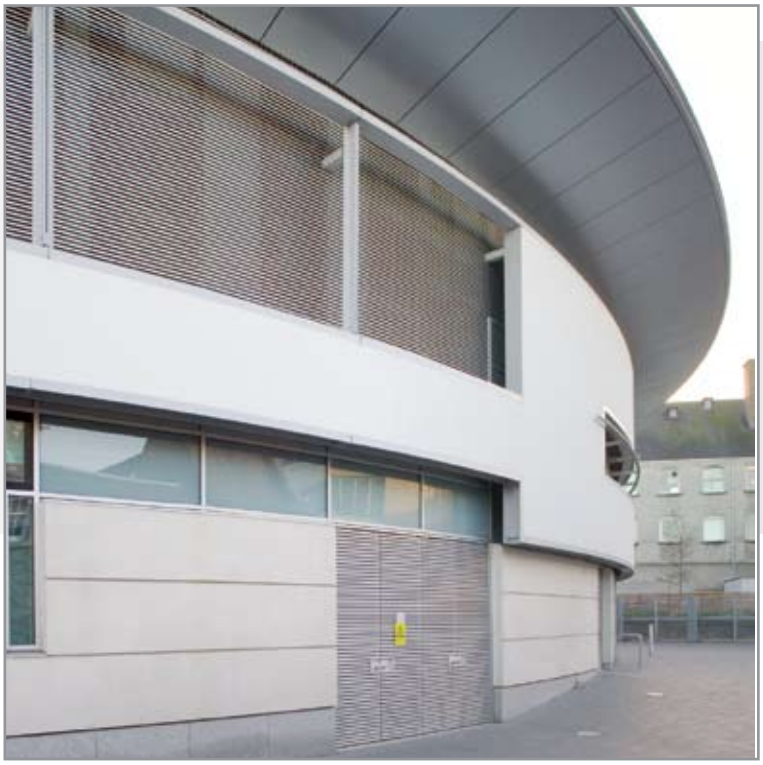


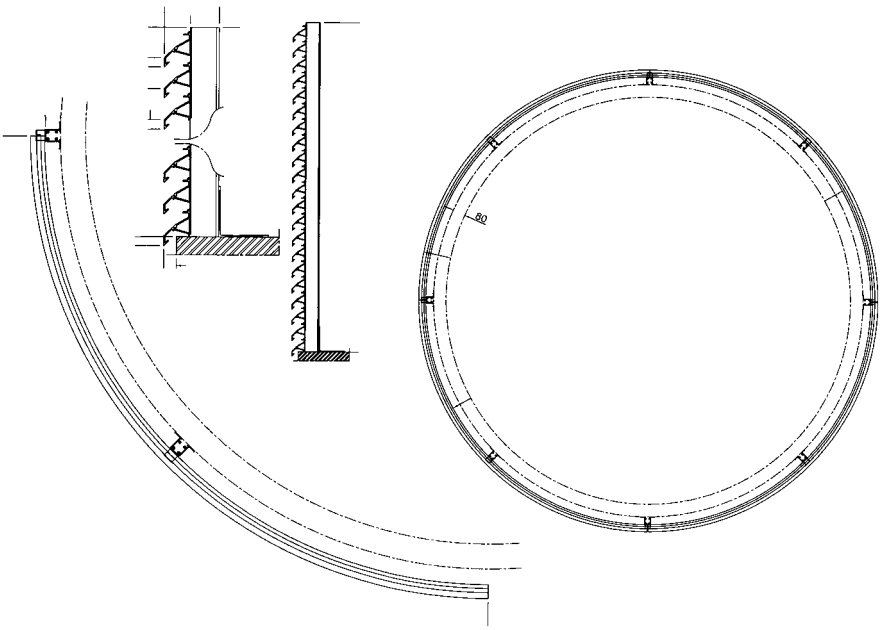
A. Curved blades

Today's designs often call for expressive shapes giving special contours to a building. RENSON has developed a curved assembly system that allows the architect's creativity to be transformed into reality.

Types L.033 and L.050 can be curved with a minimum radius of 800 mm.

Plans for such a curved design must be submitted to the technical department of RENSON for approval before the construction process is started.



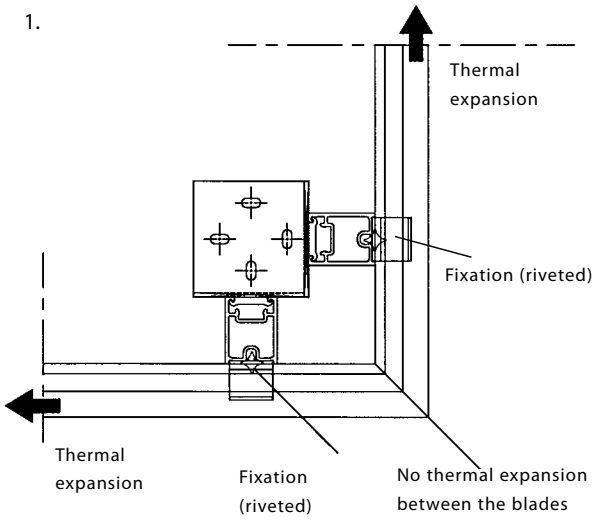


B. Mitred corners

Where a corner is formed, the blades are cut to the correct angle, in order to provide a perfect installation and ensure an aestheticly attractive fassade.

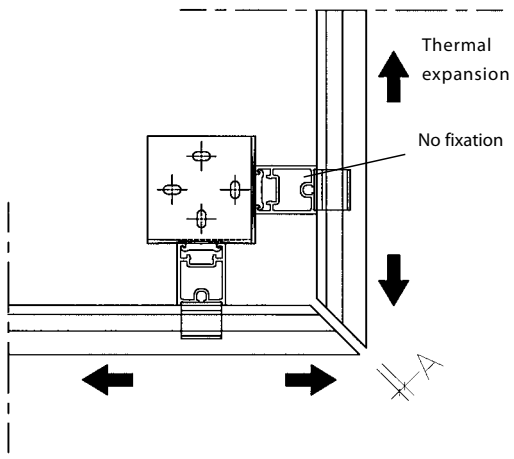
Possible solutions to fit corners:

1.



Expansion
The mullions are fitted as close as possible to the corner

2.



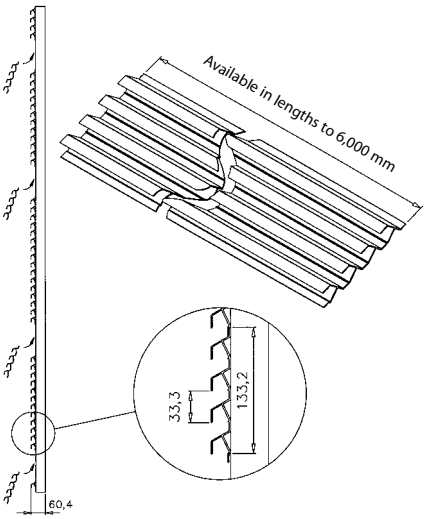
Expansion joint included in mitre
The mullions are fitted as close as possible to the corner

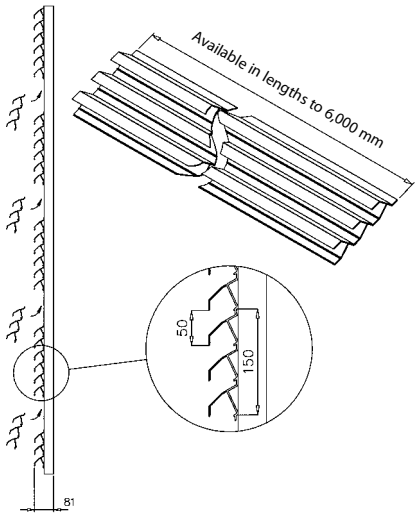
C. Special shapes

RENSON long ago moved on from the limits of a simple square design, and has continuously developed new solutions for specific applications.
These are applications mainly intended to create a certain aesthetic added value, but also applications where functional requirements must be combined with a contemporary design.

D. Block blade L.033.05 and L.050.05

This type of blade offers fast and easy assembly and better vandalism-resistance than the standard aluminium CLS. The blades can only be used for riveting or screw-fixing to an existing full back structure (wall, metal sheeting, ...).
The extruded profiles are only available in types L.033 or L.050.
They consist of 3 (blade L.050.05) to 4 (blade L.033.05) blades extruded together. The profiles are available as punched or unpunched versions. The block blades can be used in conjunction with the standard blades.

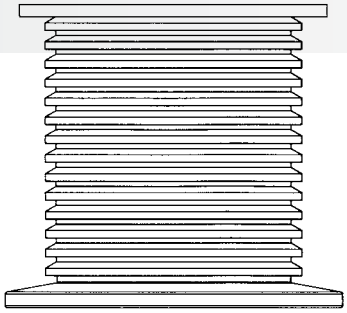


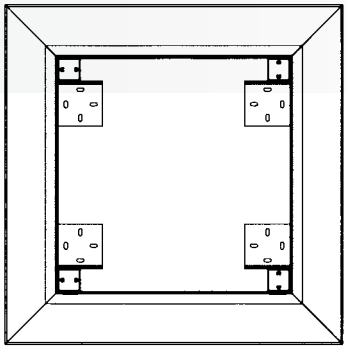


E. Turrets

A turret is placed on the rooftop of buildings to conceal industrial appliances. (chimney stacks,....)

RENSON takes care of complete construction including the top plate and sill.





F. Louvre grilles

With the blades of the CLS LINIUS®, louvres assembled according to requirements can also be produced.
These louvres are made of frame profiles for building in or surface mounting, filled with a blade type depending on passage or aesthetic requirements, optionally fitted with a stainless steel mosquito screen.
The louvre CLS grilles and louvres can then be aesthetically matched.
Louvre panels are available in all forms, sizes, RAL colours, and as permanent or lockable versions.

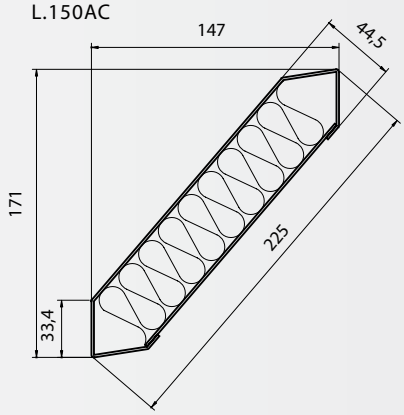
Louvre grilles with moving blades, sliding panels, or fixed or removable surface-mounted grilles for windows are also available.

For more info please see our RENSON louvre brochure.

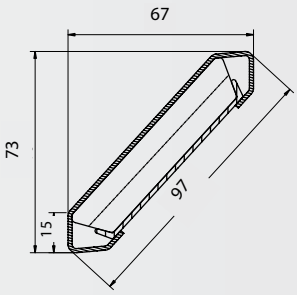
G. Acoustic applications

Noise nuisance is an environmental pollutant. We at RENSON are fully aware of this. RENSON offers a solution with an acoustic louvre to reduce noise pollution and comply with existing regulations. This acoustic louvre system will allow air passage but reduced noise passage. The RENSON technical department is at your disposal to advise and discuss a suitable acoustic construction.

L.150AC



L.060AC



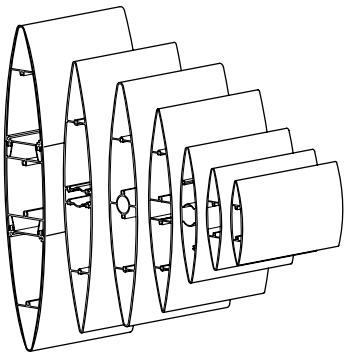
In order to determine the ideal solution, the following factors are important:

- the desired dB noise level
- the distance and location of the noise
- the noise level of the noise source
- the required flow rate

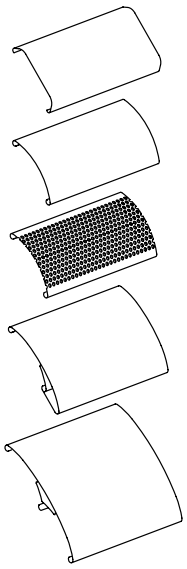
The acoustic continuous louvre system consists of a support structure, acoustic blades and blade supports.
The acoustic blade is filled with sound absorbing and non-combustible mineral wool.

H. Aesthetic façade cladding with SUNCLIPS® and ICARUS® blades

Besides the range of louvre systems, RENSON also offers a whole range of aluminium profiles suitable for sunshading structures.
One of the systems can be vertically fitted to act as a louvre. This structure is mainly intended for purely aesthetic applications and/or sunshading.



ICARUS®



SUNCLIPS®

For more info see the SUNCLIPS® and ICARUS® brochures

Care of equipment and materials

To avoid deformation of blades etc. it is imperative that 'soft handling' methods are used to unload and store materials. Deliveries on pallets may never be stacked more than two high to minimise exposing others on the site to risk.

To prevent damage during storage, handling or delivery, the following rules must be taken into account :

- The products are preferably stored inside.
- With open outside storage, remove the packaging to prevent the entry of water and any overheating.
- Never place the elements directly on damp ground.
- During storage one must guarantee sufficient ventilation of the elements.
- Soiling by cement, mortar or lime must be immediately removed with clean water.

Make sure that material or installations nearby cannot accidentally fall against the boxes and cause damage. The components are packed in wooden crates to protect them against damage. Packages and boxes are labelled with the content. The label has a bar code with the internal computer system reference. Where possible the link is made with the production drawings that can be sent with the goods.

Deliveries are planned so that the correct material arrives in the correct place in the preferred order of use!

General instructions

1. Doors

During the installation of a door in a CLS one must ensure that the fixation of the pivot system is perfectly aligned with the door pillars. For the height of the door one must take account of the level of the finished floor. A small correction afterwards between position and height is still possible using floats. Big differences must be discussed with the site supervisor, taking into account the usual tolerances during assembly.

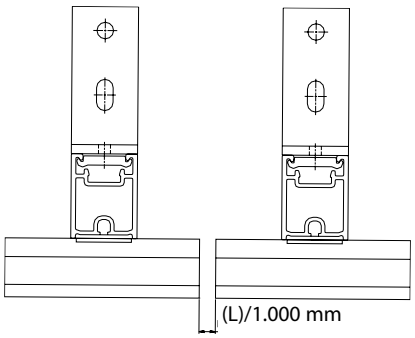
2. Mesh

Fixed to the supporting structure, supplied on a roll. Attached with screws and kept in place by a plate that clamps the mesh against the support.

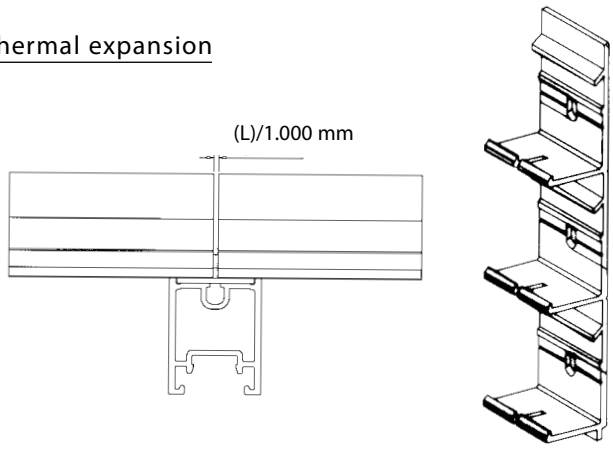
3. Expansion

Respect the thermal expansion of aluminium based on the DIN53752 standard (thermal coefficient of expansion = 0.024 mm/mK) and always leave the necessary space between the profiles.

Connecting piece for thermal expansion



2 separate mullions



1 mullion with double blade support

4. Cleaning frequency

When the aluminium elements are rained upon in a normal way and are placed in a neutral atmosphere, they need to be cleaned thoroughly once or twice a year. Aluminium components situated in an urban or industrial environment need to be thoroughly cleaned at least twice a year. For coastal areas or areas with a strongly polluted atmosphere this frequency should be increased. The cleaning of components not rained upon must be more frequent.

SHORT SUMMARY OF RENSON CONTINUOUS LOUVRE SYSTEM SPECIFICATIONS

Product description
The CLS is made up sections of extruded AlMgSi0.5 aluminium with a finish specified by the architect.

The wall is made up of vertical profiles of type _____
for structural stability, fixed with
aluminium brackets of type _____

The extruded profiles type _____
are fixed on the vertical profiles _____
with blade supports, that are themselves
riveted to the vertical profile.

The blades have a depth of _____
and have a pitch of _____
The total depth of the louvre amounts to _____
The distance between the vertical mullions must be
determined based on the relevant data.
The CLS is to be installed by an authorised contractor.

Technical values
Visual free area: _____
Physical free area: _____
K-factor: _____

Finish
The CLS will be finished _____

RENSON Sunprotection • ZI 2 Vijverdam
Maalbeekstraat 6 • B-8790 Waregem • België
Tel. 0032 (0)56 62 71 07 • Fax 0032 (0)56 62 71 47
info@renson.net • **www.renson.eu**

RENSON Fabrications LTD • Fairfax Unit 1-5 • Bircholt Road
Parkwood Industrial Estate • Maidstone • Kent ME15 9SF
Tel. 01622/754123 • Fax 01622/689478 • Fax 01622/689479
info@rensonuk.net • **www.renson.eu**

RENSON
INNOVATION IN VENTILATION

RENSON: YOUR PARTNER IN NATURAL VENTILATION AND SUN PROTECTION

RENSON, with its rich tradition in innovation and experience since 1909, is profiling itself as an undisputed market leader in natural ventilation and solar shading. Since 2003 our headoffice is located in a remarkable building in Waregem, alongside the E17 Kortrijk-Ghent motorway. The building is an application of our Healthy Building Concept and it serves as a model for our technological professionalism and know how.

A healthy indoor climate is RENSON's priority and this is far more than just a trend. We develop and commercialise products that are energysaving and environmentally friendly. In this way RENSON contributes to the application of the Kyoto climate agreement.

RENSON HAS IT ALL

• Our multidisciplinary R & D department is co-operating with leading European research organizations. This results in many innovative designs and products.

• Our automatic powder coating installation, anodisation unit, moulding centre, plastic injection moulding unit, assembly department and store are accommodated within an area of 75.000m^2. Thanks to this vertical integration, RENSON supplies high quality products.

• Our sales and marketing department has its headquarters in Belgium. There are branches in France and Great Britain, and we are also operating across the European borders.

• The diversity and competence of our staff guarantees the correct solution for your building project. Our main goal is to establish a constructive long term relationship with all building specialists.

Conditional technical changes • The most recent edition of the brochure can be downloaded on www.renson.eu

RENSON Projects • ZI 2 Vijverdam • Maalbeekstraat 6 • B-8790 Waregem
Tel. +32 (0)56 62 71 07 • Fax +32 (0)56 62 71 47 • projects@renson.be • www.renson.eu

RENSON Fabrications LTD • Fairfax Unit 1-5 • Bircholt Road
Parkwood Industrial Estate • Maidstone • Kent ME15 9SF • Tel. 01622/754123
Fax 01622/689478 • Fax 01622/689479 • info@rensonuk.net • www.renson.net

RENSON
INNOVATION IN VENTILATION