

# Sunscreens Brise Soleil

- Fixed Louvre Screens  
50/75/100
- Adjustable Ellipsoid Blades  
200/300
- Fixed Ellipsoid Blades  
100/200/300/400



Louvres Sunscreens Natural Ventilators

Ruskin Air Management Limited  
[www.ruskinuk.co.uk](http://www.ruskinuk.co.uk)

# Sunscreens / Brise Soleil

## Introduction

The use of sunscreens to reduce solar heat gain through glazing is recognised as an important consideration in modern buildings.

In Northern latitudes such as the UK, the sun's altitude is lower, resulting in more exposure for vertical glazing to heat gains.

With increasing emphasis on controlled internal environments and the need for reduced energy consumption, planning for solar gains is necessary even in air conditioned buildings.

Besides being very practical, sunscreens also provide the designer with additional creative opportunities.

## Screen type

Sunscreens are produced in a range of 'louvred' blades or in ellipsoid blade styles. Ellipsoid blades may be used in vertical or horizontal form and can be adjustable.

## Material

All sunscreen blades are aluminium. Framework or side plates are also in aluminium, while wall brackets, brace arms and support arms are normally in steel or stainless steel.

## Finishes

Aluminium profiles are available in natural anodised or polyester powder coat. Steel is plated and polyester powder coat finished. Stainless steel is self colour.

## Fixing methods

Simple screens may be fixed to structure via wall brackets and brace arms. Larger / heavier screens can be fitted via support arms or direct to structure.

Screens may be fitted to curtain wall systems by the use of our special brackets. However, the suitability of the curtain wall profile to carry the imposed loads must be confirmed.

Centres of wall brackets / support arms depends on screen type, span and design wind load.

## Sunscreens above windows

The length and width of projection of a screen depends on a number of variable factors among which are time of year and time of day.

For south facing elevations in the UK the highest sun altitude occurs at mid day. The sun altitude rises during the months of April and May, peaking at June, then declining through to September.

The east-west sun path also means that for optimum shading a sunscreen should be wider than the window in question.

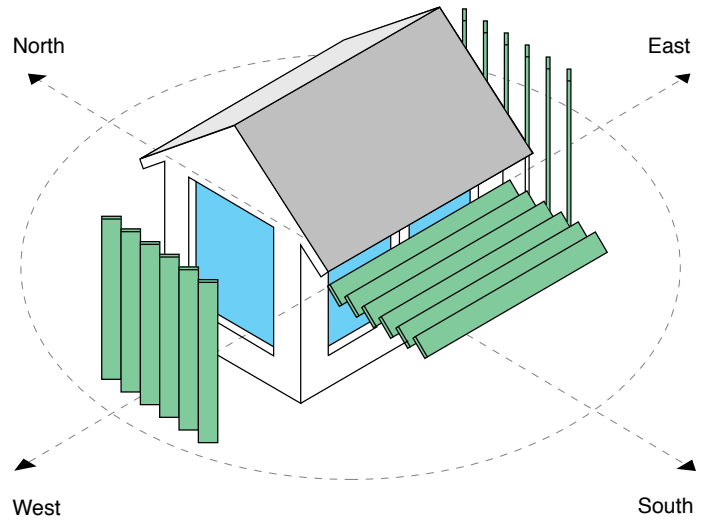
However providing optimum shading for all occasions based solely on sun position would be incorrect. Shading requirements should be considered (by the relevant consultant) in conjunction with the type of glazing, building structure, type of sky (cloudy / clear) etc.

Sun altitude at 52° latitude at 12 noon

March 38°  
May 58°  
June 62°  
Aug 50°  
Sept 38°  
Dec 15°

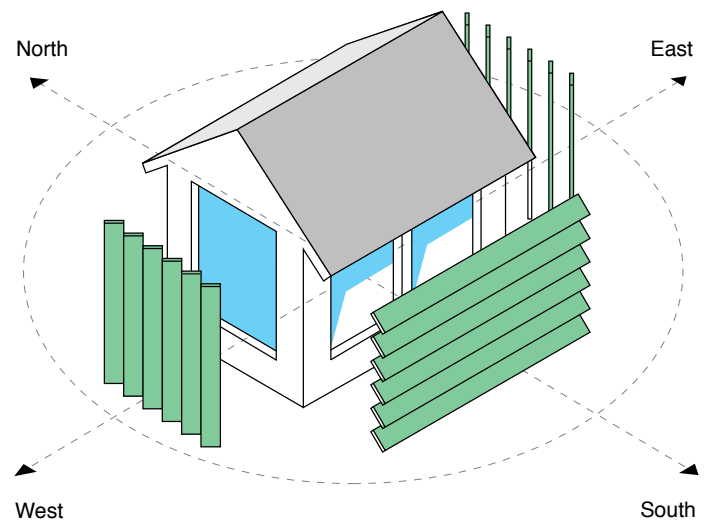
Sun altitude at 55° latitude at 12 noon

March 35°  
May 55°  
June 58°  
Aug 47°  
Sept 35°  
Dec 12°



South facing sunscreens should be horizontal, either projecting from the head of the window or horizontal placed in front of the window.

Screens facing east or west should be vertical (moveable).



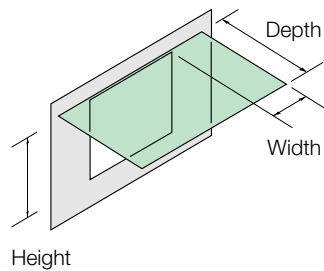
## Solar Altitude and Azimuth

Altitude is the angle up from the horizon.  
Azimuth is the angle along the horizon, with zero degrees corresponding to north and increasing in a clockwise fashion.

Sunscreen 'depth' and 'width'.

$$\text{Depth} = \frac{\text{height}}{\tan \text{VSA}}$$

$$\text{Width} = \text{depth} \times \tan \text{HSA}$$



Width is the size that the screen should project beyond the window jamb for maximum sun screening.

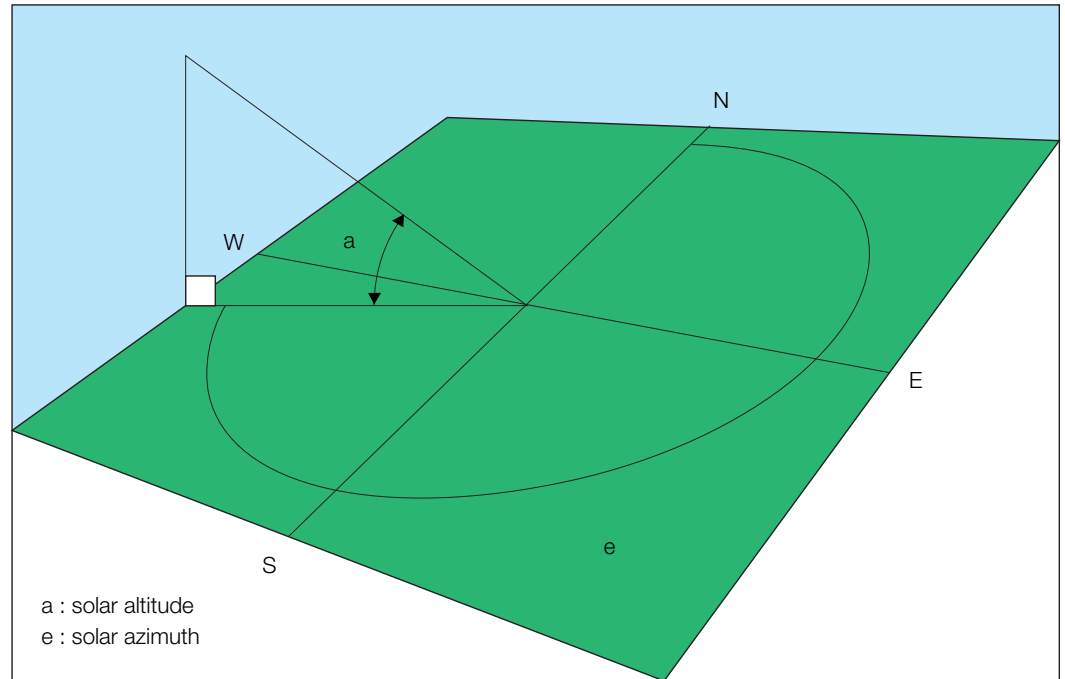
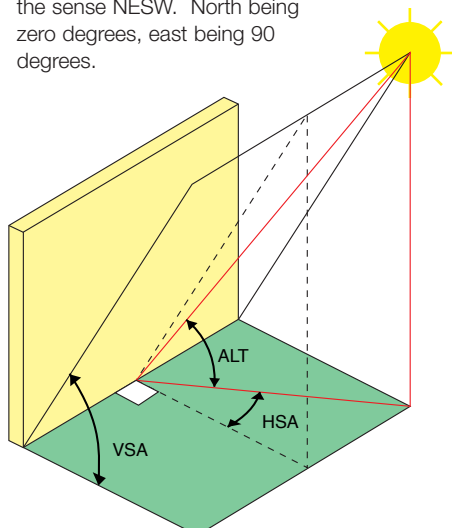
### Shadow Angles

When shading a window, the absolute azimuth and altitude of the sun are not as important as the horizontal and vertical shadow angles relative to the orientation of a specific surface.

The Horizontal Shadow Angle (HSA) is the angle between the orientation of a surface and the solar azimuth.

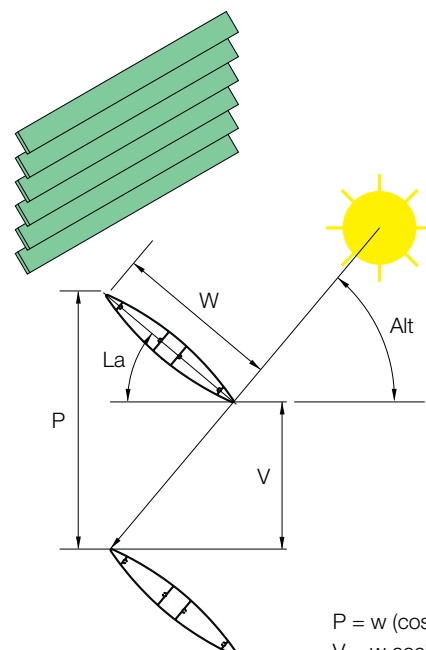
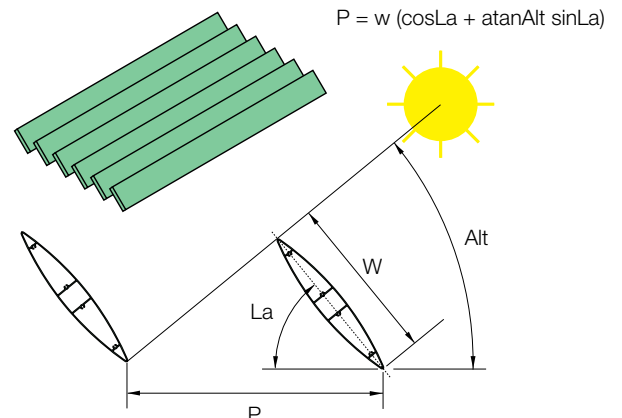
The Vertical Shadow Angle (VSA) is the angle formed by a virtual plane between the bottom left hand and right hand corners of the window and the sun.

HSA and VSA are measured in the sense NESW. North being zero degrees, east being 90 degrees.



### Sunscreen blade angle and pitch

Blade spacing must cater for the high point of the sun in June and for the low point - normally considered to be September (while in winter months the sun is lower it is also weaker due to general daylight conditions).



$$P = w (\cos La \tan Alt + \sin La)$$

$$V = w \cos La \tan Alt$$

## Ellipsoid fixed blades

### Sizes

Fixed blades are available in 100, 200, 300, and 400 mm styles.

### Blade span

The span (length) of blades does depend on design loads (see blade length guide).

### Fixings

The small 100 mm and the 200 mm blades would normally be assembled on to side plates (ladder construction), for connection to support arms.

Blades types 200 and 300 can be fitted as per the adjustable blade details but with the link rod locked in the required position. This arrangement caters for expansion / contraction of blades.

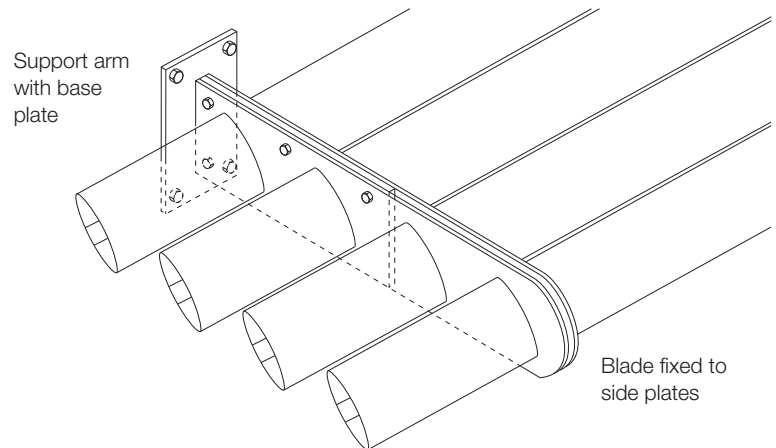
The large 400 blades would generally be fitted direct to structure utilising our special expansion bracket fittings.

### End caps

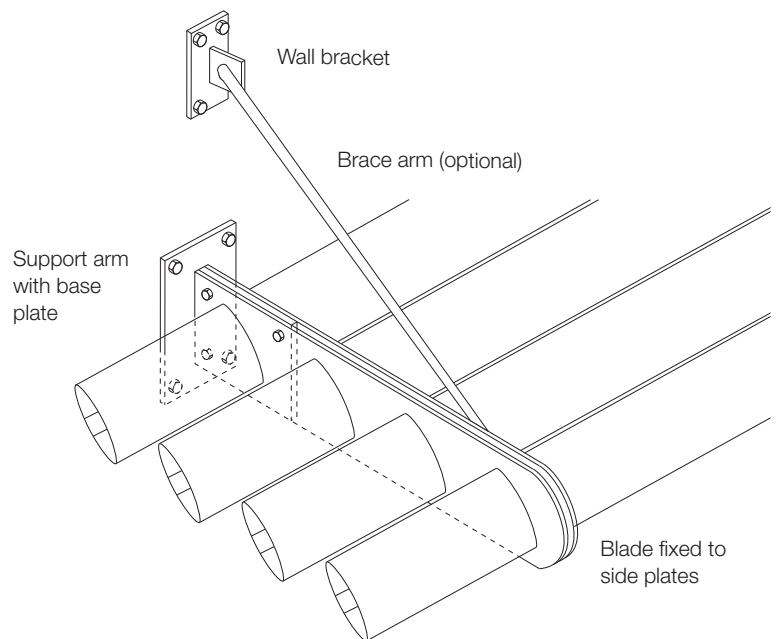
Profiled end caps are fitted to blades with expansion fixing arrangements.

For shorter blade spans, end caps may be used for fixing to support arms / structure.

### Fixing to steel / concrete

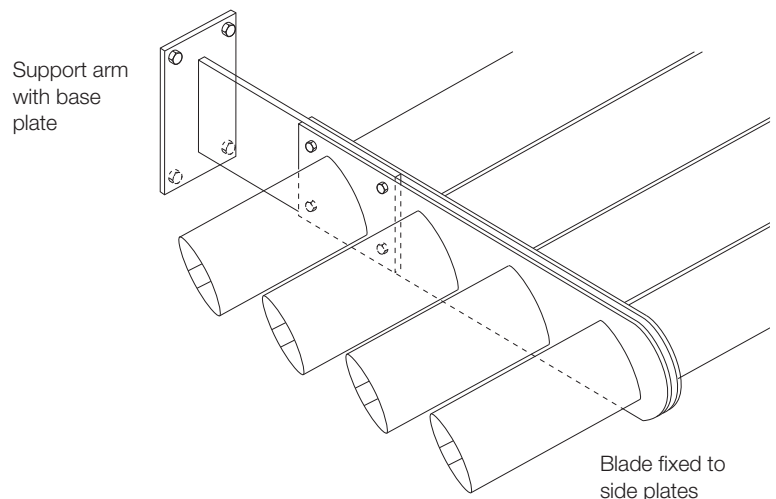


### Fixing to brick work



### Fixing through cladding to structure

Stub arm fixed prior to cladding





## Ellipsoid adjustable blades

### General

Adjustable blades have support / pivot axles housed in an aluminium channel frame - top and bottom for vertical applications and each side for horizontal. A link rod joins each sunbreaker blade to ensure uniform movement.

Control of adjustable units is by electric actuator fitted to the connection rod.

### Rotation

Blade rotation is clockwise.

### Sizes

Blades are available in 200 mm and 300 mm profiles produced in modular sizes with 'non standard' lengths being catered for by closure angles.

### Blade Span

The span (length) of blades does depend on design loads.

Recommended spans are given for each blade type.

### End caps

Profiled end caps are fitted to ellipsoid blades.

### Link rods

Aluminium channel with stainless steel pins.

### Connector

Flat bar for joining link rods on larger screens.

### Head / cill or side frames

Extruded aluminium channel.

### Axles

Stainless steel:

Axles have nylon pivot bushes. Head and side axles are fitted with centralising collar.

### Electric operation

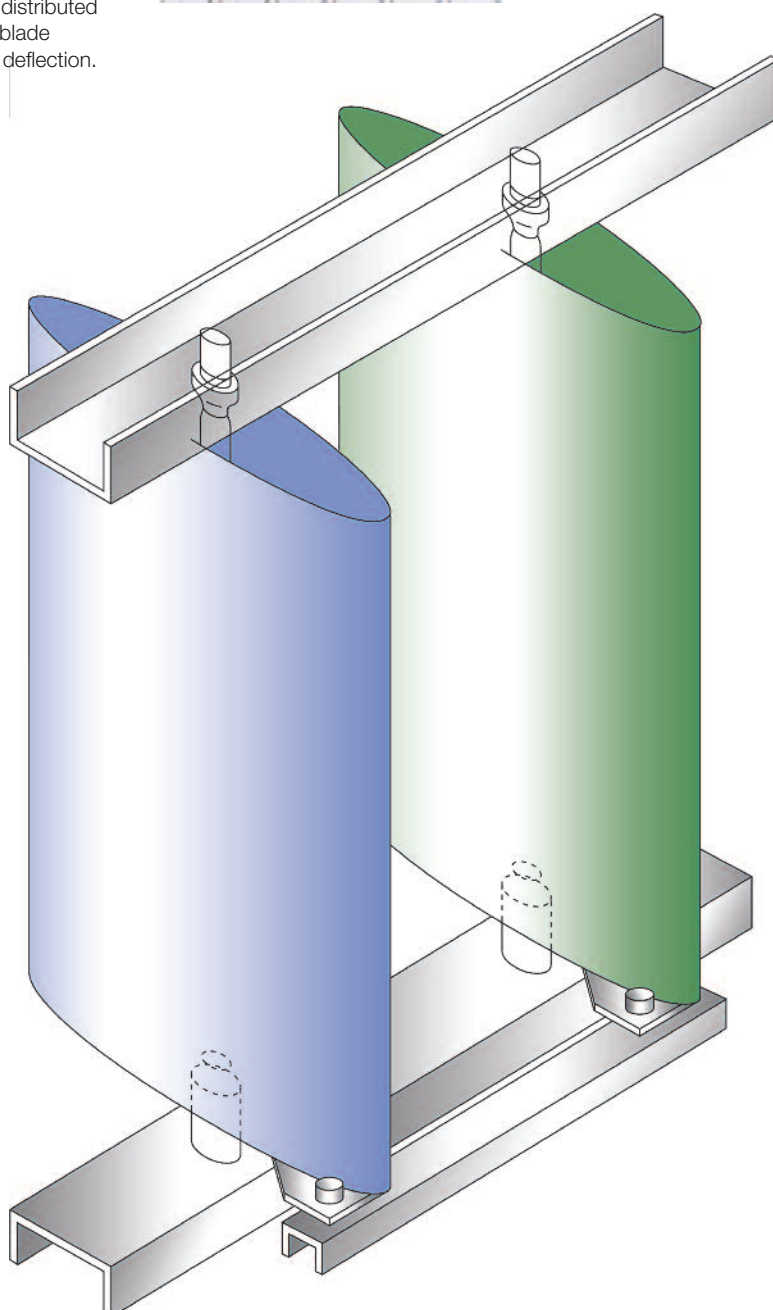
24 volt motors can be supplied. These are fitted with an additional protective cover.

### Technical performance

The axle mechanism has been subject to a 50 000 cycle wear test with no deterioration of component parts.

Pivot axles and channel frame have had static load test of 150 kg (1.5 kN) applied to each axle for a period of 20 mins without permanent distortion to axle or frame.

Ellipsoid blades have been subjected to uniformly distributed load tests to establish blade length and acceptable deflection.









## Sunscreens fixing to curtain wall mullions

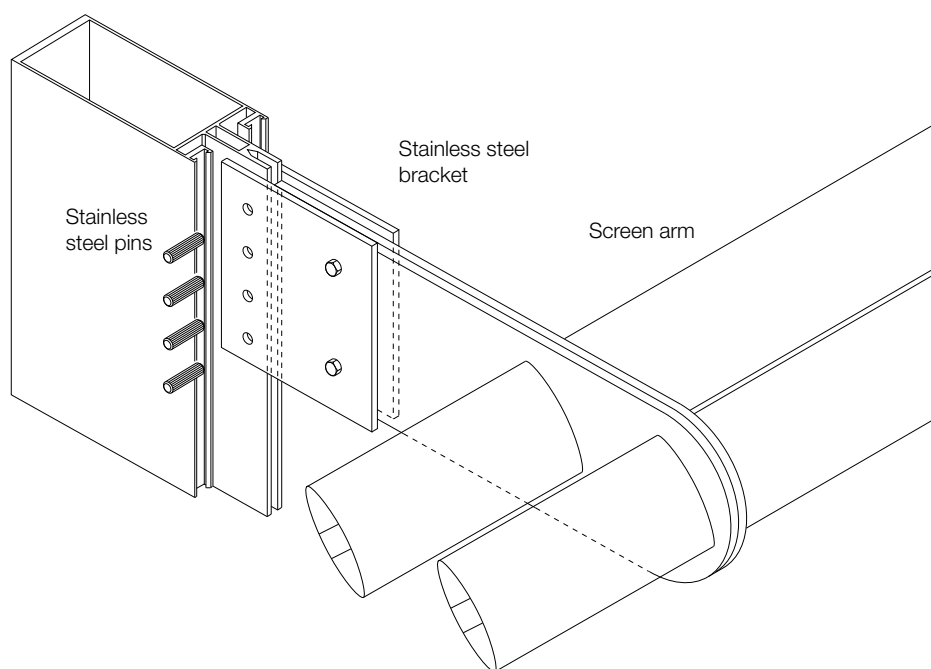
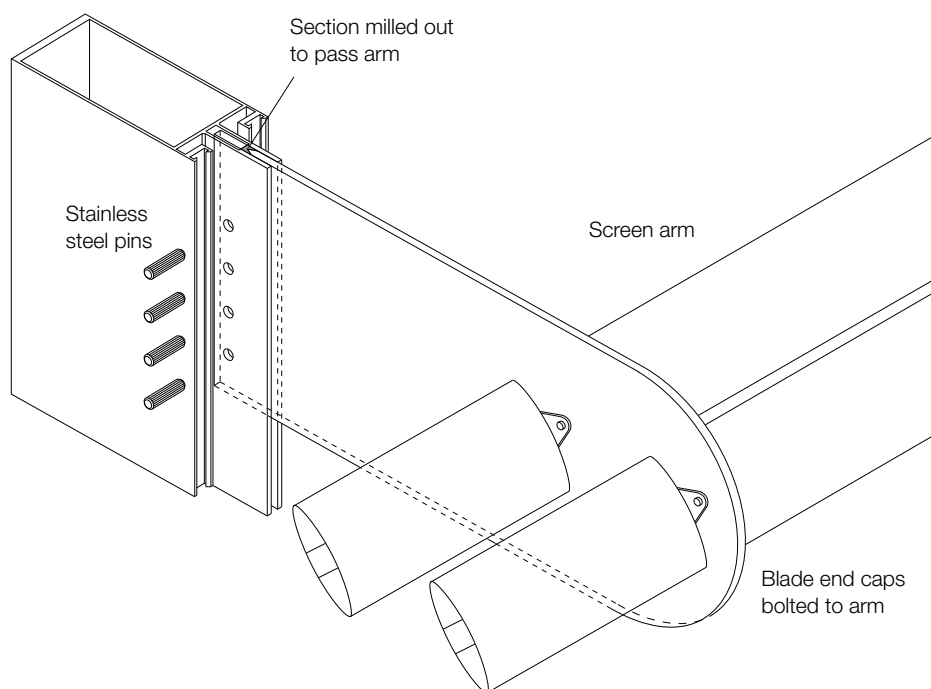
Sunscreens may be fitted to various types of curtain wall mullions.

These details show the most common form of fixing sunscreen support arms. The holes required in the mullion would normally be factory drilled for accuracy.

Where long blade spans or larger projecting screens are required, brace arms may be needed to distribute loads over the mullion.

For these screen applications, the curtain wall supplier must confirm the suitability of their system profile to carry the imposed loads.

The depth of screen arms is determined by screen projection, span and imposed loads (wind / snow / self weight), as is the number and size of fixing pins.



# Louvre fixed blade screens

## Sizes

Louvred screens are produced from our 50, 75 or 100 blade profiles.

## Framed screens

These are light weight simple screens of short projection and limited span.

They are fitted to structure via wall brackets and have brace arm supports.

## Ladder screens

Screens with greater projection or longer span between supports can be produced in this construction. Also used where brace arms are not desired.

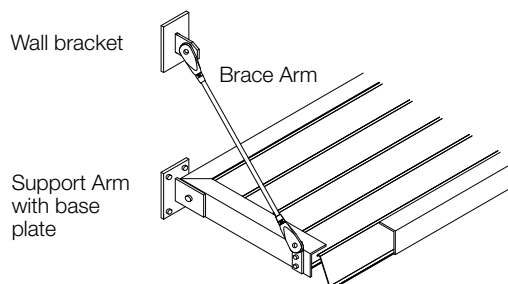
A 75 mm diameter tube fascia is available for ladder screens.

Simple brace bars are fitted to blades where required. Where fascia tubes are used the 'brace' will be a rod / spacer.

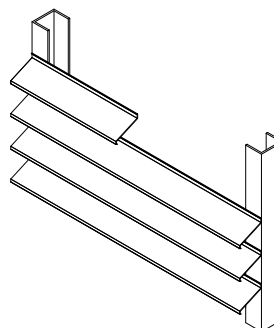
## Vertical screens

These will generally follow the same format as above.

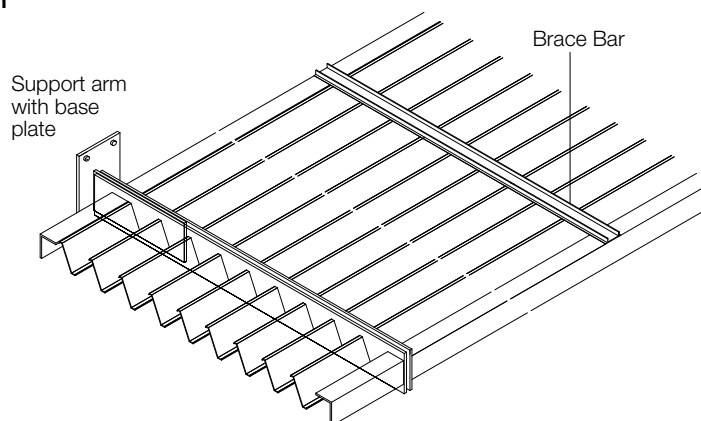
## Framed Screens



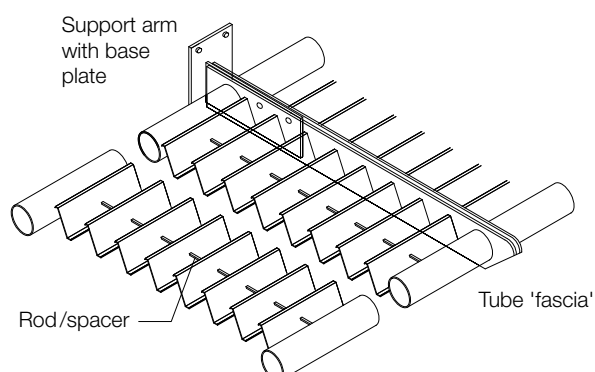
## Vertical Screen



## Standard Ladder Screen



## Special ladder for use with fascia tube and rod/spacer



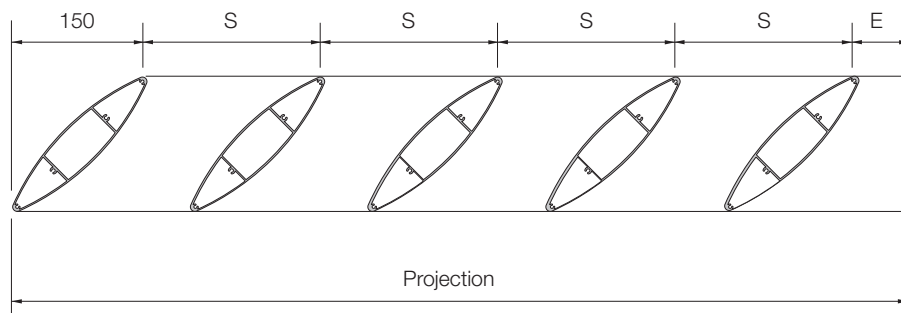


## Standard ellipsoid sunscreens with 200 blades

Maximum length between support arms based on  $1200 \text{ n/m}^2$  wind load is 3000 mm.

Screens with a projection of up to 1000 mm will have 3.52 mm x 152 mm extruded aluminium side plates.

Screens projecting 1050 mm up to 1200 mm will have 6.35 mm x 152 mm extruded aluminium side plates.



Projection	No. of blades	Spacing (S)	End Dim (E)
600	3	200	50
650	3 *	190	40
700	4	175	25
750	4	185	45
800	4	200	50
850	4 *	190	50
900	5	190	50
950	5	190	40
1000	5	200	50
1050	5 *	195	40
1100	6	180	50
1150	6	190	50
1200	6	200	50

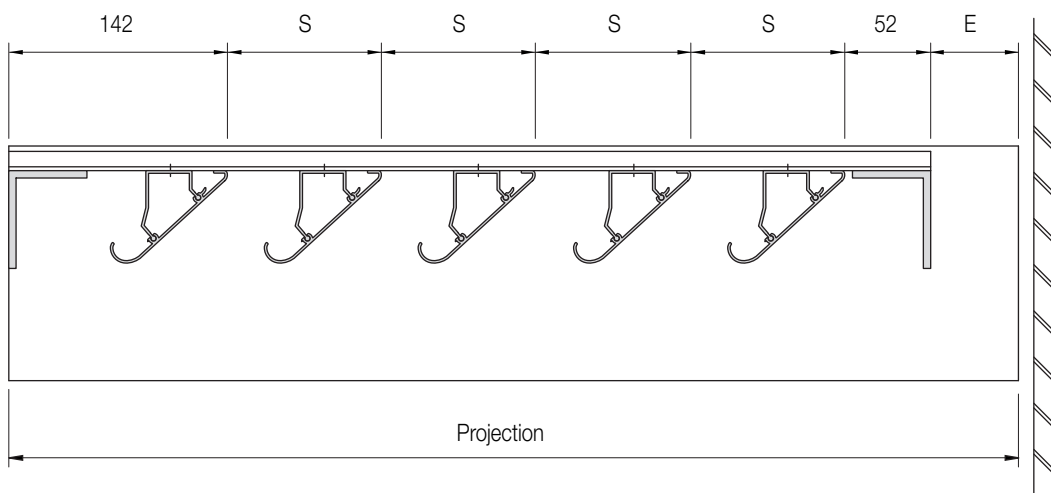
\* fitted with fascia tube

## Standard ladder sunscreens with type 75AB blades

Maximum length between support arms based on  $1200 \text{ n/m}^2$  wind load is 2400 mm.

Screens with a projection of up to 1000 mm will have 3.52 mm x 102 mm extruded aluminium side plates.

Screens projecting 1050 mm up to 1200 mm will have 4.76 mm x 152 mm extruded aluminium side plates.



Projection	No. of blades	Spacing (S)	End Dim (E)
600	5	90	46
650	5	100	56
700	6	90	56
750	6	100	56
800	7	90	66
850	7	100	56
900	8	95	41
950	8	100	56
1000	9	95	46
1050	9	100	56
1100	10	95	51
1150	10	100	56
1200	11	95	56

### Brace bars

Frame length mm    No. of  
brace bars

Up to 1000 mm	-
1001 to 2000 mm	1
2001 to 2400 mm	2

# F/H Sunscreens

## Introduction

A simple pleasing design for fitting to curtainwall and window systems.

## Screen Type

F type screens are fixed and would generally be used in conjunction with inward opening windows.

H type screens are hinged to enable cleaning of fixed window and curtainwall systems from the outside.

## Material / Construction

50 mm diameter tubular extruded aluminium head rail, fitted to aluminium mounting brackets with stainless steel axles.

## Ellipsoid cill rail

100 mm x 10 mm extruded aluminium.

Screen blades and spacer tubes from extruded aluminium.

Screens are 'locked' with 8 mm diameter stainless steel core rods. Rods are 150 mm from each end and at 1200 mm maximum centres.

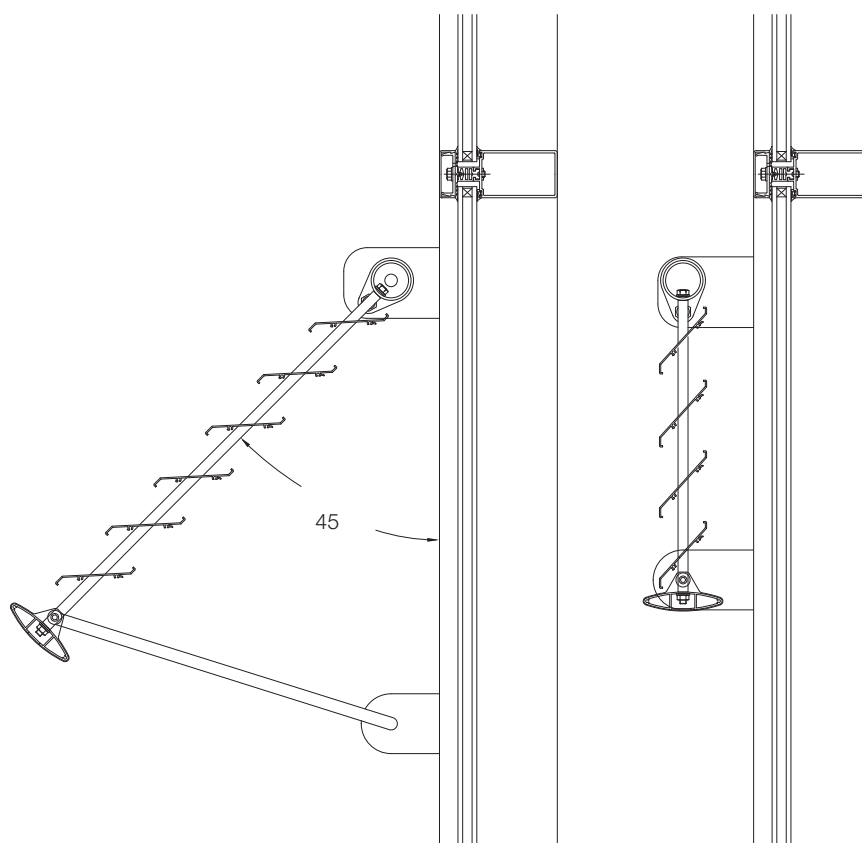
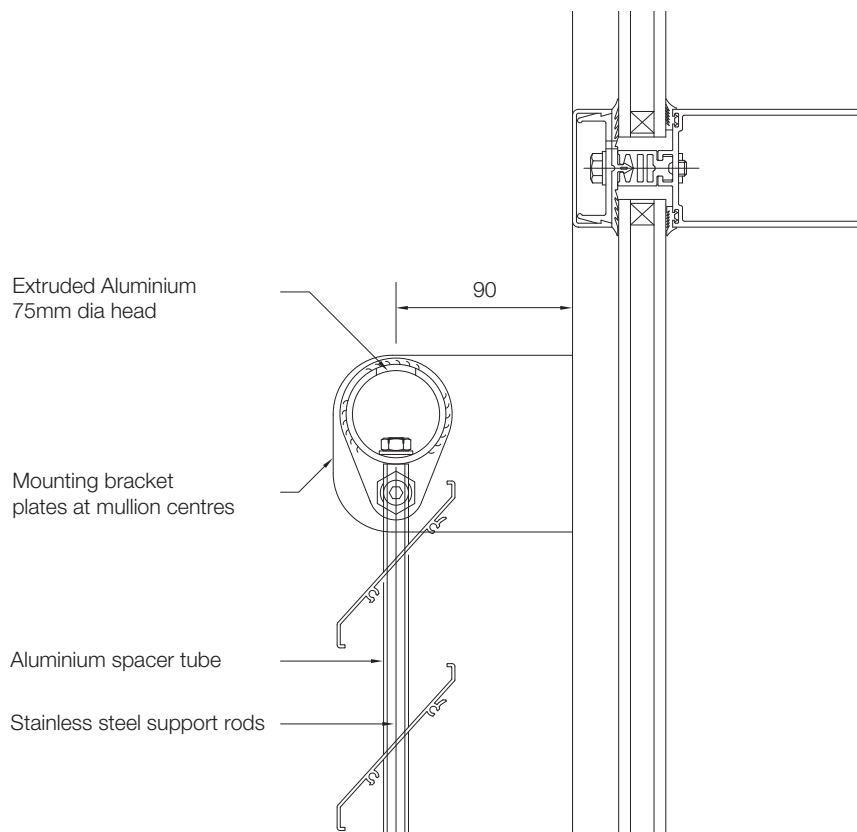
Hinged screens have aluminium support arms for use when the screen is required to be held 'open'.

Hinged screens are secured to a cill mounting bracket by lever 'bolts'.

Fixed screens are fitted to the cill mounting bracket by stainless steel pins.

## Finishes

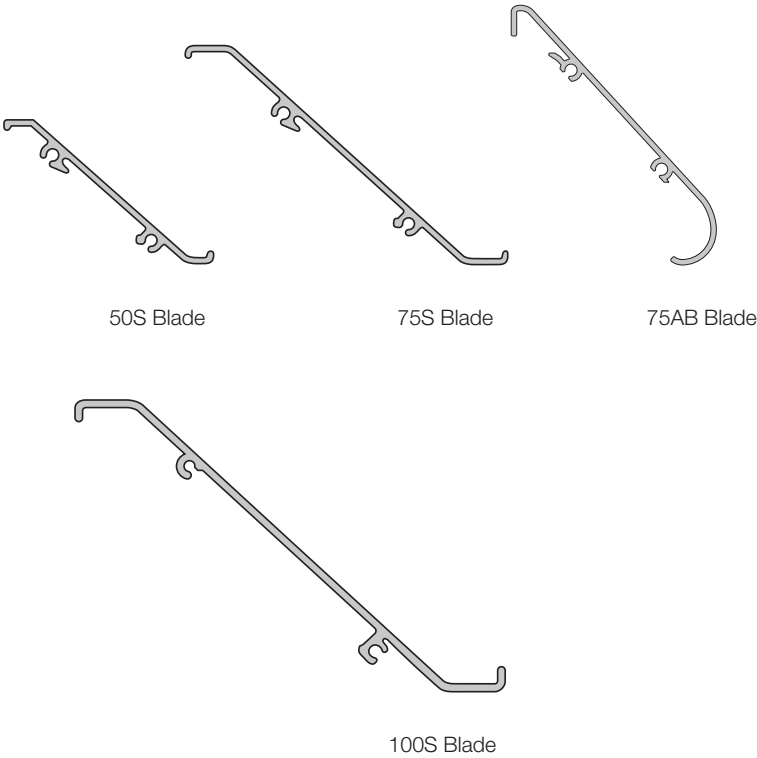
Available in polyester powder coat and anodised finishes.



# Ellipsoid blade span guide

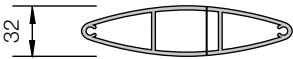
## Louvre blades

75S special ladder screen will span 2400 mm with 1200 mm projection at 1200 n/m<sup>2</sup> wind load.

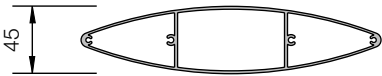


## Ellipsoid blades

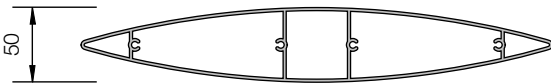
Type 100



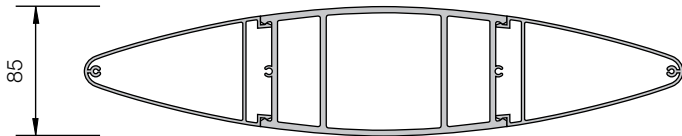
Type 200S



Type 300S



Type 400

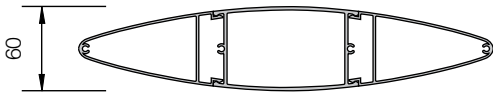


Type	100	200S	300S	400
Windload n/m <sup>2</sup>	Span mm			
600	1950	3850	4200	6000
900	1750	3550	3850	5700
1200	1600	3350	3600	5400
1350	1550	3250	3500	5300
1500	1500	3150	3400	5200
1700	1450	3050	3300	5000
2000	1400	2950	3200	5000
Deflection L/150		Deflection L/175		Deflection L /200 or max 25 mm

Spans are based on blades being at a 45 degree angle.

This table is for guidance. Each project should be confirmed with our design office.

Type 300





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# naco

Louvres Sunscreens Natural Ventilators