



**KINGFISHER SOLAR SHADING SYSTEMS**



## SOLAR SHADING

### Solar heat gains

On sunny days, solar heat gains through glazing can far outweigh other sources of heat in a building. Apart from the direct heating effect of sunlight, re-radiated heat becomes trapped inside glazing, increasing the heat gain. This means either that conditions inside the building become uncomfortably warm, or that air conditioning and ventilation loads are greatly increased to compensate.



With the trend towards naturally controlled internal environments within buildings, solar shading, especially when combined with natural ventilation, represents an increasingly desirable alternative or complementary strategy to air conditioning or mechanical ventilation. This approach can provide savings in running costs as well as general energy savings and consequent environmental benefits. Even in air-conditioned buildings, if solar shading is used there is a saving by reducing the cooling requirement on hot sunny days.

### Solar shading

Studies have shown that properly designed external shading on south, east and west facades can reduce solar heat gain by up to 85%.

Increased use of natural lighting contributes to reducing energy costs. External shading can reduce direct glare whilst allowing high levels of diffused (indirect) natural light.

Control of light levels is important in buildings such as museums, art galleries and greenhouses, for conservation and climate control. Solar shading can play a major part in the lighting control strategy.

### External shading

External shading is often preferable to the use of internal blinds because:

- It cuts out solar energy before it passes through the glazing (whereas internal blinds absorb solar heat and radiate it back into the building).
- It allows higher levels of glare-free diffused natural light, reducing artificial lighting energy costs.
- It allows natural ventilation through opening windows.
- It can be used as a striking feature of the building's design.
- It can provide greater privacy by shielding glazing.
- It can provide an uninterrupted outside view.

## KINGFISHER SOLAR SHADING SYSTEMS

Kingfisher solar shading systems can be used in new or refurbished buildings, and a wide range of installations is possible.

Location and orientation of the building can influence the solar shading design. We can advise on design criteria such as blade type, angles and spacings for each installation, taking into account location, orientation, solar control requirements, and provision for maintenance access, window and blade cleaning.

Installations are normally carried out by Kingfisher trained personnel, and there is a range of fixing components to suit most types of facade.

Range and applications		Page
<b>KS Z Z-blade sunbreaks</b>		<b>4</b>
<i>Description</i>	Continuous fixed blades or individual framed panels for reduction of solar heat gain through glazing. Economical supply and installation.	
<i>Applications</i>	Offices and other commercial/public buildings.	
<i>Installation</i>	External, projecting horizontally above glazing, or vertically in front of glazing. Also faceted curves.	
<b>KS E Elliptical blade sunbreaks</b>		<b>6</b>
<i>Description</i>	Continuous blades for reduction of solar heat gain through glazing. Great rigidity allows large spans. Normally fixed, but controllable motorised versions available.	
<i>Applications</i>	Offices and other commercial/public buildings.	
<i>Installation</i>	External glazed facades including faceted curves; parallel to the facade (vertical) or projecting (horizontally or sloping).	
<b>KS Sunscreen</b>		<b>8</b>
<i>Description</i>	Controllable louvre system for reduction of solar heat gain and precise regulation of daylight levels. Manual or automatic operation.	
<i>Applications</i>	Museums, art galleries, greenhouses, conservatories, libraries, offices, conference halls.	
<i>Installation</i>	Internal or external to sloping, horizontal, curved or barrel vault glazing, rooflights and glazed atria.	
<b>KR Rollerscreen</b>		<b>9</b>
<i>Description</i>	Tensioned-fabric system to compensate for fluctuations in solar gain or light level. Manual or automatic operation. Also heavy-duty gravity-fall non-tensioned version.	
<i>Applications</i>	Shopping malls, atria, offices, airports, conference centres and hotels.	
<i>Installation</i>	Internal or external.	
<b>Purpose designed systems</b>		<b>10</b>
<i>Description</i>	Systems purpose-designed to suit application, installation and aesthetic requirements.	

## KS Z EXTERNAL SUNBREAKS



External solar shading system using Z-profile blades. Designed as a complete fully-flexible system, supplied in component form for site assembly or in pre-assembled panels. Installed projecting horizontally above glazing, or inclined, or on vertical arms in front of glazing (examples illustrated).

### Composition

Blades and support arms are extruded aluminium alloy (grade 6063 T6 to BS 1474). Support brackets and braces are aluminium, steel or stainless steel. Blade clips and fixings are stainless steel.

### Accessories

Fascia trims, angled brace arms, bracing wires and drop rod supports as required. Maintenance walkways.

### Size

Blade length up to 6m maximum for continuous runs (where access permits). Blade angle fixed at 45°. Blade centres to suit application, normally 200mm (KS 200Z) or 135mm (KS 135Z). Support arms up to 3m centres.\* Horizontal projection variable to suit application. Choice of support arms according to projection and loading.

### Appearance

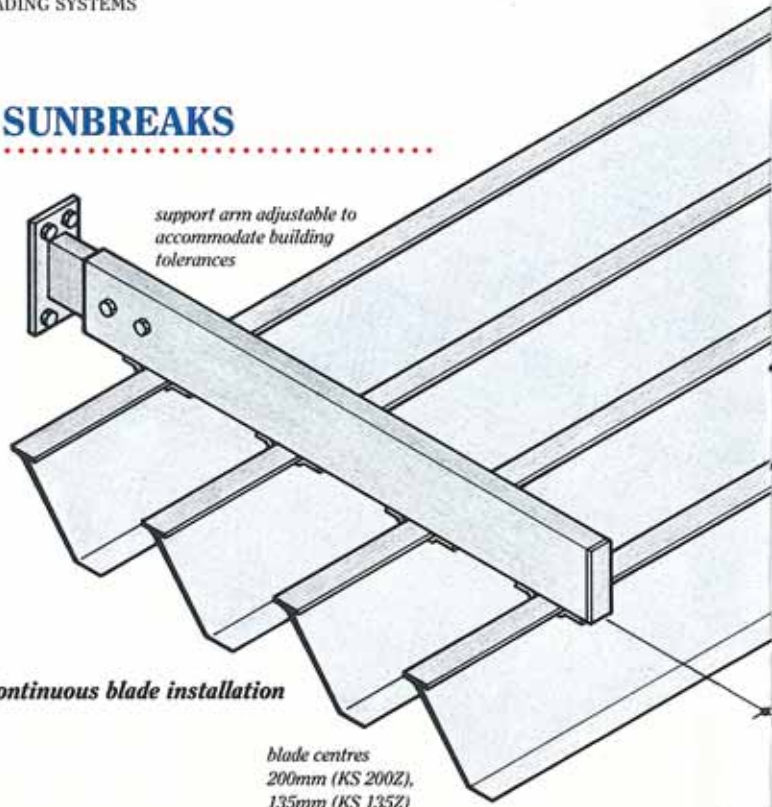
Standard finish: polyester powder coated to BS 6496 in a RAL colour from our standard range. Alternative finishes: PVF2, natural or colour anodised (AA25 to BS 3987), mill finish. Blades, support arms and fascia trims normally have the same finish and colour. Blade clips mill-finish vibration-deburred stainless steel.

25 year guarantee available on polyester and anodised finishes, please enquire for details.

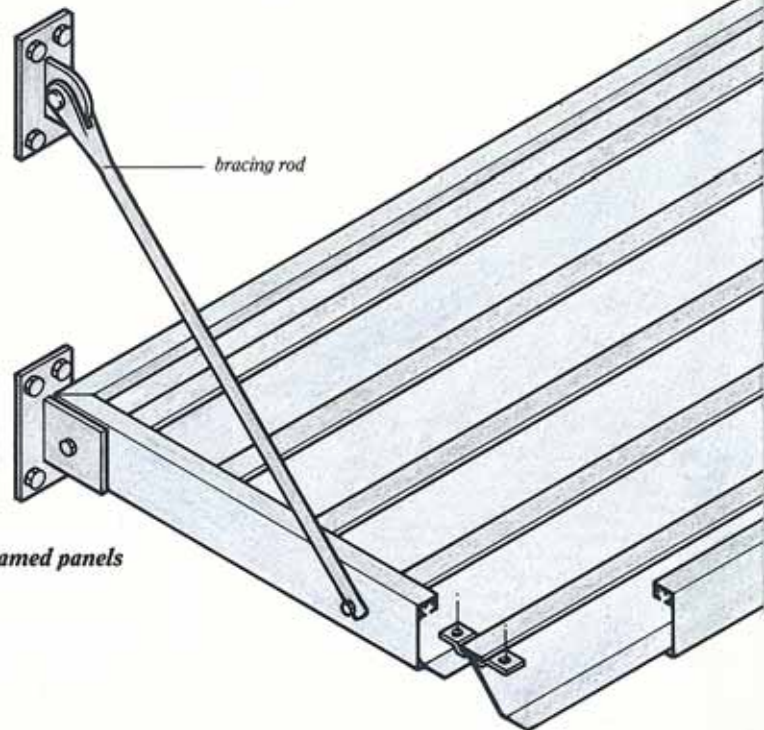
### Performance

Properly designed solar shading can reduce solar heat gain by up to 85%.

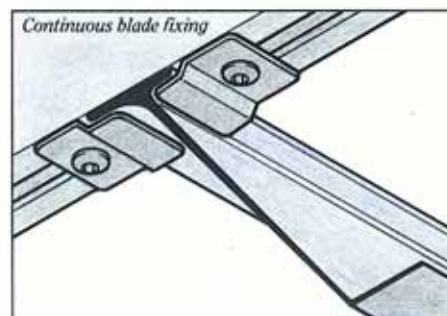
\*Contact Kingfisher Technical Office for advice on support arm centres.



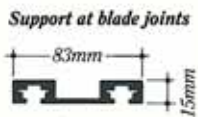
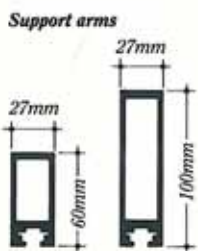
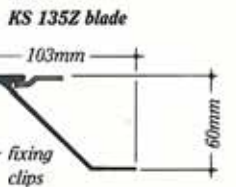
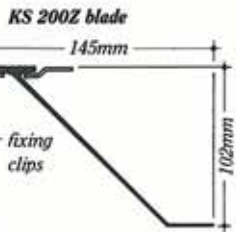
Continuous blade installation

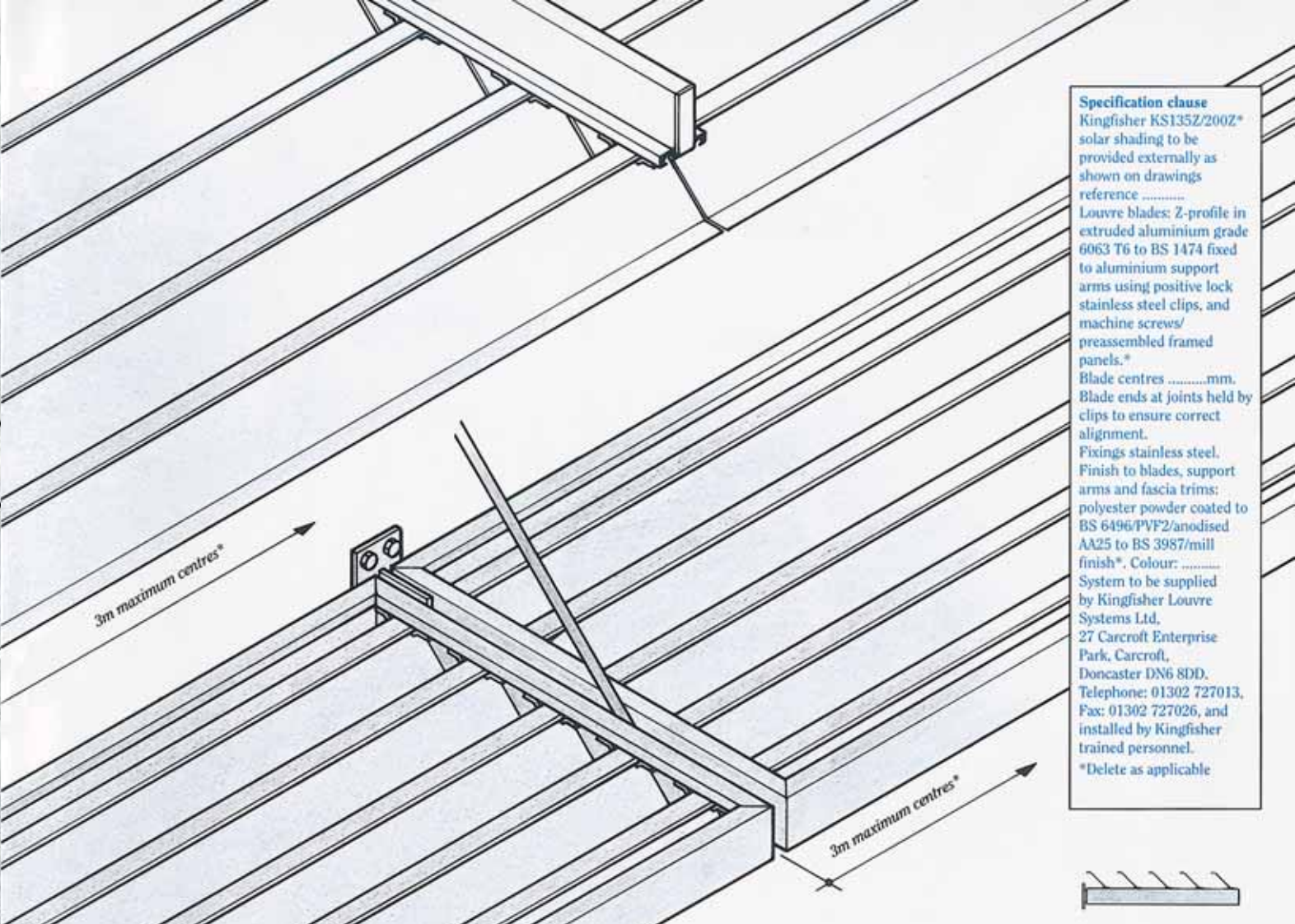


Framed panels



Continuous blade fixing





**Specification clause**  
 Kingfisher KS135Z/200Z\*  
 solar shading to be provided externally as shown on drawings reference .....

Louvre blades: Z-profile in extruded aluminium grade 6063 T6 to BS 1474 fixed to aluminium support arms using positive lock stainless steel clips, and machine screws/ preassembled framed panels.\*

Blade centres .....mm.  
 Blade ends at joints held by clips to ensure correct alignment.

Fixings stainless steel.  
 Finish to blades, support arms and fascia trims: polyester powder coated to BS 6496/PVF2/anodised AA25 to BS 3987/mill finish\*. Colour: .....

System to be supplied by Kingfisher Louvre Systems Ltd,  
 27 Carcroft Enterprise Park, Carcroft, Doncaster DN6 8DD.  
 Telephone: 01302 727013, Fax: 01302 727026, and installed by Kingfisher trained personnel.  
 \*Delete as applicable

3m maximum centres\*

3m maximum centres\*

**Possible installation configurations**

*Need for bracing arms depends on projection and loading*

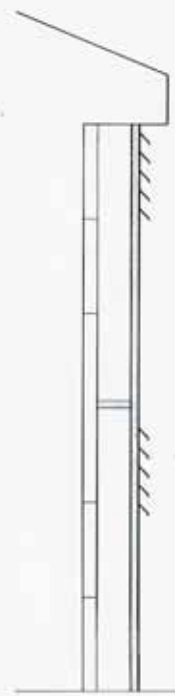


**Installation**

Installation will normally be carried out by Kingfisher trained personnel. Blades are factory cut to length, and assembled on to support arms on site using clips and machine screws for maximum integrity of fixing. Pre-assembled framed panels can also be supplied if required. Support arms require suitable fixing points. Brackets are available for fixing to metal cladding, blockwork, glazing bars, framing etc. Special fixing designs are also possible. Fixing clips allow for thermal movement through any length of run.

**Maintenance**

Generally, no maintenance is required other than cleaning to maintain appearance (this is a condition of guarantee of finish where applicable). Cleaning may be carried out when glazing is cleaned. Bracing wires if used may require re-tensioning. Walkways where fitted may require routine safety checks.



## KS E EXTERNAL SUNBREAKS

External solar shading system using elliptical aerofoil profile blades of high rigidity with a smooth clean symmetrical appearance. Supplied in component form for site assembly, or as pre-assembled panels, both of which can be installed vertically (parallel to wall face) or projecting horizontally, or sloping, and on faceted curves.

Three blade sizes provide design flexibility. We can advise on blade spacings and angles to suit specific requirements.

### Composition

Blades are extruded aluminium alloy (grade 6063 T6 to BS 1474) hollow sections, screw-fixed to support arms at each end, or alternatively with end caps. Support arms are normally aluminium, profiled to shape if required. Fixings are stainless steel.

### Accessories

Maintenance walkways (aluminium or steel) may be installed on horizontal support arms.

### Size

Horizontal projection from the wall, blade angle and spacing may all be varied to suit shading requirements. There is no limit on height of vertical installations.

Support arm centres may vary according to building shape, height, location, local topography, and the position and height of shading on the building.

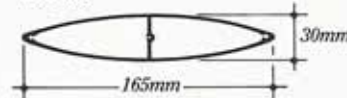
Blade type	Typical support arm centres (m) maximum
KS 105E	1.8
KS 165E	3.0
KS 280E	3.5

### Components

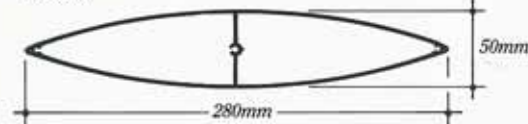
KS 105E



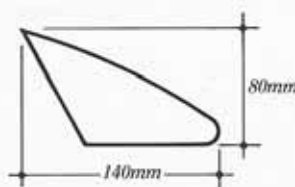
KS 165E



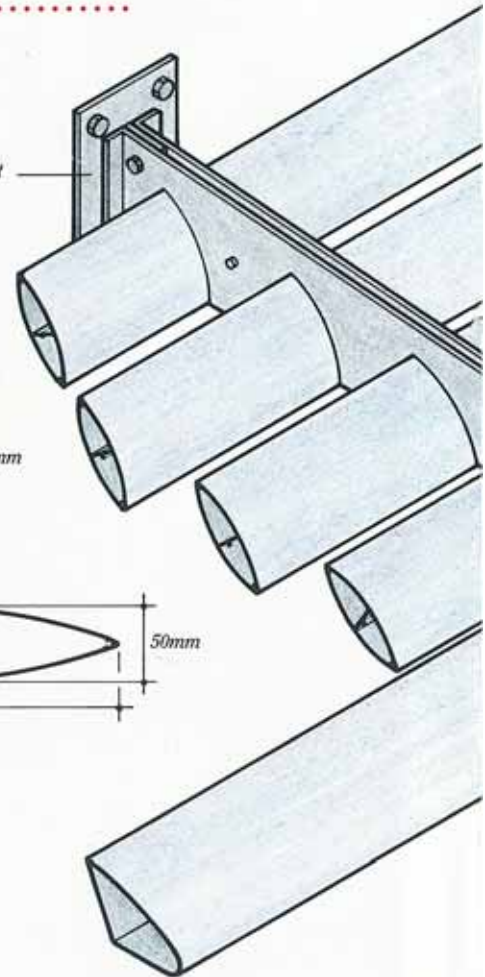
KS 280E



Bullnose fascia trim



fixing bracket



### Appearance

Standard finish: polyester powder coated to BS 6496 in a RAL colour from our standard range.

Alternative finishes: PVF2, natural or colour anodised (AA25 to BS 3987), mill finish.

Blades, support arms and fascia trims normally have the same finish and colour. 25 year guarantee available on polyester and anodised finishes, please enquire for details.

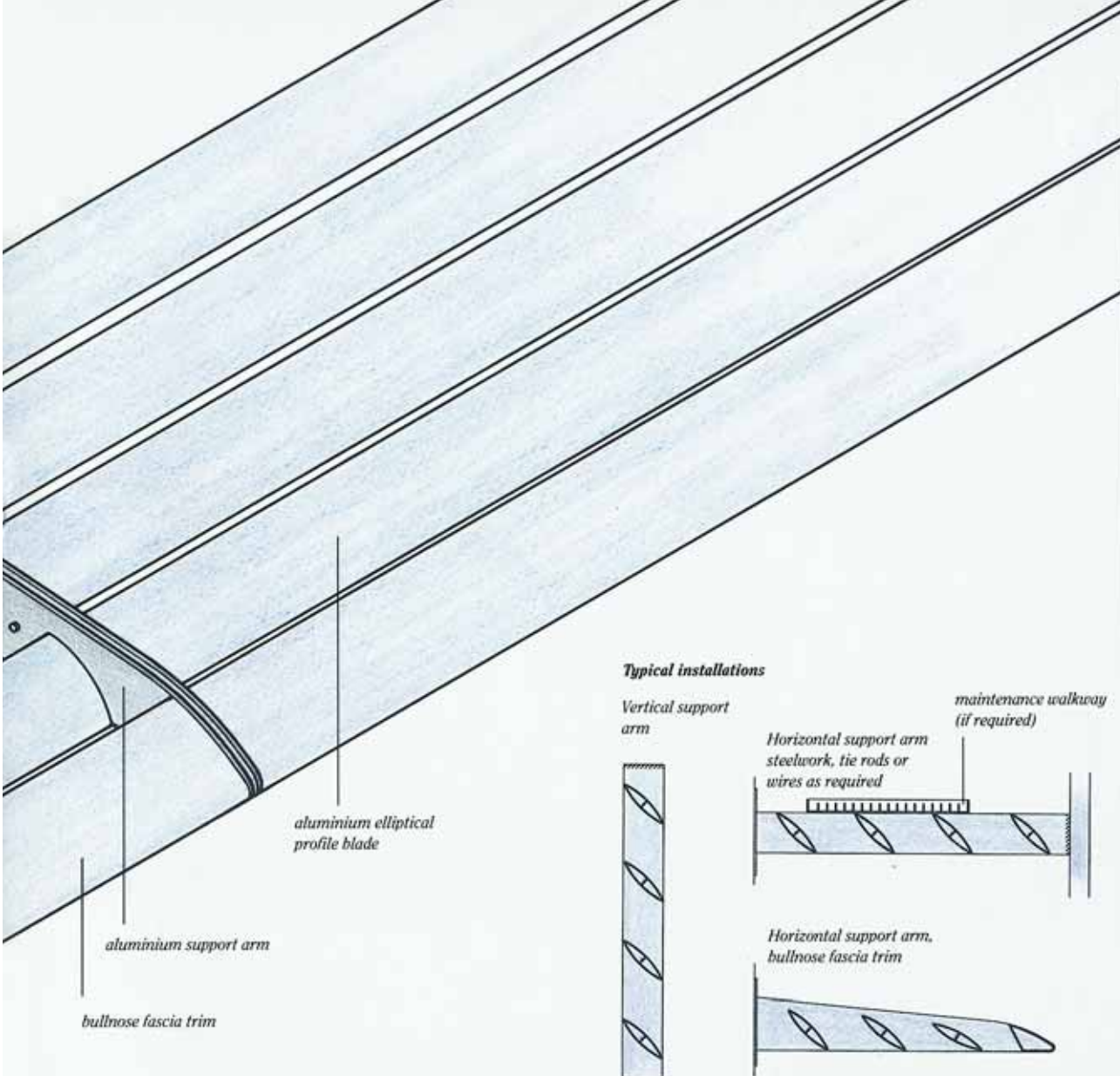
### Performance

Properly designed solar shading can reduce solar heat gain by up to 85%.

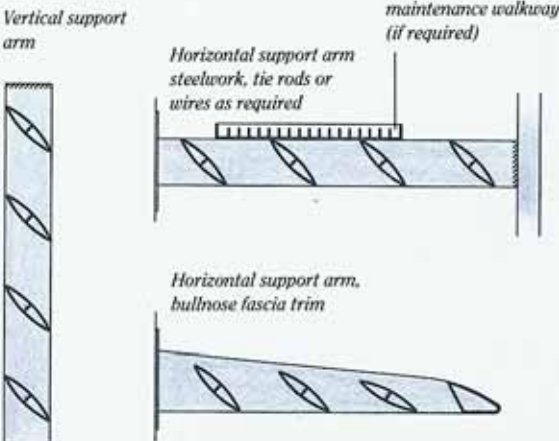
**Specification clause**  
 Kingfisher KS105E/  
 KS165E/KS280E\*  
 solar shading to be  
 provided externally as  
 shown on drawings  
 reference .....

Louvre blades: elliptical  
 one piece profile in  
 extruded aluminium  
 (grade 6063 T6 to BS  
 1474) fixed to aluminium  
 support arms, or as  
 preassembled panels; blade  
 angle .....,  
 blade centres ..... mm.  
 Fixings stainless steel.  
 Finish to blades, support  
 arms and fascia trims:  
 polyester powder coated to  
 BS 6496/PVF2/anodised  
 AA25 to BS 3987/mill  
 finish\*. Colour: .....

System to be supplied by  
 Kingfisher Louvre  
 Systems Ltd,  
 27 Carcroft Enterprise  
 Park, Carcroft,  
 Doncaster DN6 8DD.  
 Telephone: 01302 727013,  
 Fax: 01302 727026, and  
 installed by Kingfisher  
 trained personnel.  
 \*Delete as applicable



**Typical installations**



**Installation**

Installation will normally be carried out by Kingfisher trained personnel. Can be supplied in component form for site assembly, or as pre-assembled panels. Typical installations are shown but these can be adapted to suit requirements. Support brackets and/or arms require suitable fixing points. Various brackets are available to allow fixing to metal cladding, blockwork, glazing bars, framing etc. Thermal movement joints will be allowed where necessary. Special fixing designs are also possible.

**Maintenance**

No maintenance is required other than regular cleaning to maintain appearance (this is a condition of guarantee of finish where applicable). Cleaning may be carried out when glazing is cleaned. Maintenance instructions will be provided for motorised installations. Walkways may require routine safety checks.



## KS SUNSCREEN

Controllable non-retractable louvre system for reduction of solar heat gain, designed specifically for use with sloping, horizontal, curved or barrel vault glazing, rooflights and glazed atria. KS Sunscreen can reduce solar heat gain by up to 90% when fitted externally or up to 45% when fitted internally. The system can also offer precise control of daylight levels.

Designed for museums, art galleries, greenhouses, conservatories, libraries, offices, conference halls.

### Types

Kingfisher KS 50 Sunscreen for smaller internal installations, KS 80 (internal) and KS 80X (external) for larger installations.

KS 88 (internal) and KS 88X (external) give control of light levels down to 20 lux by interlocking louvres and brush seals.

### Control methods

Manual or electric operation with automatic control available.

### Composition

Rigid extruded aluminium rack arms with nylon pivots; roll-formed aluminium louvre blades clipped to rack arms. Standard rack arm for tight spaces; heavy duty rack arms where fewer fixing points are available.

### Size

Installations are purpose-designed to suit requirements. Depending on blade size, units can be up to 6m high or 6m wide with a maximum area of 20m<sup>2</sup>. It is often possible to link units to cover larger areas.

### Appearance

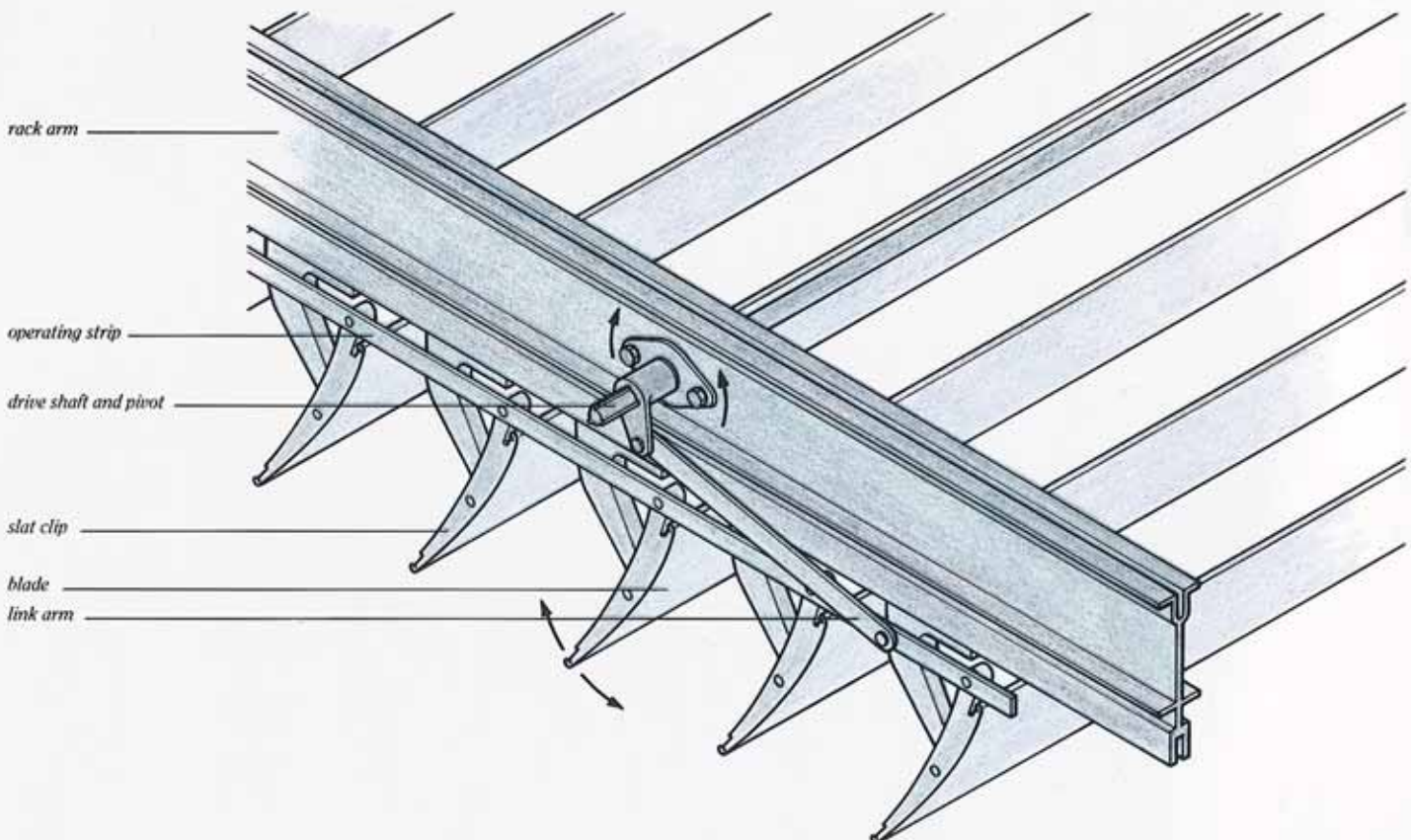
Blades are stoved enamel finish in a range of RAL colours from our standard range, and may be non-perforated, or with approximately 15% perforations allowing some diffused light even when fully closed.

Rack arms are available mill finish, anodised, or polyester powder coated.

### Specification clause

Kingfisher Sunscreen KS 50/80/80X/88/88X\* to be provided internally/externally\* as shown on drawings reference .....  
Rigid extruded aluminium rack arms with nylon pivots; finish: mill finish/anodised/polyester powder coated\*; colour: ..... Roll-formed aluminium louvre blades clipped to rack arms; blades perforated/non-perforated\*, finish stoved enamel, colour: .....  
Operation: manual/electric/with automatic control\*.  
System to be supplied by Kingfisher Louvre Systems Ltd, 27 Carcroft Enterprise Park, Carcroft, Doncaster DN6 8DD. Telephone: 01302 727013, Fax: 01302 727026, and installed by Kingfisher trained personnel.  
\*Delete as applicable

### KS Sunscreen system





## KR ROLLERSCREEN

Controllable tensioned-fabric solar shading system for internal or external use. Can be operated by manual switch or automatically controlled to compensate for fluctuations in solar gain or light level. Designed for shopping malls, atria, offices, airports, conference centres and hotels.

### Control methods

Powered by long-life reversible motors. Manual wall switches for single or group operation, or computer controlled automatic operation.

### Composition

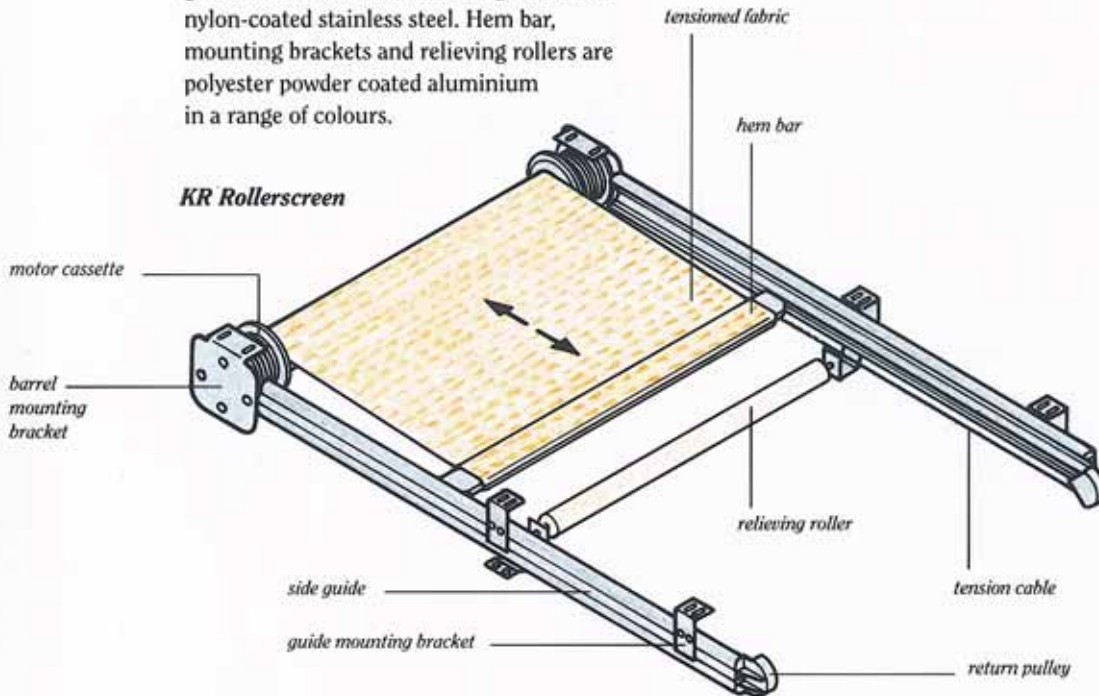
Fabric PVC-coated glass fibre, roller galvanised steel or aluminium, guide cable nylon-coated stainless steel. Hem bar, mounting brackets and relieving rollers are polyester powder coated aluminium in a range of colours.

### Appearance

Comprehensive range of fabric colours; swatches available. Hem bar, mounting brackets, relieving rollers and side guides are polyester powder coated in a RAL colour from our standard range.

### Specification clause

Kingfisher Rollerscreen KR 100/KR 120/KR 200/KB 300/KR 400\* tensioned\* fabric solar shading system to be provided internally/externally\* as shown on drawings reference ..... Fabric: PVC-coated glass fibre, colour: ..... Fabric rollers: galvanised steel or aluminium, guide cable nylon coated stainless steel. Hem bar, mounting brackets, relieving rollers and side guides: polyester powder coated aluminium, colour ..... Operation: manual/automatic control\*. System to be supplied by Kingfisher Louvre Systems Ltd, 27 Carcroft Enterprise Park, Carcroft, Doncaster DN6 8DD. Telephone: 01302 727013, Fax: 01302 727026, and installed by Kingfisher trained personnel. \*Delete as applicable. For KB 300 delete 'tensioned'.



### Size

	Maximum width (m)	draw (m)	fabric area (m <sup>2</sup> )
<b>Internal applications</b>			
KR 100	3	6	16
KR 120	6	6	18
KR 200	5	18	60
<b>Internal, vertical only*</b>			
KB 300	7	12	72
<b>External applications</b>			
KR 400	5	6	16

\*Not tensioned.

## PURPOSE DESIGNED SYSTEMS

In addition to our standard range of solar shading systems, we can offer bespoke designs for purpose-made systems, allowing a wide freedom in functional and aesthetic considerations.

Blades may be curved or specially shaped, and may be perforated, which provides a diffused daylighting effect.

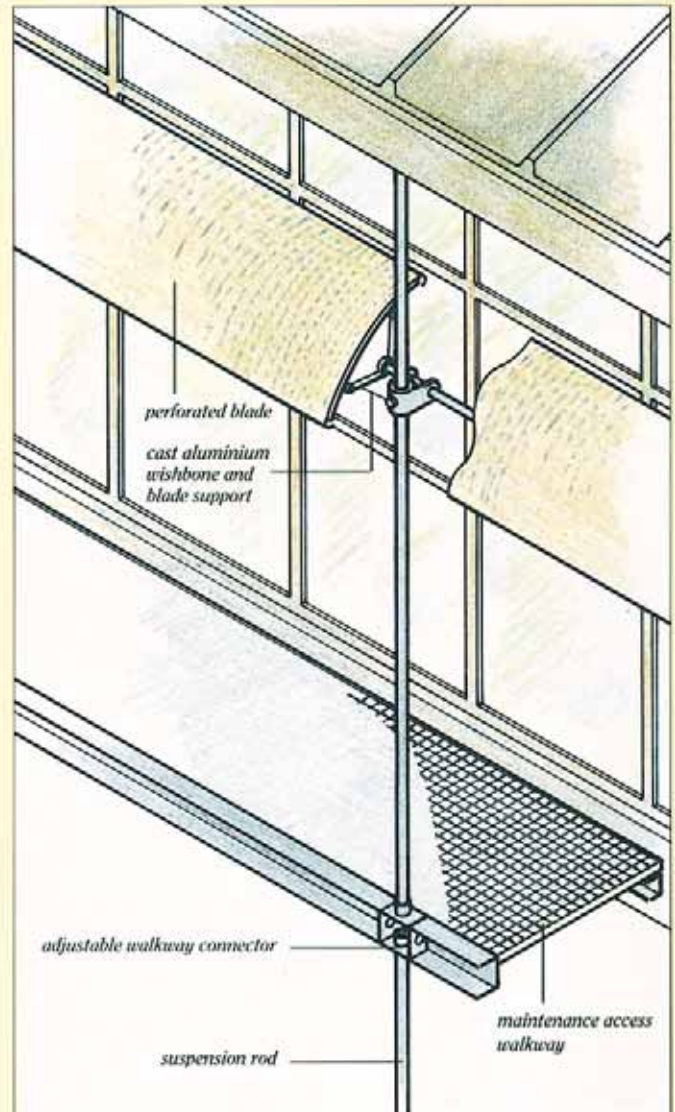
### The Edward Jenner Institute, Newbury, Berkshire

Architect: Sheppard Robson, London

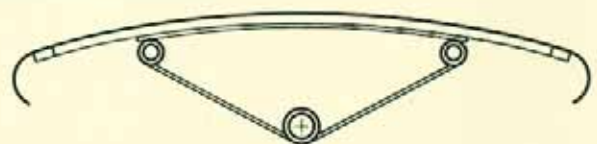
Main contractor: Moss Construction

Specially shaped and perforated blades were supplied on this prestigious project, partly for aesthetic reasons and partly because the perforated blades provide diffused daylighting, allowing more natural light of a better quality into the building.

The perforated blades were anodised rolled aluminium and have a translucent effect when seen from inside. Special concealed fixings and a support system incorporating a maintenance walkway were also part of the contract.



850mm wide curved perforated blade



**PROJECTS**



## FURTHER INFORMATION

### References

BSRIA TN 8/98 Refurbishment for natural ventilation.

CIBSE Applications Manual AM10: 1997  
Natural ventilation in non-domestic buildings.

### Other products

Building Product Design market a wide range of other building products including:

Kingfisher ventilation louvres

Passivent natural ventilation systems and Tricklevents

Metro modular rooflights

Kingfisher continuous rooflights

Glidevale roof ventilation systems and roofing products.

Protect membranes



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Kingfisher Louvre Systems Ltd maintains a policy of continuous development and reserves the right to amend product specifications without notice.

**BPD**

A member of the Building Product Design Group