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CI/SfB	(31.4)		

November 2008

C/S Airfoil® Solar Shading Systems



AIRFOIL[®] SOLAR SHADING SYSTEMS

For over 50 years, architects have found that by using C/S Solar Shading Systems on buildings and schools they could create comfortable, productive environments for employees and students alike. External sunshades are simply the most effective method of reducing heat and glare in a building's interior. Properly designed sun controls can reduce heat gain by up to 85% whilst increasing the interior's usable space by allowing occupants to sit adjacent to windows. C/S Airfoil installations will assist in compliance with Building Regulations Approved Document L2 (2002).



Company profile

Construction Specialties operates through 22 offices worldwide, and has key manufacturing locations or Sales Offices in most European countries.

The UK Head Office, based in Buckinghamshire, is the sales and manufacturing hub for servicing markets across the UK and Ireland (and parts of Europe), through a network of experienced and professional technical sales representatives.

Our product ranges include wall protection systems, entrance matting systems, specialist coatings for walls and floors, expansion joint covers, solar shading, cubicle curtain track and pressure relief systems. These have been successfully installed in many of the world's most prestigious buildings, across a spectrum of business sectors including healthcare, transport, retail, leisure and commercial offices.

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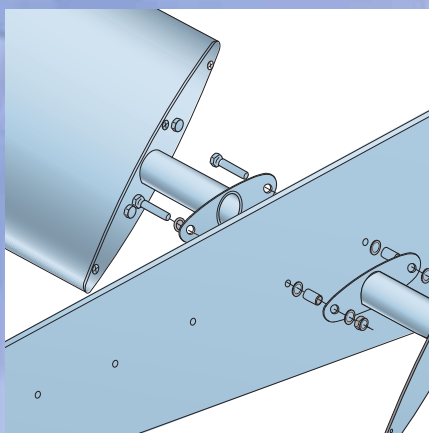
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BLADE SIZES

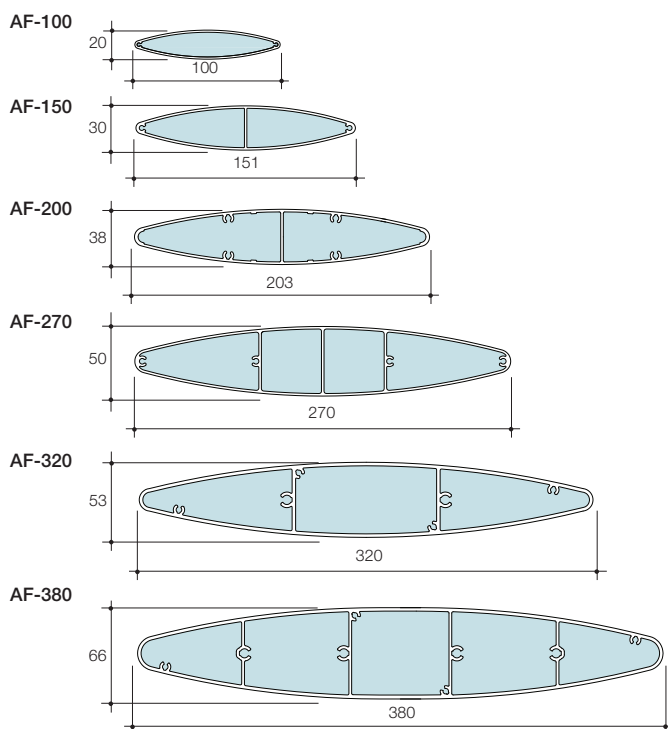
C/S Airfoil blades are both stylish and practical. The clean lines and sleek profile of the Airfoil blade achieve an appearance of quality and individuality, whilst providing an effective solution to the control of solar heat gain in buildings.

A number of options are available for securing C/S Airfoil blades to the supporting structure, which allows a variety of blade configurations to produce a bespoke design. Cantilevered sunshades are ideal for both new and existing construction. They provide effective shading while maintaining unobstructed views. Projection and blade size may be varied to suit the project requirement.

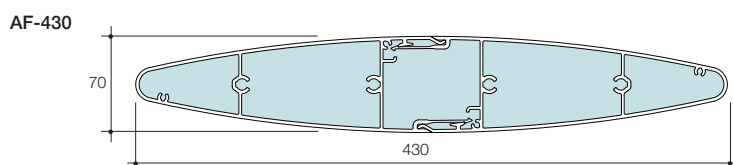
Façade mounted blades are a perfect alternative for applications where greater control is required over direct sunlight. The choice of blade orientation, either horizontal or vertical, is largely determined by a combination of form and function. The form being architectural preference, the function being the amount of light cut-off required and the building orientation.

Blade size selection

Single extrusion

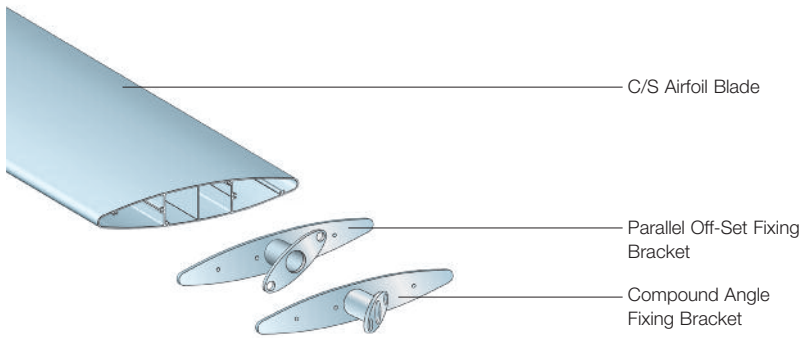


Two-part extrusion

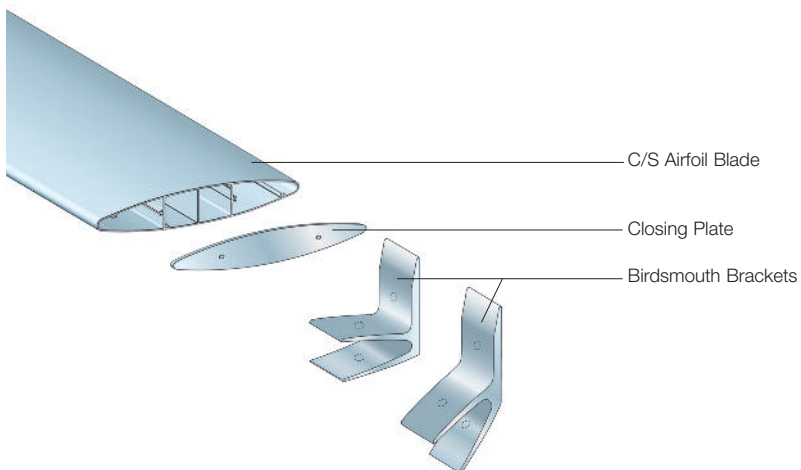


FIXINGS

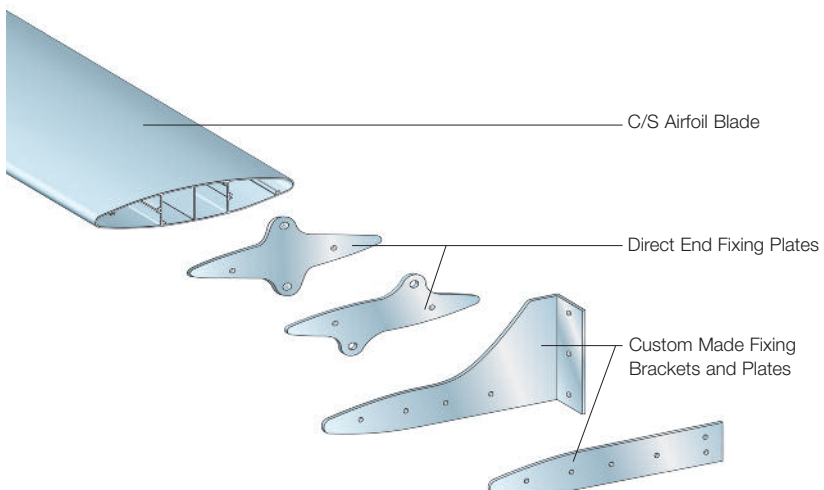
End Support Fixing (see pages 8 and 12)



Birdsmouth Support Fixing (see pages 6 and 12)



Direct End Support Fixing (see pages 7 and 13)



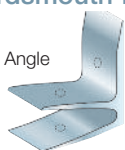
BIRDSMOUTH SUPPORT FIXING

Extruded aluminium birdsmouth brackets provide a simple and effective fixing system for C/S Airfoil blades. Brackets are available in either 45° or 90° angle options.

Standard bracket widths are 50mm for AF-150 and 100mm for AF-200, 270 and 320 blades. These are suitable for facade or cantilevered mounting.

Birdsmouth Bracket Angle Options

90° Angle



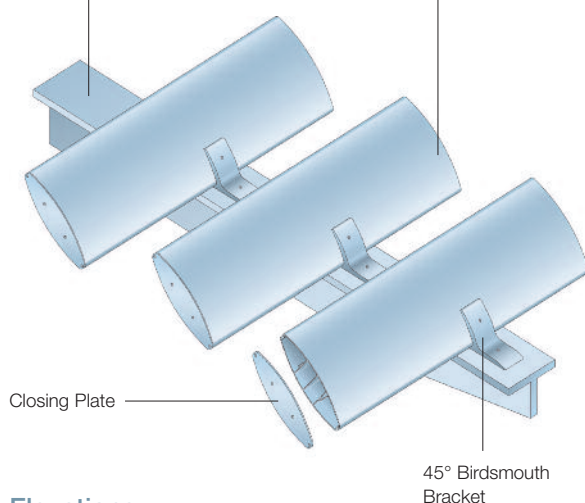
45° Angle



Cantilevered Mounting

Structural Support (by others)

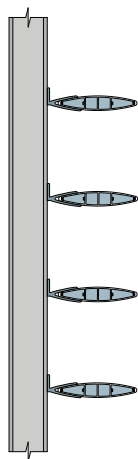
C/S Airfoil Blade



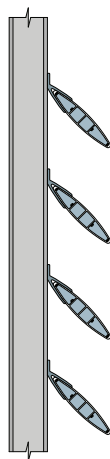
Closing Plate

45° Birdsmouth Bracket

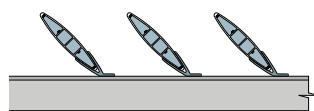
Elevations



Vertically mounted using 90° Birdsmouth Brackets



Vertically mounted using 45° Birdsmouth Brackets



Horizontally mounted using 45° Birdsmouth Brackets

Façade Mounting (horizontal or vertical)

90° Birdsmouth Bracket

Closing Plate

C/S Airfoil Blade

Structural support (by others)

Please refer to technical pages for details of:

- bracket and blade compatibility (p.10)
- bracket widths and hole sizes (p.12)
- typical blade spacings (p.11).

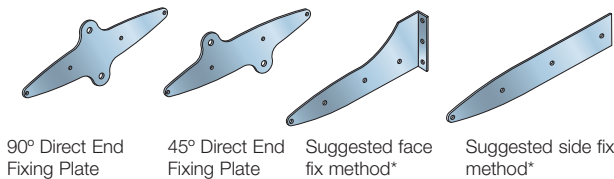
Aluminium Closing Plates can be supplied to suit the blade selected.

DIRECT END SUPPORT FIXING

Stainless steel Direct End Fixing Plates available in 45° and 90° orientations provide versatility in fixing options.

Fixing can be back to the building facade via support steelwork run vertically or cantilevered arms providing horizontal support.

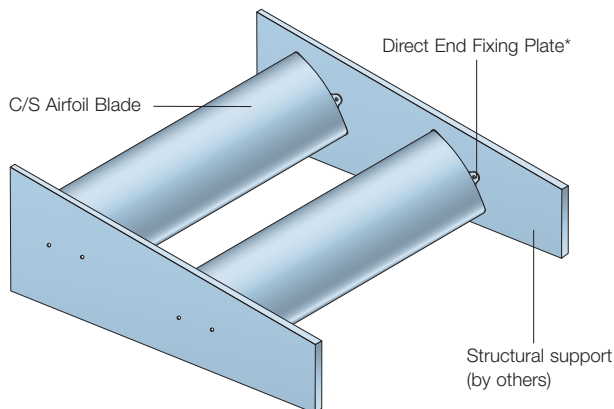
Standard Plates



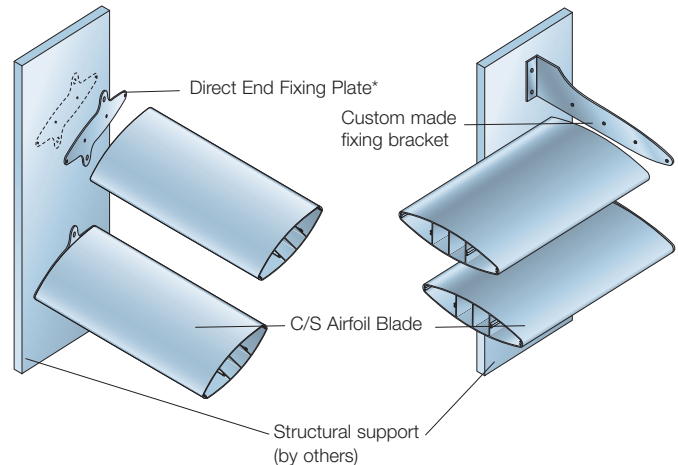
* Other shapes and blade angles can be supplied. Please contact our Technical Department for details.



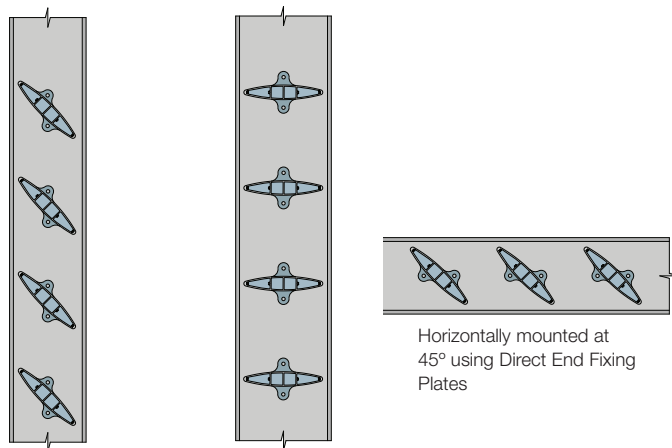
Cantilevered Mounting



Façade Mounting



Elevations



Vertically mounted at 45° using Direct End Fixing Plates

Vertically mounted at 90° using Direct End Fixing Plates

Horizontally mounted at 45° using Direct End Fixing Plates

*Plates must be pre-attached to C/S Airfoil blades with counter-sunk screws prior to fixing to the Structural Support.

Note: Main screw ports on AF-320, AF-380 and AF-430 blades must be tapped to suit M8 x 50mm long countersunk screws.

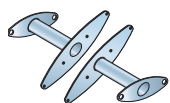
Please refer to technical pages for details of:

- bracket and blade compatibility (p.10)
- plate angles and fixing points (p.13)
- typical blade spacings (p.11)
- use of expansion collars (p.13)

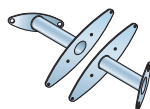
END SUPPORT FIXING

Stainless steel Compound Angle Fixing Brackets are used when dealing with corner details and faceted elevations. To complement this detail, Parallel Off-set Fixing Brackets for use on straight runs are also available.

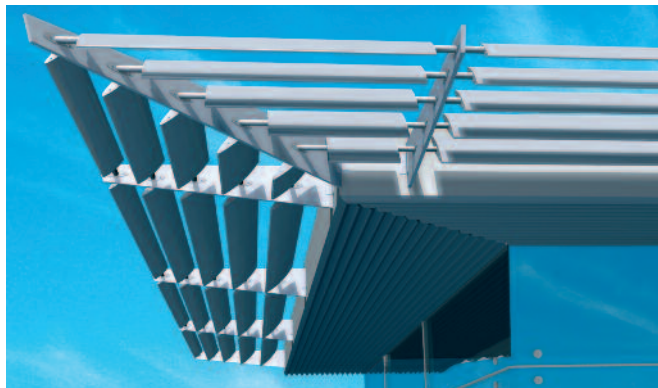
Parallel Off-set Fixing Brackets*



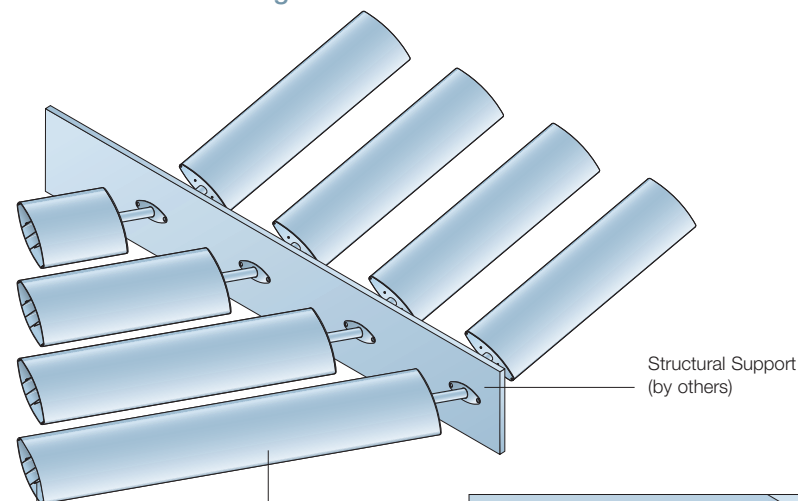
Compound Angle Fixing Brackets*



* For angles available please refer to page 12.

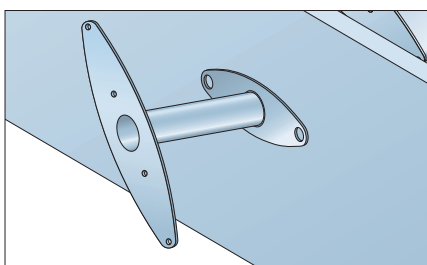


Cantilevered Mounting



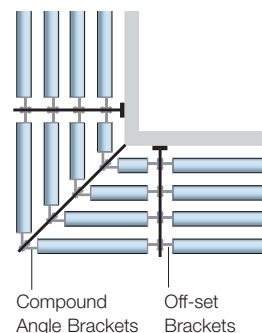
Note: Main screw ports on AF-320, AF-380 and AF-430 blades must be tapped to suit M8 x 50mm long countersunk screws.

C/S Airfoil Blade

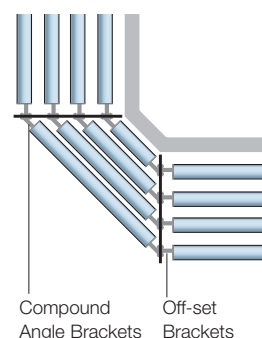


Compound Angle Fixing Bracket

Corner Options

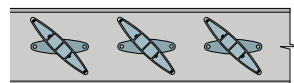


Compound Angle Brackets Off-set Brackets



Compound Angle Brackets Off-set Brackets

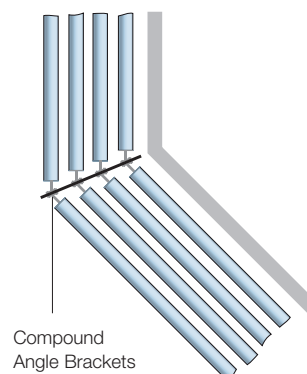
Elevation



Horizontally mounted at 45° using Compound Angle Fixing Brackets

Please refer to technical pages for details of:

- fixing positions (p.12)
- typical blade spacings (p.11)
- bracket and blade compatibility (p.10)
- use of expansion collars (p.13)



Compound Angle Brackets

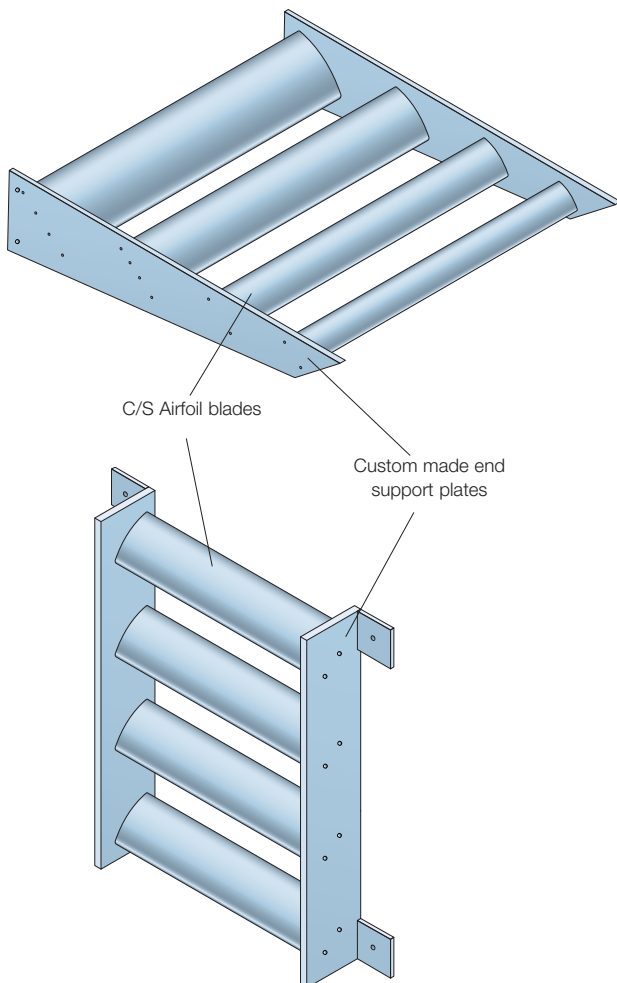
CUSTOM DESIGNS

C/S Airfoil blades allow full flexibility for a custom design, putting the stamp of individuality on a building.

Customised units, using standard blades and laser cut end support plates or brackets, can be produced for individual applications.

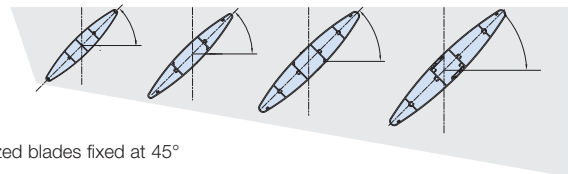


Examples of C/S Factory Produced Units



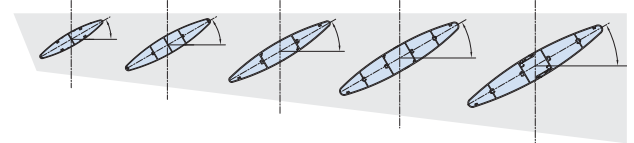
Typical Options

AF-270 AF-320 AF-380 AF-430



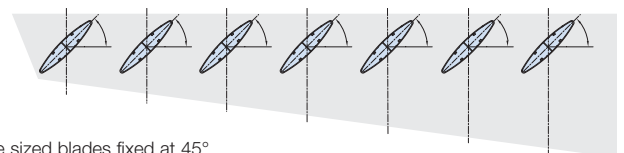
Different sized blades fixed at 45°

AF-200 AF-270 AF-320 AF-380 AF-430



Different sized blades fixed at 30°

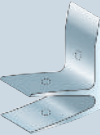
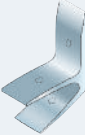
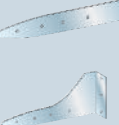
AF-200



Same sized blades fixed at 45°

TECHNICAL INFORMATION

Bracket and blade size compatibility

							
	Birdsmouth Bracket 90°	Birdsmouth Bracket 45°	Closing Plate for use with Birdsmouth Bracket	Direct End Fixing Plate	Custom made Fixing Bracket	Parallel Off-set Fixing Bracket	Compound Angle Fixing Bracket
Material	Aluminium	Aluminium	Aluminium	Stainless Steel	Aluminium or Stainless Steel	Stainless Steel	Stainless Steel
Single extrusion blades							
AF-100	—	—	—	•	•	—	—
AF-150	•	•	•	•	•	•	•
AF-200	•	•	•	•	•	•	•
AF-270	•	•	•	•	•	•	•
AF-320	•	•	•	•	•	•	•
AF-380	—	—	—	•	•	•	•
Two-part extrusion blade							
AF- 430	—	—	—	•	•	•	•

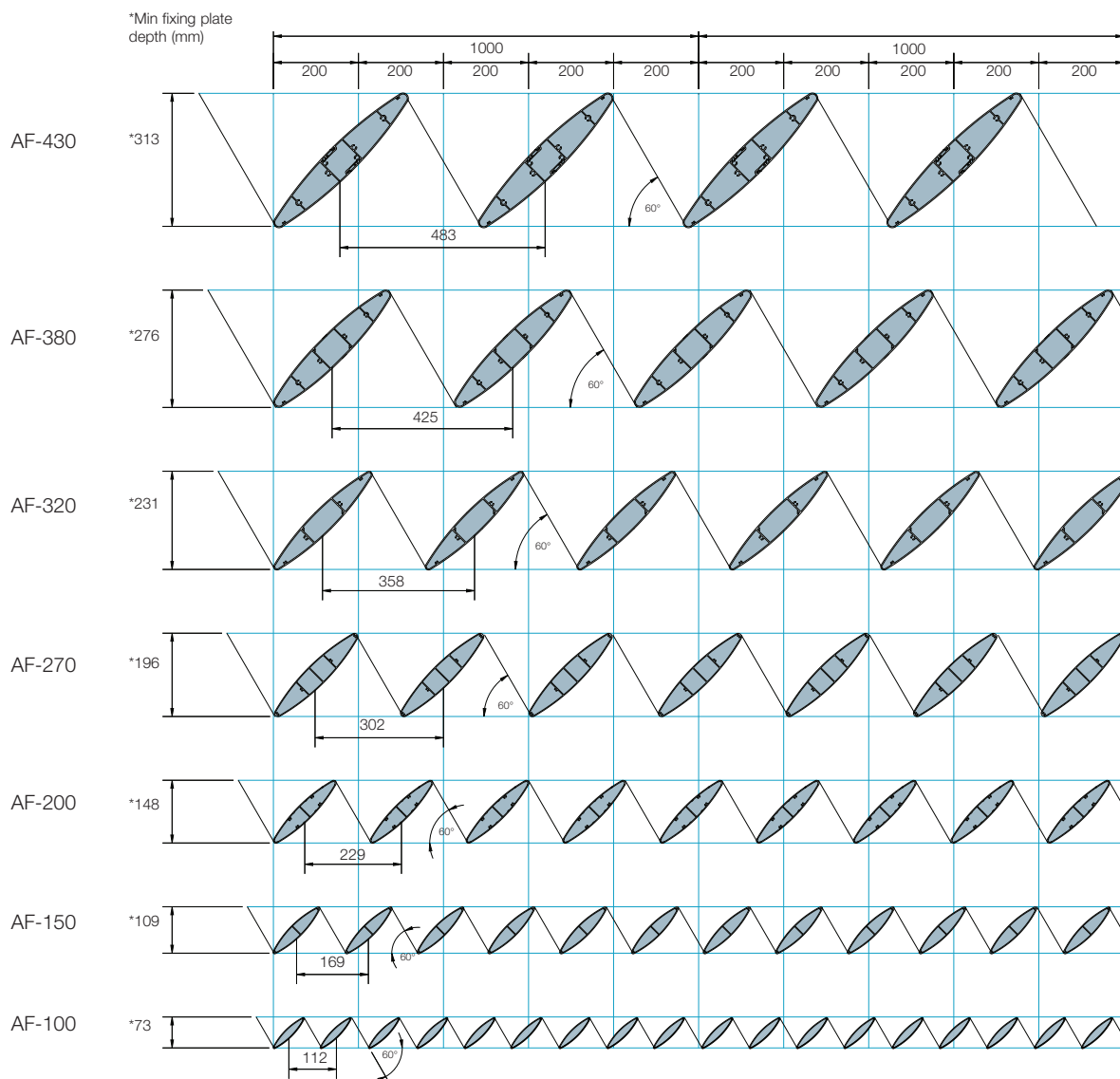
Blade span capacity

Wind Load (kPa)/Blade Span (mm)

Blade	0.50kPa	0.75kPa	1.00kPa	1.25kPa	1.50kPa	1.75kPa	2.00kPa
AF-100	2661mm	2324mm	2112mm	1960mm	1845mm	1752mm	1676mm
AF-150	3787mm	3308mm	3006mm	2790mm	2626mm	2494mm	2386mm
AF-200	4716mm	4120mm	3743mm	3475mm	3270mm	3106mm	2971mm
AF-270	5654mm	4939mm	4488mm	4166mm	3920mm	3724mm	3562mm
AF-320	6397mm	5588mm	5077mm	4713mm	4435mm	4213mm	4030mm
AF-380	7771mm	6788mm	6168mm	5726mm	5388mm	5118mm	4895mm
AF-430	8215mm	7176mm	6520mm	6053mm	5696mm	5411mm	5175mm

The above blade span dimensions are for guidance only and represent the maximum recommended span for each blade profile, when fixed in a typical horizontal canopy arrangement.

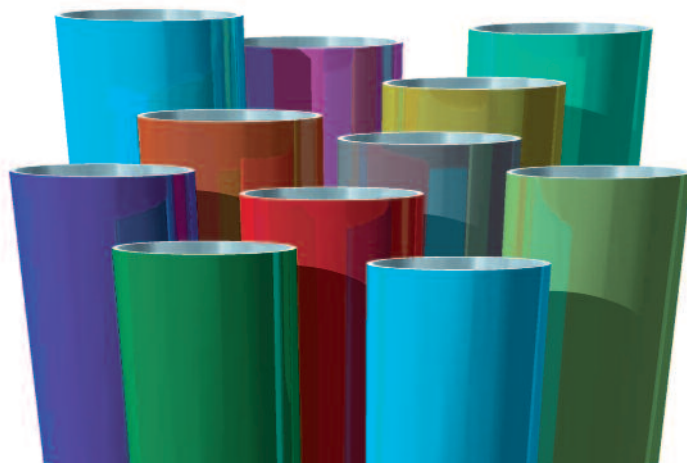
Typical blade spacings for cantilevered arrangements (based on a 45° blade angle and 60° sun cut-off angle)



Finishing options

Airfoil blades are polyester powder coated as standard to one of the stock colours from the Syntha Pulvin range (including many RAL and BS colours). Non-standard finishing options include Syntha Pulvin metallic polyester powder, specially formulated polyester powder colours, mill finish or anodised.

Syntha Pulvin colour swatches are available upon request.



TECHNICAL INFORMATION

Blades

C/S Airfoil blades are extruded in grade 6063-T6 aluminium alloy in seven standard widths. Blades can be extruded in lengths of 6m. However, subject to minimum quantities, we are able to extrude any blade profile to one or more specific lengths to suit project requirements, thus minimising unnecessary waste.

Mounting options

There are various methods for securing C/S Airfoil blade profiles to the supporting structure, although typically blades would be 'end fixed' between (and usually within the depth of) supporting plates or rafters. Alternatively, a number of 'Bracket Fixed' options are available.

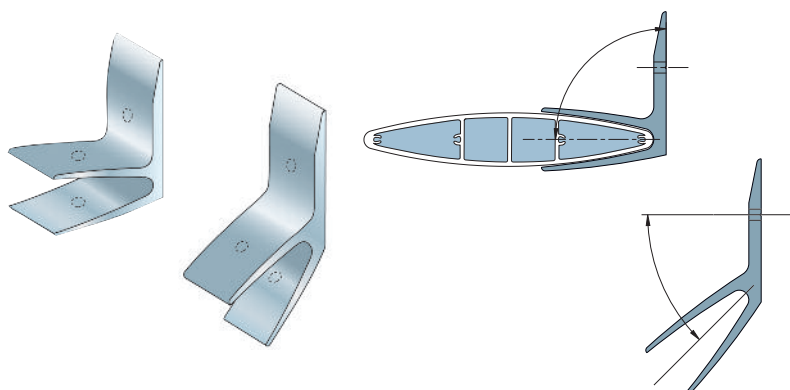
End fixings

All Airfoil blades incorporate screw ports within the extrusion, allowing self-tapping screws/or bolts to be passed through supporting end plates and into the end of the blades. This method of fixing is strong enough to support the blade even at its maximum span.

Birdsmouth Brackets

Blade Type	Bracket Angles	Standard Bracket Width (in mm)*	Fixing Hole Size (in mm)
AF-150	45°, 90°	50	6.5
AF-200	45°, 90°	100	6.5
AF-270	45°, 90°	100	8
AF-320	45°, 90°	100	8

* Brackets can be cut to custom width to suit project requirements. It should be noted, however, that the width of the brackets will have a bearing on their maximum spacing. Customer bracket designs may also be possible to suit a particular project. When required, aluminium closing plates can be supplied to suit the blade profile selected.



Compound Angle Fixing Brackets (45°)*

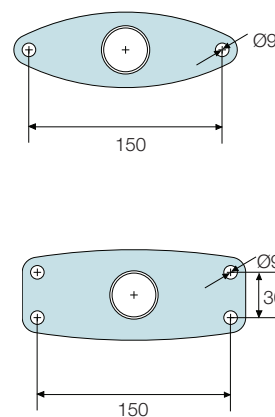
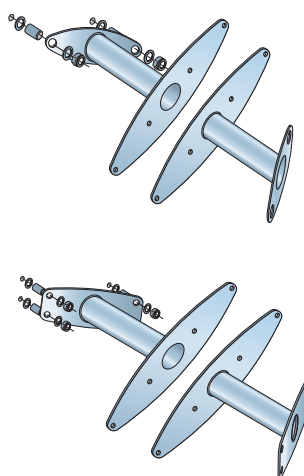
Blade type	Standard** blade angles	Fixing hole quantities and size (in mm)
AF-150	45°	2x9
AF-200	45°	2x9
AF-270	45°	2x9, 4x9†
AF-320††	45°	2x9, 4x9†
AF-380††	45°	2x9, 4x9†
AF-430††	45°	2x9, 4x9†

* Other angles (i.e 30° and 60°) available on special request, please contact our Technical department for details on 01296 652800.

** Other angles (i.e. 30° and 60°) available on special request.

† Four hole fixing brackets should be used where blade span exceeds 3500mm.

†† Main screw ports must be tapped to suit M8x50mm long screws.



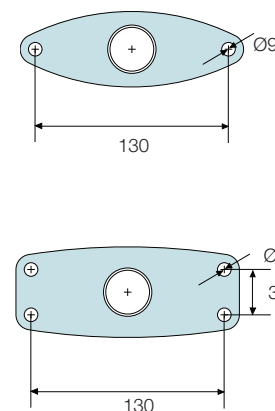
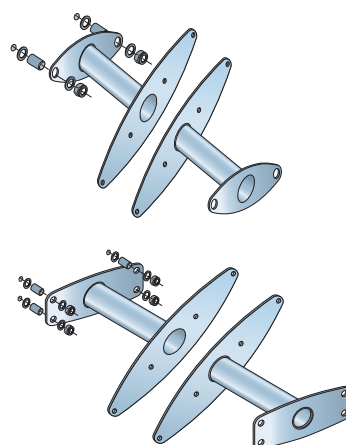
Parallel Off-set Fixing Brackets

Blade type	Standard* blade angles	Fixing hole quantities and size (in mm)
AF-150	45°	2x9
AF-200	45°	2x9
AF-270	45°	2x9, 4x9†
AF-320††	45°	2x9, 4x9†
AF-380††	45°	2x9, 4x9†
AF-430††	45°	2x9, 4x9†

* Other angles (i.e 30° and 60°) available on special request, please contact our Technical department for details on 01296 652800.

† Four hole fixing brackets should be used where blade span exceeds 3500mm.

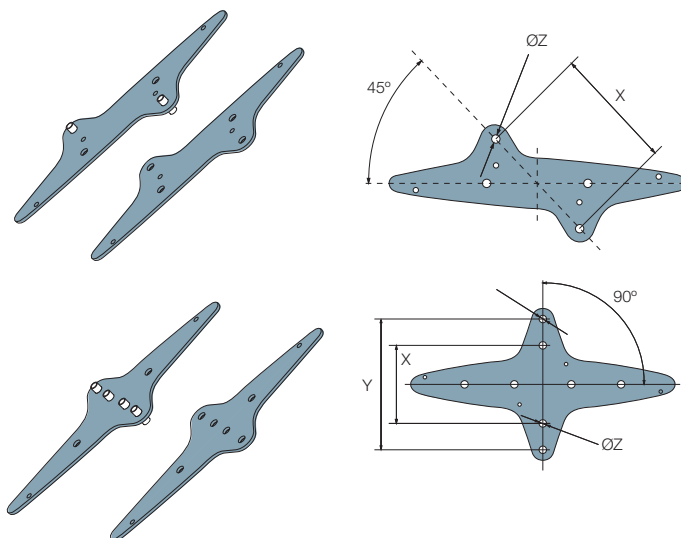
†† Main screw ports must be tapped to suit M8x50mm long screws.



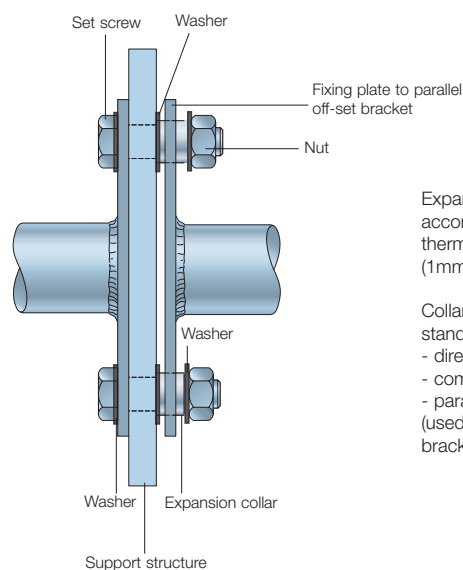
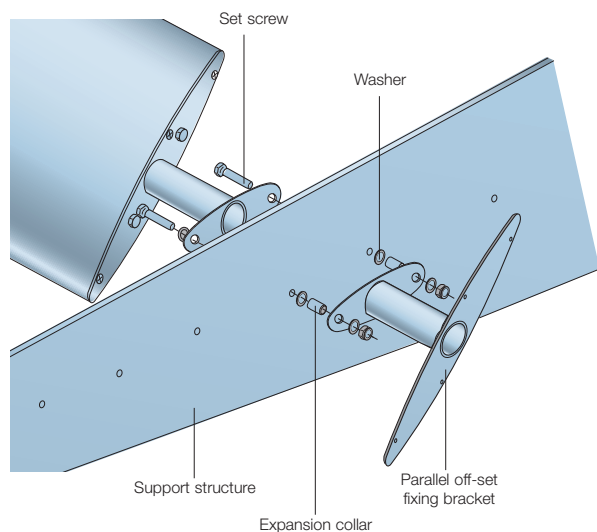
Direct End Fixing Plates

Blade Type	Plate Angles		Distances between fixing points (x, y in mm)	Plate thickness (in mm)	Fixing hole quantities and sizes (z in mm)
	Cantilevered mounting	Façade mounting			
AF-150	45°, 90°	45°, 90°	80	3	2x9
AF-200	45°, 90°	45°, 90°	80	3	2x9
AF-270	90°	90°	80	3	2x9
	45°	45°	110	3	2x9
AF-320†	90°	90°	85	4	2x9
	45°	45°	130	4	2x9
AF-380†	90°	90°	110, 180	4	4x11
	45°	45°	180, 250	4	4x11
AF-430†	90°	90°	110, 180	4	4x11
	45°	45°	180, 250	4	4x11

† Main screw ports must be tapped to suit M8x50mm long screws.



Expansion collar detail



Expansion collars accommodate tolerance/thermal movement of a blade (1mm per 1 metre of blade).

Collars are supplied as standard for use with:

- direct end fixing plates
- compound angle brackets
- parallel off-set brackets (used only with left hand side brackets/plates).

Fixing components

M8 Washer

M10 Washer

M8 Nut

M10 Nut

4.8mm x 30mm Round Head Screw

4.8mm x 25mm Countersunk Screw

4.2mm x 25mm Countersunk Screw

5mm Blind Rivet

12mm O.D. x 9mm I.D. x 20mm long Expansion Collar

18mm O.D. x 12mm I.D. x 12mm long Expansion Collar

18mm O.D. x 12mm I.D. x 20mm long Expansion Collar

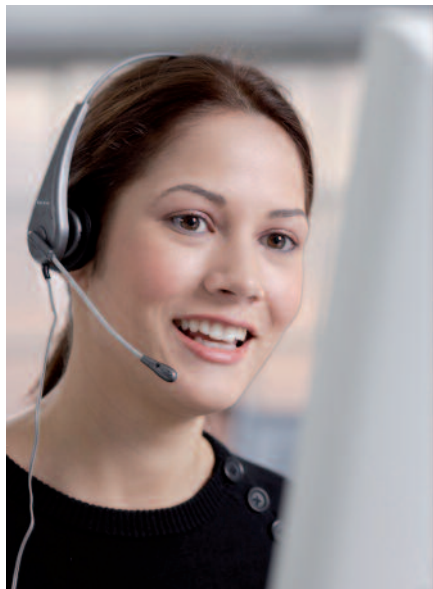
18mm O.D. x 12mm I.D. x 50mm long Expansion Collar

M8 x 50mm Countersunk Screw

M8 x 50mm Set Screw

M10 x 50mm Set Screw

OUR SERVICE



C/S Technical Support

We look forward to assisting you with any queries, which you may have and ensuring that you have made the right selection for your project. Call us on +44 (0)1296 652800 to speak with our customer service team, technical team or area representatives.

Samples Service

Please contact our Customer Service Team for the samples you require.
info@c-sgroup.co.uk
+44 (0)1296 652800

C/S Specification Support

NBS specification clauses are available on request, contact us for specification assistance.



NBS Specification Clauses for C/S products are available on NBS Plus.

Installation service

We work with a range of partners who can provide an expert project management and installation service.

Please contact us for further details.

Legislation

The Building Regulations 2000 – Part L

The updated Part L 'Conservation of Fuel and Power' came into force in 2002 and since then has impacted the way buildings are designed in terms of their energy efficiency.

Part L, coupled with the government's commitment to reduce the UK carbon dioxide emissions by 80% by 2050, now means that building design will be scrutinised and improved further.

Cooling of buildings due to solar heat gain significantly contributes to CO₂ emissions, and Part L suggests that one good method to reduce solar heat gain is to use solar shading on the external façade.

With careful consideration, solar shading design can contribute positively to the reduction of energy waste (heating and cooling) within a building.

Warranty policy

Construction Specialties (UK) Ltd (the Company) warrants to its purchasers that their Airfoil products sold will be free from any defects in materials or workmanship and will meet the design criteria noted in our brochures when properly applied, installed and maintained. If, in the sole opinion of the Company, a product covered by this warranty is defective, the Company will replace or repair it free of any charge. This warranty shall extend for a period of two years following the date of shipment by the Company. This is in lieu of all other warranties expressed or implied, and is the sole warranty extended by the Company. The liability of the Company under this warranty is limited to repair or replacement, and does not include any responsibility for consequential or other damage of any nature.

Disclaimer

The Company reserves the right to make design changes for the purpose of product improvement, or to withdraw any design without notice.

UK AND GLOBAL PROJECTS

- Red Maids' Junior School – Bristol, UK
- Hardwicke Pavilions – Shrewsbury, UK
- Tottenham Hale Retail Park – London, UK
- Hollow Way Medical Centre – Oxford, UK
- Todmorden Sports and Leisure Centre - Todmorden, UK
- Beaminster School - Beaminster, UK
- Ampress Park – Lymington, UK
- Hartismere High School - Eye, UK
- M I R A - Hinckley, UK
- Police Station - Wembley, UK
- Frenchay Hospital - Bristol, UK
- B & Q Store - Crownhill Retail Development, UK
- R Griggs & Co - Wellingborough, UK
- Shannon Health Clinic - Limerick, Ireland
- Electricity Supply Board Poolbeg - Dublin, Ireland
- TWU Institute of Health Sciences - TX, USA
- U.C. Davis Performing Arts Center – CA, USA
- Brandeis University, Carl & Ruth Shapiro Campus Center – MA, USA
- Al-Futtaim Motors - Abu Dhabi, U.A.E.
- Emirates Driving School - Abu Dhabi, U.A.E.
- City Forum II - Gdansk, Poland
- Volkswagen Dealership - various locations, Poland
- School For Nurses - Rouen, France
- Supermarket Casino - Nimes, France
- Museum of Malaga - Malaga, Spain



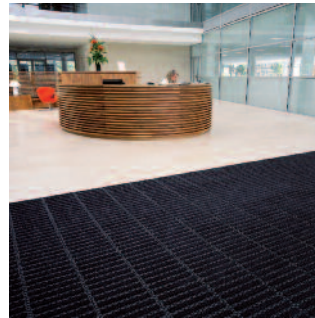
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Construction Specialties (UK) Ltd
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www.c-sgroup.co.uk

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