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Agrément Certificate
08/4550
Product Sheet 1

KEYLITE ROOF WINDOWS

KEYLITE CENTRE PIVOT ROOF WINDOWS

PRODUCT SCOPE AND SUMMARY OF CERTIFICATE

This Certificate relates to Keylite Centre Pivot Roof Windows, for use on roofs of domestic and commercial buildings with a pitch between 15° and 90°, to provide natural light and ventilation.

AGRÉMENT CERTIFICATION INCLUDES:

- factors relating to compliance with Building Regulations where applicable
- factors relating to additional non-regulatory information where applicable
- independently verified technical specification
- assessment criteria and technical investigations
- design considerations
- installation guidance
- regular surveillance of production
- formal three-yearly review.



KEY FACTORS ASSESSED

Thermal insulation — the thermal transmittance value (U value) of a Keylite Centre Pivot Roof Window was measured by the Hot Box method according to BS EN ISO 12567-2 : 2005 (see section 5).

Weathertightness — the windows can be used in the exposure situations described in this Certificate (see section 6).

Structural stability — the products can be selected to have adequate resistance to wind loads (see section 7).

Ventilation — the windows can provide rapid ventilation and background ventilation (see section 8).

Behaviour in relation to fire — the glazing used in the windows can be considered as non-combustible material. Windows can be used for emergency egress (see section 9).

Durability — the life of the products is expected to be at least equal to conventional timber windows. Any slight external colour change or surface dulling of the aluminium covers that might occur will be uniform over the visible surfaces of the windows (see section 16). The internal finish will maintain an acceptable appearance up to 10 years (see section 16).

The BBA has awarded this Agrément Certificate to the company named above for the products described herein. These products have been assessed by the BBA as being fit for their intended use provided they are installed, used and maintained as set out in this Certificate.

On behalf of the British Board of Agrément

Chris Hunt

Head of Approvals — Physics

Greg Cooper

Chief Executive

Date of Second issue: 22 July 2010

Originally certificated on 15 August 2008

The BBA is a UKAS accredited certification body — Number 113. The schedule of the current scope of accreditation for product certification is available in pdf format via the UKAS link on the BBA website at www.bbacerts.co.uk

Readers are advised to check the validity and latest issue number of this Agrément Certificate by either referring to the BBA website or contacting the BBA direct.

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Regulations

In the opinion of the BBA, Keylite Centre Pivot Roof Windows, if used in accordance with the provisions of this Certificate, will meet or contribute to meeting the relevant requirements of the following Building Regulations:



The Building Regulations 2000 (as amended) (England and Wales)

Requirement: A1	Loading
Comment:	The products will have sufficient strength and stiffness to sustain the imposed load. See sections 7.1 and 7.2 of this Certificate.
Requirement: B1	Means of warning and escape
Comment:	Windows of an appropriate size can be used as an escape route from floors not more than 4.5 m above ground level. See section 9.4 of this Certificate.
Requirement: B2	Internal fire spread (linings)
Comment:	The glazing used in the products can be regarded as non-combustible material and, therefore, can be taken as having a Class 0 classification. See section 9.1 of this Certificate.
Requirement: B4(2)	External fire spread
Comment:	When used in roof windows, unwired glass at least 4 mm thick can be regarded as having an AA designation. See section 9.2 of this Certificate.
Requirement: C2(b)	Resistance to moisture
Comment:	The windows will resist weather ingress. See sections 6.1 and 6.2 of this Certificate.
Requirement: C2(c)	Resistance to moisture
Comment:	The windows can contribute to satisfying this Requirement. Vents provide airflow to alleviate surface condensation. See section 11 of this Certificate.
Requirement: F1	Means of ventilation
Comment:	In calculating the contribution of the products to natural purge ventilation, the area of opening given in section 8.1 of this Certificate should be related to floor area as set out in Approved Document F. Background ventilation is provided by vents incorporated in the windows. See sections 8.2 and 8.3 of this Certificate.
Requirement: L1(a)	Conservation of fuel and power
Comment:	See sections 5.1 and 5.2 of this Certificate.
Requirement: N1	Protection against impact
Comment:	Glazing less than 800 mm above floor level should meet the requirements of Requirement N1 or should comply with the requirements of BS EN 12600 : 2002. See section 12.2 of this Certificate.
Requirement: N3	Safe opening and closing of windows etc
Comment:	In buildings other than dwellings, windows which can be opened by people in or about the building should be constructed or equipped so that they can be opened, closed or adjusted safely. See section 12.1 of this Certificate.
Requirement: N4	Safe access for cleaning windows etc
Comment:	In buildings other than dwellings, this Requirement can be met. See section 15.4 of this Certificate.
Requirement: Regulation 7	Materials and workmanship
Comment:	The products are acceptable. See sections 16.1, 16.2 and 16.4 to 16.6 and the <i>Installation</i> part of this Certificate.



The Building (Scotland) Regulations 2004 (as amended)

Regulation: 8(1)(2)	Fitness and durability of materials and workmanship
Comment:	The products satisfy the requirements of this Regulation. See sections 15.1 to 15.4, 16.1, 16.2 and 16.4 to 16.6 and the <i>Installation</i> part of this Certificate.
Regulation: 9	Building standards – construction
Standard: 1.1(b)	Structure
Comment:	The products will have sufficient strength and stiffness to sustain the imposed loads, with reference to clauses 1.1.1 ⁽¹⁾⁽²⁾ , 1.1.2 ⁽¹⁾⁽²⁾ and 1.1.3 ⁽¹⁾⁽²⁾ . See sections 7.1 and 7.2 of this Certificate.
Standard: 2.5	Internal linings
Comment:	The glazing, as part of the ceiling lining is non-combustible, with reference to clause 2.5.1 ⁽¹⁾⁽²⁾ . See section 9.1 of this Certificate.
Standard: 2.8	Spread from neighbouring buildings
Comment:	When used in roof windows, glass at least 4 mm thick is classified as 'low vulnerability' material, with reference to clause 2.8.1 ⁽¹⁾⁽²⁾ . See section 9.3 of this Certificate.
Standard: 2.9	Escape
Comment:	Windows of an appropriate size can be used as an escape route from an apartment on an upper storey at a height of not more than 4.5 m. See section 9.4 of this Certificate
Standard: 3.10	Precipitation
Comment:	The products will resist weather ingress, with reference to clause 3.10.1 ⁽¹⁾⁽²⁾ . See sections 6.1 and 6.2 of this Certificate.

Standard:	3.14	Ventilation
Comment:		In calculating the contribution of the windows to natural ventilation, with reference to clause 3.14.2 ⁽¹⁾⁽²⁾ to this Standard, see section 8.1 of this Certificate. Trickle ventilation, with reference to clauses 3.14.3 ⁽²⁾ and 3.14.5 ⁽¹⁾⁽²⁾ , is provided by vents incorporated in the windows. See sections 8.2 and 8.3 of this Certificate.
Standard:	3.15	Condensation
Comment:		The windows can contribute to satisfying this Standard, with reference to clauses 3.15.1 ⁽¹⁾ and 3.15.4 ⁽¹⁾ . See section 11 of this Certificate. Vents will provide airflow to alleviate surface condensation with reference to clause 3.15.4 ⁽¹⁾ . See section 11 of this Certificate.
Standard:	3.16	Natural lighting
Comment:		In calculating the contribution of the windows to natural lighting, with reference to clauses 3.16.2 ⁽¹⁾ and 3.16.3 ⁽¹⁾ to this Standard, see section 10 of this Certificate.
Standard:	4.8(b)	Danger from accidents
Comment:		Where accidental collision with it is likely, glazing must comply with BS 6262-4 : 2005 to satisfy this Standard, with reference to clause 4.8.2 ⁽¹⁾⁽²⁾ . See section 12.2 of this Certificate.
Standard:	4.8(c)	Danger from accidents
Comment:		The products can be safely cleaned from inside the building, with reference to clause 4.8.3 ⁽¹⁾⁽²⁾ . See section 15.4 of this Certificate.
Standard:	6.1(a)(b)	Carbon dioxide emissions
Standard:	6.2	Building insulation envelope
Comment:		See sections 5.1 to 5.2 of this Certificate.
Regulation:	12	Building standards – conversions
Comment:		All comments given for these windows under Regulation 9, also apply to this Regulation, with reference to clause 0.12.1 ⁽¹⁾⁽²⁾ and Schedule 6 ⁽¹⁾⁽²⁾ . (1) Technical Handbook (Domestic). (2) Technical Handbook (Non-Domestic).



The Building Regulations (Northern Ireland) 2000 (as amended)

Regulation:	B2	Fitness of materials and workmanship
Comment:		The products are acceptable. See sections 16.1, 16.2 and 16.4 to 16.6 and the <i>Installation</i> part of this Certificate.
Regulation:	B3(2)	Suitability of certain materials
Comment:		The products are acceptable. See sections 15.1 to 15.3 of this Certificate.
Regulation:	C4(b)	Resistance to ground moisture and weather
Comment:		The products will resist weather ingress. See sections 6.1 and 6.2 of this Certificate.
Regulation:	D1	Stability
Comment:		The products will have sufficient strength and stiffness to sustain the imposed load. See sections 7.1 and 7.2 of this Certificate.
Regulation:	E2(c)	Means of escape
Comment:		Windows of an appropriate size can be used as an escape route in dwellings. See section 9.4 of this Certificate
Regulation:	E3(a)	Internal fire spread – Linings
Comment:		The glazing used in the roof windows can be regarded as non-combustible material and therefore can be taken as having a Class 0 classification. See section 9.1 of this Certificate.
Regulation:	E5(b)	External fire spread
Comment:		When used in roof windows, unwired glass at least 4 mm thick can be regarded as having an AA designation. See section 9.2 of this Certificate.
Regulation:	F2(a)(i)	Conservation measures
Regulation:	F3(2)	Target carbon dioxide Emissions Rate
Comment:		See sections 5.1 and 5.2 of this Certificate.
Regulation:	K2	Means of ventilation
Comment:		When calculating the area of window openings for ventilation purposes, see section 8.1 of this Certificate. Trickle ventilation is provided by the methods described in sections 8.2 and 8.3 of this Certificate.
Regulation:	V2	Impact with glazing
Comment:		Where people are likely to come into contact with glazing in a building the requirements of this Regulation shall be deemed to be satisfied if the glazing complies with Technical Booklet V, Section 2. See section 12.2 of this Certificate.
Regulation:	V4	Safe opening and closing of windows, skylights and ventilators
Comment:		Any window which can be opened by a person shall be so constructed or equipped that it may be opened, closed and adjusted safely. The requirements of this Regulation shall be deemed to be satisfied if the window complies with Technical Booklet V, Section 4. See section 12.1 of this Certificate.
Regulation:	V5	Safe means of access for cleaning glazing
Comment:		Reasonable provision shall be made for safe means of access to clean glazing. The requirements of this Regulation shall be deemed to be satisfied if the means of access complies with Technical Booklet V, Section 5. See section 15.4 of this Certificate.

Information in this Certificate may assist the client, CDM co-ordinator, designer and contractors to address their obligations under these Regulations.

See section: 2 Delivery and site handling (2.4 and 2.5) of this Certificate.

Non-regulatory Information

NHBC Standards 2010

NHBC accepts the use of the Keylite Centre Pivot Roof Windows, when installed and used in accordance with this Certificate in relation to *NHBC Standards, Chapter 6.7 Doors, windows and glazing.*

General

This Certificate relates to Keylite Centre Pivot Roof Windows. The products comprise single-opening roof windows revolving about a centre pivot constructed from a wood core, covered with coil-coated aluminium covers on the external face, a clear satin acrylic lacquer on the internal face and glazed with a sealed, double glazed low emissivity, argon-filled unit with toughened glass or laminated toughened glass.

Technical Specification

1 Description

1.1 Keylite Centre Pivot Roof Windows (see Figures 1, 2 and 3) are fabricated from preserved softwood frames featuring coil-coated aluminium covers on the external faces and clear satin water-based acrylic lacquer on the internal faces of the frames and sashes.

1.2 The range comprises single-opening lights revolving about a centre pivot subject to the size restrictions shown in Table 1.

Table 1 Size range

Window code	Modular size width x height (mm)	Outer frame dimensions (mm)		Opening light dimensions (mm)	
		Width	Height	Width	Height
CP01	550 x 780	550	780	371	531
CP02	550 x 980	550	980	371	731
CP03	660 x 1180	660	1180	481	931
CP04	780 x 980	780	980	601	731
CP05	780 x 1180	780	1180	601	931
CP06	780 x 1400	780	1400	601	1151
CP07	940 x 1600	940	1600	761	1351
CP08	1140 x 1180	1140	1180	961	931
CP09	1340 x 980	1340	980	1161	731

1.3 The roof windows are factory-glazed using sealed double-glazed units (4/20/4). The units comprise a 4 mm thick outer pane made of toughened or laminated glass, a 20 mm argon-filled cavity and a 4 mm thick inner pane made of float glass featuring a low emissivity coating and carry CE Marking to show compliance with EN 1279-5 : 2005.

1.4 Conservation roof windows are covered with black coil-coated aluminium covers on the external face (see Figure 4) and clear satin water-based acrylic lacquer on the internal faces of the frames and sashes and are supplied complete with mullion. Flashings are available from the Certificate holder.

1.5 The cores of the window framing members are profiled from multi-laminated softwood and treated with preservative. Members of the outer frames and sashes are glued and nailed at the corners.

1.6 The aluminium profiles protecting the outer frames and sash and the flashings sealing the joint between the frame and the roof slope are fabricated from aluminium sheet alloys EN AW-1050A, EN AW-3003, EN AW-3105 to BS EN 573-3 : 2007. The aluminium sheet is 1.0 mm or 0.7 mm thick depending on component and is secured to the wood core with polyester powder coated, zinc plated mild steel screws.

1.7 The coil-coating on the aluminium components is available in grey finish as standard (other colour finishes are an option) and black for the conservation roof windows and has a minimum thickness of 25 µm.

Figure 1 Keylite Centre Pivot Roof Window cross sections

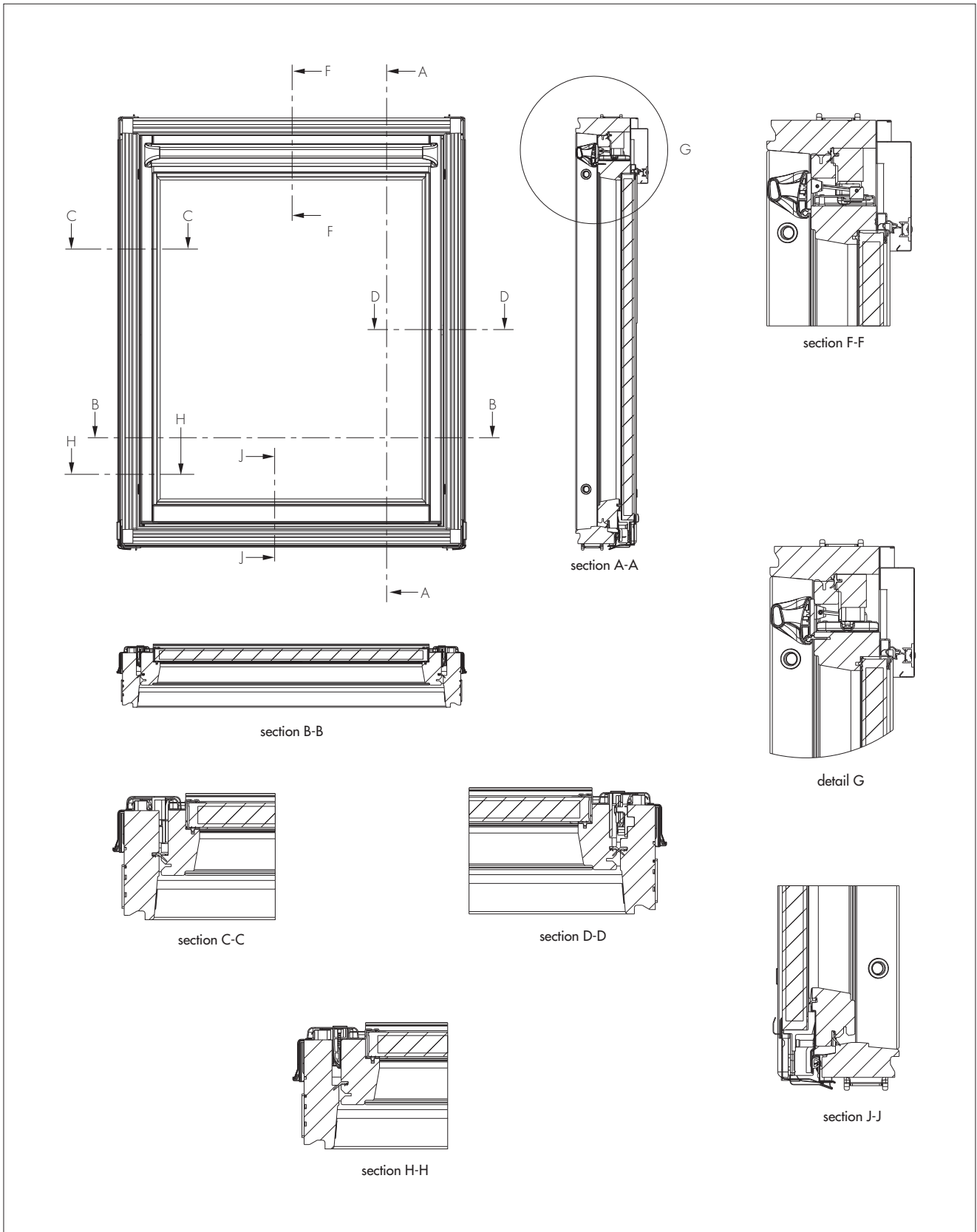
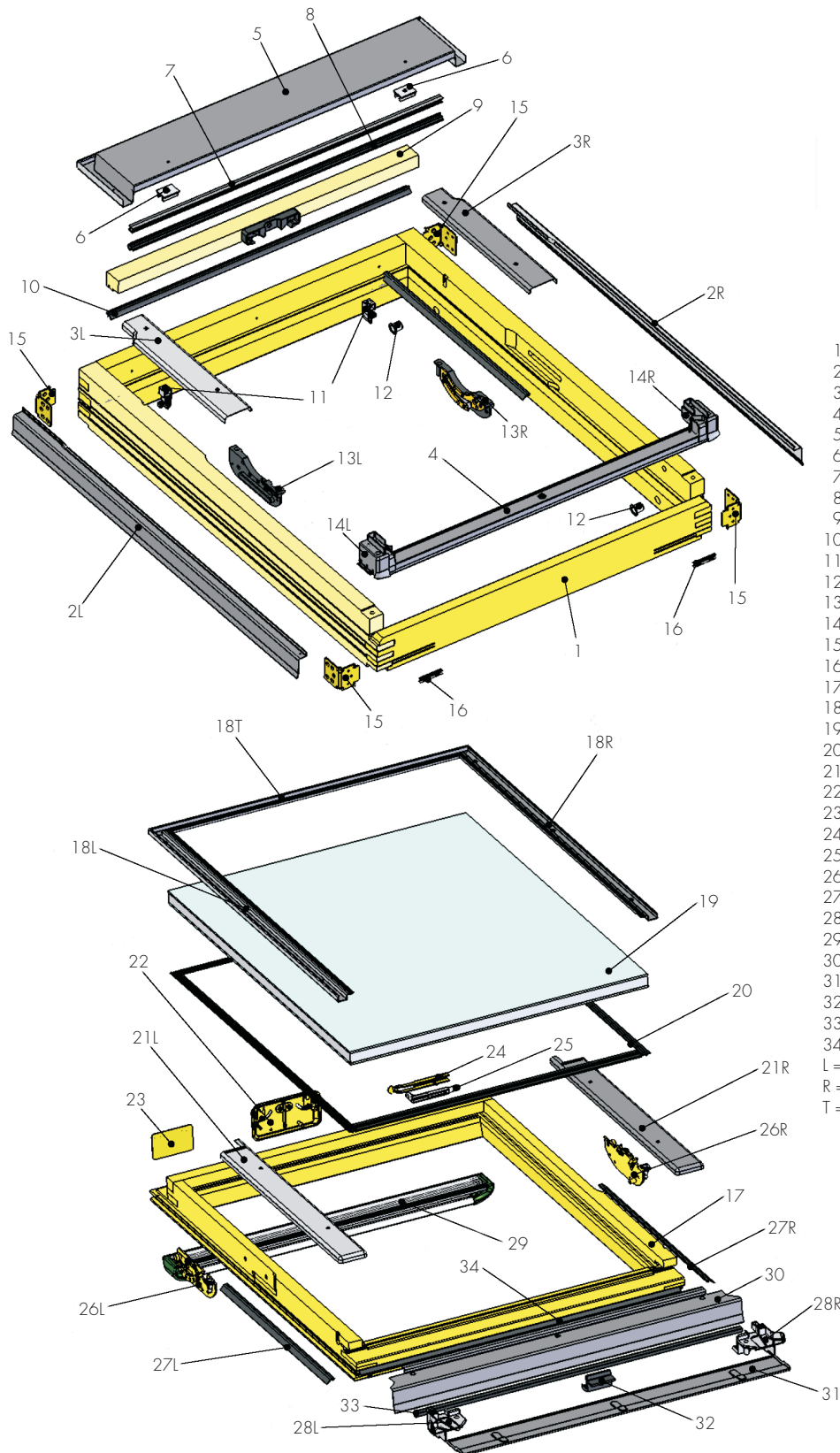


Figure 2 Keylite Centre Pivot Roof Window components



- 1 Frame timber
 - 2 Frame side flashing left and right
 - 3 Frame C-channels left and right
 - 4 Bottom frame piece
 - 5 Hood flashing
 - 6 Hood strip bracket
 - 7 Hood strip
 - 8 Hood seal
 - 9 Latch keep timber
 - 10 Latch keep seal
 - 11 Sash guide piece
 - 12 Thimble
 - 13 Frame hinge left and right
 - 14 Frame end cap left and right
 - 15 Fixing bracket
 - 16 Frame groove plug
 - 17 Sash timber
 - 18 Glazing border top, left and right
 - 19 Glazing unit
 - 20 Glazing seal
 - 21 Sash C-channel left and right
 - 22 Latch
 - 23 Window ID card
 - 24 Locking bolt housing
 - 25 Locking bolt
 - 26 Sash hinge left and right
 - 27 Sash side seal left and right
 - 28 Sash end cap left and right
 - 29 Vent flap handle
 - 30 Upper glazing piece
 - 31 Lower glazing piece
 - 32 Glazing boss
 - 33 D-seal
 - 34 Bottom sash seal
- L = Left hand
R = Right hand
T = Top

Figure 3 Window placements

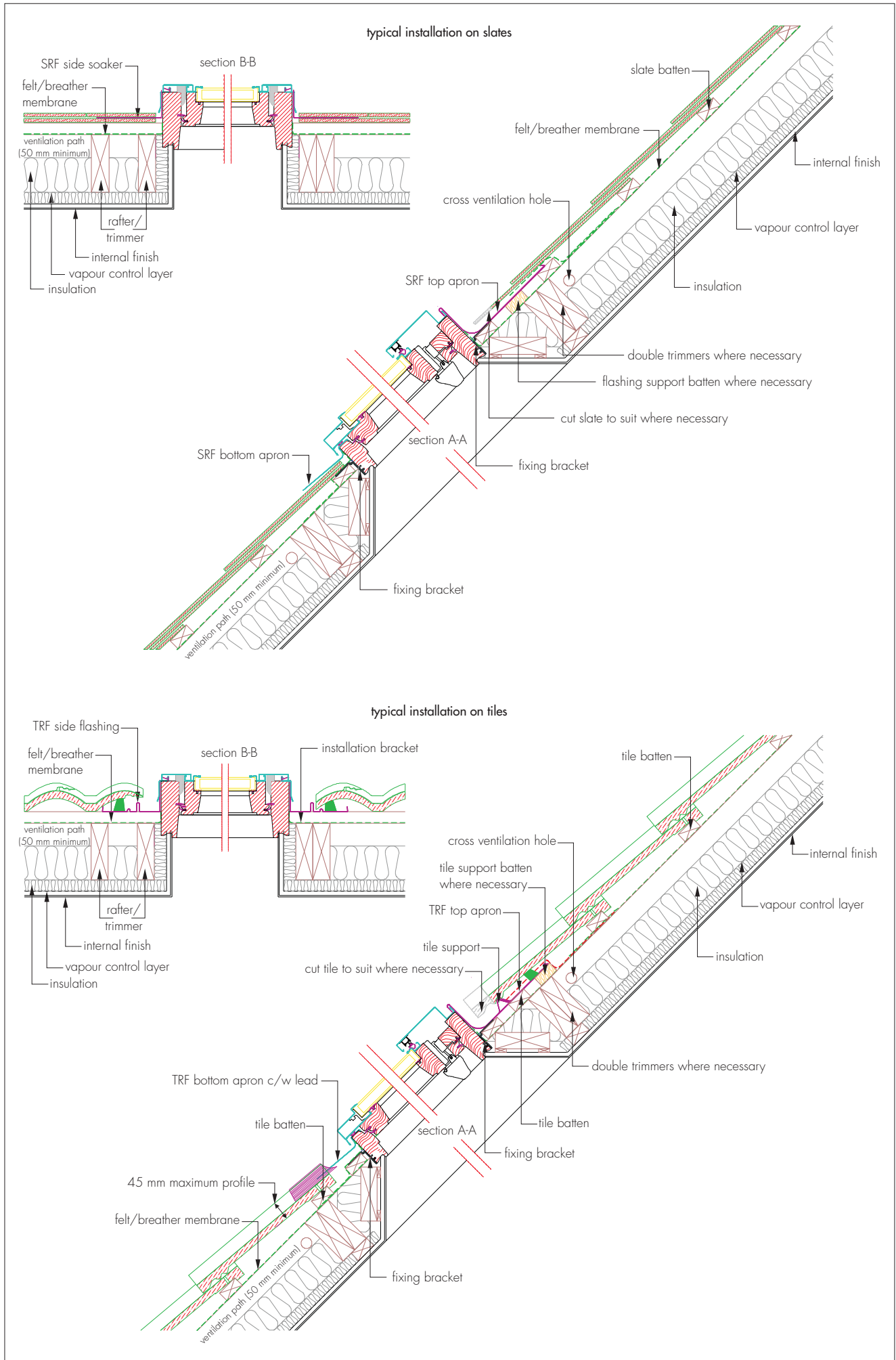


Figure 4 Conservation Centre Pivot Roof Windows



1.8 Glazing units are sealed into the wooden sash using EPDM gaskets on the inside and butyl mastic tape on the outside. The glazing unit is held with aluminium glazing beads.

1.9 The windows are operated by the upper control bar, constructed from anodized aluminium alloy. The centre pivot hinges are constructed from a combination of zinc plated mild steel and acetal homopolymer resin. They allow the sash to be turned through 180° and secured in position by engaging one or two bolts (depending on window size) for cleaning and maintenance. A key operated lock (or two depending on window size) is available and can be fitted at the bottom of the sash pivot.

1.10 EPDM weatherstripping is located in the grooves around the periphery of the opening light frame below the hinge axis and around the outer frame above the hinge axis. A base seal is fitted to the bottom member of the opening light.

1.11 The windows are equipped with a built-in background ventilator equipped with an open mesh dust and insect filter fitted in the top member on the external face of the sash.

1.12 Quality control checks are carried out on the incoming materials, during production and on the finished products.

2 Delivery and site handling

2.1 The windows are delivered to site ready glazed. For transportation they are suitably protected in cardboard boxes to avoid damage.

2.2 Each window has a label bearing the company's mark and the BBA identification mark incorporating the number of this Certificate.

2.3 The windows should be stored under cover in a clean area, on edge and suitably supported to avoid distortion or damage.

2.4 The weight of the window is written on the box. The weight of the roof window, and its ease of handling, particularly by one person, must also be taken into account when planning site operations.

2.5 When selecting means of access, for example use of scaffolding, the safety of the operatives, the occupants, and the passers-by, during the period of installation, should be considered.

Assessment and Technical Investigations

The following is a summary of the assessment and technical investigations carried out on Keylite Centre Pivot Roof Windows.

Design Considerations

3 Use

3.1 Keylite Centre Pivot Roof Windows are suitable for use on roofs of domestic or commercial buildings with a pitch between 15° and 90°.


3.2 New roof structures incorporating the product should be designed and constructed in accordance with the relevant Building Regulations and British (or European) Standards.

3.3 The roof windows are suitable for most existing roofs and for replacing existing roof windows. For such installations, it is important that the roof is checked by a suitably-qualified person for structural adequacy and strengthened as required to support the additional loads imposed upon it by the installation of the roof windows.

4 Practicability of installation


The products are designed to be installed by a competent general builder, or a contractor, experienced with these types of products.

5 Thermal insulation

 5.1 The thermal transmittance value (U value) of a Keylite Centre Pivot Roof Window, 1140 mm wide by 1180 mm high, incorporating a centre pivot opening light and glazed with a 4/20/4 mm sealed, double-glazed unit with a low-E soft coating ClimaGuard Premium as the inner pane and argon-filled cavity, when measured by the Hot Box method according to BS EN ISO 12567-2 : 2005, is 1.4 W·m⁻²·K⁻¹. In the opinion of the BBA, the thermal transmittance value (U value) of the conservation roof windows, incorporating the same glazing units, would be similar.

5.2 For the purposes of heat loss calculations, the U value measured in section 5.1 should be adjusted according to the slope of installation in accordance with section 11.1 of BRE Report (BR 443 : 2006) *Conventions for U-value calculations*.

6 Weathertightness

 6.1 When installed in accordance with the Certificate holder's instructions and sections 17 and 18, the windows will provide a weatherproof construction.

6.2 Selected samples from the windows were tested generally in accordance with BS 6375-1 : 2009. Assessment of the results shows that the products, within the range described in section 1.2, are suitable for use where the test pressure classes defined in BS 6375-1 : 2009 and indicated in Table 2 are applicable. The gradings are based on the assumption that the outer frame is supported in accordance with the manufacturer's instructions.

6.3 For unusual building layouts, building shapes or ground topography, the designer will need to give particular consideration to the prevailing exposure conditions.

7 Structural stability


 7.1 The products achieve the wind resistance loads shown in Table 2.

Table 2 Test pressure class

	Classification to			
	BS 6375-1	BS EN 12207	BS EN 12208	BS EN 12210
Air permeability ⁽¹⁾⁽²⁾	Class 2, 300 Pa	Class 2		
Watertightness ⁽²⁾	Class 7A, 300 Pa		Class E2100	
Wind resistance ⁽¹⁾	Class 2000+			Class AE2400

(1) Window tested in the vertical position.

(2) Vent sealed.

7.2 The magnitude of the actual snow load imposed will depend upon a number of factors, such as height above sea level, geographical location and roof arrangement. Therefore, it is recommended that BS 6399-3 : 1988 is used to calculate the actual snow load.

7.3 Details of connections between the roof window and the roof must be entrusted to a suitably-qualified person. Guidance is available from the Certificate holder.

8 Ventilation



8.1 The approximate opening area for rapid natural ventilation is given in Table 3.

8.2 Contribution to the background ventilation requirements of the various Building Regulations can be made by the air vent incorporated in the roof windows (see Figure 5).

8.3 The equivalent areas of vents, when tested in accordance with BS EN 13141-1 : 2004, of Keylite Centre Pivot Roof Windows are given in Table 3.

8.4 The vents' geometric area will be greater than the equivalent areas in Table 3, however the integral mesh makes a determination impractical. Users in Scotland and Northern Ireland should, therefore, take the relevant equivalent area in section Table 3 when considering requirements for minimum geometric area.

Figure 5 Integral air vent



Table 3 Ventilation areas

Window code	Modular size width x height (mm)	Opening area for rapid natural ventilation (m ²)	Length of vent (mm)	Equivalent area for trickle ventilation (mm ²) ⁽¹⁾	Equivalent area for trickle (mm ²) ⁽²⁾	Airflow rate (l s ⁻¹) ⁽³⁾
CP01	550 x 780	0.27	337	—	3880	3.05
CP02	550 x 980	0.37	337	3879	3880	3.05
CP03	660 x 1180	0.57	487	4658	4656	3.66
CP04	780 x 980	0.55	607	6567	5503	4.33
CP05	780 x 1180	0.69	607	—	5503	4.33
CP06	780 x 1400	0.84	607	—	5503	4.33
CP07	940 x 1600	1.20	767	—	6632	5.22
CP08	1140 x 1180	1.04	967	—	8043	6.33
CP09	1340 x 980	0.98	1176	—	9454	7.44

(1) Values obtained from tests to BS EN 13141-1 : 2004.

(2) Based on an equivalent area of 7055 mm² per metre width of window.

(3) Based on an airflow rate of 5.55 l s⁻¹ per metre width of window.

9 Behaviour in relation to fire



9.1 The glazing used in the windows is Class A1 by reference to Commission Decision 96/603/EC and can therefore be considered as non-combustible.



9.2 When used in roof windows, unwired glass at least 4 mm thick can be regarded as having an AA designation.



9.3 When used in roof windows, glass at least 4 mm thick is classified as “low vulnerability” material.



9.4 Where a window is required in a dwelling (for England and Wales and Scotland dwellings with a floor not more than 4.5 m above ground level), to provide a means of escape from an inner room or a loft space converted into a habitable room, the window can meet the relevant Requirements or Standards of the national Building Regulations when it incorporates an opening light positioned no more than 1.1 m above the floor, providing a clear opening area of at least 0.33 m² (the obstruction caused by opening lights hung on pivot hinges must be taken into account when the clear opening is determined) and not less than 450 mm high by 450 mm wide. The route through the window may be at an angle rather than straight through. In addition:

England and Wales — windows must remain open without needing to be held

Scotland — locks may be used but must not cause a permanent obstruction to satisfy Mandatory Standard 2.9, clause 2.9.4⁽¹⁾ as escape windows

(1) Technical Booklet (Domestic).

Northern Ireland — the window must be positioned not less than 600 mm above the floor when fitted in the plane of the roof or 800 mm for windows used in dormer construction (90° to horizontal).

10 Glass area



The approximate glass area of the windows is given in Table 4.

Table 4 Approximate glass area

Window code	Glass area (m ²)
CP01	0.20
CP02	0.27
CP03	0.49
CP04	0.44
CP05	0.56
CP06	0.69
CP07	0.91
CP08	0.97
CP09	0.85

11 Condensation risk



Experience of window systems similar to the Keylite Centre Pivot Roof Windows has shown that, in normal domestic or similar applications, roof windows do not constitute a significant condensation risk when correctly installed. Guidance on some satisfactory design details is given in *Limiting thermal bridging and air leakage : Robust construction details for dwellings and similar buildings*, TSO 2002. Further information is contained in BRE Report (BR 262 : 2002) *Thermal insulation : avoiding risks*.

12 Safety



12.1 The windows can comply with the recommendations of BS 8213-1 : 2004 with regard to the positioning of hand operated controls.



12.2 Account must be taken of the recommendations given in BS 6262-4 : 2005, which include the use of safety glass, complying with BS EN 12600 : 2002, under certain circumstances.

13 Security against intrusion

13.1 The opening lights can be fitted with a key-operated locking device, where the windows are required to satisfy the security requirements of *NHBC Standards 2010, Chapter 6.7 Doors, windows and glazing*. It is the responsibility of the building designer to specify where these requirements need to be satisfied.

13.2 The arrangement of the aluminium cladding and glazing retaining profiles ensures that removal of the glass is difficult from the outside.

14 Ease of operation

The window can be operated without difficulty when correctly installed.

15 Maintenance



15.1 The window can be re-glazed and the gaskets and weatherstripping replaced, but these operations are outside the scope of this Certificate.

15.2 Maintenance painting of the external and internal finishes should be considered at the intervals defined in sections 16.2 and 16.4 respectively or earlier if a high aesthetic standard is required. The Certificate holder can recommend a suitable paint and maintenance system (outside the scope of this Certificate).

15.3 If damage occurs, the furniture and fittings can be replaced.



15.4 The external pane of the glazing unit can be cleaned from inside the building.

15.5 The external glazing and external frame members can be cleaned using water containing household detergent. If dirt is allowed to build up on the members over long periods it may become more difficult to restore the surface appearance.

15.6 Care should be taken when using proprietary materials for cleaning the glass, to ensure that deposits are not allowed to remain on the wood or aluminium surfaces where they may cause discoloration and damage to the surface. In addition, care must be taken to avoid damage to, or discoloration of, the members when stripping paint from adjacent timber, for example, by means of a blowlamp or paint stripper.

15.7 The pivot hinges are designed to be maintenance free. The locking mechanism should be lubricated periodically to minimise wear and to ensure smooth operation.

16 Durability



16.1 The external faces of the frames and sashes are protected by aluminium covers. Therefore, the life of the roof windows is expected to be at least equal to conventional timber windows.

16.2 The performance of the external coating will depend on its environment, location and aspect face. It will retain a good appearance for at least 15 years.

16.3 Any external colour change or surface dulling of the aluminium covers that might occur will be uniform over any one elevation.



16.4 The acrylic internal finish will maintain an acceptable appearance up to 10 years. This may be reduced in areas of high humidity such as kitchens or bathrooms or if subjected to mechanical damage. The appearance can be restored by overcoating.

16.5 Fittings, including the pivot hinges and operating handles, as described in this Product Sheet, will have similar durability except where windows are to be installed in areas subject to particularly aggressive conditions. These conditions can prevail in coastal locations or near sources of industrial pollutants and replacement of fittings may be necessary within the life of the window.

16.6 The gaskets and weatherstripping may need to be replaced within the life of the window.

Installation

17 General

17.1 Keylite Centre Pivot Roof Windows must be fixed into the opening, in accordance with the recommendations in the *Keylite Fitting Instructions for Roof Windows*, using angled anchors, made from zinc plated mild steel, fixed to the window frame and rafters or battens. The window may be installed at any point above floor level (subject to Building Regulations approval), but consideration must be given to ease of operation.

17.2 With suitable propping, it is normally acceptable to cut out one rafter and form a trimmed opening. Where more extensive cutting of structural members is proposed or in any case of doubt, appropriately qualified and experienced persons should be consulted.

17.3 When preparing the opening to accept the roof window, a tolerance of +20 mm to +40 mm should be allowed.

17.4 The window must be installed above a complete row of tiles, as these must not be cut under the window. In the case of metal roof sheets or similar, the window must be installed above a horizontal lap. In the case of roofing materials having a depth of more than 45 mm (for example pantiles, profiled sheets and corrugated fibre cement sheets), it is necessary that the upper edge of the roofing material is cut (tiles or slates) or blunt (metal roofing sheets or similar) under the edge of the window.

17.5 When installing the window, the following distances between the edge of the window and tiles must be maintained:

- at bottom edge of window
 - 20 mm for slate (up to 8 mm thick)
 - 50 mm for plain tiles
 - 100 mm for flat tiles and profile tiles up to 45 mm thick
 - 120–140 mm for profiled tiles over 45 mm thick
- at sides of window
 - 0–20 mm for slate
 - 30–40 mm for plain tiles
 - 55–65 mm for flat and profiled tiles
- at top edge of window
 - 60–110 mm for slate
 - 50–100 mm for plain tiles
 - 60–150 mm for tiles up to 45 mm thick
 - 60–150 mm for tiles over 45 mm thick
 - 60–150 mm for corrugated sheets.

17.6 The window aperture should be marked on the roofing felt. When cutting away the roofing material a 50 mm flap should be allowed all around to provide a waterproof dpc. The battens are cut out where the window is to be fitted.

17.7 The window is fitted using four angle brackets. The optimum width spacing between the rafters should be close to the width of the window and can be 20 mm to 40 mm larger than it. In the case of a roof having a different spacing between the rafters additional timber bridging support must be provided.

17.8 The laths or roof boarding is cut, where the window is to be fitted, to the width and height of the window plus 20 mm to 40 mm.

18 Procedure

Preparation of the window

18.1 The timber packaging lath and aluminium cladding parts supplied with the window and the opening light frame are removed in accordance with the manufacturer's instructions.

18.2 The supplied angle mounting brackets are fixed to the jambs of the outer frame approximately 100–200 mm from the corners in accordance with the manufacturer's instructions.

Mounting the window on the roof

18.3 The frame is fitted into the prepared opening in the roof, ensuring that it lies horizontally using a spirit level and that the frame top is running parallel with the roofing rafter.

18.4 The lower angle brackets are screwed onto the rafters or battens and the opening light frame is fitted into the casing in accordance with the manufacturer's instructions and the top angle brackets are screwed onto the rafters.

18.5 The roof tile underlay/dpc is secured around the sides of the roof window.

18.6 Installation is completed by fixing the appropriate flashings in accordance with the manufacturer's instructions.

19 Tests

19.1 Tests were carried out to determine:

- air permeability (BS 6375-1 : 2009)
- watertightness (generally in accordance with BS 6375-1 : 2009)
- effect of wind loads (BS 6375-1 : 2009)
- efficiency of window fittings (BBA ad hoc method)
- corrosion resistance of window fittings (BS EN 1670 : 2007)
- mechanical loading tests (generally to BS 6375-2 : 2009)
- load bearing capacity of safety devices (BS EN 14609 : 2004)
- snow loading (MOAT No 54 : 1989)
- ease of operation (BS 6375-1 : 2009)
- basic security test (BBA ad hoc method).

19.2 The clear satin lacquer applied to the interior face was tested to determine:

- gloss retention after artificial weathering (BS EN ISO 2813 : 2000)
- fungal resistance (BS 3900-G6 : 1989)
- extensibility of applied film (MOAT No 33 : 1986)
- water vapour permeability [BS 3177 : 1959 (1995)]
- abrasion resistance (BS 3900-E15 : 2006, BS EN ISO 7784-2 : 2006)
- scratch resistance (BS EN ISO 1518 : 2001)
- adhesion of coating (BS EN ISO 2409 : 2007).

19.3 The air vent was tested in accordance with BS EN 13141-1 : 2004.

19.4 Existing data was examined relating to the thermal transmittance value of a roof window and the aluminium cladding profiles.

20 Investigations

The window fabrication procedure including the methods adopted for quality control, have been examined and found satisfactory by the BBA.

Bibliography

- BS 3177 : 1959 *Method for determining the permeability to water vapour of flexible sheet materials used for packaging*
- BS 3900-E15 : 2006 *Paints and varnishes — Determination of resistance to abrasion — Rotating abrasive rubber wheel method*
- BS 3900-G6 : 1989 *Methods of test for paints — Assessment of resistance to fungal growth*
- BS 6229 : 2003 *Flat roofs with continuously supported coverings — Code of practice*
- BS 6262-4 : 2005 *Glazing for buildings — Code of practice for safety related to human impact*
- BS 6375-1 : 2009 *Performance of windows and doors — Classification for weathertightness and guidance on selection and specification*
- BS 6375-2 : 2009 *Performance of windows and doors — Classification for operation and strength characteristics and guidance on selection and specification*
- BS 6399-2 : 1997 *Loading for buildings — Code of practice for wind loads*
- BS 6399-3 : 1988 *Loading for buildings — Code of practice for imposed roof loads*
- BS 8213-1 : 2004 *Windows, doors and rooflights — Design for safety in use and during cleaning of windows, including door-height windows and roof windows — Code of practice*
- BS EN 573-3 : 2007 *Aluminium and aluminium alloys — Chemical composition and form of wrought products — Chemical composition and form of products*
- BS EN 1670 : 2007 *Building hardware — Corrosion resistance — Requirements and test methods*
- BS EN 12207 : 2000 *Windows and doors — Air permeability — Classification*
- BS EN 12208 : 2000 *Windows and doors — Watertightness — Classification*
- BS EN 12210 : 2000 *Windows and doors — Resistance to wind load — Classification*
- BS EN 12600 : 2002 *Glass in building — Pendulum test — Impact test method and classification for flat glass*
- BS EN 13141-1 : 2004 *Ventilation for buildings — Performance testing of components/products for residential ventilation — Externally and internally mounted air transfer devices*
- BS EN 14609 : 2004 *Windows — Determination of the resistance to static torsion*
- BS EN ISO 1518 : 2001 *Paints and varnishes — Scratch test*
- BS EN ISO 2409 : 2007 *Paints and varnishes — Cross-cut method*
- BS EN ISO 2813 : 2000 *Paints and varnishes — Determination of specular gloss of non-metallic paint films at 20°, 60° and 85°*
- BS EN ISO 7784-2 : 2006 *Paints and varnishes — Determination of resistance to abrasion — Rotating abrasive rubber wheel method*
- BS EN ISO 12567-2 : 2005 *Thermal performance of windows and doors — Determination of thermal transmittance by hot box method — Roof windows and other projecting windows*
- EN 1279-5 : 2005 *Glass in building — Insulating glass units — Evaluation of conformity*
- MOAT No 33 : 1986 *The assessment of masonry coatings*
- MOAT No 54 : 1989 *UEAtc guide for the Agrément of individual rooflights*
- EC Decision 96/603/EC — Commission Decision of 4 October 1996 establishing a list of products belonging to Class A — No contribution to fire

21 Conditions

21.1 This Certificate:

- relates only to the product/system that is named and described on the front page
- is granted only to the company, firm or person named on the front page — no other company, firm or person may hold or claim any entitlement to this Certificate
- is valid only within the UK
- has to be read, considered and used as a whole document — it may be misleading and will be incomplete to be selective
- is copyright of the BBA
- is subject to English law.

21.2 Publications and documents referred to in this Certificate are those that the BBA deems to be relevant at the date of issue or re-issue of this Certificate and include any: Act of Parliament; Statutory Instrument; Directive; Regulation; British, European or International Standard; Code of Practice; manufacturers' instructions; or any other publication or document similar or related to the aforementioned.

21.3 This Certificate will remain valid for an unlimited period provided that the product/system and the manufacture and/or fabrication including all related and relevant processes thereof:

- are maintained at or above the levels which have been assessed and found to be satisfactory by the BBA
- continue to be checked as and when deemed appropriate by the BBA under arrangements that it will determine
- are reviewed by the BBA as and when it considers appropriate.

21.4 In granting this Certificate, the BBA is not responsible for:

- the presence or absence of any patent, intellectual property or similar rights subsisting in the product/system or any other product/system
- the right of the Certificate holder to manufacture, supply, install, maintain or market the product/system
- individual installations of the product/system, including the nature, design, methods and workmanship of or related to the installation
- the actual works in which the product/system is installed, used and maintained, including the nature, design, methods and workmanship of such works.

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