



## Anglian Windows Limited

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**Agrément  
Certificate  
No 00/3665**

Designated by Government  
to issue  
European Technical  
Approvals

## ANGLIAN PVC-U CONSERVATORY SYSTEM

Système de serre  
Gewächshausystem

## Product




• THIS CERTIFICATE REPLACES CERTIFICATE No 93/2963 AND RELATES TO THE ANGLIAN PVC-U CONSERVATORY SYSTEM.


- The conservatories are for use as extensions to new or existing buildings where an external grade door separates conservatory from inner room.
- It is essential that the conservatories are installed and used in accordance with the conditions set out in the Design Data and Installation parts of these Front Sheets and accompanying Detail Sheets.

## Regulations — Detail Sheet 1


### 1 The Building Regulations 1991 (as amended) (England and Wales)

 The Secretary of State has agreed with the British Board of Agrément that the extension of a building by the addition at ground level of a conservatory, where the floor area does not exceed 30 m<sup>2</sup>, is exempt from the Building Regulations provided that the glazing satisfies the requirements of Part N *Glazing — Materials and protection*. See section 10.1 of this Certificate.

### 2 The Building Standards (Scotland) Regulations 1990 (as amended)

 A conservatory forming a single storey extension to an existing dwelling of purpose sub-group 1B or 1C, where the conservatory does not contain a flue or heat-producing appliance, is not within one metre of a boundary and the floor area does not exceed 30 m<sup>2</sup>, is exempt from these Regulations.

### 3 The Building Regulations (Northern Ireland) 1994 (as amended)

 A conservatory constructed as an annexe to an existing building and having a floor area not exceeding 30 m<sup>2</sup> and not less than one metre from any boundary is exempt from these Regulations provided that the conditions described in A5 Exemptions are met.

Information in this Certificate may assist the client, planning supervisor, designer and contractors to address their obligations under these Regulations.

See section:

*Delivery and site handling* of the relevant Detail Sheet.

## Design Data

### 5 Strength and stability

5.1 With the exception of the additional requirements described in section 6.2, the design is in accordance with:

BS Code of practice 118 : 1969

BS 6399 : Part 3 : 1988

BS Code of Practice 3 : Chapter V : Part 2 : 1972.

5.2 Structural testing has been used to verify the relevant aspects of the design outside the scope of the codes, including resistance of conservatories to racking, interaction of components and effects of long-term loads.

5.3 The conservatories will have adequate resistance to wind loads in areas where the design wind speed of  $38 \text{ ms}^{-1}$ , calculated in accordance with CP 3 : Chapter V : Part 2 : 1972, exerts a maximum pressure of 900 Pa.

5.4 The roof is designed to support an imposed load of  $0.75 \text{ kNm}^{-2}$ . The magnitude of the actual snow load imposed will depend upon a number of factors, ie height above sea level, geographical location, roof size and arrangement, etc. It is therefore recommended that BS 6399 : Part 3 : 1988 is used to calculate the actual snow load when the conservatory is used in areas where a load greater than  $0.75 \text{ kNm}^{-2}$  can be expected.

5.5 Foundations must be designed in accordance with BS 8004 : 1986 and NHBC Standard, Chapter 4 : 1992 where applicable.

### 6 Weathertightness

6.1 Selected samples from the Anglian Conservatory configurations covered by this Certificate were tested for weathertightness. There are no standards or guides applicable to conservatories. Therefore, for the assessment, use was made of BS 6375 : Part 1 : 1989 and MOAT No 1 giving the results shown in Table 1. The gradings are based on the assumption that the conservatory is installed in accordance with the appropriate *Anglian Technical Information File*.

Table 1 Weathertightness

	BS 6375 : Part 1 : 1989 Test pressure class (Pa)	MOAT No 1 Grading
Weathertightness	200	E <sub>2</sub>
Air permeability <sup>(1)</sup>	300	A <sub>2</sub>

E<sub>2</sub> indicates water leakage occurring between 150 Pa and 299 Pa.

A<sub>2</sub> indicates an airflow rate below the line passing the point for a rate of flow of  $6 \text{ m}^3\text{h}^{-1}\text{m}^{-1}$  at 100 Pa pressure, when tested up to a pressure of 300 Pa.

(1) Gradings apply to wall frames only; built-in ventilation in the roof is a design feature.

6.2 To achieve the gradings given in Table 1, particular attention must be paid to the correct fitting of all gaskets and weatherseals, and to the detailing of sealants and flashings.

### 7 Behaviour in relation to fire

7.1 The toughened safety glass used can be regarded as a non-combustible material and therefore can be taken as having a Class 0 performance rating.

7.2 The polycarbonate sheet used in the conservatories has achieved a Class 1 rating when tested to BS 476 : Part 7 : 1987 and is therefore classed as a TP(a) rigid thermoplastic. In Table 18 of Approved Document B to the Building Regulations 1991 (England and Wales) TP(a) rigid thermoplastics is allowed to be used in conservatory roofs.

7.3 The spread of flame across PVC-U is limited, and in a fire it will tend to char and may fall away. The use of the material in the construction of a conservatory would not accelerate the development of a fire.

### 8 Ventilation and solar heat gain

8.1 Opening lights can be included in the wall frame options to provide adequate ventilation. The precise area of opening can be calculated as described in the appropriate Detail Sheet of BBA Certificate No 93/2906 (see also the accompanying Detail Sheets of this Certificate). A habitable room may be ventilated through an adjoining conservatory if the ventilation openings

have an area appropriate to Building Regulations Requirements.

8.2 Opening roof lights can be included where required to provide greater levels of ventilation.

8.3 Background ventilation can be provided by the inclusion of controllable trickle ventilators in the head of window and door units where required. The roof incorporates eaves and ridge ventilation.

8.4 Solar heat gain through the roof panels and wall frames may provide a useful additional heat input during winter conditions; however, summertime internal temperatures will also be raised. Where this latter effect is of importance in reducing the habitability of the conservatory, the following design factors should be considered:

orientation with respect to south  
aspect ratio of the floor plan of the conservatory,  
and  
area of opening lights and doors to area of floor  
expressed as a percentage.

8.5 To reduce the effects of solar heat gain on the internal temperature of the conservatory, a range of blinds is available from Anglian Windows Limited. The performance of these blinds has not been assessed by the BBA.

8.6 As an approximate guide, northerly facing conservatories should have opening lights or doors of not less than 15% of the floor area, rising to not less than 25% with roof blinds for those of a southerly aspect. This should limit the solar gain temperature rise to less than 12°C for most situations in summertime using only natural ventilation. Where lower temperature rises are desired, consideration can be given to mechanical forced ventilation. More precise methods of design and solar data are given in *CIBSE (Chartered Institution of Building Services Engineers) Guide Book*, Parts A4 and A6.

## 9 Condensation risk and thermal insulation

In common with all roof glazed structures, temperature reduction under night-time winter sky radiation conditions will lead to the possibility of condensation. However, the effects may be minimised by ventilation and by the use of background heating to maintain the internal temperature between 3°C and 4°C above the external ambient temperature during winter night-time clear sky conditions. The U value of the polycarbonate roof sheets is calculated to be 2.38 Wm<sup>-2</sup>K<sup>-1</sup> using *CIBSE Guide Book*, Parts A3.5 to A3.7. The rafters are assessed as having higher U values than this and consequently may be subject to occasional winter condensation under severe conditions. In general, if temperatures and humidities within the conservatory are maintained within the normal domestic band from 10°C to 25°C and from 40% to 65% RH,

respectively, any occurrence of condensation will be slight and temporary.

## 10 Safety

10.1 The wall frames of Anglian Conservatories are glazed with sealed, double-glazed units incorporating toughened safety glass Kitemarked to BS 6206 : 1981; this satisfies the requirements of Part N1 of the Building Regulations 1991 (England and Wales). Where a glass roof is specified, sealed double-glazed units incorporate toughened safety glass Kitemarked to BS 6206 : 1981, or laminated glass.

10.2 The opening light windows will comply with the recommendations of BS 8213 : Part 1 : 1991 with regard to the positioning of hand operated controls.

10.3 The framework of the conservatories will comply with the requirement for soft body impact resistance for category C and D locations as defined in BS 8200 : 1985.

## 11 Security against intrusion

11.1 The opening lights, residential and patio doors are fitted with locking mechanisms and features as described in section 4.12. They provide reasonable security against unauthorised entry by the opportunist intruder. Where relevant, reference should be made to *NHBC Standards*, Chapter 6.7.

11.2 All glazing beads are either fitted internally to the wall frames or, where fitted externally, the glass unit is retained by adhesive glazing tape and therefore removal of the glazing from the outside is extremely difficult.

11.3 It is recommended that a conservatory forming an extension to an existing dwelling should retain a lockable exterior type door to the main building.

## 12 Ease of operation

The windows and doors can be operated without difficulty when correctly installed in the conservatory.

## 13 Services

Any services required for the conservatory are outside the scope of this Certificate. Any requirement to change existing drainage or utility services will be the subject of advice from Anglian Windows Limited.

## 14 Maintenance

14.1 The wall frames can be re-glazed and the gaskets and weatherstripping replaced, but these operations should be carried out by Anglian Windows Limited using the materials approved by the BBA. If the coextruded glazing bead gasket is

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damaged, for example during re-glazing, it may be necessary to replace the complete bead.

14.2 If damage occurs, the furniture and fittings can be readily replaced by releasing the fixing screws and changing the fitting.

14.3 The PVC-U frame members can be cleaned using water containing household detergent, as instructed on the reverse of the Anglian warranty document. If dirt is allowed to build up on the members over long periods it may become more difficult to restore the surface appearance.

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

14.5 Paints can adversely affect the impact strength of the PVC-U frame members and the application of dark colours could lead to a risk of thermal distortion. Therefore painting is not recommended.

14.6 The window and door locking mechanisms and hinges should be lubricated periodically to minimise wear and to ensure smooth operation, as recommended by Anglian Windows Limited.

14.7 The roof panels can be readily replaced, if damaged, by removal of the rafter caps and

sealing gaskets. Cleaning should be carried out using water containing household detergent. Only soft cloths should be used when cleaning, in order to avoid scratching of the surface.

## 15 Durability

15.1 Evidence is available on the performance in the UK of PVC-U similar to that used for the framing members, over a period of 15 years in windows and in excess of 20 years in other external applications. Such evidence, when compared with the results of tests on the Anglian PVC-U, indicates that the conservatories will have a life of at least 25 years. Any slight colour change or surface dulling that might occur will be uniform over the visible surfaces of the wall frames.

15.2 Polycarbonate roof sheets, aluminum rafters, infill panels and other components, including the hinges, locking mechanism and operating handles, will have similar durability. Where conservatories are to be installed in areas subject to particularly aggressive conditions, for example, in coastal locations or near sources of industrial pollutants, replacement of components may be necessary within the life of the conservatory. Polycarbonate roof sheet replacement may be necessary where prolonged exposure to direct sunlight causes degradation.

15.3 The gaskets, weatherstripping and silicone sealant may need to be replaced within the life of the conservatory.

### 16 General

16.1 The survey, design and installation of the Anglian PVC-U Conservatory is undertaken by Anglian Windows Limited in accordance with the appropriate *Anglian Technical Information File*.

16.2 Cavity trays are required where the conservatory roof abuts the wall of the building for new construction and consideration is given in their inclusion in existing walls in exposed situations.

16.3 Consideration should be given to the inclusion of snow guards on higher roofs with pitches steeper than 45°.

### 17 Preparation

The site is prepared, foundations are constructed and any walls are built to the instructions of Anglian Windows Limited. The foundations meet the requirements of BS 8004 : 1986 and *NHBC Standard*, Chapter 4 : 1992, where applicable. Anglian Windows Limited take into consideration local conditions seeking advice from the local authority when necessary. If there are any doubts with regard to the stability of the site a suitably qualified engineer is consulted.

- BS 476 *Fire tests on building materials and structures*  
Part 7 : 1987 *Method for classification of the surface spread of flame of products*
- BS 6206 : 1981 *Specification for impact performance requirements for flat safety glass and safety plastics for use in buildings*
- BS 6375 *Performance of windows*  
Part 1 : 1989 *Classification for weathertightness (including guidance on selection and specification)*
- BS 6399 *Loading for buildings*  
Part 3 : 1988 *Code of practice for imposed roof loads*
- BS 8004 : 1986 *Code of practice for foundations*
- BS 8200 : 1985 *Code of practice for design of non-loadbearing external vertical enclosures of buildings*
- BS 8213 *Windows, doors and rooflights*  
Part 1 : 1991 *Code of practice for safety in use and during cleaning of windows and doors (including guidance on cleaning materials and methods)*
- CP 3 *Code of basic data for the design of buildings*  
Chapter V *Loading*  
Part 2 : 1972 *Wind loads*
- CP 118 : 1969 *The structural use of aluminum*
- MOAT No 1 : 1974 *Directive for the Assessment of Windows*

## Conditions of Certification

### 18 Conditions

18.1 This Certificate:

- (a) relates only to the product that is described, installed, used and maintained as set out in this Certificate;
- (b) is granted only to the company, firm or person identified on the front cover — no other company, firm or person may hold or claim any entitlement to this Certificate;
- (c) has to be read, considered and used as a whole document — it may be misleading and will be incomplete to be selective;
- (d) is copyright of the BBA.

18.2 References in this Certificate to any Act of Parliament, Regulation made thereunder, Directive or Regulation of the European Union, Statutory Instrument, Code of Practice, British Standard, manufacturers' instructions or similar publication, shall be construed as references to such publication in the form in which it was current at the date of this Certificate.

18.3 This Certificate will remain valid for an unlimited period provided that the product and the manufacture and/or fabricating process(es) thereof:

- (a) are maintained at or above the levels which have been assessed and found to be satisfactory by the BBA;

(b) continue to be checked by the BBA or its agents; and

(c) are reviewed by the BBA as and when it considers appropriate.

18.4 In granting this Certificate, the BBA makes no representation as to:

- (a) the presence or absence of any patent or similar rights subsisting in the product or any other product;
- (b) the right of the Certificate holder to market, supply, install or maintain the product; and
- (c) the nature of individual installations of the product, including methods and workmanship.

18.5 Any recommendations relating to the use or installation of this product which are contained or referred to in this Certificate are the minimum standards required to be met when the product is used. They do not purport in any way to restate the requirements of the Health & Safety at Work etc Act 1974, or of any other statutory, common law or other duty which may exist at the date of this Certificate or in the future; nor is conformity with such recommendations to be taken as satisfying the requirements of the 1974 Act or of any present or future statutory, common law or other duty of care. In granting this Certificate, the BBA does not accept responsibility to any person or body for any loss or damage, including personal injury, arising as a direct or indirect result of the installation and use of this product.



In the opinion of the British Board of Agrément, the Anglian PVC-U Conservatory System is fit for its intended use provided it is installed, used and maintained as set out in this Certificate. Certificate No 00/3665 is accordingly awarded to Anglian Windows Limited.

On behalf of the British Board of Agrément

A handwritten signature in black ink, appearing to read 'P. C. Newson'.

Date of issue: 29th March 2000

Chief Executive



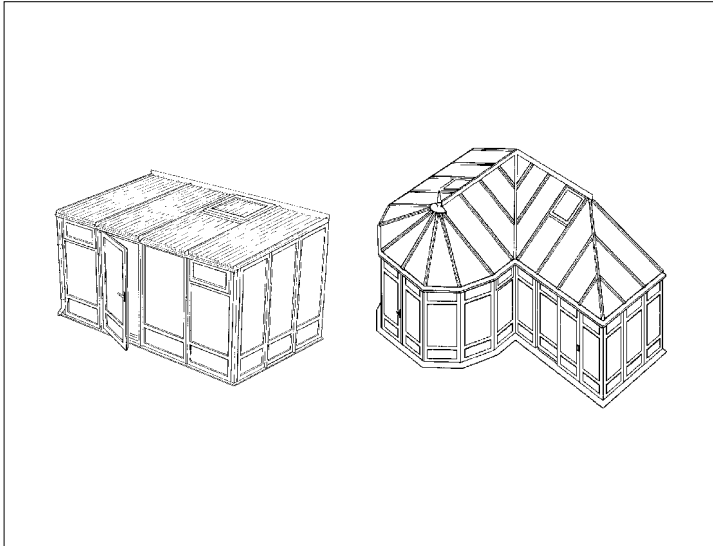
Anglian Windows Limited

Certificate No 00/3665

THE ANGLIAN WHITE KNIGHT PVC-U  
CONSERVATORY SYSTEM

**DETAIL SHEET 2**

## Product



• THIS DETAIL SHEET RELATES TO THE ANGLIAN WHITE KNIGHT PVC-U CONSERVATORY SYSTEM.

*This Detail Sheet must be read in conjunction with the Front Sheets, which give the product's position regarding the Building Regulations, general information relating to the system, and the Conditions of Certification, respectively.*

## Technical Specification

### 1 Description

#### General

1.1 The Anglian White Knight PVC-U Conservatory System is designed, fabricated and installed by Anglian Windows Limited for use in the exposure situations described in this Certificate.

1.2 The Anglian White Knight PVC-U Conservatory System comprises white PVC-U wall frames and aluminium roof construction, with PVC-U internal and external cladding, in the following configurations:

- Garden room incorporating a lean-to roof with a pitch of 5° to 30°, front wall frames and gable ends (see Figure 1).
- Victorian style incorporating a 15° to 30° pitched roof, a roof bow and tunnel wall and bow frames (see Figure 2).
- Composite conservatory comprising combinations of the above styles and including pitched roof configurations with hips and valleys (see Figure 3).

1.3 Permissible size parameters and configurations are described in the *Anglian Product Specification Manual PSM 03*; this Certificate relates to conservatories not exceeding a floor area of 30 m<sup>2</sup> within these parameters.

Figure 1 Garden room conservatory

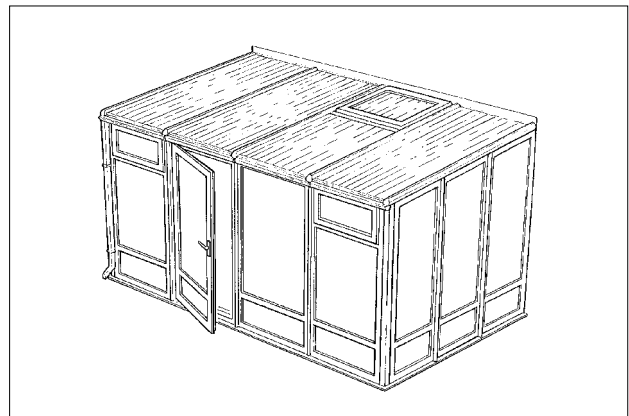


Figure 2 Victorian style conservatory

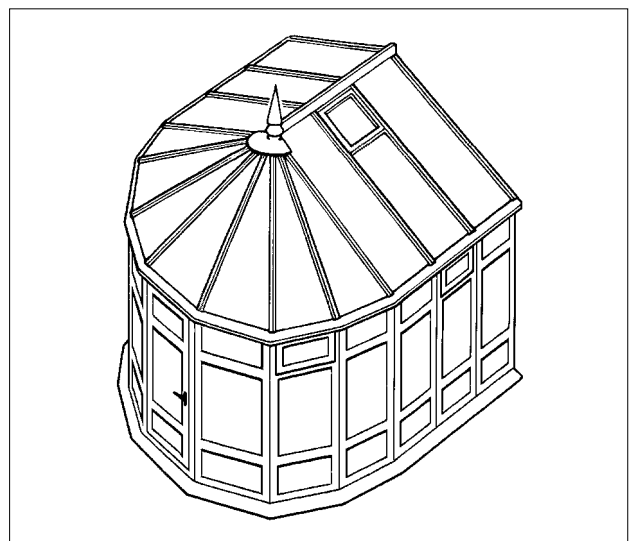
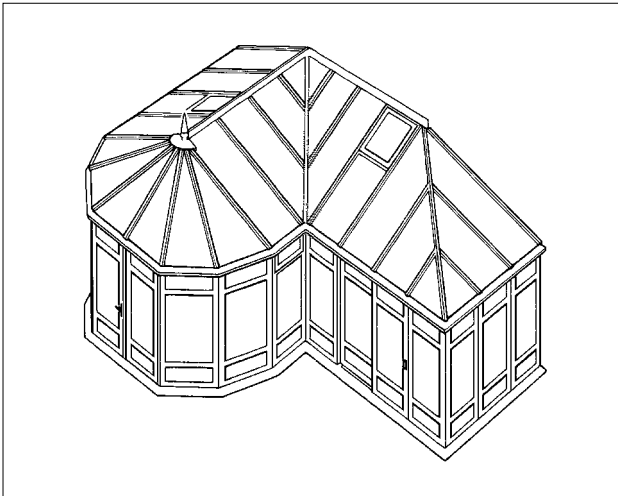


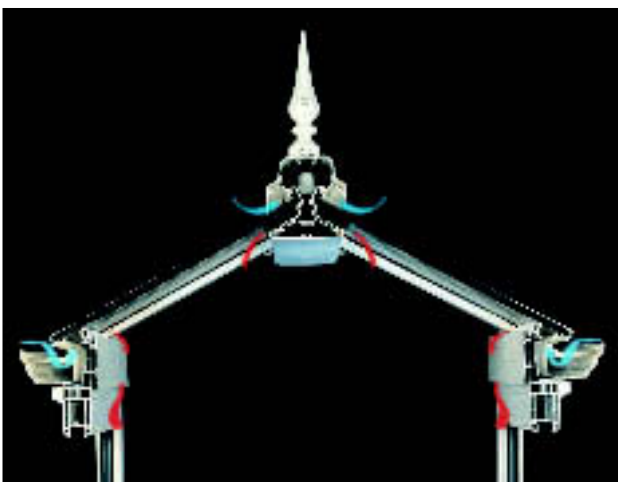
Figure 3 Composite conservatory



1.4 The full specifications and drawings for the materials and components covered by this Certificate have been examined and are retained by the BBA. This section gives only general details of the system. A complete schedule of the component parts is contained in the *Anglian Product Specification Manual PSM 03*.

1.5 The roof system (see Figure 4) consists of a ridge beam member and glazing bar sections extruded from aluminium to BS 1474 : 1987, material designation 6063-T6, glazed with triple- or quadruple-wall polycarbonate panels or double-glazed sealed units. The units are 20 mm thick, and sealed units are Kitemarked to BS 5713 : 1979. An aluminium eaves beam or ring beam is attached to the supporting side wall structure with corner joints fixed with aluminium cleats and zinc plated screws.

Figure 4 Typical roof system



1.6 Glazing bars with PVC-U internal cladding and TPE coextruded gaskets are attached to the eaves beam and ridge beam member with zinc plated steel bolts (captive in slots in the ridge and eaves beam aluminium extrusions). Hip bars are clamped onto the die-cast ridge end with Speedlok fixings. Starter glazing bars are attached to the ridge and eaves beams in the same manner as the transom glazing bars. The starter glazing bars are fixed directly to the existing building wall to provide lateral stability to the roof structure.

1.7 Glazing panels or units supported by the glazing bars are located into the ridge system through a PVC-U rain baffle and coextruded gasket providing a seal against ingress of moisture. External PVC-U caps with TPE coextruded gaskets snap into position on the glazing bars and hold down the roof panels or units, forming a seal between the internal and external gaskets.

1.8 To prevent the ingress of moisture, a closed cell bung is positioned at the ridge end at the intersection of the hip bars and a silicone seal is applied to the joints.

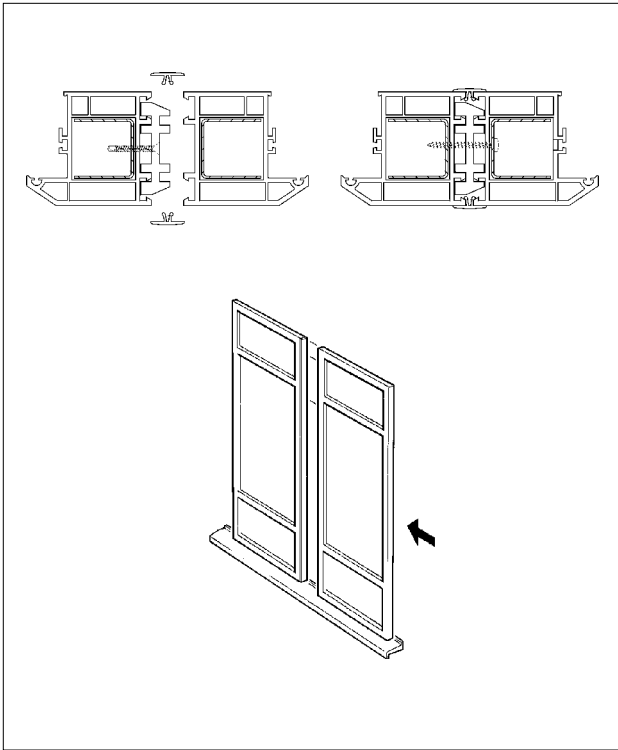
1.9 An external PVC ridge cap, with integral ridge flashing trim, is positioned on top of the ridge body and is clamped in position from the inside with nylon fixing rods.

1.10 A PVC gutter system is attached to the aluminium eaves beam around the full perimeter of the roof using push-fit brackets. The underside of the gutter is finished off with a PVC trim or dentil moulding options. The internal face of the eaves beam and the ridge beam clad with an internal PVC cladding.

1.11 An opening roof vent designed to match the glazing bar sections is available if required.

1.12 Wall frames (see Figure 5) are fabricated from white unplasticized polyvinyl chloride (PVC-U) profiles, produced by conventional extrusion techniques from material complying with Case B (PVC-U with additional polymers), as defined in BBA MOAT No 17 : 1990. The profiles, methods of fabrication, welding of joints and reinforcing are generally as described in BBA Certificate No 93/2906, Detail Sheets 2 and 3, the White Knight tilt and turn and outward opening window systems. *The Anglian Product Specification Manual PSM 03* defines full details of the conservatory.

Figure 5 Typical wall frame



1.13 Wall frames comprise fixed and opening lights internally glazed with sealed double-glazed units or infill panels, with PVC-U skins and a polystyrene foam and plywood core, in the sizes and configurations described in the *Anglian Product Specification Manual PSM 03*. Anglian Ultra sealed units are Kitemarked to BS 5713 : 1979.

1.14 Coupling mullions, corner posts, and bay poles are used when required. The components are extruded from aluminium alloy type 6063-T5 to BS 1474 : 1987.

1.15 Single or double opening residential doors in white PVC-U can be included in the wall frames as described in the *Anglian Product Specification Manual PSM 03*.

1.16 Single residential doors are fitted with a lock incorporating three deadbolts and a hook lock. Double opening doors are fitted with multipoint locks and shootbolt locks at the top and bottom of each leaf. Sliding patio doors incorporate a top shootbolt, two mushroom-headed bolts and a key operated plunger lock at the centre stile. Outward opening windows are fitted with shootbolt locking mechanisms and friction stays incorporating a lug

which locates in the main frame. Tilt and turn windows incorporate multipoint locks and passive mushroom-headed location devices. All windows are supplied with locking handles.

1.17 A masonry base wall of cavity construction can be incorporated in the conservatory as described in the *Anglian Product Specification Manual PSM 03*.

### Quality control

1.18 Quality control includes checks on all materials and components, in particular:

#### **PVC-U compound**

bulk density  
flow, contamination and particle size

#### **Extruded PVC-U profiles**

dimensions  
colour  
heat reversion  
resistance to cold impact

#### **Fabrication of wall frames**

extrusions and fittings (visual inspection)  
overall dimensions  
operation and opening of locking mechanisms  
strength of welded corners

#### **Fabrication of roof system**

extrusions and components (visual inspection)  
overall dimensions.

## 2 Delivery and site handling

2.1 All components are suitably protected and delivered to site and Anglian Windows Limited.

2.2 The wall frames should be stored under cover in a clean area, on edge and suitably protected to avoid distortion or damage.

2.3 The weight of glazing can be calculated, where required for manual handling operations, by reference to the information contained in BS 952 : Part 1 : 1995. The weight of the unglazed frame, and its ease of handling, particularly by one person, must also be taken into account when planning site operations.

2.4 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.

## Installation

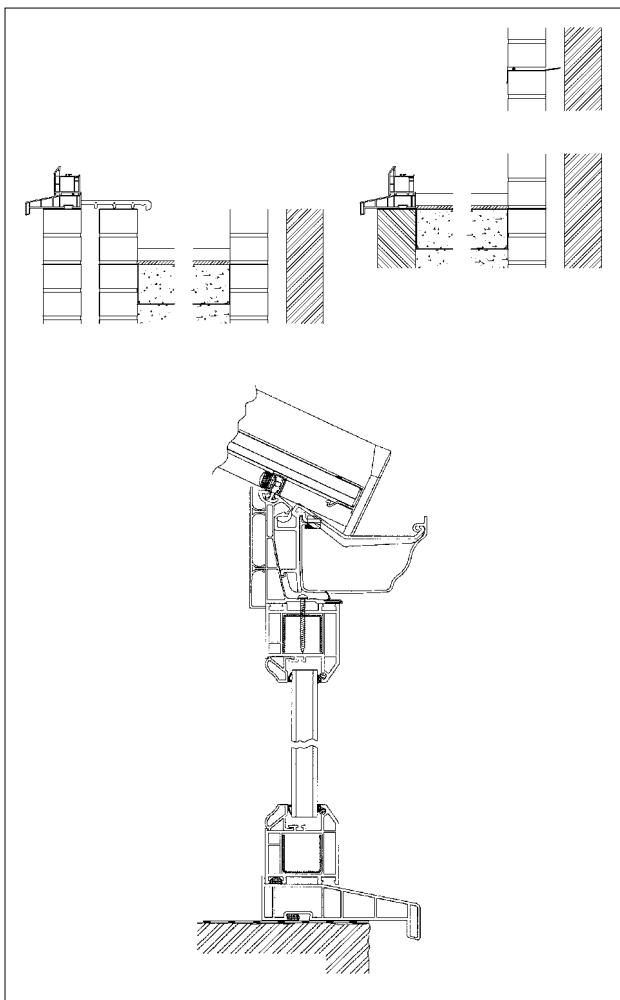
### 3 Procedure (see Figure 6)

3.1 The installation procedure is described fully in *Anglian Technical Information File TIF 004*.

3.2 The conservatory base wall dpc is chased into the building wall and lapped. Any airbricks obstructed by the conservatory base are ducted to the outside.

3.3 The sill is positioned on the base wall, and where appropriate the dpm is folded over the brickwork, and a mastic seal is applied beneath the sill.

Figure 6 Typical installation details



3.4 All fixed glazing is removed from the wall frames prior to positioning on the sill. Starting with the centre frame, and applying a mastic seal between sill and frame, the frames are secured to the sill with screws at 600 mm (max) centres.

3.5 The wall construction is made from individual PVC-U frames joined via coupling mullions, bay poles or corner posts, secured by screws located at 150 mm centres from top and bottom corners and then at 400 mm (max) centres.

3.6 The final wall frames are fixed to the building wall using expanding anchors through the frame.

3.7 The eaves beam is positioned on top and in line with the supporting side frames and secured using the recommended fastener and fixing centres. The corner joints are spliced with aluminium cleats and fixing screws.

3.8 The ridge beam is placed in position and located with the starter glazing bars, hip bars and transom bars. The hip bars with Speedlok fixings are clamped to the die-cast ridge end, and to the eaves beam by captive bolts located in the eaves beam extrusion. Starter glazing bars and transom bars are attached to the ridge section and the eaves beam by captive bolts located in the ridge and eaves beam extrusions.

3.9 The starter glazing bars are fixed directly to the existing house wall using appropriate fixings.

3.10 The roof is glazed with polycarbonate sheets or sealed double-glazing units. Each panel is located into the ridge system between the PVC rain baffle and the coextruded TPE gasket. External glazing caps with coextruded TPE gaskets are snapped onto the glazing bars to form a seal against the glazing panel.

3.11 A closed cell foam bung is positioned at the ridge end of the intersection of the hip bars and a silicone seal is applied to the joints. The PVC ridge cap is clamped into position from inside.

3.12 Lead flashing is fitted at the abutment of the roof to the house wall.

3.13 The installation is completed by fitting such items as trims, ridge cresting, finials, gutters and downpipes. Rainwater is directed to a suitable soakaway or drain.

## Technical Investigations

The following is a summary of the technical investigations carried out on the Anglian White Knight PVC-U Conservatory System.

### 4 Tests

4.1 Tests were carried out to determine:

air permeability  
 watertightness  
 effect of wind loads  
 effect of snow loads  
 resistance to racking loads  
 resistance to impact.

4.2 Tests in accordance with MOAT No 8 : 1973 and MOAT No 17 : 1990 gave the results for the PVC extrusions as detailed in Table 2.

### 5 Other investigations

The design process, fabrication of wall frames and installation methods have been examined and found satisfactory by the BBA.

Table 2 PVC-U extrusion test results

ash content (%)	7.55
Vicat softening temperature (°C)	84
tensile strength (MPa)	46
modulus of elasticity (MPa)	2640
tensile impact (kJm <sup>-2</sup> ):	
new material	685 ± 103
aged material <sup>(1)</sup>	590 ± 83
induction time of dehydrochlorination (min):	
new material	122
aged material <sup>(1)</sup>	113
impact test at -10°C	pass
shrinkage on heating at 100°C for 1 hour	2%
verification of gelation by heating	pass

(1) artificially aged.

## Bibliography

BS 952 *Glass for glazing*  
 Part 1 : 1995 *Classification*

BS 1474 : 1987 *Specification for wrought aluminium and aluminium alloys for general engineering purposes: bars, extruded round tubes and sections*

BS 5713 : 1979 *Specification for hermetically sealed flat double glazing units*

BS EN 10142 : 1991 *Specification for continuously hot-dip zinc coated low carbon steel sheet and strip for cold forming: technical delivery conditions*

MOAT No 8 : 1973 *Directive for Rigid PVC Products Used Externally in Building*

MOAT No 17 : 1990 *UEAtc Technical Guide for the Agrément of windows in PVC-U* [supersedes MOAT No 17 : 1981]



On behalf of the British Board of Agrément

A handwritten signature in black ink, appearing to read 'P. C. Newson'.

Date of issue: 29th March 2000

Chief Executive

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**British Board of Agrément**

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For information about Agrément  
Certificate validity and scope, tel:  
**Hotline: 01923 665400**



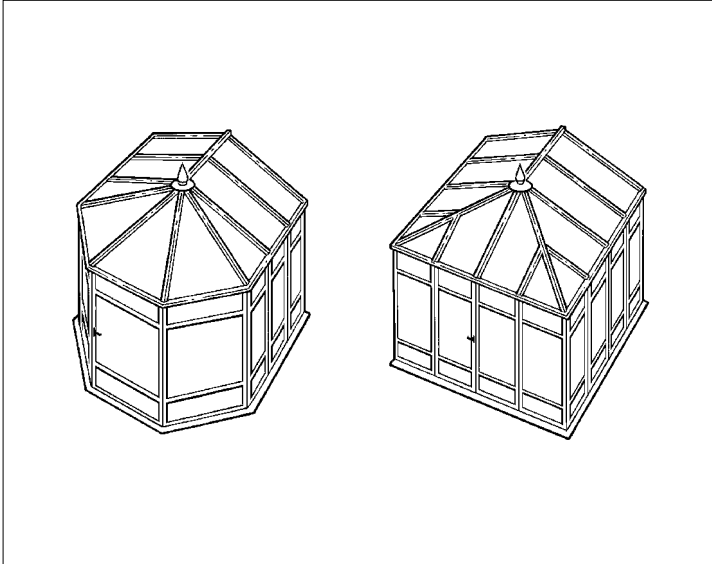
Anglian Windows Limited

THE ANGLIAN CRUSADER PVC-U  
CONSERVATORY SYSTEM

Certificate No 00/3665

DETAIL SHEET 3

## Product



• THIS DETAIL SHEET RELATES TO THE ANGLIAN CRUSADER PVC-U CONSERVATORY SYSTEM.

*This Detail Sheet must be read in conjunction with the Front Sheets, which give the product's position regarding the Building Regulations, general information relating to the system, and the Conditions of Certification, respectively.*

## Technical Specification

### 1 Description

1.1 The Anglian Crusader PVC-U Conservatory System is designed, fabricated and installed by Anglian Windows Limited for use in the exposure conditions described in this Certificate.

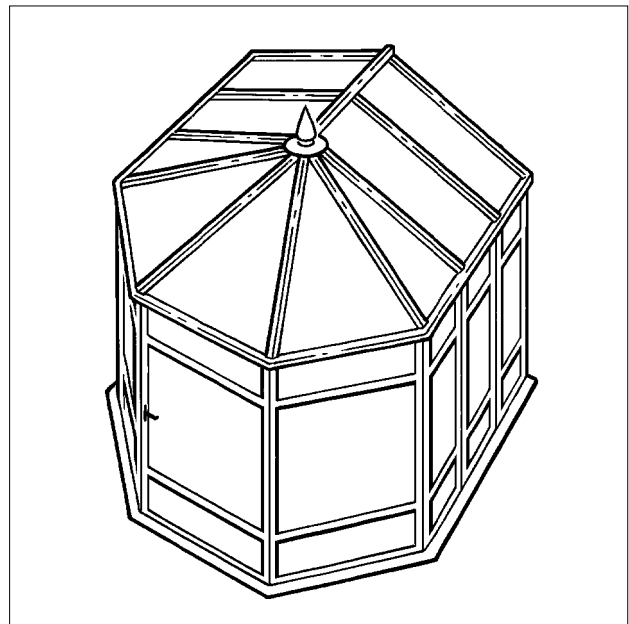
1.2 The Anglian Crusader PVC-U Conservatory System comprises white PVC-U wall frames and aluminium roof construction, with PVC-U internal and external cladding, in the following configurations:

- Victorian style incorporating a 20° pitched roof, a roof bow and tunnel wall and bow frames (three or five part bow) (see Figure 1).
- Elizabethan/Edwardian style incorporating a 20° pitched roof, front wall frames and tunnel wall frames (see Figure 2).

1.3 Permissible size parameters and configurations are described in the *Anglian Product Specification Manual PSM 03*; this Certificate relates to conservatories not exceeding a floor area of 30 m<sup>2</sup> within these parameters.

1.4 The full specifications and drawings for the materials and components covered by this Certificate have been examined and are retained by the BBA. This section gives only general details of the system. A complete schedule of the component parts is contained in the *Anglian Product Specification Manual PSM 03*.

Figure 1 Victorian style conservatory



1.5 The roof system (see Figure 3) consists of a ridge beam member and glazing bar sections extruded from aluminium to BS 1474 : 1987, material designation 6063-T6, glazed with triple- or quadruple-wall polycarbonate panels or double-glazed sealed units. The units are 20 mm thick and sealed units are Kitemarked to BS 5713 : 1979. An aluminium eaves beam or ring beam is attached to the supporting side wall structure with corner joints fixed with aluminium cleats and zinc plated screws.

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Figure 2 Elizabethan style conservatory

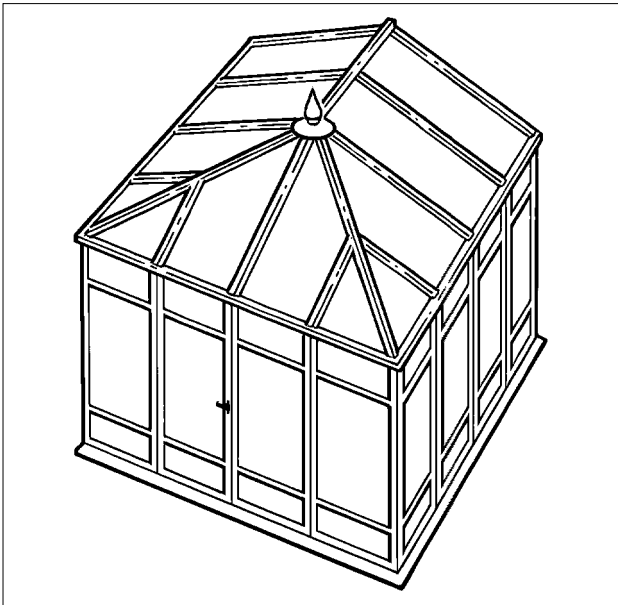
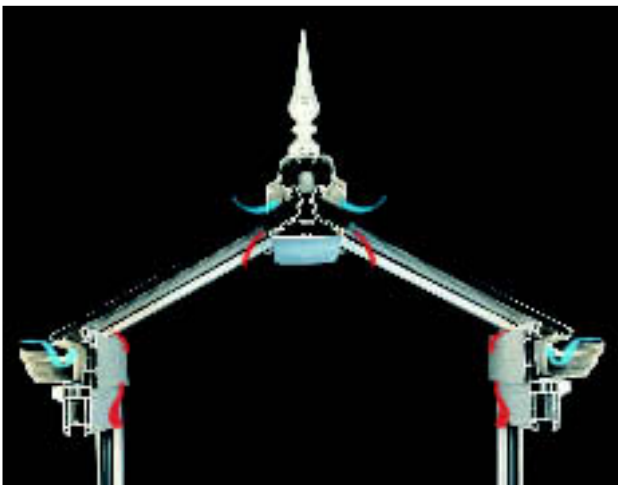


Figure 3 Typical roof system



1.6 Glazing bars with PVC-U internal cladding and TPE coextruded gaskets are attached to the eaves beam and ridge beam member with zinc plated steel bolts (captive in slots in the ridge and eaves beam aluminium extrusions). Hip bars are clamped onto the die-cast ridge end with Speedlok fixings. Starter glazing bars are attached to the ridge and eaves beams in the same manner as the transom glazing bars. The starter glazing bars are fixed directly to the existing building wall to provide lateral stability to the roof structure.

1.7 Glazing panels or units supported by the glazing bars are located into the ridge system through a PVC-U rain baffle and coextruded gasket providing a seal against ingress of moisture. External PVC-U caps with TPE coextruded gaskets snap into position on the glazing bars and hold down the roof panels or units, forming a seal between the internal and external gaskets.

1.8 To prevent the ingress of moisture a closed cell bung is positioned at the ridge end at the intersection of the hip bars and a silicone seal is applied to the joints.

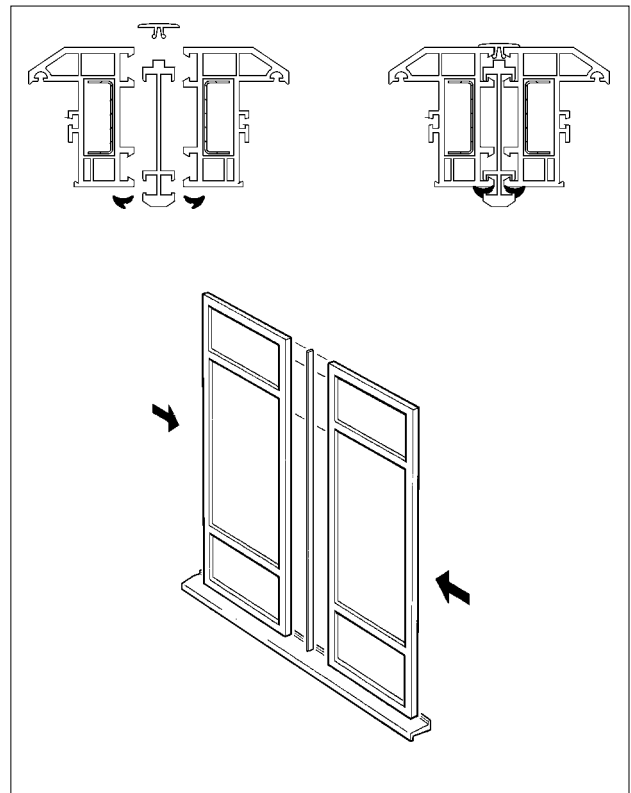
1.9 An external PVC ridge cap with integral ridge flashing trim is positioned on top of the ridge body and is clamped in position from the inside with nylon fixing rods.

1.10 A PVC gutter system is integral in the ring beam or attached to the aluminium eaves beam around the full perimeter of the roof using push-fit brackets. The underside of the gutter is finished off with a PVC trim or dentil moulding options. The internal face of the eaves beam and the ridge beam clad with an internal PVC cladding.

1.11 An opening roof vent designed to match the glazing bar sections is available if required.

1.12 Wall frames (see Figure 4) are fabricated from white unplasticized polyvinyl chloride (PVC-U) profiles, produced by conventional extrusion techniques from material complying with Case B (PVC-U with additional polymers), as defined in BBA MOAT No 17 : 1990. The profiles, methods of fabrication, welding of joints and reinforcing are generally as described in BBA Certificate No 96/3264, Detail Sheet 4 Crusader 70 outward opening window system. The *Anglian Product Specification Manual PSM 03* defines full details of the conservatory.

Figure 4 Typical wall frame



1.13 Wall frames comprise fixed and opening lights externally glazed with sealed double-glazed units or infill panels, with PVC-U skins and polystyrene foam and plywood core, in the sizes and configurations described in the *Anglian Product Specification Manual PSM 03*. Anglian Ultra sealed units are Kitemarked to BS 5713 : 1979.

1.14 Coupling mullions, corner posts, and bay poles are used when required. The components are extruded from aluminium alloy type 6063-T5 to BS 1474 : 1987.

1.15 Single or double opening residential doors in white PVC-U can be included in the wall frames as described in the *Anglian Product Specification Manual PSM 03*.

1.16 Single residential doors are fitted with a lock incorporating three deadbolts and a hook lock. Double opening doors are fitted with multipoint locks and shootbolt locks at the top and bottom of each leaf. Outward opening windows are fitted with mushroom-headed espagnolette locking mechanisms and friction stays. All windows are supplied with locking handles.

1.17 A masonry base wall of cavity construction can be incorporated in the conservatory as described in the *Anglian Product Specification Manual PSM 03*.

## Quality control

1.18 Quality control includes checks on all materials and components, in particular:

*PVC-U compound*

bulk density

flow, contamination and particle size

*Extruded PVC-U profiles*

dimensions

colour

heat reversion

resistance to cold impact

*Fabrication of wall frames*

extrusions and fittings (visual inspection)

overall dimensions

operation and opening of lacking mechanisms

strength of welded corners

*Fabrication of roof system*

extrusions and components (visual inspection)

overall dimensions.

## 2 Delivery and site handling

2.1 All components are suitably protected and delivered to site and Anglian Windows Limited.

2.2 The wall frames should be stored under cover in a clean area, on edge and suitably protected to avoid distortion or damage.

2.3 The weight of glazing can be calculated, where required for manual handling operations, by reference to the information contained in BS 952 : Part 1 : 1995. The weight of the unglazed frame, and its ease of handling, particularly by one person, must also be taken into account when planning site operations.

2.4 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.

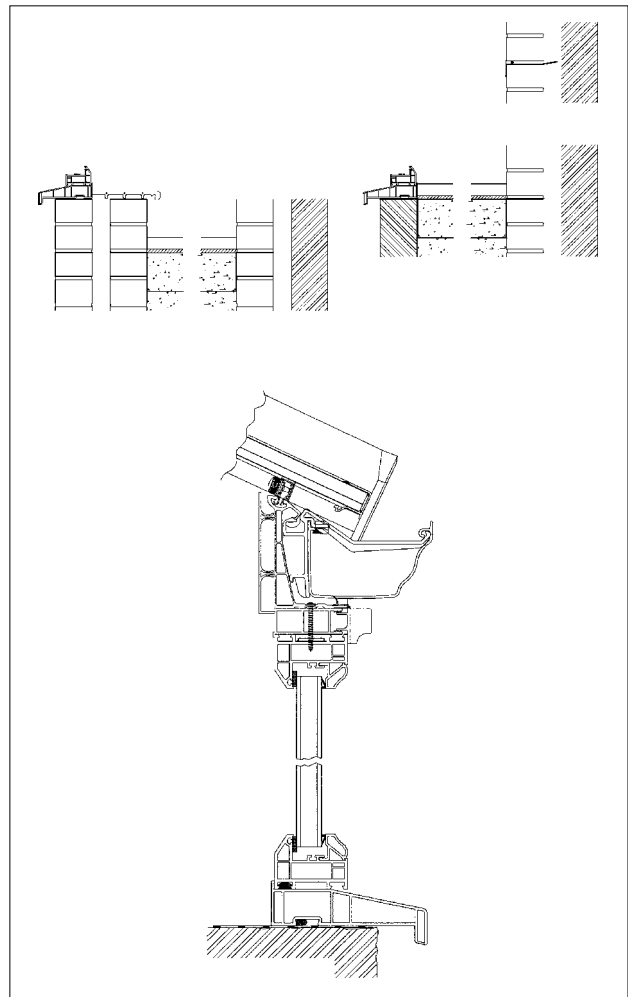
## Installation

### 3 Procedure (see Figure 5)

3.1 The installation procedure is described fully in *Anglian Technical Information File TIF 004*.

3.2 The conservatory base wall dpc is chased into the building wall and lapped. Any airbricks obstructed by the conservatory base are ducted to the outside.

Figure 5 Typical installation details



3.3 The sill is positioned on the base wall, and where appropriate the dpm is folded over the brickwork, and a mastic seal is applied beneath the sill.

3.4 Starting with the end wall frames, and applying a mastic seal between sill and frame, the glazed frames are positioned on the sill.

3.5 The wall construction is made from individual PVC-U frames joined via coupling mullions, bay poles or corner posts, secured by screws and cleats at top and bottom, and by means of a wedge gasket along the length of the coupling.

3.6 The end wall frames are fixed to the building wall using a coupling fixed to the masonry.

3.7 The eaves beam is positioned on top and in line with the supporting side frames and secured using the recommended fastener and fixing centres. The corner joints are spliced with aluminium cleats and fixing screws.

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3.8 The ridge beam is placed in position and located with the starter glazing bars, hip bars and transom bars. The hip bars with Speedlok fixings are clamped to the die-cast ridge end, and to the eaves beam by captive bolts located in the eaves beam extrusion. Starter glazing bars and transom bars are attached to the ridge section and the eaves beam by captive bolts located in the ridge and eaves beam extrusions.

3.9 The starter glazing bars are fixed directly to the existing house wall using appropriate fixings.

3.10 The roof is glazed with polycarbonate sheets or sealed double-glazing units. Each panel is located into the ridge system between the PVC rain baffle and the coextruded TPE gasket. External glazing caps with coextruded TPE gaskets are snapped onto the glazing bars to form a seal against the glazing panel.

3.11 A closed cell foam bung is positioned at the ridge end of the intersection of the hip bars and a silicone seal is applied to the joints. The PVC ridge cap is clamped into position from inside.

3.12 Lead flashing is fitted at the abutment of the roof to the house wall.

3.13 The installation is completed by fitting such items as trims, ridge cresting, finials, gutters and downpipes. Rainwater is directed to a suitable soakaway or drain.

## Technical Investigations

The following is a summary of the technical investigations carried out on the Anglian Crusader PVC-U Conservatory System.

### 4 Tests

4.1 Tests were carried out as part of this assessment, and previous assessments, to determine:

air permeability  
watertightness  
effect of wind loads  
effect of snow loads  
resistance to racking loads  
resistance to impact.

4.2 Tests in accordance with MOAT No 8 : 1973 and MOAT No 17 : 1990, from previous assessments, gave the results for the PVC extrusions as detailed in Table 2.

Table 2 PVC-U extrusion test results

ash content (%)	7.55
Vicat softening temperature (°C)	84
tensile strength (MPa)	46
modulus of elasticity (MPa)	2640
tensile impact (kJm <sup>-2</sup> ):	
new material	685 ± 103
aged material <sup>(1)</sup>	590 ± 83
induction time of dehydrochlorination (min):	
new material	122
aged material <sup>(1)</sup>	113
impact test at -10°C	pass
shrinkage on heating at 100°C for 1 hour	2%
verification of gelation by heating	pass

(1) artificially aged.

## 5 Other investigations

The design process, fabrication of wall frames and installation methods have been examined and found satisfactory by the BBA.

## Bibliography

BS 952 *Glass for glazing*  
Part 1 : 1995 *Classification*

BS 1474 : 1987 *Specification for wrought aluminium and aluminium alloys for general engineering purposes: bars, extruded round tubes and sections*

BS 5713 : 1979 *Specification for hermetically sealed flat double glazing units*

BS EN 10142 : 1991 *Specification for continuously hot-dip zinc coated low carbon steel sheet and strip for cold forming: technical delivery conditions*

MOAT No 8 : 1973 *Directive for Rigid PVC Products Used Externally in Building*

MOAT No 17 : 1990 *UEAtc Technical Guide for the Agrément of windows in PVC-U* [supersedes MOAT No 17 : 1981]



On behalf of the British Board of Agrément

Date of issue: 28th March 2000

Chief Executive