

SBP Ltd

Unit D
Stafford Park 7
Telford
Shropshire TF3 3BQ

Tel: 01952 292511 Fax: 01952 292025
e-mail: info@plaslyne.co.uk
website: www.plaslyne.co.uk



Agrément Certificate
No 01/3827

WINFIT² CAVITY CLOSER, FORMER AND FRAME FIXING SYSTEMS

PRODUCT SHEET 2 — CAVIMASTER CAVITY CLOSER, FORMER AND FRAME FIXING SYSTEM

PRODUCT SCOPE AND SUMMARY OF CERTIFICATE

This Certificate relates to the Cavimaster Cavity Closer, Former and Frame Fixing System for use as a cavity closer and to form an opening in masonry cavity walls.

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

Hygrothermal behaviour — the system can be used in Accredited Construction Details for jambs and sills which require a path of minimum thermal resistance through the cavity closer of not less than $0.45 \text{ m}^2\text{KW}^{-1}$ (see section 5).

Weather resistance — the system is effective as a damp-proof barrier and when used in a suitable wall construction will resist the passage of water into the interior of the building in flush and check reveal installations (see section 6).

Structural stability — in terms of wind loading resistance the system can be used in all areas of the UK. The system must not be used to support loads from masonry (see section 7).

Properties in relation to fire — the installed system will not contribute significantly to the growth of a fire. The system does not constitute a cavity barrier (see section 8).

Durability — the system, protected within the cavity, will last the normal expected life of a building (see section 11).

The BBA has awarded this Agrément Certificate for the Cavimaster Cavity Closer, Former and Frame Fixing System to SBP Ltd as fit for its intended use provided it is installed, used and maintained as set out in this Agrément Certificate.

On behalf of the British Board of Agrément

Head of Approvals
— Physics

Chief Executive

Date of First issue: 5 May 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.

British Board of Agrément
Bucknalls Lane
Garston, Watford
Herts WD25 9BA

©2008

tel: 01923 665300
fax: 01923 665301
e-mail: mail@bba.star.co.uk
website: www.bbacerts.co.uk

Regulations

In the opinion of the BBA, the Cavimaster Cavity Closer, Former and Frame Fixing System, 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:	C2(b)	Resistance to moisture
Comment:		The system prevents the passage of moisture from the outer leaf to the inner leaf of a cavity wall at window or door openings. See sections 6.1 to 6.3 of this Certificate.
Requirement:	C2(c)	Resistance to moisture
Comment:		The system can contribute to minimising the risk of condensation. See sections 5.2 and 5.3 of this Certificate.
Requirement:	L1(a)(i)	Conservation of fuel and power
Comment:		The system can contribute to minimising heat loss at jambs and sills. See section 5.1 of this Certificate.
Requirement:	Regulation 7	Materials and workmanship
Comment:		The system is acceptable. See section 11 and the <i>Installation</i> part of this Certificate.
In addition to the contribution which the system can make to meeting the relevant Requirements, the following comments should be noted:		
Requirement:	A1	Loading
Comment:		When used in conventional cavity walls, the system will not adversely affect the structural stability of the walls. Use of the system does not obviate the need for conventional wall ties between the inner and outer leaves at window and door openings. Door frames require additional fixings. See sections 7.1 to 7.4 of this Certificate.
Requirement:	B3(4)	Internal fire spread (structure)
Comment:		The system can be used in constructions that meet this Requirement. See sections 8.1 to 8.3 of this Certificate.



The Building (Scotland) Regulations 2004 (as amended)

Regulation:	8(1)(2)	Fitness and durability of materials and workmanship
Comment:		The system can contribute to a construction satisfying this Regulation. See sections 10 and 11 and the <i>Installation</i> part of this Certificate.
Regulation:	9	Building standards – construction
Standard:	3.10	Precipitation
Comment:		Walls incorporating the system can satisfy this Standard, with reference to clauses 3.10.1 ⁽¹⁾⁽²⁾ and 3.10.3 ⁽¹⁾⁽²⁾ . See sections 6.1 to 6.3 of this Certificate.
Standard:	3.15	Condensation
Comment:		The system can contribute to minimising the risk of condensation, with reference to clauses 3.15.1 ⁽¹⁾ , 3.15.4 ⁽¹⁾ and 3.15.5 ⁽¹⁾ . See sections 5.2 and 5.3 of this Certificate.
Standard:	6.1(b)	Carbon dioxide emissions
Standard:	6.2	Building insulation envelope
Comment:		The system can contribute to minimising heat loss at jambs and sill, with reference to clauses 6.2.3 ⁽¹⁾ , 6.2.4 ⁽¹⁾⁽²⁾ and 6.2.5 ⁽²⁾ . See section 5.1 of this Certificate.
Regulation:	12	Building standards – conversions
Comment:		All comments given for this system under Regulation 9, also apply to this Regulation, with reference to clause 0.12.1 ⁽¹⁾⁽²⁾ and Schedule 6 ⁽¹⁾⁽²⁾ .
In addition to the contribution which the system can make to satisfying the relevant Standards, the following comments should be noted:		
Regulation:	9	Building standards – construction
Standard:	1.1(a)(b)	Structure
Comment:		When used in conventional masonry cavity walls the system will not obviate the need for conventional wall ties between the inner and outer leaves at window and door openings, with reference to clause 1.1.1 ⁽¹⁾⁽²⁾ . Door frames require additional fixings. See sections 7.1 to 7.4 of this Certificate.
Standard:	2.4	Cavities
Comment:		In conjunction with a cavity barrier, the system can satisfy this Standard, with reference to clause 2.4.1 ⁽¹⁾⁽²⁾ and Annex 2.B ⁽¹⁾ or 2.D ⁽²⁾ . The system does not constitute a cavity barrier. See sections 8.1 to 8.3 of this Certificate.
		(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 system is acceptable. See section 11 and the <i>Installation</i> part of this Certificate.
Requirement:	B3(P2)	Internal fire spread (structure)
Comment:		The system is acceptable. See section 10 of this Certificate.

Regulation:	C4(b)	Resistance to ground moisture and weather
Comment:		Walls incorporating the system can contribute to meeting this Regulation. The sub-frame can be used where checked reveals are required. See sections 6.1 to 6.3 of this Certificate.
Regulation:	C5	Condensation
Comment:		The system can contribute to satisfying this Regulation. See section 5.3 of this Certificate.
Regulation:	F2(a)(i)	Conservation measures
Regulation:	F3(2)	Target carbon dioxide Emissions Rate
Comment:		The system can contribute to minimising heat loss at jambs and sill. See section 5.1 of this Certificate.
In addition to the contribution which the system can make to meeting the relevant Regulations, the following comments should be noted:		
Regulation:	D1	Stability
Comment:		When used in conventional masonry cavity walls, the system will not obviate the need for conventional wall ties between the inner and outer leaves at around window and door openings. Door frames require additional fixings. See sections 7.1 to 7.4 of this Certificate.
Regulation:	E4(4)	Internal fire spread — Structure
Comment:		The system does not constitute a cavity barrier. See sections 8.1 to 8.3 of this Certificate.

Construction (Design and Management) Regulations 2007

Construction (Design and Management) Regulations (Northern Ireland) 2007

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

See section: 3 Use (3.6).

Non-regulatory Information

NHBC Standards 2007

NHBC accepts the use of the Cavimaster Cavity Closer, Former and Frame Fixing System, when installed and used in accordance with this Certificate in relation to *NHBC Standards*, Chapter 6.1 *External masonry walls*.

Zurich Building Guarantee Technical Manual 2007

In the opinion of the BBA the Cavimaster Cavity Closer, Former and Frame Fixing System, when installed and used in accordance with this Certificate, satisfies the requirements of the *Zurich Building Guarantee Technical Manual*, Section 4 *Superstructure*, Sub-section *External walls — Thermal insulation*.

General

This Certificate relates to the Cavimaster Cavity Closer, Former and Frame Fixing System for use as a template to form an opening in masonry cavity walls and to establish the cavity width during construction (range 75 mm to 100 mm) allowing PVC-U or timber windows and doors to be fixed in the reveal. It can be used in check reveal installations.

The system closes the cavity at openings, without forming a thermal bridge, and provides a damp-proof barrier between the inner and outer wall leaves at the point of closure.

Door frames must be fixed independently to the masonry. Proprietary fixings which may be recommended by the manufacturer for this purpose are outside the scope of this Certificate.

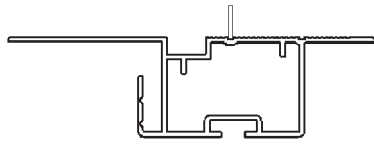
It is important that the designers, planners, contractors and/or installers ensure that the cavity closer sub-frame is installed and used in accordance with the Certificate holder's instructions and the information given in this Certificate.

Technical Specification

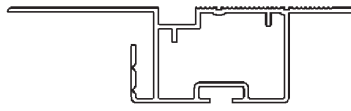
1 Description

1.1 The Cavimaster Cavity Closer, Former and Frame Fixing System (see Figure 1) is an insulated, unplasticised polyvinyl chloride (PVC-U) cavity closer and window or door sub-frame, used to form an opening in masonry cavity walls during construction. It is made from extruded profiles formed into a U-shape template, with mechanically joined (using corner cleats) corners at the sill or threshold and a temporary fixing batten (50 mm by 25 mm thick) fixed at the head (10 mm from the top) using stainless steel pan or countersunk head screws (No 8 by 16 mm). The cavity closer profiles are fitted with insulation (EPS, declared thermal conductivity $\lambda_{90/90}$ 0.038 Wm⁻¹K⁻¹). For checked reveal installations a PVC-U bracing bar is fixed at the head using bracing shoes. The head batten or bracing bar must be removed prior to the installation of the window/door frames. For closer sub-frames over 1200 mm an additional timber batten/bracing bar is fixed at half height to prevent distortion. For check reveal installations sill locators are screwed onto the sill section 150 mm to 200 mm from corners and at 600 mm centres. A minimum of two sill locators per sill are required. For sub-frames exceeding 1200 mm a 50 mm length of sill locator is screwed onto the sill section of the sub-frame.

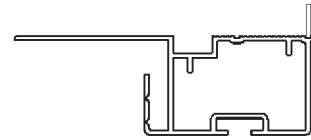
Figure 1 Components



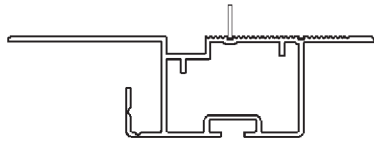
WF3753
75 mm cavity — jamb



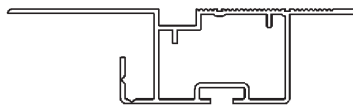
WF3752
75 mm cavity — sill



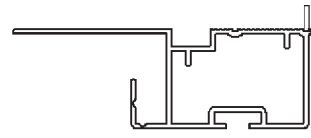
WF3754
75 mm cavity — jamb check reveal



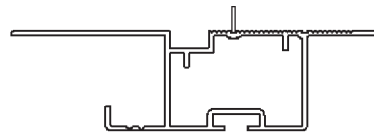
WF3803
80 mm cavity — jamb



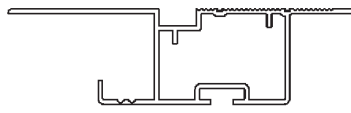
WF3802
80 mm cavity — sill



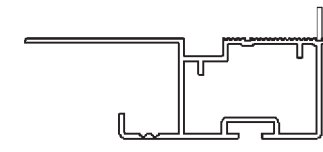
WF3804
80 mm cavity — jamb check reveal



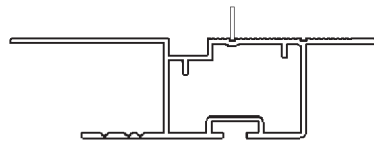
WF3903
90 mm cavity — jamb



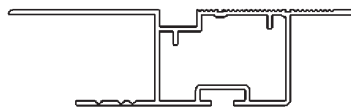
WF3902
90 mm cavity — sill



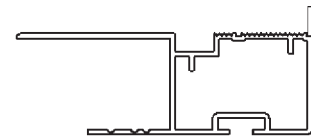
WF3904
90 mm cavity — jamb check reveal



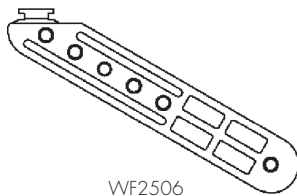
WF3103
100 mm cavity — jamb



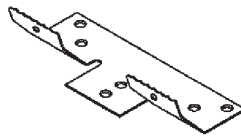
WF3102
100 mm cavity — sill



WF3104
100 mm cavity — jamb check reveal



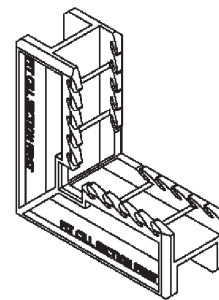
WF2506
tie



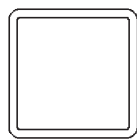
WF2470
clip



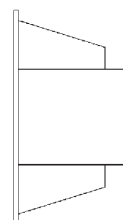
WF2510
sill locator



WF3560
corner cleat



WF2502
PVC-U brace



WF2516
PVC-U shoe



WF3724
insulation

1.2 The jamb and sill profiles are cut to size. The corner cleats are fitted first to the sill section and then the jamb sections are fitted.

1.3 The main PVC-U profile incorporates a box section to fit into the recess of the wall cavity.

1.4 The cavity closer profiles are produced by conventional extrusion techniques from virgin or reground PVC-U material. The virgin material has previously been assessed by the BBA and complies with Case B (PVC-U with additional polymers) as defined in MOAT No 17 : 1990.

1.5 Nylon 6 ties, manufactured by standard injection moulding techniques, are used to build the cavity closer frame into the surrounding mortar joints (see Figures 2, 3 and 4).

1.6 The cavity frame components and accessories are listed in Table 1 and shown in Figure 1.

1.7 Checks are carried out to monitor the quality of the extrusions.

Figure 2 Cavimaster sub-frame fabrication

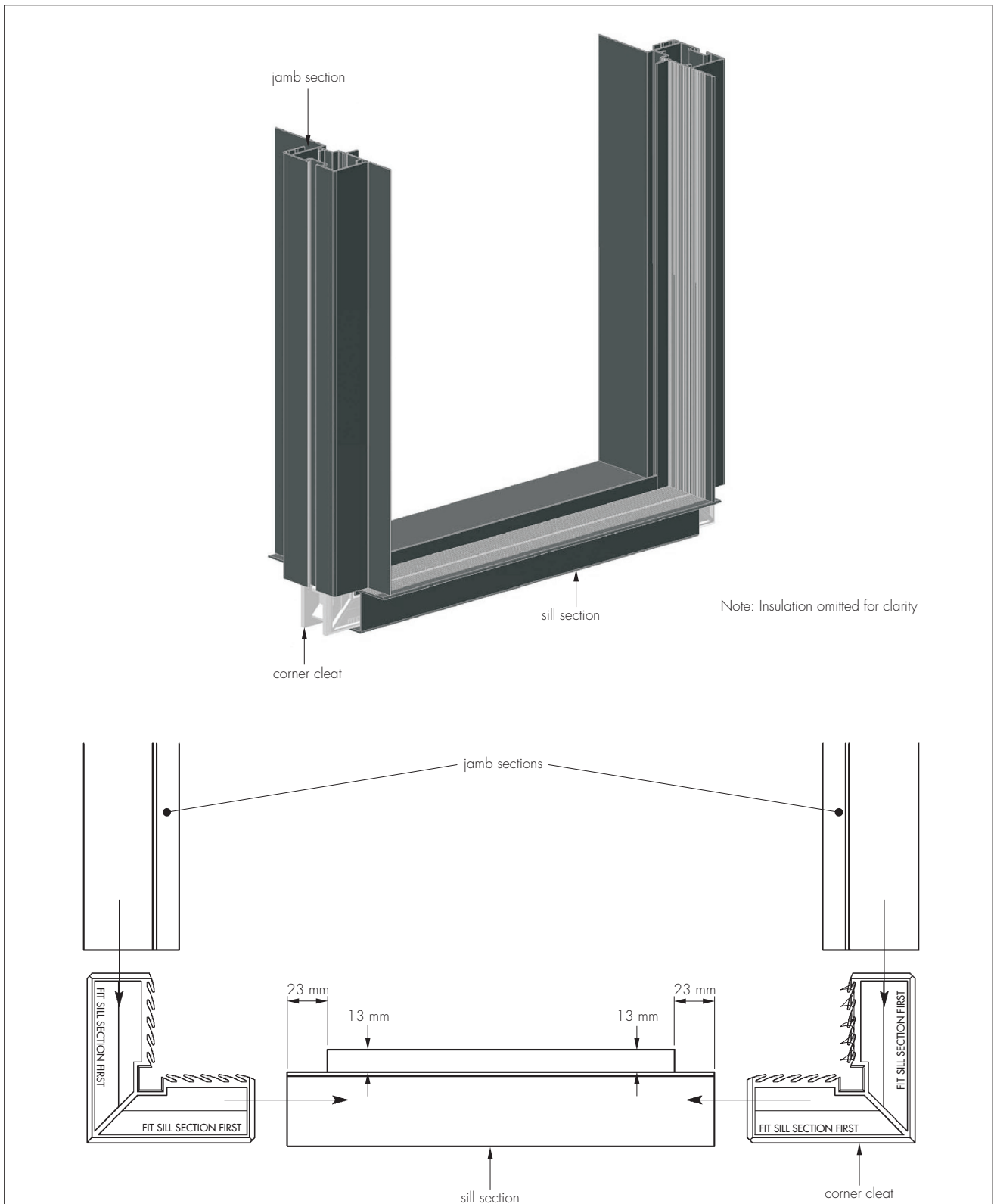


Figure 3 Typical head with window detail

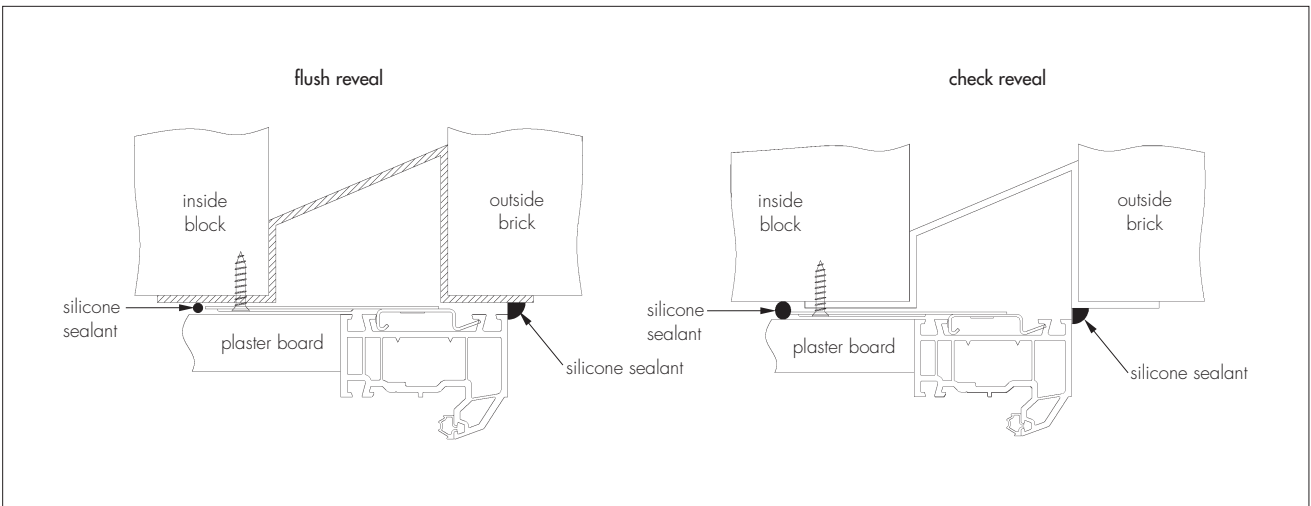


Figure 4 Typical jamb with window detail

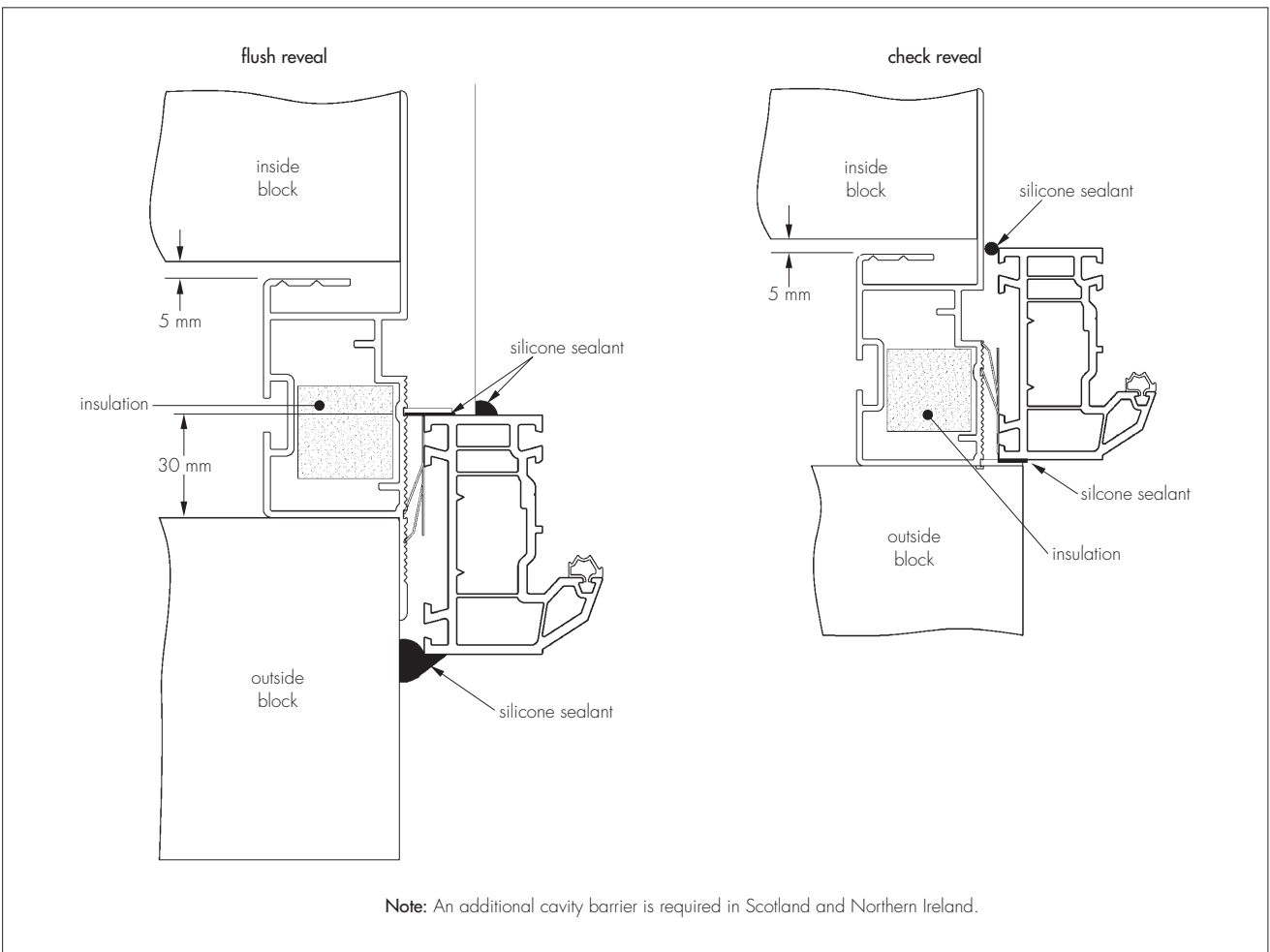


Table 1 List of components

Manufacturer's designation	Components	Application
WF3753	Cavity closer/sub-frame	Jamb 75 mm cavity profile
WF3752	Cavity closer/sub-frame	Sill/threshold 75 mm cavity profile
WF3754	Cavity closer/sub-frame	Jamb 75 mm cavity check reveal profile
WF3803	Cavity closer/sub-frame	Jamb 80 mm cavity profile
WF3802	Cavity closer/sub-frame	Sill/threshold 80 mm cavity profile
WF3804	Cavity closer/sub-frame	Jamb 80 mm cavity check reveal profile
WF3903	Cavity closer/sub-frame	Jamb 90 mm cavity profile
WF3902	Cavity closer/sub-frame	Sill/threshold 90 mm cavity profile
WF3904	Cavity closer/sub-frame	Jamb 90 mm cavity check reveal profile
WF3103	Cavity closer/sub-frame	Jamb 100 mm cavity profile
WF3102	Cavity closer/sub-frame	Sill/threshold 100 mm cavity profile
WF3104	Cavity closer/sub-frame	Jamb 100 mm cavity check reveal profile
WF2506	Tie/lug	Sub-frame tie
WF2470	Fixing clip	For securing window outer frame jambs to cavity closer sub-frame
WF2510	Sill locator	For securing window outer frame to sill of cavity closer sub-frame
WF3560	Corner cleat	For mechanically joining cavity closer sub-frame
—	Softwood batten	Head batten (typical 50 mm x 25 mm)
WF2502	PVC-U brace	Bracing bar
WF2516	PVC-U shoe	For fixing bracing bar
WF3724	EPS block	Insulation for cavity closer profiles
—	Stainless steel screws (No 8 x 16 mm)	Timber head batten and sill locator profile fixing screws
—	Stainless steel screws (No 4.3 diameter 16 mm)	Bracing shoes fixing screws
—	Stainless steel screws (4.3 mm diameter 16 mm countersunk head)	Fixing clip fixing screws

2 Delivery and site handling

2.1 Assembled sub-frames are labelled with system identification and the BBA identification mark incorporating the number of this Certificate. They are dispatched along with the requisite number of ties, any additional ancillary items and installation instructions.

2.2 Alternatively the cavity closer profiles are delivered to site in polythene sleeves, each bearing a product identification label. They are dispatched along with the corner cleats for mechanically joining the profiles on site, requisite number of ties, any additional ancillary items and installation instructions.

2.3 Assembled sub-frames are stacked vertically and delivered as individual items, taking care to avoid distortion in transit. The sub-frames or profiles should be stored under cover in a clean area, on edge in the case of sub-frames, and suitably supported to avoid distortion or damage. The sub-frames and profiles should be protected from vehicular and pedestrian traffic.

Assessment and Technical Investigations

The following is a summary of the assessment and technical investigations carried out on the Cavimaster Cavity Closer, Former and Frame Fixing System.

Design Considerations

3 General

3.1 The Cavimaster Cavity Closer, Former and Frame Fixing System is suitable for use in masonry walls with nominal cavity widths in the range 75 mm to 100 mm and with window and door frames made from PVC-U or timber. Windows must have an outer frame design suitable for correct fitting of the fixing clips, or alternatively through fixing can be used. The Certificate holder will advise on the suitability of outer frame profiles.

3.2 The system can be used as a template, to form an opening, around which a wall can be constructed.

3.3 The system provides a damp-proof barrier, acts as a cavity closer without forming a thermal bridge, and avoids the need for cutting bricks and blocks. The window/door is fitted after completion of the masonry. It can also be used to form a checked reveal where required and to fit the window after completion of the masonry, as is conventional practice in Scotland and Northern Ireland.

3.4 Masonry walls into which cavity closers are incorporated must be constructed in accordance with one or more of the following technical specifications:

- BS 5628-1 : 2005 and BS 5628-3 : 2005
- the National Building Regulations:

3.5 Windows and doors are fitted into the sub-frame from the outside or inside of the building.

3.6 Sub-frames are manufactured to suit the exact window/door size. A $5 \text{ mm} \pm 2 \text{ mm}$ clearance per side is allowed between the sub-frame and window or door, in accordance with the *Winfit² Specification & Installation Guide*.

3.7 The maximum sub-frame cavity closer size is 2400 mm wide by 2400 mm high, maximum perimeter 7900 mm for windows and for doors. Doors require additional proprietary fixings outside the scope of this Certificate.

4 Practicability of installation

Installation of the system is straightforward and can be carried out by tradesmen using traditional skills.

5 Hygrothermal behaviour



5.1 The product has a path of minimum thermal resistance through the closer of at least $0.45 \text{ m}^2\text{KW}^{-1}$ when used in jambs and sills with the window/door frame set back 30 mm or more into the wall cavity (see Figures 4 and 5). The system can therefore be used in accordance with the Accredited Construction Details (version 1.0) to limit heat loss and assign the default heat loss rates in Table 3 of BRE Information Paper IP 1/06 *Assessing the effects of thermal bridging at junctions and around openings* in SAP and SBEM calculations.



5.2 Jambs and sills incorporating the system in accordance with section 5.1 will adequately limit the risk of local surface condensation.



5.3 Under normal domestic conditions the level of interstitial condensation associated with the system will be low and the risk of any resultant damage minimal.

5.4 Door frames installed with proprietary fixings which cannot be set back into the wall cavity by 30 mm may require additional thermal insulation, for example dry lining, to minimise excessive heat loss and the risk of excessive surface condensation.

6 Weather resistance

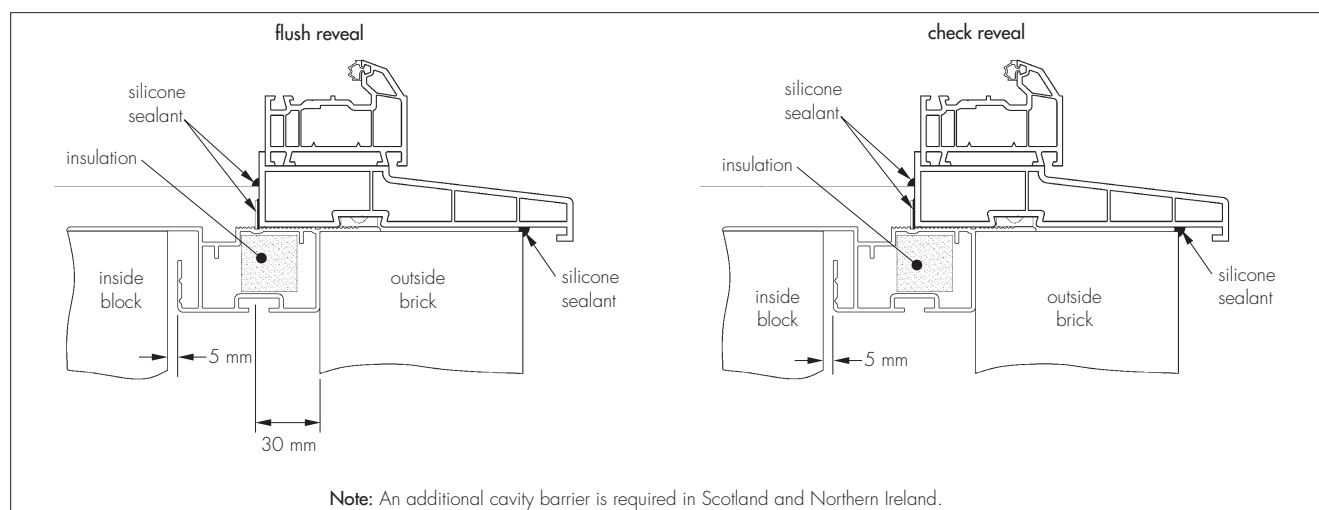


6.1 The system is effective as a vertical damp-proof barrier at jambs of window and door openings in masonry constructions, where a brick/block closer and dpc detail would normally be used. The system is also effective as a horizontal damp-proof barrier at the sill or threshold.

6.2 Installations with a flush (in-line) wall opening (see Figures 3, 4 and 5) are suitable for use in the 'sheltered' and 'moderate' exposure categories, as defined in Table 11 of BS 5628-3 : 2005 and depicted as exposure zones 1 and 2 in the map contained in Section 3.1 of BRE report (BR 262 : 2002) *Thermal insulation : avoiding risks*. The sub-frame may also be considered for use in other areas where a conventional return brick/block closer detail with dpc has been found to provide adequate resistance to the penetration of wind-driven rain.

6.3 The system may also be used to construct a check reveal (see Figures 3, 4 and 5). In this construction, in which the frame is positioned in a rebate behind the outer leaf of the jamb, the system is suitable for use in exposure categories up to and including 'very severe' as defined in Table 11 of BS 5628-3 : 2005 which covers all exposure zones in the United Kingdom.

Figure 5 Typical sill with window detail



7 Structural stability



7.1 The system is non-loadbearing and must not be used to support loads from the masonry. Lintels are required above window or door openings.

7.2 The system will not have an adverse effect on the structural stability of brickwork or blockwork walls, constructed in the conventional manner in accordance with normal good practice as defined in BS 5628-1 : 2005 and BS 5628-3 : 2005. Use of the system does not obviate the need for conventional wall ties around the openings.

7.3 A window fitted correctly into a cavity frame, using fixing clips at the jambs, sill locator at the sill and conventional fixing lugs at the head, will satisfactorily transfer to the structure wind loads likely to be encountered in the UK. In terms of wind loading resistance the cavity frame can be used in all areas of the UK.

7.4 The alternative method of window frame fixing using lugs, or through fixing into the masonry, provides similar resistance to wind loading to that described in section 7.3.

7.5 Door frames for use with the cavity frame require additional proprietary fixings at the jambs and sill/threshold to ensure that the frame remains firmly fixed when the door is slammed. Head fixings may be required for larger doorsets. Reference should be made to the relevant installation procedures described in the *Winfit² Specification & Installation Guide*.

8 Properties in relation to fire



8.1 The installed system will not contribute significantly to the growth of a fire.

8.2 The system does not constitute a cavity barrier against the penetration of smoke and flame in the context of the Building Regulations. This does not prevent its use in England and Wales where cavity barriers are not generally required around openings in masonry cavity wall construction. In Scotland and Northern Ireland, however, the system is only suitable for use in conjunction with a cavity barrier meeting the performance requirements defined in:

Scotland — Mandatory Standard 2.4, clause 2.4.1 and Annex 2.B⁽¹⁾ or 2.D⁽²⁾

(1) Technical Handbook (Domestic).

(2) Technical Handbook (Non-Domestic).

Northern Ireland — Technical Booklet E, Paragraph 3.37.

8.3 The use of the system does not preclude the need to provide suitable fire protection to steel lintels where this is necessary to satisfy the Building Regulations.

9 Security against intrusion

Removal of a window from the cavity frame from outside is virtually impossible as the shape of the outer frame prevents access to the locating clips. If required, for any reason, supplementary through fixing of the window frame is possible. The door frames are secured by lugs or through fixings around the perimeter outside the scope of this Certificate.

10 Maintenance



To ensure the maximum weathertightness, the silicone seal between window or door frames and masonry must be checked regularly and repairs or renewal carried out promptly.

11 Durability



The system is durable when installed in accordance with this Certificate and will not suffer significant degradation when protected within the cavity. The system will last the normal expected life of a building.

Installation

12 General

12.1 Installation of the Cavimaster Cavity Closer, Former and Frame Fixing System must be carried out in accordance with the *Winfit² Specification & Installation Guide*.

12.2 A cavity barrier may be required (see section 8.2).

12.3 Reference should be made to the typical installation details shown in Figures 3, 4 and 5 when reading the installation details given in section 13. The windows in these Figures are shown for information only and do not form part of this assessment.

12.4 At the build-in stage it must be ensured that the sub-frame remains plumb, level, square, and with parallel sides.

13 Procedure

13.1 The assembled sub-frame including timber head batten or PVC-U bracing bar is ready for building into the construction of cavity walls using traditional building methods.

13.2 The cavity wall is built to the sill level, ensuring that the course work is level, flat, and that all excess mortar is removed.

13.3 The sub-frame is positioned in the cavity with the plaster stop in the correct position relative to the cavity, so that the inner surface of the window frame is set in 30 mm from the inner surface of the outer leaf, and temporary timber supports are attached to the closer, if required. The closer frame is aligned with a spirit level and the timber supports are secured so that they are rigid and they will keep the frame square and plumb. The course work is built up by one course and butted to one side of the sub-frame.

13.4 The position of the sub-frame is checked and the course work on the opposite side of the sub-frame is built up by one level.

13.5 Ties are inserted into the channel of the sub-frame jambs, rotated through 90° and built into the mortar bed joints. These ties should be fitted after the first brick course and then at 300 mm centres. The ties should be inserted alternately, tying the sub-frame into both inner and outer courses ensuring that the sub-frame is tight against the outer brick leaving a 5 mm clearance on the inside between the internal blockwork and the cavity closer (see Figure 4). A minimum of three ties per vertical member is required.

13.6 When the masonry reaches head level the head batten/bracing bar and any bracing support, if used, are removed (except in checked reveal installations where the head batten/bracing bar is removed before the final brick course is added) and a lintel, with associated dpc, is fitted across the masonry just clear of the top of sub-frame. The wall construction is continued to complete the aperture.

13.7 In check reveal installations a sill location piece (WF2510) is screwed to the sub-frame using stainless steel screws (No 8 by 16 mm) in such a position so that it locates the window sub-sill (see Figure 5). The head batten, if fitted, is removed before the final brick course is added to allow access to the batten fixing screws.

13.8 In all installations the top brick course should be arranged to ensure that, when bedded in, the lintel does not exert a load on the window or door frame/sub-frame.

13.9 The sub-frame is cleaned to ensure that it is free from mortar. The brickwork must be allowed to set before attempting to fit the window/door.

13.10 The fitting of windows or doors to the sub-frame must be carried out in accordance with the *Winfit² Specification & Installation Guide*.

Window preparation and fitting

13.11 The correct window is selected to suit the sub-frame. All protective wrapping is removed.

13.12 Jamb clips are screw fixed to the outer frame jambs (see Figure 4) 150 mm to 250 mm from each corner and at centres not exceeding 600 mm. A minimum of two clips per vertical member is required.

13.13 A sill location piece is fitted instead to the sill section of the sub-frame (see Figure 5).

13.14 A bead of silicone sealant is applied to the upstand of the sub-frame.

13.15 For windows fitted from outside the building the window is offered up to the sub-frame, positioning it squarely in the aperture and clipped into place by applying even pressure to position the window back against the sub-frame flange. The head member of the window is secured using lugs or screw fixings positioned not less than 150 mm from the corners and at centres not exceeding 600 mm.

13.16 For windows fitted from the inside of the building the window is offered up to the sub-frame from the inside of the building and installed as in section 13.15.

Finishing

13.17 An effective sealant is applied around the perimeter of the window/door internally prior to applying internal finishes.

13.18 In locations where the plaster may be subject to repeated impact (eg at door reveals from door slamming) it is recommended that wet plaster be replaced by dry lining.

13.19 Finishing trims are fitted after completion of the window installation, where required.

13.20 The window is weather-proofed externally, using a suitable low modulus silicone sealant.

14 Tests

14.1 Confirmatory tests were carried out in accordance with MOAT No 8 : 1973 and MOAT No 17 : 1990 on PVC-U extrusions made from reground material, to determine:

- Vicat softening temperature
- ash content
- shrinkage on heating
- induction time of dehydrochlorination.
- changes on heating

14.2 Tests were carried out in accordance with the methods defined in MOAT No 1 : 1974, on a combined sub-frame and PVC-U window, installed in a test rig, to determine:

- air permeability
- watertightness
- effect of cyclic wind loads to ± 1250 Pa
- effect of temperature variation (-5°C to 55°C)
- safety test, wind loading using increased pressure of 3000 Pa and reduced pressure of 3000 Pa⁽¹⁾.

(1) The test was performed at reduced temperature to ensure that the contraction of the window under such conditions would not render the system unsafe.

15 Investigations

An assessment was made of:

- heat loss and condensation risk in accordance with the Accredited Construction Details (version 1.0) and the Accredited Construction Details (Scotland)
- weather resistance of the system when installed in accordance with the manufacturer's instructions
- fire resistance and structural stability of walls incorporating the frame acceptor
- durability of the components used in the construction of the system
- the manufacture and quality control of the extruded profiles.

Bibliography

BS 5628-1 : 2005 *Code of practice for the use of masonry — Structural use of unreinforced masonry*

BS 5628-3 : 2005 *Code of practice for the use of masonry — Materials and components, design and workmanship*

MOAT No 1 : 1974 *Directive for the Assessment of Windows*

MOAT No 8 : 1973 *UEAtc Directive for Rigid PVC Products used externally in Building*

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

16 Conditions

16.1 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.

16.2 References in this Certificate to any Act of Parliament, Statutory Instrument, Directive or Regulation of the European Union, British, European or International Standard, Code of Practice, manufacturers' instructions or similar publication, are references to such publication in the form in which it was current at the date of this Certificate.

16.3 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.

16.4 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.

16.5 Any information relating to the manufacture, supply, installation, use and maintenance of this product/system which is contained or referred to in this Certificate is the minimum required to be met when the product/system is manufactured, supplied, installed, used and maintained. It does 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; nor is conformity with such information to be taken as satisfying the requirements of the 1974 Act or of any 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 manufacture, supply, installation, use and maintenance of this product/system.