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Agrément Certificate

96/3226

Product Sheet 1

MANTHORPE CAVITY CLOSERS

MANTHORPE THERMAL CAVITY CLOSER

This Agrément Certificate Product Sheet⁽¹⁾ relates to Manthorpe Thermal Cavity Closer for use as a cavity closer and to form an opening in masonry cavity walls.

(1) Hereinafter referred to as 'Certificate'.

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 cavity closers meet and exceed the minimum thermal resistance path of $0.45 \text{ m}^2 \cdot \text{K} \cdot \text{W}^{-1}$ as required by the Accredited Construction Details (version 1.0). Default ψ -values (ψ) in BRE Information Paper IP 1/06 may, therefore, be used for jamb and sill junctions in SAP or SBEM calculations (see section 6).

Water resistance — the product 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 7).

Structural stability — in terms of wind loading resistance, the product can be used in all areas of the UK. The product must not be used to support loads from the masonry (see section 8).

Properties in relation to fire — the installed product will not contribute significantly to the growth of a fire. The product does not constitute a cavity barrier (see section 9).

Durability — the product, protected within the cavity, will continue to function for the normal expected life of a building (see section 11).



The BBA has awarded this Certificate to the company named above for the product described herein. This product has been assessed by the BBA as being fit for its intended use provided it is installed, used and maintained as set out in this Certificate.

On behalf of the British Board of Agrément

Claire Curtis-Thomas

Date of Fourth issue: 10 November 2017

John Albon – Head of Approvals
Construction Products

Claire Curtis-Thomas
Chief Executive

Originally certificated on 27 March 1996

Certificate amended on 3 July 2018 to revise fire section.

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.

Any photographs are for illustrative purposes only, do not constitute advice and should not be relied upon.

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Regulations

In the opinion of the BBA, the Manthorpe Thermal Cavity Closer, if installed, used and maintained in accordance with this Certificate, can satisfy or contribute to satisfying the relevant requirements of the following Building Regulations (the presence of a UK map indicates that the subject is related to the Building Regulations in the region or regions of the UK depicted):



The Building Regulations 2010 (England and Wales) (as amended)

Requirement:	C2(b)	Resistance to moisture
Comment:		The product has adequate resistance to the ingress of rain and wind-driven spray and so can contribute towards the wall satisfying this Requirement. See sections 7.1 to 7.3 of this Certificate.
Requirement:	C2(c)	Resistance to moisture
		The product will not constitute a significant condensation risk and so can contribute towards the wall satisfying this Requirement. See sections 6.2 and 6.3 of this Certificate.
Requirement:	L1(a)(i)	Conservation of fuel and power
Comment:		The products can contribute to minimising heat loss at jambs and sills. See section 6.1 of this Certificate.
Regulation:	7	Materials and workmanship
Comment:		The products are acceptable. See section 11 and the <i>Installation</i> part of this Certificate.
Regulation:	26	CO₂ emission rates for new buildings
Regulation:	26A	Fabric energy efficiency rates for new dwellings (applicable to England only)
Regulation:	26A	Primary energy consumption rates for new buildings (applicable to Wales only)
Regulation:	26B	Fabric performance values for new dwellings (applicable to Wales only)
Comment:		The product can contribute to minimising heat loss at jambs and sill. See sections 6.1 and 6.2 of this Certificate.



The Building (Scotland) Regulations 2004 (as amended)

Regulation:	8(1)	Durability, workmanship and fitness of materials
Comment:		The product can contribute to a construction satisfying this Regulation. See section 11 and the <i>Installation</i> part of this Certificate.
Regulation:	9	Building standards applicable to construction
Standard:	3.10	Precipitation
Comment:		The product has adequate resistance to the ingress of rain and wind-driven spray and so can contribute towards the wall satisfying this Standard, with reference to clauses 3.10.1 ⁽¹⁾⁽²⁾ and 3.10.3 ⁽¹⁾⁽²⁾ . See section 7 of this Certificate.
Standard:	3.15	Condensation
Comment:		The product will not constitute a significant condensation risk and so can contribute towards the wall satisfying this Standard, with reference to clauses 3.15.1 ⁽¹⁾⁽²⁾ , 3.15.4 ⁽¹⁾⁽²⁾ and 3.15.5 ⁽¹⁾⁽²⁾ . See sections 6.2 and 6.3 of this Certificate.
Standard:	6.1(b)	Carbon dioxide emissions
Standard:	6.2	Building insulation envelope
Comment:		The product can contribute to minimising heat loss at jambs and sills, with reference to clauses 6.2.3 ⁽¹⁾ , 6.2.4 ⁽¹⁾⁽²⁾ and 6.2.5 ⁽²⁾ . See section 6.1 of this Certificate.
Standard:	7.1(a)	Statement of sustainability
Comment:		The product can contribute to meeting the relevant requirements of Regulation 9, Standards 1 to 6, and therefore will contribute to a construction meeting a bronze level

of sustainability as defined in this Standard. In addition, the product can contribute to a construction meeting a higher level of sustainability as defined in this Standard, with reference to clauses 7.1.4⁽¹⁾⁽²⁾ [Aspects 1⁽¹⁾⁽²⁾ and 2⁽¹⁾], 7.1.6⁽¹⁾⁽²⁾ [Aspects 1⁽¹⁾⁽²⁾ and 2⁽¹⁾] and 7.1.7⁽¹⁾⁽²⁾ [Aspect 1⁽¹⁾⁽²⁾]. See section 6.1 of this Certificate.

Regulation: 12

Building standards applicable to conversions

Comment:

All comments given for this product under Regulation 9, Standards 1 to 6, 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) 2012 (as amended)

Regulation: 23

Fitness of materials and workmanship

Comment:

The product is acceptable. See section 11 and the *Installation* part of this Certificate.

Regulation: 28

Resistance to moisture and weather

Comment:

The product has adequate resistance to the ingress of rain and wind-driven spray and so can contribute towards the wall satisfying this Regulation. See section 7 of this Certificate.

Regulation: 29

Condensation

Comment:

The product will not constitute a significant condensation risk and so can contribute towards the wall satisfying this Regulation. See section 6.3 of this Certificate.

Regulation: 39(a)(i)

Conservation measures

Regulation: 40(2)

Target carbon dioxide emission rate

Comment:

The product can contribute to minimising heat loss at jambs and sills. See section 6.1 of this Certificate.

Construction (Design and Management) Regulations 2015

Construction (Design and Management) Regulations (Northern Ireland) 2016

In the opinion of the BBA, there is no information in this Certificate which relates to the obligations of the client, designer (including Principal Designer) and contractor (including Principal Contractor under these Regulations).

Additional Information

NHBC Standards 2017

In the opinion of the BBA, the Manthorpe Thermal Cavity Closer, if installed, used and maintained in accordance with this Certificate, can satisfy or contribute to satisfying the relevant requirements in relation to *NHBC Standards*, Chapter 6.1 *External masonry walls*.

Technical Specification

1 Description

1.1 The Manthorpe Thermal Cavity Closer (see Table 1 and Figure 1) is an insulated, unplasticised polyvinyl chloride (PVC-U) cavity closer, used to form an opening in masonry cavity walls during construction. It comprises a core of grooved polystyrene insulation⁽¹⁾, either extruded (XPS) or expanded (EPS 70), 27 mm thick for rigid, 24 mm thick for flexible, with extruded PVC-U sections push-fitted on one or both sides. The PVC-U sections incorporate fixing channels and those with ribbed flanges include fixing holes in the flanges.

(1) Including fire-retardant additive.

Table 1 Manthorpe Cavity Closer profiles

	Width (mm)							
	50	65	75	85	90	100	150	350
Rigid								
G240 double extrusion — double flange	✓	✓	✓		✓	✓	✓	✓
G241 single extrusion — single flange	✓	✓	✓		✓	✓		
G241M single extrusion — single flange, multi-width	✓	✓	✓	✓	✓	✓		
G242 double extrusion — single flange	✓	✓	✓		✓	✓	✓	✓
G247 single extrusion — double flange	✓	✓	✓		✓	✓		
G247M single extrusion — double flange, multi-width	✓	✓	✓	✓	✓	✓		
Flexible								
G243 double extrusion — double flange	✓	✓	✓		✓	✓	✓	✓
G244 double extrusion — single flange	✓	✓	✓		✓	✓	✓	✓

1.2 Profiles G240, G242, G243 and G244 are available in 2.5 m lengths and various widths (see Table 1), dependent on the width of the polystyrene insulation block. Intermediate sizes between 50 mm and 350 mm are available to order. Profiles G241 and G247 are available in 2.44 m lengths and various widths, dependent on the width of the polystyrene insulation block. Profiles G241M and G247M multi-width are available in 2.44 m lengths and have a polystyrene insulation block 100 mm wide that is pre-notched at 50 mm, 65 mm, 75 mm and 85 mm intervals for cutting to size on site.

1.3 The flexible types (G243 and G244) are used for forming closers in circular and arched openings (diameter greater than 500 mm) and are manufactured from the rigid types (G240 and G242 respectively) by cutting 3 mm wide grooves across the PVC-U sections at 25 mm centres. Rubber bands at 500 mm centres are used to hold the profile together prior to installation.

1.4 Polypropylene ties, manufactured by standard injection-moulded techniques (straight — G245, right-angled — G246) are used for fixing and for jointing profiles (see Figure 2).

Figure 1 Manthorpe Cavity Closer profiles

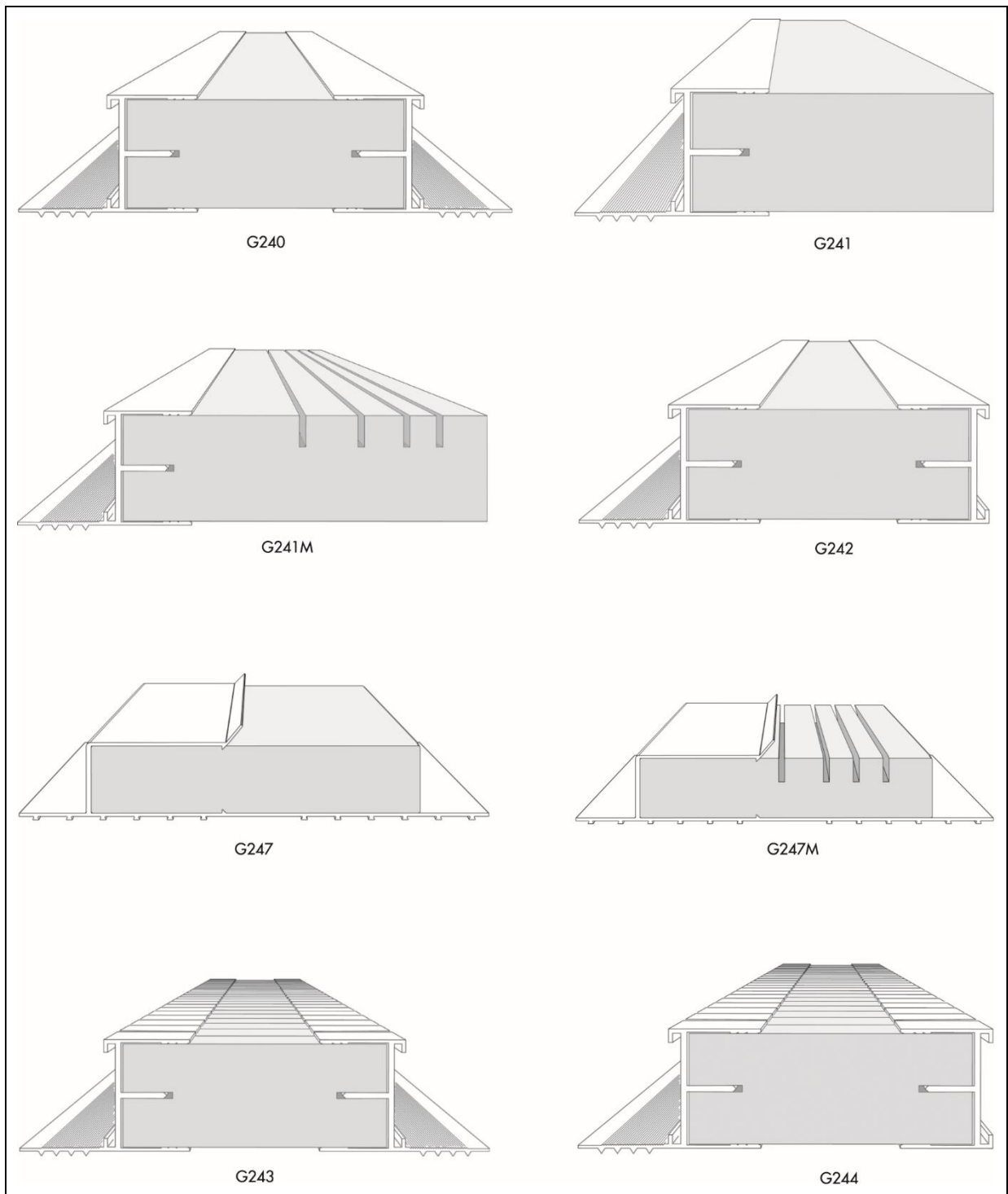
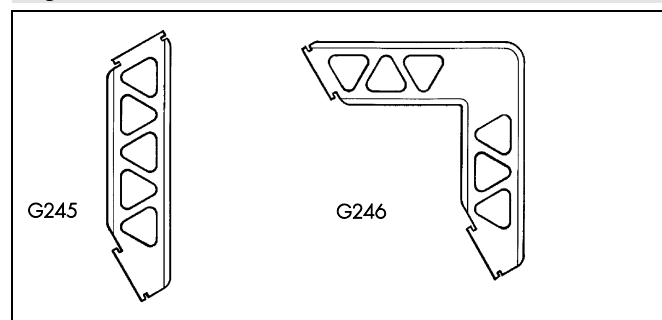


Figure 2 Ties



2 Manufacture

2.1 The cavity closer unplasticised polyvinyl chloride (PVC-U) profiles are produced by conventional extrusion techniques. The insulation is fitted in the factory.

2.2 As part of the assessment and ongoing surveillance of product quality, the BBA has:

- agreed with the manufacturer the quality control procedures and product testing to be undertaken
- assessed and agreed the quality control operated over batches of incoming materials
- monitored the production process and verified that it is in accordance with the documented process
- evaluated the process for management of nonconformities
- checked that equipment has been properly tested and calibrated
- undertaken to carry out the above measures on a regular basis through a surveillance process, to verify that the specifications and quality control operated by the manufacturer are being maintained.

2.3 The management system of Manthorpe Building Products Limited has been assessed and registered as meeting the requirements of BS EN ISO 9001 : 2008 by SGS UK Ltd (Certificate GB12/84769).

3 Delivery and site handling

3.1 The closer profiles are delivered to site in polythene sleeves, each bearing a product identification label and containing six lengths of profile and a copy of the installation instructions. Ties are supplied separately in bags of 100 (G245) and 50 (G246).

3.2 The profiles should be stored flat and under cover in a clean area away from direct sunlight and excessive heat, and supported along their length to prevent distortion or damage. 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 Manthorpe Thermal Cavity Closer.

Design Considerations

4 General

4.1 The Manthorpe Thermal Cavity Closer is suitable for use in masonry walls with nominal cavity widths of 50 mm to 350 mm and with timber, PVC-U, aluminium or steel window or door frames. It can be used as a template to form an opening around which a wall can be constructed and to establish the cavity width during construction.

4.2 The product provides a damp-proof barrier between the inner and outer leaves at point of closure, acts as a cavity closer without forming a thermal bridge, and avoids the need for cutting bricks and blocks. The closer can also be used to form a check reveal where required and to fit the window after completion of the masonry, as is conventional practice in Scotland and Northern Ireland.

4.3 Masonry walls into which cavity closers are incorporated must be constructed in accordance with the national Building Regulations and one or more of the following technical specifications:

- BS 8000-0 : 2014
- BS 8000-3 : 2001
- BS EN 1996-2 : 2006 and its UK National Annex.

4.4 Proprietary window and door frame fixings, which may be recommended by the Certificate holder, are outside the scope of this Certificate.

5 Practicability of installation

The product is designed to be installed by a competent general builder, or a contractor, experienced with this type of product.

6 Hygrothermal behaviour



6.1 The product can contribute to maintaining continuity of thermal insulation at jambs and sills in wall openings. The path of minimum thermal resistance through the closers calculated to BRE Information Paper IP 8/08 is at least $0.45 \text{ m}^2 \cdot \text{K} \cdot \text{W}^{-1}$ when used in jambs and sills with the window/door frame set back 30 mm or more into the wall cavity (see Figures 3 and 6). Example junction details shown in Figures 3 and 6 are acceptable. For Accredited Construction Details, the corresponding heat loss rates ψ -values (psi) in BRE Information Paper IP 1/06, Table 3, may be used in carbon emission calculations in Scotland and Northern Ireland. Attention must be given to the correct setback in order to ensure compliance with these requirements. Detailed guidance on limiting heat loss and air filtration can be found in the documents supporting the national Building Regulations.



6.2 Jambs and sills incorporating the product in accordance with section 6.1 will adequately limit the risk of local surface condensation.



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

6.4 Door frames installed with proprietary fixings which cannot be set back into the wall cavity by 30 mm (see section 6.1) may require additional thermal insulation, for example dry lining, to minimise excessive heat loss and the risk of excessive surface condensation.

6.5 The junctions between the wall and the front and back of the window/door frame must be effectively sealed.

7 Water resistance



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

7.2 Profiles G240, G243, G247 and G247M with PVC-U flanges extending over both leaves at a flush (in-line) wall opening are suitable for use in the exposure zones 1 'sheltered'⁽¹⁾ and 2 'moderate'⁽¹⁾. These profiles may also be considered for use in other locations where a conventional return brick/block closer detail with dpc has been found to provide adequate resistance to the penetration of wind-driven rain.

7.3 Profiles G241, G241M, G242 and G244 are suitable for use at a rebated opening (check reveal). In this construction, in which the frame is protected by a conventional dpc and positioned in a rebate behind the outer leaf at the jamb, the product is suitable for use in exposure zones up to and including zone 4 'very severe'⁽¹⁾⁽²⁾. However, a dpc may be fitted between the closer and outer leaf if required.

(1) As depicted in the map in Section 3.1 of BRE Report BR 262 : 2002.

(2) This covers all exposure zones in the United Kingdom.

8 Structural stability

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

8.2 The product 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 the Standards listed in section 4.3 of this Certificate. Use of the product does not obviate the need for conventional wall ties around the openings.

8.3 Window and door frames should be fixed to the masonry by conventional means, in addition to any fixings to the closer (outside the scope of this Certificate).

9 Properties in relation to fire

9.1 The installed product will not contribute significantly to the growth of a fire.

9.2 The products do not constitute a cavity barrier against the penetration of smoke and flame; therefore, they should be used in conjunction with cavity barriers satisfying the performance requirements defined in the documents supporting the national Building Regulations.

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

10 Maintenance

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

11 Durability



The product is durable when installed in accordance with this Certificate and will not suffer significant degradation since it is protected within the cavity. The product will continue to function for the normal expected life of a building.

12 Reuse and recyclability

The PVC-U profile of the product can be recycled.

Installation

13 General

13.1 Installation of the Manthorpe Thermal Cavity Closer must be carried out in accordance with the Certificate holder's instructions.

13.2 A cavity barrier may be required (see section 9.2 of this Certificate).

13.3 Reference should be made to the typical installation details shown in Figures 3 to 6 when reading the installation details given in this Certificate. (The windows in these Figures are shown for information only and do not form part of this assessment.)

Figure 3 Sill detail

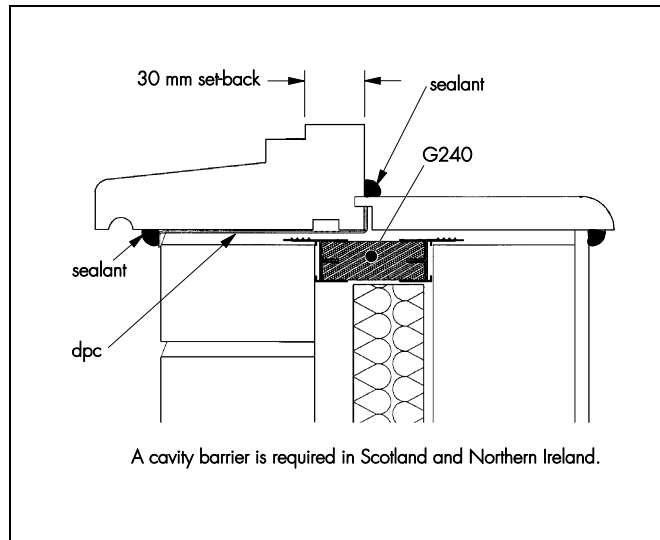


Figure 4 G240 closer built-in prior to window

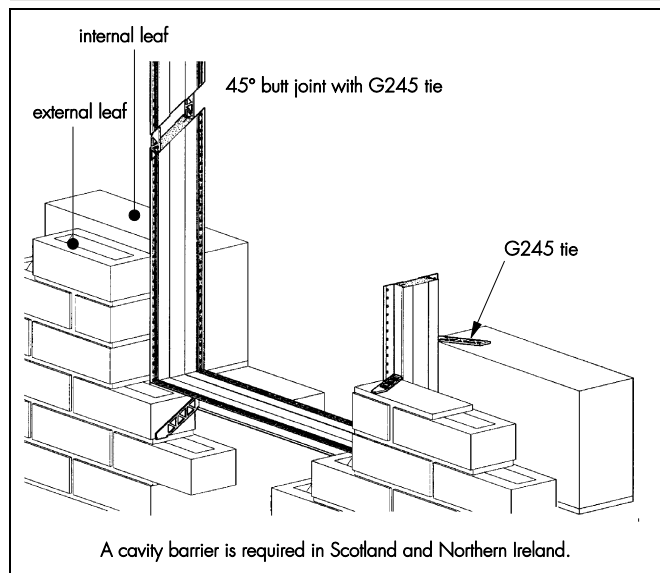


Figure 5 Use of G242 closer in check reveal

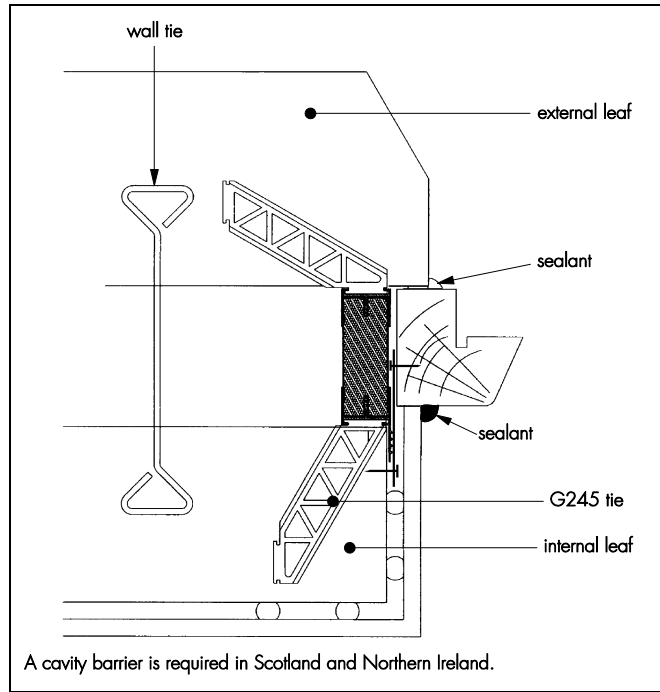
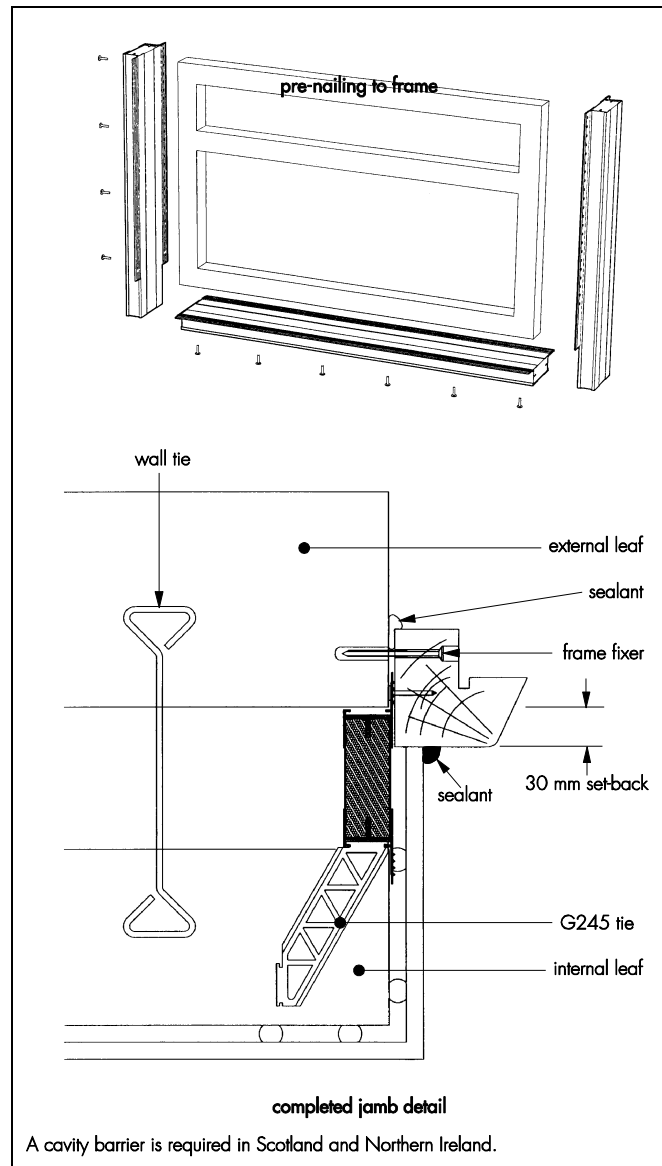


Figure 6 Use of G242 close jamb detail



13.4 In cutting the products to length, care should be taken to achieve clean, flat, square ends.

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

13.6 When installed in conjunction with the cavity closer, the back edge of the window/door frames should be set back at least 30 mm behind the inner face of the outer leaf to meet thermal requirements (see section 6.1) whilst ensuring that the front edge of the frame remains over the outer leaf.

14 Procedure

Individual closer lengths built-in during wall construction and prior to installation of window or door

14.1 The wall is built to sill level, ensuring that the course work is level and flat, and that all excess mortar is removed and the product is selected to suit the application and cavity width.

14.2 A length of closer is cut to suit the width of the window and inserted in the cavity at the sill (see Figure 3).

14.3 Two jamb sections of closer are cut to oversail the sill by 75 mm and the flanges are trimmed back by 75 mm so that the closer can sit in the cavity butted up against the sill section (see Figure 4). Props or a dummy frame may be used to keep the jamb sections in position at this stage.

14.4 The wall is built up at the jambs, and the closer sections secured by ties (G245) located in the channel in the PVC-U section and resting in the mortar course (see Figure 4), and fixed through the flange holes into mortar courses. Ties should be used as necessary to hold the jamb sections in place prior to the installation of the window or door. A minimum of four ties per vertical member, two near the top (one into each leaf) and two near the bottom, are recommended by the Certificate holder.

14.5 The G240, G243, G247, G247M and G243 profiles are used where the brickwork and blockwork are in-line (see Figures 3, 4 and 6) and G241, G241M, G242 and G244 where the brickwork is rebated to the blockwork (see Figure 5, check reveal).

14.6 Cut lengths may be butted against each other at the jambs provided that they are butted at an angle of 45° sloping down to the outer leaf and there is no more than one join per jamb. The joint is secured and aligned by inserting a tie (G245) into the PVC-U section channel and sliding it across the joint (see Figure 4).

14.7 An insulated lintel and ancillary damp-proof protection is fitted at the head, and the window/door is fixed to the outer leaf by proprietary fixings (outside the scope of this Certificate). An effective sealant must be applied around the perimeter of a window/door internally, prior to applying internal finishes. The window must be weather-proofed externally, using a suitable low modulus flexible sealant.

14.8 In locations where the plaster may be subjected to repeated impact (eg at door reveals from door slamming), it is recommended that wet plaster is reinforced with hessian scrim or, preferably, replaced by dry lining.

Use of preformed closer frame

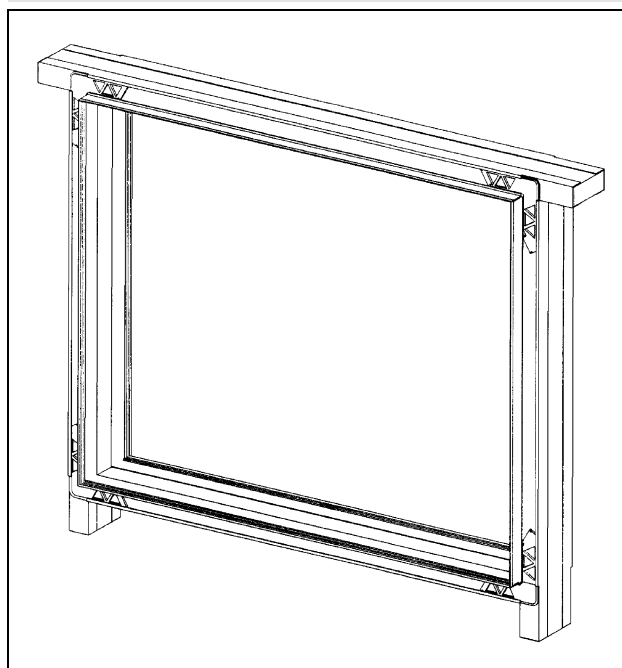
14.9 The closer profiles may be pre-assembled into a closer frame to be used as a former for an opening during the building of a wall.

14.10 Sill and jamb sections are cut as described in sections 14.2 and 14.3. For the construction of a frame, the channels, as well as flanges, need to be trimmed back by 75 mm at the base of the jamb sections.

14.11 To complete the frame, a dummy head section is cut 150 mm oversize and flanges/grooves cut back by 75 mm at each end.

14.12 Eight right-angled ties (G246) are pushed into the channels at both sides of the ends of the head and sill sections, and the protruding legs of the ties pushed into the channels of the jamb section (see Figure 7).

Figure 7 Preformed closer frame



14.13 To increase the rigidity of larger frames, horizontal timber braces may be fixed through flange holes across jamb sections, to be removed as the wall is built.

14.14 When the wall approaches head level, the dummy head section and ties are removed, to be used again for another frame.

14.15 The wall is built around the frame as described in section 14.4 and the installation completed as detailed in sections 14.7 and 14.8.

Closer built-in with window or door

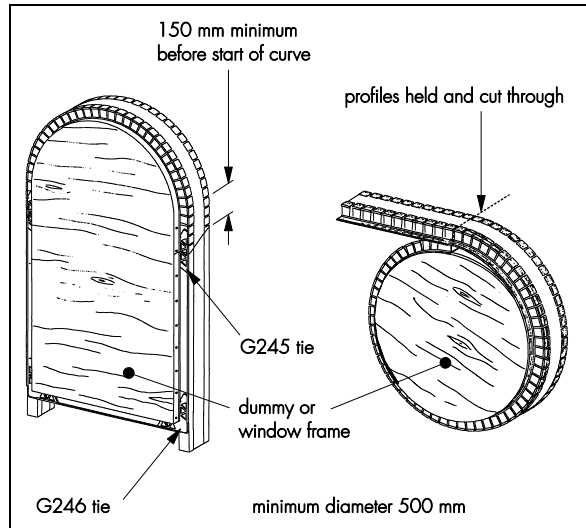
14.16 The closer sections are cut as described in sections 14.2 and 14.3 and the outer flange secured to the window/door frame through the fixing holes with galvanized clout nails⁽¹⁾ (timber frame) or self-tapping screws⁽¹⁾ (PVC-U or metal frame).

(1) Outside the scope of the Certificate.

14.17 The frame with attached closer is positioned on the sill with the sill closer in the cavity, the masonry built up around the jambs, and the installation completed as described in sections 14.7 and 14.8 (see Figure 6).

14.18 Profiles G243 and G244 for use around circular openings are fitted in a similar way. The profiles are shaped around and nailed to a frame (or dummy frame) before the overlapping ends are cut with a fine-toothed saw to give a close fitting butt-joint (see Figure 8). On the larger diameter windows, profiles may be butt jointed with G245 ties used as described in section 14.6. The assembly is positioned on the wall at the base of the window and the masonry built up around the frame following conventional practice for circular windows. Where a dummy frame has been used, retaining nails are removed as the wall is built, with the dummy frame removed just prior to the installation of the window. To complete the installation, the frame is fixed to the masonry using traditional or proprietary fixings, a weatherproof sealant incorporated between frame and outer leaf, and wet plaster applied at the internal reveal, taking note of the recommendations in section 14.4. It is recommended that circular profiles be used under a suitable cavity tray to shed water away from the closer, frame and inner leaf at this position.

Figure 8 Assembly of arched and circular closers



14.19 Profiles G243 and G244 may also be used to close archways, following the procedure outlined in section 14.18. In this application the ends of the closer are cut at 45° and butt jointed with G245 ties to rigid jamb sections as described in section 14.6 (see Figure 8).

Refurbishment

14.20 The product can also be used in refurbishment work. In this application any return brick closer must be removed and the cavity cleared at the opening. In Scotland and Northern Ireland, a suitable cavity barrier will be required in conjunction with the new closer (see section 8.2). The closer sections are cut as described in sections 14.2 and 14.3, inserted into the cavity and screwed to the masonry through the flange holes. The window is then installed and the installation completed as described in sections 14.7 and 14.8.

Technical Investigations

15 Tests

Tests were carried out to determine:

- shrinkage on heating
- resistance to cracking in acetone
- changes on heating.

16 Investigations

16.1 An assessment was made of:

- heat loss and condensation risk
- the practicability of the installation
- weather resistance of the product when installed in accordance with the Certificate holder's instructions
- fire resistance and structural stability of walls incorporating the cavity closer sub-frame
- durability of the components used in the construction of the product

16.2 The manufacturing process was evaluated, including the methods adopted for quality control, and details were obtained of the quality and composition of materials used.

Bibliography

BS 8000-0 : 2014 *Workmanship on construction sites — Introduction and general principles*

BS 8000-3 : 2001 *Workmanship on building sites — Code of practice for masonry*

BS EN 1996-2 : 2006 *Eurocode 6 : Design of masonry structures — Design considerations, selection of materials and execution of masonry*

NA to BS EN 1996-2 : 2006 UK National Annex to *Eurocode 6 : Design of masonry structures — Design considerations, selection of materials and execution of masonry*

BS EN ISO 9001 : 2008 *Quality management systems — Requirements*

BRE Information Paper IP 1/06 *Assessing the effects of thermal bridging at junctions and around openings*

BRE Information Paper IP 8/08 *Determining the minimum thermal resistance of cavity closers*

BRE Report (BR 262 : 2002) *Thermal insulation : avoiding risks*

17 Conditions

17.1 This Certificate:

- relates only to the product/system that is named and described on the front page
- is issued only to the company, firm, organisation or person named on the front page – no other company, firm, organisation or person may hold claim that this Certificate has been issued to them
- 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.

17.2 Publications, documents, specifications, legislation, regulations, standards and the like referenced in this Certificate are those that were current and/or deemed relevant by the BBA at the date of issue or reissue of this Certificate.

17.3 This Certificate will remain valid for an unlimited period provided that the product/system and its manufacture and/or fabrication, including all related and relevant parts and 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.

17.4 The BBA has used due skill, care and diligence in preparing this Certificate, but no warranty is provided.

17.5 In issuing this Certificate the BBA is not responsible and is excluded from any liability to any company, firm, organisation or person, for any matters arising directly or indirectly from:

- 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
- actual installations of the product/system, including their nature, design, methods, performance, workmanship and maintenance
- any works and constructions in which the product/system is installed, including their nature, design, methods, performance, workmanship and maintenance
- any loss or damage, including personal injury, howsoever caused by the product/system, including its manufacture, supply, installation, use, maintenance and removal
- any claims by the manufacturer relating to CE marking.

17.6 Any information relating to the manufacture, supply, installation, use, maintenance and removal 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, maintained and removed. It does not purport in any way to restate the requirements of the Health and Safety at Work etc. Act 1974, or of any other statutory, common law or other duty which may exist at the date of issue or reissue 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.