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**Agrément
Certificate
No 96/3226**

Third issue*



Designated by Government
to issue
European Technical
Approvals

MANTHORPE THERMAL CAVITY CLOSER II

Elément de remplissage
Hohlraumfüllelement

Product




• THIS CERTIFICATE RELATES TO THE MANTHORPE THERMAL CAVITY CLOSER II, AN INSULATED PVC-U CAVITY CLOSER FOR USE IN MASONRY WALLS WITH CAVITY WIDTHS FROM 50 mm TO 150 mm.

• The product closes the cavity at window and door openings without forming a thermal bridge, provides a damp-proof barrier between inner and outer wall leaves at the point of closure, and can be used to establish the cavity width and to form an opening. The product is suitable for use with timber, PVC-U, aluminium or steel window and door frames.

Regulations

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

 The Secretary of State has agreed with the British Board of Agrément the requirements of the Building Regulations to which cavity closers can contribute in achieving compliance. In the opinion of the BBA, the Manthorpe Thermal Cavity Closer II, if used in accordance with the provisions of this Certificate, will meet or contribute to meeting the relevant requirements.

Requirement: C4

Resistance to weather and ground moisture

Comment:

The product prevents the passage of moisture from the outer leaf to the inner leaf of a cavity wall at door and window openings. See sections 11.1 to 11.3 of this Certificate.

Requirement: L1

Dwellings

Requirement: L2

Buildings other than dwellings

Comment:

When the closer is used as detailed in this Certificate, adequate provision will have been made to limit the thermal bridging which occurs around openings of which it forms a part. It will therefore contribute to meeting the requirement of limiting the heat loss through the fabric, and the risk of condensation at the reveal will be minimal. See section 10.1 of this Certificate.

continued

continued

- *The closers are non-loadbearing and window and door frames must be fixed independently to the masonry. Proprietary frame fixings, which may be recommended by the manufacturer, are outside the scope of this Certificate.*
- *It is essential that the product is installed and used in accordance with the manufacturer's instructions and the conditions set out in the Design Data and Installation parts of this Certificate.*

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Requirement:	Regulation 7	Materials and workmanship
Comment:		The product is acceptable. See section 14 of this Certificate.
		In addition to the contribution which the product can make to meeting the relevant requirements, the following comments should be noted.
Requirement:	A1(1)	Loading
Comment:		When used in conventional masonry cavity walls the product will not adversely affect the structural stability of the walls. Use of the product will not obviate the need for conventional wall ties between the inner and outer leaves at window and door openings.
Requirement:	B3(1)	Internal fire spread (structure)
Comment:		The product is acceptable. See sections 12.1 to 12.3 of this Certificate.

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



In the opinion of the BBA, the Manthorpe Thermal Cavity Closer II, if used in accordance with the provisions of this Certificate, will satisfy or contribute to satisfying the various Regulations and related Technical Standards as listed below.

Regulation:	10	Fitness of materials and workmanship
Standard:	B2.1	Selection and use of materials, fittings, and components, and workmanship
Comment:		The product can contribute to a construction meeting this Standard. See the <i>Installation</i> part of this Certificate.
Standard:	B2.2	Selection and use of materials, fittings, and components, and workmanship
Comment:		The product complies with the requirements of this Standard. See section 14 of this Certificate.
Regulation:	11	Structure
Standard:	C2.1	Stability
Comment:		When used in masonry cavity walls the product will not obviate the need for conventional wall ties between the inner and outer leaves at window or door openings.
Regulation:	12	Structural fire precautions
Standards:	D2.1 and D2.2	Structural protection — Principles
Standards:	D6.1 and D6.2	Concealed spaces — Principles
Comment:		In conjunction with a cavity barrier, the product can satisfy these Standards. The product does not constitute a cavity barrier. See sections 12.1 to 12.3 of this Certificate.
Regulation:	17	Resistance to moisture
Standard:	G3.1	Resistance to precipitation — Resistance to precipitation
Comment:		Walls incorporating the product can comply with the requirements of this Standard. See sections 11.1 to 11.3 of this Certificate.
Regulation:	18	Resistance to condensation
Standard:	G4.1	Condensation — Interstitial condensation
Comment:		The product can contribute to satisfying this Standard. See section 10.2 of this Certificate.
Standard:	G4.2	Condensation — Surface condensation
Comment:		The product can satisfy this Standard. See section 10.1 of this Certificate.
Regulation:	22	Conservation of fuel and power
Standard:	J4.1	Buildings in purpose group 1 — Limiting thermal bridging at junctions and around openings
Standard:	J9.1	Buildings in purpose groups 2 to 7 — Limiting thermal bridging at junctions and around openings
Comment:		Walls incorporating the product can satisfy these Standards. See section 10.1 of this Certificate.

3 The Building Regulations (Northern Ireland) 2000



In the opinion of the BBA, the Manthorpe Thermal Cavity Closer II, if used in accordance with the provisions of this Certificate, will satisfy or contribute to satisfying the various Building Regulations as listed below.

Regulation:	B2	Fitness of materials and workmanship
Comment:		The product is acceptable. See section 14 of this Certificate.
Regulation:	C4	Resistance to ground moisture and weather
Comment:		Cavity walls incorporating the product can satisfy this Regulation. See sections 11.1 to 11.3 of this Certificate.
Regulation:	C5	Condensation
Comment:		The product is acceptable. See section 10.2 of this Certificate.

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Regulation: D1

Stability

Comment:

When used in conventional masonry cavity walls, the product will not adversely affect the structural stability of the walls. Use of the product does not obviate the need for conventional wall ties between the inner and outer leaves at window or door openings.

Regulation: E4

Internal fire spread — Structure

Comment:

The product is acceptable. See sections 12.1 to 12.3 of this Certificate.

Regulation: F2

Building fabric

Comment:

Walls incorporating the product can satisfy this Regulation. See section 10.1 of this Certificate.

4 Construction (Design and Management) Regulations 1994 (as amended) Construction (Design and Management) Regulations (Northern Ireland) 1995 (as amended)

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

See section:

6 Delivery to site and storage (6.2).

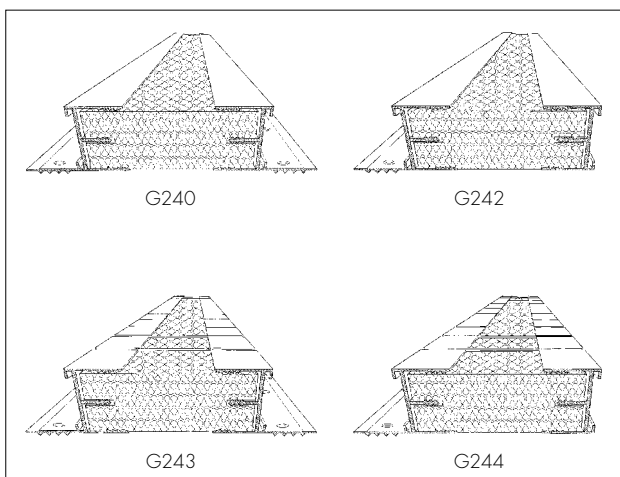
Technical Specification

5 Description

5.1 The Manthorpe Thermal Cavity Closer II consists of two types of closer profile, rigid (G240 — double-flange, and G242 — single-flange) and flexible (G243 — double-flange and G244 — single-flange). Each comprises a core of grooved extruded, CFC-free, polystyrene insulation⁽¹⁾ (27 mm thick for rigid, 24 mm thick for flexible) with extruded PVC-U sections push-fitted either side (see Figure 1). The PVC-U sections incorporate fixing channels and those with ribbed flanges include fixing holes in the flanges.

(1) Including fire-retardant additive.

Figure 1 Closer profiles

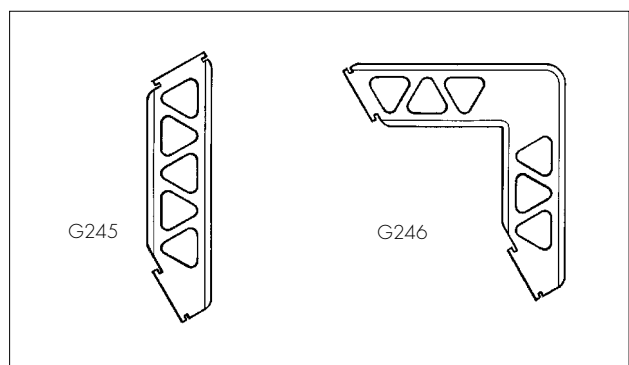


5.2 The profiles are available in 2.44 metre lengths and five main widths, 50 mm, 65 mm, 75 mm, 90 mm, 100 mm and 150 mm, dependent on the width of the polystyrene insulation block. Intermediate sizes between 50 mm and 150 mm are available to order.

5.3 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.

5.4 Injection-moulded polypropylene clips (straight — G245, right-angled — G246) are available for fixing and for jointing profiles (see Figure 2).

Figure 2 Clips



5.5 Quality control includes visual and dimensional checks during manufacture and assembly.

6 Delivery to site and storage

6.1 The closer profiles are delivered to site in polythene sleeves, each bearing a product identification label and containing six 2.44 metre lengths of profile, and a copy of the installation instructions. Clips are supplied separately in bags of 100 (G245) and 50 (G246).

6.2 The profiles should be stored flat, away from direct sunlight and excessive heat and supported along their length to prevent distortion.

7 General

7.1 The Manthorpe Thermal Cavity Closer II is suitable for use in masonry walls with nominal cavity widths in the range of 50 mm to 150 mm and with window and door frames made from timber, PVC-U, aluminium or steel.

7.2 The product provides a damp-proof barrier, acts as a cavity closer without forming a thermal bridge, and avoids the need for cutting bricks and blocks.

7.3 The PVC-U flange can provide an adequate key for traditional plaster finishes. However, in locations where the plaster may be subjected to repeated impact (eg at door reveals from door slamming) it is recommended that wet plaster be reinforced by hessian scrim or preferably replaced by dry lining. Where the polystyrene insulation is exposed at the internal reveal an expanded metal mesh fixed across the closer to the blockwork is required for use with wet plaster.

7.4 Proprietary frame fixings, which may be recommended by the manufacturer, are not covered by this Certificate.

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

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

- BS 5628-1 : 1992 and BS 5628-3 : 2001.
- The national Building Regulations:

England and Wales

Approved Document A1/2, Section 1C

Scotland

Technical Standards, Part C, *Small Buildings Guide*

Northern Ireland

Technical Booklet D.

8 Practicability of installation

Installation is straightforward and can be carried out by craftsmen using traditional skills following the procedures and conditions laid down in this Certificate.

9 Structural stability

9.1 The Manthorpe Thermal Cavity Closer II is non-loadbearing and must not be used to support loads from the masonry. Door and window frames should be fixed to the masonry by conventional means in addition to any fixings to the closer. Lintels are required above window or door openings.

9.2 The products 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 5628-3 : 2001. Use of the product does not obviate the need for conventional wall ties around the openings.

10 Hygrothermal behaviour



10.1 For cavity widths up to and including 100 mm⁽¹⁾ (150 mm for check reveal applications) thermal bridging and the risk of local surface condensation around openings will be acceptable, and meet the following requirements, where the window/door frame is set-back by at least 15 mm into the wall cavity and the junctions between the walls and the front and back of the window/door frame and sill are effectively sealed.

England and Wales

Approved Document L1, Paragraphs 1.30 and 1.32
Approved Document L2, Paragraphs 1.9 and 1.11

Scotland

Technical Standards J4.1 and J9.1

Northern Ireland

Technical Booklet F, Paragraph 1.33.

(1) For cavity widths above 100 mm and up to 150 mm the hygrothermal performance at flush jamb opening details needs to be assessed on an individual basis. With the appropriate insulation in the cavity, it is likely that the above requirements will be met.



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

11 Weather resistance



11.1 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 dpc detail would normally be used. The product is also effective as a horizontal dpc at the sill or threshold.

11.2 Profiles G240 and G243 with PVC-U flanges extending over both leaves at a flush (in-line) wall opening (see Figures 3, 4 and 6) are suitable for use in the 'sheltered' and 'moderate' exposure categories, as defined in Table 11 of BS 5628-3 : 2001 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*. These profiles 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.

11.3 Profiles G242 and G244 are suitable for use at a rebated opening (check reveal) (see Figure 5). 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 categories up to and including 'very severe' as defined in Table 11 of BS 5628-3 : 2001 which covers all exposure zones in the United Kingdom.

12 Properties in relation to fire



12.1 The Manthorpe Thermal Cavity Closer II will not contribute significantly to the growth of a fire.

12.2 The product 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 or Northern Ireland, where cavity barriers are not required around openings. In Scotland, however, the product is only suitable for use in conjunction with a cavity barrier meeting the performance requirements defined in Technical Standard (D1.3), Table 1.

12.3 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 building regulations.

13 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.

14 Durability



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

Installation

15 General

15.1 Installation of windows and doors using the cavity closer must be carried out in accordance with the manufacturer's installation instructions.

15.2 When installed in conjunction with the cavity closer, the back edge of the window/door frames should be set-back at least 15 mm⁽¹⁾ behind the inner face of the outer leaf to meet thermal requirements (see section 10.1) whilst ensuring that the front edge of the frame remains over the outer leaf.

(1) A smaller set-back may be possible if a satisfactory hygrothermal assessment using BRE Information Paper IP 17/01, *Assessing the effects of thermal bridging at junctions and around openings*, shows that thermal requirements are met.

15.3 The junctions between the wall and the front and back of the window/door frame must be effectively sealed (see section 10.1).

15.4 Typical installation details are shown in Figures 3 to 6 inclusive.

16 Procedure

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

16.1 The wall is built to sill level and the product selected to suit the application and cavity width.

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

16.3 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.

16.4 The wall is built up at the jambs and the closer sections secured by clips (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. Clips 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 clips per window jamb, two near the top (one into each leaf) and two near the bottom, are recommended by the manufacturer.

Figure 3 Sill detail

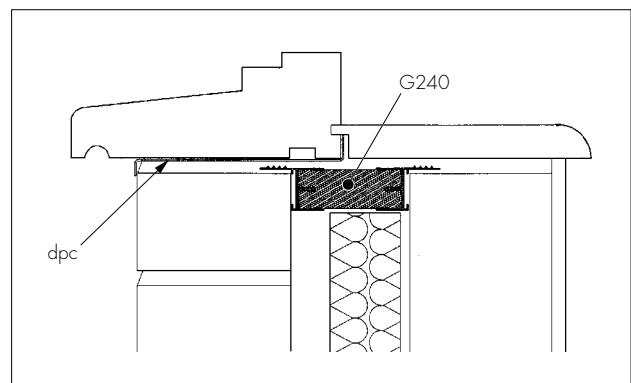


Figure 4 G240 closer built in prior to window

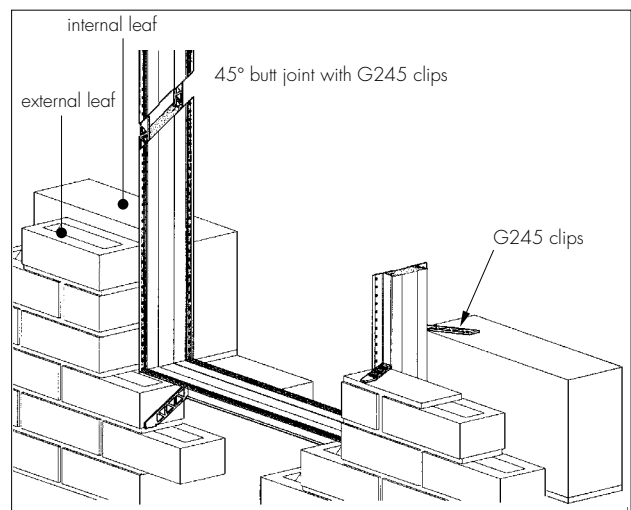


Figure 5 Use of G242 closer in check reveal

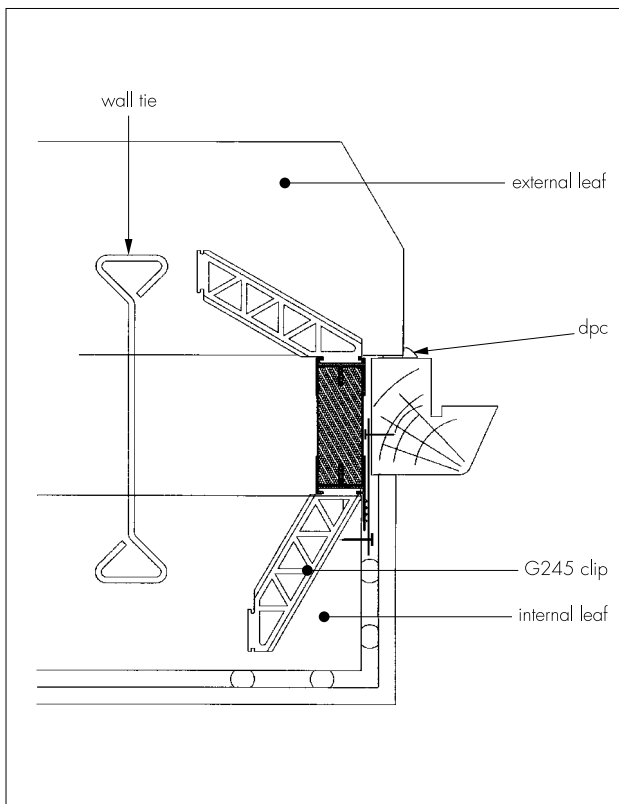
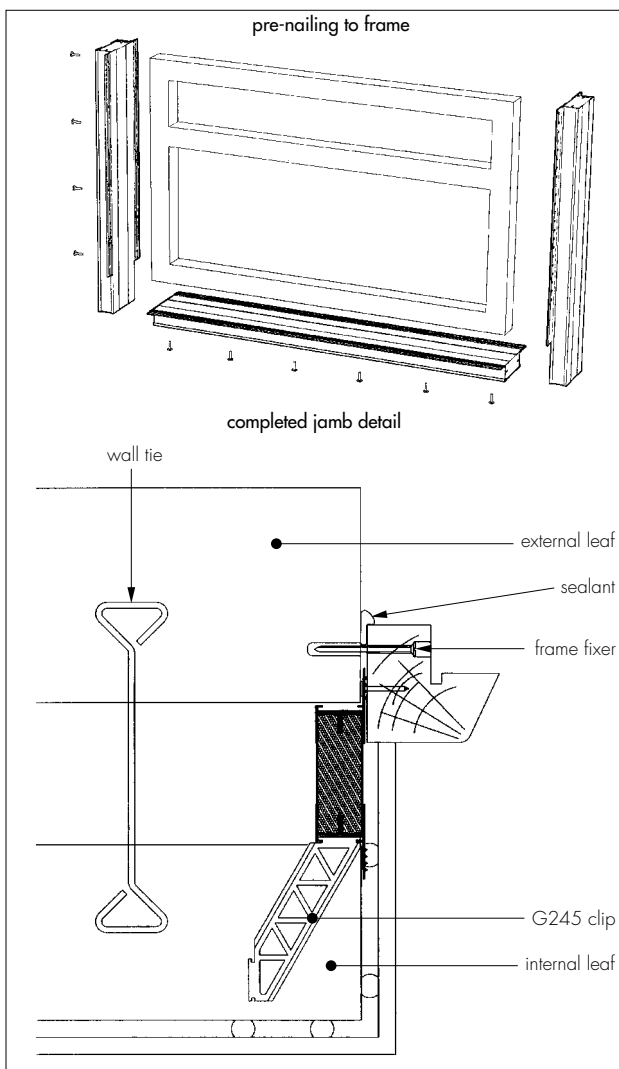


Figure 6 G240 closer pre-fixed to window



16.5 The G240 profile is used where the brickwork and blockwork are in-line (see Figures 3, 4 and 6) and G242 where the brickwork is rebated to the blockwork (see Figure 5, checked reveal).

16.6 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 joint per jamb. The joint is secured and aligned by inserting a clip (G245) into the PVC-U section channel and sliding it across the joint (see Figure 4).

16.7 An insulated lintel and ancillary damp-proof protection is fitted at the head and the window/door fixed to the outer leaf by proprietary fixings and sealed around the external perimeter with a proprietary weatherproofing sealant.

16.8 The internal reveal is finished with wet plaster or dry lining, taking note of the recommendations given in section 7.3.

Use of preformed closer frame

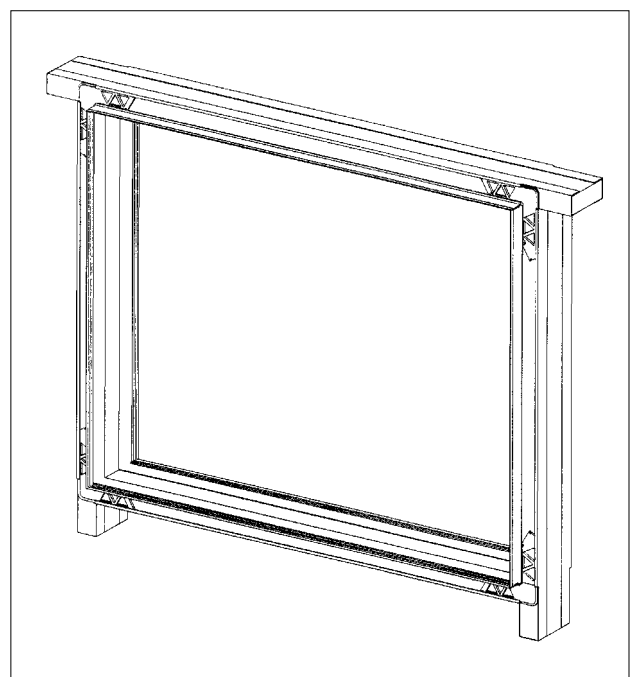
16.9 The closer profiles may be pre-assembled into a closer frame to be used as a former for an opening during the building of a wall.

16.10 Sill and jamb sections are cut as described in sections 16.2 and 16.3. 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.

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

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

Figure 7 Preformed closer frame



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16.13 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.

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

16.15 The wall is built around the frame as described in section 16.4 and the installation completed as detailed in sections 16.7 and 16.8.

Closer built in with window or door

16.16 The closer sections are cut as described in sections 16.2 and 16.3 and the outer flange secured to the window/door frame through the fixing holes with galvanized clout nails (timber frame) or self-tapping screws (PVC or metal frame).

16.17 The frame with attached closer is sat 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 16.7 and 16.8 (see Figure 6).

16.18 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 clips used as described in section 16.6. The assembly is sat 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, and the dummy frame 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 7.3. 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.

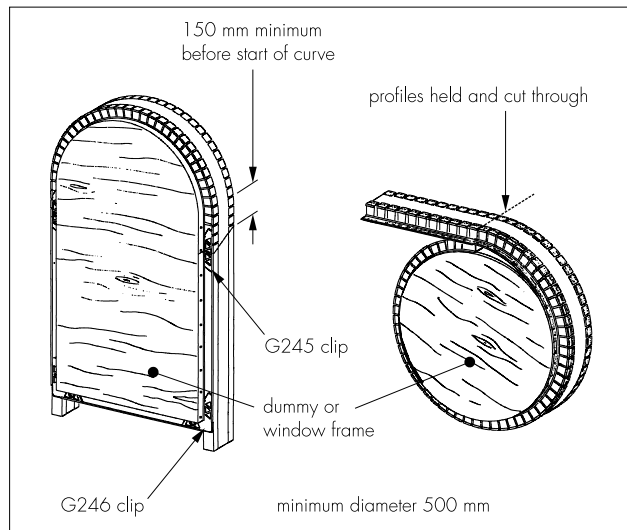
16.19 Profiles G243 and G244 may also be used to close archways, following the procedure outlined in section 16.18. In this application the ends of the closer are cut at 45° and butt-jointed with G245 clips to rigid jamb sections as described in section 16.6 (see Figure 8).

Refurbishment

16.20 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. The closer sections are cut as described in sections 16.2 and 16.3, 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 16.7 and 16.8.

Figure 8 Assembly of arched and circular closers



Technical Investigations

The following is a summary of the technical investigations carried out on the Manthorpe Thermal Cavity Closer II.

17 Tests

Tests were carried out to determine:

- shrinkage on heating of PVC-U sections
- resistance of PVC-U sections to cracking in acetone.

18 Investigations

18.1 An assessment was made of the hygrothermal properties of constructions incorporating the product. In making this assessment a computer simulation, in accordance with BRE Information Paper IP 17/01, *Assessing the effects of thermal bridging at junctions and around openings*, was carried out to determine the thermal transmittance and temperature factor around the openings in walls with a U value $\geq 0.3 \text{ Wm}^{-2}\text{K}^{-1}$.

18.2 The practicability of the installation was assessed.

18.3 Factory visits were made to assess the manufacture and quality control of the product.

18.4 An assessment was made of:

- durability of the PVC-U and polystyrene used in the construction of the product
- weathertightness of the product when installed in accordance with the manufacturer's instructions
- fire resistance and structural stability of walls incorporating the product
- thermal performance of the product.

Bibliography

BS 5628-1 : 1992 *Code of practice for use of masonry — Structural use of unreinforced masonry*
BS 5628-3 : 2001 *Code of practice for use of masonry — Materials and components, design and workmanship*

Conditions of Certification

19 Conditions

19.1 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) is valid only within the UK;
- (d) has to be read, considered and used as a whole document — it may be misleading and will be incomplete to be selective;
- (e) is copyright of the BBA;
- (f) is subject to English law.

19.2 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, are references to such publication in the form in which it was current at the date of this Certificate.

19.3 This Certificate will remain valid for an unlimited period provided that the product and the manufacture and/or fabrication including all related and relevant processes 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 as and when deemed appropriate by the BBA under arrangements that it will determine; and
- (c) are reviewed by the BBA as and when it considers appropriate.

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

- (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 or standard of individual installations of the product or any maintenance thereto, including methods and workmanship.

19.5 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 Manthorpe Thermal Cavity Closer II is fit for its intended use provided it is installed, used and maintained as set out in this Certificate. Certificate No 96/3226 is accordingly awarded to Manthorpe Building Products Limited.

On behalf of the British Board of Agrément

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

Date of Third issue: 18th December 2003

Chief Executive

**Original Certificate issued on 27th March 1996. This amended version includes a change of name for the product, an additional product size, new Hygrothermal behaviour and Properties in relation to fire statements, revised national Building Regulations, a new CDM Regulation statement and new Conditions of Certification.*

British Board of Agrément

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For information about the Agrément Certificate, including validity and scope, tel: Hotline 01923 665400, or check the BBA website.