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**Agrément
Certificate
No 89/2325**
Second issue*

Designated by Government
to issue
European Technical
Approvals

CATNIC 'STRONGHOLD' WALL CONNECTOR

Profils pour maçonnerie
Profile für Mauerwerk

Product



• THIS CERTIFICATE RELATES TO THE CATNIC 'STRONGHOLD' WALL CONNECTOR, A PRODUCT USED FOR TYING NEW MASONRY WALLS TO EXISTING WALLS.

- The product may be used to provide simple lateral support to masonry wall panels in conversion, extension and new building works.
- The product is suitable to tie walls of up to three storeys high, ie up to 8 m maximum, within the limits given in section 9.2 of this Certificate.
- The product may be used for internal or external walls, the one size being used for new masonry walls ranging from 60 mm to 250 mm thick.

Regulations

1 The Building Regulations 2000 (England and Wales)



The Secretary of State has agreed with the British Board of Agrément the requirements of the Building Regulations to which wall extension profiles can contribute in achieving compliance. In the opinion of the BBA, the Catnic 'Stronghold' Wall Connector, if used in accordance with the provisions of this Certificate, will meet or contribute to meeting the relevant requirements.

Requirement: **A1**
Comment:

Loading

The product will contribute to the strength and stiffness of masonry walls provided that the design loads are in accordance with section 9.3 of this Certificate.

Requirement: **B3(1)**
Comment:

Internal fire spread (structure)

The product will not adversely affect the fire resistance of the wall.

Requirement: **C4**
Comment:

Resistance to weather and ground moisture

Walls joints constructed using the product will resist the passage of moisture to the inside of the building provided that the weatherproofing detail is in accordance with sections 10.1 and 10.3 of this Certificate.

Requirement: **L1**
Comment:

Conservation of fuel and power

The product will not significantly affect the thermal transmittance of the walls it joins. See section 7.6 of this Certificate.

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Requirement:	Regulation 7	Materials and workmanship
Comment:	The product is acceptable. See section 13 of this Certificate.	
In addition to the contribution to which the Catnic 'Stronghold' Wall Connector can make to meeting the relevant requirements, the following comment should be noted.		
Requirement:	E1	Airborne sound (walls)
Comment:	The affect of the product on sound transmission through walls has not been assessed. See section 7.4 of this Certificate.	

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



In the opinion of the BBA, the Catnic 'Stronghold' Wall Connector, 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
Standard:	B2.1	Selection and use of materials and components
Comment:	The product is acceptable. See section 13 of this Certificate.	
Regulation:	11	Structure
Standard:	C2.1	Stability
Comment:	Wall joints made with the product will have satisfactory strength and stiffness provided that the design loads are in accordance with section 9.3 of this Certificate.	
Regulation:	12	Structural fire precautions
Standard:	D2.1	Fire resistance
Comment:	The product will not adversely affect the fire resistance of the wall.	
Regulation:	17	Resistance to moisture
Standard:	G3.1	Resistance to precipitation
Comment:	Wall joints constructed using the product will resist the passage of moisture to the inside of the building provided that the weatherproofing detail is in accordance with sections 10.1 and 10.3 of this Certificate.	
Regulation:	18	Resistance to condensation
Standard:	G4.1	Interstitial condensation
Comment:	The risk of damage due to interstitial condensation will be minimal. See section 7.6 of this Certificate.	
Regulation:	22	Conservation of fuel and power
Standard:	J2.1	Standards for buildings in purpose group 1
Standard:	J3.1	Standards for buildings in purpose groups 2 to 7
Comment:	The product will not significantly affect the thermal transmittance of the walls it joins. See section 7.6 of this Certificate.	

In addition to the contribution to which the Catnic 'Stronghold' Wall Connector can make to meeting the relevant requirements, the following comment should be noted.

Regulations:	19, 20 and 21	Resistance to transmission of sound
Standard:	H2.1	Airborne sound
Comment:	The affect of the product on sound transmission through walls has not been assessed. See section 7.4 of this Certificate.	

3 The Building Regulations (Northern Ireland) 2000



In the opinion of the BBA, the Catnic 'Stronghold' Wall Connector, 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 13 of this Certificate.	
Regulation:	C4	Resistance to ground moisture and weather
Comment:	Wall joints constructed using the product will resist the passage of moisture to the inside of the building provided that the waterproofing detail is in accordance with sections 10.1 and 10.3 of this Certificate.	
Regulation:	C5	Condensation
Comment:	The risk of damage due to interstitial condensation will be minimal. See section 7.6 of this Certificate.	
Regulation:	D1	Stability
Comment:	Wall joints constructed with the product will have satisfactory strength and stiffness provided that the design loads are in accordance with section 9.3 of this Certificate.	
Regulation:	E4	Internal fire spread — Structure
Comment:	The product will not adversely affect the fire resistance of the wall.	

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Regulation: F2	Conservation of fuel and power — Building fabric
Comment:	The product will not significantly affect the thermal transmittance of the walls it joins. See section 7.6 of this Certificate.
In addition to the contribution to which the Catnic 'Stronghold' Wall Connector can make to meeting the relevant requirements, the following comment should be noted.	
Regulation: G1	Sound insulation of dwellings
Regulation: G2	Separating walls and separating floors
Regulation: G3	Existing walls and floors which become separating walls and separating floors
Comment:	The affect of the product on sound transmission through walls has not been assessed. See section 7.4 of this Certificate.

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

In the opinion of the BBA, there is no information in this Certificate which relates to the obligations of the client, planning supervisor, designer and contractors under these Regulations.

Technical Specification

5 Description

5.1 The Catnic 'Stronghold' Wall Connector components are listed in Table 1 and shown in Figure 1.

5.2 The wall connector carrier and wall connector ties are formed from slit steel coil to meet the specifications given in Table 1.

5.3 The fixing components, ie coach screws, washers and masonry plugs, are bought in to the specifications given in Table 1.

Table 1 Component specification

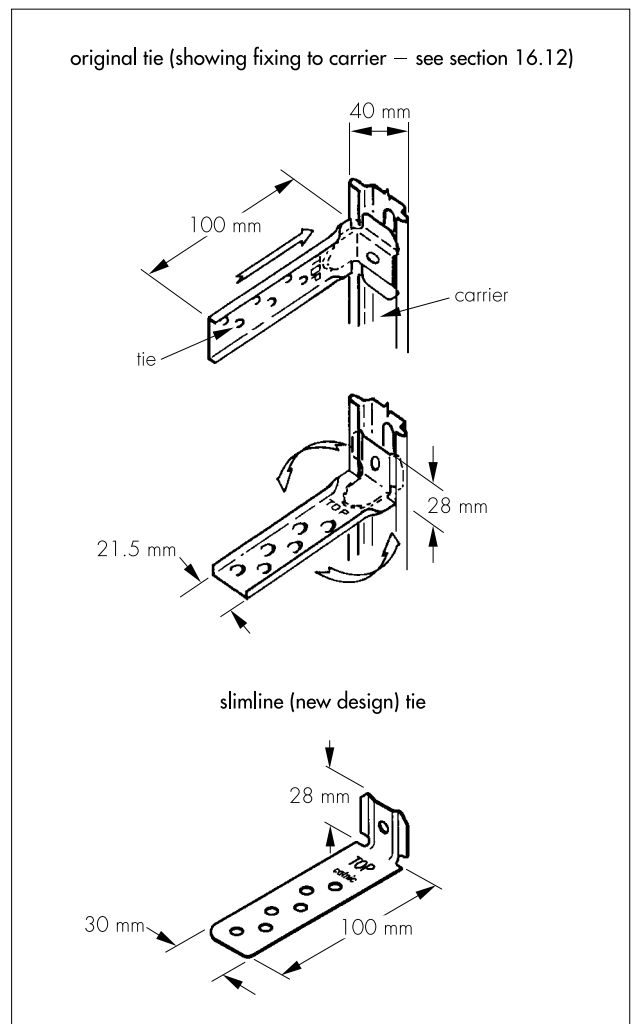
Component	Dimensional specification	Material specification
Wall connector carrier	1190 mm long x 40 mm wide x 0.7 mm thick	see note ⁽¹⁾
Wall connector ties	length and width shown in Figure 1 0.8 mm thick	see note ⁽¹⁾
Coach screw	hexagonal head M6 x 50 mm	see note ⁽²⁾
Washer	6.4 mm ID 14.0 mm OD 1.6 mm thick	see note ⁽³⁾
Wall plug	10 mm OD 44 mm long	high density polythene

(1) Austenitic stainless steel grade 1.4301 of BS EN 10088-2 : 1995.

(2) Austenitic stainless steel grade A2 to BS EN ISO 3506-1 : 1998.

(3) Austenitic stainless steel grade A2 to BS EN ISO 3506-1 : 1998. Manufactured to BS 4320 : 1968(1998).

Figure 1 Wall connector ties



6 Delivery

6.1 The Catnic 'Stronghold' Wall Connector is delivered in a pack which contains two wall connector carriers, ten wall connector ties, five coach screws, five washers, five masonry plugs and an instruction leaflet.

6.2 Each pack bears the BBA identification mark incorporating the number of this Certificate.


Design Data

7 General


7.1 The Catnic 'Stronghold' Wall Connector is suitable to tie new masonry walls of up to three storeys (maximum height 8 m) to existing masonry walls, in conversion, extension and new building works. When used in two- or three-storey constructions the new wall must be effectively tied at the roof and intermediate floor levels in accordance with the recommendations of BS 5628-3 : 1985.

7.2 The product may be used for internal and external walls, the one size being suitable for new masonry walls ranging from 60 mm to 250 mm thick.

7.3 Use of the product obviates the need for conventional toothing or bonding.

 7.4 The wall connectors have not been assessed for use where particular sound insulation properties are required; therefore, separating walls incorporating the wall connectors should be tested to show compliance with the relevant Building Regulations. It should be recognised that where any differential movement has to be accommodated (as referred to in section 9.6) this will have a significant effect on the acoustic performance of the wall construction.

7.5 The system has not been assessed for use where the masonry fixings will be subject to direct tensile load.

 7.6 The construction of a new external wall, whether jointed by traditional toothing and bonding or by the use of a metal profile, will create a thermal bridge through the original wall. The use of any metal profile at this junction will not significantly affect the U value of the wall. Extensions should always be designed in accordance with BS 5250 : 1989(1995) and, where necessary, appropriate insulation included in the construction to minimise the risk of local condensation, particularly if the new wall is of solid construction.


8 Practicability of installation

The product is easy to install under normal site conditions using techniques common in building practice.

9 Structural performance

9.1 The Catnic 'Stronghold' Wall Connector will provide simple lateral support to masonry wall panels in the context of BS 5628-1 : 1992.

9.2 Use of the product is limited to existing masonry of solid clay bricks, solid dense and lightweight aggregate concrete blocks and solid autoclaved aerated concrete blocks of minimum crushing strength 3.5 Nmm^{-2} .

 9.3 For the substrates referred to under section 9.2 the design shear strength of the product may be taken as 4.0 kN over the height of two carriers, ie 2315 mm.

9.4 In accordance with BS 5628-1 : 1992, the reaction along the edge of the wall may normally be assumed to be uniformly distributed.

9.5 As with conventional toothing and bonding, the designer must ensure that the existing wall has adequate strength, stability and integrity to accommodate the new wall. The effect of any proposed modification to the existing wall, such as cutting a vertical dpc (see section 10.3), must also be checked.

9.6 The system is capable of accommodating vertical movement of up to 10 mm, due for example to differential foundation movement, without a significant loss of strength. Brittle finishes, eg plaster and rendering, may be cracked where such movement occurs and may require repair.

9.7 In addition to the requirements directly referred to in this Certificate, structures of brickwork or blockwork, in which the system is incorporated, must be designed and constructed to comply with one of the following technical specifications:


(1) BS 5628-1 : 1992 and BS 5628-3 : 1985

(2) The Building Regulations 2000 (England and Wales), Approved Document A1/2, Part C, Section 1

(3) The Building Standards (Scotland) Regulations 1990 (as amended), Technical Standards, Part C *Small Buildings Guide*

(4) The Building Regulations (Northern Ireland) 2000 (as amended), Technical Booklet D *Structure*.

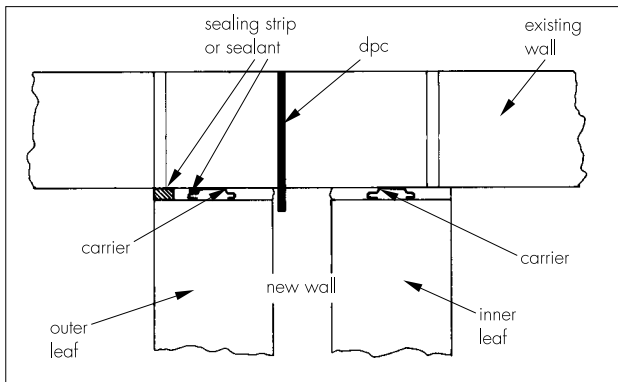
10 Weathertightness

 10.1 To prevent water penetration at the joint between the existing wall and the outer leaf of the new wall, either wax or bitumen-impregnated foam sealing strip or polymer-based sealant should be positioned, either behind the wall connector carrier or in the junction perpend as shown in Figure 2.

10.2 The weathertightness of the joint will not be affected by normal building movement.

10.3 Where exposure conditions can be classified as being equal to or in excess of moderate/severe (see BS 5628-3 : 1985), in common with other wall connector/starter systems and conventional tothing or bonding methods, additional protection from moisture penetrating to the inside of the building should be considered. This can take the form of an extended vertical dpc, as shown in Figure 2, which will prevent moisture from being transmitted through the existing masonry wall and also shed any moisture that may penetrate the perpend joint to the bottom of the new wall cavity.

Figure 2 Weathersealing details



11 Performance in relation to fire

Use of the product will not have a significantly adverse affect on the fire resistance of the existing or new wall.

12 Maintenance

During routine maintenance a sealant joint at the junction perpend should be checked and, if necessary, the joint must be raked out and remade (see section 10.1).

13 Durability

The wall connector carrier and fixings will not be adversely affected by mortar (including those incorporating conventional mortar admixtures) or cavity insulation materials. If joint movement is low and the system is used in accordance with the manufacturer's recommendations, the specified joint sealants can remain effective for up to 20 years (see sections 10.1 and 12 of this Certificate).

Installation

14 General

14.1 The Catnic 'Stronghold' Wall Connector must be installed according to the manufacturer's instructions.

14.2 The existing masonry must be structurally sound, with a flat, vertical surface.

14.3 Fixings for the wall connector carriers must be made into bricks or blocks and not into mortar joints.

14.4 For cavity wall construction a wall connector carrier must be used with each leaf.

14.5 For external walls the bottom edge of the lower wall connector carrier must be above the damp-proof course.

14.6 For external walls, the vertical joint between the existing wall and the outer leaf of the new wall must be weathersealed as detailed under section 10.

15 Preparation

Any rendered or pebble-dashed finish should be removed to ensure that wall connector carriers are fixed directly to the existing masonry.

16 Procedure

16.1 A vertical line is marked on the existing wall at the centre of the proposed new wall.

16.2 If required (see section 10.3 and Figure 2) a vertical cut is made into the existing wall in readiness for a vertical dpc.

16.3 The wall connector carriers are installed starting with the lowest carrier at the bottom of the proposed joint and working upwards to the highest carrier.

16.4 The first wall connector carrier is placed over the marked centre-line and the fixing positions marked as shown in Figure 3. In so doing it is ensured that the carrier is positioned above the damp-proof course and that all fixing positions avoid mortar joints. If necessary the alternative positions are used, ie 450 mm and 600 mm.

16.5 The holes are drilled and plugged using a 10 mm masonry drill.

16.6 The first carrier is then lightly attached to the masonry, with the coach screws and washers provided, at the two lower fixing positions only.

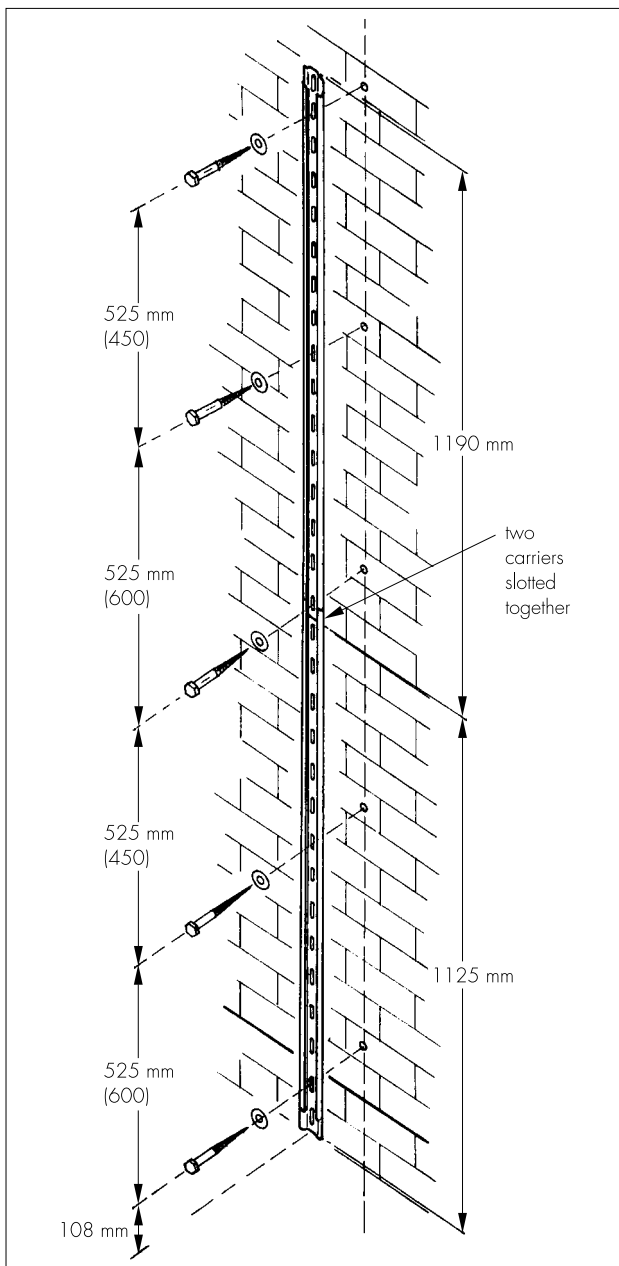
16.7 The second wall connector carrier is slotted into the lower carrier so that both end fixing slots overlap. If necessary the second carrier is reduced in length to accommodate the height of the new wall by cutting at one end only.

16.8 The procedures outlined in sections 16.4, 16.5 and 16.6 are then repeated for the second carrier.

16.9 For any additional carriers required to complete the joint, the procedures outlined in sections 16.7 and 16.8 are repeated. If an overlap slot should coincide with a mortar joint then the two lapped carriers are fixed separately on slots adjacent to the overlap.

16.10 When specified, the impregnated foam sealing strip or polymer-based sealant is positioned behind the wall connector carriers (see section 9.1 and Figure 2).

Figure 3 Wall connector carriers



16.11 The wall connector carriers are aligned and all coach screws tightened.

16.12 Wall connector ties are attached to the wall connector carriers by twisting and sliding into position at a maximum of 300 mm centres (see Figure 1).

16.13 Brickwork or blockwork for the new wall is laid in the conventional way, with a full mortar joint between the existing and the new walls. The wall connector ties are bedded onto mortar and a mortar bed applied over the top so that the ties are completely surrounded with mortar.

16.14 When specified, at the completion stage of the new wall, the impregnated foam sealing strip or polymer-based sealant is inserted at the junction perpendicular (see section 10.1 and Figure 2).

16.15 If required, the extended vertical dpc is inserted into the aperture cut as described in section 10.3.

Technical Investigations

The following is a summary of the technical investigations carried out on the Catnic 'Stronghold' Wall Connector.

17 Tests

17.1 Tests were carried out to establish the load deflection characteristics of:

the component parts
laterally loaded wallties.

17.2 Comparative couplet shear tests were carried out on the new design of tie to confirm its performance.

18 Other investigations

18.1 Calculations were made and examined, in conjunction with the results of the load deflection tests (see section 17), to establish structural performance.

18.2 Existing information relating to the suitability of the corrosion protection and compatibility of materials in contact, was examined.

18.3 Data relating to the effects of the product on the weathertightness of cavity walls were examined.

18.4 Site trials were conducted to assess the practicability of installation.

18.5 An assessment was made of the behaviour of the system in fire.

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

Bibliography

BS 4320 : 1968(1998) *Specification for metal washers for general engineering purposes. Metric series*

BS 5250 : 1989(1995) *Code of practice for control of condensation in buildings*

BS 5628 *Code of practice for use of masonry*
BS 5628-1 : 1992 *Structural use of unreinforced masonry*
BS 5628-3 : 1985 *Materials and components, design and workmanship*

BS EN ISO 3506 *Mechanical properties of corrosion-resistant stainless-steel fasteners*
BS EN ISO 3506-1 : 1998 *Bolts, screws and studs*

BS EN 10088 *Stainless steels*
BS EN 10088-2 : 1995 *Technical delivery conditions for sheet/plate and strip for general purposes*

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) has to be read, considered and used as a whole document — it may be misleading and will be incomplete to be selective;
- (d) is copyright of the BBA.

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, shall be construed as 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 fabricating process(es) thereof:

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

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

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

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

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

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 Catnic 'Stronghold' Wall Connector is fit for its intended use provided it is installed, used and maintained as set out in this Certificate. Certificate No 89/2325 is accordingly awarded to Corus UK Limited.

On behalf of the British Board of Agrément

Date of Second issue: 19th November 2001

Chief Executive

**Original Certificate issued 27th October 1989. This amended version includes a redesigned tie and new Conditions of Certification.*

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