



Bluebird Fixings Limited

Westminster Industrial Estate
Station Road
North Hykeham
Lincoln LN6 3QY
Tel: 01522 697776 Fax: 01522 697771

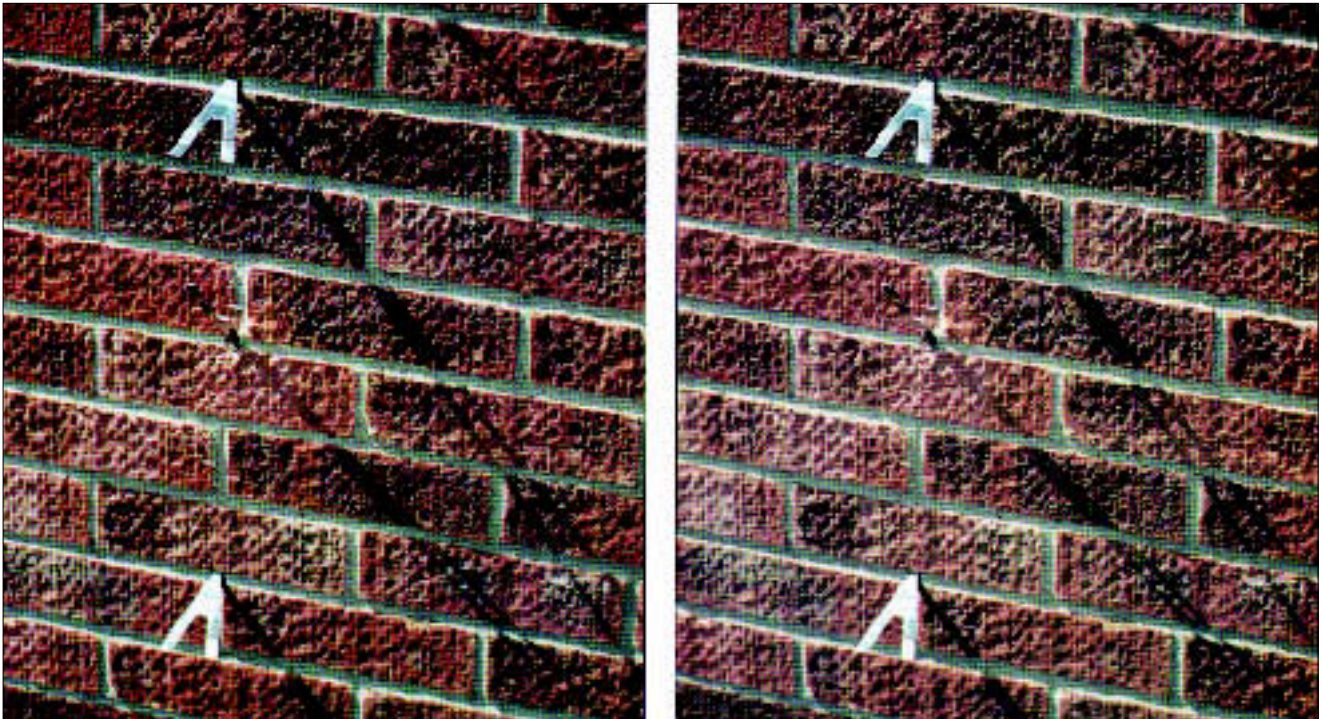
**Agrément
Certificate
No 93/2878**
Second issue *

Designated by Government
to issue
European Technical
Approvals

BLUEBIRD SCREW TIE WALL CONNECTORS

Profils pour maçonnerie
Profile für Mauerwerk

Product



• THIS CERTIFICATE RELATES TO BLUEBIRD SCREW TIE WALL CONNECTORS, FOR TYING NEW MASONRY WALLS TO EXISTING WALLS.

• The products may be used to provide simple lateral support to masonry wall panels in conversion, extension and new building works.

• The products are suitable to tie walls of up to three storeys high, ie up to 8 metres maximum, within the limits given in section 8.2 of this Certificate.

• The ties are available in stainless steel or post galvanized mild steel.

• The stainless steel product may be used for internal or external walls and the post galvanized product may be used for internal walls. One size is used for new masonry walls ranging from 60 mm to 250 mm thick.

Building Regulations

1 The Building Regulations 1991 (as amended 1994) (England and Wales)



The Secretary of State has agreed with the British Board of Agrément the requirements of the Building Regulations to which wall connectors can contribute in achieving compliance. In the opinion of the BBA, Bluebird Screw Tie Wall Connectors, if used in accordance with the provisions of this Certificate, will contribute to meeting the relevant requirements.

Requirement: A1

Comment:

Loading

The products will contribute to the strength and stiffness of masonry walls provided the design loads are in accordance with section 8.3 of this Certificate.

Requirement: B3(1)

Comment:

Internal fire spread (structure)

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

Requirement: C4

Comment:

Resistance to weather and ground moisture

Wall joints constructed using the products will resist the passage of moisture to the inside of the building (see Figure 2).
Materials and workmanship

Requirement: Regulation 7

Comment:

The products are acceptable.

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



In the opinion of the BBA, Bluebird Screw Tie Wall Connectors, if used in accordance with the provisions of this Certificate, will satisfy or contribute to satisfying the various Regulations and Technical Standards as listed below.

| | |
|---|---|
| <p>Regulation: 10 Standard: B2</p> <p>Comment:</p> | <p>Fitness of materials Selection and use of materials, fittings, components and other manufactured products</p> <p>The products are acceptable when used in accordance with this Certificate.</p> |
| <p>Regulation: 11 Standard: C2.1</p> <p>Comment:</p> | <p>Structure Construction</p> <p>Wall joints made with the products will have satisfactory strength and stiffness provided the design loads are in accordance with section 8.3 of this Certificate.</p> |
| <p>Regulation: 12 Standard: D2.2</p> <p>Comment:</p> | <p>Structural fire precautions Fire resistance</p> <p>The products will not adversely affect the fire resistance of the wall.</p> |
| <p>Regulation: 17 Standard: G3.1</p> <p>Comment:</p> | <p>Preparation of site and resistance to moisture Resistance to precipitation</p> <p>Wall joints constructed using the products will resist the passage of moisture to the inside of the building (see Figure 2).</p> |

3 The Building Regulations (Northern Ireland) 1994 (as amended 1995)



In the opinion of the BBA, Bluebird Screw Tie Wall Connectors, if used in accordance with the provisions of this Certificate, will satisfy the various Building Regulations as listed below.

| | |
|--|---|
| <p>Regulation: B2</p> <p>Comment:</p> | <p>Fitness of materials and workmanship</p> <p>The products are acceptable.</p> |
| <p>Regulation: C5</p> <p>Comment:</p> | <p>Resistance to ground moisture and weather</p> <p>Wall joints constructed using the product will resist the passage of moisture to the inside of the building (see Figure 2).</p> |
| <p>Regulation: D2</p> <p>Comment:</p> | <p>Stability</p> <p>Wall joints constructed with the products will have satisfactory strength and stiffness provided the design loads are in accordance with section 8.3 of this Certificate.</p> |
| <p>Regulation: E6</p> <p>Regulation: E8</p> <p>Comment:</p> | <p>Internal fire spread — structure External fire spread</p> <p>The product will not adversely affect the fire resistance of the wall.</p> |

Technical Specification

4 Description

Bluebird Screw Tie Wall Connectors shown in Figure 1 are manufactured from components listed in Table 1.

Table 1 Component specification

| Component | Dimensional specification | Material specification |
|---|--|-------------------------|
| Screw tie (fishtail end) (see Figure 1) | 80 mm long × 50 mm wide × 1.2 mm thick | see note ⁽¹⁾ |
| Screw tie (screw thread) | No 10 × 60 mm (see Figure 1) | see note ⁽¹⁾ |
| Wall plug | 8 mm o.d. 40 mm long | nylon |

(1) Austenitic stainless steel grade 304 S15 to BS 1449 : Part 2 : 1983 or post galvanized mild steel with a minimum average coating weight of 610 gm⁻² to BS EN 10142.

5 Delivery

5.1 The wall connectors are delivered in boxes containing 100 screw tie connectors, 100 wall plugs and an instruction leaflet.

5.2 Each box carries identification of material type and bears the BBA identification mark incorporating the number of the Certificate.

Figure 1 Dimensions

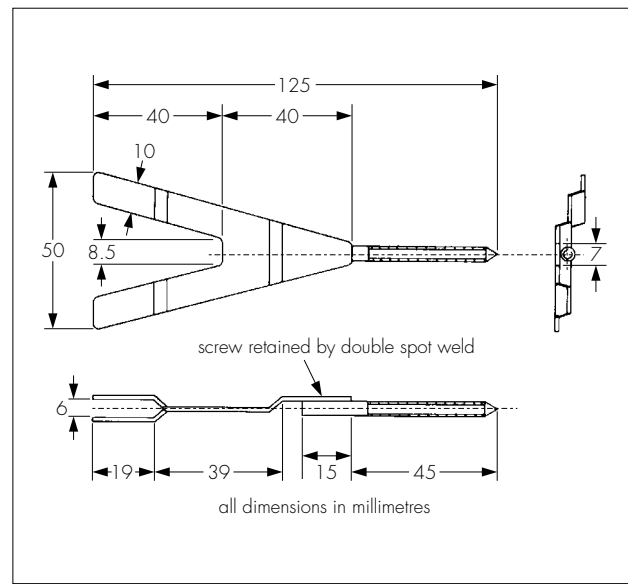
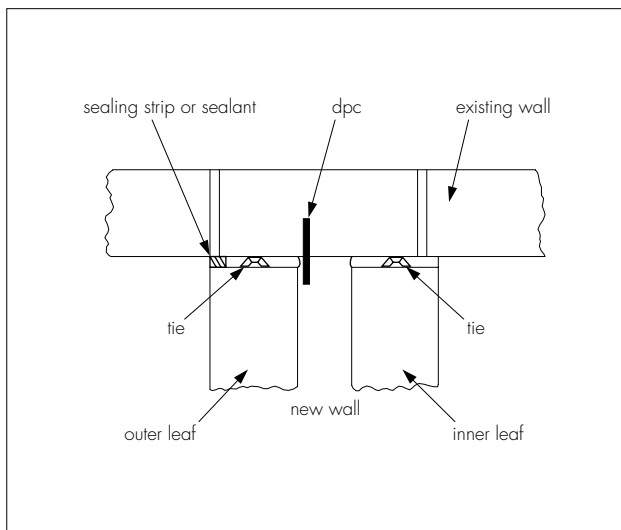


Figure 2 Weathersealing details



Design Data

6 General

6.1 Bluebird Screw Tie Wall Connectors are suitable to tie new masonry walls of up to three storeys (maximum height 8 metres) to existing masonry walls.

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

6.3 Where particular sound insulation properties are required, eg separating walls, tests should be conducted in accordance with BS 2750 : Part 4 : 1980(1983) and the results assessed in accordance with BS 5821 : Parts 1 and 2 : 1984(1993) to show compliance with the relevant Building Regulations.

7 Practicability of installation

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

8 Structural performance

8.1 Bluebird Screw Tie Wall Connectors will provide simple lateral support to masonry wall panels in the context of BS 5628 : Part 1 : 1992.

8.2 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 2.8 Nmm^{-2} .

8.3 For the substrates referred to under section 8.2 the design shear strength of the product may be taken as 1.2 kN (0.12 kN per tie) over the height of one storey, ie 2400 mm with the ties spaced at a maximum of 225 mm. Where greater density and shear strength is required over one storey the spacing between the ties can be reduced.

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

8.5 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.

8.6 The system is capable of accommodating vertical movement of up to 5 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.

8.7 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 : Part 1 : 1992 and BS 5628 : Part 3 : 1985.

(2) Section 1, Part C, of Approved Document A1/2 to the Building Regulations 1991 (as amended 1994) (England and Wales).

(3) Small Buildings Guide for compliance with Part C of the Building Standards (Scotland) Regulations 1990 (as amended).

(4) The Building Regulations (Northern Ireland) 1994 (as amended 1995). Technical Booklet D and the relevant British Standard.

9 Weathertightness

9.1 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.

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

9.3 Where exposure conditions can be classified as being equal to or in excess of moderate/severe (see BS 5628 : Part 3 : 1985), in common with other wall connector/starter systems and conventional toothing 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.

10 Performance in relation to fire

Where the walls are required to have a one-hour fire resistance, use of the products will have no significantly adverse effect on the fire resistance of either the existing or new wall.

11 Maintenance

During routine maintenance a sealant joint at the junction perpendicular should be checked and, if necessary, the joint must be raked out and remade (see section 9.1).

12 Durability

The wall connectors will not be adversely affected by mortars (including those incorporating conventional mortar admixtures) or cavity insulation materials.

Installation

13 General

13.1 Bluebird Screw Tie Wall Connectors must be installed according to the manufacturer's instructions.

13.2 The existing masonry must be structurally sound.

13.3 The wall connectors must be fixed into bricks or blocks and not into mortar joints.

13.4 For cavity wall construction wall connectors must be used with each leaf.

13.5 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 9.

14 Preparation

Rendered or pebble-dashed finishes should be removed to ensure that wall connectors are fixed directly to the existing masonry.

15 Procedure

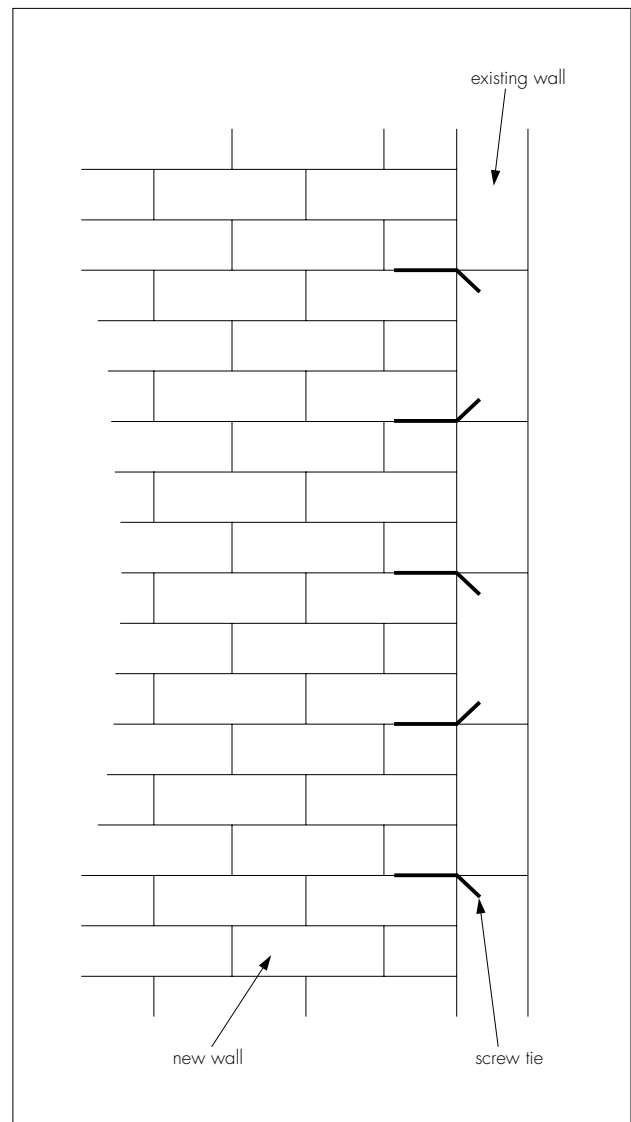
15.1 A vertical line is marked on the existing wall at the centre of the proposed new wall.

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

15.3 The positions of the wall connectors are marked as shown in Figure 3. It is essential that the wall connectors are spaced vertically at a maximum of every three courses of brickwork (nominally 225 mm).

15.4 The first hole is drilled downwards at an angle to the horizontal of approximately $30^\circ \pm 5^\circ$, always drilling into the masonry substrate. An 8 mm diameter masonry drill bit is used and the depth of the hole is 45 mm. The wall plug is inserted and pushed to the end of the hole. The next hole is similarly drilled and plugged but the fixing hole must be drilled upward at a 30° angle to the horizontal. This procedure is repeated ensuring that the fixing holes are drilled in alternate directions at each subsequent wall connector position.

Figure 3 Screw tie positions



15.5 The wall connectors are screwed fully into the wall plugs.

15.6 When specified, the impregnated foam sealing strip or polymer based sealant is positioned (see section 9.1 and Figure 2).

15.7 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 fishtail ends of the wall connectors are bent to lie horizontally in the mortar bed and a mortar bed is applied over the top so that the fishtail ends are completely embedded in mortar.

15.8 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 9.1 and Figure 2).

15.9 If required, the extended vertical dpc is inserted into the aperture cut as described in section 5.3.

Technical Investigations

The following is a summary of the technical investigations carried out on Bluebird Screw Tie Wall Connectors.

16 Tests

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

component parts
laterally loaded walldettes.

17 Other investigations

17.1 Calculations were made and examined, in conjunction with the results of the load deflection tests (see section 1.5), to establish structural performance.

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

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

17.4 Trials were conducted to assess the practicability of installation.

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

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

Bibliography

- BS 1449 *Steel plate, sheet and strip*
Part 2 : 1983 *Specification for stainless and heat-resisting steel plate, sheet and strip*
- BS 2750 *Measurement of sound insulation in buildings and of building elements*
Part 4 : 1980(1993) *Field measurements of airborne sound insulation between rooms*
- BS 5628 *Code of practice for use of masonry*
Part 1 : 1992 *Structural use of unreinforced masonry*
Part 3 : 1985 *Materials and components, design and workmanship*
- BS 5821 *Method for rating the sound insulation in buildings and of building elements*
Part 1 : 1984(1993) *Method for rating the airborne sound insulation in buildings and of interior building elements*
Part 2 : 1984(1993) *Method for rating the impact sound insulation*
- BS EN 10142 : 1991 *Specification for continuously hot-dip zinc coated low carbon steel sheets and strip for cold forming: technical delivery conditions*

Conditions of Certification

18 Conditions

18.1 Where reference is made in this Certificate to any Act of Parliament, Regulation made thereunder, Statutory Instrument, Code of Practice, British Standard, manufacturer's instruction or similar publication, it shall be construed as reference to such publication in the form in which it is in force at the date of this Certificate.

18.2 The quality of materials and the method of manufacture have been examined and found satisfactory by the BBA and must be maintained to this standard during the period of validity of this Certificate. This Certificate will remain valid for an unlimited period provided:

- (a) the specification of the product is unchanged; and
- (b) the manufacturer continues to have the product checked by the BBA.

18.3 This Certificate will apply only to the product that is installed, used and maintained as set out in this Certificate.

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

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

18.5 It should be noted that any recommendations relating to the safe use 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 or Common Law duties of care, or of any duty of care which 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 or Common Law duties 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 use of this product.



In the opinion of the British Board of Agrément, Bluebird Screw Tie Wall Connectors are fit for their intended use provided they are installed, used and maintained as set out in this Certificate. Certificate No 93/2878 is accordingly awarded to Bluebird Fixings Limited.

On behalf of the British Board of Agrément

Date of Second issue: 6th December 1996

Director

**The original certificate was issued on 17th March 1993. This amended version includes the change of address of the Certificate holder and updates the building regulations.*