



SIMPSON

Strong-Tie

®

Masonry Connectors

Including
Extension Wall
Profiles and
Wire Ties

C-MC16UK



+44(0)1827 255600
www.strongtie.co.uk



Masonry Connectors and Wall Ties

C2K Crocodile Wall Extension Profile

The UK's most popular solution to the tying-in of new walls to existing masonry walls/columns. The only system with "snap out" ties which can be positioned anywhere along the channel for a universal fit.

The C2K Crocodile Wall Starter is a quality engineered wall connector system that has been developed for use with most brick and block modules. This system has been designed for multi-purpose use where reliability and durability are important requirements. It provides lateral support to masonry wall panels in conversion, extension and new building work.

- BBA Approved for up to 8m, 3 storey work.
- Accommodates 10mm of vertical movement.
- Adjustable anchor ties to accommodate variation in brick courses.
- All fixings and ties provided within the packs.

The multi-purpose 'no flange profile' that has been designed to cater for brick and block walls of widths from 60 to 250mm. Ideal for internal and external applications where both sides of the new wall are to be fair faced.

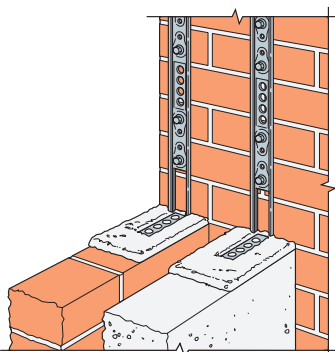
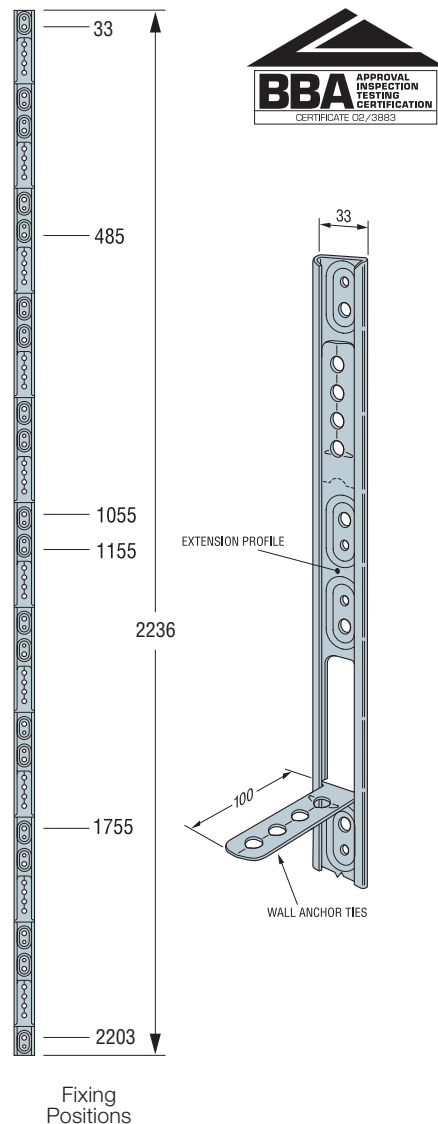
Material:

Stainless Steel Profiles:	Austenitic stainless steel.
Mild Steel Profiles:	Pre-galvanised mild steel.
Coach Screws:	M6 x 50mm
Masonry Plugs:	High density polythene.

Finish: Stainless steel or pre-galvanised mild steel with epoxy coating.

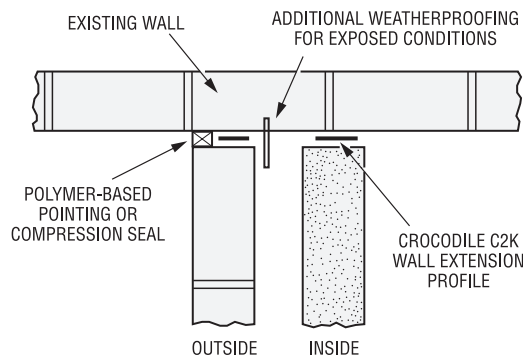
Installation:

- Use all specified fasteners.
- Fasteners must be spaced evenly, unless otherwise specified, and installed into the bricks or block and not into mortar joints.
- Insert wall ties provided at maximum 300mm centres, bedding the ties into the mortar joints.
- Detailed site work instructions are provided with each wall connector system.
- In exposed locations it may be necessary to incorporate additional protection, for example the insertion of a vertical dpc.



Typical C2K Installation

The appropriate fixings and fastenings are included in the C2K packaging.



Model No.		No. Fixings	Connector Width (mm)	Total Length (mm)	New Wall Thickness (mm)	Shear Strength ¹
Galvanised	Stainless Steel					
C2KG	C2KS	6	33	2236	60 - 250	3.5kN

1. The design shear strength given relates to existing masonry of autoclave aerated concrete blocks with a minimum crushing of strength 3.5 N/mm².

Masonry Connectors and Wall Ties

1FUR/1EXT/1MPP/1MPS Wall Extension Profiles

A time saving solution to the tying-in of new walls to existing masonry walls/columns (flanged options).

A quality engineered wall connector system that has been developed for use with most brick and block modules. This system has been designed for multi-purpose use where reliability and durability are important requirements. It provides lateral support to masonry wall panels in conversion, extension and new building work.

- Suitable for up to 8m, 3 storey work.
- Accommodates 10mm of vertical movement.
- Adjustable anchor ties to accommodate variation in brick courses.
- All fixings and ties provided within the packs.

Double flange profiles:

Double flange profiles provide the benefit of a channel within which to build the new wall, giving substantial support to finished walls where the inside and outside faces are to be plastered/rendered.

Single flange profiles:

A single flange return provides an edge that, once plumbed, can be used for a construction guide as well as giving support for walls to be fair faced on one side.

Profiles without flanges:

The multi-purpose no flange profile is designed for brick/block widths of 60 to 250mm and greater, being ideal for internal and external applications where both sides of the new wall are to be fair faced.

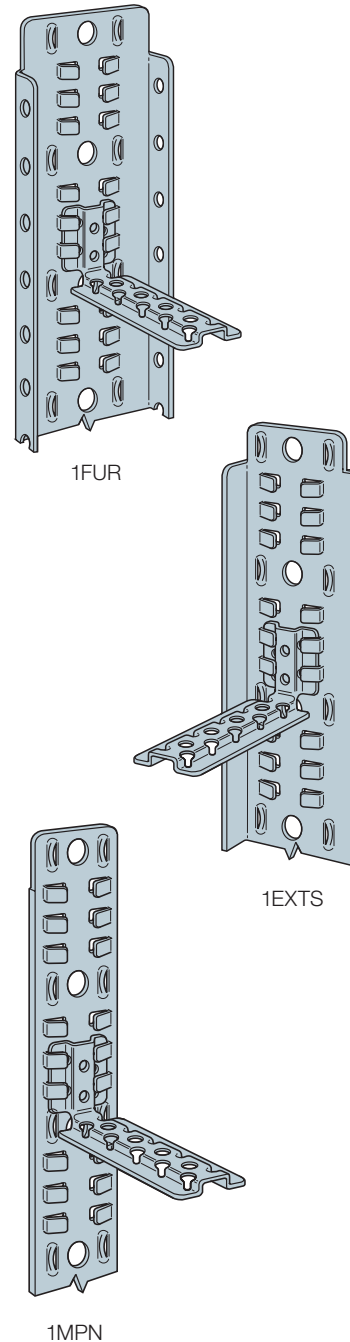
Material:

Stainless Steel Profiles:	Austenitic stainless steel.
Mild Steel Profiles:	Pre-galvanised mild steel.
Coach Screws:	M6 x 50mm
Masonry Plugs:	High density polythene.

Finish: Stainless steel or pre-galvanised mild steel with epoxy coated powder finish.

Installation:

- Use all specified fasteners.
- Fasteners must be spaced evenly, unless otherwise specified, and installed into the bricks or block and not into mortar joints.
- Insert wall ties provided at maximum 300mm centres, bedding the ties into the mortar joints.
- Detailed site work instructions are provided with each wall connector system.
- In exposed locations it may be necessary to incorporate additional protection, for example the insertion of a vertical dpc.



Model No.		Qty Fixings	Connector Width (mm)	Total Length (mm)	New Wall Thickness (mm)	Shear Strength ¹
Galvanised	Stainless Steel					
Double Flange						
1FUR5100	-	5	100	2315	100	6.0kN
Single Flange						
1EXT100S	1FUR100S	5	85	2315	85 - 150	5.0kN
No Flange						
1MPP056N	1MPS056N	5	56	2275	60 - 250	4.0kN

1. The design shear strength given relates to existing masonry of solid aerated concrete blocks of minimum crushing strength 5.0 N/mm².

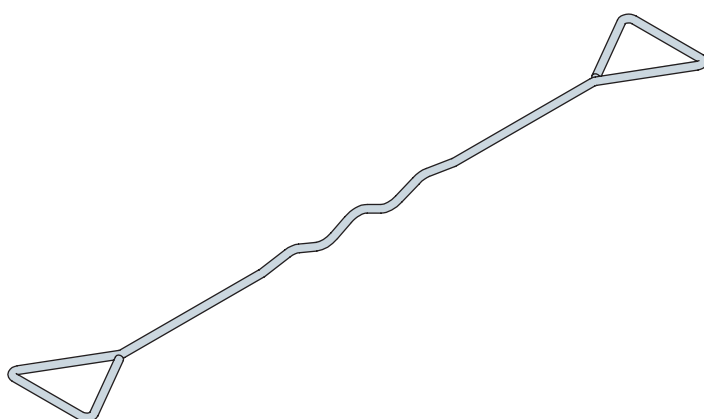
Masonry Connectors and Wall Ties

WTS Stainless Steel Masonry to Masonry Wire Tie

Type 2 and Type 4 Stainless Steel Masonry to Masonry Wall Ties.

WTS2: Type 2 Wall Ties: Masonry General Purpose

Type 2 wall ties are suitable for general purpose applications such as domestic and small commercial buildings up to 15m in height. They can also be used in buildings with heights exceeding 15m, but should only be used in those situations if shown to be of adequate performance by calculation. Use in flat sites where the basic wind speed is up to 31 m/s and the altitude is not more than 150m above sea level.



IRC001

- Suitable for use with all cavity wall ties.
- Used to hold insulation material back to structure.

WTS4: Type 4 Wall Ties: Masonry Light Duty

Type 4 wall ties are light duty, suitable for box-form dwellings up to 10 metres high with leaves of similar thickness, including internal separating cavity walls. Use in flat sites in towns and cities where the basic wind speed does not exceed 25 m/s and the altitude is not more than 150m above sea level.

WTS4: Type A Approval

WTS4-200 and WTS4-225 ties meet the requirements of Approved Document E: Resistance to the Passage of Sound and are suitable for use in separating party walls of new build attached dwellings.

WTS2 and WTS4 Performance Values

WTS Type	Type Classification ⁽¹⁾	Minimum Mortar Class and Designation	Declared Tensile Strength (N)	Tensile Strength at 1mm Displacement (N)	Declared Compressive Strength (N)	Compressive Strength at 1mm Displacement (N)
WTS2	Type 2	M2 (iv)	2060	950	2040	1650
WTS4	Type 4	M2 (iv)	1350	530	460	290

Recommended Masonry to Masonry Tie Length

Item Code	Cavity Width (mm)	Length of Wall Tie (mm)
WTS2-200	50-75	200
WTS4-200		
WTS2-225	76-100	225
WTS4-225		
WTS2-250	101-125	250
WTS4-250		
WTS2-275	126-150	275
WTS4-275		

Masonry Connectors and Wall Ties

Recommended Positioning and Density

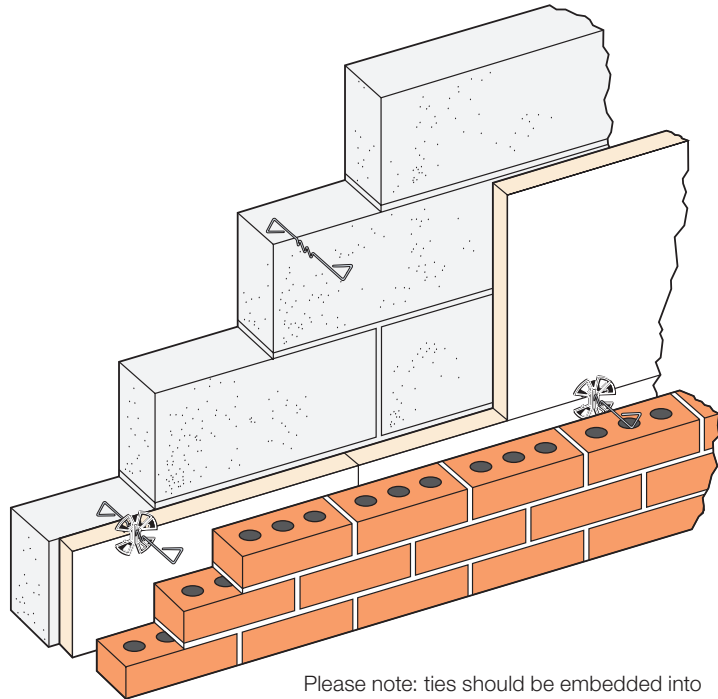
For walls in which both leaves are 90mm or thicker, masonry ties need to be placed at not less than 2.5 per square metre (900mm horizontal x 450mm vertical centres).

The ties should be evenly distributed throughout the wall area, with the exception of around openings and should be staggered where possible.

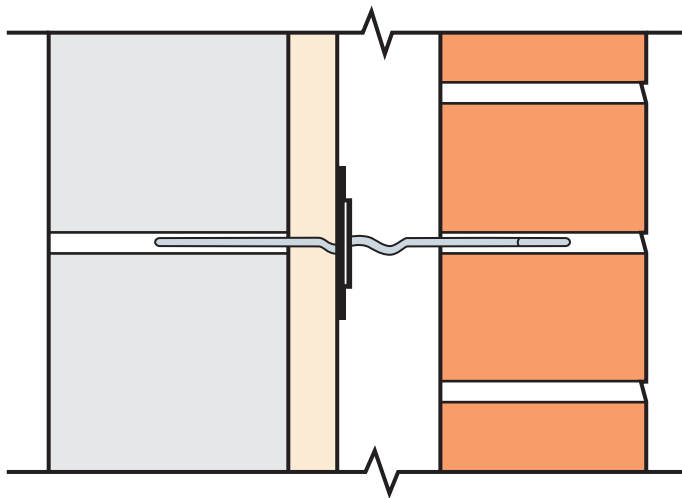
Insulation Board

Where insulation board is installed within the cavity and restrained by ties with insulation retaining clips (Simpson Strong-Tie ref. IRC001), it may be necessary to reduce the horizontal spacing of the ties to 600mm.

At vertical edges of an opening, unreturned or unbonded edges, and vertical expansion joints - additional ties should be used at a rate of one per 300mm (height) and located not more than 225mm from the edge.



Please note: ties should be embedded into the mortar. Not shown above for clarity.



Length of Tie and Embedment

Wall ties should be of the correct length to ensure they are fully embedded in the masonry.

The tie should have a minimum embedment of 50mm in each leaf, but also allow for site tolerances relating to the cavity width and centring of the tie.

The recommended tie lengths will therefore achieve an embedment of between 62.5mm and 75mm.

For the most suitable tie length, see the "Recommended Masonry to Masonry Tie Length" table (previous page).

Sound Resistance: As stated within the Approved Document E 2003 - Resistance to the Passage of Sound - wall ties used in external and separating cavity walls have to have a minimum value of dynamic stiffness to reduce the transmission of airborne noise. Ties are separated into Type A and Type B.

- Type A: Can be used in separating walls and external walls subject to them also having the required structural capacity. They can be butterfly ties or other ties with a dynamic stiffness of less than 4.8 MN/m³.
- Type B: Can only be used in external cavity walls subject to them also having the required structural capacity. They can be butterfly ties or other ties with a dynamic stiffness of less than 113 MN/m³.

Masonry Connectors and Wall Ties

WST Stainless Steel Wall Starter Tie

WST is a screw in wall starter tie designed to join new masonry to existing walls without the need for jointing. Each tie is supplied with a nylon wall plug.

- Provides lateral stability for brickwork to blockwork.
- Suitable for use with interior or exterior walls.
- Simply drill a hole, place the wall plug and screw the tie into place.
- CE marked to EN 845-1:2013.

Applications:

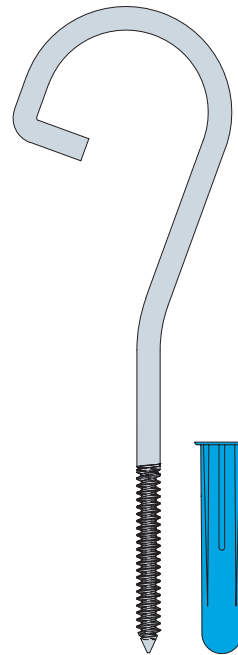
- Extensions.
- Conservatories.
- Garden Walls.

Material

- Wall Tie: Austenitic Stainless Steel.
- Wall Plug: Nylon.

Installation

- Ties should be fixed at 225mm vertical centres and be central to each leaf of the new wall.
- Drill a hole for the wall plug (Ø10 x 45mm) and insert the nylon wall plug.
- Ties may be fixed horizontally into the mortar joint of the existing wall, or at an angle of 30° to the horizontal and then bent into the bed joint of the new brickwork. When fixing the tie into the mortar joint, ensure the mortar is sound (i.e. not soft or crumbly) and is capable of taking the fixings and the loads applied on it.
- Build the tie into the new leaf of the blockwork, ensuring that it is surrounded by mortar.

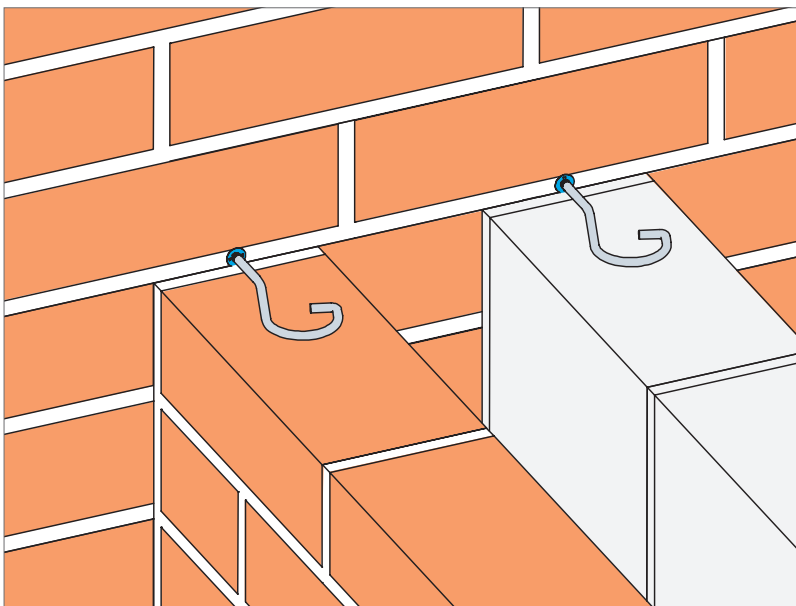


WST Performance Values

Item Code	Declared Tensile Strength (N)	Tensile Strength at 1mm Displacement (N)	Declared Shear Strength (N)	Shear Strength at 1mm Displacement (N)
WST135	1560	1450	1860	940

Note: Performance values stated above are based upon tests undertaken with the wall plug installed into mortar of compressive strength class M2 designation (iv), that had cured for 28 days.

Typical WST Installation.



Masonry Connectors and Wall Ties

WSTC Stainless Steel Cavity Wall Starter Tie

WSTC is a screw in cavity wall starter tie suitable for connecting a new leaf of masonry to an existing structure.

- Supplied with nylon wall plug and neoprene 'O' ring.
- Suits cavities 50 to 125mm.
- CE marked to EN 845-1:2013.

Material

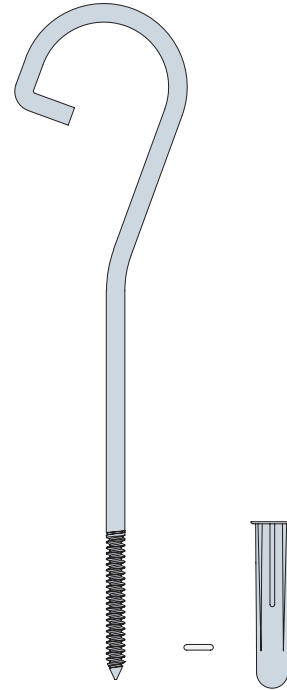
- Wall Tie: Austenitic Stainless Steel.
- Wall Plug: Nylon.
- 'O' Ring: Neoprene.

Applications

- Inner leaf walls for existing structures such as barn conversions.

Installation

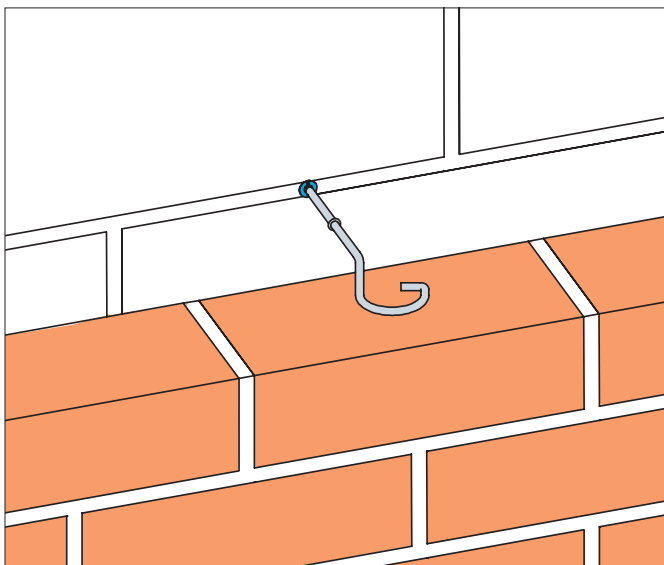
- Tie should be fixed into brickwork, blockwork or stone.
- Tie must be installed horizontally.
- Position the tie so that the mortar end is located in the bed joint of the new leaf of blockwork or brickwork.
- Drill a hole for the wall plug (Ø10 x 45mm) and insert the nylon wall plug.
- Slide the neoprene 'O' ring onto the tie and screw into the plug.
- Build the tie into the new leaf of blockwork ensuring that it is surrounded by mortar.



WST Performance Values

Item Code	Declared Tensile Strength (N)	Tensile Strength at 1mm Displacement (N)	Declared Compressive Strength (N)	Compressive Strength at 1mm Displacement (N)
WSTC180	1560	1150	2250	1860
WSTC200	1560	1150	2250	1860
WSTC230	1560	1150	2250	1860

Typical WSTC Installation.



Masonry Connectors and Wall Ties

CWT Cavity Wall Tie

CWT is a strip cavity tie with a designed embedment length of 62.5mm.

- Suitable for use with cavities 50 - 150mm.
- Conforms to PD 6697:2010 as a Type 1 wall tie which can be used for all types of building of any height and location in the British Isles.
- Deep 'V' profiled drip reduces mortar build up during construction and prevents water from crossing the inner leaf of the masonry.

Material:

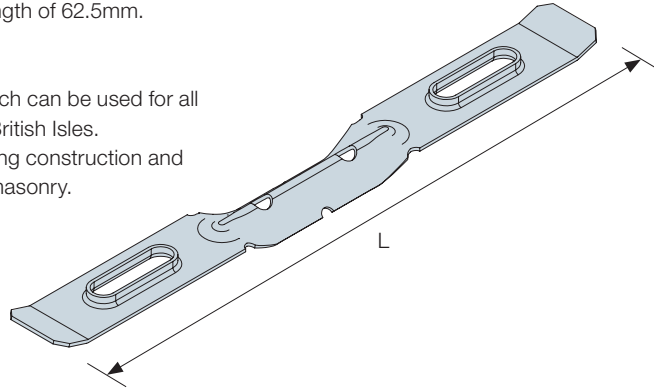
Austenitic stainless steel.

Installation:

For cavity walls with a leaf thickness of 90mm or more, unless otherwise specified place ties at 900mm centres horizontally, 450mm centres vertically and staggered where possible to a minimum density to be 2.5 ties per square metre.

Additional ties should be used at the unbonded vertical edges of an opening or at movement control joints. These should be placed 225mm from the joint, or opening, edge and at a maximum of 300mm centre to centre.

Ties should be embedded into each leaf by at least 50mm, however to allow for normal tolerances of cavity widths this is usually increased. When using insulation batts, it may be necessary to reduce the horizontal tie spacing to 600mm centres.



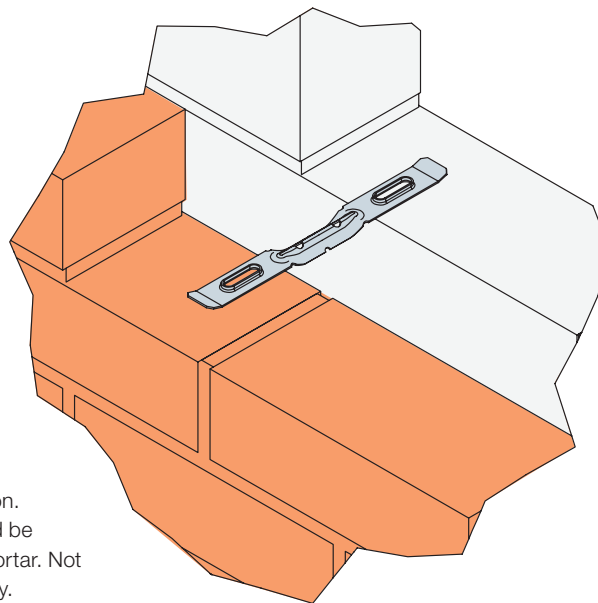
CWT Performance Values

Type Classification ⁽¹⁾	Minimum Mortar Class and Designation	Declared Tensile Strength (N)	Tensile Strength at 1mm Displacement (N)	Declared Compressive Strength (N)	Compressive Strength at 1mm Displacement (N)
Type 1	M2 (iv)	3020	1470	2630	2133

1. In accordance with PD6697.

Recommended Masonry to Masonry Tie Length

Item Code	Cavity Width (mm)	Length (L) of Wall Tie (mm)
CWT50	50	175
CWT75	51 - 75	200
CWT100	76 - 100	225
CWT125	101 - 125	250
CWT150	126 - 150	275
CWT175	151 - 175	300

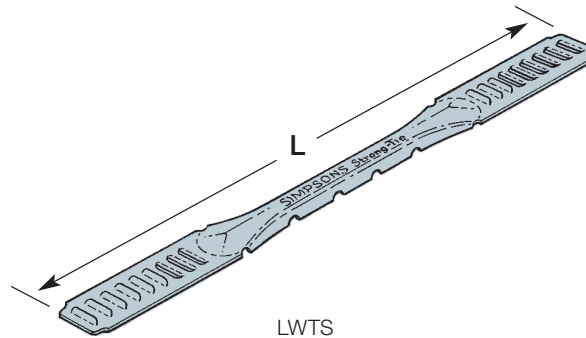


Typical CWT installation.
Please note: tie should be embedded into the mortar. Not shown above for clarity.

Masonry Connectors and Wall Ties

LWTS/IRC Cavity Wall Tie and Insulation Clip

Improve the effective thickness of a wall under load. Maintain the moisture break and thermal/sound insulation characteristics of cavity walls. Designed, manufactured and tested to the BS requirements of DD140 parts 1 and 2.



LWTS: Type 3 Cavity Ties:

General purpose ties suitable for cavity widths up to 75mm. Suitable for use in masonry cavity walls of domestic houses and small commercial buildings up to 15m in height, where the basic wind speed does not exceed 44m/s.

Material: Cavity Wall Ties: Austenitic stainless steel. Insulation Clip: Black plastic.

Installation:

For cavity walls with a leaf thickness of 90mm or more, unless otherwise specified place ties at 900mm centres horizontally, 450mm centres vertically and staggered where possible to a minimum density to be 2.5 ties per square metre.

Additional ties should be used at the unbonded vertical edges of an opening or at movement control joints. These should be placed 225mm from the joint, or opening, edge and at a maximum of 300mm centre to centre.

Ties should be embedded into each leaf by at least 50mm, however to allow for normal tolerances of cavity widths this is usually increased. When using insulation batts, it may be necessary to reduce the horizontal tie spacing to 600mm centres.



IRC001

- Suitable for use with all cavity wall ties.
- Used to hold insulation material back to structure.
- 75mm diameter.

LWTS Performance Values

Model No	Cavity Width (mm)	Wall Tie Length (mm)	Type Classification ⁽¹⁾	Minimum Mortar Class and Designation	Declared Tensile Strength (N)	Tensile Strength at 1mm Displacement (N)	Declared Compressive Strength (N)	Compressive Strength at 1mm Deflection (N)
LWTS	50 - 75	205	Type 3	M2 (IV)	1330	600	2050	1125

1. In accordance with PD6697.

Masonry Connectors and Wall Ties

FTC Cavity Frame Tie

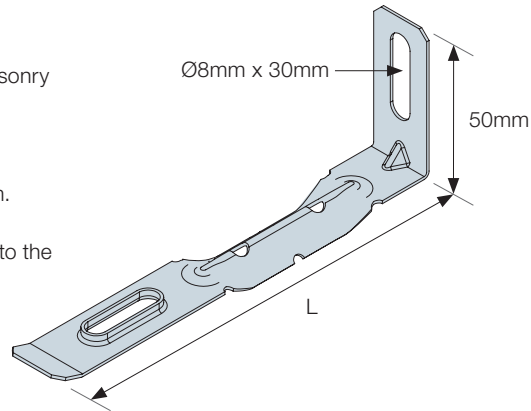
FTC is a cavity frame tie which can be used for masonry to masonry or concrete to masonry or steel to masonry construction.

- 8mm diameter vertical slot to accommodate M6 fixings.
- Suitable for use on cavities ranging from 50mm to 150mm.
- Deep 'V' profiled drip reduces mortar build up during construction and prevents water from crossing the cavity to the building's inner leaf.

Material: Austenitic stainless steel.

Installation:

- Install to concrete with mechanical or resin anchors; to steel with self drilling screws and to masonry with suitable plugs and screws.
- Minimum 18mm diameter washer required in all instances. For stated tension loads to apply, the fixing must be installed at the bottom of the slot.
- Isolation pads or sleeves are required to isolate stainless steel frame ties from mild steel support or fixings.



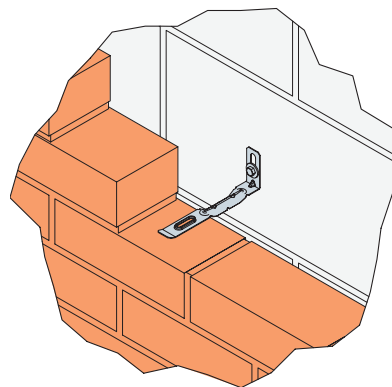
FTC Performance Values

Cavity Widths (mm)	Declared Tensile Strength (N)	Tensile Strength at 1mm Displacement (N)	Declared Compressive Strength (N)	Compressive Strength at 1mm Displacement (N)
Up to 75	1670	556	3080	1026
76 - 150			2410	1011

1. Fasteners not specified. Installer to select own fastener. Tensile capacity to be a minimum of SST declared load or fastener tensile/pull-out load.

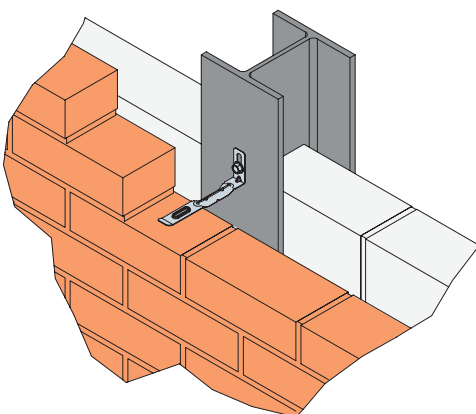
Recommended Masonry to Masonry Tie Length

Item Code	Cavity Width (mm)	Length (L) Wall Tie (mm)
FT175C	50	125
FT200C	75	150
FT225C	100	175
FT250C	125	200
FT275C	150	225

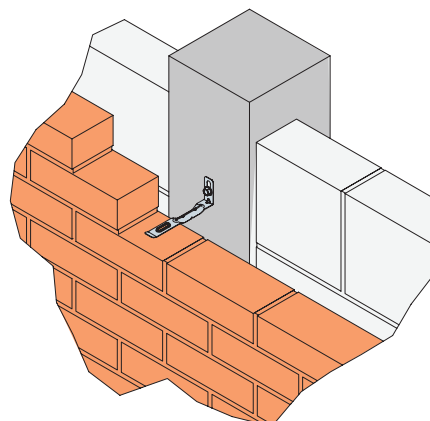


Brick to block work installation.

Please note: tie should be embedded into the mortar. Not shown for clarity.



Brick to steel installation.



Masonry to Concrete installation.

Masonry Connectors and Wall Ties

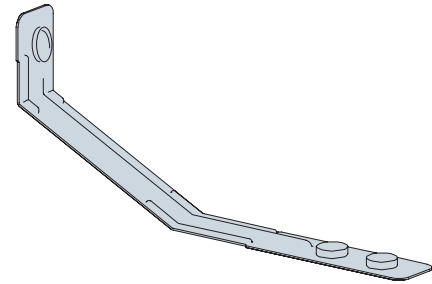
BTS/SWT Brick to Timber and Brick to SIP Tie

The BTS and SWT are wall ties used to restrain the external brickwork back to the building structures, while maintaining a clear cavity.

The BTS and SWT offer an outstanding combination of performance and cost in a wall tie for use with timber frame or SIP (Structural Insulated Panels). Manufactured from austenitic stainless steel.

A Type 6 wall tie is suitable for use in timber frame and SIP structures allowing up to 24mm of movement.

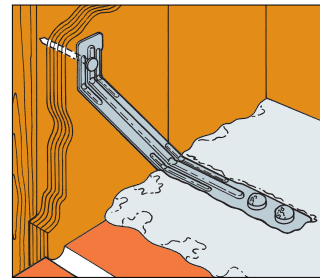
Location	Density of Ties	Spacing (mm)
All South East England and Town and City sites where basic wind speed does not exceed 52m/sec	4.4 ties per m ²	600 x 375
All sites where basic wind speed exceeds 52m/sec	7 ties per m ²	600 x 225



Timber Frame Installation

Use 3.35mm x 50mm stainless steel annular ring shank nails (supplied with tie).

BTS50N	BTS75N	BTS100N
50mm Cavity	75mm Cavity	100mm Cavity



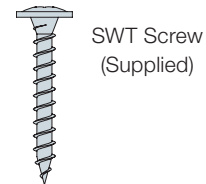
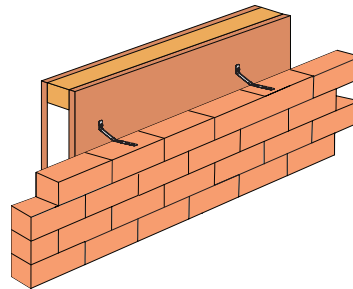
BTS Installation

BTS Compressive Load Capacity 414N.
BTS Tensile Load Capacity 600N.

SIP Installation

Due to having to fix to OSB alone, when building with SIP, a stainless steel screw (supplied with the tie) is required to maintain the strength of the connection.

SWT50	SWT75	SWT100
50mm Cavity	75mm Cavity	100mm Cavity

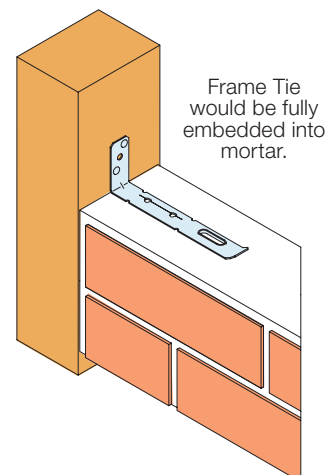
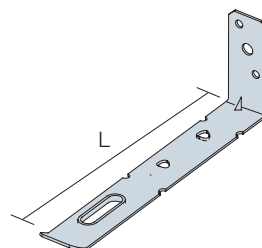


SWT Compressive Load Capacity 414N.
SWT Tensile Load Capacity 714N.

FT Frame Tie

When fastening windows, door frames etc. to masonry the frame tie provides enhanced mortar keying and reduces the risk of injury from sharp edges.

Item Code (Galvanised)	Item Code (Stainless Steel)	L (mm)
FT150	FT150S	100
FT175	FT175S	125
FT200	FT200S	150
FT225	FT225S	175
FT250	FT250S	200



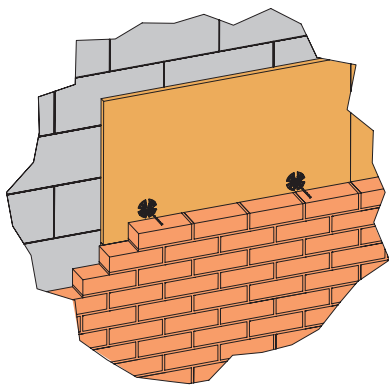
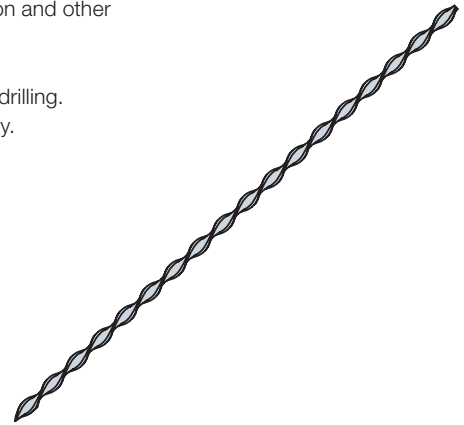
Masonry Connectors and Wall Ties

HELI Thin Joint Masonry Tie

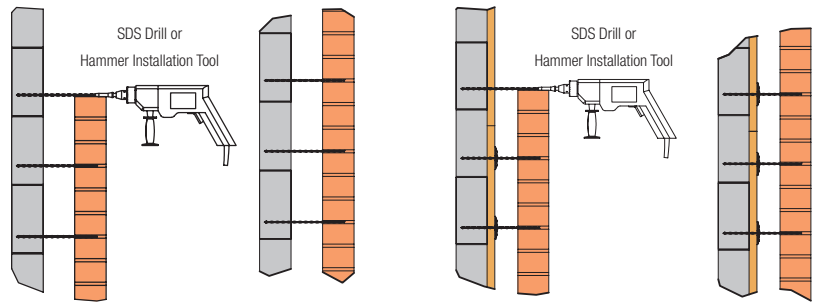
Type 3 stainless steel cavity wall ties for thin joint blockwork systems of masonry construction and other applications where the joints of the inner and outer leaves of masonry do not course.

- Ties can be hammered directly into the AAC1 concrete block without the need for pre-drilling.
- A continuous helix ensures multiple drip points that prevent moisture crossing the cavity.
- Suitable for use with cavities 50mm to 150mm.
- Thin joint wall ties are cold-roll profiled and twisted to form a 7mm diameter helical tie with a cross sectional area of just 9mm².
- Can be used in conjunction with the IRC insulation retaining clip where insulation has to be retained in the cavity.
- An installation tool is required to hammer the tie into the AAC block.

Material: Stainless Steel



Masonry Installation, shown with IRC insulation retaining clip.



Masonry Tie Performance Values

Model	Type Classification	Minimum Mortar Class and Designation	Declared Tensile Strength (N)	Tensile Strength at 1mm Displacement (N)	Declared Compressive Strength (N)	Compressive Strength at 1mm Displacement (N)
HELI07	3	M2 (iv)	1460	670	1250	620

Timber Frame Tie Embedment Parameters

Item Code	Cavity Width (mm)	Tie Length (mm)	Minimum Tie Embedment Depth (mm) Tensile Strength at 1mm Displacement	
			3.5 N/mm ² AAC	Mortar
HELI07205A2	50	205	80	70
HELI07230A2	50 - 75	230	80	70
HELI07255A2	75 - 100	255	80	70
HELI07280A2	100 - 125	280	80	70
HELI07305A2	125 - 150	305	80	70

1. AAC: Autoclaved Aerated Concrete.

Bead and Mesh - Guidance for Use

Simpson Strong-Tie supplies a range of Beads, Mesh and Archformers to satisfy the requirements of modern building design, along with the needs of traditional repair and maintenance work.

We only recommend the use of stainless steel or PVC-u products in external applications. Galvanised steel beads should not be used externally.

Corrosion Protection

- In normal circumstances matured plasterwork may be regarded as dry and therefore non-corrosive. Where galvanised beads are used the initial plaster drying out period should be kept to a minimum to reduce the risk of possible corrosion of the steel.
- Stainless steel beads are specifically designed for cement based renders and should not be used with gypsum based plasters.
- To prevent bimetallic corrosion ensure all metal fixings used in the installation are of the same material or are separated with a suitable plastic sheathing.
- In general, metal beads should be kept dry and stored flat. Care should also be taken to prevent accidental damage to the galvanised coating.
- The use of water contaminated with soluble salts in plastering mixes should be avoided as should soluble chlorides as they are likely to increase the risk of metal corrosion.
- Always refer to the plaster/render manufacturer for further information.

Material: Simpson Strong-Tie Plastering Accessories are manufactured from either: Pre-Galvanised Mild Steel or Austenitic Stainless Steel

MILD STEEL GALVANISED TO Z275 IS NOT SUITABLE FOR EXTERNAL APPLICATIONS. STAINLESS STEEL or PVC-u SHOULD ONLY BE USED IN EXTERNAL APPLICATIONS WITH THE APPROPRIATE CEMENT BASED RENDERS.

British Standards - Relevant current British Standards are as follows;

- BS EN 14353:2007 + A1: 2010.
- BS EN 13658-1: 2005: Part 1 - Metal Lath and Beads: Internal Plastering.
- BS EN 13658-2: 2005 Part 2 - Metal and Lath Beads: External Rendering.
- BS EN 13914-1: 2005 - External Rendering.
- BS EN 13914-2: 2005 - Internal Plastering.
- BS8212: 1995 - Code of Practice for Dry lining and Partitioning using Gypsum Plaster.

General Installation Notes:

- The most appropriate bead should be specified in accordance with the application, required plaster depth and desired finish. In external applications, we only recommend the use of stainless steel or PVC-u products.
- When using beads externally, ensure that the drying out time of the plaster kept to a minimum, particularly during winter months provide heating and ventilation to the area when necessary.
- Ensure that all metal components used in a given installation are of the same material type.
- Always wear gloves when cutting or handling to prevent injury from sharp edges.
- Beads and Mesh may be cut to size as required by using snips across the mesh and a hacksaw across the beads noses.
- Beads should be fixed in accordance with one of the following methods.
 1. Pressing the bead's wings firmly into plaster dabs placed at approximately 600mm centres both sides of the arris.
 2. The wings may be embedded into the first coat of plaster for normal two coat work.
 3. Nailing to a background with galvanised, or stainless steel nails.
- When beads are used in conjunction with metal lath backgrounds, galvanised or stainless steel tying wire may be used. Ensure the wire material matches the bead and lath materials. All wire should be twisted tightly and the ends bent away from the finished face of the coating. (For lath fixing details refer to DML and RBL sections of catalogue).
- Avoid damage to beads when trowelling plaster or render.

It is the users responsibility to make sure that the correct product is used. If further advice is needed, contact our technical department on 01827 255600 or via email at uktechnical@strongtie.com.



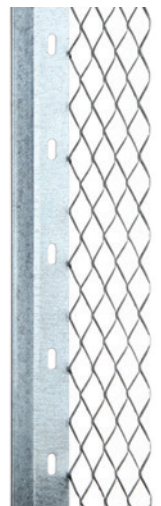
Thin Coat Bead



Angle Bead



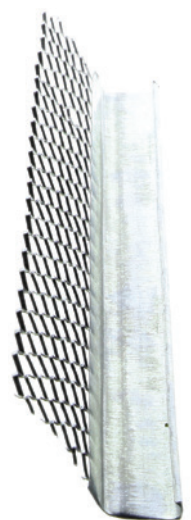
Perforated Stop Bead



Mesh Wing Stop Bead



Mini Mesh Bead



Render Stop Bead



Simpson Strong-Tie®

Cardinal Point
Winchester Road
Tamworth
Staffordshire
B78 3HG

Tel: +44(0)1827 255600

Visit: www.strongtie.co.uk

Twitter: [strongtieUK](https://twitter.com/strongtieUK)

Facebook: [simpsonstrongtieUK](https://www.facebook.com/simpsonstrongtieUK)

**Masonry
Connectors**

Includes Extension Wall Profiles
and Wire Ties

C-F-16UK

2016 Edition

