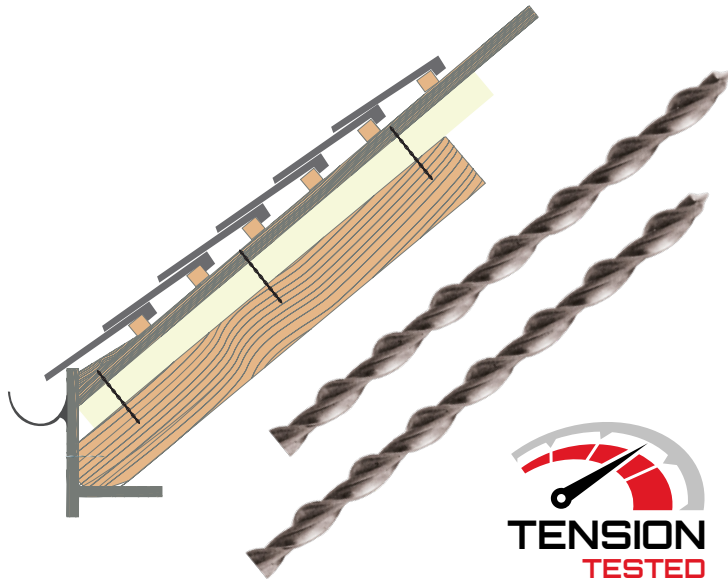


SAMSON WARM ROOF FIXINGS



SAMSON FIXINGS

A Helical Fixing for Warm Roof Applications that is used to secure and sandwich a layer of insulation over the structural roofing timbers in energy efficient buildings.



ADVANTAGES

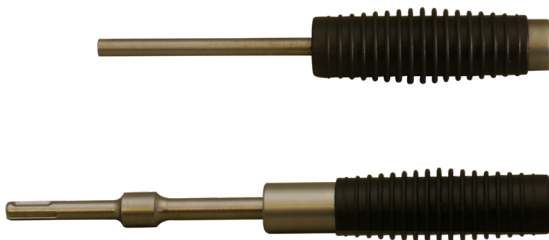
- Easy and fast installation
- Unlike a nail it rotates as it is driven in reducing the risk of splitting or bouncing timbers
- Does not compress insulation or impair thermal performance
- Unique one-piece stainless steel fixing
- Excellent holding performance in tension and compression
- Supports heavy sliding loads in all wind conditions
- 6mm and HC7mm available
- 304 Stainless steel
- Hand hammered or power-driven without pre-drilling
- Headless for minimal thermal bridging
- Recommended by all the leading insulation manufacturers
- In house design service - Full technical data available
- Tested and endorsed by independent testing authorities

SAMSON HELICAL 1-POINT RANGE

- **6mm lengths available (mm):**
100 • 110 • 120 • 125 • 130 • 135 • 140 • 145 • 150 • 160 • 170 • 180 • 190 • 200 • 205 • 210
- **HC7mm lengths available (mm):**
150 • 160 • 170 • 180 • 190 • 200 • 210 • 220 • 230

TOOLING

- We recommend tooling for 6mm fixings over 120mm long and for 7mm fixings over 170mm long



MORE ADVANTAGES

- Roof timbers are kept warm and dry
- Creates a continuous thermal envelope without cold bridges, improving the thermal efficiency of the property
- Protects against damp and corrosion
- Roof tile ventilation is no longer required
- Produces warm usable space
- Capable of achieving Part L of building regulations

NOTE

- If the thickness of the insulation exceeds 100mm or if the counter batten is warped an alignment installation tool is recommended enabling central alignment during installation.



info@samsonfixings.com

IT'S IN THE BUILDING!

www.samsonfixings.com

SAMSON FIXINGS LTD

UNIT 7 BEECH COURT, WILLOW ROAD, ST IVES, HUNTINGDON, PE28 9RF, UNITED KINGDOM • COMPANY REG. 11972793

Please always wear the appropriate safety and protective clothing when installing fixing and anchor products. Always observe the necessary Health & Safety guidelines.

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The above information is given in good faith, and may be subject to alteration at any time without prior notification.



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MANUAL & HAND SUPPORT TOOL INSTALLATION



INSTALLATION GUIDE

GUIDE:

When fixing through hardwood we recommend that either a pilot hole is drilled or to install with a Power Installation Tool.

SAMSON HELICAL TIES can be driven using a conventional hammer. A series of light taps rather than heavy blows will allow the **SAMSON HELICAL TIE** to rotate during insertion. Hand- and Power Support Tools are also available.

INSTALLATION:

1. Line the counter batten up with the rafter beneath the insulation.
2. Apply pressure to the counter batten pressing firmly onto the insulation.
3. Place the **SAMSON HELICAL TIE** as near to the centre of the counter batten as possible and hammer home (Alternatively drive with Power Support Tool).
4. Place the remaining fixings at the recommended spacings along the counter batten, and hammer home.

NOTE:

Once fixed at the recommended density the battens will feel vertically secure but may feel a little springy horizontally if the gap is not set tightly enough. This movement will be alleviated by the bracing effort of the tile battens which will provide additional lateral rigidity.



POWER SUPPORT TOOL INSTALLATION



SAMSON WARM ROOF FIXINGS

Technical Specifications

CALCULATING CORRECT LENGTH OF 6mm FIXING

METHOD	EXAMPLE
1. *BATTEN/ COUNTERBATTEN THICKNESS >	25mm
2. + INSULATION THICKNESS >	+60mm
3. + THICKNESS OF ANY ADDITIONAL MATERIAL - (PLYWOOD, DAMP-PROOFING) >	+12mm
4. + 35mm EMBEDMENT IN RAFTER >	+35mm
5. = LENGTH OF FIXING REQUIRED >	= 132mm (use 135mm)

THE DENSITY AND SPACING OF SAMSON WARM ROOF FIXINGS (Using a 25mm counter batten)

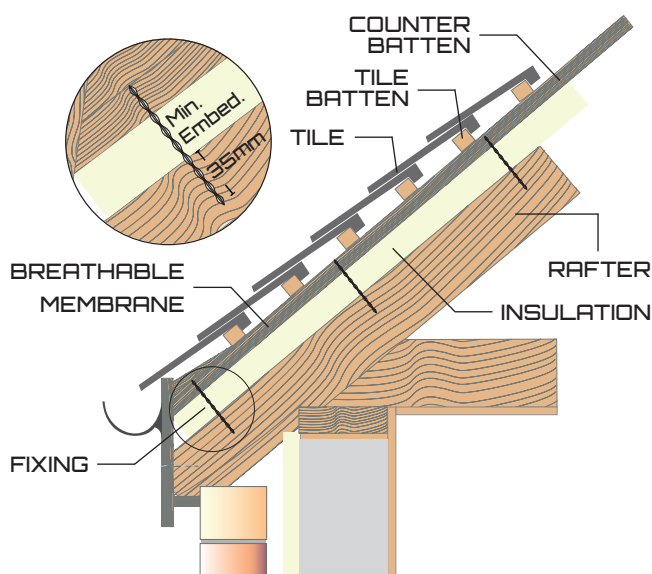
INSULATION THICKNESS	FIXINGS PER M ²	RAFTER SPACING		
		400mm	450mm	600mm
0 - 50mm	6.5	380	325	260
51 - 75mm	13.2	185	180	125
76 - 100mm	18.4	135	130	90

CALCULATING THE QUANTITY OF FIXINGS

- Batten fixings per m² x Total roof area m² =
Quantity required

**25mm minimum counter-batten thickness
38mm Recommended by BRE*

Insulation is getting much thicker to help to conform to part L of the building regulations, thus helping to reduce carbon emissions. SAMSON HELICAL now has a HC7mm ø fixing to improve the efficiency of fixing insulation over 50mm thick.



NOTE

The table above has been designed to suit the majority of applications. It is suitable for projects matching all of the following criteria:

- Buildings up to 15 metres in height
- Roof coverings up to 60kg/m²
- Minimum counter-batten thickness of 25mm
- Using a 38mm counter batten will reduce the quantity of fixings required per M² *
- Slope of ground within 1km up to 1:12.5
- Locations in wind zones up to 52m/s

**Contact the SAMSON Technical Department for assistance.*

At SAMSON we realize that safety and performance are paramount in the structural repair and fixing markets. To guarantee the products safety, tension is induced through the SAMSON HELICAL section by the twisting motion in the manufacturing process. This ensures that all impurities in the base material are detected early, and any inferior materials discarded.



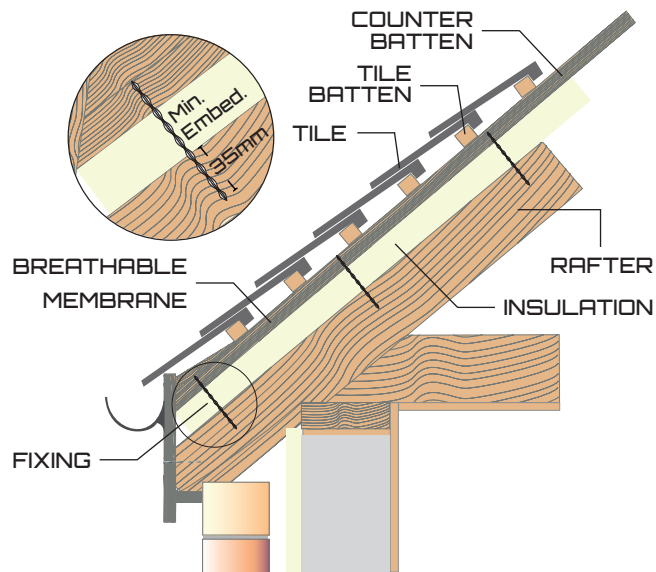
SAMSON WARM ROOF FIXINGS

Warm Roof Installation Technical Guide

INSTALLATION DETAILS

SAMSON HELICAL 1-POINT TIES can be driven using a conventional hammer. A series of light taps rather than heavy blows will allow the SAMSON HELICAL 1-POINT TIE to rotate during insertion. Alternatively you can use the SDS Power support tool to drive the fixings home.

1. Line the counterbatten up with the rafter beneath the insulation.
2. Apply pressure to the counterbatten pressing firmly onto the insulation.
3. Place the SAMSON HELICAL 1-POINT TIE as near to the centre of the counterbatten as possible and hammer home (Alternatively drive with Power Support Tool).
4. Place the remaining fixings at the recommended spacings along the counterbatten, and hammer home.



Once fixed at the recommended density the battens will feel vertically secure, but may feel a little springy horizontally if the gap is not set tightly enough. This movement will be alleviated by the bracing effort of the tile battens which will provide additional lateral rigidity.

At SAMSON we realize that safety and performance are paramount in the structural repair and fixing markets. To guarantee the products safety, tension is induced through the SAMSON HELICAL section by the twisting motion in the manufacturing process. This ensures that all impurities in the base material are detected early, and any inferior materials discarded.

WIND SUCTION LOADS

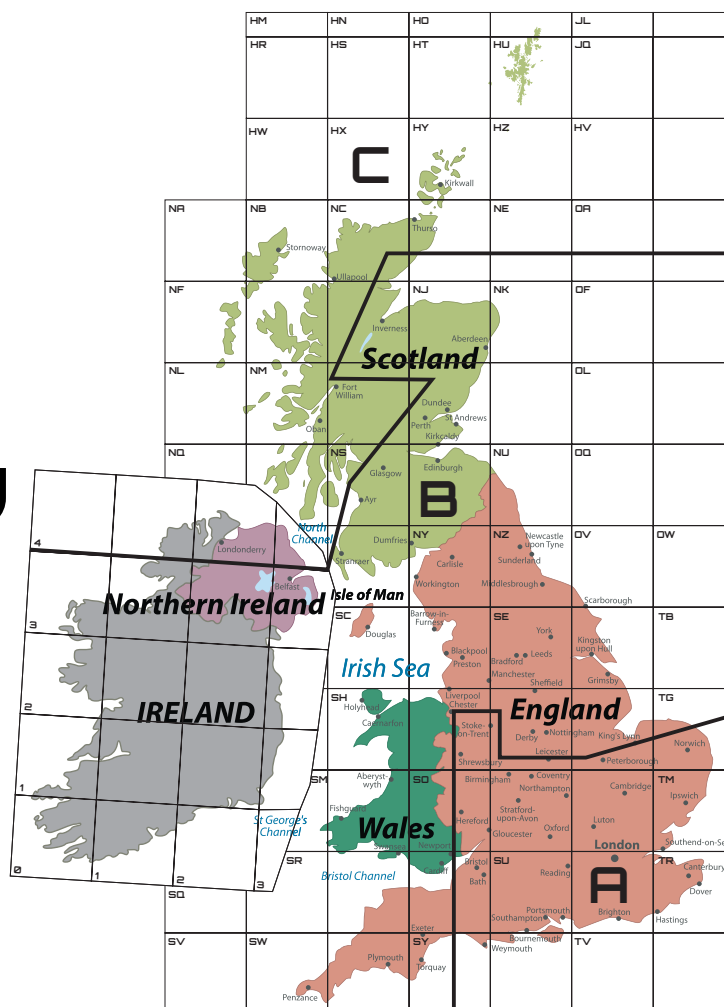
1. Factors affecting fixing density to resist wind suction loads

Wind Zones A, B and C as defined by the map above.

- A = Basic wind speed up to 44m/s
- B = Basic wind speed up > 44m/s up to 52m/s
- C = Basic wind speed > 52m/s

2. Local land contour within 1km of site

- (a) Flat or gently sloping surrounding land, where slopes do not exceed 1:20. ($S_1 = 1$) *
- (b) Moderately sloping surrounding land where slopes are between 1:20 and 1:12.5 ($S_1 = 1.1$) *
- (c) Surrounding land sloping steeply in excess of 1:12.5, declined as 'No Limit'. ($S_1 = 1.36$) *



SAMSON WARM ROOF FIXINGS

Warm Roof Installation Technical Guide

Information required to calculate the fixing length and axial spacing

- A) Counter-batten thickness Minimum 25mm,
British standards now advise 38mm.
- B) Insulation Thickness
- C) Addition material IE Ply or plasterboard which
is place between the counter-batten and rafter.
- D) Rafter centre
- E) Location of Contract
- F) Roof Pitch
- G) Weight of Tile
- H) Roof Area

Insulation Thickness: 0 – 35mm
(Table 1 / Min. fixings/m² to resist sliding loads)

Warm Roof Fixing Roof Pitch								Weight of laid roofing measured on the slope kg/m ²	
20°	30°	40°	50°	60°	70°	80°	90°		
1.5	2.0	1.8	1.6	1.0	0.5	0.7	0.7	10	A.C. or Steel Sheet
1.6	2.2	2.3	1.9	1.7	1.0	1.0	1.0	20	A.C. Slates
1.8	2.5	2.6	2.4	2.0	1.5	1.6	1.6	30	Natural Slates
2.0	2.8	3.0	2.8	2.5	2.0	2.1	2.1	40	
2.1	3.2	3.2	3.2	3.0	2.5	2.6	2.6	50	Interlocking Concrete Tiles
2.2	3.4	3.7	3.4	3.7	3.0	3.1	3.2	60	
	3.6	4.0	4.0	4.0	3.7	3.8	3.8	70	Plain Clay Tiles
	4.0	4.4	4.6	4.6	4.0	4.4	4.4	80	
	4.2	4.7	5.0	5.0	4.5	5.0	5.0	90	Concrete Slates
	4.5	5.2	5.3	5.4	5.1	5.4	5.4	100	Cotswold Stone

Insulation Thickness: 36 – 50mm
(Table 1 / Min. fixings/m² to resist sliding loads)

Warm Roof Fixing Roof Pitch								Weight of laid roofing measured on the slope kg/m ²	
20°	30°	40°	50°	60°	70°	80°	90°		
3.0	4.2	3.8	3.0	2.1	0.9	1.1	1.1	10	A.C. or Steel Sheet
3.4	4.6	4.4	3.9	3.1	1.9	2.0	2.1	20	A.C. Slates
3.7	5.2	5.2	4.6	4.0	3.0	3.2	3.2	30	Natural Slates
4.0	5.5	6.0	5.6	4.9	4.1	4.1	4.2	40	
4.4	6.1	6.5	6.4	5.6	5.0	5.2	5.3	50	Interlocking Concrete Tiles
4.7	6.8	7.2	7.1	6.7	6.0	6.2	6.3	60	
	7.2	8.0	8.0	7.7	7.1	7.6	7.5	70	Plain Clay Tiles
	8.0	8.6	9.0	8.6	8.1	8.4	8.6	80	
	8.5	9.4	9.6	9.8	9.0	9.8	9.8	90	Concrete Slates
	8.9	10.0	10.5	10.5	10.0	10.7	10.7	100	Cotswold Stone



SAMSON WARM ROOF FIXINGS

Warm Roof Installation Technical Guide

Information required to calculate the fixing length and axial spacing

- | | |
|--|-------------------------|
| A) Counter-batten thickness Minimum 25mm,
British standards now advise 38mm. | D) Rafter centre |
| B) Insulation Thickness | E) Location of Contract |
| C) Addition material IE Ply or plasterboard which
is place between the counter-batten and rafter. | F) Roof Pitch |
| | G) Weight of Tile |
| | H) Roof Area |

Insulation Thickness: 51 – 75mm
(Table 1 / Min. fixings/m² to resist sliding loads)

Warm Roof Fixing Roof Pitch								Weight of laid roofing measured on the slope kg/m ²	
20°	30°	40°	50°	60°	70°	80°	90°		
5.2	7.4	7.0	5.6	3.7	1.7	1.7	1.8	10	A.C. or Steel Sheet
6.0	8.5	8.2	7.0	5.4	3.6	3.7	3.7	20	A.C. Slates
6.7	9.3	9.5	8.5	7.0	5.4	5.5	5.6	30	Natural Slates
7.3	10.3	10.6	10.0	8.7	7.2	7.5	7.6	40	
8.1	11.2	12.1	11.5	10.6	8.8	9.6	9.6	50	Interlocking Concrete Tiles
8.6	12.2	13.1	13.0	12.1	11.0	11.2	11.4	60	
	13.2	14.6	14.4	13.9	12.5	13.1	13.3	70	Plain Clay Tiles
	14.1	15.5	16.0	15.5	14.5	15.2	15.3	80	
	15.0	16.9	17.5	17.0	16.3	17.1	17.3	90	Concrete Slates
	16.1	18.4	18.9	18.9	18.0	19.1	19.2	100	Cotswold Stone

Insulation Thickness: 76 – 100mm
(Table 1 / Min. fixings/m² to resist sliding loads)

Warm Roof Fixing Roof Pitch								Weight of laid roofing measured on the slope kg/m ²	
20°	30°	40°	50°	60°	70°	80°	90°		
7.5	10.5	9.6	7.6	5.5	2.4	2.6	2.6	10	A.C. or Steel Sheet
8.5	11.7	11.5	9.8	7.6	5.0	5.3	5.3	20	A.C. Slates
9.3	13.0	13.2	11.8	10.1	7.7	8.0	8.0	30	Natural Slates
10.2	14.5	14.9	14.0	12.3	10.3	10.5	10.5	40	
11.3	15.9	16.6	16.0	14.9	12.7	13.4	13.4	50	Interlocking Concrete Tiles
12.1	17.1	18.4	18.1	17.0	15.3	15.3	15.9	60	
	18.5	20.2	19.4	19.2	17.6	18.5	18.7	70	Plain Clay Tiles
	20.2	21.8	22.1	21.8	20.3	21.2	21.7	80	
	21.4	23.6	24.4	24.1	22.9	23.5	24.3	90	Concrete Slates
	22.6	25.5	26.4	26.5	25.5	26.3	27.0	100	Cotswold Stone



SAMSON WARM ROOF FIXINGS

Warm Roof Installation Technical Guide

Table 2 / Fixings/m² for different fixing centres

Fixing Centres	Rafter Centre 400mm	Rafter Centre 450mm	Rafter Centre 600mm	Rafter Centre 1200mm
100mm	25.0	22.2	16.7	8.3
125mm	20.0	17.8	13.3	6.7
150mm	16.7	14.8	11.1	5.6
175mm	14.3	12.7	9.5	4.8
200mm	12.5	11.1	8.4	4.2
225mm	11.1	9.8	7.3	3.7
250mm	10.0	8.9	6.7	3.4
275mm	9.1	8.0	6.0	3.0
300mm	8.3	7.3	5.5	2.8
312mm	8.0	7.1	5.3	2.7
325mm	7.7	6.5	5.2	2.6
350mm	7.2	6.0	4.8	2.4
375mm	6.7	5.9	4.5	2.3
400mm	6.3	5.6	4.2	2.1
406mm	6.2	5.5	4.1	2.0

Table 3 / Cladding fixing densities to resist wind suction for cladding and vertical tiles

Wind Zone	Max. Slope of Land within 1km	Suction kN/m ²	Warm Roof Fixing Batten Thickness		
			25mm	38mm	50mm
A	1:20 2-52	4.3	2.5	2.0	
	1:12-5	3.52	5.6	3.4	2.4
	No Limit	4.66	7.4	5.3	3.7
B	1:20 3-52	6.0	3.6	2.8	
	1:12-5	4.26	7.0	4.6	3.5
	No Limit	6.51	10.0	7.2	5.4
C	1:20	4.10	6.5	4.4	3.2
	1:12-5	4.94	8.0	5.4	4.0
	No Limit	7.54	12.5	8.4	6.0

Information required to calculate the Fixing length and Axial spacing

- **Calculating the Fixing length:**

Counterbatten Thickness + Insulation Thickness +
Any Additional Material + 35mm Embedment

= **Total Length required**

- **Calculate QTY of Fixings required:**

Roof area M² x Min. Fixings / M²

= **Total QTY**

- **Calculating the Axial Centres and QTY required:**

Insulation thickness, Tile weight and Roof Pitch.
Go to Table 1 and cross reference the min.

Fixings / M². With that figure go to Table 2, cross
reference against the rafter centre, to the fixing
centre. The result is the axial spacing along the
counterbatten.



SAMSON WARM ROOF FIXINGS SPECIFICATION FORM



Information required to calculate the fixing length and axial spacing

Name		Date	
Company Name/Branch		Tel:	
		Fax:	
Insulation thickness			mm
Counter-batten Thickness: The counter-batten must be a minimum of 25mm thick. If this is not possible consult the SAMSON SALES TEAM			mm
Additional material thickness: Sometimes, other materials such as ply or plasterboard are placed between the insulation and the rafters.			mm
Counter-batten Centres: This is the counter-batten spacing and is usually the same as the rafter centres.			mm
Roof Pitch: This is needed in order to calculate the sliding load. You can round this figure up or down to the nearest 10°			°
What sort of tiles/slates are to be used? This is needed in order to calculate the sliding load. At best we need to know the laid weight in kg/m ² , at worst the name of the tile/slate to be used.	Lead/Steel Sheets		
	Artificial Slates (most Eternits)		
	Natural/Welsh Slates		
	Interlocking Concrete Tiles		
	Clay Tiles		
	Cotswold Stone		
Other			
Wind Exposure:	What country is the site in?		
Would you consider it's exposure to the wind: Take into account if the site is in town, on top of a hill, near the coast etc. Is the building height over 15 metres?	Minimum		
	Medium		
	Maximum		
Yes		No	
What is the area of the roof? This is needed to calculate the total number of fixings required.			m ²
To be filled in by SAMSON: From the above answers we can calculate that you require:			
(quantity)	(length)	(centres)	
SAMSON 1-POINT TIE x	mm fixed every	mm up the counter-batten	
Signed	Date	Enq. N°	

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